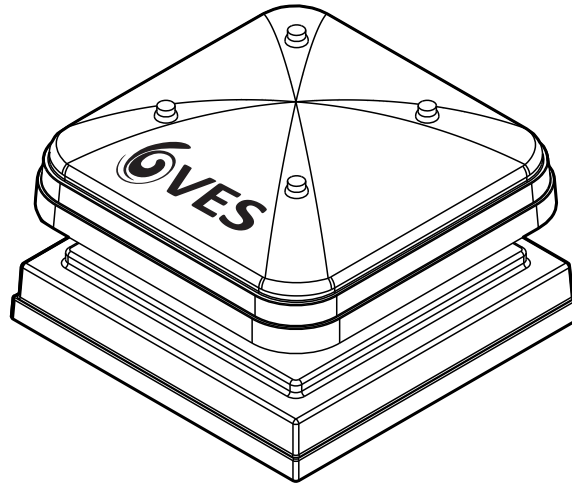





Skypod Roof Extract Units


Installation, Operation and Maintenance Manual





Important  **This manual must be read in full before Installation, Operation and Maintenance of the units supplied**

Please ensure that this document is passed to the end user. This manual forms an integral part of the product and should be kept for the working life of the product. Additional copies of this and supporting documents are available by contacting VES or by visiting www.ves.co.uk and following the 'Information Centre' link.

The following symbols used within this document refer to potential dangers, advice for safe operation or important points of reference

Warning  Indicates hazards associated with electric current and high voltages

Caution  Indicates hazards that require safety advice for personnel or potential unit/property damage

Important  Indicates important information

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Introduction 1 The **Skypod** series is a range of axial fan roof extract units with duties up to 7.5m³/s. Suitable for curb and profile sheet mounting, available in both low silhouette side extract and vertical discharge configurations. Skypods are available with or without fans installed. The standard ambient operating temperature of the range is -25 to +70°C, for specific temperatures and fan details see Page 7.

For further technical details regarding dimensions and weights, contact VES on **08448 15 60 60**, quoting the sales order (SO) number and the unit type as found on the unit nameplate, or alternatively visit www.ves.co.uk.



Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Nomenclature	2	Point Description	Point Variants	Details (as appropriate)
Part Number Coding	1	Product	SKC SKV	Horizontal Discharge Vertical Discharge
	2	Unit Size	250...800	Sequential see unit outline for details
	3	Poles	/4 /6 Null	4 Pole 6 pole EC Motor
	4	Phase	-1 -3	230V 50Hz Single Phase 400V 50Hz Three Phase
	5	Motor Type	Null /EC	AC Motor EC Motor
	6	Backdraft Shutter	Null /BS	No Backdraught Shutters Backdraught Shutters
	7	Bird Mesh	Null /BM	No Bird Mesh Bird Mesh
	8	Colour	Null	R7004 as standard

Typical Example SKC250-1/EC/BS/BM

SKC 250 -1 /EC /BS /BM
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧



Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Receipt of Goods & Handling 3

Immediately upon receipt of goods, check for possible damage in transit paying particular attention to fan impellers and unit casing. Prior to installation please check to ensure alignment and smooth rotation of the impeller after transit. Also check to ensure that any ancillary items are included. These will normally be supplied fitted or, in the case of small items, taped to the unit. In the event of any damage having occurred or if any item is found to be missing, it is essential to inform VES Andover Ltd. within **7 days** of delivery quoting sales order number and the unit type, as found on the unit nameplate. After this period, VES would be unable to accept any claim for damaged or missing goods.

Installation 4

The entire system must be considered for safety purposes and it is the responsibility of the installer to ensure that all of the equipment is installed in compliance with the manufacturer's recommendations, with due regard to the current HEALTH AND SAFETY AT WORK ACT and conforms to all relevant statutory regulations.

Where a unit is installed so that a failure of components could result in injury to personnel, precautions should be taken to prevent such an injury. If the unit is installed where there is a reasonable possibility of persons or objects coming into contact with the impeller whilst operational, a guard should be fitted or steps taken to prevent this. It is the installer's responsibility to ensure that access panels are not obstructed in any way and safe working access for maintenance must be provided in accordance with Health and Safety and Building Regulations. For confirmation of required access please see the appropriate unit outline drawing.

For optimum unit performance, careful consideration must be paid to the location of the unit in relation to the ductwork and associated items; placing the unit directly adjacent to a bend in ductwork will impede airflow and reduce performance. Consideration must also be given by the installer for adequate illumination of the unit location in order for safe maintenance. Further consideration should be given to the unit's position and should be secured into place as appropriate; this is especially important with external mounting as the wind and elements may effect the overall stability of the unit.

When provided, the appropriate lifting lugs should be used and lifted using spreaders, taking into account the weight of the unit. The lifting gear should be arranged so as not to bear on the casework. The lifting lugs may be removed after installation if required. It is recommend that a bird guard mesh is fitted for safety reasons.

Caution



If the fan unit is installed where there is a reasonable possibility of persons or objects coming into contact with the impeller whilst operational, a guard should be fitted or steps taken to prevent this.

Important



It is the responsibility of the installer to ensure that the unit is installed in a manner which will not result in injury or damage to either the unit or property.

Caution



Only experienced fitters should undertake this work. Take necessary safety precautions when working in elevated positions.

These products contain rotating parts and electrical connections which can be a danger and could cause injury, although unlikely as all fans are fitted with motor side guards. The axial fans generate noise; it is advised that if activities have to be conducted in close proximity to the working units the noise level should be taken into account.

Taking the previously mentioned points into consideration, it is advised that this fan should be installed out of normal reach of personnel.



Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

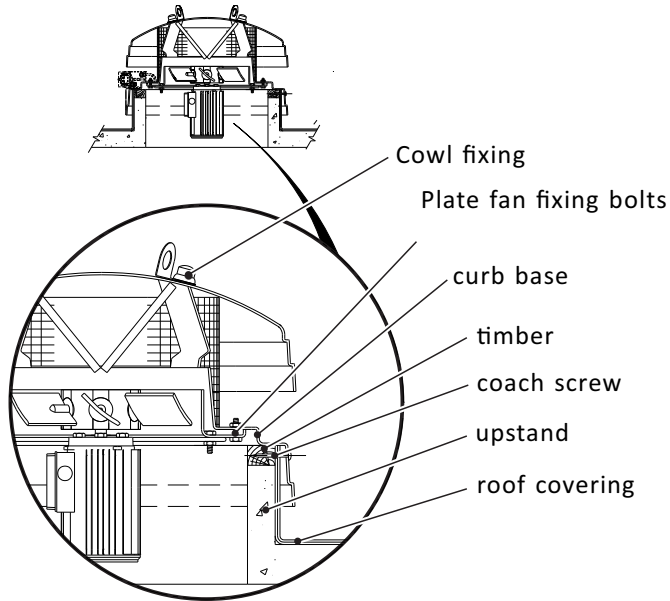
Installation 4 Continued

Units with curb base mounting:

The Skypod is designed to sit on top of a prepared roof upstand, for further dimensional details refer to the unit outline drawing. Note: In some circumstances the fan fixing bolts may rest on the timber upstand, where necessary trim the upstand to suit to ensure correct seating. We recommend that each unit be fixed to the upstand with coach screws or similar, through the side of curb base into the timber upstand see *fig. 1*. This is especially important as strong winds could be encountered in exposed locations.

Typical curb base detail
(SKC unit shown)

Fig. 1



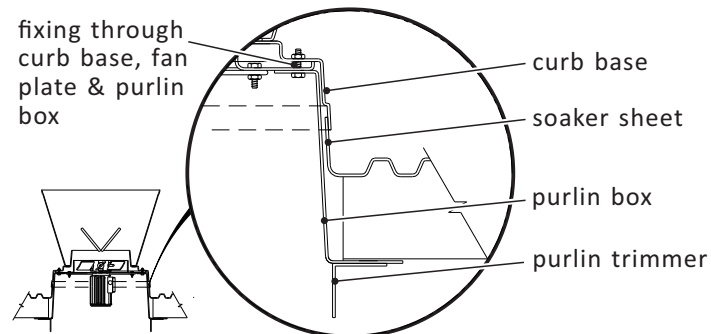
Units with soaker sheet base mounting:

Before cutting into the roof ensure that the correct profile base has been purchased. All roof apertures must be independently supported by structural trimmers in accordance with local building regulations, in order to protect plant weight, and to support any service personnel.

The Skypod unit complete with soaker sheet is designed for sloping roofs only, to a maximum pitch of 30°. We recommend that each unit be supported by and fixed to a purlin box, using the appropriate fixings (supplied by others), through the top of the curb base and fan plate (see *fig. 2*). In some circumstances the fan fixing bolts may rest on the trim around the top of the purlin box upstand. Cut and trim this to suit, to ensure the unit is correctly seated. This installation may require more than one engineer as access to both the roof and ventilated area may be required. The soaker sheet acts as flashing to ensure weather proofing.

Typical profile roof detail
(SKV unit shown)

Fig. 2



Important



Where the Unit is fitted to corrugated roofs, the unit must sit central to any one sheet and not where two sheets join together in order to provide good weatherproofing.



Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Installation 4 Continued

It may not always be possible to install the unit in its optimum position, however the following should be considered when positioning the unit:

If locating roof units in roof lights, trimmer supports are essential. Care should be taken to avoid sitting units directly above tie bars or purlins as this may obstruct the fan and reduce the unit performance.

Important



Where the Unit is fitted to corrugated roofs, the unit must sit central to any one sheet and not where two sheets join together to ensure there is adequate support for the unit.

On existing roofs we recommend that the top edge of the soaker sheet be installed under the ridge capping, however good weather proofing can also be achieved further down the roof provided the soaker sheet top edge tucks under the existing roof panel. For structural support a purlin box should be used, and trimmers fitted between the purlins to support the assembly. For tiled roofs, the soaker sheet should be appropriately flashed as you would a chimney so as to ensure good weatherproofing.

On metal decking roofs it is often impractical and unwise to attempt to lift the roofing sheets and install the roof unit as described above. In these circumstances we recommend that a sufficiently sized hole be cut in the required location for the roof unit and the unit be supported and fixed into position as above.

Once in position a cover sheet can be run from the apex (under the ridge capping), down to and just overlapping the edge of the unit soaker sheet, to ensure weatherproofing (see *fig. 3*).

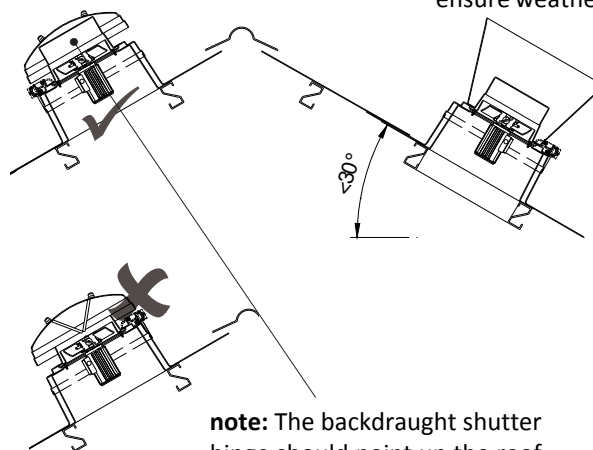
Ideal location

Where possible site the roof unit with the top edge of the soaker sheet placed under the ridge capping.

If a lower position is required tuck top edge of soaker sheet under desired roof panel to ensure weatherproofing.

Recommended soaker sheet installation

Fig. 3



note: The backdraught shutter hinge should point up the roof incline, for correct operation.



Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring 5 & Fan Installation

Warning



The electrical supply **must be fully isolated** before attempting to affect any work on this unit. All electrical connections to any unit must be carried out in accordance with the current edition of the I.E.E Regulations, only competent Electricians should be allowed to affect any electrical work to our units.

