Merrychef

eikon e4s

Service & Parts Manual

eikon
cooking redefined

WARNING MICROWAVE EMISSIONS
DO NOT BECOME EXPOSED TO EMISSIONS FROM THE MICROWAVE GENERATOR OR PARTS CONDUCTING MICROWAVE ENERGY.

Manitowoc

Service & Parts Manual original instructions
Part Number 32Z3870 GB
Issue 4

SYMBOLS

The symbols below are used, where applicable, as visual guidance throughout this manual.
The relevant safety precautions MUST be observed and implemented at all times.

DANGER!
This symbol is shown if there is a immediate risk of severe personal physical injury or death.

WARNING
This symbol is shown if there is a possible risk of severe personal physical injury.

CAUTION
This symbol is shown if there is a possible risk of personal physical injury.

NOTICE
This lettering is shown if damage may occur to the equipment.

INFORMATION
This symbol is used to highlight useful or important information. For example: The manual consists of main sections (tab markers on the extreme left and right of the pages), followed by the main subject heading, sub-headings and text. Text with a reference number or letter, such as (1) refers to the same reference ❶ on the image.

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1 SAFETY REQUIREMENTS

IMPORTANT INFORMATION - READ CAREFULLY

This manual provides technical guidance for engineers who have successfully undertaken a recognised product familiarisation and training course run by Merrychef to carry out service/repair tasks to the appliance/s shown on the front cover of this manual which must not be used for any other make or model of appliance.

Please remember that it is wiser not to attempt a service task if you are unsure of being able to complete it competently, quickly, and above all safely.

To avoid injury to yourself or others and to protect the appliance from possible damage, ensure you have read and understand all the relevant instructions and ALWAYS follow the Safety Codes when servicing an oven.

1.0.1 Before attempting to repair the oven, check the oven for microwave emissions using a calibrated microwave emission detector.

1.0.2 Check that the oven is not emitting microwaves, even when supposedly not in operation.

1.0.3 Check that the oven is not operating continuously, whether the display indicates cooking or not.

1.0.4 Never manipulate the mains power lead whilst it is live.

1.0.5 Before removing the oven casing ALWAYS isolate the oven from the mains electricity power supply. Switch off and disconnect the oven plug from the wall socket, turn off isolator switch to disconnect fixed wired ovens.

NOTE: The oven switch does not provide adequate protection against electric shock as it does not isolate all of the internal wiring from the mains.

1.0.6 Ensure electrical supply is locked-off to prevent the oven from being inadvertently powered up.

1.0.7 Do not leave the oven unattended without the oven panels fitted and keep within sight of other personnel when testing the oven, ensuring persons other than trained engineers are denied access.

1.0.8 The minimum number of panels should be removed and the HT capacitors must be discharged before working on the oven using a suitably insulated 10 MΩ Resistor.

1.0.9 Temporary insulation should be used to prevent accidental contact with dangerous conductors.

1.0.10 Do not touch any internal wiring or connectors within the oven, whether you believe it is live or not and avoid touching the metalwork (casing, panels, etc) of the oven with your body.

1.0.11 Only use electrically rated screwdrivers for adjusting 'Pots' etc., ensuring the tool touches nothing else.

1.0.12 Ensure the Test Equipment is set correctly before use.

1.0.13 Test Equipment such as meter test leads or clamps must be fitted and removed whilst the unit is dead, for each and every test.

1.0.14 Do not undertake functional Magnetron testing with the oven panels removed.

1.0.15 Avoid touching the Test Equipment, unless necessary for the operation.

IF SMOKE IS OBSERVED
SWITCH OFF THE OVEN - DISCONNECT/ ISOLATE FROM THE ELECTRICAL SUPPLY - KEEP THE OVEN DOOR CLOSED TO STIFLE ANY FLAMES.

DANGER!
BEFORE REMOVING THE OVEN CASING, ISOLATE THE OVEN FROM THE MAINS ELECTRICITY POWER SUPPLY; SWITCH OFF, DISCONNECT OVEN PLUG FROM WALL SOCKET, TURN OFF ISOLATOR SWITCH TO DISCONNECT FIXED WIRED OVENS AND LOCK-OFF.

WARNING
ALWAYS DISCHARGE THE HT CAPACITORS BEFORE WORKING ON THE OVEN USING A SUITABLY INSULATED 10MΩ RESISTOR.

1.0.16 Upon completion of a service follow the steps for "Commissioning the oven" under the "Commissioning" section of this manual.

2 PRODUCT OVERVIEW & FUNCTIONS

CONSTRUCTION

Stainless Steel cavity and casework.

CONTROL SYSTEM

Colour touchscreen, icon driven.

Storage for up to 1024 programs with 6 stages per cooking program providing a user instruction for each stage.

USB memory stick data transfer.

Safety system: ensures control area temperature is within limits.

MICROWAVE POWER

Two magnetrons.

Distribution system, rotating active antennae.

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

Safety system: agency approved monitored interlock door system, current monitoring and overheat detection for magnetrons.

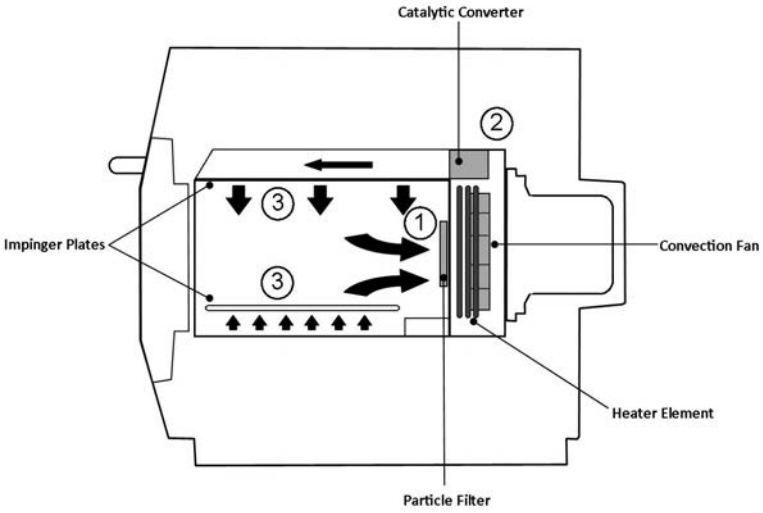
CONVECTED HEAT

Temperature settings 0°C off and from 100°C to 275°C in 1° C steps.

Distribution system, recirculating airflow impingement.

Convection fan setting, 10-100% in 1% increments.

Safety system: oven cavity overheat detection.



START UP SEQUENCE

With the oven switch in the OFF position and the mains power ON, the QTS & SRB boards boot up. When the oven switch is turned ON the splash screen briefly displays oven information and the cabinet cooling fan is activated.

After completing a successful logic test, the safety relay is energised and the oven preheats or displays a preheat temperature choice. Once preheated the oven displays the main menu if in FS mode or a recipe selection if in QSR mode.

SHUTTING DOWN SEQUENCE

When oven switch is turned OFF the screen displays 'Shutting Down' and the cooling fan operates until the cabinet temperature has been sufficiently reduced (cavity temperature of 50°C).

The safety relay is de-energised and the QTS & SRB boards remain active.

HOW IT WORKS

The convection fan pulls air in through the Air Diffuser (1) This is then heated and returned to the cavity through the catalyst (2) and impinger plates (3) to produce an even heat pattern in the oven. This heat pattern allows food to cook evenly and produces a crisp golden finish, everytime.

3 MAIN FEATURES

1 ON/OFF SWITCH

ON (I) activates the oven, OFF (0) switches the oven to standby mode. IT DOES NOT ISOLATE INTERNAL WIRING FROM THE MAINS SUPPLY.

2 CONTROL PANEL

Touch sensitive controls (easyToUCH®) for controlling oven functions, including diagnostics and service mode.

3 USB MenuKey®

A socket, located under the logo, allows a USB MenuKey® to be used to update the cooking programs and oven firmware on the pcb's.

4 OVEN CAVITY

The oven cavity is mostly constructed from stainless steel panels which must be kept clean to avoid contamination of food products and allow the oven to perform at peak efficiency.

5 IMPINGER PLATES (Upper & Lower)

Direct the air in the cavity. They must be cleaned on a regular basis, and kept free of debris.

6 OVEN DOOR

The twin-skinned door has a thermally insulated inner section to lower the surface temperature and incorporates a microwave choke.

7 DOOR SEAL

Provides a tight seal around the door and must be kept clean. The seal must be checked regularly and replaced if worn or damaged.

8 AIR FILTER

The air intake provides cooling air for internal components and must be cleaned daily and must NOT be obstructed. The filter must be in place for the oven to function.

9 STEAM VENT

Vents steam from the oven cavity.

10 HOT AIR FAN

Circulates hot air through the catalytic convertors and oven cavity.

11 RATING PLATE

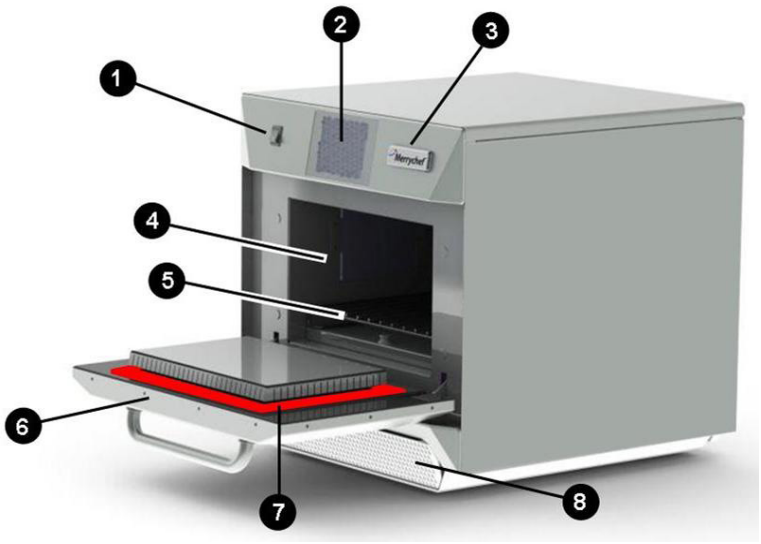
The rating plate, located on the rear oven cover, states the Model, Serial Number, Electrical Ratings and Manufacturers telephone number.

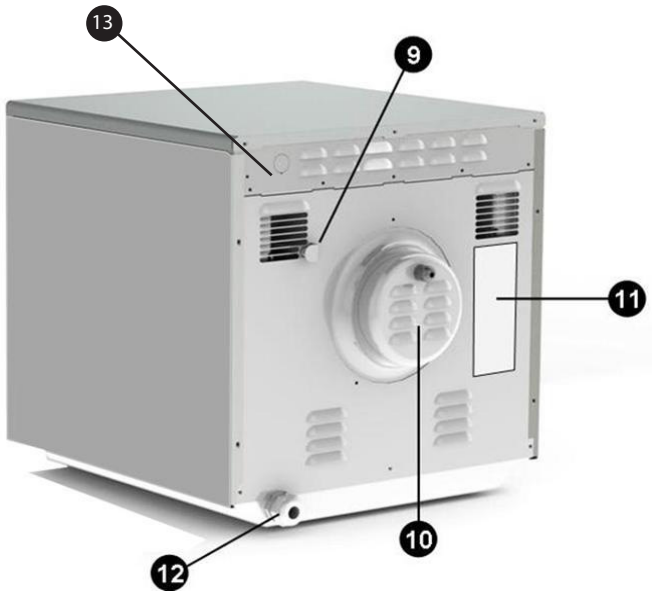
12 MAINS ELECTRIC POWER CABLE

Located on the rear of the oven and must be replaced if worn or damaged.

13 OH STAT ACCESS BOLT

To reset cavity OH Stat remove bolt to gain access to stat.

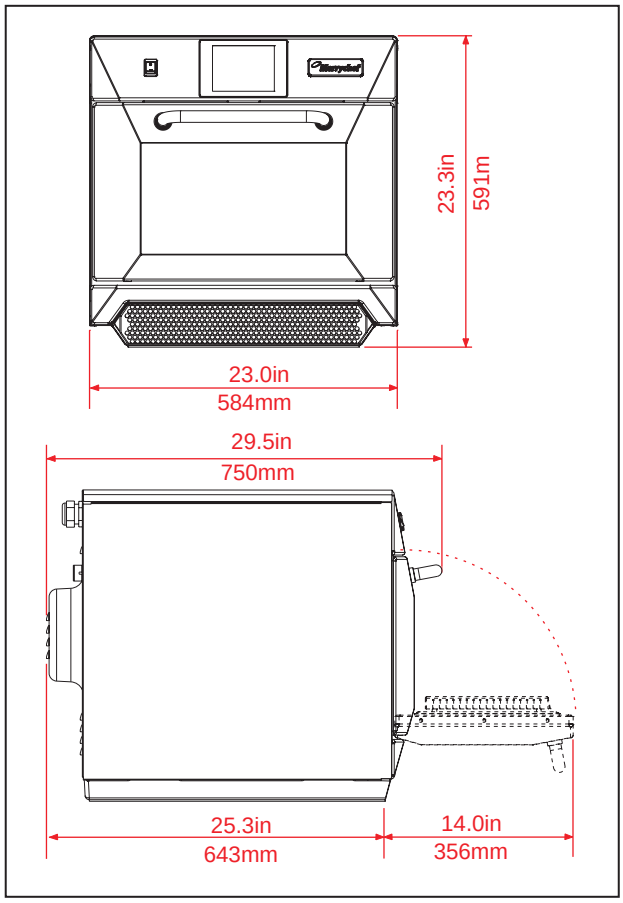




4 TECHNICAL SPECIFICATIONS

4.1 Specifications

Description	unit	e4s
Touch screen controls	programs	1024
Ambient operating temperature	°C/°F	<40/104
External HxWxD	mm	591x584x750
External HxWxD	inches	23.3x23.0x29.5
Internal HxWxD	mm	218x375x361
Internal HxWxD	inches	8.6x14.8x14.2
Cooking chamber	Ltr (cu.ins)	29.5 (1800)
Power output microwave	Watts	1800
Power output convection	kW	3.2
Power supply	Hz	50 or 60
Power supply	V	230 (50Hz), 208/240 or 220 (60Hz)
Power supply	kW	6.2
Unpackaged oven weight net	Kg (lbs)	86.3 (190)
Sound pressure level	dB(A)	<60



4.2 Serial Number (Rating Plate)

Serial number: YY MM SITE SERIAL

i.e. 10 06 2130 12345 (1006213012345)

Oven manufactured 2013 in June at Sheffield (UK), production number 12345.

Model Number: MODEL CONVECTION MICROWAVE VOLTAGE HERTZ LEAD PLUG COMMUNICATION VERSION CUSTOMER/ACCESSORY COUNTRY

i.e. e4s S T 30 5 H E U 1 GM EU (e4SST305HEU1GMEU)

model e4s, 3200W, 1800W, 230V, 50Hz, L+N+E(4mm EU), 3-pin plug, USB, 1, General Market, European.

4.3 Compliances

EU Directives

EMC 2004/108/EC

LVD 2006/95/EC

RoHS 2011/65/EU

MD 2006/42/EC

CE

EC Declaration of Conformity

Manufacturer

Manitowoc Foodservice UK Limited
Manitowoc, Provincial Park,
Nether Lane, Ecclesfield,
Sheffield, S35 9ZX

Equipment details

Generic Model Numbers eikon e4s
Description Commercial Combination Microwave Oven

Declaration of Conformity with directives and standards

The manufacturer hereby declares that its commercial combination microwave ovens listed above comply with the following directives and standards.

Compliance with Directives

The commercial combination microwave ovens comply with the relevant provisions of the following European Directives
EMC 2004/108/EC LVD 2006/95/EC RoHS 2011/65/EU MD 2006/42/EC

Harmonised Standards Applied

The commercial combination microwave ovens comply with the relevant requirements of the following European standards.

- EN 60335-2-90: 2006 +A1 (excluding Annex EE ship board requirements)
- EN 60335-1: 2012
- EN 62233:2008
- EN 55014-2:2009 in accordance with Category IV requirements

Electrostatic discharge	IEC 61000-4-2:2008
Radiated RF interference	IEC 61000-4-3:2006
Fast transient common mode, AC port	IEC 61000-4-4:2004
Mains surge, AC port	IEC 61000-4-5:2005
RF current, common mode, AC port	IEC 61000-4-6:2008
Mains voltage dips & interruptions	IEC 61000-4-11:2004
Flicker	IEC 61000-3-11:2000

- EN 55011:2009 Classification: Class A, Group 2

Mains terminal disturbance voltage	Table 6
Radiated disturbance, magnetic field*	Table 9
Radiated disturbance, electric field	Table 9

- AS/NZS CISPR 11

Radiated disturbance	CISPR 11:2009 Class A
Conducted disturbance	CISPR 11:2009 Class A

Quality and environmental management

Manitowoc Foodservice UK Limited (Sheffield) employs a quality management system in accordance with EN ISO 9001:2008 and a certified environmental management system in accordance with EN ISO 14001.

5 INSTALLATION

OVEN LOCATION AND POSITIONING

Choose a site away from major heat sources.

DO NOT position so that hot air is drawn in from fryers, grills, griddles, etc.

A heat barrier to the height of the oven must be installed if sited next to a burner, stove or range.

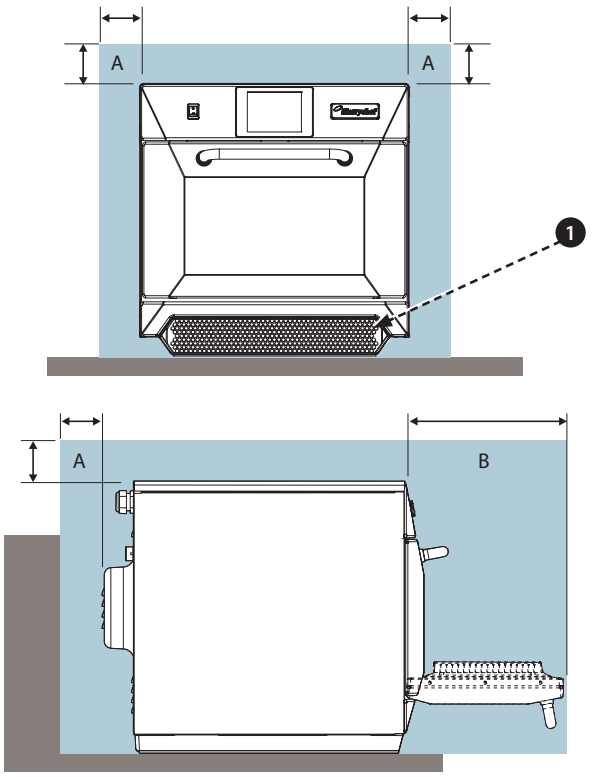
Place the oven on a permanent nonslip/ nonflammable flat surface that is LEVEL, STABLE and STRONG enough for the oven and contents.

Allow a minimum clearance (A) of 2 inches (50mm) around the oven for hot air to escape.

Allow sufficient clearance (B), in front of the oven for the door to open fully.

The air intake is located at the lower front of the oven (1) and it is important that the airflow is as cool as possible and not preheated by other appliances such as burners, stoves, ranges, fryers, grills and griddles as this will deteriorate the life and performance of the oven.

Do not affix labels/stickers to oven other than those applied or approved by the manufacturer.



The oven will not operate without the AIR FILTER correctly fitted in place.

HANDLING & STORAGE

When moving an oven always observe and follow national and local requirements for lifting and moving heavy objects. Do not use the oven door handle to lift oven.

When not in use, electrically disconnect the oven and store safely in a dry cool place, do not stack ovens.

6 ELECTRICAL INSTALLATION

DANGER!
THIS APPLIANCE MUST BE EARTHED. FAILURE TO DO SO MAY RESULT IN ELECTRIC SHOCK AND DEATH.

The oven must be connected to a separate electrical supply installed by a qualified and approved electrician.

A suitably rated isolating switch with a 3mm contact gap on all poles should be fitted for each oven installed.

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

This equipment complies with EN61000-3-11, however, when connecting sensitive equipment to the same supply as the oven, the user should determine in consultation with the supply authority, if necessary, that a low impedance supply is used.

SINGLE PHASE (1)

UK models are fitted with a Blue 32Amp Plug to IEC 60309 (EN 60309)

The Circuit Breaker should be rated at 40A (Type C).

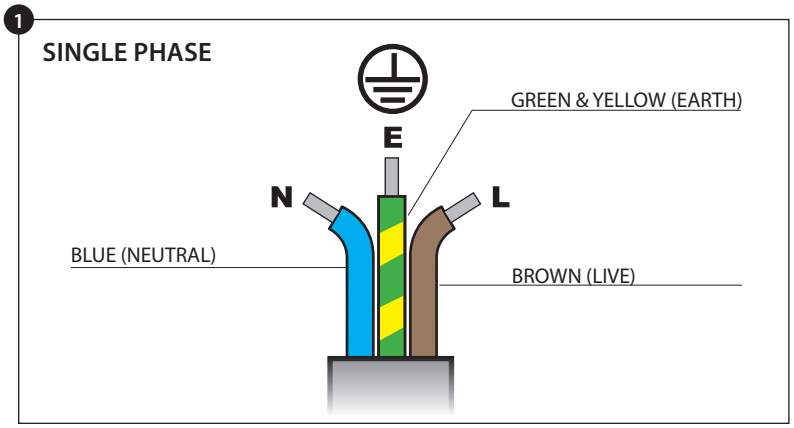
TWIN PHASE (2)

Twin Phase models should be connected as shown.

The Circuit Breaker should be rated at 20A/Phase (Type C).

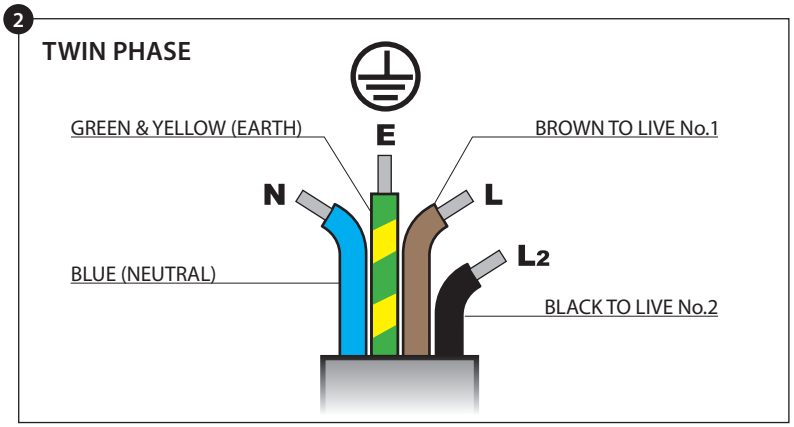
1

SINGLE PHASE



2

TWIN PHASE



WARNING
HIGH LEAKAGE CURRENT -- EARTH CONNECTION IS ESSENTIAL.

EQUIPOTENTIAL

An Equipotential Earth point is provided on the rear panel of the oven for independent Earth (GND) connection.

POWER SUPPLY: EARTH LEAKAGE CIRCUIT BREAKERS

If the oven is connected to an Earth Leakage Circuit Breaker device, this should allow a minimum of 30 milliamperes earth current without interrupting the circuit.

IF YOU ARE IN ANY DOUBT ABOUT YOUR ELECTRICAL SUPPLY, SEEK THE ADVICE OF A QUALIFIED ELECTRICIAN.

7 ELECTRICAL INSTALLATION GUIDE

DANGER!
THIS APPLIANCE MUST BE EARTHED. FAILURE TO DO SO MAY RESULT IN ELECTRIC SHOCK AND DEATH.

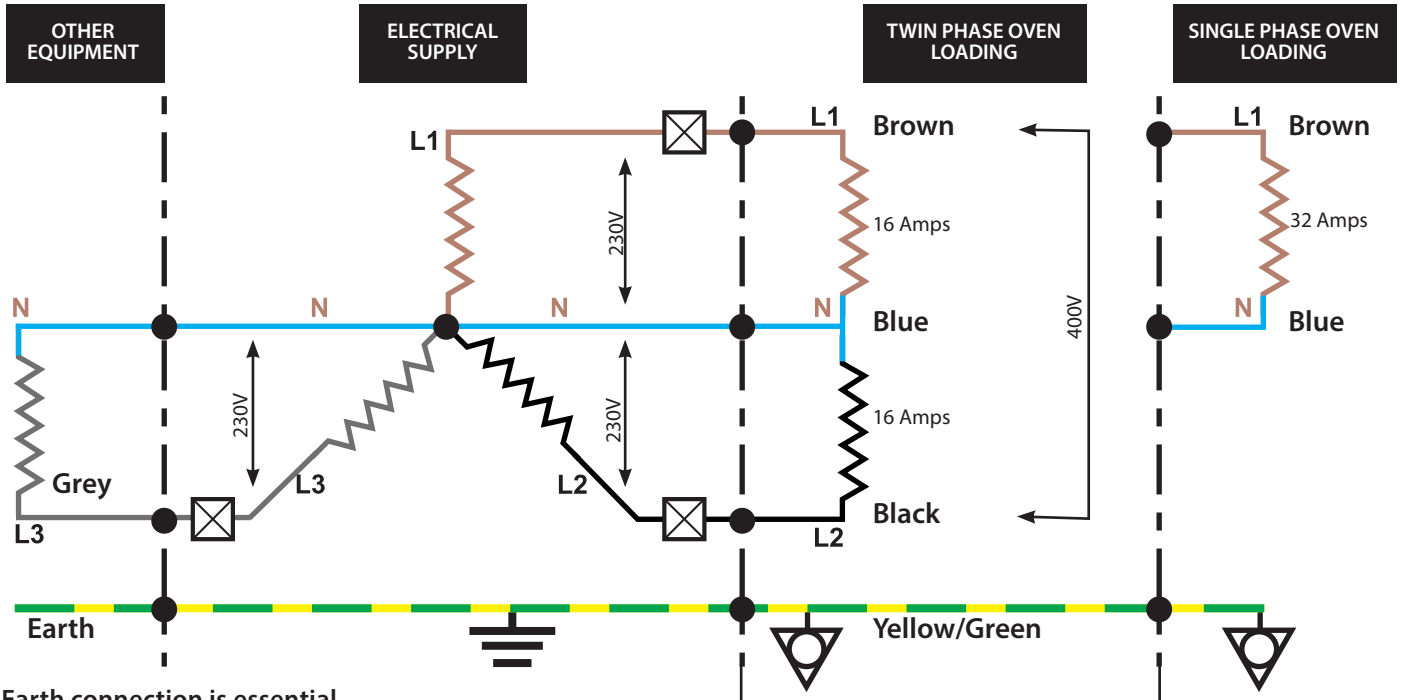
The oven must be connected to a separate electrical supply installed by a qualified and approved electrician.

