



SERVICE MANUAL



23873

OV310G MODEL SHOWN

OV310 Series Mini Rack Oven Installation Instructions

OV310G
OV310E

ML-132515
ML-132516

- NOTICE -

This Manual is prepared for the use of trained Baxter Service Technicians and should not be used by those not properly qualified.

This manual is not intended to be all encompassing. If you have not attended a Baxter Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Baxter Service Technician.

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IMPORTANT FOR YOUR SAFETY

IMPORTANT FOR YOUR SAFETY

THIS MANUAL HAS BEEN PREPARED FOR PERSONNEL QUALIFIED TO INSTALL GAS EQUIPMENT, WHO SHOULD PERFORM THE INITIAL FIELD START-UP AND ADJUSTMENTS OF THE EQUIPMENT COVERED BY THIS MANUAL

POST IN A PROMINENT LOCATION THE INSTRUCTIONS TO BE FOLLOWED IN THE EVENT THE SMELL OF GAS IS DETECTED. THIS INFORMATION CAN BE OBTAINED FROM THE LOCAL GAS SUPPLIER

IMPORTANT

IN THE EVENT A GAS ODOR IS DETECTED, SHUT DOWN UNITS AT MAIN SHUTOFF VALVE AND CONTACT THE LOCAL GAS COMPANY OR GAS SUPPLIER FOR SERVICE.

FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE

WARNING

IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

IN THE EVENT OF A POWER FAILURE, DO NOT ATTEMPT TO OPERATE THIS DEVICE.

KEEP AREA AROUND OVEN CLEAR OF COMBUSTIBLES.

DO NOT OBSTRUCT COMBUSTION AND VENTILATION OPENING ON THE OVEN.

SERVICE UPDATES

SERVICE UPDATES

September 2017

- Added OV310/OV310 HIGH ALTITUDE CORRECTION CHART.

GENERAL

INTRODUCTION

These instructions are for the OV310 Series Mini Rack Oven. The Mini Rack Oven is shipped assembled requiring minimal field assembly.

All Mini Rack Ovens will require leveling and connection to utilities. All information, illustrations and specifications contained in this manual are based on the latest product information available at the time indicated on the cover of the manual.

UNPACKING

Remove the crating from oven and check for possible shipping damage. If the oven is found to be damaged after unpacking, save packaging material and contact the carrier within 15 days of delivery.

You will need to remove door(s), front trim and control panel prior to maneuvering oven thru a standard 36" doorway.

NOTICE

Prior to starting oven remove rack retainer screw used to secure removable oven rack during shipment.

LOCATION

Level floor or noncombustible surface within 1/8" per foot up to 3/4" in all directions.

Oven is intended to be installed with its back against a wall and not directed toward food cooking or preparation areas.

Oven can be mounted on a stand, MB300 Proofer Cabinet or noncombustible surface.

Do not obstruct the flow of combustion and ventilation air. Keep the appliance area free and clear from combustibles.

Make sure there is an adequate supply of make-up air in the room to allow for combustion.

The electrical diagram is located on the inside of the right side panel.

CLEARANCE DIMENSIONS

Oven UL/CSA Listed for 0" clearance to combustible surfaces for back and side walls.

Minimum 24" clearance is recommended on the right side of oven for service access. If right side of oven is

within 30" of radiant heat or grease vapor source, a vent guard is required.

A 1" to 4" back clearance is recommended for plumbing rear drain connection.

Oven must be installed so that top of oven is located above 6 feet from the floor.

Top of oven requires adequate clearance for servicing accessibility.

TESTING THE GAS SUPPLY PIPING SYSTEM (GAS OVENS ONLY)

When test pressures exceed 1/2 psig (14" w.c.) (3.45kPa), the oven and its individual shutoff valve must be disconnected from the gas supply piping.

When test pressure is 1/2 psig (14" w.c.) (3.45kPa) or less, the oven must be isolated from the gas supply piping system by closing its individual shutoff valve.

INSTALLATION CODES AND STANDARDS

OV310 mini rack ovens must be installed in accordance with:

United States

1. State and local codes.
2. National Fuel Gas Codes, ANSI-Z223.1 (latest edition), available from:
American Gas Association
1515 Wilson Boulevard
Arlington, VA 22209
3. ANSI/NFPA 96, Vapor Removal from Cooking Equipment (latest edition), available from:
National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169
4. National Electrical Code, ANSI/NFPA-70 (latest edition).

Canada

1. Local codes.
2. CAN/CGA-B149-1, Installation for Natural Gas Burning Appliances and Equipment (latest edition).

3. CAN/CGA-B149-2, Installation for Propane Burning Appliances and Equipment (latest edition).
4. Canadian Electrical Code, Part 2, CSA Standard C22.1 (latest edition).

