Service Manual

351FEC100B/C/D/E, 351FEC200BK/CK/DK/EK

CPG COOKING PERFORMANCE GROUP

Electric
Convention Ovens

NOTICE

This manual is for a certified service technician and should not be used by those who are not properly trained. This manual cannot cover all possible conditions that may occur and is not intended to be all encompassing. You should read this manual in its entirety and the specific repair you wish to do prior to starting the repair. This will allow you to determine if you have the correct tools, instruments, and skills to perform the procedure.

Intertek Intertek

REVISED: 03/2022

Index

Troubleshooting

PROBLEM	SOLUTIONS
Heating element will not turn on	Ensure the green power light is 'ON'
	Ensure the power switch is turned 'ON'
	If in 'COOK' mode, ensure the doors are closed
	Ensure power is going to and from fan
	Ensure thermostat is high enough to call for heat
	Check thermostat probe function
	Check high limit thermostat is not open
	Check contactors are functioning correctly
	Check heating elements
Heating element will not turn off	Check that the thermostat is turned "OFF"
	Check temperature sensor/probe and wiring
	Check thermostat
	Check high limit thermostat
	Check contactors are functioning
Unit will not turn on	Ensure the green power light is 'ON'
	Ensure the power switch is turned 'ON'
	Check control panel safety switch
	Check internal circuit breaker
	Check correct voltage is reaching terminal blocks

PROBLEM	SOLUTIONS
Blower fan will not turn on	Ensure the green power light is ON
	Ensure power switch is 'ON'
	If in 'COOK' mode, ensure doors are closed
	Check correct voltage is going through power switch
	Check voltage is getting to fan
	Check fan speed switch
	Check both door switches
Oven is not reaching temperature	Ensure thermostat is set to correct temperature
	Ensure internal circuit breaker is 'ON'
	Ensure fan is running
	Check heating elements
	Check thermostat probe
	Check high limit thermostat
	Check contactors are functioning
	Check heating elements

PANEL REMOVAL

1. To access internal electrical components, you must remove the front lower panel and right side panel
2. Remove the front lower panel by removing 4 Phillips head screws and rotating cover down and away from oven. (Fig. 1 & 2)
3. Remove right side panel by removing 1 hex head screw from the right front corner (Fig. 3), then remove 5 more hex head screws from the rear of the unit (Fig. 4)
4. With all screws removed from right side panel you can remove the panel by pulling it down and towards the rear of the unit. If it does not move, you may need to remove or loosen the bolt holding the control panel in place. (Fig. 5)


Fig. 1


Fig. 2


Fig. 3

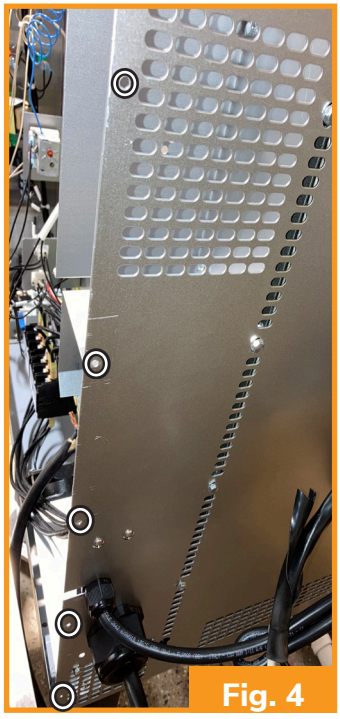


Fig. 4


Fig. 5

MAIN POWER SWITCH

CAUTION : COMPONENTS CAN BE HOT

Check for continuity, disconnect wires from rear terminals on switch, check between middle and lower terminals when 'ON', if none found, replace switch, if found move to next check below

With unit plugged in; check for 0.5 amps at full voltage from middle terminal to L3 terminal block. (Fig. 6 & 8)

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

Fig. 7

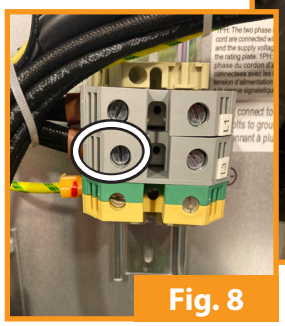


Fig. 8

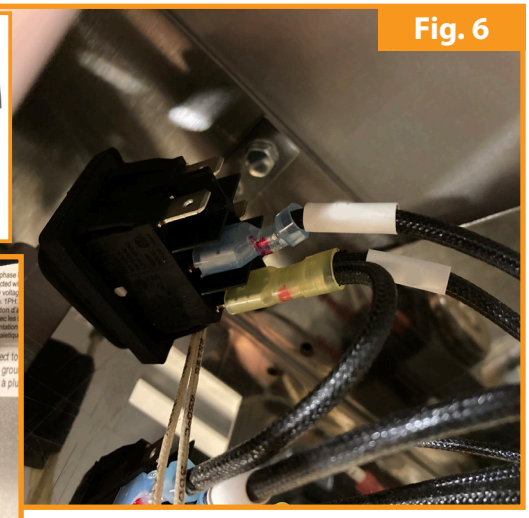


Fig. 6

COOK / COOL SWITCH

Check for continuity, disconnect wires from rear terminals on switch, check between middle and top terminal when switch is on 'COOL' and then between middle and lower terminal when switch is on 'COOK'; if continuity is not found in both switch positions, replace switch; if found in both positions, see below for more testing

With unit turned 'ON'; check for full voltage between the middle terminal and L3 terminal block (Fig. 6 & 8)

With unit turned 'ON'; check for 0.5 amps and full voltage at top terminal when switch is on 'COOL' (Fig. 9) to the L3 terminal block (Fig. 3)

With unit turned 'ON'; check for 0.5 amps full voltage from lower terminal when switch in on 'COOK' (Fig. 9) to L3 terminal block (Fig. 3)

