

# **DOMESTIC STEAM GENERATORS**

Please read all of the instructions carefully before commencing installation or using the facility.

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## **INTRODUCTION**

The AQUA STEAM GENERATOR series have many unique features that make them superior to other steam generators in the market place. They have been designed 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! Steam quality can deteriorate due to poor water quality and this can result in unpleasant odours'. The AQUA STEAM GENERATORS overcome the problem by providing an automatic flushing facility to drain the stale water. The AQUA STEAM GENERATOR is ideal for the occasional steam bather or for more frequent use. The AQUA STEAM Generator automatically flushes a small amount of water and impurities away from time to time. This patented system also greatly reduces the amount of scale and solids that may otherwise build up in the tank. Water impurities are kept to a minimum and steam to optimum freshness.

Other features are the electronic control that for domestic use comes with a polished metal surround, designed to blend with classic or modern style sanitary ware. At the touch of a button the system can be turned on and provides a constant display of temperature setting, cubicle temperature and remaining time. The generator will automatically turn off after 32 minutes although it can be re-started at any time. The unit is pre-wired for easy installation. The steam outlet is also polished metal and has a venturi essence diffuser.

Good operation is ultimately dependant upon the quality of the water entering the steam generator. This can vary dramatically over short distances from one area to another depending upon the water source and its quality in terms of hardness, salts and solids. Frequently draining the generator will greatly reduce any problems due to water quality that might otherwise arise and also ensure the optimum freshness of the steam produced.

If in doubt about your water hardness consult your local water authority giving the location of where the steam generator will be fitted.

Note that the AQUA STEAM GENERATOR has three possible power settings. They are supplied set to 3kW but this can be readily increased to 6kw or 9kw by the installer.

**For more details see technical specification**

## **TECHNICAL SPECIFICATION**

The following chart is for guidance only and for cubicles that are correctly insulated to manufacturer's guidelines.

**NOTE.** Should the insulation not be adequate, allow extra KWs for heat loss.

	CUBICLE SIZE FOR MASONRY MATERIAL	CUBICLE SIZE FOR PLASTIC MATERIAL	SUPPLY CURRENT	POWER SUPPLY	POWER SUPPLY
	CUBIC METRES	CUBIC METRES	AMPS	1 PHASE	3 PHASE
3 kW	1.0 to 2.0 Cu.Mtr.	0 to 4.5 Cu.Mtr.	12.5 amps	1.5mm sq.	1.5mm sq.
6 kW	2.0 to 4.7 Cu.Mtr.	6 to 12 Cu.Mtr.	25 amps	4mm sq.	1.5mm sq.
9 kW	4.7 to 8.0 Cu.Mtr.	14 to 18 Cu.Mtr.	37.5 amps	6mm sq.	1.5mm sq.

**POWER SETTING** AQUA STEAM GENERATORS are adjustable 3, 6, 9kw Use cable size above (min).

If cubicle is not square allow ½ KW for masonry material and ¼ Kw for plastic material per extra square meter of surface created. These examples are for a cubicle at 40°c for higher temperatures additional power or lagging may be required.

POWER SUPPLY 220-240 volts AC 50-60Hz Hz. Single phase, or three phases.

ELECTRONIC CONTROLS User friendly electronic controls, factory wired (plug in) 12 volts DC.

HEATERS Incaloy industrial rated heaters 3kw 240 volts.

OPTIONAL AUXILLIARY OUTPUT A terminal connector with fuse, up to 5 amp synchronised with heaters, which may be used to power an essence dosing system if required.

FUSES. The system must be cabled and fused correctly to suit the above supply current requirements. All heaters are protected with a manual reset Hi-limit. Control electronics is protected by a 3.15 Amp slow blow fuse.

WATER SUPPLY Minimum working pressure 0.5 bar. Maximum working pressure 10 bar, 3/4" male thread, for connection to washing machine type hose.

STEAM OUTLET 15mm pipe maximum length 9 Mtrs 22mm pipe maximum length 20 Mtrs Pipes must be lagged adequately.

