

Sapphire Engineering™ IPV

Integrated Piston & Valve

The Sapphire IPV is the detachable piston and valve component of the Pump & Valve Module (PVM) developed for precision dispensing applications. The IPV can also be used as a plug-in replacement for the syringe and valve of many industry-standard syringe pumps.

- ▶ Patented technology provides up to 20 times longer life than typical Glass Barrel/PTFE syringes with Kel-F®/PTFE plug valves (See Fig 1)
- ▶ Accuracy and precision identical to typical syringes and valves
- ▶ Significant lifetime cost savings
- ▶ No routine maintenance required
- ▶ Use with Sapphire Engineering's Pump & Valve Module
- ▶ Direct, plug-in replacement for existing syringes and valves on Cavo™ XP 3000 and Hamilton PSD/4 syringe pumps
- ▶ Optional seal-wash versions available to help extend life with difficult fluids
- ▶ Made of durable, chemically resistant materials
- ▶ Available valve configurations: three-way "Y" valve, three-way "T" valve, three-port distribution valve, four-way valve
- ▶ Available piston sizes: 50 µL, 100 µL, 250 µL, 500 µL, 1.0 mL, 2.5 mL, 5.0 mL
- ▶ Optional wetted materials available upon request

The Big Difference

Extensive tests show the IPV will outlast traditional syringes and valves as much as 20 fold, yielding major lifetime cost savings. By selecting the seal-wash option, you can extend IPV longer even when pumping salts and corrosive fluids. As a bonus, you save even more on downtime and upkeep because the IPV requires no routine preventive maintenance such as cleaning and nut tightening, essential with conventional syringes.



The "How" of Such Dramatic Savings

First, we use cutting-edge piston technology to pump fluids via positive displacement in lieu of a traditional syringe. Second, we incorporate a ceramic-on-ceramic shear valve instead of the more common polymer plug valve. These innovations, coupled with our proprietary surface finishing processes on the ultrahard piston, rotor and stator surfaces, mean significantly less wear and downtime for a reduced cost of ownership.

Getting up and running takes as little as five minutes with the IPV's plug-in compatibility with a variety of different syringe pump styles. Contact us for information on compatibility with other syringe pumps as well as capabilities for lower flow rates.

Figure 1

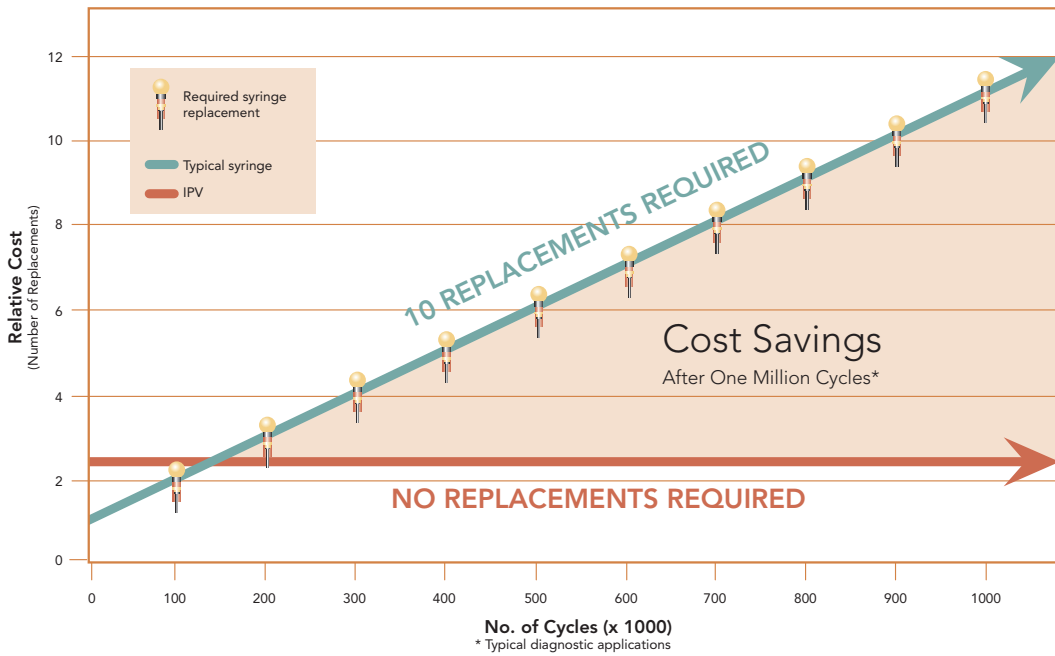


Figure 2	3-Way Y Valve	3-Way T Valve	3-Port Distribution Valve	4-Way Valve
Position 1				
Position 2				
Position 3				
Position 4				
Rotor volume	8.4 µL	13.4 µL	5.7 µL	8.0 µL
Port to Port Volume	35.0 µL	40.0 µL	36.8 µL	34.6 µL

Rotor Volume is the physical volume of the fluid path in the ceramic rotor
Port to Port volume is the total internal volume of the ceramic valve, when measured from one port, through the stator and rotor, to another port.

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