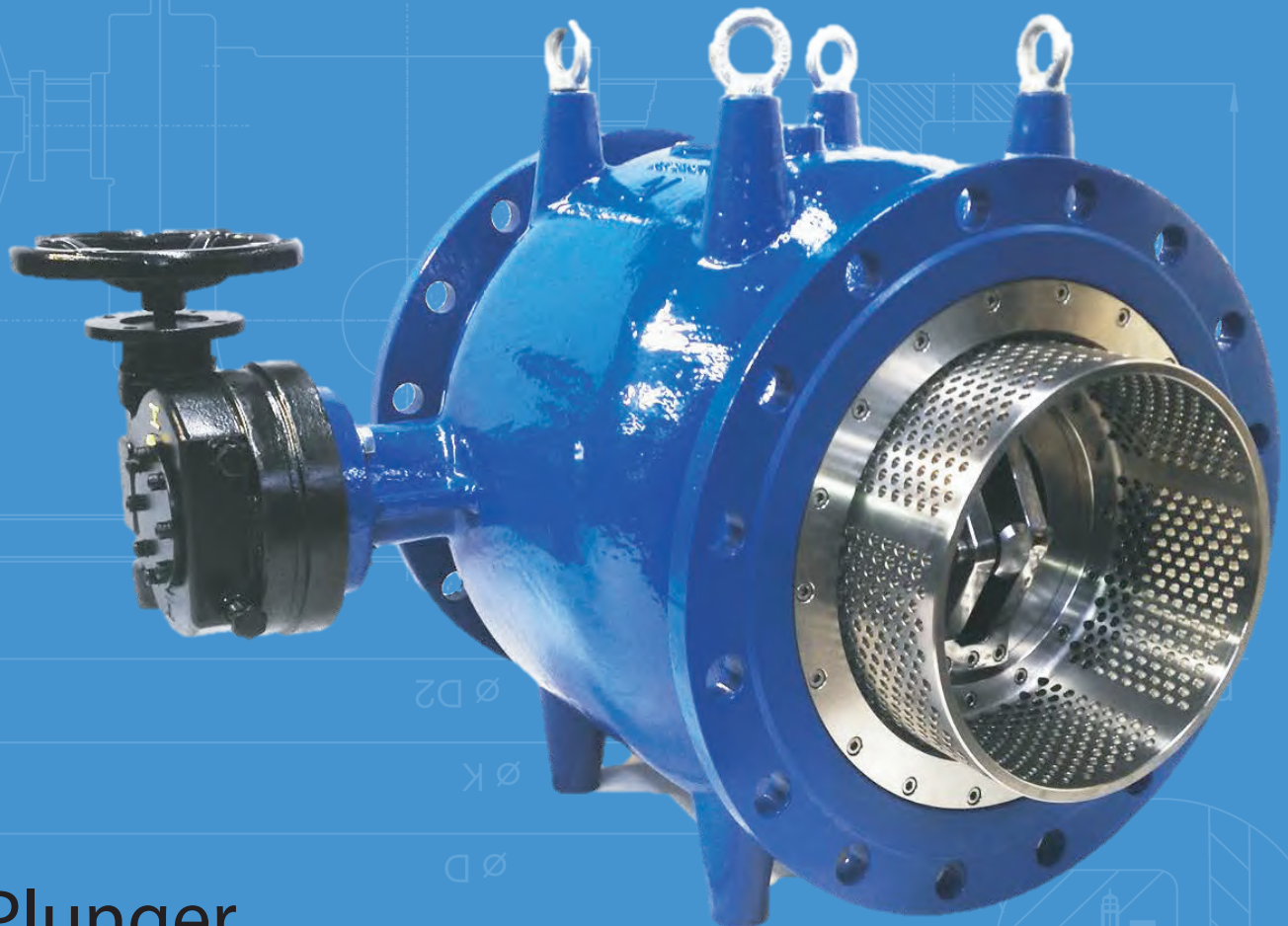




AV-TEK®

VALVES THAT REDEFINE INDUSTRY STANDARDS



VRX Plunger
Advanced Control Valve

Av-Tek® is leading the way in the development, manufacturing, and implementation of high-quality valves for use municipal, industrial, and sea water industries. Our premium designs and technology outperform and out last the competition. Read more to learn why our VRX Plunger Valve is the best Advanced Control Valve on the market today!

