



Heated Display Case

ED3

ED3-48	ED3SYS-48
ED3-72	ED3SYS-72
ED3-96	ED3SYS-96



MN-48816-EN

REV.01
08/24

EN



Manufacturer's Information

Copyright	<p>© Copyright 08/24 by Alto-Shaam, Inc.</p> <p>All rights reserved.</p> <p>This manual or any portion thereof may not be reproduced or used in any manner whatsoever without the express written permission of Alto-Shaam, Inc.</p>
Trademarks	<p>All trademarks referenced in this documentation are the property of their respective owners.</p>
Manufacturer	<p>Alto-Shaam, Inc.</p> <p>P.O. Box 450</p> <p>W164 N9221 Water Street</p> <p>Menomonee Falls, WI 53052</p>
Original instructions	<p>The content in this manual is written in American English.</p>

Alto-Shaam 24/7 Emergency Repair Service

Call	Call 800-558-8744 to reach our 24-hour emergency service call center for immediate access to local authorized service agencies outside standard business hours. The emergency service access is provided exclusively for Alto-Shaam equipment and is available throughout the United States through Alto-Shaam's toll free number.
Availability	Emergency service access is available seven days a week, including holidays.

Parts Information

Parts Finder Tool	Interactive diagrams for spare parts for this appliance are available online at our Parts Finder Tool: https://www.alto-shaam.com/en/customer-support/parts . Or, scan the QR code below.
--------------------------	--



Parts Ordering Information	Original manufacturer's replacement parts may be ordered directly from the Alto-Shaam network of Authorized Service Agents and Parts Distributors. Follow this link for a map to a local partner: https://www.alto-shaam.com/en/how-to-buy . If you are an Authorized Service Agent or Parts Distributor, please submit your purchase order to parts@alto-shaam.com .
-----------------------------------	--

Non-OEM parts may be substituted; however, these parts must be of equal quality and specifications as those provided by Alto-Shaam.

This page is intentionally left blank.

Manufacturer's Information	2
Foreword	3
Alto-Shaam 24/7 Emergency Repair Service	3
Parts Information	3
Table of Contents	5
Safety	7
The Meaning of Signal Words	7
Safety Precautions.	8
Operation	11
How to Operate the Display Case	11
Components	13
Component Identification	13
Rear Controls Identification	14
ED3-48 Control Panel Identification.	15
ED3-48 Top Terminal Block Identification	16
ED3-72 Control Panel Identification.	17
ED3-72 Top Terminal Block Identification	18
ED3-96 Control Panel Identification.	19
ED3-96 Top Terminal Block Identification	20
Electrical Components	21
Theory	23
Sequence of Operation	23
Maintenance	25
Maintenance Schedule	25
Troubleshooting	27
Bottom Heat does not Work	27
Top Heat does not Work	28
LED Lighting does not Work	29
How to Replace Ceramic Heater Element	30
How to Replace LED Assembly.	34
How to Replace Power Supply	36
How to Replace Gas Strut	41
Schematics	45

TABLE OF CONTENTS

This page is intentionally left blank.

The Meaning of Signal Words

This manual contains signal words where needed. These signal words must be obeyed to reduce the risk of death, personal injury, or equipment damage. The meaning of these signal words is explained below.

**DANGER**

Danger indicates a hazardous situation which, if not avoided, will result in serious injury or death.

**WARNING**

Warning indicates a hazardous situation which, if not avoided, could result in serious injury or death.

**CAUTION**

Caution indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Notice indicates a situation which, if not avoided, could result in property damage.



NOTE: Note indicates additional information that is important to a concept or procedure.

Safety Precautions

Before you begin

Read and understand all instructions in this manual.

Electrical precautions

Obey these electrical precautions when using the appliance:

- Connect the appliance to a properly grounded outlet. Do not use the appliance if it is not properly grounded. Consult an electrician if there is any doubt that the outlet used is properly grounded.
 - Keep the cord away from hot surfaces.
 - Do not operate the appliance if it has a damaged cord or plug.
 - Do not immerse the cord or plug in water.
 - Do not let the cord hang over the edge of a table or counter.
 - Do not use an extension cord.
-

Usage precautions

Obey these usage precautions when using the appliance:

- Only use this appliance for its intended use of heating.
 - Always keep liquids, or foods that can become liquid when heated, level and at or below eye level where they can be seen.
 - Use utensils and protective clothing such as dry oven mitts when loading and unloading the appliance.
 - Do not add water to this appliance.
 - Do not use this appliance near water such as a sink, in a wet location, near a swimming pool, or similar locations.
-

Maintenance precautions

Obey these maintenance precautions when maintaining the appliance:

- Obey precautions in the manual, on tags, and on labels attached to or shipped with the appliance.
- Only clean the appliance when cool and OFF.
- Do not store the appliance outdoors.
- Do not clean the appliance with metal scouring pads.
- Do not use corrosive chemicals when cleaning the appliance.
- Do not use a hose, water jet, or steam cleaner to clean the appliance.
- Do not use the appliance cavity for storage.
- Do not leave flammable materials, cooking utensils, or food inside the appliance when it is not in use.

Operator training

All personnel using the appliance must have proper operator training. Before using the appliance:

- Read and understand the operating instructions contained in all the documentation delivered with the appliance.
- Know the location and proper use of all controls.
- Keep this manual and all supplied instructions, diagrams, schematics, parts lists, notices, and labels with the appliance if the appliance is sold or moved to another location.
- Contact Alto-Shaam for additional training if needed.

Operator qualifications

Only trained personnel with the following operator qualifications are permitted to use the appliance:

- Have received proper instruction on how to use the appliance.
- Have demonstrated their ability with commercial kitchens and commercial appliances.

The appliance must not be used by:

- Persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision concerning use of the appliance by person responsible for their safety.
- People impaired by drugs or alcohol.

- Children should be supervised to ensure that they do not play with the appliance.
- Children shall neither clean nor maintain the appliance.

Condition of appliance

Only use the appliance when:

- All controls operate correctly.
- The appliance is installed correctly.
- The appliance is clean.
- The appliance labels are legible.

Servicing the appliance

- Only trained personnel are permitted to service or repair the appliance. Repairs that are not performed by an authorized service partner or trained technician will void the warranty and relieve Alto-Shaam of all liability. Original manufacturer's replacement parts may be substituted; however, these parts must be of equal quality and specifications as those provided by Alto-Shaam.
- To prevent serious injury, death or property damage, have the appliance inspected and serviced at least every twelve (12) months by an authorized service partner or trained technician.
- Contact Alto-Shaam for the authorized service partner in your area.

Sound power

The A-weighted sound pressure level is below 70 dB(A).

Personal Protective Equipment (PPE)

Wear the following Personal Protective Equipment (PPE) while cleaning the appliance:

- Protective gloves
 - Protective clothing
 - Eye protection
 - Face protection
-

Use of restraining devices

A restraining device (tether) must be installed to any appliance that is hard-wired and mounted on casters. The tether must:

- Be secured to the building's structure.
- Limit the movement of the appliance so that no stress is transmitted to the electrical conduit.

A connection point for the tether is located on the back of the appliance.

A tether is not supplied by nor available from the manufacturer.

Service Technician Training

Only trained personnel are permitted to service or repair the appliance. Service technicians must be knowledgeable in current codes and standards as stated by the appropriate agencies, such as:

- The National Fire Protection Association (NFPA)
- National Electrical Code (NEC)
- The Service Technician's employer

How to Operate the Display Case

Before you begin

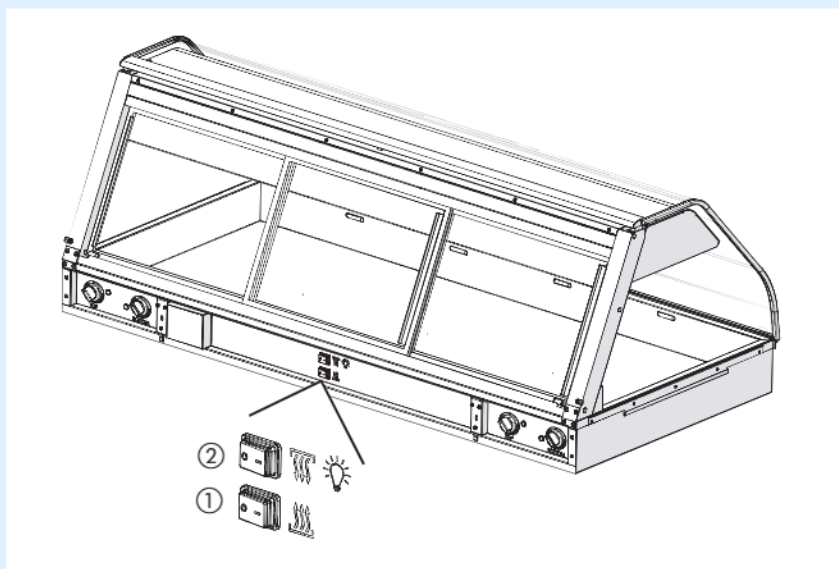
The display case must be connected to electric power.

Turning on the display case

To turn on the display case, do the following.

Step	Action
------	--------

1. **Set** the bottom heat switch ① to the ON position.
Set the top heat switch ② to the ON position. This will turn on the lights.



Adjusting display case temperature

2. **Adjust** the temperature of the bottom heat with thermostat ③.
Adjust the temperature of the top heat with thermostat ④.



Continued on next page

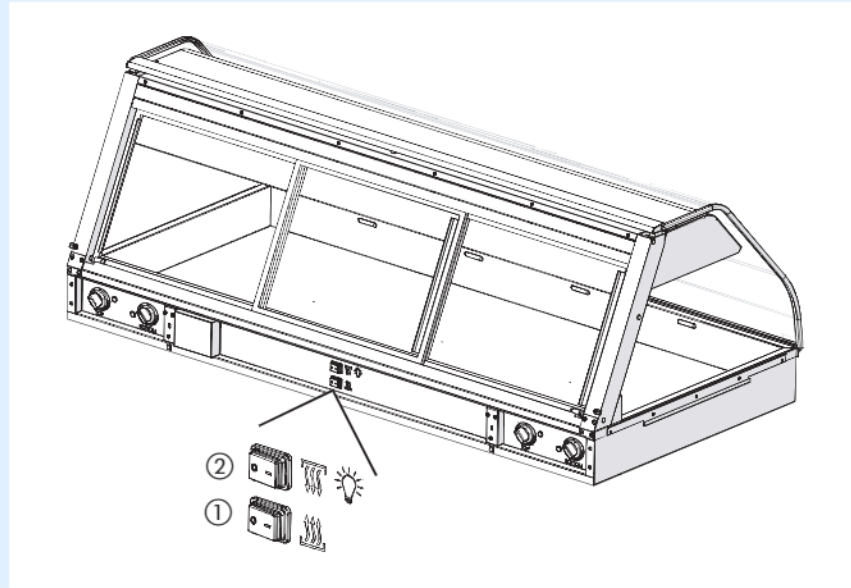
Continued from previous page

Turning off the display case

To turn off the display case, do the following.

3. **Set** the bottom heat switch ① to the OFF position.

Set the top heat switch ② to the OFF position. This will turn off the lights.



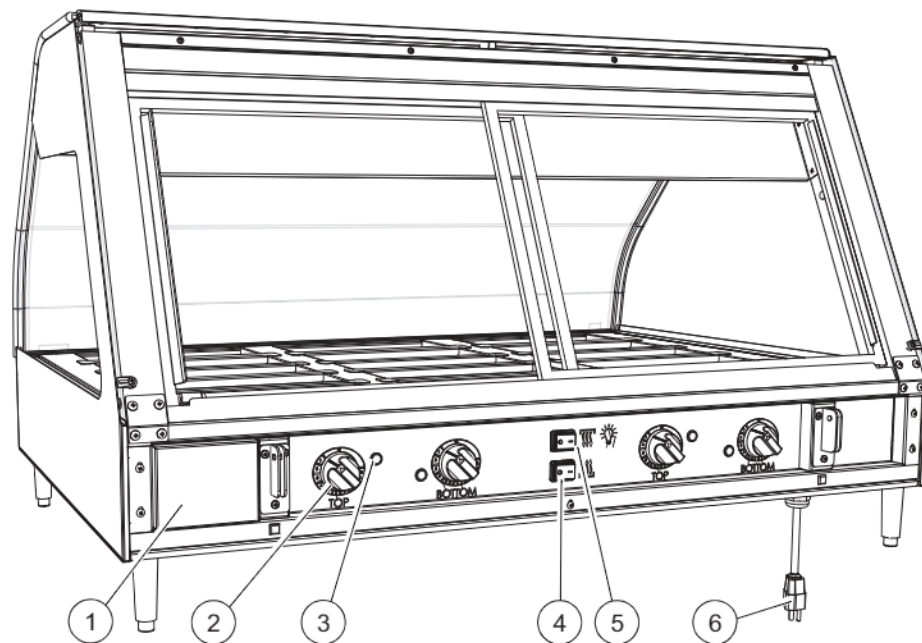
The display case is now off.

