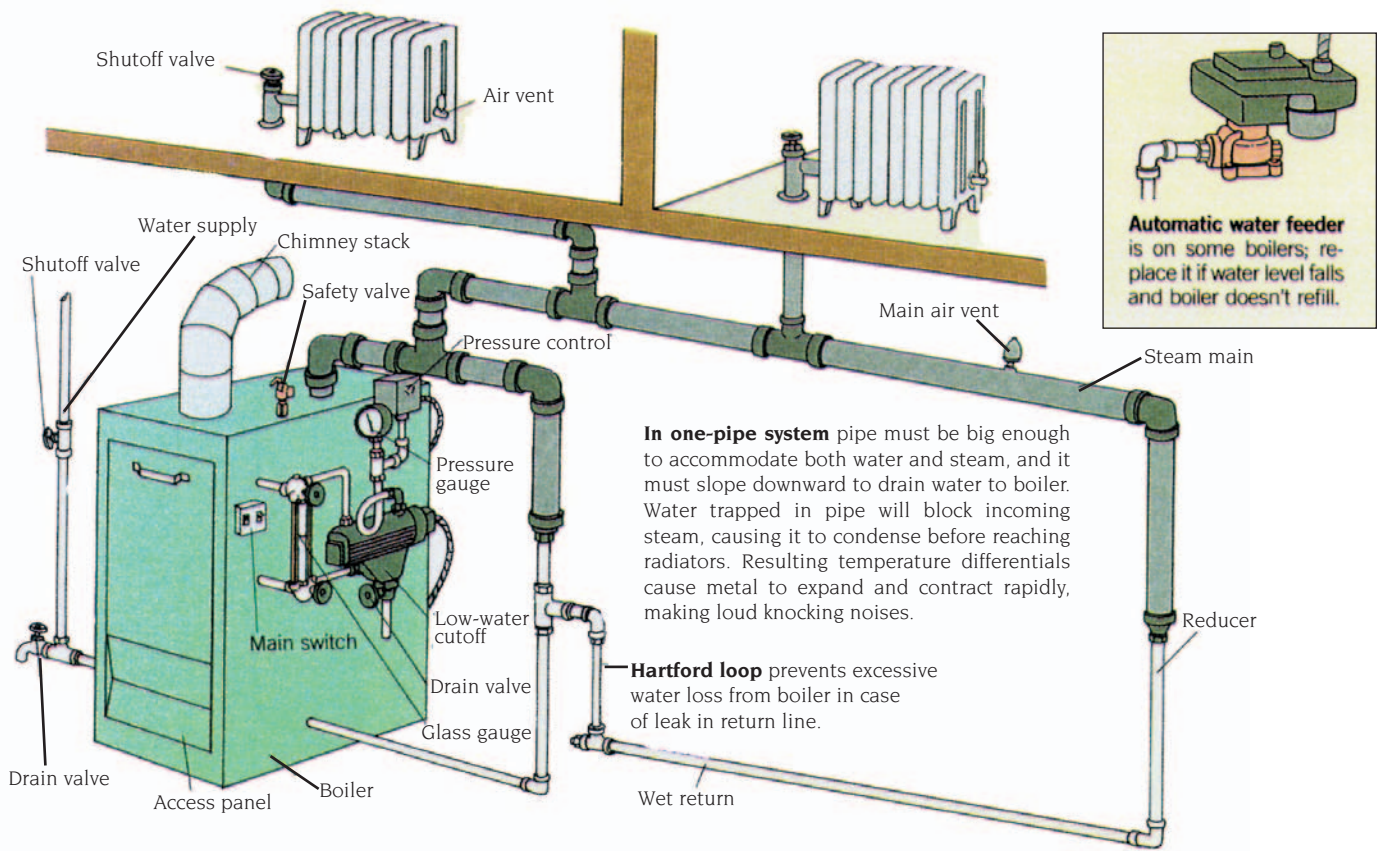


# Steam heating systems



(illustrations may not represent your exact system or components.)

In a steam system, water is heated in a boiler until it vaporizes and rises through pipes to radiators or convectors. When the steam hits the cooler radiator surfaces, it condenses and the water runs back to the boiler.

A steam system may be one-pipe or two-pipe. In a two-pipe system, the steam flows through one set of pipes and the condensate returns through another. In a one-pipe system (below), the steam and water travel through the same pipe in opposite directions.

**Safety controls.** When water is heated to steam, pressure builds up in the boiler. To operate the boiler to suit current weather conditions, the boiler has a pressure control. Check the pressure gauge just after the boiler switches off. If it is far above the pressure setting, have the control replaced immediately. Boilers also have a pressure safety valve that will open before an unsafe pressure level is reached.

If the water in the boiler falls below a safe level, the low-water cutoff turns

off the burner. The water level should be midway in the glass gauge when the boiler is not operating.

