

ABSTRACT OF THE DISCLOSURE

METAL DIAPHRAGM TYPE VALVE

A metal diaphragm type valve includes a valve seat holder supported from a rotatable valve stem, a metal diaphragm and a deflection limiter. The valve seat holder has a shaft extending upwardly through central openings in the diaphragm and the deflection limiter. A diaphragm support step having an annular flat surface joining an arcuate shoulder is provided around the shaft of the valve seat holder and the inner peripheral edge of the diaphragm rests on the flat surface. The deflection limiter has a flat bottom surface facing the top surface of the diaphragm and an arcuate surface extends radially outwardly from the flat bottom surface. The deflection limiter, diaphragm and valve seat holder are welded together by a weld extending through the flat bottom portion of the deflection limiter and the inner peripheral edge of the diaphragm to the flat surface on the seat holder, the weld forming an air-tight seal between the valve chamber and the passage for the shaft. The radial dimensions of the flat surfaces are different so that bending stresses occur in different regions of the diaphragm depending on whether the valve is opened or closed.

(Fig. 1)