



ASB Heating Elements Ltd.



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ASB Heating Elements Ltd.

Warranty

Warranty

ASB HEATING ELEMENTS LTD. (ASB) warrants its products against manufacturing defects and workmanship under their normal usage conditions, to the original user or purchaser only, for a period of eighteen months from the date of purchase, or for a period of twelve months after installation, whichever shall come first. Any labor cost associated with the removal, re-installation, replacement, loss of productivity, or consequential damage are excluded from and not covered by this warranty. In addition, there is no warranty against damage by corrosion.

ASB's obligation under this warranty shall be limited to the repair, including any necessary parts and the costs of labor connected with the repair only, or at our option, the exchange of any product that shows evidence of a manufacturing defect within the warranty period. Replacement parts furnished in connection with this warranty shall be warranted for a period equal to the unexpired portion of the original equipment warranty.

Technical information contained in ASB's catalogue, price list or any other information furnished without charge or obligation is given and accepted without any liability on the part of ASB and at the recipient's risk. This warranty applies to the product from the original date of purchase or installation as aforesaid and the owner must provide a copy of the original dated of bill of sale, or invoice for installation. No warranty service will be performed without such proof. Transportation of the products to and from the service depot provided by ASB is the responsibility of the owner.

This warranty shall not apply to damages due to handling, transportation, unpacking, installation, set-up, customer adjustments, or repair or replacement of parts supplied by other than ASB. Any malfunction or failure caused by or resulting from abnormal environmental conditions, improper or unauthorized service, improper maintenance, modifications or repair by the owner, abuse, misuse, neglect, accident, fire, flood or other acts of god are excluded.

This warranty is in lieu of all other warranties expressed or implied, and ASB neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale or service of this product. In no event shall ASB be liable for special or consequential damage arising from the use of this product or for any delay in the performance of this warranty due to causes beyond ASB's control.



ASB Heating Elements Ltd.

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General Information

Quality, innovation, and technical excellence are our commitments to you, our valued customer. ASB offers you quality manufactured heating products to meet the demanding needs of the Industrial Process Marketplace.

Electric Heat and Energy Conservation in the Industrial Process Heating field are compatible. Electric heat is 100% energy efficient, combined with good temperature controls you will get the exact amount of heat energy to do the intended job. Coupling the efficiency with the ability to locate the heat precisely where you need it, you will get all the power where you need it.

Quality products, technical assistance, and helping you select the right components for your needs helps you meet your heating needs.

Liability

Technical information contained in this catalogue is furnished without charge or obligation, and is given and accepted at the recipient's risk.

While every effort is made to supply the equipment as shown, ASB reserves the right to make dimensional and other design changes to the products without notice.

Returns

Stock items, un-used and in the original packaging, can be returned. There is a 15% re-stocking charge.

A return authorization form must accompany shipments of returned goods, whether for credit, repair, or warranty replacement.



CE



CE

Tubular Elements only

ASB offers you the absolute best tubular element, available 0.260" 0.315" 0.375" & 0.430" sheath O.D.

Tubular elements are the most versatile, dependable and rugged of any heat generating device. These qualities make it an ideal heat source for many applications. The Tubular Element is the core of the most common heating solutions found today.

ASB Tubular Elements are manufactured from the highest quality materials. This gives you the most dependable heat source for your specific needs.

Experts in Element Design

With many years experience designing and applying heating elements, we have mastered both the science and the art of tubular element manufacturing. Your ASB heater will perform as you expect.

Components

ASB uses 80-20 ni-chrome wire, "A" grade magnesium oxide and the highest quality tubing. Filling machines and roll reduction equipment are expertly maintained to manufacturer's tolerances, and final test equipment is fully calibrated. You can expect high quality from ASB.

Applications Expertise

Our technical staff is available to help you solve your heating situation. Use our experience and skills, and together we can get you the heating results you need.

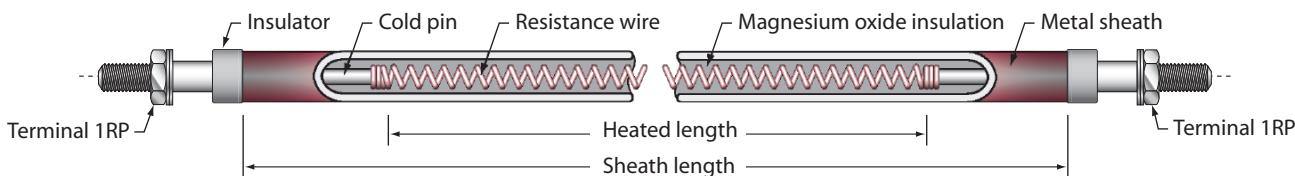


Figure 1A

Figure 2A

Figure 3A

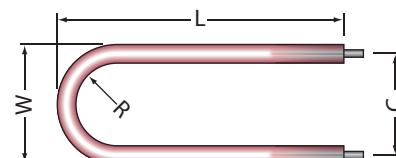
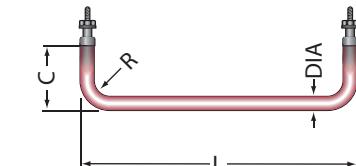
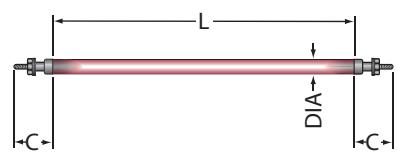


Figure 4A

Figure 5A

Figure 6A

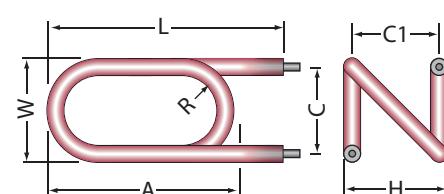
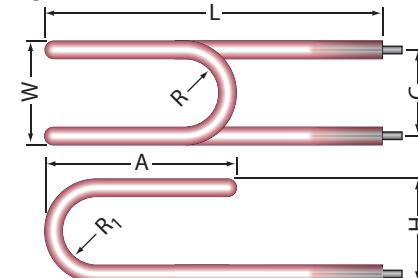
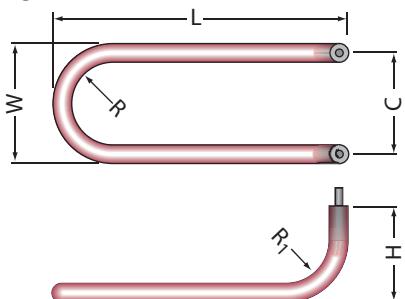


Figure 7A

Figure 8A

Figure 9A

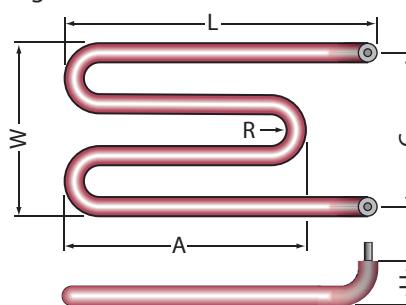
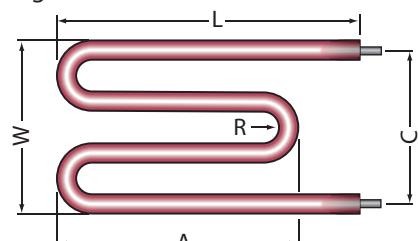
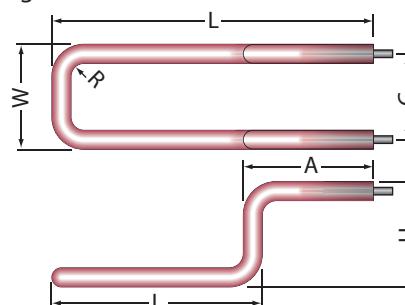


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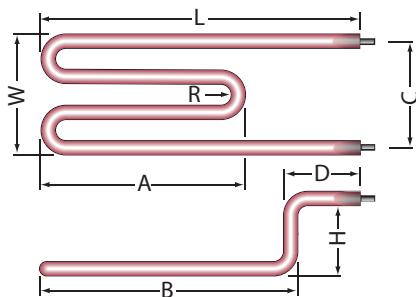


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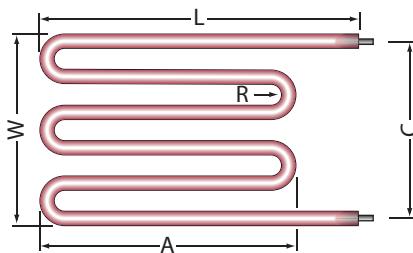


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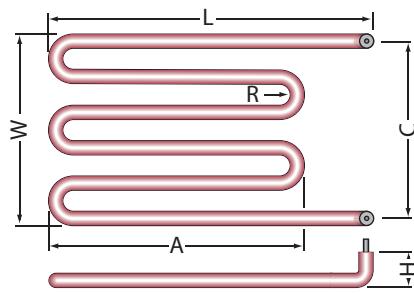


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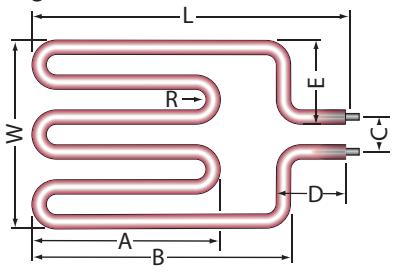


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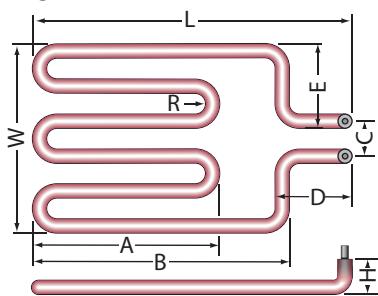


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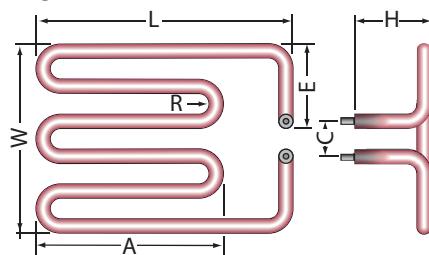


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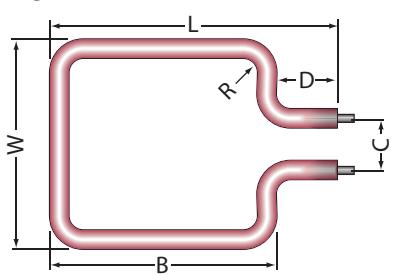


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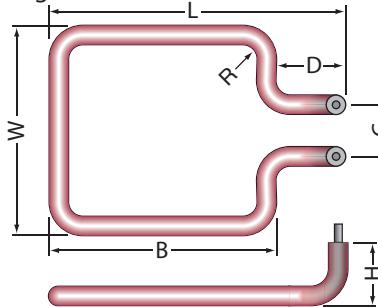


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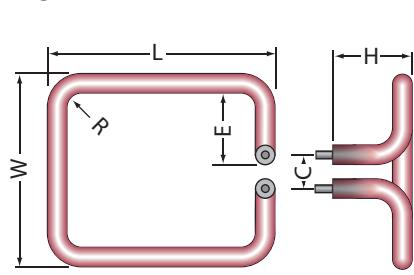


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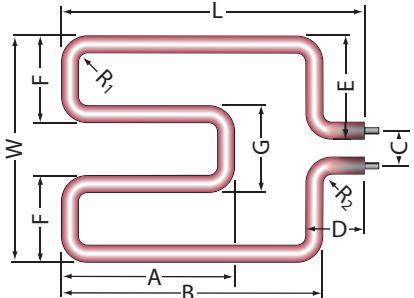


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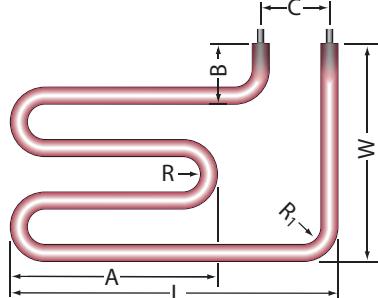


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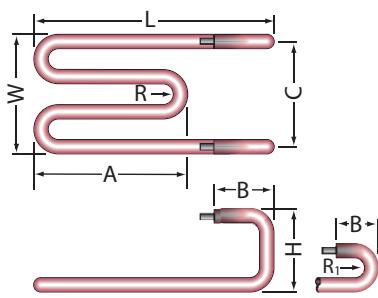


Figure 21A-1

Figure 22A

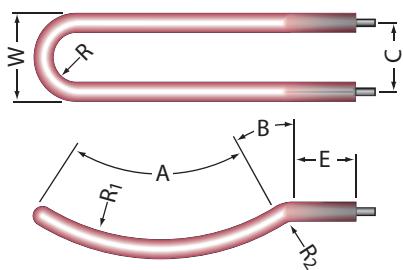


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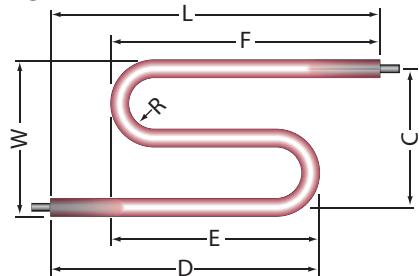


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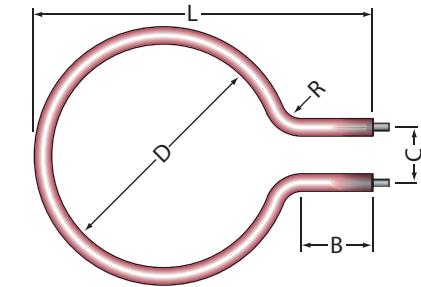


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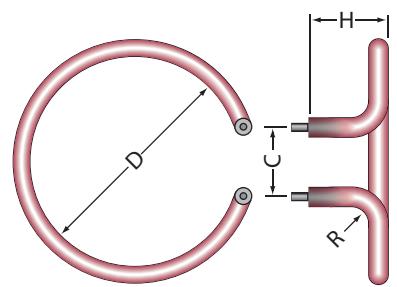


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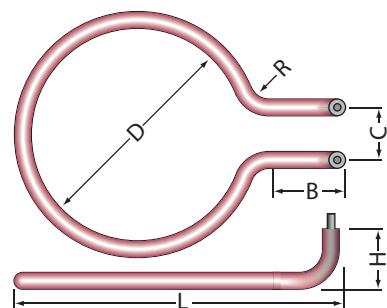


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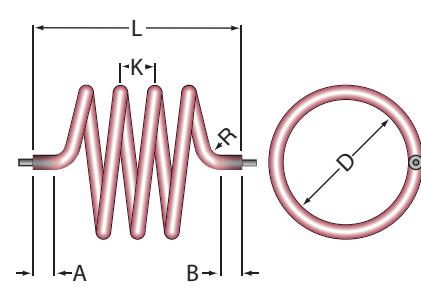


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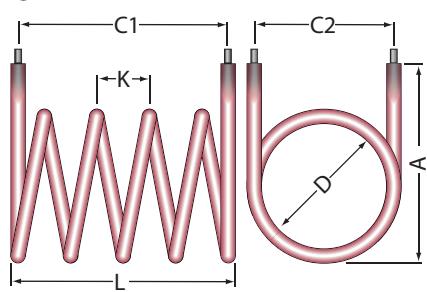


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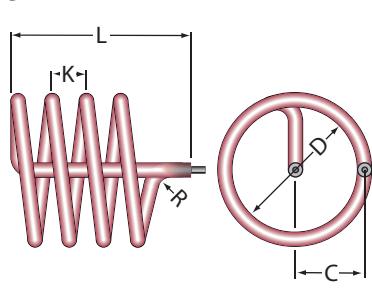


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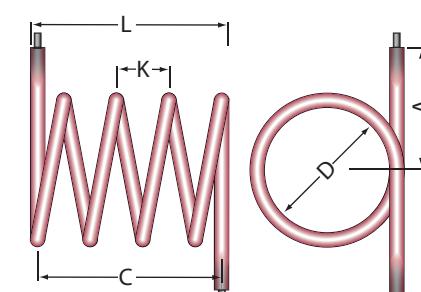


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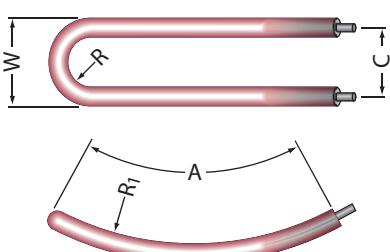


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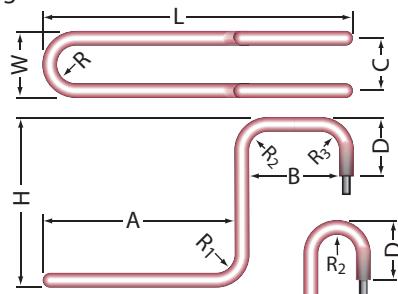


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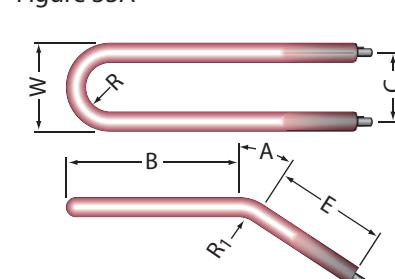


Figure 32A-1

Figure 34

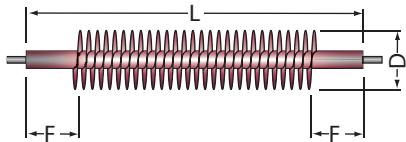


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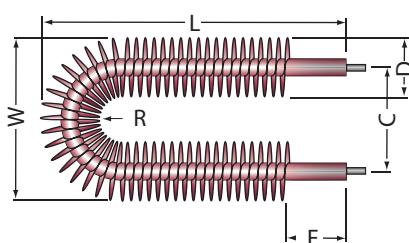
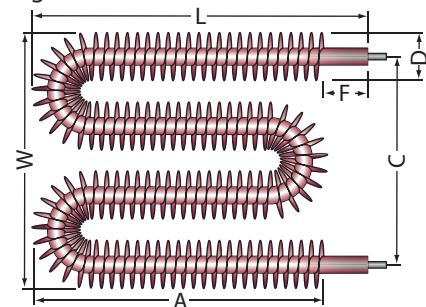


Figure 36



Sheath and fin material are mild steel. Stainless steel sheath and fin material is available

0.315" dia. element, "D" = $15/16$ " diameter nominal

Figure 34

kw	L	part no.
1	19	ASB-301S
2	34	ASB-302S
3	49	ASB-303S
4	64	ASB-304S
5	79	ASB-305S
6	94	ASB-306S

nominal dimensions

$$F = \frac{5}{8}$$

Figure 35

kw	L	part no.
1	9	ASB-301U-A
2	16	ASB-302U-A
3	24	ASB-303U-A
4	31	ASB-304U-A
5	39	ASB-305U-A
6	46	ASB-306U-A

nominal dimensions

$$C = 2\frac{1}{2}$$

$$F = \frac{5}{8}$$

$$R = 1\frac{9}{16}$$

$$W = 3\frac{3}{8}$$

Figure 36

kw	L	part no.
1	6	ASB-301W-A
2	10	ASB-302W-A
3	13	ASB-303W-A
4	17	ASB-304W-A
5	20	ASB-305W-A
6	24	ASB-306W-A

nominal dimensions

$$A = L - F$$

$$C = 6$$

$$F = \frac{5}{8}$$

$$W = 6\frac{7}{8}$$

0.430" dia. element, "D" = 1" diameter nominal

Figure 34

kw	L	part no.
2	27	ASB-402S
3	39	ASB-403S
4	52	ASB-404S
5	64	ASB-405S
6	77	ASB-406S
7	89	ASB-407S
8	102	ASB-408S

nominal dimensions

$$F = \frac{5}{8}$$

Figure 35

kw	L	part no.
2	13	ASB-402U-A
3	20	ASB-403U-A
4	26	ASB-404U-A
5	32	ASB-405U-A
6	38	ASB-406U-A
7	44	ASB-407U-A
8	51	ASB-408U-A

nominal dimensions

$$C = 3$$

$$F = \frac{5}{8}$$

$$R = 2$$

$$W = 4$$

Figure 36

kw	L	part no.
2	7	ASB-402W-A
3	10	ASB-403W-A
4	14	ASB-404W-A
5	17	ASB-405W-A
6	20	ASB-406W-A
7	23	ASB-407W-A
8	26	ASB-408W-A

nominal dimensions

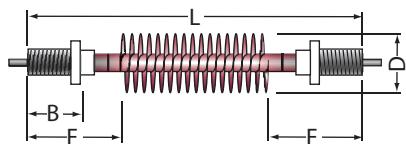
$$A = L - F$$

$$C = 7\frac{1}{2}$$

$$F = \frac{5}{8}$$

$$W = 8\frac{1}{2}$$

Figure 37



Fitting 1/2-20 for 0.315" O.D element }
5/8-18 for 0.430" O.D element } Brass crimped on

Figure 38

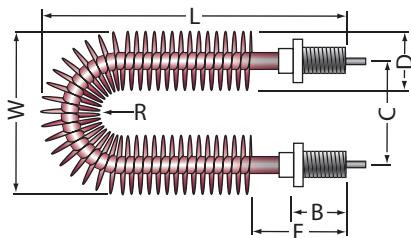
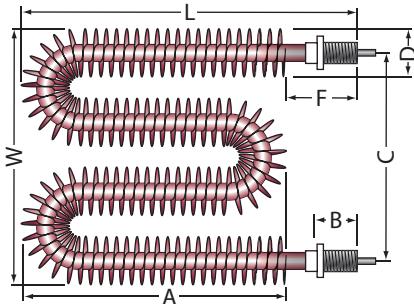


Figure 39



Sheath and fin material are mild steel. Stainless steel sheath and fin material is available

**0.315" dia. element, "D" = 15/16" diameter nominal on formed elements
"D" = 1" diameter nominal on straight elements**

Figure 37

kw	L	part no.
1	20.5	ASB-301SF
2	35.5	ASB-302SF
3	50.5	ASB-303SF
4	65.5	ASB-304SF
5	80.5	ASB-305SF
6	95.5	ASB-306SF

nominal dimensions

B = 1/2"

F = 2 1/8"

Figure 38

kw	L	part no.
1	10.5	ASB-301UF-A
2	17.5	ASB-302UF-A
3	25.5	ASB-303UF-A
4	32.5	ASB-304UF-A
5	40.5	ASB-305UF-A
6	47.5	ASB-306UF-A

nominal dimensions

B = 1/2"

C = 2 1/2"

F = 2 1/8"

R = 1 9/16"

W = 3 3/8"

Figure 39

kw	L	part no.
1	7.5	ASB-301WF-A
2	11.5	ASB-302WF-A
3	14.5	ASB-303WF-A
4	18.5	ASB-304WF-A
5	21.5	ASB-305WF-A
6	25.5	ASB-306WF-A

nominal dimensions

A = L-F

B = 1/2"

C = 6"

F = 2 1/8"

W = 6 7/8"

0.430" dia. element, "D" = 1" diameter nominal on formed elements

"D" = 11/16" diameter nominal on straight elements

Figure 37

kw	L	part no.
2	28.5	ASB-402SF
3	40.5	ASB-403SF
4	53.5	ASB-404SF
5	65.5	ASB-405SF
6	78.5	ASB-406SF
7	90.5	ASB-407SF
8	103.5	ASB-408SF

nominal dimensions

B = 5/8"

F = 2 1/8"

Figure 38

kw	L	part no.
2	14.5	ASB-402UF-A
3	21.56	ASB-403UF-A
4	27.5	ASB-404UF-A
5	33.5	ASB-405UF-A
6	39.5	ASB-406UF-A
7	45.5	ASB-407UF-A
8	52.5	ASB-408UF-A

nominal dimensions

B = 5/8"

C = 2 "

F = 2 1/8"

R = 1 "

W = 3 1/8"

Figure 39

kw	L	part no.
2	8.5	ASB-402WF-A
3	11.5	ASB-403WF-A
4	15.5	ASB-404WF-A
5	18.5	ASB-405WF-A
6	21.5	ASB-406WF-A
7	24.5	ASB-407WF-A
8	27.5	ASB-408WF-A

nominal dimensions

A = L-F

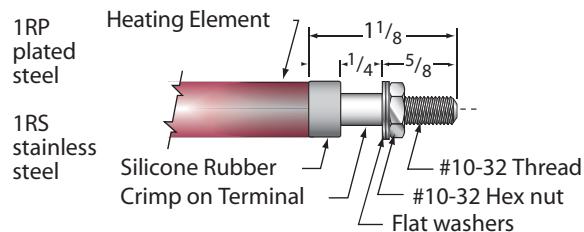
B = 5/8"

C = 6 "

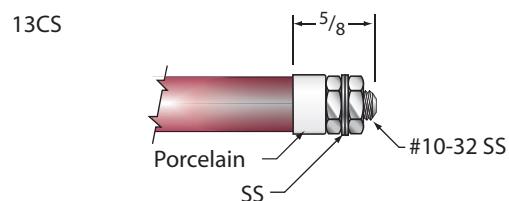
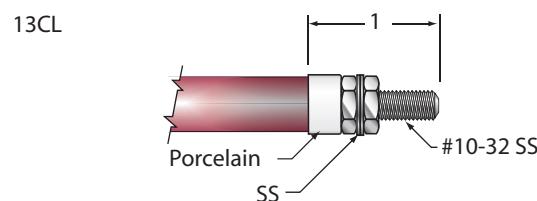
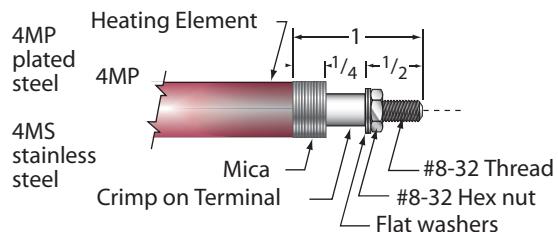
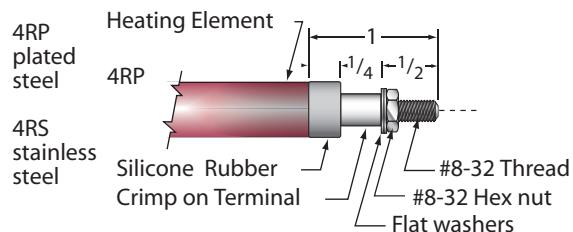
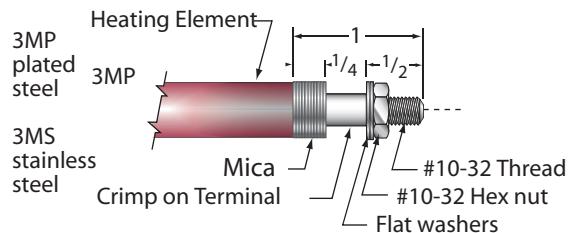
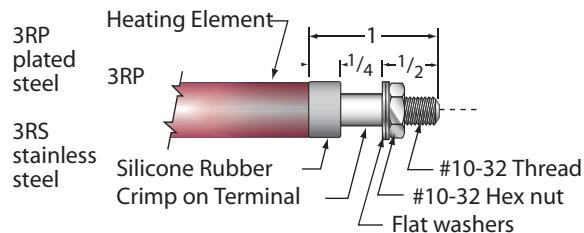
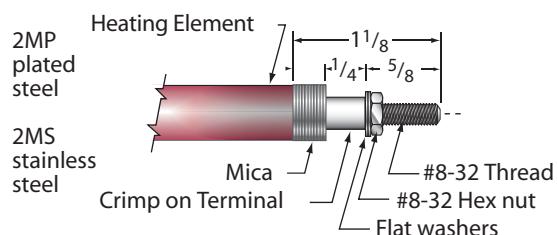
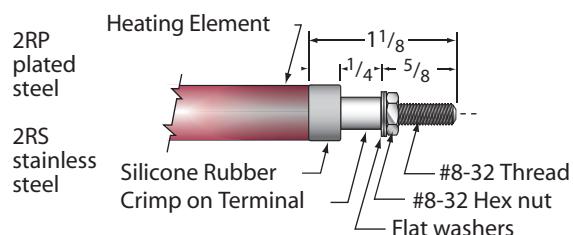
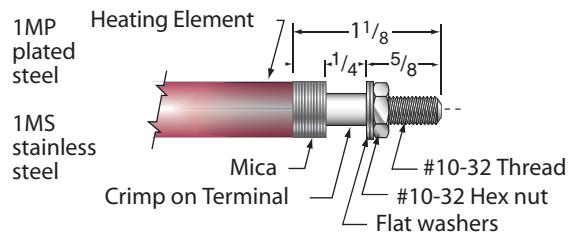
F = 2 1/8"

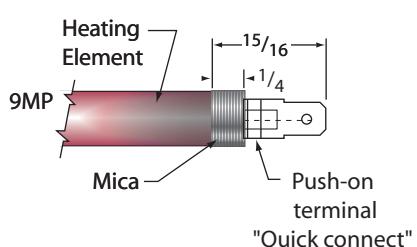
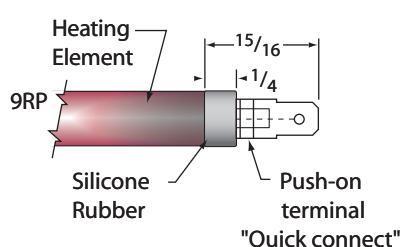
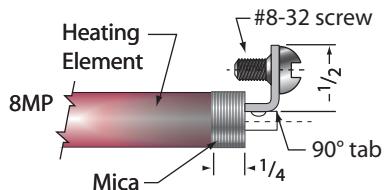
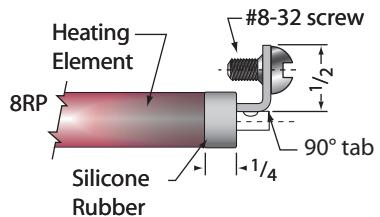
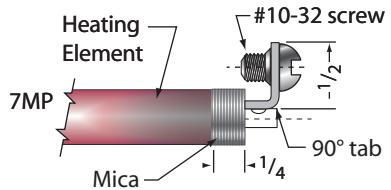
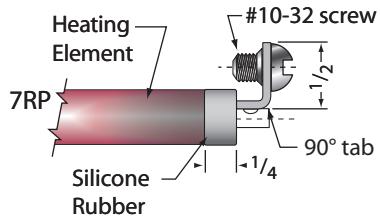
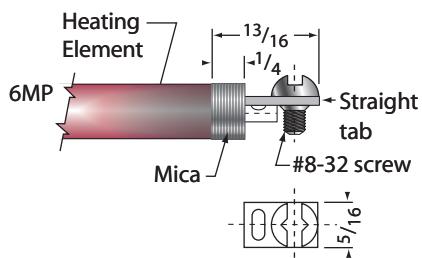
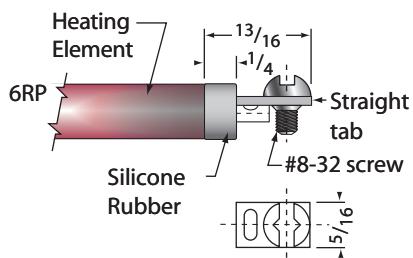
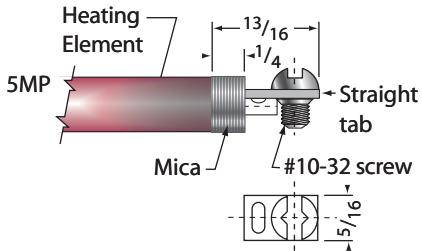
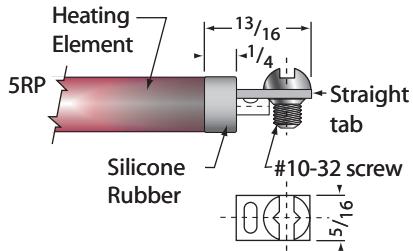
W = 7 1/8"

Silicone rubber insulator (R)
200C maximum ambient at terminal

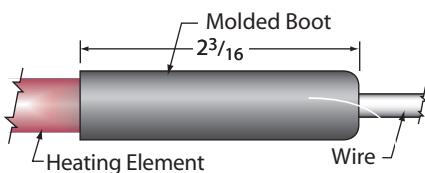
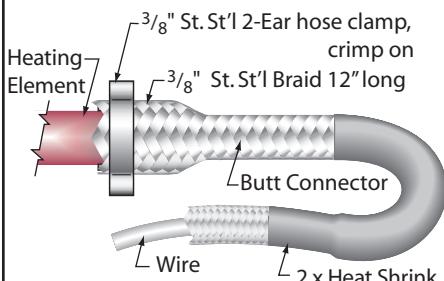
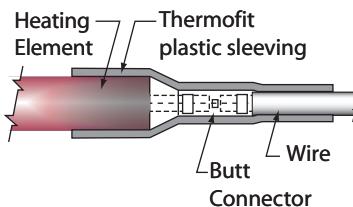
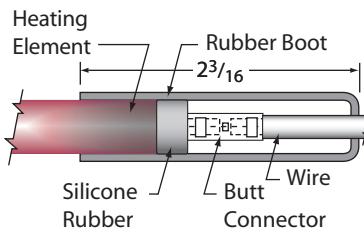
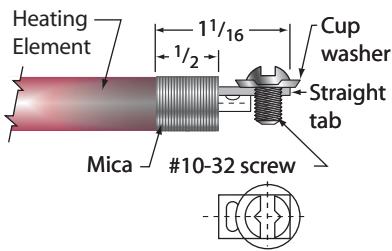


Mica insulator (M)
450C maximum ambient at terminal

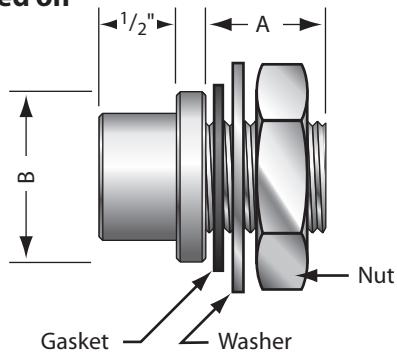




Other terminals



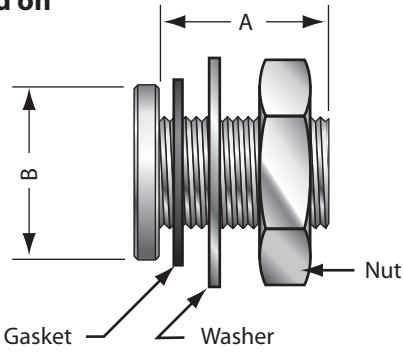
Crimped on



Crimped on

Element Dia.	Fitting material	Liquid tight seal	A	B	Thread	Fitting No.
0.315"	Brass	No	1/2	3/4	1/2-20	C1A
			5/8	7/8	9/16-18	C2A
0.430	Brass		5/8	7/8	5/8-18	C3A

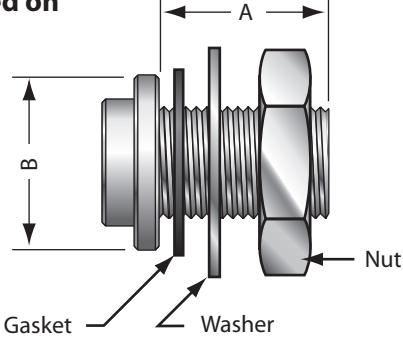
Brazed on



Brazed

Element Dia.	Fitting material	Liquid tight seal	A	B	Thread	Fitting No.
0.315	Brass	Yes	1/2	3/4	1/2-20	B1A
			1/2	1	5/8-18	B2A
			1/2	3/4	1/2-20	B3A
	SS		7/8	1	5/8-18	B4A
	Brass		1	7/8	1/2-20	B5A
			1	3/4	9/16-18	B6A
	SS		1 3/8	3/4	1/2-20	B7A
	Brass hex		3/4	3/4 hex	1/2-20	B8A
	SS hex		5/8		1/2-20	B9A
	Brass hex		3/4		1/2-20	B10A
0.375	Brass		1/2	3/4	1/2-20	B11A
	SS		7/8	1	5/8-18	B12A
	Brass		1	7/8	1/2-20	B13A
	SS hex		5/8	3/4 hex	1/2-20	B14A
	Brass		7/8	1	5/8-18	B15A
0.430	SS		7/8	1	5/8-18	B16A
	Brass		1	1	3/4-16	B17A
	Brass		1 1/8	1	5/8-18	B18A
	Brass		13/16	1 1/4	7/8-14	B19A

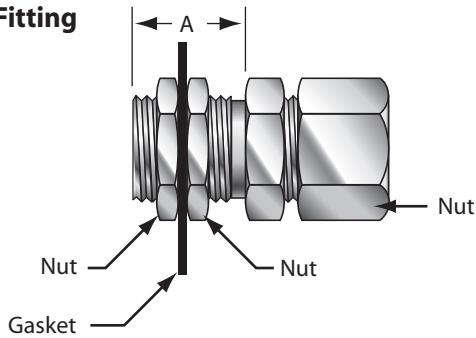
Welded on



Welded

Element Dia.	Fitting material	Liquid tight seal	A	B	Thread	Fitting No.
0.430	Stainless Steel	Yes	7/8	1	5/8-18	W1A
			1 1/8	1	3/4-16	W2A
			1 1/8	1	5/8-18	W3A

Compression Fitting



Compression Fitting

Element Dia.	Fitting material	Liquid tight seal	A	B	Thread	Fitting No.
0.430	Brass	Yes	5/8		5/8-18	CF8

Compression Fitting uses

- Tank immersion applications where permanently attached fittings are unacceptable
- Oven applications where tubular has to pass through insulation
- Fitting location adjustable to meet field requirements
- removable terminal boxes

Figure 40

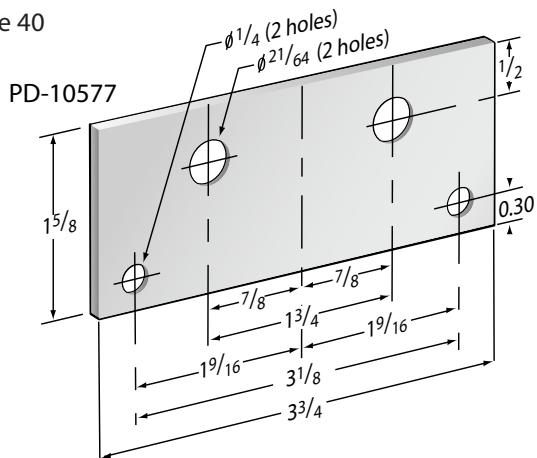


Figure 42

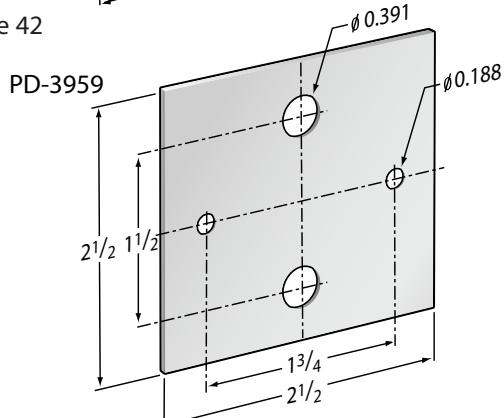


Figure 44

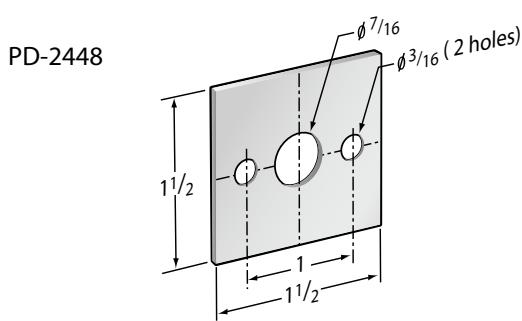


Figure 46

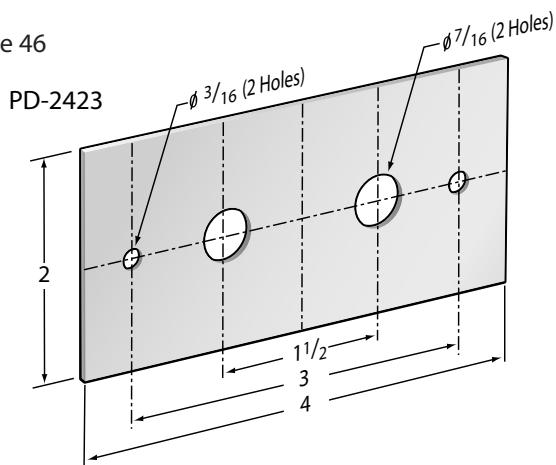


Figure 41

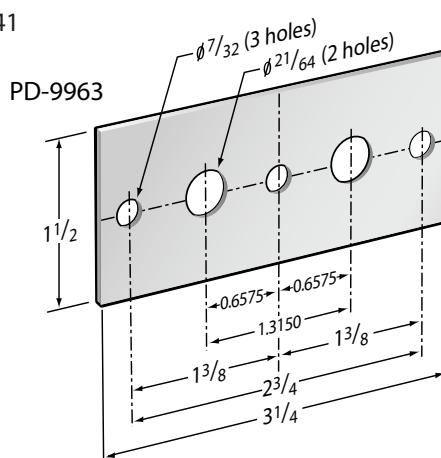


Figure 43

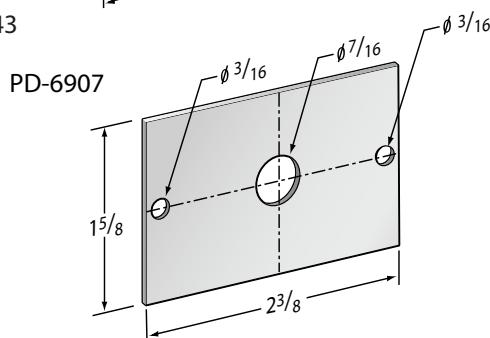


Figure 45

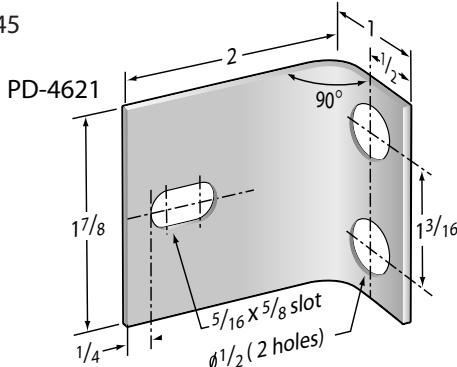


Figure 47

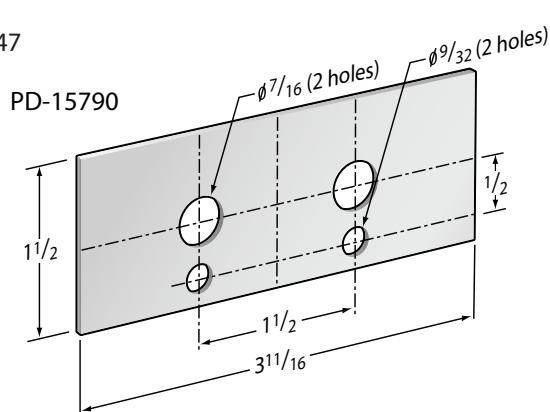


Figure 48

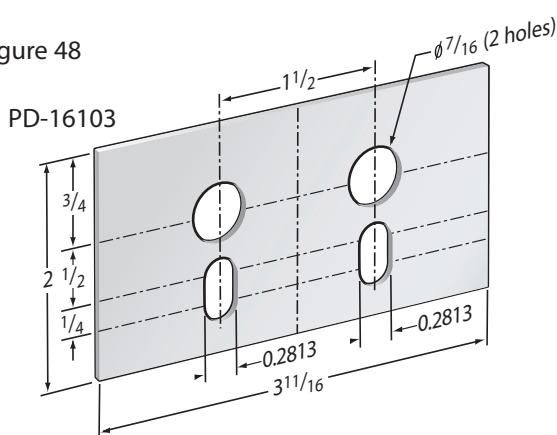


Figure 49

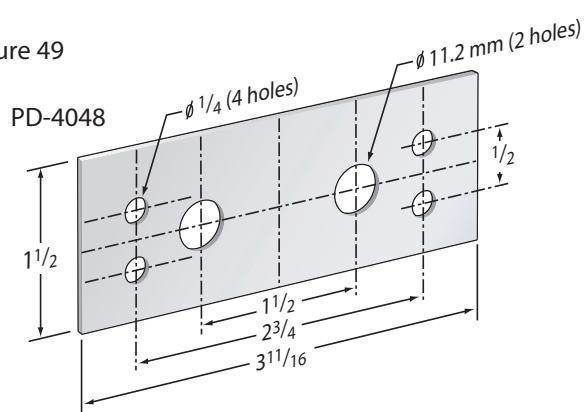


Figure 50

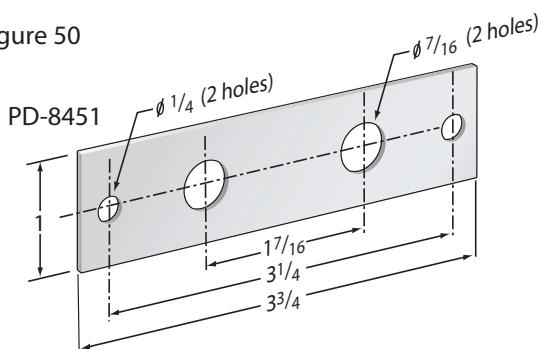


Figure 51

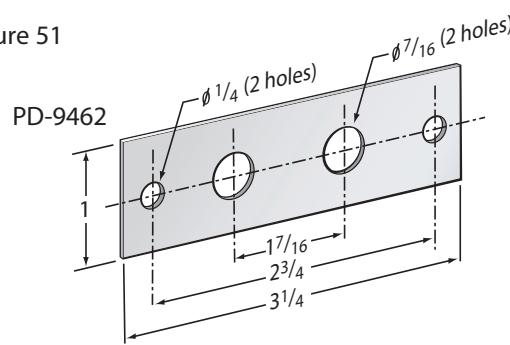


Figure 52

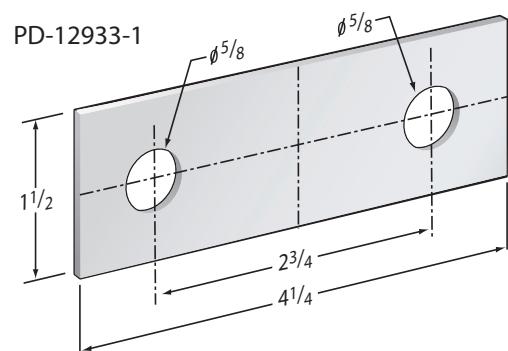


Figure 53

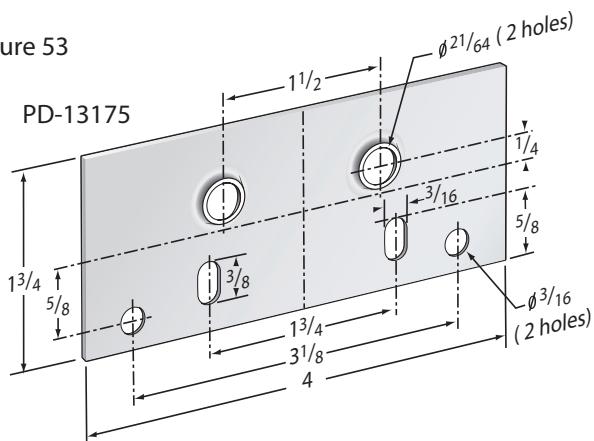


Figure 54

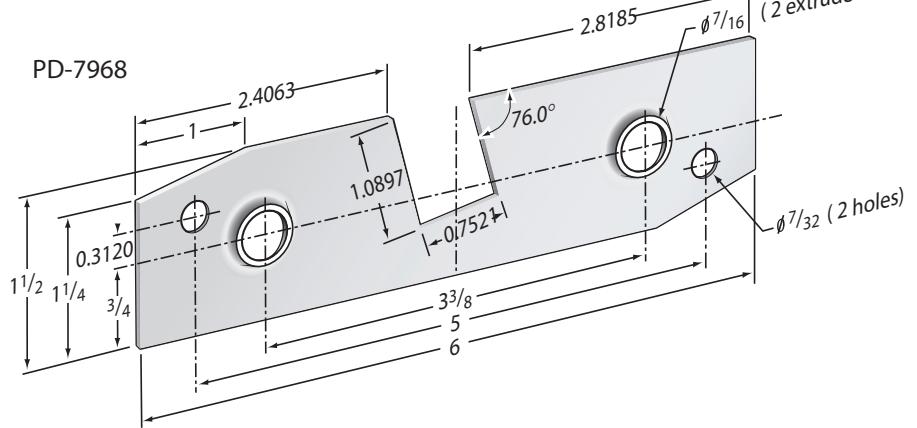


Figure 55

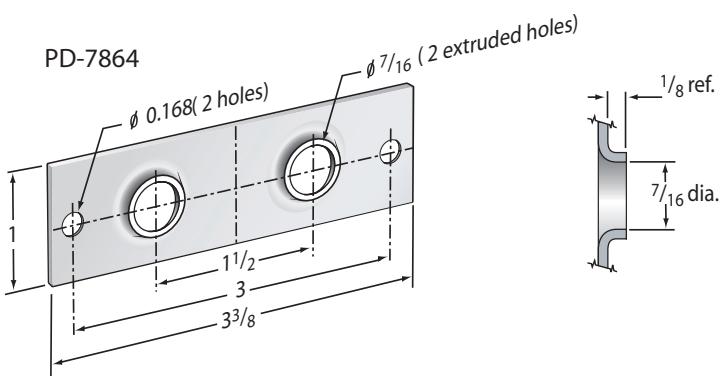


Figure 56

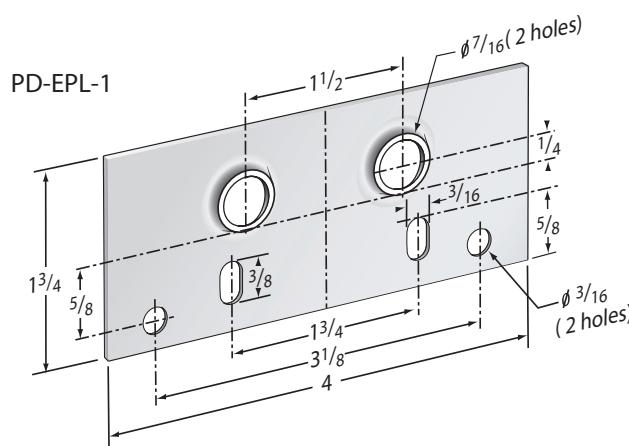


Figure 57

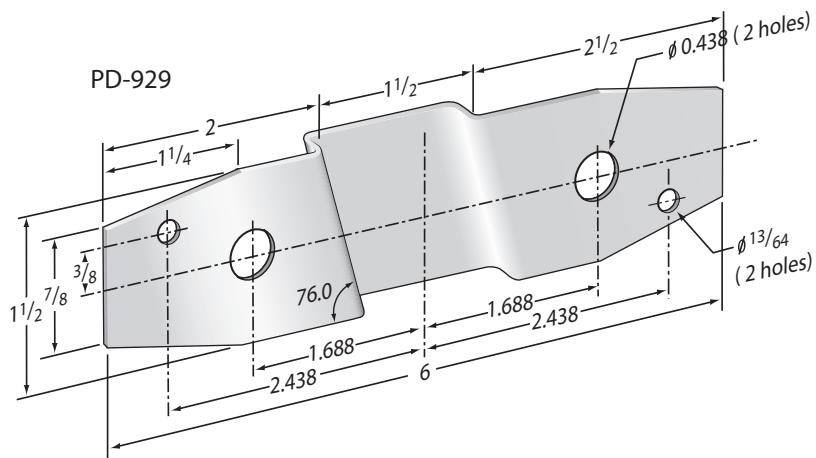
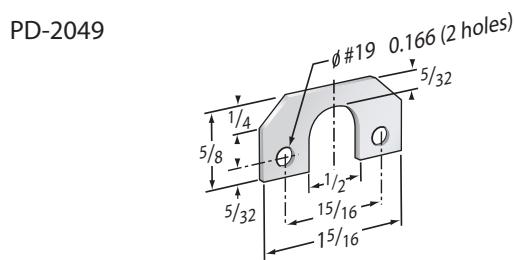


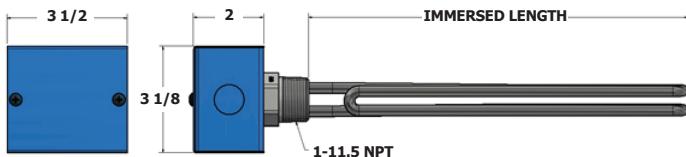
Figure 58



1" NPT Screw Plug Immersion Heater

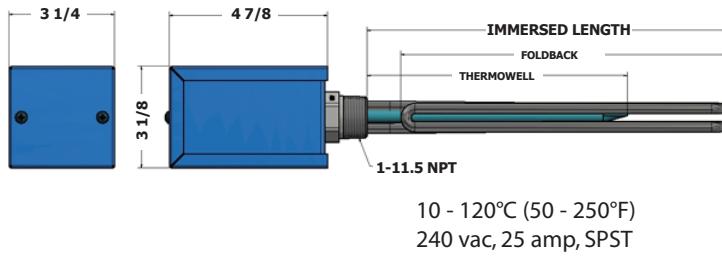
Standard (SP series)

General Purpose Enclosure
no thermostat



With thermostat (ASP series)

General Purpose Enclosure
with thermostat

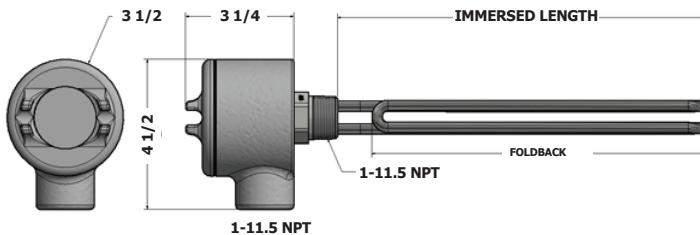


Optional Temperature Ranges

-16 to +40°C (0-100°F)
70-280°C (160-540°F)

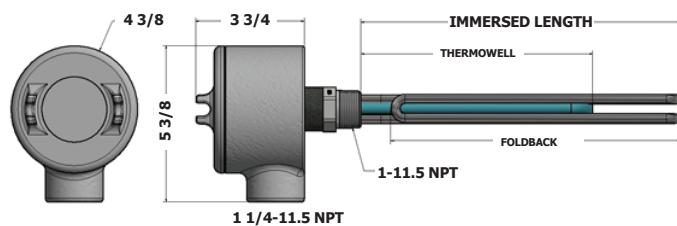
Moisture Resistant or Hazardous Location - SP series

Moisture Resistant Enclosure (add suffix MR)
Hazardous Location (Explosion Resistant - add suffix ER)
Non-Thermostat version



Moisture Resistant or Hazardous Location - ASP series

Moisture Resistant Enclosure (add suffix MR)
Hazardous Location (Explosion Resistant - add suffix ER)
Thermostat included version



80 watts/in² Copper Sheath

Typically to heat:
1" brass screw plug
1 element - up to 240 volts
(specify voltage when ordering)

watts	immersed length B dim.	fold back length	catalogue number	net weight (lb)
			Fig. 59 standard	Fig. 60 with thermostat
500	5		SPC-0500	ASPC-0500
750	6 7/8		SPC-0750	ASPC-0750
1000	6 7/8		SPC-1000	ASPC-1000
1250	10		SPC-1250	ASPC-1250
1500	10		SPC-1500	ASPC-1500
2000	7 1/2	6 1/16	SPC-2000	ASPC-2000
3000	10 9/16	8 7/8	SPC-3000	ASPC-3000
4500	15 1/8	13 15/16	SPC-4500	ASPC-4500
5000	16 5/8	15 7/8	SPC-5000	ASPC-5000

25 watts/in² Incoloy Sheath

Typically to heat:
1" steel screw plug
1 element - up to 240 volts
(specify voltage when ordering)

watts	immersed length B dim.	fold back length	catalogue number	net weight (lb)
			Fig. 59 standard	Fig. 60 with thermostat
500	8 7/8	3	SPA-0500	ASPA-0500
750	10	6 1/4	SPA-0750	ASPA-0750
1000	11 7/8	9 1/4	SPA-1000	ASPA-1000
1500	18	13 1/2	SPA-1500	ASPA-1500
2000	22	19 1/2	SPA-2000	ASPA-2000

12 watts/in² Incoloy Sheath

Typically to heat:
1" steel screw plug
1 element - up to 240 volts
(specify voltage when ordering)

watts	immersed length B dim.	fold back length	catalogue number	net weight (lb)
			Fig. 59 standard	Fig. 60 with thermostat
300	8 7/8	5	SPAL-0300	ASPAL-0300
500	11 7/8	10 1/2	SPAL-0500	ASPAL-0500
750	18	14 1/2	SPAL-0750	ASPAL-0750
1000	22	19	SPAL-1000	ASPAL-1000

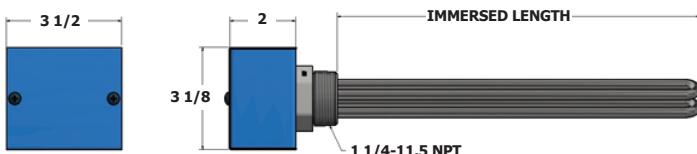


ASB Heating Elements Ltd.

