

# AIRLINE AIR-S & AIR-X Units

## Installation, Operation and Maintenance Manual

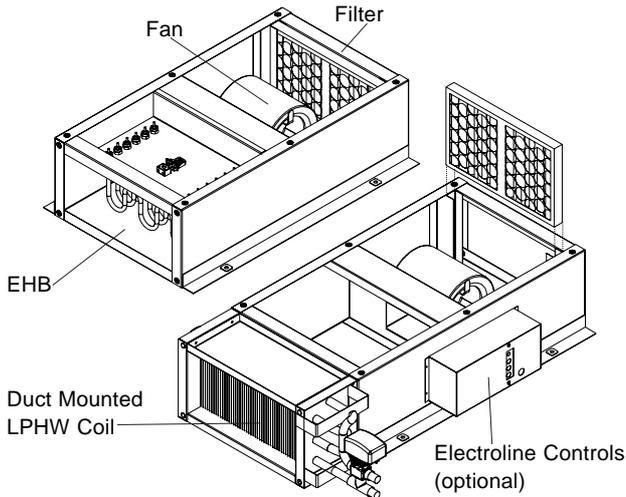


Fig. 1 Typical unit layout  
 (Lids Removed For Clarity)

In the event of any damage having occurred or if any item found to be missing, it is essential to inform VES Andover Ltd. within **7 working days** of delivery quoting sales order number and the unit type as found on the unit nameplate. After this period we will be unable to accept any claim for damaged or missing goods.

When moving the unit, handle with care and in such a manner as to limit damaging the external finish if applicable as this may reduce the ability to resist corrosion. AIRLINE units are to be rigged and lifted using spreaders, taking into account the weight of the unit, and lifting gear should be arranged so as not to bear on the casework.

### IMPORTANT !

Lids or housings must not be used as lifting points

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 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.

Unless specially designed otherwise, all units must be installed horizontally (i.e. airflow in the horizontal plane) with the fan shafts lying flat in the same plane.

If in any doubt contact VES for further details.

### IMPORTANT !

Electrical supply must be fully isolated before attempting to affect any work on this unit

### Electric Heater Batteries

Supply to the heater should be 1ph or 3ph with separate neutrals; confirmation of this can be found on the unit nameplate. Cables should be of silicone rubber, fiberglass or of a similar high temperature insulated type and be installed to current I.E.E. Regulations, ensuring a sufficient earth connection to the terminal provided. Care should be taken not to overstrain the terminal pillars as this may permanently damage the elements.

The heater is fitted with a manual reset high temperature cutout with normally closed (NC) terminals. The cutout is set to break if the duct temperature rises above 130°C and must be connected in series with the main contactor coil circuit if the heater is to be isolated in the event of overheating. The electrical supply must be isolated before attempting to reset the manual cut-out.

In order to prevent overheating within the unit, a 2-5 minute fan run-on timer should be incorporated into the control circuit. This will prevent any excessive build up of heat within the AHU and avoid damage to those internal components that could result in such an event.

### IMPORTANT !

It is essential that all electrical connections are properly made

The elements are tested prior to dispatch and are within a tolerance of 7.5W. In the event that elements should be found to be faulty they can be easily removed and replaced. To remove the electric heater battery, take out the fixings from the element tray and remove the assembly.

### IMPORTANT !

This manual must be read in full before Installation, Operation and Maintenance of the unit/s supplied

<b>Contents</b>		page
1	Introduction	1
2	Installation	1
3	Set-up	3
4	Wiring	3
5	Maintenance	6
6	Warranty	7
7	Declaration of Conformity	8

## 1 Introduction

The AIRLINE series is a range of small supply and extract air handlers, direct driven, with duties up to 0.55m<sup>3</sup>/s. Suitable for plant-room and ceiling void locations, each unit will have been supplied with either no pre-wiring or with fitted ELECTROLINE control panel as specified at the time of order. The standard operating temperature of the unit is -20 to +35°C.

For further technical details contact VES on **08448 15 60 60**, quoting the sales order (SO) number and the unit type as found on the unit nameplate or visit [www.ves.co.uk](http://www.ves.co.uk).

