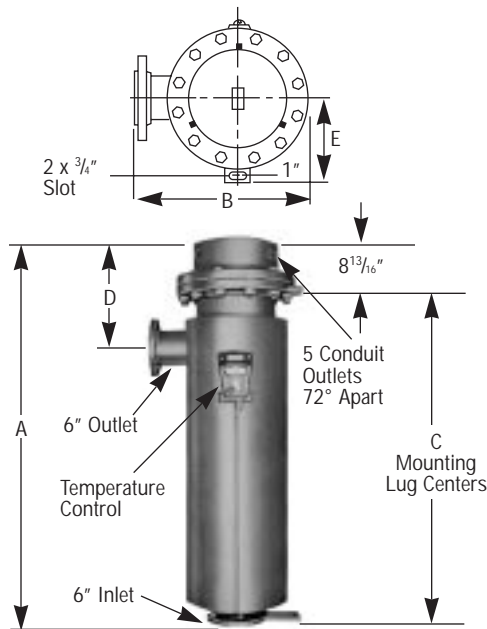


# Chromalox®

## Installation, Operation and RENEWAL PARTS IDENTIFICATION

SERVICE REFERENCE	
DIVISION 4	SECTION NWH
SALES REFERENCE	PE428
161-058064-001	
DATE	DECEMBER, 1983

### Type NWH-45, 72, 108 Circulation Heaters for Water Heating



Specifications – Table A

Model	Volts	kW	No. of 3Ø Circuits	W/In <sup>2</sup>	Dimensions (In.)				
					A	B	C	D	(Inc. Lug) E
NWH-45250	480	250	5	50	65	26 <sup>1</sup> / <sub>2</sub>	56 <sup>1</sup> / <sub>8</sub>	18 <sup>13</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>2</sub>
NWH-45300	480	300	5	50	72 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>	63 <sup>5</sup> / <sub>8</sub>	18 <sup>13</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>2</sub>
NWH-45350	480	350	5	50	80	26 <sup>1</sup> / <sub>2</sub>	71 <sup>1</sup> / <sub>8</sub>	18 <sup>13</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>2</sub>
NWH-45400	480	400	5	50	87 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>	78 <sup>5</sup> / <sub>8</sub>	18 <sup>13</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>2</sub>
NWH-45450	480	450	5	50	95	26 <sup>1</sup> / <sub>2</sub>	86 <sup>1</sup> / <sub>8</sub>	18 <sup>13</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>2</sub>
NWH-45500	480	500	5	50	102 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>	93 <sup>5</sup> / <sub>8</sub>	18 <sup>13</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>2</sub>
NWH-72600	480	600	8	45	97 <sup>3</sup> / <sub>8</sub>	27 <sup>3</sup> / <sub>4</sub>	88 <sup>1</sup> / <sub>8</sub>	19	13 <sup>3</sup> / <sub>4</sub>
NWH-72675	480	675	8	45	105 <sup>5</sup> / <sub>8</sub>	27 <sup>3</sup> / <sub>4</sub>	96 <sup>1</sup> / <sub>8</sub>	19	13 <sup>3</sup> / <sub>4</sub>
NWH-72750	480	750	8	45	113 <sup>5</sup> / <sub>8</sub>	27 <sup>3</sup> / <sub>4</sub>	104 <sup>1</sup> / <sub>8</sub>	19	13 <sup>3</sup> / <sub>4</sub>
NWH-108900	480	900	12	45	98 <sup>5</sup> / <sub>8</sub>	29 <sup>1</sup> / <sub>2</sub>	88 <sup>13</sup> / <sub>16</sub>	19 <sup>3</sup> / <sub>8</sub>	14 <sup>1</sup> / <sub>2</sub>
NWH-108975	480	975	12	45	104 <sup>5</sup> / <sub>8</sub>	29 <sup>1</sup> / <sub>2</sub>	94 <sup>13</sup> / <sub>16</sub>	19 <sup>3</sup> / <sub>8</sub>	14 <sup>1</sup> / <sub>2</sub>
NWH-1081050	480	1050	12	45	110 <sup>5</sup> / <sub>8</sub>	29 <sup>1</sup> / <sub>2</sub>	100 <sup>13</sup> / <sub>16</sub>	19 <sup>3</sup> / <sub>8</sub>	14 <sup>1</sup> / <sub>2</sub>

### GENERAL

The high capacity NWH-45, 72 or 108 series are intended for indoor use and are used primarily for water and weak solution heating.

The 45, 72 or 108 copper sheathed tubular elements are centered in a 14", 16" or 18" diameter steel heating chamber, respectively, and welded to a removable steel flange. The assembly is surrounded by 2" of insulation and a sheet metal jacket.

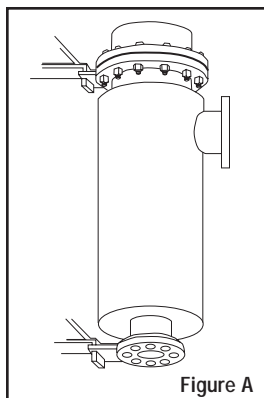
Depending upon the order specifications, the NWH-45, 72 or 108 may or may not be factory equipped with an MF7 or other

Chromalox thermostat. Such thermostats function to control outlet temperatures and to limit internal temperatures under abnormal flow conditions. These controls do not fail-safe.

