Closed-Loop Drainback Systems

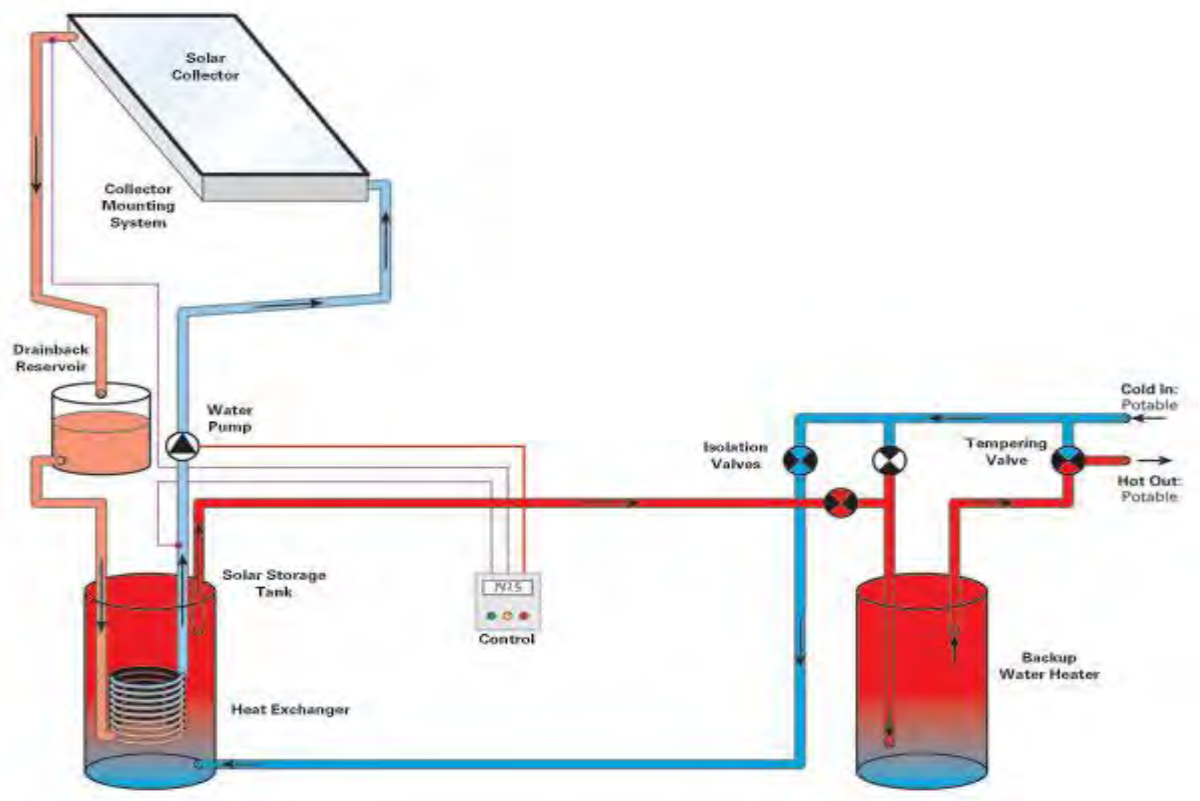
The closed-loop drainback system requires perhaps the least routine service of any active system. The heat-transfer fluid is distilled water, which seldom has to be changed. When the system is at rest (not pumping), the solar collector is empty and the distilled water is stored in a 10-gallon (38 l) reservoir tank, usually located just above the solar storage tank. Higher capacity reservoir tanks are typically required in large systems.

When the pump turns on, the distilled water is circulated from the reservoir back through the collector and heat exchanger, passing heat to the potable water in the solar tank. When the pump shuts off again, the distilled water drains back into the reservoir. The collector must therefore always be higher than the storage tank, and there must be sufficient continuous slope in the piping to ensure against freezing.

Drainback systems are effective and reliable. They work great, even on the hottest and coldest days of the year, and can operate twenty years without needing service. The only downside is that larger pumps usually have to be used, especially if you're pumping water two stories or more, since the drainback pump has to lift the distilled water to the height of the solar collectors.

One way around the height problem is to place the reservoir in the attic, reducing the height the pump has to lift. However, if it's located in a place where the pipes going to and from the reservoir could freeze, glycol must be added. This is also done when long, horizontal pipe runs do not allow drainback to occur quickly.

The following illustration includes the primary components of any closed-loop drainback system.



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