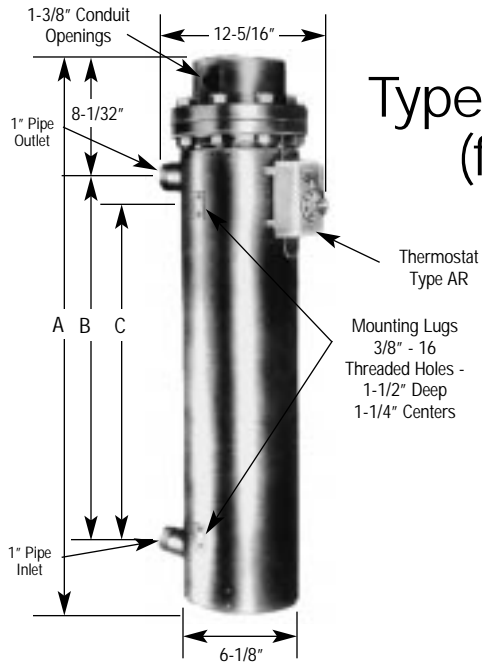


Chromalox®

Installation

and

RENEWAL PARTS IDENTIFICATION



Type NWHO-3 Series Circulation Heaters (for Regular and Fuel Oil Heating)

SERVICE REFERENCE	
DIVISION 4	SECTION NWHO
SALES REFERENCE (Supersedes PE406-4)	PE406-5
161-048710-001	
DATE FEBRUARY, 1999	

Specifications — Table A

Regular Oil Heaters							
Model	Volts	Phase	kW	W/In ²	Dimensions (In.)		
					A	B	C
NWHO-33015	240 or 480	1 or 3 Δ	3	23	32-15/16	22-1/2	16-1/2
NWHO-34515			4.5		32-15/16	22-1/2	16-1/2
NWHO-36015			6		42-15/16	32-1/2	26-1/2
NWHO-37515			7.5		55-7/16	45	39
NWHO-39015			9		55-7/16	45	39
Fuel Oil Heaters							
NWHO-30315	240 or 480	1 or 3 Δ	3	15	32-15/16	22-1/2	16-1/2
NWHO-30415			4		42-15/16	32-1/2	26-1/2
NWHO-30615			6		55-7/16	45	39

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.

The NWHO-3 series is a general-purpose regular and fuel oil solution circulation heater intended for use indoors. It is designed for 150 psig at 550°F per ANSI standards.

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

Depending upon the order specifications, the NWHO-3 may or may not be factory equipped with 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 installation is the responsibility of the user, Chromalox will be glad to make equipment recommendations.

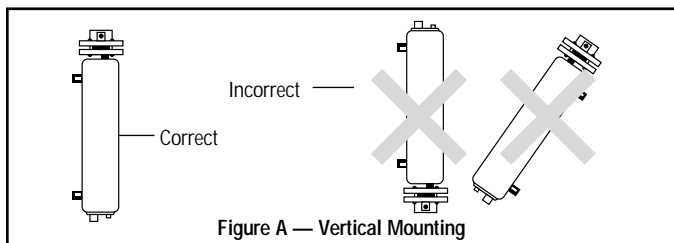
INSTALLATION

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

1. Vertical mounting (Preferred) —

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

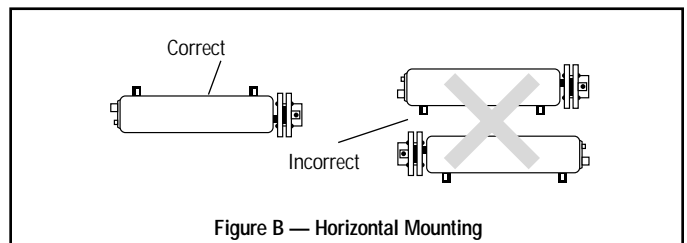
The axis of the chamber will be in a vertical position as in the photo above and as in Figure A.



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 NWHO-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. *Do not operate 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

