

XEU / AEU Heater Troubleshooting Tips – SIS07-B

1.0 Heater is not operating

1.1 Incorrect supply voltage or no voltage to heater.

1.1.1 Confirm supply voltage is correct using a multi-meter, and compare to heater data plate

1.1.1.1 Take corrective action

1.2 No power to contactor

1.2.1 Ensure circuit breaker is not tripped and/or disconnect switch (if applicable) is in the “ON” position. Check that fuse is not blown.

1.2.1.1 Take corrective action

1.3 Blown fuse on PCB

1.3.1 Inspect fuse visually and/or using a multi-meter

1.3.1.1 Replace with provided spare if required

1.4 Faulty room thermostat

1.4.1.1 Ensure thermostat wires are connected properly. Disconnect thermostat wires on terminals 5 and 6 of the PCB located in control box and replace with a jumper wire. If the heater starts, a faulty thermostat is likely the problem. Use a multi-meter to confirm continuity of thermostat switch while turning knob on thermostat between low and high temperatures ensuring that it opens and close. Observe the temperature on the dial to confirm thermostat calibration.

1.4.1.2 The BTX bi-metal thermostat should be wired to “Common” and “NC (Normally Closed)”. The XET1 electronic thermostat requires 24VAC power. Refer to XET1 wiring diagram on the Products page at www.HazlocHeaters.com. Replace room thermostat if required.

1.5 Faulty disconnect switch

1.5.1 Measure the continuity using multi-meter. Turn on/off.

1.5.1.1 Replace switch if required.

1.6 Failed automatic and/or manual reset H.L. thermostats or tripped manual reset H.L. thermostat.

1.6.1 Use a multimeter to check resistance between terminals 3 and 4 on the printed circuit board located in the control box. If the circuit is open, remove the lower enclosure cover, and confirm the manual H.L. thermostat has not tripped. If tripped, press button to reset, and check resistance again. If the circuit is closed, test the heater for 10 minutes to ensure heater does not trip again. If it does, there is usually another issue causing it to overheat.

1.6.1.1 If there is no obvious reason for the heater to have high limited, a replacement H.L. thermostat kit is available. Both the automatic reset and manual reset H.L. thermostats included in the kit will need to be changed simultaneously.

1.7 Contactor failure

1.7.1 With power disconnected, check for free movement of the contacts by pressing the contactor plunger in with a non-conductive object. Remove contactor top cover. Check for burnt contacts or wiring. Check the resistance of the contactor coil. See resistance readings below

1.7.1.1 Replace Contactor and damaged wiring as required

WARNING: Do not open enclosures if an explosive atmosphere is present. See owner’s manual for installation, operation, and repair instructions. Use factory approved replacement parts only. Disconnect power before trouble shooting for any circuit continuity. Ensure all enclosure covers are tight and secure before placing unit back into service.



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1.8 Transformer failure

- 1.8.1 Check voltage supplied to contactor coil by transformer. Either 24VAC or 120VAC. Confirm with data plate. See resistance readings below

- 1.8.1.1 Replace transformer

1.9 Tripped or blown breaker

- 1.9.1 Check for water ingress or leakage in the control box and element enclosure. Check sensitivity of GFI. Confirm the correct size breaker is being used for the heater by referencing the amperage stated on the data plate.

- 1.9.1.1 If water ingress or leakage is found, return heater for servicing to factory for repair, or replace the damaged components. All returns require an RMA authorization.

1.10 Damaged heating elements

- 1.10.1 Remove buss bars. Take resistance readings. See chart below. In addition to taking the element resistance readings, confirm the resistance between the element sheath and cold pin of each element is very high (infinite).

- 1.10.2 Return heater to Hazloc for repair or replace core in the field

2.0 Heater cycling on/off, little or no heat, or room not getting up to temperature before turning off

2.1 Obstructed air flow, dirt, debris, bent fins, foreign objects, louvers closed too far, etc.

- 2.1.1 Visually check the core fins, front & back.

- 2.1.1.1 Clean, remove dirt & debris, adjust louvers, straighten core fins as required.