Component Identification



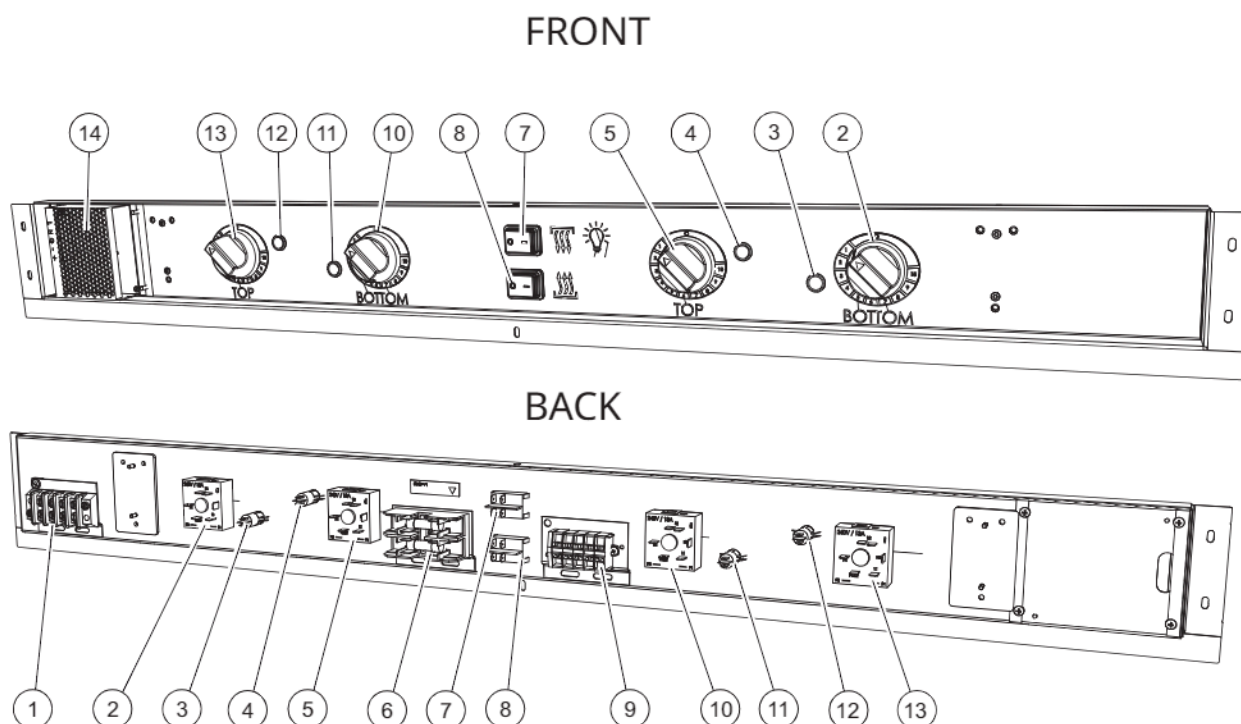
COMPONENTS

Rear Controls Identification



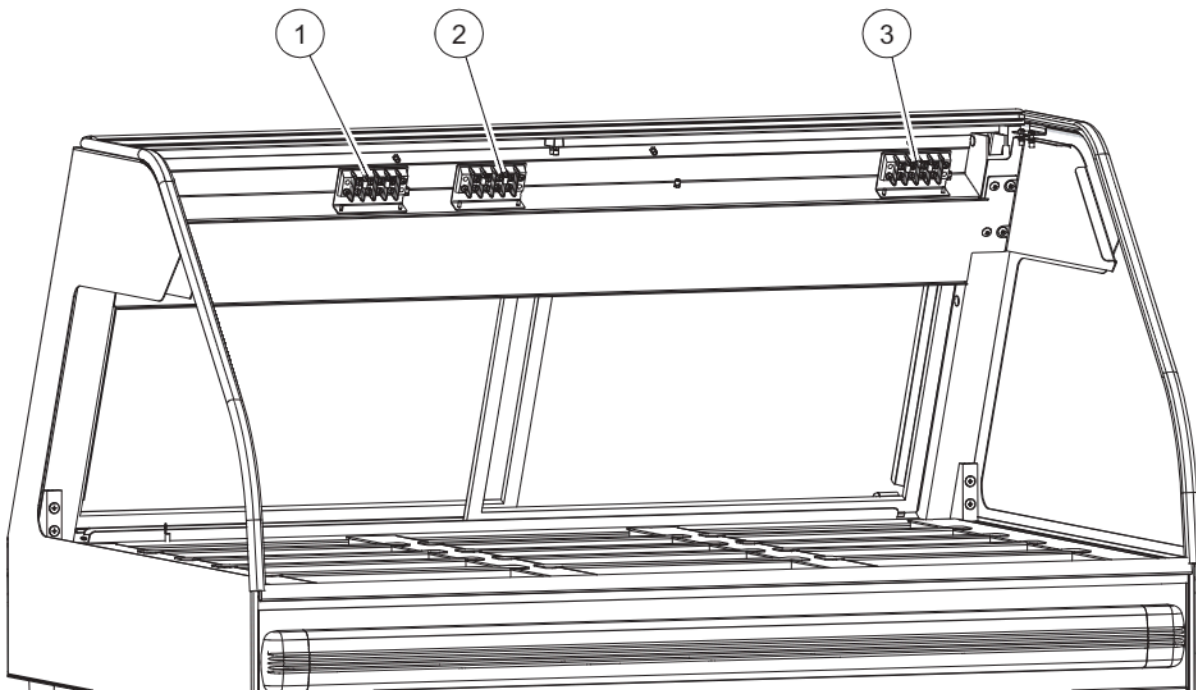
Ref.	Description
1	Power supply cover
2	Thermostat control knob
3	Heater indicator light
4	Bottom heat switch
5	Top heat and light switch
6	Electrical supply cord

ED3-48 Control Panel Identification



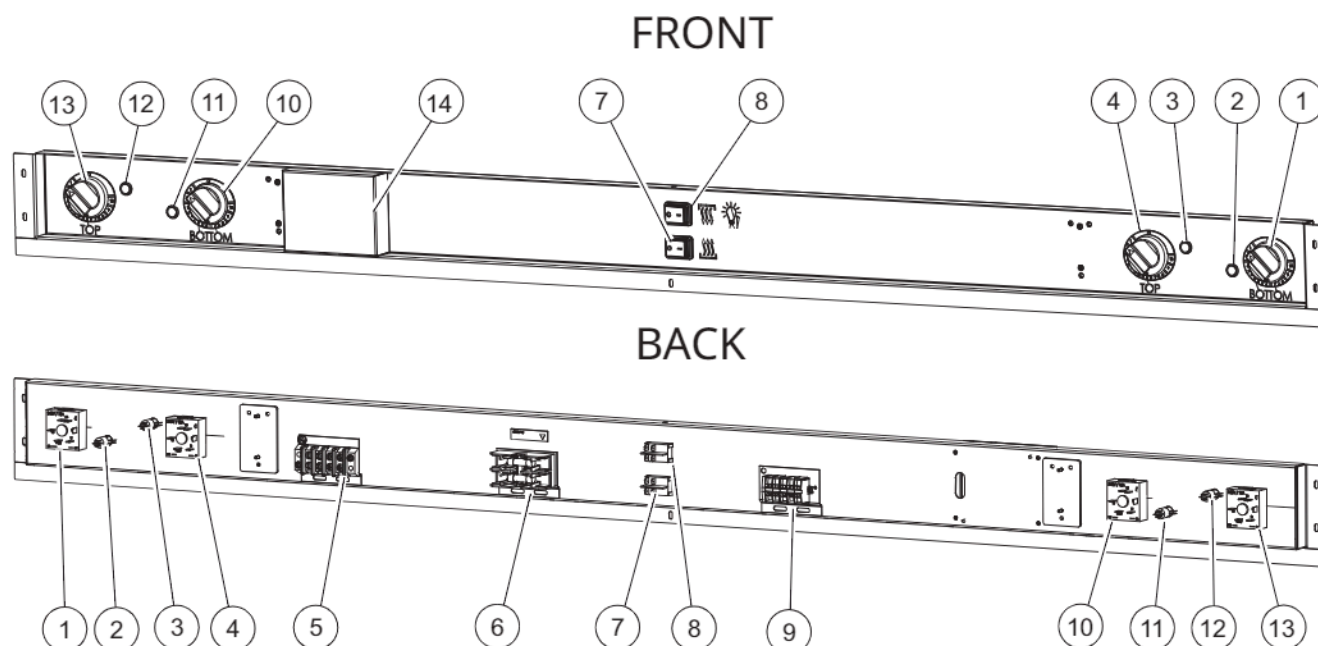
Ref.	Description
1	Terminal block 1 (TB1)
2	Thermostat, bottom right
3	Heater indicator light, bottom right
4	Heater indicator light, top right
5	Thermostat, top right
6	Fuse holder
7	Switch, top heat and lights
8	Switch, bottom heat
9	Terminal block 2 (TB2)
10	Thermostat, bottom left
11	Heater indicator light, bottom left
12	Heater indicator light, top left
13	Thermostat, top left
14	12VDC power supply

ED3-48 Top Terminal Block Identification



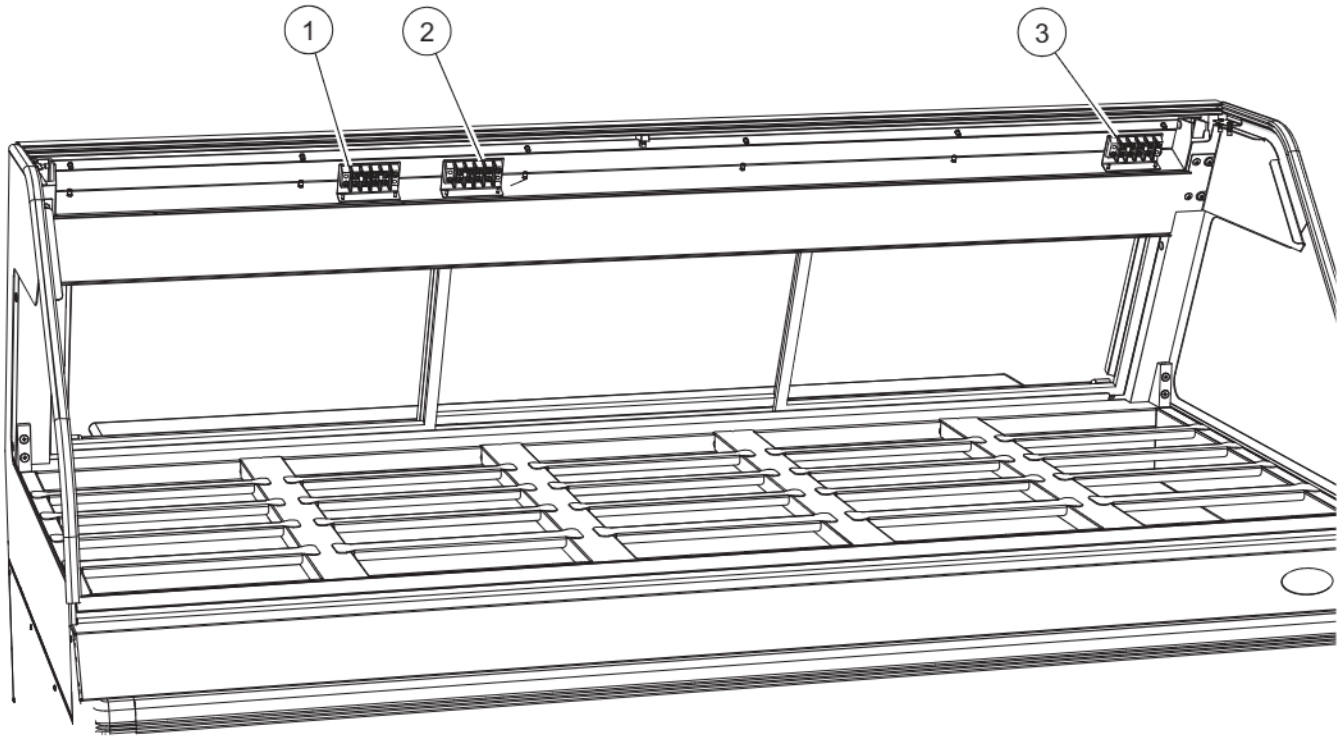
Ref.	Description
1	Terminal block 5 (TB5)
2	Terminal block 4 (TB4)
3	Terminal block 3 (TB3)

ED3-72 Control Panel Identification



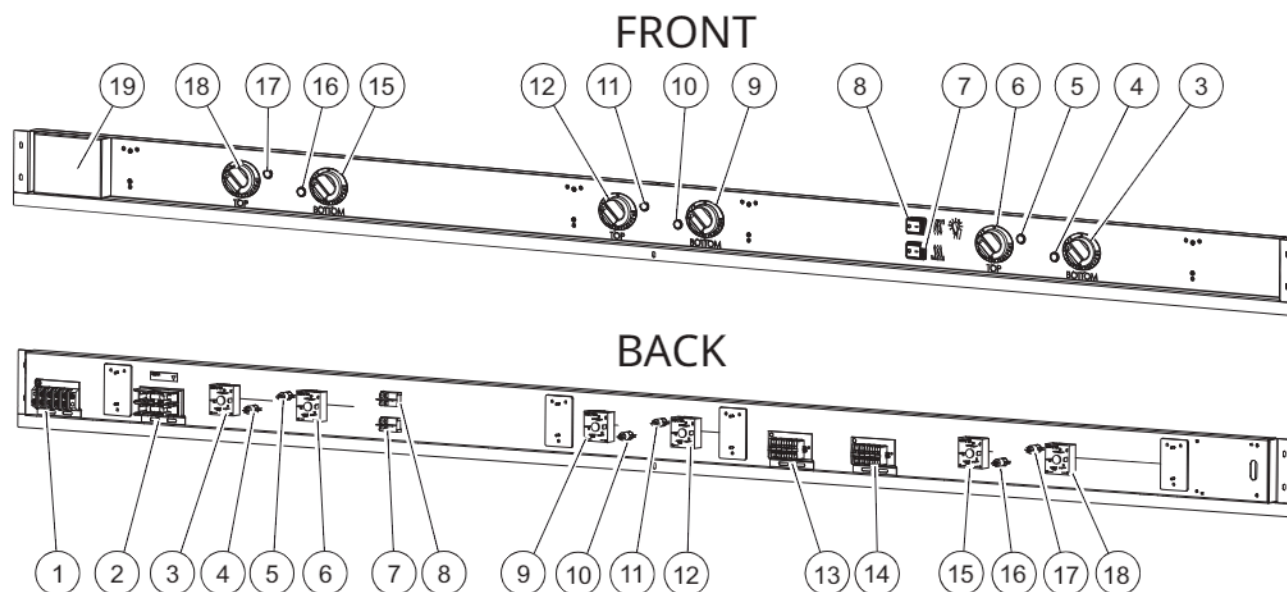
Ref.	Description
1	Thermostat, bottom right
2	Heater indicator light, bottom right
3	Heater indicator light, top right
4	Thermostat, top right
5	Terminal block 1 (TB1)
6	Fuse holder
7	Switch, bottom heat
8	Switch, top heat and lights
9	Terminal block 2 (TB2)
10	Thermostat, top left
11	Heater indicator light, top left
12	Heater indicator light, bottom left
13	Thermostat, bottom left
14	12VDC power supply

