

KGC-MC METAL CUTTING CAST STAINLESS STEEL KNIFE GATE VALVES





Design and Construction

DeZURIK KGC-MC Metal Cutting Cast Stainless Steel Knife Gate Valves are designed to provide long service life in applications requiring shearing capabilities like those found in Pulp and Paper Recycle and Rejects Cyclone applications.

The KGC-MC valve is designed to cut the media flow with no jamming problems. To withstand the high loads necessary to shear wires, staples or glass, the valves have a replaceable, serrated seat constructed of 410 Stainless Steel. The seat ring's teeth and teeth arrangement are designed to prevent bunching or clogging while cutting through heavy trash such as metal, plastics, glass and shards.

The KGC-MC Knife Gate Valves are available in 3-24" (80-600mm) sizes with one-piece cast stainless steel bodies. Numerous features combine to provide a longer service life, less downtime and less maintenance than other valves currently used for these tough applications.

- Valves can be either metal or dual metal-and-resilient seated.
- Gates of Hardened 410 Stainless Steel or heat-treated 17-4 Stainless Steel have a shearing beveled edge to cut cleanly through media.
- High-performance packing system with wire scraper rings extends service life.
- Copper scraper rings act to guide the gate through the packing chamber, critical in high cycle and shearing applications.
- Oversized gate guides provide support for the moving gate through the full stroke, minimizing any chance of deflection.
- Heavy-duty superstructure withstands high cycle rates and vibration.
- Optional purge ports available in the seat and chest prevent process buildup.

Serrated Seat Ring & Shearing Gate Tip Prevent Media Jamming

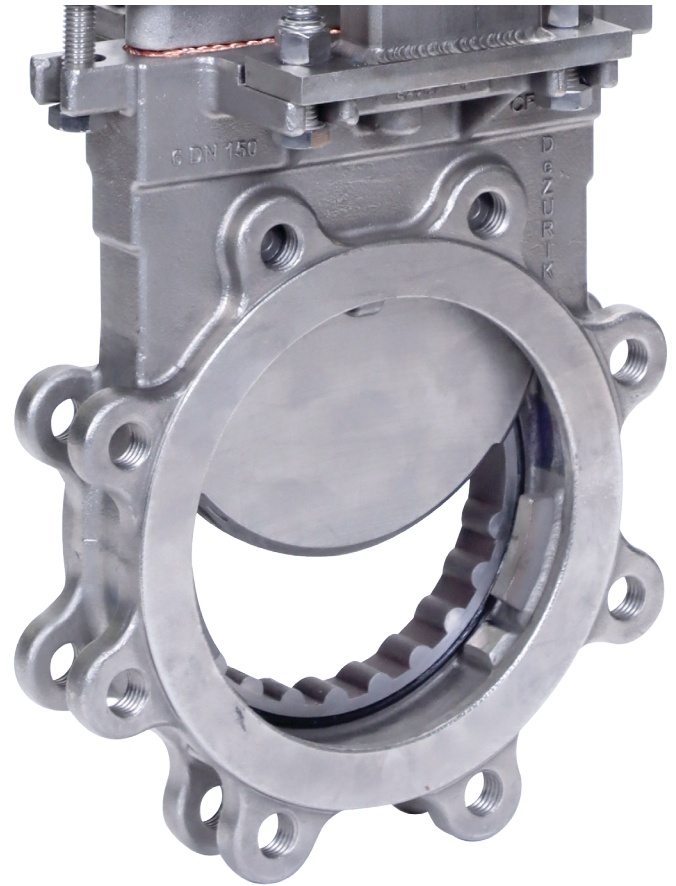
The serrated seat ring, shearing beveled gate edge and cast guides and jams work together to prevent media from becoming trapped or jamming. Wires, staples, glass or plastic are cleanly cut, crushed and cleared from the seating area.

Guided Shear Gate Design Assures Positive Shutoff

The body features cast oversized gate guides to provide support for the moving gate through the full stroke from open to closed, minimizing any chance of gate deflection. The gate guides are 150% larger than standard and strategically positioned to provide greater support to the gate during the cutting process. Cast gate jams at the bottom of the body hold the gate securely against the seat to assure positive shutoff.

Rugged, Heavy-Duty Cast Body

The cast body and packing gland are available in 316 or 317 Stainless Steel with ASME Class 150 flanges. The body has raised face end connections with drilled and tapped lugs. Purges in the chest and seat area are an available option to prevent process media buildup.



