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GT45 / GT46 VEE-RAY GAS FRYERS

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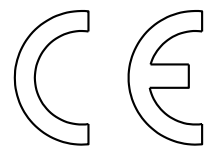
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In line with policy to continually develop and improve its products, Moffat Ltd. reserves the right to change the specifications and design without prior notice.

BLUE SEAL 'VEE-RAY' GAS FRYERS

GT45 - SINGLE PAN FRYER

GT46 - TWIN PAN FRYER

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Date Purchased..... Serial No.....

Dealer.....

Service Agent.....

INTRODUCTION

We are pleased you chose to purchase a Blue Seal 'VEE-RAY' gas fryer. To ensure you receive the utmost benefit from your new fryer, there are two things you can do.

FIRSTLY

Please read this instruction book carefully and follow the directions given. The time taken will be well spent.

SECONDLY

If you are unsure of any aspect of installation, instructions or performance of your fryer, contact your Blue Seal dealer.

THIS APPLIANCE IS ONLY FOR PROFESSIONAL USE AND USED ONLY BY QUALIFIED PEOPLE.

WARNING

GREAT CARE MUST BE TAKEN BY THE OPERATOR TO USE THE EQUIPMENT SAFELY TO GUARD AGAINST RISK OF FIRE.

- • The fryer must **NOT** be left on unattended.
- A regular inspection by a competent serviceman should be made to ensure operation of fryer.

SPECIFICATIONS

A. HEAT INPUT - GROSS

	Natural	LPG
Total	90 (85,300 Btu/hr)	90 (85,300 Btu/hr)

B. GAS PRESSURE

Natural	1.00 kPa (4.0" WG)
Propane	2.75 kPa (14" WG)

C. INJECTOR SIZES

	Main	Pilot
Natural	Ø3.00 mm.	Ø0.62 mm.
LPG	Ø1.85 mm.	Ø0.35 mm.

UK UNITS ONLY

A. HEAT INPUT (kW) - GROSS		
	Natural Gas (G20)	Propane Gas (G31)
Total	25.0 (2.38 m ³ /hr)	25.0 (1.94 kg/hr)
B. GAS PRESSURE		
Natural	10 mbar (4.0" WG)	
Propane	37 mbar (14" WG)	
C. INJECTOR SIZES		
	Main	Pilot
Natural Gas	Ø3.00 mm.	Ø0.45 mm.
Propane Gas	Ø1.75 mm.	Ø0.30 mm.

D. INSTALLATION CLEARANCES

	Combustibles	Non-Combustibles
Side	25 mm	0 mm
Back	25 mm	0 mm

E. OVERALL DIMENSIONS

Width	450 mm
Height	915 mm
Height to Splashback	1065 mm
Depth	812 mm

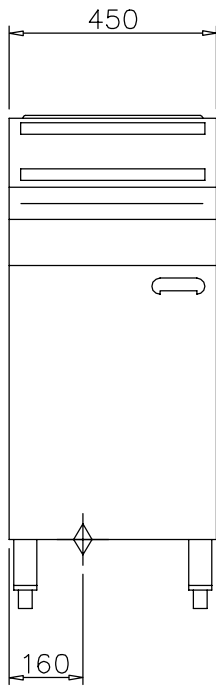
F. GAS CONNECTION

Gas connection point ¾" BSP male thread located 160mm from LH side, 50mm from rear and 150mm from floor.

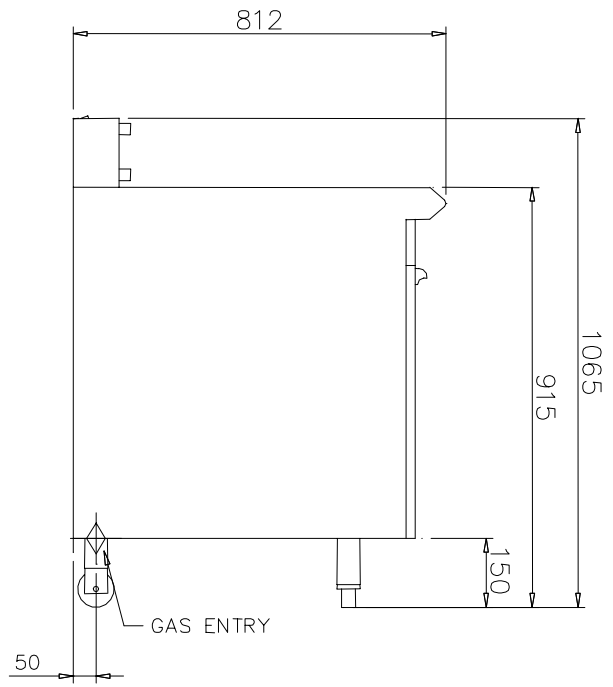
G. PAN CAPACITY

	GT45	GT46
Oil	20 ltr	26 ltr (total)
Shortening	16 kg	21kg (total)

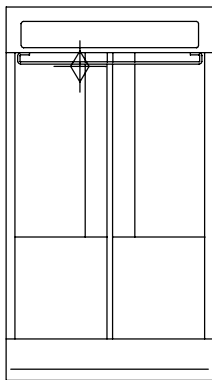
SPECIFICATIONS



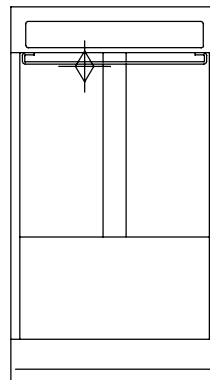
FRONT



SIDE



PLAN
GT46



PLAN
GT45c

INSTALLATION INSTRUCTIONS

This appliance must be installed in accordance with national installation codes and in addition in accordance with relevant national/local codes covering gas, fire and health.

- United Kingdom:** - Gas Safety (Installation & Use) Regulations 1998.
- BS6173 Installation of Catering Appliances.
- BS5440 1 & 2 Installation Flueing & Ventilation.
- Australia:** - AS 5601 - Gas Installations.
- New Zealand:** - NZS 5261 - Gas Installation.
- United States:** - ANSI Z333.1 1984, NATIONAL Gas Fuel Code.
- Canada:** - CANI B149, Installation of Burning Appliances and Equipment.

