



KBD BI-DIRECTIONAL KNIFE GATE VALVES TECHNICAL SPECIFICATIONS

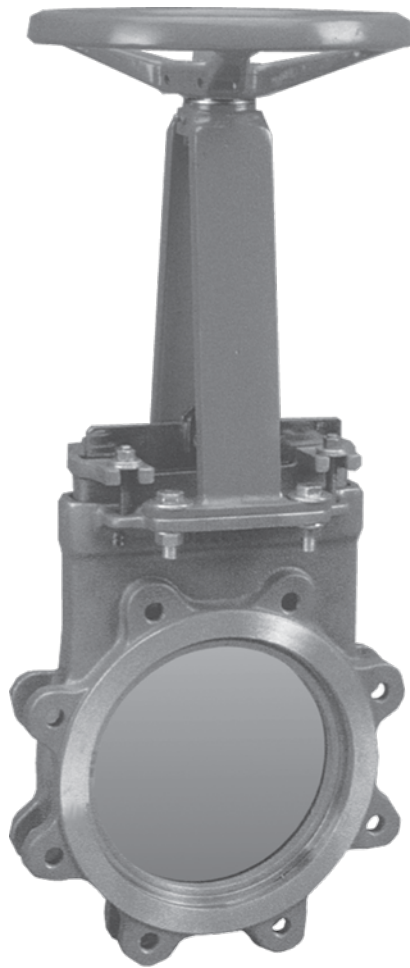
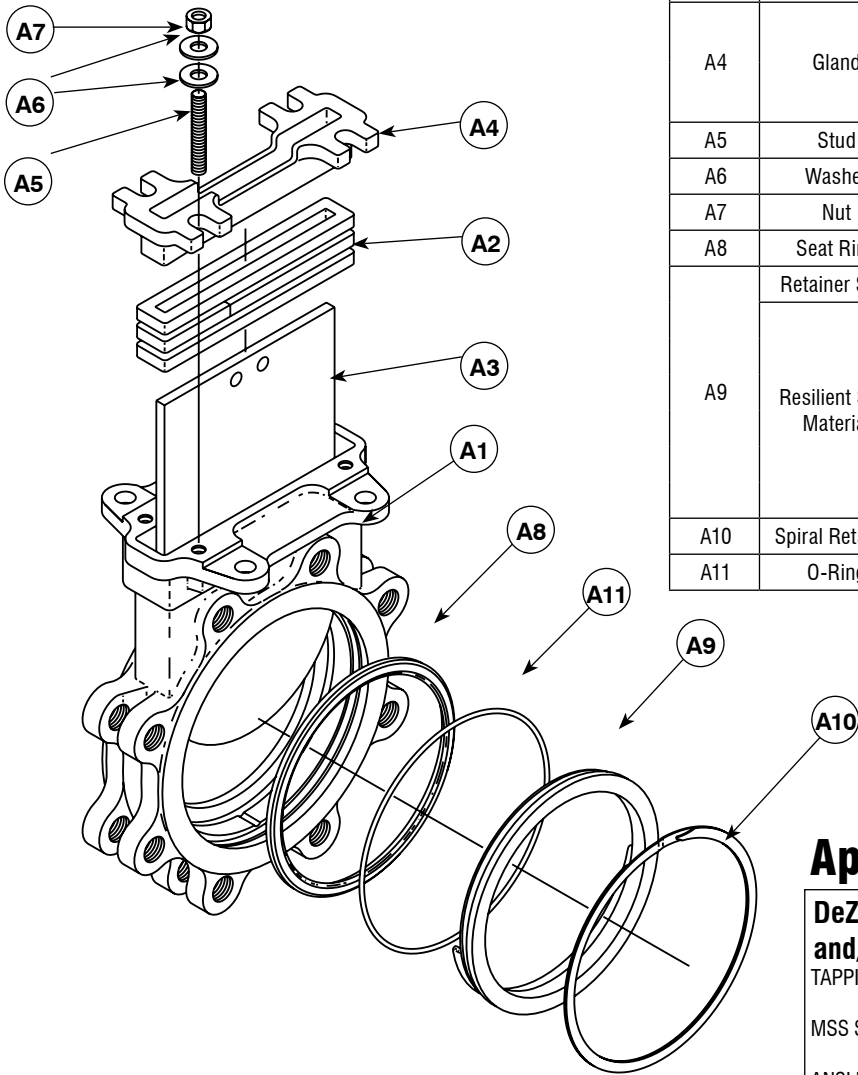


