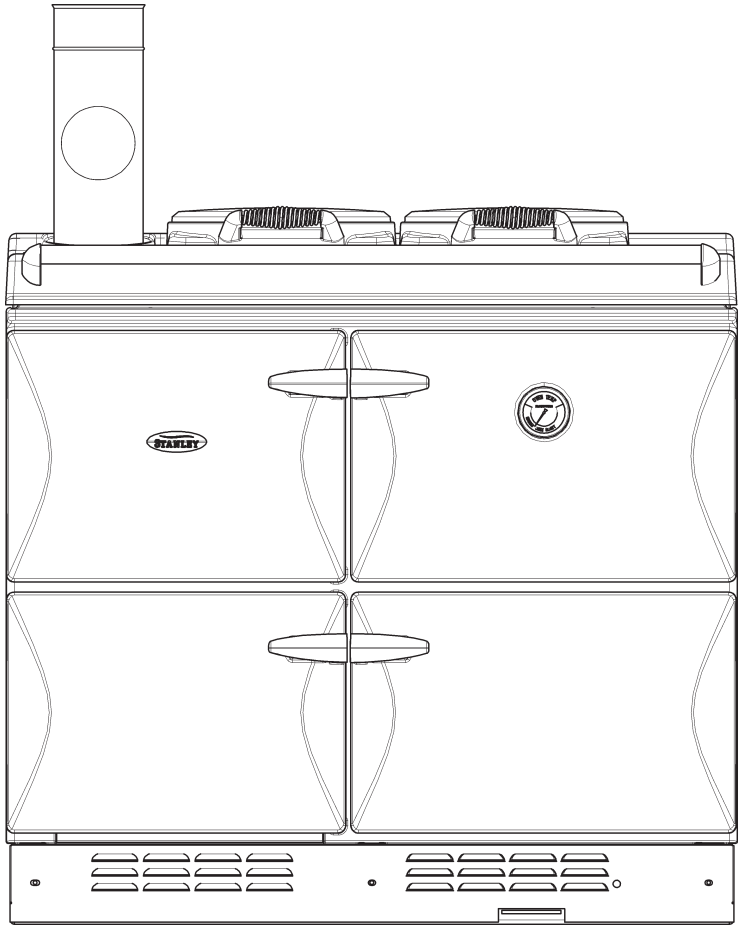
Brandon 80 CD C/F



DESN 516328

Servicing Instructions

PLEASE READ THESE INSTRUCTIONS BEFORE SERVICING THIS APPLIANCE

06/14 EINS 516326

Contents

Consumer Protection

As responsible manufacturers we take care to make sure that our products are designed and constructed to meet the required safety standards when properly installed and used.

IMPORTANT NOTICE: PLEASE READ THE ACCOMPANYING WARRANTY
Any alteration that is not approved by Waterford Stanley could invalidate the approval of the appliance, operation of the warranty and could affect your statutory rights.

Health & Safety

This appliance may contain some of the materials that are indicated. It is the Users/Installers responsibility to ensure that the necessary protective clothing is worn when handling where applicable. The pertinent parts that contain any of the listed materials that could be interpreted as being injurious to health and safety, see below for information.

Firebricks, Fuel Beds, Artificial Fuels
When handling use disposable gloves.

Fire cement
When handling use disposable gloves.

Glues and Sealants
Exercise caution - if these are still in liquid form use face mask and disposable gloves.

Glass Yarn, Mineral Wool, Insulation Pads, Ceramic Fibre
Maybe harmful if inhaled. May be irritating to skin, eyes, nose and throat. When handling avoid contact with skin or eyes. Use disposable gloves, face-masks and eye protection. After handling wash hands and other exposed parts. When disposing of the product, reduce dust with water spray, ensure that parts are securely wrapped.

Kerosene and Gas Oil fuels (mineral oils)

1. The effect of mineral oils on the skin vary according to the duration of exposure.
2. The lighter fractions also remove the protective grease normally present on the surface of the skin. This renders the skin dry, liable to crack and more prone to damage caused by cuts and abrasions.
3. ‘Oil acne’ is recognised by the presence of skin rashes. The arms are most often affected, but may occur where there is contact with oil or oily clothing.
   - Seek medical attention for any rash.
   - Avoid skin contact with mineral oil or clothing containing mineral oil.
4. Inhalation of mineral oil vapours must be avoided. Never fire the burner in the open air as unburnt oil vapours are likely to occur.
5. Use a suitable barrier cream which will give protection against mineral oil, lanolin based hand cream are usually very effective.
6. Never syphon mineral oil by mouth. If accidentally swallowed, call a doctor, do not induce vomiting.

NOTE: SMOKE/SMELL DURING INITIAL USAGE
Some parts of the cooker have been coated with a light covering of protective oil. During initial operation of the cooker, this may cause smoke/smell to be emitted and is normal and not a fault with the appliance, it is therefore advisable to open doors and or windows to allow for ventilation. Lift the lids to prevent staining the linings.

INTRODUCTION

To ensure the best performance from your Stanley Brandon. It should be serviced once a year; preferably at the start of the heating season.

This appliance must be commissioned by a Waterford Stanley Approved Engineer. Once the installation has been completed, contact the Waterford Stanley Service Department on 051-302222 to arrange the commission of same. Please have the serial number of the cooker available.

Failure to install and maintain the appliance correctly could lead to prosecution.

An additional flueway and combustion chamber clean halfway through the heating season may be necessary in some cases.

The Stanley Brandon cannot be serviced whilst hot, so both oven and boiler thermostats should be turned off on the evening before the service visit.

SERVICE SCHEDULE

Annual Service

During annual service flexible oil line, burner nozzles and burner head seals **MUST BE CHANGED.**

WIRING: Ensure there is no damage or loose connections. This should be carried out by a competent engineer.

BURNER REMOVAL - for cleaning and inspection.
CLEANING - Boiler heat exchanger, flueways, oven and hotplate flueways together with ceramic fibre burner chambers.
BURNER SERVICING
OIL PUMP SERVICING - Cleaning of fuel line strainer.
RE-COMMISSIONING
REPLACEMENT PARTS

Oven Door Fit - Both doors must be checked and adjusted if necessary to ensure the alignment with the door catch is correct, the keep is secure and the oven is sealed when the door is closed.

Additional Flueway Clean
It may be necessary in some installations to give the boiler flueways a clean out at the end of the heating season.

This appliance **MUST** be serviced at regular 12 monthly intervals to optimise its safety, efficiency and performance.

Burner Removal

PREPARATION

WARNING: BEFORE REMOVING SERVICE ACCESS COVERS OR THE OIL BURNER ENSURE THAT ALL ELECTRICAL SUPPLIES TO THE APPLIANCE HAVE BEEN ISOLATED.

The burners can be removed without disconnecting the oil supply pipe. However if the filters are being cleaned or a pressure gauge fitted to the pump then the oil supply should be turned OFF and arrangements made to catch any oil which will leak from the oil pump.

BURNER ACCESS

SEE FIG. 1

1. Open up the bottom burner access door. Remove door and put in a safe place.
2. Remove 4 inner panel securing screws and remove panel.
3. Remove the 3 plinth securing screws and remove plinth.

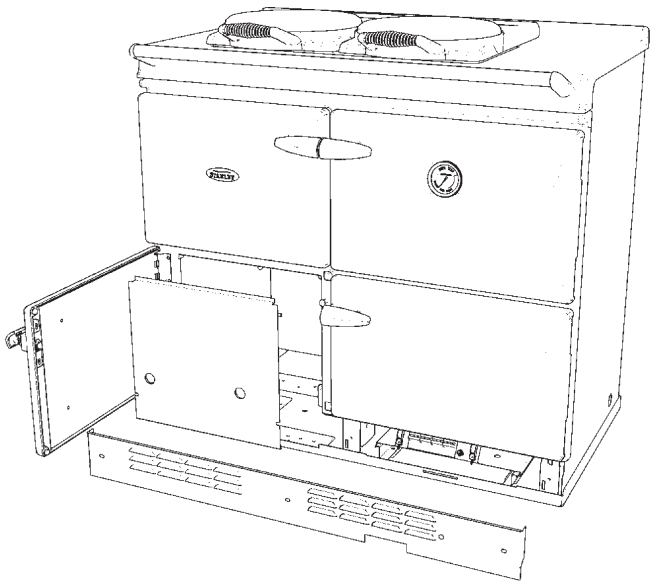


Fig. 1 DESN 515985

BURNER REMOVAL

IMPORTANT: DURING BURNER REMOVAL CARE MUST BE TAKEN NOT TO DAMAGE THE CERAMIC FIBRE INSULATION.

SEE FIGS. 2 and 3

BOILER BURNER

1. Place a sheet on the floor in front of the cooker to act as a working area.
2. Remove lower LH door and burner aperture cover and store in a safe place.
3. Unscrew jubilee clip and remove flexi air intake pipe from burner.
4. Using a 13mm spanner, remove top securing bolt and remove burner by rotating it approximately 90° counterclockwise and drawing it away from the boiler.

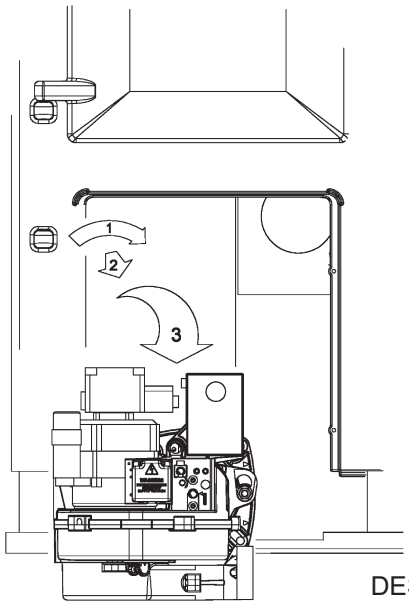


Fig. 2 DESN 515960

COOKER BURNER

1. Unscrew jubilee clip and remove flexi air intake.

2. Using a 13mm spanner, unscrew top securing bolt and remove burner by rotating clockwise and drawing away from under the cooker.

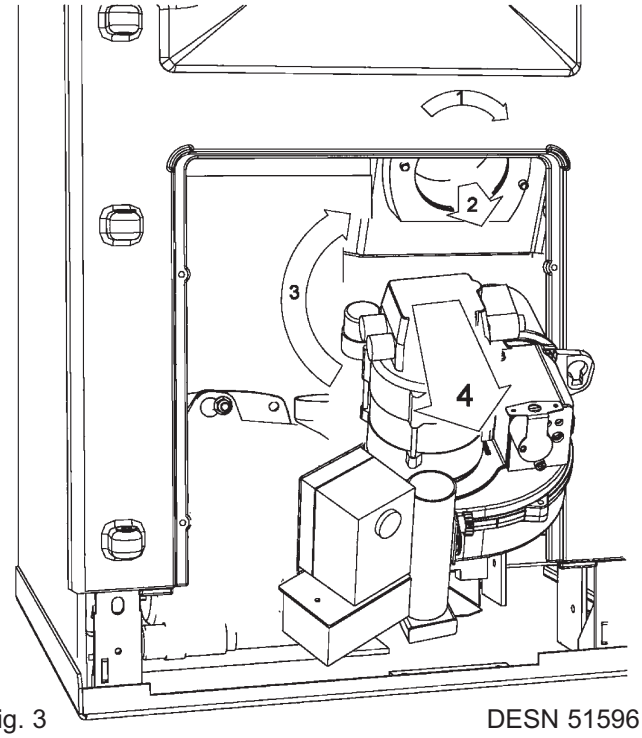


Fig. 3 DESN 515961

Cleaning

HEAT EXCHANGER CLEANING

IMPORTANT DURING CLEANING CARE MUST BE TAKEN NOT TO DAMAGE THE CERAMIC FIBRE INSULATION.

