



# INSTALLATION AND USER GUIDE

## 2.7KW ELECTRIC FLOW BOILER



**ADVANCE APPLIANCES LTD**

**PLEASE RETAIN FOR REFERENCE**

# PLUG N GLOW INSTALLATION GUIDE

Congratulations on choosing Plug n Glow 2 - the latest innovation from Advance Appliances.

Plug n Glow is manufactured in the UK and is a versatile mini electric flow boiler. Let's get the important stuff out of the way first. It can be installed vertically only and not horizontally and must be orientated as shown below. If it isn't, the heater pod may burn out. We can tell if the heater pod has burnt out and the warranty will not apply, so please be careful.

In addition, when it is installed you must be absolutely sure that the pod is full of water before switching on otherwise – no warranty – so once again – please be careful.

Figure 1



Figure 2



## DESCRIPTION AND OPERATION

Plug n Glow is a 2.7kw electric flow boiler with a two year guarantee. It is fitted with a 13amp plug which is sufficient to drive the boiler and a heating circulator pump rated up to 300 watts.

It can be used in so many ways that we have devoted a section to applications. There are more options – the applications refer to the most common usage.

First of all it can be programmed – Plug n Glow can be timed to come on and off twice a day in the week, at weekends or both (see page 9) and you can control the temperature on board using the calibrations on the dial (SWITCH “INT” and dial in temperature) or off board with, say a room thermostat, cylinder thermostat, pipe thermostat, flow switch or an outside frost thermostat (SWITCH “EXT” and set your off board thermostat to required temperature).

The off board thermostat can be connected to the PCB “CONTROL” connection. It must be ZERO VOLTAGE. It is just a switch, of course, so anything you want to use to switch it can be used as long as there is some temperature control. For example if a pump goes live and the Plug n Glow is being used as a boost it can be switched via a relay.

The temperature control dial is switched off once an external thermostat is used and the switch is in the EXTERNAL position.

### IMPORTANT NOTE

*When the switch is set to INTERNAL, (INT) operation, controlled by the adjustable temperature dial and the timer - a pump MUST be connected otherwise the unit will burn out.*

*When the switch is set to EXTERNAL operation, the unit will only come on when the timer and the connected external “switch” via “CONTROL” connection on PCB are calling for heat.*

*The external “switch” must be ZERO VOLTAGE and wired to the two terminals marked CONTROL in the Plug N Glow. The external switch could be a thermostat, a light, a pump etc. Please note if it is a light or a pump you must use a relay to make sure no voltage goes into the board.*

*So, if it is being operated by a pump for example the timer can be set on continuous (press ‘over-ride’) as demand is only made when the pump comes on.*

*The same goes for a thermostat operation, however if this is in a separate heating system such as a conservatory you may wish to set the timer appropriately.*

### THERE MUST ALWAYS BE PUMPED CIRCULATION DURING DEMAND PERIODS.

Also, once the unit is plugged in and there is demand the PUMP terminal on the PCB will be live. A pump can be connected for heating circuits, secondary hot water loops etc. Use proprietary circulators as you would in normal operation. Look at APPLICATIONS for ideas in using a pump.

Please note the Plug n Glow only operates on fully pumped sealed systems. It will not work on gravity.

It has two levels of safety to protect against overheat.

## INSTALLING

Please pay attention to orientation on page two. Please fix securely to a wall with screws and plugs appropriate to bear a load of 1kg.

It can be located anywhere appropriate inside a building in frost free conditions (unless being used with a frost thermostat) – It should be near a mains socket outlet and at a height and position where it can be accessed easily. If it is an open vented circuit it should be at least 500mm below the water line in the feed tank.

Do not install in an enclosure without sufficient ventilation and/or exposed to moisture.

To access connections remove the holding screw and lift off the cover. Remove plugs/wires etc as appropriate. Any pump or thermostat connections can now be made routing cables through the gland nuts fitted. The PCB is clearly marked PUMP and CONTROL.

