MERRYCHEF®
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eikon® e1s

GB

User Manual CE – Original, GBR

Section 3: Service and Repair Guide

Part number: 32Z3957s3

Read instructions before use

Table of Contents

Document information

Version control

Date	Issue number	Description	Issued by
14th March 2018	1.0	Service and Repair Manual	Merrychef

Document purpose

This Service and Repair Manual is intended for all trained service technicians who work with the Merrychef eikon e1s microwave combination oven, and provides them with the necessary information for carrying out servicing and repair work properly and safely.

Related documents

This document forms one part of the overall Merrychef eikon e1s user manual. The complete manual is separated into three sections:

- Section 1: Safety Guide
- Section 2: Operations and Installation Guide
- Section 3: Service and Repair Guide

How to use this guide

This guide should be read prior to servicing or repairing the appliance. It should also be used in conjunction with the Safety Guide (Section 1) and the Operations and Installation Guide (Section 2).

Symbols and their meanings

Important information has been highlighted throughout this section using symbols and warning notices.

Symbol	Meaning
	Warnings of potential injuries. Heed all the warning notices that appear after this symbol to avoid potential injuries or death.
	See specified section or guide.
	Take note of this information.

Warning notices

Hazard level	Consequences	Likelihood
DANGER	Death / serious injury (irreversible)	Immediate risk
WARNING	Death / serious injury (irreversible)	Potential risk
CAUTION	Minor injury (reversible)	Potential risk
DAMAGE	Damage to property	Potential risk

3A. Safety precautions and requirements

Warning and safety signs

The following warning signs/notices must be attached to the microwave combination oven and optional accessories in the area indicated so as to be easily visible at all times.

Figure 3.1: Warning and safety signs on appliance

Area	Symbol	Descriptions
1		**Microwaves warning** There is a risk of external and internal burns of body parts following exposure to microwave energy.
2		**Electric shock warning** There is a risk of electric shock if the appliance is serviced without disconnecting the electrical supply.
3		**Fire / electric shock warning** There is a risk of fire / electric shock if the appliance is operated without respecting the minimum clearances.
4		**Hot surface warning** There is a risk of burns from high temperatures inside the cavity and on the inside of the appliance door.
5		**Electric shock warning** There is a risk of electric shock if the electrical power is not connected to a properly grounded outlet.
6		**Equipotential bonding**

Table 3.1: Meaning of signs

Parts and safety devices

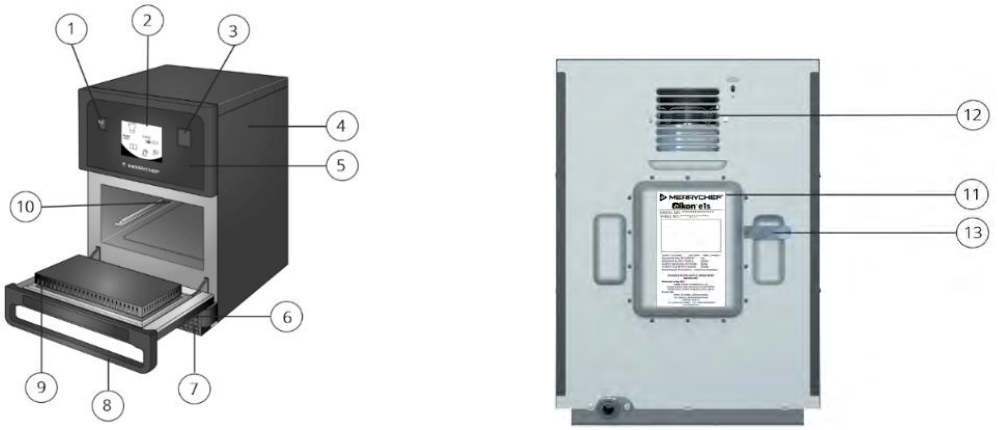


Figure 3.2: e1s front and rear views – parts and safety devices

Item	Part / safety device	Function and precautions
1	ON/OFF appliance switch	Used to turn the microwave combination oven on and off. However, turning this switch off does not isolate the appliance from the electricity supply.
2	easyToUCH® screen control panel	The easyToUCH® screen illuminates to alert the user that the appliance is switched on.
3	USB port	A USB socket located under the cover allows updates to programmes stored on the appliance.
4	Protective cover	The cover can only be removed with specific tools. It prevents live parts from being touched accidentally and prevents access to the moving fan. Always ensure the cover is securely in place.
5	Operating panel	Can only be removed using specific tools and prevents live parts from being touched accidentally. Always ensure the panel is in place.
6	Appliance door	Protects the user and outside environment from hot steam and microwave energy. Check the door regularly for damage and replace it if required.
7	Air filter	The air filter is part of the ventilation system and should be free of obstruction and cleaned daily.
8	Door handle	The door handle is a rigid bar which is pulled downwards and away from the appliance to open it.
9	Door seals	The tight seals around the door ensure protection from microwave energy leaking from the cavity. Check the door seals regularly for signs of damage and replace it if required.
10	Cavity	The cavity (cooking chamber) is constructed from stainless steel and used for cooking products. Keep it clean by following the appliance's cleaning procedures.
11	Nameplate	A label that is attached at the rear of the oven and states the serial number, model type and electrical specifications.
12	Air outlets	Air used to cool internal components and allow steam from the cavity to escape. The air outlets must be kept free from obstruction and they will not allow microwave energy to escape into the environment.
13	Steam pipe and cover	A covered pipe from the cavity to the back of the oven to vent steam during cooking and prevent pressure build up.

Table 3.1: Parts – functions and precautions

Other safety devices

Safety device	Functions	Checks / Actions
Door interlocks - Electric door sensor for appliance door	▪ Ensures that the microwave generation system cannot be powered when the door is open	Check door switch: ▪ **Action:** Open the appliance door fully and press Start ▪ **Result:** Door open warning message
Disconnection device	▪ Installed by the customer close to the appliance; easily visible and accessible, 1- or 3-pole action, minimum contact separation 3mm ▪ Used to disconnect the appliance from the power supply during cleaning, repair and servicing work and in case of danger	**Action:** ▪ Trip the disconnection device ▪ Unplug appliance such that from any access point the operator can check the plug remains removed ▪ Use of disconnection with a locking system in the isolated position
Internal fuses	▪ Prevent faulty components from drawing too much current and causing potential fire hazard	▪ Ensure that the internal fuses are correctly rated

Table 3.2: Safety devices - actions and checks

Hazard points

Heat generation (1)

The microwave combination oven becomes hot inside the cavity and on the inside of the appliance door. This poses a risk of burns on hot surfaces inside the microwave combination oven, and also on hot appliance parts, food containers and other accessories used for cooking.

Hot steam / vapour (2)

When cooking food, the microwave combination oven may generate hot steam and vapour which escapes when the appliance door is opened and which is removed through the air vents on the rear of the microwave combination oven when the appliance door is closed. This poses a risk of scalding from hot steam when the appliance door is opened. Take particular care when opening the appliance door if the top door edge is below your field of vision.

Live components (3)

The microwave combination oven contains live parts. This means a risk from live parts if the cover is not in place.

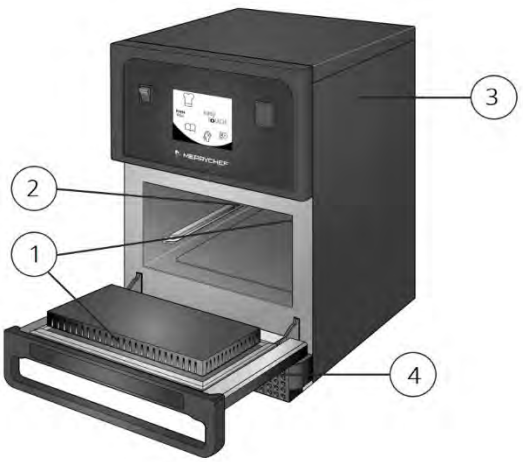


Figure 3.3: Hazard points

Parts moving against each other (4)

For various actions, such as opening/shutting the appliance door or cleaning the appliance door, there is the risk that you will crush or cut your hand.

General safety instructions

General safety instructions for all individuals using the e1s appliance is provided in *Section 1: Safety Guide.* This guide covers instructions and precautions relevant to service and repairs only.

All service engineers and persons using the appliance should read *Section 1: Safety Guide* before using or servicing the appliance in any way.

Safety during installation and set up

Safety instructions for installation and setting up including precautions when preparing the appliance for use is provided in *Section 3B.* You should also read *Section 1: Safety Guide* before installing or using the appliance.

Safety during cleaning

Safety instructions for installation and set up is provided in *Section 3C.* You should also read *Section 1: Safety Guide* before using and maintaining the appliance.

Safety during operation

For details of hazards and safety precautions when operating the appliance, please refer to *Section 1: Safety Guide*. For operating instructions, please refer to *Section 2: Operations and Installation Guide.*

Service and repair safety requirements

Users must read *Section 1: Safety Guide* before handling the oven in any way. A summary of the service and repair safety requirements are provided below but it is mandatory to use the Safety Guide in conjunction with this Service and Repair Guide.

Personal protective equipment requirement

Ensure work wear as specified in country-specific standards and directives for kitchen work is used, in particular:

- Protective clothing
- Heat protective gloves (compliant with EN 407 in European Union or equivalent)
- Safety boots

Hazards and risks

Risk of injury from lifting heavy weights incorrectly

⚠WARNING

When lifting the appliance, the weight of the appliance may lead to injuries, especially in the torso area. To avoid this:

- Use a fork-lift truck/pallet truck to move the appliance.
- Use suitable lifting gear.
- When lifting the appliance, use enough people for the weight of the appliance (value depending on age and gender). Observe the local occupational safety regulations for lifting and carrying.

Risk of body parts being crushed when moving and setting the appliance down

⚠WARNING

To avoid crushing body parts, ensure these instructions are followed:

- Use suitable handling gear
- Move the appliance slowly and carefully and secure it against tipping over
- Make sure centre of gravity is balanced and avoid jolts
- Ensure the supporting surface meets the requirements specified above

Risk of cuts from sharp edges

To avoid cuts, ensure personal protective equipment is used and exercise caution when handling sheet-metal parts.

Risk of trapping fingers or body in mechanical parts of the appliance

To avoid this risk, when opening or closing the door, ensure that the handle is used and keep clear of the door hinges.

Risk of electric shock from live electrical parts

⚠DANGER

Live electrical parts are to be found under covers, under the operating panel, along the mains power lead and on metal parts adjacent to the appliance. As such, work on the electrical system must only be performed by qualified electricians (as per EN50110-1 in EU or equivalent) from an authorised service company. To avoid risk:

- The appliance must not be installed or operated outdoors.
- The electrical supply must be connected in accordance with applicable local and national regulations and regulations of the professional associations and of the relevant power supply company.
- Ensure that all electrical connections are in perfect condition and fixed securely.
- Make sure that the appliance is connected to an equipotential bonding system (EU).

- If two microwave combination ovens are installed in a stacking kit, both cases of the appliances and the stacking kit itself must be grounded in a suitable manner and connected to an equipotential bonding system.
- For microwave combination ovens on a wheeled platform, the length of the mains power lead must accommodate the degree of movement allowed to the appliance by the retaining device on the wheeled platform. When moving the assembly (platform plus appliance), never place the mains power lead under tension.
- All electrical connections must be checked when the appliance is prepared for first-time use to ensure cables are laid correctly and connections are made properly.

Rules for moving and setting up the wheeled trolley safely

The appliance may need to be moved for service and repair. To avoid hazards, the following rules must be observed when moving the wheeled trolley (optional accessory) that carries the appliances:

- Watch out for all connecting cables when moving appliances. Never wheel over the connecting cables. Never pull off or even stretch the connecting cables.
- The appliances must be disconnected from the electrical supply before moving the stacking kit (optional accessory).
- The appliances must be left to cool down on the trolley before being moved.
- There must not be any food left in the appliances.
- The appliance door must be closed.
- Protective clothing must be worn if the appliance is mounted on a trolley.
- It is important to ensure that the unit is level once it is back in place.
- Once the unit is back in place, the parking brakes must be engaged again.
- Whatever the position, care must be taken to ensure that the trolley carrying the appliance does not tip over.

Risk of burns

⚠WARNING

Before starting servicing and repair work, wait until the cooking chamber has cooled to below 50°C / 122°F or use the 'Cool-down' function (see *Cool-down procedures* in *Section 3C*) to cool the cooking chamber.

Wear personal protective equipment suitable for handling hot surfaces before touching any of the interior parts of the cooking chamber, the inside of the appliance door or any parts that were inside the oven during cooking.

Risk of burns from microwave emissions

- Do not become exposed to emissions from the microwave generator or parts conducting microwave energy.
- Never operate an appliance that has failed the 'Microwave Leakage test'.

Risk of smoke or fire

If one of the electrical components is defective, for example due to a short-circuit, or if the internal wiring is refitted incorrectly when servicing/repairing the oven, there is a risk of smoke or fire. To avoid this risk:

- Never use electrical spare components which failed a dedicated test or look damaged.
- Carefully refit electrical connections using the wiring diagrams provided in the *Electrical installation requirements* section in *Section 3B*.

Safety when replacing appliance parts

Safety instructions for replacing oven parts, including by removing casing is provided in *3I. – Replacing components.*

3B. Installation and setting up

Safety requirements

Personal protective equipment requirement

When installing or moving the appliance, ensure the following personal protective equipment is used:

- Protective gloves
- Safety boots
- Hard hat (e.g. when heavy loads are being lifted and working overhead)

To ensure local and national standards and regulations relating to workplaces in catering kitchens and the installation location are observed, only Service Technicians are permitted to set up the appliance.

Safety precautions relating to the installation location

To prevent hazards that arise from the installation site and environment of the appliances, the following rules must be observed:

- The floor adjacent to the appliance may be slippery. Clean up spillages immediately.
- The location for installation must comply with operating conditions requirements:
  - The ambient temperature lies between +4°C /40°F and +35°C/95°F
  - Not a toxic or potentially explosive atmosphere
  - Dry kitchen floor to reduce the risk of accidents
- ⚠DAMAGE Minimum space requirement must be complied with:
  - The minimum height of free space necessary above the top surface of the appliance is 50mm (2”).
  - The minimum depth requirement is as follows:
    - Width of appliance = 406.4mm (16”)
    - Total depth with door open = 806.9mm (31.8”)
    - Counter depth = 499.0mm (19.6”)
  - Safety clearance on left-/right-hand side / at rear: 0mm
- The appliance must not be installed directly under a fire alarm or sprinkler system. Fire alarm installations and sprinkler systems must be set up to handle the level of steam and vapour expected to escape from the appliance when the door is opened.
- There is a risk of fire from the heat emitted from hot surfaces. Therefore, flammable materials, gases or liquids must not be located near, on or below the appliance.
- It must be possible to set up the microwave combination oven in the installation position so that it cannot tip over or slide about. The supporting surface must comply with these requirements.
- Vibrations must generally be avoided when using wheeled oven stands or wheeled stacking kits.
- Heat sources in the vicinity must lie at a minimum distance of 500mm (20”).
- The appliance must be installed so that there is absolutely no possibility that liquid from the appliance or liquid coming from cooking processes can reach deep-fat fryers or appliances that use hot, uncovered fat. Deep-fat fryers or appliances that use hot, uncovered fat, and which are located in the vicinity must lie at a minimum distance of 500mm / 20in.
- Requirements for supporting surface is met.
  - The supporting surface must be flat and level.

- The supporting surface must have a non-slip surface.
- The supporting surface must be able to bear the in-use weight of the appliance, plus the weight of the structure supporting the appliance as follows: 50Hz = 46kg /101lbs and 60Hz = 45kg / 99lbs.

Potential risks during installation and setting up

Risk of injury from lifting heavy weights incorrectly

⚠WARNING

When lifting the appliance, the weight of the appliance may lead to injuries, especially in the torso area. To avoid this:

- Use a fork-lift truck/pallet truck to move the appliance.
- Use suitable lifting gear.
- When lifting the appliance, use enough people for the weight of the appliance (value depending on age and gender). Observe the local occupational safety regulations for lifting and carrying.

Risk of body parts being crushed when moving and setting the appliance down

⚠WARNING

To avoid crushing body parts, ensure these instructions are followed:

- Use suitable handling gear.
- Move the appliance slowly and carefully, and secure it against tipping over.
- Make sure centre of gravity is balanced and avoid jolts.
- Ensure the supporting surface meets the requirements specified above.

Risk of cuts from sharp edges

To avoid cuts, ensure personal protective equipment is used and exercise caution when handling sheet-metal parts.

Risk of trapping fingers or body in mechanical parts of the appliance

To avoid this risk, when opening or closing the door, ensure that the handle is used and keep clear of the door hinges.

Risk of electric shock from live electrical parts

⚠DANGER

Live electrical parts are to be found under covers, under the operating panel, along the mains power lead and on metal parts adjacent to the appliance. As such, work on the electrical system must only be performed by qualified electricians (as per EN50110-1 in EU or equivalent) from an authorised service company. To avoid risk:

- The appliance must not be installed or operated outdoors.
- The electrical supply must be connected in accordance with applicable local and national regulations and regulations of the professional associations and of the relevant power supply company.
- Ensure that all electrical connections are in perfect condition and fixed securely.
- Make sure that the appliance is connected to an equipotential bonding system (EU).
- If two microwave combination ovens are installed in a stacking kit, both cases of the appliances and the stacking kit itself must be grounded in a suitable manner and connected to an equipotential bonding system.
- For microwave combination ovens on a wheeled platform, the length of the mains power lead must accommodate the degree of movement allowed to the appliance by the retaining device on the wheeled platform. When moving the assembly (platform plus appliance), never place the mains power lead under tension.
- All electrical connections must be checked when the appliance is prepared for first-time use to ensure cables are laid correctly and connections are made properly.

Safety precautions for preparation for first use

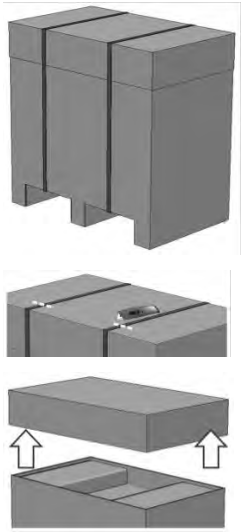
- Ensure work wear as specified in country-specific standards and directives for kitchen work is used, in particular:
  - Protective clothing
  - Heat protective gloves (compliant with EN 407 in European Union or equivalent)
  - Safety boots
- Ensure cardboard packaging and transport securing devices etc. have been removed completely from the appliance.
- Ensure that any work on the electrical system is performed solely by a qualified electrician from an authorised service company.
- Ensure that the appliance, including all metallic accessories, is connected to an equipotential bonding system.
- Ensure all warning signs are in their designated position (Figure 3.1).
- Ensure all safety devices and protective equipment are fitted, are working correctly and are secured properly in place.
- Do not operate the microwave combination oven unless it has been properly transported, set up, installed and placed into operation as indicated in this manual and the person responsible for placing it into operation has confirmed this.
- Do not operate the oven if it is damaged. It is particularly important that the oven door closes properly and that there is no damage to the door, door hinges, door seals and sealing surfaces.
- If the appliance has wheels fitted to the supporting structure, the parking brakes on the front wheels must be engaged when operating the appliance.
- Ensure the air filter situated at the lower front of the appliance (Figure 3.2), is free of obstruction.
- Ensure the air outlets (Figure 3.2) are free from obstruction.

Hazards and safety when operating the appliance

For details of hazards and safety precautions when operating the appliance, please refer to *Section 1: Safety Guide*.

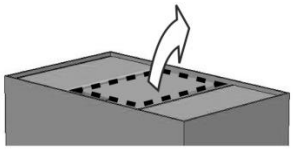
Unpacking

1. Cut the box banding straps and remove the lid.

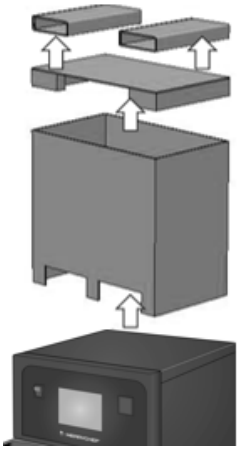


2. Remove the customer documentation and any product accessories.

- 1x air filter
- 1x cook plate
- 1x Safety Guide
- 1x Operations and Installation Guide



3. Remove the packaging to reveal your microwave combination oven.



WARNING Inspect the appliance for damage before signing the delivery note. Record any damage on the delivery note and notify the carrier and manufacturer. Never install or put into service a damaged appliance under any circumstances.

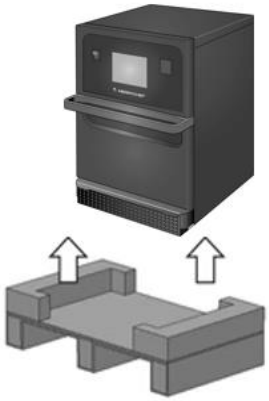
Taking the appliance off the pallet

1. Identify appropriate lifting points.

WARNING

- Wear appropriate Personal Protective Equipment.
- **Do not lift the oven by the handle.**
- Risk of crushing from the appliance tipping over. Take precautions.

2. Lift the appliance from the packaging. The appliance is now ready for installation.



Installation location requirements

Minimum space required

Figure 3.4 shows the space required to install the appliance. It also shows the minimum horizontal distances from adjacent walls and surfaces. The safety clearance on the top must also always be complied with.

