

STOVES

GR 600

Servicing Guide

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TABLE OF CONTENTS

	Page No.
General Notes On Appliance Operation	3 - 4
Introduction To Software Faults	5
General Discussion On Problem Solving	6
List Of Fault Symptoms	7
Fault Symptoms With Main Causes And Corrective Actions	8 - 13
Appendix A (Solenoid Testing Procedure)	14
Appendix B (Thermistor Testing Procedure)	14
Appendix C (Oven Fan Shaft Choke Sizes)	15
Appendix D (Transformer)	16

General Notes On Appliance Operation

Basic System Functions

Main PCB board

This is located in the pressure back and carries the microprocessor that controls the operation of the system and also has the ignition system built into the same PCB. It is important to note that there are earth screws and sleeves that clamp the board to the frame and make an earth path, in addition to the earth wire on the 600GRa, **IT IS EXTREMELY IMPORTANT THAT THIS SCREW AND SLEEVE ARE PROPERLY IN PLACE** Failure to replace them will result in erratic appliance functions.

Fan Speed Control PCB

This is the small square board mounted above the cooling fan and is connected between the main PCB relay outputs and the oven burner fans to control the speed of the oven fans.

Solenoid Valve

Either with 4 solenoids (600 Gra) or 6 solenoids (720/900Gra). This controls the gas to the burners and is switched on and off by the main PCB.

Pressure Switch

Mounted on the bottom of the pressure chamber with the low-pressure outlet connected to the outside of the appliance via a short length of rubber tube. This switch ensures that the correct air pressure is maintained keeping the burners supplied with the right amount of air for safe combustion. It is important that this tube is not kinked, crushed, punctured or blocked, as the appliance will not function. Obviously, the back panel must be fitted for the pressure switch to operate.

Cooling Fan

The cooling fan provides air for combustion and cooling within the appliance it is important that this is free of obstructions to allow free flow of air into the appliance.

Oven Burner Motor

The oven burner/fan blade Assy. is screwed onto the end of the hollow motor shaft. If the motor is serviced or changed it is important to check that it is free to rotate and that the correct size choke is fitted inside the shaft.

Transformer

Provides 240V ~ and 24V d.c. to the main PCB.

Thermistor

This is a small brass rod mounted on the rear of the oven cavity behind the burner cover. It is important that the securing nut is fully tightened when replacing this item and that the rear of the brass body is clear of any oven insulation and foil as this affects the oven temperatures.

Fascia Control Assembly

This assembly comprises a circuit board plus microswitch/switches that are operated by cams mounted on potentiometer spindles. The microswitch provides an extra failsafe switch in the supply to the gas solenoids.

General Notes On Appliance Operation (Continued)

Programmer/Clock

This gives a continuous readout of time of day and can be utilised to provide an automatic programming facility. When switched initially the time of day must be set and the programmer set to manual operation. The appliance will still operate however if the timer is disconnected by unplugging the ribbon cable.

Introduction To Software Faults

The software monitors the operation of the appliance via feedback from certain components within the appliance, if any of this feedback is not as expected the software will generate one of the following signals:-

Hard Lock Out (HLO)

There are two types of HLO

- a) **Microprocessor fails its self-check.**
This is indicated by the green and red fascia LED,s coming on steady and the oven lamps and cooling fan staying on.
- b) **Microprocessor has a hard fault.** This is indicated by the green and red LED,s flashing alternately as soon as power is applied or immediately one of the control is turned on.

Soft Lock Out (SLO)

This is indicated by the green LED flashing and sometimes the oven lamps and cooling fan continue to run. The main causes of this type of Lock Out are as follows.

- a) **Ignition Failure.** The system allows the burners a certain amount of time to light before it shuts down. The ignition sequence on the oven is different to the grill i.e. The oven goes through five attempts where the fan slows down, the ignition sparks 4 or 5 times and if it does not light the gas shuts off and the fan speeds up again, this is repeated 5 times until the system goes to SLO. The grill just has one attempt where it sparks approx. 25 times and then goes to SLO.
- b) **Flame Detection Failure.** In this instance the burner will light but the ignition will continue to spark and go through the ignition cycle detailed above before it locks out.
Open Circuit Failure Of The Thermistor Probe. In this instance the failure will occur approx. 4 minutes after the oven has been turned on.
- c) **Air Pressure Failure.** This is not classed as a Lock Out condition. However, if the pressure switch closed signal disappears, even momentarily, the solenoids and ignition circuit will be de-activated cutting the gas supply to the burners. The appliance cooling fan, lights and oven burner fans will continue to operate normally, waiting for a pressure switch closed signal to be activated. If a pressure switch closed signal is re-established the solenoids and ignition circuit will be re-activated and normal operation of the appliance will resume.

