AIR CHANGE
ENERGY EFFICIENT 100% FRESH AIR

INSTALLATION AND MAINTENANCE MANUAL

WALL MOUNT
ENERGY RECOVERY VENTILATOR

Model: WM-ERV

VERSION 2005.2

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AIR-CHANGE 100% OUTDOOR AIR WALL MOUNTED ENERGY RECOVERY VENTILATOR (WM-ERV)

1 INTRODUCTION

1.1 Safety Considerations

IMPORTANT

DO NOT LEAVE HEAT EXCHANGER EXPOSED TO DIRECT SUNLIGHT. **Prolonged exposure to UV light can cause severe damage to the structure of the heat exchanger, and will void the warranty.**

WARNING

Improper installation, service, maintenance or use can cause fire, electrical shock or other conditions which may cause personal injury or property damage and will void the warranty. Check with Air Change or nearest Air Change dealer for any information required on the ventilation unit equipment.

DANGER

Electrical shock can cause personal injury or death. Before performing any work on this equipment, the electrical supply must be turned off at the electrical service box to avoid the possibility of shock, injury or damage to equipment.

Note: There may be more than one power supply circuit.

1.2 Note to Installer

- Only trained and qualified personnel should install, repair or service air conditioning equipment. Untrained supervised operatives can perform basic maintenance functions such as cleaning or replacing filters. Service personnel must perform all other operations.

- Installing and servicing air conditioning equipment can be hazardous due to electrical and mechanical components.

- When working on electrical equipment, observe precautions in all literature, tags and labels attached to or shipped with unit. Follow all safety codes and guidelines. Wear safety goggles, work gloves and any protective clothing.

- All work must comply with relevant SAA wiring rules and local authority codes. Installers must ensure that all statutory regulations and by laws have been addressed.

- Installers must ensure that the structures built to take the units have been suitably constructed for the purpose, all safety precautions have been applied prior to installation, and all preparation work has been constructed and suitably sized for its purpose.

1.3 Inspection and Unpacking

- The unit should be inspected upon delivery for possible external damage incurred during transport. If damage is evident it should be noted on the freight docket and the Air-change sales office contacted. A claim should be lodged with shipping company within three (3) days if shipment is damaged or incomplete.

- If major damage is apparent, do not lift unit on to site without prior approval from Air-change. The unit was inspected prior to packing and was in perfect condition at that time.

- Test load to see if the weight is equally distributed. Do this by lifting the unit a few centimetres off the floor and holding it there before lifting any further or before transporting the unit.

- Check unit rating plate to ensure the correct unit matches the job specifications.

1.4 Unit Handling

- Protective packaging should not be removed until the unit is at the point of installation. When removing packaging, be careful not to damage, scratch or dent the unit. After removal of packaging or crating, all removable access panels should be opened to inspect for unit internal damage.

- Exercise extreme caution when lifting.

2 INSTALLATION OF WM-ERV

2.1 Location

2.1.1 General

- The ventilation unit is located through an outside wall or suitable window
- The WM-ERV package is marked with stickers “Fresh air” “Supply Air”, “Return Air” and “Exhaust Air” showing the air path through the unit.

2.1.2 Internal Inlet/Outlet Considerations

- Whenever possible, the unit should be located where the fresh air can be mixed with the refrigerated air from the air conditioner.
- The prime function of the unit is to deliver pre-conditioned fresh air by transferring the energy from the cold stale return air. Therefore the unit must be located away from where the cold return air can be affected by a heat source i.e. a frequently opening door to exterior, or near any major source of heat generation.
- The introduced fresh air should also be above head height to avoid blowing directly on to occupants.

2.1.3 External Inlet/Outlet Considerations

- The exhaust discharge should be directed in a clear path away from any windows that can be opened.
- Location of the fresh air inlets should adhere to the Australian Standards 1668.2 Code.
- The fresh air intake should be positioned clear of any objects which could obstruct the airflow and be clear of any polluted air from other units, exhaust fans, kitchen or toilet exhausts, etc.
- When the unit is fully installed, make sure the outside inlet grille opening and the return air inside are completely free and not blocked off in any way.

