Request for Substitution

Date: March 20th, 2026

Chief Procurement Officer
Department of Water
County of Kauaʻi
4398 Pua Loke Street
Līhuʻe, HI 96766

RE: Request for Substitution
IFB No.: _____
Project: WKK-15, Construct Kilauea 466' Tank, 1.0 MG

Dear Sir:

In accordance with the requirements of the above mentioned Invitation For Bids for the above named Project, I/we hereby submit for your review and approval material substitution(s) for the item(s) listed below.

EXAMPLE:

ITEM	MANUFACTURER AND CATALOG NUMBER SPECIFIED	SUBSTITUTE MANUFACTURER AND CATALOG NUMBER	VARIATION FROM THE SPECIFICATIONS
1" Combination Air/Vacuum Relief Valve (qty x1)	Val-Matic 201C.2	DeZurik ASU APCO 300.00-1	Manufacturer substation, functionally equal
4" Gate Valves (qty x20)	Mueller 2360 American AVK Series 25 American Flow Control Series 500 Clow Series 6100 Kennedy Valve	DeZurik – KGC-ES 35.00-1C Red Valve – Seris DX	Different AWWA standard (C520 vs C509); different valve type; not typical for buried distribution; different sealing mechanism and long-term shutoff performance
12" Gate Valves (qty x4)	Mueller 2360	DeZurik – KGC-ES 35.00-1C Red Valve – Seris DX	Same as above; additionally may not meet installation expectations for valve boxes and buried service

12” Butterfly Valve (qty x1)	None	DeZurik BAW AWWA	No deviation
12” Flap Valve (Overflow) (qty x1)	None	Tideflex TF-1 Flanged Duckbill Valve	Different valve type (elastomeric duckbill vs hinged flap); no mechanical hinge; different operation method

I am informed that this Request for Substitution must be received by the Department no later than 4:30 p.m. Hawaii Standard Time on **Friday, March 20, 2026**.

I further certify that this request of the above listed item(s) has no other variant features.

VERY TRULY YOURS,

James Medeiros
SIGNATURE

James Medeiros
PRINT OR TYPE NAME & TITLE OF SIGNER

Hawaii Engineering Services
NAME OF FIRM

1082 Makepono Street
ADDRESS

Honolulu, HI 96819
CITY, STATE & ZIP CODE

(808) 970-9446
TELEPHONE NO.

HAWAII ENGINEERING SERVICES

1082 Makepono St, Honolulu, HI 96819 Ph: (808) 841-0033 Fax: (808) 841-2534 info@hiengineering.com

March 19, 2026

To: Kiewit Infractructure West Co.
10704 Shoemaker Ave.
Santa Fe Springs, CA 90670

Re: WKK-15, Construct Kilauea 466' Tank, 1.0 MG
Kilauea, HI 96754
TMK: 5-1-005: 131
Job No. 02-06

DEVIATIONS LIST

- 104.06 Air Relief Valves

"Air relief valves shall conform to AWWA C512 and be Val-Matic Model 201C.2 or approved equal".
HES does not offer Val-Matic, but is prepared to offer APCO as a substitute, see brochure below.

"Provide complete installation including piping, fittings, supports, and protective hood"
HES will not supply any piping, supports or hood. Only valves will be provided.

"Air valve shall be protected against debris entry."
HES will not be proving a hood or screen for debris protection.

- 205 Valves & Appurtenances

"Gate valves shall confirm to AWWA C509".
HES will need to confirm with manufacturers to verify AWWA C509 and NSF 61 compliance for the model that is submitted.

"Valve bolts shall be silicon bronze or stainless steel and coated with anti-seize"
Bolting dependent on manufacturer, HES to confirm with vendors. Custom bolts may be required.

"Valves shall open by turning counterclockwise (left open)."
DeZurik offers many options, opening direction to be confirmed via submittal process.

"All valves shall have manufacturer's name, pressure rating, and year cast on body."
HES to confirm nameplate data through submittal process.

"Stuffing boxes shall have multiple O-rings (minimum three)."
To be confirmed through submittal process.

"Valve design shall include thrust bearings for torque reduction"
To be confirmed through submittal process.

"No metal-to-metal wedging or seating surfaces."
To be confirmed through submittal process.

"Provide operator torque data and certification"
This information will not be providing at the quoting / bid phase. This is a submittal requirement and will be deferred until a PO is in place.

"Valves shall be hydrostatically tested at factory"
Specific testing requirements likely required. HES to confirm test parameters during submittal process.

"Interior and exterior coatings shall meet AWWA C550 (fusion epoxy)"
HES to confirm during submittal process.

- <u>302.16 Gate and Butterfly Valves</u>

"All buried valves shall be wrapped with polyethylene encasement"
HES does not supply wrap material. Installation responsibility by others.

"Provide proper size ball corporation stops on both sides of valve."
HES is not supplying ball corp stops.

"Valves shall be anchored as required"
HES is not supplying anchorage hardware.

"Valve boxes shall be installed over all buried valves."
HES will not be supplying valve boxes for the valves provided.

"Valve operating nut shall be 2-inch square."
Different manufacturers offer multiple nut sizes, to be confirmed though submittal process.

"Extension stems shall be provided where required for depth."
Final stem lengths to be confirmed though submittal process.

"Valves deeper than 4 feet shall be installed in maholes"
HES will not be providing manhole assemblies.

"Valve ends shall match pipe system (MJ or flange as shown)"

End connections at locations to be confirmed during submittal process.

"All valves shall be set plumb and true with box centered"
By others.

- 302.17 Air Relief Valves

"Air relief valves shall be Val-Matic 201C.2 with associated piping and appurtenances."
HES will provide APCO and will not provide piping and appurtenances.

"Air valve shall include isolation valve below ARV"
HES can provide the ARV, but more info needed on isolation valves to confirm if in HES scope.

"Air valve piping shall include blow-off or drain connection"
HES will not be providing a drain/blowoff assembly.

- 302.17 ARV Appurtenances

"Provide copper piping, fittings, concrete base, and screened hood."
Not supplied, the entire ARV assembly will not be included.

- 402-8 Approved Materials

"Materials shall be from approved manufacturers or equal." "Use listed manufacturers where specified"
DeZurik, Tideflex, APCO not listed, requires end user approval as equal. Substitution required.

"Valve types shall conform to standard municipal water system components."
Tideflex duckbill is a non-traditional valve type, needs approval.

- Reservoir / Overflow

"Provide flap valve at overflow discharge"
HES can provide a Tideflex duckbill valve, which is different to a mechanical flap. The valve provides a functional equivalent.

1082 Makepono St, Honolulu, HI 96819 Ph: (808) 841-0033 Fax: (808) 841-2534 info@hiengineering.com

Regards,

James Medeiros
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www.hiengineering.com

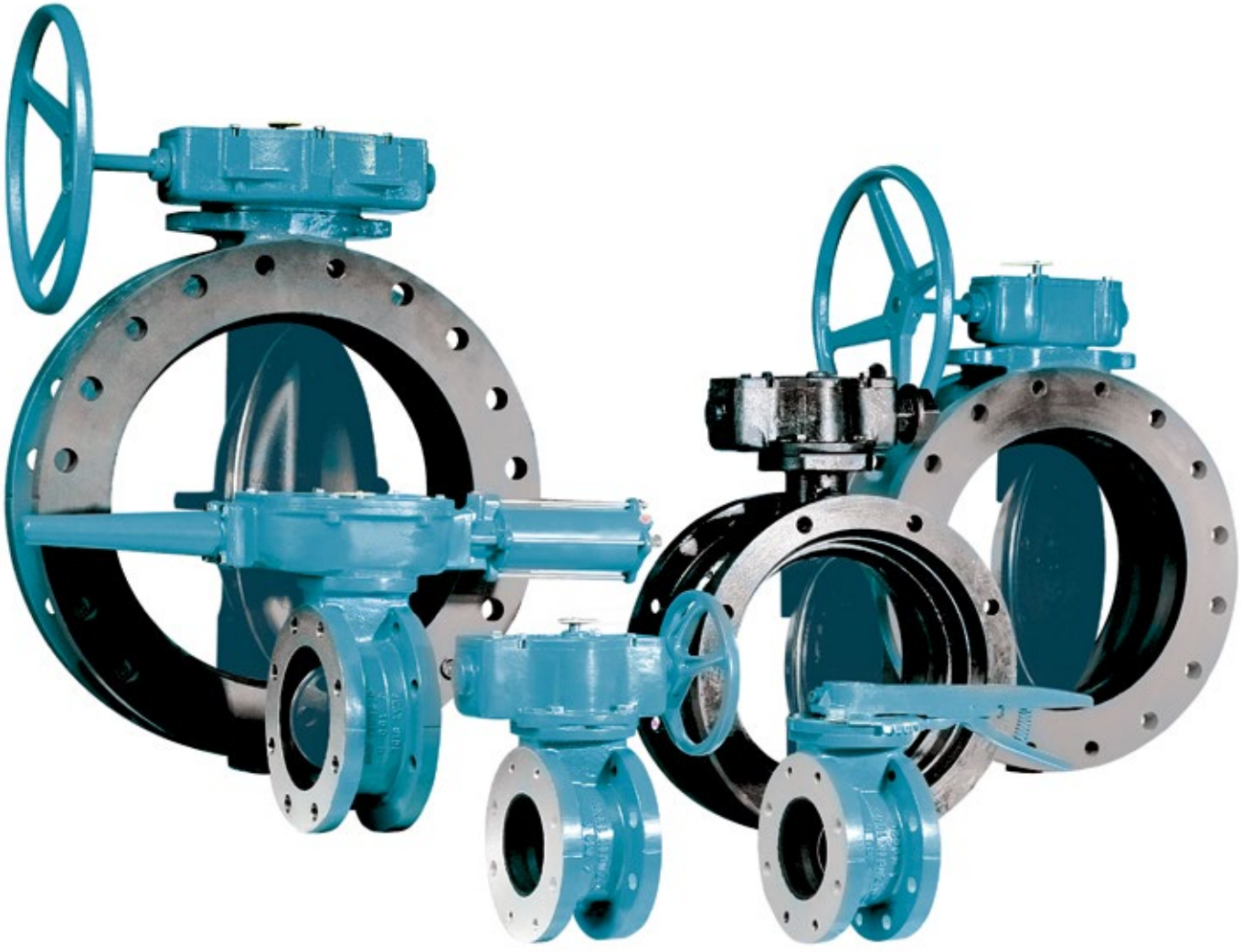
Water and Energy Savings Solutions

DeZURIK

BULLETIN 43.00-1

NOVEMBER 2025

DeZURIK BAW AWWA BUTTERFLY VALVES



Defining the DeZURIK Difference

DeZURIK History

DeZURIK is an innovative global leader for the water and wastewater treatment industries, recognized worldwide for high quality and superior performance.

While DeZURIK provides innovative valves and related equipment for water and wastewater, DeZURIK eagerly responds as new industries develop and existing industries progress. Our knowledgeable engineers are quick to respond with groundbreaking technological advances. They continue to develop a wide range of products focusing on water and wastewater treatment, pulp and paper, chemical and petrochemical, power, mining and other process industries. Some of our products increase accuracy. Others assure durability or reliability. All of our products work to enhance our customer's profitability.

Certification

For our latest certifications, please visit our web site DeZURIK.com.

Leading Edge Design Software

Computer Aided Design systems are used by research and development engineers throughout the product development cycle. DeZURIK utilizes leading edge solid modeling software which allows product designers to view valve parts and assemblies three dimensionally. The 3D models are electronically transferred to Finite Element Analysis software where stress and deflection calculations are performed. This software allows designers to visualize deflection of critical parts under extreme loads. Proper relief and safety factors are included in every valve design to ensure long performance life.

Advanced Machining Capabilities

DeZURIK's solid modeling CAD software allows parts to be directly transferred to CAM modules for machine fixture design and NC programming. AWWA Butterfly Valves are manufactured with the most sophisticated machining centers available. Milling, drilling, boring, and tapping operations are performed on fully automated machine centers that perform sequential, error-free operations. DeZURIK's investment in state-of-the-art machining centers ensures products of consistently high quality.

Rubber & Elastomer Compounding

DeZURIK formulates and handcrafts rubber to control quality on critical components. Over 50 years of pressure/temperature rubber-molding experience assures the AWWA seat design provides long, maintenance-free service. DeZURIK compounds its own resilient seat materials to assure low operating torque and protection from pipeline corrosion and abrasion from sedimentation deposits.

Prototype Design Testing

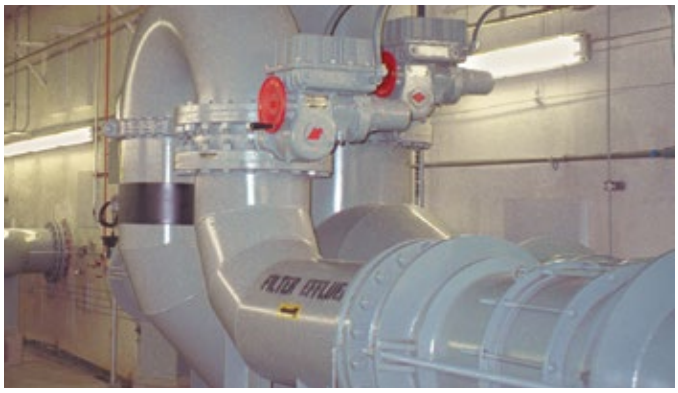
Valve prototypes of sizes up to 36" (900mm) are tested in DeZURIK's flow laboratory. Flow ranges from a few cubic centimeters per minute to 72,000 gallons per minute can be tested. Computer controlled testing automatically sets flow, monitors temperatures, takes sample readings, and analyzes information. Before release, beta test sites are used to gain actual field experience. Valves are tested up to 10,000 cycles per AWWA C504 specifications. Proof of design testing certification is available.

Applications

DeZURIK AWWA Butterfly Valves are designed for applications throughout water and wastewater treatment plants, water distribution systems, power plants, and industrial plants. AWWA Butterfly Valves can be applied in applications demanding high-quality and thoroughly tested valves which offer many years of trouble-free service.

Pump Check Control Systems

Pump check control systems, utilizing AWWA Butterfly Valves, are available in many different models.



Production Testing

Each valve is given a hydrostatic, seat leakage and performance test per AWWA C504 before it is shipped.

3–20" (80–500mm) Design

Features for Years of Trouble-Free Service

Body Styles

Flanged, ASME B16.1 Class 125,
3–20" (80–500mm), Valve Class 150B

Flanged, ASME B16.1 Class 125,
3–20" (80–500mm), Valve Class 250B

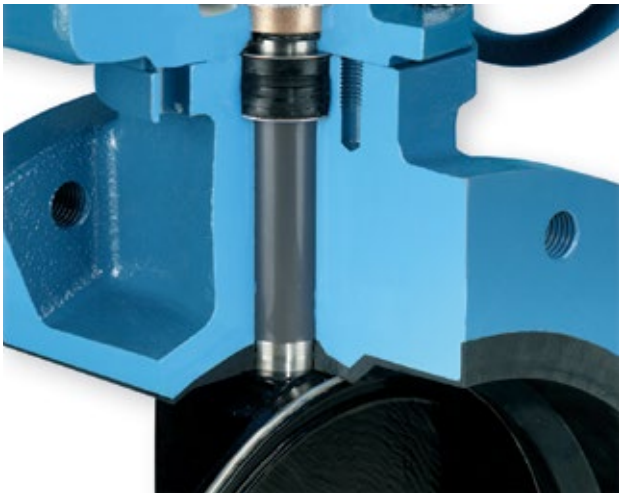
Flanged, ASME B16.1 Class 250,
3–18" (80mm–450mm), Valve Class 250B

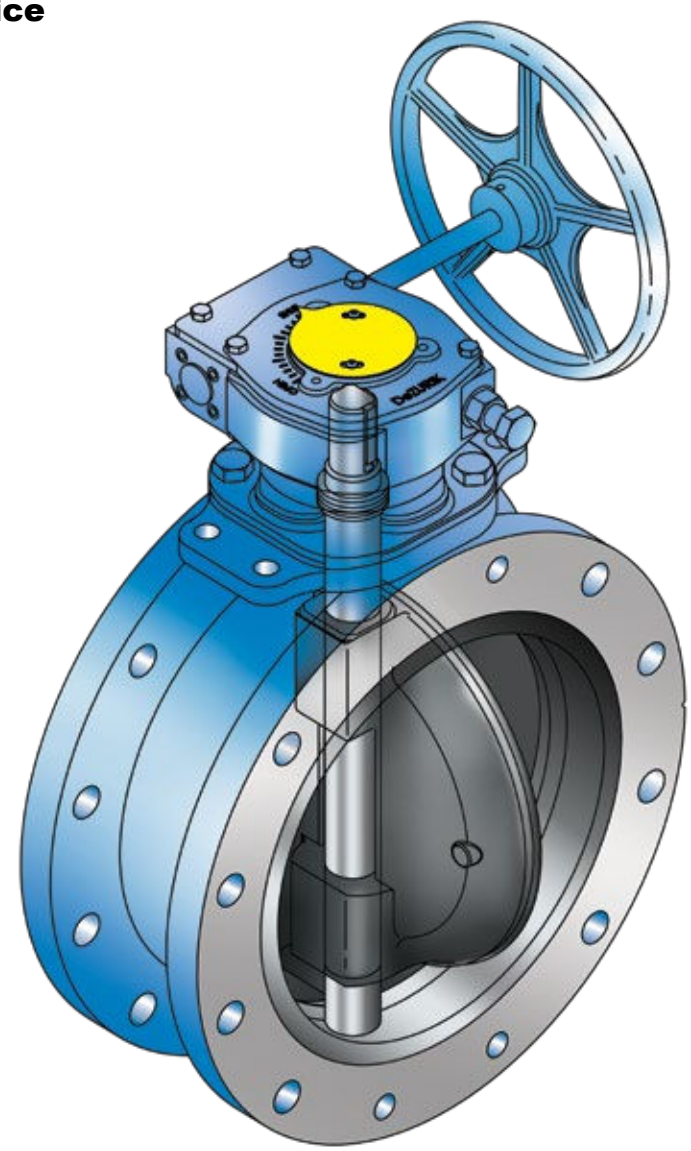
Mechanical Joint, ANSI/AWWA C111/A21.11, 4–20"
(100–500mm), Valve Class 150B

Mechanical Joint, ANSI/AWWA C111/A21.11, 4–20"
(100–500mm), Valve Class 250B

Corrosion Resistant Shaft

Stainless steel shafts provide corrosion resistance in bearing and packing journal areas to ensure long bearing and packing life. Standard shaft materials include 304, 316, and 17-4 PH stainless steel.





Self-Compensating Shaft Seals

Shaft seals are self-compensating, V-type packing. DeZURIK uses a minimum of four sealing rings. This proven multi-ring sealing technology offers reliability and continuous self-adjustment.

Long Life, Low Friction Bearings

Upper and lower journal shaft bearings are designed to provide high compressive strength, low friction and require no lubrication.

3–20" (80–500mm) Design

Fully Rubber Lined Body

A fully rubber lined body is standard, eliminating the need for inner body coating, and protecting the body against corrosion buildup.

Integrity of the Proven Molding Process

The rubber bonding process used on DeZURIK AWWA Butterfly Valves is proven by more than 50 years of field experience. AWWA C504 requires testing of the bonding process per ASTM D429, method B. The test requires a 1" (25mm) wide strip of rubber to withstand a minimum 75 lbs. pull force (at a 90° angle) before tearing away from the valve body. During destructive testing, the rubber must tear before the bond between the rubber seat and metal valve body gives way, demonstrating that the bond is stronger than the rubber. Based on extensive experience and proof of design testing, DeZURIK can assure that a molded-in body seat remains maintenance-free for the life of the valve.

Choice of Seat Materials

Standard seat materials include Acrylonitrile-Butadiene (NBR) for water service and EPDM for high-temperature applications such as air blower lines.

4° Sealing Surface

The spherical sealing surface, molded into the valve seat, provides constant interference between the sealing surface and the disc edge for a full 4° sealing range. This allows the actuator to be adjusted within the correct sealing range while the valve is under pressure and flow.

Molded-In Body Seat

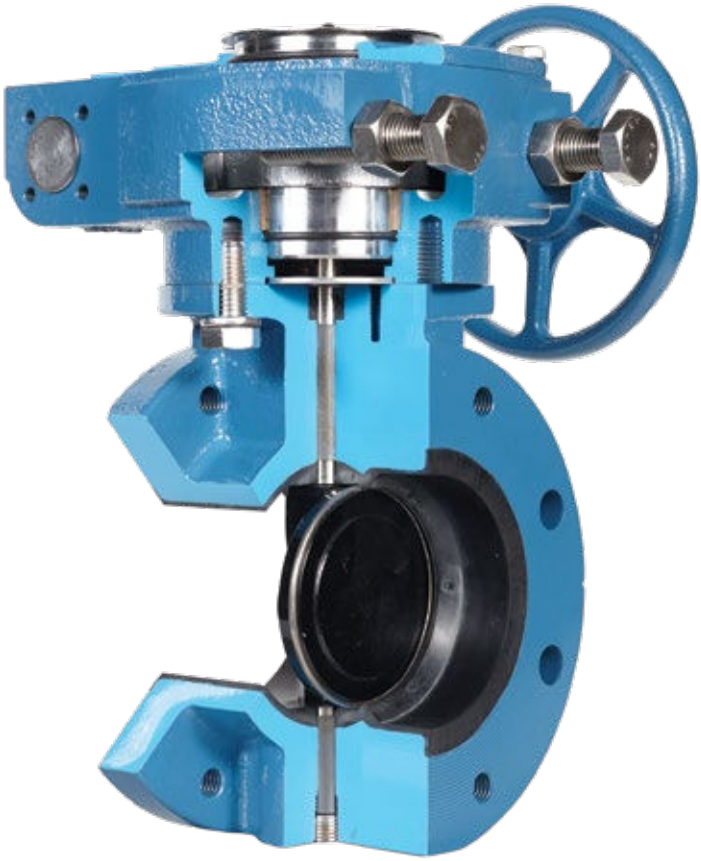
The pressure/temperature molding process used on AWWA Butterfly Valves provides a long-lasting, maintenance-free seat. DeZURIK's molded-in body seat lasts far beyond the 10,000 cycles required by AWWA C504. The molded seat-in-body design provides:

- Uniform rubber thickness.
- Consistent interference between the rubber seating surfaces and the stainless steel disc edge.
- Tight tolerance control on critical seat dimensions.

3–20" (80–500mm) Design

Disc Locators

An innovative, molded-in, disc-centering device aligns the disc in the seat, providing a positive seal and longer seat life. Disc hubs, supported by the locators, ensure disc location accuracy. The offset style disc design means disc-alignment locators are separate from the sealing surface, extending valve seat life.



Proven Disc-To-Shaft Pinning

All DeZURIK disc-to-shaft pinning connections conform to AWWA C504. Disc-to-shaft pinning is provided by a stainless steel torque screw on sizes 3–12" (80–300mm). Sizes 14–20" (350–500mm) utilize a tangential pin which is locked in place with a stainless steel set screw.

High Temperature Applications

For operating temperatures to 290° F (143°C), EPDM seat material and packing, high temperature bearings and high temperature paint on the disc are available as standard options. Other seat materials for higher temperatures available on application.

3–20" (80–500mm) Design

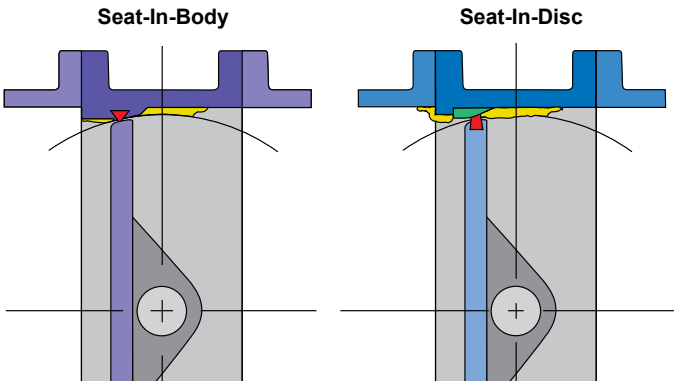
Integral Shaft Bearing Seals

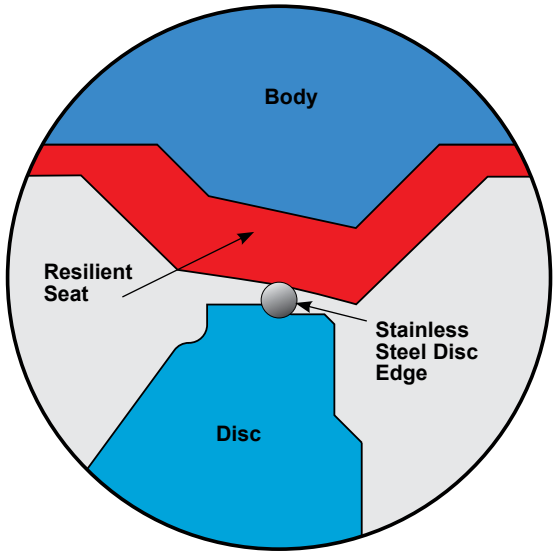
To ensure all components of the valve remain maintenance-free, the molded-in body seat and body liner contain integral shaft bearing seals in the upper and lower journals. These seals protect bearing journal areas against sedimentation, mineral deposits, and corrosion particles — all of which can damage bearings and shorten valve life.

Seat-In-Body vs. Seat-On-Disc

DeZURIK's AWWA Butterfly began its evolution over 40 years ago. For over 25 years, a stationary rubber seat located in the valve body has been the standard. This feature is fundamental to the long-term performance of the valve.

After years of service, water distribution valves and pipelines (regardless of material) suffer the effects of abrasive corrosion and tuberculation buildup. When the rubber seat of a butterfly valve is located on the moving disc edge, it will erode or tear away as it plows its way through line buildup, causing the valve to leak. With a rubber seat-in-body design, the stainless steel disc provides the resistance necessary to plow through line buildup without seat-on-disc edge damage.





Offset Disc Design

The offset disc provides an uninterrupted 360° sealing surface. The sealing surface is not interrupted by the valve shaft and does not have any continuous contact points between the rubber seat and the disc edge. This results in a longer seat life.

Stainless Steel Disc Edge

Solid 316 stainless steel disc edge provides the corrosion and abrasion resistance essential for long-lasting, maintenance-free service. The stainless steel disc edge is on all disc materials including iron, carbon steel and aluminum bronze discs.

24” (600mm) and Larger Design

Quality Features for Superior Performance

Body Styles

Flanged, ASME B16.1 Class 125,
24–144" (600–3600mm), Valve Class 150B

Flanged, ASME B16.1 Class 125,
28–144" (700–3600mm), Valve Class 75B

Flanged, ASME B16.1 Class 125,
28–48" (700–1200mm), Valve Class 25A

Flanged, ASME B16.1 Class 125,
24–144" (600–3600mm), Valve Class 250B

Flanged, ASME B16.1 Class 250,
24–48" (600–1200mm), Valve Class 250B

Mechanical Joint, ANSI/AWWA C111/A21.11,
24–48" (600–1200mm), Valve Class 150B

Mechanical Joint, ANSI/AWWA C111/A21.11,
24–48" (600–1200mm), Valve Class 250B

Corrosion Resistant Shaft Material

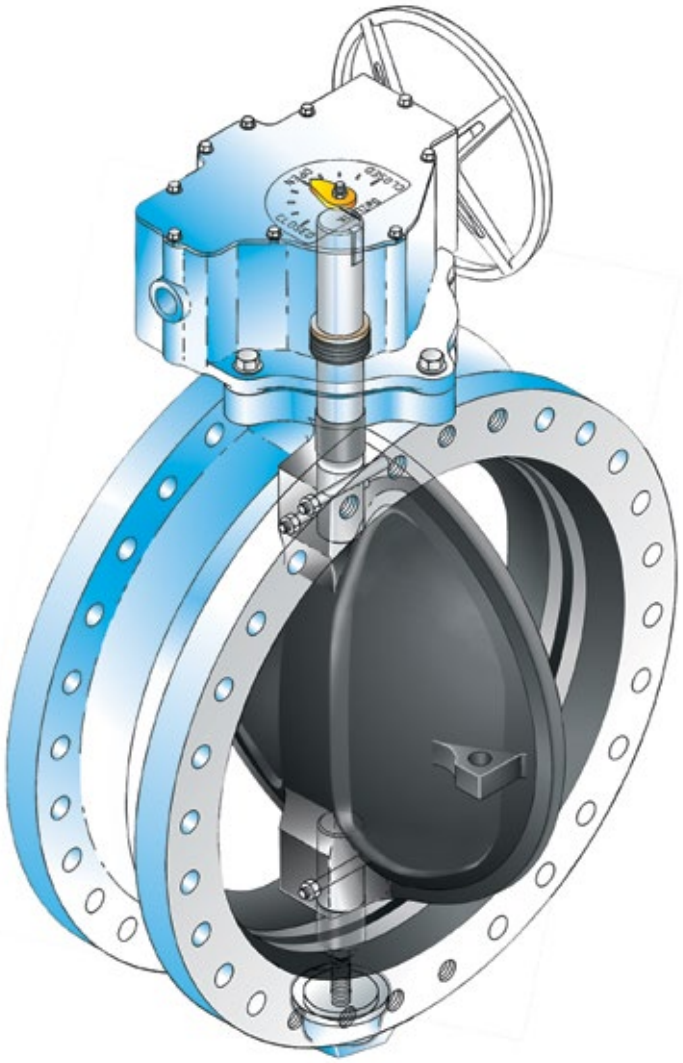
Standard shaft materials include 304, 316, and 17-4 PH stainless steel, providing the corrosion resistance in the bearing and packing journal areas necessary to ensure long bearing and packing life.

Stainless Steel Disc Edge

Solid 316 stainless steel disc edges provide a corrosion and abrasion resistant seating area essential for long-lasting, maintenance-free service.

Choice of Seat Materials

Standard seat materials include Acrylonitrile Butadiene (NBR) for water service and EPDM for high temperature applications such as air blower lines.



High Temperature Applications

For operating temperatures to 290°F (143°C), EPDM seat material and packing, high temperature bearings and high temperature paint on the body and disc are standard. Other seat materials for higher temperatures available on application.

Positive Disc Locators

Incorporated into the lower shaft is an adjustable thrust bearing assembly which holds the disc position in all possible installation orientations.
This thrust bearing absorbs forces from the disc weight, internal hydraulics and axial shaft loads.

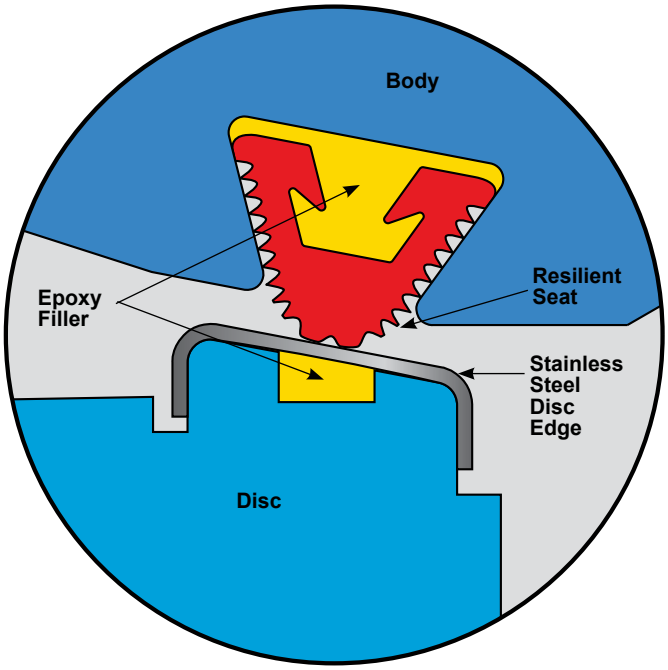
24" (600mm) and Larger Design

Rugged Disc Structure

DeZURIK utilizes state-of-the-art design and analysis computer software and test equipment to develop the optimum disc structure. Larger valves have an open disc structure, allowing water to flow through the center ports of the disc. On smaller sizes, DeZURIK utilizes a dome disc structure. On all valve sizes the disc structure is non-hollow, allowing inspection of each surface and wall thickness against shrinkage and core shift during the casting process.

Seat Design

DeZURIK's large valve seat design is industry proven and offers reliability, low operating torque and long life. The rubber seat is retained within a dovetail groove in the valve body and locked in place by an epoxy wedge. This design eliminates the need for fasteners, retaining rings or retaining segments to lock the seat in place. After the valve is fully assembled, with the disc in the closed position, an epoxy compound is injected behind the rubber seat and cured at a predetermined pressure based on the valve's pressure class. The injection pressure controls the interference between the rubber and stainless steel disc edge, providing a level of seating performance virtually impossible to achieve with other seat designs.



Adjustable, Replaceable Seat

As required by AWWA C504 for valves 24" (600mm) and larger, this seat design offers field adjustment and replacement capabilities. Proper field adjustment can be performed from either the upstream or downstream side of a pressurized valve.

Proven Disc-To-Shaft Pinning

Disc-to-shaft pinning is provided by a stainless steel tapered pin on sizes 24" (600mm) and larger. This proven design provides a reliable, high strength connection that conforms to AWWA C504.

Long Life, Low Friction Bearings

The upper and lower journal shaft bearings are designed to provide high compressive strength, low friction and require no lubrication.