General Discussion On Problem Solving

Many clues can be gathered about the likely cause of a fault if the manner of failure can be observed at the time of failure. Run the appliance to see if you can identify exactly what the problem is. A lock out state can be caused by any number of faults, however, the type of fault indication and at what moment in the operating cycle the fault occurs can point exactly to the cause of failure.

- 1) The back panel must be in place and fully screwed down, as the system will not function unless the correct pressure is established in the rear pressure chamber.
- 2) The clock/programmer must be in the manual mode for both ovens and grill to function. **NOTE:** If the programmer is suspected of generating a fault, this can be checked by unplugging the programmer, as the system will function without it connected.
- 3) If the oven fails to work correctly, try the grill before commencing any further analysis (and vice versa). If at least one of the burners is functioning correctly then the safety systems general to all burners are working correctly e.g. pressure system, Clock/programmer etc. It also makes it unlikely that the main PCB is at fault and more likely to be a peripheral component that is causing the fault.
- 4) Ensure correct gas pressure and voltage levels.
- 5) The cooling fan is quite powerful and requires a clear air entrance at the rear of the appliance. Ensure that the appliance is installed in accordance with the installation instructions paying particular attention to the minimum air gaps required. Also ensure there are no obstructions to the airflows or that there is nothing loose which could be drawn into the air stream.
- 6) When testing the grill the door should be fully open and when testing the ovens test with the door fully closed.
- 7) If you think the problem is related to the main control system, the first thing to do is an inspection of the wiring system for incorrect wiring and loose connections particularly cable connector joints.

List Of Fault Symptoms

- 1) The appliance shuts down completely and recycles to the start condition.
- 2) The cooling fan and oven lights operate but no ignition attempt or solenoid operation when any of the controls are operated.
- 3) Oven green ready light does not come on and appliance goes to SLO after 4 minutes.
- 4) The oven runs for a short period then the flame becomes dull and sometimes goes out.
- 5) The oven burner lights runs for a few seconds the gas cuts off and the burner goes out.
- 6) The burner does not light intermittently during normal cooking and goes to SLO.
- 7) The supply fuse keeps blowing.
- 8) Oven lamps and fans come on but ignition does not start on the oven (grill works OK)
- 9) Appliance goes to HLO as soon as mains power is applied.
- 10) Appliance goes to HLO immediately one of the controls is turned on.
- 11) The green ready LED comes on but oven temperature is low.
- 12) Oven lights but the electrode keeps sparking and appliance goes to SLO.
- 13) The grill will not come on with the door open but lights when the door is closed and the oven will not come on with the door closed but lights when the door is open.
- 14) The cooling fan does not run on for approx. 5-10 minutes after the appliance has been on for more than approx. 5 minutes.
- 15) The appliance goes to SLO when the top oven is switched from oven to grill.
- 16) The cooling fan and oven lamps stay on continuously after normal 5-10 minute run on time.
- 17) Poor cooking performance.
- 18) The grill wont light and goes to SLO after the ignition attempt, Ovens work OK.

Fault Symptoms With Main Causes And Corrective Actions.

- 1) **The Appliance Shuts Down Completely And Recycles To The Start Condition.**

This can be caused by a known fault which occurred on some early batches of SASS transformers where an internal connection disconnects when the transformer heats up and remakes again when the transformers cools down. Resulting in temporary loss of power to the appliance. The timer will have to be reset before the appliance will function, the user may be leaving the appliance to cook and when they return the timer is flashing and needs resetting to manual mode before the appliance will function again.

- 2) **The cooling fan and oven lights operate but no ignition attempt or solenoid operation when any of the controls are operated.**

This is most likely to be a **Pressure System Failure**. This can be caused by cooling fan failure, blockage of air, a faulty pressure switch/tube, or Low Voltage supply.