2.2 Installation and fitting of Ventilation unit

NOTE: Any studs that are cut have to be cross noggined for support of the wall.
Steps:

1 Remove front panel by lifting up and out;

2 Remove fan drawer by drawing forward towards yourself;

3 Remove filter by drawing forward towards yourself;

4 Remove heat exchanger by removing security screws, and drawing forward towards yourself;

5 Cut aperture 715mm wide x 760mm high. The depth of the carcass is 595mm with an additional 145 mm protruding face panel (see drawing);

6 The unit must be inserted from inside the room. Push unit through aperture until flange seals against the wall;

7 Fix through bottom and through sides 460mm up from bottom;

8 Timber or metal sealing batons for the rear of the unit will need to be supplied by the installer;

9 Replace fan drawer, heat exchanger and security screws, filter and front grille.

2.3 Electrical

- A power supply rated at 240v +/- 10% 1 phase, 50Hz is required to operate two 80W fan motors within manufacturer's tolerances. They are controlled by a variable speed switch

- Mains cables and control circuit wires are to be connected as per wiring diagram and all wiring must comply with relevant local wiring rules.

- Single phase fan motors are internally protected and there is no need for external overload switches.

3 SYSTEM COMPONENTS

3.1 General

- The Air Change Wall Mounted Energy Recovery Ventilator (WM-ERV) has been developed for Classrooms and other applications to supply fresh air to meet Ventilation codes. The system pre-cools or pre-heats and dehumidifies outdoor air by transferring the energy from the return air through the heat exchanger walls to the incoming outdoor air. The Enthalpy Heat Exchanger inbuilt in the Ventilator has been designed to return around 75% efficiency.

- The WM-ERV is professionally assembled, internally wired through out, with easy access for filter change. The Front grille is designed to be removed by lifting upwards and then pulling towards you, allowing access to filters. Remember to always turn the power off before removing the front grille.

- The WM-ERV provides 300 l/s outdoor air on low speed and 350 l/s outdoor air on high speed.

3.2 System Components

3.2.1 Cabinet

- Prefabricated wall and ceiling panels of are constructed of 1.2mm galvanised sheet metal, bonded to 10mm aluminium polyethylene insulation.

3.2.2 Fans

- Supply and exhaust fans are 80W centrifugal direct drive and are constructed using forward curved vanes fabricated from galvanised steel.

- Fans are controlled by an HPM electronic speed control.

3.2.3 Heat Exchanger

- The Energy Reclaim (enthalpy) heat exchanger uses a combination of cross flow and counter flow, with enthalpy transfer media between moulded plastic air guiding frames for a very high efficiency and long life. The heat exchanger has been secured under pressure by galvanised steel end plates and corner fittings.

- There is no cross contamination between the air paths.

- The counter flow enthalpy heat exchanger incorporated into the unit will reclaim up to 75% of the energy (under normal operating conditions) from the return air and transfer it to the incoming outside air, i.e. to pre-treat the outside air. This results in a saving of up to 75% on the cost of heating or cooling the outdoor air. (Typical ERV use with normal air conditioning, see Plan and Side View schematic).

- Heat exchanger is secured in place by two screws that secure the heat exchanger to the cabinet. This ensures that the heat exchanger can only be removed from inside the room.

3.2.4 Filters

- Filters are supplied and fitted in the factory. A single filter is inserted and removed via the return air inlet grid and provides filtering for both fresh air inlet and return air inlet of the heat exchanger.

IMPORTANT: Never operate unit without filters fitted to the return and fresh air intakes.

IMPORTANT: If these units are being used during construction when adhesive, sealers, ducts, new and used carpets are being installed make sure all equipment is fitted and adequately protected. We recommend using disposable or temporary filters during commissioning and during pre-hand over running.

3.2.5 Electrical

- Internal controls are all 240V supply. Wiring is done in accordance to Australian Standards and specific state electrical authorities.