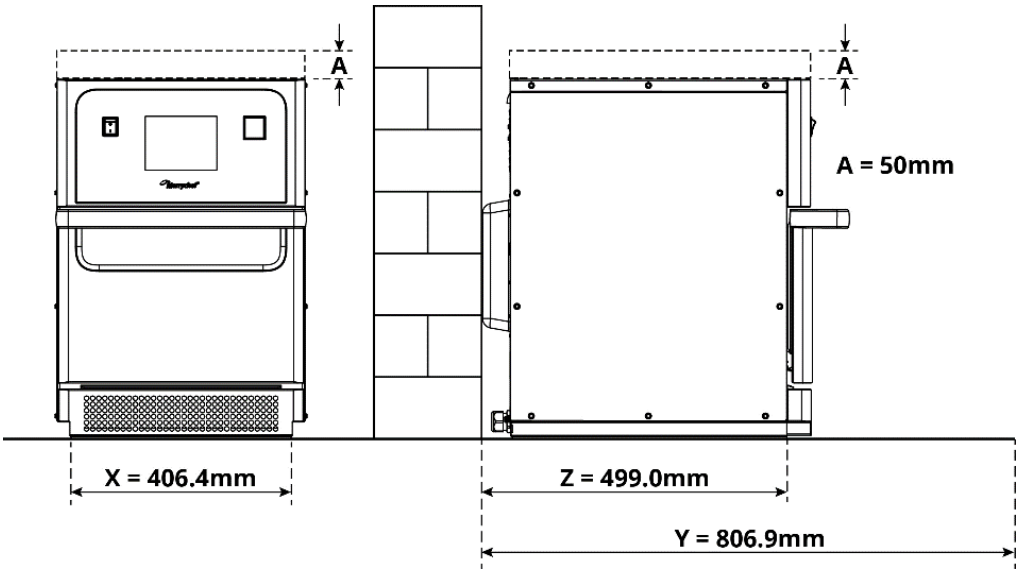


Figure 3.4: Minimum space requirements

- Safety clearance from the top (A) = 50mm (2”)
- Depth requirement:
  - Width of appliance (X) = 406.4mm (16”)
  - Total depth with door open (Y) = 806.9mm (31.8”)
  - Counter depth (Z) = 499.0mm (19.6”)
- Safety clearance on left-/right-hand side / at rear: 0mm

Actual space requirements

Far more room than the specified minimum space requirement is needed in front of the appliances to operate the microwave combination ovens safely, in particular to handle hot food safely. Larger wall gaps are generally recommended to provide access for servicing.

In the installation location, the following parts must not be covered, adjusted or blocked:

- Air vent on the rear of the appliance
- Air filter at the front of the appliance

Mounting the appliance on a work surface

The appliance can be mounted on a suitable work surface that can bear the weight.

Observe the following rules to ensure that the appliance is installed in a stable situation:

- The worktop must have a non-slip surface.
- The supporting surface must have the following properties:
  - The supporting surface must be flat and level.
  - The supporting surface must be able to bear the in-use weight of the appliance, plus the weight of the structure supporting the appliance as follows: 50Hz = 46kg /101lbs and 60Hz = 45kg / 99lbs.

Electrical installation requirements

Safety rules

DANGER Observe the following rules to prevent hazards caused by faulty electrical connections:

- Only electricians qualified under the terms of EN 50110-1 and from an authorised service company are permitted to perform work on electrical equipment.
- The electrical supply must be connected in accordance with applicable local regulations of the professional associations and of the relevant power supply company.
- The case of the appliance must be grounded in a suitable manner and connected to an equipotential bonding system.
- If two microwave combination ovens are installed in a stacking kit, both cases of the appliances and the stacking kit itself must be grounded in a suitable manner and connected to an equipotential bonding system.
- Wear the personal protective equipment as specified in Section 3A.

Equipment provided by customer and electrical installation regulations

Table 3.3 shows what equipment must be provided by the customer and what regulations must be observed when connecting the appliance.

Equipment	Regulations
Fuse	Fuse protection and connection of the appliance must comply with local regulations and national installation requirements.
Equipotential bonding	The appliance must be incorporated in an equipotential bonding system. Equipotential bonding: electrical connection that ensures that the frames of electrical equipment and any external conductive components are at an equal (or practically equal) potential.
Residual-current device (RCD)	The installation regulations require protection by a residual-current device (RCD). Suitable residual-current devices meeting the relevant national regulations must be used. If the installation includes more than one appliance, one residual-current device must be provided for each appliance.
Disconnection device	An easily accessible all-pole disconnection device with a minimum contact separation of 3mm must be installed close to the appliance. The appliance must be connected via this disconnection device. The disconnection device is used to disconnect the appliance from the electrical supply for cleaning, repair and installation work.

Table 3.3: Electrical equipment and regulations

The requirements and specifications for e1s

Fitted frequency converter

- The appliance is fitted with one frequency converter (FC) and an EMC mains input filter.
- These devices may result in a leakage current of more than 3.5mA per FC drive.
- Use a suitable RCD for the rated voltage.

Properties of the residual-current device

The residual-current device (RCD) must have the following properties:

- Filter for filtering out RF currents.
- 'Time delayed' trip characteristic for RCD devices with trip threshold >30mA: prevents RCD being tripped by charging currents of capacitors and parasitic capacitances when appliance is switched on.

- 'Leakage current protection, Type SI' trip characteristic for RCD devices with trip threshold >30mA: insensitive to nuisance tripping.

Circuit Breakers

- Establishments with standard (Type 'B') circuit breakers are sensitive to 'surges' which occur on switching on freezers, refrigerators and other catering equipment, including microwave combination ovens. Because of this, a Type 'D' circuit breaker (designed specifically for this type of equipment) must be fitted. An individual, suitably rated circuit breaker should be fitted for each appliance installed.

Low impedance electrical supply

- This commercial combination microwave oven complies with EN 61000-3-11. However, when connecting sensitive equipment to the same supply as the appliance, the user should determine in consultation with the supply authority, if necessary, that a low impedance supply is used.

Electrical supply

- The e1s microwave combination oven is only available as a single-phase model and is designed to draw 13 amps maximum in all configurations, as shown in Table 3.4.

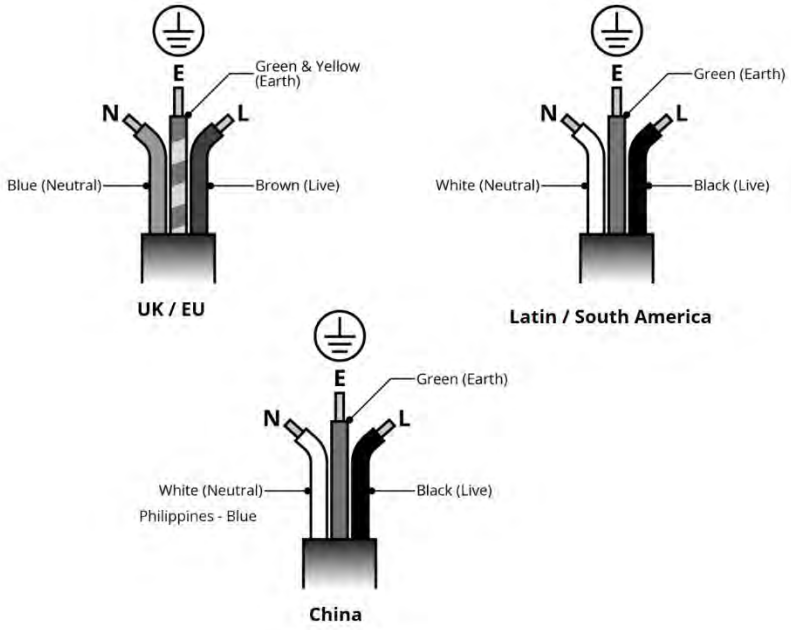
Illustration	Meaning
	**Phase**: Single 16 A Breaker for 15/16 A plug configurations and be Time Delay, Motor Start Type (European Type D). UK 13 A models are fitted with a moulded plug to BS1363, fused at 13A. EU13 A models are fitted with a moulded plug to CEE 7/7 (Type F Schuko) rated at 16 A. ROW 13 A models are fitted with country specific 15/16 A plugs. Please contact your local Welbilt representative for further information.

Table 3.4: e1s electrical specifications

Equipotential bonding

- An equipotential bonding point is provided on the rear panel of the appliance for independent Earth (GND) connection.

Setting up the appliance

Fitting the air filter

The air filter is fitted in position below the cavity door. It is a magnetic attachment.

Inserting the cook plate

The cook plate is inserted in the cavity, simply by sliding it onto the shelf runners.

Turning the oven on and off

To start up the oven, ensure the appliance is clean and empty with just the cook plate inside it. Then switch the appliance on using the on/off switch at the front of the oven.

When the oven is switched on, the easyTOUCH® screen illuminates with the display briefly showing the serial number and appliance data. To keep the data on the screen, lightly tap the screen to freeze the display. Tap again to continue.

3C. Cleaning procedures

Safety requirements

Personal protective equipment requirement

When cleaning the appliance cavity by hand, and using spray cleaning products, the following personal protective equipment should be used:

- Breathing mask
- Safety goggles
- Protective gloves
- Protective clothing/apron

The specification for these items is provided on the data sheet that should accompany the cleaning products themselves or, where necessary, from the manufacturer directly.

Other cleaning tasks should be carried out in accordance with the instructions given on cleaning and with the personal protective equipment specified by the manufacturer of the cleaning products.

Potential risks during cleaning

Risk of electric shock from live parts

⚠DANGER

Water on the exterior of the appliance can cause a short-circuit, which may result in electric shock on touching the appliance. Therefore:

- Do not spray the interior and exterior of the appliance with water.
- Always keep the USB cover closed during cleaning.

Risk of burns from high temperatures on interior parts of the appliance

⚠WARNING

There is a risk of burns should any of the following be touched:

- Any of the interior parts of the cavity.
- The inside of the appliance door.
- Any parts that are or have been inside the oven during cooking including racks, shelf grills and baking trays.

To minimise the risk of burns:

- Before starting cleaning tasks, wait until the cavity has cooled to below 50°C / 122°F or use the 'Cool Down' function to cool the cavity as described in the *Cool-down procedures* section in *Section 3C*.

Risk of scalding from hot steam

⚠WARNING

If water or cleaning agent is sprayed into the hot cavity, steam will be produced and this may scald. To minimise this risk:

- Before starting cleaning tasks, wait until the cavity has cooled to below 50°C / 122°F or use the 'Cool Down' function to cool the cavity as described in the *Cool-down procedures* section in *Section 3C.*
- Step back from the appliance to avoid the hot steam and vapour escaping through the open appliance door.

Risk of irritation to skin, eyes and respiratory system from cleaning products

WARNING

Direct contact with the cleaning or protective chemicals will irritate the skin, eyes and respiratory system. To minimise this risk:

- Do not inhale the vapours or spray mist from the cleaning and protective chemicals.
- Do not let the cleaning or protective chemicals come into contact with skin, eyes or mucous membranes.
- Do not spray cleaning or protective chemicals into a cavity.
- Wear personal protective equipment as detailed at the beginning of this section.

Wearing personal protective clothing is vital throughout the cleaning process and can minimise risks of burns and scalds.

Daily cleaning tasks

Cleaning the oven regularly is an important aspect of service and maintenance. Table 3.5 shows what must be cleaned daily.

What must be cleaned?	Procedure	Cleaning chemicals
Cavity	Clean by hand with a soft cloth or paper towel	Cleaning and protective chemicals approved by the manufacturer
Outside of appliance	Clean by hand with a soft cloth	Common household stainless-steel cleaner or hard surface cleaner
Containers, baking sheets, shelf grills and other accessories used for cooking	Clean by hand with a soft non-abrasive sponge and rinse off after with water	Common household detergent
Air filter	Wipe clean or wash in soapy water	Common household detergent

Table 3.5: Daily cleaning tasks

Cleaning items

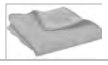
Product		Use
Merrychef Cleaner		Cleaning the cavity and appliance door
Merrychef Protector		Protecting the cavity and appliance door
Common household stainless-steel cleaner or hard surface cleaner		Caring for the external surfaces of the microwave combination oven
Common household detergent: mild on skin, alkali-free, pH-neutral and odourless		Cleaning components and accessories and fittings according to relevant instructions
Protective rubber gloves		To protect hands from cleaning agents
Non-abrasive nylon scrub pad		For all surface and door cleaning
Cleaning towel and cloths		For all surface and door cleaning
Eye protection		To protect eyes from cleaning agents
Dust mask (optional)		To protect from inhaling cleaning agents

Table 3.6: Cleaning items

Cleaning instructions

- Ensure the oven has been cooled down as per the instructions in this guide.
- Read the safety instructions on cleaning.
- Wear protective glasses and protective rubber gloves during cleaning.

⚠CAUTION

- Never use sharp implements or harsh abrasives on any part of the appliance.
- Do not use caustic cleaners on any part of the appliance or cavity.
- Do not scrub the roof (jet plate) or door seal.
- Do not use metallic scourers on any part of the appliance at any time.
- Do not spray cleaning product directly into the cavity.
- Do not use the appliance without a clean air filter in place.

Pre-cleaning checklist

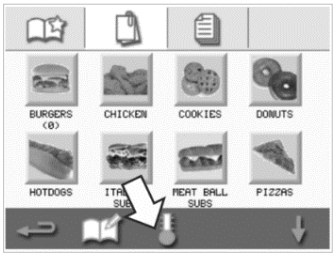
- The appliance has been cooled down correctly
- No food has been left in the cavity.
- All containers, baking sheets, shelf grills and any other accessories have been removed from the cavity.

Cool-down procedures

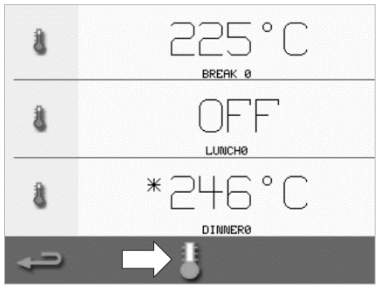
The microwave combination oven must be cooled down properly before cleaning, servicing or repairing.

To cool down the appliance:

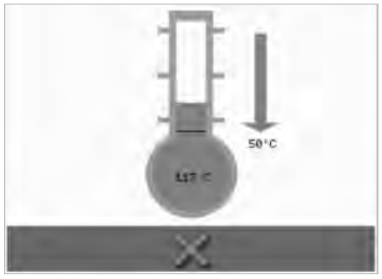
1. Select the thermometer symbol from the cookbook or the cleaning symbol from the main menu (full serve mode).



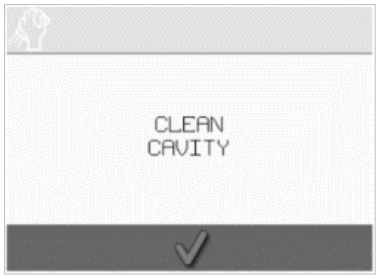
2. In the temperature screen, select the blue thermometer symbol to disable heating and start the cooling cycle.



3. The cooling progress is displayed and takes approximately 20 minutes. To reduce the cool-down time, leave the appliance door open slightly during the cooling process.



4. Once the cooling process is complete, you will see a 'Clean Cavity' screen. The oven is now ready for cleaning.



Cleaning process

There are several stages in the cleaning process:

Stage 1: Clean and dry the oven and oven parts

Stage 2: Apply oven protector (optional)

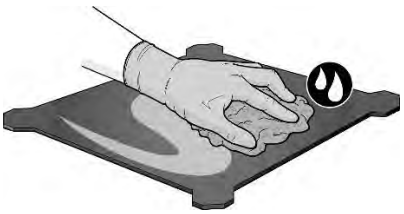
Stage 3: Clean the air filter and external surfaces

Stage 4: Cure the protective chemical (if oven protector applied)

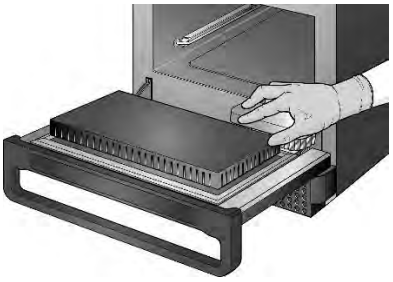
Stage 1: Clean and dry the oven and oven parts

1. In a cooled-down oven (see section 2G), open the door and remove the cook plate and any other cooking accessories.

2. Wash all removed oven parts in warm soapy water. Wash off using a clean cloth and plenty of warm water.



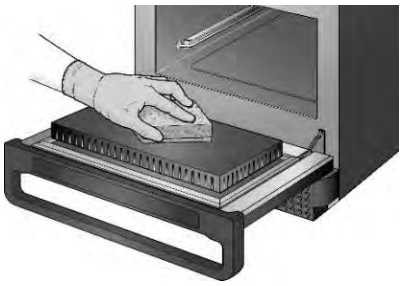
3. Use a dry clean brush to remove any food particles from between the cavity floor and the inside of the front door.



4. Spray Merrychef approved cleaner onto a sponge and clean all internal surfaces **except the cavity roof (jet plate) and door seal**.

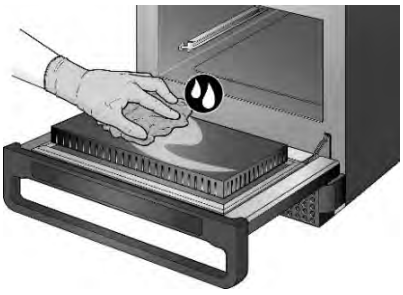
⚠ *Do not spray directly into the cavity.*

5. For difficult areas, leave to soak for 10 minutes with the appliance door open. Use a non-abrasive nylon scrub.

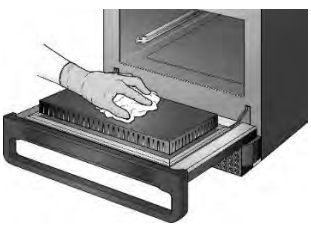


⚠ *Do not scrub.*

6. Wash off all surfaces using a wet clean cloth. The cavity roof and door seal can be wiped clean with a wet clean cloth as well.



7. Dry all surfaces and oven parts using a clean cloth or paper towel.



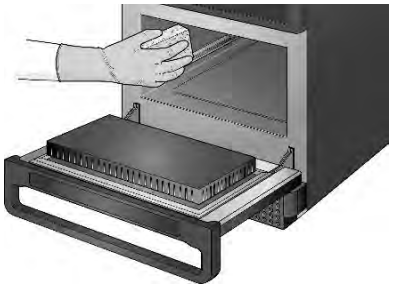
8. Press the tick on the clean cavity screen to continue.

9. A prompt will appear to apply the oven protector (optional).

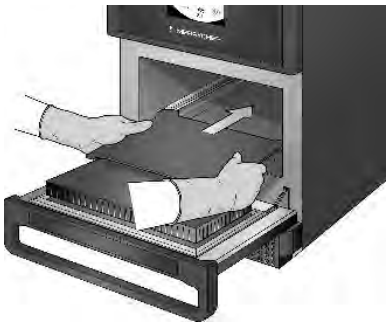
Stage 2: Apply oven protector (optional)

1. Spray Merrychef protector or a Merrychef approved protector onto a clean sponge.

2. Spread the protective chemical lightly onto all internal surfaces, avoiding the roof (jet plate) and door seal.



3. Replace the cleaned and dried cook plate.



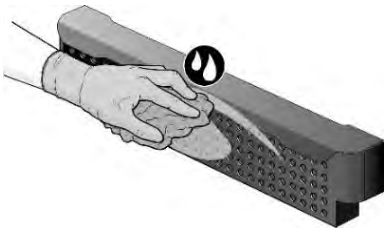
4. Press the tick on the apply oven protector screen to continue.

5. A prompt appears to clean the air filter.

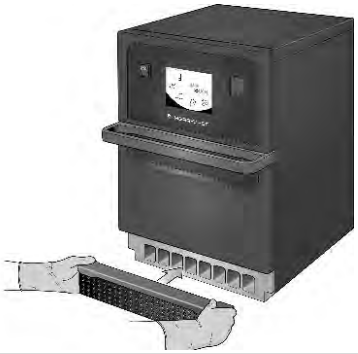
Stage 3: Clean the air filter and external surfaces

1. Remove the air filter by gently pulling it.

2. Wipe the air filter clean or wash in soapy water.



3. Dry and replace the air filter.



4. Press the green tick to confirm cleaning of the air filter.

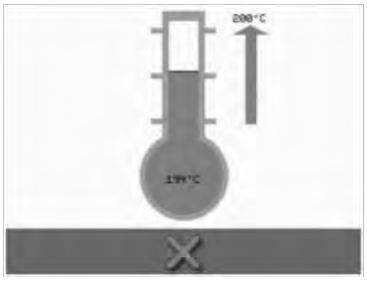
5. The oven switches OFF automatically.

6. Wipe the external surfaces of the oven with a damp cloth.

Stage 4: Cure protective chemical (if oven protector applied)

1. Switch ON the appliance using the on/off button.

2. Preheat the cavity. Once reaching the preset operating temperature it will take about 30 minutes to cure the protective chemical.



3. The protective chemical turns light brown when cured and the oven is ready to be used again.

3D. Technical data summary

Dimensions and weight

Size and weight (without packaging)

- Width of appliance = 406.4mm (16")
- Total depth with door open = 806.9mm (31.8")
- Depth with door closed = 538mm (21.2")
- Counter depth = 499.0mm (19.6")
- Net weight = 46.0 kg (101 lbs)

Safety clearances

- The minimum height of free space necessary above the top surface of the appliance is 50mm (2").
- Safety clearance on left-/right-hand side / at rear: 0mm

Electrical specifications

See *Electrical installation requirements* in *Section 3B*.

