



Installation Operation & Maintenance Manual

Enviroscreen Heat Pump Air Curtain

Enviroscreen - ES Type D 15 HP



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1.0 General Information

Before starting installation

- Read this document and make sure you understand the contents.
- Contact Envirotec Ltd on 01494 525342 if you are not certain.
- Check that the unit is free from damage.
- Check that the wiring diagram is present.
- Check that any loose components referred to on the wiring diagram are included.
- Don't dispose of any packaging until you have checked all components.
- Don't dispose of the delivery note - it contains information about the unit that will help us assist you in the event of any problems.

2.0 Environmental Responsibility



Envirotec take environmental responsibility seriously and are continually developing products to help reduce the energy consumption of buildings and to reduce the use of natural resources when possible. Air curtains are built and packaged using recyclable material where possible. When the product comes to the end of its useful life please consider contacting Envirotec to enquire about refurbishment possibilities or recycling using a specialist registered company in accordance with any national or EU legislation. Envirotec are an ISO14001 accredited company.

3.0 Health & Safety

3.1 Safety Procedures

Most accidents that occur during the operation and maintenance of machinery are the result of failure to observe basic safety rules or precautions. An accident can often be avoided by recognising a situation that is potentially hazardous.

When handling, operating or carrying out maintenance on the unit, personnel must use safe engineering practices and observe all relevant local health and safety requirements and regulations. The attention of users in the UK is drawn to the Health and Safety at Work Act, 1974, and the current issue of the Regulations of the Institution of Electrical Engineers.

Envirotec Ltd cannot anticipate every possible circumstance that might represent a potential hazard. The warnings included in this document are therefore not all-inclusive. If the user employs an operating procedure, an item of equipment or a method of working that is not specifically recommended by Envirotec Ltd they must ensure that the unit will not be damaged or made unsafe, and that there is no risk to persons or property.

The A-weighted sound pressure level at $\geq 1\text{m}$ from the air curtain is $<65\text{ dB(A)}$ and the C-weighted instantaneous sound pressure value at $\geq 1\text{m}$ from the air curtain is $<70\text{ dB(C)}$.

3.2 Maintenance & repair precautions

Competent personnel only under a qualified supervisor must carry out maintenance, repairs or modifications. If replacement parts are needed use only genuine Envirotec spare parts. The refrigerant used in the heat pump range is R410A.

High operating temperatures are attained by some components during normal operation. Ensure all electric heating elements or heating coils have cooled sufficiently to allow safe handling. Appropriate body protection against hot surfaces should be worn.

Do not open any access panels or touch electrical components while voltage is applied. Only a qualified electrician equipped with the proper tools and wearing appropriate body protection against electrical hazards should carry out such work.

Before removing any panels from the enclosure, or dismantling any part of the unit, isolate from the main electrical power supply. Lock the isolator in the 'OFF' position and remove the fuses. Attach a label to the isolator switch carrying the warning 'WORK IN PROGRESS – DO NOT APPLY VOLTAGE'. Do not switch on electrical power or attempt to start the unit if a warning label is attached.

Units incorporating Low Temperature Hot Water (LTHW) heating coils must be isolated from the water supply before undertaking any work. Attach a label to any closed isolating valves carrying the warning 'WORK IN PROGRESS – DO NOT ADJUST VALVE'. Do not open valve or attempt to start unit if a warning label is attached.

When Envirotec products are installed over doorways or within the ceiling framework, most maintenance or repair work will be carried out at heights in excess of 2 metres. Suitable precautions should be taken to ensure that any access equipment used, ladders, towers, etc., are isolated from passing human traffic by the use of an appropriate barrier/notice system. Any barriers used should be positioned at a suitable distance to remove risk of injury to passing personnel from dropped tools/components. All equipment used to gain access to work at height must be properly secured, and manned by sufficient support staff to meet National/Local safety regulations.

Attention should be paid to the weight of units or individual components, particularly when being removed from the original installed location. Suitable lifting equipment, including slings, straps, hooks, etc. should be used as appropriate.

4.0 Warning Indications - Enviroscreen Air Curtains

The air curtain must be installed, maintained, repaired and removed by a qualified installer or qualified service person.

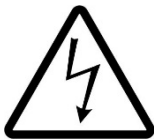
Warnings

Description



MOVING PARTS HAZARD - Moving parts

Do not operate with access cover or grille removed
Stop the unit before servicing and safely isolate power supplies



ELECTRICAL SHOCK HAZARD - Live electrical parts

Do not operate with access cover or grille removed
Stop the unit before servicing and safely isolate power supplies



HIGH TEMPERATURE HAZARD - High temperature parts

Do not operate with access cover or grille removed
You may get burned when removing access panel or grille



SHARP EDGES HAZARD – Sharp Edge parts

Do not touch aluminium fins or drain pan holes
Doing so may result in injury

5.0 Enviroscreen Air Curtain - Standard Versions & Sizes

Envirotec's air curtains are designed to separate the internal climate from the external climate and help minimise drafts.

Follow the installation instructions carefully to ensure correct and safe installation of the product.

5.1 Standard Version

Enviroscreen – ES Type D

Free hanging via threaded rods (rods by others), access to filter via removable return air grille on rear of unit.
Fan access via removable panel on underside of unit.

5.2 Standard Size

Enviroscreen Type D 15 HP air curtain is available in the following size: 1500mm.

Special sizes are available on request.