Important



It is the customer's responsibility to supply earth fault protection through the building installation device and a dedicated, isolated power supply with overload protection, to account for motor start up currents. See specific fan details Fig. 5 & 6 .

Warning



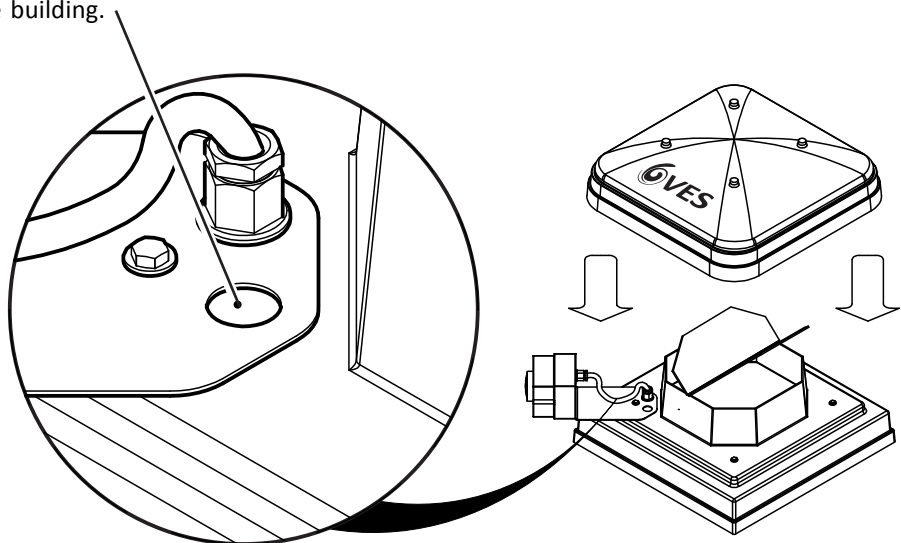
Do not connect any unit to an electrical supply voltage outside of that indicated on the motor nameplate.

If an optional isolator is fitted; make the appropriate electrical connection as shown in fig. 4 using a suitable weatherproof gland (supplied by others) and the appropriate knockout in the isolator. Should the installation require a supply from within the building a pre-punched hole in the isolator plate and fan have been provided. Using the hole in the plate as a guide, carefully make a hole in the GRP and again gland as appropriate. It may be necessary to remove the cowl or the entire fan assembly in order to affect this work; it is important only the required fixings are removed and that all parts are reinstated correctly.

The mains supply cable should be suitably sized and terminated as shown in fig. 7, 8 ... 18. Electrical details are shown in fig. 5 & 6 .

Pre-punched hole for 20mm cable gland to connect supply to the isolator from within the building.

Isolator bracket
Fig. 4





Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring 5 Continued & Fan Installation

EC Fan Table

Fig. 5

Unit Type	Voltage (VAC)	Motor Size (KW)	Motor Full Load Current (A)	Fan Speed (RPM)	Maximum Operating Temperature (°C)	IP Rating	Fan Wiring Diagram	(Optional) Isolator Wiring Diagram
SKC250-1/EC	230 1 Phase	0.11	0.9	2580	60	IP44	Fig 7	Fig 13
SKC/V 355-1/EC	230 1 Phase	0.45	2.4	1950	60	IP54	Fig 8	Fig 14
SKC/V 400-1/EC	230 1 Phase	0.52	2.7	1800	60	IP54	Fig 8	Fig 14
SKC/V 450-1/EC	230 1 Phase	0.31	1.65	1300	60	IP54	Fig 8	Fig 14
SKC/V 500-1/EC	230 1 Phase	0.84	4.4	1440	60	IP54	Fig 9	Fig 15
SKC/V 500-3/EC	400 3 Phase	1.00	1.7	1550	60	IP54	Fig 9	Fig 15
SKC/V 560-1/EC	230 1 Phase	0.58	3.2	1110	60	IP54	Fig 9	Fig 15
SKC/V 560-3/EC	400 3 Phase	1.25	2.1	1450	60	IP54	Fig 9	Fig 15
SKC/V 630-1/EC	230 1 Phase	0.85	4.3	1050	60	IP54	Fig 9	Fig 15
SKC/V 630-3/EC	400 3 Phase	1.25	2	1200	60	IP54	Fig 9	Fig 15
SKC/V 710-1/EC	230 1 Phase	0.66	3.4	890	60	IP54	Fig 9	Fig 15
SKC/V 710-3/EC	400 3 Phase	1.95	3.2	1150	65	IP54	Fig 9	Fig 15
SKC/V 800-3/EC	400 3 Phase	3.1	4.8	1100	55	IP54	Fig 9	Fig 15

AC Fan Table

Fig. 6

Unit Type	Voltage (VAC)	Motor Size (kW)	Motor Full Load Current (A)	Fan Speed (RPM)	Maximum Operating Temperature (°C)	IP Rating	Fan Wiring Diagram	(Optional) Isolator Wiring Diagram
SKC250/4-1	230 1 Phase	0.05	0.24	1370	55	IP44	Fig 10	Fig 16
SKC/V 315/4-1	230 1 Phase	0.14	0.62	1360	50	IP44	Fig 10	Fig 16
SKC/V 355/4-1	230 1 Phase	0.18	0.77	1230	60	IP44	Fig 10	Fig 16
SKC/V 400/4-1	230 1 Phase	0.26	1.15	1320	55	IP54	Fig 11	Fig 17
SKC/V 450/4-1	230 1 Phase	0.56	2.5	1320	70	IP54	Fig 11	Fig 17
SKC/V 500/6-1	230 1 Phase	0.30	1.3	910	70	IP54	Fig 11	Fig 17
SKC/V 500/4-1	230 1 Phase	0.76	3.3	1230	70	IP54	Fig 11	Fig 17
SKC/V 560/6-1	230 1 Phase	0.46	2.2	930	70	IP54	Fig 11	Fig 17
SKC/V 560/4-3	400 3 Phase	1.05	2.2	1280	70	IP54	Fig 12	Fig 18
SKC/V 630/6-1	230 1 Phase	0.74	3.4	910	70	IP54	Fig 11	Fig 17
SKC/V 630/4-3	400 3 Phase	2.40	4.6	1320	65	IP54	Fig 12	Fig 18
SKC/V 710/6-1	230 1 Phase	0.95	4.4	850	65	IP54	Fig 11	Fig 17
SKC/V 710/6-3	400 3 Phase	0.94	1.7	900	70	IP54	Fig 12	Fig 18
SKC/V 800/6-3	400 3 Phase	1.60	3.6	920	70	IP54	Fig 12	Fig 18