Power and heat

Microwave power

- Microwave settings, off or 5–100% in 1% increments

Convected heat

- Temperature settings OFF and from 100°C to 260° C / 212°F to 500°F in 1°C steps

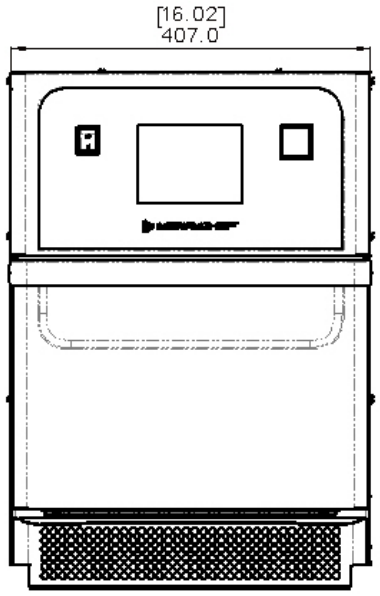
Noise emission

The weighted emission sound pressure is <70 dBA.

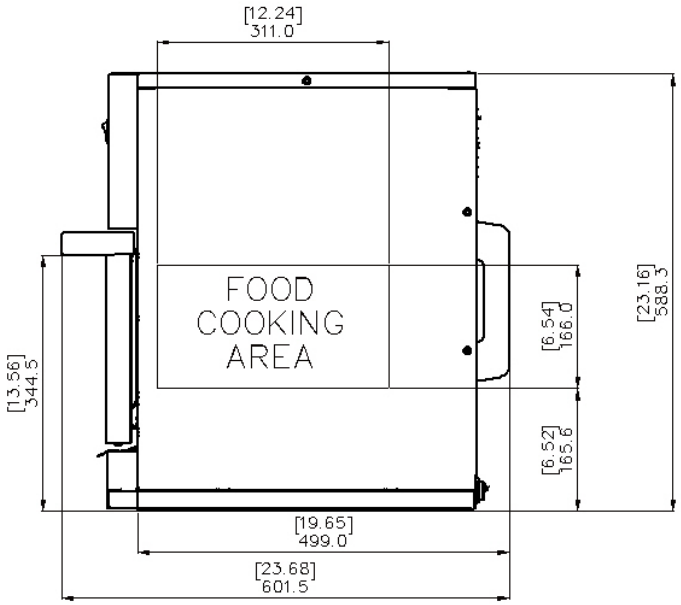
Regulatory standards compliance

See *Section 1: Safety Guide* for details of regulatory standards and directives.

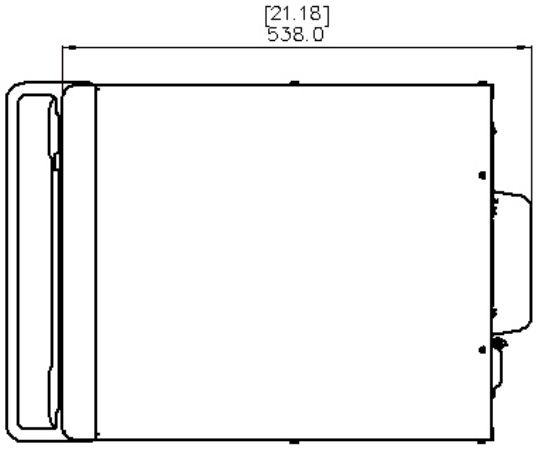
Dimensional drawings



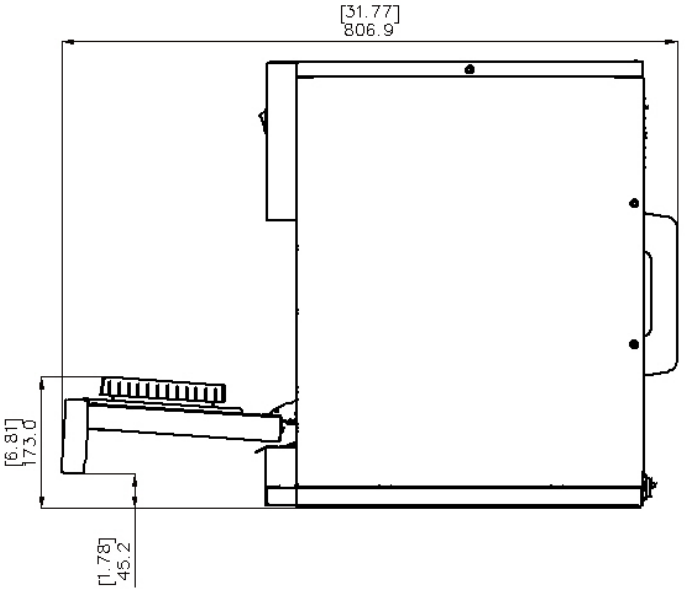
Front view (door closed)



Cavity dimensions (door closed)



View from the top (door closed)



View from the right-hand side (door open)

Figure 3.5: e1s dimensions with doors open and closed

3E. Diagnostics

Checking the condition of your appliance

Servicing procedure: overview

1. Disconnect/isolate the appliance from the power supply.
2. Check the appliance is correctly installed as described in the “Installation” section of this manual.
3. Visually check the cleanliness/condition of the power supply/cable/gland, casing, cavity and door of the appliance for signs of wear, damage, distortion etc. If required, refer to the “Replacing components" section of this manual.
4. Complete an "Earth/Insulation test" (see “Tests" section of this manual) on the appliance before switching on.
5. Check the display for error messages. If an error is shown, refer to the error codes in Table 3.7 in *Section 3F*.
6. If a firmware update is required, follow the instructions in *3H. - Firmware updates* before continuing with the service procedure.

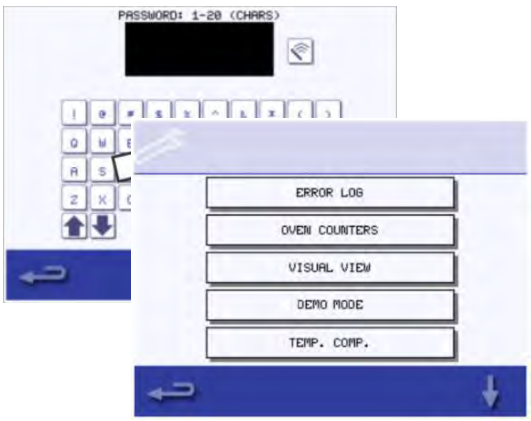
Entering Service Mode

1. Tap to hold the first screen upon switching on, press the hidden button at the top right-hand corner to load the password screen.

2. Enter the administration password. The default password is ‘MANAGER’. Select OK (green tick) to display the ‘Settings’ menu.

3. Select the spanner symbol from the Settings menu.

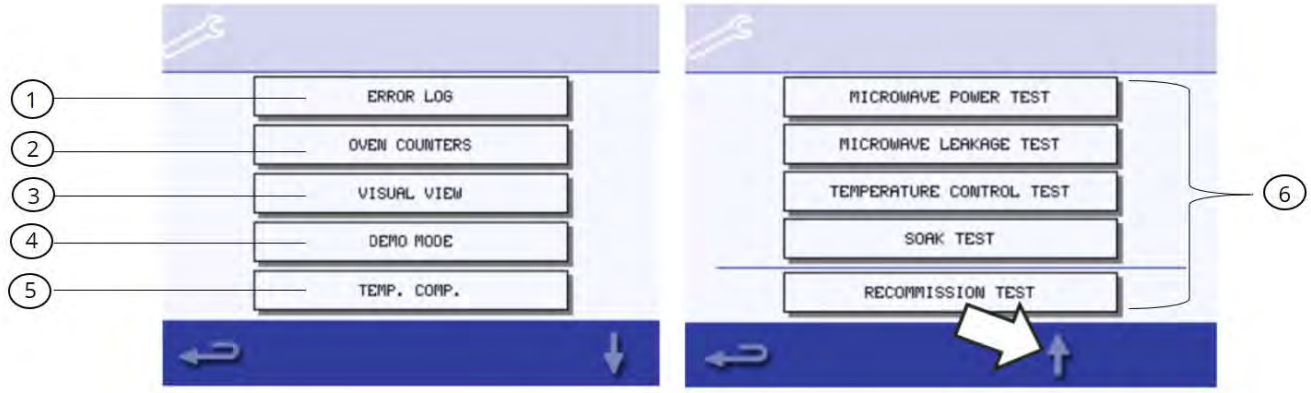
4. Enter the service password and select OK to display the error log, service information and test options.



Functions of the Service Mode

Once in 'Service Mode', you can do the following by selecting the relevant option on screen:

1. Check the 'Error Log' for details of any logged appliance errors.
2. Check the 'Oven Counters' to find the usage of components and the controls area temperature within the cabinet.
3. Check the operational performance of the main components using 'Visual View'.
4. Switch to 'Demo Mode'. This switches the oven into a demonstration mode where the oven will act as though it is heating and cooking but does not use the microwave or heating circuits. Can be used for training or customer demonstrations.
5. The 'Temp. Comp'. option enables calibration of cavity temperature. Cavity temperature is factory set and should not require adjustment. If cavity temperature calibration is required, contact the manufacturer.
6. Several tests are available in service mode that ensure the appliance is operating correctly. The up and down arrows highlighted below can be used to select the required test. Test procedures are covered in *Section 3G*.



Errors and diagnostics

Viewing error messages

In the instance of a major error, a description of the type of error is shown by the system when switched on. The on-screen message will show a description of the type of error along with some instructions on what action to take. The error code as 'Exxx' will be displayed and the serial number of the oven, model, UI (QTS) version and SRB version information are also displayed as shown on the Error screen.

You can use the error code to determine the nature of the problem by referring to the error codes in Table 3.7 in *Section 3F*.

Clearing error messages

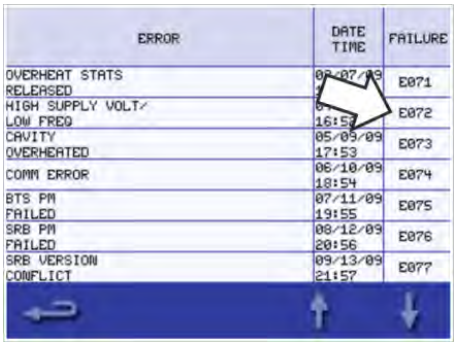
You can clear an error message by power cycling the mains power supply to the oven (not the oven ON/OFF switch).

Viewing the Error Log

1. Enter service mode and select 'Error Log' to display a listing of oven component errors.

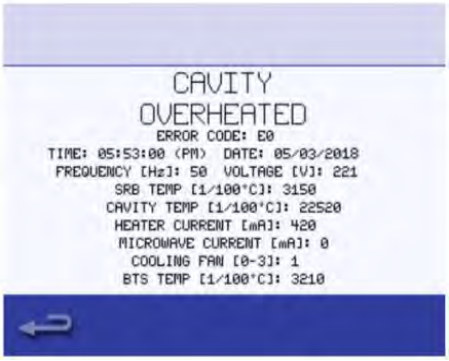
2. Scroll down the list (if necessary) and select an error from the list to display individual records.

   Note: The 'Failure' column shows the error code assigned by the appliance which a service Merrychef Service Engineer may request if contacted.



3. A variety of information is displayed for each error. You can also use the error code to look up details of the fault using the xxx table.

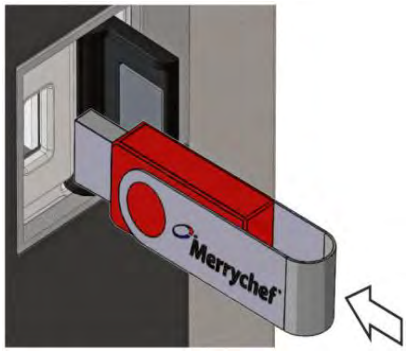
   Note: Select backspace  *at any point to return to the error log and again to return to the Service Menu*.



Copying error messages onto USB sticks

1. Enter settings menu select the 'USB' symbol. The USB screen appears.

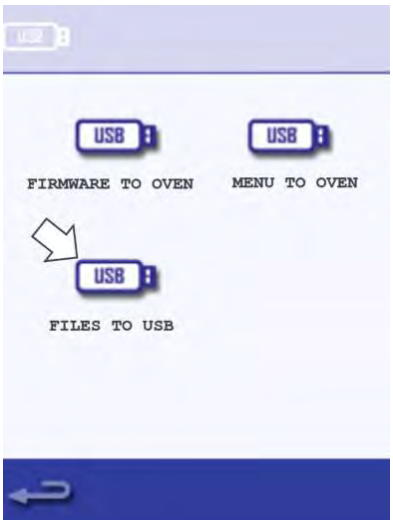
2. Open the cover of the USB port and insert the USB memory stick into the slot.



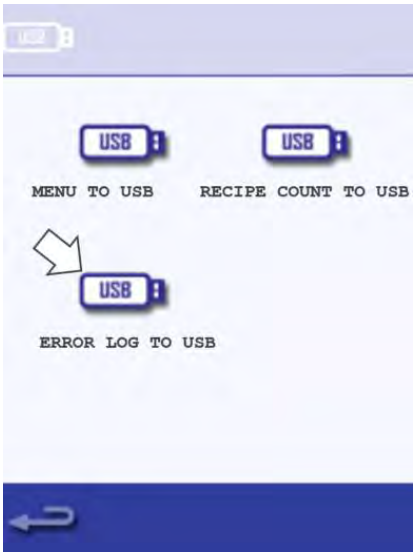
Note: The USB memory stick may take several seconds to load before the screen will respond.

You can use any USB up to 128GB but you are advised to format it before use (FAT32).

3. Select 'Files to USB' on the USB screen.



4. Select 'Error Log' on the following screen.



5. Select the green check mark to copy the error log to the USB memory stick. The upload progress is shown followed by the upload status.

6. Select backspace  three times to return to the main menu and then remove the USB memory stick.

Oven counters

The Oven Counters option in service mode is used to to display the oven component usage. This information can be requested by service and manufacturer engineers to give indication of component life expectancy.

1. In Service Mode, select 'Oven Counters' to display the oven component usage and ambient controls area temperature.

2. Details include the number of screen touches, filter cycles, door cycles, total oven power, magnetron and heater element power on time and the ambient controls area temperature in the cabinet.

3 Select backspace to return to the Service Menu.

Health checks of components

Procedure: Service Mode > Visual View

The **Visual View** option in Service Mode allows you to do health checks on some of the components of the application, including:

- The oven door
- Cooling fan
- Magnetron
- Convection fan
- Heater

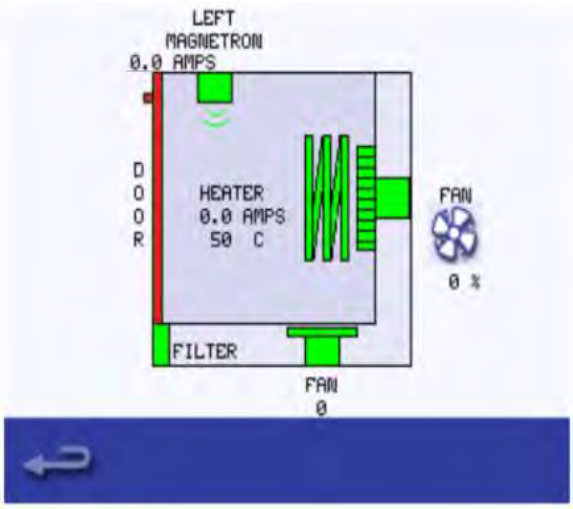
Instructions on how to check each component are provided below once you have entered Service Mode and selected Visual View is provided below.

Check oven door

- Open the oven door.
- Check the colour of the door symbol changes from green to red on the display to check the door microswitch circuit is operating.
- Place door spacers onto the oven door (refer to *Adjusting the door microswitches in Section 3I* for details), close the door and check the colour of the door symbol on the display.

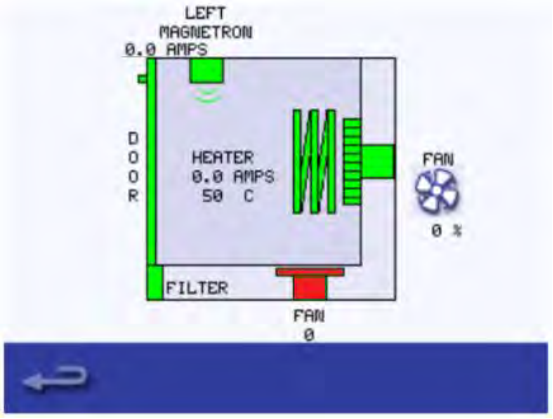
  Green colouring indicates that the door microswitch adjustment is ok.

  Red colouring indicates that the door microswitch adjustment procedure must be completed.



Check cooling fan

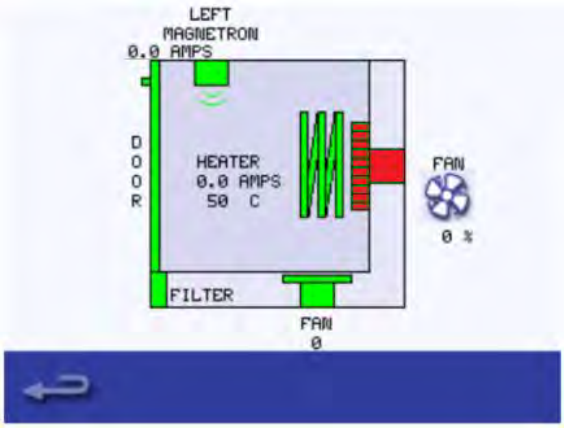
- Select the cooling fan symbol so it becomes red.
- Increase and decrease the fan power from 0% (Off) to 100% (Max).
- When increasing the fan power from the fan noise should become louder.



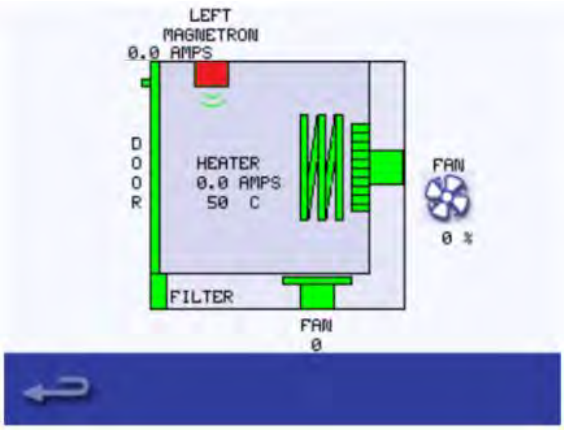
Check convection fan

Pressing the fan icon increases the fan power in 10% steps and from 100% to 0%. Pressing the fan symbol in the diagram switches the fan to 100% power.

When increasing the fan power gradually to 100% the fan noise should become louder.



Check magnetron



Select the magnetron and check it is operating correctly.

Place a microwave safe container of water into the cavity, and close the oven door.

Select the magnetron to test the current draw at maximum output, this will time-out after 30 seconds.

Test the magnetron.

Using heat proof gloves, remove the container and close the oven door.

Magnetron test:

If there is a magnetron error present, then first reset the error.

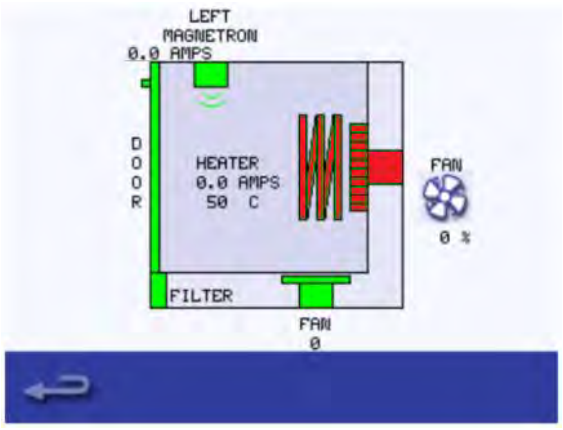
If during the magnetron test the current is between 1.1 - 2.2 A and the error re-occurs after eight seconds, then the failure can be found in the 230V circuit.

Refer to the schematics to find the fault for repair (fuses, SRB, door switches, connections, power supply).

If the current is 0 A during the magnetron test and the error reoccurs after eight seconds then the failure can be found in the high voltage circuit.

Replace high voltage components (diode/rectifier, capacitor or magnetron) to find out the failing component. Never measure in the high voltage circuit. See "Replacing components" section of this manual.

Check heater



Select the heater, it increases to maximum temperature and then cycles (the convection fan is ON by default).

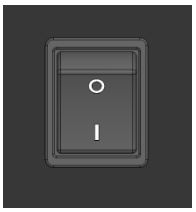
Check the cavity temperature increases and the heater element current draw at maximum is correct. The current should be between 8 A and 11 A depending on domestic mains voltage.

Note: If the heater is near maximum temperature the oven will not draw maximum current. It is advised to run this test when the oven is cold.

Touchscreen calibration

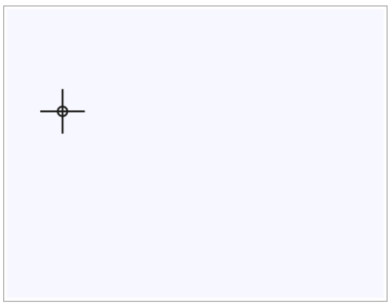
Should the touchscreen behave in an inconsistent manner, the touchscreen can be re-calibrated.

1. Apply continuous light pressure to the screen while switching the appliance on.
   Continue to hold until the progress bar has completed.

