BEECH OVENS™
WORLD LEADER IN SPECTACULAR COOKING EQUIPMENT

26A Curtin Ave West
Eagle Farm, 4009
Queensland, Australia
Tel: (617) 3397 0277
Fax: (617) 3397 0030
e-Mail: sales@beechovens.com.au
Web: www.beechovens.com
ABN 14 115 371 741

Installation and Operation Manual

TRN-TBR-TSQ Tandoor Oven Series

(Revision 8 – Jul 2022)

To obtain the best results from your Beech Oven, please read this manual in its entirety before operation.

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Introduction

This manual outlines the recommended methods and procedures for installation and operation of a Beech Tandoor Oven. Improper installation, adjustment, alteration, service or maintenance can result in property damage, injury or death. It is strongly advised that any personnel involved with the installation, commissioning or maintenance of the oven, read this manual in its entirety before installing or servicing this equipment.

Failure to follow the recommendation of the content of this manual, or the advice of Beech Oven personnel, may result in property damage, serious injury or death.

Failure to follow the recommendation of the content of this manual, or the advice of Beech Oven personnel, will void the manufacturer's warranty and liability.

A warranty document is supplied with every Beech Oven. It is compulsory that this document be completed and returned to Beech Oven's Head Office in a timely manner. Failure to do so will void the warranty of your product.

The following information is compiled to ensure that your Beech Tandoor Oven is installed and maintained to provide its safest and most efficient performance at all times.

All measurements shown are as a guide only. Refer to design documentation and technical specifications for correct dimensions.

Contact Information

Beech Ovens Head Office:
26A Curtin Ave West
Eagle Farm
Brisbane Qld 4009
Australia

Tel: +61 (0)7 3397 0277
Fax: +61 (0)7 3397 0030

Web: www.beechovens.com
E-mail: sales@beechovens.com.au
Technical Support: technical@beechovens.com.au

Important Information

WARNING: Improper installation, adjustment, alteration, service or maintenance of a Beech Oven can result in property damage, injury or death. Read the installation, operation and maintenance instructions thoroughly before installing or servicing this equipment.

It is recommended that suitably qualified professional personnel install this oven.

Installation of the exhaust system must be in accordance with your local authority guidelines.

The oven flue must be inspected at three monthly intervals to determine if soot, oil or carbon deposits have occurred. If deposits have accumulated, these must be removed to reduce the risk of fire *(refer to the* Maintenance *section in this manual)*

Do not use charcoal, wood or any other additional fuel source in gas or electric Tandoors.

For your safety

Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or ‘freshen up’ a fire in this oven. Keep all such liquids well away from the oven when in use.
Do not use products not specified for use with this oven.
Do not over fire.

Disposal of ashes

Ashes should be placed in a metal container with a tight-fitting lid. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled. Local regulations may apply.

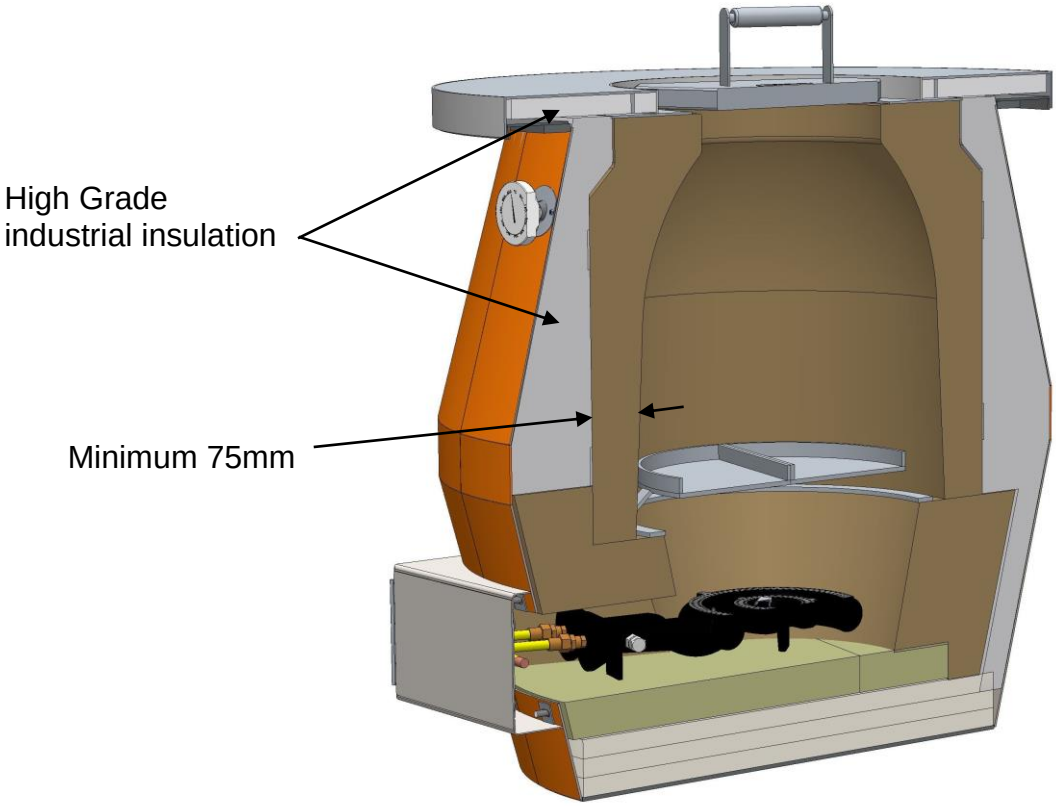
Retain this manual for future use

Additional copies of this manual are available from Beech Ovens, online or from your local Beech Ovens representative.

Dear Tandoor Purchaser

Please be advised:

- Due to the effects of thermal expansion on the ceramic Tandoor wall material, it is common for expansion cracks and small pieces of ceramic wall material to dislodge from the wall. This in no way reduces the cooking ability, insulating qualities or longevity of the oven and is considered normal for our Tandoors. In addition, all ceramic inners have a stainless steel band located both top and bottom to further prevent any separation of the ceramic pot. The pot integrity and performance is **guaranteed for 4 years**, however, you could expect many years of service from our pots. Call the Beech Ovens head office if you have any questions.



- As part of the commissioning procedure for gas Tandoors, it is important that the supply gas pressure is tested and the pressure regulator is adjusted to the specified pressures *(1kpa for natural gas and 2.75kpa for LPG).*

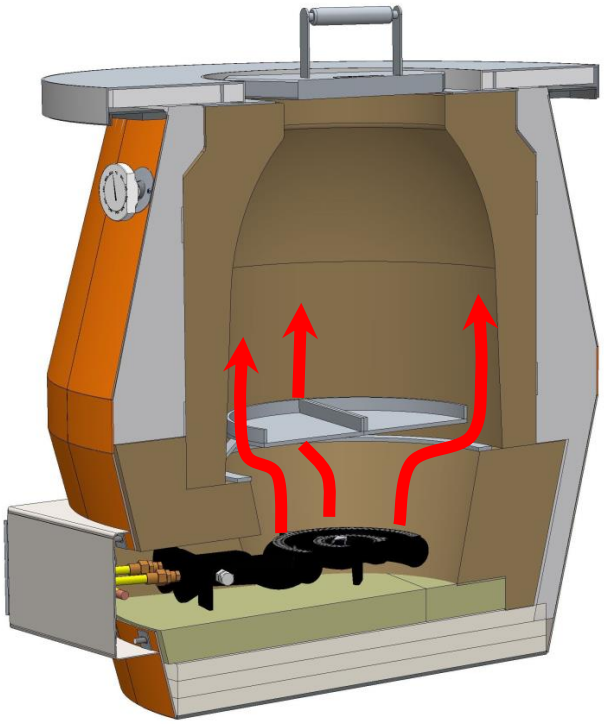
- Care should be taken not to overheat the Tandoor. Do not run the Tandoor at full power with the lid on for extended periods. From cool, 3-4 hours with the lid on is sufficient to bring the oven to operating temperature. After that, the flame should be adjusted down or the lid should be used only when cooking/baking food on skewers. Overheating by running at full power overnight with the lid on will damage the gas system components. This may void the warranty.

Overview

General

The Beech Tandoor Oven has been designed according to Refractory Engineering principals to produce an oven which outperforms all competitors through the use of modern hard wearing materials and highest grade insulating materials. This combination produces a long lasting Tandoor with very little heat transfer through the walls.

Beech Tandoor ovens are available in 3 standard formats – Round, Square and Barrel - and in 2 standard sizes – 500mm and 700mm internal diameter. The internal pot *(drum)* is fully insulated and surrounded by either a Stainless Steel outer of a Mild Steel outer barrel. All Tandoors can be mounted into a bench or the external surface clad with a non-combustible finish if required by the Interior Decorator.



Each Tandoor oven is supplied with a two-part Burner Cover to keep out any contaminants from the burner area. Heat energy flows evenly up the walls for consistent Naan and skewer cooking. For extra flavour, Charcoal or timber chips can be placed on top of this plate to smoulder and add flavour to the cooked food.

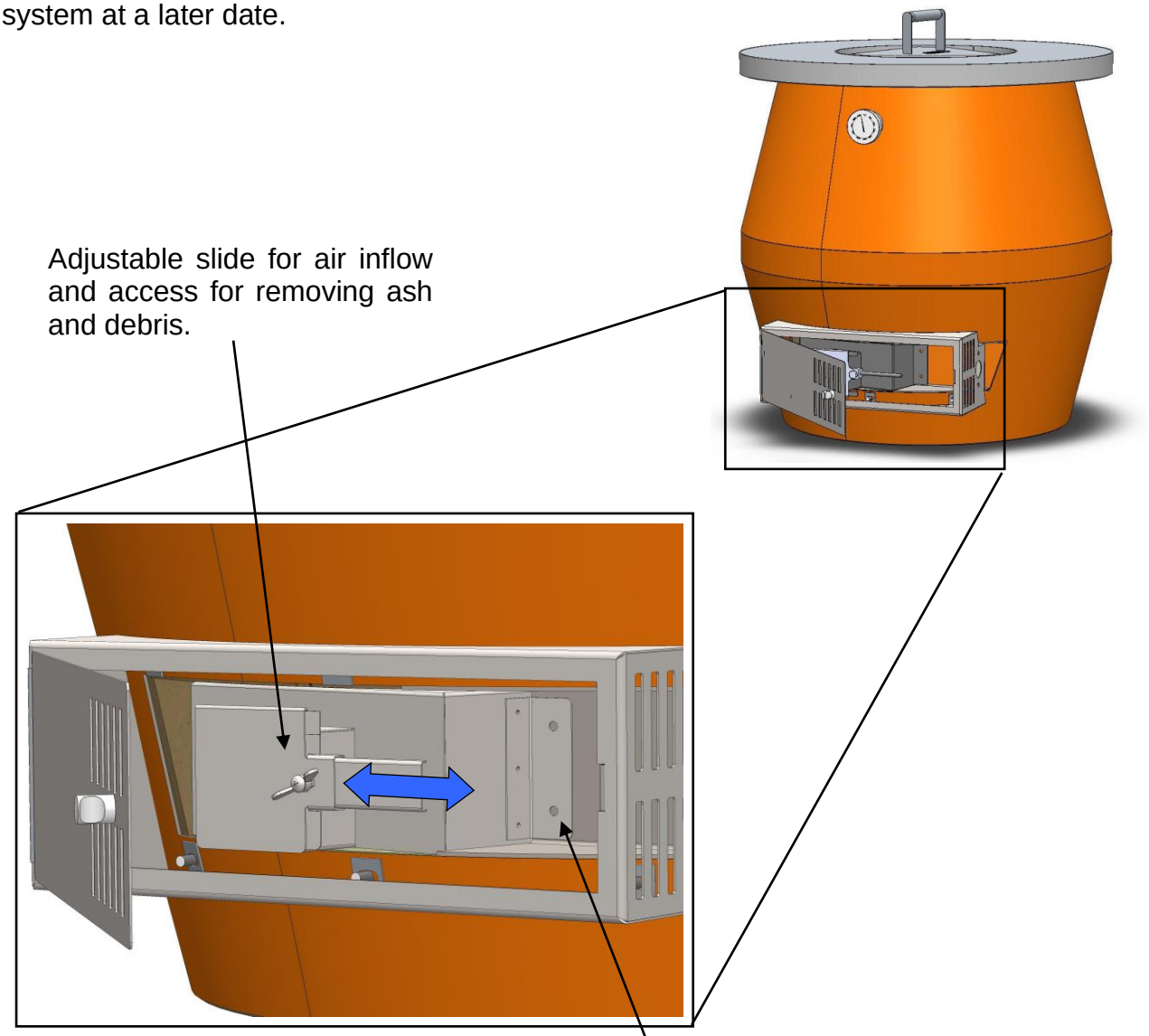
Firing Systems

All Tandoors are available as Charcoal, Gas or Electric as standard. All systems are replaceable and interchangeable.

Charcoal

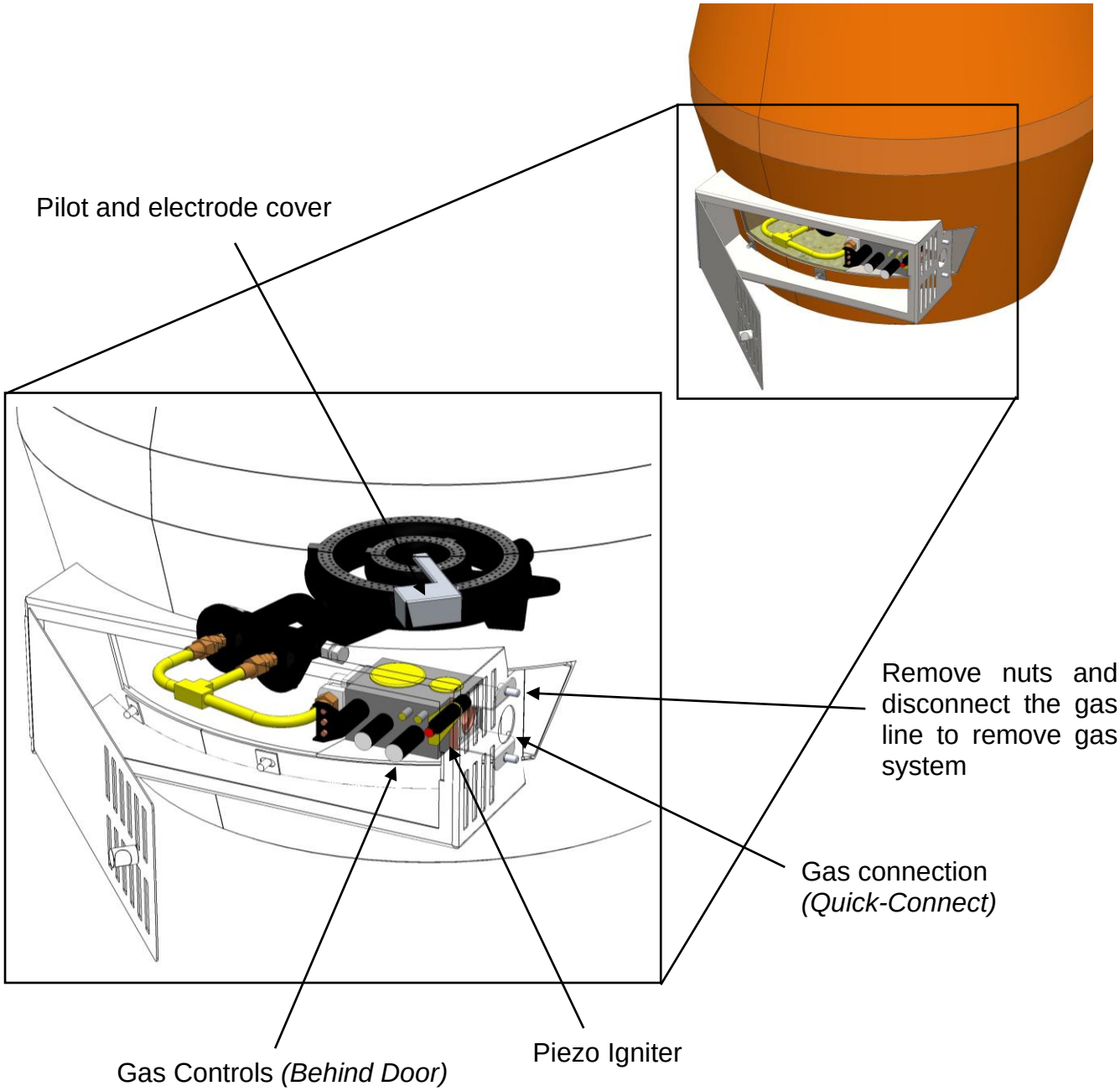
Charcoal inserts are a Stainless Steel plug installed into the burner inlet which allows access and ventilation to the internal burner area. Charcoal is placed into the base of the burner area and ignited. The access panel on the Charcoal Plug allows air flow to be controlled to give the desired internal temperature.

The charcoal plug can also be removed and replaced with either a gas or electric firing system at a later date.



