ALTO-SHAAM

Service Manual

Converge®

Deluxe Control
Simple Control

CMC-H2H
CMC-H3H

Structured Air Technology™

MN-47241-EN

REV.03
07/23

EN

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Manufacturer's Information

Trademarks

All trademarks referenced in this documentation are the property of their respective owners.

Manufacturer

Alto-Shaam, Inc.

P.O. Box 450

W164 N9221 Water Street

Menomonee Falls, WI 53052

Original instructions

The content in this manual is written in American English.

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.

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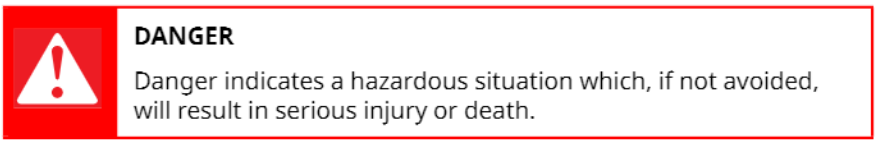
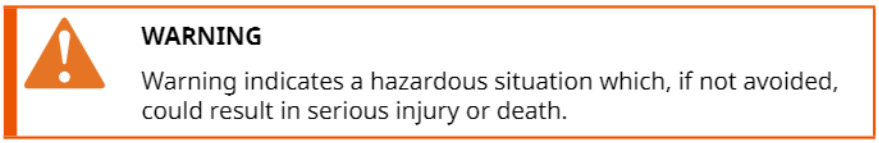
The Meaning of Signal Words

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.



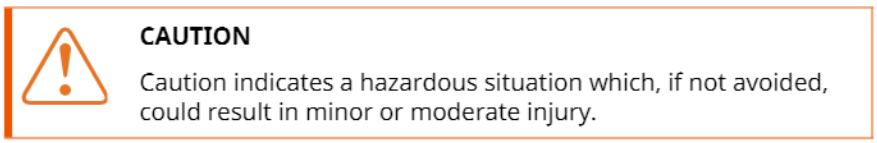
DANGER

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



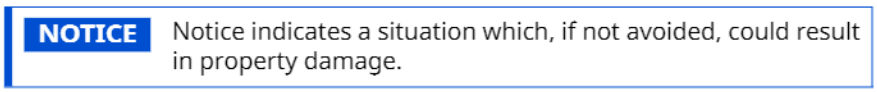
WARNING

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

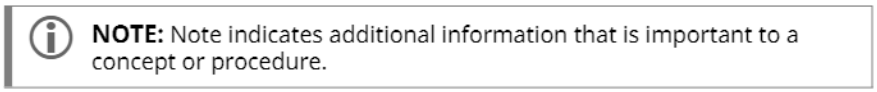


CAUTION

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 attempt to service the appliance or its cord and plug.
- 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 or cooking.
- 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.
- Use caution when using the appliance. Floors adjacent to the appliance may become slippery.
- Do not cover or block any of the openings of this appliance.
- Do not cover racks or any other part of this appliance with metal foil.
- Do not use this appliance near water such as a sink, in a wet location, near a swimming pool, or similar locations.
- Do not unplug or disconnect the appliance immediately after cooking. The cooling fans must stay on to protect electrical components.

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 oven is 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 or water jet 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.
- Do not remove the top cover or side panels. There are no user-serviceable components inside.

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

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 Turn On and Turn Off the Oven (Deluxe Control)

Before you begin

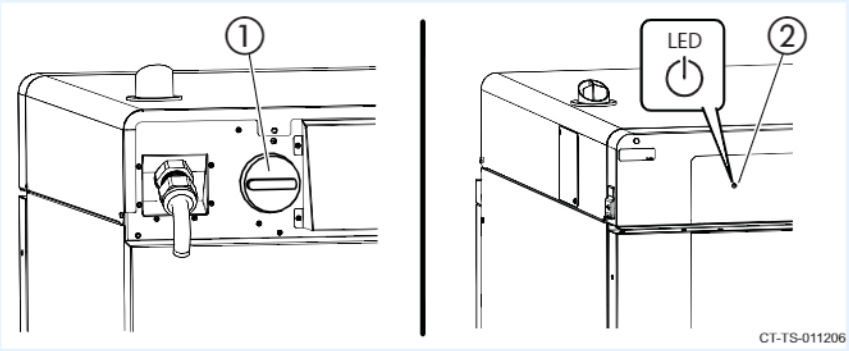
The oven must be connected to electric power.

Turning on the oven

To turn on the oven, do the following.

Step	Action
1.	**Set** the main disconnect switch ① to the ON position. **Touch** the ON/OFF button ②.

> **NOTE:** The main disconnect switch is meant to be used during service operations. For every day operation, it may be left in the ON position.

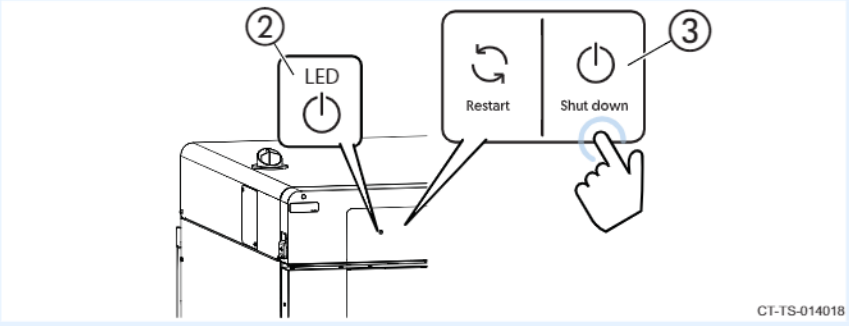


The oven is now on.

Turning off the oven

To turn off the oven, do the following.

Step	Action
2.	**Touch** and hold the ON/OFF button ② until the "Shut Down Options" screen displays. **Touch** "Shut down" ③. The oven activates the blowers for the cool-down process. The cool-down process is complete when the oven deactivates the blowers and the display screen turns off.



The oven is now off.

How to Lock and Unlock the Screen (Deluxe Control)

Before you begin

The oven is turned on.

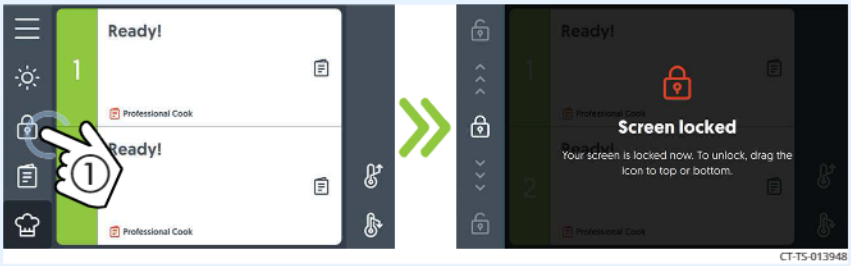
Background

The screen can be locked to prevent changes being made during the cooking process.

Procedure

To lock and unlock the screen, do the following.

Step	Action
1.	**Touch** the lock icon ①. The screen is now locked.



2.	To unlock the screen, **touch and hold** the lock icon ① and drag it to the top or bottom of the screen.

Result

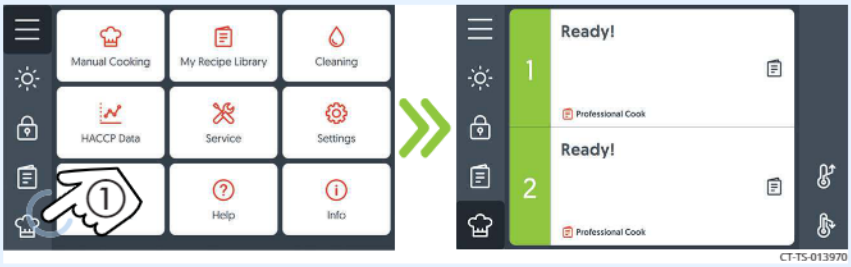
The screen is now locked or unlocked.

How to Cool Down the Oven (Deluxe Control)

Procedure

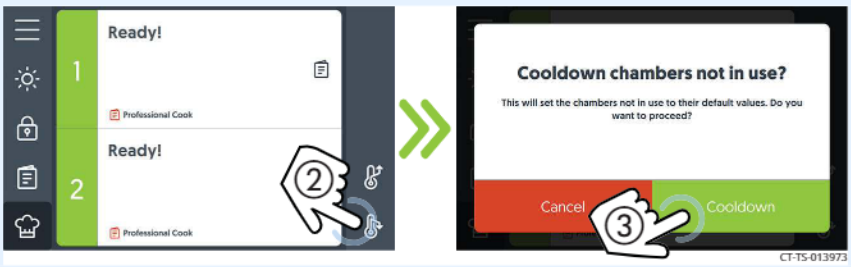
To cool down the oven, do the following.

Step	Action
1.	**Touch** the manual cook icon ①.



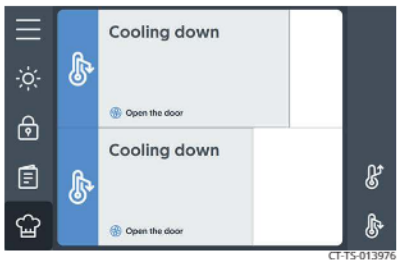
2.	**Touch** the cooldown icon ②. The cooldown-all-chambers screen displays. **Touch** "Cooldown" ③. **Open** the door.

> **NOTE:** The oven activates the blowers for the cooldown process. The oven deactivates the blowers when the cooldown process is complete.



Cooling down progress bars

Above each chamber on the screen, progress bars indicate each chamber's progress towards reaching its cool down temperature.



Result

The oven is now cooled down.

How to View Oven Information (Deluxe Control)

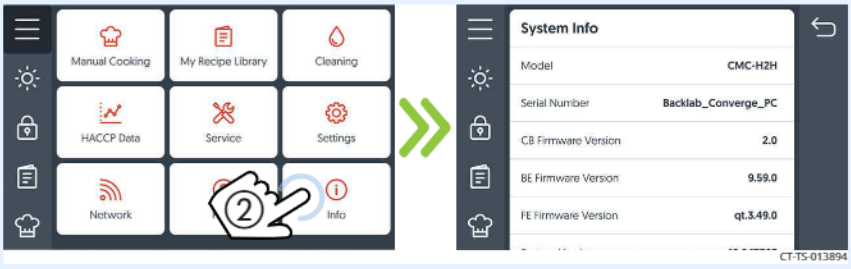
Background

This procedure is to be done through the touchscreen on the Deluxe control, not through the ChefLinc™ oven management system.

The oven information screen shows the system info, serial number, network status, and connection settings.

Procedure

To view oven information, do the following.

Step	Action
1.	**Touch** the menu icon ①. The menu screen displays. 
2.	**Touch** the "Info" icon ②. The "System Info" screen displays. **Scroll** to view the oven model, serial number, system software, network status, and cleaning timer. 

Result

The oven's information has been viewed.

How to Calibrate the Temperature Probe (Deluxe Control)

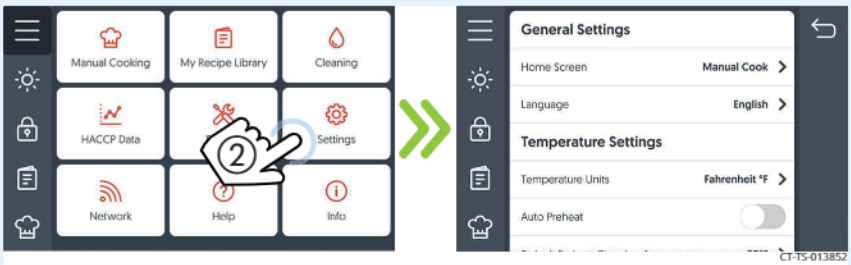
Before you begin

Make sure:

- The oven is on, but not in cooking or holding mode.
- You have a thermometer.
- You have a container filled with ice and water.

Procedure

To calibrate the probe, do the following.

Step	Action
1.	**Insert** the probe and the thermometer in a container of ice water and allow the temperature to settle to 32°F (0°C).
2.	**Touch** the menu icon ①. The menu screen displays. 
3.	**Touch** the "Settings" icon ②. The "General Settings" screen displays. 

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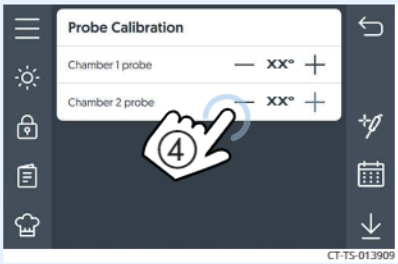
4. **Scroll** ③ until “Probe Offsets” displays. **Touch** the “Calibrate Probes” ④ setting.

5. **Compare** the probe temperature reading against 32°F (0°C).

   Touch the “+” or “–” symbols until the temperature displayed is 32°F (0°C) ⑤.
   Touch the check mark ⑥.



6. **Remove** the probe from the ice water.

7. If the oven has multiple probes, repeat this procedure until all probes are calibrated.

Result

The probe is now calibrated.

How to Turn On and Turn Off the Oven (Simple Control)

Before you begin

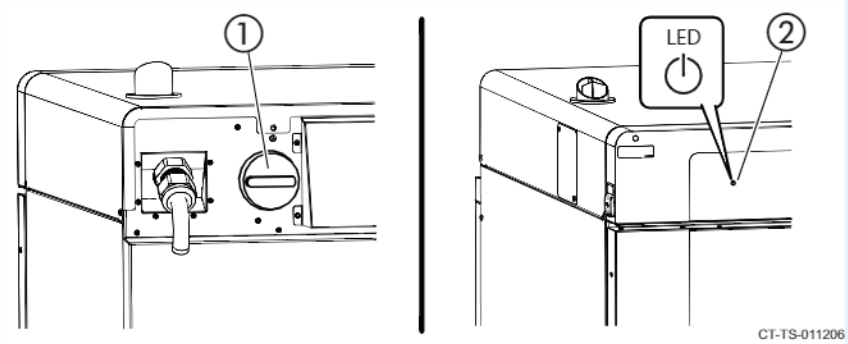
The oven must be connected to electric power.

Turning on the oven

To turn on the oven, do the following.

Step	Action
1.	**Set** the main disconnect switch ① to the ON position. **Press** the ON/OFF button ②. The LED on the button illuminates green.

> **NOTE:** The main disconnect switch is meant to be used during service operations. For every day operation, it may be left in the ON position.



The oven is now on.

Turning off the oven

To turn off the oven, do the following.

2.	**Press and hold** the ON/OFF button until the LED above the ON/OFF button illuminates red. The oven activates the blowers for the cool-down process. The screen displays a cool-down prompt and asks for the door to be opened. The oven will deactivate the blowers when the cool-down process is complete.

The oven is now off.

How to Lock and Unlock the Screen (Simple Control)

Before you begin

The oven is turned on.

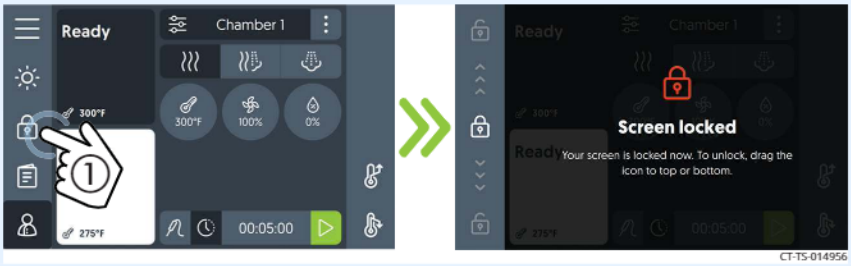
Background

The screen can be locked to prevent changes being made during the cooking process.

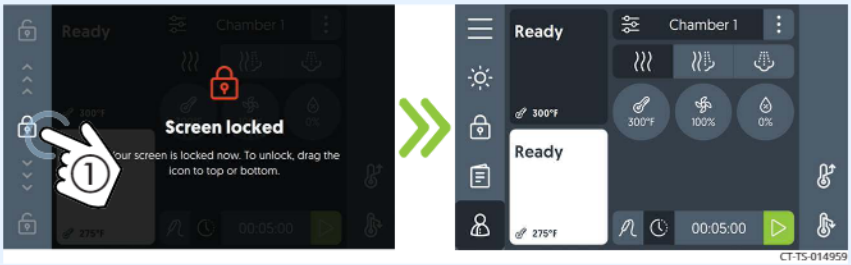
Procedure

To lock and unlock the screen, do the following.

Step	Action
1.	**Touch** the lock icon ①. The screen is now locked.



2.	To unlock the screen, **touch and hold** the lock icon and drag it to the top or bottom of the screen.



Result

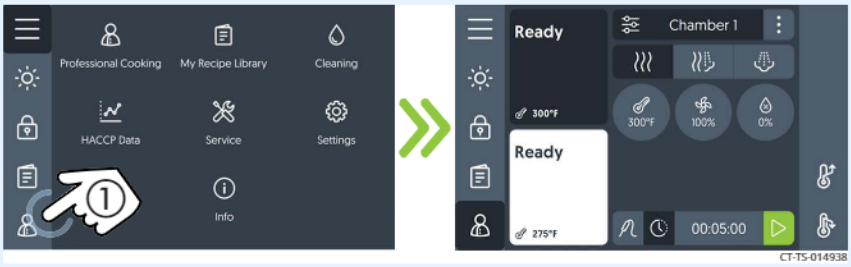
The screen is now locked or unlocked.

How to Cool Down the Oven (Simple Control)

Procedure

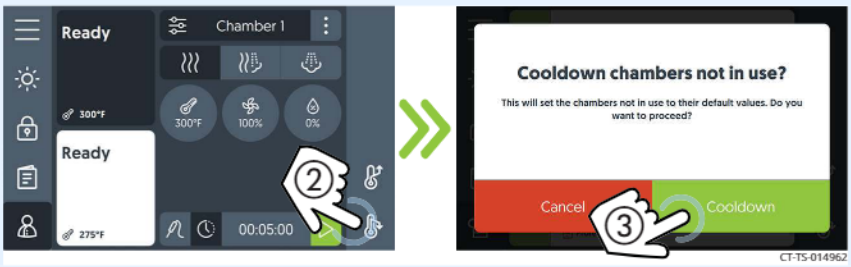
To cool down the oven, do the following.

Step	Action
1.	**Touch** the professional cook icon ①.



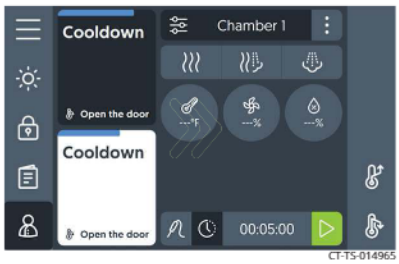
2.	**Touch** the cooldown icon ②. The cooldown all chambers screen displays. **Touch** "Cooldown" ③. **Open** the door.

> **NOTE:** The oven activates the blowers for the cooldown process. The oven deactivates the blowers when the cooldown process is complete.



Cooling down progress bars

Above each chamber on the screen, blue progress bars indicate each chamber's progress towards reaching its cool down temperature.



Result

The oven is now cooled down.

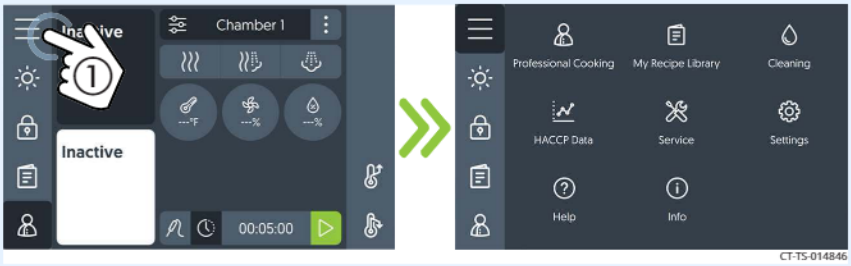
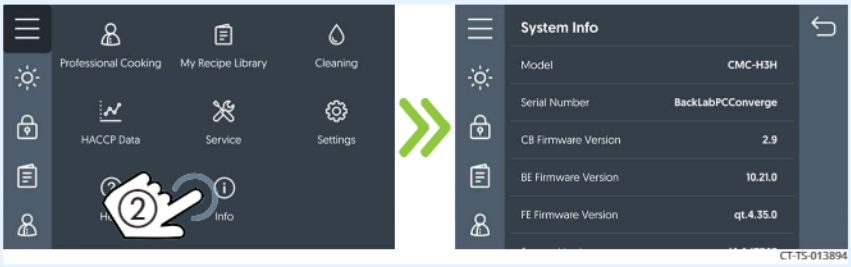
How to View Oven Information (Simple Control)

Background

The oven information screen shows the system info, serial number, network status, and connection settings.

Procedure

To view oven information, do the following.

Step	Action
1.	**Touch** the menu icon ①. The menu screen displays. 
2.	**Touch** the "Info" page icon ②. The "System Info" screen displays. **Scroll** to view the oven model, serial number, system software, network status, and cleaning timer. 

Result

The oven's information has been viewed.

How to Calibrate the Temperature Probe (Simple Control)

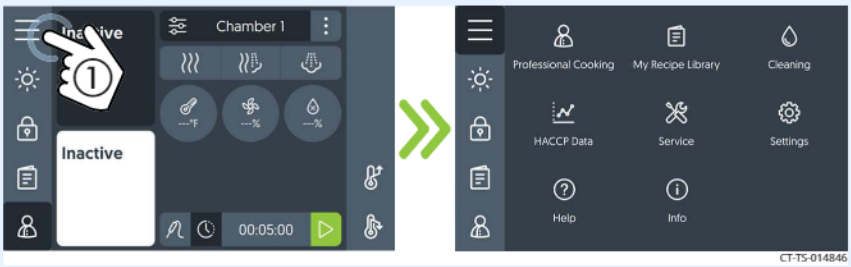
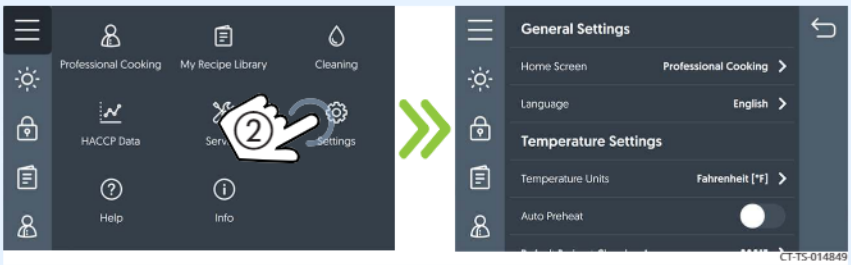
Before you begin

Make sure:

- The oven is on, but not in cooking or holding mode.
- You have a thermometer.
- You have a container filled with ice and water.