2.2 Motor failure

- 2.2.1 With power disconnected, confirm that motor spins freely by rotating fan. Confirm resistance readings using a multi-meter. Contact factory with heater model code to obtain resistance readings.

- 2.2.1.1 Replace motor

2.3 Incorrect fan rotation (3-phase heaters)

- 2.3.1 Confirm fan rotation is counterclockwise from rear of heater

- 2.3.1.1 Change rotation of motor by switching any two voltage lines on contactor.

2.4 Faulty room thermostat

- 2.4.1 Disconnect thermostat wires on terminals 5 and 6 of the PCB located in control box and replace with a jumper wire. If the heater starts, a faulty thermostat is likely the problem. Use a multi-meter to confirm continuity of thermostat switch while turning knob on thermostat between low and high temperatures ensuring that it opens and closes. Observe the temperature on the dial to confirm thermostat calibration.

- 2.4.1.1 Replace thermostat.

2.5 Damaged fan blade

- 2.5.1 Inspect fan blade for cracks, bent blades, secureness to motor shaft, vibration etc.

- 2.5.1.1 Replace fan blade

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2.6 Loss of vacuum in core or loss of fluid

- 2.6.1 Check for signs of fluid leakage (Orange/Pink Glycol) from pressure relief device located in the top center of the heater core while looking up through the top louver blade and top cabinet panel. Also inspect inside the element enclosure, around fin tubes, and on louver blades, etc. for signs of fluid leak. Core may feel warm on the bottom & cold on the top.
 - 2.6.1.1 Return heater to Hazloc for repair or replace core in the field.

2.7 Damaged heating elements

- 2.7.1 Remove buss bars. Take resistance readings. See chart below. In addition to taking the element resistance readings, confirm the resistance between the element sheath and cold pin of each element is very high (infinite).
 - 2.7.1.1 Return heater to Hazloc for repair or replace core in the field

2.8 Thermostat location

- 2.8.1 Ensure wall thermostat, or heater with built-in thermostat, is not mounted too high on the wall or close to the ceiling causing it to receive an inaccurate room temperature.
 - 2.8.1.1 Relocate the wall thermostat to suitable location, or if equipped, converting the built-in thermostat to a wall mount thermostat at a lower location. Heaters with a built-in thermostat and heater model code ending in "-B" can be field converted to a wall-mount thermostat by ordering a BLK thermostat conversion kit.

2.9 Incorrect supply voltage to heater

- 2.9.1 Confirm supply voltage is correct using a multi-meter, and compare to heater data plate
 - 2.9.1.1 Take Corrective action

2.10 Loose or damaged wiring

- 2.10.1 Check wiring condition & connection tightness
 - 2.10.1.1 Repair/replace as required

2.11 Contactor failure

- 2.11.1 Check for free movement of the contacts by pressing the contactor plunger in with a non-conductive object. Remove contactor top cover. Check for burnt contacts or wiring. Check the resistance of the contactor coil. See resistance readings below.
 - 2.11.1.1 Replace contactor

2.12 Transformer failure

- 2.12.1 Check voltage supplied to contactor coil by transformer. Either 24VAC or 120VAC. Confirm with data plate. Refer to Heater Element Resistance chart.
 - 2.12.1.1 Replace transformer.

2.13 Exceeded altitude limit of heater

- 2.13.1 Check Owner's Manual for altitude limit.
 - 2.13.1.1 Remove heater from service if limit is exceeded

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3.0 Contactor chattering or not engaging

3.1 Transformer failure

- 3.1.1 Check voltage supplied to contactor coil by transformer. Either 24VAC or 120VAC. Confirm with heater data plate. Refer to Transformer Resistance chart.
- 3.1.1.1 Replace transformer

3.2 Incorrect supply voltage to heater

- 3.2.1 Confirm supply voltage is correct using multi-meter and compare to heater data plate.
- 3.2.1.1 Take corrective action

4.0 Rupture disc burst or any signs of fluid leakage from core

4.1 Welded/seized points on contactor causing a runaway condition

- 4.1.1 Check for free movement of the contacts by shutting down power to the unit and pressing the contactor in. **DO NOT PERFORM THIS TEST WHILE POWER IS APPLIED TO HEATER.** Check for burnt contacts or wiring. Check the resistance of the contactor coil. Refer to Contactor Resistance chart.
- 4.1.1.1 Return heater to Hazloc for repair or replace core and contactor in the field.

