



# INSTALLATION MANUAL

## BROASTER® 2400

### PRESSURE FRYER w/SmartTouch

**Be sure ALL installers read, understand, and have access to this manual at all times.**



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608/365-0193 [broaster.com](http://broaster.com)



## FOR YOUR SAFETY

Do not use or store gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

**⚠ WARNING** Improper installation, adjustments, 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.

For the sake of safety and clarity, the following words used in this manual are defined as follows:

**⚠ DANGER** Indicates an imminently hazardous situation which, if not avoided, could result in serious injury or death.

**⚠ WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.

**⚠ CAUTION** Indicates a potentially hazardous situation which, if not avoided, could result in minor injury, property damage or both.

All adjustments and repairs shall be made by an authorized Broaster Company representative.

If there is a power failure, turn cook/filter switch OFF. On the Model 2400GH, also slide switch on gas valve OFF. DO NOT attempt to operate unit during a power failure.

**⚠ WARNING** Failure to read and understand this manual completely could result in serious injury or death. Be sure ALL operators read, understand and have access to this manual at all times.

**⚠ WARNING** Rags or paper containing cooking oil can catch fire if exposed to heat. Laundering will not remove the oil. Dispose of all oil-soiled papers and rags in a trash container that is in a ventilated area away from all cooking equipment or other heat sources such as direct sunlight.

**⚠ WARNING** If at any time the **POWER ON** light does not turn off when the power switch is moved to the **OFF** position, disconnect the power to the fryer and contact your local Broaster Company representative for service immediately.

**⚠ WARNING** **DO NOT** operate unit without filter pan and filter pan cover in its proper position. Filter pan cover must be wiped clean after each filtering cycle. Make sure Pressure Relief Valve and Pressure Gauge ports on bottom of cover are clear of any oil or grease buildup.

**⚠ WARNING** Make sure Pressure Relief Valve and Pressure Gauge ports on bottom of cover are clear of any oil or grease buildup.

**2400GH:** Post, in prominent locations, instructions to be followed in the event that the user smells gas. This information can be obtained from your local gas supplier.

cont'd on next page

**⚠ WARNING** Make sure a restraining device is used that complies with the Standard for *Commercial Gas Ranges*, ANSI Z83.11/ CSA 1.8 to guard against transmission of strain to the gas connectors.

**⚠ DANGER** Failure to restrain the fryer could allow it to move, causing hot shortening to spill out, or a possible break in the gas line causing an explosive condition.

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# 1 - PRE-INSTALLATION

## LOCATION

For convenience and speed, location of the unit should be given careful consideration. If possible, locate the unit so the flow of cooked product is in a straight line from storage, in and out of the unit and to the customer. A Landing table or Dump Table should be provided on at least one side of the unit.

- To avoid splashing of hot liquid, unit must be restrained to prevent tipping. This can be done by installing the unit in a battery of appliances, in an alcove or with adequate ties
- Provision must be made to eliminate movement of the unit which might cause strain on electrical and gas connections.
- DO NOT install unit where traffic areas are on either side or in back of unit.

## CLEARANCE

### USA:

Gas units are to be installed only in non-combustible locations. Minimum clearances for non-combustible construction is 0 inches from sides and 6 inches from back.

### CANADA:

Gas units are certified for installation on a combustible floor. Minimum clearances for combustible construction is 1 inch from sides and 6 inches from back.


## LEVELING

Adjust front feet to level entire unit. Add additional blocking if necessary on a sloping floor.

## RECOMMENDED VENTILATION REQUIREMENTS

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Exhaust hood should comply with ANSI/NFPA #96 or national, state and local codes. All units must be under an adequate power exhaust hood for ventilation of cooking vapors and products of combustion. Precautions should be taken in the design of the exhaust hood to avoid interference with operation of the unit. Consult a local ventilation company for fire suppression, design and installation of a hood.

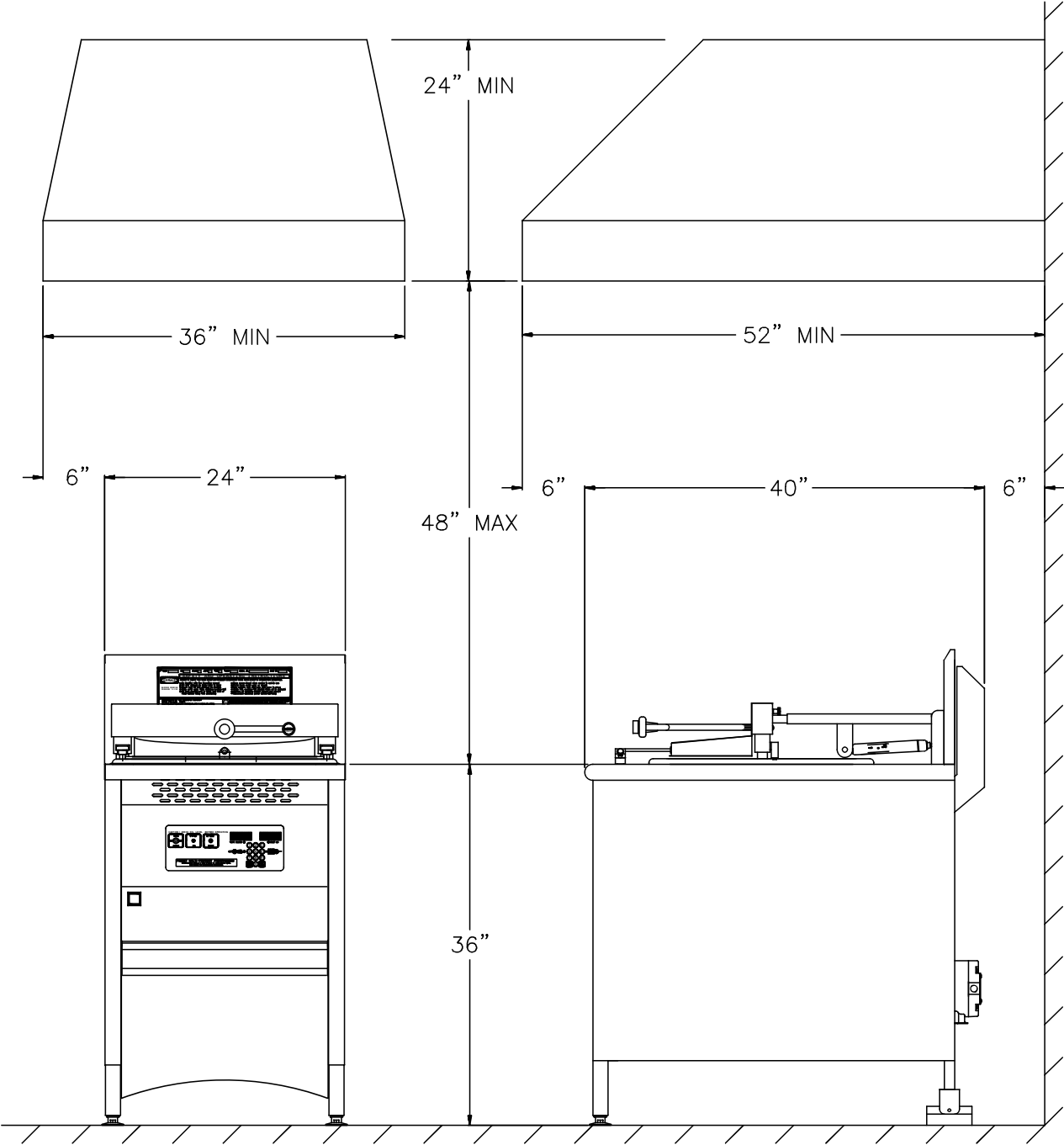
 **WARNING** **DO NOT extend the exhaust stack or exhaust flue of any unit. Doing so may cause a negative back draft causing malfunction and interference with burner operation on the 2400GH and improper exhausting of cooking vapors on all models.**