Reconnect the wires to the PCB and replace the cover. The pipe connections are 22mm. Use 22mm compression fittings to connect the unit to the circuit.

This is an important bit – make sure that the circuit is full of water before proceeding. Plug n Glow is suitable for pressures up to 3bar. A sealed circuit needs an air vent at the top of the circuit as well as any vents that may be on radiators etc as it will be essential to expel all air.

A good idea is to connect the pump in the circuit remotely and run it before you run the heater to eliminate air pockets. The pump has a one minute over-run to extend the life of the heater.

Once you are completely satisfied that the circuit has no air then you can programme the Plug n Glow and plug in and switch on. If you decide to hard wire use a 13 amp switched spur, make sure any connections are accessible in case the unit needs to be switched off quickly.

Fill in the commissioning document on page 14 and leave it with these instructions at the customer's house.

### IMPORTANT NOTE

*If you are using Plug N Glow to add power to an existing system and want to switch it on with a pump please use a relay on the pump to switch "CONTROL" on/off. This ensures that it is a ZERO VOLTAGE switch. There will be no need to use the pump connections or add another pump.*

## MAINTENANCE

Plug n Glow requires no maintenance. However, it must be installed inside a building, and unless you are using it with a frost thermostat (in a greenhouse for example) it should be in a frost free environment. Always use a proprietary inhibitor in heating circuits and if the circuit is drained always replenish the inhibitor to correct dosage.

There are no user serviceable parts, however in case of pod or PCB failure Advance Appliances can provide spare parts. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

The red LED may flash at times during high temperature applications. This is normal and it re-sets three times automatically. If it remains flashing after the re-set please re-boot by switching off the power, waiting 10 seconds and switching back on.

## WARRANTY

We will guarantee trouble free use for two years provided it is installed and operated correctly, is free of air and you keep the commissioning document and your original receipt or invoice.

If it fails in service due to a manufacturing defect we will repair or exchange it like for like. We cannot be held responsible for other costs. If for example it is used in a place which is not frequented for long periods the system should be drained down. Use common sense – we are understanding, having built our business on trust and quality – we expect our customers to do their best to mitigate loss.

## APPLICATIONS

This is the fun bit – Plug n Glow is a great innovation and we have come up with the following ideas and applications. Bear in mind that the EXTERNAL (EXT) button will give you the option of switching it on and off with any switch – for example (using a contactor/relay to achieve VOLTAGE FREE switching) it could be connected so that a pump in a gas central heating system is the switch – if the pump is live it can switch Plug n Glow on when there is demand on the heating system. Or – using a contactor/relay again – a home office heating system could be activated by turning the light on as long as the circuit has a room thermostat incorporated. Or again – for heat pump defrost using off board heat pump controls.

You can incorporate more than one, just link them in series but please use individual power points – not power extension blocks.

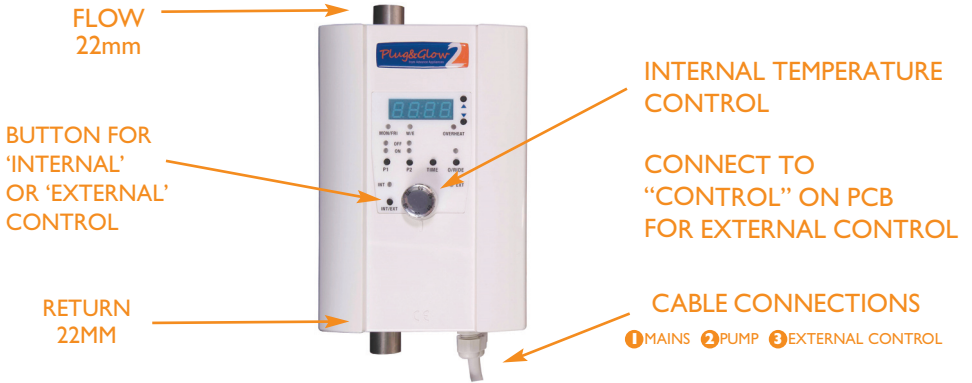
So –here goes:

- HOME OFFICES HEATING WITH SMALL RADIATOR/UNDERFLOOR
- GARAGE OR WORKSHOP HEATING
- ADD AS A BOOST TO EXISTING SYSTEM IF YOU EXTEND YOUR HOUSE
- DRY OUT SCREED IN NEW BUILD
- DE FROST HEAT PUMP SYSTEMS
- USE WITH UNDERFLOOR OR RADIATOR(S) IN YOUR CONSERVATORY
- GREENHOUSE HEATING WITH EXTERNAL THERMOSTAT TO PREVENT FROST FROM KILLING PLANTS – WITH PIPE HEATING OR UNDERFLOOR LOOP FOR AN EVEN TEMPERATURE
- SECONDARY RETURN ON LARGE HOT WATER SERVICE LOOPS – ESPECIALLY WITH HEAT PUMP, AND THERMAL STORE INSTALLATIONS TO AVOID DE-STRATIFYING THE CYLINDER
- THERMAL DISINFECTION AND LEGIONELLA CONTROL
- DE STRATIFICATION OF CYLINDERS
- IN LINE PRE HEAT FOR COMBI BOILERS USING PV WITH A FLOW SWITCH

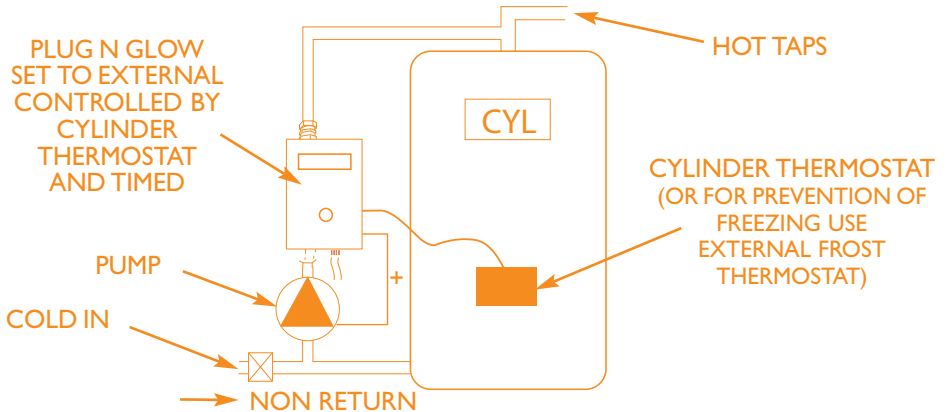
### OPERATION

- HOLIDAY HOMES USING FROST STAT TO PREVENT HEATING OR HOT WATER TANK FREEZING
- AT HOME IN WINTER IF YOU ARE ON HOLIDAY EITHER TIMED OR ON FROST THERMOSTAT
- LINK A COUPLE TOGETHER FOR HIGHER OUTPUT FOR SHOPS, SURGERIES OFFICES ETC
- HEATING OPEN TANKS FOR INDUSTRIAL PROCESSES – WASHING ETC
- TOWEL RAILS ALL YEAR ROUND

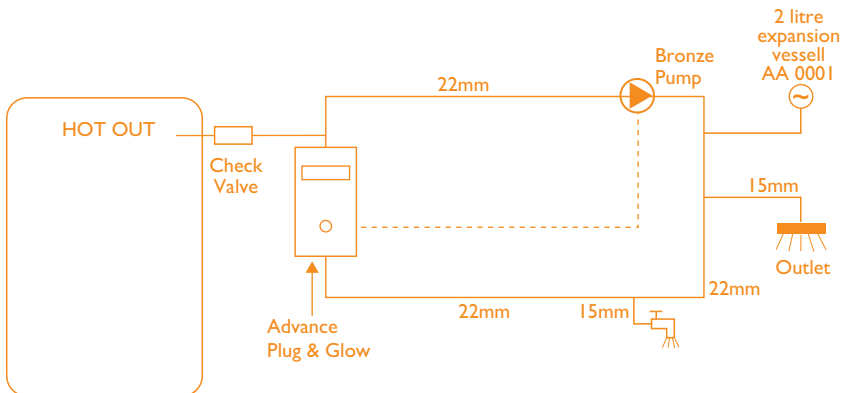
**Figure 3 - GENERAL CONTROL SCHEMATIC**



