

STEAM GENERATORS

INTRODUCTION: Various steam generators are available to suit the particular size and materials used for constructing steam enclosures.

DOMESTIC: BJ39kW & BJ39AkW

COMMERCIAL: BJ6-12AkW, BJ6-12BkW & BJ18-24BkW

The STEAM GENERATOR "BJ" series have many unique features and have been designed by the manufacturers to give maximum performance, easy installation, easy operation and low maintenance costs. The most important point of all for the user is that they produce the freshest steam possible. Our "BJ" series of auto-flushing generators have a unique patented automatic solids reduction system that ensures that solids in the water are kept to a minimum and water freshness to optimum purity.

Other features are the electronic control, which for domestic use, comes with metal surround. The domestic control is designed to blend with classic or modern style sanitary ware, with full constant display of the temperature setting, the cubicle temperature and an elapsed time indication. The unit will auto stop after 32 minutes. All units are pre-wired for easy installation.

The commercial control is electronic with fully display, 7 day timer, 32 minutes standby facility, cubicle control, computer link and security lock, pre-wired for easy installation.

The steam outlet is a similar design to the domestic control and has a venturi essence diffuser both 15mm and 22mm steam outlets are available.

Adjustable power settings in each generator means that just four models will serve 95% of the market requirements.

	MODEL	POWER	AUTO-FLUSHING
1	DOMESTIC BJ 39	3,6,9kW	NO
2	DOMESTIC BJ 39AkW	3,6,9kW	YES
3	COMMERCIAL BJ 6-12BkW	6,9,12 kW	YES
4	COMMERCIAL BJ 18-24BkW	18,21,24kW	YES

For more details see technical specification for specific models.

Please note that whatever steam generator from which ever manufacturer you choose the water quality is of paramount importance. **Poor water quality will inevitably mean more frequent servicing.** The BJ series of auto flush generators with the patented solid reduction system greatly reduces servicing down time compared to non patented systems.

TECHNICAL SPECIFICATION

AQUA-STEAM GENERATOR BJ SERIES

The following chart is for cubicles that are correctly insulated to Manufacturers guidelines.

NOTE Should the insulation not be adequate, allow extra power (kW's) for heat loss.

	CUBICLE SIZE FOR MASONRY MATERIAL	CUBICLE SIZE FOR PLASTIC MATERIAL	SUPPLY CURRET	POWER SUPPLY	POWER SUPPLY
	CUBIC METRES	CUBIC METRES	AMPS	I PHASE	3 PHASE
6kW	2.5 to 8.0 Cu.Mtr.	4.0 to 15.0 Cu.Mtr.	25 amps	4mm.sq.	1.5mm.sq.
9kW	7.0 to 16.0 Cu Mtr.	13.0 to 24.0 Cu.Mtr	38 amps	6mm.sq.	1.5mm.sq.
12kW.	14.0 to 20.0 Cu Mtr.	22.0 to 30.0 Cu Mtr	50 amps	3 PHASE	4mm.sq.
18kW	18.0 to 30.0 Cu Mtr.	28.0 to 40.0 Cu Mtr	76 amps	3 PHASE	4mm.sq.
24kW	28.0 to 40.0 Cu Mtr.	38.0 to 50.0 Cu Mtr	100 amps	3 PHASE	6mm.sq.

If cubical is not reasonable square allow for additional power.

POWER SUPPLY 220-240 volts AC.50-60 Hz BJ6-12A single phase, or three phase. BJ18-24A three phase only.

POWER SETTING ADJUSTABLE (kW) BJ6-12A 6, 9 & 12kW. BJ18-24A, 18 & 24kW. Cable size must be determined before installation and adequate for the maximum power to be set.

ELECTRONIC CONTROLS User friendly electronic controls, factory wired (plug in) 12 volts DC. 7 day timer, computer link.

HEATERS Incaloy industrial rated heaters, each 3kW 240 volts approx. 20ohms resistance.

ESSENCE DEFUSER UNIT Terminal connector with fuse, up to 5 amp. synchronised with heaters.

PROTECTION Heaters protected with manual reset Hi-limit. Controls and essence defuser unit protected internally with 5 amp max cartridge fuse. Unit must be externally protected by appropriate fuses or MCB's.

WATER SUPPLY Minimum working pressure 0.5 bar. Maximum working pressure 10bar. % "male thread, for connection to washing machine type hose. Auto descaler available from JAN 97. Note that the generator has an approved water inlet valve but in certain areas, particularly commercial units it may be a requirement to install a double check valve or RPZ(reduced pressure zone) anti pollution valve to eliminate all possibility of the water supply becoming contaminated.