## General Requirements:

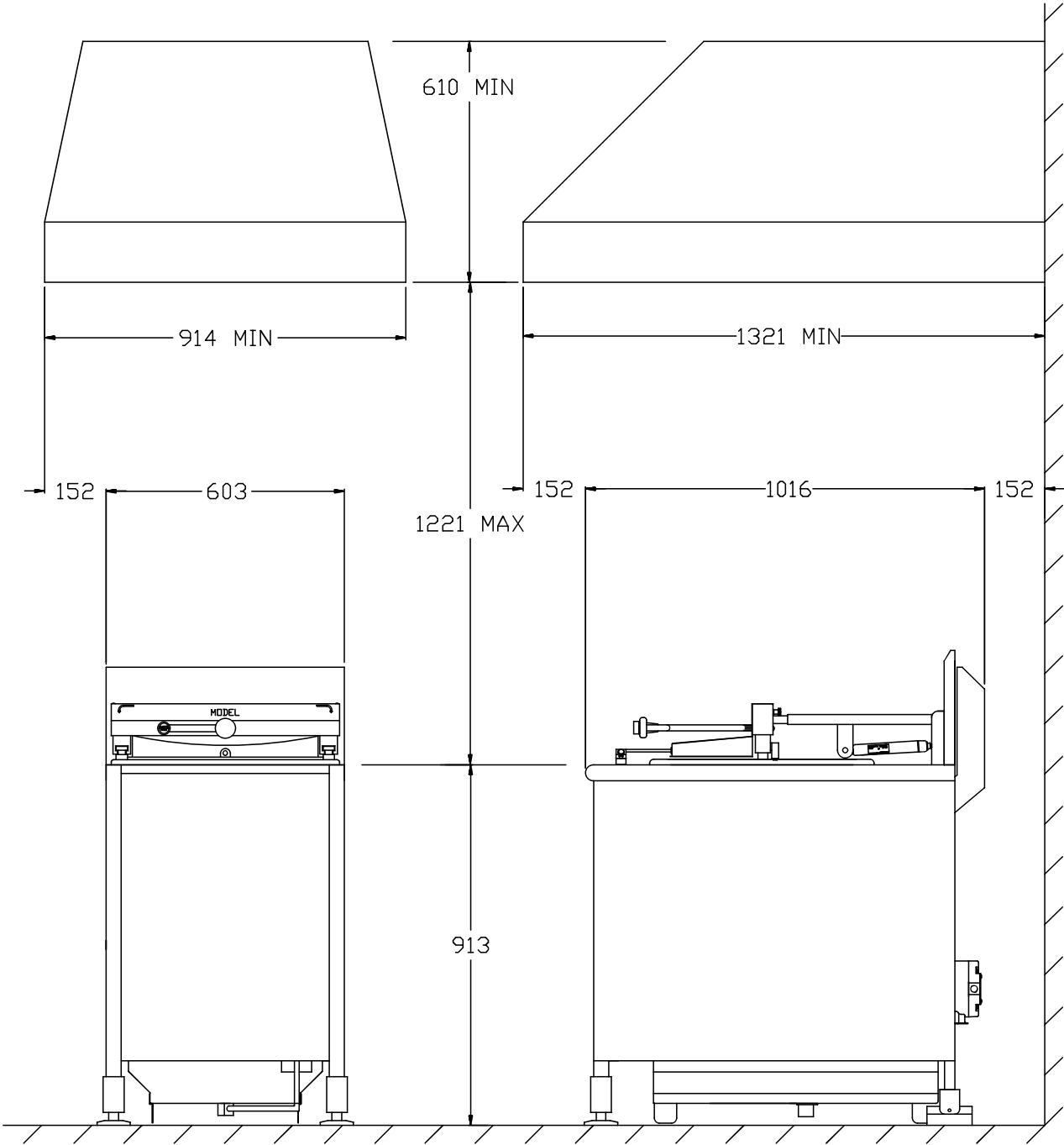
1. Exhaust hood must conform to the applicable national, state and local codes in which it is installed.
2. In the absence of any such codes it is recommended that requirements of the National Fire Protection Association (ANSI/NFPA), Standard No. 96 be followed for the design, installation and use of exhaust system components. This includes hoods, grease removal devices, exhaust ducts, dampers, air moving devices, auxiliary equipment and fire extinguishing equipment for the exhaust system and the cooking equipment used therein in commercial, industrial, institutional and similar cooking applications.
3. **Hood Size:** The overhead canopy type hood should be sized to completely cover the equipment it is designed to ventilate plus an overhang of at least 6 inches on all sides of equipment not immediately adjacent to walls or other construction extending above the cooking surface. Non-canopy, prefabricated “backshelf” type hoods should be sized according to the manufacturers specifications.
4. **Exhaust Air Volume (minimum):** Canopy hood open on all four sides: 1800 cu. ft./minute. Canopy hood open on three sides or less: 1200 cu. ft./minute.
5. **Exhaust Air Velocity:** All exhaust ducts should be sized to provide an air velocity in the ducts of at least 1500 ft./minute.



**Hood Dimensions In Inches:**



**Hood Dimension In Millimeters:**

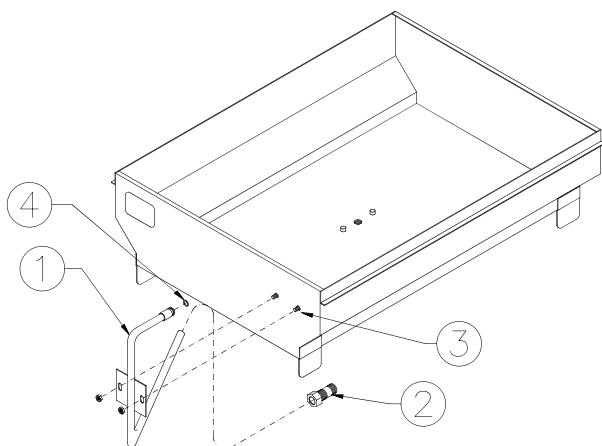


## 2 - FILTER PAN ASSEMBLY

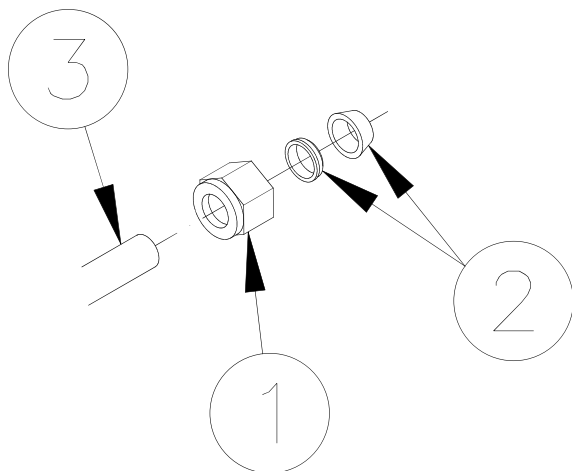
### HARDWARE LIST

- (2) 00552 - Keps Nuts
- (1) 15283 - Connector with ferrule
- (3) 09883 - O-Ring
- (1) 15559 - Riser Line
- (2) 01596 - Washer

### ASSEMBLY

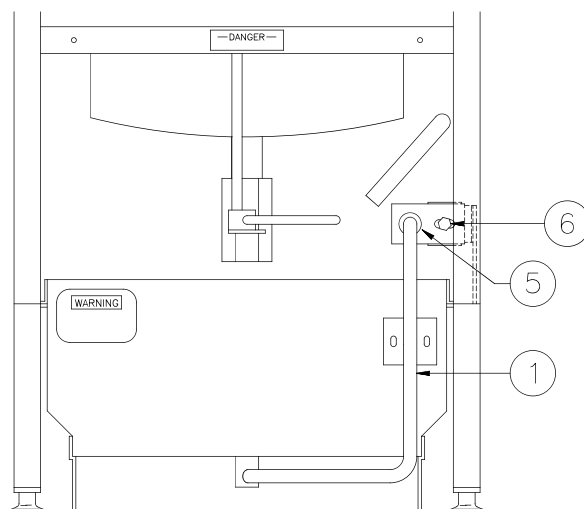


1. From bag of hardware, install compression nut then 2 piece ferrule onto riser line (1). (see below)



2. Install riser line onto pan. First install line into fitting (2) on bottom center of pan while the mounting plate fits over studs (3) on front of pan.

