

## Circulation

# NWHIS, NWHOIS & GCHIS Series

## Pure Water, Corrosive Solution & High Temperature Gas Applications

- **Flanged Heater Design**
- **3 - 14" Type 304 Stainless Steel Pipe Body, 150 Lb Construction**
- **2 - 200kW**
- **120, 240 and 480V, 1 & 3 Phase**
- **General Purpose, Moisture Resistant Terminal, Moisture Resistant/Explosion Proof Enclosure**
- **0.475" Dia. Stainless Steel or INCOLOY® Sheath Elements (15 - 50 W/in<sup>2</sup>)**
- **With & Without Thermostat**
- **UL, CSA, ATEX and Other Third Party Approval, Listing or Certification Available on Many Models**

### Applications

**Pure Water** — Heating of demineralized or de-ionized water that is highly aggressive to mild steel.

**Mildly Corrosive Solutions** — Heat mildly corrosive solutions (pH5 to pH9) using stainless elements and a passivated stainless pipe body.

**Highly Corrosive Solutions and Oils** — Low watt density INCOLOY® sheath elements coupled with a passivated Stainless Steel pipe body provides long service life when heating highly corrosive solutions and sulfur laden oils.

**Steam Superheating** — Increase the enthalpy and quality of steam. Smaller units can be used to make up line losses in steam generating and distribution systems.

**High Temperature Gas** — INCOLOY® elements and a Stainless Steel vessel enhance safe operation to nearly 1400°F outlet gas temperature in air, gas or steam superheating applications.

### Features

**Terminal Enclosures** — Standard stock heater terminal enclosure E1 General Purpose. Moisture Resistant/Explosion Proof E2 or Moisture Resistant E4 Enclosures are available as assembly stock.

**Elements** — Sturdy 0.475" Dia. Stainless Steel or INCOLOY® sheath elements provide superior strength and rigidity. Chromalox elements utilize high quality resistance wire for coil construction. The coil is surrounded with high purity magnesium oxide which is compacted to a dense solid to ensure high thermal conductivity and dielectric strength.

**Corrosion Resistance** — NWHIS and NWHOIS pipe bodies and all Stainless Steel heating elements are passivated to provide additional resistance to corrosion.

**Flanges** — Type 304 Stainless Steel flanges are standard on 3" and larger circulation heaters. Flange dimensions conform to ANSI B16.5 standards.

**Vessels** — Pipe body and nozzles are type 304 ASTM A312 ERW Stainless Steel pipe. The end disks are type 304 ASTM A240 Stainless Steel plate. Provided with thermal insulation and painted sheet metal jacket.

**Baffle Assemblies** — Internal baffle assemblies are provided for model GCHISB-18 heaters to increase the velocity of the air, gas or steam as it passes through the vessel. Increasing the velocity of the gas helps reduce the temperature of the element sheaths and the vessel walls in critical applications.

**Wiring** — Wiring terminals are spaced to provide proper arcing and creepage clearances. Termination insulators provide electrical isolation between the terminals and the grounded metal sheath to enhance personnel safety and equipment service life. Heavy duty jumper straps and other terminal parts assure tight connections and an extra margin of current carrying capacity.

**Controls** — All stock and assembly stock heaters, Series MTSS, 03 and 06, come equipped



with mechanical AR thermostats. These thermostats are suitable for most applications. Explosion-resistant and liquid-tight thermostats are provided on E2 and E4 units, respectively. Individual product pages list other types of thermostats and controls available for each heater. For heaters listed without controls, refer to the Overview on Mechanical and Electrical Control Options in this section.

**Precision Temperature Control and Control Panels** — For larger kW heaters and precise control of gas temperatures in high temperature applications, Chromalox recommends the use of thermocouple sensors, electronic PID temperature controls and SCR power panels for circulation heater applications. The use of electronic and SCR controls will minimize overshoot and reduce the possibility of heater damage from overtemperature operation. Integral or remote mounted control panels with electronic controls and solid state (SCR) or contactor power controllers can be provided using virtually any combination of control devices. Consult the Controls section for details.