## 2 Installation

The entire system must be considered for safety purposes. It is the responsibility of the installer to ensure that all of the equipment is installed in compliance with the manufacturer's recommendations. Consideration must be given by the installer to the positioning of the unit to ensure that access for maintenance can be provided in line with the Health and Safety and Building Regulations. Adequate illumination of the units location must also be considered in order to carry out maintenance safely.

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.

Immediately upon receipt of goods, check for possible damage in transit paying particular attention to fan impellers, motor, flexible connections, coil connections and unit casing. Prior to installation please check to ensure smooth rotation of the impellor 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.

# AIRLINE AIR-S & AIR-X Units

Installation, Operation and Maintenance Manual

## 2 Installation *continued*

Elements that are stored in damp conditions may need drying to attain correct insulation readings.

For further technical details contact **VES Customer Services Department**, quoting the sales order (SO) number and the unit type as found on the unit nameplate.

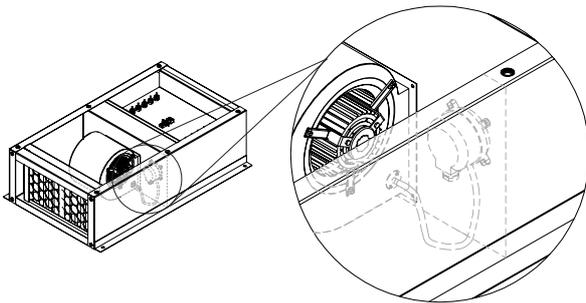
An Airflow Pressure Switch is fitted as standard throughout this range of units. The Airline range is versatile and can be installed in various orientations onsite, check the Airflow pressure switch has been installed to suit your chosen unit configuration.

### IMPORTANT

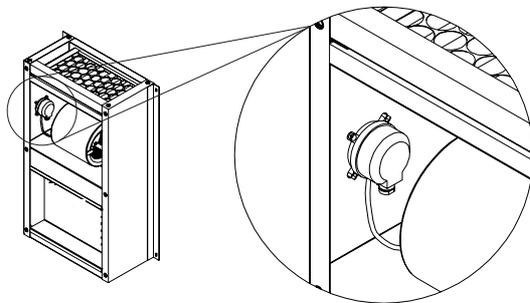
The Airflow pressure switch must be installed vertically, with the pressure connections pointing downwards to ensure correct operation.

If when the unit is installed the Airflow pressure switch is not orientated correctly, remove the fixings and reinstall in the following locations see *fig.2*.

*Fig.2* Airline shown with lid removed and airline connected, electrical connections made by others



Above: The Airflow pressure switch is installed to suit top access. If the unit is hung from the ceiling and it becomes bottom access the Airflow pressure switch must be removed and rotated 180° and reinstalled.

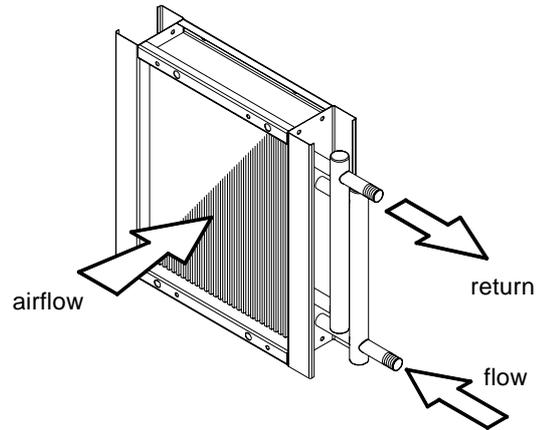


Above: The Airflow pressure switch is installed to suit a vertical installation. Move the switch to the side of the unit as shown, ensuring the pressure connections are pointing down.

The airline pipes must be reinstalled in the same locations and be free from kinks and sharp bends to ensure correct operation. Note: Connect low pressure supply to port marked P2, connect high pressure supply to port P1 (the pressure connections are clearly marked on the bottom of the switch). For wiring instructions see section 4 Wiring.

### Water Coils

Low Pressure Hot water (LPHW) coils should have an air vent and drain plug located on the pipework immediately adjacent to the AHU: they are not fitted to the coil.



*Fig.3* Typical Coil connections

The air vent should be at the highest point, with the drain at the lowest. When the coil is at a high point of the system it should be regularly vented so as to avoid potential air locks resulting in a fall off of duty.

