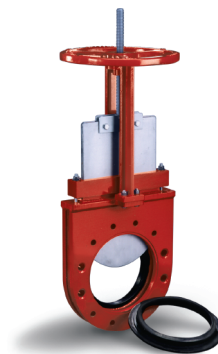


Red Valve

Knife Gate Valve Products



Series G Knife Gate Valves

A refinement of the time-proven knifegate design

① Robust design

A thick, stainless steel liner and heavy-duty cast iron body make the Red Valve Series G tougher and more robust than competing designs.

② Precision-buffed, stainless steel gate

The stainless steel knife gate is precision-buffed for tight shutoff. Its knife-like edge cuts through heavy or high-viscous fluids. Knife edges are machine chamfered to reduce packing wear.

③ Smooth handwheel opening/closing

The double-lead ACME thread on the stem makes opening and closing the valve smooth and speedy, with low torque requirements.

④ Seat design resists buildup

The surface of the valve seat has no recesses to harbor heavy fluid deposits that could build up.

⑤ Leak-tight, multi-layer gland packing

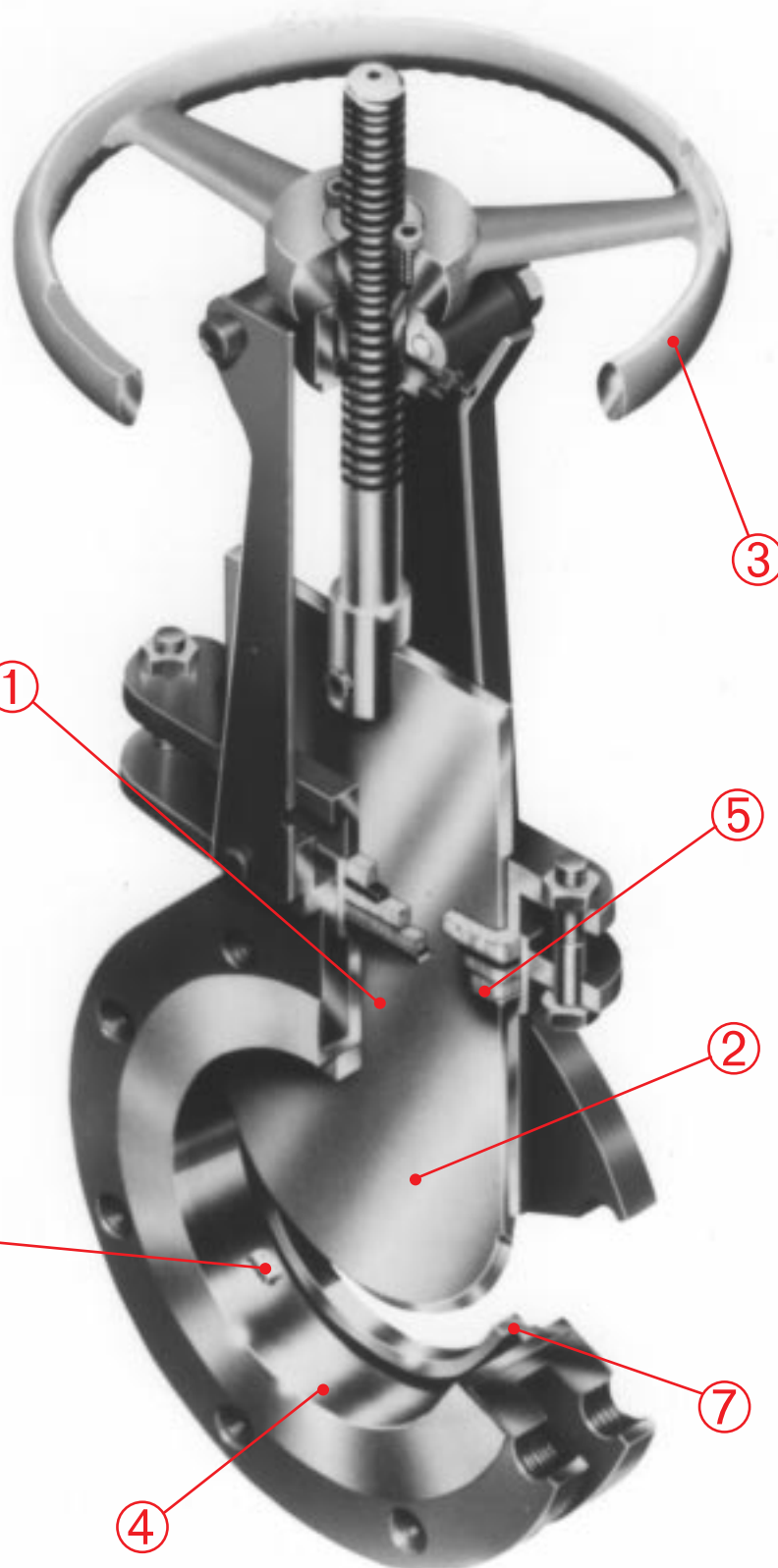
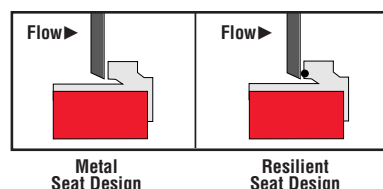
The gland packing is multi-layered with molded silicon rubber. This chemical-resistant packing provides total sealing.

