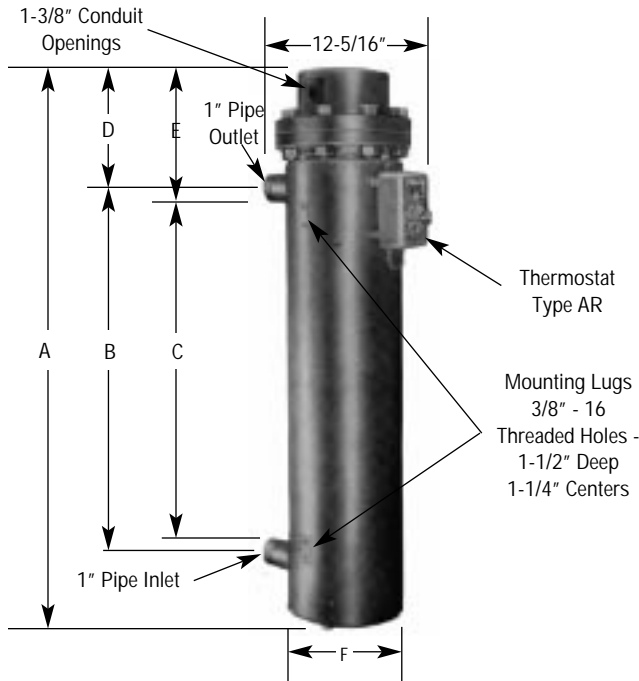


Chromalox®

Installation Operation

and

RENEWAL PARTS IDENTIFICATION



SERVICE REFERENCE	
DIVISION 4	SECTION NWH
SALES REFERENCE (Supersedes PE405-5)	PE405-6
161-048380-001	
DATE JULY, 1990	

Type NWH-3 Circulation Heater for Water Heating

Specifications — Table A

Model	Voltage	Phase	kW	Watt Density	Dimensions (In.)		
					A	B	C
NWH-3625	240	1 or 3Δ	6	47.7	32-15/16	22-1/2	16-1/2
NWH-3925		1 or 3Δ	9	47.5	32-15/16	22-1/2	16-1/2
NWH-31225	or	1 or 3Δ	12	46.2	42-15/16	32-1/2	26-1/2
NWH-31525	480	1 or 3Δ	15	45.9	55-7/16	45	39
NWH-31825		1 or 3Δ	18	45.6	55-7/16	45	39

GENERAL

The NWH-3 series is a general-purpose water or water-based solution circulation heater intended for use indoors. It is designed for 150 psig at 550°F per ANSI standards.

The 3 copper-sheathed tubular elements are centered in a 3" diameter galvanized steel heating chamber and welded to a removable galvanized steel flange. The assembly is surrounded by 1-1/2" insulation and sheet metal jacket.

Depending upon the order specifications, the NWH-3 may or may not be factory equipped with an AR 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 make equipment recommendations.

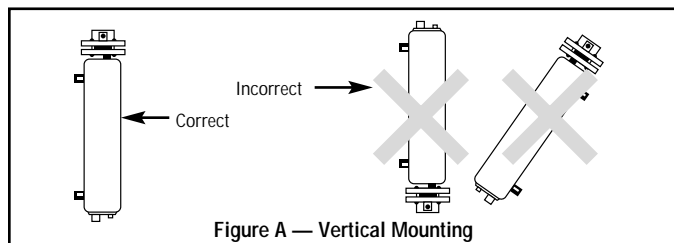
INSTALLATION

CAUTION: Hazard of Electric Shock. Disconnect all power before installing heater.

1. Vertical Mounting (Preferred) —

When the heater is vertically mounted, the terminal housing will be at the top of the heater. The water inlet pipe will be located on the side near the bottom of the heater and the outlet pipe at the top.

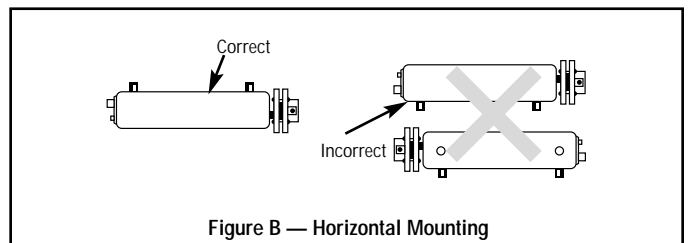
The axis of the chamber will be in a vertical position as in the photo above, and as in Figure A.



Note: A drain pipe located at the bottom of the heater should be provided and enough room left, when mounting heater, to allow draining the heater.

2. Horizontal Mounting (Optional) —

When mounting heater horizontally, inlet and outlet pipes **must** be up. In any other position, heater cannot be purged of air, and elements may be seriously damaged. (See Figure B.)



INSTALLATION

3. Whether vertically or horizontally, the heater should be rigidly mounted so that vibration is at a minimum since excessive vibration will result in erratic thermostat operation. The NWH-3 is provided with mounting lugs to support the heating chamber. (See photo.)
4. By using a slotted mounting assembly on either of the lugs, the heater chamber will be permitted to expand with increasing temperature.
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.