4.2 Obstructed air flow, dirt, debris, bent fins, foreign objects, louvers closed too far, etc.

- 4.2.1 Visually check core fins, front and back.
- 4.2.1.1 Return heater to Hazloc for repair or replace core in the field

4.3 Motor failure

- 4.3.1 With power disconnected, confirm that motor spins freely by rotating fan. Confirm resistance readings using a multi-meter. Contact factory with heater model code to obtain resistance readings
- 4.3.1.1 Return heater to Hazloc for repair or replace core and motor in the field.

5.0 Heater runs constantly

5.1 Incorrect thermostat location

- 5.1.1 Ensure thermostat is NOT located near louvers, exhaust fans, doors, or other sources of cold, that might affect the sensitivity of the thermostat
- 5.1.1.1 Relocate thermostat to a more suitable location

5.2 Welded/seized contactor

- 5.2.1 Check for free movement of the contacts by shutting down power to the unit and pressing the contactor in. **DO NOT PERFORM THIS TEST WHILE POWER IS APPLIED TO HEATER.** Check for burnt contacts or wiring. Check the resistance of the contactor coil. Refer to Heater Element Resistance chart.
- 5.2.1.1 Replace contactor

5.3 Undersized heater

- 5.3.1 Confirm building heat requirements using the “Heat Loss Estimator” on www.HazlocHeaters.com or consult an HVAC engineer.
- 5.3.1.1 Add additional heater or replace existing with correct kW output.

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XEU / AEU Heater Troubleshooting Tips – SIS07-B

XEU1 Series Electric Heater – cCSAus North American Approvals

NOTE: The bus bars and wires should be removed from the element cold pins, and all wires should be disconnected on transformer, contactor coil, and high limit thermostats to isolate these devices to achieve proper readings.

Maintenance, Repair and Replacement procedures can be found at www.hazlocheaters.com in the product owner's manual.

XEU1 Contactor			
Confirm Heater Control Voltage With Data Plate			
XEU1 Contactor	Ω Requirements	XEU1 Contactor	Ω Requirements
120 Volts	Min - Max 162 - 198 Ω	24 Volts	Min - Max 6.3 - 7.7 Ω

XEU1 Transformer				
Ω Requirements				
120V Control Circuit	208V RED	240V YELLOW	480V WHITE	600V BLUE
SECONDARY Min-Max	PRIMARY Min-Max			
22.4 - 22.8	48.0 - 49.0	56 - 57	175.5 - 178.5	237 - 243
24V Control Circuit	208V RED	240V YELLOW	480V WHITE	600V BLUE
SECONDARY Min-Max	PRIMARY Min-Max			
1.0 - 1.20	48.0 - 49.0	56 - 57	175.5 - 178.5	254.0 - 260.0

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XEU / AEU Heater Troubleshooting Tips – SIS07-B

