SERVICE MANUAL

OV310G MODEL SHOWN

OV310 Series Mini Rack Oven Installation Instructions

OV310G	**ML-132515**
	ML-132597
OV310E	**ML-132516**
	ML-132598

- NOTICE -

This Manual is prepared for the use of trained Hobart 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 Hobart 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 Hobart Service Technician.

The reproduction, transfer, sale or other use of this manual, without the express written consent of Hobart, is prohibited.

This manual has been provided to you by ITW Food Equipment Group LLC ("ITW FEG") without charge and remains the property of ITW FEG, and by accepting this manual you agree that you will return it to ITW FEG promptly upon its request for such return at any time in the future.

TABLE OF CONTENTS

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.

GENERAL

SERVICE UPDATES

July 2025
- Updated SPECIFICATIONS with new ML specifications.
- Updated INITIAL STARTUP.

March 2024
- Updated SPECIFICATIONS.
- Updated INITIAL STARTUP.

July 2020
- Updated OV310/OV310 HIGH ALTITUDE CORRECTION CHART.

September 2017
- Added OV310/OV310 HIGH ALTITUDE CORRECTION CHART.

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
Natural	Propane	BTU/HR
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:

   8" DIA connection collar. Combustion vent can be directly vented or indirectly (canopy hood) outside. Direct venting requires draft diverter. All services must comply with all federal, state and local codes.

6. Indirect vent standard:

   Oven located under an exhaust hood with adequate overhangs and exhaust rates to completely capture byproducts of combustion from flue. A minimum clearance of 18" must be maintained from the termination of the oven flue to the filters of the hood venting system. The hood exhaust fan must be electrically interlocked with the oven. All services must comply with all federal, state and local codes.

7. Direct vent option:

   Duct and fan (if required) to be supplied by customer. All services must comply with all federal, state and local codes. Draft of -0.03"w.c. to -0.11"w.c. required at a point 6" above draft hood upper collar.

NOTES:

- Oven start-up must be performed by an Authorized Servicer.
- Customer responsible to finish and install all utilities to and from oven.
- All services must comply with all Federal, State and Local codes.
- Oven must be installed on a level floor. Oven is UL/C-UL classified and CSA (AGA/CGA) approved for 0" clearance to combustible surfaces on the side and rear walls. If right side of oven is within 30" of radiant heat or grease vapor source, a vent guard is required. Unit requires 1" to 4" clearance for rear drain connection.
- Top of oven requires adequate clearance for service accessibility.
- Oven will fit through a standard 36" doorway with doors, control panel, and trim package removed.
- Manufacturer reserves the right to make changes in sizes and specifications.

OV310G (ML-132515)

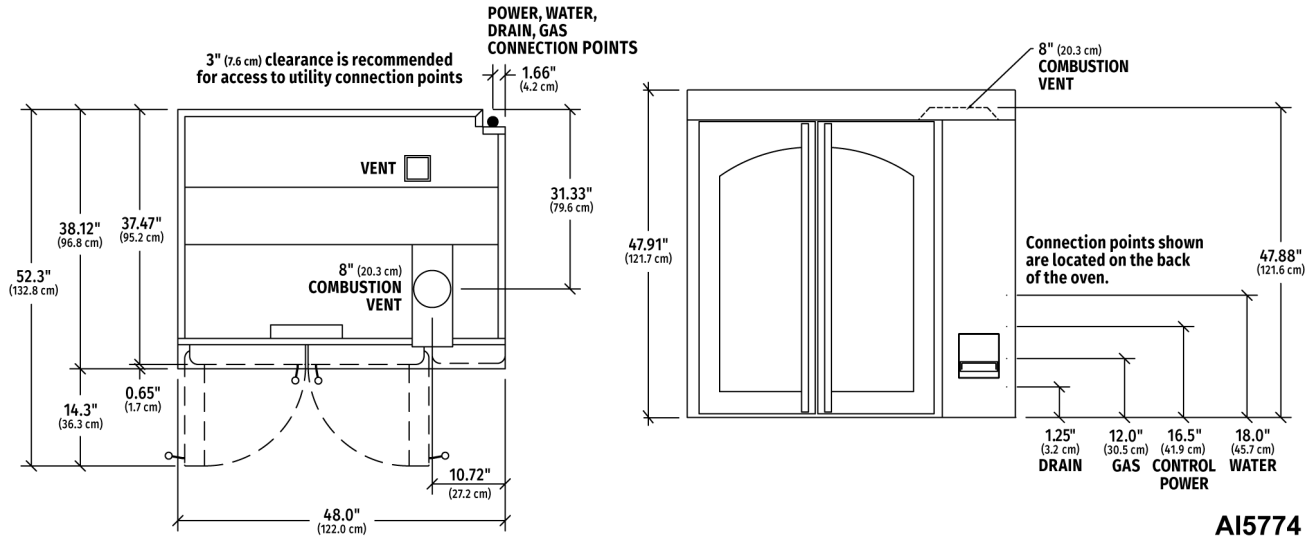


Fig. 1

OV310G (ML-132597)