Replaceable, Wear Resistant Metal or Resilient Seat

Both metal and dual metal-and-resilient seated valves are available in 410 Stainless Steel with Chloroprene (CR), Acrylonitrile-Butadiene (NBR), Terpolymer of Ethylene, Propylene and a Diene (EPDM), Fluoro Rubber (FKM), and Chloroprene, off white (CRW). Metal seated valves meet MSS SP-81. Dual metal-and-resilient seated valves provide leak tight/drip tight shutoff. The seat ring mechanically retains the resilient seat to prevent it from becoming dislodged. The seat ring is removable, replaceable and rotateable.

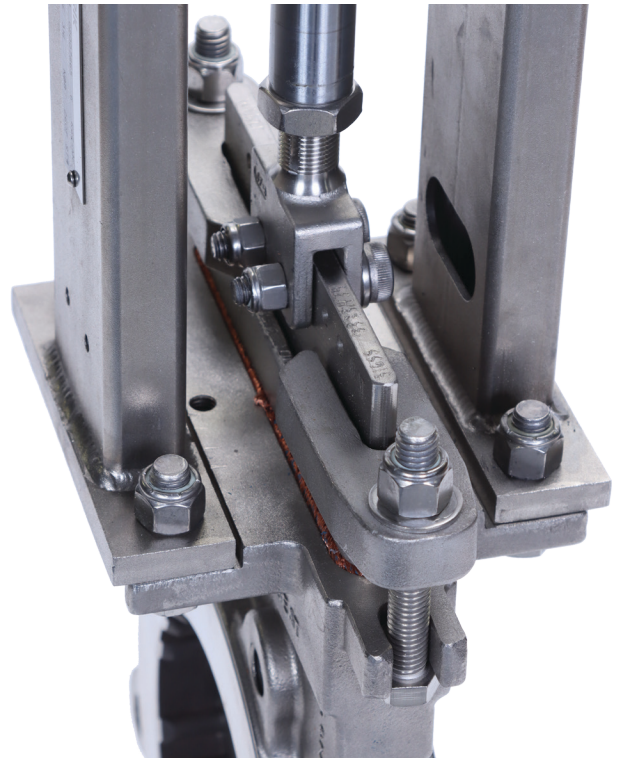


Heavy-Duty Stem/Gate Clip

A strong, investment cast gate clip complements KGC-MC's robust construction. Gate clip and gate are drilled to match the shoulder screw diameter to provide a heavy-duty connection needed for high cycle applications.

DeZURIK Exclusive Rounded Gate Edges

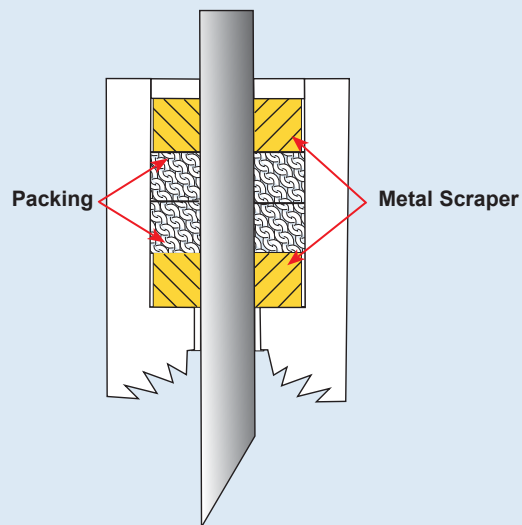
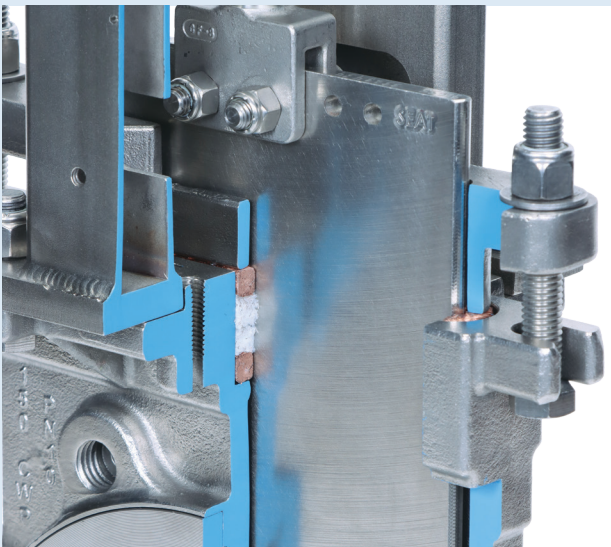
The KGC valves all have a gate with a rounded gate edge that is precision machined with a ground finish on both sides and edges. The rounded gate edge moves smoothly through the packing with minimal packing disturbance, thus requiring less adjustment and maintenance of the packing system.