ED3-72 Top Terminal Block Identification



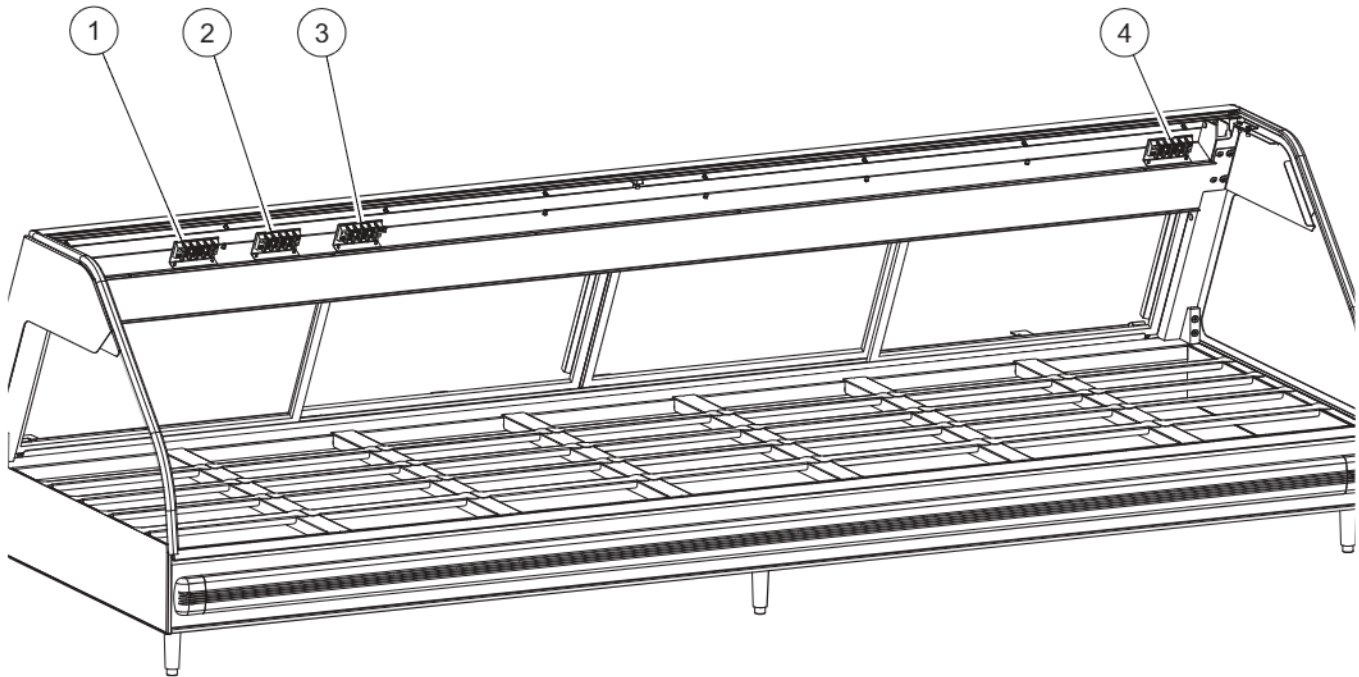
Ref.	Description
1	Terminal block 5 (TB5)
2	Terminal block 4 (TB4)
3	Terminal block 3 (TB3)

ED3-96 Control Panel Identification



Ref.	Description	Ref.	Description
1	Terminal block 1 (TB1)	11	Heater indicator light, top center
2	Fuse holder	12	Thermostat, top center
3	Thermostat, bottom right	13	Terminal block 7 (TB7)
4	Heater indicator light, bottom right	14	Terminal block 2 (TB2)
5	Heater indicator light, top right	15	Thermostat, bottom left
6	Thermostat, top right	16	Heater indicator light, bottom left
7	Switch, bottom heat	17	Heater indicator light, top left
8	Switch, top heat and lights	18	Thermostat, top left
9	Thermostat, bottom center	19	12VDC power supply
10	Heater indicator light, bottom center		

ED3-96 Top Terminal Block Identification

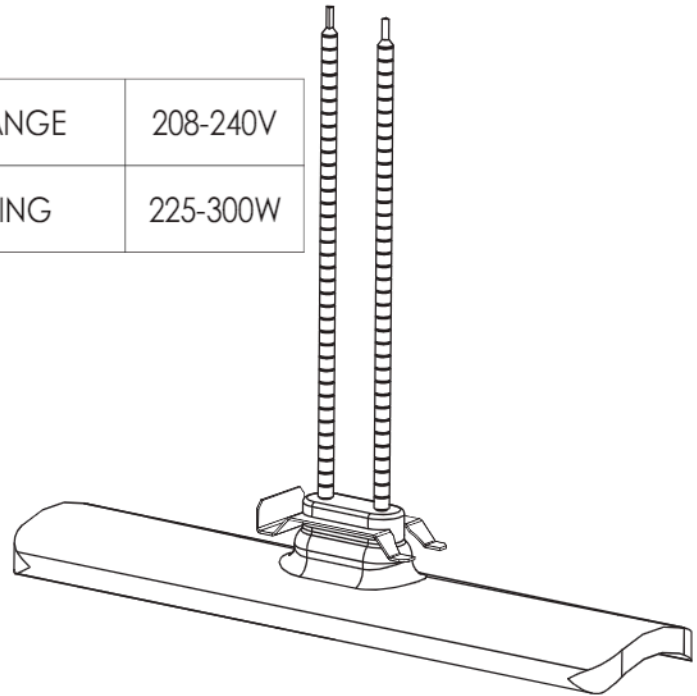


Ref.	Description
1	Terminal block 6 (TB6)
2	Terminal block 5 (TB5)
3	Terminal block 4 (TB4)
4	Terminal block 3 (TB3)

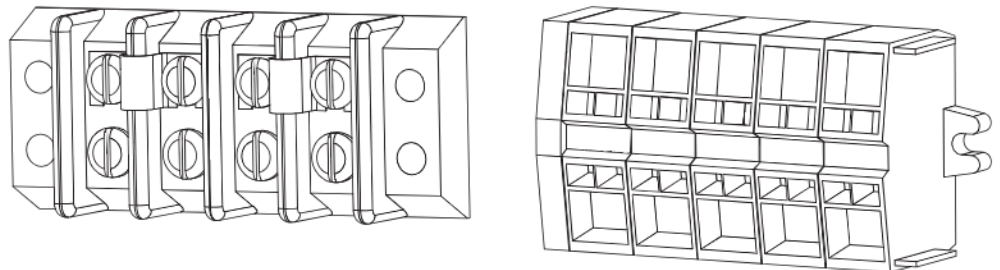
Electrical Components

Ceramic Heater Element

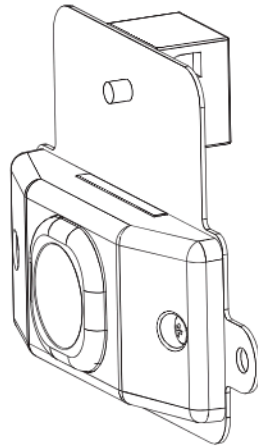
VOLTAGE RANGE	208-240V
POWER RATING	225-300W



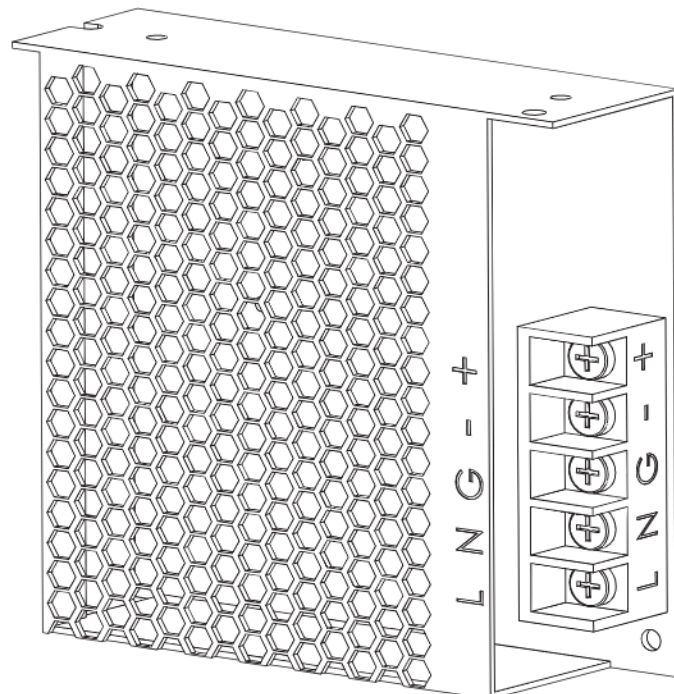
Terminal Blocks



LED Assembly



12VDC Power Supply



Sequence of Operation

Bottom heat operation

1. AC power enters from the power source to TB1 to FU3 fuse to the bottom heat switch.
2. From bottom heat switch power flows to TB2 and splits off to the thermostats.
3. From the thermostat, power flows directly to the heating element.
4. The power indicator LED is powered by the thermostat to show when the heating element has power flowing to it.

Top heat operation, ED3-48 and ED3-72

1. AC power enters from the power source to TB1 to FU2 fuse to the top heat switch.
2. From top heat switch power flows to TB2 and splits off to the thermostats.
3. From the left thermostat, power flows TB4 then to the heating element(s).
4. From the right thermostat, power flows TB5 then to the heating elements.
5. The power indicator LED is powered by the thermostat to show when the heating element has power flowing to it.

Top heat operation, ED3-96

1. AC power enters from the power source to TB1 to FU2 fuse to the top heat switch.
 2. From top heat switch power flows to TB7 and splits off to the thermostats.
 3. From the left thermostat, power flows TB4 then to the heating elements.
 4. From the center thermostat, power flows TB5 then to the heating elements.
 5. From the right thermostat, power flows TB6 then to the heating elements.
- The power indicator LED is powered by the thermostat to show when the heating element has power flowing to it.

LED operation

1. AC power enters from the power source to TB1 to FU2 fuse to the top heat switch.
2. From top heat switch power flows to the power supply then to FU1 fuse then TB3.
3. From TB3, power flows to the LED assemblies.

This page is intentionally left blank.

Maintenance Schedule

Requirements

- Make sure the appliance is turned OFF and cool.

Daily

For daily maintenance, do the following.

- **Remove** any spills with disposable paper wipes or a damp cloth.
- **Clean** appliance interior with commercial detergent or grease solvent.
- **Make sure** to use a non-abrasive nylon scrub pad for stubborn areas.
- **Wipe** the glass surfaces of the appliance with glass cleaner and a damp cloth.
- **Wipe** the gaskets, controls and door track of the appliance with a damp cloth.
- **Clean** cutting board(s) with commercial detergent or grease solvent.

Monthly

For monthly maintenance, do the following.

- **Inspect** end and front glass pieces for any signs of chips and cracks.
- **Test** gas struts by lifting front glass to ensure the glass remains suspended without dropping back down. **Schedule** service as soon as possible if struts are not holding the glass in an upright position.

This page is intentionally left blank.

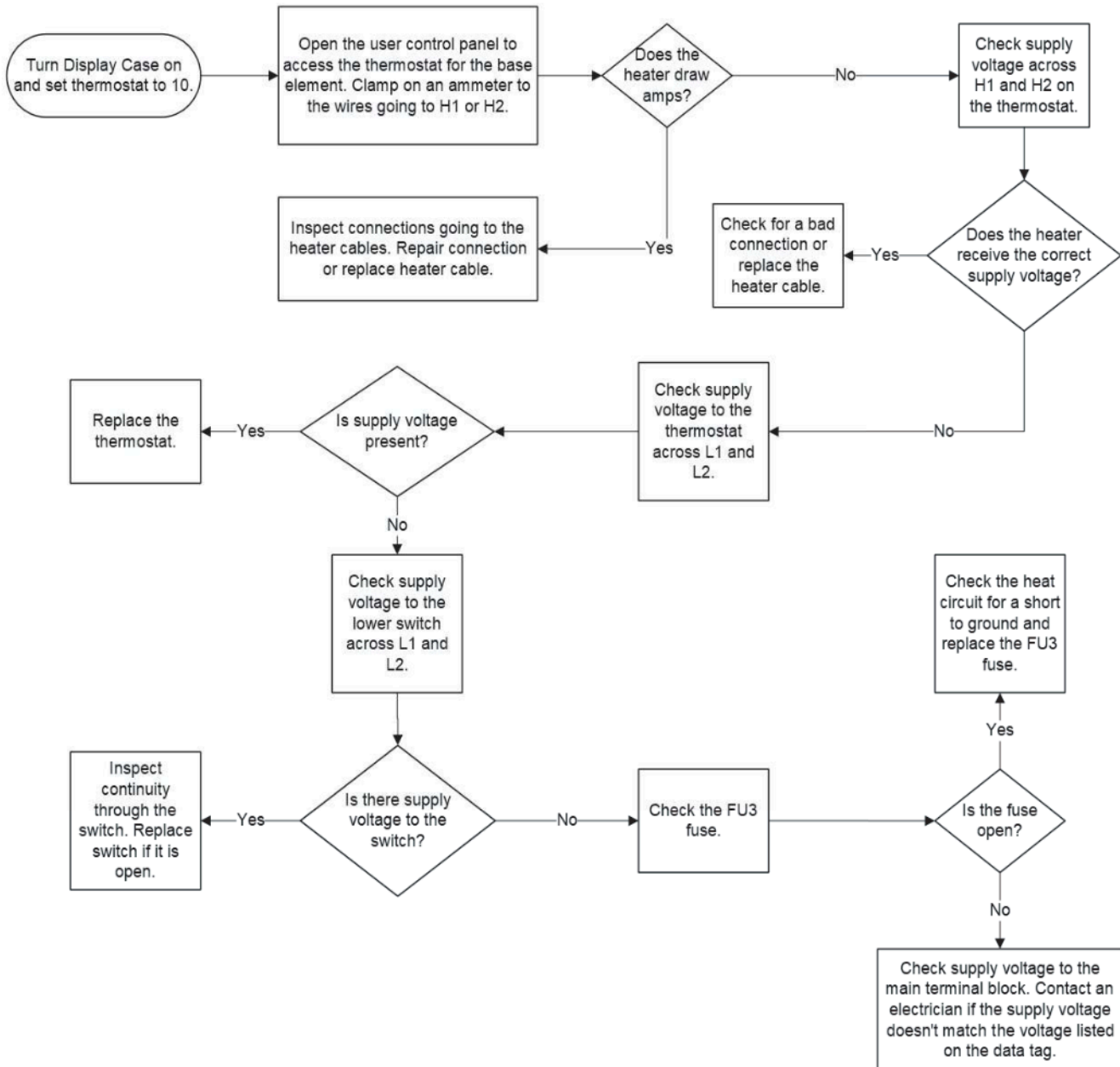
Bottom Heat does not Work



WARNING: Electric shock and arc flash hazard.

Use caution when measuring line voltage.

Wear Personal Protective Equipment (PPE).

