DeZURIK
APCO | HILTON

BULLETIN
JUNE 2020

46.00-1A

DeZURIK BOS-US 2-20" (50-500MM) UNINTERRUPTED SEAT RESILIENT SEATED BUTTERFLY VALVES

- Design
- Operation
- Performance

Design and Construction

BOS-US Valves feature a one-piece body; one-piece shaft and high-performance resilient seats made of EPDM or NBR. The uninterrupted seat design provides bi-directional shutoff to the full rating of the valve. They are available as lugged or wafer bodies, with nickel plated ductile iron, 316 stainless steel or aluminum bronze discs.

Wide Range of Applications

BOS-US Resilient Seated Butterfly Valves are designed to handle a wide variety of liquids and gasses. The uninterrupted seat BOS Valve is desirable for applications where extended service applications are necessary such as high cycles, high pressures and high temperatures. BOS-US valves are excellent choices for continuous modulating control, dead-end service to 250 psi, and vacuum service to 24" Hg.

Pressure Ratings

- 250 psi (1724 kPa) for valves with Ductile Iron or Aluminum Bronze discs
- 200 psi (1380 kPa) for valves with 316 Stainless Steel discs

Temperature Ratings

- NBR, Acrylonitrile-Butadiene 10 to 180°F (-12 to 82°C)
- EPDM, Terpolymer of Ethylene Propylene & a Diene -30 to 250°F (-35 to 121°C)

Uninterrupted Seat Design

By using an off-center disc, BOS Valves have an uninterrupted seat design for improved seating performance, resulting in longer seat life. The BOS-US uninterrupted seat design assures dead-tight shutoff in isolation and dead-end service without requiring downstream flanges. BOS-US Valves have integral flange seals, eliminating the need for flange gaskets.

Superior Bonded Seats

The BOS-US seat bonding process provides a long-lasting, maintenance free seal. Seats are bonded to the body, holding the seat firmly in place and eliminating premature seat failure that can occur due to flexing and fatigue. The bonded seat also improves performance when the line maintains a vacuum, or when handling viscous liquids – circumstances that tend to dislodge seats that are not solidly retained in the valve body.

Bearings for Reliable Operation

Three heavy-duty bearings ensure smooth, reliable valve operation and promote a longer cycle life than valve designs without bearings. They are fit into the valve body to support shaft loads and eliminate binding. Shaft seals protect bearings from internal and external corrosion.

Shaft Seals for Maximum Reliability

The BOS-US shaft sealing technology offers maximum reliability. It uses four separate sealing components for continuous protection from leakage. Disc hubs form the primary seal around the shaft. Two additional seals are molded into the seat to ensure reliability.

Blowout Proof Shaft

BOS-US Valves feature a rugged, splined disc-to-shaft connection. This provides high cycle life and great control performance. Shaft diameters meet AWWA 504 Class 75B standards. For user safety, each valve has a blowout proof shaft per API 609 standard.

Actuator Mounting Flange

The actuator mounting flange is per ISO 5211 and accommodates all types of actuators – including levers, gears, pneumatic cylinders and electric motors.

Testing and Standards

Every BOS-US Valve is tested for leakage, shell pressure and to be operational with actuator.

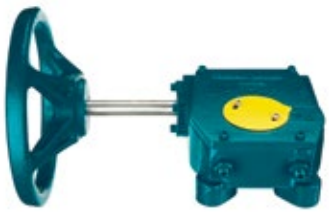
NSF-61/NSF-372 Certified

BOS-US valves with EPDM or NBR Seats are certified per NSF/ANSI-61 and NSF/ANSI-372 requirements for use in drinking water applications.

Compatible with Standard Actuators

The actuator mounting flange on BOS valves is compatible with the ISO 5211 bolt pattern which increases flexibility and reduces inventory. Actuator options include lever, handwheel, chainwheel, PowerRac®, and G-Series Cylinder.

MG-Series Manual Gear



Manual Gear actuators provide high torque for robust applications and a long service life without maintenance. Handwheel or Chainwheel input operators are available.

