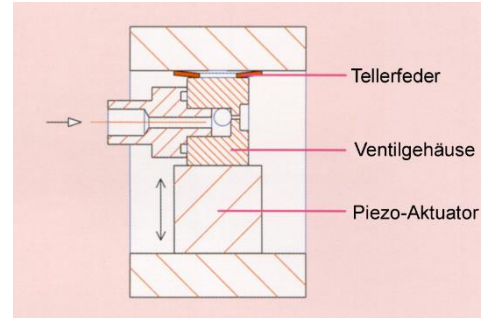


**Category:** Mechanical Components & Systems

**Reference:** TD-DE-1001

### Fast-acting ball valve for liquids and gases

For fast and accurate metering of small quantities of liquid or gas, a fast-switching ball valve has been developed in which a ball closes the valve orifice only as a result of a pressure difference between the valve inlet and outlet. The valve opening connects the inlet to the outlet of the valve. To open the valve, the ball is moved from the valve seat by an actuating device. The actuating device may, for example, apply a short push to the ball. The impact causes the ball to roll off the valve seat and release the opening. The flow of fluid (gas, liquid) towards the valve opening, which starts immediately after the valve is opened, entrains the ball and drives it back onto the valve seat. The closing process is faster the lower the density and mass of the ball and the higher the flow velocity of the medium.



The short switching times and high repetition frequency result from the fact that the closing element in the valve is a freely movable ball and that the actuating device has no direct coupling with the ball.

The valve function is independent of position if, for example, a cage ensures that the ball always remains in a region of sufficiently strong flow, which drives the ball back onto the valve seat after opening.



There are a number of versions of the quick-acting ball valve. A robust, versatile version of the valve is shown schematically. In this case, the valve is opened by a pulse transfer to the valve body. The valve housing moves and the ball initially remains in place due to inertia until the housing wall collides with the ball and lifts the ball out of the valve seat. The impulse is generated by a piezo actuator.

Low complexity - modular design



1-pol



2-pol mit Sitz und Kugeln



1-Kugel-Version

**Innovative Aspects:**

- fast and accurate micro-dosing of liquid and gaseous media
- corrosion resistant ceramic valve body
- no lubrication
- low wear, as only one moving component
- No springs, needles, spindles, diaphragms
- No pneumatic control

**Application Areas:**

Due to its excellent technical characteristics, the fast-switching ball valve can be used wherever small quantities of gases and liquids need to be metered quickly and accurately.

A number of fields of application exist in the following areas, among others:

- automation and pressure technology
- Medical technology
- Energy and fuel technology
- Chemical industry
- Adhesive bonding technology
- Apparatus engineering
- Automotive engineering
- Aviation.

**Cooperation:**

There is interest in potential users for the fast-switching ball valve. The valve can be adapted to different requirements. An industrial partner is available for this purpose, who also carries out precision manufacturing of the valve housings.