



SPC CurveVector Cassette Heater

Installation, Operation and Maintenance Instructions

IOM 103 Issue 1



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1. General

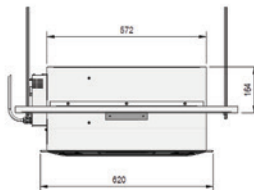
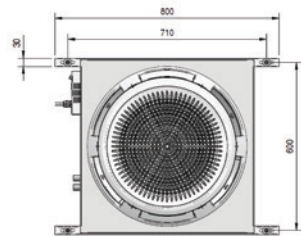
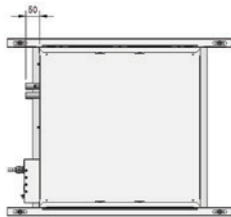
1.1 Description

The Belgravia CurveVector is a self-contained fan convector heater designed for recessed installation into suspended T bar or plasterboard ceiling. The unit can be freely suspended if required. Versions of the unit are available for use against low grade hot water temperatures

associated with heat pumps and condensing boilers, as well as conventional boiler temperatures. The version for low grade water incorporates a 3 row coil heat exchanger, while that for conventional hot water temperatures has a 2 row coil heat exchanger.

Size WxLxH	570mm x 572mm x 300mm
Weight	32kg
Power supply	230V/1Ph/50Hz
Fan type	Backward curved centrifugal
Motor type	EC (brushless DC)
Maximum power draw	155W
Internal volume (litres)	1.5 (2 row coil), 2.1 (3 row coil)
Hot water connections	22mm copper
Specific fan power (W/l/s)	0.14 spd1, 0.19 spd 2, 0.24 spd3
Approx. NR level	29 spd1, 35 spd2, 39 spd3

Table 1. General information



1.2 Receipt and Preparation

The units are wrapped and display the SPC works order number, model reference, site reference (where appropriate) and site details.

On receipt, check that all details are correct in the customer schedules prior to opening the packaging. Damages should be reported to the carrier and to the SPC Sales Office immediately.

It is recommended that the packaging is kept in place and the units stored in a safe area until the necessary services are complete in order to avoid the possibility of site damage.

Within the main packaging, in addition to the CurveVector unit itself, there will be the grille/cover, 2-off mounting angles and 2-off blind plates for use if some of the air outlets are not being used.

Any controls supplied with the unit will be packaged separately and will be supplied c/w the relevant wiring diagram for the control options ordered.

1.3. Safety guidelines before starting installation

Fan convectors are a component in a complete heating system and consideration must be given to the operation of the complete system during the installation process. The installer of the fan convector is responsible for ensuring the following:

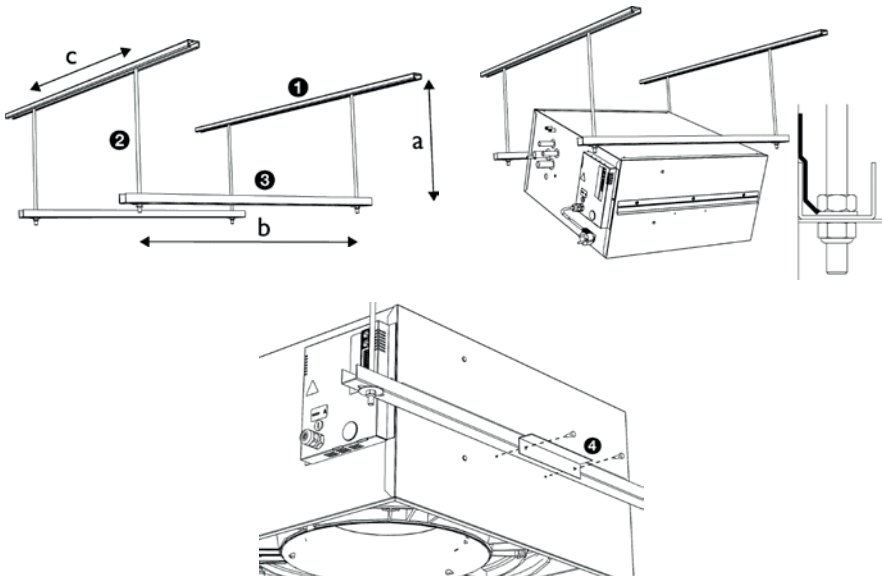
- Equipment has been installed in both a safe and suitable position for proper operation and servicing to maximise the unit's working life.
- The installation has been made in line with the manufacturer's guidelines, best industry practice and any relevant regulations.
- Work has been carried out by competent personnel in possession of the necessary tools and personal protective equipment. The personnel must have read and fully understood the instructions and scope of work.
- The product has been installed such that children under 3 years are kept away unless fully supervised. Children between the ages of 3 and 8 should only switch the unit on/off if they are fully supervised and have been given specific training and have an awareness of the hazards involved; they must not plug in the unit or perform maintenance. Tamperproof controls are available to limit use.
- If the product is to be used by persons with reduced physical, sensory or mental capability, then they must be supervised or have been instructed in the use of the product in a safe manner.