SEE FIG. 4

1. Remove top LH door and facia glass. Remove 2 fixing screws from control panel chassis and hinge open.
2. Remove lower bolt from control panel fixing bracket and pivot bracket upwards, away from boiler access door.

SEE FIG. 5

1. Remove four securing nuts and withdraw access door from below through burner aperture.
2. Remove stack of 5 sheet metal baffles, check assembly and replace as shown in Fig. 6.
3. Check aluminium twisted baffles are in position and there are 28 baffles, one in each recuperator tube. **NOTE:** LH set of 4 x aluminium twisted baffles are half length.
4. When replacing access door, tighten the 4 fixing screws to a torque setting of 7.5 NM.
5. Check condensate trap and clean as necessary.

CONDENSATE TRAP CLEANING

1. Check and clean condensate trap as necessary.

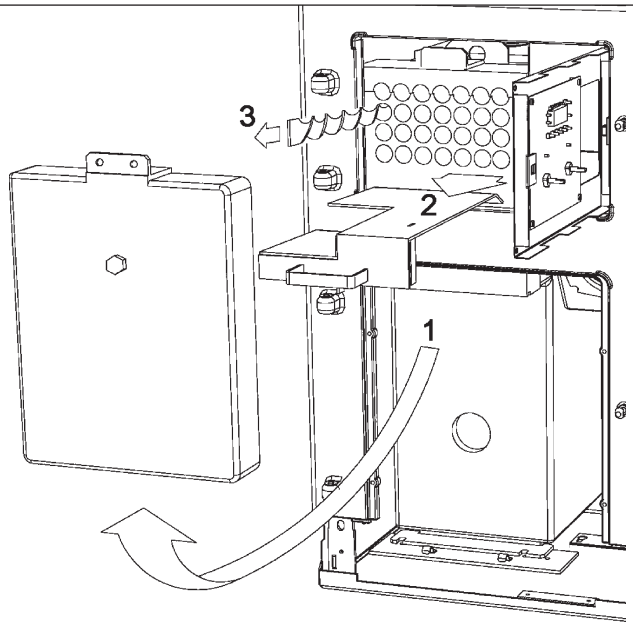


Fig. 4 DESN 515950

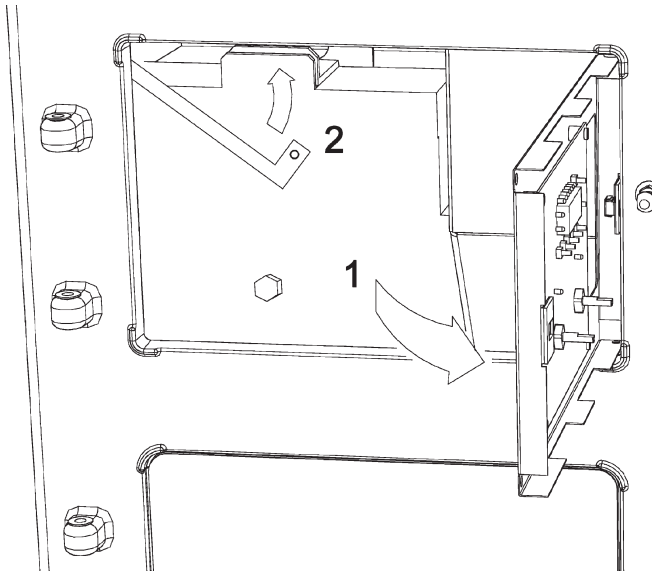
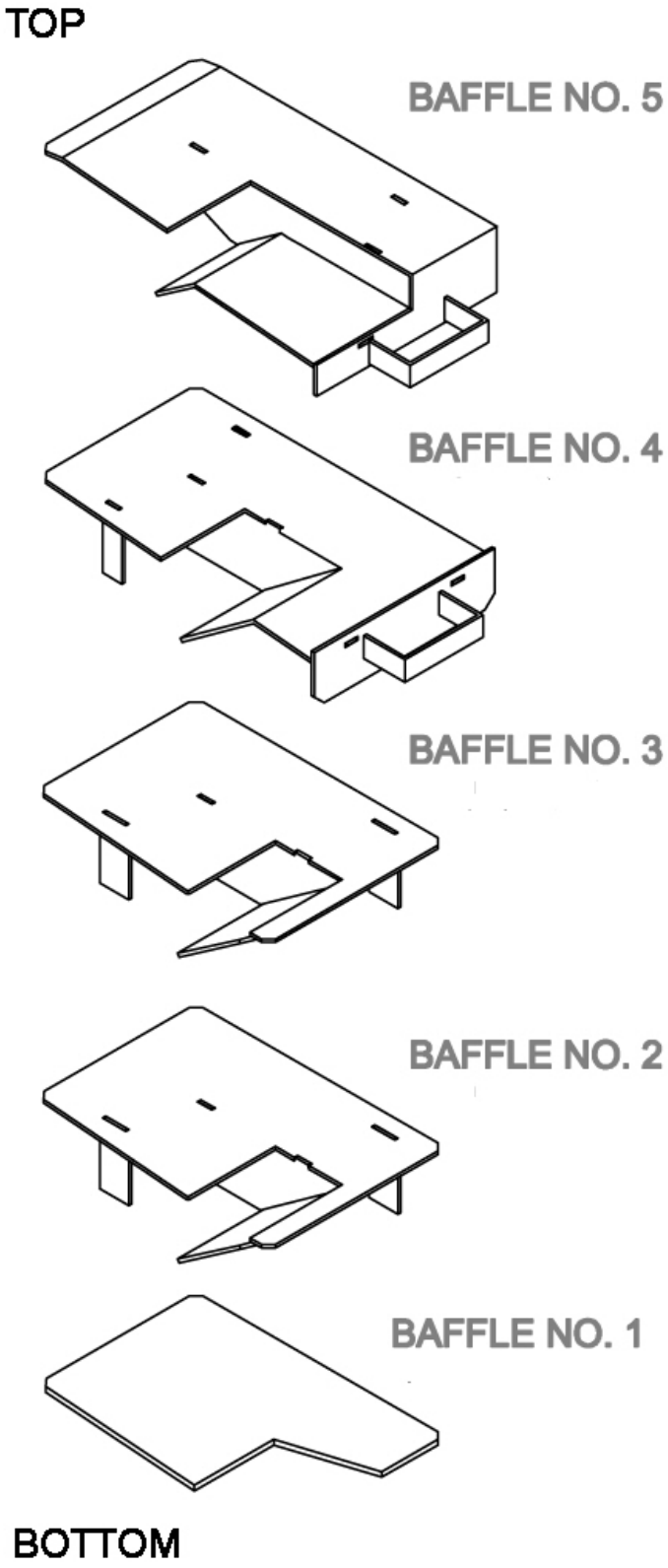


Fig. 5 DESN 516337



ALL BAFFLES MUST BE STACKED IN PLACE AS DIAGRAM ABOVE

Fig. 6

Cleaning

OVEN & HOTPLATE FLUEWAY CLEANING

SEE FIGS 7 & 8

1. Remove the top oven door and place in a safe position.
2. Remove side and base access doors (complete with gaskets) using hex. driver.
3. Thoroughly clean top, side and base flueways through access apertures with brush.
4. Remove all debris with vacuum cleaner.
5. Replace side and base access doors (replace gaskets if necessary). Secure in position using hex. driver.
6. **TO REMOVE THE HOTPLATE:** Remove nut and washer from inside the roasting oven, top left hand side. Unscrew 2 countersunk hex. screws, insert lifting eyes and lift hotplate out with hooks provided.
7. Brush and clean in between hotplate ribs on underside.
8. Examine soft rope seal located around hotplate aperture in top plate and two rope seals on hotspot. Replace if frayed or damaged.
9. Replace hotplate ensuring the underside ribs are on the LH side and that it seals to the top plate.

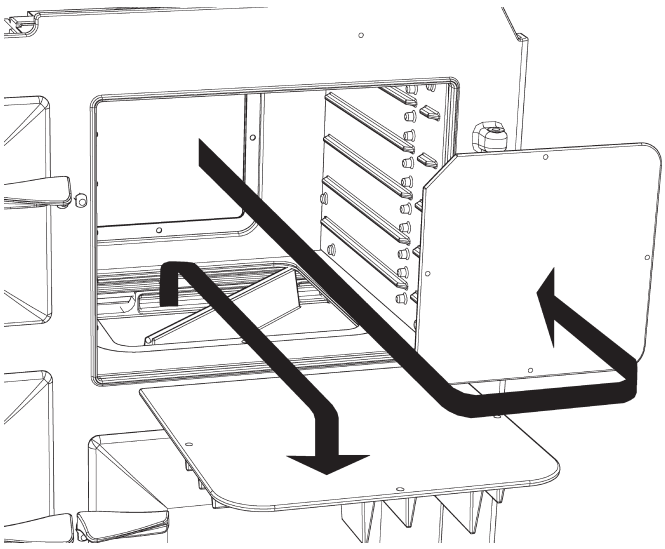


Fig. 7 DESN 515764

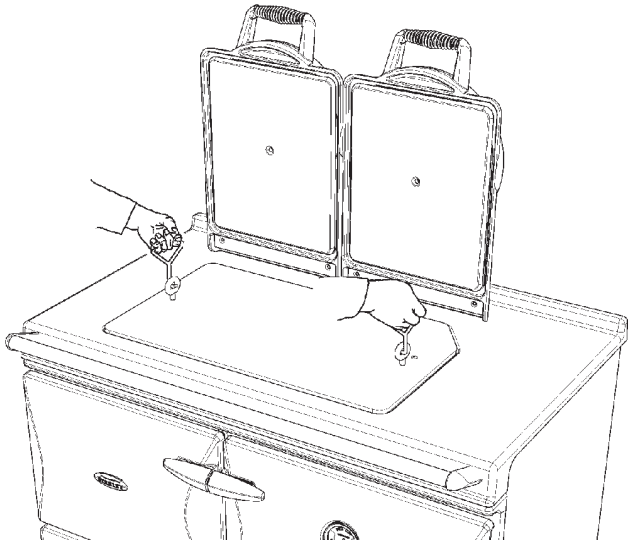


Fig. 8 DESN 515991

INTRODUCTION

SEE FIGS. 9, 10 & 11

It is recommended that each side of the burner is serviced individually so as not to get the components from the two burners mixed up.

The correct combination of burner blast tubes are shown.

To remove blast tube, slacken two grub screws, pull forward.