Gas

For the Gas version, the gas jet layout has been designed specifically to avoid contamination by food or other contaminants entering the gas jets and clogging the system. A quick connect fitting allows the burner assembly to be easily removed for cleaning and maintenance. Regular cleaning and maintenance will ensure safe and consistent operation. *(Refer to the Maintenance section in this manual)*

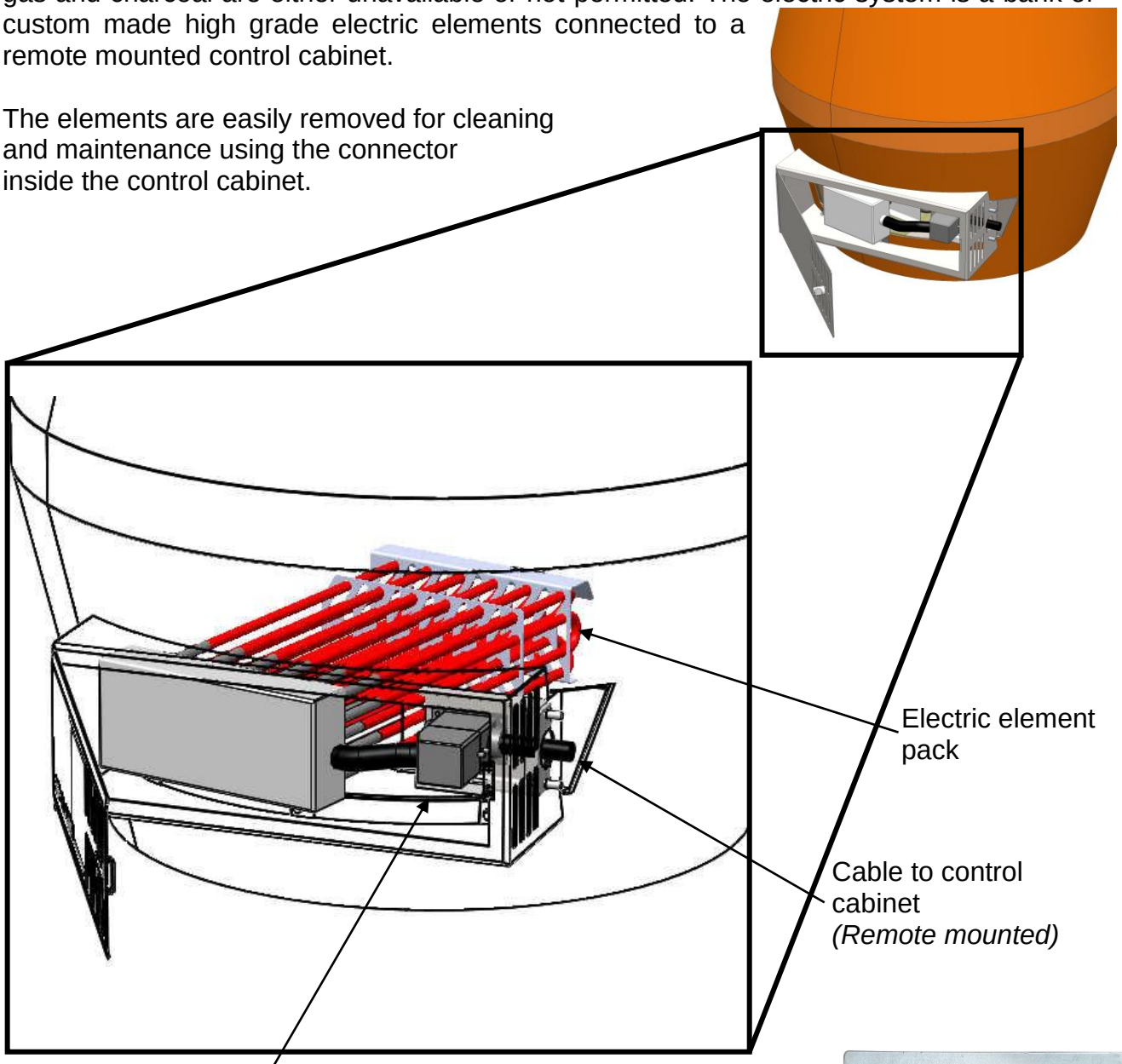


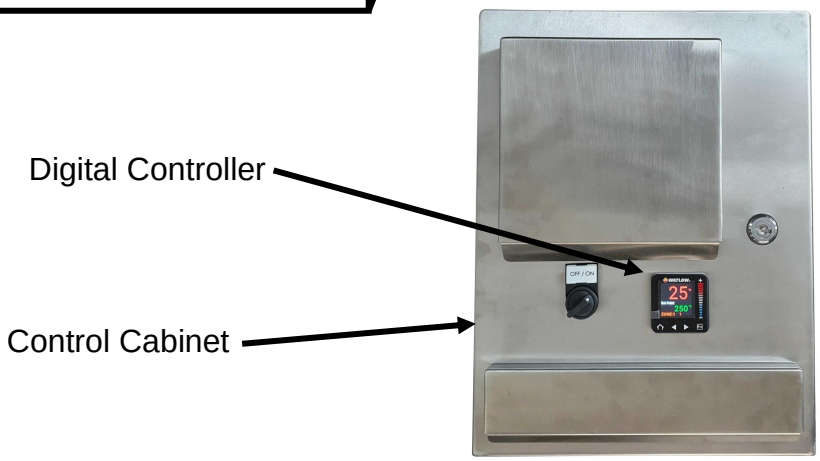
To remove the gas system for cleaning and maintenance, isolate and disconnect the gas line at the quick connect fitting, remove the 2 nuts on the side of the cabinet and carefully slide the gas burner and valve assembly out. Replace in reverse order.

Electric

Beech Ovens have developed the electric Tandoor firing system for use in places where gas and charcoal are either unavailable or not permitted. The electric system is a bank of custom made high grade electric elements connected to a remote mounted control cabinet.

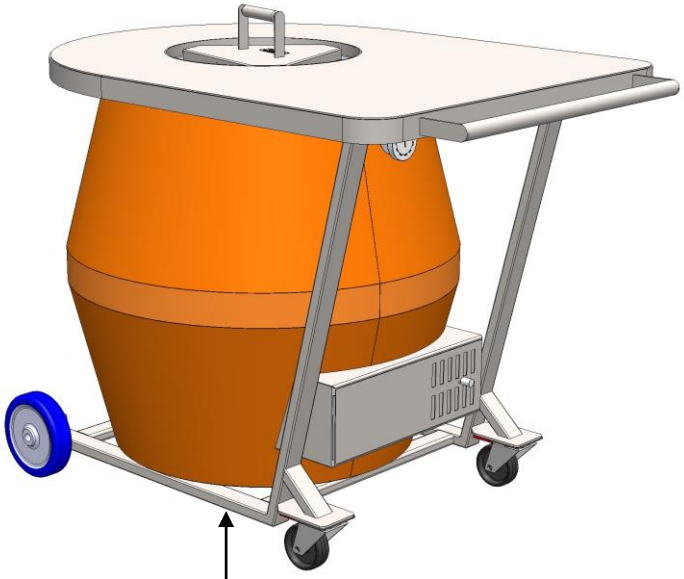
The elements are easily removed for cleaning and maintenance using the connector inside the control cabinet.



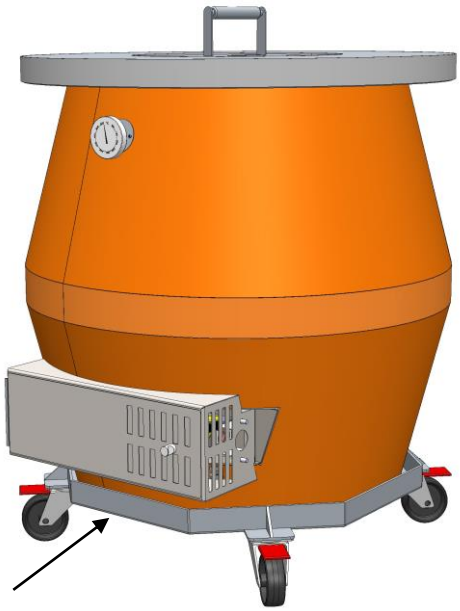


Portability

Both the Round and Square Tandoors come standard with heavy duty castors. These allow the Tandoors to be transported to open air venues (*e.g. poolside or outdoor functions),* internally if an exhaust canopy was available nearby and for cleaning and servicing. Castor trolleys are available for Barrel Tandoors as a separate accessory.



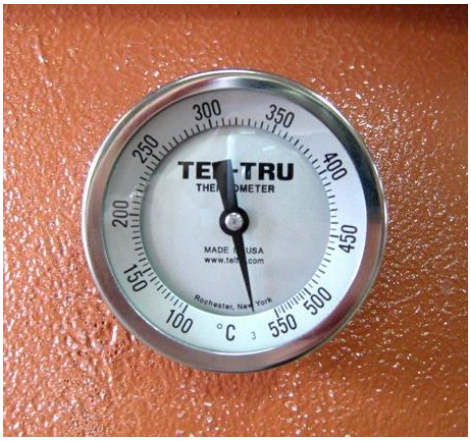
Mobile Workstation Trolley



Castor trolley

Thermometer

All ovens come with a temperature probe in the side wall of the oven. The perfect temperature for Naan cooking is 220 – 280 Degrees C. This is used only as a guide for showing the wall temperature and can have a slightly delayed reaction time.



Section 1 – Installation

Installation

Installation

Due to the “stand-alone” design of the standard Tandoors, the installation process is usually relatively simple. Most Tandoors are delivered with a Stainless Steel top, enclosed Control Cabinet and finished architectural outer casing. The instructions below outline the installation and connection procedures.

NOTE: *All Tandoors are extremely heavy and should be handled with care and attention. DO NOT attempt to lift without appropriate lifting and safety equipment.*

Oven Weights

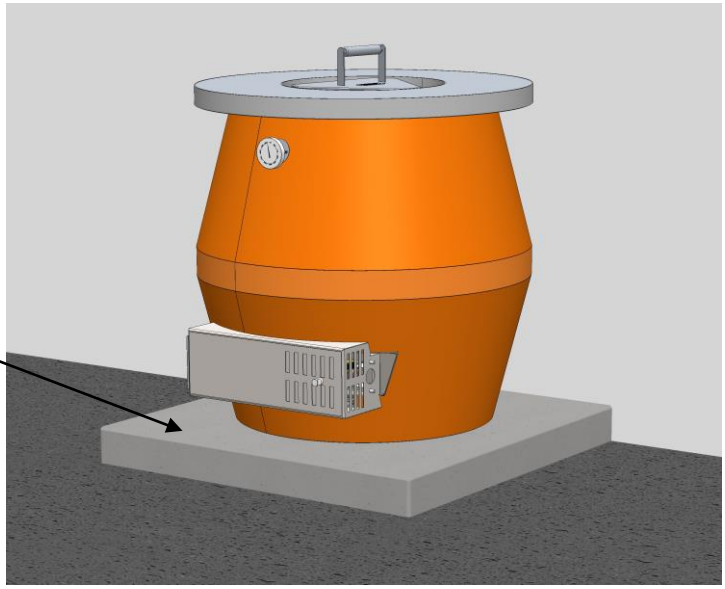
TRN0500, TBR0500 and TSQ0500 – 650kg Crated. *(Approx.)*
TRN0700, TBR0700 and TSQ0700 – 750kg Crated. *(Approx.)*

All Beech Tandoors should be installed under a suitable exhaust extraction canopy. These should be designed in accordance with local regulation and installed by qualified trades’ people.

Site Preparation

Before installing the Tandoor into position, check with your local Engineer to ensure that the floor is able to withstand the weight of the Tandoor. *(See Oven Weights table above)* The floor surface should be either constructed or covered with a non-combustible material to avoid any heat transfer causing damage or fire.

This is especially important with Barrel Tandoors as the base of the Tandoor sits flat on the floor surface. All Tandoors have the option of being installed on a plinth to raise the working height. If a plinth is used this should be constructed of a non-combustible material i.e. concrete, fibre cement sheet, etc.

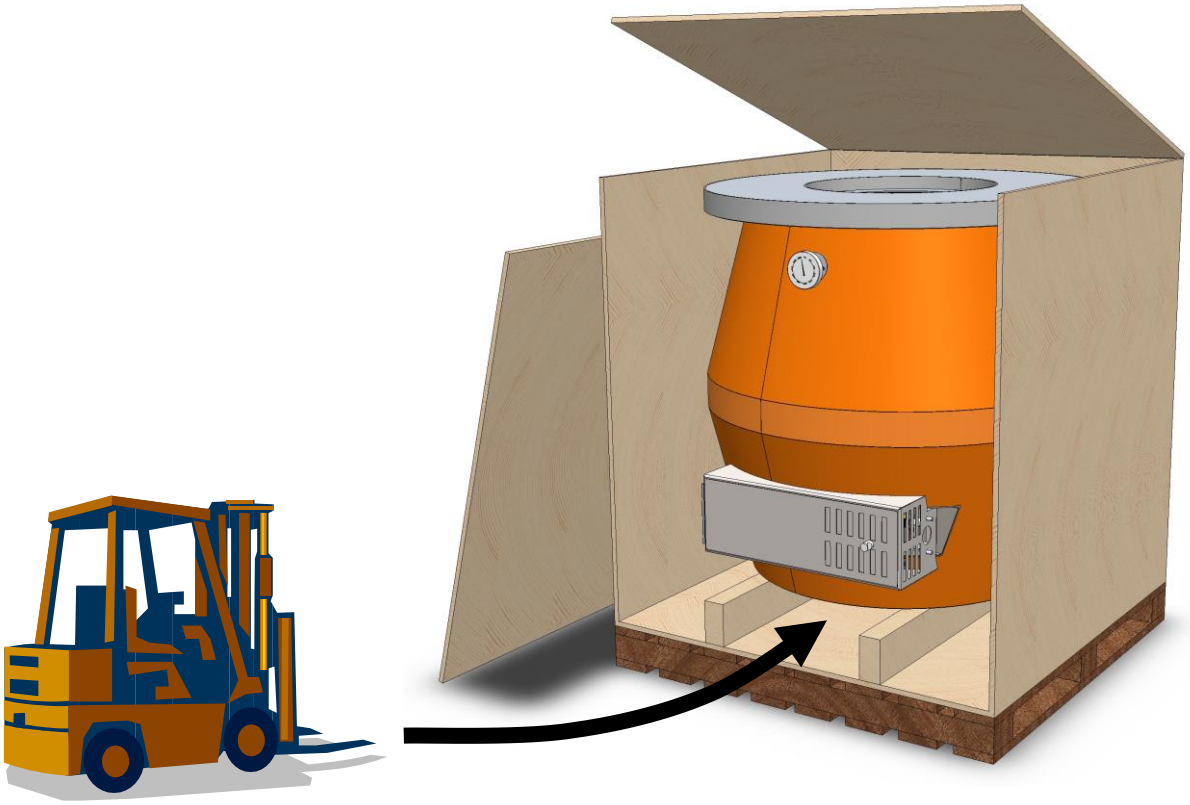


Unpacking

Most Tandoors are shipped in a fully contained plywood crate. Inside the crate the Tandoor components and documentation can be found both inside the Tandoor and in the surrounding crate. Check that these components and documents do not get misplaced.

Round and Square Tandoors are delivered with either castors or adjustable feet as standard. The easiest way to remove these from the crate is to lift them from the crate with the help of a forklift. Carefully insert the forks under the main body and lift free from the crate.

For Barrel Tandoors, there should be 2 beams that support the main body. Carefully insert the forks under the main body and lift free from the crate.



Once removed from the crate, the Tandoors can either be moved into position by a pallet trolley, forklift or by rolling on the castors. *(Note: for ovens on castors, the two swivel castors have locks for use as brakes when the oven is stationary)*

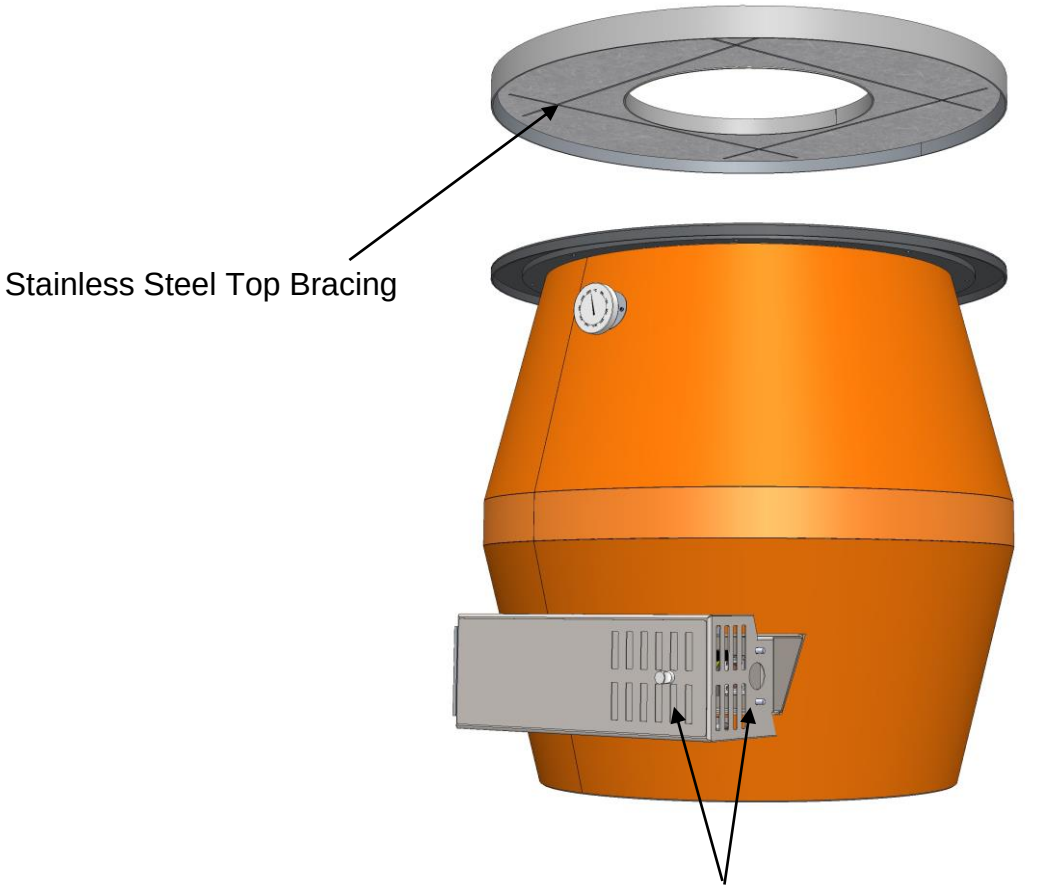
NOTE: *Be careful not to damage the castors or Tandoor by rolling over sharp edges or uneven flooring.*

Building In

The oven can be safely built in to most bench tops. Beech Ovens recommends the use of only non-combustible materials *(i.e. stone, fibre cement sheet, stainless steel, etc*) when enclosing or building up to the Tandoor body or top.

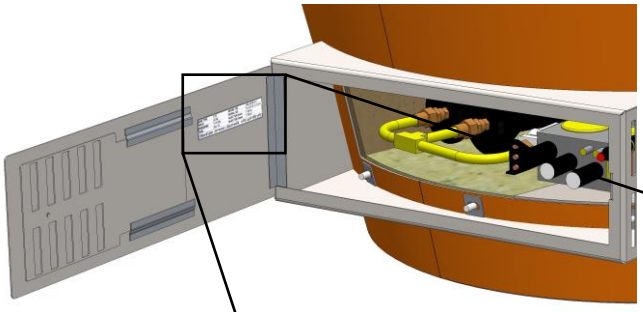
Contact Beech Ovens Head Office for more information on common stone bench tops and expansion joint detail.

If required, the stainless steel top of the Tandoor can be removed by removing the 4 rivets around the top edge. If the top is then to be modified to fit into an existing bench top, it is important that the new top follow the same construction method as the standard top. (*E.g. insulation, bracing, etc.)*



When enclosing or installing the oven into a common bench, ensure to allow sufficient access to the control cabinet and connection point for periodic cleaning, servicing and maintenance.