STEAM OUTLET 15mm. max length 9 mtrs 22mm max length 20 mtrs. Must be lagged adequately.

NOTE BJ18-24A is supplied with two steam outlets. If pipe is longer than 10 mtrs add an extra kW.

TWO STEAM PRESSURE SAFETY FEATURES IN ORDER OF OPERATION.

1. Manual reset cut out. 2. Pressure safety valve.

STEAM GENERATION Up to 1.4 Kg of steam per kW per hour. Constant steam.

HEAT EXCHANGER Stainless steel tank, constructed with maintenance access, via access cap (s) for cleaning (easily removable).

CONSTRUCTION For the prevention of corrosion the external casing is Zinc plated steel and all internal components are of corrosion resistant materials.

PATENT DESIGN AUTO FLUSHING UNIQUE REDUCTION SYSTEM Water softener not required if regular cleaning is carried out or an Aqua-soft is fitted (Auto descaler) Waste size 15mm depositing to a washing machine standpipe or other suitable outlet.

This unit is manufactured in accordance with the European standard EN 60 335-2- 15: 1990 Electrical power must be supplied via a residual current circuit breaker (rated at 30m Amp sensitivity) together with an isolating switch per pole with 3mm break for all poles and supply fuses to suit supply current.

**TO BE INSTALLED TO NATIONAL STANDARDS BY A
QUALIFIED ENGINEER**

INSTALLATION & FITTING INSTRUCTIONS
FOR THE COMMERCIAL STEAM GENERATORS
BJ6-12AkW & BJ18-24AkW
BJ6-12BkW & BJ18-24BkW
MIL2000

NOTE:- Before the installation of this machine, please make sure you read the instructions. Failure to install this machine in accordance with the manufacturers recommendations can make the system unsafe, invalidate the warranty or adversely affect maintenance. Should you have any queries or require technical advice, contact your distributor who will put you in contact with our technical department.

STAGE ONE:- Siting and Fixing the Generator

A minimum space of 1100mm for width and 1000mm for height should be allowed, with proper access for servicing the generator.

Determine a clean dry place where the steam generator is to be fixed (emphasis on the surface being secure and the unit being properly supported). The unit is not suitable for installation in a damp or wet area.

Screw the generator to the wall, through screw holes drawing (see detail A)

Make sure the generator is both vertical and horizontally level.

Allow 300mm minimum height from the floor, to leave space for drainage of solids into a container.

A minimum space of 400mm from the cleaning access cap(s) (see detail 4A) from the unit should be permitted for cleaning with the brush provided.

Once the generator has been fixed, the anchor screw must be fitted (see detail B) to prevent the generator from being accidentally moved.

Should the generator be boxed in, an access door or panel must be fitted to allow for easy access and maintenance of the generator unit without damaging the decoration, you should also make an allowance for ventilation minimum 100mm x 100mm.

STAGE TWO:- Water Supply

Before the installation of this machine please check with the local water authority, the particles of scale per million, should it be more than 50 parts per million an Aqua Steam Water Inhibitor must be fitted. If used commercially the cartridge must be replaced every three months, should the water be more than 100 parts per million an Automatic Descaler or Monospheric Water Softener must be fitted.

We recommend that a washing machine hose be fitted to the 'Y.' BSP male thread of the solenoid valve (detail) and connect the other end of the hose to a servicing valve so water can be isolated. The hose is also useful for flushing the tank and pipework etc.

A minimum water pressure of 0.5 bar and maximum 10.0bar must be allowed for the correct operation of this machine.

STAGE THREE:- Fitting Steam Outlet (detail 13)

The maximum pipe run must not exceed 20 Mtrs.in length and must be of 22mm diameter. The pipe work should be installed in such a way as not to create air locks. Long radius bends should be used or pulled bends to reduce restriction of steam. The pipe must be adequately lagged to avoid heat loss and condensation of steam.

The BJ 18-24 generator has two independent steam outlets, each must be fitted as above but totally independent from each other. When pipe is increased over 10 Mtrs a higher power setting may be necessary.

It is bad practice and a frequent source of failure to inject essence into the steam pipe(s). Even in very large diameter pipes the fillers and plasticisers used in the essence quickly block the pipe and also back up into the generator.

STAGE FOUR:- Auto-flushing (detail4)

Connection to the discharge solenoid valve is W' BSP thread and the drain line must be a minimum of 15mm diameter heat resistant pipe and must have a minimum fall of 1.5 degrees to an open drain, washing machine trap or similar. Keep the pipe run short with as few bends as possible as it will otherwise fill with scale.