TWO STEAM PRESSURE SAFETY FEATURES IN ORDER OF OPERATION.

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

STEAM GENERATION Up to 1.4kg of steam per kw per hour. **Constant steam.**

HEAT EXCHANGER Stainless steel tank, constructed with, easily removable external access cap for easy cleaning.

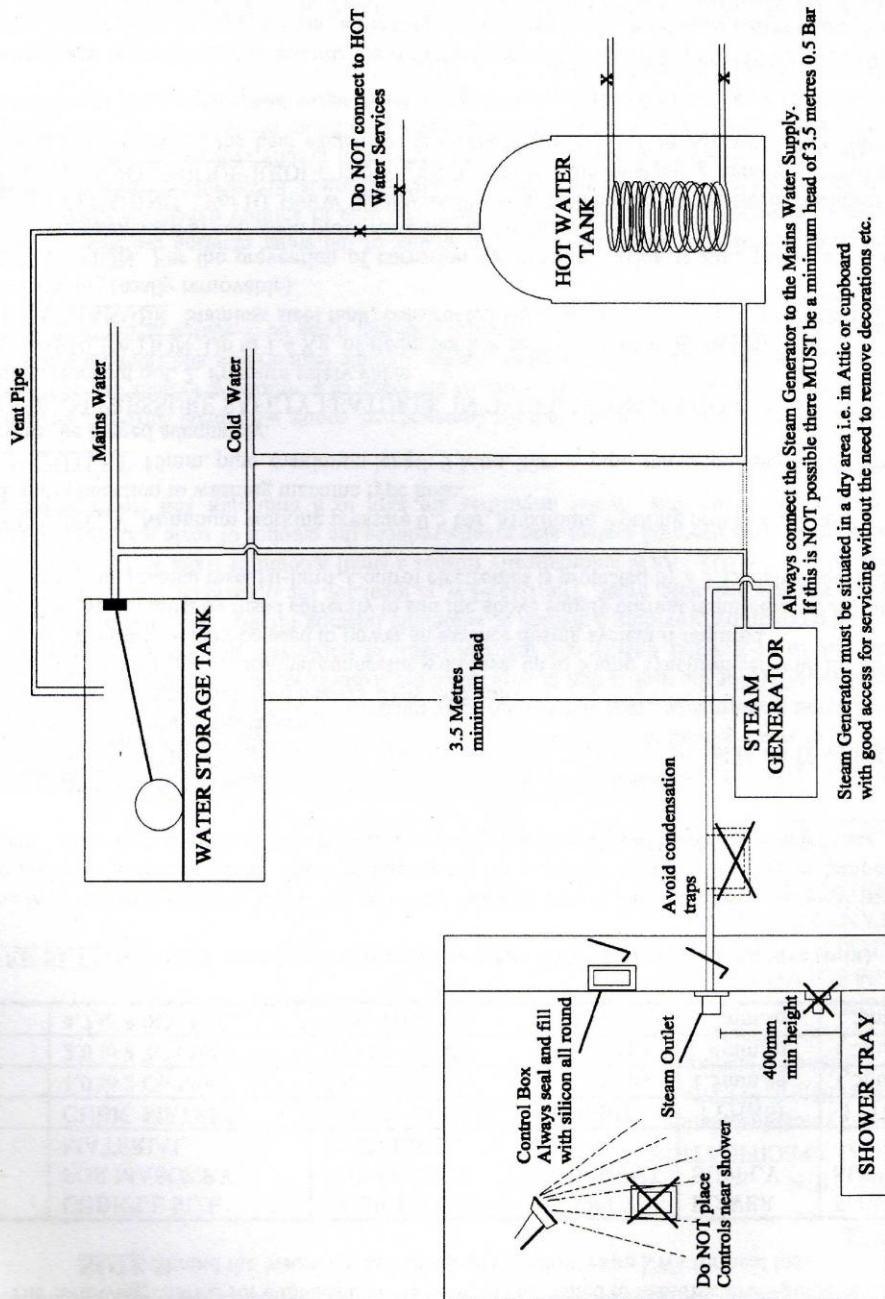
CONSTRUCTION For the prevention of corrosion the external casing is Zinc plated steel and all internal components are of corrosion proof materials and metals.