# Circulation

## NWHIS

### Pure Water & Mildly Corrosive Solution Applications

#### Specifications and Ordering Information

kW	Volts	Ckt & Phase	Dimensions (In.)			Model	Stock	PCN	Wt. (Lbs.)
			A	B	C				
<b>Series 03 — 3 inch, 150 lb 304 passivated stainless steel vessel, 3 INCOLOY® elements (45 W/in<sup>2</sup>) with side mounted thermostat (60 to 250°F) — 1" NPT pipe inlet and outlet</b>									
6	240	1-3	32-15/16	22-1/2	16-1/2	NWHIS-03-006P-E1	NS	012010	70
6	480	1-3	32-15/16	22-1/2	16-1/2	NWHIS-03-006P-E1	NS	012028	70
12	240	1-3	42-15/16	32-1/2	26-1/2	NWHIS-03-012P-E1	NS	012036	80
12	480	1-3	42-15/16	32-1/2	26-1/2	NWHIS-03-012P-E1	NS	012044	80
18	240	1-3	55-7/16	45	39	NWHIS-03-018P-E1	NS	012052	98
18	480	1-3	55-7/16	45	39	NWHIS-03-018P-E1	NS	012060	98
<b>Series 06 — 5 inch, 150 lb 304 passivated stainless steel vessel, 6 INCOLOY® elements (45 W/in<sup>2</sup>) with side mounted thermostat (60 to 250°F) — 2" NPT pipe inlet and outlet</b>									
24	240	2-3	41-3/4	30	11-3/8	NWHIS-06-024P-E1	NS	012079	140
24	480	1-3	41-3/4	30	11-3/8	NWHIS-06-024P-E1	NS	012087	140
30	240	2-3	48-3/4	37	14-1/8	NWHIS-06-030P-E1	NS	012095	155
30	480	1-3	48-3/4	37	14-1/8	NWHIS-06-030P-E1	NS	012108	155
40	240	2-3	60-1/4	48-1/2	20-5/8	NWHIS-06-040P-E1	NS	012116	176
40	480	2-3	60-1/4	48-1/2	20-5/8	NWHIS-06-040P-E1	NS	012124	176
50	480	2-3	73-5/8	61-7/8	27-5/16	NWHIS-06-050P-E1	NS	012132	210
<b>Series 18 — 8 inch, 150 lb 304 passivated stainless steel vessel, 18 INCOLOY® elements (45 W/in<sup>2</sup>) — 2-1/2" NPT pipe inlet and outlet</b>									
50	240	3-3	45-1/4	24-11/16	21-3/16	NWHIS-18-050P-E1	NS	021311	396
50	480	3-3	45-1/4	24-11/16	21-3/16	NWHIS-18-050P-E1	NS	021320	396
75	240	3-3	53-1/4	32-11/16	29-3/16	NWHIS-18-075P-E1	NS	021338	414
75	480	3-3	53-1/4	32-11/16	29-3/16	NWHIS-18-075P-E1	NS	021346	414
100	240	3-3	60-1/4	39-11/16	36-3/16	NWHIS-18-100P-E1	NS	021354	425
100	480	3-3	60-1/4	39-11/16	36-3/16	NWHIS-18-100P-E1	NS	021362	425
125	240	3-3	67-7/8	47-5/16	43-13/16	NWHIS-18-125P-E1	NS	021370	470
125	480	3-3	67-7/8	47-5/16	43-13/16	NWHIS-18-125P-E1	NS	021389	470
150	240	3-3	77-3/8	56-13/16	53-5/16	NWHIS-18-150P-E1	NS	021397	535
150	480	3-3	77-3/8	56-13/16	53-5/16	NWHIS-18-150P-E1	NS	021400	535
175	240	3-3	86-3/8	65-13/16	62-5/16	NWHIS-18-175P-E1	NS	021418	625
175	480	3-3	86-3/8	65-13/16	62-5/16	NWHIS-18-175P-E1	NS	021426	625
200	240	3-3	104-3/8	83-13/16	79-5/16	NWHIS-18-200P-E1	NS	021434	705
200	480	3-3	104-3/8	83-13/16	79-5/16	NWHIS-18-200P-E1	NS	021442	705

**Stock Status:** S = stock NS = non-stock  
**To Order**—Specify model, volts, phase, kW, PCN and quantity.

**Note** — Refer to the Controls section for control panels.

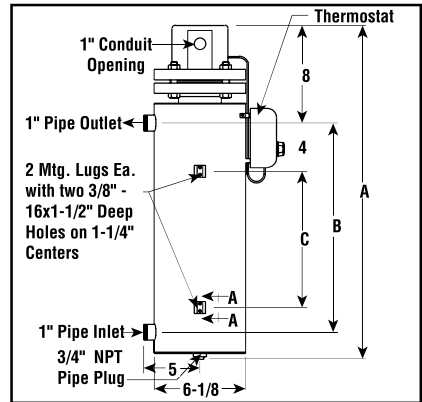
#### Ordering Information

To Order — Complete the Model Number using the Matrix provided.