3. Install washers and keps nuts onto studs but do not tighten.
4. Tighten nut onto fitting (2).
5. Lubricate O-ring (4) with cooking oil. Install O-ring into groove on riser line (1).
6. Install filter pan under unit and align riser line with suction line (5).
7. Tighten keps nuts mounting riser line to filter pan.
8. See Operation Manual for additional assembly.



### ADDITIONAL ADJUSTMENTS IF NEEDED

1. Loosen nut and bolt (6).
2. Push pan under unit. By hand, move suction line (5) until riser line (1) is fully inserted into suction line.
3. Tighten all nuts and bolts.



## 3 - 2400GH INSTALLATION

### GENERAL REQUIREMENTS

**⚠ DANGER** Failure to restrain the fryer could allow it to move, causing hot shortening to spill out, or a possible break in the gas line causing an explosive condition.

> Install and ANSI Z83.11/CSA 1.8 compliant restraining device (such as Broaster Company part number 17708) per manufacturers instructions.

**⚠ WARNING** Use appliance connectors and quick-disconnect devices that are in compliance with the applicable ANSI and CSA standards.

> Attach an appliance connector to the fryer according to the instructions provided by the connector manufacturer.

> When installing or servicing the unit, always check the dataplates, located toward the rear of the countertop. This will make certain proper parts are used and the correct service rendered. **DO NOT** apply a voltage to this unit other than that shown on the dataplate. If in doubt, consult your local power company.

> A remote circuit breaker or fuse should be installed in main power supply located in a path of exit and clearly identified.

> A gas shutoff valve, installed in gas supply line, should be located in a path of exit and clearly identified.

> Keep burner area free and clear of all combustible materials.

> **DO NOT** obstruct exhaust flue or open area around bottom of unit at the front, back and sides which would restrict the flow of combustion and ventilation air.

> Consult a local ventilation company to insure an adequate air supply for all gas fired equipment.

> US & Canada: Installation must conform with local codes, or in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1, Natural Gas Installation Code, CAN/CGA-B149.1, or the Propane Installation code, CAN/CGA-B149.2, as applicable.

> The unit and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2psi(3.45kPa).

> The unit must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2psi(3.45kPa).

## ELECTRICAL CHARACTERISTICS

The unit is available for 120VAC applied voltage, 15 amp, 60Hz, 1 phase electrical connection in the USA and Canada. 220VAC applied voltage, 50/60Hz, 1 phase connection in the European Union.

When installed, the unit must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, or the Canadian Electrical Code, CSA C22.2, as applicable.

## ELECTRICAL CONNECTIONS

Applied voltage should match dataplate listed voltage.



**Electrical Grounding Instructions - The unit is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. DO NOT cut or remove grounding prong from this plug.**

## **GAS CHARACTERISTICS**

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All gas units are tested using local gas supply. Your unit may or may not operate correctly on your type of gas. Therefore, the unit should be checked and corrected if necessary. See service manual.

**⚠ WARNING** **DO NOT attempt to use any other gas than that specified on data plate located on the front panel.**

### **BTU/HR Ratings:**

#### US & Canada:

Cast Iron Burner:

Natural Gas: 100,000 BTU

Propane: 100,000 BTU

Tubular Steel Burner

Natural Gas: 95,000 BTU

Propane: 95,000 BTU

#### EU:

G20: 29.31 kW net

G31: 29.31kW net

### **Gas Pressure and Orifices:**

- If adjustment of the regulator does not deliver the correct BTU per hour or if another type of gas is to be used, contact your local gas supply company for correct gas pressure and orifice sizing.

Maximum gas supply line pressure:

Natural (G20) Gas: 7" wc (17.4mbar)

Propane (G31) Gas: 14" wc (34.9 mbar)

Manifold pressure at test fitting:

Cast Iron Burner:

Natural (G20) Gas: 4.0"wc (9.9 mbar)

Propane (G31) Gas: 10.0"wc (25.0 mbar)

Tubular Steel Burner:

Natural (G20) Gas: 3.5"wc (8.7 mbar)

Propane (G31) Gas: 10.0"wc (25.0 mbar)

Main burner orifice size:

Natural (G20) Gas: #14 (4.62mm)

Propane (G31) Gas: #32 (2.95mm)

Pilot burner orifice size:

Natural (G20) Gas: .018 (.46mm)

Propane (G31) Gas: .011 (.28mm)

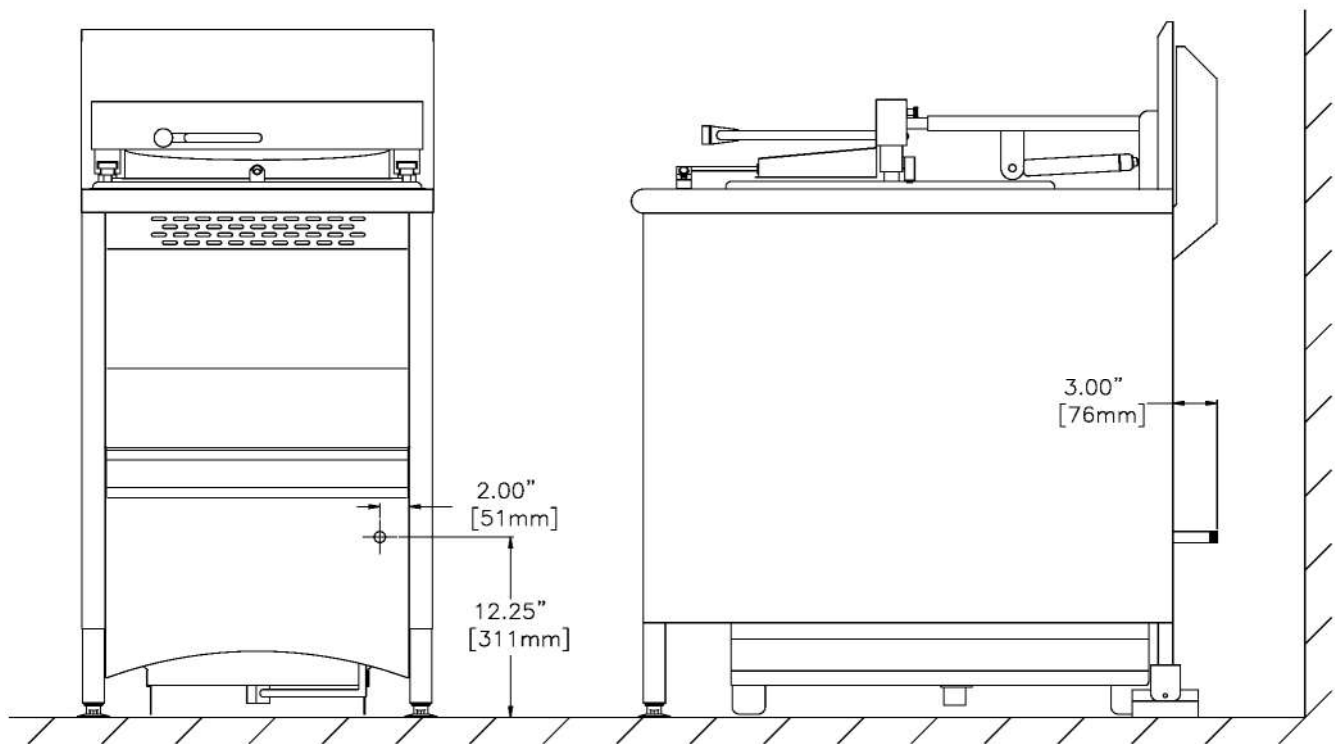
## Gas Conversion:

### USA & Canada

- Contact your local Broaster Company representative for converting from one type of gas to another.