Self-Compensating Shaft Seals

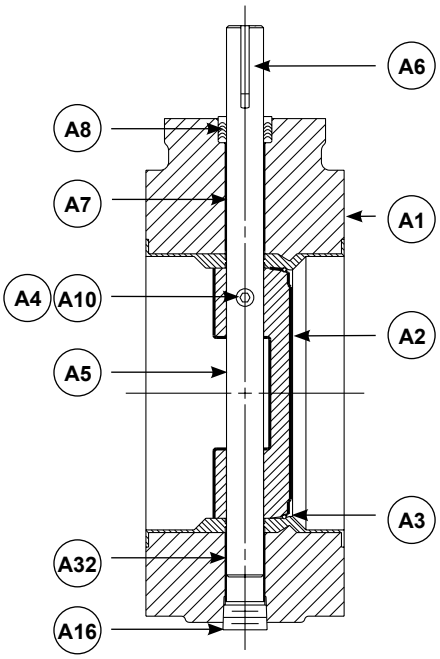
Shaft seals are self-compensating, V-type packing. DeZURIK uses a minimum of four sealing rings. This proven multi-ring sealing technology offers reliability and continuous self-adjustment. Standard packing materials include Acrylonitrile-Butadiene (NBR) or EPDM to meet all application requirements.

Offset Disc Design

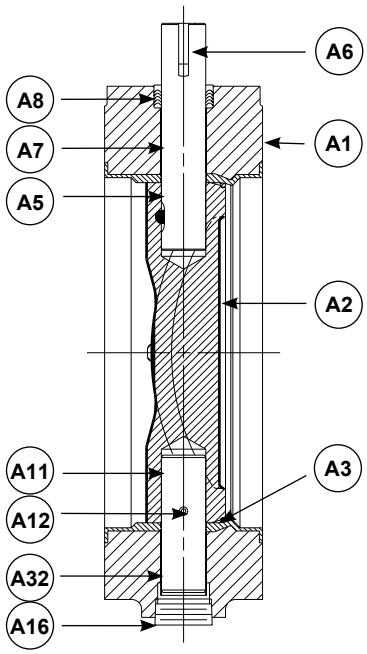
The offset disc provides an uninterrupted 360° sealing surface. The sealing surface is not interrupted by the valve shaft and does not have any continuous contact points between the rubber seat and the disc edge. This results in a longer seat life.

Materials of Construction

3–16" (80–400mm)



18 & 20" (450 & 500mm)



3–20" (80–500mm) Valve Sizes

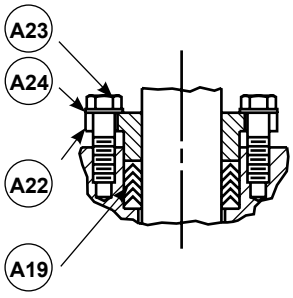
Item	Description	Material
A1	Body NBR or EPDM seat is permanently bonded to the body	Cast Iron ASTM A126 Class B Ductile Iron ASTM A536 Grade 65-45-12
A2	Disc	Ductile Iron ASTM A536 Grade 65-45-12 316 Stainless Steel, ASTM A743, Type CF8M Aluminum Bronze, C95500, ASTM B763/B271/B505
A3	Disc Seating Edge	316 Stainless Steel, ASTM A276, Type 316 316 Stainless Steel, ASTM A743, Type CF8M
A4	Tangential Pin 14–20" (350–500mm)	316 Stainless Steel, ASTM A276, Type 316 (250B) 17-4 PH Stainless Steel, H1100
A5	Shaft 3–16" (80–400mm) Upper Shaft 18–20" (450–600mm)	316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM A564, Type 630 Condition 1150
A6	Key	Steel AISI 1018
A7	Upper Journal Bearing	Nylon and Molybdenum Disulphide Composition (NBR Seat) PTFE (EPDM Seat) (250B) PTFE Fabric Liner, Fiberglass back-up shell
A8	Packing	Acrylonitrile Butadiene (NBR Seat) Ethylene Propylene Diene Terpolymer (EPDM Seat)
A10	Torque Screw 3–12" (80–300mm)	316 Stainless Steel, ASTM A276, Type 316 (250B) 17-4 PH Stainless Steel, Condition 1100
A10	Set Screw 14–20" (350–500mm)	18–8 Stainless Steel
A11	Lower Shaft 18–20" (450–600mm)	316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM A564, Type 630 Condition 1150
A12	Set Screw 18–20" (450–500mm)	18–8 Stainless Steel
A16	Plug 3–20" (80–500mm)	3–8" (80–200mm) Carbon Steel, SAE J403, Grade 1008/1010 10–20" (250–500mm) Malleable Iron, ASTM A47-52 Grade 35018 (250B, 3–6" (80–150mm)) Carbon Steel, SAE J403, Grade 1008/1010 (250B, 8–20" (200–500mm)) Malleable Iron, ASTM A47-52 Grade 35018
A32	Lower Journal Bearing	Nylon and Molybdenum Disulphide Composition (NBR Seat) PTFE (EPDM Seat) (250B) PTFE Fabric Liner, Fiberglass back-up shell

Materials of Construction

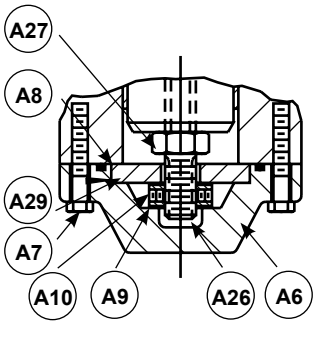
24–72" (600–1800mm) Valve Sizes

Item	Description	Material
A1	Body	Cast Iron, ASTM A126 Class B Ductile Iron, ASTM A536 Grade 65-45-12
A2	Seat	Acrylonitrile-Butadiene (NBR) Terpolymer of Ethylene, Propylene and a Diene (EPDM)
A6	Thrust Bearing Cover	Cast Iron, ASTM A126 Class B Ductile Iron, A536 Grade 65-45-12
A7	Screw	18-8 Stainless Steel
A8	O-Ring	Acrylonitrile-Butadiene (NBR) Terpolymer of Ethylene Propylene and a Diene (EPDM)
A9	Thrust Collar	Steel, ASTM 108
A10	Set Screw	18-8 Stainless Steel
A11	Disc	Ductile Iron ATM A536 Grade 65-45-12
A12	Disc Edge	316 Stainless Steel, ASTM A240, Type 316
A13	Disc Pin	304 Stainless Steel, ASTM A276, Type 304 303 Stainless Steel, ASTM 582, Type 303
A14	Nut	18-8 Stainless Steel
A15	Upper Shaft	304 Stainless Steel, ASTM A276, Type 304 316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM 564, Type 630 Condition 1150
A16	Key	Steel AISI 1018
A17	Bearing	PTFE Fabric Liner, Fiberglass back-up shell
A19	Packing	NBR Acrylonitrile-Butadiene (NBR Seat) EPDM Ethylene Propylene and a Diene (EPDM Seat)
A20	Spacer 30-48" (750–1200mm)	316 Stainless Steel, ASTM A276, Type 316
A22	Gland 60-72" (1500–1800mm)	Bronze ASTM B-62
A23	Screw (Used with A22)	18-8 Stainless Steel
A24	Washer (Used with A22)	18-8 Stainless Steel
A25	Lower Shaft	304 Stainless Steel, ASTM A276, Type 304 316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM 564, Type 630 Condition 1150
A26	Adjusting Screw	303 Stainless Steel, ASTM A582, Type 303
A27	Jam Nut	18-8 Stainless Steel
A29	Thrust Plate	Carbon Steel AISI A108
A30	Screw 24–48" (600–1200mm)	18-8 Stainless Steel
A31	Lockwasher 24–48" (600–1200mm)	18-8 Stainless Steel
A32	Epoxy	Epoxy
A33	O-Ring	Acrylonitrile-Butadiene (NBR) Terpolymer of Ethylene Propylene and a Diene (EPDM)

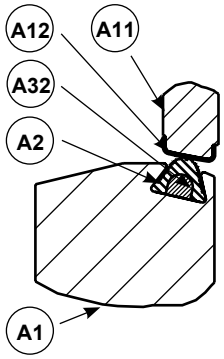
Contact DeZURIK for materials of construction on valve sizes 78–120" (2000–3000mm).



Detail E
Adjustable Packing
Optional on 24–48" (600–1200mm)
Standard on 54–72" (1400–1800mm)

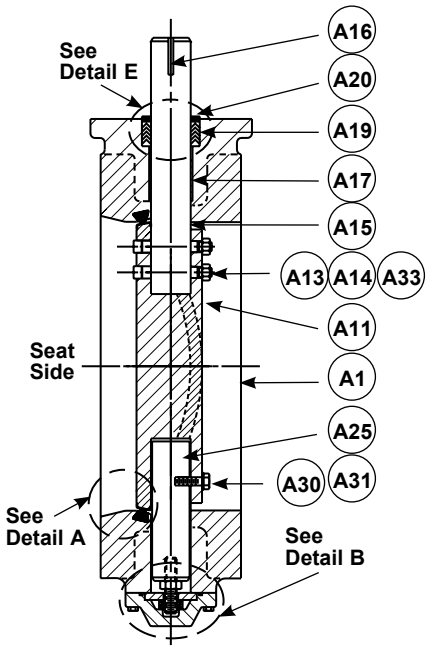


Detail B

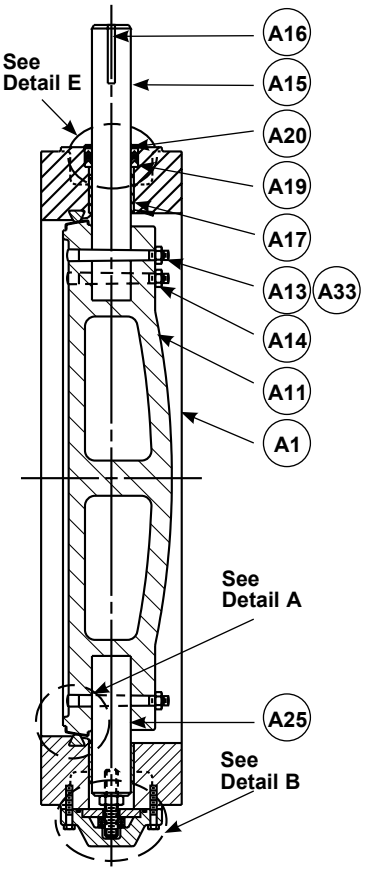


Detail A

24–42" (600–1100mm)



48–72" (1200–1800mm)



Valve Selection

Cv/Kv Values*

Class 150B

Valve Size	100% Cv/Kv	
	Flat Cv/Kv	Dome Cv/Kv
3" 80mm	362 313	356 308
4" 100mm	658 569	646 559
6" 150mm	1,380 1,194	1,360 1,176
8" 200mm	2,440 2,111	2,390 2,067
10" 250mm	3,910 3,382	3,840 3,322
12" 300mm	5,730 4,960	5,630 4,870
14" 350mm	7,840 6,782	7,700 6,661
16" 400mm	10,200 8,823	9,980 8,633
18" 450mm	12,600 10,899	12,400 10,726
20" 500mm	15,800 13,667	15,500 13,408
24" 600mm	22,900 19,809	22,500 19,463

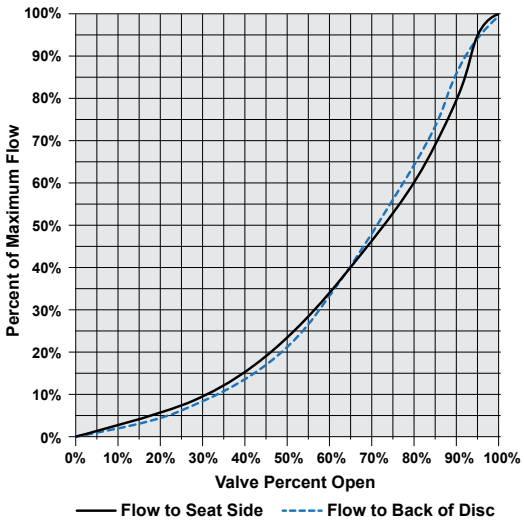
Class 25A, 75B, 150B

Valve Size	100% Cv/Kv	
	Flat Cv/Kv	Dome Cv/Kv
30" 750mm	36,500 31,573	35,900 31,054
36" 900mm	53,200 40,018	52,300 45,240
42" 1100mm	73,100 63,232	71,800 62,107
48" 1200mm	109,000 94,285	103,000 89,095
54" 1400mm	140,000 121,100	131,000 113,315
60" 1500mm	173,000 149,645	163,000 140,995
66" 1700mm	210,000 181,650	198,000 171,270
72" 1800mm	250,000 216,250	236,000 204,140

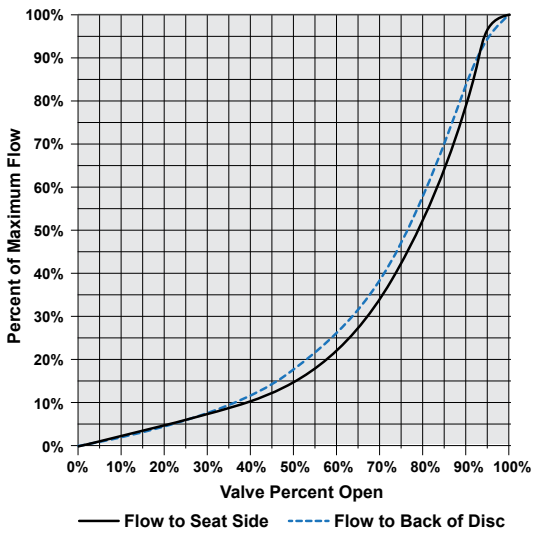
Contact DeZURIK for Cv/Kv Values on 78–120" (2000–3000mm) valves and for Class 250B.

* Cv = Flow in GPM of water at 1 psi pressure drop.
Kv = Flow in m3/hr. of water at 100 kPa pressure drop.

Flow Characteristic 3-42" (80-1100mm)



Flow Characteristic 48-72" (1200-1800mm)



Applicable Standards

DeZURIK BAW AWWA Butterfly Valves are designed and/or tested to meet the following standards:	
ANSI/AWWA C111/A21.11	Mechanical Joint Bell dimensions conform to ANSI/AWWA C111/A21.11, Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe Fittings.
ANSI/AWWA C-504	Valves conform to AWWA Standard ANSI/AWWA C-504 for sizes 3-72" (80-1800mm) Rubber Seated Butterfly Valves. Standard interior and exterior coatings meet the requirements of this standard.
ANSI/AWWA C-516	Valves conform to AWWA Standard ANSI/AWWA C-516 for sizes 78" (2000mm) & larger Rubber Seated Butterfly Valves. Standard interior and exterior coatings meet the requirements of this standard.
ASME B16.1	Dimensions and drilling of flanged end connections on valves up to 96" (2400mm) conform to Class 125 sections of ASME B16.1 Cast Iron Pipe Flanges and Flange Fittings.
ASTM D429	Bonding of 3-20" (80-600mm) seats conforms to ASTM D429, Standard Test Methods for Rubber Property - Adhesion to Rigid Substrates.
ASTM D471	Seat material volume increase is less than 2% after immersion in distilled water for 70 hours, when tested in accordance with ASTM D471, Standard Test Method for Rubber Property - Effect of Liquids.
ASTM D1149	Ozone resistance of seat material conforms to ASTM D1149, Standard Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber.
AWWA C110	Ductile-Iron and Gray-Iron Fittings, Mechanical Joint Accessories 30-48" (750-1200mm) meet this standard.
AWWA C153	Ductile-Iron Compact Fittings, Mechanical Joint Accessories 4-24" (100-600mm) meet this standard.
AWWA C207	For sizes 102" (2600mm) and larger, flange bolt patterns comply with AWWA C207 and flange thickness complies with AWWA C516.

Basic Valve Weights*

Valve Size	Flanged F1	Flanged F2	Mechanical Joint
	All Classes	Class 250B	Class 150B (Use for Class 250B)
3" 80mm	33 15	45 21	—
4" 100mm	45 21	62 29	50 23
6" 150mm	65 30	90 41	76 35
8" 200mm	100 46	144 66	112 51
10" 250mm	156 71	207 94	123 56
12" 300mm	250 114	312 142	213 97
14" 350mm	325 148	454 206	238 108
16" 400mm	383 174	538 245	398 181
18" 450mm	428 195	596 271	444 202
20" 500mm	547 249	773 351	570 259
24" 600mm	1025 466	1435 652	1025 466
28" 700mm	1360 618	—	—
30" 750mm	1850 840	2405 1092	1850 840
36" 900mm	2800 1271	3640 1652	2800 1271
42" 1050mm	4050 1838	5265 2389	4050 1838
48" 1200mm	5750 2609	7475 3392	5750 2609
54" 1400mm	7500 3403	—	—
60" 1500mm	9825 4458	—	—
66" 1700mm	12100 5491	—	—
72" 1800mm	15150 6874	—	—
Contact DeZURIK for weights on valve sizes 78" (2000mm) and larger.			

lbs
kilograms

* Weights are approximate and do not include crating or actuators.

Ordering

Valve Style
Give valve style code as follows:

BAW	=	AWWA Butterfly Valve

Valve Size
Give valve size code as follows:

3"	(80mm)	42"	(1100mm)
4"	(100mm)	48"	(1200mm)
6"	(150mm)	54"	(1400mm)
8"	(200mm)	60"	(1500mm)
10"	(250mm)	66"	(1700mm)
12"	(300mm)	72"	(1800mm)
14"	(350mm)	78"	(2000mm)
16"	(400mm)	84"	(2100mm)
18"	(450mm)	90"	(2300mm)
20"	(500mm)	96"	(2400mm)
24"	(600mm)	102"	(2600mm)
28"	(700mm)	108	(2700mm)
30"	(750mm)	114"	(2900mm)
36"	(900mm)	120"	(3000mm)
		144"	(3600mm)

Note: All orders for 28" (700mm) and larger must include valve pipeline mounting position and shaft orientation as setup text on line item.

End Connection
Give end connection code as follows:

F1	=	ASME 125 Flanged 3-96" (80–2400mm) AWWA C207 Class B & C Flanged 102-144" (2600-3600mm)
F2	=	ASME 250 Flanged 3-48" (80–1200mm)
MJ	=	Mechanical Joint 4-48" (100–1200mm)

With Mechanical Joint ends, buriable actuators are recommended.

Body Material
Give body material code as follows:

CI	=	Cast Iron - F1 or MJ
CS	=	Carbon Steel - F1, 24" & larger (600mm & larger)
DI	=	Ductile Iron - F1, F2, or MJ
S2	=	316 Stainless Steel - F1, 24" & larger (600mm & larger)

Packing/Seat Combination
Give packing/seat material codes as follows:
Packing Material

NBRN	=	Acrylonitrile-Butadiene Self-Adjusting 3–144" (80-3600mm) -20 to 180ºF (-29 to 82ºC)
NBRA	=	Acrylonitrile-Butadiene Adjustable 3–144" (80-3600mm) -20 to 180ºF (-29 to 82ºC) Do not use with buried service
EPDN	=	EPDM Self-Adjusting -20 to 290ºF (-29 to 143ºC) 3–48" (80–1200mm)
EPDA	=	EPDM Adjustable -20 to 290ºF (-29 to 143ºC) 3–48" (80–1200mm) Do not use with buried service.
TCN	=	PTFE Self-Adjusting -20 to 450ºF (-29 to 232ºC) 54–144" (1400–3600mm)
TCA	=	PTFE Adjustable -20 to 450ºF (-29 to 232ºC) 3–144" (80–3600mm) Do not use with buried service.

Seat Material

NBR	=	Acrylonitrile-Butadiene -20 to 180ºF (-29 to 82ºC) Must use NBRN or NBRA packing.
EPDM	=	Terpolymer of Ethylene Propylene & a Diene -20 to 290ºF (-29 to 143ºC) Must use EPDA or EPDN, TCN or TCA packing.

Class AWWA C-504
Give AWWA Class code as follows:

25A	=	28–48"	(700–1200mm)	Flanged
75B	=	28–144"	(700–3600mm)	Flanged
150B	=	3–144"	(80–3600mm)	Flanged
		4–48"	(100–1200mm)	Mechanical Joint
250B	=	3–144"	(80–3600mm)	Flanged
		4–48"	(100–1200mm)	Mechanical Joint

Note: Pressure ratings above 150 not available with EPDM Seat on valves 24" & larger (600mm & larger).

Disc/Shaft Combination
Give disc/shaft code as follows:
Disc Material

DI	=	Ductile Iron disc with 316 stainless steel edge
S2	=	316 Stainless Steel
CS	=	Carbon Steel, 24" & larger (600mm & larger)

Shaft & Pin Material
Give shaft & pin material code as follows:

S2	=	316 Stainless Steel shaft & pin, Standard on 3–20" (80-500mm), optional on 24" (600mm) and larger
S1	=	304 Stainless Steel shaft Pin is 316 Stainless Steel on 24–36" (600-900mm) and 304 Stainless Steel on 42–144" (1100-3600mm)
S5	=	17-4 pH Stainless Steel shaft & pin (must be used with 250B)

Options
Give options code as follows:

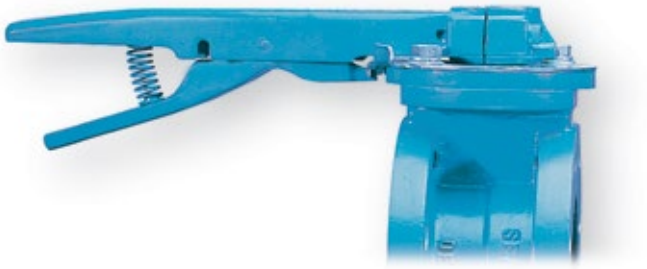
AIS	=	American Iron and Steel. Valves conform to Consolidated Appropriations Act, 2014 section 436 (EPA, Clean Water and Drinking Water State Revolving Funds) and Consolidated Appropriations Act, 2017 section 746 (USDA RUS Water & Environmental Programs (WEP)).
DTR	=	DeZURIK Standard Certified Production Hydrostatic Shell and Seat Test Report
CMC	=	Certificate of Material Conformance
TB	=	DeZURIK Standard Certified Hydrostatic Shell Test and Seat Leak Test, both directions

Ordering Example:
BAW,24,F1,CI,NBRN-NBR,150B,DI-S1*Actuator

Mechanical Joint Accessories

Accessories include bolts, nuts, packing and glands for both ends. Sizes 4-24" (100-600mm) meet AWWA C153. Sizes 30-48" (750-1200mm) meet AWWA C110. Order as a separate item by giving code ACC*MJ-valve size.

Manual Actuators
Lever Actuators



Rotary Manual Actuators

DeZURIK offers a variety of rotary manual actuator options which are in complete compliance with AWWA C504. Manual actuators are available with handwheel, chainwheel or 2" (80mm) square nut options.

Easily Adjustable Stops

Open and closed position stops can be easily adjusted without drilling, shimming or pinning. The stops ride the input shaft and can be repositioned with a simple adjustment of the stop nut.

Rugged Designs

Manual actuators are sized to operate with a maximum input of 150 foot pounds on 2" (80mm) square operating nuts, and can be sized for 40 or 80 pound rim pull on handwheels and chainwheels. The actuators are self-locking, maintaining valve position under varying flow conditions.

Buriable and Weatherproof Construction

DeZURIK actuators feature a cast iron housing in buriable or weatherproof construction. The mechanism is totally enclosed and does not require lubrication for routine maintenance. Buried service actuators are grease filled per AWWA C504.

Valve Position Indicator

The pointer on weatherproof actuators clearly indicates the valve position marked on top of the housing. The indicator shaft is sealed to keep moisture from entering the actuator housing.

A 10-position dial provides positive latching in open, closed and eight intermediate positions.
A pointer indicates position of disc plus a notch in the handle allows use of a padlock to prevent unauthorized valve operation.

Mounting

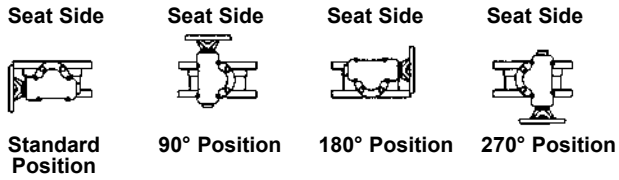
Lever actuators can be mounted at standard or 180°. Levers are available on 3–8" (80–200mm) valve sizes.

Easily Rotatable

The four keyways in the yoke make DeZURIK nut and handwheel manual actuators easy to rotate to any of four mounting positions. Chainwheel actuators can be mounted at standard and 180º.

Mounting

Nut & Handwheel

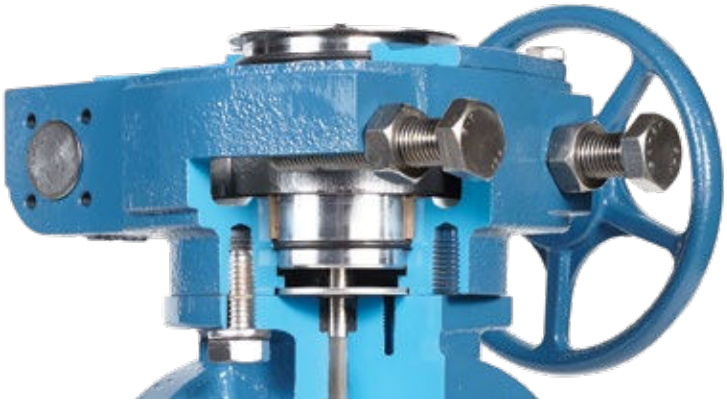


Chainwheel

Manual Actuators

G-Series Design

The G-Series design is available on 3–30" (80–750mm) valve sizes with a handwheel, chainwheel or 2" square nut input. The worm gear mechanism allows the G-Series actuators to provide high output torque with a torque curve matching the torque required by the valve. G-Series actuators feature a steel worm and ductile iron gear.

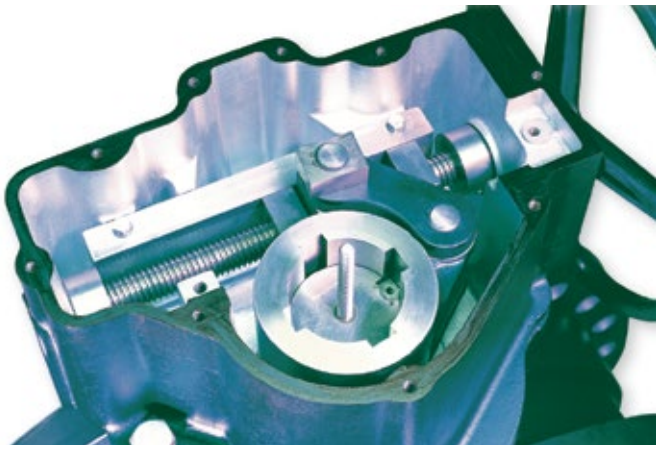


300 & 450 Foot Pound Input Torque

As required by AWWA C504, an input torque of 300 foot pounds against the fully adjustable open and closed position stops is standard. A 450 foot pound input capability against the stops is an option.

LA-Series Design

The LA-Series design is available on 30–72" (750–1800mm) valve sizes. The link-arm mechanism allows the LA-Series actuator to provide characterized closure which slows valve travel as the disc comes into the seat. The actuators feature high compressive strength yoke nut bearings which ensure reliable operation and increase cycle life.



High Output Torque

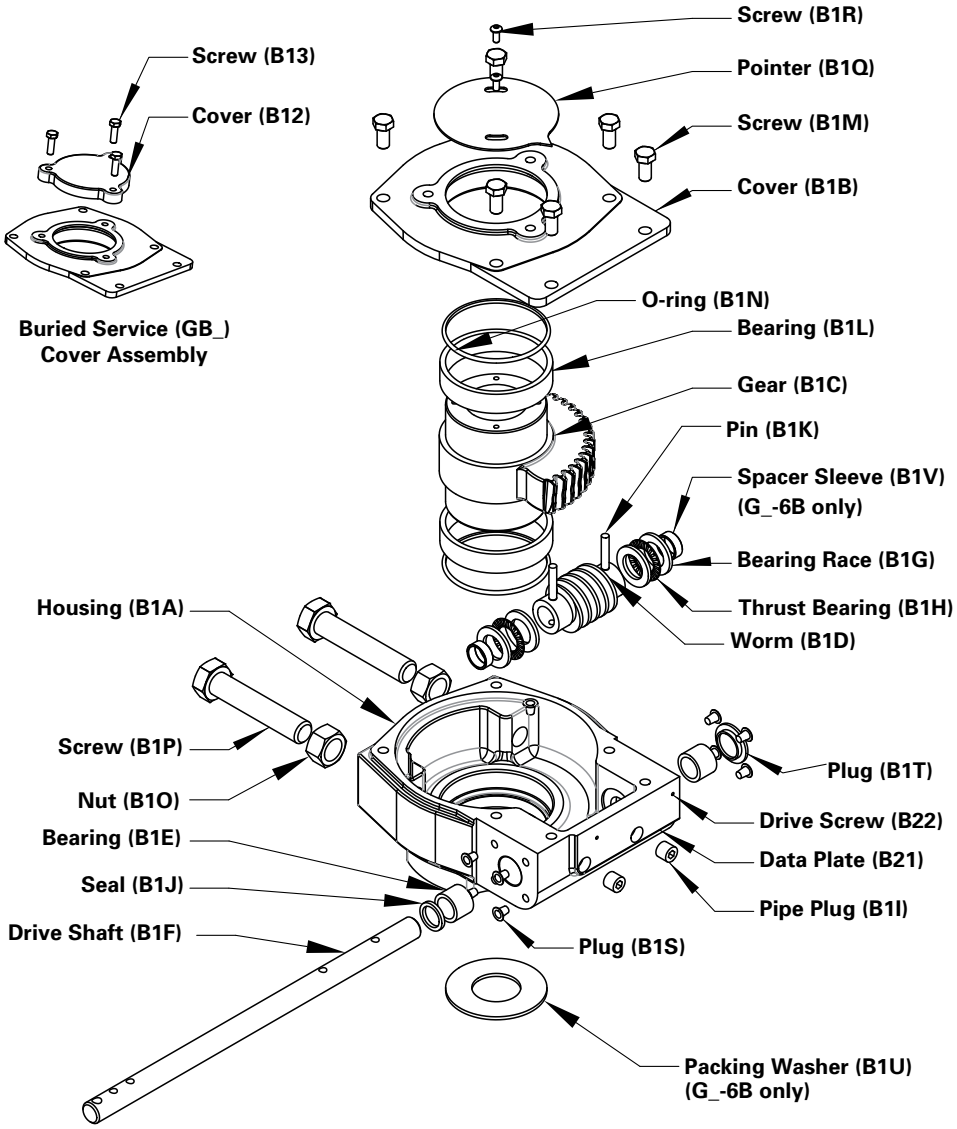
The LA-Series actuators feature an input torque capability of 450 foot pounds against the open and closed position stops as standard. An optional spur gear provides a 2:1 mechanical advantage while maintaining an input torque capability of 300 foot pounds against the stops. The spur gear slows closing of the valve, minimizing the possibility of water hammer.

450 Ft-Lb Input Stops

LA-Series actuators have 450 Ft-Lb input stops as standard.