A suitably rated isolating switch with a 3mm contact gap on all poles should be fitted for each oven installed.

WARNING
HIGH LEAKAGE CURRENT

EQUIPOTENTIAL

An Equipotential Earth point is provided on the rear panel of the oven for independent Earth (GND) connection.



Earth connection is essential.

Phase Loading Diagram

7.1 Phase Loading

Oven loading per phase is not equal therefore we recommend that other electrical equipment is connected to L3+ N.

☒ Circuit Breakers

TWIN PHASE

Circuit Breakers should be rated at 20A per Phase and be Time Delay, Motor Start Type (European Type C).

SINGLE PHASE

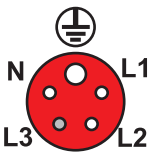
Circuit Breakers should be rated at 40A per Phase and be Time Delay, Motor Start Type (European Type C).

Earth Leakage Circuit:

If the oven is connected to an Earth Leakage Circuit Breaker device, this should allow a minimum of 30 milliamps earth current without interrupting the circuit.

If you are in any doubt about your electrical supply, seek the advice of a qualified electrician.

RED



Rear view of plug
Plug Type:
Three Phase
32Amp
IEC 60309
[EN60309]
L1+ L2+ N+ E
[L3 is not used]

20 Amp

BLUE

Rear view of plug
Plug Type:
Single Phase
32Amp
IEC 60309
[EN60309]
L1+N+E

40 Amp

8 OVEN CONTROL SETTINGS

1. Select the 'settings' symbol from the main menu screen.

2. Enter the password and select OK to display the Settings menu (3) comprising:

A. Oven mode/navigation settings.

B. Language options.

C. Oven temperature settings and labels.

D. Service information and error logs (password required).

E. Recipe counters.

F. Date & time settings.

G. Speaker sound levels.

H. Oven Timer (Temperature/ON/OFF).

J. USB program connection.

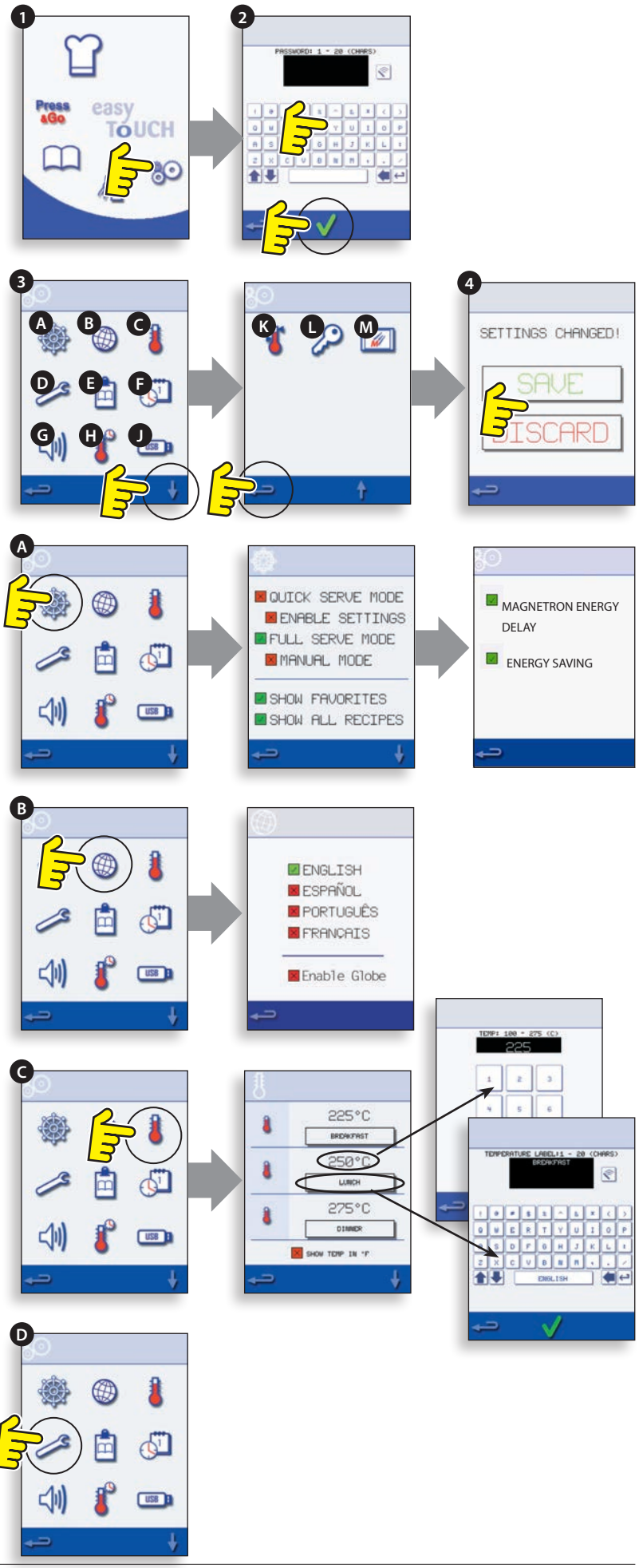
K. Temperature Band.

L. Change Settings/Service access passwords.

M. Screen saver.

When finished with a setting, select backspace to return to the main settings menu.

To exit the settings menu, select backspace, a prompt will be displayed to either 'SAVE' or 'DISCARD' any changed settings (4).



8.1 Oven mode/navigation settings (A)

8.1.1 Select the oven mode/navigation symbol (A) from the 'Settings' menu.

8.1.2 Select 'Quick Serve Mode' for cooking only, or 'Full Serve Mode' for cooking & development programs or 'Manual Mode' to manually cook only via the 'chef's hat' symbol.

8.1.3 Select 'Enable Settings' to display an 'unlock' symbol on the Quick Serve Mode screen to allow access to the 'Settings' menu.

8.2 Language options (B)

8.2.1 Select the 'Globe' symbol (B).

8.2.2 Select the checkbox of the required language/s from the list shown.
Select the 'Enable Globe' checkbox to display the 'Globe' icon in the menu screens to select a preset language.

8.3 Oven temperature settings and labels (C)

8.3.1 To change the oven preheat temperature, select the temperature symbol (C) to display the keypad. Enter the required temperature and select OK.

NOTE: The temperature options screen is only displayed at start up when two or more temperatures are set above minimum.

8.3.2 To change a temperature label, select the label to display the keyboard, enter the required label name and select OK.

For Service information & error logs (D) refer to Servicing.

8.4 Recipe counters (E)

8.4.1 Select the clipboard symbol to display a listing of recipe counters.

8.4.2 If shown, use the arrows (bottom right) to scroll up and down the list.

8.5 Date and Time settings (F)

8.5.1 Select the time/date symbol to display the setting options.

8.5.2 CHANGE THE DATE: Select 'MONTH', enter the correct month on the keypad and select OK.

8.5.3 Select 'DAY', enter the correct day on the keypad and select OK.

8.5.4 Select 'YEAR', enter the correct last two digits of the year on the keypad and select OK.

8.5.5 To display the month first, followed by the day and year, select the 'MM-DD-YY' checkbox.

NOTE: The error logs are recorded using these settings.

8.5.6 CHANGE THE TIME: Select 'HOUR', enter the correct hour on the keypad and select OK.

8.5.7 Select 'MIN', enter the correct minutes on the keypad and select OK.

8.5.8 Select the day name shown to cycle through to display the correct weekday.

8.6 Sound levels (G)

8.6.1 Select the speaker symbol to adjust the volume level suitable for the environment from none (OFF) to the loudest (100%).

8.6.2 Select music note symbol to set LOW, MED or HIGH tone.

8.6.3 Select the keypad symbol to switch the sound ON or OFF when the touchscreen is pressed.

8.7 Oven Timer (H)

8.7.1 Select the thermometer/timer symbol.

8.7.2 Select the 'Timer Enabled' checkbox (green check mark).

8.7.3 Select a weekday using the up/down arrows.

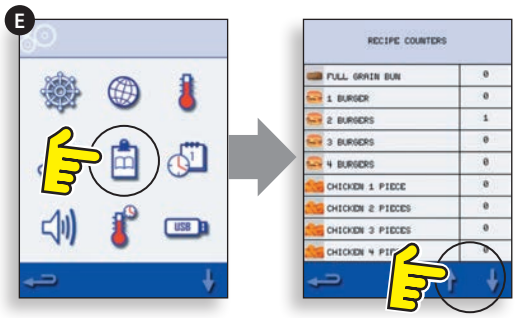
8.7.4 Select an empty 'Time' box (maximum of 5 per day) or clear the box using the wipe symbol.

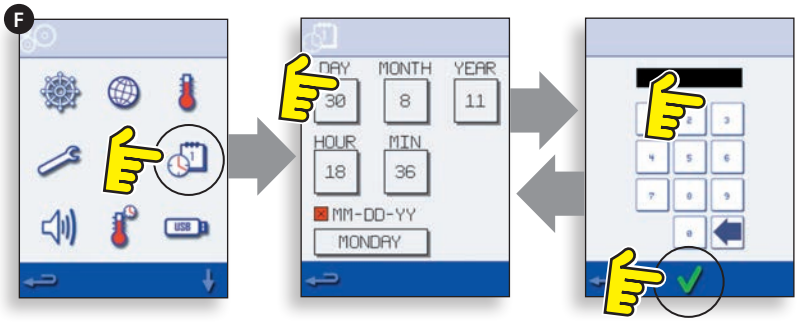
8.7.5 Enter the start time on the keypad and select OK.

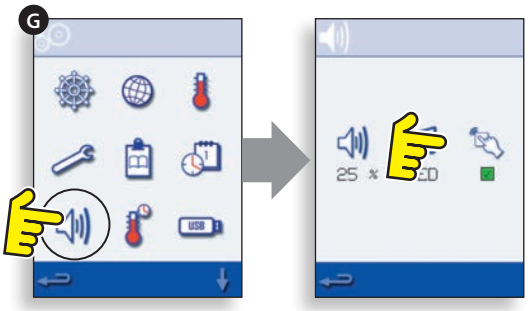
8.7.6 Select an empty 'Temperature' box opposite the time box displaying the time just entered, or clear the box using the wipe symbol next to it.

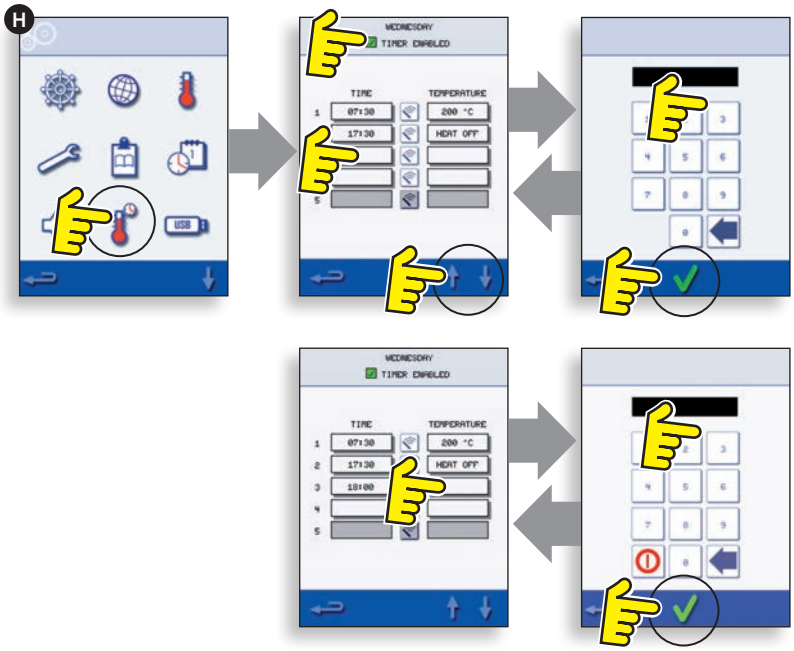
8.7.7 Enter the cavity temperature required on the keypad and select OK.

NOTE: You can also select zero to turn the heat off. Selecting the red circle symbol will switch the oven OFF.









8.8 USB oven programs (J)

IMPORTANT: Downloading from a USB will clear all the existing programs.

Check that the key has the correct number/code for the programs you want to load into the oven memory (1 '.cbr' + 'autoupd.ate').

8.8.1 With the oven switched off, slide the Merrychef badge (oven front top right) upwards and insert the USB Memory Stick into the slot.

8.8.2 Switch the oven ON.

8.8.3 The files automatically download from the USB showing the progress and confirmation screens for the update.

8.8.4 On completion the oven displays the start up screen, then the thermometer symbol is displayed.

8.8.5 Remove the USB and keep it in a safe place. Reposition the USB cover.

8.9 Temperature Band (K)

8.9.1 Select the 'Temp Band' symbol at which the oven controls, e.g. 50°C.

8.9.2 Select the required temperature band checkbox, shown by a green check mark.

NOTE: Although the lowest practical Temp Band should be used, if the set oven temperature falls by more than the selected Temp Band, the ready to cook mode and Temp Band are deactivated until the oven reaches the preheat temperature.

8.10 Change Password (L)

8.10.1 Select the key symbol to change the oven passwords.

8.10.2 Select the oven settings or Service symbol.

8.10.3 Enter the existing password and select OK to confirm.

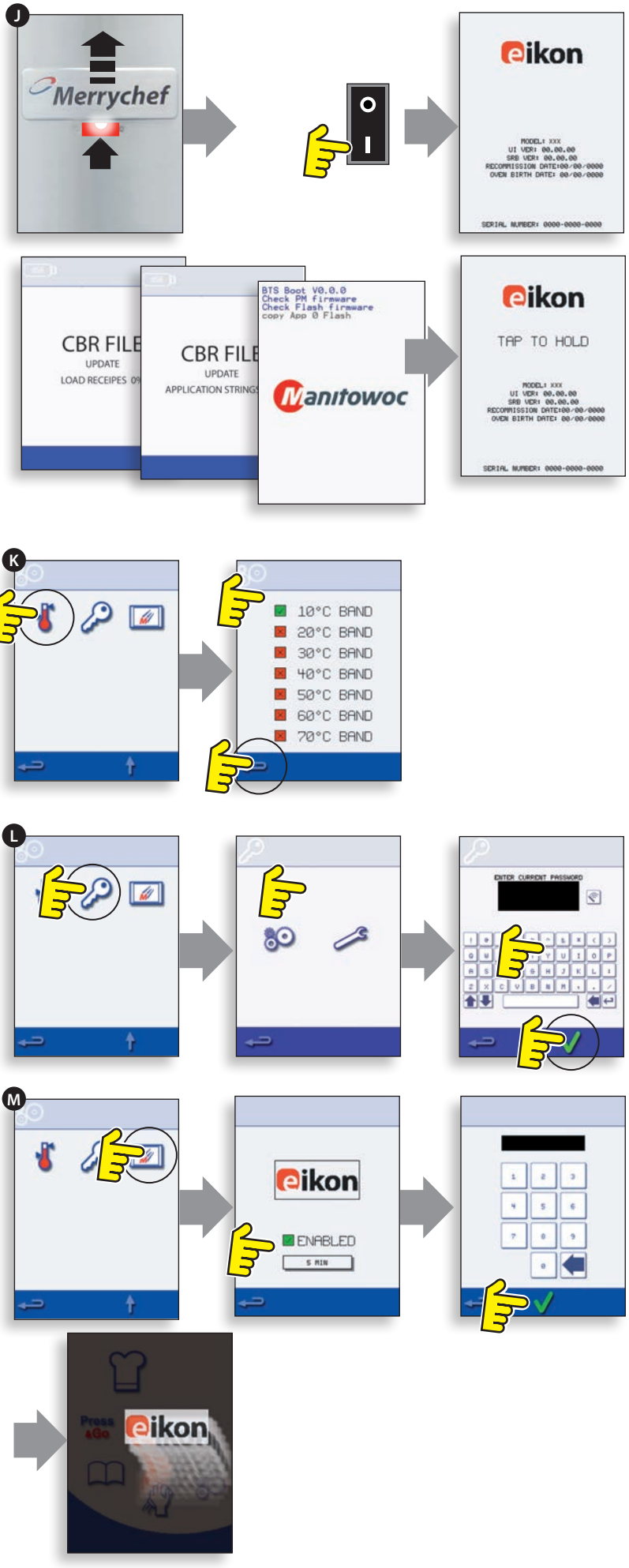
8.10.4 Enter the new password, select OK.

8.10.5 Confirm new password, select OK.

8.11 Screen saver (M)

8.11.1 Select the ENABLED checkbox to switch the screen saver ON or OFF.

8.11.2 Select the time box below to enter a time delay on the keypad from 1 to 60 minutes before the screen saver starts and select OK to confirm.



9 COOLING THE OVEN DOWN BEFORE CLEANING

9.1 Oven cool down

IMPORTANT: the oven must be cooled down before the cleaning processes are carried out.

1. In Full Serve mode, select the CLEANING symbol from the main menu.

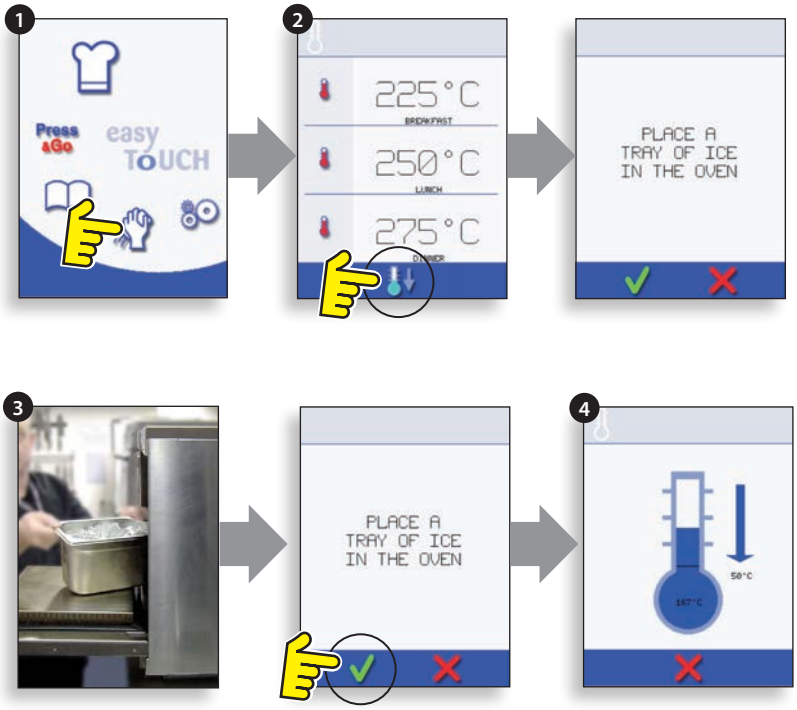
2. In Full or Quick Serve mode, select the blue thermometer symbol to disable heating and start the cooling cycle.

3. Taking all necessary precautions place a suitable container of ice or cold water (to speed up the cooling process) into the hot oven cavity. Select the OK symbol to continue.

4. The cooling progress is displayed and takes approximately 30 minutes. Note that the oven will continue to cool should the door be opened during the cool down procedure.

5. Once the cooling process is complete, carefully remove the cool down pan. The pan and water maybe hot so an oven cloth or gloves should be used.

6. The oven is now ready for cleaning. Select OK on the screen after completing each stage.



9.2 Preparing to clean the oven

For the oven to operate at peak efficiency, the cavity, door, air filter and grease filter must be kept clean.

A daily cleaning routine will ensure that you comply with the required hygiene standards and will help to maintain and prolong the efficiency of your oven.

Equipment required (not supplied)

- Merrychef® approved oven cleaner
- Merrychef® approved oven protector (optional)
- Heat proof gloves
- Protective rubber gloves
- Non–abrasive nylon scrub pad
- Cleaning towel and cloths
- Eye protection
- Dust mask (optional)

CAUTION
WEAR PROTECTIVE RUBBER GLOVES WHEN CLEANING THE OVEN.

NOTICE
DO NOT USE CAUSTIC CLEANERS ON ANY PART OF THE OVEN OR OVEN CAVITY AS IT WILL CAUSE PERMANENT DAMAGE TO THE CATALYTIC CONVERTERS.

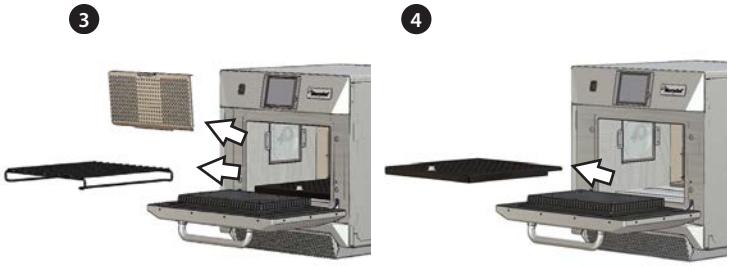
10 COLD OVEN CLEANING INSTRUCTIONS

Complete COOL DOWN procedure and allow the oven and accessories to cool before commencing cleaning.

NOTICE
DO NOT USE TOOLS.
NEVER USE SHARP IMPLEMENTS OR HARSH ABRASIVES ON ANY PART OF THE OVEN.

REMOVE & CLEAN OVEN PARTS

1. Switch off the oven.
2. Remove the air filter at the base of the oven.
3. Open the oven door and remove any cooking trays/rack.
4. Wash all parts in warm soapy water. Wash off using a clean cloth and plenty of clean, warm water. Ensure all components are dry before re-fitting them.
5. Dry using a fresh, clean cloth.



CLEAN THE OVEN

1. Remove any spillages with suitable cloth/paper towel.

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

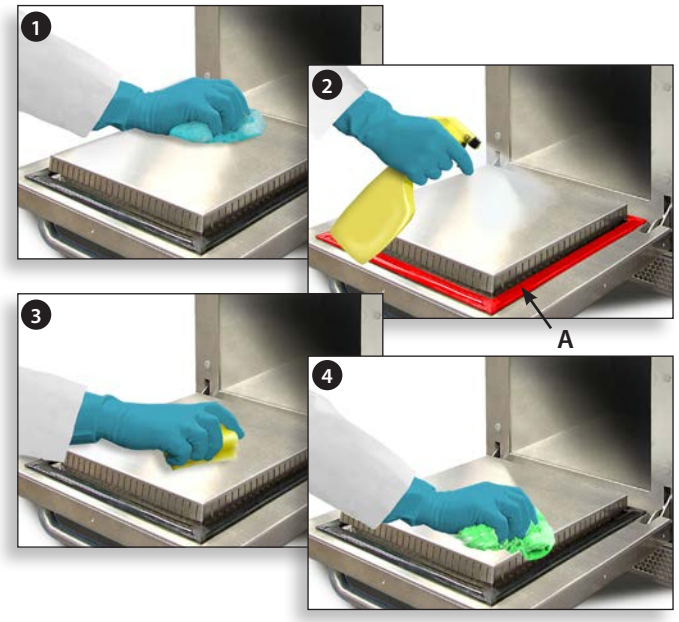
2. Wear protective rubber gloves and protective glasses following manufacturer's recommendations. Carefully spray a Merrychef® approved oven cleaner onto all the internal surfaces of the oven except the door seal (A).

DO NOT spray directly into the fan opening at the rear inside of the oven.

3. For difficult areas, leave to soak for 10 minutes with the oven door open.

Use a non–abrasive nylon scrub pad/sponge to clean the cavity, roof and the inside of the door. Do not scrub the door seal or use metallic scourers.

4. Wash off using a clean cloth and plenty of clean warm water and dry using a fresh clean cloth or paper towel. Ensure all components are dry before re-fitting them.
5. Replace all the cleaned oven parts.
6. Close the oven door and wipe the outside of the oven with a damp cloth.
7. Now press the green check mark.