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

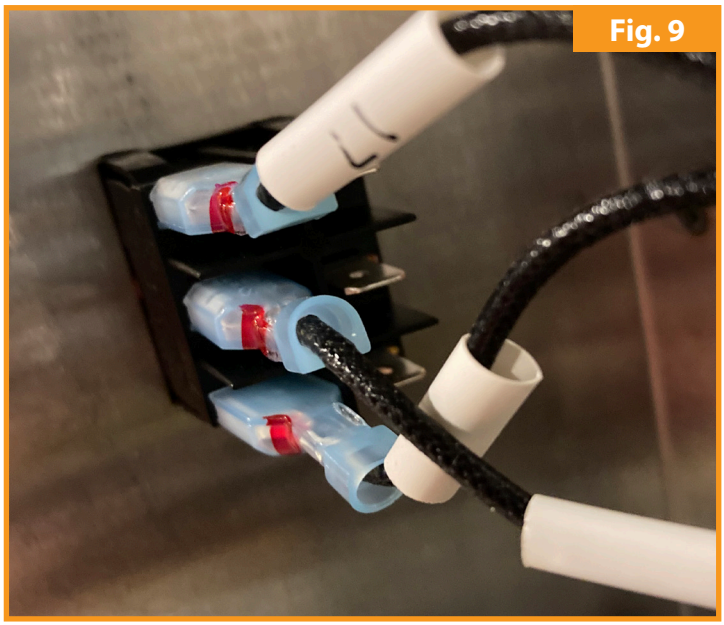


Fig. 9

*Full voltage = 208 volts or 240 volts depending on unit purchased

FAN SPEED SWITCH

Disconnect wires from rear of switch, check continuity between middle and lower terminals when switch in 'HI' position, then check continuity between middle and upper terminals when switch is in 'LOW' position; if continuity is not found in both switch positions, replace switch; if found in both positions, see below for more testing

Fig. 10

Fan running check:
Fan speed = HI; check for voltage at the terminal block and at the rear of switch, bottom terminal
Voltage = 208 or 240 volts at 0.5 amps
Fan Speed = Low; check for voltage at the terminal block and at the rear of the switch, top terminal
Voltage = 208 or 240 volts at 0.5 amps
(Fig. 11)
Middle terminal on switch should always have power when unit is 'ON'.

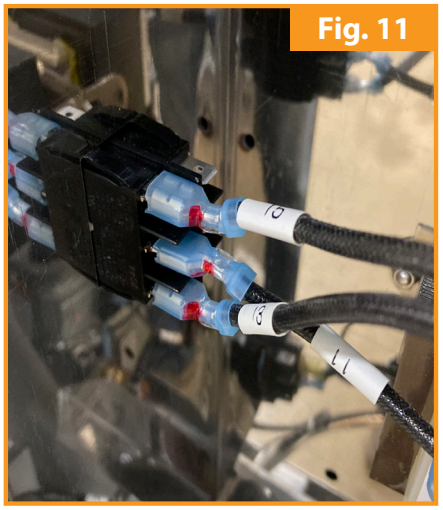


Fig. 11

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

LIGHT SWITCH

Disconnect wires from rear of switch, check continuity between middle and lower terminal when switch is 'ON'; position; if continuity is not found in 'ON' position, replace switch; if found, see below for more testing

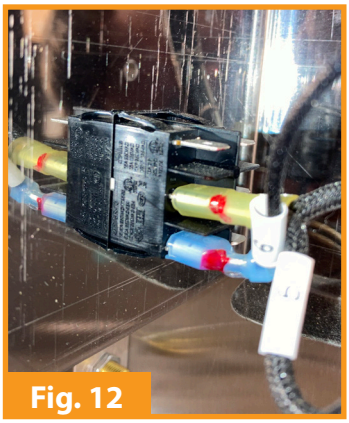


Fig. 12

Reconnect wires and with light switch turned 'ON' and unit plugged in and 'ON', check for full voltage between terminal block and lower terminal (Fig. 12)

Fig. 13

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

PART TESTING

TIMER

Disconnect wires from rear of timer, turn timer knob to 0 minutes, check for continuity across terminals on rear of switch, if none is found, replace timer (Fig. 14)

Fig. 14

Turn knob to between 1 and 60 minutes, check that no continuity is found, turn knob to 'OFF', check that no continuity is found, if continuity is found, replace timer (Fig. 15)

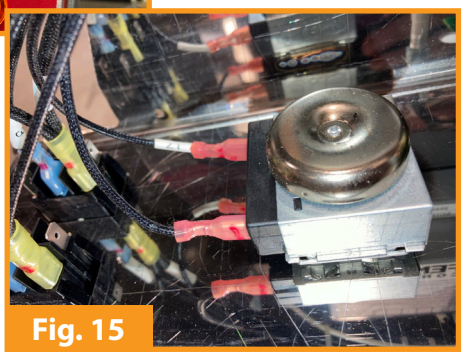


Fig. 15

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

BUZZER

Disconnect wires from buzzer; check across terminals for approx. 3.08 kilo-ohms +/-10%, if outside of range, replace buzzer (Fig. 16)

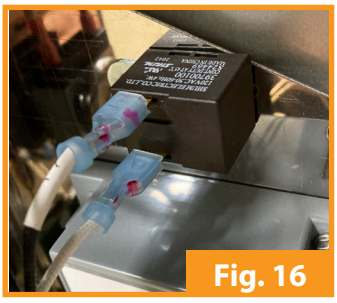


Fig. 16

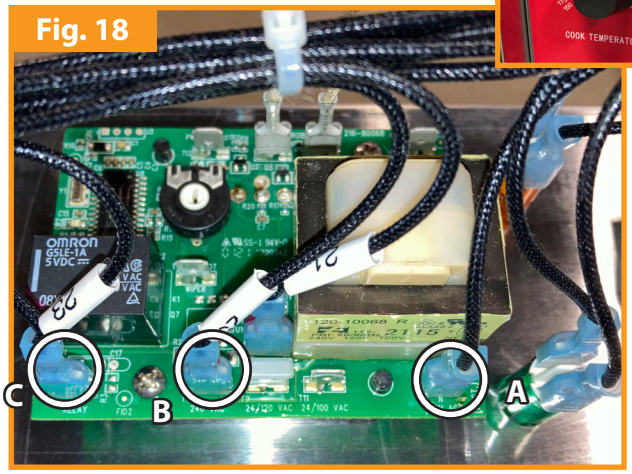
Check for any discoloration or deformations of electrical connections, if any are found, replace connections