Main Valve Features

Annular Flow Design

The Av-Tek® VRX Plunger valve opens and closes in an annular flow pattern, allowing precise control throughout the entire stroke of the valve. The linear flow of the media is directed around the inner core of the valve body without interruption. From the closed position, the piston retracts into the body of the valve and flow increases. As the valve closes the flow path and the piston move in the same direction eliminating transient waves, or water hammer.

Body Styles and Sizes

6" to 48" Class 150B ANSI Class 125 raised face flanged.

Compact and Robust

The VRX Plunger valve has a much shorter lay length than a traditional globe style control valve, but quality is not lost due to the ASTM A536 one piece ductile iron body and internal stainless steel components. The VRX is suitable for up to 250 psi CWP.

*Higher pressure ratings available upon request

Bronze Welded Guide Rails

The bronze welded body rail is applied to the Ductile Iron valve body by means of a machine welded overlay which is micro finished and polished. This results in very low friction when the plunger opens and closes. The welding process eliminates the possibility of the rails delaminating, or the need for fasteners, which can cause misalignment or jamming of the piston as the valve operates.

Quarter Turn Valve

The Av-Tek® VRX Plunger is a Quarter turn valve to ensure quick opening and closing when needed. Each valve comes standard with a quarter turn AWWA Self Locking Worm Gear, and can be adapted with an electric actuator for automatic control.

Certified Zero Leakage

Each VRX Plunger valve is tested in accordance with EN 12266-1. Beyond industry standard testing, Av-Tek® conducts additional testing and ensures each valve includes a leak test report and heat trace numbers of the valve components with delivery.

Dry Disc Hub

Our advanced modern dry disc hub and shaft design is achieved through multiple O-Ring seals on the crank shaft. This prevents pressurized system water and outside water from entering the dry shaft, as well as provides ancillary vacuum protection.

Drinking Water Safe

NSF 61/372 Certified for use in Potable Water Systems

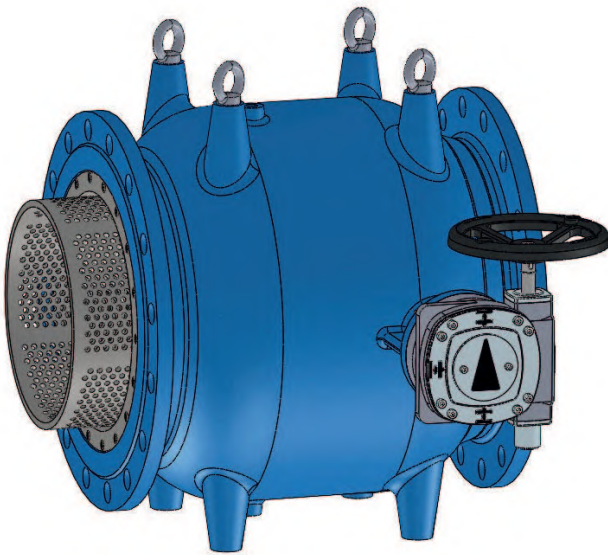
Ease of Maintenance

The VRX Plunger valve requires zero to minimal maintenance. The rubber seal is preserved from wear and is out of the flow stream of the media. The bearing cover allows the user to remove the worm gear without dewatering the pipeline. In the rare event that the rubber sealing ring ever required replacing, it can be replaced in the field, with common tools, and without the need of a specialized technician.

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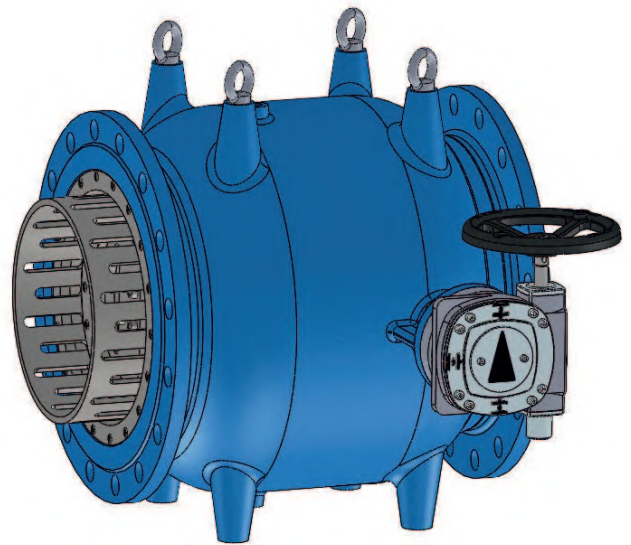
Av-Tek™ VRX Plunger Valve

The Av-Tek® VRX Plunger Valve is the result of years of advanced engineering and study. Our progressive design offers the latest technology specifically designed for flow control, pressure management, and isolation in water applications. With modern features and the highest-grade materials, the VRX Plunger brings unprecedented longevity and reliability to meet the critical service demands of a modern water infrastructure.



