



THYBAR
CORPORATION

ERV-MATE



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THYBAR
CORPORATION

ERV-MATE CURB/ADAPTER

ERV-Mate curb/adapter for RTU / Energy Recovery Ventilator Combinations

Outdoor air ventilation of buildings is accepted to be the primary and most effective way of reducing the concentration of indoor air pollutants and improving building indoor air quality. Total energy (enthalpy) type energy recovery ventilators (ERV) that precondition the outside air before it enters the rooftop units for heating or cooling allow for this healthy mechanical ventilation while saving significant amounts of power and cost. There are periods of time, however, when outdoor air conditions are such that mechanical heating or cooling of the outside air is not required and 100% free air cooling/ventilating (economizing) is desired. Most energy recovery ventilation accessories are sized to handle only the portion (25% to 50%) of the total unit airflow required for outside air ventilation during the mechanical heating or cooling modes. To allow for the higher airflow of economizing a costly bypass damper arrangement must be added to the ERV. Further cost is involved in controlling these dampers. All roof top unit manufacturers offer fully modulating economizer accessories for their units that accomplish this task at a fraction of the cost it would take to integrate the same function into the ERV. The problem is that the ERV needs to be installed in the same place as the factory economizer making the two incompatible.

The solution is the ERV-Mate by Thybar Corporation. This is a factory insulated curb/adapter that combines the functions of the ERV with the factory economizer by supporting the roof top unit and ERV... and through ducted passages in the accessory properly routes their corresponding airflows allowing for the maximum benefit of healthy efficient total energy recovery outdoor air ventilation coupled to the packaged roof top units mechanical heating or cooling with fully integrated factory economizing.

This configuration has the added benefit of allowing for separate ducting of the exhaust air from the building to the energy recovery ventilator rather than routing that air through the return duct and risking unwanted mixing of certain types of exhaust air from locker rooms, smoking areas or toilet facilities with other spaces in the building*. The exhaust fan in the ERV can also continue to run during the economizing cycle providing power exhaust.**

The ERV-Mate can be built as a curb for new installations or a Retro-Mate® for retrofit of existing facilities. As with all ThyCurb products by Thybar Corporation the ERV-Mate can incorporate seismic construction, vibration elimination, pitch compensation, or be configured for pre-engineered metal buildings.

