Description

Control Valve

This invention concerns a control valve according to the characterising clause of Claim 1.

Such a control valve is for example known from DE 197 09 883 A1.

In the case of the control valve described and shown therein, and also with other valves known, the position control unit is mounted directly on the yoke.

The air for the regulating control of the actuator is in this case is led through holes, which are provided in the yoke and which are connected on the one hand to the position control unit and on the other hand to the actuator.

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This type of air supply requires on the one hand a particular form of the yoke, which makes only one corresponding arrangement possible, and on the other hand the necessary arrangement itself, which is quite costly, and the manufacture of the control valve altogether can be expensive.

Since there is a great number of position control units available, but which essentially have different external and connecting dimensions, individual adaption of the yoke or the air supply holes to the desired position control unit must be carried out.

Fundamentally, production of a control valve can then only follow if its user has determined beforehand which position control unit is to be used. Extensive prefabrication of the control valves, from the point of view of volume production, is therefore not feasible in practice.

Therefore the purpose of this invention is to develop a control valve of the generic type so that the feasibility of prefabrication in volume is improved, production is simplified and therefore is cost-beneficial.

This aim is achieved with a control valve which possesses the characteristics of Claim 1.

Additional adaption of the yoke to create the air supply holes can now be completely omitted with this design arrangement of the control valve.

Apart from the possibility of prefabricating the control valve in a sizeable volume further than was hitherto possible, the design of the yoke also can be carried out independently of any

consideration for the space required for air supply holes, which brings with it a greater degree of freedom for other functional requirements.

In addition, the connecting piece can be adapted considerably more easily due to its compact construction, in particular with regard to creating air supply holes, as is the case with the yoke.

However, the replacement of already installed position control units is readily feasible, since merely a connecting piece adapted to the new position control unit can be fitted, which can be achieved with very little assembly work.

An advantageous design of the invention provides for the connecting piece to have fixing means, for example threaded holes, to which a protective casing is attached, by means of which the clearance formed between the valve chamber and actuator is encased.

The protective casing prevents unintentional intrusion into the working area of the valve spindle, so that the resulting risk of injury is excluded.

Moreover, the protective casing provides protection against external influences, such as contamination, mechanical intervention or similar.

Further advantageous designs of the invention are characterised in the subclaims.

A design example of the invention is described below with reference to the enclosed drawings which show:

in Figure 1 a control valve according to the invention in a partially cut-away side view,

in Figure 2 a connecting piece of the control valve in a partially cut-away front view,

in Figure 3 the connecting piece in a top view,

in Figure 4 the connecting piece in a partially cut-away side view.

Figure 1 shows a control valve which in its basic design consists of a valve chamber 1, a valve face (not visible) arranged therein for regulating the rate of flow, a valve spindle 7 which is connected to the valve face, and an actuator 2, by means of which the valve spindle 7 can be pneumatically operated.

The actuator 2 is connected at the top to a yoke 4 consisting of pillars 5, the said yoke 5 being connected at the bottom to the valve chamber 1.

As well the pillars 5 are screwed into pegs 8 of the actuator 2.

Attached to the yoke 4 is a connecting piece 6 to which in turn a position control unit 3 is flange-mounted, which is linked in operation with the actuator 2 and through which its control is pneumatically practicable.

The connecting piece 6 is clamped between the pegs 8 and the pillars 5, for which through-holes 15, which are penetrated by threaded stems of the pillars 5 screwed into the pegs 8, are provided

in a base of the connecting piece 6. With these, the pegs 8 are supported at the base of the connecting piece 6, while a circumferential wall 14 of the connecting piece 6 fits closely against the underside of the actuator 2.

The position control unit 3 is screwed to a mounting plate 12 of the connecting piece 6. For this purpose, the mounting plate 12 is provided with mounting holes 13 through which screws (not shown) are led, the said screws being screwed into the position control unit 3.

For transfer of the control air between the position control unit 3 and the actuator 2, an air supply hole 9 is provided in the connecting piece 6. The air supply hole 9 discharges into an air admission hole 11 which corresponds to an air exit hole of the position control unit 3.

In the area of the actuator 2, the air supply hole 9 discharges into a connecting hole 10 of the housing of the actuator 2, both this transfer area and air admission hole 11 to the air exit hole of the position control unit 3 being appropriately sealed so as to avoid air losses.

As particularly shown very clearly in Figures 2 to 4, the connecting piece 6 has a mounting lug 16 in the area of the base.Attached to this mounting lug 16 is a protective casing 17 through which the interior space, which is formed by the yoke 4 and which is not covered by the position control unit 3, is substantially enclosed so that this interior space is protected on the one hand against access and on the other hand against external influences, such as contamination or mechanical intervention.

Reference Number List

1	Valve chamber
2	Actuator
3	Position control unit
4	Yoke
5	Pillar
6	Connecting piece
7	Valve spindle
8	Peg
9	Air supply hole
10	Connecting hole
11	Air admission hole
12	Mounting plate
13	Mounting hole
14	Wall
15	Through hole
16	Mounting lug
17	Protective casing

Claims

1. A control valve with a valve chamber (1), to which a yoke (4) is attached, the said control valve supporting a pneumatically-operated actuator (2) which is connected to a valve spindle (7) by means of which a valve face, arranged in the valve chamber (1) and influencing the rate of flow, can be controlled, and with a position control unit (3) which is linked pneumatically in operation with the actuator, characterised in that a connecting piece (6) is attached to the yoke (4), to which the position control unit (3) is flange-mounted, an air supply hole (9), corresponding on the one hand to the position control unit (3) and on the other hand to the actuator (2), being provided in the connecting piece (6).

2. A control valve according to Claim 1, characterised in that the connecting piece (6) is clamped between the yoke (4) and the actuator (2).

3. A control valve according to Claim 1, characterised in that the connecting piece (6) has a mounting plate (12) to which the position control unit (3) is attached.

4. A control valve according to Claim 1, characterised in that the connecting piece (6) has a mounting lug to which a protective casing (17) is attached, by which the space open to the outside between the yoke (4) and the actuator (2) is enclosed.

5. A control valve according to Claim 3, characterised in that the mounting plate (12) has mounting holes (13) through which are led screws connecting with the position control unit (3).

6. A control valve according to one or more of Claims 1 to 5, characterised in that the air supply hole (9) is led through a wall (14) of the connecting piece (6) as well through the mounting plate (12).