Oven Mounted on Casters (Gas Ovens Only)
Appliances equipped with casters, instructions that:

1. The installation shall be made with a connector that complies with the Standard for Connectors for Moveable Gas Appliances ANSI Z21.69 or Connectors for Moveable Gas Appliances CAN/CGA-6.16, and a quick-disconnect device that complies with the Standard for Quick-Disconnect Devices for Use with Gas Fuel ANSI Z21.41 or Quick Disconnect Devices for Use with Gas Fuel CAN1-6.9.
2. Adequate means must be provided to limit the movement of the appliance.

TOOLS

Standard Tools

1. Standard set of hand tools.
2. Field service grounding kit Part No. TL-84919.
3. Screwdriver set (Jeweler's).

Test Equipment

1. Bacharach combustion analyzer No. 125 Fyrite Pro (Order from Bakery Support).
2. Multi-Meter that measures 200 micro amps Grainger No. 6MR09.
3. Digital thermometer with 6' probe Grainger No. 4YV88.
4. Dwyer incline manometer Grainger No. 3T294.
5. Force gauge measure in lbs. (Min. 0-10lbs).

Special Tools

1. Mini laser level, self-leveling with tripod Harbor Freight No. 92703-OVGA.

SPECIFICATIONS

Plumbing Connections

Water and waste piping and connections shall comply with the International Plumbing Code 2003, International Code Council (ICC), or to the Uniform Plumbing Code 2003, International Association of Plumbing and Mechanical Officials (IAPMO).

NOTE: Plumbing connections must comply with applicable sanitary, safety and plumbing codes and provide adequate backflow protection to comply with applicable federal, state and local codes.

1. Water connection:

1/2" NPTF water line connection.

Cold water 30-75 psi flow (1.2 G.P.M.).

Recommended water hardness range: 2-4 grains per gallon.

Recommended pH range: 7.0 to 8.0.

Acceptable range for chloride concentration: 0-30 ppm.

2. Drain connection:

1/2" NPTF rear drain connection, route to minimum 1" air gap drain.

Separate drain line recommended if oven installed on a proofer cabinet.

3. Gas connection (Gas Oven):

3/4" NPT pipe size 95,000 BTU/Hr.

Standard - Natural gas.

Optional - Propane gas.

SUPPLY GAS PRESSURE		INPUT BTU/HR
Natural	Propane	
5" to 14" w.c.	11" to 14" w.c.	95,000

4. Electrical connection:

Control circuit

Both gas and electric ovens require a dedicated control circuit 120V 60Hz 1 Phase 15 Amp Maximum.

RATINGS:

CONTROL CIRCUIT (ALL OVENS) *			
Volts	Amps	Phase	HZ
120	10	1	60
* Includes auxiliary circuit			

AUXILIARY EXTERNAL OUTPUT CIRCUIT (ALL OVENS)			
Volts	Amps	Phase	HZ
120	5	1	60

5. Combustion vent:

INSTALLING OVEN

This manual is written for OV310 Mini Rack Ovens. Before installing oven, compare parts to packing list to ensure all parts were received. Wait as long as possible before removing plastic protective covering from panels and doors. Prior to installing oven, check facility floor or noncombustible surface being level within 1/8" per foot up to 3/4" in all directions.

MOUNTING OVEN

Oven can be installed on a stand, MB300 proofer cabinet, or noncombustible surface.

1. Mount oven:
 - A. Run a bead of sealant on mounting surface around inside perimeter of the oven footprint. Use NSF approved sealant, Dow Corning 732 or GE RTV108.
 - B. Position oven onto mounting surface.
 - C. Secure the rear of the oven to the mounting surface using tie-down brackets.
2. Position oven into final location.

LEVELING OVEN

1. Check oven to be level front to back side to side by placing level on oven rack, shim if necessary.
 - A. If oven is installed on a stand with adjustable legs, rotate the foot clockwise or counter clockwise to level oven front to back and side to side.
 - B. If oven is installed on casters, determine which caster needs to be adjusted.
 - 1) Ensure locks on casters are locked.
 - 2) Use a block of wood to support equipment near caster that needs adjustment.
 - 3) Loosen the bolt on the caster needing adjustment and insert shim(s) between the caster plate and bottom of stand leg/proofer cabinet.
 - 4) Re-tighten caster bolt and check oven for being level.

VENTILATION

Ventilation requirements will vary with each installation and must comply with applicable portions of the National Fire Protection Association Standards #96, #94 and with local codes.

Exhaust Fan Interlock

A connection point (maximum 5-amps) is provided for Indirect Vent (Exhaust Hood) or optional Direct Vent (Draft Hood). It is located behind the right side service panel adjacent to the 120 V power connection. Consult local codes for vent interlock requirements.

