CLAIMS

1. A controller comprising: a valve body in which a fluid passage is provided; a diaphragm configured to close and open the fluid passage by coming into contact with and separating from an annular valve seat provided to the valve body, respectively; a valve stem configured to change a position thereof, thereby deforming the diaphragm in closing and opening directions; and a drive device configured to move the position of the valve stem;

wherein, between a working shaft of the drive device and the valve stem, a power transmission device configured to amplify a force acting on the working shaft and to transmit a resultant force thus amplified to the valve stem is provided,

the diaphragm is made of metal and is deformable to either state among:

a fully closed state in which the fluid passage is fully closed;

a fully open state in which the fluid passage is fully open; and

a partially open state in which the fluid passage is partially open,

wherein the drive device is a pneumatic cylinder device and comprises:

a cylinder having a recess that is open at one end side of the cylinder;

a bonnet configured to close an opening of the cylinder;

a piston disposed in the recess of the cylinder;

a rod fixed to a distal end side of the piston and configured to press the working shaft; and

a diaphragm having a center portion fixed to the piston, a peripheral edge portion fixed between the cylinder and the bonnet, and a turn portion between the center portion and the peripheral edge portion both of which are fixed,

in which compressed air supplied between the bonnet and the diaphragm is caused to press the piston via the diaphragm, thereby moving the rod, and,

in the partially open state, on a basis of a flow rate of a fluid that flows through the fluid passage, the drive device makes an adjustment to a position of the working shaft such that the flow rate is constant by adjusting the compressed air supplied between the bonnet and the diaphragm.

2. The controller according to claim 1, wherein the fluid passage has: a central passage that has an opening surrounded by the valve seat and that is opposed to a center portion of the diaphragm; and an outside passage that has an opening on a radially outside of the valve seat and that is opposed to a vicinity of an outer peripheral edge portion of the diaphragm, and

the outside passage constitutes an inlet passage of the fluid and the central passage constitutes an outlet passage of the fluid.

3. The controller according to claim 2, wherein the central passage has a diameter that is not greater than a diameter of the outside passage.

4. The controller according to claim 1, wherein the pneumatic cylinder device is controlled by an electropneumatic regulator that controls air pressure steplessly in proportion to an electric signal.