Rotary Manual Actuators
GS/GB-6B Materials of Construction

Item	Description	Material
B1A	Housing	Cast Iron, ASTM A126, Class B
B1B	Cover	Cast Iron, ASTM A126, Class B
B1C	Gear	Ductile Iron, ASTM A536, Grade 80-55-06
B1D	Worm	Steel, EN19 or ASTM A322, Grade 1440, UNS G14400
B1L	Bearing	Bronze, Oil Impregnated
B1F	Drive Shaft	Stainless Steel, Type 431 ASTM 276
B1G	Bearing Race	Steel
B1H	Thrust Bearing	Steel
B1I	Pipe Plug	18-8 Stainless Steel, ANSI B16.14
B1J	Shaft Seal	Acrylonitrile-Butadiene (NBR) and carbon steel case
B1K	Pin	Type H Steel EN8 Rockwell C20-25, ANSI B18.8.2
B1E	Bearing	Bronze, Oil Impregnated, ASTM B438, Grade 1, Type 2
B1M	Screws	A2-70, DIN933 (comparable to Stainless Steel 18-8)
B1N	O-ring	Acrylonitrile-Butadiene (NBR)
B1O	Nut	A2, DIN439B, (comparable to Stainless Steel 18-8)
B1P	Screw	A2-80, DIN933 (comparable to Stainless Steel 18-8)
B1Q	Pointer	Steel Zinc Plated, ASTM 569
B1R	Screw	A2 (comparable to Stainless Steel 18-8) ANSI B18.3.4M
B1S	Plug, Tapered	Plastic 238-D
B1T	Plug	Steel, ASTM A108, UNS G1018
B1U	Packing Washer	316 Stainless Steel, ASTM A276, UNS S31600
B1V	Spacer Sleeve	Steel EN 19 or ASTM A322, Grade 4140 UNS G41400



Rotary Manual Actuators

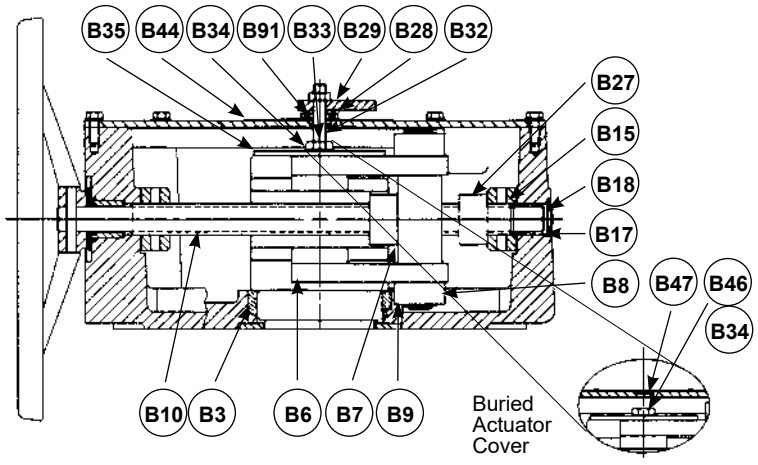
LA-Series Actuator Materials of Construction

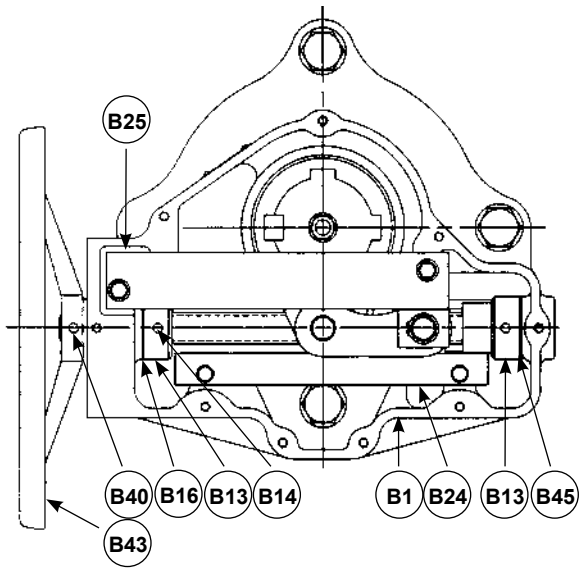
Item	Description	Material
B1	Housing	Cast Iron, ASTM A126 Class B
B2	Bearing	Bronze Oil Impregnated
B3	Yoke	Ductile Iron, ASTM A536 80-55-06
B4	Cover	Steel Plate, A36 HR
B5	Packing Retainer	Steel Plate, A36 HR
B6	Link	Steel
B7	Yoke Nut	Ductile Iron, ASTM A536 80-55-06
B8	Guide Nut (LA-4 & LA-6)	Powder Metal 8020 23B
B9	Retaining Ring	Carbon Steel, SAE 1060-1090
B10	Input Shaft	Steel, AISI 1141
B11	O-Ring	Acrylonitrile-Butadiene
B12	O-Ring	Acrylonitrile-Butadiene
B13	Collar	Steel, AISI 1215
B14	Pin	Steel
B15	Thrust Washer	Teflon/Glass Fabric, Stainless Steel Backing
B16	Thrust Washer	Teflon/Glass Fabric, Stainless Steel Backing
B17	Bearing	Bronze Oil Impregnated
B18Expansion Plug		Steel Zinc Plated
B23	Retaining Washer	Stainless Steel, Type 18-8
B24	Outer Guide Bar	Steel, AISI 1018
B25	Inner Guide Bar	Steel, AISI 1018
B26	Square Nut	Steel, AISI 1018
B27	Stop Nut	Steel, AISI 1018
B28	Seal	Steel with Nitrile
B29	Pointer	Steel, ASTM A36
B32	Stud	Steel Zinc Plated
B33	Nut	Steel Zinc Plated
B34	Thread Seal	Steel with Nitrile
B35	Yoke Cover	Steel, ASTM A569
B40	Pin	Steel Zinc Plated
B43	Handwheel	Cast Iron, ASTM A126 Class B
B44	Position Plate	Vinyl
B45	Shim	Steel
B47	Expansion Plug	Steel Zinc Plated

Item	Description	Material
B48	Bushing	Bronze Oil Impregnated
B50	Chain Guide	Cast Iron, ASTM A126
B51	Closing Link	Steel
B52	Collar	Steel, ASTM A36
B53	Bearing	Bronze
B54	Screw	Steel Zinc Plated
B55	Washer	Steel Zinc Plated
B56	Retaining Ring	Carbon Steel
B57	Adaptor Plate	Steel, ASTM A36
B58	Seal	Garlock
B62	Bearing	Bronze
B63	Gasket	Non-Asbestos
B64	Adaptor	Cast Iron, ASTM A126 Class B
B65	Gasket	Non-Asbestos
B69	Housing (Spur Gear)	Cast Iron, ASTM A126
B70	Pin (Chainwheel)	Steel Zinc Plated
B71	Gasket	Fiber Non-Asbestos
B72	Screw	Steel Zinc Plated
B73	Screw	Steel Zinc Plated
B74	Seal	Steel Zinc Plated
B75	Pin	Steel Zinc Plated
B76	Pin	Steel Zinc Plated
B77	Retainer Ring	Steel Zinc Plated
B78	Cover	Steel Plate, ASTM A36
B81	Gear	Carbon Steel
B82	Gear	Carbon Steel
B83	Input Shaft (Spur Gear)	Steel, ASTM A29
B84	O-Ring	Nitrile
B85	Chainwheel	Cast Iron, ASTM A126 Class B
B88	Adaptor (Adj. Packing)	Steel, ASTM A36
B89	Bearing	Bronze
B90	Shaft Extension	Steel, AISI 1215
B91	Washer	Steel Zinc Plated
B92	Expansion Plug	Zinc Plated Steel
B93	Lockwasher	Zinc Plated Steel

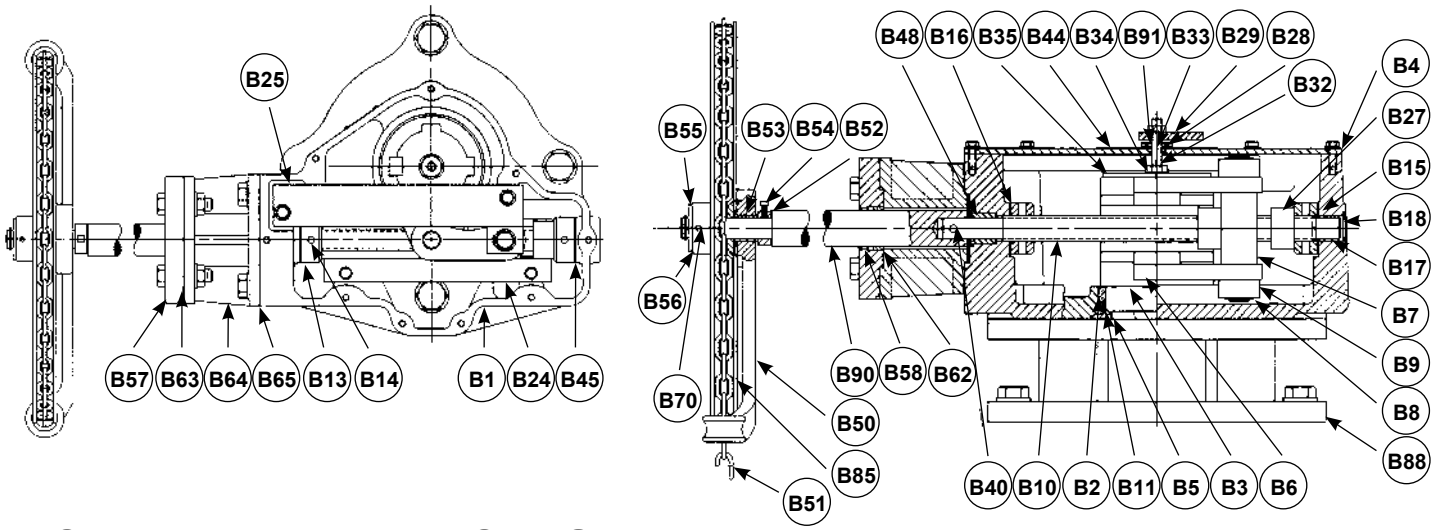
Note: All fasteners are zinc plated steel unless stainless steel bolting is specified.

LA-Series Handwheel

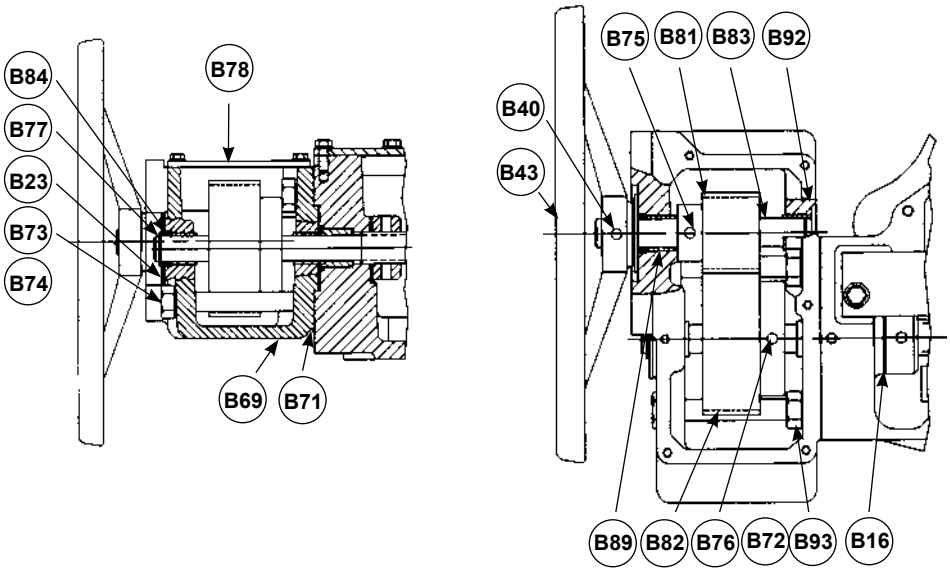




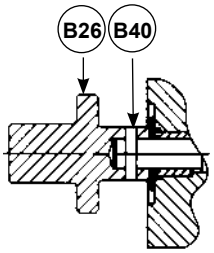
LA-Series Chainwheel



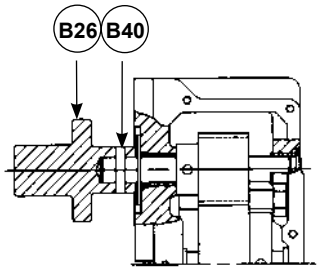
LA-Series Handwheel with Spur Gear



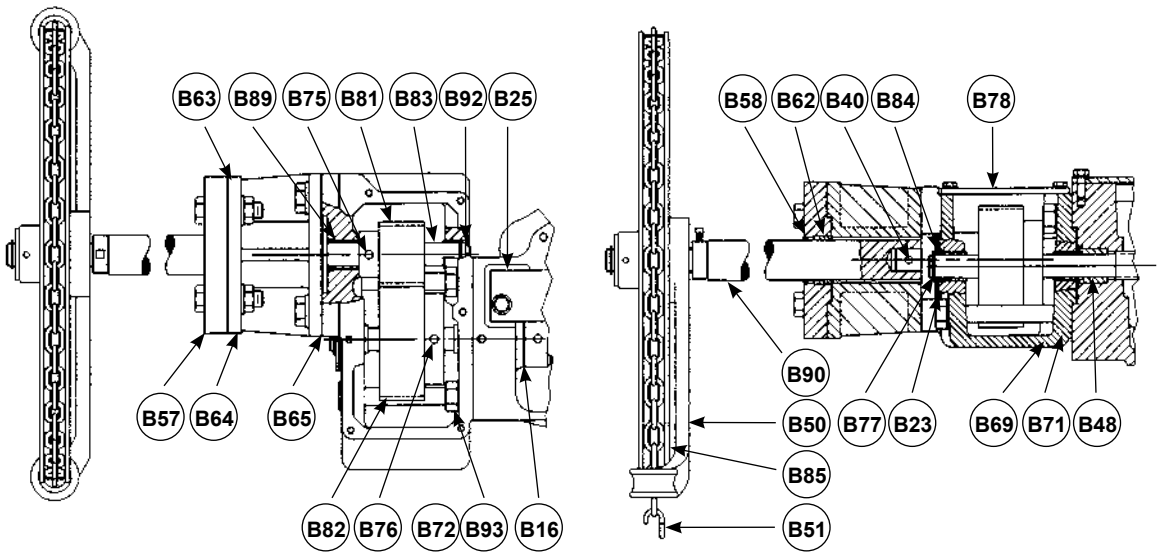
Nut



Nut with Spur Gear



LA-Series Chainwheel with Spur Gear



Manual Actuator Accessories

Tee Wrench

For use in actuating 2" (50mm) nut actuators. Available in 4, 5, 6, 7 or 8 foot lengths. Other lengths available on special order.

Chain — For Chainwheel Actuators

Chain for chainwheel actuators are available in zinc plated, galvanized or 304 stainless steel.

Stainless Steel Bolting

Includes stainless steel fasteners on valve and actuator.

Clockwise Rotation

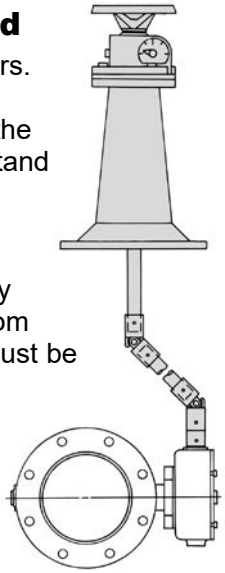
Clockwise rotation to open (open right). Available with GS/GB-6B-Series and LA Series Manual Actuators.

Galvanized Chainwheel and Guide

Same as chainwheel actuator except chainwheel and guide are galvanized.

Dial Indicating Floorstand

For valves with handwheel actuators. Actuator is mounted on the valve and the input shaft is extended to the floorstand. Included with the floorstand are the handwheel mounted on the floorstand, dial indicator and couplings. Extension rod must be ordered separately. Floorstand may be directly above valve or offset from valve location. A buried actuator must be specified when ordering an FSDI.

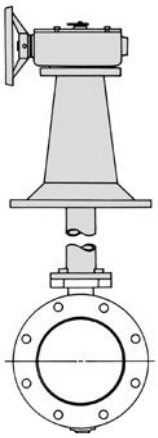


Extension Rod

Extension rod is required for use with FSDI floorstand.

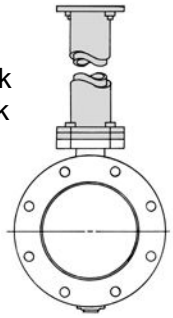
Actuator Mounted on Floorstand

Included with floorstand are the couplings, extension pipe and mounting of actuator on floorstand.



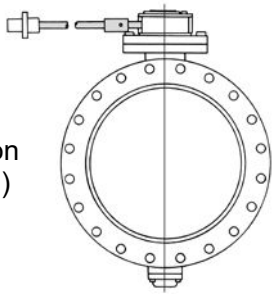
Neck Extensions

Included is an extended valve neck and shaft. Valves for use with neck extensions must be furnished with non-adjustable packing and a non-buried actuator. Extensions are not recommended for use with positioners.



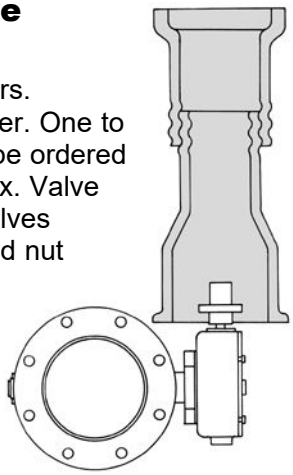
Extended Nut for Manual Actuators

For actuators used with floorboxes and valve boxes. Includes couplings, extension rod and extended 2" (50mm) square nut.



Valve Box and Valve Box Extensions

For use with buried actuators. Includes valve box and cover. One to five extension pieces may be ordered to extend depth of valve box. Valve boxes may be used with valves having standard or extended nut actuators. Top of nut must be 6" (150mm) below grade. Valve boxes are tee wrench actuated. Tee wrenches must be ordered separately.



Cylinder Actuators

DeZURIK cylinder actuators are available as double-acting pneumatic or water hydraulic cylinders for either on-off or positioning services.

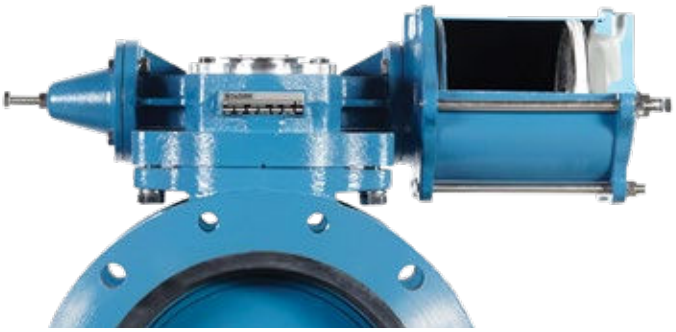
All cylinder actuators are double-acting, stationary mounted with all working parts totally protected within weatherproof enclosures.

C540 Cylinder Actuators

DeZURIK C540 pneumatic and hydraulic cylinder construction is in strict accordance with AWWA C540. The cylinder head and end cap are ductile iron. On pneumatic cylinders, interior surfaces are epoxy coated; on hydraulic cylinders, interior surfaces are nickel plated.

On pneumatic cylinders, the piston is epoxy coated cast iron and the piston rod is chrome plated carbon steel.

On hydraulic cylinders, the piston is nickel plated cast iron and the piston rod is chrome plated stainless steel.



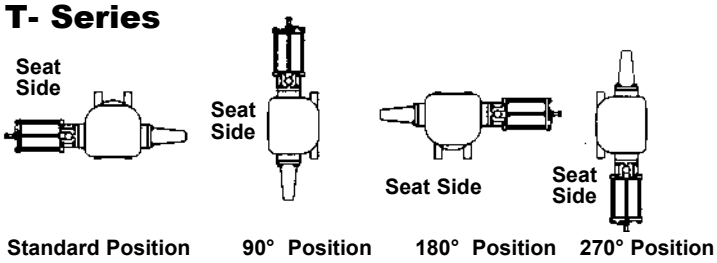
Manual and Throttling Manual Override

Contact Application Engineering for assistance.

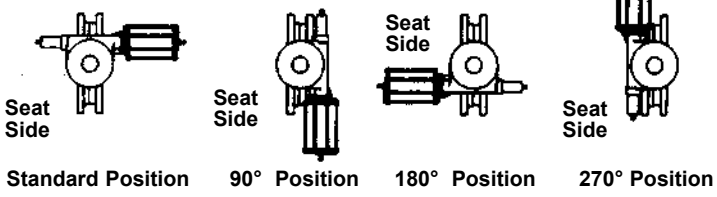
Mounting

Cylinder actuators can be mounted at 90° increments from standard.

T- Series



G- Series



Electric Motors

Electric motors offer reliable and economical valve operation. The electric actuator and associated gearing meet AWWA C540. DeZURIK AWWA Butterfly Valves can be furnished with electric motor actuators produced by leading manufacturers.

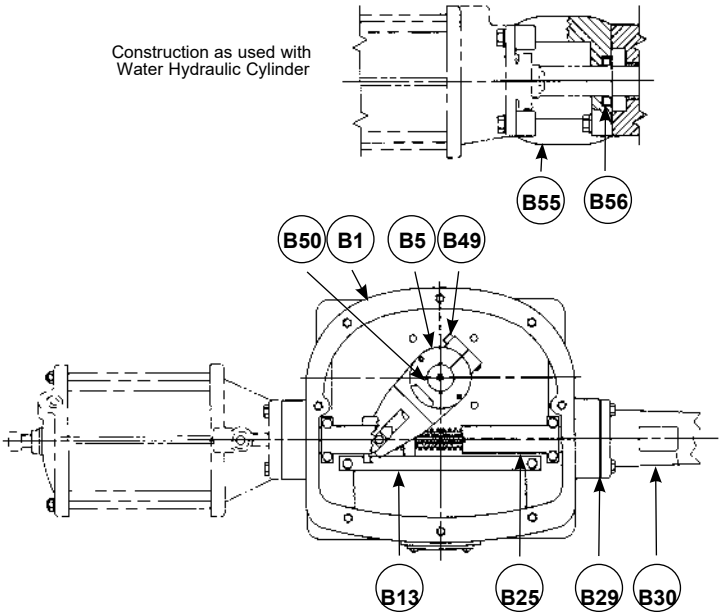
When ordering electric motor actuators, please provide information listed on “Data Input Checklist” at end of bulletin.

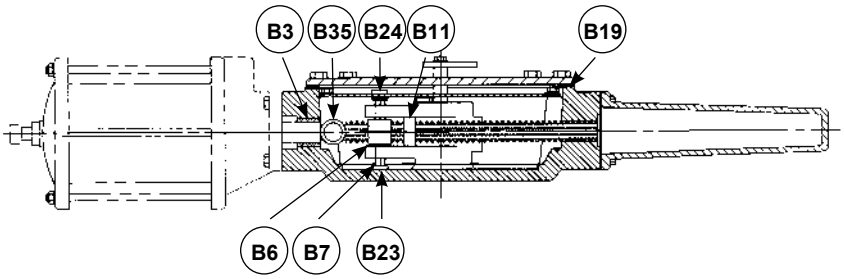
Cylinder Actuators

T-Series Cylinder Actuator Materials of Construction

Item	Description	Material
B1	Housing	Cast Iron, ASTM A126 Class B
B3	Bearing	Bronze
B5	Yoke	Cast Ductile Iron, A536
B6	Yoke Nut	Cold Rolled Steel
B7	Bearing	Sintered Stainless Steel
B11	Stop Nut	Cold Rolled Steel
B13	Guide Rail	Cold Rolled Steel
B19	Gasket	Neoprene
B23	Lower Yoke Guide (TW-7 only)	Steel, AISI 1215
B24	Upper Yoke Guide (TW-7 only)	Steel, ASTM A366
B25	Guide Rail (TW-7 only)	Steel, ASTM A36
B29	Gasket	Neoprene
B30	Cap	Fiberglass
B35	Stay Pin	Steel
B49	Screw	Alloy Steel
B50	Key	Steel, AISI 1018
B55	Adaptor (Hydraulic only)	Cast Iron, ASTM A126 Class B
B56	Wiper (Hydraulic only)	Carbon Steel

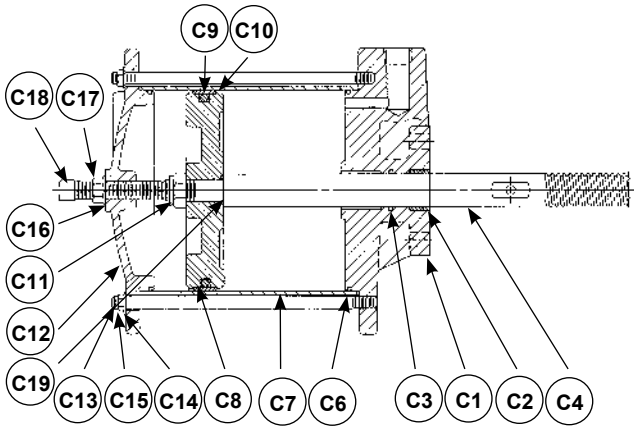
Note: All fasteners are zinc plated steel unless stainless steel bolting is specified.





Pneumatic/Low Pressure Oil Hydraulic Cylinder Materials of Construction

Item	Description	Standard Construction	C-540 Construction
C1	Cylinder Head	Cast Iron, ASTM A126 Class B	Ductile Iron, ASTM A536 65-45-12
C2	Bearing	Bronze Oil Impregnated	Bronze Oil Impregnated
C3	Rod Seal	Teflon with NBR	Teflon with NBR
C4	Piston Rod	Steel, AISI 1215 Chrome Plated	Steel, AISI 1215 Chrome Plated
C6	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C7	Cylinder Tube	Fiberglass	Fiberglass
C8	Piston	Cast Iron, ASTM A126 Class B	Cast Iron, ASTM A126 Class B
C9	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C10	Piston Seal	Virgin Teflon	Virgin Teflon
C11	Nut	Zinc Plated Steel	Zinc Plated Steel
C12	Cylinder Cap	Ductile Iron, ASTM A536 65-45-12	Ductile Iron, ASTM A536 65-45-12
C13	Tie Rod	Zinc Plated Steel	Steel, AISI C1018 Zinc Plated
C14	Washer	Zinc Plated Steel	Zinc Plated Steel
C15	Nut	Zinc Plated Steel	Zinc Plated Steel
C16	Seal Thread	Steel with Nitrile	Steel with Nitrile
C17	Jam Nut	Zinc Plated Steel	Zinc Plated Steel
C18	Set Screw	Zinc Plated Steel	Zinc Plated Steel
C19	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene

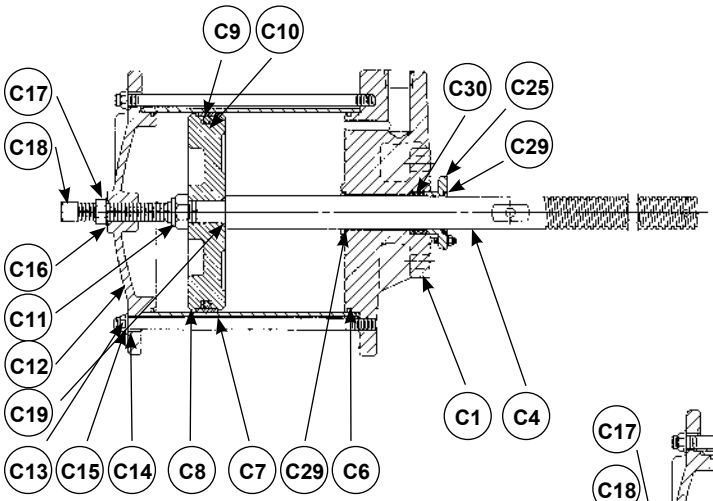


Cylinder Actuators

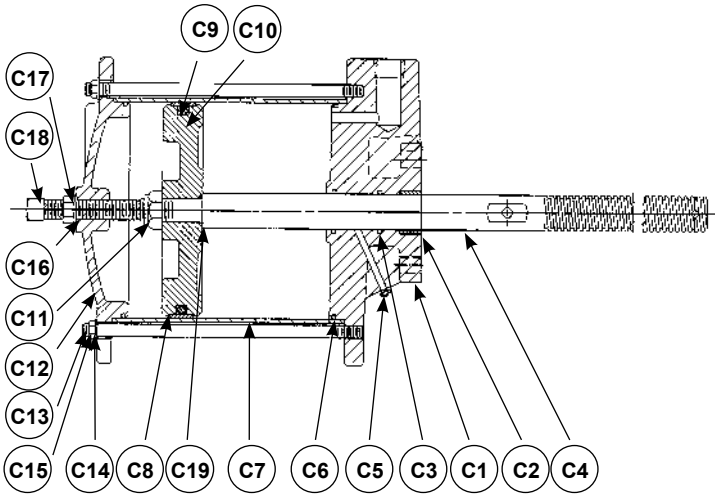
Water Hydraulic Cylinder
Materials of Construction

Item	Description	Standard Construction	C-540 Construction
C1	Cylinder Head	Cast Iron, ASTM A126	Ductile Iron, ASTM A536 65-45-12 Nickel Plated
C2	Bearing	–	Bronze Oil Impregnated
C3	Rod Seal	–	Teflon with NBR
C4	Piston Rod	Stainless Steel, ASTM A564, Type 17-4	Stainless Steel, Type 304 Chrome Plated
C5	Vent Plug	–	Alemite 47200
C6	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C7	Cylinder Tube	Fiberglass	Fiberglass
C8	Piston	Cast Iron, ASTM A126	Cast Iron, ASTM A126 Class B Nickel Plated
C9	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C10	Piston Seal	Virgin Teflon	Virgin Teflon
C11	Nut	Stainless Steel, Type 18-8	Stainless Steel, Type 18-8
C12	Cylinder Cap	Ductile Iron, ASTM A536	Ductile Iron, ASTM A536 65-45-12 Nickel Plated
C13	Tie Rod	Zinc Plated Steel	Steel, AISI C1018 Zinc Plated
C14	Washer	Zinc Plated Steel	Zinc Plated Steel
C15	Nut	Zinc Plated Steel	Zinc Plated Steel
C16	Seal Thread	Steel with Nitrile	Steel with Nitrile
C17	Jam Nut	Zinc Plated Steel	Zinc Plated Steel
C18	Set Screw	Stainless Steel, Type 18-8	Stainless Steel, Type 18-8
C19	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C25	Gland	Cast Iron, ASTM A126	–
C29	Scraper	Carbon Steel	–
C30	Packing	Neoprene & Cotton Duck	–

Water Hydraulic — Standard



Water Hydraulic — C-540



Cylinder Actuator Accessories

Positioners

DeZURIK offers both pneumatic and electronic signal valve positioners for use with cylinder actuators.

Gauges

Pneumatic positioners are available with three gauges mounted and piped; electronic positioners are available with two gauges mounted and piped.

4-Way Solenoid Valves

For cylinder actuators, 4-way direct acting, two position solenoid valves feature metal enclosures, .25" (6mm) NPT connections, Cv of .70 and a maximum pressure differential of 125 psi (8.5 Bar). Solenoid coil voltage is both 110/50/1 and 120/60/1 AC power. Contact DeZURIK for DC voltage. Solenoids are available with or without manual overrides. On large valves, furnish valve/actuator size, service conditions, and required operating speed for solenoid recommendations. Solenoid action should be specified.

Air Filter Regulator

For use on all pneumatic actuators. Includes a pressure reducing valve with filter and gauge. Maximum supply is 100 psi (7 Bar).

Speed Control Valves

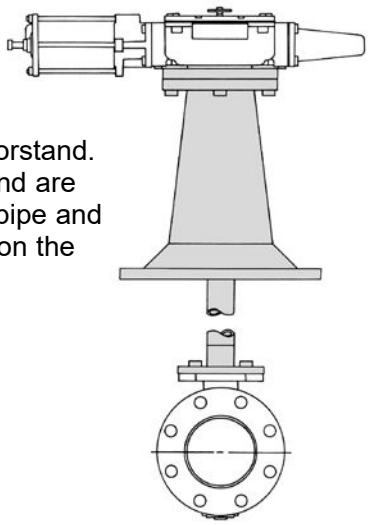
Speed control valves are available for controlling opening and closing speed on cylinder actuators.

Position Indicating Switches

Available in NEMA 4, 4x, 7 or 9 ratings. Switches are available as two SPDT or four SPDT.

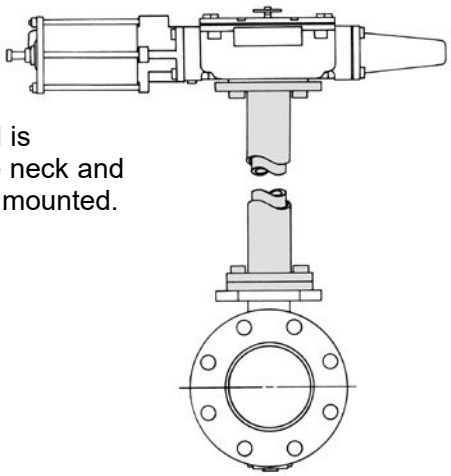
Floorstand

For valves with cylinder actuators mounted on floorstand. Included with the floorstand are couplings, the extension pipe and mounting of the actuator on the floorstand.

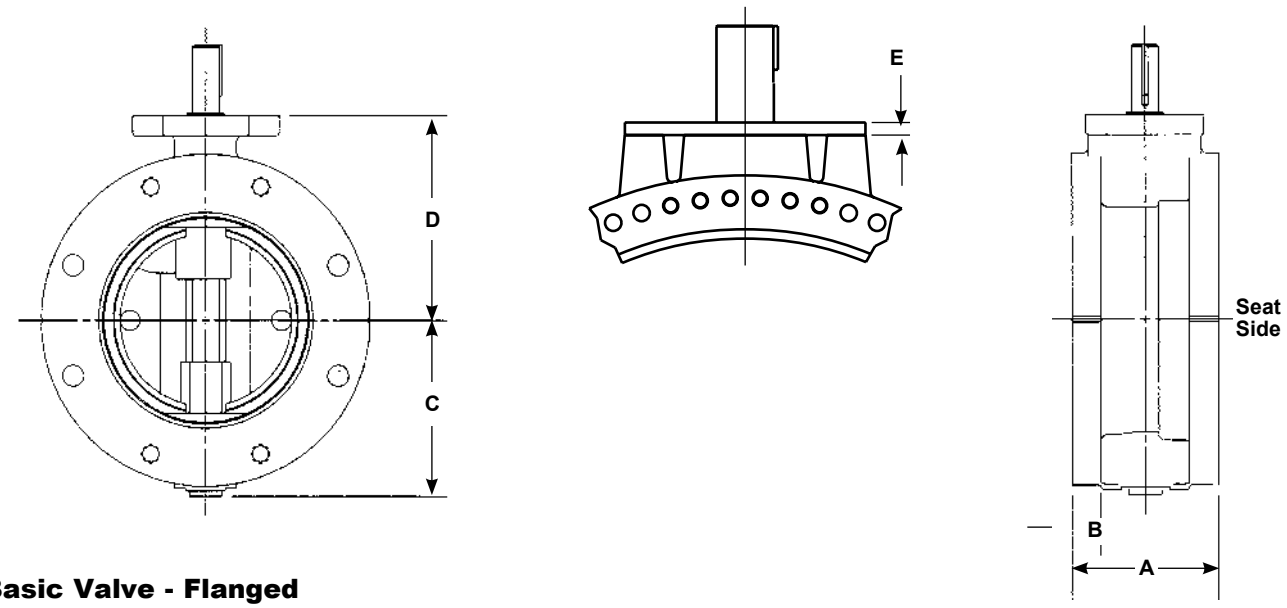


Neck Extension

For 3–20" (80–500mm) valves using T-Series Cylinder actuators. Included is the extended valve neck and shaft with actuator mounted.