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Materials of Construction

Item	Description	Characteristic/Material
A1	Body	One-piece cast 304 stainless steel Grade ASTM A743 Grade CF8
		One-piece cast 316 stainless steel Grade ASTM A743 Grade CF8M
		One-piece cast 317 stainless steel Grade ASTM A743 Grade CG8M
A2	Packing	C, Square braided PTFE impregnated synthetic fiber
		CW, Square braided PTFE impregnated synthetic fiber with one ring of copper wire braided scraper
		ZJ, Square braided PTFE yarn (no lubricant) with one ring of PTFE cord
A3	Gate	304 stainless steel, ASTM A240 Type 304 with 304 stainless steel body
		316 stainless steel, ASTM A240 Type 316 with 316 stainless steel body
		317L stainless steel, ASTM A240 Type 317L with 317 stainless steel body
A4	Gland	316 stainless steel, ASTM A743 Grade CF8M on 304 and 316 stainless steel bodies
		317L stainless steel, ASTM A743 Type 317L on stainless steel bodies
A5	Stud	18-8 stainless steel
A6	Washer	18-8 stainless steel
A7	Nut	18-8 stainless steel
A8	Seat Ring	316 stainless steel, ASTM A240 with resilient seat material
A9	Retainer Seat	316 stainless steel, ASTM A240 with resilient seat material
	Resilient Seat Material	CR, Chloroprene
		NBR, Acrylonitrile-Butadiene
		CSM, Chloro-Sulfonyl-Polyethylene
		EPDM, Terpolymer of Ethylene, Propylene and a Diene
		FKM, Fluoro Rubber
A10	Spiral Retainer	316 stainless steel
A11	O-Ring	Same as resilient seat material



Applicable Standards

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

TAPPI TIS 405-8	Valve standards for pulp and paper mills
MSS SP-81 Metal Seated Valves	Stainless Steel, Bonnetless, Flanged Knife Gate Valves
ANSI B16.5	Carbon Steel Flanges and Flanged Fittings, 150 lb. Conforms to related flange drilling dimensions
International Standards	Conforms to flanged bolt guides and pressure ratings - JIS 10; DIN 10 and DIN 16; ISO 7005-1/PN10 and 7005-2/16; BS 4504/PN10 and BS 4504/PN16; and AS 2129 Tables D and E

Valve Selection

Cv/Kv Values, K Factors, Area of Opening

Valve Size	Metal Seated, Round Port		
	Cv* Kv* 100% Open	K Factor **	Area of Opening (in ² /cm ²)
3" 80mm	565 489	0.25	7.1 46
4" 100mm	1040 900		0.22
6" 150mm	2440 2110	0.20	29 187
8" 200mm	4460 3860		0.18
10" 250mm	6250 5410	0.23	69 445
12" 300mm	9400 8130		0.21

*Cv = Flow in GPM of water at 1 psi pressure drop.

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

The equivalent length of pipe may be calculated according to the following formula:

$$L = \frac{K \times D}{f} \quad \text{Where } L = \text{Equivalent length of pipe in feet}$$

K = K factor - Resistance coefficient of valve
D = Pipe diameter in feet
f = Friction factor, relating to type of pipe

Shutoff Capability

Resilient Seats	Leak tight/zero leakage
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Pressure Rating

3-12" (80-300mm)	150 psi C.W.P. (1030 kPa)
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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:
KBD = Bi-Directional Knife Gate Valve

Valve Size

Give valve size code as follows:

3 = 3" (80mm)	8 = 8" (200mm)
4 = 4" (100mm)	10 = 10" (250mm)
6 = 6" (150mm)	12 = 12" (300mm)

End Style

Give end style code as follows:

- L1 = Lugged ANSI 150
- L110 = Lugged, ISO 7005-1, DIN 10 or BS4504/PN10
- L116 = Lugged, ISO 7005-1, DIN 16 or BS4504/PN16
- L1J1 = Lugged, JIS10
- L1DA = Lugged, AS2129 Table D
- L1EA = Lugged, AS2129 Table E
- L1T = Lugged, ANSI 150 with through bolting flange

Note: For lugged through bolting with other drillings, consult factory.