Please contact Envirotec Sales 01494 525342

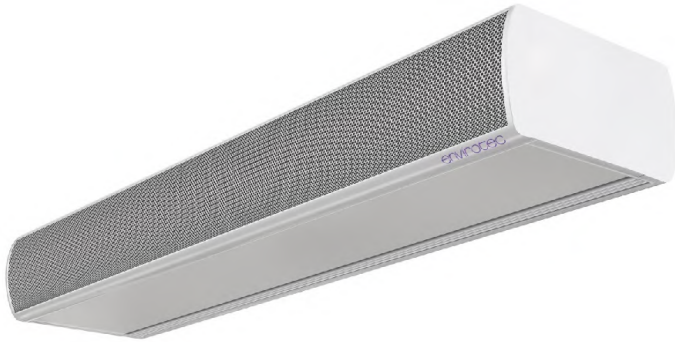
6.0 Air Curtain Performance Data

AIR CURTAIN MODEL	ES	D-ES15-HP (Type D 1500 HP)
OUTDOOR UNIT	RAV-	SP1104AT-E
CAPACITY CODE	HP	4
Heating Capacity	kW	10.3
Heating COP	kW/kW	3.11
Standard Air Flow	l/s	630
Standard Air Flow	m ³ /h	2268
Fan Motor Power (min.-max.)	kW	0.185-0.335
Fan Motor Current (max.)	A	4.3
Power Input Indoor	kW	0.32
Power Input Outdoor	kW	3.00
Power Input System	kW	3.32
System Run Current	A	13.91
AIR CURTAIN UNIVERSAL	ES	Type D 1500 HP
Door Width	mm	1500
Maximum Door Height	m	3.0
Sound Pressure Level	dBA	54
Sound Power Level	dBA	69
Pipe Connections Gas Side	mm - "	22.2 - 7/8
Pipe Connections Liquid Side	mm - "	15.9 - 5/8
Height/Width/Depth	mm	340/1500/520
Weight	kg	73
Power Cable From Outdoor To Indoor		3 core + earth
OUTDOOR UNIT	RAV-	SP1104AT-E
Heating Capacity	kW	2.4 - 13.0
Heating Power Input	kW	2.52
Operating Range Cooling/Heating	°C	43 to -15/15 to -15
Standard Air Flow	l/s	1683
Standard Air Flow	m ³ /h	6060
Sound Pressure Level Cooling/Heating	dBA	49/50
Sound Power Level Cooling/Heating	dBA	66/67
Refrigerant Base Charge/Chargeless To	kg/m	3/1/30
Refrigerant Additional Charge Main Liquid Side	g/m	40
Minimum/maximum piping length	m	3/75
Height Difference Outdoor To Indoor	m	±30
Pipe Connections Gas Side	mm - "	15.9 - 5/8
Pipe Connections Liquid Side	mm - "	9.5 - 3/8
Drain Port Connector Hose Inner Diameter	mm	16
Height/Width/Depth	mm	1340/900/320
Total Weight	kg	93
Maximum Run Current	A	10.43
Power Supply		1 phase 230 V 50 Hz
Suggested Fused Supply	A	16

Performance data for heating is laboratory tested to standard EN14511:2011 air curtain operating at high fan speed, outdoor air temperature 7°C DB/6°C WB and indoor air temperature 20°C DB. Outlet velocity and velocity uniformity tested to BS27327: 2009.

7.0 Air Curtain Version - Specifications

7.1 Enviroscreen - ES Type D



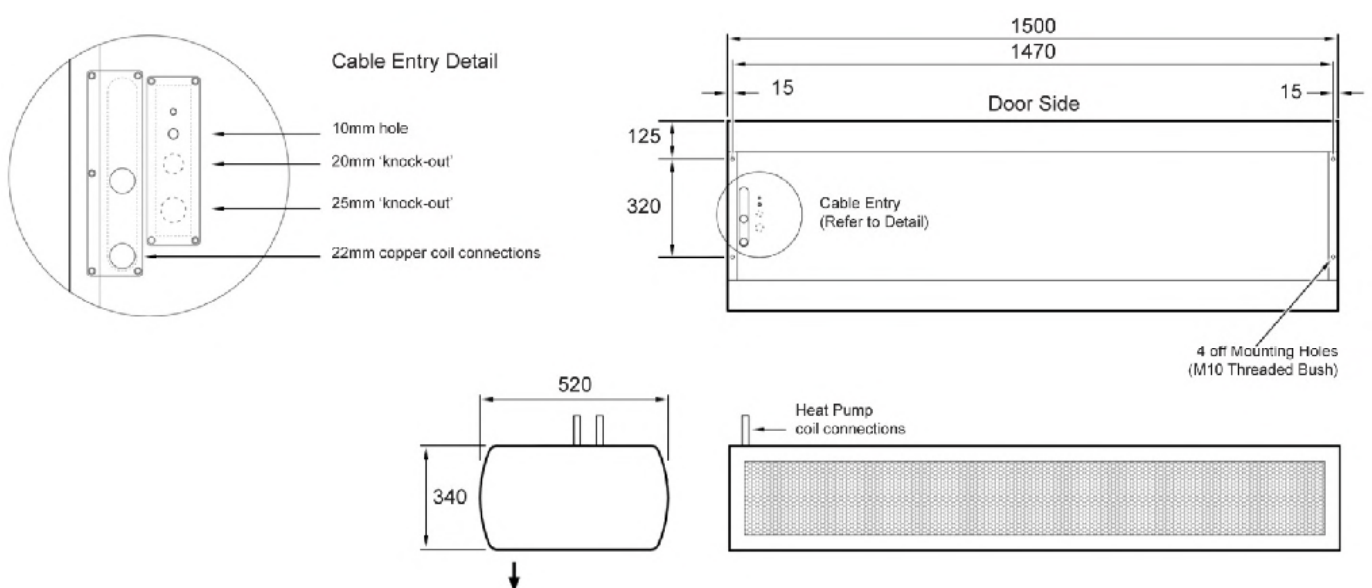
General Assembly Drawing Ref. GA 4034

Suitable for 'On View' applications

Case Length: 1500mm
(Door width + 200mm)
Case Height: 340mm
Case Depth: 520mm

Minimum Mounting Height: 2200mm
Maximum Mounting Height: 3000mm

Air Curtain Reference	Active Length	Fixing Centres	Weight	Power Supply	Power	FLC	Starting Current	Air Volume	Output
Unit Size	mm	mm	kg	Phase	kW	Amps	Amps	m ³ /s	kW
ES Type D 15	1500	1470	73	1	0.25	2.4	4.79	0.63	11.20



