



Vector® Multi-Cook Oven

Commercial Gas Oven With Simple Control

VMC-F3G
VMC-F4G



Structured Air Technology®

MN-47202-EN

REV.01
11/21

EN



Manufacturer's Information

Copyright

© Copyright 11/21 by Alto-Shaam, Inc.

All rights reserved.

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.

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.



DANGER: Before starting the oven, make sure you do not detect the odor of gas.

If you smell gas:

- Shut off the gas supply immediately.
- Do not attempt to light any appliance.
- Do not touch any electrical elements.
- Extinguish any open flame.
- Evacuate the area.
- Use a telephone outside of the property and immediately contact your gas supplier.
- If unable to contact your supplier, contact the fire department.

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.

This page is intentionally left blank.

Manufacturer's Information	2
Foreword	3
Alto-Shaam 24/7 Emergency Repair Service	3
Table of Contents	5
Safety	7
The Meaning of Signal Words	7
Safety Precautions.	8
Operation	11
How to Turn On and Turn Off the Oven	11
How to Update the Interface Board (IB)	13
How to Update the Control Board (CB)	16
How to Load Configuration Files	19
Components	23
Chamber Identification	23
Front Panel Identification	24
Back Panel Identification	25
Component Access Panels Identification	26
Top Panel Component Identification	27
Control Panel Component Identification	28
F4—Right Side Component Identification (120 Volt)	30
F4—Right Side Component Identification (208–240 Volt, 220 Volt)	31
F3—Right Side Component Identification (120 Volt)	32
F3—Right Side Component Identification (208–240 Volt, 220 Volt)	33
Back Side Component Identification	45
Left Side Component Identification	50
Maintenance	53
Maintenance Schedule	53
How to Clean the Oven	55
Troubleshooting	59
Error Codes.	59
The Oven will not Power Up	60
Chamber Lights do not Illuminate	62
The Check Fan Indicator Light is Illuminated	63

Axial Cooling Fan(s) are not Running	64
How to Test the Blower Motors	65
How to Test the Cooling Fans	68
How to Test the Fuel Pressure.	70
How to Inspect the Heat Exchanger	73
How to Calibrate a Chamber Thermocouple	86
How to Test the Probe	89
What to do if the Oven Malfunctions	91
What to do if the Fan Indicator Light Illuminates	92
What to do if the High Limit Screen Displays	93

Schematics	95
-------------------	-----------

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.
-

Gas precautions

Obey these gas precautions when using the appliance:

- Only use the oven when the ventilation hood is turned on.
 - Keep the area around the oven clear of any obstructions that might slow down the flow of cooling air.
 - Do not place objects near the oven's exhaust vents.
 - Do not touch the exhaust while the oven is running or immediately after it has been turned off.
 - Do not spray aerosols in the area of the oven during operation.
 - Do not store flammable materials in the area of the oven.
-

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.
-

Continued on next page

Continued from previous page

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

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 are permitted to use the appliance. They must meet the following qualifications:

- Have received proper instruction on how to use the appliance
- Are familiar 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.

Continued on next page

Continued from previous page

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, or the use of non-factory parts, will void the warranty and relieve Alto-Shaam of all liability.
- 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 72 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

Before you begin

The oven must be connected to electric power.

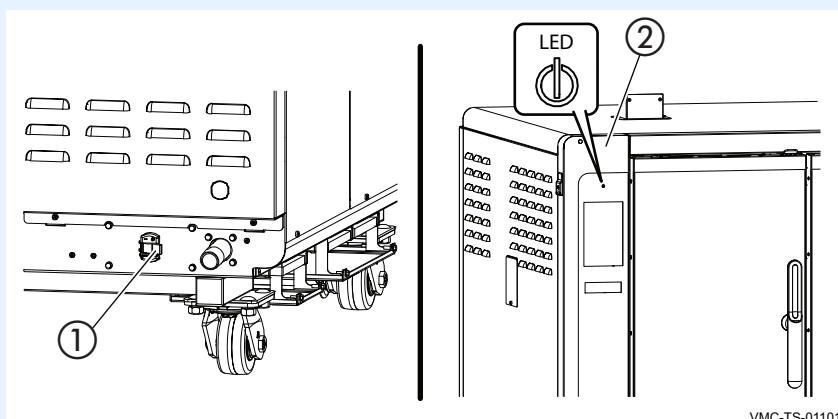
Turning on the oven

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.

Continued on next page

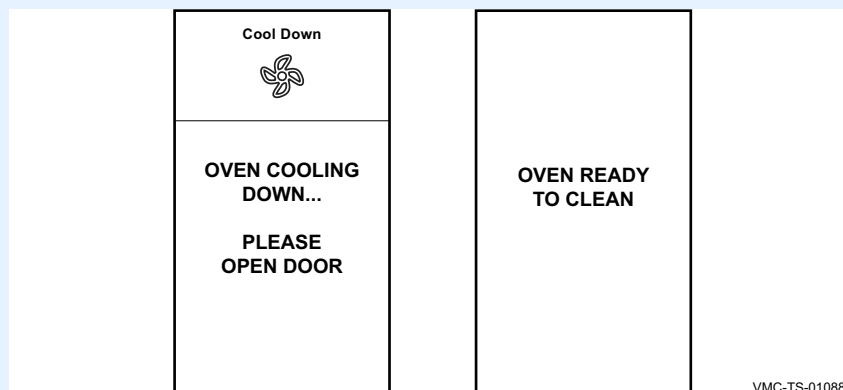
Continued from previous page

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 and the screen will display "Oven Ready to Clean." When the cool-down process is complete, it is safe to clean the oven.



VMC-TS-010882

The oven is now off.

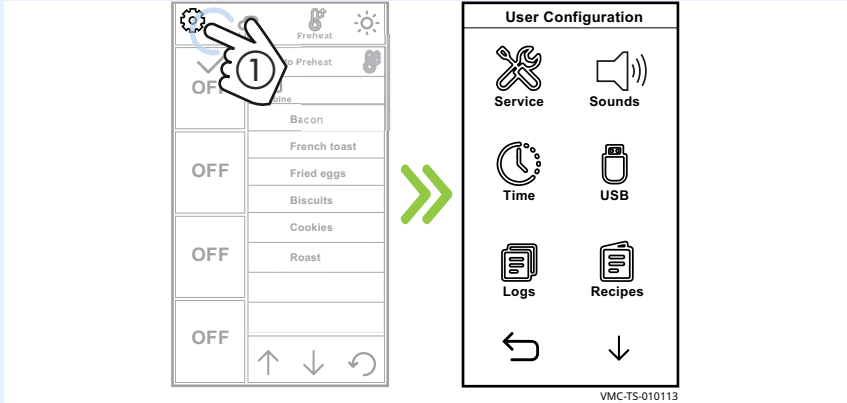
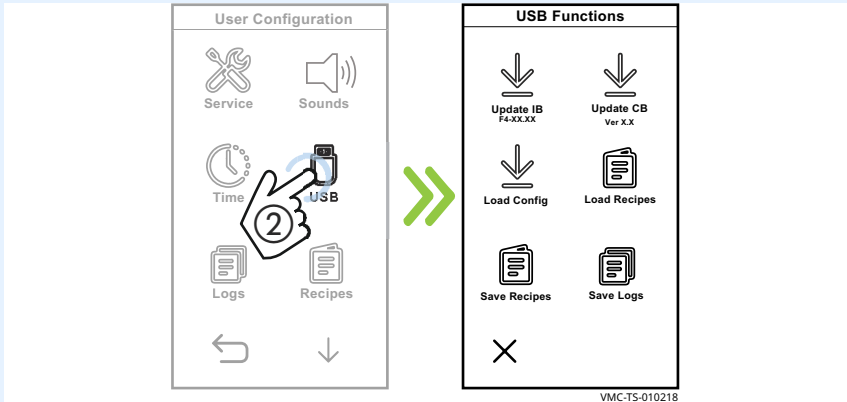
How to Update the Interface Board (IB)

Before you begin

- The chambers should be off (not preheated).
- Do not remove the USB drive during the update process.
- You will need a USB drive with the updated firmware.
- You will need to know the service pass code.

Procedure

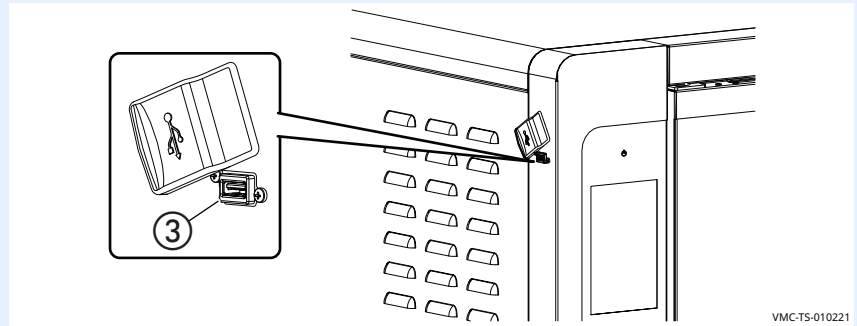
To update the interface board, do the following.

Step	Action
1.	Touch the gear icon ①. The User Configuration screen displays. 
2.	Touch the USB icon ②. The USB Functions screen displays. 

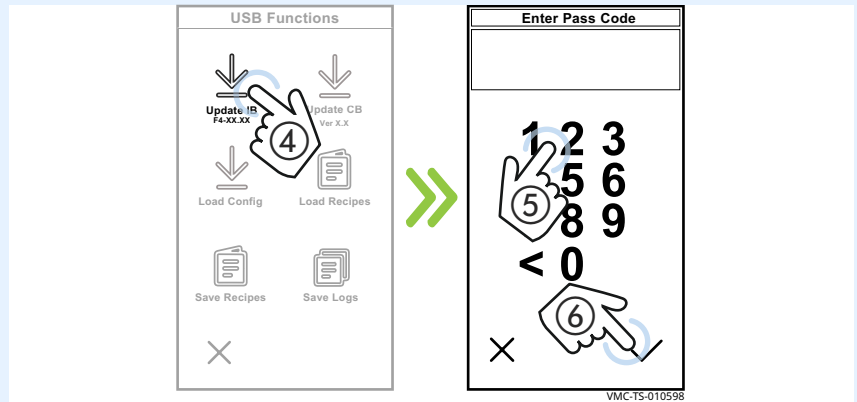
Continued on next page

Continued from previous page

3. **Plug** the USB drive into the port ③.



4. **Touch** the Update IB icon ④. The Enter Pass Code screen displays.
Enter the pass code ⑤.
Touch the check mark ⑥.



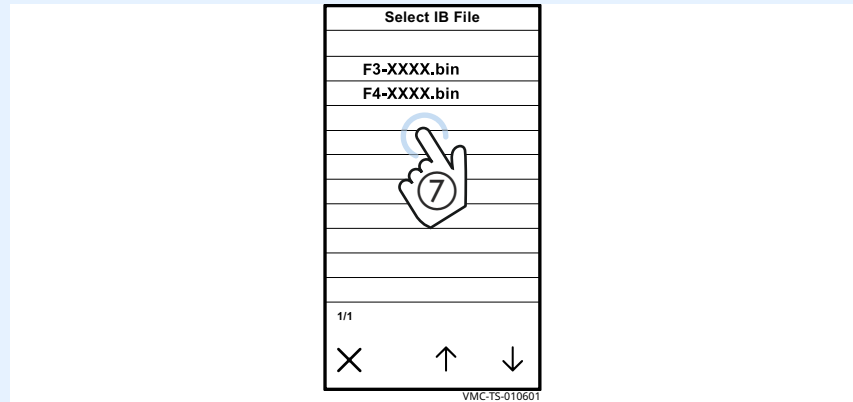
Continued on next page

Continued from previous page

5. **Touch** the firmware file ⑦ for your particular oven—choose by oven size. The oven loads the selected firmware.

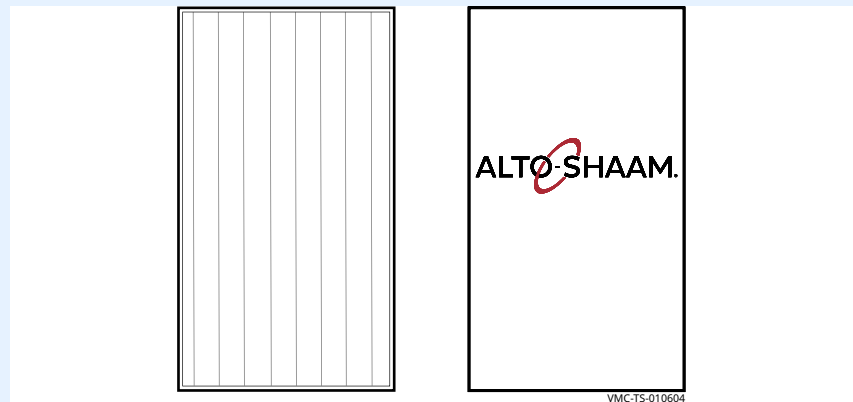


NOTE: Do not remove the USB drive during the update process.



The oven goes through the update process:

- The screen goes blank.
- The striped screen displays for a few seconds.
- The screen goes blank.
- The logo screen displays for a few seconds.
- The oven turns off.



6. **Press** the ON/OFF button to turn on the oven and complete the update process.

Result

The interface board has now been updated.

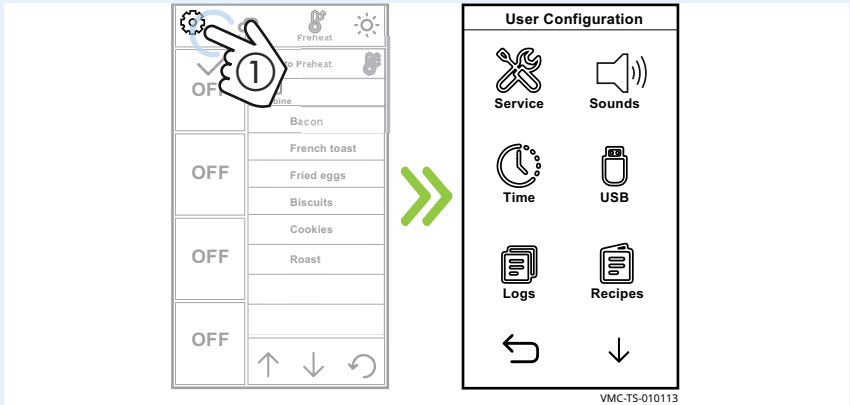
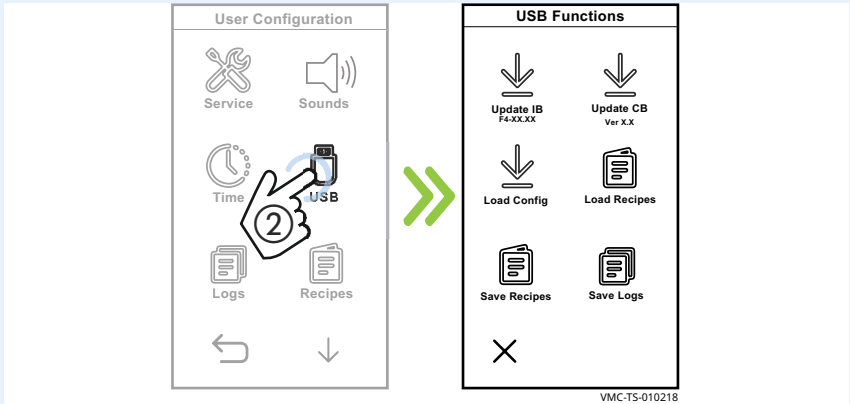
How to Update the Control Board (CB)

Before you begin

- The chambers should be off (not preheated).
- Do not remove the USB drive during the update process.
- You will need a USB drive with the updated firmware.
- You will need to know the service pass code.

Procedure

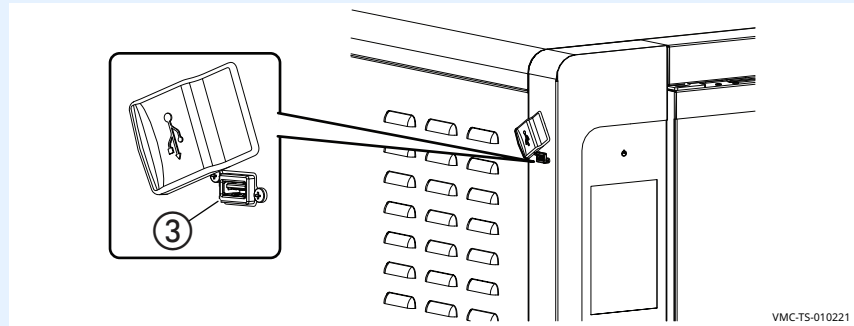
To update the control board, do the following.

Step	Action
1.	Touch the gear icon ①. The User Configuration screen displays. 
2.	Touch the USB icon ②. The USB Functions screen displays. 

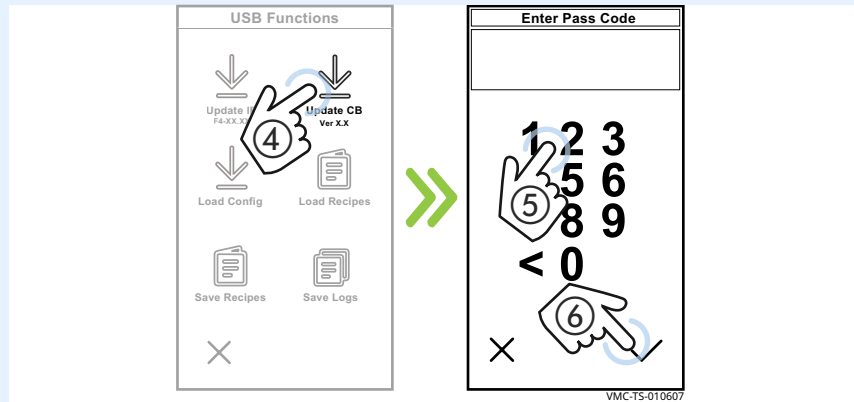
Continued on next page

Continued from previous page

3. **Plug** the USB drive into the port ③.



4. **Touch** the Update CB icon ④. The Enter Pass Code screen displays.
Enter the pass code ⑤.
Touch the check mark ⑥.



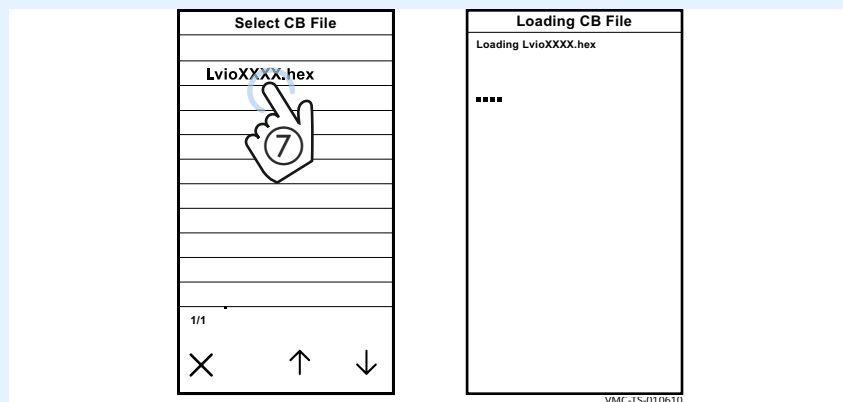
Continued on next page

Continued from previous page

5. **Touch** the firmware file ⑦. The oven loads the selected firmware.

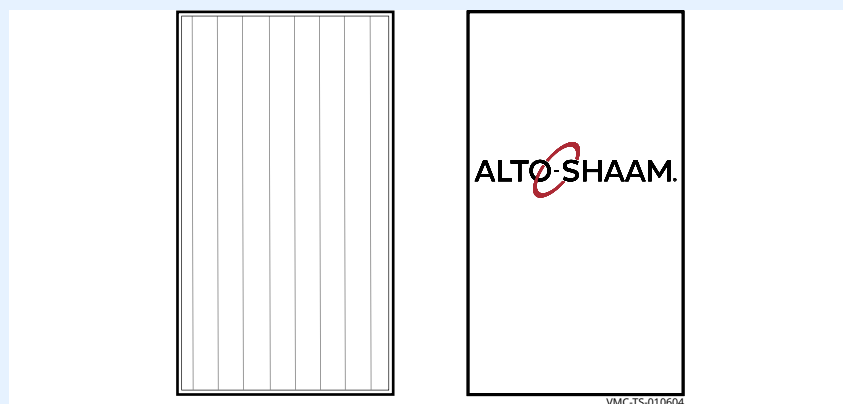


NOTE: Do not remove the USB drive during the update process.



The oven goes through the update process:

- The screen goes blank.
- The striped screen displays for a few seconds.
- The screen goes blank.
- The logo screen displays for a few seconds.
- The oven turns off.



6. **Press** the ON/OFF button to turn on the oven and complete the update process.

Result

The control board has now been updated.

How to Load Configuration Files

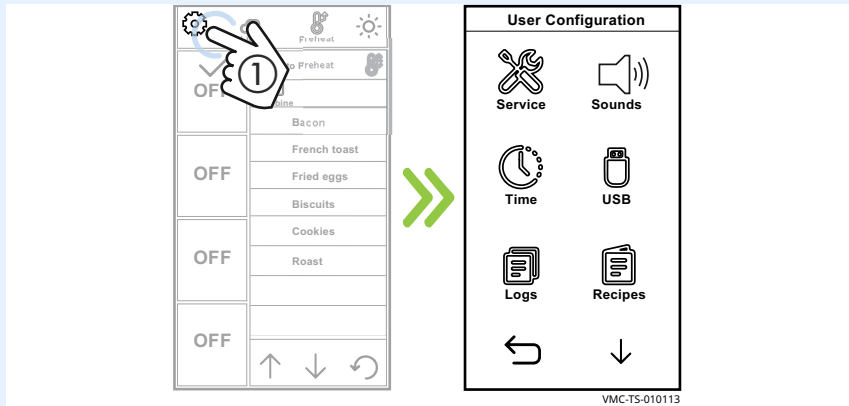
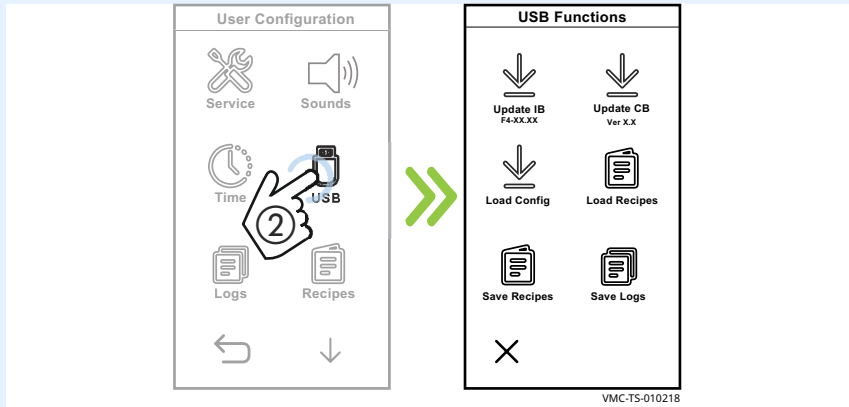
Before you begin

- The chambers should be off (not preheated).
- Do not remove the USB drive during the update process.
- You will need a USB drive with the configuration files.
- You will need to know the service pass code.

Procedure

Configuration files are used to load the oven menu.

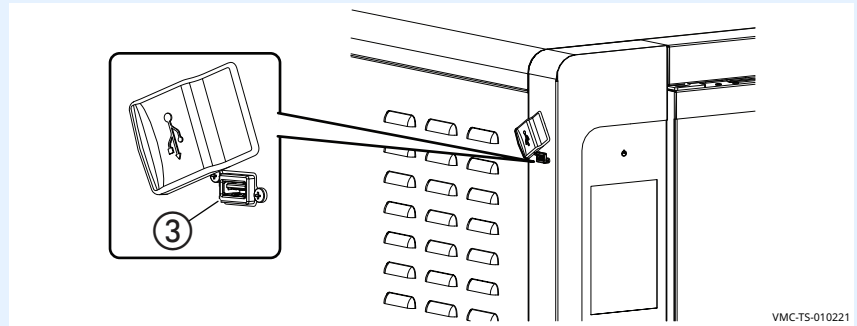
To load a menu to the oven, do the following.

Step	Action
1.	Touch the gear icon ①. The User Configuration screen displays. 
2.	Touch the USB icon ②. The USB Functions screen displays. 

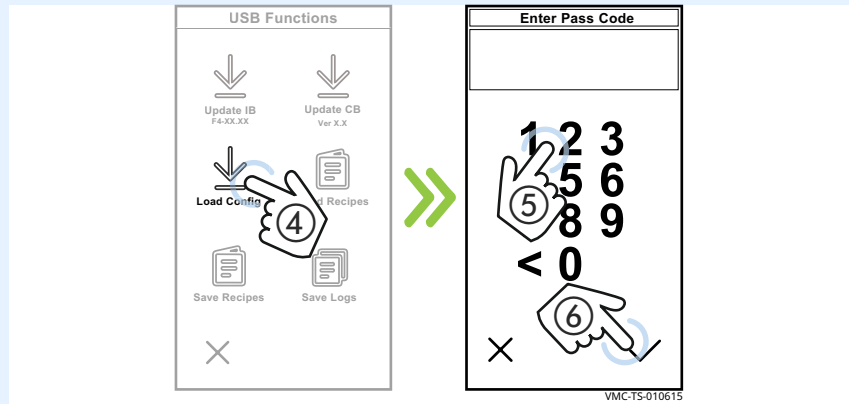
Continued on next page

Continued from previous page

3. **Plug** the USB drive into the port ③.



4. **Touch** the Load Config icon ④. The Enter Pass Code screen displays.
Enter the pass code ⑤.
Touch the check mark ⑥.



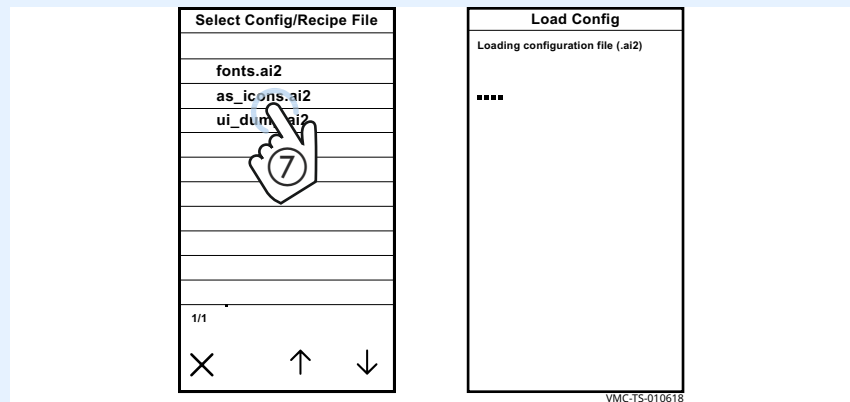
Continued on next page

Continued from previous page

5. **Touch** the configuration file ⑦. The oven loads the selected firmware.

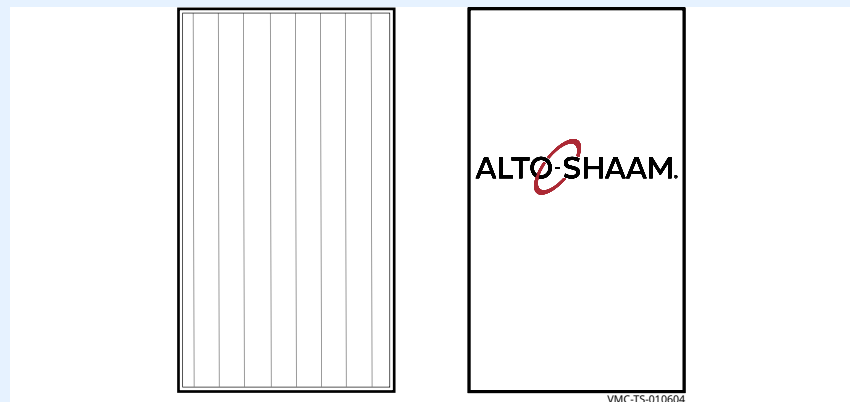


NOTE: Do not remove the USB drive during the update process.



The oven goes through the update process:

- The screen goes blank.
- The striped screen displays for a few seconds.
- The screen goes blank.
- The logo screen displays for a few seconds.
- The oven turns off.



6. **Press** the ON/OFF button to turn on the oven and complete the update process.

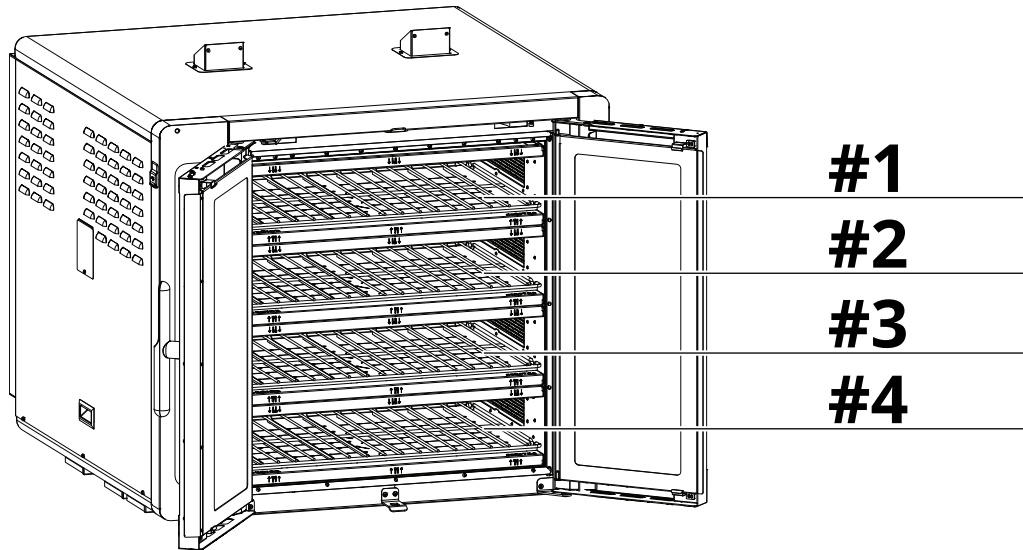
Result

The configuration file has now been loaded.

This page is intentionally left blank.

Chamber Identification

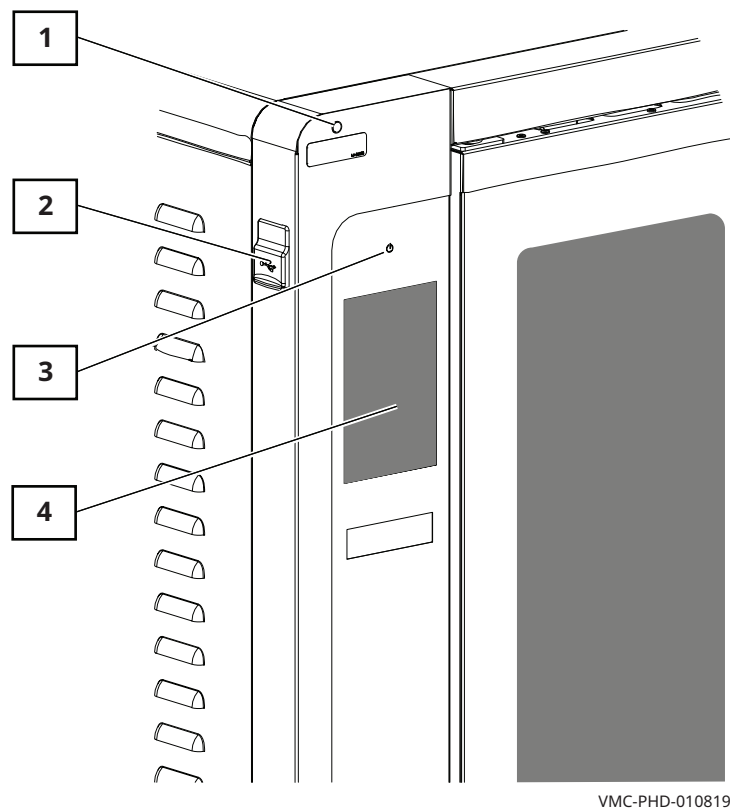
Components will be identified in accordance with the chamber numbering illustrated here. See topic *Variable Frequency Drive (VFD)* for VFD numbering.



VMC-PHD-013207

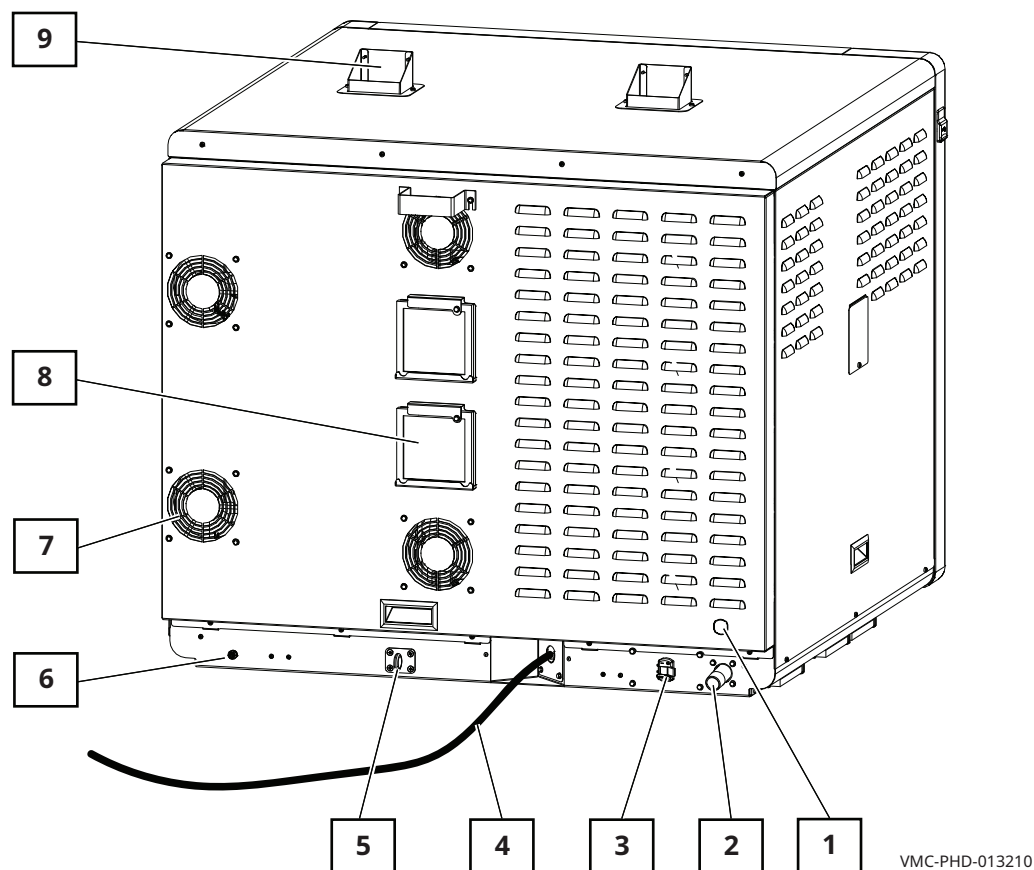
COMPONENTS

Front Panel Identification



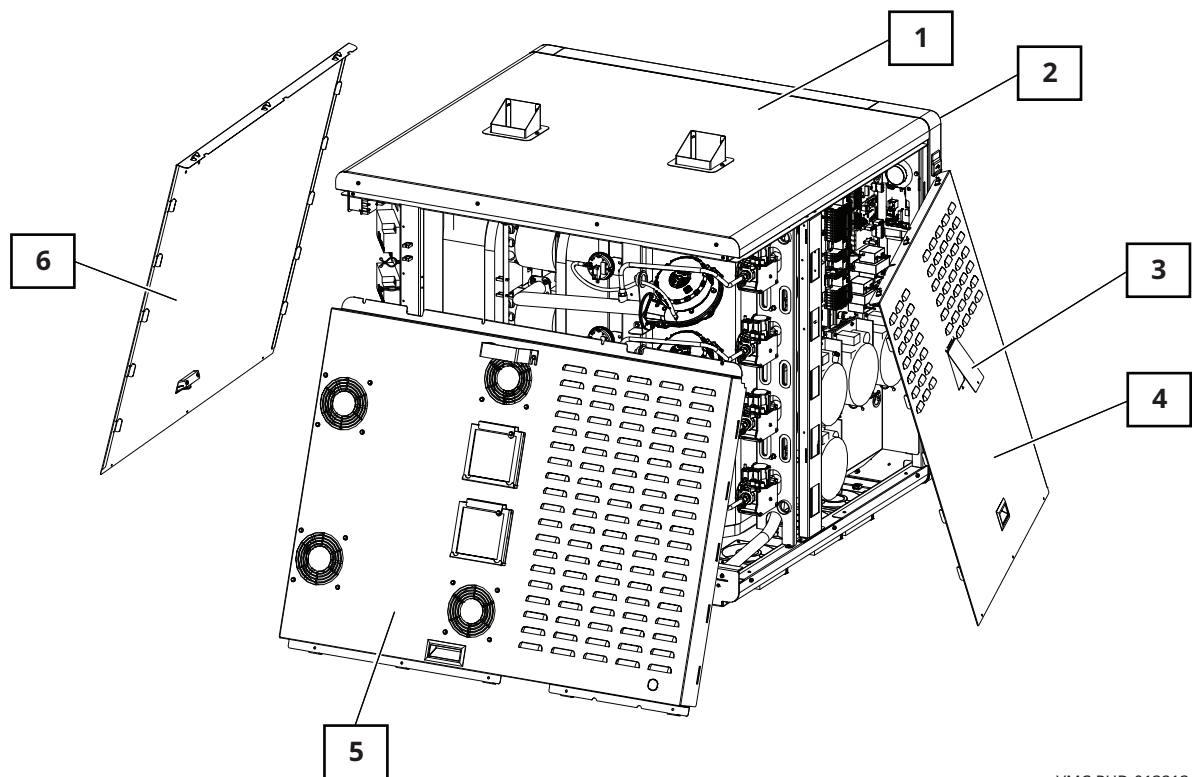
Ref.	Description
1	Check fan indicator light
2	USB port
3	ON/OFF button
4	Control panel display

Back Panel Identification



Ref.	Description
1	Ethernet port
2	Gas inlet pipe
3	Main disconnect switch
4	Electrical supply cord
5	Tether ring
6	Equipotential-bonding terminal
7	Cooling fan—exhaust
8	Cooling fan—intake
9	Exhaust—combustion

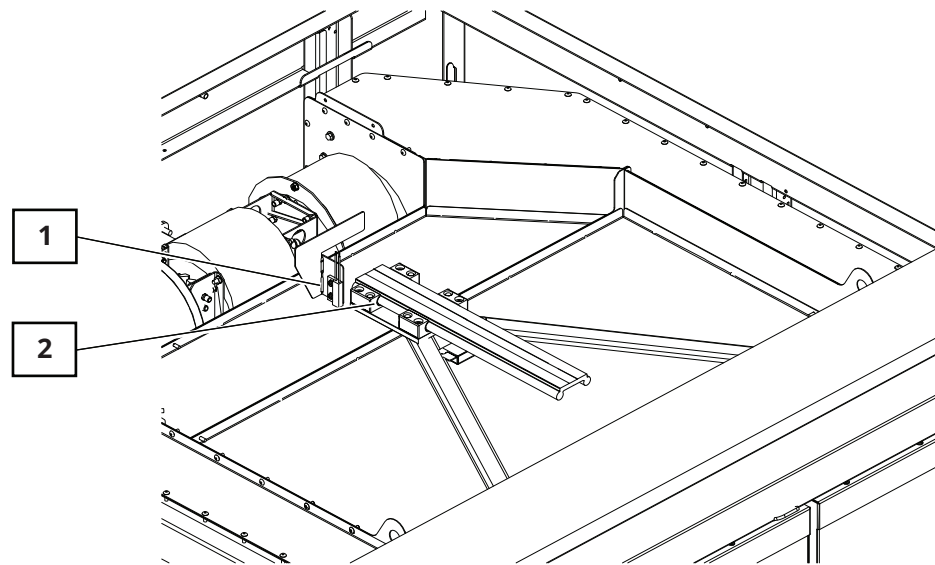
Component Access Panels Identification



VMC-PHD-013213

Ref.	Description	Provides access to
1	Top panel	Door drive and door switch
2	Control panel	Interface board, display, WiFi antenna
3	Circuit breaker access panel	Circuit breakers
4	Left service panel	Electric chassis components, gas valves
5	Back service panel	Burner components and convection blower fan
6	Right service panel	Burner controllers, high limit switches

Top Panel Component Identification

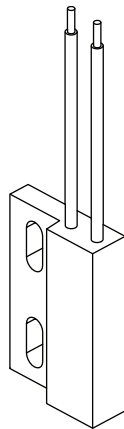


VMC-PHD-010701

Ref.	Description
1	Door switch
2	Door closure mechanism

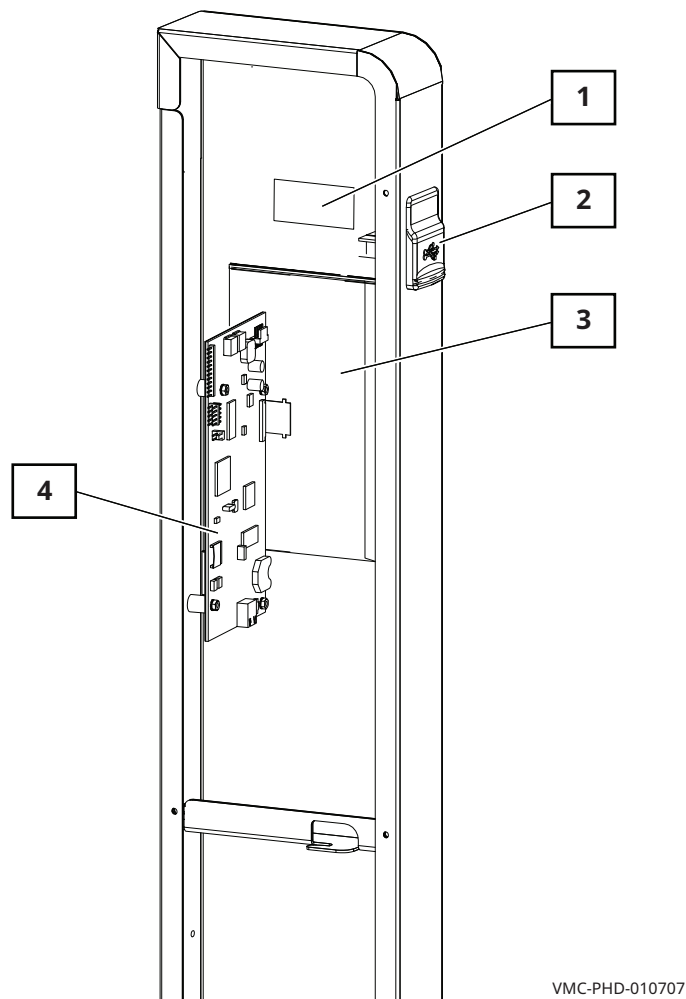
Door Switch

- **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.