Blue Seal 'VEE-RAY' fryers are designed to provide years of satisfactory service, and correct installation is essential to achieve best performance, efficiency and trouble-free operation.

Installation must allow for a sufficient flow of fresh air for the combustion air supply. Combustion air requirements:

Natural Gas (G20) 25 m³/hr minimum.

Propane Gas (G31) 26 m³/hr minimum.

Components having adjustments protected (e.g. paint sealed) by manufacturer are only allowed to be adjusted by an authorised service agent. They are not to be adjusted by the installation person.

Installations must be carried out by authorised persons only. Failure to install equipment to relevant codes and manufacturers specifications in this section will void warranty.

1. BEFORE CONNECTION PLEASE READ THE FOLLOWING CAREFULLY.

a) UNPACKING

- Remove all packing.
- Check equipment and parts for damage. Report any damage immediately to carrier and distributor.
- Remove protective plastic coating from door outer panel and side panels.
- Check that the following parts have been supplied with each fryer:

	GT45	GT46
Baskets	2	2
Basket Grids	1	2
Lid	1	1
Adjustable Legs	2	2
Castors (fixed)	2	2
Flue Diverter	1	1
Drain Stick	1	1

Report any deficiencies to the distributor who supplied the fryer.

INSTALLATION INSTRUCTIONS

b) GAS SUPPLY

Blue Seal GT45 and GT46 gas fryers do not require an electrical connection, as they function totally on the gas supply only.

It is essential that the gas supply is correct for the fryer to be installed and that adequate supply pressure and volume is available.

The following checks should therefore be made before installation:

- i) The gas type the fryer has been supplied for is shown on a coloured sticker inside the fryer door. Check that this is correct for the gas supply. Gas conversion procedure is detailed on page 25 of this manual.
- ii) The operating pressure of these fryers is stated on the product data plate affixed to the inside of the door. The gas supplied should be checked to ensure adequate supply pressure.
- iii) The input rate of these fryers is also stated on the data plate, and this should be checked against the available supply volume. Particular note should be taken if the fryer(s) is/are being added to an existing installation.

2. INSTALLATION

Any gas burning appliances require adequate clearance and ventilation for optimum and trouble-free operation.

IMPORTANT

DO NOT obstruct or block the appliance flue

- a) Installation in accordance with the following requirements is of utmost importance.
 - i) Never directly connect a ventilation system to the appliance flue outlet.
 - ii) A minimum of 610 mm clearance must be maintained from the flue outlet to any above surface.
 - iii) Flue diverter is fitted.
 - iv) Back and side clearances:

	Combustible Surfaces	Non-Combustible Surfaces
--	-----------------------------	---------------------------------

Back	25 mm (1 inch)	0 mm (0 inches)
Sides	25 mm (1 inch)	0 mm (0 inches)

Front Clearance:

In order to facilitate easy operation, drainage and servicing of appliance, a minimum of 600 mm clearance should be maintained at the front of the unit.

- v) All air for burner combustion is supplied from underneath the unit. The legs must always be fitted and no obstructions placed on the underside or around the base of the unit, as obstructions will cause incorrect operation and/or failure of the appliance.

INSTALLATION INSTRUCTIONS

b) INSTALLATION PROCEDURE

Installations are to be carried out by a qualified installer.

- i) Fit the supplied legs to the fryer and secure in place with spring washers and hex bolts. Ensure they are securely fastened.
- ii) Fit flue diverter supplied to rear of splashback.
- iii) Place unit in approximate installed location.
- iv) Connect the gas supply. The connection joint is a $\frac{3}{4}$ " BSP male thread found at the rear bottom of the cabinet.
A manual isolation valve must be fitted to the individual appliance supply line.
- v) Check connection for gas leaks.
- vi) Correctly locate fryer into final position and using a spirit level, adjust legs so the unit is level and at the correct height.
- vii) The appliance and supply should now be checked for any gas leaks.
- viii) Operate fryer in accordance with lighting instructions found in Operation Instructions section.

The operating pressures should be adjusted to achieve the following required settings.

UK UNITS ONLY	
Natural Gas (G20)	10 mbar.
Propane Gas (G31)	37 mbar.

Natural Gas	1.00 kPa (4" w.c.).
LPG	2.75 kPa (11" w.c.).

The pressure test point is found next to the gas control knob behind the fryer door.

Unscrew the bottom pressure test point plug through the access hole in the control panel and connect pressure meter.

Note

If other equipment is on gas supply, the pressure should be checked with all equipment on to ensure the supply volume is adequate.

Natural gas units have a regulator within the gas control on the fryer and adjustment of this is achievable by removing the regulator cap from below the control knob and screwing in/out the spring adjusting cap.

Once the operating pressure has been set the pilot burner supply can be adjusted so that impingement of the pilot flame on the thermocouple and thermopile is correct and the main burner pilot flame ignites the main burners satisfactorily.

INSTALLATION INSTRUCTIONS

The pilot burner rate adjustment screw is located next to the electrical terminal block at the bottom of the gas control. Anti-clockwise rotation of the adjustment screw will increase the size of the pilot flame.

Should any difficulties be found in correctly setting up the fryer, further information can be found in the Service section of this manual.

3. INSTALLATION COMMISSIONING

The following commissioning checks must be carried out before the fryer is handed over for use, to ensure the unit operates correctly and the operator(s) understand correct operation.

- a) Each operator must be instructed in the areas of correct lighting, operation and shutdown procedures.
- b) This manual must be kept by the owner for reference, and a record of date of purchase, date of installation, and serial number (found on product data plate inside door) recorded and kept with this manual.
- c) Commissioning shall include thermostat operation check. This should be carried out by filling the fryer with oil/shortening to the oil 'FILL LEVEL' mark at the rear of the tank and setting the thermostat to 180°C. Light pilot burners and turn on main burners in accordance with Operation Instructions found on page 9 of this manual.

Note

If using shortening, the fryer should be filled in accordance with 'Shortening' instructions found in on page 8 of this manual.