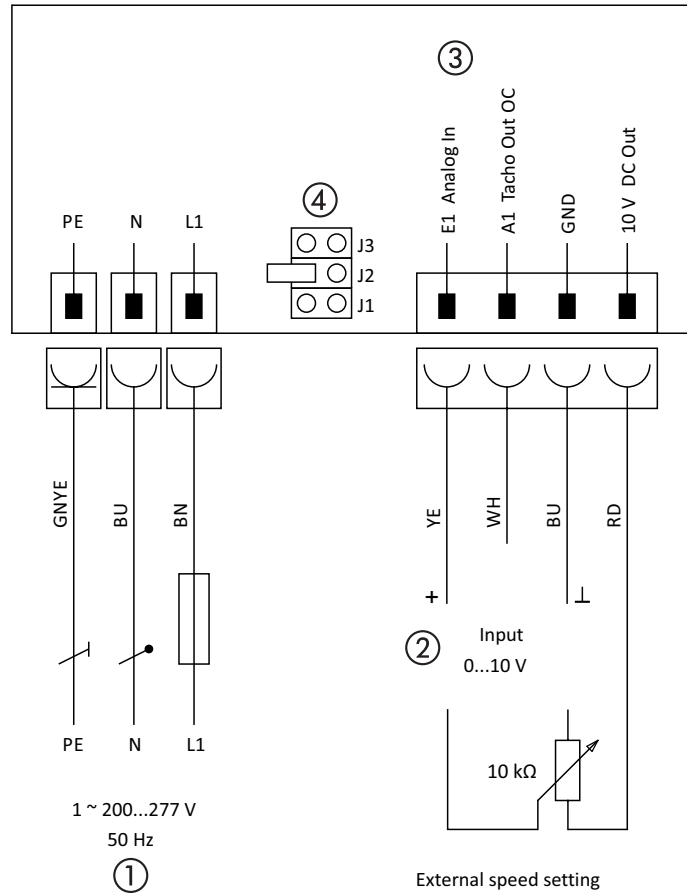
Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring & Fan Installation 5 Continued

SKC 250-1/EC

Fig. 7



- ① Mains 200...277 V
- ② External speed [reset 0...10 V]
- ③ Signal Connection
- ④ Operating Mode Selection (J2 and J3) and reversal of direction of rotation (J1)



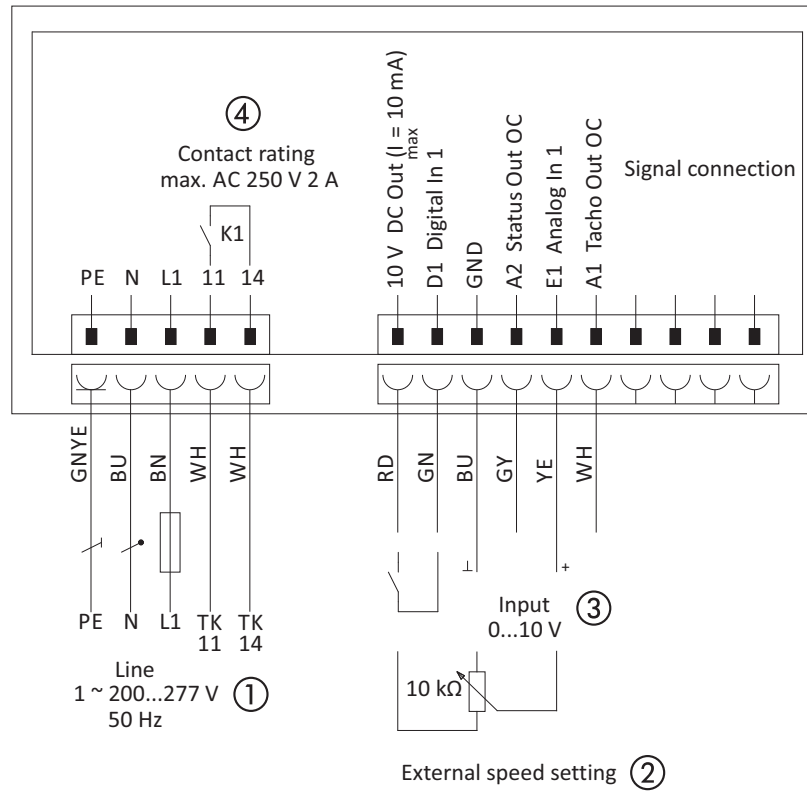
Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring & Fan Installation 5 Continued

