

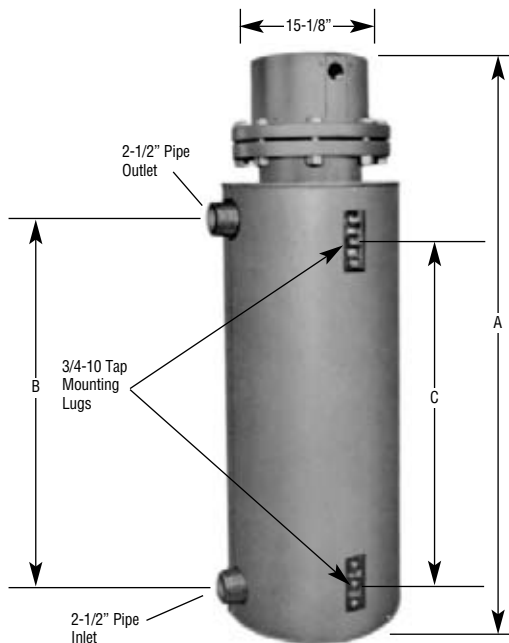
Chromalox®

Installation, Operation and RENEWAL PARTS IDENTIFICATION

SERVICE REFERENCE

| | | | |
|-----------------|----------------------|--------------|--|
| DIVISION 4 | | SECTION NWHO | |
| SALES REFERENCE | (Supersedes PE426-1) | PE426-2 | |
| 161-058063-001 | | | |
| DATE | JANUARY, 2003 | | |

NWHO(F)-18 Circulation Heaters (for Regular and Fuel Oil Heating)



Specifications — Table A

| Regular Oil Heaters | | | | | | | |
|---------------------|------------|-------|----|-------------------|------------------|----------|----------|
| Model | Volts | Phase | kW | W/In ² | Dimensions (In.) | | |
| | | | | | A | B | C |
| NWHO-1830R15 | 240 or 480 | 3 Δ | 30 | 20 | 53-7/8 | 32-11/16 | 29-3/16 |
| NWHO-1840R15 | 240 or 480 | 3 Δ | 40 | 20 | 60-7/8 | 39-11/16 | 36-3/16 |
| NWHO-1850R15 | 240 or 480 | 3 Δ | 50 | 20 | 68-1/2 | 47-5/16 | 43-13/16 |
| NWHO-1860R15 | 240 or 480 | 3 Δ | 60 | 20 | 78 | 56-13/16 | 53-5/16 |
| NWHO-1870R15 | 240 or 480 | 3 Δ | 70 | 20 | 87 | 65-13/16 | 62-5/16 |
| NWHO-1880R15 | 240 or 480 | 3 Δ | 80 | 20 | 97 | 75-13/16 | 72-5/16 |
| Fuel Oil Heaters | | | | | | | |
| NWHO-1820F15 | 240 or 480 | 3 Δ | 20 | 12 | 53-7/8 | 32-11/16 | 29-3/16 |
| NWHO-1825F15 | 240 or 480 | 3 Δ | 25 | 12 | 60-7/8 | 39-11/16 | 36-3/16 |
| NWHO-1830F15 | 240 or 480 | 3 Δ | 30 | 12 | 68-1/2 | 47-5/16 | 43-13/16 |
| NWHO-1835F15 | 240 or 480 | 3 Δ | 35 | 12 | 78 | 56-13/16 | 53-5/16 |
| NWHO-1840F15 | 240 or 480 | 3 Δ | 40 | 12 | 87 | 65-13/16 | 62-5/16 |
| NWHO-1845F15 | 240 or 480 | 3 Δ | 45 | 12 | 97 | 75-13/16 | 72-5/16 |

GENERAL

⚠ WARNING

FIRE/EXPLOSION HAZARD. 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 personal injury or property damage.

The NWHO(F)-18 series is a general purpose regular and fuel oil solution circulation heater intended for use indoors.

