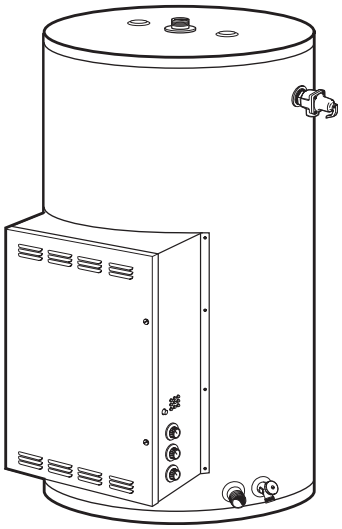
Commercial
Electric Water Heaters
CONVERSION KIT INSTRUCTIONS

FOR INSTALLATION BY QUALIFIED SERVICE PERSONNEL ONLY



Heavy Duty Series
E175
Configuration

LISTED
COMMERCIAL STORAGE TANK WATER HEATER
18GO

⚠CAUTION: TEXT PRINTED OR OUTLINED IN RED CONTAINS INFORMATION RELATIVE TO YOUR SAFETY. PLEASE READ THOROUGHLY BEFORE ATTEMPTING ANY CONVERSION.

E175 - AP16551 (08/16)

FOREWORD

The purpose of this manual is to explain how to change the voltage and wattage of a Rheem/Ruud commercial electric water heater when changing the elements. This manual is not intended to explain the reconstruction of commercial electric water heaters in the field.

The addition of heating elements or subtraction of heating elements in the field is not approved by Underwriters Laboratories, Inc., and therefore, is not allowed and should not be attempted.

Please note the limitation that “both the heater required and the heater to be converted must be found in this manual. Before attempting any conversion read the detailed instructions.

⚠SAFETY

Be sure to disconnect appliance from electrical supply before working on or near the electrical system of the heater. Never touch electrical components with wet hands or when standing in water.

REQUIRED ABILITY

CONVERSION OF ANY WATER HEATER LISTED IN THIS MANUAL REQUIRES ABILITY EQUIVALANT TO THAT OF A LICENSED ELECTRICAL TRADESMAN.

NOTICE!!

You MUST use Factory Authorized Replacement Parts when converting electric water heaters per this Procedure.

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CONVERSION MATERIALS

1. Element Plug Remover: or 1-1/2” deep well socket and ratchet.
2. Screwdrivers: Two required. One #2 Phillips and one slotted screwdriver.
3. Conversion kit: Includes conversion instructions. Replacement electrical elements, element gaskets, conversion kit label, and caution label.

CONVERSION GUIDELINES

Be sure to read and understand the following guidelines before starting any conversion.

1.) Conversions are designed to be made only where the number of factory heating elements are replaced by the same number of conversion heating elements.

2.) The Element Usage Table below indicates the configurations possible for these series of water heaters. Refer to the Commercial Electric Conversion Guide on page 3 through 5 for electrical specifications applicable to specific configurations.

Heavy Duty Series E175 Configurations

ZONE	INPUT KW	NUMBER OF ELEMENTS	ELEMENT WATTAGE	AVAILABLE VOLTAGES
1	6	3	2000	208, 240, 277, 480
	9		3000	208, 240, 277, 480
	12		4000	208, 240, 277, 480
	15		5000	208, 240, 277, 480
	18		6000	208, 240, 277, 480
2	18	6	3000	208, 240, 277, 480
	24		4000	208, 240, 277, 480
	27		4500	208, 240, 277, 480
	30		5000	208, 240, 277, 480
	36		6000	208, 240, 277, 480
3	36	9	4000	208, 240, 277, 480
	45		5000	208, 240, 277, 480
	54		6000	208, 240, 277, 480
4	60	12	5000	208, 240, 277, 480
	72		6000	208, 240, 277, 480
	108		9000	480

NOTICE: When converting a ZONE 2 heater from 18kW, 24kW and 27kW to 30kW, the T&P relief valve may also need to be changed. Ensure the T&P relief valve is rated for 200,000 BTU when making these type of conversions.

AVAILABLE KIT FOR THE E175

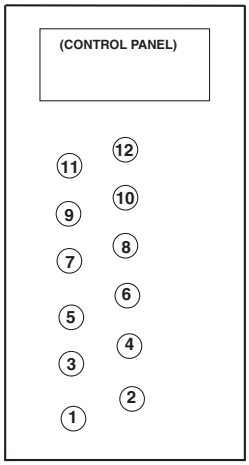
ZONE	AVAILABLE VOLTAGES	INPUT KW	NUMBER OF ELEMENTS	ELEMENT WATTAGE	KIT NUMBER
1	208	6	3	2000	SP20609
		9		3000	SP20610
		12		4000	SP20611
		15		5000	SP20612
		18		6000	SP20613
2	208	18	6	3000	SP20614
		24		4000	SP20615
		27		4500	SP20616
		30		5000	SP20617
		36		6000	SP20618
3	208	36	9	4000	SP20619
		45		5000	SP20620
		54		6000	SP20621
4	208	60	12	5000	SP20622
		72		6000	SP20623