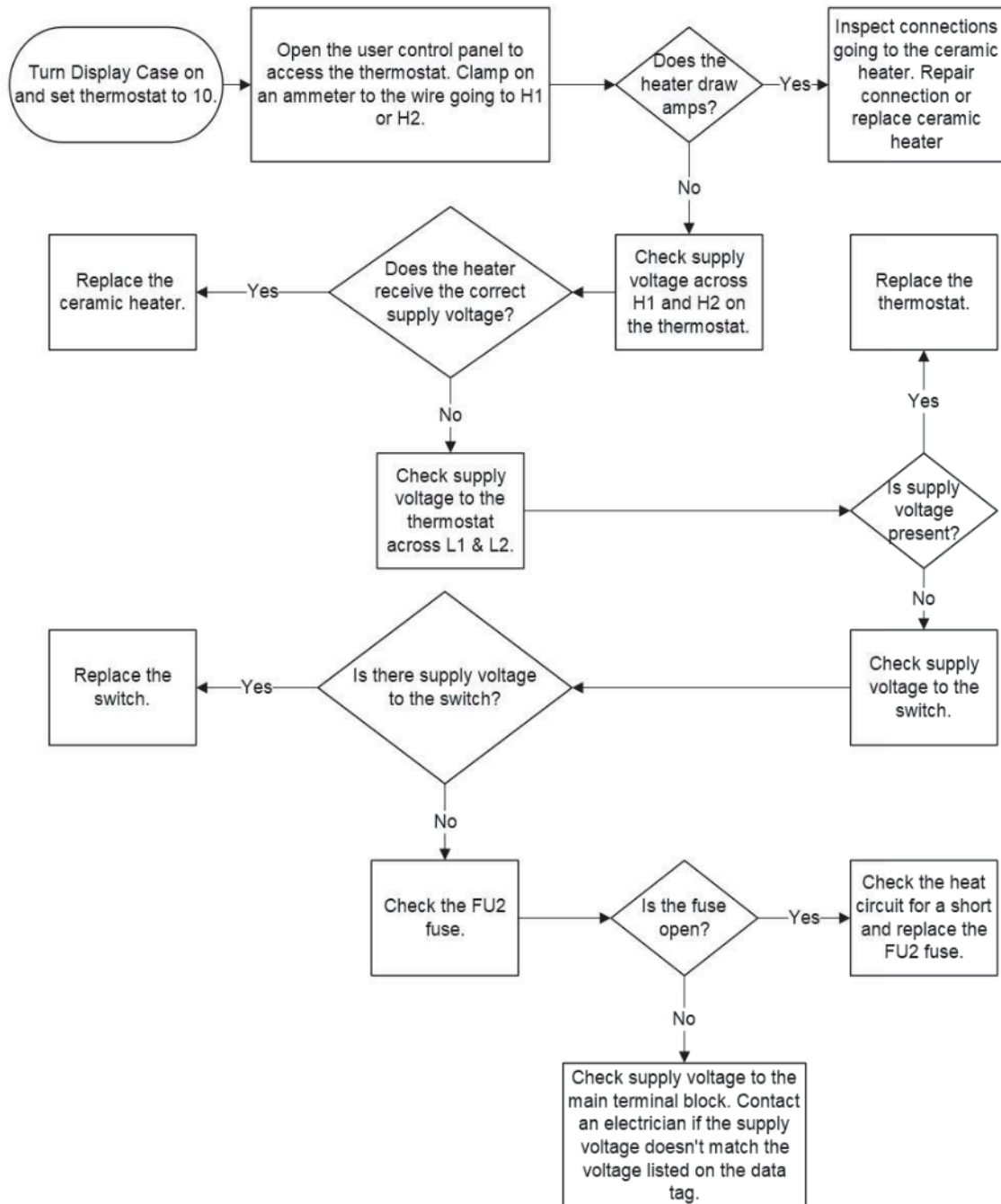


TROUBLESHOOTING

Top Heat does not Work



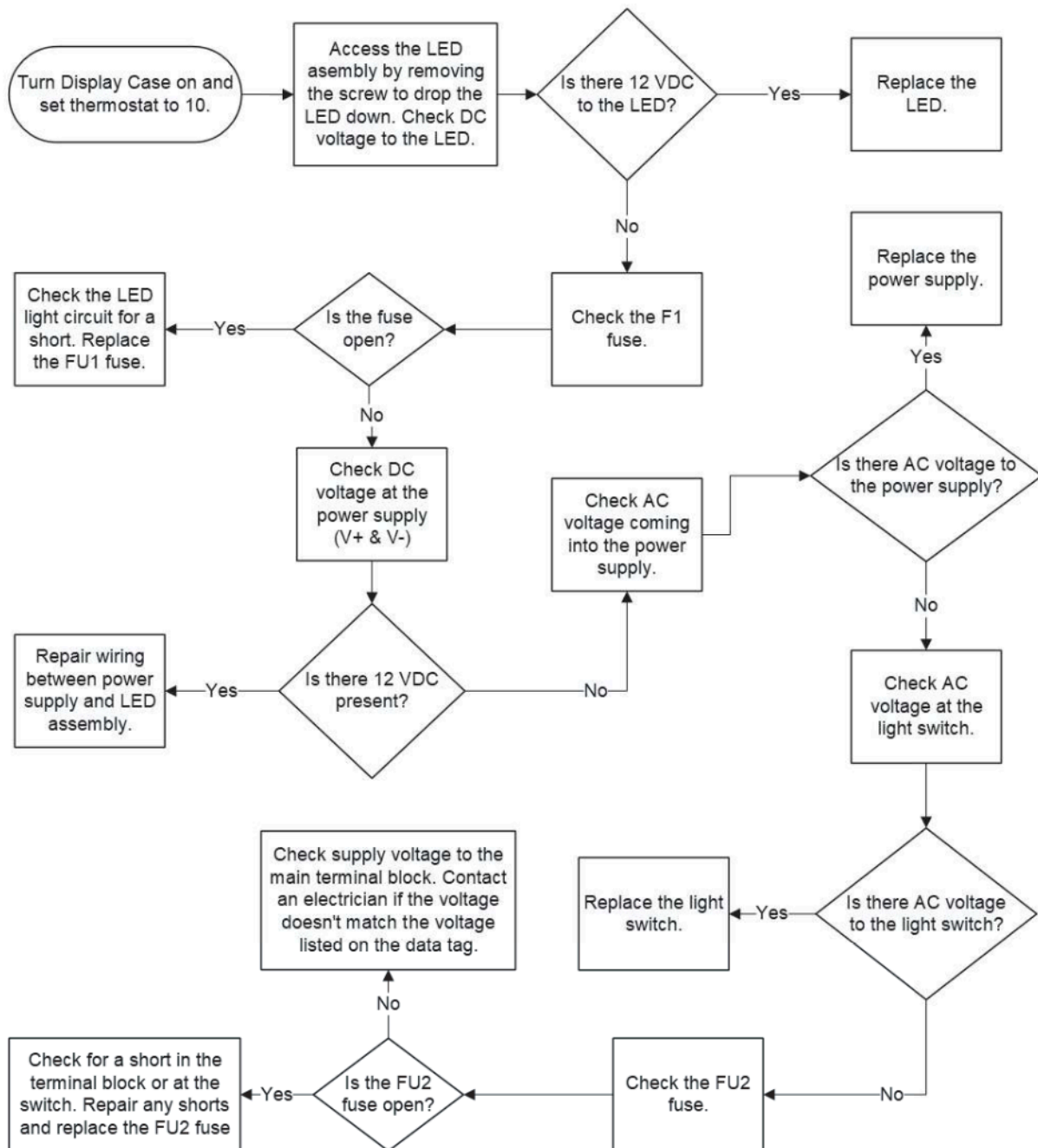
WARNING: Electric shock and arc flash hazard.
Use caution when measuring line voltage.
Wear Personal Protective Equipment (PPE).



LED Lighting does not Work



WARNING: Electric shock and arc flash hazard.
Use caution when measuring line voltage.
Wear Personal Protective Equipment (PPE).



How to Replace Ceramic Heater Element

Before you begin

- Appliance must be disconnected from power source.
- The appliance is cool to the touch (room temperature).

Procedure

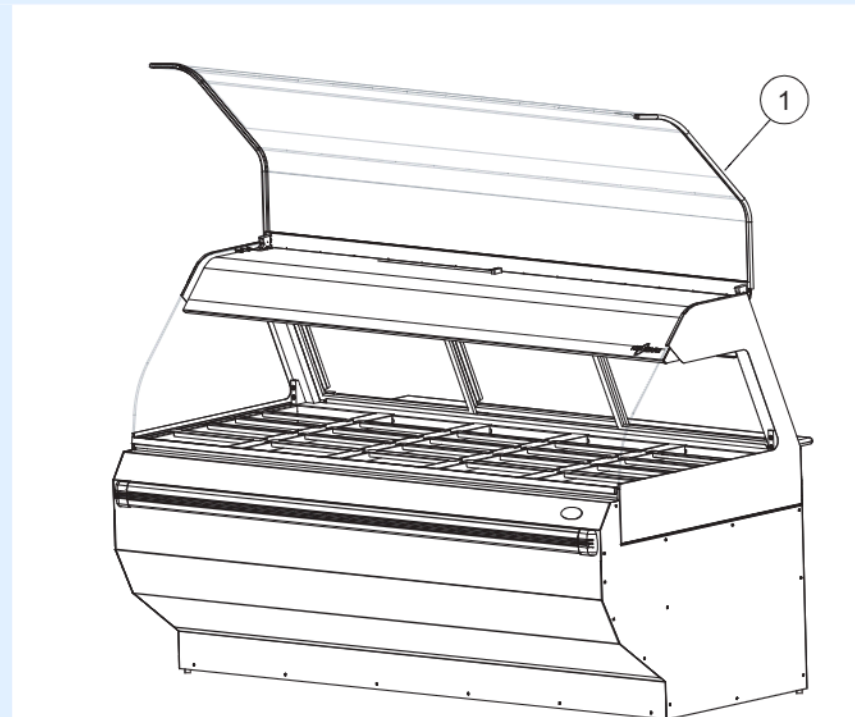
To replace ceramic heater element, do the following.



WARNING: Electric shock hazard.

Disconnect the appliance from electric power before servicing the appliance.

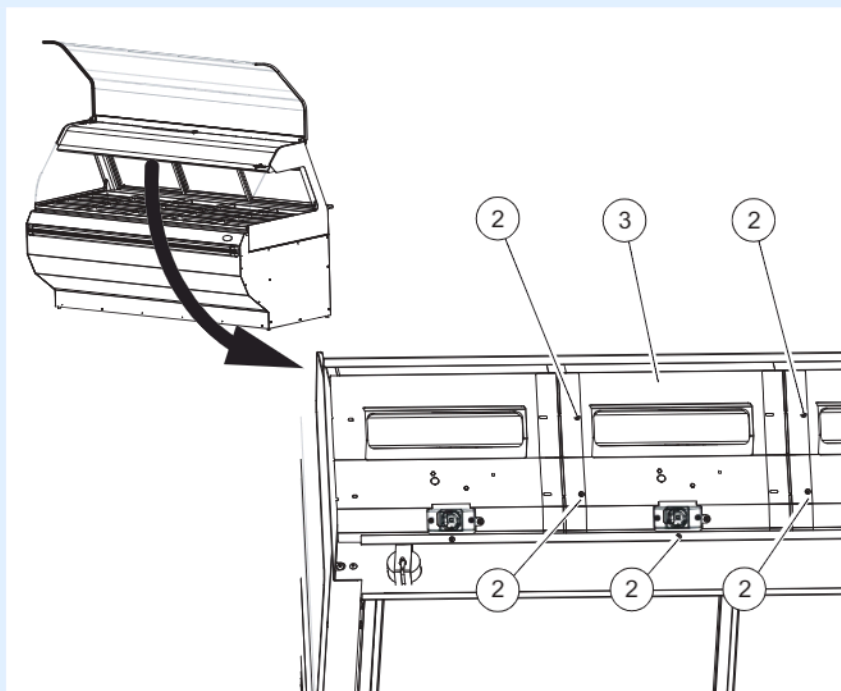
Step	Action
1.	Open the front glass ① of display case.



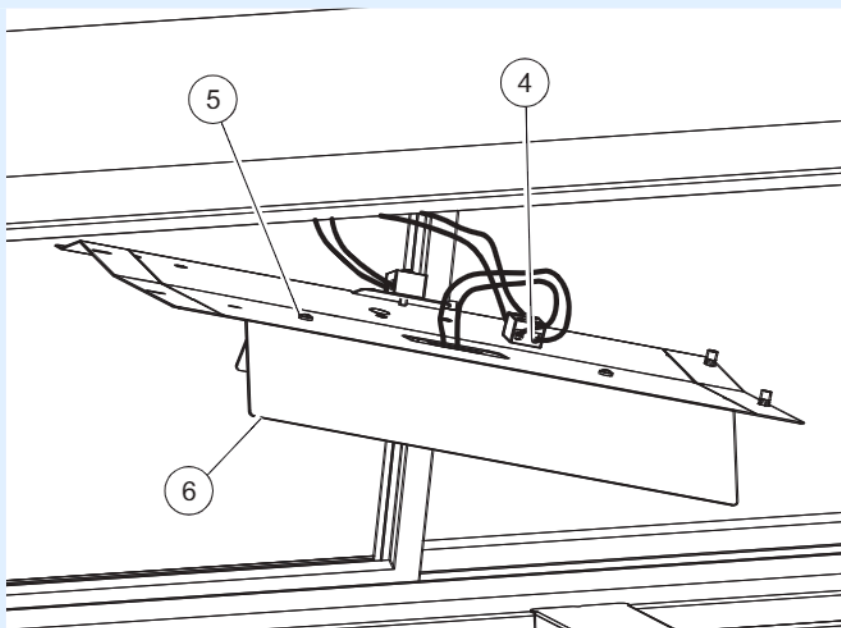
Continued on next page

Continued from previous page

2. **Remove** the screws ② and heater assembly ③ from the display case.



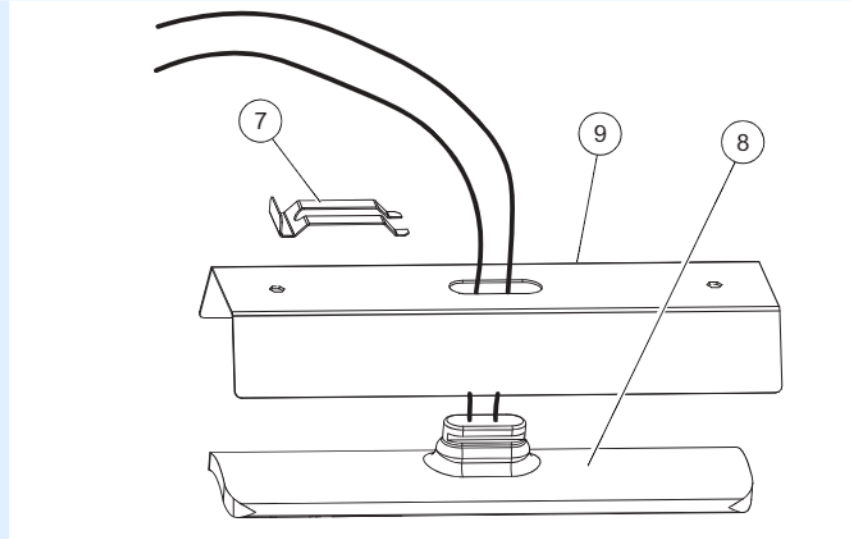
3. **Disconnect** the two heater element wires ④ from terminal block on heater assembly. **Remove** the two screws ⑤ and heater subassembly ⑥ from heater assembly.



