

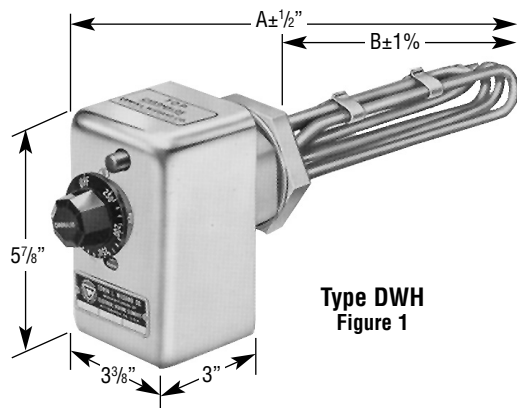
Etirex®

Installation, Operation and RENEWAL PARTS IDENTIFICATION

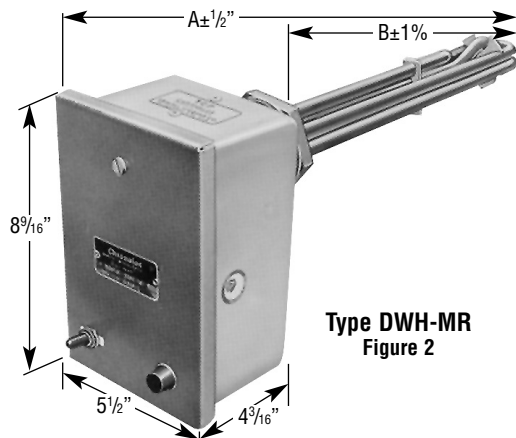
SERVICE REFERENCE

DIVISION 4		SECTION DWH	
SALES REFERENCE (Supersedes PD405-5)		PD405E-5	
		161-049651-501	
DATE		JANUARY, 2008	

Type DWH and DWH-MR Electric Dishwasher Heater



Type DWH
Figure 1



Type DWH-MR
Figure 2

Specifications – Table A

Model	Volts	kW	Watt Density	Dimensions (In.)		Net Wt. (Lbs.)
				A Overall Length	B Length Inside Tank	
1 PHASE						
DWH-3	208	3	53	14 $\frac{1}{2}$	8 $\frac{1}{2}$	8
DWH-3	240	3	53	14 $\frac{1}{2}$	8 $\frac{1}{2}$	8
DWH-5	208	5	53	19 $\frac{1}{2}$	13 $\frac{1}{4}$	9.5
DWH-5	240	5	53	19 $\frac{1}{2}$	13 $\frac{1}{4}$	9.5
3 PHASE						
DWH-3	208	3	53	14 $\frac{1}{2}$	8 $\frac{1}{2}$	8
DWH-3	240	3	53	14 $\frac{1}{2}$	8 $\frac{1}{2}$	8
DWH-5	208	5	53	19 $\frac{1}{2}$	13 $\frac{1}{4}$	9.5
DWH-5	240	5	53	19 $\frac{1}{2}$	13 $\frac{1}{4}$	9.5
DWH-7.5	208	7.5	51.6	24	18 $\frac{3}{4}$	13
DWH-7.5	240	7.5	51.6	24	18 $\frac{3}{4}$	13