- Single phase fan motors are internally protected and there is no need for external overloads in the ventilation unit.

3.3 Schematic Dimensional Data and Wiring Diagram - Following Pages.

4 SERVICE AND MAINTENANCE

4.1 Ventilation unit General

- Ventilation units have been designed for easy maintenance with first quality materials and components used throughout. Preventative maintenance programs will vary according to actual working conditions and locations and hours of usage by the client. Air Change will be pleased to provide advice on special service requirements for particular installations.

4.2 Heat exchangers - Air Change Enthalpy Heat exchangers

IMPORTANT: Return and Fresh air filters must be changed/cleaned regularly to ensure airflow is unrestricted. Heat exchanger warranty may be voided if filters are not cleaned according to maintenance schedule and if proper filtration standards are not adhered to.

NOTE: Air Change can provide a heat exchanger replacement service on request.

WARNING: Switch off unit before attempting to remove parts for cleaning.

5.1.1 Enthalpy Heat exchanger Maintenance

IMPORTANT: DO NOT WASH THE ENTHALPY HEAT EXCHANGER

- **The Enthalpy Heat exchanger** has a brown paper-based enthalpy exchange media between the plates which can be vacuumed or brushed gently.

IMPORTANT: DO NOT ATTEMPT TO CHANGE THE LENGTH OF THE HEAT EXCHANGER BY REMOVING END PLATES AND PLASTIC PLATES.

This can mean that the media between the plates is dislodged from its position and therefore will cause lack of performance through increased pressure drop through the heat exchanger or damage to the Sensible media. Any tampering with the heat exchanger may invalidate our warranty and Air-Change will not be held responsible for lack of performance or pressure drop.

If the heat exchanger is the incorrect length, please return to Air-change for a replacement unit.

4.3 Fans

Fan shaft and motor bearings are of permanently lubricated, sealed type and require no regular maintenance other than a check on their general condition.

4.4 Maintenance Schedule

4.4.1 General

- Air-change systems are designed for easy maintenance, with highest quality materials and components used throughout.
- Preventative maintenance programs will vary according to actual working conditions and location and hours of usage by the client.
- Air-change will be pleased to provide expert advice on special service requirements for particular installations.

IMPORTANT: Failure to carry out regular maintenance may render warranty claims invalid if faults have been caused by lack of proper maintenance. Air-change may request to see the maintenance schedule carried out.

4.4.2 Monthly Maintenance Schedules.

- Filters should be inspected frequently immediately after installation to confirm the frequency of cleaning needed for the particular location. Regular change/clean of filters is necessary to ensure normal operating conditions.
- Vacuum or wash filters, and dry thoroughly before replacing.

The following is a guide until frequency according to usage is established.

4.4.3 Three-Monthly Checks

- ***Repeat the Monthly Schedule***
- Clean Heat Exchanger (see section 4.1)
- Check fan blower wheels for dirt build-up and tightness on shaft
- Check all cabinet panels for correct fitting, alignment and seals, and clean cabinet as required. Ensure no insulation has been detached from panels.
- All electrical terminals should be checked for tension on each maintenance visit **with main switch off**.

4.4.4 Annual Maintenance

- Repeat monthly and three-monthly checks

- Check cabinet for any paint chips or abrasions and treat accordingly.
- Measure and record the amperage of each motor against nameplate details.

WARRANTY INFORMATION, TERMS & CONDITIONS

Failure to carry out regular maintenance with a licensed and reputable refrigeration company may render warranty claims invalid if faults have been caused by lack of Maintenance. Air-change may request to see the maintenance schedule carried out.

Management will need to keep records provided by service companies, which will detail the service done to each unit. This record is a summary of your service documentation for easy reference for management in case of a warranty claim.

Your equipment is a major investment and will last for many years if properly maintained and serviced.

Air Change Pty Ltd will only accept a completed warranty card [issued in each manual] or a copy of the original invoice complete with matching serial numbers as proof of purchase. This information must be verified before the authorisation of any warranty claims. We also require details of servicing with all warranty claims.