The calibration of the thermostat should then be checked once the oil is up to temperature. If a discrepancy is found, the thermostat calibration should be adjusted as per instructions found in the Service section of this manual.

OPERATION INSTRUCTIONS

WARNING

DANGER OF FIRE EXISTS IF THE OIL LEVEL IS BELOW THE MINIMUM "LO" INDICATED LEVEL

Blue Seal 'VEE-RAY' fryers have been designed to provide simplicity of operation and 100% safety protection.

Improper operation is therefore almost impossible, however bad operation practices can reduce the oil/shortening life and produce a poor quality product. To use this fryer correctly please carefully read the following sections.

1. Filling tank with frying medium.
2. Lighting pilot burners.
3. Operating Main Burners.
4. Temperature setting.
5. Frying guide and care of oil.
6. Draining and Cleaning.

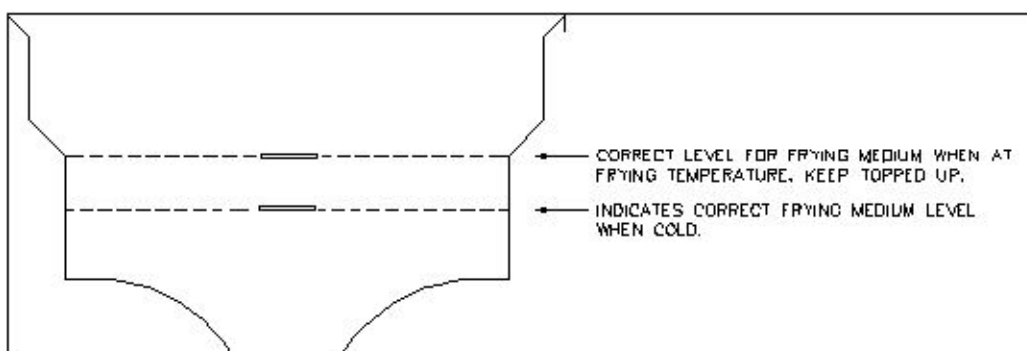
BEFORE USE:-

- a. Check gas supply is on.
- b. Check that no foreign articles are in tank.

1. FILLING TANK:-

Blue Seal 'VEE-RAY' fryers can be used with both oil and shortening.

Before filling always check that the drain valve(s) behind the door is closed. A locking slide is provided on these valves and this should always be locked in position during use.



- a. OIL - Carefully fill fryer pan with oil until the 'FILL-LEVEL' mark is reached. The GT45 fryer will hold approx 20 litres and the GT46 fryer will hold approx 13 litres per pan.
- b. SHORTENING - Ideally shortening should be pre-melted before putting into pan. This is normally done in a suitable vessel on a boiling table burner(s). The liquefied shortening can then be poured into the pan until it reaches the 'FILL LEVEL' mark.

OPERATION INSTRUCTIONS

When pre-melting shortening, only heat until shortening is just liquefied. Do not bring up to high temperature as handling of hot shortening is dangerous.

If pre-melting of shortening is not possible then it should be cut in pieces and packed down into pan.

Bringing the shortening up to frying temperature when not pre-melting should be done in two stages.

1. Pre-Heating;


Light main burners (see operating Instructions on this page) and manually cycle on/off until shortening has liquefied. Ideally burners should be cycled on for 5 seconds and off for 10 seconds. Following this procedure, it should allow shortening to liquefy greatly without scorching. Running burners continuously will cause shortening in contact with pan to overheat, resulting in premature oil breakdown. Never allow shortening to smoke while melting as this indicated too high temperatures. If smoking starts increase intervals between on cycle of burners.

2. Once shortening has liquefied it can be brought up to fryer temperature.


2. LIGHTING PILOT BURNERS

With tank fill with frying medium, the pilot burners can be lit.

To light, firstly open door to access controls;

- a) Rotate and depress control knob at position marked  or "PILOT".
- b) With knob depressed push piezo ignition button to generate spark at pilot burner. Repeat spark until pilot burners are alight.
- c) Hold in control knob for approx. 10 seconds, then release. Pilot burner should remain alight. If not repeat above procedure.


GT45 - SINGLE PAN UK UNITS ONLY

- a) Rotate and depress control knob at position marked  or "PILOT".
- b) With knob depressed push RH piezo ignition button to generate spark at pilot burner. Repeat spark until pilot burners are alight.
- c) Hold in control knob for approx. 10 seconds, then release. Pilot burner should remain alight. If not repeat above procedure.
- d) To light LH pilot burner depress blue button push L/H piezo ignition button to generate spark at pilot burner. Repeat spark until pilot burner lights. Hold blue button depressed for approximately 10 seconds then release. Pilot should remain alight

OPERATION INSTRUCTIONS

3. LIGHTING MAIN BURNERS

Once pilot burners are alight, operation of main burners can occur. To light:-

Rotate control knob to position marked .

Main burners will now ignite automatically off pilot burners.

Note:

- i) If main burners are turned on immediately after pilot burners are lit a delay of approximately 30 seconds will occur until the thermopile which provides power to open the main valve has had adequate time to heat up off the pilot burners.
The main burners will also not light up if the frying medium temperature is above the thermostat set temperature.
- ii) Turning the control knob from pilot to main burner position will allow manual cycling of burners on and off when melting shortening.

4. SETTING TEMPERATURE

The temperature used for fryer food is the most important aspect of fryer operation. Incorrect temperatures will result in poor product quality and will reduce the life of the oil.

Blue Seal 'VEE-RAY' fryers feature a thermostat which is accurate to within 1°C.

The temperature can be set from 145°C to 195°C, although we do not recommend any food to be cooked above 190°C.

To set operating temperature simply turn thermostat to desired setting.

Main burners will operate automatically to maintain this temperature.

In order to assist in obtaining best results with your fryer and the product cooked in it, the following pages detail recommend temperatures and a practical guide to frying. Time spent reading this information will result in obtaining a cooked product of exceptional quality and taste.

As a safety precaution all Blue Seal 'VEE-RAY' fryers feature an over-heat control which will turn off the fryer in the event that the oil reaches over 220°C, should there be a thermostat failure.