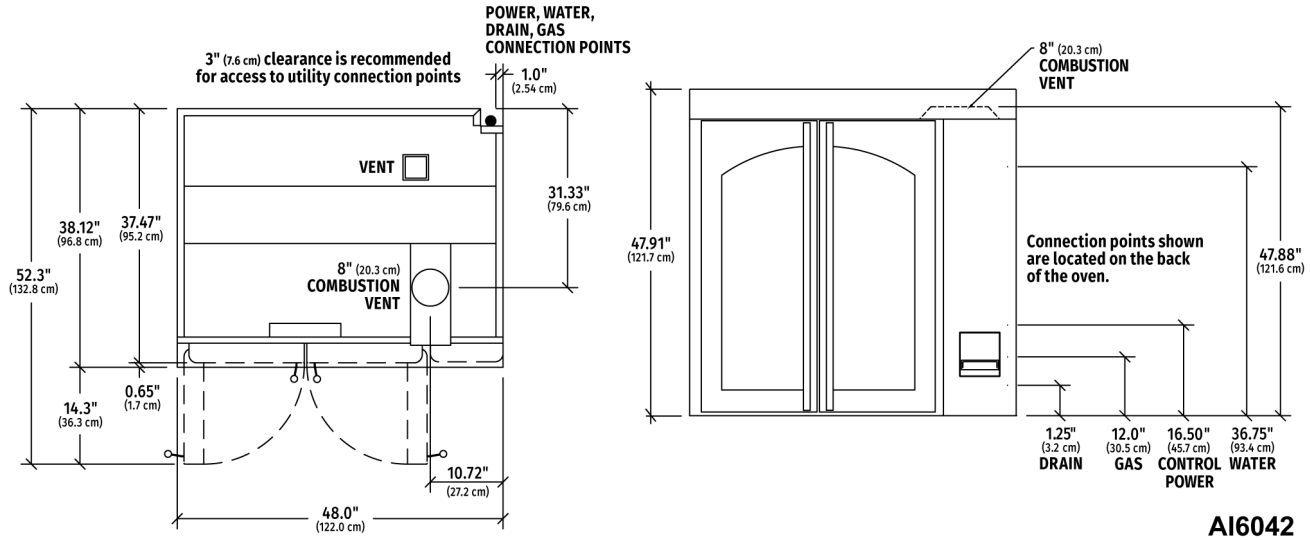


Fig. 2

OV310E (ML-132516)

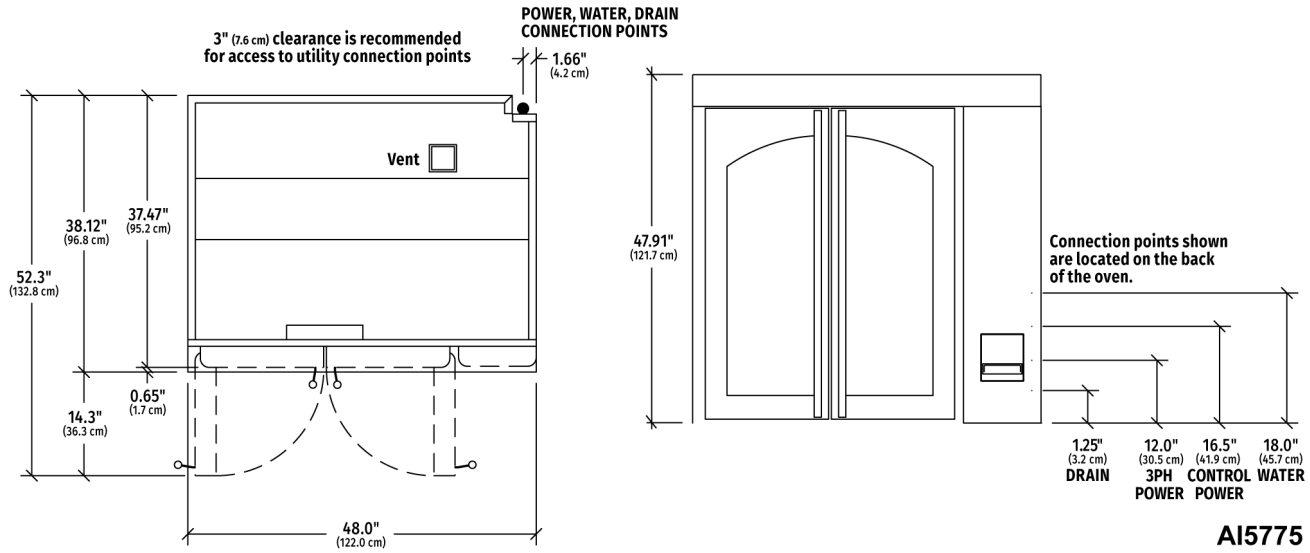


Fig. 3

OV310E (ML-132598)