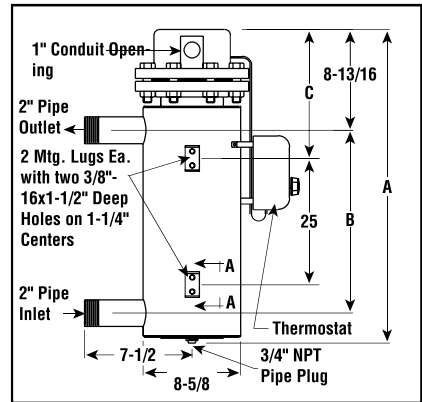
Model	Pure Water and Mildly Corrosive Solution		
NWH	Water Circulation Heater		
IS	INCOLOY® Elements — Stainless Steel Vessel		
	Code	Number of Elements	
	03	Three	
	06	Six	
	18	Eighteen	
	Code	kW	
	006P	6	040P 40
	012P	12	050P 50
	018P	18	075P 75
	024P	24	100P 100
	030P	30	125P 125
			150P 150
			175P 175
			200P 200
	Code	Terminal Enclosure	
	E1	General Purpose	
	E2	Moisture Resistant/Explosion Resistant	
	E4	Moisture Resistant	
NWH	03	006P	E1
<b>Typical Model Number</b>			

#### Dimensions (Inches)

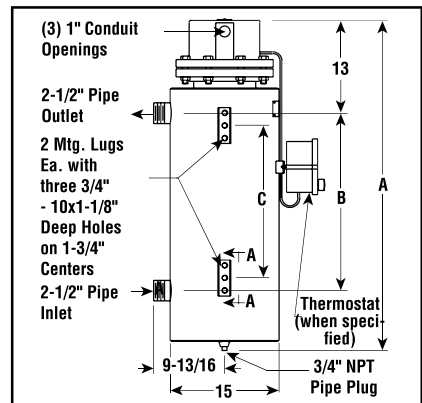
##### NWHIS-03



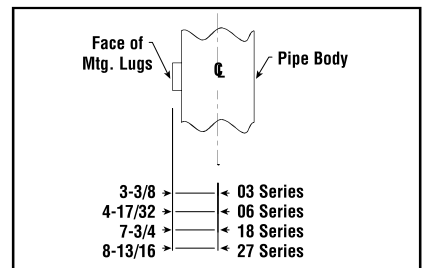
##### NWHIS-06



##### NWHIS-18



##### NWHIS-AA



STEAM, AIR AND GAS

# Circulation

## NWHOIS

### Corrosive Oil & Highly Corrosive Solution Applications

*Specifications and Ordering Information*

kW	Volts	Ckt & Phase	Dimensions (In.)			Model	Stock	PCN	Wt. (Lbs.)
			A	B	C				
<b>Series 03 — 3 inch, 150 lb 304 passivated stainless steel vessel, 3 INCOLOY® elements (15 W/in<sup>2</sup>) with side mounted thermostat (60 to 250°F) — 1" NPT pipe inlet and outlet</b>									
2	240	1-3	32-15/16	22-1/2	16-1/2	NWHOIS-03-002P-E1	NS	012140	70
2	480	1-3	32-15/16	22-1/2	16-1/2	NWHOIS-03-002P-E1	NS	012159	70
4	240	1-3	42-15/16	32-1/2	26-1/2	NWHOIS-03-004P-E1	NS	012167	80
4	480	1-3	42-15/16	32-1/2	26-1/2	NWHOIS-03-004P-E1	NS	012175	80
6	240	1-3	55-7/16	45	39	NWHOIS-03-006P-E1	NS	012183	98
6	480	1-3	55-7/16	45	39	NWHOIS-03-006P-E1	NS	012191	98
<b>Series 06 — 5 inch, 150 lb 304 passivated stainless steel vessel, 6 INCOLOY® elements (15 W/in<sup>2</sup>) with side mounted thermostat (60 to 250°F) — 2" NPT pipe inlet and outlet</b>									
8	240	1-3	41-3/4	30	11-3/8	NWHOISR-06-008P-E1	NS	012204	140
8	480	1-3	41-3/4	30	11-3/8	NWHOISR-06-008P-E1	NS	012212	140
12	240	1-3	60-1/4	48-1/2	20-5/8	NWHOISR-06-012P-E1	NS	012220	176
12	480	1-3	60-1/4	48-1/2	20-5/8	NWHOISR-06-012P-E1	NS	012239	176
<b>Series 06 — 5 inch, 150 lb 304 passivated stainless steel vessel, 6 INCOLOY® elements (23 W/in<sup>2</sup>) with side mounted thermostat (60 to 250°F) — 2" NPT pipe inlet and outlet</b>									
25	240	2-3	73-5/8	61-7/8	27-5/16	NWHOIS-06-025P-E1	NS	012247	176
25	480	1-3	73-5/8	61-7/8	27-5/16	NWHOIS-06-025P-E1	NS	012255	176
30	240	2-3	86-5/8	74-7/8	33-7/8	NWHOIS-06-030P-E1	NS	012263	240
30	480	1-3	86-5/8	74-7/8	33-7/8	NWHOIS-06-030P-E1	NS	012271	240