COOKER/BOILER BURNER

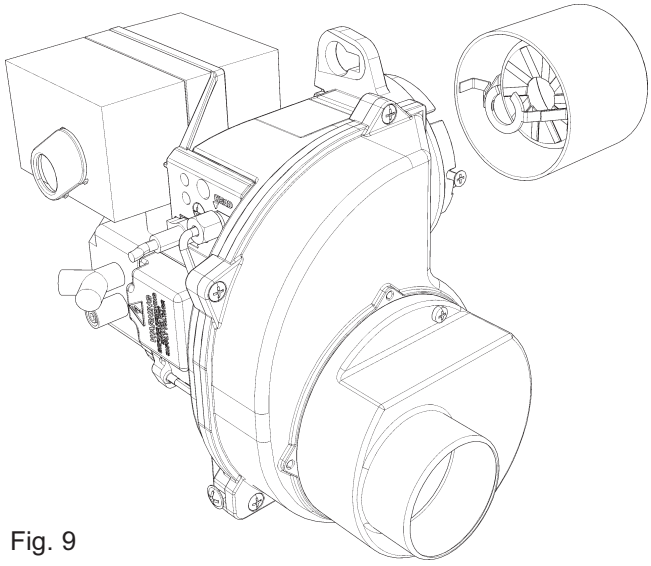
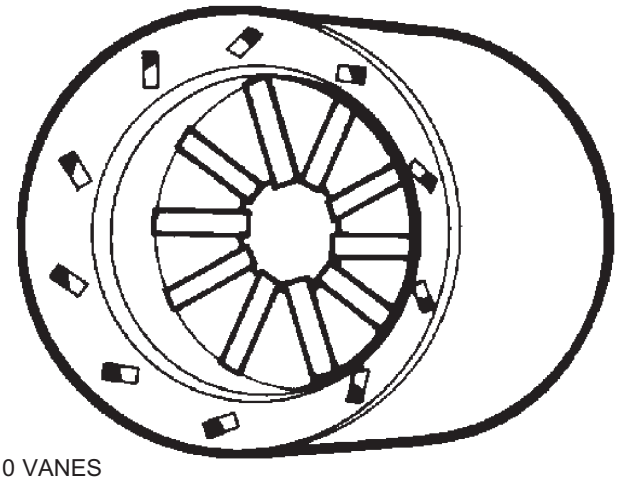


Fig. 9

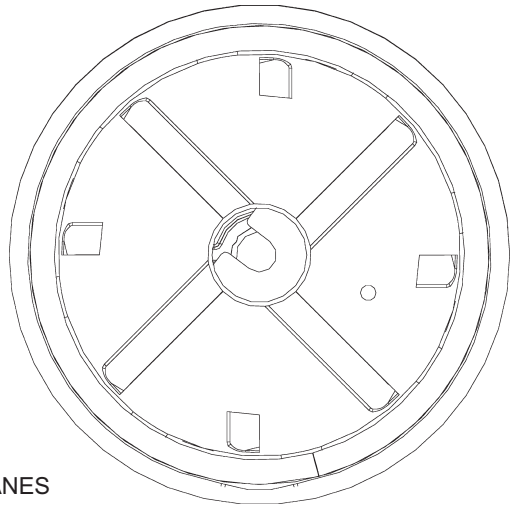
COOKER/BOILER = Countersunk screws in tube



10 VANES

COOKER BURNER

Fig. 10 DESN 515977



4 VANES

BOILER BURNER

Fig. 11 DESN 515963

BURNER NOZZLE REMOVAL

SEE FIG. 12

COOKER

1. Remove two countersunk head screws and remove blast tube, carefully feeding the HT leads through the rear of the burner.
2. Remove two screws and slide out nozzle support cradle complete with ignitor assembly from burner head.
3. Unscrew nozzle from its holder with a correctly fitting tubular spanner to avoid damage to hexagon.

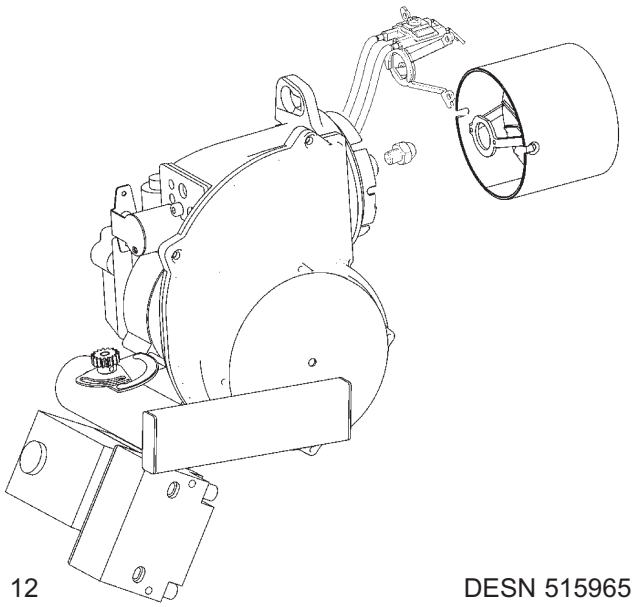


Fig. 12 DESN 515965

BOILER

SEE FIG. 13

1. Release two countersunk head screws and remove blast tube.
2. Remove two screws and slide out nozzle support cradle complete with ignitor assembly from burner head.
3. Unscrew nozzle from its holder with a correctly fitting tubular spanner to avoid damage to hexagon.

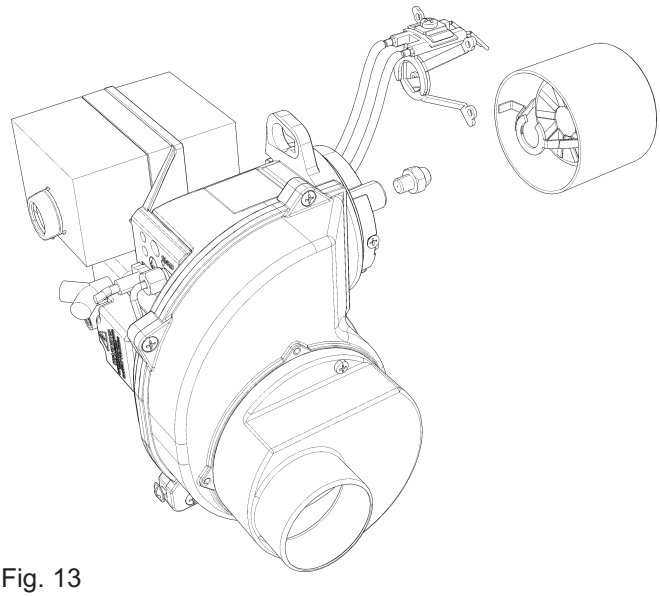


Fig. 13

BURNER NOZZLE REPLACEMENT

SEE FIG. 14

1. Replace nozzle with a new one of the same make and specification.
2. Ensure that mating faces are clean.
3. Hold nozzle holder with correct spanner when tightening the nozzle.
4. Typically finger tight plus 1/4 turn with spanner is sufficient.
   DO NOT OVERTIGHTEN.
5. Ensure electrode gaps are correct.

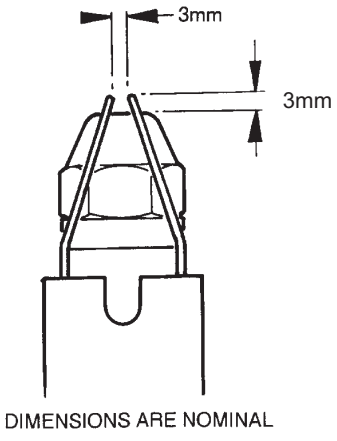


Fig. 14 DESN 510538

PHOTO ELECTRIC CELL (PEC) CLEANING

SEE FIG. 15

Withdraw Photo Electric Cell from the burner head. Clean PEC sensing end with a soft cloth taking care not to scratch the light sensitive body. Re-insert PEC taking care to insert the correct way round.

Should the cell show signs of distortion or cracking, replacement will be necessary. See PEC Replacement, Page 19.

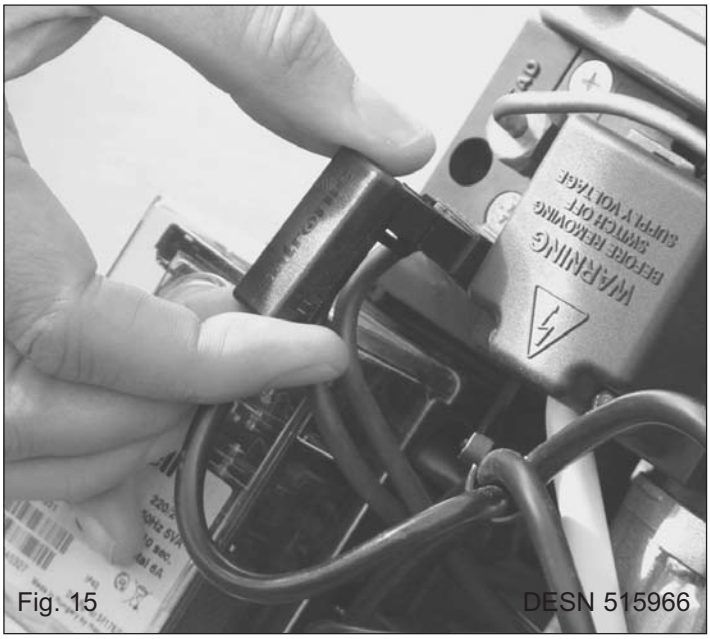


Fig. 15 DESN 515966

FAN CLEANING

SEE FIG. 16

1. Remove two screws and air inlet snorkel.
2. Remove four screws and split fan case.
3. Clean between the blades of the fan impeller with a small brush and remove any residue.

RE-ASSEMBLE BURNER

Re-assemble the burner in reverse order.

COOKER/BOILER FAN

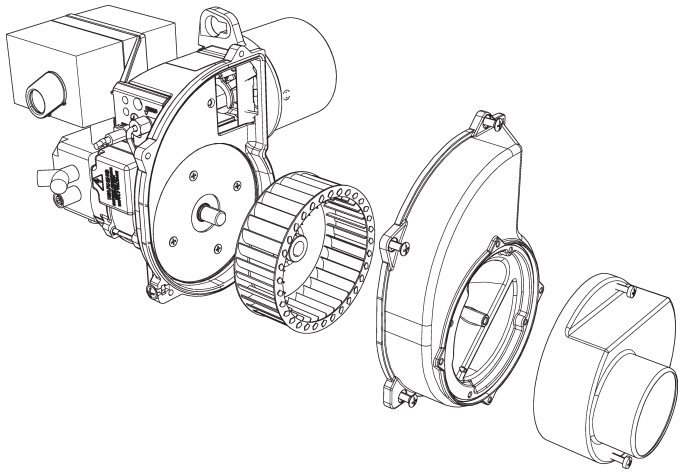


Fig. 16

Oil Pump Servicing

INTRODUCTION

To carry out any servicing on the oil pump. Turn off the oil line isolating valve near to the appliance.

OIL PUMP STRAINER CLEANING

SEE FIG. 17

1. A container must be put under the pump to catch any oil when starting to clean the oil pump strainer.
2. Remove 4 socket head screws.
3. Remove filter.
4. Wash with clean kerosene.
5. Re-assemble in reverse order.

OIL LINE FILTER CLEANING

1. Turn OFF the line isolating valve fitted prior to the oil line filter.
2. Follow manufacturers instructions to remove filter element from the housing, taking care to collect kerosene residue from the filter housing.
3. Wash filter thoroughly in clean kerosene.
4. Re-assemble in reverse order.

NOTE: Flexible fuel hose (s) must be replaced at each service, ie annually.