1 1/4" NPT Screw Plug Immersion Heater

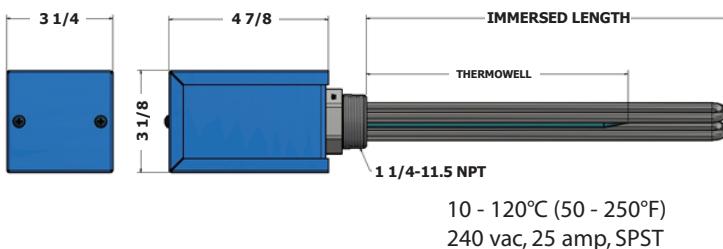
Standard (SP series)

General Purpose Enclosure
no thermostat



With thermostat (ASP series)

General Purpose Enclosure
with thermostat

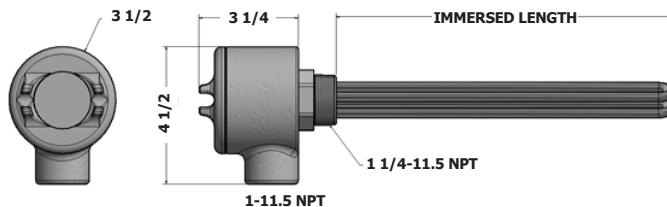


Optional Temperature Ranges

-16 to +40°C (0-100°F)
70-280°C (160-540°F)

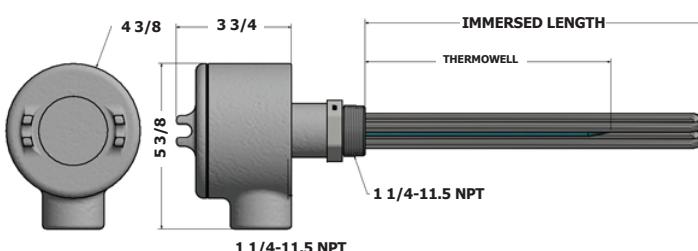
Moisture Resistant or Hazardous Location - SP series

Moisture Resistant Enclosure (add suffix MR)
Hazardous Location (Explosion Resistant add suffix ER)
Non-Thermostat version



Moisture Resistant or Hazardous Location - ASP series

Moisture Resistant Enclosure (add suffix MR)
Hazardous Location (Explosion Resistant add suffix ER)
Thermostat included version



50-60 watts/in² Copper Sheath

Typically to heat:
1 1/4" brass screw plug
municipal water
1 or 2 elements - up to 240 volts
(specify voltage when ordering)

watts	immersed length B dim.	no.of elements	catalogue number Fig.63 standard	catalogue number Fig.64 with thermostat	net weight (lb)
750	7 1/2	1	SPC-1007	ASPC-1007	3
1000	9 1/2	1	SPC-1010	ASPC-1010	3
1500	7 1/2	2	SPC-1015	ASPC-1015	4
2000	9 1/2	2	SPC-1020	ASPC-1020	4
3000	13 1/2	2	SPC-1030	ASPC-1030	4
5000	17 1/2	2	SPC-1050	ASPC-1050	5

25 watts/in² Steel Sheath

Typically to heat:
1 1/4" steel screw plug
light oils
1 or 2 elements - up to 240 volts
(specify voltage when ordering)

watts	immersed length B dim.	no.of elements	catalogue number Fig.63 standard	catalogue number Fig.64 with thermostat	net weight (lb)
500	11	1	SPO-1005	ASPO-1005	3
750	8 1/2	2	SPO-1007	ASPO-1007	4
1000	11	2	SPO-1010	ASPO-1010	4
1500	16 1/4	2	SPO-1015	ASPO-1015	4
2000	22 3/8	2	SPO-1020	ASPO-1020	5
2500	27	2	SPO-1025	ASPO-1025	5

12 watts/in² Steel Sheath

Typically to heat:
1 1/4" steel screw plug
hydraulic oils
1 or 2 elements - up to 240 volts
heavy oils
(specify voltage when ordering)

watts	immersed length B dim.	no.of elements	catalogue number Fig.63 standard	catalogue number Fig.64 with thermostat	net weight (lb)
250	11	1	SPOL-1002	ASPOL-1002	3
500	11	2	SPOL-1005	ASPOL-1005	4
750	16 1/4	2	SPOL-1007	ASPOL-1007	4
1000	22 3/8	2	SPOL-1010	ASPOL-1010	5
1250	27	2	SPOL-1012	ASPOL-1012	5



ASB Heating Elements Ltd.

2" NPT Screw Plug Immersion Heater

Two element design - one phase only

50-60 watts/in² Copper Sheath Typically to heat:
2" brass screw plug municipal water
2 elements - up to 600 volts 1 phase
(specify voltage when ordering)

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 67 standard	Fig. 68 with thermostat	
1500	6 1/2	SPC-2015	ASPC-2015	6
2000	7 1/2	SPC-2020	ASPC-2020	6
2500	9 1/2	SPC-2025	ASPC-2025	6
3000	11 1/2	SPC-2030	ASPC-2030	7
4000	17 3/4	SPC-2040	ASPC-2040	7
5000	19	SPC-2050	ASPC-2050	7
6000	24 1/2	SPC-2060	ASPC-2060	8
7000	28	SPC-2070	ASPC-2070	8
8000	32 1/2	SPC-2080	ASPC-2080	9
10000	39 3/8	SPC-2100	ASPC-2100	9
12000	47 1/4	SPC-2120	ASPC-2120	10
15000	54	SPC-2150	ASPC-2150	10

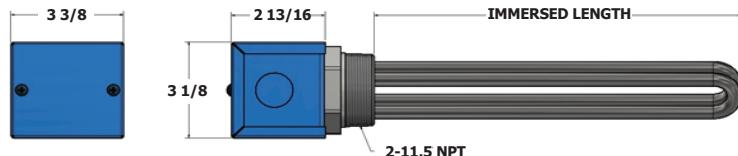
50-60 watts/in² Incoloy Typically to heat:
2" 316 SS screw plug municipal water
2 elements - up to 600 volts 1 phase process water
(specify voltage when ordering)

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 67 standard	Fig. 68 with thermostat	
1500	6 1/2	SPI-2015	ASPI-2015	6
2000	7 1/2	SPI-2020	ASPI-2020	6
2500	9 1/2	SPI-2025	ASPI-2025	6
3000	11 1/2	SPI-2030	ASPI-2030	7
4000	17 3/4	SPI-2040	ASPI-2040	7
5000	19	SPI-2050	ASPI-2050	7
6000	24 1/2	SPI-2060	ASPI-2060	8
7000	28	SPI-2070	ASPI-2070	8
8000	32 1/2	SPI-2080	ASPI-2080	9
10000	39 3/8	SPI-2100	ASPI-2100	9
12000	47 1/4	SPI-2120	ASPI-2120	10
15000	54	SPI-2150	ASPI-2150	10

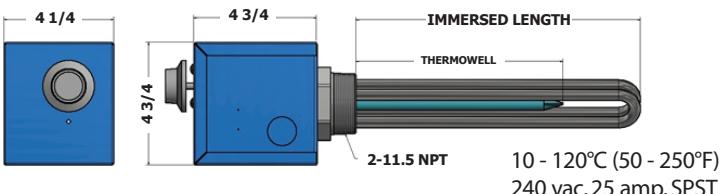
50-60 watts/in² 316 SS Sheath Typically to heat:
2" 316 SS screw plug food processing
2 elements - up to 600 volts 1 phase de-ionized water
(specify voltage when ordering) mild acid solution

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 67 standard	Fig. 68 with thermostat	
1500	6 1/2	SPS-2015	ASPS-2015	6
2000	7 1/2	SPS-2020	ASPS-2020	6
2500	9 1/2	SPS-2025	ASPS-2025	6
3000	11 1/2	SPS-2030	ASPS-2030	7
4000	17 3/4	SPS-2040	ASPS-2040	7
5000	19	SPS-2050	ASPS-2050	7
6000	24 1/2	SPS-2060	ASPS-2060	8
7000	28	SPS-2070	ASPS-2070	8
8000	32 1/2	SPS-2080	ASPS-2080	9
10000	39 3/8	SPS-2100	ASPS-2100	9
12000	47 1/4	SPS-2120	ASPS-2120	10
15000	54	SPS-2150	ASPS-2150	10

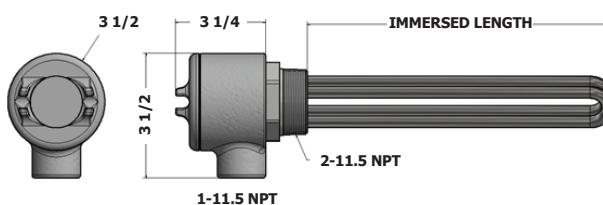
Standard No Thermostat (SP series)



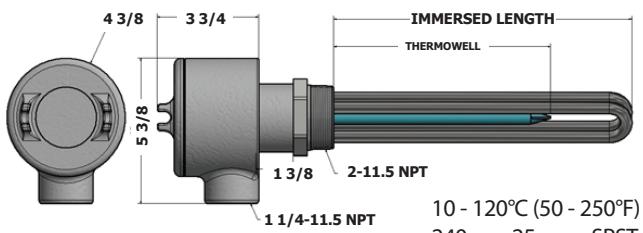
With thermostat (ASP series)



Moisture Resistant or Hazardous Location (SP series)



With thermostat (ASP series)



Optional Thermostats

Available temperature ranges and/or electrical choices

Temperature ranges

-16 to + 40°C (0-100°F)
70 - 280°C (160 - 540°F)
160 - 370°C (320-700°F)

Electrical ranges

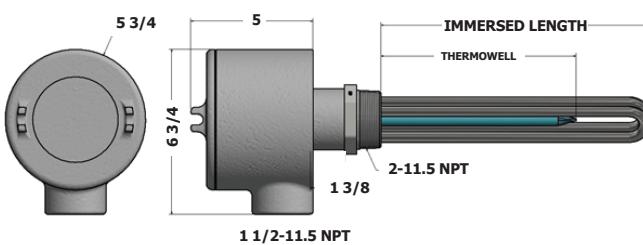
240 vac, 25 amp, DPST
480 vac, 15 amp, TPST
600 vac, 15 amp, TPST

Moisture Resistant or Hazardous Location - ASP series with any optional thermostat

Moisture Resistant Enclosure (add suffix MR)

Hazardous Location (Explosion Resistant add suffix ER)

DPST or TPST (NEMA 4 or NEMA 7)



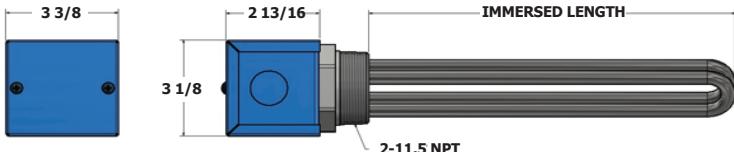


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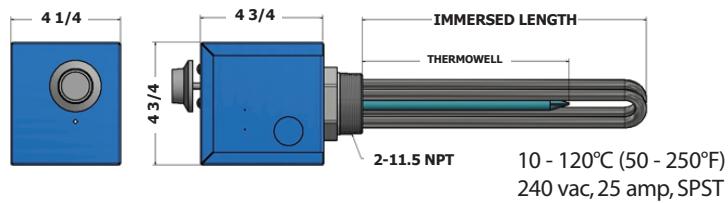
2" NPT Screw Plug Immersion Heater

Two element design - one phase only

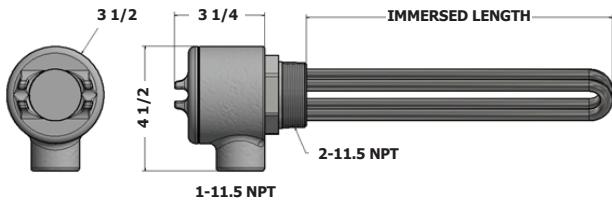
Standard No Thermostat (SP series)



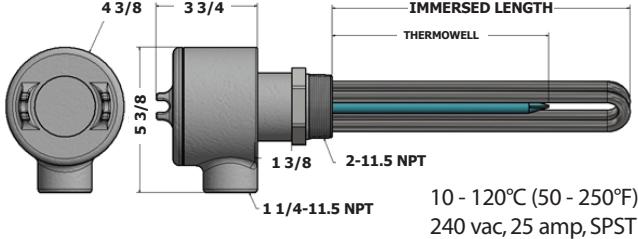
With thermostat (ASP series)



Moisture Resistant or Hazardous Location (SP series)



With thermostat (ASP series)



Optional Thermostats

Available temperature ranges and/or electrical choices

Temperature ranges

-16 to + 40°C (0-100°F)
70 - 280°C (160 - 540°F)
160 - 370°C (320-700°F)

Electrical ranges

240 vac, 25 amp, DPST
480 vac, 15 amp, TPST
600 vac, 15 amp, TPST

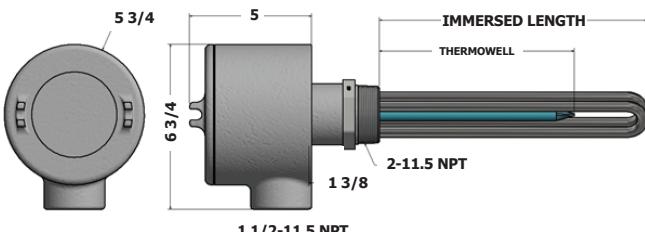
Moisture Resistant or Hazardous Location - ASP series

with any optional thermostat

Moisture Resistant Enclosure (add suffix MR)

Hazardous Location (Explosion Resistant add suffix ER)

DPST or TPST (NEMA 4 or NEMA 7)



25 watts/in² Steel Sheath

Typically to heat:

2" steel screw plug light oils
2 elements - up to 600 volts 1 phase
(specify voltage when ordering)

watts	immersed length B dim.	catalogue number Fig.72 standard	catalogue number Fig.73 with thermostat	net weight (lb)
750	6 1/2	SPO-2007	ASPO-2007	6
1000	7 1/2	SPO-2010	ASPO-2010	6
1250	9 1/2	SPO-2012	ASPO-2012	6
1500	11 1/2	SPO-2015	ASPO-2015	7
2000	17 3/4	SPO-2020	ASPO-2020	7
2500	19	SPO-2025	ASPO-2025	7
3000	24 1/2	SPO-2030	ASPO-2030	8
3500	28	SPO-2035	ASPO-2035	8
4000	32 1/2	SPO-2040	ASPO-2040	9
5000	39 3/8	SPO-2050	ASPO-2050	9
6000	47 1/4	SPO-2060	ASPO-2060	10
7000	54	SPO-2070	ASPO-2070	10

12 watts/in² Steel Sheath

Typically to heat:

2" steel screw plug hydraulic oils,
2 elements - up to 600 volts 1 phase heavy oils
(specify voltage when ordering)

watts	immersed length B dim.	catalogue number Fig.72 standard	catalogue number Fig.73 with thermostat	net weight (lb)
350	6 1/2	SPOL-2003	ASPOL-2003	6
500	7 1/2	SPOL-2005	ASPOL-2005	6
635	9 1/2	SPOL-2006	ASPOL-2006	6
750	11 1/2	SPOL-2007	ASPOL-2007	7
1000	17 3/4	SPOL-2010	ASPOL-2010	7
1250	19	SPOL-2012	ASPOL-2012	7
1500	24 1/2	SPOL-2015	ASPOL-2015	8
1750	28	SPOL-2017	ASPOL-2017	8
2000	32 1/2	SPOL-2020	ASPOL-2020	9
2500	39 3/8	SPOL-2025	ASPOL-2025	9
3000	47 1/4	SPOL-2030	ASPOL-2030	10
3500	54	SPOL-2035	ASPOL-2035	10

25 watts/in² Incoloy Sheath

Typically to heat:

2" steel screw plug light oils,
2 elements - up to 600 volts 1 phase mild caustic solution
(specify voltage when ordering.) mild alkaline solution

watts	immersed length B dim.	catalogue number Fig.72 standard	catalogue number Fig.73 with thermostat	net weight (lb)
750	6 1/2	SPA-2007	ASPA-2007	6
1000	7 1/2	SPA-2010	ASPA-2010	6
1250	9 1/2	SPA-2012	ASPA-2012	6
1500	11 1/2	SPA-2015	ASPA-2015	7
2000	17 3/4	SPA-2020	ASPA-2020	7
2500	19	SPA-2025	ASPA-2025	7
3000	24 1/2	SPA-2030	ASPA-2030	8
3500	28	SPA-2035	ASPA-2035	8
4000	32 1/2	SPA-2040	ASPA-2040	9
5000	39 3/8	SPA-2050	ASPA-2050	9
6000	47 1/4	SPA-2060	ASPA-2060	10
7000	54	SPA-2070	ASPA-2070	10



ASB Heating Elements Ltd.

2" NPT Screw Plug Immersion Heater

Three element design - one or three phase

50-60 watts/in² Copper Sheath Typically to heat:
2" brass screw plug municipal water
3 elements - up to 600 volts, 1 or 3 phase
(specify voltage and phase when ordering)

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 77 standard	Fig. 78 with thermostat	
2250	6 1/2	SPC-3022-P	ASPC-3022-P	6
3000	7 1/2	SPC-3030-P	ASPC-3030-P	6
3750	9 1/2	SPC-3037-P	ASPC-3037-P	6
4500	11 1/2	SPC-3045-P	ASPC-3045-P	7
6000	17 3/4	SPC-3060-P	ASPC-3060-P	7
7500	19	SPC-3075-P	ASPC-3075-P	7
9000	24 1/2	SPC-3090-P	ASPC-3090-P	8
10500	28	SPC-3105-P	ASPC-3105-P	8
12000	32 1/2	SPC-3120-P	ASPC-3120-P	9
15000	39 3/8	SPC-3150-P	ASPC-3150-P	9
18000	47 1/4	SPC-3180-P	ASPC-3180-P	10
22500	54	SPC-3225-P	ASPC-3225-P	10

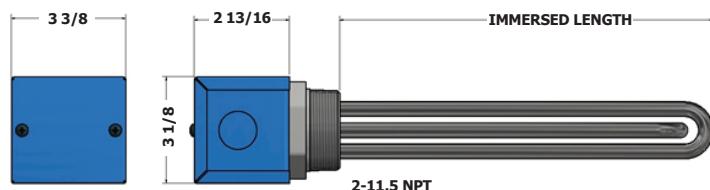
50-60 watts/in² Incoloy Sheath Typically to heat:
2" stainless steel screw plug municipal water
3 elements - up to 600 volts, 1 or 3 phase process water
(specify voltage and phase when ordering)

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 77 standard	Fig. 78 with thermostat	
2250	6 1/2	SPI-3022-P	ASPI-3022-P	6
3000	7 1/2	SPI-3030-P	ASPI-3030-P	6
3750	9 1/2	SPI-3037-P	ASPI-3037-P	6
4500	11 1/2	SPI-3045-P	ASPI-3045-P	7
6000	17 3/4	SPI-3060-P	ASPI-3060-P	7
7500	19	SPI-3075-P	ASPI-3075-P	7
9000	24 1/2	SPI-3090-P	ASPI-3090-P	8
10500	28	SPI-3105-P	ASPI-3105-P	8
12000	32 1/2	SPI-3120-P	ASPI-3120-P	9
15000	39 3/8	SPI-3150-P	ASPI-3150-P	9
18000	47 1/4	SPI-3180-P	ASPI-3180-P	10
22500	54	SPI-3225-P	ASPI-3225-P	10

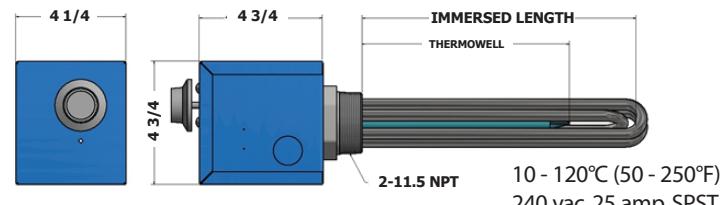
50-60 watts/in² SS Sheath Typically to heat:
2" 316 SS screw plug food processing
3 elements - up to 600 volts, 1 or 3 phase de-ionized water
(specify voltage and phase when ordering) mild acid solution

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 77 standard	Fig. 78 with thermostat	
2250	6 1/2	SPS-3022-P	ASPS-3022-P	6
3000	7 1/2	SPS-3030-P	ASPS-3030-P	6
3750	9 1/2	SPS-3037-P	ASPS-3037-P	6
4500	11 1/2	SPS-3045-P	ASPS-3045-P	7
6000	17 3/4	SPS-3060-P	ASPS-3060-P	7
7500	19	SPS-3075-P	ASPS-3075-P	7
9000	24 1/2	SPS-3090-P	ASPS-3090-P	8
10500	28	SPS-3105-P	ASPS-3105-P	8
12000	32 1/2	SPS-3120-P	ASPS-3120-P	9
15000	39 3/8	SPS-3150-P	ASPS-3150-P	9
18000	47 1/4	SPS-3180-P	ASPS-3180-P	10
22500	54	SPS-3225-P	ASPS-3225-P	10

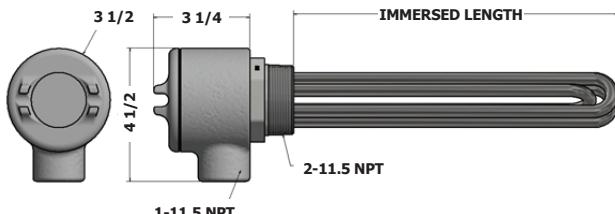
Standard No Thermostat (SP series)



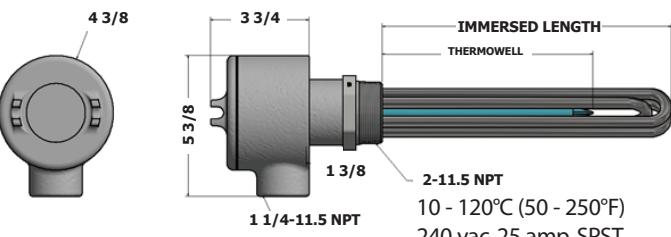
With thermostat (ASP series)



Moisture Resistant or Hazardous Location (SP series)



With thermostat (ASP series)



Optional Thermostats

available temperature ranges and/or electrical choices

Temperature ranges

- 16 to + 40°C (0-100°F)
- 70 - 280°C (160 - 540°F)
- 160 - 370°C (320-700°F)

Electrical ranges

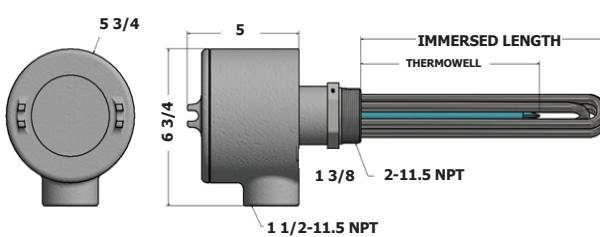
- 240 vac, 25 amp, DPST
- 480 vac, 15 amp, TPST
- 600 vac, 15 amp, TPST

Moisture Resistant or Hazardous Location - ASP series with any optional thermostat

moisture Resistant Enclosure (add suffix MR)

Hazardous Location (Explosion Resistant add suffix ER)

DPST or TPST (NEMA 4 or NEMA 7)



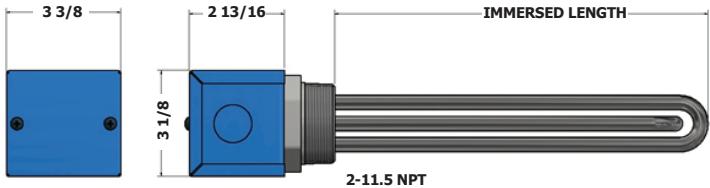


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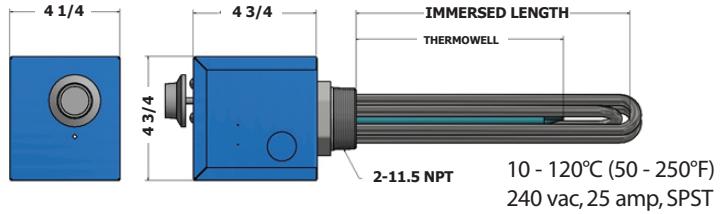
2" NPT Screw Plug Immersion Heater

Three element design - one or three phase

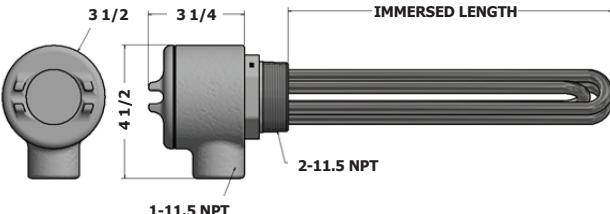
Standard No Thermostat (SP series)



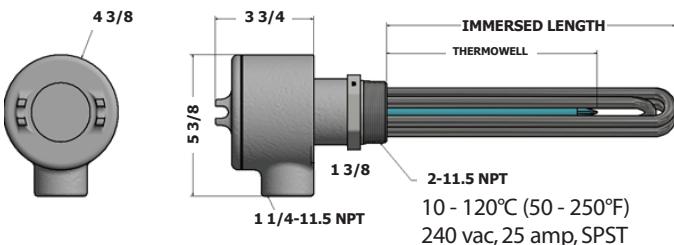
With thermostat (ASP series)



Moisture Resistant or Hazardous Location (SP series)



With thermostat (ASP series)



Optional Thermostats

Available temperature ranges and/or electrical choices

Temperature ranges

-16 to + 40°C (0-100°F)
70 - 280°C (160 - 540°F)
160 - 370°C (320-700°F)

Electrical ranges

240 vac, 25 amp, DPST
480 vac, 15 amp, TPST
600 vac, 15 amp, TPST

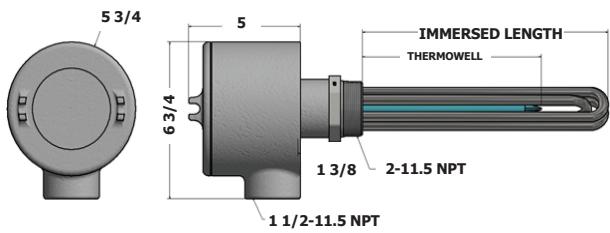
Moisture Resistant or Hazardous Location - ASP series

with any optional thermostat

Moisture Resistant Enclosure (add suffix MR)

Hazardous Location (Explosion Resistant add suffix ER)

DPST or TPST (NEMA 4 or NEMA 7)



25 watts/in² Steel Sheath

Typically to heat:

2" steel screw plug light oils
3 elements - up to 600 volts, 1 or 3 phase
(specify voltage and phase when ordering)

watts	immersed length B dim.	catalogue number Fig. 82 standard	catalogue number Fig. 83 with thermostat	net weight (lb)
1125	6 1/2	SPO-3011-P	ASPO-3011-P	7
1500	7 1/2	SPO-3015-P	ASPO-3015-P	7
1875	9 1/2	SPO-3018-P	ASPO-3018-P	7
2250	11 1/2	SPO-3025-P	ASPO-3025-P	8
3000	17 3/4	SPO-3030-P	ASPO-3030-P	8
3750	19	SPO-3037-P	ASPO-3037-P	8
4500	24 1/2	SPO-3045-P	ASPO-3045-P	9
5250	28	SPO-3052-P	ASPO-3052-P	9
6000	32 1/2	SPO-3060-P	ASPO-3060-P	9
7500	39 3/8	SPO-3075-P	ASPO-3075-P	9
9000	47 1/4	SPO-3090-P	ASPO-3090-P	11
10500	54	SPO-3105-P	ASPO-3105-P	11

12 watts/in² Steel Sheath

Typically to heat:

2" steel screw plug hydraulic oils,
3 elements - up to 600 volts, 1 or 3 phase heavy oils
(specify voltage and phase when ordering)

watts	immersed length B dim.	catalogue number Fig. 82 standard	catalogue number Fig. 83 with thermostat	net weight (lb)
525	6 1/2	SPOL-3005-P	ASPOL-3005-P	7
750	7 1/2	SPOL-3007-P	ASPOL-3007-P	7
935	9 1/2	SPOL-3009-P	ASPOL-3009-P	7
1125	11 1/2	SPOL-3011-P	ASPOL-3011-P	8
1500	17 3/4	SPOL-3015-P	ASPOL-3015-P	8
1875	19	SPOL-3018-P	ASPOL-3018-P	8
2250	24 1/2	SPOL-3022-P	ASPOL-3022-P	9
2625	28	SPOL-3026-P	ASPOL-3026-P	9
3000	32 1/2	SPOL-3030-P	ASPOL-3030-P	9
3750	39 3/8	SPOL-3037-P	ASPOL-3037-P	9
4500	47 1/4	SPOL-3045-P	ASPOL-3045-P	11
5250	54	SPOL-3052-P	ASPOL-3052-P	11

25 watts/in² Incoloy Sheath

Typically to heat:

2" steel screw plug light oils,
3 elements - up to 600 volts mild caustic solution
(specify voltage when ordering) mild alkaline solutions

watts	immersed length B dim.	catalogue number Fig. 82 standard	catalogue number Fig. 83 with thermostat	net weight (lb)
1125	6 1/2	SPA-3011-P	ASPA-3011-P	7
1500	7 1/2	SPA-3015-P	ASPA-3015-P	7
1875	9 1/2	SPA-3018-P	ASPA-3018-P	7
2250	11 1/2	SPA-3025-P	ASPA-3025-P	8
3000	17 3/4	SPA-3030-P	ASPA-3030-P	8
3750	19	SPA-3037-P	ASPA-3037-P	8
4500	24 1/2	SPA-3045-P	ASPA-3045-P	9
5250	28	SPA-3052-P	ASPA-3052-P	9
6000	32 1/2	SPA-3060-P	ASPA-3060-P	9
7500	39 3/8	SPA-3075-P	ASPA-3075-P	9
9000	47 1/4	SPA-3090-P	ASPA-3090-P	11
10500	54	SPA-3105-P	ASPA-3105-P	11



ASB Heating Elements Ltd.

2¹/₂" NPT Screw Plug Immersion Heater

Three element design - one or three phase only

50-60 watts/in² Copper Sheath

Typically to heat:

2¹/₂" brass screw plug municipal water
3 elements - up to 600 volts, 1 or 3 phase
(specify voltage and phase when ordering)

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 87 standard	Fig. 88 with thermostat	
2250	6 1/2	SPC-3022	ASPC-3022	6
3000	7 1/2	SPC-3030	ASPC-3030	6
3750	9 1/2	SPC-3037	ASPC-3037	6
4500	11 1/2	SPC-3045	ASPC-3045	7
6000	17 3/4	SPC-3060	ASPC-3060	7
7500	19	SPC-3075	ASPC-3075	7
9000	24 1/2	SPC-3090	ASPC-3090	8
10500	28	SPC-3105	ASPC-3105	8
12000	32 1/2	SPC-3120	ASPC-3120	9
15000	39 3/8	SPC-3150	ASPC-3150	9
18000	47 1/4	SPC-3180	ASPC-3180	10
22500	54	SPC-3225	ASPC-3225	10

50-60 watts/in² Incoloy Sheath

Typically to heat:

2¹/₂" stainless steel screw plug municipal water
3 elements - up to 600 volts, 1 or 3 phase process water
(specify voltage and phase when ordering)

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 87 standard	Fig. 88 with thermostat	
2250	6 1/2	SPI-3022	ASPI-3022	6
3000	7 1/2	SPI-3030	ASPI-3030	6
3750	9 1/2	SPI-3037	ASPI-3037	6
4500	11 1/2	SPI-3045	ASPI-3045	7
6000	17 3/4	SPI-3060	ASPI-3060	7
7500	19	SPI-3075	ASPI-3075	7
9000	24 1/2	SPI-3090	ASPI-3090	8
10500	28	SPI-3105	ASPI-3105	8
12000	32 1/2	SPI-3120	ASPI-3120	9
15000	39 3/8	SPI-3150	ASPI-3150	9
18000	47 1/4	SPI-3180	ASPI-3180	10
22500	54	SPI-3225	ASPI-3225	10

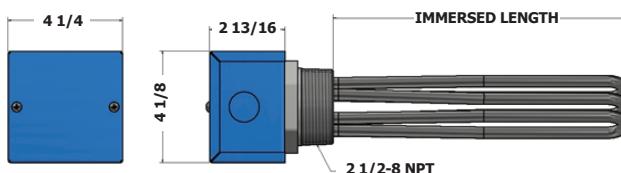
50-60 watts/in² SS Sheath

Typically to heat:

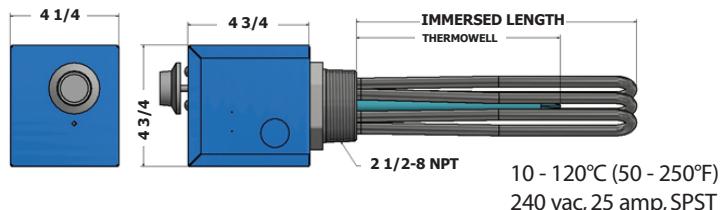
2¹/₂" 316 SS screw plug food processing
3 elements - up to 600 volts, 1 or 3 phase de-ionized water
(specify voltage and phase when ordering) mild acid solution

watts	immersed length B dim.	catalogue number		net weight (lb)
		Fig. 87 standard	Fig. 88 with thermostat	
2250	6 1/2	SPS-3022	ASPS-3022	6
3000	7 1/2	SPS-3030	ASPS-3030	6
3750	9 1/2	SPS-3037	ASPS-3037	6
4500	11 1/2	SPS-3045	ASPS-3045	7
6000	17 3/4	SPS-3060	ASPS-3060	7
7500	19	SPS-3075	ASPS-3075	7
9000	24 1/2	SPS-3090	ASPS-3090	8
10500	28	SPS-3105	ASPS-3105	8
12000	32 1/2	SPS-3120	ASPS-3120	9
15000	39 3/8	SPS-3150	ASPS-3150	9
18000	47 1/4	SPS-3180	ASPS-3180	10
22500	54	SPS-3225	ASPS-3225	10

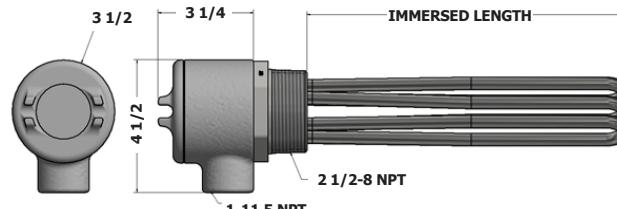
Standard No Thermostat (SP series)



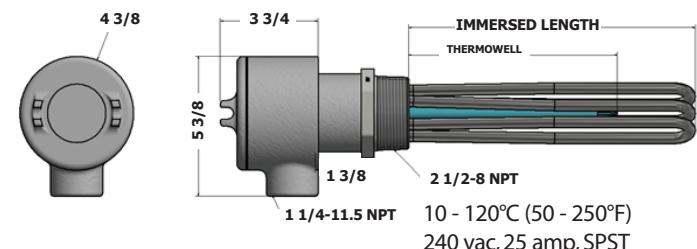
With thermostat (ASP series)



Moisture Resistant or Hazardous Location (SP series)



With thermostat (ASP series)



Optional Thermostats

Available temperature ranges and/or electrical choices

Temperature ranges

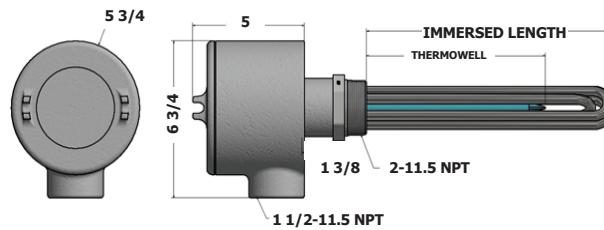
-16 to + 40°C (0-100°F)
70 - 280°C (160 - 540°F)
160 - 370°C (320-700°F)

Electrical ranges

240 vac, 25 amp, DPST
480 vac, 15 amp, TPST
600 vac, 15 amp, TPST

Moisture Resistant or Hazardous Location - ASP series with any optional thermostat

Moisture Resistant Enclosure (add suffix MR)
Hazardous Location (Explosion Resistant add suffix ER)
DPST or TPST (NEMA 4 or NEMA 7)



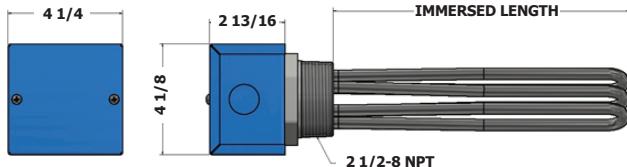


ASB Heating Elements Ltd.

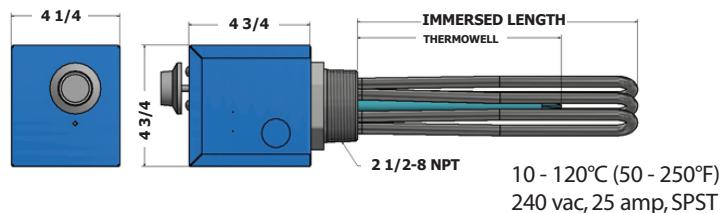
2¹/₂" NPT Screw Plug Immersion Heater

Three element design - one or three phase

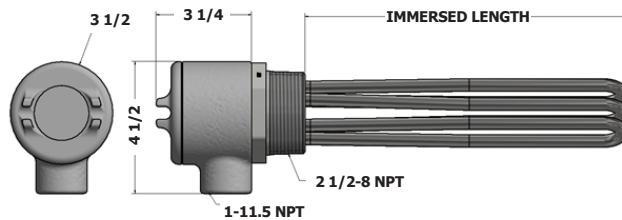
Standard No Thermostat (SP series)



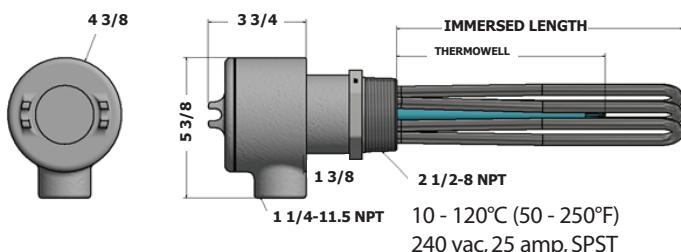
With thermostat (ASP series)



Moisture Resistant or Hazardous Location (SP series)



With thermostat (ASP series)



Optional Thermostats

Available temperature ranges and/or electrical choices

Temperature ranges

-16 to + 40°C (0-100°F)
70 - 280°C (160 - 540°F)
160 - 370°C (320-700°F)

Electrical ranges

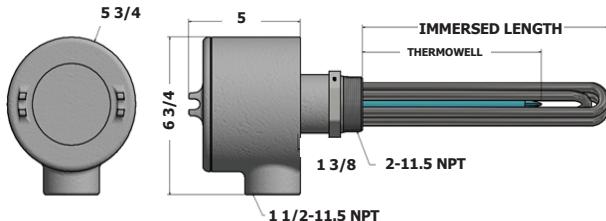
240 vac, 25 amp, DPST
480 vac, 15 amp, TPST
600 vac, 15 amp, TPST

Moisture Resistant or Hazardous Location - ASP series with any optional thermostat

Moisture Resistant Enclosure (add suffix MR)

Hazardous Location (Explosion Resistant add suffix ER)

DPST or TPST (NEMA 4 or NEMA 7)



25 watts/in² Steel Sheath

Typically to heat:

2 1/2" steel screw plug light oils
3 elements - up to 600 volts, 1 or 3 phase
(specify voltage and phase when ordering)

watts	immersed length B dim.	catalogue number		net weight (lb)
	Fig. 92 standard	Fig. 93 with thermostat		
1125	6 1/2	SPO-3011	ASPO-3011	7
1500	7 1/2	SPO-3015	ASPO-3015	7
1875	9 1/2	SPO-3018	ASPO-3018	7
2250	11 1/2	SPO-3025	ASPO-3025	8
3000	17 3/4	SPO-3030	ASPO-3030	8
3750	19	SPO-3037	ASPO-3037	8
4500	24 1/2	SPO-3045	ASPO-3045	9
5250	28	SPO-3052	ASPO-3052	9
6000	32 1/2	SPO-3060	ASPO-3060	9
7500	39 3/8	SPO-3075	ASPO-3075	9
9000	47 1/4	SPO-3090	ASPO-3090	11
10500	54	SPO-3105	ASPO-3105	11

12 watts/in² Steel Sheath

Typically to heat:

2 1/2" steel screw plug hydraulic oils
3 elements - up to 600 volts, 1 or 3 phase heavy oils
(specify voltage and phase when ordering)

watts	immersed length B dim.	catalogue number		net weight (lb)
	Fig. 92 standard	Fig. 93 with thermostat		
525	6 1/2	SPOL-3005	ASPOL-3005	7
750	7 1/2	SPOL-3007	ASPOL-3007	7
935	9 1/2	SPOL-3009	ASPOL-3009	7
1125	11 1/2	SPOL-3011	ASPOL-3011	8
1500	17 3/4	SPOL-3015	ASPOL-3015	8
1875	19	SPOL-3018	ASPOL-3018	8
2250	24 1/2	SPOL-3022	ASPOL-3022	9
2625	28	SPOL-3026	ASPOL-3026	9
3000	32 1/2	SPOL-3030	ASPOL-3030	9
3750	39 3/8	SPOL-3037	ASPOL-3037	9
4500	47 1/4	SPOL-3045	ASPOL-3045	11
5250	54	SPOL-3052	ASPOL-3052	11

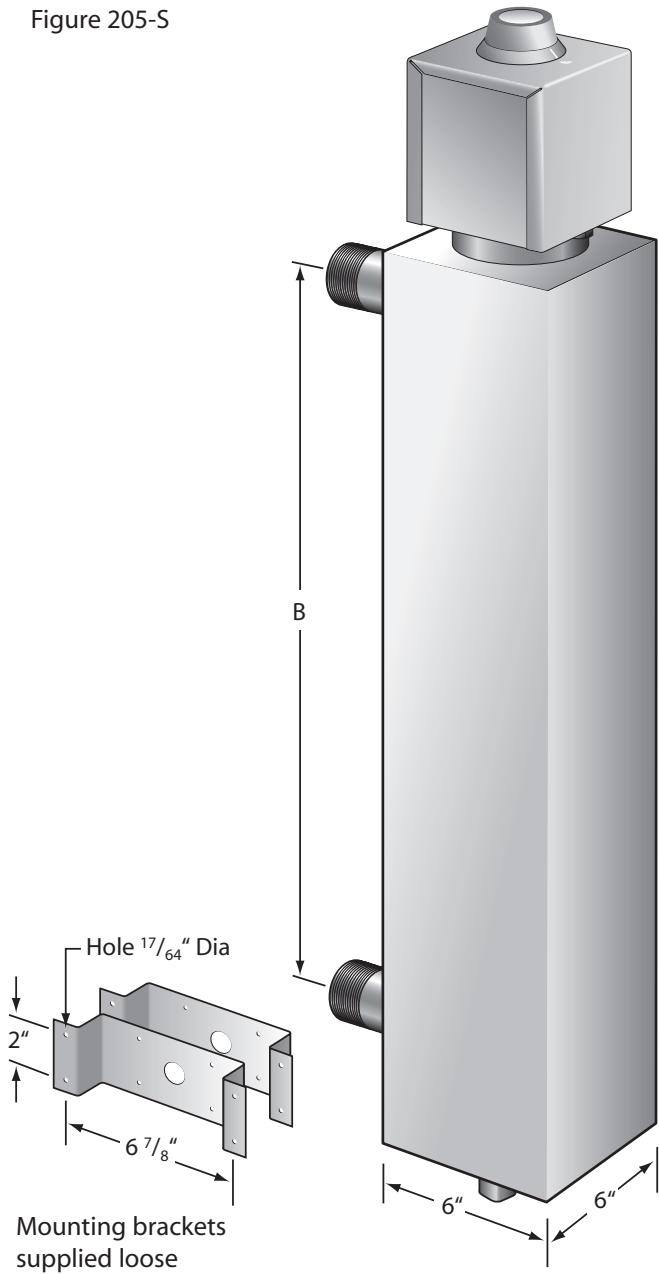
25 watts/in² Incoloy Sheath

Typically to heat:

2 1/2" steel screw plug light oils,
2 elements - up to 600 volts mild caustic solution
(specify voltage when ordering) mild alkaline solutions

watts	immersed length B dim.	catalogue number		net weight (lb)
	Fig. 92 standard	Fig. 93 with thermostat		
1125	6 1/2	SPA-3011	ASPA-3011	7
1500	7 1/2	SPA-3015	ASPA-3015	7
1875	9 1/2	SPA-3018	ASPA-3018	7
2250	11 1/2	SPA-3025	ASPA-3025	8
3000	17 3/4	SPA-3030	ASPA-3030	8
3750	19	SPA-3037	ASPA-3037	8
4500	24 1/2	SPA-3045	ASPA-3045	9
5250	28	SPA-3052	ASPA-3052	9
6000	32 1/2	SPA-3060	ASPA-3060	9
7500	39 3/8	SPA-3075	ASPA-3075	9
9000	47 1/4	SPA-3090	ASPA-3090	11
10500	54	SPA-3105	ASPA-3105	11

Figure 205-S

**Circulation Heaters**

A circulation heater is designed to heat liquids or gases as they pass through the unit. Similar to a heat exchanger, except this unit generates its own heat. An electric fired circulation heater covers a broad range of heating applications. A screw plug heater is installed into a pipe body and multiple units can be series connected to give you any kilowatt size.

Common features:

Screw Plug Heater

- Typically units shown on pages B1 to B8
- Figure 205 S shows a unit with a built in thermostat, non-thermostat versions are also available
- General Purpose, Moisture Resistant, or Hazardous Location terminal boxes available
- Copper, steel, stainless steel, Incoloy and other specialty sheathed heating elements are also available

Pipe Body

- Normally mild steel
- Stainless steel vessels available
- Can be vertically or horizontally mounted
- Vessel is insulated and has a painted steel outer casing
- Weather resistant casing also available
- NPT inlet and outlet connections
- Overall length approximately 10" longer than the heater "B" dimensions



ASB Heating Elements Ltd.