System Connection



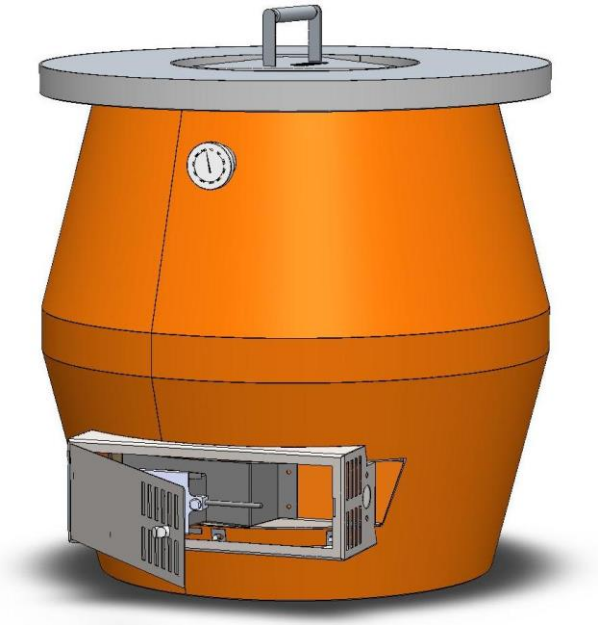
All Beech Tandoor Ovens that are Gas or Electric fired are delivered factory preset depending on the gas type or voltage specified at order stage. Please ensure that the Gas type or Electricity supply voltage on the data label is correct before connecting.

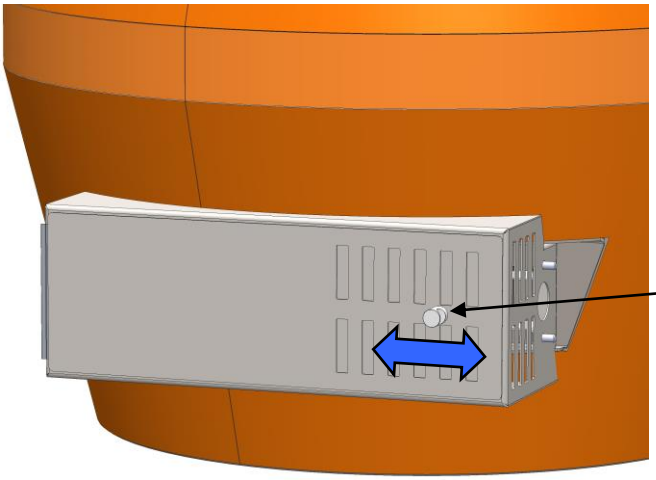
GAS TYPE	LPG	MODEL NO.	TNL-900B-05.1
INPUT	62 MJ	SERIAL NO.	TN-12732-13.1-520
PRESSURE	2.75 kPa	INJECTOR Inner	1.35mm
DOM	Dec-10	INJECTOR Outer	1.90mm
Beech Gas Services Australia +(61) 418 883 962			

All work required for installation must be carried out by approved persons and comply with all local codes and regulations in force at time of installation.

Charcoal Installation

If the Tandoor is to be fired using charcoal, once installed into position there is no further installation required. Ensure that the floor both underneath and directly in front of the Tandoor is constructed or covered using a non-combustible material. This is to ensure that any hot charcoal spillage does not damage or cause fire.





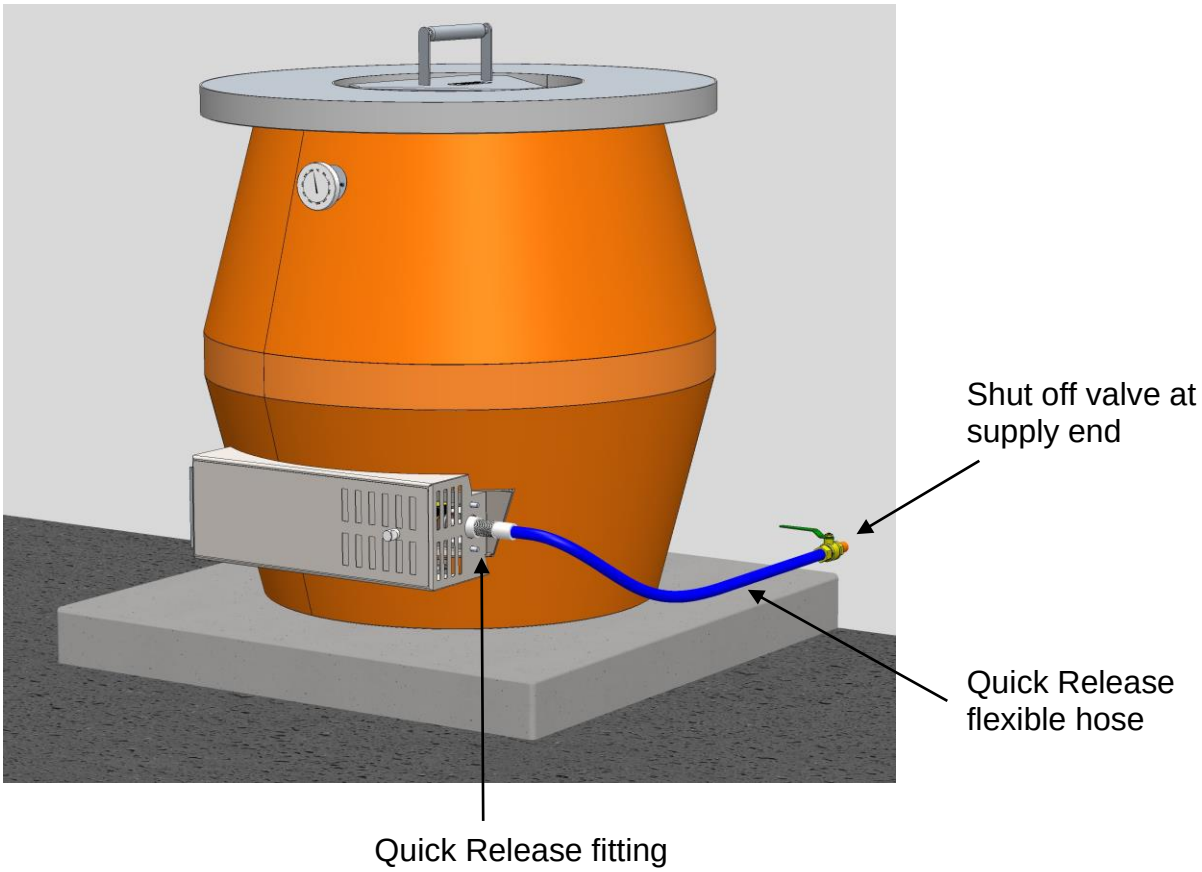
To adjust the amount of air flow, loosen the knob on the cabinet door and slide the fresh air inlet. When the required air flow is achieved, tighten the knob again to lock in position.

Gas System Connection Detail

Beech Ovens recommend that the Gas System should only be connected by authorised Gas Fitters *(Technicians).* Sizing of the main supply gas pipe should be determined by the Gas Fitter to achieve 60Mj at the appliance.

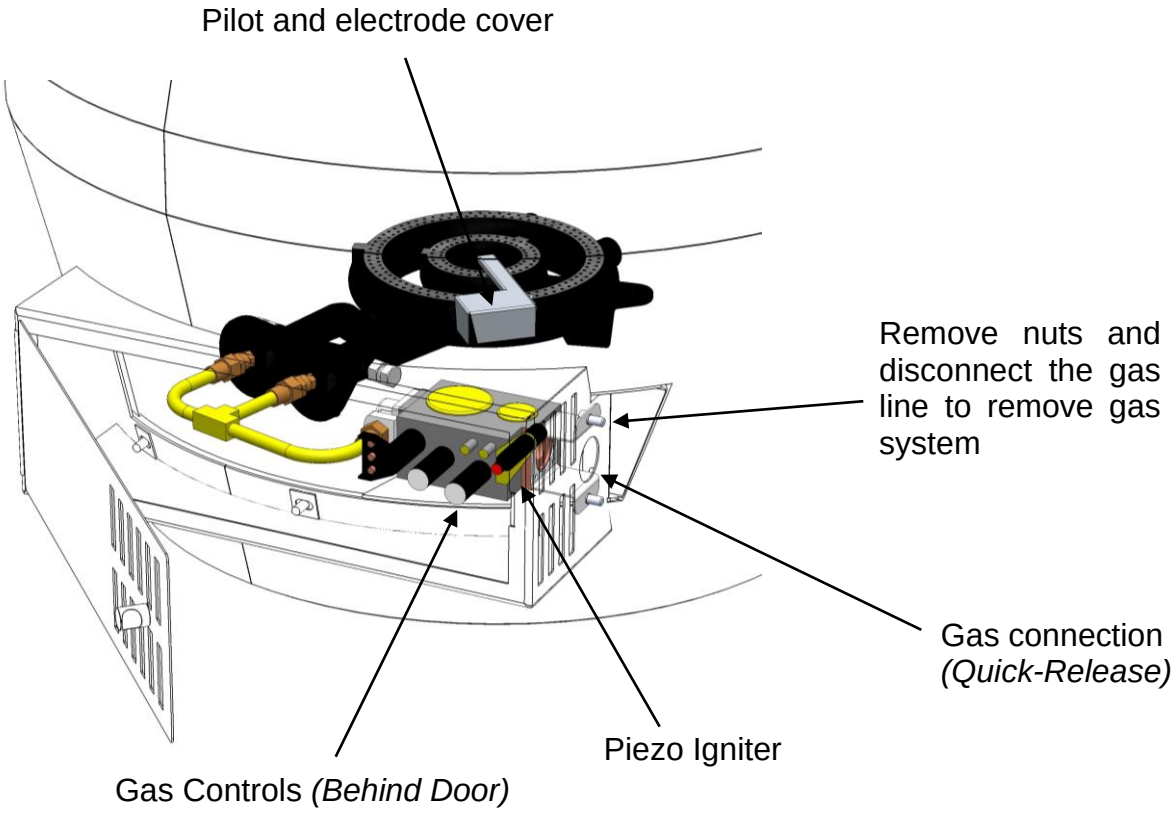
The Gas valve is designed to self-regulate excess inlet gas pressure provided that the inlet pressure does not exceed 6kPa.
If the inlet gas pressure is above 6kPa, a pressure regulator must be fitted.
Minimum supply pressures should be 1kPa for Natural Gas and 2.75kPa for LPG.

Mains Gas supply should always be connected first to a shut off valve before the quick release hose supplied with the Tandoor *(Blue flexible hose).* This quick release hose can then be connected to the fitting supplied on the Tandoor. The quick release fitting allows the Gas Burner Assembly to be removed easily for cleaning and maintenance.



NOTE: *Always isolate the gas supply before disconnecting the quick release fitting.*

The gas control valve, situated inside the control cabinet, has a Piezo ignition, pilot flame system and has a flame failure device which will shut the gas supply, should the pilot flame fail. The valve allows for high and low flame adjustment and the burner is a 2 ring, cast iron AC8 burner.



The gas system has been designed and assembled in accordance with all requirements of the AGA (Australian Gas Association). Each system is assembled and preset depending on gas type specified at order stage; Natural Gas, Propane (LPG) or Town Gas.

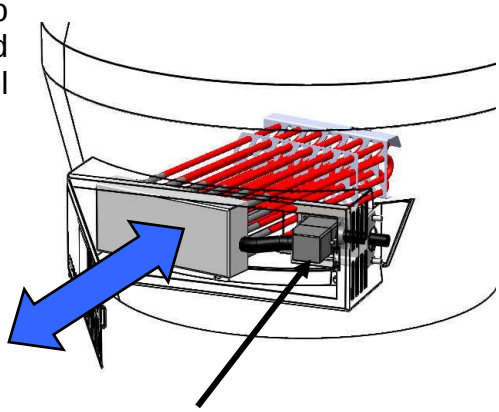
NOTE: *Connection of the Gas supply line should be carried out by qualified personnel. Be sure to check for correct gas type and set-up for local gas supply. Be sure that the lines are purged in accordance with local regulation.*

Gas Consumption

The thermal input for all Tandoors is 60Mj or 56869 BTU.
(*Sizing of the main supply gas pipe should be determined by the Gas Fitter to achieve 60Mj at the appliance.)*

Electric System Connection Detail

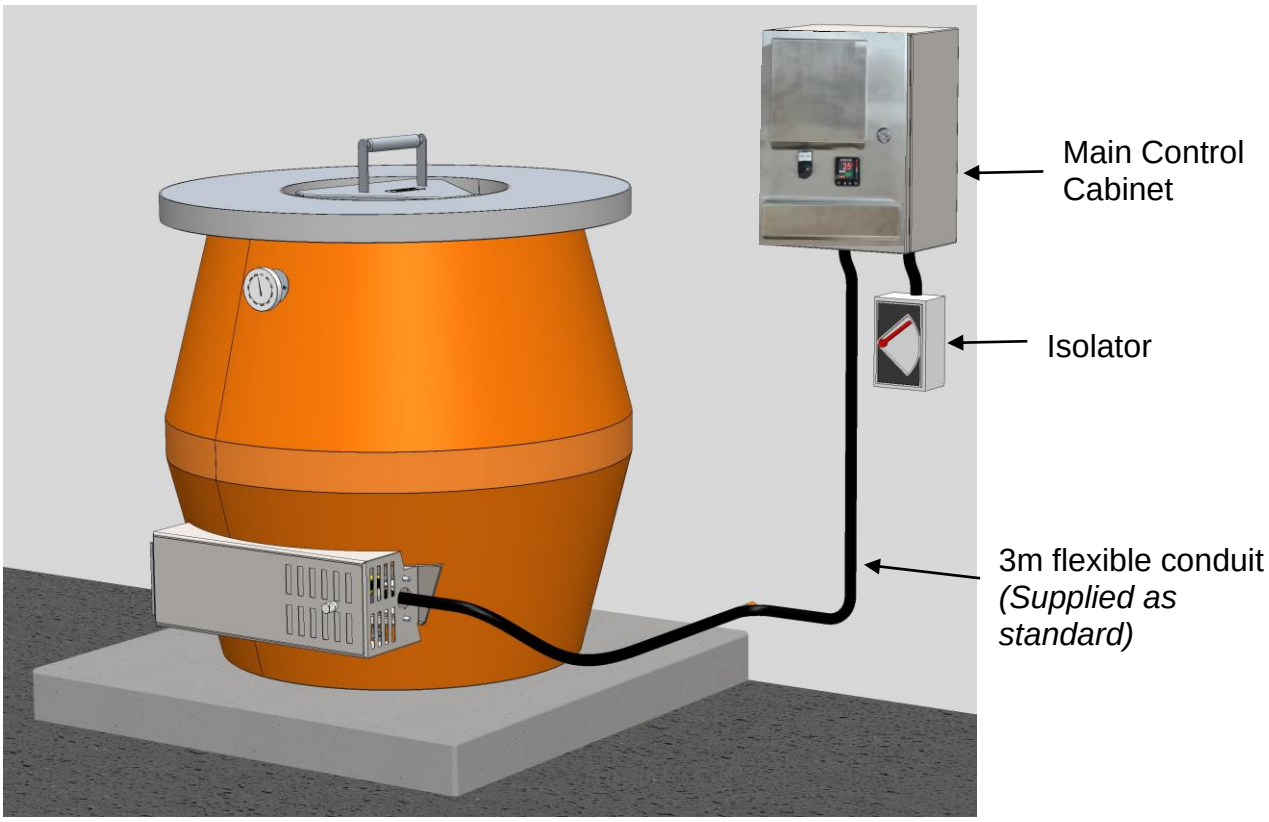
The Electric System for all Tandoors is designed to be easily removed for cleaning, service and maintenance using the connector inside the control cabinet.



Connector – unlatch to remove element pack

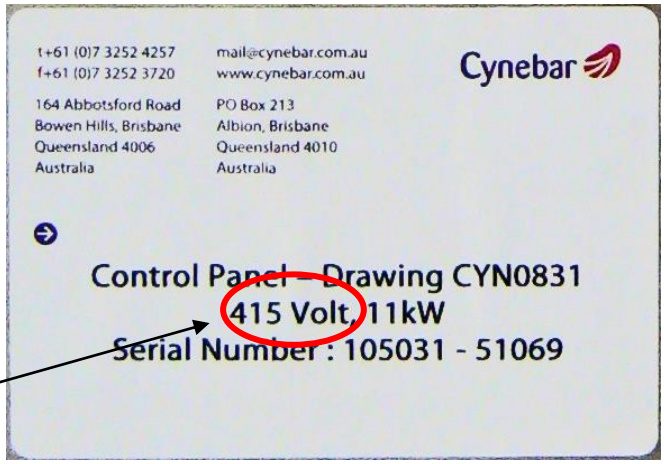
The main cable from the element connector is connected to the main control cabinet. This cabinet houses the control systems required to regulate and manage the heating elements in the Tandoor.

The main control cabinet should be fixed with appropriate fixings to a wall in close and convenient location to the Tandoor. The standard cable length between the main control cabinet and the Tandoor connector is 3 metres.



3 Phase power supply should be connected to the main control cabinet by a licensed and qualified Electrician. Beech Ovens recommend that a supply isolator be installed directly before the main control cabinet.

The supply voltage depends on the installation location. Supply should be 3 Phase *(between 380 and 440Volts depending on location),* 15 Amps per phase with no neutral @ 50Hz. Check that the supply voltage corresponds to that on the data label on the inside of the main control cabinet.



