

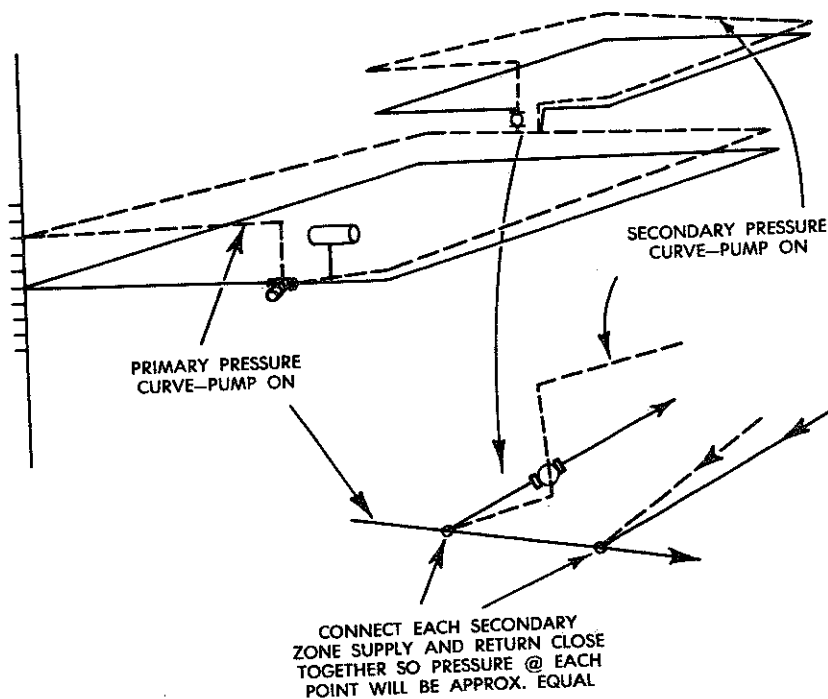
A system containing a good deal of free air in the piping and radiation can cause a similar reaction. Thorough initial venting and an efficient air separator will usually remedy this type of problem and eventually establish a fixed point of no pressure change.

MULTIPLE PUMPS AND POINT OF NO PRESSURE CHANGE

If the operation of a single circulating pump cannot change the pressure within the compression tank, then, of course, the operation of many pumps installed throughout the system will not affect a single point of no pressure change.

Therefore, with this single reference point in mind for a starting pressure, it is possible to determine the

hydraulics and pressure gradients for an entire system regardless of the number of pumps installed in primary or secondary circuits. Secondary pumping, the subject of a separate Design Manual, is a means of inter-connecting piping circuits in such a way that the operation of one will not adversely affect the other. Figure 9 illustrates the pressure relationship on a typical primary-secondary system. Note how the connection point for each secondary circuit to the primary circuit establishes the pressure for the secondary circuit. For the secondary pump to add its pressure differential throughout the secondary circuit, it must also operate away from the connection to the primary system. Again, the pressure loss between this secondary connecting point to the primary system and the pump suction should be kept as small as possible.



NOTE: Pump operation effects tank sizing by its effect on the operating range of the pressure relief valve. If the relief valve is located at a point away from the point of no pressure change, the initial pressure placed upon it will be effected by pump pressure as well as static height and fill pressure applied to the high point of the system. When possible locate the relief valve close to the point of no pressure change. When this can't be done, calculate the additional pump pressure that will be placed at the relief valve and select tank size accordingly.

Figure 9 — Pressure Relationship On Typical Primary-Secondary System