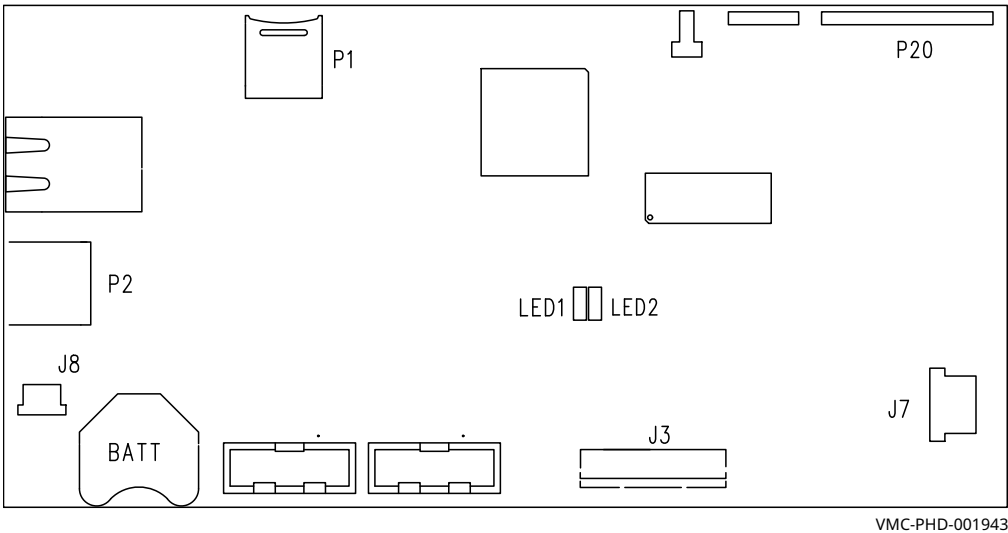
VMC-PHD-010704

Control Panel Component Identification



Ref.	Description
1	ON/OFF board
2	USB port
3	Display
4	Interface board

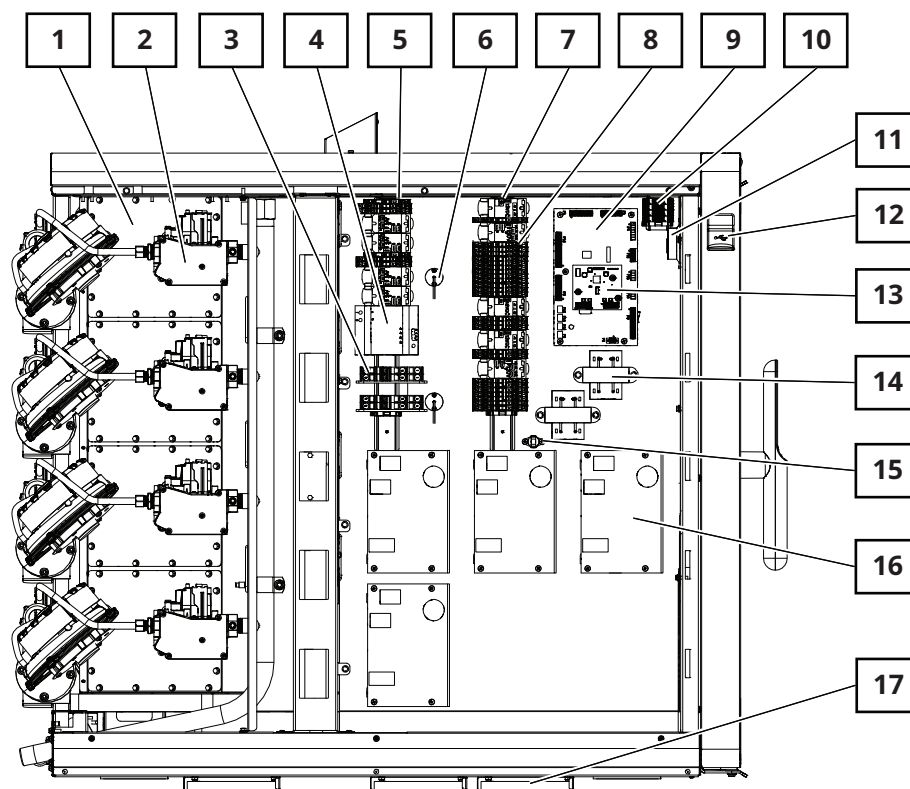
Interface Board



VMC-PHD-001943

Ref.	Description
BATT	Clock battery
J3	LCD display ribbon cable
J7	Control board communication
J8	Touch overlay ribbon cable
P1	4 GB micro SD card
P2	USB connection
P20	ON/OFF switch circuit board
LED 1	RS485 communication
LED 2	RS485 communication

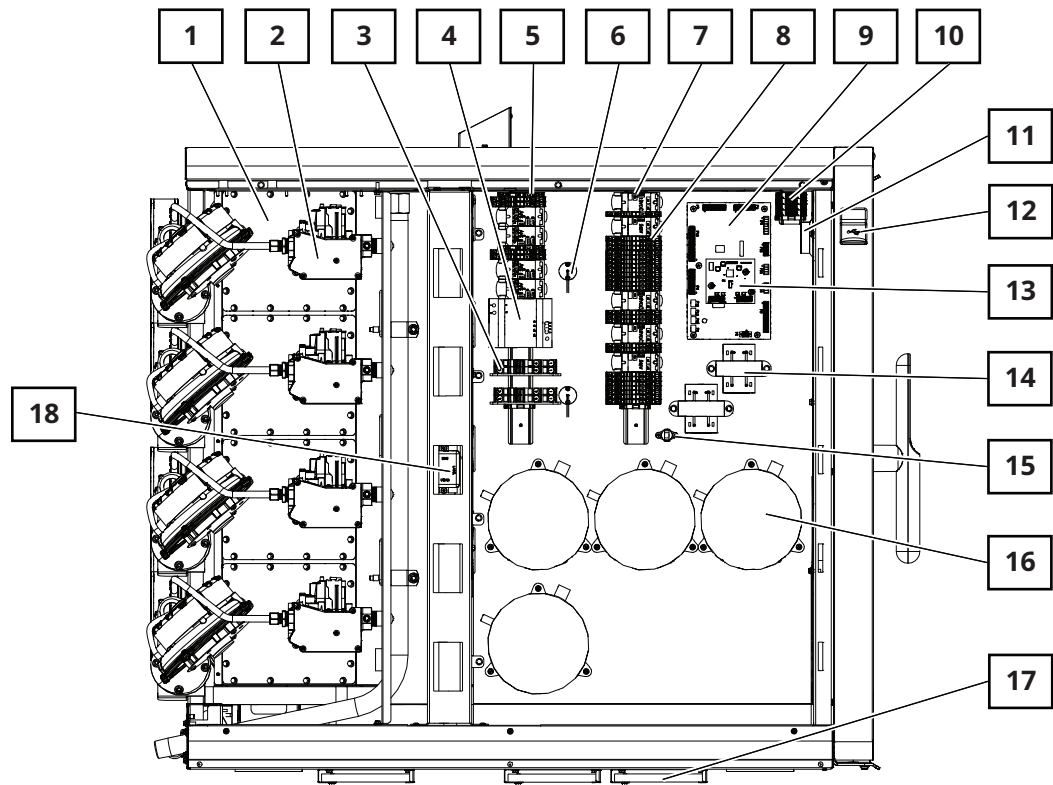
F4—Right Side Component Identification (120 Volt)



VMC-PHD-013216

Ref.	Description	Ref.	Description
1	Heat exchanger access panel	10	Terminal blocks
2	Gas valve	11	Speaker
3	Circuit breakers	12	USB port
4	12VDC power supply	13	Daughter board
5	Terminal blocks and relays	14	Transformer
6	Chamber air temperature probe	15	Switch—check fans light 1 of 2
7	Relay	16	Variable frequency drive (VFD)
8	Terminal blocks	17	Cooling fans
9	Control board	—	—

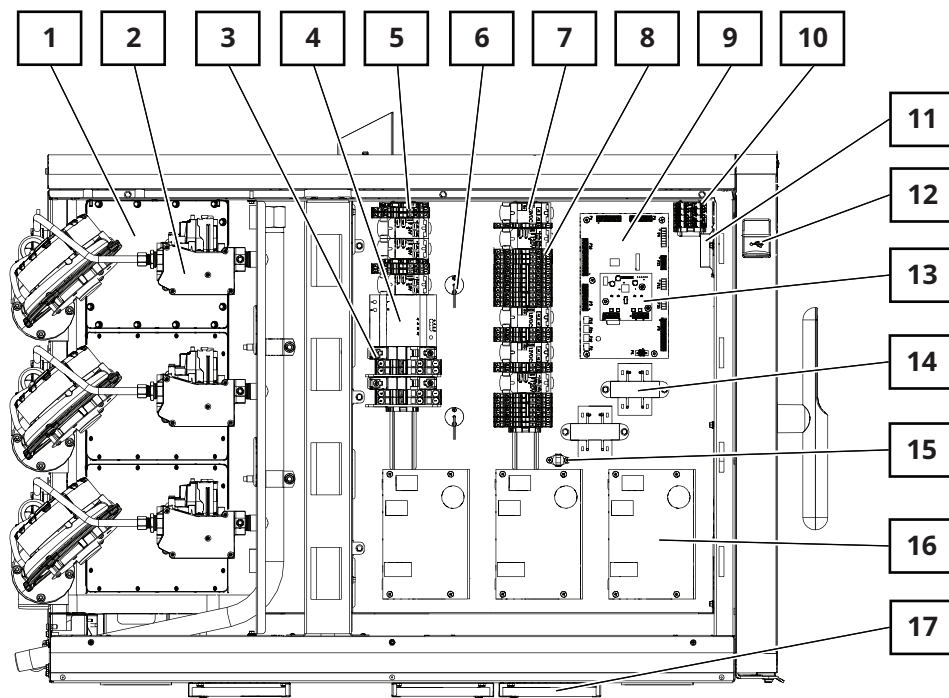
F4—Right Side Component Identification (208–240 Volt, 220 Volt)



VMC-PHD-013219

Ref.	Description	Ref.	Description
1	Heat exchanger access panel	10	Terminal blocks
2	Gas valve	11	Speaker
3	Circuit breakers	12	USB port
4	12VDC power supply	13	Daughter board
5	Terminal blocks and relays	14	Transformer
6	Chamber air temperature probe	15	Switch—check fans light 1 of 2
7	Relay	16	Variable frequency drive (VFD)
8	Terminal blocks	17	Cooling fans
9	Control board	18	Line filter (CE only)

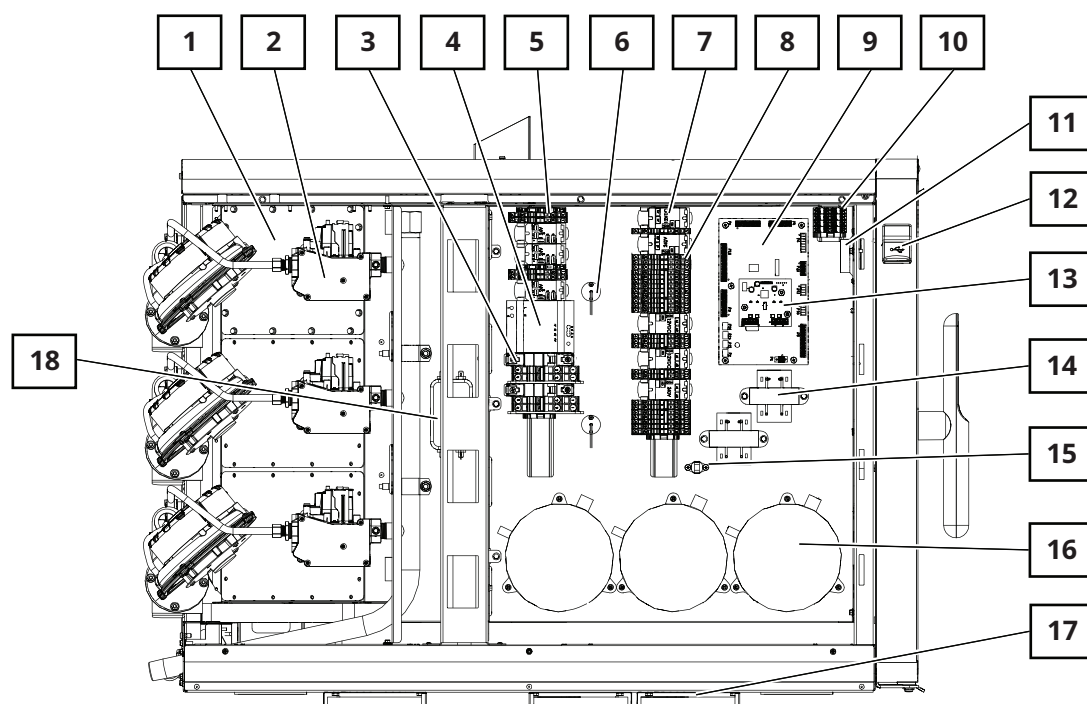
F3—Right Side Component Identification (120 Volt)



VMC-PHD-013222

Ref.	Description	Ref.	Description
1	Heat exchanger access panel	10	Terminal blocks
2	Gas valve	11	Speaker
3	Circuit breakers	12	USB port
4	12VDC power supply	13	Daughter board
5	Terminal blocks and relays	14	Transformer
6	Chamber air temperature probe	15	Switch—check fans light 1 of 2
7	Relay	16	Variable frequency drive (VFD)
8	Terminal blocks	17	Cooling fans
9	Control board	—	—

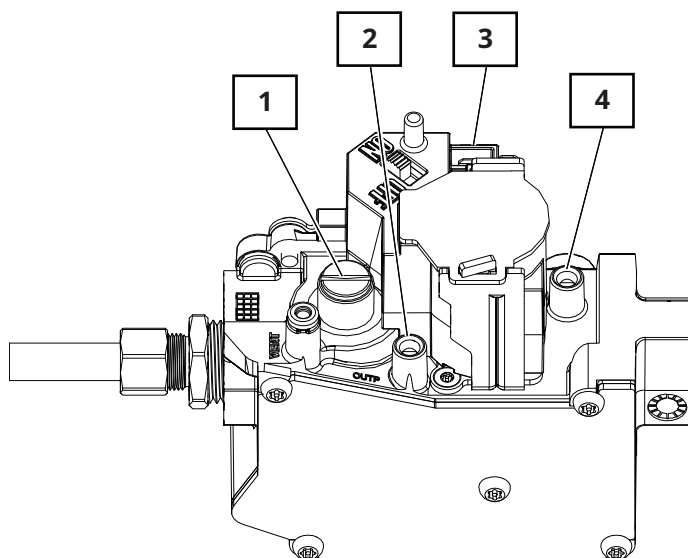
F3—Right Side Component Identification (208–240 Volt, 220 Volt)



VMC-PHD-013225

Ref.	Description	Ref.	Description
1	Heat exchanger access panel	10	Terminal blocks
2	Gas valve	11	Speaker
3	Circuit breakers	12	USB port
4	12VDC power supply	13	Daughter board
5	Terminal blocks and relays	14	Transformer
6	Chamber air temperature probe	15	Switch—check fans light 1 of 2
7	Relay	16	Variable frequency drive (VFD)
8	Terminal blocks	17	Cooling fans
9	Control board	18	Line filter (CE only)

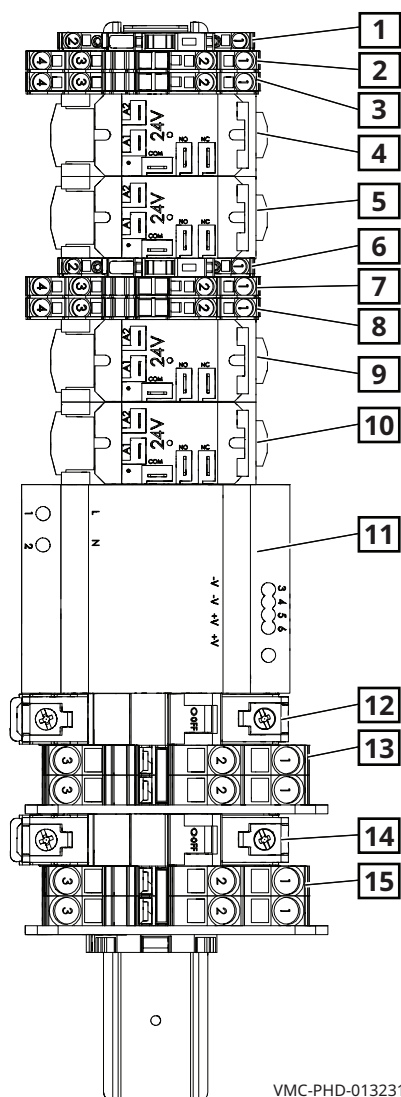
Gas Valve



VMC-PHD-013228

Ref.	Description
1	Pressure adjust (spring)
2	Pressure test port (out)
3	Electrical solenoid
4	Pressure test port (supply)

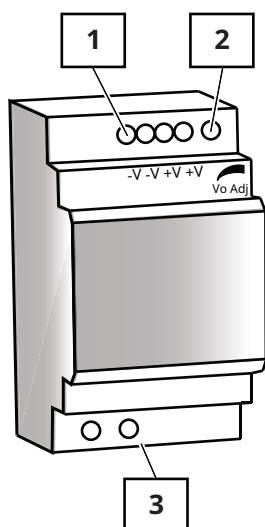
Fuses, Terminal Blocks, Relays, Power Supply, Circuit Breakers



Ref.	Description	Ref.	Description
1	Fuse 1	9	Relay—ignition sense 3–24 V
2	TB 34	10	Relay—ignition sense 4–24 V
3	TB 12	11	12 VDC power supply
4	Relay—ignition sense 1–24 V	12	Circuit breaker 1
5	Relay—ignition sense 2–24 V	13	TB 1
6	Fuse 2	14	Circuit breaker 2
7	TB 36	15	TB 4
8	TB 14	—	—

12VDC Power Supply

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



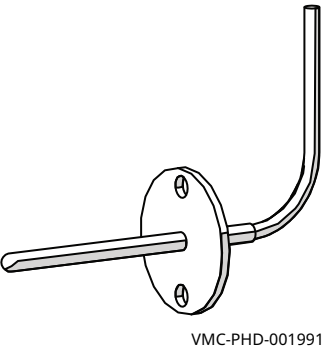
VMC-PHD-001935

Ref.	Description
1	12VDC terminals
2	12VDC adjustment
3	90-264 VAC input

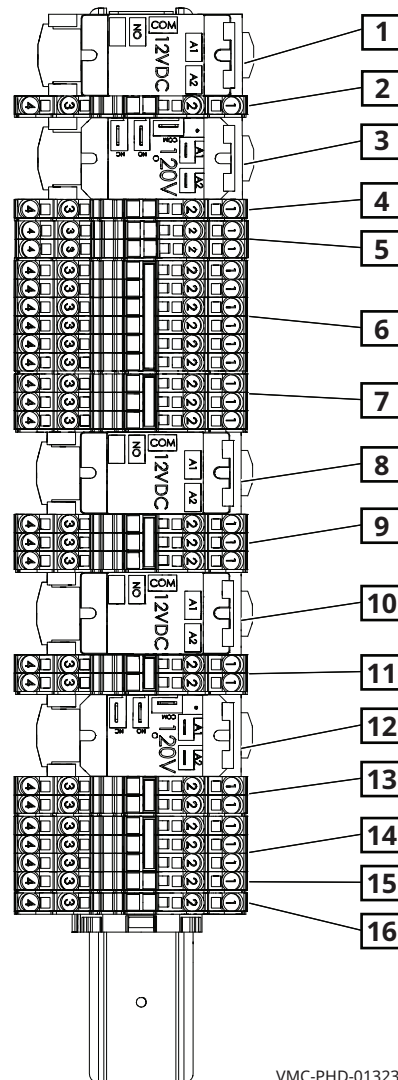
Chamber Air Temperature Probe

K Type Thermocouple

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



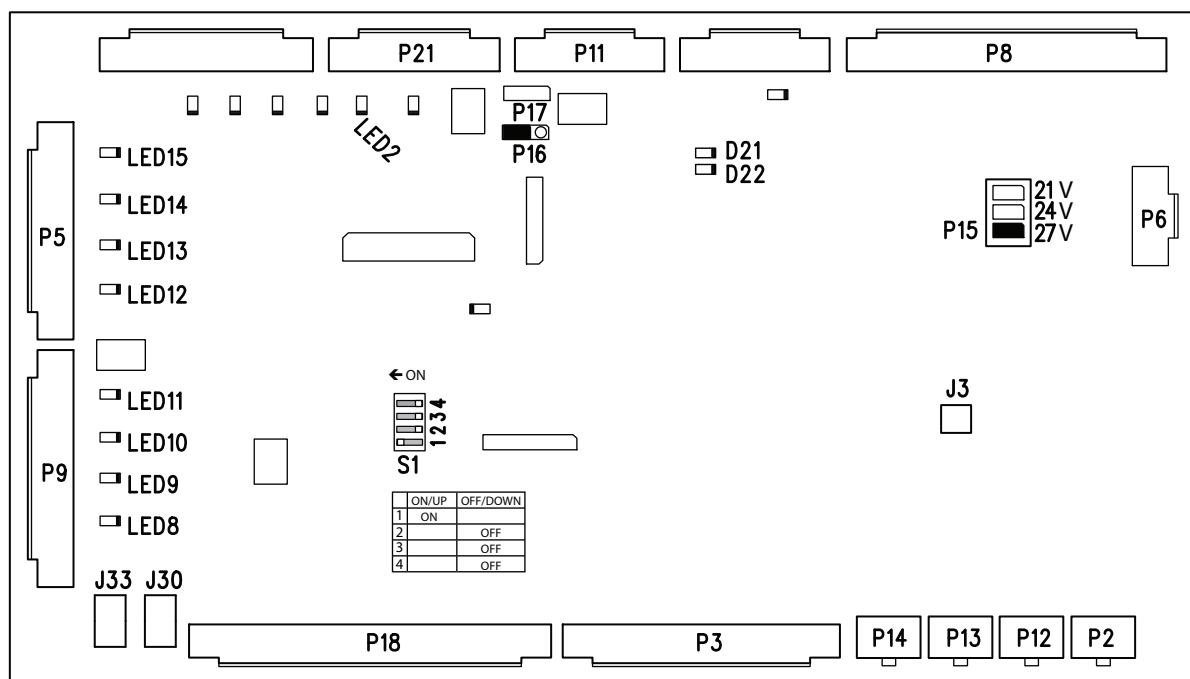
Relays, Terminal Blocks



VMC-PHD-013234

Ref.	Description	Ref.	Description
1	Relay—convection (VFD) drive 1 and 2	9	TB 26
2	TB 38	10	Relay—combustion blowers
3	Relay—convection (VFD) drive 3 and 4	11	TB 28
4	TB 40	12	Relay—check fans
5	TB 29	13	TB 30
6	TB 16	14	TB 37
7	TB 22	15	TB 32
8	Relay—cooling fans	16	TB 18

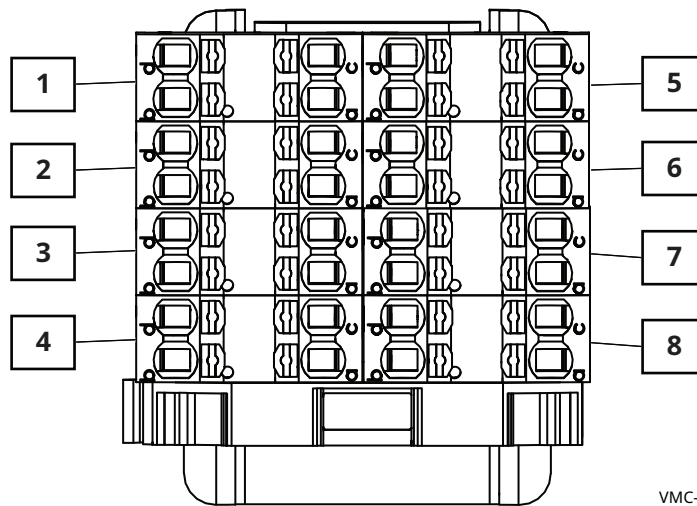
Control Board (CB)



VMC-PHD-013313

Ref.	Description	Ref.	Description	Ref.	Description
P2	Drive 1 communication	P15	Jumper	LED 9	Chamber 2 call for heat
P3	Input signals	P16	Jumper	LED 10	Chamber 3 call for heat
P5	Lights	P17	Not used	LED 11	Chamber 4 call for heat
P6	Input from 12VDC power supply	P18	Input from switches	LED 12	Chamber 1 light
P8	Thermocouple inputs	P21	Output to blower/fan relay RL1	LED 13	Chamber 2 light
P9	Heater control signal to SSRs	J3	Speaker	LED 14	Chamber 3 light
P11	Communication to UI board	J30	AC input from the transformer	LED 15	Chamber 4 light
P12	Drive 2 communication	J33	AC input from the transformer	D21	RS485 communication
P13	Drive 3 communication	LED 2	Cooling fan power	D22	RS485 communication
P14	Drive 4 communication	LED 8	Chamber 1 call for heat	S1	1 ON 2, 3, 4 OFF

Terminal Blocks

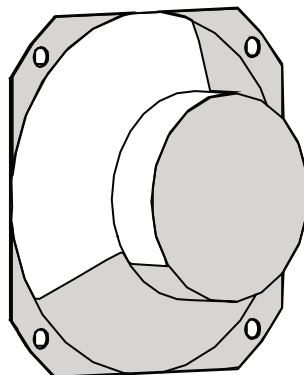


VMC-PHD-013237

Ref.	Description
1	TB 63 Light 1
2	TB 65 Light 3
3	TB 67 Light 1
4	TB 69 Light 3
5	TB 64 Light 2
6	TB 66 Light 4 F4
7	TB 68 Light 2
8	TB 70 Light 4 F4

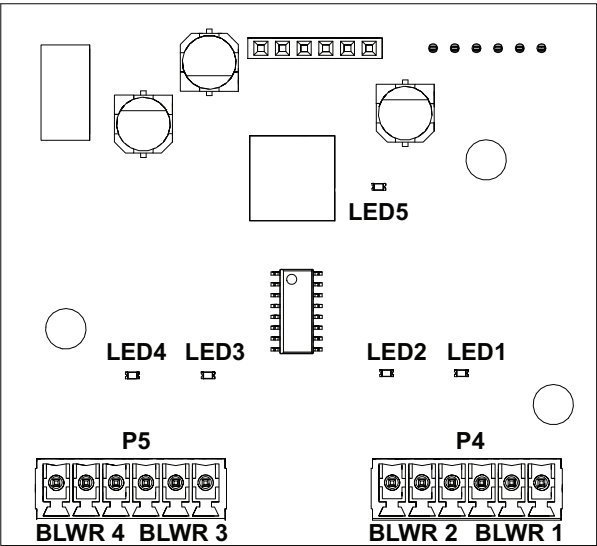
Speaker

8 Ohms



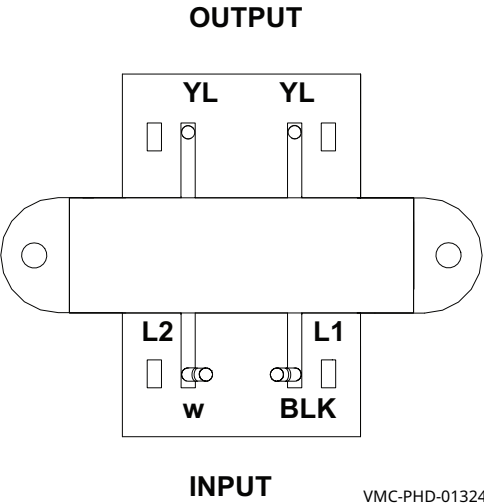
VMC-PHD-001995

Daughter Board



VMC-PHD-013240

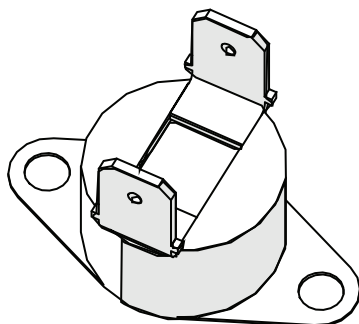
120 to 24 VAC Transformer



VMC-PHD-013243

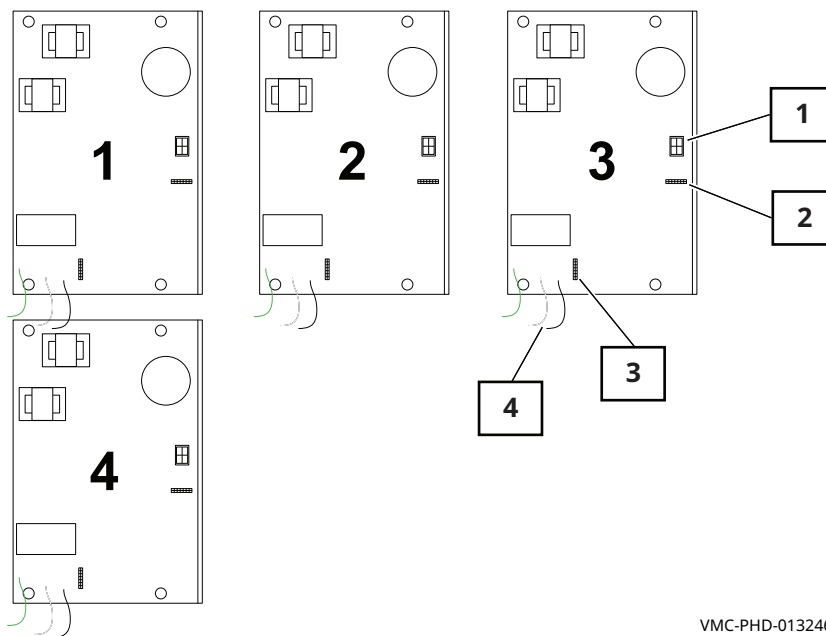
Check Fans Indicator Light Switch 1 of 2

- The contacts close at or above 130°F (54°C)



VMC-PHD-001903

Variable Frequency Drives (VFD) 120 Volt



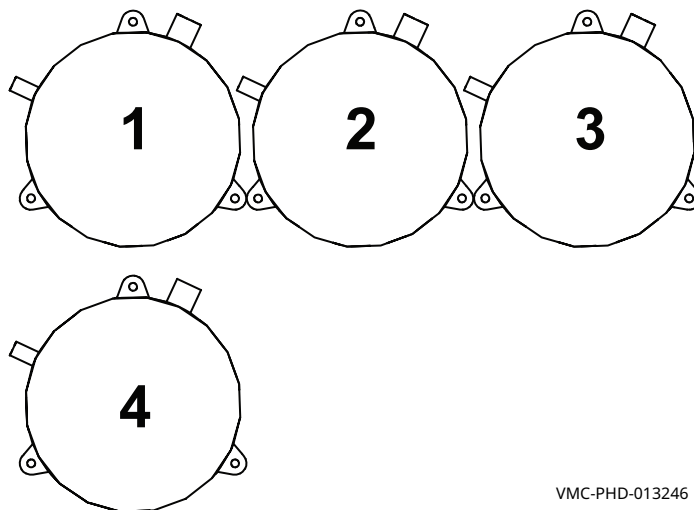
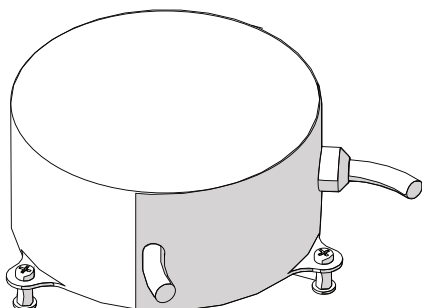
VMC-PHD-013246

Ref.	Description
1	Motor—Pulse Width Modulation (PWM)
2	Motor—hall effect
3	Control Board communication
4	Power and ground

Variable Frequency Drives (VFD) 208–240 Volt, 220 Volt

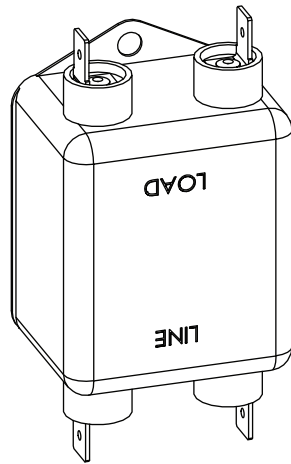


WARNING: Electric shock hazard.
Do not disassemble the VFD.



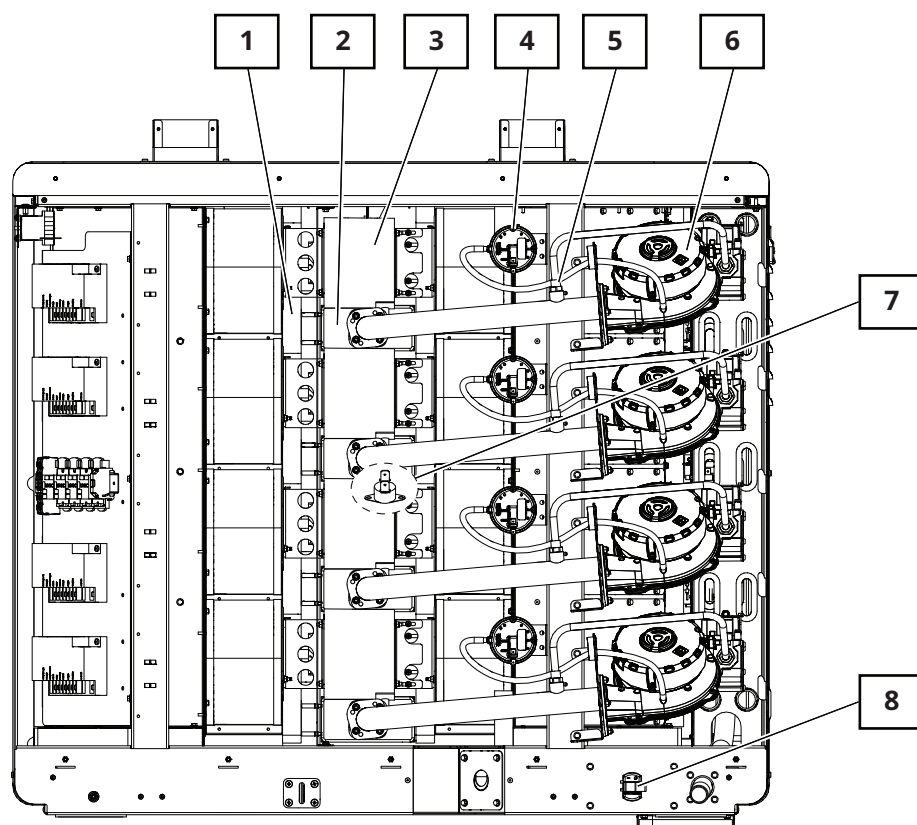
VMC-PHD-013246

Line Filter (CE Only)



VMC-PHD-010737

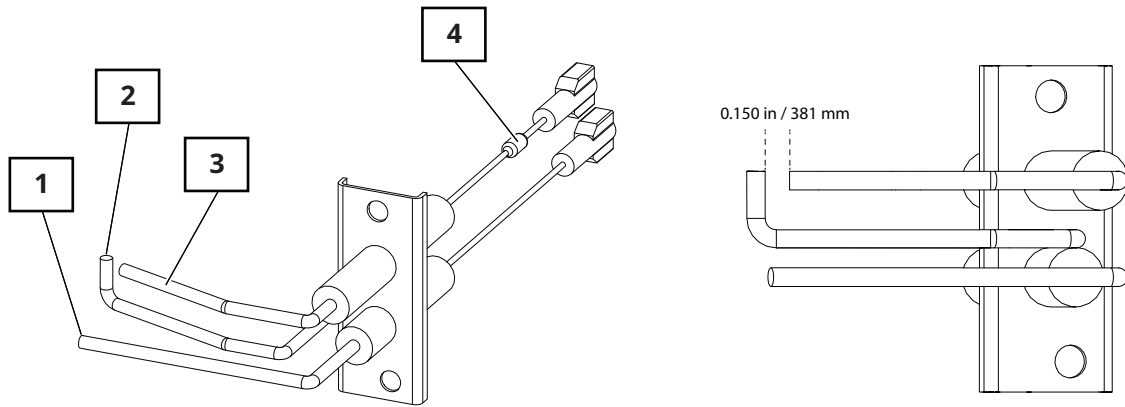
Back Side Component Identification



VMC-PHD-013252

Ref.	Description
1	Igniter
2	Burner
3	Convection motor
4	Air proving switch
5	Orifice
6	Combustion blower
7	Check fans switch (2 of 2) (mounted to back panel)
8	Main disconnect switch

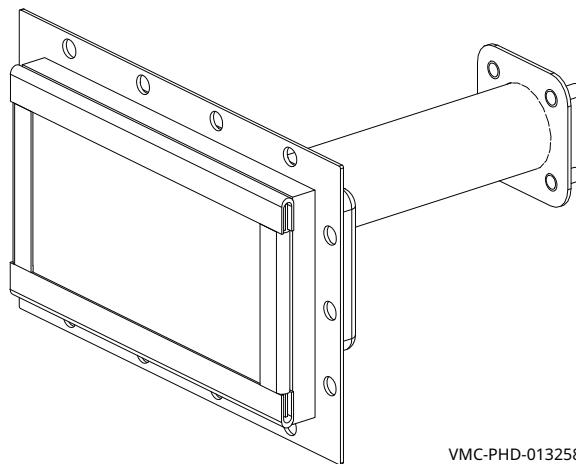
Igniter



VMC-PHD-013255

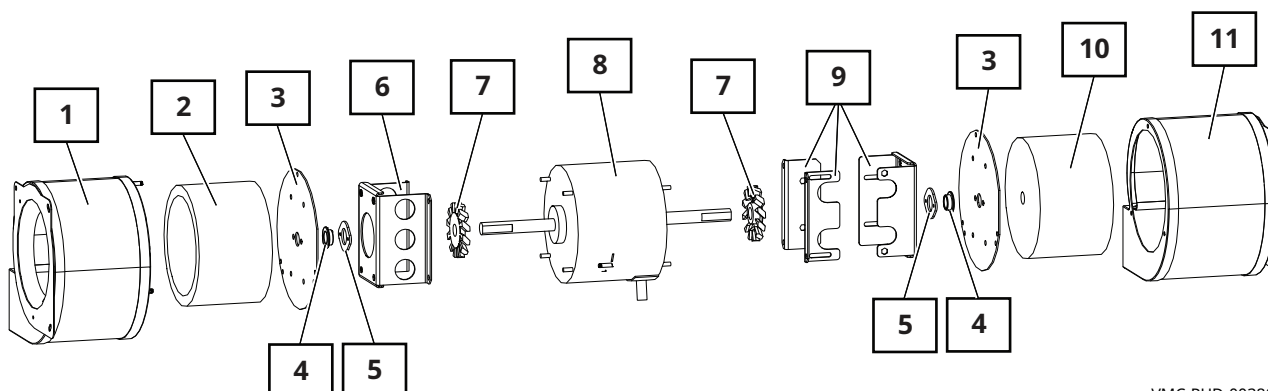
Ref.	Description
1	Flame sense
2	Ground
3	Spark
4	1000 ohm resistor

Burner



VMC-PHD-013258

Blower Motor Assembly



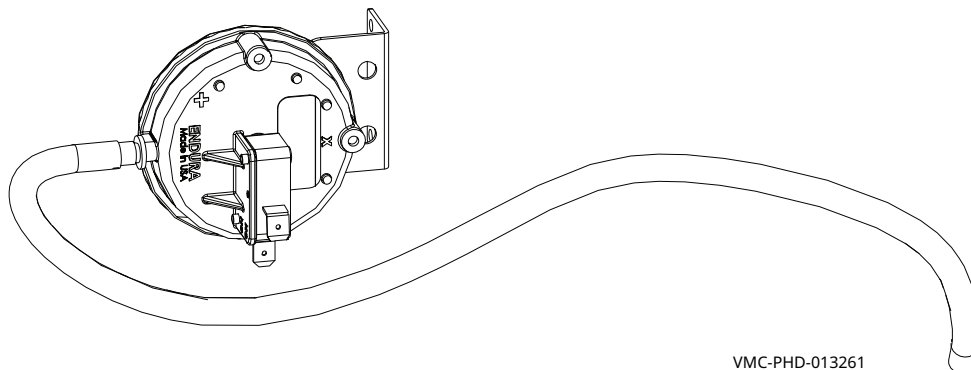
VMC-PHD-003802

Ref.	Description	Ref.	Description
1	Blower housing, left side	7	Radial blower wheel, 12-blade
2	Wheel, blower, left side	8	Motor, double shaft
3	Plate, motor mounting	9	Bracket, adjustable, motor mount
4	Bushing	10	Wheel, blower, right side
5	Plate, seal retainer	11	Blower housing, right side
6	Bracket, motor mount, left side	—	—

Air Proving Switch

Single pole normally open

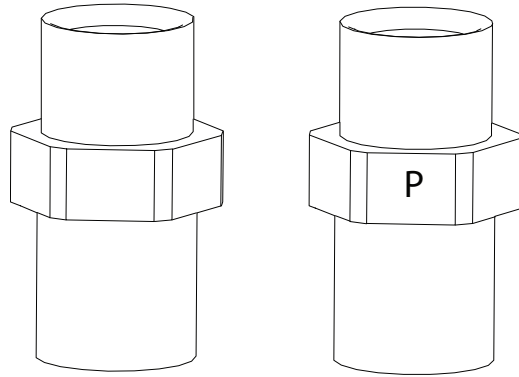
Contacts change state on pressure rise 0.20 ± 0.05 " W.C.