ZONE	AVAILABLE VOLTAGES	INPUT KW	NUMBER OF ELEMENTS	ELEMENT WATTAGE	KIT NUMBER
1	240	6	3	2000	SP20624
		9		3000	SP20625
		12		4000	SP20626
		15		5000	SP20627
		18		6000	SP20628
2	240	18	6	3000	SP20670
		24		4000	SP20629
		27		4500	SP20630
		30		5000	SP20631
		36		6000	SP20632
3	240	36	9	4000	SP20633
		45		5000	SP20634
		54		6000	SP20635
4	240	60	12	5000	SP20636
		72		6000	SP20637

Notes:

1. In Zone 1 - Use Element Locations 1 - 3.
   In Zone 2 - Use Element Locations 1 - 6.
   In Zone 3 - Use Element Locations 1 - 9
   In Zone 4 - Use Element Locations 1 - 12

2. CONVERT HEATERS ONLY WITHIN THE SAME ZONE!! Units from different zones may have different components, or component ratings.



ELEMENT LOCATIONS

AVAILABLE KIT FOR THE E175 CONT.

⚠CAUTION: THE 277 VOLTAGES CAN ONLY BE CONVERTED USING SINGLE PHASE MODELS.

ZONE	AVAILABLE VOLTAGES	INPUT KW	NUMBER OF ELEMENTS	ELEMENT WATTAGE	KIT NUMBER
1	277	6	3	2000	SP20638
		9		3000	SP20639
		12		4000	SP20640
		15		5000	SP20641
		18		6000	SP20642
2	277	18	6	3000	SP20643
		24		4000	SP20644
		27		4500	SP20645
		30		5000	SP20646
		36		6000	SP20647
3	277	36	9	4000	SP20648
		45		5000	SP20649
		54		6000	SP20650
4	277	60	12	5000	SP20651
		72		6000	SP20652

ZONE	AVAILABLE VOLTAGES	INPUT KW	NUMBER OF ELEMENTS	ELEMENT WATTAGE	KIT NUMBER
1	480	6	3	2000	SP20653
		9		3000	SP20654
		12		4000	SP20655
		15		5000	SP20656
		18		6000	SP20657
2	480	18	6	3000	SP20658
		24		4000	SP20659
		27		4500	SP20660
		30		5000	SP20661
		36		6000	SP20662
3	480	36	9	4000	SP20663
		45		5000	SP20664
		54		6000	SP20665
4	480	60	12	5000	SP20666
		72		6000	SP20667
		108		9000	SP20668

CONVERSION PROCEDURE

1. Follow the matrix of the Conversion Guide on page 5 and 6 to determine the zone of your water heater. Refer to the rating label for the input and voltage. You can convert between different wattages i.e. 2000W to 4000 **WITHIN THE SAME ZONE**. However, you cannot convert outside of the zone of your water heater.
2. Confirm the correct kit was received.
3. Unpack the heater and open the access panel to the element cavity.
4. Remove the insulation and thermostat cover if applicable. DO NOT REMOVE THE ELEMENT WIRING YET!
5. Do ONE element at a time, perform the following steps.
6. For one element only, remove the black and red element leads.
7. With an element wrench, unscrew the old element from the heater tank.

⚠CAUTION: The following procedure (Step 8) MUST be performed before proceeding futher. Failure to do so could result in equipment damage or bodily injury.

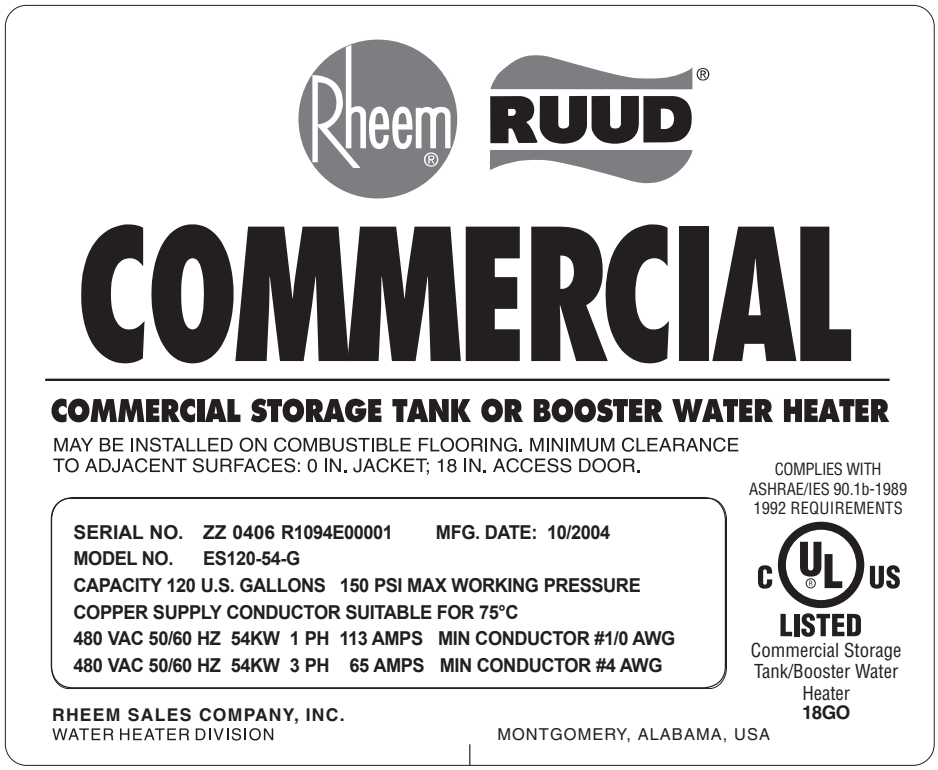
8. To the new element, add a NEW gasket (ME models element have preinstalled gaskets). Assemble the new element into the tank using an element wrench. Snug the element up firmly.
9. Wire the element by attaching the water heater red and black leads to the elements.
10. Finish converting the heater, one element at a time, following steps 5 through 9.