Procedure

To calibrate the probe, do the following.

Step	Action
1.	Place the probe and the thermometer in a container of ice water and allow the temperature to settle to 32°F (0°C).
2.	**Touch** the menu icon ①. The menu screen displays. 
3.	**Touch** the "Settings" icon ②. The "General Settings" screen displays. 

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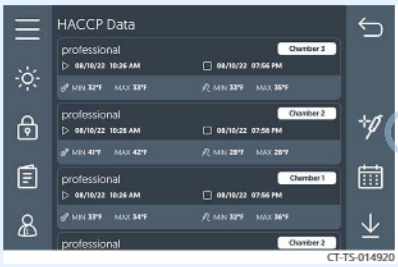
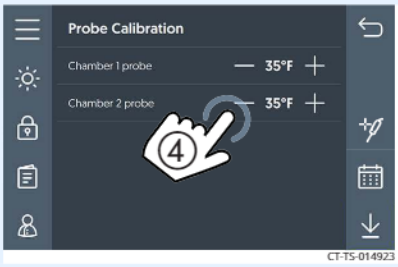
4. **Scroll** ③ until "Probe Offsets" displays. **Touch** the "Calibrate Probes" ④ setting.



5. **Compare** the probe temperature reading against 32°F (0°C).

   Touch the "+" or "–" symbols until the temperature displayed is 32°F (0°C) ⑤.
   Touch the check mark ⑥.



6. **Remove** the probe from the ice water.

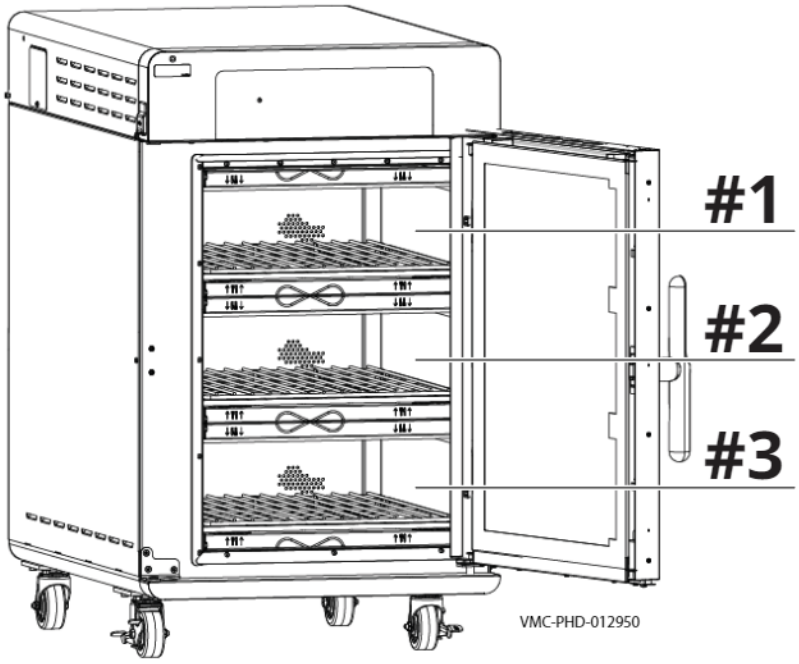
7. If the oven has multiple probes, repeat this procedure until all probes are calibrated.

Result

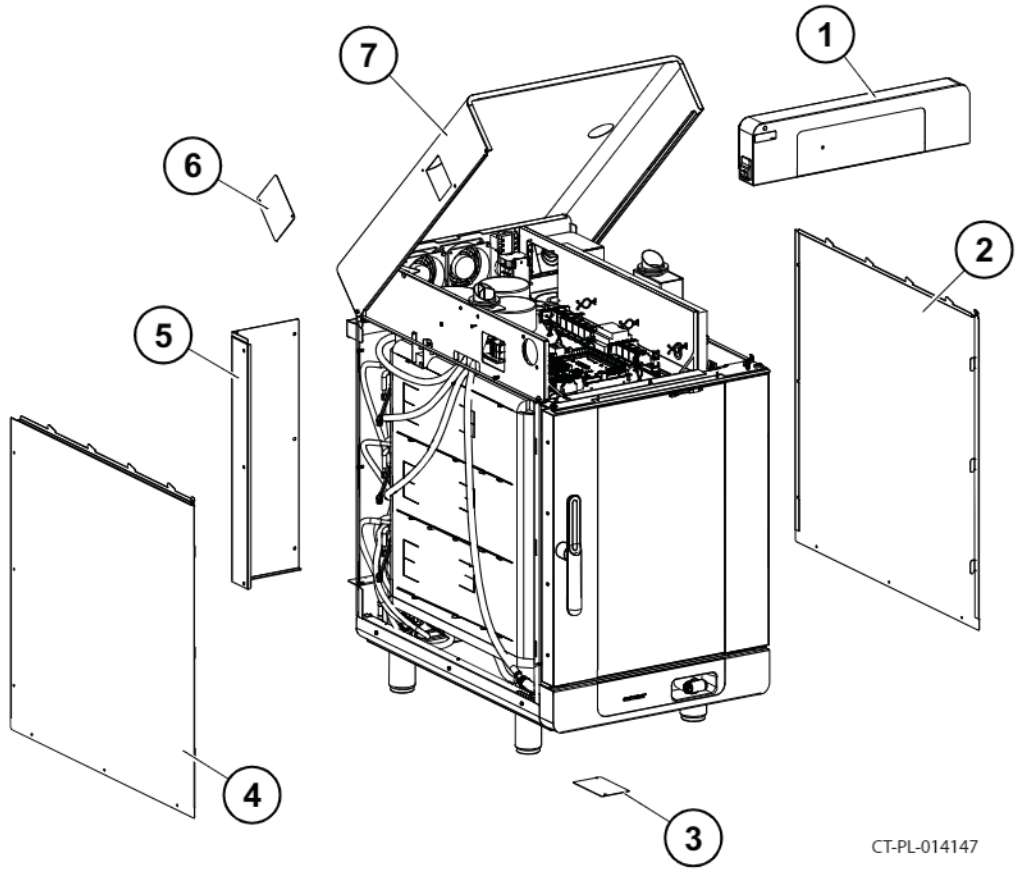
The probe is now calibrated.

Chamber Identification

Components will be identified in accordance with the chamber numbering illustrated here.

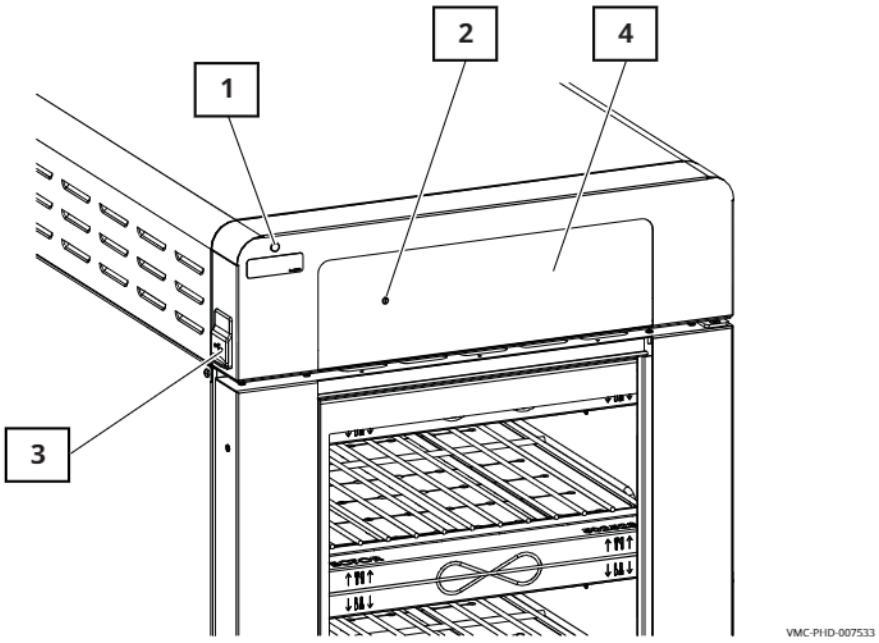


Service Panels Identification



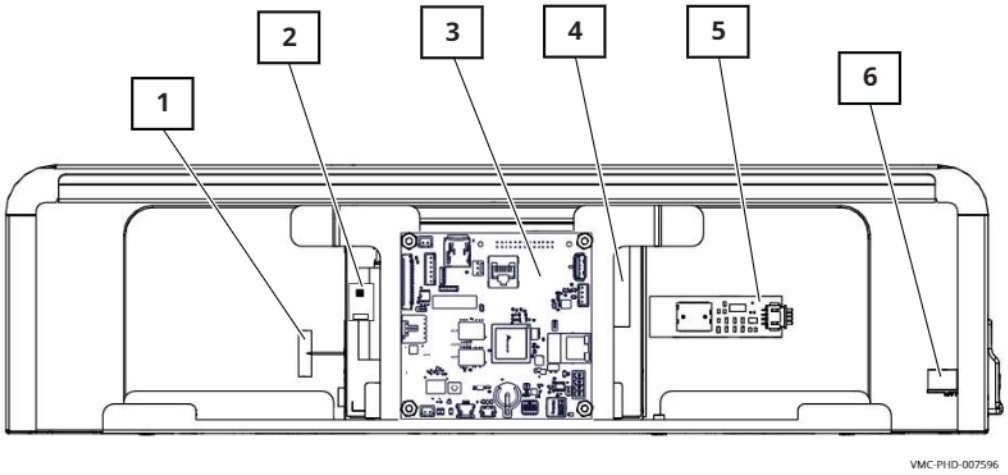
Ref.	Description	Ref.	Description
1	Control panel	**5**	Convection heating elements panel
2	Right side panel	**6**	Circuit breakers 4 and 5 panel
3	Cleaning pump panel	**7**	Top panel
4	Left side panel	—	—

Front Panel Component Identification



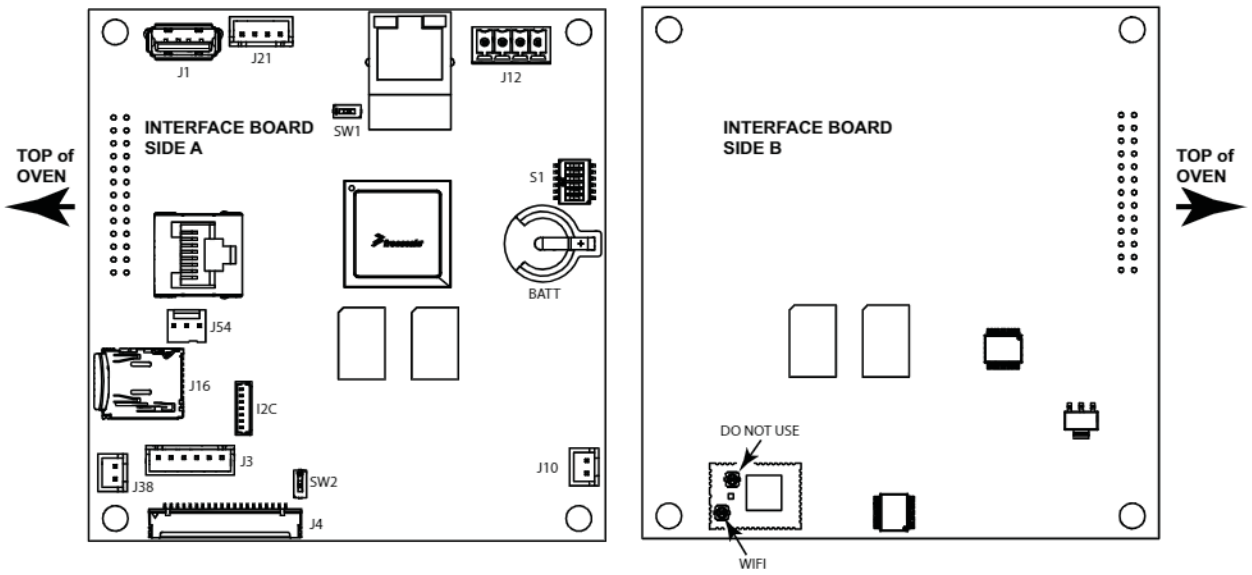
Ref.	Description
1	Check fans indicator light
2	ON/OFF button
3	USB port
4	Control panel display

Control Panel Component Identification



Ref.	Description
1	WIFI antenna
2	Capacitive touch controller board (Not serviceable)
3	Interface board
4	Liquid Crystal Display (LCD) (Not serviceable)
5	ON/OFF board
6	USB port

Interface Board



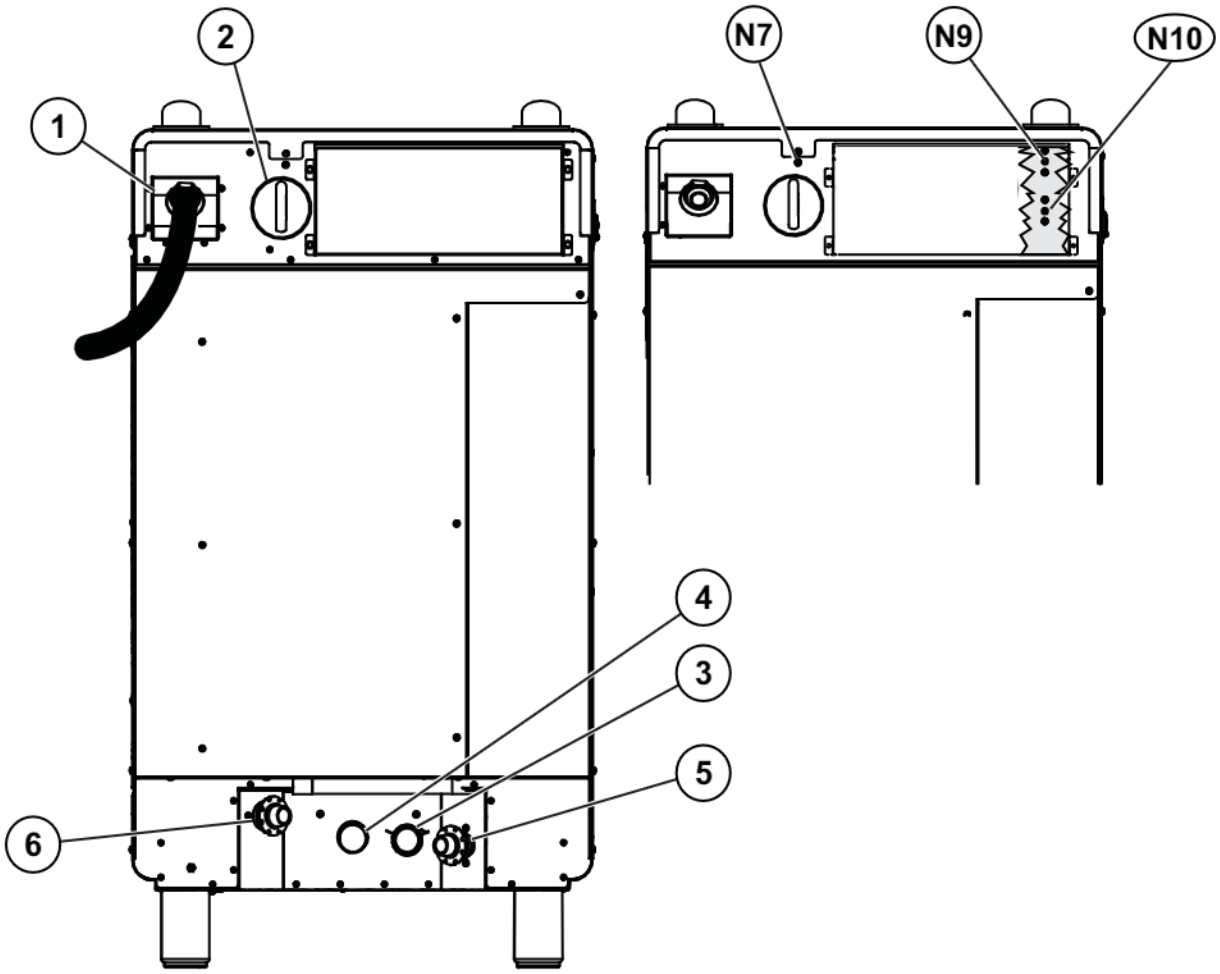
VMC-TS-008222

Ref.	Description
BATT	Clock battery
I2C	Capacitive touch cable
J1	USB connections
J3	Display back light
J4	LCD interface
J10	Speaker
J12	12 VDC power
J13	Ethernet
J16	8 GB micro SD card
J21	ON/OFF board
J38	Speaker
J54	RS 485/232 LVIO
S1	DIP switches (see table)
SW1	DIP switch (off)
SW2	DIP switch (off)

Product	Screen Orientation	SW 6	SW 5	SW 4	SW 3	SW 2	SW 1
Vector H	Landscape	OFF	OFF	OFF	OFF	OFF	OFF
Cook & Hold	Landscape	OFF	OFF	ON	OFF	OFF	OFF
Vector F Electric	Portrait	OFF	ON	ON	OFF	OFF	ON
Vector F Gas	Portrait	OFF	ON	ON	ON	OFF	ON
Arby's	Landscape	ON	OFF	ON	OFF	ON	OFF
Converge DX	Landscape	ON	OFF	OFF	OFF	OFF	OFF
Converge SX	Landscape	ON	OFF	OFF	OFF	ON	OFF
Prodigi Pro Electric	Portrait	OFF	OFF	OFF	ON	OFF	ON
Prodigi Pro Gas	Portrait	ON	OFF	ON	ON	OFF	ON
Prodigi Classic Elect	Portrait	OFF	OFF	OFF	ON	ON	ON
Prodigi Classic Gas	Portrait	ON	OFF	ON	ON	ON	ON

AS-PHD-014227

Rear Panel Components Identification

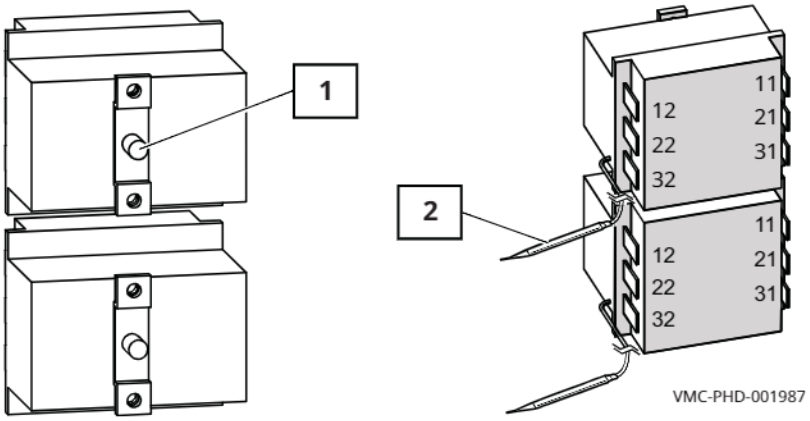


Ref.	Description	Ref.	Description
1	Electric power cord connection	**6**	Untreated water connection Y2 Condensate water Y5 Hose reel
2	Main disconnect switch	**N7**	Chamber 1 reset switch
3	Manual drain	**N9**	Chamber 2 reset switch
4	Oven drain	**N10**	Chamber 3 reset switch
5	Treated water connection Y1 Steam injection	**-**	---

High Limit Switch

Resettable

Contacts open at 572°F (300°C)



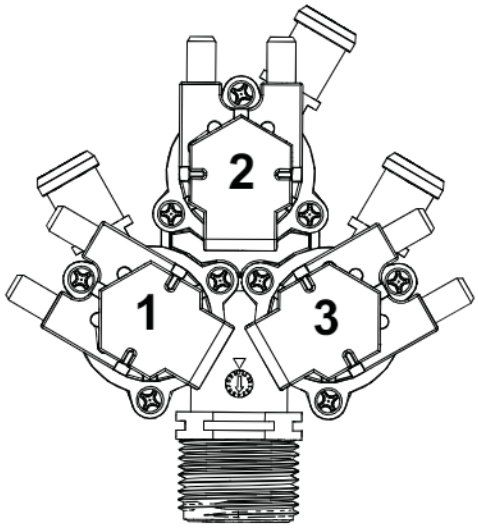
Ref.	Description
1	Reset button
2	Temperature bulb