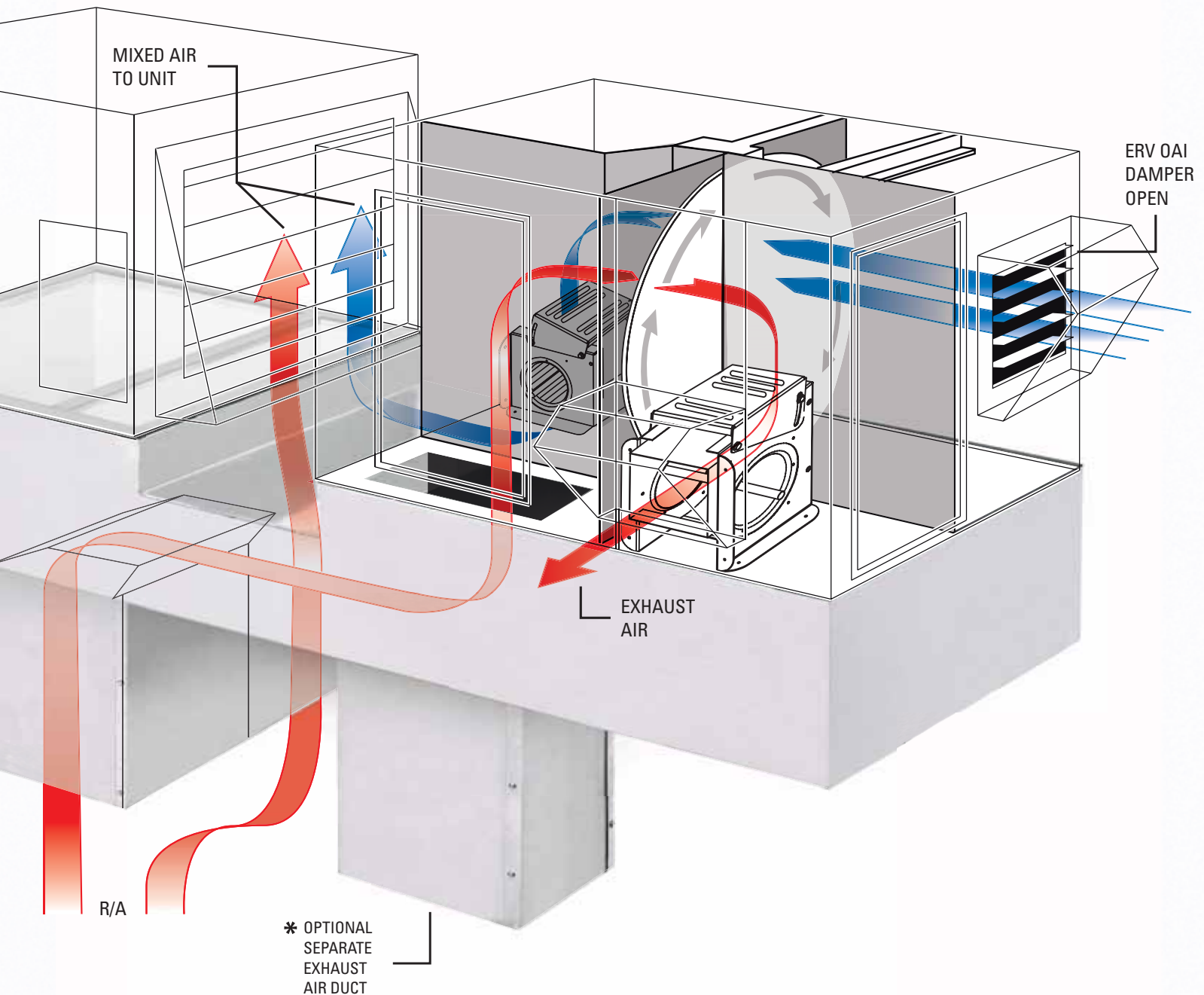
Thybar Corporation has a complete range of Thyvent energy recovery ventilators to meet your needs... or the ERV-Mate can be designed for use with your roof top unit and the energy recovery ventilator of your choosing. Please contact us today with application requests.



SEQUENCE OF OPERATION WITH ENERGY RECOVERY

ERV ENERGIZED

- Supply air fan runs
- Exhaust air fan runs
- OAI damper is open
- Exhaust air damper is open
- Wheel rotates
- Economizer OAI damper closed
- Economizer return air damper full open (not shown)