Indirect Vent (Under Exhaust Hood)

Locate the oven under an exhaust hood with adequate overhangs and exhaust rates to completely capture the byproducts of combustion discharged from the flue. From the termination of the flue to the filters of the hood venting system, a minimum clearance of 18" must be maintained. The hood exhaust fan must be electrically interlocked with the oven.

Direct Vent (Draft Hood)

1. Remove four screws from the tabs securing fan grille to top of draft inducer and lift grille off.

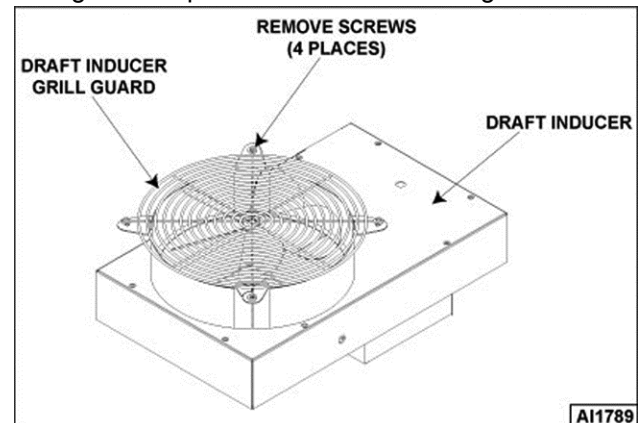


Fig. 2

2. Bend the four exposed oven flue collar tabs vertically and secure the draft diverter to the oven flue collar with four screws.

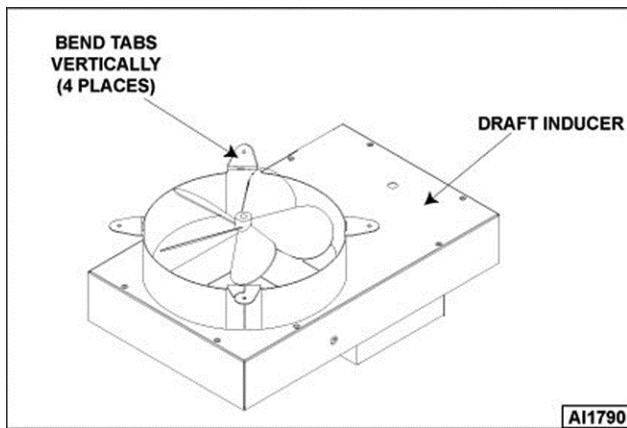


Fig. 3

3. With oven in position connect customer supplied exhaust ducting to the draft diverter.

NOTE: Draft diverter must be installed with 6" clearance between bottom of draft diverter skirt and top of draft inducer, and 8" dia. flue stack. All services must comply with all federal, state and local codes.

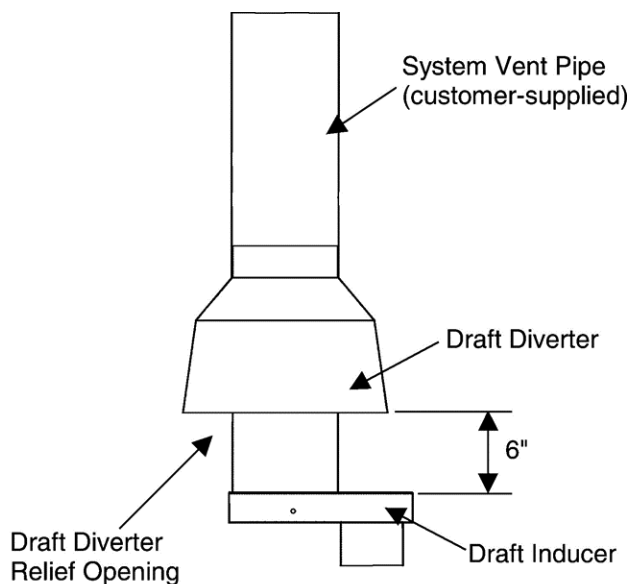


Fig. 4

10447

INITIAL START-UP



⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures. There may be multiple circuits. Be sure all circuits are disconnected.

NOTE: Remove all protective plastic sheeting from oven surfaces and wipe down to remove all fingerprints, prior to heating oven.

NOTE: Remove single retainer screw located in top of rack just below rotator shaft as well as the two flat washers located between shoulder bolts and rack bottom support.

NOTE: All utility connections by others.

Verify the following:

- Gas supply line shut-off valve is in the OFF position.
- Gas supplied matches data plate and gas valve on oven.
- Gas valve is in the OFF position.
- Electrical connections have been made by electrician. 120V control circuit, high voltage heating circuit, and powered exhaust fan interlock (external device maximum 5 amp).