DeZURIK Exclusive Premium Packing System

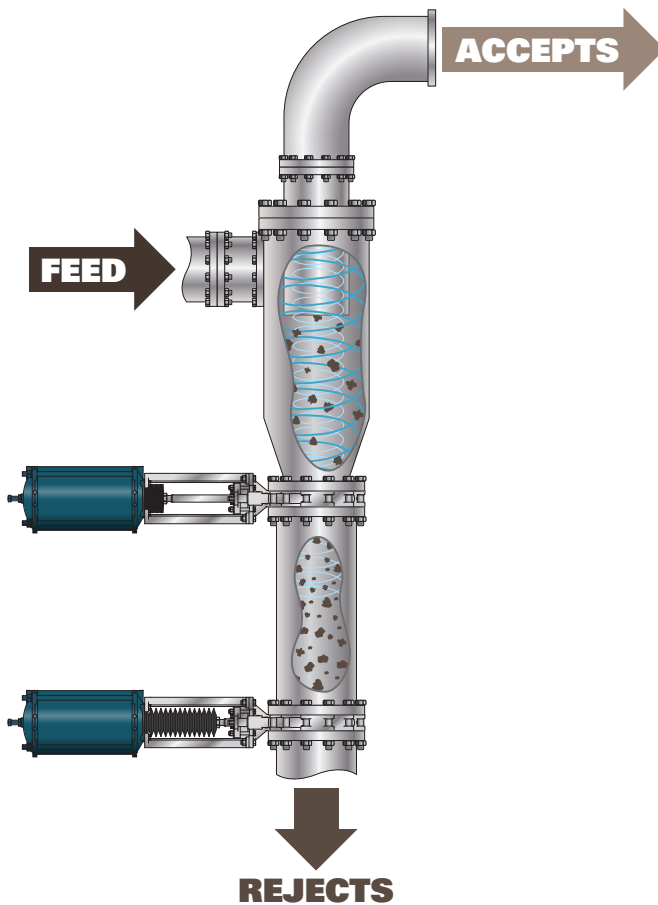
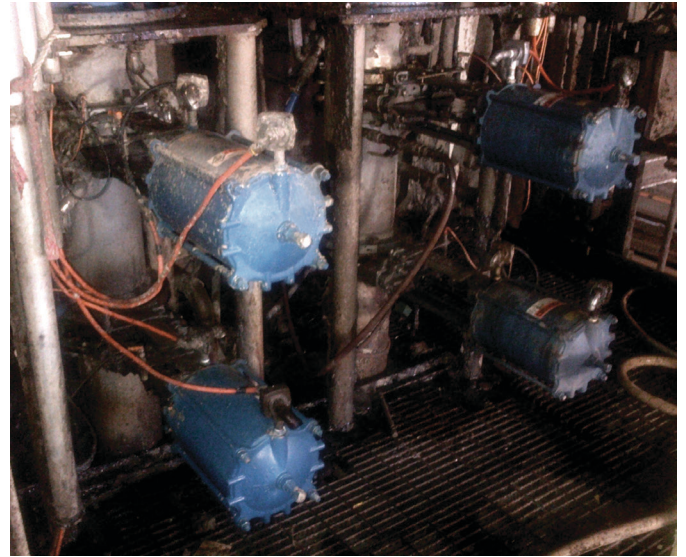
The KGC-MC valve has the DeZURIK Exclusive Premium Packing System that includes a fully-machined rounded cast packing chamber, rounded gate edge, and PTFE braided packing with top and bottom copper wire scraper rings to wipe the gate and prevent process media from entering the packing chamber. The copper scraper rings act to guide the gate through the packing chamber, critical in high cycle and shearing applications. This proven packing system includes 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



Demonstrated Reliability in HD Cleaner Applications

DeZURIK KGC Knife Gate Valves are proven performers in Recycle Paper High Density Cyclone Cleaners. The KGC-MC valve is ideally suited for recycle applications that require shearing of media containing heavy trash, solids, nails, wire, staples, plastic or glass.