⚠CAUTION: CHECK ALL WATER AND ELECTRICAL CONNECTIONS FOR TIGHTNESS.

11. Recheck all terminals for tightness, proper wiring per schematic, and neatness of wiring. Heater should be no less than factory constructed quality and appearance.
12. If a voltage change was made on the heater, move the RED transformer lead to the proper voltage terminal.
13. If a phase change is required, refer to the wiring diagram affixed to the control enclosure door for exact red / black wire arrangement at the field wiring block. (Wiring diagrams may also be found in the appendix of this procedure or in the Use and Care Manual.)
14. Replace thermostat cover and insulation to element cavity, if applicable, and close control enclosure.
15. Place new rating label overlay over existing rating label.
16. Re-package the water heater. Mark new wattage, voltage and phase information on the carton tag.

TYPICAL ORIGINAL MODEL

CONVERTED MODEL RATING PLATE.



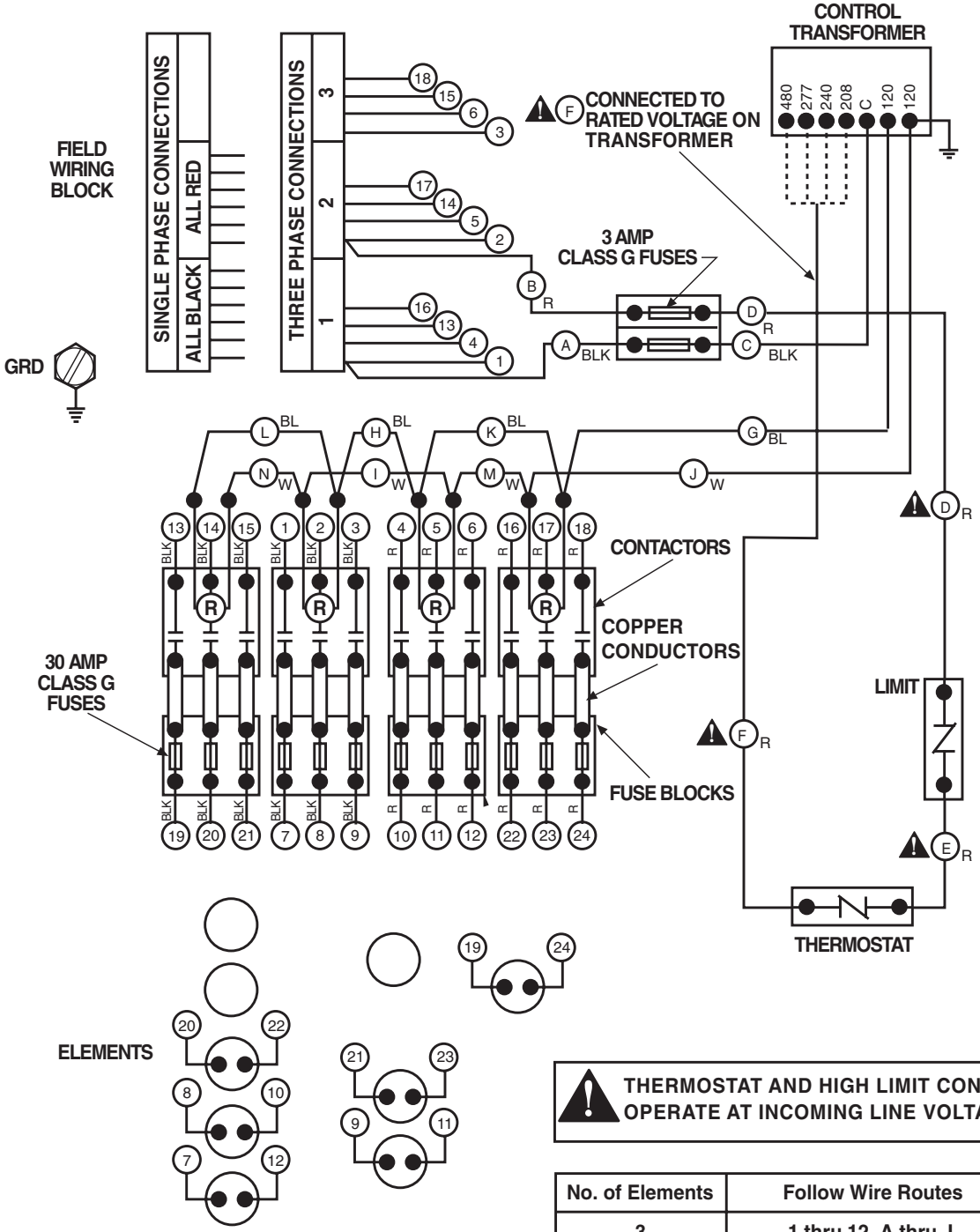
The example above shows a conversion from a 208 volt, 36kw model to a 480 volt, 54kw model.

