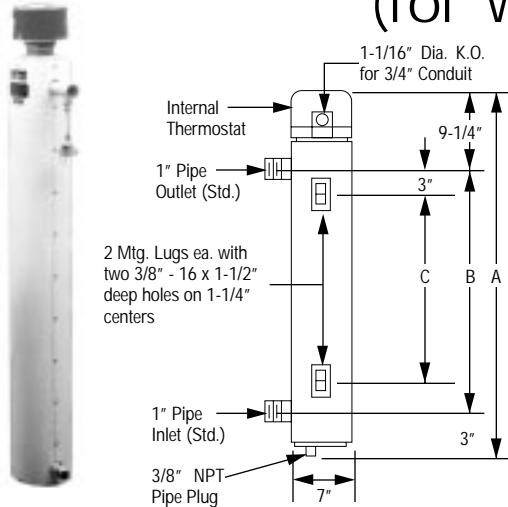


Chromalox®

Installation, Operation and MAINTENANCE INSTRUCTIONS

| SERVICE REFERENCE | |
|--------------------------------------|---------------|
| DIVISION 4 | SECTION NWHMT |
| SALES REFERENCE (Supersedes PE439-1) | PE439-2 |
| 161-303186-001 | |
| DATE | APRIL, 1999 |

Type NWHMT Circulation Heater (for Water Heating)



Specifications — Table A

| Model | Volts | Phase | kW | W/in ² | Dimensions (In.) | | |
|-------------|-----------------|--------|-----|-------------------|------------------|--------|--------|
| | | | | | A | B | C |
| NWHMT-3305 | 120, 240 or 480 | 1 or 3 | 3 | 50 | 21-5/8 | 9-3/8 | — |
| NWHMT-3455 | 240 or 480 | 1 or 3 | 4.5 | 50 | 21-5/8 | 9-3/8 | — |
| NWHMT-3605 | 240 or 480 | 1 or 3 | 6 | 50 | 34-3/4 | 22-1/2 | 16-1/2 |
| NWHMT-3905 | 240 or 480 | 1 or 3 | 9 | 50 | 34-3/4 | 22-1/2 | 16-1/2 |
| NWHMT-31205 | 240 or 480 | 1 or 3 | 12 | 50 | 57-1/2 | 45-1/4 | 39-1/4 |
| NWHMT-31505 | 240 or 480 | 1 or 3 | 15 | 50 | 57-1/2 | 45-1/4 | 39-1/4 |
| NWHMT-31805 | 240 or 480 | 1 or 3 | 18 | 50 | 57-1/2 | 45-1/4 | 39-1/4 |

GENERAL

WARNING: This heater is not intended for use in hazardous atmospheres where flammable vapors, gases, liquids or other combustible atmospheres are present as defined in the National Electrical Code. Failure to comply can result in explosion or fire.

Hazardous area terminal housings are available, consult your Local Chromalox representative for details.

The NWHMT series is a general-purpose water circulation heater intended for use indoors.

The three Copper sheathed tubular elements are centered in a 2-1/2" diameter galvanized heating chamber and sealed in a removable screwplug. The assembly is surrounded by 1-1/2" insulation and sheet

metal jacket.

Depending upon the specifications, the NWHMT may or may not be factory equipped with AR or other Chromalox thermostats. Such thermostats function to control outlet temperatures and limits 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 make equipment recommendations.

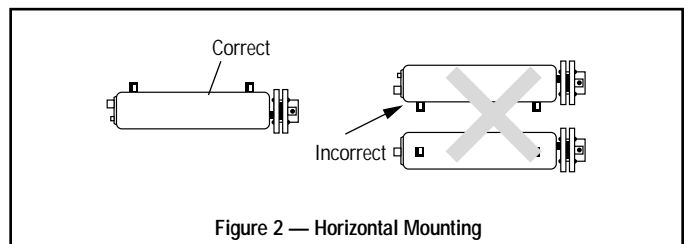
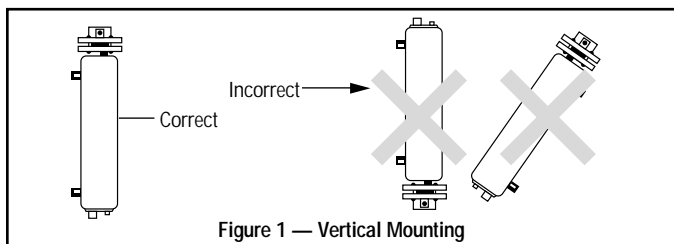
INSTALLATION

WARNING: Hazard of Shock. Disconnect all power before installing heater.

- Vertical mounting (axis of chamber vertical, see above drawing.) is preferred with terminal housing at top of heater (Figure 1).
- When mounting heater horizontally, inlet and outlet pipes **must** be up. In any other position, heater cannot be purged of air and ele-

ments may be seriously damaged (Figure 2).