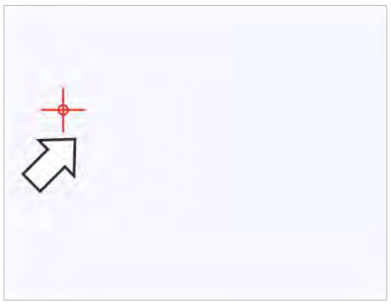


2. Using a non-abrasive pointer, such as a ball point pen, accurately press the centre of each crosshair displayed on the screen.

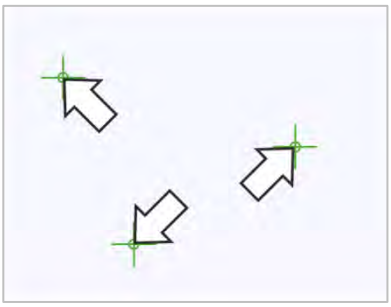
   Note: If a crosshair turns red, you missed the centre of the crosshead and should repeat the procedure.



3. If the crosshair turns red you missed the centre of the crosshair.
   Repeat the procedure.



4. If the crosshairs turn green three times consecutively the calibration process is completed successfully.



5. Once calibrated the screen will display information about the appliance.

3F. Fault Finding

There are many error codes that the system may display, depending on the cause of the problem and the parts associated. The tables below list the error codes that may be displayed with their meaning and the system's response to the errors.

Error code list

Error Code	Error Condition	Description	Trigger	Possible Causes	System Response	Action
E 101	Magnetron failed to energise	Detects a magnetron is not working correctly.	The current measured by the current sensing transformer was outside of tolerance.	Failure of component/s in the microwave circuit	Display error message until system is power cycled (see footnote).	Check high voltage microwave circuit.
E 102	Heater on without request	Detects a heating element is not working correctly.	A rise in a cavity temperature 25 °C over setpoint in a given period of time.	Stalled convection motor or heater element/ SRB issue	Display error message until system is power cycled (see footnote).	Run heater element diagnostics.
E 103	Ambient overheat >60°C	Detects if the controls area is operating above temperature.	The ambient temperature measured on the QTS and SRB was >60°C.	Cooling fan failed. Cooling fan wired incorrectly. Inlet air too hot. Blocked air filter.	Display clean air filter and oven cooling until ambient controls area temperature is below 50°C.	Ensure oven is cooling correctly.
E 104	Magnetron / cavity overheat	Detects if the cavity and magnetrons are above temperature.	Cavity and magnetron overheat thermostats.	Cooling fan failed. E103 / E106 not triggering. Failed SRB. Magnetron failure. Wiring / connection fault. Blocked inlet filter.	Display error message until service call and the magnetron cools down or the cavity stat is reset.	Press the cavity reset button the rear panel of the appliance. Restart, if error repeats it is a cavity stat trip. If not suspect mag stat trip.
E 105	Supply frequency high / low	Detects if the power supply frequency is outside specification.	The power supply to the oven frequency sensor on the SRB measures too high / low.	Incorrect mains voltage. Poor internal / external wiring connections. Faulty SRB.	Error not displayed, stored in error log.	If not resolved download error log for review by manufacturer.
E 106	Cavity reaches 300°C once it has been controlling at setpoint	Detects if the cavity temperature has risen above limit.	The setpoint of the appliance was exceeded.	Cavity fire. Failed convection fan. No impeller or loose impeller on convection fan.	Display error message until system is power cycled (see footnote).	Check cavity. Ensure convection fan is operational.
E 107	Communication error	No communication can be made between the QTS and SRB.	Loss of communication between the SRB and QTS.	SRB / QTS connection cable unplugged or damaged. Faulty QTS or SRB.	Display error message until system is power cycled (see footnote).	Check SRB/QTS connections.
E 108	QTS PM error	Wrong PM found / no PM found.	The QTS or SRB either has an incorrect PM (Personality Module) fitted or no PM is fitted.	The PM has been changed and is incorrect. The PM has been removed.	Display error message until system is power cycled (see footnote).	Check PM is fitted correctly.
E 109	SRB PM error	Wrong PM found / no PM found.	The QTS or SRB either has an incorrect PM (Personality Module) fitted or no PM is fitted.	The PM has been changed and is incorrect. The PM has been removed.	Display error message until system is power cycled (see footnote).	Check PM is fitted correctly.

Error Code	Error Condition	Description	Trigger	Possible Causes	System Response	Action
E 110	SRB version conflict	SRB firmware version incompatible with QTS version.	The QTS has found that the firmware running the SRB is not supported.	Firmware update has been carried out to the QTS and the SRB has not been updated to match.	Display error message until system is power cycled.	Ensure firmware is up to date.
E 111	Cavity sensor error	Cavity sensor broken / unplugged.	The controller is reading an open circuit across the thermocouple input.	The thermocouple is not connected. The thermocouple is broken open circuit. Failed SRB.	Display error message until system is power cycled (see footnote).	Replace thermocouple and check connection to SRB.
E 112	SRB sensor fail	SRB ambient temperature sensor failure	Shorted SRB temperature sensor.	Shorted Ambient temp sensor on the SRB.	Display error message until service call and the magnetron cools down or the cavity stat.	Replace SRB.
E 113	Magnetron fail on without request	Magnetron operates without being requested to do so.	Magnetron current sensed at >1 Amp.	Triac, Diode or relay short circuited on SRB.	Display error message until service call and the magnetron cools down or the cavity stat is reset.	Check power supply to oven. Replace SRB.
E 116	Heater off on request	No heater heat rise in cavity.	Cavity does not reach 100°C in 30 minutes.	Oven heater element failure.	Display error message until service call and the magnetron cools down or the cavity thermostat is reset.	Check heater element.
E 117	Magnetron overheat thermostat	Magnetron overheat thermostat has been triggered as a result of excessive temperature.	Magnetron stat is open circuit when running microwave.	Blocked air filters / high environmental temperatures / Positioning next to heat sources or failed magnetron.	Display error message until service call and the magnetron cools down or the cavity thermostat is reset.	Check magnetron is being cooled successfully.
n/a	Oven door open longer than 1 min.	Oven door open. Oven inoperable.	Break in switched feed on SRB.	Door left open. Failed door switch/s or SRB. Faulty wiring or connection.	Display warning message until door is closed.	If door is closed check microswitches and fuses.
EO87	Constant key press detected	Touch screen inoperable.	Continual pressure of the touch screen.	Damaged touch screen / touch screen depress for more than 15 seconds.	Display error message until touch screen press released.	Clean touch screen and overlay. Reset power to oven.

Table 3.7: Error codes and actions

Note: To reset the error, cycle the main power button at the front of the appliance.

Error code for recommission test messages

- 89 Cooling test fail – if this occurs repeat test and ensure the test is complete
- 90 Convection test fail – if this occurs repeat test and ensure the test is complete
- 92 Heater test fail – if this occurs repeat test and ensure the test is complete
- 93 Magnetron test fail – if this occurs repeat test and ensure the test is complete
- 96 Door closed test fail – if this occurs repeat test and ensure the test is complete
- 97 Door open test fail – if this occurs repeat test and ensure the test is complete
- 98 Incomplete cleaning – if this occurs repeat test and ensure the test is complete

3G. Tests

All service engineers must familiarise themselves with the information in *Section 1: Safety Guide*. before using this Service and Repair Guide to carry out tests. A summary of safety requirements is also included in *Section 3A.*

Test types

The following tests can be performed by service engineers:

- Components test with a Portable Appliance Tester (PAT)
- Microwave power test
- Microwave leakage test
- Temperature Control test
- Soak test
- Recommission test
- Main voltage test

Equipment required for tests

- Portable Appliance Tester (P.A.T.)
- Digital Multi-Meter (D.M.M.)
- Microwave detection / leakage meter
- Temperature reader
- Continuity meter
- Door Spacer Kit (4mm) part number PSA1109
- Microwave safe 600 ml glass beaker
- Microwave safe 2 litre container

Testing selected components (casing mounted)

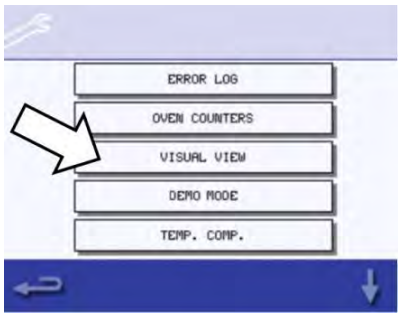
Microwave Power test: Measuring the microwave power output of the magnetron(s)

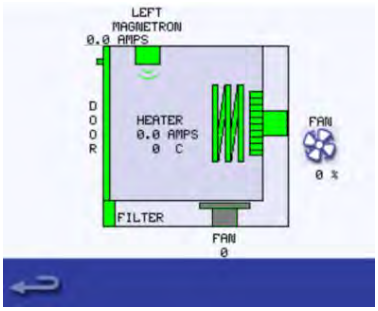
⚠WARNING Check and ensure that the appliance is cool before starting this test.

The power output is established under IEC 705 standard method which is only workable in laboratory controlled conditions. The power output is also affected by line voltage under load, so this test is an approximation only.

1. Enter Service Mode. For details on how to access the Service Mode see *Entering Service Mode* in *Section 3E*.

2. Select 'Visual View' to check the cavity temperature reading has dropped to as close to 0°C as possible. In most situations this will be room temperature.

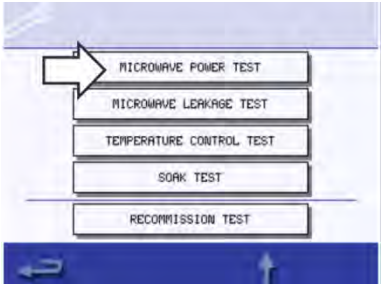


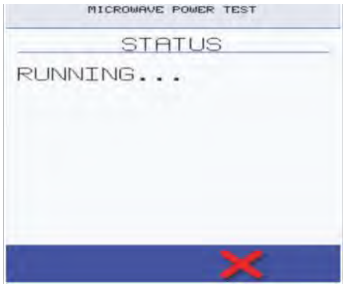


3. Fill a microwave safe container (glass or plastic) with one litre (approx. 2 pints) of tap water at 20°C (68°F) and measure and record the water temperature.

4. Place the container centrally into the cavity and close the appliance door.

5. Select 'Microwave Power Test' from the Service Mode tests screen (microwave power 100% for 60 seconds, fan minimum). The test will start running and count down will begin on screen.





6. When the countdown has finished, remove the container from the cavity.
   Immediately stir with a plastic implement and measure the water temperature.

7. Calculate the temperature rise of the water (end temperature minus the start temperature).
   The temperature rise should be approximately 11°C (52.7°F) ±10% for the 800W. If the temperature rise is considerably outside these limits check the microwave circuit and components.
   It may be necessary to replace the magnetron and/or high voltage diode board / rectifier. These procedures are described in detail in *Section 3I.*

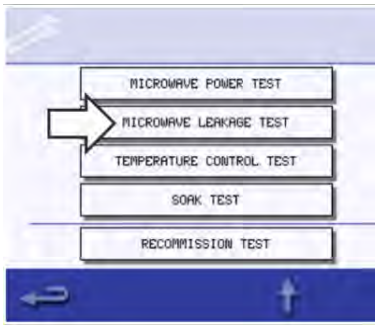
Microwave Leakage test

Follow these instructions when measuring:

- Make sure that the survey meter you are using has been calibrated and is suitable for measuring frequencies of 2,450 MHz.
- Do not exceed meter full scale deflection. The leakage meter should initially be set to the highest scale, then adjusted down as necessary to ensure that low readings are measured on the most sensitive range.
- To prevent false readings, hold the probe on the grip provided and move at 2.5 cm/second.
- Always hold the probe at right angles to the oven and point of measurement, ensuring the probe is reading 50 mm from the test area.
- The leakage should not exceed 5 mW/cm².

1. Add 275ml of cold water into a 600ml microwave safe container and place it in the centre of the cavity. Then close the appliance door.

2. Enter Service Mode on the screen and select 'Microwave leakage test' from the appliance tests.



3. Set the leakage meter to the appropriate scale/range.

   Move the survey meter probe across all casework joins and vent areas including those marked in yellow.

4. When the magnetron circuit stops after 30 seconds, change the water and re-select the test to continue.

5. Select the red 'X' on the status screen to stop the test at any time.

6. Readings must be below 5 mW/cm² to pass the microwave leakage test.

   Any leakage that is observed in terms of the level and position on the appliance should be recorded and kept with the appliance user documentation.

   CAUTION If a level greater than 5 mW/cm² is observed, check for damage to door, door seals, panel work and replace as necessary, then re-test. If not resolved, contact your local Merrychef representative. Don't use the appliance hereafter.

Temperature Control test: measuring the cavity temperature

Re-calibrating the temperature sensor / thermocouple with the SRB is normally only required when the thermocouple has been replaced or the appliance is under or over cooking.

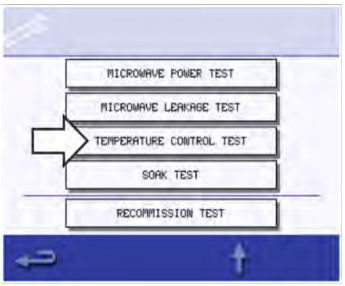
1. Place the probe of a temperature reader on the metal plate in the centre of the oven cavity and close the door.

2. Select 'Temperature Control Test' from the service mode tests.

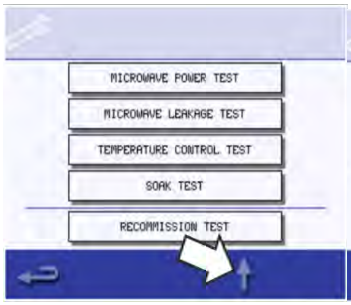
   The cavity heats up and cycles at the maximum set point temperature over 30 minutes.

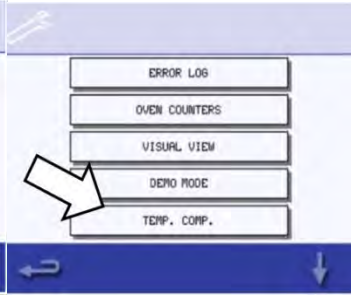
   Once the appliance is up to maximum temperature, check for a stable temperature reading.

   Select the red 'X' from the status screen to finish the test, if necessary.

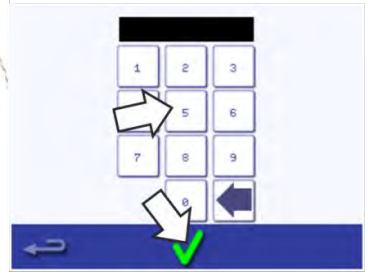


3. If the temperature reading is different to the maximum set point, scroll up to select TEMP. COMP. (Temperature Compensation) and enter the password "TCOMP".





4. Enter the figure from the temperature reader on the keypad and select OK to calibrate the SRB to the temperature sensor (thermocouple).



5. Retest to check that the cavity temperature reading is the same as the oven maximum set point temperature.
6. If the temperature reading is stable, repeat the Temperature Control Test procedure.

If the temperature reading is unstable:

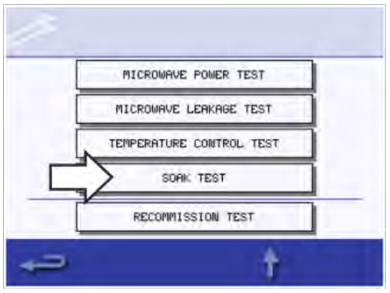
1. Disconnect and isolate the appliance from the electricity supply.
2. Take protective measures to ensure the power cannot be switched on again.
3. Allow the appliance to cool down.
4. Remove the side and top panels of the casing.
5. Check the cavity temperature sensor wire and connections.
6. If the wire and connections are working properly replace the cavity temperature sensor (see *Section 3l. - Replacing components*).
7. Refit the panels of the casing.
8. Switch ON the appliance and repeat the test procedure as described above.
9. If the temperature is still unstable repeat steps 1 to 3, replace the SRB (see *Section 3l. - Replacing components*) and repeat step 6.

Reuse the existing PM (Personality Module) on the new SRB (enter serial number on reboot).

Soak test: checking the cavity integrity

The Soak test is used to check the overall functionality of the oven while in full operation.

1. Place an oven/microwave safe container with approximately 2 litres of water into the cavity.
2. Close the appliance door and select 'Soak Test' from the Service Mode oven tests.



3. Run the test (30 minutes at maximum oven temperature, 50% microwave power, and maximum fan speed), carefully checking the appliance casing, joints and door seal for signs of steam or water escaping from the cavity.

   If necessary, rectify any leaks and repeat the test.

4. Safely remove the container from the cavity.

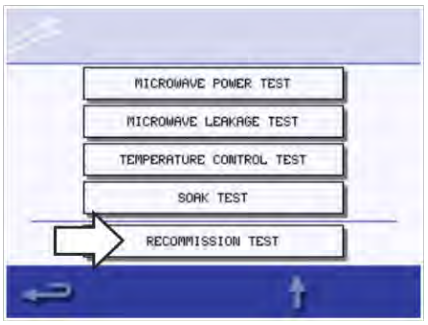
Recommission test

The Recommission Tests are performed following the completion of a service or repair to ensure that the appliance is working correctly before handing back to the customer. It is not necessary to perform this test upon initial installation.

Some of the tests have a countdown timer where failing to carry out a test within the time limit will cause a test failure and the Recommission Test will have to be restarted.

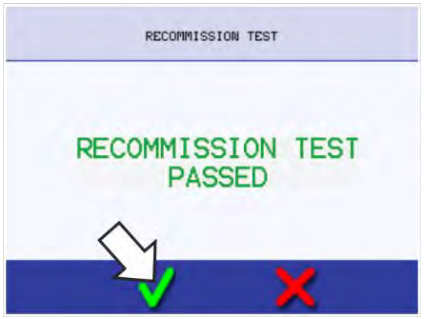
1. Enter Service Mode. For details on how to enter Service Mode, see *Entering Service Mode* in *Section 3E.*

   Select 'Recommission Test' from the Service Mode oven tests and follow the on screen instructions to perform the tests.



2. The test will begin with countdown. Do not select the red 'X' unless you want to stop the test.

3. After a test has successfully passed, select the green check mark to continue.



4. When all the tests have been successfully performed the display shows the Recommission Test has passed.

   Select the green check mark to confirm.

5. In the event of a Recommission Test failure, the detail will be recorded in the Error Log. Rectify any error and repeat the Recommission Test.

Commissioning the oven after service/repair/testing

Complete the following checks after the oven has been serviced/repaired/tested before connecting to the mains electricity power supply:

1. All internal electrical connections are correct (see *Circuit diagrams* in *Section 3J*).
2. All wiring insulation is correct and is not touching any sharp edges.
3. All grounding connections are electrically and mechanically secure.
4. All door safety microswitches are secure and mechanically sound.
5. The door activates all of the door microswitches and in the correct order.
6. The door operation is smooth, and the arms run freely in the slots.
7. The temperature sensor (thermocouple) is correctly connected to the SRB.
8. The casing is securely refitted with no trapped wires.

Before finishing a service call, recheck the following points:

1. Run the recommission tests to ensure the oven is functioning correctly and the touch screen is working.
2. Microwave emissions are below the permissible limit of 5 mW/cm^2.
3. The power output of the oven is checked in accordance with the procedure.
4. The oven has a correct air gap of 50 mm / 2 inches above. Air flow should not be restricted.
5. Complete the service report.

High voltage components (casing removed)

High Voltage Transformer test

Ensure the following requirements have been met before starting the test:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.
- The casing of the appliance has been removed.

⚠DANGER

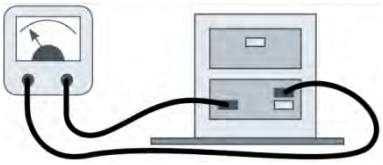
- High voltages and large currents are present at the high voltage capacitor.
- It is very dangerous to work near this part when the oven is on.
- NEVER make any voltage measurements at the high voltage circuits, including the magnetron filament.

1. Remove all connections from the transformer.

2. Using a Digital Multi-Meter (DMM), check the resistance of the windings.

   Results should be as follows:

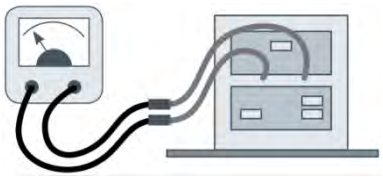
   - Mains winding between tags, approx. 0.6 – 1 Ω.



   - High Voltage winding, approx. 60 Ω.

   - Filament winding between terminals, less than 1 Ω.

     It is possible to makes this test across the orange cables of the magnetron.



3. Using the DMM, test the insulation resistance between:
   - Primary winding and chassis. Pass if reading is over 10 MΩ
   - Filament winding and chassis. Pass if reading is over 10 MΩ

   Note: One end of the High Voltage winding is connected to the chassis, so this is not tested.

High Voltage Capacitor test

Ensure the following requirements have been met before starting the test:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.
- The casing of the appliance has been removed.

⚠DANGER

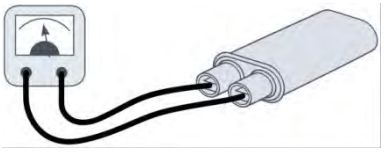
- High voltages and large currents are present at the high voltage capacitor.
- It is very dangerous to work near this part when the oven is on.
- NEVER make any voltage measurements at the high voltage circuits, including the magnetron filament.