2. Installation

2.1 Mounting general

Units should be installed at a minimum of 1.8m above the floor and a recommended maximum height of 3m.

2.2 Installation in suspended ceiling



The drawing above gives details of the arrangement of the suspension system and the dimensions required: a = hanging height to suit the height of the false ceiling, b = 670 to 750mm, c = 600mm. The channels marked 1 are Unistrut etc fixed to the ceiling, these and the threaded rod, marked 2, are not supplied with the unit. The channels marked 3 are the suspension profiles supplied with the unit.

The Unistrut is first secured to the ceiling/soffit, and the threaded rod affixed (M8 recommended).

The suspension profiles are then fixed to the end of the threaded rod, and then the unit is hooked onto these suspension profiles. Note that some adjustment is still possible at this stage.

Finally, the suspension is secured on both sides using the securing brackets supplied with the unit. These brackets **MUST** be fitted.

The unit should then be brought into line with the underside of the T bars and then levelled.

2.3 Installation in finished/plasterboard ceiling

The same suspension method and equipment are used as above.

The plasterboard needs to be cut such that it exceeds the outside dimensions of the unit (570 x 572mm) but is smaller than the overall extents of the grille (620mm x 620mm). The height of the unit should then be adjusted such that it finishes just above the level of the plasterboard.

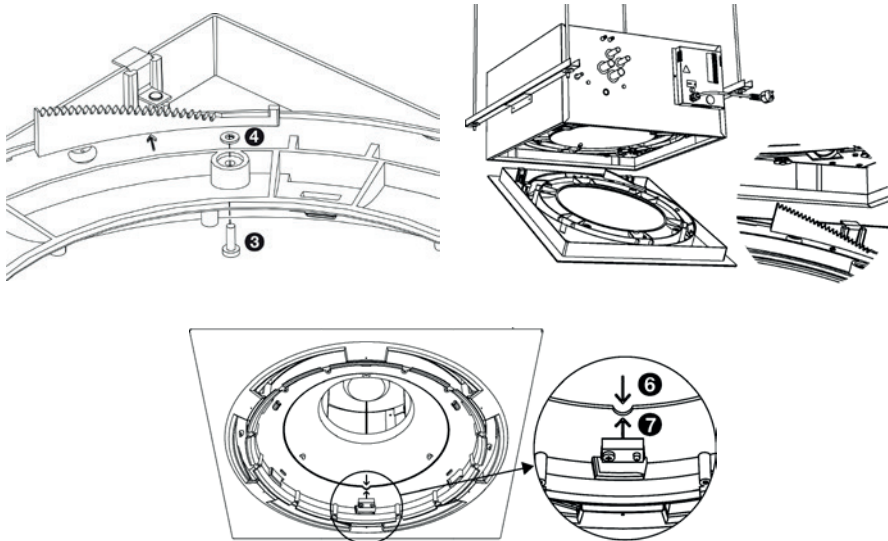
The weight of the unit must be taken by the suspensions and threaded rods, not the plasterboard ceiling.

