#3044

OPERATING YOUR HEAT RECOVERY VENTILATOR

#3044

R-2000

About this Factsheet...

A Heat Recovery Ventilator (HRV) can help ensure a healthy, clean and comfortable home environment without the penalty of high fuel bills. This factsheet has been prepared to help you achieve these benefits. The following pages explain:

— how an HRV works,
— how to operate one,
— possible problems and solutions, and
— routine maintenance requirements.

This factsheet is written primarily for occupants of R-2000 homes; however the information presented here will be relevant and useful to any HRV owner.

This factsheet is intended as a **supplement** to your HRV owner's manual, not as a substitute. **To ensure that your unit performs properly, you should follow the manufacturer's instructions for your particular type of HRV**. If a manual was not supplied, or if proper operation was not explained to you, contact the installer or manufacturer.

HRVs are used year-round, although this factsheet generally refers to operation during the heating season.

INTRODUCTION

Daily activities add a wide range of pollutants to the air in our homes and these must be removed. In other words, the stale indoor air must be regularly replaced with fresh outdoor air.

In many conventional houses, this "air exchange" process takes place randomly. Household air leaks out of the house through the many cracks in the structure.

Accidental air exchange is greatly reduced in an R-2000 Home since it is tightly built. Therefore a mechanical ventilation system capable of continuously replacing the stale indoor air with fresh outdoor air is a necessity in every R-2000 Home.

Heat Recovery Ventilators (HRVs) provide ventilation, while also recovering heat from the exhaust air. Specifically, an HRV that is properly installed, operated and maintained will:

— exhaust indoor air and pollutants,
— exhaust excess humidity,
— recover heat energy from the outgoing stale air,
— use the recovered energy to preheat incoming fresh air, and
— provide fresh air for distribution throughout the house

SOME TYPICAL HOUSEHOLD POLLUTANTS

Pollutant	Sources
Excess moisture (humidity)	People, cooking, washing, plants, etc.
Formaldehyde	Many types of plywood, particleboard, panelling, carpeting, furniture, textiles, etc.
Radon	Soil and sometimes concrete, building materials, and groundwater.
Tobacco smoke	Smoking
Household chemicals	Cleaning products, various hobby supplies, paint, solvents, aerosols, etc.
Odours, viruses, bacteria and fur	People and pets
Combustion products (including carbon monoxide, nitrogen oxides, carbon dioxide, particulates)	Fuel-burning appliances including furnaces, heaters, cookstoves, clothes dryers, fireplaces, wood stoves, etc.

CAUTION: Do *not* rely on your HRV to remove combustion by-products. Combustion appliances in an R-2000 Home are designed to vent to the outside. If combustion products are escaping into your R-2000 Home, there is a problem with an appliance or its venting system. Get it repaired *immediately*! (Unvented fuel-burning appliances such as portable gas-fired space heaters should not be used in R-2000 homes.)

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THE PARTS OF AN HRV

An HRV generally consists of:

- a casing which houses and protects the unit
- circulating fans
- the heat exchange core, where heat is transferred from outgoing to incoming air
- filters to keep dirt out of the heat exchange core
- a condensate drain to prevent moisture from accumulating in the core
- defrost mechanisms to prevent freezing when the air is very cold, and
- controls to change fan speeds according to ventilation needs.

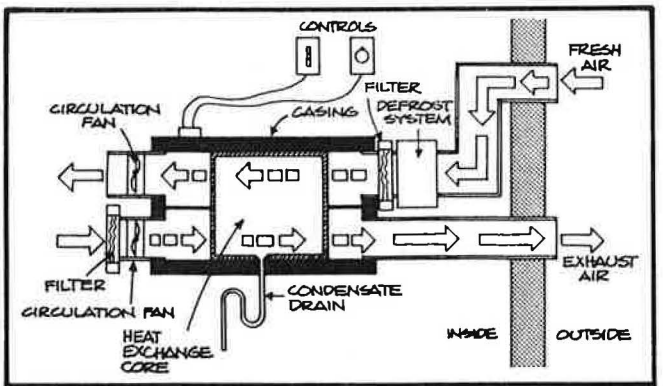

FIGURE 1. THE PARTS OF AN HRV
(Note: All illustrated parts are not found on all units)

OPERATING YOUR HRV

Once your HRV is installed and functioning, operation is relatively easy. The following general points, and the manufacturer's instructions, should ensure safe and reliable performance for many years.

