

DeZURIK AIS COMPLIANT KGC-BD BI-DIRECTIONAL CAST STAINLESS STEEL KNIFE GATE VALVE

Quality Knife Gate Valves for AIS Compliance

DeZURIK, your trusted source for quality valves, is committed to delivering products that comply with all AIS provisions. DeZURIK/APCO/Hilton and Willamette valves can be specified to meet provisions of H.R. 3547, the Consolidated Appropriations Act, for projects involving Clean Water State Revolving Funds (CWSRF) or Drinking Water State Revolving Funds (DWSRF). This requirement applies to projects for the construction, alteration, maintenance, or repair of a public water system or treatment works. DeZURIK has close relationships with a network of US-based vendors throughout our supply chain that provide AIS compliant castings and components. DeZURIK's AIS Compliant KGC-BD Bi-Directional Knife Gate Valve is just one of the many valve products available to meet AIS provisions.

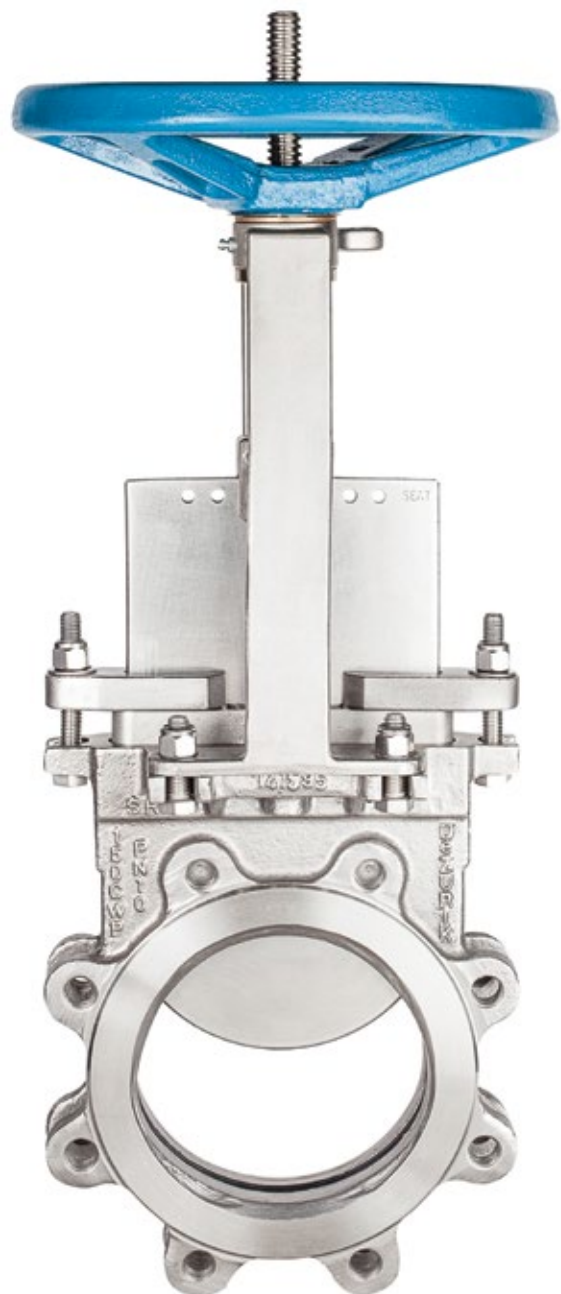
Design and Construction

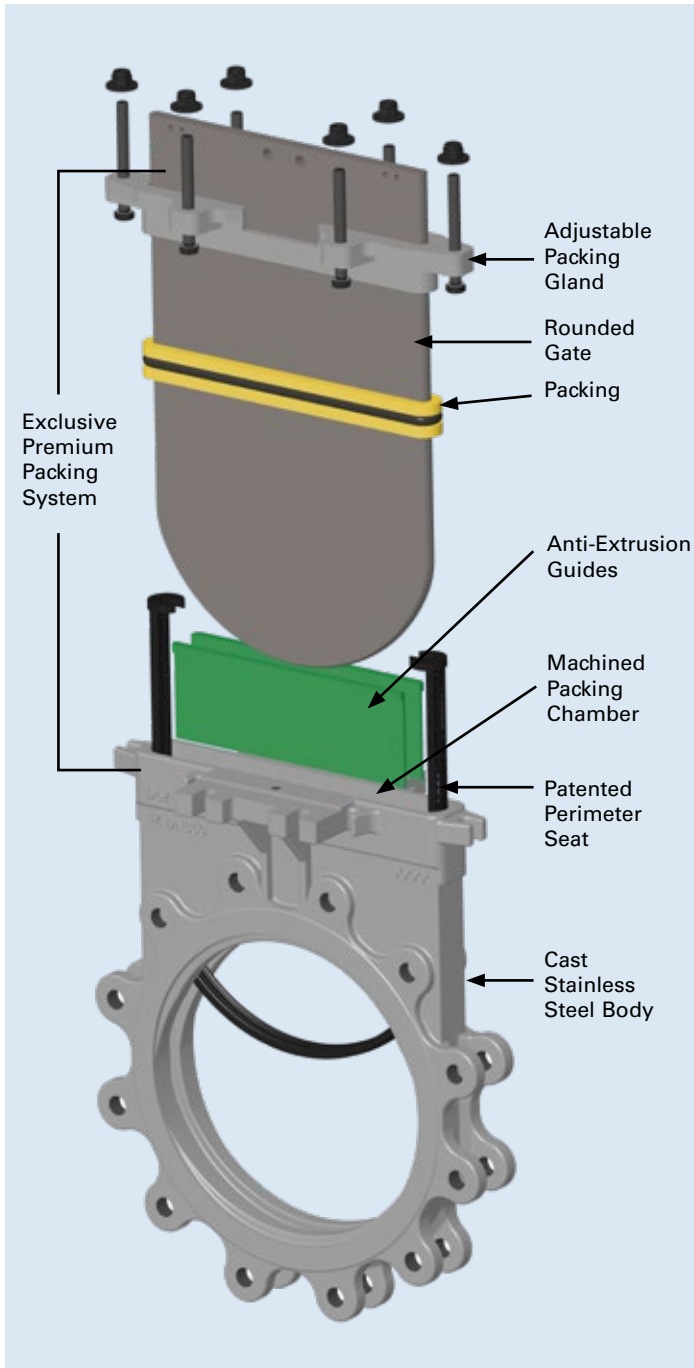
The KGC-BD valve features a unique, patented perimeter seat design that provides bubble-tight shutoff in either direction, even on dead end service. The valve is designed for isolation – on/off applications of clean, dirty, viscous and corrosive liquids; sludge; slurries; clean and corrosive gases.