Dimensions



Basic Valve - Flanged

Valve Size	A		B		C		D		E
	F1 25A, 75B & 150B	F2 250B	25A, 75B & 150B	250B	25A, 75B & 150B	250B	25A, 75B & 150B	250B	250B Only
3" 80mm	5.00 127	5.00 127	.81 21	1.19 30	4.00 102	4.12 105	4.81 122	4.81 122	–
4" 100mm	5.00 127	5.00 127	1.00 25	1.31 33	4.75 121	5.00 127	5.56 141	5.56 141	–
6" 150mm	5.00 127	5.00 127	1.06 27	1.50 38	6.03 153	6.25 159	7.00 178	7.00 178	–
8" 200mm	6.00 152	6.00 152	1.19 30	1.69 43	7.16 182	7.50 191	8.31 211	8.31 211	–
10" 250mm	8.00 203	8.00 203	1.25 32	1.97 50	8.38 213	8.75 222	9.50 241	9.50 241	–
12" 300mm	8.00 203	8.00 203	1.31 33	2.09 53	9.66 245	10.25 260	11.00 279	11.00 279	–
14" 350mm	8.00 203	8.00 203	1.47 37	2.25 57	10.91 277	11.50 292	11.50 292	11.50 292	–
16" 400mm	8.00 203	8.00 203	1.53 39	2.38 60	12.06 306	12.75 324	12.75 324	12.75 324	–
18" 450mm	8.00 203	8.00 203	1.66 42	2.50 64	14.03 356	14.50 368	13.50 343	14.00 356	–
20" 500mm	8.00 203	8.00 203	1.78 45	2.63 67	15.02 382	17.50 445	15.25 387	15.25 387	–
24" 600mm	8.00 203	12.00 305	1.97 50	2.91 74	19.00 483	20.19 513	18.41 468	19.50 495	–
30" 750mm	12.00 305	12.00 305	2.25 57	3.13 80	23.00 584	23.75 603	22.62 575	21.75 552	1.25 32
36" 900mm	12.00 305	15.00 381	2.50 64	3.50 89	27.38 696	27.38 695	25.62 651	25.62 651	1.25 32
42" 1100mm	12.00 305	15.00 381	2.75 70	3.81 97	30.91 785	30.91 785	30.42 773	30.42 773	1.25 32
48" 1200mm	15.00 381	15.00 381	2.88 73	4.13 105	35.38 899	35.38 899	33.00 838	33.00 838	1.25 32

Inches
Millimeter

Contact DeZURIK for dimensions on valve sizes 54" (1400mm) and larger.

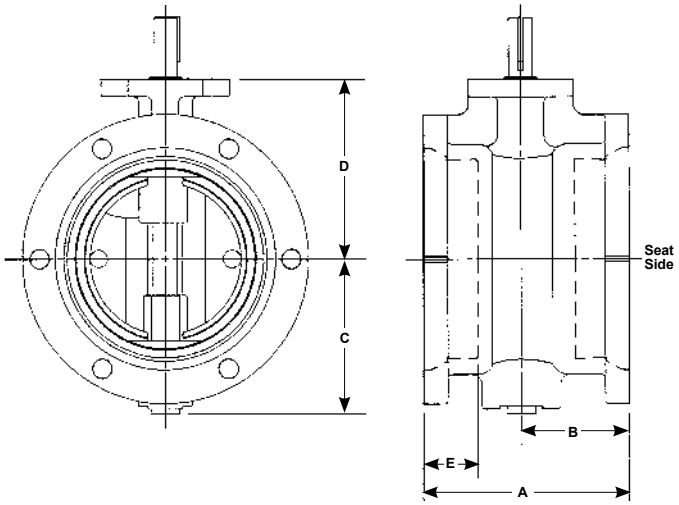
Note: All dimensions are subject to change without notice. Request certified drawings for use in preparing piping layouts.

Dimensions

Basic Valve — Mechanical Joint

Valve Size	A	B	C	D	E
4" 100mm	8.56 217	4.75 121	4.75 121	5.56 141	2.50 64
6" 150mm	8.88 226	4.75 121	6.03 153	7.00 178	2.50 64
8" 200mm	9.50 241	5.00 127	7.16 182	8.31 211	2.50 64
10" 250mm	9.88 251	5.25 133	8.38 213	9.50 241	2.50 64
12" 300mm	10.00 254	5.38 137	9.66 245	11.00 279	2.50 64
14" 350mm	12.38 315	6.62 168	10.91 277	11.50 292	3.50 89
16" 400mm	12.75 324	6.75 171	12.06 306	12.75 324	3.50 89
18" 450mm	13.42 341	7.00 178	14.03 356	13.50 343	3.50 89
20" 500mm	13.38 340	7.12 181	15.02 382	15.25 387	3.50 89
24" 600mm	13.75 349	7.50 191	19.00 483	18.41 468	3.50 89
30" 750mm	17.75 451	9.62 244	23.00 584	22.62 575	4.00 102
36" 900mm	18.00 458	10.00 254	27.38 696	25.62 651	4.00 102
42" 1100mm	18.75 476	10.25 260	30.91 785	30.41 772	4.00 102
48" 1200mm	19.62 498	10.62 270	35.38 898	33.00 838	4.00 102

Inches
Millimeter

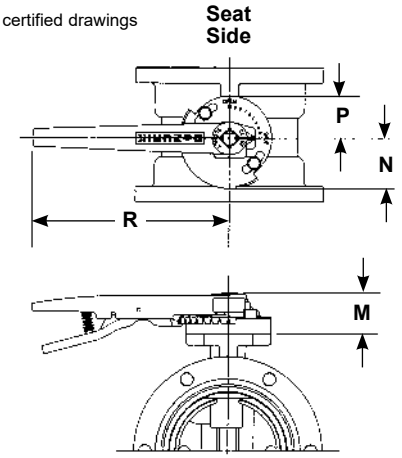


Note: All dimensions are subject to change without notice. Request certified drawings for use in preparing piping layouts.

Lever Actuator

Valve Size	Dimensions			
	M	N	P	R
3-4" 80-100mm	2.56 65	3.56 90	3.00 76	14.00 356
6-8" 150-200mm	2.88 73	3.56 90	3.00 76	14.00 356

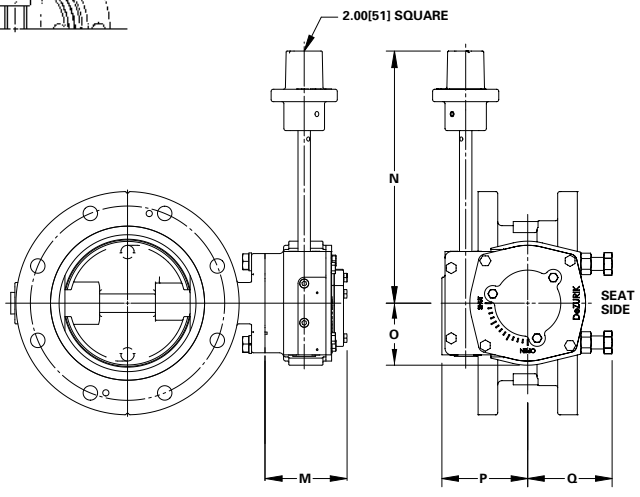
Inches
Millimeter



GS/GB Nut

Valve Size	Actuator Size	Dimensions				
		M	N	O	P	Q
3-12" 50-300mm	6B	4.96 126	15.25 387	3.75 95	5.19 132	5.10 130
14-20" 350-500mm	6B	5.96 151	15.25 387	3.75 95	5.19 132	5.10 130
24-30" 600-750mm	12A	6.27 159	17.85 453	7.47 190	8.90 226	7.60 193

Inches
Millimeter

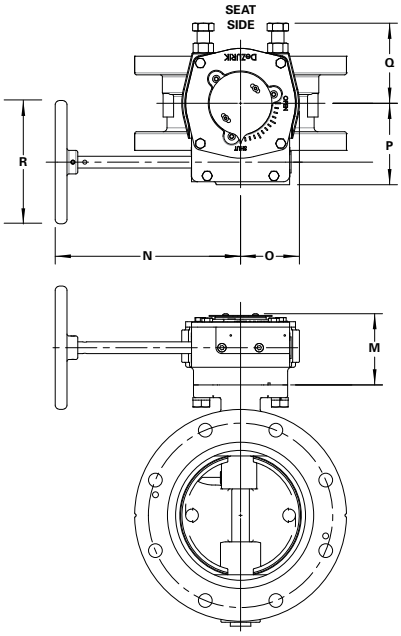


Dimensions

GS/GB Handwheel

Valve Size	Actuator Size	Dimensions					
		M	N	O	P	Q	R
3-12" 50-300mm	6B-HD8	4.54 115	11.81 300	3.75 95	5.19 132	5.10 130	8.00 203
	6B-HD12	4.54 115	11.81 300	3.75 95	5.19 132	5.10 130	12.00 305
	6B-HD16	4.54 115	12.25 311	3.75 95	5.19 132	5.10 130	16.00 406
14-20" 350-500mm	6B-HD12	5.54 141	11.81 300	3.75 95	5.19 132	5.10 130	12.00 305
	6B-HD16	5.54 141	12.25 311	3.75 95	5.19 132	5.10 130	16.00 406
	6B-HD24	5.54 141	15.94 405	3.75 95	5.19 132	5.10 130	24.00 610
18-20" 450-500mm	6B-HD24	5.54 141	15.94 405	3.75 95	5.19 132	5.10 130	24.00 610
	12A-HD16	5.66 144	15.48 393	7.47 190	8.90 226	7.60 193	16.00 406
	12A-HD20	5.66 144	15.48 393	7.47 190	8.90 226	7.60 193	20.00 508
	12A-HD30	5.68 144	20.69 526	7.47 190	8.90 226	7.60 193	30.00 762
24" 500mm	12A-HD12	5.68 144	15.12 384	7.47 190	8.90 226	7.60 193	12.00 305
	12A-HD16	5.68 144	15.48 393	7.47 190	8.90 226	7.60 193	16.00 406
	12A-HD20	5.68 144	15.48 393	7.47 190	8.90 226	7.60 193	20.00 508
	12A-HD24	5.68 144	19.19 487	7.47 190	8.90 226	7.60 193	24.00 610
	12A-HD30	5.68 144	20.69 526	7.47 190	8.90 226	7.60 193	30.00 762
28-30" 700-750mm	12A-HD20	5.68 144	15.48 393	8.25 210	8.90 226	7.60 193	20.00 508
	12A-HD30	5.68 144	20.69 526	8.25 210	8.90 226	7.60 193	30.00 762
	12A-HD36	5.68 144	22.75 578	8.25 210	8.90 226	7.60 193	36.00 914

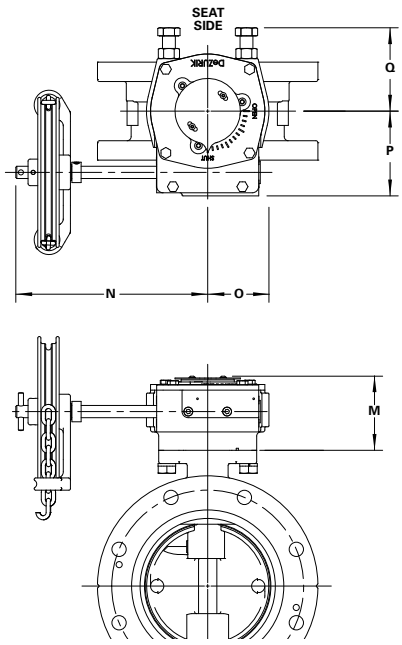
Inches
Millimeter



GS/GB Chainwheel

Valve Size	Actuator Size	Dimensions					
		M	N	O	P	Q	R
3-12" 50-300mm	6B-CW8	4.54 115	11.81 300	3.75 95	5.19 132	5.10 130	8.00 203
	6B-CW12	4.54 115	11.81 300	3.75 95	5.19 132	5.10 130	12.00 305
	6B-CW20	4.54 115	18.64 473	3.75 95	5.19 132	5.10 130	20.00 508
14-20" 350-500mm	6B-CW12	5.54 141	11.81 299	3.75 95	5.19 132	5.10 130	12.00 305
	6B-CW20	5.54 141	18.64 473	3.75 95	5.19 132	5.10 130	20.00 508
	6B-CW24	5.54 141	18.64 473	3.75 95	5.19 132	5.10 130	24.00 610

Inches
Millimeter

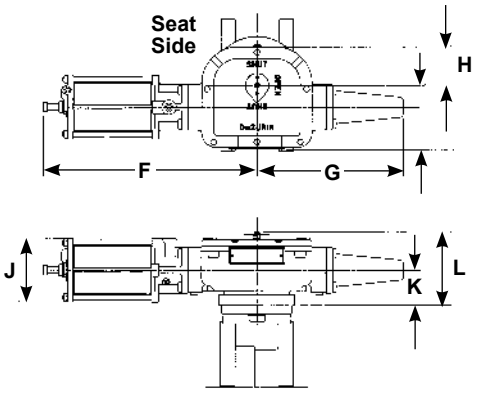


Dimensions

T-Series Cylinder Actuator

Valve Size (Cylinder Size)	F		G	H	I	J	K	L
	Pneumatic	Hydraulic						
3–10" 80–250mm (C4)	18.12 460	21.12 536	16.31 414	3.25 83	5.94 151	5.38 137	1.81 46	4.69 119
14" 350mm (C6)	18.88 480	21.88 556	16.31 414	3.25 832	5.94 151	7.88 200	1.81 46	4.69 119
12–16" 300–400mm (C6)	23.44 595	26.44 672	17.88 454	4.44 113	8.12 206	7.88 200	3.12 79	5.84 148
14–20" 350–500mm (C8)	24.06 611	27.06 687	17.88 454	4.44 113	8.12 206	10.25 260	3.12 79	6.03 153

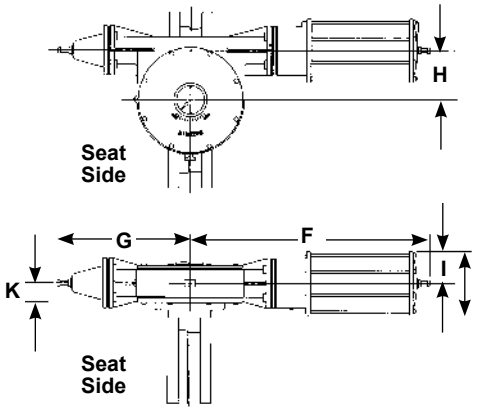
Inches
Millimeter



G-Series Cylinder Actuator

Valve Size (Cylinder Size)	F		G	H	I	J	K
	Pneumatic	Hydraulic					
18-20" 450-500mm (GS-12-PC8)	30.88 784	Contact DeZURIK	17.50 445	6.88 175	4.25 108	8.50 216	3.25 83
18-20" 450-500mm (GS-12-PC10)	31.00 787	Contact DeZURIK	17.50 445	6.88 175	5.25 133	10.50 267	6.88 175
24" 600mm (GS-12-PC8)	31.50 800	32.75 832	17.50 445	6.88 175	4.25 108	8.50 216	3.25 83
24" 600mm (GS-12-PC10)	31.62 803	33.88 861	17.50 445	6.88 175	5.25 133	10.50 267	3.25 83
24-30" 600-750mm (GS-12-PC8)	31.50 800	32.75 832	17.50 445	6.88 175	4.25 108	8.50 216	3.50 89
24–30" 600–750mm (GS-12-PC10)	31.62 803	33.88 861	17.50 445	6.88 175	5.25 133	10.50 267	3.50 89

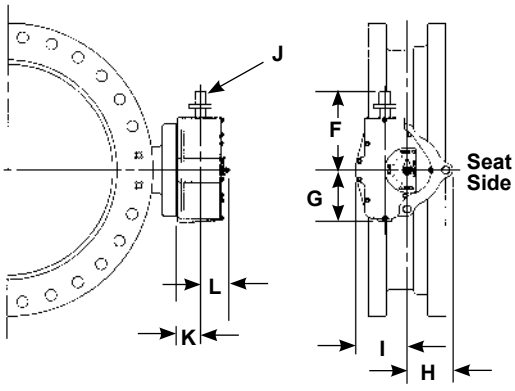
Inches
Millimeter



LA-Series Nut

Valve Size (Actuator Size)	F	F with Spur Gear	G	H	I	J	K	L
24–42" 600–1100mm (LA-4)	14.19 360	20.81 529	9.38 238	8.25 210	9.44 240	2.00 51	4.41 112	6.25 159
36–54" 900–1400mm (LA-6)	16.19 411	22.81 579	12.12 308	8.25 210	11.12 282	2.00 51	4.41 112	6.25 159
36–66" 900–1700mm (LA-10)	20.19 513	26.81 681	16.81 427	8.25 210	16.12 409	2.00 51	4.81 122	5.84 148

Inches
Millimeter

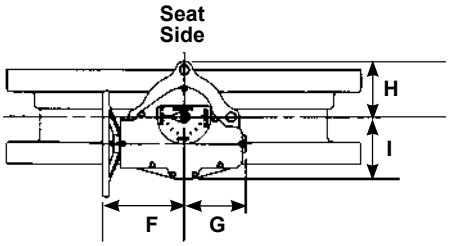


Dimensions

LA-Series Handwheel 24–36" (600–900mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-4-HD16	12.25 311	18.88 480	17.50 445	6.88 175	4.25 108	8.50 216	3.25 83	3.25 83
LA-4-HD24	20.25 514	31.62 803	17.50 445	6.88 175	5.25 133	10.50 267	3.25 83	3.25 83
LA-4-HD36	25.50 648	31.50 800	17.50 445	6.88 175	4.25 108	8.50 216	3.50 89	3.50 89

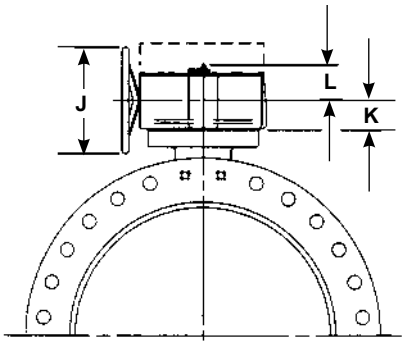
Inches
Millimeter



LA-Series Handwheel 28–42" (700–1100mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-4-HD24	22.25 565	28.88 734	12.12 308	8.25 210	11.12 282	24.00 610	4.41 112	6.25 159
LA-4-HD30	24.88 632	31.50 800	12.12 308	8.25 210	11.12 282	30.00 762	4.41 112	6.25 159
LA-4-HD36	27.50 699	34.12 867	12.12 308	8.25 210	11.12 282	36.00 914	4.41 112	6.25 159

Inches
Millimeter



LA-Series Handwheel 28–48" (700–1200mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-10-HD24	26.25 667	32.88 835	16.81 427	8.25 210	16.12 409	24.00 610	4.81 122	5.84 148
LA-10-HD30	28.88 734	35.50 902	16.81 427	8.25 210	16.12 409	30.00 762	4.81 122	5.84 148
LA-10-HD36	31.50 800	38.12 968	16.81 427	8.25 210	16.12 409	36.00 914	4.81 122	5.84 148

Inches
Millimeter

Note: All dimensions are subject to change without notice.
Request certified drawings for use in preparing piping layouts.

Dimensions

LA-Series Chainwheel 20–36" (500–900mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-4-CW20	35.00 889	41.62 1057	9.38 238	8.25 210	9.44 240	20.06 510	4.41 112	6.25 159
LA-4-CW30	35.00 889	41.62 1057	9.38 238	8.25 210	9.44 240	29.75 756	4.41 112	6.25 159

Inches
Millimeter

LA-Series Chainwheel 24–42" (600–1100mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-6-CW30	37.00 940	43.62 1108	12.12 308	8.25 210	11.12 282	29.75 756	4.41 112	6.25 159

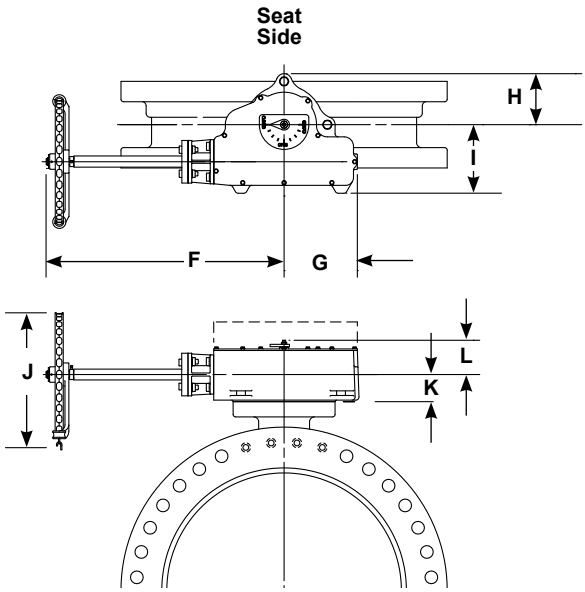
Inches
Millimeter

LA-Series Chainwheel 28–48" (700–1200mm)

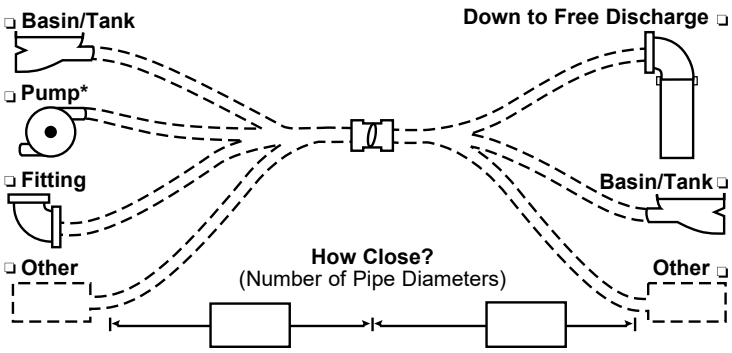
Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-10-CW20	41.00 1041	47.62 1210	16.81 427	8.25 210	16.12 409	20.06 510	4.81 122	5.84 148
LA-10-CW30	41.00 1041	47.62 1210	16.81 427	8.25 210	16.12 409	29.75 756	4.81 122	5.84 148

Inches
Millimeter

Note: All dimensions are subject to change without notice.
Request certified drawings for use in preparing piping layouts.



DeZURIK Butterfly Valve Applications Data Input Checklist



Part A: Check boxes and complete lines to show upstream/downstream configuration, enter distances in pipe diameters.

Part B: Check off or enter operating conditions.

1. Valve Function? ☐ Open/Shut ☐ Throttling ☐ Modulating Control
2. Where Installed? ☐ Buried ☐ Submerged ☐ Above Ground, In Plant
3. Line Fluid? ☐ Fresh Water ☐ Sewage ☐ Air ☐ Other?_____
4. Maximum Fluid Temperature? _____°C _____°F
5. Line Size? _____inches _____(mm) (nominal)
6. Normal Working Pressure?_____psi_____kPa
   Maximum (Shutoff) Pressure Differential? _____psi _____kPa
7. Normal Wide Open Valve Flow? _____flow rate or _____flow units
8. Emergency Maximum (Line Break, Etc.) Flow? _____flow rate _____flow units
9. (If Throttling or Modulating Control) Flow Range Desired?
   Maximum Flow? _____flow rate _____flow units
   Minimum Flow? _____flow rate _____flow units
10. Pipe Connection? _____Flanged _____Mechanical Joint _____Other

Part C: Check off or enter operator requirements.

1. Operator Type? Manual: ☐ Lever ☐ Lead Screw ☐ Gear ☐ Other?
   Power: ☐ Cylinder ☐ Electric ☐ Other?
2. Direction of Rotation To Open: ☐ Clockwise–(OR) ☐ Counter clockwise—(OL)
3. Cylinder Specifications:
   a. Supply Type and Pressure? ☐ Water_____psi_____kPa ☐ Oil_____psi_____kPa
   ☐ Air_____psi_____kPa ☐ Other_____psi_____kPa
   b. Fail Safe? ☐ Yes ☐ No; If yes which way if valve fails? ☐ Open ☐ Close
   c. Operating Times? _____sec Open to Close; _____sec Close to Open
   d. Accessories?
   ☐ Speed Control ☐ Limit Switches (ES) (Qty:_____O,_____C,_____I)
   ☐ Solenoid W/Manual Override ☐ Positioner
   ☐ Manual Override (On loss of supply press.) ☐ Solenoid W/O Manual Override
   ☐ Other? _____
_____
4. Electric Specifications:
   a. Supply?_____Volts_____Phase_____Hz
   b. Duty Cycle? ☐ Intermittent ☐ Continuous
   c. Starter/Control Needs?_____
   d. Operating Times?_____sec (Note: 60 sec per AWWA unless specified)
   e. Accessories?
   ☐ AUX Switches ☐ Potentiometer ☐ Slidewire Receiver ☐ Reversing Starter
   ☐ Heaters ☐ Control Station ☐ Control Transformer ☐ Other?_____

Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:
Web Site: DeZURIK.com E-Mail: info@DeZURIK.com

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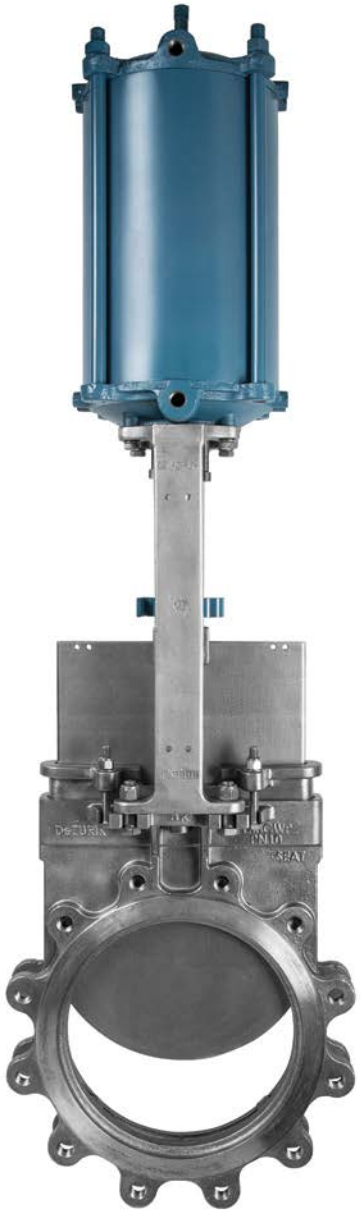
DeZURIK

BULLETIN
JULY 2023

35.00-1C

DeZURIK KGC-ES EXTENDED SERVICE LIFE CAST STAINLESS STEEL KNIFE GATE VALVES



DeZURIK KGC-ES Extended Service Life Cast Stainless Steel Knife Gate Valves

Applications

DeZURIK KGC-ES Cast Stainless Steel Knife Gate Valves are designed for the toughest corrosive, abrasive liquid, slurry or dry material applications including Pulp and Paper, Mining, Wastewater, Chemical, Petrochemical, Power, Steel, Food Processing, and more.

Design and Construction

The heart of the KGC-ES is the DeZURIK ***Exclusive Premium Packing System.*** This system features a tight tolerance machined packing chamber, rounded gate edge, anti-extrusion ring, and many packing options to meet the demands of your specific application. All of these features together will improve sealing, extend packing life, and reduce maintenance.

Depending on what your application requires, the cast body and packing gland are available in 304, 316, 317, 254-SMO, 2205 Duplex Stainless Steel or Hastelloy C. Other body and gate materials are available upon request.

KGC-ES Knife Gate Valves are available in sizes 2-48" (50-1200mm) with metal, resilient or soft seated versions.

The actuator superstructure is heavy duty cast carbon steel or cast stainless steel to minimize corrosion. A variety of actuator options are available including handwheels, chainwheels, bevel gears, levers, pneumatic cylinders, hydraulic cylinders, and electric motors. A full complement of accessories is also offered.

DeZURIK Exclusive Rounded Stainless Steel Gate

Gates are available in 304, 316, 317, 17-4, 254-SMO, 410, 2205 Duplex Stainless Steel or Hastelloy C for corrosion resistance. The gate has a precision ground finish on both sides to prevent packing and seat damage. The beveled knife-like gate edge with a machined tooth on each side pushes away or cuts through solids in the flow stream.

- Provides superior sealing
- Improves packing life
- Requires less compression and thus reduces friction
- Eliminates sharp corners where leakage first occurs

Deflection Cones

To prolong valve life in particularly demanding services, deflection cones are available in 316 stainless steel or abrasion resistant cast iron per ASTM A532 with Brinell Hardness of at least 500 BHN or urethane.

Cast Gate Guides and Jams

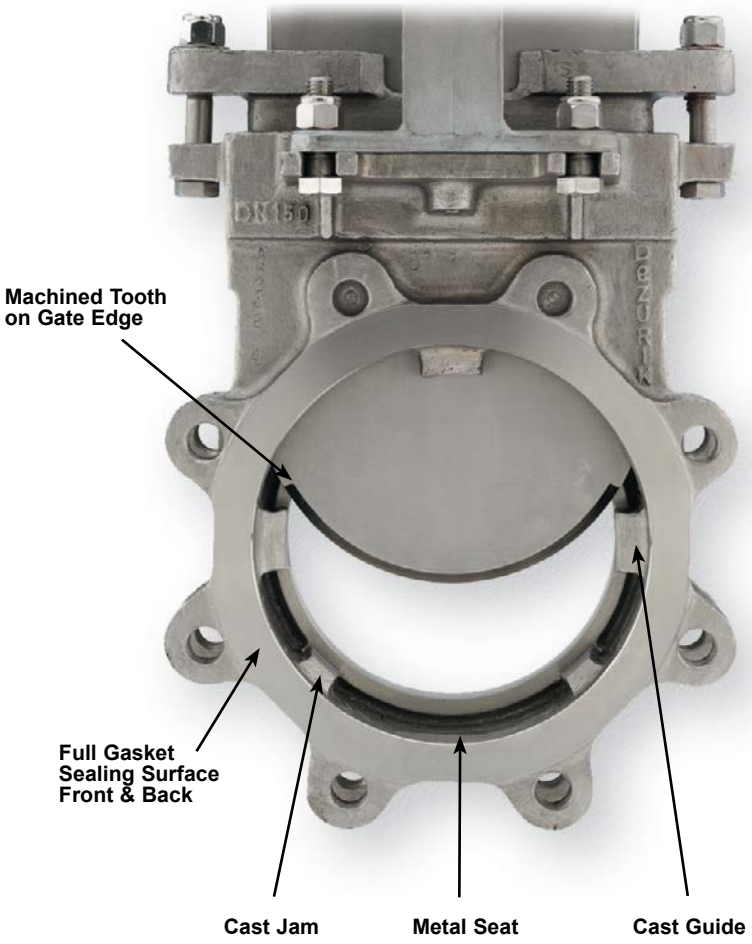
The cast gate guides provide support for the moving gate and will not break off like welded guides. Cast gate jams at the bottom of the body hold the gate securely against the seat to assure positive shutoff. All KGC-ES valves can handle full reverse pressure without damage. The body has raised face end connections with drilled and tapped lugs.

High Flow Capacity

The 100% round port design allows high flow capacity and minimum pressure drop. DeZURIK's KGC-ES valve seat I.D. is equal to the inside diameter of standard pipe (ASME B36.10).

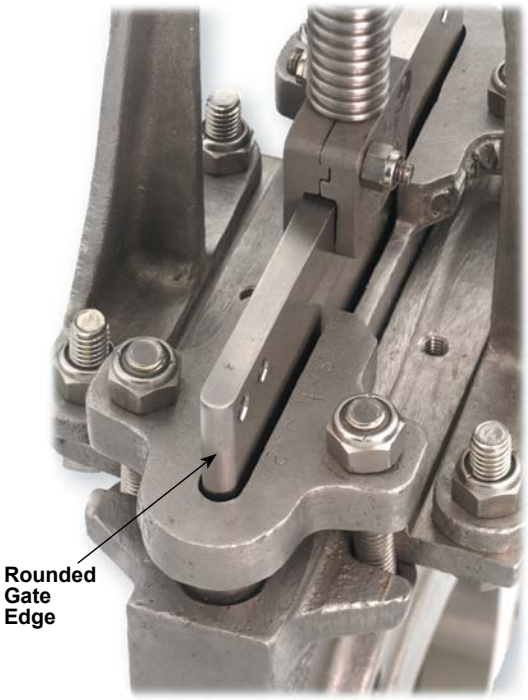
Full Gasket Sealing Front and Back

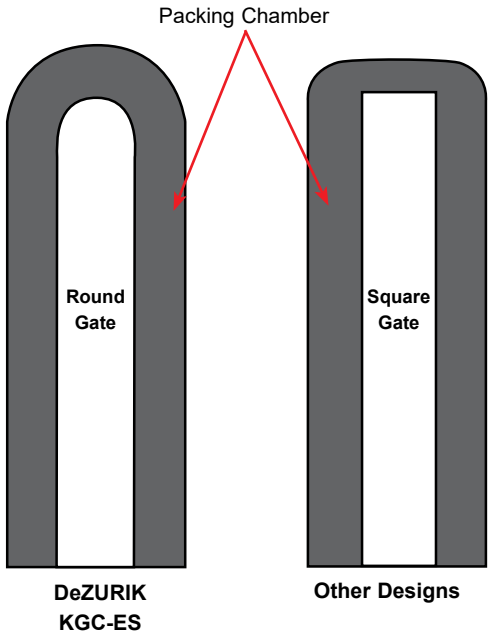
For maximum gasket sealing the KGC-ES end connections conform to ASME B16.20 dimensions for spiral-wound gaskets.