Wiring Diagram:
Immersion Thermostat Models

-G Models

3 & 6 Element Configurations Only

Up to 30 Amp Fuses



THERMOSTAT AND HIGH LIMIT CONTROLS OPERATE AT INCOMING LINE VOLTAGE.

No. of Elements	Follow Wire Routes
3	1 thru 12, A thru J
6	1 thru 24, A thru N

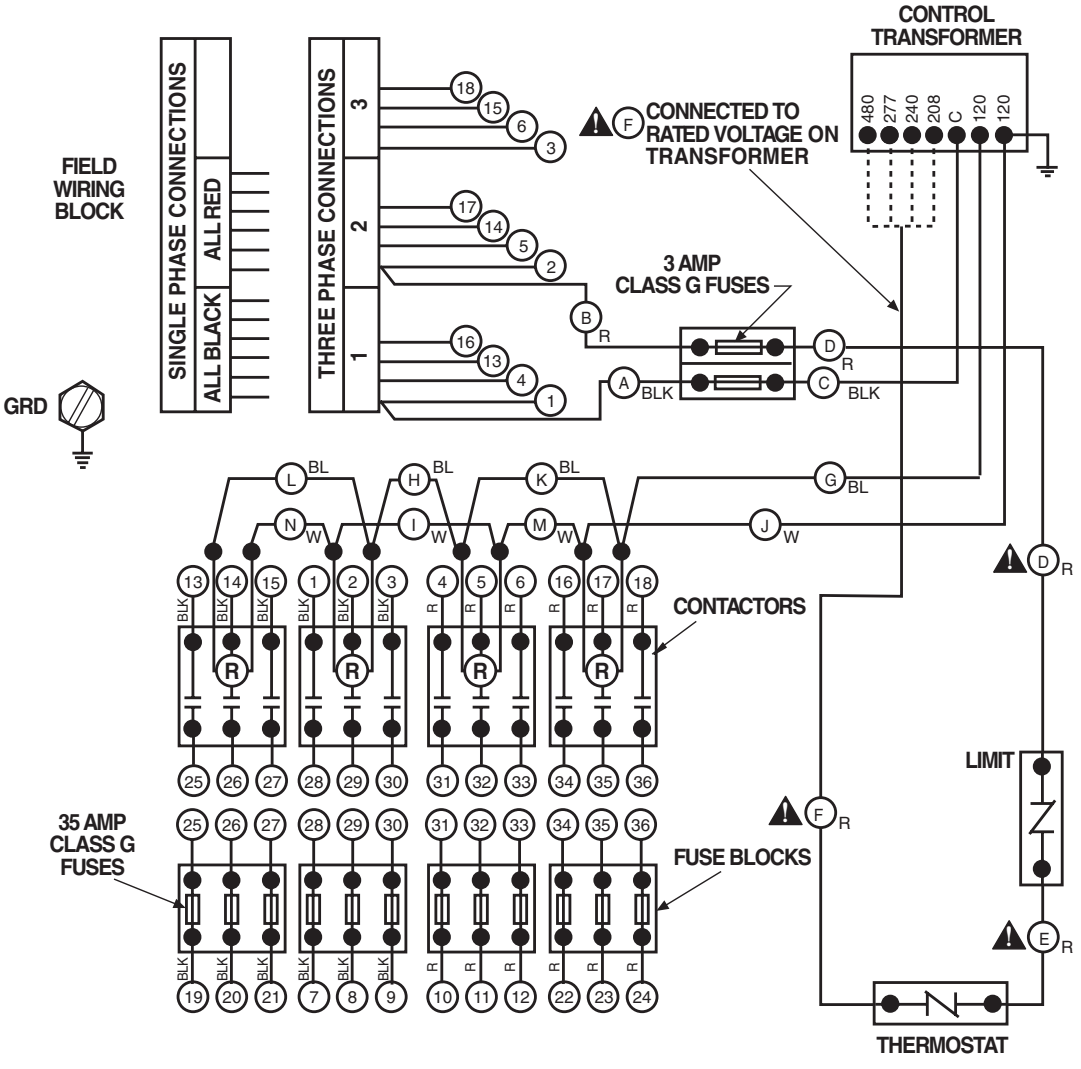
NOTE:
THIS WATER HEATER MAY BE SUPPLIED BY A BRANCH CIRCUIT HAVING OVER 300 VOLTS BETWEEN

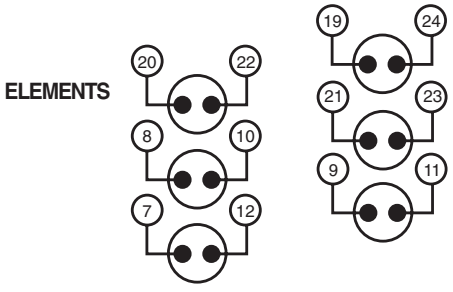
Wiring Diagram:
Immersion Thermostat Models