The KGC Bi-Directional valve features a rounded cast packing chamber, rounded gate edge and premium packing system. All of these features combine to provide improved sealing, extended packing life and reduced maintenance.

Size Range and Pressure Ratings

3-24" (80-600mm) 150 psig CWP (1030 kPa)





Bubble-Tight, Bi-Directional Shutoff

The KGC-BD Bi-Directional Knife Gate Valve provides bubble-tight shutoff in both directions up to the full rating of the valve. There is no recommended flow direction—and the valve does not require line pressure to seal. The interference fit between the gate and seat provides bubble tight shutoff throughout the pressure range. The valve can be used in either direction on dead end service without a mating flange.

Perimeter Seat Seal

The rounded gate provides full perimeter sealing against the seat, eliminating a pocket in the seat that could potentially trap process media and prevent the valve from fully closing.



Maximum Flow Capacity

The 100% full port area is equal to ASME B36.10 standard pipe, and provides maximum flow capacity and minimum pressure drop.

Full Gasket Sealing

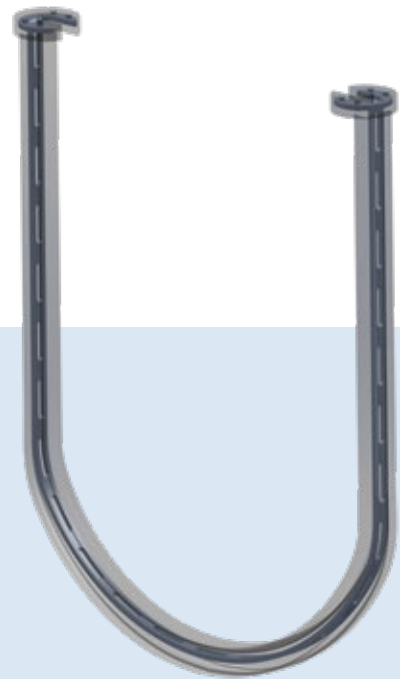
For maximum gasket sealing, the KGC-BD end connections conform to ASME B16.20 dimensions for spiral-wound gaskets.

Patented Seat Design

The KGC-BD Bi-Directional Knife Gate Valve combines a patented design, one-piece rubber molded seat with encapsulated full 316 Stainless Steel metal reinforcement insert, a spline and puck that work together to lock the seat securely into the valve body. This unique seat design prevents buckling or dislodgement that can occur with other perimeter seat designs.

Unique Perimeter Seat Design

The superior design of the KGC-BD perimeter seat has three distinct features that prevent buckling or dislodgment during operation. These patented features combine to give the KGC-BD outstanding installed performance.



1. One-Piece Rubber Molded Seat with Full Metal Insert

The one-piece, resilient seat has a full 316 Stainless Steel reinforcement insert encapsulated in the seat molding that provides rigidity to the seat. This special design was developed specifically to address the problems associated with seat pull-out that can occur with other perimeter seat designs when the valve is stroked.