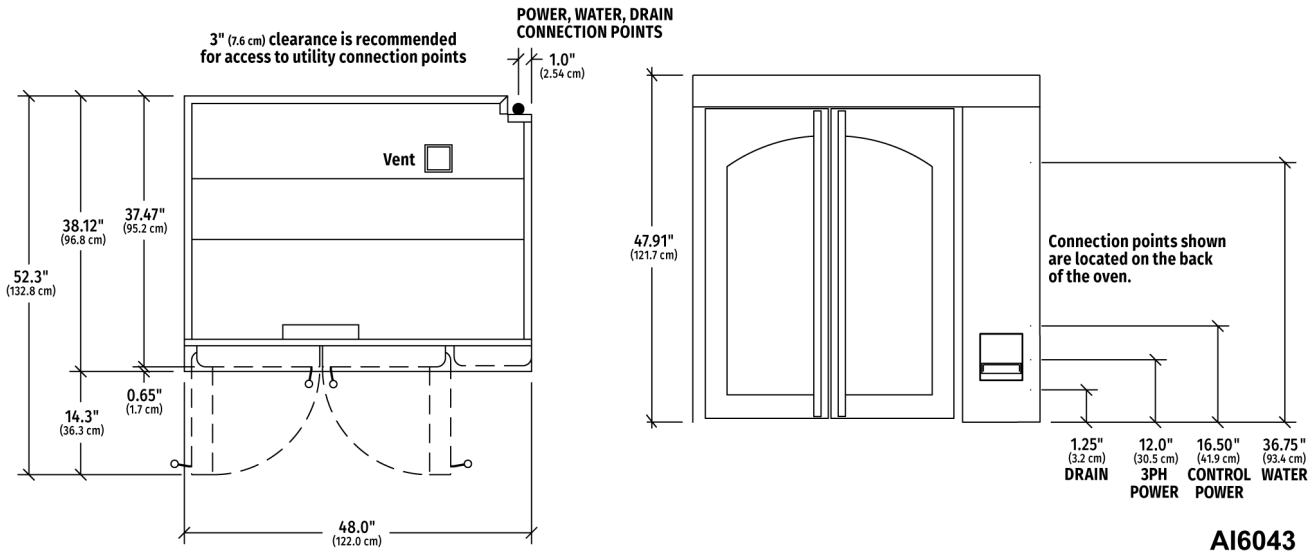


Fig. 4

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 (2, Fig. 5) from the tabs securing fan grille (1, Fig. 5) to top of draft inducer (3, Fig. 5) / (2, Fig. 6) and lift grille off.

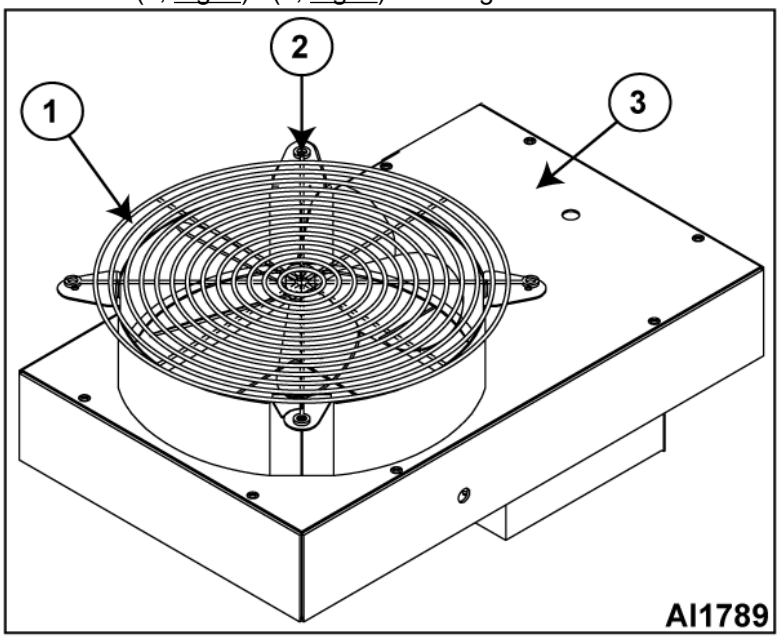


Fig. 5

2. Bend the four exposed oven flue collar tabs (1, Fig. 6) vertically and secure the draft diverter to the oven flue collar with four screws.

