

A **heat recovery ventilator (HRV)** or an **air-to-air exchanger** is designed to provide fresh air into a home while exhausting an equal amount of stale air. The core (metal or plastic) transfers heat from one stream to the other – called **sensible heat**. During the winter months, the ventilation system should run regularly to minimize high humidity levels. The incoming air is heated utilizing the heat recovered from stale air before it is exhausted. During the summer months (a house equipped with central air conditioning), the HRV reverses the heat-exchange process, removing some of the heat from the incoming air and transferring it to the outgoing stale air.

An **energy recovery ventilator (ERV)** is a relatively new type of HRV that can exchange both heat and moisture. It has an **enthalpic core** (paper) that transfers moisture as well as heat from one air stream to the other – called **latent heat**. Enthalpy is the term used to describe the energy content of air. This type of unit is recommended for warm, humid areas with heavy air conditioning use and temperatures above 25° F [-4° C]. It does not require a dehumidistat control, defrost mechanism or condensate (drain) line.

The unit may be located in the attic, basement, or utility room and making sure that **it is level** and fastened with vibration-resistant supports. It may be attached to the ductwork of a forced-air heating system or installed independently with its own ducting network. In homes without forced-air furnace, fresh air should be supplied to all living areas and bedrooms – except bathrooms, kitchen and laundry areas.

### **COMPONENTS OF A HRV/ERV:**

- INSULATED DUCTS, TYPICALLY 6" (15 CM) FOR BOTH THE INCOMING (FRESH) AND EXHAUST (STALE) AIR – INCLUDING THERMAL COLLARS, EXTERIOR HOODS, SCREENS AND PROPERLY SEALED
- DUCTWORK TO DISTRIBUTE THE FRESH AIR TO VARIOUS ROOMS AND TO RETURN STALE AIR TO THE UNIT
- FANS TO CIRCULATE AIR THROUGHOUT THE HOME AND EXHAUST STALE AIR
- HEAT-EXCHANGER CORE, WHERE SENSIBLE/LATENT HEAT IS TRANSFERRED FROM ONE AIR STREAM TO THE OTHER
- FILTERS ON BOTH THE INTAKE AND EXHAUST SIDES OF THE CORE TO PREVENT CLOGGING
- DEFROST MECHANISM (OR PRE-HEATER) TO PREVENT FREEZING AND BLOCKING (NOT REQUIRED ON AN ERV)
- DRAIN TO REMOVE CONDENSATION FROM INSIDE THE UNIT (NOT REQUIRED ON AN ERV)
- OPERATING CONTROLS TO REGULATE VENTILATION NEEDS:
  - MANUAL HIGH-SPEED SWITCHES LOCATED IN THE KITCHEN, BATHROOM AND LAUNDRY ROOMS
  - RHEOSTAT AND TIMER USED TO OPERATE AND VARY THE FAN SPEED (SIMILAR TO A LIGHT DIMMER SWITCH)
  - DEHUMIDISTAT (NOT REQUIRED ON AN ERV), IS CENTRALLY LOCATED IN THE HOUSE WHERE IT SENSES AVERAGE HUMIDITY LEVELS AND OVERRIDES THE VENTILATOR TO HIGH SPEEDS WHEN THE HUMIDITY RISES ABOVE THE SET POINT (BETWEEN 30-45% RELATIVE HUMIDITY)