Check and test the following:

- a) The cooling fan is running freely at full speed and there is no restriction to the air inlet, paying particular attention to the minimum air gaps required as stated in the installations instructions.
- b) Check the pressure switch tube ensuring that it is fitted correctly, not blocked, kinked or split.
- c) Check the pressure switch micro switch for correct operation.
- d) Check that all the panels are fitted correctly ensuring there is no pressure loss due to poor fitting panels. Pressure switch may not operate if panels are not fitted correctly.
- e) Check appliance voltage is above 210V ~ 50Hz.
- f) If all the above is Ok then it may be a faulty Main PCB.

- 3) **Oven Green Ready LED Does Not Come On And Oven Goes To SLO After 4 Minutes.**

This is most likely to be an open circuit thermistor. Check as per Appendix B.

Fault Symptoms With Main Causes And Corrective Actions. (Continued)

- 4) **The Oven Runs For A Short Period, The Flame Picture Becomes, Poor And The Flame Sometimes Goes Out**

Burner Motor

The hall switch on the burner motor has become damaged or disconnected check and make sure switch is not damaged and connected into the fan speed board ensuring wires on switch are not broken.

Low Gas Pressure

Check gas pressure, if the problem is intermittent it may only happen when say a gas boiler is operating.

Ceramic glass missing from centre of fan cover.

Wrong choke or choke missing from fan shaft.

Check for correct choke as specified in Appendix C.

Grill ceramic glass plate dislodged or broken.

The fan speed PCB has been incorrectly wired, by-passing the PCB or is faulty.

Check the wiring as per the circuit diagram. If all the above options have been ruled out it is likely to be the fan control board that needs replacing.

- 5) **The Oven Burner Lights, Runs For A Few Seconds Then The Gas Cuts Off And The Burner Goes Out, This Keeps On Repeating.**

Possible fault on one of the solenoid coil.

Check the solenoids as per Appendix A.

Fault on the main PCB.

Replace the main board.

- 6) **The Oven Does Not Light Intermittently During Normal Cooking And Goes To Soft Lock Out.**

The electrode is not sparking to the target.

The electrode may be breaking down to earth or sparking to the fan cover.

The electrode lead may be tracking to earth. Observe the electrode during the ignition cycle and make sure it sparks to the target every time.

The gas pressure may be low.

Check gas pressure.

The speed control PCB may be faulty or incorrectly wired.

Fault Symptoms With Main Causes And Corrective Actions. (Continued)

7) The Supply Fuse Keeps Blowing

Short circuit somewhere on the 240V ~ system or one of the 24V d.c. outputs from the main PCB. The transformer and or the main PCB may be damaged. The most likely causes are:

- a) A ribbon cable has melted onto the grill canopy.
- b) One of the solenoids has gone short circuit. Check as per Appendix A.
- c) One of the fan motor windings may have shorted out.
- d) Any part of the wiring may have shorted to earth.

Do not replace parts until the cause of failure has been established.

8) Oven Lamps And Fans Come On But Ignition Does Not Start On Oven Burners (Grill Works OK)

If the green ready LED comes on immediately then the problem is a short circuit thermistor probe.
Check the probe as per Appendix B.

If the green light does not come on then a false flame signal may be being generated.

Check the oven burner fan blade Assy. is screwed fully onto the motor shaft. also check the mesh for stands of wire which may be touching the electrode, flatten or cut off stands. If the problem persists then the fault may be on the Main PCB ignition circuit.

9) Appliance Goes To HLO As Soon As Mains Power Is Applied.

Possible wiring fault or short circuit.

Check all wiring and connections, particularly ribbon cable connectors.

Fault on main PCB.

This may have been caused by a short circuit cable or a short on a peripheral component, carry out the following checks:

- a) Check the solenoids as per Appendix A.
- b) Thoroughly check all the wiring for damage and trapped wires.
- c) Check Transformer to Appendix D.

Try to determine the cause of failure before changing components.

Fault Symptoms With Main Causes And Corrective Actions. (Continued)

- 10) **Appliance Goes To HLO Immediately One Of The Controls Is Turned On.**

Short circuit solenoid.

Check solenoid as per Appendix A.