Fans

- Impedance protected
- 240V
- 581 Ohm

Water Solenoid — Steam

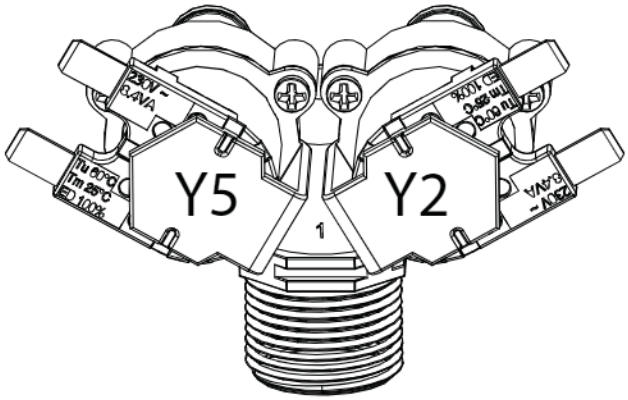
- Y1 Water Solenoid



CT-PHD-014200

Water Solenoid — Clean/Rinse and Hand Shower

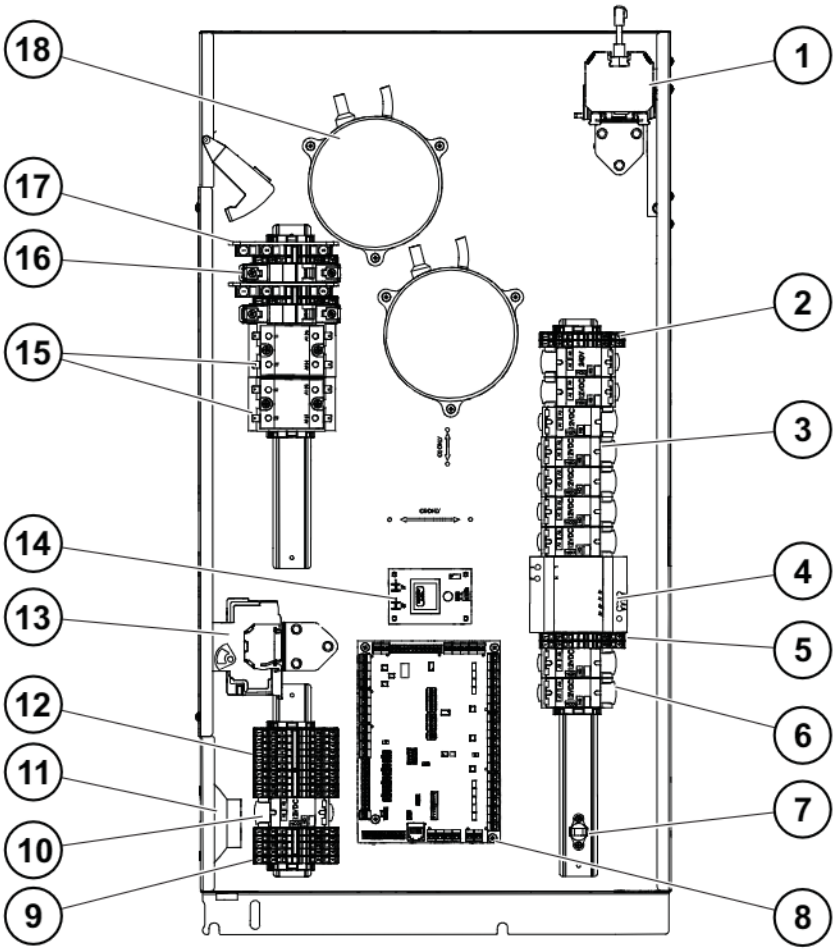
- Y2 Water
- Y5 Hand shower



CT-PHD-014198

Top Panel Components—CMC-H2H

208-240V, 1PH

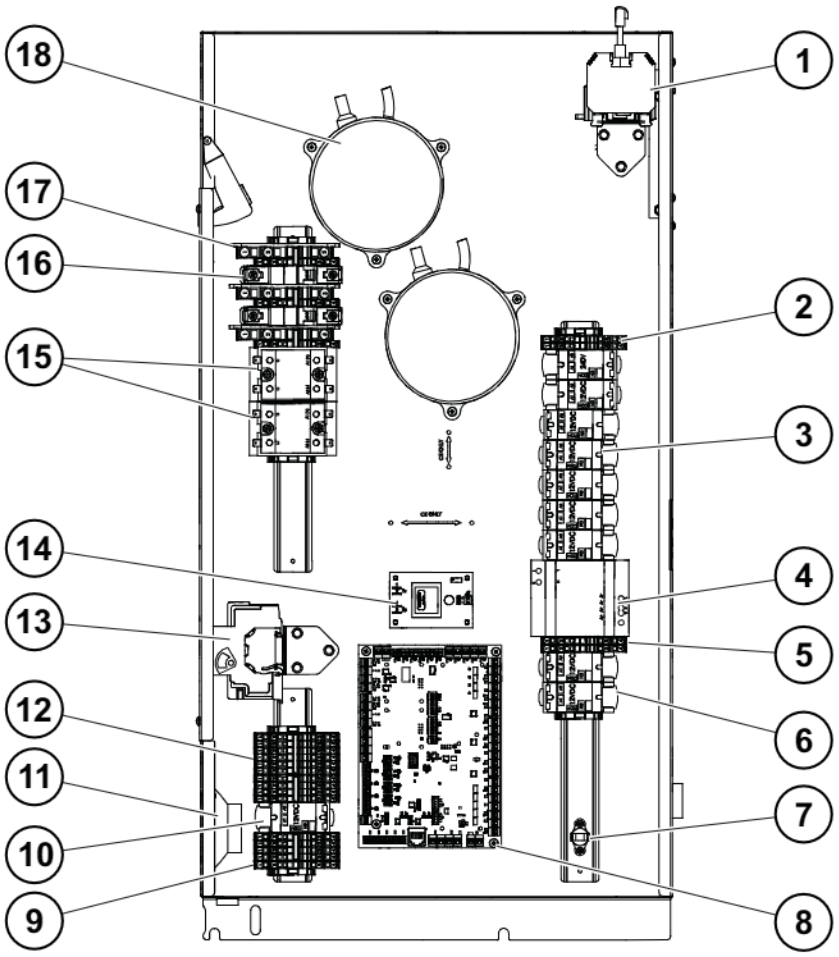


CT-PHD-014153

Ref.	Description	Ref.	Description
1	Disconnect switch	10	Relay
2	Terminal blocks	11	Speaker
3	Relays	12	Terminal blocks
4	DC Power supply	13	Circuit breakers
5	Terminal blocks	14	Voltage monitor
6	Relays	15	Solid State Relay (SSR)
7	Check fans switch	16	Circuit breakers
8	Control board	17	Terminal block
9	Terminal blocks	18	Variable Frequency Drive (VFD)

Top Panel Components—CMC-H2H

208-240V, 3PH

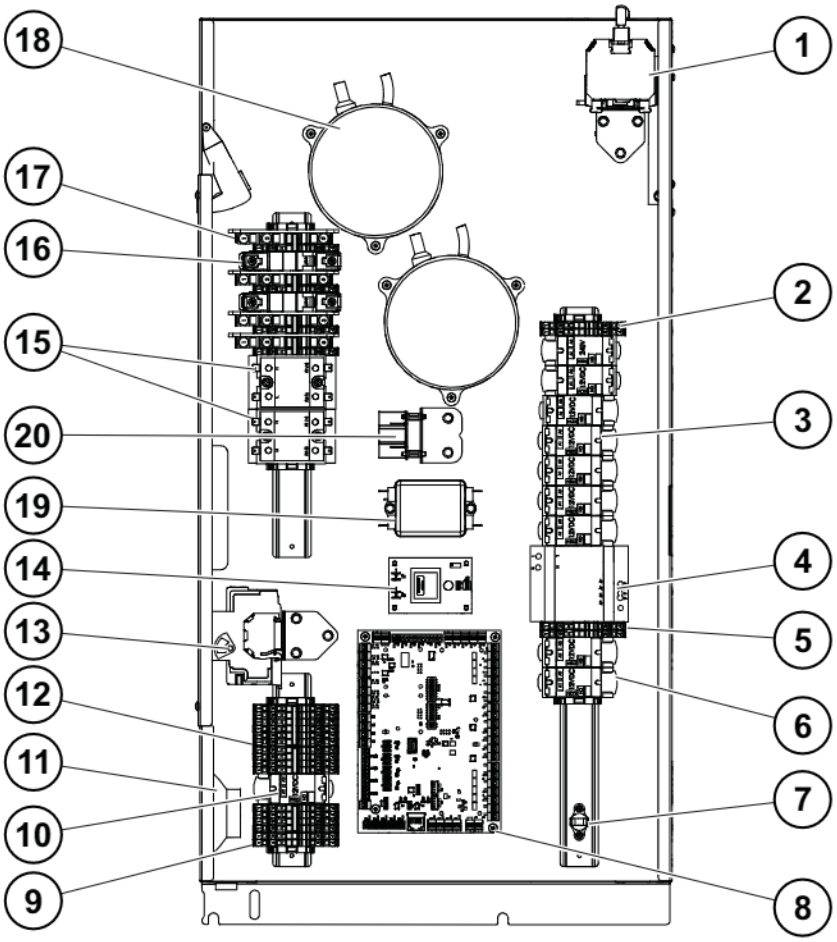


CT-PHD-014155

Ref.	Description	Ref.	Description
1	Disconnect switch	10	Relay
2	Terminal blocks	11	Speaker
3	Relays	12	Terminal blocks
4	DC Power supply	13	Circuit breakers
5	Terminal blocks	14	Voltage monitor
6	Relays	15	Solid State Relay (SSR)
7	Check fans switch	16	Circuit breakers
8	Control board	17	Terminal block
9	Terminal blocks	18	Variable Frequency Drive (VFD)

Top Panel Components—CMC-H2H

380-415V, 3PH

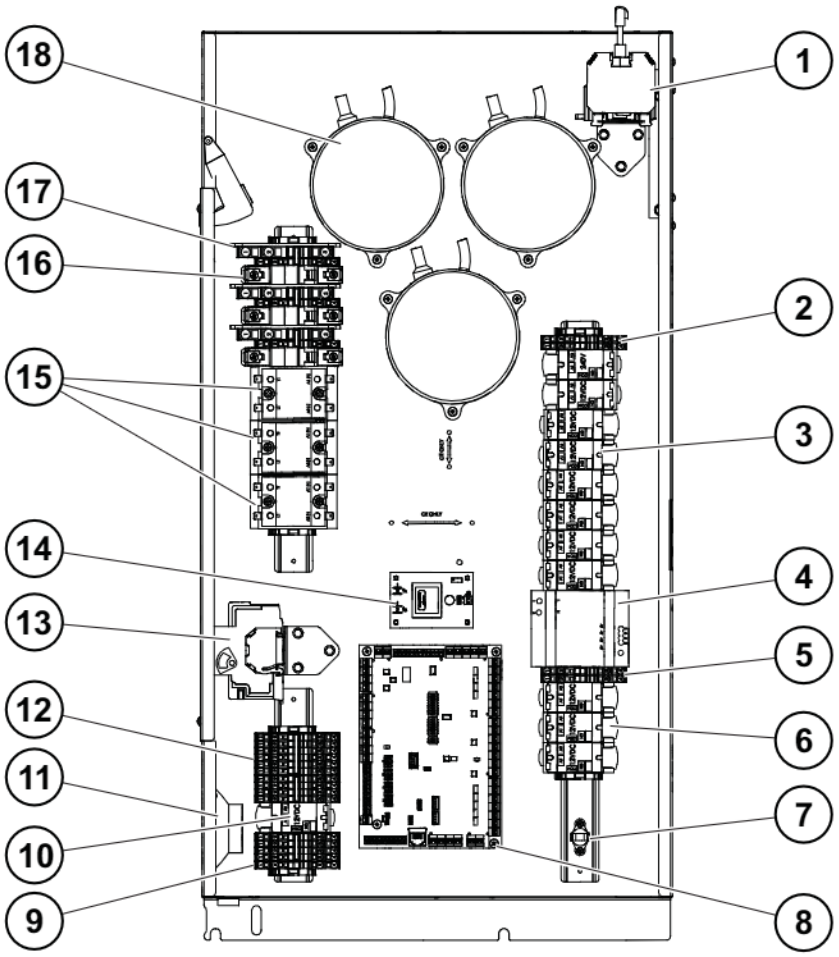


CT-PHD-014157

Ref.	Description	Ref.	Description
1	Disconnect switch	11	Speaker
2	Terminal blocks	12	Terminal blocks
3	Relays	13	Circuit breakers
4	DC Power supply	14	Voltage monitor
5	Terminal blocks	15	Solid State Relay (SSR)
6	Relays	16	Circuit breakers
7	Check fans switch	17	Terminal block
8	Control board	18	Variable Frequency Drive (VFD)
9	Terminal blocks	19	Line filter
10	Relay	20	WYE filter

Top Panel Components—CMC-H3H

208-240V, 3PH

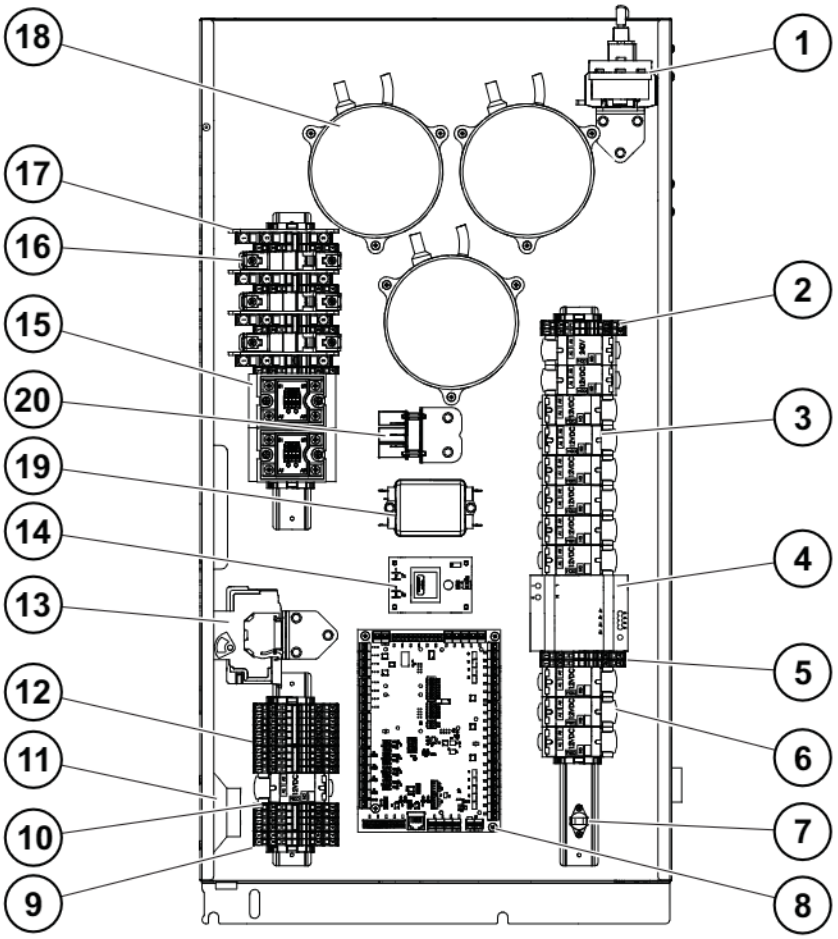


CT-PHD-014159

Ref.	Description	Ref.	Description
1	Disconnect switch	10	Relay
2	Terminal blocks	11	Speaker
3	Relays	12	Terminal blocks
4	DC Power supply	13	Circuit breakers
5	Terminal blocks	14	Voltage monitor
6	Relays	15	Solid State Relay (SSR)
7	Check fans switch	16	Circuit breakers
8	Control board	17	Terminal block
9	Terminal blocks	18	Variable Frequency Drive (VFD)

Top Panel Components—CMC-H3H

380-415V, 3PH

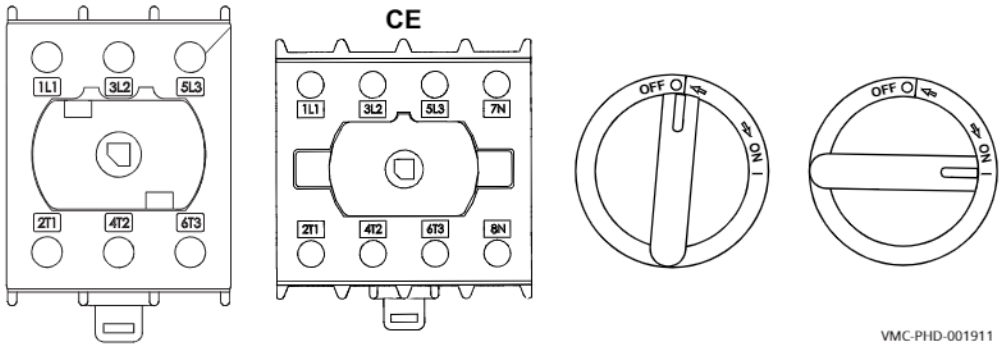


CT-PHD-014161

Ref.	Description	Ref.	Description
1	Disconnect switch	11	Speaker
2	Terminal blocks	12	Terminal blocks
3	Relays	13	Circuit breakers
4	DC Power supply	14	Circuit breakers
5	Terminal blocks	15	Voltage monitor
6	Relays	16	Solid State Relay (SSR)
7	Check fans switch	17	Terminal block
8	Control board	18	Variable Frequency Drive (VFD)
9	Terminal blocks	19	Line filter
10	Relay	20	WYE filter

Top Panel Components—All

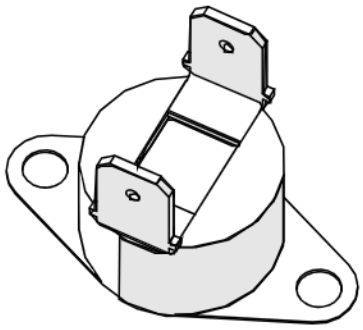
Main Disconnect Switch



VMC-PHD-001911

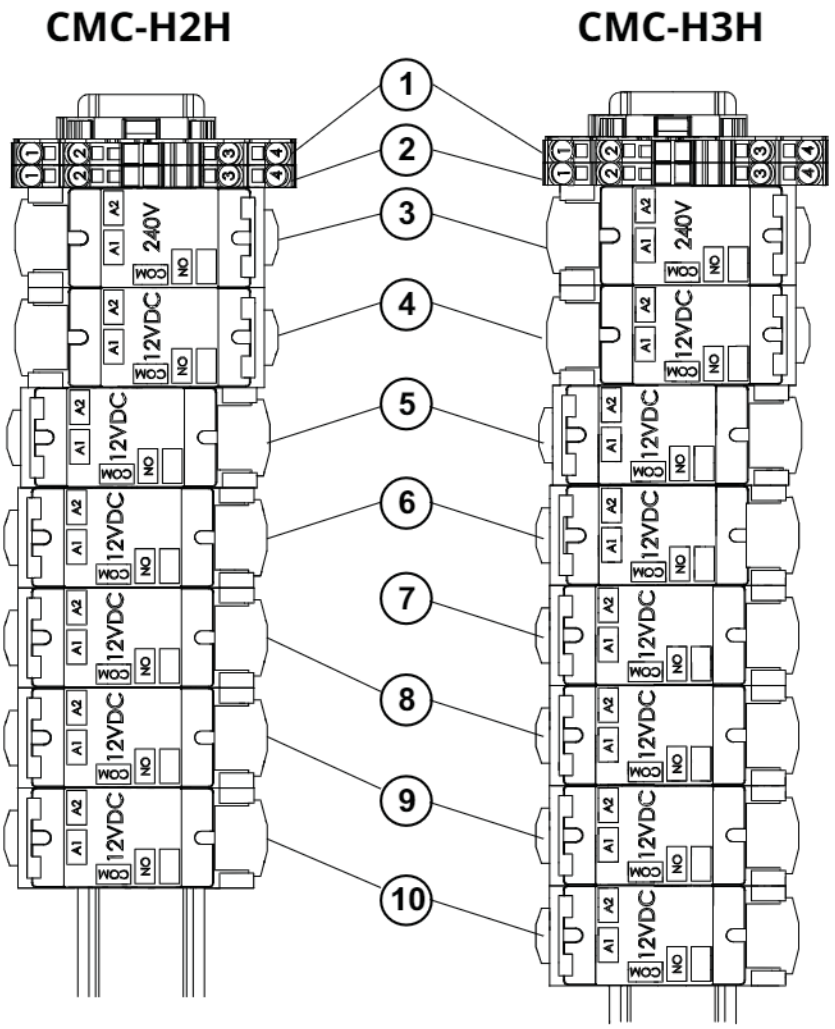
Check Fans Indicator Light Switch 1 of 2

Contacts close at or above 130°F (54°C)



VMC-PHD-001903

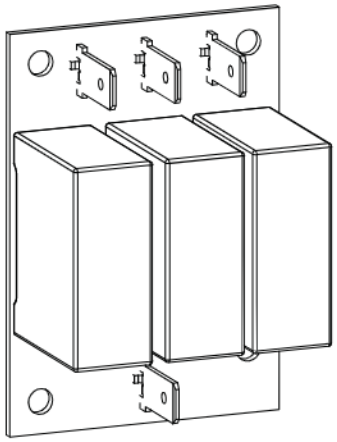
Terminal Blocks, Relays



CT-PHD-014163

Ref.	Description	Ref.	Description
1	TB61 — Check fans circuit	6	Steam valve relay (SV 2)
2	TB 60 — Check fans circuit	7	Steam valve relay (SV 3)
3	Check fans alarm	8	Cleaning pump relay
4	Catalytic converter relay (CC)	9	Water relay (H_2O)
5	Steam valve relay (SV 1)	10	Hand shower relay

Wye Filter (CE Only)



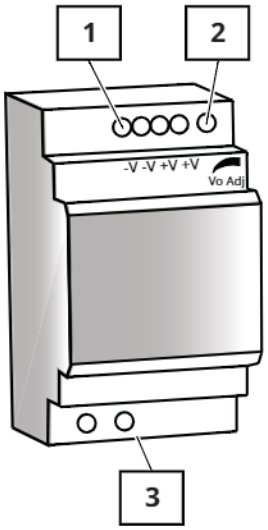
VMC-PHD-010734

Line Filter (CE Only)

VMC-PHD-010737

12VDC Power Supply

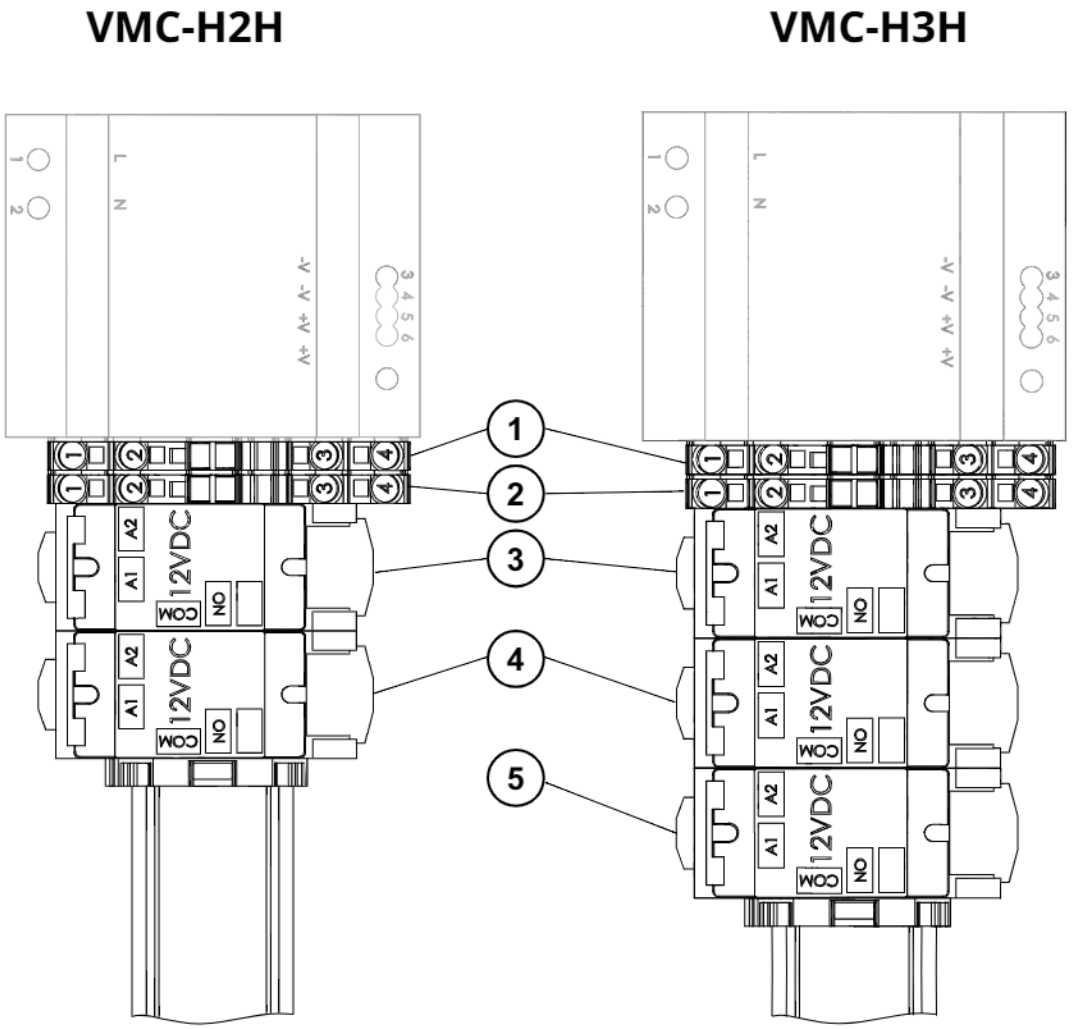
Supplies DC voltage to the control board and the ON/OFF switch.