PowerRac® Cylinder Actuators

Double-acting and spring-return PowerRac® actuators feature a proven rack-and-pinion design ideally suited for high cycle applications. PowerRac® acuators provide high output torque for on-off applications and consistently high output torque throughout the full stroke for accurate control. Its durability is backed up with a Lifetime Warranty.

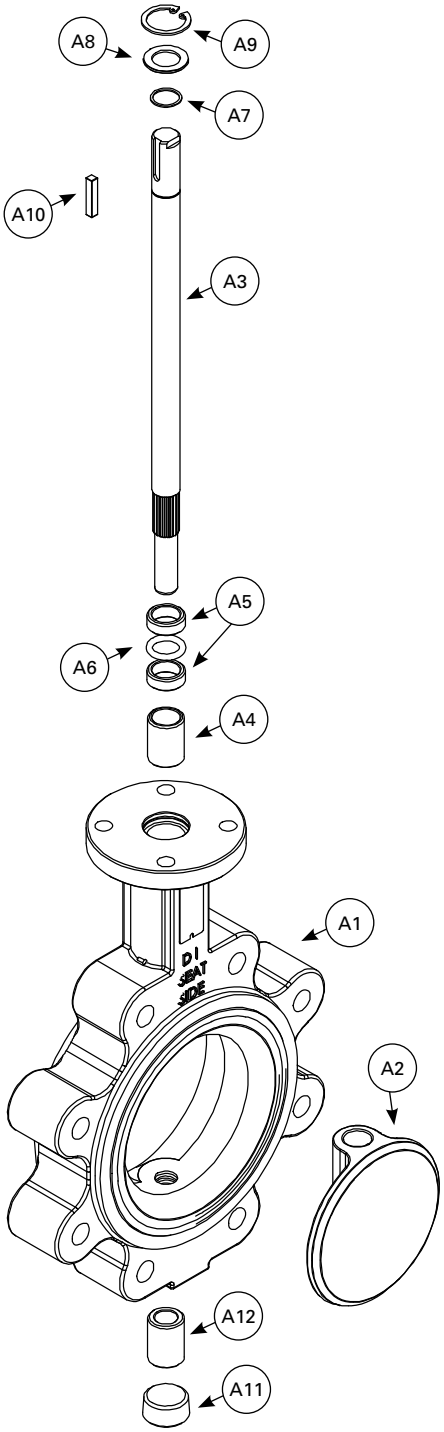
G-Series Cylinder Actuators

G-Series actuators feature a rack-and-gear design for larger size rotary valves where constant high torque capability throughout the stroke is required. They are available as double-acting with either pneumatic or hydraulic supply.

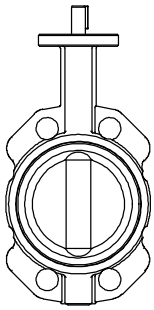
Accessories

A full line of accessories is also available, including positioners, solenoids, switches, speed controls, floorstands and valves boxes.

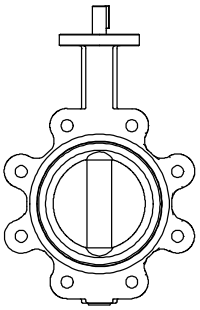
Materials of Construction



Wafer and Lugged Design



Wafer Body



Lugged Body

Item	Description	Material
A1	Body/Seat	Ductile Iron, ASTM A536, 65-45-12/NBR – Acrylonitrile-Butadiene
		Ductile Iron, ASTM A536, 65-45-12/EPDM – Terpolymer of Ethylene Propylene and a Diene
A2	Disc	Ductile Iron, ASTM A536, 65-45-12, Nickel Plated
		Aluminum Bronze, ASTM B148, C954
		316 Stainless Steel, ASTM A743, CF8M
A3	Shaft	316 Stainless Steel, ASTM A276
		410 Stainless Steel, ASTM A276
A4	Middle Bearing	Aluminum Bronze, ASTM B148, C954
A5	Upper Bearing (2)	Aluminum Bronze, ASTM B148, C954
A6	O-Ring	NBR – Acrylonitrile-Butadiene
		EPDM – Terpolymer of Ethylene Propylene and a Diene
A7	Retainer Ring	302 Stainless Steel, ASTM A276
A8	Washer	416 Stainless Steel, ASTM A582
A9	Retainer Ring	Steel, ASTM A29M
A10	Key	Steel, AISI 1020
A11	Pipe Plug	Cast Iron, Zinc Plated
A12	Lower Bearing	Aluminum Bronze, ASTM B148, C954

Valve Selection

Shutoff Capabilities

Seat-Type	Shutoff
All Seat Materials	Bubble Tight Shutoff*

* Full rated bi-directional shutoff; lugged valves provide dead end service to full valve rating.