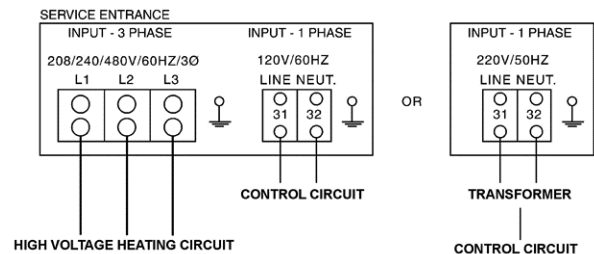


Fig. 5

10449

- Drain connected by plumber at right rear corner of oven.
- Water line is connected by plumber to pressure regulator assembly located at right rear corner of oven.
- Water shut off is installed in supply line.

NOTE: If a water filtration unit is installed in water supply line, verify that a filter cartridge (supplied by customer) is installed in unit (performed by a plumber).

NOTE: Refer to oven installation checklist and complete during initial start-up.

1. Verify flue draft (direct vent with gas oven only).

- A. Insert a draft tube into the flue stack 6" above the top of the draft diverter. If required, drill a hole in flue stack to insert draft tube.
- B. Connect an incline manometer or equivalent to the draft tube.

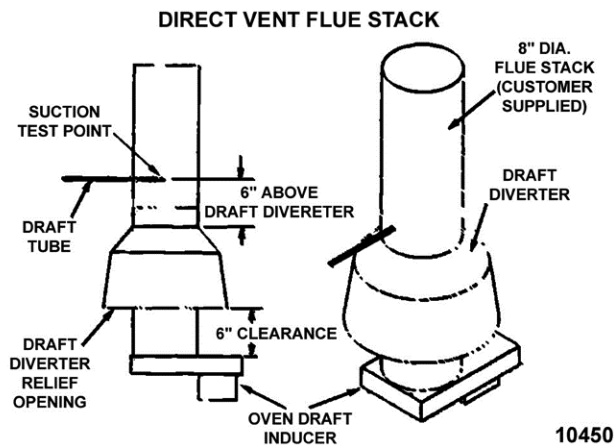


Fig. 6

- C. With the oven turned off and doors closed, check the manometer reading. Reading should be a vacuum of **0.03" to 0.11" W.C.**
 - 1) If vacuum requirements are met, proceed to step D.
 - 2) If vacuum requirements are not met, the customer supplied flue stack must be modified to meet the above stated requirements.
 - 3) After flue stack change has been done, repeat the procedure.
- D. Operate the oven for a minimum of 5 minutes.
 - 1) While burner is lit, check for a back draft at the draft diverter relief opening (i.e. smoke emitted from a smoldering source).
 - 2) If no back draft indicated (smoke going up draft diverter relief opening) test is complete.
 - 3) If back draft indicated (smoke not going up draft diverter relief opening) the oven must not be operated, until proper adjustments have been made (correct flue stack to have adequate up draft through the draft diverter relief opening).

- E. Verify oven rack rotates and baking compartment circulation fan is turning. If not, door switches will need to be adjusted, as outlined under **DOOR SWITCH ADJUSTMENT Step 4**.

NOTE: Baking compartment circulation fan will run continuously with time entered in the bake timer and cycle on/off with heating circuit if no time is entered in the bake timer.

2. Ignition Sequence Check (Gas Ovens Only).

NOTE: Ignition module makes one attempt to light burner before locking out.

NOTE: Remove power from ignition control module by turning main circuit breaker to oven off or by opening the loading doors for a minimum of 5 seconds.

- A. Turn gas valve off to test ignition sequence check.
- B. Set oven to call for heat by pressing bake temperature display UP ARROW key, until HEAT ON LED illuminates.
- C. Draft inducer energized for 15 seconds pre-purge cycle.
- D. Hot surface igniter glows indicating that it is energized.
- E. 2 seconds after igniter was energized, gas valve solenoid is energized.
- F. After igniter has been energized for 4 seconds, flame sensor will not have recognized a flame.
 - 1) Power is removed from igniter and gas valve.
- G. After initial try for ignition and the burner has not lit, there will be an additional 15 second purge time.
- H. LED on ignition control will flash in a 3 flash sequence indicating a flame recognition failure and that the control is in lock-out mode.
- I. This indicates the safety lock-out circuit is functioning properly.

NOTE: See IGNITION SEQUENCE TIMING DIAGRAM Fig. 19

3. Gas Pressure Adjustment (Gas Ovens Only).

- A. Remove the gas valve cover to access the gas valve pressure taps.