-G Models

3 & 6 Element Configurations Only

35 Amp Fuse



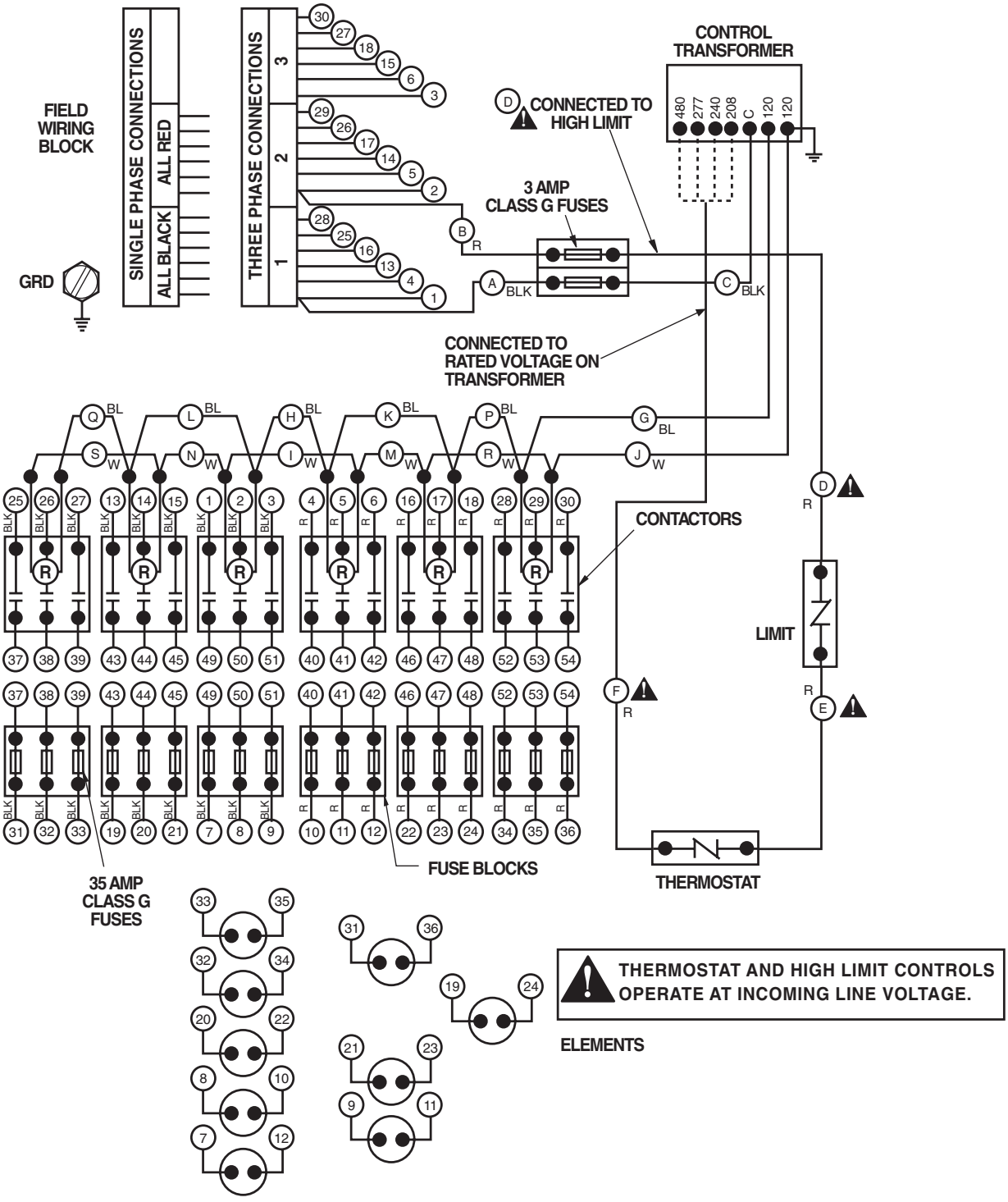


THERMOSTAT AND HIGH LIMIT CONTROLS OPERATE AT INCOMING LINE VOLTAGE.

No. of Elements	Follow Wire Routes
3	1 thru 12, 28 - 33, A - J
6	1 thru 36, A - N

NOTE:
THIS WATER HEATER MAY BE SUPPLIED BY A BRANCH CIRCUIT HAVING OVER 300 VOLTS BETWEEN CONDUCTORS, PROVIDED THE SYSTEM HAS A GROUND NUETRAL AND NO CONDUCTOR IS OVER 300 VOLTS TO GROUND.