XEU1 Heater Element Resistance Chart

Model	Heater kW	Element W	Heater Voltage	Nominal Element Resistance Ω	Minimum Element Resistance Ω	Maximum Element Resistance Ω
XEU1-12-030-208160	3	1000	208	43.26	41.10	45.43
XEU1-12-030-240160	3	1000	240	57.60	54.72	60.48
XEU1-12-030-480360	3	1000	480	230.40	218.88	241.92
XEU1-12-030-600360	3	1000	600	360.00	342.00	378.00
XEU1-12-050-208160	5	1667	208	25.96	24.66	27.26
XEU1-12-050-240160	5	1667	240	34.56	32.83	36.29
XEU1-12-050-480360	5	1667	480	138.24	131.33	145.15
XEU1-12-050-600360	5	1667	600	216.00	205.20	226.80
XEU1-12-075-208160	7.5	2500	208	17.31	16.44	18.17
XEU1-12-075-240160	7.5	2500	240	23.04	21.89	24.19
XEU1-12-075-480360	7.5	2500	480	92.16	87.55	96.77
XEU1-12-075-600360	7.5	2500	600	144.00	136.80	151.20
XEU1-12-100-208360	10	3333	208	12.98	12.33	13.63
XEU1-12-100-240160	10	3333	240	17.28	16.42	18.14
XEU1-12-100-480360	10	3333	480	69.12	65.66	72.58
XEU1-12-100-600360	10	3333	600	108.00	102.60	113.40
XEU1-16-150-208360	15	5000	208	8.65	8.22	9.09
XEU1-16-150-240360	15	5000	240	11.52	10.94	12.10
XEU1-16-150-480360	15	5000	480	46.08	43.78	48.38
XEU1-16-150-600360	15	5000	600	72.00	68.40	75.60
XEU1-16-200-480360	20	6667	480	34.56	32.83	36.29
XEU1-16-200-600360	20	6567	600	54.00	51.30	55.70
XEU1-20-250-480360	25	8333	480	27.65	26.27	29.03
XEU1-20-250-600360	25	8333	600	43.20	41.04	45.36
XEU1-20-300-480360	30	10000	480	23.04	21.89	24.19
XEU1-20-300-600360	30	10000	600	36.00	34.20	37.80
XEU1-20-350-480360	35	11667	480	19.75	18.76	20.74
XEU1-20-350-600360	35	11667	600	30.86	29.31	32.40

Each heater has three heating elements.

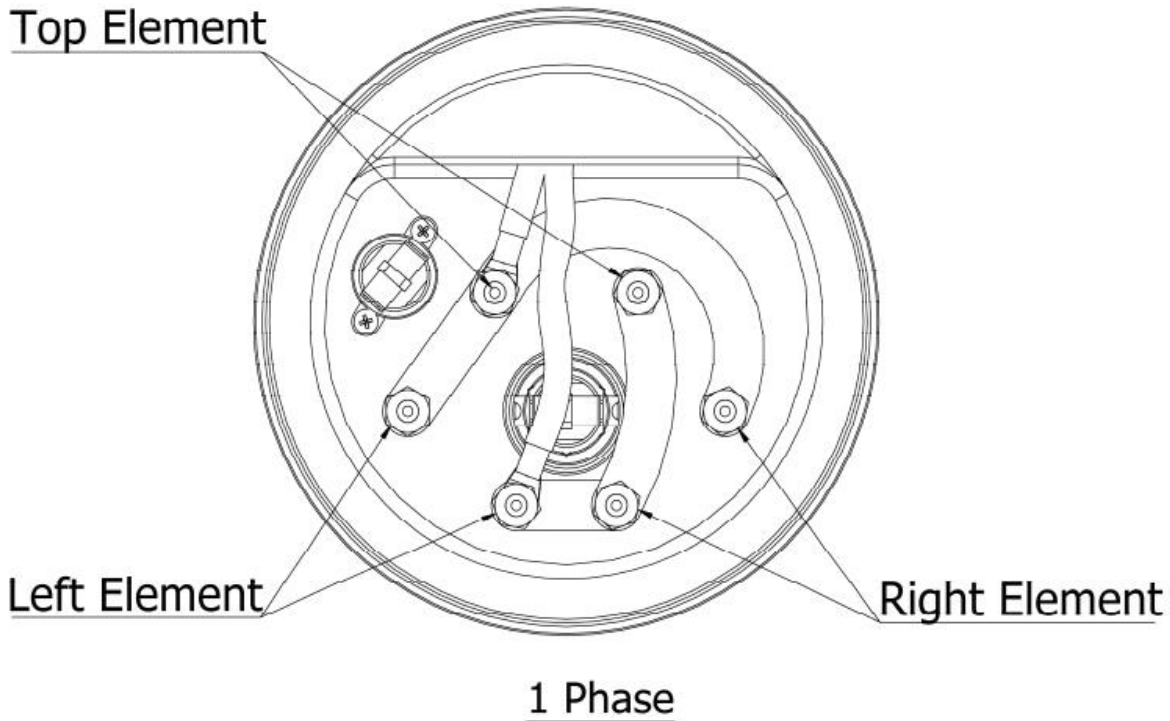
**** Remove bus bars and wires from element cold pins before taking any measurements. ****

WARNING: Do not open enclosures if an explosive atmosphere is present. See owner's manual for installation, operation, and repair instructions. Use factory approved replacement parts only. Disconnect power before trouble shooting for any circuit continuity. Ensure all enclosure covers are tight and secure before placing unit back into service.