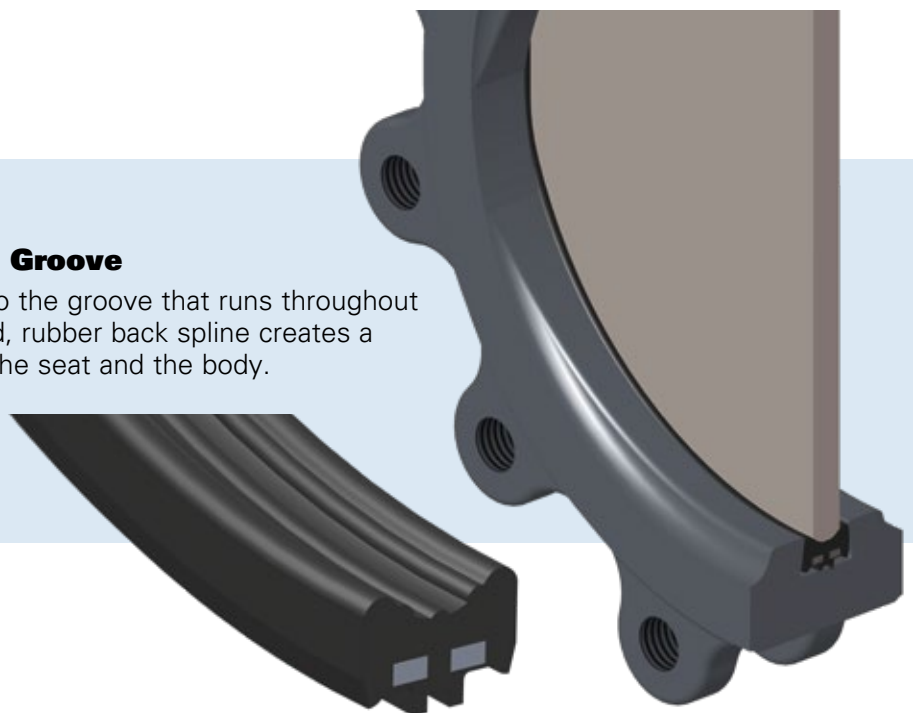


2. Seat Pucks Securely Locked Into Packing Chamber

The seat pucks at the top of the rubber-molded seat sit securely in machined pockets in the bottom of the packing chamber. This mechanically retains the seat and keeps it firmly in place, even in the most demanding applications. And because the pocket is recessed into the valve body, there is no interference with the integrity of the packing.

3. Seat Locked Into Body Groove

The perimeter seat is locked into the groove that runs throughout the valve body. The fully molded, rubber back spline creates a tight seal between the back of the seat and the body.



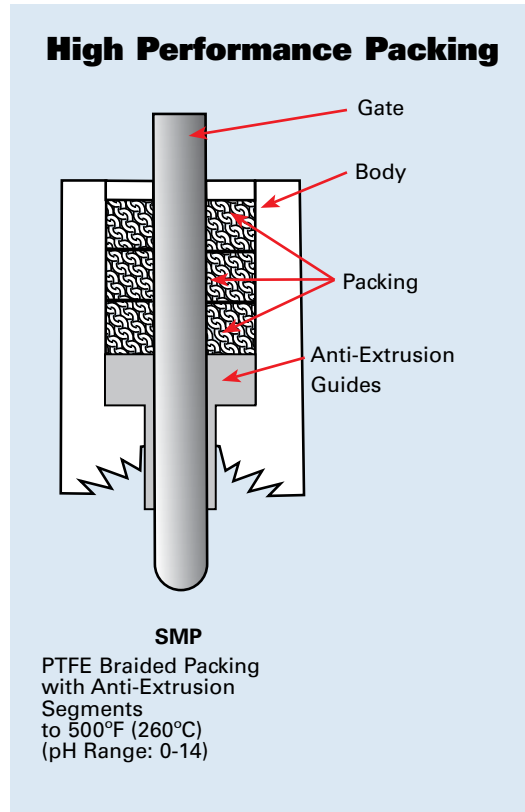
DeZURIK Exclusive Premium Packing System

Because the pucks sit in machined pockets in the packing chamber, there is no intrusion into the packing chamber. The KGC-BD valve has the DeZURIK Exclusive Premium Packing System that includes a fully machined rounded cast packing chamber, rounded gate edge, and anti-extrusion guides.

Putting "The Premium Packing System" To Work

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

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



- Sealing
 - Adjustable Packing Gland will renew the seal by increasing the compression of the packing to seal the valve
- Scraping
 - Anti-Extrusion Guides function as a gate scraper, designed to prevent media from entering packing chamber.
- Supporting
 - Anti-Extrusion Guides support packing, keep packing from extruding between body and gate, and also maintain gate alignment to maximize sealing performance.

Quality Materials for Reliable Service

The heavy-duty cast body is 316 Stainless Steel. Resilient seat materials include Chloroprene CR; Terpolymer of Ethylene, Propylene and a Diene EPDM; Acrylonitrile-Butadiene NBR; and Fluoro Rubber FKM. Three rings of PTFE packing provide extended service life with fewer adjustments. The superstructure is 304 Stainless Steel.