1. Remove all electric connections from the high voltage capacitor.

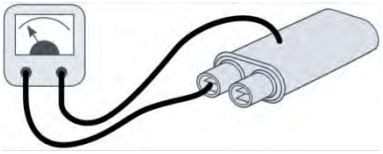
2. Using a Digital Multi-Meter (DMM), check for continuity:

   Results should be as follows:

   - Connect the DMM to both terminals of the high voltage capacitor.
   - The test is passed if the DMM display reaches approx. 10 MΩ.



   - Connect the DMM to one terminal and the metal outer case of the high voltage capacitor.
   - The test is passed if the DMM display reads "open circuit".
   - Repeat the test for the other terminal and the metal outer case.



   - Using the DMM, test the insulation resistance between both terminals and the metal outer case of the high voltage capacitor.
   - The test is passed if the megger display reads over 100 MΩ.

High Voltage Magnetron test

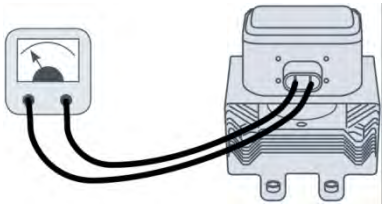
Ensure the following requirements have been met before starting the test:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.
- The casing of the appliance has been removed.

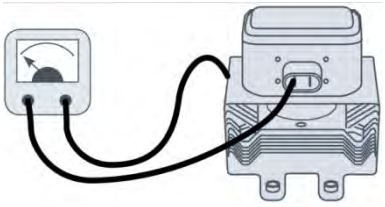
1. Remove all electric connections from the magnetron.
2. Using a DMM, check for continuity.

   Results should be as follows:

   - Connect the DMM to both filament terminals of the magnetron.
   - The test is passed if the megger display reads 1 Ω or less.



   - Connect the DMM to one filament terminal and the metal outer case of the magnetron.
   - The test is passed if the megger display reads "open circuit".
   - Repeat the test for the other filament terminal and the metal outer case.



Mains voltage components (casing removed)

Convection fan: motor

The convection fan motor is a 3-phase AC motor having a maximum speed of 5000 rpm controlled by a motor speed controller.

The windings are thermally protected and in the event of a thermal fault, a trip inside the motor will operate and shut down the motor speed controller.

Convection fan: motor speed controller

The convection motor speed controller provides a 3-phase AC switched mode drive to the convection motor and is controlled by a 0 - 10 VDC signal from the SRB.

This allows the motor to be adjusted from approximately 1100 rpm to 5000 rpm in steps of 1%.

- Door open 1100 rpm (20% @ 2V).
- Door closed (not cooking), 1600 rpm (30% @ 3V).
- Door closed (cooking), speed as specified by program or setting up to a maximum of 5000 rpm (100% @ 10V).

Convection fan: LED status display

During normal operation the convection fan LED should be ON and NOT flashing. In an error state the LED will flash and the convection fan will operate in safe mode (limited to 1500 RPM). The number of flashes per second indicates the current error state which are summarised in the table below.

Once the condition that caused the error state has been resolved, the LED will take 10 seconds to recover.

LED flashes	Warning Type	Warning Condition	Recover Condition
1	Over voltage	Input power voltage >270V	Input power voltage < 238V
2	Under voltage	Input power voltage < 150V	Input power voltage > 160V
3	Software over current	More than 9A	Less than 9A
4	Motor over temperature	Temperature fuse open	Temperature fuse recover
5	IPM over current	Current more than 9A	Less than 9A
8	Hardware over current	Current more than 13A	Less than 13A

Table 3.8: Error causes and LED

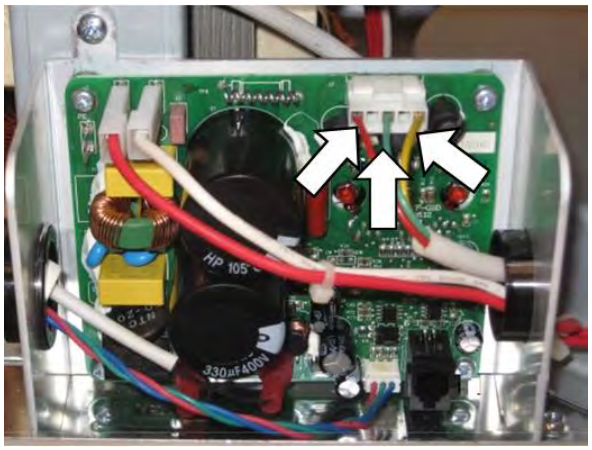
Convection fan: motor and motor speed controller tests

Ensure the following requirements have been met before starting the test:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.
- The casing of the appliance has been removed.

Check the following:

- Electrical supply into motor controller.
- Three phase connections to convection fan motor.
- Motor speed controller (convection fan) connections to SRB.
- Convection fan motor thermal cut-out (short circuit).
- Convection fan motor rotates freely / not seized.
- Convection fan motor winding resistances:
  - Red to Green 6-7 Ω
  - Red to Yellow 6-7 Ω
  - Green to Yellow 6-7 Ω
- Red or Green or Yellow to Earth (open circuit).



3H. Firmware updates

There are three firmwares required for the e1s: QTS, SRB and Icon. All firmwares are pre-installed but may require updating as per instruction from the manufacturer or as part of hardware replacement. Firmwares are updated by loading the required files to a USB memory stick and then downloading this information to the appliance using the USB memory stick slot on the oven.

Procedures to load USB sticks and download to appliance

Important notes:

- Downloading from a USB memory stick will clear all existing programs.
- Only use an empty USB memory stick (up to 128GB) formatted as FAT32.
- Copy the following firmware files to the ROOT directory of the USB memory stick:
    - QTS-eX-XXX-VX.X.XX.BIN
    - SRB-eX_X_X_XXX.BIN
    - VX-APP-eX.CBR (icon file)
    - Autoupd.ATE (for auto update only)
- The USB memory stick should be formatted to FAT32 with firmware loaded.
- Do not remove the USB memory stick during the download sequence as this could corrupt the data transferred from the USB stick.
- Save the menu files before uploading files.
- If you have a menu file on your USB memory stick then the menu of the appliance will be overwritten.
- If you do not have file on your USB memory stick the menu of the appliance stays as it is.

There are two methods for installing firmwares: manual or automatic. Automatic is the simplest method as it ensures that all three firmwares have been updated at the same time. Manual update is used when one or other of the circuit boards has been replaced.

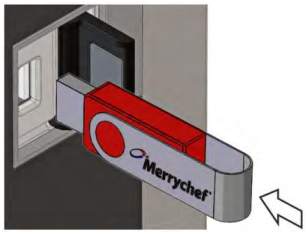
For manual update follow all instructions in the *Manual updates* section given below.

For automatic update ensure the Autoupd.ATE is on the USB memory stick then follow the instructions in the *Automatic updates using Autoupd.ATE files* section.

Manual updates

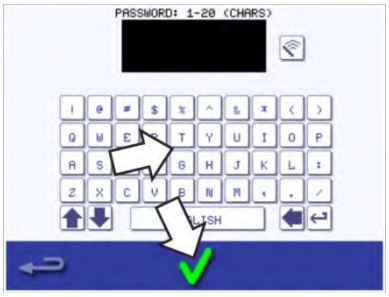
1. With the oven switched off, open the cover of the USB port and insert the USB memory stick into the slot.

   The USB memory stick should be formatted to FAT32 with firmware loaded.



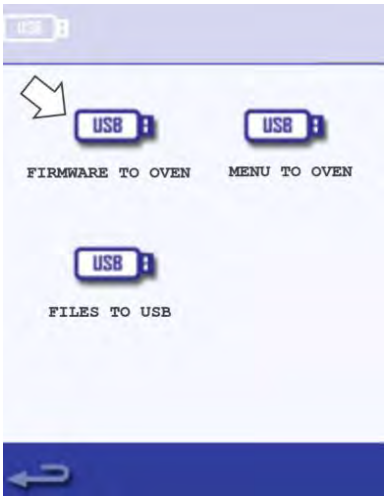
2. Switch on the oven and tap the top-right hand corner.

3. Enter the password and select the green check mark.



4. Select the USB symbol from the Settings menu.

5. Select from the USB screen 'Firmware' (for QTS and SRB updates).



6. Install updates by selecting the correct files.

   Updates should be installed in this order:

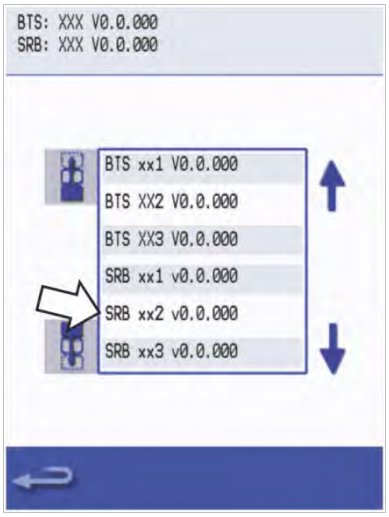
   1. SRB update – see below for instructions
   2. QTS update – see below for instructions

   The update screen will display the file version and product. Select the green check mark to confirm the installation.

SRB firmware update

1. When you select Firmware, the current QTS (Quick Touch Screen) and SRB (Smart Relay Board) firmware versions are displayed at the top left of the screen. Select the 'SRB' file with the correct file version number.

   Note: A tinted band over a file name indicates the file is not valid for your oven.



2. Check if the file information shown is correct before selecting OK.
   If not, select 'X' and locate the correct file.

3. The SRB file is checked and the download progress from the USB is displayed followed by the update status and confirmation screens.

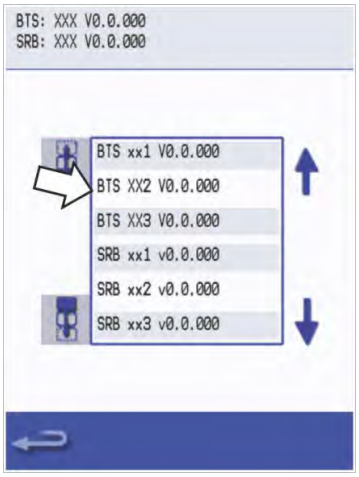
   Note: Wait until all files have been loaded. Do not touch the oven until the end of the downloading process.

4. When the download process is complete, press the return arrow to now update QTS file.

QTS firmware update

1. Select the 'QTS' file with the correct file version number.

   Note: A tinted band over a file name indicates the file is not valid for that appliance.



2. Check if the file information shown is correct before selecting OK.
   If not, select 'X' and locate the correct file.

3. The file update progress is displayed.
   When the QTS download has been completed, the oven will reboot and display a flash screen as it updates.
   At 50%, the cooling fan stops operating, after 100% various screen displays appear as the software reboots.

4. Once rebooted, check if the screen shows the correct QTS version.
   If not, repeat the process using the correct file.

5. Remove the USB memory stick and keep it in a safe place.

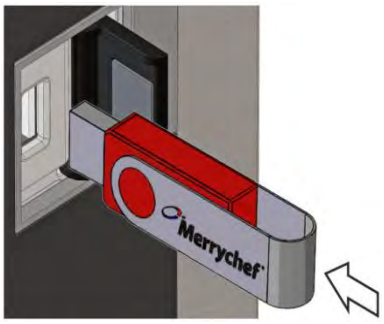
Automatic updates using Autoupd.ATE files

1. Load the USB stick with the Autoupd.ATE file.

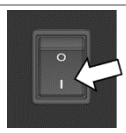
   Copy the following firmware files to the ROOT directory of the USB memory stick:

   - QTS-eX-XXX-VX.X.XX.BIN
   - SRB-eX_X_X_XXX.BIN
   - VX-APP-eX.CBR
   - Autoupd.ATE

   With the oven switched OFF, open the cover of the USB port and insert the USB memory stick into the slot.



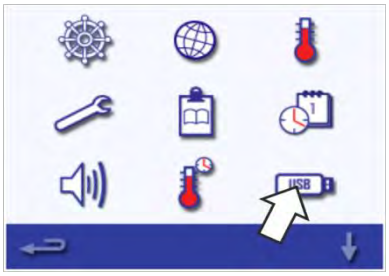
2. Switch ON the oven.



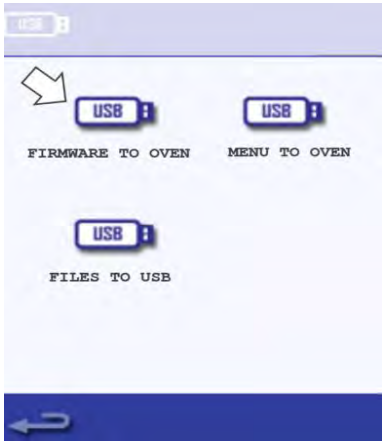
3. Tap the top right of the screen to bypass the preheat stage.

4. Enter the password "MANAGER" and select OK to display the settings menu.

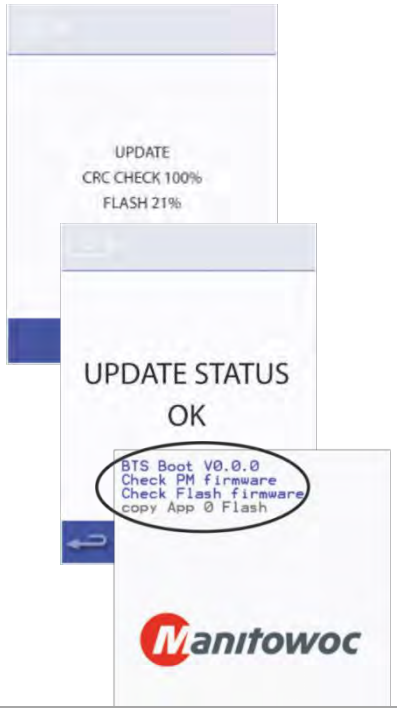
5. Select the USB symbol.



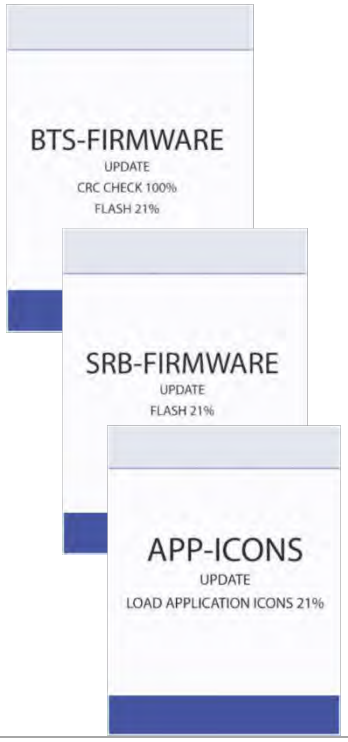
6. Select the 'Firmware to Oven' USB symbol.



7. The file starts downloading. The CBR file is checked and the download progress from the USB memory stick is displayed followed by the update status and confirmation screens.



8. The QTS, SRB and Application Icon files then download automatically showing the progress, status and reboot confirmation screens for each file update.



9. On completion, the start up screen is displayed showing the updated firmware versions before moving to the pre-heat temperature screen.

Confirming the firmware update

After an update of the appliance firmware certain files are copied back to the USB memory stick.

You can check if the file transfer was successful with the following procedure:

1. Load the files from the USB memory stick to a computer.
2. Open the update (UPDATE.txt) file.
3. A firmware update is confirmed below the serial number of the appliance with 'updated' following the QTS/SRB firmware.

Load only the specific files for the stage 4.x upgrade onto the USB memory stick:

- BTS/QTS - (model type) V.004.000.xxx
- SRB - (model type) V.004.000.xxx
- Latest menu file xxxxxxxxxx

Load only the correct menu files onto the USB memory stick and not single menus.

PM (Personality Module) replacement - firmware update

The Personality Module on the SRB contains the firmware.

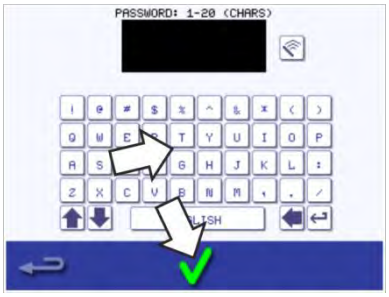
The Personality Module on the QTS contains the firmware, serial number of your appliance, temperature calibration, cooking profiles, application icons and the recipe images.

1. With a new Personality Module fitted and casing refitted, switch on the appliance and tap the screen to hold and check the QTS and SRB versions are the latest release.

   If not, execute a firmware update using the latest versions.

2. Tap the top right of the screen to bypass the preheat stage.

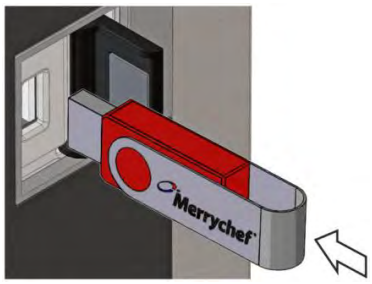
3. Enter the service password "MANAGER" and select OK to display the settings menu.



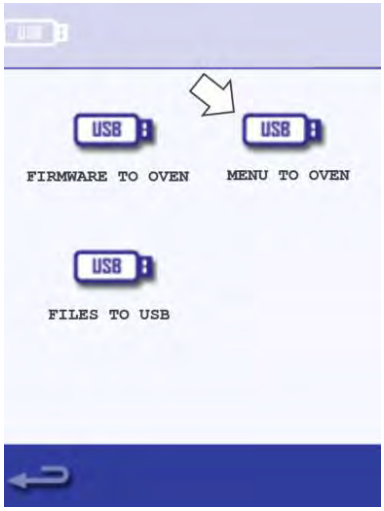
4. Select the USB symbol.

5. Open the cover to the USB port and insert the USB memory stick into the slot.

   Note: The USB memory stick may take several seconds to load before the screen will respond. Do not remove the USB memory stick until the process is complete.

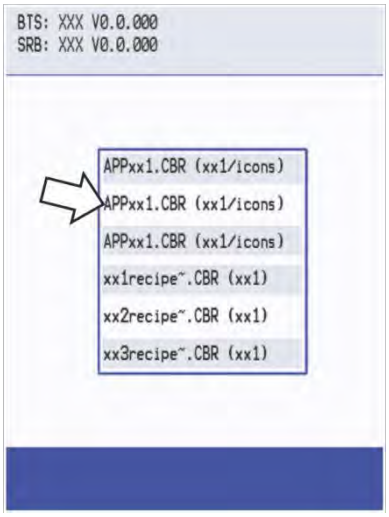


6. Once the USB memory stick has stopped flashing, select the 'Menu to Oven' symbol.



7. Select the application icons file to download.

   Note: A tinted band over a file name indicates the file is not valid for that appliance.



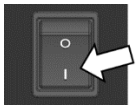
8. Check the file information shown is correct before selecting OK.
   If not, select 'X' and locate the correct file.

9. When completed, select menu file to load the cooking profiles.
   Once the cooking profiles are loaded the appliance restarts.

10. Enter the date and time settings.

11. Enter the serial number of the appliance (found on the rating plate at the rear casing).

12. Switch the appliance OFF/ON.



13. Remove the USB memory stick and keep it in a safe place.

3I. Replacing components

Safe working when replacing appliance parts

All service engineers must familiarise themselves with the information in *Section 1: Safety Guide*. before using this Service and Repair Guide and carrying out tests. A summary of safety requirements is also included in *Section 3A.*

Before starting service / repair work, it is essential that you familiarise yourself with the all the rules and hazard warnings specified and follow the instructions given.

Eligibility of personnel for removal / fitting of appliance parts

Only qualified personnel from an authorised service company are permitted to remove and fit components of the microwave combination oven.

Rules for setting up the appliance safely

To prevent hazards that arise from the installation site and environment of the appliances, the rules for setting up the appliance safely must always be observed. See *Section 3B.*

Moving heavy loads

⚠WARNING

Risk of injury from lifting incorrectly

When lifting the appliance, the weight of the appliance may lead to injuries, especially in the area of the torso.

- Use a forklift truck or pallet truck to place the appliance in the installation position or to move it to a new position.
- When shifting the appliance into the correct position, use enough people for the weight of the appliance when lifting it (value depending on age and gender). Observe the local occupational safety regulations.
- Wear personal protective equipment.

Sharp-edged sheet-metal parts

⚠WARNING

Risk of cuts from sharp-edged sheet-metal parts

Working with or behind sharp-edged sheet-metal parts may result in cuts to hands.

- Exercise caution.
- Wear personal protective equipment.

Hot surfaces

⚠WARNING

Risk of burns from high temperatures inside the cavity and on the inside of the appliance door

- You may get burnt if you touch any of the interior parts of the cooking chamber, the inside of the appliance door or any parts that were inside the oven during cooking.
- Before starting servicing and repair work, wait until the cooking chamber has cooled to below 50°C / 122°F or use the ‘Cool-down' function to cool the cooking chamber.
- Wear personal protective equipment.

Live components

⚠DANGER

Risk of electric shock from live parts

When the covers of the microwave combination oven are removed, there is a risk of electric shock from touching live parts.

- Make sure that any work on the electrical system is performed solely by a qualified electrician from an authorized customer service office.
- Before removing the covers:
    - Switch the appliance off and disconnect the plug from the wall socket.
    - Turn off the isolator switch to disconnect fixed wired appliances and lock-off.
    - Take protective measures at every power switch to ensure that the power cannot be switched on again.
    - Always discharge the high voltage capacitors before working on the appliance using a suitably insulated 10MΩ resistor.
    - Make sure that the appliance is de-energized.
- Make sure that the electrical connections are intact and connected securely before you reconnect the appliance to the power supply.
- Before putting the appliance back into operation, make sure that the appliance, including all metallic accessories, is connected to an equipotential bonding system.