VMC-PHD-013261

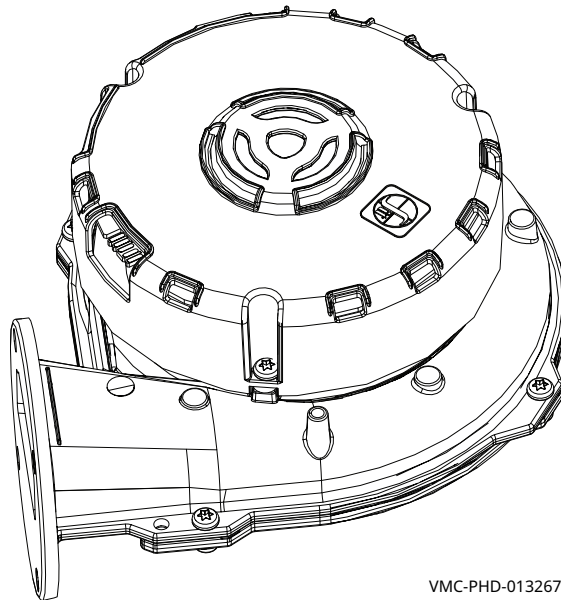
Orifice

The propane orifice is designated with a "P" stamped on one face.



VMC-PHD-013264

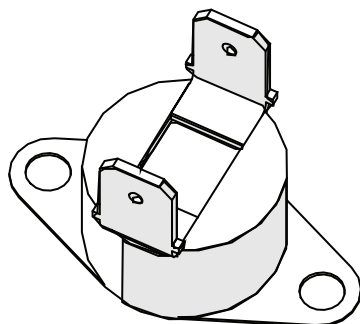
Combustion Blower



VMC-PHD-013267

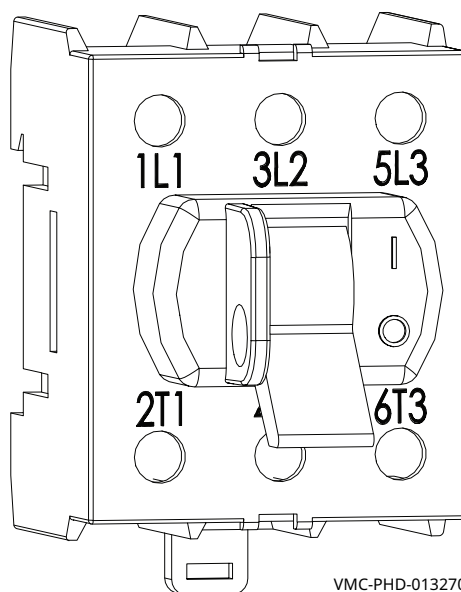
Check Fans Indicator Light Switch 2 of 2

- The contacts close at or above 130°F (54°C)



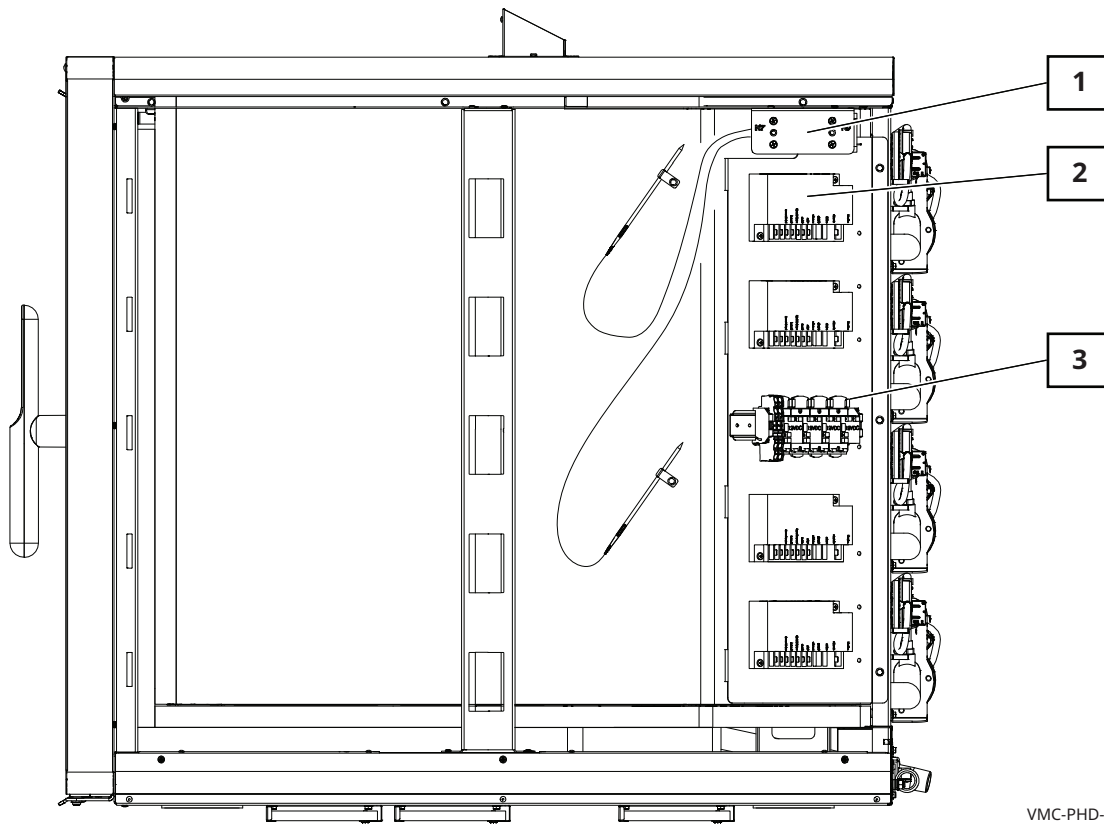
VMC-PHD-001903

Main Disconnect Switch



VMC-PHD-013270

Left Side Component Identification

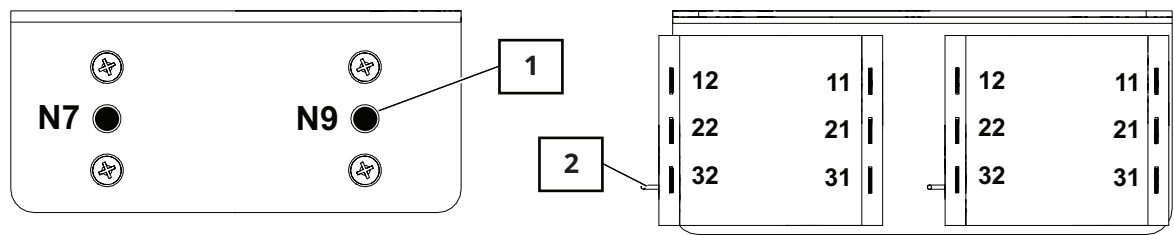


VMC-PHD-013273

Ref.	Description
1	High limit switches—N7, N9
2	Burner control
3	Terminal blocks, relays

High Limit Switches

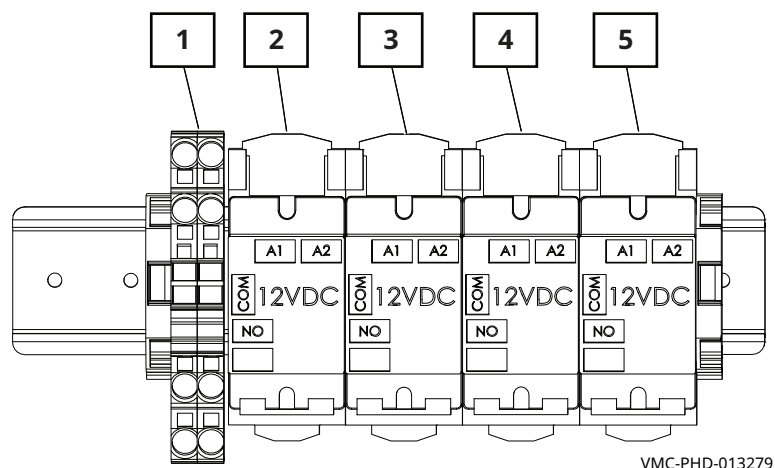
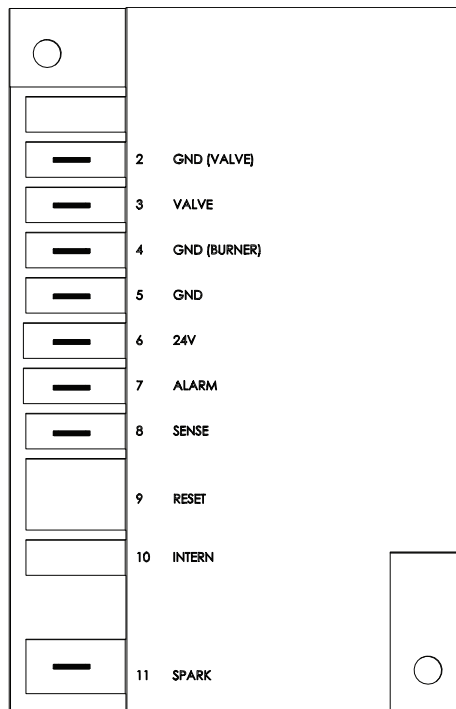
Resettable
Contact open at 572°F (300°C)



VMC-PHD-013276

Ref.	Description
1	Reset button
2	Temperature bulb

Burner Control



Ref.	Description
1	TB GND
2	Heat demand relay 1
3	Heat demand relay 2
4	Heat demand relay 3
5	Heat demand relay 4

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.
- **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.
- **Inspect** and clean the grease filters (if equipped)
- 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 cooling fan filters.

Yearly

For yearly maintenance, do the following.



NOTE: Must be performed by a qualified professional.

- **Inspect** the return air path for grease buildup. **Remove** any grease buildup.
- **Inspect** the heat exchangers and burners. See topic *How to Inspect the Heat Exchanger*.
- **Inspect** the heater flange area for grease leakage.
- **Inspect** the motor flange area for grease leakage.
- **Inspect** the door gaskets for correct shape and seal.
- **Inspect** the inner and outer door window panes for cracking or chipping.

- **Check and tighten** all wire connections.
- **Check and tighten** all display, interface and control board connections.
- **Check and tighten** the door hinges.

Continued on next page

Continued from previous page

- **Record** the software versions and update if necessary.
 - **Record** the incoming supply line voltage.
-
- **Test** each chamber fan for correct operation.
 - **Test** each chamber heater for correct operation.
 - **Test** the chamber lights.

How to Clean the Oven

Before you begin



WARNING: Burn hazard.

Wear eye protection and hand protection while cleaning the oven.

Do not spray cleaner into the oven while the blowers are running.

Allow the oven, racks, and jet plates to cool before cleaning the oven.

NOTICE

Do not spray any opening inside the oven with water or cleaning solution.

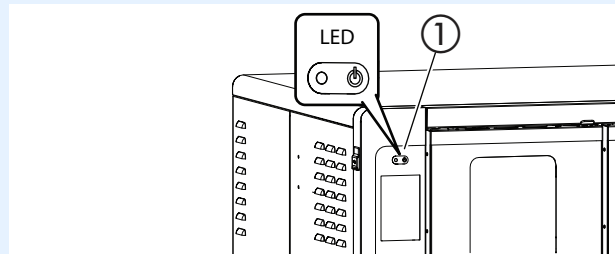
Do not use steel pads, wire brushes, or scrapers when cleaning.

Daily cleaning procedure

For daily cleaning, do the following.

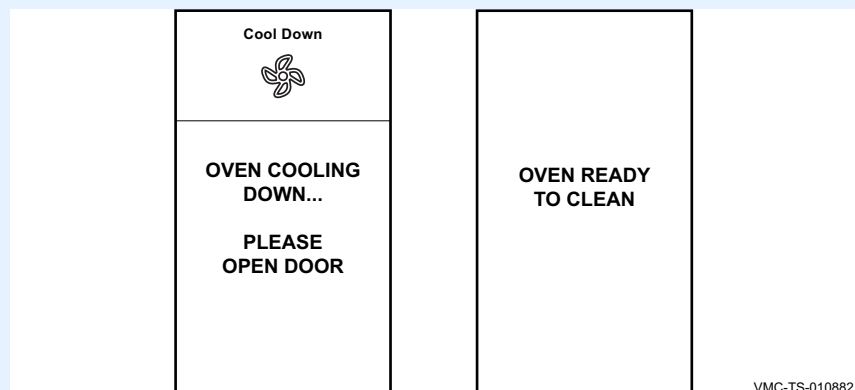
Step Action

1. **Press and hold** the ON/OFF button ① until the LED above the ON/OFF button illuminates red.



VMC-TS-010651

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 and the screen will display "Oven Ready to Clean." When the cool-down process is complete, it is safe to clean the oven.



VMC-TS-010882

Continued on next page

Continued from previous page

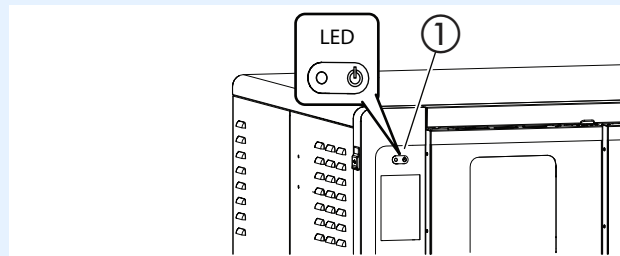
2. **Remove** any spills with disposable paper wipes or a damp cloth.
3. **Wipe** the outside of the oven with a damp cloth.
4. **Wipe** the outside of the oven with a stainless steel cleaner.

Monthly or as needed cleaning procedure

For the monthly cleaning or as needed if the oven is dirty, do the following.

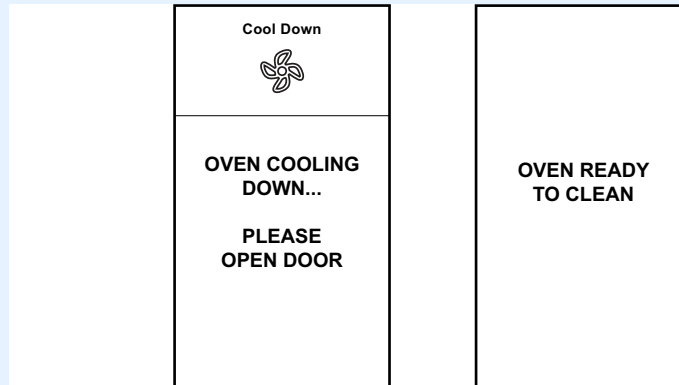
Step	Action
------	--------

- | | |
|----|--|
| 1. | Press and hold the ON/OFF button ① until the LED above the ON/OFF button illuminates red. |
|----|--|



VMC-TS-010651

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 and the screen will display "Oven Ready to Clean." When the cool-down process is complete, it is safe to clean the oven.



VMC-TS-010882

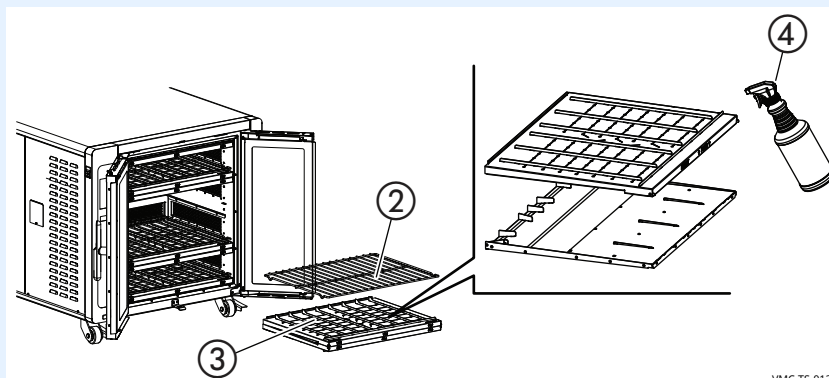
Continued on next page

Continued from previous page

2. **Remove** the cooking racks (2) and jet plates (3).



CAUTION: Personal injury hazard.
Use hand protection when handling the jet plates.



VMC-TS-013125

3. **Separate** the jet plates.

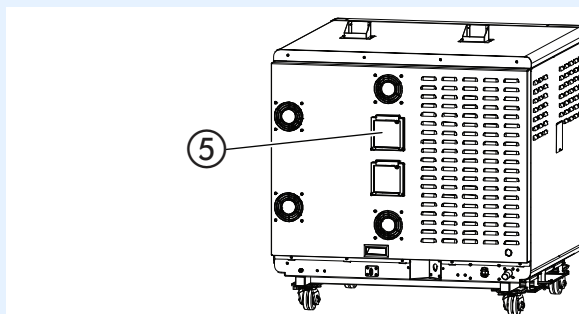
4. **Spray** the cooking racks and jet plates with Alto-Shaam non-caustic oven cleaner (4), CE-46828. Follow safety instructions on cleaner bottle. Let the cleaner work for 3–5 minutes. **Scrub** with a non-abrasive scrub pad. **Rinse** with water. **Wipe** with a soft cloth.

5. **Spray** the interior surfaces of the oven with Alto-Shaam non-caustic oven cleaner, CE-46828. Let the cleaner work for 3–5 minutes. **Scrub** with a non-abrasive scrub pad. **Remove** any residue with a water-soaked towel.

6. **Remove** the cooling fan filters (5). Clean with a mild cleaner and rinse with hot water.



NOTE: Replace the cooling fan filters at least once a year.



VMC-TS-013128

Continued on next page

Continued from previous page

7.	Re-install the cooling fan filters.
8.	Clean the door glass with Windex® or equivalent glass cleaner.
9.	Re-install the jet plates and cooking racks.  NOTE: Make sure the jet plates are installed correctly. The nozzles on the jet plates should be pointing towards the food.
10.	Spray the exterior of the oven with stainless steel polish. Wipe the exterior of the oven with a non-abrasive scrub pad. NOTICE Use only non-caustic cleaners. Do not spray directly into the fan openings on the rear of the oven. Do not use cleaners that contain sodium hydroxide (lye) or phosphorus.

Result

The oven is now clean.

Error Codes

Code	Description	Parameters that trigger the error	Possible Cause(s)
E-3	Motor error	No cavity motor rotation detected for greater than 30 seconds.	1. Connection between Variable Frequency Drive (VFD) and control board 2. Connection between fan motor and VFD 3. Fan motor 4. VFD 5. Control board
E-10	Sensor short	Short circuit detected on sensor wires.	1. Sensor connection 2. Sensor 3. Control board
E-11	Sensor open	Cavity air sensor reading > 650°F (343°C).	1. Sensor connection 2. Sensor 3. Control board
E-30	Unit under temperature	Cavity temperature remains 25°F (14°C) below target for more than 90 minutes.	Troubleshoot heating element
E-31	Electronics over temperature	Control board temperature exceeds 158°F (70°C) and/or interface board temperature exceeds 184°F (84°C).	1. Cooling fan filters blocked or dirty 2. Cooling fan not operating 3. Installation clearance requirements not met
E-87	Gas lockout	Loss of flame three times within 5 minutes.	Lack of fuel pressure.
E-88	Ignition module/valve failure	Two, 4-second tries for light at the ignition module with a 30-second delay between.	1. Valve status is not open after call for heat.
E-90	Gas combustion blower speed failure	Blower RPM is outside +/- 10% of expected RPMs at start of call for heat, or post-ramping when the end speed is reached.	1. Power supply cable is not connected to blower motor. 2. Speed control cable is not connected to blower motor. 3. Blower motor is blocked, rotation is impeded, or motor is faulty. 4. Faulty PWM daughter board.
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. Connection of modbus cable 2. Modbus cable 3. Control board 4. Interface board
E-108	Bi-metal thermostat open	Open circuit detected across bi-metal switch.	1. Cooling fan filters blocked or dirty 2. Cooling fan not operating 3. Connection between bi-metal switch and control board 4. Installation clearance requirements not met 5. Bi-metal switch
E-109	High limit error Note: Contact an authorized Alto-Shaam service partner.	Open circuit detected across high limit switch.	1. Jet plate(s) improperly installed 2. Cavity fan not operating 3. Optional grease filters blocked with debris 4. Heat relay(s) stuck closed 5. Connection between high limit switch and control board 6. High limit switch

The Oven will not Power Up

Before you start

- Remove the circuit breaker service panel.
- Move the circuit breakers to the OFF position, then move the circuit breakers to the ON position and retry operation. If the oven still does not power up, follow the troubleshooting procedure below.



WARNING: Electric shock and arc flash hazard.

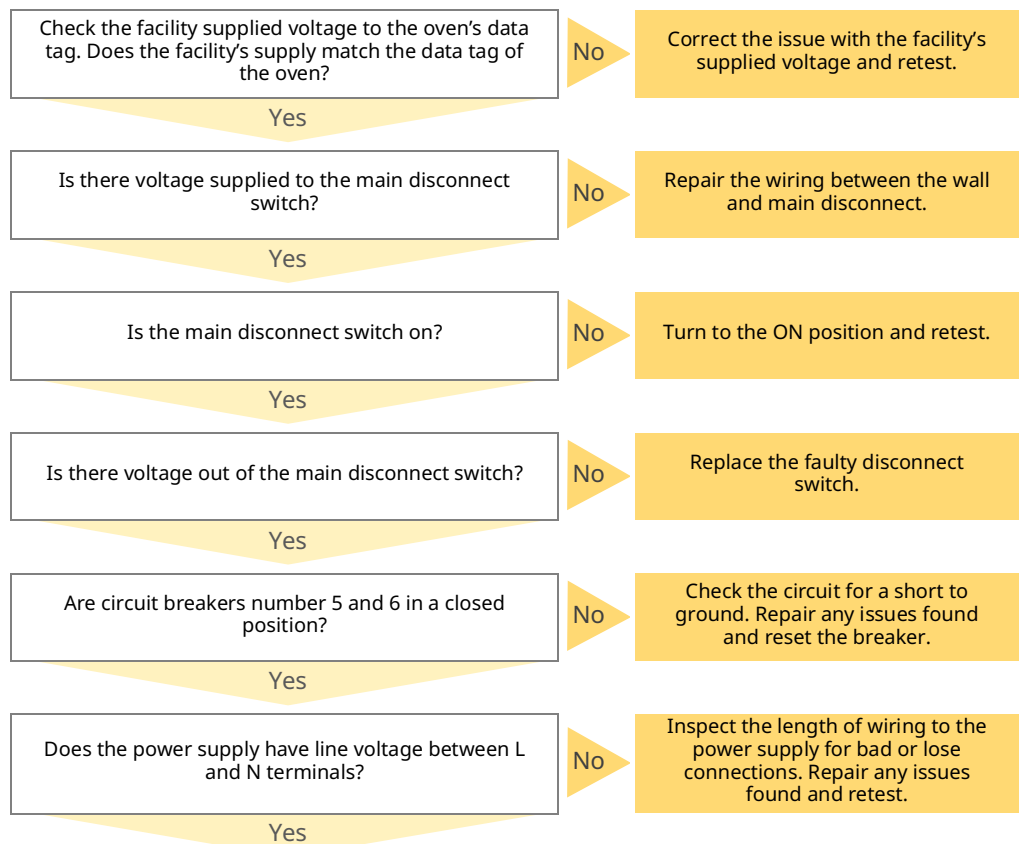
Use caution when measuring line voltage.

Wear Personal Protective Equipment (PPE).

NOTICE

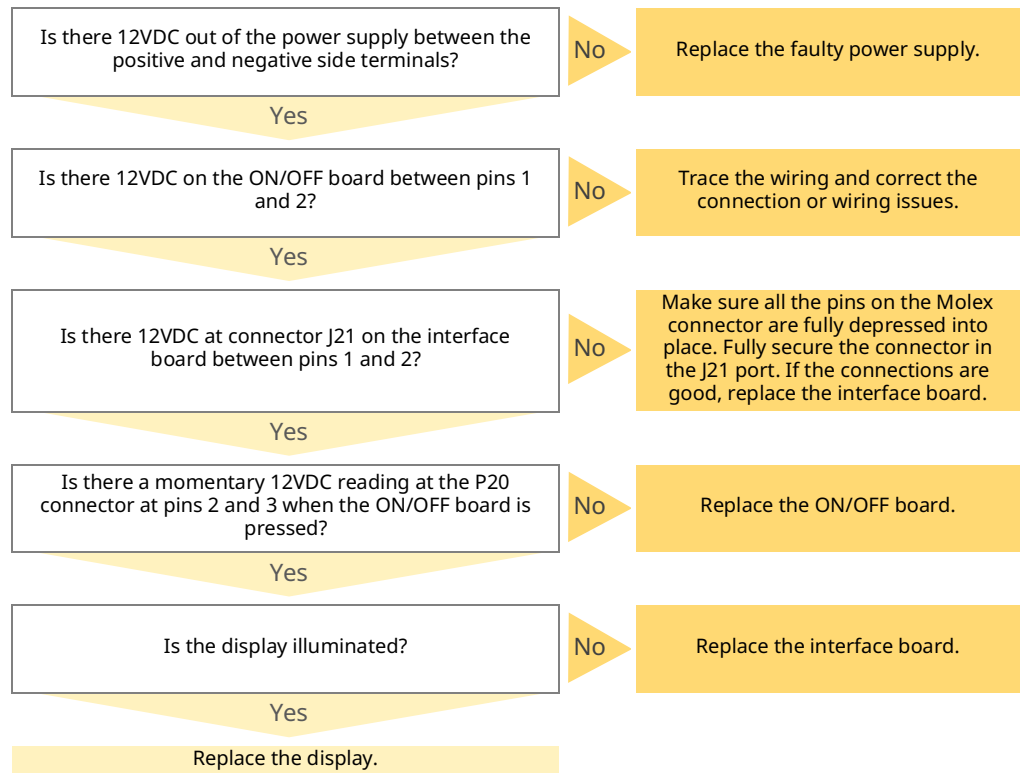
Do not operate the oven in a cooking mode for an extended period of time with the top panel removed. Damage to the electronics may occur without adequate cooling airflow.

An auxiliary fan must be used if the oven will be operated in a cooking mode for an extended period of time with the top panel removed.



Continued on next page

Continued from previous page



Chamber Lights do not Illuminate

Before you start

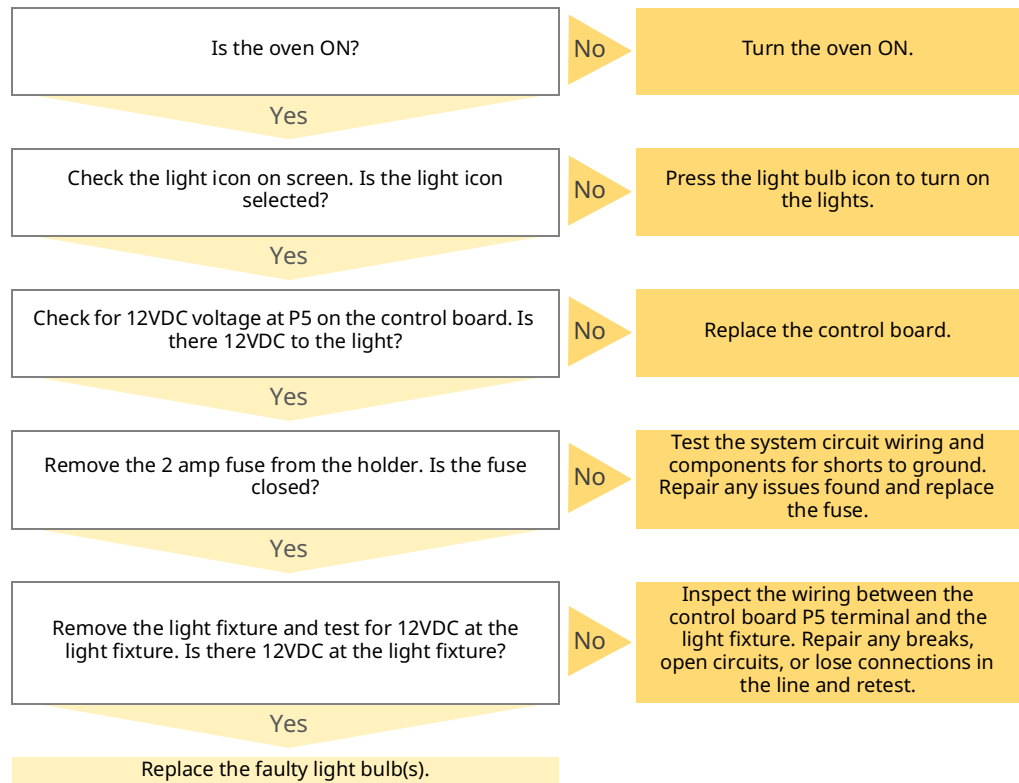
Remove the service panel.



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

NOTICE

Do not operate the oven in a cooking mode for an extended period of time with the top panel removed. Damage to the electronics may occur without adequate cooling airflow. An auxiliary fan must be used if the oven will be operated in a cooking mode for an extended period of time with the top panel removed.



The Check Fan Indicator Light is Illuminated

Before you start

- Put the oven into a heating mode.
- Remove the service panel.



WARNING: Electric shock and arc flash hazard.

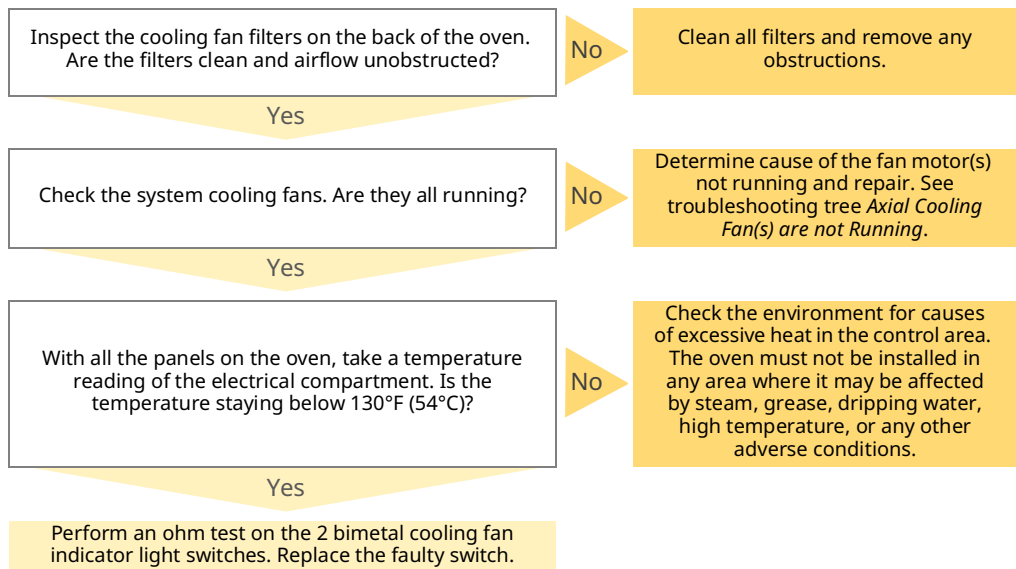
Use caution when measuring line voltage.

Wear Personal Protective Equipment (PPE).

NOTICE

Do not operate the oven in a cooking mode for an extended period of time with the top panel removed. Damage to the electronics may occur without adequate cooling airflow.

An auxiliary fan must be used if the oven will be operated in a cooking mode for an extended period of time with the top panel removed.



Axial Cooling Fan(s) are not Running

Before you start

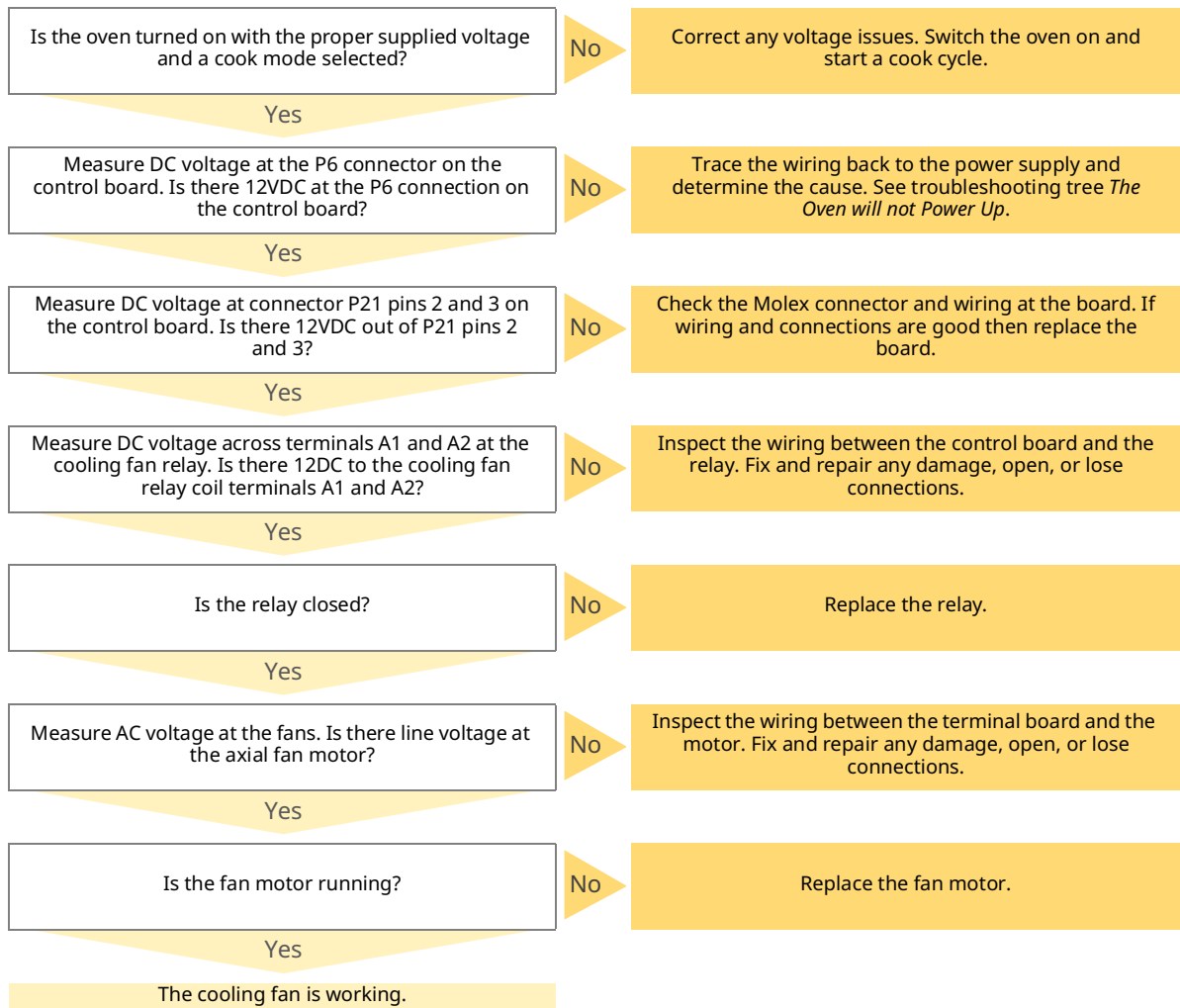
- Put the oven into a heating mode.
- Remove the top service panel.



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

NOTICE

Do not operate the oven in a cooking mode for an extended period of time with the top panel removed. Damage to the electronics may occur without adequate cooling airflow.
An auxiliary fan must be used if the oven will be operated in a cooking mode for an extended period of time with the top panel removed.



How to Test the Blower Motors

Before you begin

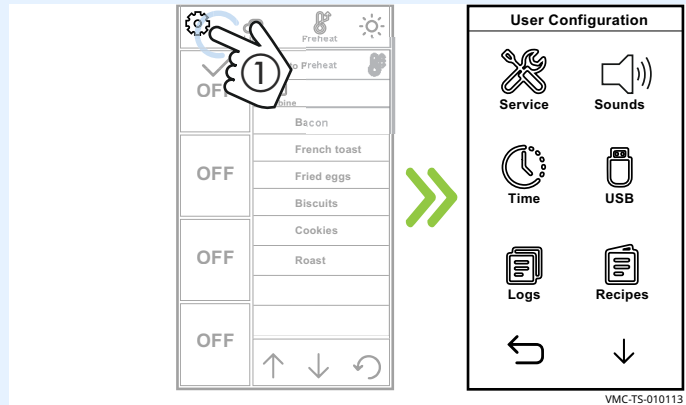
The oven must be connected to electric power.

Procedure

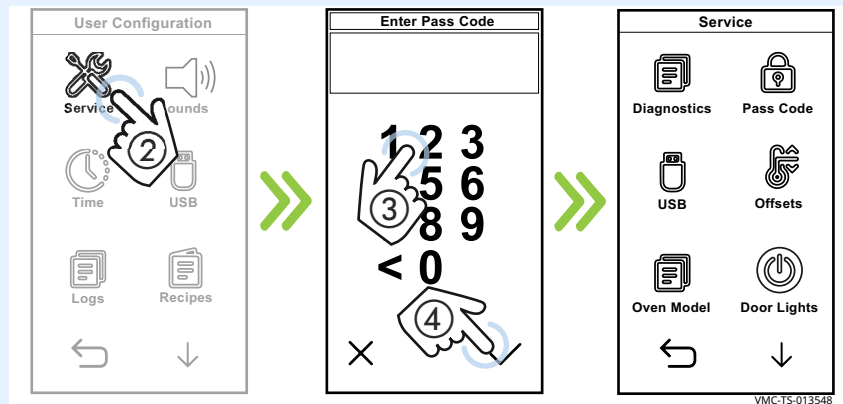
To test the blower motors, do the following.