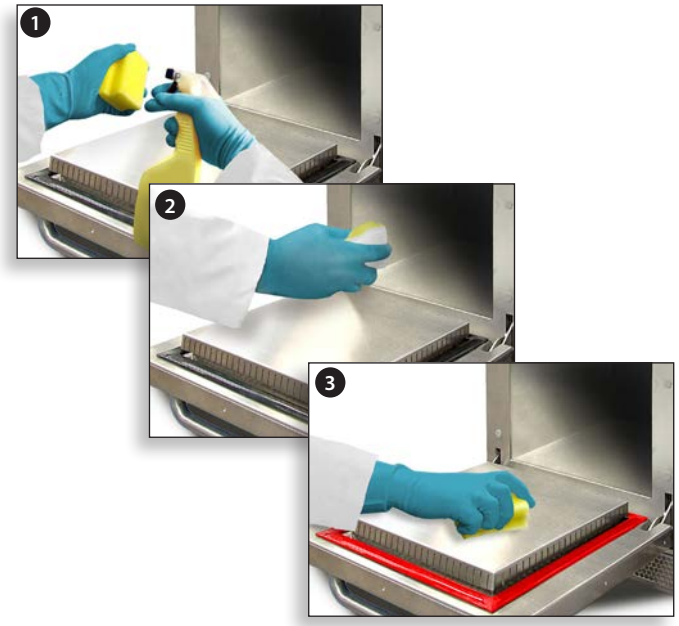


NOTICE
DO NOT USE THE OVEN WITHOUT A CLEAN AIR FILTER IN PLACE.

APPLY OVEN PROTECTOR

1. Only apply to a clean oven. Spray a Merrychef® approved oven protector onto a sponge.
2. Spread oven protector lightly onto all internal surfaces of the oven avoiding cooking surfaces, fan inlets and outlets.
3. Spread oven protector lightly onto the internal surface of the oven door avoiding the door seal.
4. Close the door and switch on the oven. If the air filter has not been replaced the touch screen will display a warning. Replace the air filter and then press the green check mark.
5. Preheat the oven. Once the oven has reached operating temperature, it will take about 30 minutes to cure the oven protector.

NOTE: Oven protector turns light brown when cured.



11 SERVICING THE OVEN

11.1 Servicing Procedure

11.1.1 Disconnect/isolate the oven from the power supply.

11.1.2 Check the oven is correctly installed as described in the Installation Instructions ("Product Details" section).

11.1.3 Visually check the cleanliness/condition of the power supply/cable/gland, oven casing, cavity and door for signs of wear, damage, distortion etc. If required, refer to the "Spares & Replacement" section.

11.1.4 Complete an 'Earth/Insulation test' ("Testing Components" section) on the oven before switching on.

11.1.5 Check the display for Error Messages, if an error is shown, refer to "Errors & Diagnostics" ("Servicing" section).

NOTE: If a firmware update is required, follow the instructions under "Firmware Updates" ("Servicing" section) before continuing with the service procedure.

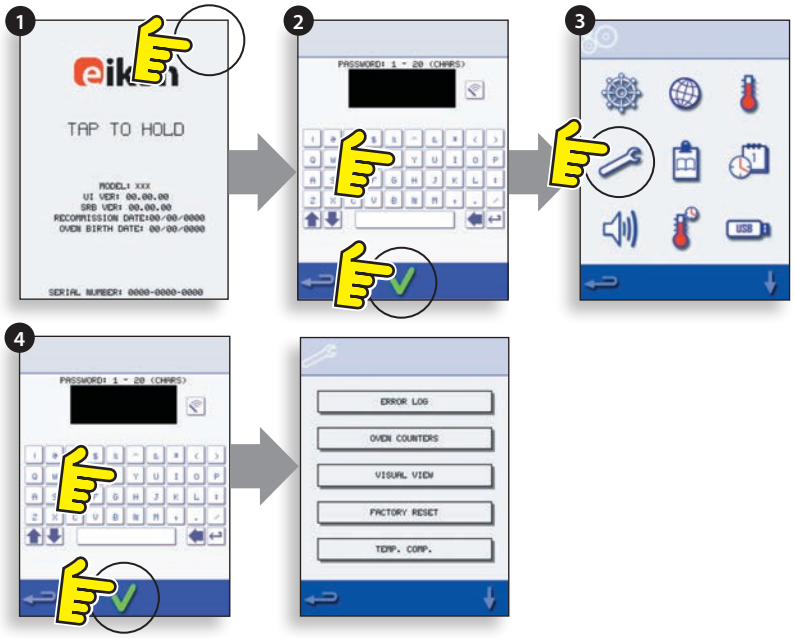
DANGER!
BEFORE REMOVING THE OVEN CASING, ISOLATE THE OVEN FROM THE MAINS ELECTRICITY POWER SUPPLY; SWITCH OFF, DISCONNECT OVEN PLUG FROM WALL SOCKET, TURN OFF ISOLATOR SWITCH TO DISCONNECT FIXED WIRED OVENS AND LOCK-OFF.

WARNING
ALLOW OVEN TO COOL. OBSERVE AND FOLLOW ALL SAFETY PRECAUTIONS INCLUDING THOSE DESCRIBED UNDER THE "SAFETY REGULATIONS" SECTION OF THIS MANUAL BEFORE ATTEMPTING A SERVICE OR REPAIR.

WARNING MICROWAVE EMISSIONS
DO NOT BECOME EXPOSED TO EMISSIONS FROM THE MICROWAVE GENERATOR OR PARTS CONDUCTING MICROWAVE ENERGY.

11.2 Enter Service Mode

1. On start up, tap the top right of the splash screen to bypass oven preheat.
2. Enter the authorised user password, for example, MANAGER and select OK to display the 'Settings' menu.
3. Select the spanner symbol.
4. Enter the service password, for example SERVICE on the keyboard and select OK to display the error log, service information and test options.



11.2.1 Check the Error Log for details of any logged oven errors. See "Errors & Diagnostics" ("Servicing" section) for more details.

11.2.2 Check the 'Oven Counters' to find the usage of components and the Controls area temperature within the cabinet (see "Errors & Diagnostics", "Servicing" sections).

11.2.3 Check the operational performance of the main components using the Visual View (see "Errors & Diagnostics", "Servicing" sections).

11.2.4 Perform the Oven Tests (see "Testing Components" section). If required refer to the "Spares and Replacement" section for any repairs needed before continuing with the Oven Tests.

11.2.5 Follow the procedures under the "Commissioning" section before commissioning the oven for use.

12 ERRORS & DIAGNOSTICS

12.1 ERROR MESSAGES

12.1.1 A description of the type of error is shown. Check for a number following 'ERROR:' (A) and refer to the Error Codes ("Fault Finding" section) for more details. The Oven Serial Number, Model, UI (QTS) version and SRB version information is also displayed below.

12.1.2 Clear the error message by power cycling the mains power supply to the oven (not the oven ON/ OFF switch).

12.2 COPYING ERROR MESSAGES

12.2.1 Enter oven settings menu (B) and select the USB symbol.

12.2.2 Slide up the USB cover and insert the USB memory stick.

12.2.3 Select 'Upload Files'.

12.2.4 Select 'Error Log'.

12.2.5 Select OK to copy the Error Log to the USB memory stick. The upload progress is shown followed by the upload status.

12.2.6 Select backspace 3 times to return to the main menu.

12.2.7 Remove the USB memory stick and replace the USB cover.

12.3 ERROR LOG

12.3.1 Enter Service Mode and select 'ERROR LOG' (C) to display a listing of oven component errors. Error details include: component description, error caused, date & time of the error with details of failure and range.

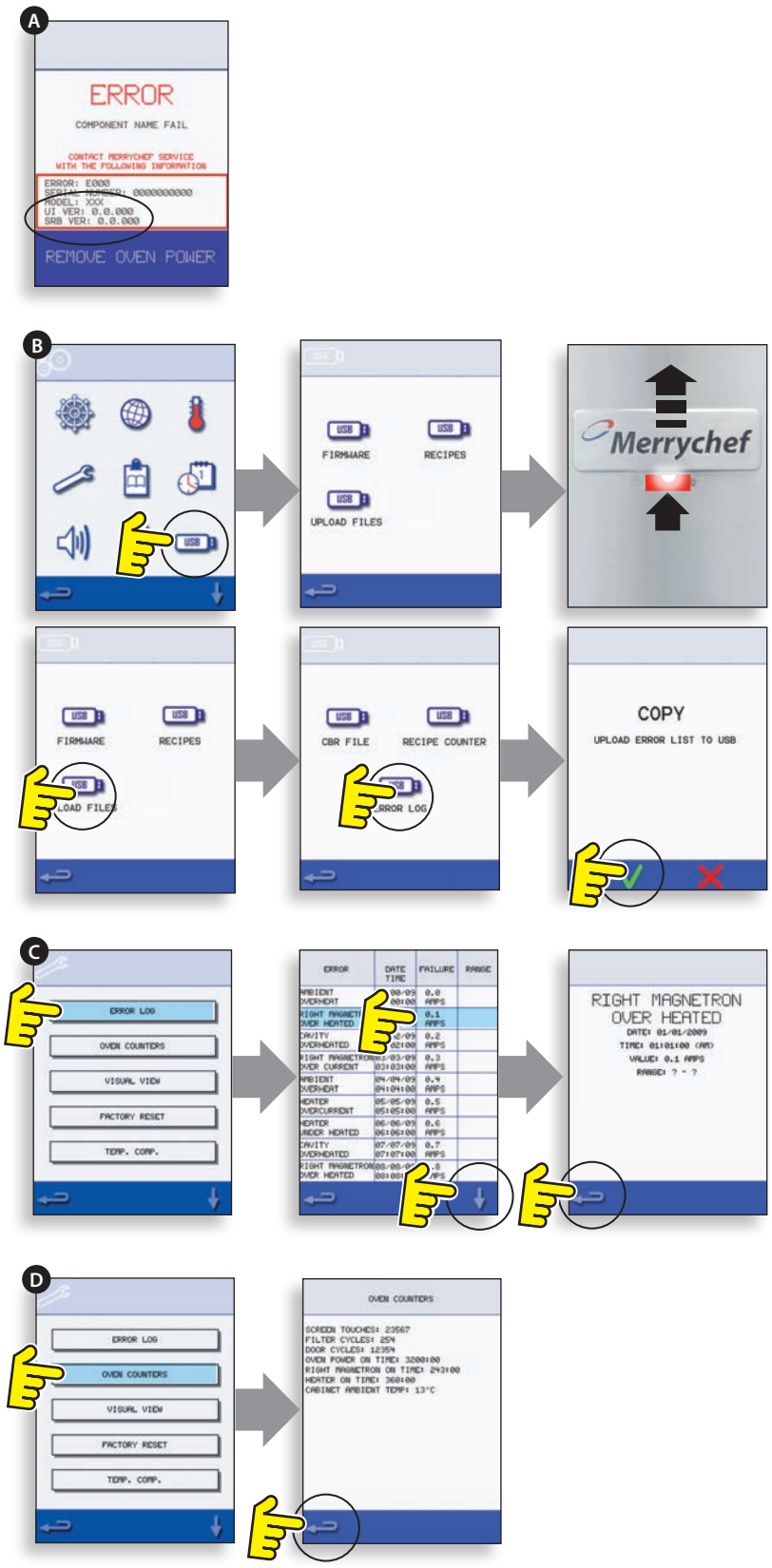
12.3.2 Scroll down the list (if necessary) and select an error from the list to display individual records.

12.3.3 Select backspace to return to the list, again to return to the Service menu.

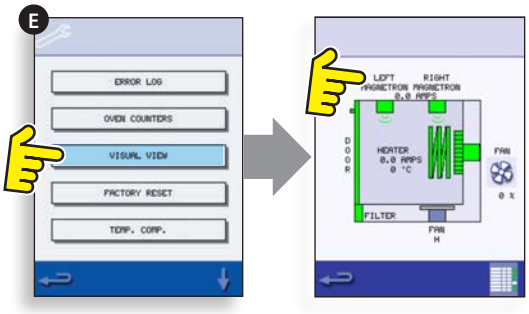
12.4 OVEN COUNTERS

12.4.1 Select 'OVEN COUNTERS' (D) to display the oven component usage and ambient controls area temperature. Details include the number of screen touches, filter cycles, door cycles, total oven, magnetron and heater element power on time and the ambient controls area temperature in the cabinet.

12.4.2 Select backspace to return to the Service menu.



12.5 VISUAL VIEW



12.5.1 Select VISUAL VIEW (E) to check the main oven components. Select a component symbol to switch on (red), select again to increase the level or turn off (green).

12.5.2 Remove the front air intake filter, the colour should change from green to red on the display indicating that the magnetic reed switch circuit for the air intake filter is operating. Replace the filter and the colour should change back to green.

12.5.3 Open the oven door and check the colour changes from green to red on the display to check the door microswitch/interlock circuit is operating. Place door spacers onto the oven door (refer to Door Interlock Adjustment ("Testing Components" section) for details), close the door and check the colour on the display. Green indicates the door adjustment is ok, red indicates that the Door Interlock Adjustment procedure must be completed.

12.5.4 Select the cooling fan and check it's operating correctly.

12.5.5 Place a microwave safe container of water into the oven, close the oven door and select a magnetron to test the current draw at maximum output, this will time-out after 30 seconds. For dual magnetron models, test the magnetrons individually and together. Using heat proof gloves, remove the container and close the oven door. Individual Magnetron Test. If there is a magnetron error present, then first reset the error. If during the magnetron test the amps show between 1.1 - 2.2 amps and the error re-occurs after 8 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 during the magnetron test 0 amp and the error re-occurs after 8 seconds then the failure can be found in the high voltage circuit. Replace HV components (diode, capacitor or magnetron) to find out the failing component never measure in the HV circuit and disconnect the oven from the main supply before working on the HV circuit also the capacitor has to be discharged.

12.5.6 Select the Convection Fan and check it is operating correctly.

12.5.7 Select the Heating Element, it increases to maximum temperature then cycles (the Convection Fan is on by default). Check the cavity temperature and heater element current draw at maximum are correct.

13 FIRMWARE UPDATES

NOTE: If icons are not displayed on the screen, press in the same positions on screen as the missing icons to select.

13.5.1 Switch on the oven.

13.5.2 Tap the top right of the screen (1) or the same position if it is not displayed to bypass oven preheat.

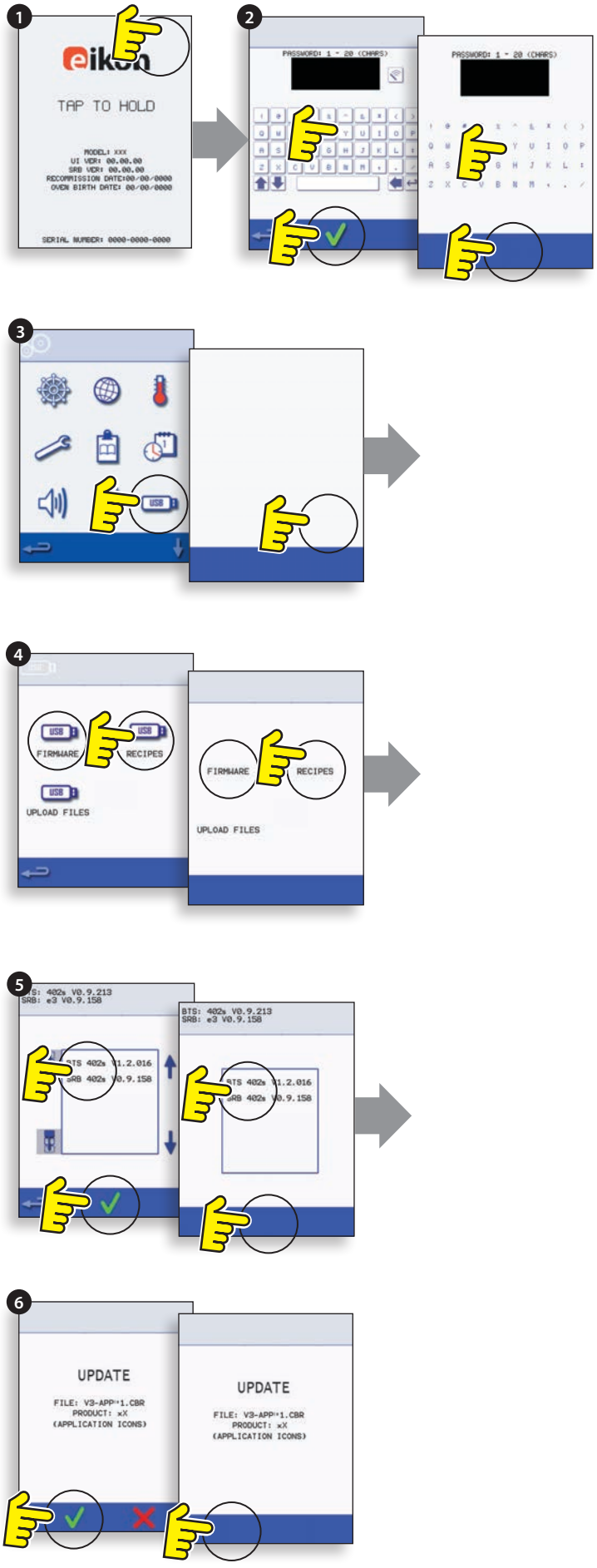
13.5.3 Enter a password (i.e. "Manager") and select OK (2) or the same position if the green check mark is not displayed.

13.5.4 Select the USB symbol (3) or the same position if it is not displayed.

13.5.5 Select one of the USB options (4) or the same position if it is not displayed: 'Firmware' for QTS & SRB updates and 'Recipe' for Icons. Install the SRB update first, the QTS update second and Icons third or if you have the Autoupd.ate file present on the USB be aware that all files of your USB will be loaded and overwrites the existing files. Also the Menu files must be saved before uploading files. If you have a menu file on your USB then the menu of the oven will be over written. If you have no menu file on your USB the oven menu stays as is.

13.5.6 Select the firmware to install and select OK (5) to confirm or the same position for the OK (green check mark), if it is not displayed.

13.5.7 The update screen displays the file version and product, select OK (green check mark) to confirm installation (6) or the same position if it is not displayed.



IMPORTANT:

Downloading from a USB will clear all existing programs. Update the 'SRB' first, the 'QTS' second and the 'Icons' third (found under the USB 'Recipe' heading).

13.5.8 Switch on the oven and tap the top right of the screen (1) to bypass the preheat stage.

13.5.9 Enter the password and select OK to display the Settings menu, see (2).

13.5.10 Select the USB symbol (4).

13.5.11 Slide the Merrychef badge (oven front top right) upwards and insert the USB Memory Stick into the slot (3).

NOTICE
DO NOT REMOVE USB DURING DOWNLOAD SEQUENCE AS THIS COULD CORRUPT THE USB DATA.

13.5.12 Once the USB has stopped flashing, select the 'FIRMWARE' USB symbol (5).

13.5.13 The current QTS (Touch Screen) & SRB (Smart Relay Board) Firmware versions are displayed at the top left of the screen (6).

SRB FIRMWARE UPDATE

13.5.14 Select the 'SRB' file required (7).

13.5.15 Check the file information is correct before selecting OK (8).

13.5.16 Update progress is displayed (9).

13.5.17 Select backspace (10) 3x to return to the USB screen shown (11).

13.5.18 If the firmware versions are far apart an SRB conflict could cause an error message (12) to be displayed.

QTS FIRMWARE UPDATE

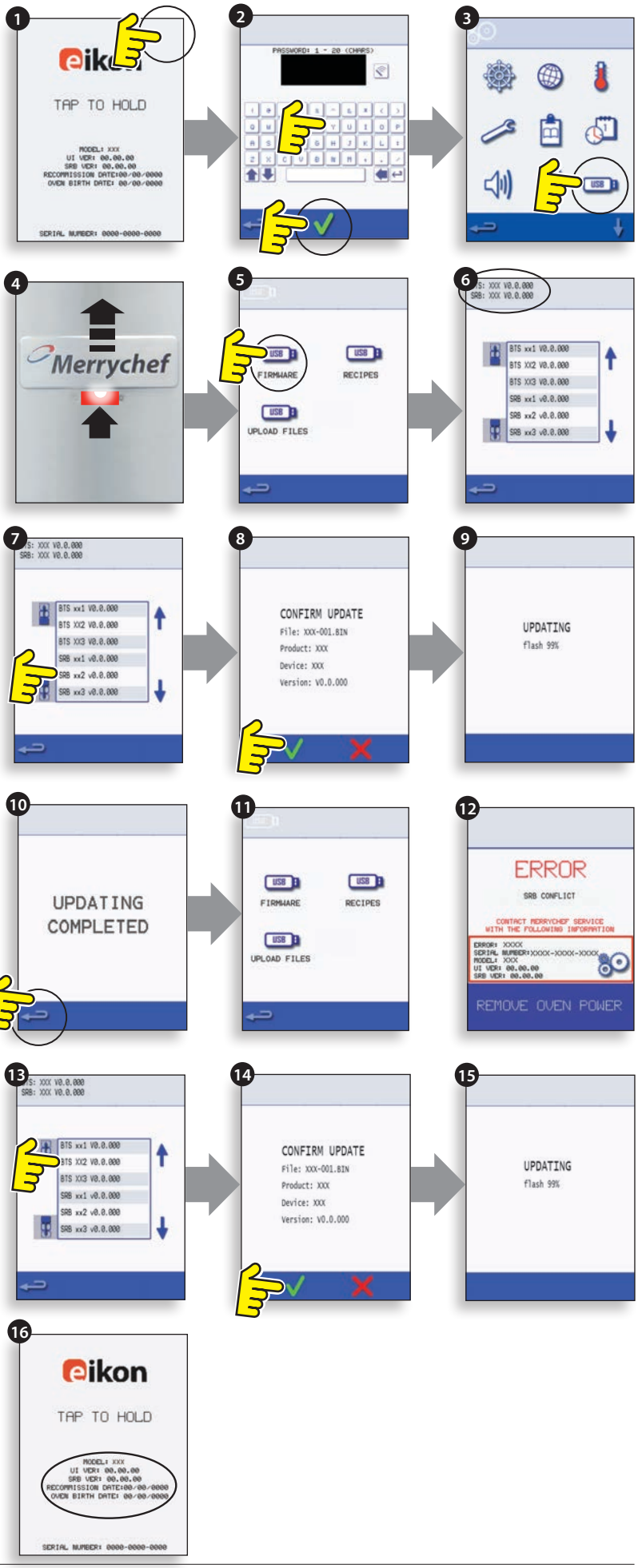
13.5.19 Select the 'QTS' file (13) with the correct file version number. Note; a tinted band over a file name indicates the file is not valid for that oven.

13.5.20 Check the file information shown is correct before selecting OK (14), if not, select 'X' and locate the correct file.

13.5.21 The file update progress is displayed (15). At 50% the cooling fan stops operating, after 100% various screen displays appear as the software reboots.

13.5.22 Check the screen shows the correct QTS version was installed (16), if not, repeat the process using the correct file.

13.5.23 Remove the USB and keep in a safe place. Reposition the USB cover.



NOTICE
DO NOT REMOVE USB DURING DOWNLOAD SEQUENCE AS THIS COULD CORRUPT THE USB DATA.

IMPORTANT:

Downloading from a USB will clear all existing programs.

Only use an empty USB memory stick formatted as follows:

A) FAT16 to update from UI QTS-XX-XXXXX-V1.2.16

B) FAT16 or FAT32 to update from UI QTS-XX-XXXXX-V1.2.17 or later.

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

For update A) follow all instructions:

For update B) follow the first 2 instructions:

13.5.24 With the oven switched off, slide the Merrychef badge (oven front top right) upwards and insert the USB Memory Stick into the slot (1).

13.5.25 Switch the oven ON (2).

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

13.5.27 Enter the password and select OK to display the Settings menu, see (4).

13.5.28 Select the USB symbol (5).

13.5.29 Select the 'FIRMWARE' USB symbol (6).

13.5.30 Select the 'QTS' file (7) with the correct file version number. Note; a tinted band over a file name indicates the file is not valid for that oven.

13.5.31 Check the file information shown is correct before selecting OK (8), if not, select 'X' and locate the correct file.

13.5.32 The CBR file is checked and the download progress from the USB is displayed (9) followed by the update status and confirmation screens.

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

13.5.34 On completion the oven start up screen (10) is displayed showing the updated firmware versions followed by the oven pre-heat temperature screen.

CONFIRMING THE OVEN UPDATE

After an oven update the oven copies files back to the USB memory stick.

13.5.35 Load the files from the USB memory stick to a computer and open the update (UPDATE.txt) file.

13.5.36 An oven update is confirmed below the oven serial number with 'updated' following the QTS/SRB firmware and App Icons.

14 OVEN TESTING

14.1 Equipment required

- Portable Appliance Tester (P.A.T.).
- Digital Multi-meter (D.M.M.).
- Megger / similar 500V d.c. resistance meter.
- Microwave detection / leakage meter.
- Temperature reader.
- Continuity meter.
- Door Spacer Kit (Part No. SA1109).
- Microwave safe 600ml glass beaker
- Microwave safe 2 litre container.

DANGER!
BEFORE REMOVING THE OVEN CASING, ISOLATE THE OVEN FROM THE MAINS ELECTRICITY POWER SUPPLY; SWITCH OFF, DISCONNECT OVEN PLUG FROM WALL SOCKET, TURN OFF ISOLATOR SWITCH TO DISCONNECT FIXED WIRED OVENS AND LOCK-OFF.