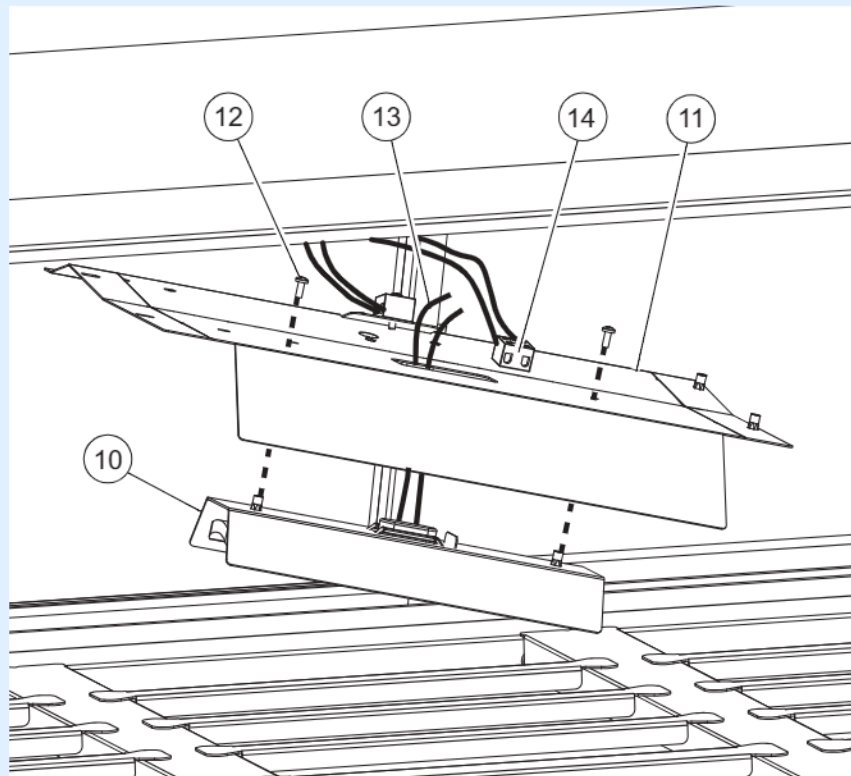
Continued on next page

Continued from previous page

4. **Remove** the retention clip ⑦ from the heater element ⑧ and remove the reflector ⑨. **Install** new heater element ⑧ on reflector ⑨ with new retention clip ⑦.



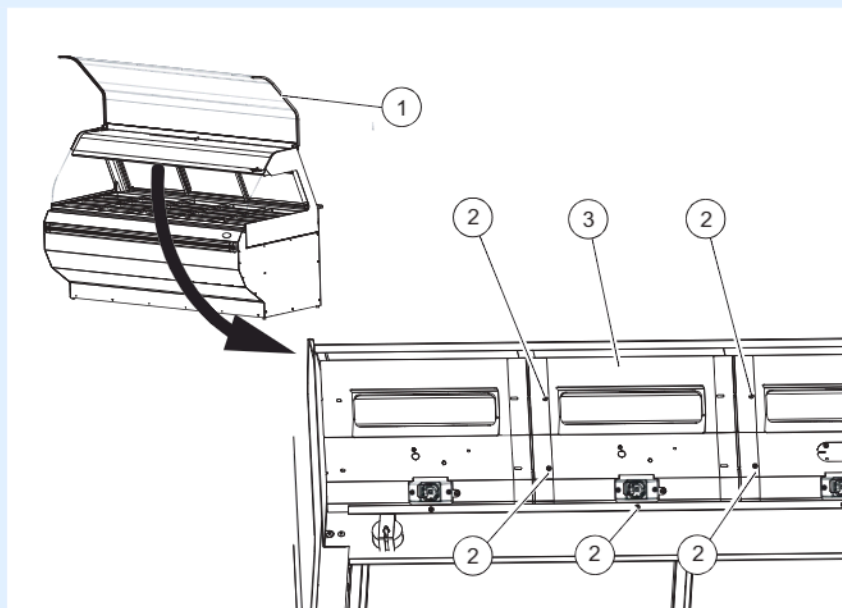
5. **Install** heater subassembly ⑩ on heater assembly ⑪ with two screws ⑫. **Connect** two wires ⑬ to terminal block ⑭.



Continued on next page

Continued from previous page

6. **Install** heater assembly ③ in display case with screws ②. **Close** the front glass ① of display case.



Result

The ceramic heater element has been replaced.

How to Replace LED Assembly

Before you begin

- Appliance must be disconnected from power source.
- The appliance is cool to the touch (room temperature).

Procedure

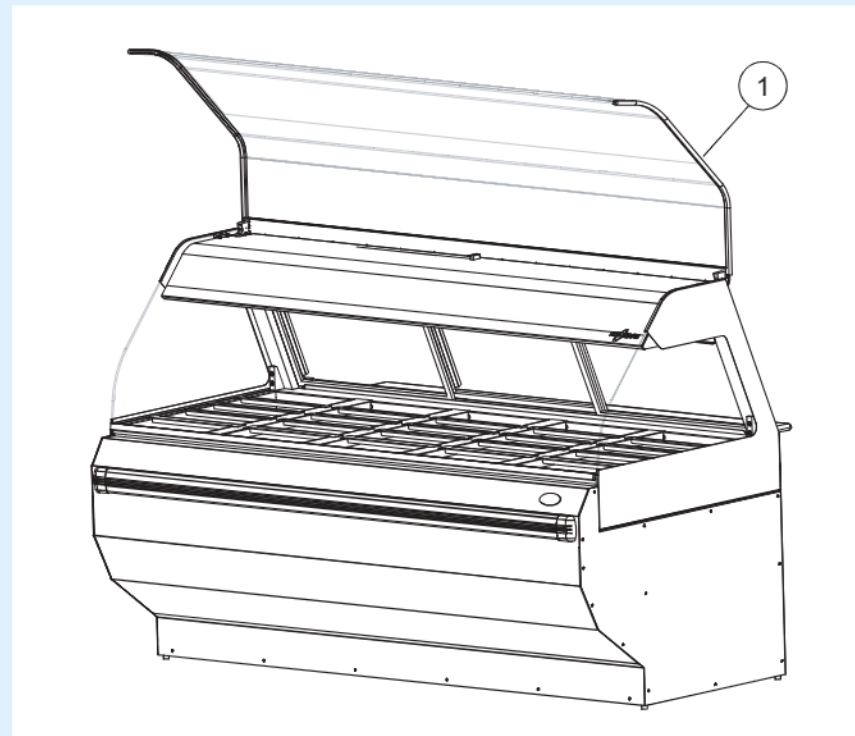
To replace the LED assembly, do the following.



WARNING: Electric shock hazard.

Disconnect the appliance from electric power before servicing the appliance.

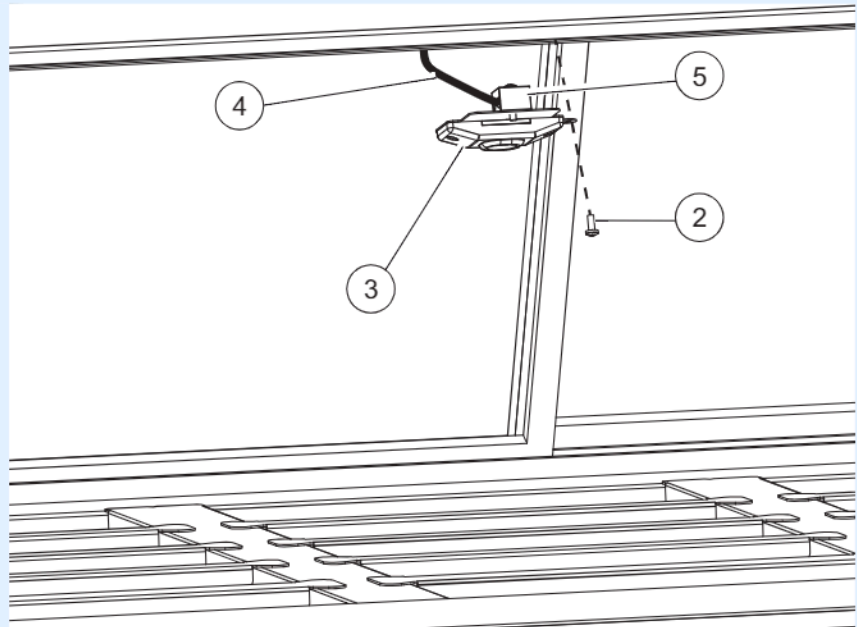
Step	Action
1.	Open the front glass ① of display case.



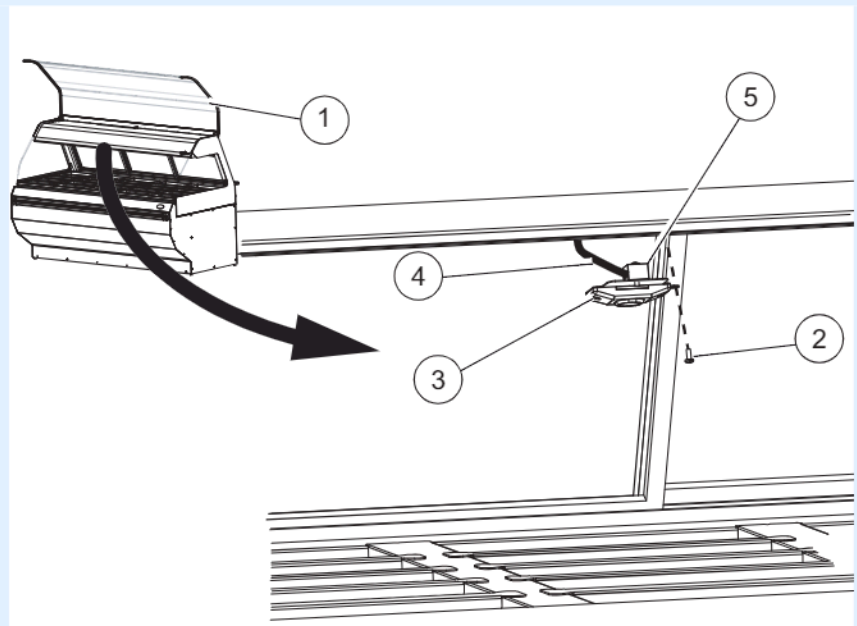
Continued on next page

Continued from previous page

2. **Remove** the screw ② and LED assembly ③ from the display case. **Remove** the wires ④ from terminal block ⑤.



3. **Install** wires ④ on terminal block ⑤. **Install** LED assembly ③ on display case with screw ②. **Close** the front glass ① of display case.



Result

The LED assembly has now been replaced.

How to Replace Power Supply

Before you begin

- Appliance must be disconnected from power source.
- The appliance is cool to the touch (room temperature).

Procedure

To replace the power supply, do the following.



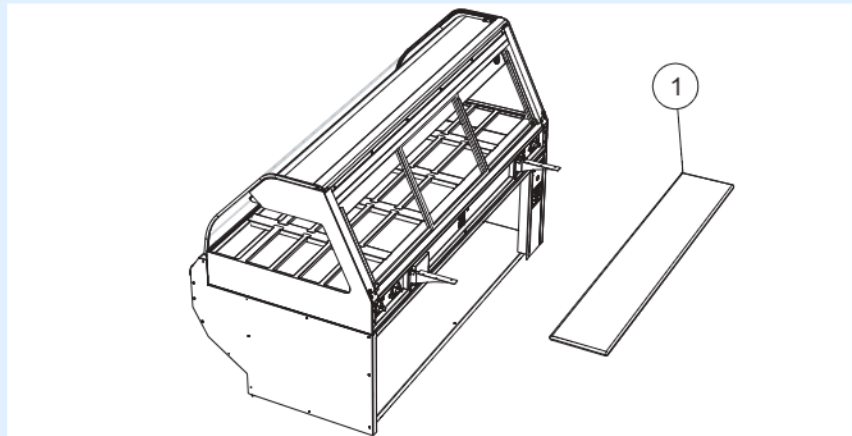
WARNING: Electric shock hazard.

Disconnect the appliance from electric power before servicing the appliance.



NOTE: Location of power supply varies per model. Model ED3-72 shown in example.

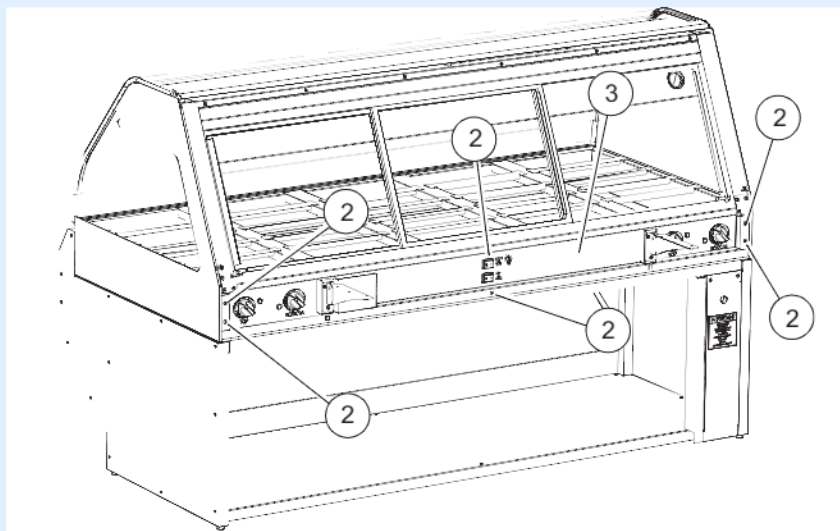
Step	Action
1.	Remove the cutting board ① from the display case.



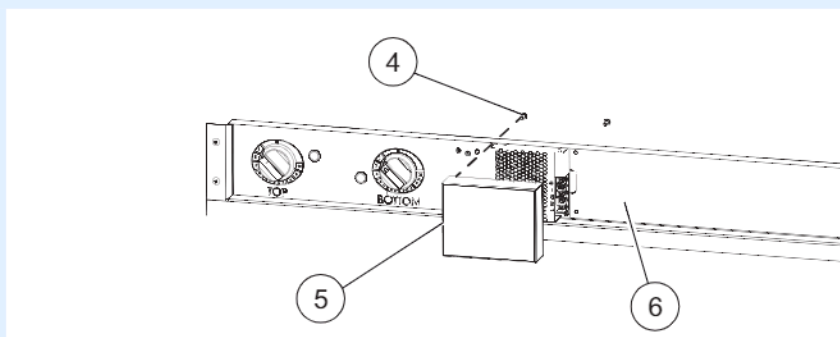
Continued on next page

Continued from previous page

2. **Remove** the six screws ② and control panel ③ from display case.



3. **Remove** the four screws ④ and power supply cover ⑤ from control panel ⑥.