Pressure Ratings

Disc/Shaft Material	Pressure Rating
Ductile Iron disc with 410 Stainless Steel Shaft	250 psi (1725 kPa)
Stainless Steel disc with 316 Stainless Steel Shaft	200 psi (1380 kPa)
Aluminum Bronze disc with 410 Stainless Steel Shaft	250 psi (1725 kPa)

Temperature Ratings

Seat Material	Temperature Rating
NBR = Acrylonitrile-Butadiene	10 to 180°F (-12 to 82°C)
EPDM = Terpolymer of Ethylene Propylene & a Diene	-30 to 250°F (-35 to 121°C)

Pipeline Velocity Range

All 2-20" valves	Up to 20 feet/second (6 meters/second)

Contact DeZURIK for pipeline velocities greater than 20 feet/second

Applicable Standards

DeZURIK BOS-US Resilient Seated Butterfly Valves are designed and/or tested to meet the following standards:	
ASME B16.1	Conforms to Class 125 flange drilling.
ASME B16.5	Conforms to Class 150 flange drilling.
ASME B16.42	Conforms to Class 150 flange drilling, body wall thickness and pressure-temperature ratings.
ASME B16.104	Exceeds Class VI shutoff requirements.
API 609	Butterfly Valves Category A.
AWWA C504	Diameter of stainless steel shaft meets AWWA Class 75B standard. Body wall thickness exceeds the AWWA Class 150B standard for butterfly valve.
MSS SP-25	Markings and identification conform to the requirements.
MSS SP-67	Butterfly Valves
ISO 5211	Actuator Mounting
NSF/ANSI-61 and NSF/ANSI-372	Certified for use in drinking water applications
International	Metric flange drilling (W110 and L110) = ISO 7005-2, DIN or BS4504 PN10 Drilling Flange Drilling Metric flange drilling (W116 and L116) = ISO 7005-2, DIN or BS4504 PN16 Drilling