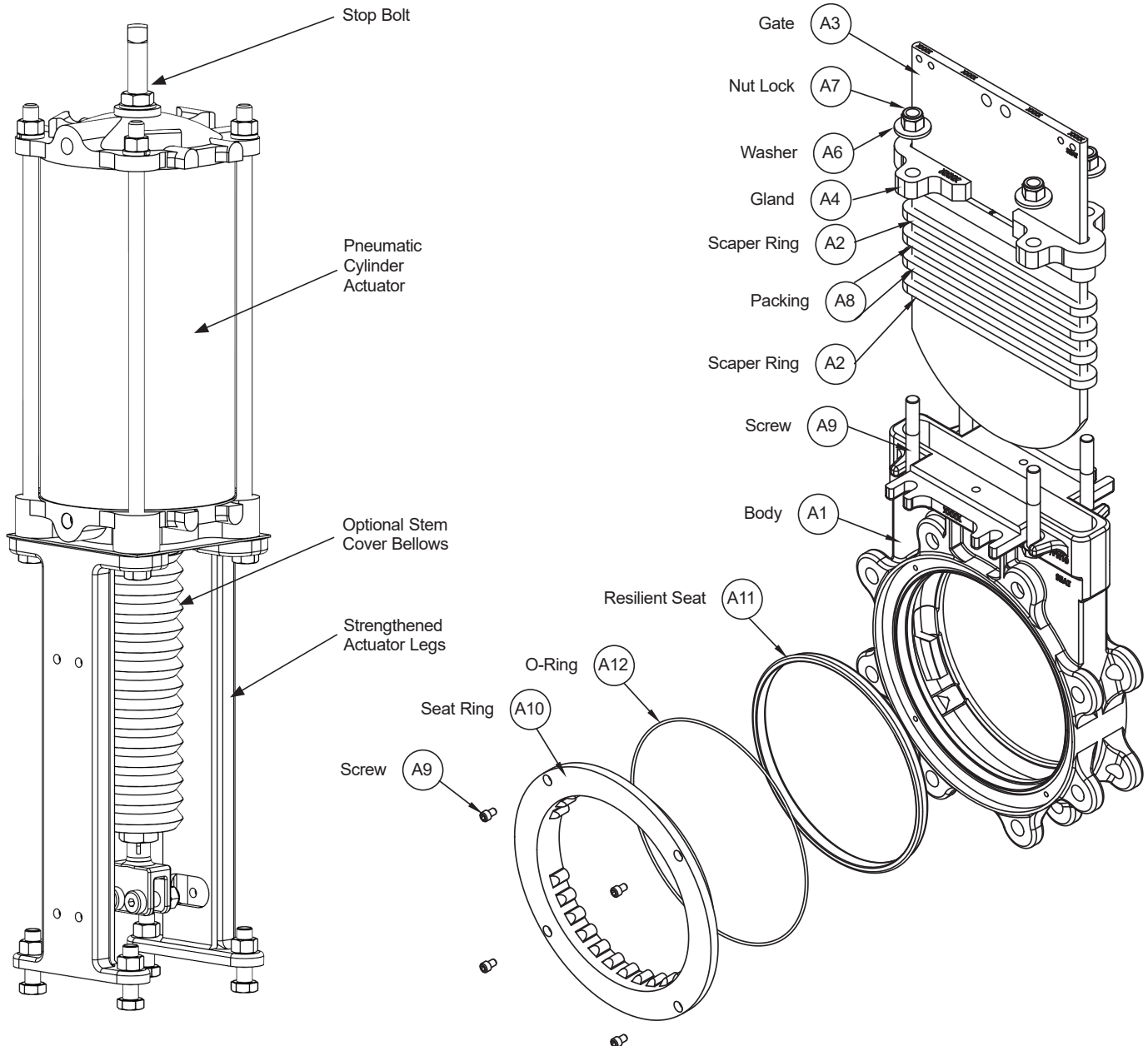


KGC-MC Separates and Shears Metal, Plastic & Other Materials

The KGC-MC has the features and rugged construction that allows it to excel in demanding services requiring shearing capabilities such as cyclone separators, recycle high density cleaners, and recycle detrashers. The serrated seat ring on the KGC-MC valve is designed to separate and shear metal, plastic and other materials without jamming. All the features of the KGC-MC combine to provide superior performance in these high-cycle shearing applications.