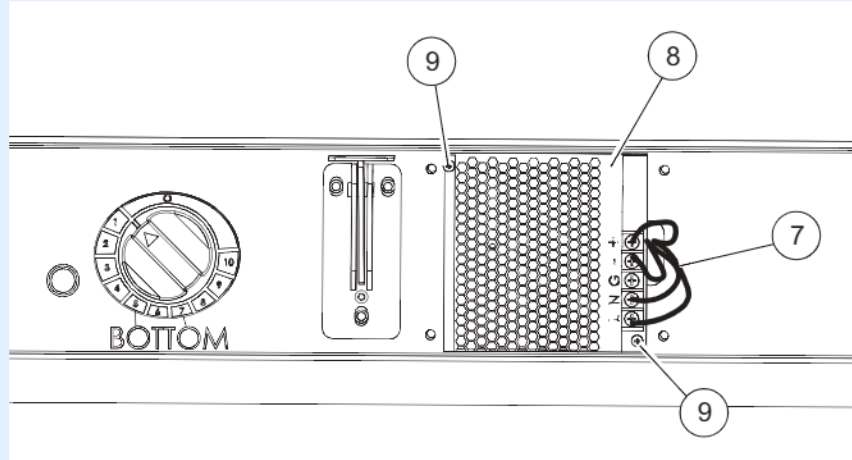


Continued on next page

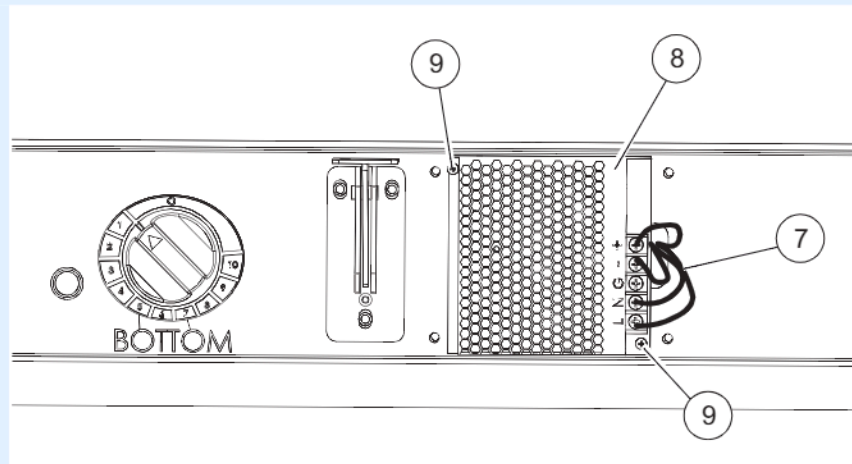
Continued from previous page

4. **Label** wires prior to removal.

Remove the wires ⑦ from the power supply ⑧. **Remove** the two screws ⑨ and power supply ⑧ from the control panel.



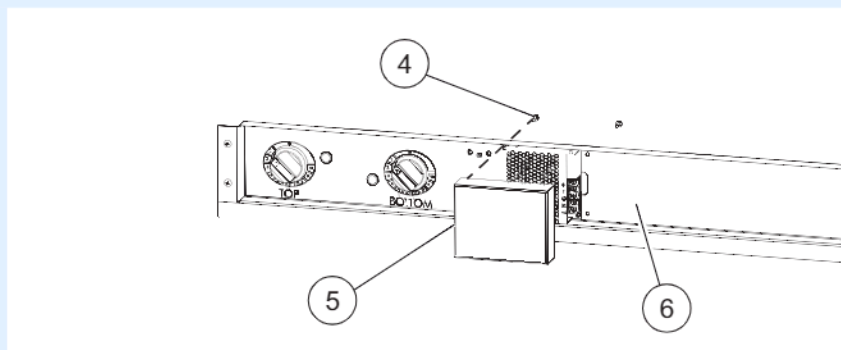
5. **Install** the power supply ⑧ on control panel with two screws ⑨. **Connect** wires ⑦ to power supply ⑧.



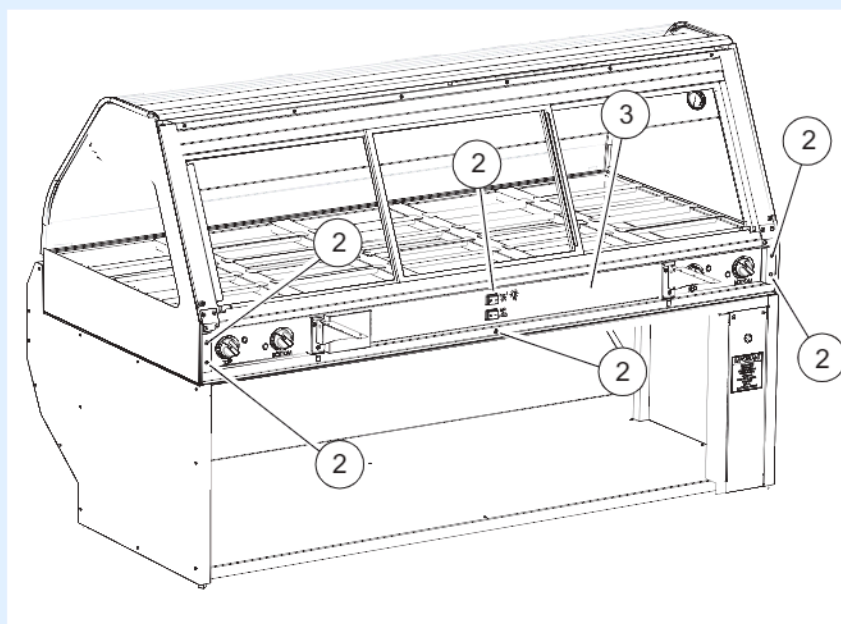
Continued on next page

Continued from previous page

6. **Install** the power supply cover (5) on the control panel (6) with four screws (4).



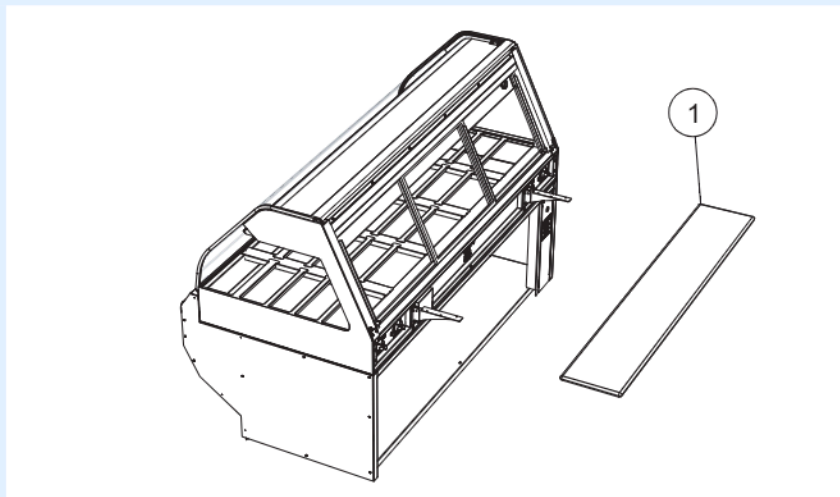
7. **Install** the control panel (3) on the display case with six screws (2).



Continued on next page

Continued from previous page

8. **Install** the cutting board ① on the display case.



Result

The power supply has now been replaced.

How to Replace Gas Strut

Before you begin

- Appliance must be disconnected from power source.
- The appliance is cool to the touch (room temperature).

Procedure

To replace the gas strut, do the following.

CAUTION

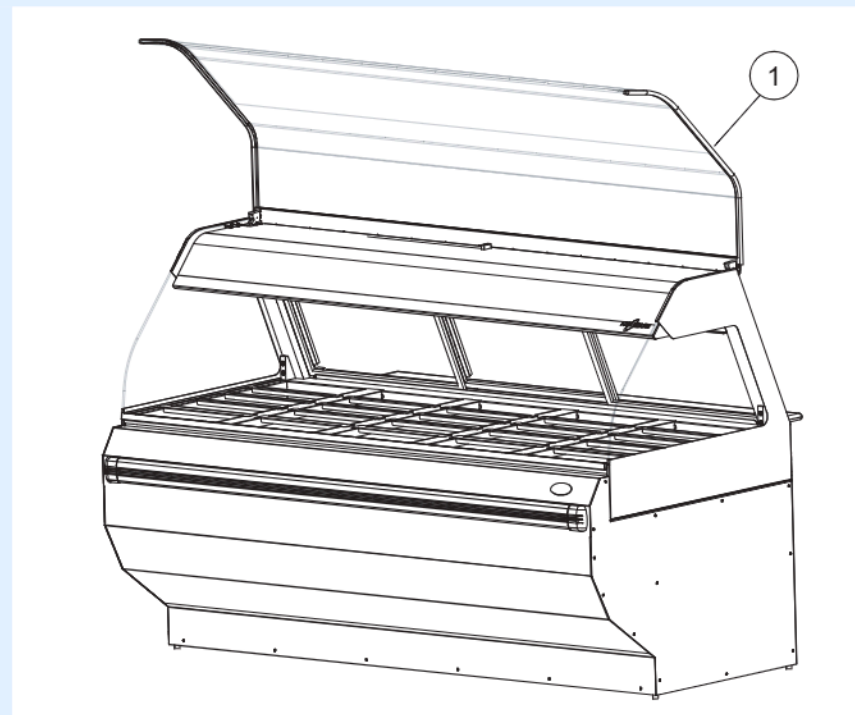


Overhead obstacle hazard.

When lifted to the full upright position, the front glass presents an overhead obstacle.

To avoid bodily injury, be mindful of the position of the front glass when it is open. If not properly supported, it could result in minor or moderate injury.

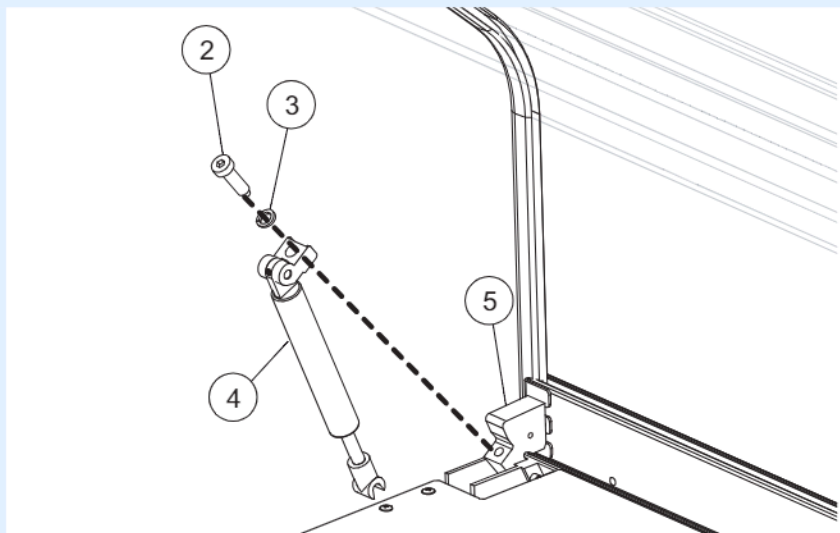
Step	Action
1.	Open the front glass ① of display case. Support the front glass ① with the appropriate lifting device.



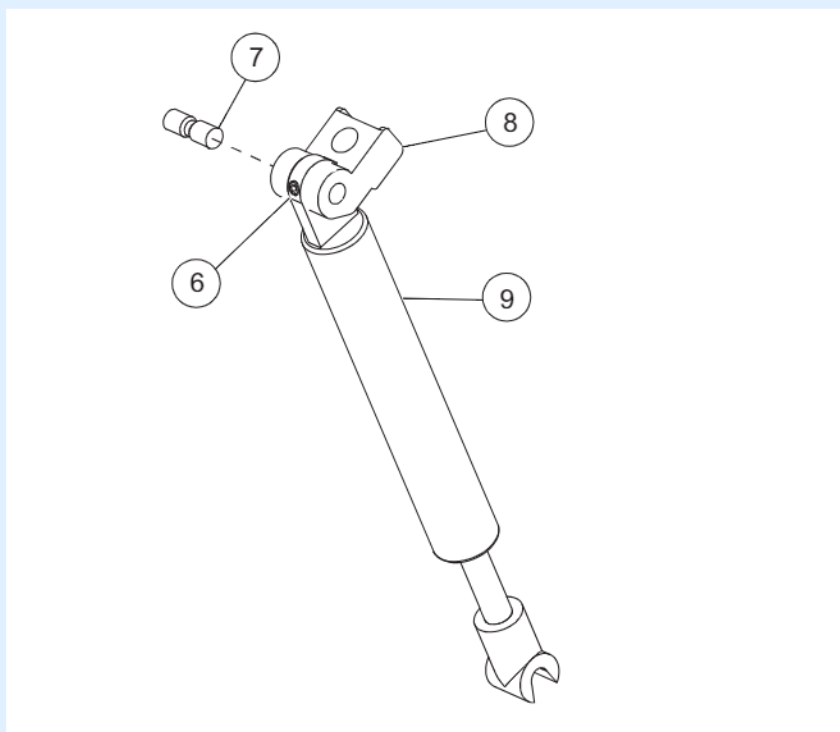
Continued on next page

Continued from previous page

2. **Remove** the screw ② and lock washer ③ and strut ④ from pivot block ⑤.



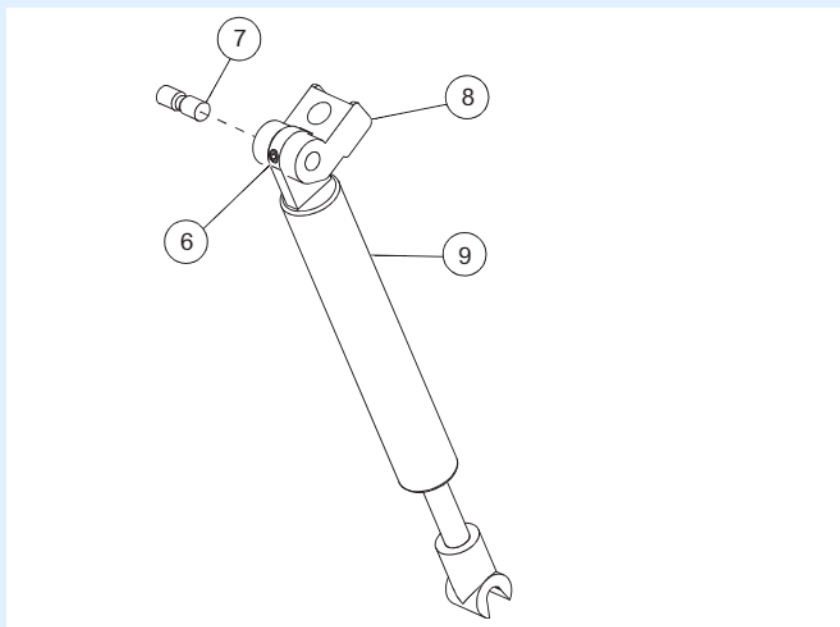
3. **Loosen** the set screw ⑥ and remove the pivot pin ⑦ from bracket ⑧ and strut ⑨.