Wiring Diagram:
Immersion Thermostat Models
-G Models
9 Element Configuration Only



NOTE:
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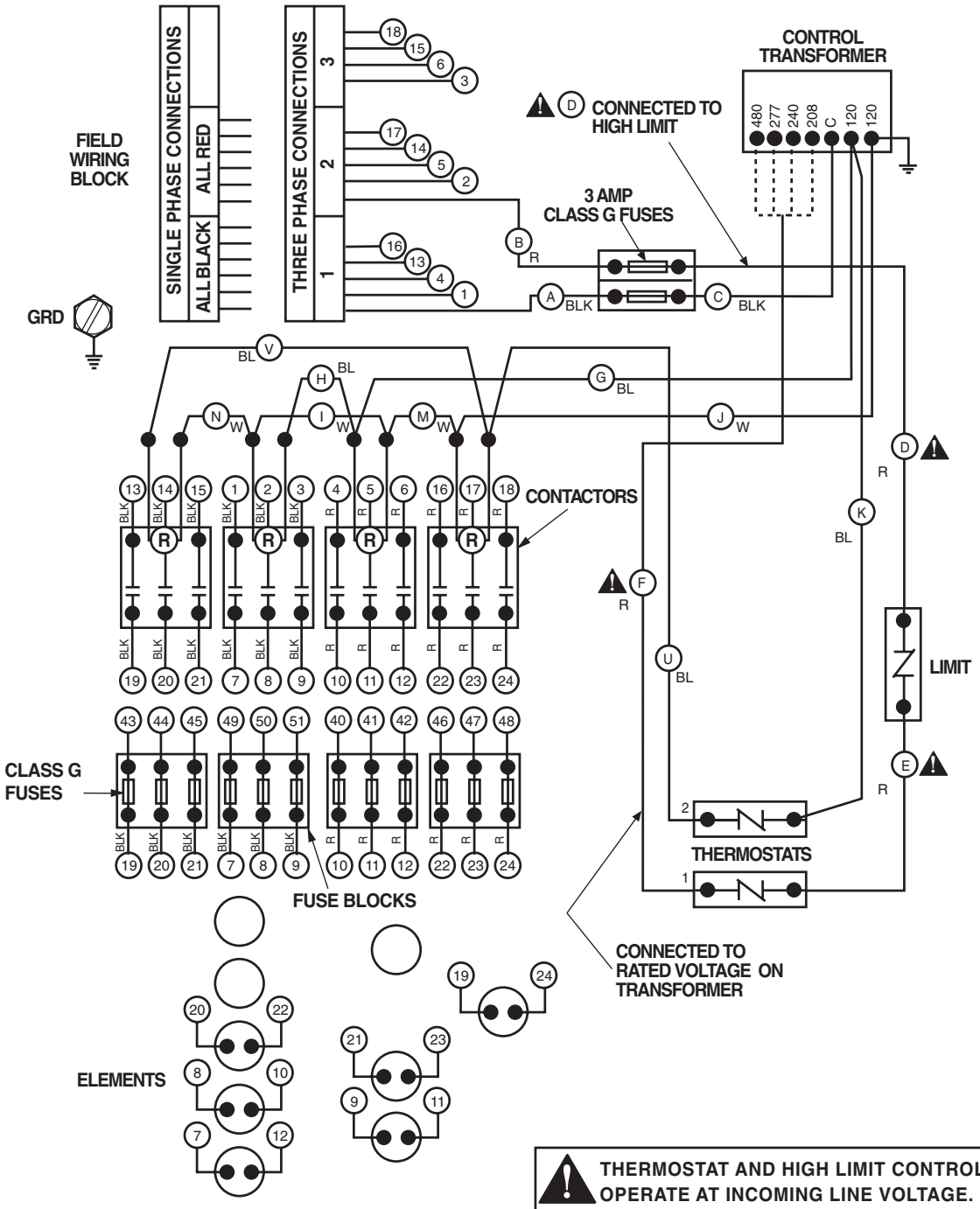
Wiring Diagram:
Immersion Thermostat Models with Staging

