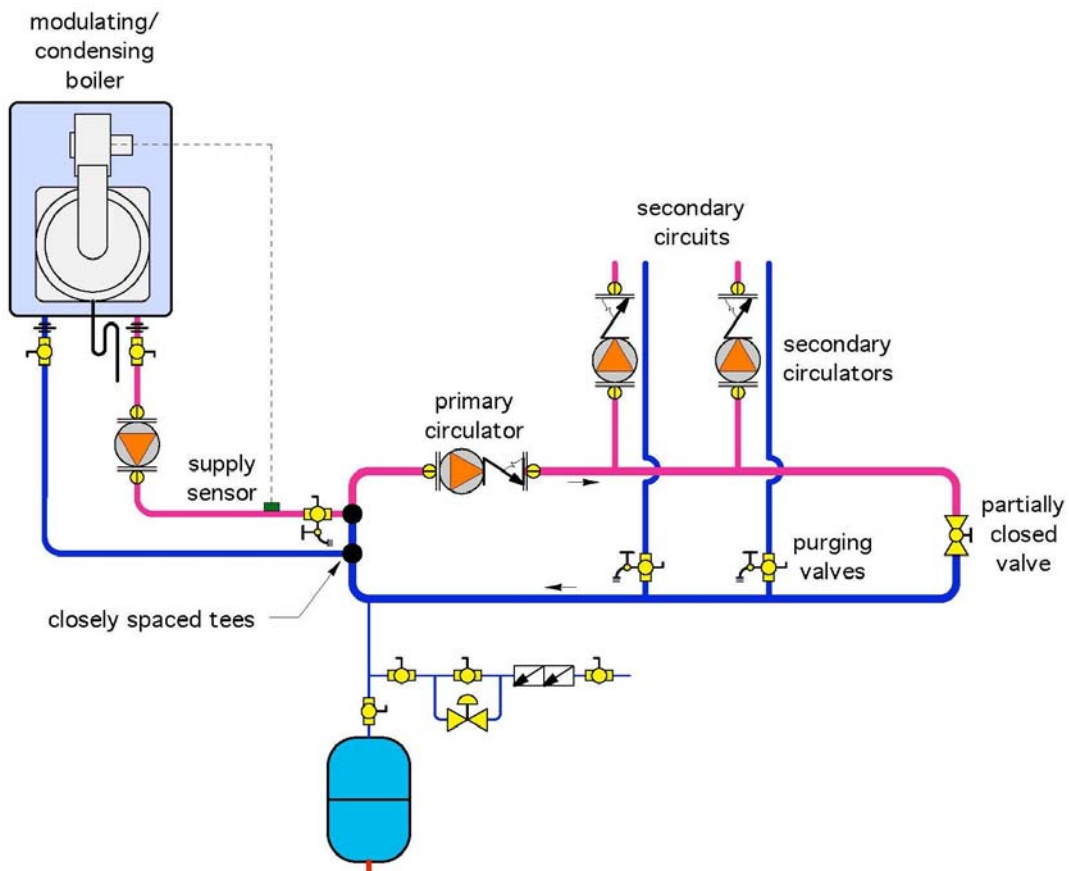


## Mod/Con Decision

### The GLITCH:

*Overview:* An installer has decided to use a mod/con boiler with a high head loss characteristic and connects it to the rest of the system as a secondary circuit with its own circulator. The two load circuits require the same water temperature so he connects them as shown.

*Exercise:* There are at least three incorrect details in this design. Can you spot them?



### The FIX:

*Result:* The distribution system is neither a primary/secondary system nor a two-pipe parallel system. It's a "piping aberration." Assuming the "primary circulator" shown operates when either of the "secondary circuits" operates the pressure drop through the partially closed valve will cause a pressure differential between the top and bottom headers that's likely to force flow through a "secondary circulator" that's off when the other load circulator operates.

Other errors include the boiler circulator “sucking” through the boiler rather than pushing into the boiler (potential for steam flashing if boiler operates at elevated temperature).

The supply temperature sensor that regulates boiler modulation should also be placed downstream of the closely spaced tees to ensure it senses the final mixed temperature to the load circuits.

Finally, there is no need for a “primary circulator.” Simply connect the load circuits to a generously sized header as shown. Size the header for a flow velocity around 2 feet/second with all load circulators operating.

