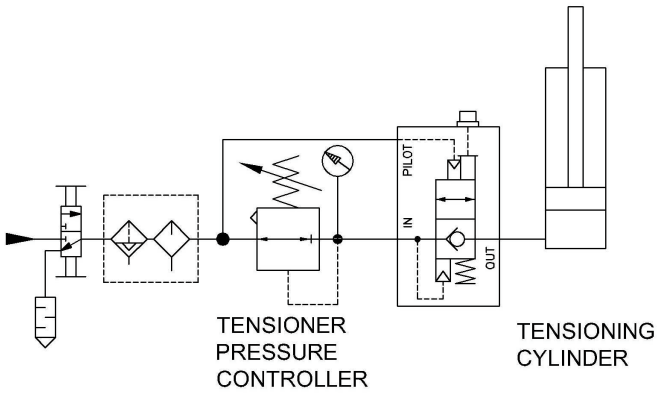
Equa-Checks on Tensioning Systems

An Equa-Check valve is an air piloted check valve with the potential for equal internal pressure balancing between the IN pressure and the PILOT pressure. The internal pressure balancing in the Equa-Check valve enables it to perform some unique controlling functions in pneumatic applications. Pneumatic tensioning systems are one type of application that can benefit from the function of an Equa-Check valve.

In pneumatic tensioning applications, under normal operation two way flow between the pressure regulator system and the tensioning cylinder needs to be maintained. While adequate air pressure is being supplied to the equipment, an Equa-Check can be used to maintain two way flow between the pressure regulator and the cylinder providing the force for the tensioning. However, if air supply pressure to the equipment supply drops close to the pressure regulated to the cylinder, the Equa-Check will check the flow from the cylinder, maintaining tensioning force.



The circuit to the left illustrates an example of a circuit used to control a cylinder that is applying a tensioning load to some type of equipment. The tensioner pressure controller regulates a pressure so that the cylinder generates an appropriate tensioning force. The pressure controller may be manual or automated. An automated controller typically would be monitoring the position or orientation of the equipment the tensioning cylinder is connected to. In that case, the automated controller would adjust the pressure to the tensioning cylinder in order to maintain position within a specific range.

In the above circuit, while normal equipment air supply is supplied to the tensioner pressure controller, the Equa-Check valve allows two way air flow between the cylinder and the regulator. However; when the equipment air pressure supply drops close to the pressure regulated to the tensioning cylinder (typically around 5 PSI of the regulated pressure) the Equa-Check valve will close to maintain the tension.

For example; if the pressure to the tensioning cylinder is controlled at 35 PSI, the Equa-Check valve will maintain two way flow as long as the equipment supply pressure is higher than approximately 40 PSI. In another case, if the tensioning cylinder pressure is controlled at 75 PSI, the Equa-Check will maintain

two way flow as long as the equipment supply pressure is higher than approximately 80 PSI.

The example circuit can be used to assure tension control when equipment is stopped by either shutoff or a loss of air pressure. When there is low or no equipment air supply, the tension would be maintained unless the cylinder air pressure is manually released by use of the manual override on the Equa-Check valve.

Tensioners are used in a variety of equipment applications involving conveyers, chains, belts, rotators or platforms where tensioning changes are needed to account for changes in factors such as loads or equipment speeds. Tensioners are used in wide ranges of applications such as food and beverage processing, material processing, machining, assembly, equipment position control systems, and part loading, unloading, stacking and unstacking.

Specific circuit design and equipment selection is application dependant. Your ALADCO distributor or ALADCO can be contacted to provide assistance with answering application questions.