SKC/V 350-1/EC
 SKC/V 400-1/EC
 SKC/V 450-1/EC

Fig. 8



- ① Line
- ② External Speed Setting
- ③ Input
- ④ Contact Rating



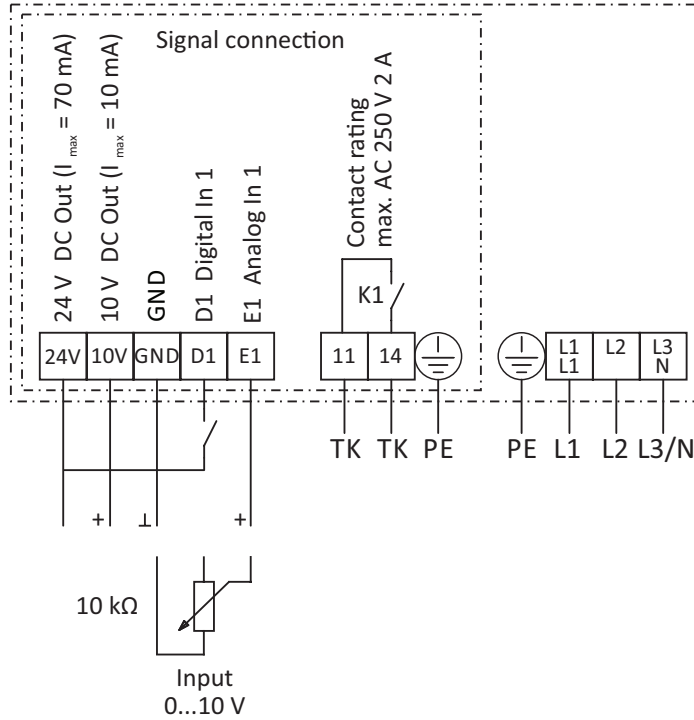
Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring & Fan Installation 5 Continued

SKC/V 500-1/EC
 SKC/V 500-3/EC
 SKC/V 560-1/EC
 SKC/V 560-3/EC
 SKC/V 630-1/EC
 SKC/V 630-3/EC
 SKC/V 710-1/EC
 SKC/V 710-3/EC
 SKC/V 800-3/EC

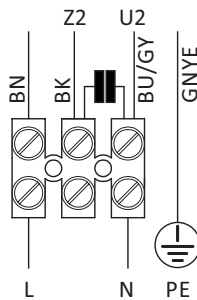
Fig. 9



SKC 250/4-1
 SKC/V 310/4-1
 SKC/V 350/4-1

Fig. 10

Other speeds possible with capacitors connected in series



Cable Colours:
 U2 - Blue or Grey
 Z2 - Black
 TB - Brown



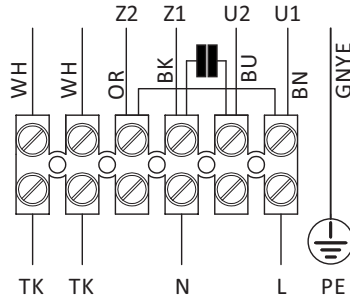
Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring & Fan Installation 5 Continued

SKC/V 400/4-1
 SKC/V 450/4-1
 SKC/V 500/6-1
 SKC/V 500/4-1
 SKC/V 560/6-1
 SKC/V 630/6-1
 SKC/V 710/6-1

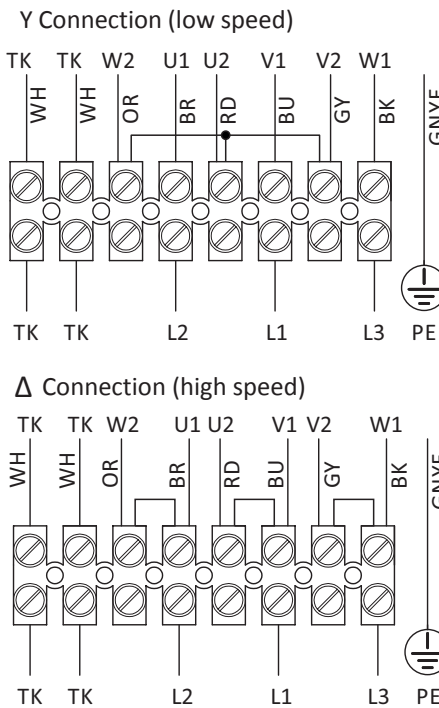
Fig. 11



Cable Colours:
 U1 - Brown
 U2 - Blue
 Z1 - Black
 Z2 - Orange
 Tk - White

SKC/V 560/4-3
 SKC/V 630/4-3
 SKC/V 710/6-1
 SKC/V 800/6-1

Fig. 12



Cable Colours:
 U1 - Brown
 V1 - Blue
 W1 - Black
 U2 - Red
 V2 - Grey
 W2 - Orange
 TK - White



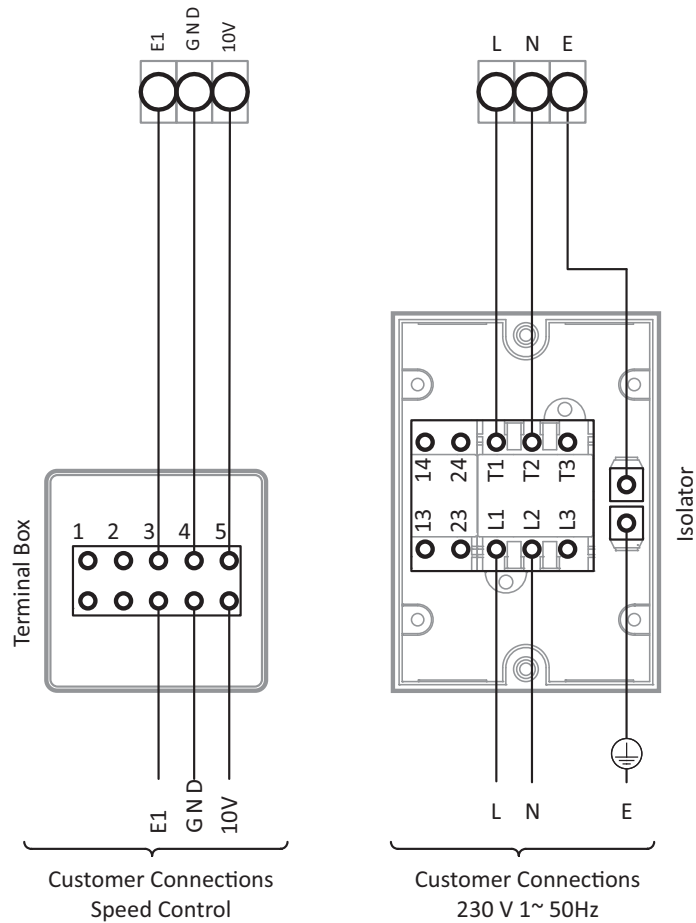
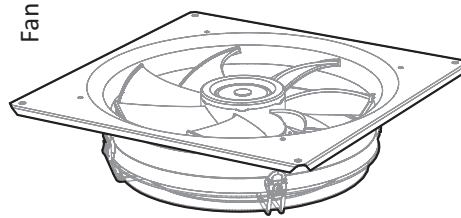
Skypod Roof Extract Units

