

## Circulation

### GCHI & Series

#### Steam, Air & Gas Applications

- **Screw Plug or Flange Heater Design**
- **2 - 18" Carbon Steel Pipe Body, 150 Lb Construction**
- **1 - 350kW**
- **120, 240 and 480V, 1 & 3 Phase**
- **General Purpose, Moisture Resistant Terminal, Moisture Resistant/Explosion Proof Enclosure**
- **0.475" Dia. INCOLOY® Sheath Elements (15 - 23 W/in<sup>2</sup>)**
- **With & Without Thermostat**
- **CSA and Other Third Party Approval, Listing or Certification Available on Many Models**

#### Applications

**Air and Gas** — Chromalox circulation heaters provide a cost effective means for heating air and common industrial gases such as Argon, Helium and Nitrogen as well as gaseous mixtures for a wide variety of industrial processes.

**High Temperature Gas** — Refer to Stainless Steel circulation heaters later in this section.

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

#### Features

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

**Elements** — Sturdy 0.475" diameter IN-COLOY® sheath elements permit higher watt densities and operating temperatures. Steel sheath elements may be used in low temperature applications. 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.

**Flanges** — Carbon Steel Flanges are standard on low to medium temperature heaters 3" and larger. Flange dimensions conform to ANSI B16.5 standards.

**Vessels** — Chromalox vessels consist of a pipe body, nozzles and end cap. The pipe body and nozzles are ASTM A53B carbon steel pipe. The end cap or disk is ASTM A516 Grade 70 carbon steel plate. Mounting lugs are welded to the pipe wall. The vessel is wrapped with thermal insulation and covered with a painted sheet metal jacket.

**Baffle Assemblies** — Internal baffle assemblies are provided on some stock circulation heaters. Baffles reduce the internal cross sectional area thereby increasing the velocity of the gas. Increasing the gas velocity reduces the operating temperature of the elements and the shell of the vessel.

**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.

**Control Thermostats** — All Series 3 and 6 stock and assembly stock heaters come equipped with mechanical AR thermostats.



These thermostats are suitable for small size gas heaters and provide low cost control in low and medium temperature applications. Explosion-resistant and liquid-tight thermostats are provided on E2 and E4 units, respectively.

#### Precision Temperature Control and Control Panels

— For larger kW gas 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 gas heating 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

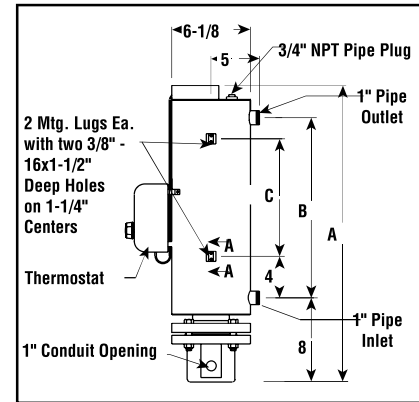
## GCHI & GCHIB

Steam, Air & Gas  
Applications to 750°F<sup>1</sup>

- 3 - 18" ANSI Blind Flange Design
- 3 - 18" Carbon Steel Pipe Body, 150 Lb Construction (750°F Max. Vessel and 1600°F Max. Sheath Temp.)<sup>1</sup> For Stainless Steel Pipe Body Construction, Refer to GCHIS Series Circulation Heaters.
- 3 - 350kW
- 240 and 480V, 1 & 3 Phase
- General Purpose, Moisture Resistant Terminal, Moisture Resistant/Explosion Proof Enclosure
- 0.475" Dia. INCOLOY® Sheath Elements (15 - 23 W/in<sup>2</sup>)
- 3 and 5" with Side Mounted Thermostat (200 - 550°F), 8, 10, 14 and 16" without Thermostat
- CSA and Other Third Party Approval, Listing or Certification Available



*Dimensions (Inches)*  
**GCHI-03**



STEAM, AIR  
AND GAS

### Applications

**Steam, Air and Gas** — Higher kW ratings for larger industrial and commercial gas heating applications.

### Features

**Terminal Enclosure** — E1 General Purpose is standard. E2 Moisture Resistant/Explosion Proof or E4 Moisture Resistant available.

**Elements** — 0.475" diameter INCOLOY® sheath elements.

**Flange** — 3 - 10" ANSI B-16.5 flange with 1/2" thermowell for thermostat bulb and a 1/8" NPT threaded opening for a thermocouple or RTD.

**Vessel** — Pipe body and nozzles are ASTM A53B carbon steel pipe. The end disk is ASTM A516 Grade 70 carbon steel plate. Provided with thermal insulation and painted sheet metal jacket.

**Baffle Assembly** — Internal baffle assemblies are provided on GCHIB-18 models. Baffles reduce the internal cross sectional area thereby increasing the velocity of the gas. Increasing the gas velocity reduces the operating temperature of the elements and the shell of the vessel.