Possible wiring fault or short circuit.

Check all wiring and connections, particularly ribbon cable connectors.

Faulty fascia PCB.

Test the oven with a spare Fascia PCB temporarily wired into the circuit, taking care not to short out any parts to earth. The voltage at the fascia is a safe low voltage of 24V d.c. But if any live part is grounded then it will damage the main PCB or fascia PCB.

Main PCB faulty

This may have been caused by a faulty solenoid. If this fault appears after you have fitted a new PCB, Re-check all the wiring and connections, if the fault persists It is likely that the replacement board is faulty.

The standard of handling of electronic PCBs through the spares dept. and on the engineers van has been poor in the past. PCBs should be delivered in anti-static bags, individually wrapped in bubble wrap and packed in a separate cardboard box until required. Any faulty boards should be repacked the same way and returned to the factory as soon as possible with a report on the fault marked. Attn: Dave Connelly, Glen Dimplex Cooking, Technical Centre, Stoney Lane, Prescott, Merseyside, L35 2XW.

- 11) **The Green Ready LED Comes On But The Oven Temperature Is Low.**

Faulty thermistor

Check as per Appendix B. Also there have been instances of the thermistors moving inside the brass body towards the rear of the oven, however, this would usually cause the oven temperature to increase.

Short circuit or loose connection on main ribbon cable.

Check ribbon cable connectors for correct mating of the two parts.

Faulty fascia PCB.

Test the oven with a spare Fascia PCB temporarily wired into the circuit, taking care not to short out any parts to earth. The voltage at the fascia is a safe low voltage of 24V d.c. But if any live part is grounded then it will damage the main PCB.

Fault Symptoms With Main Causes And Corrective Actions. (Continued)

- 12) **Oven Lights But Electrode Carries On Sparking And Appliance Goes To SLO.**
- There is a break in the electrode lead.
Check the electrode circuit for continuity.
- The electrodes may be cross connected.
The flame sensing circuit on the main PCB is faulty.
- 13) **The Grill Will Not Come On With The Door Open But Lights When The Door is Closed And The Oven Will Not Come On With The Door Closed But The Lights When The Door Is Open.**
- The door switch is not operating correctly due to:
The micro switch is faulty, check the operation and continuity.
- Faulty fascia PCB.
Test the oven with a spare Fascia PCB temporarily wired into the circuit, taking care not to short out any parts to earth. The voltage at the fascia is a safe low voltage of 24V d.c. but if any live part is grounded then it will damage the main PCB or fascia PCB.
- Note:- 720/900 Gra Ovens will operate with doors open or closed. Grill will only operate with door open. 600 Gra Oven will only operate with door closed and grill will only operate with door open.
- 14) **Cooling Fan Does Not Run On For 5-10 Minutes After The Appliance Has Been In Use For More Than Approx. 5 Minutes.**
- The fascia micro switches are not turning off.
Check the operation of the cams on the control spindles and the operation of the micro switches.
- The fascia PCB may be faulty.
- 15) **The Appliance Goes To SLO When The Top Oven Is Switched From Oven To Grill.**
- Faulty fascia PCB.
Connect a spare fascia PCB as described in Para. 12 If you replace the PCB check the correct operation of the switches.
Instruct the user not to turn the appliance off at the mains when the cooling fan is still running, as this will cause heat damage to the fascia board.

Fault Symptoms With Main Causes And Corrective Actions. (Continued)

- 16) The Cooling Fan And The Lights Stay On Continuously After The Normal 5-10 Minute Run On Time.**

If the green and red LEDs are lit then the appliance may have failed the microprocessor self check and gone into HLO.

Reset the appliance and if the problem persists replace the main PCB. Do Not Confuse This Symptom With Symptom Number 2.

Fascia PCB switching is faulty.

Check by substituting a spare fascia PCB and if fascia PCB is replaced check the correct switching of the micro switches.

- 17) Poor Cooking Performance**

Thermistor Faulty

Check resistance as per Appendix B and ensure that the thermistor is fully tightened onto the oven back panel.

The oven insulation is covering the brass probe at the rear of the oven.
Clear away the insulation to expose the brass body to the cooling fan airflow.

Faulty Fan Speed PCB.

This may be causing the fan to run too slow, thus overheating the thermistor probe.

