



Air Vent Technology Ltd,

Unit 1 Regents Court, Walworth Industrial Estate, Andover, Hampshire, SP10 5NX
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HRR/EC HEAT RECOVERY UNITS

Installation, Operation & Maintenance Manual

Introduction

Designed for external applications, the HRR/EC range encompasses 7 models of direct driven centrifugal fan units with airflows up to $0.95\text{m}^3/\text{s}$.

Motors are pre-wired to an external terminal box trickle / boost speed controller & isolator.

Heat recovery is handled via plastic cross-flow heat exchanger module with fitted motorised face & by-pass damper.

Configuration can be side by side or stacked with LPHW or EHB supplementary heating.

General Construction

The HRP range of units is of a standard construction of a 25mm thick double skinned case. The case has inner skins of spangled galvanized sheet steel, outer skins have a plastic coated finish, and is filled with $45\text{kg}/\text{m}^3$ density mineral wool slab. Units are also fitted with double pitched weather lid, and fitted inlet & discharge bird mesh guard cowls. Standard colour is BS10A05 Goose-wing Grey, others available on request.

Access is via removable side panels.

Inspection Upon Receipt Of Goods

Immediately upon receipt of any goods, a careful inspection should be undertaken to ensure neither damage nor missing parts. Particular attention should be paid to the fan impeller, coil connections and casework including lid & plastic finish.

In the event of such damage or loss having occurred, inform AVT (01264 356415) **WITHIN 3 WORKING DAYS** of the delivery date, giving the serial number which can be found on the nameplate. After this period we will be unable to entertain any claim for loss or damage.

Handling

Units must be handled with care, particularly units being craned into position to avoid any damage particularly to the coil connections, overhanging weather lid & plastic finish. A spreader bar should be employed so as to prevent damage to the top of the unit.

Installation

When installing our equipment, the following must be observed.

Safety: It is the responsibility of the installer to ensure that the installation complies with the legal regulations and the current **HEALTH AND SAFETY AT WORK ACT**.

Ambient Temperatures: The range of units covered by this manual are designed for use in an environment where the ambient air temperature is unlikely to exceed 40°C .

Mounting / Positioning: These units must be mounted in the horizontal plane mounted on a completely flat base.

Duct Connections: Adjoining ductwork should always be independently supported to avoid undue stress on the unit casing. Impellers are statically and dynamically balanced, anti-vibration mounts and flexible connections are available to suit.

Access: All units are designed with easily removable components for maintenance purposes. Sufficient room should be allowed adjacent to the unit to allow components to be withdrawn.

Electrical Wiring

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

All wiring should be carried out by a competent electrician and should comply fully with the current I.E.E. Wiring regulations.

The electrical supply must be as stated on the nameplate.

When the wiring is complete, check for free & correct rotation of the fan impeller

Heat Recovery

Units fitted with Cross Flow Plate Heat Exchangers **MUST** not have the supply and extract fans run independently from each other as this will cause damage to the heat exchanger module. It is also recommended that an interlock be fitted within the controls to turn both fans off in the event of one failing.



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Maintenance:

3 Monthly: Filters should be inspected and if found to be heavily soiled, replaced.

6 Monthly: The fan impeller should be carefully cleaned with a brush. This will prevent the impeller from becoming unduly dirty and become unbalanced. Damper cogs, blades and frames should be cleaned and lubricated with a PTFE or silicone oil aerosol lubricant.

12 Monthly: The security and integrity of all fastenings should be checked, particularly the motor mounting frame.

Heat Exchanger:-

Plate heat exchangers have no moving parts, therefore only minimal maintenance is required. Periodically inspect heat exchange matrix for any debris, dust or dirt build up. If found it should be removed by one of the following methods.

Superficial dust or debris can be removed from the surface of the heat exchange matrix by gently brushing with a soft long haired brush. Loosened debris can then be flushed through with warm water or vacuumed from the surface of the matrix.