**Wiring** — Convenient field wiring terminals are provided for easy installation.

**Controls** — Series 03 and 06 stock and assembly stock heaters come equipped with side mounted thermostat. Series 18, 27, 45 and 108 are furnished without thermostat.

### Specifications and Ordering Information

kW	Volts	Ckt & Phase	Dimensions (In.)			Model	Stock	PCN	Wt. (Lbs.)
			A	B	C				
Series 03 — 3 inch, 150 lb carbon steel vessel — 3 INCOLOY® elements¹ (23 W/in²) with thermostat									
3	240	1-1	32-15/16	22-1/2	16-1/2	GCHI-03-003P-E1	NS	013240	62
3	240	1-3	32-15/16	22-1/2	16-1/2	<b>GCHI-03-003P-E1</b>	<b>S</b>	<b>103915</b>	62
3	480	1-1	32-15/16	22-1/2	16-1/2	GCHI-03-003P-E1	NS	013258	62
3	480	1-3	32-15/16	22-1/2	16-1/2	<b>GCHI-03-003P-E1</b>	<b>S</b>	<b>103958</b>	62
4.5	240	1-1	42-15/16	32-1/2	26-1/2	GCHI-03-04P5-E1	NS	013266	72
4.5	240	1-3	42-15/16	32-1/2	26-1/2	GCHI-03-04P5-E1	NS	104070	72
4.5	480	1-1	42-15/16	32-1/2	26-1/2	GCHI-03-04P5-E1	NS	013274	72
4.5	480	1-3	42-15/16	32-1/2	26-1/2	<b>GCHI-03-04P5-E1</b>	<b>S</b>	<b>104117</b>	72
6	240	1-1	55-7/16	45	39	GCHI-03-006P-E1	NS	013282	94
6	240	1-3	55-7/16	45	39	<b>GCHI-03-006P-E1</b>	<b>S</b>	<b>104230</b>	94
6	480	1-1	55-7/16	45	39	GCHI-03-006P-E1	NS	013290	94
6	480	1-3	55-7/16	45	39	<b>GCHI-03-006P-E1</b>	<b>S</b>	<b>104272</b>	94

**Stock Status:** S = stock NS = non-stock

**To Order**—Specify model, volts, phase, kW, PCN and quantity.

1. Outlet gas temperature must be kept below both maximum sheath and vessel temperature or element and heater damage may occur. Contact your Local Chromalox Sales office for application assistance.

# Circulation

## GCHI & GCHIB

Steam, Air & Gas

Applications to 750°F<sup>1</sup> (cont'd.)