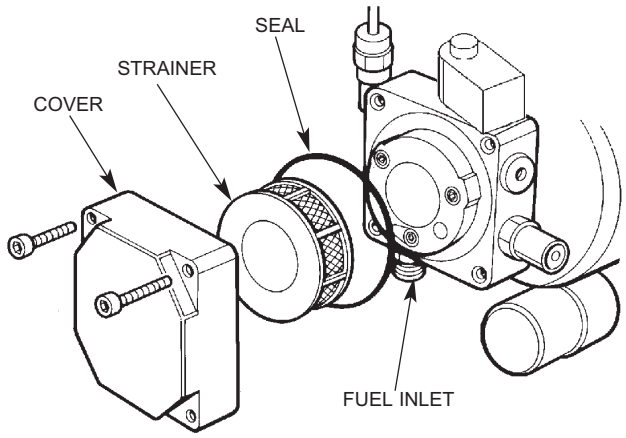


Fig. 17 DESN 512002 A

BLEED AIR FROM OIL SUPPLY

Disconnect the flexible oil pipe line at the pump inlet, open the stop valve slowly and run off some of the oil into a receptacle to establish an air free supply to the pump. Re-make the connection oil tight and leave valve open.

FIT PRESSURE GAUGE

Remove the bleed screw from the manifold and fit an oil pressure gauge with R1/8 connection to check the pump output pressure.

SWITCH ON ELECTRICITY

Set the boiler burner time clock to continuous and turn the boiler thermostat to maximum. The boiler burner should run on pre-purge for 7-15 seconds. With the ignition spark energised. The oil solenoid valve should open allowing the burner to fire.

Until all the air from the oil pump is flushed out there may be some flame instability, resulting in the burner locking out. This will be shown by the burner stopping and the illumination of the signal light in the reset button of the control box (See Fig. 18). **IN THIS EVENT, WAIT AT LEAST ONE MINUTE**, then press the re-set button to restart.

VENT OIL PUMP

SEE FIG. 18

Whilst the burner is running, vent air from the pump by slackening the pressure gauge port sufficiently to allow air to bleed out. When bubble free oil seeps out, re-tighten.

ADJUST OIL PRESSURE

SEE FIG. 19

With the burner running check the oil pressure on the pressure gauge.
If the pressure gauge is not indicating the correct reading, then adjust the pressure by turning the pressure regulator clockwise to increase or anti-clockwise to decrease the pressure until the pressure gauge reads:

BOILER - 8.5 bar (125lbf/ln^2)

COOKER - 10 bar (145lbf/ln^2)

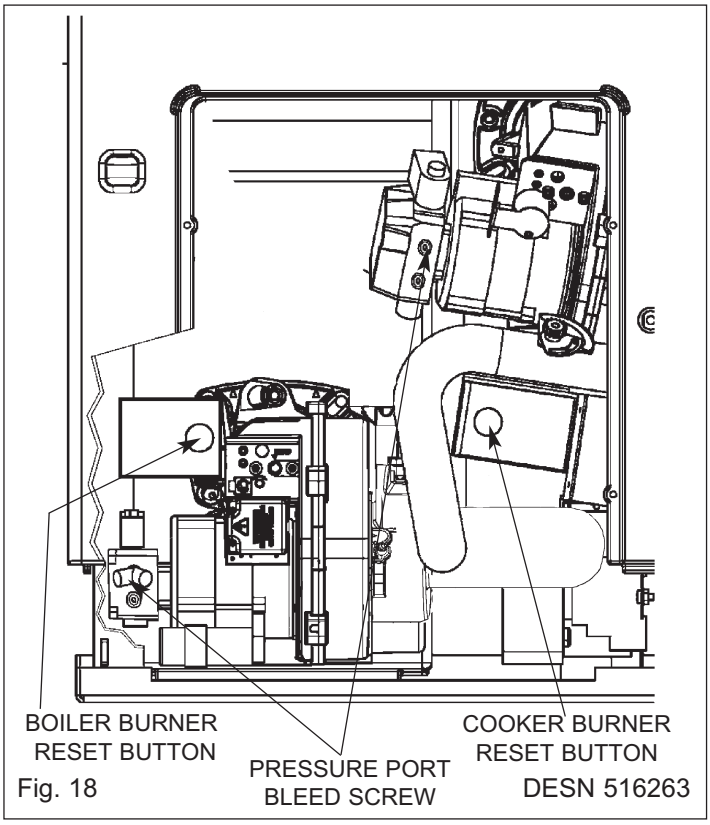


Fig. 18

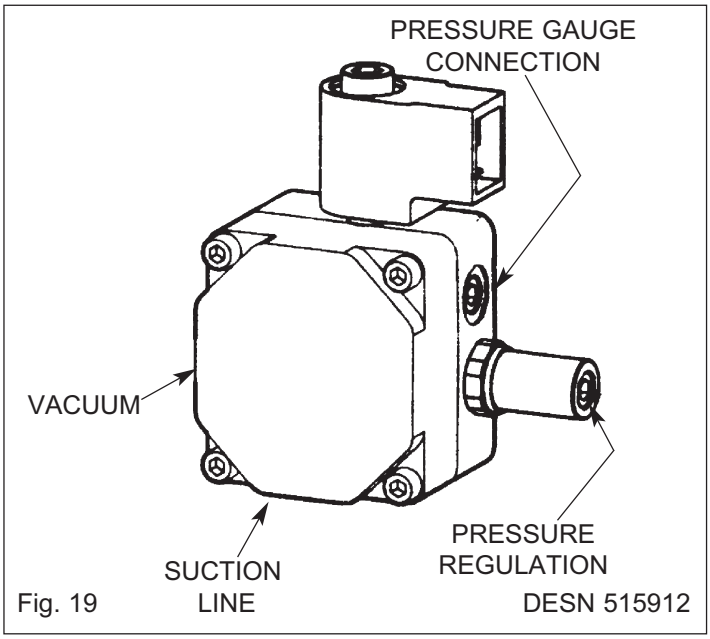


Fig. 19

Re-commissioning

SET COMBUSTION AIR

SEE FIG. 20 & 21

After 15 minutes of the boiler burner running:

1. Remove top LH door, store in a safe place.
2. Open control door.
3. Remove the plugging screw and insert the sensing end of a portable indicator to check the CO_2 (Carbon Dioxide) level. Adjust the boiler burner air intake until a reading of 11.0/11.5% is recorded on the indicator.

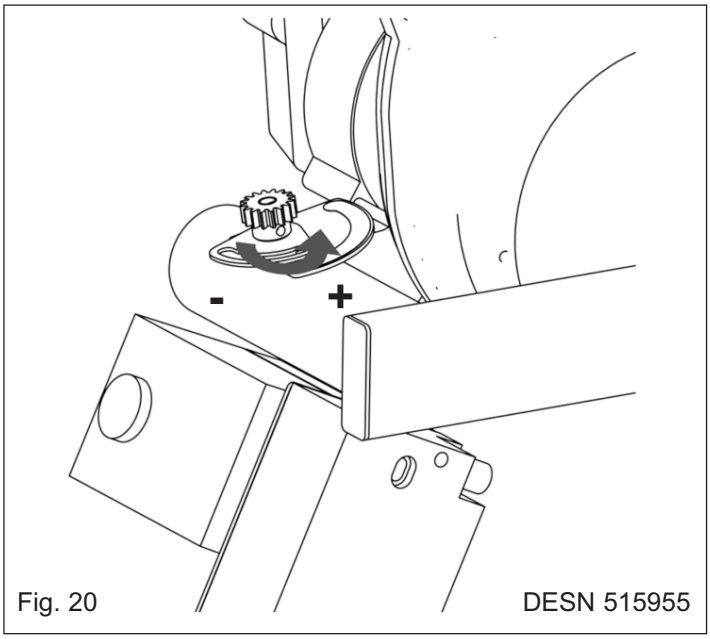


Fig. 20 DESN 515955

CHECK SMOKE

SEE FIG. 21

Remove the CO_2 sampling tube and using the same hole for flue sampling, insert the sensing end of a Baccarach Smoke Pump and check that the smoke in the boiler flueways does not exceed No. 2 on the scale.
Replace the plugging screw and plug.
Switch off the boiler burner.

COOKER BURNER - SEE FIG. 21

Switch on cooker burner.
After 15 minutes of the cooker burner running.
Repeat the above procedures for the cooker burner. To sample the flue gases from the cooker burner lift up the RH insulating cover and remove the countersunk headed screw in the hotplate. The cooker burner should be set to 11.0/11.5% maximum Smoke No. 2.

Replace the countersunk headed screw on completion ensuring that it will not interfere with any pots and pans placed on the hotplate.

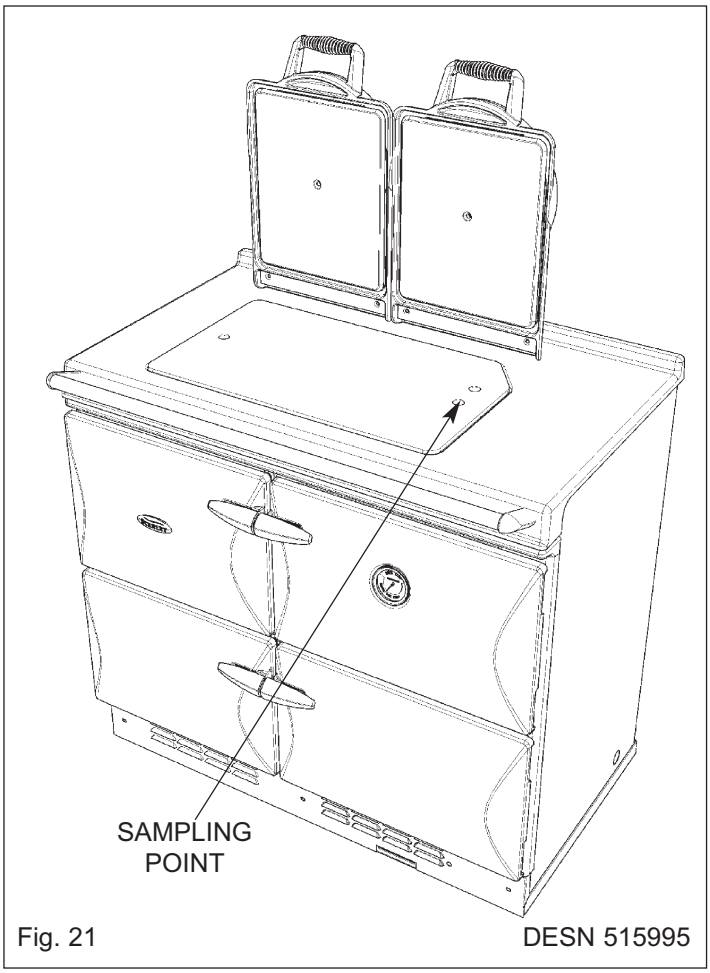


Fig. 21 DESN 515995

FAN MOTOR

SEE FIG. 22

Follow instructions in sections BURNER ACCESS, Steps 1 to 3 and BURNER REMOVAL.

1. Isolate electric supply.
2. Remove 3-pin plug.
3. Remove solenoid plug.
4. Disconnect oil pipe.
5. Undo 2 screws and remove snorkel.
6. Remove 4 countersunk screws from fan case and split the case.
7. Remove grub screw and withdraw fan.
8. Remove 4 countersunk screws and remove fan motor from case.
9. Remove 3 socket head screws and withdraw pump.
10. Re-assemble in reverse order.

