



Bolt Heaters/ Flexible Bolt Heaters



Certificate No. 013867



Heatrex has over thirty-five years experience in the design and manufacture of high quality bolt heaters. The Heatrex Bolt Heater is specifically designed to provide maximum watt density rating on the heated tube length.

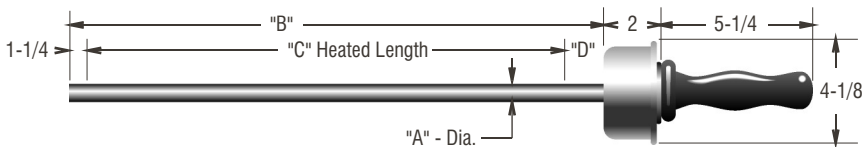
Heatrex uses the highest quality materials commonly available to manufacture these heaters and maintains rigid quality control procedures to insure a reliable product. Each heater is energized at rated voltage and electrically tested at full heat prior to shipment.

Applications

Heatrex Bolt Heaters are used to preheat large, hollow holding bolts or studs where a high concentration of heat is critical for bolt expansion in a short period of time. As an insertion type unit, the bolt heater is widely used in the manufacture and servicing of heavy duty steam or other pressure equipment. It is also used to heat die blocks and large platens and to expand adjusting bolts on mechanical or hydraulic presses.

In general, most applications attempt to produce an expansion (or stretch) of .0015 inches per inch of length on alloy bolts. This will produce a bolt stress of 45,000 psi at the root of the thread. The portion of the bolting member to be heated, excluding threads, is usually approximately 65% of the total length.

The following chart outlines suggested heater diameters for some common hole sizes to produce the above stretch using standard Heatrex Bolt Heaters.



Clearance Hole	Heater Diameter
.500	.438
.625	.553 or .565
.750	.688
.813	.781
.875	.813
1.000	.938
1.125	1.047
1.250	1.188
1.500	1.324

Standard Features

- Alloy sheath swaged tubular construction
- Grade "A" magnesium-oxide filled and swaged
- 80/20 Nickel chrome alloy resistance wire
- Standard 4" octagon electrical enclosure, with knock-outs for easy wiring
- Insulating handle
- Wide range of standard (stock) diameters and lengths

Optional Features

- Special watt densities, wattages, lengths and diameters available
- Three conductor power leads and plug assemblies
- Two conductor power leads with grounding clip and plug assemblies
- Replaceable element bolt heaters feature cast boxes for convenient screw-in interchangeability
- Flexible Bolt Heaters available

Benefits

- Fast response, large bolts can be heated to full expansion in 15-30 minutes
- May be used in multiples, for uniform heating of matching bolts

Installation

Heatrex Bolt Heaters can be portable with plug disconnect. When multiple heaters are used, all must be energized simultaneously. Check service to determine that the line will carry the heater load at rated voltage. For insertion applications, hole diameter should be as close to heater diameter as possible (1/16" maximum clearance). Close tolerance will permit maximum heat transfer and prolong heater life. For applications other than bolt heating contact the factory.

Operating Instructions

Warning: Do not operate bolt heater at rated voltage in open air. Insert heater into bolt before energizing. Heater must be properly fused and grounded.

In view of the fact that bolt heaters operate at high temperatures with a relatively short life, ultimate failure should be anticipated and precautions taken to prevent an electrical or shock hazard.

Heaters should be connected to a power supply of rated voltage on the nameplate. All field wiring should be in accordance with NEC and local codes.

BOLT HEATERS

Adequate wire size for total amperage and length of run should be determined from standard code tables. Where more than one heater is used on a circuit, it is recommended that each heater be individually fused to prevent damage to the equipment and possible shock hazard to operating personnel.

Storage

Care should be taken to store heaters properly prior to use. Heaters must be stored inside in dry heated locations. Do not store in wet humid locations.

If heaters have been stored for more than sixty days or have not been used for over thirty days between operations, insulation tests should be conducted to check for moisture absorption (see Field Test Instructions included with shipment).

