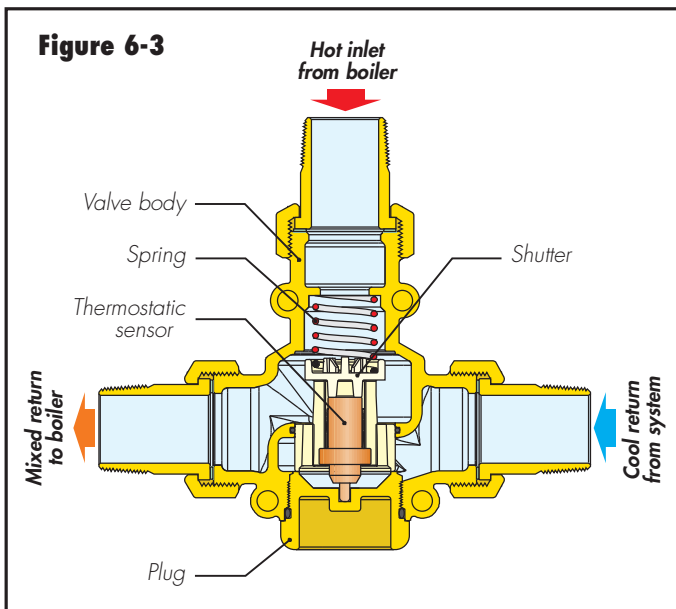
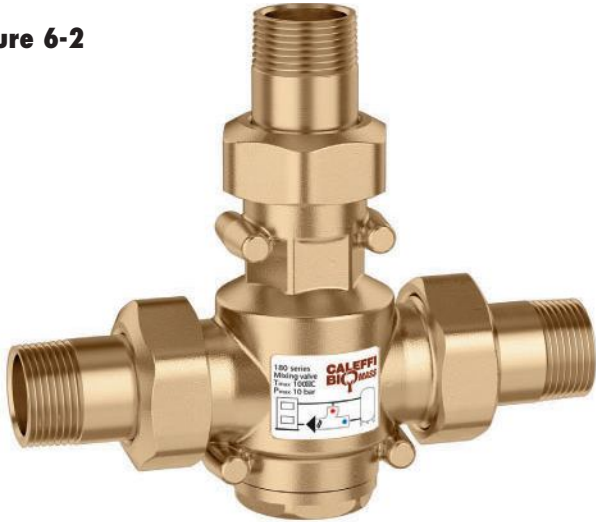


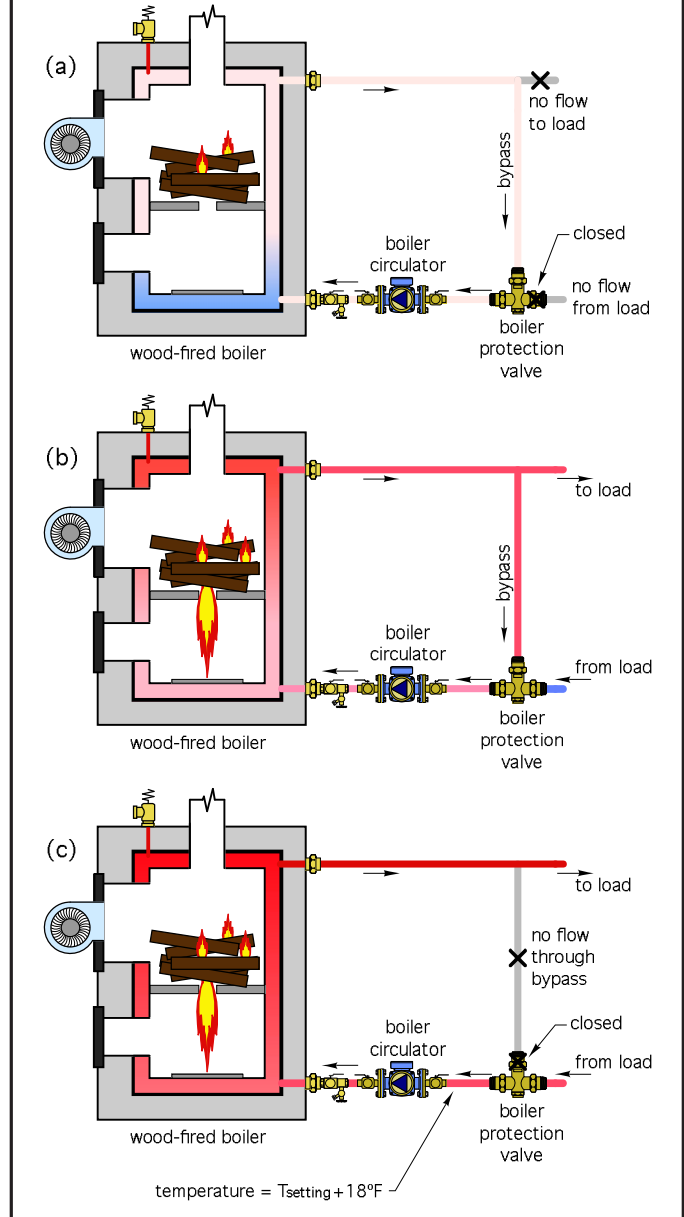
Figure 6-2



very dry firewood (10% to 15% moisture content) being burned with relatively high excess air. The upper setting would be appropriate for wood with higher moisture content (30% or more) being burned with low excess air. A cartridge calibrated for 140°F is suggested for wood-fired boilers operating with seasoned wood.