### Specifications and Ordering Information

kW	Volts	Ckt & Phase	Dimensions (In.)			Model	Stock	PCN	Wt. (Lbs.)
			A	B	C				
Series 06 — 5 inch, 150 lb carbon steel vessel — 6 INCOLOY® elements¹ (23 W/in²) with thermostat									
9	240	1-1	41-3/4	30	11-3/8	GCHI-06-009P-E1	NS	013303	135
9	240	1-3	41-3/4	30	11-3/8	GCHI-06-009P-E1	NS	104715	135
9	480	1-1	41-3/4	30	11-3/8	GCHI-06-009P-E1	NS	013311	135
9	480	1-3	41-3/4	30	11-3/8	GCHI-06-009P-E1	NS	013320	135
12	240	1-1	48-3/4	37	14-7/8	GCHI-06-012P-E1	NS	013338	164
12	240	1-3	48-3/4	37	14-7/8	<b>GCHI-06-012P-E1</b>	<b>S</b>	<b>104870</b>	164
12	480	1-1	48-3/4	37	14-7/8	GCHI-06-012P-E1	NS	013346	164
12	480	1-3	48-3/4	37	14-7/8	<b>GCHI-06-012P-E1</b>	<b>S</b>	<b>104598</b>	164
20	240	1-1	60-1/4	48-1/2	20-5/8	GCHI-06-020P-E1	NS	013354	195
20	240	1-3	60-1/4	48-1/2	20-5/8	GCHI-06-020P-E1	NS	013362	195
20	480	1-1	60-1/4	48-1/2	20-5/8	GCHI-06-020P-E1	NS	013370	195
20	480	1-3	60-1/4	48-1/2	20-5/8	<b>GCHI-06-020P-E1</b>	<b>S</b>	<b>105478</b>	195
25	240	1-1	73-5/8	61-7/8	27-5/16	GCHI-06-025P-E1	NS	013389	212
25	480	1-3	73-5/8	61-7/8	27-5/16	GCHI-06-025P-E1	NS	013397	212
25	240	1-1	73-5/8	61-7/8	27-5/16	GCHI-06-025P-E1	NS	013400	212
25	480	1-3	73-5/8	61-7/8	27-5/16	GCHI-06-025P-E1	NS	013418	212
30	240	1-3	86-5/8	74-7/8	33-7/8	GCHI-06-030P-E1	NS	013434	240
30	480	1-3	86-5/8	74-7/8	33-7/8	GCHI-06-030P-E1	NS	013450	240
Series 18 — 8 inch, 150 lb carbon steel vessel — 18 baffled INCOLOY® elements¹ (20 W/in²)									
30	240	3-3	54-5/16	32-11/16	29-3/16	GCHIB-18-030P-E1	NS	080768	350
30	480	3-3	54-5/16	32-11/16	29-3/16	GCHIB-18-030P-E1	NS	080776	350
40	240	3-3	61-5/16	39-11/16	36-3/16	GCHIB-18-040P-E1	NS	080784	420
40	480	3-3	61-5/16	39-11/16	36-3/16	GCHIB-18-040P-E1	NS	080792	420
50	240	3-3	68-15/16	47-5/16	43-13/16	GCHIB-18-050P-E1	NS	080805	480
50	480	3-3	68-15/16	47-5/16	43-13/16	GCHIB-18-050P-E1	NS	080813	480
Series 27 — 10 inch, 150 lb carbon steel vessel — 27 INCOLOY® elements¹ (15 W/in²)									
50	240	3-3	68-9/16	43	39-1/2	GCHI-27-050P-E1	NS	020212	400
50	480	3-3	68-9/16	43	39-1/2	GCHI-27-050P-E1	NS	020220	400
60	240	3-3	75-9/16	50	46-1/2	GCHI-27-060P-E1	NS	020239	440
60	480	3-3	75-9/16	50	46-1/2	GCHI-27-060P-E1	NS	020247	440
70	240	3-3	81-9/16	56	52-1/2	GCHI-27-070P-E1	NS	020255	480
70	480	3-3	81-9/16	56	52-1/2	GCHI-27-070P-E1	NS	020263	480
80	240	3-3	91-9/16	66	62-1/2	GCHI-27-080P-E1	NS	020271	520
80	480	3-3	91-9/16	66	62-1/2	GCHI-27-080P-E1	NS	020280	520
90	240	3-3	100-9/16	75	71-1/2	GCHI-27-090P-E1	NS	020298	560
90	480	3-3	100-9/16	75	71-1/2	GCHI-27-090P-E1	NS	020300	560

**Stock Status:** S = stock NS = non-stock

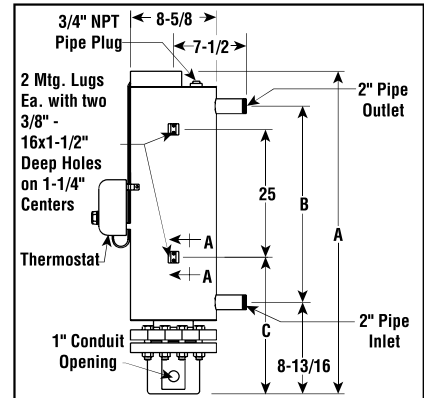
**To Order**—Specify model, volts, phase, kW, PCN and quantity.

1. Outlet gas temperature must be kept below both maximum sheath and vessel temperature or element and heater damage may occur. Contact your Local Chromalox Sales office for application assistance.

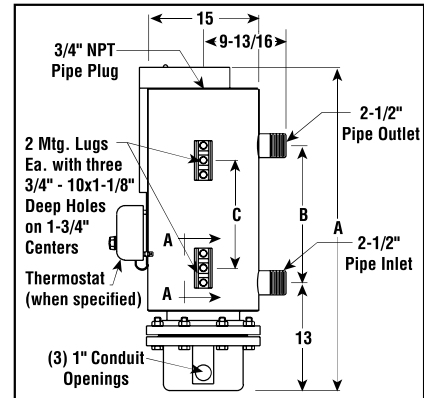
**Other Note** — Refer to the Controls section for control panels.