For further details, please refer to GA4034

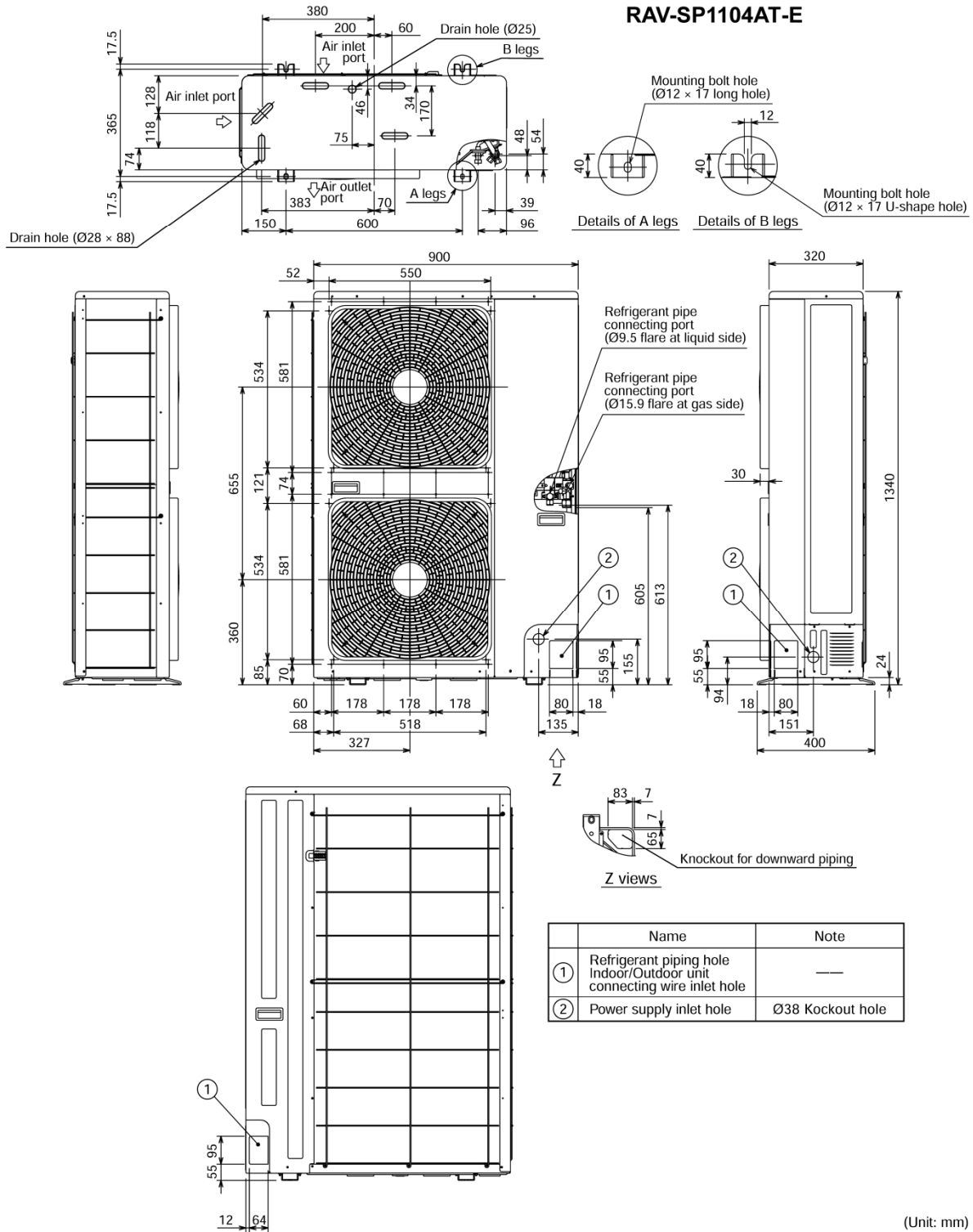
8.0 Toshiba - Inverter Outdoor Unit

Air Curtain Reference	Toshiba Inverter Heat Pump	Weight	Power supply	Heating Capacity (Range)	Power Input Heating
Unit Size	Model	kg	Phase	kW	kW
ES Type D 15 HP	RAV-SM1104ATP-E	77	1	3.0 - 11.2	3.1

Outdoor Unit	RAV	SM1104ATP-E
Heating Capacity (Range)	kW	11.2
Power Input Heating	kW	3.1
Approximate COP	W/W	3.61
Pipe Connection Gas-Liquid	in	5/8 – 3/8
Pipe length Max/Min	m	50/5
Pre Charged Pipe length	m	30
Additional R410a Charge	g/m	40
Base Refrigerant Charge	kg	2.8
Max Operating Current	A	14.4
Suggested Fuse Size	A	20
Dimensions (h x w x d)	mm	795x900x320



8.1 Toshiba Inverter Outdoor Unit Dimensions



9.0 Enviroscreen Air Curtain - Filter Specification and Sizes

ES Type D filter specification - G3 Grade, wire rod frame, white synthetic media, throwaway filter.

ES Type D – Filter Sizes

Air Curtain Reference	Unit Width	Filter Size W x D x T	Envirotec Part No.	Qty	Grade
ES Type D 15	1500	1455 x 280 x 5	FIL104	1	G3

Use only genuine Envirotec replacement filters to ensure adequate equipment protection.

For replacement filters contact Envirotec on 01494 525342 or spares@envirotec.co.uk quoting model number and serial number to ensure correct replacement parts.