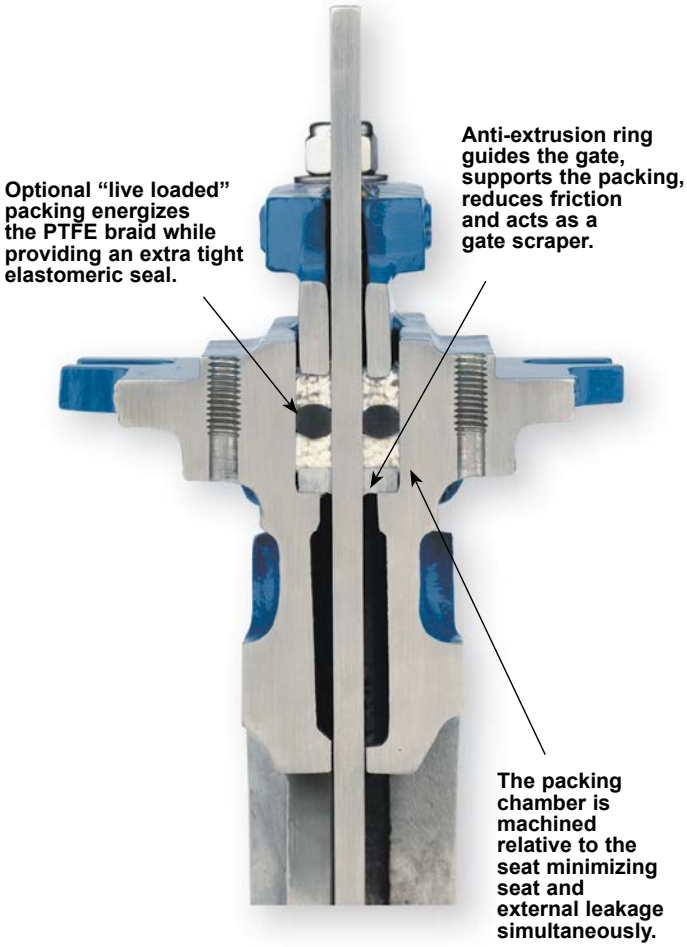


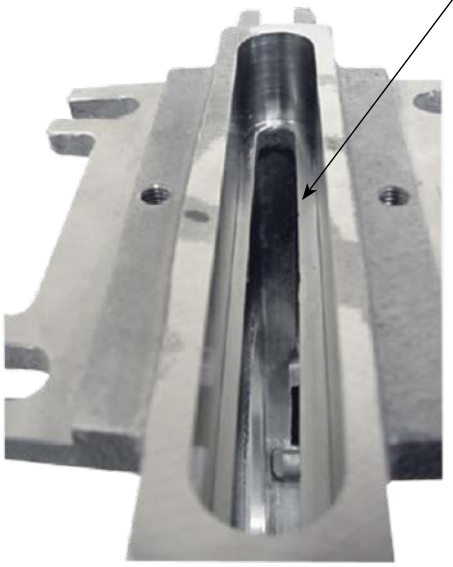
DeZURIK Exclusive Premium Packing System Ensures Long-Life by Sealing, Scraping and Supporting

DeZURIK KGC-ES Valves have a unique packing system that ensures a long-life tight seal with minimal packing gland pressure. The Premium Packing System is available for general, moderate, severe, and high temperature applications. The machined packing chamber, rounded gate edge, and anti-extrusion ring form the base. The system is completed by careful selection of the packing material. Temperature, pH, and media properties will determine the most suitable packing option. KGC-ES valves can be re-packed without being removed from the pipeline.









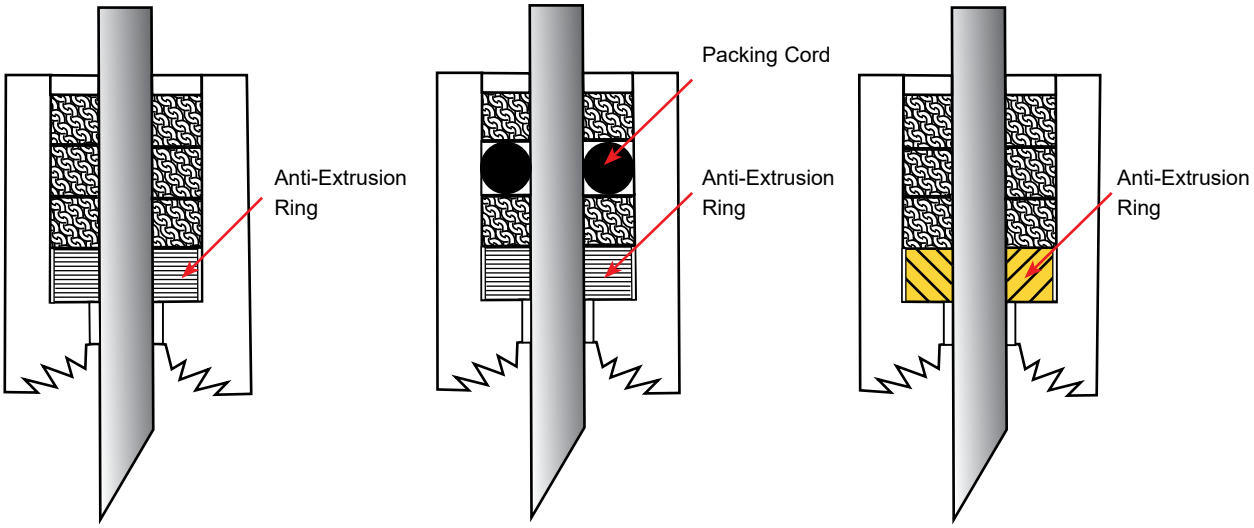
Test data proves the Premium Packing System requires fewer packing adjustments and provides extended service life.

Putting The Premium Packing System To Work

The KGC-ES packing system includes a number of features that:

- Extend service life
- Reduce external leakage
- Minimize friction and actuator thrust required
- Require fewer packing adjustments
- Ensure alignment of the gate
- Allow field replacement of packing

High Performance Packing Material Options



SMP

Lubricated PTFE Braided Packing with Anti-Extrusion Ring

FGP

Lubricated Food Grade Service with Anti-Extrusion Ring

ASP

Lubricated Self-Adjusting PTFE Braided Packing with Copolymer of Tetrafluoroethylene/propylene Fluoroelastomer Cord and Anti-Extrusion Ring

TDP

Dry Service, Dry PTFE Braided Packing with Solid PTFE Cord and Anti-Extrusion Ring

HTP

High Temperature Braided Packing with Carbon Fabric Reinforced Graphite Anti-Extrusion Ring

HMP

High Temperature Braided Packing with Metal Scraper Anti-Extrusion Ring

Application Factors That Affect Your Packing Selection For Optimal Sealing

- Compatibility with process media
  - Wet or dry application
  - Food grade or non-food grade
  - Life cycle stroke frequency
  - Temperature
  - pH Acid-Base level
  - Scaling or crystallization on gate
- Sealing
  - ASP packing with energized resilient cord will keep pressure on the packing material to maximize seal
  - Adjustable Packing Gland will renew and compress the packing to seal the valve
- Scraping
  - Anti-Extrusion Ring functions as a gate scraper, preventing process media from entering packing chamber.
- Supporting
  - Anti-Extrusion Ring supports packing, keeps packing from extruding between body and gate, and maintains gate alignment to maximize sealing performance

Seat Options

Metal, resilient or soft seated valves are offered in a 100%, round port design. The integral metal seated or the replaceable 17-4 PH Stainless Steel H900 Heat Treated version is available with shutoff capability exceeding current MSS-SP81 standards.

Resilient Seated Valves

Resilient seated valves are available for applications where drip-tight shutoff is required. Unlike valves which use an O-ring seal, DeZURIK KGC-ES Valves have a replaceable resilient seat designed especially for knife gate valve applications. The resilient seat material is molded on three sides of the stainless steel seat ring. When the valve is closed, the gate is pushed against the seat and held in place by the gate jams. When the valve is open, the gate moves away from the seat, allowing clearance, which prevents seat damage and reduces operating force.

A variety of seat materials are available:

CR - Chloroprene

NBR - Acrylonitrile-Butadiene

EPDM - Terplymer of Ethylene, Propylene and a Diene

FKM - Fluoro Rubber

CRW - Chloroprene, off white

Soft Seated Valves

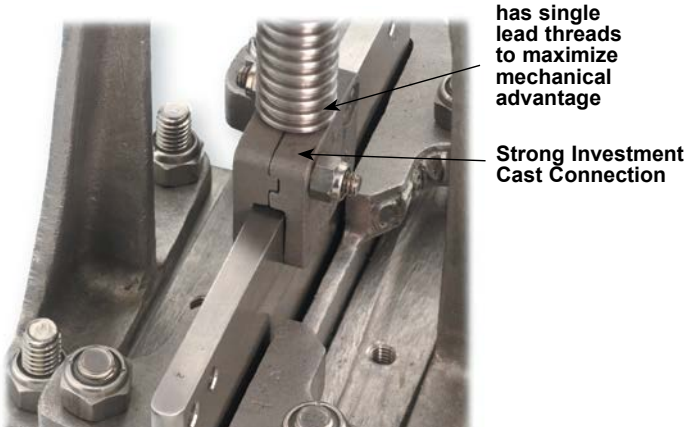
Soft seated valves are available for applications concerned with color contamination.

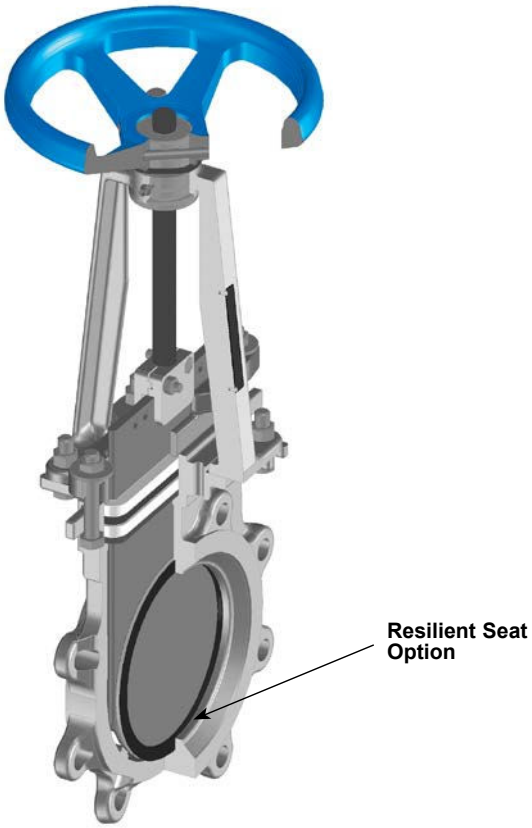
PTFE - Polytetrafluoroethylene, white

Reinforced PTFE - Polytetrafluoroethylene

Low Rim-Pull Force

A strong investment cast clip complements KGC-ES's robust construction. The single lead threads on the manual stem result in a lower required handwheel rim-pull force.





V-Orifice Design for Reliable Throttling and Modulation Control

An integral metal-seated V-port design is also available for reliable throttling control of thick slurries including paper stock. The constant V-orifice is maintained from open valve position to closed to prevent bridging or plugging and to ensure maximum control accuracy. Other orifice shapes available upon request.

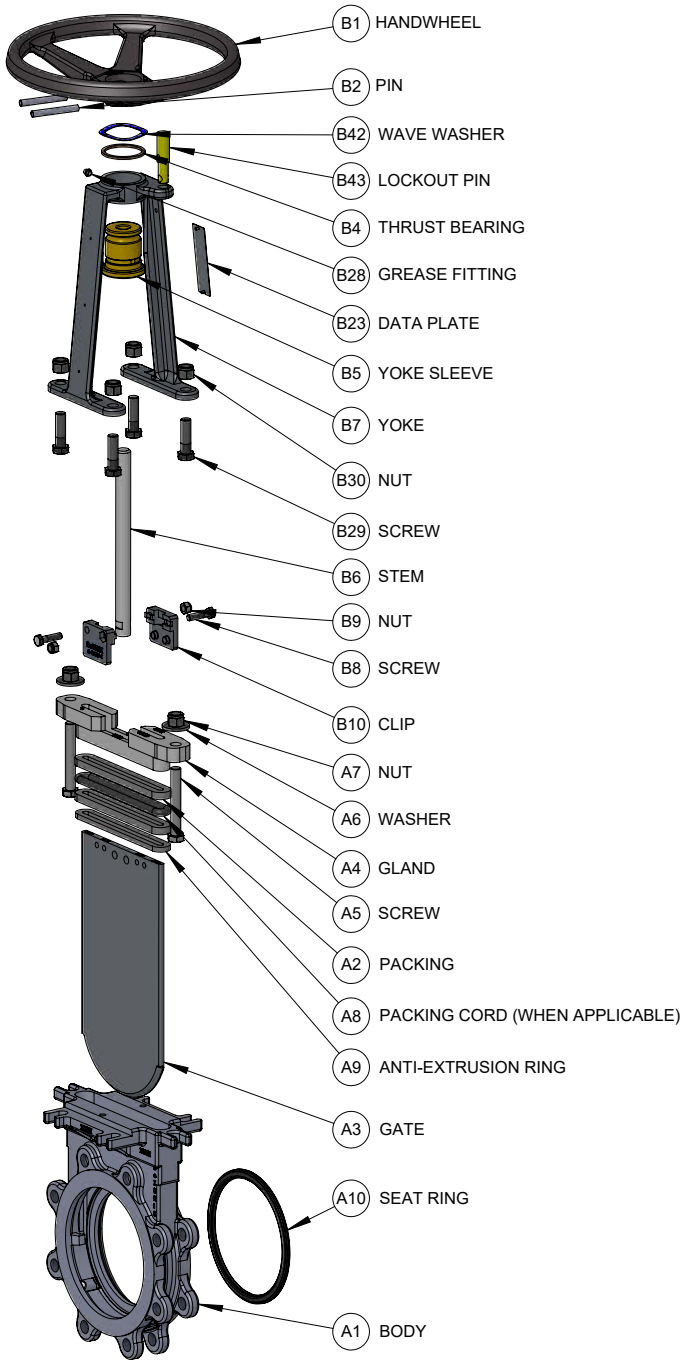
Options

DeZURIK KGC-ES Knife Gate Valves may be ordered with the following options to meet your application requirements:

- Purge port connections
- Corrosion resistant cylinder actuator materials
- Hardened/removable seats
- Hardened gates
- Bonnets

Materials of Construction

Item	Description	Material
A1	Body	304 Stainless Steel, ASTM A351 CF8
		316 Stainless Steel, ASTM A351 CF8M
		317 Stainless Steel, ASTM A351 CG8M
		254-SMO Stainless Steel, ASTM A351 CK3MCuN
		2205 Duplex Stainless Steel, ASTM A995 CD3MN
		Hastelloy C ASTM A494 CW2M / CX2MW
A2	Packing	ASP - Self-Adjusting PTFE Braided Packing to 400ºF (205ºC) (pH Range 0-14)
		SMP - PTFE Braided Packing to 500°F (260°C) (pH Range 0-14)
		TDP - Dry Service, Dry PTFE Braided Packing to 500°F (260°C) (pH Range: 0-14)
		HTP - High Temperature Braided Packing to 650°F (343°C) (pH Range: 1-12)
		HMP - High Temperature Braided Packing with Metal Scraper Ring to 1000°F (540°C) (pH Range: 3-11)
		FGP - Food Grade Service to 450°F (232°C) (pH Range: 3-11)
A3	Gate	304 Stainless Steel, ASTM A240
		316 Stainless Steel, ASTM A240
		317 Stainless Steel, ASTM A240
		17-4 Stainless Steel H900 Heat Treated, ASTM A564
		254 - SMO Stainless Steel, ASTM A240
		2205 Duplex Stainless Steel, ASTM A276
		Hastelloy C 276, ASTM B574
		410 Stainless Steel, ASTM A240
A4	Gland	Matches Body Material
A5	Screw	304 Stainless Steel
A6	Washer	304 Stainless Steel
A7	Nut	304 Stainless Steel
A8	Packing Cord	Copolymer of Tetrafluoroethylene/Propylene Fluoroelastomer to 400ºF (205ºC) (pH Range 0-14). Used with ASP packing
		Solid PTFE to 500°F (260°C) (pH Range: 0-14). Used with TDP packing
A9	Anti-Extrusion Ring	PTFE, Glass Filled to 500ºF (260ºC) (pH Range 0-14). Used with SMP, TDP, ASP and FGP packing.
		Square Braid with weave of fully-annealed copper wire scrapers to 1000ºF (540ºC) (pH Range 3-10). Used with HMP packing
		Carbon Fabric Reinforced Graphite to 800ºF (427ºC) (pH Range 1-12). Used with HTP packing.
A10	Seat Ring*	CR - Chloroprene to 180°F (83°C)
		NBR - Acrylonitrile-Butadiene to 180°F (83°C)
		EPDM - Terpolymer of Ethylene, Propylene and a Diene to 250°F (122°C)
		FKM - Fluoro Rubber to 400°F (204°C)
		17-4 PH Stainless Steel H900 Heat Treated
		CRW - Chloroprene, Off White to 140°F (60°C)
		PTFE - Polytetrafluoroethylene, white to 450°F (230°C)
		Reinforced PTFE - Polytetrafluoroethylene, to 500°F (260°C)
B1	Handwheel	Painted, Cast Iron
B2	Roll Pin	Carbon Steel or 420 Stainless Steel
B4	Thrust Bearing	Oil Impregnated Bronze
B5	Yoke Sleeve	Aluminum Bronze
B6	Stem	304 Stainless Steel
B7	Yoke	Cast Steel or 304 Stainless Steel
B8	Screw	Zinc Plated Steel or 18-8 Stainless Steel
B9	Nut	Zinc Plated Steel or 18-8 Stainless Steel
B10	Clip	304 Stainless Steel
B23	Data Plate	316 Stainless Steel
B28	Grease Fitting	Zinc Plated Steel
B29	Screw	Zinc Plated Steel or 18-8 Stainless Steel
B30	Nut	Zinc Plated Steel or 18-8 Stainless Steel
B42	Wave Washer	304 Stainless Steel
B43	Lockout Pin	304 Stainless Steel



*The replaceable Seat Ring is standard on resilient-seated valves and optional on metal-seated valves.The standard integral metal seat matches the body material.

Valve Selection

Shut-Off Capabilities

Resilient Seats	Leak tight/drip tight
Soft Seats	5 cc/in/min
Metal Seats	Meet MSS SP-81

Pressure Ratings

2-52" (50-1300mm)	150 psi C.W.P. (1030 kPa)
Optional 30 & 36" (750 & 900mm)	100 psi C.W.P (690 kPa)

Notes:
Valve can handle Full Reverse Pressure without damage.

Valves with Chloroprene, off white seats are limited to 50 psi (350 kPa). Contact DeZURIK with service conditions.

DeZURIK resilient seated and soft seated knife gate valves are tested at minimum of 40 psi per MSS SP81 standards. Contact DeZURIK for special low pressure tests if operating line pressure is below 40 psi.

Applicable Standards

DeZURIK KGC-ES Knife Gate Valves are designed and/or tested to meet the following standards:	
MSS SP-81	Metal Seated Valves, Stainless Steel, Bonnetless, Flanged Knife Gate Valves
MSS SP-151	Pressure testing of knife gate valves
ASME B16.5 2-24" (50-600mm)	Flanges and Flanged Fittings, ASME 150 Conforms to related drilling dimensions
ASME 16.47 26-52" (650-1300mm)	Large diameter Steel Flanges. Series A. Conforms to related dimensions
AWWA C520	Valves conform to AWWA Standard ANSI/AWWA C-520 for sizes 2-96" (50-2400mm) Knife Gate Valves
International Standards	Conforms to flanged bolt guides — JIS 10; DIN 10 and DIN 16; ISO 7005-1/PN10 and 7005-2/PN16; BS 4504/PN10 and BS 4504/PN16; and AS 2129 Tables D and E; SANS 1123-1000 and SANS 1123-1600

Flow Parameters

Round Port

Valve Size	Cv* Kv* 100% Open	K** (resistance)	Port Area (in^2/cm^2)
2" 50mm	300 260	0.16	3.1 20
3" 80mm	675 584	0.16	7.1 46
4" 100mm	1200 1040	0.16	12.6 81
5" 125mm	1900 1640	0.16	19.6 126
6" 150mm	2700 2340	0.16	28.3 183
8" 200mm	4800 4200	0.16	50.3 325
10" 250mm	7500 6500	0.16	78.5 506
12" 300mm	10800 9300	0.16	113 729
14" 350mm	13200 11400	0.16	138 890
16" 400mm	17400 15100	0.16	183 1180
18" 450mm	22300 19300	0.16	234 1510
20" 500mm	27800 24000	0.16	291 1880
22" 550mm	34000 29400	0.16	355 2290
24" 600mm	40500 35000	0.16	425 2740
26" 650mm	47800 41300	0.16	501 3230
28" 700mm	55600 48100	0.16	583 3760
30" 750mm	64000 55400	0.16	672 4340
32" 800mm	73000 63100	0.16	767 4950
36" 900mm	93000 80400	0.16	976 6300
42" 1050mm	126000 109000	0.16	1336 8620
48" 1200mm	165000 142700	0.16	1750 11290

V-Orifice 60 Degrees

Valve Size	Cv* Kv* 100% Open	K** (resistance)	Port Area (in^2/cm^2)
2" 50mm	89 77	1.80	1.9 12
3" 80mm	210 584	1.63	4.3 28
4" 100mm	386 330	1.53	7.7 50
5" 125mm	665 580	1.27	11.5 74
6" 150mm	900 780	1.42	17.2 111
8" 200mm	1660 1400	1.32	30.6 197
10" 250mm	2320 2000	1.65	42.0 271
12" 300mm	3490 3000	1.52	61.9 399
14" 350mm	4650 4000	1.27	80.8 521
16" 400mm	6110 5300	1.29	106 680
18" 450mm	8000 6900	1.23	138 890
20" 500mm	10100 8700	1.20	170 1100
22" 550mm	11900 10300	1.28	213 1370
24" 600mm	15100 13100	1.14	250 1610
26" 650mm	16800 14500	1.28	300 1940
28" 700mm	19500 16900	1.29	350 2260
30" 750mm	23900 20700	1.14	389 2510
32" 800mm	25600 22100	1.30	460 2970
36" 900mm	35200 30400	1.11	568 3660
42" 1050mm	44100 38100	1.32	800 5160
48" 1200mm	57800 50000	1.33	1050 6770

*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

Valve Selection

Valve and Actuator Weights

Pounds
Kilograms

Valve Size	Basic Valve	With Lever	With Handwheel	With Chainwheel	With Bevel Gear Handwheel*	With Cylinder		
						Size	lbs.	Kg.
2" 50mm	10 4.5	20 9	20 9	32 14.5	—	4" (100mm)	29	13
3" 80mm	16 7	37 17	27 12	39 18	88 40	4" (100mm)	37	17
4" 100mm	24 11	48 22	36 16	48 22	96 43.5	4" (100mm)	45	20
						6" (150mm)	63	29
5" 125mm	32 14.5	60 27	51 23	66 30	108 49	4" (100mm)	58	26
						6" (150mm)	76	35
						8" (200mm)	88	40
6" 150mm	38 17	66 30	57 26	75 34	113 51	4" (100mm)	63	29
						6" (150mm)	81	37
						8" (200mm)	93	42
8" 200mm	65 30	98 44.5	86 39	101 46	144 65	6" (150mm)	112	51
						8" (200mm)	124	56
10" 250mm	103 47	157 71	141 85	179 81	191 87	8" (200mm)	174	79
						10" (250mm)	220	100
						12" (300mm)	257	117
12" 300mm	148 67	213 97	187 85	227 103	241 109	8" (200mm)	225	102
						10" (250mm)	270	122
						12" (300mm)	309	140
14" 350mm	199 90	N/A	265 120	284 129	303 137	10" (250mm)	332	151
						12" (300mm)	372	169
16" 400mm	272 123	N/A	341 155	358 162	380 172	10" (250mm)	409	186
						12" (300mm)	449	204
						14" (350mm)	495	225
18" 450mm	361 164	N/A	433 197	449 204	473 215	12" (300mm)	551	250
						14" (350mm)	602	273
						16" (400mm)	813	369
20" 500mm	518 235	N/A	593 269	653 296	637 289	12" (300mm)	712	323
						14" (350mm)	760	345
						16" (400mm)	982	445
22" 550mm	622 282	N/A	698 317	N/A	760 345	12" (300mm)	830	377
						14" (350mm)	881	400
						16" (400mm)	1101	500
						18" (450mm)	1144	519
24" 600mm	725 329	N/A	803 364	N/A	882 400	12" (300mm)	947	430
						14" (350mm)	1001	454
						16" (400mm)	1219	553
						18" (450mm)	1262	572
26" 650mm	918 417	N/A	N/A	N/A	1104 501	12" (300mm)	1200	544
						14" (350mm)	1251	568
						16" (400mm)	1524	692
						18" (450mm)	1578	716
						20" (500mm)	1711	777
28" 700mm	1111 503	N/A	N/A	N/A	1325 601	12" (300mm)	1417	643
						14" (350mm)	1467	666
						16" (400mm)	1648	748
						18" (450mm)	1830	830
						20" (500mm)	1963	891
30" 750mm	1446 656	N/A	N/A	N/A	1594 723	12" (300mm)	1718	780
						14" (350mm)	1768	802
						16" (400mm)	1985	900
						18" (450mm)	2205	1000
						20" (500mm)	2365	1073
32" 800mm	1700 772	N/A	N/A	N/A	1825 828	12" (300mm)	1901	862
						14" (350mm)	1951	886
						16" (400mm)	2121	963
						18" (450mm)	2300	1044
						20" (500mm)	2426	1101
36" 900mm	2204 1000	N/A	N/A	N/A	2366 1073	14" (350mm)	2541	1153
						16" (400mm)	2755	1250
						18" (450mm)	2987	1355
						20" (500mm)	3150	1428
42" 1050mm	3600 1634	N/A	N/A	N/A	3908 1774	On Application		
48" 1200mm	4997 2266	N/A	N/A	N/A	5450 2474	On Application		

Note: Weights are approximate and do not include crating

* For Bevel Gear with Chainwheel, add the following weight to the bevel gear with handwheel weight:
2-18" add 7 lbs. (3kg)
20-24" add 26 lbs. (12kg)
30" add 74 lbs. (34kg)
36" add 68 lbs. (31kg)

Ordering

To order, simply complete the valve order code from information shown. An ordering example is shown for your reference.

Valve Style
Give valve style code as follows:

KGC = Cast Stainless Steel Knife Gate Valve

Valve Size
Give valve size code as follows:

2	=	2"	(50mm)	20	=	20"	(500mm)
3	=	3"	(80mm)	22	=	22"	(550mm)
4	=	4"	(100mm)	24	=	24"	(600mm)
5	=	5"	(125mm)	26	=	26"	(650mm)
6	=	6"	(150mm)	28	=	28"	(700mm)
8	=	8"	(200mm)	30	=	30"	(750mm)
10	=	10"	(250mm)	32	=	32"	(800mm)
12	=	12"	(300mm)	36	=	36"	(900mm)
14	=	14"	(350mm)	42	=	42"	(1050mm)
16	=	16"	(400mm)	48	=	48"	(1200mm)
18	=	18"	(450mm)				

Body Style
Give body style code as follows:

ES = Extended Service Life with DeZURIK Exclusive Premium Packing System

End Connection
Give end connection code as follows:

F1 = ASME 150 UNC Tapping for Threads
F110 = ISO 7005/PN10 Drilling
F116 = ISO 7005/PN16 Drilling
F1DA = AS2129 Table D Drilling
F1EA = AS2129 Table E Drilling
F1UN(1) = ASME 150 UN-8 Tapping for Threads
F1S10 = SANS 1123-1000
F1S16 = SANS 1123-1600

Optional End Connections

F1T = ASME 150 Through Bolting
F1J1 = JIS 10 Drilling

On Application

Other end connections available on application.

Body Material
Give body material code as follows:

Standard

S1 = 304 Stainless Steel (14" and larger)
S2 = 316 Stainless Steel
S3 = 317 Stainless Steel

On Application

HC = Hastelloy C
S6 = 254 Stainless Steel
S10 = 2205 Duplex Stainless Steel

Packing Material
Give packing material code as follows:

Standard Packing

SMP = PTFE Braided Packing to 500°F (260°C) (pH Range 0-14)

Optional Packing

ASP = Self-Adjusting PTFE Braided Packing with AFLAS Fluoroelastomer Cord to 400ºF (205ºC) (pH Range 0-14)
TDP = Dry Service, Dry PTFE Braided Packing with Solid PTFE Cord to 500°F (260°C) (pH Range: 0-14)
HTP = High Temperature Braided Packing to 650°F (343°C) (pH Range: 1-12)
HMP = High Temperature Braided Packing with Metal Scraper Ring to 1000°F (540°C) (pH Range: 3-10)
FGP = Food Grade Service to 450°F (232°C) (pH Range: 3-11)

Gate Material (2)
Give gate material code as follows:

Standard Gate Materials

S1 = 304 Stainless Steel (Standard for S1 body material) 14" and larger
S2 = 316 Stainless Steel (Standard for S2 body material)
S3 = 317 Stainless Steel (Standard for S3 body material)

Optional Gate Materials

S5 = 17-4 Stainless Steel H900 Heat Treated (Used with S1, S2, & S3 body materials)

On Application

S6 = 254-SMO Stainless Steel (Used with S6 body material)
S8 = 410 Stainless Steel (Used with S1, S2 & S3 body materials)
S10 = 2205 Duplex Stainless Steel (Used with S2, S3 OR S10 body materials)
HC = Hastelloy C (Used with HC body materials)

Seat Material (3)
Give seat material code as follows:

Standard Seat Materials

M = Metal
V = V-Orifice All Metal
CR = Chloroprene to 180°F (83°C)
NBR = Acrylonitrile-Butadiene to 180°F (83°C)
EPDM = Terpolymer of Ethylene, Propylene and a Diene to 250°F (122°C)

Optional Seat Materials

FKM = Fluoro Rubber to 400°F (204°C)
S5D = 17-4 PH Stainless Steel H900 Heat Treated

On Application

CRW = Chloroprene, Off White to 140°F (60°C)
PTFE or RTFE

Standard Options
Give option code as follows:

ARRA = ARRA Compliant
PSA = Purge Ports in Seat Area
PCA = Purge Ports in Chest Area
PSC = Purge Ports in Seat and Chest Area
CMC = Certificate of Material Conformance
CRT = Certified Physical and Chemical Test Reports
— = Optional Coating
— = DeZURIK Standard Test Certification
P100 = 30" and 36" (750 and 900mm) valves with 100 psi (690 kPa) pressure rating

Notes:
(1) Applies to valves 18" (450mm) and larger. Flange bolt hole threads are 8 threads per inch in accordance with ANSI, API and MSS standards.
(2) Gate material limitations by body style in parentheses.
(3) The limiting factor in valve selection is the lowest temperature of the packing or seat.

Ordering Example:

KGC,6,ES,F1,S2,SMP,S2-CR*Actuator

Manual Actuators

Lever Actuators

Lever actuators can be furnished on 2-12" (50-300mm) valves for applications where rapid valve operation is required or where space prevents use of a standard handwheel or bevel gear actuator. Maximum pressure differential required for valves with lever actuators should not exceed the limits listed. Maximums are based on the operating force for each valve size. Lever actuators are carbon steel only. SMP packing recommended with MN-LV.

To order, add the lever actuator code to the basic valve order code.

Lever Actuator

Valve Size	Order Code Carbon Steel (CS) Yoke	Maximum Pressure Differential psi/kPa
2-4" 50-100mm	MN-LV-CS	75 520
5-6" 125-150mm	MN-LV-CS	45 310
8" 200mm	MN-LV-CS	25 170
10" 250mm	MN-LV-CS	20 140
12" 300mm	MN-LV-CS	14 100

Ordering Example:
KGC,6,ES,F1,S2,SMP,S2-M*MN-LV-CS

Handwheel and Chainwheel Actuators

All 2-24" (50-600mm) valves can be furnished with handwheel actuators, and 2-20" (50-500mm) with chainwheel actuators. To order handwheel or chainwheel actuators, add the appropriate order code to the basic valve order code. Refer to information on bevel gear actuators for use on dry solids, paper stock, slurries or when pressure exceeds limits shown. Order chain for chainwheel actuators as a separate item.

Handwheel Actuator

Valve Size	Order Code Carbon Steel (CS) Yoke	Order Code 304 SST (S1) Yoke	Maximum Pressure Differential psi/kPa
2-4" 50-100mm	MN-HD8-CS	MN-HD8-S1	150 1030
5-8" 125-200mm	MN-HD12-CS	MN-HD12-S1	150 1030
10-12" 250-300mm	MN-HD16-CS	MN-HD16-S1	150 1030
14" 350mm	MN-HD20-CS*	MN-HD20-S1*	125 860
16" 400mm	MN-HD20-CS*	MN-HD20-S1*	100 680
18" 450mm	MN-HD20-CS*	MN-HD20-S1*	75 515
20" 500mm	MN-HD20-CS*	MN-HD20-S1*	50 340
22" 550mm	MN-HD20-CS*	MN-HD20-S1*	25 170
24" 600mm	MN-HD20-CS*	MN-HD20-S1*	25 170

*Bevel gear actuators recommended for dry solids, paper stocks, slurries, or when pressure exceeds limits shown.

Ordering Example:
KGC,6,ES,F1,S2,SMP,S2-M*MN-HD12-CS

Chainwheel Actuator

Valve Size	Order Code Carbon Steel (CS) Yoke	Order Code 304 SST (S1) Yoke	Maximum Pressure Differential psi/kPa
2-4" 50-100mm	MN-CW8-CS	MN-CW8-S1	150 1030
5-8" 125-200mm	MN-CW12-CS	MN-CW12-S1	150 1030
10-12" 250-300mm	MN-CW20-CS	MN-CW20-S1	150 1030
14" 350mm	MN-CW20-CS*	MN-CW20-S1*	125 860
16" 400mm	MN-CW20-CS*	MN-CW20-S1*	100 680
18" 450mm	MN-CW20-CS*	MN-CW20-S1*	75 515
20" 500mm	MN-CW30-CS*	MN-CW30-S1*	50 340

*Bevel gear actuators recommended for dry solids, paper stocks, slurries, or when pressure exceeds limits shown.