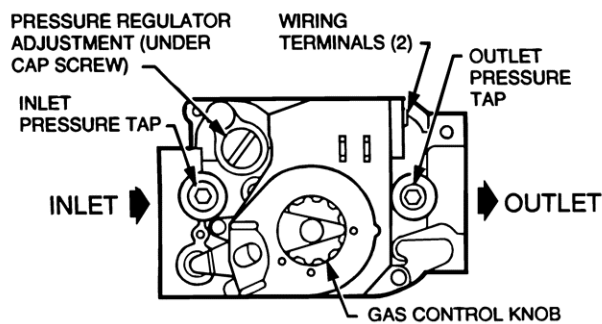
- B. Attach a manometer to the 1/8" NPT outlet pressure tap and one to the 1/8" NPT inlet pressure tap on the gas valve and turn the gas supply and gas valve on.
- C. Remove the pressure regulator adjustment cap screw from the main gas valve to access the adjustment screws.
- D. Turn the main gas valve on, turn the oven on and set the temperature to call for heat.
- E. With the burner flame established, insure the proper line pressure (adjust supply regulator if necessary) and adjust the outlet manifold pressure regulator to:



GAS CONTROL KNOB

10451

3.5" W.C. (Natural Gas)



5770

10.0"W.C. (Propane Gas)

4. Door Switch Adjustment.

If the rack does not rotate and the circulation fan does not come on, then the door switches may be out of adjustment. The door switches are located on top of oven.

- A. Turn the power On.
- B. Access door switches on top of oven.

- C. With the oven doors closed loosen door switch screws and position door switch bracket until door switch closes.
- D. Secure door switch screws and put oven into operation.

NOTE: If unable to determine which switch is not closing, adjust switches inward / outward until switches are activated when doors are completely closed and deactivated when doors are opened more than 1/2".

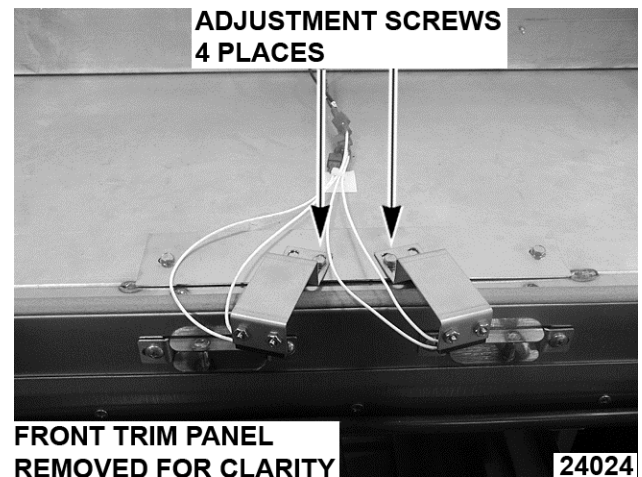


Fig. 9

5. Door Adjustment Procedure.

- A. Check to ensure that the door gap is a consistent 3/8" between the doors. Check from top of doors to bottom of doors.



Fig. 10

NOTE: If door gap needs to be adjusted - adjust hinge plates to obtain consistent 3/8" gap.

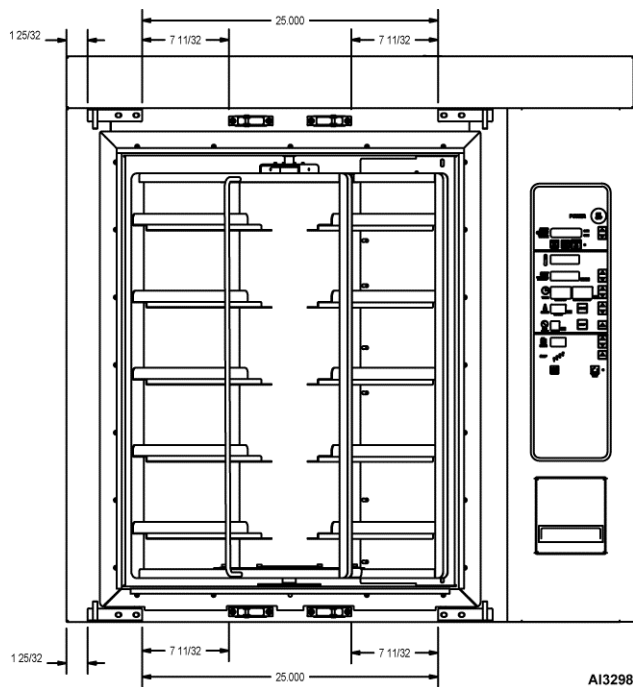


Fig. 11

- B. Ensure the top of the doors and the bottom of the doors are even. Place a straight edge on the top of the doors to verify.

NOTE: If adjustments are required - adjust hinge plates.



Fig. 12

- C. If a door is difficult to open loosen the (top and bottom) corresponding strikers and slide the strikers toward the door hinge point.



Fig. 13

- D. If a door will not remain closed loosen the (top and bottom) corresponding strikers and slide the strikers away from the door hinge point.