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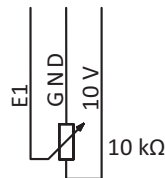
Standard Wiring 5 Continued & Fan Installation

Isolator Wiring
 SKC 250-1/EC

Fig. 13



10V to D1 Link
 for fan enable
 External
 speed
 settings





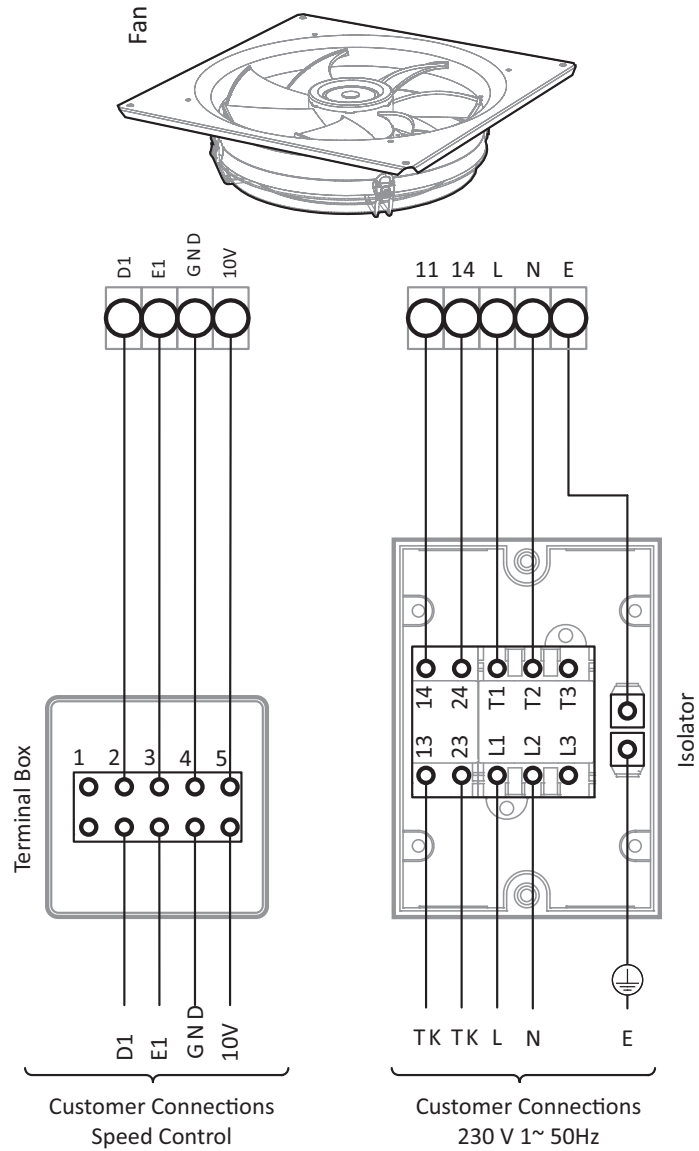
Skypod Roof Extract Units

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Standard Wiring 5 Continued & Fan Installation

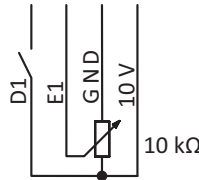
Isolator Wiring
 SKC/V 350-1/EC
 SKC/V 400-1/EC
 SKC/V 450-1/EC

Fig. 14

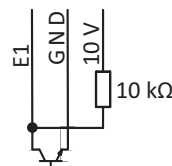


10V to D1 Link
 for fan enable

External
 speed
 settings



Input
 0...10 V





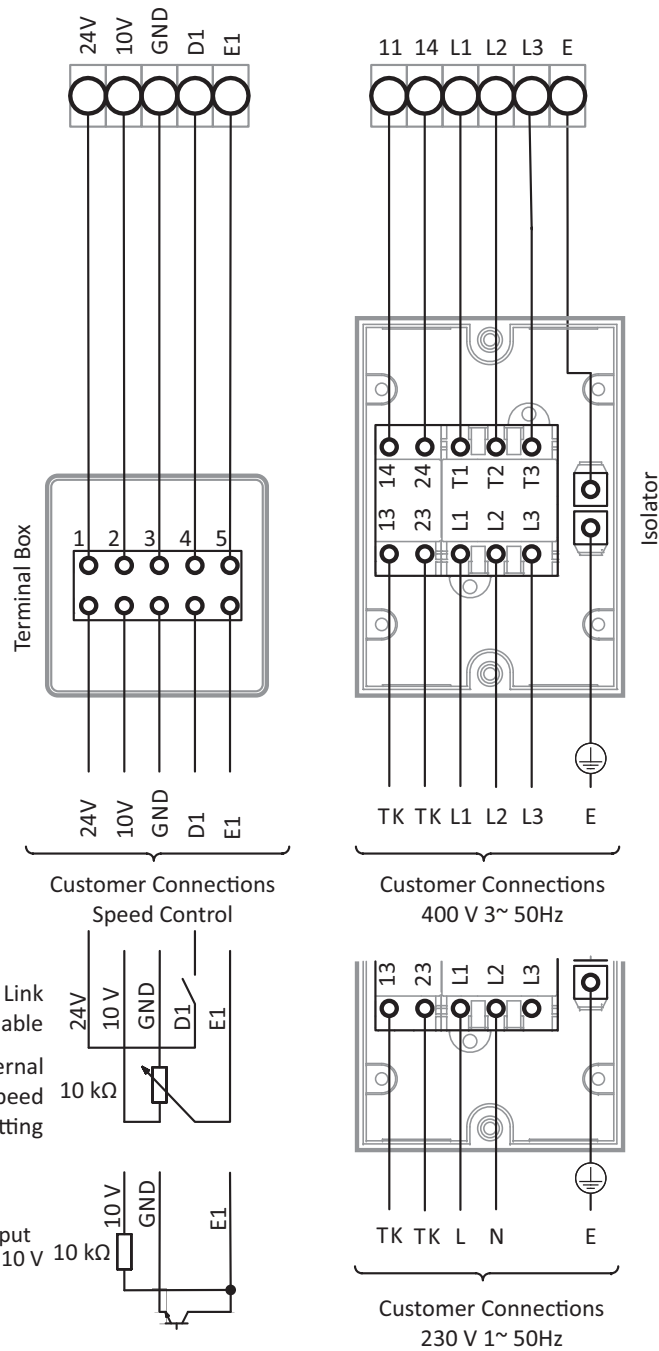
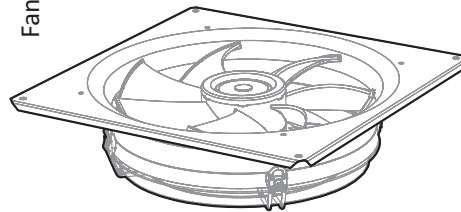
Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring 5 Continued & Fan Installation