THERMOSTAT

Visually check board for any burns, discoloration or corrosion. If found, replace thermostat

Fig. 17

Fig. 18



Check for full voltage from COM terminal (Fig. 18 - A) to input terminal (Fig. 18 - B)

Check for 24 volts from COM terminal (Fig. 18 - A) to output terminal (Fig. 18 - C)

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

HEAT ELEMENTS

Disconnect wiring to elements; check resistance of each element, 16.6 ohms +/- 10% at 70°F
(Fig. 19) (Temperature will change resistance valve)

Reconnect wiring to elements, turn unit 'ON' and ensure thermostat is calling for heat, Amps at each element loop = 13.7 amps +/- 10%
(Fig. 19)

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

Fig. 19

Fig. 20

HIGH LIMIT THERMOSTAT/SWITCH

Disconnect wiring to high limit, check continuity, if none is found, replace high limit thermostat

Reconnect wiring to high limit, check for full voltage to both terminals from L3 terminal block, if not found on both sides, replace high limit (Fig. 22)
High limit is normally closed unless temperature inside unit gets above 635°F

Fig. 21

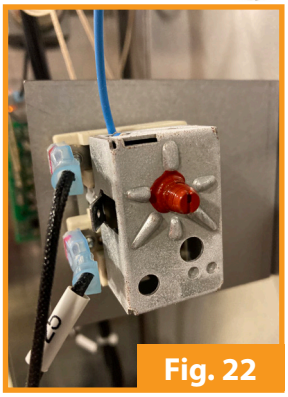


Fig. 22

TEMPERATURE SENSOR

Disconnect wiring from thermostat, check resistance of sensor across wire terminals on sensor probe ends, 1.1 kilo-ohms +/- 10 % at 70° F; replace if outside of range (valve will change with temperature) (Fig. 23)

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

Fig. 23

DOOR SWITCH

Disconnect wires from rear of switch, check continuity between terminals when switch lever is 'closed'; position; if continuity is not found in 'closed' position, replace switch; if found, see below for more testing

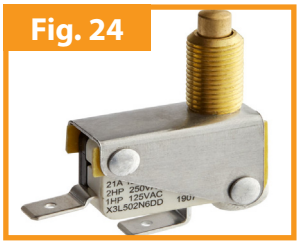


Fig. 24

With wires disconnected, check for no continuity between terminals when switch lever is 'open', if continuity is found, replace switch, if not found see below

With unit 'ON' and plugged in, check for voltage from each terminal to L3 terminal when switch is 'closed'. (Fig. 25)

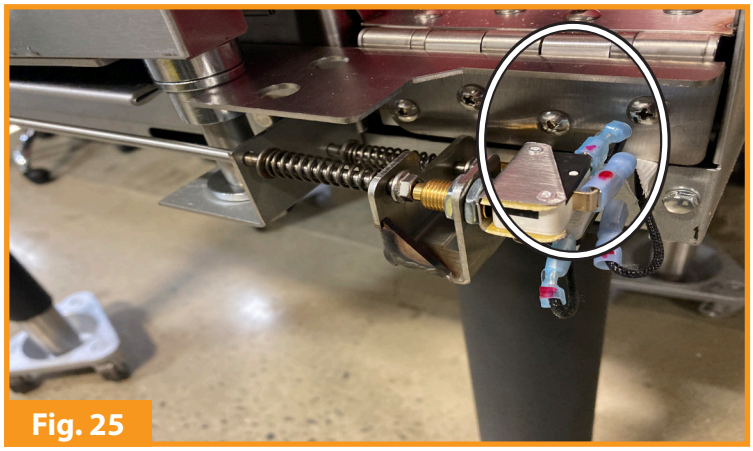


Fig. 25

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

HEAT ON AND POWER INDICATOR LIGHT

Heat on Lamp: (Orange)
With unit 'ON', wired to building power, and unit calling for heat, check for 24 volts between terminals, and L3 terminal block, replace if no voltage is found or light does not light (Fig. 26)

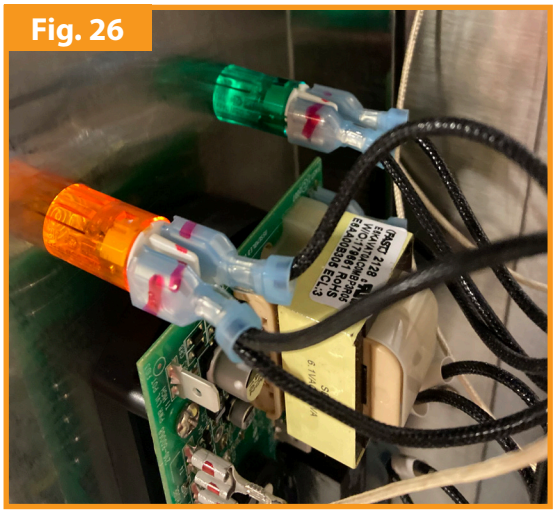


Fig. 26

Power Lamp: (Green)
With unit wired to building power and internal circuit breaker is 'ON', check for full voltage between terminals at back of lamp and L3 terminal block, replace if no voltage is found or light does not light (Fig. 26)

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

CIRCUIT BREAKER (INSIDE)

Disconnect wires to check continuity of breaker, with breaker in 'ON' position, continuity should be found from top to bottom (Fig. 27 - A to Fig. 27 - a) and (Fig. 27 - B to Fig. 27 -b); with breaker in 'OFF" position, continuity should not be found
Replace if above tests fail, continue below if needed