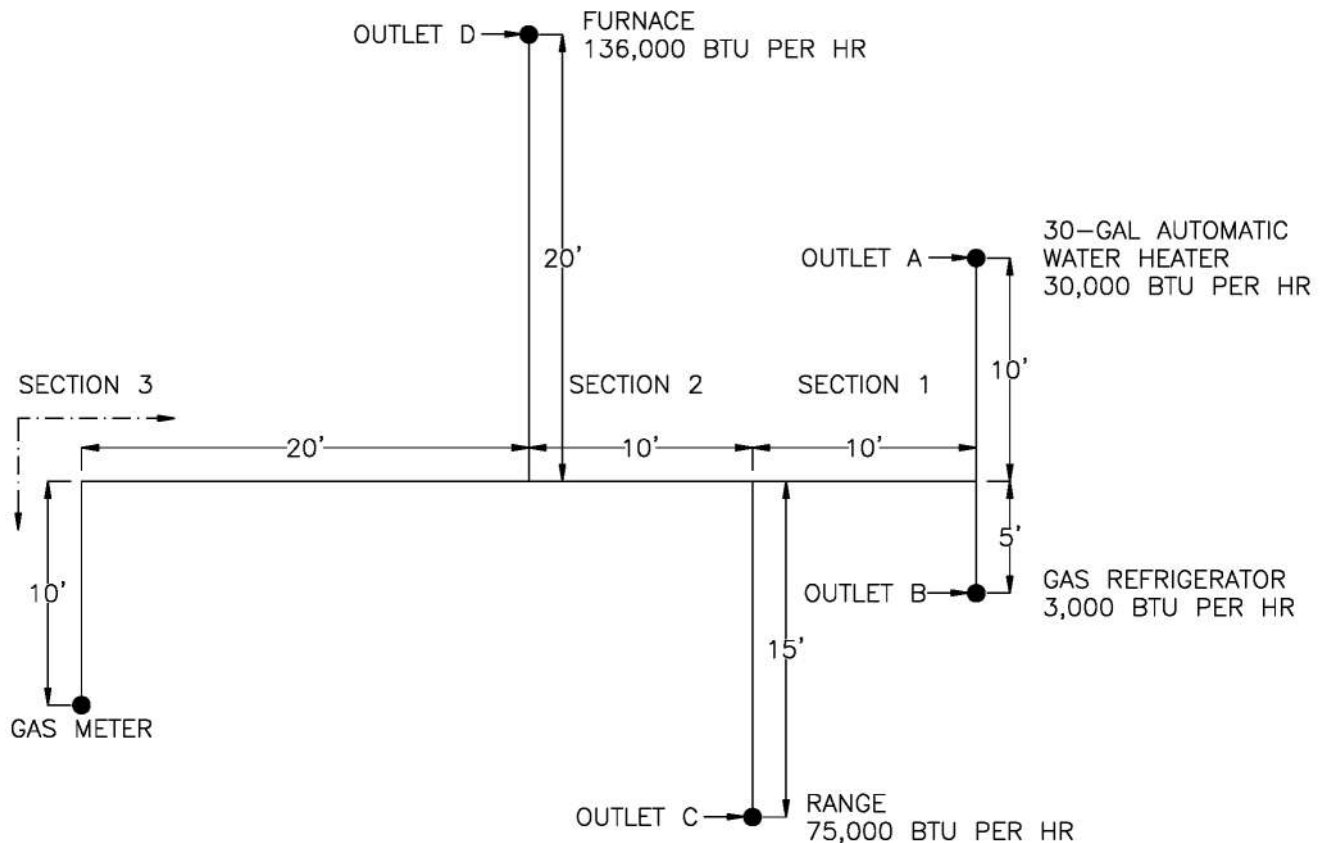
## High Altitude:

- For operation at elevations above 2,000 feet above sea level, gas input must be reduced 4% for each 1,000 feet. Contact your local Broaster Company representative for correct orifice sizing.





## Example of Piping System Design:



## GAS PIPING

- The unit is equipped with a 1/2" pipe for gas connection. Shipped with each unit, for 3/4" gas connection, is one each of the following:

P/N 00743 - Bushing Hex Reducer  
3/4 to 1/2

P/N 01319 - Coupling 3/4 Pipe

- 3/4 NPT minimum supply piping recommended.
- Use only black steel pipe and malleable fittings for gas connections.
- Pressure loss in the piping must not exceed 0.3" W.C.
- Be sure gas supply piping is of the proper size for the BTU input. Take into consideration all other gas appliances

which must operate from the same gas supply. Be sure piping will not interfere with drain pans or valves.

- A compound resistant to the action of liquified petroleum gas should be used on the threads of gas supply piping joints. Check all connections and pipes with a soap and water solution. Bubbles indicate a gas leak. DO NOT use an open flame to check for gas leaks.
- Determine the required pipe size of each section and outlet of the piping system shown in Solution, with a designated pressure drop of 0.30 inch water column. Gas to be used has 0.60 specific gravity and a heating value of 1,000 BTU per cubic foot.

**Solution:**

C = Consumption (rating plate input or pipe capacity if necessary). Pipe capacity table at top of next page.

BTU = BTU per cubic foot for the gas type.

CFH = Cubic Feet/Hour

**Maximum gas demand for outlet A:**

$$C/BTU = 30,000/1,000 = 30 \text{ CFH}$$

**Maximum gas demand for outlet B:**

$$C/BTU = 3,000/1,000 = 3 \text{ CFH}$$

**Maximum gas demand for outlet C:**

$$C/BTU = 75,000/1,000 = 75 \text{ CFH}$$

**Maximum gas demand for outlet D:**

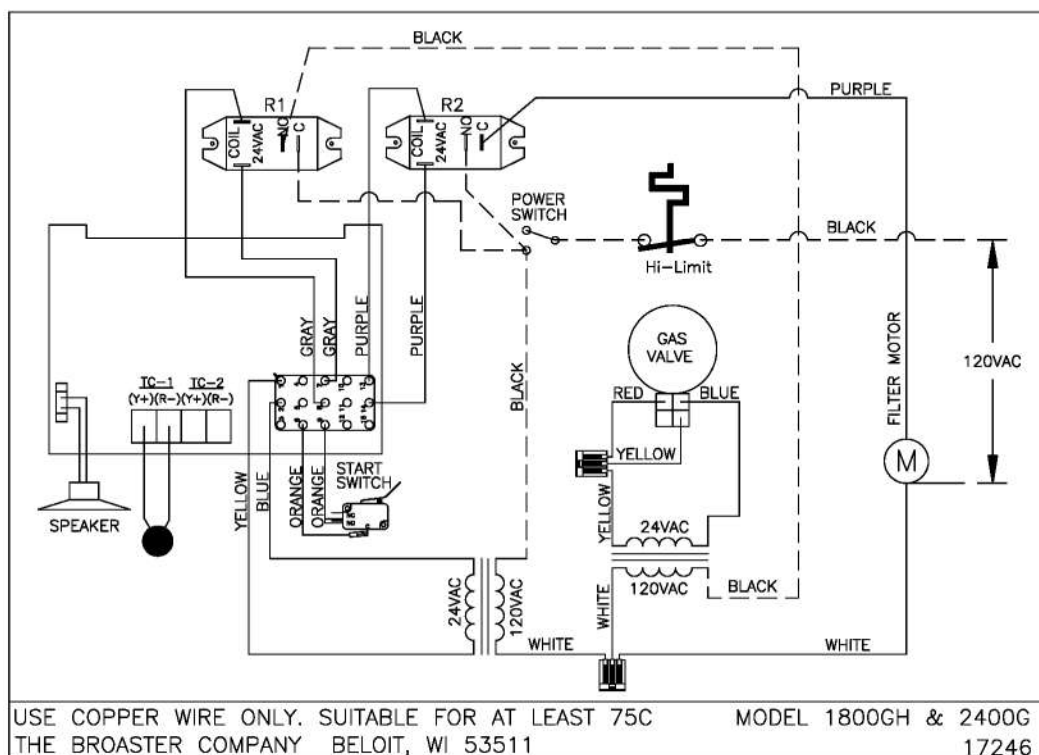
$$C/BTU = 136,000/1,000 = 136 \text{ CFH}$$