BLUE SEAL GT46 'VEE-RAY' Fryers feature a split tank allowing distinctive products to be cooked in individual pans and at different temperatures. This allows seafood products to be fried separate from French Fries for instance to stop flavour contamination between products and allow such product to be cooked at its optimum frying temperature.

OPERATION INSTRUCTIONS

Frying guide and care of frying oils and fats

- a) Prepare food correctly.
Prepare in as nearly uniform pieces as possible and bring to room temperature. Have free from excessive moisture and also excessive crumb when 'breading' is done.
- b) Preheat medium to the right temperature for the particular food and no higher - specially prepared frying mediums are recommended.

The frying medium should be at the proper temperature before lowering the food into it. Avoid heating the frying medium to any higher temperature than is needed. Also avoid holding the frying medium at the frying temperature when there is no food being cooked. Any frying medium will break down if held for long periods at frying temperatures.

- c) Lower food gradually into the hot frying medium using a wire basket, until all pieces are submerged. Avoid overloading the basket, we recommend no more than 900g per basket or 1800g per load. Overloading will cause the temperature to drop so low that a longer frying time will be needed and the foods will become grease soaked and unattractive. With a little experience you can determine what amount of food may be added to the fryer without causing an excessive drop in temperature. If the drop is excessive, either the food is too cold or there is too much of it in the fryer. Temperatures and cooking times quoted are based on average size batches in the fryer.
- d) Continue cooking until the outside of the food is brown and crisp and the pieces are cooked through.
- e) The exact cooking time depends upon the size of the pieces and upon whether the food has been pre-cooked. When in doubt, test a sample and be sure.
- f) Remove food from the frying medium and let it drain in the basket over the fryer.
Conserve the excess frying medium by letting it drain back into the fryer. This draining should not consume much time, however, if the fried food is to be served at its hot, crisp, flavoursome best.
- g) Serve immediately after frying.
Deep fried foods are at their flavour peak as soon as frying is complete. Serve them within a minute or two after they are taken from the fryer. Fried foods should never be held.

OPERATION INSTRUCTIONS

5. FRYING TEMPERATURE GUIDE

Summary of Practical Care of Frying Fats and Oils:

Fats and oils are unstable compounds. Even the best will break down to some extent in the fryer. There are a number of causes of frying mediums ceasing to be edible. Heat and moisture are two of the most important causes and we have both heat and moisture in the deep well fryer. Frying medium is by far the most expensive item of deep well frying equipment, so if the following points are carefully observed the cost of frying can be kept to a minimum.

- a) Select one of the recommend mediums for deep frying (Hydrogenated shortening, high grade lards or salad oils made from peanuts, cottonseed or corn). Know the smoking temperature of the one you select, generally the heat temperature qualities and stability of frying oils, particularly peanut oil, are perhaps greater than that of the solid fats.
- b) Avoid burning the medium - either when putting new medium into fryer or during frying, No food needs a deep well frying temperature higher than 195°C and most foods should be fried around 180°C.
- c) Have rapid 'turnover' of the frying medium. The term 'turnover' means the rate at which fresh medium is added to the old medium in the fryer.
- d) Filter the frying medium daily, or more often if necessary, to remove crumbs and other sediment.
- e) Clean fryer each time the medium is filtered, to keep it free from gum. Also be sure that all soap and detergent is thoroughly removed from the fryer after cleaning it.
- f) Taste the frying medium daily to be sure there is no 'Off' flavour which may be transmitted to other foods.

If these simple precautions are taken consistently, fried foods can always be served at their delicious best. Furthermore, the breakdown of frying medium can be kept at a minimum and the cost of frying operations considerably lowered.

Smoking Temperatures of Frying Mediums

Based on work by the American Meat Institute

Medium	Smoking Temperature
Hydrogenated Fats	190°C to 225°C
Compounds	194°C to 223°C
Lards - Team-rendered	165°C to 225°C
Refined deodorised lard	221°C
Kettle-rendered	190°C
Oils	190°C
Corn	208°C
Cottonseed	217°C

OPERATION INSTRUCTIONS

Frying Temperature Chart

	Temperature (°C)	Duration (minutes)
Chicken - Small Pieces	175-185	8-10
- Large Pieces	160-170	14-16
Chops/Cutlets	165-175	5-8
Fish Buttered/Breaded	170-175	1-5
Prawns/Shellfish	170-175	1-5
Doughnuts - Cake type	185-190	2
- Yeast raised	175-180	2
Fritters	175-185	3-5
Vegetables	185-190	2-3
Potato chips - Blanch	165	3-4
- Fry	190	3-4
French Fries - Medium	190	3-4
-shoe string	190	3-4

This chart is intended as a guide only.

NOTE: Components having adjustments protected (e.g. paint sealed) by manufacturer are only allowed to be adjusted by an authorised service agent. They are not to be adjusted by the user.

OPERATION INSTRUCTIONS

GUIDE TO PROBLEMS IN DEEP FRYER

PROBLEM	CAUSE	CORRECTION
Foaming	Presence of soap or detergent residue from cleaning	Rinse fryer thoroughly three times with clean water. Ensure fryer is perfectly dry before charging with oil.
	Excessive breakdown of oil.	Add fresh oil daily to replace contents every 3-5 days.
	Continual frying of food with excess moisture.	Remove excess moisture from foods to be fried.
	Continued overheating of oil.	Check setting of the thermostat. Turn down heat when use is low to around 120°C (Standby)
	Overloading	Maintain 1-8 ratio of food to oil.
Gumming	Heating oil too rapidly.	When charging fryer or starting up melt oil gradually.
	Continued overheating of oil.	Check thermostat setting by using a mercury in glass thermometer or a thermocouple.
	Frying oil broken down.	Check amount of fresh oil added to fryer to be sure 'turnover' is adequate
	Using wrong cooking oil.	Some oils form gums when used in a deep fryer. e.g safflower oil.
Greasy Foods	Frying at low temperatures	Increase temperature and check thermostat setting.
	Inadequate preparation of food.	Be sure foods (especially potatoes) are 'cured' correctly.
	Excessive quantities of breading or batter.	Remove surplus breading or batter.
	Placing food in frying oil direct from freezer.	Allow frozen foods to thaw before frying.
	Surplus moisture in and on surface of food.	Drain and dry foods before frying.