Step	Action
1.	Touch the gear icon ①. The User Configuration screen displays.
2.	Touch the Service icon ②. The Enter Pass Code screen displays. Enter the pass code ③. Touch the check mark ④. The first Service screen displays.

1. **Touch** the gear icon ①. The User Configuration screen displays.



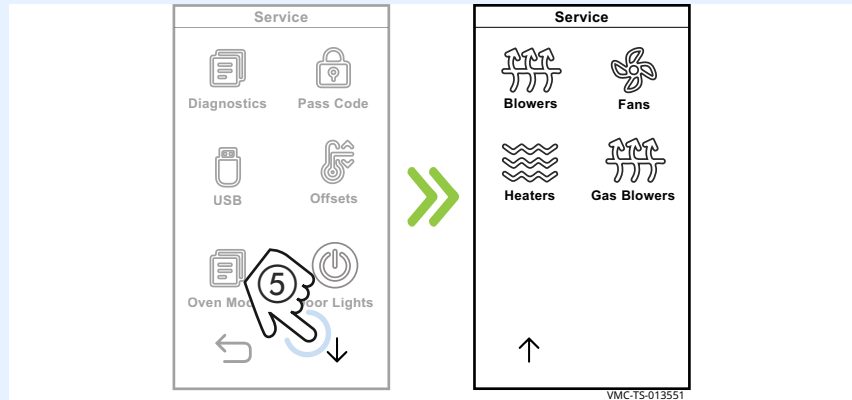
2. **Touch** the Service icon ②. The Enter Pass Code screen displays.
Enter the pass code ③.
Touch the check mark ④. The first Service screen displays.



Continued on next page

Continued from previous page

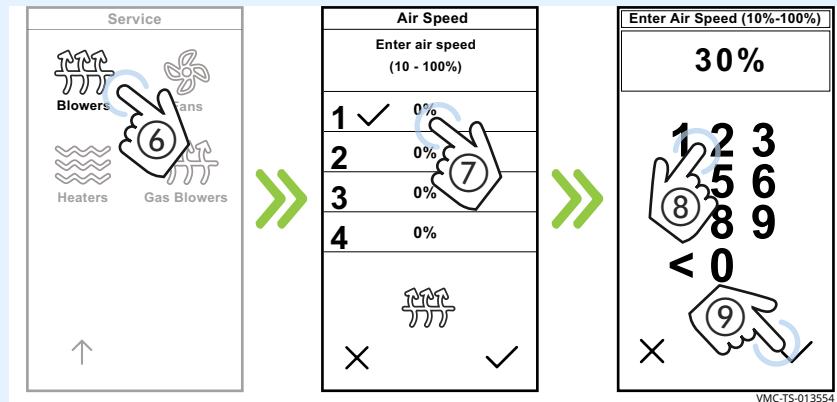
3. **Touch** the down arrow ⑤. The second Service screen displays.



4. **Touch** the Blowers icon ⑥. The Air Speed screen displays.

Touch the chamber ⑦ you want to test. The Enter Air Speed (10%-100%) screen displays.

Enter the air speed ⑧ using the number pad. **Touch** the check mark ⑨.



5. **Open** the door and listen for the blower fan. See topic *Chamber Blower Fans Inoperable* if the blower motor does not turn on.

Continued on next page

Continued from previous page

6. **Touch** the home icon ⑩ to stop the blower motors and return to the home screen.



NOTE: Touching the cancel icon will also stop the blower motors and return to the Service screen.

Air Speed	
Enter air speed (10 - 100%)	
1 ✓	0%
2	0%
3	0%
4	0%
	
	

VMC-TS-010771

Result

The blower motors have now been tested.

How to Test the Cooling Fans

Before you begin

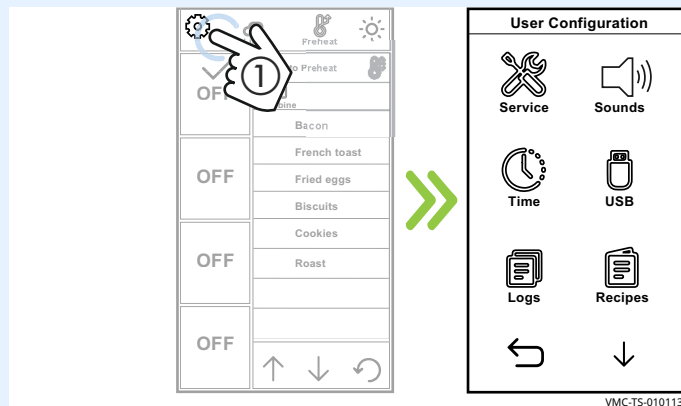
- The oven must be connected to electric power.
- Make sure the top cover and side panels are installed when testing the cooling fans.

Procedure

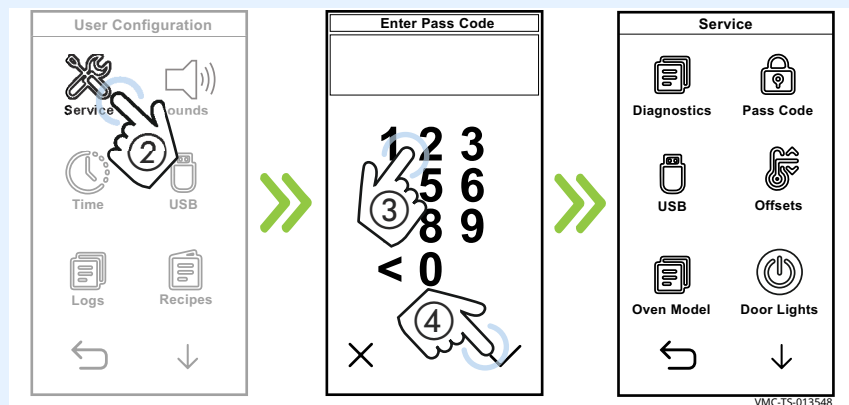
To test the cooling fans, do the following.

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

1. **Touch** the gear icon ①. The User Configuration screen displays.



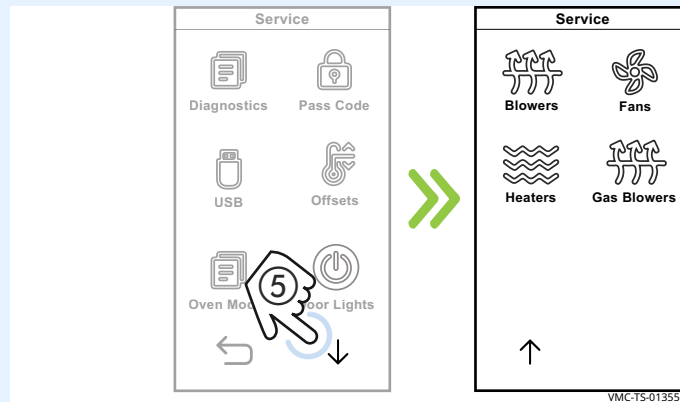
2. **Touch** the Service icon ②. The Enter Pass Code screen displays.
Enter the pass code ③.
Touch the check mark ④. The first Service screen displays.



Continued on next page

Continued from previous page

3. **Touch** the down arrow ⑤. The second Service screen displays.

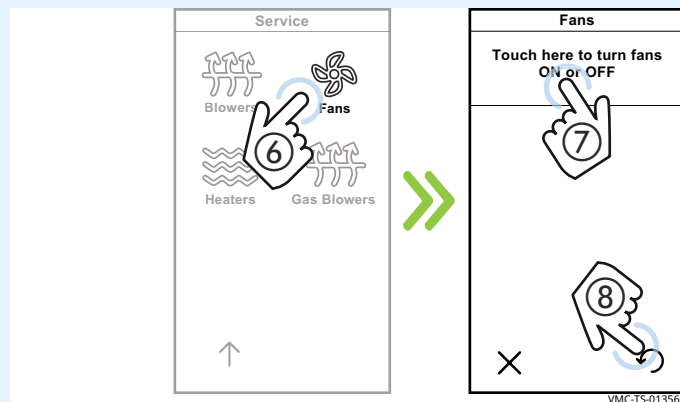


4. **Touch** the Fans icon ⑥. The Fans screen displays.

Touch Touch here to turn fans ON or OFF ⑦ to turn on and turn off the cooling fans. See topic *The Cooling Fan(s) are Inoperable* if the cooling fans do not turn on.

Touch the home icon ⑧ to stop the cooling fans and return to the home screen.

NOTE: Touching the cancel icon will also stop the cooling fans and return to the Service screen.



Result

The cooling fans have now been tested.

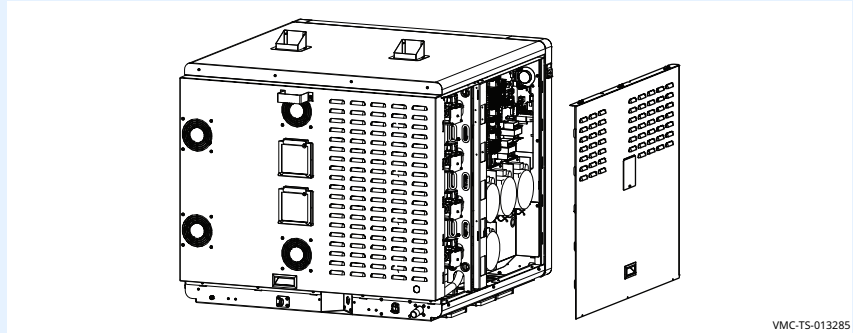
How to Test the Fuel Pressure

Procedure

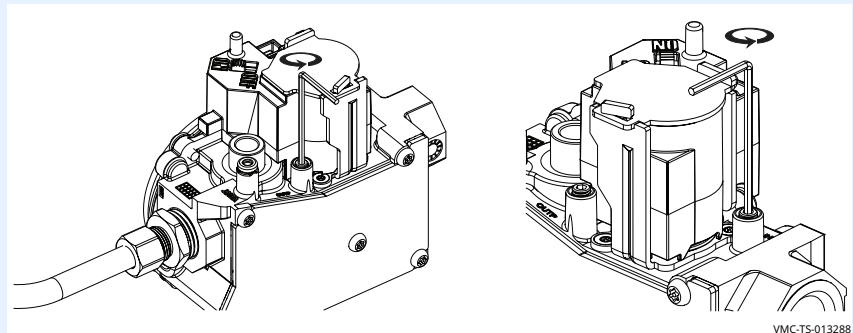
To test the fuel pressure, do the following.

Step	Action
1.	Remove the left side service panel.
2.	Shutoff the gas supply to the oven. Loosen the test port set screws in the gas valve.
3.	Attach manometers to the gas valve test ports.

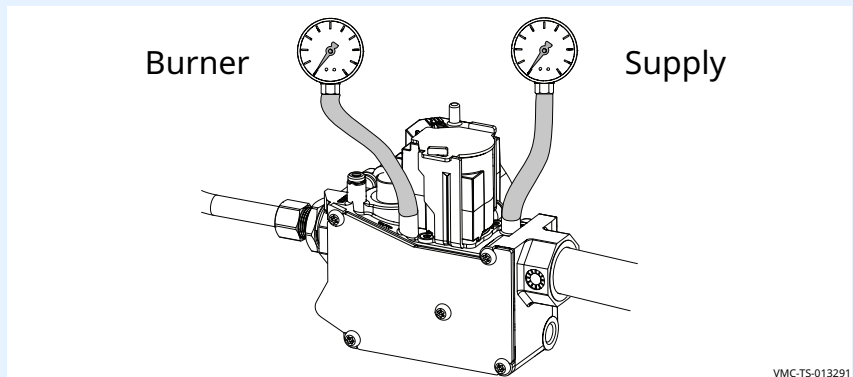
1. **Remove** the left side service panel.



2. **Shutoff** the gas supply to the oven.
Loosen the test port set screws in the gas valve.



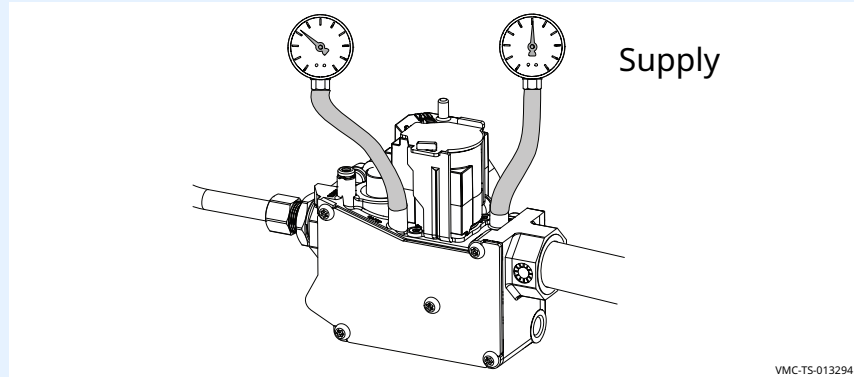
3. **Attach** manometers to the gas valve test ports.



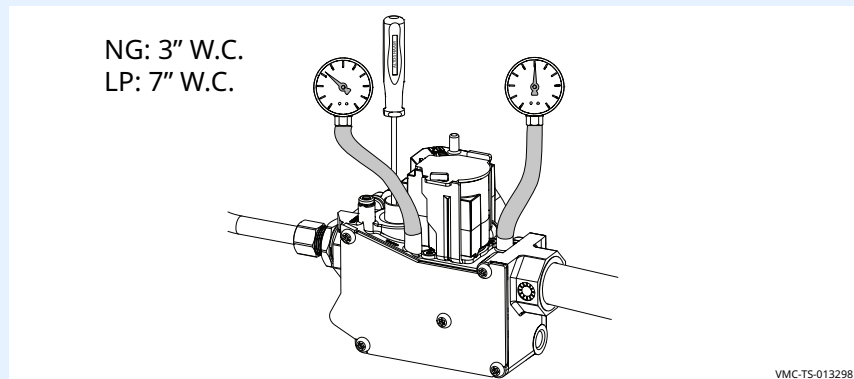
Continued on next page

Continued from previous page

4. **Turn on** the gas supply to the oven.
Start a manual cook for all chambers. See the Operator's Manual.
5. With all of the burners in a heating mode, **make sure** the supply pressure meets the requirements.
 - Natural Gas (NG): 7" W.C. nominal, 14" W.C. high, 5" W.C. low
 - Liquid Propane (LP): 11" W.C. nominal, 14" W.C. high, 9" W.C. low



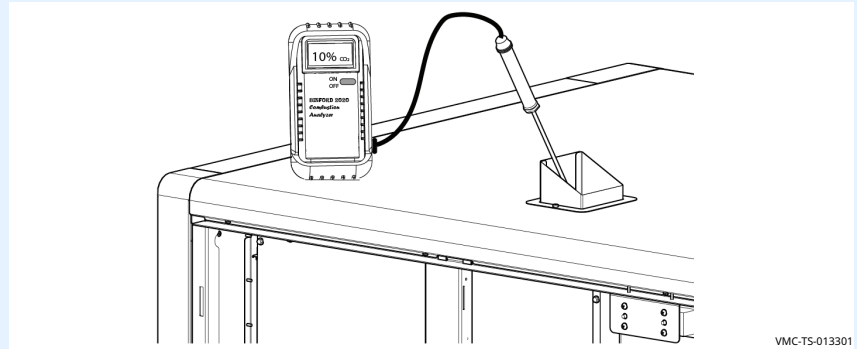
6. With a burner in a heating mode, **measure** the burner fuel pressure.
If a pressure adjustment is required, remove the regulator cover and rotate the adjustment screw. Repeat the pressure measurement and adjustment steps for all chambers.



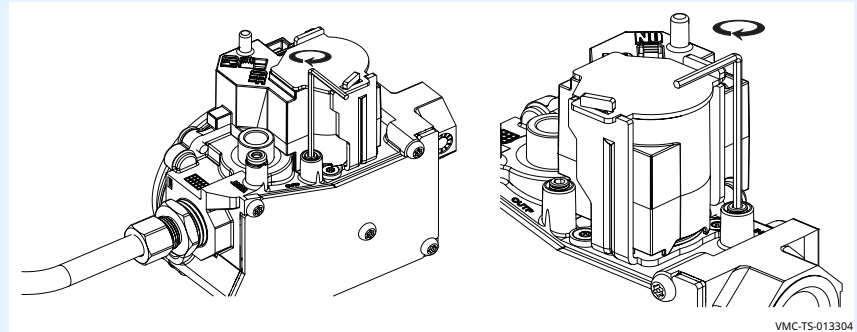
Continued on next page

Continued from previous page

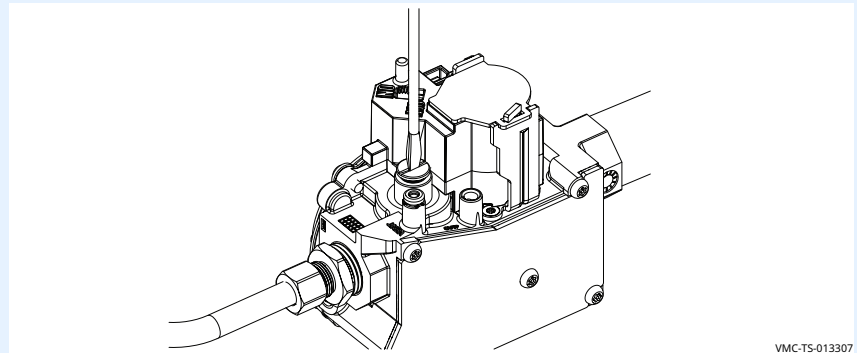
7. With a burner in a heating mode, **measure** the exhaust CO₂ and CO. Repeat the combustion analysis measurement steps for all chambers.
 - CO₂—10% plus 0, minus 1.5
 - CO—less than 25



8. **Shutoff** the gas supply, **remove** the manometers, **tighten** the test port screws into the gas valves.



9. **Install** the regulator cover.



10. **Re-install** the left side service panel.

Result

The fuel pressure has now been tested.

How to Inspect the Heat Exchanger

Before you begin

- The oven must be disconnected from electric power.
- Shutoff or disconnect the gas supply to the oven.
- Label all wires before disconnecting them.
- Label all components before removing them.

Procedure

To inspect the heat exchanger, do the following.

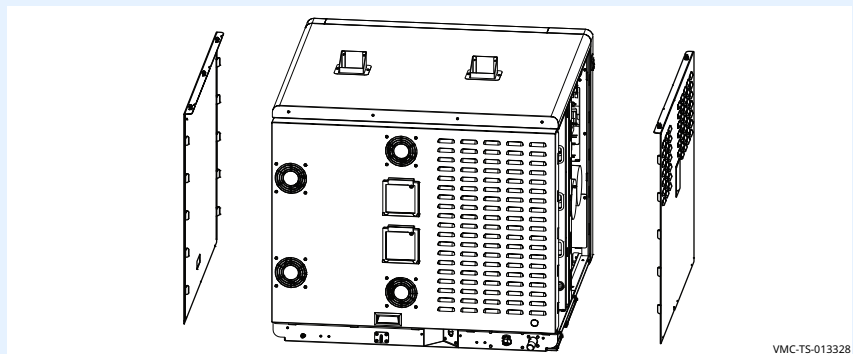


WARNING: Electric shock hazard.

Disconnect the oven from electric power before servicing the appliance.

Step	Action
1.	Remove the side service panels.

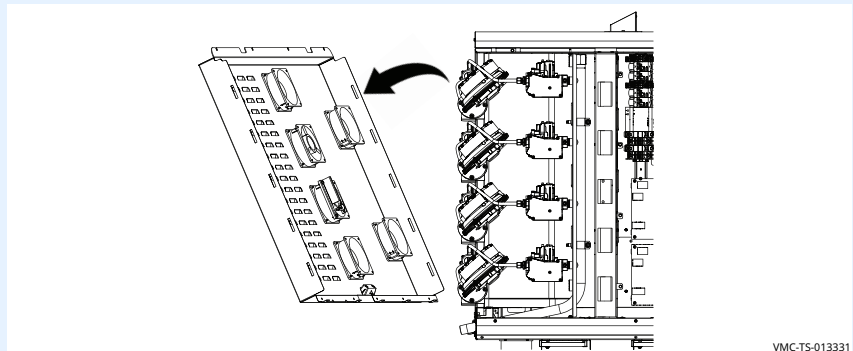
1. **Remove** the side service panels.



2. **Loosen** the screws securing the back panel to the oven. **Disconnect** the wires from the fans. **Disconnect** the wires from the bi-metal check fans switch. **Remove** the back panel from the oven.



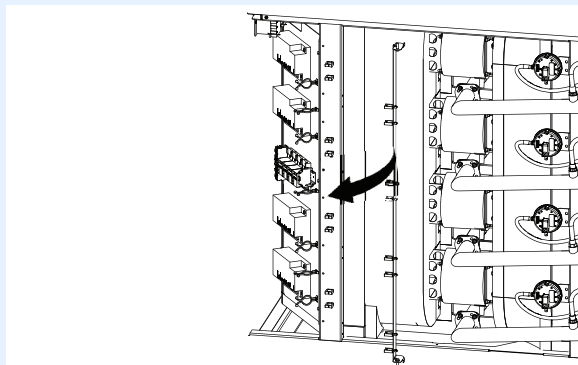
NOTE: The fans and bi-metal switch have connectors in the wire harness.



Continued on next page

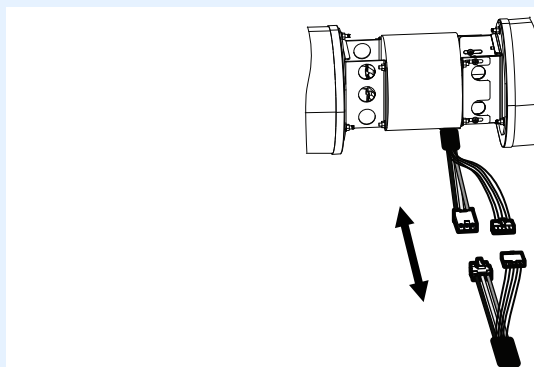
Continued from previous page

3. **Remove** the wires from the wire support.
Remove the wire support from the oven.



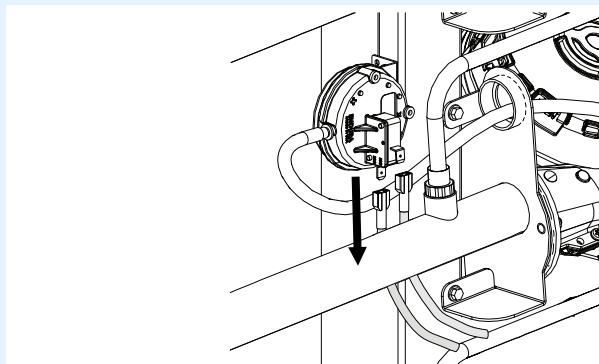
VMC-TS-013334

4. **Disconnect** the blower motor(s) connectors.



VMC-TS-013337

5. **Remove** the wires from the air pressure switches.

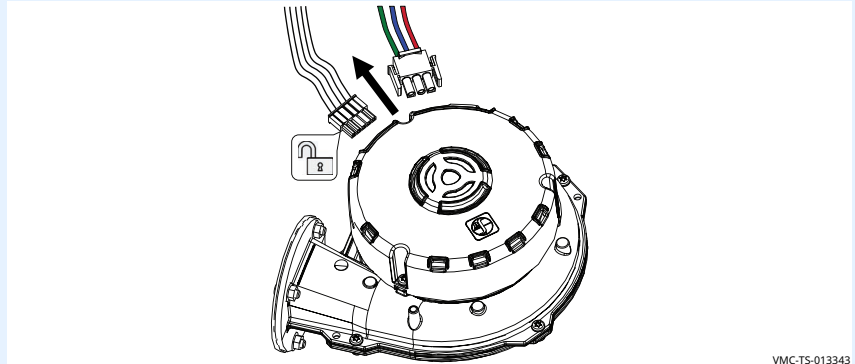


VMC-TS-013340

Continued on next page

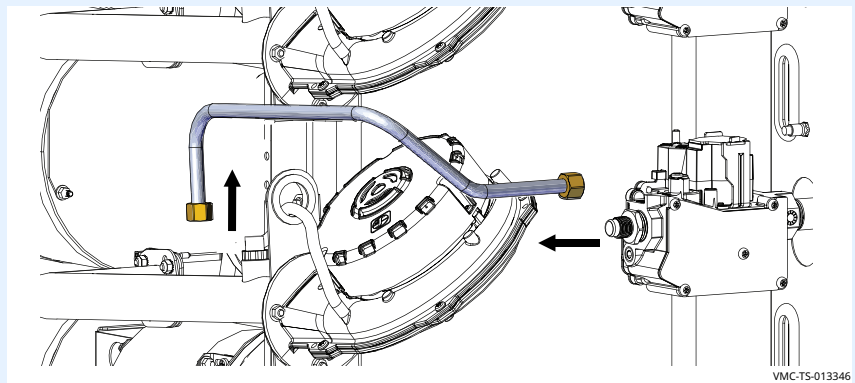
Continued from previous page

6. **Remove** the wires from the combustion blower motor(s).



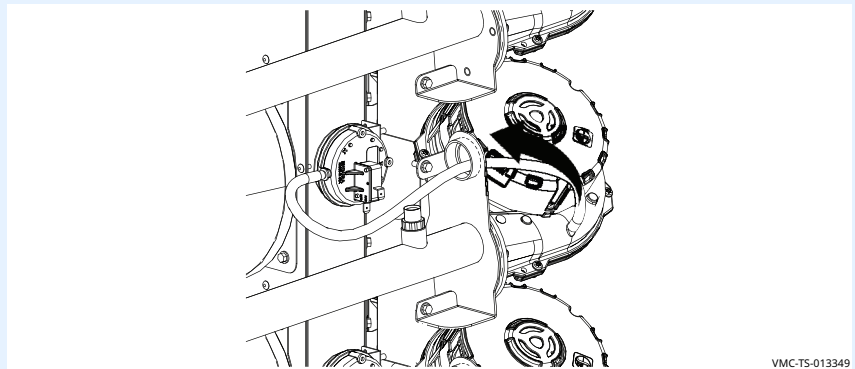
VMC-TS-013343

7. **Remove** the gas tube(s) from the gas valve and the orifice.



VMC-TS-013346

8. **Remove** the air pressure switch tubing from the burner fan housing.

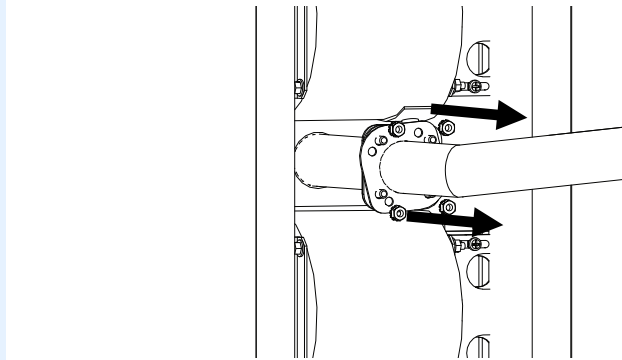


VMC-TS-013349

Continued on next page

Continued from previous page

9. **Remove** the nuts from the air tube flange connection.

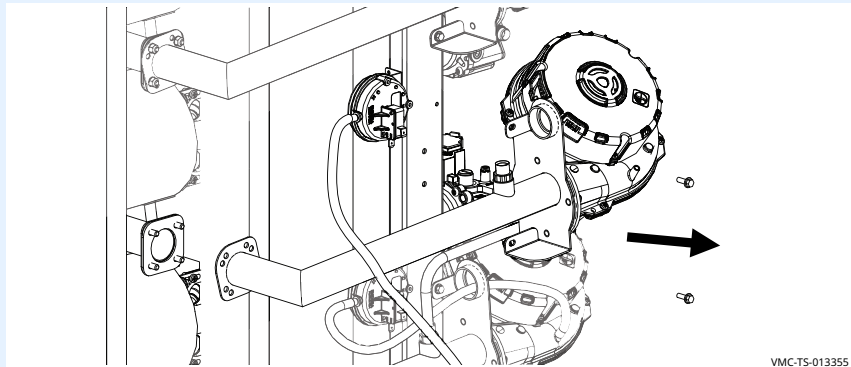


VMC-TS-013352

10. **Remove** the combustion and tube assembly.

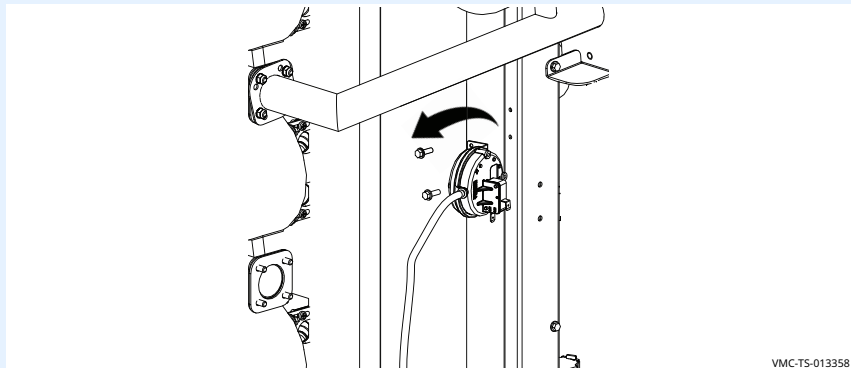


NOTE: Retain the air tube flange gasket for re-use.



VMC-TS-013355

11. **Remove** the air pressure switches.



VMC-TS-013358

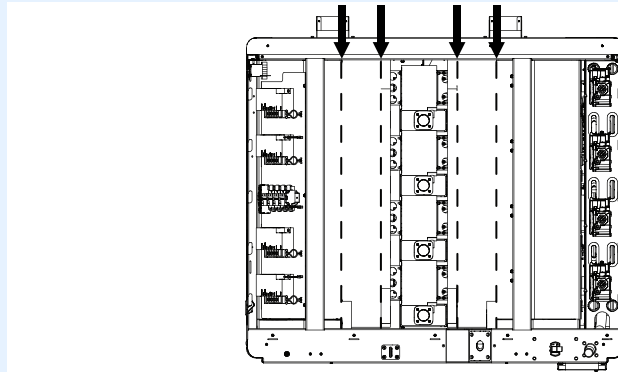
Continued on next page

Continued from previous page

12. **Cut** and remove the tape holding the insulation together.

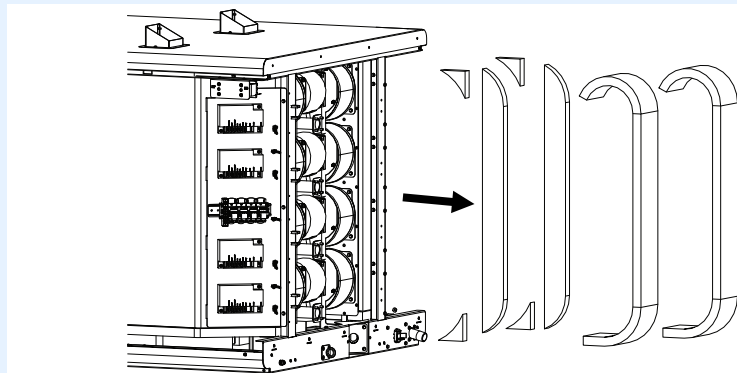


NOTE: The dashed lines in the image below represent the seams of insulation.



VMC-TS-013361

13. **Remove** the insulation.

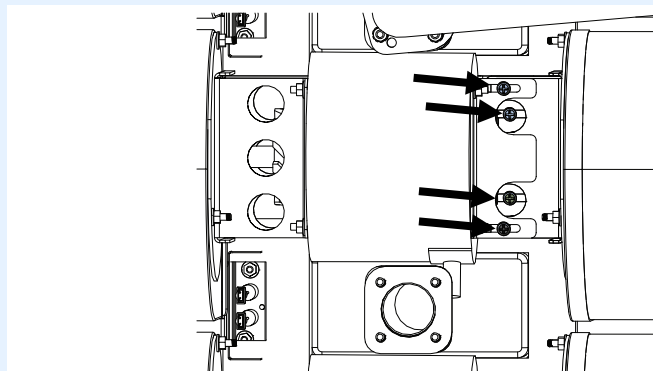


VMC-TS-013364

14. **Loosen** the four blower adjustment screws.



NOTE: Do not remove the blower adjustment screws.



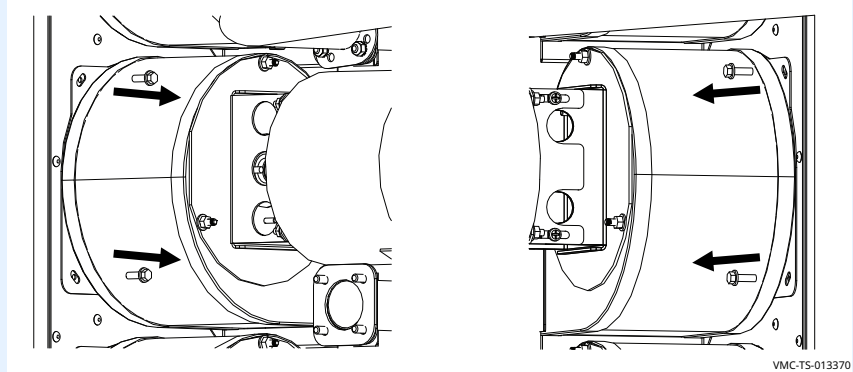
VMC-TS-013367

Continued on next page

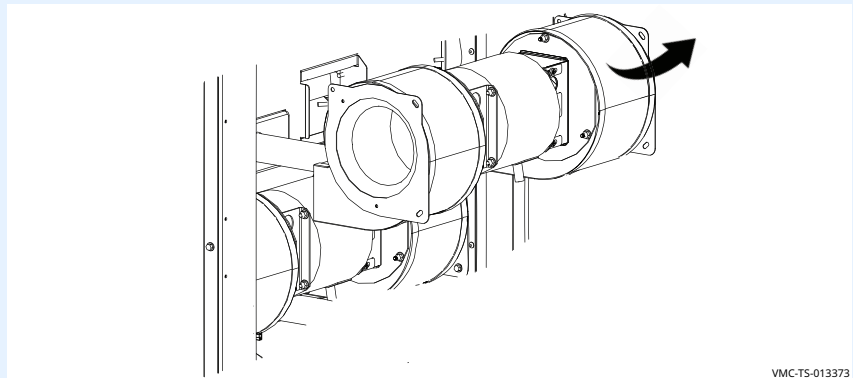
Continued from previous page

15. **Remove** the housing screws securing the blower housing to the oven.

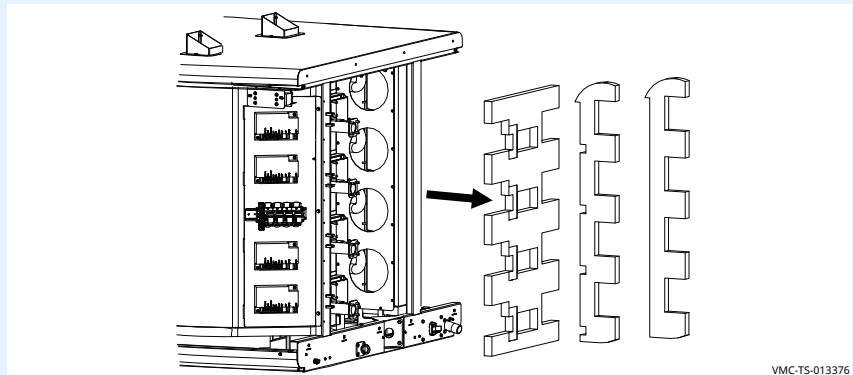
NOTE: Use caution when removing the housing screws. Do not strip out the holes.



16. **Remove** the convection blower assemblies from the oven.



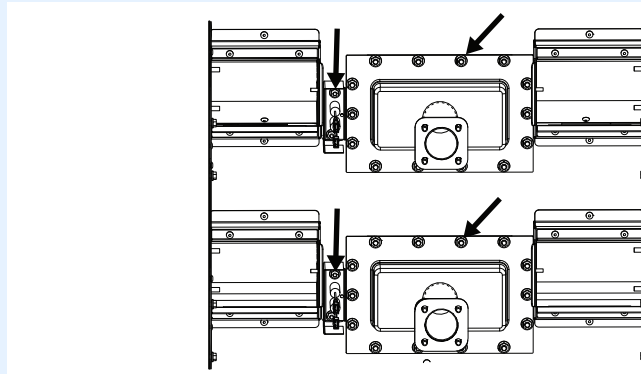
17. **Remove** the insulation.



Continued on next page

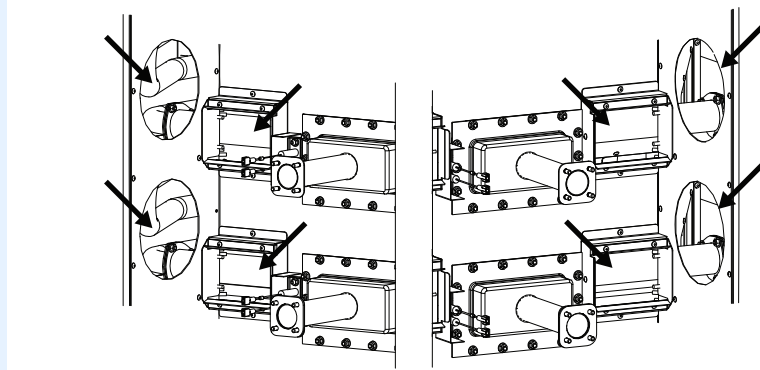
Continued from previous page

18. **Inspect** each burner and igniter area for cracks, leaking or damaged gaskets, or broken mounting studs.



VMC-TS-013379

19. **Inspect** inside of each heat exchanger area for cracks, leaking or damaged gaskets, or broken studs. **Remove** any grease or debris from these areas.

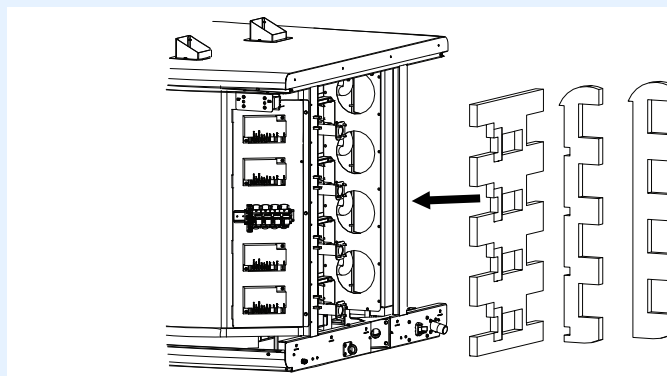


VMC-TS-013382

20. **Re-install** the insulation.



NOTE: Make sure when installing the insulation that all seams are tight, all corners and edges are tucked-in, and all insulation is taped securely.

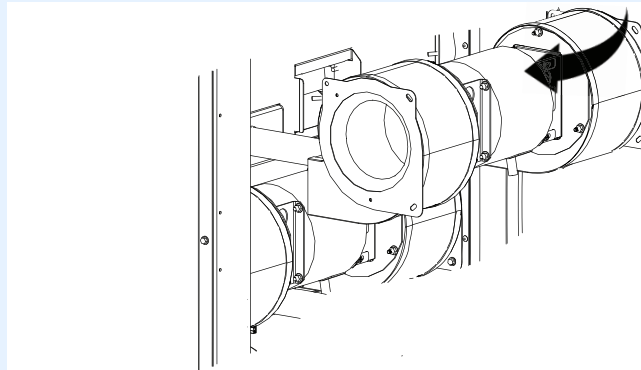


VMC-TS-013385

Continued on next page

Continued from previous page

21. **Re-install** the blower assemblies into the oven.

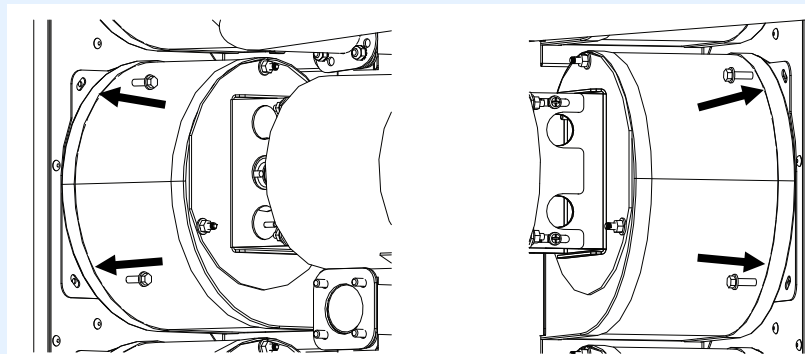


VMC-TS-013391

22. **Re-install** the screws securing the blower housing to the oven.