When installing the units in plasterboard ceilings rather than suspended ceilings with removable tiles, access panel(s) will need to be arranged in the finished ceiling.

2.4 Free-hanging

While the units are intended for recessed installation, they can be free-hanging if required. The units should be suspended from the ceiling as above.

2.5. Grille/cover installation

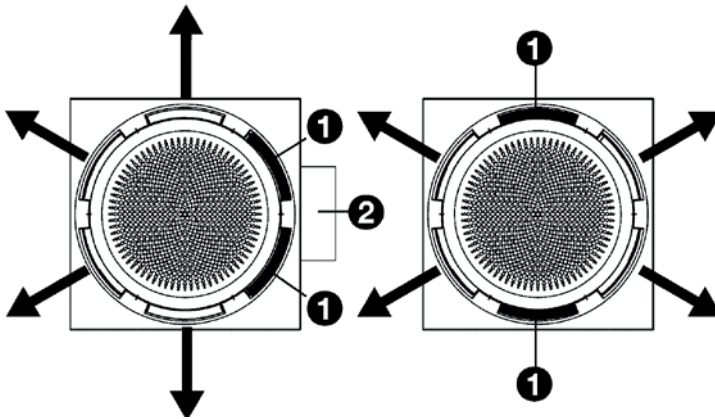


The central, perforated inlet grille holding the filter is first removed by turning anti-clockwise (bayonet catch). The remaining portion of the grille is then pushed inside the unit and fixed using the 4-off retaining screws. Note that the

grille will only fit onto the unit in one position – arrows are marked on both pieces to indicate the correct positioning. Finally, the central, perforated grille is re-fitted.

2.6. Blanking plates

The unit is supplied with 2-off blanking plates which can, if required, be fitted to cover up to 2-off of the outlets in order to direct the outflow, see sketch.



3. Fluid piping

The unit is supplied with 22mm compression pipe terminations. When installed, it is important that the flow and return are made to the correct connection in order to optimise the heat output of this unit. The flow and return connections are marked with arrows on the side of the unit casing. Note that a thermostatic valve and actuator with a remote sensor is fitted to the return pipe connection – this must be set at no higher than 65°C. This provides a maximum temperature limit on the leaving air.

Ensure that 22mm final connections are made with rounded and deburred copper pipe.

There is an extended air vent which penetrates the side of the casing next to the flow and return pipework; this can be used during commissioning to purge any air out of the heat exchanger. Additional air vents should be fitted at any high points in the pipework to prevent any airlocks. Air vents should be automatic unless they are to be regularly serviced.

If pipework is turned through 90° at the unit, ensure that it does not run in front of the electrical box and prevent it from being accessed.

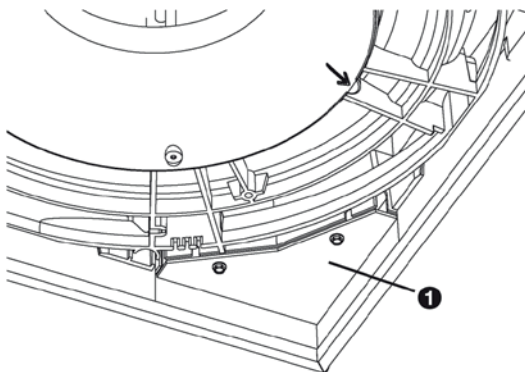
4. Wiring

Units incorporate high efficiency EC motors directly coupled to the fan. Power to the units is from a standard 230V/1Ph/50Hz supply and transformation and rectification is provided by the motor. The table above gives details of the power draw.

All wiring should be undertaken by a certified electrician in line with the latest version of the wiring regulations. The unit **MUST** be isolated prior to working on it or opening the grille. It is recommended that each unit is powered from a dedicated fused/switched spur or socket mounted within 1.5m of the unit – the fcu/socket must remain accessible to allow the unit to be serviced.

