

Figure 1

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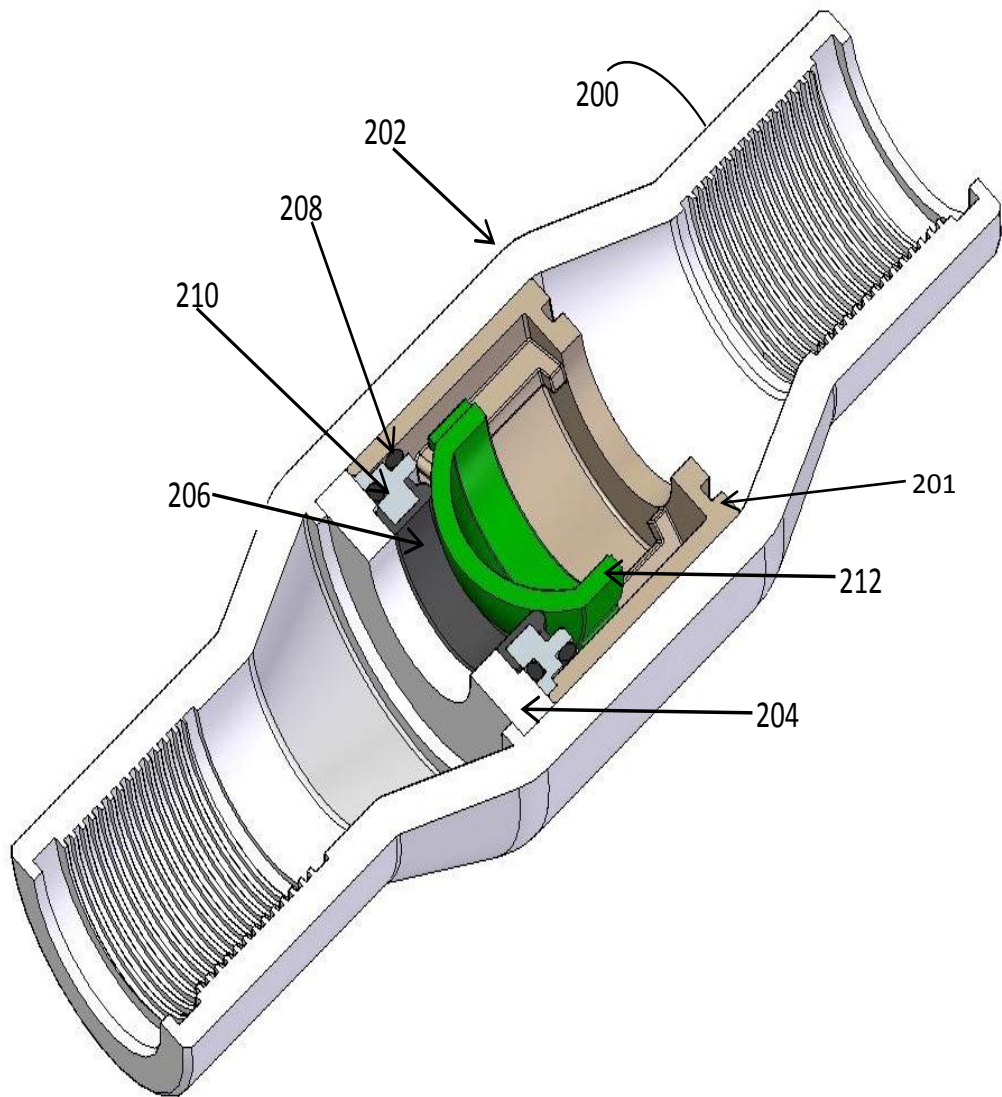


Figure 2

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Title:

Non return valve for use in water line

Field of invention:

The present invention relates to a flow control device, and more specifically to a non-return valve which prevents the liquid flow in opposite direction.