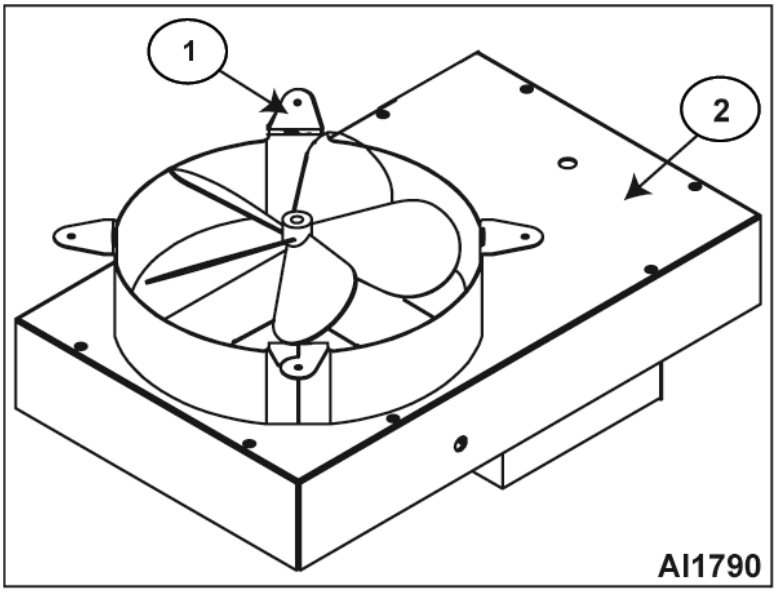


Fig. 6

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.

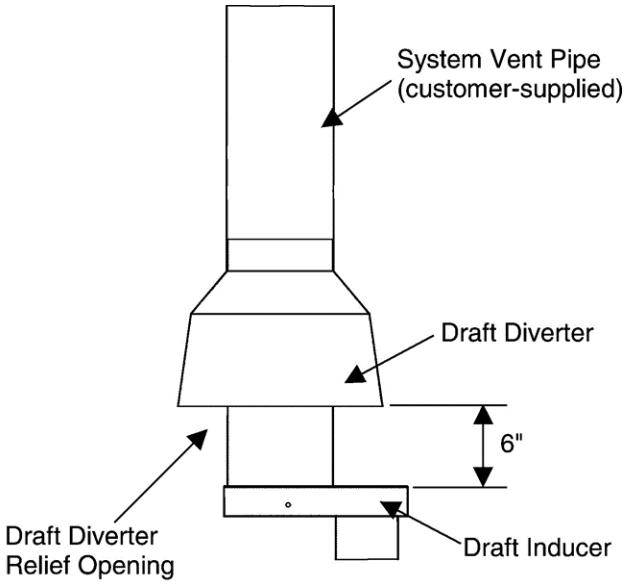


Fig. 7

INITIAL STARTUP

⚠ 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 amps).

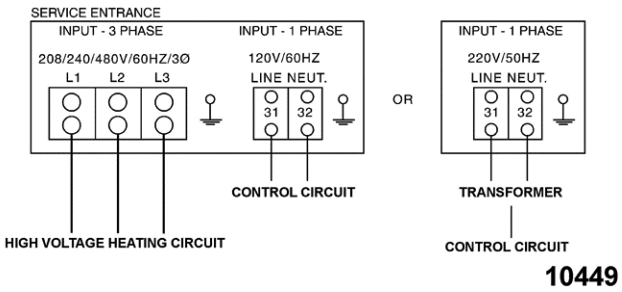


Fig. 8

- 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 startup.

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 a incline manometer or equivalent to the draft tube.

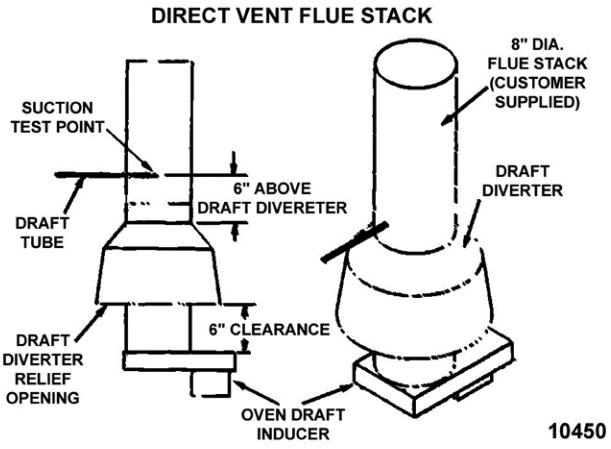


Fig. 9

   C. With oven turned off and doors closed, check 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, customer supplied flue stack must be modified to meet the above stated requirements.

      3) After flue stack change has been done, repeat procedure.