**Stock Status:** S = stock NS = non-stock  
**To Order**—Specify model, volts, phase, kW, PCN and quantity.

**Note** — Refer to the Controls section for control panels.

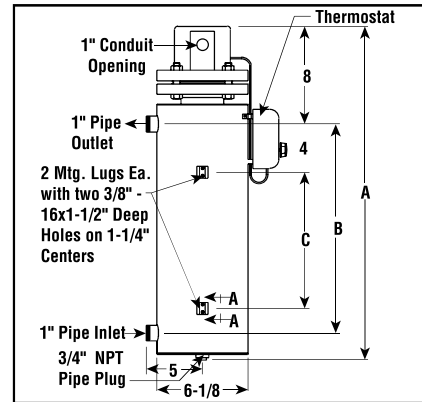
*Ordering Information*

To Order — Complete the Model Number using the Matrix provided.

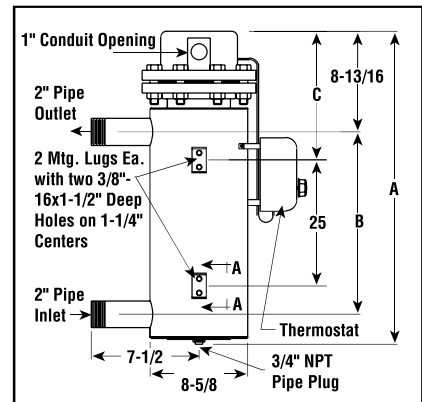
Model	Corrosive Oil and Highly Corrosive Solution		
NWHO	Oil Circulation Heater		
IS	INCOLOY® Elements — Stainless Steel Vessel		
R	Reduced Watt Density		
Code	Number of Elements		
03	Three		
06	Six		
Code	kW		
002P	2	008P	8
004P	4	012P	12
006P	6	025P	25
		030P	30
Code	Terminal Enclosure		
E1	General Purpose		
E2	Moisture Resistant/Explosion Resistant		
E4	Moisture Resistant		
NWHOIS 03	002P	E1	Typical Model Number