OPERATION INSTRUCTIONS

PROBLEM	CAUSE	CORRECTION
	Frying oil in advanced stages of breakdown.	Discard "exhausted" oil and recharge fryer. This exhausted oil will not serve as an adequate heat transfer medium.
	Use of dripping or other unrefined oil.	Due to low smoke point, cooking in these oils at lower temperatures results in greater oil absorption by the food.
	Using the wrong kind of cooking oil.	Always use a completely refined and deodorised cooking oil.
Rapid Oil Breakdown	Inadequate frying oil turnover	Adjust procedures to fry more food in fryer to increase turnover.
	Overheating of oil.	Check setting of the thermostat with mercury in glass thermometer or thermocouple.
	Contamination	Filter or strain oil daily.
	Poor Cleaning procedures.	Clean fryer each day or at least once a week and rinse thoroughly. Dry fryer before use.
	Presence of copper or brass in fryer equipment.	Remove all copper or brass fittings from contact with oil.
	Overloading fryer.	Maintain 1-8 ratio of food to frying oil.
	Excessive moisture of food.	Drain and dry foods before frying.
	Overheating oil on standby.	Reduce temperature of frying oil between 93°C to 121°C during idle periods. (Standby).
Smoking	Insufficient turnover of oil.	Maintain a minimum quantity of oil in fryer for more rapid turnover or increase quantity of food fried in fryer. Replace fryer capacity with fresh oil in 3-5 days.
	Continual frying with excess moisture on food.	Drain foods before frying, pat dry.

OPERATION INSTRUCTIONS

PROBLEM	CAUSE	CORRECTION
	Contamination of oil.	Filter or strain daily to remove contaminants.
	Overheating of oil.	Check setting of the thermostat with mercury in glass thermometer or thermocouple.
	Rapid breakdown of oil.	Use stable frying oil.
	Use of unrefined oils.	Dripping smokes at lower temperature than refined and deodorised oils.
Darkening of oil	Presence of salt on food.	Salt foods after frying and away from dryer.
	Foods dripped in batter high in egg yolk.	Reduce egg content of batter, replace part egg with milk.
	Oil contamination.	Filter or strain oil daily.
	Poor cleaning practice.	Clean fryer thoroughly at least once a week or each day in cases of heavy usage. Ensure fryer is perfectly dry before use.
	Overheating of oil.	Check setting of the thermostat with mercury in glass thermometer or thermocouple.
	Insufficient oil turnover.	Top up daily to replace contents of fryer in 3-5 days.
	Cooking much high sugar foods.	Potatoes at the end of a season are usually high in reducing sugars. When fried they will darken quickly and colour the oil.

Note:

Excessive usage of oil is an indication of high absorption of oil in the food. This is a function of temperature and character of the goods being fried - NOT due to the type of oil being used (unless refined oils are being used). Any variation in the apparent life of the oil is always due to one or more of the causes mentioned.

OPERATION INSTRUCTIONS

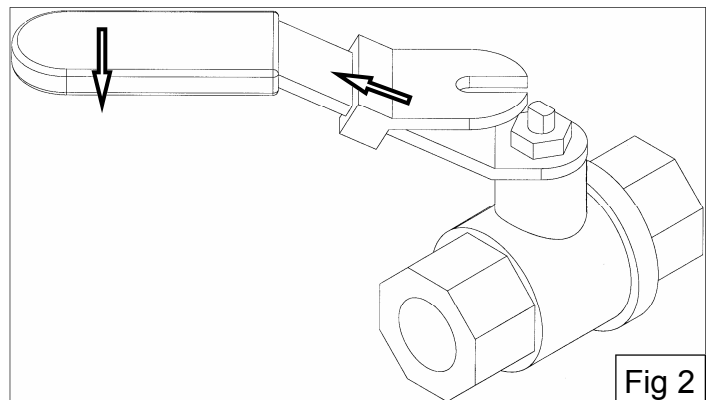
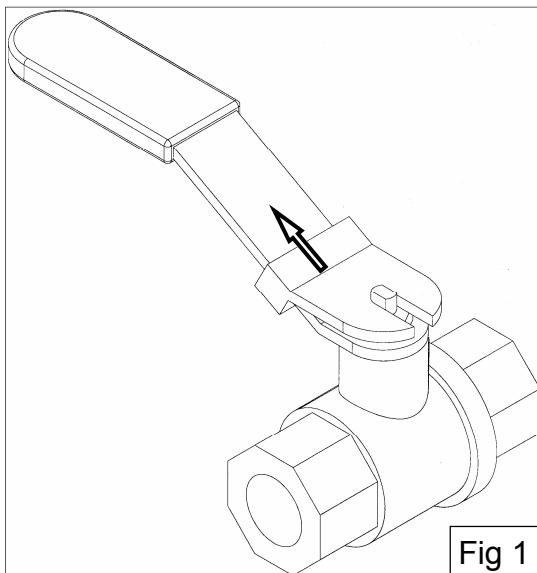
6. DRAINING AND CLEANING

In order to achieve maximum operating results, the fryer should be cleaned regularly and all controls should be checked and adjusted periodically by a qualified serviceman.

WARNING:

DO NOT ATTEMPT TO MOVE THE FRYER WHILST THE FRYER IS FULL OF OIL.

BEFORE ATTEMPTING TO MOVE THE FRYER, ENSURE THAT ALL THE OIL HAS BEEN DRAINED FROM THE TANK. REFER TO THE INFORMATION BELOW ON HOW TO DRAIN THE OIL FROM THE FRYER.



Opening Drain Valve

- 1 Lift locking slide on valve handle (fig 1) to release valve.
- 2 Rotate handle anticlockwise (fig 2) to open valve.
- 3 When valve is closed locking slide will drop down, locking valve, to prevent accidental opening.

a) Daily

At the end of each day or at the end of each shift, if the frying schedule is heavy, the frying medium should be drain and strained.