STAGE FIVE:- In the Cubicle

Fit either the BkW temperature sensor or the AkW cubicle control.

The BkW sensor should be fitted about 200mm from the ceiling away from the steam outlet in a safe position.

The AkW cubicle control if fitted should be approx. 1.8mtrs above the floor away from the steam outlet.

We recommend that shower type silicone sealant be used around the stainless steel trim and box assembly of the cubicle control to fix the unit to the wall. Connect plug (20) on lower right hand of attendant control box.

STAGE SIX:- Fitting 12v Electronic Attendant Control (detail 7A)

This control must be fitted in an easily accessible dry place for the operation of the attendant. When the control is fitted to the wall then connect plugs coming from the control to the sockets on relay board inside left hand of generator box.

NOTE extension leads are available if required. Also make sure exposed connectors are protected with water proof tape.

STAGE SEVEN:- Computer Management Link

You only need to connect a 2 wire lead with a gland inside lower left hand of attendant control. These wires must go to a volt free contact at the computer, when contact is made (closed) generator will start, when contact is (open) generator will stop.

NOTE control switch must be on timer mode and timer switch "off" to synchronise with computer. This function is available as standard on the AkW control but only by special order on the BkW control.

STAGE EIGHT:- Power (Kilowatt) selection for BJ6-12 & BJ18-24

For BJ6-12 the fixed minimum power is 6kW. To increase to 9kW insert link pin (**detail 10**) and to increase to 12kW also insert link pin (**detail 10A**). For model BJ18-24 the minimum fixed power is 18kW. To increase to 21kW fit link pin (**detail 10**). To increase to 24kW fit link pin

(**detail 10A**). Link pins are to prevent power being accidentally increased. Cable should be adequately sized to suit the power requirement. Note, setting the generator on a higher power than necessary may result in the cubicle remaining for relatively long periods at a temperature above the set point with no steam. Only use the minimum power necessary.

STAGE NINE:- Connection to Power Supply

The BJ6-12 is set for three phase but can be modified to single phase by just inserting a cross connector (**detail 6A**) into connector (**detail 16**). By tightening the three screws the machine will be converted into single phase operation. The BJ18-24 is three phase only. When connecting cables to power supply it is advised that conduit be used and connected via hole (**detail 6B**) with the appropriate fitting. 220-240v AC. for single phase, 415v AC. for three phase 50-60Hz.

The steam generator must be earthed and connected to a residual current circuit breaker with a minimum of 30 milli Amps sensitivity and connected through an isolating switch with minimum of 3mm breakage across all poles. The correct fuse must be fitted for the power selected.

For technical specification see sheet 1. NOTE all mains connections must be thoroughly tightened and it is good practice to re-tighten all power connections within the generator since copper conductors may have "eased back" in their terminals in transit.

STAGE TEN:- Essence Diffuser Unit (optional extra)

This machine is provided with a 220-240v AC. 5 amp fused terminal connector (detail 118) and PG7 cable gland (detail 18A) for essence diffuser connection, this will energise when steam is produced. For further details contact your supplier.

STAGE ELEVEN:- Commissioning Generator

Re-check that the unit is installed in accordance with the instructions before switching mains power on. Please check that the water supply is "ON" with sufficient pressure 0.5 bar, (3 metres head). Switch power "ON" and you will see a green light on the generator and an intermittent one on the AkW attendant control or a further steady green light on the BkW control (that means the generator is ready to start) now follow the operating instructions. Once the generator is operating switch off and drain the generator to clean plumbing flux etc from inside. Do this twice, finally check for leaks.

If you need any further information please do not hesitate to contact our technical department.

Please leave instructions with client and demonstrate how to clean and descale the unit.

OPERATING INSTRUCTIONS - BJ6-12AkW & BJ18-24AkW
ATTENDANT CONTROL (12 VOLTS ONLY)

Unlock the clear lid with a screw driver or with the key. Then press the side next to the lock and the clear lid will open, press the (control "ON") then if controls are off and you see a green intermittent light that means the power is on and you can start to operate the generator.

CUBICLE CONTROL STANDBY 32 MINUTES AUTO STOP

To operate this control, you must first set the switch on the attendant control to 32 minutes auto. The steam generator will only work when the user inside the cubicle pushes the stainless steel button. A red intermittent light will indicate that the generator is "ON" then it will stop automatically.

ENERGY SAYE AUTO-STOP 32 MINUTES

This is to synchronise to cubicle control and is normally used in periods that the cubicle is not busy so as to save energy. You can switch the cubicle for 32 minutes by pressing the top left button next to the clock and you can stop the system by pressing the lower button.

