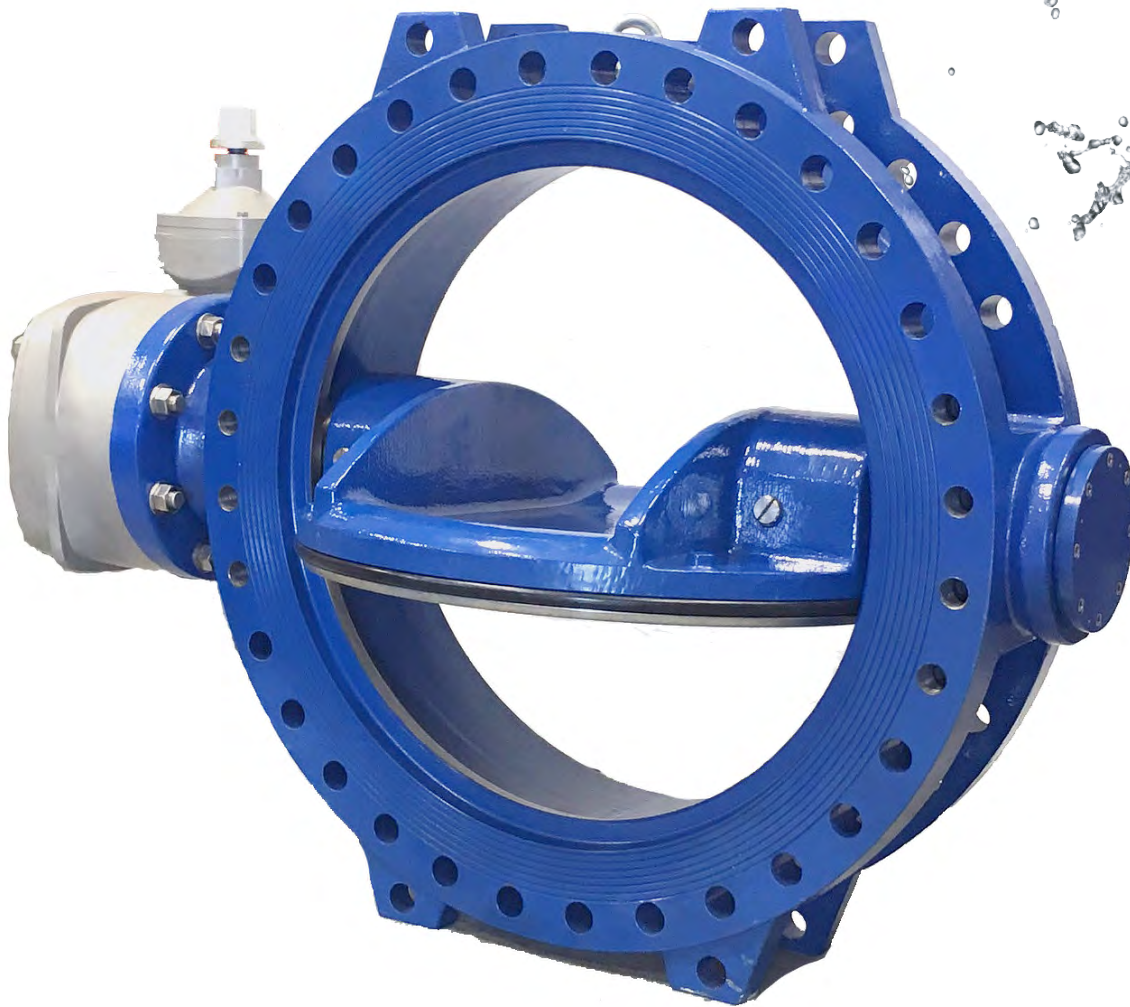




AV-TEK®

VALVES THAT REDEFINE INDUSTRY STANDARDS



High Performance *DEX*
Double Eccentric Butterfly Valve

Main Features

Double Eccentric Design

The centerline of the disc rotation is horizontally and vertically offset from the body seat. This high-performance design eliminates “seat set” compression while the valve is in the open position. Compression on the seal is released after only a few degrees of opening which reduces friction and wear. This makes the DEX valve ideal for modulation or in the open position for extended periods of time

AWWA Flange to Flange Dimensions

6” to 108” AWWA Class 150B ANSI Class 125 flanged dimensions
Class 300B dimensions are to AWWA C519

High Working Pressures

ASTM A536 Ductile Iron body with 2205 Duplex Stainless Steel upper and lower shafts make the Av-Tek® DEX suitable for 250 PSI CWP applications.