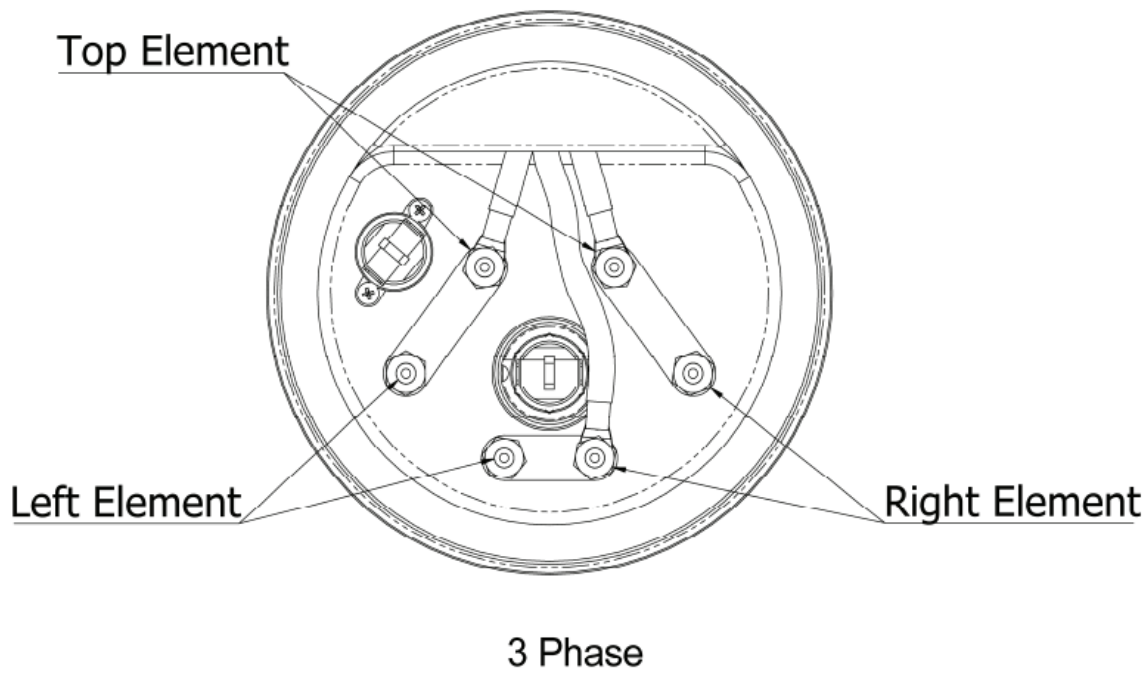


XEU / AEU Heater Troubleshooting Tips – SIS07-B

XEU1 Heater Element Housing



**** Remove bus bars and wires from element cold pins before taking any measurements ****



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XEU / AEU Heater Troubleshooting Tips – SIS07-B

AEU1 Series Electric Heater – ATEX, IECEx and EAC Ex International Approvals

NOTE: The bus bars and wires should be removed from the element cold pins, and all wires should be disconnected on transformer, contactor coil, and high limit thermostats to isolate these devices to achieve proper readings.

Maintenance, Repair and Replacement procedures can be found at www.hazlocheaters.com in the product owner's manual.

AEU1 Contactor Control Voltage	Ω Requirements
24 Volts	Min - Max 6.3 - 7.7 Ω

AEU1 Transformer			
Ω Requirements			
24V Control Circuit	230V YELLOW	400V RED	480V WHITE
SECONDARY Min-Max	PRIMARY Min-Max		
0.90 - 1.1	65.5 - 66.5	147.0 - 151.0	187.0 - 193.0

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XEU / AEU Heater Troubleshooting Tips – SIS07-B