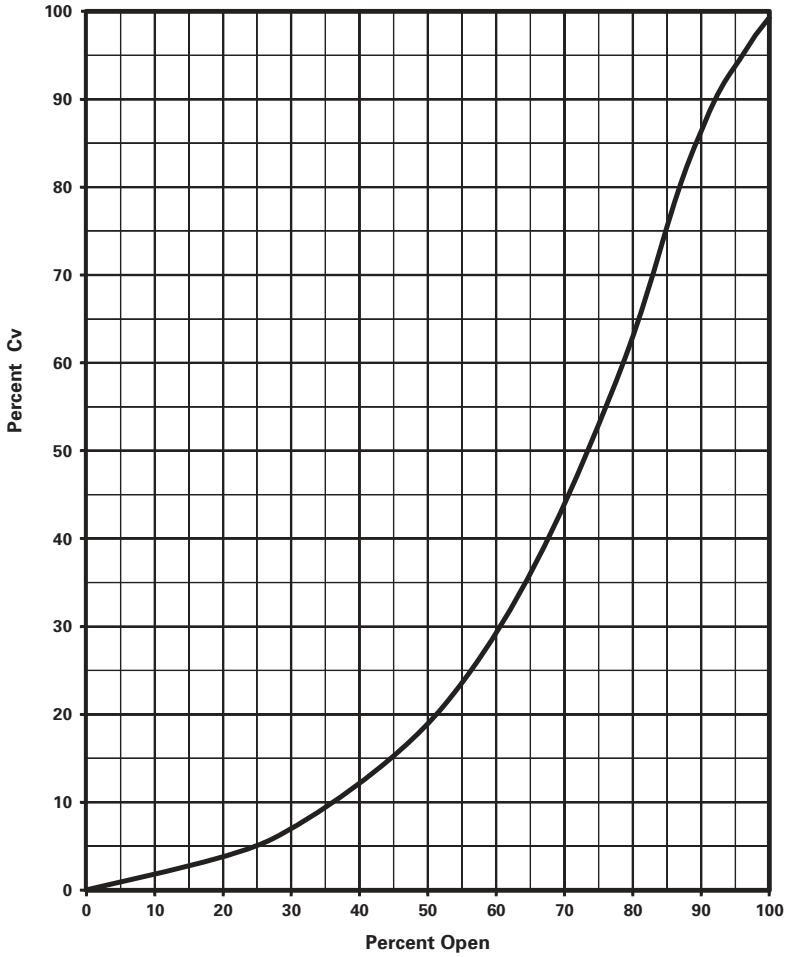
Flow Parameters

Valve Size	Cv* / Kv* 100% Open	K Factor**
2" / 50mm	101 / 87	0.81
2.5" / 65mm	163 / 141	0.77
3" / 80mm	287 / 248	0.72
4" / 100mm	507 / 439	0.68
5" / 125mm	840 / 727	0.65
6" / 150mm	1166 / 1009	0.63
8" / 200mm	2620 / 2266	0.59
10" / 250mm	4003 / 3463	0.44
12" / 300mm	7448 / 6443	0.42
14" / 350mm	8330 / 7205	0.40
16" / 400mm	11811 / 10217	0.28
18" / 450mm	14488 / 12532	0.26
20" / 500mm	18974 / 16413	0.25

*Cv = Flow in GPM of water at 1 psi pressure drop.
Kv = Flow in m3/hr. of water at 100 kPa pressure drop.
**K = The resistance coefficient of the valve. The constant (K) can be used to determine the equivalent length of pipe.

$L = \frac{KxD}{f}$ Where L = Equivalent length of pipe in feet
K = Resistance coefficient
D = Pipe diameter in feet
f = Friction factor, related to type of pipe

Flow Curve



Weights

Valve Size	Basic Valve	
	Wafer	Lugged
2" / 50mm	6 / 3	8 / 4
2.5" / 65mm	8 / 4	9 / 5
3" / 80mm	10 / 5	12 / 6
4" / 100mm	16 / 8	20 / 10
5" / 125mm	20 / 10	25 / 12
6" / 150mm	28 / 13	32 / 15
8" / 200mm	43 / 20	49 / 23
10" / 250mm	62 / 29	76 / 35
12" / 300mm	102 / 47	124 / 57
14" / 350mm	143 / 65	161 / 74
16" / 400mm	218 / 99	264 / 120
18" / 450mm	292 / 133	331 / 151
20" / 500mm	369 / 168	505 / 230

Valve Size	Lever Weight
2-6" / 50-150mm	2 / 1

Pounds
Kilograms

Ordering

To order, simply complete the valve order code from information shown.

Valve Style
Give valve style code as follows:

BOS	=	Resilient Seated Butterfly Valve

Valve Size
Give valve size code as follows:

2	=	2"	50mm	10	=	10"	250mm
2.5	=	2.5"	65mm	12	=	12"	300mm
3	=	3"	80mm	14	=	14"	350mm
4	=	4"	100mm	16	=	16"	400mm
5	=	5"	125mm	18	=	18"	450mm
6	=	6"	150mm	20	=	20"	500mm
8	=	8"	200mm				

Body Style
Give body style code as follows:

US	=	Uninterrupted Seat

End Connection
Give end connection code as follows:

W1	=	ASME Class 125/150 Wafer Drilling
L1	=	ASME Class 125/150 Lugged Drilling

On Application

W110	=	ISO 7005-2, DIN or BS4504 PN10 Wafer Drilling
W116	=	ISO 7005-2, DIN or BS4504 PN16 Wafer Drilling
L110	=	ISO 7005-2, DIN or BS4504 PN10 Lugged Drilling
L116	=	ISO 7005-2, DIN or BS4504 PN16 Lugged Drilling

Body Material
Give body material code as follows:

DI	=	Ductile Iron

Seat, Shaft Seal Material Combination
Give seat, shaft seal material code as follows:

NBR,NBR	=	Acrylonitrile-Butadiene 10° to 180°F (-12° to 82°C)
EPDM,EPDM	=	Terpolymer of Ethylene Propylene & a Diene -30° to 250°F (-35° to 121°C)

Trim Combination
Give disc-shaft material code as follows:

DI-S8	=	Ductile Iron Nickle Plated Disc - 410 Stainless Steel Shaft
S2-S2	=	316 Stainless Steel Disc - 316 Stainless Steel Shaft
ALB-S8	=	Aluminum Bronze Disc - 410 Stainless Steel Shaft

Ordering Example:

BOS,6,US,W1,DI,NBR,NBR,DI-S8*actuator

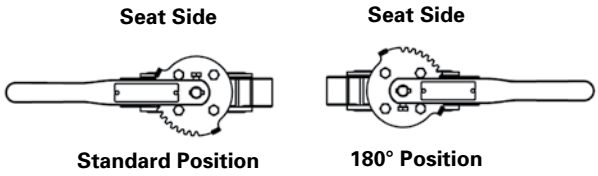
Manual Actuators

10-Position Lever Actuator

Lever Actuators are available on 2-6" valve sizes. The 10-position dial provides positive latching in open, closed and eight intermediate positions. To order, add lever code to basic valve order code. Levers may be mounted at standard or 180° mounting positions.

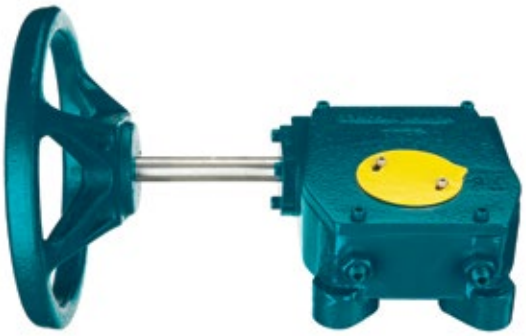
Valve Size	Order Code	Maximum Pressure Differential
		psi/kPa
2-6" 50-150mm	LT	250 1725

Ordering Example:
BOS,6,W1,DI,NBR,NBR,DI-S8*LT



MG-Series Manual Gear Actuators

MG-Series Manual Gear Actuators provide high torque for robust applications and a long service life without maintenance. MG-Series are available on 2-20" valve sizes with Handwheel or Chainwheel input. Refer to bulletins 72.00-1 and 72.00-2 for technical specifications and sizing.



Cylinder Actuators

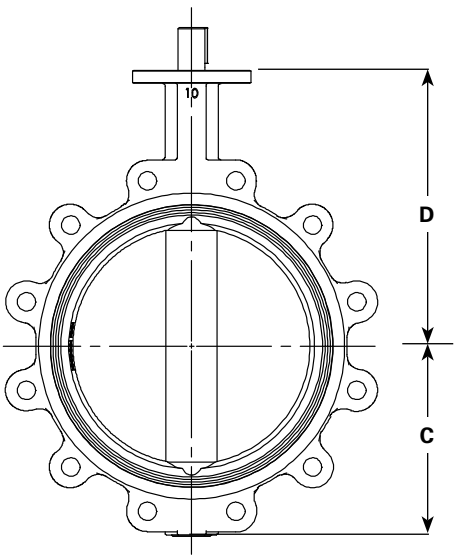
G-Series Cylinder Actuators

G-Series are constructed for dependable and lasting performance. G-Series cylinder actuators feature a rack and gear design for larger size valve where constant high torque capability throughout the stroke is required. Refer to bulletin 73.00-1 for technical specifications and sizing.