AUTO FLUSHING UNIQUE SCALE REDUCTION SYSTEM For normal domestic use in a soft water area the generator will rarely require descaling however in hard water areas' descaling is more important especially if used frequently or commercially. Should this be the case a water softener is recommended. **NOTE:** - The water softener should be set to back wash when the generator is not in use.

These units are manufactured in accordance with the European standard EN 60 335-2-15:1990. Electrical power must be supplied via an appropriately sized cable, a residual current circuit breaker (rated at 30ma amps sensitivity) together with a local isolating switch with 3mm break for all poles and terminal fuses to suit supply current.

**FIGURE 1**  
**PLEASE NOTE THIS DIAGRAM IS NOT TO SCALE.**

**PLEASE READ INSTALLATION INSTRUCTIONS**



**WARNING: This product MUST be installed by a qualified electrician**

## **INSTALLATION & FITTING INSTRUCTIONS** **FOR THE DOMESTIC STEAM GENERATORS**

**NOTE:** - Before the installation of this machine, please make sure you read these instructions thoroughly. Failure to install this machine in accordance with the manufacturers recommendations might invalidate the warranty. Should you have any queries or require technical advice, contact your distributor who will put you in contact with our technical department. The electricity supply must only be connected to the unit by a suitably qualified person in accordance with local regulations.

### **STAGE ONE: - Locating and Fixing the Generator**

A minimum space of 700mm for width and 550mm for height should be allowed, with proper access for servicing the generator and descaling cap. (See detail 5 Fig 2) Determine the place where the steam generator is to be fixed (emphasis on the surface being secure). Screw the generator to the wall, through screw holes provided (See dimensions on figure 2). Make sure the generator is both vertical and horizontally level. Once the generator has been fixed the anchor screw must be fitted 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 without damaging the decoration, you should also make an allowance for ventilation minimum 100mm x 100mm opening.

### **STAGE TWO: - Water Supply**

Generally the water supplied from any regional water authority is of sufficient quality to use with the Aqua-Steam generator. Greater care is perhaps required if water is from a well or bore hole particularly if the iron content is high. Such water should be avoided. If requested the water authority will advise on the scale content (hardness) of the water supplied. In situation where the water hardness is greater than 100 ppm it is recommended that a monospheric water softener be incorporated to supply the generator especially if the unit is to be in frequent use. Alternately inspect the unit for scale after every 100 hours of use and descale as necessary – see descaling instructions.

### **STAGE THREE: - Fitting steam outlet**

The pipe work should be installed in such a way as not to create air locks. Ensure that any condensation forming in the pipe can run freely back to the generator or the outlet. 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. When the pipe is increased to greater than 10 Mtrs in length, additional power must be provided to compensate for heat loss.

### **STAGE FOUR: Auto-flushing model BJ3-9AKW**

Connection to the solenoid flushing valve is 1/2" BSP thread and the drain line must be a minimum of 15mm diameter pipe and have a fall of 1.5deg min. to a washing machine trap or similar open drain suitable for water at boiling point. It is most important that a person cannot accidentally come into contact with the flushing water if the drain is accidentally opened when the generator is hot as the water may be **boiling or dangerously hot.**

#### **STAGE FIVE: - Fitting cubicle control**

It is necessary to leave or make a hole in the cubicle wall to accept the cubicle control unit, a hole of the following size is required:-

Horizontal 103mm approx

Vertical 80mm approx

Deep 43mm approx

The trim measures approx 95 x 120mm It is essential that shower type silicone sealant be used around the stainless steel trim and the control panel when fixing the unit to the wall. Connect 9 pin plug into socket item 7 on figure 2 taking care to hand tighten the 2 screws in the plug. The control should be fitted at a convenient height for operation approx 1.2 – 1.4 Mtrs from floor level.