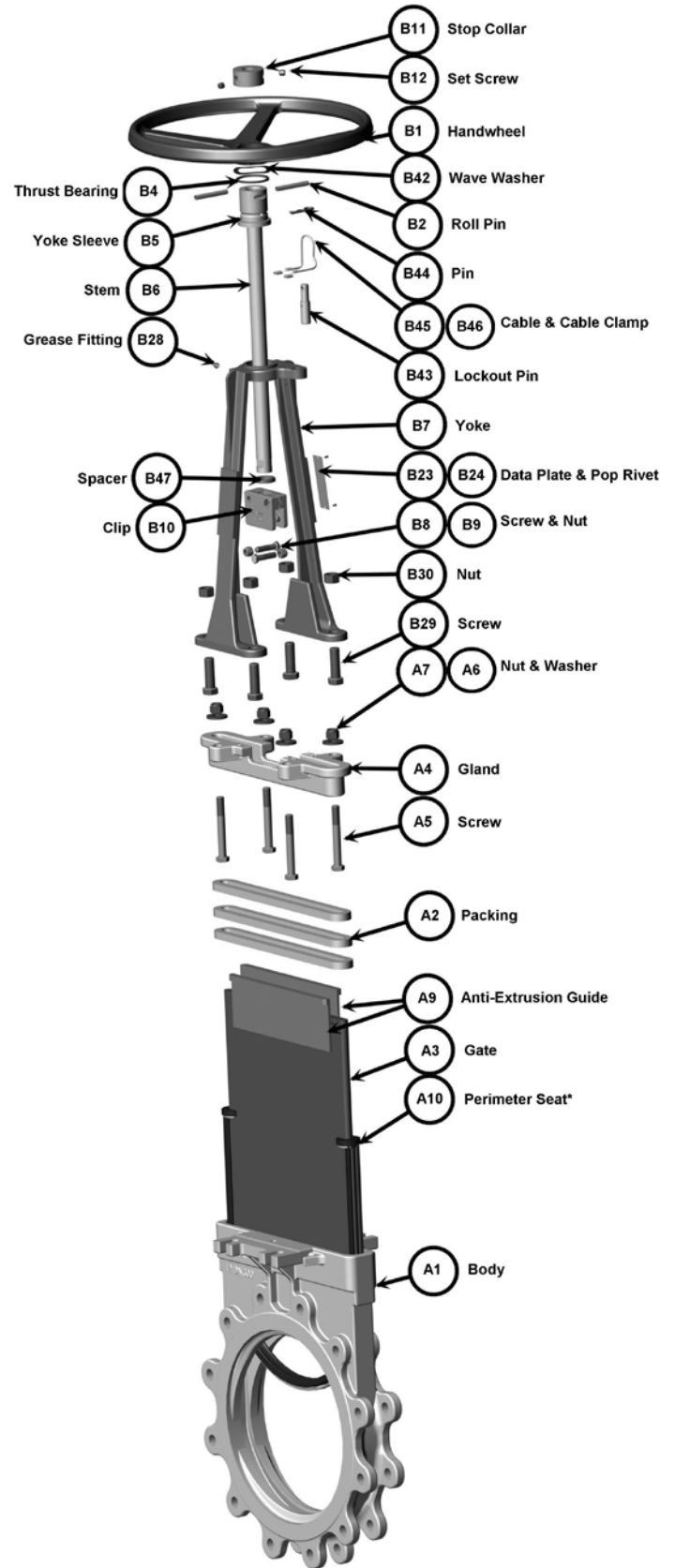
Rounded Stainless Steel Gate

The 316 Stainless Steel gate resists corrosion. The gate has a precision ground finish on both sides to prevent packing and seat damage.

Materials of Construction

Item	Description	Material
A1	Body	316 Stainless Steel, ASTM A351 CF8M
A2	Packing	SMP - PTFE Braided Packing to 500°F (260°C) (pH Range 0-14)
A3	Gate	316 Stainless Steel, ASTM A240
A4	Gland	316 Stainless Steel, ASTM A240
A5	Screw	304 Stainless Steel
A6	Washer	304 Stainless Steel
A7	Nut	304 Stainless Steel
A9	Anti-Extrusion Guide	Glass Filled PTFE
A10	Perimeter Seat*	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)
B1	Handwheel	Painted, Cast Iron, ASTM A126 Class B
B2	Roll Pin	Carbon Steel or 420 Stainless Steel
B4	Thrust Bearing	Oil Impregnated Bronze
B5	Yoke Sleeve	Aluminum Bronze
B6	Stem	316 Stainless Steel
B7	Superstructure	304 Stainless Steel, ASTM A351 CF8
B8	Screw	18-8 Stainless Steel
B9	Nut	18-8 Stainless Steel
B10	Clip	304 Stainless Steel
B11	Stop Collar	304 Stainless Steel
B12	Set Screw	18-8 Stainless Steel
B23	Data Plate	316 Stainless Steel
B24	Pop Rivet	18-8 Stainless Steel
B28	Grease Fitting	Zinc Plated Steel
B29	Screw	18-8 Stainless Steel
B30	Nut	18-8 Stainless Steel
B42	Wave Washer	304 Stainless Steel
B43	Lockout Pin	304 Stainless Steel
B44	Pin	18-8 Stainless Steel
B45	Cable	316 Stainless Steel
B46	Cable Clamp	316 Stainless Steel
B47	Spacer	304 Stainless Steel

*Seat ring is molded with fully encapsulated 316 Stainless Steel reinforcement insert.



*Patent Pending seat design

Valve Selection

Shut-Off Capabilities

All Resilient Seats	Bubble Tight to Full Valve Rating
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Pressure Ratings

3-24" (80-600mm)	150 psi C.W.P. (1030 kPa)
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Flow Parameters

Valve Size	Cv* Kv* 100% Open	K** (resistance)	Port Area (in ² /cm ²)
3" 80mm	755 655	0.16	8.3 54
4" 100mm	1275 1100	0.16	13.5 87
5" 125mm	2020 1745	0.16	21.1 136
6" 150mm	2750 2380	0.16	29.4 190
8" 200mm	5055 4420	0.16	52.7 340
10" 250mm	7880 6830	0.16	82.9 535
12" 300mm	11180 9630	0.16	117 755
14" 350mm	13800 11920	0.16	144 930
16" 400mm	18300 15870	0.16	192 1239
18" 450mm	23450 20300	0.16	246 1585
20" 500mm	29000 25000	0.16	304 1959
24" 600mm	42180 36450	0.16	442 2854

*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.

