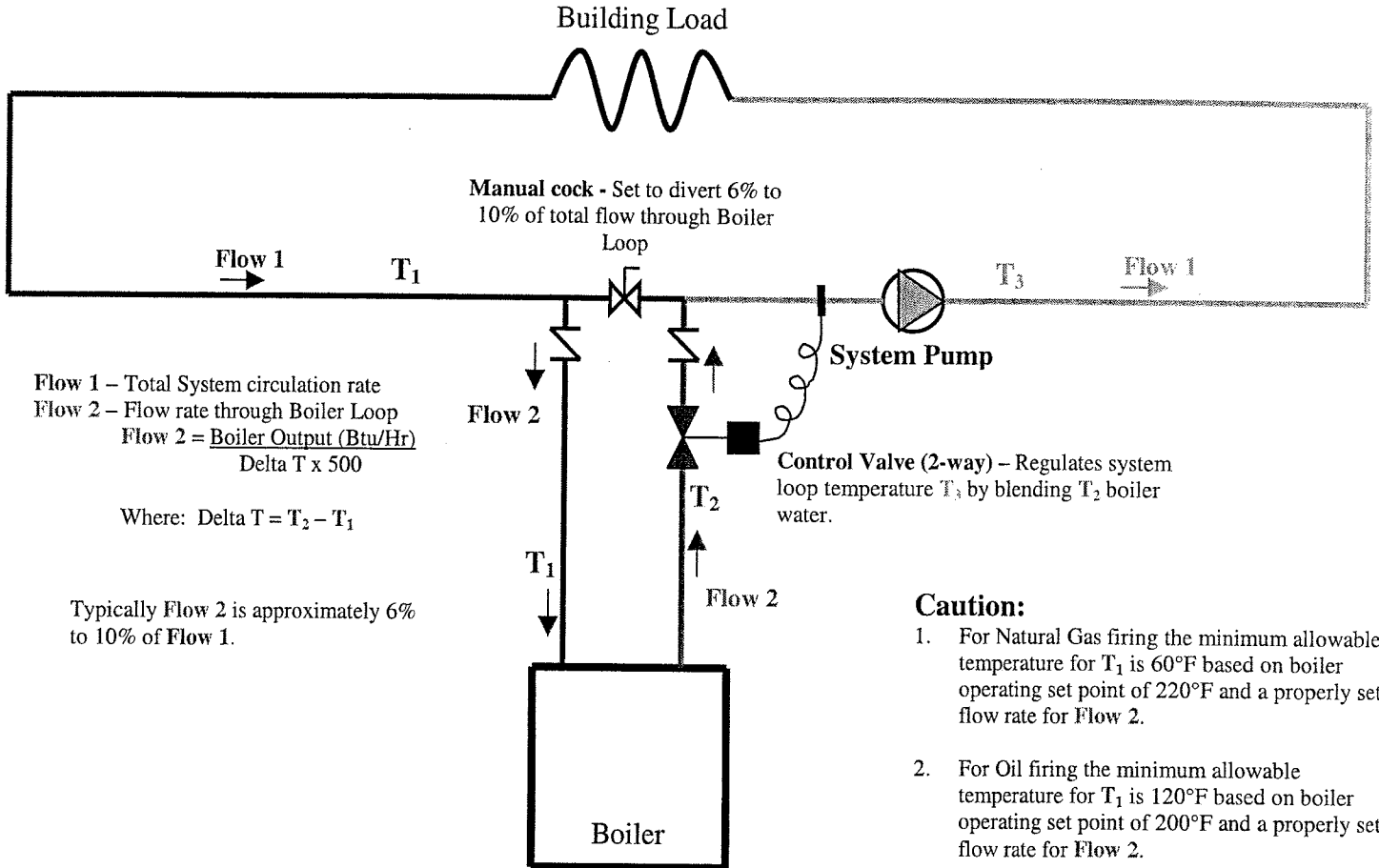


Suggested Piping Low Temperature Water Systems Bryan Boilers with Top Return Connections



Theory:

The Top Return connection available on Bryan water boilers allows for the application of the boiler on low temperature systems without the use of an external mixing pump. This is accomplished by allowing the return water to be tempered by injecting it down through the boiler's down comer before it enters the main heat exchange area. Condensation concerns are eliminated by properly setting the flow rate through the boiler to achieve the desired temperature rise across the boiler.

Considerations:

If desired the boiler can be shut down when there is no demand for auxiliary heat to the system. Shutting down the boiler can be accomplished by utilizing an end switch mounted on the control valve and wiring it in series into the boiler's limit circuit. Typically a time delay should be provided to prevent the valve from going completely shut, thus allowing residual heat to dissipate from the boiler. This will prevent nuisance lockouts of the High Limit.

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Example AB120-W:

Natural Gas Fired Example											
Model	Input (Btu/Hr)	Output (Btu/Hr)	LWT °F	EWT °F							
				60	70	80	90	100	110	120	130
AB120	1200000	1002000	220	12.5	13.4	14.3	15.4	16.7	18.2	20.0	22.3
			210		14.3	15.4	16.7	18.2	20.0	22.3	25.1
			200			16.7	18.2	20.0	22.3	25.1	28.6
			190				20.0	22.3	25.1	28.6	33.4
			180					25.1	28.6	33.4	40.1
			170						33.4	40.1	50.1
			160							50.1	66.8
			150								100.2

EWT = Entering Water Temperature (T₁)
LWT = Leaving Water Temperature (T₂)
GPM = Gallons per minute

Oil Fired Example							
Model	Input (Btu/Hr)	Output (Btu/Hr)	LWT °F	EWT °F			
				120	130	140	150
AB120	1200000	1002000	200	25.1	28.6	33.4	40.1
			190		33.4	40.1	50.1
			180			50.1	66.8
			170				100.2