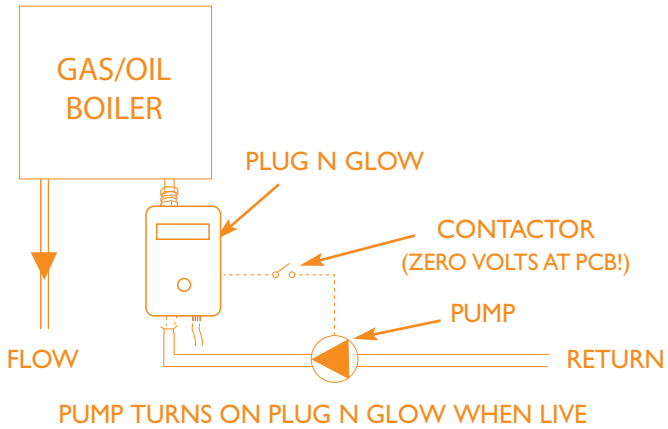
**Figure 4 - CYLINDER DESTRTIFICATION AND THERMAL DISINFECTION**



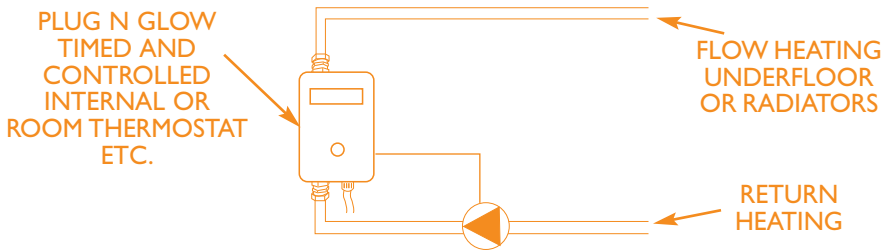
**Figure 5 - SECONDARY RETURNS WITH HEAT PUMP AND THERMAL STORE CYLINDERS**