Isolator Wiring
 SKC/V 500-1/EC
 SKC/V 500-3/EC
 SKC/V 560-1/EC
 SKC/V 560-3/EC
 SKC/V 630-1/EC
 SKC/V 630-3/EC
 SKC/V 710-1/EC
 SKC/V 710-3/EC
 SKC/V 800-3/EC

Fig. 15





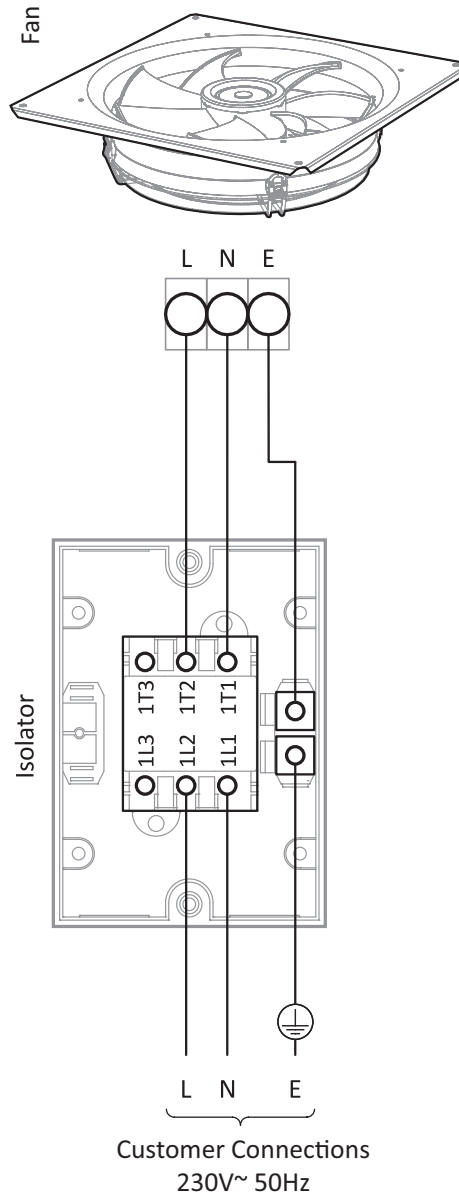
Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring 5 Continued & Fan Installation

Isolator Wiring
SKC 250/4-1
SKC/V 310/4-1
SKC/V 350/4-1

Fig. 16





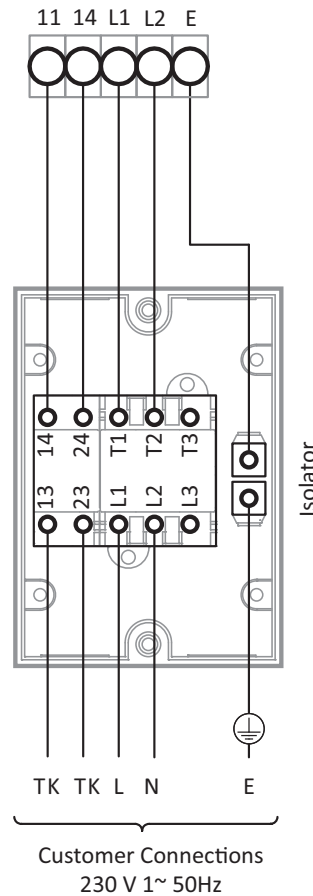
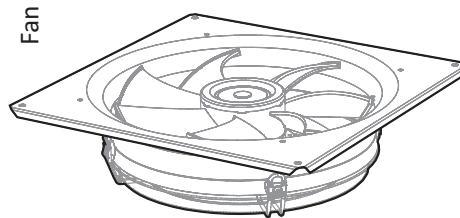
Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Standard Wiring 5 Continued & Fan Installation

Isolator Wiring
SKC/V 400/4-1
SKC/V 450/4-1
SKC/V 500/6-1
SKC/V 500/4-1
SKC/V 560/6-1
SKC/V 630/6-1
SKC/V 710/6-1

Fig. 17





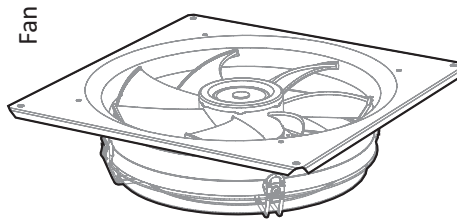
Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