2 Stage
-GS Models



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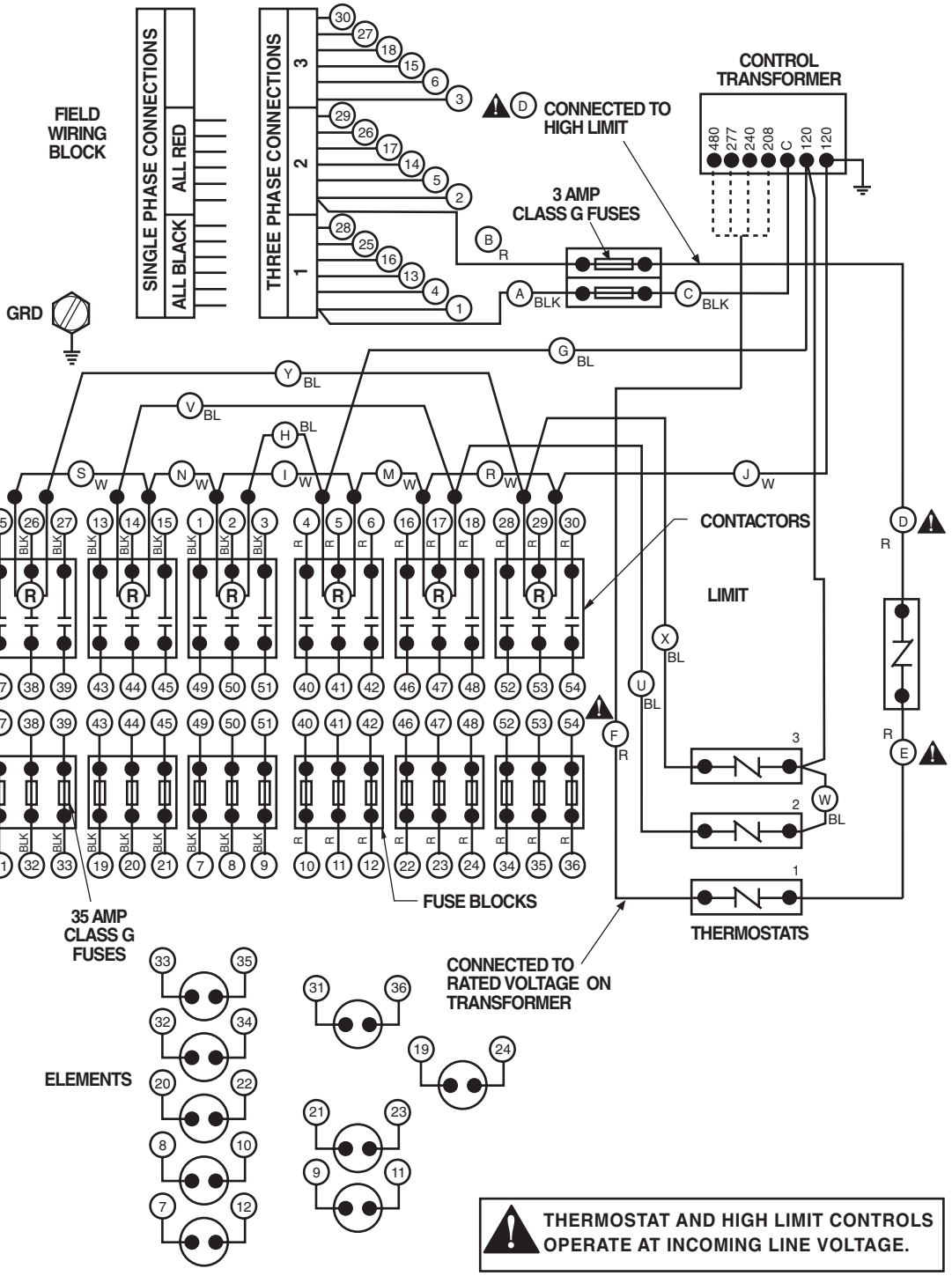
Wiring Diagram: Immersion Thermostat Models with Staging