Orifice Cage

- Clean or potable water
- Medium to high cavitation risk
- Medium to high velocity
- High pressure drop
- High Pressure differential reducing
- Flow control to atmosphere w/ full pipe downstream



Slotted Cage

- Filtered Raw or clean water
- Low to medium cavitation risk
- Low flow velocity
- Low pressure drop
- Low differential pressure reducing
- Flow control

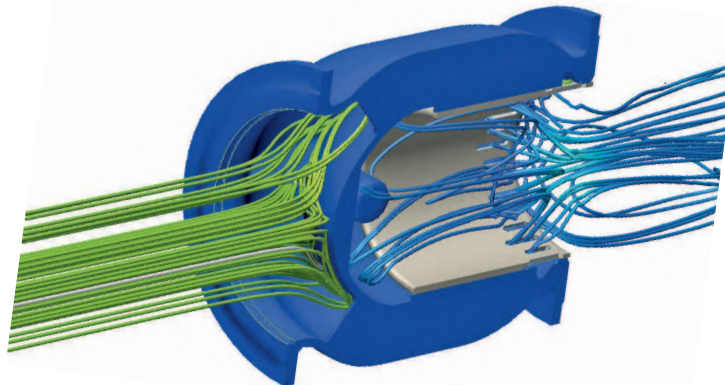
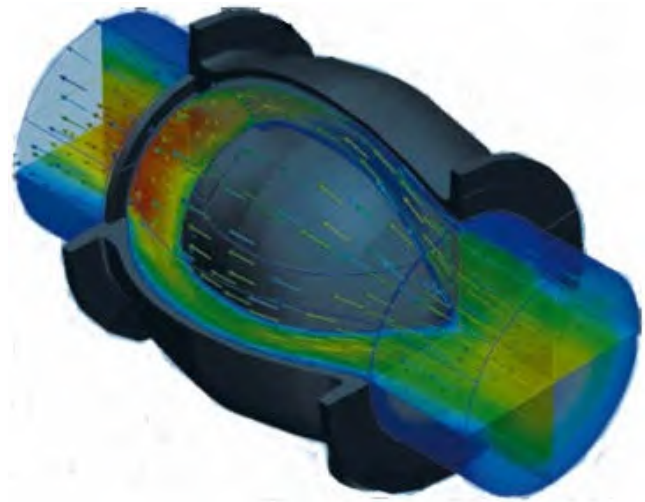
ADVANCED FEATURES

The Av-Tek® VRX Plunger valve offers a modern design and solution to the traditional control valve. By diverting the flow over the internal cone into the annular chamber of the body section, the VRX Plunger positions the vapor bubbles into the center of the pipe so the cavitation occurs away from the pipeline or the valve itself. Unlike traditional control valves, the one piece body design make the VRX plunger long lasting and virtually maintenance free.

The flow through design allows for debris and other small particles to pass through the valve without harming the valve, and the seat is out of the flow path of the water as well. The VRX Plunger can be equipped with either a manual gear or electric actuator, giving the user precise control. And each valve is equipped with a mechanical shaft and crank both manufactured in stainless steel. The correct control trim is based on each specific application, and the Av-Tek® engineering team uses the application criteria to select and size the correct cavitation cage.

SUPERIOR DESIGN

The Av-Tek® VRX Plunger valve is tested against the stringent European EN 12266-1 requirements and meets and exceeds all performance testing. Each valve is tested and certified at Zero Leakage before it leaves the factory. United States third party performance testing has been successfully completed at the Utah State University hydraulics lab located in Logan, Utah.