Specifications – Table B

Model	Volts	kW	Watt Density	Dimensions (In.)		Net Wt. (Lbs.)
				A Overall Length	B Length Inside Tank	
1 PHASE						
DWH-MR-5PS	120	5	53	19 $\frac{1}{16}$	13 $\frac{3}{16}$	11
DWH-MR-5PS	208	5	53	19 $\frac{1}{16}$	13 $\frac{3}{16}$	11
DWH-MR-5PS	240	5	53	19 $\frac{1}{16}$	13 $\frac{3}{16}$	11
DWH-MR-7.5PS	208	7.5	51.6	25	18 $\frac{7}{8}$	12
DWH-MR-7.5PS	240	7.5	51.6	25	18 $\frac{7}{8}$	12
DWH-MR-10PS	208	10	53	30 $\frac{1}{8}$	24	13
DWH-MR-10PS	240	10	53	30 $\frac{1}{8}$	24	13
3 PHASE						
DWH-MR-5PS	208	5	53	19 $\frac{1}{16}$	13 $\frac{3}{16}$	11
DWH-MR-5PS	240	5	53	19 $\frac{1}{16}$	13 $\frac{3}{16}$	11
DWH-MR-5PS	480	5	53	19 $\frac{1}{16}$	13 $\frac{3}{16}$	11
DWH-MR-7.5PS	208	7.5	51.6	25	18 $\frac{7}{8}$	12
DWH-MR-7.5PS	240	7.5	51.6	25	18 $\frac{7}{8}$	12
DWH-MR-7.5PS	480	7.5	51.6	25	18 $\frac{7}{8}$	12
DWH-MR-10PS	208	10	53	30 $\frac{1}{8}$	24	13
DWH-MR-10PS	240	10	53	30 $\frac{1}{8}$	24	13
DWH-MR-10PS	480	10	53	30 $\frac{1}{8}$	24	13
DWH-MR-15PS	208	15	56	38 $\frac{3}{4}$	32 $\frac{1}{2}$	17
DWH-MR-15PS	240	15	56	38 $\frac{3}{4}$	32 $\frac{1}{2}$	17
DWH-MR-15PS	480	15	56	38 $\frac{3}{4}$	32 $\frac{1}{2}$	17

GENERAL

Etirex type DWH and DWH-MR screwplug immersion heaters are designed for heating water only. They are especially suited for use in providing high watt density in a small, confined area.

- Heater construction characteristics — (Type DWH)
 - High quality resistance wire is held in place by compacted magnesium oxide enclosed in an INCOLOY® sheath.
 - Three INCOLOY® sheath elements are brazed to a 2" NPT brass screwplug.
 - Integral thermostat (DPST) is externally adjustable with a temperature range of 60-250°F with a temperature limit stop set at 215°F.
 - Thermostat setting determines cut-out temperature of over-heat protection device.
 - Heater is supplied with clamping nut and gaskets for optional mounting in thin wall tanks up to 1/4" thick with a 2 3/8" diameter opening.
- Heater construction characteristics (Type DWH-MR)
 - High quality resistance wire is held in place by compacted magnesium oxide enclosed in an INCOLOY® sheath.

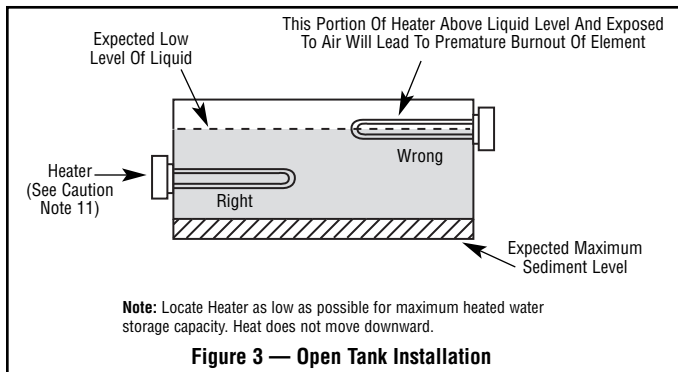
- Three INCOLOY® elements are brazed to a 2" NPT brass screwplug.
- Hinged terminal enclosure is moisture and spray resistant.
- Pilot light and on-off switch are on outside of cover.
- Built-in adjustable thermostat with a temperature range of 100-210°F.
- Built-in contactor.
- Heater is supplied with clamping nut and gaskets for optional mounting in thin-wall tanks up to 1/4" thick with 2 3/8" diameter opening.

WARNING: Users should install adequate controls and safety devices with their electric heating equipment. Where the consequences of failure may be severe, back-up controls are essential, including GFCI (Ground Fault Circuit Interrupters). Although the safety of the installation is the responsibility of the user, Etirex will assist in identifying equipment options.

