

HEAT RECLAIMERS AND STACK DAMPERS

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A chimney heat reclaimer is an energy saving device that is installed in a furnace flue pipe to capture some of the waste heat normally lost up the chimney. Both hot air and hot water heat exchangers are available and can be purchased from heating contractors or greenhouse suppliers. The heated air can be used in nearby areas such as a headhouse or shop or to preheat irrigation water.

In the most common type of air exchanger, a small fan blows room air through tubes placed in the stream of hot exhaust gases. The thermostatically controlled fan should be adjusted to turn on at the minimum stack temperature recommended by your furnace or boiler manufacturer (usually 250°F to 350°F). Too low a stack temperature will allow the moisture in the flue gases to condense and the acids and other harmful compounds will deteriorate the chimney.

Hot water units use either plain or finned pipe coils to capture the heat. A thermostat controls the small pump that circulates the water. One of the best uses of this heated water is for irrigation. Remember that piping and the tank should be well insulated.

Heat reclaimers work best if you have an inefficient furnace. The amount of heat captured will vary with the size of the furnace, the average flue gas temperature and the type of reclaimer used. For example, about 40,000 Btu/hr can be reclaimed from a 200,000 Btu/hr furnace operating at 50 percent efficiency and a 550°F stack temperature. This is enough to heat 10 gallons of water from 50°F to 100°F for each hour the furnace operates.

Before purchasing a heat reclaimer evaluate your heating system to see if it might be better to replace it with a more efficient unit. New oil and gas fired units achieve greater than 80 percent efficiency. However, if a heat reclaimer is what you want, make sure that it is UL listed and is installed by a knowledgeable service person. Also, because accumulations of soot will build up on the heat exchanger and reduce its efficiency, it should be cleaned periodically, usually every month or two.

Flue Damper

Automatic flue dampers are devices that are installed in the furnace flue and designed to stop air from going up the chimney when the heating system is not operating. Both thermal and electrical dampers are available and can be purchased from heating contractors and energy stores.

Thermal dampers are used on gas furnaces. They operate on the principal that the heated flue gases open the temperature sensitive louvers allowing the byproducts of combustion to escape. When the furnace burner is not operating, the furnace stack cools and the louvers close, blocking the escape of warm room air up the chimney. These dampers are inexpensive and simple to install.

Electrical dampers are generally used with oil fired furnaces and boilers although some have been used with gas furnaces. In this unit an electric motor or solenoid rotates a circular metal plate to either open or close the stack passageway. The electrical connection to the furnace control box prevents the burner from operating until the damper plate is fully opened. After combustion has ceased, a time delay allows the combustion gases to escape up the chimney before the damper plate closes.

As with heat reclaimers, stack dampers are most effective on older, inefficient units. They are not needed on furnaces with flame-retention burners. Research has shown that possible savings of 5 to 15 percent can be obtained with the larger savings achieved where the burner cycles on and off frequently. Stack dampers should be installed by a licensed heating contractor and should be listed by an approved testing agency.