

Claims

[Claim 1]

A Coriolis flowmeter configured to drive flow tubes and detect a phase difference and/or a vibration frequency proportional to a Coriolis force acting on each of the flow tubes, to thereby determine a mass flow rate and/or density of a fluid to be measured, which flows through the each of the flow tubes, the Coriolis flowmeter comprising manifolds arranged at both end portions of the each of the flow tubes, wherein a number of the flow tubes is set to two, wherein a channel of each of the manifolds comprises, as shaping portions therefor: a pipe-side opening portion arranged close to a pipe to which the Coriolis flowmeter is to be installed; tube-side opening portions arranged close to the flow tubes, a number of the tube-side opening portions being equal to the two flow tubes; and a channel branching portion to be branched corresponding to the two flow tubes, wherein areas of branching portion sectional shapes of the channel branching portion are set equal to each other, wherein a channel sectional area in a range of from the channel branching portion toward the tube-side opening portions is set so as to be prevented from becoming larger than the areas of the branching portion sectional shapes, wherein the each of the branching portion sectional shapes of the channel branching portion is set to a D-shape, and the shape of the each of the tube-side opening portions is set to a circular shape, and wherein the channel sectional area in the range of from the channel branching portion toward the tube-side opening portions is set so as to be linearly decreased from the

areas of the branching portion sectional shapes.

[Claim 2]

A Coriolis flowmeter according to claim 1, wherein a sectional shape of the channel in the range of from the channel branching portion toward the tube-side opening portions is changed in an order of the D-shape, a substantially D-shape, a substantially circular shape, and the circular shape.

[Claim 3]

A Coriolis flowmeter according to claim 2, further comprising a branching wall comprising a branching wall tip end formed into a sharp edge, and a pair of flat surface portions continuous with the branching wall tip end, the branching wall tip end being arranged at a position of the channel branching portion.

[Claim 4]

A Coriolis flowmeter according to claim 3, wherein the branching wall further comprises curved surface portions continuous with the tube-side opening portions, and intermediate portions each formed between each of the flat surface portions and each of the curved surface portions for transition from a flat surface to a curved surface.

[Claim 5]

A Coriolis flowmeter according to claim 1, 2, 3, or 4, wherein

the each of the flow tubes is formed into a straight tube shape and a region in the range of from the channel branching portion toward the tube-side opening portions is formed into a shape extending straight, or the each of the flow tubes is formed into a curved tube shape and the region in the range of from the channel branching portion toward the tube-side opening portions is formed into a curved shape.

[Claim 6]

A Coriolis flowmeter according to claim 1, 2, 3, 4, or 5, further comprising a transition portion arranged between the channel branching portion and the pipe-side opening portion, the transition portion being formed as a portion at which the channel sectional area is set so as to be prevented from becoming larger than an area of an opening shape of the pipe-side opening portion, and as a portion secured toward complete branching.

Claims

[Claim 1] A Coriolis flowmeter configured to drive flow tubes and detect a phase difference and/or a vibration frequency proportional to a Coriolis force acting on each of the flow tubes, to thereby determine a mass flow rate and/or density of a fluid to be measured, which flows through the each of the flow tubes,

the Coriolis flowmeter comprising manifolds arranged at both end portions of the each of the flow tubes,

wherein a number of the flow tubes is set to an even number,

wherein a channel of each of the manifolds comprises, as shaping portions therefor:

a pipe-side opening portion arranged close to a pipe to which the Coriolis flowmeter is to be installed;

tube-side opening portions arranged close to the flow tubes, a number of the tube-side opening portions being equal to the number of the flow tubes; and

a channel branching portion to be branched corresponding to the number of the flow tubes,

wherein areas of branching portion sectional shapes of the channel branching portion are set equal to each other, and

wherein a channel sectional area in a range of from the channel branching portion toward the tube-side opening portions is set so as to be prevented from becoming larger than the areas of the branching portion sectional shapes.

~~[Claim 2] A Coriolis flowmeter according to claim 1, wherein the channel sectional area in the range of from the channel branching portion toward the tube-side opening portions is set so as to be linearly decreased from the areas of the branching portion sectional shapes.~~

[Claim 3] A Coriolis flowmeter according to claim 1 or 2,
wherein each of the branching portion sectional shapes of the channel branching portion is set to a non-circular shape, and
wherein a shape of each of the tube-side opening portions is set to a circular shape.

[Claim 4] A Coriolis flowmeter according to claim 1, 2, or 3,
wherein the number of the flow tubes is set to two,
wherein the each of the branching portion sectional shapes of the channel branching portion is set to a D-shape, and
wherein the shape of the each of the tube-side opening portions is set to the circular shape.

[Claim 5] A Coriolis flowmeter according to claim 1, 2, 3, or 4,
wherein the each of the flow tubes is formed into a straight tube shape or a curved tube shape, and
wherein, when the each of the flow tubes is formed into the curved tube shape, a region in the range of from the channel branching portion toward the tube-side opening portions is formed into a curved

~~shape.~~

[Claim 6] A Coriolis flowmeter according to claim 1, 2, 3, 4, or 5, wherein, when a transition portion toward complete branching is arranged between the channel branching portion and the pipe-side opening portion, the channel sectional area of the transition portion is set so as to be prevented from becoming larger than an area of an opening shape of the pipe-side opening portion.