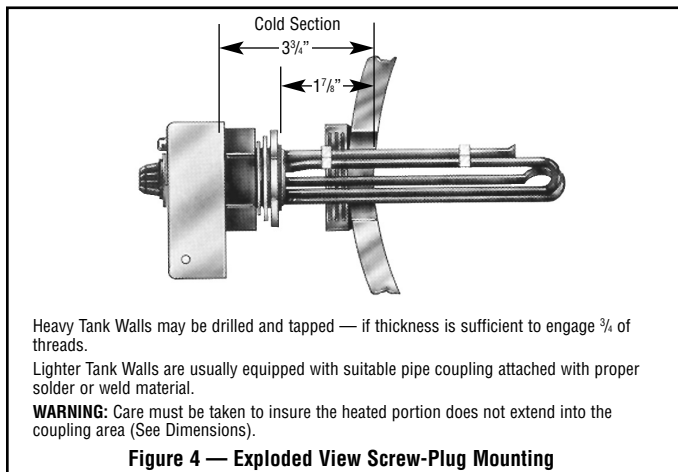
INSTALLATION

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

1. Before installing, check your immersion heater for any damage that may have occurred during shipment.
2. Check to insure that the line voltage is the same as that stamped on the nameplate.
3. Do not bend the heating elements. If bending is necessary, check factory.
4. Mount heater in the tank so that the liquid level will always be above the effective heated portion of the heater. If the heater is not properly submerged, it may overheat and damage the heating elements (see Figure 3).



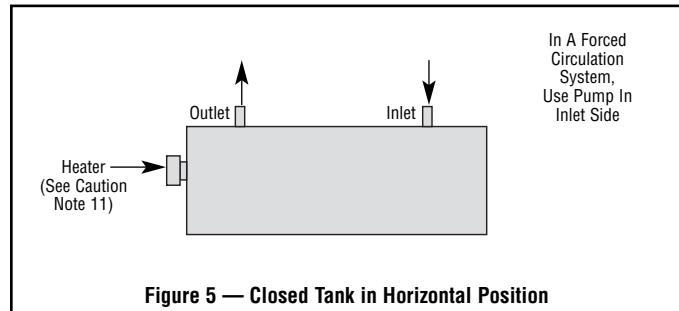
5. Where work will pass over or near equipment, additional protection, such as a metal guard, may be needed.
6. Heater must not be operated in sludge.
7. Install the heater using a high quality pipe sealing compound on the threads. Screw the heater into the opening (Figure 4). Tighten sufficiently with wrench applied on the hex portion of the screwplug.



8. Closed Tank Installation

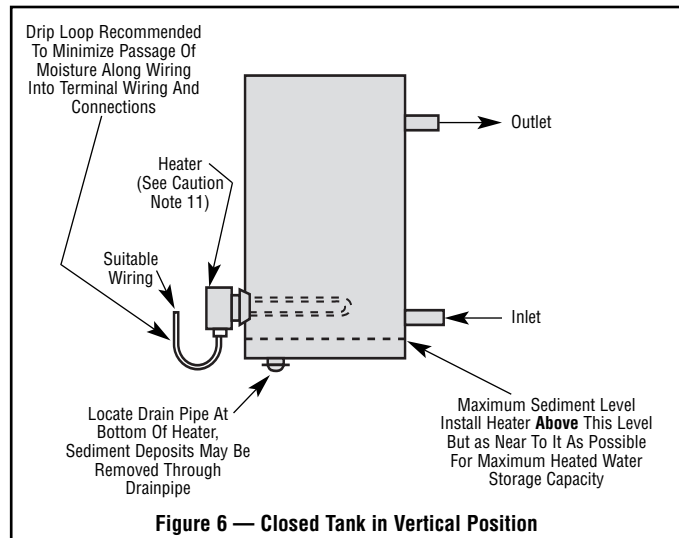
Note: When heating in closed vessels, controls and back-up controls must be used to prevent buildup of temperature and/or pressure.

A. Horizontal Position (Figure 5)



- A1. Place heater at an elevation so that natural circulation can take place.
- A2. Position outlet and inlet in a vertical plane, facing upward to prevent air pockets. Be sure all trapped air is removed from the closed tank. Bleed the air out of the liquid piping system and heater housing prior to operation.
- A3. **IMPORTANT:** Heater should never be located at the highest point in the water system. Provide expansion tank, if necessary.