3 Stage
-GS Models



NOTE:
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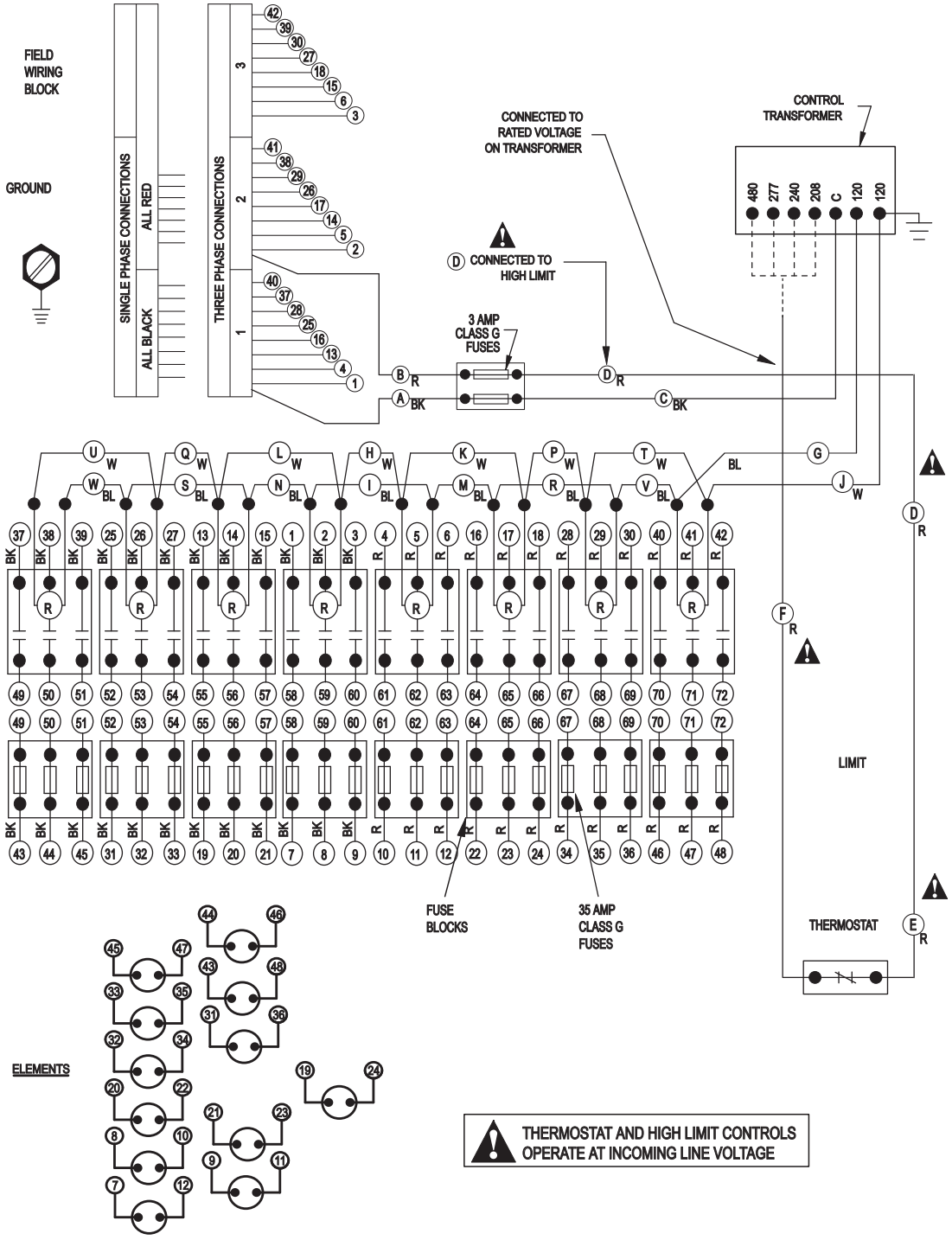
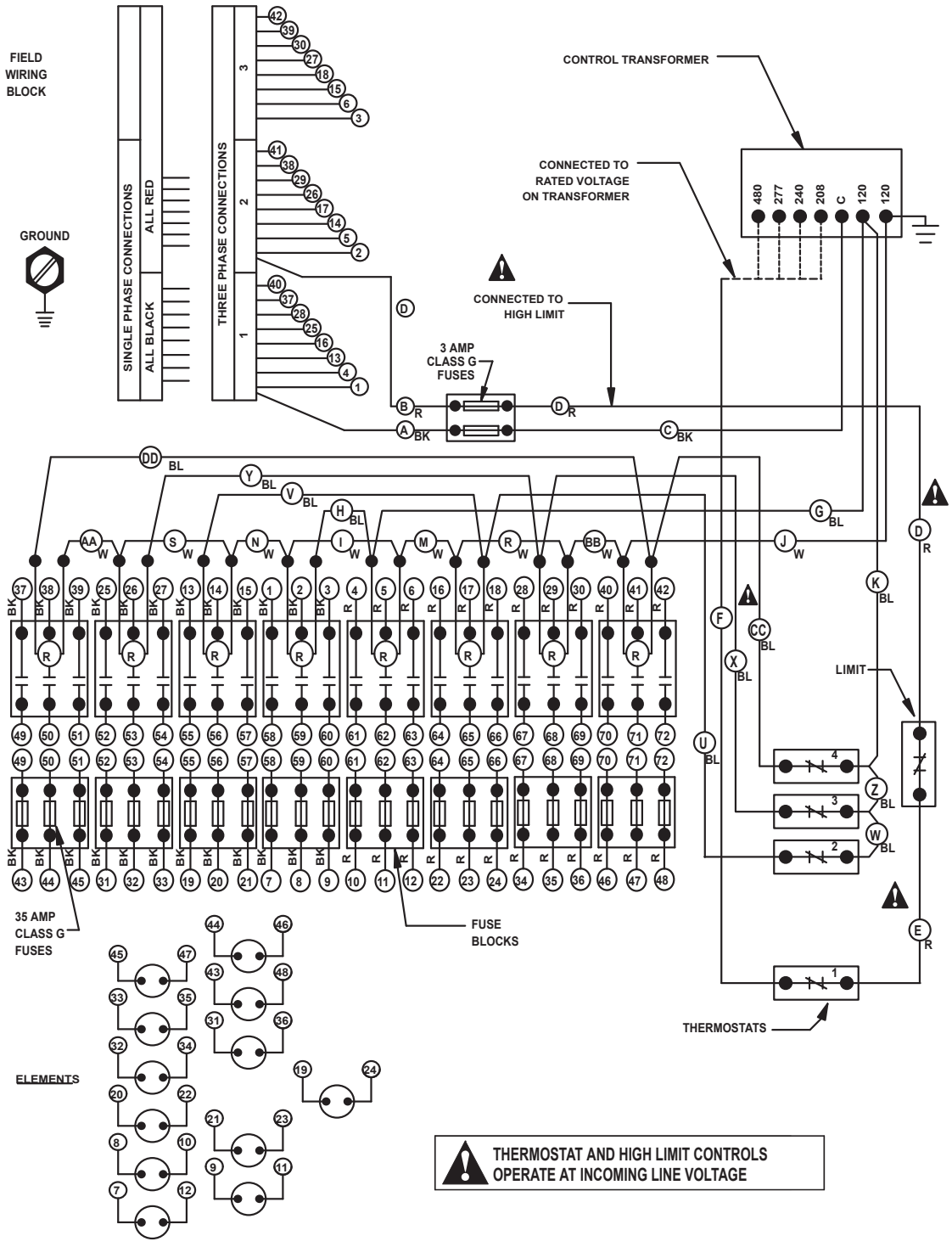
Wiring Diagram:
Immersion Thermostat Models
-G Models

12 Element Configuration Only



NOTE:
THIS WATER HEATER MAY BE SUPPLIED BY A BRANCH CIRCUIT HAVING OVER 300 VOLTS BETWEEN CONDUCTORS, PROVIDED THE SYSTEM HAS A GROUND NEUTRAL AND NO CONDUCTOR IS OVER

Wiring Diagram:
Immersion Thermostat Models
4 Stage
-GS Models



NOTE:
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NOTES