10.0 Installation

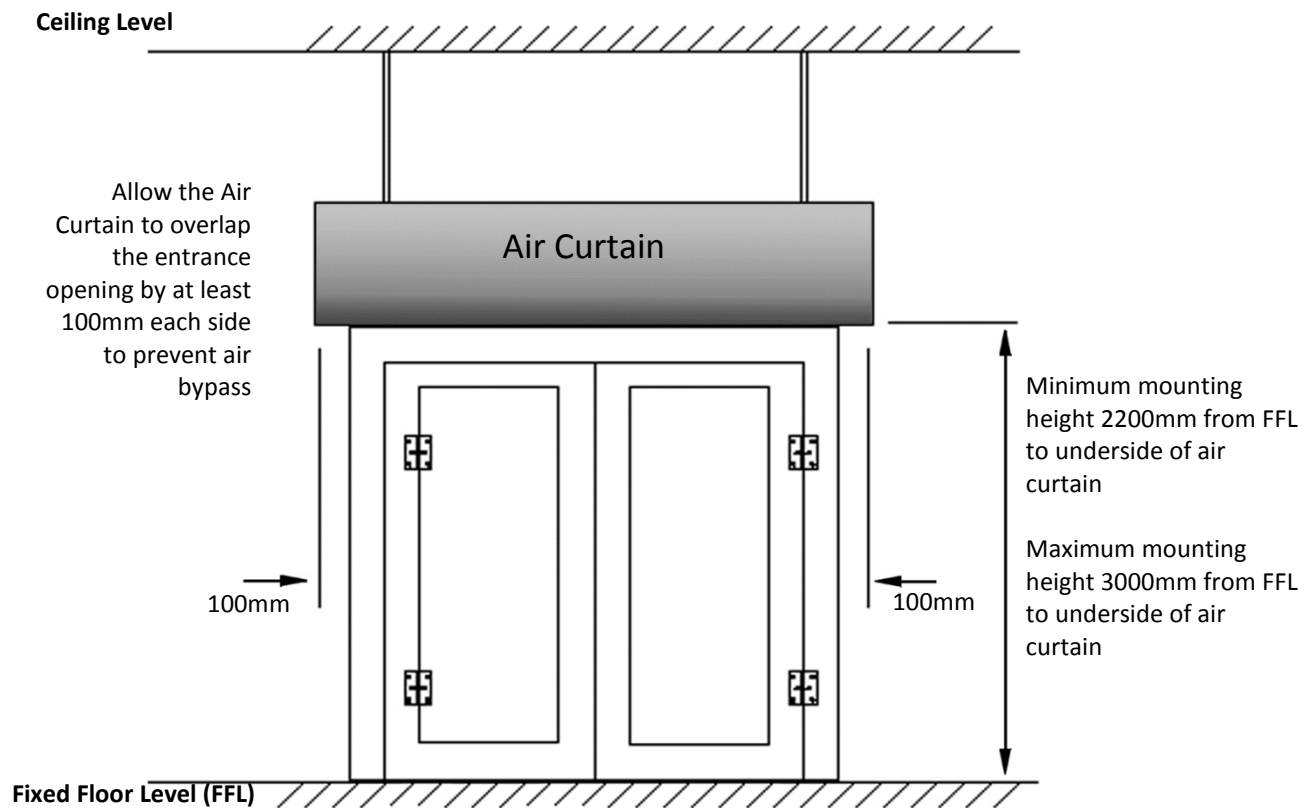
ALWAYS

- Only use a qualified installer or qualified service person to install the air curtain. If the air curtain is installed by an unqualified individual, a fire, electric shocks, injury, refrigerant leakage, noise and or vibration may result and the product warranty will be invalidated.
- If a heat pump air curtain is installed in a small room, take appropriate measures to prevent the refrigerant from exceeding the concentration limit if it leaks. Consult the dealer who supplied the heat pump outside unit when implementing the measures. Accumulation of highly concentrated refrigerant may cause an oxygen deficiency accident.
- When transporting the air curtain, take care not to hold the bands around the packing carton. Injury may result if the bands should break. Wear shoes with additional protective toe caps.
- Check the structure is capable of supporting the weight of the unit. The designated hanging bolts M10 or greater should be used at enough strong places to support the weight of the unit. If the strength is not enough, the unit may fall down resulting in injury.
- Check the unit will cover the full width of the door with minimum 100mm overlap each side. Mount the unit as close to the door as possible.
- Note that the maximum mounting height dimension is from fixed floor level to the discharge grille.
- Refer to the charts for dimensions and weights.
- Ensure that a suitable fused isolated earthed and lockable power supply is available (not supplied). The isolator must be located at a height of between 0.6m and 1.9m above the service level. (See charts above for rating and type). The height of the service level will be dependent upon final fixed position of air curtain and type and size of access equipment used to service product. As a guide consider the bottom of the air curtain to be the datum.
- Provide a suitable padlock for the off-switch locking to ensure that the isolated power supply is not accidentally switched on during installation or maintenance.

NEVER

- Install the air curtain in a hazardous environment or areas where explosive atmospheres may be present. If a combustible gas leaks and becomes concentrated around the unit a fire may occur. This equipment is not intended to be used in hazardous environments.
- Obstruct the filter (minimum recommended free space to obstruction 200mm).
- Obstruct or cover the linear blade supply air grille.

10.1 Fixing Position



10.2 Mechanical Installation

ALWAYS

- Ensure that the installer is suitably trained or qualified to carry out mechanical installation and that they have the appropriate PPE and mechanical lifting aids available to allow for a safe installation.
- Remove front panel by removing fixing screws to access fixing points.
- Replace screws into holes for safe keeping during installation.
- Make sure that the final position of the unit will allow free air ways into air intake and the air discharge is free from obstructions.
- Transfer fixing position dimensions to mounting position by carefully measuring or marking through case of unit.
- Use suitable fixings to support the unit's weight into fixing position.
- Clean any debris or materials from the unit before refitting access panel.

10.3 Refrigerant Piping

ALWAYS

- Consult the Toshiba Installation manual before commencing installation of the outside unit and refrigerant pipe work. If in doubt contact **Toshiba 24 hour Technical Helpline 0870 843 0333**
- Ensure that all refrigerant pipe is secured correctly, is within maximum pipe separation limits and is correctly insulated. Do not operate the outdoor unit until the system is fully commissioned. Operating the outdoor unit with the refrigerant circuit incomplete could cause damage to the unit.
- When the air curtain has been installed or relocated, please ensure that the refrigerant circuit is pressure tested and evacuated in accordance with Toshiba installation instructions and F-Gas Regulations. Failure to adhere to correct installation practice could lead to a system malfunction, inefficient operation and a breach of F-Gas Regulations relating to HFC refrigerants.
- Ensure that Oxygen Free Nitrogen gas is used to perform the pressure/leak test.

