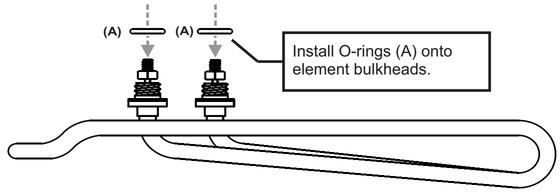
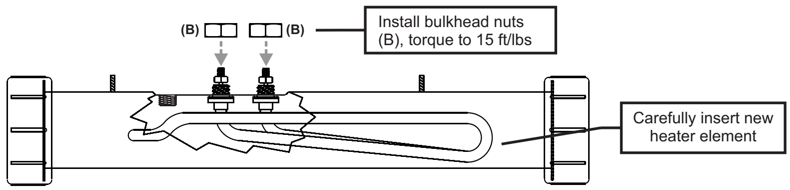
HEATER ELEMENT REPLACEMENT INSTRUCTIONS

CAUTION - After removing the defective element, assure that all inner and outer sealing surfaces are clean and free of debris prior to installing the new o-rings and element or leaks may occur.

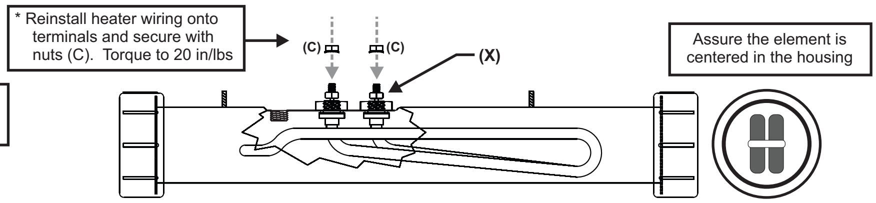
STEP 1

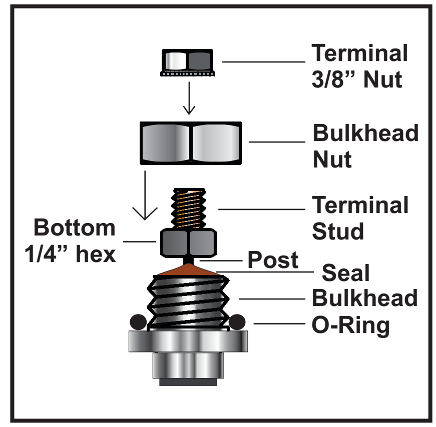


STEP 2



STEP 3





* **WARNING:** Hold the Bottom Hex (x) with a 1/4" open end wrench when tightening the Terminal Nut to prevent rotation and damage to the epoxy end seal.

PARTS INCLUDED
(A) - 60-0022 - O-Ring (2ea)
(B) - 01-0010 - Nut, 1/2"x 20 (2ea)
(C) - 01-0035 - Nut, K-Lock #10-32 (2ea)

TORQUE SETTINGS
3/4" Bulkhead Nuts = 15 ft/lbs
3/8" Terminal Nuts = 20 in/lbs

85-0035 Rev 06 01/14

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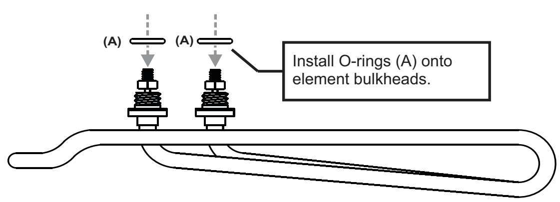

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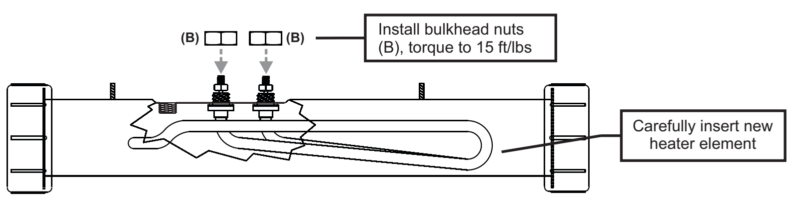