7DAY TIMER

With this function you can program the generator to be switched 2 times "ON" and 2 times "OFF" on each individual day of the week.

COMPUTER LINK MANAGEMENT SYSTEM

This link will allow you to switch the generator "ON" or "OFF" from your computer but the control switch must be positioned in timer mode and the timer switch must be "OFF".

TEMPERATURE ADJUSTMENT

You can adjust the temperature by pressing arrows up and down next to the thermometer, where an intermittent light tells you the setting of the temperature and a series of steady lights tell you the actual cubicle temperature.

If you switch off the attendant control unit you will over-ride the computer link and any other function. For servicing and in an emergency always switch the generator "OFF" at the mains.

Note that the generator is supplied with the temperature pre-set at 35°C. In order to change this setting first set the temperature required as described above and then turn the control off by using the OFF button on the touch pad. When restarted, the system will then start up using your preferred operating temperature.

OPERATING INSTRUCTIONS- BKW Control

ATTENDANT CONTROL (12 VOLTS ONLY)

Unlock and open the clear lid as described in the AkW instructions.

7DAYTIMER

With this function you can programme the generator to be switched on and off twice each individual day of the week.

COMPUTER LINK MANAGEMENT SYSTEM

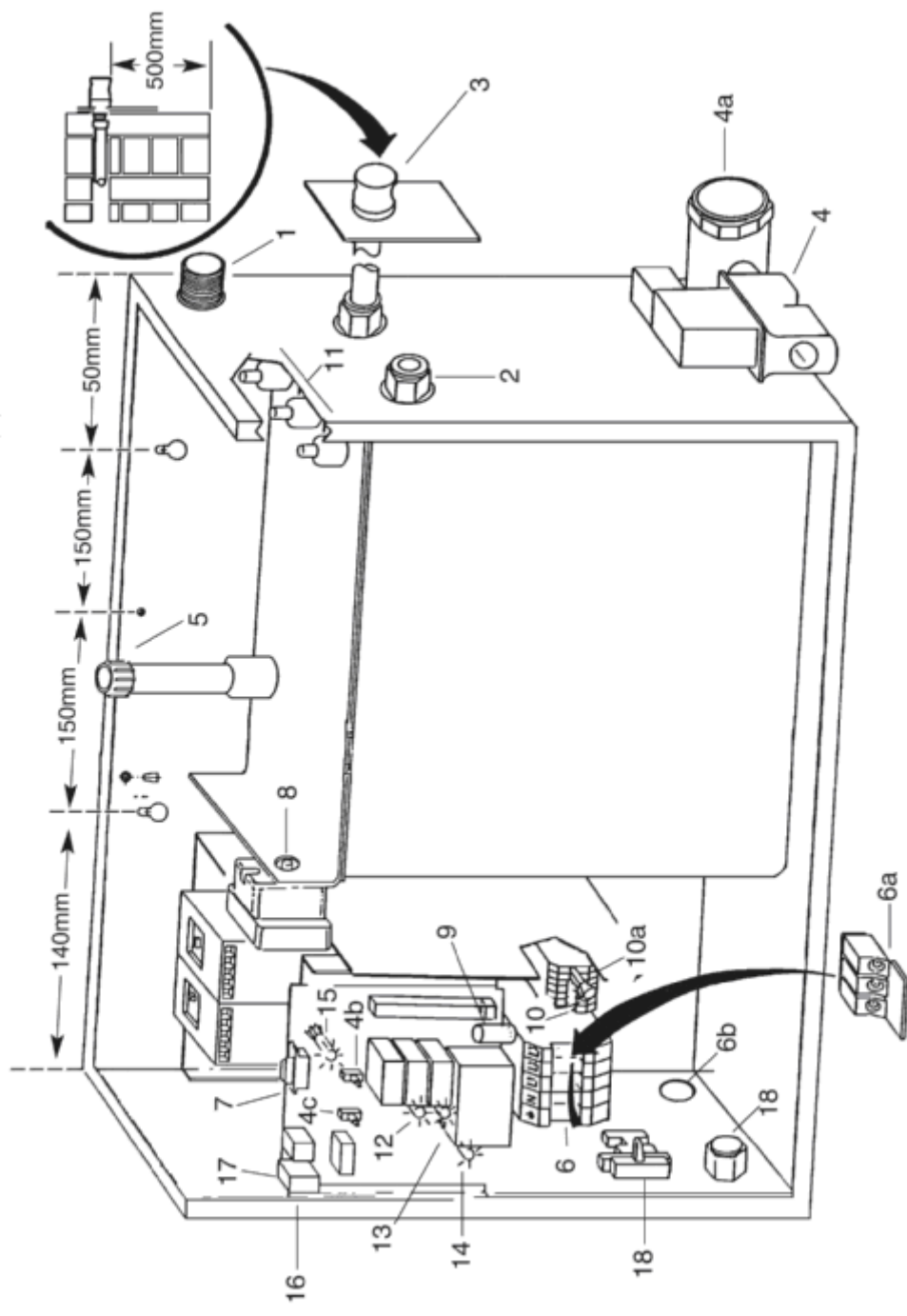
This link will allow you to switch the generator on or off from your computer but the timer switch must be in the off position. This function is only available by special order.