Faulty oven fan (again causing fan to run slowly)

Incorrectly fitted or damaged fan cover.

- 18) The grill wont light and goes to SLO after the ignition attempt, ovens work OK.**

- a) Check operation of solenoids i.e. Correct flow of gas to the burner.
- b) Check for blocked and correct size injector.
- c) Ensure there is a spark at the electrode, which is sparking towards the grill burner through the gas mixture.
- d) Ensure the ceramic glass is not cracked and fitted correctly.
- e) Refit burner ensuring burner cowl is clamped correctly.

Appendices

Appendix A (Solenoid Testing Procedure)

To check the solenoids measure the resistance between the six single blue wires coming from the solenoid (not the double wires). Check with your multimeter between pins 1 & 2, 4 & 5 and 6 & 7 on the plug connector. You should find in each case that the resistance is approx 2600 Ohms. Alternatively if using the test box follow the instructions marked on the box. If either of the two coils in the channel you are measuring has gone open circuit then there will be no reading. If one of the coils has gone to a short circuit the resistance will have halved. Also check resistance/continuity between each pin and earth as one of the solenoid supply wires could have been trapped between the plastic bobbin and its metal housing causing a short to earth.

Appendix B (Thermistor Testing Procedure)

Unplug the thermistor from the main board and measure the resistance across the two pins with a multimeter. If you have a test box then plug the thermistor into the socket provided as this makes access to the pins easier. The resistance at room temperature is approx 100,000 Ohms (100K). Manipulate the wires where they terminate at the brass body and the connector in case there is an intermittent connection.

Appendices (Continued)

Appendix C (Oven Shaft Choke Sizes And Injector sizes)

Appliance	Gas Category	Gas Type	Burner	Choke Pt.No	Choke Dia. mm	No. Of Grooves	Plate Pt No. 502148000
600Gra	I _{2H}	G20 Nat Gas	Main Oven	082050101	8.7	1	N/A
720Gra	I _{2H}	G20 Nat Gas	Main Oven	None Fitted	N/A	N/A	N/A
720Gra	I _{2H}	G20 Nat Gas	Top Oven	082050105	8.44	5	N/A
900Gra	I _{2H}	G20 Nat Gas	Main Oven	None Fitted	N/A	N/A	N/A
900Gra	I _{2H}	G20 Nat Gas	Top Oven	082050105	8.44	5	N/A
Appliance	Gas Category	Gas Type	Oven	Choke Pt.No	Choke Dia. mm	No. Of Grooves	Plate Pt No. 502148000
600Gra	I ₃	G30/31 LP	Main Oven	None Fitted (but cover plate on jet holder)	N/A	N/A	YES
720Gra	I ₃	G30/31 LP	Main Oven	None Fitted (but cover plate on jet holder)	N/A	N/A	YES
720Gra	I ₃	G30/31 LP	Top Oven	082050105	8.44	5	N/A
900Gra	I ₃	G30/31 LP	Main Oven	None Fitted (but cover plate on jet holder)	N/A	N/A	YES
900Gra	I ₃	G30/31 LP	Top Oven	082050105	8.44	5	N/A

Appliance	Burner	Nominal Rate Qn kW	Injector Size	Grammes per hour		
			Nat Gas G20	LPG G30/G31	Propane G31	Butane G30
600Gra	Grill	3.2	Amal Size 230	Amal Size 95	229	233
600Gra	Oven	2.4	Amal Size 180	Amal Size 75	172	174
	Total Heat Input ΣQn kW	3.2			229	233
Appliance	Burner	Nominal Rate Qn kW	Injector Size	Grammes per hour		
			Nat Gas G20	LPG G30/G31	Propane G31	Butane G30
720Gra	Grill	3.2	Amal Size 230	Amal Size 95	229	233
720Gra	Top Oven	1.8	Amal Size 130	Amal Size 55	129	131
720Gra	Main Oven	2.4	Amal Size 180	Amal Size 75	172	174
	Total Heat Input ΣQn kW	5.6			400	407
Appliance	Burner	Nominal Rate Qn kW	Injector Size	Grammes per hour		
			Nat Gas G20	LPG G30/G31	Propane G31	Butane G30
900Gra	Grill	3.2	Amal Size 230	Amal Size 95	229	233
900Gra	Top Oven	1.8	Amal Size 130	Amal Size 55	129	131
900Gra	Main Oven	2.4	Amal Size 180	Amal Size 75	172	174
	Total Heat Input ΣQn kW	5.6			400	407