An earth connection must be provided as part of the power supply. The unit is protected by a 1.6A fuse.

Electrical connections, both power and control, are made direct to a terminal block in the electrical housing inside the unit. Cable glands are supplied on the side of the electrical box for power and control wiring. The electrical housing is easily accessible from the side of the unit and is held in by two screws. If access must be from the bottom then this can be made after removing the main cover (see earlier). There is an electrical housing cover which can then be removed by loosening two set screws.



5. Control

A range of control options are available with the unit, and a wiring diagram is provided with each. Controls for CurveVector units will be remote and will consist of on/off, change speed or proportional thermostats, along with on/off, change speed and summer/winter switches. If the wiring diagram is not available or lost, please contact SPC. No attempt to wire up the units

should be made without the relevant wiring diagram; failure to abide by this will result in voiding of the warranty.

When using remote thermostats, they should be fitted on the wall at a height of approximately 1.5m and away from any local sources of heat and/or direct sunlight.

6. Commissioning

Commissioning of CurveVector heaters requires the following:

- Check rotation of all fans
- Check leaving air temperature
- Check operation of any controls
- Check for no excessive and/or unexpected noise

7. Maintenance

To ensure effective and safe operation of the unit, it is imperative that the internal surfaces remain clean. In order to maintain the heater at maximum efficiency, it is recommended, especially when mounted in dusty areas, that the unit is cleaned internally using a vacuum cleaner nozzle attachment and that this should be done at least once every 3 months, depending on the environment. Alternatively, a dry cloth can be used, but the unit must not be cleaned using water or spray. Under no circumstances should moisture be allowed in contact with the internal surfaces of the heater. Access to the inside of the unit can be achieved by the removal of the central grille.

Always ensure that the unit is electrically isolated prior to opening the grille for cleaning etc. The external panels can be cleaned using a dry cloth or mild detergent, but moisture must not be allowed to seep inside the casing.

A filter is included, attached to the perforated grille, and this can be removed from the unit prior to being cleaned/dried and refitted. It is recommended that the filter (if fitted) is inspected regularly initially to determine the regularity with which it should be cleaned; this will depend on the environment and the level of dust, etc.

The coil heat exchanger can be cleaned with a vacuum cleaner. It is accessed by removing the black plastic moulded housing, which is held in place on four screws.

Fan bearings – the backward curved fan incorporates sealed for life bearing and no lubrication is required.

8. Fault finding

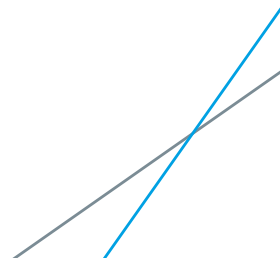
Below is a list of common faults and the steps required to resolve them.

Fault	Cause	Remedy
Fan not running	No power	Check electricity supply to unit
	Fuse blown	Check unit fuse and any circuit breakers
	Controls	Check controls are not preventing fan(s) from operating
	Damaged fan/motor	Replace faulty fan assembly
Low leaving air temperature	Controls	Check controls are not preventing fan from energising. Check controls are not preventing valves from opening in the pipework external to the unit.
	No/low water flow and/or temperature	Check that there is a good flow of hot water reaching the unit and that there is not an excessive temperature drop between the flow and return pipes. High temperature drops indicate very low water flowrates. Check temperature of hot water flow to the unit.

6. Disposal

Units have a heat exchanger from copper tubes and aluminium fins. The units include fan assemblies from mixed materials and printed circuit boards which should be disposed of separately and in line with WEEE directives. It is not recommended that the units are disposed of with domestic waste but that the components are recycled as far as possible.







SPC House
Evington Valley Road
Leicester
LE5 5LU

T: 0116 249 0044
E: spc@spc-hvac.co.uk
spc-hvac.co.uk

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