



## Overview

# HPV VALVES



AZIENDA CON SISTEMA QUALITÀ  
CERTIFICATO DA DNV  
=UNI EN ISO 9001/2000=

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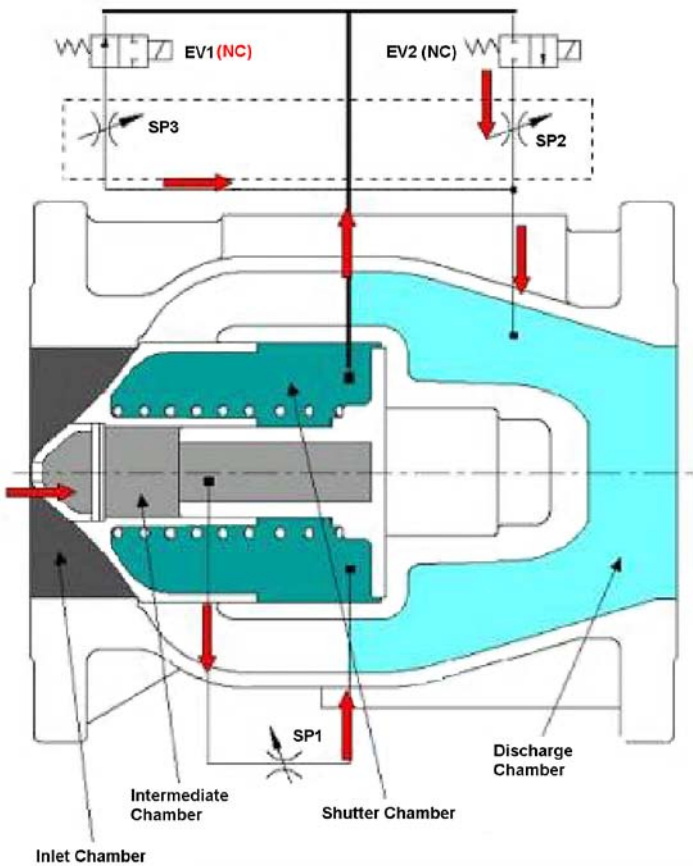
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## General Description

### HPV Two stage Shut-off version

The basic components of the valve are:

- The body;
- The shutter, that runs inside the body and determines the valve area of the fluid and consequently the capacity during its axial run;
- The internal shutter guide;
- The cap, mounted at the end of the shutter, which acts with the body and shutter to create the profile of the valve areas of the fluid inside the valve;
- The return spring, that acts on the shutter.



The valve is also supplied with a support in the upper part, on top of which two solenoid valves are mounted.

The fluid passes from the "Inlet Chamber" to the "Intermediate Chamber" through a hole in the cap and then through a dirt-proof filter. Then, it fills the "Shutter Chamber" through the SP1 orifice. Next, it reaches the solenoid valve holder block through a connecting hole. Inside the block the fluid finds two paths (one through the SP2 orifice and the other through the SP3 orifice) that run parallel to each other to reach the "Discharge Chamber". The fluid undergoes to pressure drops along this path depending on the opening level of the orifices SP1, SP2 and SP3 and on the opening of the valves EV1 and EV2. An intermediate pressure is established between the delivery pressure and the discharge pressure, as a result of these pressure drops in the "Shutter Chamber". Together with the contrasting action of the spring, this pressure moves the axial position of the shutter, which, in turn, influences the upstream/downstream pressure values of the valve and therefore also the "Shutter Chamber" pressure. Consequently, the equilibrium of the forces is further modified, which regulates the position of the shutter itself. This phenomenon ceases once the position of equilibrium is reached, where the effect of the pressure of the

"Shutter Chamber", added to the force of the spring, is equal to the effect of the delivery pressure.

The valve works according to three operating regimes;

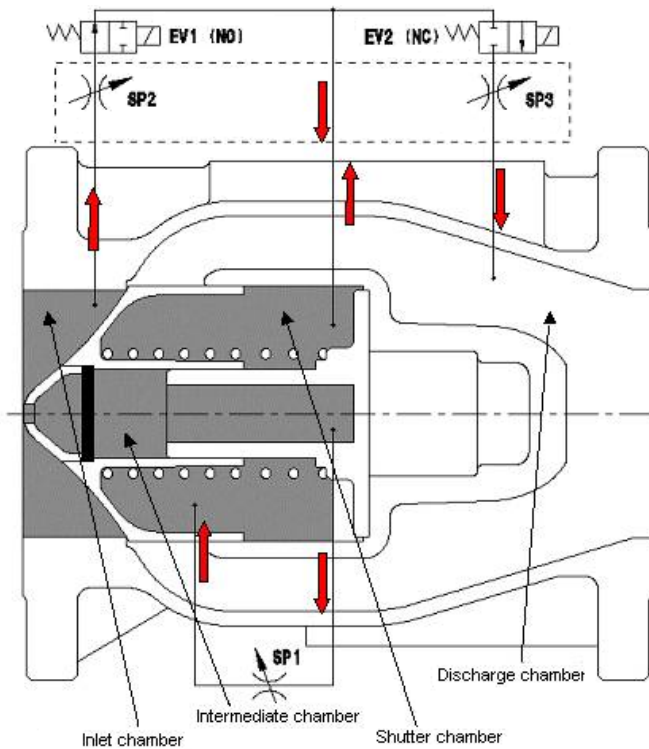
- Closed;
- Intermediate low flow position;
- High flow position.