Stubborn deposits can be removed by using a low pressure washer with an approved detergent solution. The solution temperature should not exceed 50°C. When using any pressure device care must be taken not to damage the heat exchange matrix.

Under **NO** circumstances should the heat exchanger be steam cleaned.

Spares:

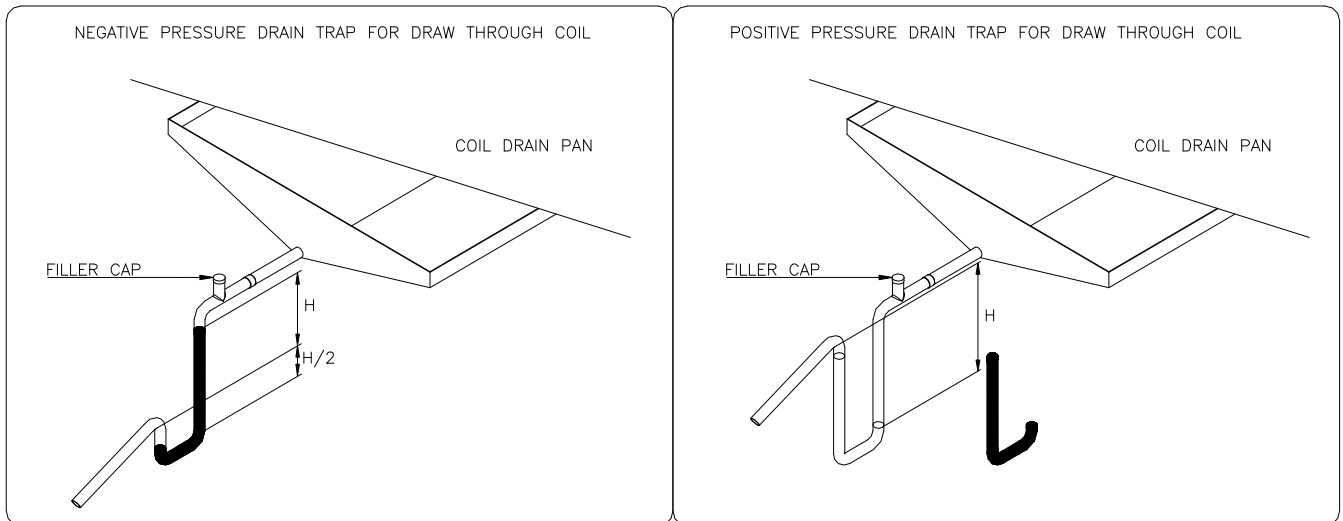
Spare parts or direct replacements are normally held in stock and are available for a period of up to 10 years from installation.

Any spare part can be ordered by contacting AVT (01264 356415) and quoting the unit serial number which can be found on the nameplate.

A complete list of recommended spares can be issued upon request.

Trapping

Correct trapping of the condensate line is essential to prevent flooding or liquid splashing back into the drain pan.