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

Applicable Standards

DeZURIK KGC-BD Knife Gate Valves are designed and/or tested to meet the following standards:

ASME B16.5	Flanges and Flanged Fittings, ASME 150 Conforms to related drilling dimensions
MSS SP-81	Stainless Steel or Stainless Steel Lined, Bonnetless, Knife Gate Valves with Flanged Ends
ASME B16.20	Metallic Gaskets for Pipe Flanges. Conforms to spiral-wound gasket dimensions

Valve and Actuator Weights

Valve Size	Basic Valve	With Handwheel	With Chainwheel	With Bevel Gear
3" 80mm	17 8	28 13	40 18	89 40
4" 100mm	24 11	36 16	48 22	96 44
5" 125mm	33 15	52 24	67 30	109 49
6" 150mm	39 18	58 26	76 34	114 52
8" 200mm	65 29	86 39	101 46	144 65
10" 250mm	106 48	144 65	182 83	194 88
12" 300mm	151 68	190 86	230 104	244 111
14" 350mm	195 88	261 118	280 127	299 136
16" 400mm	281 127	350 159	367 166	387 176
18" 450mm	382 173	454 206	470 213	494 224
20" 500mm	511 232	586 266	647 293	630 286
24" 600mm	730 331	N/A	N/A	877 398

Pounds
Kilograms

Note: Weights are approximate and do not include crating.

Ordering DeZURIK's AIS Compliant Knife Gate Valve

DeZURIK's AIS designation must be specified in the order code at the time of quotation and ordering to ensure AIS compliance is maintained throughout the manufacturing process. When AIS valve products are ordered, DeZURIK will provide a certification letter that meets EPA documentation requirements.

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 = American Iron & Steel Compliant Cast Stainless Steel Knife Gate Valve

Valve Size Give valve size code as follows:	
3 = 3" (80mm)	12 = 12" (300mm)
4 = 4" (100mm)	14 = 14" (350mm)
5 = 5" (125mm)	16 = 16" (400mm)
6 = 6" (150mm)	18 = 18" (450mm)
8 = 8" (200mm)	20 = 20" (500mm)
10 = 10" (250mm)	24 = 24" (600mm)

Body Style Give body style code as follows: BD = Bi-Directional
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End Connection Give end connection code as follows: F1 = ASME 150 UNC Tapping for Threads
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Body Material Give body material code as follows: S2 = 316 Stainless Steel

Packing Material Give packing material code as follows: SMP = PTFE Braided Packing to 500°F (260°C) (pH Range 0-14)
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Gate Material Give gate material code as follows: S2 = 316 Stainless Steel

Seat Material Give seat material code as follows: 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)

Standard Options Give option code as follows: AIS = American Iron & Steel Compliant CMC = Certificate of Material Conformance CRT = Certified Physical and Chemical Test Reports DTR = DeZURIK Standard Certified Hydrostatic and Seat Test Report - = Optional Coating
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Ordering Example:
KGC,6,BD,F1,S2,SMPS2-CR,AIS* Actuator

Manual Actuators

Handwheel and Chainwheel Actuators

All 3-20" (80-500mm) valves can be furnished with handwheel actuators or 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 slurries or when pressure exceeds limits shown. Order chain for chainwheel actuators as a separate item.

Handwheel Actuator

Valve Size	Order Code	Maximum Pressure Differential psi/kPa
	304 SST (S1) Yoke	
3-4" 80-100mm	MN-HD8-S1	150 1030
5-8" 125-200mm	MN-HD12-S1	150 1030
10-12" 250-300mm	MN-HD16-S1	150 1030
14" 350mm	MN-HD20-S1*	100 690
16" 400mm	MN-HD20-S1*	75 515
18" 450mm	MN-HD20-S1*	50 340
20" 500mm	MN-HD20-S1*	25 170

*Bevel gear actuators recommended for slurries, or when pressure exceeds limits shown.

Ordering Example:

KGC,6,BD,F1,S2,SMPS2-CR,AIS*MN-HD12-S1

Chainwheel Actuator

Valve Size	Order Code	Maximum Pressure Differential psi/kPa
	304 SST (S1) Yoke	
3-4" 80-100mm	MN-CW8-S1	150 1030
5-8" 125-200mm	MN-CW12-S1	150 1030
10-12" 250-300mm	MN-CW20-S1	150 1030
14" 350mm	MN-CW20-S1*	100 690
16" 400mm	MN-CW20-S1*	75 515
18" 450mm	MN-CW20-S1*	50 340
20" 500mm	MN-CW30-S1*	75 515

*Bevel gear actuators recommended for slurries, or when pressure exceeds limits shown.

Ordering Example:

KGC,4,BD,F1,S2,SMPS2-CR,AIS*MN-CW8-S1

Bevel Gear Actuators

Bevel gear actuators are available on 3-24" (80-600mm) 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	Maximum Pressure Differential psi/kPa
	304 SST (S1) Yoke	
3-10" 80-250mm	MNB-HD12-S1	150 1030
12-16" 300-400mm	MNB-HD16-S1	150 1030
18-24" 450-600mm	MNB-HD24-S1	150 1030

Ordering Example:

KGC,14,BD,F1,S2,SMPS2-CR,AIS*MNB-HD16-S1

Bevel Gear Chainwheel Actuators

Valve Size	Order Code	Maximum Pressure Differential psi/kPa
	304 SST (S1) Yoke	
3-10" 80-250mm	MNB-CW12-S1	150 1030
12-20" 300-500mm	MNB-CW20-S1	150 1030
24" 600mm	MNB-CW30-S1	100 690

Ordering Example:

KGC,14,BD,F1,S2,SMPS2-CR,AIS*MNB-CW20-S1-90
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.

Manual Actuator Accessories

Chain for Chainwheel Actuators

Order as a separate item by giving the correct code and specify required length of chain as second line information. 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 12 feet long (366cm)

Extension for Handwheel

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 top of handwheel.