Maximum capacity of pipe in cubic feet of gas per hour (based upon a pressure drop of 0.3 inch water column and 0.6 specific gravity gas):

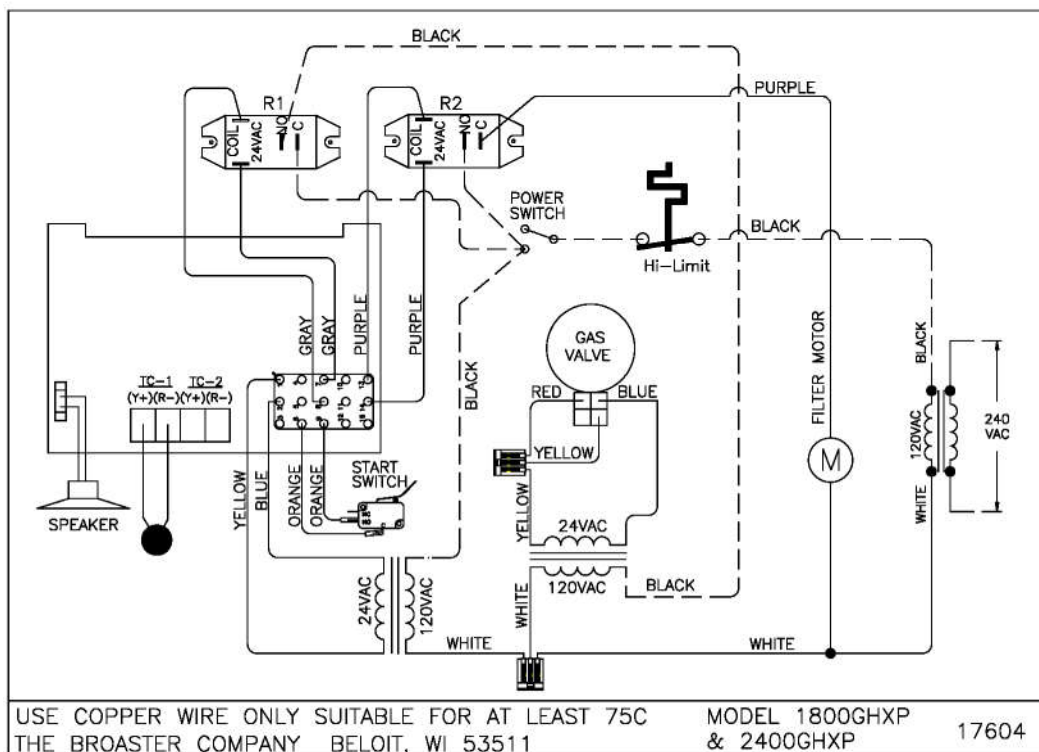
Length in Feet	Nominal Iron Pipe Size, Inches								
	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
10	132	278	520	1,050	1,600	3,050	4,800	8,500	17,500
20	92	190	350	730	1,100	2,100	3,300	5,900	12,000
30	73	152	285	590	890	1,650	2,700	4,700	9,700
40	63	130	245	500	760	1,450	2,300	4,100	8,300
50	56	115	215	440	670	1,270	2,000	3,600	7,400
60	50	105	195	400	610	1,150	1,850	3,250	6,800
70	46	96	180	370	560	1,050	1,700	3,000	6,200
80	43	90	170	350	530	990	1,600	2,800	5,800
90	40	84	160	320	490	930	1,500	2,600	5,400
100	38	79	150	305	460	870	1,400	2,500	5,100
125	34	72	130	275	410	780	1,250	2,200	4,500
150	31	64	120	250	380	710	1,130	2,000	4,100
175	28	59	110	225	350	650	1,050	1,850	3,800
200	26	55	100	210	320	610	980	1,700	3,500

## Wiring diagrams:

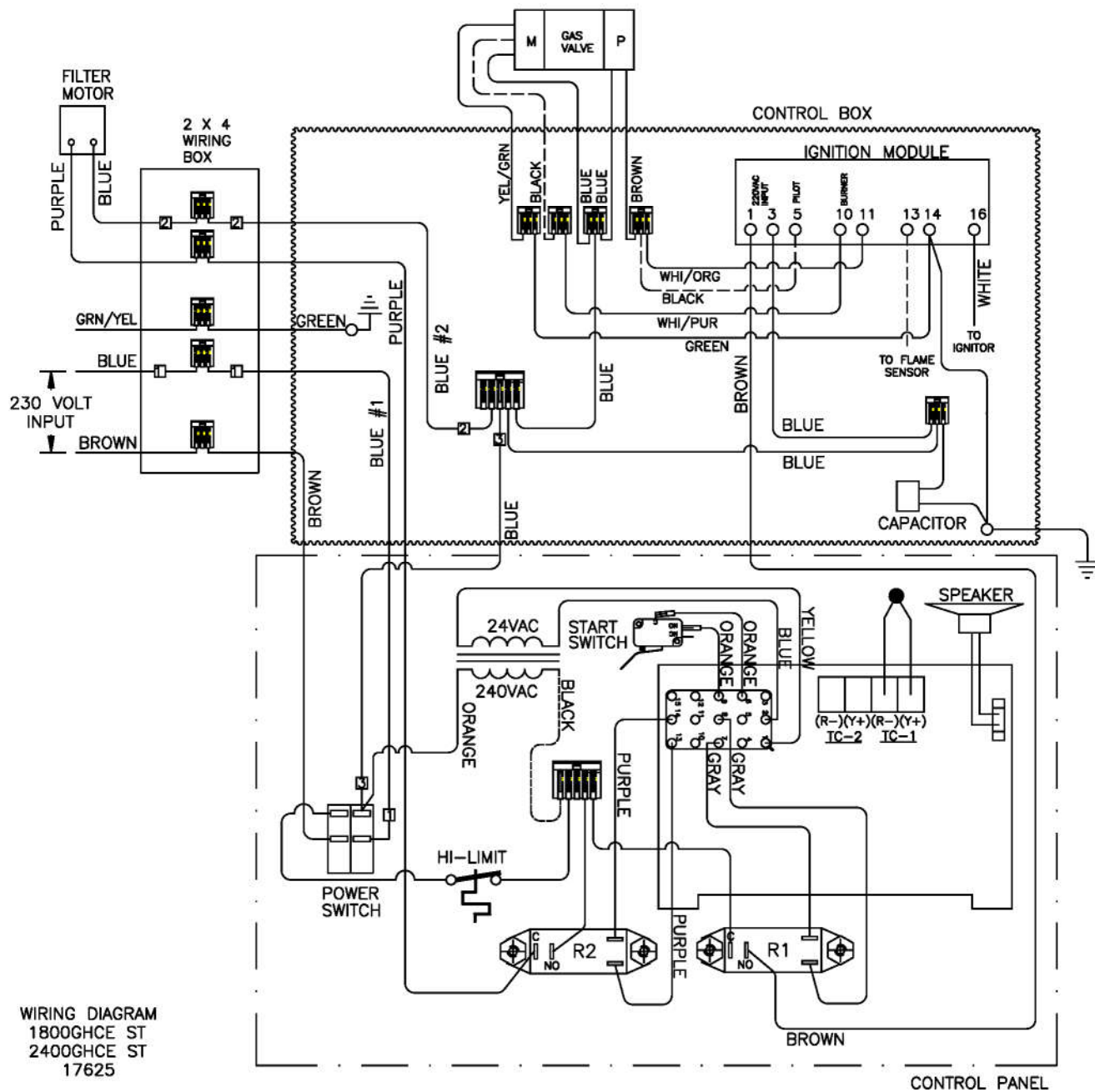
### MODEL 2400GH: DOMESTIC



### MODEL 2400GHXP: EXPORT



# MODEL 2400GHCE & UK:



WIRING DIAGRAM  
1800GHCE ST  
2400GHCE ST  
17625

## 4 - 2400E INSTALLATION

### GENERAL REQUIREMENTS

- When installing or servicing the unit, always check the dataplates, located toward the rear of the countertop. This will make certain proper parts are used and the correct service rendered. DO NOT apply a voltage to this unit other than that shown on the data plate. If in doubt, consult your local power company.
- A remote circuit breaker or fuse should be installed in main power supply located in a path of exit and clearly identified.