- The NWHMT series of circulation heaters are provided with mounting lugs to support the heater chamber. Refer to drawing above for location of these mounting lugs.
- Mount heaters to permit unrestrained expansion of chamber due to temperature. This can be accomplished by using a slotted mounting assembly on either of the lugs.



INSTALLATION

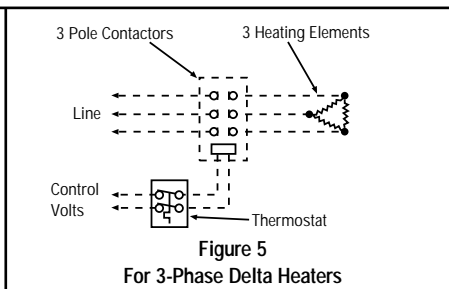
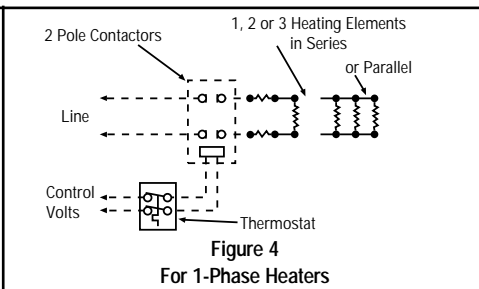
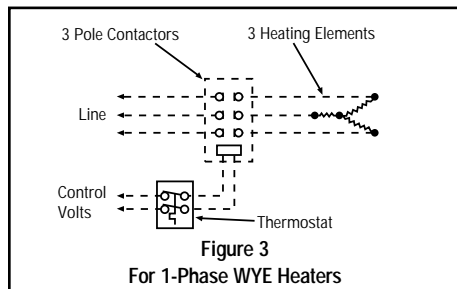
5. **DANGER: Hazard of Fire.** Provide minimum of 6" spacing from a chamber and related piping to nearest combustible material. Avoid operation of heater near combustible fluids or in combustible vapor or gas laden atmosphere.
6. Provide adequate space at terminal end to permit withdrawal of the heater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

WIRING

WARNING: Hazard of Shock. Any installation involving electric heaters must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.

1. Electrical wiring to heater must be installed in accordance with the National Electrical Code and/or local electrical codes by a qualified person as defined in the NEC.
2. When element wattages are not equal, heaters must not be connected in series.

3. Electrical wiring to heater should be connected in rigid conduit or in flexible hose to keep corrosive vapors and liquids out of the terminal housing. If high humidity is encountered, the conduit should slope down away from the heater.
4. If flexible cord is employed, a watertight connector should be used for entry of the cord into the terminal housing. Outdoor applications require liquid-tight conduit and connectors.
5. Bring the power line wires through the opening in the terminal housing. Connect line wire as shown in Figures 3 through 5.



NOTE: Dotted lines indicate "customer furnished."

OPERATION

1. Do not heat materials that are corrosive to the heating element sheath or chamber. For water heating service, condensate drain may be provided from bottom of chamber. Check factory.
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 housings are available to protect heater. Check with Local Chromalox Sales representative.
3. If foreign material is carried by the gaseous flow, install suitable filters in the inlet pipe to the heater.
4. Do not allow heater to operate when fluid flow is interrupted.

MAINTENANCE

WARNING: Hazard of Shock. Disconnect all power before servicing heater.

1. Remove heating element assembly periodically to check heater sheath for corrosion or excessive oxidation. Correct operating conditions to minimize sheath deterioration.
2. Periodically check temperature control and limit control operation to insure accurate and safe process operation.
3. Check all electrical connections periodically and retighten connections which may have loosened in service. Replace wire terminals which show signs of oxidation which would interfere with establishment of reliable electrical connections.

RENEWAL PARTS IDENTIFICATION

Thermostat AR-215 60-250F.....300-048518-013

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 indemnities 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. THE FOREGOING IS CHROMALOX'S ONLY OBLIGATION AND BUYER'S EXCLUSIVE REMEDY FOR BREACH OF WARRANTY, AND IS BUYER'S EXCLUSIVE REMEDY AGAINST CHROMALOX FOR ALL CLAIMS ARISING HEREUNDER OR RELATING HERETO WHETHER SUCH CLAIMS ARE BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORIES, BUYER'S FAILURE TO SUBMIT A CLAIM AS PROVIDED ABOVE SHALL SPECIFICALLY WAIVE ALL CLAIMS FOR DAMAGES OR OTHER RELIEF, INCLUDING BUT NOT LIMITED TO CLAIMS BASED ON LATENT DEFECTS. IN NO EVENT SHALL BUYER BE ENTITLED TO INCIDENTAL OR CONSEQUENTIAL DAMAGES AND BUYER SHALL HOLD CHROMALOX HARMLESS THEREFROM. ANY ACTION BY BUYER ARISING HEREUNDER OR RELATING HERETO, WHETHER BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORIES, MUST BE COMMENCED WITHIN ONE (1) YEAR AFTER THE DATE OF SHIPMENT OR IT SHALL BE BARRED.

W2008M