When the appliance is not connected to an equipotential bonding system, there is a risk of electric shock from touching live parts.

- Make sure that any work on the electrical system is performed solely by a qualified electrician from an authorised service company.
- Make sure that the electrical connections are intact and connected securely before putting the appliance into use.
- Before preparing the appliance for use, make sure that the appliance, including all metallic accessories, is connected to an equipotential bonding system.

Microwave emissions

⚠WARNING

Risk of burns from microwave emissions

- Do not become exposed to emissions from the microwave generator or parts conducting microwave energy.
- Never operate an appliance that has failed the Microwave Leakage test.

Fire / smoke in the appliance

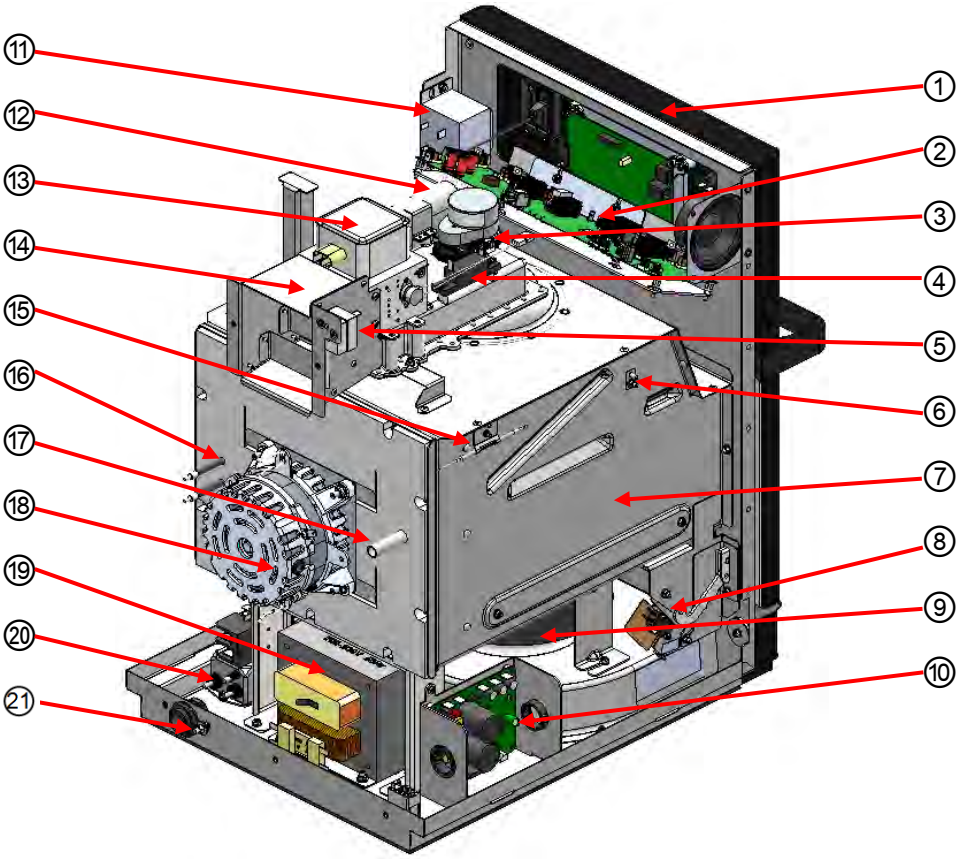
⚠WARNING

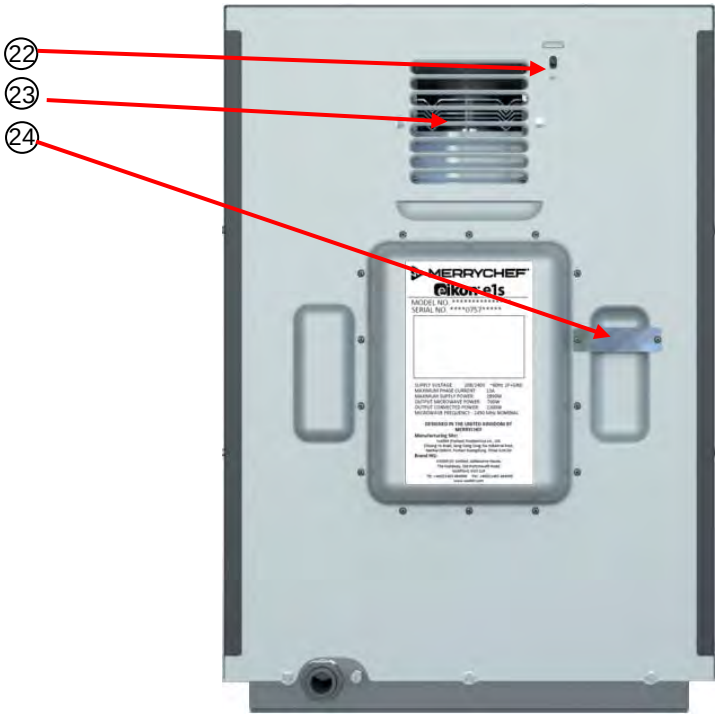
Risk of fire and/or smoke

Flames and/or smoke may come out of the oven when switching it on after service/repair. This can be caused by a defective electrical component or electrical connections (wiring) that have been refitted incorrectly.

- Switch off the oven.
- Disconnect/isolate the oven from the electrical supply.
- Keep the oven door closed to stifle any flames.

Overview of parts





Component List

Item	Name	Function
1	Front panel	The front panel houses the touch screen and the QTS assembly.
2	Smart Relay Board (SRB)	The SRB controls all electrical oven components.
3	Stirrer Motor	A stirrer motor turns a stirrer distributing microwave energy in the cavity.
4	Diode (high voltage)	The diode completes the magnetron circuit for required high voltage.
5	Cavity Thermostat	The thermostat continuously measures the temperature in the cavity and prevents it from overheating. A reset button is found on the thermostat rear which is accessible through the rear panel (see Item 22).
6	Cavity temperature sensor wire (thermocouple)	The sensor wire extends between the thermostat and the interior of the cavity.
7	Cavity	The cavity (cooking chamber) for cooking food can be accessed by opening the oven door.
8	Door microswitch(es)	The microswitches are connected to the door hinges and switch off the magnetron(s) when the oven door is opened.
9	Cooling fan	The cooling fan pulls air through the air filter into the interior of the casing in order to cool the electrical components.
10	Convection (hot air) fan motor speed controller	This component controls the speed of the convection fan motor depending on specific oven settings.
11	Transformer (low voltage)	The low voltage transformer feeds the SRB.
12	Capacitor (high voltage)	The capacitor completes the magnetron circuit for required high voltage.
13	Magnetron (high voltage)	A magnetron generates microwaves.
14	Cooling duct	The cooling duct leads heat generated by the magnetron(s) to the rear of the oven.
15	Overheat sensor	Used by the cavity thermostat to detect overheating.
16	Element	Heater element.
17	Exhaust pipe	The exhaust pipe leads excessive steam from the cavity to the cooling duct and the rear air outlet of the oven.
18	Convection (hot air) fan motor	The convection fan motor is controlled by the speed controller and drives the convection fan.
19	Transformer (high voltage)	A high voltage transformer feeds a magnetron.
20	Electromagnetic Compatibility (EMC) Filter and Fuses	EMC filters reduce the transfer of electromagnetic noise. The fuses protect the oven from high voltages and currents.
21	Equipotential bonding connection (CE appliances only)	This is an electrical connection that ensures that the frames of electrical equipment and any external conductive components are at an equal (or practically equal) potential.
22	Cavity thermostat reset button	Press to reset a cavity overheat .
23	Air vent grille	Allows air to flow from the magnetron.
24	Exhaust outlet protection	Prevents touching the hot steam outlet.

Table 3.9: Components and their functions

Removing / fitting the casing

Requirements and tools

Check that the following requirements have been met:

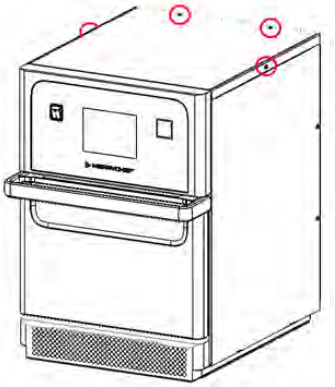
- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The top, left and right panels of the casing of the appliance have been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- M5.5 hex socket wrench / nut runner

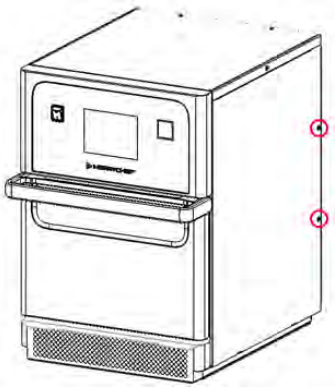
1. Remove the top panel first. Unscrew the four remaining M5.5 screws, then lift the rear of the panel and slide backwards.

   Important note: *The high voltage capacitor should be discharged once the top cover has been removed.*



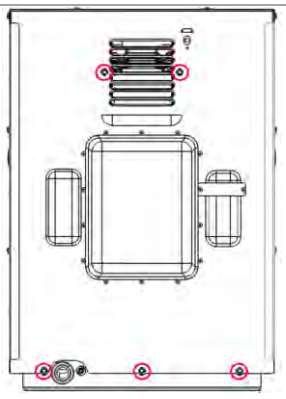
2. To remove the side panels, unscrew the two screws that attach each side panel to the rear panel.

   When removing the side panels, lift and move the rear of the panels away from the appliance before sliding backwards.



3. To remove the rear panel, first unscrew the three screws at the bottom of the panel and then the two screws either side of the air duct grille.

   The panel can then be lifted to remove.



Removing / fitting the door assembly and door seal

Requirements and tools

Check that the following requirements have been met:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- Two metal pins (length: 10 mm / 0.4 in)
- Stanley knife
- Sealant
- Cloth for wiping residue

Unassemble door

1. Open the door fully and locate the holes positioned in the upper area of the hinges.

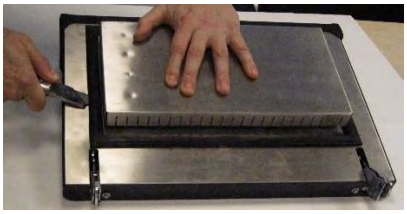
2. Push the two metal pins through the holes in each hinge.

3. Close the door onto the two metal pins and then free the door by pulling upward and forward. The door should now be fully removed.

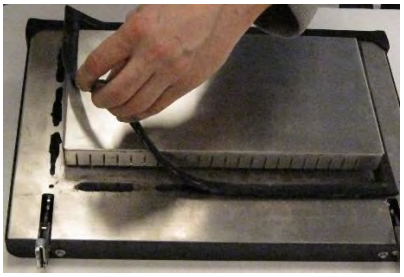
Removing and fitting door seal

1. Place a stanley knife underneath the door seal and go all the way to break the seal.

   Ensure you do all four sides avoiding the metal clips on each corner.



2. Gently pull the metal clip out of each corner and lift off the door seal

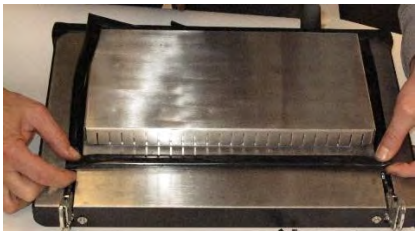


3. Remove excess sealant using the stanley knife or similar to make the surface as flat as possible and then clean the inner surface area wiping off any remaining sealant and residue.

4. Apply sealant around the existing door seal area. Ensure you do all four sides.

5. Place the new door seal over the door in the same place as the old one and insert the metal clips in each corner.

   Note: You may need to trim the metal clips.



6. Apply sealant underneath the door seal and press down firmly to tightly secure the door seal onto the door. Ensure it is straight and wipe off any excess sealant leaking.

7. Leave to dry naturally. It will need 24 hours to dry but the heat of the oven can also be used to dry the sealant by refitting the door (see below).

The door seal can be replaced without removing the door. Simply open the oven door as much as you can and follow the procedure above.

Refitting the door

1. Keeping the removed door flat at 90 degrees to the oven, push the two metal hinges inside the available slots at the bottom of the oven. You should feel the hinges fiitting in place.

2. Close the appliance door. Re-open and close to check the fitting.

   Note: If the door was removed to replace door seal, you can now leave the door closed and let the sealant dry naturally for 24 hours or you can heat up the oven to dry the seal.

Heating up the oven to dry the seal

3. Switch the oven on and let it heat to 260 degrees.

4. Keep the door shut for two hours.

   The oven will be ready for usage again after 2 hours

⚠WARNING

- Never use the oven without the door seal attached properly.
- Never switch on the oven without the door attached and closed.

Replacing a magnetron

Requirements and tools

Check that the following requirements have been met:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The top, left and right panels of the casing of the appliance have been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

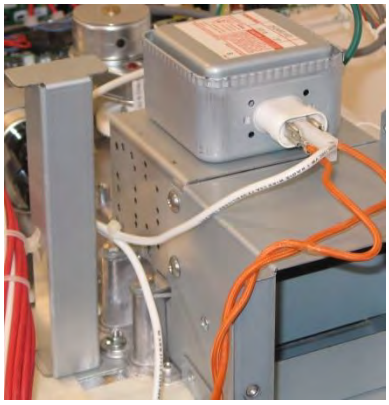
Tools required:

- Hammer or similar tool
- PZ2 Pozidriv screwdriver
- M8 hex socket wrench

Component location

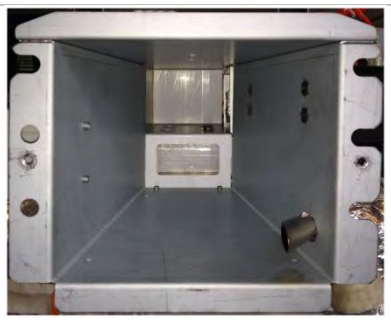
The magnetron is located on top of the cavity and is fixed to the cooling duct and the cavity roof.

The cooling duct covers one side of the magnetron where the magnetron is attached to the cavity roof with two screws.



The outlet of the cooling duct carries heat to the back of the oven and is covered by a grille.

The outlet comprises a sheet metal frame.



Preparing a spare magnetron

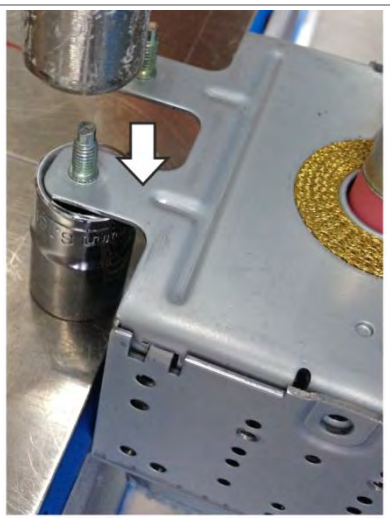
1. The spare magnetron comes with four pressed bolts. Remove the bolts before fitting the magnetron to the oven.

   Note:

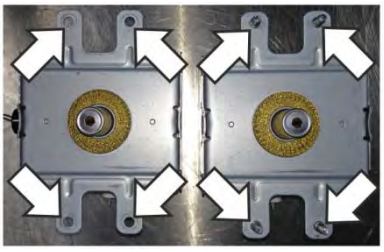
   - *The bolts can be removed by knocking them out of the tabs with a hammer.*
   - *Ensure the tabs do not get bent. Secure them by laying them upon a piece of tube while pushing out the screws.*

   ⚠CAUTION

   Wear personal protective equipment to protect your fingers when using the hammer.



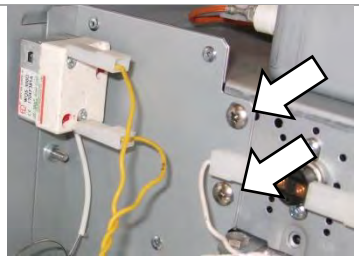
Comparison of spare magnetrons with (right) and without (left) pressed bolts.

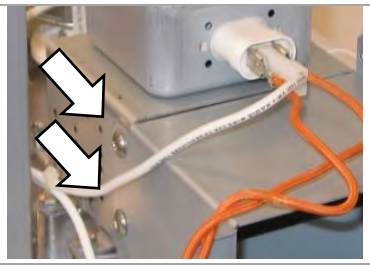


Removing the magnetron

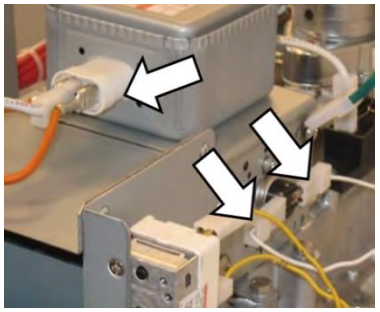
1. Unfasten the pozidriv screws on the right side of the cooling duct.

   Unfasten the pozidriv screws on the left side of the cooling duct.

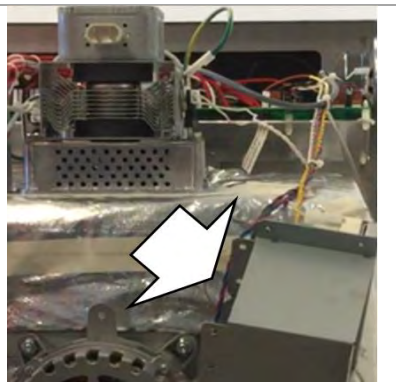




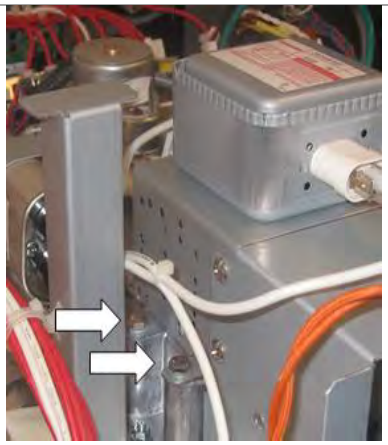
2. Disconnect the orange and white cables from the magnetron body.

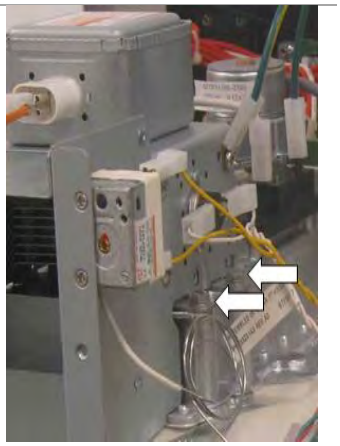


3. Carefully remove the cooling duct so as not to pull on the cables.



4. Remove the four M8 nuts from the magnatron base.
   The magnetron can then be removed by lifting the magnetron body.





Fitting a magnetron

Follow the steps in the reverse order to fit a spare magnetron.

⚠WARNING

- Ensure nothing becomes trapped under the magnetron mounting points (e. g. insulation material) while fitting the magnetron. This can lead to microwave leakage.
- If the electric connections have not been restored properly this may lead to malfunction/damage of the oven.

Replacing the cooling fan

Requirements and tools

Check that the following requirements have been met:

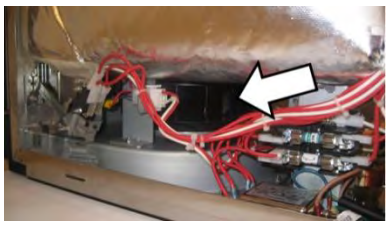
- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The top and side panels of the casing of the appliance have been removed.
- The cooling fan speed controller is removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- M7 hex socket wrench
- PZ2 Pozidriv screwdriver

Component location

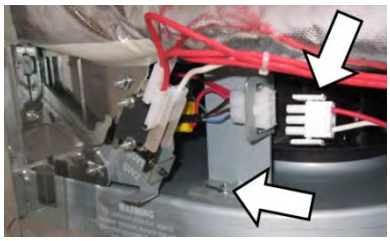
The cooling fan is located under the oven cavity.



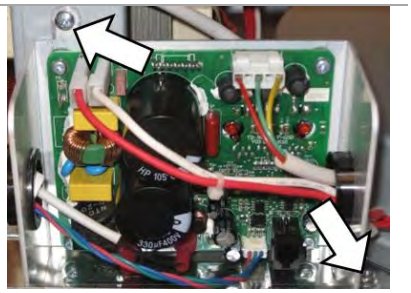
Removing the cooling fan

1. On the right-hand side of the appliance, unplug the electrical connection of the cooling fan.

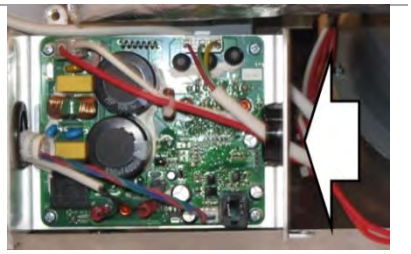
   Loosen the M7 hex nut to free the metal bracket holding the cooling fan.



2. On the left-hand side of the appliance, unfasten the PZ2 and M7 nut that hold the convection fan motor speed controller board backing plate.