NOTE: Ensure that gaskets and seals are in place and in good condition.

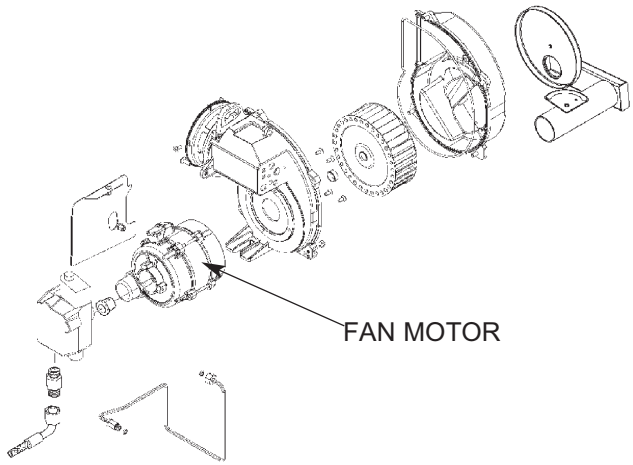


Fig. 22 DESN 515970

IGNITION ELECTRODES

SEE FIG. 23

1. Release two countersunk head screws and remove blast tube.
2. Remove two screws and slide out nozzle support cradle c/w ignitor assembly from burner head.
3. Disconnect ignition leads.
4. Remove ignitor assembly by removing countersunk screw and clamp.
5. Fit new ignition electrode assembly, re-assemble in reverse order.
6. Check electrode gap and reset if necessary.

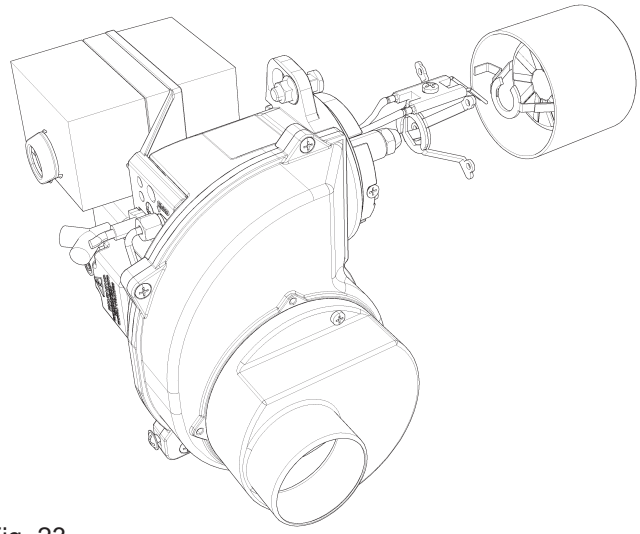


Fig. 23

Replacement of parts (Burner)

IGNITOR

SEE FIG. 24

Follow instructions in sections BURNER ACCESS, Steps 1 to 3, and BURNER REMOVAL.

1. Remove both HT leads from ignitor.
2. Remove mains plug from ignitor.
3. Remove 2 ignitor securing screws.
4. Remove ignitor.
5. Fit new ignitor, re-assemble in reverse order.

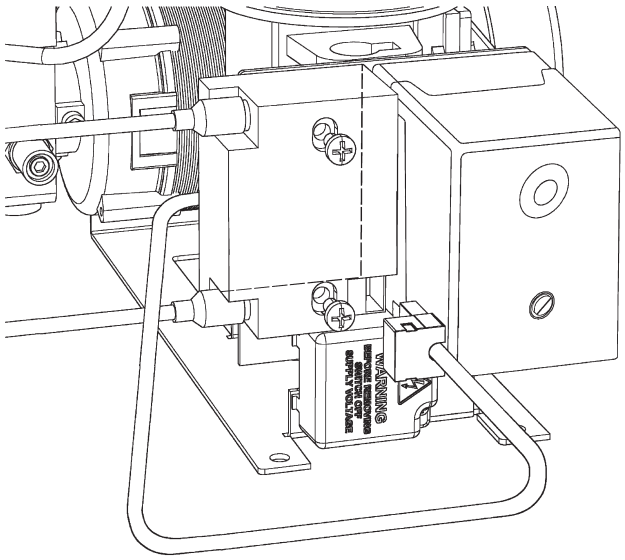


Fig. 24 DESN 516265

SOLENOID COIL

SEE FIG. 25

Follow instructions in sections BURNER ACCESS, Steps 1 to 3, and BURNER REMOVAL.

1. Remove plug.
2. Remove solenoid securing nut and washer.
3. Remove solenoid coil.
4. Fit new solenoid coil, re-assemble in reverse order.

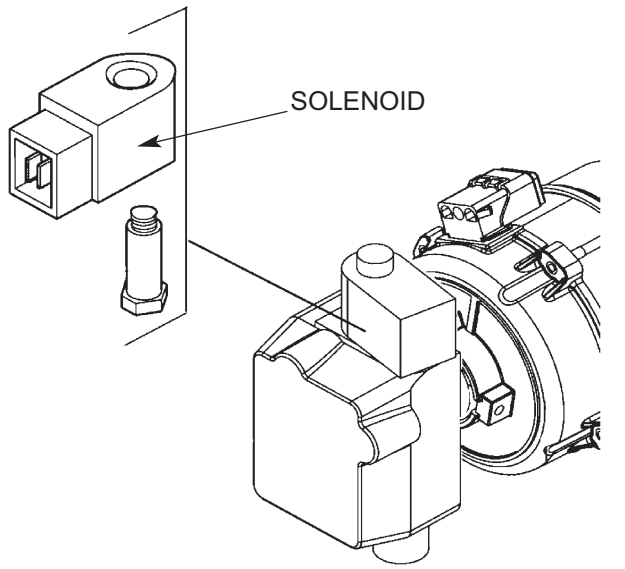


Fig. 25 DESN 515972

CONTROL BOX

SEE FIG. 26

Follow instructions in section BURNER ACCESS, Steps 1 to 3.

1. Undo central fixing screw.
2. Gently pull control box away from base.
3. Fit new control box, re-assemble in reverse order.

Fig. 26 DESN 515973

PEC

SEE FIG. 27

Follow instructions in section BURNER ACCESS, Steps 1 to 3.

1. Withdraw PEC from burner head.
2. Push in retaining clip and remove PEC from plug.
3. Fit new PEC.
4. Re-attach plug and re-insert PEC taking care to insert the correct way round.

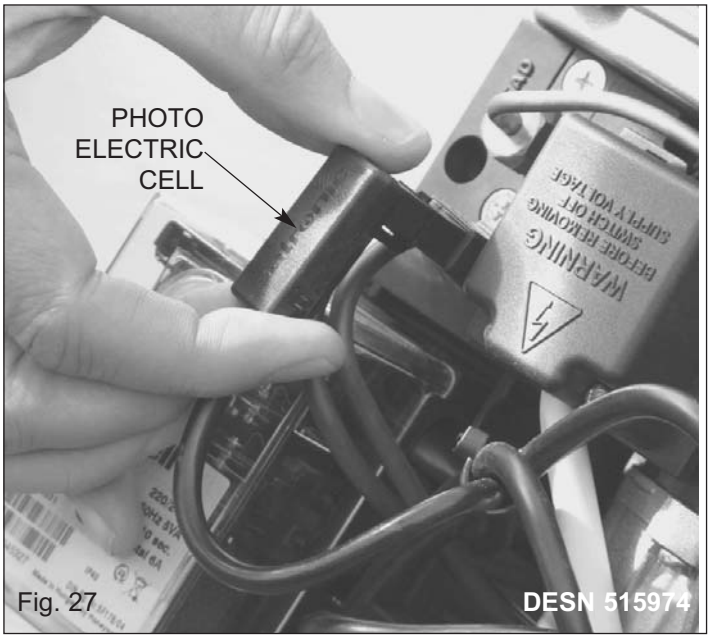


Fig. 27 DESN 515974

Replacement of parts (Burner)

PUMP ACCESS

SEE FIG. 28

Follow instructions in section BURNER ACCESS, Steps 1 to 3 and BURNER REMOVAL.

1. Isolate fuel supply.
2. Disconnect flexible hose (This must be replaced annually).
3. Remove solenoid plug.
4. Remove feed pipe.
5. Slacken three securing screws and remove pump.
6. Check drive, replace if worn or damaged.
7. Replace pump, re-assemble in reverse order.

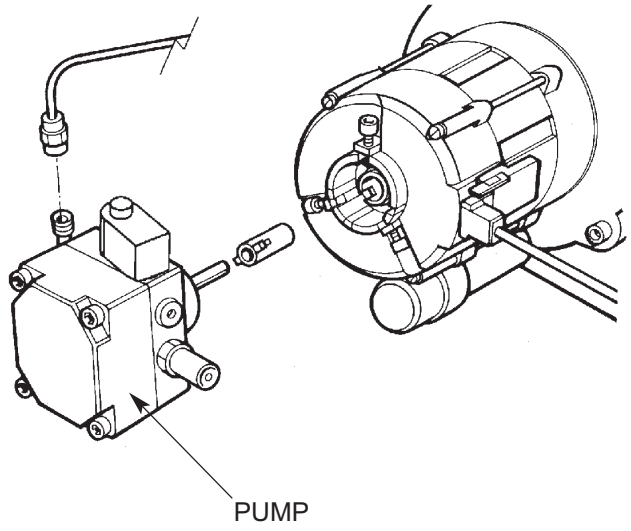


Fig. 28 DESN 515976

ELECTRICAL COMPONENT ACCESS

BEFORE REMOVING SERVICE ACCESS COVERS ENSURE THAT ALL ELECTRICAL ACCESS TO THE APPLIANCE HAS BEEN SWITCHED OFF (SWITCH OFF AND REMOVE PLUG).

SEE FIG. 29

1. Remove the controls door and place in a safe position.
2. Remove both thermostat control knobs.
3. Remove the 2 cover panel fixing screws.
4. Remove glass cover panel and place in a safe position.
5. Remove the two control panel fixing screws.
6. Pull open facia controls chassis (hinged on RH side) and remove 3 pin plug from rear of control board.

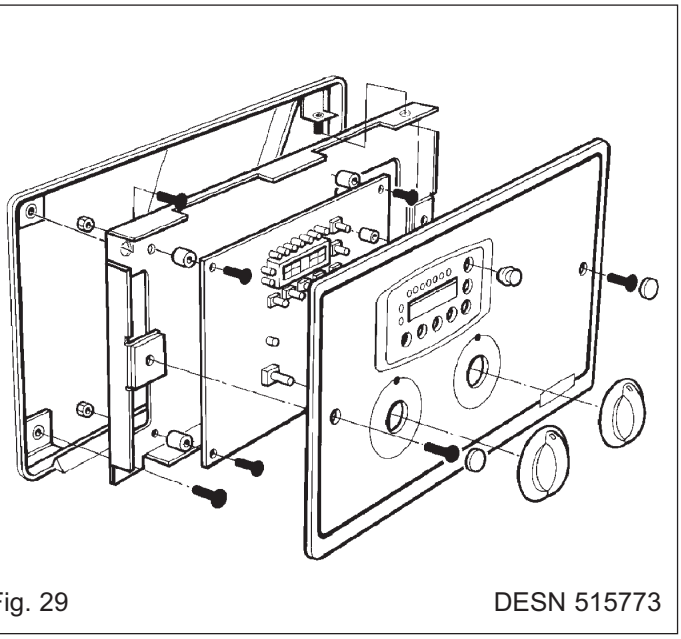


Fig. 29 DESN 515773

RE-ASSEMBLE

1. Re-attach the 3-pin plug.
2. Close facia controls chassis and secure with the 2 screws.
3. Refit the outer panel in position and secure with the 2 screws.
4. Replace the thermostat knobs.
5. Replace the controls door.