## Figure 6 - ADD TO HOME HEATING



## Figure 7 - STAND ALONE HEATING - CONSERVATORY/HOME OFFICE

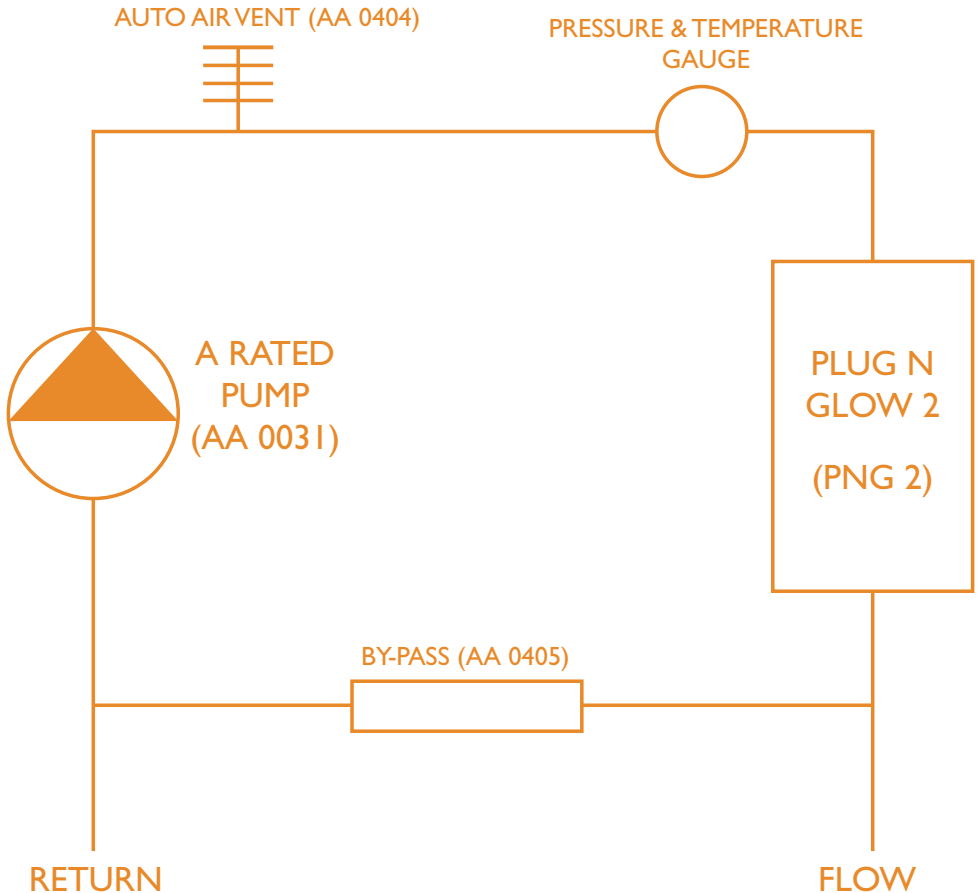


## Figure 8 - GREENHOUSE/HOLIDAY HOME ETC - PREVENT FREEZING



FOR HOLIDAY HOMES ETC PUT PLUG N GLOW IN HEATING CIRCUIT AND CONNECT TO FROST THERMOSTAT TO PREVENT WINTER FREEZING

## PLUG N GLOW + INSTALLATION



The plate is pre drilled for ease of hanging - please use appropriate fixing. To use with a heating system add a sealed system kit (reference code AA 0400) which has a filling loop, relief valve and 8 litre expansion vessel included. For drying out screed in underfloor systems these items may already form part of the system - please check. The unit can be moved from site to site for repeated use.



## PLUG N GLOW 2 USER SETUP INSTRUCTIONS

*Note:* If no buttons pressed for 20 seconds display will revert to normal operation

### Setting the Clock

Press 'Time' button

Display flashes current day of week

Use ▲ or ▼ to change the day, press 'Time'

Display flashes the hour

Use ▲ or ▼ to change the hour, press 'Time'

Display flashes the minutes

Use ▲ or ▼ to change the minutes, press 'Time'

Clock now set, display shows current time

The clock has a battery backup to keep the time in the event of power loss

### Setting the program P1 or P2

Example shows P1

Press 'P1' button

Display shows 'Pr 1'

The 'Mon/Fri' or 'WE' (week end) LED flash the current day timer mode

Use ▲ or ▼ to edit the program day to either Mon/Fri, WE or both if you want all days the same, press 'P1'

The 'On' LED lights and the start hour flashes

Use ▲ or ▼ to change the hour to turn heater on, press 'P1'

The 'On' LED lights the start minute flashes

Use ▲ or ▼ to change the minute to turn heater on, press 'P1'

The 'Off' LED lights and the off hour flashes

Use ▲ or ▼ to change the hour to turn heater off, press 'P1'

The 'Off' LED lights and the off minute flashes

Use ▲ or ▼ to change the minute to turn heater off, press 'P1'

Program P1 now set, display shows current time

### Override

Press the 'Override' button to manually turn on the heater

The 'Override' LED indicates that the heater is on.

Press the 'Override' button again turns the heater off.

*Note:* The heater will stay permanently on when overridden irrespective of timer until turned off by 'override' button as described above.