B. Vertical position (Figure 6)



9. **DANGER: Hazard of Fire — Since the heaters are capable of developing high temperatures, extreme care should be taken to:**
 - A. Avoid contact between heaters and combustible materials.
 - B. Keep combustible materials far enough away to be free of the effects of high temperatures.
10. **WARNING: Provision should be made to prevent water damage from any eventual leaking of tank or components. Install near a floor drain.**

WIRING

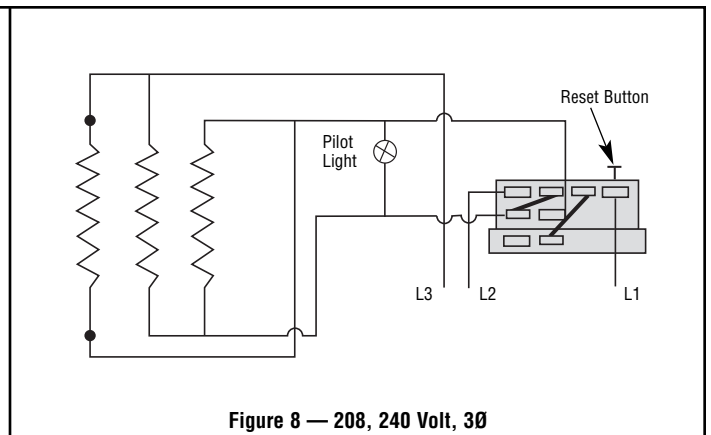
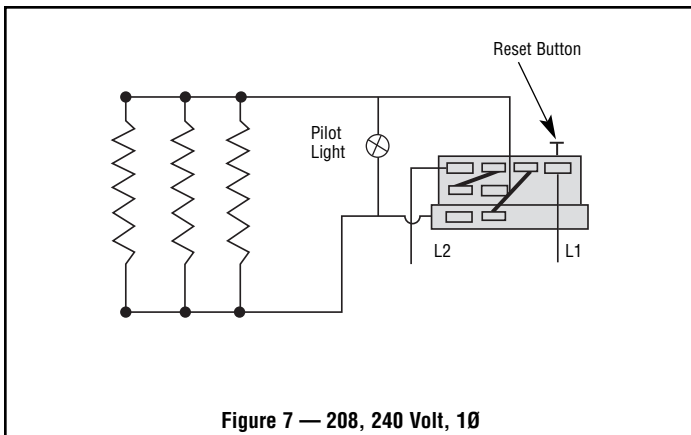
WARNING: Hazard of Electric Shock. Any installation involving electric heaters must be grounded to earth to eliminate shock hazard.

1. Electrical wiring to heater must be installed in accordance with the National Electrical Code and with local codes.
2. When element wattages are not equal, heaters must not be connected in series.
3. Electrical wiring to heater should be contained in rigid conduit or in sealed flexible hose to keep corrosive vapors and liquids