Use a drain stick if necessary to stir up solid medium into top medium to melt it. Slip a muslin or other suitable bag over the drain valve. Crumbs will be caught in bag but frying medium will strain freely through bag into receptable. When pan is empty, use small pan with handle as ladle and dip hot frying medium from receptable and pour vigorously around sides and bottom of pan to wash out crumbs and particles adhering to them. Continue to dip and pour until all crumbs are washed down and into filter bag.

Open drain valve wide and check for any particles or crumb residue in valve.

OPERATION INSTRUCTIONS

Clean out with stiff nylon brush if necessary. Do not use wire brushed or metal rods as these damage the seating and lead to eventual leakage. If obstruction cannot be removed with brush, use wooden probe to dislodge. Close valve and pour frying medium back into pan and continue days work. Straining takes less time than frying one load of potatoes and will pay dividends in food quality and saving of frying medium.

b) Weekly Cleaning

1. Proceed as above to drain and filter the tank, but do not refill it with oil until it has been cleaned as detailed below.

Fill the fryer with cold water to the normal fill level and add a high quality commercial cleaner that has been specifically formulated for fryers. All purpose cleaners are not recommended. Never use a caustic or lye solution, as this will leave a fat destroying film on the tank.

2. Heat the water to approximately 80-90°C.
3. Clean your baskets at the same time by simply immersing them in the solution. Allow fryer to clean for 5-10 minutes or as directed on the cleaner instructions. Remove baskets. Turn OFF burners.
4. Scrub lightly, but vigorously with a stiff nylon bristle brush to remove any remaining deposits. DO NOT use a wire brush, as this will scratch the sides.
5. Empty the fryer and rinse thoroughly with water. Use a 1 part vinegar to 15 parts water solution to rinse the tank and neutralize any cleaner residue. Use a weaker solution of up to 1 part to 25 water if this proves unsuitable for the cleaner being used.
6. Rinse the tank thoroughly with water, drain and dry. Refill the tank with new filtered oil/fat.

SERVICING INSTRUCTIONS

Blue Seal 'VEE-RAY' fryers are designed and engineered for serviceability. Any part can be quickly and easily removed for service or replacement from the front of the unit.

WARNING:

DO NOT ATTEMPT TO MOVE THE FRYER WHILST THE FRYER TANK ARE FULL OF OIL.

BEFORE ATTEMPTING TO MOVE THE FRYER, ENSURE THAT ALL THE OIL HAS BEEN DRAINED FROM THE TANK. REFER TO THE INFORMATION ON THE PREVIOUS PAGES ON HOW TO DRAIN THE OIL FROM THE FRYER.

CAUTION: Before carrying out any service work ensure that the gas supply line is shut down and/or disconnected.

NOTE: All servicing must be carried out by an authorised person. It is recommended that the fryer is periodically checked every six months.

Components having adjustments protected (e.g. paint sealed) by manufacturer are only allowed to be adjusted by an authorised service agent. They are not to be adjusted by unauthorised service person.

Blue Seal 'VEE-RAY' gas fryers are designed for trouble-free operation. However, fryers operate in adverse environments and maintenance and service may be required. The following troubleshooting guide should enable quick identification of mis-adjustment or failure of a component.

Further detail of service work follows Troubleshooting Guide once fault has been found.

Further assistance for part identification is found in the Spare Parts List.

The most common servicing requirement is gas conversions for which the procedure is detailed in the "Gas Type Conversion Instructions".

1. EXPLANATION OF CONTROL SYSTEM

The gas control circuit in these fryers is operated by two millivolt circuits.

The first is the pilot system which consists of the thermocouple, the pilot burner(s) and the gas control.

Heat on the thermocouple from the pilot flame generates a 20-30 mV electrical potential between the thermocouple and earth. This millivolt circuit connected to the gas control valve is enough to hold the pilot valve magnet within the gas control open, thereby allowing the pilot burner to operate.

The second millivolt circuit consists of the thermopile (a collection of thermocouple connections in series), and the gas control. Heat on the thermopile from the pilot flame which is constantly on as explained above, generates approximately 500-700 millivolts which when connected to the main burner valve magnet within the gas control, allows the magnet to pull open the main burner valve and this passes gas through to the burners.

SERVICING INSTRUCTIONS

This main valve circuit is interrupted by the main thermostat and as the thermostat cycles on/off, it closes or opens this millivolt circuit, thereby opening and closing the main burner valve to cycle the main burners on/off.

The overtemperature thermostat is included in the pilot valve millivolt circuit in this same way so that when it open circuits it cuts the electrical supply to the pilot valve magnet, thereby shutting off the pilot burner. The fryer then becomes inoperable until the oil cools to below 200°C when the overtemperature thermostat will close again and allow the millivolt circuit to be complete and thereby allow the pilot burner to be lit again.

Following the Troubleshooting Guide will enable a quick narrowing down of possible causes and lists appropriate solutions.

2. TROUBLESHOOTING

Piezo Ignitor Not Sparking - The most common cause will be a short in the high tension lead. If repeated sparking of the piezo shows intermittent sparking at the electrode, then the lead should be traced to find area of short. This can normally be visually seen as the spark arcs. If the lead is shorting the best solution is to replace it, as the electrical insulation strength of the lead may have deteriorated.

If the spark arc can be seen at the electrode insulator at the pilot burner instead of at the electrode tip, then the insulator probably has a fracture and should be replaced.

If no spark at all can be generated, remove piezo ignitor and hold close to cabinet body, depress piezo ignitor and if a spark cannot be generated to cabinet body the piezo ignitor is faulty and should be replaced.

Note: If piezo ignition fails, the pilots can be manually lit in the interim until the piezo circuit is repaired. A standard taper torch or matches/lighter can be used for manual back-up ignition.

Pilot Burners Will Not Light/Stay Alight - Firstly check thermocouple connection is firm and the overtemperature lead connection to interrupter on thermocouple is secure. Loose connections will cause resistance to millivolt circuit and result in pilot outage.

If connections OK, verify that there is gas at the pilot burner when the control knob is held in the pilot position by manually lighting. If there is no gas flow or very little, check supply is not empty or shut off further downstream. If pilot can be lit but flame too small to impinge on thermocouple, again check supply and if OK, check adjustment of pilot flow by adjusting screw below control knob on gas control. If sufficient pilot flame cannot be obtained, remove pilot orifice from pilot burner and check for blockages and/or correct size.