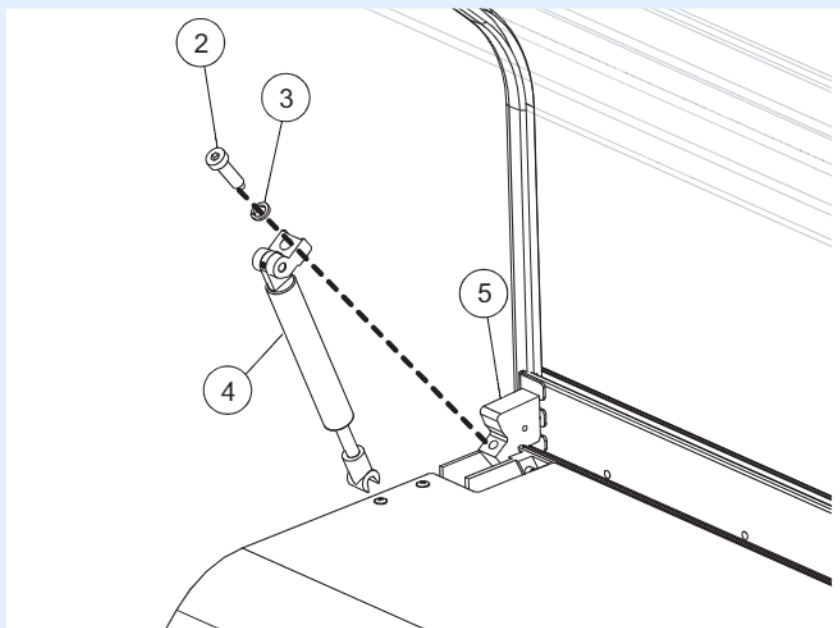
Continued on next page

Continued from previous page

4. **Install** the new gas strut **9** on bracket **8** with pivot pin **7**. **Tighten** the set screw **6**.



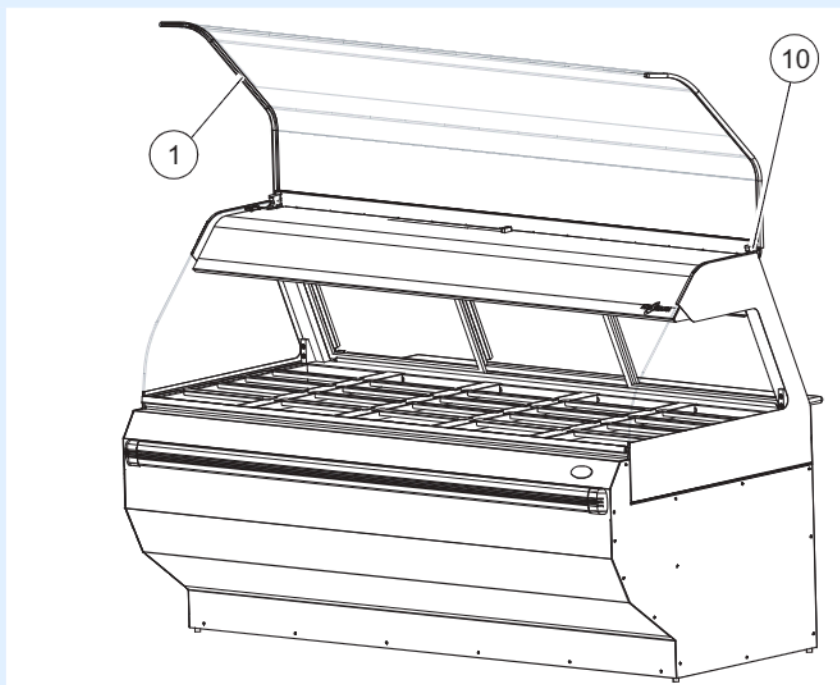
5. **Install** the gas strut **4** on pivot block **5** with screw **2** and lock washer **3**.



Continued on next page

Continued from previous page

6. **Repeat** steps 2 through 5 on remaining strut ⑩. **Remove** supporting device and close front glass ①.



Result

The gas strut has now been replaced.

ED3-Schematics

MODEL 48 208-240V 1PH

MODEL 72 208-240V 1PH

MODEL 96 208-240V 1PH

LEGEND

PG 02

PG 03

PG 04

PG 05

ED3/TY3 208-240V 1Ph 48/72/96

ELEC-70012

ALTO-SHAAM®

enthermics®
medical systems

2

6/18/2024

Stephanie J

183804

Updated for production

1

1/23/2024

HV

183804

Updated per F199 Beta Build comments

0

3/9/2023

monter/

183392

New

REV.