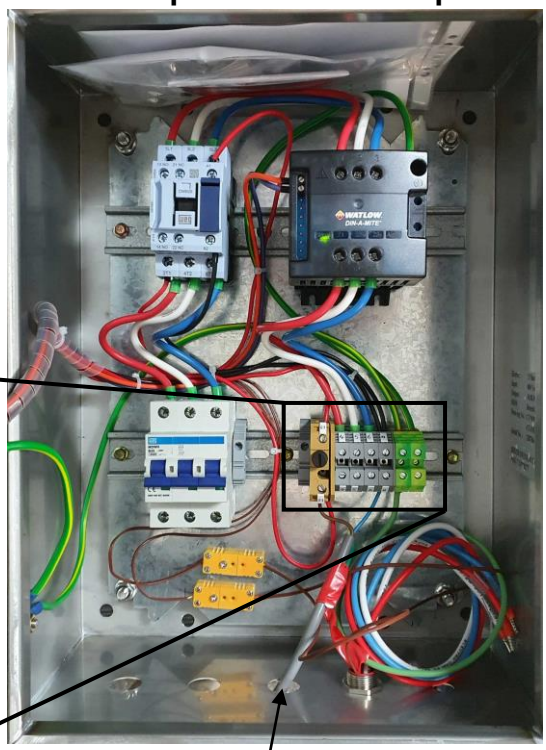
System Voltage

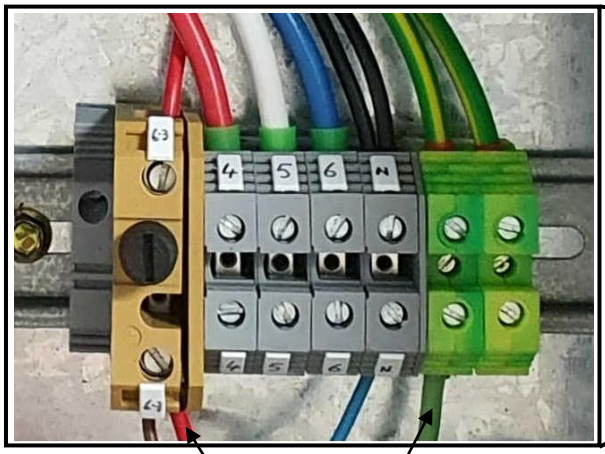
The cable from the Tandoor should also be connected to the main control cabinet to the appropriate positions as marked inside the main control cabinet.

Care should be taken to maintain the IP44 ingress protection. A lock should be fitted to the control panel handle to prevent unauthorized access.

Control panel with door open

Power supply should be;
3 phase,
15 Amps per phase,
4 core cable with 3 actives and 1 earth.





Main Power Supply in
(3 x power – 1 x Earth)

Mains power supply lead in here

Digital Temperature Controller

All electric Tandoor ovens come with a temperature probe in the wall of the oven. A remote digital thermometer is combined with the Digital Temperature Controller in the front panel of the main control cabinet. The digital temperature controller enables more consistent heat quality and reduced wastage by maintaining the set temperature.

For detailed information about how to use the controller, see the **Operation** section in this manual.

Precautions with Electricity

As with any electrical appliance care should be taken to protect the electrical components. Excess fluid should not be allowed into the oven cavity and reasonable care should be taken when using spears for baking not to damage the heating elements.

The mouth of the oven can and should be covered during and after cooking is finished for the night to retain heat in the Tandoor. This helps for a faster warm up period the next day.

Section 2 – Commissioning

Commissioning

Tandoor Wall Preparation

Most important:

Prior to cooking in any Tandoor ensure the following mixture is applied to the Tandoor inner wall *(cooking surface).* This is to prevent the Naan bread from sticking to the cooking surface.

Ingredients

1kg spinach *(minced very finely in blender)*
Natural yogurt *(750 grams)*
Mustard/olive oil *(thick oil)* 750ml
Salt 400 gram
Fenugreek *(500 gram)*

Method

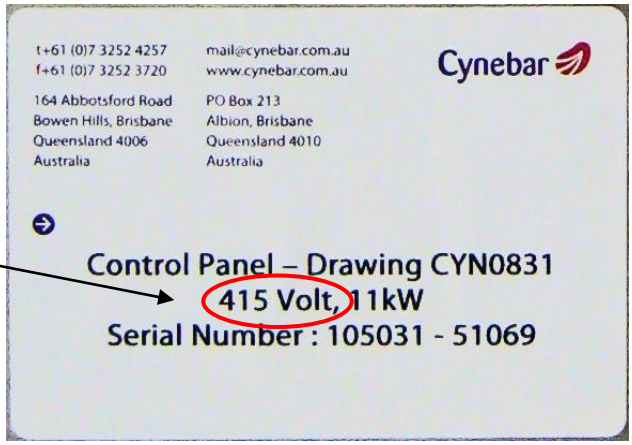
- Fenugreek is soaked in tepid water *(1.5litres)* for approximately 24 hours and ground finely in a blender.
- All the ingredients are then blended together and cooked for half an hour on low heat.
- This mixture is then rubbed on the inner wall of the Tandoor and then, after 1 hour, the oven is lit and set to a low heat.
- The Tandoor lid should be left on after lighting the oven.
- The above procedure should be applied three to four times in a day.
- The inner should be gently cleaned with a piece of cloth before each application of this mixture.
- For a new oven this procedure should be applied at least 6 times *(2 days).*
- For the best cooking results, this procedure should be repeated once a month.

Firing for the First Time

All Beech Tandoor ovens are factory pre-set to the requirements stated in the original order. Before starting the oven for the first time be sure to check that the electrical supply and gas type is the same as what is stated on the data label on the inside of the control cabinet door. DO NOT start the system if the electrical supply or gas type is different as it will not fire correctly. Contact Beech Ovens Technical Service department for further information.

GAS TYPE	LPG	**MODEL NO.**	TNL-900B-05.1
INPUT	62 Mj	**SERIAL NO.**	TN-12732-13.1-520
PRESSURE	2.75 kPa	**INJECTOR Inner**	1.35mm
DOM	Dec-10	**INJECTOR Outer**	1.90mm
Beech Gas Services Australia +(61) 418 883 962			

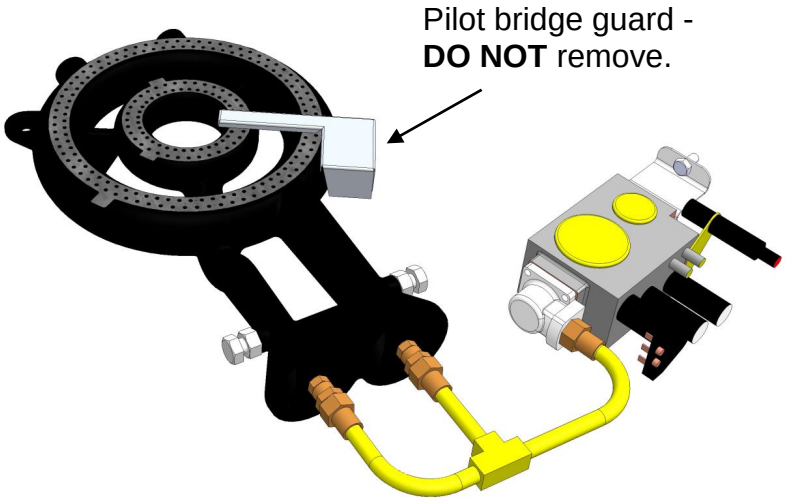
Electric Data Label located on the inside of the Main Control Cabinet with supply Voltage, kW rating and Serial Number.



Gas Pressures

When firing for the first time it is important to check that the gas pressures are set correctly in accordance with the data label on the inside of the control cabinet door. These pressures should be 1kPa for Natural Gas and 2.75kPa for LPG *(Propane).* Ensure that the gas supply is ON and that there is adequate mains supply to the Tandoor.

The Pilot flame is located under the stainless steel bridge guard which enables both burner rings to be ignited simultaneously. The guard also acts as protection form any draft that may affect the pilot flame and cause it to blow out. DO NOT remove this guard unless in order to replace or maintain.



Gas Pressure Testing – Sit Nova 820

The following section explains the procedure for testing gas pressures for the Sit Nova 820 Gas valve. The valve allows for use ONLY with the gas type stated on the data label. Conversion kits are available to purchase from Beech Ovens Head Office technical@beechovens.com.au or your local Beech Ovens representative.

NOTE: *Never attempt to convert gas types without first changing the valve and data plate in the Gas control cabinet. This testing procedure should be carried out by an experienced gas technician and is performed in situ with the system fully operational.*

The testing procedure is identical for Propane and Natural gas systems, though the reader must refer to the General Technical Details chart for adjusted pressure requirements.

Inlet *(Supply)* Pressure

Before calibration, check that all other kitchen appliances connected to the main Gas supply line are running at maximum capacity. If flame calibration of the oven is done independently of other appliances being in use, the following steps will need to be repeated when these appliances are running to ensure the main Gas supply is capable of the supplying the required flow.

To begin adjustment, the main Gas supply pressure should first be checked on the inlet side of the valve to confirm that sufficient pressure is being supplied.

The screw for the Inlet *(supply)* pressure test point *(7 in below diagram)* can be removed and an appropriate fitting or hose used to connect to the test gauge. This should confirm supply pressure in excess of the required pressure of 1.0kPa for Natural Gas and 2.75kPa for Propane Gas. Should supply pressure fall below these levels, gas supply to the kitchen will need to be improved.

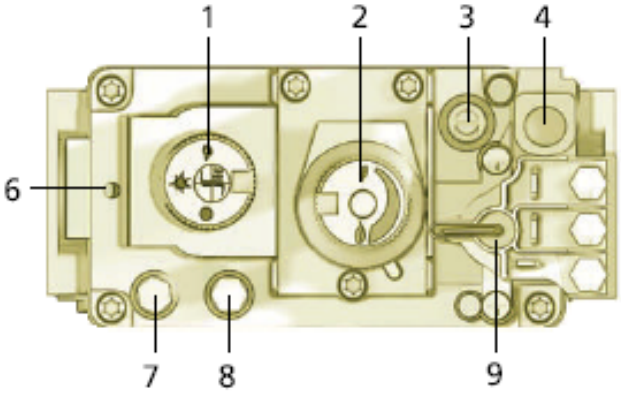
NOTE: *Pressure above 6.0kPa will damage the valve. If supply pressure is above 6.0kPa, a pressure regulator will need to be installed.*

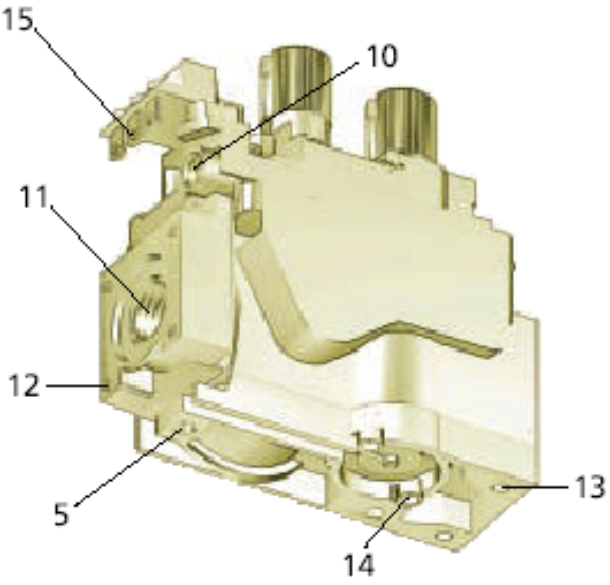
Replace the inlet pressure test point screw and tighten to 2.5Nm.

The Tandoor valve is factory set to achieve the correct High and Low flame size. For detailed information on how to adjust the High and Low flame size, please contact Beech Ovens technical department at technical@beechovens.com

DESCRIPTION

1 Control knob
2 Main gas flow manual adjustment device
3 Adjustment screw for gas flow to the pilot
4 Thermocouple connector
5 Alternative thermocouple connector
6 Provision for accessories support bracket
7 Inlet pressure test point
8 Outlet pressure test point
9 Actuating solenoid valve
10 Pilot outlet
11 Main gas outlet
12 Holes (M5) for fixing flanges
13 Supplementary valve body fixing points
14 Connection for pressure regulator / combustion chamber compensation
15 Thermopile and thermostat connection





TECHNICAL DATA

• Gas connections:	Rp 1/2 ISO 7 (1/0 3/8" on request)
• Installation position:	any position
• Gas families:	I, II and III
• Maximum gas inlet pressure:	60 mbar
• Outlet pressure setting range:	3...30 mbar (20...50 on request)*
• Working temperature range:	0...70 °C
• Pressure regulator:	Class B
• Automatic solenoid valve:	Class D (Class C on request)

* Versions without manual gas flow adjustment device

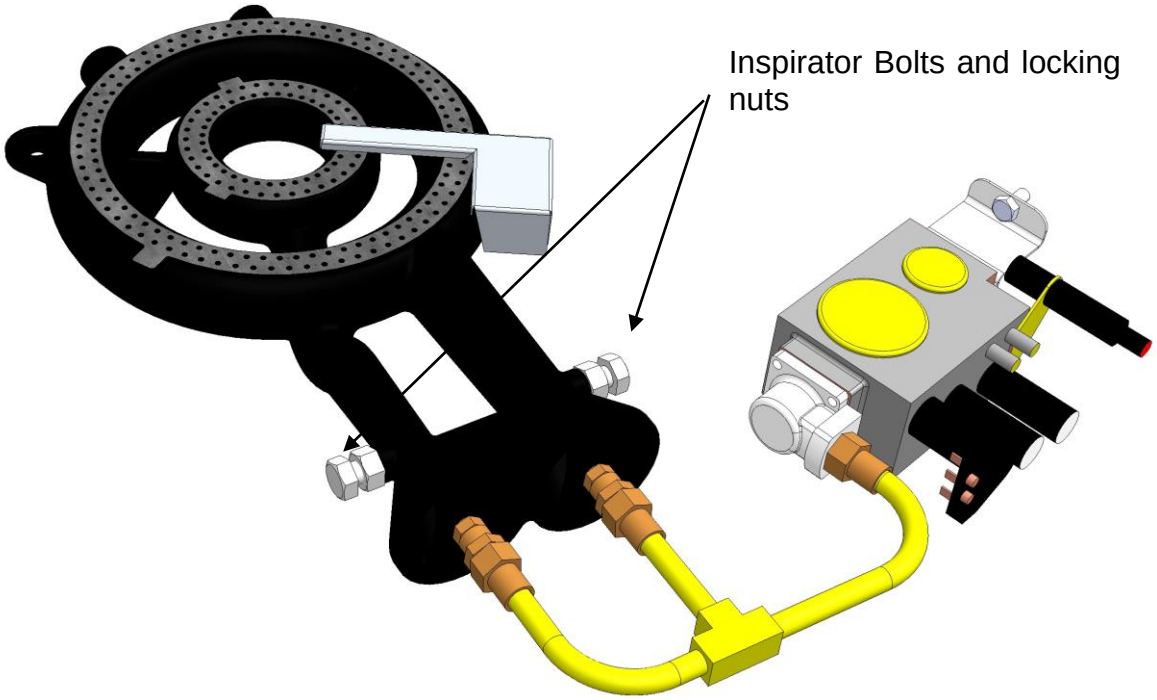
THERMOPILE POWER SUPPLY

Use two-wire thermopile

Voltage with open circuit	≥ 350 mV
Voltage with closed circuit	≥ 100 mV
Resisistance of the coil	1.6 ohm

Inspirator Calibration

The gas burner should have long soft blue flames with an occasional yellow duty flame. The type *(NOT size)* of flame can be adjusted by the air mixture adjustment on the inspirator. On the side of the shanks of the burner are two *(2)* M12 bolts that have locking nuts up to the burner body. These are normally factory set to achieve the correct flame though in some instances this may require adjustment to achieve the above described flame.



To adjust the air mixture and flame type;

Loosen the locking nut

Adjust the bolt either in or out until the correct flame is achieved

Re-tighten the locking nut.

Exhaust system is functioning correctly

Before firing for the first time, ensure that the Tandoor is installed under an approved exhaust canopy/system. Considerable exhaust gases and fumes can be expelled from the top of the Tandoor and must be ducted out of the kitchen space. *Refer to your mechanical contractor as this is not usually supplied by Beech Ovens.*

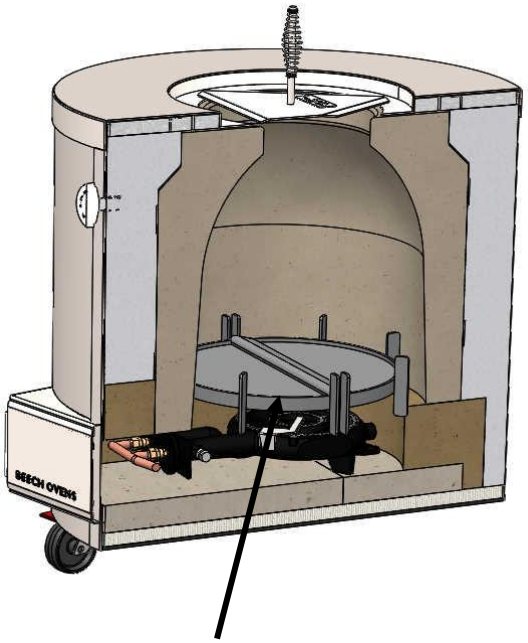
Electrical Supply *(Electric ONLY)*

Ensure that the mains power is correctly connected and the main power supply switch is ON. *See Operation section for detailed instructions.*

Burner Covers

The burner covers are designed to both protect the burners from debris and user damage and to redirect the heat from the burner up the internal walls.

Before firing the Tandoor, check that the burner covers are installed correctly. If the covers are not installed correctly, the Tandoor will not function correctly and you may run the risk of permanently damaging the burners.



Installation & Commissioning Check Sheet

Please complete and return to Beech Ovens after commissioning.
Failure to return this form may void the warranty of the oven.
A signed copy must remain with site personnel.

Commissioning Technician: _____ Date: _____

Installation Contractor: _____

Install Date: _____

Model: _____

Serial Number: _____

Customer Name *(Executive Chef/ Hotel Engineer/ etc.):* _____

Installation Address: _____

Phone: _____

Email: _____

Beech Ovens contact information

Beech Ovens Head Office:
26A Curtin Ave West
Eagle Farm
Brisbane Qld 4009
Australia

Tel: +61 (0)7 3397 0277

Web: www.beechovens.com
E-mail: sales@beechovens.com.au
Technical Support: technical@beechovens.com.au

Installation Check Sheet

Assembly Check:

□ Fitted Oven Components. *(Lid, Tools, Burner cover, etc.)*

□ Ensure that ONLY non-combustible materials are used in the construction of any façade surrounding the oven, including the areas closest to the oven.

□ Check that a compliant exhaust extraction system is installed.

□ Check that the burner covers are fitted correctly.

Gas / Electric Connection:

Gas

□ All Gas fittings tight and correctly connected.

□ Shut-off valve installed prior to the flexible supply hose.

□ Burner mounted firmly in position.

□ Check quick release connection firmly in place.

□ Gas Type corresponds to that stated on the data plate in the Gas control cabinet.

Electric

□ Electrical supply voltage is in accordance with data plate.

□ Main Control Cabinet fixed firmly to wall.

□ Cables connected correctly and firmly in main control cabinet.

□ Elements installed correctly and connector firmly coupled.