### ELECTRICAL CHARACTERISTICS

These models are available for either 208 or 240 applied voltage, 60Hz, 3 phase electrical connection in the USA. 220 or 240 applied voltage, 50/60Hz, 3 phase connection in the European Union.

Be sure to check the wiring diagram located inside the front panel. It shows electrical circuits and connections. See Access For Hook-Up under ELECTRICAL HOOK-UP.

When installed, the unit must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, or the Canadian Electrical Code, CSA C22.2, as applicable.

### ELECTRICAL CONNECTIONS

- Use copper wire only for connections.
- If power run is over 50 feet, use next larger size wire.

#### 2400E Suggested Wiring Capacity Table:

Phase	Volts	Amps	Wire	Breaker or Fuse
3	240	40	#8	50
3	208	42	#8	60
3	220/380	29.5	#8	40
3	230/400	25.2	#8	35
3	240/415	26.3	#8	35

## ELECTRICAL HOOK-UP



**Disconnect main power supply and turn unit OFF before installing power supply to the unit. HIGH VOLTAGE may be encountered. Only persons trained and equipped for checking high voltage shall perform electrical connections.**

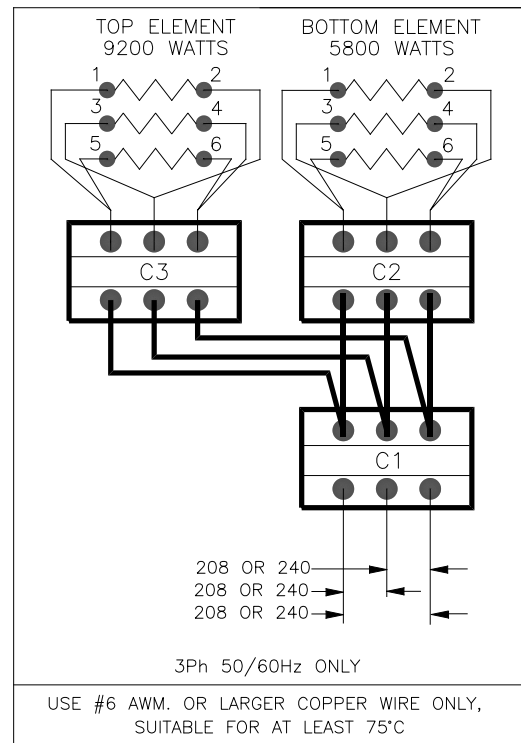
### Access For Hook-Up:

1. Disconnect main power supply.
2. Remove condensate pan and two screws from bottom of front panel. Pull out and down on bottom to remove.

### Phase Wiring:

Phase wiring diagram is located inside the front panel.

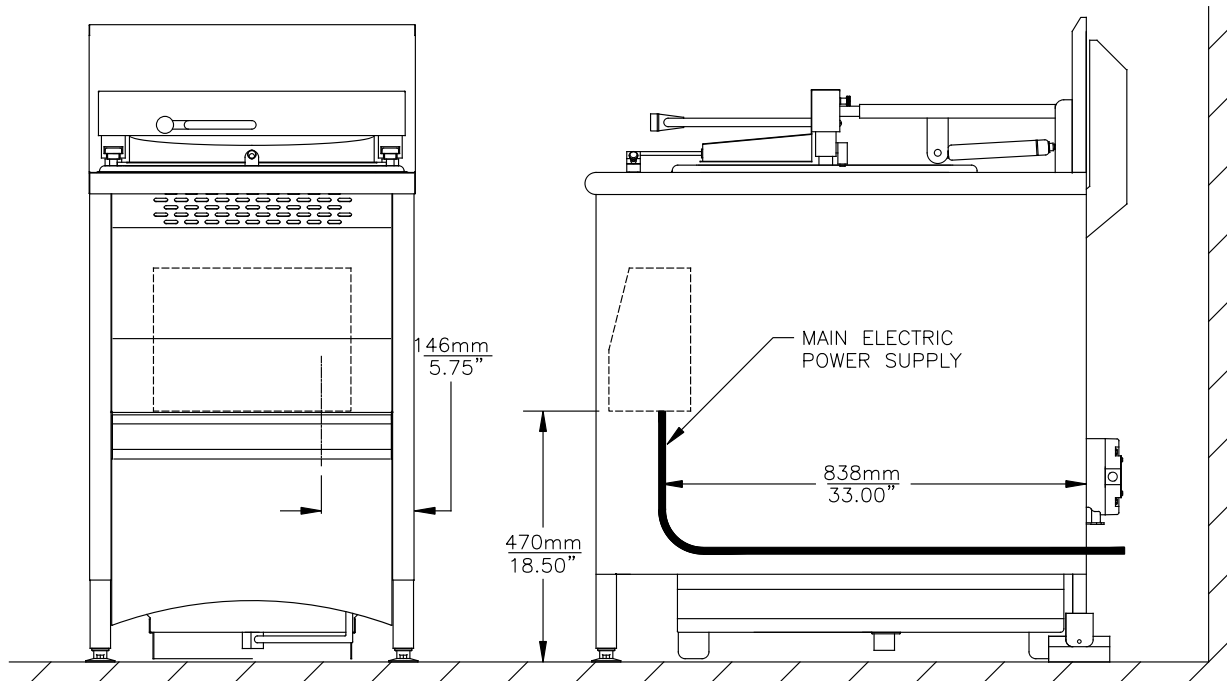
Electric units are shipped from the factory wired for 3 phase. In this case, applied voltage must be connected to L1, L2 and L3 of contactor C1 and a ground wire to the GND connector.