TEMPERATURE ADJUST

The digital thermostat displays the temperature at the sensor in the steam room. To display the set point press and hold the thermometer button. Should the set point need adjustment continue to hold the thermometer button and at the same time use the up or down arrow to select the required temperature. Release all buttons.

START UP DISCHARGE

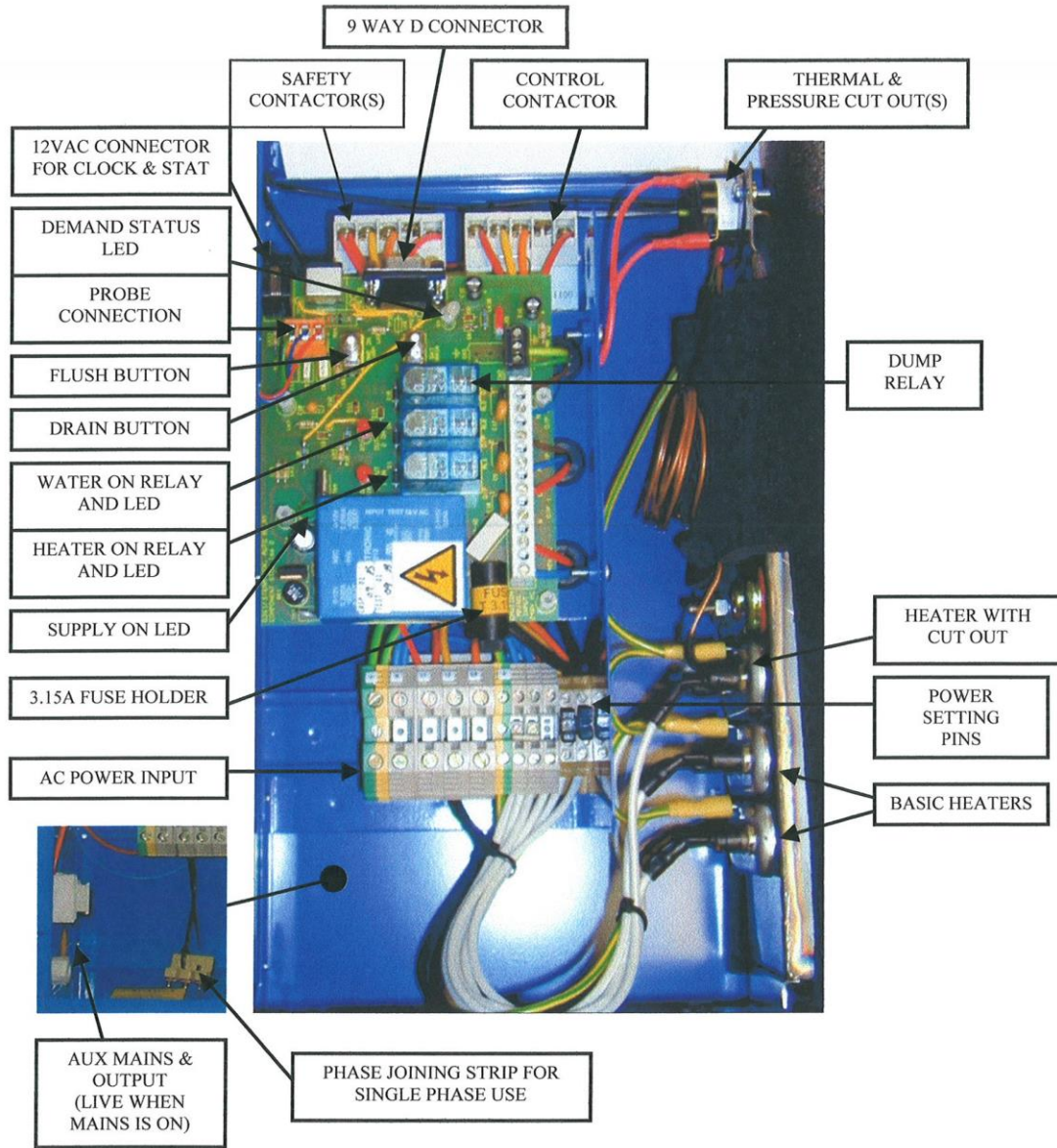
The BkW control is designed so that it may also be used in conjunction with an Automatic Descaler. When descaling is completed and the generator restarts a brief heating cycle (10 seconds approx.) is initiated followed by a 4 minute discharge and delay before the generator refills and starts to heat up. This discharge can be over-ridden by using the on/off switch on the bottom right of the control, turning it on, off and on again.