VMC-PHD-001935

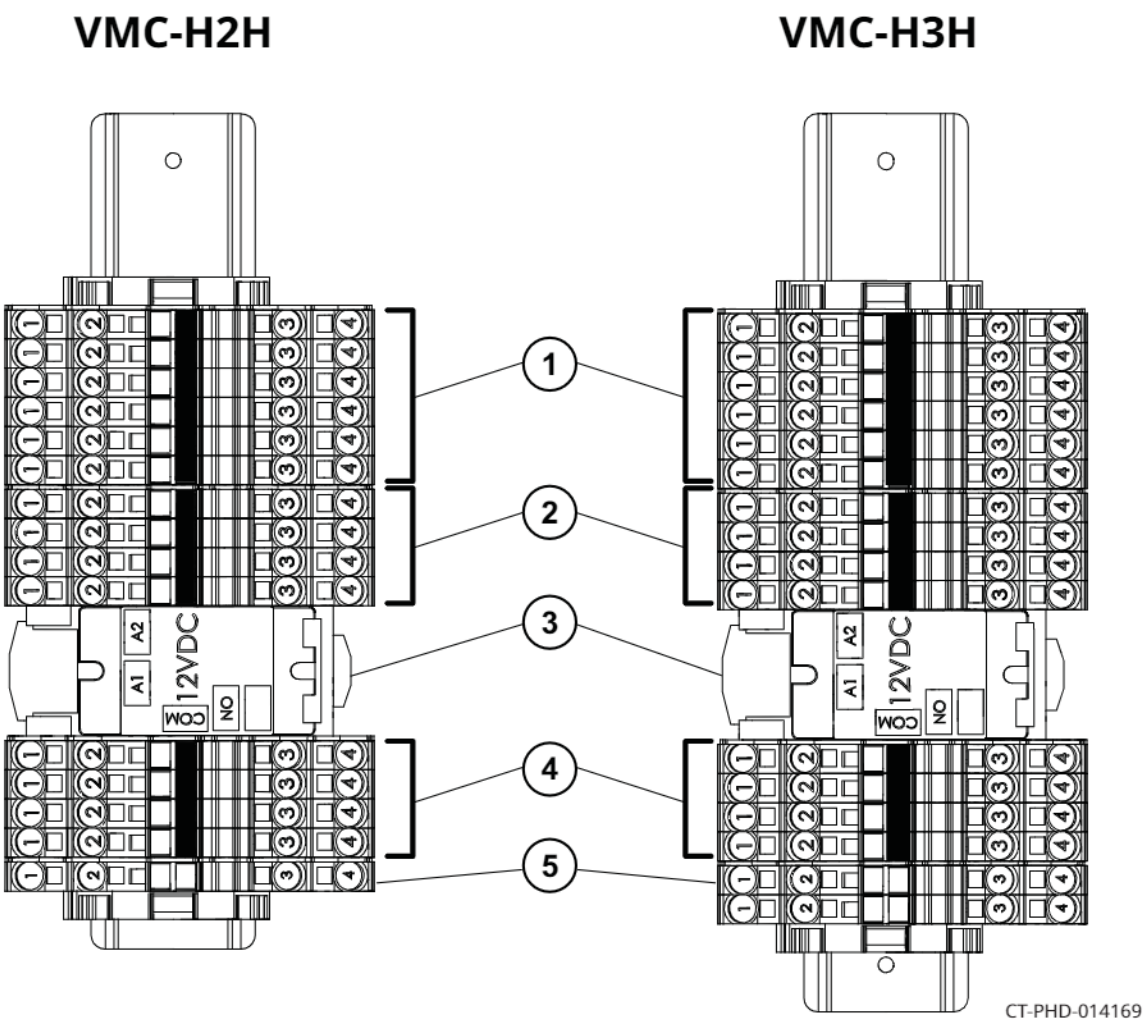
Ref.	Description
1	12VDC terminals
2	12VDC adjustment
3	240VAC terminals

Steam Element Relays



Ref.	Description
1	TB32 — DC –
2	TB 34 — DC +
3	Steam element relay (LWS 1)
4	Steam element relay (LWS 2)
5	Steam element relay (LWS 3)

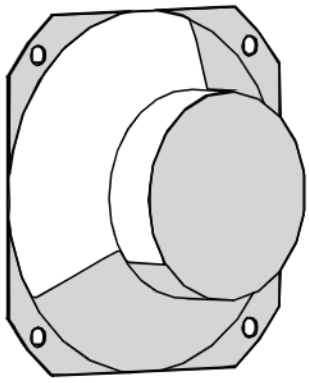
Terminal Blocks, Drive Relays



Ref.	Description
1	TB 16 — L1 after circuit breaker
2	TB 22 — L2/N after circuit
3	CV (VFDs) drive relay
4	TB 26 — L2/N CV drive relay
5	TB GND — ground

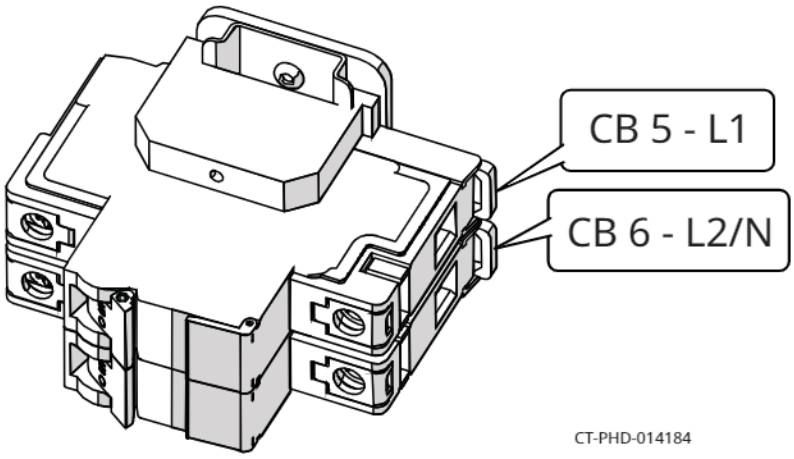
Speaker

8 Ohms



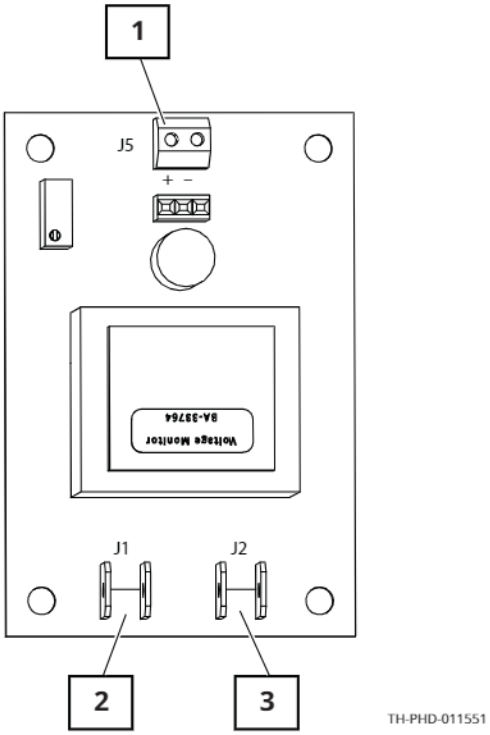
VMC-PHD-001995

Circuit breakers



CT-PHD-014184

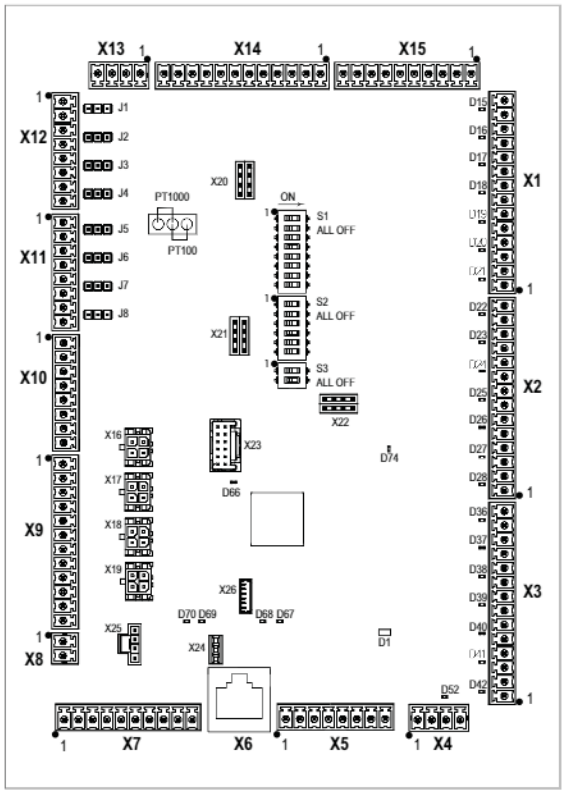
Voltage Monitor



Input (J1–J2)	DC Range (J5)
190	3.725
200	3.921
208	4.078
230	4.509
250	4.902

Ref.	Description
1	J5 DC output
2	J1 AC input
3	J2 AC input

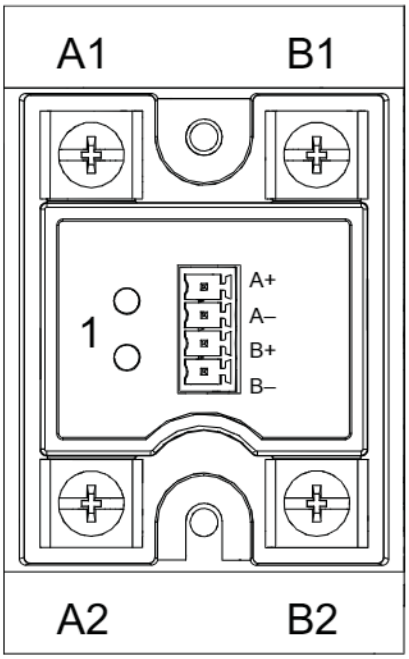
Control Board



CT-PHD-014167

Ref.	Pin(s)	Description	Ref.	Pin(s)	Description
D1	–	Green / Red LED 5V	X5	–	N7, N9, N10 High Limits
D15–D28	–	Yellow LEDs – Function Outputs	X6	–	CB – IB Communication
D36–D42	–	Yellow LEDs – Function Outputs	X7	–	Not Used
D52	–	Amber LED 12V at 5V Converter	X8	1–2	Voltage Monitor
D66	–	White Led - Heart Beat Blinking	X9	–	Not Used
D67-68	–	Blue LEDs – Blinking	X10	1–2	B3 – Water Temp Probe
D69-D70	–	Blue LEDs – Not Used	–	3–8	Not Used
D74	–	Green LED 3.3V	X11	1–6	P1, P2, P3 Product Temp Probes
J1–J8	–	RTD Input Jumpers 100W, 1000W	–	7–8	Not Used
X1	1–6	Steam Valve Relays (SV)	X12	1–6	C1, C2, C3 Chamber Temp Probes
–	7–8	Catalytic Converter Relay	–	7–8	Not Used
–	9–14	Solid State Relays (SSR)	X13	–	RGB Door Handle Lights
X2	1–2	CV (VFD) Drive Relay	X14	–	Not Used
–	3–4	Not Used	X15	1–2	Door Switch
–	5–10	Steam Element Relays (LWS)	–	3–4	Check Fans Relay
–	11–12	Cleaning Pump Relay	–	5–10	Steam Relief Valve Switches (SWT)
–	13–14	Water (H_2O) Relay	X16-X19	–	VFD Communication
X3	1–6	Chamber Lights	X20-X26	–	Not Used
–	7–8	Not Used	S1	–	DIP Switches – Option Select (All Off)
–	9–14	Steam Relief Valves (RV)	S2	–	DIP Switches – Product Select (All Off)
X4	–	12 VDC Supply	S3	–	DIP Switches – Address Select (All Off)

Solid State Relay — Duel (SSR)

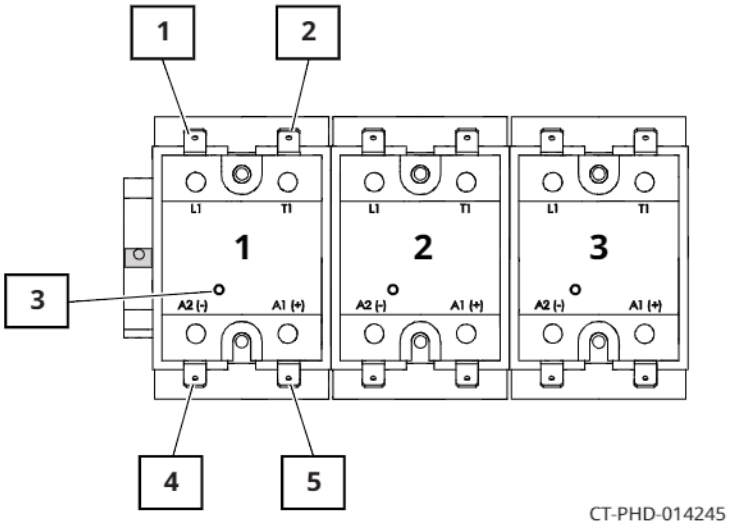


VMC-PHD-010722

Ref.	Description
A1	A1 terminal, AC line voltage into the SSR
A2	A2 terminal, AC load voltage to the heating element A
B1	B1 terminal, AC line voltage into the SSR
B2	B2 terminal, AC load voltage to heating element B
A+	A+ terminal, DC control voltage from the control board to the SSR
A-	A- terminal, DC control voltage from the control board to the SSR
B+	B+ terminal, DC control voltage from the control board to the SSR
B-	B+ terminal, DC control voltage from the control board to the SSR
1	Call for heat indicator

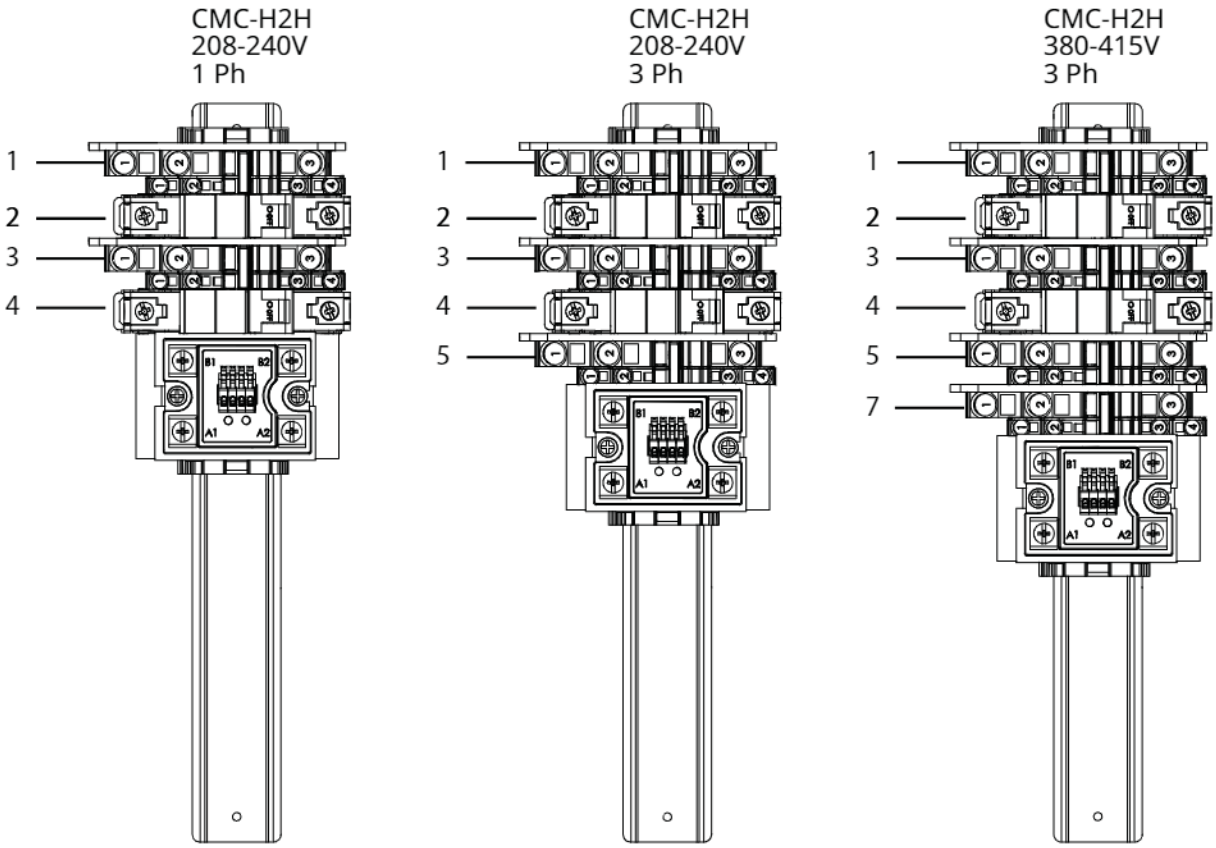
Solid State Relay — Single (SSR)

Heater element control. One SSR for each chamber.



Ref.	Description
1	L1 terminal, AC line voltage into the SSR
2	T1 terminal, AC load voltage to the heating element
3	Call for heat indicator light
4	A2 (-) terminal, DC control voltage from the control board to the SSR
5	A2 (+) terminal, DC control voltage from the control board to the SSR

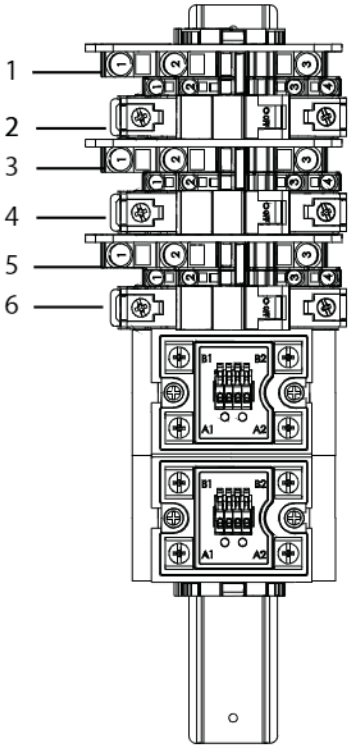
CMC-H2H Terminal Blocks & Circuit Breakers



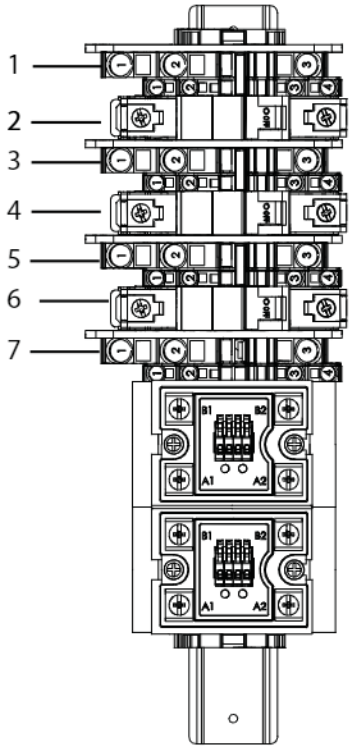
Ref.	Description
1	Terminal block 1
2	Circuit breaker 1
3	Terminal block 2
4	Circuit breaker 2
5	Terminal block 3
6	Circuit breaker 3
7	Terminal block 4

CMC-H3H Terminal Blocks & Circuit Breakers

CMC-H3H 208-240V
3 Ph



CMC-H3H 208-240V
3 Ph

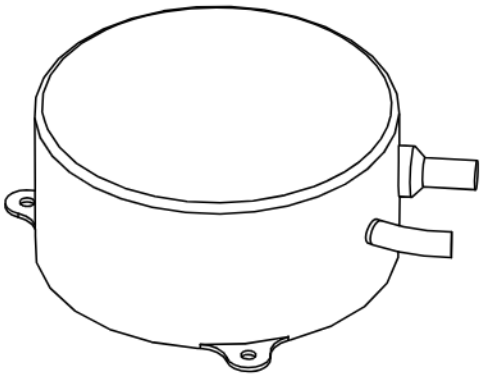


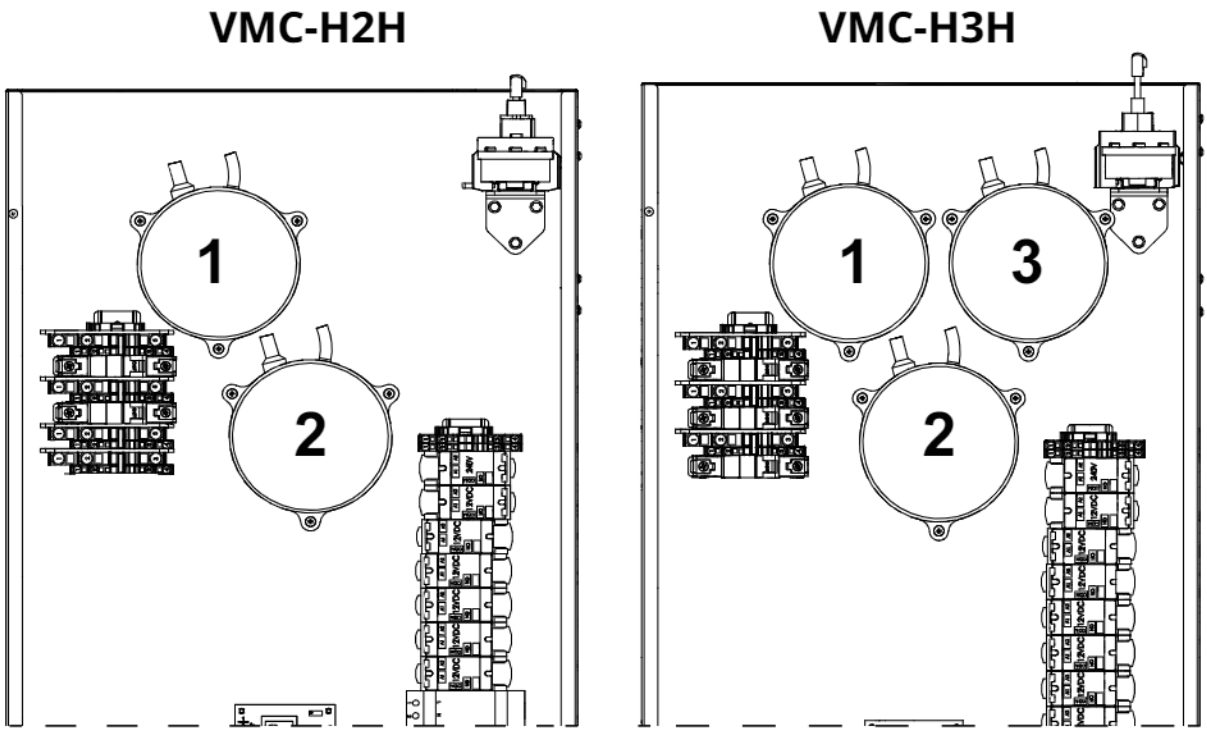
CT-PHD-014174

Ref.	Description
1	Terminal block 1
2	Circuit breaker 1
3	Terminal block 2
4	Circuit breaker 2
5	Terminal block 3
6	Circuit breaker 3
7	Terminal block 4