*Higher pressure ratings available upon request.

316L SST Welded Body Seat

The Nickel Chromium ,316L Stainless Steel body seat is applied to the Ductile Iron valve body by robotic welded overlay process and then micro finished and polished. The chemical properties of the 316L SST prevent corrosion between the seat and the Ductile Iron valve body. The permanent welding process eliminates the possibility of body seat separation.

Drinking Water Safe

NSF 61/372 Certified for use in potable water systems.

Dry Disc Hub

The advanced dry disc hub and shaft design is achieved through 10 O-Ring seals on both the upper and lower shafts. This prevents ground water and line media from entering the journal areas, resulting in ease of operation and minimal torque for many years.

Certified Zero Leakage

Each double eccentric butterfly valve is tested in accordance with EN Standards and AWWA C504, Av-Tek® provides a unique test certificate for each valve that leaves its factory. The certificate includes a leak test report, bi-directional tightness, and heat trace numbers of the valve components and more.

Engineered Linings and Coatings

The ASTM A536 Ductile Iron body comes standard with 14 Mil DFT electrostatic applied Fusion Bonded Epoxy lining and coating. Holiday testing is performed to ensure the valve meets the most stringent coating thickness and porosity requirements.

*Additional specialized coatings are available for sea and hot water applications.

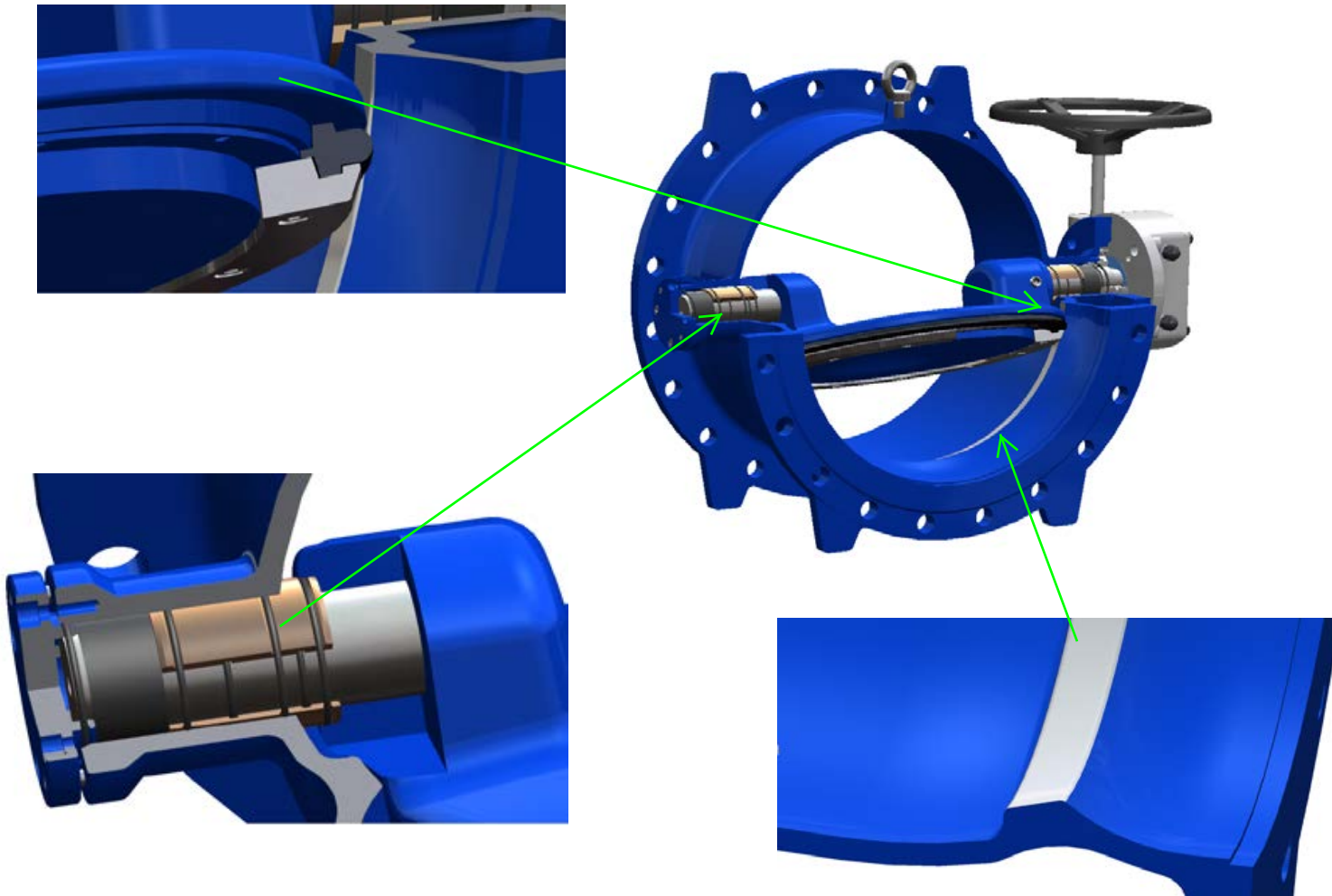
Ease of Maintenance