600

900

Appendices (Continued)

Appendix D (Transformer Testing)

Unplug the transformer and check for the following readings: -

Test Between Connectors	Specification
Green & Yellow	Approx 240V
Green & Yellow	Continuity
Red 1 & Red 2	22-35V
Red 1 & Brown	10-18V
Red 2 & Brown	10-18V

PRODUCT: STOVES 600GR-AU Sta
COLOUR: STAINLESS
CODE: 444447967
ISSUE: 2
DATE: 09/08/2006



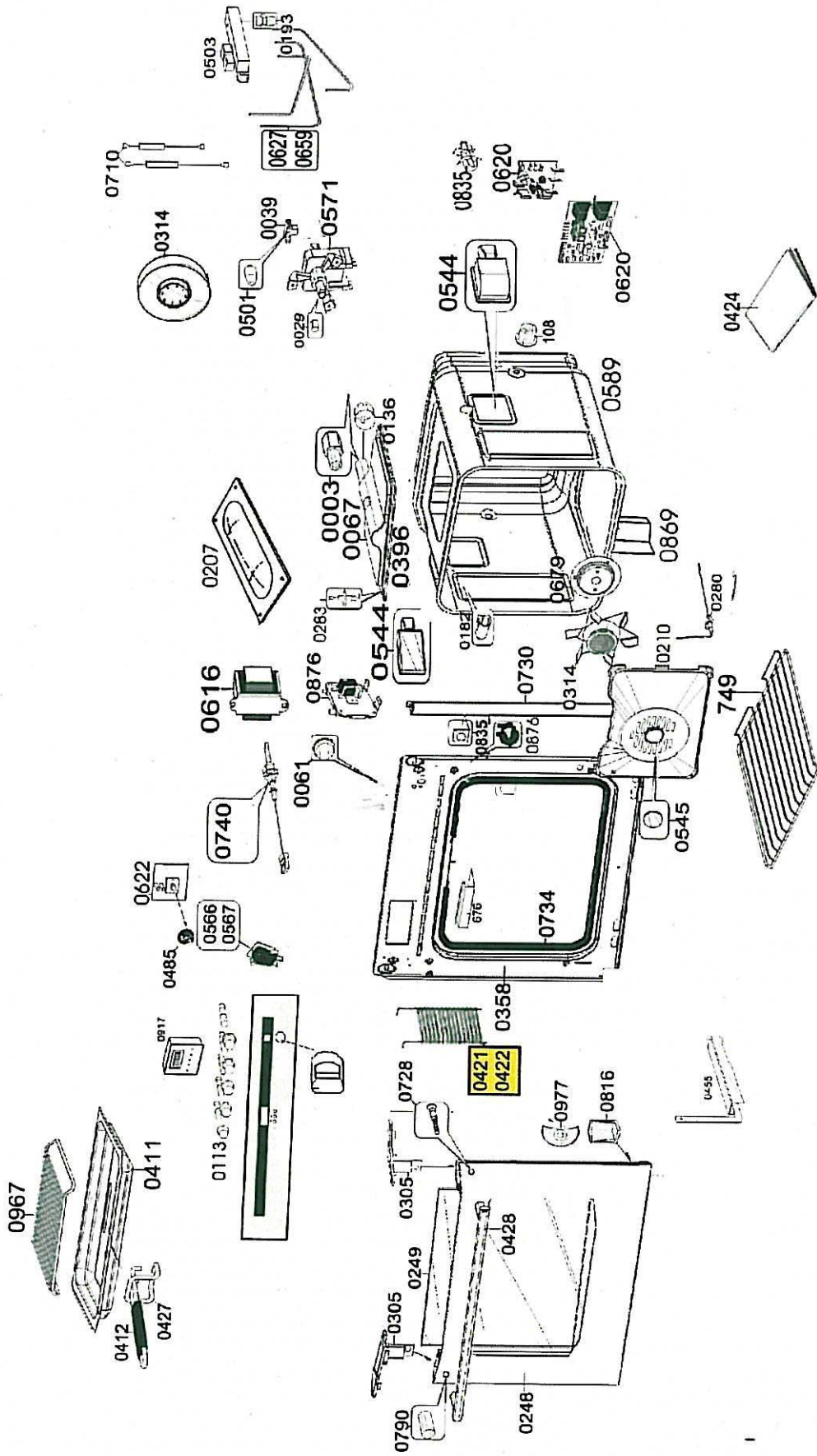
Key	Product	Product Description	TCO	Replace	Date	Qty
0041	082050200	BLOCK injector 14-432A P				1
0065	012067207	BURNER oven rotastar ng				1
0067	082274704	BURNER grill 32005				1
0113	082588500	BUTTON timer				5
0182	082101600	CLIP tubular				4
0247	012898940	DOOR assy ovn gls (glued) sta				1
0247	082911308	GLASS inner main oven				1
0283	082473700	ELECTRODE DEL713 QGRF				1
0314	082465300	FAN cooling ref:R2S 175AB9244				1
0322	012891002	FACIA glass assy 600GR sta				1
0324	082543300	FILTER basket strainer				1
0395	082050600	GLASS disc				1
0411	602517702	GRILL PAN (pristine)				1
0412	082469100	GRIP handle grill pan				1
0420	082917304	GUIDE shelf large lh				1
0421	082917305	GUIDE shelf large rh				1
0424	082731200	HANDBOOK STOVES 600GR-AU				1
0427	082283705	HANDLE grill pan				1
0428	082575400	HANDLE assy				1
0436	082519000	HARNESS 600GRa Ref:904507				1
0455	082821001	HINGE oven				2
0494	081794608	INJECTOR h/p large				1
0499	082547601	INJECTOR oven amal				1
0503	082536200	INLET/solenoid assy MSVDB4A01				1
0514	082518300	INSULATION microswitch				1
0525	082589103	KNOB control b/l 600/900gr				1
0544	082905500	LAMP oven				2
0564	602598800	MEATTIN (pristine)				1
