

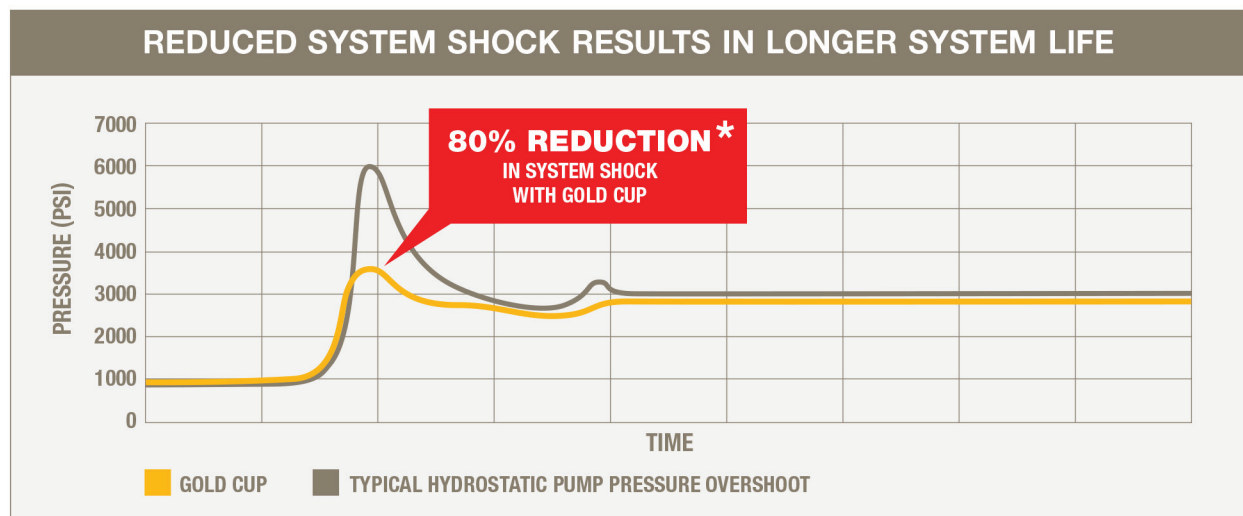
# PUMP Brief

Hydraulic Pump Division

AS-0022

## Gold Cup Solution Series: Part 8

Fast Compensation for System Pressure Spikes



\* Consult HPD Technical Support to quantify dollar savings.

Parker Gold Cup (GC) pumps have the fastest acting Pressure Compensated Override (PCO) in any closed circuit pump on the market today. Simply stated, systems with a competitive pump, or where a relief valve is used to control the maximum pressure in the system – the pressure spike will be much higher than when a GC pump is employed.

The pressure spike seen in a system when the PCO activates is dependent on the size and length of hose and pipe between the pump and actuator.

The greater the distance between the pump and actuator, the less of a spike is seen. However, if the pump and actuator are close together, and little hose is used, the pressure spike can be very high.

To test this on GC pumps, a relief valve was put on the outlet of the pump – the absolute worst-case scenario. Then, the valve was shut at full flow using a 500-cc/rev pump set at 350 Bar. The pressure spike with the PCO acting in 0.1 seconds was 283 Bar above the setting – i.e. 633 Bar.

While this worst-case example won't happen in the field, there will be a pressure spike whenever the PCO operates. In a waste shredder application, for example, a pressure spike can occur up to 10 times/minute. Such spikes must be stopped to protect the actuator, pump, hoses, tubes and fittings in the system.

Many competitors will fit a cross line relief valve (CLRV) to help protect the system. Usually this is placed near the actuator, which in most instances is a motor. While this will protect the

motor, it does not help in protecting the hoses, tubes, fittings and most importantly the pump.

Due to the GC pump design, the system can be protected from these pressure spikes, and the CLRV can be eliminated, reducing the cost of hoses, fittings, brackets, paint, labor, etc. – at virtually no cost. In turn, this makes the GC pump a more attractive proposition.

Another reason to avoid having to compare the pricing of competitive pumps in an application is the many additional value added advantages of the GC pump design. For example, the spike in the system can be controlled directly at the pump by using an accumulator to make the PCO start to operate as the pressure is rising – not when it reaches the maximum setting. Due to the fact that accumulators require maintenance of the correct pre-charge setting, we have an economic alternative solution. Instead, the same end result can be accomplished with a length of high-pressure 10 mm hose.

If you have measured the pressure in your system, our technical support team can assist in calculating the optimum hose length to install. However, it is not always possible to measure this spike without very fast monitoring equipment and pressure transducers. Instead, general protection can be achieved by attaching a 3-meter length of 10 mm hose onto the VA or VB or V port

on the valve block (depending on the application). The hose can be coiled into a small loop, held together with plastic ties, and connected to a pressure gauge to make a neat and tidy installation.

As a result, the hose acts as an accumulator during the very fast pressure rise in the system, which causes a pressure drop for the sequence poppet to open and start to destroke the pump. The net effect is a minimum pressure over shoot, and virtually *no spike!*

For applications where the PCO is operated several times over a short period of time, it is recommended that this approach be used to protect the system and reduce the costs of using additional components and labor.

### **Support**

Have a question on remote control of the compensator? Call the Technical Support Team at **937.644.3915**, or contact **[pumptechsupport@parker.com](mailto:pumptechsupport@parker.com)** for assistance.