### Internal/External Control

When using an external room thermostat or switch

The 'Ext' LED should be selected by using the INT /EXT button

*Note:* In Ext mode the front panel temperature knob is disabled

Without any external room thermostat

The 'Int' LED should be selected by using the INT/EXT button

The temperature of the heater is controlled using the front panel knob

*Note:* If 'Ext' is selected the heater will not warm up

## TECHNICAL DATA

SIZE W X H X D	120MM X 207MM X 85MM
WEIGHT	0.9 KG
CONNECTIONS PLUMBING	22MM PIPE
POWER	2.7KW POD + 300 WATTS PUMP
RATING	13 AMPS
MAX OPERATING PRESSURE	3 BAR
OPERATING TEMPERATURE	UP TO 80°C
SAFETY CUT OUT	90°C AND 95°C
ERP CLASS	D

## ELECTRIC BOILER SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission according to the manufacturer's instructions and complete this Benchmark Commissioning Checklist will invalidate the warranty. This does not affect the customer's statutory rights.

Customers Name \_\_\_\_\_ Telephone Number \_\_\_\_\_

Address \_\_\_\_\_

Boiler Make and Model \_\_\_\_\_

Boiler Serial Number

Commissioned by (print name) \_\_\_\_\_

Company Name \_\_\_\_\_ Telephone Number \_\_\_\_\_

Company Address \_\_\_\_\_ Commissioning Date \_\_\_\_\_

Building Regulations Notifications Number (if applicable) \_\_\_\_\_

**CONTROLS** Tick the appropriate boxes Room Thermostat and Programme/Timer  Programmable Room Thermostat  Load/Weather Compensation  Optimum Stat Control

Time and Temperature Control to Heating Thermostatic Radiator Valves Fitted  Not Required

Automatic Bypass System Fitted  Not Required

### ALL SYSTEMS

The system has been flushed and cleaned in accordance with BS7593 and boiler manufacturer's instructions Yes

What system cleaner was used? \_\_\_\_\_

What inhibitor was used? \_\_\_\_\_ Quantity  Litres

### ALL INSTALLATIONS

The heating and hot water system complies with the appropriate Building Regulations Yes

The boiler and associated products have been installed and commissioned in accordance with the manufacturer's instructions Yes

The operation of the boiler and system controls have been demonstrated to and understood by the customer Yes

The manufacturer's literature has been explained and left with the customer Yes

Commissioning Engineer's Signature \_\_\_\_\_ Customer's Signature \_\_\_\_\_

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

## EC Declaration of Conformity

We: **ADVANCE APPLIANCES LTD**

Of: Coppice Side Industrial Estate, Brownhills, Walsall WS8 7EX

declare that:

Equipment: **Plug and Glow**

The following CE Marking Directives are applicable:

**2006/95/EC** Conforms with the safety objectives of the Low Voltage Directive and its amending Directives.

**2004/108/EC** Conforms with the essential requirements of the EMC Directive and its amending Directives

and has used the relevant parts of the following standard as guidance for demonstrating conformity to the Directive named above:

**BS EN 60335-1:2012**

**BS EN 55014-1:2006+A2:2011**

**BS EN 55014-2:1997+A2:2008**

**BS EN 61000-3-2:2013**

**BS EN 61000-3-3:2014**

I hereby declare that I am the person who is authorized to compile the technical file and that the equipment named above has been tested and found to comply with the relevant sections of the above referenced specifications. The unit complies with all of the relevant essential requirements of the applicable Directive.

Signed by



**Name: G.Egginton**

**Position: Director**

**Done at:** Address listed above.

**On: 09.02.16**

## HOT WATER ASSOCIATION CHARTER MEMBER

**Hot Water Association (HWA) Members undertake to offer their customers the following:**

- To supply fit for purpose products clearly and honestly described
- To supply products that meet or exceed appropriate standards and building and water regulations
- To provide pre and post sales technical support
- To provide clear and concise warranty details to customers



[www.hwacharter.org](http://www.hwacharter.org)



UNIT 4 COPPICE SIDE IND EST BROWNHILLS WALSALL WS8 7EX TEL 01543 377723  
For Terms and Conditions go to [www.advanceappliances.co.uk](http://www.advanceappliances.co.uk)