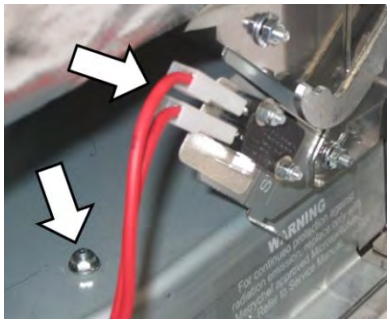


3. Slide the board/backing plate towards the rear of the appliance to provide access to the cooling fan.

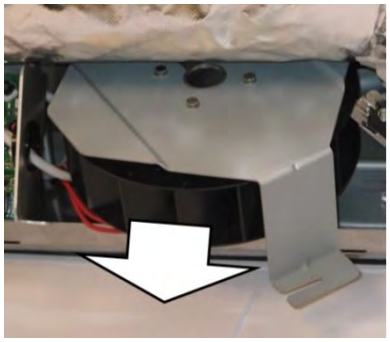


4. Unplug the door microswitch connections on the left side of the appliance.

   Loosen the M7 hex nut to free the metal bracket holding the cooling fan.



5. The cooling fan can then be removed by lifting upward and sliding out on the left side of the appliance.



Fitting the cooling fan

Follow the steps in reverse order to fit the cooling fan.

⚠CAUTION

If the electric connections have not been restored properly this may lead to malfunction/damage of the oven.

Replacing the QTS (Quick Touch Screen) assembly

Requirements and tools

Check that the following requirements have been met:

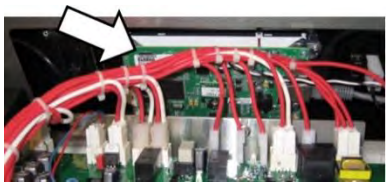
- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The top and side panels of the casing of the appliance have been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- M5.5 hex socket wrench

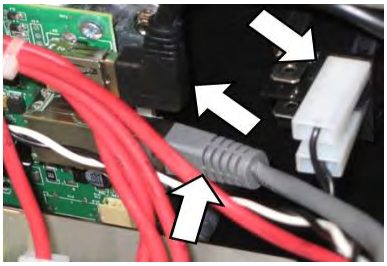
Component location

The QTS (Quick Touch Screen) board lies behind the easyTOUCH® screen and is attached to the front panel of the oven.



Removing the QTS assembly

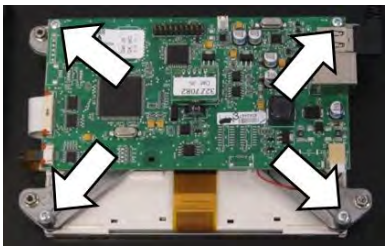
1. Disconnect all cables connecting the QTS assembly.



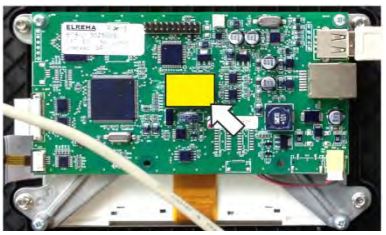
2. Unfasten the M5.5 hex head flange bolt that fixes the front panel to the appliance body.

3. Remove the top front panel (including the touch screen and QTS assembly) from the frame of the casing by lifting upward and towards the front of the appliance. Note the three studs in corners of the assembly that locate and hold the assembly to the appliance body.

4. Unfasten the four M5.5 hex head flange bolts to remove the QTS assembly from the front panel.



5. Remove the PM (Personality Module) from the QTS and place safely aside.



⚠CAUTION

Do not use tools to remove or refit the Personality Module.

Fitting the QTS assembly

- Follow the steps in the reverse order to fit the QTS assembly.
- Reconnect all electric connections to the QTS board.

Note: Fit the PM removed from the old QTS to the new QTS.

Reason: Replacement QTS units come WITHOUT Personality Modules as they store individual settings saved by the user. For details see QTS circuit board assembly in Section 3J.

⚠CAUTION

If the electric connections have not been restored properly this may lead to malfunction/damage of the oven.

Replacing the SRB (Smart Relay Board)

Requirements and tools

Check that the following requirements have been met:

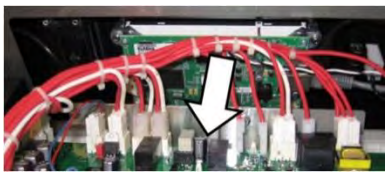
- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The side and top panels of the casing of the appliance have been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- M7 hex socket wrench

Component location

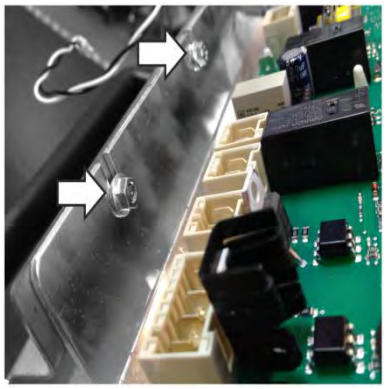
The SRB (System Relay Board) extends over the whole width of the oven and rests in a tilted position close to the front panel of the oven. It is mounted to the frame of the appliance.



Removing the SRB

1. Disconnect all cables connecting the SRB to other components.

2. Unfasten two M7 hex head flange bolts to remove the SRB from the frame of the casing.



3. Remove the PM (Personality Module) from the SRB and place safely aside.

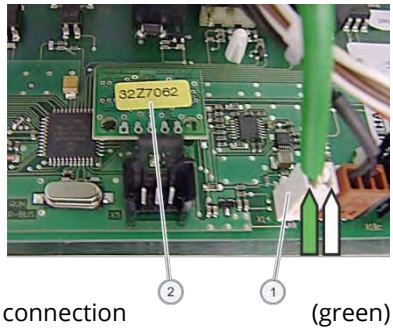
⚠CAUTION

Do not use tools to remove or refit the Personality Module.

Fitting the SRB

- Follow the steps in the reverse order to fit the SRB.
- Reconnect all electric connections to the SRB.

For details see *SRB circuit board* in *Section 3J.*



(1) = Thermocople connector
(2) = Personality Module

Ensure the thermocouple negative (-) connection (white) and positive (+) connection (green) are fitted the correct way round or the oven temperature readings will be wrong.

Note: Refit the Personality Module (PM) removed from the old SRB to the new SRB.

Reason: Replacement QTS / SRB units come WITHOUT Personality Modules as the PMs store individual settings saved by the user.

⚠CAUTION

If the electric connections have not been restored properly this may lead to malfunction/damage of the oven.

Replacing the touchscreen overlay

Requirements and tools

Check that the following requirements have been met:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The top and side panels of the casing of the appliance have been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- Flat headed screw driver

1. The touch screen overlay surrounds the easyTOUCH® screen providing easy-to-clean protection from electrical connections. Should it fail, it can be removed by prising away from the front of the appliance with a flat headed screwdriver.

2. The adhesive should be removed from the appliance using an alcohol based cleaner before the replacement is applied.

Adjusting the door microswitches

Requirements and tools

Check that the following requirements have been met:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The top and side panels of the casing of the appliance have been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- M7 hex socket wrench

Component location and importance

Located on the door hinges are three safety microswitches, to prevent microwave emissions escaping when the oven door is opened:

- The primary microswitch (SW3) breaks the electrical supply circuit to the transformers.
- The secondary microswitch (SW2) breaks the microwave circuit if the primary fails.
- The monitor switch (SW1) will short out the microwave circuit blowing the fuse if both primary and secondary microswitches fail.

You should adjust the microswitches after replacing old with new door hinges.

Note: Micro-switch alignment is NOT required if just refitting the same door.

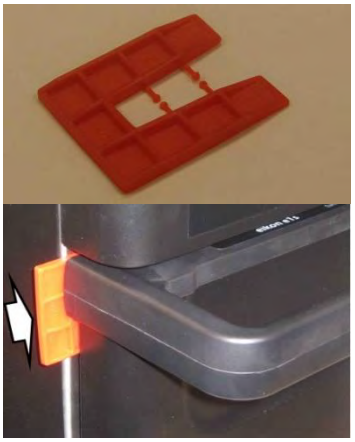
Important note:

In the event that the monitor switch causes the microwave circuit fuse to blow, the secondary (SW2) and monitor (SW1) microswitches must be replaced due to exposure to high short-circuit currents.

The purpose of the following adjustment procedure is to set the microswitch to switch off the microwave circuit when the door is opened more than 4 mm and for the microwave circuit to operate when the door is closed and the door seal expands.

Adjusting the switches

1. Open the appliance door and position the red 4mm spacers over the top corners of the door seal. Then carefully close the door ensuring the spacer is still in position.



2. Slacken the pivot screw using a M7 hex socket wrench.

3.	Release the adjusting screws and move the backplate until microswitch SW3 just activates. Then secure all screws.
4.	Open the appliance door to replace the green 2mm spacers with red 4mm spacers and close the door.
5.	Slacken the pivot screw using a M7 hex socket wrench.
6.	Release the adjusting screws and move the backplate until microswitch SW2 just activates. Then secure all screws.
7.	Remove the spacers, then open and close the appliance door 5-10 times.

Important checks

Check if the switches operate in the following sequence, as microswitch SW3 must switch the load current.

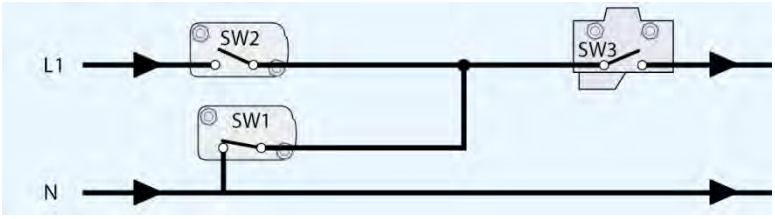
Closing the door:

SW1 opens first

SW2 closes second

SW3 closes third

oven door open



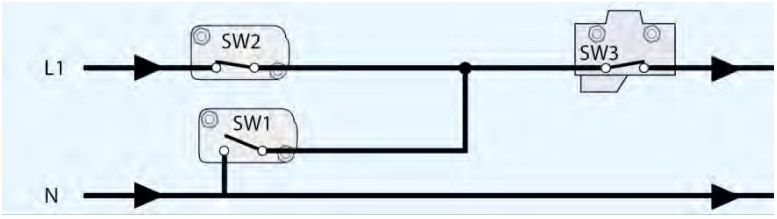
Opening the door:

SW3 opens first

SW2 opens second

SW1 closes third

oven door closed



Replacing the impinger plate

Requirements and tools

Check that the following requirements have been met:

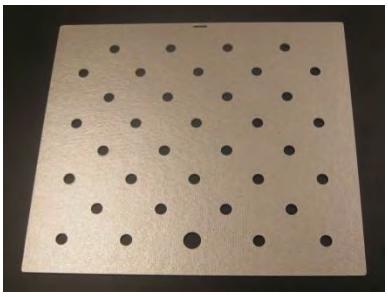
- The appliance is cool
- Tools required – none

Removing the impinge plate

1. The impinger plate rests on brackets in the upper part of the cavity.

   To assist removal, a larger hole is provided at the front of the impinger plate big enough to insert a finger.

2. Remove the impinger plate from the cavity by pulling forward and slightly downward.



Fitting the impinger plate

The impinger plate is fitted with the reverse action to removal, pushing until the plate slots into place.

Replacing the stirrer

Requirements and tools

Check that the following requirements have been met:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The upper casing panel of the appliance has been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- M7 hex socket wrench
- Replacement partition plate

Component location

The stirrer is positioned inside the top of the oven cavity. To access the stirrer the impinger plate is first removed (see above).

Removing the stirrer

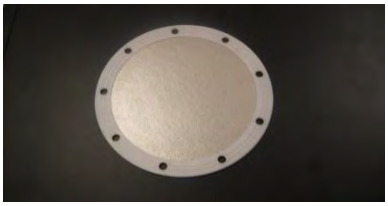
1. Removing the impinger plate (see above) reveals the partition plate.

   Unfasten the nine M7 hex nuts that secure the partition plate.

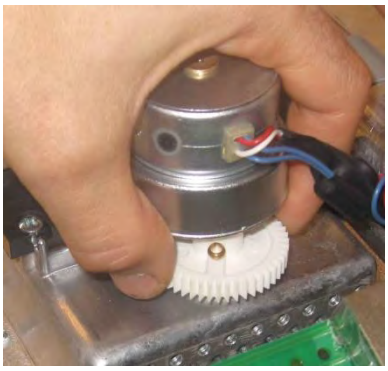
2. The partition plate features a rubber gasket on its upper side which adheres to the upper surface of the cavity.

   The rubber gasket prevents grease-laden air from entering the space around the cavity and so needs to be intact.

   To remove the partition plate it is necessary to first prise the gasket from the silver mica board with a flat edge screwdriver. This will compromise the gasket and so a replacement partition plate is required to complete the stirrer replacement procedure.



3. To remove the stirrer from the motor spindle, the motor must be prevented from moving. This is most easily achieved by holding one of the white cogs located below the motor.



The stirrer can then be removed by turning clockwise.

Remove the remains of the old gasket before fitting the new impincher plate (comes with gasket).

Fitting the stirrer

- Follow the steps in the reverse order to fit the stirrer.
- When refitting the partition plate, fasten the screws on opposite corners/sides in turns and do NOT proceed stringently clockwise or anti-clockwise.
- Tighten the partition plate screws to 2.1 Nm of torque.

Replacing the stirrer motor

Requirements and tools

Check that the following requirements have been met:

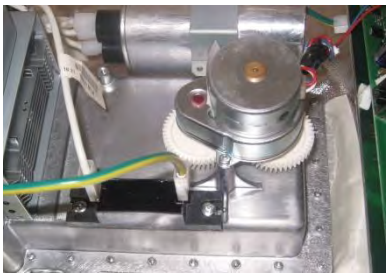
- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The upper casing panel of the appliance has been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- M7 hex socket wrench
- Pozidriv PZ1 screwdriver
- Loctite thread adhesive
- Replacement partition plate

Component location

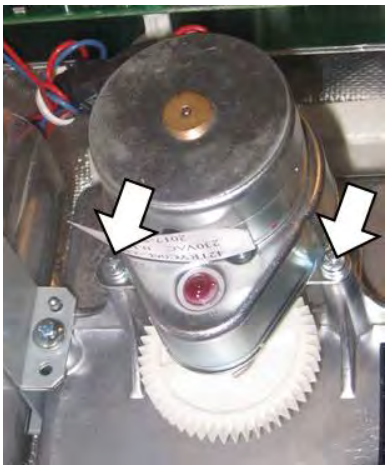
The stirrer motor is positioned on top of the oven cavity between the magnetron and SRB board. To remove the motor, the stirrer must first be freed from the motor spindle inside the cavity. To do this, the impinger plate and stirrer are removed as described above.



Removing the stirrer motor

1. With the stirrer removed (see above), the stirrer motor on top of the cavity can be dismounted using a pozidriv PZ1 screwdriver.

   Note: The threads at the stirrer motor are locked with Loctite.



Fitting the stirrer motor

- Follow the steps in the reverse order to fit the stirrer motor.
- The threads at the stirrer motor should be resealed with loctite.

Replacing the convection fan motor and heating element

Requirements and tools

Check that the following requirements have been met:

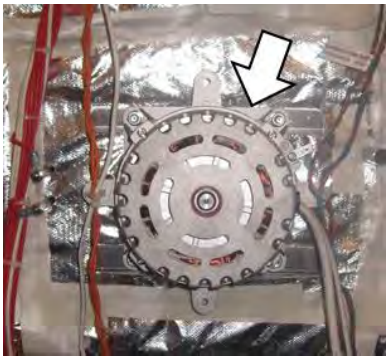
- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The casing of the appliance has been removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

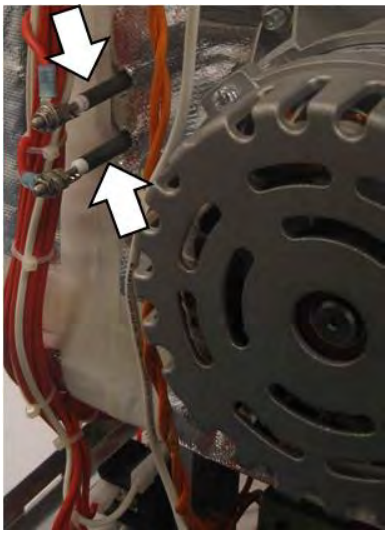
- M7 hex socket wrench
- Pozidriv PZ1 screwdriver

Component location

The convection motor is positioned on the rear of the cavity.



The element connections can be seen to the left of the convection motor.

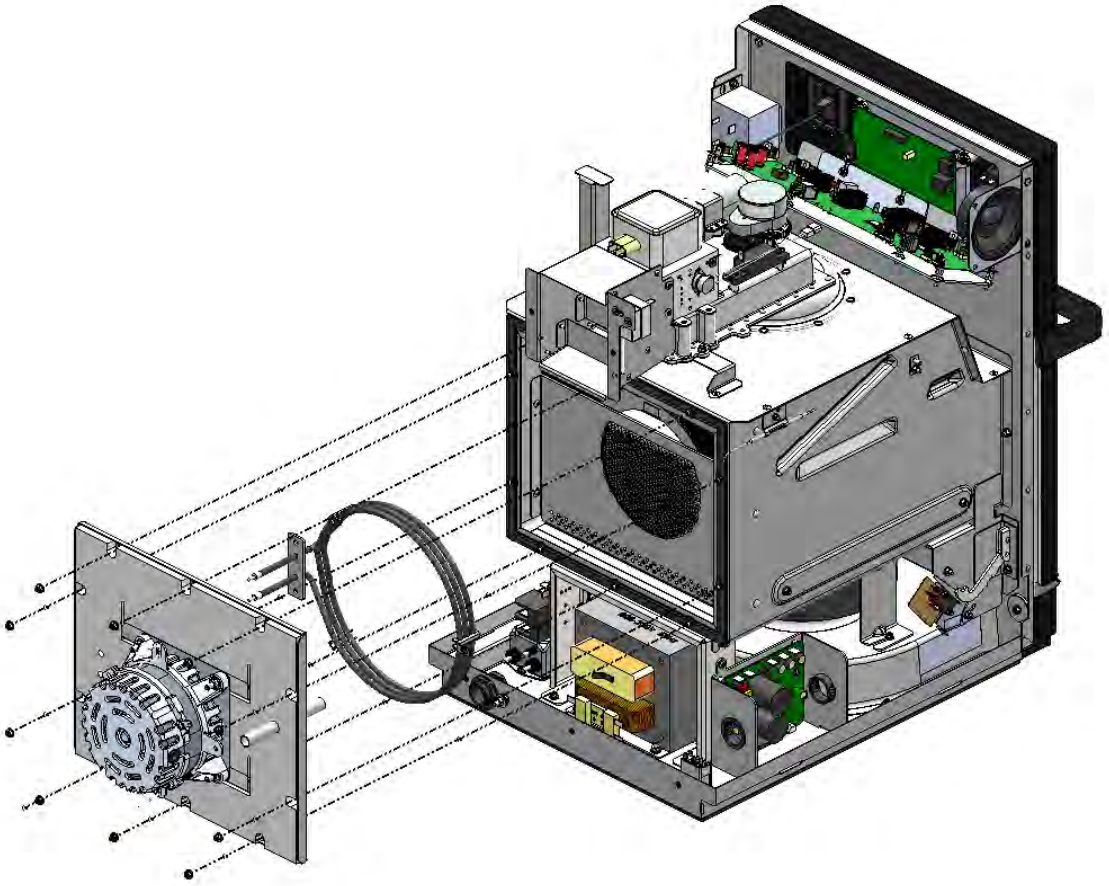


Removing the convection motor and heating element

1. To remove the convection motor assembly, the silver insulation blanket must be peeled back to give access to the 10 x M7 nuts located at the positions indicated in this picture.

Note: Any high-temperature tape compromised when peeling back the insulation will need to be replaced.

The figure below shows the convection fan assembly and element component arrangement.



Replacing a transformer (high voltage)

Requirements and tools

Check that the following requirements have been met:

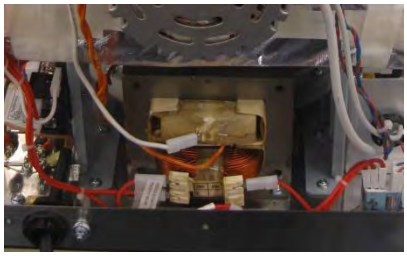
- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The casing of the appliance is removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

- M8 hex socket wrench

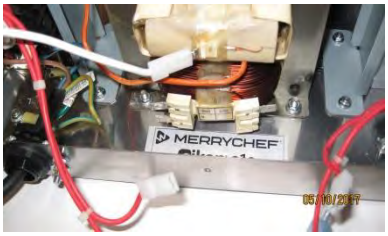
Component location

The high voltage transformer is located at the rear of the oven below the cavity.

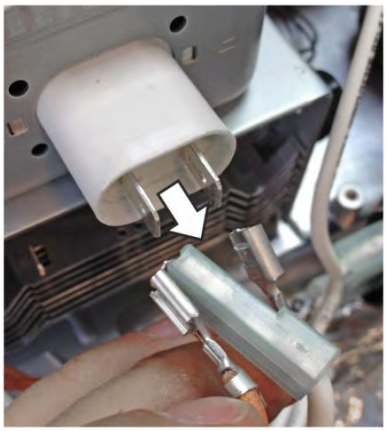


Removing a transformer (high voltage)

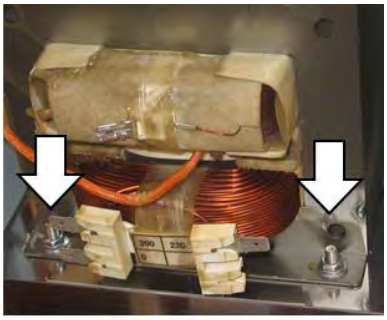
1. Unplug all electric connections of the transformer(s).