WARNING
ALWAYS DISCHARGE THE HT CAPACITORS BEFORE WORKING ON THE OVEN USING A SUITABLY INSULATED 10MΩ RESISTOR.

WARNING
ALLOW OVEN TO COOL. OBSERVE AND FOLLOW ALL SAFETY PRECAUTIONS INCLUDING THOSE DESCRIBED UNDER THE "SAFETY REGULATIONS" SECTION OF THIS MANUAL BEFORE ATTEMPTING A SERVICE OR REPAIR.

DANGER!
THIS APPLIANCE MUST BE EARTHED. FAILURE TO DO SO MAY RESULT IN ELECTRIC SHOCK AND DEATH.

WARNING MICROWAVE EMISSIONS
DO NOT BECOME EXPOSED TO EMISSIONS FROM THE MICROWAVE GENERATOR OR PARTS CONDUCTING MICROWAVE ENERGY.

14.2 Earth/Insulation Test

14.2.1 Disconnect/isolate the oven from the power supply.

14.2.2 Connect the mains lead from the oven to a P.A.T. (Portable Application Tester).

14.2.3 Connect the Earth from the P.A.T. to the oven hinge (A).

14.2.4 Place the P.A.T. in an open area, such as the floor, away from any persons.

14.2.5 Perform a Class 1 test, a PASS indicates the oven Earthing circuit is functioning ok.

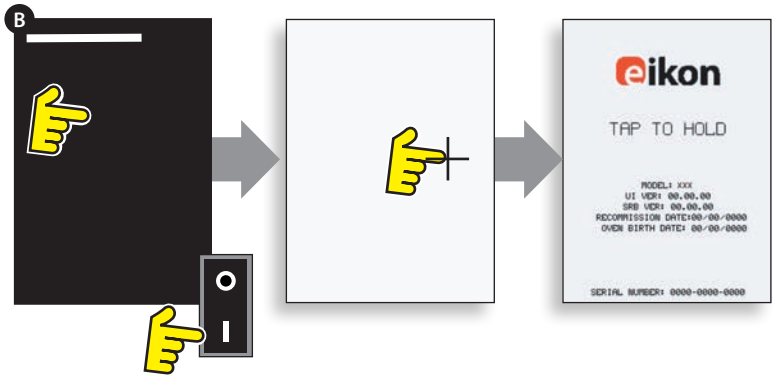
14.2.6 If a FAIL is indicated, remove the oven casing and check ALL earth connections before retesting.

14.2.7 NEVER operate an oven that has failed this test as it could be potentially dangerous.

14.3 Screen Calibration

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

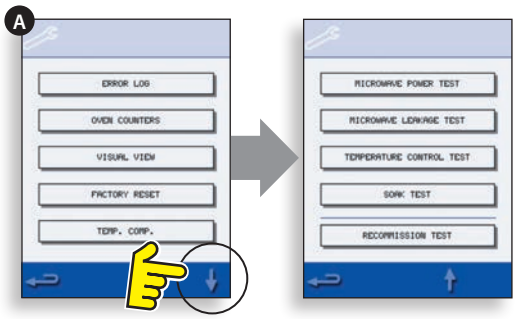
14.3.2 Using a non-abrasive pointer, such as a ball point pen, accurately press the center of each crosshair displayed on the screen. Once calibrated the screen will display the oven information.



14.4 Oven Tests

14.4.1 Enter Service Mode (see "Servicing" section).

14.4.2 Select the down arrow to display the individual Oven tests (A) for the oven to perform.



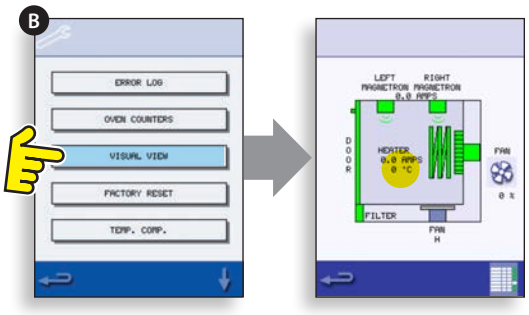
14.5 Microwave Power Test

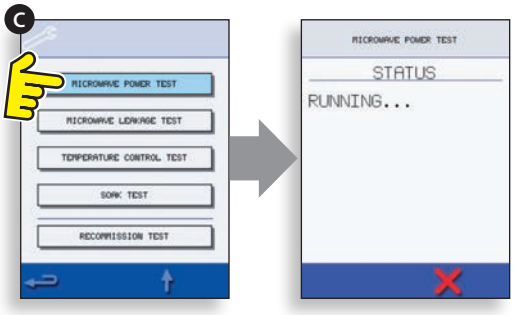
Measuring the power output:

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

14.5.1 Ensure the oven is cold, then enter Service mode to bypass oven preheating.

14.5.2 Select Visual View (B) to check the oven cavity temperature reading is as close to 0°C as possible.





1. Fill a microwave safe container (glass or plastic) with one litre (1.78 pints) of tap water at about 20°C (68°F).
2. Measure and record the water temperature in the container using a thermometer capable of reading ±0.1 degree increments.
3. Place the container centrally inside the oven.
4. Select 'Microwave Power Test' (C) from the service mode tests (microwave power 100% for 63 seconds, fan minimum).
5. When the countdown has finished, remove the container from the oven, immediately stir with a plastic implement and measure the water temperature.
6. Calculate the temperature rise of the water (end temperature minus the start temperature).

The Temperature Rise should be:

21.5°C (42°F) ±10%

If the temperature rise is outside these limits:

- Check the microwave circuit and components (see "Testing Components" section). Replace magnetron and/or HV diode board if required.

14.6 Microwave Leakage Test

Note before 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, 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 2.5cm/second.
- Always hold the probe at right angles to the oven and point of measurement, ensuring the probe is reading 50mm from the test area.
- The leakage should not exceed 5mW/cm^2.

Procedure:

14.6.1 Add 275ml of cold water into a 600ml microwave safe container.

14.6.2 Place the 600ml container in the centre of oven and close the door.

14.6.3 Enter Service mode and select 'Microwave leakage test' (A) from the oven tests.

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

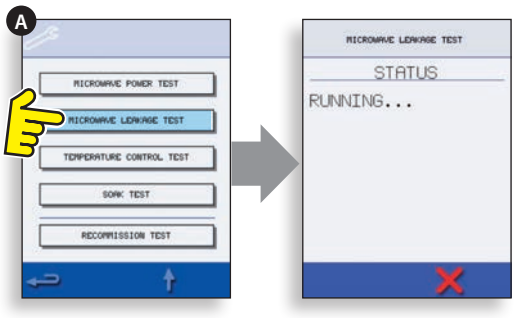
14.6.5 Move the survey meter probe across all casework joins and vent areas including those marked in yellow, shown opposite.

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

14.6.7 Select the red 'X' on the display to stop the test at any time.

14.6.8 Readings must be below 5mW/cm^2. If a level greater than 5mW/cm^2 is observed, this should be reported to the Merrychef Service Department immediately, and the oven should not be used.

14.6.9 Notes should be kept of any leakage that is observed in terms of the level and position on the oven. This information should be kept with the service documentation.



14.7 Temperature Control Test

Measuring the oven cavity temperature.

NOTE: Re-calibrating the Thermocouple with the SRB is normally only required when the Thermocouple has been replaced or the oven is under or over cooking.

Procedure:

14.7.1 Place the probe of a temperature reader (A) onto a heat sink or a metal plate in the centre of the oven cavity and close the oven door.

14.7.2 Select 'Temperature Control Test' (B) from the service mode tests. The oven heats up and cycles at the maximum set point temperature over 30 minutes.

14.7.3 Once the oven is up to maximum temperature check for a stable temperature reading.

14.7.4 Select the red X to finish the test, if necessary.

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

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

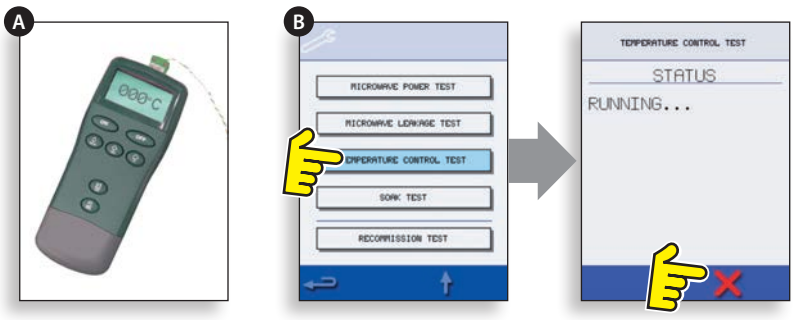
14.7.7 Retest to check that the oven cavity temperature reading is the same as the oven maximum set point temperature.

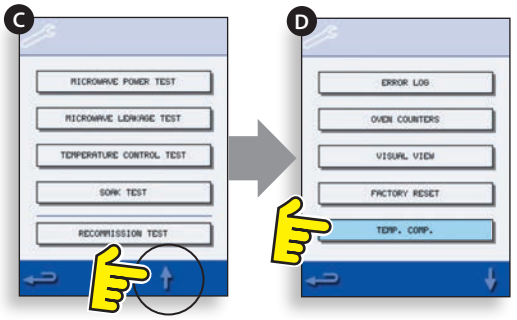
If the temperature reading is unstable:

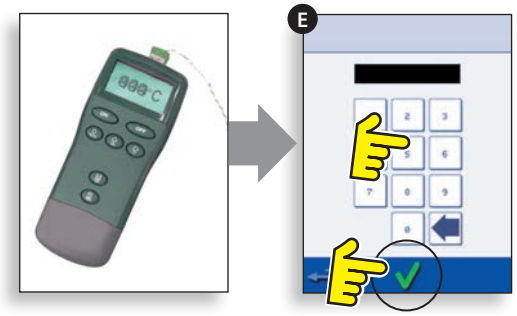
1. Disconnect and isolate the oven from the electricity supply.
2. Allow the oven to cool down.
3. Remove the oven casing.
4. Check the cavity temperature sensor wire and connections.
5. If the wire and connections are ok replace the cavity temperature sensor (see "Spares & Replacement" section).
6. Replace oven casing, switch ON and retest.
7. If the temperature is still unstable repeat steps 1 to 3, replace the SRB (see "Spares & Replacement" section), repeat step 6.

NOTE: Reuse the existing PM (Personality Module) on the new SRB (enter Serial No. on reboot).

14.7.8 Repeat the Temperature Control Test procedure.







14.8 Soak Test

Checking the oven cavity integrity.

Procedure:

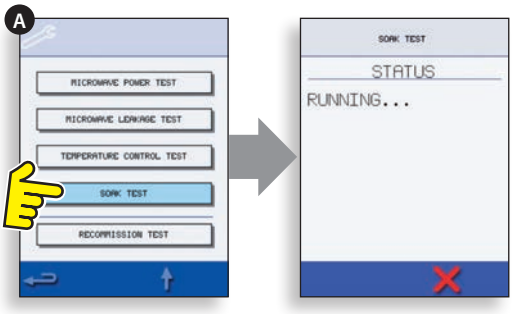
14.8.1 Place an oven/microwave safe container with approx. 2 litres of water into the oven.

14.8.2 Close the oven door and select 'Soak Test' (A) from the Service mode oven tests (maximum oven temperature, 50% microwave power, maximum fan speed).

14.8.3 Run the test (30 minutes), carefully checking the oven casing, joints and door seal for signs of steam or water escaping from the oven cavity.

14.8.4 If necessary, rectify any leaks and repeat the test.

14.8.5 Safely remove the container from the oven.



14.9 Recommission Test

The Recommission tests are performed following the completion of a service or repair to ensure the oven is operational before handing back to the customer.

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.

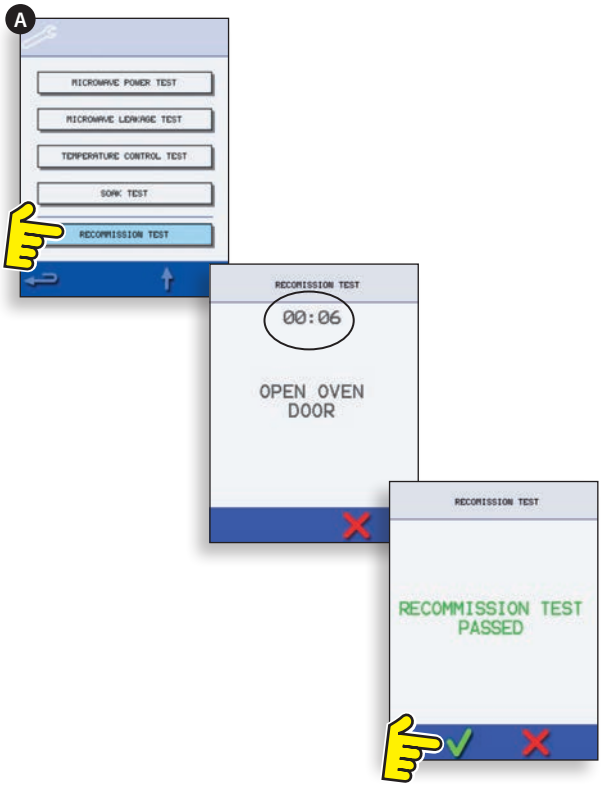
Procedure:

14.9.1 Select 'Recommission Test' (A) from the service mode oven tests and follow the on screen instructions to perform the tests. Do not select the red 'X' unless you want to stop the test.

14.9.2 After a test has successfully passed, select OK to continue.

14.9.3 When all the tests have been successfully performed the display shows the Recommission test has passed, select OK to confirm.

14.9.4 In the event of a Recommission test failure, the detail will be recorded in the Error log. Any error should be rectified and the Recommission test run again.



15 HIGH VOLTAGE COMPONENTS

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.

DANGER!
BEFORE REMOVING THE OVEN CASING, ISOLATE THE OVEN FROM THE MAINS ELECTRICITY POWER SUPPLY; SWITCH OFF, DISCONNECT OVEN PLUG FROM WALL SOCKET, TURN OFF ISOLATOR SWITCH TO DISCONNECT FIXED WIRED OVENS AND LOCK-OFF.

WARNING
ALWAYS DISCHARGE THE HT CAPACITORS BEFORE WORKING ON THE OVEN USING A SUITABLY INSULATED 10MΩ RESISTOR.

WARNING
ALLOW OVEN TO COOL. OBSERVE AND FOLLOW ALL SAFETY PRECAUTIONS INCLUDING THOSE DESCRIBED UNDER THE "SAFETY REGULATIONS" SECTION OF THIS MANUAL BEFORE ATTEMPTING A SERVICE OR REPAIR.

WARNING MICROWAVE EMISSIONS
DO NOT BECOME EXPOSED TO EMISSIONS FROM THE MICROWAVE GENERATOR OR PARTS CONDUCTING MICROWAVE ENERGY.

15.1 High Voltage Transformer Test

15.1.1 Disconnect and isolate the oven from the electricity supply.

15.1.2 Allow the oven to cool down.

15.1.3 Remove the oven casing.

15.1.4 Ensure that the High Voltage Capacitor is discharged before commencing work.

15.1.5 Remove all connections from the Power Transformer.

15.1.6 Using a D.M.M., check the resistance of the windings. Results should be as follows:

1 Mains winding between tags, approx. 1.1 Ω

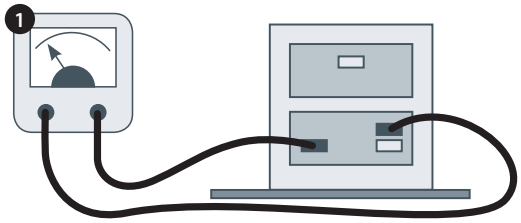
2 High Voltage winding, approx. 60 Ω

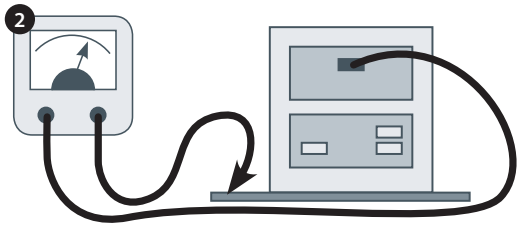
3 Filament winding between terminals, less than 1 Ω

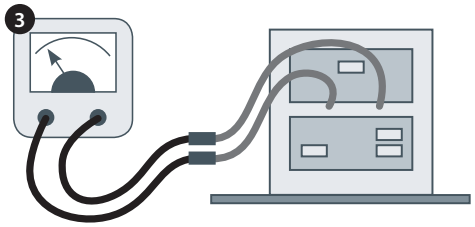
15.1.7 Using a Megger, test the insulation resistance between:

- Primary winding and chassis, pass if reading is over 10 MΩ
- Filament winding and chassis, pass if reading is over 10 MΩ

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







15.2 High Voltage Rectifier Test (Diode Board)

15.2.1 Disconnect and isolate the oven from the electricity supply.

15.2.2 Allow the oven to cool down.

15.2.3 Remove the oven casing.

15.2.4 Ensure that the High Voltage Capacitor is discharged before commencing work.

15.2.5 Remove all connections from the High Voltage Rectifier.

15.2.6 Using a Megger, test for continuity in both directions. Results should be as follows:

- Open circuit both ways - FAIL
- Conducts one-way only - PASS
- Short circuit both ways - FAIL
- Conducts one way, leaks the other - FAIL

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.

15.3 High Voltage Capacitor Test

15.3.1 Disconnect and isolate the oven from the electricity supply.

15.3.2 Allow the oven to cool down.

15.3.3 Remove the oven casing.

15.3.4 Ensure that the High Voltage Capacitor is discharged before commencing work.

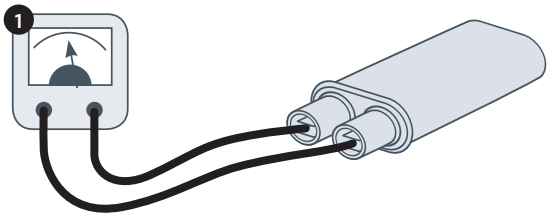
15.3.5 Remove all connections from the High Voltage Capacitor.

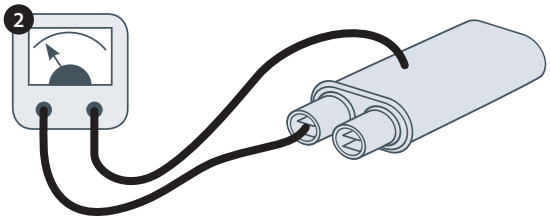
15.3.6 Using a D.M.M., check for continuity between the terminals. Results should be as follows:

1 Between Terminals, pass if approx. 10 MΩ

2 Between Terminals and case, pass if open circuit.

15.3.7 Using a Megger, test the insulation resistance between the Terminals and case, pass if reading is over 100 MΩ.





15.4 High Voltage Magnetron Test

15.4.1 Disconnect and isolate the oven from the electricity supply.

15.4.2 Allow the oven to cool down.

15.4.3 Remove the oven casing.

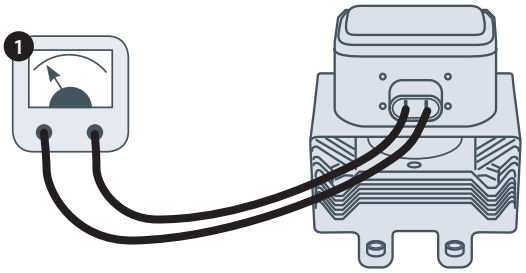
15.4.4 Ensure that the High Voltage Capacitor is discharged before commencing work.

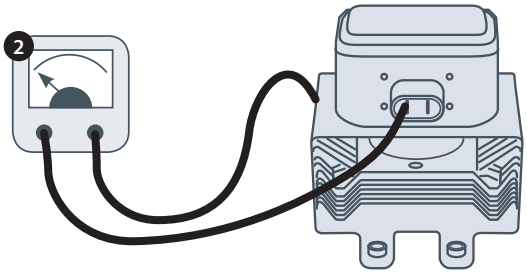
15.4.5 Remove all connections from the High Voltage Magnetron.

15.4.6 Using a Megger check for continuity. Results should be as follows:

1 Filament terminals, pass if 1 Ω or less.

2 Between each filament terminal and the metal outer case should read open.





16.1 Door Interlock Adjustment

Located on the door hinges are 3 safety interlock microswitches, to prevent microwave emissions escaping when the oven door is opened:

The Primary (SW3) breaks the electrical supply circuit to the transformers.

The Secondary (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 interlocks fail.

IMPORTANT: 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 from high short-circuit currents.

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

16.1.1 Door Interlock Adjustment procedure:

16.1.2 Disconnect and isolate the oven from the electricity supply.

16.1.3 Allow the oven to cool down.

16.1.4 Remove the oven casing.

16.1.5 Ensure that the High Voltage Capacitor is discharged before commencing work.

16.1.6 Door Spacer Kit SA1109

1. Position Green 2mm spacers over the top corners of the door seal and carefully close the door ensuring the spacer is still in position.
2. Slacken the pivot screw.
3. Release the adjusting screws and move the backplate until microswitch SW3 just activates then secure all screws.
4. Open door to replace the Green 2mm spacers with Red 4mm spacers and close the door.
5. Slacken the pivot screw.
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 oven door 5-10 times.

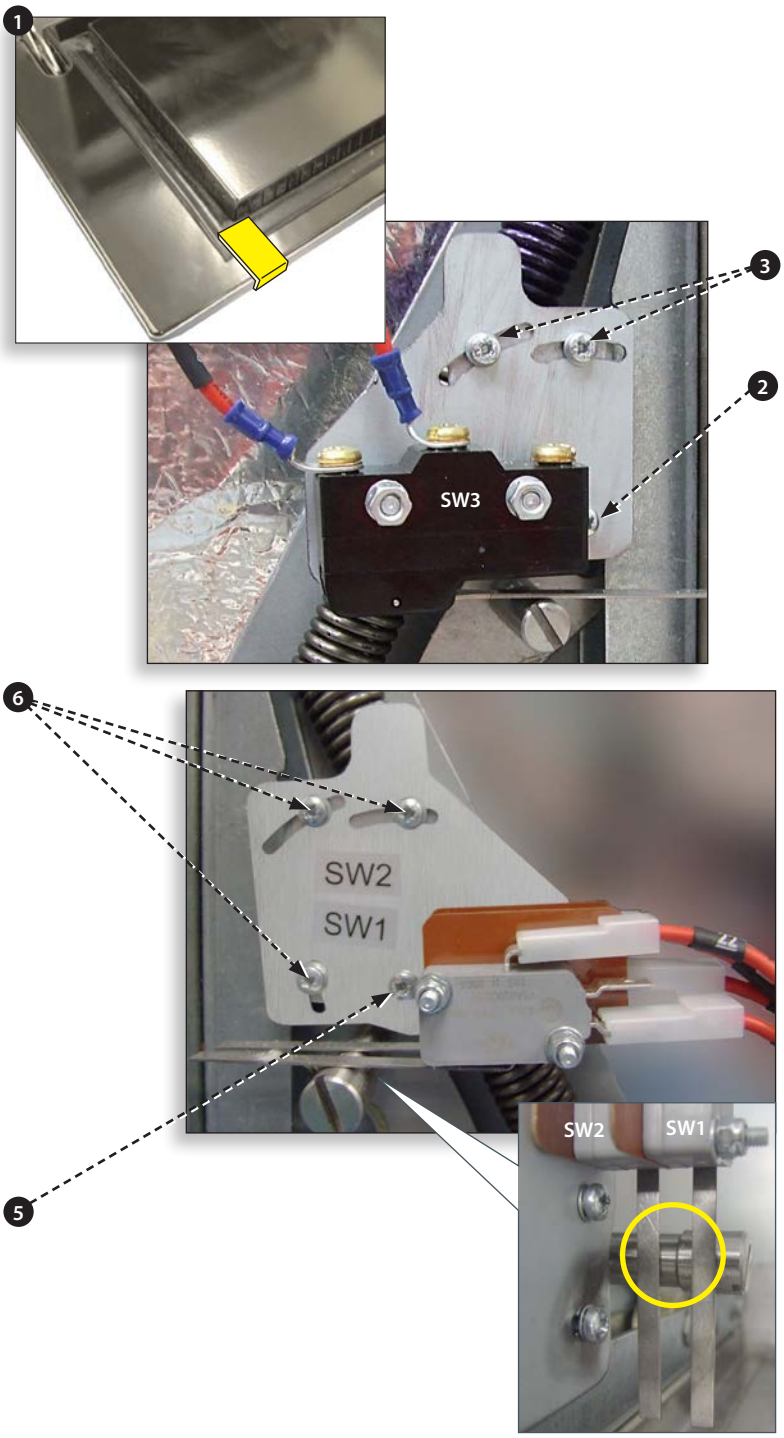
IMPORTANT: CHECK THE SWITCHES OPERATE IN THE FOLLOWING SEQUENCE AS MICROSWITCH SW3 MUST SWITCH THE LOAD CURRENT.