The Double Offset design requires zero to minimal maintenance and the bearing cover allows the user to remove the worm gear without dewatering the pipeline. In the event of seal replacement or repair it can be accomplished in the field, with common tools, without the need of epoxy injections or a specialized technician.

DEX High Performance Modern Double Offset Design

The Av-Tek® DEX Butterfly Valve is the result of years of advanced engineering and study. This progressive design offers the latest technology specifically designed for use in water applications. With its modern features and high-grade materials, the DEX brings unprecedented longevity and reliability to meet the critical service demands of a modern water structure.

Double Eccentric Design



Certified to NSF/ANSI 61 & 372

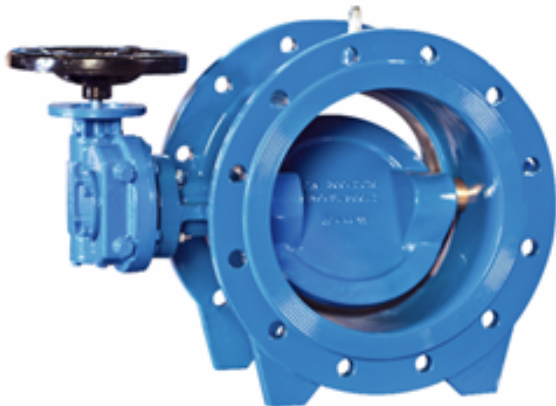
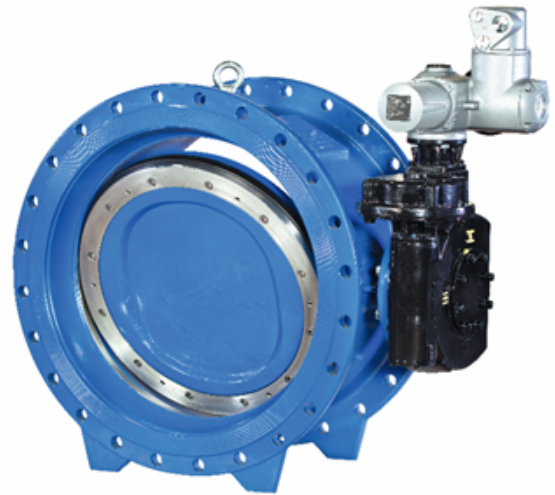
316L SST Welded
Body Seat

Superior Design

The Av-Tek® *DEX* Double Eccentric Butterfly Valve offers a modern design compared to the traditional AWWA, commodity type, butterfly valve. The double offset design occurs from the centerline of the disc rotation being horizontally and vertically offset from the stainless steel body seat. Unlike traditional concentric AWWA butterfly valves, the double offset design offers a “non-rubbing” resilient sealing ring that releases compression after only a few degrees of opening, resulting in decades of zero leakage sealing capabilities. This makes the *DEX* ideally suited for critical isolation applications, where performance and reliability are paramount. In the rare event a resilient seal ever need adjustment or replacement, this can be achieved with common tools, in the field, and with out removing the valve from the pipeline unlike epoxy filled seats that require special equipment, training and skill.