10.4 Electrical Installation

ALWAYS

- Ensure that the installer is suitably trained or qualified to carry out the electrical installation and that they have the appropriate personal protective equipment (PPE) and mechanical lifting aids available to allow for a safe installation. Only a qualified installer or qualified service person is allowed to carry out the electrical work on this equipment. Under no circumstances must this work be done by an unqualified individual since failure to carry out the work properly may result in electric shocks and / or electrical leaks.
- When connecting electrical wires, repairing the electrical parts or undertaking other electrical jobs, wear gloves to provide protection for electricians and from heat, insulation shoes and clothing to provide protection from electric shocks. Failure to wear PPE may result in electric shocks.
- Use wiring that meets the specification in the Installation Manual and the stipulations in the local regulations and laws. Use of wiring that does not meet the specification may give rise to electric shocks, electrical leakage, smoking and/or a fire.
- Ensure you have read and understood the wiring diagram supplied with the unit.
- Ensure that a suitable fused isolated and earthed power supply is available at a maximum distance of 1.9m from the service level of the unit. (not supplied)
- Check that all the components referred to in the wiring diagram are present.
- Use a suitable cable entry point or drill hole in the case using a hole saw sized to suit the cable gland being careful not to drop swarf inside unit or damage internal components. Any damage to an internal component during installation may void warranty.
- Ensure an isolator switch and circuit breaker (not supplied) that meets the specifications in the installation manual and the stipulation in the local regulations and laws must be installed between unit and power supply.
- Ensure that the unit is connected to earth (grounding work). Incomplete grounding causes an electric shock.
- Check that after installation, repair or relocation that the ground wires are connected properly.
- Make sure ALL connections are tight and free from damage.

- Clean any debris or materials from the unit before refitting access panel.
- Follow the wiring diagram for electrical connections.
- After the installation work has finished be sure to use an insulation tester set (500V Megger) to check the resistance is $2M\Omega$ or more between the charge section and the non-charge metal section (Earth section). If the resistance value is low, a disaster such as a leak or electric shock could result.
- It is recommended that earth continuity test to be carried out on each installed device at completion of installation ($\geq 10A, 1V$).

NEVER

- Connect ground wires to gas pipes, water pipes, and lightning rods or ground wires for telephone wires.

11.0 Heat Pump Controller

The unit is supplied with a standard hard wired remote controller **RBC-AMT32E**.

The standard hard wired remote controller can control an individual air curtain or a group of 8 air curtains. The remote controller allows the operating parameters to be set for the indoor unit. It also allows faults to be displayed and unit configurations to be set up. For 7 day control, the alternative controller **RBC-AMS41E** can be supplied on request.

11.1 RBC-AMT32E Controller



For full owner's manual, please visit the Toshiba website at:

<http://www.toshiba-aircon.co.uk/products/controls/standard/standard-remote-rbc-amt32e>

11.2 RBC-AMT32E Controller - Installation

Note 1: The remote controller wire should not be bundled with other wires (mains, etc.), or installed with other wires in the same conduit, as malfunction may result.

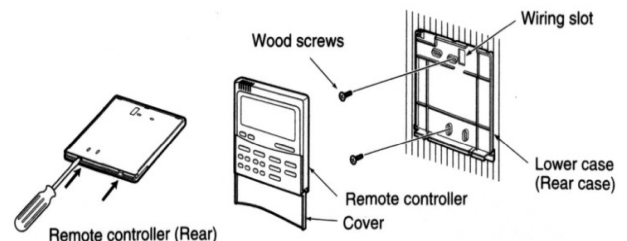
Note 2: Install the remote controller away from sources of electrical interference and electromagnetic fields.

Note 3: If electrical interference is unavoidable, countermeasures such as appropriate filtering should be employed.

For removal of the remote controller's lower case (rear case), insert the tip of a flat head screw driver, etc., into the two openings at the bottom of the remote controller to open the case.

Fix the remote controller's rear case by wood screws (2 pcs.). Do not over tighten, as it may damage the rear case.

Connect the wires from the Envirotec Air Curtain to the remote controller terminal block.



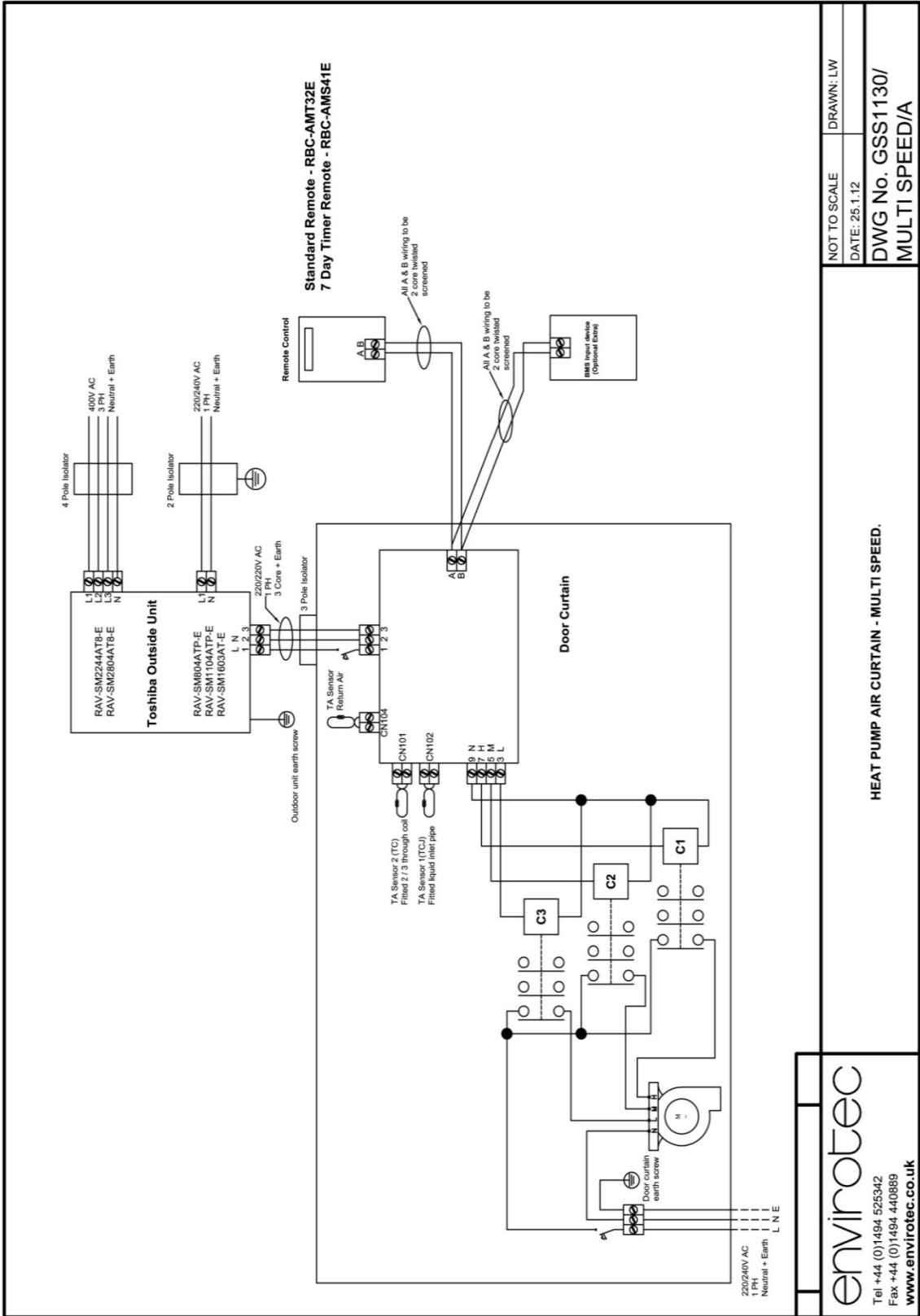
Connect the wires of the remote controller following the terminal numbering convention of the air curtain to prevent miswiring. **Do not apply 230v AC mains voltage to the remote controller as it will be damaged.**

