

Title (en)  
**MICROVALVE**

Title (de)  
**MIKROVENTIL**

Title (fr)  
**MICROVANNE**

Publication  
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Application  
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Abstract (en)  
[origin: DE4418450A1] The present invention relates to a microvalve which can be used, in particular, as a pilot valve in pneumatic control systems. The solenoid valves used hitherto in this area can be miniaturised only at the expense of a considerable increase in costs. The microvalve according to the invention comprises a first, discharge-side part (1) with a diaphragm structure (3) as a movable closing element and a second part (2) with an outlet opening (7) and a valve seat (5). The diaphragm structure is provided with heating elements so that, upon heating, the diaphragm flexes counter to the applied pressure. At least one of the two parts has pits of defined depth (6), which are arranged in such a way that, when the valve is closed, cavities are formed which are heated by the heating elements. To assist the opening functions of the valve, the diaphragm can be coated with a material which has a different thermal coefficient of longitudinal expansion than the diaphragm material. The microvalve described can be manufactured at a reasonable cost using semiconductor technology and its combined thermomechanical/thermopneumatic action provides improved operating characteristics. <IMAGE>

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