3" -150 LB Flange Heaters - Copper Sheath

50-60 watts/in² Copper Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water

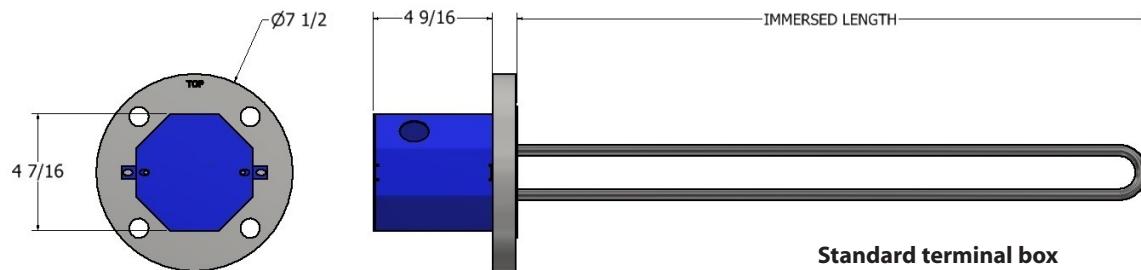
3" - 150 psi flange, 3 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFC-3-03004	13
6.0	18	PFC-3-03006	14
7.5	19	PFC-3-03007	14
9.0	25	PFC-3-03009	15
10.5	28	PFC-3-03010	16
12.0	32	PFC-3-03012	16
15.0	39	PFC-3-03015	18
18.0	47	PFC-3-03018	19
22.5	54	PFC-3-03022	20

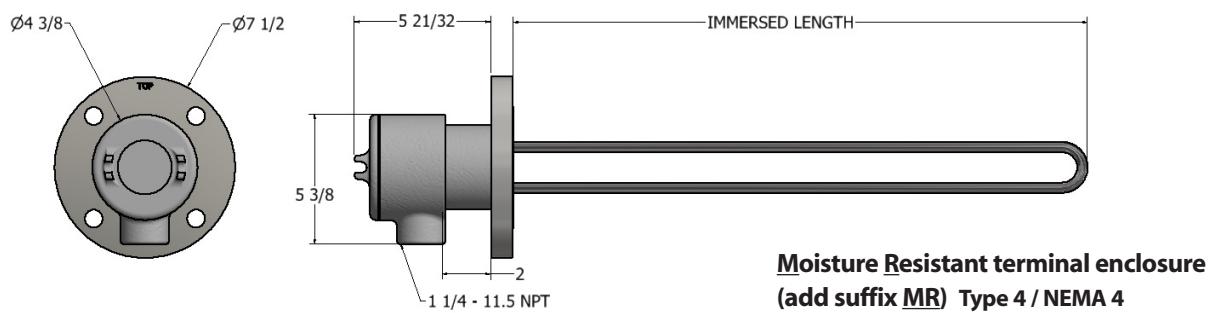
3" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	14	PFC-3-06009	16
12	18	PFC-3-06012	17
15	19	PFC-3-06015	17
18	25	PFC-3-06018	18
21	28	PFC-3-06021	19
24	32	PFC-3-06024	19
30	39	PFC-3-06030	21
36	47	PFC-3-06036	22
45	54	PFC-3-06045	23

3" Flange 3 & 6 Elements

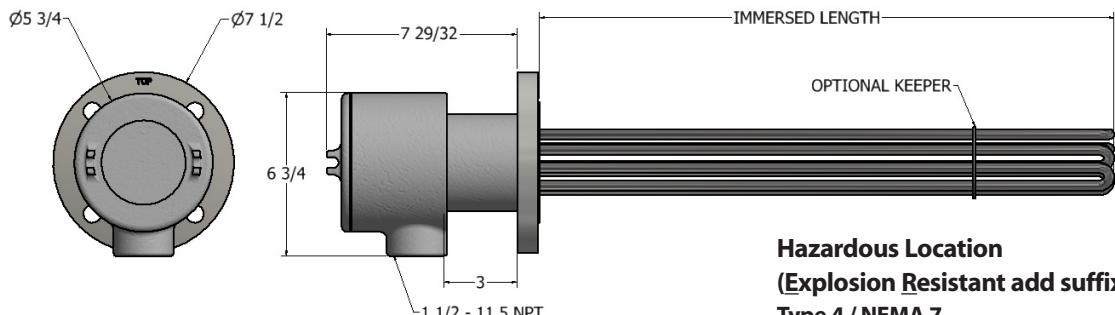


3" Flange 3 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

3" Flange 6 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

4" -150 LB Flange Heaters - Copper Sheath

50-60 watts/in² Copper Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water

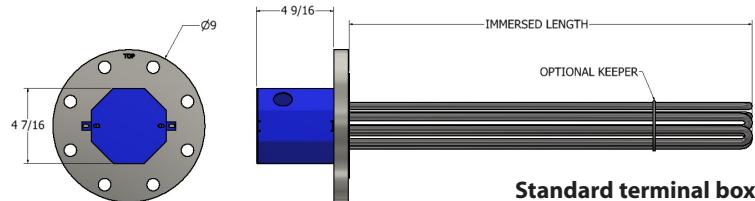
4" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	14	PFC-4-06009	14
12	18	PFC-4-06012	15
15	19	PFC-4-06015	15
18	25	PFC-4-06018	16
21	28	PFC-4-06021	17
24	32	PFC-4-06024	17
30	39	PFC-4-06030	19
36	47	PFC-4-06036	20
45	54	PFC-4-06045	21

4" - 150 psi flange, 9 elements in flange

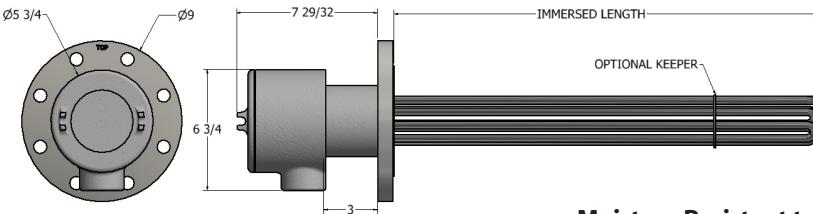
kw	immersed length B dim.	catalogue number	net weight (lb)
13.5	14	PFC-4-09013	18
18.0	18	PFC-4-09018	19
22.5	19	PFC-4-09022	19
27.0	25	PFC-4-09027	20
31.5	28	PFC-4-09031	21
36.0	32	PFC-4-09036	21
45.0	39	PFC-4-09045	23
54.0	47	PFC-4-09054	24
67.5	54	PFC-4-09067	25

4" Flange 6 & 9 Elements



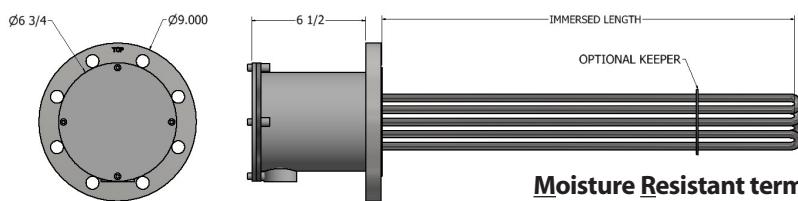
Standard terminal box

4" Flange 6 Elements



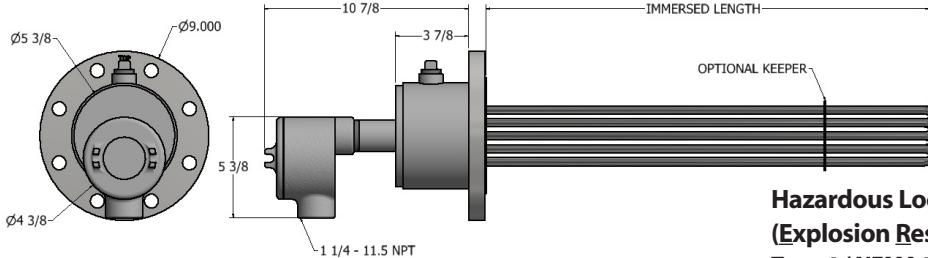
Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

4" Flange 9 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

4" Flange 9 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

5"-150 LB Flange Heaters - Copper Sheath

50-60 watts/in² Copper Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water

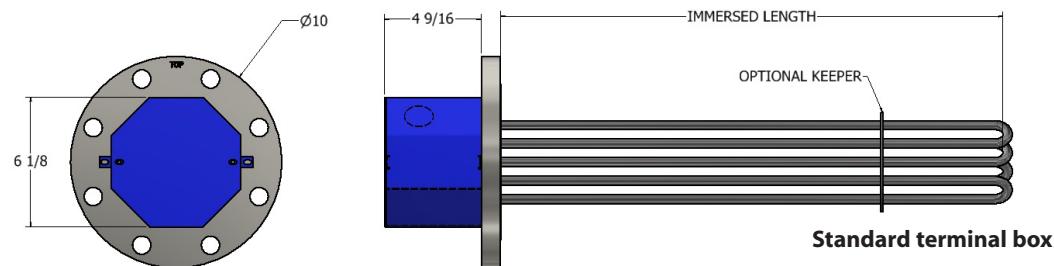
5" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	14	PFC-5-06009	28
12	18	PFC-5-06012	29
15	19	PFC-5-06015	29
18	25	PFC-5-06018	31
21	28	PFC-5-06021	32
24	32	PFC-5-06024	34
30	39	PFC-5-06030	36
36	47	PFC-5-06036	39
45	54	PFC-5-06045	41

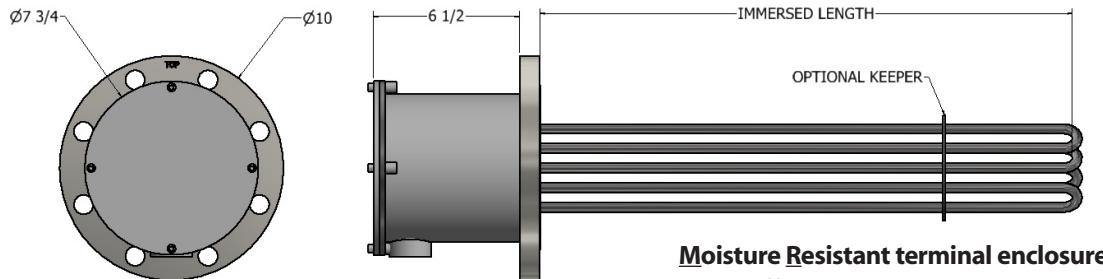
5" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
13.5	14	PFC-5-09013	30
18.0	18	PFC-5-09018	32
22.5	19	PFC-5-09022	33
27.0	25	PFC-5-09027	36
31.5	28	PFC-5-09031	37
36.0	32	PFC-5-09036	39
45.0	39	PFC-5-09045	43
54.0	47	PFC-5-09054	47
67.5	54	PFC-5-09067	50

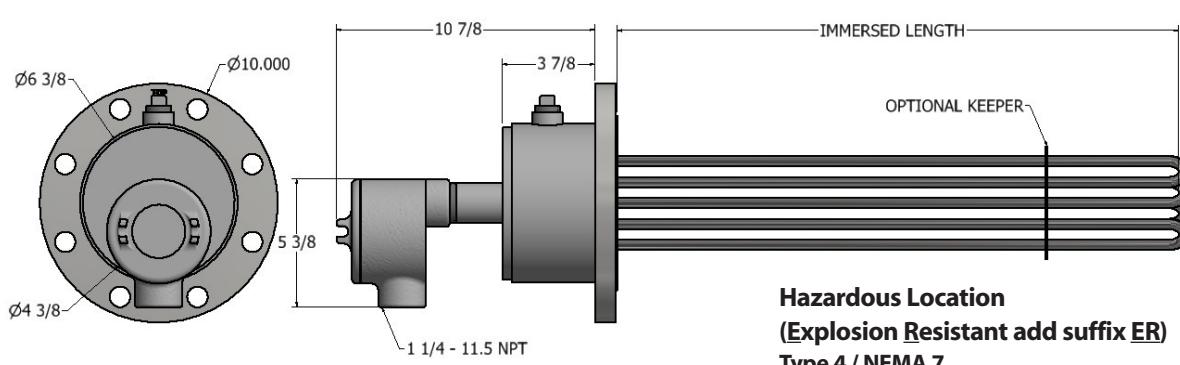
5" Flange 6 & 9 Elements



5" Flange 6 & 9 Elements



5" Flange 9 Elements





ASB Heating Elements Ltd.

6"-150 LB Flange Heaters - Copper Sheath

50-60 watts/in² Copper Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water

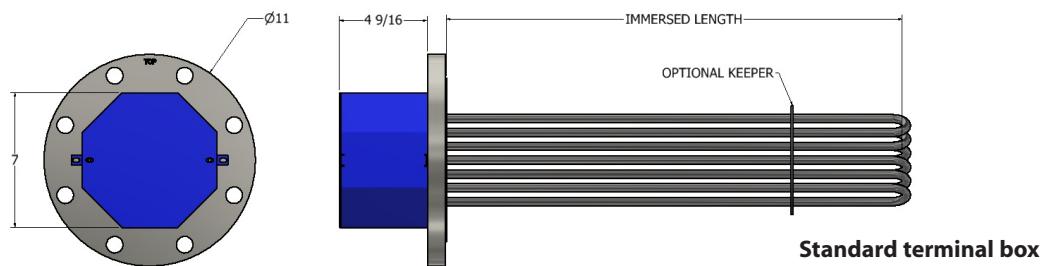
6" - 150 psi flange, 12 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
18	14	PFC-6-12018	40
24	18	PFC-6-12024	43
30	19	PFC-6-12030	44
36	25	PFC-6-12036	48
42	28	PFC-6-12042	50
48	32	PFC-6-12048	52
60	39	PFC-6-12060	57
72	47	PFC-6-12072	62
90	54	PFC-6-12090	67

6" - 150 psi flange, 15 elements in flange

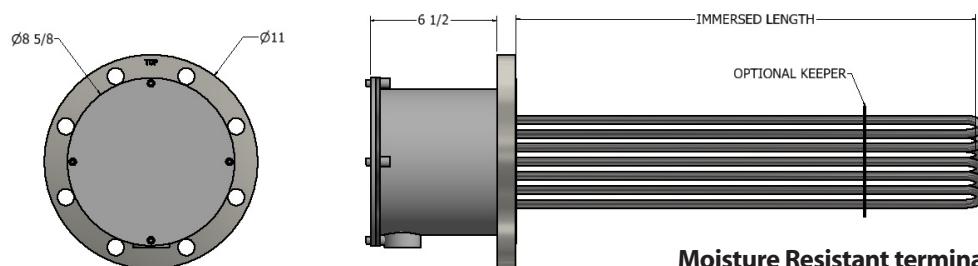
kw	immersed length B dim.	catalogue number	net weight (lb)
22.5	14	PFC-6-15022	43
30.0	18	PFC-6-15030	46
37.5	19	PFC-6-15037	47
45.0	25	PFC-6-15045	52
52.5	28	PFC-6-15052	54
60.0	32	PFC-6-15060	58
75.0	39	PFC-6-15075	64
90.0	47	PFC-6-15090	70
112.5	54	PFC-6-15112	76

6" Flange 12 & 15 Elements



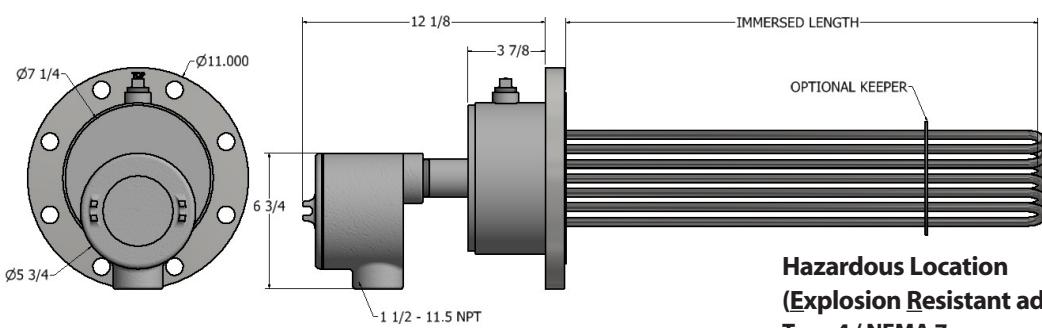
Standard terminal box

6" Flange 12 & 15 Elements



Moisture Resistant terminal enclosure
(add suffix MR) Type 4 / NEMA 4

6" Flange 12 & 15 Elements



Hazardous Location
(Explosion Resistant add suffix ER)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

8" Flange Heaters - Copper Sheath

50-60 watts/in² Copper Sheath

150 psi steel flange - ANSI rated

6" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water

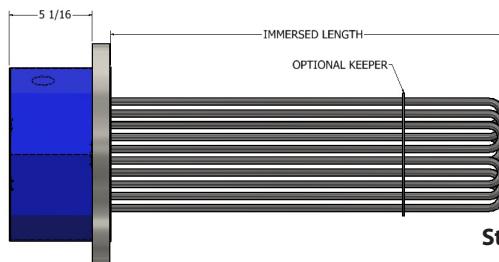
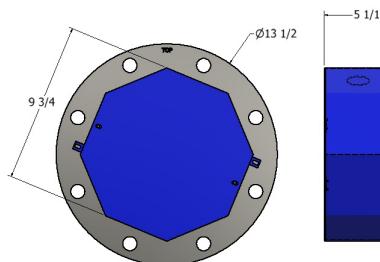
8" - 150 psi flange, 18 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
27	16	PFC-8-18027	58
36	20	PFC-8-18036	62
45	21	PFC-8-18045	63
54	27	PFC-8-18054	69
63	30	PFC-8-18063	72
72	34	PFC-8-18072	76
90	41	PFC-8-18090	83
108	49	PFC-8-18108	91
135	56	PFC-8-18135	98

8" - 150 psi flange, 21 elements in flange

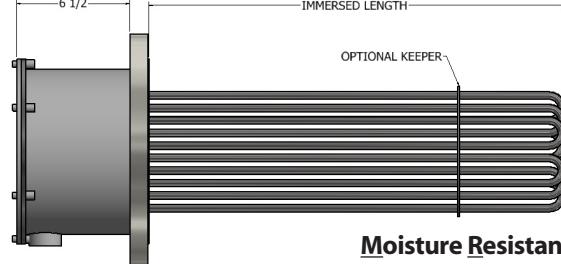
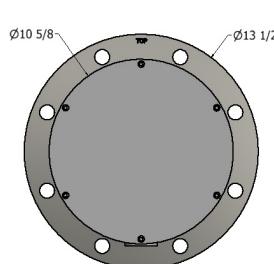
kw	immersed length B dim.	catalogue number	net weight (lb)
31.5	16	PFC-8-21031	61
42.0	20	PFC-8-21042	65
52.5	21	PFC-8-21052	67
63.0	27	PFC-8-21063	74
74.0	30	PFC-8-21074	77
84.0	34	PFC-8-21084	82
105.0	41	PFC-8-21105	90
126.0	49	PFC-8-21126	99
158.0	56	PFC-8-21158	107

8" Flange 18 & 21 Elements



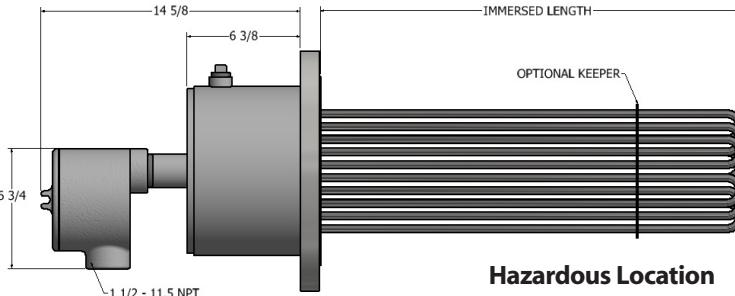
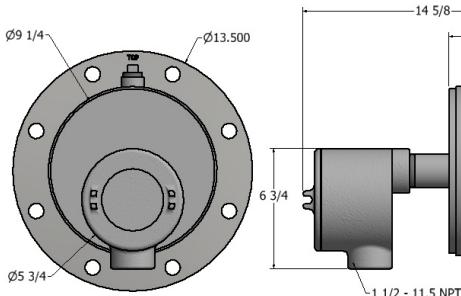
Standard terminal box

8" Flange 18 & 21 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

8" Flange 18 & 21 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

8" Flange Heaters - Copper Sheath

50-60 watts/in² Copper Sheath

150 psi steel flange - ANSI rated

6" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water

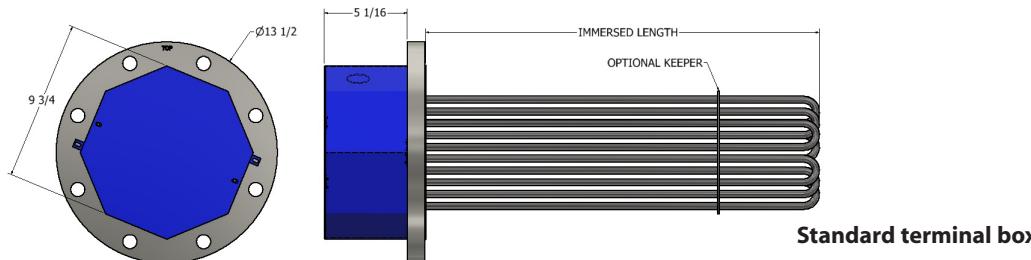
8" - 150 psi flange, 24 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
36	16	PFC-8-24036	63
48	20	PFC-8-24048	69
60	21	PFC-8-24060	70
72	27	PFC-8-24072	78
84	30	PFC-8-24084	82
96	34	PFC-8-24096	87
120	41	PFC-8-24120	97
144	49	PFC-8-24144	107
180	56	PFC-8-24180	117

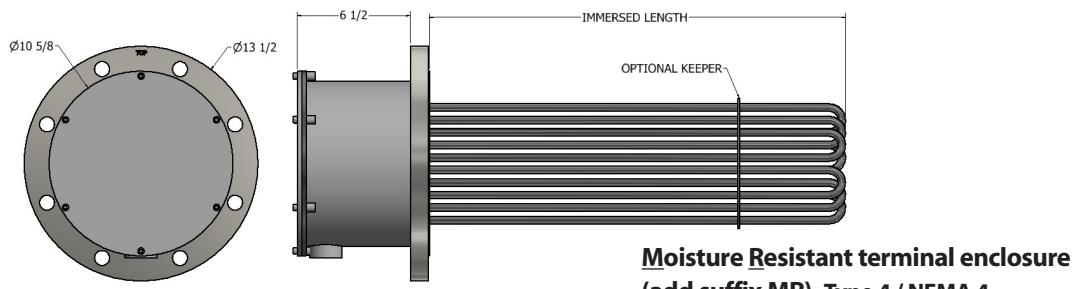
8" - 150 psi flange, 27 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
40.5	16	PFC-8-27040	66
54.0	20	PFC-8-27054	72
67.5	21	PFC-8-27067	74
81.0	27	PFC-8-27081	83
95.0	30	PFC-8-27095	87
108.0	34	PFC-8-27108	93
135.0	41	PFC-8-27135	104
162.0	49	PFC-8-27162	116
202.0	56	PFC-8-27202	126

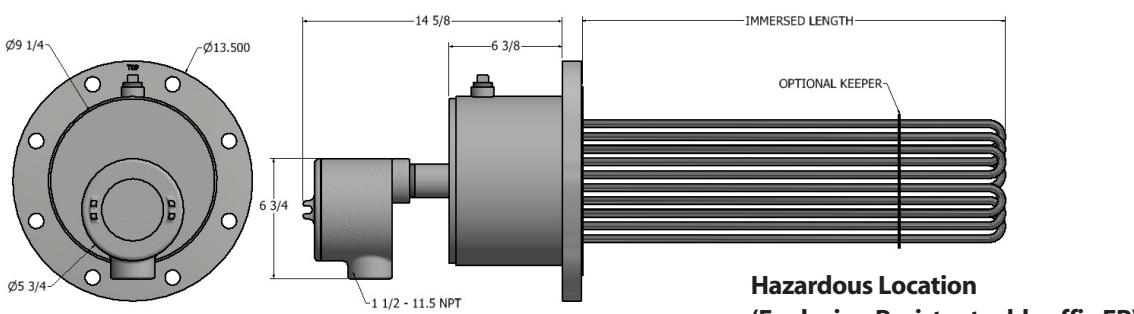
8" Flange 24 & 27 Elements



8" Flange 24 & 27 Elements



8" Flange 24 & 27 Elements





ASB Heating Elements Ltd.

3" -150 LB Flange Heaters - Incoloy Sheath

50-60 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water

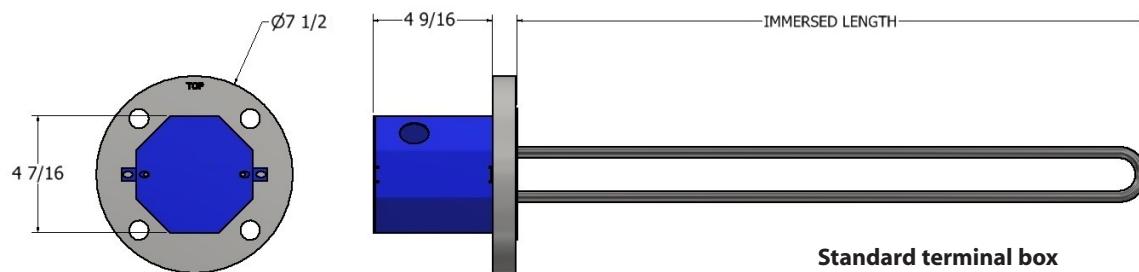
3" - 150 psi flange, 3 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFIH-3-03004	13
6.0	18	PFIH-3-03006	14
7.5	19	PFIH-3-03007	14
9.0	25	PFIH-3-03009	15
10.5	28	PFIH-3-03010	16
12.0	32	PFIH-3-03012	16
15.0	39	PFIH-3-03015	18
18.0	47	PFIH-3-03018	19
22.5	54	PFIH-3-03022	20

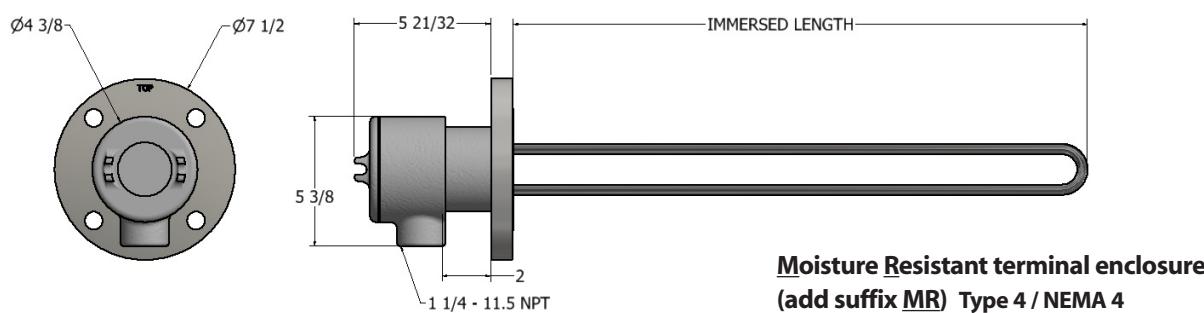
3" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	14	PFIH-3-06009	16
12	18	PFIH-3-06012	17
15	19	PFIH-3-06015	17
18	25	PFIH-3-06018	18
21	28	PFIH-3-06021	19
24	32	PFIH-3-06024	19
30	39	PFIH-3-06030	21
36	47	PFIH-3-06036	22
45	54	PFIH-3-06045	23

3" Flange 3 & 6 Elements

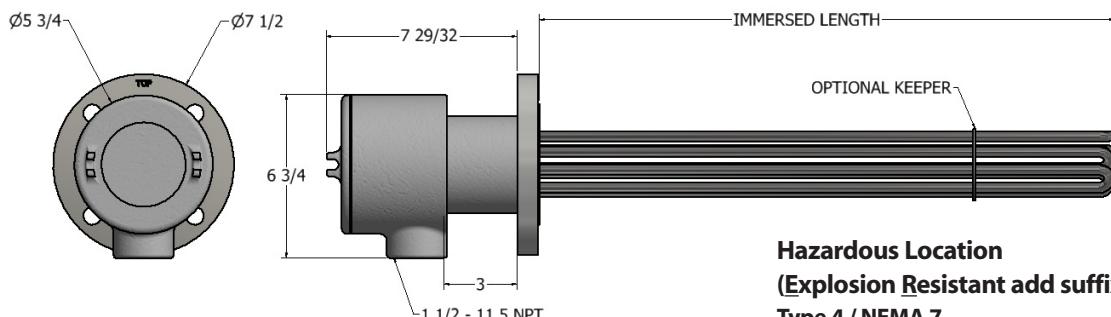


3" Flange 3 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

3" Flange 6 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

4" -150 LB Flange Heaters - Incoloy Sheath

50-60 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water

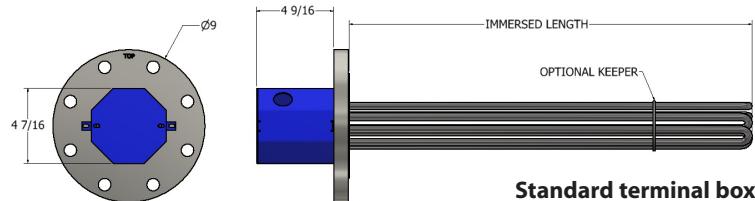
4" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	14	PFIH-4-06009	13
12	18	PFIH-4-06012	14
15	19	PFIH-4-06015	14
18	25	PFIH-4-06018	15
21	28	PFIH-4-06021	16
24	32	PFIH-4-06024	16
30	39	PFIH-4-06030	18
36	47	PFIH-4-06036	19
45	54	PFIH-4-06045	20

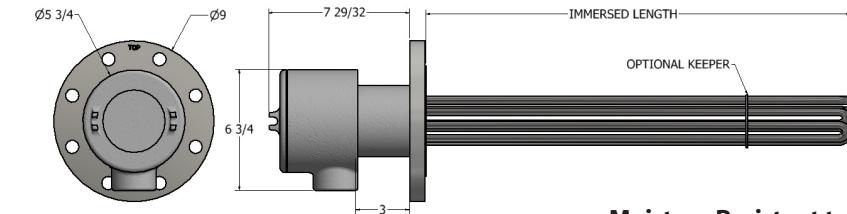
4" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
13.5	14	PFIH-4-09013	18
18.0	18	PFIH-4-09018	19
22.5	19	PFIH-4-09022	19
27.0	25	PFIH-4-09027	20
31.5	28	PFIH-4-09031	21
36.0	32	PFIH-4-09036	21
45.0	39	PFIH-4-09045	23
54.0	47	PFIH-4-09054	24
67.5	54	PFIH-4-09067	25

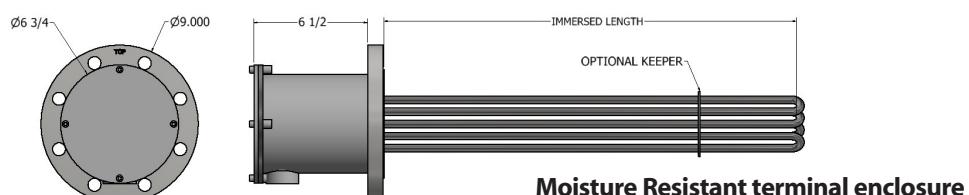
4" Flange 6 & 9 Elements



4" Flange 6 Elements

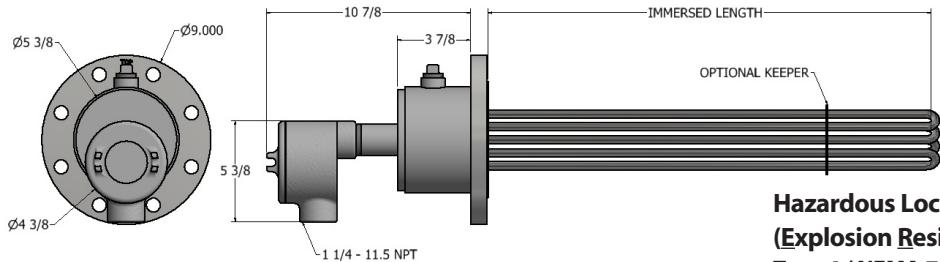


4" Flange 9 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

4" Flange 9 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

5"-150 LB Flange Heaters - Incoloy Sheath

50-60 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water
process water

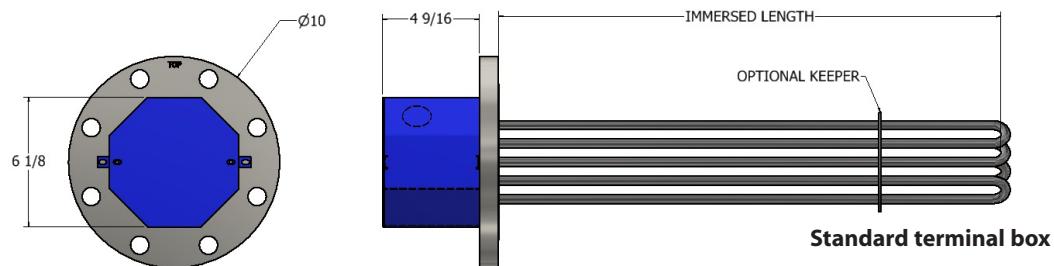
5" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	14	PFIH-5-06009	28
12	18	PFIH-5-06012	29
15	19	PFIH-5-06015	29
18	25	PFIH-5-06018	31
21	28	PFIH-5-06021	32
24	32	PFIH-5-06024	34
30	39	PFIH-5-06030	36
36	47	PFIH-5-06036	39
45	54	PFIH-5-06045	41

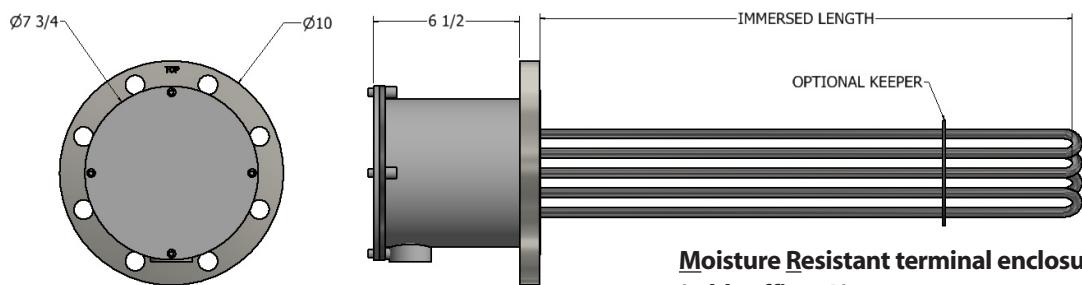
5" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
13.5	14	PFIH-5-09013	30
18.0	18	PFIH-5-09018	32
22.5	19	PFIH-5-09022	33
27.0	25	PFIH-5-09027	36
31.5	28	PFIH-5-09031	37
36.0	32	PFIH-5-09036	39
45.0	39	PFIH-5-09045	43
54.0	47	PFIH-5-09054	47
67.5	54	PFIH-5-09067	50

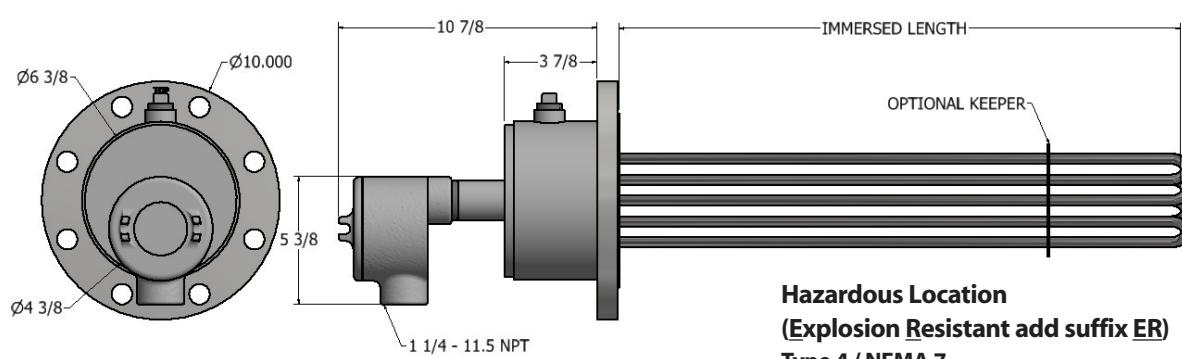
5" Flange 6 & 9 Elements



5" Flange 6 & 9 Elements



5" Flange 9 Elements





ASB Heating Elements Ltd.

6"-150 LB Flange Heaters - Incoloy Sheath

50-60 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water
process water

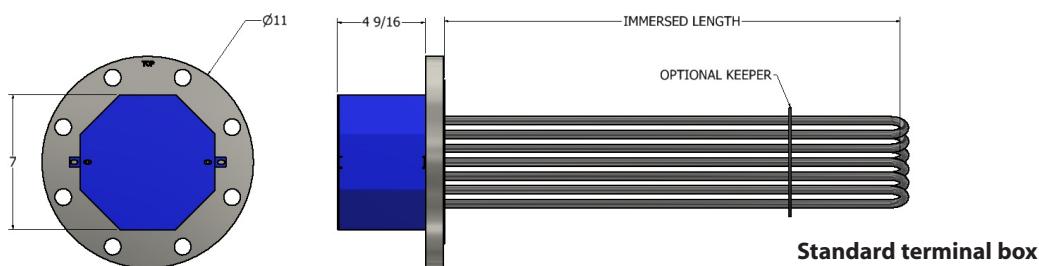
6" - 150 psi flange, 12 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
18	14	PFIH-6-12018	40
24	18	PFIH-6-12024	43
30	19	PFIH-6-12030	44
36	25	PFIH-6-12036	48
42	28	PFIH-6-12042	50
48	32	PFIH-6-12048	52
60	39	PFIH-6-12060	57
72	47	PFIH-6-12072	62
90	54	PFIH-6-12090	67

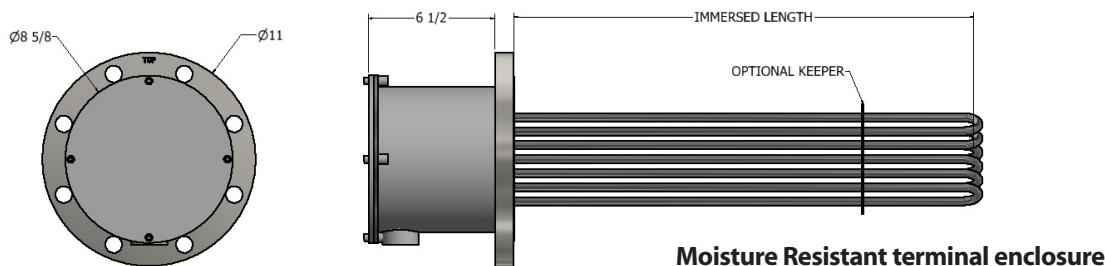
6" - 150 psi flange, 15 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
22.5	14	PFIH-6-15022	43
30.0	18	PFIH-6-15030	46
37.5	19	PFIH-6-15037	47
45.0	25	PFIH-6-15045	52
52.5	28	PFIH-6-15052	54
60.0	32	PFIH-6-15060	58
75.0	39	PFIH-6-15075	64
90.0	47	PFIH-6-15090	70
112.5	54	PFIH-6-15112	76

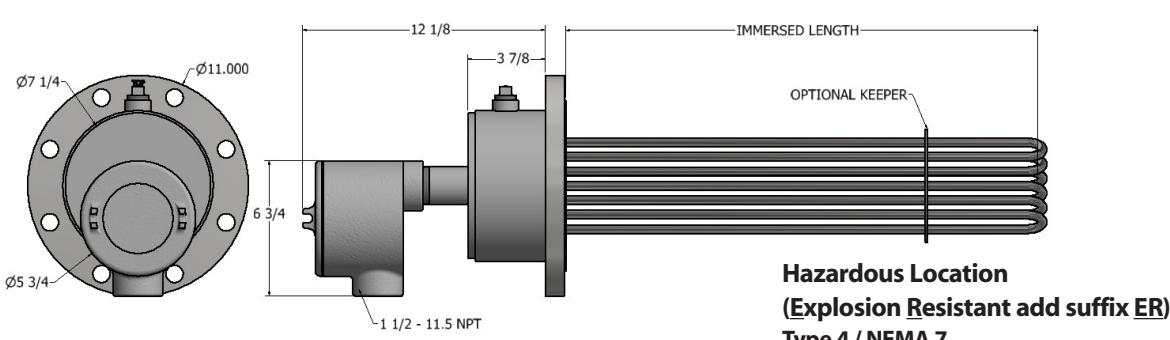
6" Flange 12 & 15 Elements



6" Flange 12 & 15 Elements



6" Flange 12 & 15 Elements





ASB Heating Elements Ltd.

8" Flange Heaters - Incoloy Sheath

50-60 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

6" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water
process water

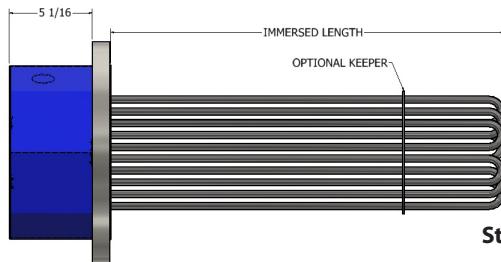
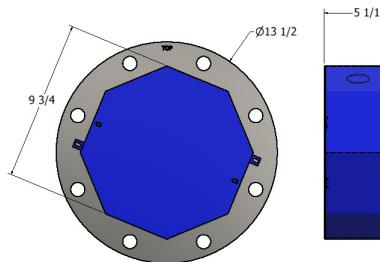
8" - 150 psi flange, 18 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
27	16	PFIH-8-18027	58
36	20	PFIH-8-18036	62
45	21	PFIH-8-18045	63
54	27	PFIH-8-18054	69
63	30	PFIH-8-18063	72
72	34	PFIH-8-18072	76
90	41	PFIH-8-18090	83
108	49	PFIH-8-18108	91
135	56	PFIH-8-18135	98

8" - 150 psi flange, 21 elements in flange

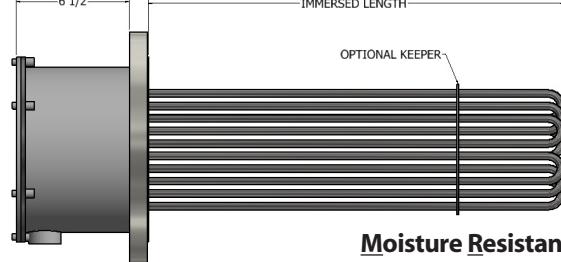
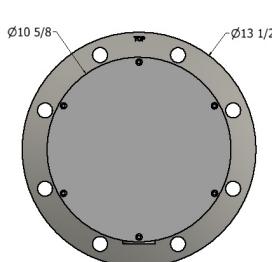
kw	immersed length B dim.	catalogue number	net weight (lb)
31.5	16	PFIH-8-21031	61
42.0	20	PFIH-8-21042	65
52.5	21	PFIH-8-21052	67
63.0	27	PFIH-8-21063	74
74.0	30	PFIH-8-21074	77
84.0	34	PFIH-8-21084	82
105.0	41	PFIH-8-21105	90
126.0	49	PFIH-8-21126	99
158.0	56	PFIH-8-21158	107

8" Flange 18 & 21 Elements



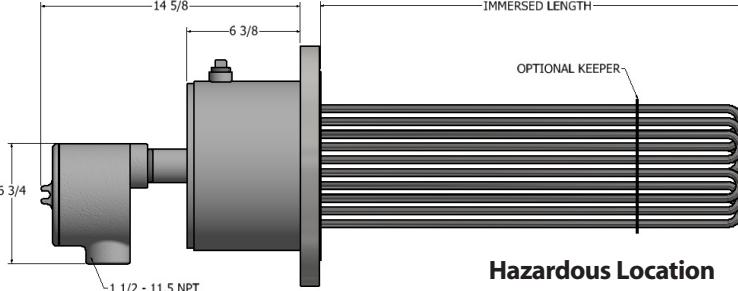
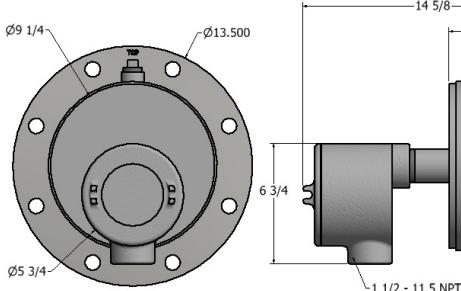
Standard terminal box

8" Flange 18 & 21 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

8" Flange 18 & 21 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

8" Flange Heaters - Incoloy Sheath

50-60 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

6" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
municipal water
process water

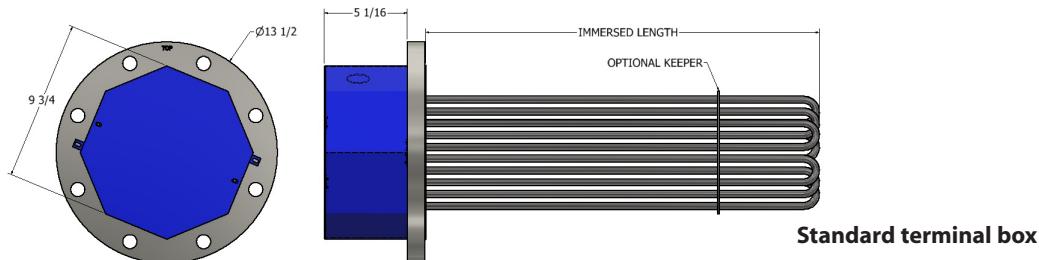
8" - 150 psi flange, 24 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
36	16	PFIH-8-24036	63
48	20	PFIH-8-24048	69
60	21	PFIH-8-24060	70
72	27	PFIH-8-24072	78
84	30	PFIH-8-24084	82
96	34	PFIH-8-24096	87
120	41	PFIH-8-24120	97
144	49	PFIH-8-24144	107
180	56	PFIH-8-24180	117

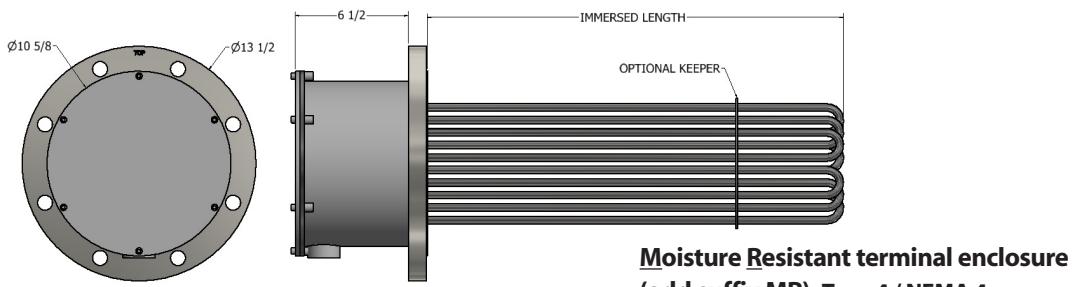
8" - 150 psi flange, 27 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
40.5	16	PFIH-8-27040	66
54.0	20	PFIH-8-27054	72
67.5	21	PFIH-8-27067	74
81.0	27	PFIH-8-27081	83
95.0	30	PFIH-8-27095	87
108.0	34	PFIH-8-27108	93
135.0	41	PFIH-8-27135	104
162.0	49	PFIH-8-27162	116
202.0	56	PFIH-8-27202	126

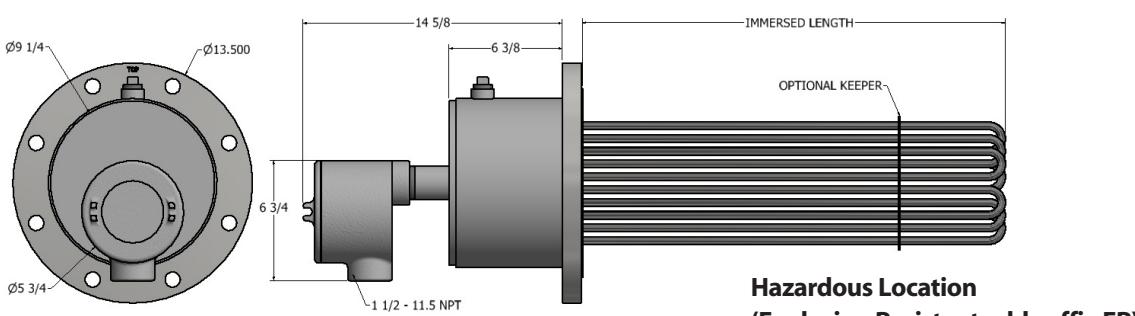
8" Flange 24 & 27 Elements



8" Flange 24 & 27 Elements



8" Flange 24 & 27 Elements





ASB Heating Elements Ltd.

3" -150 LB Flange Heaters - Incoloy Sheath

25 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:

light oil, water,
mild alkaline solutions,
mild caustic solutions

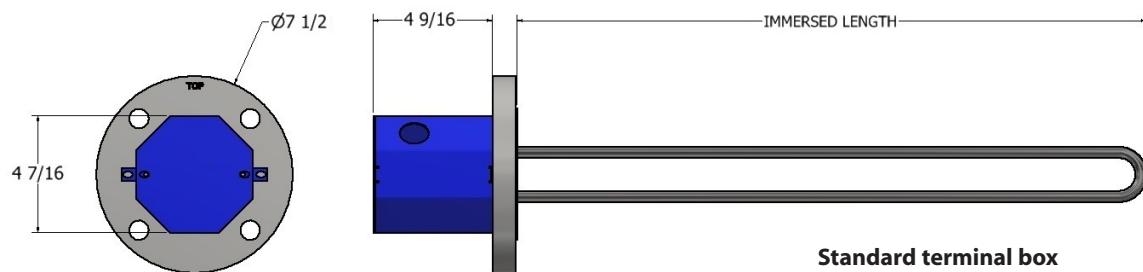
3" - 150 psi flange, 3 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
2.25	14	PFI-3-03002	13
3.0	18	PFI-3-03003	14
4.5	25	PFI-3-03004	15
5.25	28	PFI-3-03005	16
6.0	32	PFI-3-03006	16
7.5	39	PFI-3-03007	18
9.0	47	PFI-3-03009	19
11.25	54	PFI-3-03011	20

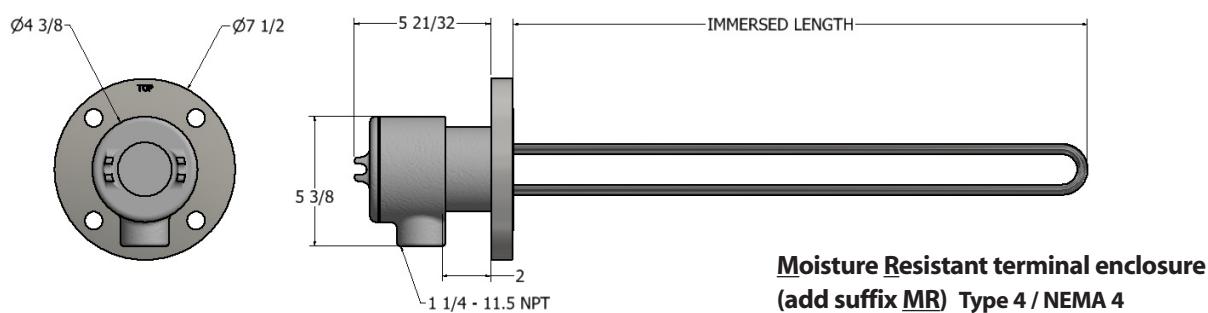
3" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFI-3-06004	16
6.0	18	PFI-3-06006	17
7.5	19	PFI-3-06007	17
9.0	25	PFI-3-06009	18
10.5	28	PFI-3-06010	19
12.0	32	PFI-3-06012	19
15.0	39	PFI-3-06015	21
18.0	47	PFI-3-06018	22
22.5	54	PFI-3-06022	23

3" Flange 3 & 6 Elements

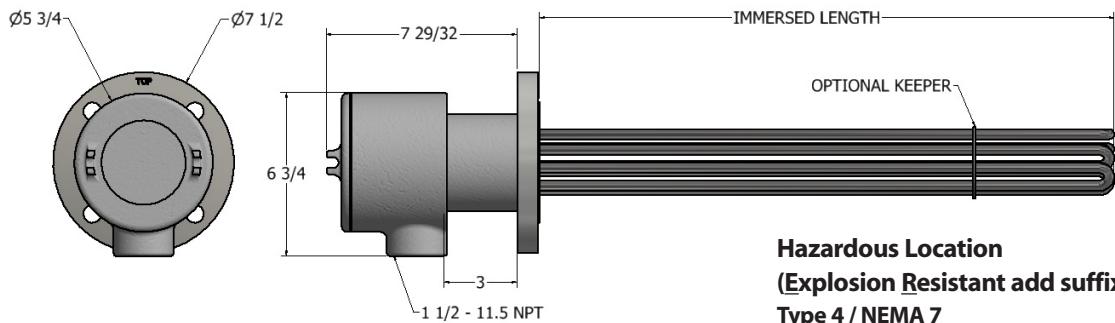


3" Flange 3 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

3" Flange 6 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

4" -150 LB Flange Heaters - Incoloy Sheath

25 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
light oil, water,
mild alkaline solutions,
mild caustic solutions

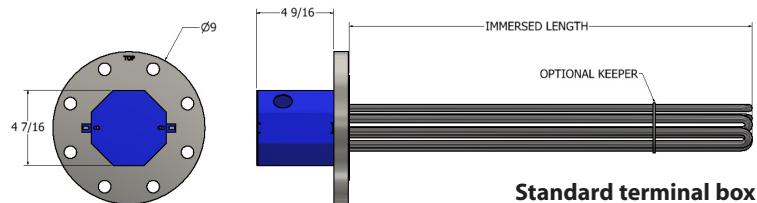
4" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFI-4-06004	17
6.0	18	PFI-4-06006	18
7.5	19	PFI-4-06007	18
9.0	25	PFI-4-06009	20
10.5	28	PFI-4-06010	21
12.0	32	PFI-4-06012	23
15.0	39	PFI-4-06015	25
18.0	47	PFI-4-06018	28
22.5	54	PFI-4-06022	30

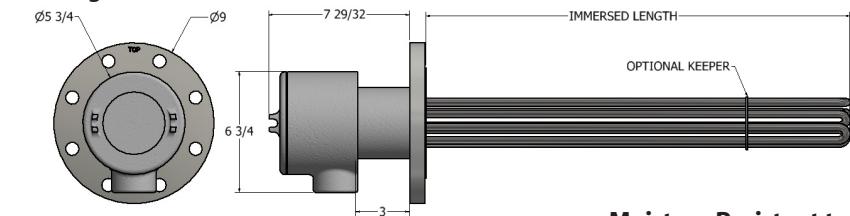
4" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
7.0	14	PFI-4-09007	19
9.0	18	PFI-4-09009	21
11.0	19	PFI-4-09011	22
13.5	25	PFI-4-09013	25
16.0	28	PFI-4-09016	26
18.0	32	PFI-4-09018	28
22.5	39	PFI-4-09022	32
27.0	47	PFI-4-09027	36
34.0	54	PFI-4-09034	39

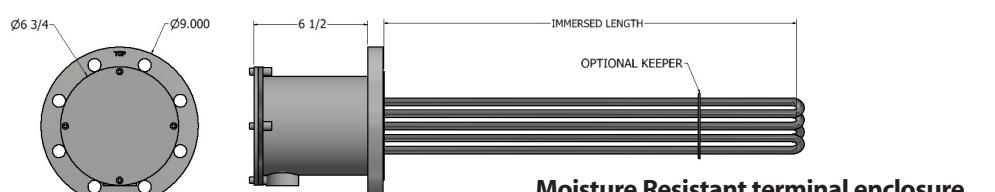
4" Flange 6 & 9 Elements



4" Flange 6 Elements

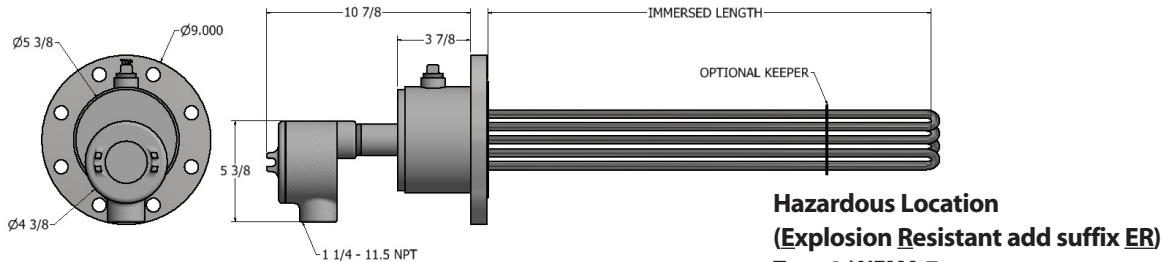


4" Flange 9 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

4" Flange 9 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

5"-150 LB Flange Heaters - Incoloy Sheath

25watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:

oil, water,

mild alkaline solutions,

mild caustic solutions

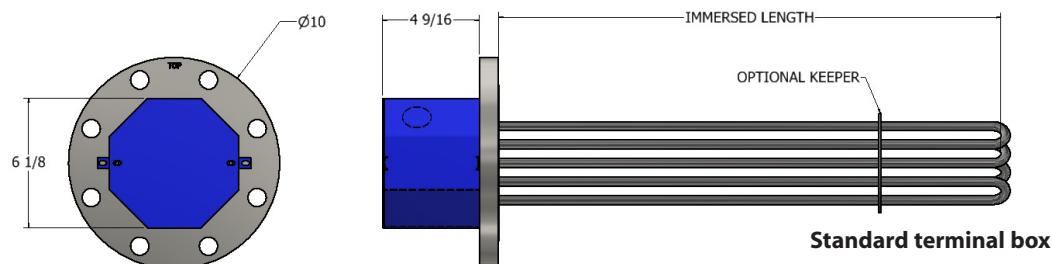
5" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFI-5-06004	28
6.0	18	PFI-5-06006	29
7.5	19	PFI-5-06007	29
9.0	25	PFI-5-06009	31
10.5	28	PFI-5-06010	32
12.0	32	PFI-5-06012	34
15.0	39	PFI-5-06015	36
18.0	47	PFI-5-06018	39
22.5	54	PFI-5-06022	41

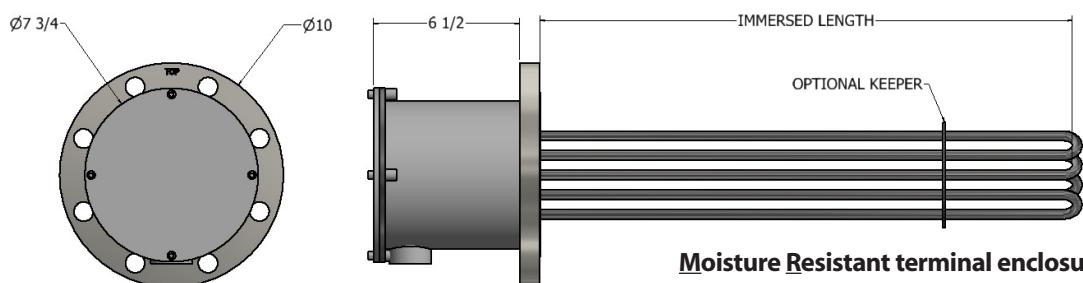
5" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
6.75	14	PFI-5-09006	30
9.00	18	PFI-5-09009	32
13.50	25	PFI-5-09013	36
16.00	28	PFI-5-09016	37
18.00	32	PFI-5-09018	39
22.50	39	PFI-5-09022	43
27.00	47	PFI-5-09027	47
34.00	54	PFI-5-09034	50

5" Flange 6 & 9 Elements

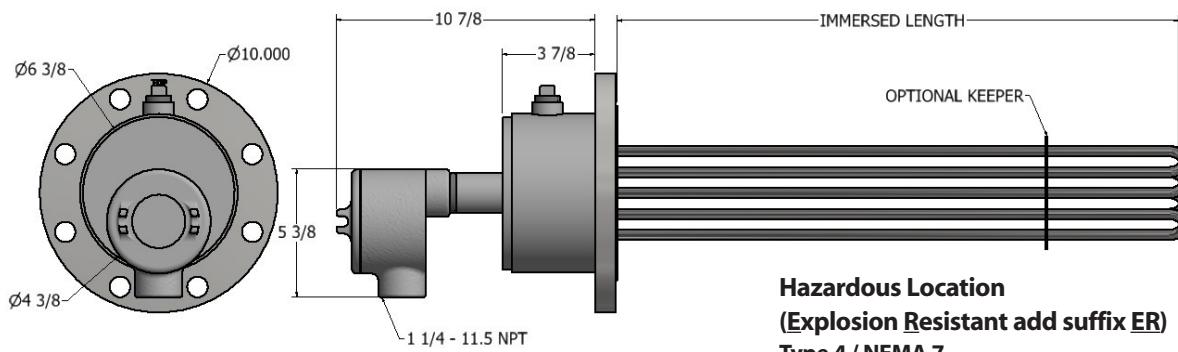


5" Flange 6 & 9 Elements



**Moisture Resistant terminal enclosure
(add suffix MR) Type 4 / NEMA 4**

5" Flange 9 Elements



**Hazardous Location
(Explosion Resistant add suffix ER)
Type 4 / NEMA 7**



ASB Heating Elements Ltd.