Variable Frequency Drive (VFD)

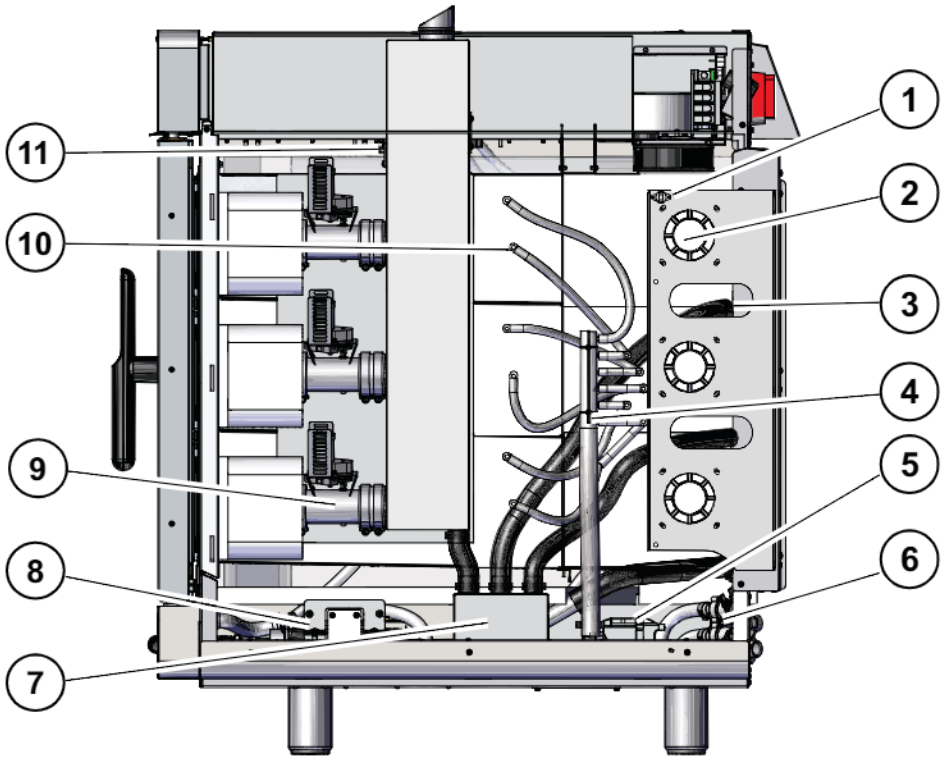
WARNING: Electric shock hazard.
Do not disassemble the VFD.





CT-PHD-014176

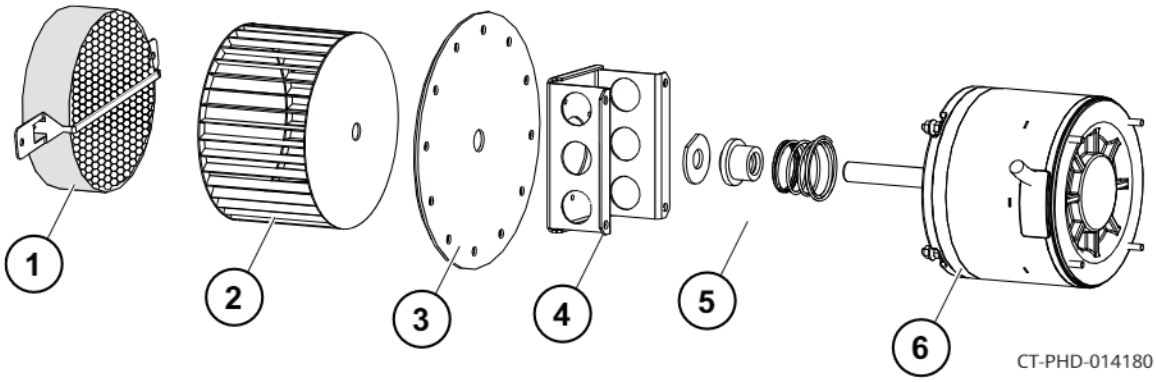
Component Identification, Right Service Panel



CT-PL-014178

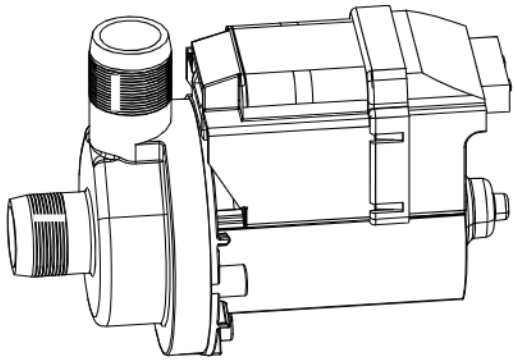
Ref.	Description	Ref.	Description
1	Check fans switch (FTT)	7	Condensate tank
2	Chamber convection fan motors	8	Hose reel, hand shower
3	Chamber drain hoses	9	Browning valve (RV)
4	Cleaning water manifold	10	Cleaning water nozzle
5	Cleaning pump	11	Catalytic converter
6	Y2/Y5 solenoid valves	—	—

Blower Assembly



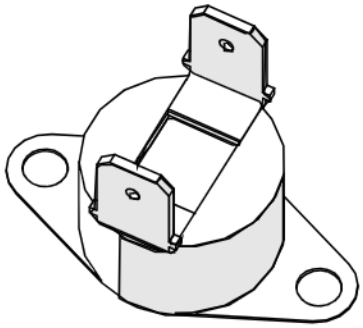
Ref.	Description
1	Catalyst
2	Fan wheel
3	Plate
4	Spacer
5	Spring assembly
6	Motor

Wash Pump



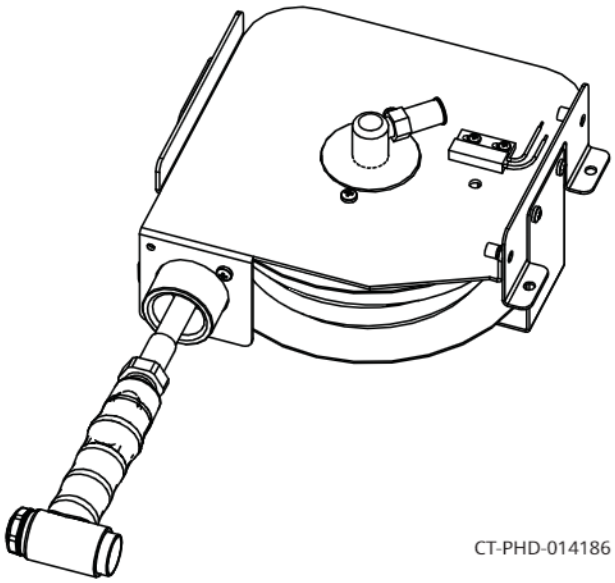
Check Fans Indicator Light Switch

Contacts close at or above 130F (54C)



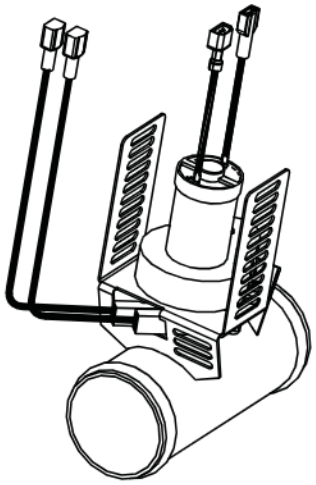
VMC-PHD-001903

Switch, Hose Reel/Hand Shower



CT-PHD-014186

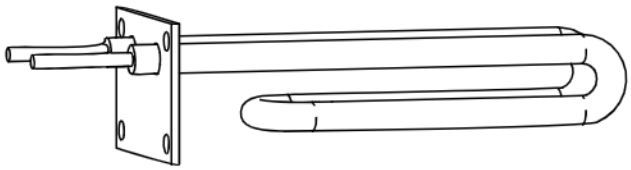
Browning Valve



CT-PHD-014188

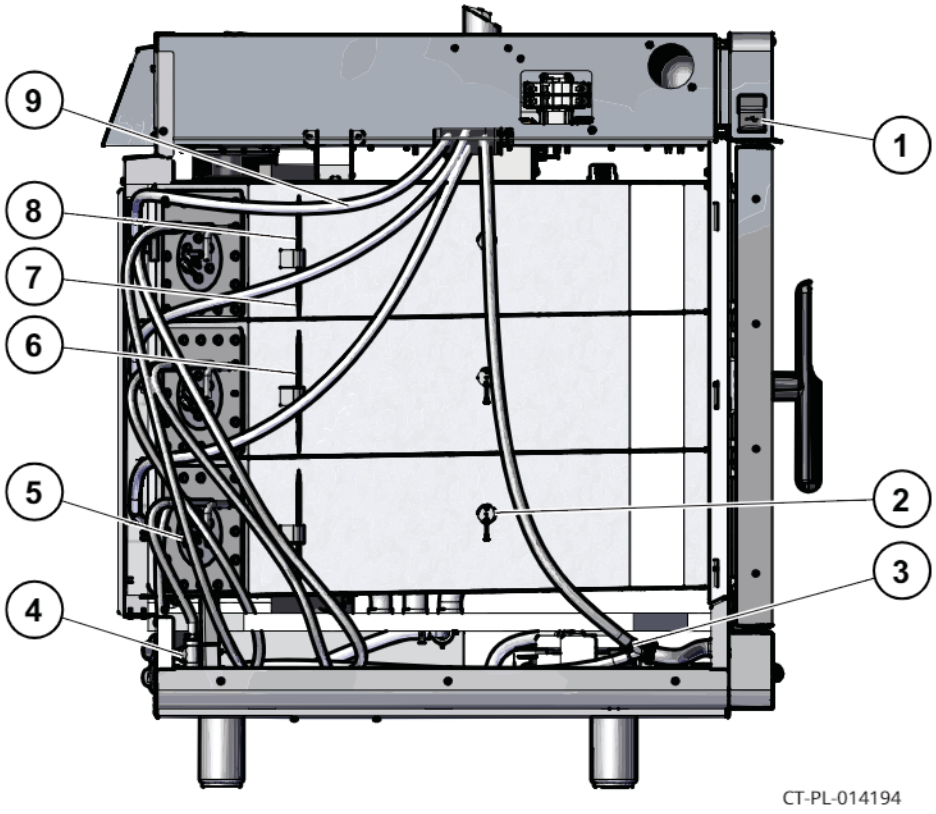
Electric Catalytic Converter

1A, 212 Ohm



CT-PHD-014192

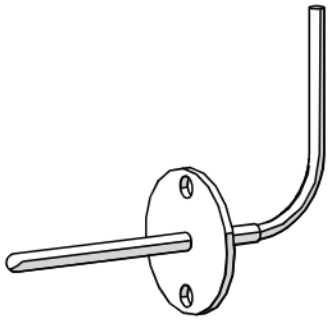
Left Service Panel Identification



Ref.	Description
1	USB Port
2	Chamber temperature sensor
3	Drain hose
4	Y1 Solenoid valves (treated)
5	Water hose — steam
6	High temperature sensor bulb
7	Steam heat element
8	Convection heating element
9	Chamber vent hoses

Chamber Temperature Probe

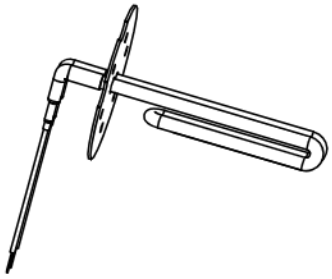
Type K thermocouple



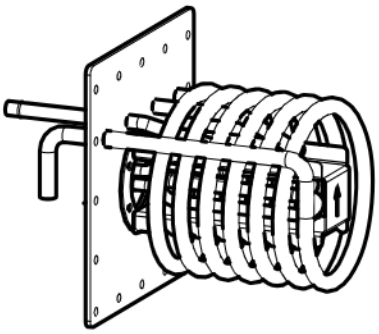
VMC-PHD-001991

100°C = 4.096 mV	100°F = 1.521 mV
200°C = 8.138 mV	100°F = 3.820 mV
300°C = 12.209 mV	100°F = 6.094 mV

Steam and Chamber Heating Elements



1.5 Amps
165 Ohms



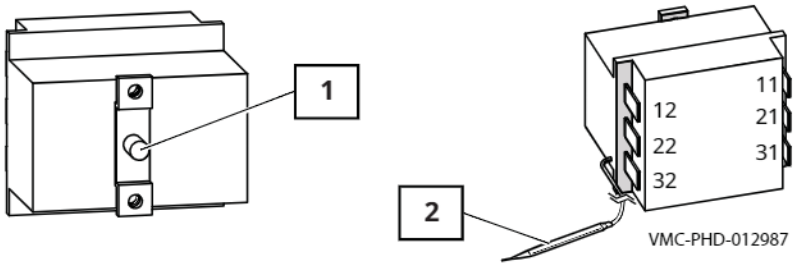
17 Amps
14 Ohms

CT-PHD-014196

High Limit Switch

Resettable

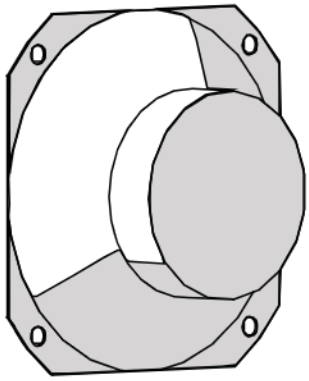
Contacts open at 572°F (300°C)



Ref.	Description
1	Reset button
2	Temperature bulb

Speaker

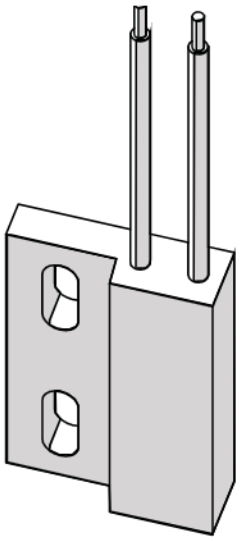
8 Ohms



VMC-PHD-001995

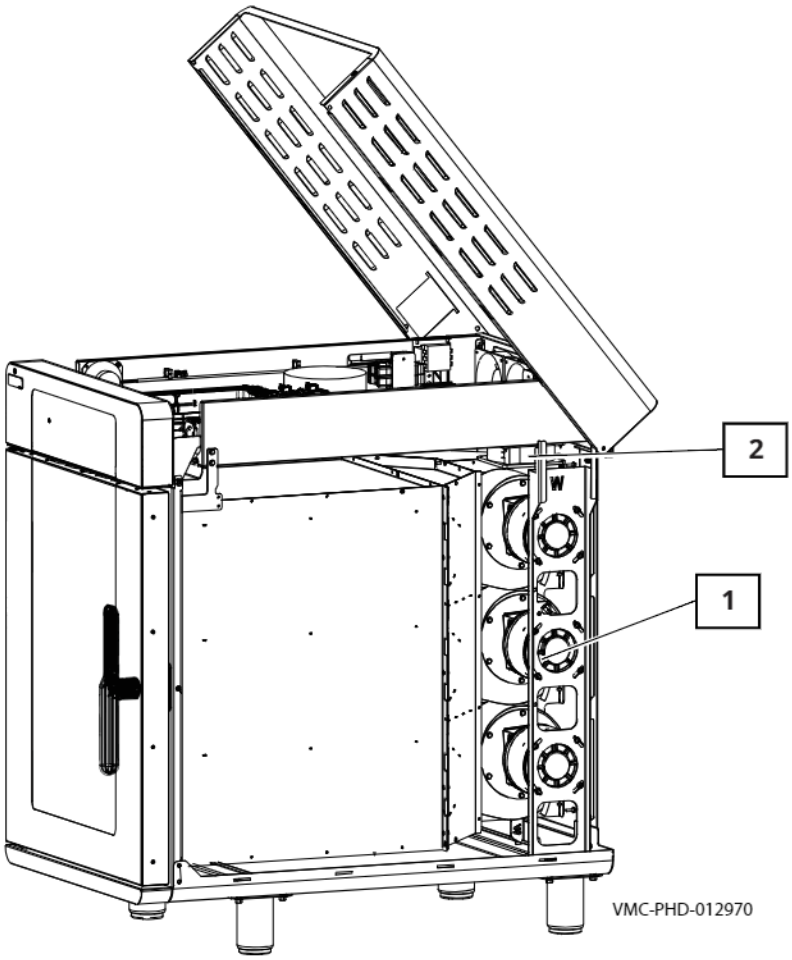
Door Switch

- **Door closed** 0 Ohms; 0 VDC across terminals 1 and 2 of connector P3 on the control board.
- **Door open** Infinite Ohms; 8 VDC across terminals 1 and 2 of connector P3 on the control board.



VMC-PHD-001999

Right Service Panel Identification



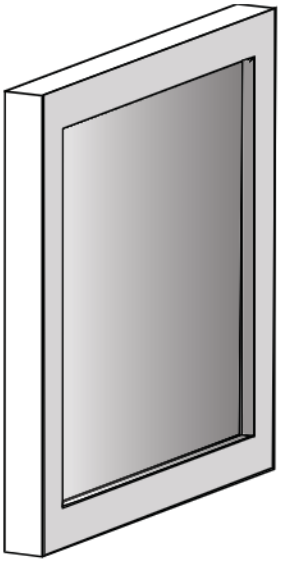
Ref.	Description
1	Chamber blower motor
2	Cooling fans

Fans

- Impedance protected
- 240 Volt
- 581 Ohm

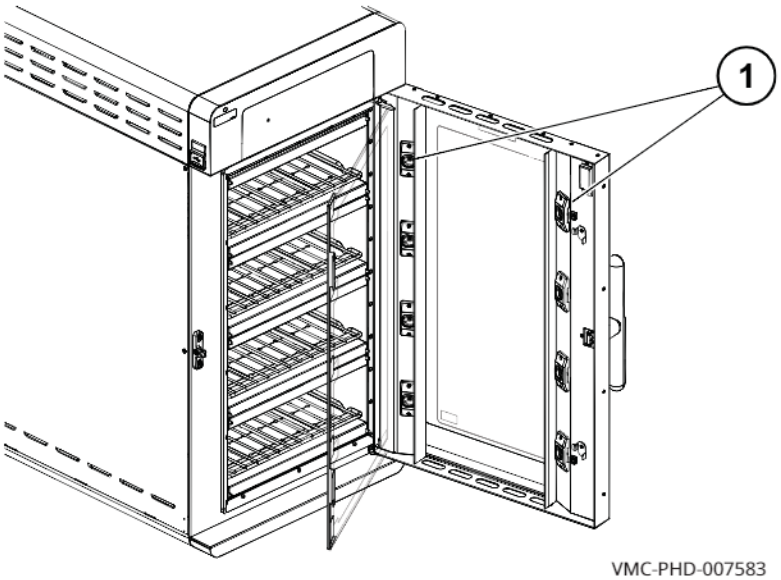
VMC-PHD-002011

Filter—Cooling Air

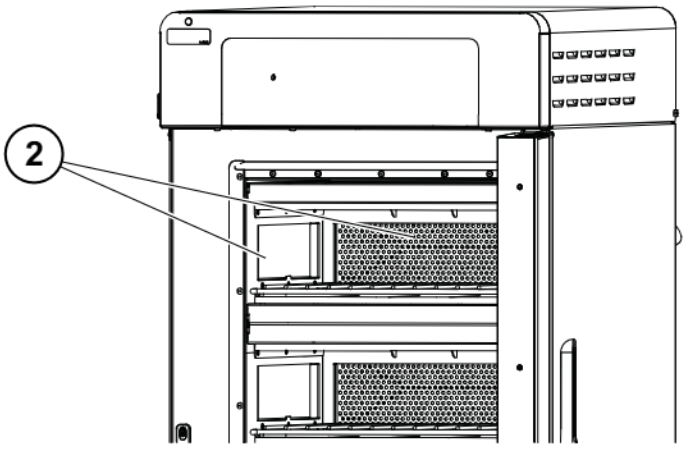


VMC-PHD-002015

Internal Components Identification



VMC-PHD-007583



VMC-PHD-007580

Ref.	Description
1	Chamber light
2	Filters (optional)

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Sequence of Operation

AC Power to the oven

1. Electrical power comes into the oven at the disconnect switch located in the back right corner of the electrical chassis. The load side of the disconnect switch is connected to the terminal blocks TB 1 TB 2 and TB 3, mounted on the DIN rail at the left side of the electrical chassis.

2. Mounted on the DIN rail next to the terminal blocks are circuit breakers CB 1, CB 2, and CB. Line voltage from terminal blocks TB 1,2, and 3 is supplied to circuit breakers CB 1, 2, and 3. One leg of line voltage is supplied from the circuit breakers to the high limits N7, N9, and N10 and then to the convection heat elements.