Order Code	Description
ENHD	Extension for Handwheel

Ordering Example:

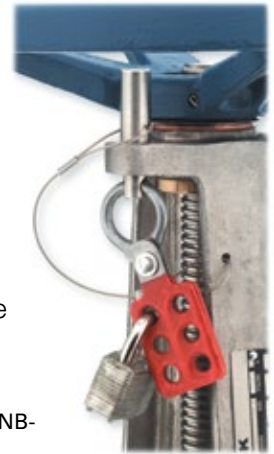
Handwheel: KGC,14,BD,F1,S2,SMPS2-CR,AIS*MN-HD20-CS,ENHD
Center line of valve to top of handwheel 72 inches (1829mm).

Lockout Device

Lockouts are fully rated to withstand the maximum output of the actuator. Available on all sizes of handwheel and bevel gear handwheel actuated valves. To order, add a comma and the order code "LK" after the actuator code.

Ordering Example:

KGC,14,BD,F1,S2,SMPS2-CR,AIS*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. This dimension must be at least twice the dimension from center line to handwheel.

Ordering Example:

KGC,14,BD,F1,S2,SMPS2-CR,AIS*MN-HD20-CS
Except with floorstand. Center line of valve to base of floorstand 72 inches (1829mm).

Cylinder Actuators

Pneumatic and Hydraulic Cylinder Actuators are available on application. Contact DeZURIK.

Electric Motor Actuators

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

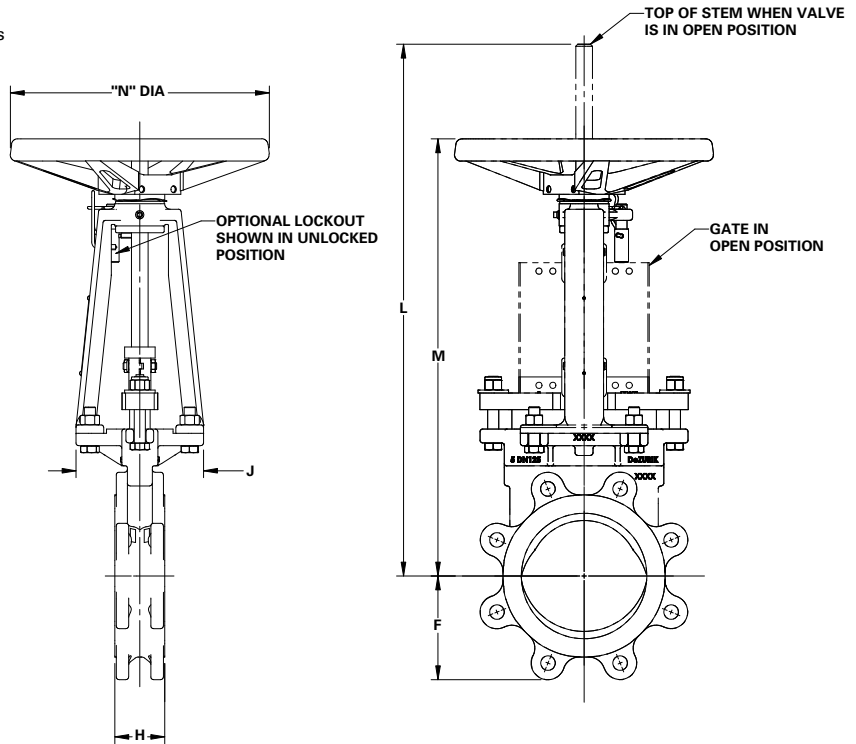
When ordering electric motor actuators, specify valve order code, shutoff pressure, service conditions (flowing media and installation direction); type of application (on/off); speed of operation; NEMA rating (4, 7, submersible, etc.); electrical characteristics (voltage and phase); actuator accessories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