PARTS LIST

Description	Item No
Inlet water Solenoid	1
Safety Valves	2
Steam Outlet Nozzle - 15mm Domestic	3
Outlet Solenoid	4
Cleaning access	4A
Manual Fill	4B
Manual Dump	4C
Descaling input cap	5
Electrical terminals	6
Single-three phase link	6a
Not used on Domestic generator	6b
Relay PCB - Domestic Board 3-9kW	7
Safety Cut Out	8
PCB Board Fuse	9
Terminal Block For KW Change	10
Terminal Block + KW Change Pins	10a
Set Of Probes- Aqua-Steam Generator	11
Indicator Heater ON	12
Indicator Water ON	13
Indicator Power ON	14
Indicator Generator State	15
Generator Case	16
Not used on Domestic generator	17
Optional auxiliary terminal	18
Electric cable input	19
Contactor	
Set of 2 Elements 3-6-9kW	
Heater Element C/W Cut Out	
5 Metre Extension Lead & Plug	
Domestic Control Panel	

STEAM GENERATOR RELAY CARD AND TERMINALS



REMOVAL OF WATER DEPOSITS

If a water softener is fitted always ensure that it is not allowed to function without salt and that it only back washes at a time when the steam generator is not in use. If the water softener is working correctly removal of water deposits will not normally be necessary.

When the steam generator has cooled down drain the generator by holding the "dump switch" on the control isolate the machine at the main power switch. Then place a container of minimum of 5Ltr capacity under the lower access cap. Remove the access cap by hand, anti-clockwise, releasing the water residue. With the brush provided clean inside the bottom of the tank to remove any flakes of scale.

Replace access cap hand tight only, please be careful not to cross the threads.
Switch on mains power switch and your regular maintenance is now complete.

DESCALING INSTRUCTIONS

If water softener is fitted make sure that this does not recycle when the generator is in use.
Descaling may need to be carried out every 100 hours of use in very hard water areas.

For safety reasons only use citric acid descaler from your supplier, supplied by the manufacturer specially for this purpose.

PLEASE READ THE FOLLOWING INSTRUCTIONS:

1. Isolate the machine at mains electrical supply and isolate the water supply.
2. Open the descaler cap (anti-clockwise) see details.
3. Mix the descaler according to the instructions and pour the solution into the generator tube using a funnel.
4. Leave descaler to work for a minimum of 5 but preferably 8 hours
5. Open the access cap (4A) and pour fresh water through the descaler tube to wash out all descaler solution and any residue thoroughly.
6. Replace the descaler cap "hand tight only".
7. Ensure the water supply is turned on. Switch on the main power supply and the generator is ready for use.
8. Note if any descaler is left in the generator the impurities detector will notice this and cause the generator to cut-out. Flush again thoroughly.

If water softener is fitted and working OK descaler is not needed.

If proper maintenance is not carried out, warranty of the tank will be void.

WARNING:

During descaling the machine must be isolated from the electricity supply at all times.
Never use this appliance during descaling and make sure that all the descaler is removed before the steam facility is used again.

CAUTION:

The user must be made aware that due care must be taken particularly with children and the infirm when using this equipment.