Closing the door:

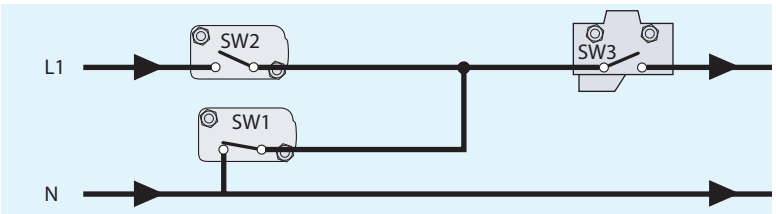
- SW1 opens first
- SW2 closes second
- SW3 closes third

Opening the door:

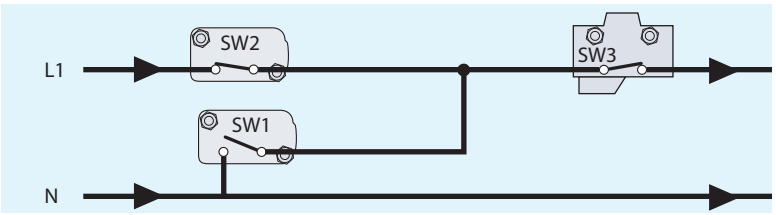
- SW3 opens first
- SW2 opens second
- SW1 closes third



OVEN DOOR OPEN



OVEN DOOR CLOSED



16.2 Convection Fan Motor & Controller

16.2.1 Convection Fan Motor.

The convection motor Is a 3-phase AC motor having a maximum speed of 7200 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.

16.2.2 Motor Controller

Provides a 3-phase AC switched mode drive to the convection motor and is controlled by a 0 - 10 Volt signal from the SRB. This allows the motor to be adjusted from approximately 1500 rpm to 7000 rpm in steps of 5%.

- Door Open, 1500 RPM (20% @ 2V)
- Door Closed (not cooking), 2190 RPM (31% @ 3.1V)
- Door Closed (cooking), speed as specified by program or setting up to a Maximum of 7000 RPM, 100% @ 10V)

16.2.3 LED Status display (A):

- Inverter Off/No supply, LED OFF.
- Power On/Ready, LED flashes ON/OFF x1 per second.
- Inverter Running, LED ON continuously.
- General Warning, LED ON/OFF x2 per second.
- Fault Condition, LED ON/OFF x10 per second.

Convection Fan Motor & Controller tests:

16.2.4 Disconnect and isolate the oven from the electricity supply.

16.2.5 Allow the oven to cool down.

16.2.6 Remove the oven casing.

16.2.7 Ensure that the High Voltage Capacitor is discharged before commencing work.

16.2.8 Check the following:

1 Electrical supply into motor controller.

2 Three phase connections to motor.

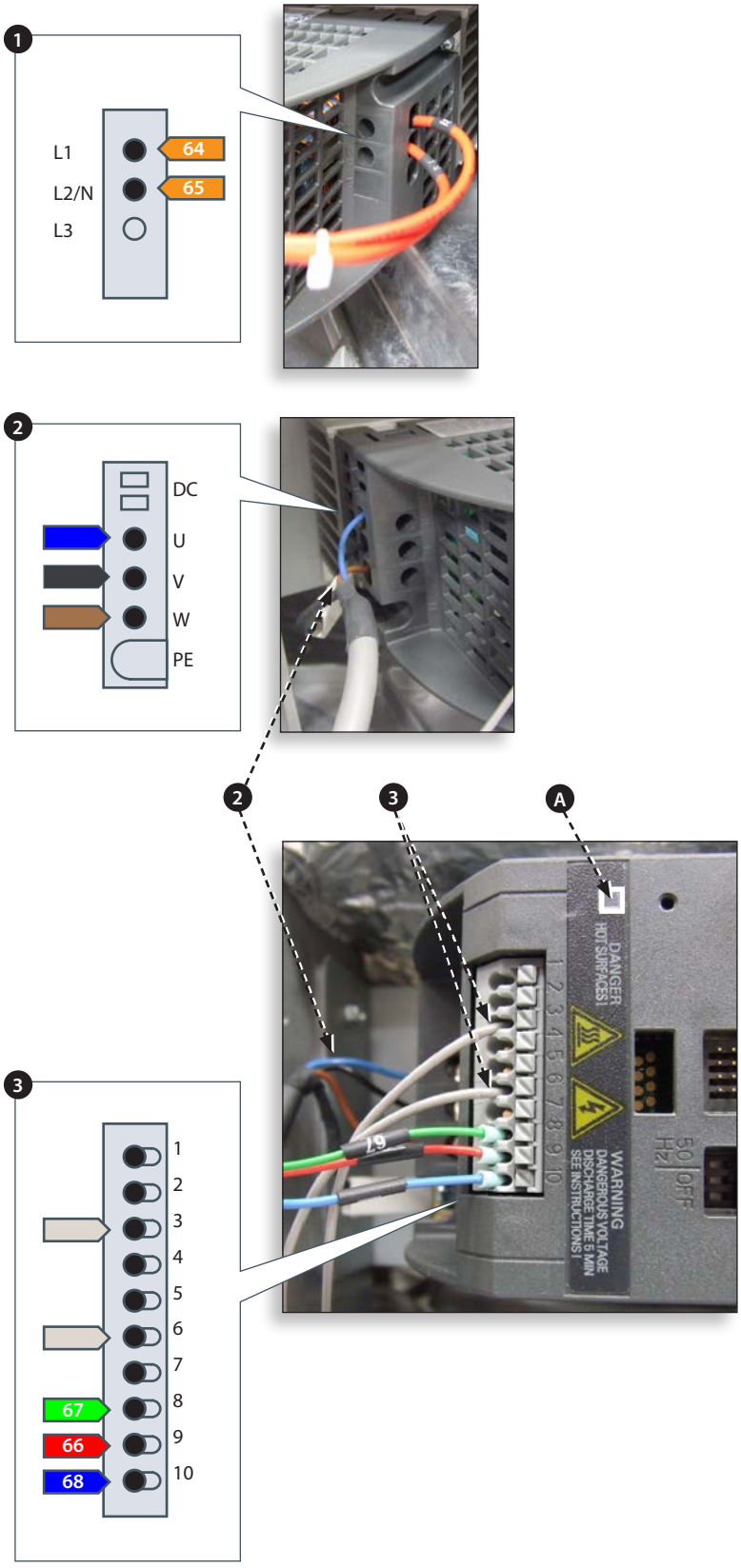
3 Speed Controller connections to SRB.

4 Motor thermal cut-out (short circuit).

5 Motor rotates freely/not seized.

6 Motor winding resistances:

- Blue-Black 3 - 4 Ohms.
- Black-Brown 3 - 4 Ohms.
- Brown-Blue 3 - 4 Ohms.
- Black or Brown or Blue to Earth (Open circuit).

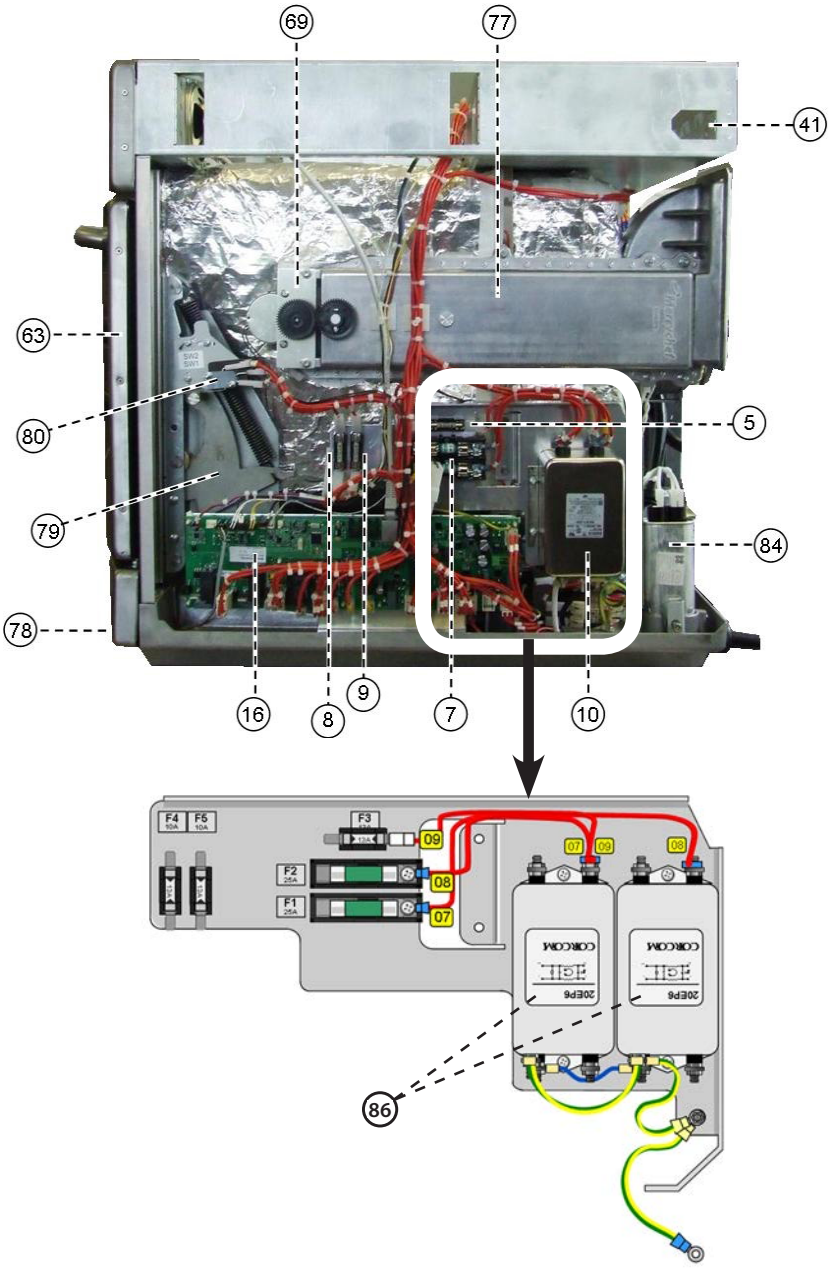


17 OVEN COMPONENTS

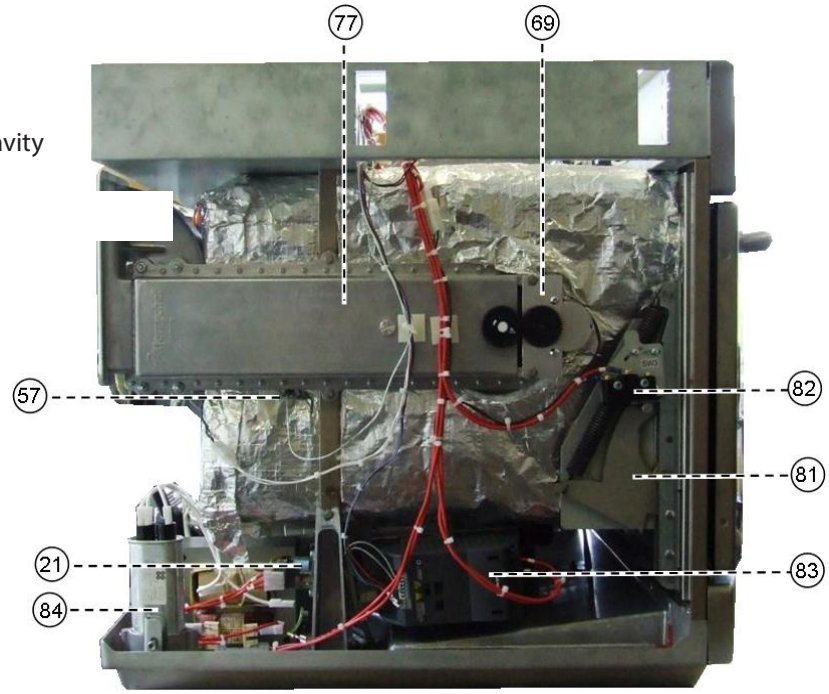
DANGER!
BEFORE REMOVING THE OVEN CASING, ISOLATE THE OVEN FROM THE MAINS ELECTRICITY POWER SUPPLY; SWITCH OFF, DISCONNECT OVEN PLUG FROM WALL SOCKET, TURN OFF ISOLATOR SWITCH TO DISCONNECT FIXED WIRED OVENS AND LOCK-OFF.

WARNING
ALLOW OVEN TO COOL. OBSERVE AND FOLLOW ALL SAFETY PRECAUTIONS INCLUDING THOSE DESCRIBED UNDER THE "SAFETY REGULATIONS" SECTION OF THIS MANUAL BEFORE ATTEMPTING A SERVICE OR REPAIR.

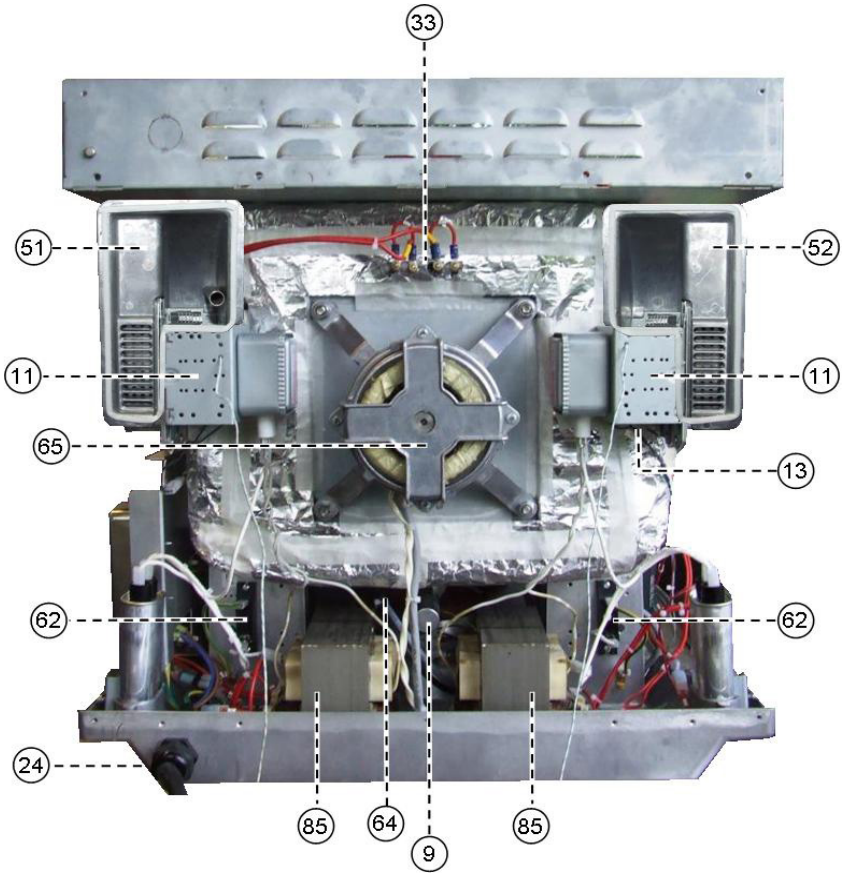
WARNING MICROWAVE EMISSIONS
DO NOT BECOME EXPOSED TO EMISSIONS FROM THE MICROWAVE GENERATOR OR PARTS CONDUCTING MICROWAVE ENERGY.

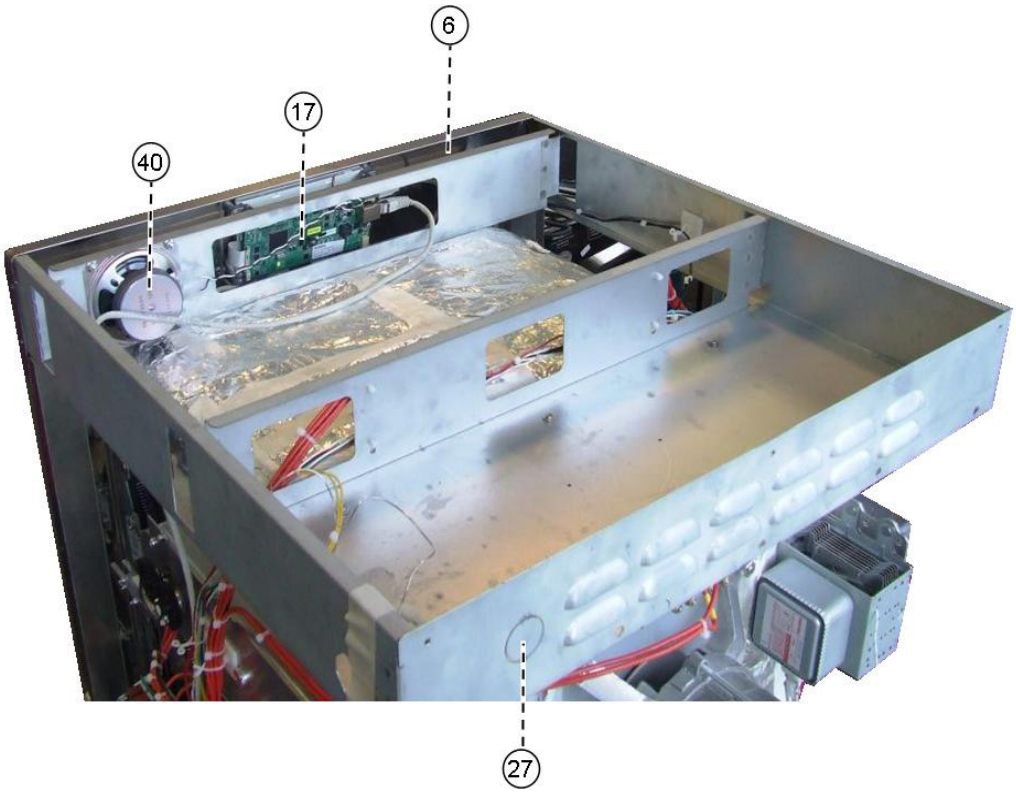


63 Door oven
80 Microswitch SW1, SW2
69 Stirrer motor assembly
77 Wave guide
41 Overheat stat oven cavity
78 Air intake filter (front)
79 Hinge assembly door RH
16 SRB Smart Relay Board with in-built 1.25A fuse (Located in front of 24V transformer)
10 30Z1488 RFI Filter 30A
86 30Z1534 RFI Filter 20A x 2
84 HV capacitor
77 Wave guide
57 Temperature sensor (Thermocouple) oven cavity
69 Stirrer motor assembly
82 Microswitch SW3
83 Controller convection fan motor
81 Hinge assembly door LH
7 Fuse (20A)
5 Fuse Control circuit (13A) F3
8 Fuse LH Transformer (13A) F4
9 Fuse RH Transformer (13A) F5



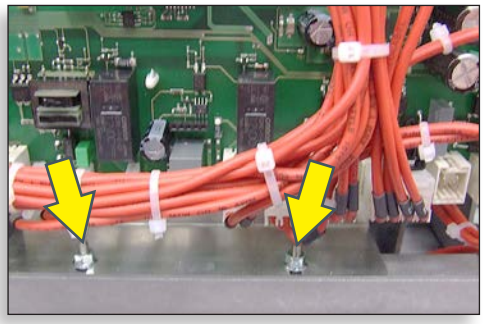
51 Magnetron cooling duct RH
11 Magnetron
33 Heater element x2 (connectors shown)
65 Motor assembly convection fan
24 Gland Power supply cable
52 Magnetron cooling duct LH
62 HT Diode
85 Transformer
69 Cooling fan motor
9 Capacitor 1.5µF (Silver) motor start
13 Overheat stat Magnetron
17 QTS Touch Screen PCB
6 Switch oven ON/OFF (rear connection)
40 Speaker unit
27 Ethernet port





18 SRB & QTS Circuit Boards

18.1 SRB replacement



18.1.1 Disconnect and isolate the oven from the electricity supply.

18.1.2 Allow the oven to cool down.

18.1.3 Remove the oven casing.

18.1.4 Ensure that the High Voltage Capacitor is discharged before commencing work.

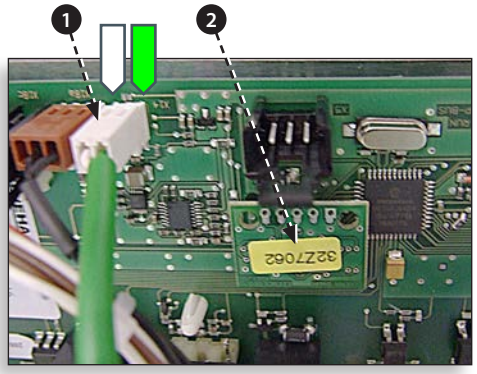
18.1.5 Taking anti-static precautions, disconnect all connections on the SRB.

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

18.1.7 Release retaining screws and remove the SRB.

18.1.8 Replace SRB and secure retaining screws.

18.1.9 Reconnect all connections to the SRB, for details see "SRB Terminal Locations" ("Electrical Circuits" section).



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

2 Refit the PM removed from the old SRB to the new SRB. Refer to the following PM replacement if a new PM is fitted.

18.2 QTS replacement

18.2.1 Disconnect and isolate the oven from the electricity supply.

18.2.2 Allow the oven to cool down.

18.2.3 Remove the oven casing.

18.2.4 Ensure that the High Voltage Capacitor is discharged before commencing work.

18.2.5 Remove the top front panel.

18.2.6 Taking anti-static precautions, disconnect all connections on the QTS.

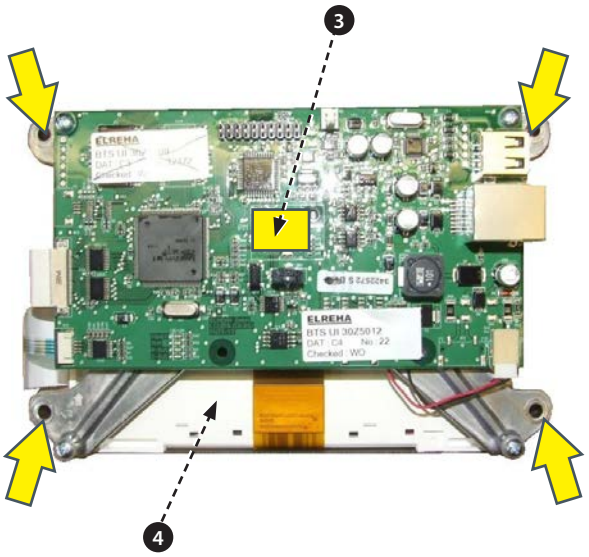
18.2.7 Remove the PM (Personality Module) (3) from the QTS and place safely aside.

18.2.8 Release the four retaining nuts and remove the QTS assembly (4).

18.2.9 Refit the PM removed from the old QTS to the new QTS. Refer to the following PM replacement if a new PM is fitted.

18.2.10 Replace the QTS assembly and secure with the retaining nuts.

18.2.11 Reconnect all connections to the QTS, for details see "QTS Terminal Locations" ("Electrical Circuits" section).



Personality Module Identification		
Oven Model	SRB Board PM	QTS Board PM
E4s	32Z7075	32Z7076

18.3 PM (Personality Module) replacement

> *The PM on the SRB contains the Firmware. The PM on the QTS contains the Firmware, Oven Serial Number, Temperature Calibration, Cooking Programs, Application Icons and the Recipe Images.*

18.3.1 With a new PM fitted and casing refitted, switch on the oven and tap the screen to hold and check the QTS and SRB versions (1) are the latest release, if not, execute a Firmware update using the latest versions. For details see "Firmware Updates" ("Servicing" section).

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

18.3.3 Enter the service password and select OK to display the Settings menu, see (3).

18.3.4 Select the USB symbol (4).

18.3.5 Slide the Merrychef badge upwards and insert the USB Memory Stick into the slot (5).

18.3.6 Once the USB has stopped flashing, select the required USB recipe symbol (6).

18.3.7 Select the Application Icons file to download (7).

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

18.3.8 Check the file information shown is correct before selecting OK (8), if not, select 'X' and locate the correct file.