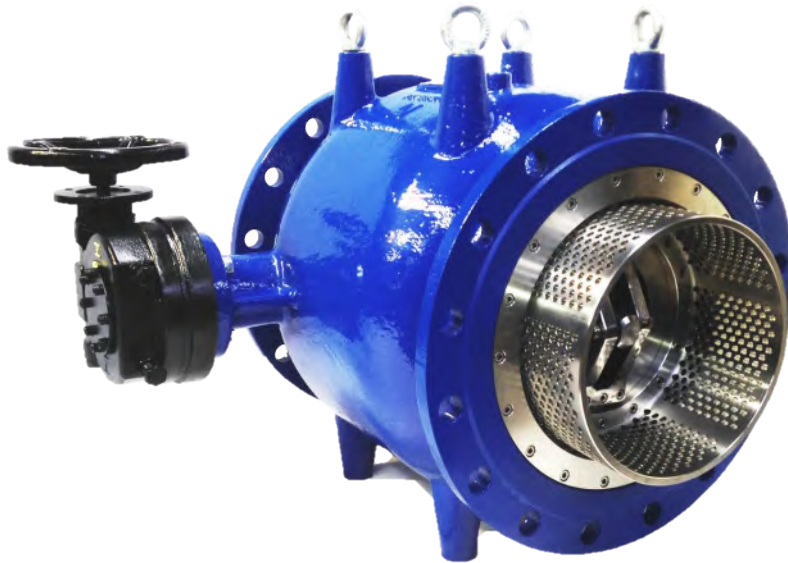
Quality Coating

Fusion Bonded Epoxy

Av-Tek® VRX Plunger valves receive a heat fused powder lining and coating known as *Fusion Bonded Epoxy for sizes 6" - 18". During this process, the powder coating is applied to a pre-heated, sand blasted body, and then cured in a high temperature oven. The standard minimum thickness is 12 Mil DFT.

Coating Testing

Quality Assurance Engineers at the Av-Tek® manufacturing facility test and certify the dry film thickness of the VRX Plunger valve with an Elcometer. The Av-Tek® Coating system is approved for contact with drinking water.



NSF 61/372

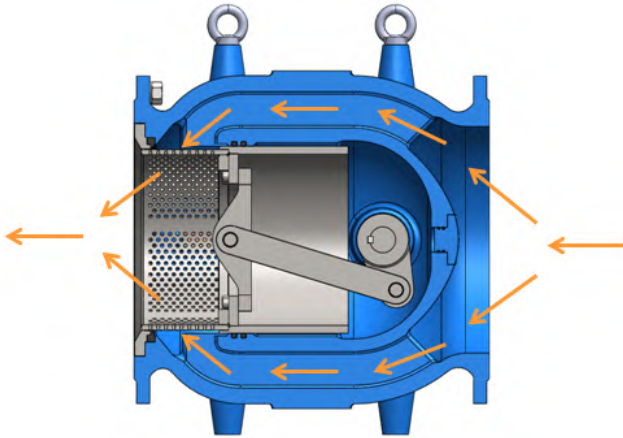
Holiday Testing

Holiday or "spark testing" is performed on VRX Plunger valves to ensure that coating is free from pinholes or voids in the protective coating. If pores or voids are detected the valve is rejected and the coating process is repeated.

