

PRESSURE BALANCED FLUID CONTROL DEVICE

ABSTRACT

The present invention is directed to a pressure balanced fluid control device. In one illustrative embodiment, the device comprises a body, a bonnet coupled to the body, a valve stem operatively coupled to a gate positioned in the body, a valve stem seal positioned between the valve stem and the bonnet, wherein a sealed cavity exists above the valve stem seal, and an opening through the bonnet that is adapted to allow a pressure of a working fluid flowing through the valve to be exerted in the sealed cavity above the valve stem seal. In another illustrative embodiment, the device comprises a body, a bonnet coupled to the body, a valve stem operatively coupled to a gate positioned in the body, a valve stem seal positioned between the valve stem and the bonnet, wherein a sealed cavity exists above the valve stem seal, and an opening through the bonnet, the opening being in fluid communication with the sealed cavity and an interior region of the body. In a further illustrative embodiment, the device comprises a body, a bonnet coupled to the body, a valve stem operatively coupled to a gate positioned in the body, a valve stem seal positioned between the valve stem and the bonnet, wherein a sealed cavity exists above the valve stem seal, a piston chamber formed in the bonnet, the piston chamber being in fluid communication with the sealed cavity and an interior region of the body, and a piston positioned in the piston chamber.

Figure 2