

Service Bulletin 105

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ECM circulators and tekmar Controllers

ECM circulators are becoming increasingly common in new installations and retrofits. ECM pumps, while more energy efficient, do cause a change in flow rates in closed loop radiant systems. As flow rate through these circulators vary, so does the heating / cooling energy to the load.

tekmar devices regulate supply temperature through PID loop control. Since a tekmar controller only has temperature feedback, it will try to compensate for this change in flow rate by the circulator. As neither the tekmar controller nor the pump have feedback from the other, fluctuation in system temperature will result.

Primary-secondary piping is the recommended mechanical layout. The benefits of primary secondary:

- Provide stability by hydraulic separation
- Constant flow through low mass heat exchangers in boilers extends the service life.

The drawbacks are:

- More circulators (unless the boiler pump is built in to the boiler)
- More labor
- More material; hydraulic separators, low loss headers or closely spaced tees are needed

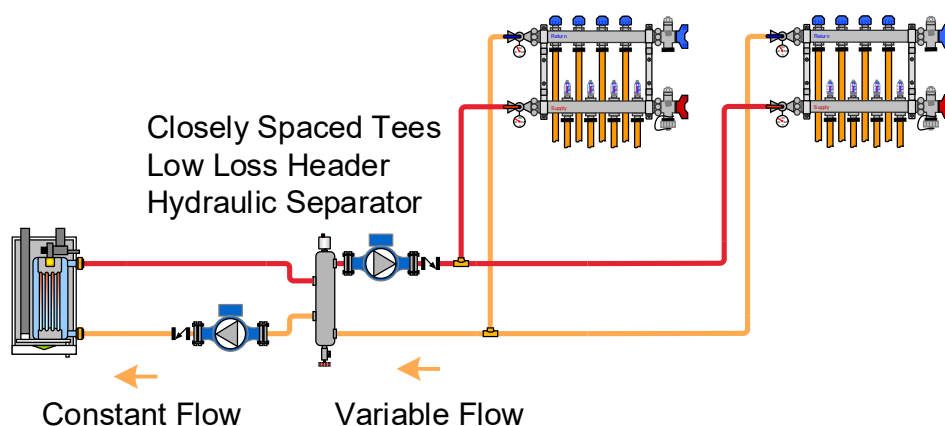
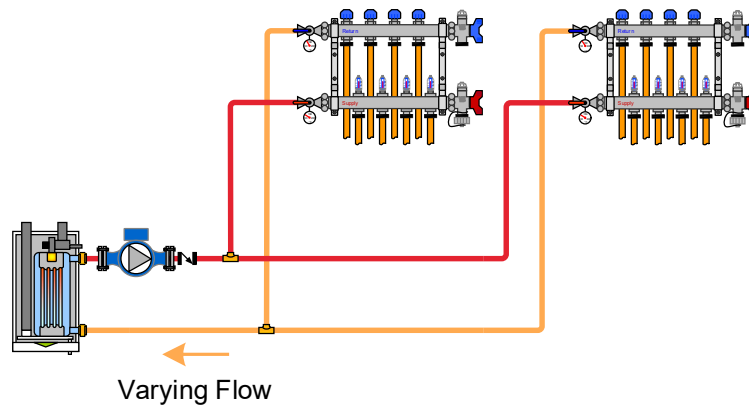


Figure 1: Primary-secondary piping provides hydronic isolation

Parallel piping (not recommended) is illustrated below. An ECM circulator will change the flow rate as the pressure changes due to valves opening and closing, which will also vary flow through the boiler. This is not recommended. In addition, as the flow diminishes, the supply temperature will rise, causing the boiler to adjust its output, which can lead to instability in the system.

If parallel piping is used, it is recommended to set the pump to a fixed speed and add a differential pressure bypass valve prevent dead-heading the circulator when all the zone valves close.



Should you have any questions regarding this service bulletin, please contact tekmar customer service by email at tekmar.customerservice@wattswater.com or by phone at 250-545-7749.

Regards,

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