The steel-sheathed tubular elements are centered in a steel heating chamber and sealed into a removable steel flange. The assembly is surrounded by insulation and a sheet metal jacket.

Depending upon the order specifications, the NWHO(F)-18 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.

⚠ WARNING

The system designer is responsible for the safety of this equipment and should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure could result in personal injury or property damage, back-up controls are essential.

INSTALLATION

⚠ WARNING

ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing heater. Failure to do so could result in personal injury or property damage. Heater must be installed by a qualified person in accordance with the National Electrical Code, NFPA 70.

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 on previous page 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)

CAUTION: 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)

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(F)-18 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. Provide adequate space at terminal to end permit withdrawal of the heater from chamber should servicing be required.

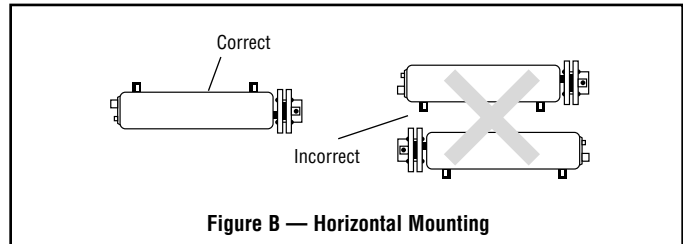
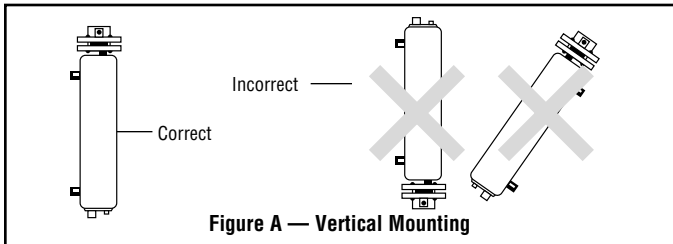
⚠ WARNING

FIRE HAZARD. Since heaters are capable of developing high temperatures, extreme care should be taken to:

- A. Provide a minimum of 6" spacing from chamber and related piping to nearest combustible material.
- B. Do not operate near combustible fluids or vapors.

⚠ CAUTION

FREEZE HAZARD. This unit is equipped with a thermowell for process control or over-temperature control. Do not allow moisture to accumulate in thermowell. Freezing temperatures can cause damage that may result in the heated medium leaking into terminal enclosure.



WIRING

⚠ WARNING

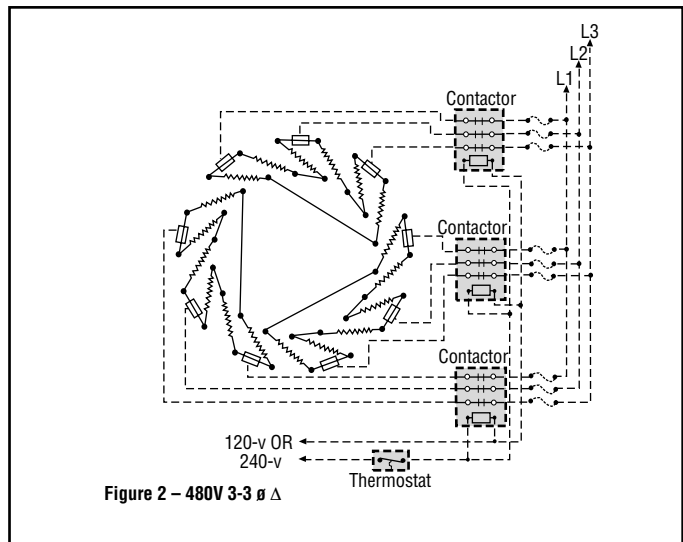
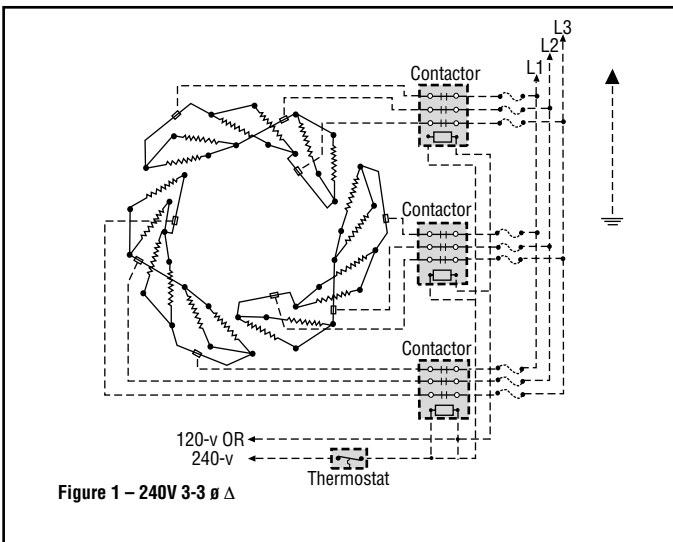
ELECTRIC SHOCK HAZARD. Any installation involving electric heaters must be performed by a qualified person and must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.