The **RBC-AMT32E** is a general controller and includes features that are not utilised by Envirotec air curtains.

For Toshiba technical enquiries and Support, or if fault codes appear on the controller display, switch the air curtain off at circuit breaker or isolator and contact **Toshiba 24 hour Technical Helpline - 0870 843 0333**.

12.0 Wiring Schematics

12.1 Heat Pump Air Curtain GSS1130 Multi Fan Speed



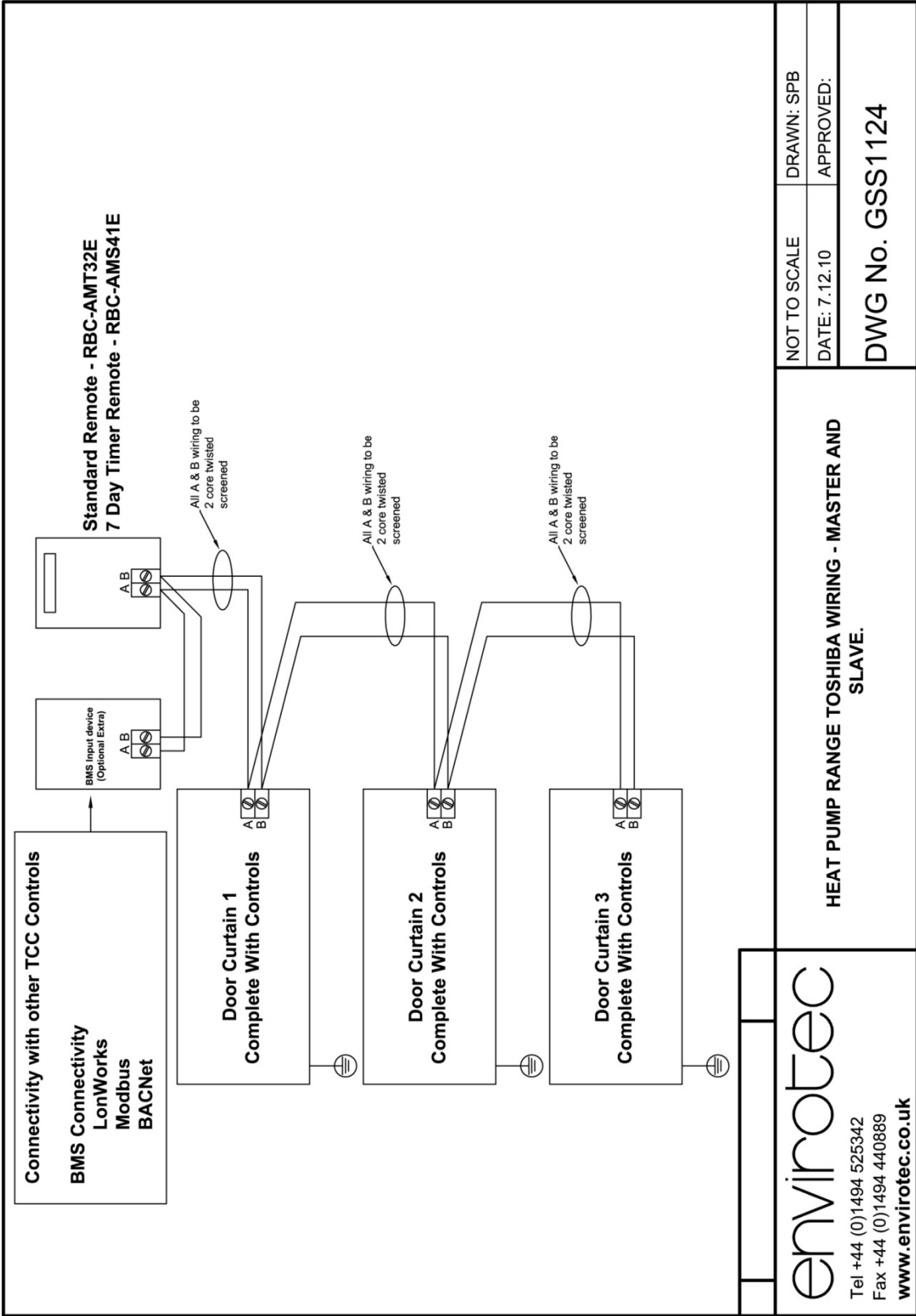
NOT TO SCALE
DATE: 25.1.12
DRAWN: LW
DWG No. GSS1130/
MULTI SPEED/A