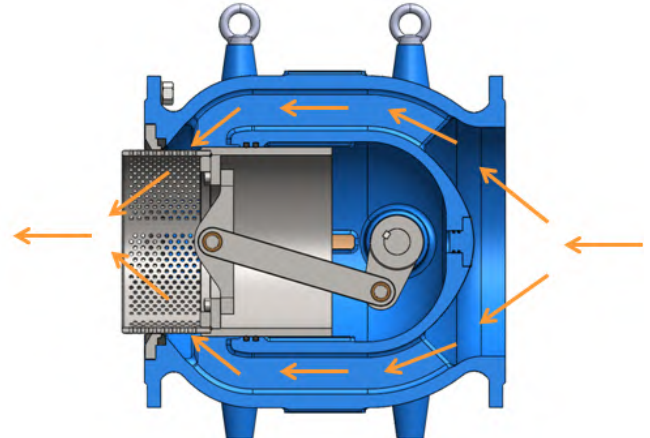


*20" - 48" valves receive two part liquid epoxy IN/OUT

VRX Plunger Stroke

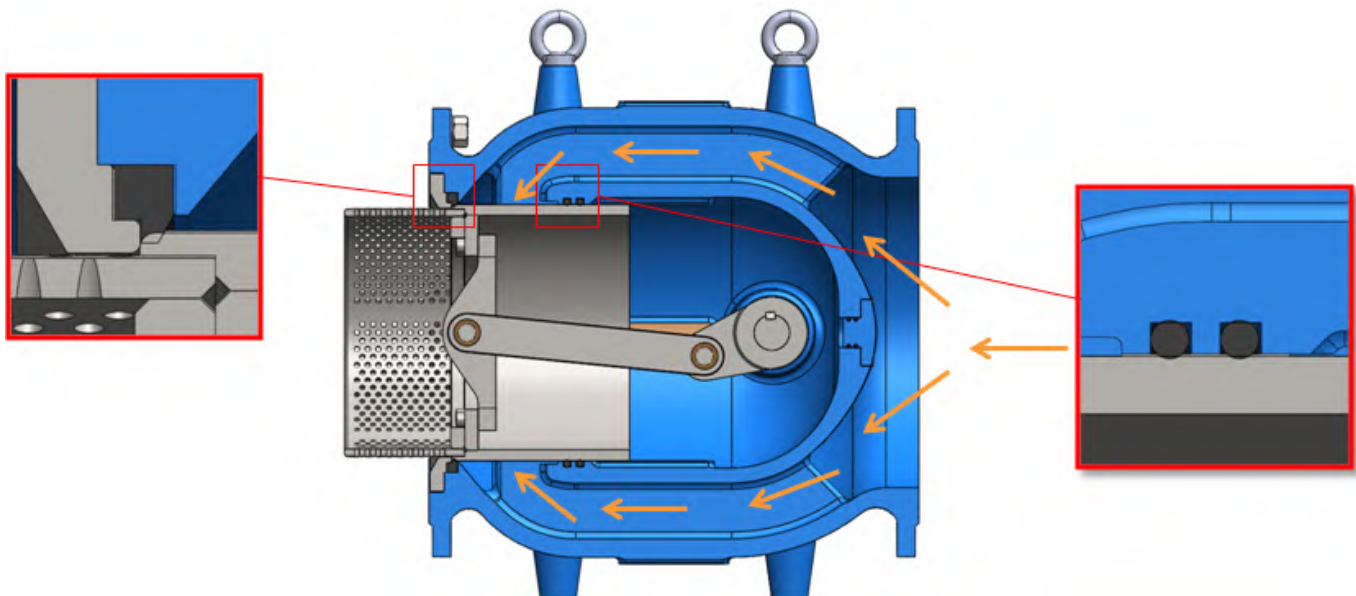


Valve in Open Position



Modulating

As the VRX Plunger valve closes, the flow path and the piston move in the same direction of flow. When the valve is fully closed, a double o-ring seal on the rear of the piston and an EPDM sealing ring on the front provide zero leakage. The piston does not need to overcome the inlet pressure, thus keeping torque values very low.



Valve in Closed Position

VRX Applications

- Pressure Reducing
- Pressure Sustaining
- Flow Control
- Tank/Reservoir Filling
- Hydroelectric Bypass
- Shutoff Valve High Pressure, High Flow



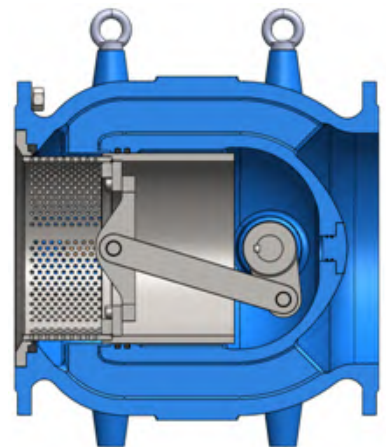
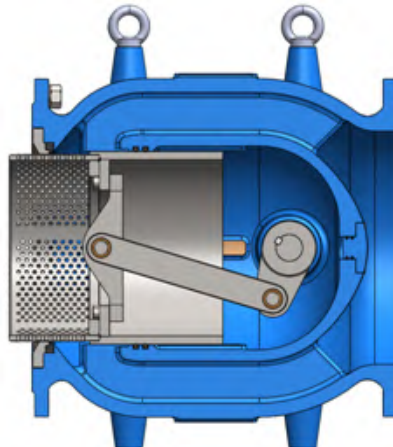
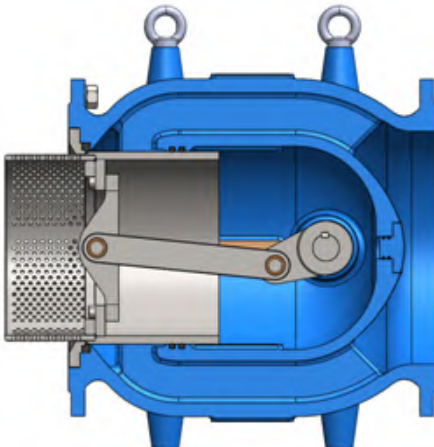
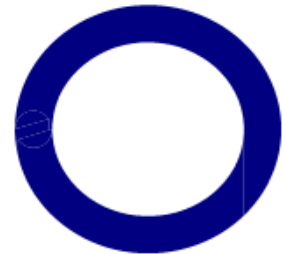
Annular Cross Section