Body Material

Give body material code as follows:

- S1 = 304 Stainless Steel
- S2 = 316 Stainless Steel
- S3 = 317 Stainless Steel

Valve & Actuator Weights

Valve Size	Valve with Handwheel	Chainwheel Adders*
	Lbs/Kg	Lbs/Kg
3" 80mm	29 13	12 5
4" 100mm	37 17	12 5
6" 150mm	56 25	16 7
8" 200mm	92 42	16 7
10" 250mm	150 68	37 17
12" 300mm	195 88	37 17

Cylinder Weights

Cylinder Size	Cylinder Adder*
	Lbs/Kg
C4	15 7
C6	38 17
C8	63 29
C10	130 59
C12	190 92

*Add to Handwheel Actuated Valve weight.

Body Style

Give body style code as follows:
C = Cast

Packing Material

Give packing material code as follows:

- C = Square Braided PTFE Impregnated Synthetic Fiber to 500°F (260°C)
- CW = Square Braided PTFE Impregnated Synthetic Fiber with one ring of Copper Wire Braided Scraper to 500°F (260°C)
- ZJ = Square Braided PTFE Impregnated Synthetic Fiber with one ring of PTFE Cord to 500°F (260°C)

Resilient Seat Material

Give seat material code as follows:

- CR = Chloroprene to 180°F (83°C)
- NBR = Acrylonitrile-Butadiene to 180°F (83°C)
- CSM = Chloro-Sulfonyl-Polyethylene to 200°F (94°C)
- FKM = Fluoro Rubber to 400°F (204°C)
- EPDM = Terpolymer of Ethylene, Propylene and a Diene to 250°F (122°C)

Note: The limiting factor in valve selection is the lowest temperature limit of the packing or seat.

Ordering Example:

KBD,4,L1,S1,C,C,CR*MN-HD8-CS

Rotary Manual Actuators

All valves can be furnished with handwheels, chainwheels and bevel gear handwheels and chainwheels. To order rotary manual actuators, add the appropriate code from the sizing table to the basic order code. When ordering bevel gear actuators, specify mounting position as second line information.

Actuator Sizing

Handwheel Actuator

Valve Size	Order Code	Max. Pressure Differential psi/kPa
3" 80mm	MN-HD8-CS	150 1030
4" 100mm	MN-HD8-CS	150 1030
6" 150mm	MN-HD10-CS	150 1030
8" 200mm	MN-HD12-CS	150 1030
10" 250mm	MN-HD16-CS	150 1030
12" 300mm	MN-HD16-CS	150 1030

Chainwheel Actuator

Valve Size	Order Code	Max. Pressure Differential psi/kPa
3" 80mm	MN-CW8-CS	150 1030
4" 100mm	MN-CW8-CS	150 1030
6" 150mm	MN-CW12-CS	150 1030
8" 200mm	MN-CW12-CS	150 1030
10" 250mm	MN-CW20-CS	150 1030
12" 300mm	MN-CW20-CS	150 1030

304 Stainless Steel Superstructure:

The superstructure is carbon steel as standard. To order rotary manual or bevel gear actuators on valves with the 304 stainless steel yoke, replace the "CS" code from the sizing table with the code "S1".

Ordering Example:

KBD,4,L1,S2,C,C,CR*MNB-HD8-S1

Bevel Gear Handwheel/Chainwheel Actuator

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 Actuator

Valve Size	Order Code	Max. Pressure Differential psi/kPa
3" 80mm	MNB-HD8-CS	150 1030
4" 100mm	MNB-HD8-CS	150 1030
6" 150mm	MNB-HD10-CS	150 1030
8" 200mm	MNB-HD12-CS	150 1030
10" 250mm	MNB-HD16-CS	150 1030
12" 300mm	MNB-HD16-CS	150 1030

Bevel Gear Chainwheel Actuator

Valve Size	Order Code	Max. Pressure Differential psi/kPa
3" 80mm	MNB-CW8-CS	150 1030
4" 100mm	MNB-CW8-CS	150 1030
6" 150mm	MNB-CW12-CS	150 1030
8" 200mm	MNB-CW12-CS	150 1030
10" 250mm	MNB-CW20-CS	150 1030
12" 300mm	MNB-CW20-CS	150 1030

Mounting:

Bevel gear actuators can be mounted in four positions: standard, 90°, 180° or 270° mounting. Specify mounting positions other than standard as second line information.