3. Terminal blocks TB 1 TB 2 and TB 3 supply the second of line voltage for the convection heat elements to the solid-state relay (SSR). The oven may have a single SSR for each chamber or dual SSRs with one SSR controlling the heating elements of two chambers. Terminal blocks TB 1 TB 2 and TB 3 also supply line voltage to circuit breakers CB 4 and CB 5. CB 4 and CB 5 supply line voltage to terminal blocks TB 16 and TB 22.

4. The voltage from the terminal blocks is then supplied to the voltage monitor, the check fans thermo switches, the check fan LED, the check fans relay, the electric catalytic converter, the catalytic converter relay, the CV drive relay, and the DC power supply.

5. The voltage monitor converts the AC input voltage to a DC output voltage that is used by the oven control to determine the input line voltage.

6. There are two check fan switches installed in the oven, one switch is mounted in the electrical chassis and the other switch is mounted near the convection fans. The switches are wired in parallel. When either switch is exposed to a temperature of 130°F the switch contacts will close, the check fan LED on the control panel will illuminate and the check fans relay will be energized.

7. When the contacts in the check fans relay close, a signal is sent to the oven control and the oven control will display the E108 error message on the control panel display.

8. The electric catalytic converter relay is energized by the control board, when the relay contacts close, line voltage is supplied to the catalytic converter heating element.

9. On the first call for heat the CV Drive Relay is energized by the control board. When the relay contacts close, line voltage is supplied to terminal block TB 26, the cooling fans are energized, and the Variable Frequency Drives (VFDs) are enabled.

DC Power to the oven

1. The DC power supply converts line voltage to 12 volts DC output.

2. DC voltage is supplied to the interface board.

3. The DC voltage is also supplied to terminal blocks TB 32 and TB 34, the voltage from the terminal blocks is then supplied to the control board and the hand shower relay.

4. The initial Alto-Shaam logo screen is displayed.

5. The humidity valves perform a self-test.

Screen 'ON' Pre heat

1. The oven preheats in convection mode only, not in steam mode.

2. The preheat can be set in the settings screen to auto preheat or be started manually.

3. The door must be closed for preheat to function.

4. The convection fan motor starts rotation and provides a speed feedback signal to prove motor operation.

5. The Hall Effect Sensor (HES) in the motor provides the feedback signal to the oven control. The motor operation must be verified before the heating elements will be energized.

6. The N6 chamber temperature probe provides a signal to the oven control indicating the chamber air temperature.

7. The convection heating element will be energized when the N6 signal indicates an actual chamber temperature that is below the preheat set point.

8. On a call for heat the control board sends 12Vdc to the solid-state relay (SSR).

9. The green LED on the SSR will illuminate when the SSR is energized.

10. When the SSR is energized, it completes the second leg of line voltage to the heating element.

11. As the oven chamber heats up and approaches the preheat set point temperature. The green LED may begin flashing or switch off.

Convection mode 85–525°F

1. When a convection cook mode is activated the electric Catalytic Converter element is energized, the convection fan starts rotation and provides a speed feedback signal to prove motor operation.

2. The Hall Effect Sensor (HES) installed in the motor provides the feedback signal to the oven control, the motor operation must be verified by the oven control before the convection heating element will be energized.

3. The N6 chamber temperature probe provides a signal to the oven control indicating the chamber air temperature. The heating element is energized when the N6 signal indicates an actual chamber temperature that is below the recipe set point.

4. On a call for heat the control board sends 12Vdc to the SSR. The green LED on the SSR will be illuminated when the SSR is energized. When the SSR is energized it completes the circuit to the heating element. As the oven chamber heats up and approaches the recipe set point temperature the green LED may begin flashing or switch off to maintain the correct chamber temperature.

Steam mode 85–250°F

1. When a steam cook mode is activated the electric Catalytic Converter element is energized, the steam system is energized, the convection fan starts rotation and provides a speed feedback signal to prove motor operation.

2. The Hall Effect Sensor (HES), installed in the motor, provides the feedback signal to the oven control, the motor operation must be verified by the oven control before the convection heating element will be energized.

3. The N6 chamber temperature probe provides a signal to the oven control indicating the chamber air temperature. The heating element will be energized when the N6 signal indicates an actual chamber temperature that is below the recipe set point.

4. On a call for heat the control board sends 12Vdc to the SSR. The green LED on the SSR is illuminated when the SSR is energized. When the SSR is energized it completes the circuit to the heating element. As the oven chamber heats up and approaches the recipe set point temperature, the green LED may begin flashing or switch off to maintain the correct chamber temperature.

Steam Generation

1. The steam mode utilizes an individual heating element to supply the heat needed for steam generation.

2. On a call for steam the control board sends 12Vdc to the steam element relay. The relay contacts close and complete the circuit to the steam element.

3. The steam element is energized and after a few seconds the water is supplied.

4. During a steam program the control board will send 12Vdc to the steam valve relay. When the steam valve relay is energized it completes the circuit to the Y1 steam valve.

5. The Y1 steam valve opens and supplies water to the steam element for the steam generation in the corresponding chamber.

6. The steam generation cycles at 150-second increments until the end of a cook cycle.

7. The chamber humidity valve will also cycle open and closed in accordance with the recipe until the end of a cook cycle.

Combi Mode 85–525°F

1. Same as steam mode except the temperature range is higher.

Cleaning mode

1. The oven must be at the required temperature before the cleaning cycle starts.

2. Use only Alto-Shaam cleaner CE-47853 when running a cleaning cycle. For a catalyst cleaning cycle, use only catalyst wash descaler CE-47859. The use of any other cleaning chemical may damage the catalyst and void the warranty.

3. The oven has five different cleaning modes.

4. The rinse cycle is a mid-day rinse to reduce the grease.

5. The light clean cycle is for light debris.

6. The medium clean is for heavy debris (10 full loads of chicken) in one chamber.

7. The heavy clean is for heavy debris (10 full loads of chicken) in all chambers.

8. The catalyst wash reminder screen displays after 18 hours of cumulative cleaning (example: after five heavy cleaning cycles).

9. The cleaning pump circulates the cleaning solution from the condensate tank to the cleaning manifold where it is distributed through hoses and injected into each chamber.

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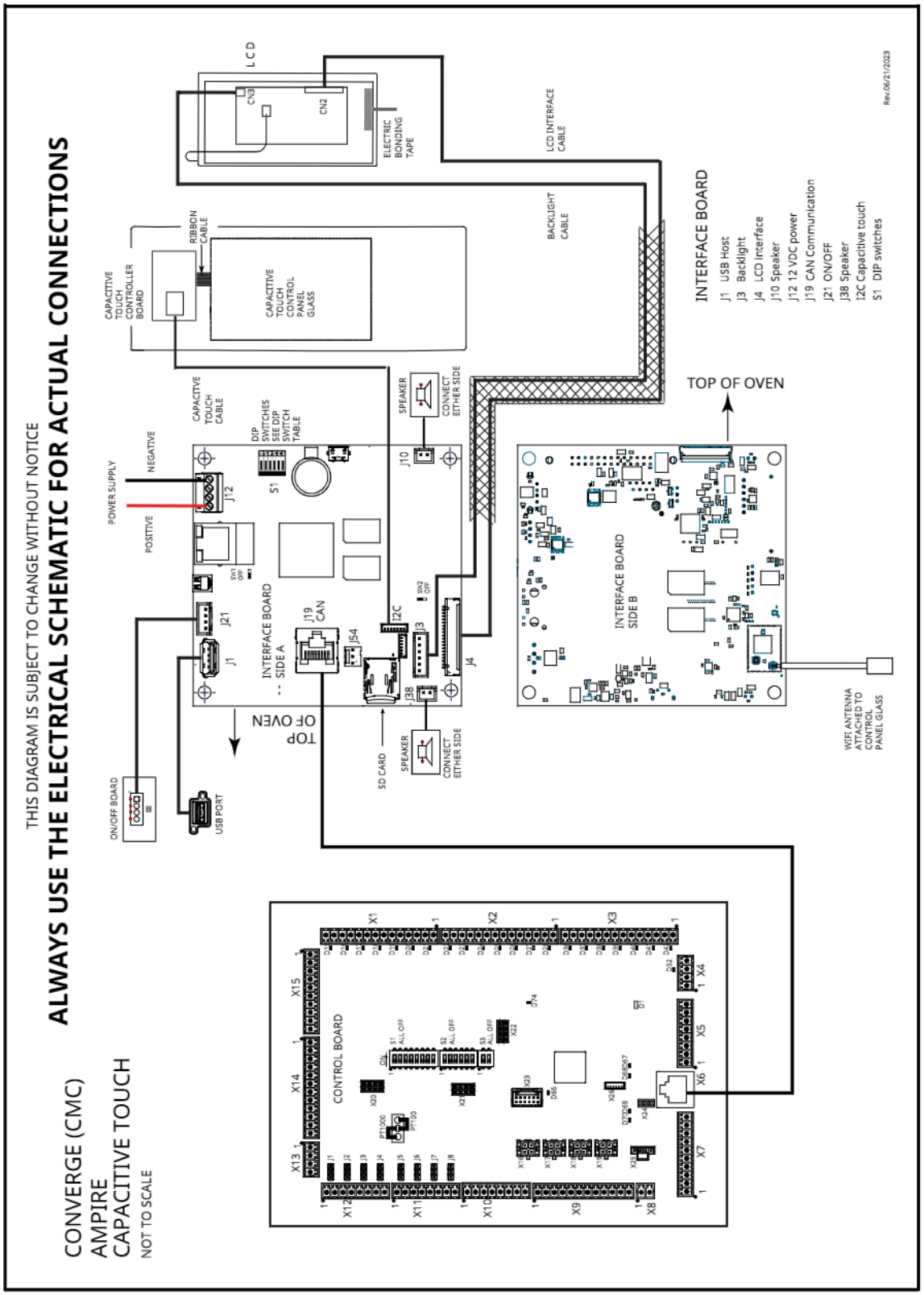
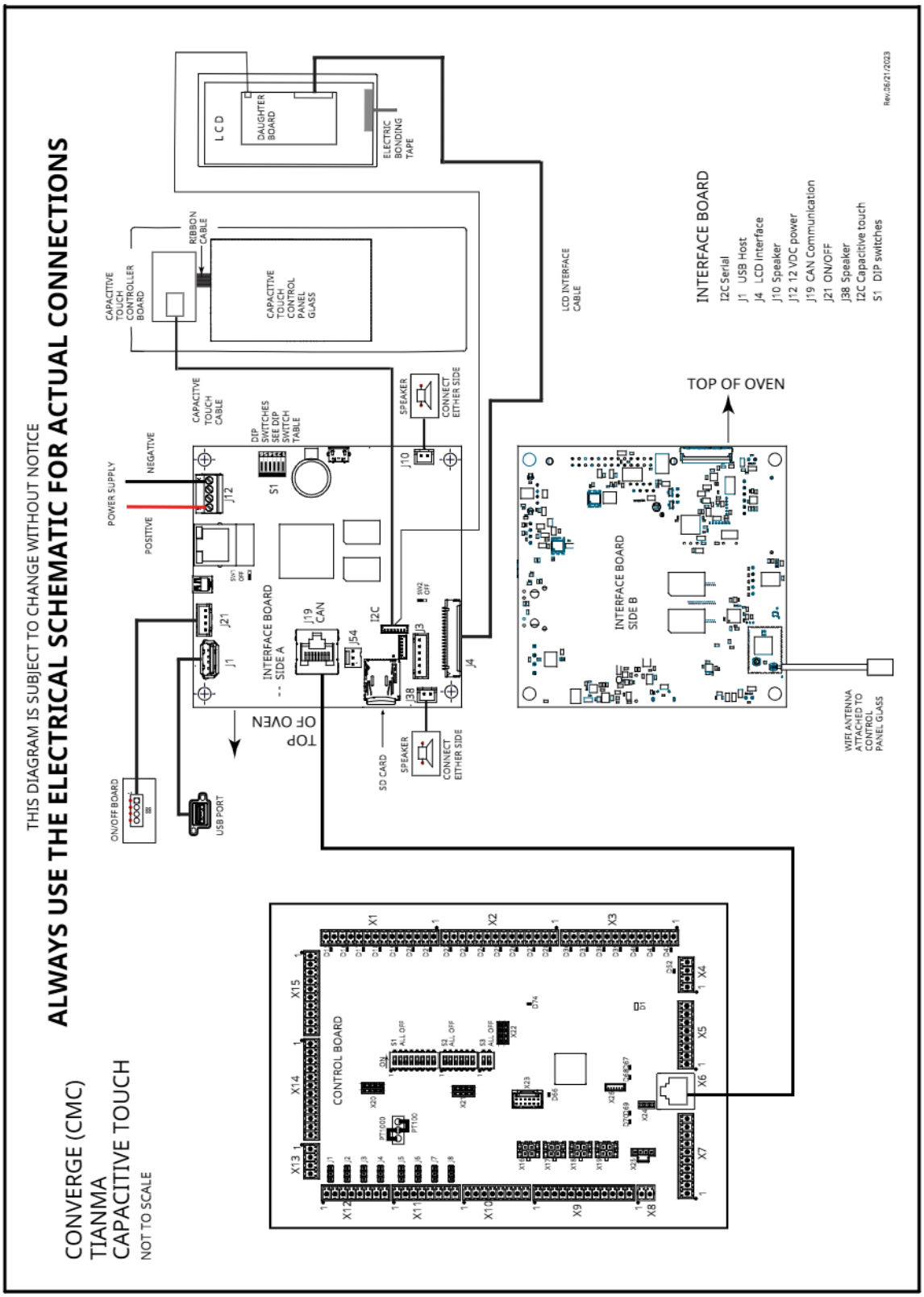
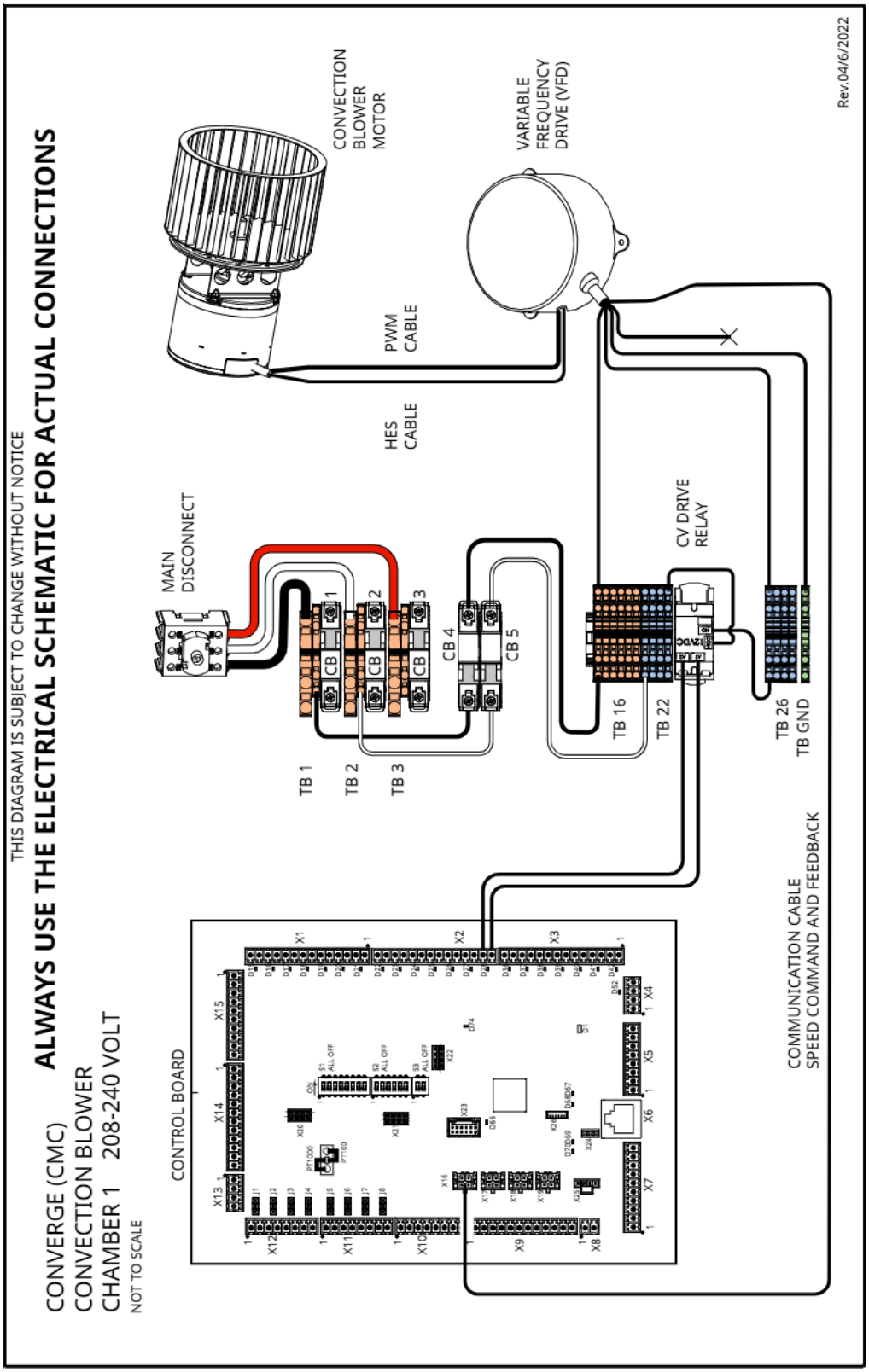
Capacitive Touch Diagram—Ampire