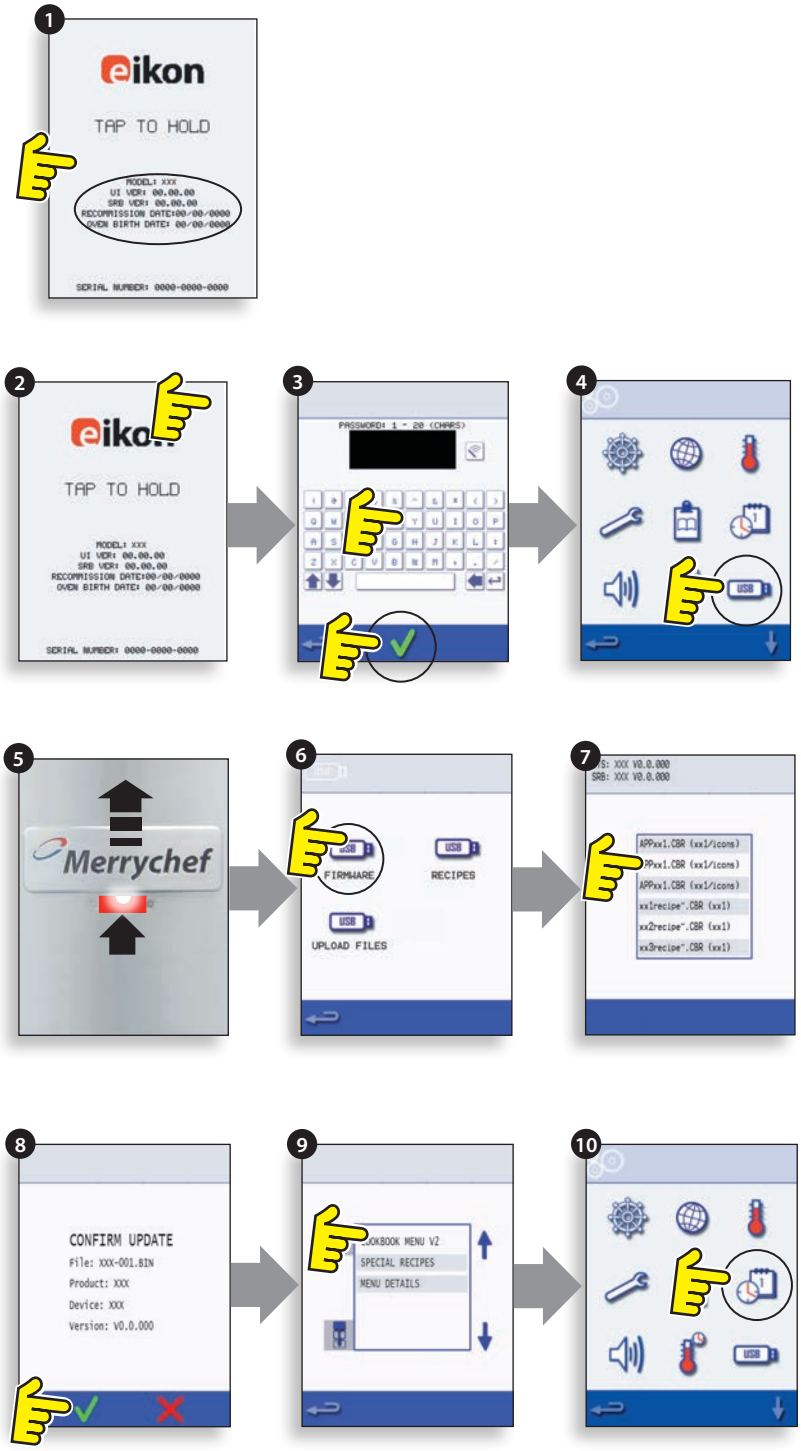
18.3.9 When completed, select recipes to load the cooking programs (9). Once the programs are loaded the oven restarts.

18.3.10 Enter the Date & Time settings (10). For details see under 'Oven Control Settings' (see "Product Information" section).

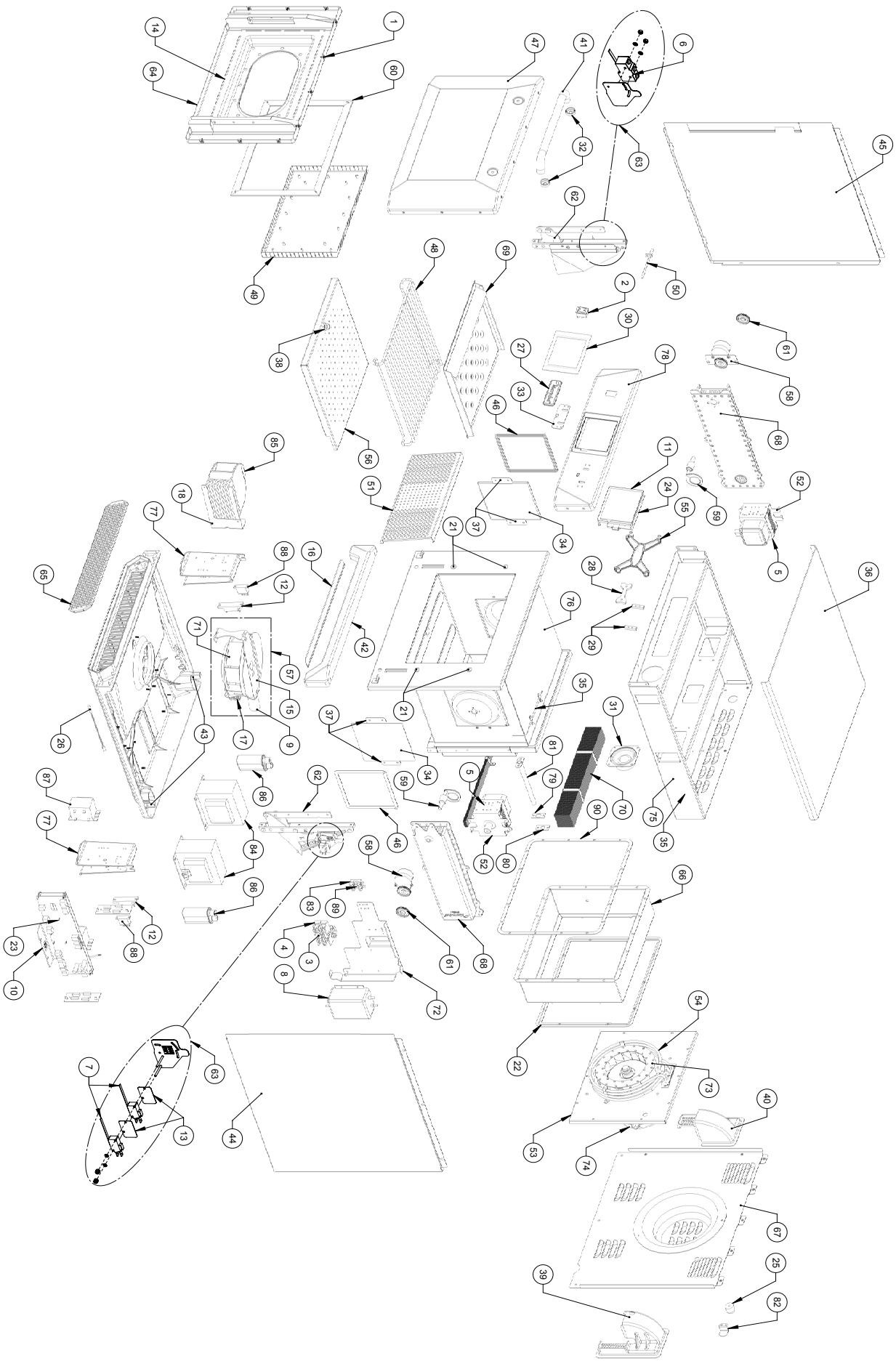
18.3.11 Enter the oven serial number (Found on the oven Rating Plate at the rear of the oven)

18.3.12 Turn the oven switch OFF/ON.

18.3.13 Remove the USB and keep in a safe place. Reposition the USB cover.



19 SPARE PARTS EXPLODED VIEW



20 SPARE PARTS

Parts list & recommended minimum stock holding & Service Kits

Merrychef eikon e4s Oven

Recommended Parts List **Recommended Minimum Stock Holding & Service Kits**

Part Number	Description	Qty Per Oven	Unit	1-10 Ovens	11-50 Ovens	51-100 Ovens	1st Aid/To Go Box	Service Centre Kit	e4s Unique Parts over e4
105005	M3 CAGE NUT	10	EA	10	30	60			
30Z0503	SWITCH ON/OFF ROCKER DPST	1	EA	1	2	4	1	1	
30Z1177	20 AMP LITTLEFUSE FLM020	2	EA	2	6	12	2	4	
30Z1178	30A FUSE HOLDER	2	EA	2	6	12	1	2	
30Z1427	MAGNETRON OVERHEAT STAT	2	EA	2	6	12	1	1	
30Z1430	MICROSWITCH (LARGE)	1	EA	2	6	12	1	1	
30Z1459	MICROSWITCH	2	EA	1	3	6	1	4	
30Z1521	e4s MOTOR SPEED CONTROLLER	1	EA	0	1	2		1	1
30Z5009	**eikon TOUCH SCREEN & PCB**	1	EA	1	3	6		1	
30Z5011	**CONTROL PCB** e4s SRB	1	EA	1	3	6		1	1
30Z5013	HT DIODE 750mA	2	EA	2	6	12	2	2	2
31Z0115	INSULATOR PAD	2	EA	2	6	12			
31Z0186	SILASTIC BLACK (DOOR SEAL)		TUBE	1	3	6	1	1	
31Z0600	USB ADAPTOR MODULE	1	EA	1	3	6		1	
31Z0620	BTS UI SRB CABLE (WHITE)	1	EA	1	3	6	1	1	
31Z1252	BOLT M4 X 10 HEX HD FLANGE SS	8	EA	8	24	48		8	
31Z1255	PG21 CABLE GLAND BLACK	1	EA	1	3	6			
31Z1256	PG21 CABLE GLAND NUT	1	EA	1	3	6			
31Z1259	SHEET COVER CAP 12MM DIA	4	EA	4	12	24			
32Z4028	HALF SIZE GASTRONOM DISH	1	EA	1	3	6			
32Z7075	PERSONALITY MODULE **SRB e4s**	1	EA	1	3	6		1	1
32Z7076	PERSONALITY MODULE **QTS e4s**	1	EA	1	3	6		1	1
6004011	RUBBER FOOT 0 40 X 25	1	EA	1	3	6			
DR0006	REED SWITCH	1	EA	1	3	6	1	1	
DR0007	MERRYCHEF BADGE	1	EA	1	3	6			
DR0008	MERRYCHEF BADGE SLIDER	1	EA	1	3	6			
DR0009	MERRYCHEF BADGE GUIDE	2	EA	2	6	12			
DR0011	TOUCHSCREEN OVERLAY	1	EA	1	3	6		1	
DR0021	HARMONISED SPEAKER	1	EA	1	3	6		1	
DR0030	HANDLE SPACER	2	EA	2	6	12			
DR0047	MERRYCHEF BADGE SEAL	1	EA	1	3	6			
DR0060	STIRRER COVER - CERAMIC	2	EA	2	6	12	2	2	
DR0079	OVEN TEMP STAT	1	EA	1	3	6	1	1	
DV0168VIT	DOOR CHOKE PRESSED VITREOUS	1	EA	1	3	6			
DV0187	TOP PANEL (PRESSED)	1	EA	0	1	2			
DV0202	CERAMIC PLATE RETAINER	4	EA	0	1	2		4	
DV0370	LOWER IMPINGER HANDLE	1	EA	1	3	6		1	
DV0403	CAST REAR DUCTING LH	1	EA	1	3	6			
DV0431	DOOR HANDLE	1	EA	1	3	6			
DV0437	LOWER FASCIA FINISHED	1	EA	1	3	6			
DV0452	CAPACITOR CLIP	2	EA	0	1	2			
DV0692	SEAL - CERAMIC COVER	2	EA	2	6	12	2	2	
DV0714	e4s WIRE RACK	1	EA	0	1	2			1
DV0773	CAVITY HOT BOX FINISHED	1	EA	1	3	6			1
DV0815	e4s CAVITY THERMOCOUPLE	1	EA	1	3	6	1	1	1
DV0825	e4s CAST RH DUCT MODIFIED	1	EA	1	3	6			1
DV0838	CONTROL PANEL e4/e4s	1	EA	0	1	2			
DV0840	e4s RH SIDE PANEL	1	EA	0	1	2			1
DV0841	e4s LH SIDE PANEL	1	EA	0	1	2			1
P30Z1415	MAGNETRON 2M303H	2	EA	0	1	2	1	2	
PSA1215	e4s DOOR ASSEMBLY (COMPLETE)	1	EA	1	3	6			1
PSA1240	e4s UPPER IMPINGER PLATE	1	EA	0	1	2			1
PSA1241	e4s HOT AIR MOTOR ASSY KIT	1	EA	1	3	6		1	1

Merrychef eikon e4s Oven

Recommended Parts List **Recommended Minimum Stock Holding & Service Kits**

Part Number	Description	Qty Per Oven	Unit	1-10 Ovens	11-50 Ovens	51-100 Ovens	1st Aid/To Go Box	Service Centre Kit	e4s Unique Parts over e4
PSA1242	e4s HEATER ASSEMBLY KIT	1	EA	1	3	6		1	1
PSA1243	e4s GASKET KIT	1	EA	1	3	6		1	1
PSA2144	DOOR SKIN ASSY e4	1	EA	0	1	2			
PSA2191	e4s IMPINGER PLATE LOWER	1	EA	1	3	6			1
PSA2195	e4s COOLING FAN ASSEMBLY	1	EA	0	1	2		1	1
PSA2197	e4s DOOR+CHOKE ASSY	1	EA	0	1	2			1
PSA2201	e4s WAVEGUIDE ASSY	2	EA	1	3	6			2
PSA288	STIRRER MOTOR ASSY (PINNED)	2	EA	0	1	2		2	
PSA291	STIRRER ASSY (PINNED)	2	EA	0	1	2		2	
PSA3113	DOOR SEAL	1	EA	1	3	6	1	1	
PSR	e4s EIKON DOOR HINGE KIT		EA	1	3	6		1	
PSR102	EIKON M/SWITCH BRACKET KIT		EA	1	3	6		1	
SA3114	e4s CAVITY ASSY	1	EA	0	1	2			
SA3127	AIR FILTER ASSY e4	1	EA	1	3	6	1	1	
SA3132	e4s CAVITY INNER STEAM PIPE	1	EA	1	3	6			1
SA3134	REAR PANEL WELDED ASSY e4s	1	EA	1	3	6			1
SA3136	CAVITY WRAP KIT	1	EA	0	1	2			1
SA3150	e4s LOWER CAT ASSY	1	EA	0	1	2			1
SA3151	e4s UPPER CAT ASSY	1	EA	0	1	2			1
SA3153	e4s AIR DIFFUSER ASSY	1	EA	1	3	6	1	1	1
eikon e4s 230Volts 50Hz - UK/EU - Single Phase - Unique Parts									
30Z0231	FUSEHOLDER 1in (13A)	3	EA	3	9	18	3	6	
30Z0456	FUSE 1in 13A HRC	3	EA	3	9	18	3	6	
30Z1425	TRANSFORMER 240V 50/60Hz	1	EA	1	3	6	1	2	
30Z1431	1.2uF 2500V CAPACITOR	2	EA	2	6	12	2	2	2
30Z1488	e4s MAINS FILTER	1	EA	1	3	6	1	2	1
P30Z1413	230V 50Hz TRANSFORMER	2	EA	2	6	12		2	
	POWER SUPPLY LEAD (UK) 3C	1	EA	1	3	6			
eikon e4s 230Volts 50Hz - UK/EU - Twin Phase - Unique Parts									
30Z0231	FUSEHOLDER 1in (13A)	3	EA	3	9	18	3	6	
30Z0456	FUSE 1in 13A HRC	3	EA	3	9	18	3	6	
30Z1425	TRANSFORMER 240V 50/60Hz	1	EA	1	3	6	1	2	
30Z1431	1.2uF 2500V CAPACITOR	2	EA	2	6	12	2	2	2
30Z1488	e4s MAINS FILTER	1	EA	1	3	6	1	2	1
P30Z1413	230V 50Hz TRANSFORMER	2	EA	2	6	12		2	
SA2209	e4s 2P PLUG - 1P LEAD HC	1	EA	1	3	6			
eikon e4s 230Volts 50Hz - AZ - Unique Parts									
30Z0231	FUSEHOLDER 1in (13A)	3	EA	3	9	18	3	6	
30Z0456	FUSE 1in 13A HRC	3	EA	3	9	18	3	6	
30Z1425	TRANSFORMER 240V 50/60Hz	1	EA	1	3	6	1	2	
30Z1431	1.2uF 2500V CAPACITOR	2	EA	2	6	12	2	2	
30Z1534	e4s MAINS FILTER 20A	2	EA	2	6	12	1	2	1
P30Z1413	230V 50Hz TRANSFORMER	2	EA	2	6	12		2	
SR233	e4s MAINS CABLE AZ 5P	1	EA	1	3	6			

Merrychef eikon e4s Oven

Recommended Parts List **Recommended Minimum Stock Holding & Service Kits**

Part Number	Description	Qty Per Oven	Unit	1-10 Ovens	11-50 Ovens	51-100 Ovens	1st Aid/To Go Box	Service Centre Kit	e4s Unique Parts over e4
eikon e4s 220Volts 60Hz - SA - Unique Parts									
30Z0231	FUSEHOLDER 1in (13A)	3	EA	3	9	18	3	6	
30Z0456	FUSE 1in 13A HRC	3	EA	3	9	18	3	6	
30Z1425	TRANSFORMER 240V 50/60Hz	1	EA	1	3	6	1	2	
30Z1331	1.00uF 2500V CAPACITOR	2	EA	2	6	12	2	2	
30Z1488	e4s MAINS FILTER	1	EA	1	3	6	1	2	1
P30Z1230	60HZ TRANS MULTI TAP	2	EA	2	6	12		2	
	POWER SUPPLY LEAD HE (EU)	1	EA	1	3	6			
eikon e4s 208V & 240V 60Hz - USA - Unique Parts									
30Z0285	FUSEHOLDER 1 1/4in (13A)	3	EA	3	9	18	3	6	
30Z1331	1.00uF 2500V CAPACITOR	2	EA	2	6	12	2	2	
30Z1439	OMRON RELAY 12V	2	EA	2	6	12	1	2	
30Z1455	TRANSFORMER LV CLASS 2	1	EA	1	3	6	1	2	
30Z1488	e4s MAINS FILTER	1	EA	1	3	6	1	2	1
30Z1507	e4s USA 12A FUSE SLOW/B	3	EA	3	9	18	3	6	3
	PLUG & LEAD ASSY (SUBWAY)	1	EA	1	3	6			
P30Z1230	60HZ TRANS MULTI TAP	2	EA	2	6	12		2	

21 FAULT FINDING

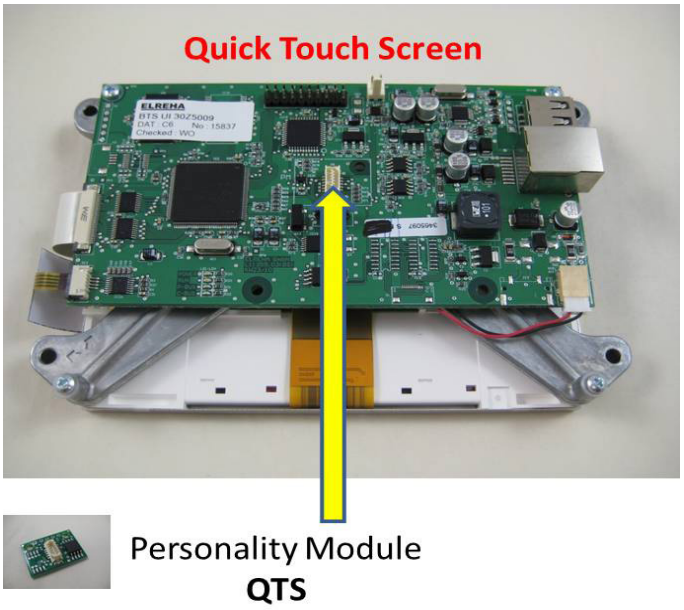
21.1 Operations Communication

21.1.1 The oven has 2 main parts being the QTS assembly (Keyboard, Screen, Logic) and the SRB (Relay board to switch and monitor the required operation).

21.1.2 The QTS is the master of the oven and instructs the SRB what to do, in turn the SRB communicates information on the operation back to the QTS.

21.1.3 The QTS and SRB have their own Personality Module fitted with the respective software to be able to communicate and work with each other.

21.1.4 The power provision to the QTS and the communication between QTS and SRB is enabled via ONE cable with RJ45 connectors fitted.



USB Memory Stick Connection:

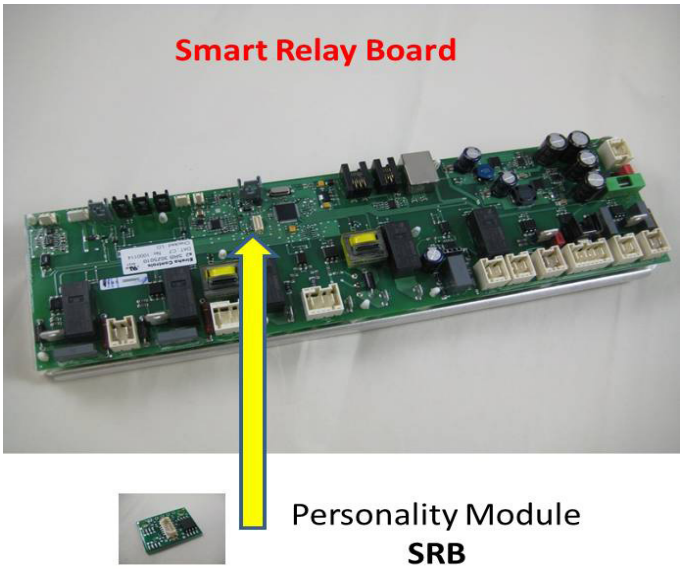
21.1.5 Menu loading from USB into the oven (Recipes)

21.1.6 Software loading from the USB to the oven (Firmware)

21.1.7 Error log saving from the oven to the USB (Upload)

21.1.8 Menu copying from the oven to the USB (Upload)

21.1.9 Recipe counter copying from the oven to the USB (Upload)



21.2 Error Code List

Error Code	Error Condition	Description	Trigger	Possible Causes	Error Level	System Response
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	Critical	Display error message until system is power cycled.
E 102	Heater incorrect current	Detects a heating element is not working correctly	The current measured by the sensing transformer on the SRB was <1A when heating cycled on or >1A when heating cycled off.	If some current >1A, one or more heater elements could have failed. If current measured <1A possible wiring fault stopping power reaching element.	Critical	Display error message until system is power cycled.
E 103	Ambient overheat >70°C	Detects if the controls area is operating above temperature	The ambient temperature measured on the QTS and SRB was >70°C	Cooling fan failed. Cooling fan wired incorrectly. Inlet air too hot. Blocked inlet filter.	Critical	Display error message until ambient controls area temperature is below 60°C
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.	Critical	Display error message until service call and the magnetron cools down or the cavity stat is reset.
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.	Critical	Display error message until system power cycled.
E 106	Cavity reaches 25°C above setpoint once it has been controlling at setpoint	Detects if the cavity temperature has risen above limits	The setpoint of the oven was exceeded	Cavity fire. Failed convection fan. No impeller or loose impeller on convection fan.	Critical	Display error message until system is power cycled.
E 107	Communication error	No communication can be made between the QTS and SRB	Loss of communication between the SBR and QTS	SRB / QTS connection cable unplugged or damaged. Faulty QTS or SRB.	Critical	Display error message until system is power cycled.
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.	Critical	Display error message until system is power cycled.

Error Code	Error Condition	Description	Trigger	Possible Causes	Error Level	System Response
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.	Critical	Display error message until system is power cycled.
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.	Critical	Display error message until system is power cycled.
E112	SRB Sensor Fail	SRB Ambient temperature sensor failure	Shorted SRB Temperature sensor	Shorted Ambient temp sensor on the SRB	Critical	Display error message until service call and the magnetron cools down or the cavity stat
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	Critical	Display error message until service call and the magnetron cools down or the cavity stat is reset.
E114	Free – Currently not used					
E116	Heater off on request	No heater current detected when requested	Cavity does not reach 100°C in 30mins	Oven heater element failure	Critical	Display error message until service call and the magnetron cools down or the cavity stat is reset.
E117	Magnetron Overheat stat	Mag overheat stat 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	Critical	Display error message until service call and the magnetron cools down or the cavity stat is reset.
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.	Warning	Display warning message until door is closed.
N/A	Air Filter removed	Air filter not fitted. Oven inoperable.	Filter not fitted.	Failed reed switch/s or SRB. Faulty wiring or connection.	Warning	Display error message until filter replaced.
N/A	Screen Frozen	Touch screen inoperable	Continual pressure of the touch screen	Damaged touch screen/touch screen depress for more than 15 seconds	Warning	Display error message until touch screen press released

21.3 Error Code for re-commission test messages

89 Cooling Test Fail
90 Convection Test Fail
91 Turntable Test Fail
92 Heater Test Fail
93 Magnetron Test Fail
94 Filter In Test Fail
95 Filter Out Test Fail
96 Door Closed Test Fail
97 Door Open Test Fail
98 Incomplete Cleaning

21.4 Normal Messages

86 On/Off Switch Operated
99 Air Filter Override Accepted by the customer
100 Main Power On, oven connected to the supply Door open (for more than 1 minute)

If 'Door Open' message is shown while the door is closed, check the Magnetron 230V circuit power supply, see "Tips for Fault Finding".

21.5 Error Messages. The oven stops operating

88 Supply Voltage Error (+/- 10% of rated voltage)
101 Magnetron Failed On Request
102 Heater On Without Request
103 Ambient Overheat
104 Magnetron/Cavity Overheat trip, when oven in idle mode, (also see E117)
105 Supply Frequency Error (+/- 2Hz)
106 Cavity Reaches 75°C above set point or 25°C at 275°C
107 Communication Error QTS-SRB
108 QTS PM Error
109 SRB PM Error
110 Incompatible SRB Version
111 Cavity Sensor Failed
112 SRB Board Sensor Failed
113 Magnetron On Without Request
114 Free - Currently Not Used
115 Convection Fan Feedback (Speed controller cable disconnected)
116 Heater Off On Request
117 Magnetron/Cavity trip during cook operation cycle (OH-12V gone for > 1sec)

If this OH trip happens in idle mode you get E104.

To reset the error, disconnect the oven from the power supply and re-connect.