Ordering Example:

KBD,4,L1,S2,C,C,CR*MN-HD8-CS

Manual Actuator Accessories

Handwheel Extension

The extension includes handwheel, non-rising stem, fittings and extensions to allow remote operation normally from above. To order, specify handwheel actuator code, and add extension description as second line information. Specify required extension length from centerline of valve to handwheel. See chart for minimum dimensions.

Ordering Example:

KBD,4,L1,S2,C,C,CR*MN-HD8-CS

Except with handwheel extension.

Centerline of valve to handwheel 36" (900mm).

Position Indicating Floorstand

A floorstand for handwheel actuated valves allows operation from above. Included is handwheel, non-rising stem, fittings, extension, and floorstand with gate position indicator. To order, specify handwheel actuator code, and add floorstand description as second line information. Specify required length from centerline of valve to base of floorstand. See chart for minimum dimensions.

Ordering Example:

KBD,4,L1,S2,C,C,CR*MN-HD8-CS

Except with position indicating floorstand.

Centerline of valve to handwheel 36" (900mm).

Minimum Dimensions

Minimum dimension from centerline of valve to handwheel when ordered without floorstand.

Minimum dimension from centerline of valve to base of floorstand when ordered with position indicating floorstand.

Valve Size	Minimum
3" 80mm	21 525
4" 100mm	24 600
6" 150mm	30 750
8" 200mm	36 900
10" 250mm	42 1050
12" 300mm	48 1200

Chain

For use with chainwheel actuators. Order as a separate item by giving code from table. Specify chain length as second line information.

Chain Size & Type	Order Code
Standard Chain	ACC*CN102
Galvanized Link Chain	ACC*CN103
304 Stainless Steel	ACC*CN104

Ordering Example:

ACC*CN102

Chain: 10 feet long.

Locking Device

Available on 3-12" (80-300mm) handwheel (MN-HD_) actuators as standard. To order as part of complete valve, add a comma and order code LK after the actuator code.

Ordering Example:

KBD,4,L1,S2,C,C,CR*MN-HD8-CS,LK

On-Off Cylinder Actuators

DeZURIK Cylinder Actuators are available with double-acting pneumatic or hydraulic cylinders for on-off positioning service. Supply pressure is 50 or 80 psi (340 or 550 kPa). Maximum supply pressure is 100 psi (690 kPa).

To order on-off cylinder actuators, add the appropriate actuator code from the on-off column of the sizing tables to the basic valve order code. To order hydraulic actuators 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

50 psi (340 kPa) Air Supply

Valve Size	Actuator Order Code (Carbon Steel Yoke)	Max. Pressure Differential psi/kPa			
		On-Off		Positioning	
		Dry Solids, Slurries, Paper Stock	Liquids & Gases	Dry Solids, Slurries, Paper Stock	Liquids & Gases
3" 80mm	CY-PC4-CS	75 520	150 1030	75 520	150 1030
4" 100mm	CY-PC4-CS	75 520	150 1030	--	150 1030
	CY-PC6-CS	--	--	75 520	--
6" 150mm	CY-PC4-CS	--	150 1030	--	25 170
	CY-PC6-CS	75 520	--	--	150 1030
	CY-PC8-CS	--	--	75 520	--
8" 200mm	CY-PC4-CS	--	50 340	--	--
	CY-PC6-CS	--	150 1030	--	25 170
	CY-PC8-CS	75 520	--	75 520	150 1030
10" 250mm	CY-PC6-CS	--	50 340	--	--
	CY-PC8-CS	--	150 1030	--	25 170
	CY-PC10-CS	75 520	--	--	50 340
	CY-PC12-CS	--	--	75 520	150 1030
12" 300mm	CY-PC6-CS	--	25 170	--	--
	CY-PC8-CS	--	100 690	--	25 170
	CY-PC10-CS	--	150 1030	--	50 340
	CY-PC12-CS	75 520	--	75 520	150 1030

Ordering Example:

KBD,4,L1,S2,C,C,CR*CY-PC4-CS

Stainless Steel Superstructure

Standard superstructure is carbon steel. To order 304 stainless steel superstructure, replace "CS" code from sizing chart with "S1".