It is important that water and steam coils are protected against damage from extreme weather conditions during the winter season. If the water is allowed to freeze in the coil system, damage may occur potentially bursting pipes and resulting in emergency problems. This can be prevented by fitting a frost thermostat at the unit inlet and ensuring that boilers run continuously in low ambient temperatures.

It is recommended that a check be made as to whether any treatment is required to the water supply for prevention of corrosion and scaling of the equipment. Information regarding the necessary action to be taken can be obtained from the relevant Water Supply Authority, particulars of which can be found in the Water Engineers Handbook yearly edition.

All VES fitted Electroline controls with water coils are supplied with either 15mm or 22mm threaded connections (from the 4-port valve). Customer pipework connections should be made directly using the compression fitting and olive supplied with the unit see *fig 3* for coil connections. All VES Electroline water units are supplied with a frost stat fitted, check that the frost stat is set to 10°C.

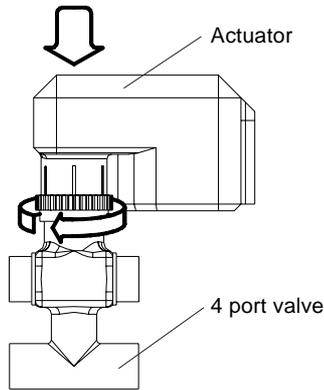
All VES Airline units with fitted controls come supplied with a comprehensive information label on the side of the unit. This sheet includes all wiring information and service details as well as identification for the fuses (see pages 5 & 6 for further details).

# AIRLINE AIR-S & AIR-X Units

Installation, Operation and Maintenance Manual

## 2 Installation *continued*

The Electroline valve actuator is prewired but supplied loose (not fitted) for transit. To fit, remove the valve cover as required. Locate the actuator on the valve, push down and tighten the locking ring by hand clockwise as shown in *fig 4*.



*Fig.4* Four port valve installation

### IMPORTANT !

Should it be necessary to remove any slide-in component ensure that these are secured into position once reinstalled.

Silencers installed close to the units and placing the unit directly adjacent to a bend in the ductwork will impede airflow and reduce performance.

Where provided, flanges and spigots should not be used to support the ductwork and used solely as a means of ductwork connection. Further consideration should be given to the unit's position and secured into place as appropriate.

## 3 Set-up

Motor and electrical details must be checked prior to connection to mains supply. All motor information can be found on the unit data sheet supplied attached to the unit. All sizes operate with direct drive fans; ensure that the impeller blades are not damaged and spin freely.

## 4 Electrical Wiring

All electrical connections must be carried out in accordance with I.E.E. regulations and only competent electricians should be allowed to undertake any electrical work to our units. The electrical supply must correspond with that shown on the datasheet. A local isolator must be fitted. Before attempting to carry out any electrical maintenance or repair work the unit must be completely isolated from its electrical supply.

### IMPORTANT !

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

All VES units are supplied with the necessary wiring diagrams, see *fig. 5*.

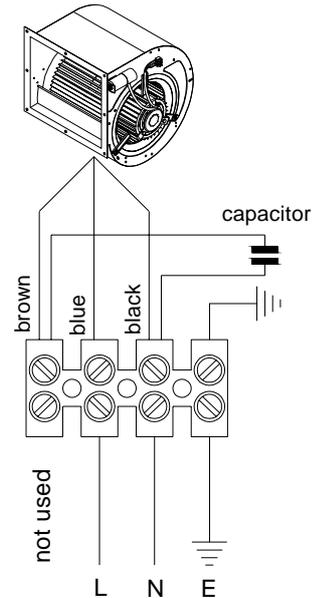
When the wiring is complete, check the free running of the fan prior to starting. Check the direction of airflow on start-up to ensure correct wiring and direction of rotation. If a fan speed controller is being used, study the wiring diagram and set-up procedure carefully at the time of installation.

*Fig.5*

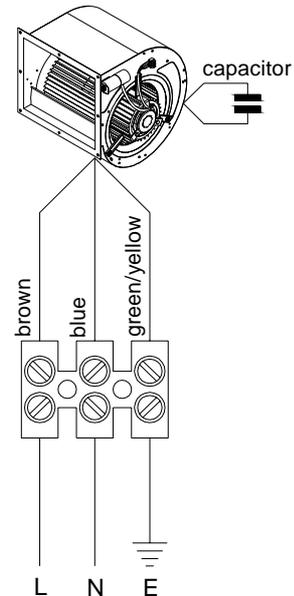
### Standard Fan Wiring Arrangement

230V 1Ph 50Hz

#### Models 1, 2, 3



#### Models 4 & 5



Before running the fan check that nothing is obstructing the free running of the fan.