Ordering Example:
KGC,4,ES,F1,S2,SMP,S2-CR*MN-CW8-S1

Manual Actuators

Bevel Gear Actuators

Bevel gear actuators are available on 3-36" (80-900mm) valves with handwheel or chainwheel actuators. Bevel gear actuators provide vertical mounting of the handwheel or chainwheel, or can be used where space limitations prohibit the use of a standard handwheel or chainwheel. A mechanical advantage makes large valve operation easier and faster.

Bevel Gear Handwheel Actuators

Valve Size	Order Code Carbon Steel (CS) Yoke	Order Code 304 SST (S1) Yoke	Maximum Pressure Differential psi/kPa
3-18" 80-450mm	MNB-HD12-CS	MNB-HD12-S1	150 1030
20-24" 500-600mm	MNB-HD16-CS	MNB-HD16-S1	150 1030
26-36" 750-900mm	MNB-HD30-CS	MNB-HD30-S1	150* 1030*

Ordering Example:

KGC,14,ES,F1,S2,SMP,S2-CR*MNB-HD12-CS

Bevel Gear Chainwheel Acutators

Valve Size	Order Code Carbon Steel (CS) Yoke	Order Code 304 SST (S1) Yoke	Maximum Pressure Differential psi/kPa
3-18" 80-450mm	MNB-CW12-CS	MNB-CW12-S1	150 1030
20-28" 500-700mm	MNB-CW20-CS	MNB-CW20-S1	150 1030
30-36" 750-900mm	MNB-CW30-CS	MNB-CW30-S1	150* 1030*

Ordering Example:

KCG,14,ES,F1,S2,SMP,S2-CR*MNB-CW12-CS-90

Actuator mounted at 90 degrees

Note:
For alternate mounting of bevel gear actuators, add -90, -180 or -270 after the actuator code and as 2nd line information on the order.
* Maximum pressure of 30" (750mm) and 36" (900mm) valves with P100 option is 100psi.

Manual Actuator Accessories

Chain for Chainwheel Actuators

Order as a separate item by giving the order code and specify required length of chain and number of pieces. One closing link is supplied with the Chainwheel Actuator.

Order Code	Description
ACC*CN102	Steel, Zinc Plated 3/16
ACC*CN103	Galvanized 3/16
ACC*CN106	316 Stainless Steel 3/16

Ordering Example:

ACC*CN102

Chain 1 piece, 12 feet long (366cm)

Extension for Handwheel or 2" Nut Extension

Provides extension of the handwheel or nut to allow remote operation – normally from above. The extension includes fittings and extension pipe with handwheel or nut mounted. To order, specify description and extension length from center line of valve to handwheel or nut.

Order Code	Description
ENHD	Extension for Handwheel
ENTS	Extension for Nut

Ordering Example:

Handwheel: KGC,14,ES,F1,S2,SMP,S2-CR*MN-HD20-CS,ENHD
Center line of valve to handwheel 72 inches (1829mm).

Lockout Device

Available on all sizes of handwheel, bevel gear handwheel and cylinder actuated valves. To order, add a comma and the order code “LK” after the actuator code.

Ordering Example:

KGC,14,ES,F1,S2,SMP,S2-CR*MNB-HD12-CS,LK

Floorstand

A floorstand for handwheel actuated valves allows operation from above. Includes floorstand with gate position indicator, handwheel, fittings and extension. To order, specify length from center line of valve to base of floorstand. For non-rising and rising stem configurations contact application engineering.

Ordering Example:

KGC,14,ES,F1,S2,SMP,S2-CR*MN-HD20-CS
Except with floorstand. Center line of valve to base of floorstand 72 inches (1829mm).

Cylinder Actuators

On-Off Cylinder Actuators

DeZURIK cylinder actuators are available with double-acting pneumatic or hydraulic cylinders for on/off or positioning services. Supply pressure is 60 or 80 psi (410 or 550 kPa). To order, add the proper code from the on/off column of the table to the valve order code. Specify hydraulic media if other than oil.

Positioning Cylinder Actuators

DeZURIK cylinder actuators are available with pneumatic or electronic positioners for throttling control. Positioners are enclosed and mounted on the superstructure.

Actuator Sizing

60 psi (410 kPa) Air Supply

Valve Size	Order Code	Order Code	Maximum Pressure Differential psi/kPa			
			On/Off		Positioning	
	Carbon Steel (CS) Yoke	304 SST (S1) Yoke	Dry Solids, Slurries, Paper Stock	Liquids & Gases	Dry Solids, Slurries, Paper Stock	Liquids & Gases
2 & 3" 50 & 80mm	CY-PC4-CS	CY-PC4-S1	150 1030	150 1030	150 1030	150 1030
4" 100mm	CY-PC4-CS	CY-PC4-S1	100 690	150 1030	75 515	75 515
	CY-PC6-CS	CY-PC6-S1	150 1030	N/R	150 1030	150 1030
5 & 6" 125 & 150mm	CY-PC4-CS	CY-PC4-S1	N/A	50 340	N/A	N/A
	CY-PC6-CS	CY-PC6-S1	125 860	150 1030	75 515	100 690
	CY-PC8-CS	CY-PC8-S1	150 1030	N/R	150 1030	150 1030
8" 200mm	CY-PC6-CS	CY-PC6-S1	75 515	125 860	50 340	50 340
	CY-PC8-CS	CY-PC8-S1	150 1030	150 1030	125 860	125 860
10" 250mm	CY-PC8-CS	CY-PC8-S1	100 690	150 1030	75 515	100 690
	CY-PC10-CS	CY-PC10-S1	150 1030	N/R	125 860	150 1030
	CY-PC12-CS	CY-PC12-S1	N/R	N/R	150 1030	N/R
12" 300mm	CY-PC8-CS	CY-PC8-S1	75 515	125 860	50 340	50 340
	CY-PC10-CS	CY-PC10-S1	125 860	150 1030	100 690	125 860
	CY-PC12-CS	CY-PC12-S1	150 1030	N/R	150 1030	150 1030
14" 350mm	CY-PC8-CS	CY-PC8-S1	50 340	75 515	25 170	50 340
	CY-PC10-CS	CY-PC10-S1	100 690	150 1030	75 515	75 515
	CY-PC12-CS	CY-PC12-S1	150 1030	N/R	100 690	125 860
16" 400mm	CY-PC10-CS	CY-PC10-S1	75 515	125 860	50 340	50 340
	CY-PC12-CS	CY-PC12-S1	125 860	150 1030	75 515	100 690
	CY-PC14-CS	CY-PC14-S1	150 1030	N/R	125 860	150 1030
18" 450mm	CY-PC12-CS	CY-PC12-S1	100 690	150 1030	50 340	75 515
	CY-PC14-CS	CY-PC14-S1	150 1030	N/R	100 690	125 860
	CY-PC16-CS	CY-PC16-S1	N/R	N/R	150 1030	150 1030
20" 500mm	CY-PC12-CS	CY-PC12-S1	50 340	125 860	25 170	50 340
	CY-PC14-CS	CY-PC14-S1	125 860	150 1030	75 515	100 690
	CY-PC16-CS	CY-PC16-S1	150 1030	N/R	125 860	150 1030
22" 550mm	CY-PC12-CS	CY-PC12-S1	50 340	100 690	N/A	25 170
	CY-PC14-CS	CY-PC14-S1	100 690	150 1030	50 340	75 515
	CY-PC16-CS	CY-PC16-S1	150 1030	N/R	100 690	125 860
	CY-PC18-CS	CY-PC18-S1	N/R	N/R	150 1030	150 1030

N/R = Not required. Use next smaller actuator
N/A = Not available. Use larger actuator or contact DeZURIK

Cylinder Actuators

Actuator Sizing

60 psi (410 kPa) Air Supply

Valve Size	Order Code	Order Code	Maximum Pressure Differential psi/kPa			
			On/Off		Positioning	
	Carbon Steel (CS) Yoke	304 SST (S1) Yoke	Dry Solids, Slurries, Paper Stock	Liquids & Gases	Dry Solids, Slurries, Paper Stock	Liquids & Gases
24" 600mm	CY-PC12-CS	CY-PC12-S1	25 170	75 515	N/A	N/A
	CY-PC14-CS	CY-PC14-S1	75 515	150 1030	50 340	50 340
	CY-PC16-CS	CY-PC16-S1	150 1030	N/R	75 515	100 690
	CY-PC18-CS	CY-PC18-S1	N/R	N/R	150 1030	150 1030
26" 650mm	CY-PC12-CS	CY-PC12-S1	N/A	75 515	N/A	N/R
	CY-PC14-CS	CY-PC14-S1	50 340	125 860	25 170	50 340
	CY-PC16-CS	CY-PC16-S1	125 860	150 1030	75 515	75 515
	CY-PC18-CS	CY-PC18-S1	150 1030	N/R	100 690	150 1030
	CY-PC20-CS	CY-PC20-S1	N/R	N/R	150 1030	N/R
28" 700mm	CY-PC12-CS	CY-PC12-S1	N/A	50 340	N/A	N/A
	CY-PC14-CS	CY-PC14-S1	50 340	100 690	N/A	25 170
	CY-PC16-CS	CY-PC16-S1	75 515	150 1030	50 340	75 515
	CY-PC18-CS	CY-PC18-S1	150 1030	N/R	75 515	125 860
	CY-PC20-CS	CY-PC20-S1	N/R	N/R	150 1030	150 1030
30" 750mm 100 CWP (P100)	CY-PC14-CS	CY-PC14-S1	25 170	75 515	N/A	N/A
	CY-PC16-CS	CY-PC16-S1	75 515	100 690	25 170	50 340
	CY-PC18-CS	CY-PC18-S1	100 690	N/R	75 515	75 515
	CY-PC20-CS	CY-PC20-S1	N/R	N/R	100 690	100 690
30" 750mm 150 CWP	CY-PC14-CS	CY-PC14-S1	25 170	75 515	N/A	N/A
	CY-PC16-CS	CY-PC16-S1	75 515	150 1030	25 170	50 340
	CY-PC18-CS	CY-PC18-S1	125 860	N/R	75 515	75 515
	CY-PC20-CS	CY-PC20-S1	150 1030	N/R	125 860	150 1030
32" 800mm	CY-PC14-CS	CY-PC14-S1	25 170	75 515	N/A	N/A
	CY-PC16-CS	CY-PC16-S1	50 340	125 860	25 170	25 170
	CY-PC18-CS	CY-PC18-S1	100 690	150 1030	50 340	75 515
	CY-PC20-CS	CY-PC20-S1	150 1030	N/R	75 515	125 860
36" 900mm 100 CWP (P100)	CY-PC14-CS	CY-PC14-S1	N/A	50 340	N/A	N/A
	CY-PC16-CS	CY-PC16-S1	25 170	75 515	N/A	N/A
	CY-PC18-CS	CY-PC18-S1	75 515	100 690	25 170	50 340
	CY-PC20-CS	CY-PC20-S1	100 690	N/R	50 340	75 515
36" 900mm 150 CWP	CY-PC14-CS	CY-PC14-S1	N/A	50 340	N/A	N/A
	CY-PC16-CS	CY-PC16-S1	25 170	75 515	N/A	N/A
	CY-PC18-CS	CY-PC18-S1	75 515	150 1030	25 170	50 340
	CY-PC20-CS	CY-PC20-S1	100 690	N/R	50 340	75 515
42-48" 1050 -1200mm	Contact DeZURIK for cylinder actuator sizing					

N/R = Not required. Use next smaller actuator
N/A = Not available. Use larger actuator or contact DeZURIK

Cylinder Actuators

Actuator Sizing

80 psi (550 kPa) Air Supply

Valve Size	Order Code	Order Code	Maximum Pressure Differential psi/kPa			
			On/Off		Positioning	
	Carbon Steel (CS) Yoke	304 SST (S1) Yoke	Dry Solids, Slurries, Paper Stock	Liquids & Gases	Dry Solids, Slurries, Paper Stock	Liquids & Gases
2 & 3" 50 & 80mm	CY-PC4-CS	CY-PC4-S1	150 1030	150 1030	150 1030	150 1030
4" 100mm	CY-PC4-CS	CY-PC4-S1	150 1030	150 1030	100 690	150 1030
	CY-PC6-CS	CY-PC6-S1	N/R	N/R	150 1030	N/R
5 & 6" 125 & 150mm	CY-PC4-CS	CY-PC4-S1	50 340	75 515	25 170	25 170
	CY-PC6-CS	CY-PC6-S1	150 1030	150 1030	125 860	150 1030
	CY-PC8-CS	CY-PC8-S1	N/R	N/R	150 1030	N/R
8" 200mm	CY-PC6-CS	CY-PC6-S1	100 690	150 1030	75 515	75 515
	CY-PC8-CS	CY-PC8-S1	150 1030	N/R	150 1030	150 1030
10" 250mm	CY-PC8-CS	CY-PC8-S1	150 1030	150 1030	100 690	125 860
	CY-PC10-CS	CY-PC10-S1	N/R	N/R	150 1030	150 1030
12" 300mm	CY-PC8-CS	CY-PC8-S1	100 690	150 1030	75 515	100 690
	CY-PC10-CS	CY-PC10-S1	150 1030	N/R	150 1030	150 1030
14" 350mm	CY-PC10-CS	CY-PC10-S1	125 860	150 1030	100 690	125 860
	CY-PC12-CS	CY-PC12-S1	150 1030	N/R	150 1030	150 1030
16" 400mm	CY-PC10-CS	CY-PC10-S1	100 690	150 1030	75 515	100 690
	CY-PC12-CS	CY-PC12-S1	150 1030	N/R	125 860	150 1030
	CY-PC14-CS	CY-PC14-S1	N/R	N/R	150 1030	N/R
18" 450mm	CY-PC12-CS	CY-PC12-S1	150 1030	150 1030	100 690	125 860
	CY-PC14-CS	CY-PC14-S1	N/R	N/R	150 1030	150 1030
20" 500mm	CY-PC12-CS	CY-PC12-S1	125 860	150 1030	75 515	75 515
	CY-PC14-CS	CY-PC14-S1	150 1030	N/R	125 860	150 1030
	CY-PC16-CS	CY-PC16-S1	N/R	N/R	150 1030	N/R
22" 550mm	CY-PC12-CS	CY-PC12-S1	100 690	150 1030	50 340	75 515
	CY-PC14-CS	CY-PC14-S1	150 1030	N/R	100 690	125 860
	CY-PC16-CS	CY-PC16-S1	N/R	N/R	150 1030	150 1030
24" 600mm	CY-PC12-CS	CY-PC12-S1	75 515	150 1030	25 170	50 340
	CY-PC14-CS	CY-PC14-S1	150 1030	N/R	100 690	125 860
	CY-PC16-CS	CY-PC16-S1	N/R	N/R	150 1030	150 1030
26" 650mm	CY-PC12-CS	CY-PC12-S1	50 340	125 860	25 170	25 170
	CY-PC14-CS	CY-PC14-S1	125 860	150 1030	75 515	75 515
	CY-PC16-CS	CY-PC16-S1	150 1030	N/R	125 860	150 1030
	CY-PC18-CS	CY-PC18-S1	N/R	N/R	150 1030	N/R
28" 700mm	CY-PC12-CS	CY-PC12-S1	50 340	100 690	N/A	25 170
	CY-PC14-CS	CY-PC14-S1	100 690	150 1030	50 340	75 515
	CY-PC16-CS	CY-PC16-S1	150 1030	N/R	100 690	125 860
	CY-PC18-CS	CY-PC18-S1	N/R	N/R	150 1030	150 1030

N/R = Not required. Use next smaller actuator
N/A = Not available. Use larger actuator or contact DeZURIK

Cylinder Actuators

Actuator Sizing

80 psi (550 kPa) Air Supply

Valve Size	Order Code	Order Code	Maximum Pressure Differential psi/kPa			
			On/Off		Positioning	
	Carbon Steel (CS) Yoke	304 SST (S1) Yoke	Dry Solids, Slurries, Paper Stock	Liquids & Gases	Dry Solids, Slurries, Paper Stock	Liquids & Gases
30" 750mm 100 CWP (P100)	CY-PC12-CS	CY-PC12-S1	25 170	75 515	N/A	N/A
	CY-PC14-CS	CY-PC14-S1	75 515	100 690	50 340	50 340
	CY-PC16-CS	CY-PC16-S1	100 690	N/R	75 515	100 690
	CY-PC18-CS	CY-PC18-S1	N/R	N/R	100 690	N/R
30" 750mm 150 CWP	CY-PC12-CS	CY-PC12-S1	25 170	75 515	N/A	N/A
	CY-PC14-CS	CY-PC14-S1	75 515	150 1030	50 340	50 340
	CY-PC16-CS	CY-PC16-S1	150 1030	N/R	75 515	100 690
	CY-PC18-CS	CY-PC18-S1	N/R	N/R	125 860	150 1030
	CY-PC20-CS	CY-PC20-S1	N/R	N/R	150 1030	N/R
32" 800mm	CY-PC12-CS	CY-PC12-S1	25 170	50 340	N/A	N/A
	CY-PC14-CS	CY-PC14-S1	50 340	125 860	25 170	50 340
	CY-PC16-CS	CY-PC16-S1	100 690	150 1030	50 340	75 515
	CY-PC18-CS	CY-PC18-S1	150 1030	N/R	100 690	150 1030
	CY-PC20-CS	CY-PC20-S1	N/R	N/R	150 1030	N/R
36" 900mm 100 CWP (P100)	CY-PC14-CS	CY-PC14-S1	25 170	75 515	N/A	25 170
	CY-PC16-CS	CY-PC16-S1	75 515	100 690	50 340	50 340
	CY-PC18-CS	CY-PC18-S1	100 690	N/R	75 515	100 690
	CY-PC20-CS	CY-PC20-S1	N/R	N/R	100 690	N/R
36" 900mm 150 CWP	CY-PC14-CS	CY-PC14-S1	25 170	75 515	N/A	25 170
	CY-PC16-CS	CY-PC16-S1	75 515	150 1030	50 340	50 340
	CY-PC18-CS	CY-PC18-S1	125 860	N/R	75 515	100 690
	CY-PC20-CS	CY-PC20-S1	150 1030	N/R	125 860	150 1030
42-48" 1050 -1200mm	Contact DeZURIK for cylinder actuator sizing					

N/R = Not required. Use next smaller actuator
N/A = Not available. Use larger actuator or contact DeZURIK

Cylinder Actuator Accessories

Position Indicating Switches

Mechanical or proximity position indicating switches are available for use on double-acting cylinder actuators. One switch can be set to indicate open or closed position. Two switches will automatically be set to indicate full open and full closed positions.

Positioners

DeZURIK cylinder actuators are available with pneumatic, electro-pneumatic or digital positioners for throttling control.

Air Filter Regulator

The DeZURIK Air Filter Regulator is designed to provide clean, accurate air pressure to actuators and positioners.

Lockout Option

KGC-ES provides the latest in lockout design technology to protect both people and the environment. Unique designs for manual and automated models are available. The lockout collar for the automated models allows fine adjustment to ensure tight shutoff and maximum opening position. Lockouts are rated to withstand the maximum output of the actuators.

Four-Way Solenoid Valves

Solenoid valves may be ordered mounted and piped as part of a complete valve/actuator assembly or as a separate item.

Speed Control Valves

Speed Control Valves are available for controlling valve opening or closing speed with pneumatic actuators. The speed of operation is adjustable.

Electric Motor Actuators

DeZURIK KGC-ES Knife Gate Valves can be furnished with electric motor actuators including Limitorque, Auma, Rotork, E.I.M. and others.

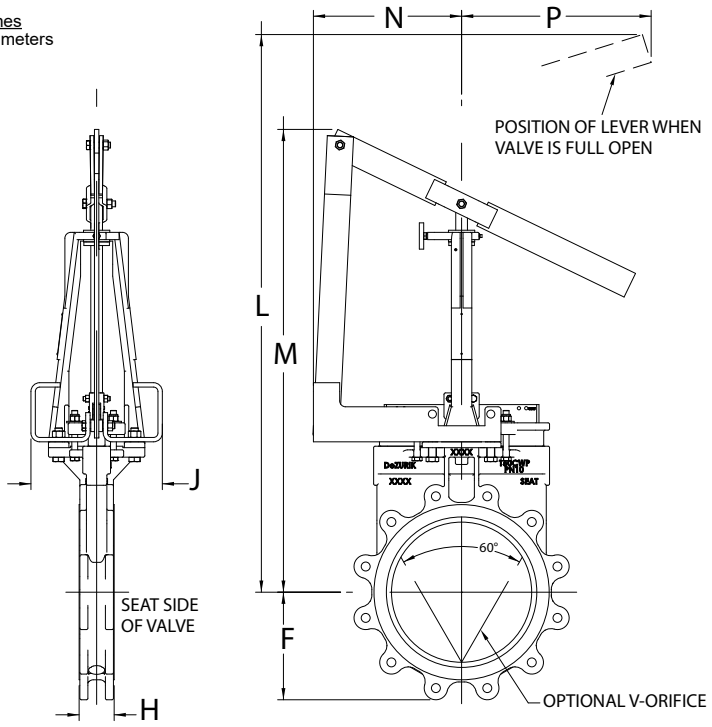
When ordering electric motor actuators, specify valve order code, shutoff pressure, service conditions (flowing media and installation direction); type of application (on/off or throttling); speed of operation; NEMA rating (4, 7, submersible, etc.); electrical characteristics (voltage and phase); actuator accessories and controls as per specification requirements.

Dimensions

Basic Valve with Lever Actuator

Valve Size	Dimensions						
	F	H	J	L	M	N	P
2" 50mm	3.0 76	1.88 48	5.75 146	15.96 405	14.78 375	4.38 111	8.00 203
3" 80mm	3.75 95	2.00 51	7.75 197	21.78 553	17.75 451	5.38 137	17.88 454
4" 100mm	4.50 114	2.00 51	7.88 200	29.40 747	19.87 505	6.12 155	24.12 613
5" 125mm	5.00 127	2.25 57	8.62 219	37.50 953	22.76 578	7.38 187	19.81 503
6" 150mm	5.50 140	2.25 57	8.62 219	42.00 1067	23.32 592	7.38 187	16.81 427
8" 200mm	6.75 171	2.75 70	9.38 238	58.12 1476	27.68 703	7.88 200	21.12 536
10" 250mm	8.00 203	2.75 70	11.25 286	68.19 1732	35.13 892	10.62 270	21.53 699
12" 300mm	9.50 241	3.00 76	11.25 286	76.03 1931	39.47 1003	12.69 322	33.44 849

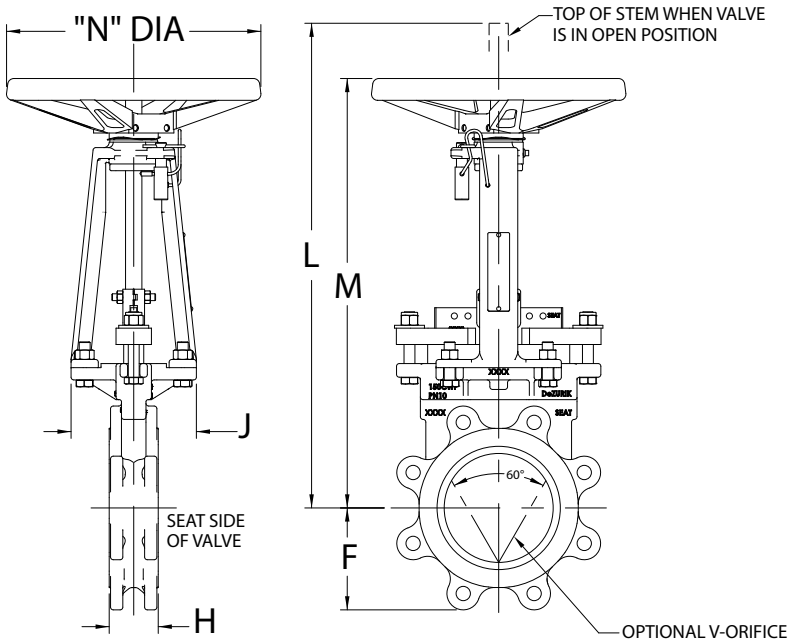
Inches
Millimeters



Basic Valve with Handwheel Actuator

Valve Size	Dimensions					
	F	H	J	L	M	N
2" 50mm	3.00 76	1.88 48	4.00 102	14.93 379	12.90 328	8.00 203
3" 80mm	3.75 95	2.00 51	4.75 121	16.65 423	14.62 371	8.00 203
4" 100mm	4.50 114	2.00 51	5.00 127	19.93 506	16.90 429	8.00 203
5" 125mm	5.00 127	2.25 57	5.75 146	24.30 618	19.56 497	12.00 305
6" 150mm	5.50 140	2.25 57	5.75 146	25.88 657	21.07 535	12.00 305
8" 200mm	6.75 171	2.75 70	6.38 162	31.43 798	24.65 626	12.00 305
10" 250mm	8.00 203	2.75 70	8.25 210	39.13 994	30.00 762	16.00 406
12" 300mm	9.50 241	3.00 76	8.25 210	44.75 1137	33.63 854	16.00 406
14" 350mm	10.50 267	3.00 76	8.25 210	54.75 1391	40.82 1037	20.00 508
16" 400mm	11.75 298	3.50 89	8.69 221	58.44 1484	42.38 1076	20.00 508
18" 450mm	12.50 318	3.50 89	9.06 230	67.75 1721	49.69 1262	20.00 508
20" 500mm	13.75 349	4.50 114	9.19 233	71.31 1811	51.25 1302	20.00 508
22" 550mm	15.5 394	4.50 114	9.19 233	77.22 1961	55.36 1406	20.00 508
24" 600mm	16.00 406	4.50 114	9.19 233	83.29 2116	59.22 1504	20.00 508

Inches
Millimeters



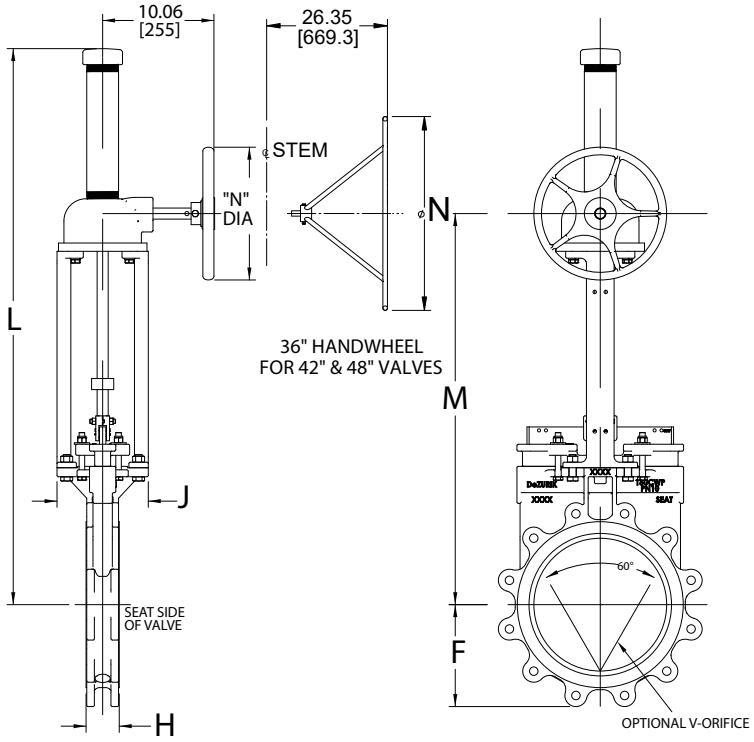
Dimensions

Bevel Gear Handwheel Actuator

Valve Size	Dimensions					
	F	H	J	L	M	N
3" 80mm	3.75 95	2.00 51	4.75 121	22.00 559	16.09 409	12.00 305
4" 100mm	4.50 114	2.00 51	5.00 127	24.30 617	18.37 467	12.00 305
5" 125mm	5.00 127	2.25 57	5.75 146	28.70 729	20.76 527	12.00 305
6" 150mm	5.50 140	2.25 57	5.75 146	30.30 769	22.29 566	12.00 305
8" 200mm	6.75 171	2.75 70	6.38 162	35.80 910	25.84 656	12.00 305
10" 250mm	8.00 203	2.75 70	8.25 210	46.50 1181	31.54 801	12.00 305
12" 300mm	9.50 241	3.00 76	8.25 210	50.20 1275	35.16 893	12.00 305
14" 350mm	10.50 267	3.00 76	8.25 210	56.70 1440	37.78 960	12.00 305
16" 400mm	11.75 298	3.50 89	8.69 221	60.40 1534	41.47 1053	12.00 305
18" 450mm	12.50 318	3.50 89	9.06 230	69.90 1775	47.08 1195	12.00 305
20" 500mm	13.75 349	4.50 114	9.19 233	73.50 1867	50.59 1285	16.00 406
24" 600mm	16.00 406	4.50 114	9.19 233	81.50 2070	58.57 1488	16.00 406
26" 650mm	17.13 435	4.63 117	9.50 241	100.95 2564	64.49 1638	30.00 762
28" 700mm	18.25 464	5.00 127	10.69 271	104.83 2663	68.37 1737	30.00 762
30"* 750mm	19.38 492	5.50 140	11.25 286	105.03 2668	73.09 1856	30.00 762
32" 800mm	20.88 530	6.00 152	11.25 286	113.20 2875	76.74 1949	30.00 762
36"* 900mm	23.00 584	6.00 152	11.25 286	122.53 3112	84.59 2149	30.00 762
42" 1050mm	26.50 673	6.50 165	13.50 343	146.28 3716	96.91 2462	36.00 914
48" 1200mm	29.75 756	7.00 178	18.50 470	194.87 4950	116.85 2968	36.00 914

* 100 psi, face-to-face (H dimension) on 30" and 36" (750 and 900mm) is 4.62" (117mm)

Inches
Millimeters



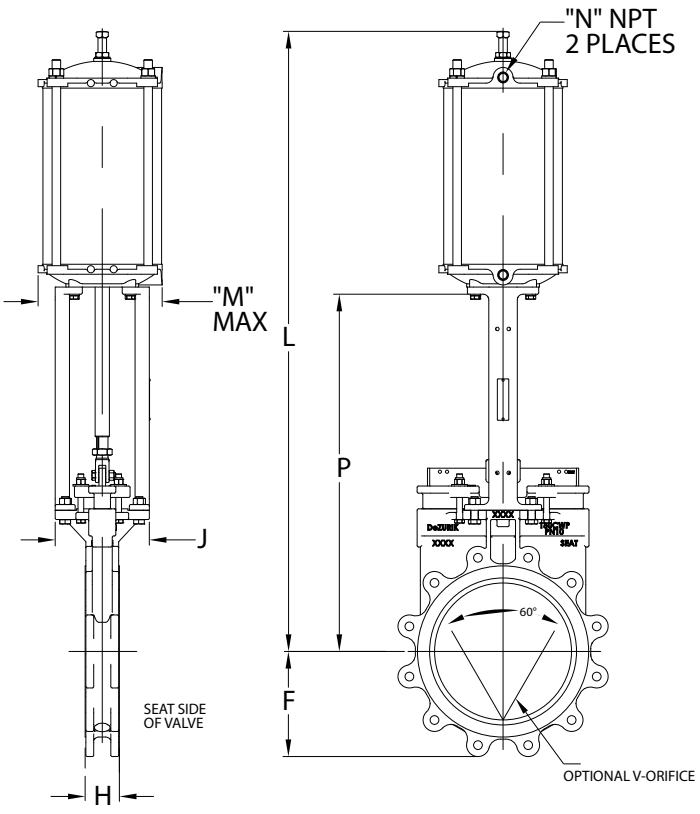
Dimensions

Basic Valve with Cylinder Actuator

Valve Size	Dimensions		
	F	H	J
2" 50mm	3.00 76	1.88 48	4.00 102
3" 80mm	3.75 95	2.00 51	4.75 121
4" 100mm	4.50 114	2.00 51	5.00 127
5" 125mm	5.00 127	2.25 57	5.75 146
6" 150mm	5.50 140	2.25 57	5.75 146
8" 200mm	6.75 171	2.75 70	6.38 162
10" 250mm	8.00 203	2.75 70	8.25 210
12" 300mm	9.50 241	3.00 76	8.25 210
14" 350mm	10.50 267	3.00 76	8.25 210
16" 400mm	11.75 298	3.50 89	8.69 221
18" 450mm	12.50 318	3.50 89	9.31 236
20" 500mm	13.75 349	4.50 114	9.42 239
22" 550mm	15.00 381	4.50 114	9.19 233
24" 600mm	16.00 406	4.50 114	9.42 239
26" 650mm	17.13 435	4.63 117	9.50 241
28" 700mm	18.25 464	5.00 127	10.69 271
30"* 750mm	19.38 492	5.50 140	11.25 286
32" 800mm	20.88 530	6.00 152	11.25 286
36"* 900mm	23.00 584	6.00 152	11.25 286
42" 1050mm	26.50 673	6.50 165	13.50 343
48" 1200mm	Contact DeZURIK		

Inches
Millimeters

* 100 psi, face-to-face (H dimension) on 30" and 36" (750 and 900mm) is 4.62" (117mm)



2-16" (50-400mm) Valves

Actuator Order Code	Dimensions											
	L										M	N
	2" 50mm	3" 80mm	4" 100mm	5" 125mm	6" 150mm	8" 200mm	10" 250mm	12" 300mm	14" 350mm	16" 400mm		
CY-PC4	22.26 565	23.98 609	26.26 667	30.64 778	32.18 817	—	—	—	—	—	5.38 137	1/4
CY-PC6	—	—	27.61 701	32.00 813	33.56 852	39.11 993	47.13 1197	None	—	—	7.88 200	1/4
CY-PC8	—	—	—	32.38 822	33.94 862	39.49 1003	49.57 1259	53.19 1351	59.06 1500	62.74 1594	10.50 267	1/2
CY-PC10	—	—	—	—	—	—	50.97 1295	54.59 1387	60.35 1533	64.03 1626	13.00 330	1/2
CY-PC12	—	—	—	—	—	—	50.94 1294	54.56 1386	60.70 1542	64.38 1635	15.00 381	1/2
CY-PC14	—	—	—	—	—	—	—	—	—	63.68 1617	17.00 432	1/2

Inches
Millimeters

18-48" (450-1200mm) Valves

Actuator Order Code	Dimensions											M	N
	L												
	18" 450mm	20" 500mm	22" 550mm	24" 600mm	26" 650mm	28" 700mm	30" 750mm	32" 800mm	36" 900mm	42" 1050mm	48" 1200mm		
CY-PC10	73.59 1869	77.16 1960	—	—	—	—	—	—	—	—	—	13.00 330	1/2
CY-PC12	73.935 1878	77.495 1968	85.52 2172	89.475 2273	—	—	—	—	—	—	Contact DeZURIK	15.00 381	1/2
CY-PC14	73.24 1860	76.81 1951	85.52 2172	88.78 2255	95.38 2423	101.44 2577	108.19 2748	—	—	—		17.00* 432	1/2
CY-PC16	70.25 1784	75.94 1929	82.00 2083	87.91 2233	95.50 2426	101.56 2580	108.31 2751	113.94 2894	125.81 3196	—		17.00 432	1/2
CY-PC18	—	—	—	88.16 2239	95.75 2432	101.81 2585	108.56 2757	114.19 2900	126.06 3202	143.19 3637		19.00 483	3/4
CY-PC20	—	—	—	—	—	102.06 2592	109.81 2789	115.44 2932	126.31 3208	143.44 3643		21.00 533	3/4

Inches
Millimeters

* M dimension on 26-30" (650-750mm) is 14.75" (375mm)

Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:
Web Site: DeZURIK.com **E-Mail:** info@DeZURIK.com

250 Riverside Ave. N. Sartell, Minnesota 56377 • Phone: 320-259-2000 • Fax: 320-259-2227

DeZURIK

BULLETIN
JULY 2020

300.00-1

APCO HIGH PERFORMANCE COMBINATION AIR VALVE (ASU)

- Design
- Operation
- Performance

Innovative Air Valve Technology

The APCO ASU Combination Air Valve introduces an innovative concept in air valve technology. Proven with extensive field experience on tough applications, the ASU valve has demonstrated improved performance, reduced maintenance and lower cost for overall reliability on clean fluids or sewage and dirty service applications.