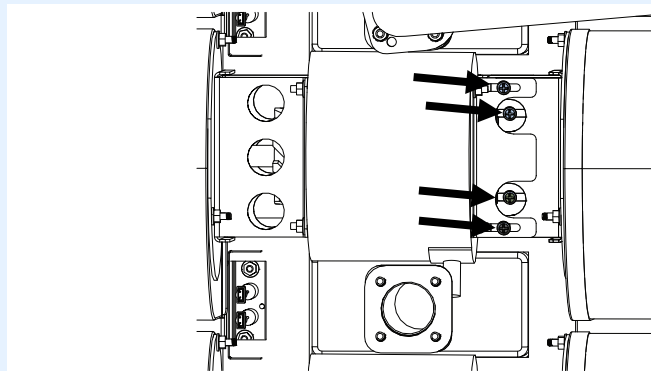


NOTE: Do not force the screws into the holes. If the screws do not line up exactly to the holes, the blower assembly is not installed correctly.



VMC-TS-013394

23. **Tighten** the four blower adjustment screws.



VMC-TS-013367

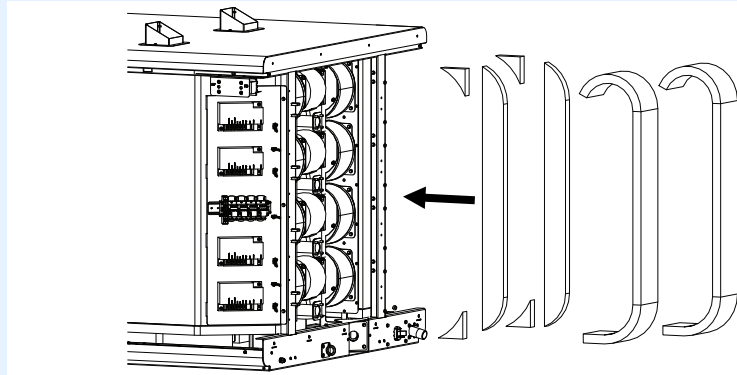
Continued on next page

Continued from previous page

24. **Install** the insulation. Tape all seams.

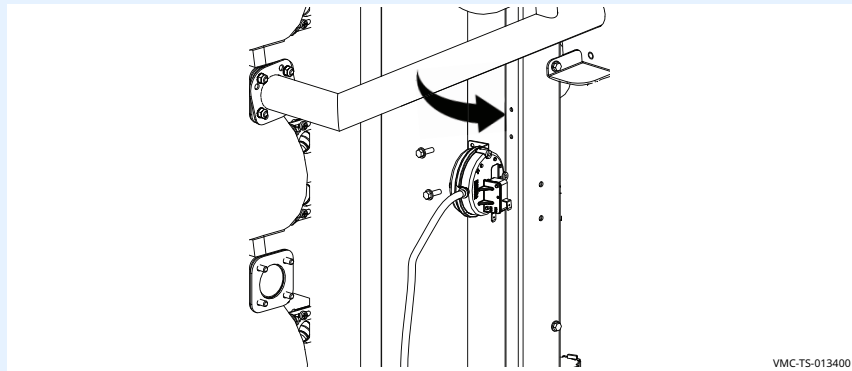


NOTE: Make sure when installing the insulation that all seams are tight, all corners and edges are tucked-in, and all insulation is taped securely.



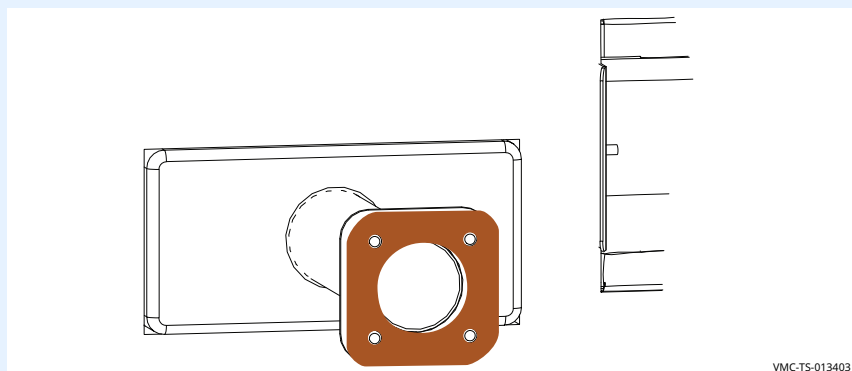
VMC-TS-013397

25. **Re-install** the air pressure switches.



VMC-TS-013400

26. **Apply** anti-seize onto the air tube flange studs. **Install** the gasket onto the air tube studs.

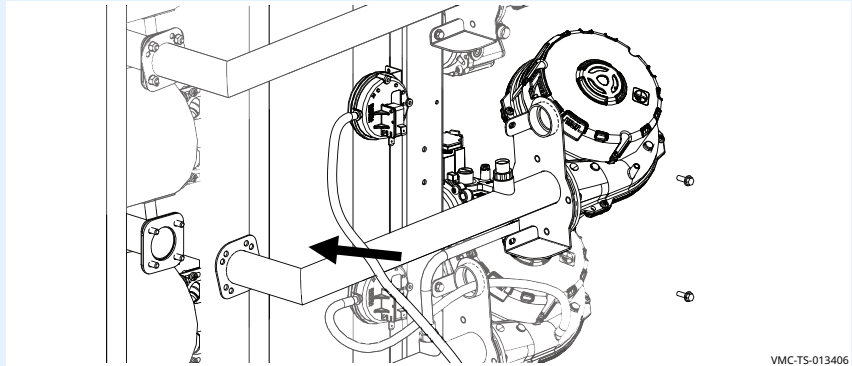


VMC-TS-013403

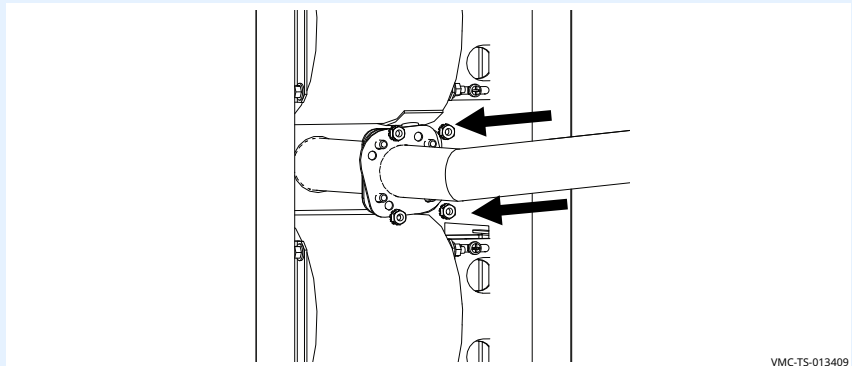
Continued on next page

Continued from previous page

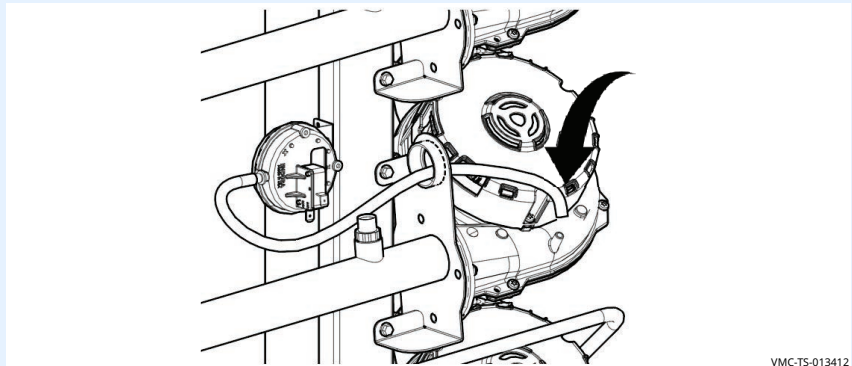
27. **Re-install** the combustion blower and tube assemblies.



28. **Re-install** the nuts for air tube connector(s). Torque the nuts to 20 in-lb.



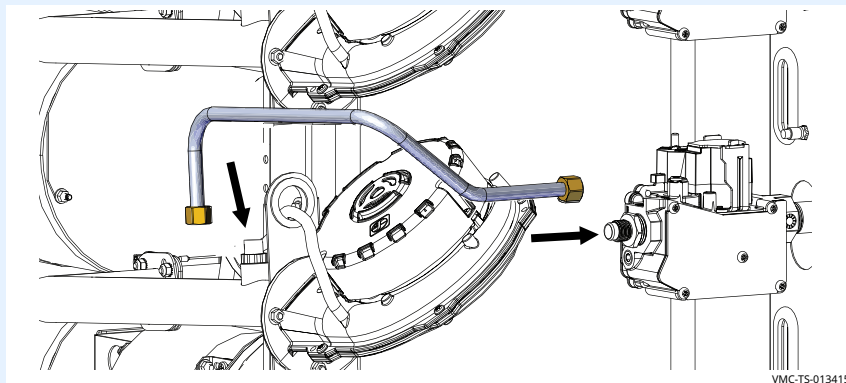
29. **Re-install** the air pressure switch tubing to the burner fan housings.



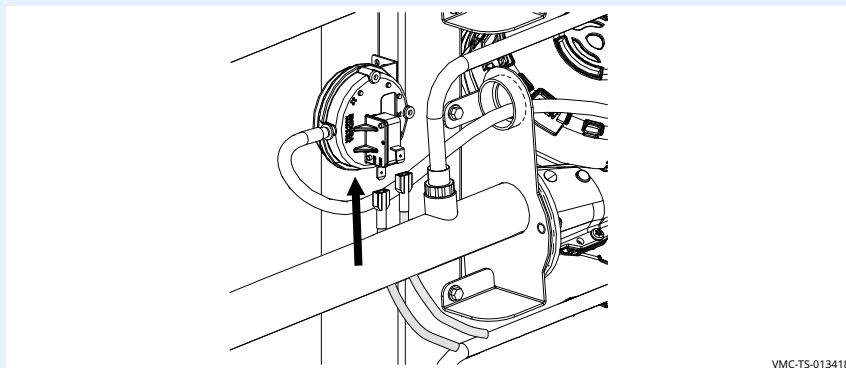
Continued on next page

Continued from previous page

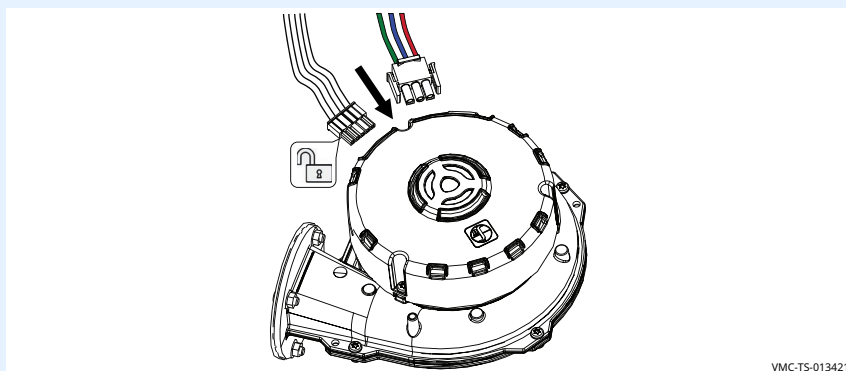
30. **Re-install** the gas tube(s) to the gas valve and the orifice.



31. **Re-connect** the wires to the air pressure switches.



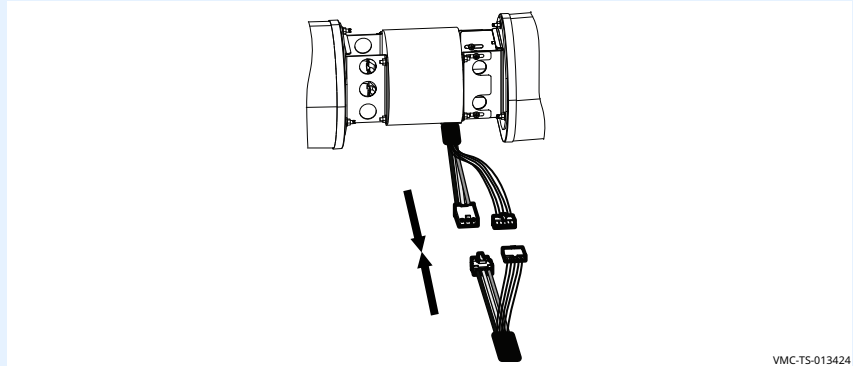
32. **Re-connect** the wire to the combustion fan motor(s).



Continued on next page

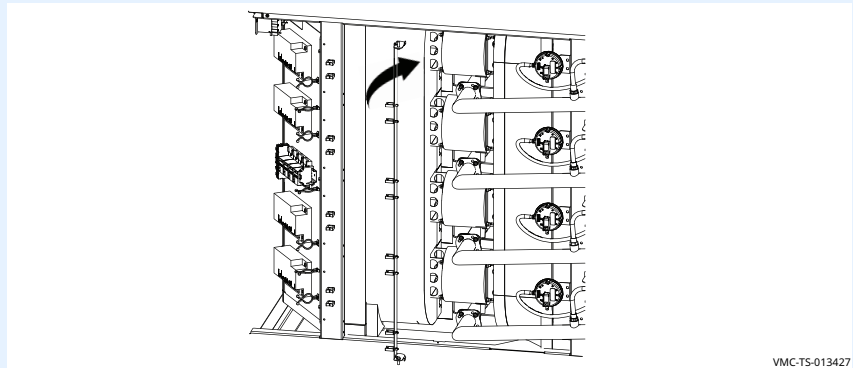
Continued from previous page

33. **Re-connect** the convection blower motor(s) connectors.



VMC-TS-013424

34. **Re-install** the wire support into the oven. **Install** the wires into the wire support.

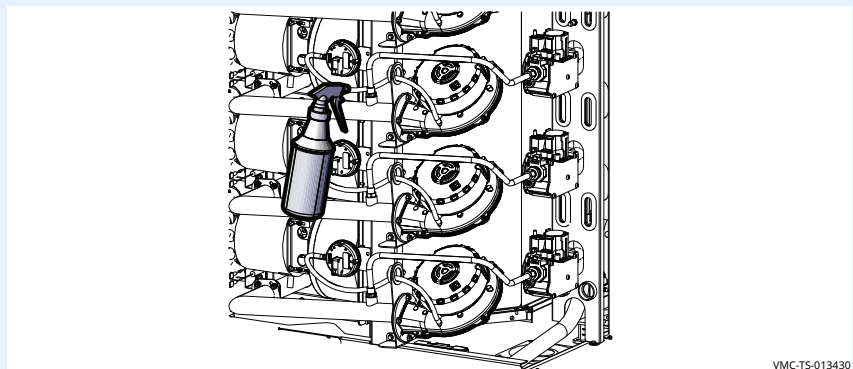


VMC-TS-013427

35. **Connect** the oven to electrical power.

36. **Open** the gas supply.

37. **Start** a manual cook. Leak check all of the fittings.



VMC-TS-013430

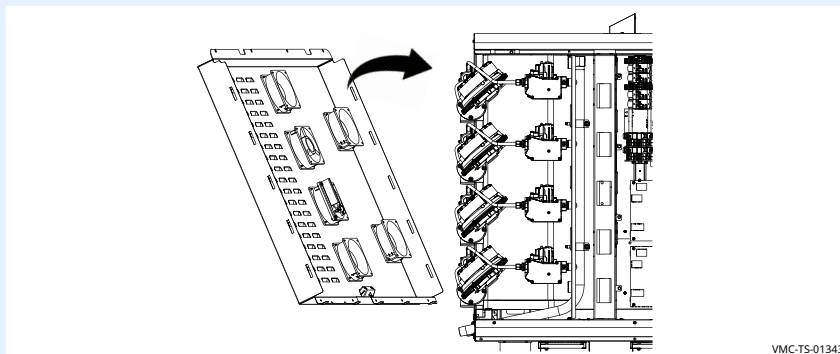
Continued on next page

Continued from previous page

38. **Re-connect** the wires from the bi-metal check fans switch. **Re-connect** the fan wires. **Re-install** the back panels onto the oven.



NOTE: The fans and bi-metal switch have connectors in the wire harness.



39. **Re-install** the side panels onto the oven.

40. **Test** all functions of the oven.

Result

The heat exchanger has now been inspected.

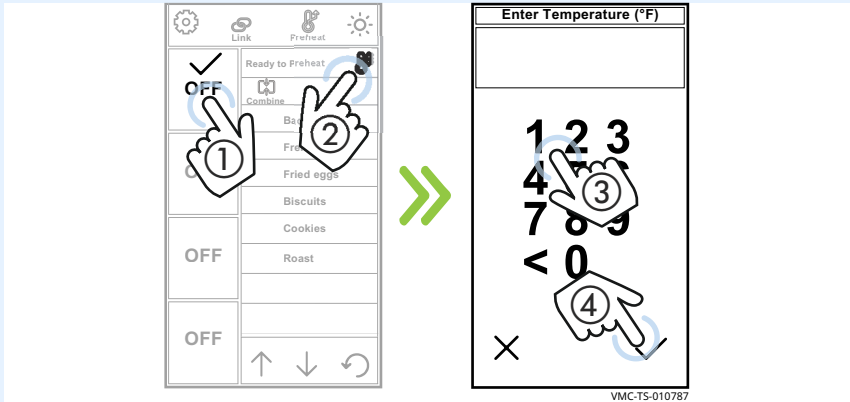
How to Calibrate a Chamber Thermocouple

Before you begin

- The oven must be connected to electric power.
- Make sure you have a multimeter with thermocouple attachment.
- Make sure the jet plates are installed.
- You will need to know the service pass code.

Procedure

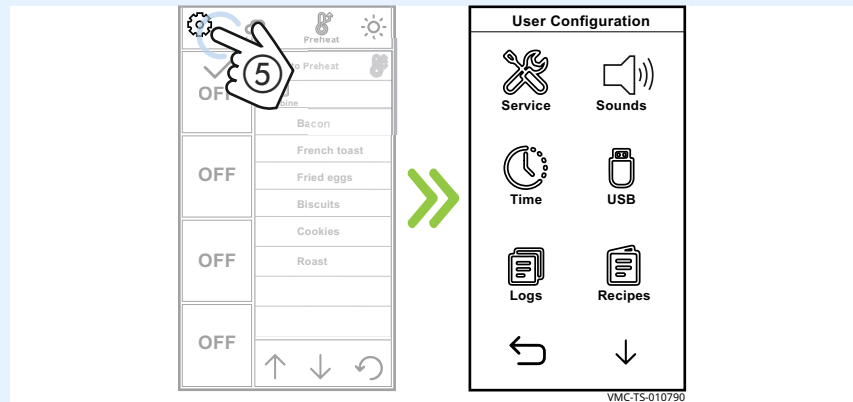
To calibrate a chamber thermocouple, do the following.

Step	Action
1.	Insert the multimeter's thermocouple into the chamber corresponding to the oven thermocouple that needs calibrating.
2.	Touch the chamber icon ①. Touch the Set Temp icon ②. The Enter Temperature screen displays. Enter a temperature of 450°F (232°C) ③ using the number pad. Touch the check mark ④. The oven starts the preheat process. 
3.	Record the following after the oven has finished preheating: ■ Temperature of the selected chamber. ■ Temperature from the multimeter.

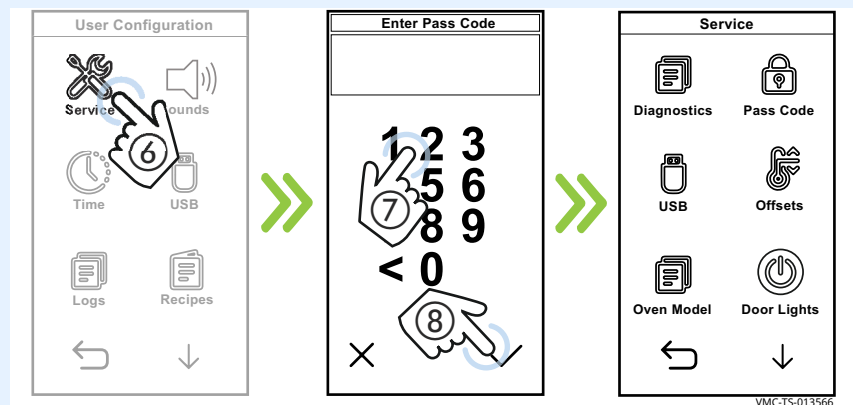
Continued on next page

Continued from previous page

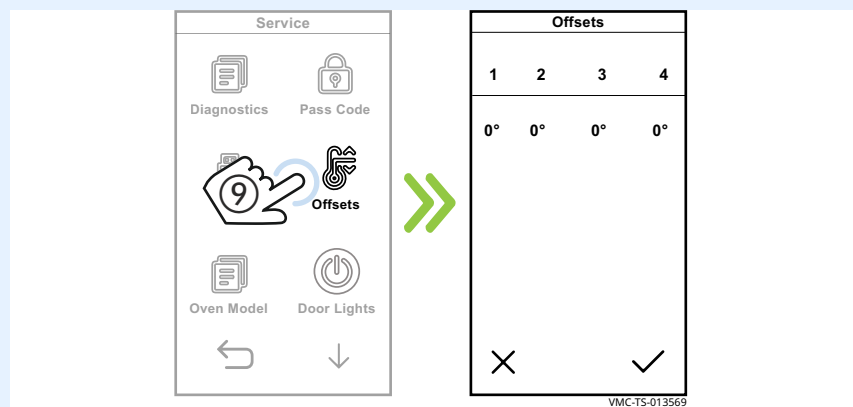
4. **Touch** the gear icon ⑤. The User Configuration screen displays.



5. **Touch** the Service icon ⑥. The Enter Pass Code screen displays.
Enter the pass code ⑦.
Touch the check mark ⑧. The Service screen displays.



6. **Touch** the Offsets icon ⑨. The Offsets screen displays.



Continued on next page

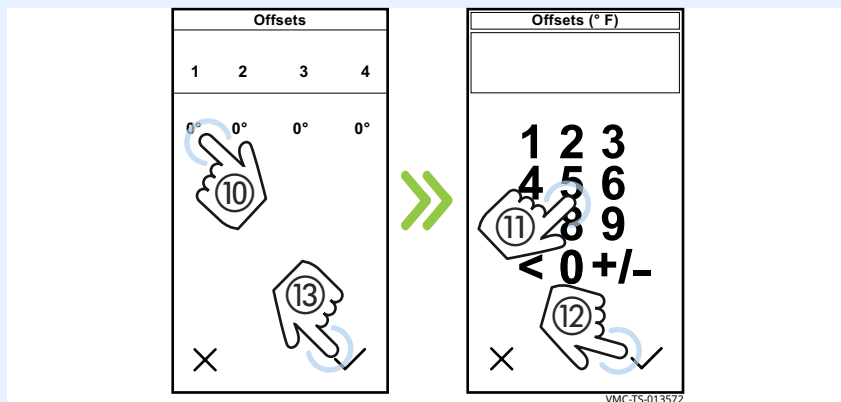
Continued from previous page

7. **Touch** the chamber that needs to be calibrated (10). The Enter Offsets screen displays.

Enter the offset number (11) from the calculation.

To determine the offset number, subtract the smaller number from the larger number. If the multimeter number is larger, add a "+" in front of the resulting number. If the chamber number is larger, add a "-" in front of the resulting number.

Touch the check mark (12).



Touch the green check mark (13) when finished.

Result

The chamber thermocouple has now been calibrated.

How to Test the Probe

Before you begin

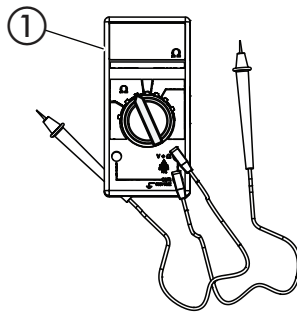
Make sure you have:

- Multimeter
- Container of ice water

Procedure

To test the probe, do the following.

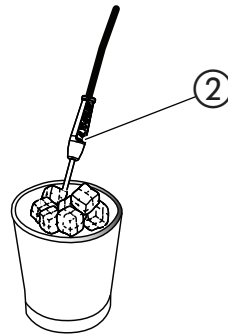
Step	Action
1.	Set the multimeter ① to ohms.
2.	Insert the probe ② into a container of ice water.
NOTE: Stir the water with the probe to ensure an accurate measurement.	



VMC-TS-003717



NOTE: Stir the water with the probe to ensure an accurate measurement.



VMC-TS-003717

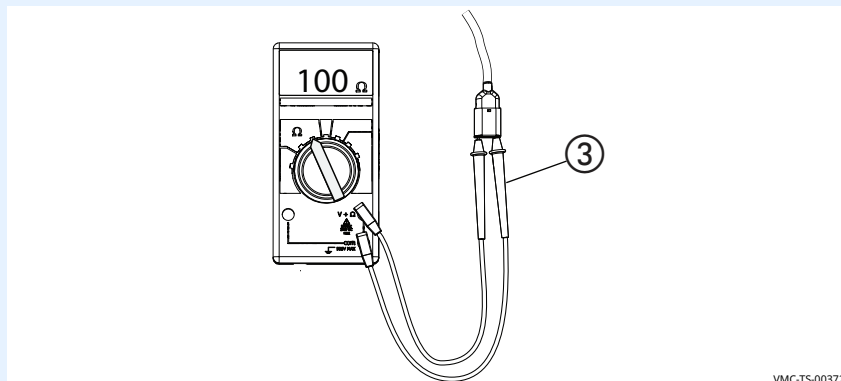
Continued on next page

Continued from previous page

3. **Insert** the meter leads ③ into the probe connector. The measurement should be between 99 and 101 ohms at 32°F (0°C).



NOTE: If the measurement is not between 99 and 101 ohms, replace the faulty probe.



VMC-TS-003723

Result

The probe has now been tested.

What to do if the Oven Malfunctions

Background

- You may need to do a factory reset in the case that the oven malfunctions for any of these issues:
 - The display freezes
 - The controls do not respond
 - The oven does not heat

Before you begin

Create a backup file of your current recipes.

Procedure

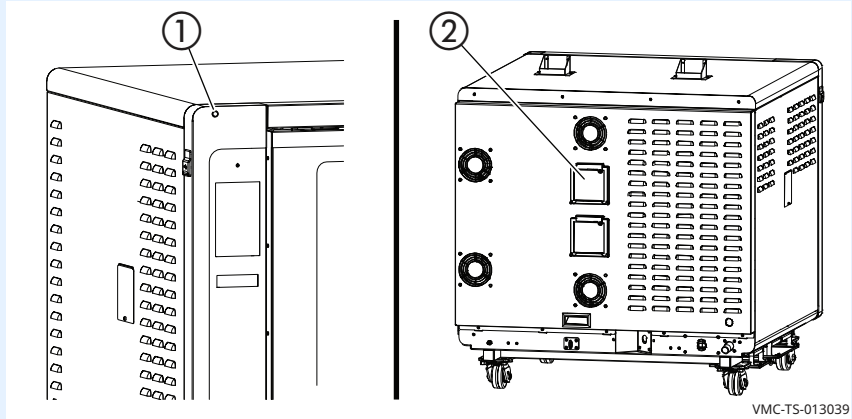
To do a factory reset, do the following.

Step	Action
1.	Make sure the oven door is closed.
2.	Press and hold the ON/OFF button until the LED illuminates red.
3.	Set the main disconnect switch to the OFF position.
4.	Turn off the main circuit breaker supplying power to the oven for 30 seconds. Then, turn on the main circuit breaker.
5.	Set the main disconnect switch to the ON position.
6.	Press the ON/OFF button until the LED illuminates green.
7.	Resume operation of the oven.
 NOTE: If the issue continues, the appliance is malfunctioning. Disconnect the appliance from the power supply and have the oven serviced by a qualified technician.	

What to do if the Fan Indicator Light Illuminates

Procedure

If the fan indicator light ① illuminates, do the following.

Step	Action
1.	Turn off the oven and allow it to cool. Remove the cooling fan filters ②.  VMC-TS-013039
2.	Clean the cooling fan filters. Clean with a mild cleaner and rinse with hot water.
3.	Re-install the cooling fan filters.
4.	Resume operation of the oven. NOTE: If the fan indicator light remains on, the appliance is malfunctioning. Disconnect the appliance from the power supply and have it serviced by a qualified technician.

Result

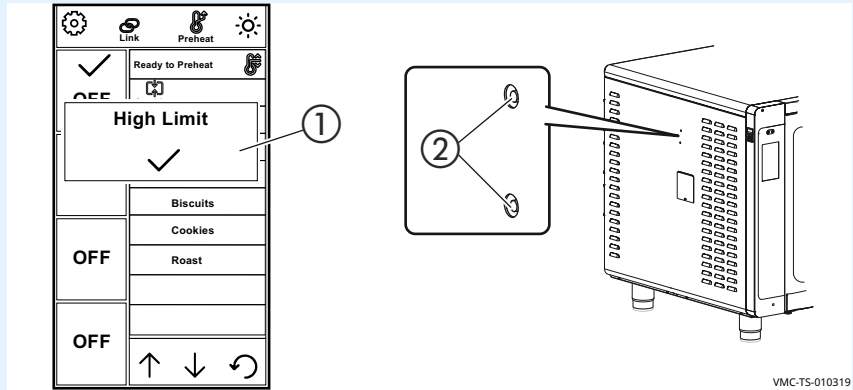
The procedure is now complete.

What to do if the High Limit Screen Displays

Procedure

If the high limit screen displays ①, do the following.

Step	Action
1.	Press and release the high limit temperature reset buttons ②.
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.	

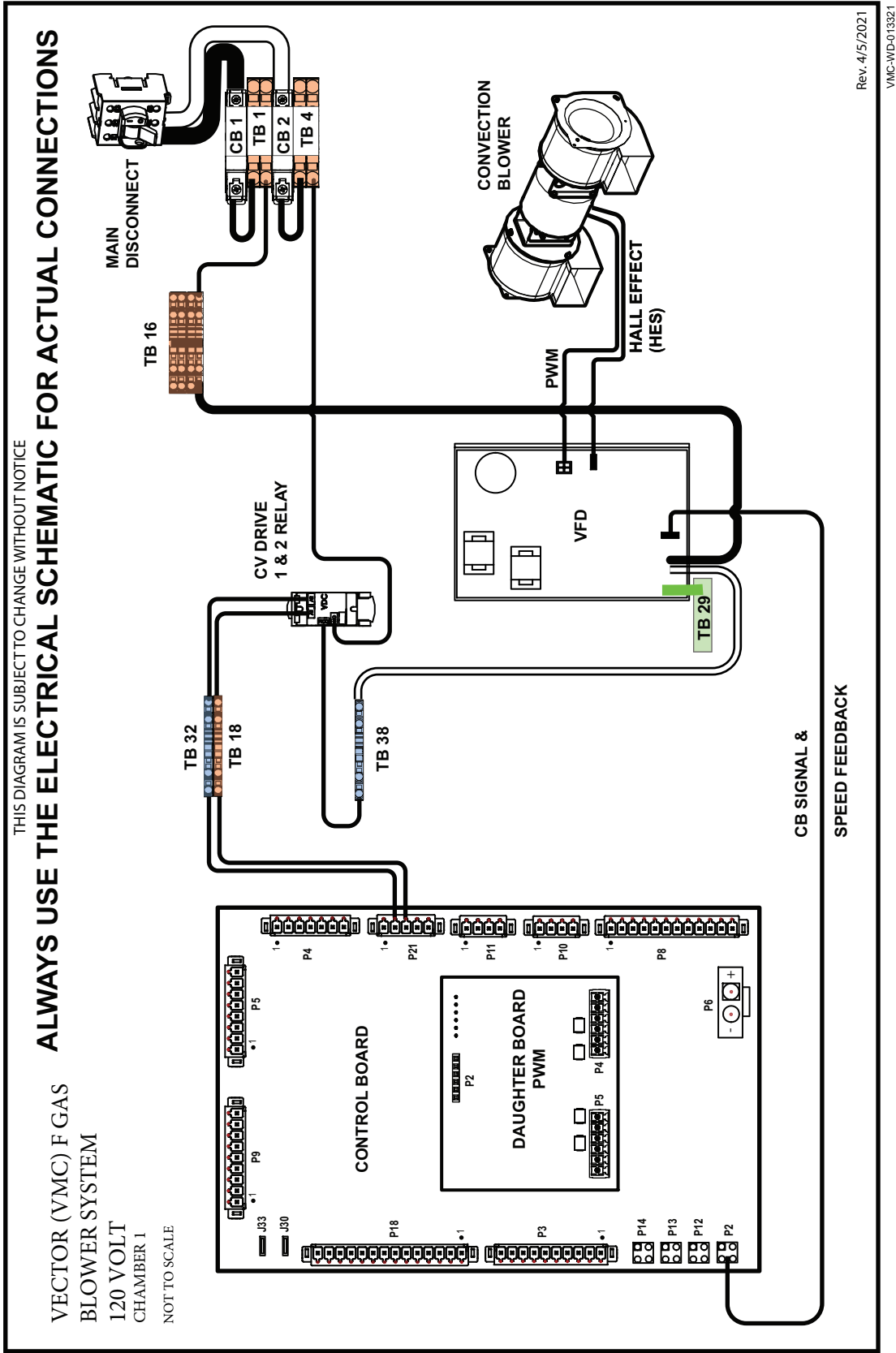


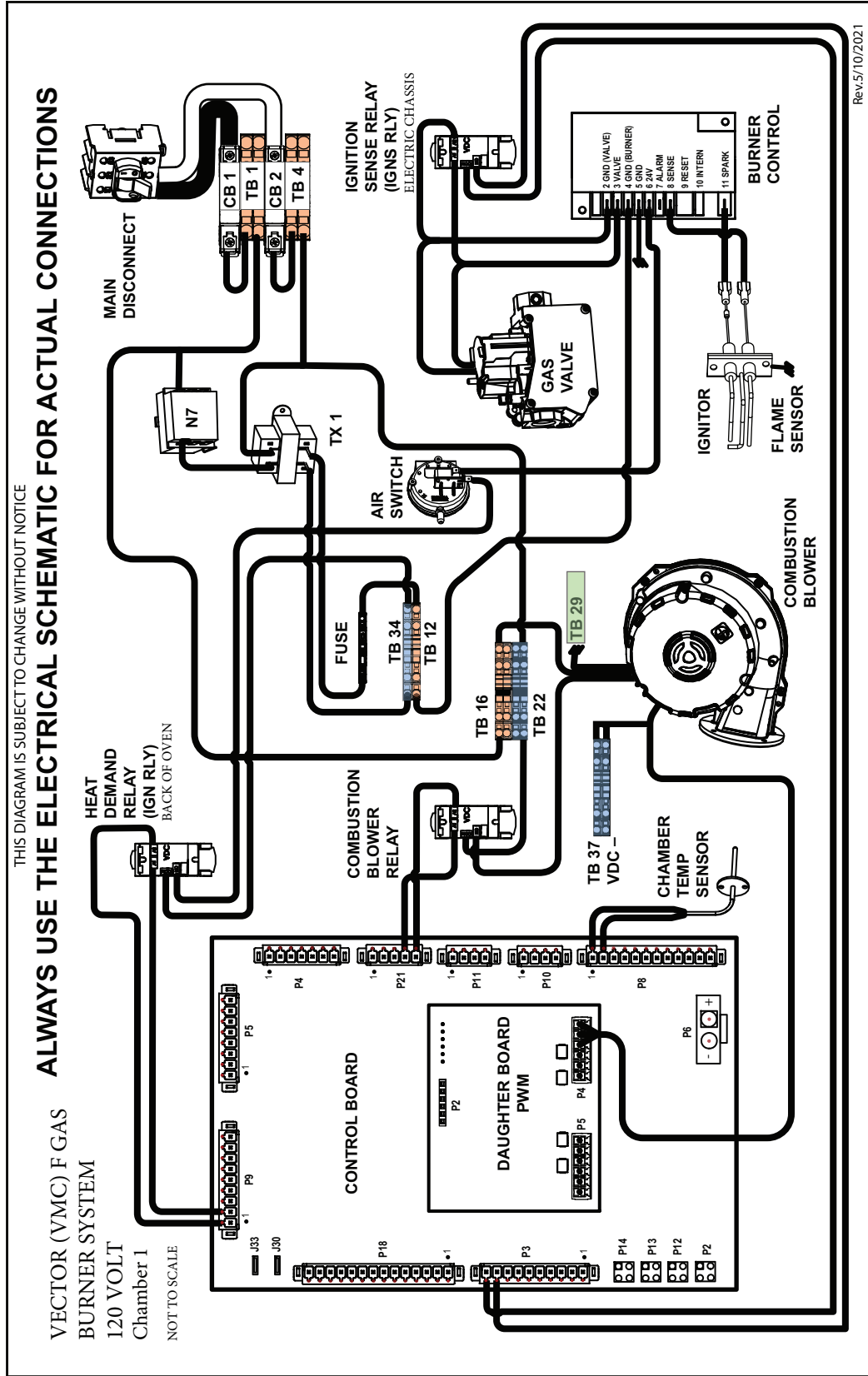
VMC-TS-010319



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.

This page is intentionally left blank.