**CAUTION:** Users should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure may be severe, back-up controls are essential. Although the safety of the installation is the responsibility of the user, Chromalox will be glad to

### INSTALLATION

1. Vertical mounting (axis of chamber vertical) is preferred. Check factory for constructions suitable for horizontal mounting.
2. Mount heater with terminal enclosure at top, and use lower nozzle as inlet to the circulating fluid.
3. The NWH-45, 72 or 108 series of circulation heaters are provided with mounting lugs to support the heater chamber. Refer to Figure A for one suggested mode of support.
4. Mount heaters to permit unrestrained expansion of chamber due to temperature. The large flange lug



5. should be bolted solidly; however, the remaining lug should be bolted loosely to allow freedom of movement with expansion.
5. **DANGER: Hazard of Fire.** Provide minimum of 6" spacing from chamber and related piping to nearest combustible material. Avoid operation of heater near combustible fluids or in combustible vapor or gas laden atmosphere.
6. Provide adequate space at terminal end to permit withdrawal of the heater from chamber should servicing be required.
7. If two or more heaters are needed to provide the needed heating capacity, arrange them for series flow.
8. **DANGER: Possible Explosion.** A pressure relief valve should be provided by customer at outlet of vessel. There should be no valving between vessel and relief valve.

## WIRING

**CAUTION:** *Hazard of Electric Shock. Any installation involving electric heaters must be grounded to earth to eliminate shock hazard.*

1. Electric wiring to heater must be installed in accordance with local and National Electrical Codes.

2. Because of high operating temperatures expected, aluminum wiring is not recommended.
3. Five 3 phase circuits is a typical design for these heaters. Other circuit arrangements are often supplied depending upon customer specifications or amperage rating.

## OPERATION

1. Do not heat materials that are corrosive to the heating element sheath or chamber.

**WARNING:** *Type NWH Circulation Heaters are equipped with copper heating elements and galvanized-steel heating chambers. It is the responsibility of the user to know the chemical composition of the corrosive solution and the character of the materials entering the solution as well as the corrosive effect of the solution upon the heating elements and chamber. Chromalox cannot warrant any electric circulation heater against failure by*

*sheath corrosion if such failure is the result of operating conditions beyond our control.*

2. Terminal ends of heater must be protected from drippings, condensation, spray or direct spill-over of material whose presence at the terminals may damage heater electrical insulation. Liquid-tight terminal enclosures are available to protect heater. Check Factory.
3. If foreign material is carried by the fluid flow, install suitable filters in the inlet pipe line to the heater.
4. Do not allow heater to operate when fluid flow is interrupted.

## MAINTENANCE

1. **CAUTION:** *Hazard of Electric Shock. Disconnect all power before servicing heater.*
2. Remove heating element assembly periodically to check heater sheath for corrosion or excessive oxidation. Correct operating conditions to minimize sheath deterioration.
3. Periodically check temperature control and pressure-tempera-

ture safety limit control operation to insure accurate and safe process operation.

4. Check all electrical connections periodically and retighten connections which may have loosened in service. Replace wire and wire terminals which show signs of oxidation which would interfere with establishment of reliable electrical connections.

## RENEWAL PARTS IDENTIFICATION

Order Renewal Parts on a Special Order Basis. Give the name of the part, part number, voltage, wattage and any special features to your local Chromalox Representative or the factory.

### WARRANTY AND LIMITATION OF REMEDY AND LIABILITY

Chromalox warrants only that the Products and parts manufactured by Chromalox, when shipped, and the work performed by Chromalox when performed, will meet all applicable specification and other specific product and work requirements (including those of performance), if any, and will be free from defects in material and workmanship under normal conditions of use. All claims for defective or nonconforming (both hereinafter called defective) Products, parts or work under this warranty must be made in writing immediately upon discovery, and in any event, within one (1) year from delivery, provided, however all claims for defective Products and parts must be made in writing no later than eighteen (18) months after shipment by Chromalox. Defective and nonconforming items must be held for Chromalox's inspections and returned to the original f.o.b. point upon request. THE FOREGOING IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Notwithstanding the provisions of this WARRANTY AND LIMITATION Clause, it is specifically understood that Products and parts not manufactured and work not performed by Chromalox are warranted only to the extent and in the manner that the same are warranted to Chromalox by Chromalox's vendors, and then only to the extent that Chromalox is reasonably able to enforce such warranty, it being understood Chromalox shall have no obligation to initiate litigation unless Buyer undertakes to pay all cost and expenses therefor, including but not limited to attorney's fees, and indemnifies Chromalox against any liability to Chromalox's

vendors arising out of such litigation.

Upon Buyer's submission of a claim as provided above and its substantiation, Chromalox shall at its option either (i) repair or replace its Products, parts or work at the original f.o.b. point of delivery or (ii) refund an equitable portion of the purchase price.

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