□ Cable between Tandoor and main control cabinet routed safely and correctly.

General Installation Check:

□ Tandoor is level – oven is stable in position.

□ Check that the floor beneath the Tandoor is constructed of non-combustible material.

□ Check to ensure that suitable fire extinguishing equipment is close at hand.

Commissioning Check Sheet

Gas Pressures:

□ All relevant Gas supply is correctly connected to the Gas control cabinet, the flexible gas tube is connected securely to the Tandoor and the manual valves are open (On). Check for leaks.

□ Check gas pressures with the burner operating and at least 80% of all gas appliances in kitchen operating.

□ Check the Flame size and colour to make sure the correct gas pressures are calibrated.

□ Check burner High and Low Flame settings.

□ Check that the Inspirator is correctly calibrated to give the correct flame colour.

General Commissioning check:

□ Check that an exhaust canopy, or equivalent, is installed and compliant with local regulation.

Operator Training:

□ How to work the Tandoor.

□ Preheat instructions.

□ Insert Lid and burner covers correctly.

Gas safety:

□ How to isolate gas supply to the oven if the smell of gas is detected near the oven.

□ Starting sequence – Check power/gas, Canopy/Fan on, Check heat-up.

□ Digital Temperature controller operation. *(Electric Only)*

□ Warranty card returned.

□ Installation and Operation Manual has been received by the Client/Operator.

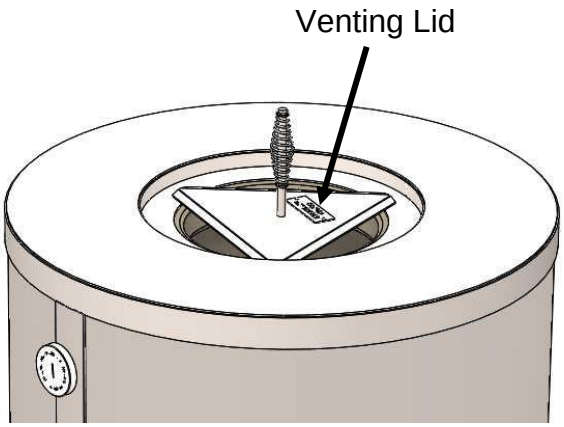
Section 3 – Operation

Operation

Operation

General Warnings

The following warnings should be adhered to:



- Due to the nature of Tandoor ovens the top surface and lid can become very hot.
- When using the Beech supplied Venting Lid, care should be taken when handling and placing this lid as it can be very hot.
- The appliance is not intended for use by young children or infirmed persons without supervision.
- Young children should be supervised to ensure that they do not play with the appliance.
- Any installation or maintenance on the electrical system should be done by a qualified technician.
- Never completely cover the top of the Tandoor. Ventilation is always necessary.
- A lock should be used for the control panel handle to prevent unauthorized access.

Cooking with the Beech Tandoor

The performance of the Beech Tandoor oven relies heavily on the operating temperature, the type of fuel used *(e.g. Gas or Charcoal)* and the skill of the operator.

Because there are so many variables and subtleties, there is certainly a learning curve for people not accustomed to this style of cooking.

The gas fired Tandoor oven typically is a manually operated oven having no form of thermostat because of the way it operates. It is traditionally operated under constant supervision when cooking Naan and semi-regular supervision when cooking with skewers.

Gas operation

Because of the nature of this oven and the high temperatures in the flame area, a manual system of gas control has been installed.

The main burner valve can be adjusted to High Flame for initial heat up but may need to be reduced to Low Flame once the desired cooking temperature is achieved. In our tests, a wall temperature of approximately 250-280°C has proven perfect for Naan bread.

Heat Up times

When the oven is cold, it will take approximately 4-5 hours to get to temperature. Subsequent days it will be already be warm from the previous days cooking if the lid has been fitted correctly.

NOTE: The Beech Tandoor oven has significantly thicker walls than typical Tandoor ovens and will always heat up slower; however it will retain its heat for much longer. By leaving the lid on the Tandoor overnight, much of the heat is retained and a much quicker warm up period will result the next day.

Precautions with Gas

The lid to the oven has been designed so it does NOT totally cover the opening to ensure that there is always an area for combusted gas to escape. *(See image above)*

Having the mouth of the oven closed off completely *(utilizing an alternate lid)* with the main burner running will lead to a dangerous situation.

If flame appears at any stage out the control cabinet door, turn the main gas valve off. Check that the area around the burner and the top opening are clean and free of debris before running the start procedure again. **If the burner backfires, turn the gas supply off and contact your gas specialist.**

The mouth of the oven can and should be covered after the burner is turned off and cooking is finished for the night in order to keep the heat in. We would expect the oven to be over 100°C when starting the next day.

Gas Ignition Summary

1. Ensure exhaust canopy/system is ON
2. Turn main control knob to “PILOT” position
3. Push in & hold the main control knob
4. Press the Piezo igniter button until the pilot ignites
5. Continue holding down the main control knob for thirty *(30)* seconds
6. Release the main control knob and turn to “ON” position
7. Adjust flame height by turning the flame control knob between high and low flame

To turn off, depress the main control knob slightly and turn to OFF position

OR to the “PILOT” position if the Tandoor is to be re-used after it has cooled.

OPERATION

Pilot flame ignition
Depress and turn the control knob to the pilot position
Depress the button and ignite the pilot flame while keeping the knob fully depressed for a few seconds (fig. 1).
Release the knob and check that the pilot flame stays lit. If it goes out, repeat the ignition operation.

fig. 1

Main burner ignition
Depress and turn the control knob to the “on” position (fig. 2).
When the automatic solenoid valve is energized, gas passage to the main burner is opened.
Valves with step ignition devices reach the maximum flow after about 10 seconds.

fig. 2

Pilot position
To keep the main burner closed and the pilot flame lit, depress and turn the control knob to the pilot position .

Turning off
Depress and turn the control knob to the “off” position (fig. 3).

Caution: the restart interlock device prevents ignition of the appliance until the flame failure device has stopped gas flow. At the end of this period (after closing the magnet unit) it is possible to carry out the re-ignition operation.

fig. 3

Charcoal Operation

The most traditional means of cooking in a Tandoor is with Charcoal. The burning charcoal gives a consistent heat and a unique flavour with which many operators find appealing. The method of cooking with charcoal can vary significantly between operators.

Firing with Charcoal

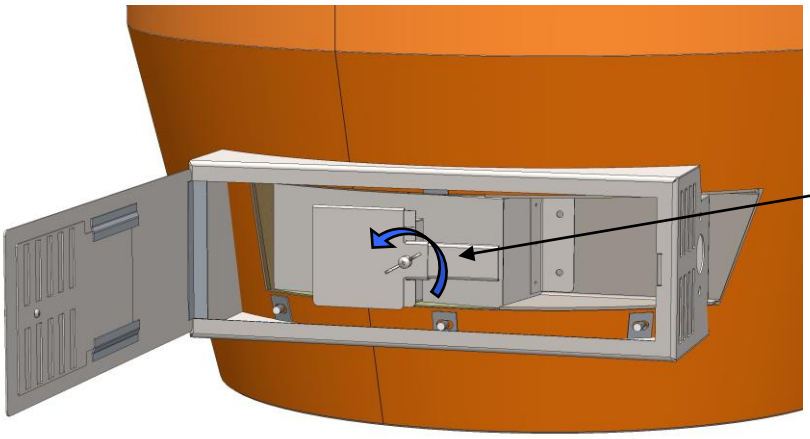
- Place approximately 2kg's of charcoal on the floor of the Tandoor
- Ignite with fire starters, kindling or equivalent
- Leave charcoal to burn

When the wall temperature reaches above 250-280°C, you can proceed to cook Naan bread.

Reload with 0.5kg lots of charcoal as required.

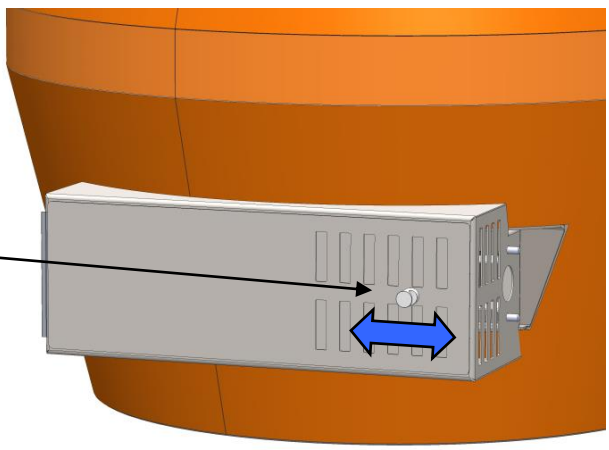
Air Inlet Adjustment

The amount of airflow may need to be adjusted by sliding the air inlet door on the control cabinet door and/or the access door on the charcoal access plug.



Loosen the wing nut and slide the access door to adjust air flow.
Slide fully to right to access inside for cleaning out ash.

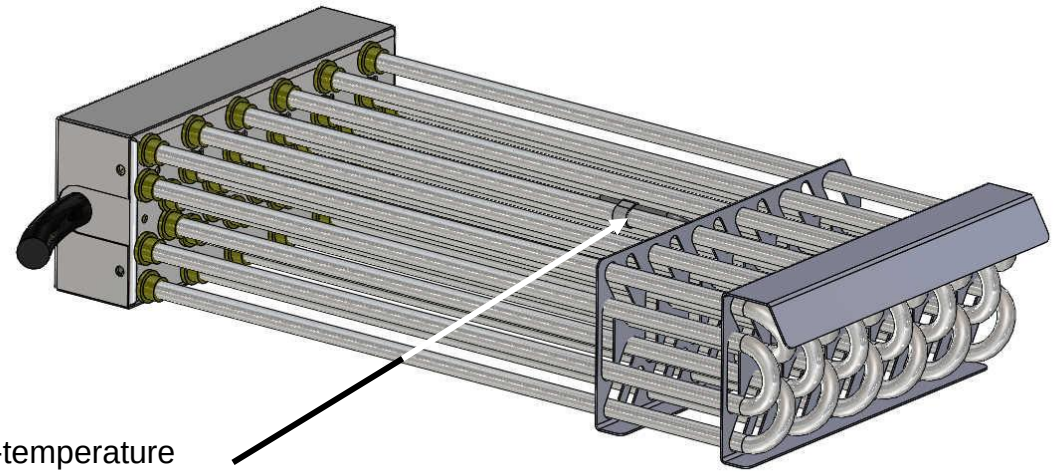
To adjust the amount of air flow, loosen the knob on the cabinet door and slide the fresh air inlet. When the required air flow is achieved, tighten the knob again to lock in position.



Electrical Operation

Precautions with Electric Systems

To optimize the service life of the electrical element, all Beech Electrical Tandoor systems are designed to protect the electrical element from overheating. The maximum allowable temperature of the electric element coil is 750°C. The elements have an over-temperature probe fixed to the element to measure and monitor the element sheath temperature.



The Control System protects the element from overheating in the following manner:

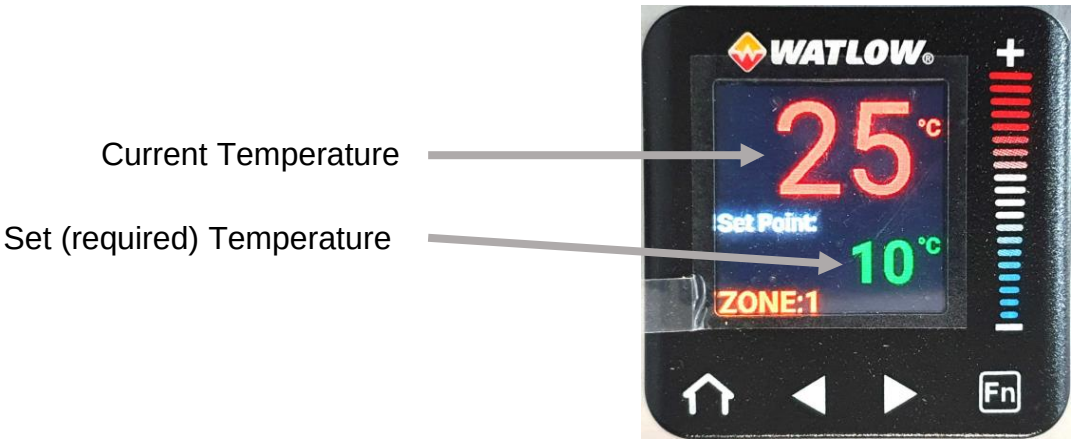
1. The system main switch is turned on. The controller will illuminate.
2. Screen will cycle between ramp & set screen
3. This on / off cycle will then continue with extended periods till the Tandoor reaches the SV *(set value)* on the controller.
4. The maximum temperature setting *(SV)* for the Tandoor oven is 300°C.

The control system incorporates a ramp-up timer into its program to ensure all temperature limits are monitored & controlled to suit. The service life of the electrical element depends on how often and how long it operates on maximum temperature.

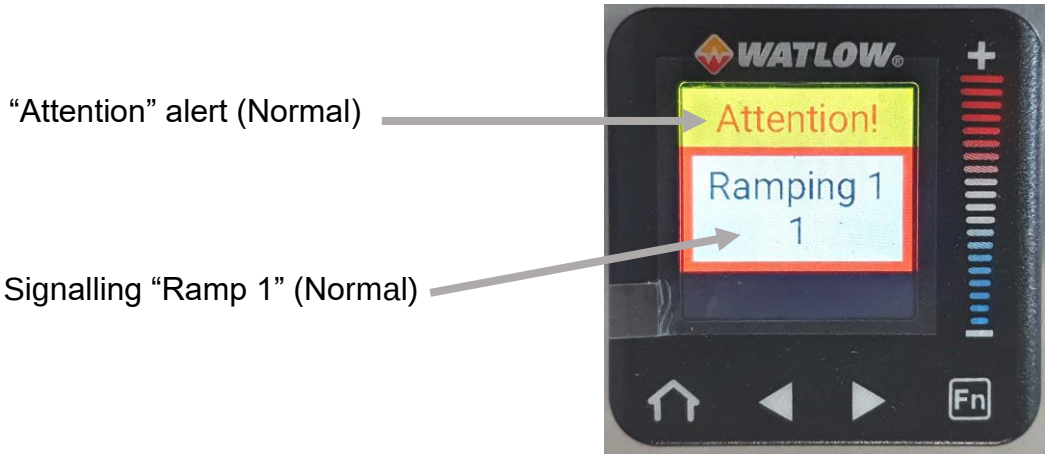
The maximum setting for the oven temperature is 300°C. The maximum over temperature setting for the electrical element probe is 750°C. **NOTE: these settings cannot be altered.**

The digital controller screen will alternate between 2 screens during normal operation.

Screen 1: This shows the set temperature and the current temperature.



Screen 2: This shows that the digital controller is ramping to achieve the set temperature.

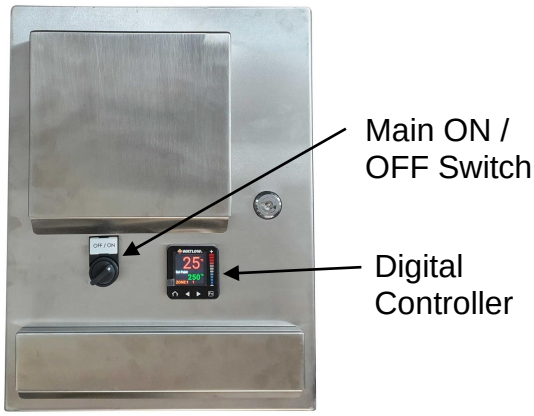


NOTE: Alternation between these 2 screens is normal.

When the oven starts from cold, this may take 8-10 hours the first time. After that, the heat up time will be much shorter. (up to 3 hours)

NOTE: It is important to ensure the removable lid is on during all heat up periods and also when the oven is turned off to retain heat.

Electrical Ignition Summary



1. Ensure the Exhaust fan / Canopy is **ON**.

2. The large display on the temperature controller will indicate the "PV" *(Present Value)* of the oven temperature. This is the current temperature of the inner wall.

3. The smaller display on the temperature controller will indicate the "SV" *(Set Value)* of the oven temperature. This is the desired temperature of the inner wall. To adjust the "SV" temperature, use the arrows on the right hand side up or down until the required temperature is achieved.

4. When cooking is finished for the day, turn "**OFF**" the main switch on the control cabinet, close the lower vents and leave the lid on the Tandoor to keep warm for the next day.

Beech Oven Digital Controller

The Digital Temperature Controller has been pre-programmed to factory setting for "Hi & Lo" limits. The program is locked into the controller. For access to this program, an authorized technician should contact Beech Ovens.

Preparing and Cooking Naan Bread

The following recipe and method is just one of many different and varied ways of preparing and cooking Naan bread. Each chef may have a special recipe and after many years of experience will develop his/her own unique style of cooking.

Tandoor Cooking Temperature – 280°C
Makes *(approx.)* 6 portions
Preparation time – *(approx.)* 45 minutes

Naan Bread Dough Recipe

Ingredients:

1. Flour_____ 500g
2. Warm Water_____ 180ml
3. Vegetable Oil_____ 20ml
4. Plain Yogurt_____ 40ml
5. Sugar_____ 5g
6. Salt_____ 5g
7. Baking Soda_____ 1 pinch
8. Yeast_____ 7g
9. Melted Butter_____ 20g

Method:

1. Mix warm water, yeast and sugar in a small bowl to activate yeast.
2. In a separate mixing bowl, mix the flour, yogurt, salt and baking soda.
3. Slowly add the yeast and warm water mix to the flour mix.
4. Work gently until the dough comes away from the bowl.
5. Drizzle the vegetable oil over the dough and knead into soft and even dough.
6. Cover and leave until it has doubled in size.
7. Knock back and divide into six balls.
8. Roll each ball in a little flour and using a rolling pin, roll into an oval shape approximately 2cm thick.
9. Wet your hand with a little water and moisten the Naan both front and back.
10. Bake for 4-6 minutes in the Tandoor until golden and crisp.
11. Brush with a little meted butter to serve.

Applying the Naan to the Tandoor wall

Prepare dough and let rise as above.

- Make into 150–200g balls and roll to flat ready for use.
- Using a 400mm long x 200–300mm wide Tea Towel or equivalent, make a “pillow” to be used to apply the Naan to the oven wall. *(See image)*
- Stretch the dough over the “pillow” with your hand as support.
- Carefully place you hand in the oven with the dough against the wall. Roll your hand with the pillow against the wall making the dough adhere in a rolling action. The Naan should stick and start cooking.
- Within 4-6 minutes, it will start peeling off. When the Naan is crisp, using the scraper and hook, remove the Naan from the oven wall.