Materials of Construction

Item	Description	Material
A1	Body	316 Stainless Steel, ASTM A351 Type CF-8M 317 Stainless Steel, ASTM A351 Type CG-8M
A2	Scrapper Ring	Braided Copper Wire Scrapper
A3	Gate	410 Stainless Steel, ASTM A240 Hardened 17-4 Stainless Steel, ASTM A564, H900
A4	Gland	316 Stainless Steel, ASTM A351 Type CF-8M 317 Stainless Steel, ASTM A351 Type CG-8M
A5	Bolt	Stainless Steel, ASTM F593 Type 304
A6	Washer	18-8 Stainless Steel
A7	Nut Lock	18-8 Stainless Steel
A8	Packing	CRW - Braided PTFE with Top & Bottom Copper Wire Scrapper to 500°F (260°C)
A9	Screw	316 Stainless Steel
A10	Seat Ring	410 Stainless Steel, ASTM A743 Hardened
A11	Resilient Seat	NBR = Acrylonitrile-Butadiene to 180°F (83°C)
		FKM = Fluoro Rubber to 400°F (204°C)
		EPDM = Terpolymer of Ethylene Propylene and a Diene to 250°F (122°C)
		CR = Chloroprene to 180°F (83°C)
A12	O-Ring	CRW = Chloroprene Off-White to 140°F (60°C)
		NBR = Acrylonitrile-Butadiene to 180°F (83°C)
		Fluoro Rubber to 400°F (204°C)
		EPDM = Terpolymer of Ethylene Propylene and a Diene to 250°F (122°C)
		CR = Chloroprene to 180°F (83°C)



Valve Selection

Shut-Off Capabilities

Resilient Seats	Leak tight/drip tight
Metal Seats	Meet MSS SP-81 and TAPPI TIS 405-8

Pressure Ratings

100°F (38°C)

3-24" (80-600mm)	150 psi C.W.P. (1030 kPa)
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Note:
Valve can withstand Full Reverse Pressure without damage.

Flow Parameters

Round Port

Valve Size	Cv* Kv* 100% Open	K** (resistance)	Port Area (in ² /cm ²)
3" 80mm	675 584	0.16	6.1 39
4" 100mm	1200 1040	0.16	11.5 74
5" 125mm	1900 1640	0.16	18.3 118
6" 150mm	2700 2340	0.16	26.6 172
8" 200mm	4800 4200	0.16	48.3 312
10" 250mm	7500 6500	0.16	76.0 490
12" 300mm	10800 9300	0.16	110 712
14" 350mm	13200 11400	0.16	135 869
16" 400mm	17400 15100	0.16	179 1156
18" 450mm	22300 19300	0.16	234 1508
20" 500mm	27800 24000	0.16	286 1848
24" 600mm	40500 35000	0.16	419 2701

*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-MC Knife Gate Valves are designed and/or tested to meet the following standards:	
ASME B16.5	Flanges and Flanged Fittings, ANSI 150 Conforms to related drilling dimensions.
International Standards	Conforms to flanged bolt guides — DIN 10 and DIN 16; ISO 7005-1/PN10 and 7005-2/PN16; BS 4504/PN10 and BS 4504/PN16.
MSS SP-81	Metal Seated Valves, Stainless Steel, Bonnetless, Flanged Knife Gate Valves. (Same as TAPPI TIS 405-8)
MSS SP-151	Pressure testing of knife gate valves
AWWA C520	Knife Gate Valves
IEC 61508 SIL 3	Complies when DeZURIK standard pneumatic or hydraulic actuators are used. Contact DeZURIK to verify compliance with other actuators. IEC 61508 SIL 3 does not apply to manual actuators.
Pressure Equipment Directive (PED)	European Pressure Equipment Directive Approved
Canadian Registration	CRN Approved in all Canadian Provinces.

