

CLARKSON SEVERE SERVICE KNIFE GATE VALVES

MODEL KS1

The KS1 is a true bi-directional, zero-leakage ASME Class 150 Knife Gate Valve designed for the rigors of severe service applications





GENERAL APPLICATION

The KS1 has many features designed to improve service life and lower cost of ownership. It is suitable for a wide range of severe service slurry applications in:

- Mining and Mineral processing
- Oil Sands processing
- Pulp and Paper plants
- Coal Preparation plants
- Power
- Steel processing

TECHNICAL DATA

Size range: NPS 2 - 16 (DN 50 - 400)

Temperature rating: NR 175 °F (80 °C)

EPDM 300 °F (150 °C) HNBR 300 °F (150 °C)

Pressure rating: ASME Class 150 Compliance to: MSS SP-135

MSS SP-135 ASME B31.3

Face to face: MSS SP-135 short Flange drillings: ASME 150/300

gs: ASME 150/300 AS 2129 Table D/E

> PN 10/16/20 SANS T1600

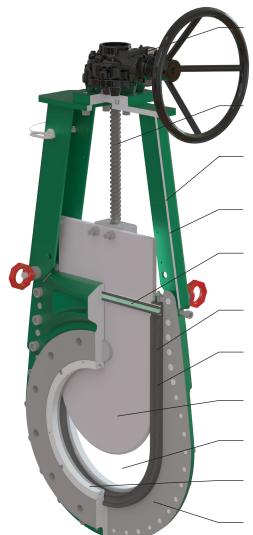
FEATURES

- True bi-directional flow and zero leakage shut-off; can be installed in either direction
- Heavy cross section precision-molded elastomer seat provides more surface area for superior isolation
- Field-adjustable, patent-pending gate edge seal system prevents leakage through top of valve
- Enclosed body design prevents any leakage to the outside environment
- Full round port and seat design offers low pressure drop across valve and longer service life in abrasive applications
- Standard inlet and outlet replaceable, rotatable Ni-Resist wear rings extend service life
- Modular frame design allows for installation of any standard accessory without modification
- Fully piggable
- Available in raised or flat face

NOTE

All valves hydrotested per MSS SP-151 and will meet zero leakage isolation from zero to 1.1x Maximum Allowable Working Pressure (MAWP).

VALVE BENEFITS



Manual bevel gear is standard on NPS 8 (DN 200) and larger, also available in hydraulic and air actuators

Non-rising stem reduces actuation torque while decreasing valve profile

Patent-pending yoke connection design with standard open/closed mechanical lockouts

Modular frame design allows for fitment of all standard accessories without need for additional modification

Patent-pending gate edge seal system eliminates leakage between the knife gate and top of valve body

Heavy cross-section molded elastomer seat for superior shutoff and longevity; simple to replace, no shimming or trimming required

Fully symmetrical design can be installed in either direction and provides true bi-directional, zero leakage shutoff

2205 stainless steel gate with dual-beveled edge displaces media away from seat to maximize sealing surface

Full round port offers low pressure drop across valve and longer service life in abrasive applications

Standard inlet and outlet replaceable, rotatable Ni-Resist wear rings extend service life

Two-piece cast body available in quad-rated WCB/LCB/WCC/LCC Carbon Steel, A439 D2 Ni-Resist, and CF8M Stainless Steel



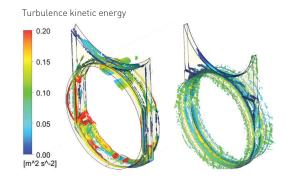
Patent-pending gate edge seal interlocks with transverse seal and scrapers to provide a continuous seal around gate, incorporating benefits of adjustments to packing pressure while valve is in service



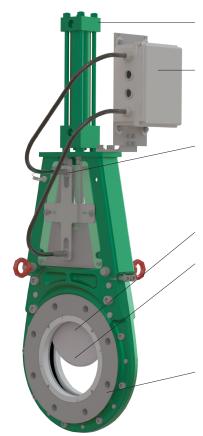
Robust, heavy cross-section seat provides superior isolation performance over the life of the valve, delivering higher cycle life at zero leakage compared to 0-ring designs



Replaceable and rotatable wear rings reduce wear to the valve body and prolong service life. Rings can be rotated three times through four positions before requiring replacement



Full round port minimizes any disruption to flow compared to non-round ports, resulting in reduced wear on the valve and downstream components



Standard options for air and hydraulic cylinders

Available energy lockouts to isolate air supply

Junction boxes available in fiberglass or stainless steel with hard-wired and quick-disconnect connections

Pre-installed solenoids available in single or dual coil with voltage, stainless steel, and explosion-proof options

Brackets to mount standard 18 mm and 5/8" proximity sensors

Standard mechanical lockout pin supports lockouttagout process and visually indicates gate position

Rated lifting lugs allow for in-line mounting

Standard 2205 and optional 17-4 PH steel gates

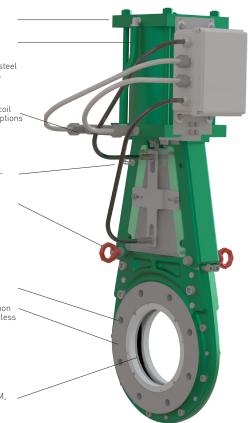
Available SSEC coating on gate reduces friction to eliminate media buildup