DATE

NAME

ECO

CHANGES

2

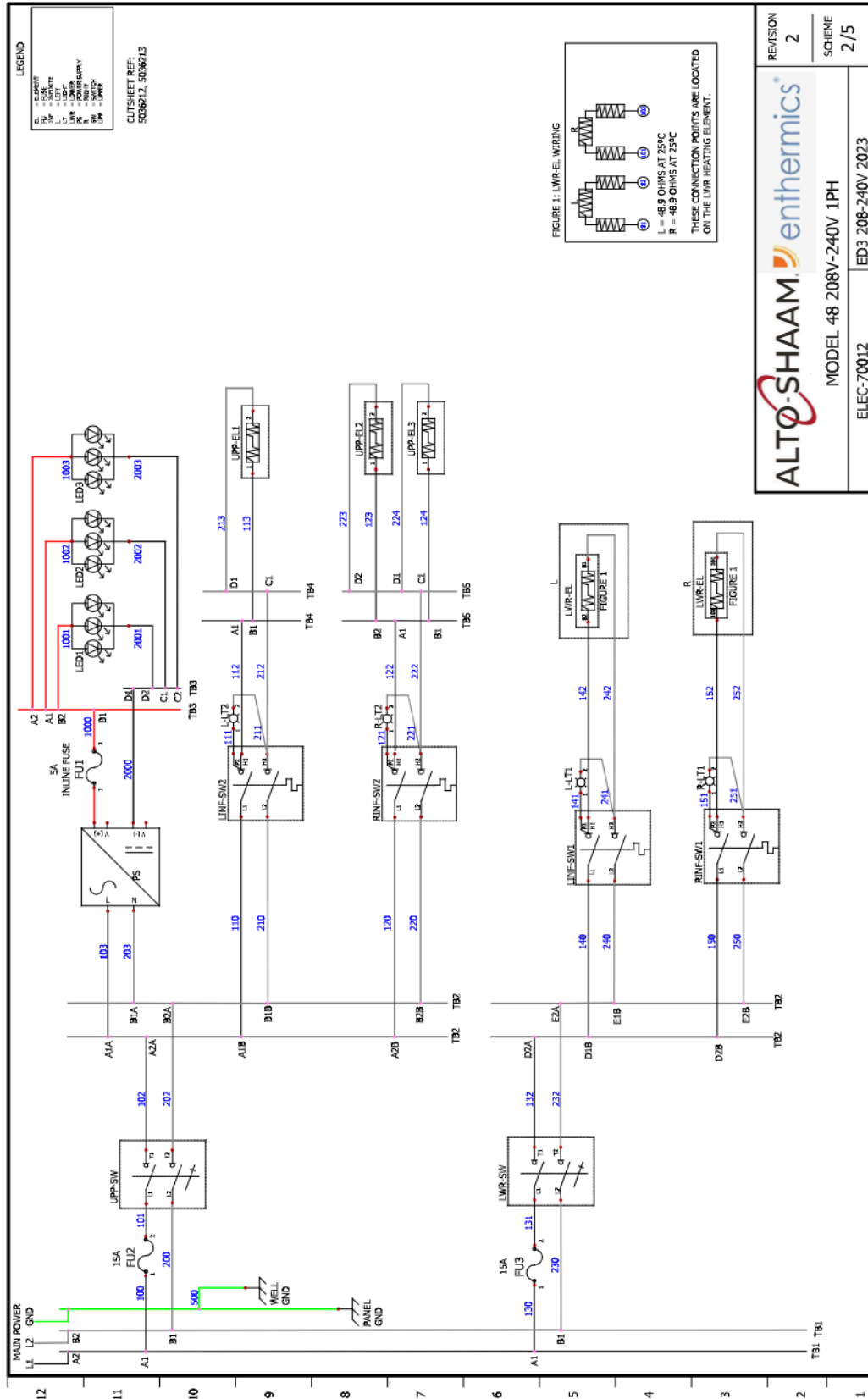
ED3/TY3 208-240V 1Ph

REVISION

1/5

SCHEME

Document released with revision 1, 2022.0.5.3



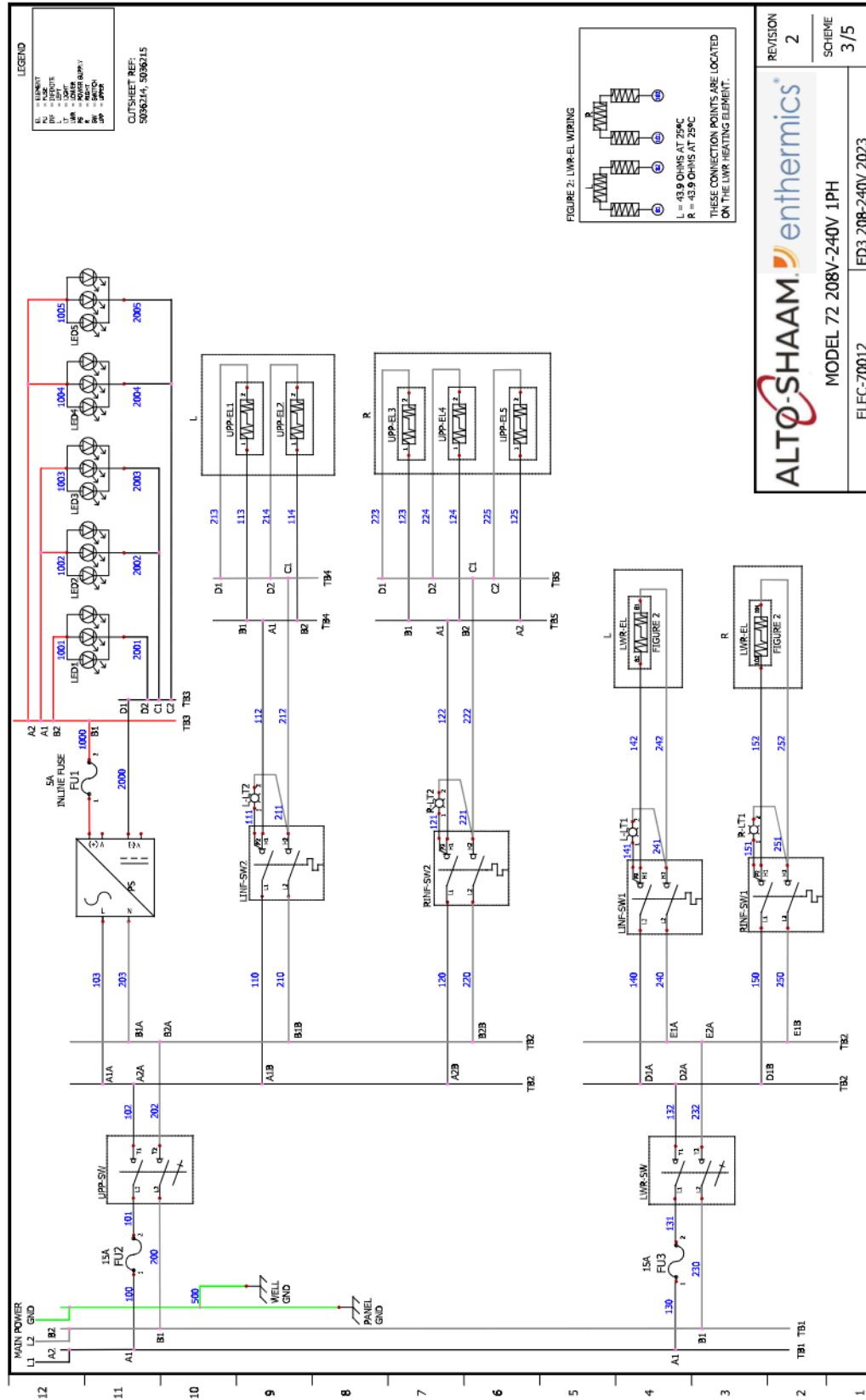
ALTO-SHAAM enthermics®

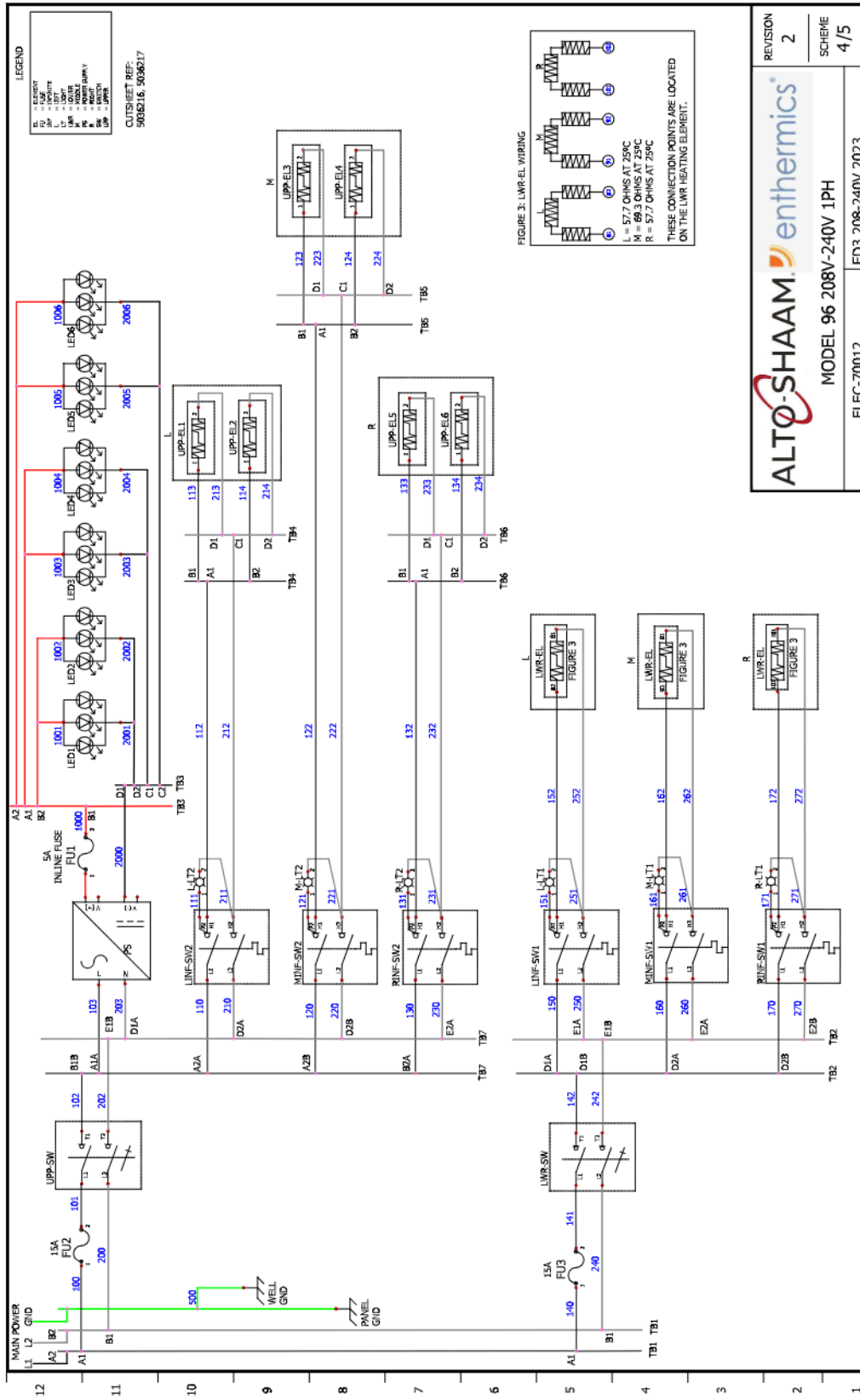
MODEL 48 208V-240V 1PH

ED3 208-240V 2023

REVISION 2

SCHEME 2/5





ALTO-SHAAM *enthermics*

MODEL 96 208V-240V 1PH

ED3 208-240V 2023

REVISION 2

SCHEME 4/5

12	A1 = COIL INPUT (+)	E41 = CONV ELEMENT SET	K3 = BOILER CONTACTOR	N7 = HIGH LIMIT	SSR = SOLID STATE RELAY
	A2 = COIL INPUT (-)	E42 = CONV ELEMENT SET	K40 = CONV CONTACTOR	N8 = BOILER TEMP PROBE	SV = STEAM VALVE
11	B1 = H2O PROBE LOW	E43 = CONV ELEMENT SET	K41 = CONV CONTACTOR	N9 = HIGH LIMIT	SW = SWITCH
	B2 = H2O PROBE HIGH	EL = ELEMENT	K42 = CONV CONTACTOR	N10 = HIGH LIMIT	TM = TERMINAL
10	B3 = WATER PROBE	FA = FAN	K43 = CONV CONTACTOR	NC X = NO CONNECTION	TB = TERMINAL BLOCK
	B4 = BOILER PROBE	FE = BOILER FUSE	K45 = CONV CONTACTOR	NC = NORMAL CLOSE	TX = TRANSFORMER
9	B5 = STEAM BY-PASS PROBE	FST = CONV FUSE	K50 = MOTOR CONTACTOR LOW	NO = NORMAL OPEN	UPP = UPPER
	B10 = FOOD PROBE	FSW = FILTER SWITCH	K51 = MOTOR CONTACTOR LOW	OB = OPTION BOARD	VFD = VARIABLE FREQUENCY DRIVE
8	B11 = MULTI-POINT PROBE	FT = X-CAP FILTER	K60 = MOTOR CONTACTOR LOW	PS = POWER SUPPLY	Y1 = STEAM VALVE
	BLVR = GAS COMB BLOWER	FTT = COOLING FAN THERMOSTAT	K61 = MOTOR CONTACTOR LOW	PSW = PRESSURE SWITCH	Y2 = MIXED WATER VALVE
7	C/B = CIRCUIT BREAKER	FU = FUSE	K77 = MASTER CONTACTOR	RB = RELAY BOARD	Y3 = CLEAN VALVE
	CAB = CABLE	G. PUMP = GREASE PUMP	K78 = MASTER CONTACTOR	RLY = RELAY	Y4 = CLEAN PUMP
6	CB = CONTROL BOARD	GND = GROUNDING	LED = LIGHT EMITTING DIODE	RV = STEAM RELIEF VALVE	Y5 = HAND SHOWER
5	CC = CATALYTIC CONVERTER	GU = HALOGEN LIGHT	LF = LINE FILTER	S7 = REED SWITCH	
	CH = CONV HEATER	HSI = HOT SURFACE IGNITOR	LQ. PUMP = LIQUID PUMP	SMK = SMOKER	
4	CV = CONVECTION	IB = INTERFACE BOARD	LVR = LOWER	SNO = STEAM MOTOR	
	E1 = BOILER ELEMENT SET	IM = IGNITION MODULE	LVS = STEAM RELIEVE VALVES	SP1 = SPARK IGNITOR	
3	E2 = BOILER ELEMENT SET	K1 = BOILER CONTACTOR	MO = MOTOR		
2	E3 = BOILER ELEMENT SET	K2 = BOILER CONTACTOR	N6 = CAVITY PROBE		
1					



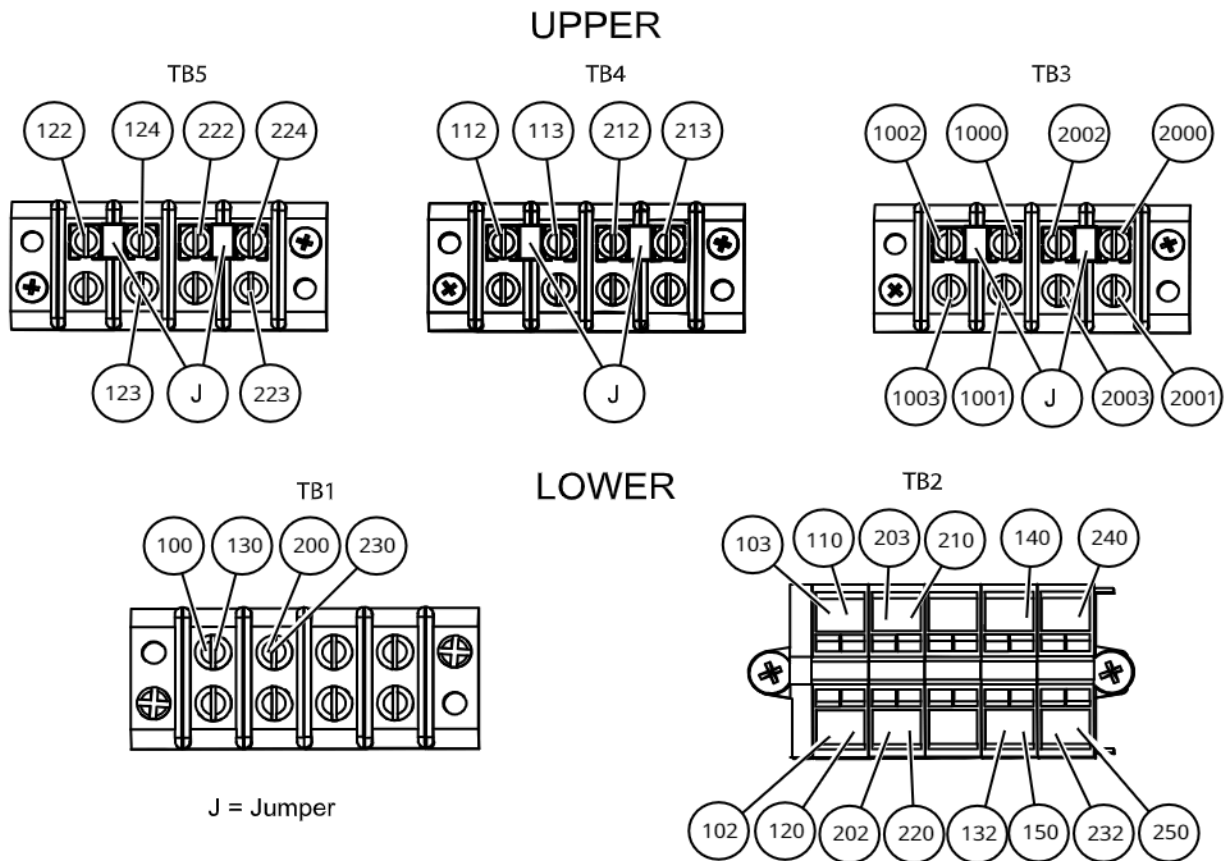
 REVISION
2

 SCHEME
5/5

LEGEND

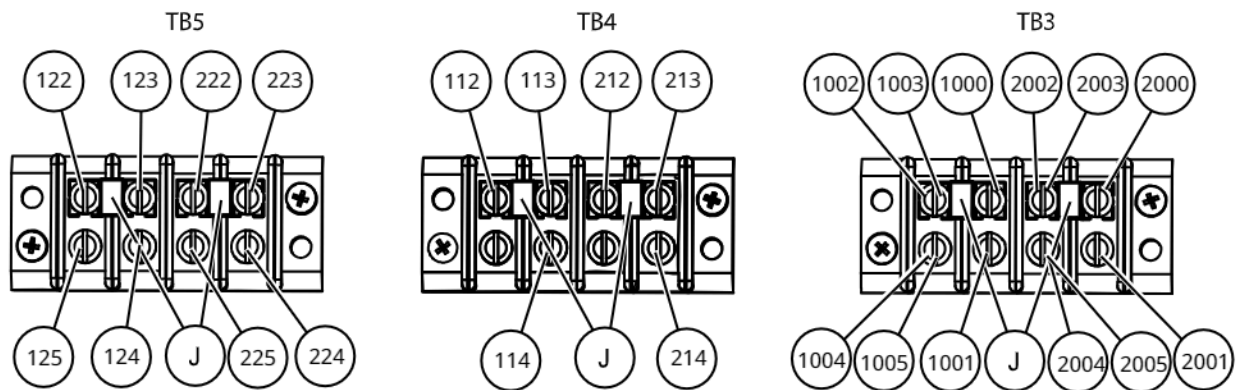
ELEC-70012 ED3 208-240V 2023

ED3-48 Terminal Block Wire Connections

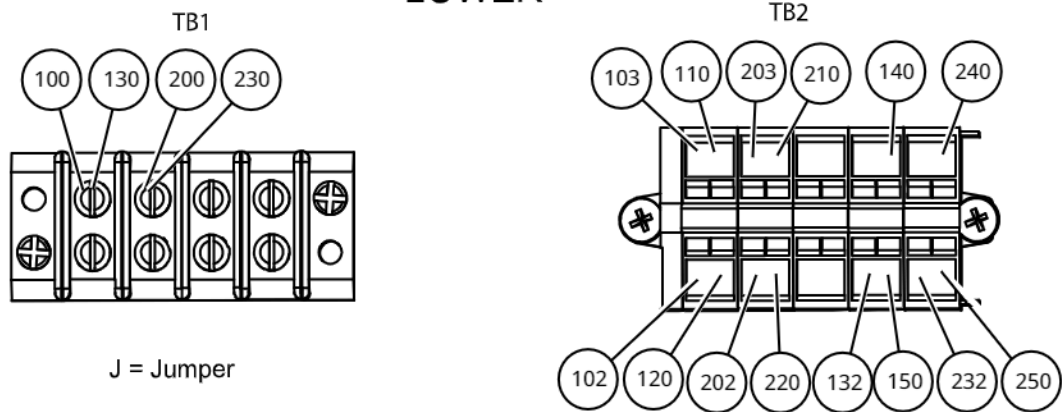


ED3-72 Terminal Block Wire Connections

UPPER



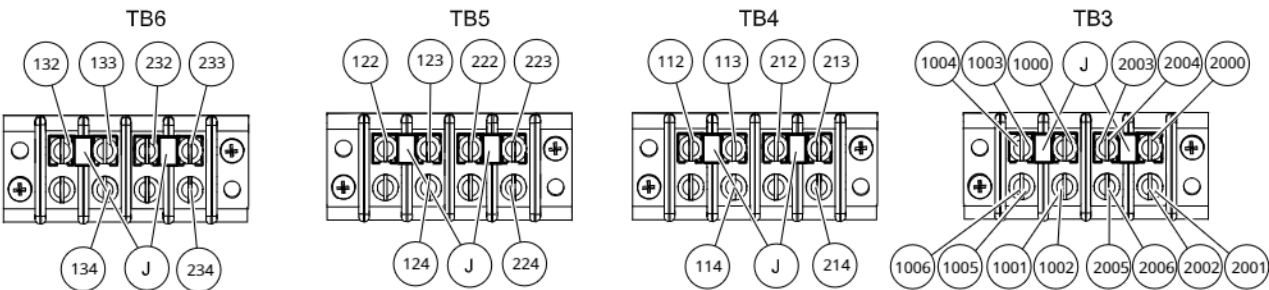
LOWER



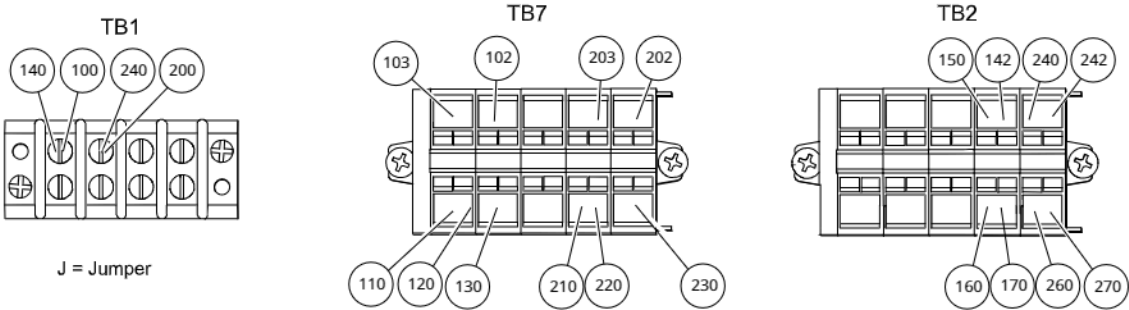
J = Jumper

ED3-96 Terminal Block Wire Connections

UPPER



LOWER





ALTO-SHAAM.

Menomonee Falls, WI U.S.A.

Phone 800-558-8744 | +1-262-251-3800 | alto-shaam.com

ASIA

Shanghai, China
Phone +86-21-6173-0336

AUSTRALIA

Brisbane, Queensland
Phone 800-558-8744

CANADA

Concord, Ontario Canada
Toll Free Phone 866-577-4484
Phone +1-905-660-6781

FRANCE

Aix en Provence, France
Phone +33(0)4-88-78-21-73

GMBH

Bochum, Germany
Phone +49 (0)234 298798-0

ITALY

Padua, Italy
Phone +39 3476073504

INDIA

Pune, India
Phone +91 9657516999

MEXICO

Phone +52 1 477-717-3108

MIDDLE EAST & AFRICA

Dubai, UAE
Phone +971-4-321-9712

CENTRAL & SOUTH AMERICA

Miami, FL USA
Phone +1 954-655-5727