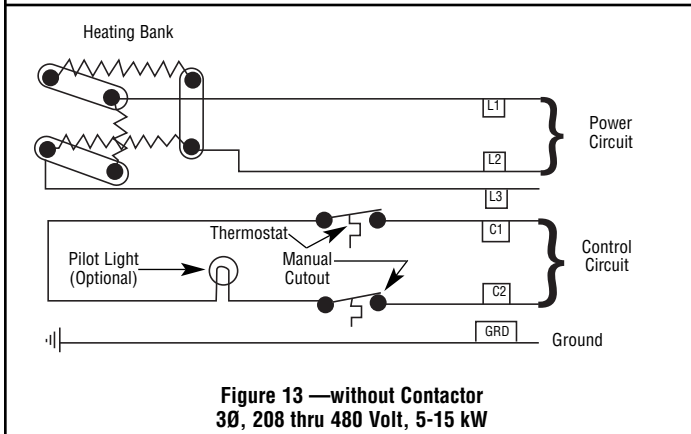
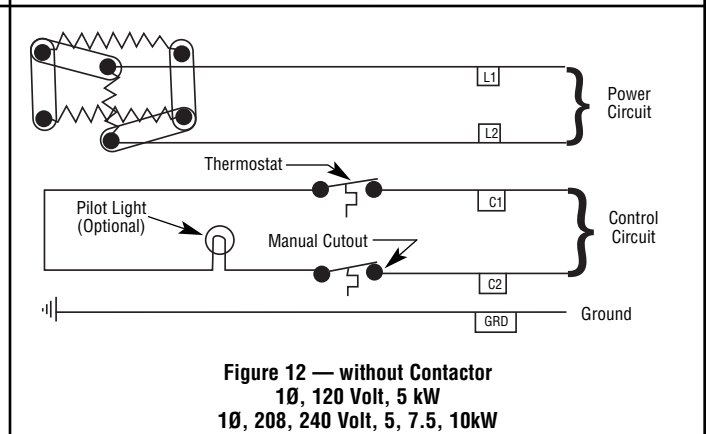
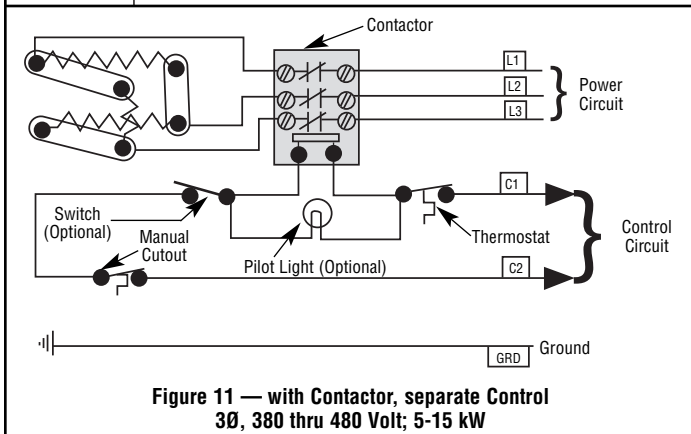
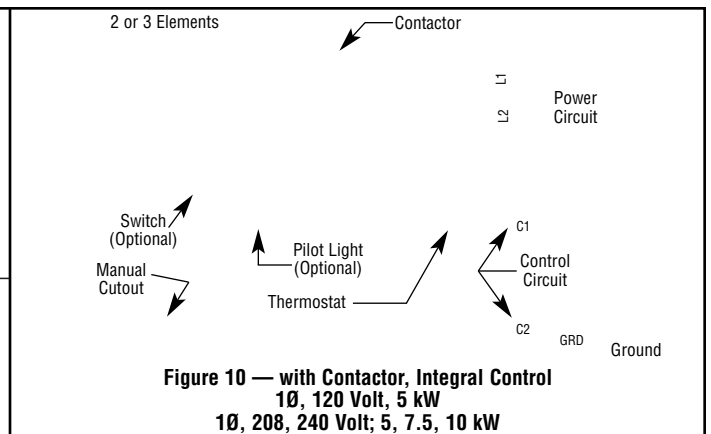
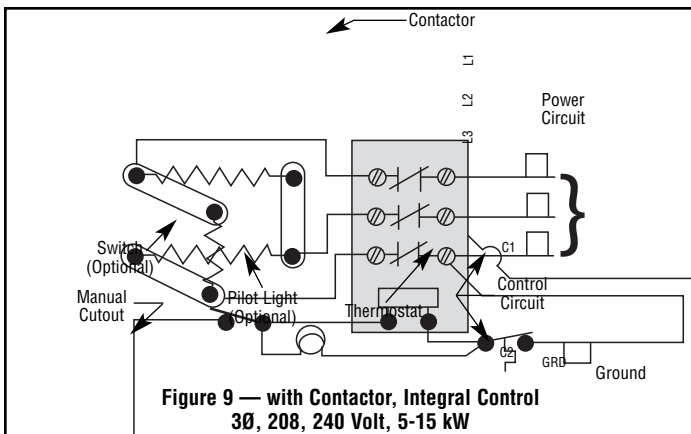
out of the terminal housing. If high humidity is encountered, the conduit should slope down away from the heater.

4. If flexible cord is employed, a watertight connector should be used for entry of the cord into the terminal box. Outdoor applications require liquid-tight conduit and connectors.
5. Bring the power line wires through the opening in the terminal box. Connect line wires as shown in the wiring diagrams (Figures 7 thru 13).