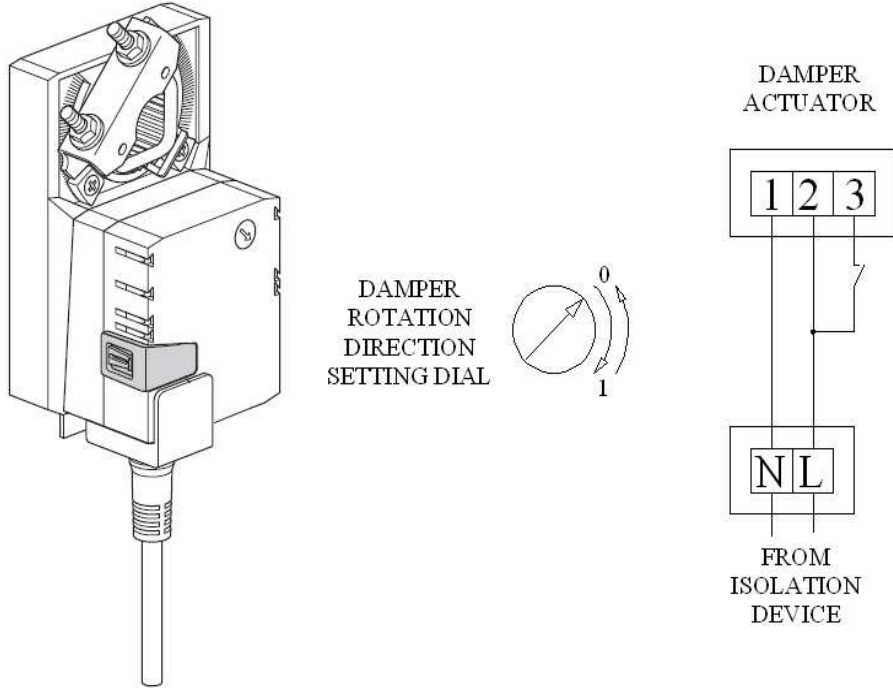
DIM H = TOTAL STATIC PRESSURE mm Wg + 25mm MINIMUM

N.B. DO NOT ALLOW TRAPS TO DRY OUT: INCLUDE ADJACENT WATER FILLING POINT.

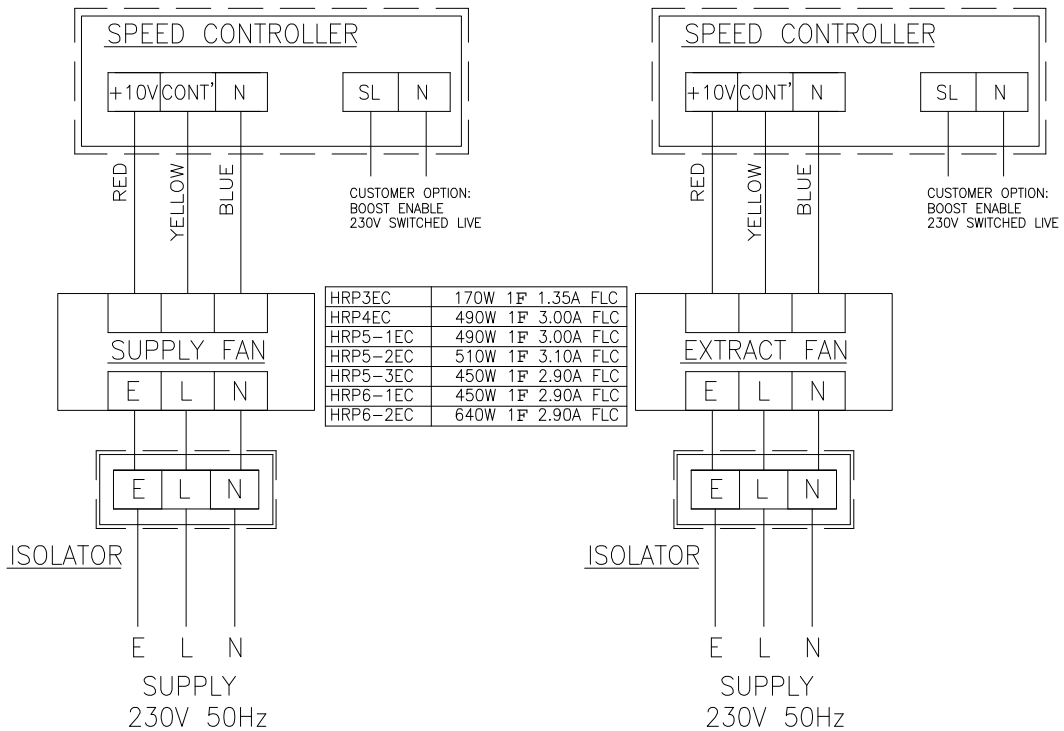


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Damper Actuator Wiring:



Fan wiring:

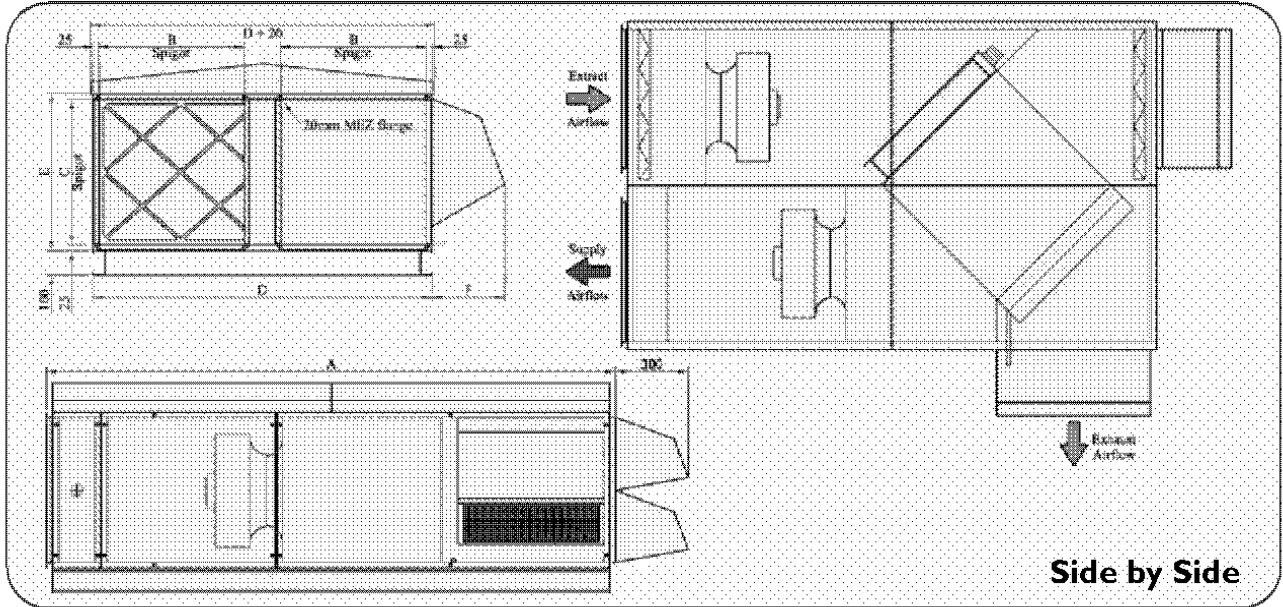




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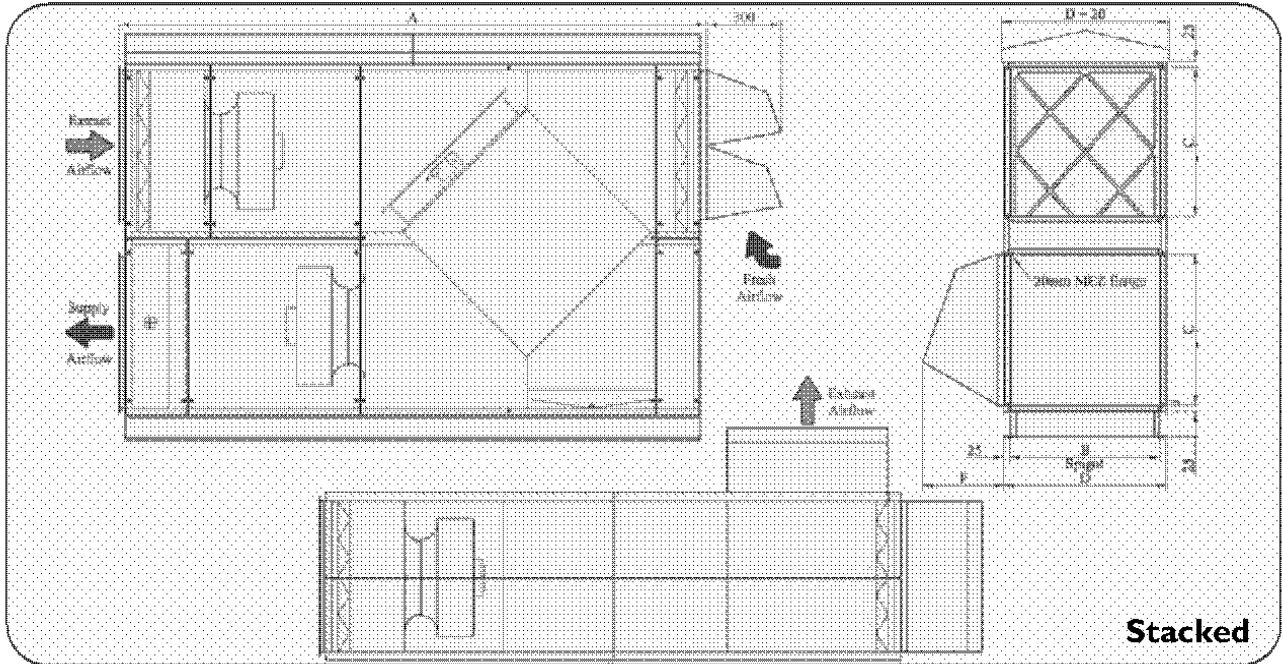


HRR-ECs - External - Side by Side

Model	A	B	C	D	E	kg
HRR3-ECs	1450	350	400	850	450	300
HRR4-ECs	1650	400	450	1000	500	300
HRR5-ECs	2150	500	550	1150	600	350
HRR6-ECs	2350	600	600	1400	650	350

HRR-ECs - External - Stacked

Model	A	B	C	D	E	kg
HRR3-ECs	1550	475	350	525	875	300
HRR4-ECs	1700	525	400	575	1000	300
HRR5-ECs	2150	625	500	675	1150	350
HRR6-ECs	2350	675	600	725	1400	3550





Electric Heater Battery

Introduction

Heaters of the sheathed element type provide a safe means of heating using electricity. The surface temperature of the elements is relatively low and they will not give an electric shock. Heaters are suitable for either horizontal or vertical airflow, though care should be taken to ensure the cutout is near the top of the