6"-150 LB Flange Heaters - Incoloy Sheath

25 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:

oil, water,

mild alkaline solutions,

mild caustic solutions

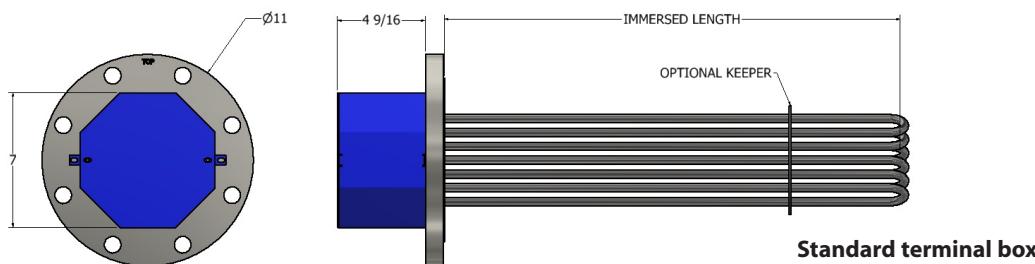
6" - 150 psi flange, 12 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	14	PFI-6-12009	40
12	18	PFI-6-12012	43
15	19	PFI-6-12015	44
18	25	PFI-6-12018	48
21	28	PFI-6-12021	50
24	32	PFI-6-12024	52
30	39	PFI-6-12030	57
36	47	PFI-6-12036	62
45	54	PFI-6-12045	67

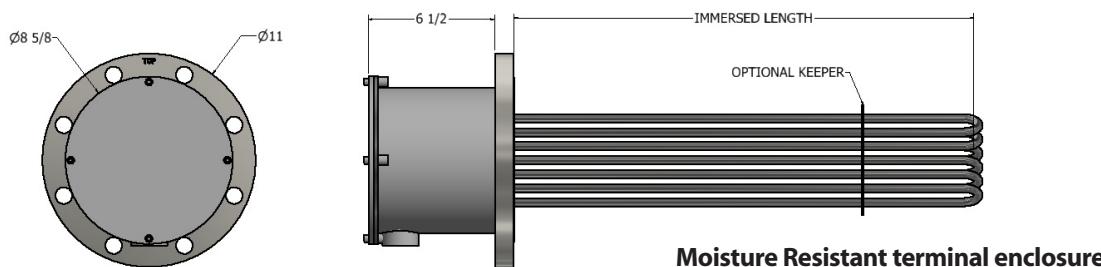
6" - 150 psi flange, 15 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
11.0	14	PFI-6-15011	43
15.0	18	PFI-6-15015	46
19.0	19	PFI-6-15019	47
22.5	25	PFI-6-15022	52
26.0	28	PFI-6-15026	54
30.0	32	PFI-6-15030	58
37.5	39	PFI-6-15037	64
45.0	47	PFI-6-15045	70
56.0	54	PFI-6-15056	76

6" Flange 12 & 15 Elements

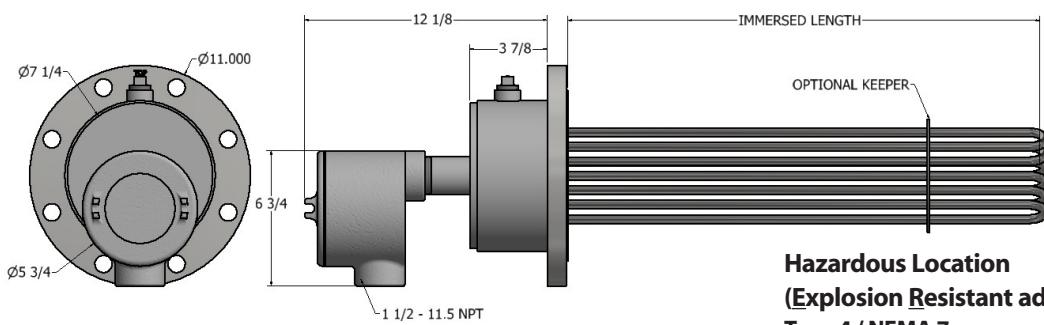


6" Flange 12 & 15 Elements



**Moisture Resistant terminal enclosure
(add suffix MR) Type 4 / NEMA 4**

6" Flange 12 & 15 Elements



**Hazardous Location
(Explosion Resistant add suffix ER)
Type 4 / NEMA 7**



ASB Heating Elements Ltd.

8" Flange Heaters - Incoloy Sheath

25 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

6" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:

oil, water,

mild alkaline solutions,

mild caustic solutions

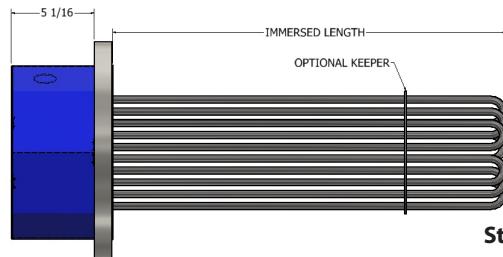
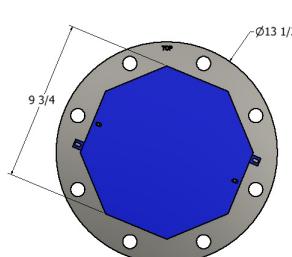
8" - 150 psi flange, 18 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
13.5	16	PFI-8-18013	58
18.0	20	PFI-8-18018	62
22.5	21	PFI-8-18022	63
27.0	27	PFI-8-18027	69
31.5	30	PFI-8-18031	72
36.0	34	PFI-8-18036	76
45.0	41	PFI-8-18045	83
54.0	49	PFI-8-18054	91
67.5	56	PFI-8-18067	98

8" - 150 psi flange, 21 elements in flange

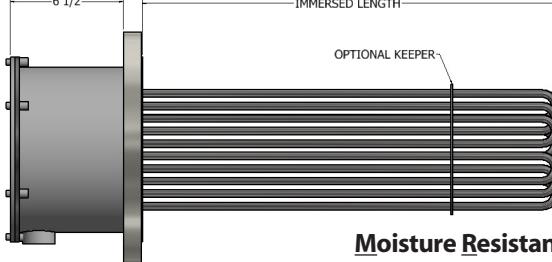
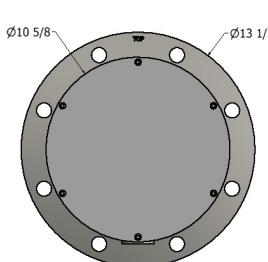
kw	immersed length B dim.	catalogue number	net weight (lb)
16.0	16	PFI-8-21016	61
21.0	20	PFI-8-21021	65
26.0	21	PFI-8-21026	67
31.5	27	PFI-8-21031	74
37.0	30	PFI-8-21037	77
42.0	34	PFI-8-21042	82
52.5	41	PFI-8-21052	90
63.0	49	PFI-8-21063	99
79.0	56	PFI-8-21079	107

8" Flange 18 & 21 Elements



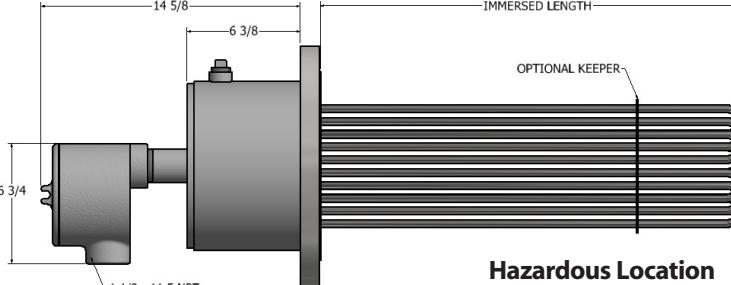
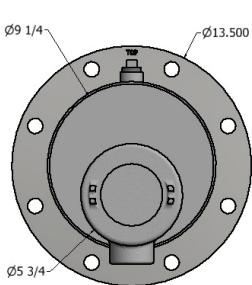
Standard terminal box

8" Flange 18 & 21 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

8" Flange 18 & 21 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

8" Flange Heaters - Incoloy Sheath

25 watts/in² Incoloy Sheath

150 psi steel flange - ANSI rated

6" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

8" - 150 psi flange, 24 elements in flange

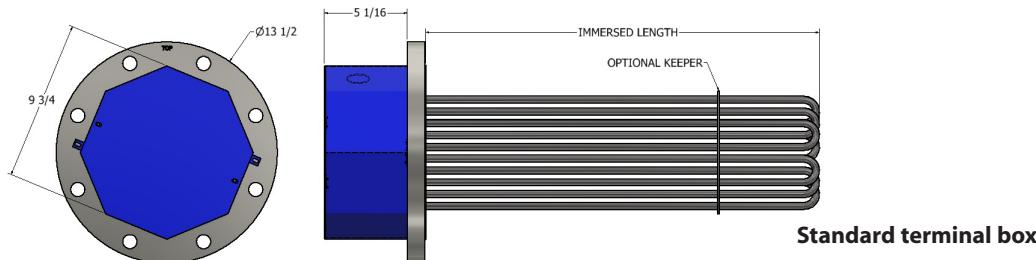
kw	immersed length B dim.	catalogue number	net weight (lb)
18	16	PFI-8-24018	63
24	20	PFI-8-24024	69
30	21	PFI-8-24030	70
36	27	PFI-8-24036	78
42	30	PFI-8-24042	82
48	34	PFI-8-24048	87
60	41	PFI-8-24060	97
72	49	PFI-8-24072	107
90	56	PFI-8-24090	117

Typically to heat:
oil, water,
mild alkaline solutions,
mild caustic solutions

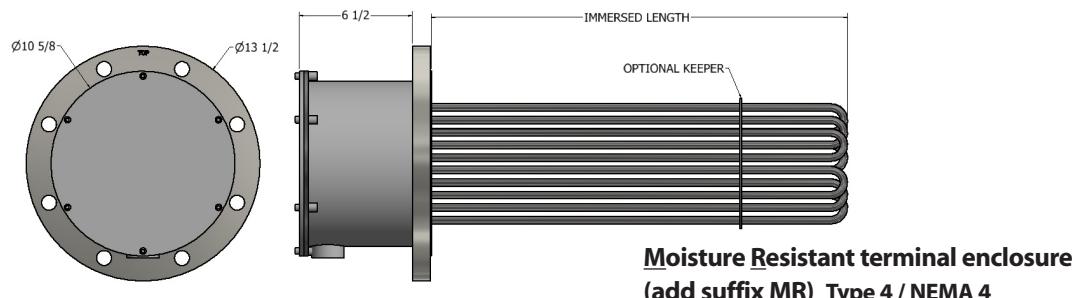
8" - 150 psi flange, 27 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
20.0	16	PFI-8-27020	66
27.0	20	PFI-8-27027	72
34.0	21	PFI-8-27034	74
40.5	27	PFI-8-27040	83
47.0	30	PFI-8-27047	87
54.0	34	PFI-8-27054	93
67.5	41	PFI-8-27067	104
81.0	49	PFI-8-27081	116
101.0	56	PFI-8-27101	126

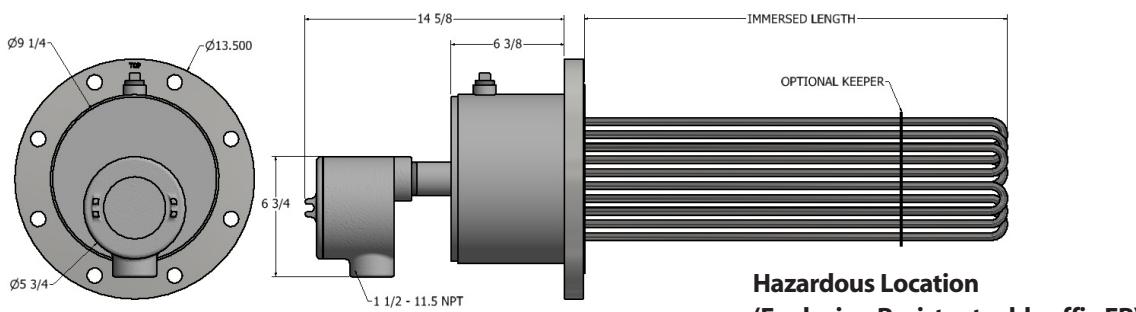
8" Flange 24 & 27 Elements



8" Flange 24 & 27 Elements



8" Flange 24 & 27 Elements





ASB Heating Elements Ltd.

3" -150 LB Flange Heaters - Steel Sheath

25 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
light oil

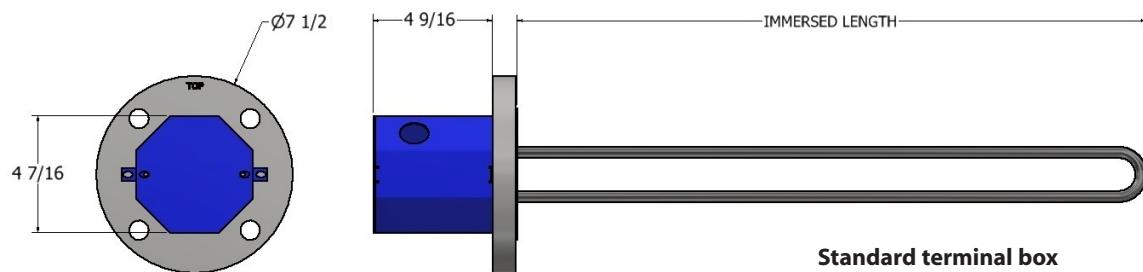
3" - 150 psi flange, 3 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
2.25	14	PFO-3-03002	13
3.00	18	PFO-3-03003	14
4.50	25	PFO-3-03004	15
5.25	28	PFO-3-03005	16
6.00	32	PFO-3-03006	16
7.50	39	PFO-3-03007	18
9.00	47	PFO-3-03309	19
11.25	54	PFO-3-03011	20

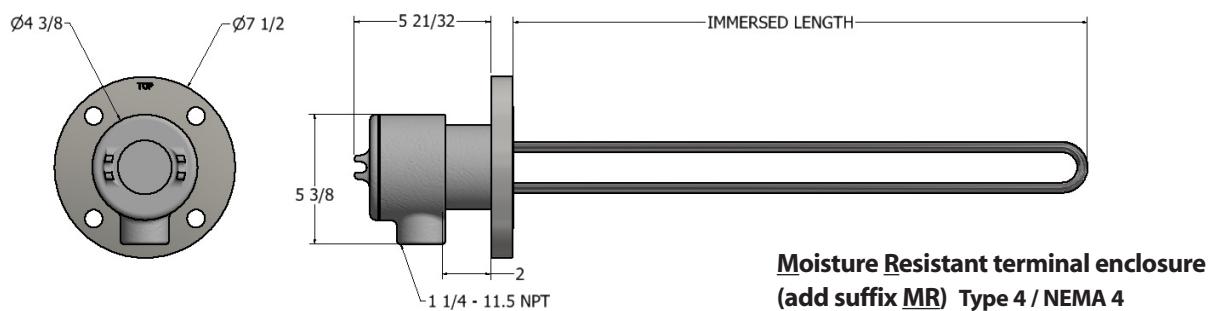
3" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFO-3-06004	16
6.0	18	PFO-3-06006	17
7.5	19	PFO-3-06007	17
9.0	25	PFO-3-06009	18
10.5	28	PFO-3-06010	19
12.0	32	PFO-3-06012	19
15.0	39	PFO-3-06015	21
18.0	47	PFO-3-06018	22
22.5	54	PFO-3-06022	23

3" Flange 3 & 6 Elements

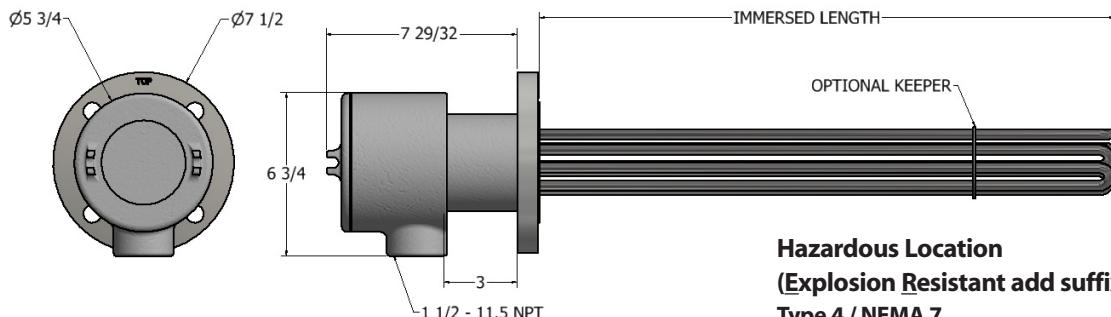


3" Flange 3 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

3" Flange 6 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

4" -150 LB Flange Heaters - Steel Sheath

25 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
light oil

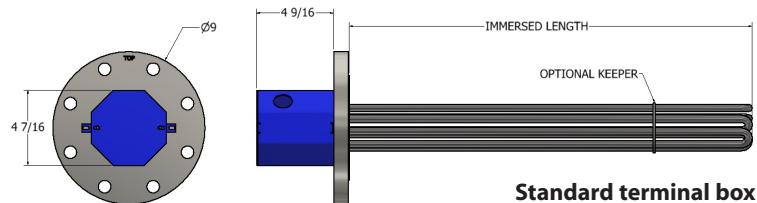
4" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFO-4-06004	17
6.0	18	PFO-4-06006	18
7.5	19	PFO-4-06007	18
9.0	25	PFO-4-06009	20
10.5	28	PFO-4-06010	21
12.0	32	PFO-4-06012	23
15.0	39	PFO-4-06015	25
18.0	47	PFO-4-06018	28
22.5	54	PFO-4-06022	30

4" - 150 psi flange, 9 elements in flange

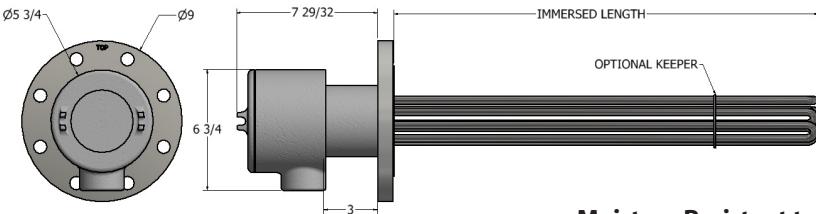
kw	immersed length B dim.	catalogue number	net weight (lb)
7.0	14	PFO-4-09007	19
9.0	18	PFO-4-09009	21
11.0	19	PFO-4-09011	22
13.5	25	PFO-4-09013	25
16.0	28	PFO-4-09016	26
18.0	32	PFO-4-09018	28
22.5	39	PFO-4-09022	32
27.0	47	PFO-4-09027	36
34.0	54	PFO-4-09034	39

4" Flange 6 & 9 Elements



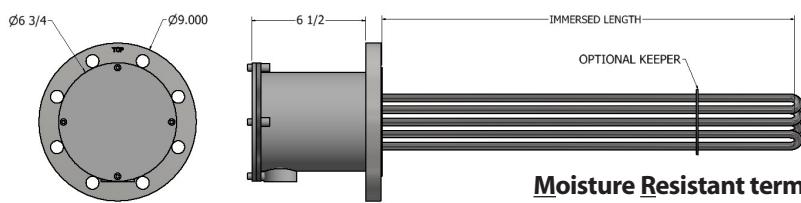
Standard terminal box

4" Flange 6 Elements



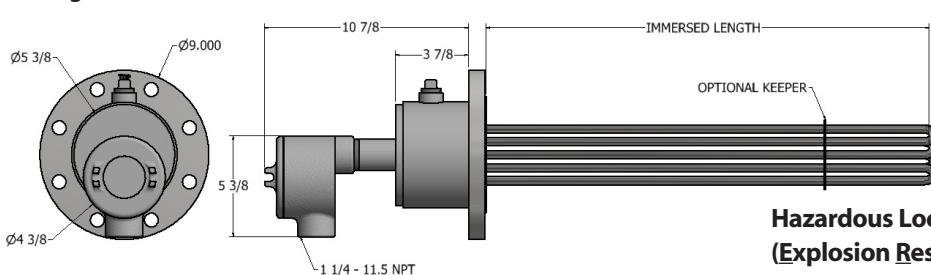
Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

4" Flange 9 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

4" Flange 9 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

5"-150 LB Flange Heaters - Steel Sheath

25watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
light oil

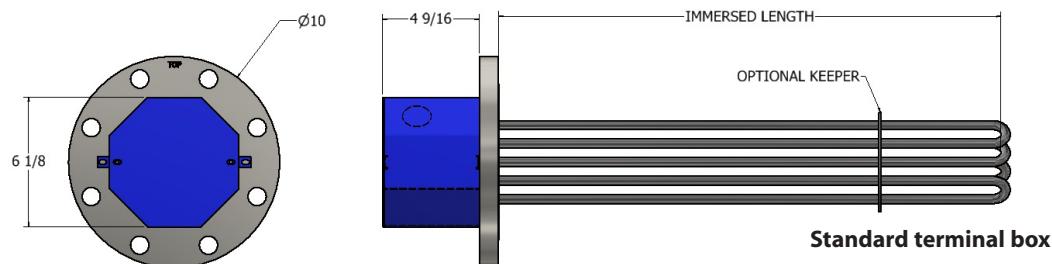
5" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFO-5-06004	28
6.0	18	PFO-5-06006	29
7.5	19	PFO-5-06007	29
9.0	25	PFO-5-06009	31
10.5	28	PFO-5-06010	32
12.0	32	PFO-5-06012	34
15.0	39	PFO-5-06015	36
18.0	47	PFO-5-06018	39
22.5	54	PFO-5-06022	41

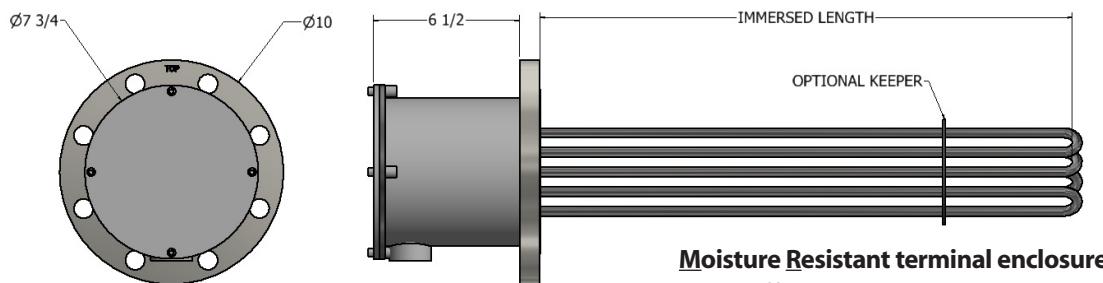
5" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
6.8	14	PFO-5-09006	30
9.0	18	PFO-5-09009	32
13.5	25	PFO-5-09013	36
16.0	28	PFO-5-09016	37
18.0	32	PFO-5-09018	39
22.5	39	PFO-5-09022	43
27.0	47	PFO-5-09027	47
- 34.0	54	PFO-5-09034	50

5" Flange 6 & 9 Elements

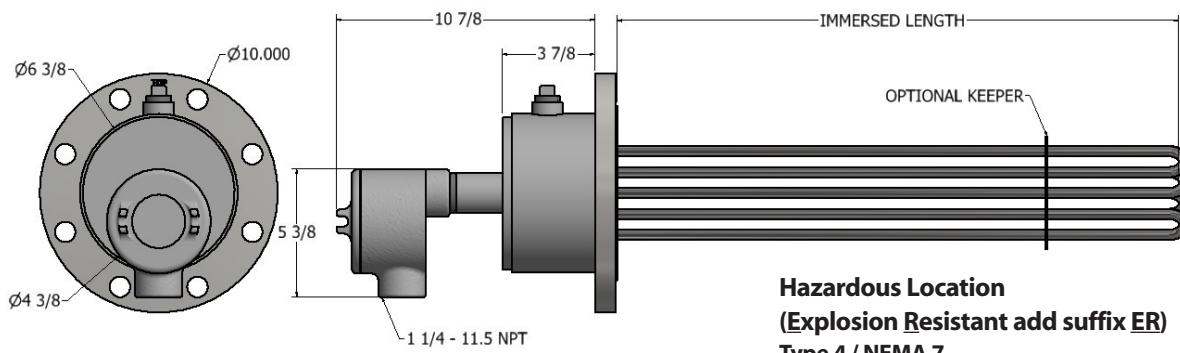


5" Flange 6 & 9 Elements



**Moisture Resistant terminal enclosure
(add suffix MR) Type 4 / NEMA 4**

5" Flange 9 Elements



**Hazardous Location
(Explosion Resistant add suffix ER)
Type 4 / NEMA 7**



ASB Heating Elements Ltd.

6"-150 LB Flange Heaters - Steel Sheath

25watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
light oil

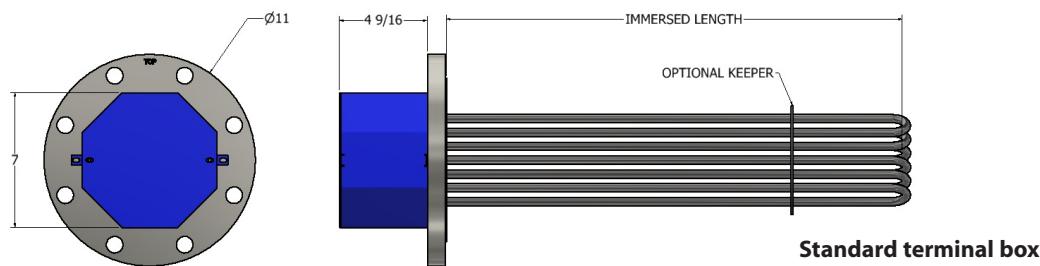
6" - 150 psi flange, 12 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	14	PFO-6-12009	40
12	18	PFO-6-12012	43
15	19	PFO-6-12015	44
18	25	PFO-6-12018	48
21	28	PFO-6-12021	50
24	32	PFO-6-12024	52
30	39	PFO-6-12030	57
36	47	PFO-6-12036	62
45	54	PFO-6-12045	67

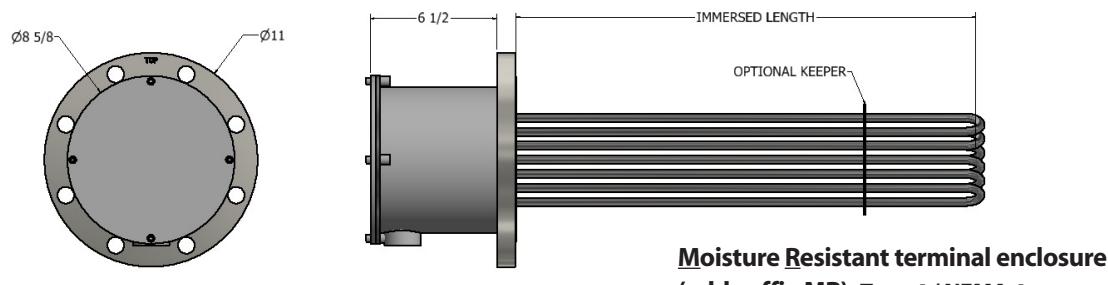
6" - 150 psi flange, 15 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
11.0	14	PFO-6-15011	43
15.0	18	PFO-6-15015	46
19.0	19	PFO-6-15019	47
22.5	25	PFO-6-15022	52
26.0	28	PFO-6-15026	54
30.0	32	PFO-6-15030	58
37.5	39	PFO-6-15037	64
45.0	47	PFO-6-15045	70
56.0	54	PFO-6-15056	76

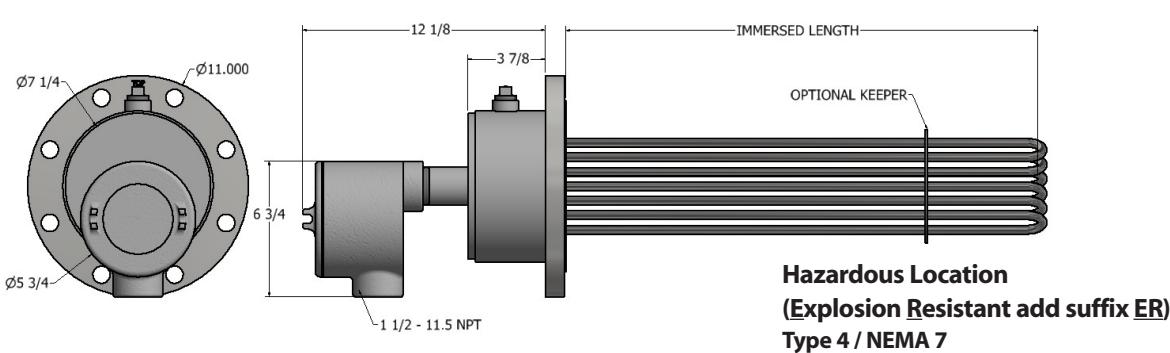
6" Flange 12 & 15 Elements



6" Flange 12 & 15 Elements



6" Flange 12 & 15 Elements





ASB Heating Elements Ltd.

8"-150 LB Flange Heaters - Steel Sheath

25watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
light oil

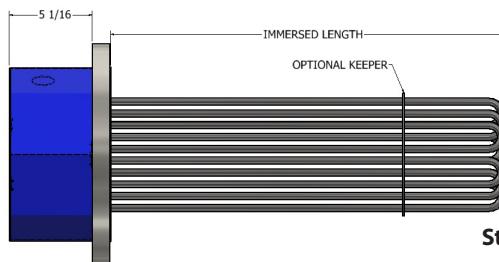
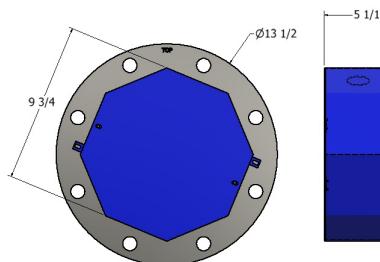
8" - 150 psi flange, 18 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
13.5	16	PFO-8-18013	58
18.0	20	PFO-8-18018	62
22.5	21	PFO-8-18022	63
27.0	27	PFO-8-18027	69
31.5	30	PFO-8-18031	72
36.0	34	PFO-8-18036	76
45.0	41	PFO-8-18045	83
54.0	49	PFO-8-18054	91
67.5	56	PFO-8-18067	98

8" - 150 psi flange, 21 elements in flange

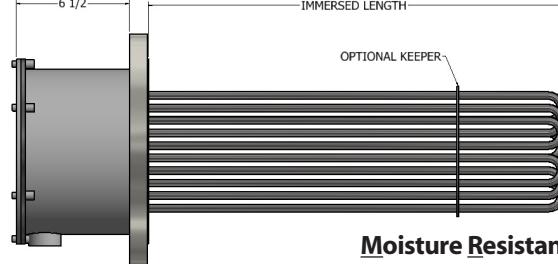
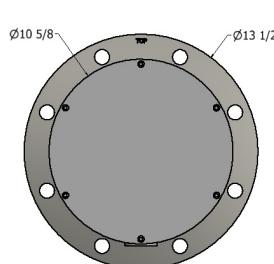
kw	immersed length B dim.	catalogue number	net weight (lb)
16.0	16	PFO-8-21016	61
21.0	20	PFO-8-21021	65
26.0	21	PFO-8-21026	67
31.5	27	PFO-8-21031	74
37.0	30	PFO-8-21037	77
42.0	34	PFO-8-21042	82
52.5	41	PFO-8-21052	90
63.0	49	PFO-8-21063	99
79.0	56	PFO-8-21079	107

8" Flange 18 & 21 Elements



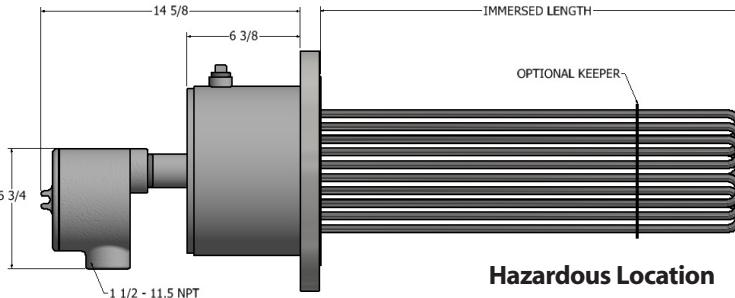
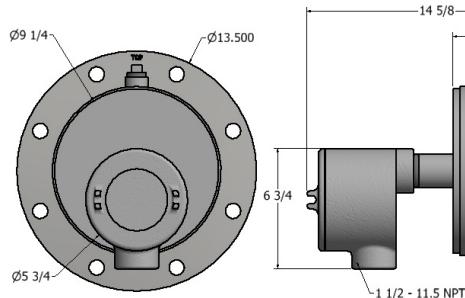
Standard terminal box

8" Flange 18 & 21 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

8" Flange 18 & 21 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

8"-150 LB Flange Heaters - Steel Sheath

25watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
light oil

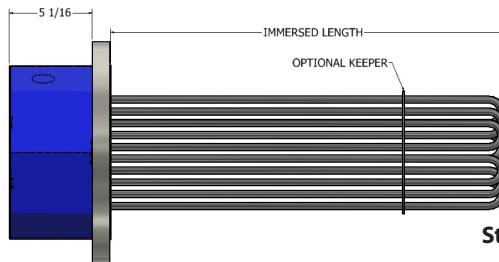
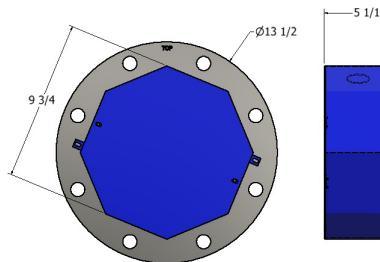
8" - 150 psi flange, 24 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
18	16	PFO-8-24018	63
24	20	PFO-8-24024	69
30	21	PFO-8-24030	70
36	27	PFO-8-24036	78
42	30	PFO-8-24042	82
48	34	PFO-8-24048	87
60	41	PFO-8-24060	97
72	49	PFO-8-24072	107
90	56	PFO-8-24090	117

8" - 150 psi flange, 27 elements in flange

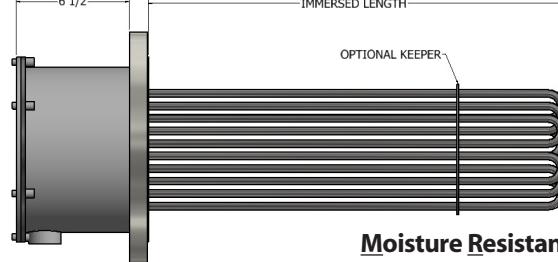
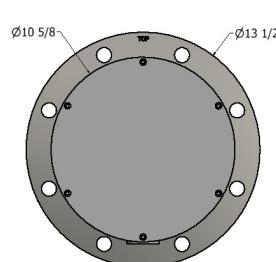
kw	immersed length B dim.	catalogue number	net weight (lb)
20.0	16	PFO-8-27020	66
27.0	20	PFO-8-27027	72
34.0	21	PFO-8-27034	74
40.5	27	PFO-8-27040	83
47.0	30	PFO-8-27047	87
54.0	34	PFO-8-27054	93
67.5	41	PFO-8-27067	104
81.0	49	PFO-8-27081	116
101.0	56	PFO-8-27101	126

8" Flange 24 & 27 Elements



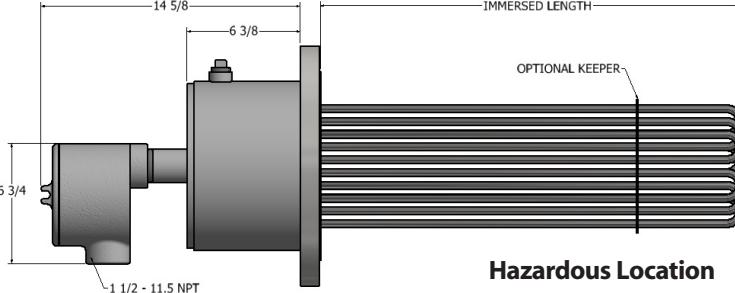
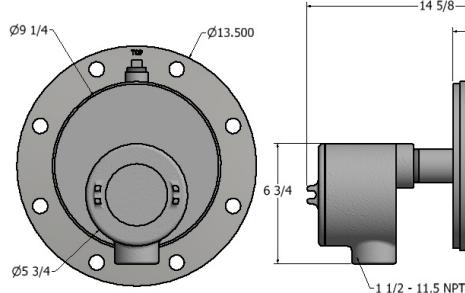
Standard terminal box

8" Flange 24 & 27 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

8" Flange 24 & 27 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

3" -150 LB Flange Heaters - Steel Sheath

18 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
hydraulic oil
heavy oil

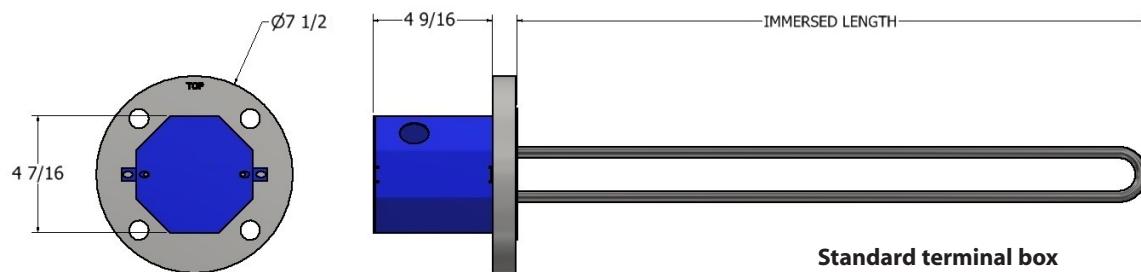
3" - 150 psi flange, 3 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
1.5	14	PFOL-3-03001	13
2.0	18	PFOL-3-03002	14
3.0	25	PFOL-3-03003	15
4.0	32	PFOL-3-03004	16
5.0	39	PFOL-3-03005	18
6.0	47	PFOL-3-03006	19
7.5	54	PFOL-3-03007	20

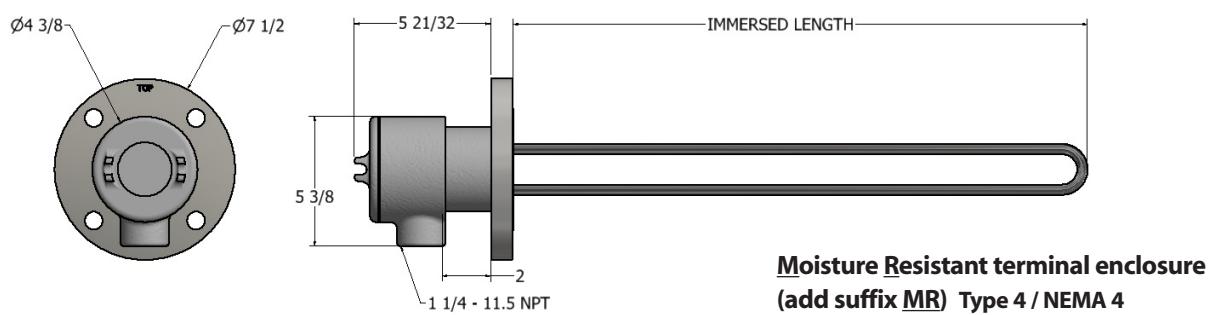
3" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
3	14	PFOL-3-06003	17
4	18	PFOL-3-06004	18
5	19	PFOL-3-06005	18
6	25	PFOL-3-06006	20
7	28	PFOL-3-06007	21
8	32	PFOL-3-06008	23
10	39	PFOL-3-06010	25
12	47	PFOL-3-06012	28
15	54	PFOL-3-06015	30

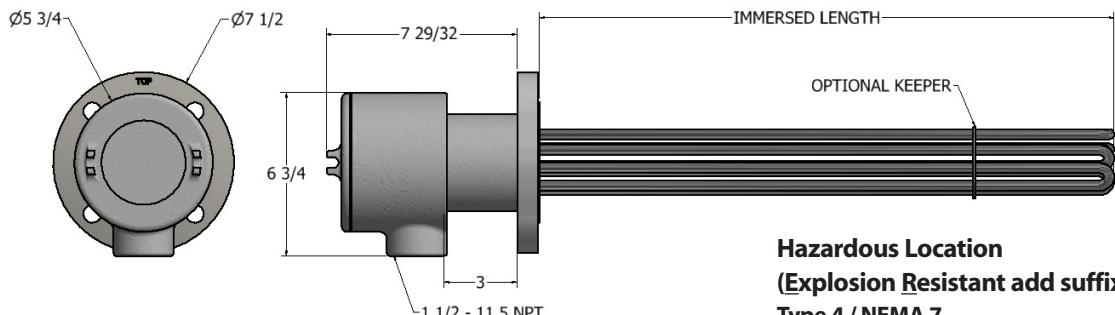
3" Flange 3 & 6 Elements



3" Flange 3 Elements



3" Flange 6 Elements





ASB Heating Elements Ltd.

4" -150 LB Flange Heaters - Steel Sheath

18 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
hydraulic oil
heavy oil

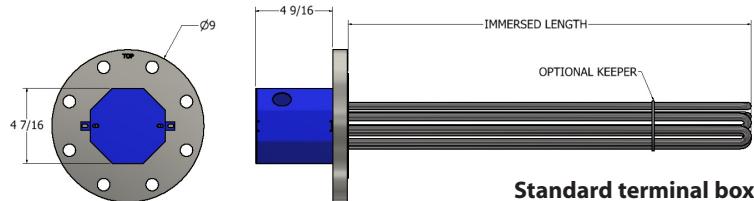
4" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
3	14	PFOL-4-06003	17
4	18	PFOL-4-06004	18
5	19	PFOL-4-06005	18
6	25	PFOL-4-06006	20
7	28	PFOL-4-06007	21
8	32	PFOL-4-06008	23
10	39	PFOL-4-06010	25
12	47	PFOL-4-06012	28
15	54	PFOL-4-06015	30

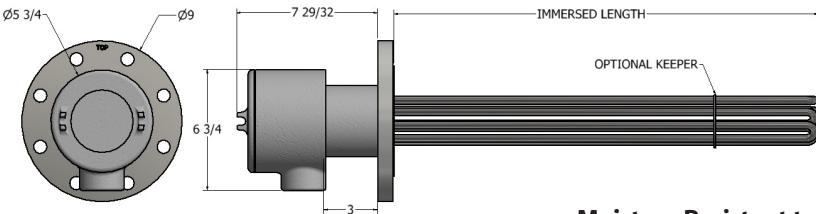
4" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFOL-4-09004	19
6.0	18	PFOL-4-09006	21
7.5	19	PFOL-4-09007	22
9.0	25	PFOL-4-09009	25
10.5	28	PFOL-4-09010	26
12.0	32	PFOL-4-09012	28
15.0	39	PFOL-4-09015	32
18.0	47	PFOL-4-09018	36
22.5	54	PFOL-4-09022	39

4" Flange 6 & 9 Elements



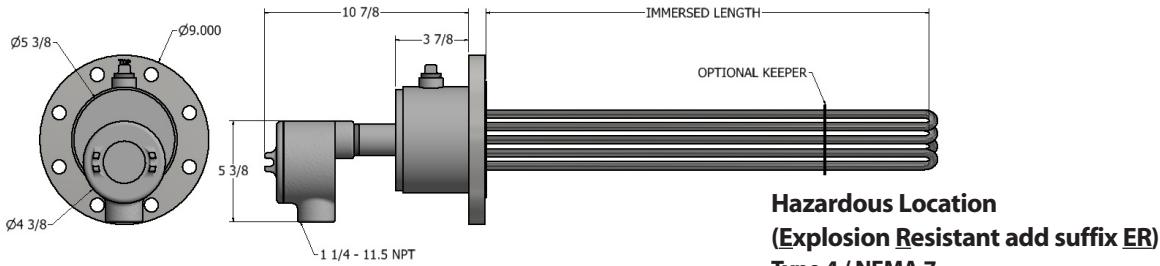
4" Flange 6 Elements



4" Flange 9 Elements



4" Flange 9 Elements





ASB Heating Elements Ltd.

5" -150 LB Flange Heaters - Steel Sheath

18 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
hydraulic oil
heavy oil

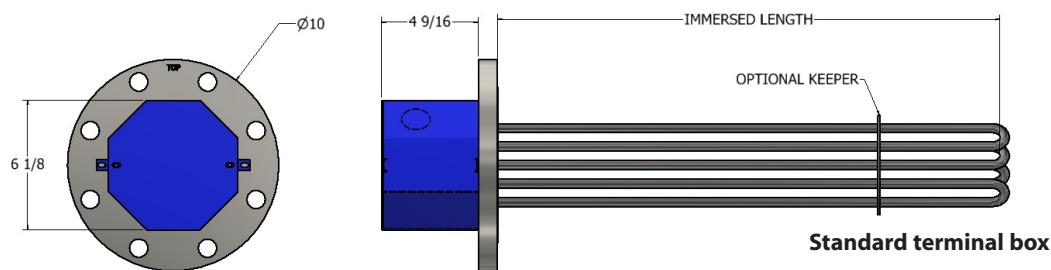
5" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
3	14	PFOL-5-06003	28
4	18	PFOL-5-06004	29
5	19	PFOL-5-06005	29
6	25	PFOL-5-06006	31
7	28	PFOL-5-06007	32
8	32	PFOL-5-06008	34
10	39	PFOL-5-06010	36
12	47	PFOL-5-06012	39
15	54	PFOL-5-06015	41

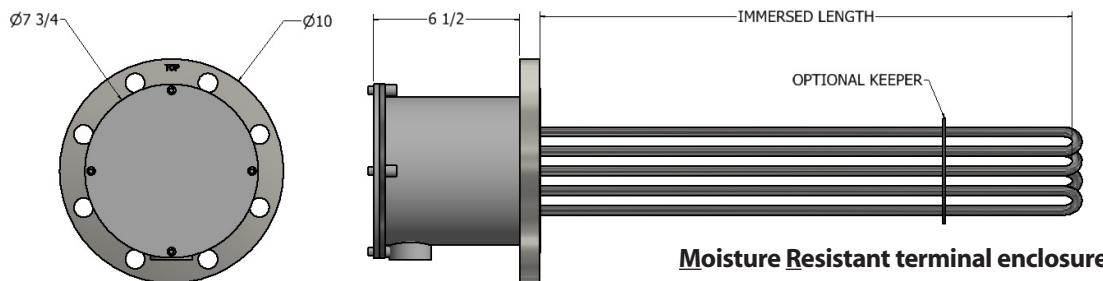
5" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFOL-5-09004	30
6.0	18	PFOL-5-09006	32
7.5	19	PFOL-5-09007	33
9.0	25	PFOL-5-09009	36
10.5	28	PFOL-5-09010	37
12.0	32	PFOL-5-09012	39
15.0	39	PFOL-5-09015	43
18.0	47	PFOL-5-09018	47
22.5	54	PFOL-5-09022	50

5" Flange 6 & 9 Elements

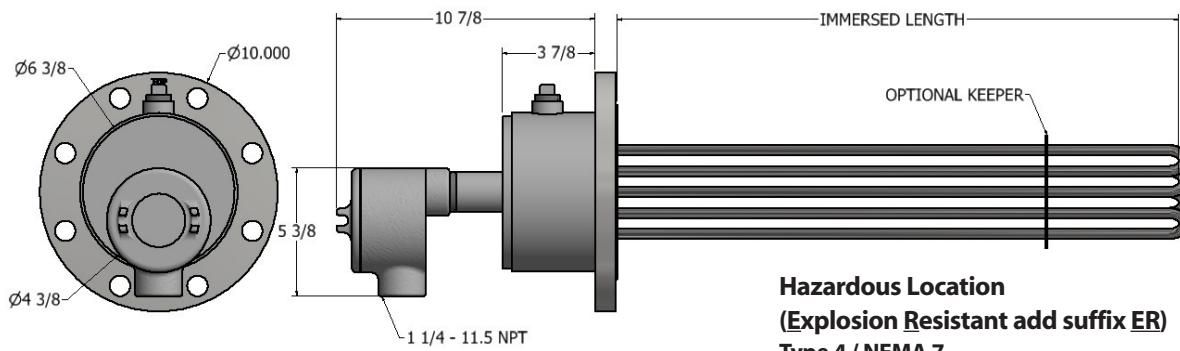


5" Flange 6 & 9 Elements



**Moisture Resistant terminal enclosure
(add suffix MR) Type 4 / NEMA 4**

5" Flange 9 Elements



**Hazardous Location
(Explosion Resistant add suffix ER)
Type 4 / NEMA 7**



ASB Heating Elements Ltd.

6" -150 LB Flange Heaters - Steel Sheath

18 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
hydraulic oil
heavy oil

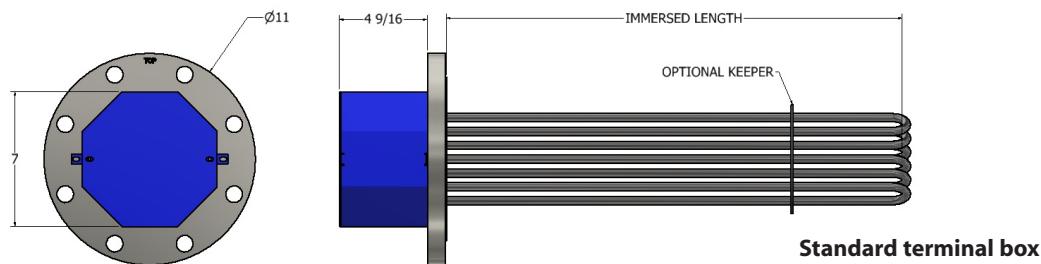
6" - 150 psi flange, 12 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
6	14	PFOL-6-12006	40
8	18	PFOL-6-12008	43
10	19	PFOL-6-12010	44
12	25	PFOL-6-12012	48
14	28	PFOL-6-12014	50
16	32	PFOL-6-12016	52
20	39	PFOL-6-12020	57
24	47	PFOL-6-12024	62
30	54	PFOL-6-12030	67

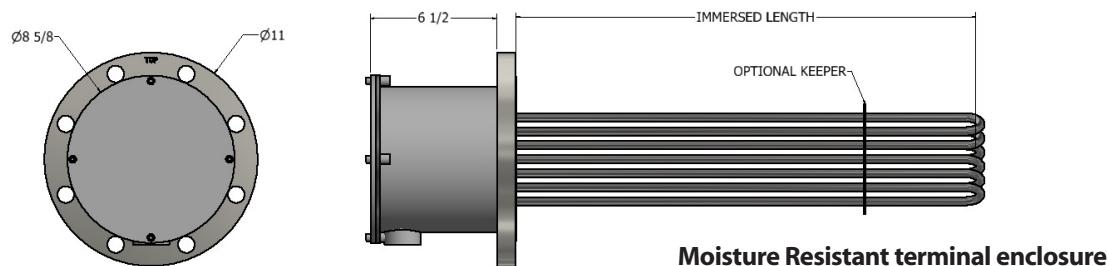
6" - 150 psi flange, 15 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
7.5	14	PFOL-6-15007	43
10.0	18	PFOL-6-15010	46
12.5	19	PFOL-6-15012	47
15.0	25	PFOL-6-15015	52
17.5	28	PFOL-6-15017	54
20.0	32	PFOL-6-15020	58
25.0	39	PFOL-6-15025	64
30.0	47	PFOL-6-15030	70
37.5	54	PFOL-6-15037	76

6" Flange 12 & 15 Elements

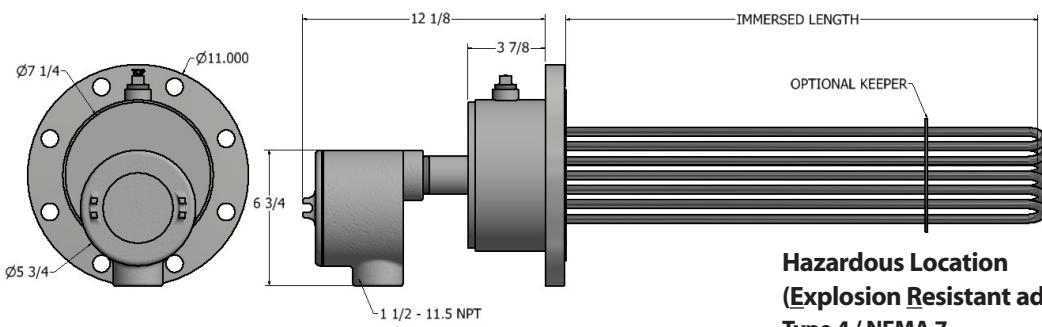


6" Flange 12 & 15 Elements



**Moisture Resistant terminal enclosure
(add suffix MR) Type 4 / NEMA 4**

6" Flange 12 & 15 Elements



**Hazardous Location
(Explosion Resistant add suffix ER)
Type 4 / NEMA 7**



ASB Heating Elements Ltd.