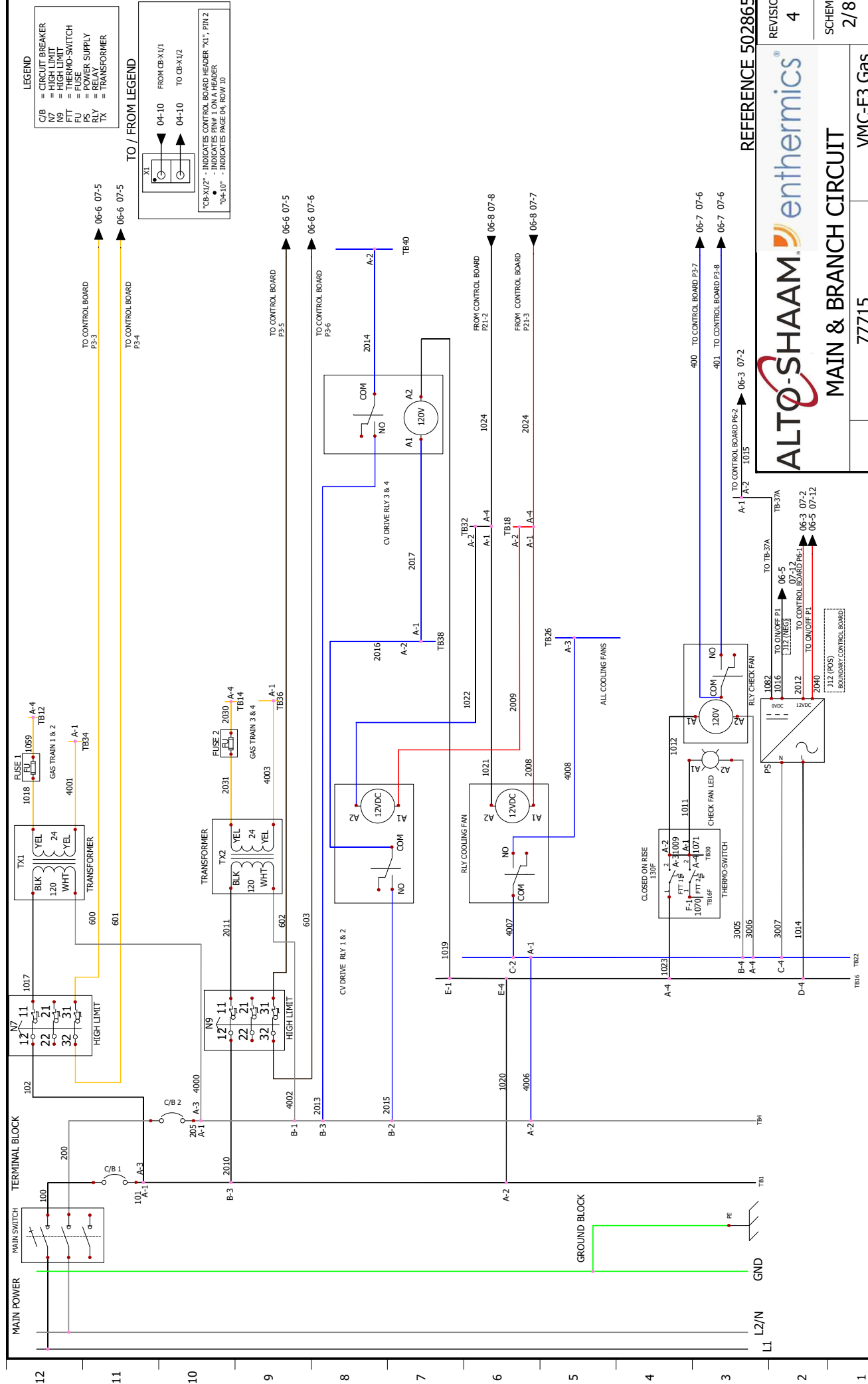
120V
77715

TABLE OF CONTENTS

MAIN & BRANCH CIRCUIT	PG 02
IGNITION CONTROL WIRES	PG 03
COMBUSTION BLOWER SYSTEM	PG 04
DRIVE, MOTOR, COOLING FAN	PG 05
SIMPLE CONTROL	PG 06
DELUXE CONTROL	PG 07
LEGEND	PG 08



4	6/29/2021	montev	182390	Update latest standards
3	1/20/2021	montev	182071	Update legend and correct Relay (NO) location
2	10/21/2020	montev	181914	Update Legend table and matching abbreviation
1	6/11/2020	montev	181578	Update Alarm signal piggy back gas valve
0	11/13/2018	montev	NPD	New
REV.	DATE	NAME	ECO	CHANGES
		77715		
		120V		
			REVISION	4
			PAGE	1/8
			VMC-F3 Gas	



REFERENCE 5028659

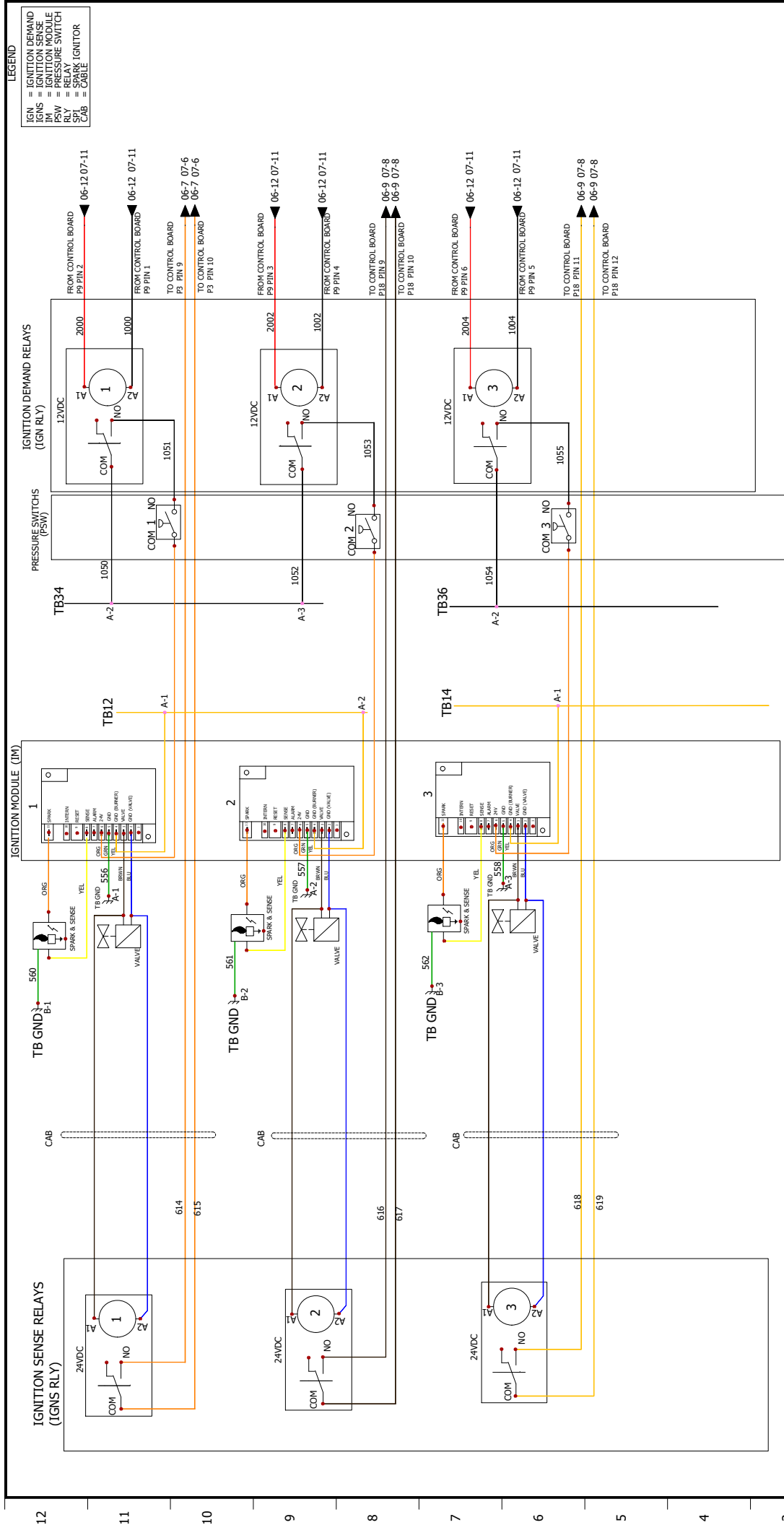
ALTO-SHAAM.  enthermics®

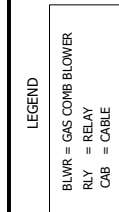
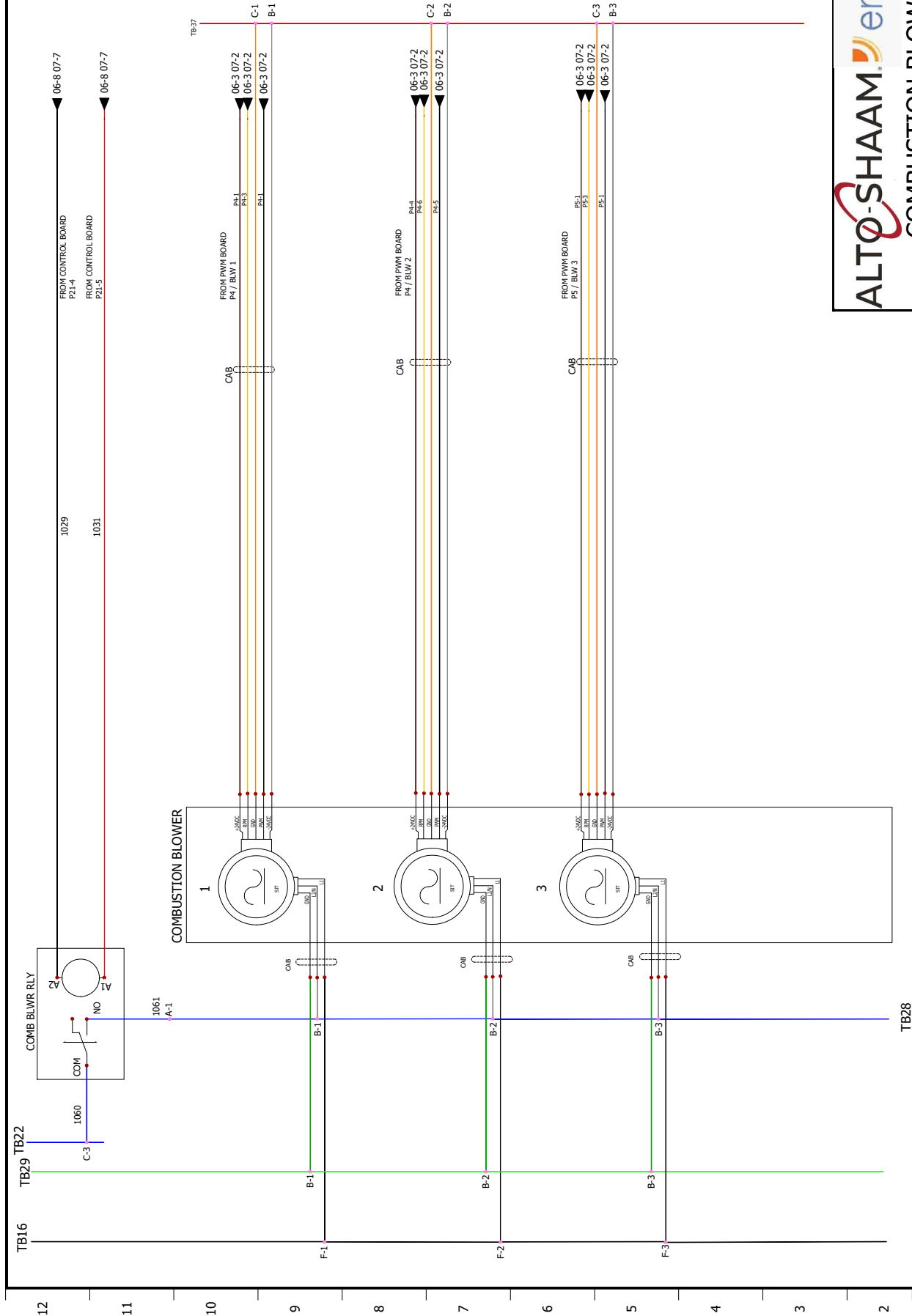
REVISION
4

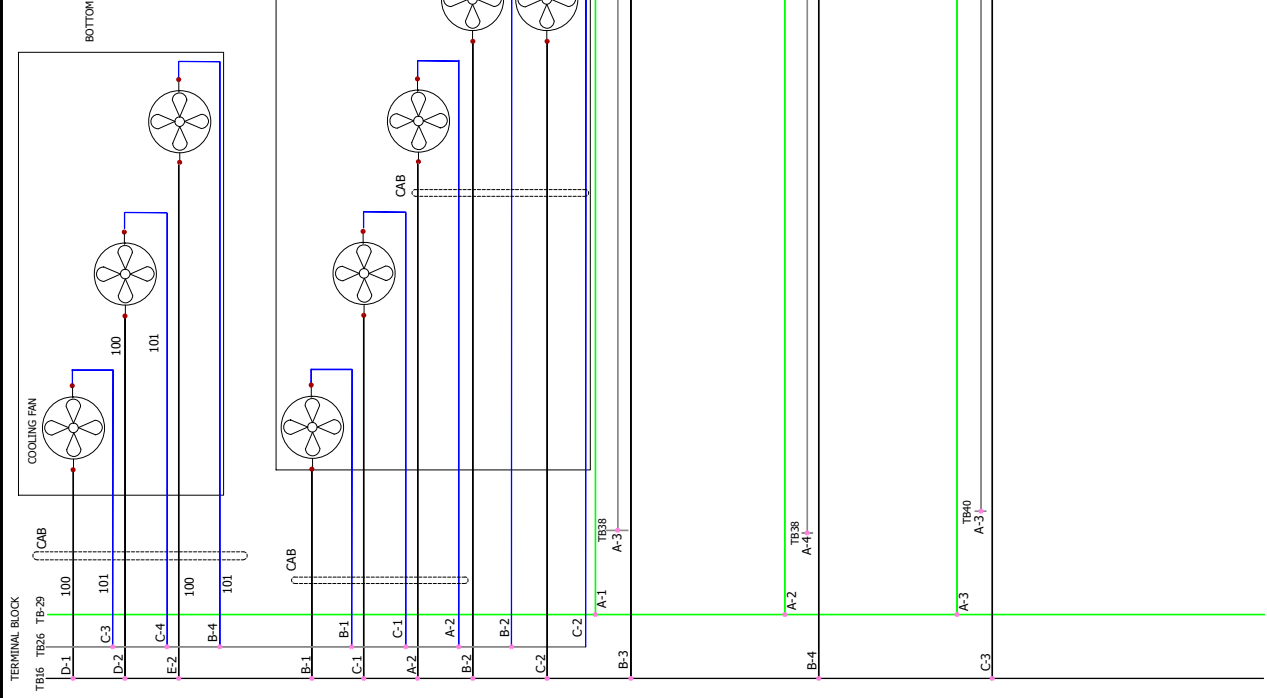
MAIN & BRANCH CIRCUIT

2/8
SCHEME

VMC-F3 Gas







LEGEND

- VFD = VARIABLE FREQUENCY DRIVE
- MO = MOTOR
- CAB = CABLE



DRIVE, MOTOR, COOLING FAN

77715

VMC-F3 Gas

REVISION 4

SCHEME 5/8

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



enthermics®

LEGEND

77715

VMC-F3 Gas

REVISION

4

SCHEME

8/8

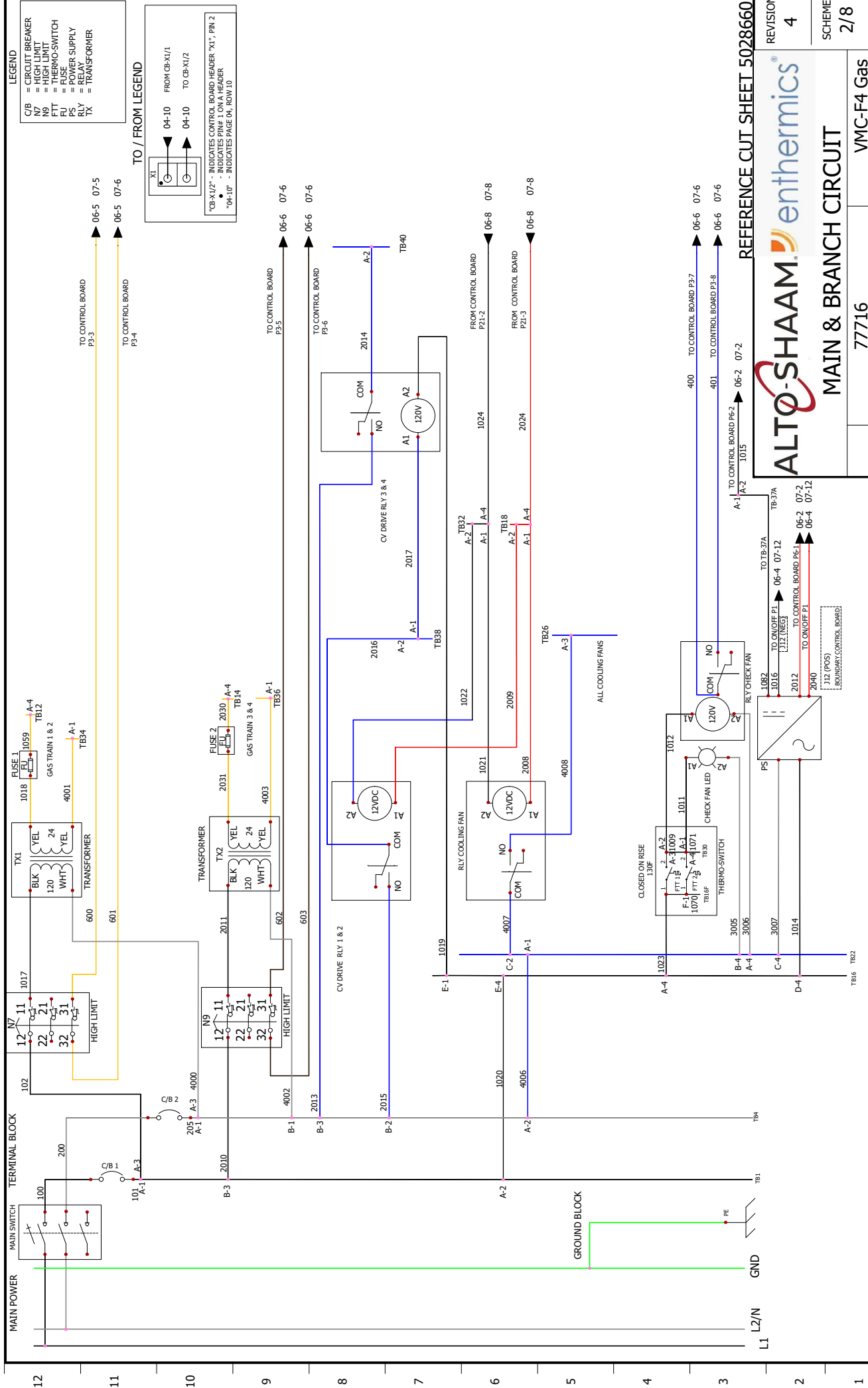
120V
77716

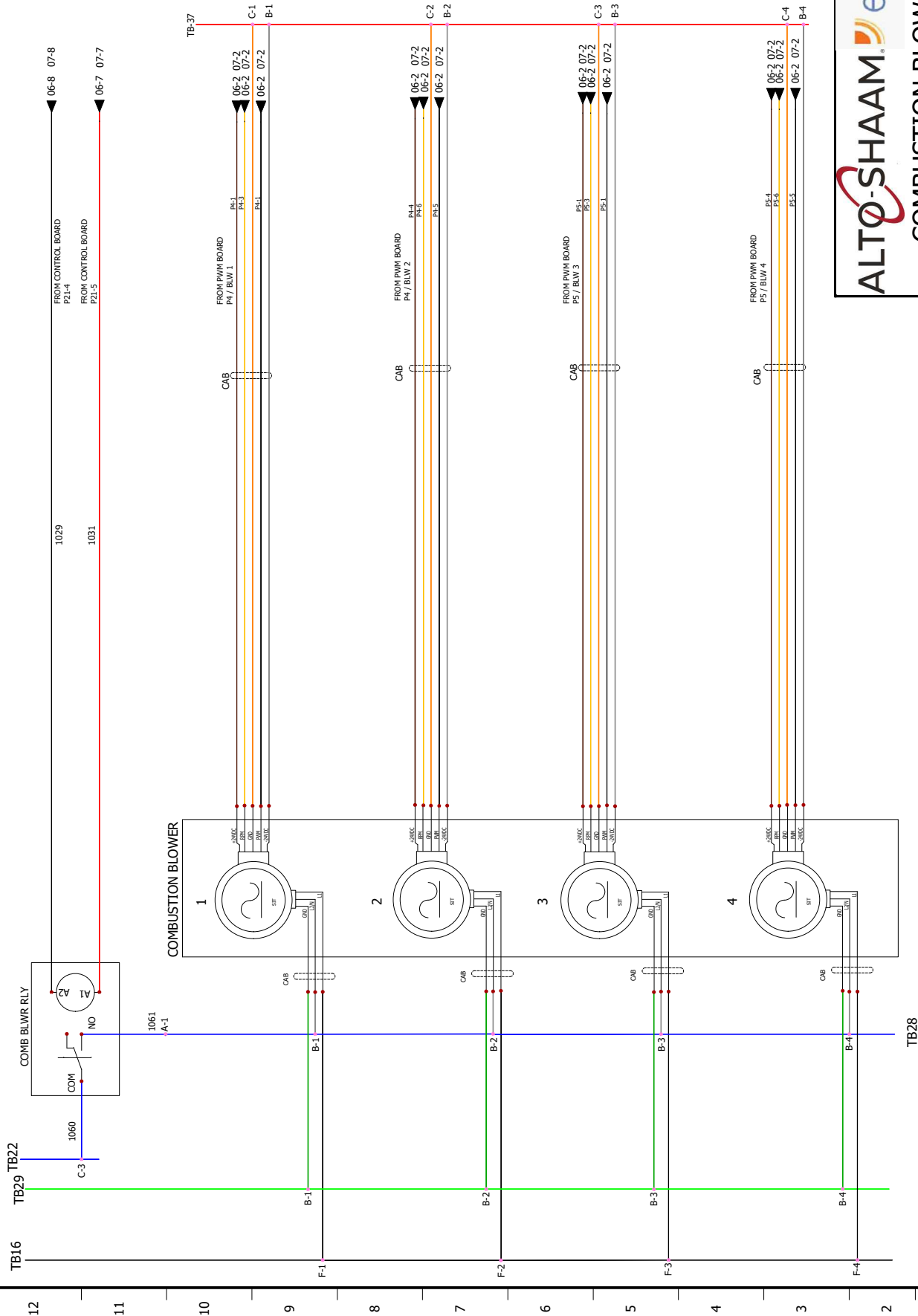
TABLE OF CONTENTS

MAIN & BRANCH CIRCUIT	PG 02
IGNITION CONTROL WIRES	PG 03
COMBUSTION BLOWER SYSTEM	PG 04
DRIVE, MOTOR, COOLING FAN	PG 05
SIMPLE CONTROL	PG 06
DELUXE CONTROL	PG 07
LEGEND	PG 08

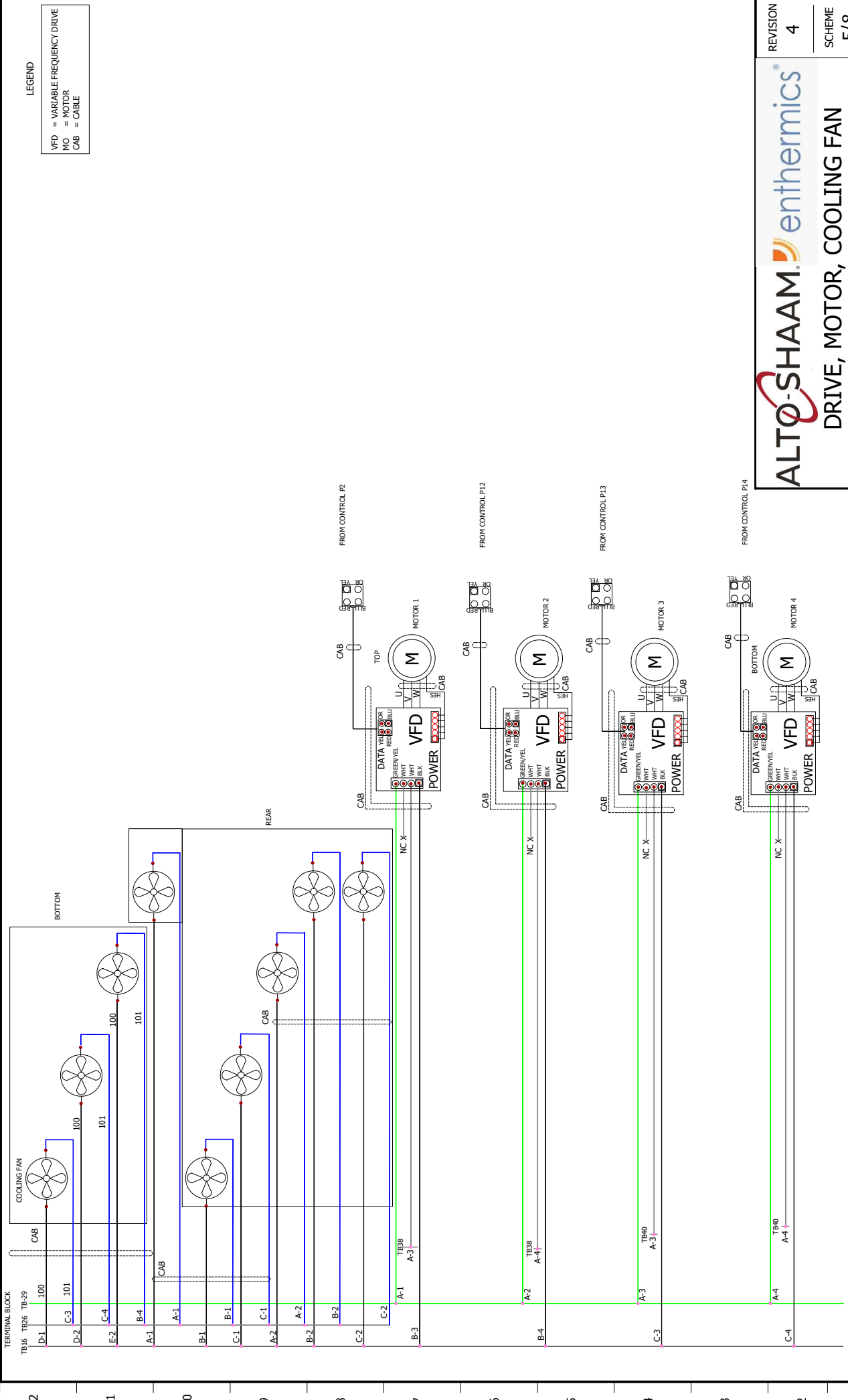


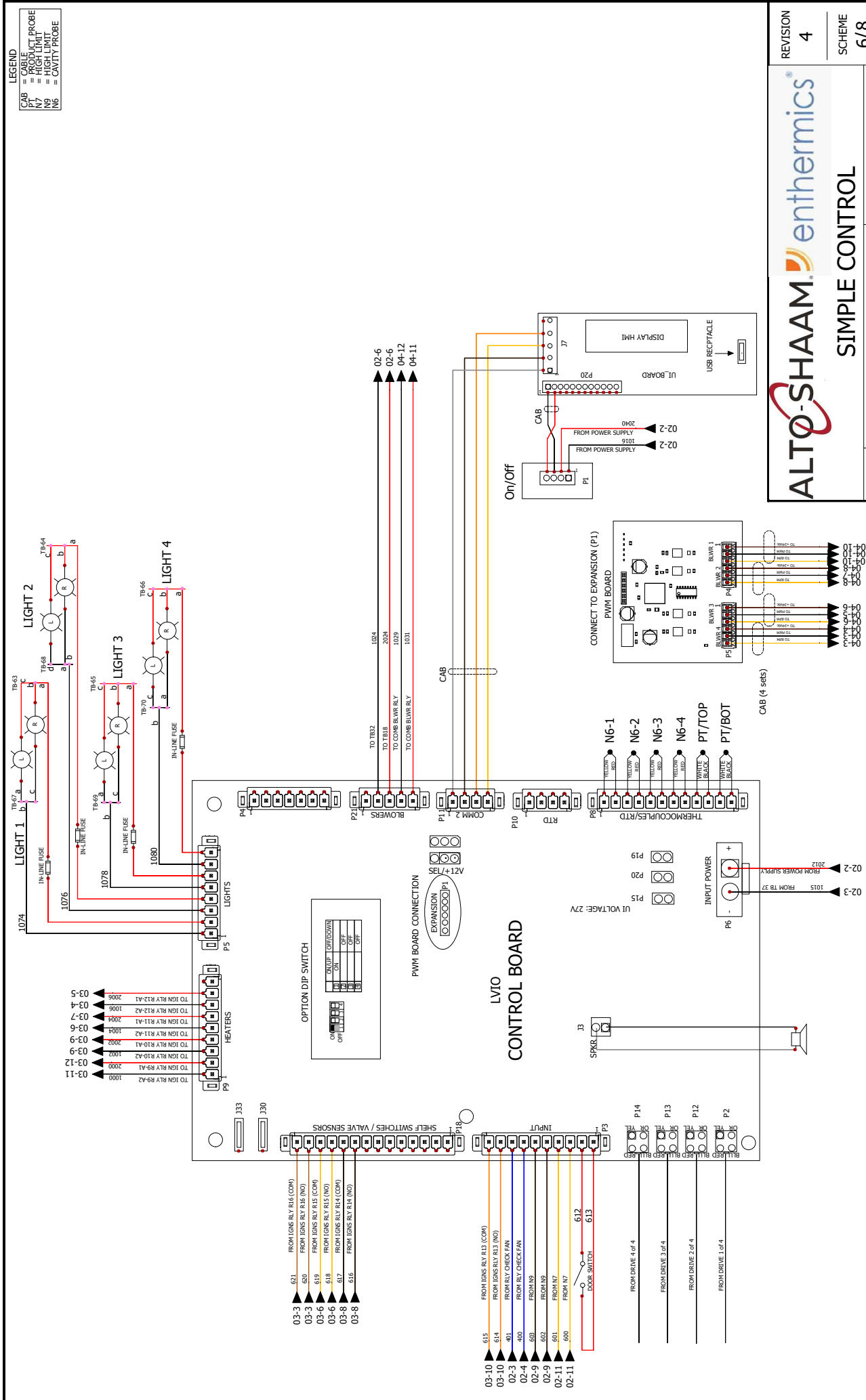
4	6/29/2021	montev	182390	Update latest standards		
3	1/20/2021	montev	182071	Update Legend and correct Relay (NO) location, add fans		
2	10/21/2020	montev	181914	Update Legend table and matching abbreviation		
1	6/11/2020	montev	181578	Update Alarm signal piggy back gas valve		
0	11/9/2018	montev	NPD	New		
REV.	DATE	NAME	ECO	CHANGES		
			77716			
			120V			
				REVISION	4	PAGE
						1/8
				VMC-F4 Gas		





BLWR = GAS COMB BLOWER
RLY = RELAY
CAB = CABLE

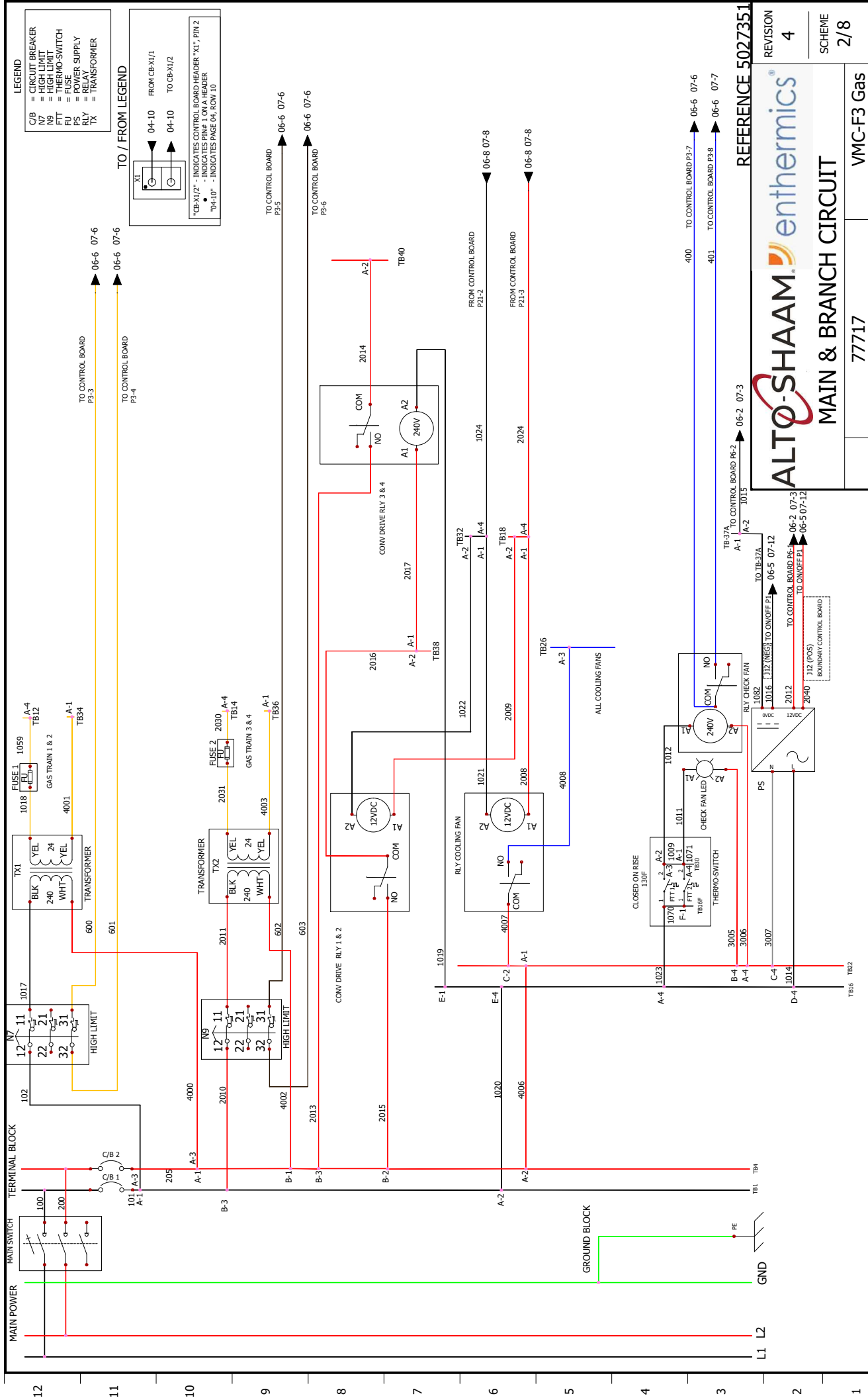


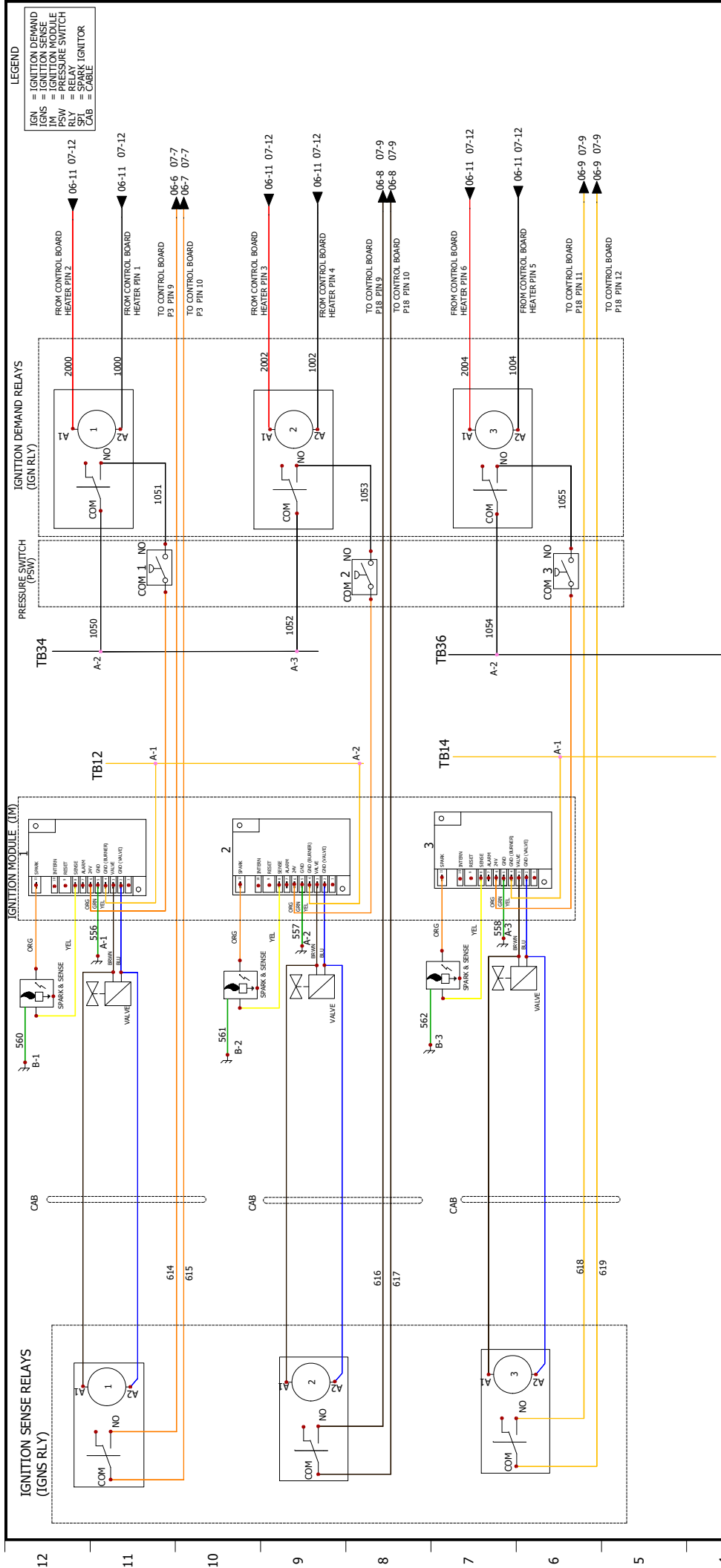


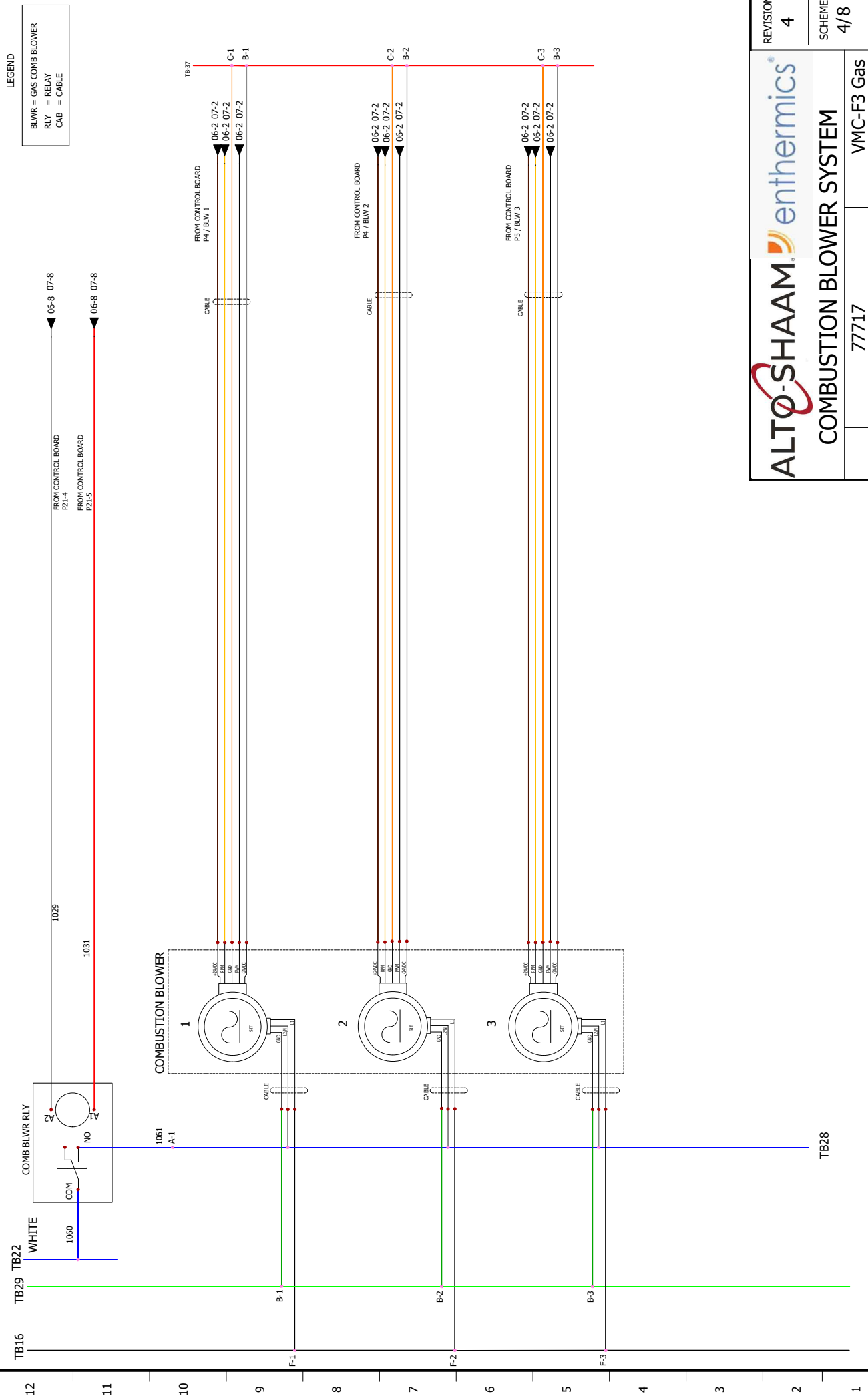
77717

MAIN & BRANCH CIRCUIT	PG 02
IGNITION CONTROL WIRES	PG 03
COMBUSTION BLOWER SYSTEM	PG 04
DRIVE, MOTOR, COOLING FAN	PG 05
SIMPLE CONTROL	PG 06
DELUXE CONTROL	PG 07
LEGEND	PG 08