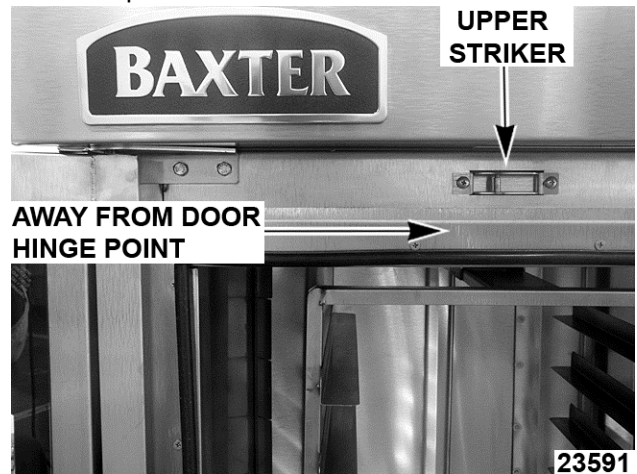


Fig. 14

- E. If the top of the door unlatches before the bottom of the door - or the bottom of the door unlatches before the top of the door - loosen the corresponding striker that is unlatching first and move away from the door hinge point.



Fig. 15

6. Rack stopping position adjustment.

If rack is adjusted without customer's typical bake product load weight on it, position rack approximately 5° prior to being square with the loading doors. Some under or over travel of rack positioning should be expected depending on product load. The rack rotation components are located on top of the oven.

- A. Put oven into operation and perform rack operation test with customer's typical bake product load weight on rack. If rack does not stop in the proper rack load/unload position, perform rack stopping position adjustment.
- B. To adjust rack stopping position:
 - 1) Open oven loading doors and verify rack is square with the loading doors, if not position rack so it is square.
 - 2) Align the pointer switch actuator sideways to align with pointer switch on top of the rotation shaft.

NOTE: If rack stops too soon, move pointer switch actuator away from pointer switch on top of the rotation shaft.

- 3) Put oven into operation and check for proper rack load/unload positioning.
- 4) Repeat the procedure until load/unload rack position is achieved.

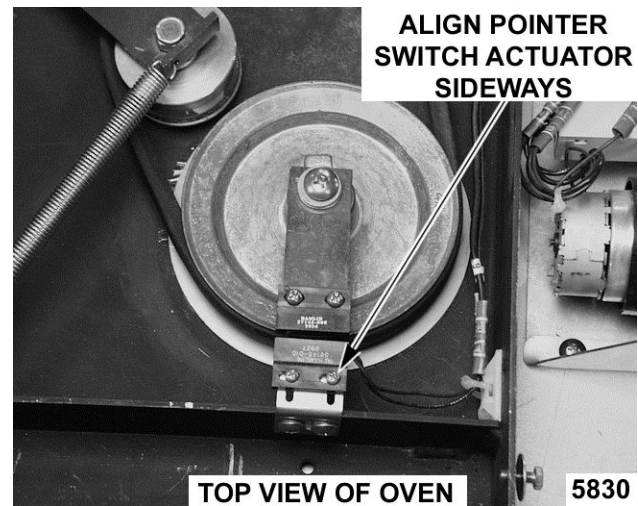


Fig. 16

7. Initial heating of oven (All Ovens).

- A. Place a thermocouple 1/2" away from air louver and near the vertical center of right hand front air louver inside the baking compartment.

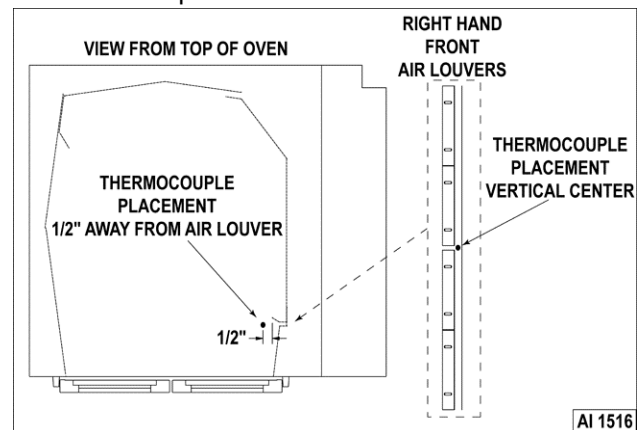


Fig. 17

- B. Route thermocouple lead to the outside of the oven. Make sure that the lead is kept clear of the rack carrier.
- C. Close the loading doors.
- D. Set the control baking temperature to 300F. (150C.) and bake timer for 30 minutes.

NOTE: Baking compartment circulation fan will run continuously with time entered in the bake timer and cycle on/off with heating circuit if no time is entered in the bake timer.