Performance Tested

The Av-Tek® *DEX* Butterfly Valve meets and exceeds performance testing of AWWA C504 and also meets the strict EN Standard. Each butterfly valve is tested and certified at Zero Leakage before it leaves the European factory. United States third party performance testing has been successfully completed at the Utah State University Water Research laboratory located in Logan, Utah.



Critical Sealing System

The Av-Tek® *DEX* Butterfly Valve has been designed to give superior shut off due to the robotic welded 316L SST seat, and a continuous, single piece pressed EPDM seal. This sealing system allows for 360° uninterrupted, bubble tight, bi-directional shut off. Each resilient seal is manufactured in the same facility as the valves, thus insuring the highest of standards are met.

Quality Coating Systems from Av-Tek® Valves

Fusion Bonded Epoxy

The Av-Tek® *DEX* Butterfly Valve receives a heat fused powder lining and coating known as Fusion Bonded Epoxy. 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 14 Mil DFT.



Coating Testing

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

Holiday Testing

A holiday or a “spark test” is performed on the *DEX* Butterfly Valve 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.





A business card is placed between the NiCr welded body seat and resilient seal showing a true double offset design.

Valve Construction

The standard Av-Tek® DEX 2504 Butterfly Valve is constructed of robust Ductile Iron ASTM A536 with a 2205 Duplex stainless steel shaft, 316 stainless steel seat rings, and EPDM resilient disc seat. The body seat ring is a continuous machine welded stainless steel ring. The 1/4 turn disc is guided by a bronze double eccentric bearing. Fusion bonded epoxy comes standard on all standard sizes of the DEX BFV.

Leak-tight closure is made when the resilient seal is rotated into the 316L SST body seat.

Av-Tek® is committed to offering the highest quality valves for water systems, **not just the minimum standard**. All Ductile Iron castings are meticulously inspected for impurities. Castings undergo dual inspections, first when they arrive from the foundry, and again after the coating process has been completed.

2205 Duplex Stainless Steel

The Av-Tek® standard shaft material is 2205 Duplex stainless steel, to ensure the highest level of strength and corrosion resistance for critical service applications.

Duplex 2205 a Stainless Steel with nearly equal proportions of austenite and ferrite, containing about 40 - 50% ferrite in the annealed condition. 2205 has been a practical solution to chloride stress corrosion cracking problems experienced with 304 or 316 stainless steel.

The high chromium, molybdenum, and nitrogen contents provide corrosion resistance superior to 316 stainless steel in water applications.

The design strength of 2205 is significantly higher than ASTM 316 stainless steel, which allows for the use of smaller shaft diameters in larger valves, thus improving flow characteristics.



A 316L stainless steel machine welded seat ensures no leak through under the seat as you will often see when the seat is pressed in. The machined finish also gives precision so the resilient seat on the disc stops all media from flowing.

Seat Options

ELASTOMER TYPE	CODE	APPLICATIONS
EPDM	E	Air, water, ethyl alcohol, sugar industry, ammonium weak acids, hot water (-20°F + 230°F)
HEAT EPDM	E1	Hot water steam (Refer to EPDM) (-22° + 290°F)
NEOPRENE	C	Alkali acids, acids base (-40° +200°F)
NBR / BUNA-N®	N	Gasoline, diesel oil, vegetable oils, machine oils, natural gas sea water, synthetic thinner (-20° +195°F)
VITON® / FKM	V	Acid, detergent, water, steam, vegetable oils (-20°F +390°F)
HYPALON	H	Petroleum, hydroxides, alcohol, alkali (-20° + 275°F)
SILICONE	S	Vegetable oils, water, steam (-20° + 345°F)
Natural Rubber / NR	R	Abrasion resistance, cement, sand, lime stone etc.b(-10° + 185°F)

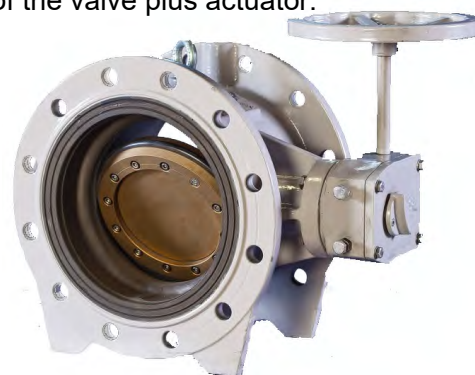
Note: These temperatures are displayed only for the valve seat.