Natural Gas 0.62 mm.
Propane Gas 0.35 mm.

UK Units	
Natural Gas (G20)	0.45 mm.
Propane Gas (G31)	0.30 mm.

SERVICING INSTRUCTIONS

If pilot flame OK but goes out after control knob released (after holding in for approximately 20 seconds), then the thermocouple may be faulty or the overtemperature thermostat may be faulty.

Firstly check the oil temperature. If above 205°C then the overtemperature control will be open circuit. Wait for oil to cool to approximately 190°C and relight pilot burner. If overtemp is operating OK the pilot should now stay alight.

If the oil is cold, disconnect the thermocouple from the gas control, while holding in the control knob in the pilot position and using a multimeter measure the millivolts being generated between the thermocouple end and earth (place other probe of multimeter on body of gas control). With thermocouple hot, millivolt reading should be between 20-30 mV. If voltage reading below 15 millivolts the thermocouple is defective and should be replaced.

If no millivolts generated, disconnect overtemperature thermostat leads from interrupter terminal on thermocouple and check continuity through overtemperature thermostat with multimeter. If overtemperature thermostat is open circuit it is faulty and needs replacing. If continuity through overtemperature thermostat then thermocouple is faulty and needs replacement.

If all of the above in the pilot and thermocouple system check out OK, then gas control valve is defective and needs replacement.

Pilot Burner Delay in Ignition of Main Burners - Check operating pressure as stated in installation instructions, Page 6. Check pilot flame adjustment; pilot flame for main burner ignition should be approximately 1 inch long. Increase by adjusting pilot adjustment screw on gas control.

Check pilot orifice size correct. (See Specifications, Page 2).

Overtemperature Thermostat Cuts Out Pilot Burners - This would occur for one of three reasons:

- i) Overtemperature thermostat faulty. If cutting out pilot when oil below 200°C then replace overtemperature thermostat.
- ii) Control thermostat not maintaining set temperature.

Cause:

- Out of calibration. See next section for calibration procedure.
- Thermostat does not open on temperature rise.

Check continuity through thermostat leads on temperature rise. If circuit does not open thermostat.

- iii) Thermostat opens on temperature rise but control valve does not respond. Check connections on gas control are correct.

If correct, replace gas control valve.

SERVICING INSTRUCTIONS

Main Burners Do Not Come On - Firstly check thermopile and thermostat connections to gas control are correct as shown above. Check connections are tight. Check thermostat setting correct and gas control knob in main burner on position.

Remove thermostat leads from gas control and check continuity through thermostat, i.e. check thermostat calling for heat. If not check calibration.

If all OK, then check the thermopile. To check, disconnect thermopile leads from gas control and measure millivolts generated by thermopile by placing multimeter probes across leads when thermopile heated in pilot flame (500-700mV should be generated). If low, replace thermopile provided pilot flame impingement on thermopile is good.

Main Burners Do Not Burn Correctly - Burners roar, light back or do not burn the correct colour then it should be replaced. Before burner replacement, however, always check operating pressure and orifice sizes are correct for gas type, (see Specifications page 2), and that flueway and/or primary air intake is not blocked/restricted.

The above guide covers all components having an active part in the control operation of the fryer and gives assistance to the most likely cause of failure should a fault develop. Obviously, due to the diversity of installations and possible happenings, not all possibilities are covered. The information provided should enable quick identification of the most probable faults that could occur.

SERVICING INSTRUCTIONS

3. REPLACEMENT OF PARTS PROCEDURE

Thermocouple

Disconnect from gas control. Unscrew securing nut from pilot burner. Remove. Replace thermocouple and reconnect.

Thermopile

Unscrew two leads from gas control terminal block. Unscrew securing nut from pilot burner. Remove. Replace thermopile and reconnect.

Pilot Burner

Disconnect thermopile and/or thermocouple from pilot burner as described above. Disconnect pilot supply tube from pilot burner by unscrewing nut and olive.

Remove pilot burner securing screw(s) and remove pilot burner assembly. Replace with new unit by reversing above procedure.

Ensure correct pilot orifice is refitted. See Specifications.

Thermostat

Drain oil from fryer first.

Remove thermostat control knob (2 slot screws or 2 socket head screws).

Remove front fascia panel (2 screws underside).

Remove control panel (6 screws visible plus 2 screws underside on GT45-SR models). Before main thermostat can be unscrewed, the overtemperature thermostat must be removed. See over.

Unscrew thermostat after disconnecting leads from gas control terminal block. Replace with new thermostat ensuring sealant suitable for 250°C is used on threads. (Loctite 567 recommended).

Refit overtemperature thermostat with thread connection being resealed. Re-assemble by reversing above procedure.

Ensure thermostat, overtemp, and H.T. leads are not pinched when refitting control panel. To calibrate thermostat see below.

Ensure thermostat leads are connected to correct terminals on gas control.

Note: On GT46 models both thermostats will require removal to allow removal of control panel. To eliminate necessity for recalibration of non-faulty thermostat mark knob position before removal.

Thermostat (Calibration)

Remove thermostat control knob.

Calibration of thermostat requires the fryer to be filled with oil. Light pilot burners and turn on burners. With temperature probe in oil, run burners until oil temperature reaches over 150°C.

SERVICING INSTRUCTIONS

Turn thermostat shaft until cycling on/off point reached. Check oil temperature and find point at which rotating shaft back and forth slightly will cause burners to cycle on/off.

Recheck oil temperature (should be between 150°C and 190°C) and refit control knob with pointer at temperature setting on control panel that reflects actual oil temperature. Allow fryer to cycle and make any fine adjustments of knob position required.

Overtemperature Thermostat

Disconnect overtemperature leads from interrupter on thermocouple.

Follow procedure for gaining access to thermostat removal as detailed under Thermostat (Replacement) and replace. Reconnect new overtemperature lead to interrupter on thermocouple ensuring secure electrical connection.

Main Burners

On both GT45 and GT46 models disconnect all thermocouple, thermopile and pilot supply tubes from gas controls.