- E. After time elapses, press Stop key to silence beeper.
- F. Fully open loading doors to verify that baking compartment circulation fan de-energizes.

- G. Close loading doors and set the control baking temperature to 400F. (200C.) and bake timer for 60 minutes.
- H. Check the temperature reading on the thermocouple meter when the at the exact time the heat light on the controller goes out.
- I. Compare the readings of the thermocouple meter and the controller temperature display.
- J. If the temperature difference between the two readings is greater than $\pm 2^{\circ}\text{F}$. or $\pm 1^{\circ}\text{C}$. adjust the temperature offset (P4).
 - 1) If temperature test shows a temperature higher than controller, increase temperature offset (P4).
 - 2) If temperature test shows a temperature lower than controller, decrease temperature offset (P4).

NOTE: Do not calibrate controller if the difference in temperature readings is greater than the range of the controller, replace controller (range $\pm 50^{\circ}\text{F}$.).

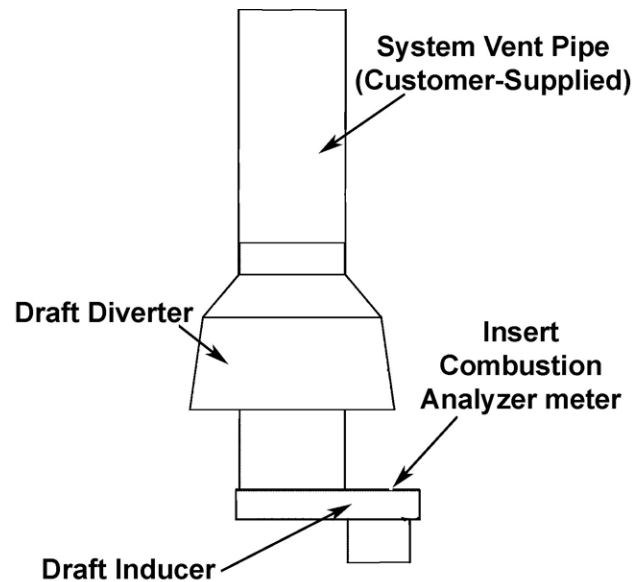
NOTE: Before calibrating the controller the oven must maintain a constant temperature for at least one hour.

- K. To Adjust:
 - 1) Access set-up mode by pressing and holding **Start** and **On/Off** for 3 seconds.
 - 2) Press **Set Temp UP Arrow** to select set-up item P4 shown in timer display.
 - 3) Use the Bake Timer Arrow to adjust offset temperature in the temperature display.
 - 4) Press **On/Off** to exit set-up mode.

8. Combustion Analysis (Gas Oven Only).

NOTE: The burner must be operating during this test.

- A. Allow oven to cool to 300F. (150C.).
- B. Insert a combustion analyzer meter into hole in top of the draft inducer.



10726

Fig. 18

- C. With burner flame established, take combustion measurements O₂, CO₂ and CO readings.

O₂: (Range 6% to 10%)

CO₂: (Range 6% to 8%)

CO: Not to exceed 0.04% (400PPM)

- D. Record set-up information on the label provided inside the controller compartment.

9. Steam Test (All Ovens).

- A. Set 20 seconds on steam timer, one minute on bake timer, and press Start key to initiate steam test.

NOTE: Only a minimal amount of water should exit out the drain after 20 seconds.

- B. Check for steam leakage around loading doors. If leakage is present, adjust door as required.
- C. After time has expired press Stop key to silence beeper.
- D. Press the Vent key to open baking chamber vent. Allow oven to vent for two minutes, then close vent.
- E. Set the control baking temperature below room temperature and open loading doors to release vapors.