AEU1 Heater Element Resistance Chart

Model	Heater kW	Element W	Heater Voltage	Nominal Element Resistance Ω	Min Element Resistance Ω	Max Element Resistance Ω
AEU1-?-12-030-230350	3	1000	230	53.36	50.69	56.03
AEU1-?-12-050-230350	5	1667	230	32.02	30.42	33.62
AEU1-?-12-075-230350	7.5	2500	230	21.34	20.28	22.41
AEU1-?-12-100-230350	10	3333	230	16.01	15.21	16.81
AEU1-?-16-150-230350	15	5000	230	10.67	10.14	11.21
AEU1-?-12-030-400350	3	1000	400	53.36	50.69	56.03
AEU1-?-12-050-400350	5	1667	400	32.02	30.42	33.62
AEU1-?-12-075-400350	7.5	2500	400	21.34	20.28	22.41
AEU1-?-12-100-400350	10	3333	400	16.01	15.21	16.81
AEU1-?-16-150-400350	15	5000	400	10.67	10.14	11.21
AEU1-?-16-200-400350	20	6667	400	8.00	7.60	8.40
AEU1-?-20-250-400350	25	8333	400	6.40	6.08	6.72
AEU1-?-20-300-400350	30	10000	400	5.34	5.07	5.60
AEU1-?-12-030-480360	3	1000	480	230.40	218.88	241.92
AEU1-?-12-050-480360	5	1667	480	138.24	131.33	145.15
AEU1-?-12-075-480360	7.5	2500	480	92.16	87.55	96.77
AEU1-?-12-075-480360	10	3333	480	69.12	65.66	72.58
AEU1-?-16-150-480360	15	5000	480	46.08	43.78	48.38
AEU1-?-16-200-480360	20	6667	480	34.56	32.83	36.29
AEU1-?-20-250-480360	25	8333	480	27.65	26.27	29.03
AEU1-?-20-300-480360	30	10000	480	23.04	21.89	24.19

(?) Either **G** (Gas) or **D** (Dust) atmosphere certified heater – element resistance readings are the same

Each heater has three heating elements.

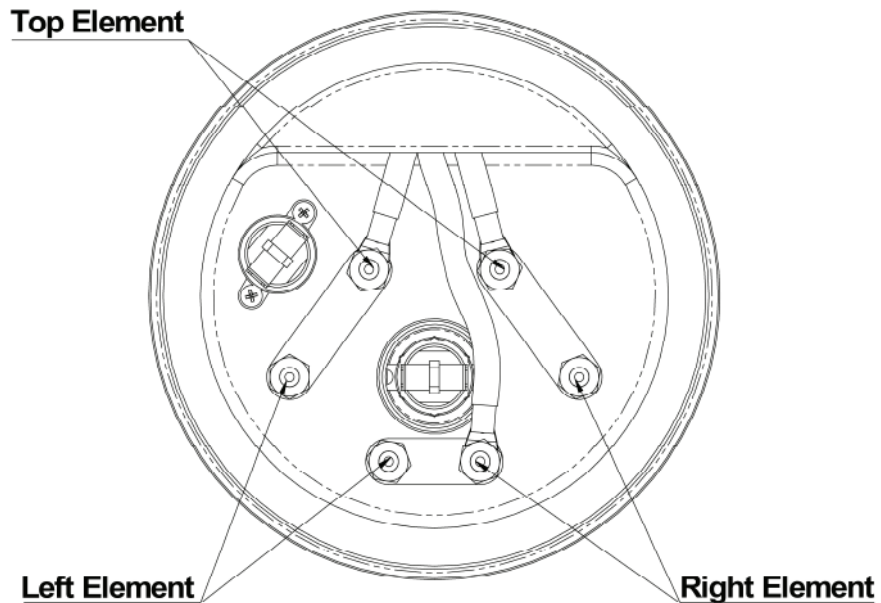
**** Remove bus bars and wires from element cold pins before taking any measurements. ****