Proper performance will only occur if the fan is rotating in the correct direction. Refer to the wiring diagram for the appropriate fan to ensure correct wiring connection, which should then result in the correct direction of rotation.



# AIRLINE AIR-S & AIR-X Units

Installation, Operation and Maintenance Manual

## 4 Wiring continued

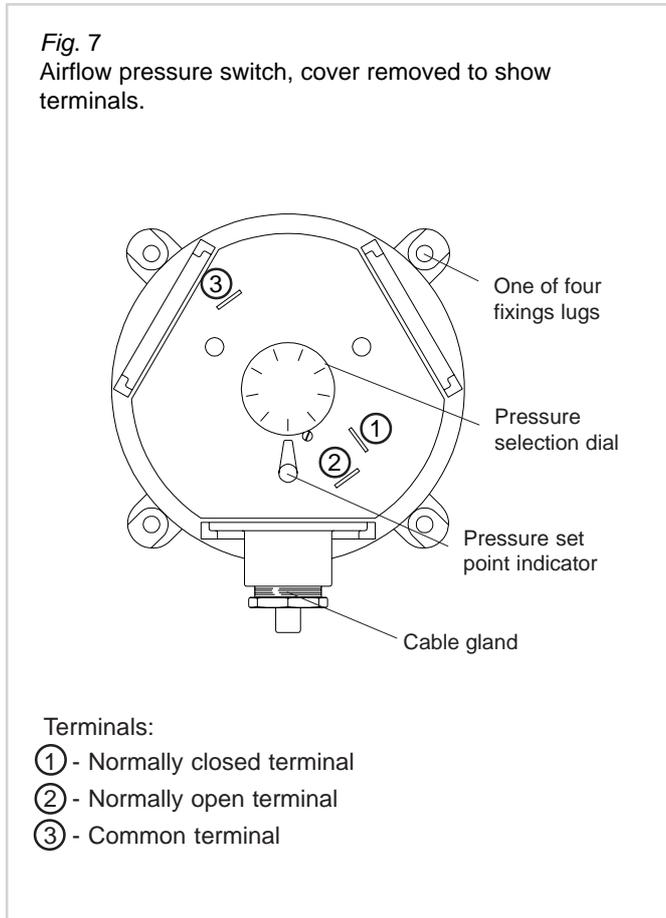
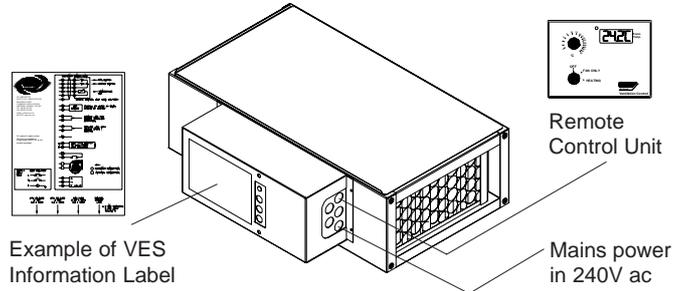
Model	Motor output Watts	FLC Amps max	Fan speed RPM	Speed regulator	
				Transformer	Electronic
1	104	0.42	1510	T1	-
2	195	0.8	1540	T1	-
3	340	1.43	1700	T4	V2
4	401	1.72	1280	T4	V2
5	668	3.32	1400	T4	V63

Fig.6 Motor details and speed regulation

### Airflow pressure switch

Remember to pass cable through the gland, allow adequate cable length to ensure the switch connections are not strained. Fit 6.4mm blade terminals and appropriate shrouded female insulated terminals to wiring. Wire switch terminals as seen in fig. 7, tighten cable gland.

Fig.8 Electroline controls



### Pressure switch/ point setting

Rotate pressure selection dial until desired trip pressure is opposite the set point indicator see fig. 7, replace cover.