Dimensions

Basic Valve with Handwheel Actuator

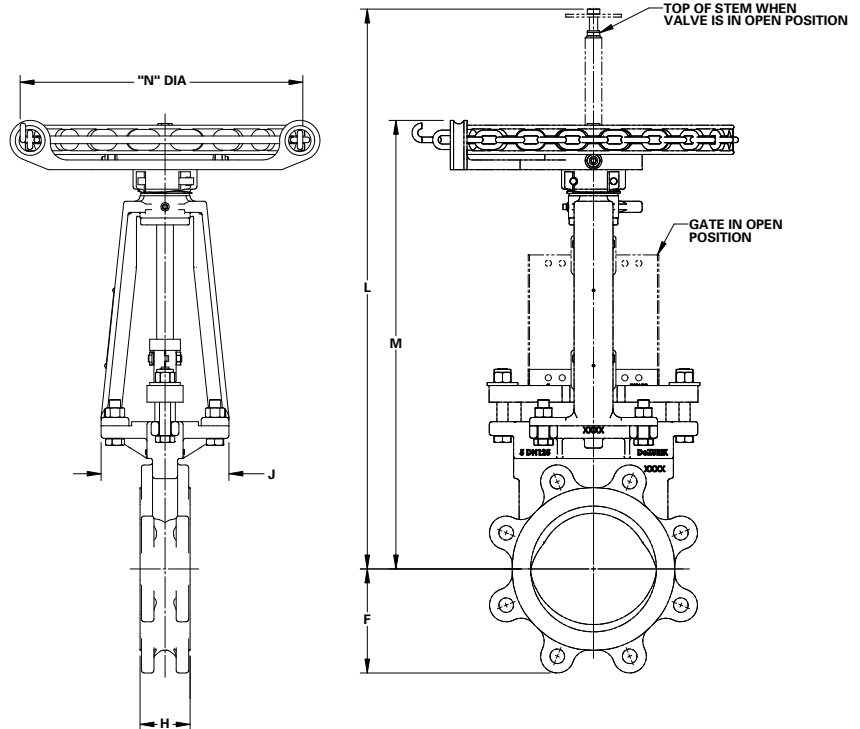
Valve Size	Dimensions					
	F	H	J	L	M	N
3"	3.75	2.00	4.75	17.50	14.62	8.00
80mm	95	51	121	445	371	203
4"	4.50	2.00	5.00	22.77	16.90	8.00
100mm	114	51	127	578	429	203
5"	5.00	2.25	5.75	24.19	19.56	12.00
125mm	127	57	146	614	497	305
6"	5.50	2.25	5.75	27.10	21.07	12.00
150mm	140	57	146	688	535	305
8"	6.75	2.75	6.38	33.60	24.65	12.00
200mm	171	70	162	853	626	305
10"	8.00	2.75	8.25	41.06	30.00	16.00
250mm	203	70	210	1043	762	406
12"	9.50	3.00	8.25	46.59	33.63	16.00
300mm	241	76	210	1183	854	406
14"	10.50	3.00	8.25	54.57	40.82	20.00
350mm	267	76	210	1386	1037	508
16"	11.75	3.50	8.69	57.97	42.38	20.00
400mm	298	89	221	1472	1076	508
18"	12.50	3.50	9.06	67.37	49.69	20.00
450mm	318	89	230	1711	1262	508
20"	13.75	4.50	9.19	71.00	51.25	20.00
500mm	349	114	233	1803	1302	508

Inches
Millimeters



Basic Valve with Chainwheel Actuator

Valve Size	Dimensions					
	F	H	J	L	M	N
3"	3.75	2.00	4.75	18.56	15.37	9.19
80mm	95	51	121	471	390	233
4"	4.50	2.00	5.00	22.74	17.62	9.19
100mm	114	51	127	578	448	233
5"	5.00	2.25	5.75	25.18	20.00	12.75
125mm	127	57	146	640	508	324
6"	5.50	2.25	5.75	26.83	21.57	12.75
150mm	140	57	146	681	548	324
8"	6.75	2.75	6.38	34.58	25.12	12.75
200mm	171	70	162	878	638	324
10"	8.00	2.75	8.25	41.56	30.76	20.00
250mm	203	70	210	1056	781	508
12"	9.50	3.00	8.25	47.29	34.35	20.00
300mm	241	76	210	1201	872	508
14"	10.50	3.00	8.25	54.57	40.82	20.00
350mm	267	76	210	1386	1037	508
16"	11.75	3.50	8.69	61.97	42.38	20.00
400mm	298	89	221	1574	1076	508
18"	12.50	3.50	9.06	67.37	49.69	20.00
450mm	318	89	230	1711	1262	508
20"	13.75	4.50	9.19	75.00	51.25	30.00
500mm	349	114	233	1905	1302	762

