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[12] Description of Utility Model

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1 sheet of Claims, 4 sheets of Description and 7 sheets of Drawings

[54] Title of Utility Model

Space-controlled Overpressure Protector

[57] Abstract

The present utility model discloses a space-controlled overpressure protector, which comprises a working medium, an upper connection body, a lower connection body, bolts, a screw, a steel ball, an adjusting screw, and a function membrane (or a plunger piston), and a controlled space is achieved by adjusting the amount of displacement of the membrane (or the plunger piston). The membrane utilizes a concave curved surface technology. The controlled space is locked reliably by the overturn of the concave membrane, thereby providing overpressure protection for a pressure instrument.

CLAIMS

1. A space-controlled overpressure protector, comprising a working medium, an upper connection body, a lower connection body, bolts, a screw, a steel ball, an adjusting screw, and a function membrane or a plunger piston, wherein

the upper connection body comprises a concave curved surface with a different function at the center or a concave platform; the membrane is tightly clamped by the upper and lower connection bodies with six bolts; and the lower connection body comprises a concave curved surface with a different function at the center and a center pressure introduction hole.

2. The space-controlled overpressure protector according to claim 1, wherein one side of the upper connection body is provided with an air vent, the steel ball and the screw.

3. The space-controlled overpressure protector according to claim 1, wherein the top of the upper connection body is provided with the adjusting screw.

4. The space-controlled overpressure protector according to claim 1, wherein the function membrane comprises a concave curved surface, which extends along the periphery and is provided with six bolt holes distributed uniformly.

5. The space-controlled overpressure protector according to claim 1, wherein the material for the upper connection body, the lower connection body and the membrane or plunger piston is selected from the group consisting of steel, aluminum, copper, ceramic as well as plastic, rubber and latex, and a combination thereof.

DESCRIPTION

Space-Controlled Overpressure Protector

[0001] The present utility model is directed to a protector for protecting a micropressure instrument (or a high-pressure instrument), and in particular to a space-controlled protector with a function-curved-surface.

[0002] The micropressure instrument (or the high-pressure instrument) is a widely used but costly and dangerous instrument. The micropressure or high-pressure media used in a chemical production process are mostly harmful gases or liquids; therefore, more and more requirements have arisen for overpressure protection.

[0003] In the prior art, an overpressure protector (see patent ZL99205775.8) operates by controlling a valve mainly in a pressure comparison manner. The pressure ranges from a minimum of 2KPA to a maximum of 50MPA.

[0004] An objective of the present utility model is to provide a protector based on a space controlling technology. The pressure ranges from a minimum of 0.02KPA to a maximum of 100MPA, which is the highest level in the world.

[0005] The objective of the present utility model is achieved through the following:

[0006] a space-controlled overpressure protector, comprising a working medium, an upper connection body, a lower connection body, bolts, a screw, a steel ball, an adjusting screw, and a function membrane (or a plunger piston), wherein

1) the upper connection body comprises a concave curved surface with a different function at the center and a center pressure introduction hole; the membrane is tightly clamped by the upper and lower connection bodies with six bolts; and the lower connection body comprises a concave curved surface with a different function at the center and a center pressure introduction hole ;

2) one side of the upper connection body is provided with an air vent, the steel

ball and the screw; and

3) the material for the upper connection body, the lower connection body and the membrane (or plunger piston) is selected from the group consisting of steel, aluminum, copper, ceramic as well as plastic, rubber and latex, and a combination thereof.

[0007] The present utility model has the following beneficial effects:

[0008] (1) according to the present utility model, the function concave curved surface on the upper connection body and the function concave curved surface on the lower connection body lock a certain amount of a compressible space with the membrane, so that an instrument provides and limits a maximum air/liquid inlet amount based on the movement of the membrane (or the plunger piston), thereby achieving the effect of protection;

[0009] (2) according to the present utility model, the membrane (or the plunger piston) isolates the direct connection between a detected medium and a pressure instrument, thereby providing anti-corrosion protection for the pressure instrument;

[0010] (3) according to the present utility model, when the membrane (or the plunger piston) appresses the upper connection body completely, the displacement of the membrane (or the plunger piston) is locked, thereby ensuring [sic] the circumstances in which continuous leakage of the detected medium occurs when the pressure instrument is damaged due to its own reasons;

[0011] (4) the protector according to the present utility model is simple in structure and has the following characteristics in manufacturing and maintenance:

suitable materials are broadly and readily available, which may be selected from the group consisting of steel, aluminum, copper, ceramic as well as plastic, rubber and latex, and a combination thereof, and

simplicity in maintenance, where except for the function membrane (or the O

ring) which needs to be inspected or replaced during regular instrument inspections, other parts may not be damaged generally and well-adapted for long-term use; and

[0012] (5) the adjusting screw used in the present utility model may control the different displacements of membrane.

[0013] FIG. 1 is a schematic diagram of a structure of an overpressure protector in the prior art.

[0014] FIG. 2 is a schematic diagram of a structure of a micropressure space-controlled overpressure protector of the present utility model.

[0015] FIG. 3 is a schematic diagram of a structure of a high-pressure space-controlled overpressure protector of the present utility model.

[0016] FIG. 4 is a schematic diagram of a zero-pressure state used in a micropressure space-controlled overpressure protector of the present utility model.

[0017] FIG. 5 is a schematic diagram of an overpressure protection state used in a micropressure space-controlled overpressure protector of the present utility model.

[0018] FIG. 6 is a schematic diagram of a zero-pressure state used in a high-pressure space-controlled overpressure protector of the present utility model.

[0019] FIG. 7 is a schematic diagram of an overpressure protection state used in a high-pressure space-controlled overpressure protector of the present utility model.

[0020] Below descriptions are described herewith in relation to FIG. 2.

[0021] Reference signs used in FIG. 2 are as follows: 1-lower connection body, 101-bolt, 2-function membrane, 3-upper connection body, 301-adjusting screw, 302-steel ball, and 303-screw.

[0022] With reference to FIG. 2, the space-controlled overpressure protector provided by the present utility model comprises:

a lower connection body 1, which comprises a concave body with a function at the center, is provided with an air vent in center, and threads for connecting with other

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