

This invention concerns improvements to valves fitted with a time delay closure.

Valves are known where the check mechanism is associated with a piston capable of being displaced in a chamber communicating with the water inlet, by the interposition of a calibrated orifice as defined in the introduction to claim 1 given in FR-A-2391406.

When opening the valve, the piston is pushed, in the chamber, by expelling the volume of water contained in it, this having the effect of lifting the check mechanism. When the check mechanism is lifted, the water enters into the time delay chamber through the said calibrated orifice and progressively pushes the check mechanism against its seating.

Therefore, the length of the time delay depends basically on the diameter of the calibrated orifice.

In order to avoid any obstruction of the calibrated orifice by any foreign matter, a rod passes through this calibrated orifice and this rod is capable of being displaced axially relative to the said orifice.

The design of existing valves is such that, when a valve is operated, the said rod is subject to a reciprocating movement through the calibrated orifice and the resulting friction causes wear which results in an increase in the diameter of the said orifice. Because of this, the water penetrates more easily into the time delay chamber and the check mechanism is pushed onto its seating sooner than required.

This condition is again aggravated by the fact that the rod is generally made from metal although the calibrated orifice is provided in a part made from a plastic material.

This invention eliminates these disadvantages and is significant in that the calibrated orifice is provided in a small insert, this being made from a very hard material such as, for example, a ruby and is held in position on the standard part.

The invention will be more fully understood by referring to the following description and the appended Figures, these being for information only and where :

- Figure 1 is a cross sectional view of the standard head of a valve which includes the device in accordance with the invention (the body of the valve is not shown)

- Figure 2 is a view, to a larger scale, of detail A in Figure 1

On referring to the Figure, it will be seen that the head of the valve comprises a check mechanism 1, associated with a piston 2 which may be displaced in a time delay chamber 3.

The water penetrates into the head through the orifices 4 and leaves through the orifices 5, or vice versa.

The piston 2 includes a calibrated orifice 6 forming a communication between the water inlet and the time delay chamber 3 in which a rod 7 may be displaced.

In the normal manner, the rod 7 comprises an axial extension for the end of a helical wound spring 8, the other end being fixed to the piston.

On depressing the push rod 9, the piston is displaced in the time delay chamber 3, the water then being expelled past the periphery of the said piston and the free end of the spring 8 contacting against the bottom 3a of the time delay chamber 3, the rod 7 being displaced in the orifice 6.

When the piston is displaced in the reverse direction, being pushed by the pressure of the water which enters into the chamber through the orifice 6, the spring extends and the rod 7 is displaced in a direction which is the reverse of that for the said piston.

In accordance with the invention, the calibrated orifice is provided in a small insert 10, made from a hard material and held onto the piston 2.

Preferably, the insert 10 is made from a synthetic ruby.

A recess 11 is provided in the piston 2, the insert 10 being a force fit.

As the piston 2 is normally made from a plastic material, it is sufficiently elastic to hold the said insert and provide a seal. In order to improve its hold, however, the recess 11 may be provided with a small retaining bead 12 on its periphery.

In order to clarify the invention, it must be stated that the diameter of the insert 10 is approximately 1.5 mm and that its thickness does not exceed 0.5 mm, the diameter of the orifice 6 also being approximately 0.5 mm.



CLAIMS

1. Valve with a time delay closure, of the type where the check mechanism is associated with a piston (2) capable of being sealed and displaced in a time delay chamber (3) communicating with the water inlet supplied through a calibrated orifice provided in the piston and being positioned on the side of the piston opposite the seating for the check mechanism, a metal rod (7) being provided and which may be displaced axially through this calibrated orifice, characterised in that the said calibrated orifice is provided in a small insert (10) made from a hard material and fitted to the said piston.

2. Valve in accordance with claim 1, characterised in that the said piston includes the said calibrated orifice and a recess used to hold the said insert.