Bolt Heater Selection Guide

Watts	Dimensions (in.)				Catalog Number		Wt. lbs. (approx.)
	"A"	"B"	"C"	"D"	120 V	240 V	
825	.438	19 1/4	12	6	200001-1	200001-2	1
1240		25 1/4	18		200002-1	200002-2	2
1650		31 1/4	24		200003-1	200003-2	2
2475		43 1/4	36		200004-1	200004-2	2
1050	.553	19 1/4	12	6	200005-1	200005-2	1
1560		25 1/4	18		200006-1	200006-2	2
2085		31 1/4	24		200007-1	200007-2	3
3125		43 1/4	36		200008-1	200008-2	3
4175		55 1/4	48		200056-1	200056-2	4
1300	.688	19 1/4	12	6	200009-1	200009-2	2
1950		25 1/4	18		200010-1	200010-2	3
2600		31 1/4	24		200011-1	200011-2	3
3900		43 1/4	36		200012-1	200012-2	4
5185		55 1/4	48		200048-1	200048-2	5
6485		67 1/4	60		200054-1	200054-2	6
1535	.813	19 1/4	12	6	200013-1	200013-2	2
2300		25 1/4	18		200014-1	200014-2	4
3065		31 1/4	24		200015-1	200015-2	5
4600		43 1/4	36		200016-1	200016-2	6
6135		55 1/4	48		200046-1	200046-2	6
7665		67 1/4	60		200053-1	200053-2	8
1770		.938	22 1/4		12	9	200017-1
2650	28 1/4		18	200018-1	200018-2		5
3540	34 1/4		24	200019-1	200019-2		5
5300	46 1/4		36	200020-1	200020-2		7
7075	58 1/4		48	200049-1	200049-2		8
8850	70 1/4	60	200055-1	200055-2	9		
1975	1.047	22 1/4	12	9	200021-1	200021-2	5
2960		28 1/4	18		200022-1	200022-2	6
3950		34 1/4	24		200023-1	200023-2	6
5925		46 1/4	36		200024-1	200024-2	8
7900		58 1/4	48		200025-1	200025-2	10
9870		70 1/4	60		200047-1	200047-2	11
4995		1.324	37 1/2		24 1/4	12	200026-1
7490	49 1/2		36 1/4	200027-1	200027-2		11
9985	61 1/2		48 1/4	200028-1	200028-2		15
12490	73 1/2		60 1/4	200029-1	200029-2		16

Watts	Dimensions (in.)				Catalog Number				
	"A"	"B"	"C"	"D"	115 V	230 V	240 V		
845	.565	14	10	2.75	-	-	540223		
1350		20	16		-	-	540224		
1850		26	22		-	-	540225		
2360		32	28		-	-	540058		
2865		38	34		-	-	540092		
270	.565	7	3	2.75	540180	-	-		
440		9	5		540181	-	-		
620		11	7		540042	-	-		
790		13	9		540079	-	-		
960	.565	15	11	2.75	540182	540183	-		
1140		17	13		540184	540018	-		
1310		19	15		540185	540115	-		
1500		21	17		540116	540076	-		
1660		23	19		540186	540187	-		
1850		25	21		540188	540136	-		
2015	.565	27	23	2.75	-	540189	-		
2200		29	25		-	540190	-		
2375		31	27		-	540191	-		
2540		33	29		-	540192	-		
2800		36	32		-	540193	-		
960		.781	10		6	2.75	-	540168	-
1215			14		10		540203	540111	-
1460	16		12	540112	540043		-		
1700	18		14	540113	540040		-		
1960	20		16	540151	540114		-		
2200	.781	22	18	2.75	540152	540153	-		
2430		24	20		540154	540078	-		
2550		25	21		-	540169	-		
2680		26	22		540155	540156	-		
2915		28	24		540157	540158	-		
3160		.781	30		26	2.75	540159	540051	-
3400	32		28	540160	540161		-		
3650	34		30	540162	540163		-		
3900	36		32	540164	540019		-		
4140	.781	38	34	2.75	-	540165	-		
4375		40	36		-	540166	-		
4625		42	38		-	540015	-		
4860		44	40		-	540093	-		
5110		.781	46		42	2.75	-	540077	-
5350	48		44	-	540039		-		
5590	50		46	-	540167		-		
6075	54		50	-	540052		-		
2670	.813		26	22	2.75		-	-	540050
3400		32	28	-		-	540118		
4125		38	34	-		-	540060		
4850		44	40	-		-	540053		
5580		50	46	-		-	540054		
6305	.813	56	52	2.75	-	-	540049		
7035		62	58		-	-	540117		
7760		68	64		-	-	540205		
8610		75	71		-	-	540207		
4970		1.188	32		28	2.75	-	-	540209
6025	38		34	-	-		540210		
7090	44		40	-	-		540119		
8150	50		46	-	-		540212		
9215	56		52	-	-		540214		
10275	62		58	-	-		540215		
11340	68		64	-	-		540217		
12580	75		71	-	-		540219		

***SPECIAL SIZES AND RATING AVAILABLE - CONSULT FACTORY**

Standard Heaters Provided with Box and Handle Only. For Additional Accessories Add Correct Suffix to Catalog Number
 "0" - Lead wires only "1" - Lead wire with ground clip "2" - Twist lock plug with ground clip "3" - Twist lock plug with integral ground
 Standard lead length on above options is 2 feet. Longer lead lengths available.

FLEXIBLE BOLT HEATERS

Applications

Heatrex Flexible Bolt Heaters are designed to allow easy access to stud bolts with overhead clearance restrictions. Heatrex Flexible Bolt Heaters incorporate a time proven design of 50 watts of heat per square inch. The flexible sheath allows the heater to be flexed or bent to almost any required configuration.