   D. Operate 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), oven must not be operated until proper adjustments have been made (correct flue stack to have adequate up draft through 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 bake timer and cycle on/off with heating circuit if no time is entered in 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 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 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 control is in lock-out mode.

   I. This indicates the safety lock-out circuit is functioning properly.

NOTE: See IGNITION SEQUENCE TIMING DIAGRAM Fig. 23

3. Gas Pressure Adjustment (Gas Ovens Only).

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

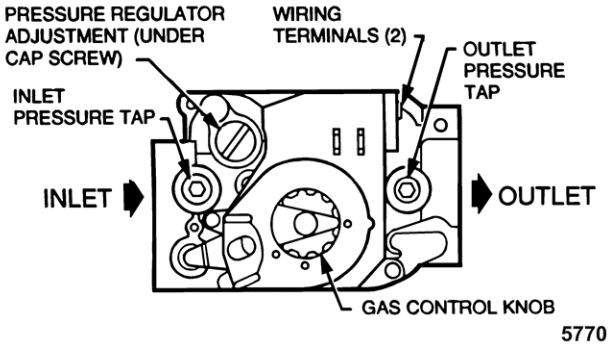
   B. Attach a manometer to the 1/8" NPT outlet pressure tap and one to the 1/8" NPT inlet pressure tap on gas valve and turn gas supply and gas valve on.

C. Remove pressure regulator adjustment cap screw from main gas valve to access adjustment screws.

D. Turn main gas valve on, turn oven on and set temperature to call for heat.

E. With burner flame established, ensure proper line pressure (adjust supply regulator if necessary) and adjust outlet manifold pressure regulator to:

3.5" W.C. (Natural Gas)



10.0"W.C. (Propane Gas)

4. Door Switch Adjustment (ML-132515 & ML-132516 Only).

NOTE: Newer models (ML-132597 & ML-132598) come with non-adjustable door switch assembly. See Fig. 13.

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

A. Turn power On.

B. Access door switches on top of oven.

C. With 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".

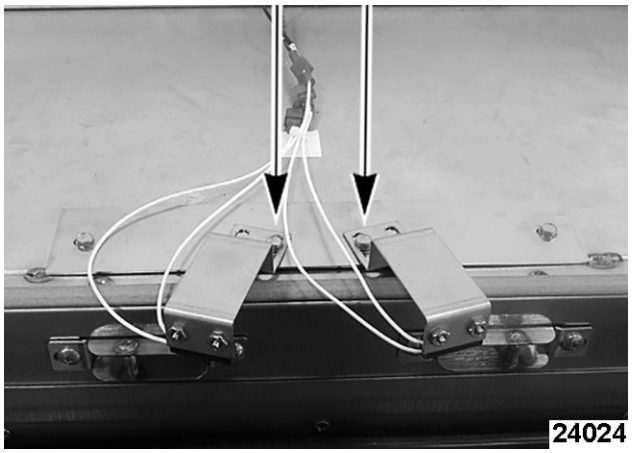


Fig. 12

NOTE: Non-adjustable door switch assembly shown below.