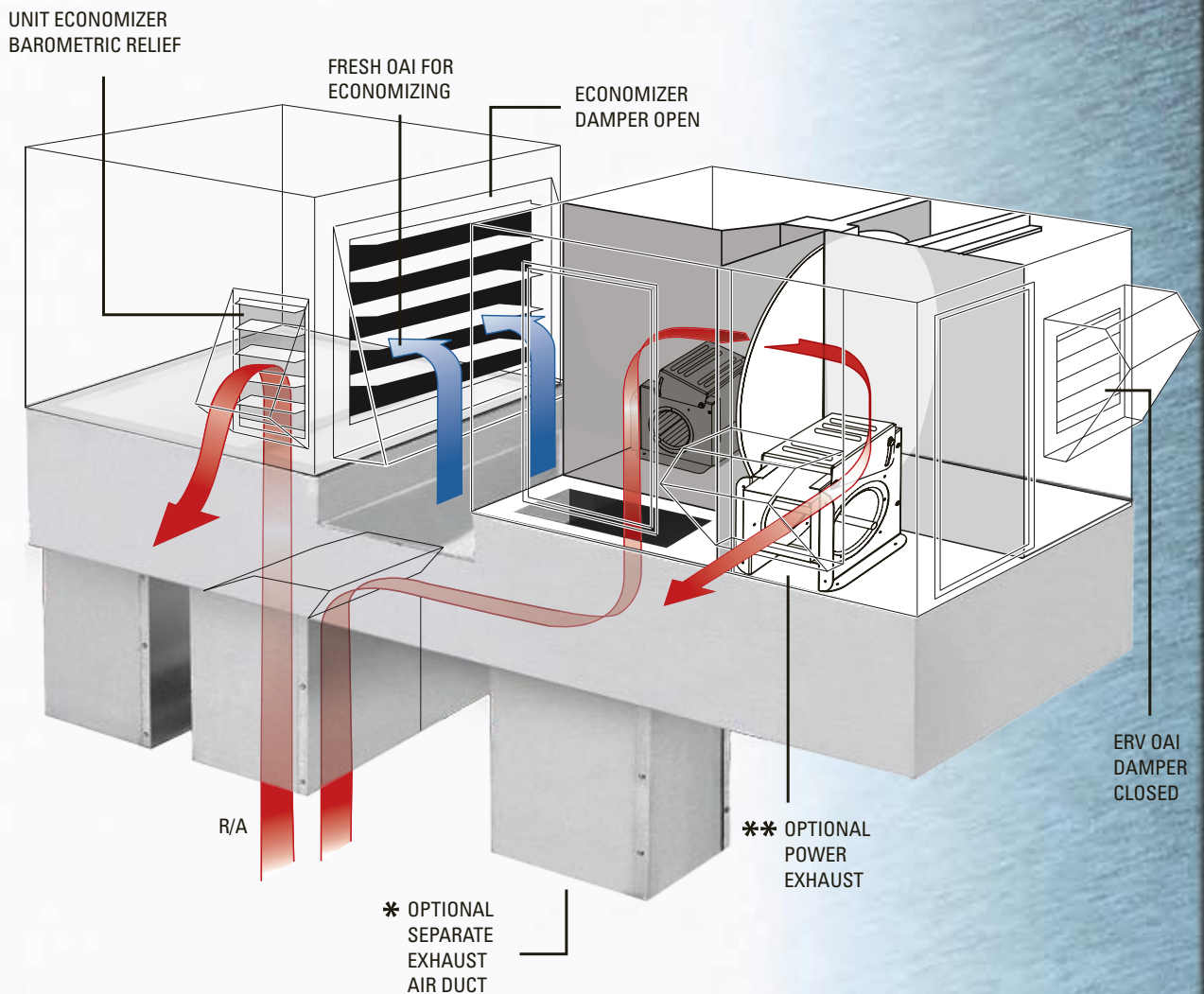
SEQUENCE OF OPERATION 100% ECONOMIZING

ERV IS INACTIVE

- Fans off
- Wheel stopped
- Dampers closed

ECONOMIZING

- Economizer OAI damper open
- Unit return air damper closed
- Barometric relief vents as required to control building pressure
- Note: Optional exhaust fan operation only to achieve power exhaust for building pressurization control**



ENERGY RECOVERY VENTILATOR

FOR COMMERCIAL, INDUSTRIAL
AND INSTITUTIONAL BUILDINGS



EXCLUSIVE
DOUBLE WALL
CONSTRUCTION

SCRUBBABLE
SHEET METAL
LINER

THE ENTIRE UNIT
IS EASILY CLEANED
WITH MILD DETERGENT

2" PLEATED
FILTER IN RACK

LONG LIFE RECOVERY
WHEEL SLIDES EASILY
IN AND OUT FOR CLEANING

NO NEED FOR CONDENSATE
DRAINS...MOISTURE IS
TRANSFERRED ENTIRELY
IN THE VAPOR PHASE

ECONOMICAL INDOOR AIR
QUALITY WITH EFFECTIVE
HUMIDITY CONTROL

FACTORY SELECTED
FANS & MOTORS
ENSURE PERFORMANCE

Thyvent energy recovery ventilators are silica gel enthalpy wheel based and provide efficient and reliable energy transfer. Supply and exhaust air travels through the slowly rotating recovery wheel where the temperature and moisture content is exchanged from one air stream to the other. They are available for use with packaged roof top units in airflows ranging from 250 to 12,000 CFM.



THYVENT ERV SPECIFICATIONS

UNIT BASEFRAME:

The base frame is constructed of formed heavy gauge galvanized steel C channel perimeter with cross channel bracing under all internal components all welded into one solid frame. Exposed welds are spray painted with chromate aluminum paint. The floor is 14 gauge galvanized steel covering 1" thick – 3 pound density fiberglass insulation and a 20 gauge galvanized steel under liner to moisture seal the bottom of the unit.

UNIT CASING:

Outdoor double wall construction consists of an 18 gauge pre-painted steel outer 'C' panel skin and fiberglass insulation between a 20 gauge galvanized steel inner liner. All joints are caulked for air and watertight integrity. All wall and roof panels are mechanically secured to each other and the structural base frame. Indoor units substitute galvanized 18 gauge steel for the outer skin in lieu of pre-painted steel.