Keep Your System Operating

You should operate your HRV at all times, unless you conscientiously allow for continuous ventilation by some other means (such as opening the windows).

If your HRV doesn't work, get it fixed! Don't be tempted to turn the unit off to save money: the very small savings you achieve will be at the expense of good air quality. R-2000 Home Program energy targets are based on **continuous** operation of the HRV.

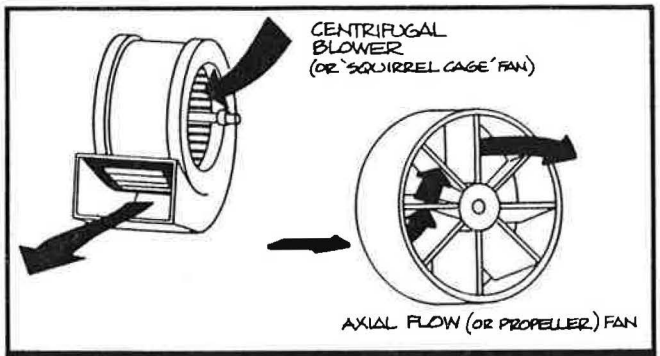

FIGURE 2. TYPES OF FANS USED IN HRVs

How Much Ventilation?

Air quality varies in a home, as does individual sensitivity to various pollutants. So, how much ventilation should your HRV provide?

low speed operation
Low speed operation of your HRV system should provide at least 5 litres per second of fresh air for each room of your house, and 10 litres per second for the basement and utility room. If you run the unit continuously as recommended, and if there is no extraordinary source of pollution inside the home, this level of ventilation is considered adequate for basic requirements. Note, however, that in special circumstances (households with heavy smokers, large families, etc.), the low speed ventilation rate may have to be increased.

If you have any doubts about your low speed ventilation, check with your HRV installer. By measuring actual airflows at the HRV, he/she can determine whether or not enough fresh air is being provided. If not, the low speed ventilation rate on some units can be adjusted (see Figure 4). Remember that it is better to provide somewhat more than adequate ventilation instead of less than adequate.

Even if your HRV is supplying enough fresh air to the house as a whole, it may not be providing enough to some rooms. Each room in the house should receive 5 litres per second. Again, if you have any doubts, check with your HRV installer.

high speed operation
Generally, the HRV should be able to provide extra ventilation by temporarily switching to high speed operation. High speed operation may be triggered by a simple switch or by automatic controls, depending on the installation.

High speed operation may be required at times in the kitchen, bathroom(s) or workshop. It may also be required during a party; when certain household chemicals are being used; when the house air

seems stale, contains odours, or is too humid. You should operate your HRV at high speed more often during the first year after the house is built, since the building materials will give off more humidity and vapours during this period.