*Dimensions (Inches)*

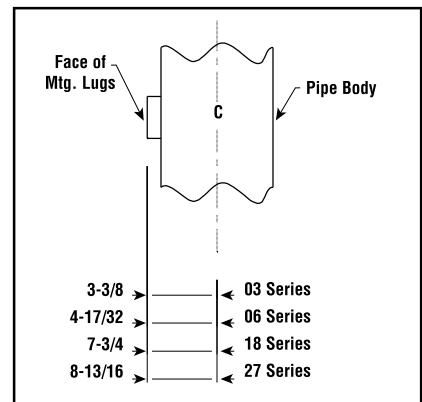
NWHOIS-03



NWHOIS-06



NWHOIS-AA



# Circulation

## GCHIS, GCHISB & GCHISR

High Temperature Gas Applications to 1200°F<sup>1</sup>

### Specifications and Ordering Information

kW	Volts	Ckt & Phase	Dimensions (In.)			Model	Stock	PCN	Wt. (Lbs.)
			A	B	C				
<b>Series 03 — 3 inch, 150 lb 304 stainless steel vessel — 3 INCOLOY® elements (15 W/in<sup>2</sup>) with side mounted thermostat (200 to 550°F) — 1" NPT pipe inlet and outlet<sup>1</sup></b>									
2	240	1-3	33-1/4	22-1/2	16-1/2	GCHISR-03-002P-E1	NS	012280	62
2	480	1-3	33-1/4	22-1/2	16-1/2	GCHISR-03-002P-E1	NS	012298	62
4	240	1-3	55-3/4	45	36	GCHISR-03-004P-E1	NS	012300	94
4	480	1-3	55-3/4	45	36	GCHISR-03-004P-E1	NS	012319	94
<b>Series 06 — 5 inch, 150 lb 304 stainless steel vessel — 6 INCOLOY® elements (15 W/in<sup>2</sup>) with side mounted thermostat (200 to 550°F) — 2" NPT pipe inlet and outlet<sup>1</sup></b>									
4	240	1-3	41-3/4	30	11-3/8	GCHISR-06-004P-E1	NS	012327	135
4	480	1-3	41-3/4	30	11-3/8	GCHISR-06-004P-E1	NS	012335	135
8	240	1-3	48-3/4	37	14-7/8	GCHISR-06-008P-E1	NS	012343	164
8	480	1-3	48-3/4	37	14-7/8	GCHISR-06-008P-E1	NS	012351	164
12	240	1-3	60-1/4	48-1/2	20-5/8	GCHISR-06-012P-E1	NS	012360	195
12	480	1-3	60-1/4	48-1/2	20-5/8	GCHISR-06-012P-E1	NS	012378	195
15	240	1-3	73-5/8	61-7/8	27-5/16	GCHISR-06-015P-E1	NS	021733	215
15	480	1-3	73-5/8	61-7/8	27-5/16	GCHISR-06-015P-E1	NS	021741	215
20	240	1-3	86-5/8	74-7/8	33-7/8	GCHISR-06-020P-E1	NS	021750	253
20	480	1-3	86-5/8	74-7/8	33-7/8	GCHISR-06-020P-E1	NS	021768	253
<b>Series 06 — 5 inch, 150 lb 304 stainless steel vessel — 6 INCOLOY® elements (23 W/in<sup>2</sup>) with side mounted thermostat (200 to 550°F) — 2" NPT pipe inlet and outlet<sup>1</sup></b>									
25	240	2-3	73-5/8	61-7/8	27-5/16	GCHIS-06-025P-E1	NS	012386	195
25	480	1-3	73-5/8	61-7/8	27-5/16	GCHIS-06-025P-E1	NS	012394	195
30	240	2-3	86-5/8	74-7/8	33-7/8	GCHIS-06-030P-E1	NS	012407	240
30	480	1-3	86-5/8	74-7/8	33-7/8	GCHIS-06-030P-E1	NS	012415	240
<b>Series 18 — 8 inch, 150 lb 304 stainless steel vessel — 18 baffled INCOLOY® elements<sup>1</sup> (23 W/in<sup>2</sup>)</b>									
30	240	3-3	50-1/8	28-1/2	25	GCHISB-18-030P-E1	NS	021856	340
30	480	3-3	50-1/8	28-1/2	25	GCHISB-18-030P-E1	NS	021864	340
40	240	3-3	54-5/16	32-11/16	29-3/16	GCHISB-18-040P-E1	NS	021872	410
40	480	3-3	54-5/16	32-11/16	29-3/16	GCHISB-18-040P-E1	NS	021880	410
50	240	3-3	61-5/16	39-11/16	36-3/16	GCHISB-18-050P-E1	NS	021899	480
50	480	3-3	61-5/16	39-11/16	36-3/16	GCHISB-18-050P-E1	NS	021901	480
<b>Series 27 — 10 inch, 150 lb stainless steel vessel — 27 INCOLOY® elements<sup>1</sup> (20 W/in<sup>2</sup>)</b>									
50	240	3-3	56-9/16	31	27-1/2	GCHIS-27-050P-E1	NS	024037	340
50	480	3-3	56-9/16	31	27-1/2	GCHIS-27-050P-E1	NS	024045	340
60	240	3-3	62-9/16	37	33-1/2	GCHIS-27-060P-E1	NS	024053	370
60	480	3-3	62-9/16	37	33-1/2	GCHIS-27-060P-E1	NS	024061	370
70	240	3-3	68-9/16	43	39-1/2	GCHIS-27-070P-E1	NS	024070	400
70	480	3-3	68-9/16	43	39-1/2	GCHIS-27-070P-E1	NS	024088	400
80	240	3-3	75-9/16	50	46-1/2	GCHIS-27-080P-E1	NS	024096	430
80	480	3-3	75-9/16	50	46-1/2	GCHIS-27-080P-E1	NS	024109	430
90	240	3-3	81-9/16	56	52-1/2	GCHIS-27-090P-E1	NS	024117	543
90	480	3-3	81-9/16	56	52-1/2	GCHIS-27-090P-E1	NS	024125	560

