

## Tips on how to operate an HRV or ERV system

### Heat Recovery Ventilator (HRV) or Energy Recovery Ventilator (ERV)

All modern homes need, and are required by Building Codes to have a mechanical ventilation system installed. In your home, the system may include a Heat Recovery Ventilator (HRV) or Energy Recovery Ventilator (ERV).

#### How does an HRV or ERV work?

This system brings in outside fresh air which, as it enters the home, is preheated by stale air that is exhausted from inside the home. The exhaust air is typically removed from kitchens and bathrooms.

The HRV or ERV system installed in your home allows you to control air quality in winter by exhausting excess moisture and odours when desired. Whenever the HRV or ERV is turned on, it exhausts air from the bathrooms and the kitchen and brings in outdoor “fresh” air to the furnace ducting and this is distributed to all the rooms in the home by the furnace fan which should automatically operate whenever the HRV or ERV is on.

In your home you will see that the HRV and ERV is controlled by an ON/OFF wall switch (Figure 1) or timer switch (Figure 2) installed in the bathrooms and kitchens. These switches may look like a wall light switch, but their purpose is to switch the HRV and ERV fans to high speed and draw exhaust air through the grille normally located high on the wall (you may or may not be able to hear this exhaust air) in the bathrooms or kitchens. This air is ducted to the HRV and ERV where it is used to pre-heat the incoming outdoor air before being exhausted outdoors.



Figure 1 ON/OFF Bathroom Exhaust Fan Switch



Figure 2 20/40/60 Minute Timer Exhaust Fan Switch

#### Switches to operate your HRV/ERV

*The wall switch or timer switch can be used to provide 20, 40 or 60 minutes of high speed exhaust airflow. (NOTE: up to 60 minutes operation may be needed to remove the moisture created during a normal shower).*

*The HRV/ERV should be turned on whenever the bathroom is in use, and should be left on for up to 60 minutes after leaving the bathroom. Please note that leaving the HRV/ERV running at high speed for more than an hour at a time is usually not needed to clear moisture/odours and doing so will increase heating/cooling costs.*

*The HRV/ERV should be turned on whenever the bathroom is in use, and should be left on for up to 60 minutes after leaving the bathroom. Please note that leaving the HRV/ERV running at high speed for more than an hour at a time is usually not needed to clear moisture/odours and doing so will increase heating/cooling costs.*

#### Automating your HRV/ERV

*The HRV/ERV is also controlled by a central “Ventilation Fan” switch which is often located on the wall near the Heating/Cooling thermostat (Figure 3). Usually, this switch allows you to set the unit to operate continuously at either low or high speed.*

*In cold dry climates such as the Canadian prairies or the North, operating the unit continuously on high or even low speed will often result in very dry house air during cold weather. Some improved controllers will allow you to run the system at low or high speed intermittently, typically 20 minutes ON and 40 minutes OFF. These types of controls may not shut the HRV off, but continue to operate it and the furnace fan in a recirculating mode to recirculate house air without ventilating.*



Figure 3 Multi-Function Automatic and Manual Override Controls

Many HRV/ERV controllers also include a dehumidistat switch (Figure 4) that may be a separate control or be built into the main “Ventilation Fan” controller. The dehumidistat control has either a series of numbers from 0% to 100% around the dial, or it may have a band that tapers from thin to thick. The narrow end equals 0% or very dry air and the thicker end equals 100% or very wet air. Setting the dial to 30% for example will cause the HRV/ERV fans to automatically switch to high speed if the relative humidity (RH) rises above the 30% set-point. The fans will remain on high speed until the indoor relative humidity is reduced below 30%.

### Operating your HRV/ERV during cold and warm months

During the coldest weather in winter, most homes need to limit the indoor relative humidity to prevent visible moisture (condensation) from occurring on the inside surface of windows. Depending on the indoor room temperatures, furniture placement and window coverings; the indoor relative humidity may need to be reduced to prevent this window condensation. The relative humidity can be allowed to increase to higher levels as long as there is no visible moisture on the windows or other cold surfaces within the house.

During the winter, the dehumidistat should be set low enough to keep condensation from occurring on your windows. The table below, (provided by Manitoba Hydro), outlines the recommended Maximum Indoor Relative Humidity (RH) levels for double-glazed windows with low E glass. This is the most common window type in new and retrofitted homes. Other glazing types may require different RH levels.



Figure 4 Dehumidistat Exhaust Fan Switch

Outdoor Temperature	Maximum Relative Humidity	NOTE:
- 30°C or below	25%	<ul style="list-style-type: none"><li>• This table assumes that airflow across the window glass is adequate and is not restricted by window coverings.</li><li>• If condensation occurs on the window, lower the relative humidity setting until window condensation stops.</li><li>• Increased operation of the ventilation system may be required for the first 1 to 2 years to control moisture from construction.</li></ul>
- 29°C to - 24°C	30%	
- 23°C to - 18°C	35%	
- 17°C to - 12°C	45%	
- 11°C to + 18°C	Above 50%	

If you notice moisture on the windows during cold weather, lower the dehumidistat setting gradually (5% at a time) until there is no moisture on the windows. Setting the furnace fan to run continuously may also help to reduce the amount of condensation that will occur on your windows. The furnace fan should be running whenever the HRV/ERV is operating at either high or low speed, and this should also help to reduce condensation.

In the spring/summer, once the temperature consistently remains above 18°C, set the dehumidistat to 100% or the OFF position. Remember to reset the relative humidity on the control to the appropriate indoor RH level in the fall in preparation for the next winter heating season. During the summer, running the HRV continuously or too often will bring in hot humid outdoor air which may cause your air conditioning system to run more often. If you notice odours or stuffiness, or you are using the bathroom, turn on the HRV with a bathroom “Fan On” or timer switch for an hour. In nice weather, opening a window can change the air in your home, but it may also bring in very humid outdoor air that will have to be dehumidified once the air conditioner is activated.

### Maintenance for your HRV/ERV

It is very important that basic maintenance be carried out to ensure that the HRV/ERV can maintain proper healthy air inside your home. Maintenance of the HRV/ERV is typically required a minimum of two times per year and preferably four times per year. The minimum maintenance described in the Operations Manual that was provided with the HRV/ERV should always be followed. Maintenance usually includes:

- Cleaning the filters located inside the HRV/ERV unit according to manufacturer’s instructions.
- Checking and cleaning the outside air intake and exhaust hoods regularly to remove any dust or debris that may reduce airflow. During the winter, ensure that the outside intake and exhaust hoods are not blocked by snow or frost (always check the hoods whenever there is frost on the trees outside the home).
- Cleaning the heat exchange core of the HRV/ERV at least once or twice per year, following manufacturer’s cleaning procedures closely in order to prevent damage to the core.
- Checking that the HRV drain hose is free draining and is not kinked or blocked.
- Combining soap or vinegar with water and pouring down the HRV drain hose to flush.

For a list of qualified contractors, visit the Heating, Refrigeration and Air Conditioning Institute of Canada at [www.hrai.ca/contractorlocator.php](http://www.hrai.ca/contractorlocator.php) or for more consumer tips and information, visit [www.hrai.ca/educationcentre.html](http://www.hrai.ca/educationcentre.html).