1. Be sure line voltage matches heater voltage as shown 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 for 480 volt service or if the amperage rating of the heaters exceeds the contact 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 3-3Ø Fig. | 480V 3-3Ø Fig. |
|------------|-------------------|-------------------|
| Any Heater | 1 | 2 |



Note: Dotted lines indicate "customer furnished." However, thermostat may be furnished by Chromalox if so specified on the order.

OPERATION

⚠ WARNING

FIRE/EXPLOSION HAZARD. Do not exceed the Pressure-Temperature rating of the flange as listed in ANSI B16.5.

IMPORTANT: It is the responsibility of the purchaser of the heater to make the ultimate choice of sheath material based upon his knowledge of the chemical composition of the corrosive solution, character of the materials entering the solution, and controls which he maintains on the process.

⚠ WARNING

Sheath corrosion can result in a ground fault which, depending upon the solution being heated, can cause an explosion or fire.

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

⚠ WARNING

ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing heater. Failure to do so could result in personal injury or property damage. Heater must be installed by a qualified person in accordance with the National Electrical Code, NFPA 70.

1. Remove heating element assembly periodically to check heater sheath for scaling, 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 and wire terminals which show signs of oxidation which would interfere with establishment of reliable electrical connections.

RENEWAL PARTS IDENTIFICATION

Regular Oil Heaters

| Model | Volts | Phase | kW | Heating Element |
|-----------------|-------|-------|----|-----------------|
| NWHO-1830R15 | 240 | 3 Δ | 30 | 155-013185-331 |
| NWHO(F)-1830R15 | 240 | 3 Δ | 30 | 155-045301-013 |
| NWHO-1830R15 | 480 | 3 Δ | 30 | 155-013185-332 |
| NWHO(F)-1830R15 | 480 | 3 Δ | 30 | 155-045301-014 |
| NWHO-1840R15 | 240 | 3 Δ | 40 | 155-013185-004 |
| NWHO(F)-1840R15 | 240 | 3 Δ | 40 | 155-045301-016 |
| NWHO-1840R15 | 480 | 3 Δ | 40 | 155-013185-005 |
| NWHO(F)-1840R15 | 480 | 3 Δ | 40 | 155-045301-017 |
| NWHO-1850R15 | 240 | 3 Δ | 50 | 155-013185-007 |
| NWHO(F)-1850R15 | 240 | 3 Δ | 50 | 155-045301-019 |
| NWHO-1850R15 | 480 | 3 Δ | 50 | 155-013185-008 |
| NWHO(F)-1850R15 | 480 | 3 Δ | 50 | 155-045301-020 |
| NWHO-1860R15 | 240 | 3 Δ | 60 | 155-013185-010 |
| NWHO(F)-1860R15 | 240 | 3 Δ | 60 | 155-045301-022 |
| NWHO-1860R15 | 480 | 3 Δ | 60 | 155-013185-011 |
| NWHO(F)-1860R15 | 480 | 3 Δ | 60 | 155-045301-023 |
| NWHO-1870R15 | 240 | 3 Δ | 70 | 155-013185-013 |
| NWHO(F)-1870R15 | 240 | 3 Δ | 70 | 155-045301-025 |
| NWHO-1870R15 | 480 | 3 Δ | 70 | 155-013185-014 |
| NWHO(F)-1870R15 | 480 | 3 Δ | 70 | 155-045301-026 |
| NWHO-1880R15 | 240 | 3 Δ | 80 | 155-013185-016 |
| NWHO(F)-1880R15 | 240 | 3 Δ | 80 | 155-045301-028 |
| NWHO-1880R15 | 480 | 3 Δ | 80 | 155-013185-017 |
| NWHO(F)-1880R15 | 480 | 3 Δ | 80 | 155-045301-029 |