WIRING DIAGRAMS — TYPE DWH



WIRING DIAGRAMS — TYPE DWH-MR



OPERATION

1. Do not operate heaters at voltages in excess of that stamped on the heater since excess voltage will shorten heater life.
2. Always maintain a minimum of 2" of water above the heated portion of the element to prevent exposure of the effective heated length. If the heater is not properly submerged, it may overheat and shorten heater life. **DO NOT OPERATE HEATER IF DRY.**
3. Be sure all trapped air is removed from a closed tank. Bleed the air out of the liquid piping system and heater housing prior to energizing.

Note: The tank or heating chamber in closed tank systems must be kept filled with liquid at all times.

4. Keep heating elements above sediment deposits.

5. **Low Megohm Condition** — The refractory material used in electric heaters may absorb moisture during transit or when subjected to a humid environment. This moisture absorption results in a cold insulation resistance of less than twenty megohms. Normally, this megohm value corrects itself after heatup and does not affect heater efficiency or life.

A low megohm condition can easily be corrected by removing the terminal hardware and terminal enclosure and baking the heater in an oven at 350°F for several hours, preferably overnight.

An alternate procedure is to energize the heaters at low voltage until the megohm reading returns to normal. When energizing heaters in air, the sheath temperatures should not exceed 750°F for INCOLOY® elements.

MAINTENANCE

WARNING: Hazard of Severe Shock. Disconnect all power to heater before servicing or replacing heaters.

1. Heaters should be checked periodically for coatings and corrosion and cleaned if necessary.
2. The tank should be checked regularly for sediment around the heater as sediment can act as an insulator and shorten heater life.

3. Remove any accumulated sludge deposits from heater and from tank.
4. Check for loose terminal connections and tighten if necessary.
5. If corrosion is indicated in the terminal housing, check terminal box gasket and replace if necessary. Check conduit layout to correct conditions that allow corrosion to enter the terminal housing.
6. Clean terminal ends of all contamination.

RENEWAL PARTS IDENTIFICATION

PARTS COMMON TO ALL TYPE DWH

Heater Cover	.080-018874-006
Thermostat	.300-047836-001
Thermostat Knob	.169-017109-001
Gasket	.132-018056-001
Clamp Nut	.200-048424-001
Element Clamps	.056-045656-001
Clamping Ring	.240-018-57-001

PARTS COMMON TO ALL TYPE DWH-MR

Thermostat	.300-019560-006
Cutout	.300-146988-005
Clamping Nut	.200-048424-001
Clamping Ring	.240-018057-001
Gasket	.132-010737-002
Pilot Light (208V, 240V)	.213-052540-001
Pilot Light (480V)	.213-052540-002

Light Bulb	.172-052561-001
ON-OFF Switch	.292-046123-001
Rubber Boot	.024-052539-001

Contactors:

Model	Volts	kW	Phase	Contactors P/N
DWH-MR-5PS	120	5	1	072-049587-010
DWH-MR-5PS	208, 240	5	1	072-047912-003
DWH-MR-5PS	208, 240	5	3	072-052560-003
DWH-MR-5PS	480	5	3	072-052560-002
DWH-MR-7.5PS	208, 240	7.5	1	072-049587-003
DWH-MR-7.5PS	208, 240	7.5	3	072-052560-003
DWH-MR-7.5PS	480	7.5	3	072-052560-002
DWH-MR-10PS	208, 240	10	1	072-049587-011
DWH-MR-10PS	208, 240	10	1	072-052560-003
DWH-MR-10PS	480	10	3	072-052560-002
DWH-MR-15PS	208	15	3	072-049587-015
DWH-MR-15PS	240	15	3	072-049587-007
DWH-MR-15PS	480	15	3	072-052560-002

Limited Warranty:

Please refer to the Chromalox limited warranty applicable to this product at <http://www.chromalox.com/customer-service/policies/termsforsale.aspx>.

Etirex®

PRECISION HEAT AND CONTROL

103 GAMMA DRIVE, PITTSBURGH, PA 15238
 Phone: 412-967-3800 Fax: 412-967-5148
www.etirex.ca