Ordering Example:

KBD,4,L1,S2,C,C,CR*CY-PC4-S1

Actuator Sizing

80 psi (550 kPa) Air Supply

Valve Size	Actuator Order Code (Carbon Steel Yoke)	Max. Pressure Differential psi/kPa			
		On-Off		Positioning	
		Dry Solids, Slurries, Paper Stock	Liquids & Gases	Dry Solids, Slurries, Paper Stock	Liquids & Gases
3" 80mm	CY-PC4-CS	75 520	150 1030	75 520	150 1030
4" 100mm	CY-PC4-CS	75 520	150 1030	--	150 1030
	CY-PC6-CS	--	--	75 520	--
6" 150mm	CY-PC4-CS	--	150 1030	--	25 170
	CY-PC6-CS	75 520	--	--	150 1030
	CY-PC8-CS	--	--	75 520	--
8" 200mm	CY-PC4-CS	--	75 520	--	--
	CY-PC6-CS	75 520	150 1030	--	25 170
	CY-PC8-CS	--	--	75 520	150 1030
10" 250mm	CY-PC6-CS	--	125 860	--	--
	CY-PC8-CS	75 520	150 1030	--	50 340
	CY-PC10-CS	--	--	--	100 690
	CY-PC12-CS	--	--	75 520	150 1030
12" 300mm	CY-PC6-CS	--	75 520	--	--
	CY-PC8-CS	75 520	150 1030	--	50 340
	CY-PC10-CS	--	--	--	100 690
	CY-PC12-CS	--	--	75 520	150 1030

Corrosion Resistant Cylinder Construction

Corrosion resistant cylinder construction includes epoxy coating on the head, cap and gland, all of which are cast iron. The tube is fiberglass, and all fasteners are stainless steel. To order, add code "CR" to the actuator code.

Ordering Example:

KBD,4,L1,S2,C,C,CR*CY-PC4-S1-CR

Accessories

Positioners

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

Air Filter Regulator

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

Manual Loading Station Control Panel

For all positioning pneumatic actuators. Output is 0-15 psi (0-100 kPa). It includes signal output gauge and pressure reducing valve. Order as a separate item by giving code ACC*CNP025.

Ordering Example:
ACC*CNP025

Four-Way Manual Control Valves

Four-Way Manual Control Valves are for all pneumatic or hydraulic double-acting cylinder actuators. It is available mounted or as a separate item. To order mounted as part of a complete valve and actuator assembly, add code from table below to valve and actuator order code. To order separately, enter code ACC* followed by code from table below.

Valve Size	Supply	NTP Size (Inches)	Code
2-36" (50-900mm)	Pneumatic	1/4"	CV201
2-10" (50-250mm)	Hydraulic	3/8"	CV202
12-36" (300-900mm)	Hydraulic	1/2"	CV203

Ordering Example:

KBD,4,L1,S2,C,C,CR*CY-PC4-S1,CV201

Ordering Example (Separate Item):

ACC*CV201

Accessories (continued)

Position Indicating Switches

Position Indicating Switches are available for use on double-acting cylinder actuators. Order as a part of a complete valve/actuator assembly by adding the appropriate code from the table below to the valve and actuator order code. Two switches will automatically be set to indicate full open and full closed positions.