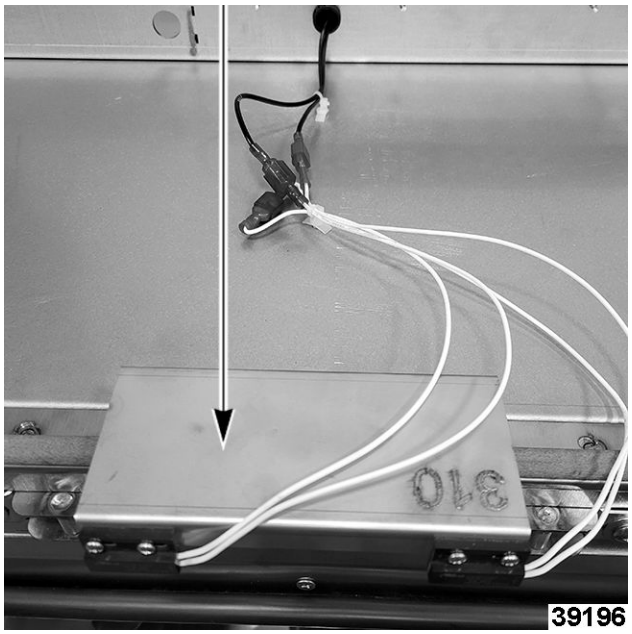


Fig. 13

5. Door Adjustment Procedure.

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

Fig. 14

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

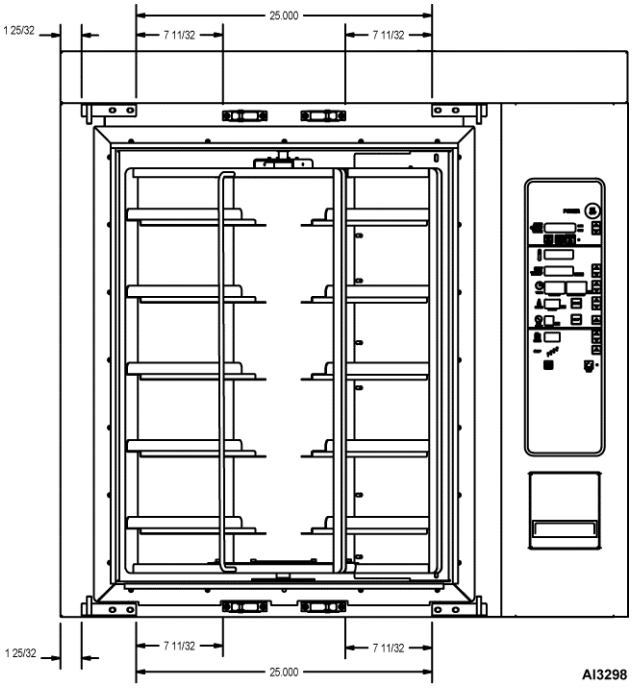


Fig. 15

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

NOTE: If adjustments are required - adjust hinge plates.

Fig. 16

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

Fig. 17

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

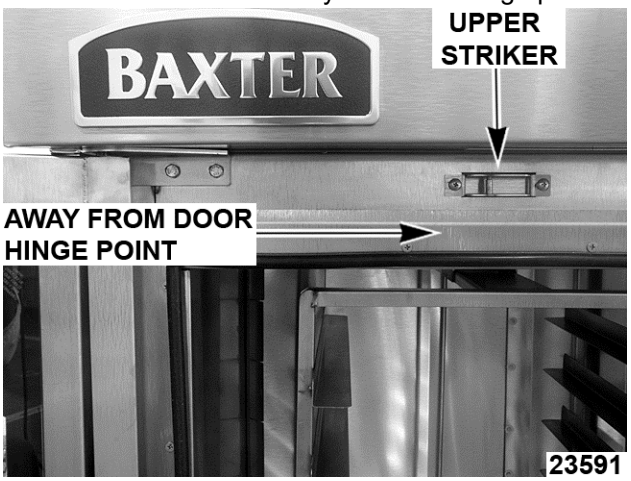


Fig. 18

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

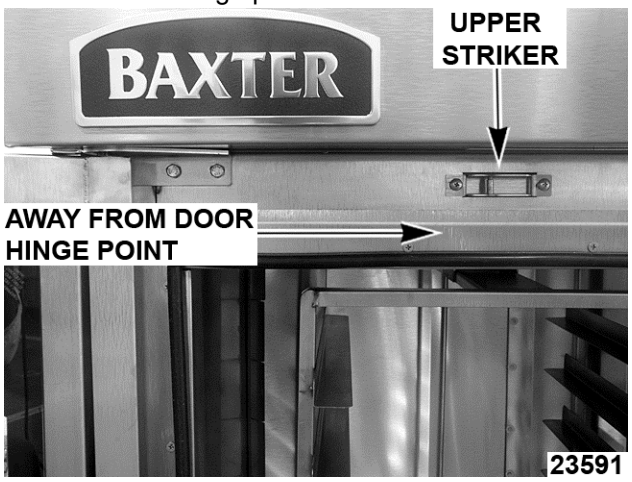


Fig. 19

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 loading doors. Some under or over travel of rack positioning should be expected depending on product load. Rack rotation components are located on top of 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 loading doors, if not position rack so it is square.

      2) Align pointer switch actuator (Fig. 20) sideways to align with pointer switch on top of rotation shaft.

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

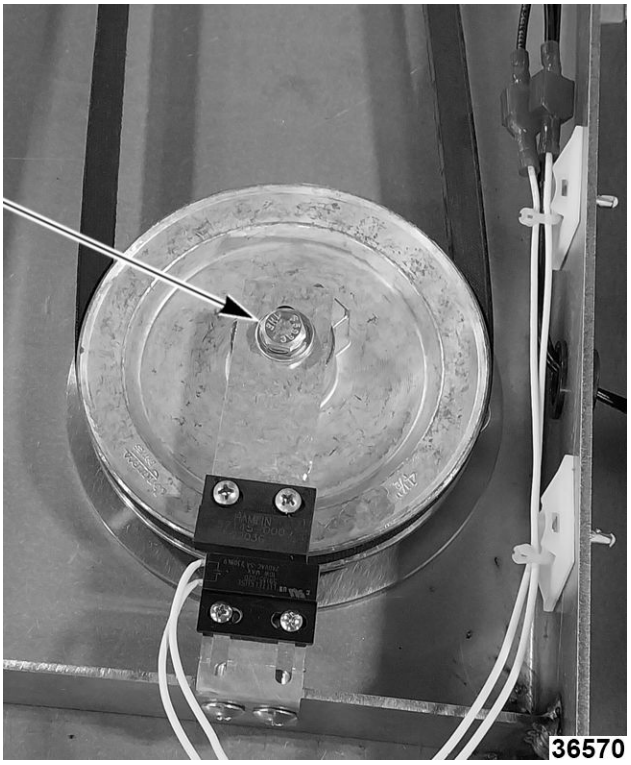


Fig. 20

      3) Put oven into operation and check for proper rack load/unload positioning.

