Four Concepts of Load Control

Machine: Industrial | **Actuator:** Cylinder | **Function:** Counterbalance, Load, Load Holding

Prepared for :

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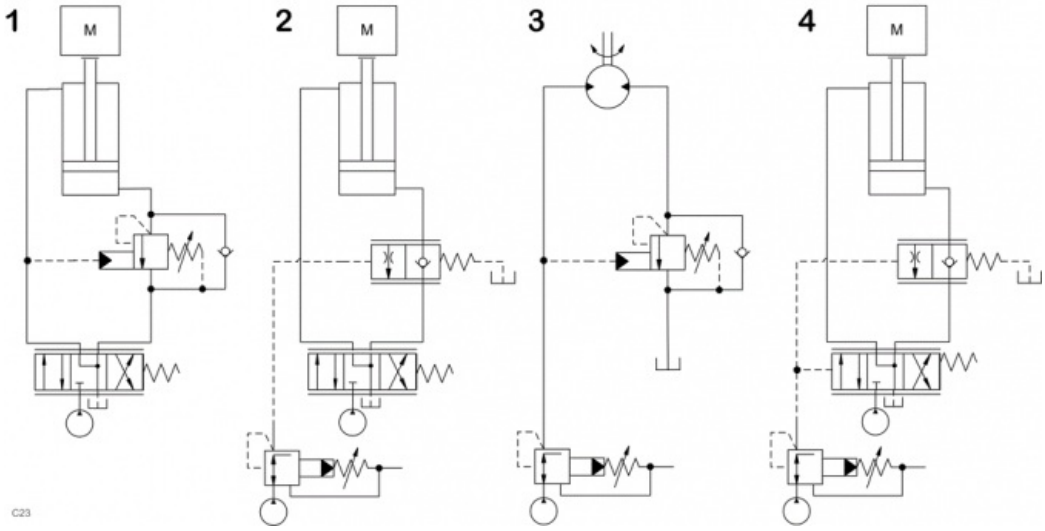
Related Products

Cartridges

CBCA - 3:1 pilot ratio, standard capacity counterbalance valve
CWCA - 3:1 pilot ratio, vented counterbalance valve
CACA - 3:1 pilot ratio, vented counterbalance valve - atmospherically referenced
MWEM - Vented, balanced, load control valve

Summary



There are four basic principles to control a motor/cylinder:

1. Flow Q on the meter in side and pressure p on meter out
2. Pressure on the meter in side and flow Q on meter out
3. Pressure p the meter in side and pressure p on meter out
4. Flow Q on the meter in side and flow Q on meter out

Products

- **Load-sensitive counterbalance: CB**, CW**,CA****
- **Load-insensitive counterbalance: MW*M**

Benefits of this circuit arrangement

- Circuit 1 describes the most common application of a standard (load sensitive) counterbalance valve: It can be seen as a relief valve with an adjustable setting depending on the pressure on the meter in side (port 3). The circuit describes an inexpensive load control that includes a relief function.
- Circuit 2 uses a non-load reactive (balanced) counterbalance like MW*M or MB*M . These circuits tend to be more stable because the counterbalance valve sees a constant pilot pressure. The circuit is more expensive because it requires an additional pressure control valve and offers no relief function.
- Circuit 3 is a typical application of a counterbalance valve to control torque in a motor. It has all the advantages of circuit 1.
- Circuit 4 demontrates both meter-in and meter-out. In practice, a precise meter-in & meter-out flow control is difficult because the pressure level can be very high or lead to cavitation at a low level.