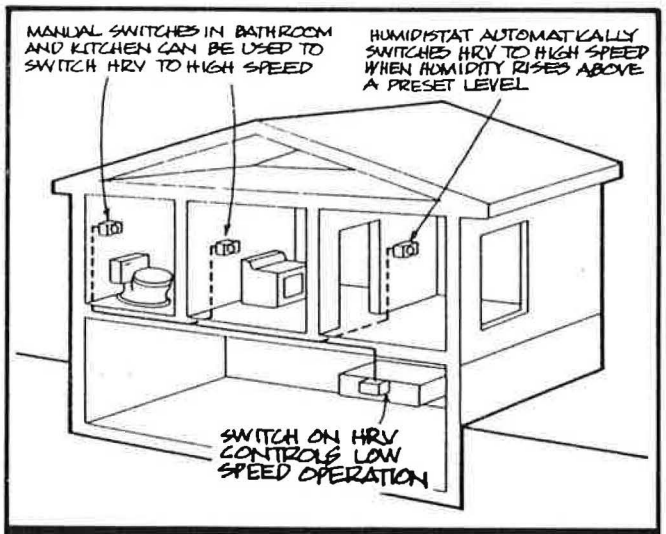

FIGURE 3. EXAMPLE OF AN HRV CONTROL SYSTEM

Spring, Summer and Fall Operation

Continuous ventilation is important year-round. If your house is air-conditioned, or if for any reason you do not keep the windows and/or doors open during spring, summer and fall, you should operate the HRV continuously. Except for the humidistat setting, your method of operation should be essentially the same as during the heating season. Compared to open windows, you may find that the HRV keeps the home cooler and quieter. Avoiding open windows also provides better security, cuts the amount of pollen and dust entering the home, and keeps the rain out.

If you do keep windows open day and night, you can still leave your HRV on all summer. The result will be better ventilation than the windows alone could provide. If you prefer, however, the low speed on some HRVs can be switched off, leaving the high speed to be used occasionally to remove kitchen and bathroom odours. Make sure the windows you open provide good air movement through the house.

When your HRV is operating, you must keep contaminants away from the fresh air intake. For instance, don't use pesticides and herbicides nearby, and be sure to keep your barbecue downwind.

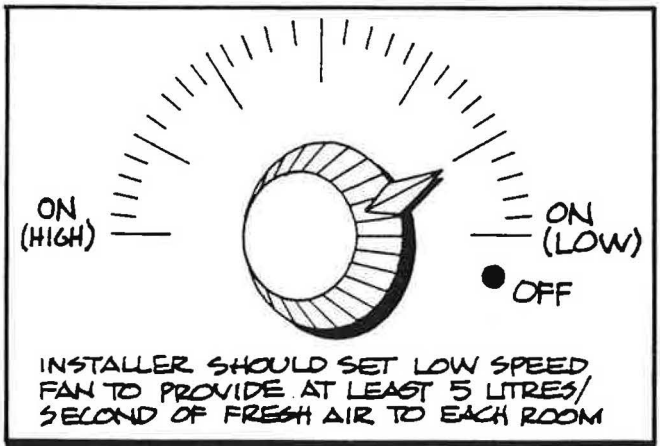

FIGURE 4. VARIABLE SPEED SWITCH CONTROLLING LOW SPEED FAN OPERATION

PROBLEMS AND SOLUTIONS

As with any appliance, problems can develop with your HRV, even if it is operated properly. Some problems will be very simple to remedy; others may require professional servicing. This "Trouble Shooting Guide" indicates when a specialist should be called in. **For more specific information, consult your HRV owner's manual. Always disconnect the power supply before working on your unit.**

HRV TROUBLE SHOOTING GUIDE

Problem	Action
1. HRV not operating	— Check HRV controls, circuit breakers/fuses, electrical outlet, and electrical cord. Adjust as appropriate.
	— Call installer if problem persists.
2. HRV operating, but little or no airflow in one or both air streams	— Check exterior hoods for blockage. Clean if required.
	— Check filters. Clean or replace, if required.
	— Check ducts for leakage. Tape loose joints if required.
	— Call installer if problem persists.

3.	HRV with high and low speed capability running on one speed only.	— Check all switches for malfunction by varying the settings. If unit remains on same speed, call installer.
4.	Unusual noise and vibrations	— Oil the fan motors if not self-lubricating. — Tighten any loose screws, fittings, etc. — Clean fan blades and core, if required. — Have unit serviced if problem persists.
5.	Excessive noise in living quarters	— Ask installer to move unit or to install vibration isolators, additional inlets/outlets, larger ducts, or soundproofing, as appropriate.
6.	Cold drafts in living quarters	— Check for blockage of **exhaust** air stream. — If problem continues or recurs, ask installer to provide diffusers, relocate fresh air outlets, add additional outlets, or add duct heater as appropriate.