Please also check the temperature for the other valve parts of the valve plus actuator.

Body Options

The Av-Tek Double Eccentric Butterfly Valves body is available in many options above the standard Ductile Iron option. These options include:

- 316 Stainless Steel
- 2205 Duplex Stainless Steel
- 2207 Super Duplex Stainless Steel
- Aluminum Bronze



*Valve shown with DI Body, ALBZ Disc and ebonite lining.

For applications where sea life, such as Quagga or Zebra Mussels are present in the water, we recommend using Ebonite hard rubber lining. This is an option for all DEX valves, sizes 6" - 108".

Disc Options

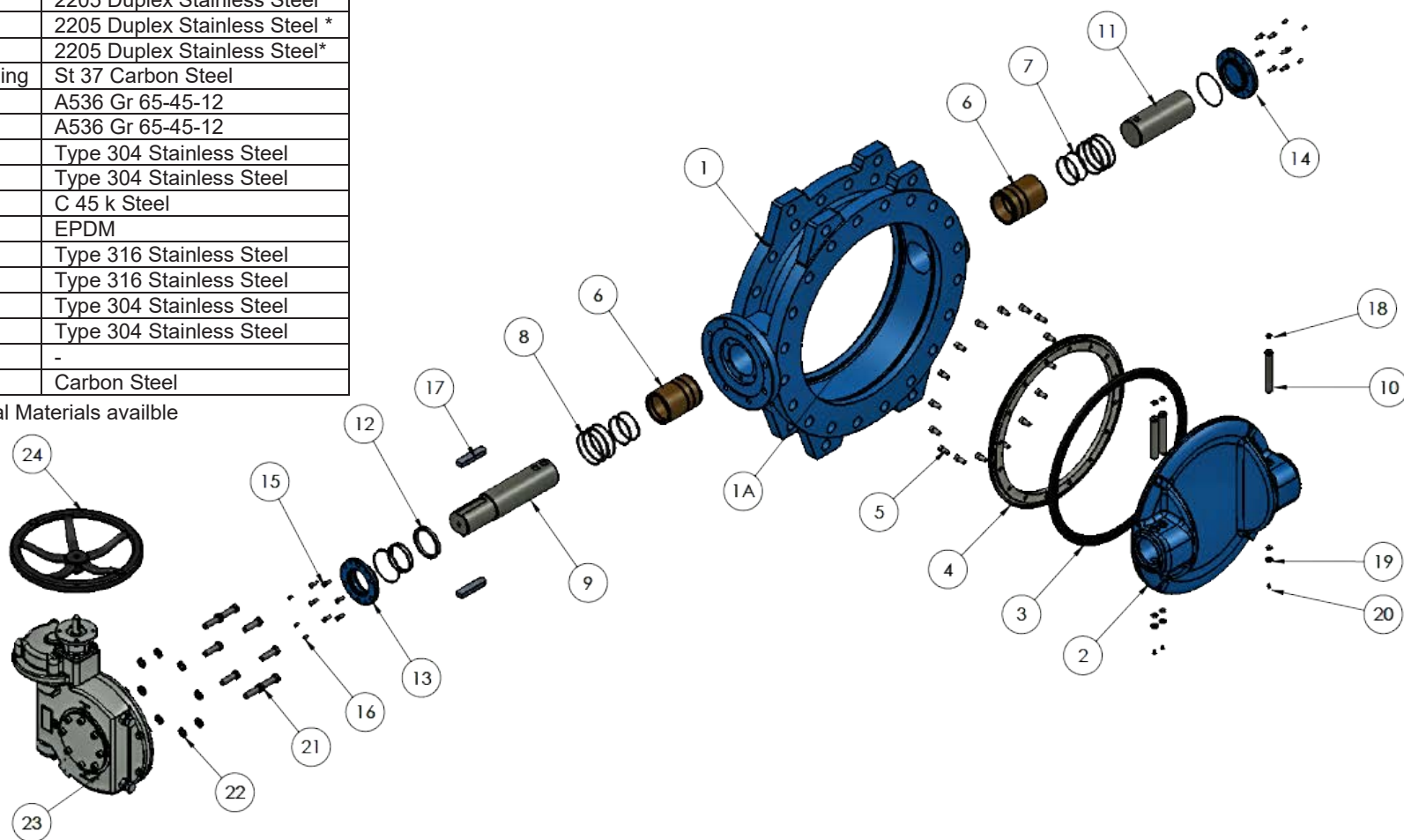
The Av-Tek Double Eccentric Butterfly valves disc is available in many options above the standard Ductile Iron option. These options include:

- 316 Stainless Steel
- 2205 Duplex Stainless Steel
- 2207 Super Duplex Stainless Steel
- Aluminum Bronze
- Ebonite encapsulated

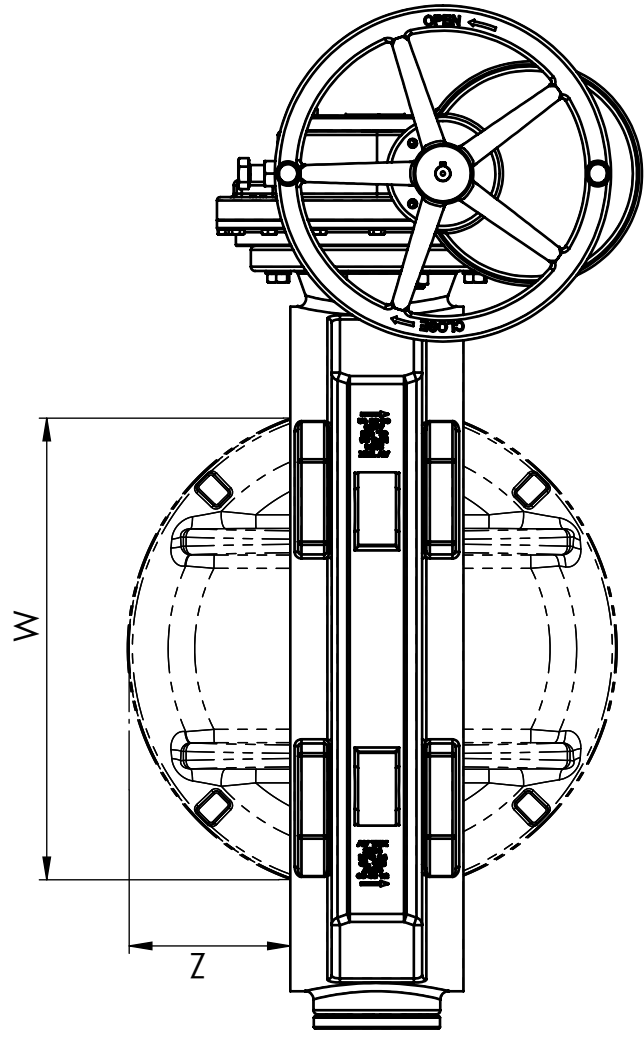
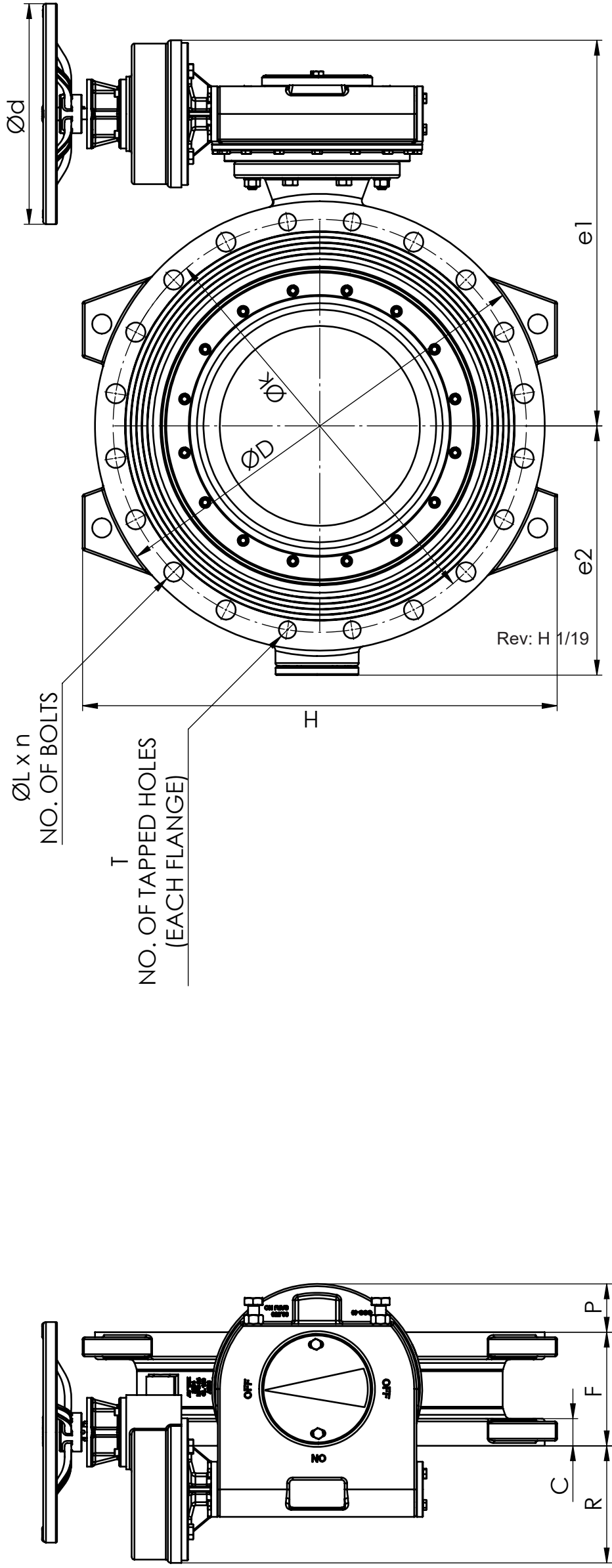
DEX Butterfly Valve Parts and Materials Specifications