8" -150 LB Flange Heaters - Steel Sheath

18 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
hydraulic oil
heavy oil

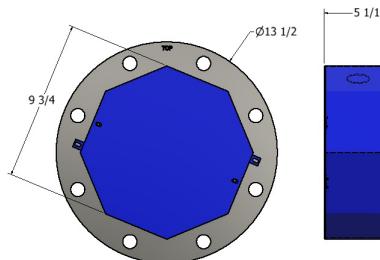
8" - 150 psi flange, 18 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
9	16	PFOL-8-18009	58
12	20	PFOL-8-18012	62
15	21	PFOL-8-18015	63
18	27	PFOL-8-18018	69
21	30	PFOL-8-18021	72
24	34	PFOL-8-18024	76
30	41	PFOL-8-18030	83
36	49	PFOL-8-18036	91
45	56	PFOL-8-18045	98

8" - 150 psi flange, 21 elements in flange

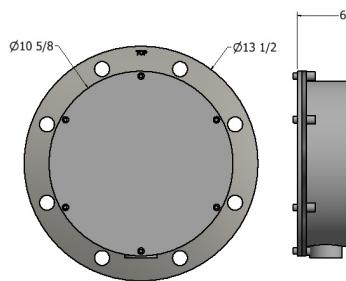
kw	immersed length B dim.	catalogue number	net weight (lb)
10.5	16	PFOL-8-21010	61
14.0	20	PFOL-8-21014	65
17.5	21	PFOL-8-21017	67
21.0	27	PFOL-8-21021	74
24.5	30	PFOL-8-21024	77
28.0	34	PFOL-8-21028	82
35.0	41	PFOL-8-21035	90
42.0	49	PFOL-8-21042	99
52.5	56	PFOL-8-21052	107

8" Flange 18 & 21 Elements



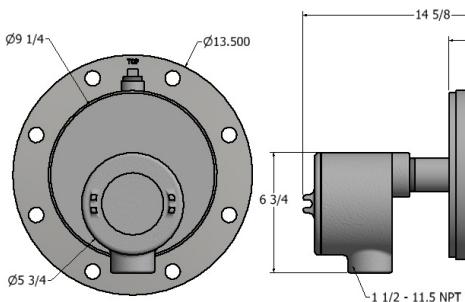
Standard terminal box

8" Flange 18 & 21 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

8" Flange 18 & 21 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

8" -150 LB Flange Heaters - Steel Sheath

18 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
hydraulic oil
heavy oil

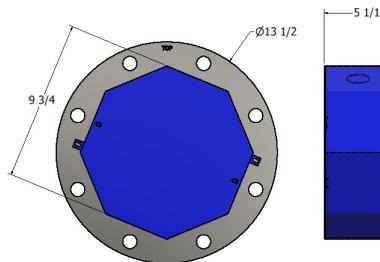
8" - 150 psi flange, 24 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
12	16	PFOL-8-24012	63
16	20	PFOL-8-24016	69
20	21	PFOL-8-24020	70
24	27	PFOL-8-24024	78
28	30	PFOL-8-24028	82
32	34	PFOL-8-24032	87
40	41	PFOL-8-24040	97
48	49	PFOL-8-24048	107
60	56	PFOL-8-24060	117

8" - 150 psi flange, 27 elements in flange

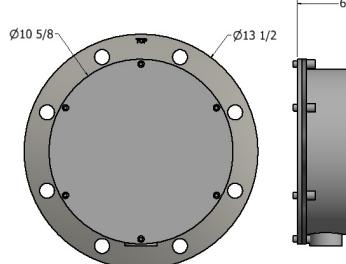
kw	immersed length B dim.	catalogue number	net weight (lb)
13.5	16	PFOL-8-27013	66
18.0	20	PFOL-8-27018	72
22.5	21	PFOL-8-27022	74
27.0	27	PFOL-8-27027	83
31.5	30	PFOL-8-27031	87
36.0	34	PFOL-8-27036	93
45.0	41	PFOL-8-27045	104
54.0	49	PFOL-8-27054	116
67.5	56	PFOL-8-27067	126

8" Flange 24 & 27 Elements



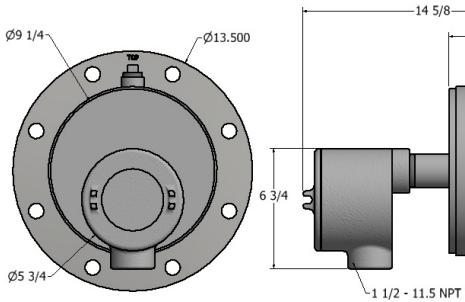
Standard terminal box

8" Flange 24 & 27 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

8" Flange 24 & 27 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

3" -150 LB Flange Heaters - Steel Sheath

12 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
medium - heavy oil
hydraulic oil

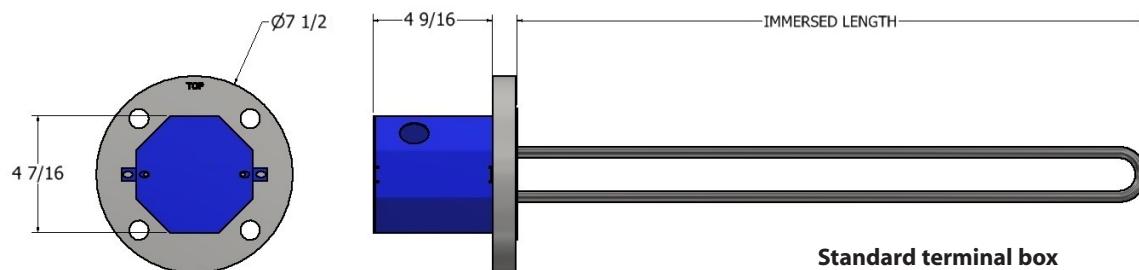
3" - 150 psi flange, 3 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
1.5	19	PFOX-3-03001	14
2.1	28	PFOX-3-03002	16
3.0	39	PFOX-3-03003	18
4.5	54	PFOX-3-03004	20

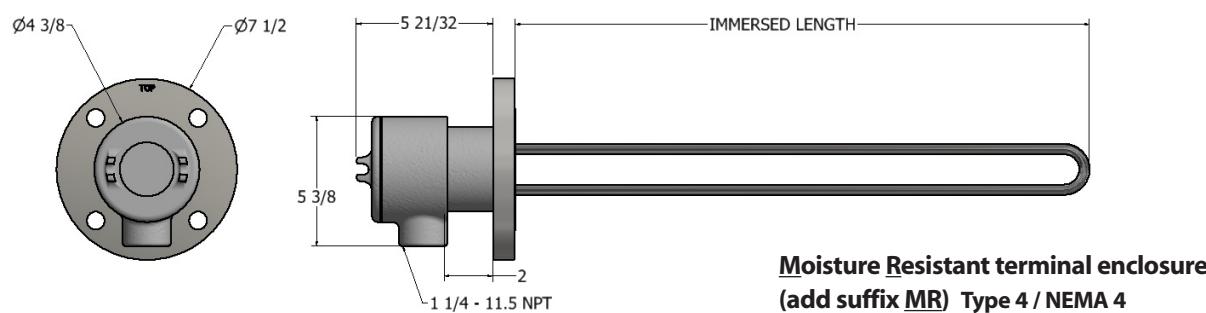
3" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
1.8	14	PFOX-3-06001	17
2.4	18	PFOX-3-06002	18
3.6	25	PFOX-3-06003	20
4.2	28	PFOX-3-06004	21
6.0	39	PFOX-3-06006	25
7.2	47	PFOX-3-06007	28
9.0	54	PFOX-3-06009	30

3" Flange 3 & 6 Elements

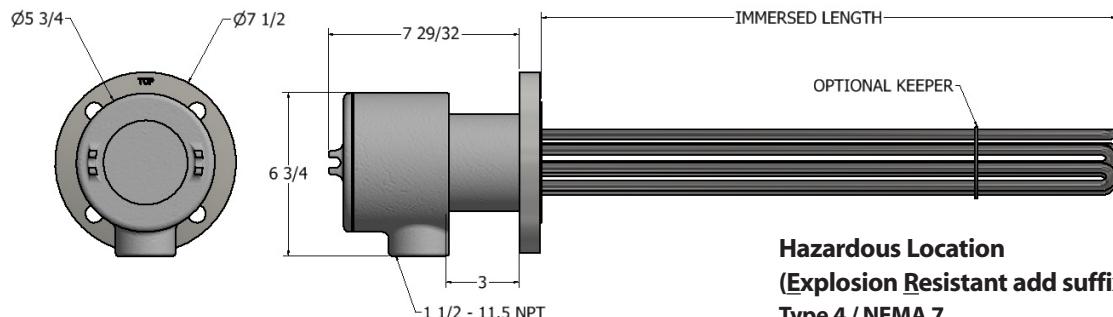


3" Flange 3 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

3" Flange 6 Elements



Hazardous Location
(**Explosion Resistant add suffix ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

4" -150 LB Flange Heaters - Steel Sheath

12 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
medium - heavy oil
hydraulic oil

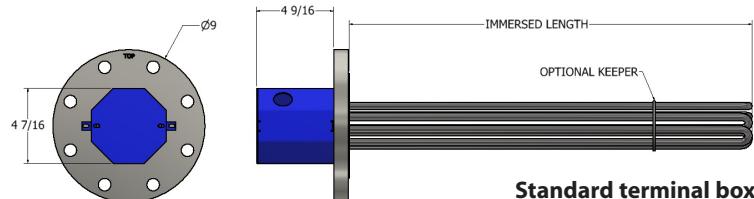
4" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
1.8	14	PFOX-4-06001	17
2.4	18	PFOX-4-06002	18
3.6	25	PFOX-4-06003	20
4.2	28	PFOX-4-06004	21
6.0	39	PFOX-4-06006	25
7.2	47	PFOX-4-06007	28
9.0	54	PFOX-4-06009	30

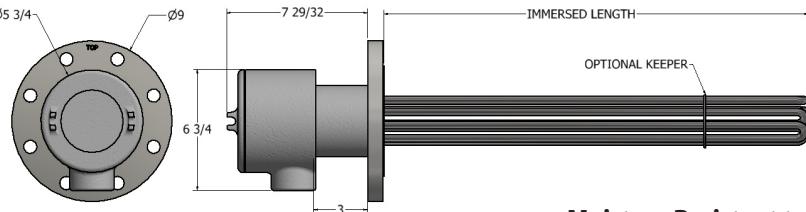
4" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
2.7	14	PFOX-4-09002	19
3.6	18	PFOX-4-09004	21
4.5	19	PFOX-4-09004	22
5.4	25	PFOX-4-09005	25
6.3	28	PFOX-4-09006	26
7.2	32	PFOX-4-09007	28
9.0	39	PFOX-4-09009	32
10.8	47	PFOX-4-09010	36
13.5	54	PFOX-4-09013	39

4" Flange 6 & 9 Elements



4" Flange 6 Elements

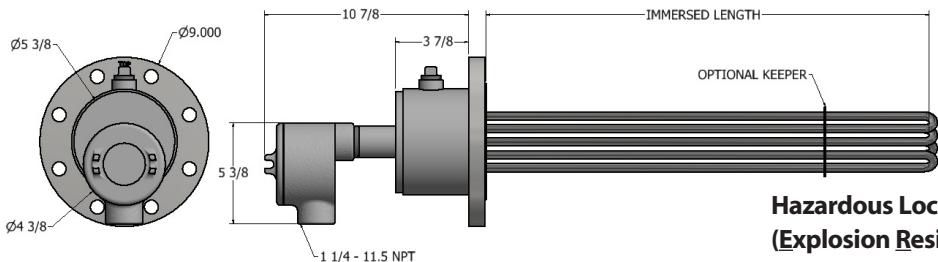


4" Flange 9 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

4" Flange 9 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

5" -150 LB Flange Heaters - Steel Sheath

12 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
medium - heavy oil
hydraulic oil

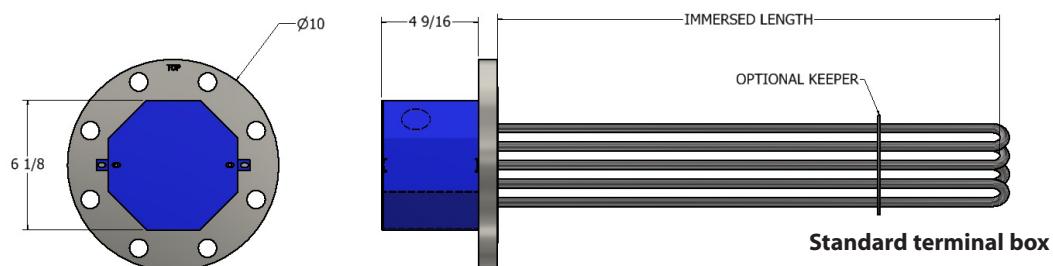
5" - 150 psi flange, 6 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
2.4	18	PFOX-5-06002	29
3.6	25	PFOX-5-06003	31
4.8	32	PFOX-5-06004	34
6.0	39	PFOX-5-06006	36
7.2	47	PFOX-5-06007	39
9.0	54	PFOX-5-06009	41

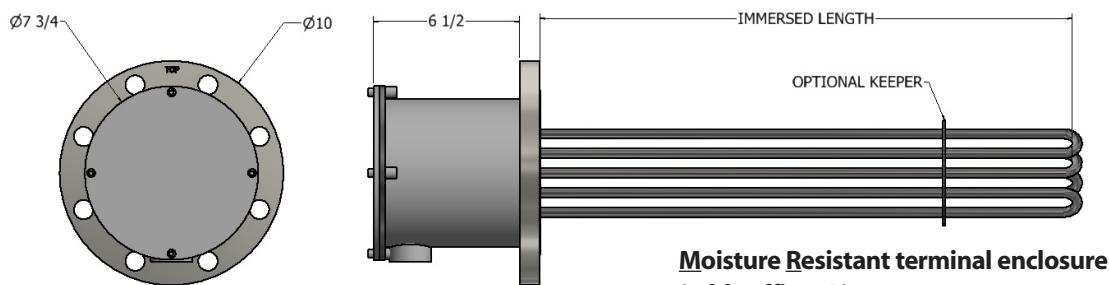
5" - 150 psi flange, 9 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
2.7	14	PFOX-5-09002	30
3.6	18	PFOX-5-09003	32
4.5	19	PFOX-5-09004	33
5.4	25	PFOX-5-09005	36
6.3	28	PFOX-5-09006	37
7.2	32	PFOX-5-09007	39
9.0	39	PFOX-5-09009	43
10.8	47	PFOX-5-09010	47
13.5	54	PFOX-5-09013	50

5" Flange 6 & 9 Elements

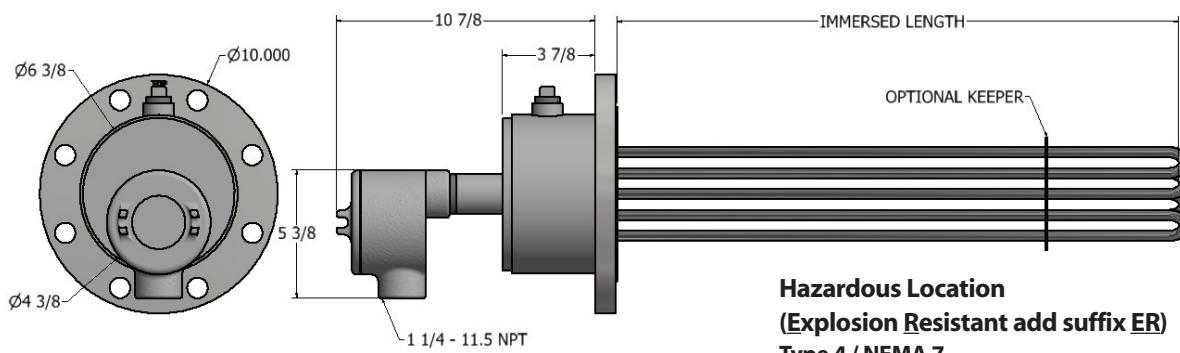


5" Flange 6 & 9 Elements



**Moisture Resistant terminal enclosure
(add suffix MR) Type 4 / NEMA 4**

5" Flange 9 Elements



**Hazardous Location
(Explosion Resistant add suffix ER)
Type 4 / NEMA 7**



ASB Heating Elements Ltd.

6" - 150 LB Flange Heaters - Steel Sheath

12 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:

medium - heavy oil
hydraulic oil

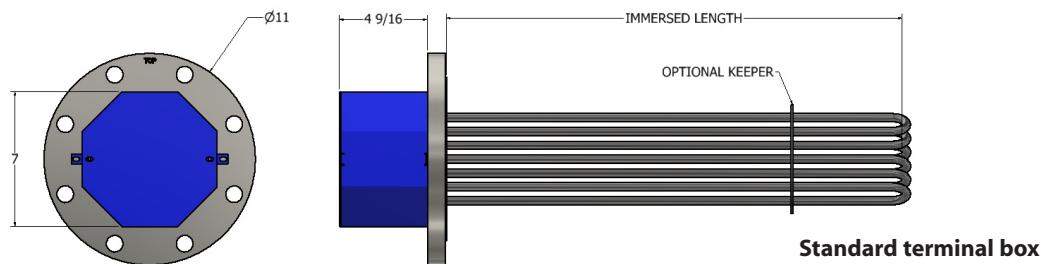
6" - 150 psi flange, 12 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
3.6	14	PFOX-6-12003	40
4.8	18	PFOX-6-12004	43
6.0	19	PFOX-6-12006	44
7.2	25	PFOX-6-12007	48
8.4	28	PFOX-6-12008	50
9.6	32	PFOX-6-12009	52
12.0	39	PFOX-6-12012	57
14.4	47	PFOX-6-12014	62
18.0	54	PFOX-6-12018	67

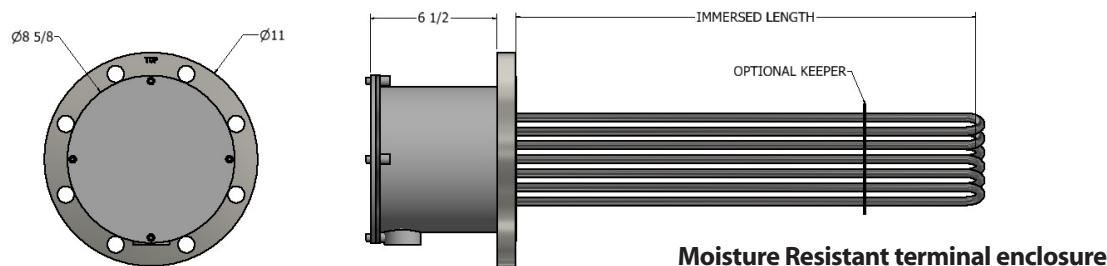
6" - 150 psi flange, 15 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
4.5	14	PFOX-6-15004	43
6.0	18	PFOX-6-15006	46
7.5	19	PFOX-6-15007	47
9.0	25	PFOX-6-15009	52
10.5	28	PFOX-6-15010	54
12.0	32	PFOX-6-15012	58
15.0	39	PFOX-6-15015	64
18.0	47	PFOX-6-15018	70
22.5	54	PFOX-6-15022	76

6" Flange 12 & 15 Elements

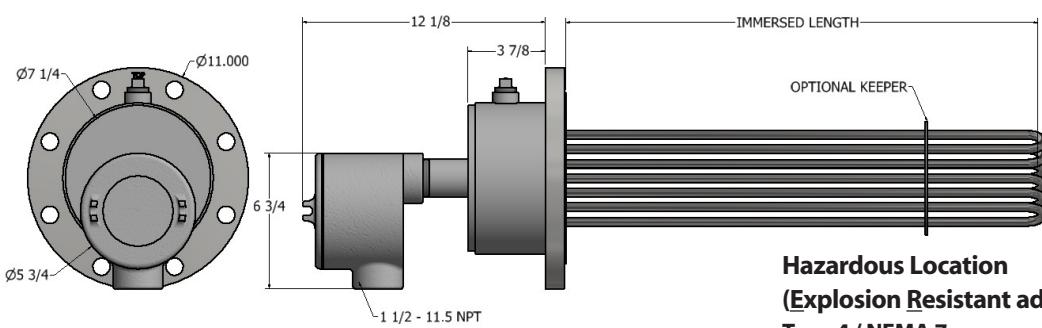


6" Flange 12 & 15 Elements



**Moisture Resistant terminal enclosure
(add suffix MR) Type 4 / NEMA 4**

6" Flange 12 & 15 Elements



**Hazardous Location
(Explosion Resistant add suffix ER)
Type 4 / NEMA 7**



ASB Heating Elements Ltd.

8" -150 LB Flange Heaters - Steel Sheath

12 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:
medium - heavy oil
hydraulic oil

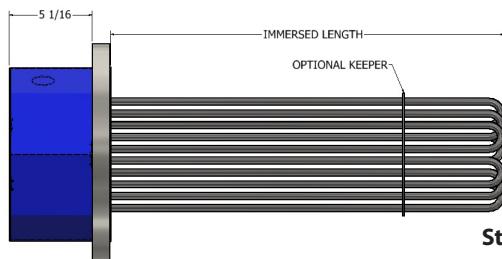
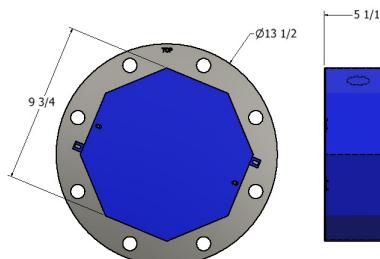
8" - 150 psi flange, 18 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
5.5	16	PFOX-8-18005	58
7.0	20	PFOX-8-18007	62
9.0	21	PFOX-8-18009	63
11.0	27	PFOX-8-18011	69
12.6	30	PFOX-8-18012	72
14.0	34	PFOX-8-18014	76
18.0	41	PFOX-8-18018	83
22.0	49	PFOX-8-18022	91
27.0	56	PFOX-8-18027	98

8" - 150 psi flange, 21 elements in flange

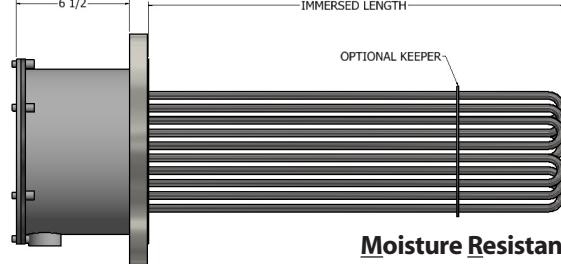
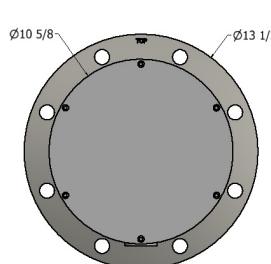
kw	immersed length B dim.	catalogue number	net weight (lb)
6.0	16	PFOX-8-21006	61
8.0	20	PFOX-8-21008	65
10.5	21	PFOX-8-21010	67
13.0	27	PFOX-8-21013	74
15.0	30	PFOX-8-21015	77
17.0	34	PFOX-8-21017	82
21.0	41	PFOX-8-21021	90
25.0	49	PFOX-8-21025	99
31.5	56	PFOX-8-21031	107

8" Flange 18 & 21 Elements



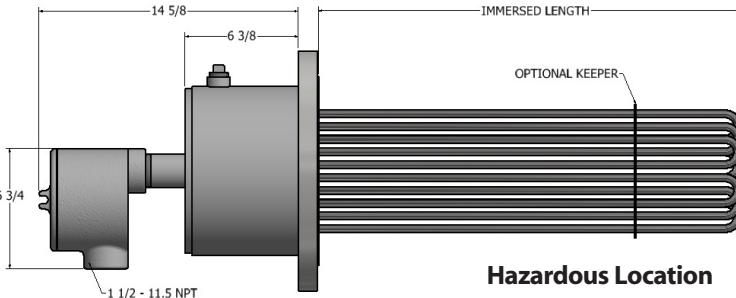
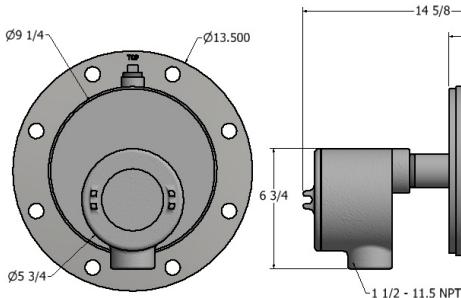
Standard terminal box

8" Flange 18 & 21 Elements



Moisture Resistant terminal enclosure
(add suffix **MR**) Type 4 / NEMA 4

8" Flange 18 & 21 Elements



Hazardous Location
(Explosion Resistant add suffix **ER**)
Type 4 / NEMA 7



ASB Heating Elements Ltd.

8" -150 LB Flange Heaters - Steel Sheath

12 watts/in² Steel Sheath

150 psi steel flange - ANSI rated

4" cold section

Up to 600 volts (specify voltage and 1 or 3 phase when ordering)

Typically to heat:

medium - heavy oil
hydraulic oil

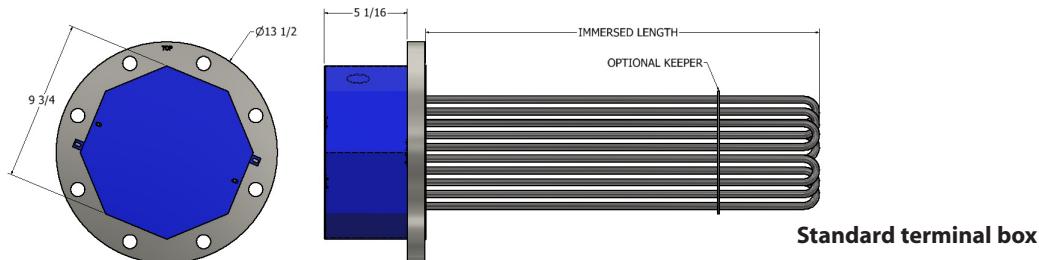
8" - 150 psi flange, 24 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
7.2	16	PFOX-8-24007	58
9.6	20	PFOX-8-24009	62
12.0	21	PFOX-8-24012	63
14.0	27	PFOX-8-24014	69
17.0	30	PFOX-8-24017	72
19.0	34	PFOX-8-24019	76
24.0	41	PFOX-8-24024	83
29.0	49	PFOX-8-24029	91
36.0	56	PFOX-8-24036	98

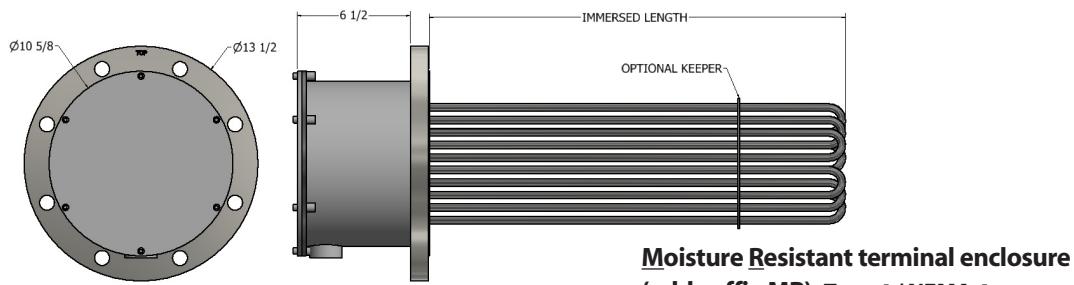
8" - 150 psi flange, 27 elements in flange

kw	immersed length B dim.	catalogue number	net weight (lb)
8.0	16	PFOX-8-27008	61
11.0	20	PFOX-8-27011	65
13.5	21	PFOX-8-27013	67
16.0	27	PFOX-8-27016	74
19.0	30	PFOX-8-27019	77
22.0	34	PFOX-8-27022	82
27.0	41	PFOX-8-27027	90
32.0	49	PFOX-8-27032	99
40.5	56	PFOX-8-27040	107

8" Flange 24 & 27 Elements



8" Flange 24 & 27 Elements



8" Flange 24 & 27 Elements

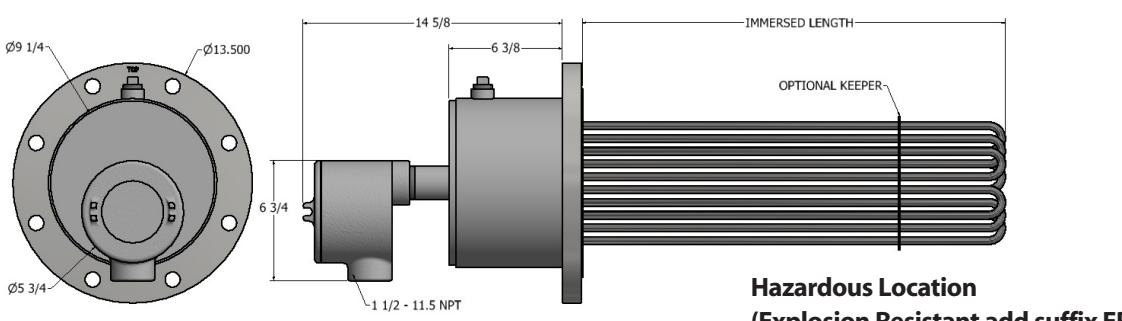
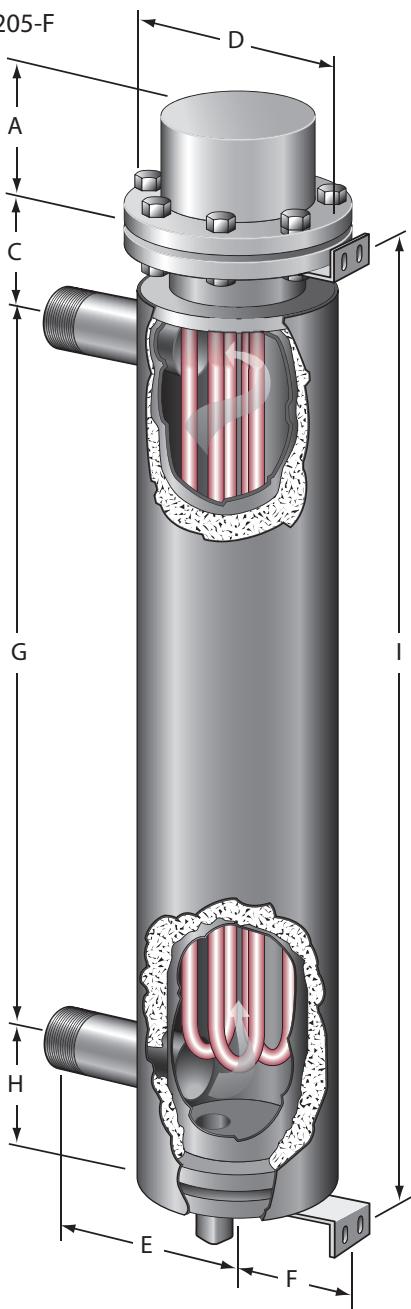


Figure 205-F



Circulation Heaters

A circulation heater is designed to heat liquids or gases as they pass though the unit. Similar to a heat exchanger, except this unit generates its' own heat. An electric fired circulation heater covers a broad range of heating applications. A flanged heater is installed into a pipe body and multiple units can be series connected to give you any kilowatt size.

Common features:

Flange Heater

- Typically units shown on pages C1 to C18
- Custom heaters designed for your special requirements
- General Purpose, Moisture Resistant, or Hazardous Location terminal boxes available
- Copper, steel, stainless steel, Incoloy and other specialty sheathed heating elements available

Pipe Body

- Normally mild steel
- Stainless steel vessels available
- Can be vertically or horizontally mounted
- Vessel is insulated and has a painted steel outer casing
- Weather resistant casing also available
- Typically NPT inlet and outlet connections
- Flanged inlet and outlets available
- Overall length approximately 10" longer than the flanged heater

Dimensions are for reference only.

Approval drawings supplied upon request.

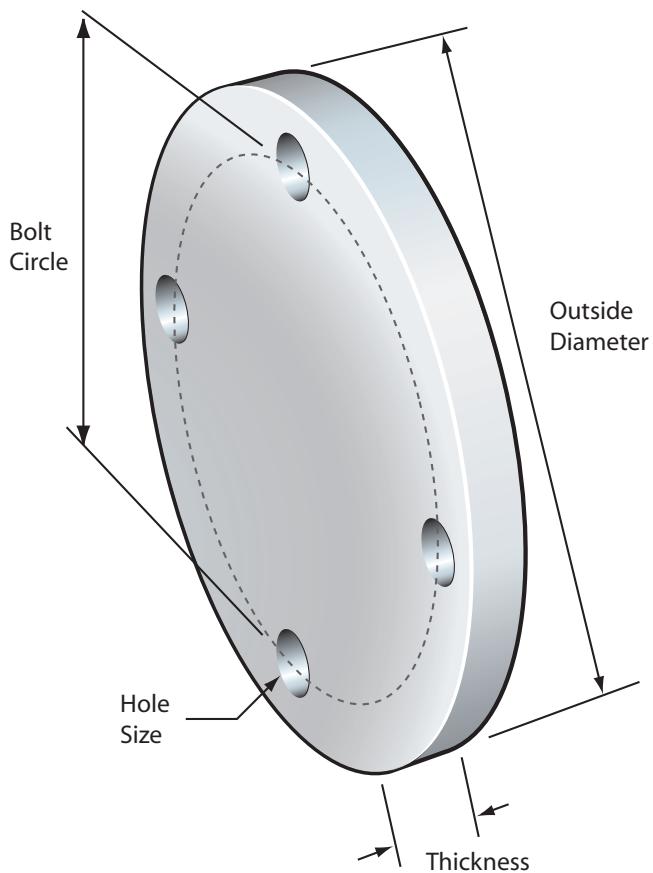
Circulation Heater Dimensions

Vessel size	A	C	D	E	F	G	H	I	Inlet/outlet
3"		3 1/2	7 1/2	9 1/4	5 1/2		3 1/2		1" NPT
4"		3 1/2	9	10 1/2	6 1/4	Immersion heater "B" dim. + C	3 1/2	G + C + H	1" NPT
5"	4 5/8	4	10	10 3/4	6 3/4		4		2" NPT
6"		4	11	11 1/2	7 1/4		4		2" NPT
8"		4 1/4	13 1/2	13 1/4	8 1/2		4 1/4		2 1/2" NPT



ASB Heating Elements Ltd.

Flange Dimensions



Nominal ANSI Flange Dimensions

Nominal Pipe Diameter	3"	4"	5"	6"	8"	10"	12"	14"
Nominal Rating	150# 300#	150# 300#	150# 300#	150# 300#	150# 300#	150# 300#	150# 300#	150# 300#
Thickness	15/16 1 1/8	15/16 1 1/4	15/16 1 3/8	1 1 7/16	1 1/8 1 5/8	1 3/16 1 7/8	1 1/4 2	1 3/8 2 1/8
Bolt Circle Dia.	6 6 5/8	7 1/2 7 7/8	8 1/2 9 1/4	9 1/2 10 5/8	11 3/4 13	14 1/4 15 1/4	17 17 3/4	18 3/4 20 1/4
Outside Diameter	7 1/2 8 1/4	9 10	10 11	11 12 1/2	13 1/2 15	16 17 1/2	19 20 1/2	21 23
Hole Size	3/4 7/8	3/4 7/8	7/8 7/8	7/8 7/8	7/8 1	1 1 1/8	1 1 1/4	1 1/8 1 1/4
Number of Holes	4	8	8	8	8	12	12	16

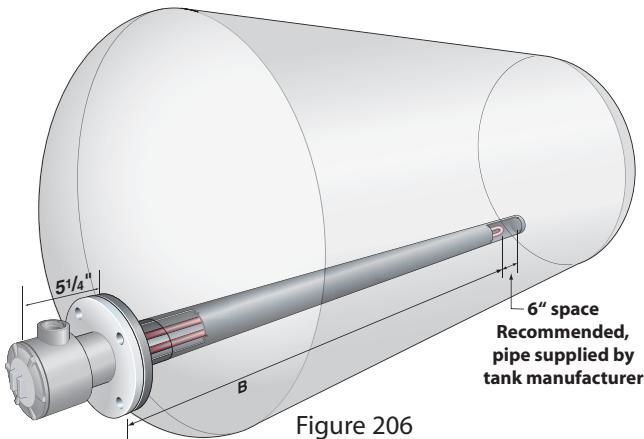


Figure 206

Pipe Insert Heaters offer you the advantages of direct immersion heat, and the ability to service the heater without draining the tank. The Incoloy sheathed element inside the pipe is carefully designed for this application, and transfers its heat to the inside pipe wall by convection and radiation. The large surface area of the pipe in contact with your liquid greatly reduces the watt density (watts/in²), making the pipe insert heaters ideally suited for heating:

- very viscous materials like Bunker C Fuel Oil,
- temperature sensitive materials like glucose, liquid sugar
- bulk storage of corrosive material

Pipe inside the tank supplied by the tank manufacturer

Low Liquid Protection

To prevent Low Liquid failure, one of multiple heaters should have a built-in thermocouple, series PFHK, and this heater must be mounted slightly higher than other heaters in the tank. When a Low Liquid event happens the air temperature inside the pipe rises dramatically and the thermocouple sends the temperature signal to your remote mounted high limit control for shutdown.

3" 150 psi flange mounting

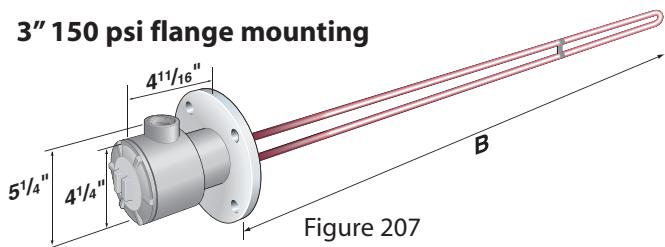


Figure 207

2" NPT screw plug mounting

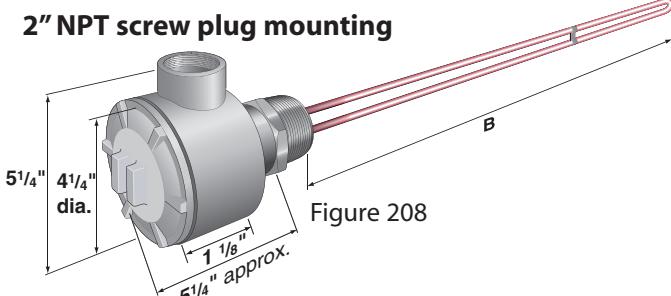


Figure 208

Typically to heat:
Incoloy element(s)
Up to 600 volts
(specify voltage when ordering)

asphalt, tar, starch, glucose, sugar,
large storage tanks, corrosive liquid

1 element 1phase

kw	(B) insert length (ft) into pipe	catalogue number	net weight (lb)
	Fig. 207 standard	Fig. 207 with "K" thermocouple	
1	2 1/2	PFH-1001MR PFHK-1001MR	15
2	4 1/2	PFH-1002MR PFHK-1002MR	17
3	6 1/2	PFH-1003MR PFHK-1003MR	19
4	8 1/2	PFH-1004MR PFHK-1004MR	21
5	10 1/2	PFH-1005MR PFHK-1005MR	23
6	12 1/2	PFH-1006MR PFHK-1006MR	25
7	14 1/2	PFH-1007MR PFHK-1007MR	27
8	16 1/2	PFH-1008MR PFHK-1008MR	29
9	18 1/2	PFH-1009MR PFHK-1009MR	31
10	20 1/2	PFH-1010MR PFHK-1010MR	33
11	22 1/2	PFH-1011MR PFHK-1011MR	35
12	24 1/2	PFH-1012MR PFHK-1012MR	37
13	26 1/2	PFH-1013MR PFHK-1013MR	39

3 elements (specify 1 or 3 phase)

kw	(B) insert length (ft) into pipe	catalogue number	net weight (lb)
	Fig. 207 standard	Fig. 207 with "K" thermocouple	
2.0	2 1/2	PFH-3002MR PFHK-3002MR	16
3.5	4 1/2	PFH-3003MR PFHK-3003MR	18
5.0	6 1/2	PFH-3005MR PFHK-3005MR	20
7.5	8 1/2	PFH-3007MR PFHK-3007MR	22
9.5	10 1/2	PFH-3009MR PFHK-3009MR	25
11	12 1/2	PFH-3011MR PFHK-3011MR	27
13	14 1/2	PFH-3013MR PFHK-3013MR	29
15	16 1/2	PFH-3015MR PFHK-3015MR	31
17	18 1/2	PFH-3017MR PFHK-3017MR	33
19	20 1/2	PFH-3019MR PFHK-3019MR	35
21	22 1/2	PFH-3021MR PFHK-3021MR	37
23	24 1/2	PFH-3023MR PFHK-3023MR	39
25	26 1/2	PFH-3025MR PFHK-3025MR	41

1 element 1phase

kw	(B) insert length (ft) into pipe	catalogue number	net weight (lb)
	Fig. 208 standard	Fig. 208 with "K" thermocouple	
1	2 1/2	SPH-1001MR SPHK-1001MR	8
2	4 1/2	SPH-1002MR SPHK-1002MR	10
3	6 1/2	SPH-1003MR SPHK-1003MR	12
4	8 1/2	SPH-1004MR SPHK-1004MR	14
5	10 1/2	SPH-1005MR SPHK-1005MR	16
6	11 1/2	SPH-1006MR SPHK-1006MR	18

2 elements 1 phase

kw	(B) insert length (ft) into pipe	catalogue number	net weight (lb)
	Fig. 208 standard	Fig. 208 with "K" thermocouple	
1.5	2 1/2	SPH-2001MR SPHK-2001MR	9
3.0	4 1/2	SPH-2003MR SPHK-2003MR	11
4.0	6 1/2	SPH-2004MR SPHK-2004MR	13
6.0	8 1/2	SPH-2006MR SPHK-2006MR	15
7.5	10 1/2	SPH-2007MR SPHK-2007MR	17
8.5	11 1/2	SPH-2008MR SPHK-2008MR	19



ASB Heating Elements Ltd.

Pipe Insert Heater

2 1/2" steel screw plug
Requires a 2 1/2" half coupling welded into tank
Includes pipe well, 2" NPT schedule 40 carbon steel pipe
Up to 600 volts
Optional "K" type High Limit Thermocouple
Optional Auto-reset High Limit
Weather Resistant terminal box

(specify voltage and 1 or 3 phase when ordering)

Typically to heat:
asphalt, tar, starch,
glucose, sugar
large storage tanks, corrosive liquid

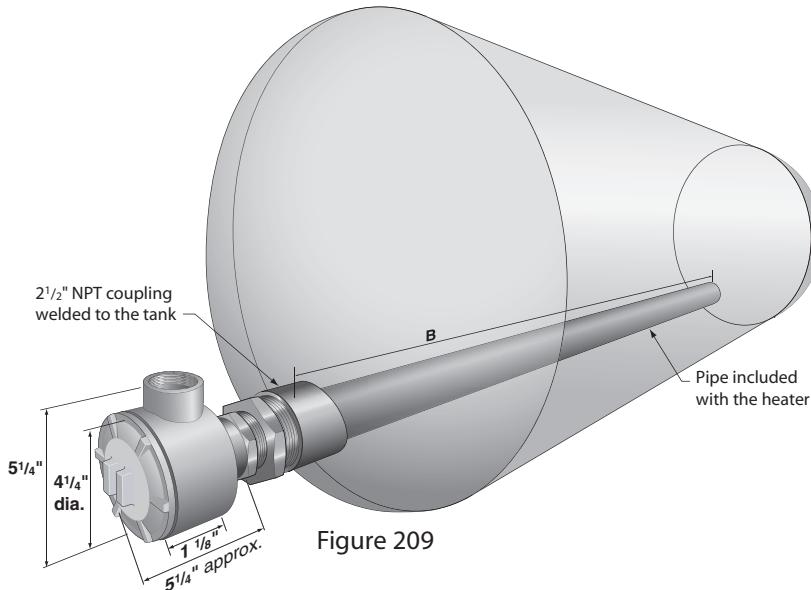


Figure 209

2 1/2" NPT screw plug mount (pipe included)

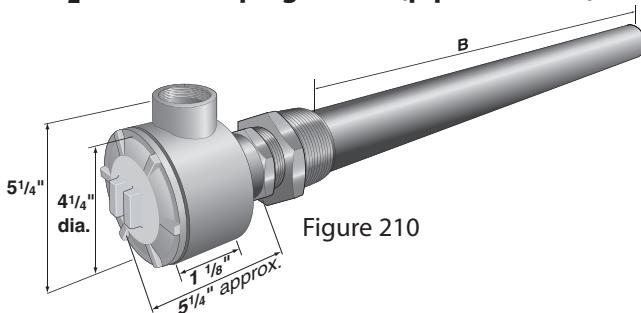


Figure 210

kw	immersed length (ft)	pipe B dim.	watt density watt/in ²	Fig. 210 standard	catalogue number	Fig. 210 with "K" thermocouple	Fig. 210 with High Limit
1	2	5	SPA-2501MR	SPAK-2501MR	SPAHL-2501MR		
2	2 1/2	8	SPA-2502MR	SPAK-2502MR	SPAHL-2502MR		
3	3 1/2	10	SPA-2503MR	SPAK-2503MR	SPAHL-2503MR		
4	4	11	SPA-2504MR	SPAK-2504MR	SPAHL-2504MR		
5	4 3/4	11	SPA-2505MR	SPAK-2505MR	SPAHL-2505MR		
6	5 1/2	12	SPA-2506MR	SPAK-2506MR	SPAHL-2506MR		
7	6	12	SPA-2507MR	SPAK-2507MR	SPAHL-2507MR		
8	6 3/4	13	SPA-2508MR	SPAK-2508MR	SPAHL-2508MR		
9	7 1/2	13	SPA-2509MR	SPAK-2509MR	SPAHL-2509MR		
10	8	13	SPA-2510MR	SPAK-2510MR	SPAHL-2510MR		
11	9 3/4	12	SPA-2511MR	SPAK-2511MR	SPAHL-2511MR		
12	9 1/2	13	SPA-2512MR	SPAK-2512MR	SPAHL-2512MR		
13	10	14	SPA-2513MR	SPAK-2513MR	SPAHL-2513MR		

Pipe Insert Heaters offer you the advantages of direct immersion heat, and the ability to service the heater without draining the tank. The Incoloy sheathed element inside the pipe is carefully designed for this application, and transfers its heat to the inside pipe wall by convection and radiation. The large surface area of the pipe in contact with your liquid greatly reduces the watt density (watts/in²), making the pipe insert heaters ideally suited for heating:

- very viscous materials like Bunker C Fuel Oil,
- temperature sensitive materials like glucose, liquid sugar
- bulk storage of corrosive material

SPA series pipe heaters come complete with a mild steel pipe well

Low Liquid Protection

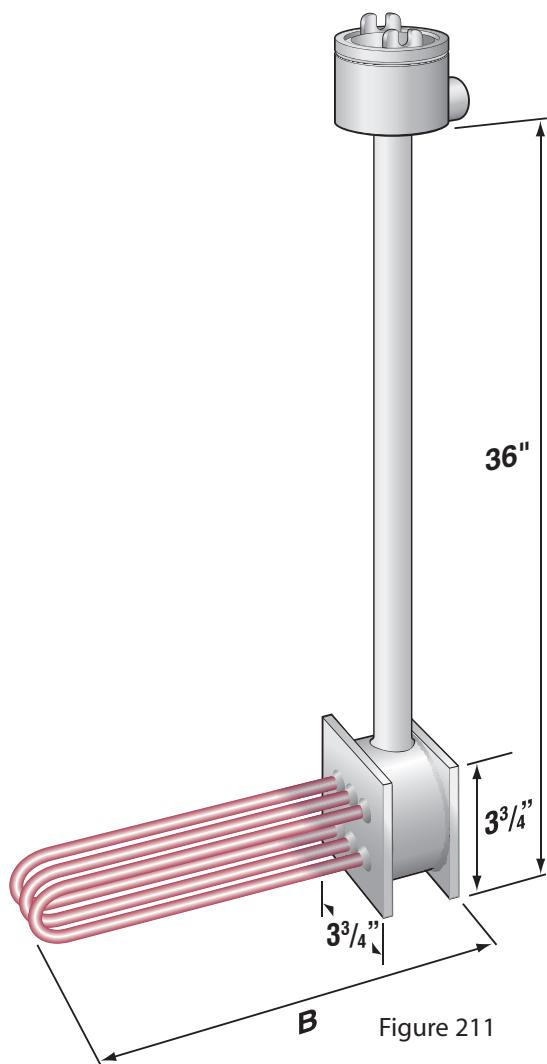
To prevent Low Liquid failure, one of multiple heaters should have a built-in over heat protection. This heater must be mounted slightly higher than other heaters in the tank. When a Low Liquid event happens the air temperature inside the pipe rises dramatically.

Low Liquid Protection Options

1. Built in "K" thermocouple option, series SPAK.
2. Built in mechanical high limit control, series SPAHL. Typical temperature setting is 700°F (370°C). The standard control is a DPST 25amp, 240 VAC. An optional 600 volt, 15 amp TPST control is available.

The built in high limit control has no contact with the liquid you are heating and cannot be used as a thermostat to control your tank temperature.

Over-the Side Immersion Heaters


Optional Features:

- Custom riser lengths
- Hazardous Location (Explosion Resistant terminal box) (NEMA 7)
- Thermostat/Thermocouple
- Sludge legs (Critical for plastic & lined tanks)

Optional Thermostats

Available temperature ranges and/or electrical choices

Electrical Ratings

DPST, 240 vac, 25 amps
TPST, 600 vac, 15 amps

Temperature Ranges

-18 to 40°C (0 to 100°F)
10 to 120°C (50 to 250°F)
70 to 280°C (160 to 540°F)
160 to 370°C (320 to 700°F)

Copper Elements (3) 50-60 watts/in²

Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)
Other wetted parts - stainless steel
Up to 600 volts, 1 or 3 phase

(specify voltage and 1 or 3 phase when ordering)

kw	immersed length B dim.	catalogue number straight	net weight (lb)
3.0	9 3/4	SHC-3030	11
3.8	12 3/4	SHC-3038	12
4.5	14 3/4	SHC-3045	13
6.0	21 1/4	SHC-3060	14
7.5	22 3/4	SHC-3075	15
9.0	28 1/4	SHC-3090	16
10.5	31 1/4	SHC-3105	17
12.0	35 1/2	SHC-3120	18
15.0	42 5/8	SHC-3150	19
18.0	50 1/2	SHC-3180	20
22.5	57 1/4	SHC-3225	21

Incloy Elements (3) 50-60 watts/in²

Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)

Other wetted parts - stainless steel
Up to 600 volts, 1 or 3 phase

Typically to heat:
municipal water
process water

mild alkaline
solutions

(specify voltage and 1 or 3 phase when ordering)

kw	immersed length B dim.	catalogue number straight	net weight (lb)
3.0	9 3/4	SHI-3030	11
3.8	12 3/4	SHI-3038	12
4.5	14 3/4	SHI-3045	13
6.0	21 1/4	SHI-3060	14
7.5	22 1/4	SHI-3075	15
9.0	28 1/4	SHI-3090	16
10.5	31 1/4	SHI-3105	17
12.0	35 1/2	SHI-3120	18
15.0	42 5/8	SHI-3150	19
18.0	50 1/2	SHI-3180	20
22.5	57 1/4	SHI-3225	21

316 Stainless Steel Elements (3)
50-60 watts/in²

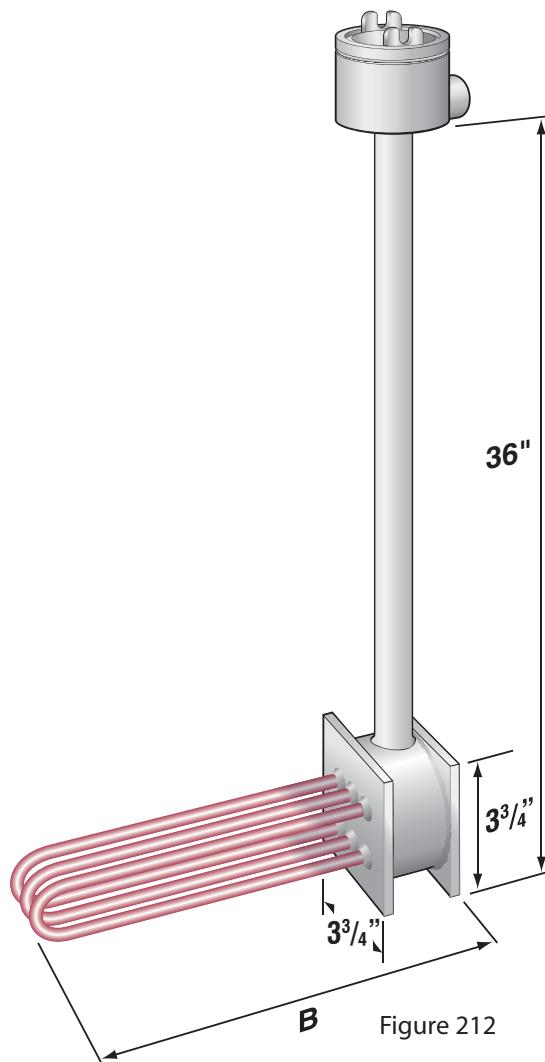
Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)
Other wetted parts - 316 stainless steel
Up to 600 volts, 1 or 3 phase

Typically to heat:
food processing
de-ionized
water
mild acid solutions

(specify voltage and 1 or 3 phase when ordering)

kw	immersed length B dim.	catalogue number straight	net weight (lb)
3.0	9 3/4	SHS-3030	11
3.8	12 3/4	SHS-3038	12
4.5	14 3/4	SHS-3045	13
6.0	21 1/4	SHS-3060	14
7.5	22 1/4	SHS-3075	15
9.0	28 1/4	SHS-3090	16
10.5	31 1/4	SHS-3105	17
12.0	35 1/2	SHS-3120	18
15.0	42 5/8	SHS-3150	19
18.0	50 1/2	SHS-3180	20
22.5	57 1/4	SHS-3225	21

Over-the Side Immersion Heaters



Steel Elements (3) 25 watts/in²

Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)
Other wetted parts - stainless steel
Up to 600 volts, 1 or 3 phase

(specify voltage and 1 or 3 phase when ordering)

Typically to heat:
oil

watts	immersed length B dim.	catalogue number straight	net weight (lb)
1500	9 3/4	SHO-3015	11
1875	12 3/4	SHO-3018	12
2250	14 3/4	SHO-3022	13
3000	21 1/4	SHO-3030	14
3750	22 1/4	SHO-3037	15
4500	28 1/4	SHO-3045	16
5250	31 1/4	SHO-3052	17
6000	35 1/2	SHO-3060	18
7500	42 5/8	SHO-3075	19
9000	50 1/2	SHO-3090	20
11250	57 1/4	SHO-3112	21

Incoloy Elements (3) 25 watts/in²

Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)
Other wetted parts - stainless steel
Up to 600 volts, 1 or 3 phase

(specify voltage and 1 or 3 phase when ordering)

Typically to heat:
oil, water, wax
alkaline
solutions
mild caustic soda

watts	immersed length B dim.	catalogue number straight	net weight (lb)
1500	9 3/4	SHA-3015	11
1875	12 3/4	SHA-3018	12
2250	14 3/4	SHA-3022	13
3000	21 1/4	SHA-3030	14
3750	22 1/4	SHA-3037	15
4500	28 1/4	SHA-3045	16
5250	31 1/4	SHA-3052	17
6000	35 1/2	SHA-3060	18
7500	42 5/8	SHA-3075	19
9000	50 1/2	SHA-3090	20
11250	57 1/4	SHA-3112	21

Optional Features:

- Custom riser lengths
- Hazardous Location (Explosion Resistant terminal box) (NEMA 7)
- Thermostat/Termocouple
- Sludge legs (Critical for plastic & lined tanks)

Optional Thermostats

Available temperature ranges and/or electrical choices

Electrical Ratings

DPST, 240 vac, 25 amps
TPST, 600 vac, 15 amps

Temperature Ranges

-18 to 40°C (0 to 100°F)
10 to 120°C (50 to 250°F)
70 to 280°C (160 to 540°F)
160 to 370°C (320 to 700°F)



ASB Heating Elements Ltd.