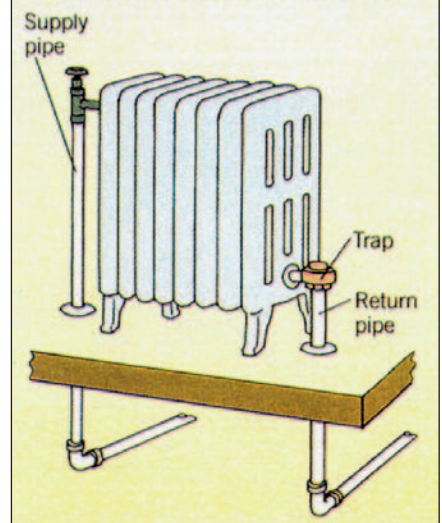
**Venting.** Quick-release air vents let air escape from the main steam lines and individual radiators. As the steam advances, pressure forces the air out of the vents. As the steam reaches the vent, its heat causes an alcohol solution inside the vent's float to expand and push against the base of the float; this causes the base to flex and push the body of the float up, closing the escape hole. Change a vent that spits or drips water, leaks steam, or fails to open.

**Maintenance.** Radiators require a free flow of air to work efficiently. Don't block them with furniture, and cover them only with special vented covers. Vacuum the radiators often.

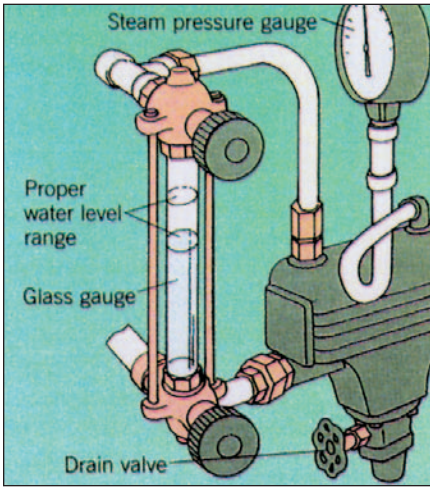
Have the system checked by a service person annually, and follow the steps described on the facing page. If the system operates poorly, call a professional. Malfunctions can be difficult to pinpoint without special equipment.

## Steam trap

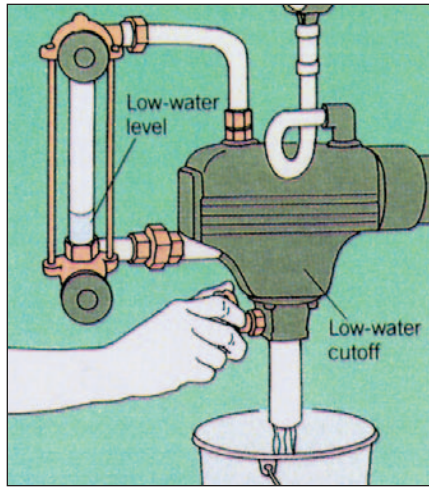
On some two-pipe steam systems, each radiator is fitted with a steam trap (instead of an air vent). The trap holds steam inside the radiator until it gives up all its heat. If return pipes feel very hot or if steam comes out of main air vent in great quantities, one or more traps may be defective; have them checked. If a trap leaks, steam will pass directly into return pipe and be wasted; replace leaky trap.



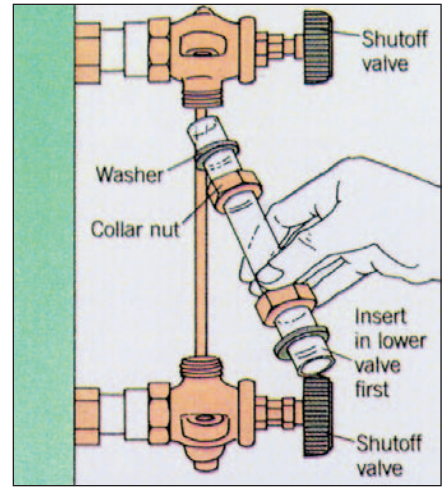
# Maintaining a steam heating system



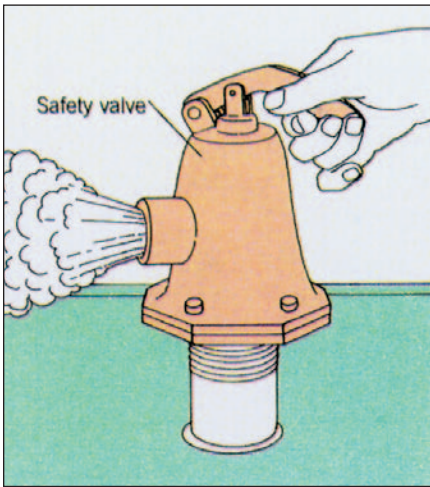
**Check water level** when boiler cycle is off every 10 to 14 days in cold weather (less often if you have automatic water feed). If water level is less than halfway up glass gauge, open water supply valve until water reaches proper level.