P.No	Part Name	Material
1	Body	A536 Gr 65-45-12*
1A	Body Seat	Type 316L NiCr Stainless Steel Overlay with Welding
2	Disc	A536 GR 65-45-12*
3	Disc Seat	EPDM*
4	Retaining Ring	Type 316 Stainless Steel*
5	Bolt	Type 316 Stainless Steel*
6	Front – Back Bushing	Bronze C90800
7	O-ring	EPDM
8	O-ring	EPDM
9	Front Shaft	2205 Duplex Stainless Steel*
10	Pin	2205 Duplex Stainless Steel *
11	Back Shaft	2205 Duplex Stainless Steel*
12	Front Adjustment Bushing	St 37 Carbon Steel
13	Front Cover	A536 Gr 65-45-12
14	Back Cover	A536 Gr 65-45-12
15	Bolt	Type 304 Stainless Steel
16	Setscrew	Type 304 Stainless Steel
17	Key	C 45 k Steel
18	O-ring	EPDM
19	Washer	Type 316 Stainless Steel
20	Bolt	Type 316 Stainless Steel
21	Bolt	Type 304 Stainless Steel
22	Washer	Type 304 Stainless Steel
23	Gear Box	-
24	Hand Wheel	Carbon Steel

* Additional Materials available



2504 DEX BUTTERFLY VALVE DIMENSIONAL DRAWING



ANSI Class 150 Rated @ 250 psi																		
Size	Flanges Conform to ASME 16.1 Table 4									e1	H	P	R	Ød	F	Z	W	Weight
	ØD	C	ØL	Øk	n	T QTY	T TAP	T DEPTH										
6	11	1	0.9	9.5	8				7.09	10.43	11.8	1	-	9.05	5	0.39	2.95	99
8	13.58	1.13	0.9	11.77	8				8.66	13.58	14.96	2.17	-	9	6	0.79	4.72	155
10	15.94	1.19	1	14.25	12				9.45	14.37	17.32	-	1.77	9	8	0.98	5.51	210
12	19	1.25	1	17	12				11.02	16.93	20.87	-	1.77	9	8	1.77	7.87	320
14	21.06	1.28	1.14	18.74	12				11.81	18.11	22.83	2.75	0.78	13.18	8	2.76	10.63	429
16	23.43	1.44	1.14	21.26	12	4	1	0.87	13.19	19.49	25.59	2.75	0.78	13.18	8	3.94	13.39	507
18	25	1.56	1.26	22.76	12	4	1 1/8	1.1	15.74	22.83	27.17	1.97	5.9	15.75	8	4.72	15.16	794
20	27.56	1.69	1.26	25	16	4	1 1/8	1.18	16.73	24.02	29.53	1.97	5.9	15.75	8	5.71	17.13	860
24	32.08	1.87	1.38	29.49	16	4	1.25	1.3	18.11	27.95	34.25	3.94	8.66	15.75	8	7.68	21.65	937
30	38.78	2.13	1.38	35.98	24	4	1.25	1.57	23.43	37.4	39.76	3.35	11.22	23.62	12	8.27	25.39	2194
36	46.06	2.37	1.65	42.76	24	8	1.5	1.57	26.77	41.73	48.82	3.35	11.22	23.62	12	11.02	31.5	2822
42	52.95	2.63	1.65	49.49	28	8	1.5	1.57	30.9	44.69	55.51	6.1	12.2	23.62	12	14.37	38.98	3836
48	59.45	2.75	1.65	55.98	36	8	1.5	1.57	35.43	48.62	61.42	4.53	10.63	23.62	15	15.75	43.31	4960

* Note that dimensions might be differ on gearboxes depending on gear provided

Product Specification - Av-Tek® - DEX Butterfly Valve

DESIGN

- A. The butterfly valve shall be of a double offset design whereby the centerline of the disc is horizontally and vertically offset from the body seat and where the elastomeric seat release compression only after a few degrees of the opening.
- B. Butterfly valves shall be rated for working pressures of no less than 250 PSI and shall provide zero leakage at full rated pressure on both sides of the disc.
- C. Valve shall conform to lay length standard dimensions set forth in AWWA C504 Short Body and shall be supplied with integral ANSI B16.1 Class 125 flanges.