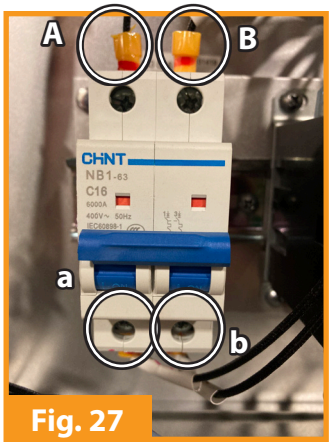


Fig. 27

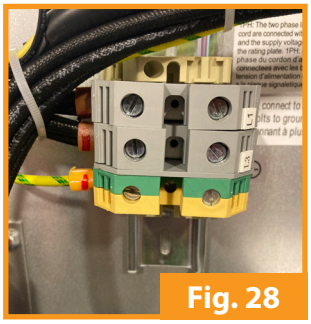


Fig. 28

With wires connected and breaker in 'ON' position, check for full voltage from inlet side (Fig. 27 - A & B) to L3 terminal block; then check from outlet side (Fig. 27 - a & b), replace if full voltage is not found out outlet side when in 'ON' position

CONTACTORS

Visually check all wiring and connectors lead to and from contactors, replace if any discoloration or deformation is found

Check for voltage with unit 'ON' and thermostat calling for heat, full voltage from 'T' side of contactors to L3 terminal block or L1 terminal block. (Fig. 29)

Fig. 29

PANEL SAFETY SWITCH

Disconnect wires from rear of switch, check continuity between terminals when switch is in 'closed' position; if continuity is not found in 'closed' position, replace switch;
if found, see below for more testing

With wires disconnected, check for no continuity between terminals when switch is in 'open', if continuity is found, replace switch, if not found see below

With unit 'ON' and unit wired into building power, check for full voltage from each terminal to neutral when switch is 'closed', replace if not found on both terminals (Fig. 30)

Check for any discoloration or deformations of electrical connections, if any are found, replace connections

Fig. 30

ALL ELECTRICAL CONNECTIONS MUST BE DISCONNECTED BEFORE WORK IS DONE

FAN MOTOR

1. Turn unit off, disconnect power supply
2. Remove right side panel to disconnect motor wires from inside plug (Fig. 31)
3. Remove wiring from rear of unit (Fig. 32 & 33)
4. Open front doors, remove racking and top rear rack brackets from inside of oven
5. Remove inside rear cover by lifting it up front slotted brackets, (Fig. 34 & 35) then tilt bottom forward and slide forward (Fig. 36)
6. Remove mounting bolts for fan motor with a 10mm socket or wrench (Fig. 37)
7. Pull fan assembly into inside of oven
8. Reassembly is reverse of removal


Fig. 31


Fig. 32


Fig. 33


Fig. 34


Fig. 35


Fig. 36


Fig. 37

ALL ELECTRICAL CONNECTIONS MUST BE DISCONNECTED BEFORE WORK IS DONE

ELECTRICAL TERMINAL BLOCKS

1. Disconnect unit from power supply
2. Unscrew wiring connector hold down screw
3. Pull wire connector out of terminal block
4. Unscrew terminal block hold down side clamp and slide up off of mounting bracket (Fig. 37 - A)
5. Slide each terminal block up and off mounting bracket

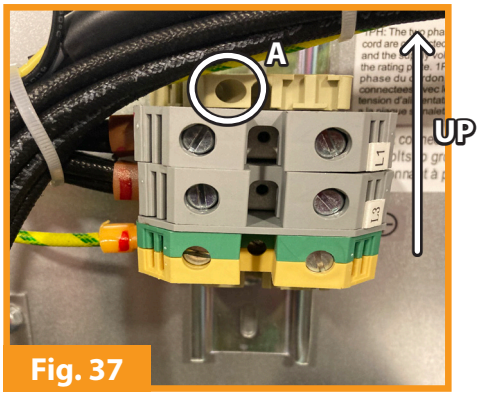


Fig. 37

HEATING ELEMENTS

1. Turn unit off, disconnect electrical connections
2. Remove hex bolts holding right side panel on with an 8mm socket
3. Loosen and remove hex nuts and washers connecting elements to wires, note their locations, use a 10mm socket (Fig. 38)
4. Open doors and remove rear inside cover panel, lift panel up, tilt bottom forward and slide down and towards front of oven
5. Remove Phillips head screws holding heating elements to back wall of oven (Fig. 39)
6. Loosen Phillips head screws holding heating elements in place, then slide heating elements towards front of oven to remove from bracket (Fig. 40)


Fig. 38

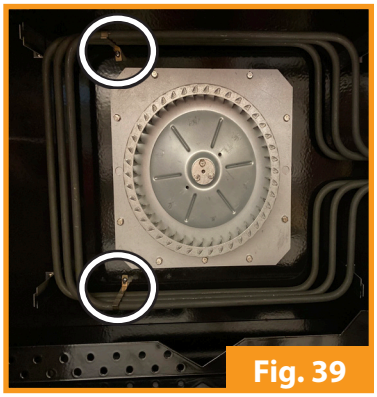


Fig. 39

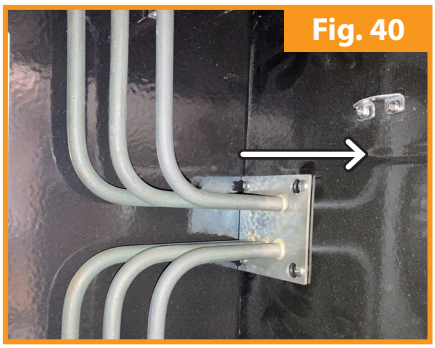


Fig. 40

PART REPLACEMENT

ALL ELECTRICAL CONNECTIONS MUST BE DISCONNECTED BEFORE WORK IS DONE

THERMOSTAT AND PROBE

1. Disconnect unit from power supply and open control panel
2. Pull knob from front of thermostat and remove Phillips screws holding thermostat to control panel (Fig. 41)
3. Removing wiring from old thermostat; Note location of wiring (Fig. 42)
4. Replace thermostat probe by removing hex head screws with an 8mm socket (Fig 43)
5. Pull probe and remove wires from thermostat board
6. Installation is reverse of removal