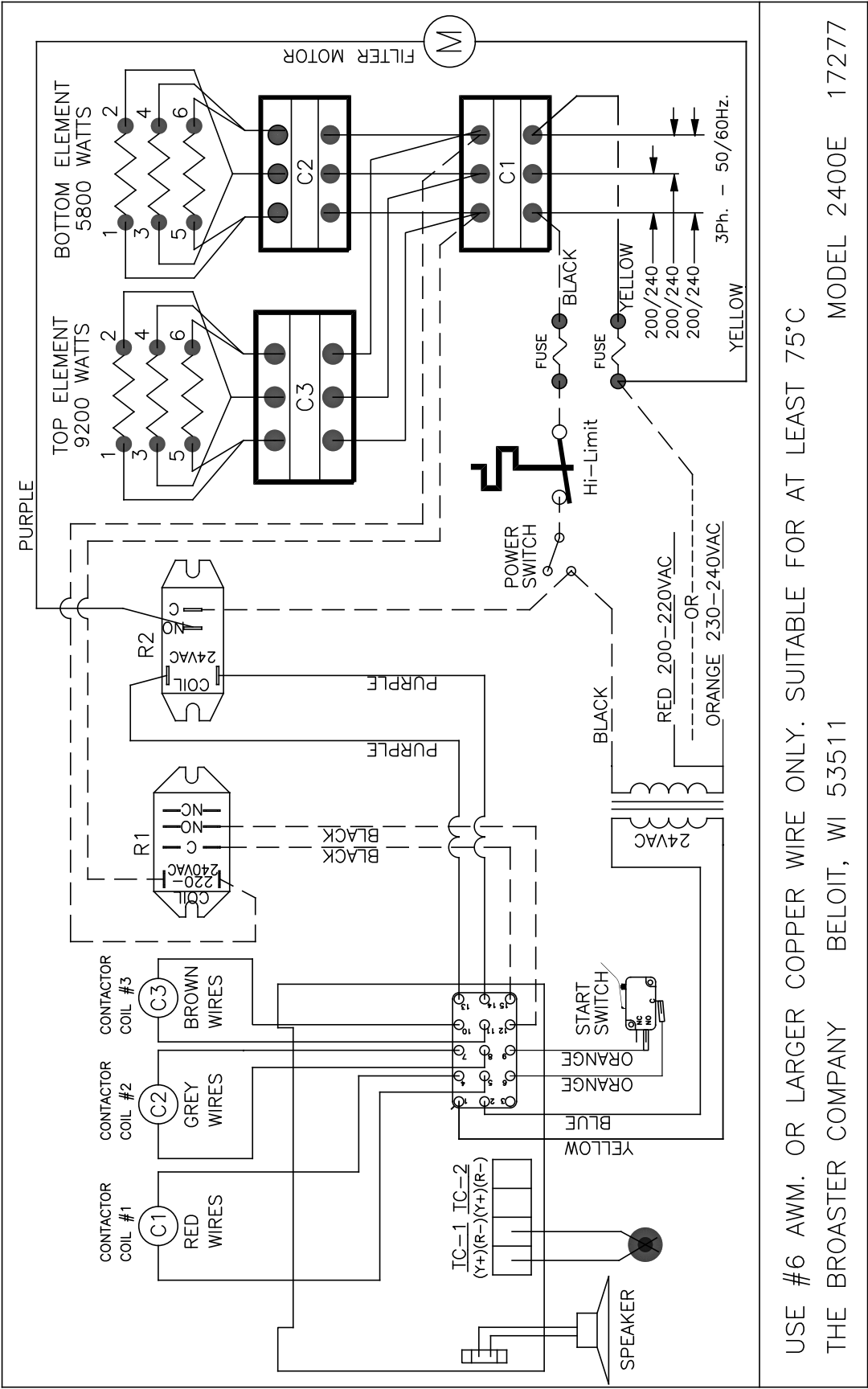
### Unit Dimensions For Electrical Hook-Up:

#### NOTICE

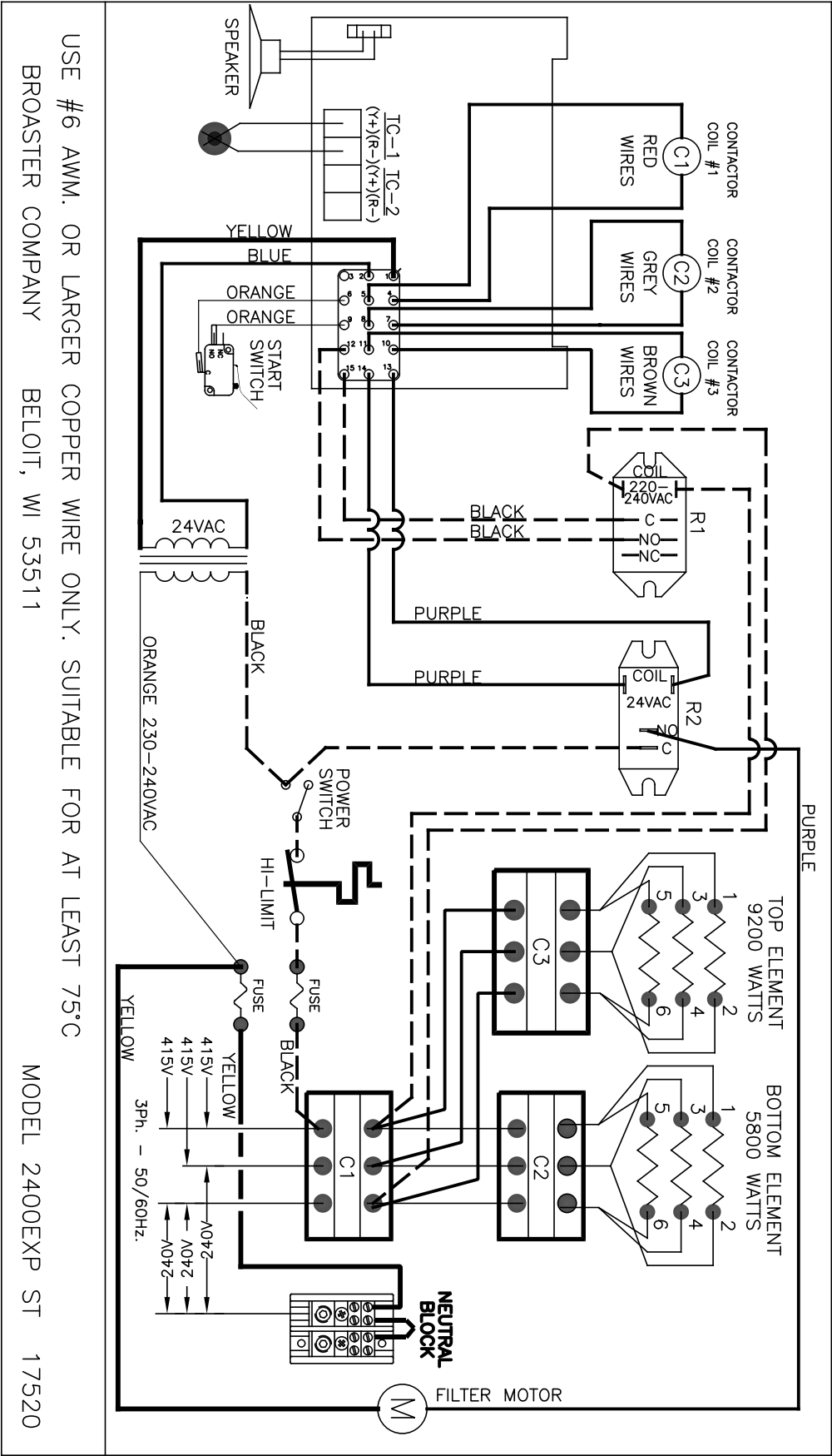
**Check all contactor screw connections to be sure they are fully tightened for proper electrical continuity.**