WEATHER HOODS:

Intake and exhaust hoods of the same pre-painted steel as the units shall be provided. Intake hoods come equipped with two-inch thick moisture eliminators that also double as an outdoor air pre-filter. Exhaust hoods come with bird screens over the exhaust opening.

ACCESS DOORS:

Doors have double wall construction same as walls and are mounted by a minimum of, two chrome plated, offset hinges each fastened to the doorframe. Industrial grade door handles fasten doors. Size and location are selected to fit the need or the customer's preference.

ENERGY RECOVERY WHEEL:

Wheel shall be enthalpy type for both sensible and latent heat recovery and be designed to ensure laminar airflow. Desiccant shall be silica gel permanently bonded to wheel media. Wheel shall be constructed of lightweight polymer media mounted on a stainless steel rotor. Wheel shall consist of removable segments. Wheels shall be mounted on a slide out rack. Energy transfer ratings shall be in accordance with ASHRAE Standard 84. Wheel assembly shall be ARI and U.L. rated. Wheels are to be provided with optional frost control when low ambient operation is required.

FANS:

Fans are DWDI FC computer selected to fit job conditions. Fans are factory mounted in the AHUs. Fan bearings have a 200,000-hour average life (L50).

MOTORS:

Motors should be standard duty, open drip proof with resilient mount. All motors are to be thermally protected. Motors shall be permanently lubricated, heavy-duty types, matched to the fan load, and furnished at the specified voltage, phase, and enclosure.

DRIVES:

Drives are belt type with variable pitched pulleys for airflow balancing.

FILTERS / EXHAUST FILTERS:

2" thick Farr 30/30 pleated filters in galvanized steel frames are provided for both supply and exhaust air streams sized for a maximum of 500 FPM. They shall be center loading with 25% efficiency.

DAMPERS:

Low leak parallel blade dampers with galvanized steel construction are provided on the outside air intakes and exhaust outlets of units. Outside air intake dampers are 24VAC motorized spring return. Exhaust dampers are gravity back draft.

ELECTRICAL:

Units shall be completely wired at the factory for single point power connection in the field. Integral motor starters for supply fans, exhaust fans, and energy recovery wheels shall be provided. All unit electrical components shall be U.L. listed and shall bear the U.L. label.

AVAILABLE OPTIONS:

ROOF CURB:

All outdoor units shall be provided with 14" high NRCA approved roof curbs (un-insulated) with all welded galvanized steel construction, integral duct supports, gaskets, and wood nailing strip.

FROST CONTROL:

A. ON/OFF Frost Control: Allows intermittent ventilation below the frost threshold temperature. A temperature control is provided to shut down the energy recovery ventilation system when outdoor temperature drops to the control set point. Operation is automatically restored when outdoor air temperature rises above the thermostat set point. The thermostat is located in the outdoor air intake hood or outdoor air intake duct as close as practical to the intake hood.

B. Exhaust Fan Only Frost Control: Allows cyclical mechanical exhaust fan only below the frost threshold temperature, a thermostat control is provided to intermittently shut down the supply blower when outdoor temperatures reach the selected frost control setting, allowing exhaust air to warm the wheel. The thermostat is located in the outdoor air intake hood or outdoor air intake duct as close as practical to the intake hood.

C. Electric Preheat Frost Control: Preheat frost control is the recommended method of preventing frost formation and ensuring design outdoor air ventilation rates for most cold climate applications. For continuous operation below the frost threshold temperature, an electric pre-heater is installed in the outdoor air inlet airstream. The pre-heater is automatically controlled to maintain a predetermined inlet air temperature.

ECONOMIZERS:

Through the use of an Enthalpy Sensor, the sensor de-energizes the ERC wheel when outdoor enthalpy is below the field adjustable set point, and when system is in the cooling mode, allowing free air cooling.

DIRTY FILTER SWITCH:

A sensing probe / air flow measuring device used to allow user to know when filter is due for change, and to relay information on how well air flow is happening within unit. Operates off of 24V (AC or DC).

ROTATION SENSOR:

Magnetic rotational sensor used to indicate rotational operation of the ERC wheel.

VFD:

(Variable Frequency Drives) Unit can be wired without motor contactors/overloads to allow field installation of customer supplied VFDs.

ThyVent

by the fabricating division of
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