PUMP Brief

Hydraulic Pump Division

AS-0016

Gold Cup Solution Series: Part 2

Basic Cylinder Circuits

As previously discussed in *Part 1 – Basic Hydraulic Circuits*, closed circuits using cylinders for linear motion are common for such applications as steering gear, stabilizers and concrete pumpers.

These applications have all the benefits of a basic hydrostatic system, but require additional pumps, valves and other components to meet the requirements.

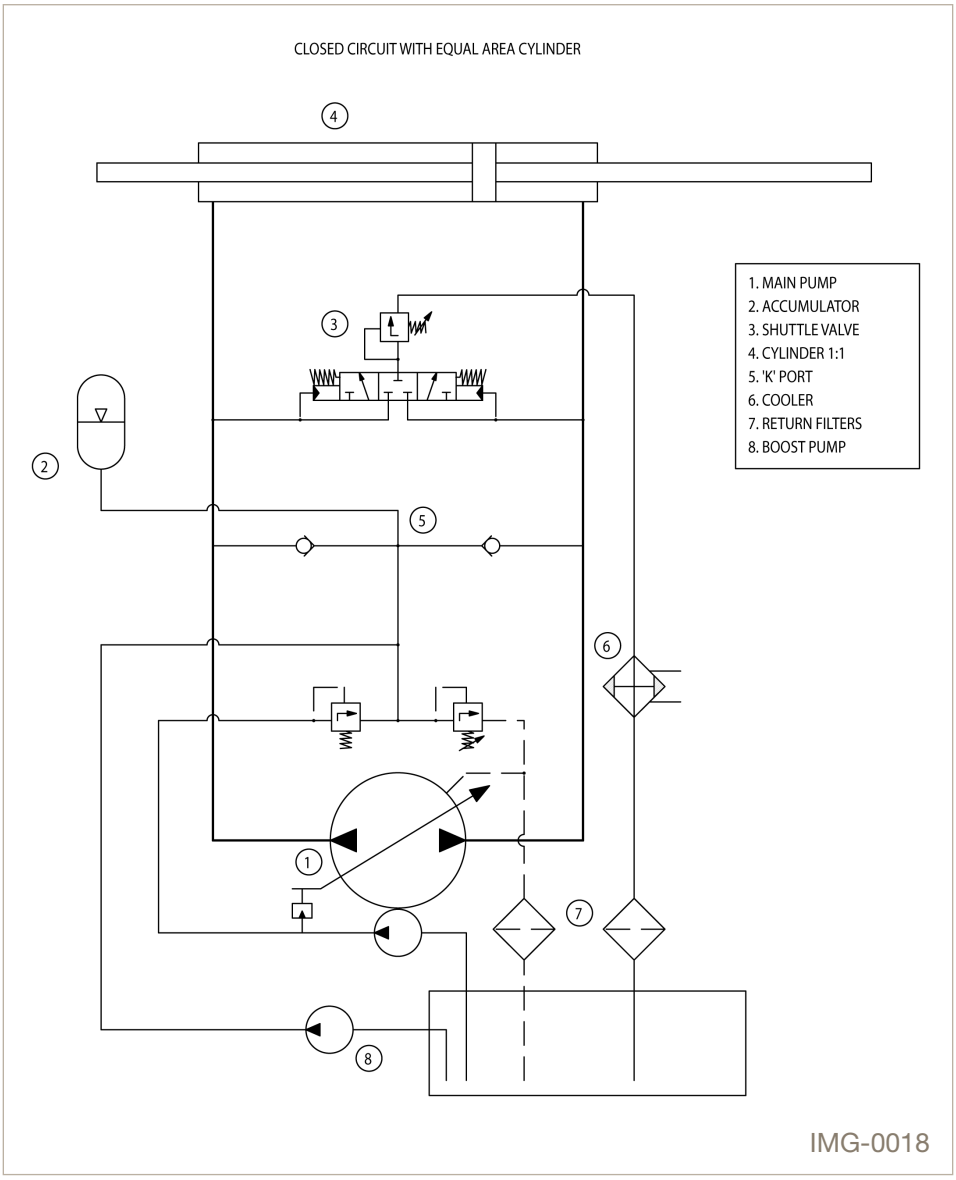
These features together with extremely fast response time make Gold Cup one of the best pumps on the planet for such applications.

We will look at two types of circuits:
1. Cylinder circuits with equal annular area (*IMG-0018*)
2. Cylinder circuits with unequal area (*IMG-0019*)

The easier of the two is the cylinder circuit with equal annular area.