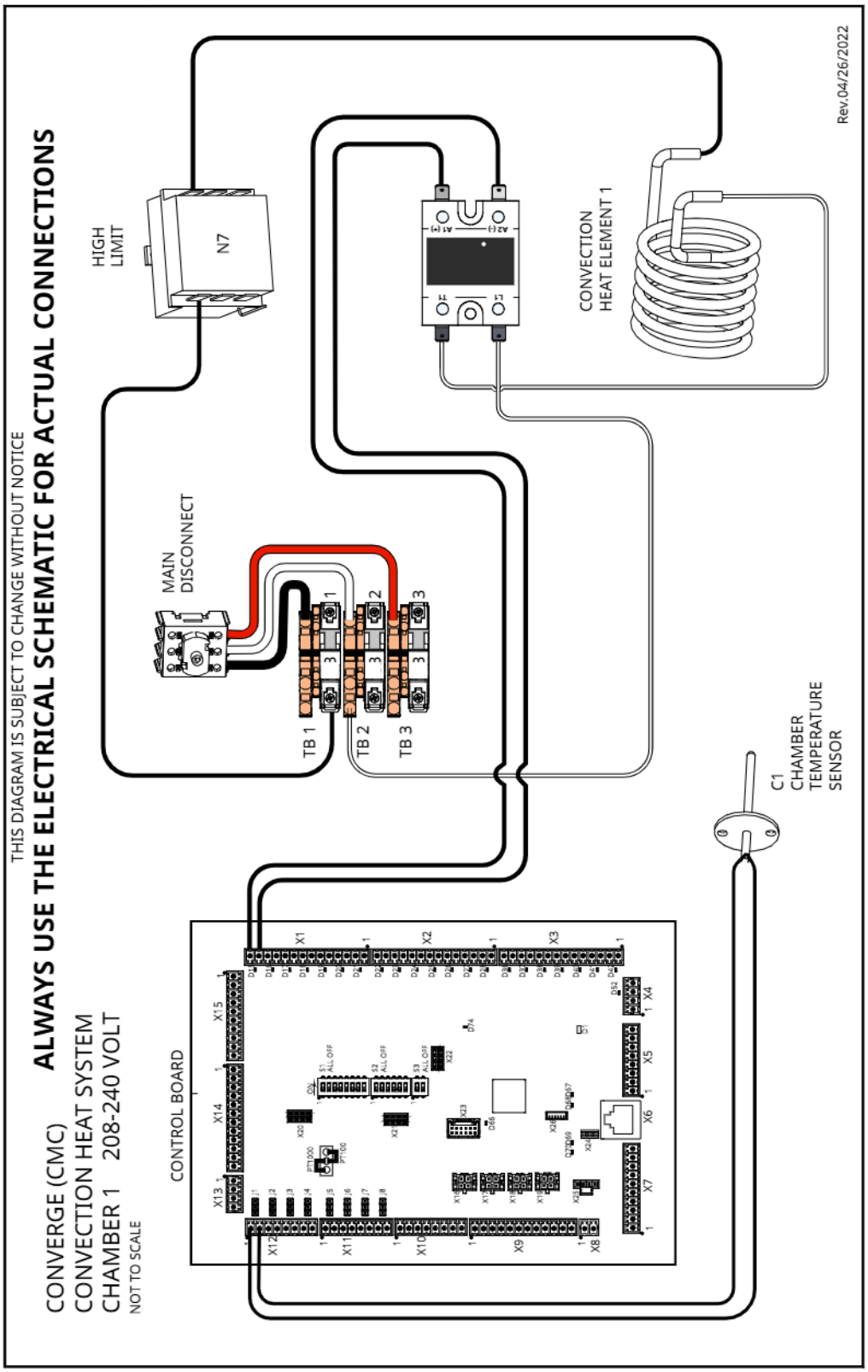
Capacitive Touch Diagram—Tianma



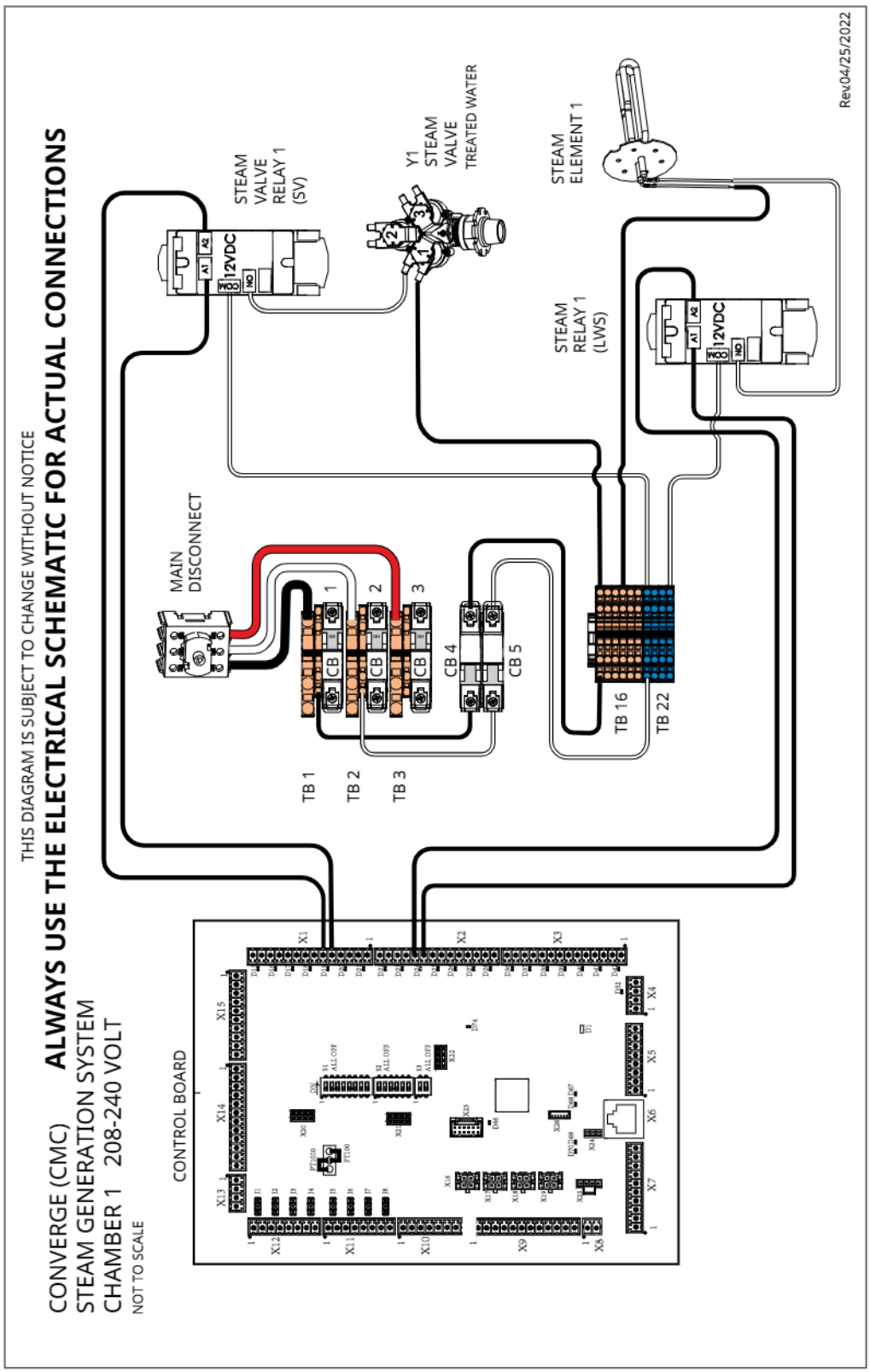
Convection Blower Diagram, Chamber 1



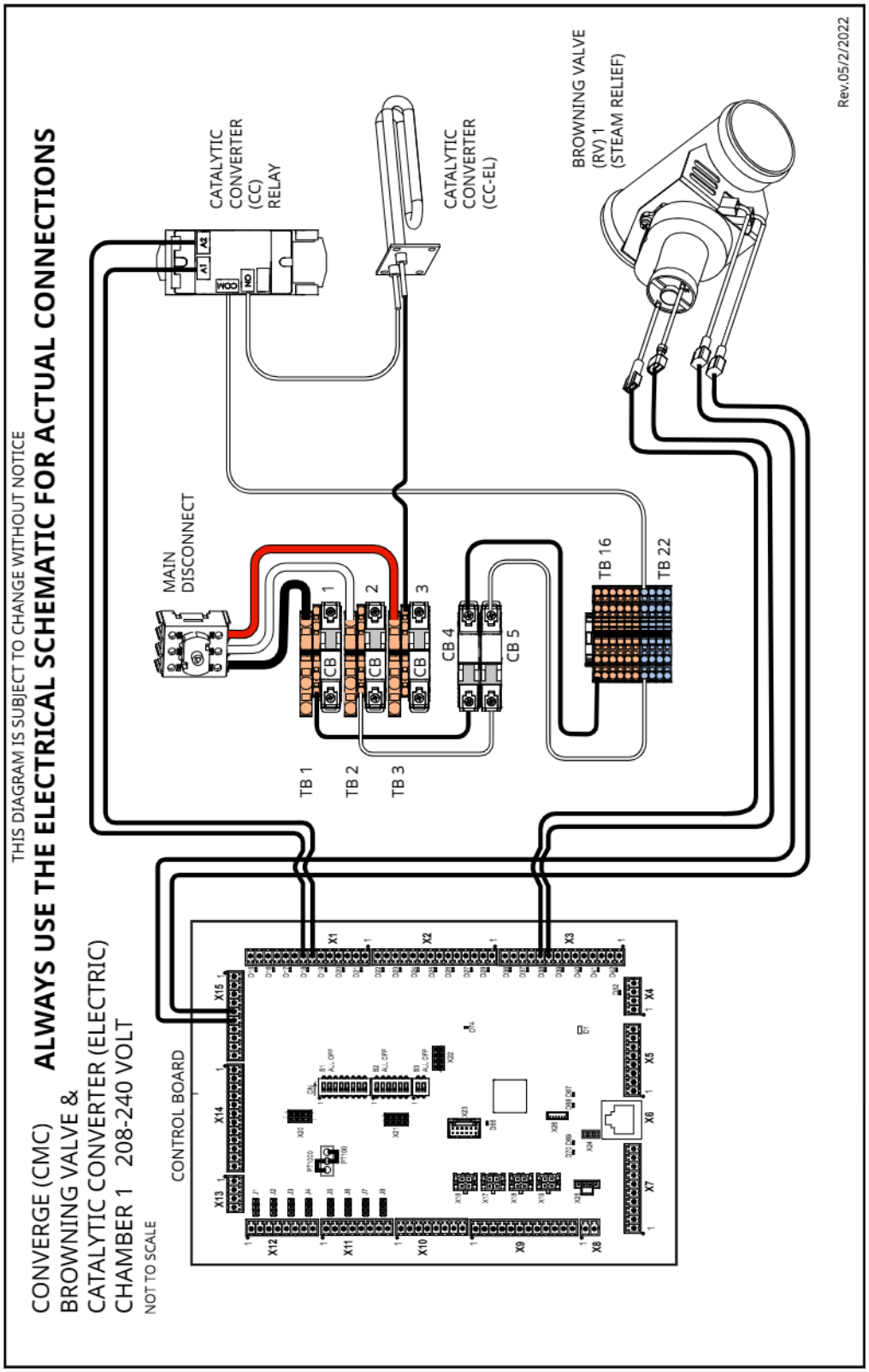
Convection Heat Diagram, Chamber 1



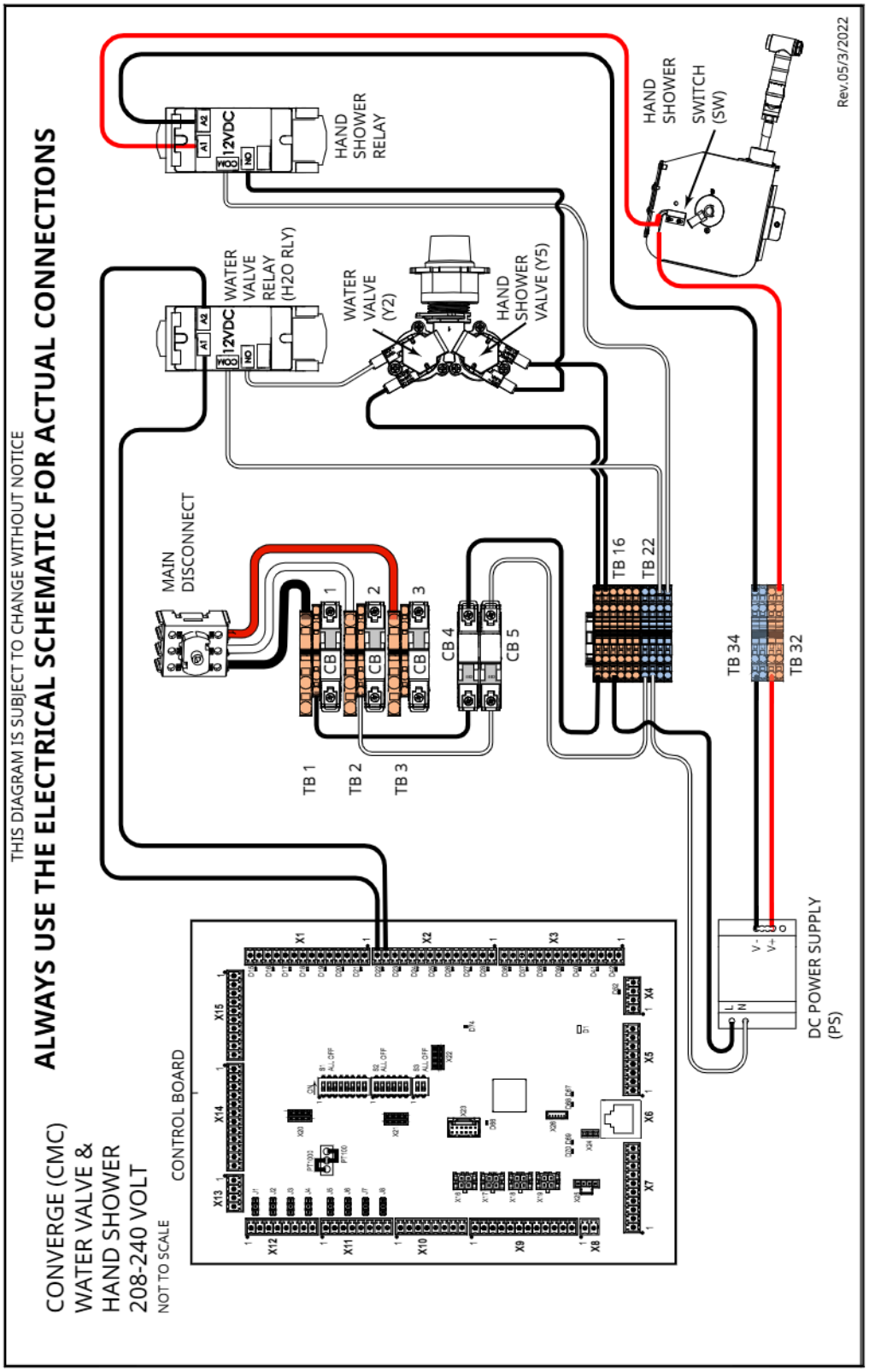
Steam Injection System Diagram, Chamber 1



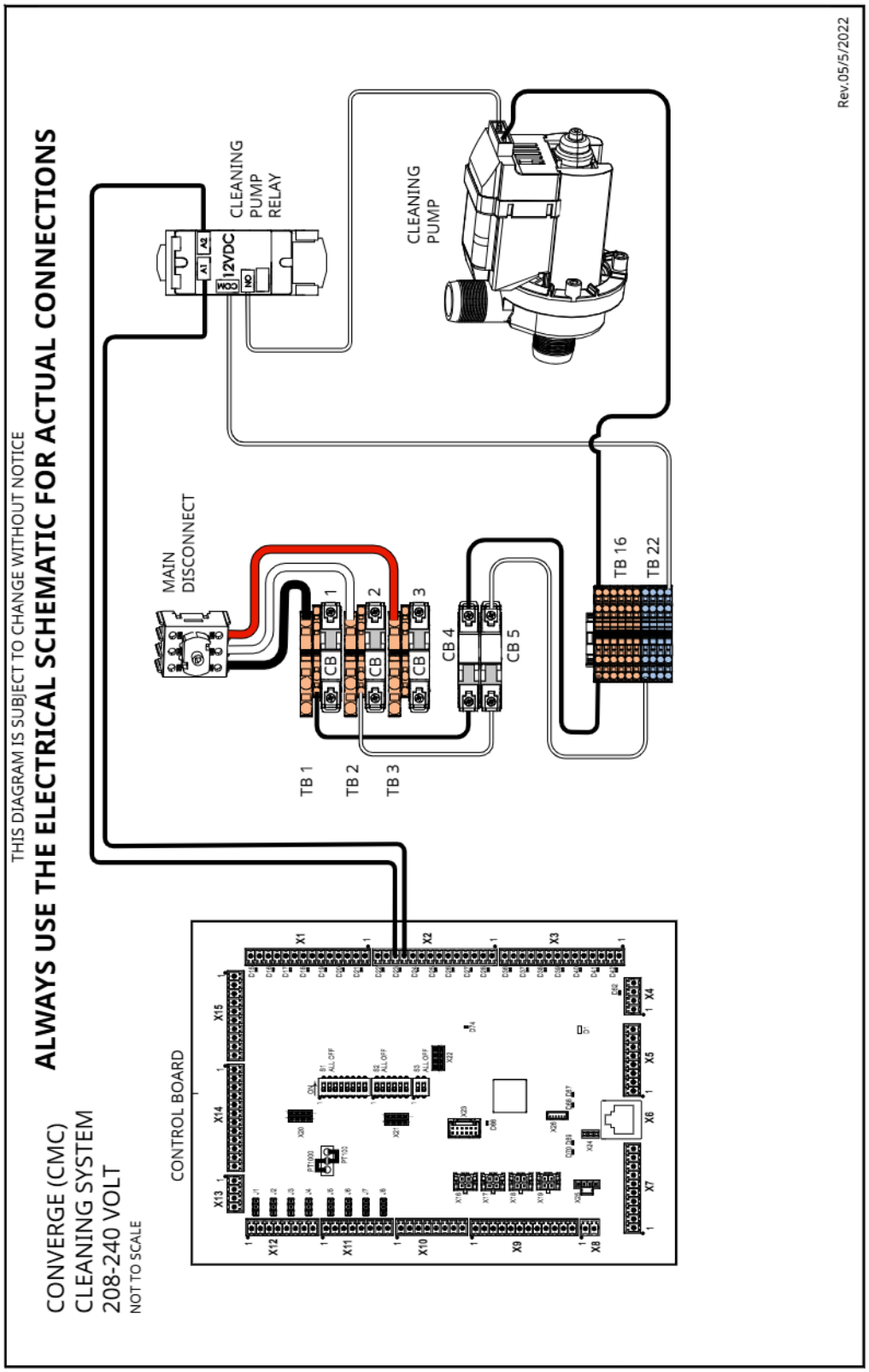
Browning Valve Diagram



Water Valve and Hand Shower Diagram



Cleaning System Diagram



Maintenance Schedule

Requirements

- See topic *How to Clean the Oven*.
- Make sure the oven is cooled down and off—inside of chamber 140°F (60°C) or less.

Daily

For daily maintenance, do the following.

- **Remove** any spills with disposable paper wipes or a damp cloth.
- **Wipe** the outside of the oven with a damp cloth.
- **Wipe** the oven gaskets with soap and water.
- **Inspect** the oven gaskets for damage.
- **Wipe** the front door glass.
- **Check** the screen for cracking or peeling. Contact Technical Service if needed.

Weekly

For weekly maintenance, do the following.

- **Clean** the entire oven. **Make sure** to use a non-abrasive nylon scrub pad.
- Do not spray the cleaner directly into the fan openings located in the rear of the oven.

Monthly

For monthly maintenance, do the following.

- **Inspect** and clean the air filters.
- **Clean** out the drip tray line.
- **Check** the supplied water filtration and change as needed.
- **Check** for software updates.
- **Check** lighting.
- **De-scale** as needed.

Yearly

For yearly maintenance, do the following.

> **NOTE:** Must be performed by a qualified professional.

- **Inspect** and test the humidity control.
- **Inspect** and test the catalytic converter element.
- **Inspect** the catalytic converter.
- **Inspect** the air intake. **Check** the length of the tubing for debris clean out or replace as needed.

Continued on next page

Continued from previous page

- **Inspect** all drain hoses and clamps.
- **Inspect** all steam water injection lines and clamps for leaks or potential issues.
- **Inspect** wiring to heating elements. Re-tighten or secure as needed. Record the amp draw.
- **Inspect** wiring to the steam element. Re-tighten or secure as needed. Record the amp draw.
- **Inspect** the cleaning system pump and hoses for leaks and proper operation.
- For ovens shipped to New Zealand or Australia, **inspect** the back flow preventer check valve per AS/NZ3500.1 and AS/NZ3500.2

- **Check** operation of all electrical cooling fans.
- **Check** all electrical connections are properly connected and secure to the boards.
- **Check** door hinges and handles. Tighten, secure, or adjust as needed.
- **Check** door gaskets for damage and seal.

- **Test** steam injection solenoid.
- **Test** condensate solenoid.
- **Run** each chamber in convection mode and test operation.
- **Run** each chamber in steam mode and test operation.

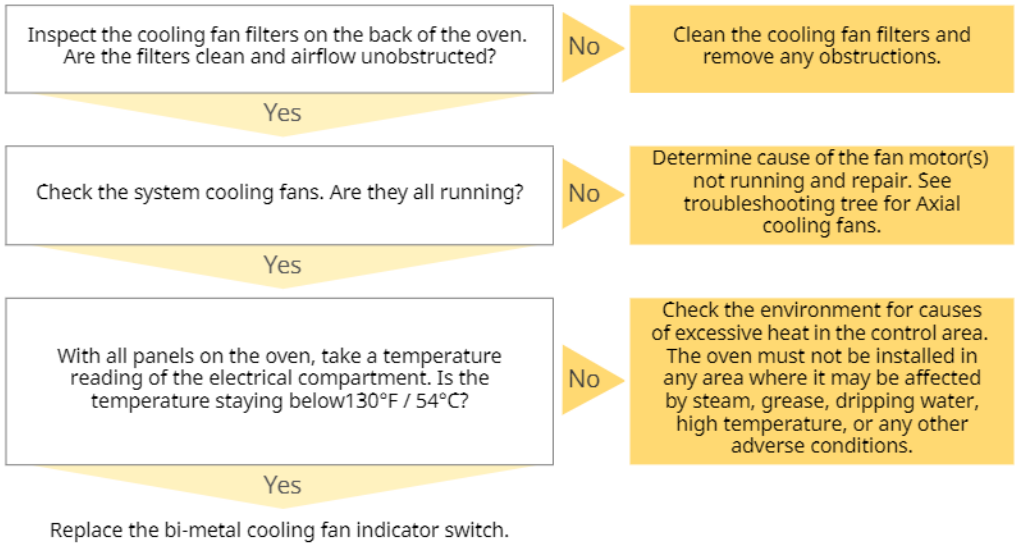
Error Codes

Code	Description	Parameters that trigger the error	Possible Cause(s)
E-3	Motor error	No chamber motor rotation detected for greater than 30 seconds.	1. Power down the control using the ON/OFF button. 2. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. 3. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-10	Sensor short	Control board detects that the chamber sensor is shorted.	1. Power down the control using the ON/OFF button. 2. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. 3. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-10	Sensor short	Control board detects that the probe in the chamber is shorted.	1. Investigate the food probe for damage. Replace if damaged. 2. Power down the control using the ON/OFF button. 3. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. 4. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-11	Sensor open	Cavity air sensor reading > 650°F (343°C).	1. Power down the control using the ON/OFF button. 2. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. 3. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-30	Unit under temperature	Cavity temperature remains 25°F (14°C) below target for more than 90 minutes.	1. Was the oven preheated before loading the food? 2. Was the oven loaded with frozen food? 3. Press the high limit reset buttons. 4. Power down the control using the ON/OFF button. Turn the oven back ON and start a cook.
E-31	Electronics over temperature	Control board temperature exceeds 158°F (70°C).	1. Make sure the cooling fan(s) are operating. 2. Make sure the exhaust vents are clean and free of debris. 3. Make sure the oven clearances are met. 4. Ambient temperature greater than 105°F (41°C). 5. Check the door gasket for damage and proper seal.

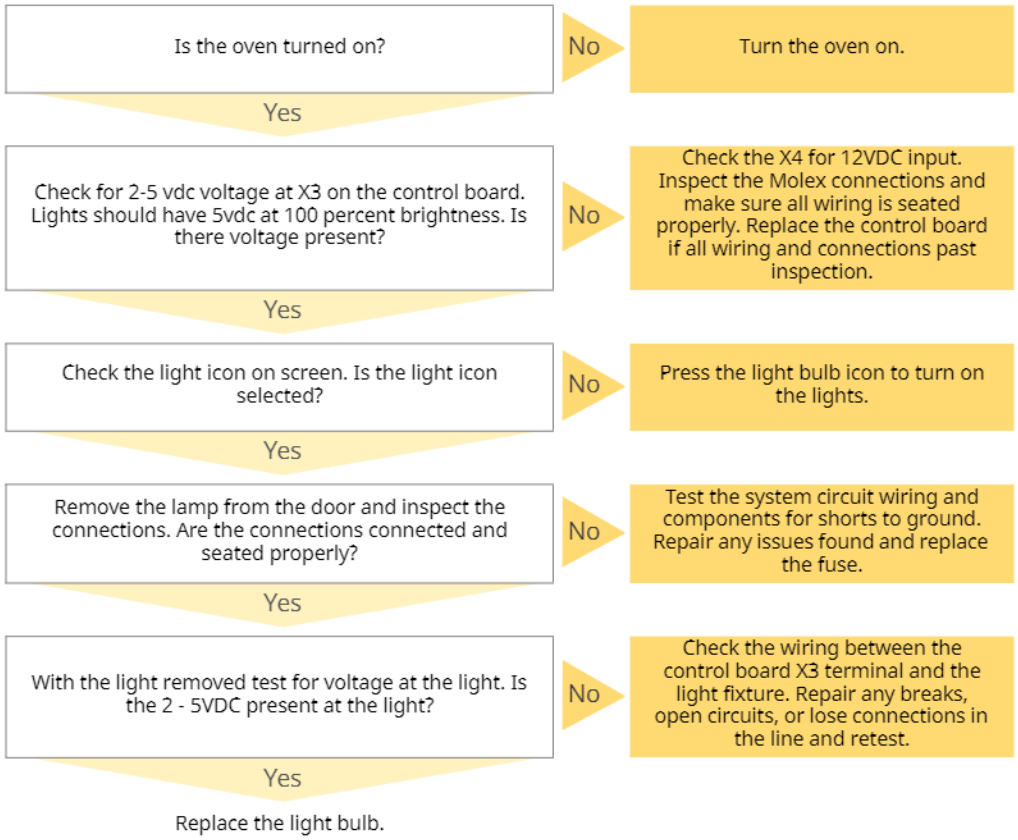
Code	Description	Parameters that trigger the error	Possible Cause(s)
E-31	Electronics over temperature	Interface board temperature exceeds 184°F (84°C).	1. Power down the control using the ON/OFF button. 2. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. 3. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-31	Electronics over temperature	Chamber temperature sensor > 600°F (316°C) for Combi or Convection or chamber temperature sensor > 395°F (202°C) for Steam or Cleaning.	1. If the oven has experienced an over temperature condition, allow the oven to cool down for a minimum of 30 minutes. 2. Press the high limit reset buttons. 3. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-31	Electronics over temperature	B3 sensor is higher than 212°F (100°C) for more than 180 seconds.	1. Make sure the water supply line(s) is connected to the oven and that the shut off valve for the water connections is in the open position. 2. If connected to water filter(s), make sure the filters are not in need of replacement. 3. Power down the control using the ON/OFF button. 4. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. 5. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-50	Control board temperature error	Temperature measurement failure on the control board.	1. Make sure the cooling fan(s) are operating. 2. Make sure the exhaust vents are clean and free of debris. 3. Make sure the oven clearances are met. 4. Ambient temperature greater than 105°F (41°C). 5. Check the door gasket for damage and proper seal.
E-55	Vent not open	60 seconds after the chamber venting motor is activated, the chamber vent valve did not open.	1. Power down the control using the ON/OFF button. 2. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. 3. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-78	Voltage monitor output is too low	Incoming line voltage is too low (<190V) or voltage monitor output is shorted.	1. Make sure the oven plug is fully seated in electrical outlet. 2. Reset the main circuit breaker for the oven. If error reoccurs, contact Technical Service.
E-79	Over voltage	Incoming line voltage is too high (>250V) or voltage monitor output is open.	1. Make sure the oven plug is fully seated in electrical outlet. 2. Reset the main circuit breaker for the oven. If error reoccurs, contact Technical Service.