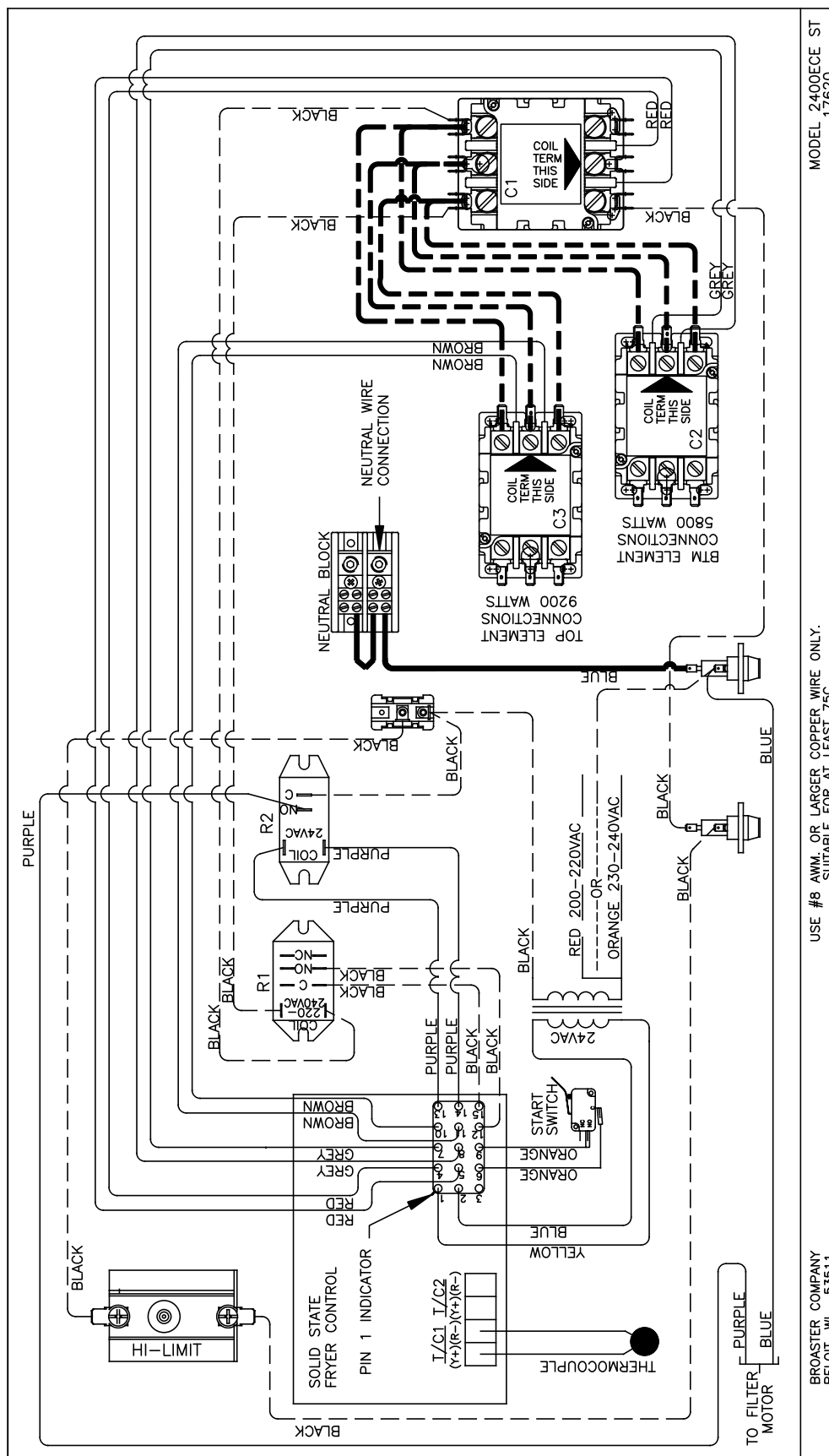
2400E 208 or 240VAC:



**EXPORT: 2400E ST 220/380VAC to 240/415VAC**









## 5 - OPERATIONAL CHECK-OUT

See operation manual for more detailed instructions.

### COVER ASSEMBLY

**⚠ CAUTION** **DO NOT** force cover open or closed when pressure regulating valve is closed. Damage to the unit may occur.

1. OPEN pressure regulating valve. Be sure pressure gauge indicates no pressure in cooking well.
2. To OPEN cover, push down on cover handle then rotate handle clockwise. Slide assembly to the rear of the unit until it stops. Then raise the assembly.
3. Remove basket lifter, envelope and all other items packed in the food basket.
4. Remove food basket and packing in bottom of cooking well.
5. To CLOSE cover, lower the assembly, pull assembly toward the front and rotate handle counterclockwise.

Cover should raise and lower easily, slide easily front to back and cover should lower and raise easily within the cooking well.

6. CLOSE pressure regulating valve handle.

Handle should slide easily from side to side and locking pin should move in and out over the cover.

### INITIAL STARTUP

#### ELECTRIC:

**⚠ WARNING** **DO NOT** operate unit without filter pan and filter pan cover in its proper position. Filter pan cover must be wiped clean after each filtering cycle.

1. Clean unit as outlined in the operation manual.
2. Make sure power switch is OFF.
3. Install cover O-ring as outlined under COVER in CLEANING section of operation manual.
4. Fill cooking well with cooking oil. See PRE-COOKING PREPARATIONS in operation manual.
5. Turn circuit breaker ON or install fuse.
6. Turn power switch ON. The controller will initiate and the COOK display will appear. HEAT ON will appear in the temperature box and the temperature will alternate between Low and the set temp.
7. Set time and temperature as described in section 6 of the operation manual.
8. Turn pressure regulating valve handle to CLOSED. The timer will start counting down. At the end of a cook cycle, an audible alarm will sound until pressure regulating valve handle is turned to OPEN.
9. If CHEC appears in display, turn unit off and back on.

## GAS:

**⚠ WARNING** **DO NOT** operate unit without filter pan and filter pan cover in its proper position. Filter pan cover must be wiped clean after each filtering cycle.

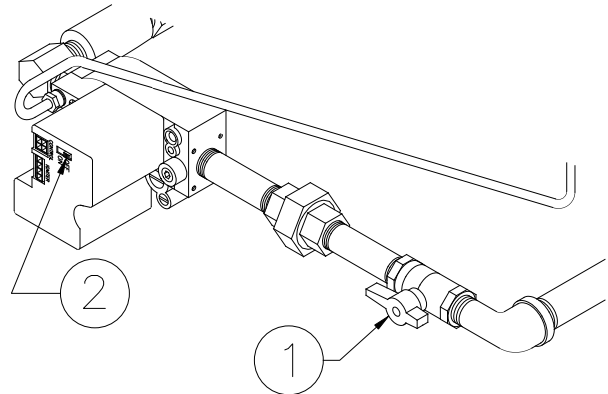
1. Clean unit as outlined in the operation manual.
2. Make sure power switch is OFF.
3. Install cover O-ring as outlined under COVER in CLEANING section of operation manual.
4. Fill cooking well with cooking oil. See PRE-COOKING PREPARATIONS in operation manual.
5. Turn circuit breaker ON or install fuse.
6. Turn power switch ON. The controller will initiate and the COOK display will appear. HEAT ON will appear in the temperature box and the temperature will alternate between Low and the set temp.

**NOTICE** Check to make sure burner is actually lit. If not see LIGHTING INSTRUCTIONS.

7. Check flame on top of burner. It should be all blue and settled on the face of the burner. If it is not, see MAIN BURNER FLAME ADMUSTMENT
8. If CHEC appears in display, turn unit off and back on.
9. Set time and temperature as described in section 6 of the operation manual.

10. Turn pressure regulating valve handle to CLOSED. The timer will start counting down. At the end of a cook cycle, an audible alarm will sound until pressure regulating valve handle is turned to OPEN.

## LIGHTING INSTRUCTIONS



### Start-Up:

1. Turn power switch OFF.
2. See OIL LEVEL in the operation manual.
3. Turn gas shut-off valve (1) ON. Wait five minutes before turning gas control ON.
4. Slide switch (2) on top of gas control to ON.

**NOTICE** The unit has an intermittent pilot burner. This type of pilot lights when the controller calls for heat and goes out when the controller isn't calling for heat.

5. To light pilot and main burners, turn power switch ON.

## Shut Down:

1. Turn power switch OFF.
2. Turn gas control switch (2) OFF.
3. Turn gas shut-off (1) valve OFF.

## MAIN BURNER FLAME ADJUSTMENT

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1. On the back of the fryer loosen the set screws holding the clamps on each side of the gas line support bracket.
2. While observing the flame, slowly slide the gas pipe from front to back in the support bracket. When the flame is as blue as it can get, re-tighten the clamps on each side of the support bracket to hold the pipe in position.

**Is the flame blue and settled on the face of the burner?** If it is, no further adjustment is necessary otherwise continue.

3. Remove the LH side panel.
4. Using an adjustable wrench or large pair of pliers, carefully change the angle of the orifice holder mounting bracket, up or down, so the orifice is pointing down the middle of the mixer tube.
5. Replace the side panel.

**NOTICE** To get the best flame several adjustments, both up and down and front and back, may be necessary.







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