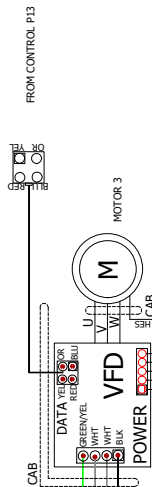
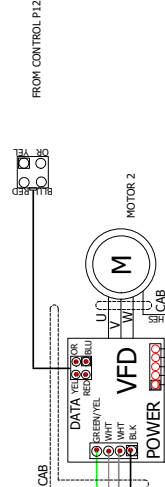
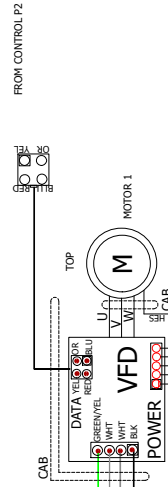
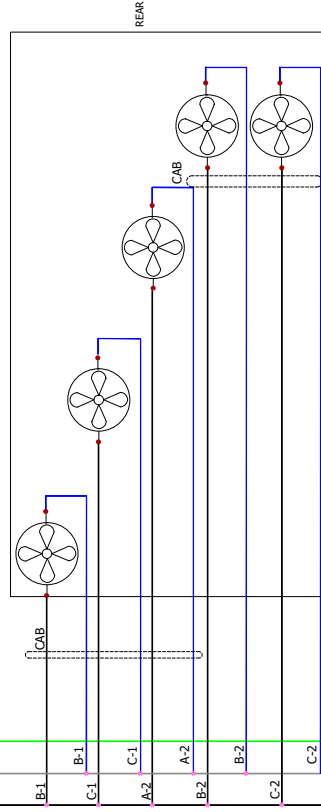
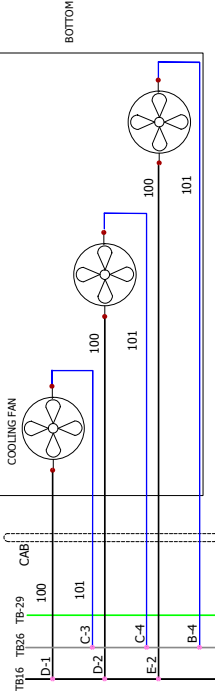
4	6/29/2021	montev	182390	Update latest standards
3	1/20/2021	montev	182071	Update Legend and correct Relay (NO) location
2	10/21/2020	montev	181914	Update Legend table and matching abbreviation
1	6/11/2020	montev	181578	Update Alarm signal piggy back gas valve
0	11/9/2018	montev	NPD	New
REV.	DATE	NAME	ECO	CHANGES
77717				
208-240V				
REVISION				4
PAGE				1/8





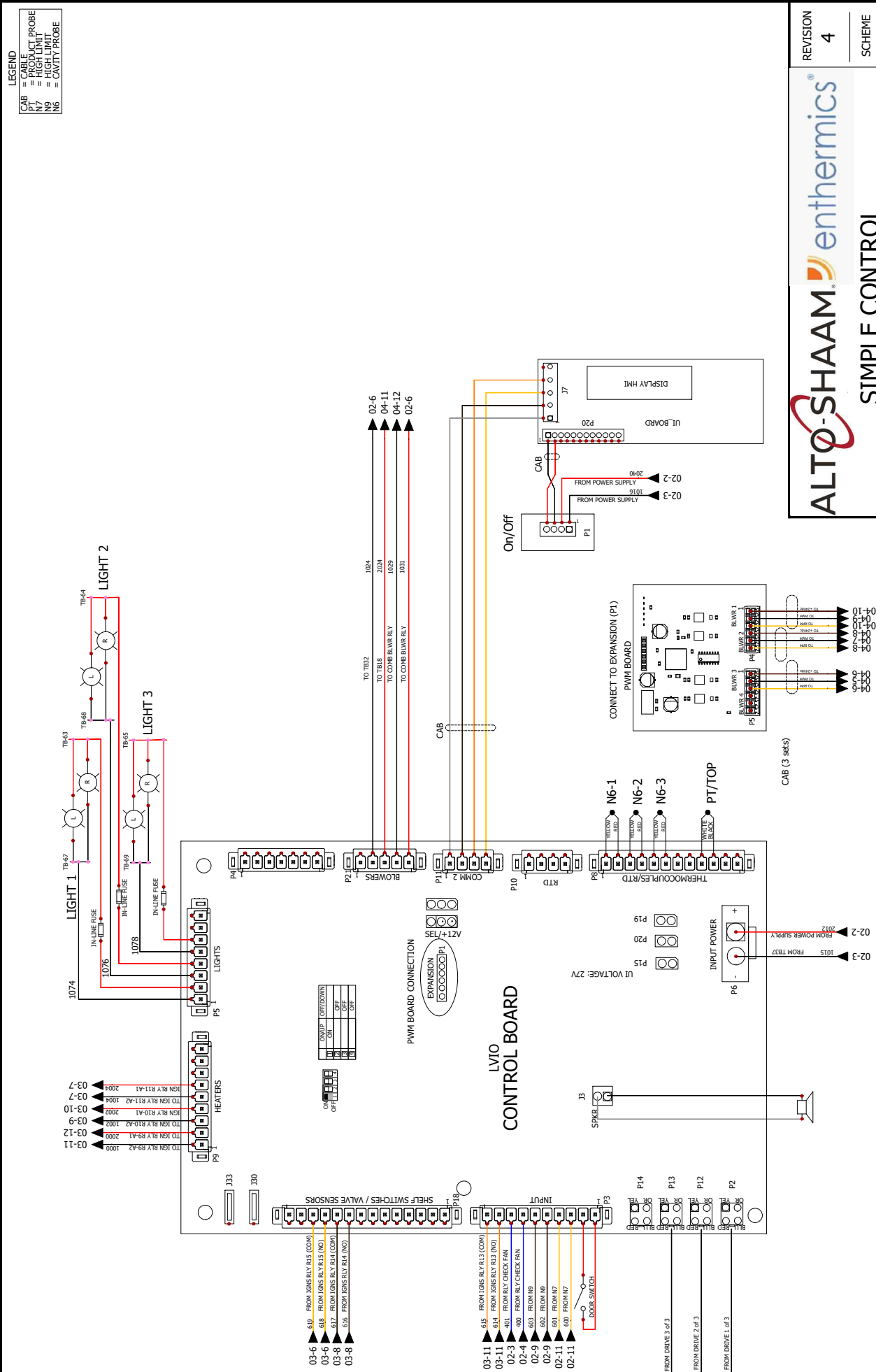


TERMINAL BLOCK

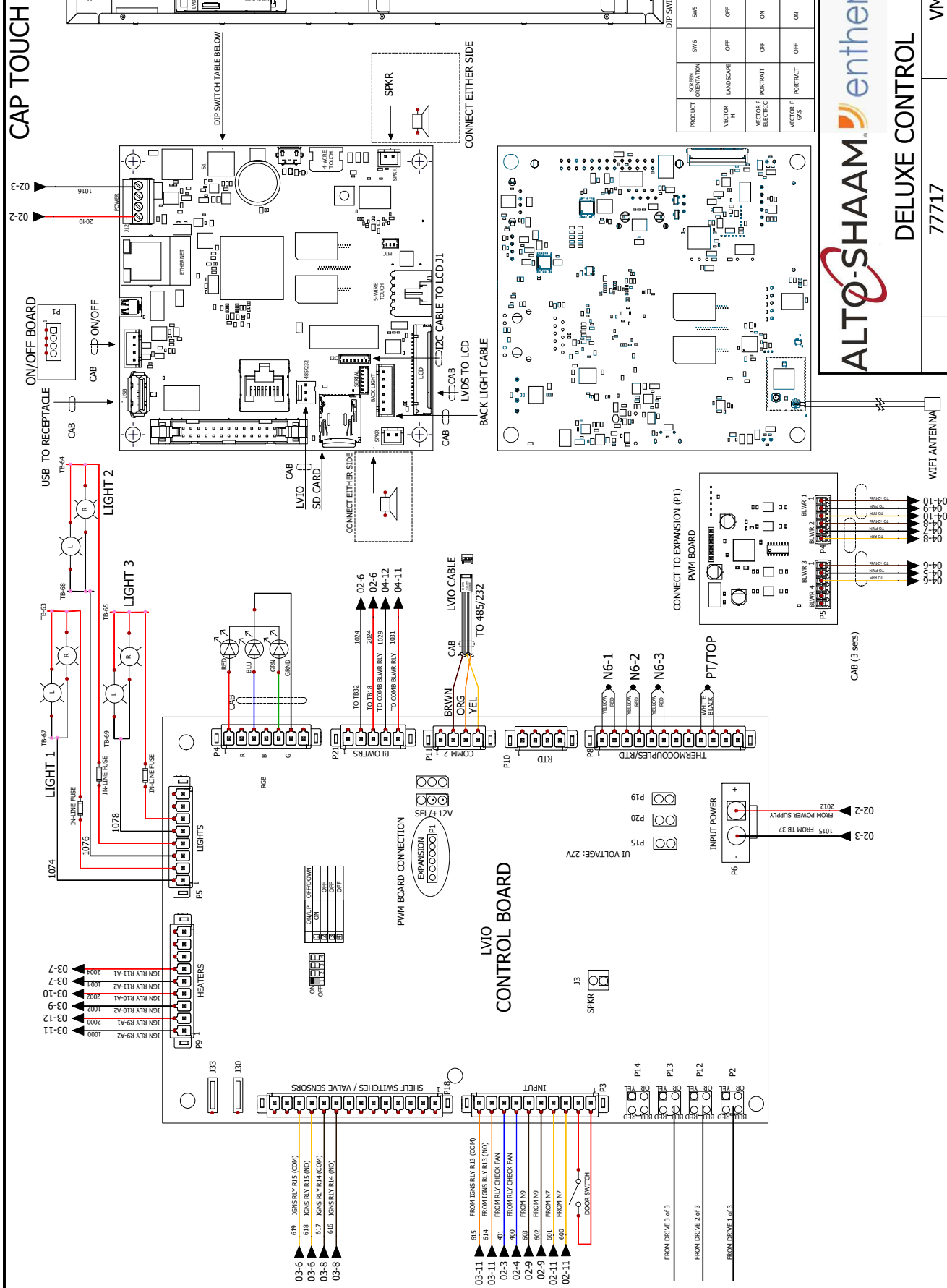


LEGEND

VFD = VARIABLE FREQUENCY DRIVE
MO = MOTOR
CAB = CABLE



CAP TOUCH



PRODUCT	SCREEN ORIENTATION	SW6	SW5	SW4	SW3	SW2	SW1
VECTOR H	LANDSCAPE	OFF	OFF	OFF	OFF	OFF	OFF
VECTOR F ELECTRIC	PORTRAIT	OFF	ON	ON	OFF	OFF	ON
VECTOR F GAS	PORTRAIT	OFF	ON	ON	ON	OFF	ON

ALTO-SHAAM.  enthermics®		REVISION 4
DELUXE CONTROL		SCHEME 7/8
77717	VMC-F3 Gas	

12	A1 = COIL INPUT (+)	E41 = CONV ELEMENT SET	K3 = BOILER CONTACTOR	N7 = HIGH LIMIT	SV = STEAM VALVE	
	A2 = COIL INPUT(-)	E42 = CONV ELEMENT SET	K40 = CONV CONTACTOR	N8 = BOILER TEMP PROBE	SW = SWITCH	
11	B1 = H2O PROBE LOW	E43 = CONV ELEMENT SET	K41 = CONV CONTACTOR	N9 = HIGH LIMIT	TM = TERMINAL	
	B2 = H2O PROBE HIGH	EL = ELEMENT	K42 = CONV CONTACTOR	N10 = HIGH LIMIT	TB = TERMINAL BLOCK	
10	B3 = WATER PROBE	FA = FAN	K43 = CONV CONTACTOR	NC X = NO CONNECTION	TX = TRANSFORMER	
	B4 = BOILER PROBE	FE = BOILER FUSE	K45 = CONV CONTACTOR	NC = NORMAL CLOSE	UPP = UPPER	
9	B5 = STEAM BY-PASS PROBE	FST = CONV FUSE	K50 = MOTOR CONTACTOR LOW	NO = NORMAL OPEN	VFD = VARIABLE FRENCY DRIVE	
	B10 = FOOD PROBE	FSW = FILTER SWITCH	K51 = MOTOR CONTACTOR LOW	OB = OPTION BOARD	Y1 = STEAM VALVE	
8	B11 = MULTI-POINT PROBE	FT = X-CAP FILTER	K60 = MOTOR CONTACTOR LOW	PS = POWER SUPPLY	Y2 = MIXED WATER VALVE	
	BLWR = GAS CONV BLOWER	FTT = COOLING FAN THERMOSTAT	K61 = MOTOR CONTACTOR LOW	PSW = PRESSURE SWITCH	Y3 = CLEAN VALVE	
7	C/B = CIRCUIT BREAKER	FU = FUSE	K77 = MASTER CONTACTOR	RLY = RELAY	Y4 = CLEAN PUMP	
	CAB = CABLE	G. PUMP = GREASE PUMP	K78 = MASTER CONTACTOR	RV = STEAM RELIEF VALVE	Y5 = HAND SHOWER	
	CB = CONTROL BOARD	GND = GROUNDING	LED = LIGHT EMITTING DIODE	S7 = REED SWITCH	---	
5	CC = CATALYTIC CONVERTER	GU = HALOGEN LIGHT	LF = LINE FILTER	SMK = SMOKER	---	
	CH = CONV HEATER	HIS = HOT SURFACE IGNITOR	LQ. PUMP = LIQUID PUMP	SMO = STEAM MOTOR	---	
4	CV = CONVECTION	IB = INTERFACE BOARD	LWR = LOWER	SPI = SPARK IGNITOR	---	
	E1 = BOILER ELEMENT SET	IM = IGNITION MODULE	LWS = STEAM RELIEVE VALVES	SSR = SOLID STATE RELAY	---	
3	E2 = BOILER ELEMENT SET	K1 = BOILER CONTACTOR	MO = MOTOR			
	E3 = BOILER ELEMENT SET	K2 = BOILER CONTACTOR	N6 = CAVITY PROBE			
2						
1						
 REVISION 4 SCHEME 8/8						
				77717		VMC-F3 Gas
LEGEND						

208-240V

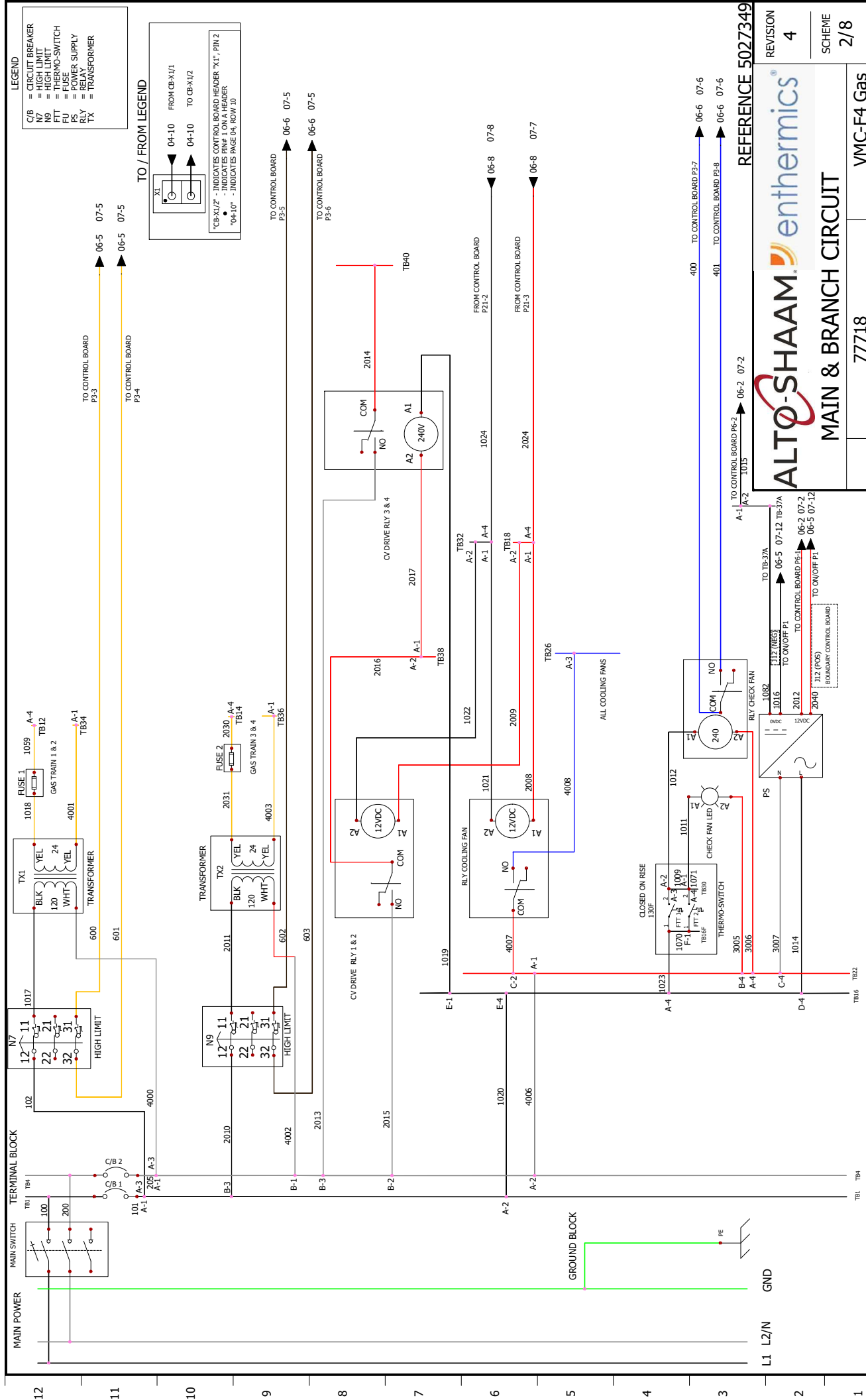
77718

TABLE OF CONTENTS

MAIN & BRANCH CIRCUIT	PG 02
IGNITION CONTROL WIRES	PG 03
COMBUSTION BLOWER SYSTEM	PG 04
DRIVE, MOTOR, COOLING FAN	PG 05
SIMPLE CONTROL	PG 06
DELUXE CONTROL	PG 07
LEGEND	PG 08



4	6/29/2021	montev	182390	Update latest standards		
3	1/20/2021	montev	182071	Update Legend and correct Relay (NO) location, add fans		
2	10/21/2020	montev	181914	Update Legend table and matching abbreviation		
1	6/11/2020	montev	181578	Update Alarm signal piggy back gas valve		
0	7/31/2018	montev	NPD	New		
REV.	DATE	NAME	ECO	CHANGES		
77718					REVISION	4
208-240V					PAGE	1/8
				VMC-F4 Gas		



REFERENCE 5027349

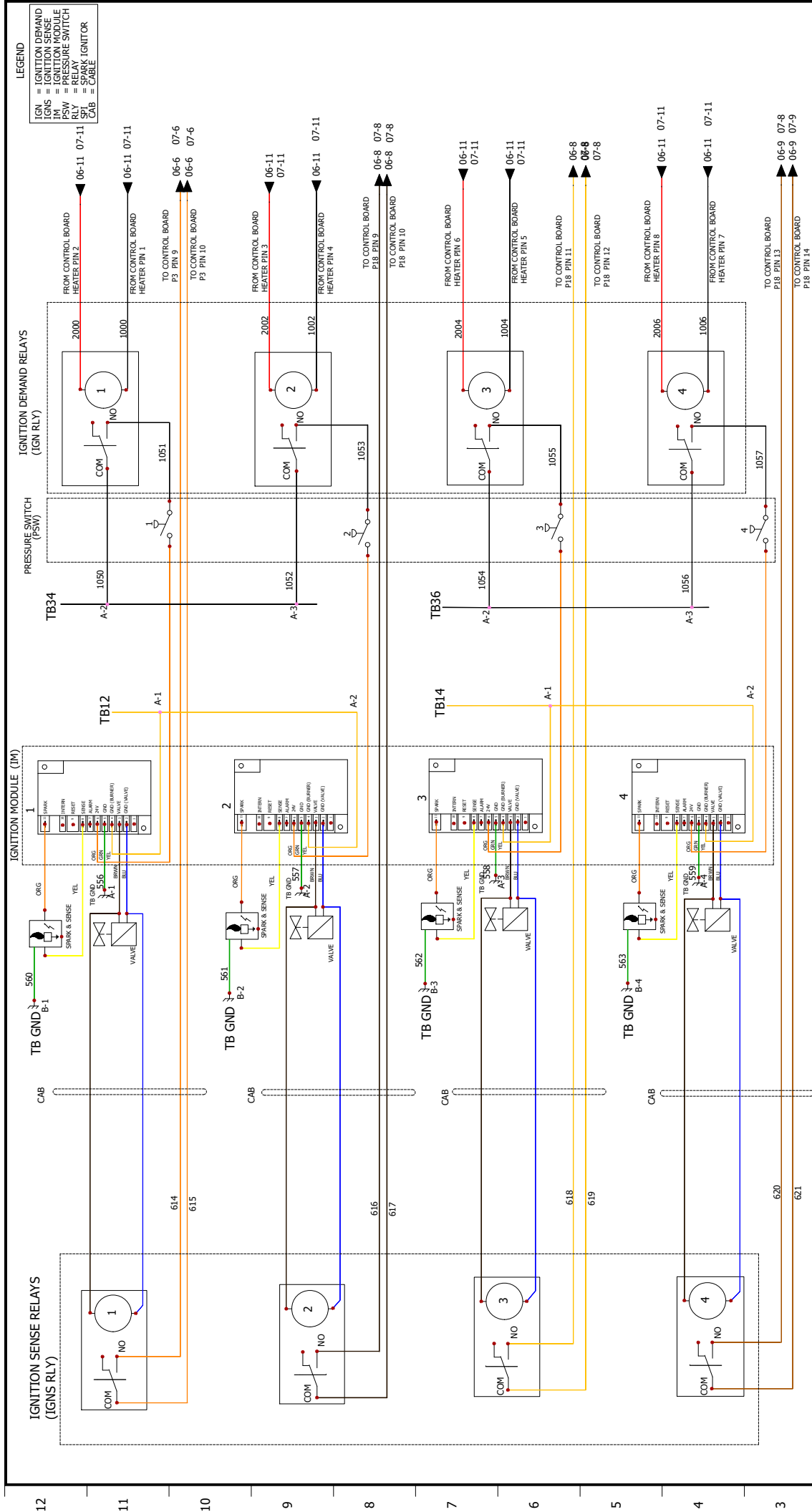
4
REVISION2/8
SCHEME

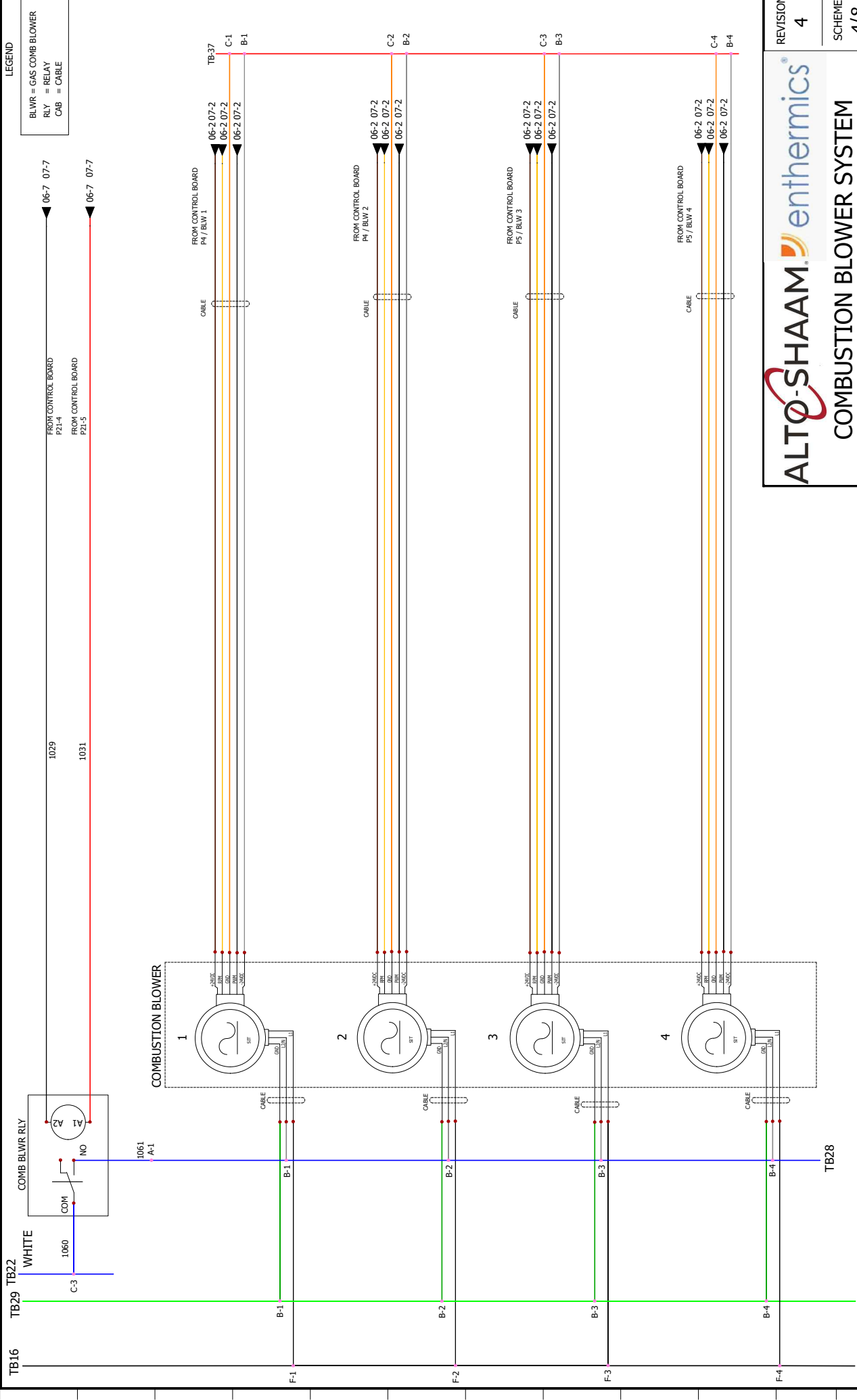
MAIN & BRANCH CIRCUIT

77718

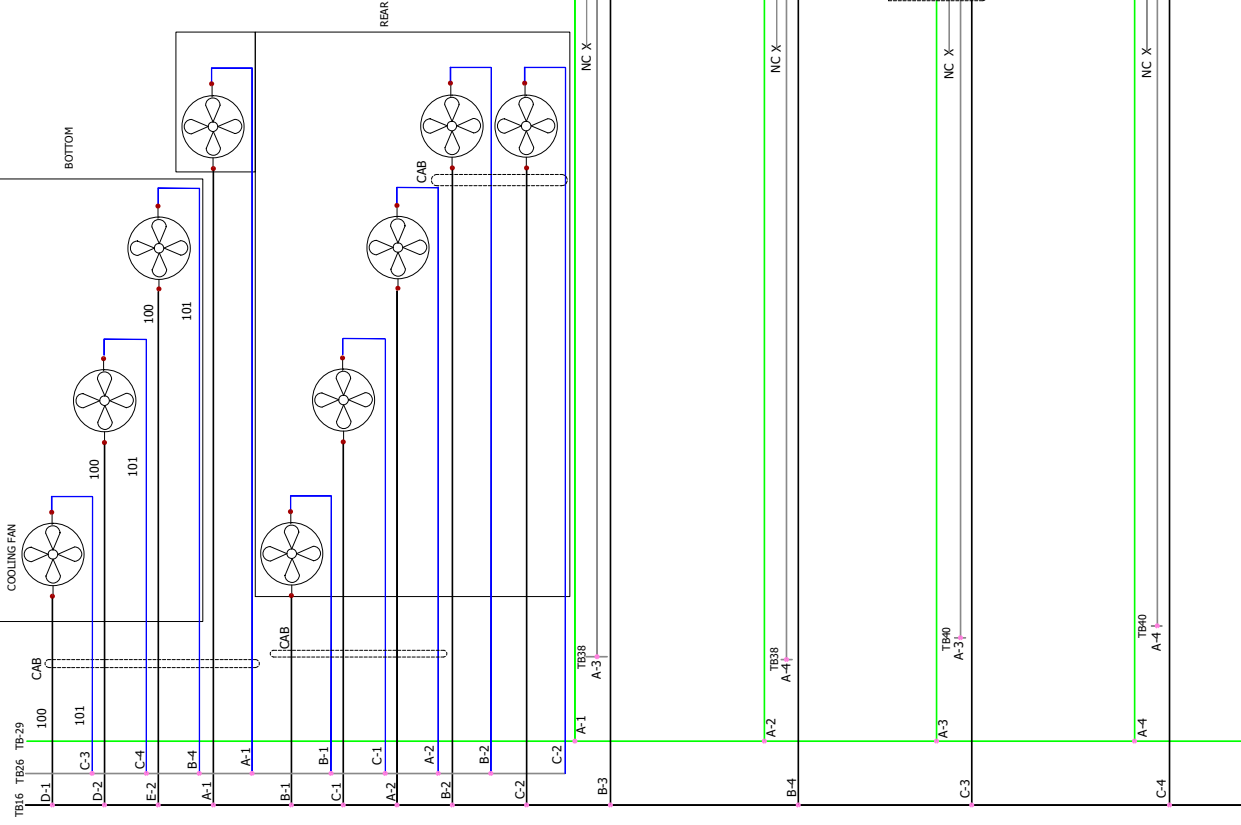
VMC-F4 Gas

REFERENCE 5027349





TERMINAL BLOCK



LEGEND

- VFD = VARIABLE FREQUENCY DRIVE
- MO = MOTOR
- CAB = CABLE

DRIVE, MOTOR, COOLING FAN

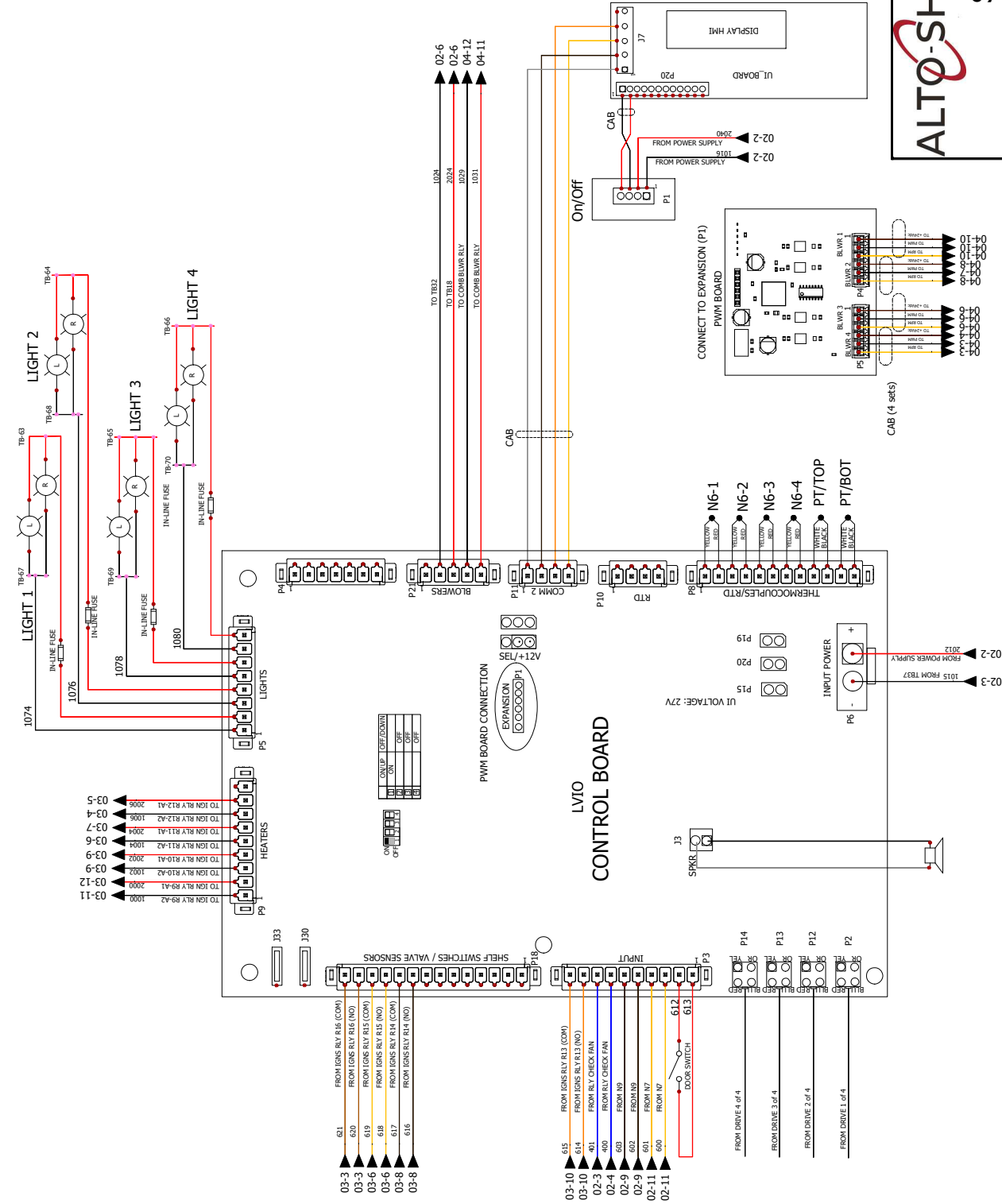
77718

VMC-F4 Gas

REVISION 4

SCHEME 5/8

LEGEND
 CAB = CABLE
 N7 = PROTECT PROBE
 N7 = HIGH LIMIT
 N9 = HIGH LIMIT
 N6 = CAVITY PROBE

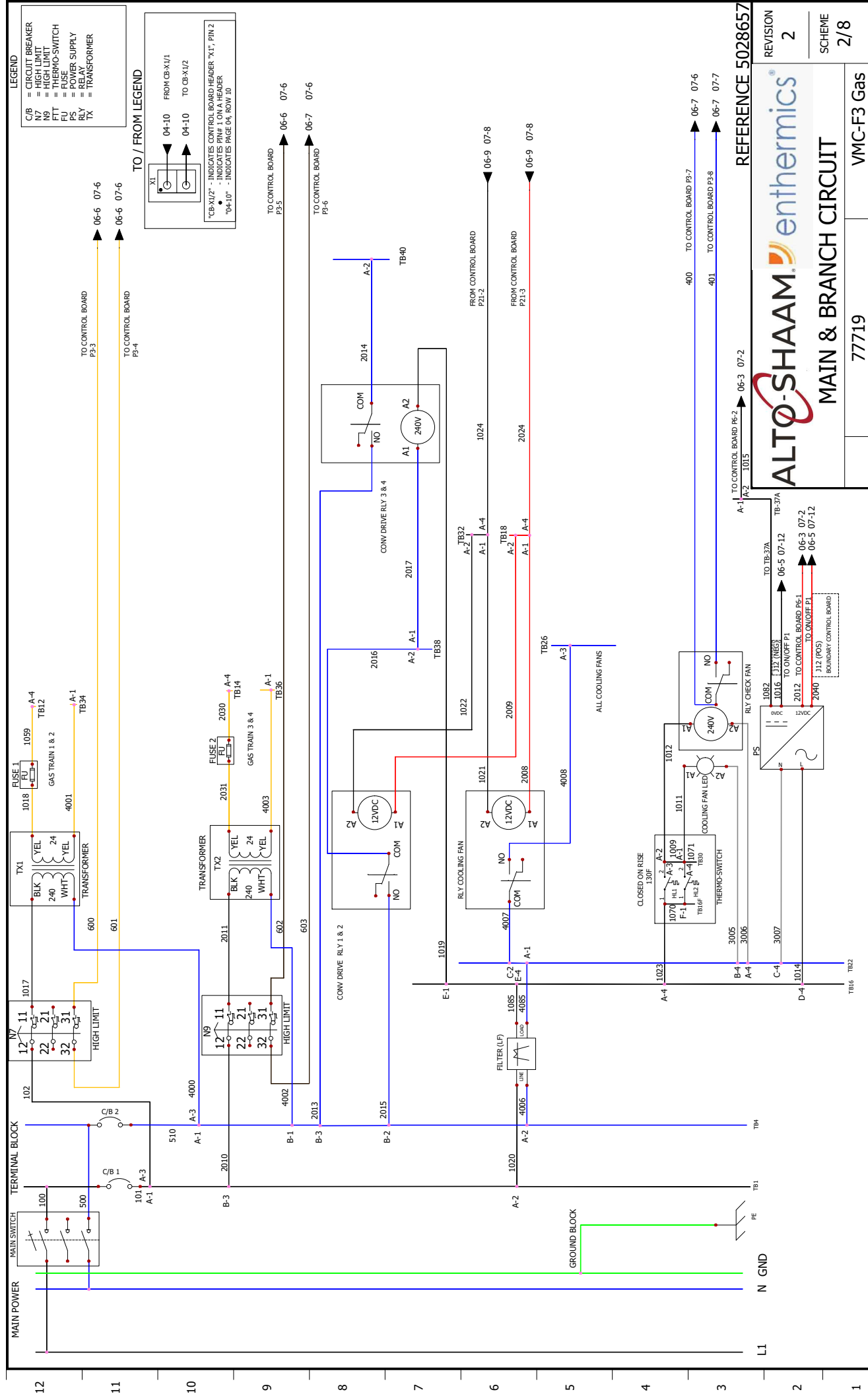


12	A1 = COIL INPUT (+)	E41 = CONV ELEMENT SET	K3 = BOILER CONTACTOR	N7 = HIGH LIMIT	SV = STEAM VALVE
	A2 = COIL INPUT(-)	E42 = CONV ELEMENT SET	K40 = CONV CONTACTOR	N8 = BOILER TEMP PROBE	SW = SWITCH
11	B1 = H2O PROBE LOW	E43 = CONV ELEMENT SET	K41 = CONV CONTACTOR	N9 = HIGH LIMIT	TM = TERMINAL
	B2 =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

77719

MAIN & BRANCH CIRCUIT	PG 02
IGNITION CONTROL WIRES	PG 03
COMBUSTION BLOWER SYSTEM	PG 04
DRIVE, MOTOR, COOLING FAN	PG 05
SIMPLE CONTROL	PG 06
DELUXE CONTROL	PG 07
LEGEND	PG 08