If you are cooking many Naan in the Tandoor, you probably want to find an arm length glove or tool to apply the Naan to the oven wall.

Problems with Cooking Naan

NOTE: For Mild Steel Tandoor pots, all Naan must be sponged with water prior to sticking to wall of oven.

The adhesion of the Naan to the wall can be affected by the following;

- Has the oven wall been prepared originally with the fenugreek mixture?
- How old the oven wall is and how much oil has had an opportunity to soak into it from the Naan bread. The wall will become oilier with use which will result in the Naan being easier to remove. Oil can be rubbed into the wall with a rag. Experiment with a limited area. Be careful not to over oil.
- Temperature of oven wall. Experiment between 225°C & 280°C.
- Water in dough.
- Oil in dough.
- Flour type.
- Water on the outside of the dough once stretched over the pillow. Experiment with saltwater.

- If there are any remnants of burnt dough on the wall, this should be removed.

Once the perfect combination is found, document it and advise all Tandoor oven users.
If the wall side of the Naan bread is not cooking evenly with the outside of the Naan, this could mean that the oven has not reached operating temperature and the wall is not hot enough. Alternatively, if the outside of the Naan is not cooking at the same rate as the wall surface, this could mean that the heat source *(Gas, Electric or Charcoal fire)* is not sufficient.

Tandoor Capacity

The standard Beech 500 Series Tandoor oven is typically used to cook Naan bread in 150-200g servings which stick well to the surface of the oven. In perfect conditions, the oven could cook 4–6 Naan at once, each cooking in approximately 5 minutes. It would therefore be possible to cook approximately 60 Naan per hour which is 10kg's of dough. The larger 700 Series Tandoor could cook approximately 80 Naan per hour which is 12.5kg's of dough.

NOTE: *The above capacities are approximates only and vary depending on the operator, recipe, Naan size, etc.*

Skewer cooking

Chicken or other meat is cooked on skewers up to 10 at once and 6 pieces of chicken per skewer. This would total 60 pieces of chicken per 20 minutes. These figures are of course approximate dependant on conditions mentioned above.

Experiment with the temperature settings. You will probably find a moderate temperature setting *(260°C)* with the lid on and lower vent closed is the best combination for skewer cooking.

The skewers need to be rotated whilst cooking. Typical cook time is 10 to 20 minutes for chicken.

If using an electric Tandoor, be careful not to place the skewer into the element. Although the element is of robust design, it will fail if a skewer is repeatedly placed upon it.

NOTE: *Be sure to use the burner covers when cooking to protect the gas burner or electric element. See "Burner Covers" in the Commissioning section for correct placement.*

CAUTION: Be careful when removing the lid from the oven as the lid surfaces may be very hot – use appropriate tool or hand mitten.

Section 4 – Maintenance & Technical Specifications

Maintenance & Technical Specifications

Tandoor Maintenance

If properly cared for, your Beech Tandoor Oven will give you many years of trouble free operation. We recommend you consider adopting the following Maintenance Schedule, which will ensure your oven operates at optimum efficiency, saving you money on operating and repair costs, ensuring your business is trading to its full potential.

It is critical to maintain the Tandoor and associated equipment on a regular basis, to avoid the possibility of a serious fire or malfunction.

Beech Ovens strongly recommends a three *(3)* monthly inspection of the Flue system as to ascertain the levels of soot, grease and creosote build up during this period. Through these regular inspections you can develop a program for regular cleaning of your exhaust system. *(Talk to your local ventilation specialist)*

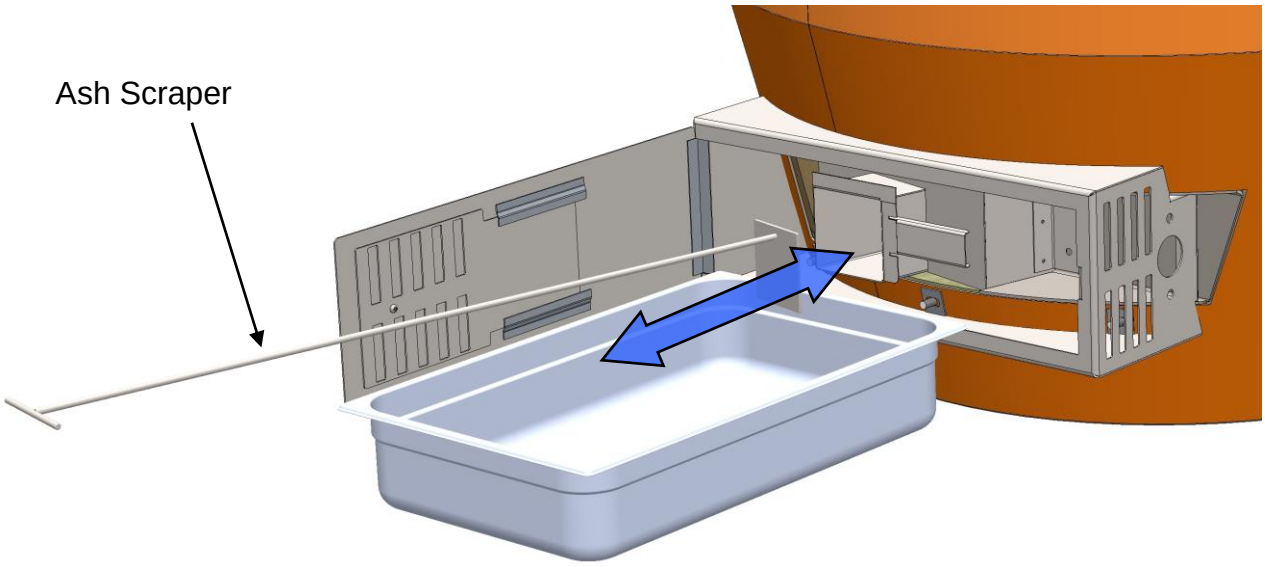
Cleaning the Floor Cavity

If there is a build-up of charcoal ash or other material, the method of cleaning this area requires the following preparation.

NOTE: *The inside of the Tandoor remains hot for long after it has been turned off. Cleaning is always recommended to be done in the morning or before it is turned on when it is coolest.*

Charcoal

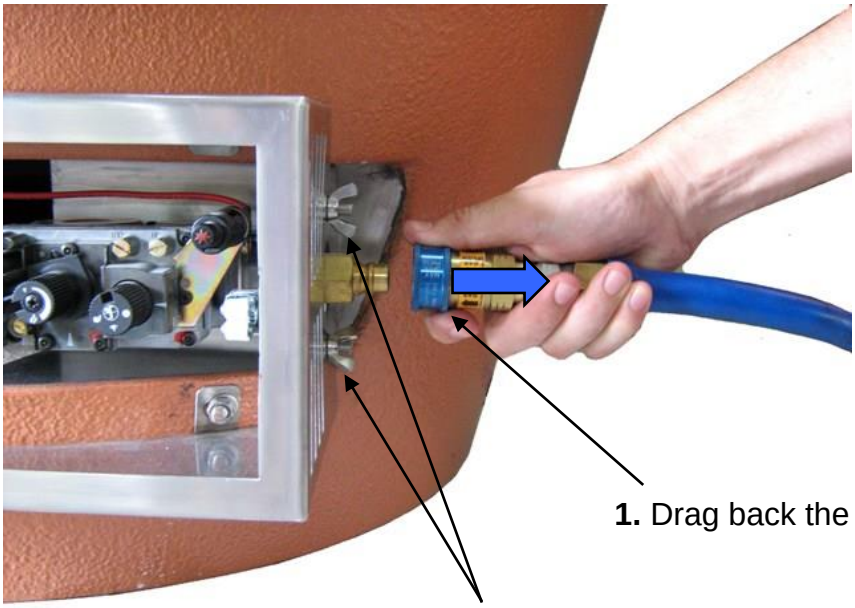
Open cabinet door and slide the access panel open.
NOTE: Ashes can be hot. Using the Ash Scraper, carefully scrape the ash out onto a tray and dispose of carefully. (*See **Disposal of Ashes** in the beginning of this Manual)*



Removing the Gas Burner

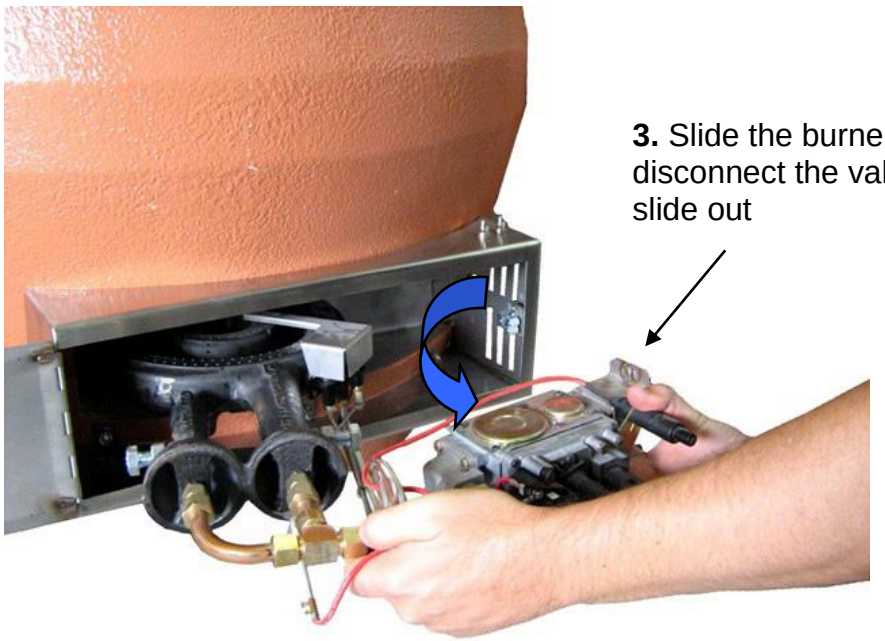
Turn **OFF** gas supply and disconnect the quick release fitting on the side of the control cabinet.

1. Loosen the 2 mounting screws holding the gas system in place.
2. Carefully remove the entire gas burner assembly.
3. Clean out the floor cavity being careful not to damage the inner walls with any sharp tools.



1. Drag back the blue ring to disconnect

2. Undo and remove wing nuts (x2)



3. Slide the burner assembly to the left to disconnect the valve assembly and carefully slide out

Gas Burner Maintenance

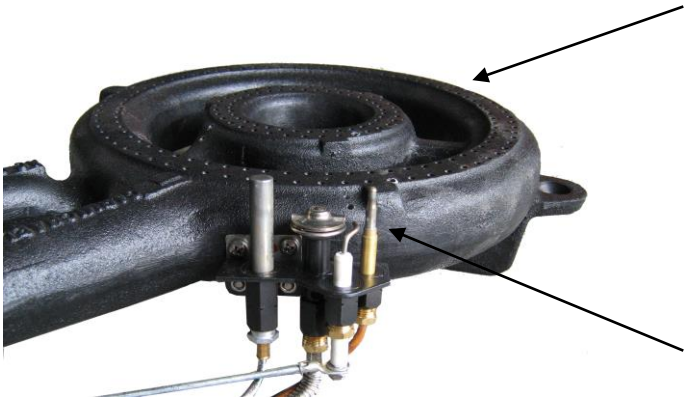
If the gas burner is functioning correctly, there is normally no need for maintenance. However there are some areas of the burner that can need attention from time to time to prevent any failure. Depending on the style of cooking, the gas burner can become contaminated with ash and debris from cooking and can easily be cleaned.

Remove the burner as per instructions above.

Loosen the 2 screws *(as shown)* and remove the Pilot bridge cover.

Remove 2 screws holding Pilot Bridge cover in place.

If any of the burner holes are dirty or blocked, blow through the burner shank with compressed air or brush with a soft brush – do NOT blow backwards towards the jets.



Using a cloth or light brush, remove any debris and soot from around the pilot, thermopile, igniter and thermocouple area.

Make sure all the holes in the burner are free from debris. If blocked, blow away any debris *(preferably with compressed air).* Do NOT blow backwards as debris will block the burner jets.

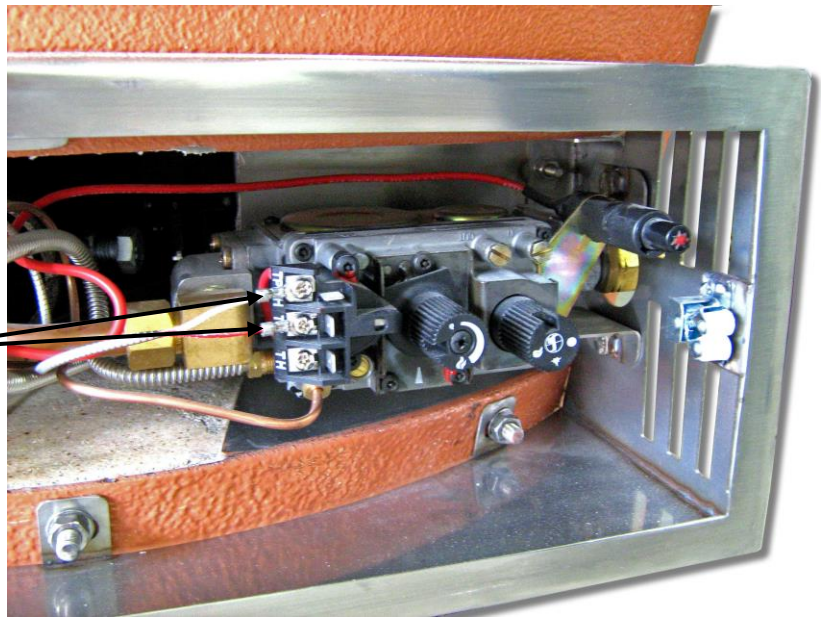
Check all cables and tubing and replace if necessary.

Re-assemble in reverse order.

Thermopile Test Procedure

NOTE: Ensure the thermopile voltage is incorrect / faulty before you replace the gas valve. The procedure below explains the method in which to test the Thermopile so it can be determined to be faulty.

Thermopile leads
Connection point
(test points)



Test Method:

Open Circuit Test:

- Disconnect thermopile leads from the gas valve.
- Take a volt meter set it to millivolts.
- Connect Thermopile leads to meter leads.
- Reading should be *350 mV* or more.

Closed circuit test:

- Take a volt meter set it to millivolts.
- Connect leads of meter to terminals that your thermopile is attached to on the gas valve.
- Turn gas valve on.
- The reading should be *100 mV* or more.

If either of the tests above are outside of the specified readings on the volt metre, the thermopile should be replaced.

Contact Beech Ovens technical support technical@beechovens.com for further information.

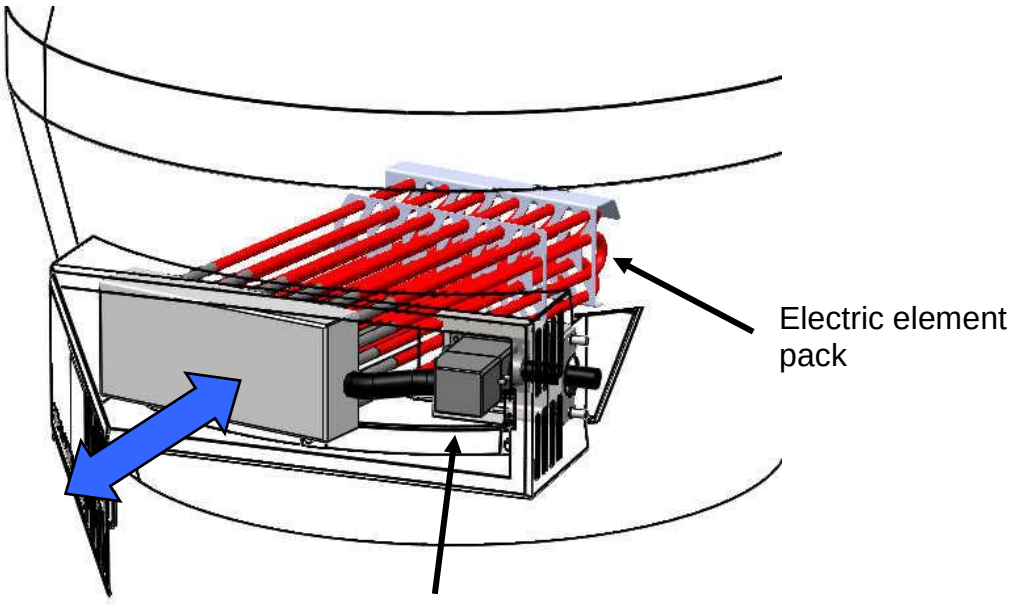
Removing the Electric Element

NOTE: *This should only be done when the oven is cool and the power is **OFF**.*

Access to the heating elements is achieved by opening the control cabinet door. Once open there is an electric connector to the right hand side which connects power from the main control cabinet to the heating elements.

- Fold the lever down/up and pull the connector apart.
- Carefully drag the heating elements forward.
- Be careful not to damage or kink the conduit between the connector and the element pack.

NOTE: DO NOT use any water or liquid solvents to clean the heating elements. The elements should be lightly scraped or rubbed with steel wool to be cleaned.

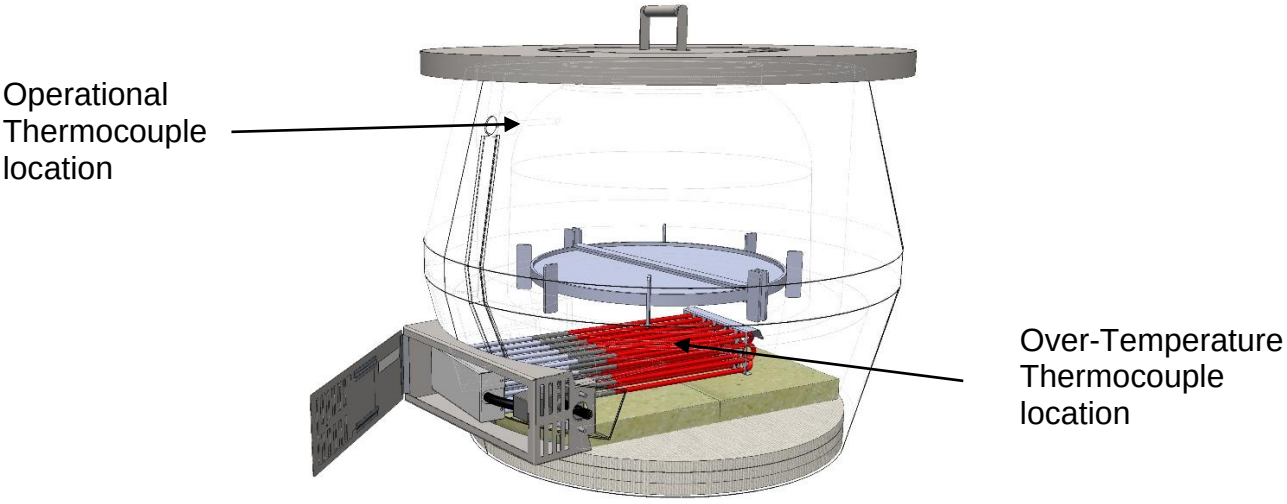


With the elements removed access can be gained to the lower oven cavity for removal of debris in this area. The walls in this area should be self-cleaning in general use, so no scraping should be required. If need be, care should be taken so as not to scratch or damage the lower chamber walls.