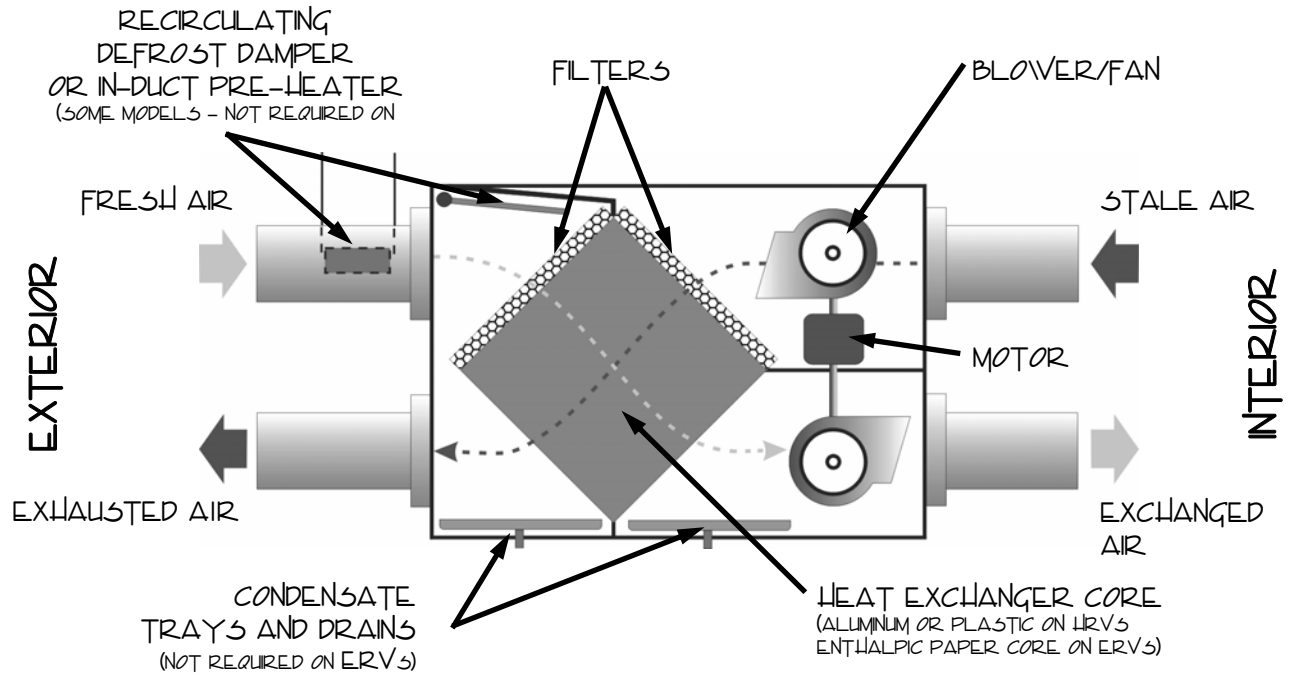
### **LOCATION OF A HRV/ERV INTAKE AND EXHAUST DUCTS:**

- AT LEAST 3' (1M) AWAY FROM THE CORNER OF THE HOUSE AND EQUIPPED WITH RAINHOODS AND SCREENS
- THE INTAKE SHOULD BE LOCATED UPSTREAM FROM THE EXHAUST SEPARATED BY A DISTANCE OF AT LEAST 6' (2 M) AND AT LEAST 18" (45 CM) ABOVE THE GROUND (OR EXPECTED SNOW ACCUMULATION DEPTH)
- THE INTAKE SHOULD BE AT LEAST 6' (2 M) AWAY FROM SOURCES OF AIR CONTAMINATION SUCH AS EXHAUST FUMES FROM THE NEIGHBORING HOUSE, DRIVEWAYS, GAS METERS, OIL FILL PIPES, AND GARBAGE CONTAINERS
- THE INTAKE SHOULD BE AT LEAST 6' (2 M) AWAY FROM DRYER, KITCHEN OR BATHROOM VENTS
- DO NOT LOCATED EITHER THE INTAKE OR EXHAUST DUCTS IN A GARAGE, ATTIC OR CRAWLSPACE