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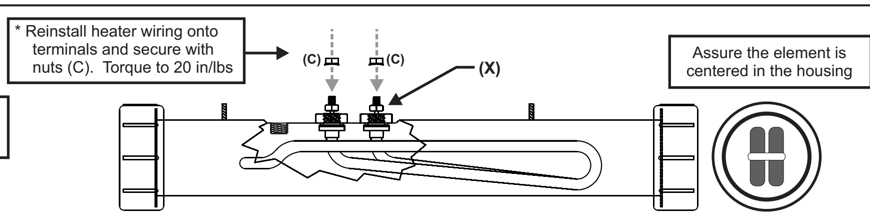

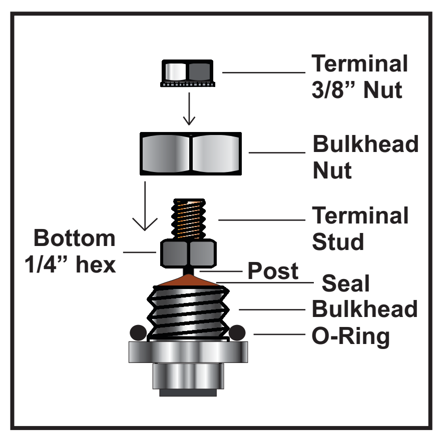

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TECHNICAL FACTS

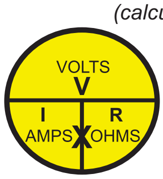
Amperage & Ohms Measurements

Kilowatts	Watts	Voltage	Amps	Ohms
11(dual)	11000	240	45.8	5.24
11 (single)	11000	240	43.6	5.5
8	8000	240	33.3	7.21
5.5	5500	240	22.9	10.4
4.5	4500	240	18.75	12.8
4	4000	240	16.7	14.4
3	3000	240	12.5	19.2
2.5	2500	240	10.4	23.04
2	2000	240	8.3	28.8
1.5	1500	120	12.5	9.6
1	1000	120	8.3	14.4
0.65	650	120	5.4	22.15

Ohm's Law

Ohm's Law is made from 3 mathematical equations that shows the relationship between electric voltage, current and resistance.

V = I x R (Voltage = Current multiplied by Resistance)
R = V / I (Resistance = Voltage divided by Current)
I = V / R (Current = Voltage divided by Resistance)
Knowing any two of the values of a circuit, one can determine (calculate) the third, using Ohm's Law.



The Wheel:
Volts V (on top of the divided line)
Amps I (lower left below the divided line)
Resistance R (lower right below the divided line)
X represents the (multiply by sign)

Temperature Rise

Based on Gallons and Heater Wattage
TEMPERATURE RISE METHOD

V = Volume of water

kW = Kilowatt rating of heater

ΔT = Temperature rise in °F Per Hour

$\Delta T = \frac{kW \times 411}{V}$ This formula is used to determine the temperature rise a kilowatt rating will achieve.

$kW = \frac{V \times 8.3 \times \Delta T}{3413}$ This formula is used to determine the kilowatt required to achieve a desired temperature rise.

1.5kW	Gallons of Water	102	123	155	205	250	305
	Water Temperature Rise in °F Per Hour*	6.0	5.0	4.0	3.0	2.5	2.0
5.5kW	Gallons of Water	113	126	151	205	281	375
	Water Temperature Rise in °F Per Hour*	20.0	18.0	15.0	11.0	8.0	6.0
11kW	Gallons of Water	181	226	302	450	900	1120
	Water Temperature Rise in °F Per Hour*	25.0	20.0	15.0	10.0	5.0	4.0

*Temperature rise as listed above does not account for heat loss - actual heat up times may vary.

Fahrenheit and Celsius Conversions

To convert Fahrenheit temperature into Celsius:
- Begin by subtracting 32 from the Fahrenheit number
- Divide the answer by 9
- Then multiply that answer by 5

To convert Celsius temperatures into Fahrenheit:
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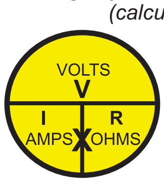

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