When the boiler is first fired, the water leaving it is well below the temperature setting of the boiler protection valve. Under this condition, the cool water inlet port of the valve is fully closed and the hot water inlet is fully open, as shown in Figure 6-4a. All water leaving the boiler is routed directly back to the boiler's inlet. No water is routed to the load. This allows the boiler temperature to rise as quickly as possible, and thus minimizes condensing mode operation.

Figure 6-4 a,b,c



As the water temperature leaving the boiler rises, the thermostatic element within the valve steadily closes the hot water inlet port and simultaneously opens the cool water inlet port. This allows some heated water to flow to the load, as shown in Figure 6-4b.

When the water temperature returning to the boiler reaches 18°F or more above the temperature setting of the boiler protection valve, the valve's hot water inlet port will be completely closed, and the "cool" port completely open. Under this condition, there is no flow in the bypass pipe, and all water leaving the boiler flows to the load, as shown in Figure 6-4c.

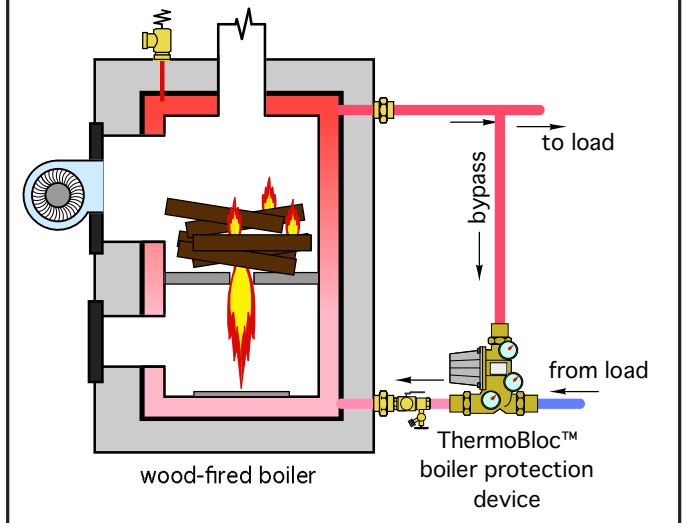
THERMOBLOC® MIXING DEVICE

Another Caleffi product combines the functionality of the boiler protection valve with the boiler circulator and a unique check valve that allows for thermosyphon flow between the boiler and load during a power outage. This “ThermoBloc” mixing device is shown in Figure 6-5. A cross section of the ThermoBloc is shown in Figure 6-6.

Figure 6-5



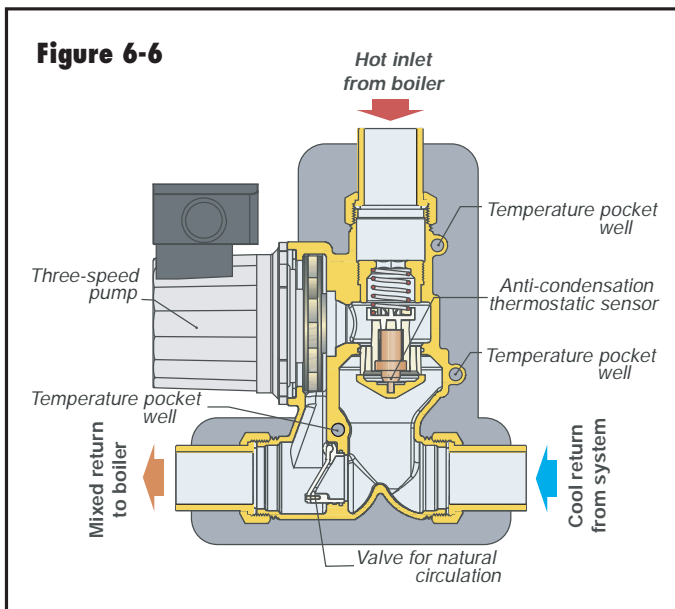
Figure 6-7



the ThermoBloc incorporates the boiler circulator, and thus speeds installation and reduces installation space and fittings. The ThermoBloc also includes thermometers that indicate the temperature of the hot and cool inlet streams, as well as the mixed temperature of the outlet stream.

A unique feature of the ThermoBloc is its ability to allow natural thermosyphon flow between the boiler and load during power outages. This operating mode helps prevent excessive heat buildup within the wood-fired boiler, which would eventually cause the pressure relief valve to open. During a power outage, a lightly loaded flapper valve within the ThermoBloc is pushed open by the slight pressure differential created by buoyancy

Figure 6-6



The ThermoBloc is installed as shown in Figure 6-7.

During normal operation (e.g., when electrical power is available), the ThermoBloc performs the same functions as the previously discussed boiler protection valve. However,

Figure 6-8