Valve and Actuator Weights

Valve Size	Basic Valve lbs. Kg.	With Cylinder	
		Order Code	lbs. Kg.
3" 80mm	16 7	CY-PC4	37 17
4" 100mm	24 11	CY-PC4	45 20
		CY-PC6	63 29
5" 125mm	32 15	CY-PC4	58 26
		CY-PC6	76 35
		CY-PC8	88 40
6" 150mm	38 17	CY-PC4	63 29
		CY-PC6	81 37
		CY-PC8	93 42
8" 200mm	65 30	CY-PC6	112 51
		CY-PC8	124 56
10" 250mm	103 47	CY-PC8	174 79
		CY-PC10	220 100
		CY-PC12	257 117
12" 300mm	148 67	CY-PC8	225 102
		CY-PC10	270 122
		CY-PC12	309 140
14" 350mm	199 90	CY-PC10	332 151
		CY-PC12	372 169
16" 400mm	272 123	CY-PC10	409 186
		CY-PC12	449 204
		CY-PC14	495 225
18" 450mm	361 164	CY-PC12	551 250
		CY-PC14	602 273
		CY-PC16	813 369
20" 500mm	518 235	CY-PC12	712 323
		CY-PC14	760 345
		CY-PC16	982 445
24" 600mm	725 329	CY-PC12	947 430
		CY-PC14	1001 454
		CY-PC16	1219 553
		CY-PC18	1262 572

Note: Weights are approximate and do not include crating.

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 Knife Gate Valve
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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: MC = Metal Cutting

End Connection Give end connection code as follows:
F1 = ANSI 150 UNC Tapping for Threads
F110 = ISO 7005/PN10 Drilling
F116 = ISO 7005/PN16 Drilling
On Application Other end connections available on application.

Body Material Give body material code as follows:
S2 = 316 Stainless Steel
S3 = 317 Stainless Steel
On Application Other body materials available on application

Packing Material Give packing material code as follows:
CW2 = PTFE Braided Packing with Top and Bottom Copper Wire Scraper to 500° (260°C) pH Range 4-10
On Application Other packing materials available on application.

Gate Material Give gate material code as follows:
S5 = 17-4 Stainless Steel H900 Heat Treated
S8 = 410 Stainless Steel
On Application Other gate materials available on application

Seat Material Give seat material code as follows:
All Metal
S8 = 410 Stainless Steel
Combination Metal with Resilient Seat Seal
S8NBR = 410 Stainless Steel, Acrylonitrile-Butadiene Seal to 180°F (83°C)
S8FKM = 410 Stainless Steel, Fluoro Rubber Seal to 400°F (204°C)
S8EPDM = 410 Stainless Steel, Terpolymer of Ethylene Propylene and a Diene Seal to 250°F (122°C)
S8CR = 410 Stainless Steel, Chloroprene Seal to 180°F (83°C)
S8CRW = 410 Stainless Steel, Chloroprene Off-White Seal to 140°F (60°C)
On Application Other resilient seat and overlay materials available on application.

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

Standard Options Give option code as follows:
CMC = Certificate of Material Conformance
CRT = Certified Physical & Chemical Test Reports
DTR = DeZURIK Standard Certified Hydrostatic & Seat Test Report
PSC = Purge Ports in Seat and Chest Area

Ordering Example:
KGC,8,MC,F1,S2,CW2,S8-S8,PSC*Actuator

Cylinder Actuators

DeZURIK cylinder actuators are available with double-acting pneumatic 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 table to the valve order code.

Actuator Sizing

60 psi (410 kPa) Air Supply

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

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

Actuator Sizing

80 psi (550 kPa) Air Supply

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

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

Cylinder Actuator Accessories

Positioners

DeZURIK cylinder actuators are available with pneumatic, electro-pneumatic or digital positioners for throttling control. Positioners are available in various NEMA ratings and mounted to the actuator legs.

Air Filter Regulator

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

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.

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.

High-Strength Actuator Legs

High-Strength Actuator Legs provide additional rigidity to withstand horizontal valve mounting, high cycle rates, and vibration common on cyclone applications, without external actuator supports.

High-Strength Actuator Legs are an integral part of a complete KGC-MC valve and actuator assembly. Include the SAL code after the actuator code.

Ordering Example (complete valve):

KGC,6,MC,F1,S2,CW2,S8-S8*CY-PC6-S1,SAL



Stem Cover Bellows

To protect valve stem from environmental debris, the Stem Cover Bellows may be ordered as part of a complete valve and actuator assembly. To order, add the SCB code to the valve and actuator code.