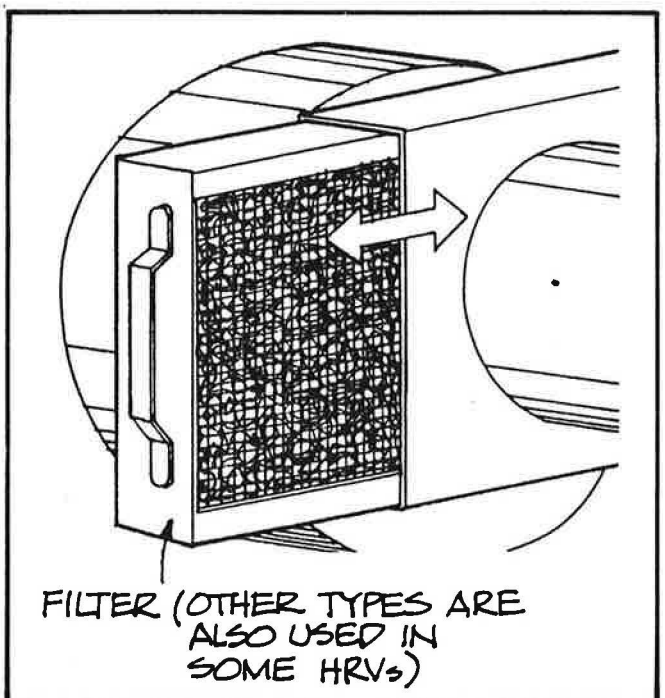

FIGURE 5. REMOVING FILTERS FOR CLEANING

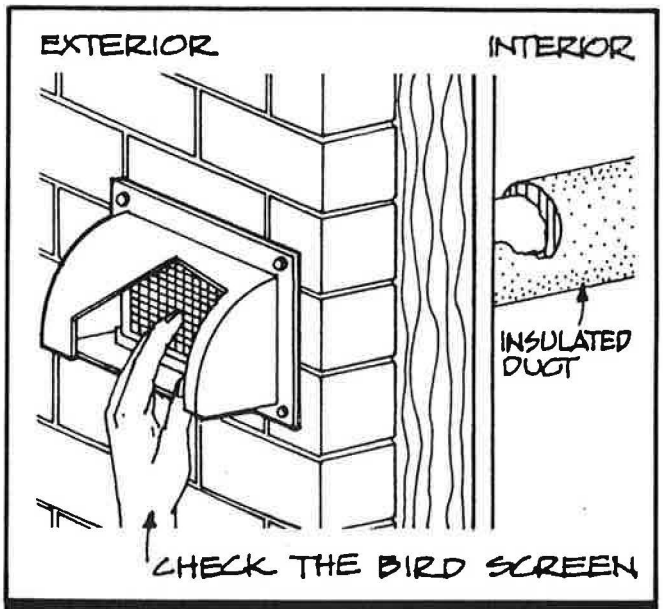

FIGURE 6. CHECKING DUCT INLETS AND OUTLETS

7.	Poor air quality/ excess moisture in some parts of the house.	— If house has forced air heating, ensure that furnace fan is operating continuously and that duct system provides adequate airflow to the parts of the house where problem occurred. — Undercut doors if there is no gap for air circulation from affected rooms to hallways. — If problem area is a source of moisture or pollutants, eliminate the source if possible. — If problem persists, have installer upgrade air circulation system and/or HRV controls.
8.	Poor air quality/ excess moisture throughout the house	— Ensure the HRV is operating properly. — If problem persists, minimum continuous ventilation rate may be inadequate. Adjust.

ROUTINE MAINTENANCE

With routine preventative maintenance, you can avoid problems, ensure the effectiveness of your HRV, and prolong its useful life. The summary below indicates the major HRV maintenance requirements. For more specific guidance, refer to the instructions provided by the manufacturer of your HRV. **Be sure to disconnect the electrical power before servicing your system.**

1. **Clean or replace air filters**
   — If the HRV has filters, these should be cleaned or replaced regularly (see Figure 5). Dirty, clogged filters can result in decreased ventilation efficiency and unbalanced airflows, or cause the unit to stop if it is equipped with an airflow switch.