Raised and flat face flanges available

Cast split-body design available in quad-rated carbon steel, corrosion-resistant Ni-Resist, or CF8M stainless steel; additional alloys on request

Corrosion-resistant fluoropolymer body and gate coating available

Heavy-duty seats available in natural rubber, EPDM, and HNBR elastomers

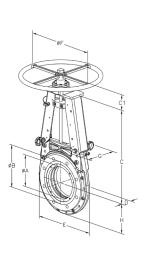


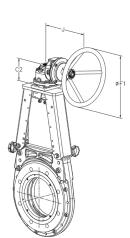
MATERIAL LIST

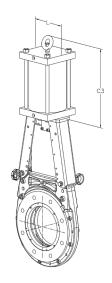
Component	Material	Properties							
Base valve configuration	Body material: WCB/LCB/WCC/LCC	Quad-rated carbon steel for wide temperature range							
	Body coating: Clarkson™ Paint	ISO 12944-2 with C3 corrosive rating							
	Gate material: 2205 Stainless steel	High corrosion resistance							
	Wear ring: A439 D2 Ni-Resist	Improved corrosion resistance and hardness							
	Seat material: Natural rubber	175 °F (80 °C) max. temperature							
		High tensile strength, superior tear and abrasion resistance							
Optional body materials	A439 D2 Ni-Resist	Improved corrosion resistance and hardness							
	CF8M Stainless steel	High corrosion resistance and chemical compatibility							
Optional body coatings	Fluoropolymer	Reduces coefficient of friction to minimize media buildup in valve internals							
Optional gate materials	17-4 PH Stainless steel	High abrasion resistance							
Optional gate coatings	SSEC	Low coefficient of friction prevents sticky, viscous, corrosive, and/or abrasive media from sticking							
		to the gate, thus reducing drag, improving seat life, and leading to more reliable isolation							
	Fluoropolymer	Reduces coefficient of friction to minimize media buildup on gate							
Optional seat materials	EPDM	300 °F (150 °C) max. temperature							
		High resistance to alkalis, acids, and oxygenated solvents							
		Low resistance to oil and hydrocarbon-based solvents							
	HNBR	300 °F (150 °C) max. temperature							
		High resistance to oil, silicone greases, hydrocarbon-based solvents, and nonoxidizing chemicals							
		Low resistance to ozone and oxygenated solvents							

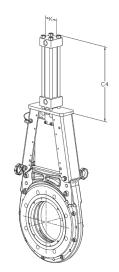
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- ØΑ Valve ID
- ØB Wear ring OD
- Valve center to yoke top plate distance
- D Face to face dimension
- Ε The maximum valve or upstand clearance dimension for installation
- Handwheel outer diameter
- The maximum valve width clearance dimension for installation
- Valve center to valve hottom distance

DIMEN	ISIONS	(inches	5)														MHW/BG TORQUE
NPS	ØA	ØB	С	C1	C2	C3	C4	D	E	ØF	ØF1	G	Н	J	K	L	ft-lb
2	2.0	3.6	9.9	3.4	-	7.3	7.8	2.0	8.5	12.0	-	6.6	4.2	-	2.5	4.5	2
3	3.0	5.0	12.0	3.4	-	8.3	8.8	2.0	10.0	12.0	-	6.6	5.0	-	2.5	4.5	3
4	4.0	6.2	14.0	3.4	-	10.1	10.2	2.0	11.2	12.0	-	6.6	5.6	-	2.5	5.5	5
6	6.0	8.5	18.4	3.4	-	12.8	12.3	2.3	13.4	20.0	-	7.2	6.7	-	2.5	7.5	16
8	8.0	10.6	22.9	3.4	5.1	15.0	14.9	2.8	16.0	20.0	11.8	8.7	8.0	11.8	3.0	8.5	42 (MHW) / 16 (BG)
10	10.0	12.8	27.0	-	5.1	18.0	17.0	2.8	18.2	-	11.8	8.6	9.1	11.8	3.5	10.6	24
12	12.0	15.0	31.3	-	5.1	19.5	19.0	3.0	21.5	-	11.8	9.8	10.8	11.8	3.5	12.8	35
14	13.3	16.3	34.4	-	5.5	22.5	21.2	3.0	23.5	-	15.8	9.9	11.8	14.4	4.5	14.8	39
16	15.3	18.5	38.5	-	5.5	24.7	23.3	3.5	26.3	-	15.8	10.7	13.5	14.4	4.5	17.0	52
DIMENSIONS (mm)										MHW/BG TORQUE							
DN	ØA	ØB	С	C1	C2	C3	C4	D	Е	ØF	ØF1	G	Н	J	K	L	N-m
50	51	92	250	86	-	186	186	51	215	305	-	168	107	-	64	114	2
80	76	127	304	86	-	210	224	51	254	305	-	168	127	-	64	114	4
100	102	157	355	86	-	257	259	51	284	305	-	168	142	-	64	140	6
150	152	216	468	86	-	325	311	57	341	508	-	183	170	-	64	191	22
200	203	270	582	86	129	380	379	70	406	508	300	220	203	299	76	216	57 (MHW) / 21 (BG)

NOTES

1. Input torque is value at handwheel to open valve at rated pressure.

 $2. \quad \text{Actuator bore size based on required thrust to open valve at rated pressure with 80 psi (5.5 bar) pneumatic or 2,000 psi (5.5 bar)} \\$ (138 bar) hydraulic supply pressure.

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