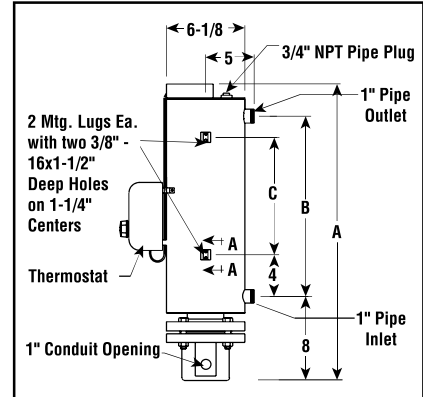
**Stock Status:** S = stock NS = non-stock  
**To Order**—Specify model, volts, phase, kW, PCN and quantity.

1. Recommended temperature limits for all GCH heaters with stainless steel vessels and INCOLOY® elements are 1600°F maximum for the sheath temperature and 1200°F maximum for the vessel temperature at 5 psi maximum pressure. Exceeding these recommendations will void the factory warranty. Outlet gas temperatures must be kept below both the maximum sheath and vessel temperatures or element and vessel damage may occur. Consult factory representative for assistance in determining the gas flow characteristics and proper heater selection.

**Other Note** — Refer to the Controls section for control panels.

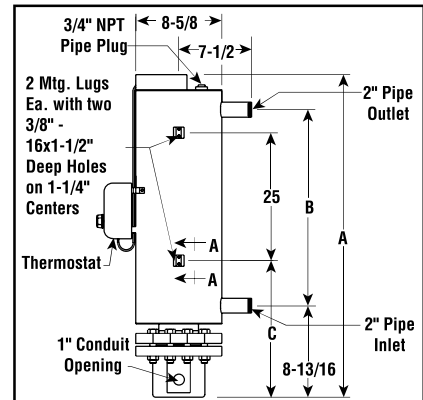
### Dimensions (Inches)

#### GCHIS-03

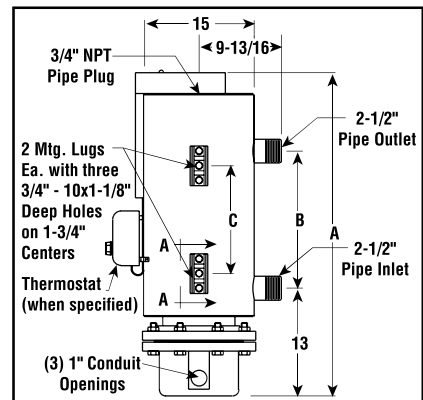


STEAM, AIR AND GAS

#### GCHIS-06



#### GCHISB-18



# Circulation

## GCHIS & GCHISB

High Temperature Gas  
Applications to 1200°F<sup>1</sup> (cont'd.)

Specifications and Ordering Information

kW	Volts	Ckt & Phase	Dimensions (In.)					Model	Stock	PCN	Wt. (Lbs.)
			A	B	C	D	E				
<b>Series 45 — 14 inch, 150 lb stainless steel vessel — 45 INCOLOY® elements<sup>1</sup> (15 W/in<sup>2</sup>)</b>											
90	480	3-3	76	57-3/16	66-11/16	15	11-1/2	GCHIS-45-090P-E1	NS	024336	925
125	480	3-3	91	72-3/16	81-11/16	15	11-1/2	GCHIS-45-125P-E1	NS	024344	1,025
150	480	3-3	106	87-3/16	96-11/16	15	11-1/2	GCHIS-45-150P-E1	NS	024352	1,125
175	480	3-3	121	102-3/16	111-11/16	15	11-1/2	GCHIS-45-175P-E1	NS	024360	1,225
200	480	3-3	128-1/2	109-11/16	119-11/16	15	11-1/2	GCHIS-45-200P-E1	NS	024379	1,325