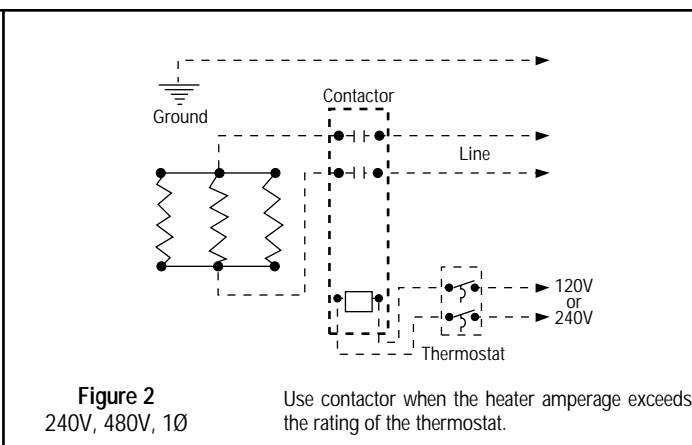
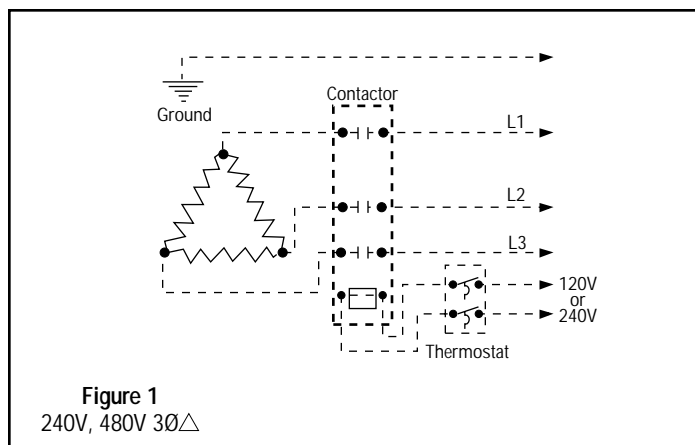
WARNING: Hazard of Shock. Any installation involving electric heaters must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.

1. Be sure line voltage matches heat voltage (on nameplate).
2. Electric wiring to heater must be installed in accordance with local and National Electrical Codes by a qualified person as defined in the NEC.
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, to properly connect the heater.

Wiring Diagrams — Table B

Model	240V, 1Ø Fig.	240V, 3Ø Δ Fig.	480V, 1Ø Fig.	480V, 3Ø Δ Fig.
NWHO-3301	2	1	2	1
NWHO-3451	2	1	2	1
NWHO-3601	2	1	2	1
NWHO-3751	2	1	2	1
NWHO-3901	2	1	2	1
NWHO-3031	2	1	2	1
NWHO-3041	2	1	2	1
NWHO-3061	2	1	2	1

Note: Use wire size and type specified by N.E.C. 480V and 550V heaters require 600V wire, per N.E.C. Contactors and wire supplied by customer.



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 NWHO Circulation Heaters are equipped with steel heating elements and 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. Check with local sales representative.
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 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 terminals that show signs of oxidation which would interfere with establishment of reliable electrical connections.

RENEWAL PARTS IDENTIFICATION

Regular Oil Heater				
Model	Volts	Phase	kW	Heating Elements
NWHO-33015	240	1	3	155-024796-031
NWHO-33015	240	3 Δ	3	155-024796-032
NWHO-33015	480	1	3	155-024796-033
NWHO-33015	480	3 Δ	3	155-024796-034
NWHO-34515	240	1	4.5	155-024796-036
NWHO-34515	240	3 Δ	4.5	155-024796-037
NWHO-34515	480	1	4.5	155-024796-038
NWHO-34515	480	3 Δ	4.5	155-024796-039
NWHO-36015	240	1	6	155-024796-041
NWHO-36015	240	3 Δ	6	155-024796-042
NWHO-36015	480	1	6	155-024796-043
NWHO-36015	480	3 Δ	6	155-024796-044
NWHO-37515	240	1	7.5	155-024796-046
NWHO-37515	240	3 Δ	7.5	155-024796-047
NWHO-37515	480	1	7.5	155-024796-048
NWHO-37515	480	3 Δ	7.5	155-024796-049
NWHO-39015	240	1	9	155-024796-051
NWHO-39015	240	3 Δ	9	155-024796-052
NWHO-39015	480	1	9	155-024796-053
NWHO-39015	480	3 Δ	9	155-024796-054

Fuel Oil Heater				
Model	Volts	Phase	kW	Heating Elements
NWHO-30315	240	1	3	155-024796-066
NWHO-30315	240	3 Δ	3	155-024796-067
NWHO-30315	480	1	3	155-024796-068
NWHO-30315	480	3 Δ	3	155-024796-069
NWHO-30415	240	1	4	155-024796-071
NWHO-30415	240	3 Δ	4	155-024796-072
NWHO-30415	480	1	4	155-024796-073
NWHO-30415	480	3 Δ	4	155-024796-074
NWHO-30615	240	1	6	155-024796-081
NWHO-30615	240	3 Δ	6	155-024796-082
NWHO-30615	480	1	6	155-024796-083
NWHO-30615	480	3 Δ	6	155-024796-084

Parts Common To All Heaters	
Standard Gasket	132-017222-015
Spiral Wound Gasket	132-073008-009
Thermostat (Regular Oil)	300-057502-015
Thermostat (Fuel Oil)	300-057502-016

Note: When ordering parts for Model Numbers suffixed by "XX" or any other 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.

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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.

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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