

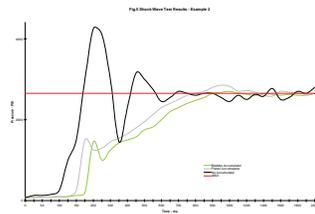
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When designing hydraulic systems, if a little thought is put into the design from the beginning, not only would the designer have a better design, but he would have a more efficient design. In circuits where we have dwell time between different functions of the machine, accumulators can reduce the overall cost of the power unit resulting in a more cost efficient system.

Designing With Accumulators In Mind Part 2

By Walt Flippo

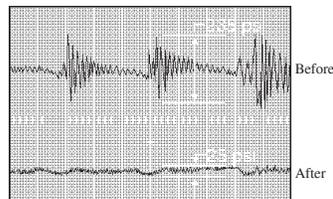
Shock in Hydraulic Systems



Most power units, whether large or small have shocks in the system due to shifting and centering of valves. As a result of the shock in the system, the fittings and hoses are constantly failing. Shocks in system also cause unwanted noise and vibration. In most cases, the shock can be suppressed, reducing noise and vibration in the system by adding a small accumulator as close to the shock generator as possible. Precharge should be about 60% of the line pressure at operating temperatures in these applications.

Piston Pump Pulsation

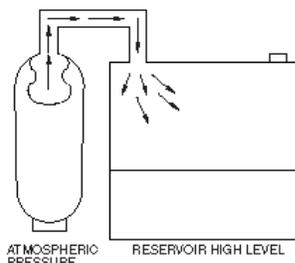
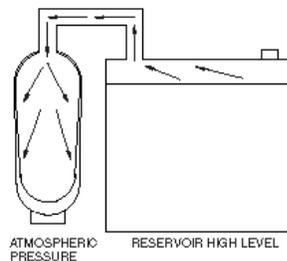
Examples of Pulsation Reduction
The examples below show pulsations for pumps at various pressures before and after installation of the In-line Pulse-Tone.



If the pump being used is a piston type, an in-line pulsetone unit will take out the ripple created by the pump reducing the noise level

and ripples in the hydraulic system caused by the piston pump. In this instance the pulsetone unit should be mounted near the outlet of the pump. The gas precharge should be about 60% of the line pressure at operating temperatures on these types of applications.

Kleenvent



Another item that would help keep cost down would be a Kleenvent. This item when applied to a power unit reservoir could extend the life of the filter element by six times or more the normal life by keeping dirt, moisture and foreign debris from entering the reservoir. This item would require little or no maintenance once installed on the reservoir. Maintenance time should be reduced as a result by

greatly extending the life of valves, pumps and other components in the system, greatly reducing down time as a result of component failure.

A small relief valve and vacuum breaker are available just in case the reservoir is over filled or under filled with fluid.

Unloading Pumps

In systems where you need to hold pressure for a long period of time while unloading the pump to conserve energy. An accumulator is the most efficient way to go. The accumulator can be charged up and the pump unloaded at low pressure to prevent wasting energy and overheating the fluid. In most cases this procedure can be done by using a variable volume pump. However, a 10 gallon variable volume pump will consume about 4hp of energy while in a compensated mode. A fixed displacement pump, unloaded at 60 psi will only pull about 1/2 hp while unloaded at 60 psi. Considerable less heat will be generated in the system, reducing the need for a heat exchanger in many instances.