CONTROL CIRCUIT-EXTERNAL

SEE FIG. 30

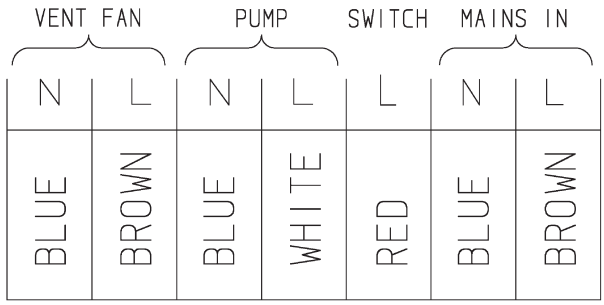


Fig. 30 DESN 515951

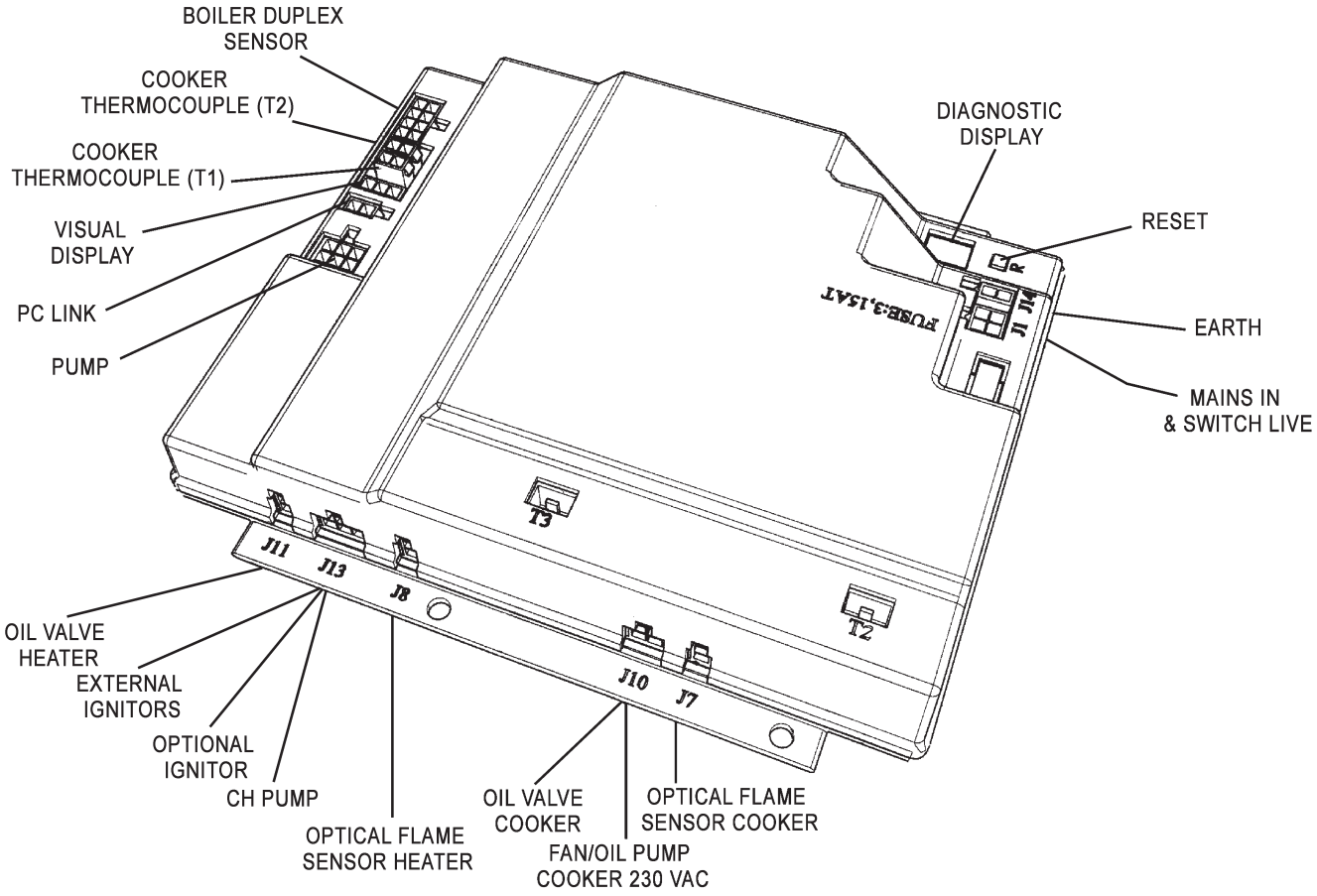


Fig. 31

DESN 514774

Stanley Brandon 80 CD C/F
Wiring Diagram 111MB for Individual Satronic boxes

KEY - APPLIANCE
G/Y - GREEN/YELLOW
BL - BLUE
BR - BROWN
W - WHITE
R - RED
BK - BLACK
G - GREEN
P - PINK
PL - PURPLE
GR - GREY
Y - YELLOW

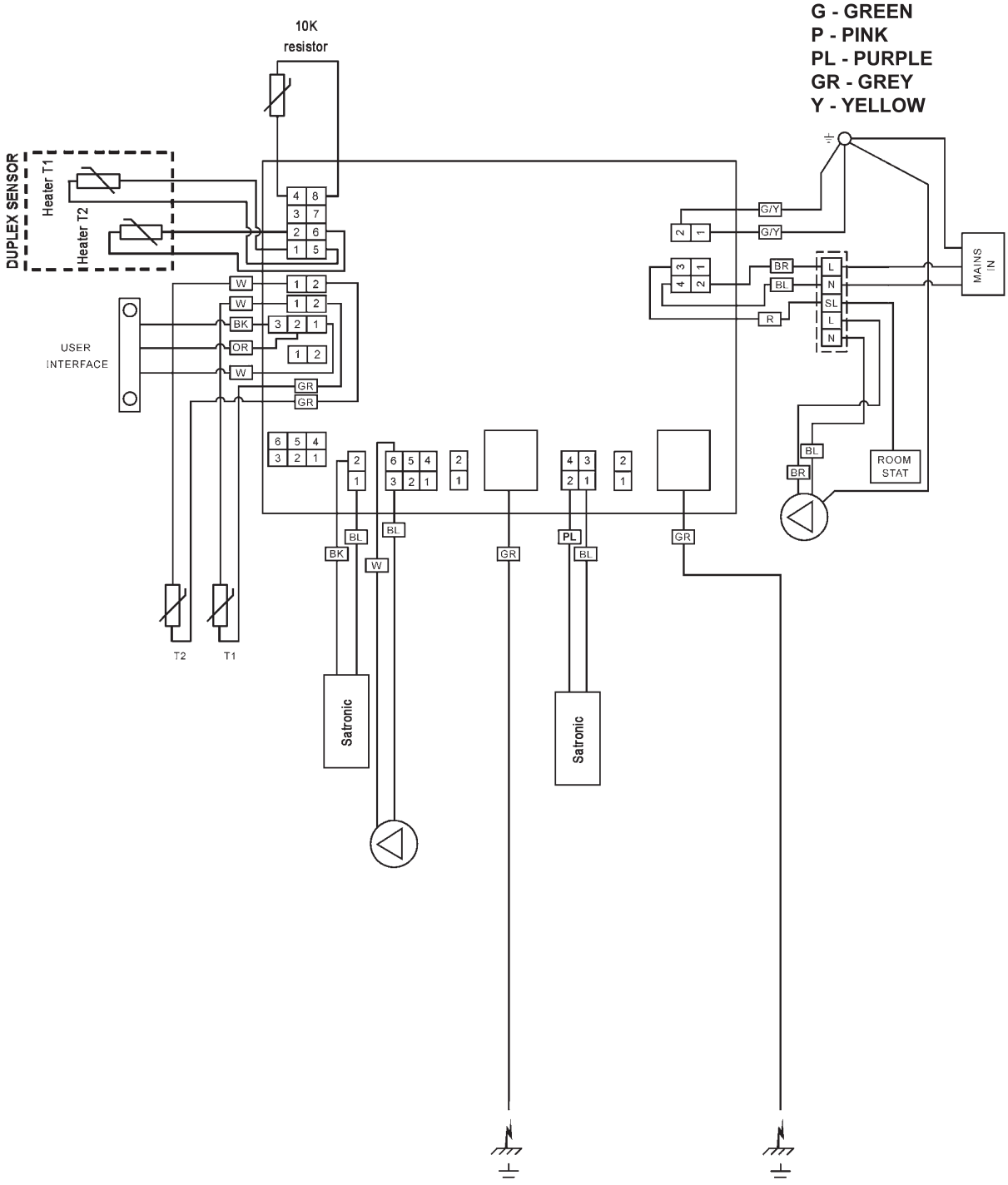


Fig. 32

Fault Finding

BURNER DOES NOT START

Burners

Check that the burner has not gone to lock-out.

Causes of lock-out can be:-

- No ignition, ignition electrode incorrectly positioned, insulation cracked, spark generator fault.
- No oil supply.
- Poor combustion.
- Photo electric cell incorrectly positioned, cracked or needs cleaning.
- Live and Neutral connections reversed.
- Faulty control box.
- Faulty fire valve.
- Faulty relays.

REFER TO FLOW DIAGRAM FOR ELIMINATION PROCEDURE.

General

You can carry out some checks on the controls before you need to access the controls compartment behind the controls door.

If only one of the burners is not running then the fault must be after the safety overheat thermostat.
Conversely of both the burners are affected then the fault lies before the programmer connections.

For access to individual controls refer to section Replacement Parts and for wiring continuity checks refer to Fig. 32 wiring diagrams.

To check out the electrical wiring at the burners you will first have to access the burner chamber. Use the following procedure:-

1. Isolate the electrical power supply.
2. Open up the bottom burner access door. Remove door and put in a safe place.
3. Unscrew the 4 screws holding the inner panel in place and remove panel.
4. Unscrew the 3 screws holding the louvered plinth in place and remove plinth.

The external mains connections are made to a terminal block situated in the front left-hand corner of the burner chamber. Re-connect the electrical supply and check that there is 230V power supply available across the mains input connection L & N on the terminal block, if not then check connecting leads, fuses and whether power is available at mains plug.

Error Table

In the next tables a description of the different errors is given Errors can be divided in two groups. Blocking errors will disappear when error is gone, and non-volatile locking errors can only be reset by the reset button.
A blocking error is indicated with an ‘E’ prior to the error number. A locking error is indicated with an ‘A’ prior to the error number. A detailed description of the different error codes is given below.

Non volatile locking errors

Locking errors are indicated with an ‘A’ alternating with the error code.