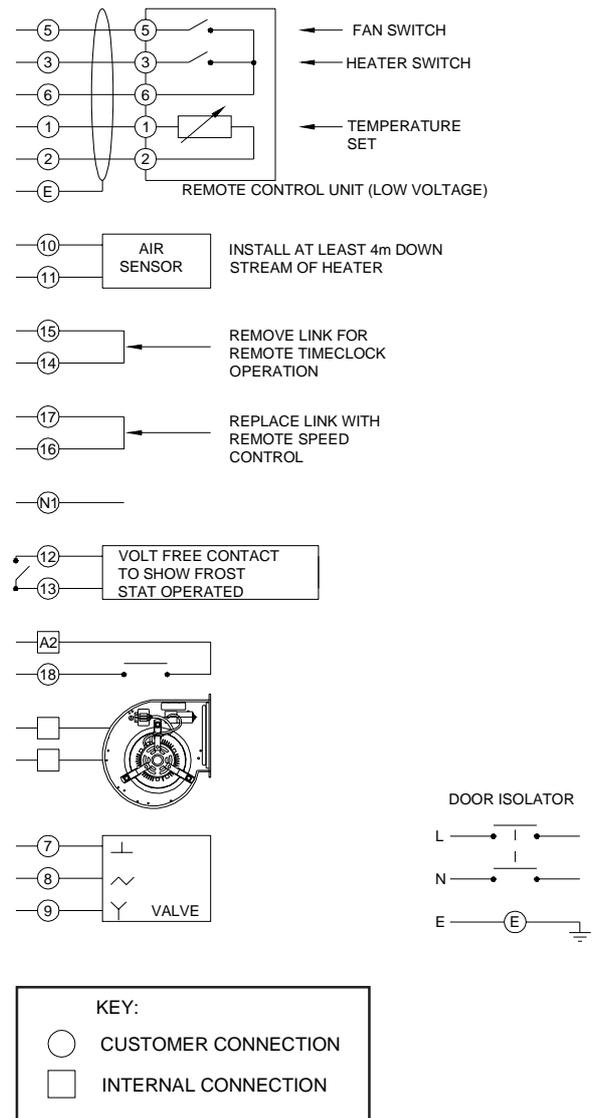
### Fitted Electroline Controls

The Airline with fitted Electroline controls is easy to install. Install the unit as per the standard installation guidelines. Connect the remote control panel (12V) and site in the desired location using 5 core signal cable for wiring to remote panel. Ensure all optional items are fitted, use the cable holes supplied on the control box for all cable connections. If access to the control box is required, make sure the isolator is in the OFF position and remove the 2 securing screws.

Fig. 9

### Wiring Diagram for LPHW Units

230V 1Ph 50Hz





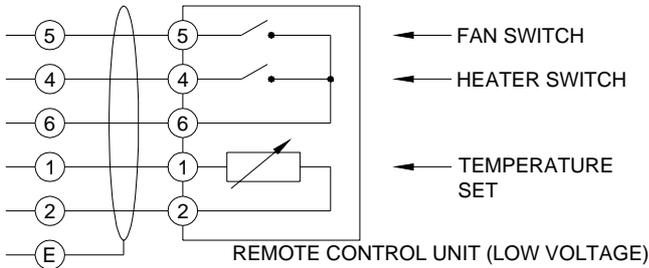
# AIRLINE AIR-S & AIR-X Units

Installation, Operation and Maintenance Manual

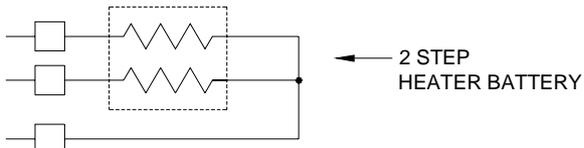
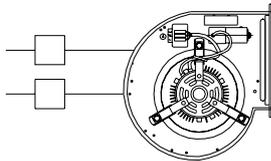
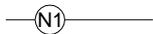
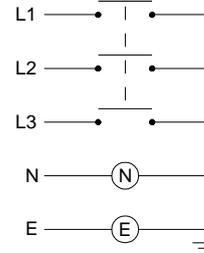
Fig. 10