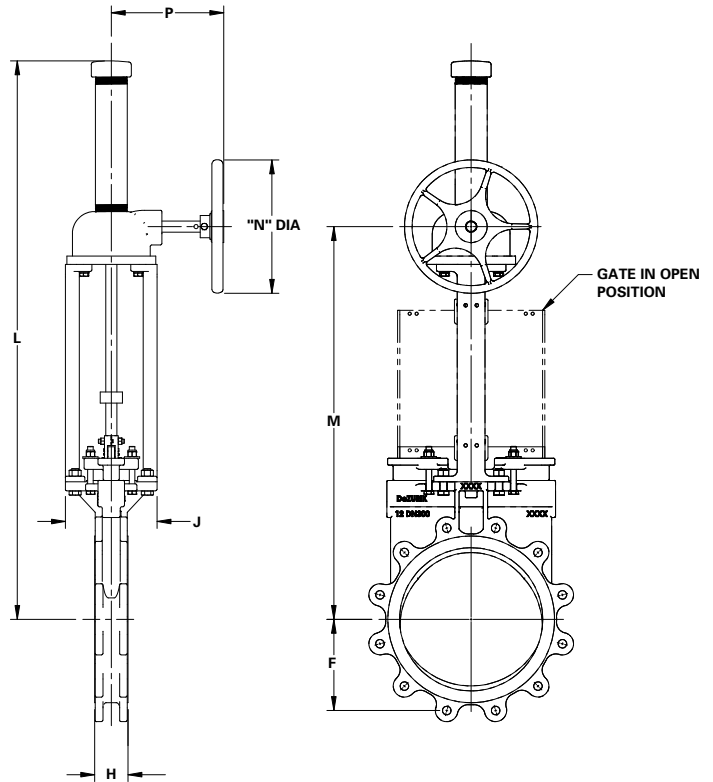


Dimensions

Bevel Gear Handwheel Actuator

Valve Size	Dimensions						P	
	F	H	J	L	M	N	Standard & 180°	90° & 270°
3" 80mm	3.75 95	2.00 51	4.75 121	22.10 561	16.09 409	12.00 305	10.12 257	10.12 257
4" 100mm	4.50 114	2.00 51	5.00 127	26.38 670	18.37 467	12.00 305	10.12 257	10.12 257
5" 125mm	5.00 127	2.25 57	5.75 146	28.82 732	20.76 527	12.00 305	10.12 257	10.12 257
6" 150mm	5.50 140	2.25 57	5.75 146	32.38 822	22.29 566	12.00 305	10.12 257	10.12 257
8" 200mm	6.75 171	2.75 70	6.38 162	40.88 1038	25.84 656	12.00 305	10.12 257	10.12 257
10" 250mm	8.00 203	2.75 70	8.25 210	46.57 1183	31.54 801	12.00 305	10.12 257	10.12 257
12" 300mm	9.50 241	3.00 76	8.25 210	50.26 1277	35.16 893	12.00 305	10.12 257	10.12 257
14" 350mm	10.50 267	3.00 76	8.25 210	56.82 1443	37.78 960	12.00 305	10.12 257	24.13 613
16" 400mm	11.75 298	3.50 89	8.69 221	62.51 1588	41.47 1053	12.00 305	10.12 257	24.13 613
18" 450mm	12.50 318	3.50 89	9.06 230	69.95 1777	47.03 1195	12.00 305	10.12 257	24.13 613
20" 500mm	13.75 349	4.50 114	9.19 233	73.63 1870	50.59 1285	16.00 406	10.12 257	24.13 613
24" 600mm	16.00 406	4.50 114	9.19 233	85.60 2174	58.57 1488	16.00 406	10.12 257	24.13 613

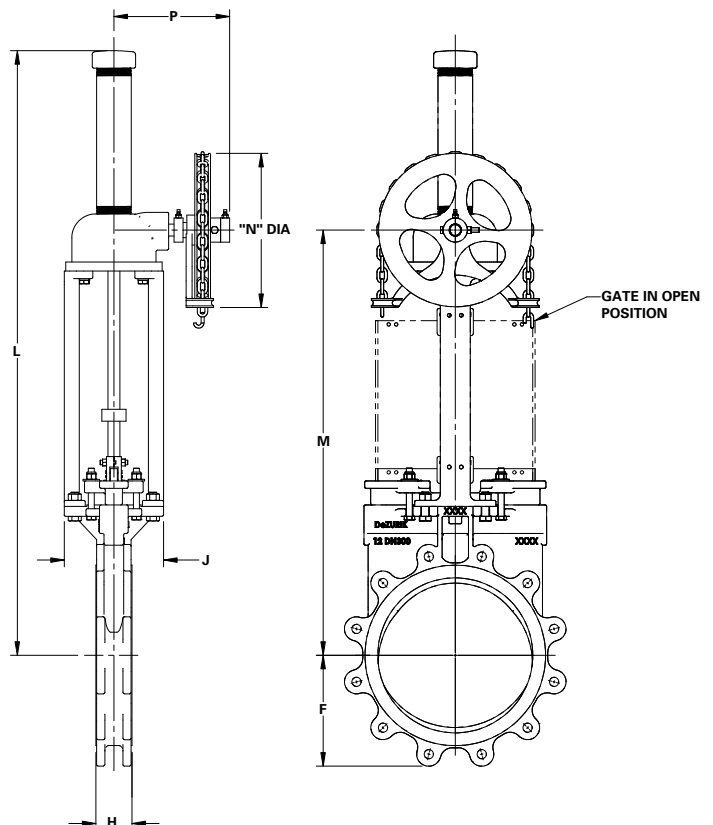
Inches
Millimeters



Bevel Gear Chainwheel Actuator

Valve Size	Dimensions						P	
	F	H	J	L	M	N	Standard & 180°	90° & 270°
3" 80mm	3.75 95	2.00 51	4.75 121	22.10 561	16.09 409	12.00 305	9.62 244	10.12 257
4" 100mm	4.50 114	2.00 51	5.00 127	26.38 670	18.37 467	12.00 305	9.62 244	10.12 257
5" 125mm	5.00 127	2.25 57	5.75 146	28.82 732	20.76 527	12.00 305	9.62 244	10.12 257
6" 150mm	5.50 140	2.25 57	5.75 146	32.38 822	22.29 566	12.00 305	9.62 244	10.12 257
8" 200mm	6.75 171	2.75 70	6.38 162	40.88 1038	25.84 656	12.00 305	9.62 244	10.12 257
10" 250mm	8.00 203	2.75 70	8.25 210	46.57 1183	31.54 801	12.00 305	9.62 244	10.12 257
12" 300mm	9.50 241	3.00 76	8.25 210	50.26 1277	35.16 893	12.00 305	9.62 244	10.12 257
14" 350mm	10.50 267	3.00 76	8.25 210	56.82 1443	37.78 960	12.00 305	9.62 244	24.13 613
16" 400mm	11.75 298	3.50 89	8.69 221	62.51 1588	41.47 1053	12.00 305	9.62 244	24.13 613
18" 450mm	12.50 318	3.50 89	9.06 230	69.95 1777	47.03 1195	12.00 305	9.62 244	24.13 613
20" 500mm	13.75 349	4.50 114	9.19 233	73.63 1870	50.59 1285	20.00*	9.62 244	24.13 613
24" 600mm	16.00 406	4.50 114	9.19 233	85.60 2174	58.57 1488	20.00*	9.62 244	24.13 613

*Note: "N" dimension on 20" & 24" (500 & 600mm) valves is 16.00 when actuator is mounted at 90° or 270°
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Sales and Service

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

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DeZURIK, Inc. reserves the right to incorporate our latest design and material changes without notice or obligation. Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing by DeZURIK, Inc. Certified drawings are available upon request.