‘A’ code	Int nr.	Error	Description
1	1 20 21 24	Too many flame errors on cooker	No flame detected after three ignition attempts for cooker or three flame losses in one hour (dot on display is on when flame loss is detected)
2	2 19 25	Too many flame errors on heater	No flame detected after three ignition attempts for heater or three flame losses in one hour (dot on display is on when flame loss is detected)
3	15	Overheat detected on heater	Heater-flow sensor (*Heater_T1*) was above 95°C.
4	7 16	Overheat error detected on cooker	Cooker temperature was above 270°C with the burner on.
5	17	Sensor difference detected on cooker or heater	Cooker sensors deviated more than 20°C for a period of 10 minutes. Heater sensors deviated more than 10°C for a period of 1 minute.
6	n/a		n/a
7	n/a	Spare error number	n/a
8	10	E2prom version incorrect	Parameter settings are incorrect.
9		Internal board error	Error on PCB

Blocking errors

Blocking errors are indicated with an ‘E’ alternating with the error code

‘E’ code	Int nr.	Error	Description
1	55 56 63 64	Heater flow error (open or shorted)	Heater flow sensor open or shorted (dot on displays is on when shorted).
2	52 60	Cooker_T1 error (open or shorted)	Cooker_T1 open or shorted (dot on displays is on when shorted).
3	51 59	Cooker_T2 error (open or shorted)	Cooker_T2 open or shorted (dot on displays is on when shorted).
4	44 45 46	Mains error	Phase and neutral exchanged. Bad earth connection. Wrong mains frequency.
5	36	Heater flame error	Unexplained flame detected.
6	37	Cooker flame error	Unexplained flame detected.
7	n/a	Spare error number	n/a
8	n/a	Spare error number	n/a
9		Internal board error	Error with PCB

Fault Finding

Cooker Burner (Control Box Type - DKO 970)

Information System

The information system communicates with the outside world using a LED (the used Flash Code is similar to the Morse Code). The messages are optically transmitted by flashing appropriately a LED. Using an (optional) additional terminal the messages can be recorded and displated in easily readable form.

Programming sequence display

The built-in microprocessor controls not only the programming sequence but the information system too. The individual phases of the programming sequence are displayed as Flash-Code.
The following messages can be distinguished.

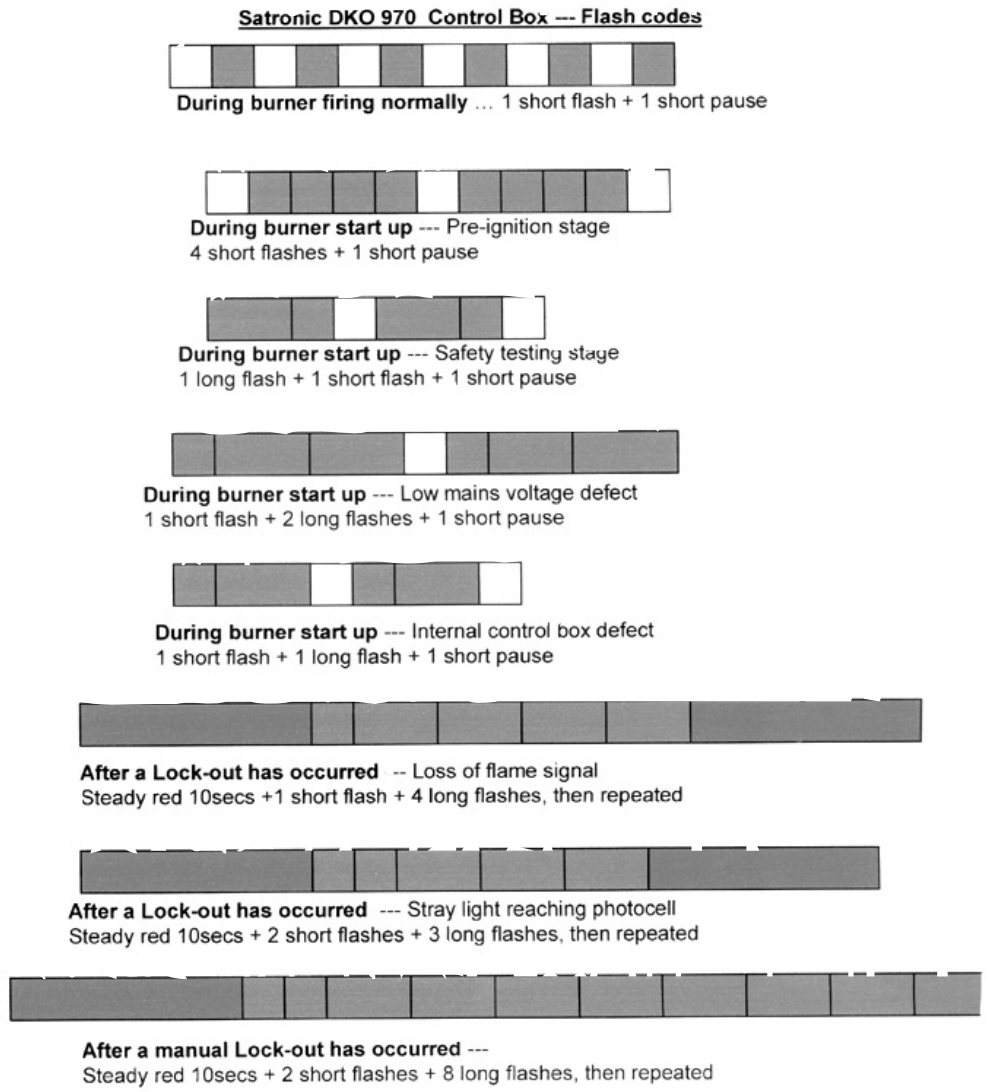
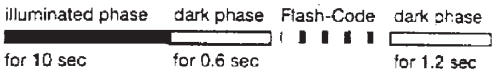


Fig. 33

Cooker Burner (Control Box Type - DKO 970)

In case of failure the LED is permanently illuminated. Every 10 seconds the illumination is interrupted by a flash code which indicates the cause of the error. Therefore the following sequence is performed which is repeated as long as the unit is not reset.

Sequence:



Error diagnosis

Error message	Flash-Code	Possible fault
lockout	I ▮ ▮ ▮ ▮	within lock out safety time no flame establishment
stray light	I I ▮ ▮ ▮	stray light during monitored phase, detector may be faulty

Flash-Code for manual lock out

manual/external lock out (see also 3. lock out and reset)	I I ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮

Stray Light Monitoring

The stray light check is performed at the end of the pre-purge time for the duration as mentioned in the table of timings.

Low-voltage protection

at 220 / 240V (110 / 120V) nominal voltage

The mains voltage has to be more than 187V_{eff} (94V_{eff}) in order to allow the unit to perform a start-up.
The mains voltage is not only mentioned in the start-up phase but also permanently during operation. If the voltage drops below <160V_{eff} (80V_{eff}) during start-up or run time the control box goes into lock-out mode. If the voltage rises again, the control box performs automatically a start-up as soon as the mains voltage is >187V_{eff} (94V_{eff}).

Table of timings (sec.)

Model	Pre-purge and pre-ignition time **tv1**	stray light monitoring **tf**	safety time **ts**	post-ignition time after V1 **tn**	delay time to V2 DKO 972 only **tv2**
05	15	5	5	7	20

Fault Finding

Cooker Burner (Control Box Type DKO 970N) - Information System

The information system is microprocessor based and reports on all aspects of burner control box operation and flame supervision. It informs about the actual programming sequence the unit is just performing. Besides monitoring of the programming sequence it also allows to identify errors during start-up operation without any additional testing devices. The automatically performed diagnoses is a valuable tool which facilitates service/maintenance work and therefore saves costs. The analyses of the error cause can be done directly on stage or if not possible afterwards at the lockout reason is stored in a non-volatile lock out mode memory.

The information system communicates with the outside world using a LED (the used Flash-Code is similar to the Morse-Code). The messages are optically transmitted by flashing appropriately a LED. Using an (optional) additional terminal the messages can be recorded and displayed in easy readable form.

Programming sequence display

The built-in microprocessor controls are not only the programming sequence but the information system too. The individual phases of the programming sequence are displayed as Flash-Code.

The following messages can be distinguished.

Message	Flash-Code
start	▮ ▮ ▮
burner in operation (from end of safety time)	▮
stop	▮ ▮ ▬ ▬

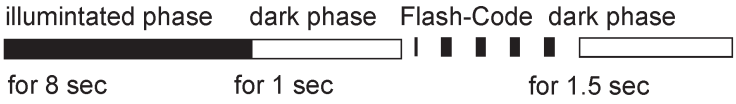
Description
▮ = short pulse
▬ = long pulse

Fig. 34 DESN 516837

Lock-out diagnoses

In case of failure the LED is permanently illuminated. Every 10 seconds the illumination is interrupted by a flash code, which indicates the cause of the error. Therefore the following sequence is performed which is repeated as long as the unit is not reset.

Sequence:



Blinking Codes: See Fig. 34A

Stray Light Monitoring

The stray light check is performed at the end of the pre-purge time for the duration as mentioned in the table of timings

Table of timings (sec.)

Model	Pre-purge and pre-ignition time tv1	stray light monitoring tf	safety time ts	post-ignition time after v1 tn	delay time to V2 DKO 972-N-only tv2
05	15	5	5	7	20

Blinkcode Dxx-N

1 Normal Operation

● —	Idle state, no heat demand
● — —	Power supply not ok (frequency or voltage)
● ● —	Start delay (cooling down ignition device, RT is on)
● ●	Waiting for FT-on, LW-off, LK-open
● ● ●	Burner is starting
●	Burner is in operation (from end of safety time)
● ● — —	Burner is stopping (e.g. in post-purge)

Code is sent every 5 s; in between the LED is off

2 Special Codes (no lock-out)

● ● ● ● ● ●	Device in Status „Parameter-Download“
● ● ● — — —	Parameter set for test; device will start only after release with serial communication
— — — — — —	“End of Life” warning

Code is sent every 5 s; in between the LED is off

3 Burner lock-out

— ●	False flame
● —	No flame at end of the safety time
● ● —	Flame failure in operation
— ● ●	Flame present after the end of operation phase
● ● ● —	No flame signal during ignition spark supervision
— ● ● ●	Two flame sensors connected
● — —	Air pressure switch (LW) opened during supervised phase
— — ●	Air pressure switch (LW) didn’t close
● — — —	Air pressure switch (LW) didn’t open
● ● — —	Oil pre-heater release temperature couldn’t be reached (FT didn’t close)
— — ● ●	Oil temperature below threshold during supervised phase (FT opened)
— — — —	Manual lock-out
● ● ● ●	Unknown errror code

Code is sent every 10 s; in between the LED is always on

4 Special Codes (lock-out)

— — — — — —	„End of Life“ lock-out
X X X X X X	Other 6-pulse code indicates system lock-out (internal failure)