Over-the Side Immersion Heaters

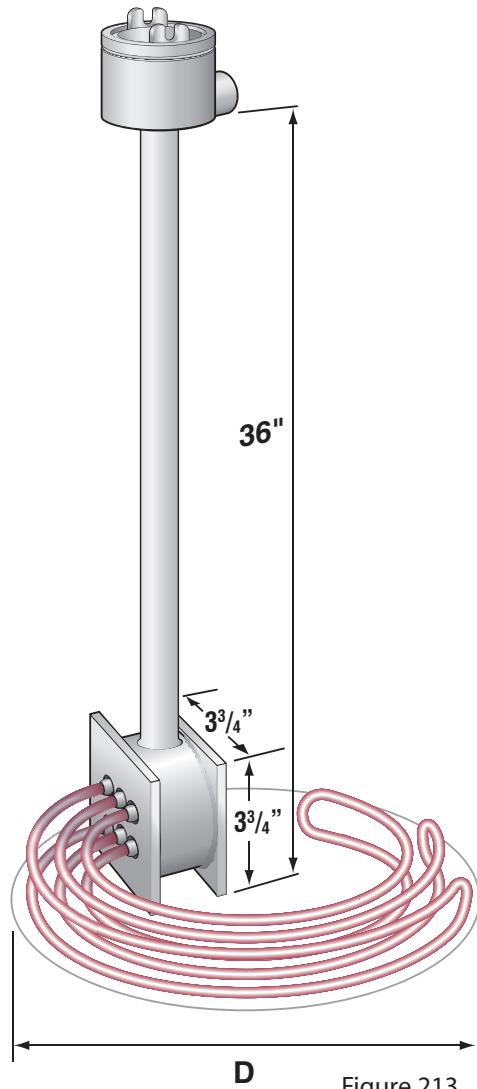


Figure 213

Copper Elements (3) 50-60 watts/in²

Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)

Other wetted parts - stainless steel
Up to 600 volts, 1 or 3 phase

(specify voltage and 1 or 3 phase when ordering)

Typically to heat:

municipal water

kw	Minimum opening dia. D	catalogue number circular	net weight (lb)
6.0	15	CSHC-3060	14
7.5	16	CSHC-3075	15
9.0	17	CSHC-3090	16
10.5	18	CSHC-3105	17
12.0	19	CSHC-3120	18
15.0	20	CSHC-3150	19
18.0	22	CSHC-3180	20
22.5	23	CSHC-3225	21

Incloy Elements (3) 50-60 watts/in²

Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)

Other wetted parts - stainless steel
Up to 600 volts, 1 or 3 phase

(specify voltage and 1 or 3 phase when ordering)

Typically to heat:

municipal water

process water

mild alkaline solutions

kw	Minimum opening dia. D	catalogue number circular	net weight (lb)
6.0	15	CSHI-3060	14
7.5	16	CSHI-3075	15
9.0	17	CSHI-3090	16
10.5	18	CSHI-3105	17
12.0	19	CSHI-3120	18
15.0	20	CSHI-3150	19
18.0	22	CSHI-3180	20
22.5	23	CSHI-3225	21

316 Stainless Steel Elements (3) 50-60 watts/in²

Typically to heat:

food processing

de-ionized

water

mild acid solutions

(specify voltage and 1 or 3 phase when ordering)

kw	Minimum opening dia. D	catalogue number circular	net weight (lb)
6.0	15	CSHS-3060	14
7.5	16	CSHS-3075	15
9.0	17	CSHS-3090	16
10.5	18	CSHS-3105	17
12.0	19	CSHS-3120	18
15.0	20	CSHS-3150	19
18.0	22	CSHS-3180	20
22.5	23	CSHS-3225	21

Optional Features:

- Custom riser lengths
- Hazardous Location (Explosion Resistant terminal box) (NEMA 7)
- Thermostat/THERMOCOUPLE
- Sludge legs (Critical for plastic & lined tanks)

Optional Thermostats

Available temperature ranges and/or electrical choices

Electrical Ratings

DPST, 240 vac, 25 amps
TPST, 600 vac, 15 amps

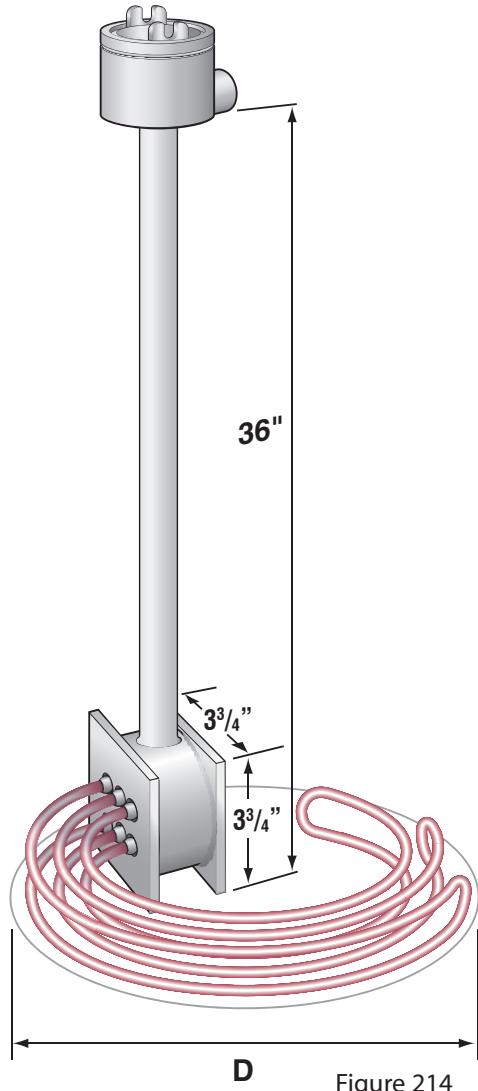
Temperature Ranges

-18 to 40°C (0 to 100°F)
10 to 120°C (50 to 250°F)
70 to 280°C (160 to 540°F)
160 to 370°C (320 to 700°F)



ASB Heating Elements Ltd.

Over-the Side Immersion Heaters



Steel Elements (3) 25 watts/in²

Typically to heat:
light oil
Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)
Other wetted parts - stainless steel
Up to 600 volts, 1 or 3 phase

(specify voltage and 1 or 3 phase when ordering)

watts	Minimum opening dia.D	catalogue number circular	net weight (lb)
3000	15	CSHO-3030	14
3750	16	CSHO-3037	15
4500	17	CSHO-3045	16
5250	18	CSHO-3052	17
6000	19	CSHO-3060	18
7500	20	CSHO-3075	19
9000	22	CSHO-3090	20
11250	23	CSHO-3112	21

Incoloy Elements (3) 25 watts/in²

Typically to heat:
oil, water, wax
Vertical riser is un-heated
Class 4 (Moisture Resistant terminal box)(NEMA 4)
Other wetted parts - stainless steel
Up to 600 volts, 1 or 3 phase

(specify voltage and 1 or 3 phase when ordering)

watts	Minimum opening dia.D	catalogue number circular	net weight (lb)
3000	15	CSHA-3030	14
3750	16	CSHA-3037	15
4500	17	CSHA-3045	16
5250	18	CSHA-3052	17
6000	19	CSHA-3060	18
7500	20	CSHA-3075	19
9000	22	CSHA-3090	20
11250	23	CSHA-3112	21

Optional Features:

- Custom riser lengths
- Hazardous Location (Explosion Resistant terminal box) (NEMA 7)
- Thermostat/Termocouple
- Sludge legs

Optional Thermostats

Available temperature ranges and/or electrical choices

Electrical Ratings

DPST, 240 vac, 25 amps
TPST, 600 vac, 15 amps

Temperature Ranges

-18 to 40°C (0 to 100°F)
10 to 120°C (50 to 250°F)
70 to 280°C (160 to 540°F)
160 to 370°C (320 to 700°F)



ASB Heating Elements Ltd.

Over-the Side Immersion Heaters

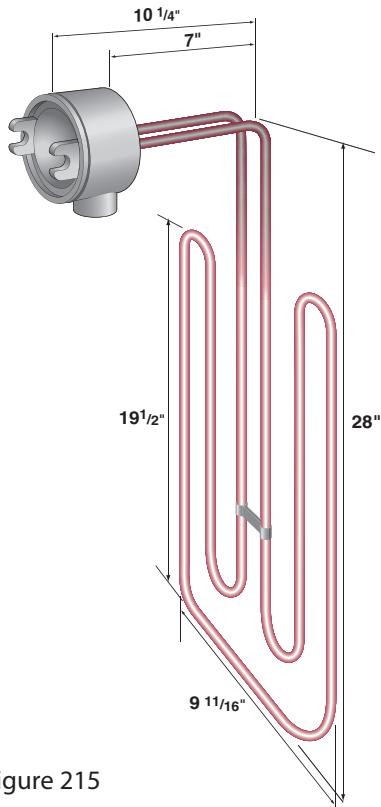


Figure 215

Hangs over lip of tank
Class 4 (Moisture Resistant terminal box)(NEMA 4)
1 element
Up to 600 volts, 1 phase
(specify voltage when ordering)

sheath material						
kw	watts/in ²	316 ss	Incoloy	Inconel	Titanium	net weight (lb)
3.0	18	RSHS-30	RSHI-30	RSHN-30	RSHT-30	8
5.0	30	RSHS-50	RSHI-50	RSHN-50	RSHT-50	8
7.5	45	RSHS-75	RSHI-75	RSHN-75	RSHT-75	8

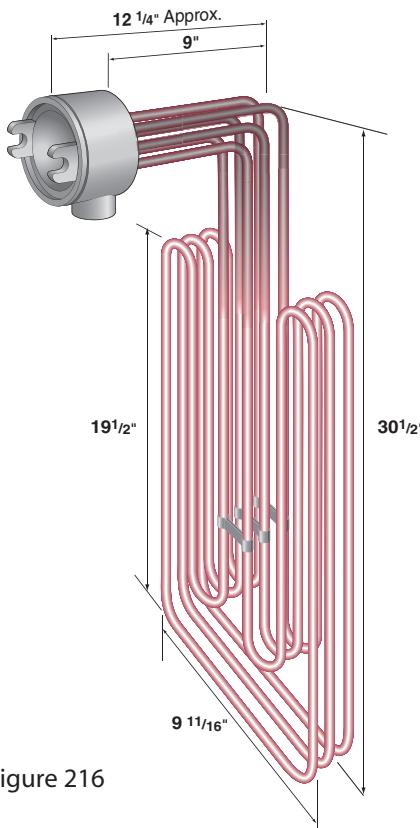


Figure 216

Hangs over lip of tank
Class 4 (Moisture Resistant terminal box)(NEMA 4)
3 elements
Up to 600 volts, 1 or 3 phase
(specify voltage and 1 or 3 phase when ordering)

sheath material						
kw	watts/in ²	316 ss	Incoloy	Inconel	Titanium	net weight (lb)
9.0	18	RSHS-3009	RSHI-3009	RSHN-3009	RSHT-3009	20
15.0	30	RSHS-3015	RSHI-3015	RSHN-3015	RSHT-3015	20
22.5	45	RSHS-3022	RSHI-3022	RSHN-3022	RSHT-3022	20

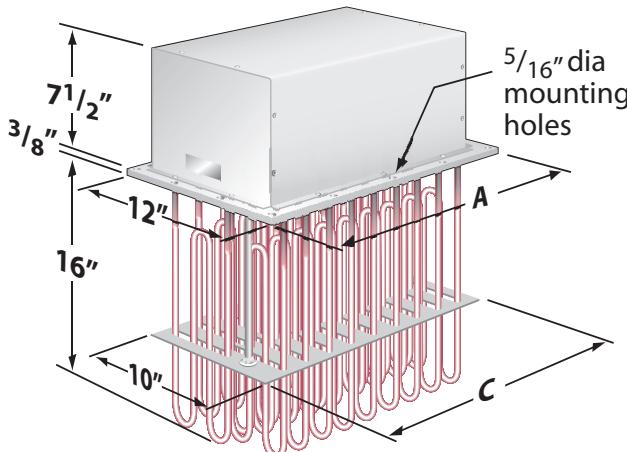


Figure 217

Incoloy Elements

Steel Mounting Flange

Steel Element Keeper

Typically to heat:

Up to 750°F outlet air temperature

forced air

2" insulation inside terminal box

ducted system

Keeper for element support

Can be mounted in any position

Up to 600 volts

(specify voltage and 1 or 3 phase when ordering)

kw	A dim.	C dim.	catalogue number	net weight (lb)
6	6	4 1/2	PFI-3006	15
12	9	7 1/2	PFI-3012	32
18	12	10 1/2	PFI-3018	45
24	15	13 1/2	PFI-3024	65
30	18	16 1/2	PFI-3030	80
36	21	19 1/2	PFI-3036	95
42	24	22 1/2	PFI-3042	115
48	27	25 1/2	PFI-3048	130
54	30	28 1/2	PFI-3054	145
60	33	31 1/2	PFI-3060	160

Incoloy Elements

Stainless Steel Mounting Flange

Stainless Steel Element Keeper

Typically to heat:

Up to 1050°F outlet air temperature

forced air

4" insulation inside terminal box

ducted system

Keeper for element support

Can be mounted in any position

All components in contact with hot air are stainless steel

Up to 600 volts

(specify voltage and 1 or 3 phase when ordering)

kw	A dim.	C dim.	catalogue number	net weight (lb)
4.5	6	4 1/2	PFIL-3004	15
9	9	7 1/2	PFIL-3009	32
12	12	10 1/2	PFIL-3012	45
18	15	13 1/2	PFIL-3018	65
22	18	16 1/2	PFIL-3022	80
26	21	19 1/2	PFIL-3026	95
32	24	22 1/2	PFIL-3032	115
36	27	25 1/2	PFIL-3036	130
40	30	28 1/2	PFIL-3040	145
45	33	31 1/2	PFIL-3045	160

$$kw = \frac{scfm \times \text{temperature rise } (^{\circ}\text{F})}{3000} \times 1.2$$

1.2 = 20% safety factor

kw = kilowatts

scfm = standard cubic feet per minute

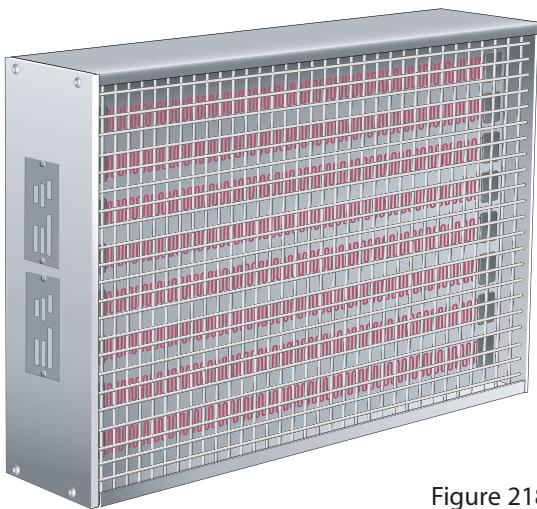


Figure 218

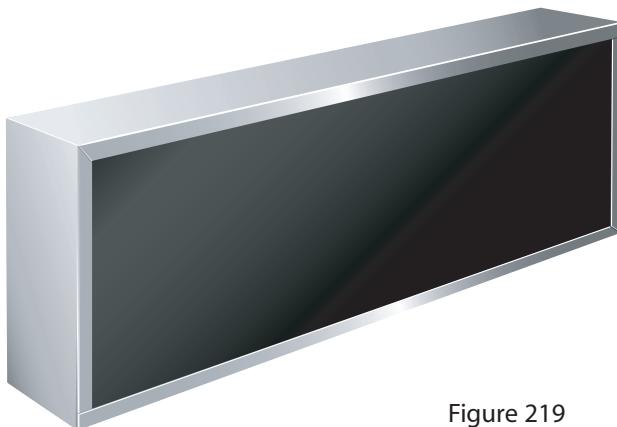


Figure 219

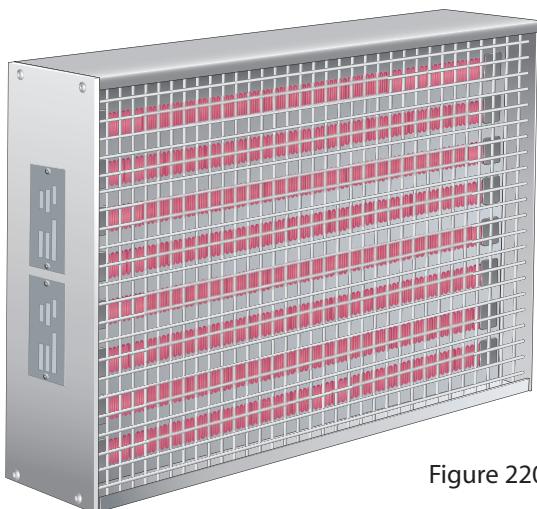


Figure 220

FS and FSA series

for applications where fast heater response required for heat sensitive products or webs.

- heats all colours uniformly
- unique serpentine metallic elements
- 25-45 second heat-up/cool-down
- element temperature to 2100° F
- up to 55 watts/in²
- can be mounted in any plane
- 5" thick aluminium case
- maximum width - 18 inches
- maximum length - 24 feet
- optional built-in thermocouple

CB series Black Glass (shown) 1350°F (2.0 micron peak)**CV series Opaque Glass (not shown) 1600°F (2.5 micron peak)**

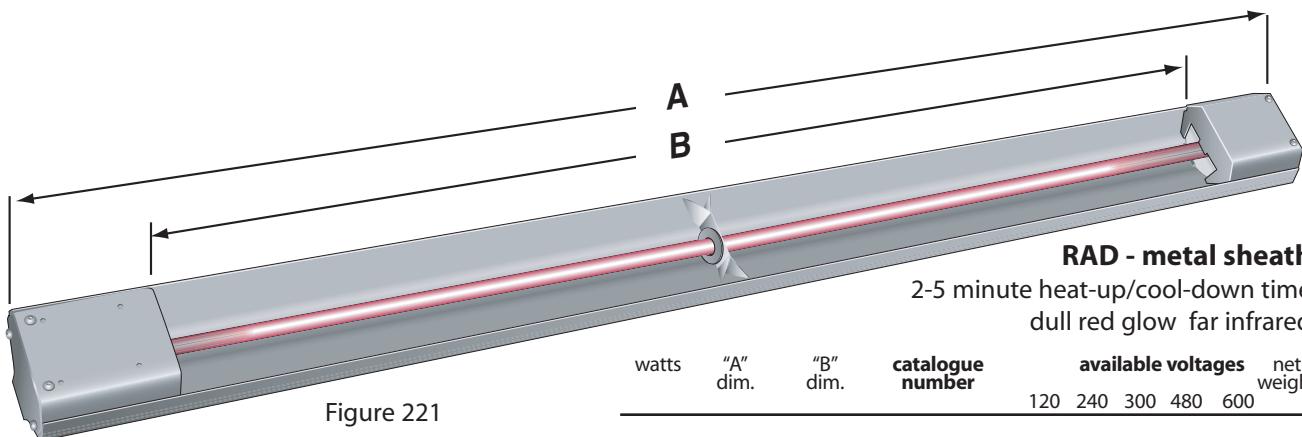
highly efficient long and medium wavelength infrared, heats all colours equally well, except pigments containing carbon black, which have higher absorption rates.

- 3 – 5 minute heat up
- 5-10 minute cool down
- uniform full heat area
- up to 25 watts/in²
- can be mounted in any plane
- 3" thick aluminium case
- maximum width - 18 inches
- maximum length - 6 feet
- J or K thermocouple (optional)

F series

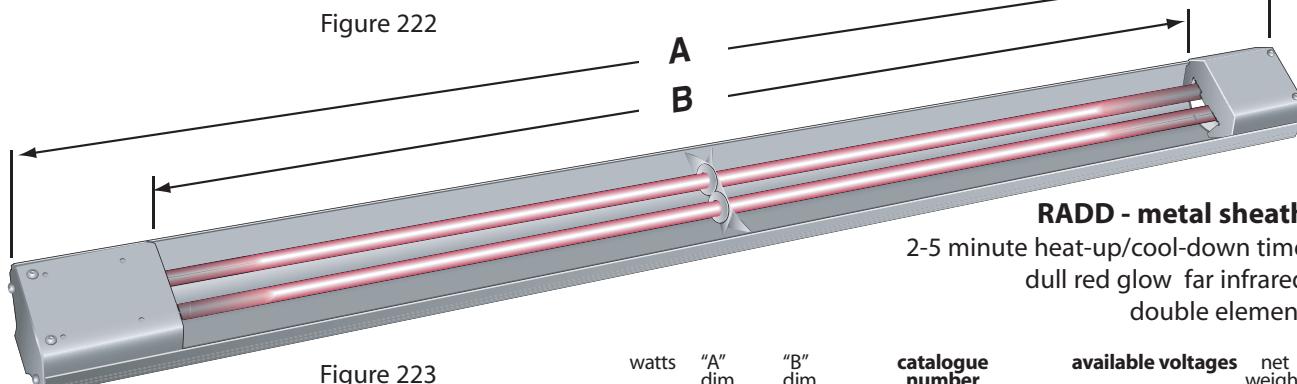
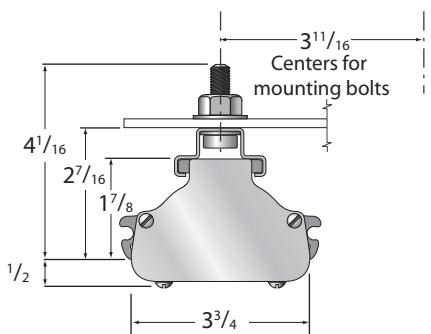
for applications where ultra fast heater response required extremely uniform heat pattern for sensitive products or webs.

- heats all colours uniformly
- unique corrugated metallic elements
- 10-15 second heat-up/cool-down
- element temperature to 1550°F (2.5 micron peak)
- up to 45 watts/in²
- can be mounted in any plane
- 5" thick aluminium case
- maximum width - 18 inches
- maximum length - 16 feet
- optional built-in thermocouple
- J or K thermocouple (optional)



RAD - metal sheath
2-5 minute heat-up/cool-down time
dull red glow far infrared

watts	"A" dim.	"B" dim.	catalogue number	available voltages	net weight
				120 240 300 480 600	
400	15 1/2	8 1/4	RAD - 1043	•	5
650	21 7/8	14 5/8	RAD - 1063	• •	5
600	24 1/8	16 7/8	RAD - 2063	• • •	6
800	24 1/8	16 7/8	RAD - 2083	• • •	6
900	30 3/8	23 1/8	RAD - 3093	• •	8
1100	30 3/8	23 1/8	RAD - 3113	• • •	8
1600	46 3/8	39 1/8	RAD - 4163	• • • •	10
1800	46 3/8	39 1/8	RAD - 4183	• • • •	10
2500	61 1/8	53 7/8	RAD - 5253	• • • •	13
3000	73 1/2	66 1/4	RAD - 6303	• • • •	15
3600	85 1/2	78 1/4	RAD - 7363	• • • •	17



RADD - metal sheath
2-5 minute heat-up/cool-down time
dull red glow far infrared
double element

watts	"A" dim.	"B" dim.	catalogue number	available voltages	net weight
				120 240 300 480 600	
800	15 1/2	8 1/4	RADD - 1084	• •	6
1600	24 1/2	16 7/8	RADD - 2164	• • • •	7
2200	30 3/8	23 1/8	RADD - 3224	• • • •	9
3600	46 3/8	39 1/8	RADD - 4364	• • • •	11
5000	61 1/8	53 7/8	RADD - 5504	• • • •	14
6000	73 1/2	66 1/4	RADD - 6604	• • • •	16
7200	85 1/2	78 1/4	RADD - 7724	• • • •	18
8000	120	112	RADD - 12008	• •	26
9000	132	120	RADD - 13209	• •	29
10000	144	132	RADD - 14410	• •	32
11000	156	144	RADD - 15611	• •	34
12000	168	156	RADD - 16812	• •	36
13000	180	167	RADD - 18013	• •	39
14000	192	180	RADD - 19214	• •	42

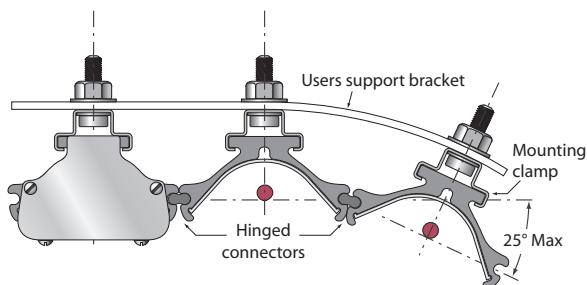


Figure 224

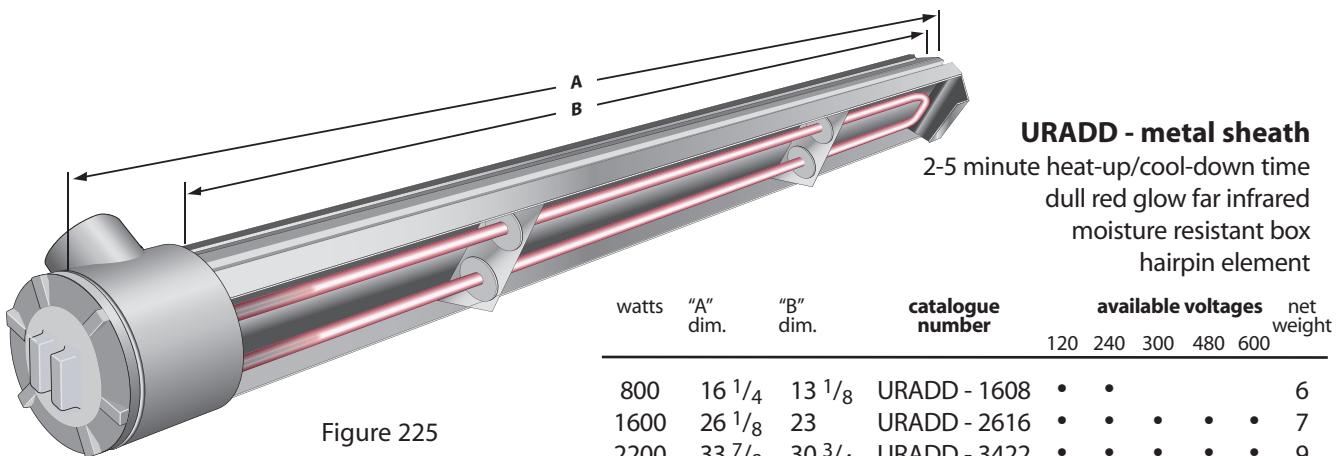


Figure 225

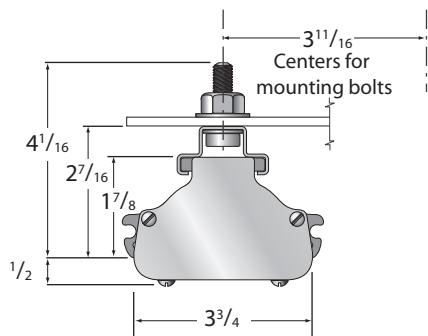


Figure 226

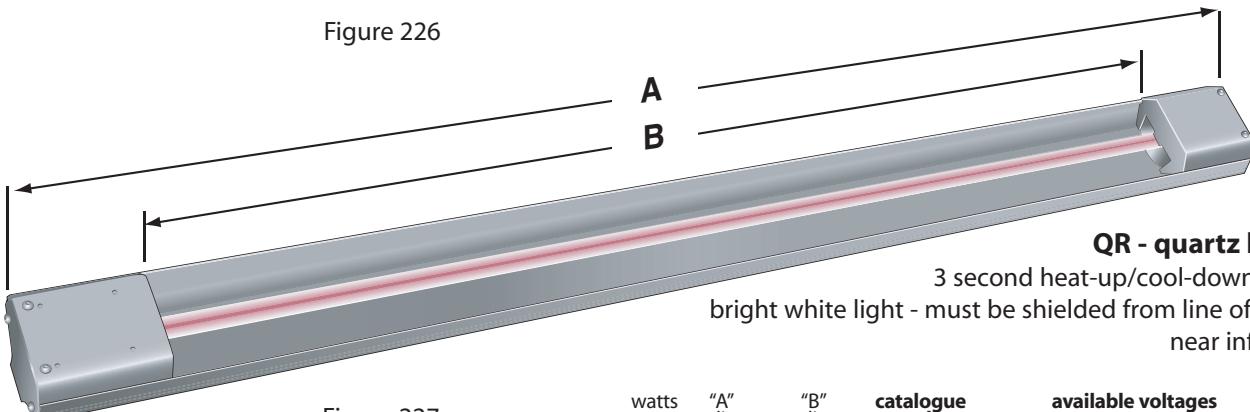
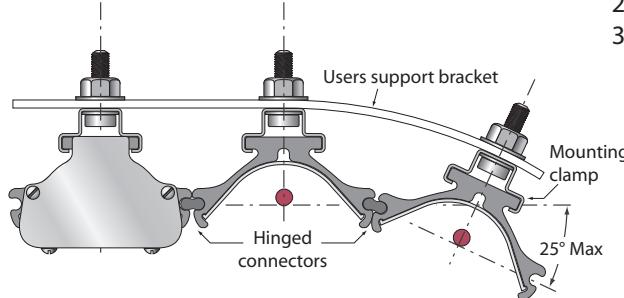


Figure 227



Mounting details

Figure 228



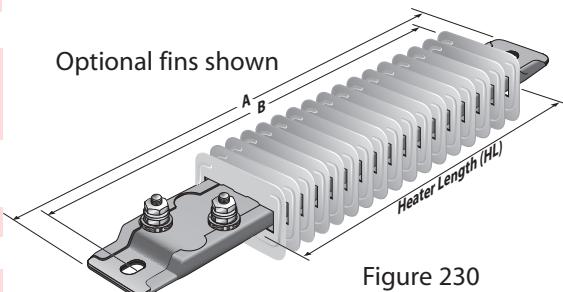
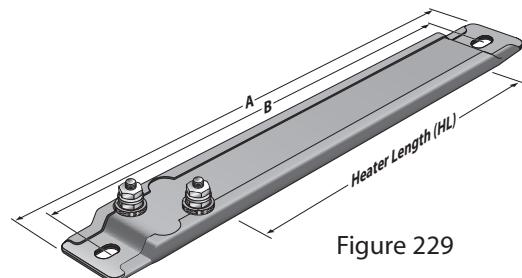
ASB Heating Elements Ltd.

Strip Heaters

High Density Compacted MgO

HDA Series Strip Heaters

A Dim.	B Dim.	HL	Watts	Watts/ sq. in.	Rust Resisting Iron Sheath 120 volts	Rust Resisting Iron Sheath 240 volts
5 ¹ / ₂	4 ¹ / ₂	2	125	14	HDA-055C-0001	HDA-055C-0002
6	5	2 ¹ / ₂	150	14	HDA-060C-0003	HDA-060C-0004
7 ¹ / ₂	6 ¹ / ₂	3 ¹ / ₂	100	8	HDA-075A-0001	
			150	12	HDA-075A-0002	HDA-075A-0003
			200	16		HDA-075A-0062
8	7	4	150	10	HDA-080A-0004	HDA-080A-0005
			175	12	HDA-080A-0006	HDA-080A-0007
10 ¹ / ₂	9 ¹ / ₂	6 ¹ / ₂	250	10	HDA-105A-0008	HDA-105A-0009
12	11	8	250	9	HDA-120A-0010	HDA-120A-0011
14	13	10	300	8	HDA-140A-0012	HDA-140A-0013
15 ¹ / ₄	14 ¹ / ₄	11 ¹ / ₄	325	8	HDA-152A-0014	HDA-152A-0015
17 ⁷ / ₈	16 ⁷ / ₈	13 ⁷ / ₈	250	5	HDA-178A-0016	
			350	7	HDA-178A-0017	HDA-178A-0018
			375	8	HDA-178A-0019	HDA-178A-0020
			500	10	HDA-178A-0021	HDA-178A-0022
			350	6	HDA-195A-0023	HDA-195A-0024
19 ¹ / ₂	18 ¹ / ₂	15 ¹ / ₂	500	9	HDA-195A-0025	HDA-195A-0026
			500	8	HDA-210A-0027	HDA-210A-0028
21	20	17	500	7	HDA-237A-0029	HDA-237A-0030
			750	10	HDA-237A-0032	HDA-237A-0033
25 ¹ / ₂	24 ¹ / ₂	21 ¹ / ₂	500	6	HDA-255A-0034	HDA-255A-0035
			750	9	HDA-255A-0036	HDA-255A-0037
26 ³ / ₄	25 ³ / ₄	22 ³ / ₄	700	8	HDA-267A-0038	HDA-267A-0039
30 ¹ / ₂	29 ¹ / ₂	26 ¹ / ₂	750	8	HDA-305A-0040	HDA-305A-0041
33 ¹ / ₂	32 ¹ / ₂	29 ¹ / ₂	750	7	HDA-335A-0042	HDA-335A-0043
35 ⁷ / ₈	34 ⁷ / ₈	31 ⁷ / ₈	1000	8	HDA-358A-0044	HDA-358A-0045
38 ¹ / ₂	37 ¹ / ₂	34 ¹ / ₂	800	6	HDA-385A-0046	HDA-385A-0047
			1000	8	HDA-385A-0048	HDA-385A-0049
			2000	14		HDA-385A-0057
42 ¹ / ₂	41 ¹ / ₂	38 ¹ / ₂	1250	9	HDA-425A-0050	HDA-425A-0051
			1500	11	HDA-425A-0052	HDA-425A-0053
46	45	42	1425	9	HDA-460A-00175	
49 ³ / ₄	48 ³ / ₄	45 ³ / ₄	1150	9	HDA-497A-00176	



CTP

Ceramic Terminal Posts are available on all threaded terminals

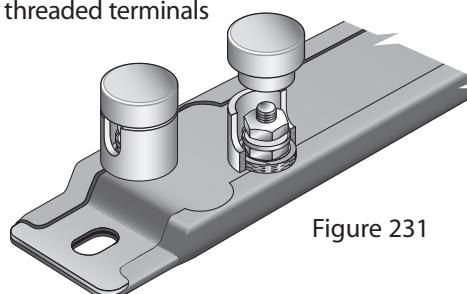


Figure 231

MTC

Metal Terminal Box for HD strip heaters
T2 and T3 threaded terminals

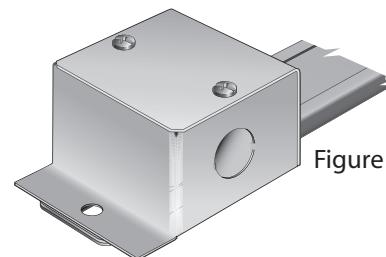


Figure 232

SI

Secondary Insulators for 600 volt systems

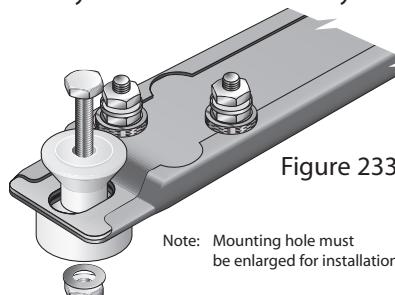


Figure 233

Note: Mounting hole must be enlarged for installation



ASB Heating Elements Ltd.

Strip Heaters

High Density Compacted MgO

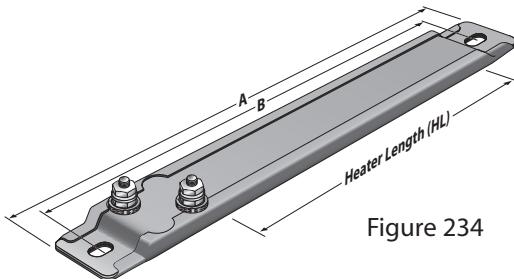


Figure 234

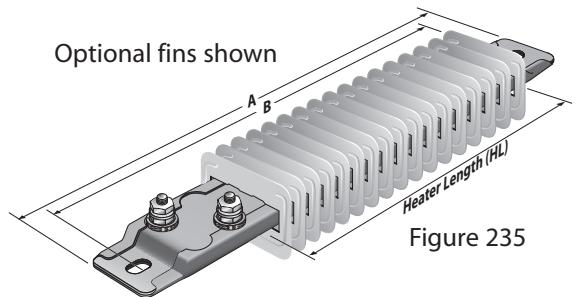


Figure 235

CTP

Ceramic Terminal Posts are available on all threaded terminals

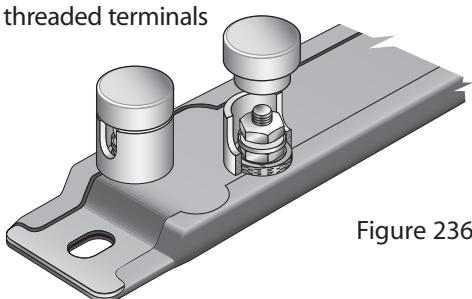


Figure 236

MTC

Metal Terminal Box for HD strip heaters
T2 and T3 threaded terminals

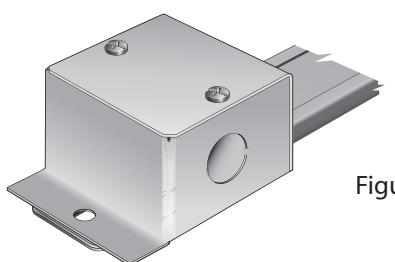


Figure 237

SI

Secondary Insulators for 600 volt systems

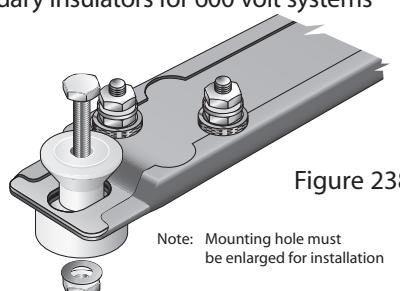
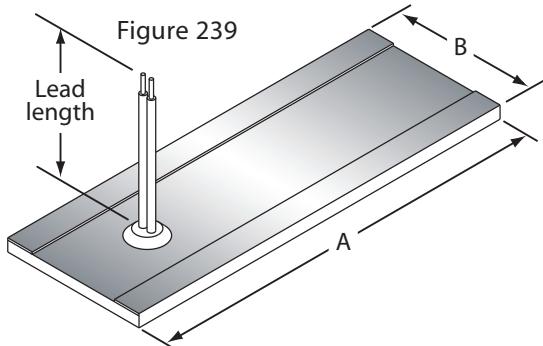


Figure 238

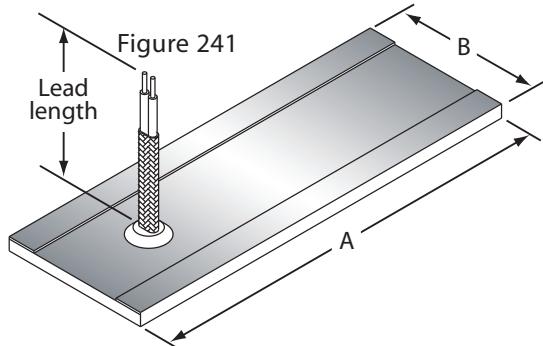
Note: Mounting hole must be enlarged for installation

HDS Series Strip Heaters

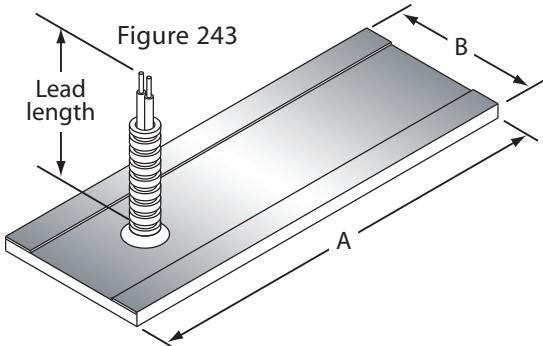
A Dim.	B Dim.	HL	Watts	Watts/ sq. in.	Stainless Steel Sheath	
					120 volts	240 volts
5 1/2	4 1/2	2	250	27	HDS-055C-0001	HDS-055C-0002
6	5	2 1/2	300	27	HDS-060C-0003	HDS-060C-0004
6	5	2	300	30		HDS-060A-0065
7 1/2	6 1/2	3 1/2	100	8	HDS-075A-0001	
			150	12	HDS-075A-0077	
			200	16	HDS-075A-0002	HDS-075A-0003
8	7	4	150	10	HDS-080A-0074	HDS-080A-0075
			250	16	HDS-080A-0004	HDS-080A-0005
			400	26	HDS-080A-0006	HDS-080A-0007
10 1/2	9 1/2	6 1/2	350	15	HDS-105A-0008	HDS-105A-0009
			400	17	HDS-105A-0010	HDS-105A-0011
12	11	8	250	9	HDS-120A-0064	
			350	14	HDS-120A-0012	HDS-120A-0013
			500	17	HDS-120A-0014	HDS-120A-0015
14	13	10	500	14	HDS-140A-0016	HDS-140A-0017
15 1/4	14 1/4	11 1/4	325	8	HDS-152A-0071	
			500	12	HDS-152A-0018	HDS-152A-0019
17 7/8	16 7/8	13 7/8	250	5	HDS-178A-0072	HDS-178A-0020
			350	7		HDS-178A-0021
			500	10	HDS-178A-0022	HDS-178A-0023
			750	14	HDS-178A-0024	HDS-178A-0025
			1000	19	HDS-178A-0026	HDS-178A-0027
19 1/2	18 1/2	15 1/2	500	9	HDS-195A-0028	HDS-195A-0029
			1000	18	HDS-195A-0030	HDS-195A-0031
21	20	17	750	12	HDS-210A-0032	HDS-210A-0033
23 3/4	22 3/4	19 3/4	500	7	HDS-237A-0034	HDS-237A-0035
			750	10	HDS-237A-0036	HDS-237A-0037
			1000	14	HDS-237A-0038	HDS-237A-0039
			1500	19		HDS-237A-0067
25 1/2	24 1/2	21 1/2	750	9	HDS-255A-0040	HDS-255A-0041
			1000	13	HDS-255A-0042	HDS-255A-0043
26 3/4	25 3/4	22 3/4	700	8		HDS-267A-0076
			1000	12	HDS-267A-0044	HDS-267A-0045
30 1/2	29 1/2	26 1/2	750	8		HDS-305A-0046
			1000	11	HDS-305A-0047	HDS-305A-0048
33 1/2	32 1/2	29 1/2	750	7	HDS-335A-0049	HDS-335A-0050
35 7/8	34 7/8	31 7/8	1000	8		HDS-358A-0051
			1500	13	HDS-358A-0052	HDS-358A-0053
38 1/2	37 1/2	34 1/2	1000	8	HDS-385A-0054	HDS-385A-0055
42 1/2	41 1/2	38 1/2	1250	9	HDS-425A-0056	HDS-425A-0057
			1500	11	HDS-425A-0058	HDS-425A-0059
46	45	42	1900	12		HDS-460A-00197
47 7/8	46 7/8	43 7/8	1350	9		HDS-478A-0081
			2250	14		HDS-478A-0082
49 3/4	48 3/4	45 3/4	2225	12		HDS-497A-00198
53 7/8	52 7/8	49 7/8	2500	13		HDS-538A-00100



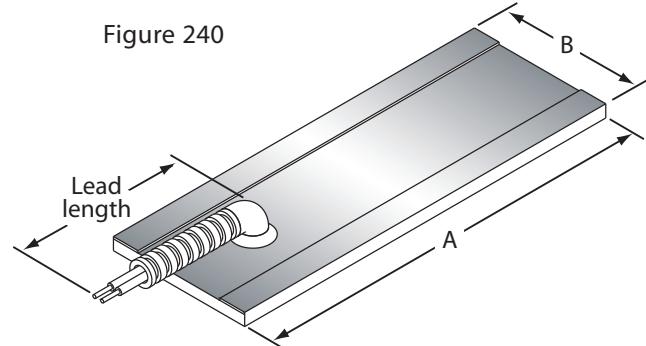
Fiberglass Leads- Specify location and length of leads at time of order.



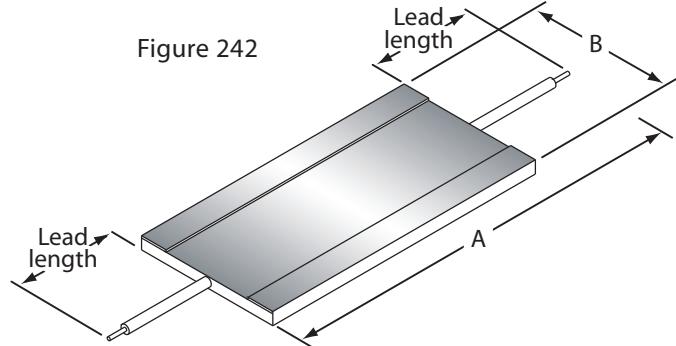
Metal Braid with Fiberglass Leads- Specify location and length of leads at time of order.



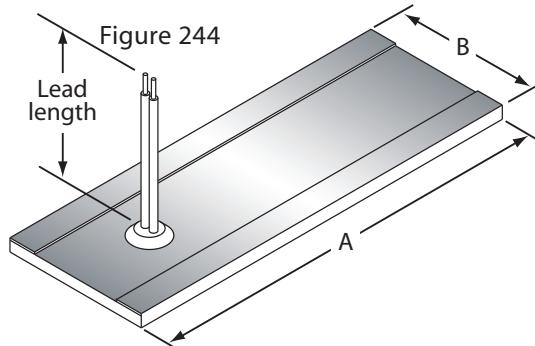
Armor Cable with Fiberglass Leads- Specify location and length of leads at time of order.



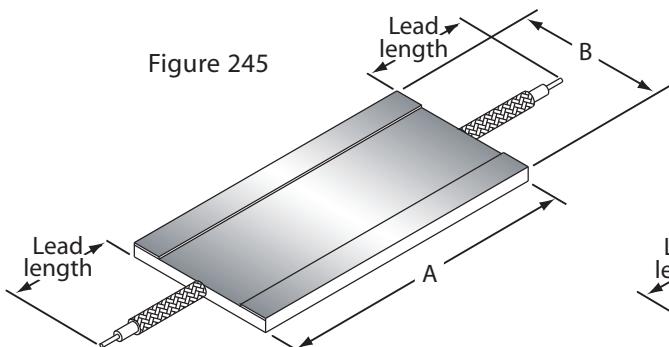
90 Degree Armor Cable with Fiberglass Leads- Specify location and length of leads at time of order.



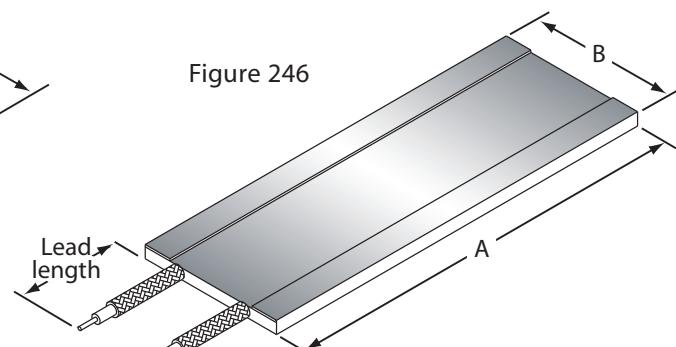
Fiberglass Leads with Protective Sleeve- Leads exit midway of either edge. Specify length at time of order



Fiberglass Leads with Protective Sleeve- Leads exit from any edge of heater. Specify length at time of order

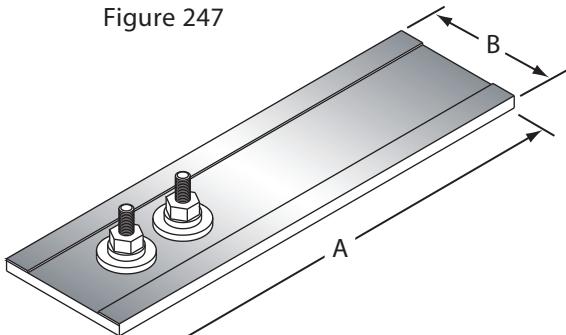


Fiberglass Leads with Metal Braid- Leads exit midway of either edge. Specify length at time of order



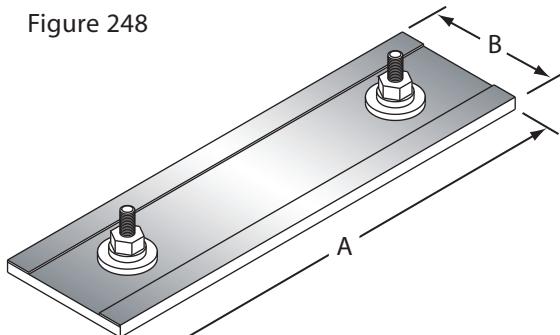
Fiberglass Leads with Metal Braid- Leads exit from any edge of heater. Specify length at time of order

Figure 247



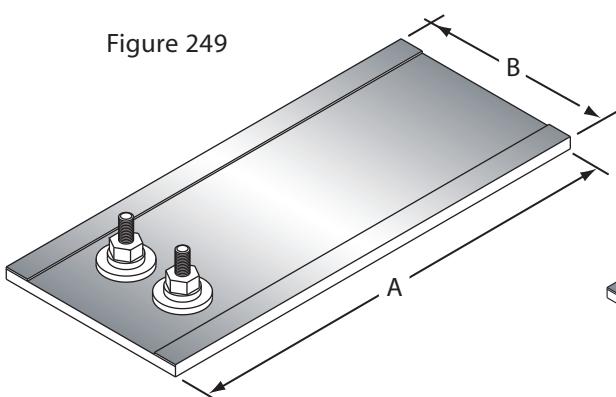
10-32 Threaded Terminals - Minimum width required- 7/8"

Figure 248



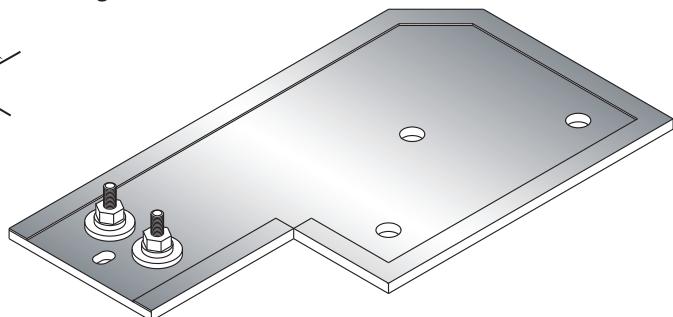
10-32 Threaded Terminals - Minimum width required- 7/8". Specify location at time of order

Figure 249



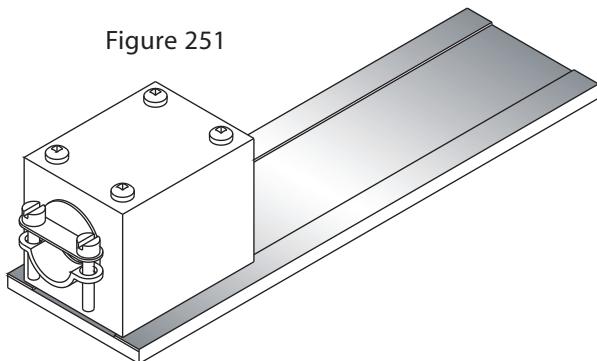
10-32 Threaded Terminals - Minimum width required 2.00"-Specify location at time of order

Figure 250



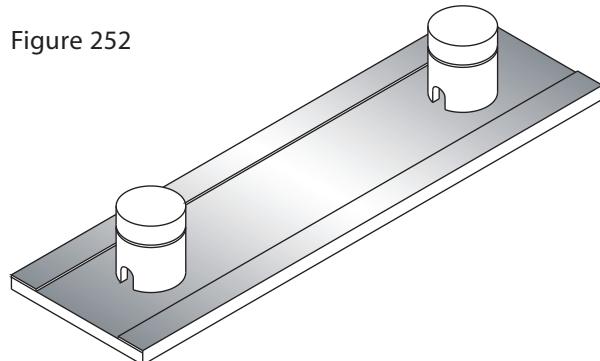
Mica strip heaters are available in irregular shapes and can be made to conform to curved surfaces. Mounting holes aid in clamping the heaters to any surface. Holes and cutouts are useful for the installation of thermocouples and for clearance of bolts and other obstructions

Figure 251

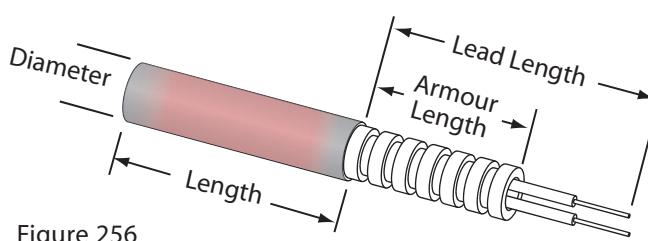
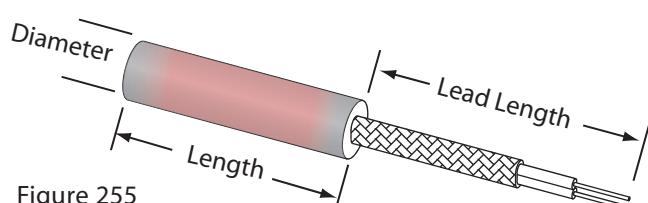
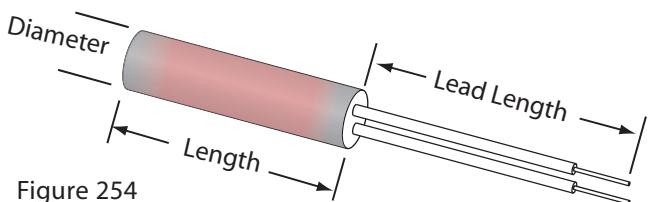
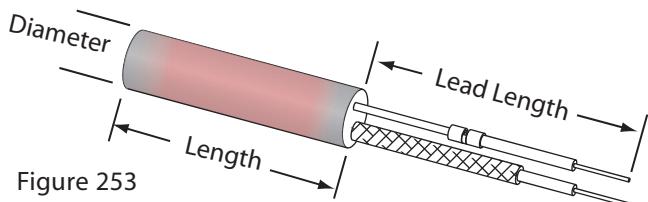
**MTC**

Metal Terminal Box

Figure 252

**CTP**

Ceramic Terminal Posts are available on all threaded terminals.