The VRX Plunger valve is ideally suited as a control valve because of its symmetrical cross section. Typical control valves have an inherent asymmetrical cross section which cannot provide a linear control curve over their entire control range. As the valve closes, the cross section is reduced from the inlet of the piston and the flow is guided along in a linear flow pattern through the cage. In every position the ring shape remains the same.

50% Open



100% Open



VRX PLUNGER VALVE PART LIST

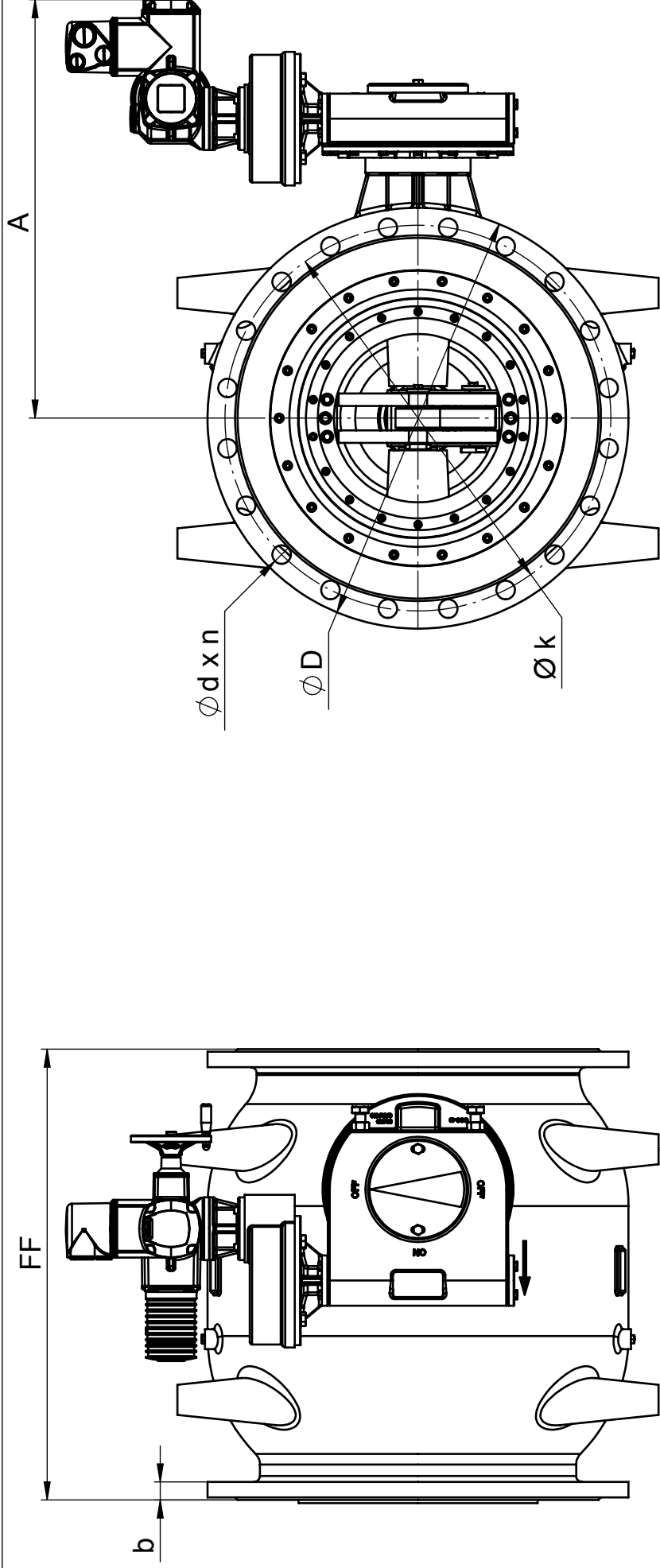
Part List & Material Specification

PART NO	PART NAME	MATERIAL
1	BODY	EN GJS 400 15
1A	PISTON GUIDE RAILS	BRONZE WELDING
2	BUSHING	BRONZE
3	O-RING	EPDM
4	SHAFT	STAINLESS STEEL 1.4021
5	KEY	STAINLESS STEEL 1.4021
6	CRANK	STAINLESS STEEL AISI 304
7	BUSHING	BRONZE
8	PIN	STAINLESS STEEL 1.4021
9	COTTER PIN	A2
*10	CAVITATION RING	STAINLESS STEEL AISI 304
11	BUSHING	STAINLESS STEEL AISI 304
12	PUSH ROD	STAINLESS STEEL AISI 304
13	PISTON ROD	STAINLESS STEEL AISI 304
14	BUSHING	BRONZE
15	PIN	STAINLESS STEEL 1.4021
16	O-RING	EPDM
17	PISTON	STAINLESS STEEL AISI 304
18	BOLT	A2
19	SEALING RING	EPDM
20	RETAINING RING	A2
21	BOLT	A2
22	COVER	Ç1050
23	BOLT	8.8
24	COVER	Ç1050
25	BOLT	A2
26	GEAR BOX	-
27	WASHER	8.8
28	BOLT	8.8
29	EYE BOLT	A105
30	BOLT	A2
31	O-RING	EPDM
32	SETSCREW	A2
33	PLUG	A2

*Cavitation Ring depends on flow parameters
- Other materials available up request.

Subject to change without notice.
Please contact us for other sizes and materials.
Part No: 37-1049

PLUNGER VALVE DIMENSIONAL DRAWING



Class 150 Flanged									
Inches	ØD	Øk	Ød	n	b	A	FF	Weight	
6	11.22	9.49	0.9	8	0.79	13.78	13.78	154	
8	13.39	11.78	0.9	8	0.79	14.76	15.75	189	
10	15.75	14.25	1	12	0.87	16.14	15.75	265	
12	18.5	17	1.02	12	0.96	17.52	20.41	331	
14	20.47	18.74	1.14	12	1.04	21.26	21.65	574	
16	22.83	21.26	1.14	16	1.1	25.98	23.62	816	