Fig. 41


Fig. 42


Fig. 43

HIGH LIMIT THERMOSTAT

1. Disconnect unit from power supply
2. Open front doors and remove 2 Phillips head screws from temperature probe cage (Fig. 46)
3. Remove high limit thermostat probe from mounting arms (Fig. 47)
4. Remove right side panel to access high limit and remove wiring from it, Note wire locations for new high limit thermostat (Fig. 45)
5. Pull probe (blue wire) from inside oven and remove hex bolt from front of high limit thermostat to remove from mounting bracket (Fig. 44)
6. Installation is reverse of removal

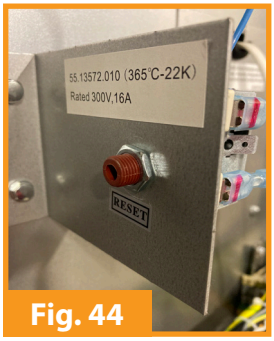


Fig. 44

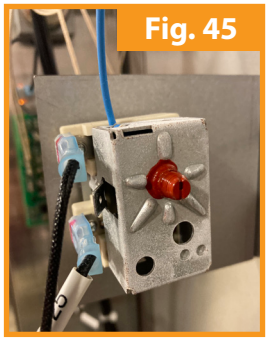


Fig. 45


Fig. 46


Fig. 47

PART REPLACEMENT

ALL ELECTRICAL CONNECTIONS MUST BE DISCONNECTED BEFORE WORK IS DONE

CONTACTORS

1. Disconnect unit from power supply and remove right side panel
2. Remove wiring from contactors and note locations for new contactor (Fig. 49)
3. Remove Phillips screws holding contactor in place to mounting bar, 4 screws on each contactor (Fig. 48 & 50)
4. Installation is reverse of removal

Fig. 49


Fig. 48

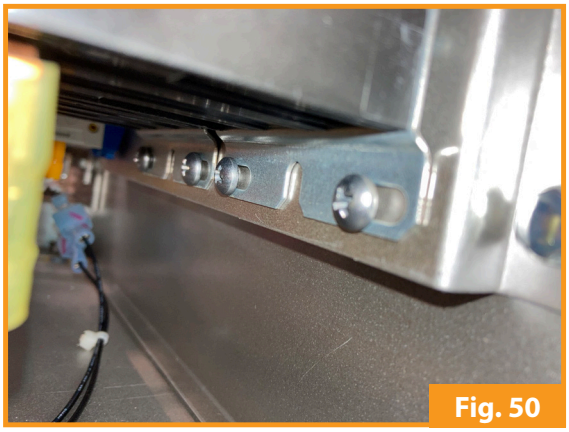


Fig. 50

CIRCUIT BREAKER (INSIDE)

1. Disconnect unit from power supply and remove right side panel
2. Remove wiring from breaker and note locations for new breaker (Fig. 51)
3. Remove breaker by pulling down on blue tabs on bottom on breaker with a flat screw driver, then rock/tilt breaker off of mounting bar (Fig. 53 & 54)
4. Installation is reverse of removal

Fig. 51

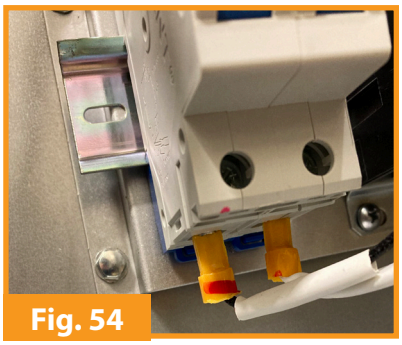


Fig. 54

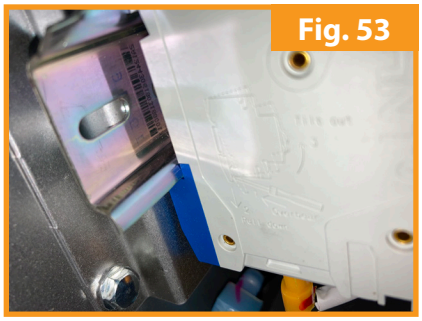


Fig. 53

DOOR LATCH REMOVAL

1. Turn off power switch
2. Disconnect unit from power supply
3. Open front door(s) on unit to access latch
4. Remove 2 Phillips head screws and pull latch from top of door (Fig. 55)
5. Installation is reverse of removal

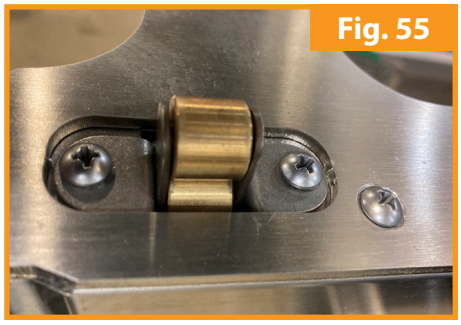


Fig. 55

DOOR LATCH ADJUSTMENT

1. Turn off power switch
2. Disconnect unit from power supply
3. Open front door(s) on unit to access latch
4. Remove 2 Phillips head screws and pull latch from top of door
5. Push in on top portion of latch to remove tension from lower locking nuts
6. With an 8mm socket and/or wrench, turn the 2 nuts to adjust the latch as needed.
7. Clockwise will lower the latch roller into the door
8. Counterclockwise will raise the latch roller out of the door
9. Installation is reverse of removal