**Crimped-On Leads, Figure 253**

A high temperature double crimp connects the MGT (450°C) leads to solid nickel pins. This construction is recommended for applications with elevated temperatures. Due to the rigid nickel pins, this construction is not recommended in applications where movement or flexing is encountered, or if sharp bends are required adjacent to the heater exit

Swaged in Leads, Figure 254

High temperature MGT (450°C) wire is internally connected and swaged in place. This construction is recommended for applications in which the leads must be bent at the exit point from the heater and where mild flexing may be found. For applications with continuous or more severe movement, we would recommend metal braid or armor cable.

Stainless Steel Braid, Figure 255

High temperature MGT (450°C) wire is internally connected and swaged in place along with stainless steel braid. This construction offers protection against abrasion and sharp edges. This is a very strong construction which offers full length flexibility. This construction is recommended in applications with flexing and where the leads must pass through metal openings or routed along metal components.

Stainless Steel Armoured Cable (Hose), Figure 256

High temperature MGT (450°C) wire is internally connected and swaged in place along with stainless steel hose. This construction is recommended for applications in which the leads are subjected to abrasion or run the risk of being pinched. This is the strongest lead protection available and works well in moving or flexing applications.

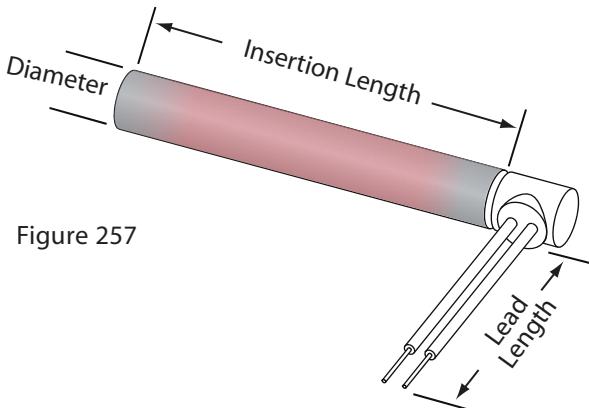


Figure 257

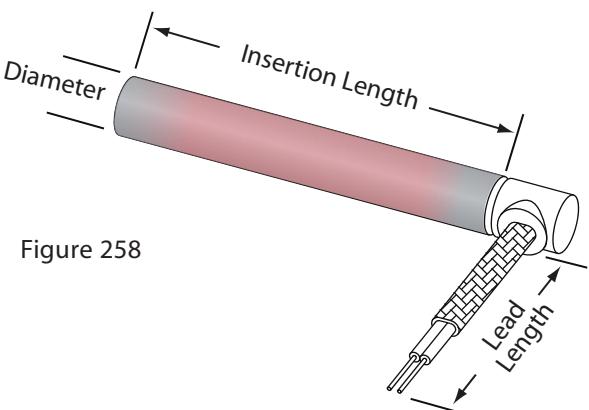


Figure 258

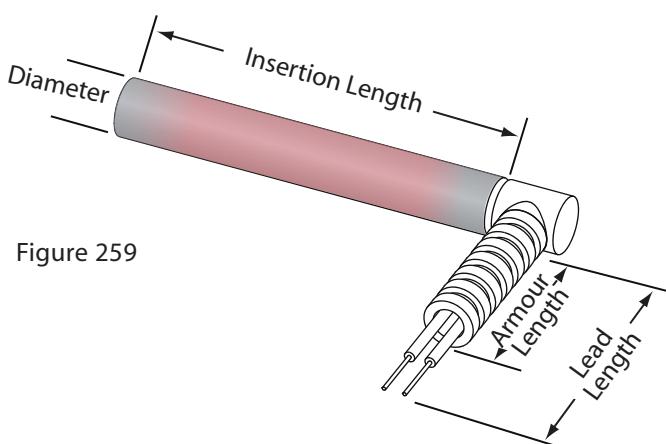


Figure 259

Right Angle Fibreglass Leads, Figure 257

High temperature MGT (450°C) leads exiting at right angle to the sheath. This construction offers a compact design where space is limited. This construction is not recommended where abrasion or flexing is present.

Right Angle Stainless Steel Braid, Figure 258

Stainless steel braid over high temperature MGT (450°C) wire exiting at right angle to the sheath. This construction is recommended in applications with flexing and where the leads must pass through metal openings or routed along metal components. This construction is desirable when space is limited and it is not feasible to bend standard leads.

Right Angle Stainless Steel Armour (Hose), Figure 259

Stainless steel hose over high temperature MGT (450°C) wire exiting at right angle to the sheath. This is the strongest lead protection for use in applications where severe abrasion is present. These leads offer good flexibility and are good for moving or flexing applications.

Heater Diameter	Minimum Unheated Length
1/8"	Not Available
1/4"	1"
5/16"	1 1/2"
3/8"	1 1/2"
1/2"	1 1/2"
5/8"	1 9/16"
3/4"	1 7/8"
15/16"	1 7/8"
1"	1 7/8"

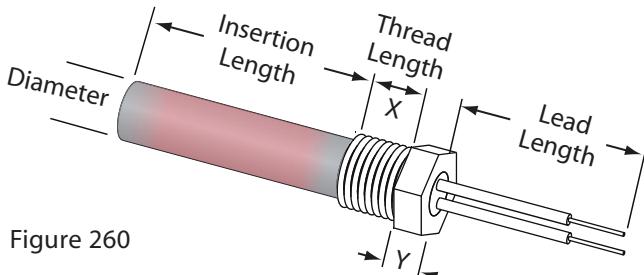


Figure 260

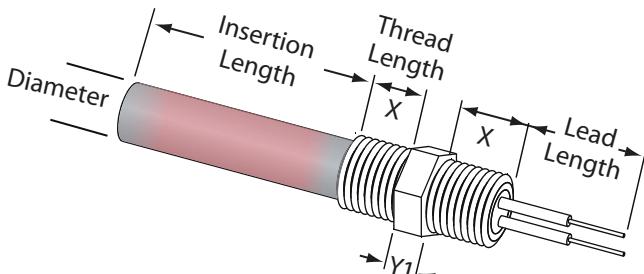


Figure 261

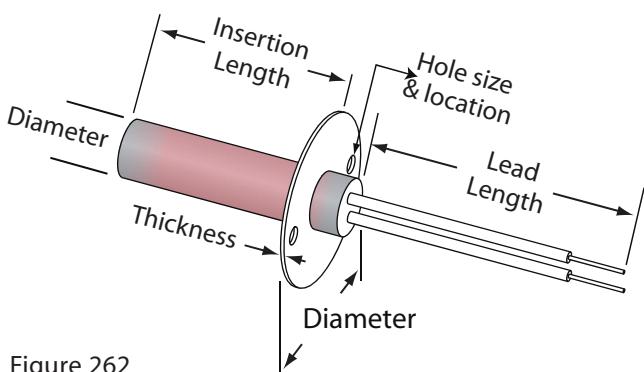


Figure 262

Single and Double Threaded Fittings, Figures 260 & 261

Single or double threaded fittings attached to sheath to allow for installation into threaded holes.

Fitting Materials

- Brass, Steel and Stainless Steel

Leadwires

- Fiberglass for high temperature applications
- Teflon for moisture protection
- Stainless Braid or Hose for flexing applications and abrasion protection

Terminal Boxes

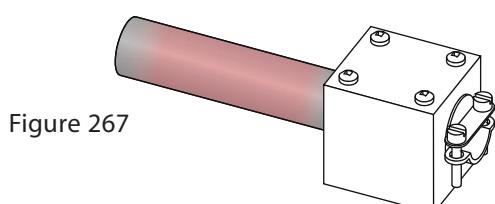
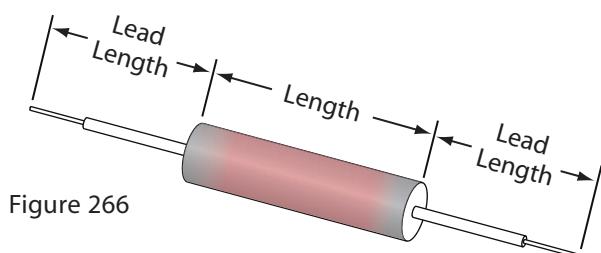
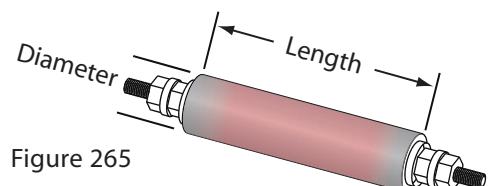
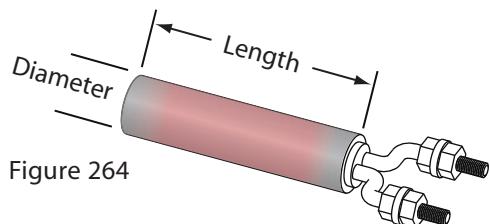
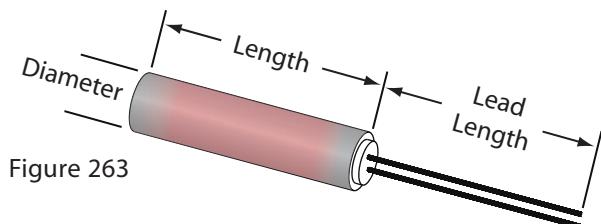
- General purpose and moisture resistant housings

Heater Diameter	NPT Size	X Dimension	Y Dimension	Y1 Dimension
1/4"	1/8-27	3/8"	3/16"	1/4"
3/8"	1/4-18	1/2"	3/16"	1/4"
1/2"	3/8-18	9/16"	1/4"	1/4"
5/8"	1/2-14	5/8"	1/4"	5/16"
3/4"	3/4-14	3/4"	1/4"	3/8"
7/8"	1-11 1/2	3/4"	1/4"	3/8"
1"	1-11 1/2	3/4"	1/4"	3/8"
1 1/4"	1 1/4-11 1/2	7/8"	5/16"	1/2"

Mounting Flanges, Figure 262

Mounting flanges are recommended for applications where vibration or movement may cause the heater to be dislodged from its hole. Stainless steel flanges are available in a variety of sizes and configurations. The standard flange is round and is supplied with two mounting holes. For heaters 5/8" diameter and under, the flange would be 1 1/2" in diameter. For larger diameter heaters the standard flange would be 2.00" in diameter.

Cartridge Heaters - other unique features



Teflon End Seal, Figure 263

A Teflon plug is swaged in place along with Teflon leads. This construction resists oil and water to 250°C/480°F. There is a minimum of a 1.00" unheated length at the lead end. Longer cold sections may be required if the watt density or operating temperature is high.

Screw Terminals, Figure 264

Threaded stud terminals are supplied complete with high temperature nuts and washers. Standard screw is #8-32. Available in 5/8", 3/4", 1", 16 mm and 20mm diameters heaters

Double Ended Terminals, Figure 265 & 266

These terminations are ideal for applications where wiring form both ends is required. A minimum cold section of 1" is required for these leads.

Available Terminations - Solid nickel pins

- Leadwires
- Threaded studs

Terminal Boxes, Figure 267

Terminal boxes are permanently attached to the heater sheath to provide excellent protection in a variety of environments.

Available Boxes - General purpose sheet metal

- Moisture proof
- Cast aluminum explosion resistant

Figure 268

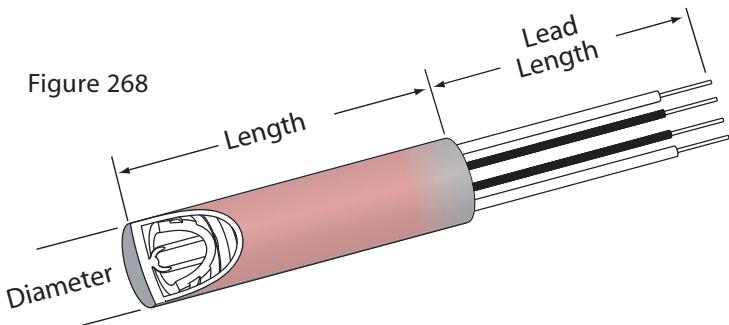


Figure 269

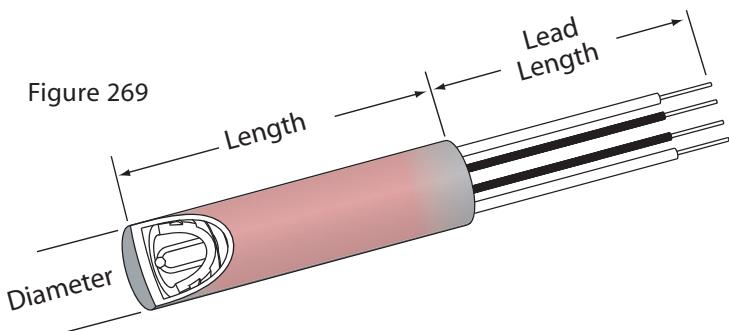


Figure 270

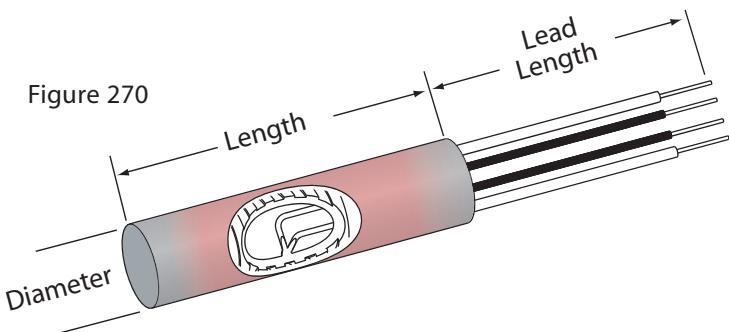
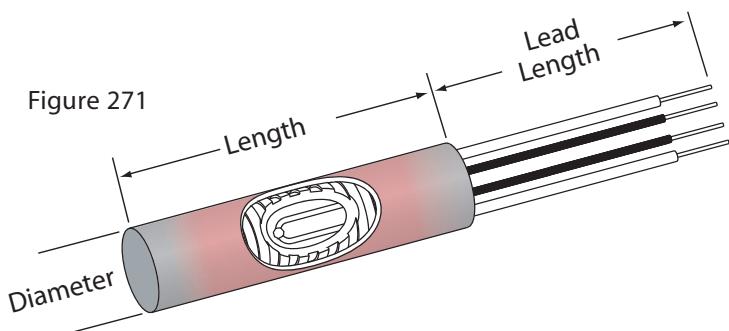


Figure 271



Internal Thermocouples

Internal thermocouples are built into the heater assembly to monitor the internal or sheath temperatures. These are useful as high limit devices or in applications where space is at a premium. The power and sensor leads exit the sheath together and can be ordered with a variety of lead protections. Not all thermocouple configurations are available on smaller diameter heaters.

Type J and K calibrations are standard for the shown constructions.

Grounded at Disc End, Figure 268

The thermocouple junction is grounded to the disc end of the heater. This construction is commonly used in hot runner applications. The disc end can be filled with silver solder and ground flat. This will ensure good contact when inserted into a flat end blind hole.

Ungrounded at Disc End, Figure 269

The thermocouple junction is ungrounded and is located just behind the disc end. This will give a reference temperature of the part being heated.

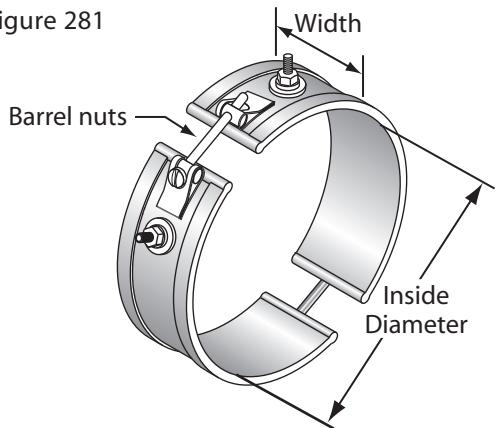
Grounded at Centre, Figure 270

The thermocouple junction is grounded to the sheath along the length of the heater. The standard location is at the center of the heater, but can be located anywhere along the length of the sheath. This construction will provide a quick response.

Ungrounded at Centre, Figure 271

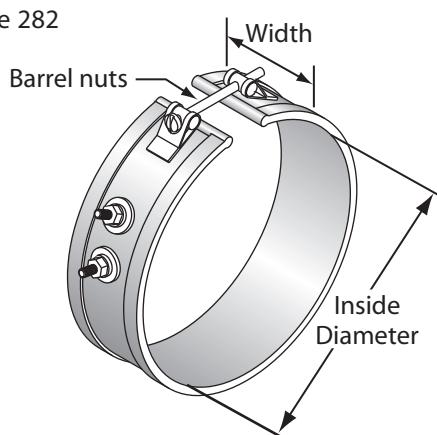
The thermocouple junction is ungrounded and is centered in the diameter of the sheath. The standard location is at the center of the heater, but can be located anywhere along the length of the sheath. Typically used as a high limit in air or vacuum applications.

Figure 281



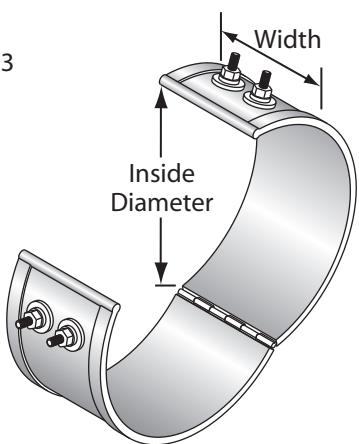
2 Piece Construction- Ease of installation in difficult locations. Recommended for diameters larger than 15". Available with any termination or clamping styles.

Figure 282



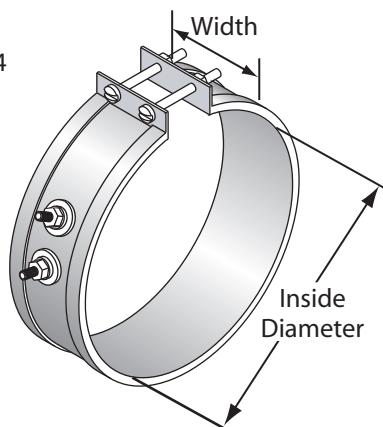
Built-in Strap- Barrel nuts provide secure and strong clamping. Also available in spring loaded designs for larger diameters

Figure 283



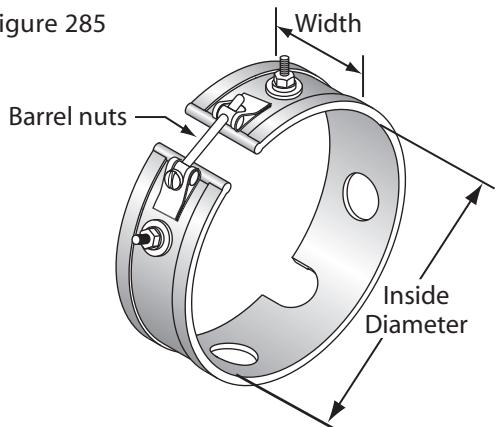
Expandable or Hinged- One piece construction used where heater cannot be slid over the barrel or die. Two sets of terminals required. All terminations available

Figure 284



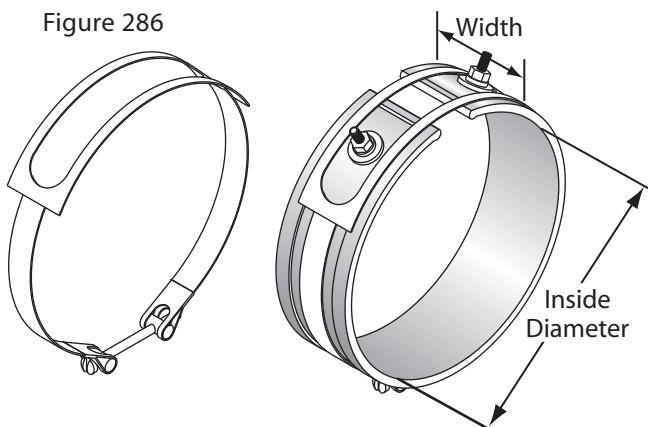
Bent Up Flange- Available with any termination style and is only recommended for narrower designs.

Figure 285



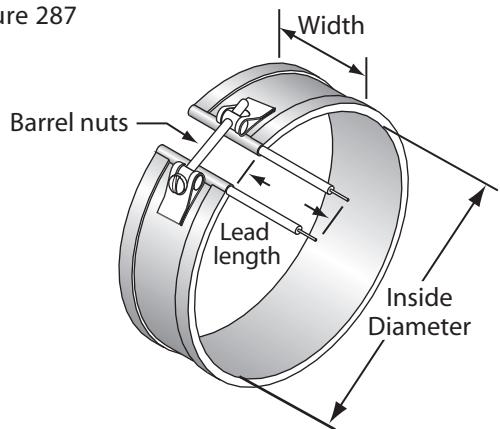
Holes and Cutouts- Allow for installation of thermocouples and transducers and give clearance for mounting bolts.

Figure 286



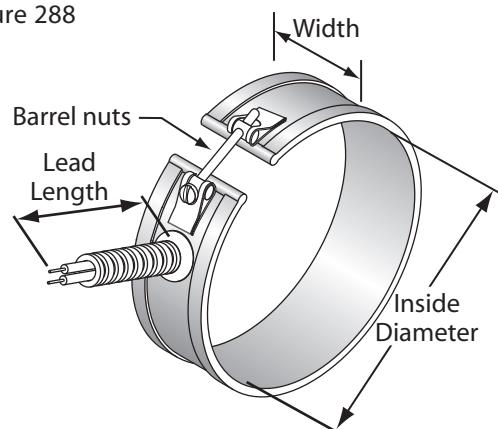
Separate Strap- Available in all sizes and configurations. Built-in straps are recommended wherever possible. Typically used in smaller diameters.

Figure 287



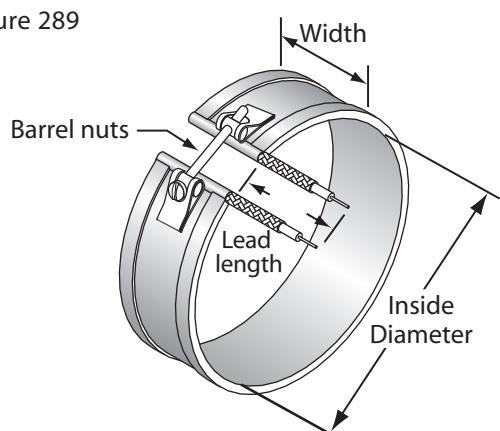
Nozzle Style- Fiberglass leads 12" long is standard

Figure 288



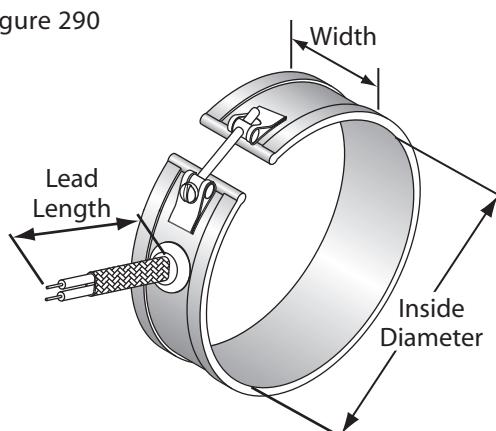
Fiberglass Leads with Armor Cable- Specify location and length of leads at time of order.

Figure 289



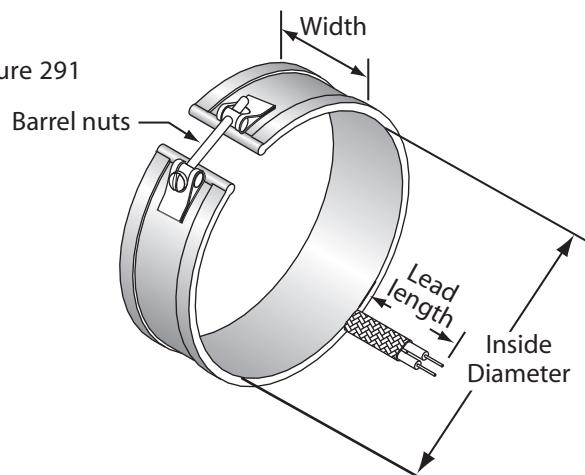
Nozzle Style- Fiberglass leads with metal overbraid
12" long is standard

Figure 290



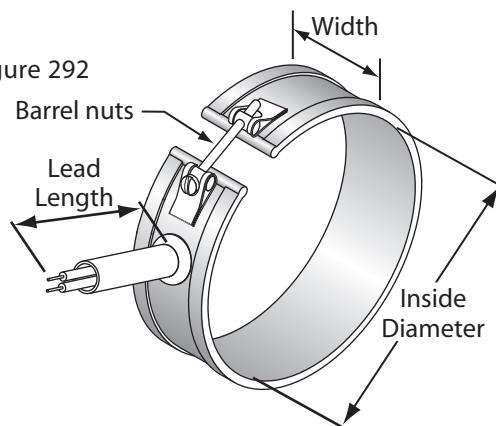
Fiberglass Leads with Metal Braid- Specify location and length of leads at time of order.

Figure 291



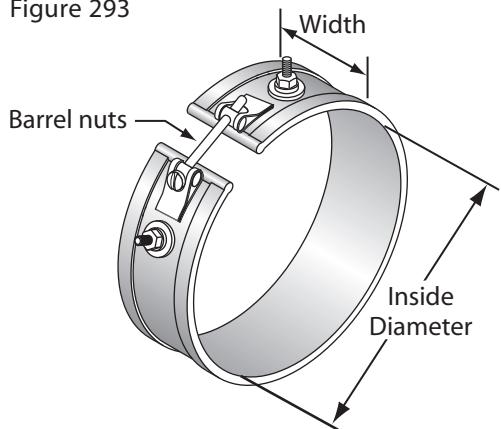
Nozzle Style- Fiberglass Leads with Metal Braid-
Exiting from the edge at 180 degrees from the gap

Figure 292



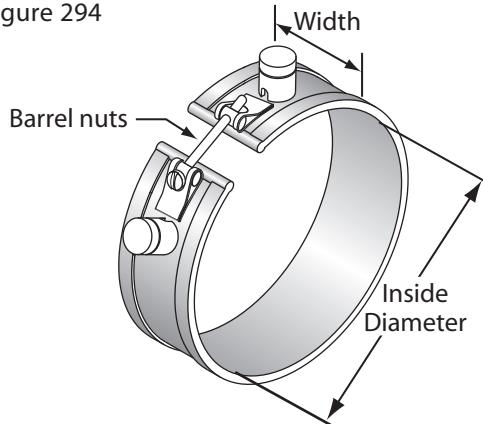
Fiberglass Leads with Protective Sleeve- Specify location and length of leads at time of order.

Figure 293



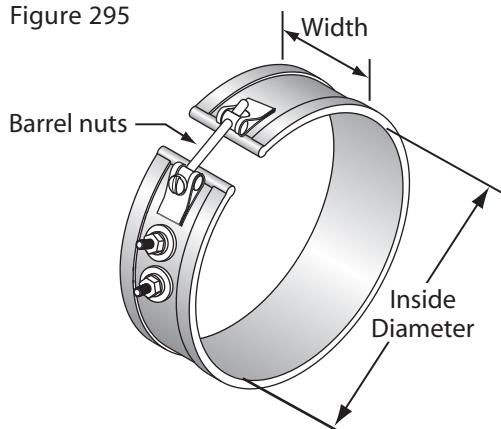
10-32 Threaded Terminals- Minimum width required 7/8"

Figure 294



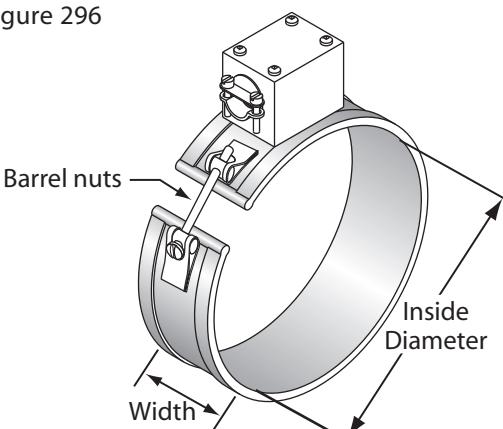
Ceramic Terminal Covers- Available on all threaded terminals. Covers available separately

Figure 295



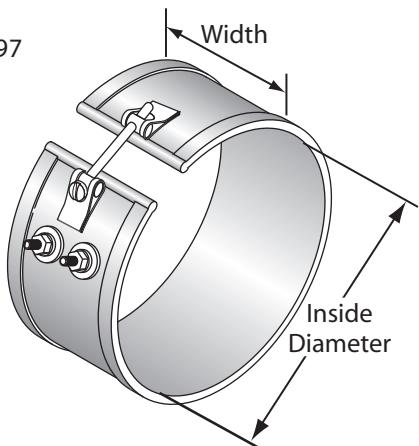
10-32 Threaded Terminals- Minimum width required 7/8"- Specify location at time of order

Figure 296



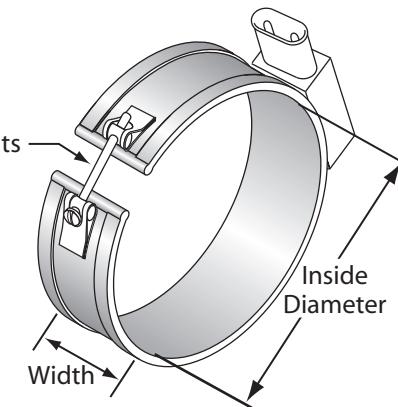
Sheet Metal Terminal Box- Available with T2 and T3 threaded terminals.

Figure 297



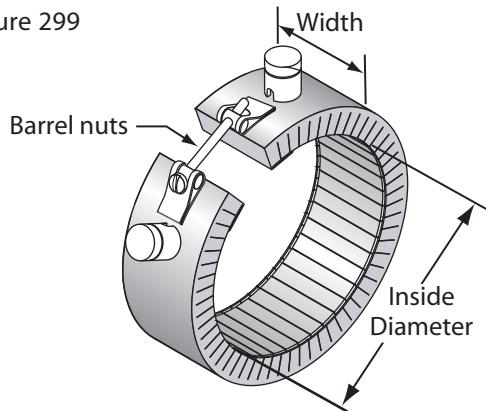
10-32 Threaded Terminals- Minimum width required 2.00"-Specify location at time of order

Figure 298



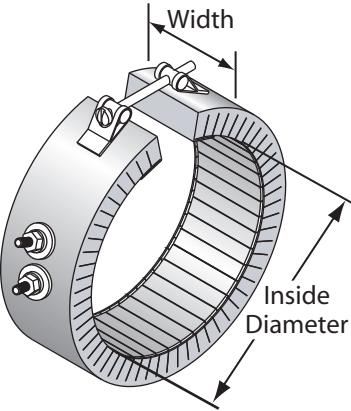
90 Degree European Plug- Also available straight out- Specify location at time of order

Figure 299



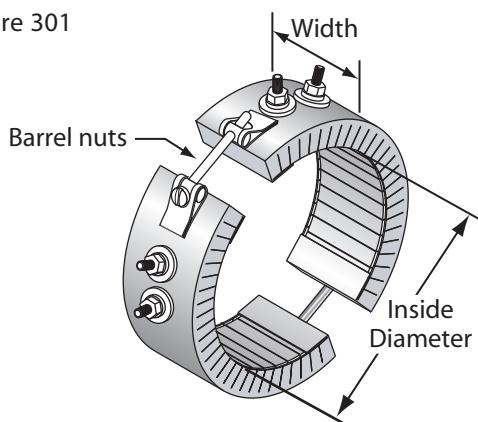
1 Piece Construction- Ceramic heaters can be opened fully. (Shown with ceramic terminal covers)

Figure 300



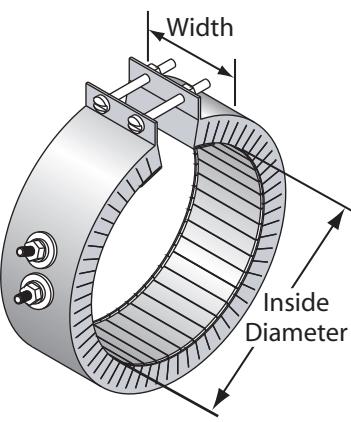
Built-in Strap- Barrel nuts provide secure and strong clamping. Also available in spring loaded designs for larger diameters

Figure 301



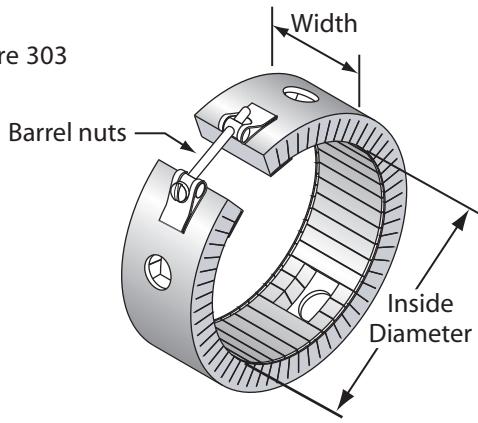
2 Piece Construction- Ease of installation in difficult locations. Recommended for diameters larger than 15".

Figure 302



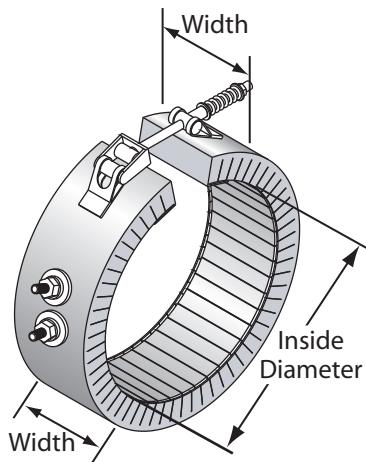
Bent up flange- Available in any termination style and is only recommended for narrower designs.

Figure 303



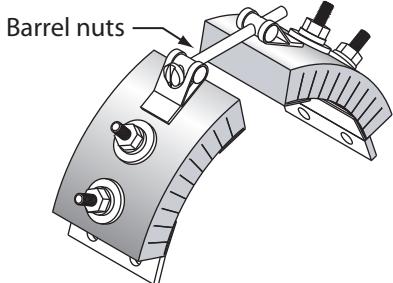
Holes and Cutouts- Allows for installation of thermocouples and transducers and give clearance for mounting bolts.

Figure 304



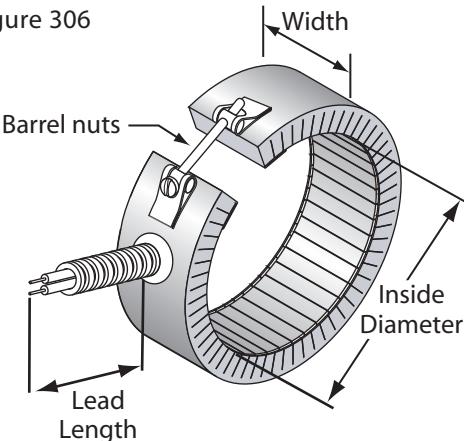
Latch and Trunion- Spring loaded clamping is recommended for larger diameter band and in applications where the heater is mounted horizontally.

Figure 305



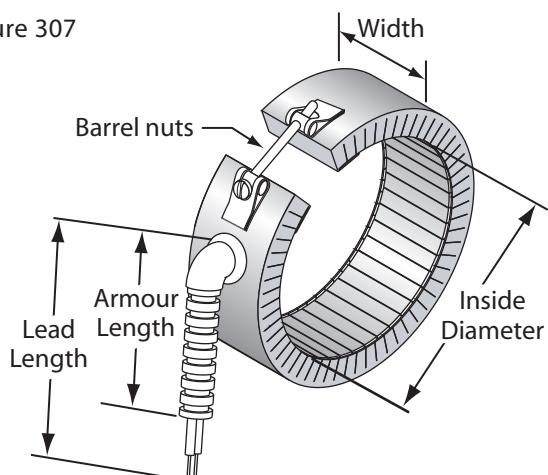
Partial Coverage Band- Used around large obstruction which holes or cut outs cannot accommodate. 2 piece construction with barrel nuts. shown. Others available

Figure 306



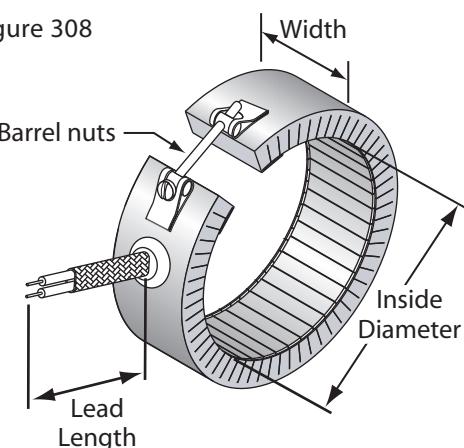
Armor cable with fiberglass leads- Specify location and length of leads at time of order.

Figure 307



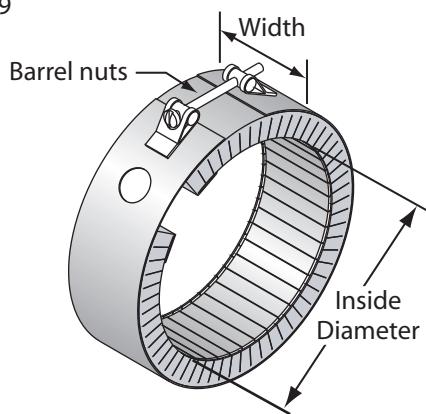
Right angle armor cable with fiberglass leads- Specify location and length of leads at time of order.

Figure 308



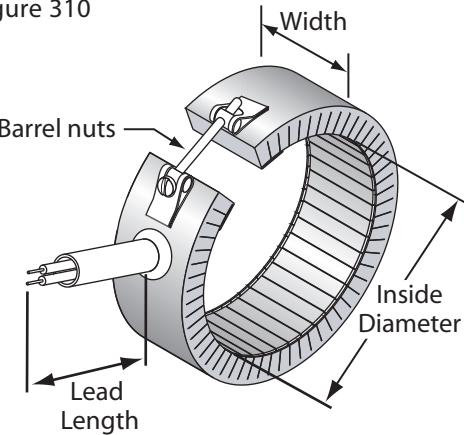
Metal braid with fiberglass leads- Specify location and length of leads at time of order.

Figure 309



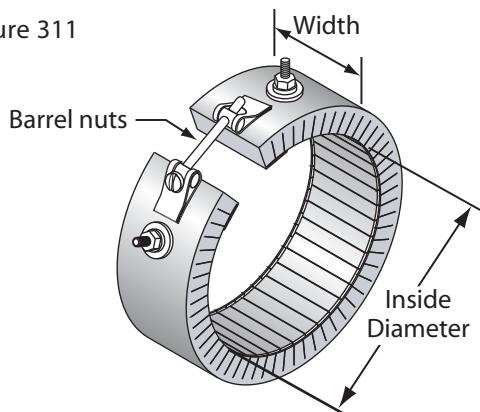
Shell Overlap- The metal strap is continued over the gap and a hole is provided. This allows for thermocouple mounting without a hole in the heater.

Figure 310



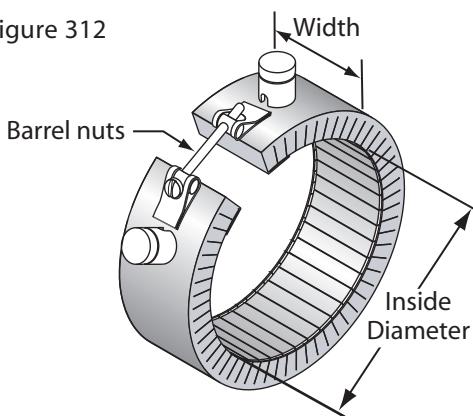
Fiberglass leads with protective sleeve- Specify location and length of leads at time of order.

Figure 311



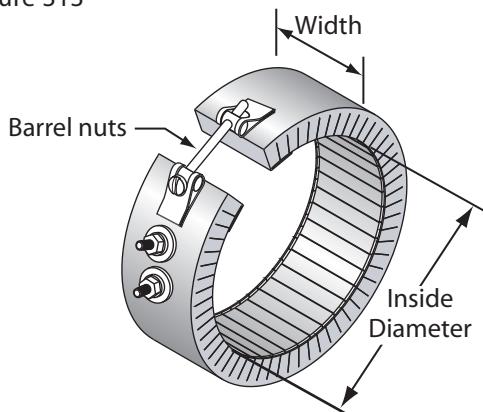
10-32 Threaded Terminals-
Minimum width required 7/8"

Figure 312



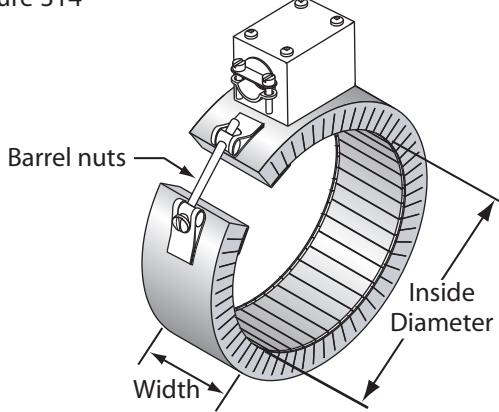
Ceramic Terminal Covers- Available on all threaded terminals. Covers available separately

Figure 313



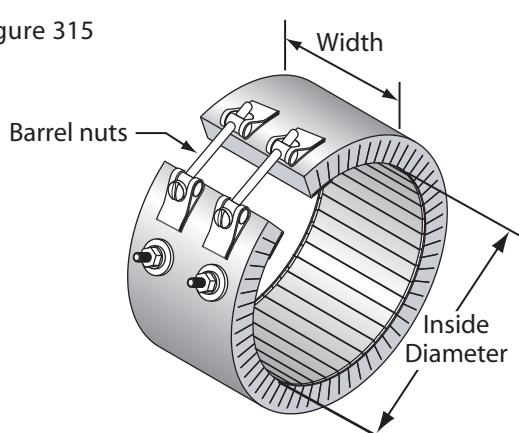
10-32 Threaded Terminals- Minimum width required
7/8"-Specify location at time of order

Figure 314



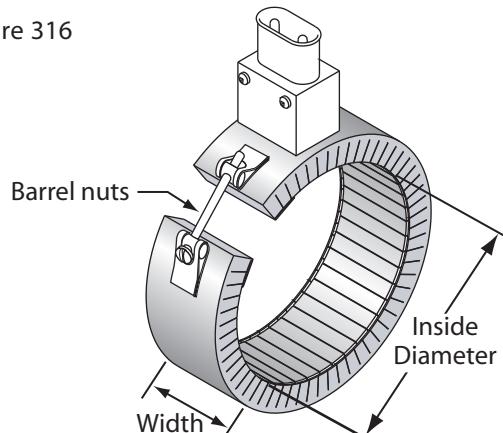
Sheet Metal Terminal Box- Available with T2 and T3
threaded terminals.

Figure 315



10-32 Threaded Terminals- Minimum width required
2.00"-Specify location at time of order

Figure 316



European Plug- Also available in 90 degree
construction- Specify location at time of order



ASB Heating Elements Ltd.

Bulb & Capillary Control

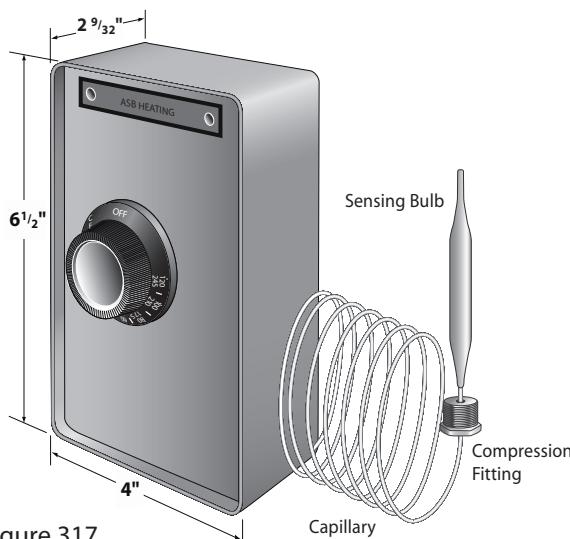


Figure 317

Temperature Control

Contacts open on temperature rise

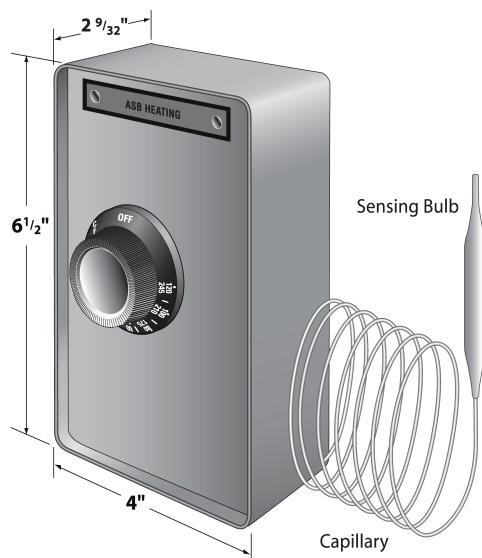
240 vac or less, 25 amp

DPST

7 feet capillary

differential +/- 5% of scale range

Cat No	Temperature Range		Bulb Dimensions		3/8" compression fitting	bulb & capillary material
	C°	F°	diameter	length		
G4-14467	-16, +40	0-100	3/8	6	included	copper
G4-14302	10-120	50-250	3/8	3 1/4	included	copper
G4-14304	70-280	160-540	3/8	3 1/2	included	nickel plated
G4-14292	10-120	50-250	3/16	10 3/16	extra	copper
G4-14293	70-280	160-540	3/16	10 7/8	extra	copper
G4-14294	160-370	320-700	3/16	7 3/8	extra	stainless steel



Temperarure Control

Contacts open on temperature rise

600 vac or less, 15 amp

TPST

7 feet capillary

differential +/- 5% of scale range

Cat No	Temperature Range		Bulb Dimensions		3/8" compression fitting	bulb & capillary material
	C°	F°	diameter	length		
G4A-633	10-120	50-250	3/16	10 3/16	extra	copper
G4A-634	70-280	160-540	3/16	10 7/8	extra	copper
G4A-635	160-370	320-700	3/16	7 3/8	extra	stainless steel



ASB Heating Elements Ltd.

Bulb & Capillary Control

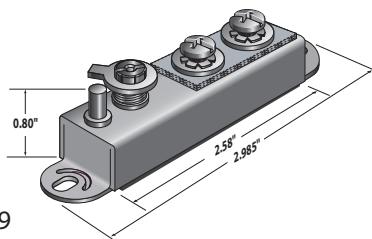


Figure 319

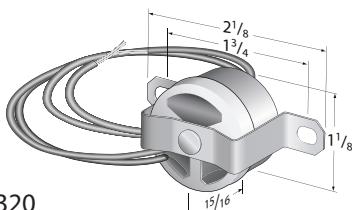


Figure 320

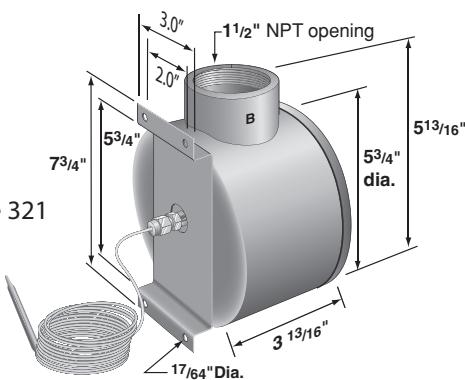


Figure 321

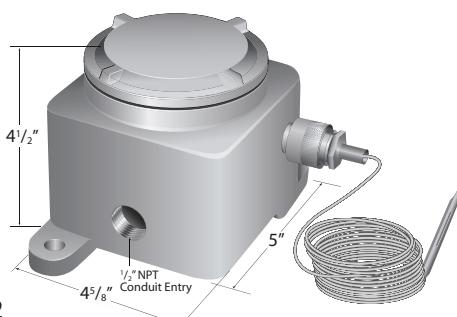


Figure 322

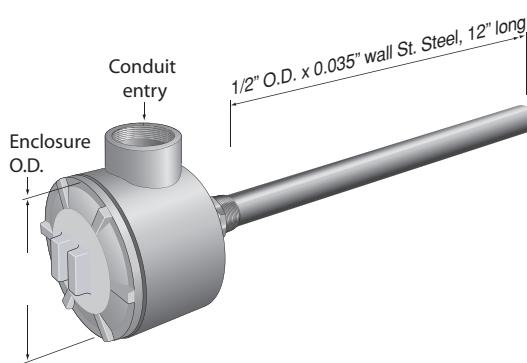


Figure 323

Surface Mount Control

Contacts open on temperature rise

Model number B1200

75° to 600°F

240 vac, maximum

1500 watts, maximum

Control Panel Thermostat

Model number DPC30525

10 amp 120 vac

5 amp 240 vac

Temperature setting
opens at 45°F ± 5°
closes at 35°F ± 5°

12" lead wires, rated at 105°F

Moisture resistant (Type 4 Enclosure)

240 vac or less, 25 amp Contacts open on temperature rise

DPST

7 feet capillary

differential +/- 5% of scale range

Cat No	Temperature Range		Bulb Dimensions		3/8" compression fitting	bulb & capillary material
	C°	F°	diameter	length		
G4-14467MR	-16,+40	0-100	3/8	6	included	copper
G4-14302MR	10-120	50-250	3/8	3 1/4	included	copper
G4-14304MR	70-280	160-540	3/8	3 1/2	included	nickel plated
G4-14292MR	10-120	50-250	3/16	10 3/16	extra	copper
G4-14293MR	70-280	160-540	3/16	10 7/8	extra	copper
G4-14294MR	160-370	320-700	3/16	7 3/8	extra	stainless steel

Explosion Proof Enclosure

Contacts open on temperature rise

Class I, Group B, C&D / Class II, Group E, F&G

240 vac or less, 25 amp

DPST

7 feet capillary

differential +/- 5% of scale range

Cat No	Temperature Range		Bulb Dimensions		3/8" compression fitting	bulb & capillary material
	C°	F°	diameter	length		
G4-14310	10-120	50-250	1/4	5 1/2	extra	nickle plated

ER Series - Hazardous Location Thermostats

MR Series - Moisture Resistant (Type 4)

Class 1, Division 1

Group C & D

Haz Loc	Moisture Resistant	Temperature Range C°	Volts	Amps	Type	Connection	Enclosure O.D.	Conduit Entry
ERG1-40SP	MRG1-40SP	-16 to 40°	240	30	SPST	1/2" NPT	5 7/8	1 1/2
ERG1-120SP	MRG1-120SP	10 to 120°	240	30	SPST	1/2" NPT	5 1/2	1 1/4
ERG1-280SP	MRG1-280SP	70 to 280°	240	30	SPST	1/2" NPT	5 7/8	1 1/2
ERG4-370DP	MRG4-370DP	160 to 370°	240	25	DPST	1/2" NPT	5 7/8	1 1/2

Other Available Options

Group A and/or B

600 volts 3 phase 15 amp



ASB Heating Elements Ltd.