18	25.2	22.76	1.26	16	1.18	27.16	25.6	1125	
20	28.16	25	1.26	20	1.24	28.54	29.53	1355.8	
24	33.09	29.49	1.38	20	1.42	30.31	35.43	2315	
28	35.83	34	1.46	28	1.55	36.02	41.34	3483	
32	40.35	38.5	1.61	28	1.69	36.02	47.24	4475	
36	45.07	42.76	1.65	32	1.83	39.17	53.15	5798	
40	49.41	47.25	1.65	36	1.97	46.85	59.06	8201	
48	58.46	55.98	1.65	44	2.24	53.54	70.87	13625	

Product Specification - Av-Tek® - VRX Plunger Valve

DESIGN

- A. The plunger valve shall be a horizontal in-line, flow through design where one central piston controls the flow of the media. The flow through design allows for debris and other small particles to pass through the valve without having a negative effect. The internal cone is designed to divert the water flow into the annular chamber of the body section. The resilient seating surface must be aligned to be out of the flow path to prevent damage to the seating surface. The valve body shall be a one-part body.
- B. Plunger valves shall be rated for working pressures of no less than 250 PSI and shall provide zero leakage at full rated pressure.
- C. Valve shall be supplied with integral class 125 or 250 flanges.
- D. The valve size, pressure rating, year of manufacture and manufacturer's name & model shall be cast onto the valve body or be on a permanently attached nameplate.
- E. Flow: The plunger shall move in an axially flow direction to reduce or enlarge the annular flow cross-section through slots in a degressive manner, and the medium will flow through the customized regulating cylinder from the outer annular chamber to the inner chamber of the plunger, for flow control.
- F. Each valve shall be supplied with a factory inspection certificate outlining body pressure test, leakage test, valve size, valve serial number, pressure rating, body heat No., stem heat No. seat material and seat heat No.