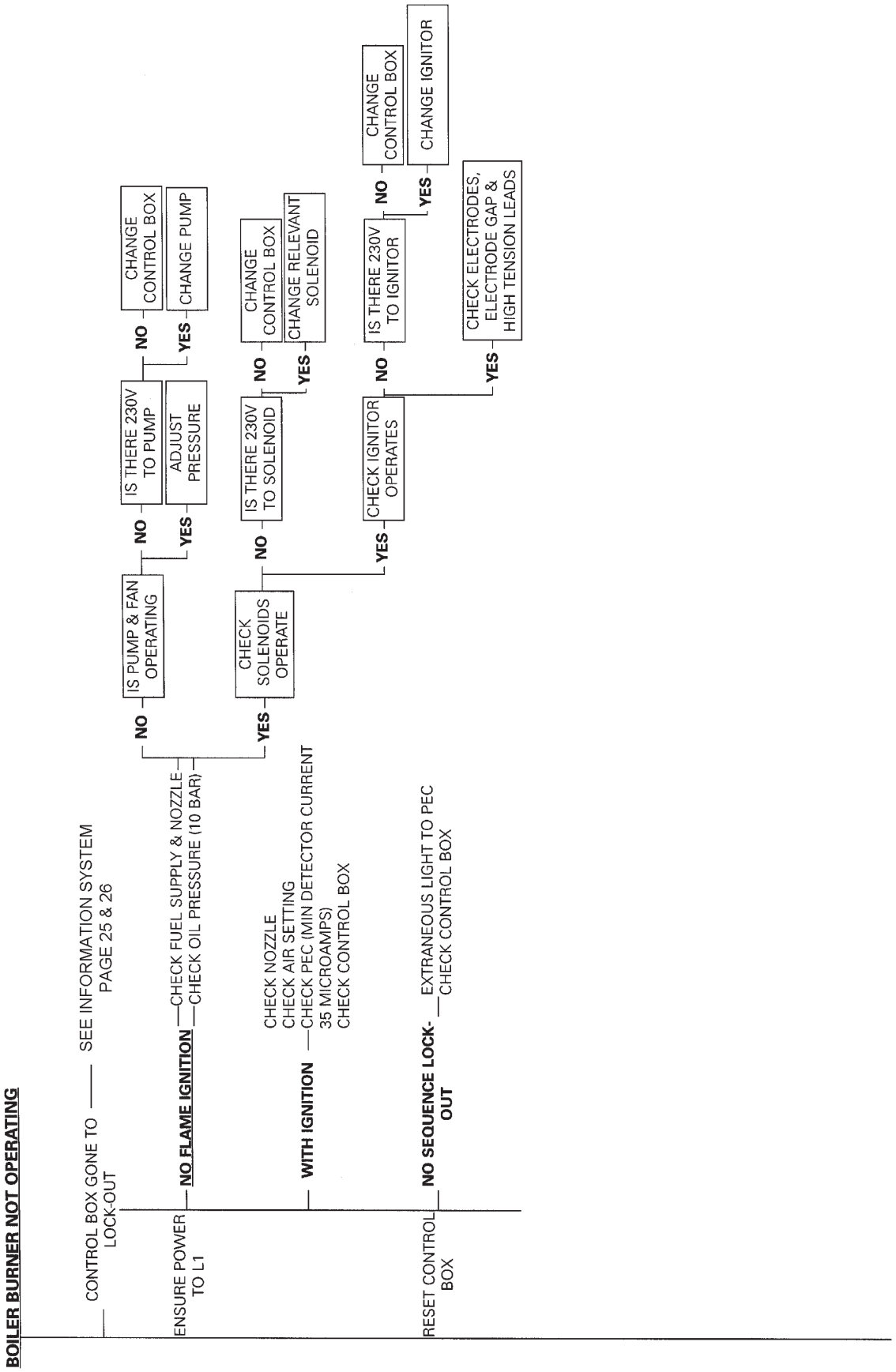
Code is sent every 10 s; in between the LED is always on

Legend: flashlight signal — long (½ s) ● short (0.1 s)
RT: heat demand
FT: pre-heater release thermostat
LW: air proving switch
LK: air damper

Fig. 34A

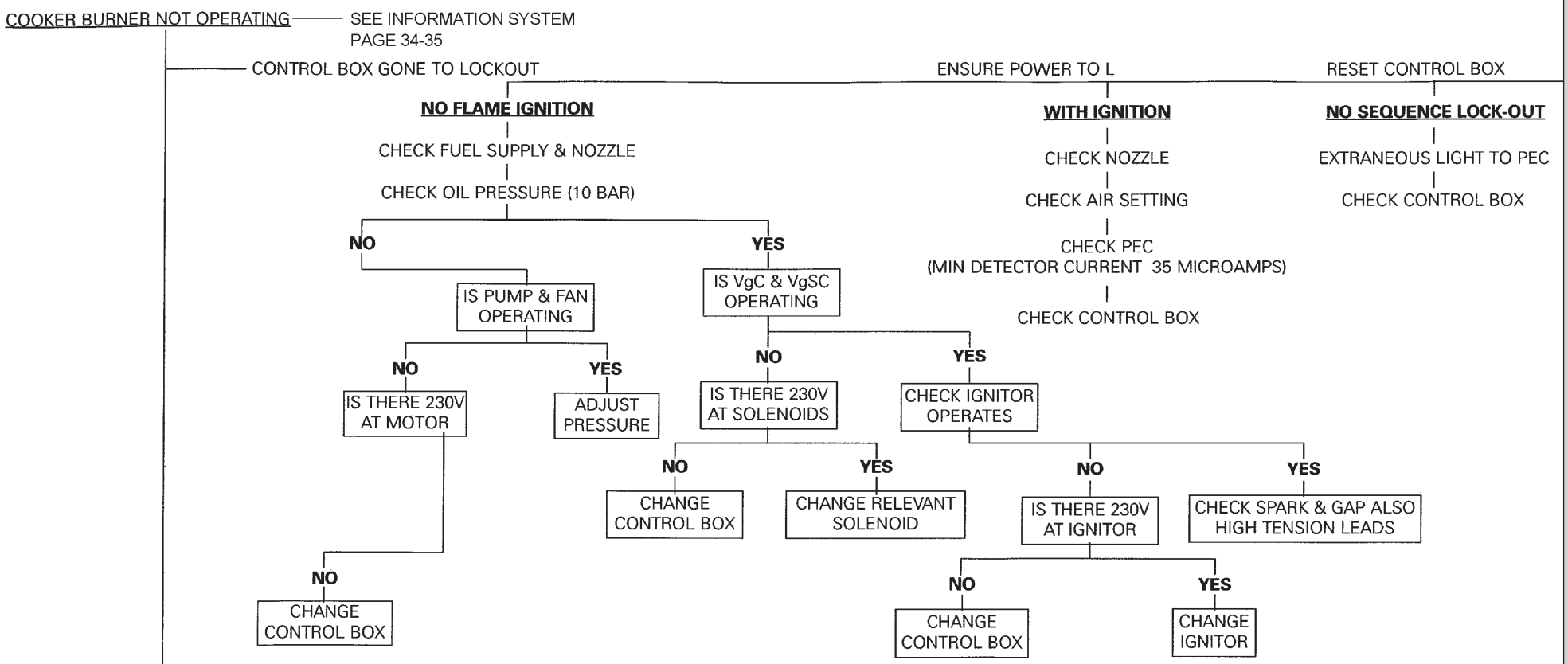
DESN 516838

Fault Finding

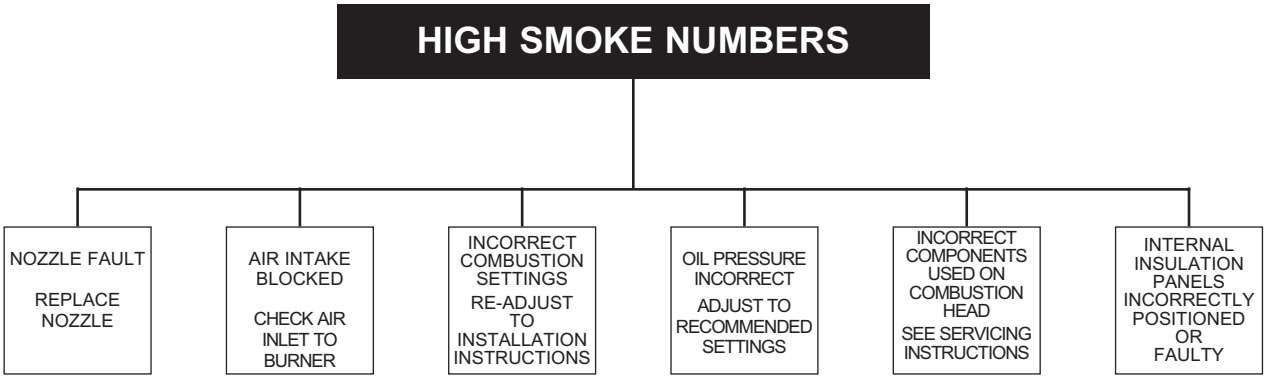


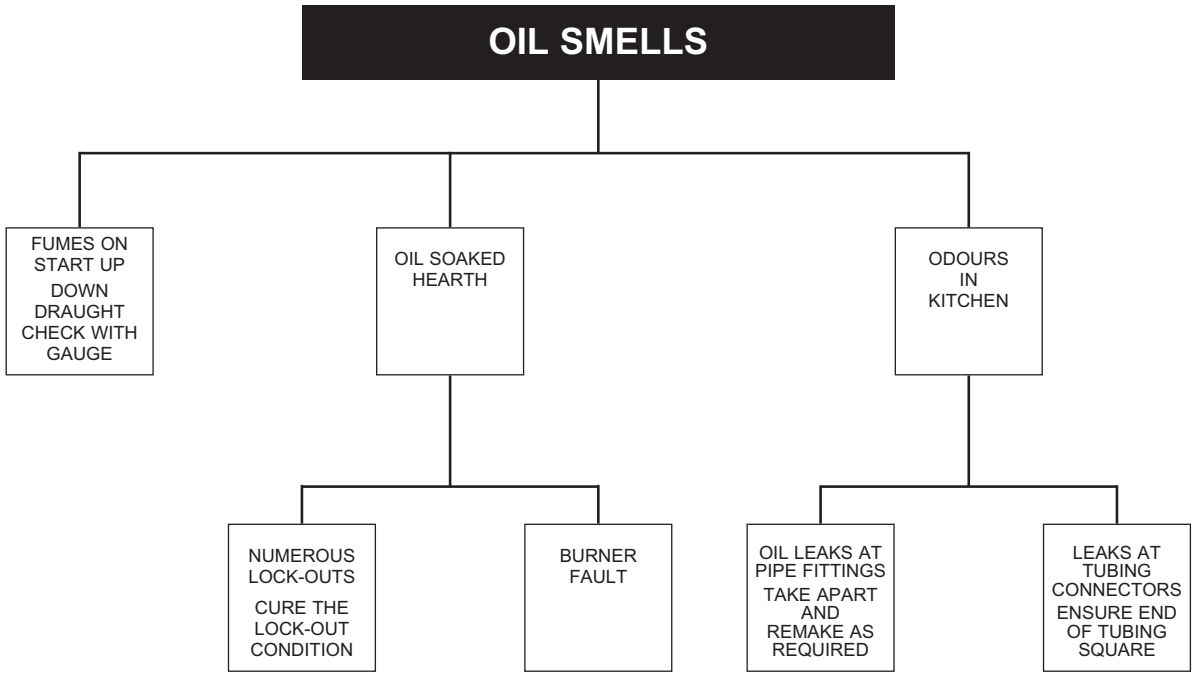
FAULT FINDING - COOKER

TESTING: POWER ON
COOKER STAT SET TO MAX



Fault Finding





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Supplied by

Waterford Stanley Ltd
Units 401 - 403
IDA Industrial Estate
Cork Road
Waterford
Ireland

Tel: (051) 302300 Fax: (051) 30-2315

www.waterfordstanley.com