#### **STAGE SIX: - Kilowatt selection**

As supplied the fixed minimum power is 3kw. To increase to 6kw insert link Pin (see detail 10 and 10a on Figure 2) to increase to 9kw insert second link Pin (see detail 10 and 10A on Figure 2). These link pins are to prevent power being accidentally increased. The electrical cable should be adequately sized to facilitate the power requirements.

#### **STAGE SEVEN: - Connection to power supply**

The generator is set for three phase but can be modified to single phase by just inserting a cross connector (see detail 6A) into connector (see detail 6) and tightening the three screws. This will convert the machine to single phase operation. When connecting cable to power supply it is advised that conduit be used and connected via hole (see detail 6b) with the appropriate fitting 220-240v AC for single phase, 415V AC for three phase.

The steam generator must be earthed and connected to a residual current circuit breaker with a minimum of 30ma sensitivity and connected through a local isolating switch with minimum of 3mm breakage across all poles. The correct fuse must be fitted in the supply to suit the generator load.

For technical specification see sheet 1. **NOTE** To ensure safe operation all electrical connections must be checked and adequately tightened by a competent person.

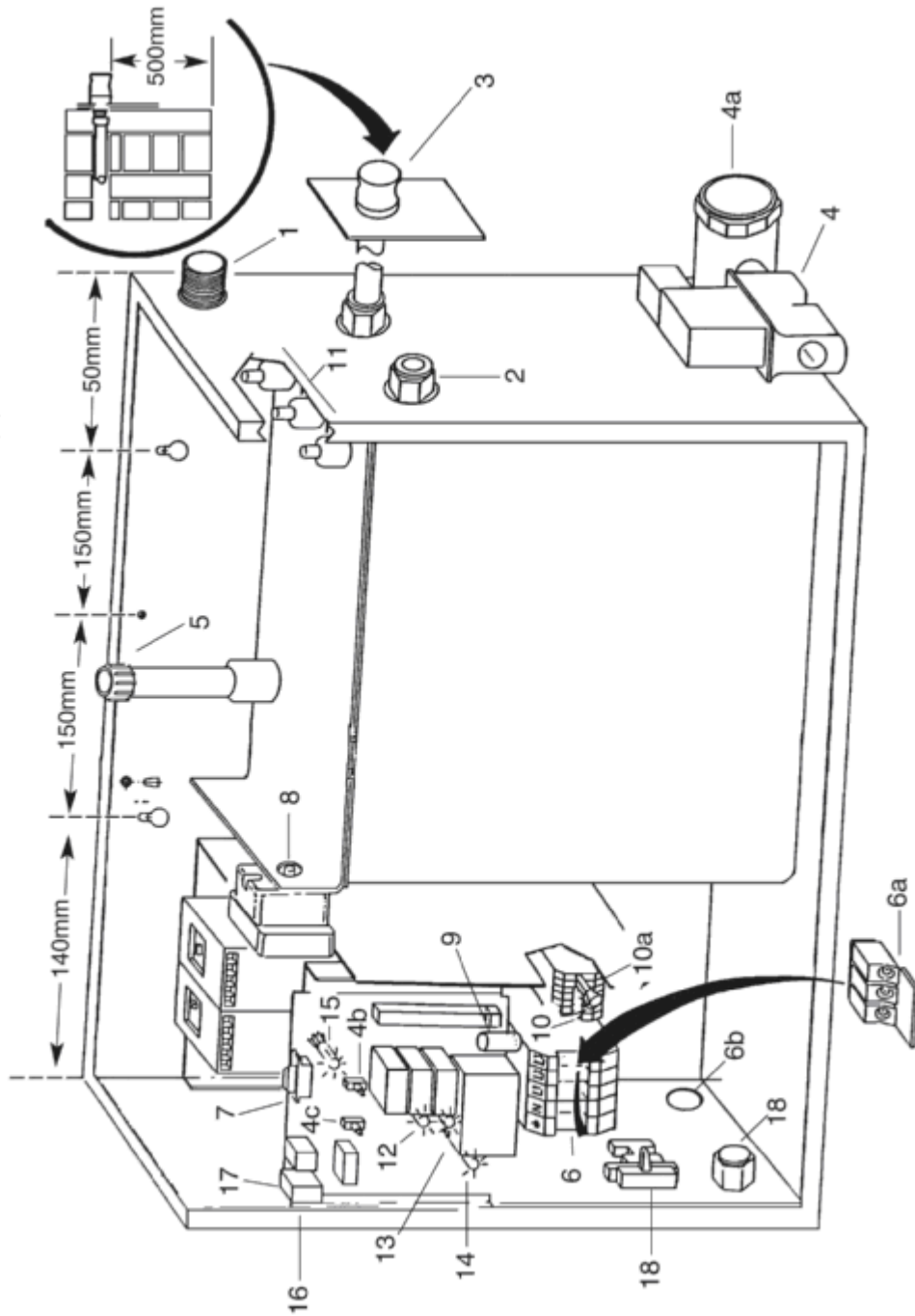
#### **STAGE EIGHT: - Commissioning generator.**