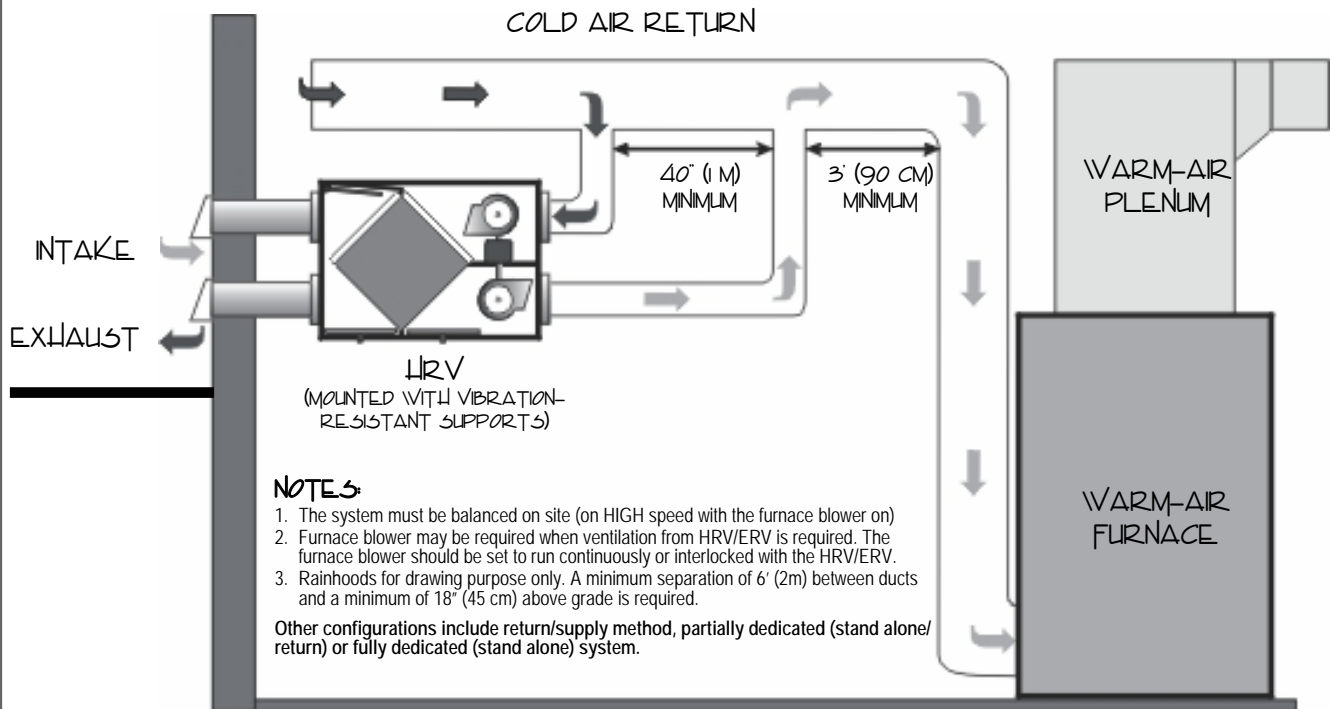
### **MAINTENANCE OF A HRV/ERV: (CONSULT YOUR MANUFACTURER'S MANUAL FOR DETAILS ON CLEANING)**

- DISCONNECT THE POWER BEFORE MAINTAINING THE UNIT
- CHECK EXTERIOR DUCTS MONTHLY TO ENSURE THEY ARE NOT BLOCKED OR BROKEN
- CLEAN OR REPLACE IN-UNIT FILTERS TWICE A YEAR (MOST ON A HRV ARE REMOVABLE AND WASHABLE)
- REMOVE AND CLEAN THE HEAT-EXCHANGER CORE TWICE A YEAR (AN HRV CORE MAY BE WASHED; AN ERV CORE SHOULD BE VACUUMED – **DO NOT WASH WITH WATER**)
- CLEAN FANS TWICE A YEAR AND CLEAN THE INSIDE OF THE CABINET
- FLUSH CONDENSATE (DRAIN) LINE WITH SOAPY WATER ONCE A YEAR (HRV UNIT ONLY)

For further information contact your local public utilities office, a licensed HVAC contractor or the America Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) or the Heating, Refrigerating and Air conditioning Institute of Canada (HRAI).



**HEAT RECOVERY VENTILATOR**



**NOTES:**

1. The system must be balanced on site (on HIGH speed with the furnace blower on)
2. Furnace blower may be required when ventilation from HRV/ERV is required. The furnace blower should be set to run continuously or interlocked with the HRV/ERV.
3. Rainhoods for drawing purpose only. A minimum separation of 6' (2m) between ducts and a minimum of 18" (45 cm) above grade is required.

Other configurations include return/supply method, partially dedicated (stand alone/return) or fully dedicated (stand alone) system.

**TYPICAL INSTALLATION ON A FORCED-AIR FURNACE (RETURN/RETURN METHOD)**

**(DIRECT CONNECTION SUPPLY AND EXHAUST AIR STREAM TO COLD AIR RETURN)**