Unscrew pilot mounting bracket (4 screws) from main inner assembly. Remove complete pilot assembly. Unscrew (2 screws) burner box underside panel from side from which burner is to be replaced.

Unscrew and remove corner support panel from underside of burner intake throat (2 screws). Burner should now be removable by dropping down front of burner and pulling forward.

Holding the burner with one hand underside and the other holding the throat, push up the rear of the burner until it positions on the rear support bracket within the burner box. It is good practice to put your head down and have a look at this bracket before trying to install a burner so that you can visualise where the bracket is when fitting the burner.

Once the rear is supported the front can be pushed up into its location. The small notch in each side of the venturi visible externally from the burner body is for front to back location and should be located up into the top corner panels when pushing up the burner at front. If correctly fitted the corner support bracket securing holes will line up with its two securing holes. If not, check burner fit.

Reassemble in reverse procedure of dis-assembly.

Ensure underside burner box panel is refitted, as failure to refit this panel will reduce combustion and performance efficiency.

SERVICING INSTRUCTIONS

Flame Failure Device (GT45 UK UNITS ONLY)

Remove thermostat control knob, noting set position. Remove control panel (6 screws visible plus 2 screws underside).

Undo Thermocouple and gas connections on the valve. Remove securing nut to remove Flame Failure control from the unit.

Refit by reversing above procedure.

Main Gas Control(s)

Should replacement of main gas control be necessary these fryers have been designed to allow removal of the main gas assembly as a cartridge so that servicing can be done on a workbench or table.

Remove front fascia panel (2 screws underside). Remove thermostat control knobs, noting set position. Remove control panel (6 screws visible plus 2 screws underside on GT45 models).

Disconnect thermocouples, thermopile leads and thermostat leads from gas control(s). Undo union at base of main supply line. Main gas control assembly can now be removed after removing 4 securing screw fixing assembly to side panel inner flanges.

Replace gas control in assembly.

Refit by reversing above procedure.

IMPORTANT - Always ensure gas thread connections are re-sealed and electrical connections secured when servicing. Always recheck correct operation before leaving premises.

4. GAS TYPE CONVERSION INSTRUCTIONS

If requiring to convert the gas type suitability on this unit a conversion kit is required.

The kit ordering part numbers are listed on page 27 if one has not been ordered with this unit.

IMPORTANT: The Blue Seal 'VEE-RAY' fryers are suitable for Natural and LP Gases only.

Conversions should be carried out by authorised persons only.

Procedure for conversion:-

1. Isolate gas supply.
2. Unscrew using ½" spanner the main burner injectors located in front of main burner venturi openings.
3. Screw in correct new injectors.

UK Units	
Natural Gas (G20)	Ø3.00 mm.
Propane Gas (G31)	Ø1.75 mm.
4. Unscrew pilot supply lines from both pilot burners and remove pilot orifice.

SERVICING INSTRUCTIONS

5. Replace with correct sized orifice and reconnect pilot supply lines.

Natural Gas $\varnothing 0.62$ mm.
LP Gas $\varnothing 0.35$ mm.

UK Units	
Natural Gas (G20)	$\varnothing 0.45$ mm.
Propane Gas (G31)	$\varnothing 0.30$ mm.

6. Remove cap which will be either hex or slotted from regulator which is intergral in gas control and located directly below main gas control knob.
7. If converting from LPG to Natural gas remove regulator knock out pin from regulator and replace with Natural gas spring and adjusting screw cap provided in kit.
8. If converting from Natural gas to LPG reverse above procedure.
9. Reconnect gas supply and check pilot connections for leaks.
10. Fit pressure gauge to pressure test point next to gas control knob on gas control after unscrewing test point plug.
11. Light main burners and adjust either LPG supply pressure at supply or on Natural gas adjust regulator safety in gas control, until specified operating pressures are achieved.

Natural Gas 10 mbar.
Propane Gas 37 mbar.

UK Units	
Natural Gas (G20)	10 mbar.
Propane Gas (G31)	37 mbar.

12. Replace regulator cap on gas control. (Natural Gas only)
13. Adjust pilot flame size at adjusting screw on gas control below gas control knob so that flame impingement on thermopile and thermocouple is correct and 3 flame of pilot burner is approximately 1" long for main burner ignitor.

Note: On Twin tank models the procedure required to be carried out on both control sets.

SPARE PARTS

CONTROLS

PART NO.	DESCRIPTION
018094	Interrupted Thermocouple.
018901	LH Thermocouple (UK Only).
018093	Thermopile.
018090K	Pilot Burner (includes electrode).
025630K	Pilot Burner (includes electrode) (UK Only).
018092	Pilot Injector \varnothing 0.35mm LPG.
018091	Pilot Injector \varnothing 0.62mm Natural.
018971	Pilot Injector \varnothing 0.30mm G31 Propane (UK Only).
018972	Pilot Injector \varnothing 0.45mm G30 Natural (UK Only).
018089K	Gas Control Kit.
019237	Flame Failure Valve (UK Only).
018095	Piezo H.T. Lead.
020119	Piezo Ignitor.
022575	Burner Kit.
018145	Thermostat Knob.
018021K	Thermostat.
018022K	Overtemperature Thermostat.

GENERAL

PART NO.	DESCRIPTION
018019	Basket.
012172	Door Magnet.
015279	Door Handle.
018358	Drain Valve.
018147	Drain Extension.
018153	Joining Strip.
SA1658	Lid.
018152	Splash Guard.
020577	Basket Tray (GT45 only).
020578	Basket Tray (GT46 only).
023191	Fish Plate (optional extra - GT45 only).
022587	Conversion Kit NAT→PROP GT45.
022583	Conversion Kit PROP→NAT GT45.
022588	Conversion Kit NAT→PROP GT46.
022584	Conversion Kit PROP→NAT GT46.
022589	Conversion Kit NAT→PROP GT45 (UK Only).
022585	Conversion Kit PROP→NAT GT45 (UK Only).
022590	Conversion Kit NAT→PROP GT46 (UK Only).
022586	Conversion Kit PROP→NAT GT46 (UK Only).