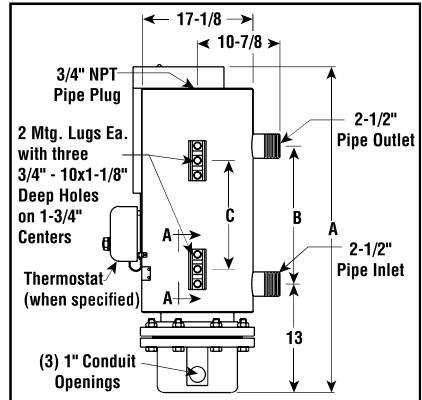
**Stock Status:** S = stock NS = non-stock  
**To Order**—Specify model, volts, phase, kW, PCN and quantity.

- Recommended temperature limits for all GCH heaters with stainless steel vessels and INCOLOY® elements are 1600°F maximum for the sheath temperature and 1200°F maximum for the vessel temperature at 5 psi pressure maximum. Exceeding these recommendations will void the factory warranty. Outlet gas temperatures must be kept below both the maximum sheath and vessel temperature or element and vessel damage may occur. Contact your Local Chromalox Sales office to determine the gas flow characteristics and proper heater selection.

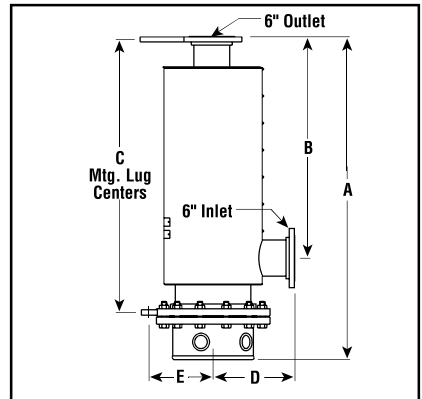
**Other Note** — Refer to the Controls section for control panels.

Dimensions (Inches)

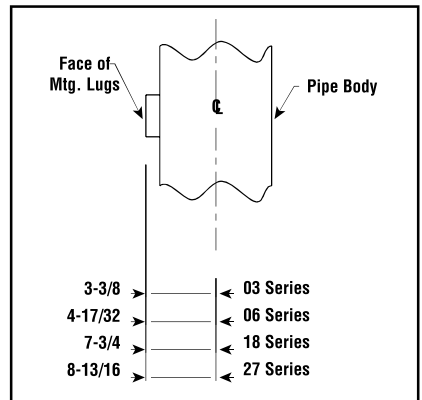
GCHIS-27



GCHIS-45



GCHIS-AA



Ordering Information

To Order — Complete the Model Number using the Matrix provided.

Model	High Temperature Gas to 1200°F <sup>1</sup>		
<b>GCHIS</b>	Gas Circulation Heater INCOLOY® Elements — Stainless Steel Vessel Internal Baffles		
<b>B</b>	<b>Code</b>	<b>Number of Elements</b>	
	<b>03</b>	Three	
	<b>06</b>	Six	
	<b>18</b>	Eighteen	
	<b>27</b>	Twenty Seven	
	<b>45</b>	Forty Five	
	<b>Code</b>	<b>kW</b>	
	<b>002P</b>	<b>2</b>	<b>050P</b> 50
	<b>004P</b>	<b>4</b>	<b>060P</b> 60
	<b>008P</b>	<b>8</b>	<b>070P</b> 70
	<b>012P</b>	<b>12</b>	<b>075P</b> 75
	<b>015P</b>	<b>15</b>	<b>080P</b> 80
	<b>020P</b>	<b>20</b>	<b>090P</b> 90
	<b>025P</b>	<b>25</b>	<b>125P</b> 125
	<b>030P</b>	<b>30</b>	<b>175P</b> 175
	<b>040P</b>	<b>40</b>	<b>200P</b> 200
	<b>Code</b>	<b>Terminal Enclosure</b>	
	<b>E1</b>	General Purpose	
	<b>E2</b>	Moisture Resistant/Explosion Resistant	
	<b>E4</b>	Moisture Resistant	
<b>GCHIS</b>	<b>18</b>	<b>030P</b>	<b>E1</b> <b>Typical Model Number</b>