22 SRB & QTS Circuit Boards

22.1 QTS LEDs

- Run - Pulsing 1 second flash, indicating that the board has booted up.
- Power - Lit to show that there is a power supply from the SRB.
- P-Bus - Irregular flashing, indicating data communication with SRB.
- C-Bus - Lit to show data being loaded from the PM onto the QTS.
- LD5 - Lit to show that a USB key is fitted.

1 LD5

2 Power, Run, P-Bus, C-Bus.

22.2 QTS Terminal Locations

3 X6 - Speaker

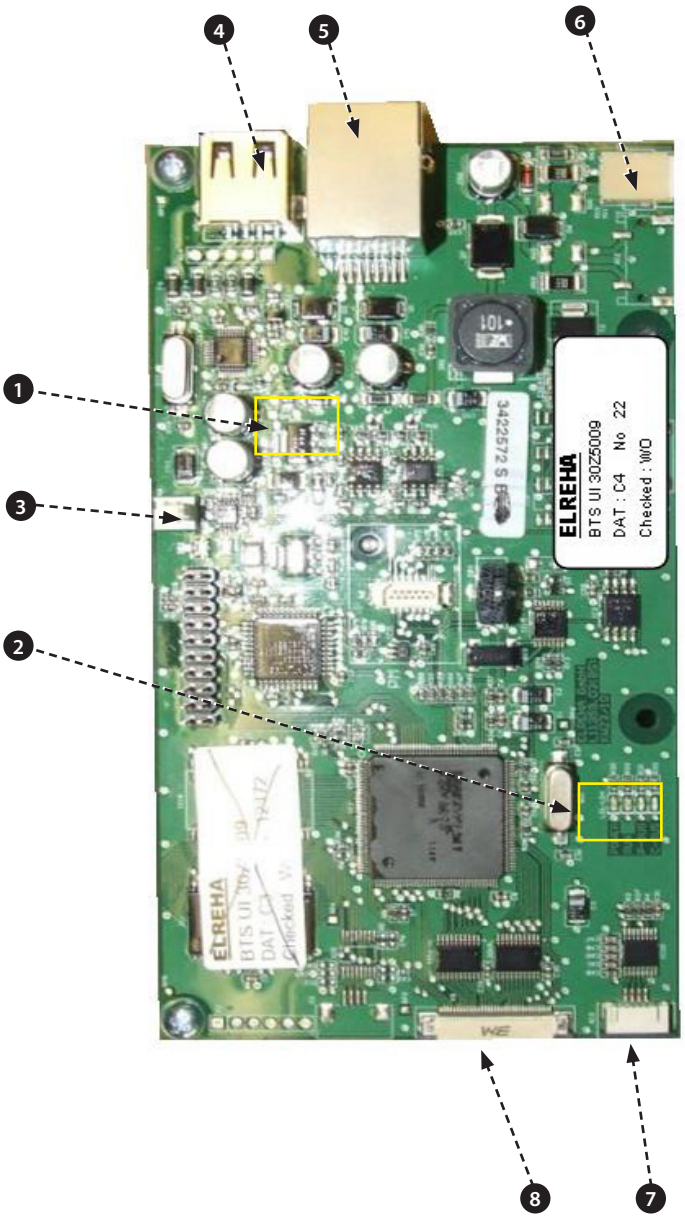
4 X5 - USB socket

5 X4 - Communications to SRB

6 X11 - Screen backlight

7 X13 - Touch pad

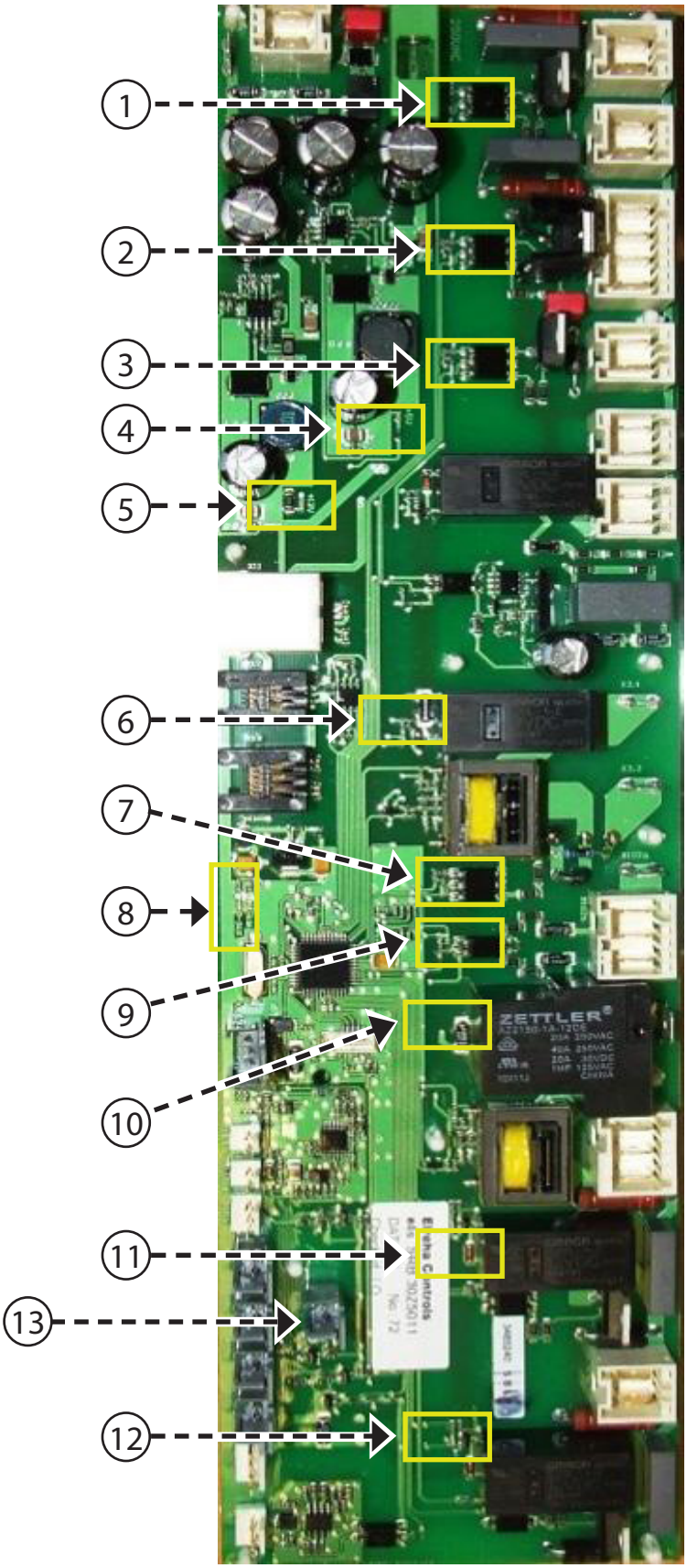
8 X9 - Display Screen PCB



22.3 SRB LED's

- P-Bus - Irregular flashing, indicating data communication with QTS.
- Run - Pulsing 1 second flash, indicating that the board has booted up.
- 12v & 5v - Lit to show voltage outputs from inboard transformer.
- Relay & Triac - Lit to show that a signal has been sent to energise that component.

1 Cooling fan.
2 Convection fan.
3 Stirrer.
4 5v supply.
5 12v supply.
6 Heater safety.
7 Heater drive.
8 P-BUS: flashes when data is being sent / received. RUN: 1 second flash.
9 Oven Door.
10 Microwave safety relay.
11 Microwave 2 drive.
12 Microwave 1 drive.
13 LED (Lit to show that signal is recieved via overheat trips). if lit it is ok.



22.4 SRB Terminal Locations:

1 X3 - Output for e4s Convection Fan Speed Controller.

2 X101 - Voltage Selection Relay coil feeds.(US Only)

3 X18b - Air intake Filter Reed Switch.

4 X18e - Right Magnetron Overheat Thermostat.

5 X18d - Left Magnetron Overheat Thermostat.

6 X18c - Cavity Overheat Thermostat.

7 X18a - On/Off Switch.

8 X14 - Cavity Temperature Thermocouple.

9 X5 - Fan RPM Input.

10 X13 - P Bus, Ethernet Port.

11 X12 - C Bus, Development PC Port.

12 X11 - P/C Bus, BTS Cable.

13 X1 - 24V supply from Low Voltage Transformer.

14 X8 - Cooling Fan.

15 X17 - Not used.

16 X20 - Microwave Stirrers.

17 X9 - Mains Output, Convection Fan Controller.

18 X103.1 - Mains Output to Low Voltage Transformer.

19 X103 - Mains Input, Live & Neutral.

20 X2.1 - Mains Input, Live for Heaters.

21 X2.2 - Mains Output, Live to Heaters.

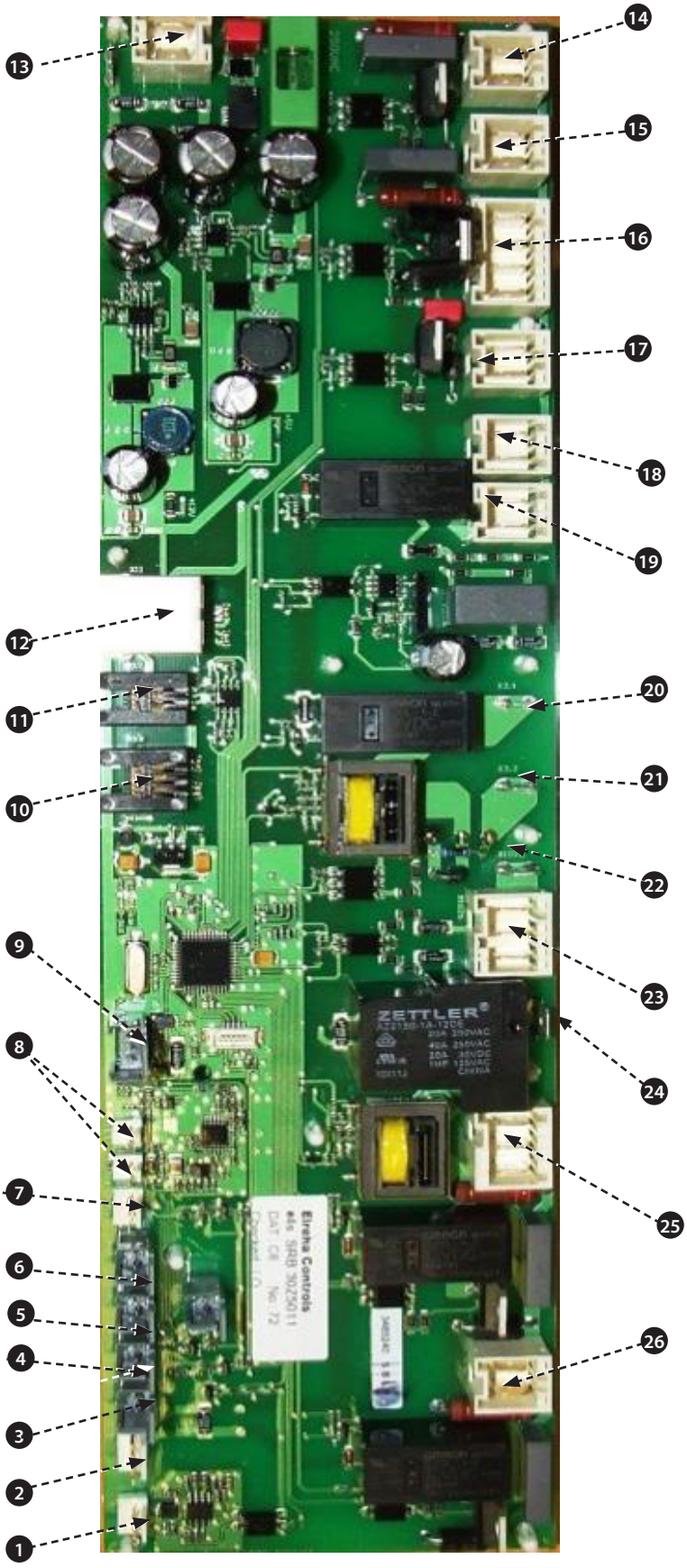
22 X102a - Mains Input, Neutral for Magnetron Transformers & Monitor Door Switch.

23 X102b - Mains Output, Neutral to Magnetron Transformers & Monitor Door Switch.

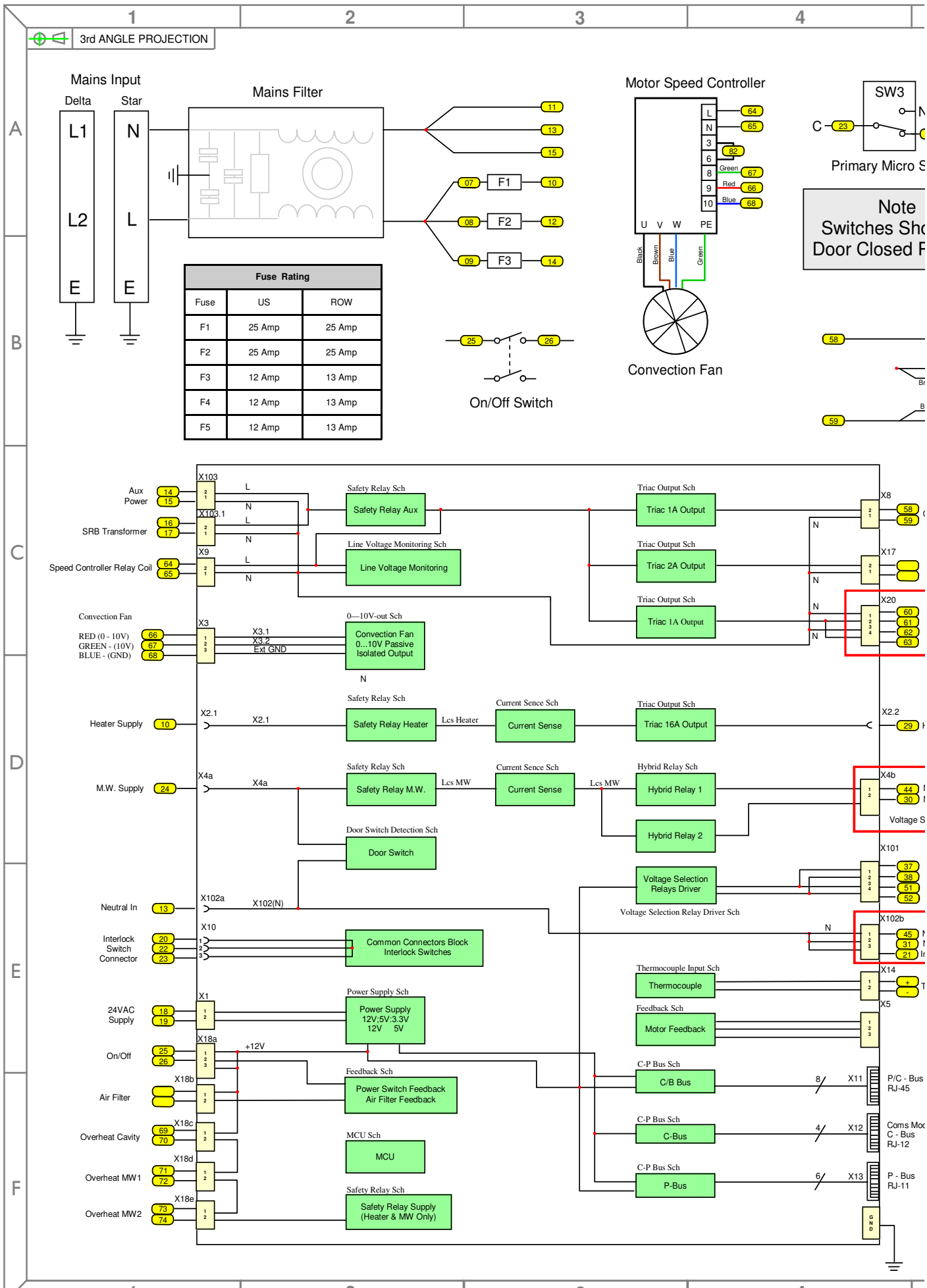
24 X4a - Door Switch signal from Secondary Door Switch (Live for Magnetron Transformers).

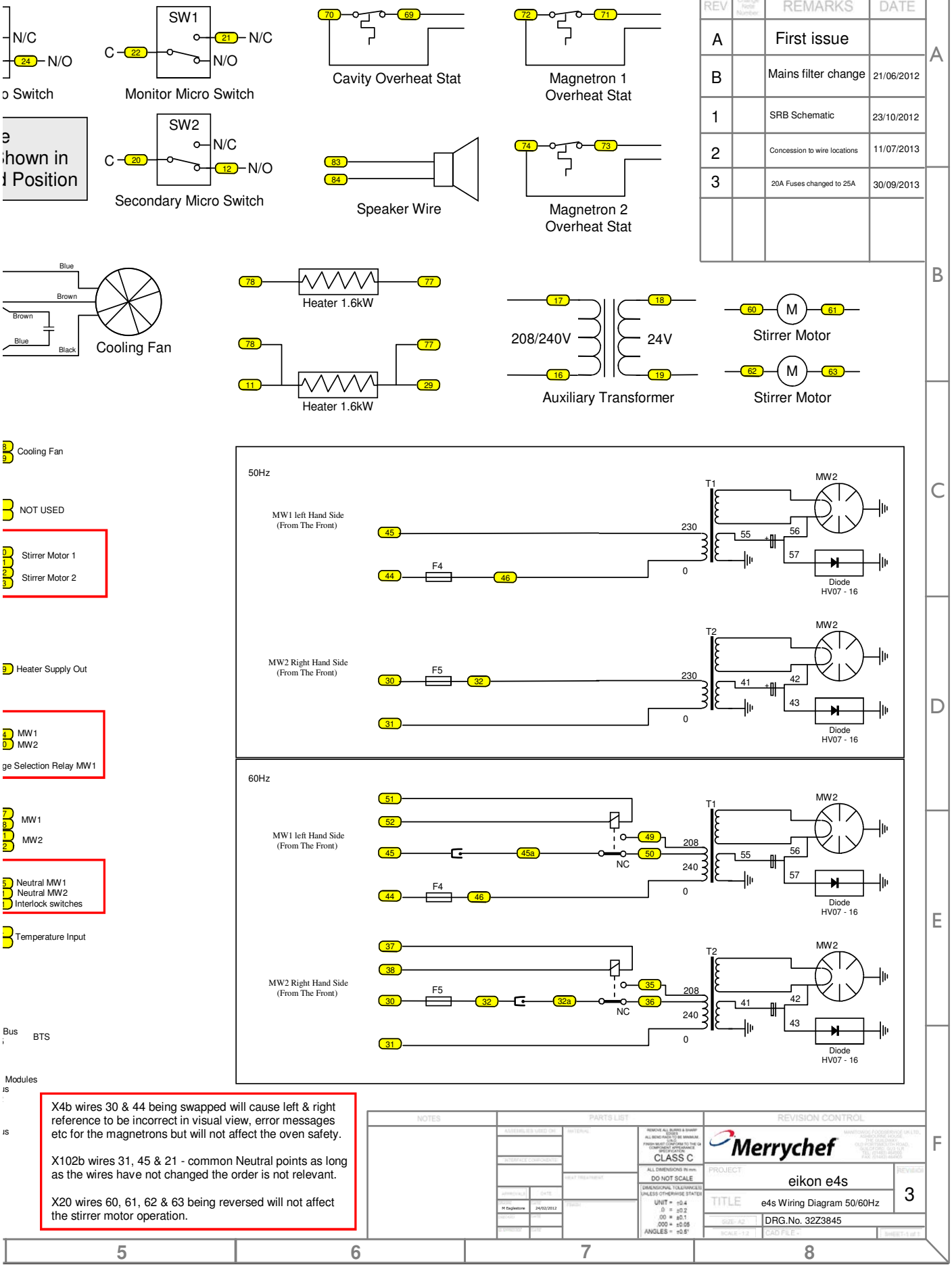
25 X10 - Connector Block for door switches.

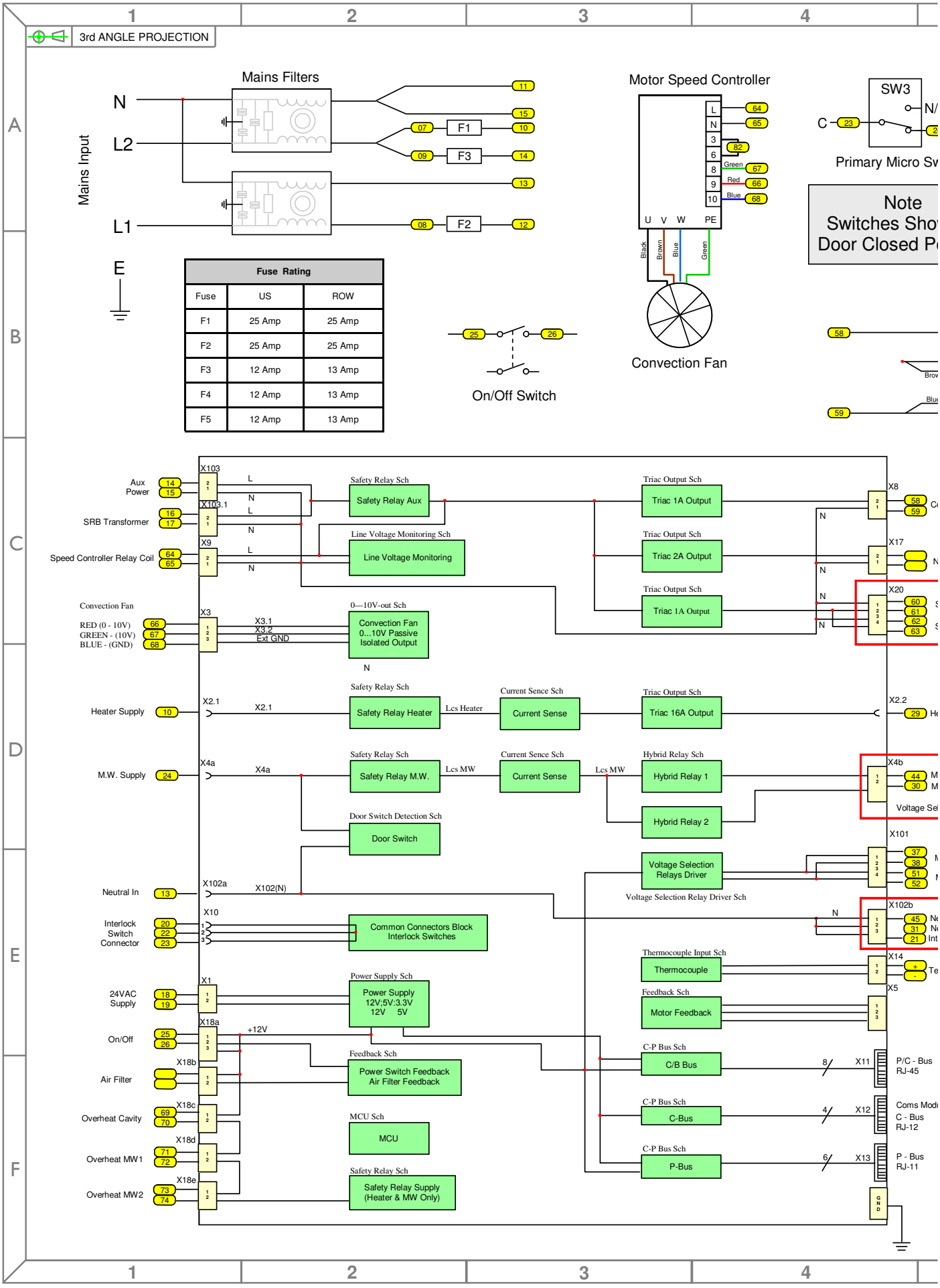
26 X4b - Live for Magnetron Transformers.