2. **Inspect exterior intake and exhaust hoods**
   — Check outside vents regularly to ensure that the screen openings are not restricted by grass, leaves or other debris (see Figure 6). During winter, ensure that snow or frost build-up does not block the openings. (If the openings are continually clogged or blocked, consider moving the vent higher up the wall.)

   — Check that no sources of odours or contaminants are located near the fresh air inlet.

3. **Clean the heat exchange core**
   — Inspect the HRV core regularly and clean when required. A build-up of dust and dirt can restrict airflow and reduce the efficiency of your HRV. Consult your owner's manual for instructions.

4. **Inspect the condensate drain**
   — If the unit has a condensate drain, periodically check that the drain line from the HRV is open and free flowing. Clean if required.

5. **Service the fans**
   — Fan motors on many HRVs are designed to operate continuously without lubrication. Your owner's manual will tell you if motor lubrication or service is necessary.

   — Fans should be inspected periodically for dirt on the blades. Remove any dirt by gently brushing the fan blades.

6. **Clean and check the ductwork**
   — Ductwork leading to and from the HRV will collect dirt over time. These air passages should be periodically inspected by removing grilles and duct ends where these are accessible. Dirty ducts can be partially cleaned with a vacuum cleaner. Many heating contractors can provide a more thorough cleaning using special equipment.

   — Check insulating jacket on connecting pipes. If jacket is punctured, serious condensation problems in the ducts will result.

7. **Provide an annual general servicing**
   — As with a furnace it is a good idea to have an HRV service contract that provides an annual general servicing by an HRV technician. Ensure that the technician is accredited by the Heating, Refrigerating and Air Conditioning Institute of Canada (HRAI) and that he/she has been trained by the manufacturer of your HRV.

   — The annual servicing should include a general check for proper operation. Controls and electrical connections in the HRV should be inspected, particularly those located inside the exhaust and fresh air streams. The defrost system should be tested.

   — The system should be checked for proper balance of airflows and, if necessary, the HRV should be rebalanced. Actual airflows should be measured, and the results should be marked on a label affixed to the HRV.

   — The annual servicing should also include maintenance items 1 to 6 (above), plus any special requirements of the particular HRV.

   — At the completion of the service call, the technician should provide a written report on the condition of the HRV.

To help you remember when maintenance is due on your HRV, a Maintenance Chart is provided on the next page.

HEAT RECOVERY VENTILATOR MAINTENANCE CHART

Instructions

1. Using your HRV owner's guide, enter the manufacturer's recommended service schedule in Column 2. Use the extra spaces in Column 1 for any additional servicing items.
2. Make a copy of this chart, post it on your HRV, and record all of the servicing that you do. This chart will then provide both a record of past service and a reminder of service due.
3. If information on the manufacturer's recommended service schedule is not available, service your HRV in accordance with the following schedule:

Monthly: — Check air filters, outside hoods and screens; clean or replace as required.

Every 3–6 months: — Check condensate drain; clean as required.

— Oil and service the fan motor, if applicable; clean fan blades as required.

Annually: — Inspect ductwork; clean as required.

— Arrange for annual general servicing by a qualified technician.

— Check heat exchange core; clean as required.

Note: Not all HRVs will require all of the servicing identified.

CAUTION: DISCONNECT ELECTRICAL POWER BEFORE SERVICING

MAINTENANCE CHART

1. Maintenance Required (see Chapter 6 for details)	2. Manufacturer's Recommended Service Schedule	3. Date Maintenance Performed					
Clean or replace air filters							
Clean or unblock outside hoods and screens							
Clean the heat exchange core							
Clean condensate drain							
Service fans							
Clean ductwork							
General servicing by qualified technician							
Other:							
Other:							
Other:							

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