NOTE

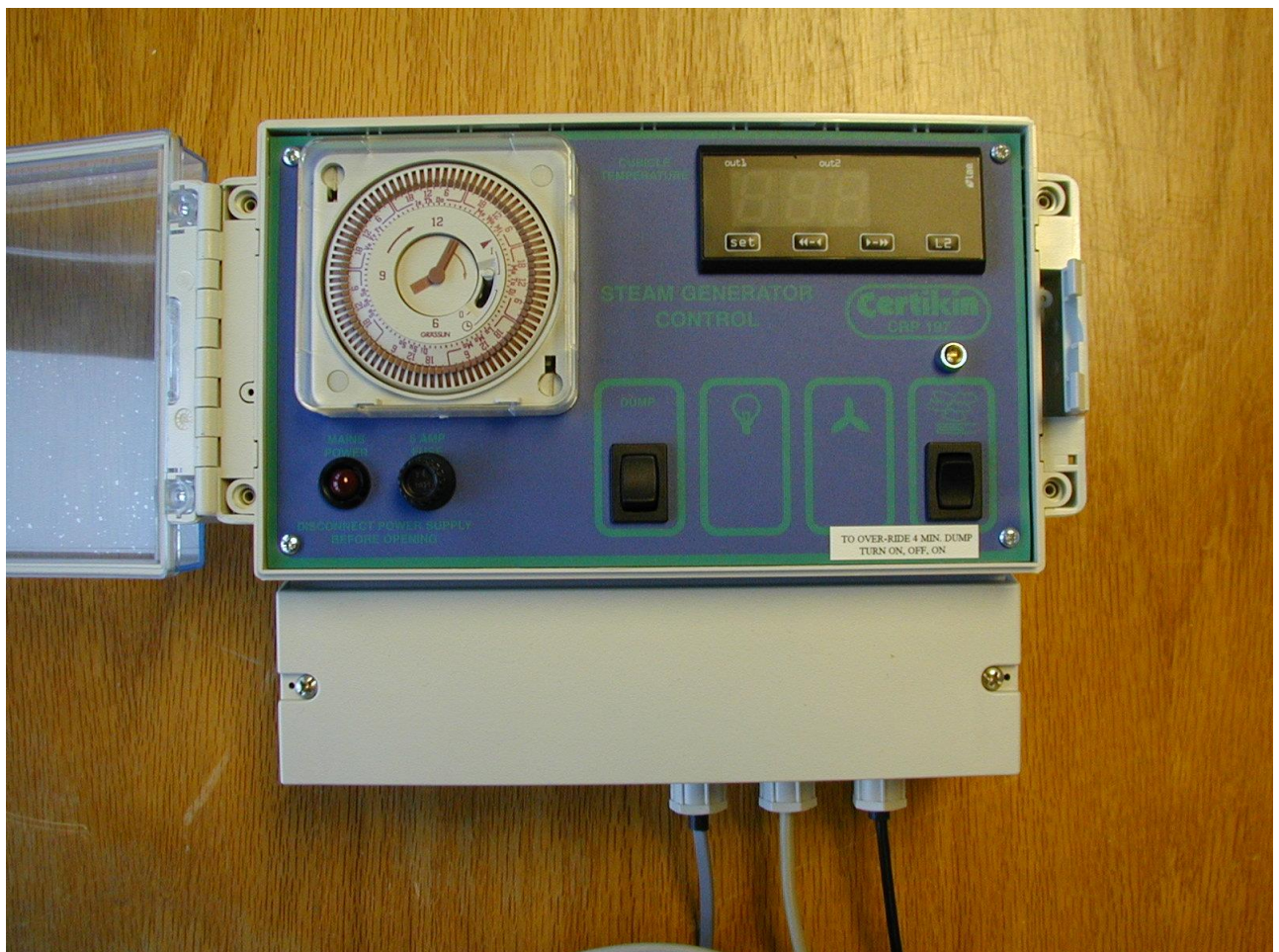
To prolong the life of the generator and reduce the inconvenience of manual descaling an Automatic Descaling Unit is available from your distributor.

BKW STEAM GENERATOR CONTROL UNIT

The BKW control unit is primarily intended for management of commercial steam generators that are in near continuous use (for intermittent use the AKW is recommended). The control incorporates a digital thermostat together with a 7 day timer that has an integral override switch, switches to turn the control ON & OFF and to DUMP the steam generator water are also provided.

Scale is the primary concern in heavily used generators and an auto de-scale unit is available for use in conjunction with commercial generators. The auto de-scale adds descaler to the generator when it is switched OFF at night. It is a feature of the BKW control, that at start up from the time clock the generator will be instructed to heat for a few seconds and then dump the entire contents of the tank over a 4 minute period, to remove any descaler that may have been added and to ensure that the unit contains fresh water before steaming begins. If an auto de-scale unit is not fitted or during testing, the 4 minute delay period can be overridden by switching the control ON/OFF switch from ON to OFF and back to ON again.

All connections to the control unit are 12 volts A.C. or D.C.



DESCALING INSTRUCTIONS

If water softener is fitted make sure that this does not recycle when the generator is in use. Descaling may need to be carried out every 100 hours of use in very hard water areas.

For safety reasons only use citric acid descaler from your supplier, supplied by the manufacturer specially for this purpose.

