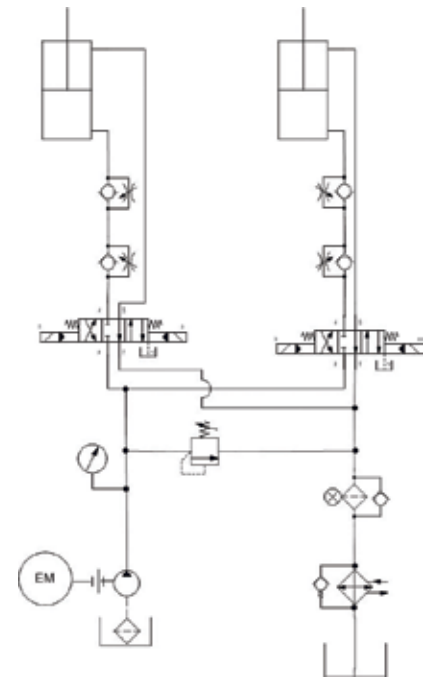


Problem: Fluxuating Pressure Problems

A glass-making facility produces headlights for several automobile manufacturers. They needed to increase production, so a bank of several new molds were purchased and installed. One manufacturer supplied the molds while a local hydraulic distributor supplied the hydraulic power units. (See the circuit attached.)

Each machine consisted of a large 20-inch bore ram with a 16-inch rod and a mold that liquid glass is poured into and cured. One hydraulic power unit supplies two of these molds. When one mold was curing, the other was opened, the product removed and then closed for another cycle.

When they were up and running, they were experiencing a problem with the system pressure fluxuating as much as 125 PSI above the relief setting of 1,000 PSI. This would affect the headlamps' curing process and result in a large number of rejects. They complained to the hydraulic supplier who sent them a new relief valve. After installation, it seemed to have fixed the problem. They cycled one of the molds 20 times with no rejects. The system clamp pressure was steady at 1,000 PSI while the mold was clamped and the glass cured. However, when they ran both molds, the problem returned. If the speed controls were out of adjustment, they felt this would cause a drop in the system pressure, not an increase.



Any idea what would be causing the problem?



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Circle 279

Previous Solution: Bursting Hose

Hoses, when installed properly, should be able to handle their rated pressure with room to spare. SAE standards require any working pressure stated on hoses to be 1/4 the burst pressure. Twisting as little as 10 degrees or installing the hose with a tighter bend radius than the minimum listed can shorten the service life as much as 90%. Dale Schaeffer, a CFC Solar instructor, noticed that the two-position directional valve was of the "Poppet" type leak-proof design. The small checks shown inside the valve position envelopes show which direction it will not leak.

During die setting, the pressure is moved frequently but not to the point of tripping one of the limit switches that would release the trapped pressure in the pilot line. Each time the ram was stopped, the pump would compensate and produce a pressure spike that might be 20 to 70 milliseconds in duration. This spike would build up in the pilot line due to the check valve in the supply line and the poppet checks in the directional valve. This would trap the pressure spikes and build up to the burst pressure of the hose. The supply line check valve to the pilot line was removed, and the problem did not return.



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