Two Switches - Open/Closed

Description	Switch Type	Rating	Order Code
2 SPDT	Mechanical	Nema 1,3,4,6,13	SE649
2 DPDT	Mechanical	Nema 1,3,4,6,13	SE524
2 SPDT	Mechanical	Nema 1,3,4,6,7,9,13	SEH95
2 DPDT	Mechanical	Nema 1,3,4,6,7,9,13	SEH96
2 SPDT, Brass Housing	Proximity	No Approval	SEH93
2 SPDT, SST Housing	Proximity	UL, CSA, FA*	SEH94

*Class I, Div. 1, Group A, B, C, D, Class II, Groups E, F, G

One Switch - Open

Description	Switch Type	Rating	Order Code
1 SPDT	Mechanical	Nema 1,3,4,6,13	SEJ40
1 DPDT	Mechanical	Nema 1,3,4,6,13	SEJ42
1 SPDT	Mechanical	Nema 1,3,4,6,7,9,13	SEJ44
1 DPDT	Mechanical	Nema 1,3,4,6,7,9,13	SEJ46
1 SPDT, Brass Housing	Proximity	No Approval	SEJ36
1 SPDT, SST Housing	Proximity	UL, CSA, FA*	SEJ38

One Switch - Closed

Description	Switch Type	Rating	Order Code
1 SPDT	Mechanical	Nema 1,3,4,6,13	SEJ41
1 DPDT	Mechanical	Nema 1,3,4,6,13	SEJ43
1 SPDT	Mechanical	Nema 1,3,4,6,7,9,13	SEJ45
1 DPDT	Mechanical	Nema 1,3,4,6,7,9,13	SEJ47
1 SPDT, Brass Housing	Proximity	No Approval	SEJ37
1 SPDT, SST Housing	Proximity	UL, CSA, FA*	SEJ39

Ordering Example:

KBD,4,L1,S2,C,C,CR*CY-PC4-S1,SEH96

Speed Control Valves

Speed Control Valves are available for controlling valve opening or closing speed with pneumatic actuators. The speed of operation is adjustable. To order mounted, add the appropriate code to the valve and actuator order code.

Speed Control	Order Code
Two speed controls	SP
One control to close	SPC
One control to open	SPO

Ordering Example:

KBD,4,L1,S2,C,C,CR*CY-PC4-S1,SP

Four-Way Solenoid Valves

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

Electric Motor Actuators

DeZURIK Knife Gate Valves can be furnished with electric motor actuators including Limitorque Auma, Rotork, E.I.M. and others. They may be specified with cast iron, ductile iron or aluminum housings and in a variety of electrical characteristics.

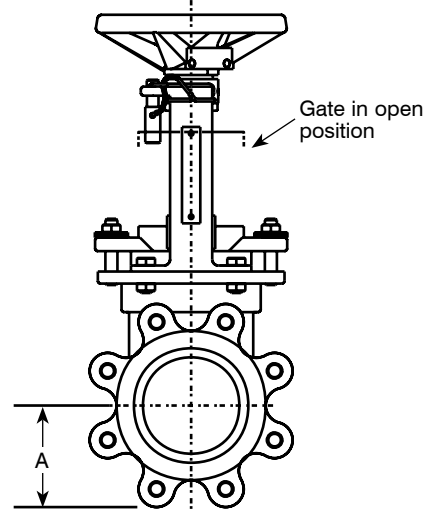
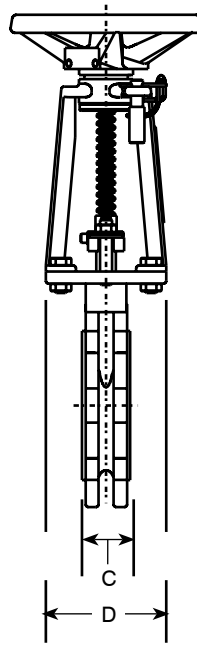
Ordering

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

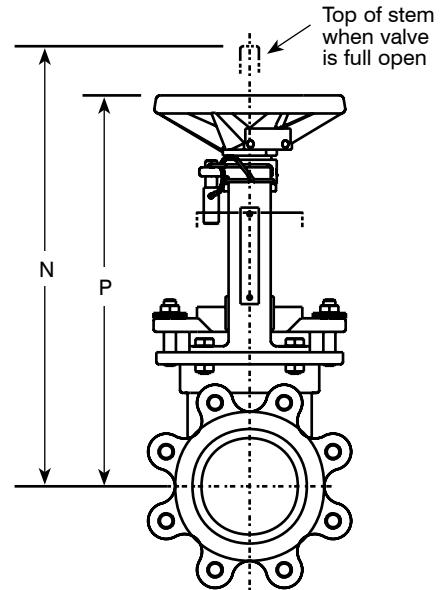
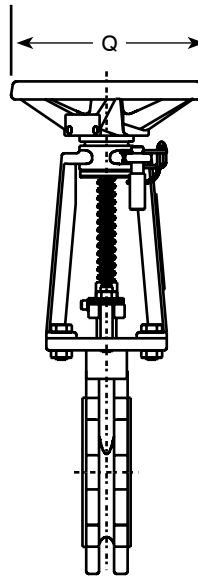
Basic Valve