PLEASE READ THE FOLLOWING INSTRUCTIONS:

1. Isolate the machine at mains electrical supply.
2. Open the descaler cap (anti-clockwise) see **detail 5**.
3. Mix the descaler according to the instructions and pour the solution into the generator tube using a funnel.
4. Leave descaler to work for a minimum of 8 hours.
5. Open the access cap (4A) and pour fresh water through the descaler.
6. Replace the descaler cap "hand tight only".
7. Switch on the main power supply and the generator is ready for use.
8. Note if any descaler is left in the generator the impurities detector will notice this and cause the generator to cut-out. **Flush again thoroughly.**

If water softener is fitted and working OK descaler is not needed.
If proper maintenance is not carried out, warranty of the tank will be void.

WARNING:

During descaling the machine must be isolated from the electricity supply at all times. Never use this appliance during descaling and make sure that all the descaler is removed before the steam facility is used again.

CAUTION

The user must be made aware that due care must be taken particularly with children and the infirm when using this equipment.

Technical Information Sheet

Programming of LAE digital thermostat - Spa and Steam

To access set up mode:

1. Switch off power
2. Press ▲ and ▼ simultaneously and hold down whilst switching power on

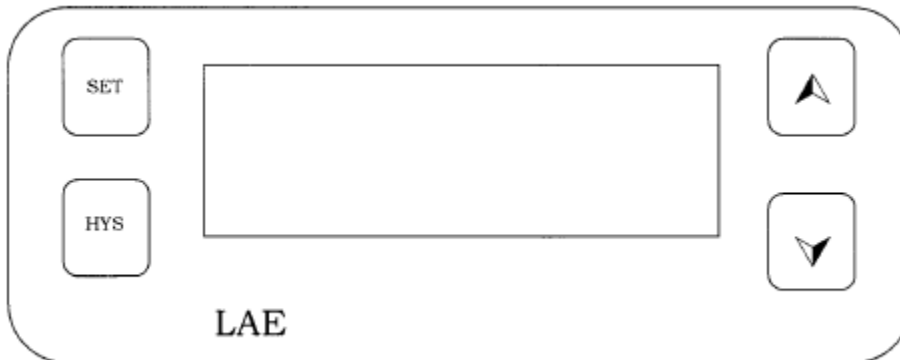
(If successful "PAR" is displayed and you are now in set up mode)

Press set and the following will be displayed:

Display	Meaning	Set to	
		Spa	Steam
VSP	Minimum set points	30-35	00
Sp	Minimum set points	40	45
Rtl	Minimum "off time" for relay	00	00
PF1	Probe Failure	Off	Off
Adj	Probe Off set – Differential of temp	00	00
Hyl	Hysteresis-heating and cooling	-1	-1

To save these settings simply turn power to stat off

Once stat is turned back on the display will read "LAE" followed by the current temperature, to set the desired set point press set and use the▲▼ keys to set.



If the following diagnostic messages are displayed change the probe:

- PFA =probe fault alarm- probe is faulty- change probe
LOR = loss of range -probe is out of range – change probe

PROBLEM SOLVING GUIDE

SYMPTOM	PROBABLE CAUSE	REMEDY
1. No green light on control box	Main power isolator switched off	Ensure mains power is on and check for green light on generator
2. No steam from unit	Control turned off	Turn on at cubicle control
3. No steam from unit	Water supply inadequate	Water turned off or blocked or very low pressure
4. Steam inadequate	Temperature too low	Set temperature higher as per operating instructions
5. Steam inadequate	Cubicle not properly lagged or power too low	Consult installer
6. Steam inadequate	Impure water	Flush generator twice by opening drain valve and re-filling twice *
7. Steam inadequate and unit stops	Over temperature reset tripped due to blocked steam outlet	Consult installer

NOTE(S) THE MOST FREQUENT CAUSE OF PROBLEMS ARE:-

1. Insufficient water, water pressure low or the supply interrupted by other services i.e. showers, pumps etc. Water inlet blocked.
 2. * Failure to provide drainage facilities. Failure to keep the generator clean i.e.
 - Not flushed clean after installation.
 - Not flushed after water softener service.
 - Not flushed after descaling.
 - Not flushed after local pipe work.
 - Not flushed after local water mains work.
 - Not flushed for a long period of time.
 - Drain pipe blocked
 3. * Failure to descale tank periodically say every 100 hours use in hard water area (1000 hours in soft water areas).
 4. Steam outlet blocked due to damage, poor installation. vandalism or essence dosing.
 5. Heater failure may cause an earth- leakage trip to occur.
 6. Poor ventilation of steam generator.
- * **Note**, these problems are greatly reduced or overcome completely where an auto-flush version is installed.