2. Disconnect the transformer(s) from the magnetron(s) by unplugging the orange cables at the magnetron(s).



3. Unfasten two M8 nuts and washers to remove the transformer.



CAUTION

The transformer is heavy.

Wear safety shoes to protect your feet from a transformer falling down.

Fitting a transformer (high voltage)

Follow the steps in the reverse order to fit the high voltage transformer(s).

CAUTION

If the electric connections have not been restored properly this may lead to malfunction/damage of the oven.

Replacing the convection fan motor speed controller

Requirements and tools

Check that the following requirements have been met:

- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The casing of the appliance is removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Tools required:

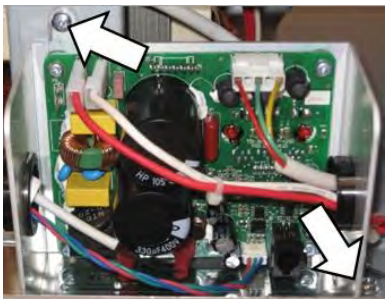
- M7 hex socket wrench
- Pozidriv PZ2 screwdriver

Component location

The convection fan motor speed controller board is located below the cavity towards the rear of the oven on the left hand side.

Removing the convection fan motor speed controller

1. After disconnecting the wire connections, unfasten the PZ2 and M7 nut that hold the convection fan motor speed controller board backing plate.



Overview of further components

Before carrying out any procedure on the parts described below, ensure the following requirements have been met:

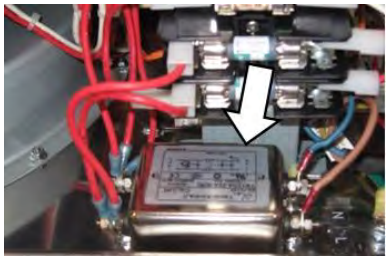
- The appliance has been disconnected from the power supply and protective measures have been taken to ensure the power cannot be switched on again.
- The appliance is cool.
- The casing of the appliance is removed.
- The high voltage capacitors are discharged before commencing work.
- Anti-static precautions have been taken.

Equipotential bonding connection

The equipotential bonding connection is located at the bottom left corner of the rear panel of the oven next to the mains supply cable.

Electromagnetic Compatibility (EMC) Filter

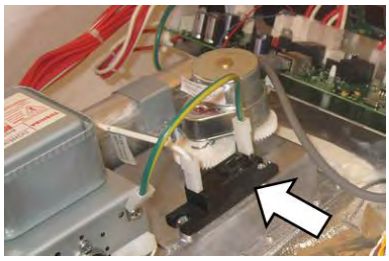
The EMC filter is located on the base panel at the rear of the appliance on the right hand side.



Diode(s) (high voltage)

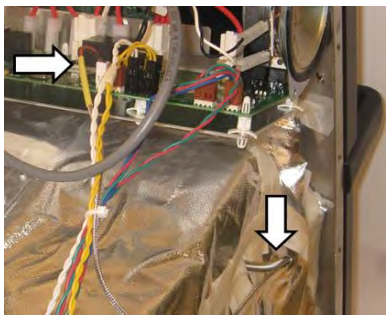
The high voltage diode is located on top of the cavity behind the magnetron.

Note: When replacing the high voltage diode, ensure it is installed in the correct orientation.



Cavity temperature sensor (thermocouple)

The cavity temperature sensor (thermocouple) provides temperature feedback to the SRB board to control the cavity temperature. The cavity temperature sensor (thermocouple) connects via a black and a red cable to the SRB board and passes in to the front left side of the cavity through a thin tube.

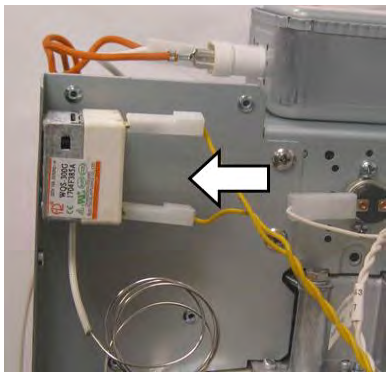


Exhaust pipe

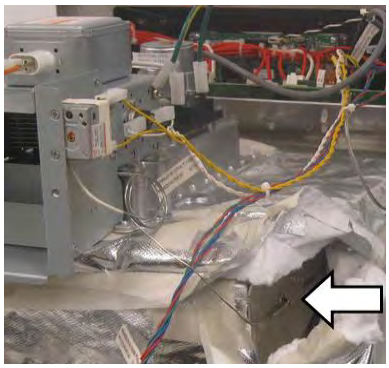
The exhaust pipe leads steam from the cavity to the cooling duct and the rear outlet of the oven. A protective strip prevents touching the outlet when hot.

Cavity high limit

The cavity thermostat is located besides the cooling duct on the left hand side of the oven (when looking at the oven from the rear). It continuously measures the temperature of the cavity and switches the oven off should overheating occur.

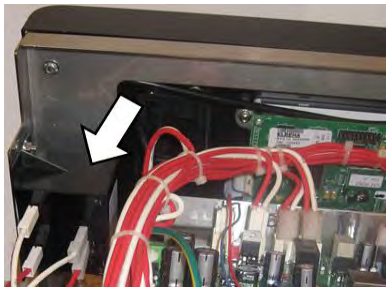


The thermostat uses a temperature sensor which is pinned within a holder located towards the rear of the top left edge of the cavity.



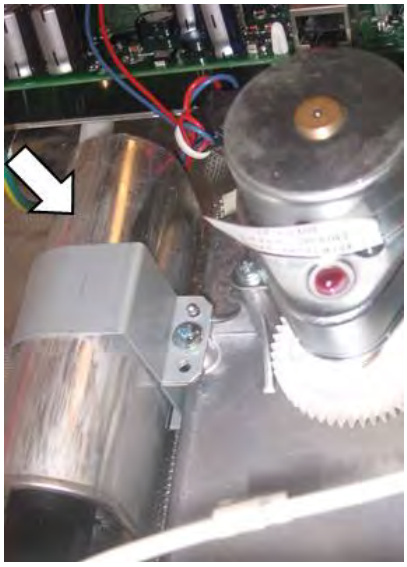
Transformer (low voltage)

The low voltage transformer is located behind the front panel in the top right corner of the appliance.



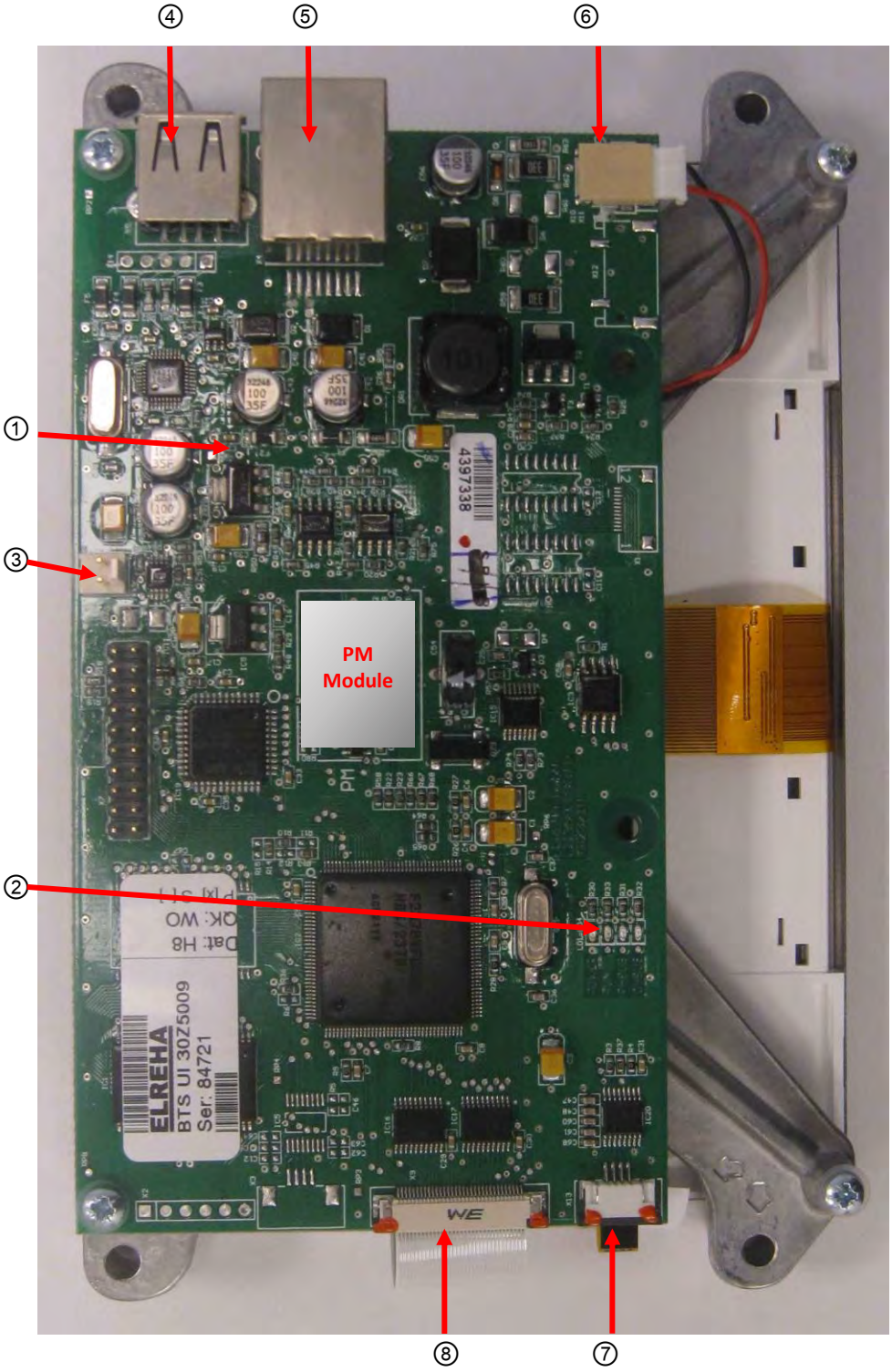
Capacitor(s) (high voltage)

The high voltage capacitor is located on top of the cavity behind the magnetron and is fixed by a sheet metal bracket.



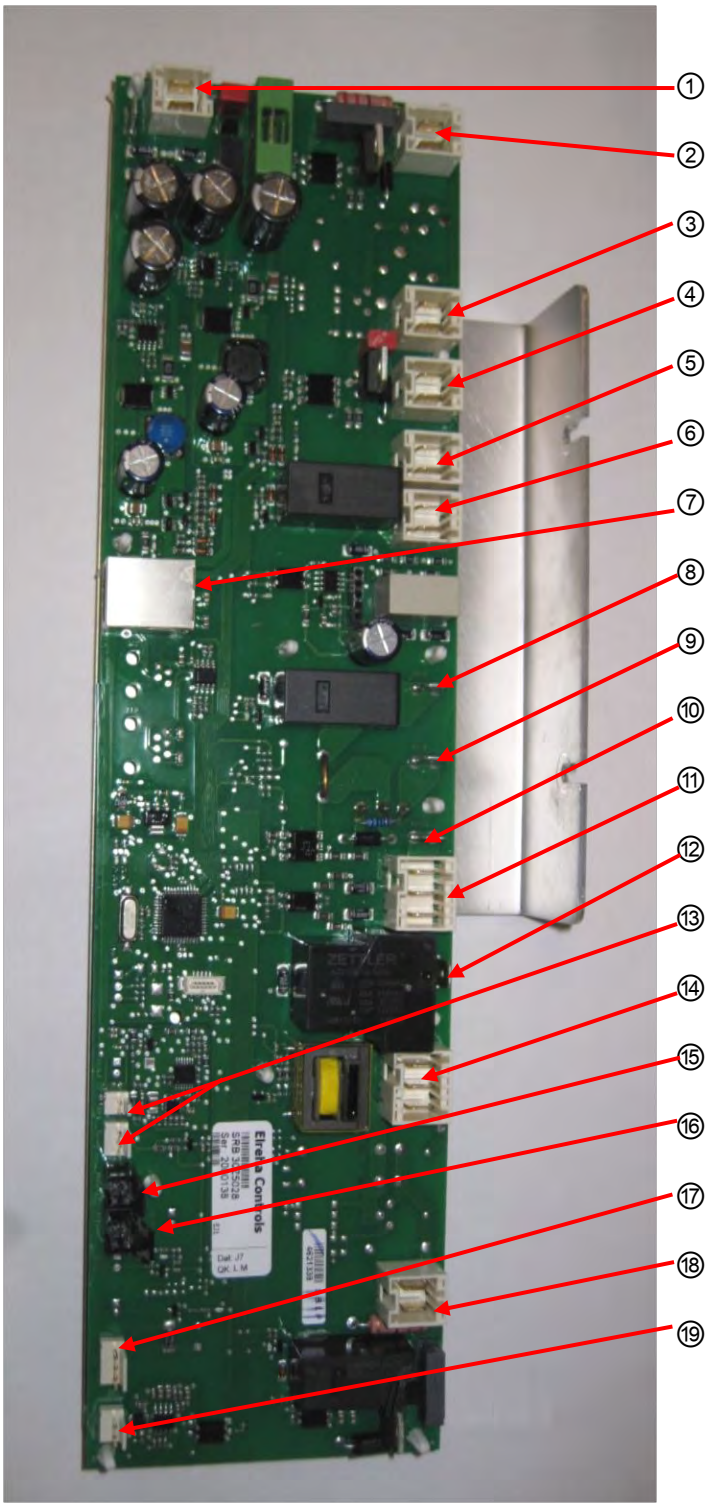
3J. Circuit boards and diagrams

QTS circuit board assembly



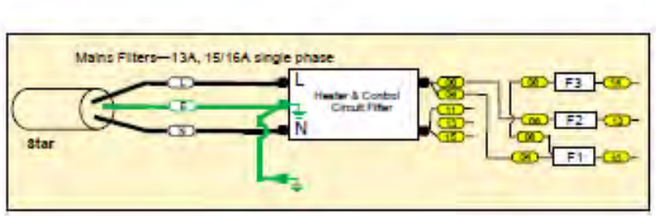
Item	Name
1	LD5
2	Power, Run, P-Bus, C-Bus
3	X6 – speaker
4	X5 – USB socket
5	X4 – Communications to SRB
6	X11 – Screen backlight
7	X13 – Touch pad
8	X9 – Display screen PCB

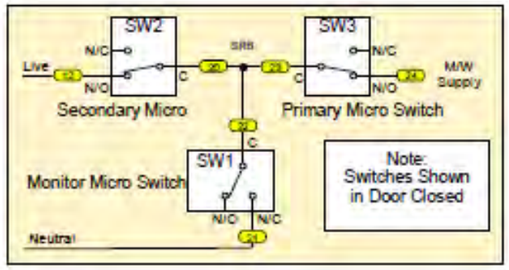
SRB circuit board

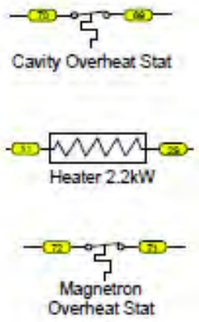


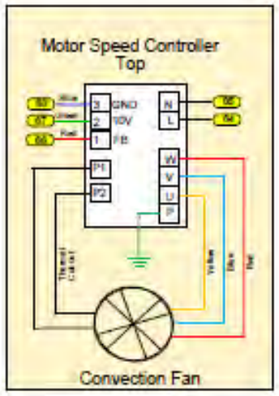
Item	Name
1	X1 – 24V supply from low voltage transformer
2	X8 – Cooling fan
3	X17 – Not used
4	X9 – Mains output, convection fan controller
5	X103.1 – Mains output to low voltage transformer
6	X14 – Cavity temperature sensor (thermocouple)
7	X11 – P/C Bus, BTS cable
8	X2.1 – Mains input, live for heaters
9	X2.2 – Mains output, live to heaters
10	X102a – Mains input, neutral for magnetron transformers and monitor door switch
11	X102b – Mains output, neutral to magnetron transformer and monitor door switch.
12	X4a – Door switch signal from secondary door switch (live for magnetron transformer)
13	X14 – Cavity temperature sensor (thermocouple)
14	X10 – Connector block for door switches
15	X18c – Cavity overheat thermostat
16	X18d – Magnetron overheat thermostat
17	X101 – Voltage selection relay coil feeds. (US version only)
18	X4b – Live for magnetron transformer
19	X3 – Output for convection fan motor speed controller

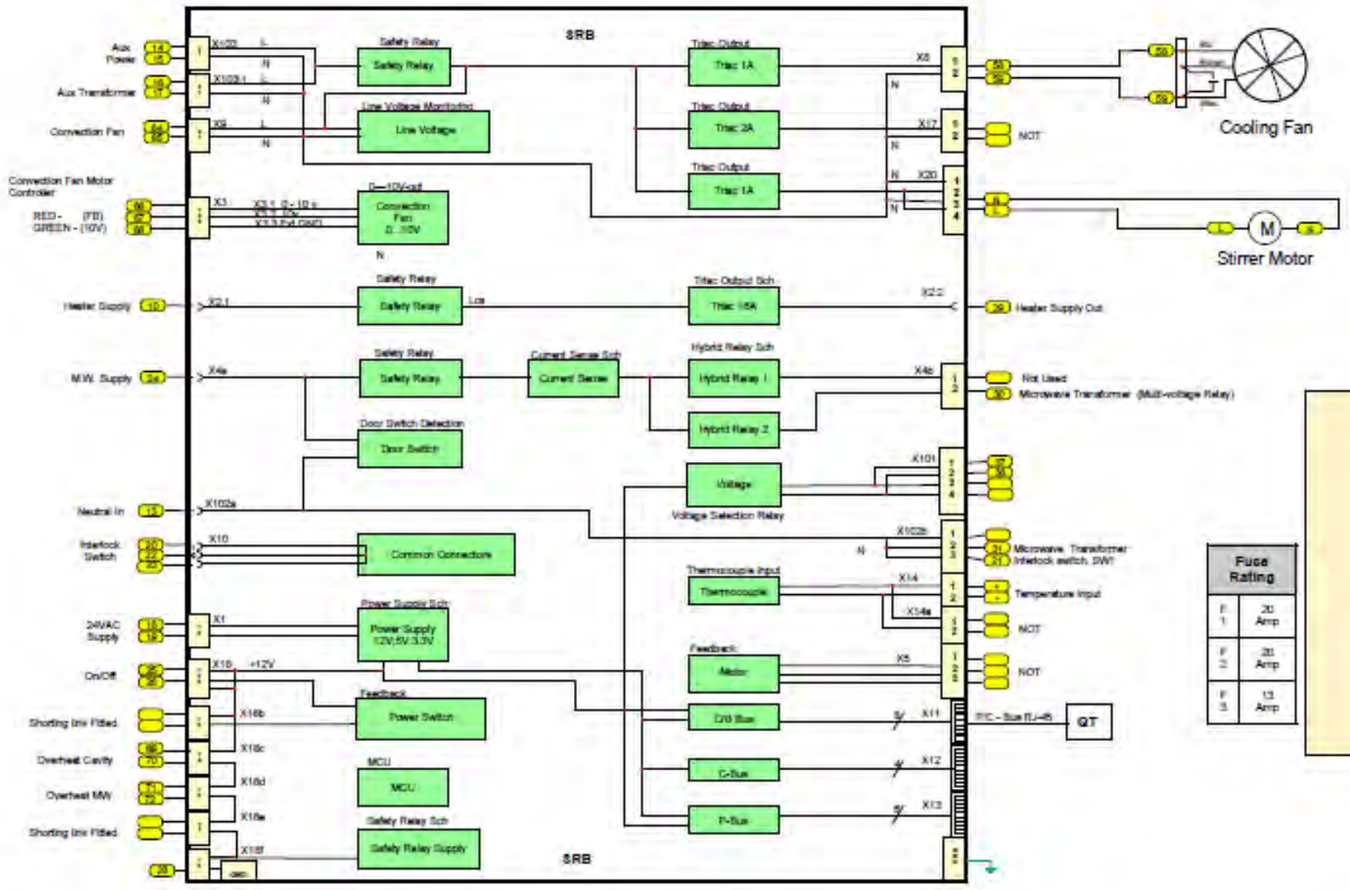
Circuit diagrams

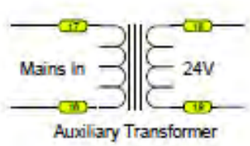




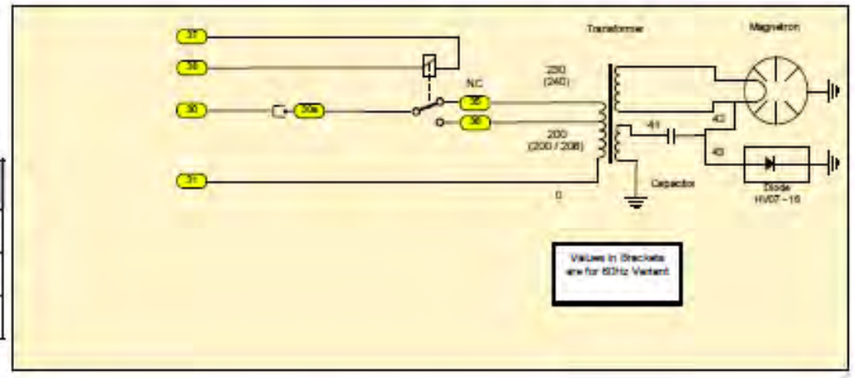








Fuse Rating	
F 1	20 Amp
F 2	20 Amp
F 3	13 Amp



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