## Wiring Diagram for EHB Units

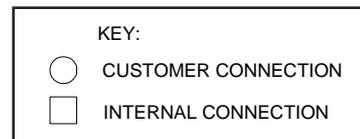
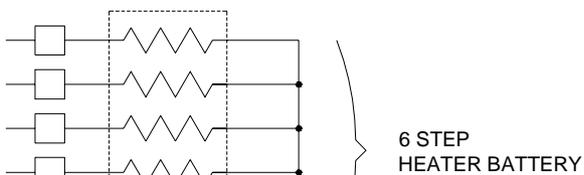
400V 3Ph 50Hz



### DOOR ISOLATOR



THIS CONTROL PANEL CAN BE USED WITH A SINGLE PHASE SUPPLY. FOR THIS SINGLE PHASE OPERATION LINK TERMINALS L1, L2 & L3.





# AIRLINE AIR-S & AIR-X Units

Installation, Operation and Maintenance Manual

## 5 Maintenance

### IMPORTANT !

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.

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

### IMPORTANT !

Before attempting to carry out any work on our units, all accompanying documentation including warning labels on the unit must be referenced.

### Three Monthly Check

Check for grease build-up in the system, especially around the impeller. Remove the grease residue if necessary. Failure to do this periodically could lead to a loss of performance or cause the fan to become out of balance, ultimately leading to bearing failure. Filters should be inspected regularly. If they are found to be heavily soiled or damaged they should be replaced immediately.

### Six Monthly Check

Coils should be inspected every six months to ascertain if any foreign matter has accumulated between the fins and that the coil connections are free from any leaks. Should any matter be found the coils should be cleaned using a soft brush and mild solution of commercial detergent. If heavily contaminated, a steam lance may be used. Care should be taken so as not to damage or distort the fins during this cleaning process. Frequent contamination might be as a result of poor filtration and should be investigated.

### IMPORTANT !

Should it be necessary to remove any slide-in component ensure that these are secured 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.



### 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.

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.

<b>Telephone</b>	<b>08448 15 60 60</b>
<b>Fax</b>	<b>023 8026 1204</b>



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

We reserve the right to alter the specification without notice.

©VES Andover Ltd. 2007

No part of this publication may be photocopied or otherwise reproduced without the prior permission in writing of VES Andover Ltd.



## AIRLINE AIR-S & AIR-X Units

Installation, Operation and Maintenance Manual

### 6 Warranty

#### Extended Warranties

All VES Andover Products come with a one year guarantee from date of dispatch, which covers parts and labour. You can now extend this with the following options:

#### Option 1. FREE extended Warranty

We can offer you a maintenance agreement that keeps this equipment in tip-top condition. If you take out this agreement, we will extend the warranty **free of charge for up to 5 years**, providing the regular maintenance agreement remains in place.

#### Option 2. 12-24 Month Extended Warranty

12-24 months from the date of dispatch. This can be covered at a cost of just 3% of order value. (minimum charge £50.00).

#### Option 3. 12-36 Month Extended Warranty

12-36 months from date of dispatch. For this cover, the charge is 6% of order value (Minimum charge £80)

Please State which option you require when you place your order. A transferable certificate will then be issued to you. *Please note, this offer excludes condensing units. We would be happy to quote you for these separately.*

#### **Register for separate spares reminders and get a 10% discount**

Register for this free service and we will automatically send you a regular reminder detailing the consumable spares for this unit, together with their current list prices.

**You will then be entitled to a 10% discount off any spares.**

To arrange any of these options.

or **Phone: 023 8046 1150**  
**Email: spares@ves.co.uk**

Stating the sales order and reference number from the unit.



## **AIRLINE AIR-S & AIR-X Units**

Installation, Operation and Maintenance Manual



### **Declaration of Conformity**

Date: 27th November 2002

Product: Airline Units

Type: AIR-S & AIR-X

Manufacturer: VES Andover Limited

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

98/37/EC (Machinery Directive)

89/336/EEC and amendment 92/31/EEC (Electromagnetic Compatibility Directive)

73/223/EEC and amendment 93/68/EEC (Low Voltage Directive)

The European Harmonised Standards applied are:

BS EN ISO 12100, EN 294, EN61000, EN 60204-1

The National Standards applied in particular are :

BS 848 Part 1

Basis of Self attestation:

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

Signature of Manufacturer:

A handwritten signature in black ink, appearing to read 'W. J. T.' or similar.

Position of Signatory:

Technical Director