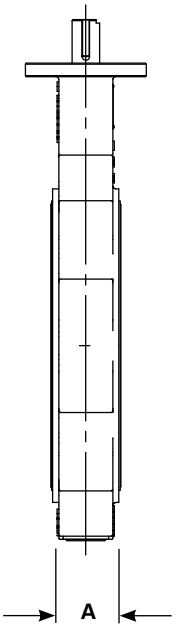
PowerRac® Cylinder Actuators

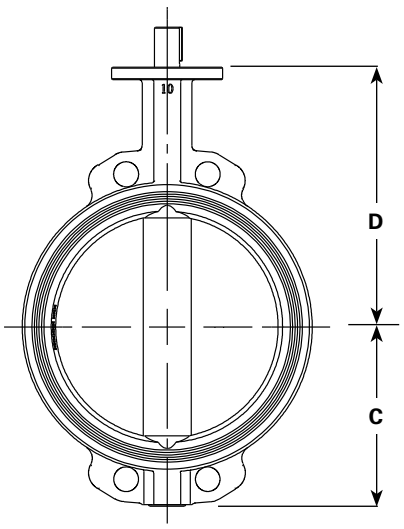
Double-acting and spring-return PowerRac® actuators feature a proven rack-and-pinion design ideally suited for high cycle applications. PowerRac® actuators provide high output torque for on-off applications and consistently high output torque throughout the full stroke for accurate control. Its durability is backed by with a Lifetime Warranty. Refer to bulletin 74.00-1, 74.00-2 and 74.00-3 for technical specifications and sizing.

Dimensions



Lugged





Wafer

Basic Valve

Valve Size	A	C	D
2"	1.69	3.31	5.79
50mm	43	84	147
2.5"	1.81	3.31	6.10
65mm	46	84	155
3"	1.81	3.54	6.50
80mm	46	90	165
4"	2.06	4.47	7.52
100mm	52	114	191
5"	2.19	4.82	8.11
125mm	56	122	206
6"	2.19	5.51	8.62
150mm	56	140	219
8"	2.38	6.75	10.24
200mm	60	171	260
10"	2.69	7.93	11.50
250mm	68	201	292
12"	3.06	9.06	13.35
300mm	78	230	339
14"	3.06	10.14	14.50
350mm	78	258	368
16"	4.00	11.81	15.83
400mm	102	300	402
18"	4.50	12.93	16.62
450mm	114	328	422
20"	5.00	14.06	18.90
500mm	127	357	480

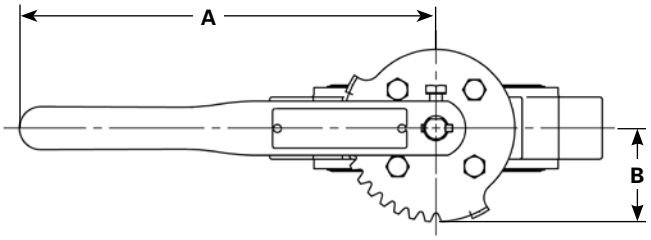
Inch
Millimeter

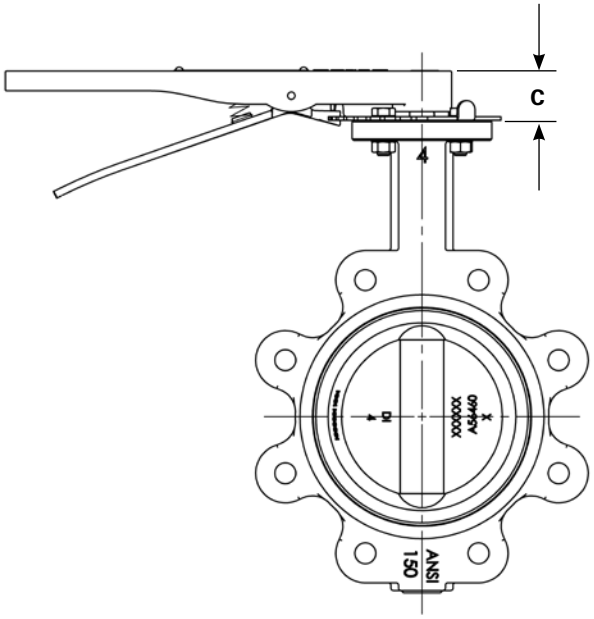
Dimensions

Lever

Valve Size	Dimensions		
	A	B	C
2-6"	10.53	2.37	1.25
50-150mm	267	60	32

Inch
Millimeter





Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:
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