The APCO ASU Combination Air Valve is single body combination valve available in sizes 1-6" as standard. Larger sizes on application.

Unique, Multi-Stage Operation

The unique venting design provides varied and predictable air flow over a wide range of air release and air/vacuum conditions. A large diameter Air/Vacuum Disc provides high volume air flow for rapid venting during pipeline filling and allows high volumes of air to enter the pipeline during draining. During normal pipeline flow conditions, the dual-range air release design prevents air build up and resultant flow restrictions under changing conditions and through the full flow range.

Universal Valve Design, Wide Operating Range & Low Pressure Sealing Down to 2 psi

Venting design and technology allows application on an almost universal range of flow conditions with effective sealing and operation available in two pressure ranges: 2 psi to 150 psi or 2 psi to 300 psi for high pressure service.

Meets AWWA C-512 Performance Specifications

The ASU Combination Air Valve meets performance requirements of the AWWA C-512 standard “Air Valves for Water & Wastewater Service.”

All Stainless Steel Construction

The ASU Combination Air Valve is ideally suited to corrosive conditions with a 316 Stainless Steel body and float. Internal parts are corrosion resistant high strength stainless steel.

Light Weight, Low Profile Body Design

The compact design of the ASU Combination Air Valve allows installation in piping systems with limited space and in vaults with low ceiling heights. Fabricated ASU construction meets full pressure class ratings and minimizes weight for ease of installation and for retrofit replacement of other air valves.

Matched Inlet & Outlet Sizes

The equal size inlet and outlet area of the ASU valve fully meets the defined requirement of AWWA C-512 providing high capacity and a broad operating range. The ASU Combination air valve is available with flanged or threaded NPT inlet connections.

Reliability Without Constant Maintenance

Clean interior design and the direct shaft mounted float eliminates troublesome linkages that can lead to frequent maintenance. The light weight, one-piece internal assembly can be easily lifted out of the valve body by the top cover.

The shape of the upper valve body creates an air compression chamber to limit fluid level and solids interference. The funnel shaped lower body reduces solids buildup on sewage or other services where solids may interfere with operation, yet it still allows for maximum outflow and self-cleaning.

For applications where standard practice calls for periodic maintenance, back flush ports are strategically located for ease of flushing with an optional back flush kit.

Larger Sizes, Higher Pressures

Valves to 300 psi are available in sizes 1" through 4" with 150 psi valve sizes available through 6" as standard. Contact DeZURIK for information and recommendations on other sizes and pressures.

Float Shape Designed for Stability

The unique float shape reduces the ballistic effect of high speed liquid flow into the valve, further adding to float stability. The float shaft is fully guided to provide smooth, long lasting operation.

No Troublesome Linkage

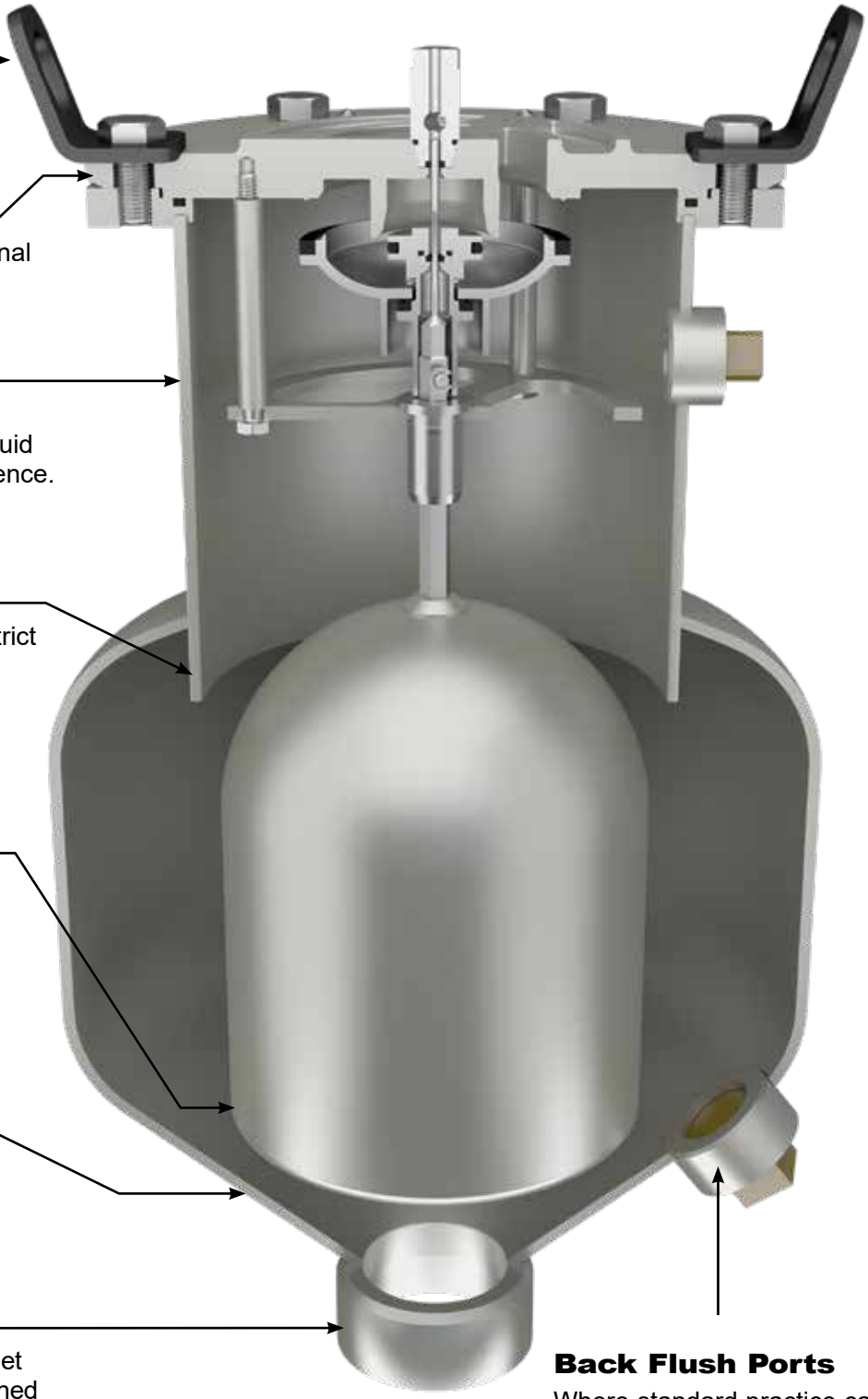
Unique disc air release venting concept eliminates linkages that can foul on dirty service applications.

For Water/Wastewater or Industrial Service

All materials and seals are proven as long life components for continuous duty service. Seals and all parts are suitable for use on water, wastewater or industrial media containing hydrocarbons, chemicals, solvents and volatiles. Recommendations available on application.

Problem Solving Design for Improved Performance & Reliability on Dirty Service Applications

Innovative air release technology provides improved valve performance and operating capability with characterisitics specifically designed to deal with clean fluids or media with the presence of grit, solids and grease.



Lifting Lugs

Lifting lugs for ease of valve installation.

Top Access Cover

Allows easy access to the internal air valve assembly.

Upper Body Shape

Upper body creates an air compression chamber to limit fluid level and restrict solids interference.

Flow Deflector/Splash Reduction Ring

Built into the upper body to restrict solids entry and minimize flow effect and fluid splash that can cause float instability.

Hydraulics Based Float Design

Unique float shape increases float stability at all flow rates. Large float size provides increased bouyancy as needed on dirty service.

True Funnel Shaped Body

Conical shaped body allows for complete draining.

Matched Inlet and Outlet Sizes

Per AWWA C512, same size inlet and outlet meets the clearly defined requirement, and provides high capacity and a broad operating range in a nearly universal valve design.

Back Flush Ports

Where standard practice calls for periodic backflushing, optional back flush kits are available.

Multi-Stage Operation Provides Dual-Range Air Release

High Capacity Multi-Stage Operation

Features high capacity air venting and inflow during filling and draining; dual range air release during normal pipeline flow conditions.

Air/Vacuum Disc

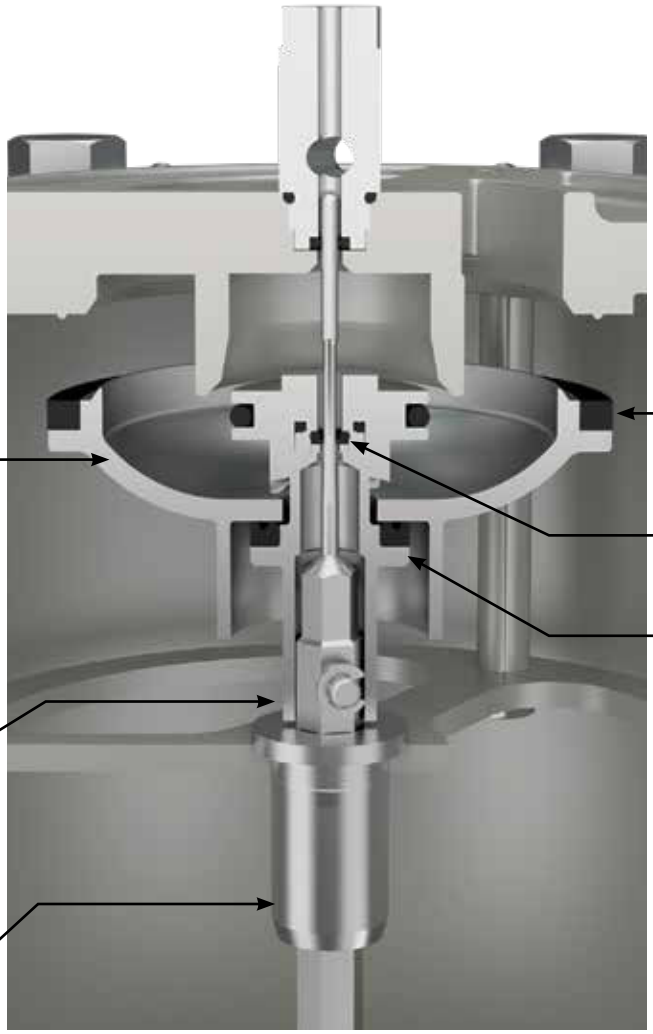
The unique Air/Vacuum Disc opens to assure high flow air venting during pipeline filling and for quick vacuum relief during pipeline draining.

No Troublesome Linkage

The internal design of the ASU valve eliminates troublesome linkage that can trap solids and interfere operation and affect reliability

Guided Float Shaft

The float shaft is fully guided to provide smooth, long-life operation. Guides prevent float misalignment and contact with the valve body.



Outlet Configurations

ASU outlet configurations in all valve sizes are designed for full rated air flow.

Standard Outlet - Threaded 90º Elbow

Furnished with pipe extension with drip line beyond the valve body.

Optional Vertical Threaded Outlet (VTO)

Outlet is threaded to allow plant piping of discharge. The VTO must be specified.

Optional Mushroom Cap (MRC)

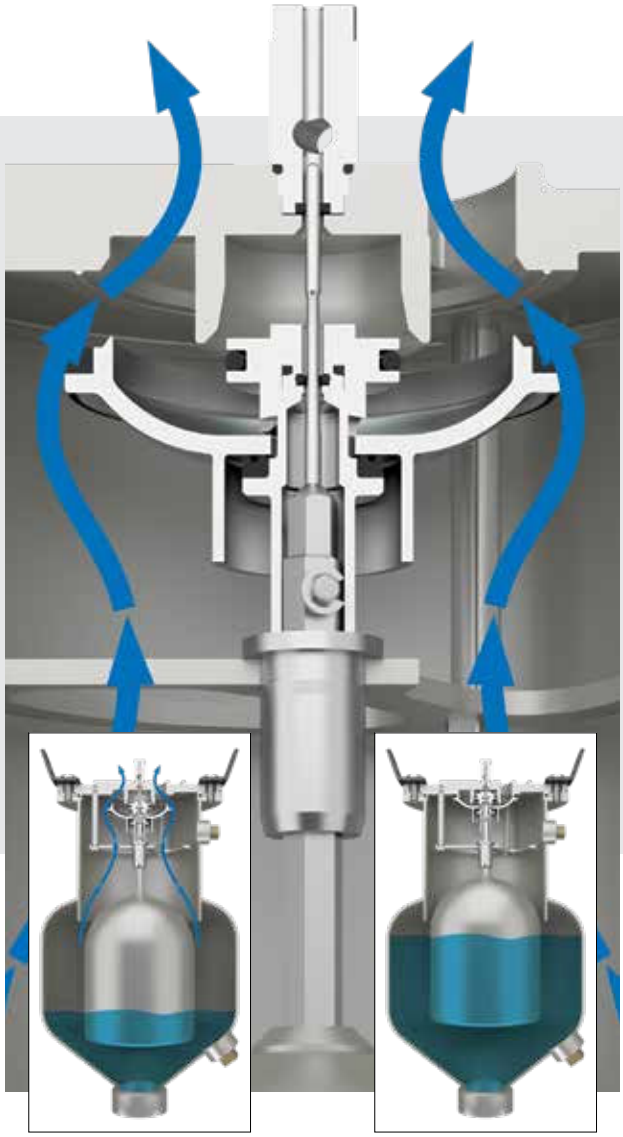
Screened vertical outlet keeps debris from entering the valve outlet.The MRC must be specified.

Valve Operation

Unique Combination Air Valve Technology

The patent pending design of the ASU Combination Air Valve features multi-stage air release operation and air/vacuum service provided by the Air/Vacuum Disc.

Pipeline Filling



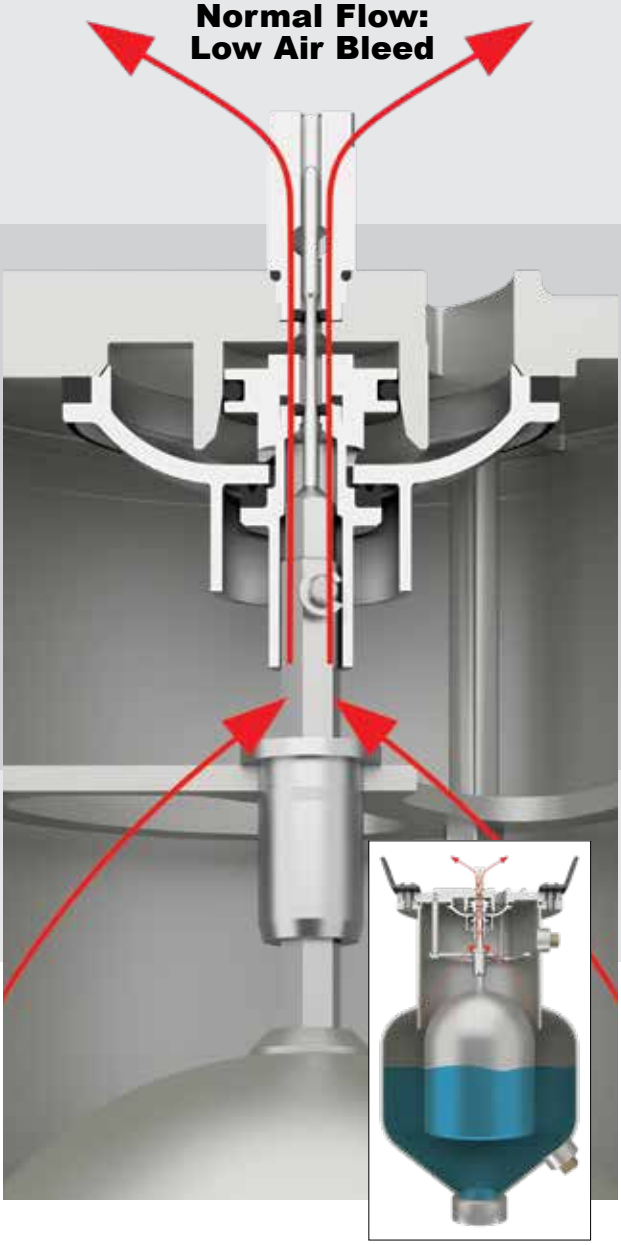
Pipeline Filling

Pipeline Full

During pipeline filling, the Air/Vacuum Disc remains open allowing high volumes of air to escape.

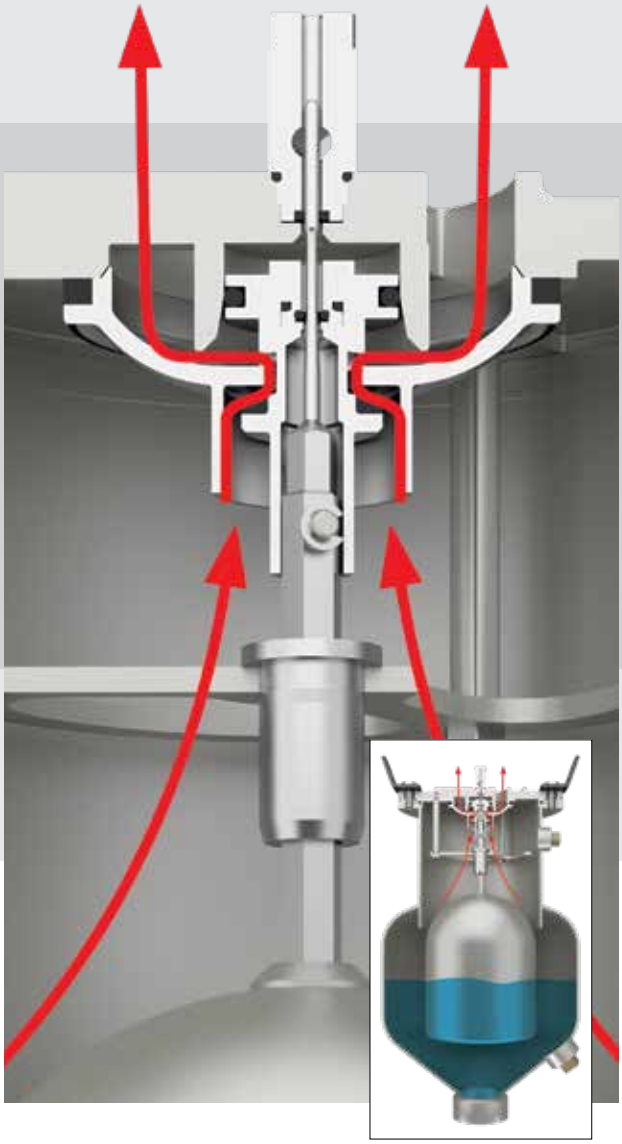
When the pipeline is full, fluid enters the valve which raises the float and lifts the Air/Vacuum Disc into the closed position. Valve is completely sealed; Air/Vacuum Disc seat, piston stem seat and float shaft seals are all in the closed position.

Dual Range Air Release



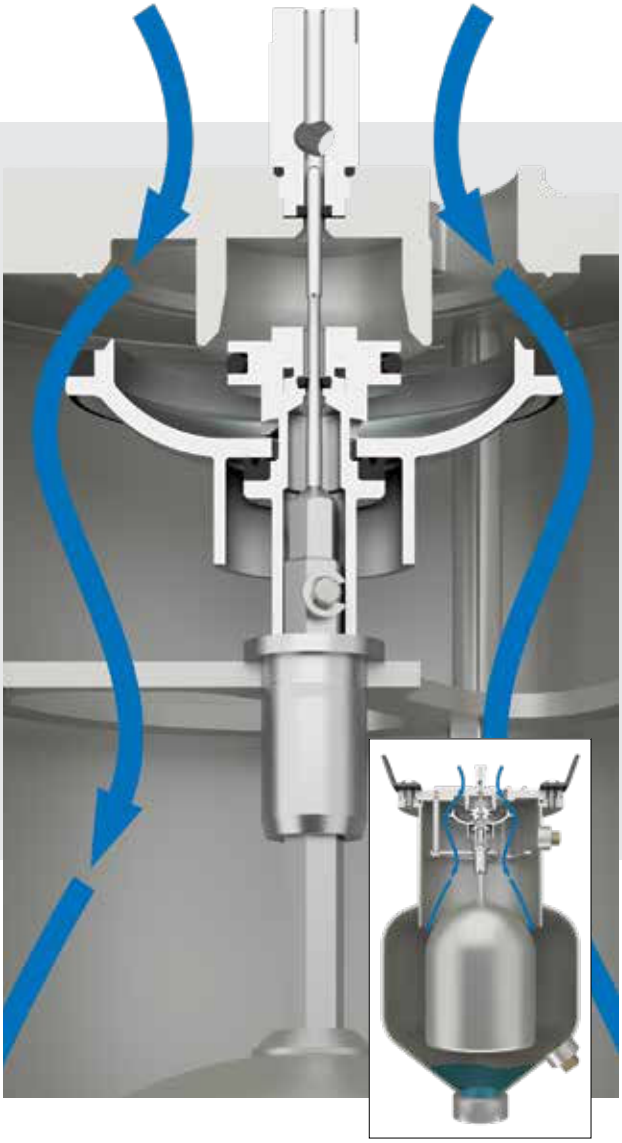
During normal system operation, air escapes from the fluid, collects at high points in the pipeline, and enters the valve. When enough air collects in the valve, it causes the float and float shaft to move down. In this minimal air release mode, the float position allows the valve to release a small amount of air past the float shaft seals. The released air is replaced by fluid entering the valve inlet, raising the float to the valve's closed position.

Normal Flow: High Air Bleed



If a larger amount of air collects in the pipeline during normal operation and enters the valve, it causes the float and float shaft to move down even farther causing the upper part of the float shaft to seal off the piston chamber. Trapped air continues to accumulate in the piston chamber, causing a pressure imbalance. The piston moves down, allowing the valve to release a larger amount of air past the piston stem and seat.

Pipeline Draining



When the pipeline is drained, or if a sudden break occurs, the valve quickly opens allowing high volumes of air to enter the pipeline. As fluid level in the valve drops, the float and float shaft move down, which allows the Air/Vacuum Disc to drop down, opening the pathway for high volume air to be pulled through the valve, reducing the risk of pipeline collapse due to excessive vacuum.

Field-Proven Performance

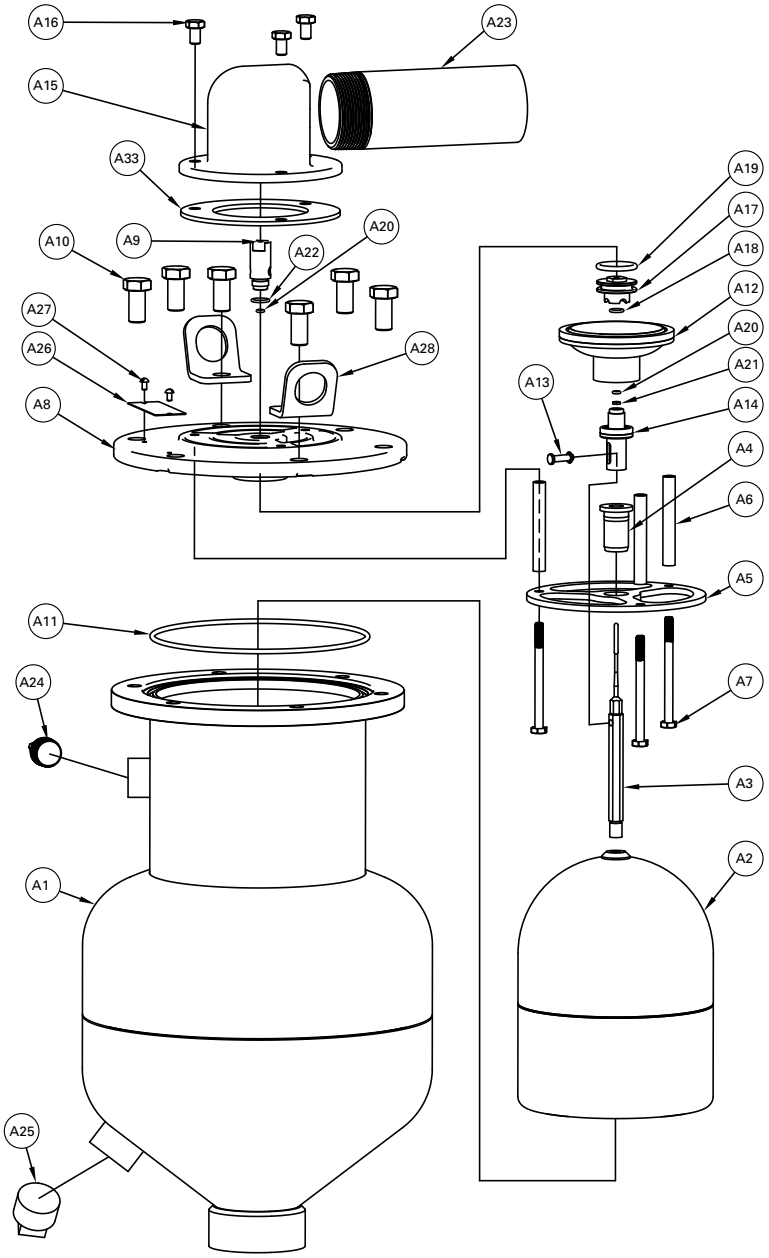
The APCO ASU Combination Air Valve was developed with 2 years of design and development testing and extensive field experience. In the field, users were consistently impressed with the performance and improved reliability of the ASU, which far exceeded other valves previously installed in the same location.

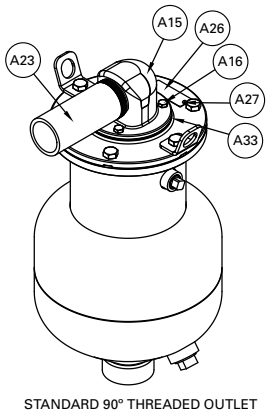
The ASU resisted clogging from grease, grit and debris meaning less maintenance, improved system reliability with reduced cost.

Materials of Construction

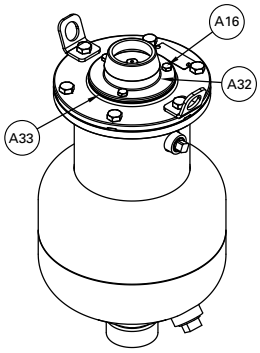
Item	Description	Material
A1	Body	316 Stainless Steel, ASTM A240/A276
A2	Float	316 Stainless Steel, ASTM A240/A276
A3	Float Shaft	316 Stainless Steel, ASTM A276, Condition A
A4	Guide Bushing	Acetal Homopolymer or Copolymer (POM)
A5	Guide Mount	316 Stainless Steel, ASTM A240
A6	Stand Off Tube	316 Stainless Steel, ASTM A269 or A511
A7	Screw	316 Stainless Steel
A8	Cover	316 Stainless Steel, ASTM A351, Type CF-8M
A9	Upper Pressure Cap (CAV) Top Cap (SCAV)	Acetal Homopolymer or Copolymer (POM)
A10	Screw	316 Stainless Steel
A11	O-Ring	Acrylonitrile-Butadiene (NBR)
A12	Air/Vacuum Disc and Seat	316 Stainless Steel, ASTM A351, Type CF-8M, with Acrylonitrile-Butadiene (NBR) Seat
A13	Clevis Pin with Retainer	Stainless Steel, Type 18-8
A14	Piston Stem and Seat	17-4 PH Stainless Steel, Type 630, ASTM A564, Condition H1150 or H1150D, with Acrylonitrile-Butadiene (NBR) Seat
A15	Outlet	Acetal Homopolymer or Copolymer (POM)
A16	Screw	316 Stainless Steel

Item	Description	Material
A17	Piston	316 Stainless Steel, ASTM A276, Condition A
A18	O-Ring	Acrylonitrile-Butadiene (NBR)
A19	O-Ring	Acrylonitrile-Butadiene (NBR)
A20	O-Ring	Acrylonitrile-Butadiene (NBR)
A21	Backup Ring	Acetal Homopolymer or Copolymer (POM)
A22	O-Ring	Acrylonitrile-Butadiene (NBR)
A23	Pipe Extension	Polyvinylchloride (PVC)
A24	Plug	316 Stainless Steel (SCAV Only)
A25	Plug	316 Stainless Steel
A26	Data Plate	316 Stainless Steel
A27	Screw	316 Stainless Steel
A28	Lift Lug	304 Stainless Steel
A30	Outlet (MRC)	304 Stainless Steel
A31	Screw	316 Stainless Steel
A32	Outlet (VTO Option)	303 Stainless Steel
A33	Gasket	Acrylonitrile-Butadiene (NBR) & PVC Foam
A34	Lower Pressure Cap	Acetal Homopolymer or Copolymer (POM)

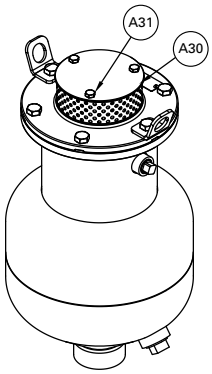




STANDARD 90° THREADED OUTLET



OPTIONAL VERTICAL THREADED OUTLET (VTO)



OPTIONAL MUSHROOM CAP (MRC)

PATENT PENDING

Valve Selection

Applicable Standards

APCO ASU Combination Air Valves are designed and/or tested to meet the following standards:	
AWWA C-512	Meets performance specifications of AWWA C512 Air Release, Air/Vacuum, and Combination Air Valves for Water and Wastewater Service
ASME B1.20.1	Pipe Threads, General Purpose, Inch
ASME/MSS-SP-114	Corrosion Resistant Pipe Fittings Threaded and Socket Welding Class 150
ASME B16.5	Pipe Flanges and Flanged Fittings
ASTM A-105 / SA-105	Dimensions conform to Standard Specification for Carbon Steel Forgings for Piping Applications

Pressure Ratings (Ambient Temperatures)

Valve Size	Body Style	Pressure Rating
1.2-6" 25-150mm	SCAV	150 psi 1035 kPa
1-4" 25-100mm Threaded inlet	CAV	300 psi 2070 kPa
1-4" 25-100mm Flanged Inlet	CAV	275 psi 1900 kPa

Note: Higher pressures and larger sizes are available on application.