Electronic Temperature Controls



Figure 324

ETR-9090 series

1/16th DIN
dual display
1 set point
1 optional alarm

80-260 vac 50/60Hz
PID auto tune/ or on/off
3 3/8" depth

Model	Sensor type	Output action	Alarm
-------	-------------	---------------	-------

ETR9090-121	any thermocouple	3a, 240vac SPDT relay	2a, 240vac SPST relay
ETR9090-122			no alarm relay
ETR9090-131		24 vdc, 20ma max.	2a, 240vac SPST relay
ETR9090-132			no alarm relay
ETR9090-151		4-20ma isolated linear	2a, 240vac SPST relay
ETR9090-152			no alarm relay
ETR9090-221	RTD Pt100 ohms	3a, 240vac SPDT relay	2a, 240vac SPST relay
ETR9090-222			no alarm relay
ETR9090-231		24 vdc, 20am max	2a, 240vac SPST relay
ETR9090-232			no alarm relay



Figure 325

ETR-9200 series

1/16th DIN
dual display
1 set point
2 optional alarms
4-20 ma PV re-transmission

80-260 vac 50/60Hz
PID auto tune/ or on/off
3" depth
NEMA 4X

Model	Sensor type	Output action	Alarm
-------	-------------	---------------	-------

ETR9200-1211	any thermocouple	3a, 240vac SPDT relay	no alarm relay
ETR9200-1221			2a, 240vac SPST relay
ETR9200-1311		24 vdc, 20ma max.	no alarm relay
ETR9200-1321			2a, 240vac SPST relay
ETR9200-1511		4-20ma isolated linear	no alarm relay
ETR9200-1521			2a, 240vac SPST relay
ETR9200-2211	RTD Pt100 ohms	3a, 240vac SPDT relay	no alarm relay
ETR9200-2221			2a, 240vac SPST relay
ETR9200-2311		24 vdc, 20ma max	no alarm relay
ETR9200-2321			2a, 240vac SPST relay



Figure 326

ETR-9300 series

1/16th DIN
dual display
2 set points
1 optional alarm

remote set point capable
loop break alarm
heater break alarm

digital communications
bumpless transfer
low voltage Input

Model	Power input	Input	Output action	Output action 2	Alarm	Communications
-------	-------------	-------	---------------	-----------------	-------	----------------

ETR9300-411000	90-264 vac 50/60Hz	Thermocouple	3a, 240vac SPST relay	none	none	none
ETR9300-411110		RTD		2A/240vac Form A relay	4-20ma/0-20ma	
ETR9300-412110		4-20ma/0-20ma	SSR, 5V/30a,		4-20ma/0-20ma	
ETR9300-413110			4-20ma/0-20ma			
ETR9300-413310				4-20ma/0-20ma		
ETR9300-513310	11-26vac or vdc					
ETR9300-xxxxx	Many other options available					Available



ASB Heating Elements Ltd.

Electronic Temperature Controls



Figure 327

ETR-9000 series

1/16th DIN
dual display (red or green)
2 outputs

universal input
90-264 vac 50/60Hz
11-26 VAC or VDC

Model	Sensor type	Output 1	Output 2
ETR9000 41100	Universal input Thermocouple,	Relay, 2A/240 vac	none
ETR9000 41110	RTD, 4-20ma, voltage	Relay, 2A/240 vac	4-20ma/-20ma
ETR9000 41200		SSR-5V/30ma	none
ETR9000 41220		SSR-5V/30ma	SSR-5V/30ma
ETR9000 41300		4-20ma/0-20ma	none
ETR9000 41310		4-20ma/0-20ma	4-20ma/0-20ma



Figure 328

ETR-901 series

1/16th DIN
no display
Proportional or on/off

120 vac
3 3/8" depth

Model	Sensor type	Output action	Temperature range
ETR901-01	"J" thermocouple	proportioning relay 3a, 120 vac SPST relay	50-850°F
ETR901-02		SSR, 32 vdc, 20ma max.	
ETR901-03		on/off 3a, 120 vac SPST relay	



Figure 329

ETR-902 series

1/16th DIN
PID or on/off

3 3/8" depth
no display, deviation lights

Model	Sensor type	Output action	Temperature Range	Power Input
ETR902-01	"J" thermocouple	proportioning 3a, 240vac SPST relay	50-850°F	120 vac
ETR902-02		SSR, 32vdc, 20ma max.		
ETR902-03		proportioning 3a, 240vac SPST relay	50-300°F	240 vac
ETR902-04		proportioning 3a, 240vac SPST relay	50-850°F	
ETR902-05		on/off 3a, 240vac SPST relay		120 vac
ETR902-06		proportioning SSR, 32vdc, 20ma max.		
ETR902-08		SSR, 32vdc, 20ma max.		240 vac



Figure 330

ETR-8120 series
ETR-8130 series

Smarter Logic®
1/8th DIN
dual display
front panel set-up

80-260 vac, 50-60HZ
2 1/2" depth
PID-auto tune, or on/off
12-36 vdc/vac available

Model	Sensor type	Output action	2 alarms
ETR8120-31211	any thermocouple	3a, 240vac SPDT relay	no alarm
ETR8120-31221			2a, 240vac SPST relay
ETR8120-31311		SSR 32 vdc, 20ma max.	no alarm
ETR8120-31321			2a, 240vac SPST relay
ETR8120-31511		4-20ma, isolated, linear	no alarm
ETR8120-31521			2a, 240vac SPST relay
ETR8120-31221	RTD-PT 100 ohms	3a, 240vac SPDT relay	2a, 240vac SPST relay
ETR8120-32521	DIN curve	4-20ma, isolated, linear	2a, 240vac SPST relay

Smarter Logic®
1/8th DIN
2 1/2" depth
PID-auto tune, or on/off

80-260 vac, 50-60HZ
2 outputs - heat/cool
dual display
front panel set-up

Model	Sensor type	Output action	2 alarms
ETR8130-312211	any thermocouple	3a, 120 vac SPDT relay	no alarm relay
ETR8130-312221			2a, 240vac SPST relay
ETR8130-322211	RTD-PT 100 ohms		no alarm relay
ETR8130-322221	DIN curve		2a, 240vac SPST relay



Figure 331

ETR-4130 series
ETR-4120 series

Smarter Logic®
1/4th DIN
dual display
front panel set-up

80-260 vac, 50-60HZ
2" depth
PID-auto tune, or on/off

Model	Sensor type	Output action	2 alarms
ETR4120-31211	any thermocouple	3a, 120 vac SPDT relay	no alarm relay
ETR4120-31221			2a, 240vac SPST relay
ETR4120-31521		4-20ma, isolated, linear	
ETR4120-32221	RTD-PT 100 ohms		

Smarter Logic®
1/4th DIN
dual display
front panel set-up

80-260 vac, 50-60HZ
2 outputs heat/cool
2" depth
PID-auto tune, or on/off

Model	Sensor type	Output action	2 alarms
ETR4130-312211	any thermocouple	3a, 120 vac SPDT relay	no alarm relay
ETR4130-312221			2a, 240vac SPST relay
ETR4130-322211	RTD-PT 100 ohms		no alarm relay
ETR4130-322221	DIN curve		2a, 240vac SPST relay



ASB Heating Elements Ltd.

Electronic Temperature Controls



Figure 332

ETR-401 series

1/4th DIN
2 " depth
on/off

100-260 vac
no display
proportioning

Model	Sensor type	Output action	Temperature range
ETR401-01	"J" thermocouple	on/off	50° - 850°F
		3a, 240vac SPDT relay	
ETR401-02		proportioning	
		3a, 240vac SPDT relay	
ETR401-04	"K" thermocouple	Proportioning	1-1200°C
		3a, 240vac SPDT relay	



Figure 333

ETR-404 series

1/4th DIN
2 " depth
on/off

90-260 vac
indicating
proportioning

Model	Sensor type	Output action	Temperature range
ETR404-01	"J" thermocouple	Proportioning	50° - 850°F
		3a, 240vac SPDT relay	
ETR404-03	"K" thermocouple	Proportioning	1-1200°C
		3a, 240vac SPDT relay	



Figure 334

ETR-3 high limit series

high limit control
no display
manual reset

surface mount or DIN rail
FM approved
optional DC output for SSR

Model	Sensor type	Output action	Temperature range
ETR3-01	"J" thermocouple	120 volt / 3.8amp 240v max	0-1400°F
ETR3-02	"K" thermocouple	120 volt / 3.8amp 240v max	0-2300°F
ETR3-03	"J" thermocouple	120 volt / 3.8amp 240v max	0-600°F
ETR3-05	"J" thermocouple	120 volt / 3.8amp 240v max	0-750°F
ETR3-06	"J" thermocouple	24vac / 3.8amp 240v max	0-1400°F
ETR3-09	RTD	120 volt / 3.8amp 240v max	0-850°F
ETR3-17	"J" thermocouple	240 volt / 3.8amp 240v max	0-1400°F



Figure 335

ETR-4 high limit series

high limit
no display
latching relay
auto reset

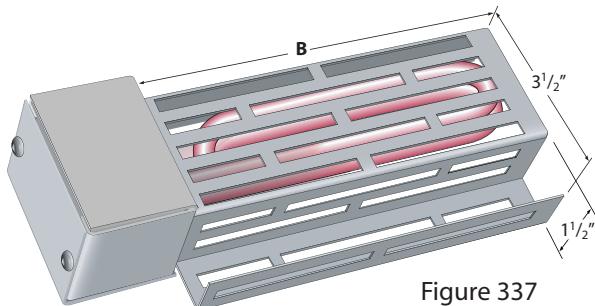
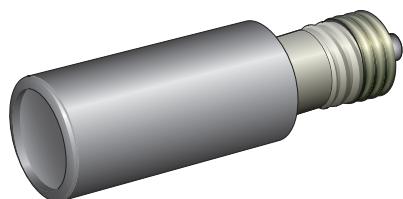
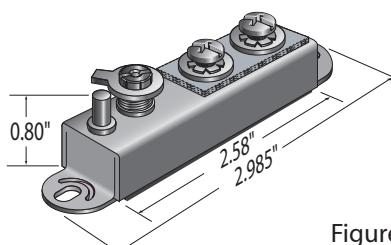
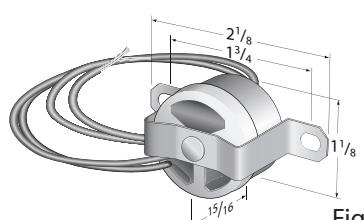
surface mount, no enclosure
100-260 vac
manual reset requires remote push button

Model	Sensor type	Output action	Temperature range
ETR4-02	"J" thermocouple	20a, 240vac SPDT relay	0-1000°F & 0-500°C
ETR4-03	"K" thermocouple	20a, 240vac SPDT relay	1-2000°F & 0-1100°C


Figure 336
Control Panels

NEMA 4 enclosure
on/off selector switch
120 volt control circuit
multiple circuit systems have time delay between circuit on duty
dual insulating electronic temperature control
high limit control with manual reset
pilot lights for - system on, heat on & high limit
custom panels also available

Disconnect amp	Maximum load amps	No. of circuits/amps per circuit	Enclosure size	Catalogue no.
30	24	1 x 24	24 x 20 x 8"	CP-030
60	48	1 x 48		CP-060
100	80	2 x 40		CP-100

(specify voltage and phase when ordering)

Figure 337
Enclosure Heater
(Also available without box)

Figure 338
Screw Base Heater

Figure 339

Figure 340

Catalogue no.	volts	watts	Catalogue no.	volts	watts
ASB14653-001B	12	50	ASB14653-009B	120	375
ASB14653-002B	24	50	ASB14653-010B	240	375
ASB14653-003B	120	100	ASB14653-011B	347	375
ASB14653-004B	120	150	ASB14653-013B	240	500
ASB14653-005B	120	200	ASB14653-014B	240	300
ASB14653-006B	120	250	ASB14653-015B	120	50
ASB14653-007B	240	250	ASB14653-016B	120	500
ASB14653-008B	120	300			

(specify voltage when ordering)

watts	volts	Catalogue no.
50		SCB-050
75	120 or	SCB-075
100	240	SCB-100
150		SCB-150
200		SCB-200

(specify voltage when ordering)
Surface Mount Control Contacts open on temperature rise

Model number B1200

75° to 600°F

240 vac, maximum

1500 watts, maximum

Control Panel Thermostat

Model number DPC30525

 10 amp 120 vac
5 amp 240 vac

 Temperature setting
opens at 45°F ± 5°
closes at 35°F ± 6°

12" lead wires, rated at 105°F

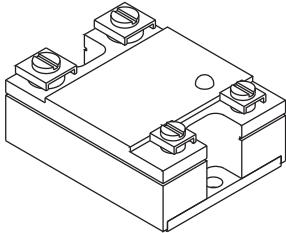


Figure 341

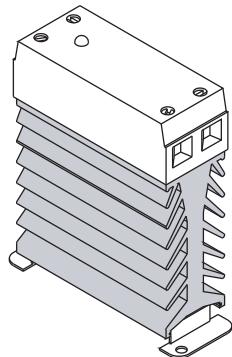


Figure 342

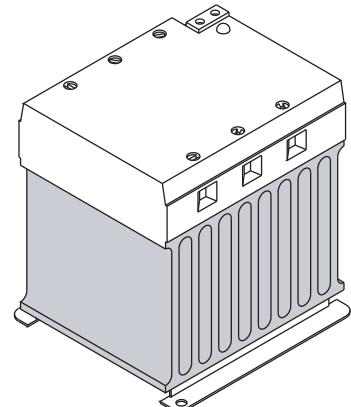


Figure 343

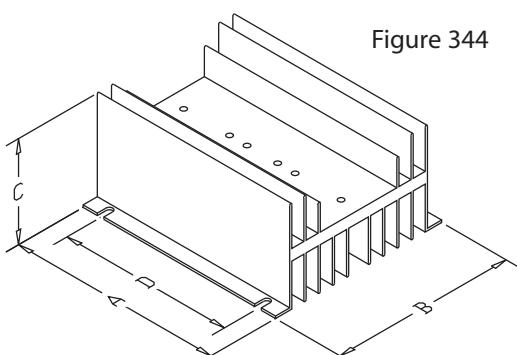


Figure 344

Solid State Relays

Model	Maximum Voltage	Amperage	Coil Voltage
240D10	330 VAC	10 AMPS	4-28 VDC
240D25	330 VAC	25 AMPS	4-28 VDC
240D40	330 VAC	40 AMPS	4-28 VDC
600D50	600 VAC	50 AMPS	4-28 VDC
240A10	330 VAC	10 AMPS	90-280 VAC
240A25	330 VAC	25 AMPS	90-280 VDC
240A40	330 VAC	40 AMPS	90-280 VDC
600A50	600 VAC	50 AMPS	90-280 VAC

DIN Rail Mount Solid State Relays

Model	Maximum Voltage	Amperage	Coil Voltage
DR600D25	600 VAC	25 AMPS	4-28 VDC
DR600D40	600 VAC	40 AMPS	4-28 VDC
DR600D75	600 VAC	75 AMPS	4-28 VDC
DR600A25	600 VAC	25 AMPS	90-280 VDC
DR600A40	600 VAC	40 AMPS	90-280 VAC
DR600A75	600 VAC	75 AMPS	90-280 VDC

DIN Rail Mount Solid State Relays - 3 phase

Model	Maximum Voltage	Amperage	Coil Voltage
DR600D30-3	600 VAC	30 AMPS	4-28 VDC
DR600A30-3	600 VAC	30 AMPS	90-280 VDC

Heat Sinks

Model	A	B	C	D
HSP1	5.500"	4.750"	2.630"	4.50"
HSP2	2.750"	4.750"	2.630"	N/A

1 Pole

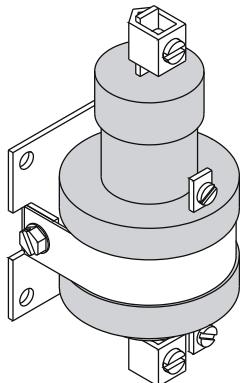


Figure 345

Standard Relays

35 AMP Relays

Style Part Number Coil Voltage

1 Pole Normally Open	1035A120AC	120 VAC
	1035A240AC	220VAC

2 Pole Normally Open	2035A120AC	120 VAC
	2035A240AC	220 VAC

3 Pole Normally Open	3035A120AC	120 VAC
	3035A240AC	220 VAC

2 Pole

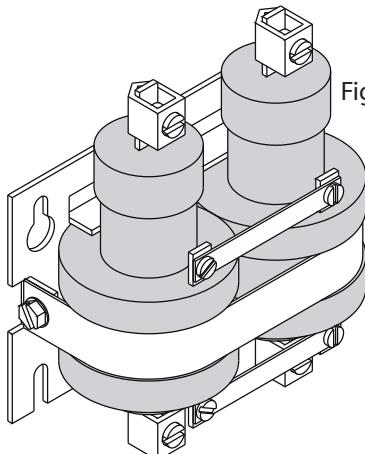


Figure 346

60 AMP Relays

Style Part Number Coil Voltage

1 Pole Normally Open	1060APS120AC	120 VAC
	1060APS240AC	220VAC

2 Pole Normally Open	2060APS120AC	120 VAC
	2060APS240AC	220 VAC

3 Pole Normally Open	3060APS120AC	120 VAC
	3060APS240AC	220 VAC

3 Pole

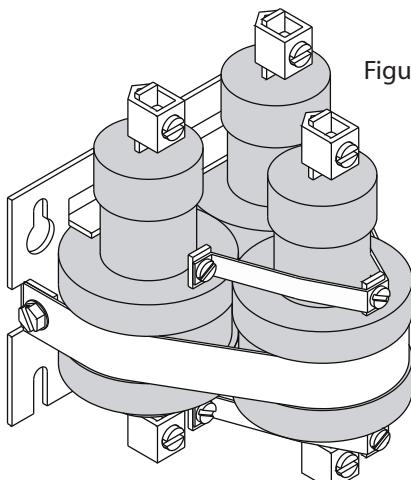


Figure 347

Bold numbers indicate stocked items

Please contact us for items with non-standard amperages or coil voltages. Many configurations available

Electrical Connection Wire

Temperature rating	guage	cat. no.
200°C	14	SEW2-14
	12	SEW2-12
	10	SEW2-10
250°C	18	TGGT 18
	16	TGGT 16
	14	TGGT 14
	12	TGGT 12
	10	TGGT 10
450°C	14	MGT 14
	12	MGT 12
	10	MGT 10

High Temperature Connectors

Wire size	stud size	cat. no.
18-22	#10	con1810
	#10	con1410
	1/4	con1425
10-12	#10	con1010
	1/4	con1025
	Butt connectors	buttcon 18 buttcon 14 buttcon 10

Other Available Items

		cat. no.
fibreglass tape	200°C	fiberglass-tape
Silicone tape	260°C	silicone-tape
ceramic wire nuts	10-12 ga	cwn 10
	14 ga	cwn 14
	16 ga	cwn 16
	18 ga	cwn 18

Protective Thermowells

316 Stainless Steel

outside fitting	inside fitting	length	cat. no.
for bulb & capillary controls			

1/2"-NPT	3/8"-NPT	6"	bwell-06
		12"	bwell-12

compression fitting for bulb 3/8-NPT CF1

for 3/16"-dia. thermocouples

3/8"-18 NPT	1/8"-27 NPT	6"	twell-06
		12"	twell-12

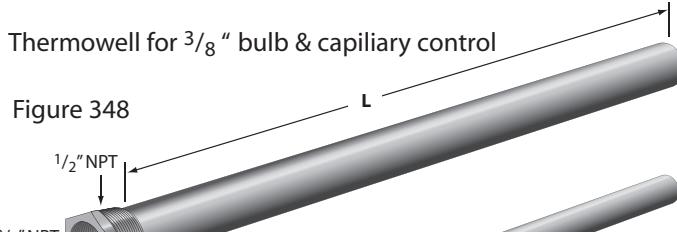


Figure 348

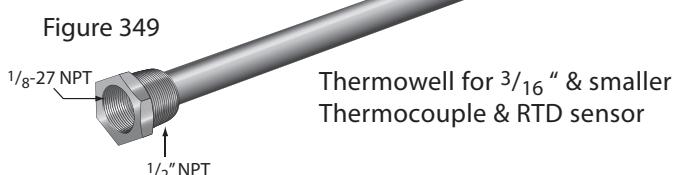


Figure 349

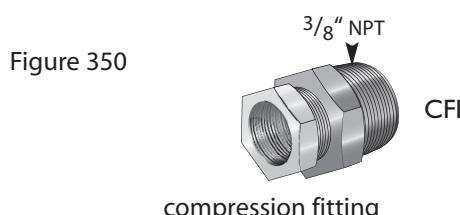


Figure 350

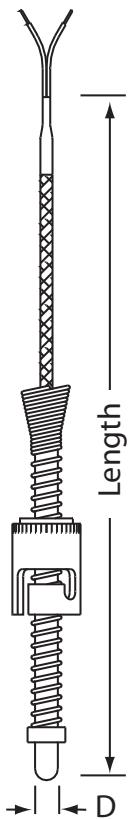
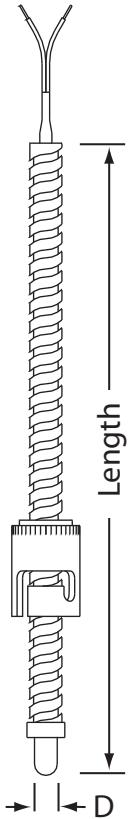
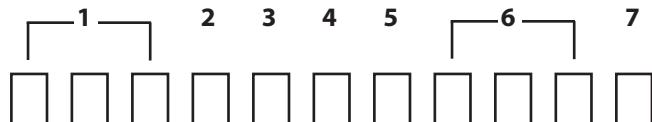
Series 110

Series 120


Figure 351

Figure 352

1) Series	110 120
2) Diameter (D)	B = $1/8"$, C = $3/16"$, D = $1/4"$
3) Calibration	J, K, T, E, D = RTD 2 wire F = RTD 3 wire
4) Junction	G = Grounded, U = Ungrounded
5) Leads	G = Fiberglass 24 ga T = Fiberglass 24 ga stainless braid F = Fiberglass 20 ga S = Fiberglass 20 ga stainless braid I = Fiberglass 24 ga stainless hose H = Fiberglass 20 ga stainless hose A = Teflon 24 ga B = Teflon 20 ga C = PVC 24 ga D = PVC 20 ga
6) Lead length	In whole inches 006-999
7) Termination	Choose a terminal design from pg L8

Ordering Code


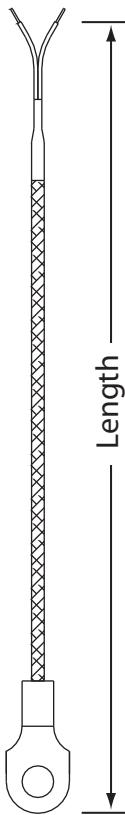
Series 130


Figure 353

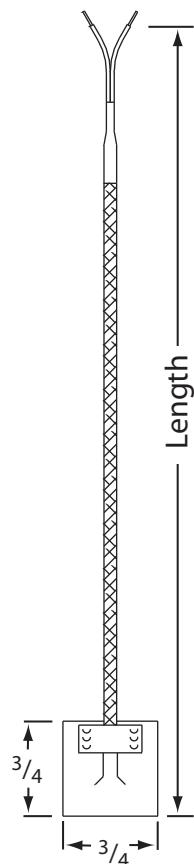
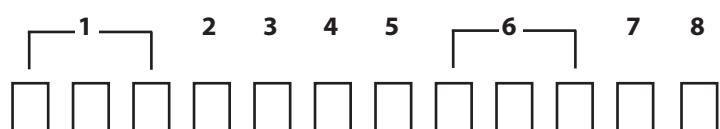
Series 140


Figure 354

1) Series	130 140
2) Lug Sizes	Ring size A = #8, B = #10, C = 1/4" Shim size D = 3/4" by 3/4" Stainless steel
3) Calibration	J, K, T, E, D = RTD 2 wire F = RTD 3 wire
4) Junction	G = Grounded, U = Ungrounded
5) Leads	T = Fiberglass 24 ga stainless braid S = Fiberglass 20 ga stainless braid I = Fiberglass 24 ga stainless hose H = Fiberglass 20 ga stainless hose A = Teflon 24 ga B = Teflon 20 ga
6) Lead length	In whole inches 006-999
7) Termination	Choose a terminal design from pg L8
8) Special options	Enter 0 if none. Specify others at time of order

Ordering Code



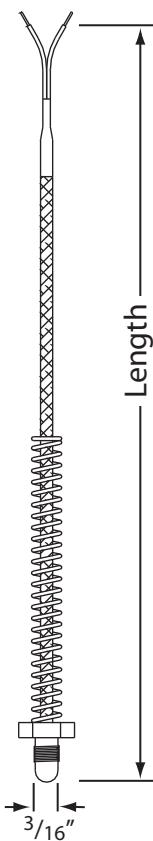
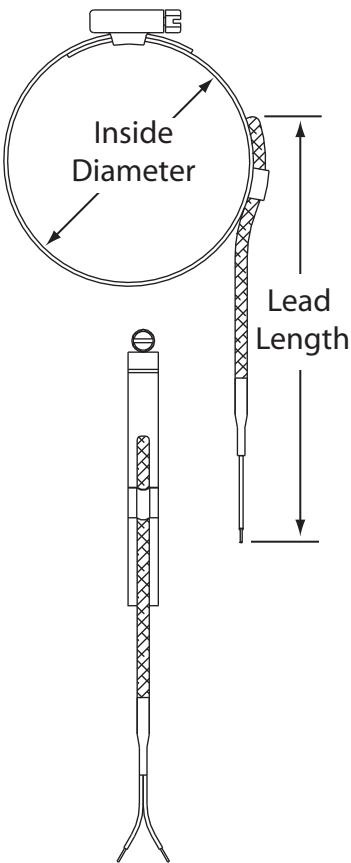
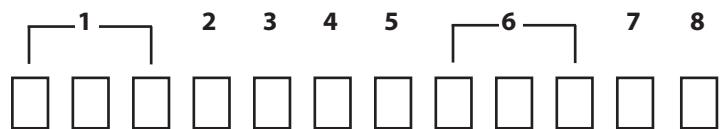
Series 145

Series 146


Figure 355

Figure 356

1) Series	145 146
2) Bolt Sizes	A = $1/4 \times 28$ UNF, B = 8-32, C = 10-32, D = M6 x 1
Band diameters	E = $1\frac{1}{16}$ - $1\frac{1}{4}$, F = $1\frac{1}{4}$ - $2\frac{1}{4}$, G = $2\frac{1}{4}$ - $3\frac{1}{4}$, H = $3\frac{1}{4}$ - $4\frac{1}{4}$, I = 4-5, J = 5-6, K = 6-7,
3) Calibration	J, K, T, E
4) Junction	G = Grounded, U = Ungrounded
5) Leads	T = Fiberglass 24 ga stainless braid S = Fiberglass 20 ga stainless braid I = Fiberglass 24 ga stainless hose H = Fiberglass 20 ga stainless hose A = Teflon 24 ga B = Teflon 20 ga
6) Lead length	In whole inches 006-999
7) Termination	Choose a terminal design from pg L8
8) Special options	Enter 0 if none. Specify others at time of order

Ordering Code


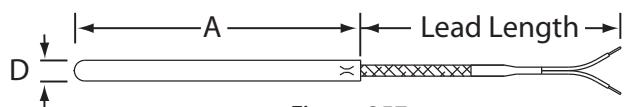
Series 150


Figure 357

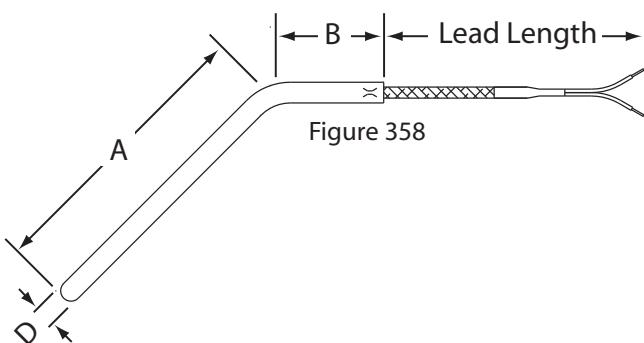
Series 151


Figure 358

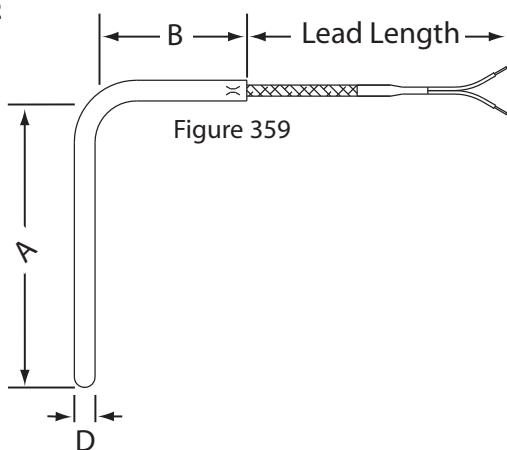
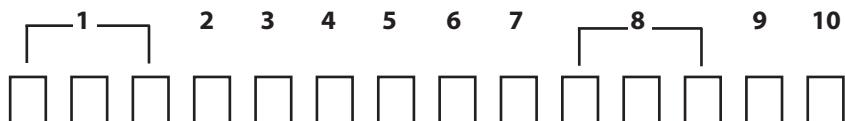
Series 152


Figure 359

1) Series	150 151 152
2) Diameter (D)	$B = \frac{1}{8}''$, $C = \frac{3}{16}''$, $D = \frac{1}{4}''$,
3) Calibration	J, K, T, E, D = RTD 2 wire F = RTD 3 wire
4) Junction	G = Grounded, U = Ungrounded
5) A Dimension	$A = \frac{1}{2}$, $B = 1$, $C = \frac{1}{2}$, $D = 2$, $E = \frac{1}{2}$, $F = 3$ $G = \frac{3}{2}$, $H = 4$, $I = \frac{1}{2}$, $J = 5$, $K = \frac{1}{2}$, $L = 6$, $M = \frac{1}{2}$, $N = 7$, $O = \frac{1}{2}$, $P = 8$, $Q = \frac{1}{2}$, $R = 9$ $S = \frac{1}{2}$, $T = 10$, $U = 12$, $V = 18$, $W = 24$, $Y = 36$ $Z = 48$, X=Special length
6) B Dimension	$A = \frac{1}{2}$, $B = 1$, $C = \frac{1}{2}$, $D = 2$, $E = \frac{1}{2}$, $F = 3$ $G = \frac{3}{2}$, $H = 4$, $I = \frac{1}{2}$, $J = 5$, $K = \frac{1}{2}$, $L = 6$, $M = \frac{1}{2}$, $N = 7$, $O = \frac{1}{2}$, $P = 8$, $Q = \frac{1}{2}$, $R = 9$ $S = \frac{1}{2}$, $T = 10$, $U = 12$, $V = 18$, $W = 24$, $Y = 36$ $Z = 48$, X=Special length (Enter 0 for series 150)
7) Leads	G = Fiberglass 24 ga T = Fiberglass 24 ga stainless braid F = Fiberglass 20 ga S = Fiberglass 20 ga stainless braid I = Fiberglass 24 ga stainless hose H = Fiberglass 20 ga stainless hose A = Teflon 24 ga B = Teflon 20 ga C = PVC 24 ga D = PVC 20 ga
8) Lead length	In whole inches 006-999
9) Termination	Choose a terminal design from pg L8
10) Special options	Fittings, flanges etc. Specify at time of order. Enter 0 if none

Ordering Code


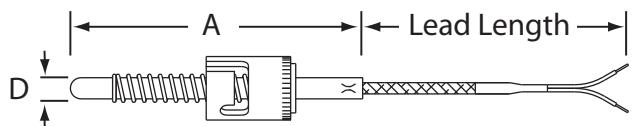
Series 160


Figure 360

1) Series 160 161 162

2) Diameter (D) $B = \frac{1}{8}''$, $C = \frac{3}{16}''$, $D = \frac{1}{4}''$,

3) Calibration J, K, T, E, D = RTD 2 wire
F = RTD 3 wire

4) Junction G = Grounded, U = Ungrounded

5) A Dimension $A = \frac{1}{2}$, $B = 1$, $C = \frac{1}{2}$, $D = 2$, $E = \frac{21}{2}$, $F = 3$
 $G = \frac{3}{2}$, $H = 4$, $I = \frac{41}{2}$, $J = 5$, $K = \frac{51}{2}$, $L = 6$,
 $M = \frac{61}{2}$, $N = 7$, $O = \frac{71}{2}$, $P = 8$, $Q = \frac{81}{2}$, $R = 9$
 $S = \frac{91}{2}$, $T = 10$, $U = 12$, $V = 18$, $W = 24$, $Y = 36$
 $Z = 48$, X = Special length

6) B Dimension $A = \frac{1}{2}$, $B = 1$, $C = \frac{1}{2}$, $D = 2$, $E = \frac{21}{2}$, $F = 3$
 $G = \frac{3}{2}$, $H = 4$, $I = \frac{41}{2}$, $J = 5$, $K = \frac{51}{2}$, $L = 6$,
 $M = \frac{61}{2}$, $N = 7$, $O = \frac{71}{2}$, $P = 8$, $Q = \frac{81}{2}$, $R = 9$
 $S = \frac{91}{2}$, $T = 10$, $U = 12$, $V = 18$, $W = 24$, $Y = 36$
 $Z = 48$, X = Special length
(Enter 0 for series 160)

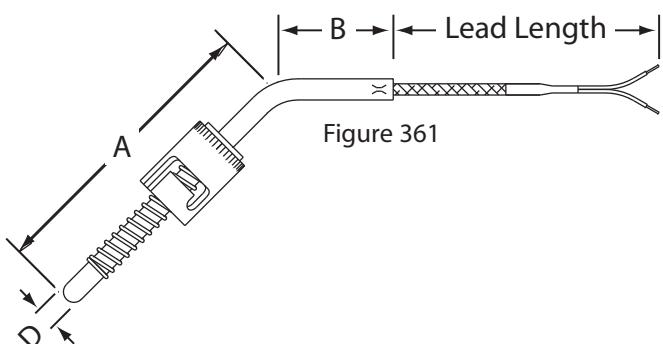
Series 161


Figure 361

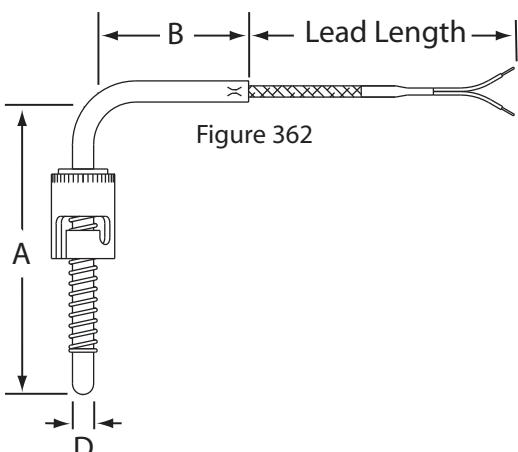
Series 162


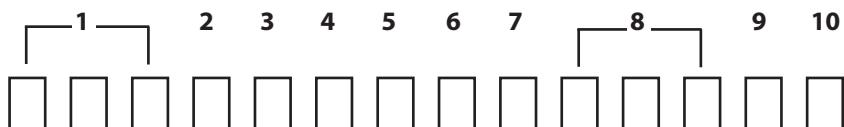
Figure 362

7) Leads
G = Fiberglass 24 ga
T = Fiberglass 24 ga stainless braid
F = Fiberglass 20 ga
S = Fiberglass 20 ga stainless braid
I = Fiberglass 24 ga stainless hose
H = Fiberglass 20 ga stainless hose
A = Teflon 24 ga
B = Teflon 20 ga
C = PVC 24 ga
D = PVC 20 ga

8) Lead length In whole inches 006-999

9) Termination Choose a terminal design from pg L8

10) Special options Fittings, flanges etc. Specify at time of order. Enter 0 if none

Ordering Code


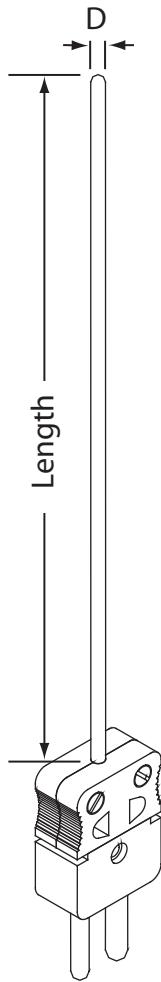
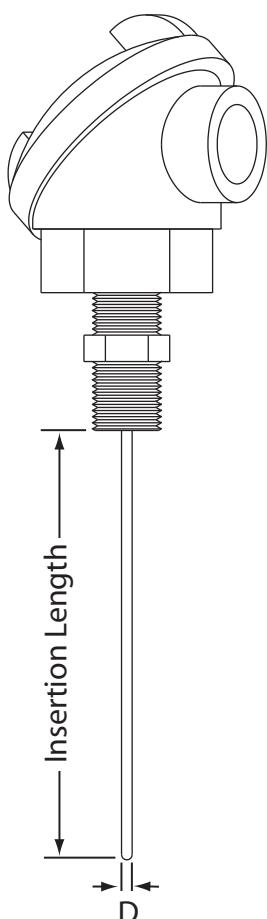
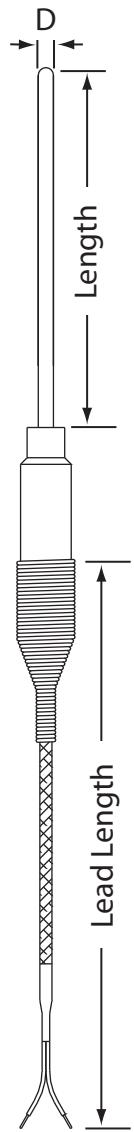
Series T3

Series T2

Series T1


Figure 363

Figure 364

Figure 365

1) Series T1 T2 T3

2) Diameter (D) $A = 1/16"$, $B = 1/8"$, $C = 3/16"$, $D = 1/4"$

3) Calibration J, K, T, E, R, S

4) Junction G = Grounded, U = Ungrounded
E = Exposed

5) Sheath Material A = 304SS, B = 316SS, C = Incoloy

6) L Dimension In whole inches 00-99

7) L Dimension A = 0, B = $1/8"$, D = $1/4"$, F = $3/8"$,

Fractional inches H = $1/2"$, J = $5/8"$, L = $3/4"$, N = $7/8"$

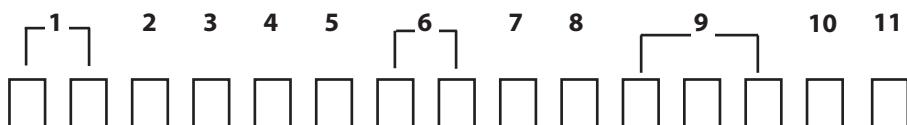
8) Leads F = Fiberglass braid
S = Fiberglass with stainless braid
H = Fiberglass with stainless hose
B = Teflon
D = PVC
K = Kapton

T2 terminations A = Aluminium head $1/2 \times 1/2$ ss fitting
L = Aluminium head $1/2 \times 1/2$ ss fitting
spring loaded
E = Explosion proof $1/2 \times 1/2$ ss fitting
I = Cast iron $1/2 \times 1/2$ ss fitting
P = Polypropylene $1/2 \times 1/2$ ss fitting

9) Lead length In whole inches 066-999

10 Termination Choose a terminal design from pg L8

11) Special options Fittings, flanges etc. Specify at time
of order. Enter 0 if none

Ordering Code


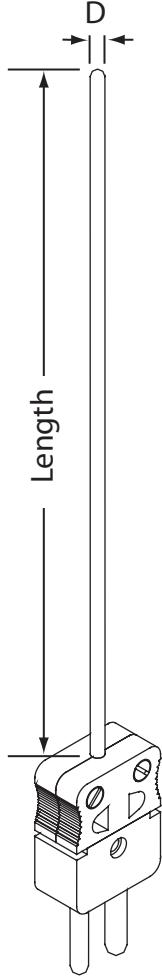
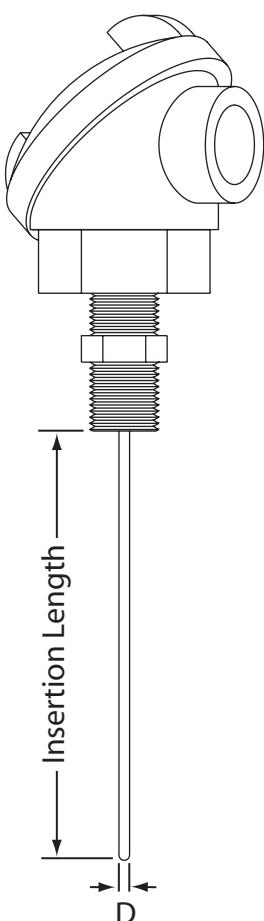
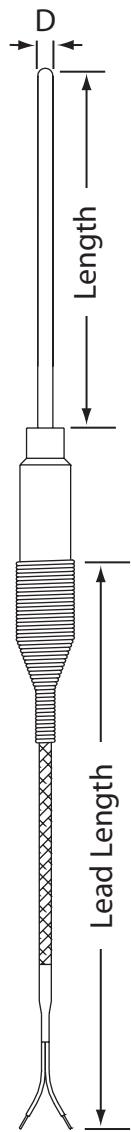
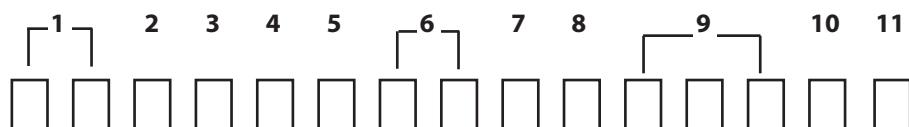
Series R3

Series R2

Series R1


Figure 366

Figure 367

Figure 368

1) Series	R1 R2 R3
2) Diameter (D)	$A = \frac{1}{16}''$ $B = \frac{1}{8}''$ $C = \frac{3}{16}''$ $D = \frac{1}{4}''$
3) Coefficient	D = Din 3850, J = JIS 3916 (100 ohm)
4) Lead Construction	D = 2 wire, T = 3 wire, F - 4 wire
5) Sheath Material	A = 304SS, B = 316SS, C = Incoloy
6) L Dimension	In whole inches 00-99
7) L Dimension	A = 0, B = $\frac{1}{8}''$, D = $\frac{1}{4}''$, F = $\frac{3}{8}''$,
Fractional inches	H = $\frac{1}{2}''$, J = $\frac{5}{8}''$, L = $\frac{3}{4}''$, N = $\frac{7}{8}''$
8) Leads	F = Fiberglass braid S = Fiberglass with stainless braid H = Fiberglass with stainless hose B = Teflon D= PVC K = Kapton
T2 terminations	A = Aluminium head $\frac{1}{2}'' \times \frac{1}{2}''$ ss fitting L = Aluminium head $\frac{1}{2}'' \times \frac{1}{2}''$ ss fitting spring loaded E = Explosions proof $\frac{1}{2}'' \times \frac{1}{2}''$ ss fitting I = Cast iron $\frac{1}{2}'' \times \frac{1}{2}''$ ss fitting P = Polypropylene $\frac{1}{2}'' \times \frac{1}{2}''$ ss fitting
9) Lead length	In whole inches 066-999
10 Termination	Choose a terminal design from pg L8
11) Special options	Fittings, flanges etc. Specify at time of order. Enter 0 if none

Ordering Code


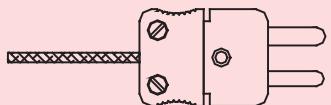
A- Standard Plug

Figure 369

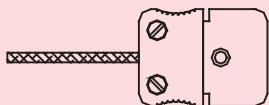
B- Standard Jack

Figure 370

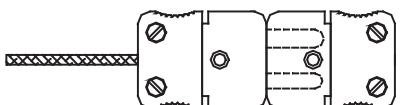
C- Standard Plug / Mating Jack

Figure 371

D - Mini Plug

Figure 372

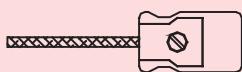
E - Mini Jack

Figure 373

F - Mini Plug / Mating Jack

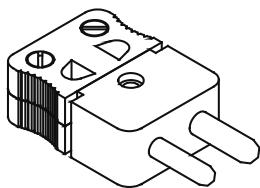
Figure 374

L - Split Leads

Figure 375

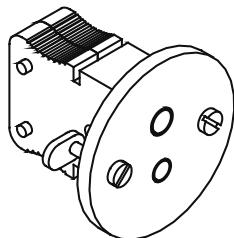
M - Leads with Spade Lugs

Figure 376

Plug - Male

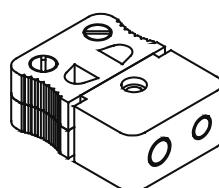
400°F Hollow pins
Part number _MP
Insert calibration J.K.T.R.U.E.N

Figure 377

Panel Jack

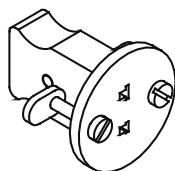
400°F Hollow pins
Part number _PMJ
Insert calibration J.K.T.R.U.E.N

Figure 378

Jack - Female

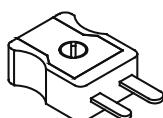
400°F Hollow pins
Part number _FP
Insert calibration J.K.T.R.U.E.N

Figure 379

Mini Panel Jack

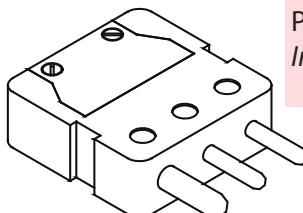
400°F Hollow pins
Part number _PMJ - mini
Insert calibration J.K.T.R.U.E.N

Figure 380

Mini Plug - Male

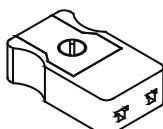
400°F Hollow pins
Part number _MP - mini
Insert calibration J.K.T.R.U.E.N

Figure 381

3 Pin Plug - Male

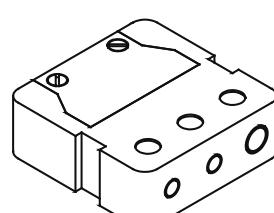
400°F Hollow pins
Part number _MP-3
Insert calibration J.K.T.R.U.E.N

Figure 382

Mini Jack - Female

400°F Hollow pins
Part number _FP - mini
Insert calibration J.K.T.R.U.E.N

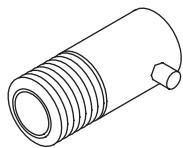
Figure 383

3 Pin Jack - Female

400°F Hollow pins
Part number _FP-3
Insert calibration J.K.T.R.U.E.N

Figure 384

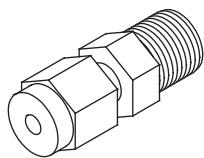
Bayonet adaptors



Part No.	Length	Thread
BA1	7/8"	1/8" NPT
BA2	1 1/2"	1/8" NPT
BA3	2"	1/8" NPT
BA4	2 1/2"	1/8" NPT
BA5	3"	1/8" NPT

Figure 385

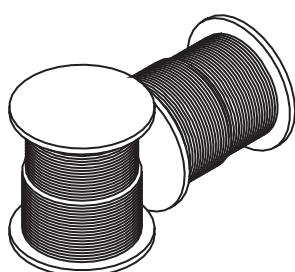
Compression Fittings



Part No.	Sheath O.D.	Material	Male NPT
CFB1/16ID	1/16"	Brass	1/8"
CFS1/16ID	1/16"	Stainless	1/8"
CFB1/8ID	1/8"	Brass	1/8"
CFS1/8ID	1/8"	Stainless	1/8"
CFB3/16ID	3/16"	Brass	1/8"
CFS3/16ID	3/16"	Stainless	1/8"
CFB1/4ID	1/4"	Brass	1/8"
CFS1/4ID	1/4"	Stainless	1/8"

Figure 386

Thermocouple wire



Construction	Overall jacket jacket	Single Conductors	Temperature ratings	
			Continuous	Single reading
PVC Polyvinyl Chloride	PVC	PVC	-20 to +221°F -29 to +105°F	N/A
FEP Extruded Teflon	FEP Teflon	FEP Teflon	-90 to +400°F -67 to +204°C	500°F 260°C
Kapton	Kapton	Kapton	500°F 260°C	N/A
Fiberglass Braid	Silicone imp. glass braid	Silicone imp. glass braid	900°F 482°C	1000°F 538°C
Vitreous Silica Fiber	Vitreous Silica Fiber	Vitreous Silica Fiber	1600°F 871°C	2000°F 1093°C
Ceramic Fiber	Ceramic Fiber	Ceramic Fiber	2200°F 1204°C	2600°F 1204°C

Figure 387



ASB Heating Elements Ltd.

List of Products

Product Prefix	Description	Page No.	Product Prefix	Description	Page No.
1035	mercury contactor	K9	ASPOL	2"NPT 1 phase	B4
1060	mercury contactor	K9	ASPOL	2.5"NPT 1 or 3 phase	B6
110	thermocouple	L1	ASPOL-P	2"NPT 1 or 3 phase	B6
120	thermocouple	L1	ASPO-P	2"NPT 1 or 3 phase	B6
130	thermocouple	L2	ASPS	2"NPT 1 phase	B3
140	thermocouple	L2	ASPS	2.5"NPT 1 or 3 phase	B7
145	thermocouple	L3	ASPS-P	2"NPT 1 or 3 phase	B5
146	thermocouple	L3	B1200	thermostat	K2
150	thermocouple	L4	BA	bayonet adaptor	L10
151	thermocouple	L4	CB	radiant heater	G1
152	thermocouple	L4	CF	compression fitting	L10
160	thermocouple	L5	CP	control panel	K7
161	thermocouple	L5	CSHA	over-the side	E4
162	thermocouple	L5	CSHC	over-the side	E3
2035	mercury contactor	K9	CSHI	over-the side	E3
2060	mercury contactor	K9	CSHO	over-the side	E4
3035	mercury contactor	K9	CSHS	over-the side	E3
3060	mercury contactor	K9	DCP	thermostat	K2
ASB14653	enclosure heater	K7	ER-G1	thermostat/HazLoc	K2
ASB1-ASB9	tubular & finned	A1-A7	ER-G4	thermostat/HazLoc	K2
ASB260	high limit	K1	ETR	temp.control/electronic	K3-K6
ASB340	high limit	K1	F	radiant heater	G1
ASPA	1"NPT 1 phase	B1	FS	radiant heater	G1
ASPA	1.25"NPT 1 phase	B2	FSA	radiant heater	G1
ASPA	2"NPT 1 phase	B4	G4	thermostat	K1
ASPA	2.5"NPT 1 or 3 phase	B8	G4A	thermostat	K1
ASPAL	1"NPT 1 phase	B1	HDA	strip heater	H1
ASPAL	1.25"NPT 1 phase	B2	HDS	strip heater	H2
ASPA-P	2"NPT 1 or 3 phase	B5	MR-G4	thermostat/Type 4	K2
ASPA-P	2"NPT 1 or 3 phase	B6	MR-G4A	thermostat/Type 4	K2
ASPC	1"NPT 1 phase	B1	MW	cartridge heater	I6-I14
ASPC	1.25"NPT 1 phase	B2	MX	cartridge heater	I6-I14
ASPC	2"NPT 1 phase	B3	PFC-3	3" 150# flange	C1
ASPC	2.5"NPT 1 or 3 phase	B7	PFC-4	4" 150# flange	C1
ASPC-P	2"NPT 1 or 3 phase	B5	PFC-5	5" 150# flange	C2
ASPI	2"NPT 1 phase	B3	PFC-6	6" 150# flange	C2
ASPI	2.5"NPT 1 or 3 phase	B7	PFC-8	8" 150# flange	C3
ASPI-P	2"NPT 1 or 3 phase	B5	PFH	pipe insert	D1
ASPO	2"NPT 1 phase	B4	PFHK	pipe insert	D1
ASPO	2.5"NPT 1 or 3 phase	B6	PFI-3	3" 150# flange	C7



ASB Heating Elements Ltd.

List of Products

Product Prefix	Description	Page No.	Product Prefix	Description	Page No.
PFI-30XX	duct heater	F1	SHO	over-the side	E2
PFI-4	4" 150# flange	C7	SHS	over-the side	E1
PFI-5	5" 150# flange	C8	SPA	1"NPT 1 phase	B1
PFI-6	6" 150# flange	C8	SPA	2"NPT 1 phase	B4
PFI-8	8" 150# flange	C9	SPA	2.5"NPT 1 or 3 phase	B8
PFIH-3	3" 150# flange	C4	SPA- MR	pipe insert	D2
PFIH-4	4" 150# flange	C4	SPA-HL MR	pipe insert	D2
PFIH-5	5" 150# flange	C5	SPA-K MR	pipe insert	D2
PFIH-6	6" 150# flange	C5	SPAL	1"NPT 1 phase	B1
PFIH-8	8" 150# flange	C6	SPA-P	2"NPT 1 or 3 phase	B6
PFIL-30XX	duct heater	F1	SPC	1"NPT 1 phase	B1
PFO-3	3" 150# flange	C10	SPC	1.25"NPT 1 phase	B2
PFO-4	4" 150# flange	C10	SPC	2"NPT 1 phase	B3
PFO-5	5" 150# flange	C11	SPC	2.5"NPT 1 or 3 phase	B7
PFO-6	6" 150# flange	C11	SPC-P	2"NPT 1 or 3 phase	B5
PFO-8	8" 150# flange	C12	SPH	pipe insert	D1
PFOL-3	3" 150# flange	C13	SPHK	pipe insert	D1
PFOL-4	4" 150# flange	C13	SPI	2"NPT 1 phase	B3
PFOL-5	5" 150# flange	C14	SPI	2.5"NPT 1 or 3 phase	B7
PFOL-6	6" 150# flange	C14	SPI-P	2"NPT 1 or 3 phase	B5
PFOL-8	8" 150# flange	C15	SPO	1.25"NPT 1 phase	B2
PFOX-3	3" 150# flange	C15	SPO	2"NPT 1 phase	B4
PFOX-4	4" 150# flange	C16	SPO	2.5"NPT 1 or 3 phase	B8
PFOX-5	5" 150# flange	C16	SPOL	1.25"NPT 1 phase	B2
PFOX-6	6" 150# flange	C17	SPOL	2"NPT 1 phase	B4
PFOX-8	8" 150# flange	C18	SPOL	2.5"NPT 1 or 3 phase	B8
QR	radiant heater	G3	SPOL-P	2"NPT 1 or 3 phase	B6
R1	RTD sensor	L7	SPO-P	2"NPT 1 or 3 phase	B6
R2	RTD sensor	L7	SPS	2"NPT 1 phase	B3
R3	RTD sensor	L7	SPS	2.5"NPT 1 or 3 phase	B7
RAD	radiant heater	G2	SPS-P	2"NPT 1 or 3 phase	B5
RADD	radiant heater	G2	T1	thermocouple	L6
RSHI	over-the side	E5	T2	thermocouple	L6
RSHS	over-the side	E5	T3	thermocouple	L6
RSHT	over-the side	E5	URADD	radiant heater	G3
SCB	screw base heater	K7			
SHA	over-the side	E2			
SHC	over-the side	E1			
SHI	over-the side	E1			