Cylinder circuits with equal annular area

Dependent on the linear speed requirement of the cylinders, we have various control options with stroking times between 180 milliseconds to 1.8 seconds, depending on the size of the pump, and with pressure and load protection of 50-100 milliseconds in the compensator override mode.



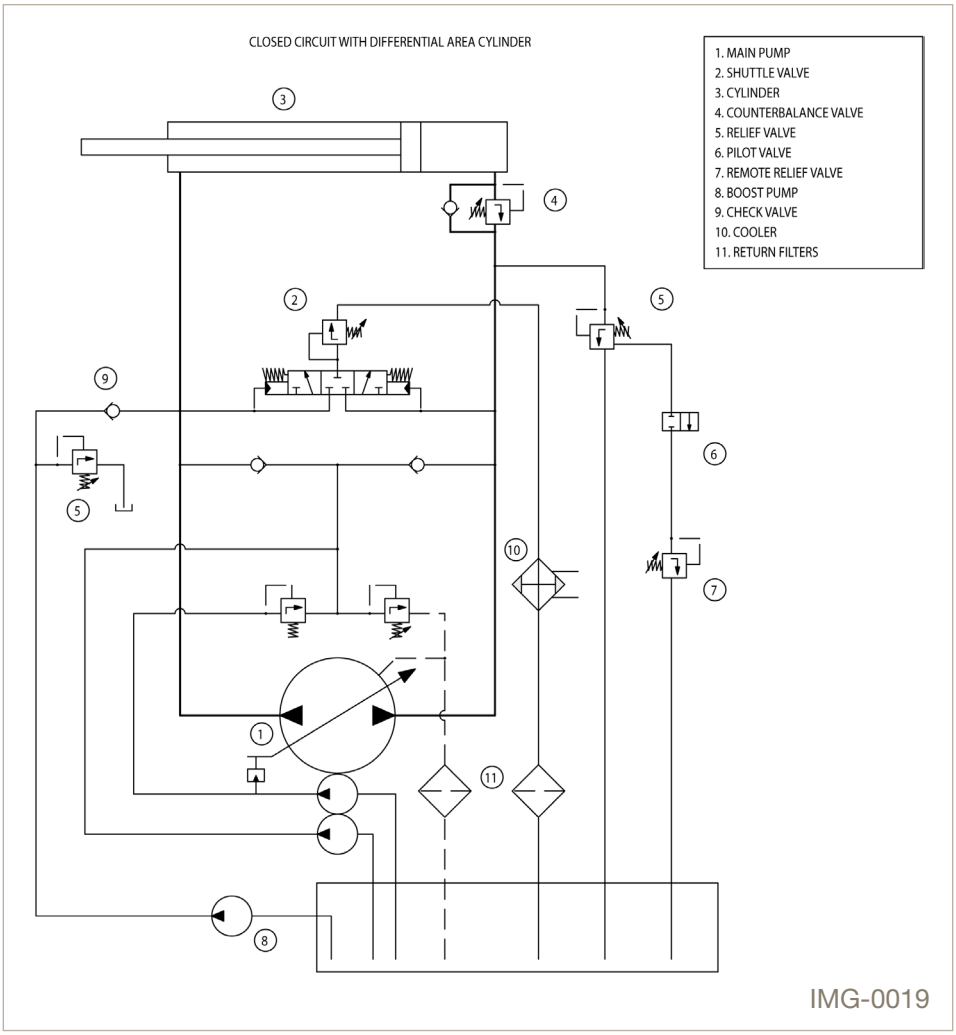
The replenishment fluid is a very important consideration in these circuits. It not only replenishes the oil taken out for cooling and leakage, but must also compensate for the compressibility of the oil in the circuit due to pressure.

Since all fluids compress under pressure it is important to maintain the replenishment pressure at the desired level (typically 12-14 Bar). Adding an accumulator to the 'K' port takes care of this. Feel free to contact our Technical Support Team if you need assistance to determine the size of the accumulator required.

Cylinder circuits with unequal area
Circuits of this type are very common on drilling machines where a cylinder is used for the thrust (pull down) or counterbalance function (for deep hole drilling, presses, etc.). Closed circuit control is much more efficient when high flow and power is required and has many advantages as discussed earlier.

Due to the many applications and sizes of cylinders used there are numerous ways to achieve the result, whether a single system or when combined with multiple function operations.

Support
What's your closed circuit question? Call the Technical Support Team at **937.644.3915** or contact **pumptechsupport@parker.com** for assistance.



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