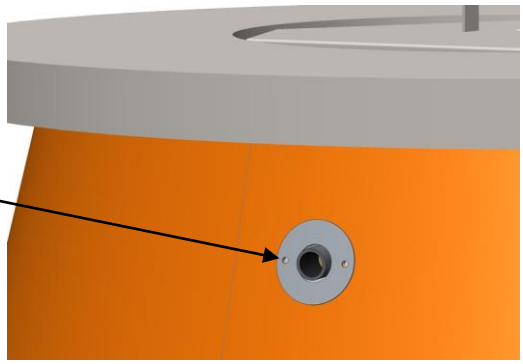
Replacing the Operational Thermocouple

On Beech Electric Tandoors, there are 2 separate thermocouples. The **Operational Thermocouple** is located in the wall of the ceramic inner and monitors and controls the **operating temperature.**

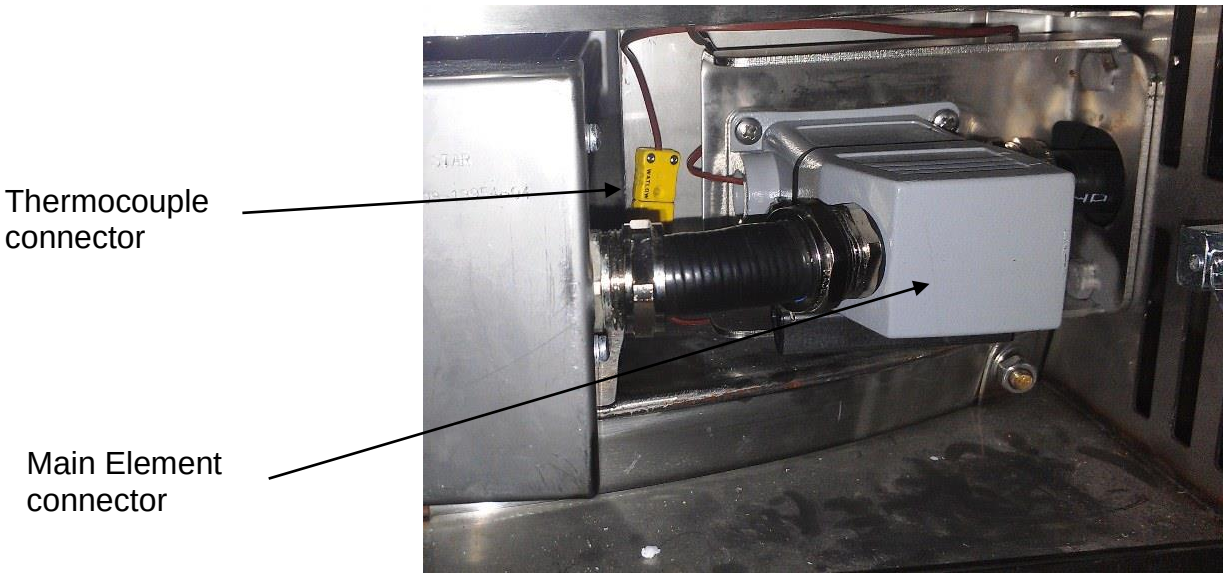
The second thermocouple is an **Over-temperature thermocouple** and is located on the sheath of the element to monitor and control the **element temperature** and is designed as a safety device to protect the electric element from overheating.

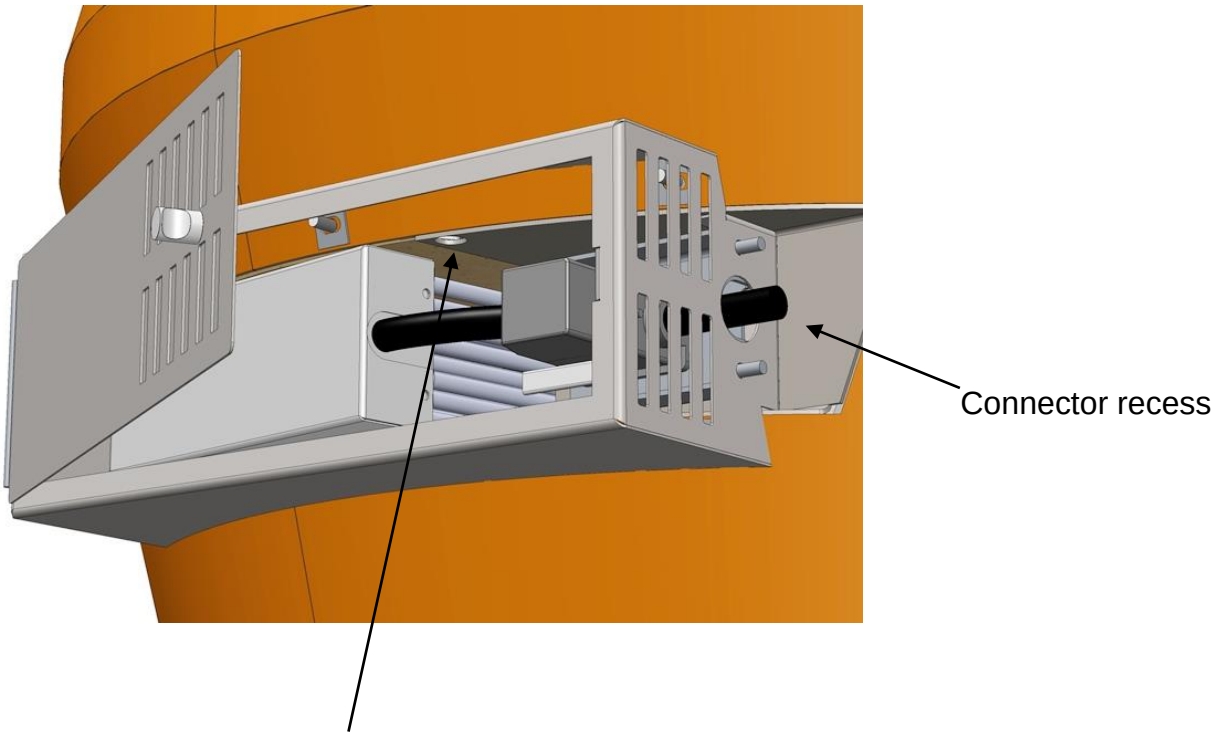


To replace the thermocouple, first remove the analogue thermometer by unscrewing it from the thermometer mounting flange as shown.



If replacing the probe, remove the existing probe by first disconnecting the yellow thermocouple connector inside the control cabinet.

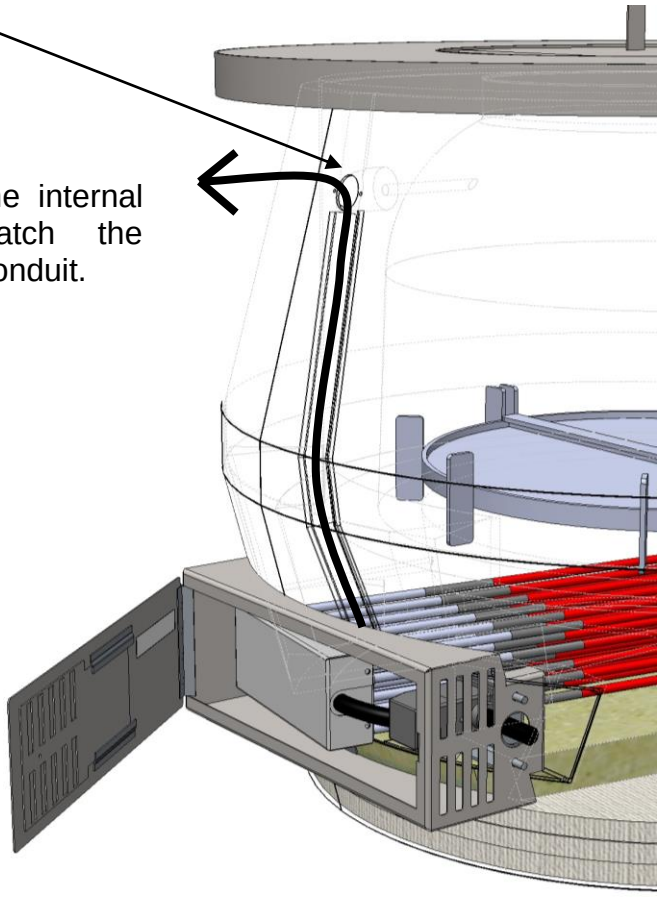




The thermocouple cable should be routed through the internal conduit through this hole in the top of the connector recess.

Carefully remove the probe from inside the ceramic inner until it is fully out and the main thermocouple cable is exposed.

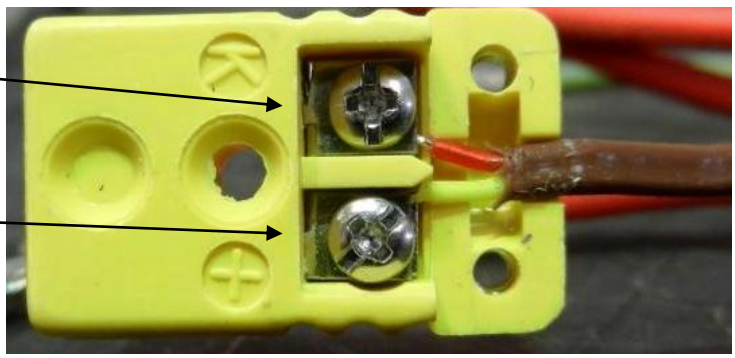
Carefully drag the cable up through the internal conduit being mindful not to catch the thermocouple connector on the internal conduit.



NOTE: If the thermocouple connector needs to be removed in order to get the cable through the internal conduit, be sure to re-connect it as per the instructions below.

Red wire is negative.

Yellow wire is positive.



Install the Operational Thermocouple in reverse order.

Maintenance Schedule

Item	Task to be performed	Performed by	Frequency				
			Daily	Weekly	Monthly	3 Months	6 Months
1	Each morning, before the oven is fired up, remove any fire ashes, debris, etc. from the floor cavity using the ash scraper and an ash pan and brush. A damp cloth may be used to remove any remaining dust. For gas and electric Tandoors, you may need to remove the burner/element prior.	Oven Operator	♦♦				
2	Clean the internal wall prior to cooking. Do **NOT** use water! Damp cloth ONLY.	Oven Operator	♦♦				
3	Cleanliness around the oven is essential. Ensure no debris or rubbish is left around, on top or in the oven area.	Oven Operator	♦♦				
4	Ensure that the exhaust system is clean and operating.	Oven Operator	♦♦				
5	Clean the gas burner/electric element, pilot assembly/thermocouple and check cabling and pipework.	Operator / Technician		♦♦			
6	Check flexible hose and connection for deterioration.	Technician			♦♦		
7	Clean exhaust canopy / flue system *(by others)*	Technician				♦♦	♦♦

General Technical Details

The data plate mounted on the inside of the Control cabinet contains the specific information for your oven. The following information is general technical details for all ovens and related Gas types.

Gas Type	Natural	Propane	Town Gas
Thermal Input *(Confirm these values with the gas data plate inside the gas control cabinet)*	60Mj *(56869BTU)*	60Mj *(56869BTU)*	60Mj *(56869BTU)*
Gas Supply Line *(shut off valve required by others)*	15mm (1/2”)	15mm (1/2”)	15mm (1/2”)
Power Supply	None Required	None Required	None Required
Burner Jet Size *(Inner Ring)* *(Outer Ring)*	2.1mm 3.0mm	1.35mm 1.9mm	3.3mm 4.8mm
Gas Pressure at Burner Injector	1Kpa	2.75Kpa	1Kpa
Gas Pressure at Oven Isolating Valve	1Kpa Min 5Kpa Max	2.75Kpa Min 5Kpa Max	1Kpa Min 5Kpa Max
Gas Consumption per Hour *(approx.)*	1.5m3/Hr.	0.4m3/Hr.	2.8m3/Hr.
Secondary air for Gas Burner	6.0 litres/Sec		
Charcoal Consumption	Approx. 5kg / service		
Tandoor Weights *(approx. crated)*	TRN,TBR,TSQ0500 650kg	TRN,TBR, TSQ0700 750kg	

Electric Tandoor Technical Details

Supply Voltage	380V	400V	415V	440V
Kilowatt Rating	10.8Kw			
Phases	3 Phase			
Hertz	50 – 60Hz			
Amps per Phase	15.6 – 17.2A	14.8 – 16.4A	14.3 – 15.8A	13.4 – 14.9A
Connection	Delta			

Electrical wiring diagrams are available on request. Please notify the Tandoor model and Serial Number located on the data plate on the inside of the control cabinet door and contact technical@beechovens.com.au or Beech Ovens head office.

Oven Materials

Tandoor outer casing is mild steel *(Barrel)* or Stainless Steel *(Round and Square)* with some stainless steel components.
Control cabinet is stainless steel.
Control cabinet components are all standard CE approved units.
Tandoor pot (inner) and internal base are "high temperature castable" with ceramic wool *(KA)* insulation between the outer casing and castable. The floor material is refractory tiles with insulation board *(VF)* underneath.
All of the Tandoor materials are safe to handle providing they are not hot. Insulation material should be handled with suitable respiratory protection.
Disposal of any materials should be confirmed with a local authority as to type of disposal method suitable.
The remains of any fire should be handled with care. The ash left in the oven may be hot and it will be dusty. Handle with care.

CE Specifications

The following table outlines the technical details for ovens installed within the CE region.

Natural Gas						
Country	**Category**	**Nominal Pressure**	**Heat Input (High Flame)**	**Heat Input (Low Flame)**	**Nominal Rate**	**Injector Diameter**
DE	12ELL	20mBar	G20: 16.5kW G25: 14.2kW	G20: 11kW G25: 11kW	1.7m³/Hr	2.1mm (#45) in' 3.0mm (#31) out
AT, DK, ES, FI, IE, IT, PT, GB, SE, CH	12H	20mBar	G20: 16.5kW	G20: 11kW	1.7m³/Hr	2.1mm (#45) in' 3.0mm (#31) out
BE, FR	12Er	20mBar	G20: 16.5kW	G20: 11kW	1.7m³/Hr	2.1mm (#45) in' 3.0mm (#31) out
Propane						
DE, NL, CH, FR, ES	13P	50mBar	G31: 16.5kW	G31: 11kW	1.3kg /Hr	1.35mm (#54) in' 1.9mm (#48) out
PT, GB, CH, FR, ES	13P	37mBar	G31: 16.5kW	G31: 11kW	1.3kg /Hr	1.35mm (#54) in' 1.9mm (#48) out
Note: CH, FR and ES allow both 37 and 50mBar						

CE DECLARATION OF CONFORMITY

Declaration No. BWFO/QEC/1

J. W. Beech Pty Ltd declare under our own responsibility that the following product:

Description: Tandoori Oven.

Model: ET-03/SqS/S/100

Manufactured by: J. W. Beech Pty Ltd
Address: 36 Gladys Street Stones Corner QLD Australia.

is in conformity with the following.

EUROPEAN DIRECTIVE:

73/23/EEC – Low voltage directive.

STANDARDS:

- **IEC 60335-2-6:1997 + A1:2000** - Safety of household and similar electrical appliances
  Part 2: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances.

  for use with IEC 60335.1:1991 + A1:94 + A2:99 (including group differences) - Safety of household and similar electrical appliances
  Part 1: General requirements.

- **IEC 92-307:1980** – Electrical installations in ships
  Part 307: Equipment – Heating and cooking appliances.

Brett A Beech
Name of Authorized Person

Director
Title of Authorized Person

BABeech
Signature of Authorized Person

19th February, 2002.
Date of Issue

Spare Parts List

The following is a condensed list of spare parts for most Tandoors. Although it is not necessary to carry any or all spare parts, we do recommend that some of the parts mentioned below be kept as they are crucial to the Tandoors operation. Please specify the model and Serial Number together with Gas Type when ordering spare parts.