      4) Repeat the procedure until load/unload rack position is achieved.

7. Initial heating of oven (All Ovens).

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

NOTE: View showing top of oven and right hand front air louvers.

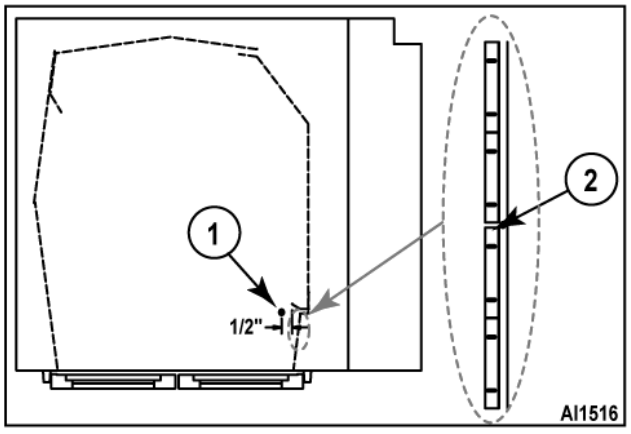


Fig. 21

   B. Route thermocouple lead to the outside of oven. Make sure lead is kept clear of rack carrier.

C. Close loading doors.

D. Set control baking temperature to 300°F (150°C) and bake timer for 30 minutes.

NOTE: Baking compartment circulation fan will run continuously with time entered in bake timer and cycle on/off with heating circuit if no time is entered in 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 control baking temperature to 400°F (200°C) and bake timer for 60 minutes.

H. Check temperature reading on thermocouple meter at the exact time the heat light on controller goes out.

I. Compare readings of thermocouple meter and controller temperature display.

J. If temperature difference between the two readings is greater than ±2°F or ±1°C adjust 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 controller, replace controller (range ±50°F).

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

K. To Adjust:

1) Access setup mode by pressing and holding **Start** and **On/Off** for 3 seconds.

2) Press **Set Temp UP Arrow** to select setup item P4 shown in timer display.

3) Use Bake Timer Arrow to adjust offset temperature in temperature display.

4) Press **On/Off** to exit setup mode.

8. Combustion Analysis (Gas Oven Only).

NOTE: The burner must be operating during this test.

A. Allow oven to cool to 300°F (150°C).

B. Insert a combustion analyzer meter into hole in top of draft inducer.

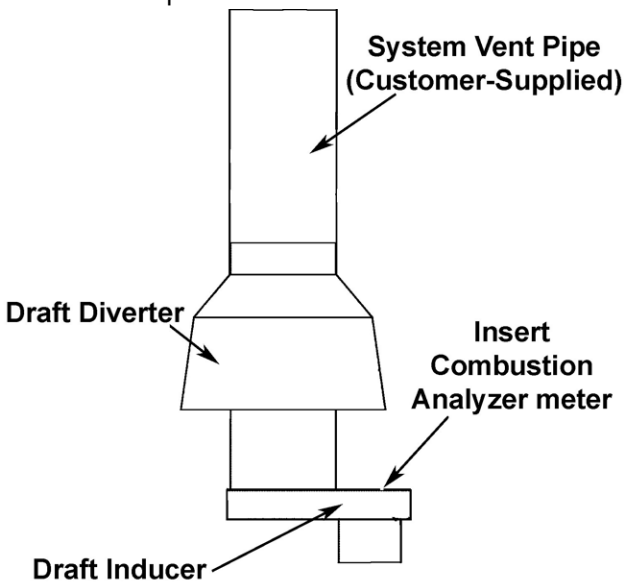


Fig. 22

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% (400 PPM)

D. Record setup 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 Vent key to open baking chamber vent. Allow oven to vent for two minutes, then close vent.