Ordering Example (complete valve):

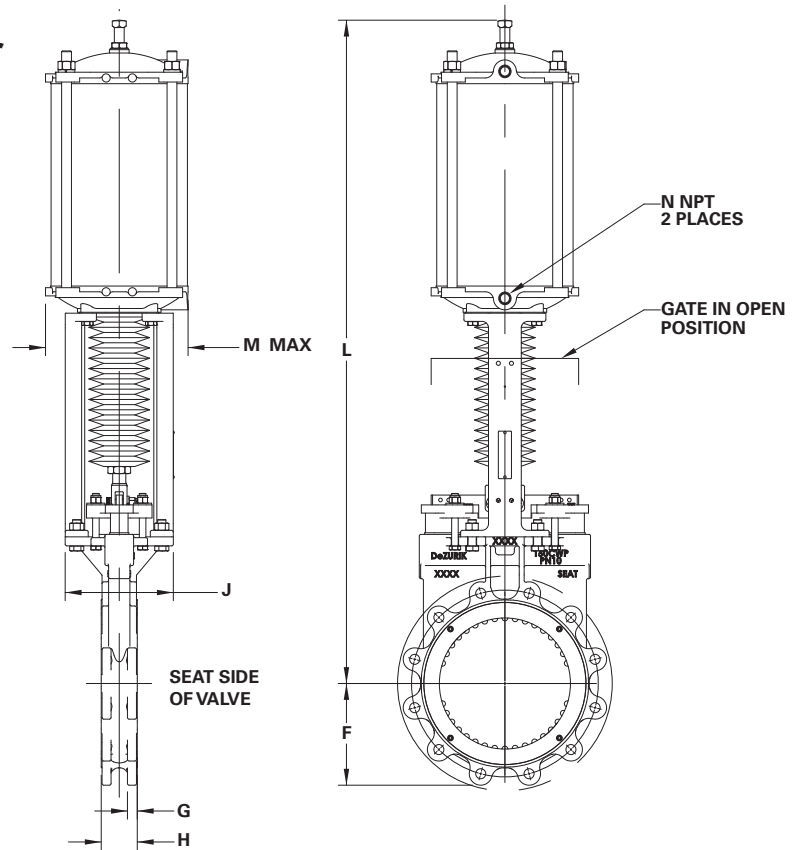
KGC,6,MC,F1,S2,CW2,S8-S8*CY-PC6-S1,SAL,SCB

Dimensions

Basic Valve with Cylinder Actuator

Valve Size	Dimensions		
	F	H	J
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
24" 600mm	16.00 406	4.50 114	9.42 239

Inches
Millimeters



3-24" (80-600mm) Valves

Actuator Order Code	Dimensions												M	N
	L													
	3" 80mm	4" 100mm	5" 125mm	6" 150mm	8" 200mm	10" 250mm	12" 300mm	14" 350mm	16" 400mm	18" 450mm	20" 500mm	24" 600mm		
CY-PC4	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	—	—	—	—	—	—	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	73.59 1869	77.16 1960	—	13.00 330	1/2
CY-PC12	—	—	—	—	—	50.94 1294	54.56 1386	60.70 1542	64.38 1635	73.94 1878	77.50 1968	89.48 2273	15.00 381	1/2
CY-PC14	—	—	—	—	—	—	—	—	63.68 1617	73.24 1860	76.81 1951	88.78 2255	17.00 432	1/2
CY-PC16	—	—	—	—	—	—	—	—	—	70.25 1784	75.94 1929	87.91 2233	17.00 432	1/2
CY-PC18	—	—	—	—	—	—	—	—	—	—	—	88.16 2239	19.00 483	3/4

Inches
Millimeters



Need Knife Gate Valve pricing or support for your mining project? Contact us for more assistance.

Perth Branch
U2/41-45 Furnace Road
Welshpool WA 6106
Phone: +61 8 9353 2565
sales@thevalvecompany.com.au

Kalgoorlie Branch
2/69 Craig Road
West Kalgoorlie WA 6430
Phone: +61 8 9021 6668
sales@thevalvecompany.com.au

Brisbane Branch
U5/225 Queensport Road
North Murrarie QLD 4172
Phone: +61 7 3348 8636
sales@thevalvecompany.com.au

Bunbury Branch
Phone: +61 417 744 791
sales@thevalvecompany.com.au