The high flow position can, at worst, also coincide with the valve position completely open, but nonetheless it can be regulated to limit the capacity of the line (hence the name Capacity Limiting Valve). The high and low flow positions are regulated manually from the outside by means of needles for adjustment.

The flow regulator with digital valve operating mode is made possible by a closed ring control carried out by a litre counter with an electronic contometric head. The capacity can be regulated almost constantly in all of the 0-100% range of the shutter opening.



HPV Digital Version



In relation to the valve acting as a Capacity limiter, the liquid reaches the "Shutter Chamber" (by means of an external line that is not represented) through the EV1 valve and the SP2 orifice. As opposed to the Capacity limiter, when the valve is in equilibrium, the adjustment micro-flow is still. The path through the SP2 orifice to the "Shutter Chamber" serves during the filling of the "Shutter Chamber" and so during closure of the valve; whereas the path through the SP3 orifice from the "Shutter Chamber" to the "Discharge chamber" serves during the emptying of the "Shutter Chamber", and so during the opening of the valve. The SP1 orifice only serves to equalize the pressure between the "Shutter Chamber" and the "Intermediate chamber" during the transistors. The course of the upstream-downstream pressure during this operating mode has no effect on regulation.

This operating mode is made possible by a closed ring control carried out by a litre counter with an electronic contometric head. The capacity can be regulated almost constantly in all of the 0-100% range of the shutter opening.



## Specifications

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### Specifications

Max operating temperature	70° C	
Min operating temperature	-20° C	
Max kinematic viscosity	40 cST	In the standard version
Max operating pressure valves with steel body	10 bar (145 PSI)	Up to 70° C
Max operating pressure valves with aluminium body	10 bar (145 PSI)	Up to 70° C (reduces to 5 bar – 73 PSI – up to 125° C)
Min valve opening pressure	0.09 bar (1.31 PSI)	
Max pressure in no-return function	1.5 bar (21.8 PSI)	
Capacity coefficient	Cv 270 gpm/psi	
Max flow rate for 0,5 bar (7.3 PSI) pressure drop	2500 l/min (660 gpm)	With diesel and gasoline (it decreases in proportion to the viscosity with other liquids)
Class of seal IEC 534-4	Class V	
Flanges	DN4" – ANSI 150 B 16.5 RF SF	
Closing time	< 4 sec	Adjustable
Opening time	From 3 to 6 sec	Adjustable

### Materials

The valve can be supplied in two versions:

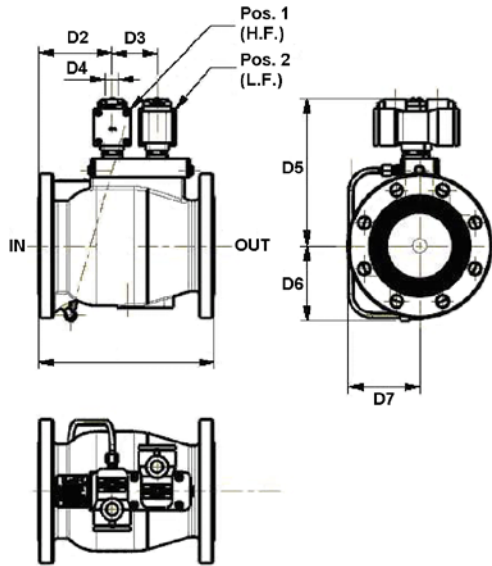
- With body in carbon steel.
- With body in aluminium.

Materials of the other components are common. The most important are:

- Shutter in aluminium EN 1706 AC-42100ST6.
- Fixed parts in aluminium.
- Other details in stainless steel and/or cadmate carbon steel.
- The dynamic sealing ring of the energised type shutter in PTFE loaded carbon.
- Shutter seal packing in VITON on incorporated metallic core.
- The rest of the packing in FPM (Viton).

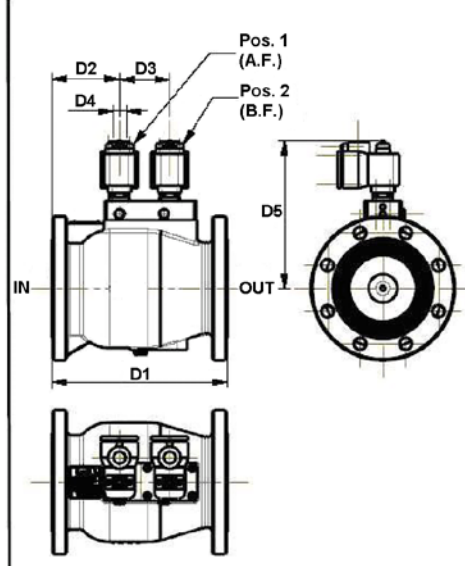
Dimensions

DIGITAL VERSION



Part.: 312607, 312608

TWO STAGE SHUT-OFF VERSION



Part.: 312601, 312603

Model	Dimensions	D1	D2	D3	D4	D5	D6	D7	Flange	Weight (Kg)
312601	in	11,01	4,25	3,15		9,23	-	-		15
	mm	280,00	108,00	80,00		234,50				
312603	in	11,01	4,25	3,15		9,23	-	-	DN 4" ANSI 150RF (ø 9 in - 229 mm)	35
	mm	280,00	108,00	80,00	RP 1/2" ISO 7/1	234,50				
312607	in	11,01	4,60	2,81		9,23	4,60	4,96		35
	mm	280,00	117,00	71,50		234,50	117,00	126,00		
312608	in	11,01	4,60	2,81		9,23	4,60	4,96		15
	mm	280,00	117,00	71,50		234,50	117,00	126,00		



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