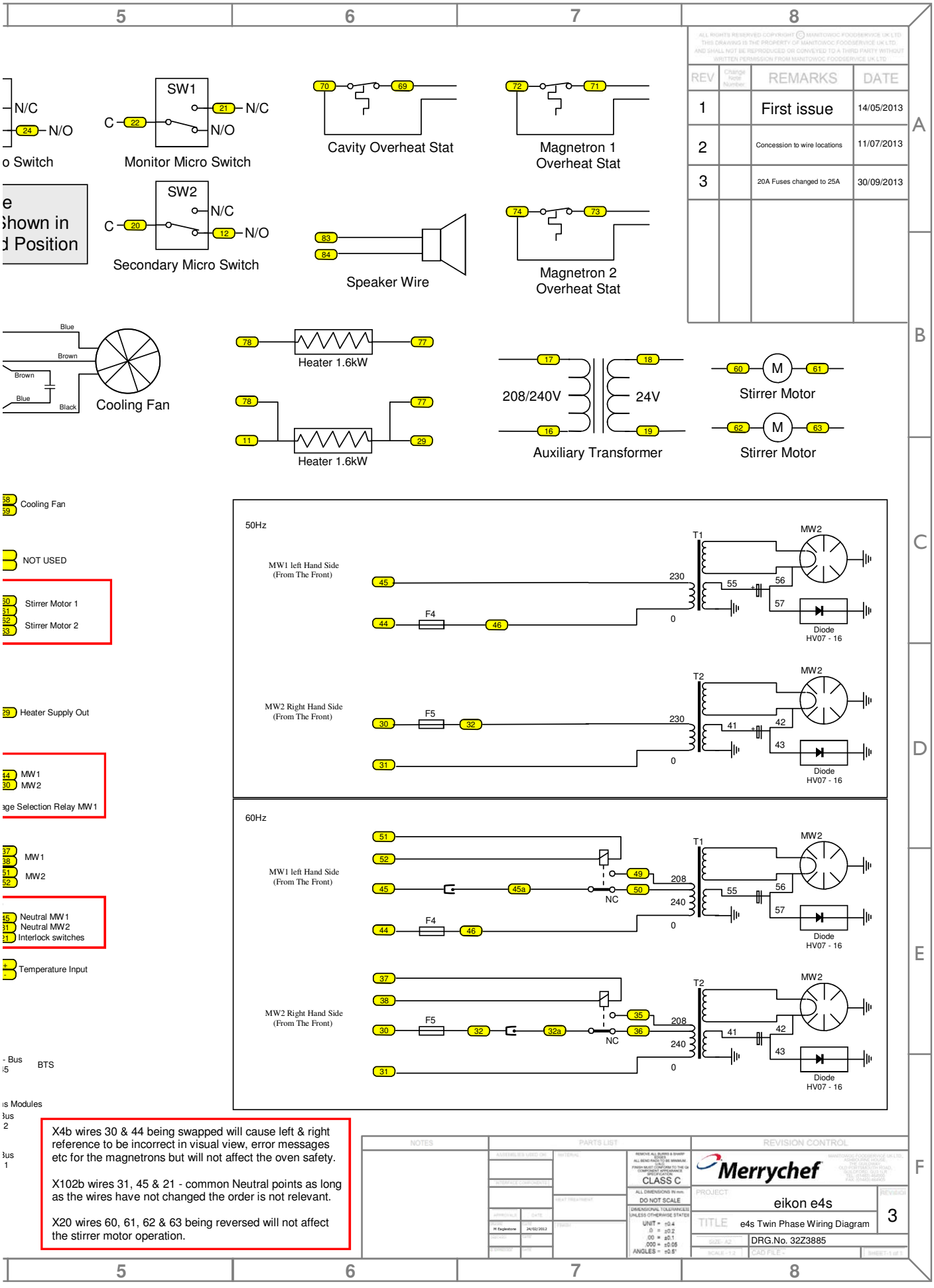


23 CIRCUIT DIAGRAM



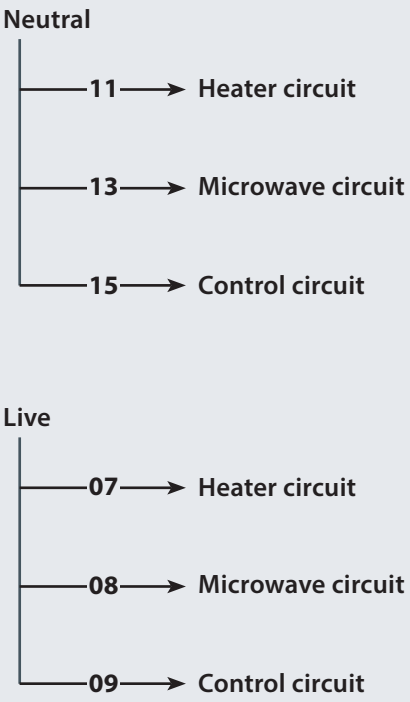

5
6
7
8
A
B
C
D
E
F
N/C
24
N/O
Switch
SW1
C
22
21
N/C
N/O
Monitor Micro Switch
70
69
Cavity Overheat Stat
72
71
Magnetron 1
Overheat Stat
hown in
Position
SW2
C
20
N/C
12
N/O
Secondary Micro Switch
83
84
Speaker Wire
74
73
Magnetron 2
Overheat Stat
Blue
Brown
Brown
Blue
Black
Cooling Fan
78
77
Heater 1.6kW
78
77
11
29
Heater 1.6kW
17
18
208/240V
24V
16
19
Auxiliary Transformer
60
M
61
Stirrer Motor
62
M
63
Stirrer Motor
Cooling Fan
NOT USED
Stirrer Motor 1
Stirrer Motor 2
Heater Supply Out
MW1
MW2
ge Selection Relay MW1
MW1
MW2
Neutral MW1
Neutral MW2
Interlock switches
Temperature Input
Bus
BTS
Modules
50Hz
MW1 left Hand Side
(From The Front)
T1
MW2
45
44
F4
46
230
0
55
56
57
Diode
HV07 - 16
MW2 Right Hand Side
(From The Front)
T2
MW2
F5
30
32
31
230
0
41
42
43
Diode
HV07 - 16
60Hz
MW1 left Hand Side
(From The Front)
51
52
45
45a
49
50
NC
208
240
0
T1
MW2
55
56
57
44
F4
46
Diode
HV07 - 16
MW2 Right Hand Side
(From The Front)
37
38
30
F5
32
32a
35
36
NC
208
240
0
T2
MW2
41
42
43
31
Diode
HV07 - 16
REV
Change Note Number
REMARKS
DATE
A
First issue
B
Mains filter change
21/06/2012
1
SRB Schematic
23/10/2012
2
Concession to wire locations
11/07/2013
3
20A Fuses changed to 25A
30/09/2013
NOTES
PARTS LIST
REVISION CONTROL
CLASS C
DO NOT SCALE
Merrychef
PROJECT
eikon e4s
REVISION
3
TITLE
e4s Wiring Diagram 50/60Hz
DRG.No. 32Z3845
X4b wires 30 & 44 being swapped will cause left & right reference to be incorrect in visual view, error messages etc for the magnetrons but will not affect the oven safety.
X102b wires 31, 45 & 21 - common Neutral points as long as the wires have not changed the order is not relevant.
X20 wires 60, 61, 62 & 63 being reversed will not affect the stirrer motor operation.


3rd ANGLE PROJECTION
Mains Filters
Mains Input
N
L2
L1
E
F1
F2
F3
Motor Speed Controller
U V W PE
Black
Brown
Blue
Green
Convection Fan
On/Off Switch
SW3
Primary Micro Sw
Note
Switches Sho
Door Closed P
Fuse Rating
Fuse | US | ROW
F1 | 25 Amp | 25 Amp
F2 | 25 Amp | 25 Amp
F3 | 12 Amp | 13 Amp
F4 | 12 Amp | 13 Amp
F5 | 12 Amp | 13 Amp
Aux Power
SRB Transformer
Speed Controller Relay Coil
Convection Fan
RED (0 - 10V)
GREEN - (10V)
BLUE - (GND)
Heater Supply
M.W. Supply
Neutral In
Interlock Switch Connector
24VAC Supply
On/Off
Air Filter
Overheat Cavity
Overheat MW1
Overheat MW2
Safety Relay Sch
Safety Relay Aux
Line Voltage Monitoring Sch
Line Voltage Monitoring
0—10V-out Sch
Convection Fan 0...10V Passive Isolated Output
Ext GND
Safety Relay Heater
Lcs Heater
Current Sence Sch
Current Sense
Safety Relay M.W.
Lcs MW
Door Switch Detection Sch
Door Switch
Common Connectors Block Interlock Switches
Power Supply Sch
Power Supply 12V;5V;3.3V 12V 5V
+12V
Feedback Sch
Power Switch Feedback Air Filter Feedback
MCU Sch
MCU
Safety Relay Sch
Safety Relay Supply (Heater & MW Only)
Triac Output Sch
Triac 1A Output
Triac 2A Output
Triac 1A Output
Triac 16A Output
Hybrid Relay Sch
Hybrid Relay 1
Hybrid Relay 2
Voltage Selection Relays Driver
Voltage Selection Relay Driver Sch
Thermocouple Input Sch
Thermocouple
Feedback Sch
Motor Feedback
C-P Bus Sch
C/B Bus
C-Bus
P-Bus
P/C - Bus RJ-45
C - Bus RJ-12
P - Bus RJ-11
Voltage Sel

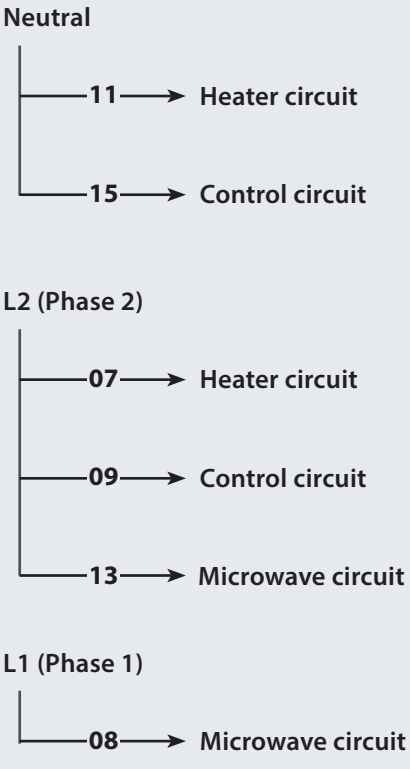

5
6
7
8
A
B
C
D
E
F
N/C
24
N/O
o Switch
SW1
C
22
21
N/C
N/O
Monitor Micro Switch
70
69
Cavity Overheat Stat
72
71
Magnetron 1
Overheat Stat
e
Shown in
d Position
SW2
C
20
N/C
12
N/O
Secondary Micro Switch
83
84
Speaker Wire
74
73
Magnetron 2
Overheat Stat
Blue
Brown
Brown
Blue
Black
Cooling Fan
78
77
Heater 1.6kW
78
77
11
29
Heater 1.6kW
17
18
208/240V
24V
16
19
Auxiliary Transformer
60
M
61
Stirrer Motor
62
M
63
Stirrer Motor
REV
Change Note Number
REMARKS
DATE
1
First issue
14/05/2013
2
Concession to wire locations
11/07/2013
3
20A Fuses changed to 25A
30/09/2013
Cooling Fan
NOT USED
Stirrer Motor 1
Stirrer Motor 2
Heater Supply Out
MW1
MW2
Selection Relay MW1
MW1
MW2
Neutral MW1
Neutral MW2
Interlock switches
Temperature Input
- Bus
BTS
Modules
50Hz
MW1 left Hand Side
(From The Front)
45
44
F4
46
230
0
T1
55
56
57
MW2
Diode
HV07 - 16
MW2 Right Hand Side
(From The Front)
30
F5
32
31
230
0
T2
41
42
43
MW2
Diode
HV07 - 16
60Hz
MW1 left Hand Side
(From The Front)
51
52
49
45
45a
NC
50
208
240
0
T1
55
56
57
MW2
Diode
HV07 - 16
F4
44
46
MW2 Right Hand Side
(From The Front)
37
38
35
30
F5
32
32a
NC
36
208
240
0
T2
41
42
43
MW2
Diode
HV07 - 16
31
X4b wires 30 & 44 being swapped will cause left & right reference to be incorrect in visual view, error messages etc for the magnetrons but will not affect the oven safety.
X102b wires 31, 45 & 21 - common Neutral points as long as the wires have not changed the order is not relevant.
X20 wires 60, 61, 62 & 63 being reversed will not affect the stirrer motor operation.
NOTES
PARTS LIST
REVISION CONTROL
CLASS C
DO NOT SCALE
Merrychef
PROJECT
eikon e4s
TITLE
e4s Twin Phase Wiring Diagram
3
DRG.No. 32Z3885

23.1 POWER CONNECTIONS e4s

Product e4s
Single Phase & Neutral Model
Microwave 1800W
Convection heater 3.2kW

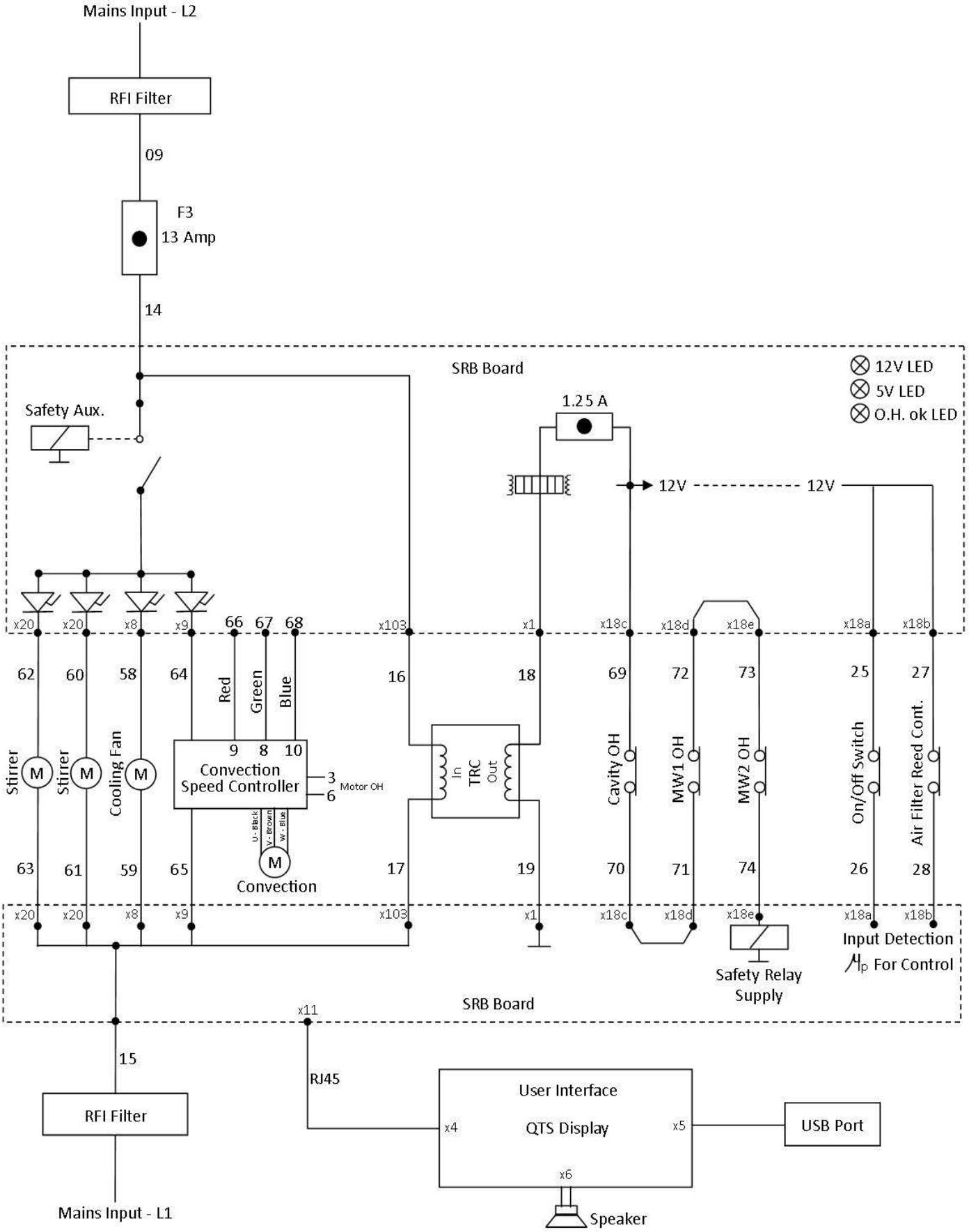


Product e4s
Twin Phase & Neutral Model
Microwave 1800W
Convection heater 3.2kW

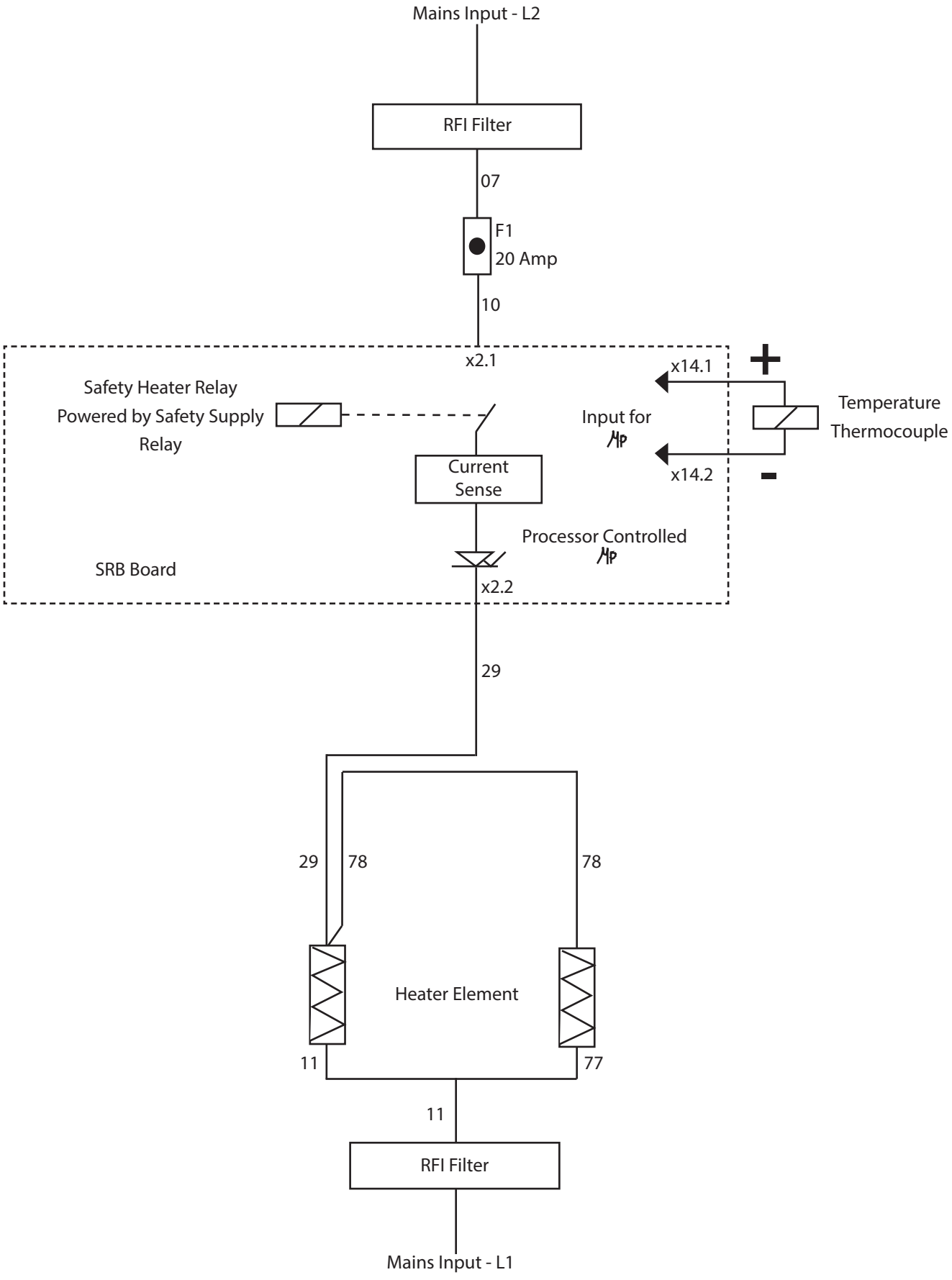


ELECTRICAL CIRCUITS

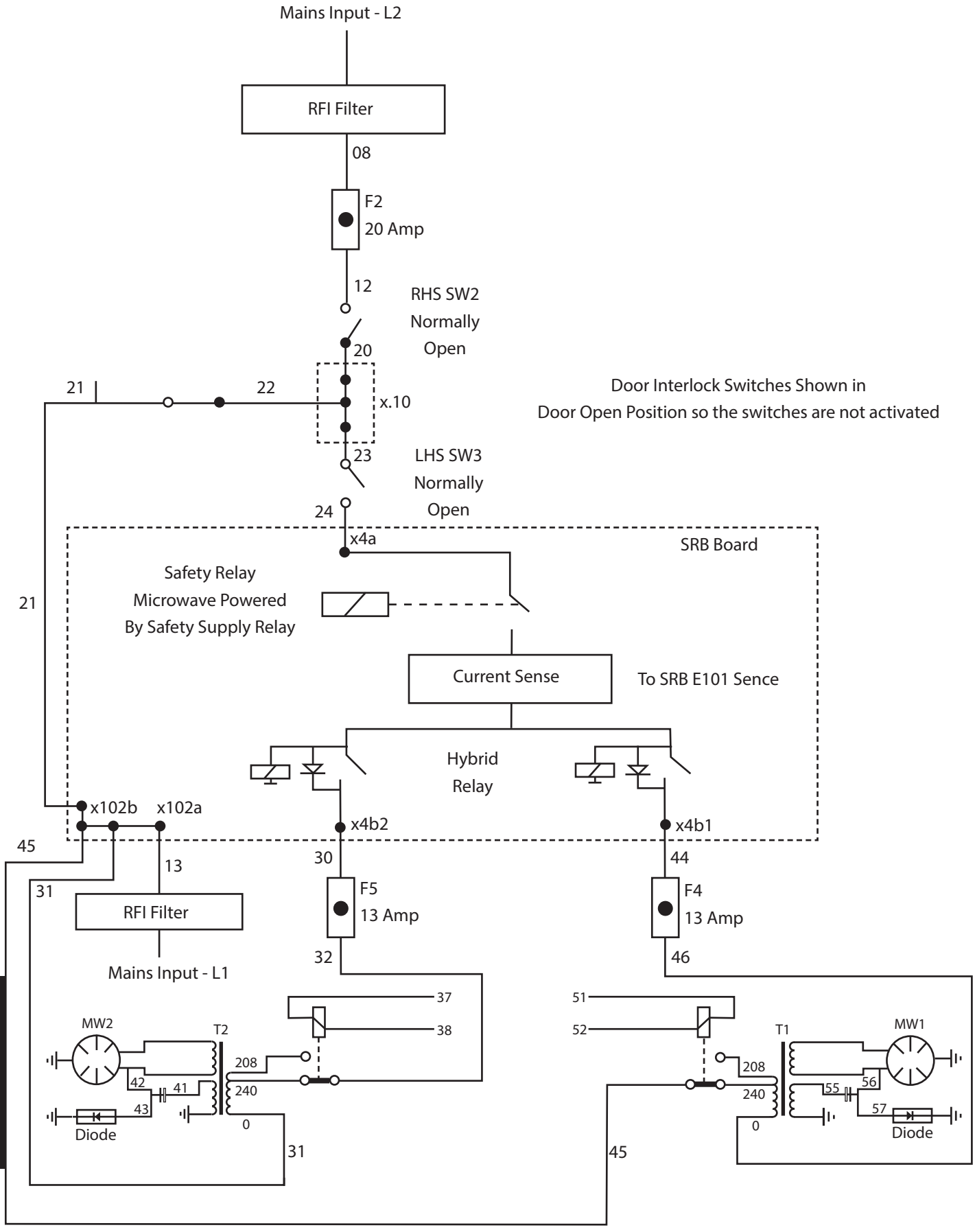
23.2 CONTROL CIRCUIT e4s



23.3 HEATER CIRCUIT e4s



23.4 MICROWAVE CIRCUIT e4s



24 Commissioning the oven

24.1 Initial installation

1 Unpack the Oven and check for damage.
2 Check Oven Accessories.
3 Check location will provide adequate Ventilation.
4 Locate Oven onto a strong, level, non-flammable Surface.
5 Remove panels & check all wiring and components for security.
6 Refit panels.
7 Position the Oven with a minimum air gap of 50mm, sides & rear.
8 Check Electrical supply and connect.
9 Place a container of water within the oven and switch it on.
10 Record Model version & check against serial plate.
11 Record QTS (UI) version.
12 Record SRB version.
13 Record Serial Number & check against serial plate.
14 Enter Service Mode.
15 Record Voltage & Frequency.
16 Record Magnetron Current Draw.
17 Check for Microwave leakage.
18 Record Heater current.
19 Check door opening on display.
20 Check filter removal on display.
21 Check fan speed.
22 Turn off the oven and remove the water.
23 Switch on oven and run up to temperature.
24 Operate Oven, Cooking a Standard Batch.
25 Supply User information & contact details to Customer.
26 Instruct Users with an Overview of the equipment, Operation & Safety (Hazards).
27 Complete Service Report.

24.2 After Service

Complete the following checks after the Oven has been Serviced/Repaired/Tested before connecting to the mains electricity power supply:

24.2.1 All internal electrical connections are correct (see wiring diagrams).

24.2.2 All wiring insulation is correct and is not touching any sharp edges.

24.2.3 All grounding connections are electrically and mechanically secure.

24.2.4 All door safety interlocks are secure and mechanically sound.

24.2.5 The door activates all of the door interlock switches and in the correct order.

24.2.6 The door operation is smooth, and the arms run freely in the slots.

24.2.7 The temperature sensor is correctly connected to the SRB.

24.2.8 The casing is securely refitted with no trapped wires.

Before finishing a service call, recheck the following points:

24.2.9 Run the Recommission tests to ensure the oven is functioning correctly and the touch screen is working.

24.2.10 Microwave emissions are below permissible limit of 5mW/cm^2.

24.2.11 The power output of the oven is checked in accordance with the procedure.

24.2.12 The oven has correct 50mm (2 inches) air gap all round and 50mm (2 inches) above. Air flow should not be restricted.

24.2.13 Complete the Service Report.

Correct disposal of this product (Waste Electrical & Electronic Equipment)

Applicable in the European Union and other European countries with separate collection systems.

This marking shown on the product or its literature indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.