E. Set control baking temperature below room temperature and open loading doors to release vapors.

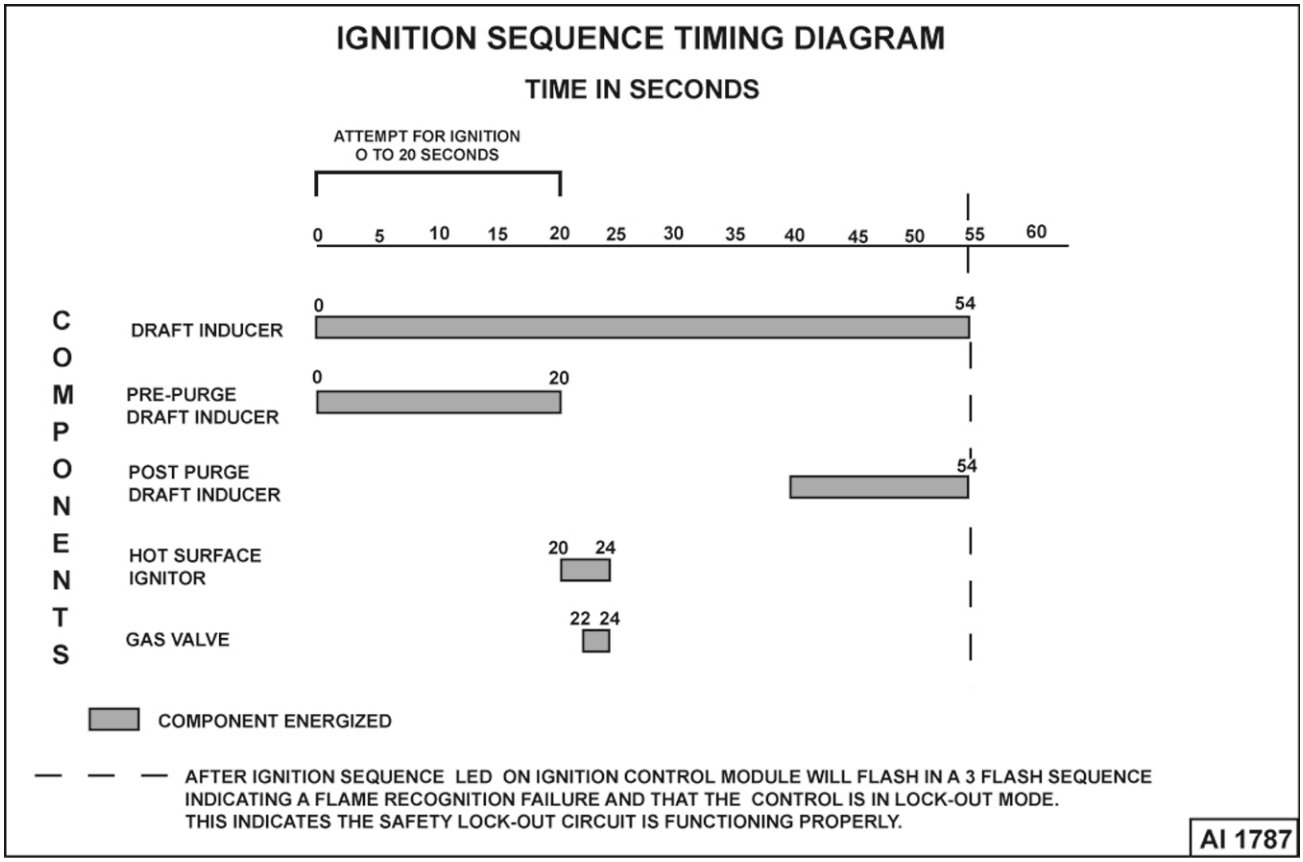


Fig. 23

OV310/OV310 HIGH ALTITUDE CORRECTION CHART

ALTITUDE CORRECTION CHART				
ELEVATION IN FEET	OV310G Natural Gas Orifice #52 Orifice Diameter 0.0635		OV310G Propane Gas Orifice #60 Orifice Diameter 0.0400	
	Oven Rating BTU/Hr	Manifold Pressure "W.C.	Oven Rating BTU/Hr	Manifold Pressure "W.C.
0 (sea level)-2,999	95,000	3.5	95,000	10
3,000-3,499	83,600	2.9	83,600	7.9
3,500-3,999	81,700	2.8	81,700	7.6
4,000-4,499	79,800	2.7	79,800	7.2
4,500-4,999	77,900	2.5	77,900	6.9
5,000-5,499	76,000	2.4	76,000	6.6
5,500-5,999	74,100	2.3	74,100	6.2
6,000-6,499	72,200	2.2	72,200	5.9

ORIFICE MUST CHANGE 6500 FT. ABOVE SEA LEVEL				
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.
6,500-7,000	70,300	3.7	70,300	9.6
7,001-7,500	68,400	3.5	68,400	9.1
7,501-8,000	66,500	3.3	66,500	8.6
8,001-8,500	64,600	3.1	64,600	8.1
8,501-9,000	62,700	2.9	62,700	7.6
9,001-9,500	60,800	2.7	60,800	7.2
9,501-10,000	58,900	2.6	58,900	6.7
10,001 +	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.