Fuel Oil Heaters

| Model | Volts | Phase | kW | Heating Element |
|-----------------|-------|-------|----|-----------------|
| NWHO-1820F15 | 240 | 3 Δ | 20 | 155-013185-019 |
| NWHO(F)-1820F15 | 240 | 3 Δ | 20 | 155-045301-001 |
| NWHO-1820F15 | 480 | 3 Δ | 20 | 155-013185-020 |
| NWHO(F)-1820F15 | 480 | 3 Δ | 20 | 155-045301-002 |
| NWHO-1825F15 | 240 | 3 Δ | 25 | 155-013185-022 |
| NWHO(F)-1825F15 | 240 | 3 Δ | 25 | 155-045301-004 |
| NWHO-1825F15 | 480 | 3 Δ | 25 | 155-013185-023 |
| NWHO(F)-1825F15 | 480 | 3 Δ | 25 | 155-045301-005 |
| NWHO-1830F15 | 240 | 3 Δ | 30 | 155-013185-025 |
| NWHO(F)-1830F15 | 240 | 3 Δ | 30 | 155-045301-007 |
| NWHO-1830F15 | 480 | 3 Δ | 30 | 155-013185-026 |
| NWHO(F)-1830F15 | 480 | 3 Δ | 30 | 155-045301-008 |
| NWHO-1835F15 | 240 | 3 Δ | 35 | 155-013185-028 |
| NWHO(F)-1835F15 | 240 | 3 Δ | 35 | 155-045301-010 |
| NWHO-1835F15 | 480 | 3 Δ | 35 | 155-013185-029 |
| NWHO(F)-1835F15 | 480 | 3 Δ | 35 | 155-045301-011 |
| NWHO-1840F15 | 240 | 3 Δ | 40 | 155-013185-031 |
| NWHO(F)-1840F15 | 240 | 3 Δ | 40 | 155-045301-031 |
| NWHO-1840F15 | 480 | 3 Δ | 40 | 155-013185-032 |
| NWHO(F)-1840F15 | 480 | 3 Δ | 40 | 155-045301-032 |
| NWHO-1845F15 | 240 | 3 Δ | 45 | 155-013185-034 |
| NWHO(F)-1845F15 | 240 | 3 Δ | 45 | 155-045301-034 |
| NWHO-1845F15 | 480 | 3 Δ | 45 | 155-013185-035 |
| NWHO(F)-1845F15 | 480 | 3 Δ | 45 | 155-045301-035 |

Note: The "F" in NWHO(F) means forced circulation (ie: equipped with baffles.) When replacing the heating element, care must be taken that the baffles line up properly with the inlet and outlet pipes. The top of the flange of replacement heating elements for forced circulation heaters is stamped near one edge with the letter "P". The sub-assembly is positioned correctly when the "P" on the flange is in line with the inlet and outlet pipe. Incorrect placement will result in hindered circulation and possible failure of the element.

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 and description.

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