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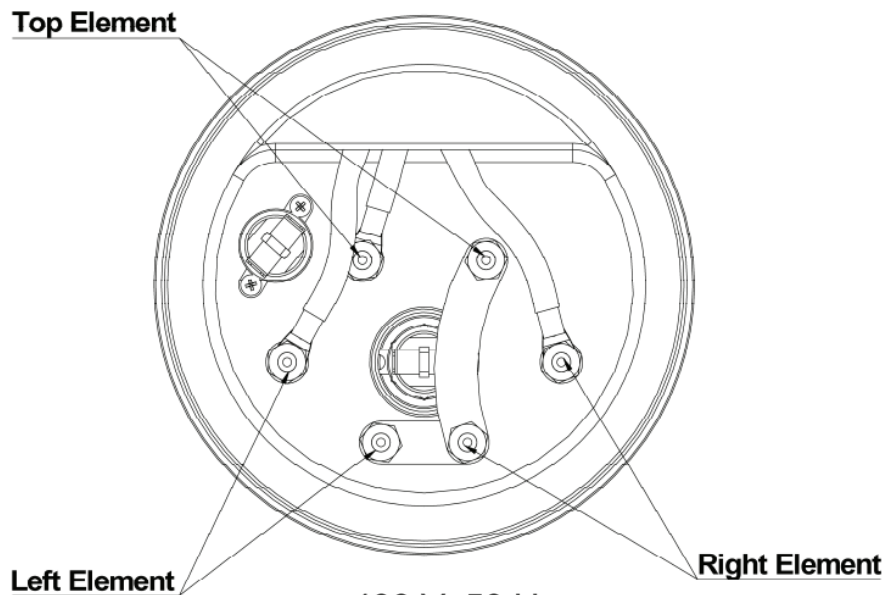


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AEU1 Heater Element Housing



230 V, 50 Hz,
Three Phase (delta)



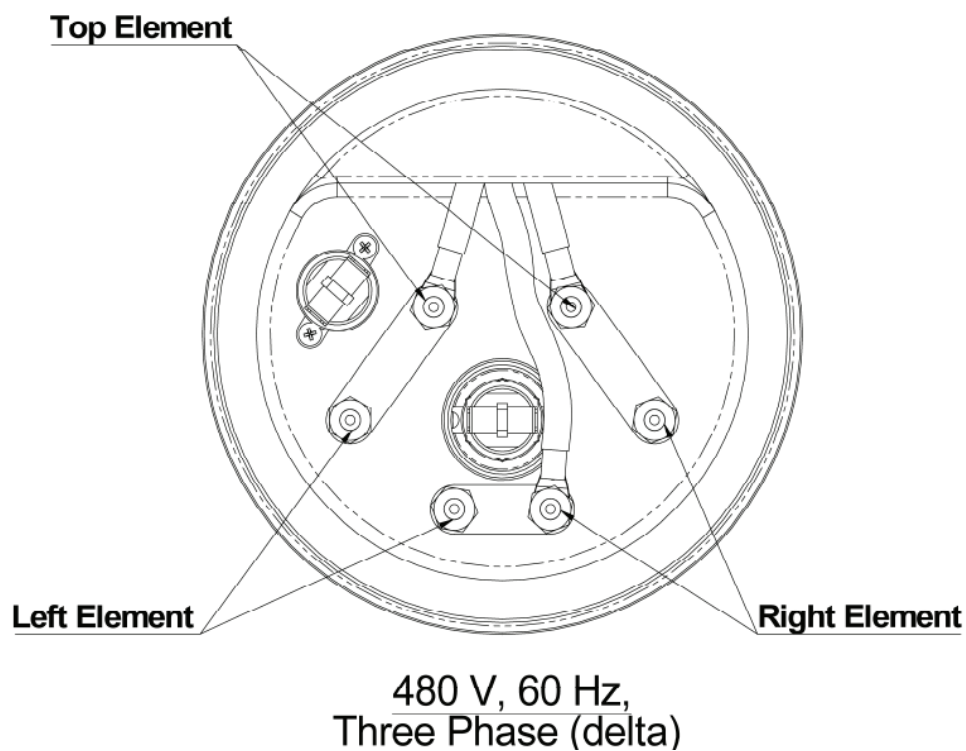
400 V, 50 Hz,
Three Phase (wye)

**** Remove bus bars and wires from element cold pins before taking any measurements. ****

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**** Remove bus bars and wires from element cold pins before taking any measurements. ****

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