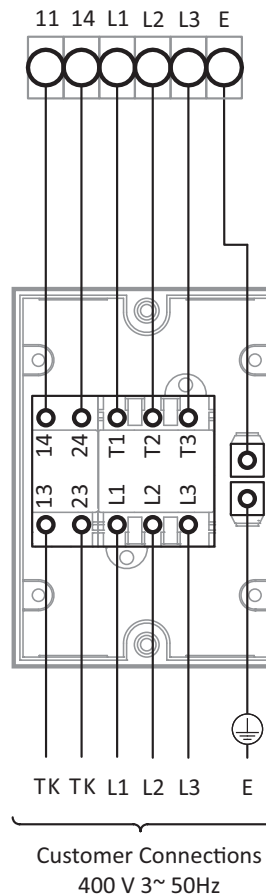
Standard Wiring 5 Continued & Fan Installation


Isolator Wiring
SKC/V 560/4-3
SKC/V 630/4-3
SKC/V 710/6-3
SKC/V 800/6-3

Fig. 18



Fan



 Check Terminal Wiring
See Fig. 12 Page 11

Caution



Refer to the fan motorplate for the correct electrical connection (Star or Delta). Please note this may require some rework at the fan terminal box.



Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Maintenance 6

Important



Before attempting to carry out any work on our units, all accompanying documentation including warning labels on the unit must be referenced.
Should it be necessary to remove any component, ensure that these are resecured into position once reinstalled. It is critical that after any maintenance work has been conducted that all components removed/replaced be refitted correctly by a competent engineer.

Warning



Before attempting to carry out any maintenance work, investigative or repair work on our units, the unit **MUST BE COMPLETELY ISOLATED** from its electrical supply. Ensure a minimum of two minutes after electrical disconnection before removing access panels. This will allow any moving parts to come to a rest. Care should also be taken when accessing external units as the wind and elements may cause moving parts to 'windmill'.

Important



When used in conjunction with an Inverter for speed control, a minimum of 5 minutes should be given to allow for the capacitors to discharge before starting work.

Caution



lifting Hazard: Due the size and weight of larger fans take extra care during removal/installation. Multiple persons are advised for this operation to avoid injury.

Caution



DO NOT REMOVE plate fan fixing bolts whilst in place, as this will leave the plate fan unsupported.

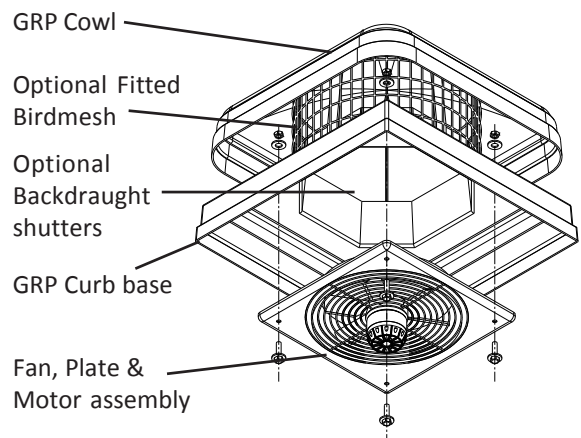
Check the GRP for signs of cracking or the possibility of water leakage, paying particular attention to the curb base fixings. Replace as necessary. To remove the fan assembly, ensure the unit is fully isolated. Remove the unit from the curb base as you will need access to both sides for the fan. Remove 4 x Fixings that secure the axial plate in place, Carefully lift the fan assembly out of the GRP.

Typical Curb Base
Detail (SKC Model
Shown

Fig. 19

To replace the fan assembly, locate the plate over the fixings holes in the GRP. Check fixings are not damaged and refix to unit, being careful to not overtighten as to damage the GRP. Reconnect the power supply. Ensure that the fans are free running.

In general, this series of units require very little maintenance. All fan and motor bearings are supplied fully greased and lubricated and are sealed for life. In the unlikely event of component failure, spares are available from stock at VES Andover Ltd.





Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

Maintenance 6 Continued

In order to keep the unit in good order the following maintenance routine is recommended:

Three Monthly Checks

Check inside the unit for accumulation of dust, grease etc. If the fan impeller is heavily soiled, clean out carefully (ensure the unit is properly isolated). Failure to do this periodically could lead to a loss of performance or the fan to become out of balance, leading ultimately to bearing failure. If the fan is stationary for long periods in a humid atmosphere, the unit should be switched ON for minimum of two hours every month to remove any moisture that may have condensed within the motor.

Six Monthly Checks

The security of fastenings and the integrity of components should be checked regularly as part of the routine maintenance operation.

Annual Checks

Clean under the cowl (and around the bird mesh) regularly to ensure performance is maintained. It may be necessary to remove the cowl to gain full access to the bird mesh: remove the four cowl fixings on the top of the unit as required.

Spares & Repairs

When enquiring after or ordering spares contact VES Spares Department, quoting the sales order (SO) number and unit type as found on the unit nameplate.

Tel: 08448 15 60 60 • Fax: 02380 26 12 04

WEEE Directive



At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with normal household waste. Do not burn.



PLEASE ENSURE THAT THIS DOCUMENT IS PASSED ON TO THE END USER

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Skypod Roof Extract Units

Installation, Operation and Maintenance Manual

CE Declaration of Conformity

Date: 3rd January 2014
Product: Skypod Extract Unit
Type: SKC/SKV
Manufacturer: VES Andover Limited

The product above is produced in accordance with EC Council Directives:

2004/108/EC (Electromagnetic Compatibility Directive)

2006/42/EC (Machine Directive)

The European Harmonised Standards applied are:

BS EN ISO 12100, BS EN ISO 13857:2008, EN61000, EN 60204-1, BS EN 60950-1:2002

Basis of Self attestation:

Quality Assurance to ISO 9001-2000, BSI Reg. Firm Cert. No. Q5375

Signature of Manufacturer:

Name:

Signature

Position of Signatory:

R.Peters

A handwritten signature in black ink, appearing to read 'R. Peters'.

Deputy Managing Director

K.Feeney

A handwritten signature in black ink, appearing to read 'K. Feeney'.

Engineering Associate Director