Valve Size	Dimensions		
	A	C	D
3" 80mm	3.75 95	2.00 51	4.75 120
4" 100mm	4.50 114	2.00 51	5.00 127
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



Handwheel

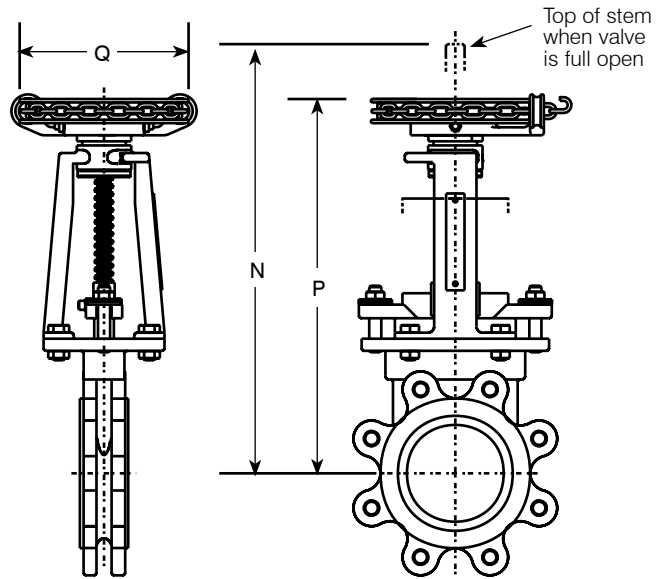
Valve Size	Dimensions		
	N	P	Q
3" 80mm	16.44 418	14.62 371	8.00 203
4" 100mm	19.00 483	16.25 413	8.00 203
6" 150mm	24.31 617	19.75 502	10.00 254
8" 200mm	30.25 768	23.69 602	12.00 305
10" 250mm	36.62 930	28.00 711	16.00 406
12" 300mm	42.50 1079	31.88 810	16.00 406



Dimensions (continued)

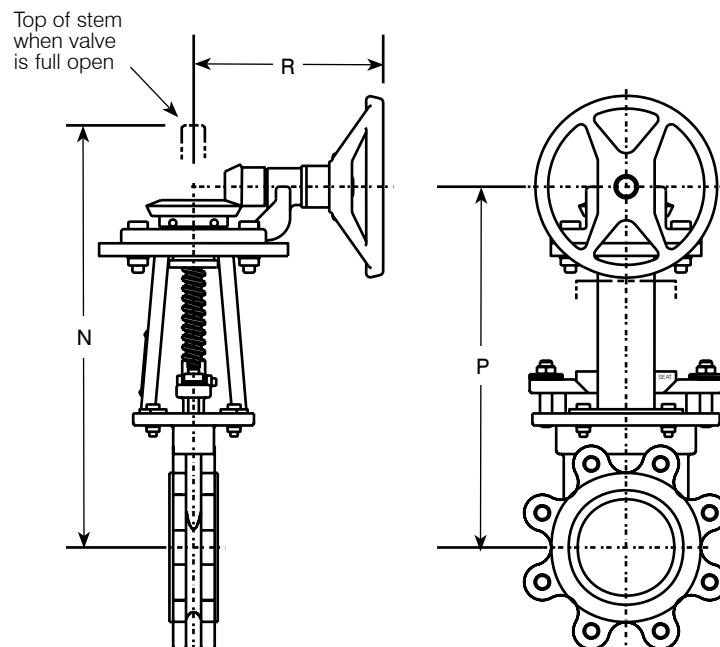
Chainwheel

Valve Size N	Size and Position		
	P	Q	
3" 80mm	16.44 418	15.44 392	9.19 233
4" 100mm	19.00 483	16.06 408	9.19 233
6" 150mm	24.31 617	20.38 518	12.75 324
8" 200mm	30.25 768	24.25 616	12.75 324
10" 250mm	36.62 930	28.81 732	20.06 509
12" 300mm	42.50 1079	32.69 830	20.06 509