Code	Description	Parameters that trigger the error	Possible Cause(s)
E-94	Interface Board - Control Board communication error	No signal transfer for more than 5 seconds between the interface board and the control board.	1. Make sure the oven plug is fully seated in electrical outlet. 2. Reset the main circuit breaker for the oven. If error reoccurs, contact Technical Service.
E-108	Cooling fan over temperature	Chassis bi-metal temperature sensor over temperature 130°F (54°C).	1. Make sure the cooling fan(s) are operating. 2. Make sure the exhaust vents are clean and free of debris. 3. Make sure the oven clearances are met. 4. Ambient temperature greater than 105°F (41°C). 5. Check the door gasket for damage and proper seal.
E-109	High limit error **Note:** Contact an authorized Alto-Shaam service partner.	Open circuit detected across high limit switch.	1. If the oven has experienced an over temperature condition, allow the oven to cool down for a minimum of 30 minutes. 2. Press the high limit reset buttons. 3. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-606	Oven cleaning system failure	Convection fan error, high limit error, cavity temperature sensor open or short, or communication for at least 15 seconds during cleaning.	1. Contact Technical Service. 2. Manually clean the oven. 3. Manually rinse the oven. 4. Make sure to remove cleaners before operating the oven.

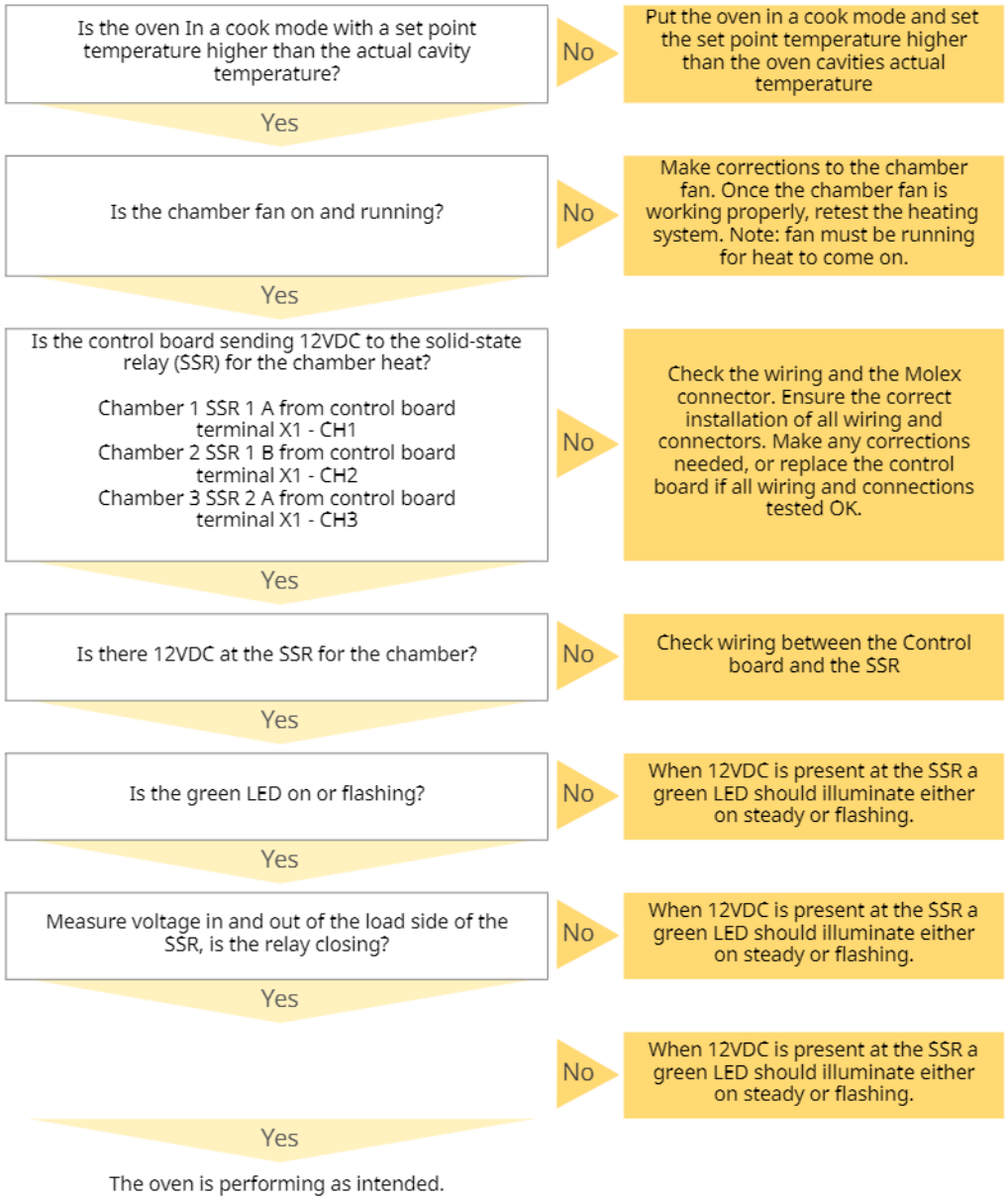
The Fan Indicator Light is On



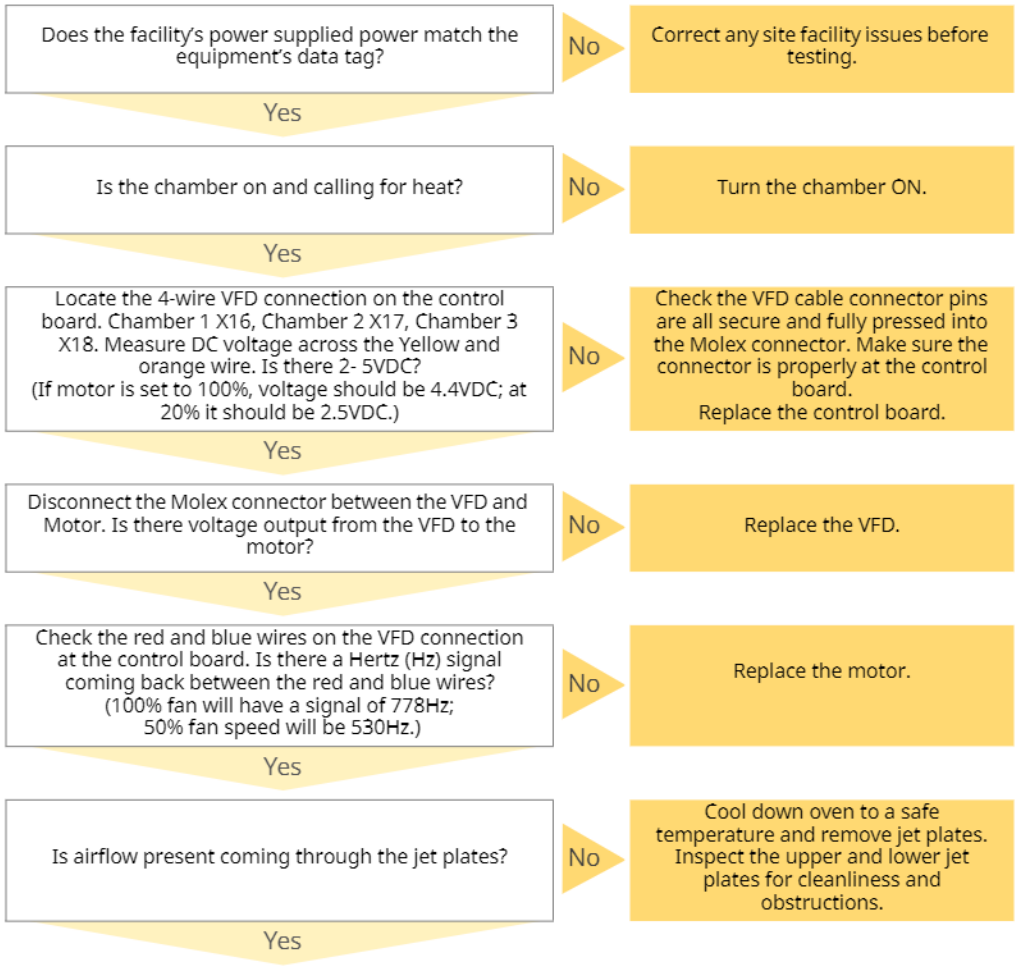
Cavity Light does not Illuminate



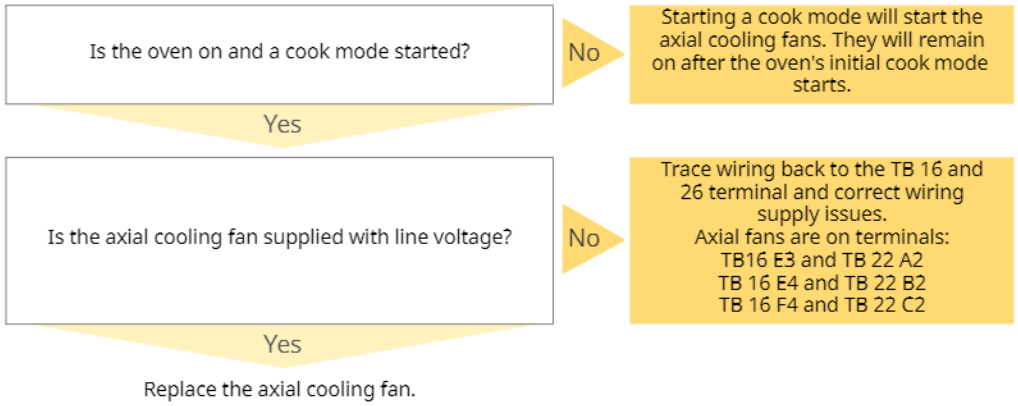
Chamber will not Heat



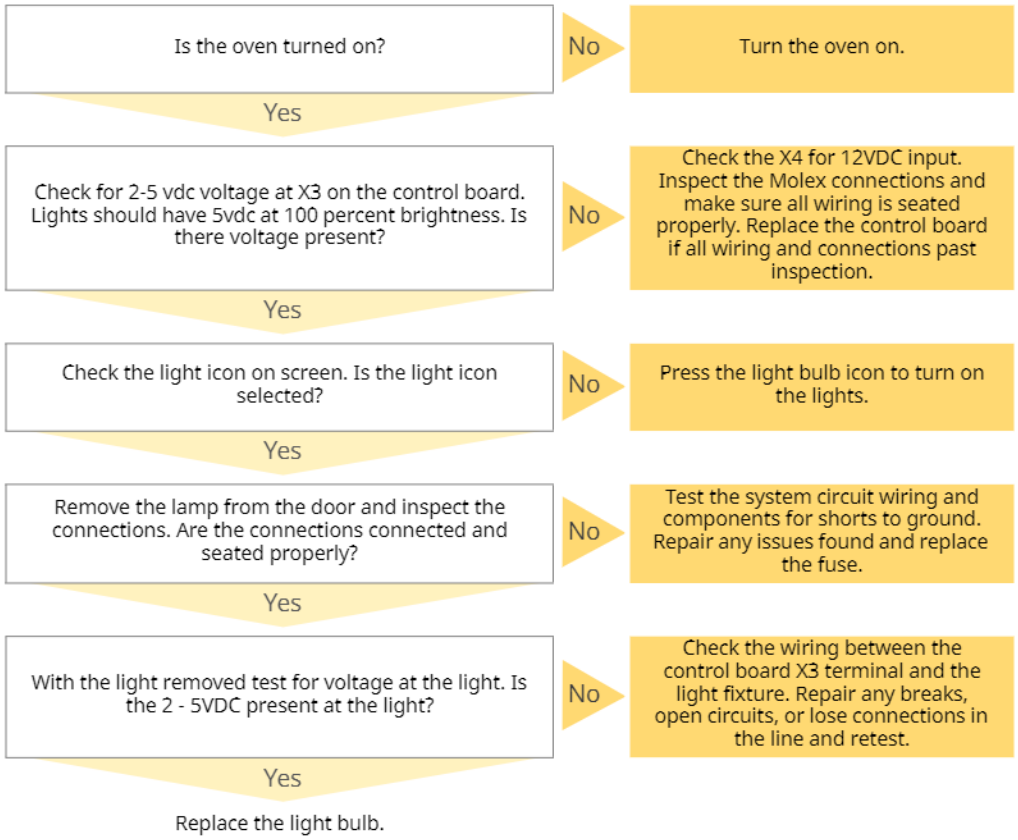
Convection Fan is not Operating



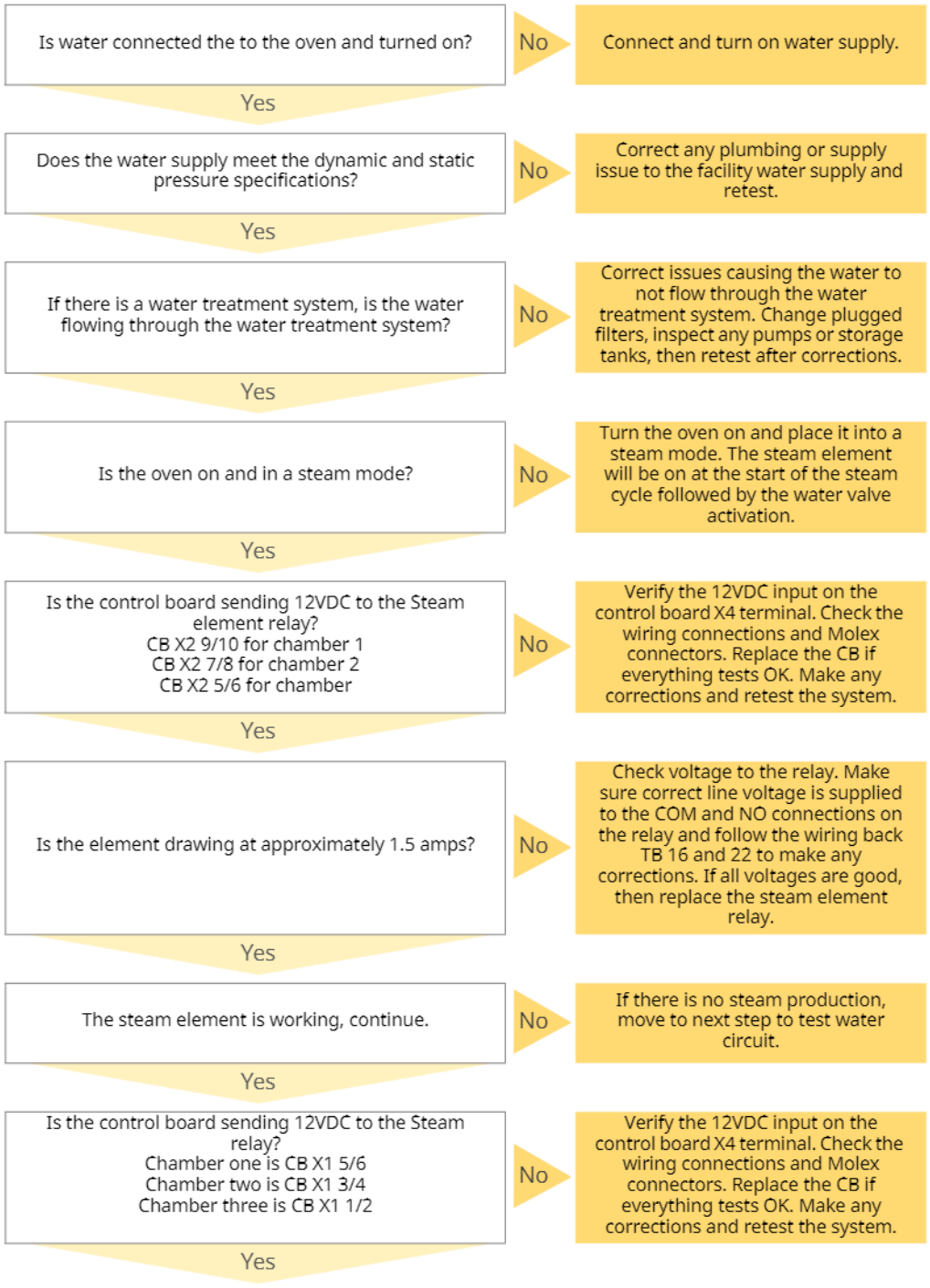
Axial Cooling Fan not Functioning

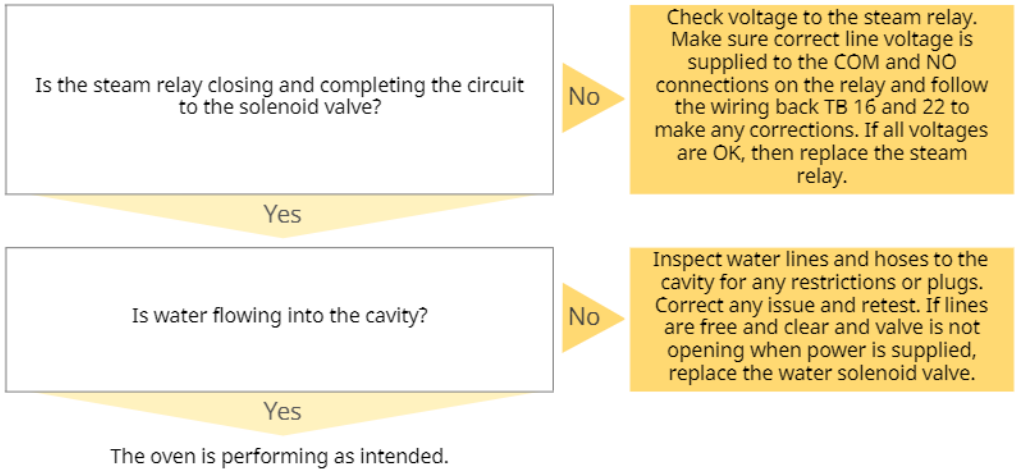


Oven will not Turn On



Steam System Doesn't Work

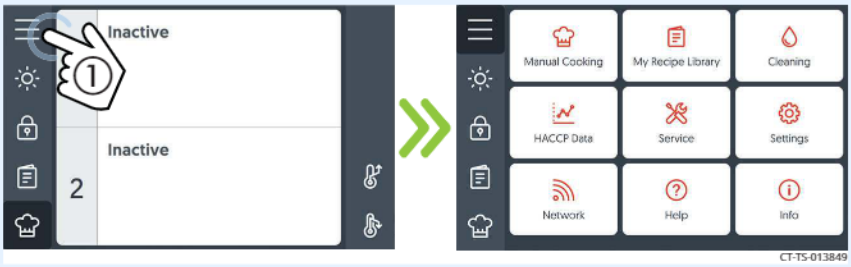



Is the steam relay closing and completing the circuit to the solenoid valve?
No
Check voltage to the steam relay. Make sure correct line voltage is supplied to the COM and NO connections on the relay and follow the wiring back TB 16 and 22 to make any corrections. If all voltages are OK, then replace the steam relay.
Yes
Is water flowing into the cavity?
No
Inspect water lines and hoses to the cavity for any restrictions or plugs. Correct any issue and retest. If lines are free and clear and valve is not opening when power is supplied, replace the water solenoid valve.
Yes
The oven is performing as intended.

How to View the Service Screen

Procedure

To view the service screen, do the following.

Step	Action
1.	**Touch** the menu icon ①. The menu screen displays. 
2.	**Touch** the "Service" icon ②. The enter pass code screen displays. 
3.	**Enter** the pass code 6702 ③. **Touch** the check mark ④. The "System Info" screen displays. 

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4. **Scroll down** ⑤ to "Chamber Info" to view information about each chamber.

> **NOTE:** Touch an indicator to test that function.

5. **Scroll right** ⑥ to view more information about each chamber.

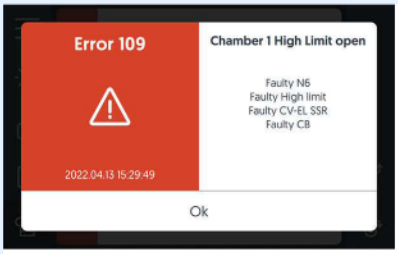
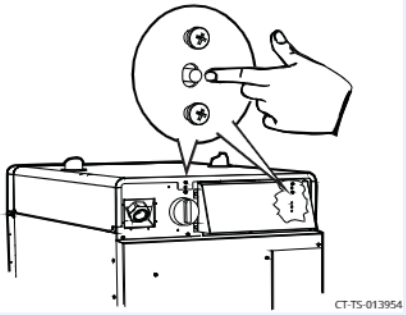
> **NOTE:** Touch an indicator to test that function.

Result The procedure is now complete.

What to do if the High Limit Screen Displays

Procedure

If the high limit screen displays, do the following.

Step	Action
1.	**Press and release** the high limit temperature reset button(s).
	NOTE: The high limit temperature reset buttons are located under the fan cover.
	 
2.	**Resume** operation of the oven.
	NOTE: If the high limit screen continues to display, the appliance is malfunctioning. Turn off the appliance and have the oven serviced by a qualified technician.

Result

The procedure is now complete.

For the most current schematics, use the QR code or click link.

Converge CMC-H2H 208-240V, 1PH, 60Hz	
Converge CMC-H2H 208-240V, 3PH, 60Hz	
Converge CMC-H2H 380-415V, 3PH, 50Hz	
Converge CMC-H3H, 208-240V, 3Ph, 60Hz	
Converge CMC-H3H 380-415V, 3PH, 50Hz	

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