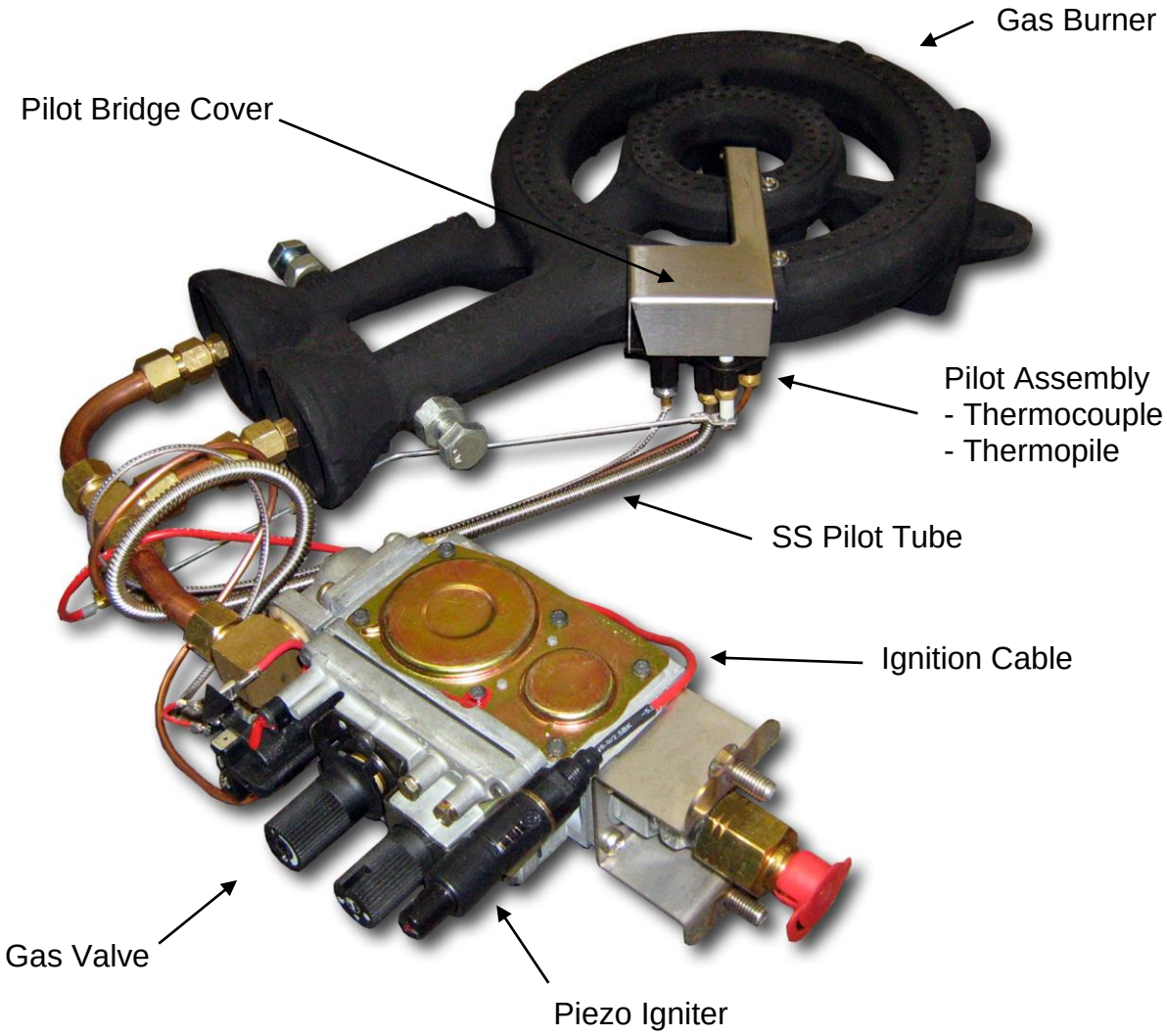
Gas Spare Parts

Image	Item Description	Brand / Type	Part No.
	Gas Burner Complete	Alexander Carmichael AC8	SPAREPT-1028
	Piezo Igniter	Generic	SPAREPT-1032
	Ignition Cable		SPAREPT-1025
	Thermopile		SPAREPT-1030
	Pilot Incl. Electrode	SIT	SPAREPT-1031
	Gas Valve	Nova 820 MV *(Natural Gas)* *(LPG)*	SPAREPT-1039 SPAREPT-1040
	Thermocouple	SIT	SPAREPT-1029

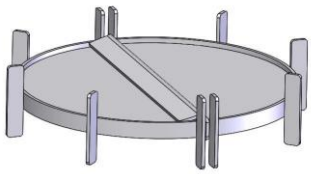
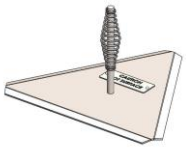
Gas Spare Parts (cont')

Image	Item Description	Brand / Type	Part No.
	SS Pilot Tube		SPAREPT-1023
	SS Pilot Bridge Cover	Beech	PARTGAS-1210
Includes Valve, Burner Jets, Pilot Jet and Data Label	Gas Conversion Kit	*(Nat to LPG)* *(LPG to Nat)*	ACONKIT-1600 ACONKIT-1601

Gas Spare Parts Overview



General Spare Parts

Image	Item Description	Brand / Type	Part No.
	Burner Cover *(Set of 2 halves)*	0500 Series 0700 Series	ATANBUR-1000 ATANBUR-1002
	Tandoor Lid	0500 Series 0700 Series	ATANLID-1100 ATANLID-1101
	SS Skewer	Beech	ATANTOO-1600
	SS Spade	Beech	ATANTOO-1601
	SS Ash Scraper	Beech	ATANTOO-1604
	SS Tandoor Hook	Beech	ATANTOO-1602

Electric System Parts

When ordering Electric System parts, please ensure that the Model number, Serial number and Voltage is specified.

NOTE: *All repairs and spare part replacements must be carried out by a licensed electrician.*

Beech Part Number	Description	Quantity
SPAREPT-1050	Rotary Selector Switch	1
SPAREPT-1121	Temperature Controller EZ-ZONE - 2 Input	1
SPAREPT-1143	AC Axial Fan - 240VAC	1
SPAREPT-1144	WEG Contactor 3P 11kW - 240VAC Coil	1
SPAREPT-1145	WEG Circuit Breaker 3P B 25A	1
SPAREPT-1126	Solid state power control DIN-A-MITE B	1
SPAREPT-1146	Terminal Fuse 6.3 A	1
SPAREPT-1147	Mini Plug/Male 'K' connector	1
SPAREPT-1148	Mini Jack/Female 'K' connector	1
SPAREPT-1149	Thermocouple K 4.7D x 50L 2m Lead	1
SPAREPT-1150	MI Thermocouple K, 3.2Dx500L, Mini P&J	1
SPAREPT-1151	Female Insert 6 Pole 500V 16A	1
SPAREPT-1152	Male Insert 6 Pole 500V 16A	1

Gas troubleshooting

A common problem with gas the Tandoor is incorrect flame adjustment.

Yellow Gas Flame

A yellow gas flame is normal for LPG gas. If, however, you have an orange flame and the walls continue to soot up please carry out the following procedures to overcome the problem.

Check that the LPG pressure is 2.75 - 3.5Kpa or equivalent.

Too much pressure = poor combustion = sooting. If the gas pressure is more than 3.5Kpa, there could be sooting due to excess fuel not being combusted.

Too little pressure *(below 2Kpa)* will also lead to poor combustion. Lack of gas pressure causes a reduction in the suction of air leading to poor combustion.

If the pressure is correct, check the inspirator to check:

- If there is flame inside this item, it has been damaged by gas backfire and needs to be replaced.

- If there is a build-up of carbon inside causing the inspirator not to work correctly. If it is full of carbon, remove it and wash with water from a hose.

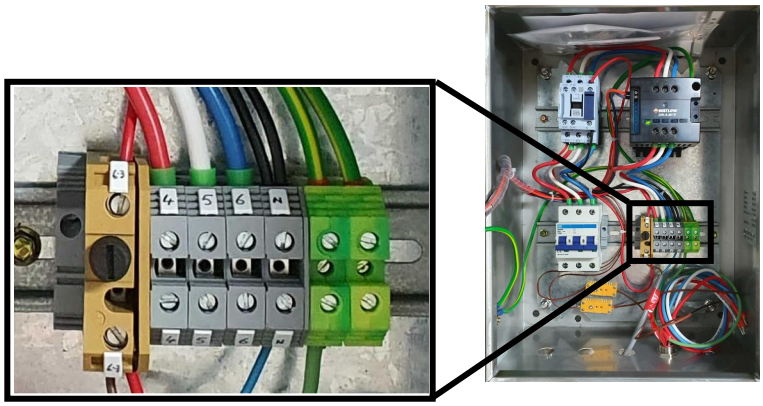
In summary, a yellow flame is only a problem if there is a soot build-up. If you still have problems, contact Beech Ovens head office or technical@beechovens.com.au

Electrical troubleshooting

If the electrical system is not performing correctly, check the following:

1. With the power turned off to the control panel, check the resistance (ohm) readings across terminals 4, 5 & 6 in the control box. For single element systems, they should read as follows depending on the supply voltage:

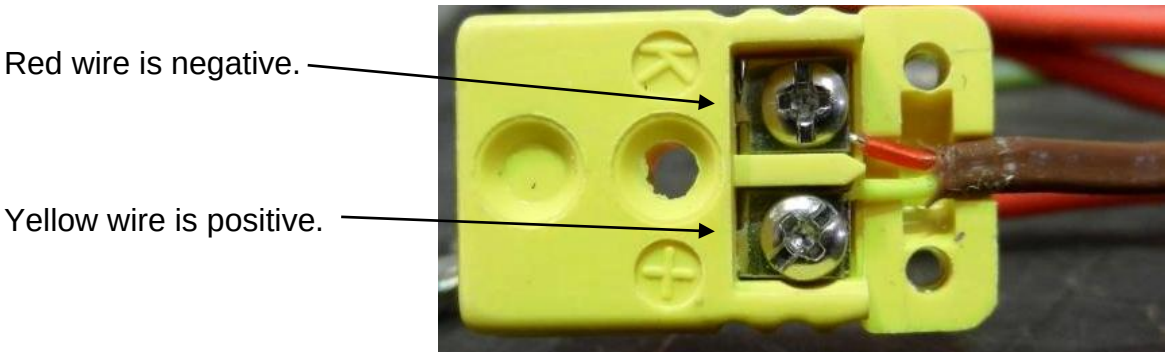
440 Volt = 35 Ohms +/- 10%
415 Volt = 31 Ohms +/- 10%
400 Volt = 30 Ohms +/- 10%
380 Volt = 27 Ohms +/- 10%



If the readings are out of range, ensure all connections are tight and retest. If there is no improvement, one of the 18 elements may be defective.

2. Check the supply voltage readings across terminals 1, 2 & 3 in the control box. These readings need to be within +/- 5% of the voltage required for this system. Check the data label in the control box to verify correct voltage.

3. Turn the power on to the control panel and check both thermocouples readings on the digital controller show a positive reading and increase when power is on. If reading negative, or if the temperature goes down instead of up, identify where the thermocouple wires are incorrect on the yellow connectors and reverse the polarity. (**NOTE:** The red wire is negative)



For the oven temperature (PV) setting, this must show a positive number here. **Not** a minus symbol.
(E.g. -25)

(If a negative number is shown, or if the temperature goes down instead of up, reverse the polarity of the yellow thermocouple connector as shown on previous page.)

<u>Watlow Controller Fault Finding</u>

Limit 1 High:

Element probe overheat.
750°C Limit reached on element sheath

Once temperature on element sheath has dropped below 750°C press the (Home) button.

Limit 1 Error / Input 2 Error:

Input 2 (overtemp element sheath probe) is open circuit

Check resistance on probe circuit. Start in control cabinet on controller, then connector in cabinet then multipole connector, then connector in terminal box.

S2 (Neg) Red
R2 (Pos) Yellow
On Controller

Error / Input 1 Error:

Air temperature probe (in tandoor wall) is Open circuit

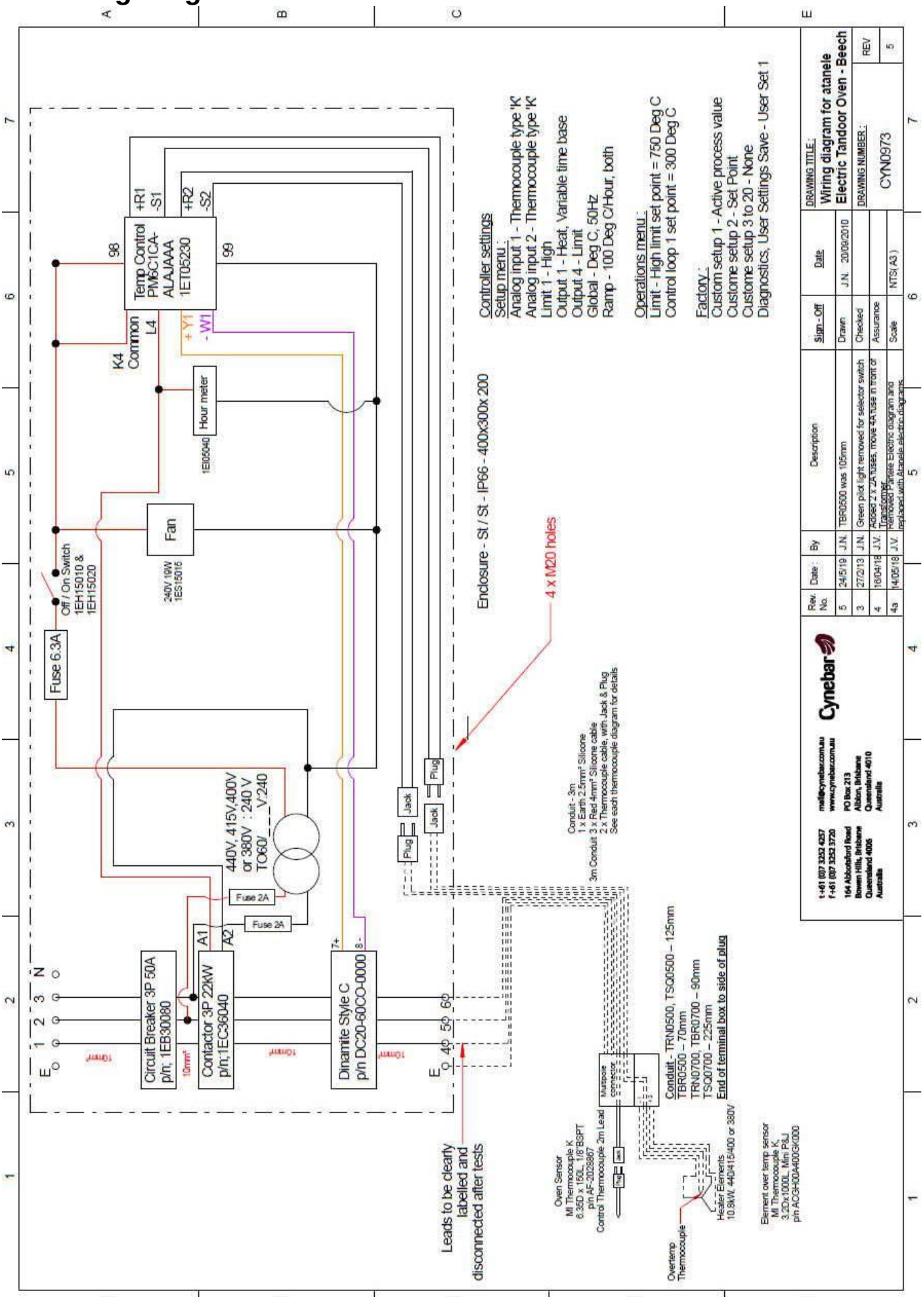
Check resistance on Temperature controller, plug in cabinet & plug in base of tandoor (connector)

S1 (Neg) Red
R1 (Pos) Yellow

This trouble shooting process will identify if an electrical element is faulty, verify the supply voltage is correct and uniform across all phases, verify both thermocouples are operational and checks they are connected correctly.

These are the main issues that occur with Beech Electric Temperature Systems. For any further troubleshooting enquiries, please contact our technical department: technical@beechovens.com.au or Beech Ovens Head Office.

Wiring Diagram



Troubleshooting Guide

To obtain the best results from your Beech Tandoor Oven, please read the Installation and Opera operation. Should a fault or complication arise, please read the following Troubleshooting guide to solution to the problem.

If after having read this manual and followed the instructions in the Troubleshooting guide faile contact Beech Ovens Technical Support at technical@beechovens.com.au

NOTE: Always ensure that both power and gas are turned off before any troubleshooting addition to having the Installation and Operation Manual in hand, Beech Ovens recommen when troubleshooting: Approved Gas Pressure gauge, Multimeter, Digital *(or analogue)* Te range of hand tools including wrenches, pliers and screwdrivers.

The following guide is a list of the most common problems encountered when using a Beech Tando

Problem / Symptom **Problem / Symptom**	**Possible Cause**	**Solutio** **Installati**
1. Smell of gas near oven.	1.1 Possible gas leakage - Do NOT operate oven.	1.1.1 Refer to **S** 1.1.2 Turn off m Isolation Valve.
2. Pilot fails to ignite *Spark heard (evident) at pilot assembly*	2.1 Gas supply problems. 2.2 Contamination on Pilot – debris, etc. 2.3 Ignition spark is shorting to metallic surface. 2.4 Faulty Thermocouple 2.5 Pilot not in correct position. 2.6 Air in Gas line. 2.7 Faulty Gas valve.	2.1.1 Check ga *technician)* For 2.2.1 Refer to **T** 2.3.1 Refer to **T** 2.4.1 Refer to **T** 2.5.1 Refer to **C** 2.6.1 Refer to **C** 2.7.1 Replace G

Troubleshooting *(continued)*

3.Burner fails to ignite *No spark heard (evident at pilot assembly*	3.1 Gas supply problems. 3.2 Faulty piezo igniter. 3.3 Faulty thermopile. 3.4 Faulty gas valve.	3.1.1 Check gas supply *(Contact service technician)* For LPG, check tank is not empty. 3.2.1 Check function and replace if required. 3.3.1 Refer to **Thermopile Test Procedure**. 3.4.1 Turn off main gas supply at Manual Gas Isolation Valve. Contact service technician.
4. Burner operating erratically	4.1 Gas supply problems. 4.2 Incorrect inspirator calibration. 4.3 Burner gas ports as slightly blocked.	4.1.1 Check gas supply *(Contact service technician)* For LPG, check tank is not empty. 4.2.1 Refer to **Inspirator calibration**. 4.3.1 Refer to **Tandoor Maintenance**.
5. Oven won't get hot or burns poorly	5.1 Gas supply problems. 5.2 Burner gas ports as slightly blocked. 5.3 Insufficient pre-heat time. 5.4 Gas jets too small.	5.1.1 Check gas supply *(Contact service technician)* For LPG, check tank is not empty. 5.2.1 Refer to **Tandoor Maintenance**. 5.3.1 Refer to **Gas Operation/Heat Up Times**. 5.4.1 Refer to **General Technical Details**.
6. Soot deposits on walls	6.1 Burner gas ports as slightly blocked. 6.2 Incorrect inspirator calibration. 6.3 Oven outlet totally sealed. 6.4 Bottom air vents totally closed. 6.5 Gas jets too large.	6.1.1 Refer to **Tandoor Maintenance**. 6.2.1 Refer to **Inspirator calibration**. 6.3.1 Refer to **Precautions with Gas**. 6.4.1 Refer to **Charcoal Operation/Air Inlet Adjustment**. 6.5.1 Refer to **General Technical Details**.
7. Burner shuts off & won't re-start	7.1 Pilot stops due to excess draft or ventilation. 7.2 Pilot bridge guard is off or misaligned. 7.3 Faulty thermopile sensor.	7.1.1 Refer to **Firing for the First Time/Gas Pressures.** 7.2.1 Refer to **Firing for the First Time/Gas Pressures.** 7.3.1 Refer to **Thermopile Test Procedure** .
8. Tandoor gets too hot	8.1 Adjust the control valve to minimum setting. 8.2 Reduce gas supply pressure.	8.1.1 Refer to **Gas Operation**. 8.2.1 Refer to **Gas Pressures/Inlet *(Supply)* Pressure**.