Bevel Gear

Valve Size	Dimensions			
	N	P	R	
			Handwheel	Chainwheel
3" 80mm	16.44 417	14.38 365	10.00 254	10.88 276
4" 100mm	19.00 483	15.94 405	10.00 254	10.88 276
6" 150mm	24.31 617	19.31 490	10.25 260	10.88 276
8" 200mm	30.25 768	23.25 591	10.25 260	10.88 276
10" 250mm	36.62 930	27.69 703	10.31 262	11.00 279
12" 300mm	42.50 1079	31.50 800	10.31 262	11.00 279



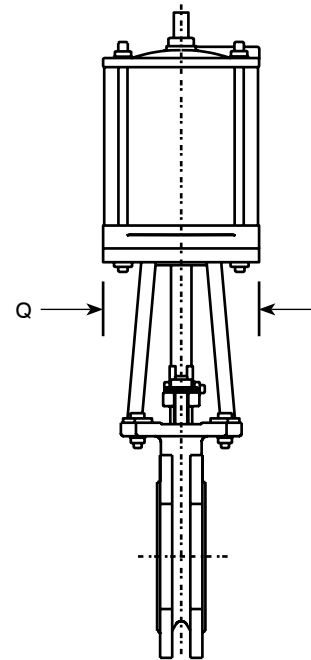
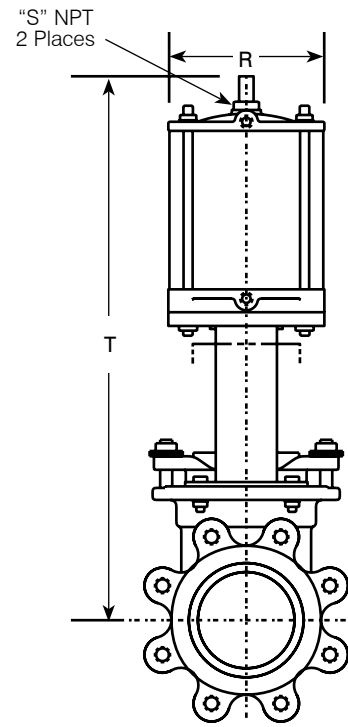
Dimensions (continued)

Cylinder

Valve Size	T-Dimensions				
	Actuator Code				
	CY-PC4	CY-PC6	CY-PC8	CY-PC10	CY-PC12
3" 80mm	21.56 548	—	—	—	—
4" 100mm	23.12 587	24.25 616	—	—	—
6" 150mm	28.69 729	29.69 754	30.50 775	—	—
8" 200mm	34.56 878	35.50 902	36.56 929	—	—
10" 250mm	—	42.56 1081	43.62 1108	43.56 1106	45.44 1154
12" 300mm	—	48.31 1227	49.31 1252	49.12 1248	50.81 1291

Valve Size	R-Dimensions				
	Actuator Code				
	CY-PC4	CY-PC6	CY-PC8	CY-PC10	CY-PC12
3" 80mm	6.38 162	6.38 162	9.00 229	—	—
4" 100mm	6.38 162	6.38 162	9.00 229	—	—
6" 150mm	6.38 162	6.38 162	9.00 229	—	—
8" 200mm	6.38 162	6.38 162	9.00 229	—	—
10" 250mm	—	8.38 213	10.25 260	14.00 356	14.00 356
12" 300mm	—	8.38 213	10.25 260	14.00 356	14.00 356

Valve Size	Q-Dimensions				
	Actuator Code				
	CY-PC4	CY-PC6	CY-PC8	CY-PC10	CY-PC12
3" 80mm	8.38 213	—	—	—	—
4" 100mm	8.38 213	8.38 213	—	—	—
6" 150mm	8.38 213	8.38 213	10.25 260	—	—
8" 200mm	8.38 213	8.38 213	10.25 260	—	—
10" 250mm	—	8.38 213	10.25 260	14.00 356	14.00 356
12" 300mm	—	8.38 213	10.25 260	14.00 356	14.00 356



Sales and Service

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

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