HEAT PUMP AIR CURTAIN - MULTI SPEED.

envirotec
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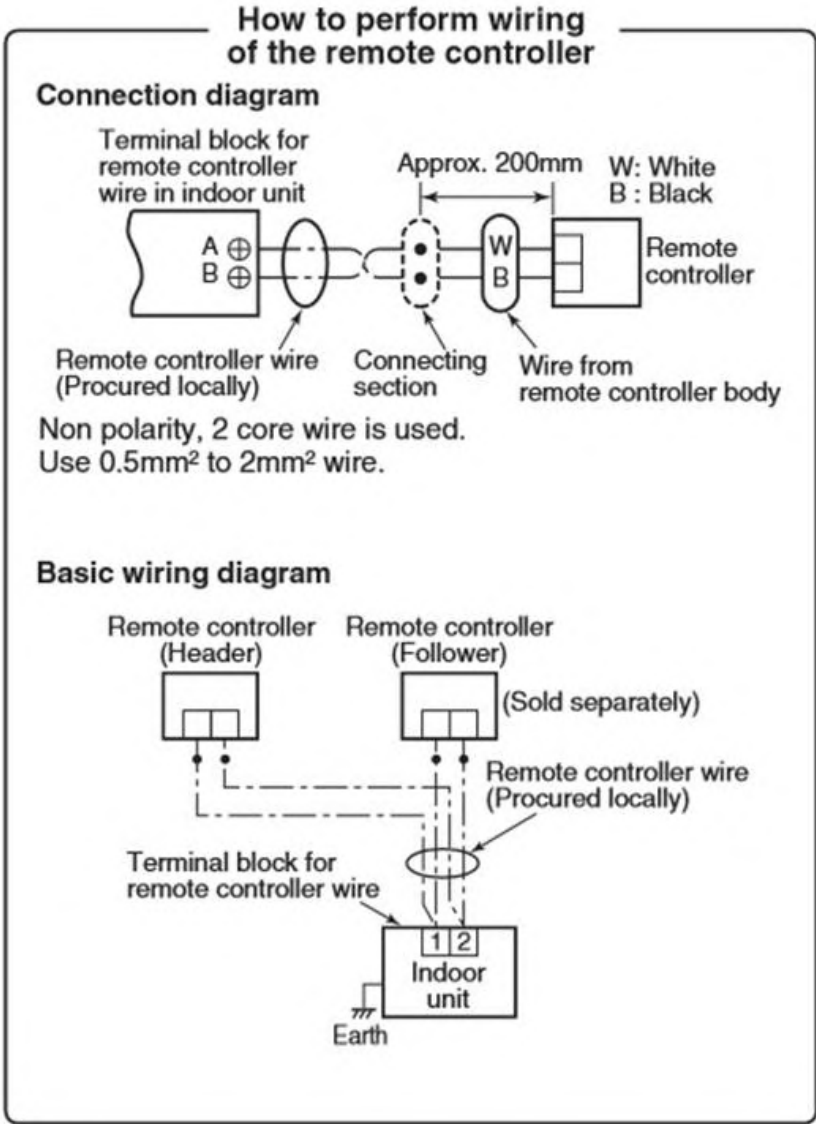
12.0 Wiring Schematics - continued

12.2 Master & Slave Heat Pump Air Curtains



11.0 Wiring Schematics - continued

12.3 Wiring the remote controller



13.0 Commissioning

Before commissioning please ensure you have read and understood the General Health & Safety Precautions.

Note to installing engineer:

The Toshiba Outside unit must be set up using an RBC-AMT32E / AMS41E controller. Please refer to Toshiba Technical Literature or call **Toshiba 24 hour Technical Helpline 0870 843 0333**.

Operation	Location	Checked
Checks before power applied		
Isolator and circuit breaker in the off position		
Unit installed with clear air inlet and outlet paths	Bottom and top face	
All packaging and installation materials removed	Internal	
Fans freely rotating	Internal	
All panels and electrical covers refitted and secure	Bottom / top face / internal	
Unit clean and free from damage	All	
Refrigeration circuit check for leaks (Heat Pump units only)	All pipe work	
Fully wired to wiring diagram issued	N/A	
All electrical terminations tight	Control Panel, Switch and Unit	

Checks with power applied	Only undertake these test after all covers are refitted and Air Curtain is electrically safe	
Fan speeds correct (if applicable)	Switch	
Heat function correct (if applicable)	Switch	
Run on Timer operates (if applicable – set for 3 minutes)	Controls	

14.0 Troubleshooting

If you have noticed that some kind of trouble (such as when an error display has appeared, there is a smell of burning, abnormal sounds are heard, the air curtain fails to heat or water is leaking) has occurred, do not touch the air curtain yourself but set the isolator/circuit breaker to OFF position and contact a qualified service person. Take steps to ensure that the power will not be turned on (by locking off supply and by marking “Out of service” near the circuit breaker for instance) until the qualified service person arrives. Continuing to use the air curtain when a fault has been reported may cause mechanical and electrical problems that could escalate or result in electric shocks etc.

15.0 Service & Maintenance Instructions

WARNING: Failure to adequately maintain and clean the unit as detailed in these operating & maintenance instructions will result in a loss of performance and reduced life expectancy of the air curtain.

WARNING: Failure to adequately maintain the unit may void the warranty. If any problems are encountered, please contact your installer/supplier.

15.1 Before Starting

ALWAYS

- Check that electrical supplies are isolated before any maintenance work is carried out. Failure to isolate the electrical supply may result in electric shocks through contact with the interior parts. Only a qualified installer or qualified service person is allowed to remove grilles or access panels of the air curtain to carry out the work.
- Place a “Work in progress” sign and safely lock the isolator in the off position while the installation, maintenance or repair work is being carried out. There is a danger of electric shock if the isolator is ON by mistake.
- Make sure that only a qualified installers or qualified service persons are allowed to undertake work at heights using a stand of 50cm or more to remove grilles or access panels of the door curtain to undertake work.
- Wear protective gloves and safety work clothing during installation, servicing and removal.
- When working at height carry out a risk assessment and take adequate precautions to protect yourself and others from falls or objects falling from heights.
- Remove any builders’ dust within the door curtain before the unit is run.