Re-check that the unit is installed in accordance with the instructions. Open the water supply making sure a minimum water pressure of 0.5 bar (3 Mtr head) is available and that no leaks are present. Then switch the mains power on, a green light will appear on the generator box, go to the steam cubicle and you will see an intermittent green light on the control. Press the top right hand button on the control "ON" and the generator will start to fill with water. (On the generator box the red water light will appear followed shortly by the red heater light). When the tank is sufficiently full the water light will turn off, wait about one minute and turn the water supply off.

Then drain the hot water from the tank by opening the drain valve using the drain push button switch Item 4b on the relay PCB. Close the drain valve and allow the tank to re-fill, repeat the same draining operation you have done above to completely dispose of any plumbers flux and other impurities. Re-check there are no leaks and now the generator is ready to be operated normally. Follow the operating instructions.

**Please leave the instructions with the client and advise them of how to descale the unit.**

FIGURE 2



## **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
Contactors	
Set of 2 Elements 3-6-9kW	
Heater Element C/W Cut Out	
5 Metre Extension Lead & Plug	
Domestic Control Panel	

## **DESCALING INSTRUCTIONS**

The steam generator manufacturer cannot accept responsibility for the quality of the water fed to the unit. Water quality varies from area to area and with the time of the year. Any warranty will be invalid if the generator is not kept free of water solids and scale. This means ensuring only adequate clean water is supplied to the generator i.e. less than 100 parts per million of impurities. (See note 2) The steam generator must be checked regularly and if necessary descaled. If there is any doubt it is better to descale the unit and typically this will need to be done every 100 hours of operation. Descaling is a relatively simple task but is important to keep the steam generator in good condition and prolong the life of the unit. The auto flushing Steam Generator will greatly reduce the build up of scale and ensures optimum freshness of steam. The frequency at which descaling is necessary is also greatly reduced compared to other manufacturers products which do not incorporate the patented auto flush system.

### **Descaling**

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 descalent is removed before the steam facility is used again.

1. For the purpose of descaling steam generators, use non poisonous and non corrosive descalent.
2. Remove the descaling cap by turning anti-clockwise. Mix the descalent to manufacturers instructions and with a funnel pour the solution into the generator. Fit the filler cap back on the unit.
3. Leave the descalent in the generator for as long as instructed.
4. Flush the generator thoroughly to ensure that all traces of descalent are removed. Note that with the tank empty it is useful to unscrew the 40mm access cap detail 4a and clean out any large pieces of scale that may remain. The auto-flushing steam generator will rarely need descaling unless the water quality is extremely poor. The service engineer will find a push button inside the cover to open the electrical flushing valve manually if necessary.

NOTE 1. In severe cases some descalent may enter the steam pipe and the steam outlet, should this happen the pipe must be flushed with clean water, from time to time this is also useful to prove that the steam pipe is not blocked.

NOTE 2. The steam generator is designed for domestic use, typically 15 hours per week. Where the unit is likely to be used in excess of this, and in particular where the water solids are high it is recommended that a steam generator with auto flushing features is used.