ALTO-SHAAM®



REFERENCE 5028657

ALTO-SHAAM® enthermics®

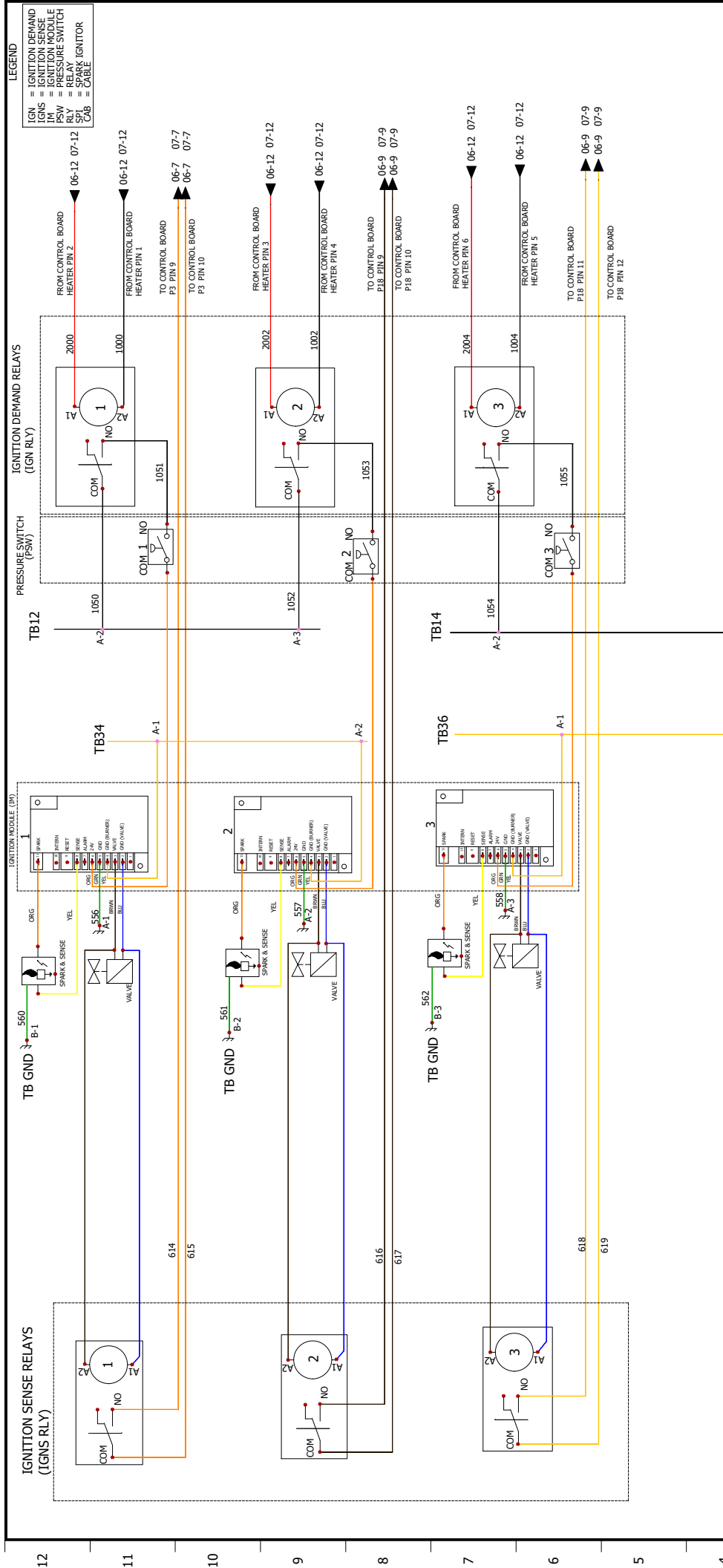
MAIN & BRANCH CIRCUIT

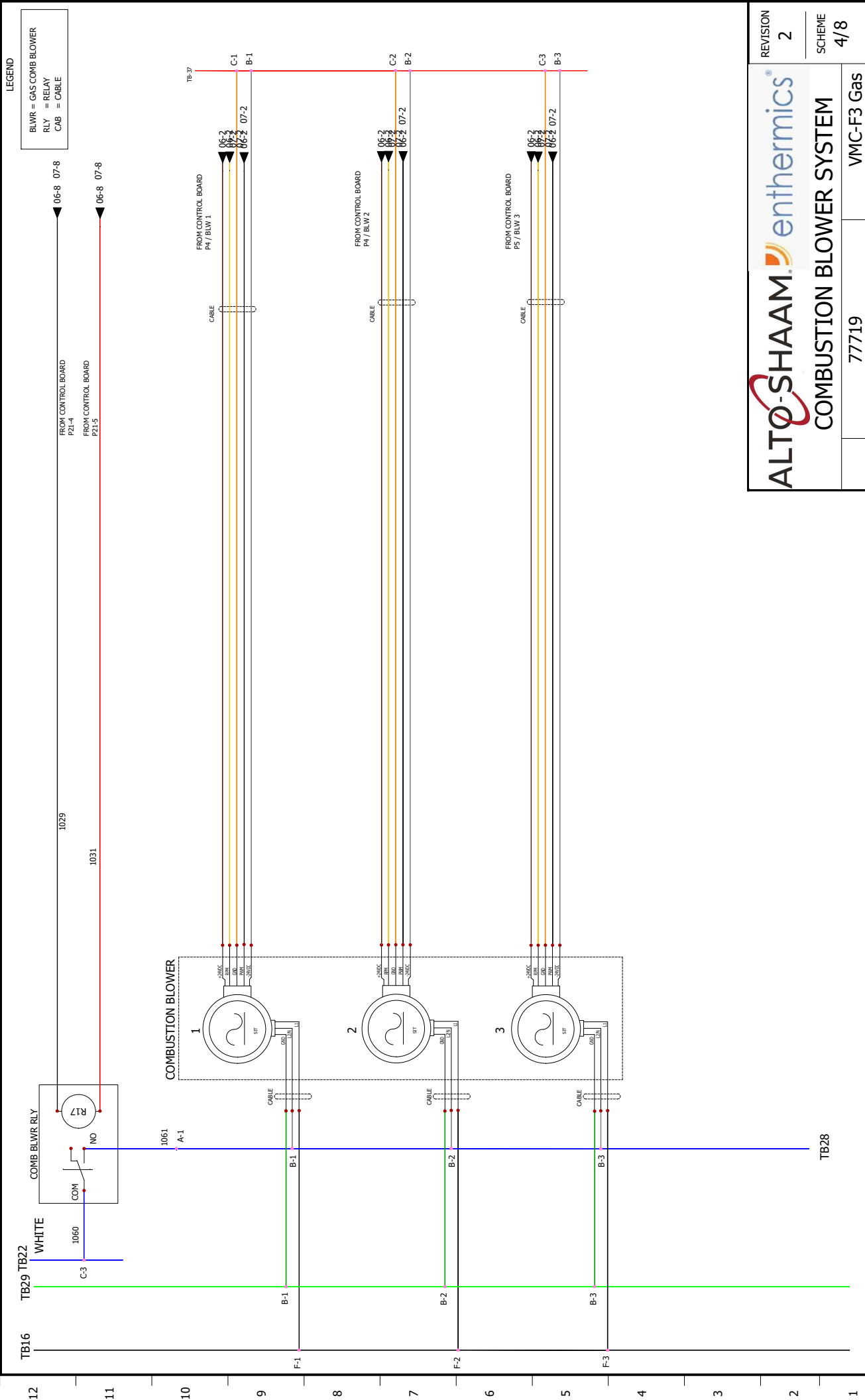
77719

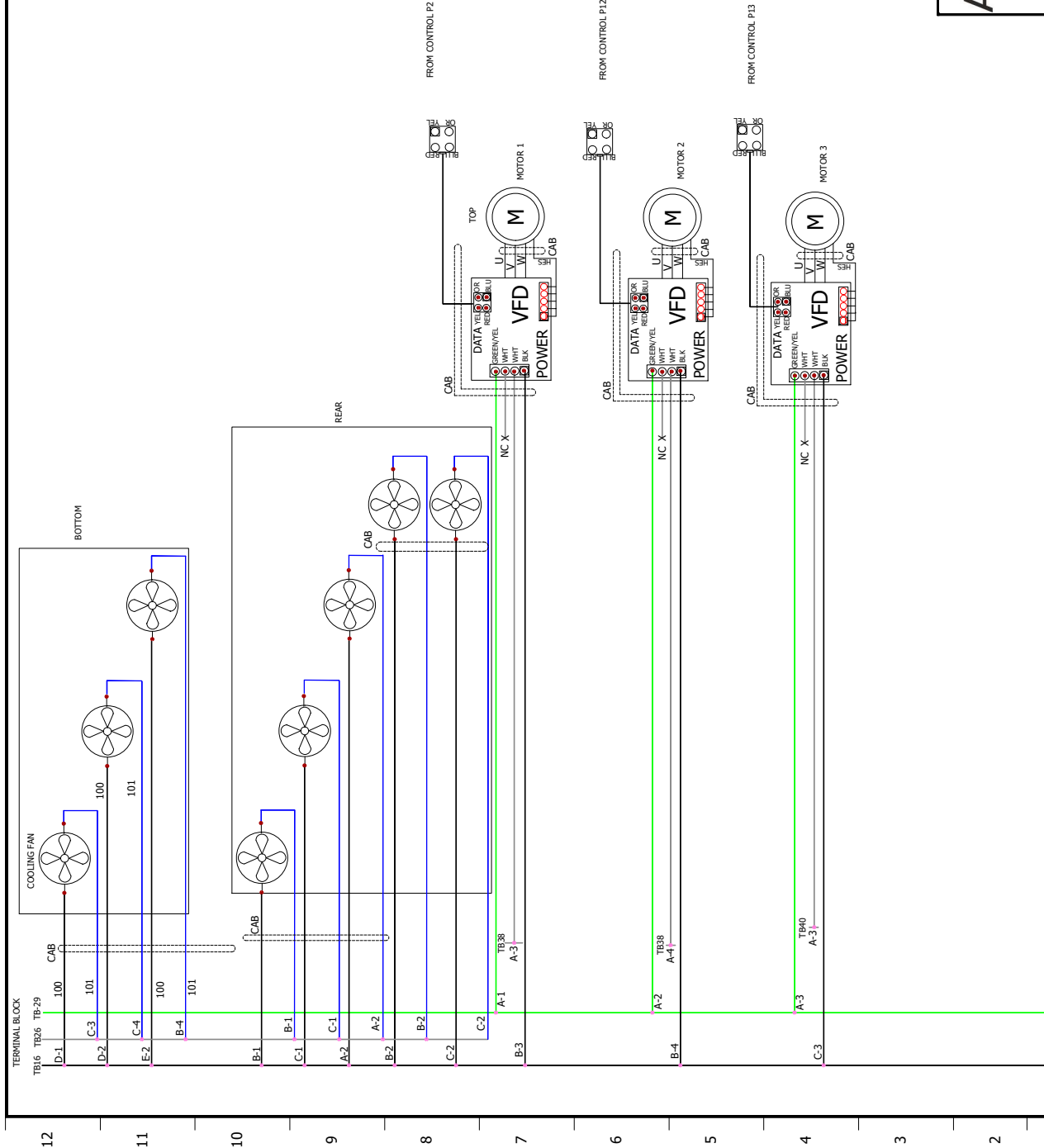
VMC-F3 Gas

REVISION
2

SCHEME 2/8



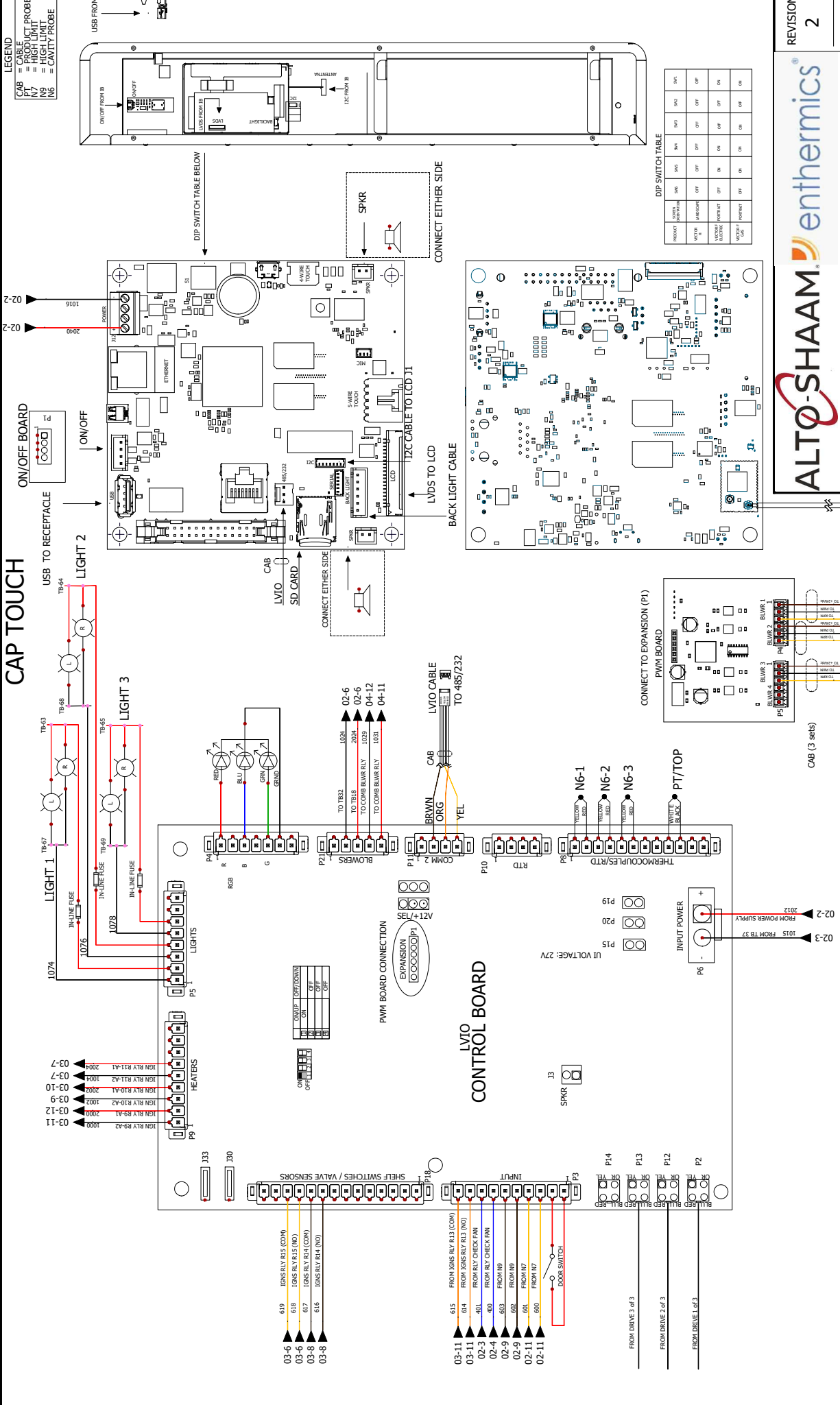






CAP TOUCH

LEGEND
CAB = CABLE
PT = PRODUCT PROBE
N7 = HIGH LIMIT
N6 = LOW LIMIT
N5 = CAVITY PROBE



DIP SWITCH TABLE

PRODUCT	ANTENNA	POWER	RELAY	RELAY	RELAY	RELAY	RELAY	RELAY	RELAY
SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10
ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

ALTO-SHAAM® enthermics®

DELUXE CONTROL

77719

VMC-F3 Gas

REVISION 2
SCHEME 7/8

12	A1	= COIL INPUT (+)	E41	= CONV ELEMENT SET	K3	= BOILER CONTACTOR	N7	= HIGH LIMIT	SV	= STEAM VALVE
	A2	= COIL INPUT(-)	E42	= CONV ELEMENT SET	K40	= CONV CONTACTOR	N8	= BOILER TEMP PROBE	SW	= SWITCH
11	B1	= H2O PROBE LOW	E43	= CONV ELEMENT SET	K41	= CONV CONTACTOR	N9	= HIGH LIMIT	TM	= TERMINAL
	B2	= H2O PROBE HIGH	EL	= ELEMENT	K42	= CONV CONTACTOR	N10	= HIGH LIMIT	TB	= TERMINAL BLOCK
10	B3	= WATER PROBE	FA	= FAN	K43	= CONV CONTACTOR	NC X	= NO CONNECTION	TX	= TRANSFORMER
	B4	= BOILER PROBE	FE	= BOILER FUSE	K45	= CONV CONTACTOR	NC	= NORMAL CLOSE	UPP	= UPPER
9	B5	= STEAM BY-PASS PROBE	FST	= CONV FUSE	K50	= MOTOR CONTACTOR LOW	NO	= NORMAL OPEN	VFD	= VARIABLE FREQUENCY DRIVE
	B10	= FOOD PROBE	FSW	= FILTER SWITCH	K51	= MOTOR CONTACTOR LOW	OB	= OPTION BOARD	Y1	= STEAM VALVE
8	B11	= MULTI-POINT PROBE	FT	= X-CAP FILTER	K60	= MOTOR CONTACTOR LOW	PS	= POWER SUPPLY	Y2	= MIXED WATER VALVE
	BLWR	= GAS CONV BLOWER	FTT	= COOLING FAN THERMOSTAT	K61	= MOTOR CONTACTOR LOW	PSW	= PRESSURE SWITCH	Y3	= CLEAN VALVE
7	C/B	= CIRCUIT BREAKER	FU	= FUSE	K77	= MASTER CONTACTOR	RLY	= RELAY	Y4	= CLEAN PUMP
	CAB	= CABLE	G. PUMP	= GREASE PUMP	K78	= MASTER CONTACTOR	RV	= STEAM RELIEF VALVE	Y5	= HAND SHOWER
	CB	= CONTROL BOARD	GND	= GROUNDING	LED	= LIGHT EMITTING DIODE	S7	= REED SWITCH	---	= -----
5	CC	= CATALYTIC CONVERTER	GU	= HALOGEN LIGHT	LF	= LINE FILTER	SMK	= SMOKER	---	= -----
	CH	= CONV HEATER	HIS	= HOT SURFACE IGNITOR	LQ. PUMP	= LIQUID PUMP	SMO	= STEAM MOTOR	---	= -----
4	CV	= CONVECTION	IB	= INTERFACE BOARD	LWR	= LOWER	SPI	= SPARK IGNITOR	---	= -----
	E1	= BOILER ELEMENT SET	IM	= IGNITION MODULE	LWS	= STEAM RELIEVE VALVES	SSR	= SOLID STATE RELAY	---	= -----
3	E2	= BOILER ELEMENT SET	K1	= BOILER CONTACTOR	MO	= MOTOR				
	E3	= BOILER ELEMENT SET	K2	= BOILER CONTACTOR	N6	= CAVITY PROBE				
2										
1										
										 77719 VMC-F3 Gas
										REVISION 2 SCHEME 8/8

LEGEND

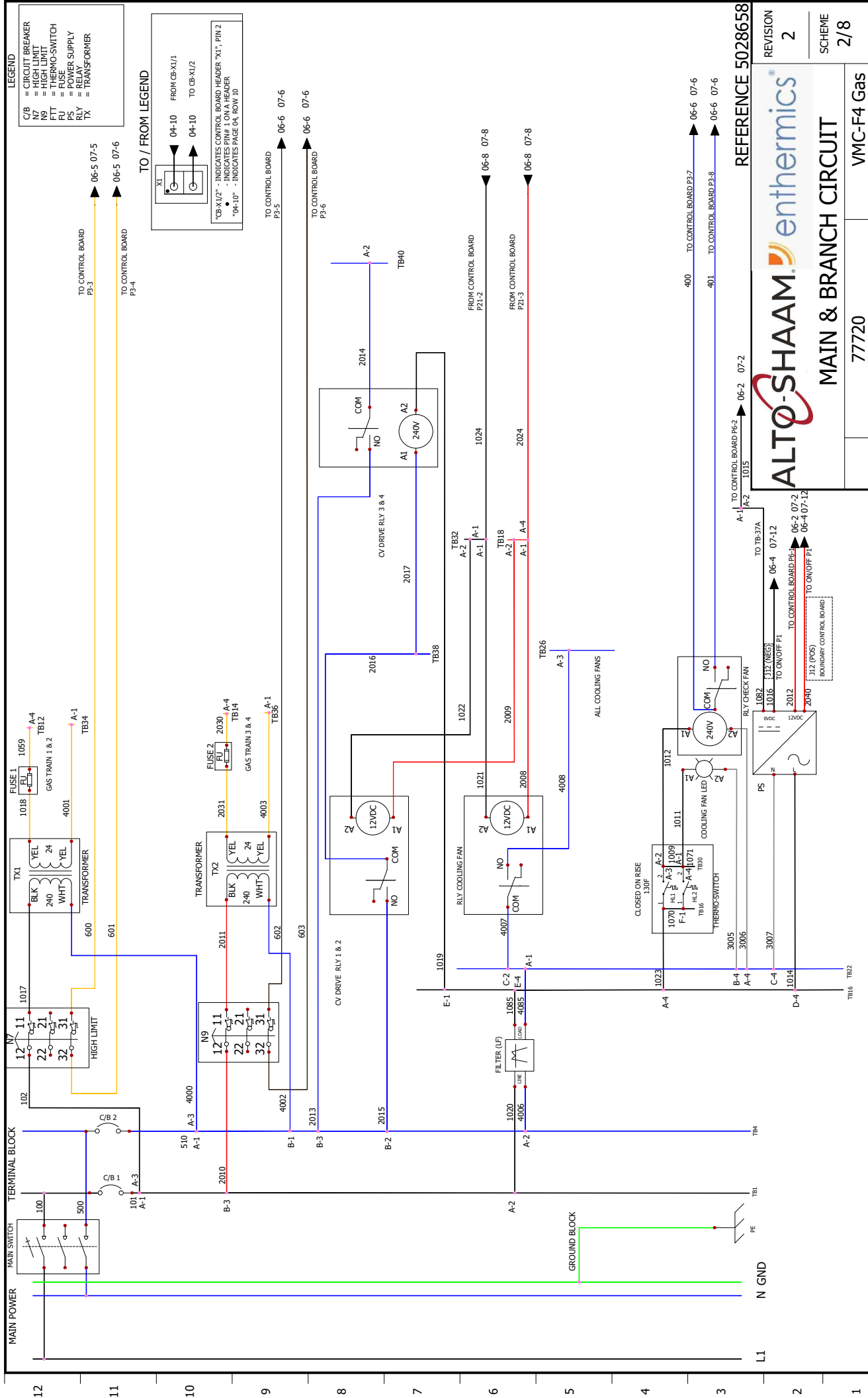
220V

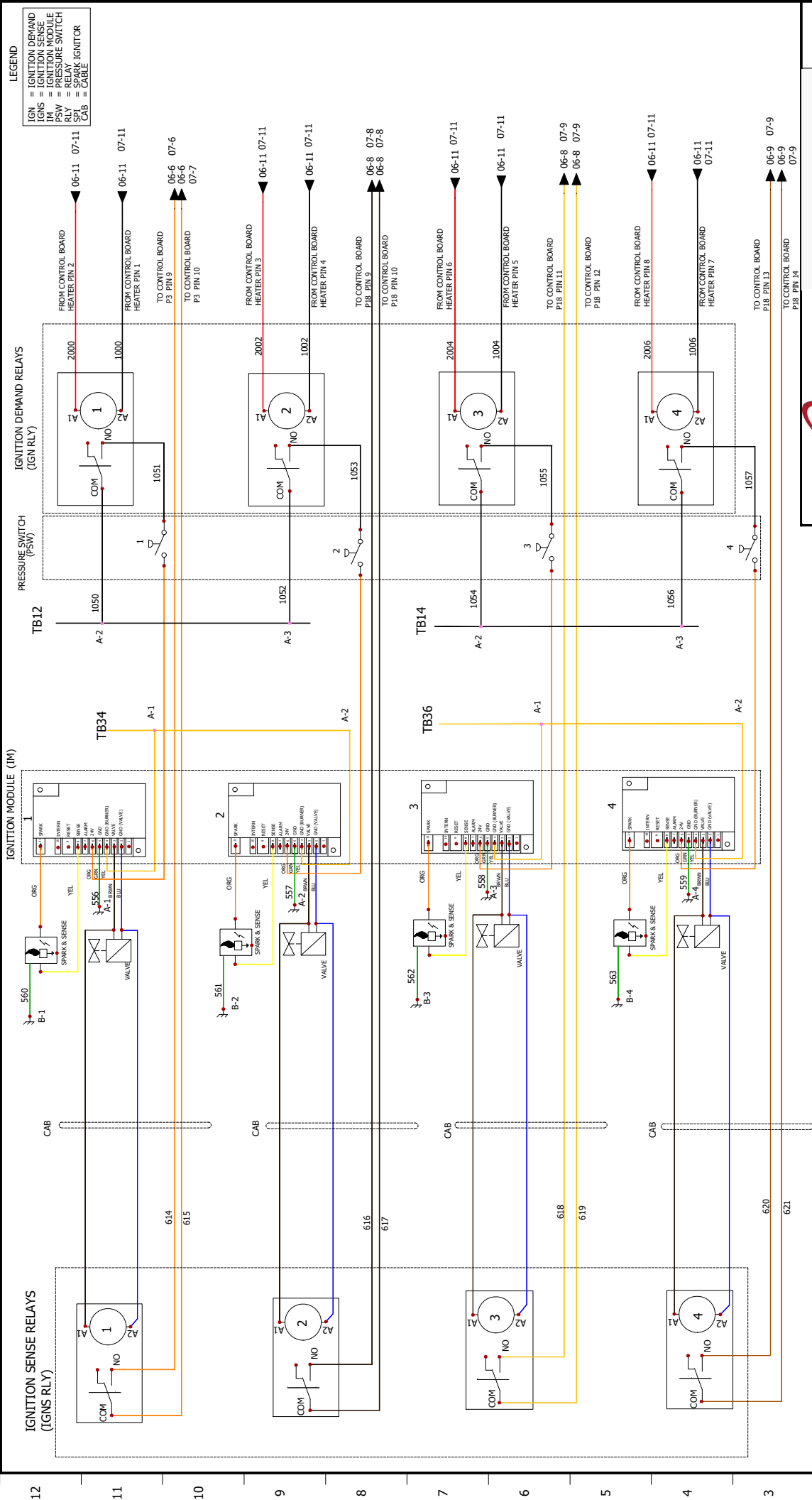
77720

TABLE OF CONTENTS

MAIN & BRANCH CIRCUIT	PG 02
IGNITION CONTROL WIRES	PG 03
COMBUSTION BLOWER SYSTEM	PG 04
DRIVE, MOTOR, COOLING FAN	PG 05
SIMPLE CONTROL	PG 06
DELUXE CONTROL	PG 07
LEGEND	PG 08

[illegible]

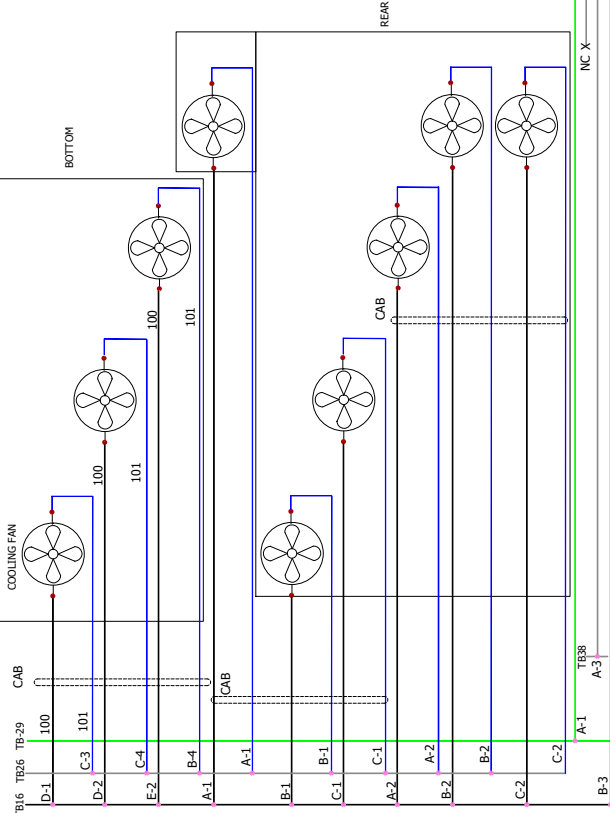




LEGEND

IGN = IGNITION DEMAND
 IGNS = IGNITION SENSE
 IM = IGNITION MODULE
 PSW = PRESSURE SWITCH
 SPK = SPARK IGNITOR
 CAB = CABLE

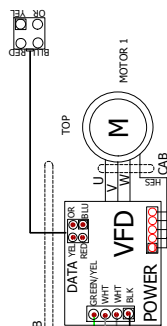
TERMINAL BLOCK



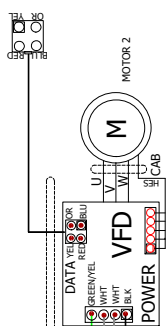
LEGEND

VFD = VARIABLE FREQUENCY DRIVE
MO = MOTOR
CAB = CABLE

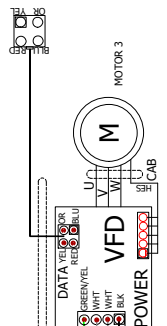
FROM CONTROL P2



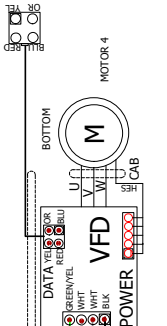
FROM CONTROL P12



FROM CONTROL P13



FROM CONTROL P14



DRIVE, MOTOR, COOLING FAN

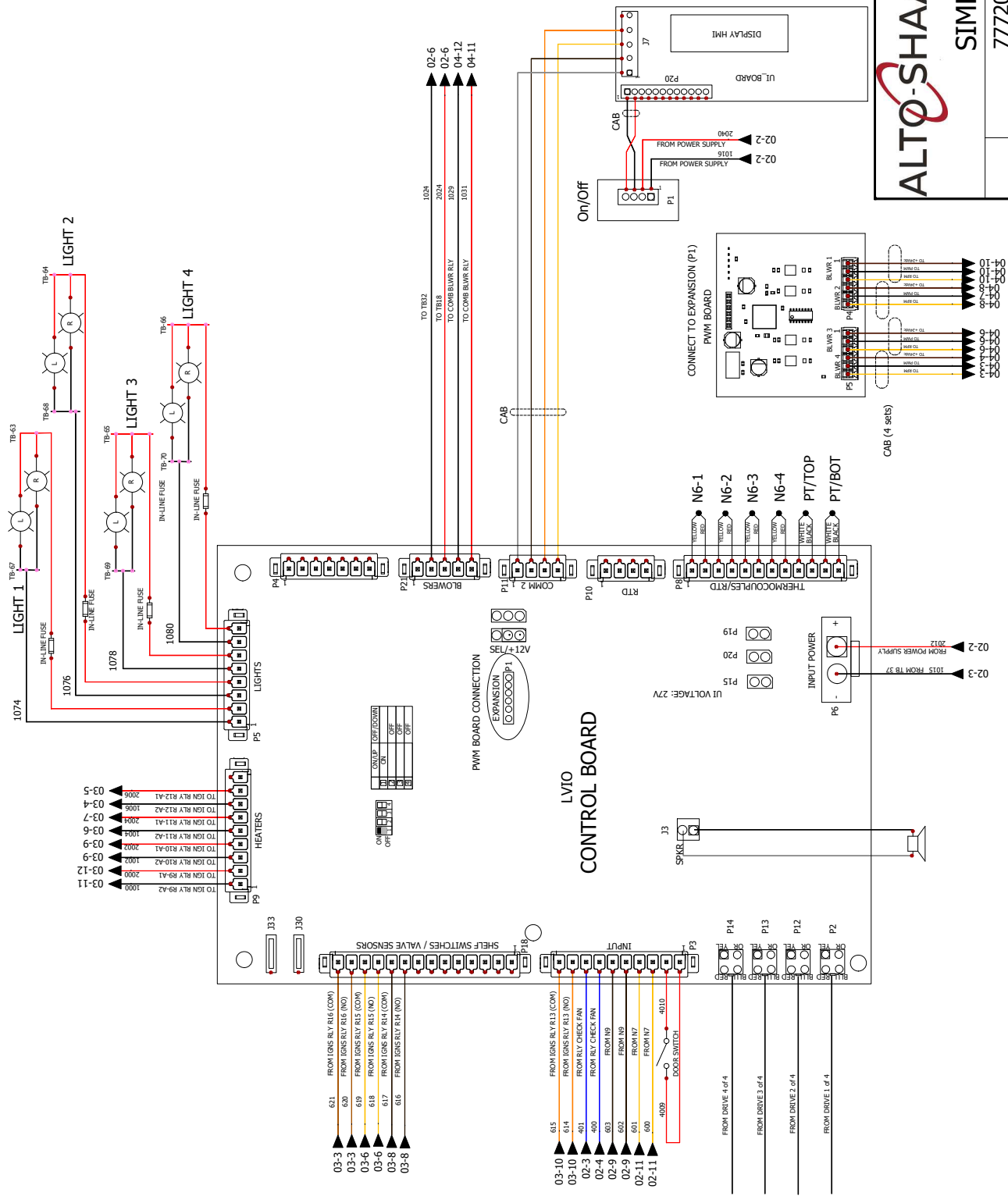
77720

VMC-F4 Gas

REVISION 2

SCHEME 5/8

LEGEND
 CAB = CABLE
 P1 = PRODUCT PROBE
 N7 = HIGH LIMIT
 N9 = HIGH LIMIT
 N6 = CAVITY PROBE



CAP TOUCH

ON/OFF BOARD

LIGHT 2

USB TO RECEPTACLE

LIGHT 3

LIGHT 4

LIGHT 1

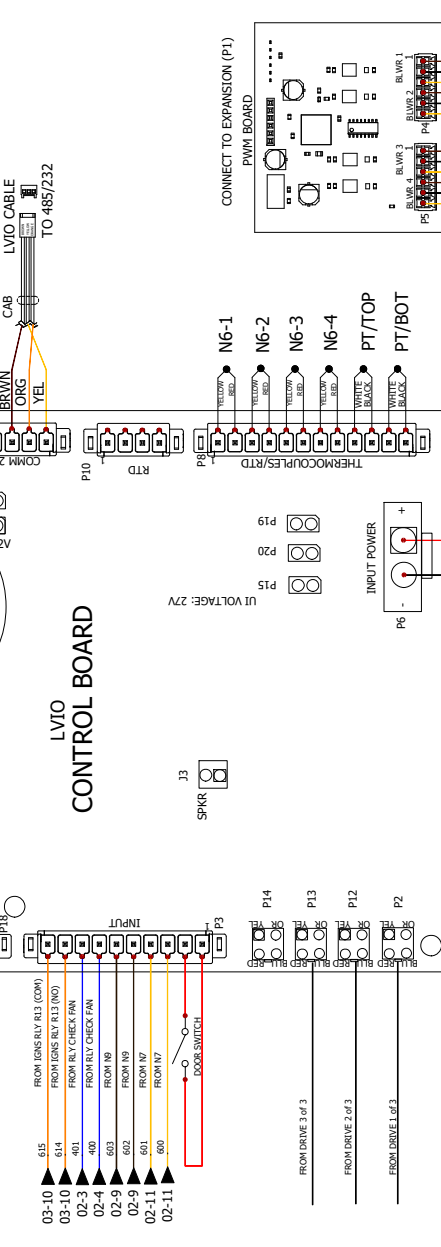
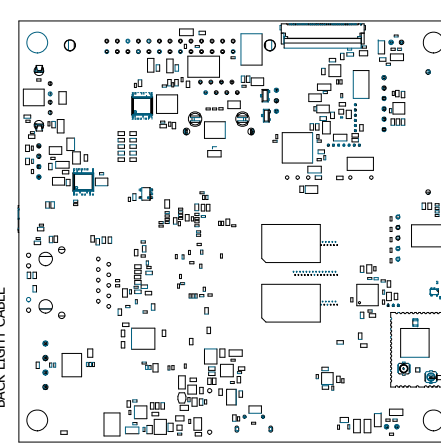
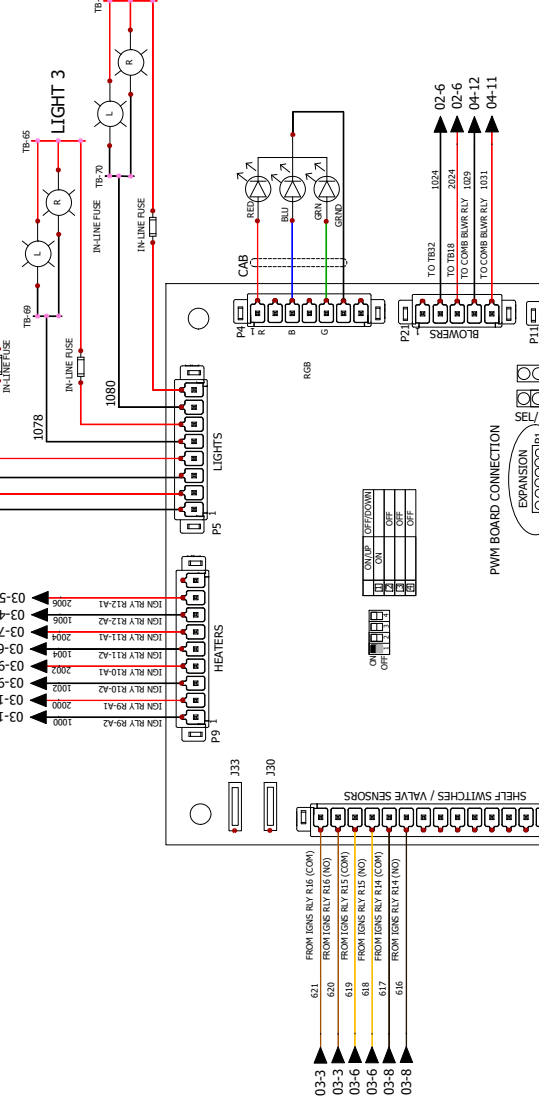
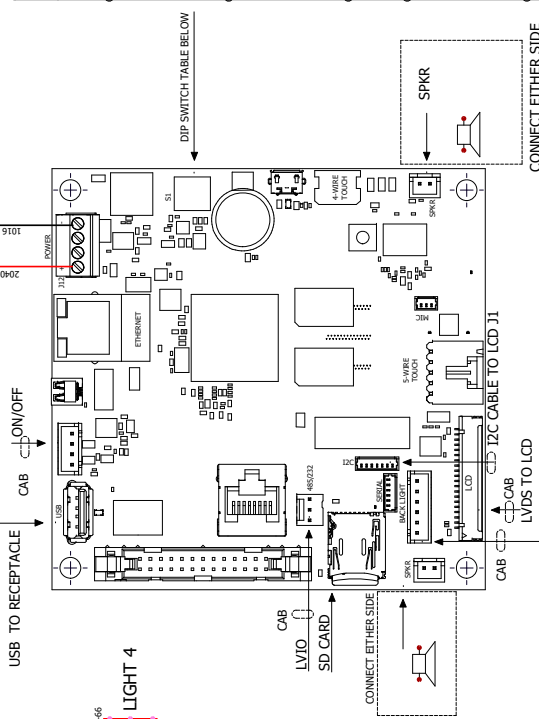
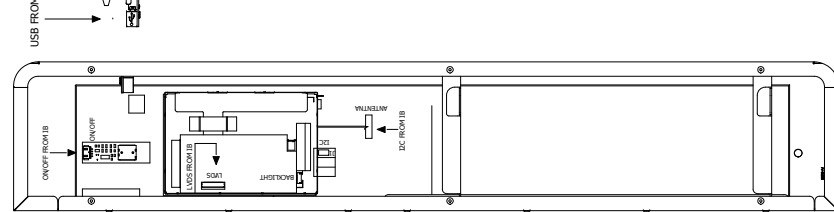
HEATERS

SHIELD SWITCHES / VALVE SENSORS

INPUT

DOOR SWITCH

LEGEND
CAB = CABLE
PT = PRODUCT PROBE
N7 = HIGH LIMIT
N9 = LOW LIMIT
N6 = CAVITY PROBE



DIP SWITCH TABLE

PRODUCT	RETRACT	RETRACT	RETRACT	RETRACT	RETRACT	RETRACT	RETRACT	RETRACT	RETRACT
ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

enthermics®

ALTO-SHAAM®

DELUXE CONTROL

77720

VMC-F4 Gas

WIFI ANTENNA



12	A1 = COIL INPUT (+)	E41 = CONV ELEMENT SET	K3 = BOILER CONTACTOR	N7 = HIGH LIMIT	SV = STEAM VALVE	
	A2 = COIL INPUT(-)	E42 = CONV ELEMENT SET	K40 = CONV CONTACTOR	N8 = BOILER TEMP PROBE	SW = SWITCH	
11	B1 = H2O PROBE LOW	E43 = CONV ELEMENT SET	K41 = CONV CONTACTOR	N9 = HIGH LIMIT	TM = TERMINAL	
	B2 = H2O PROBE HIGH	EL = ELEMENT	K42 = CONV CONTACTOR	N10 = HIGH LIMIT	TB = TERMINAL BLOCK	
10	B3 = WATER PROBE	FA = FAN	K43 = CONV CONTACTOR	NC X = NO CONNECTION	TX = TRANSFORMER	
	B4 = BOILER PROBE	FE = BOILER FUSE	K45 = CONV CONTACTOR	NC = NORMAL CLOSE	UPP = UPPER	
9	B5 = STEAM BY-PASS PROBE	FST = CONV FUSE	K50 = MOTOR CONTACTOR LOW	NO = NORMAL OPEN	VFD = VARIABLE FREQUENCY DRIVE	
	B10 = FOOD PROBE	FSW = FILTER SWITCH	K51 = MOTOR CONTACTOR LOW	OB = OPTION BOARD	Y1 = STEAM VALVE	
8	B11 = MULTI-POINT PROBE	FT = X-CAP FILTER	K60 = MOTOR CONTACTOR LOW	PS = POWER SUPPLY	Y2 = MIXED WATER VALVE	
	BLWR = GAS CONV BLOWER	FTT = COOLING FAN THERMOSTAT	K61 = MOTOR CONTACTOR LOW	PSW = PRESSURE SWITCH	Y3 = CLEAN VALVE	
7	C/B = CIRCUIT BREAKER	FU = FUSE	K77 = MASTER CONTACTOR	RLY = RELAY	Y4 = CLEAN PUMP	
	CAB = CABLE	G. PUMP = GREASE PUMP	K78 = MASTER CONTACTOR	RV = STEAM RELIEF VALVE	Y5 = HAND SHOWER	
	CB = CONTROL BOARD	GND = GROUNDING	LED = LIGHT EMITTING DIODE	S7 = REED SWITCH	--- = -----	
5	CC = CATALYTIC CONVERTER	GU = HALOGEN LIGHT	LF = LINE FILTER	SMK = SMOKER	--- = -----	
	CH = CONV HEATER	HIS = HOT SURFACE IGNITOR	LQ. PUMP = LIQUID PUMP	SMO = STEAM MOTOR	--- = -----	
4	CV = CONVECTION	IB = INTERFACE BOARD	LWR = LOWER	SP1 = SPARK IGNITOR	--- = -----	
	E1 = BOILER ELEMENT SET	IM = IGNITION MODULE	LWS = STEAM RELIEVE VALVES	SSR = SOLID STATE RELAY	--- = -----	
3	E2 = BOILER ELEMENT SET	K1 = BOILER CONTACTOR	MO = MOTOR			
	E3 = BOILER ELEMENT SET	K2 = BOILER CONTACTOR	N6 = CAVITY PROBE			
2						
1						
 77720 VMC-F4 Gas						REVISION 2 SCHEME 8/8
LEGEND						



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

RUSSIA

Moscow, Russia
Phone +7 903 7932331