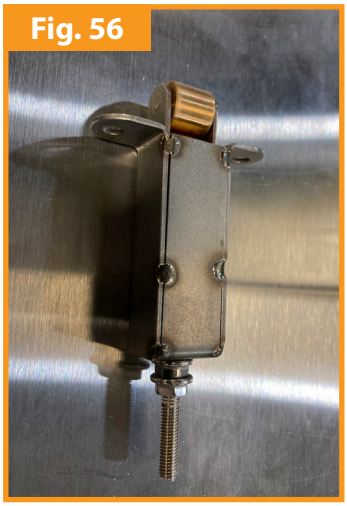
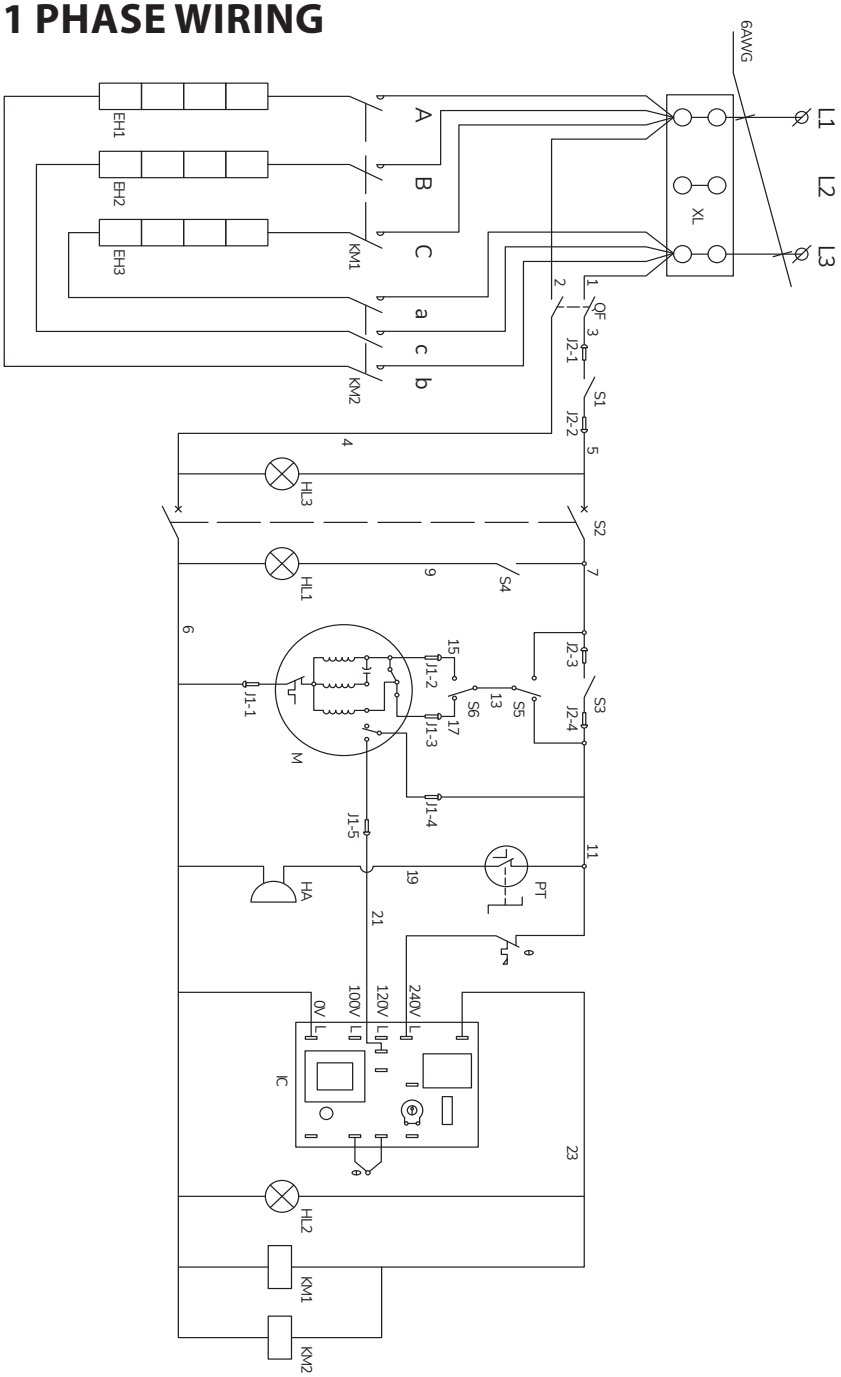


