Title (en)

APPARATUS FOR AND METHOD OF DRAINING ULTRASONIC TRANSDUCER PORT CAVITIES

Title (de)

VERFAHREN UND VORRICHTUNG ZUR DRAINAGE DER EINFÜHRUNGSSTUTZEN VON ULTRASCHALLWANDLERN

Title (fr)

PROCEDE ET DISPOSITIF DE DRAINAGE DES CAVITES DES ORIFICES DE TRANSDUCTEURS ULTRASONORES

Publication

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Application

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Abstract (en)

[origin: WO9613701A2] A self-draining design for an ultrasonic gas meter is disclosed. The self-draining design of the present invention provides either a duct extending generally horizontally between the cavity and the bore to permit gravity to drain liquid therefrom, or extending vertically from the cavity to the outside of the housing to permit accumulated liquid to be drained by gravity and/or the action of a gas blowdown. The self-draining design of the present invention provides that a transducer-port assembly is configured to enhance the movement of fluid by maintaining a distance between the transducer and the surfaces of the port for enhancing the effect of surface tension of the liquid for reducing the surface area of the liquid. By allowing the liquid to assume a smaller surface area, typically spherical, the liquid reduces its friction or drag. The reduction of the surface area/volume ratio of the liquid greatly reduces the friction forces between the liquid and the surfaces of the transducer-port assembly for overcoming inertia and for enhancing the movement of the liquid for draining the meter. The method of draining accumulated liquid from an ultrasonic flowmeter comprises the steps of (a) maintaining a displacement between the transducer and the surfaces of the port which is sufficiently large to enhance the surface tension effect of the liquid for reducing the surface area/volume ratio of the liquid sufficient to reduce the forces between the liquid and the surfaces of the transducer-port assembly, (b) overcoming the inertia associated with the liquid by gravity causing the liquid to move, and (c) enhancing the movement of the liquid from the cavity in the port by gravity providing the force to continue the movement of the liquid such that the liquid is sufficiently removed from the port so that the meter is unfettered by coupling.

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