AXIOM INDUSTRIES LIMITED

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Balancing DHWR Systems

The flow required in branch returns of domestic hot water recirculation (DHWR) systems need only be high enough to overcome the thermal losses in the piping. Unfortunately, these systems are rarely balanced and some branches overflow while others get almost no flow.

In the branches that overflow, high water velocities erode the fittings. In some cases, erosion can even occur in straight runs of pipe immediately downstream of connectors if the fitter has not properly reamed the edges of the tubing.

The branches with inadequate flow may not have hot water immediately available, and users may have to run the water for a while. This time lag can be aggravated if the plumbing fixtures have flow restriction devices like low-flow aerators.

Automatic flow limiting valves can solve these problems by controlling the flow in DHWR branch returns to low values, e.g. 1.0 USgpm in ¾" tubing, water velocity less than 1 fps. The system will be balanced, with hot water readily available at all points (saving water and energy), and the low velocity will not cause any erosion.

Axiom Industries Ltd. – Specialty Products for Hydronic Systems

2615 Wentz Avenue, Saskatoon, SK S7K 5J1 Ph: (306) 651-1815 Fax: (306) 242-3373
website: www.axiomind.com email: sales@axiomind.com