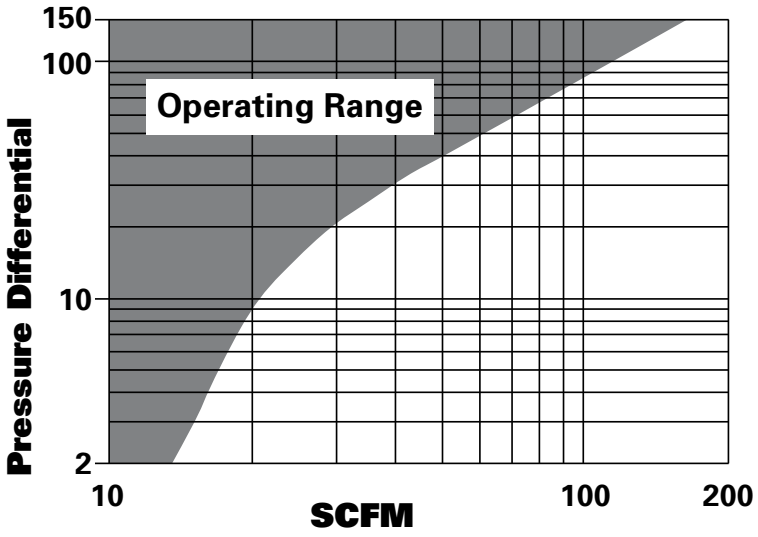
Operating Range

Valve Size	Body Style	Pressure Rating
1.2-6" 25-150mm	SCAV	2-150 psi 14-1035 kPa
1-4" 25-100mm Threaded inlet	CAV	2-300 psi 14-2070 kPa
1-4" 25-100mm Flanged Inlet	CAV	2-275 psi 14-1900 kPa

Maximum Temperature

Valve Size	Body Style	Pressure Rating
1-6" 25-150mm	SCAV & CAV	180º F 82º C

Air Release Variable Venting Capacity



Valve Weights

Standard 90º Outlet

Valve Size	Flanged	Threaded
1" 25mm	——	41 18.5
1.2"* 25mm	46.5 21	41 18.5
2" 50mm	47 21.5	41.5 19
3" 80mm	57.5 26	47.5 21.5
4" 100mm	61.5 28	47.5 21.5

Vertical Outlet (VTO)

Valve Size	Flanged	Threaded
1" 25mm	——	43 19.5
1.2"* 25mm	48.5 22	43 19.5
2" 50mm	48 22	42.5 19
3" 80mm	61 27.5	51 23
4" 100mm	63 28.5	49 22

Mushroom Cap Outlet (MRC)

Valve Size	Flanged	Threaded
1" 25mm	——	42 19
1.2"* 25mm	47.5 21.5	42 19
2" 50mm	47.5 21.5	42 19
3" 80mm	58 26.5	48 21.5
4" 100mm	62 28	48 21.5
6" 150mm	95 43	——

Accessory Weights

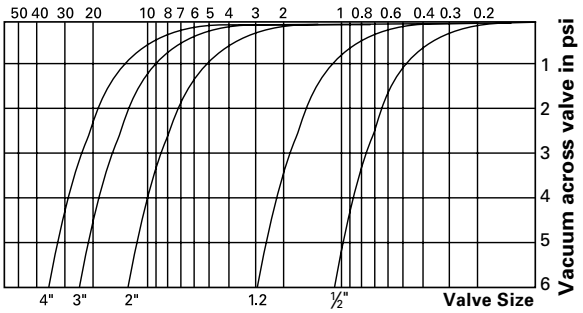
Valve Size	Double-Acting Throttling Device (DAT)	Backflush Attachment (BFK)
1" 25mm	4.17 1.90	5.15 2.37
1.2"* 25mm	4.17 1.90	5.15 2.37
2" 50mm	6.65 3.00	5.15 2.37
3" 80mm	19.65 8.90	5.15 2.37
4" 100mm	23.73 10.80	5.15 2.37
6" 150mm	——	5.15 2.37

* NOTE: Size 1.2 is a 1" valve with a 2" NPT Inlet and a 1" NPT Outlet.

Performance Graphs For Air/Vacuum Valve

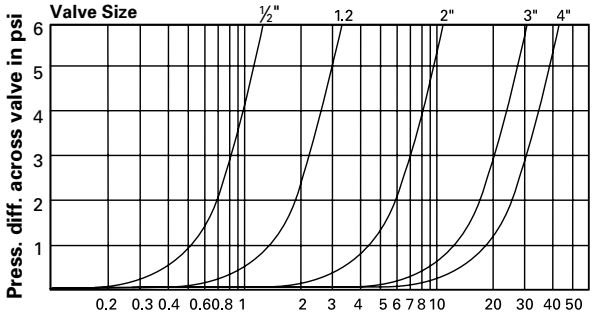
Graphs show air inflow/outflow through valve in standard cubic feet of free air per second (scfs). Curves shown are actual flow capacities at 14.7 psi barometric pressure and 70°F temperature based on actual test. These figures are not merely flow capacities across the orifice, but flow capacities across the entire valve.
In the test set-up, air approach velocity is negligible, therefore actual flow capacity exceeds the values shown on chart.

Inflow



NOTE: Size 1.2 is a 1" valve with a 2" NPT Inlet and a 1" NPT Outlet.

Outflow



NOTE: Size 1.2 is a 1" valve with a 2" NPT Inlet and a 1" NPT Outlet.

Ordering

To order, simply complete the valve order code from information shown. An ordering example is shown for your reference.

Valve Style
Give valve style code as follows:

ASU	=	Combination Air Valve

Valve Size
Give valve size code as follows:

SCAV

1.2	=	1"	(25mm)	1" Outlet with 90 degree elbow
2	=	2"	(50mm)	2" Outlet with 90 degree elbow
3	=	3"	(80mm)	3" Outlet with 90 degree elbow
4	=	4"	(100mm)	4" Outlet with 90 degree elbow
6	=	6"	(150mm)	6" Outlet with Mushroom Cap

CAV

1	=	1"	(25mm)	1" Outlet with 90 degree elbow
2	=	2"	(50mm)	2" Outlet with 90 degree elbow
3	=	3"	(80mm)	3" Outlet with 90 degree elbow
4	=	4"	(100mm)	4" Outlet with 90 degree elbow

Note: Size 1.2 is a 1" valve with a 2" NPT Inlet and a 1" NPT Outlet

Body Style
Give body style code as follows:

SCAV	=	Clean or Wastewater Service
CAV	=	Clean Service

Inlet Connection
Give inlet connection code as follows:

SCAV

T1	=	Threaded Inlet NPT (1-4")(to 150 psi)
F1	=	Flanged Inlet ASME 150 (1.2-6")
NA	=	Not Required (used with VWB option only)

CAV

T1	=	Threaded Inlet NPT (1-4")(to 300 psi)
F1	=	Flanged Inlet ASME 150 (2-4")(to 275 psi)

Body Material
Give body material code as follows:

S2	=	316 Stainless Steel

Trim Combination
Orifice size
Give orifice code as follows:

R516	=	5/16" (SCAV body style only)
H516	=	5/16" (CAV body style only)

Seat Material
Give seat material code as follows:

NBR	=	Acrylonitrile-Butadiene
EPDM	=	Terpolymer of Ethylene Propylen & A Diene
FKM	=	Fluoro Rubber

Disc/Float Material
Give disc/float material code as follows:

S2	=	316 Stainless Steel

Shaft Material
Give shaft material code as follows:

S2	=	316 Stainless Steel

Frame Material
Give frame material code as follows:

S2	=	316 Stainless Steel

Options
Give option code as follows:

DTR	=	DeZURIK Standard Certified Production Hydrostatic Shell & Seat Test Report
VWB	=	Valve Without Body (must be used with NA Inlet Connection) (SCAV only)
WW	=	Wastewater Service (CAV only)

Ordering Example: ASU,3,SCAV,F1,S2,R516-NBR-S2-S2-S2*

Accessories
Give accessory code as follows:

BFK	=	Backflush Kit (SCAV only)
DAT	=	Double Acting Throttling Device (1-4")
MRC	=	Mushroom Cap (1-4") (Standard on 6" valves)
VTO	=	Vertical Outlet (1-4")

Ordering Example (With Accessory Mounted):
ASU,3,SCAV,F1,S2,R516-NBR-S2-S2-S2*MRC

Options & Accessories

Vertical Threaded Outlet (VTO)

The Vertical Outlet is threaded to allow plant piping of discharge. It is available as a complete valve assembly or as a separate item.

To order as part of a complete valve, add VTO to order code.

Ordering Example:
ASU,4,SCAV,F1,S2,R516-NBR-S2-S2-S2*VTO

To order as a separate item, give order code from the table below.

Valve Size	Size	Order Code
1" 25mm	1" NPT	ACC*VTO-1
1.2"* 25mm	1" NPT	ACC*VTO-1.2
2" 50mm	2" NPT	ACC*VTO-2
3" 80mm	3" NPT	ACC*VTO-3
4" 100mm	4" NPT	ACC*VTO-4

* NOTE: Size 1.2 is a 1" valve with a 2" NPT Inlet and a 1" NPT Outlet.

Mushroom Cap Outlet (MRC)

The Mushroom Cap prevents foreign debris from entering the valve outlet while providing wide openings for free expulsion and admittance of air. The mushroom cap is standard on the 6" valve and, it is available as a complete valve assembly or as a separate item on 1-4" valves.

To order as part of a complete valve, add MRC to order code.

Ordering Example:
ASU,4,SCAV,F1,S2,R516-NBR-S2-S2-S2*MRC

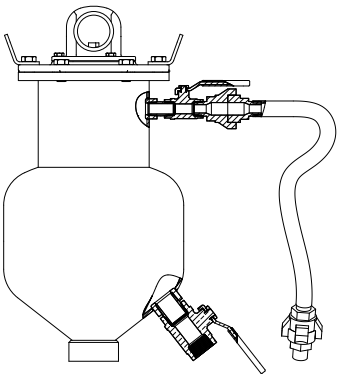
To order as a separate item, give order code from the table below.

Order Code	Usage
ACC*MRC-ASU-SM	1", 1.2" or 2" ASU Valve
ACC*MRC-ASU-LG	3" or 4" ASU Valve

Ordering Example:
ACC*MRC-ASU-SM

Back Flush Attachment Kit (BFK)

The Back Flush Attachment Kit is recommended for periodic cleaning of grease and scum from the ASU-SCAV Combination Air Valve only. The Back Flush Attachment Kit is a separate item that includes two brass shut-off valves, 316 stainless steel piping, and 5 feet of hose with galvanized steel quick disconnect couplings. An isolation valve is required on the inlet port to isolate the valve while performing the back-flushing operation, but is not included. Contact DeZURIK for recommendations.



To order as a separate item, give order code ACC*BFK-ASU

Ordering Example:
ACC*BFK-ASU

Options & Accessories (Cont.)

Double Acting Throttling Device (DAT)

The APCO Double Acting Throttling Device (DAT) is designed to regulate and restrict air venting on the discharge orifice of the ASU Combination Air Valves. The DAT features and exclusive throttling air-out/full flow air-in design. On pump start, the device establishes a pressure load on the rising column of media to eliminate shock to the pump, controls and check valve. On pump stop, the DAT device automatically opens to allow full line, unrestricted air reentry to prevent a vacuum and water column separation in the pump. The DAT has a fusion coated epoxy coating. The DAT can be ordered as part of a complete valve, or as a separate item. The DAT is not a stand-alone device and cannot be installed directly to the pipeline. The DAT must be installed in the outlet port (top) of the ASU Combination Air Valve.

To order as part of a complet valve, add DAT to the order code.

Ordering Example:
ASU,4,SCAV,T1,S2,R516-NBR-S2-S2-S2*DAT

To order as a separate item, give order code from the table below.

Valve Size	Order Code
1" 25mm	ACC*DATFB-ASU-1
1.2"* 25mm	ACC*DATFB-ASU-1.2
2" 50mm	ACC*DATFB-ASU-2
3" 80mm	ACC*DATFB-ASU-3
4" 100mm	ACC*DATFB-ASU-4

Ordering Example:
ACC*DATFB-4

Valve Without Body (VWB)

VWB shown with optional mushroom cap

All Internal parts for the ASU-SCAV valve may be ordered as a complete assembly to be replaced into an existing body. Includes all parts except A1, A24 and A25. To order, use NA code for the Inlet Connection and add VWB in the option field

Ordering Example:
ASU,4,SCAV,NA,S2,R516-NBR-S2-S2-S2,VWB*

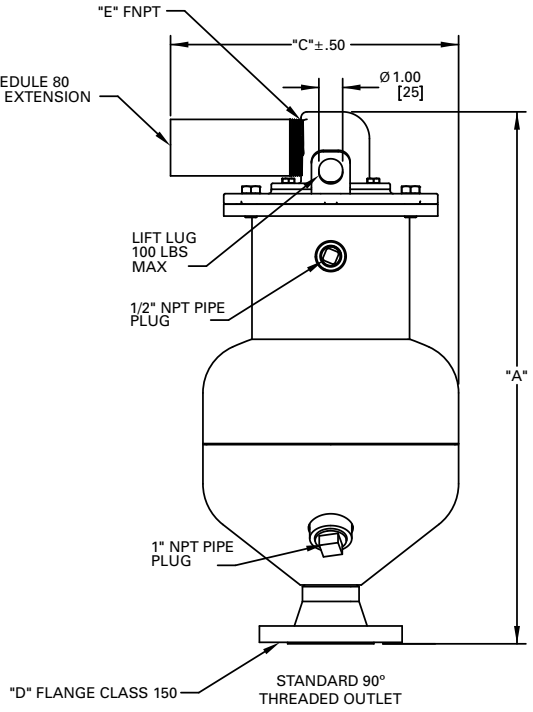
Dimensions

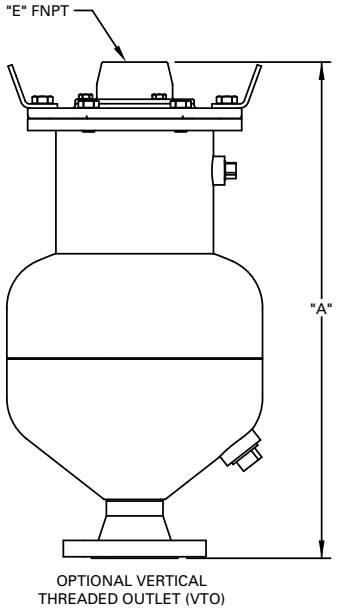
Flanged Inlet

Valve Size	Outlet Option	Inlet Size	Outlet Size	Dimensions				
		D	E	A		B	C	F
				SCAV	CAV			
1.2"* / 25mm	Standard	2"	1"	22.43 / 570	N/A	9.00 / 229	12.11 / 308	10.70 / 272
	VTO			20.92 / 531			N/A	
	MRC			21.37 / 543				
2" / 50mm	Standard	2"	2"	22.43 / 570	21.39 / 343	9.00 / 229	12.11 / 308	10.70 / 272
	VTO			20.92 / 531	19.88 / 505		N/A	
	MRC			21.37 / 543	20.40 / 518			
3" / 80mm	Standard	3"	3"	25.19 / 640	24.12 / 613	9.69 / 246	10.60 / 269	11.46 / 291
	VTO			22.55 / 573	21.49 / 546		N/A	
	MRC			22.69 / 576	21.50 / 546			
4" / 100mm	Standard	4"	4"	25.08 / 637	24.00 / 610	9.69 / 246	10.60 / 269	11.46 / 291
	VTO			22.44 / 570	21.37 / 542		N/A	
	MRC			22.47 / 571	21.38 / 543			
6" / 150mm	MRC	6"	6"	27 / 686	N/A	13.50 / 243	N/A	15.30 / 389

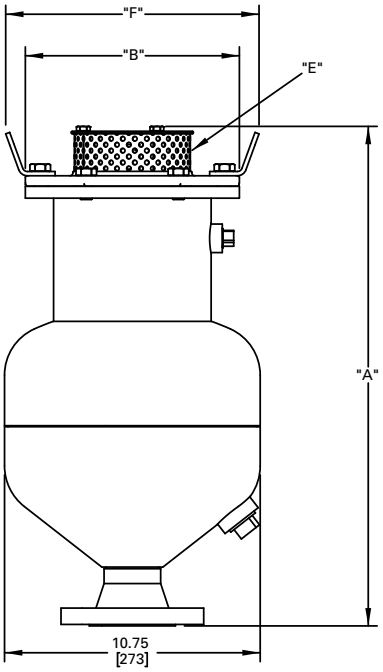
* NOTE: Size 1.2 is a 1" valve with a 2" Flanged Inlet and a 1" NPT Outlet.

Inches
Millimeters





OPTIONAL VERTICAL THREADED OUTLET (VTO)



OPTIONAL MUSHROOM CAP OUTLET (MRC)

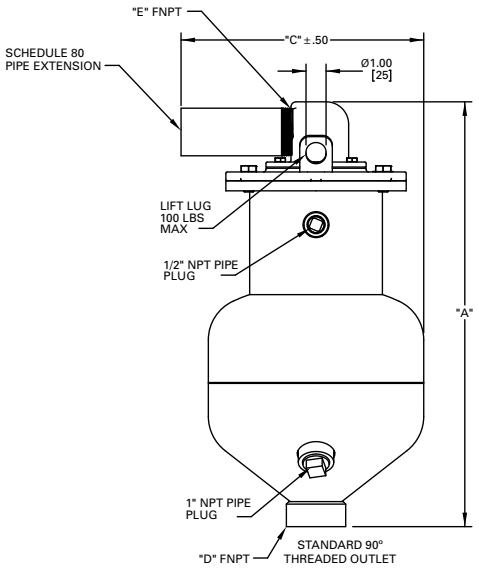
Dimensions

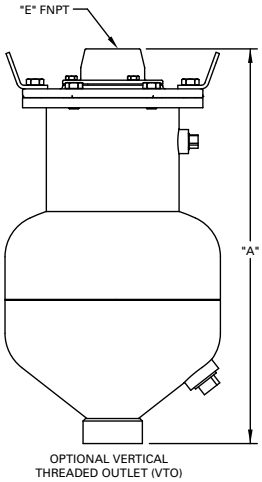
Threaded Inlet NPT

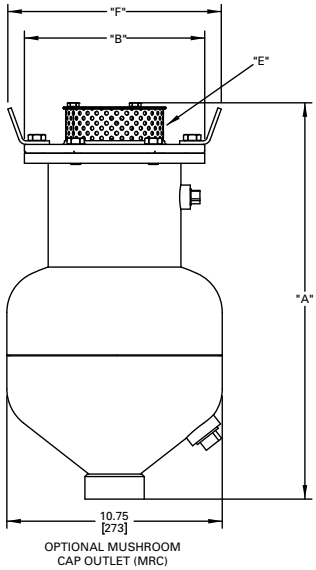
Valve Size	Outlet Option	Inlet Size D	Outlet Size E	Dimensions A SCAV	A CAV	B	C	F
1" 25mm	Standard	1"	1"	N/A	20.46 520	9.00 229	12.11 308	10.70 272
	VTO				18.95 481		N/A	
	MRC				19.47 495			
1.2"* 25mm	Standard	2"	1"	21.20 538	N/A	9.00 229	12.11 308	10.70 272
	VTO			19.70 500			N/A	
	MRC			20.14 512				
2" 50mm	Standard	2"	2"	21.20 538	20.58 523	9.00 229	12.11 308	10.70 272
	VTO			19.70 500	19.07 484		N/A	
	MRC			20.14 512	19.59 498			
3" 80mm	Standard	3"	3"	23.92 608	23.50 597	9.69 246	10.60 269	11.46 291
	VTO			21.28 541	20.87 530		N/A	
	MRC			21.43 544	20.88 530			
4" 100mm	Standard	4"	4"	23.92 608	23.39 447	9.69 246	10.60 269	11.46 291
	VTO			21.28 541	20.76 527		N/A	
	MRC			21.43 544	20.77 528			

* NOTE: Size 1.2 is a 1" valve with a 2" NPT Inlet and a 1" NPT Outlet.

Inches
Millimeters







Sales and Service

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The World Leader in Pinch and Check Valve Technology™

Continuing a Legacy of Leadership, Innovation and Customer Service

More than 65 years ago, Red Valve was founded on a simple promise to manufacture the world's highest quality engineered pinch and check valves, with an unsurpassed level of technical innovation. This promise began a legacy of leadership, a never-ending quest to solve customers' toughest challenges and exceed their expectations, that continues today.

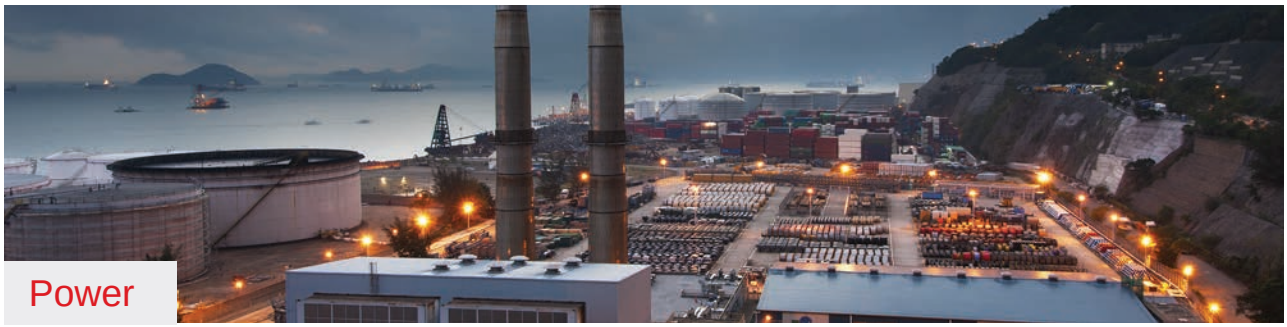
Being The World Leader in Pinch and Check Valve Technology™ is more than a slogan, it's a promise. This promise lives on every day with every Pinch Valve, Control Valve, Pressure Sensor, Expansion Joint, Tideflex® Duckbill Check Valve, Tideflex® In-Line Check Valve, and CheckMate UltraFlex® In-Line Check Valve we ship to customers all over the world. It's a promise kept by hundreds of dedicated Red Valve employees and independent sales representatives.

Innovative Valve Solutions for Every Application

Wastewater Treatment

Mining

Chemical



Power

Pulp and Paper

Tideflex® Series 35-1 Flanged Check Valve

Materials of Construction

Available in sizes 4” - 102”
Body: Natural Rubber (NR), Ethylene Propylene Diene Terpolymer (EPDM), Acrylonitrile-Butadiene (NBR), Fluoroelastomer (FKM), Chloroprene (CR), Chlorosulfonated Polyethylene (CSM), Chloro-Isobutylene-Isoprene (CIIR), NSF*/ANSI/CAN 61 and NSF*/ANSI/CAN 372 certified EPDM
*Certified for 2,000 gallons or greater volume.
Retaining Rings: 316 Stainless Steel, special alloys available

The flat-bottom Series 35-1 Flanged Check Valve features an integral rubber flange, allowing it to be mounted to flanged outfall pipes or directly to headwalls where the pipe is flush.

The Series 35-1 is often a direct replacement for flanged flap gates, where hinge pins rust and corrode if not routinely lubricated, allowing debris to collect in the seating area of the valve, keeping flappers open.

- Series 35-1 Valves 18” and larger are constructed with curved bill as standard.
- Standard flange size drilling conforms to ASME B16.5 and ASME B16.47, Class 150 standards. All other domestic and international standards, as well as customer specified flange dimensions, are also available.
- The valve is furnished complete with retaining rings for installation.

Tideflex® Series 35 Flanged Check Valve

Materials of Construction

Available in sizes 0.5” - 72”
Body: Natural Rubber (NR), Ethylene Propylene Diene Terpolymer (EPDM), Acrylonitrile-Butadiene (NBR), Fluoroelastomer (FKM), Chloroprene (CR), Chlorosulfonated Polyethylene (CSM), Chloro-Isobutylene-Isoprene (CIIR), NSF*/ANSI/CAN 61 and NSF*/ANSI/CAN 372 certified EPDM
*Certified for 2,000 gallons or greater volume.
Retaining Rings: 316 Stainless Steel, special alloys available

The Series 35 Flanged Check Valve is manufactured identically to the Tideflex® TF-2 Check Valve, with the addition of an integral elastomer flange as part of the valve. The Series 35 Flanged Check Valve is simple in design, with only one part, the all-elastomer duckbill check valve.

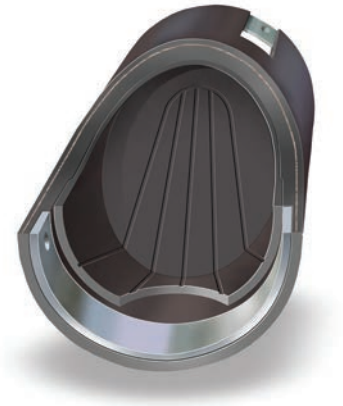
The Series 35 Flanged Check Valve is ideal for applications and installations where a slip-over pipe check valve is not feasible because of an existing flange in the piping system or an existing flange cemented in the outfall piping system vault.

- There are no seats or interference fits to corrode or freeze valve operation, making it virtually maintenance-free. The Series 35 seals completely around solids, making it ideal for fly ash, raw sewage, sludge, lime, mining slurries and many other abrasive and corrosive slurries.

- Standard flange size drilling conforms to ASME B16.5 and ASME B16.47, Class 150 standards. All other domestic and international standards, as well as customer specified flange dimensions, are also available.

- The valve is furnished complete with retaining rings for installation.

CheckMate UltraFlex® In-Line Check Valve



Materials of Construction

Available in sizes 3” - 72”
Body: Natural Rubber (NR), Ethylene Propylene Diene Terpolymer (EPDM), Acrylonitrile-Butadiene (NBR), Fluoroelastomer (FKM), Chloroprene (CR), Chlorosulfonated Polyethylene (CSM), Chloro-Isobutylene-Isoprene (CIIR), ANSI/CAN 61 and ANSI/CAN 372 certified EPDM
Mounting Clamps: 316 Stainless Steel, special alloys available

The CheckMate UltraFlex® In-Line Check Valve is the preferred choice for both municipal and industrial applications, including stormwater, wastewater, highway run-off, CSO, SSO and flood control, to prevent unwanted backflow. Unlike less-engineered, molded in-line check valves held together with rivets, the CheckMate® is hand-fabricated, utilizing various natural and synthetic elastomers and fabric-ply reinforcement to create a unibody construction. No mechanical parts or fasteners to catch debris, corrode or fail, make the CheckMate® extremely durable and virtually maintenance-free. The CheckMate UltraFlex® can also be custom-engineered to resist chemicals, grease and oils found in stormwater, wastewater and industrial applications.

- The CheckMate® is the most user-friendly in-line check valve on the market today.
- The CheckMate® exhibits extremely low head loss, allowing for near 100% flow capacity.
- Patented arc notch, saddle grooves, and optimized construction enable the CheckMate® to open faster than other in-line check valves, allowing pipelines and entire collection systems to drain quicker. The valve snaps open with far less head pressure, significantly increasing pipeline capacity, allowing free flow of water during weather events, minimizing the chance for standing water to collect upstream.
- Installation is easy: from the upstream or downstream end of the pipe, simply insert valve into position and clamp into place. No modification to pipe or structure is typically required to install. Pre-drilled holes quickly pin the valve in position.
- For applications where there is no access to the upstream side of the valve, thimble inserts and extensions are available for the Checkmate®.
- The CheckMate® is recessed inside the pipe. No additional permitting is required. The result is savings in installation time and operational cost.
- Integral upstream or downstream rubber flanged versions are available with ANSI or custom drillings.

Tideflex® Series 33, 39 and 39F In-Line Check Valves

Materials of Construction

Series 33: Available in sizes 1” - 3”
Series 39: Available in sizes 4” - 24”
Series 39F: Available in sizes 30” - 84”
Body: Cast iron ASTM A126 sizes up to 24”. Fabricated steel body in sizes 30” - 84”
Sleeves: Natural Rubber (NR), Ethylene Propylene Diene Terpolymer (EPDM)*, Acrylonitrile-Butadiene (NBR), Fluoroelastomer (FKM), Chloroprene (CR), Chlorosulfonated Polyethylene (CSM), Chloro-Isobutylene-Isoprene (CIIR), NSF*/ANSI/CAN 61 and NSF*/ANSI/CAN 372 certified EPDM
*Certified for 2,000 gallons or greater volume.
Drilled and tapped flanges: ASME 125/150
Optional: Epoxy coating or rubber-lined body available. Steel or stainless steel saddle support available.

Tideflex® Series 33, 39 and 39F In-Line Check Valves are designed to handle abrasive slurries, sewage, sludge and other difficult materials. The in-line check valve’s fabric-reinforced elastomer sleeve provides thru-flow at minimum pressure drop across the valve at all times. Forward pressure opens the valve automatically and reverse pressure seals the valve. Wear and deterioration caused by continuous operation of abrasive slurries are minimized because of the durable inner rubber check valve.

- No mechanical parts, hinges, discs or metal seats to freeze, corrode or bind.
- The unique elastomer check sleeve can seal on solids.
- Silent and non-slamming operation.
- Series 39F Valves have thru-drilled flange holes. Series 33 and Series 39 Valves have tapped holes. Specify maximum line pressure and backpressure.

Tideflex® Series 37
Flanged In-Line Check Valve

Materials of Construction

Available in sizes 1” - 54”
Body: Natural Rubber (NR), Ethylene Propylene Diene Terpolymer (EPDM)*, Acrylonitrile-Butadiene (NBR), Fluoroelastomer (FKM), Chloroprene (CR), Chlorosulfonated Polyethylene (CSM), Chloro-Isobutylene-Isoprene (CIIR), NSF*/ANSI/CAN 61 and NSF*/ANSI/CAN 372 certified EPDM
*Certified for 2,000 gallons or greater volume.
Drilled and tapped flanges: ASME Class 125 Flanges, DIN PN6, PN10, PN16

The Series 37 Flanged In-Line Check Valve is a simple, reliable and cost-effective solution to backflow problems. Designed to be installed between two mating flanges, the Series 37 eliminates the need for a valve body.

With only one moving part, the maintenance-free elastomer check valve, the Series 37 In-Line Check Valve is simple in design. Sliding, rotating, swinging and spring parts are eliminated, with no seats to corrode or packing to maintain. In addition, the Series 37 is a passive design that requires no external source of air or electricity to operate, resulting in dramatically reduced operating costs.

- The Series 37 In-Line Check Valve can be ordered in a variety of elastomers.

- Flanges conform to ASME B16.1 Class 125 specifications. Special custom designs or metric flange drillings are also available. When ordering, specify line and backpressure.

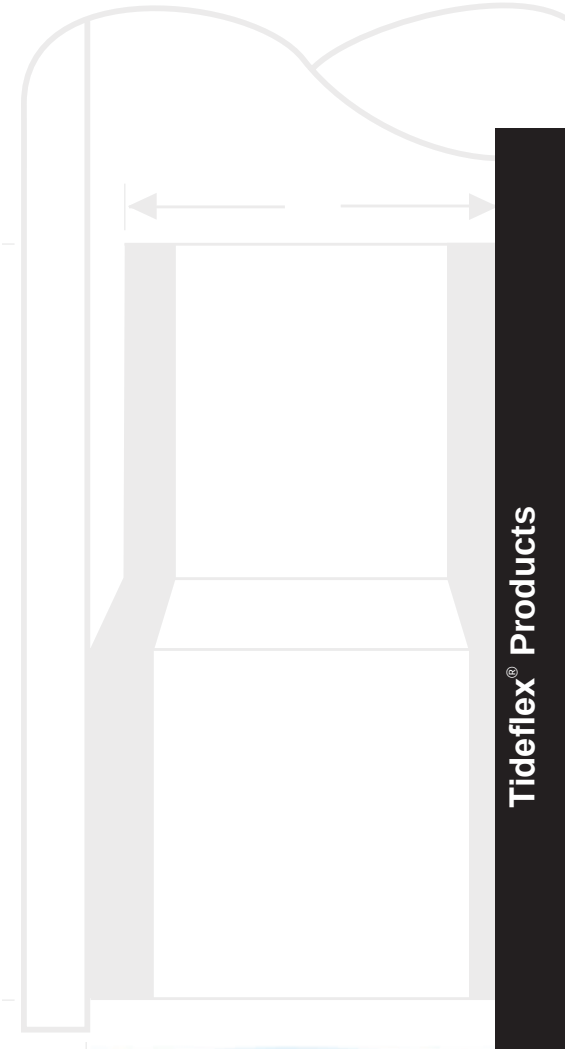
Tideflex® Series 37G
Slip-In In-Line Check Valve

Materials of Construction

Available in sizes 2” - 72”
Body: Natural Rubber (NR), Ethylene Propylene Diene Terpolymer (EPDM)*, Acrylonitrile-Butadiene (NBR), Fluoroelastomer (FKM), Chloroprene (CR), Chlorosulfonated Polyethylene (CSM), Chloro-Isobutylene- Isoprene (CIIR), NSF*/ANSI/CAN 61 and NSF*/ANSI/CAN 372 certified EPDM
*Certified for 2,000 gallons or greater volume.
Expansion Clamps: 316 Stainless Steel

The Series 37G Slip-In In-Line Check Valve is a special adaptation of the Series 37. The 37G can be completely inserted into a pipe which effectively gives it a zero face-to-face dimension. The outside diameter of the 37G’s cuff is fabricated to precisely match the inside diameter of the pipe, providing a press-fit connection. The valve is supplied with an internal expansion clamp to provide compression between the valve and pipe I.D. Each clamp has four pre-drilled holes that allow the valve to be pinned into position. The 37G can even be fabricated for elliptical or out of round pipe. Consult Red Valve for special fabrications.

- The 37G is predominantly used in gravity-driven outfall pipes and in manholes and vaults where the valve is inserted into the effluent pipe and compressed to the pipe I.D. with an expansion clamp.
- The 37G can be inserted into the end of a pipe, but access to the clamp should be from upstream of the valve, not through the bill of the valve.
- For those applications where there is no access to the upstream side of the valve, the 37G Thimble Insert is the solution.
- For higher backpressure ratings or to lower head loss while maintaining backpressure ratings, Saddle Support Technology (SST) can be used in conjunction with the Series 37G.



Red Valve offers a worldwide, world-class custom service network. With corporate offices in Pittsburgh, PA, manufacturing facilities in Gastonia, NC, and sales representatives around the globe, Red Valve has the sales engineering team to help you select the best choice of valves and related products for your applications.

Red Valve®

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