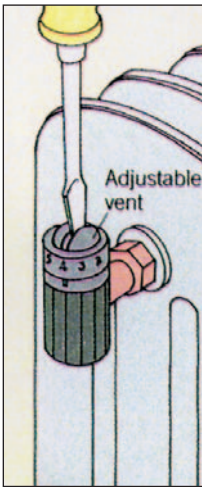
**Flush low-water cutoff** once a month in heating season to prevent buildup of sediment. Turn down thermostat, put bucket under pipe, open valve, and let water run until it's clear. Be careful; water will be hot. Close valve; refill boiler to proper level.



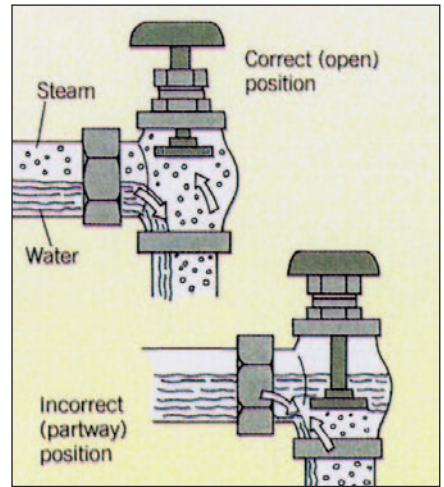
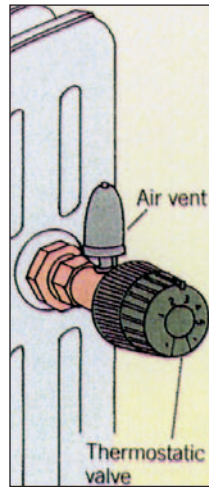
**If glass gauge is dirty**, turn off boiler main switch; let boiler cool. Shut off valves above and below gauge; loosen nuts; lift glass up and out, and clean it. Slide clean (or new) glass into place, tighten connections, turn valves on, and turn boiler on.



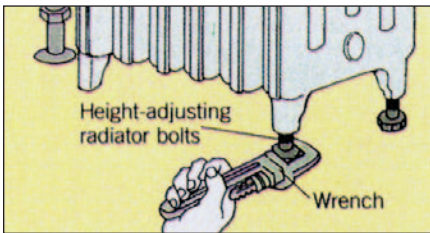
**Check safety valve** once a year. With boiler running, pull up lever or handle and allow small amount of steam to escape. Watch that valve reseats properly and does not leak steam. If it sticks or appears clogged, shut off power and have valve replaced.



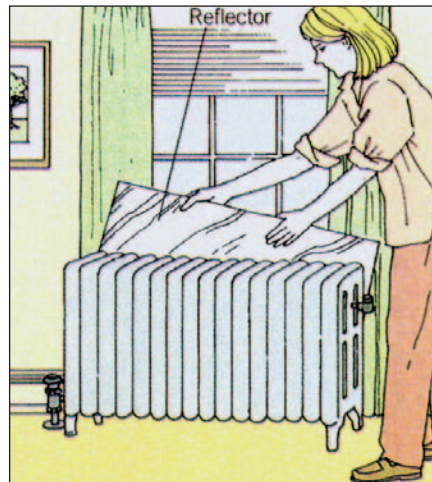
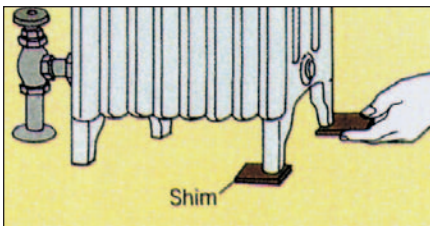
**Check air vents** on radiators for clogging by listening for hissing sound and checking radiator for heat. If valve is adjustable, open fully when checking. Replace clogged vent with one of same size. If room overheats, add thermostatic valve to radiator.



**Prevent knocking** in one-pipe system by opening or closing radiator valves fully, never partway. Because steam enters radiator and water leaves through same valve, a half-closed valve mixes water and steam together, causing knocking at valve.



**To stop knocking** in one-pipe radiator, tip end opposite pipe a bit higher to keep water from collecting at bottom and blocking incoming steam. If radiator has height-adjusting bolts in legs, simply loosen them; otherwise slide shims under legs.



**Increase radiator efficiency** by sliding reflector between it and outside wall to reflect heat back into room and keep it from being lost to outside wall. You can buy insulated reflectors or make them with corrugated cardboard and aluminum foil.

(illustrations may not represent your exact system or components.)