Fig. 56

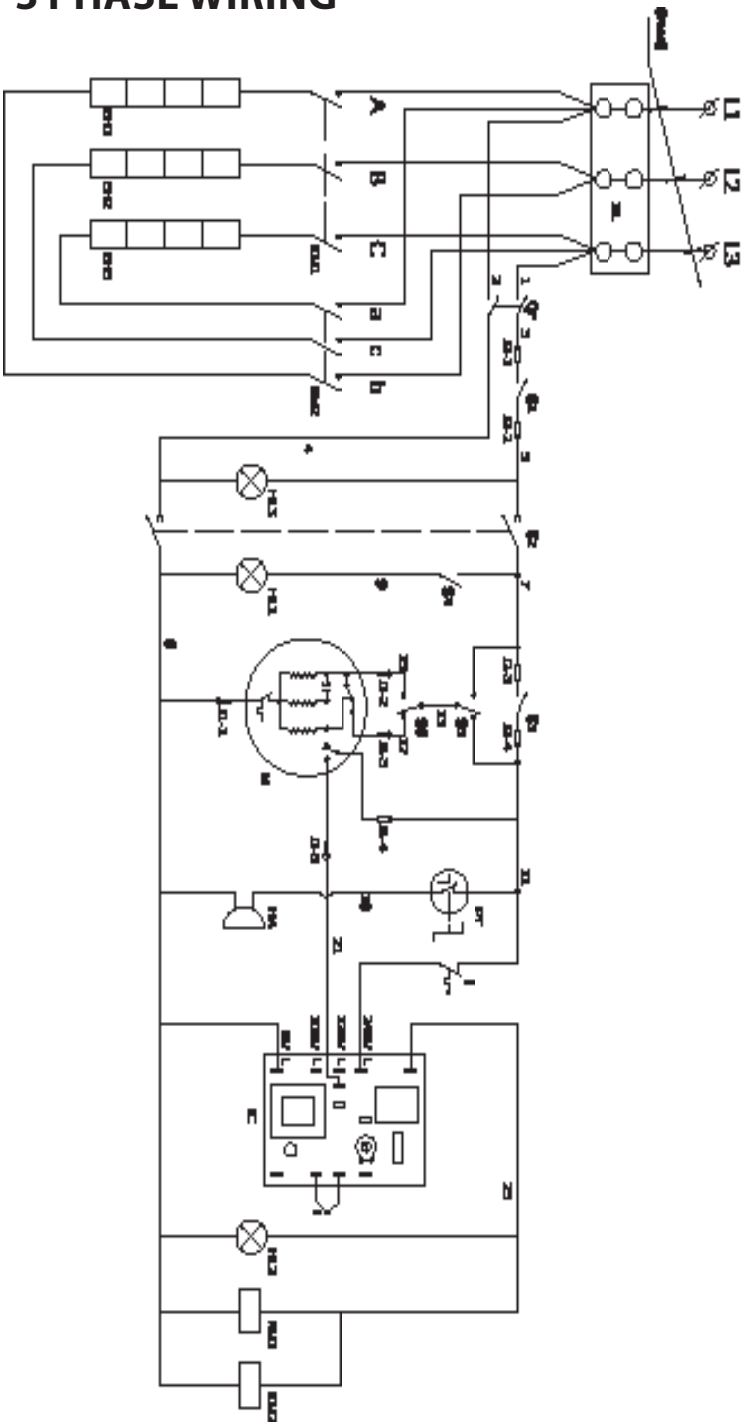
WIRING DIAGRAM

1 PHASE WIRING



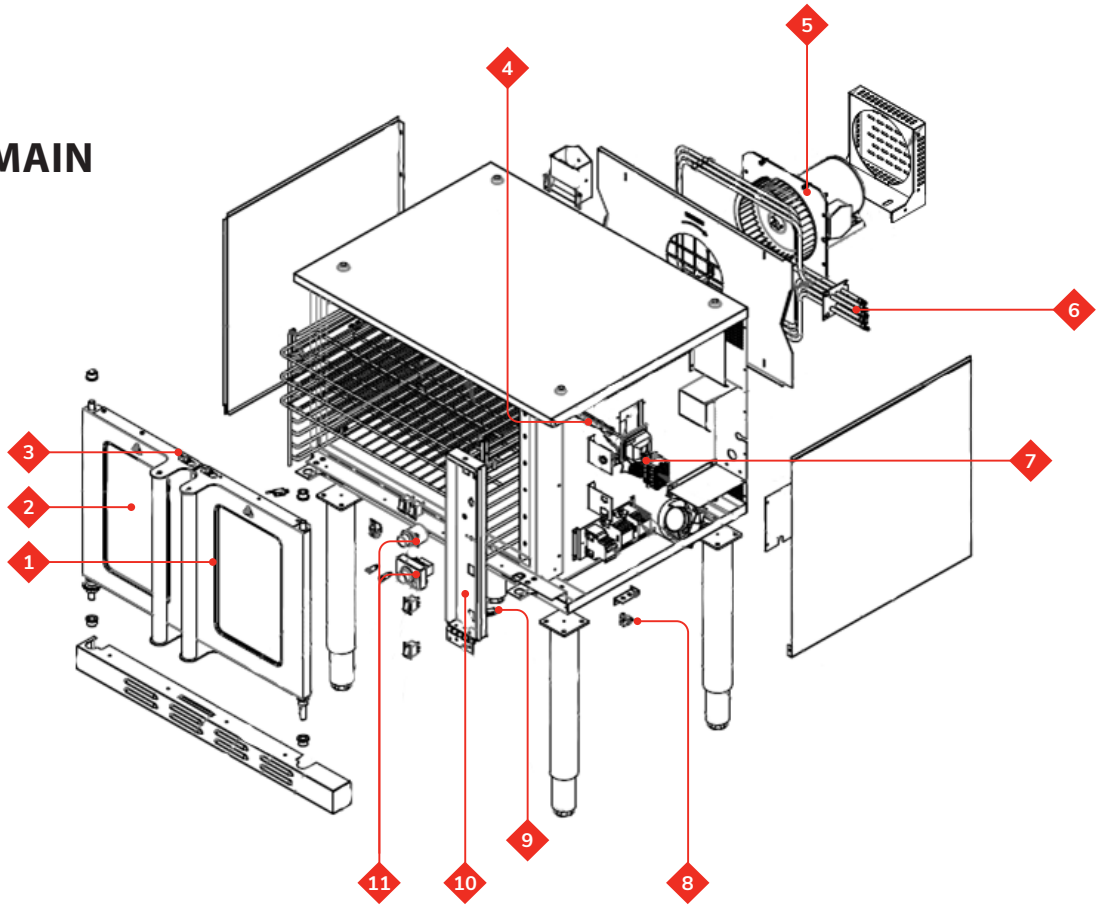
WIRING DIAGRAM

3 PHASE WIRING



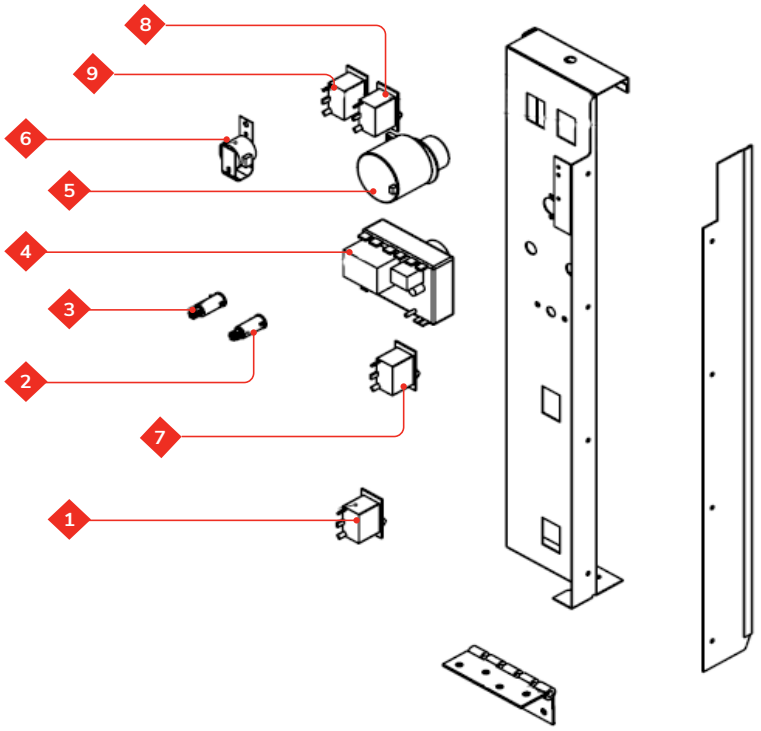
PARTS DIAGRAM

MAIN



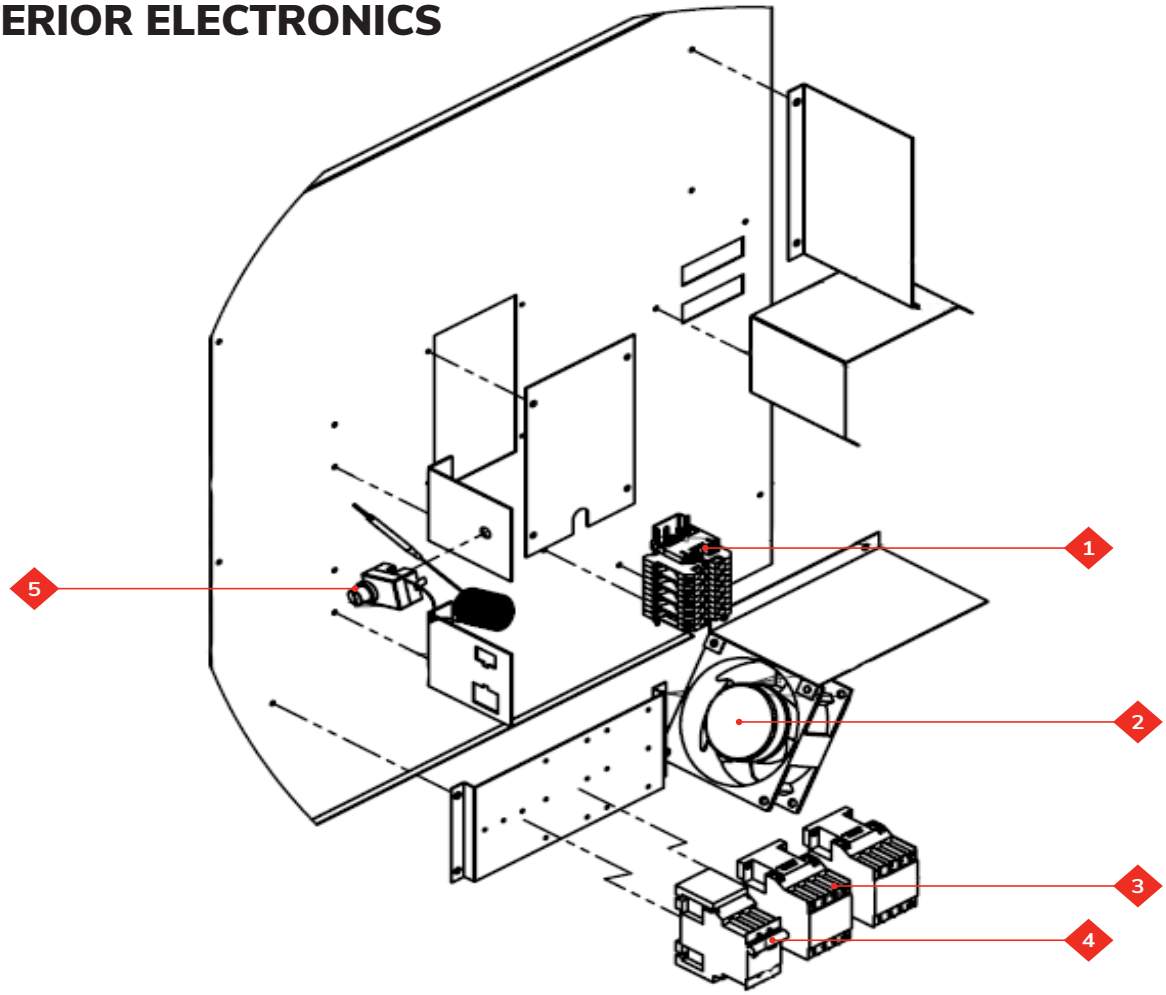
ITEM #	DESCRIPTION	PART #
1	RIGHT DOOR ASSEMBLY	35165002053
2	LEFT DOOR ASSEMBLY	35165002054
3	DOOR LATCH	35165002016
4	TEMPERATURE PROBE	351170022
5	BLOWER MOTOR	351010267
5A	BLOWER WHEEL	351010263
6A	HEATING ELEMENT (230V)	351041024
6B	HEATING ELEMENT (208V)	351041056
7	OVEN LIGHT	351130109
8	SAFETY SWITCH (CONTROL)	351080026
9	DOOR SWITCH	351080079
10	CONTROL PANEL ASSEMBLY	SEE NEXT PAGE
11	KNOB (THERMOSTAT & TIMER)	351110438

CONTROL PANEL



ITEM #	DESCRIPTION	PART #
1	LIGHT SWITCH	351080141
2	HEAT ON LAMP (ORANGE)	351130021
3	POWER LAMP (GREEN)	351130023
4	THERMOSTAT	351030169
5	TIMER	351120028
6	BUZZER	351100002
7	FAN SPEED SWITCH	351080141
8	COOK / COOL SWITCH	351080141
9	POWER SWITCH	351080141

INTERIOR ELECTRONICS



ITEM #	DESCRIPTION	PART #
1	TERMINAL BLOCK	--
2	COOLING FAN	351010246
3	AC CONTACTOR	351090135
4	CIRCUIT BREAKER	351030192
5	HIGH LIMIT THERMOSTAT	351030187