duct. An even flow of air across the elements **MUST** be maintained and the velocity should not fall below 1.75m/s. The heater should be positioned away from materials that may be damaged by

Controls

A suitable control system should be installed which must include a timer to **keep the fan running for a period of 2 minutes after the heater has been switched off.** A range of compatible control panels is available from AVT. If a speed controller is being fitted, it **MUST NOT** allow the fan to be turned off independently of the control panel nor must it allow the air volume to **FALL BELOW** that stated on the heater nameplate.

Testing

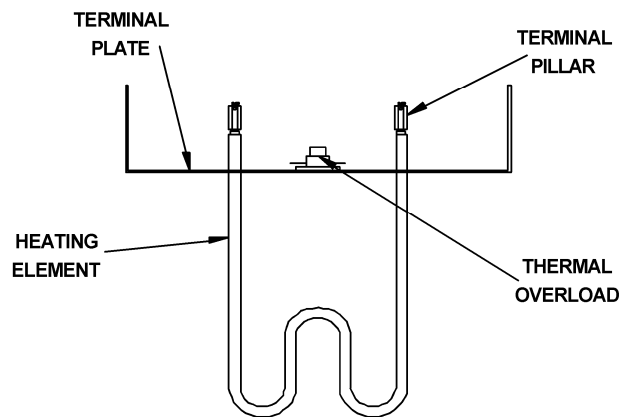
Elements are tested prior to dispatch and are within a tolerance of +7.5W. Elements stored in damp conditions may require drying out in order to achieve the correct insulation levels. Contact AVT in case of uncertainty.