### **FLUSHING**

Optimum steam quality can only be achieved if the generator is filled with the purest possible water. Boiling or extremely hot water could be released when the drain valve (see detail 4) is opened so it is recommended that due care be taken and preferably that the unit should be allowed to cool slightly before the drain valve is opened.

### **CAUTION:**

The user must be made aware that due care must be taken particularly with children and the infirm when using this equipment. If in doubt seek medical advice. Leave the instructions with the client and ensure that they understand how to use the facility.

## **PROBLEM SOLVING GUIDE**

<b>SYMPTON</b>	<b>PROBABLE CAUSE</b>	<b>REMEDY</b>
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

### **NOTES** 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, poor water quality or water impurities.
2. Failure to provide drainage facilities.
3. 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
4. Failure to descale tank periodically say every 100 hours use in hard water area (1000 hours in soft water areas).
5. Steam outlet blocked due to damage, poor installation, vandalism or essence dosing.
6. Heater failure may cause an earth- leakage trip to occur.
7. Poor ventilation of steam generator.

## **INDICATORS**

### **CONTROL UNIT**

The two alternating green indicators at the bottom of the thermometer show that low voltage power is available at the control unit. When the control is turned on the steady indicators on the thermometer show the temperature at the control unit. The flashing indicator on the thermometer shows the current set point (or required temperature). The clock indicators each represent 4 minutes giving 32 minutes if all are on.

STEAM GENERATOR. There are four indicators on the Steam Generator:-

Item 14 GREEN Shows mains supply is connected to the generator and switched on.

Item 12 RED (upper) Comes on whenever the control is on and the generator requires more water.

Item 13 RED (lower) Comes on whenever the heaters need to be on to make steam.

Item 15 YELLOW Comes on whenever the supply is on and will change to green only when the control temperature is above the set point.

Item 15 GREEN Cubicle has reached set temperature

Item 15 RED Error state impurities in water or water has reached the high probe

## **IMPORTANT NOTICE**

If this unit should fail to work properly please re-check the following:-

1. The unit has been installed in accordance with the instructions in a vertical position as shown in figures 1 & 2.
2. Electrical power is reaching the unit.
3. Water supply is reaching the unit and the input has not become blocked with swarf or sediment.
- 4 The steam pipe or the steam outlet has not become blocked.

## **WARRANTY**

The supplier may exchange recondition or repair the unit on a return to base service at his discretion provided it is still within the warranty period. No responsibility can be accepted if the unit has been tampered with by unauthorized personnel. The most common cause for failure is poor water quality (i.e. impurities or scale)

# **OPERATING INSTRUCTIONS FOR** **AQUA STEAM GENERATOR**

## **Preliminary checks**

Make sure that the water supply is available and the electrical isolating switch is turned on. Two GREEN indications will flash alternately on the thermometer.

## **Switching on or off**

Lightly press the ON button. The RED indicators on the clock will illuminate to show that the unit is operational. The unit now starts to heat up, after two or three minutes steam will start to appear at the outlet. After 32 minutes the clock indicator will go out and steam will cease automatically.

## **Temperature adjustment**

On the thermometer a single indicator (YELLOW, AMBER, or RED) will be seen to be-flashing this is the temperature set point. The set point can be increased or decreased by pressing the UP or DOWN arrows alongside the thermometer. The indicators on the thermometer indicate the approximate temperature of the cubicle. If the cubicle temperature exceeds the set temperature the steam unit will automatically shut down temporarily, until such time as the temperature of the cubicle is below the set point, when, once again, the steam unit will automatically start to generate steam again provided the clock is still showing time.

## **Temperature Setting**

To set the control to remember the desired temperature set point, turn the generator on using the control in the cubicle adjust the control using the up and down arrows to the desired temperature then turn the control off. The control will then remember the desired set point for subsequent use.

## **NOTE**

AVOID PRESSING or applying HOT or COLD water directly to the bulb of the thermometer as this will affect the sensitivity of the unit

**WARNING** - Children and the infirm should be supervised when using the unit.

**IMPORTANT** - In hard water areas a good quality de-scaler must be fitted