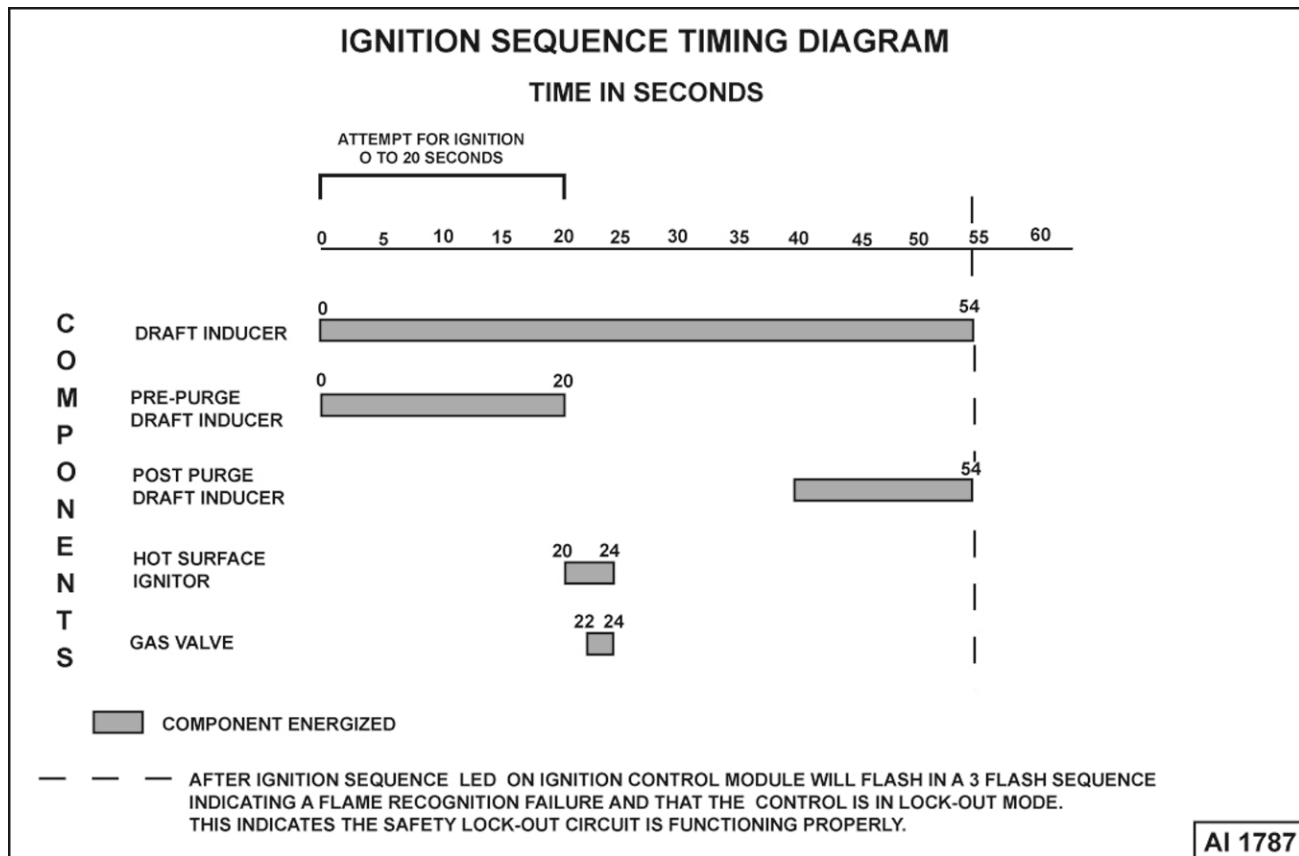


Fig. 19

OV310/OV310 HIGH ALTITUDE CORRECTION CHART

ALTITUDE CORRECTION CHART				
ELEVATION IN FEET	OV310G		OV310G	
	Natural Gas		Propane Gas	
	Orifice #52		Orifice #60	
	Orifice Diameter 0.0635		Orifice Diameter 0.0400	
	Oven Rating BTU/Hr	Manifold Pressure "W.C.	Oven Rating BTU/Hr	Manifold Pressure "W.C.
0 (sea level)	95,000	3.5	95,000	10
3,000	83,600	2.9	83,600	7.9
3,500	81,700	2.8	81,700	7.6
4,000	79,800	2.7	79,800	7.2
4,500	77,900	2.5	77,900	6.9
5,000	76,000	2.4	76,000	6.6
5,500	74,100	2.3	74,100	6.2
6,000	72,200	2.2	72,200	5.9

ALTITUDE CORRECTION CHART				
ELEVATION IN FEET	OV310G		OV310G	
	Natural Gas		Propane Gas	
	Orifice #54 Orifice Diameter 0.0550		Orifice #65 Orifice Diameter 0.0350	
	Oven Rating BTU/Hr	Manifold Pressure "W.C.	Oven Rating BTU/Hr	Manifold Pressure "W.C.
6,500	70,300	3.7	70,300	9.6
7,000	68,400	3.5	68,400	9.1
7,500	66,500	3.3	66,500	8.6
8,000	64,600	3.1	64,600	8.1
8,500	62,700	2.9	62,700	7.6
9,000	60,800	2.7	60,800	7.2
9,500	58,900	2.6	58,900	6.7
10,000	57,000	2.4	57,000	6.3

FINAL CHECKS

1. Test for proper operation.

NOTE: Baking compartment circulation fan will cycle on/off with heating circuit.

2. Cool-Down:
 - A. Press Off key to turn off oven.
 - B. With loading doors open, press Vent key to initiate oven cool-down.
 - C. After oven has reached a safe cool-down temperature, stop automatic cool-down by closing loading doors and/or turning the oven power off.
3. Complete Installation Checklist and distribute copies per instructions on checklist.