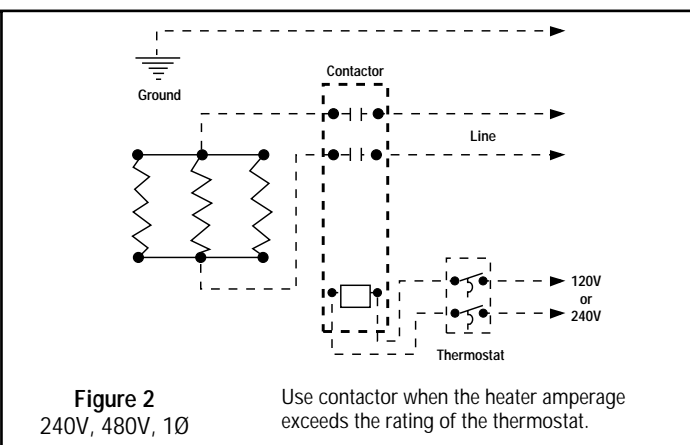
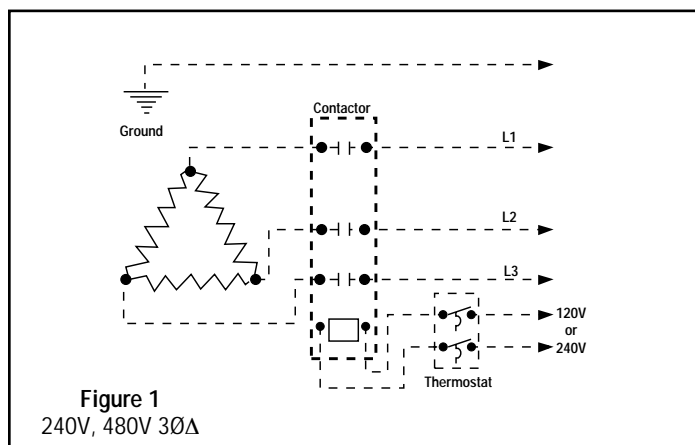
WIRING

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

1. Be sure line voltage matches heater voltage (on nameplate).
2. Electric wiring to heater must be installed in accordance with local and National Electrical Codes.
3. Power controllers must be used when heaters are rated 3 phase and when the heater amperage exceeds the rating of the thermostat.
4. Refer to Wiring Diagram, Table B, for the proper wiring diagram for connecting heater.

Wiring Diagrams - Table B

Model	240V, 1 Ø Fig.	240V, 3 Ø Δ Fig.	480V, 1 Ø Δ Fig.	480V, 3 Ø Δ Fig.
NWH-3625	2	1	2	1
NWH-3925	2	1	2	1
NWH-31225	2	1	2	1
NWH-31525	2	1	2	1
NWH-31825	2	1	2	1



Note: Dotted lines indicate "customer furnished." However, Thermostat could have been furnished by Chromalox if so specified on the order.

OPERATION

1. Do not heat solutions that are corrosive to the heating element sheath or the heating 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. Their presence at the terminals may damage heater electrical insulation. Liquid-tight terminal enclosures are available to protect heater. Contact your Local Chromalox Sales office.
3. If foreign material is carried by the liquid flow, install suitable filters in the inlet pipe line to the heater.
4. Do not allow heater to operate when liquid flow is interrupted.

MAINTENANCE

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

Model	Volts	Phase	kW	Heating Elements	AR2525 Thermostat Assembly	MF7 Thermostat Assembly
NWH-3625	240	1	6	155-024796-001	300-057560-007	300-048481-006
NWH-3625	240	3Δ	6	155-024796-002	300-057560-007	300-048481-006
NWH-3625	480	1	6	155-024796-003	300-057560-007	300-048481-006
NWH-3625	480	3Δ	6	155-024796-004	300-057560-007	300-048481-006
NWH-3925	240	1	9	155-024796-006	300-057560-007	300-048481-006
NWH-3925	240	3Δ	9	155-024796-007	300-057560-007	300-048481-006
NWH-3925	480	1	9	155-024796-008	300-057560-007	300-048481-006
NWH-3925	480	3Δ	9	155-024796-009	300-057560-007	300-048481-006
NWH-31225	240	1	12	155-024796-011	300-057560-007	300-048481-006
NWH-31225	240	3Δ	12	155-024796-012	300-057560-007	300-048481-006
NWH-31225	480	1	12	155-024796-013	300-057560-007	300-048481-006
NWH-31225	480	3Δ	12	155-024796-014	300-057560-007	300-048481-006
NWH-31525	240	1	15	155-024796-016	300-057560-007	300-048481-006
NWH-31525	240	3Δ	15	155-024796-017	300-057560-007	300-048481-006
NWH-31525	480	1	15	155-024796-018	300-057560-007	300-048481-006
NWH-31525	480	3Δ	15	155-024796-019	300-057560-007	300-048481-006
NWH-31825	240	1	18	155-024796-021	300-057560-007	300-048481-006
NWH-31825	240	3Δ	18	155-024796-022	300-057560-007	300-048481-006
NWH-31825	480	1	18	155-024796-023	300-057560-007	300-048481-006
NWH-31825	480	3Δ	18	155-024796-024	300-057560-007	300-048481-006

Note: When ordering parts for Model Numbers suffixed by "XX" or any other letter or letters not specifically identified on this instruction sheet, order Renewal Parts on special order basis, giving name of part, part number, model number and description.

PARTS COMMON TO ALL HEATERS	
AR Mounting Bracket027-011378-001 (2)
Flexitallic Gasket132-019779-001
Standard Gasket132-017222-001

Note: Number in () indicates quantity of same part number used.

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.

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out of such litigation.

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