Standard Features

- Alloy sheath
- Element swaged to finished size
- Two high-temperature resistance wires
- Grade "A" magnesium-oxide insulation

Optional Features

- Three prong twist lock plug

Benefits

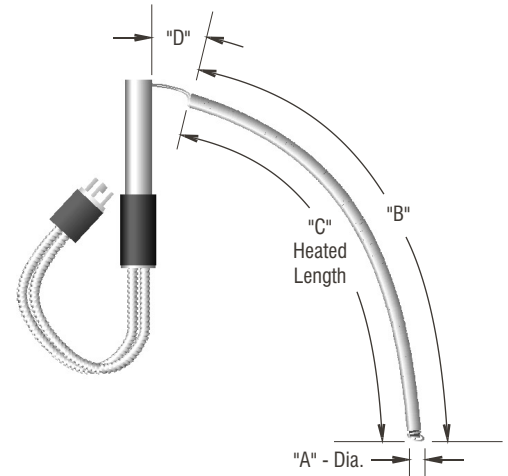
- A unique "Top Hat" design, retaining plug and cable, help with insertion while preventing unraveling of element.
- A special handle assembly incorporates a 90° offset, which increases the insertion clearance by 80%, allowing easy entry into studs with less than optimum clearance.

Watts	Dimensions (in.)				Catalog Number		Wt. lbs. (approx.)
	"A"	"B"	"C"	"D"	120 V	230/240 V	
590	.375	13	10	3	640001	N/A	.75
1060		21	18		640002	N/A	1.00
825		15	12		640003	N/A	1.00
1650	.438	27	24	3	640004	N/A	1.00
2475		39	36		640005	N/A	1.50
820	.500	16.5	13	3.5	*	640057	1.50
1050		15	12		640006	640007	1.50
2090	.553	27	24	3	N/A	640008	2.00
4180		51	48		N/A	640009	2.75
1414	.560	16	11	5	*	640015	1.00
1300	.688	16	12	4	640010	640011	1.75
1950	.688	24.25	18	6.25	*	640055	2.00
3900	.688	43.25	36	7.25	*	640056	3.00
4000	.688	54.25	48	6.25	*	640054	3.00
1800	.724	29.5	26.5	3	*	640059	3.00
3564	.750	36	33	3	*	640043	3.00
1800	.762	29.5	26.5	3	*	640058	3.00
2700	.781	24	21	3	*	640037	2.50
3510	.781	30	27	3	*	640038	2.75
1540	.813	16	12	4	640012	640013	2.00
1770	.938	17	12	5	N/A	640014	2.75

*SPECIAL SIZES AND RATINGS AVAILABLE - CONSULT FACTORY

Standard Heaters Provided with Handle and Leads. For Additional Accessories Add Correct Suffix to Catalog Number

"1" - Lead wire with ground clip "2" - Twist lock plug with ground clip "3" - Twist lock plug with integral ground
Standard lead length on above options is 2 feet. Longer lead lengths available.



ADDITIONAL PRODUCTS FROM HEATREX, INC.



Portable Distribution Center



The "Outage Master" Distribution Center



Bolt Heater Storage Cart



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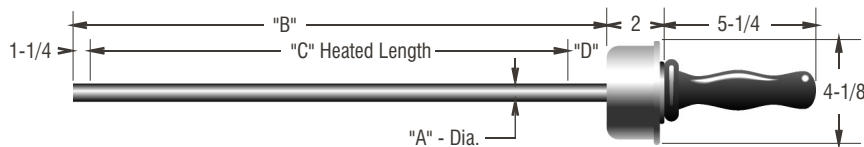
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UPCOMING OUTAGE? TEARING DOWN YOUR TURBINE? NEED BOLT HEATERS?

CHECK YOUR STOCK OF BOLT HEATERS FOR CORRECT SIZES AND WORKING CONDITION.

- Heatrex Stocks Hundreds of Standard GE, Westinghouse and Other OEM Style Electric Bolt Heaters Ready for 48-Hour Shipment
- Heatrex Can Build to Your Specifications and Ship to You Within 2-3 Weeks After Receipt of Order
- Heavy Duty Construction
- In Addition to Standard Design (See Diagram), Heatrex has Flexible and Replaceable Element Style Bolt Heaters
- **NEW Selection!** Gas Bolt Heaters
- Heatrex Manufactures Portable Load Centers and Carts to Assist You With Your Outage



Watts	"A" Diameter	"B" Sheath Length	"C" Heated Length	"D" Cold Length	Volts	P/N	Quantity

***SPECIAL SIZES AND RATING AVAILABLE - CONSULT FACTORY**

Standard Heaters Provided with Box and Handle Only. For Additional Accessories Add Correct Suffix to Catalog Number

"0" - Lead wires only "1" - Lead wire with ground clip "2" - Twist lock plug with ground clip "3" - Twist lock plug with integral ground
Standard lead length on above options is 2 feet. Longer lead lengths available.

POWER GEN CO. NAME: _____

STATION NAME: _____

CONTACT NAME: _____

OUTAGE START DATE: _____

PH: _____ **FAX:** _____

CALL HEATREX AT (814) 724-1800 FOR A QUOTATION AND QUICK DELIVERY.

FAX: (814)333-6580 • E-Mail: sales@heatrex.com. Visit www.heatrex.com for additional information on our complete tubular heater product line. Custom built heaters used for service and repair throughout the power generation plant.