MATERIALS

- A. Body: Valve bodies shall be ductile iron, ASTM A536 65-45-12 or A536 60-40-18, with ANSI B16.1s. Pre drilled lifting holes lugs shall integrally be provided to assist in the installation and removal of valve from the pipeline.
- B. Regulating Parts: The plunger shall be 304 Stainless Steel, the cavitation cage shall be 304 SST, the push rod and piston rod shall be 304 stainless steel.
- C. Shaft: The Shaft shall be 304 SST.
- D. Sealing: All resilient seals shall be EPDM and the main shaft seal must be out of the flow path to prevent damage when valve is in operation.
- E. Piston Guide Rails: The plunger shall slide and be contained in the axial position by guide rails. To prevent possible corrosion between the guide rails and the valve body, the guide rails shall be completely fused to the valve body in an overlay weld process to prevent any gaps or corrosion pathways. Guide rails which are riveted or bolted to the valve body are not acceptable for long-term operability and corrosion protection. The guide rails shall be bronze and shall be positioned around the plunger in an uneven quantity to reduce the potential for damaging harmonic vibration, clogging or excessive wear. The guide rails shall be low to no lead and very low zinc content to prevent dezincification.
- F. Shaft Bearings: Valve shaft bearings shall be corrosion resistant, self-lubricating sleeve type made of bronze. Non-metallic shaft bearings are not allowed.
- G. The iron surfaces of the valve body and disc shall be coated with minimum 12 mil DFT fusion bonded epoxy or two part epoxy

ACTUATION

- A. Manual Actuators: Actuators shall conform to ANSI/AWWA C540, subject to the following requirements. All actuators shall be self-locking worm gear type and shall hold the valve piston in the closed, open and any intermediate position without creeping or fluttering and be supplied from known and reputable gear manufacture.

MANUFACTURER

- A. Manufacture shall be ISO 9001:2008, Accredited and Certified.
- B. Manufacture shall have current NSF 61/372 Certifications
- C. Manufacture shall have valve performance independently tested and verified in the USA by an accredited third party flow testing facility.
- D. Valve shall be the VRX Plunger Valve, AV-Tek® Valve USA

Av-Tek® Actuation Options



Manual *Worm Gear Actuators*

- Self-locking
- Meet requirements of AWWA C504.
 - Cast iron housing, bronze gear, and manual travel stops.
- Above ground gears come with visual position indicator and hand wheel operator.
 - Chain wheel and 2" square nut are optional.
- Buried service gears are sealed and grease packed with a 2" square nut.
- Gear accessories are available for quote.



Pneumatic and Hydraulic Actuators

- Pneumatic or hydraulic cylinder actuators available
- Double-Acting or single acting (spring return, fail to close or fail to open) types
- Control systems are available to accommodate open/close and throttling applications



Electric Motor Actuators

- Available on all Av-Tek® valves.
- For open/close or modulating service under any condition suitable to the valve.
- Single Phase or 3-Phase Power.
- All major, intelligent, non-intrusive actuators available.
- Direct mounts to ISO Mounting Pad.



Av-Tek® Inc. offers modern solutions for the persistent problems facing water users, plant operators, and engineering firms. Our technology far exceeds the current options in the marketplace, and clients are quickly realizing Av-Tek® is setting a new standard for quality, performance, and craftsmanship.

The Av-Tek® DEX double eccentric butterfly valve is a primary example of our superior design and quality, and comes with options available to match any market needs. With hard rubber lining, aluminum bronze discs, and certified to meet the most stringent requirements, you can rest assured there is not a better valve on the market today.

The Av-Tek® VRX Plunger Valve has been engineered and designed for absolute control; specifically, for water applications. The VRX accompanied with an electric motor operator can function as a critical isolation, pressure, and control valve without the fear of cavitation damage.

The Av-Tek® Resilient Seated butterfly valves are a crucial part of nearly every application, and the advanced design allows for quick replacement of seats. The disc is never penetrated, ensuring this valve has a long life, free of leaks and defects.

The Av-Tek® Model 4900 is a resilient seated ball check valve with a sinking or floating ball to prevent back flow. This allows for flow passage with minimum friction loss.

The Av-Tek® Dismantling Joints are recommended anytime a valve is above ground, for easy mounting and dismantling. Dismantling joints also remove the stress on valves in line due to installation problems. Ductile Iron Bodies, Fusion Bonded Epoxy In & Out, and EPDM O-Rings are always standard.

Contact us today for further information or any questions you may have. Our team is happy to discuss your specific situation and provide expert recommendations that will deliver long-lasting solutions for your water management needs.

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