0566	082395500	MICROSWITCH 343/602				1
0571	082438100	MOTOR rotostar 230v Hall 1c				1
0620	082487800	PCB rotostar Q600GRF				1
0620	082059602	PCB FASCIA				1
0622	082438200	PCB control				1
0710	081731301	RESISTOR 68ohm 16434 KB				1
0728	080215764	WASHER fibre 11/64" dia				2
0728	082534600	SCREW M3 X 20 pz pan head blk				2
0728	080180676	SCREW m6x30 pp mc				2
0728	080180696	Screw M4x30 pozi csk bl zinc				2
0730	082800600	SEAL edge 580mm				2
0734	082501400	SEAL oven 50m roll				1.5
0740	082473800	SENSOR main oven (green lead)				1
0749	082917403	SHELF main oven 452 wide				2
0783	082800801	SLEEVE oven lamp				2
0790	082501002	SPACER handle (Vision unclad)				2
0790	081826900	SPACER 600gtf/c 200				1
0793	012059801	SPACER rotostar assy				1
0810	082588700	STEM 600/900 timer				5
0816	082510800	STOP inner glass				2

0876	081544500	SWITCH pressure C6065a11682				1
0876	082319200	SWITCH door COO55RBAAB				1
0917	082090801	TIMER programmer				1
0967	082518800	TRIVET grill pan				1

STOVES

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GAS BUILT-IN OVEN



Wiring colour code: Bk - Black, Bn - Brown, Bu - Blue, Gn - Green, Or - Orange, R - Red, W - White, Y - Yellow, P - Pink.

- A1 - Oven Fan
- A2 - Cooling Fan
- B - Transformer
- C1 - Grill Solenoid
- C2 - Oven Solenoid
- Q - Resistor
(Nat Gas 68 Ohms / LPG 100 Ohms)
- E - Thermistor
- F1 - Microswitch
- F2 - Door Switch
- F3 - Pressure Switch
- G1 - HT Oven Electrode
- G2 - HT Grill Electrode
- H1 - Live
- H2 - Neutral
- K - Oven Lamps
- N - Programmer
- P - Speed Control (Hall Switch)
- D - Earth Screw

