



## Ventilation Systems

### 18.4 Heat Recovery Ventilators and Energy Recovery Ventilators

Regardless of the type of ventilation system used, warm indoor air is replaced with cold outdoor air that must be heated. One way to reduce the cost of heating the fresh air is to extract heat from the outgoing stale air and use it to pre-heat the incoming air. Heat recovery ventilators (HRVs) and energy recovery ventilators (ERVs)—are devices performing this task (Figure 18.5). HRVs transfer sensible heat while ERVs transfer both sensible heat and moisture. HRVs are best suited to heating climates while ERVs, depending on their design, can be suitable for both heating and cooling climates. Because ERVs exchange moisture between incoming and outgoing air streams they will tend to maintain higher indoor humidity levels in winter, thus enhancing comfort. If operating in conjunction

with an air conditioner, they will dehumidify the incoming air stream in the summer helping to reduce indoor relative humidity and cooling loads. Not all ERVs are suited to all heating climates, so be sure to verify with the equipment manufacturer if the equipment can operate properly in the temperatures anticipated in your area.

The economics of installing an HRV or ERV will depend on the cost of energy and the severity of the weather in a particular location. HRVs or ERVs can reduce the amount of energy needed to preheat ventilation air, but have higher capital costs than ventilation systems without heat recovery.

In addition to the capital costs of the heat exchanger and housing, heat recovery ventilation

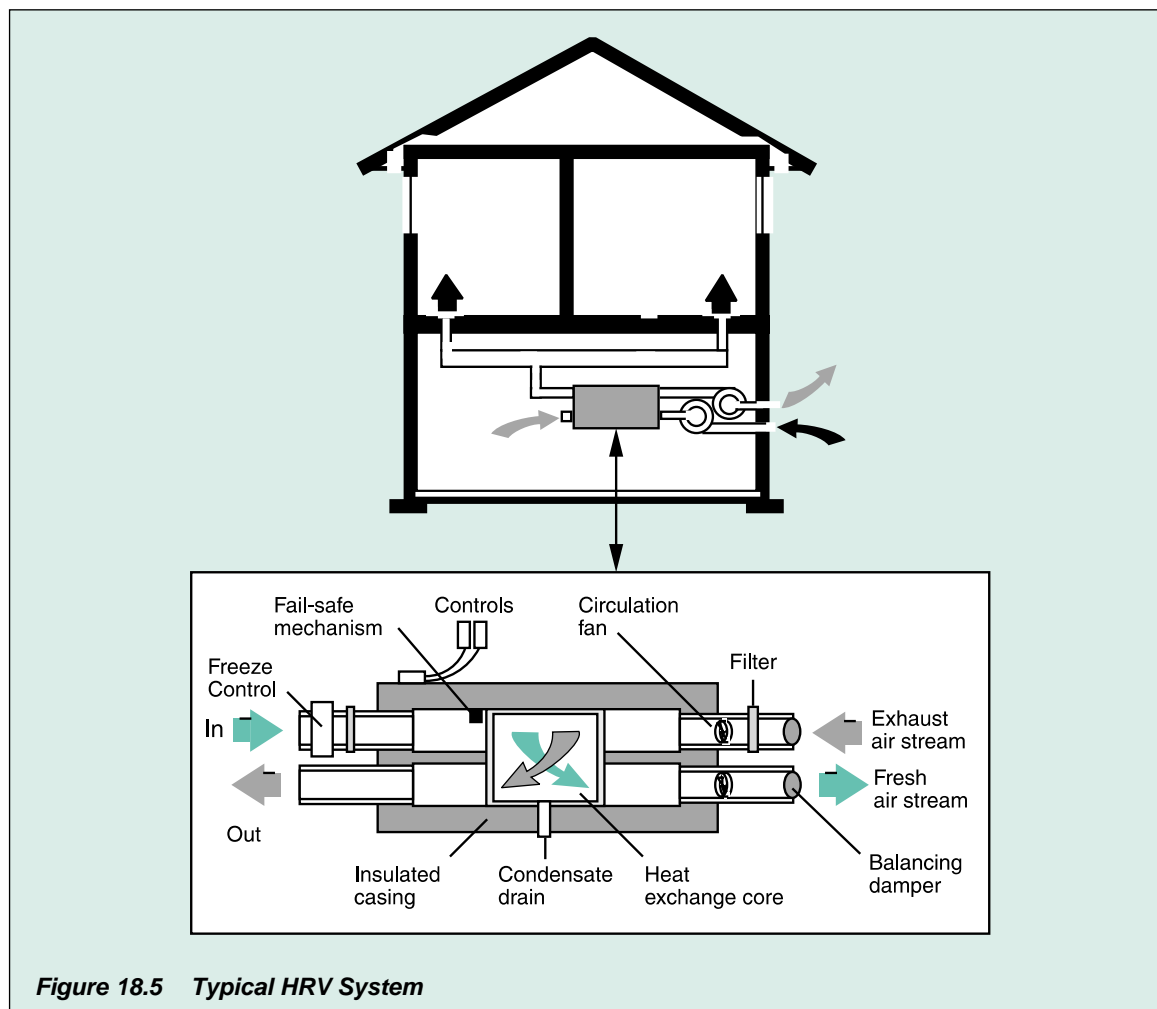


Figure 18.5 Typical HRV System