- D. The valve size, pressure rating, year of manufacture, and manufacturer's name and model shall be cast onto the valve body or be on a permanently attached nameplate.
- E. Shaft Seals: The shaft seals shall ensure the upper and lower valve shafts remain non-wetted and prevent pressurized system water from entering the uncoated valve disc hub and valve body shaft bore. The outer shaft seals shall consist of eight O-rings in a removable bronze cartridge bolted to the valve body and not retained by the valve actuator. Neither pull down packing glands nor braided compression V-type packing are allowed. Back shaft shall be positively fixed to the disc, eliminating the risk of blow out.
- 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., disc heat No., stem heat No. seat material, and seat heat No.
- G. Valve shall be tested and certified complaint according to the latest standards of NSF 61 & 372.

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 in each flange to assist in the installation and removal of valve from the pipeline.
- B. Disc: The disc shall be ductile iron, ASTM A536 65-45-12 or ASTM A536 60-40-18. The disc shall be secured to the valve shaft using mechanically retained stainless steel shaft locking bolts. Tangential pins that penetrate the front of disc shall not be allowed.
- C. Shaft: Both the upper and lower valve shafts shall be made of high strength ASTM 2205 Duplex grade Stainless Steel.
- D. Elastomeric Seal: Valve seats shall be EPDM mounted on the valve disc with a AISI 316 stainless steel seat retainer. The seat retainer shall be counter bored and drilled. Seat retaining fasteners shall be AISI 316 Stainless Steel and shall not extrude above the seat retaining ring. Seat shall be field replaceable and adjustable with common tools.
- E. Metallic Seat: The metallic body seat shall be 316L NiCr Stainless Steel and applied to the valve body by means of a machined weld overlay process eliminating the possibility of leakage through the body/seat joint.
- F. Shaft Bearings: Valve shaft bearings shall be corrosion resistant, self-lubricating sleeve type and 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 14 mil DFT fusion bonded 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 disc 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 valve performance independently tested and verified in the USA by an accredited third party flow testing facility.
- C. Manufacture must have 5 years minimum experience in the production of Double Eccentric Butterfly Valves.
- D. Valve shall be the DEX Butterfly Valve, AV-Tek™ Valve USA

Av-Tek® Actuation Options



Manual *Worm Gear Actuators*

- Self-locking
- Meet requirements of AWWA C550.
 - 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
- Hydraulic 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.

Av-Tek® Inc. Valve

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