### Dimensions (Inches)

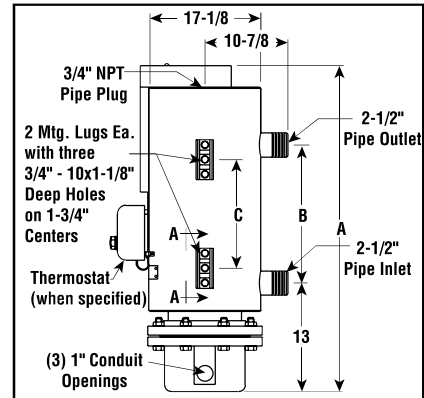
#### GCHI-06



#### GCHIB-18



#### GCHI-27



# Circulation

## GCHI & GCHIB

Steam, Air & Gas

Applications to 750°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				
Series 45 — 14 inch, 150 lb carbon steel vessel — 45 INCOLOY® elements¹ (15 W/in²)											
75	480	3-3	76	57-3/16	66-11/16	15	11-1/2	GCHI-45-075P-E1	NS	086238	835
90	480	3-3	76	57-3/16	66-11/16	15	11-1/2	GCHI-45-090P-E1	NS	086254	925
125	480	3-3	91	72-3/16	81-11/16	15	11-1/2	GCHI-45-125P-E1	NS	086270	1,025
150	480	3-3	106	87-3/16	96-11/16	15	11-1/2	GCHI-45-150P-E1	NS	086297	1,125
175	480	3-3	121	102-3/16	111-11/16	15	11-1/2	GCHI-45-175P-E1	NS	086318	1,225
Series 72 — 16 inch, 150 lb carbon steel vessel — 72 INCOLOY® elements¹ (15 W/in²)											
200	480	3-3	93	74-5/8	84-1/8	16	12-3/4	GCHI-72-200P-E1	NS	086393	1,265
225	480	3-3	101	82-5/8	92-1/8	16	12-3/4	GCHI-72-225P-E1	NS	086369	1,310
250	480	3-3	109	90-5/8	100-1/8	16	12-3/4	GCHI-72-250P-E1	NS	086334	1,355
Series 108 — 18 inch, 150 lb carbon steel vessel — 108 INCOLOY® elements¹ (15 W/in²)											
300	480	6-3	94	75-1/2	85	17	13-1/2	GCHI-108-300P-E1	NS	086422	1,400
325	480	6-3	100	81-1/2	91	17	13-1/2	GCHI-108-325P-E1	NS	086457	1,450
350	480	6-3	106	87-1/2	97	17	13-1/2	GCHI-108-350P-E1	NS	086481	1,500

**Stock Status:** S = stock NS = non-stock

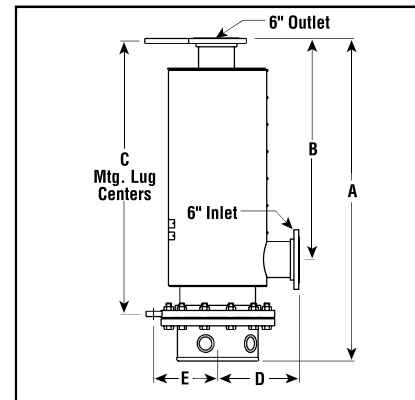
**To Order**—Specify model, volts, phase, kW, PCN and quantity.

1. Recommended temperature limits for all GCH heaters with carbon steel vessels and INCOLOY® elements are 1600°F maximum for the sheath temperature and 750°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 for assistance in determining the gas flow characteristics and proper heater selection. Heaters supplied without controls.

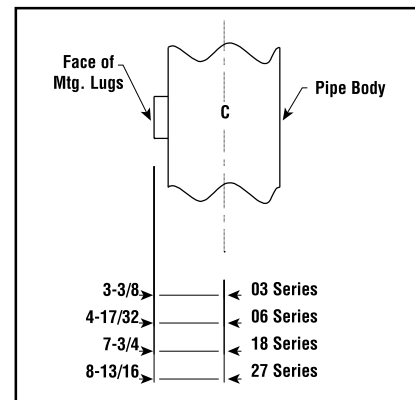
**Other Note** — Refer to the Controls section for control panels.

### Dimensions (Inches)

#### GCHI-45, 72, 108



#### GCHI-AA



### Ordering Information

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

Model	Steam, Air and Gas to 750°F <sup>1</sup>			
<b>GCHI</b>	Gas Circulation Heater — INCOLOY® Elements — Steel Vessel			
<b>B</b>	Internal Baffles			
	<b>Code</b>	<b>Number of Elements</b>		
	<b>03</b>	Three	<b>45</b>	Forty Five
	<b>06</b>	Six	<b>72</b>	Seventy Two
	<b>18</b>	Eighteen	<b>108</b>	One Hundred Eight
	<b>27</b>	Twenty Seven		
	<b>Code</b>	<b>kW</b>		
	<b>003P</b>	3	<b>040P</b>	40
	<b>04P5</b>	4.5	<b>050P</b>	50
	<b>006P</b>	6	<b>060P</b>	60
	<b>009P</b>	9	<b>070P</b>	70
	<b>012P</b>	12	<b>075P</b>	75
	<b>020P</b>	20	<b>080P</b>	80
	<b>025P</b>	25	<b>090P</b>	90
	<b>030P</b>	30	<b>125P</b>	125
	<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>GCHI</b>	<b>45</b>	<b>072P</b>	<b>E1</b>	<b>Typical Model Number</b>