Wiring Instructions

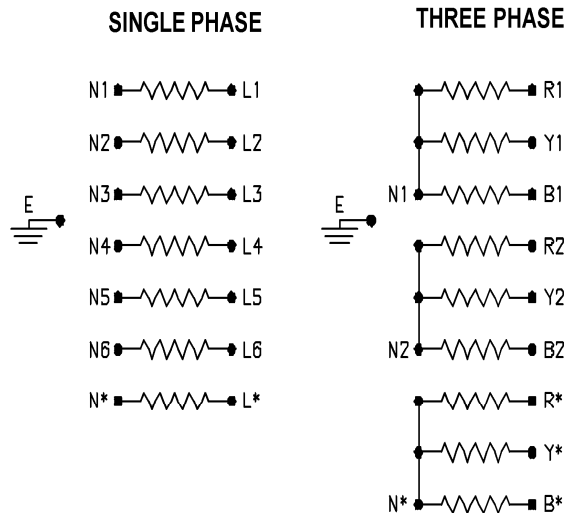
1. The electrical supply to the heater should be either 1ph or 3ph (with separate neutrals) - refer to nameplate for clarification.
2. Electrical cables should be of a high temperature, insulated type (i.e. silicone rubber or fibreglass) and be installed in accordance with current IEE wiring regulations.
3. The heater is fitted with a manual reset, thermal overload which will break the contacts when the duct temperature exceeds 130°C. This should be wired in series with the operating coil of the control circuit.
4. Ensure a suitable earth connection is made to the terminal provided.

5. The element studs are fitted with terminal pillars and care should be taken not to over tighten and cause damage to the elements.
6. Always fit an isolator for maintenance of the heater.

Component Layout



ELECTRIC HEATERS MUST BE WIRED AND INSTALLED IN ACCORDANCE WITH THE FOLLOWING DIAGRAMS AND INSTRUCTIONS.



Where * = any number of additional steps



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ELECTRIC HEATER BATTERIES

Installation, Operation & Maintenance Manual

LPHW Coil

Installation

Before installation check the coil for any minor fin damage and use a fin comb to reinstate the fins.

Check that the handing of the coil is correct for your application. The handing is determined whilst looking in the direction of airflow and relates to the position of the connections. Install all coils with the tubes horizontal and level. This applies whether the airflow is horizontal or vertical. The reason is that this will allow for the most effective venting of the coil. Coils are not to be used with the tubes vertical or inclined upwards unless this was agreed at the design stage.

Where coils are incorporated into ducting, it is important that they are properly installed. Suitable sealing methods should be employed to prevent air bypassing the finned area of the coil. The ducting should be fitted to the coil by removing the end covers (where fitted) and drilling through the coil platework and bolting into position. Care should be taken to protect the headers and return bends by using a piece of wood or sheet metal behind the platework being drilled. A suitable sealant should be used to seal the joints and when replacing the end covers. Access should be provided to both ends of the coil, without the need to remove any of the external pipework, for the purpose of inspection, cleaning and maintenance.

Piping

Coils should be piped such that the water flowing into the coil is at the end where the air leaves the coil. This will give counterflow and the greatest heat transfer.

Coils should be piped according to any relevant local codes of practice.

Where threaded connections are supplied, the only approved method of jointing method is by use of Boss white and hemp. The thread fitted to the coil is to be supported at all times whilst making joints. All external piping is to be supported independently from the coil. Fluid filters are recommended.

Maintenance

Finned surfaces should be inspected regularly and cleaned if necessary.

Filters should be regularly changed to maintain constant air flows.

Coil should be inspected for signs of corrosion. Circulating fluid should be kept free from impurities and corrosive elements.

Vent air from coil on a regular basis. Automatic air vents are recommended.

Check all connections and tighten if necessary.