Background:

Use of non-return valve results in reduced water hammer arising out of sudden change of flow direction because of pump shut off, resulting in increased life of piping system. Apart from safeguarding the piping system, the use of valve also safeguards the pump impeller and motor from damages that could arise because of immediate change in rotational direction arising out of flow reversal. So the proper selection and its installation are very important to reap the above fruits and improve the overall life and performance of the piping system. The use of non-return valve is very important in any kind of piping system to improve the life and performance of the piping system components. The piping system could be in any contour or direction depending on the requirement and the non-return valve used must perform flawlessly irrespective of the way it is used. The device should be cost effective. Typical flow control devices are not sealable at minimum pressure, pressure drop across the connection is high, not usable at any position, not capable of withstanding high hydraulic pressure acting on it, cannot perform over long periods of time, not rust resistant, not temper resistant and not compact in size.

The flow control devices available in the market are made of either plastic or metal. But both plastic and metal flow control device has some disadvantages. Plastic devices available in the market can be only used in horizontal application. Plastic devices cannot be used directly in vertical condition under load. They cannot withstand the tensile load; assembly is easily openable so the device can be easily tempered. Performances of the plastic devices are variable. In case of metal

devices pressure drop across connection is high. Sealing pressure requirement in metal devices is high. Reduction in flow passage is high in metal devices and cannot be used with plastic pipes directly. Rusting decreases the performance over the period of time. Metal devices are generally bulky in size which results a use limitation. It cannot be used directly with plastic pipes.

So there is a need of a product which can solve all the above mentioned problems.

Objective of the invention:

1. It is the primary objective of the present invention to be used in any position.
2. It is another objective of the present invention to provide seals at very low pressure.
3. It is another objective of the present invention to provide minimal pressure drop across the connections.
4. It is another objective of the present invention to withstand the different loads acting on it.
5. It is another objective of the present invention to withstand high internal hydraulic pressure.
6. It is another objective of the present invention to withstand the vertical hanging loads.
7. It is another objective of the present invention to give consistent performance for the life span.
8. It is another objective of the present invention to be temper free.

9. It is another objective of the present invention to be rust free.

10. It is another objective of the present invention to be compact in size.

11. It is another objective of the present invention to be cost effective.

Summary:

The present invention relates to product for preventing the liquid flow in opposite direction, which is a non-return valve. The non-return valve is used to prevent the liquid flow in the opposite direction when the supply is shut off, maintaining the water column in the upside pipes.

Brief description of drawings:

Figure 1 illustrates an external view of the valve according to an aspect of the present invention

Figure 2 illustrates a sectional view of the valve according to an aspect of the present invention.

Figure 3 illustrates a three dimensional sectional view of the valve according to an aspect of the present invention.

Detail description:

The present invention is a non-return water valve used in water line. In this invention figure 1 represents the external view of the valve. Figure 2 represents

the whole sectional view of the valve and figure 3 represents the three dimensional sectional view of the valve.

Figure 2 discloses the invention consisting of an enclosing body 206, a supporting head for holding the hydraulic head 204, sealing elements for a leak proof system 202, 205 and 208, sealing element seat as a base for sealing elements 203 and floating element 207.

In the present invention when water flows in the upward direction (shown by the arrow mark), the floating element 207 is lifted up because of the water pressure and the water continues to flow because of the arrangements done in the guideline shell 201. When the flow is interrupted or the pump is stopped the reversal of water takes place in the valve which brings the floating element 207 down, making it to rest against the sealing element 208, stopping the downward flow instantly and perfectly.

The supporting plate 204, helps in withstanding the high hydraulic head acting on the floating element 207 in the downward direction, sealing element here helps in making the system leak proof 202, 205 and 208. Guiding shell 201 acts in two ways, firstly it provides the passage of the water to flow in an upward direction and secondly it guides the floating element 207 to move in a fixed direction and thus making the valve opening and closing operation very smooth. Sealing element seat 203 provides the perfect base for the sealing elements to make the system 100% leak proof. The complete assembly 206 is capsuled with the supporting plate, sealing element seat, sealing elements and floating element.

Part 209 describes locking arrangement for pipe and valve in one embodiment. 210 describes the sealing between pipe and valve and threads showing the method of jointing valve and groove 211.

The above discussed non-return valve can be connected with the any kind of material in number of ways such as, threaded connection, flanged connection, external grooved connection, solvent cement jointing and compression fitting. Further it is possible to supply in N number of jointing arrangements.