NEVER

- Carry out any electrical work unless the wiring diagram is available.
- Climb onto or place objects on top of the door curtain. You may fall or objects may fall off and result in injury.

15.2 Service

ALWAYS

- Inspect for mechanical and electrical defects. Failure to regularly inspect the unit for signs of mechanical vibration (often due to dirt build up on fan impellers) may cause metal fatigue in fixings or suspension brackets and the unit may fall down resulting in injury.
- Electrically test the insulation of the fan motors and associated wiring.
- Gently rotate the impeller(s) by hand to ensure free rotation.

15.3 Cleaning

ALWAYS

- Clean Grilles with hot soapy water and a soft cloth. All grilles are replaceable if the need arises.
- Gently brush out dirt and dust etc. from the motor, fan impeller, fan casing and shafts.
- Use a vacuum cleaner and brush to remove dust from the motor ventilation holes to ensure that motor cooling is maintained at maximum efficiency.

NEVER

- Spill cleaning materials over the motor and wiring.

16.0 Service & Maintenance Instructions - continued

16.1 Lubrication

ALWAYS

- Lubricate bearings as these are sealed-for-life.

16.2 Filters

ALWAYS

- Check filters on a regular basis.

NEVER

- Leave dirty filters in units for long periods without replacement.

16.3 Washable filters

ALWAYS

- Inspect the unit after it has been running for two weeks to establish a time-scale within which the filters should be washed. This will vary on environmental conditions and so intervals between filter changing will be different. A mild detergent solution is recommended.

16.4 Throwaway filters

ALWAYS

- Inspect the unit after it has been running for two weeks to establish a time-scale within which the filters should be changed. This will vary on environmental conditions and so intervals between filter changing will be different.
- Remove dirty or blocked filters even if no immediate replacement is available. This will avoid costly damage.

17.0 Spares

Contact Envirotec on 01494 525342 or spares@envirotec.co.uk for all replacement consumable items. Major items such as fans, heating elements etc. can be replaced with original design components supplied by Envirotec.

18.0 Copyright

All the information contained in this guide are the property of Envirotec Ltd and may not be used or copied in any way other than for the safe operation of the equipment it is intended for without written permission from Envirotec.

19.0 Warranty

Failure to adequately maintain the unit may void the warranty. If any problems are encountered, please contact your installer/supplier.

Serial number

Date installed

20.0 EC Declaration of Conformity

Envirotec Ltd
Desborough Park Road
High Wycombe
Bucks HP12 3BX
United Kingdom

Tel: +44 (0) 1494 525342
www.envirotec.co.uk
freshthinking@envirotec.co.uk



EC Declaration of Conformity

Document Number: DoC Air Curtain (HP) 1501

We, Envirotec Ltd at above address declare under our sole responsibility that the product detailed below complies with essential requirements of the following EU directives,

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility 2004/108/EC
- Restriction on the use of certain Hazardous Substances (RoHS) directive 2011/65/EU

Equipment description	Air Curtains for use with Heat Pumps		
Models	Enviroscreen (HP)	ES Type A ES Type B	ES Type C ES Type D
	Universal (HP)	UNI Type B	UNI Type C

Compliance with the directives has been assessed by with reference to the following harmonised standards.

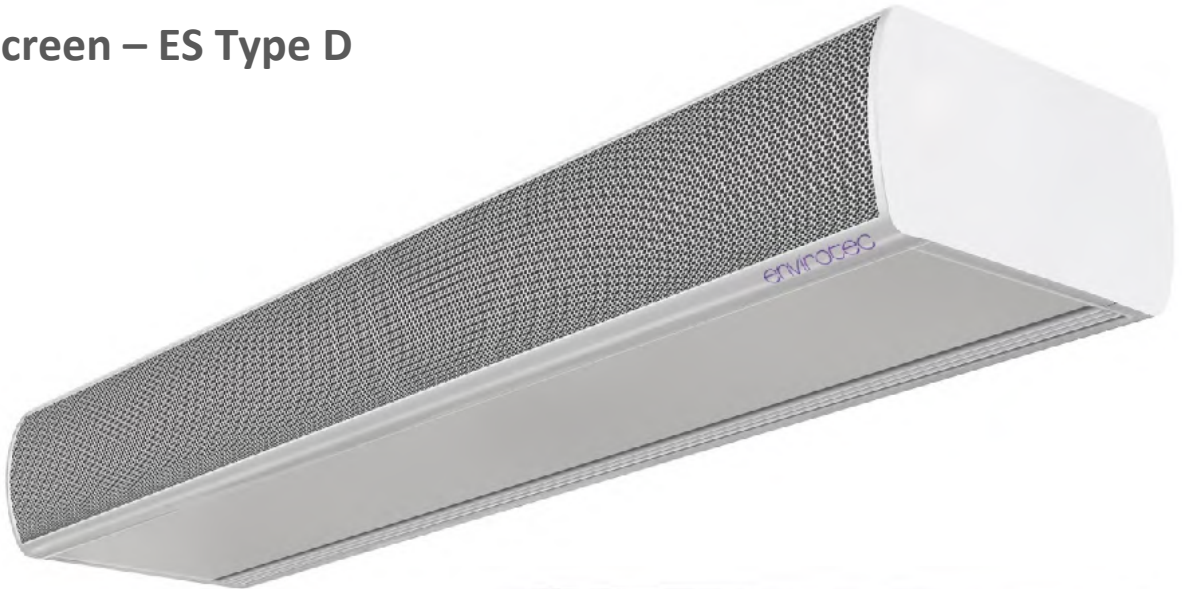
- EN ISO 12100: 2010 – Safety of machinery — General principles for design — Risk assessment and risk reduction
- EN 60204-1:2006+A1:2009 - Safety of machinery. Electrical equipment of machines. General requirements

A technical file for this equipment has been assembled and is maintained at the above address.

	Signature
Christopher Lister	Name of signatory#
Director	Position of signatory
High Wycombe, December 2015	Place and Date of Issue

being the person authorised to sign on behalf of the supplier

Enviroscreen – ES Type D



RAV-SM1104ATP-E



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