⑥ Bosses for positive seating

Two bosses are welded to the valve seat. These press the knife gate snugly against the side of the seat ring for bubble-tight shutoff.

⑦ A choice of two seat designs

A standard stainless steel seat or optional EPDM resilient seat is available. Choose the best one for your fluid control requirements.



COVER: Large-Diameter Series G Valves installed at the City of Houston, TX, pumping station. In service since 1987.

Series G Knife Gate Valve

- ▶ High-quality, full-port design
- ▶ Compact, low profile
- ▶ Leak-proof elastomer packing gland
- ▶ Precision-buffed stainless steel gate
- ▶ Stock delivery sizes 2" - 24"



Materials of Construction

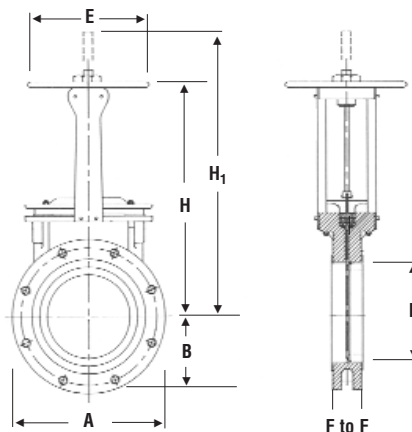
- ▶ Cast iron body, lined with 316 stainless steel
- ▶ 316 metal seat or EPDM resilient seat
- ▶ Manual, pneumatic, hydraulic and electric actuators
- ▶ ANSI class 150

The Red Valve Series G Knife Gate Valve features a cast iron body with stainless steel wetted parts. This efficient valve design affords the user a high-quality valve in which all the wetted parts, including the gate, seat, packing gland and flange face are stainless steel while providing cost savings with cast iron flanges.

The Series G has a double-lead ACME thread that reduces operating torque. A special ring-shaped, multi-layer packing gland is combined with elastomer to ensure a tight seal. The gate corners are machined with chamfered edges so that the corners of the gate do not wear the packing. The chamfered edge and elastomer seal packing gland prevent packing wear. These valves are manufactured to handle a wide variety of fluids in chemical plants, pulp and paper mills, wastewater treatment plants, mining operations, sugar mills and food-processing facilities.

Series G Knife Gate Valves can be fitted with a variety of actuators, including standard handwheel, bevel gear,

pneumatic actuators, hydraulic actuators, electric actuators and chainwheel actuators. Other options include limit switches, solenoid valves and bonnets.



Seat Material	Max Operating Temperature	Rate of Leakage
316 SS EPDM	400°F 212°F	40 cc/min/in 0 cc/min/in

Valve Size D	Length F to F	Width A	Height B	Height Closed H	Height Open H ₁	Handwheel Diameter E	Working Pressure psi	Valve Weight lbs.
2"	1 7/8"	6 1/2"	3 1/4"	11"	13"	8"	150	23
2 1/2"	1 7/8"	6 1/2"	3 3/4"	12"	14"	8"	150	25
3"	2"	8"	4"	13"	15"	8"	150	29
4"	2"	8"	4 1/2"	14"	17"	8"	150	36
5"	2 1/4"	10"	5"	16"	20"	16"	150	55
6"	2 1/4"	11 1/4"	5 1/8"	19"	25"	11"	150	70
8"	2 3/4"	13 1/2"	6 3/4"	23"	31"	11"	150	95
10"	2 3/4"	16"	8"	27"	37"	14"	150	145
12"	3"	19"	9"	32"	43"	16"	150	220
14"	3"	21"	10 1/2"	35"	48"	16"	150	275
16"	3 1/2"	23 1/2"	11 3/4"	39"	54"	20"	150	355
18"	3 1/2"	25"	12 1/2"	43"	59"	22"	150	495
20"	4 1/2"	27 1/2"	13 3/4"	49"	67"	25"	150	650
24"	4 1/2"	32"	16"	78"	78"	28"	150	1,015

Series G Pneumatic/Electric

- ▶ High-quality, full-port valve
- ▶ Compact, low-profile design
- ▶ Leak-proof elastomer packing gland
- ▶ Stock delivery pneumatic actuated 2"-12"
- ▶ Pneumatic or electric actuation for automatic control



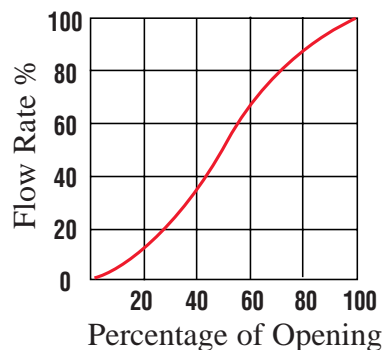
Materials of Construction

- ▶ Cast iron body lined with 316 stainless steel
- ▶ 316 metal or EPDM resilient seat
- ▶ Pneumatic or electric actuator
- ▶ ANSI class 150

Red Valve manufactures a complete line of pneumatically and electrically actuated Series G Knife Gate Valves. The RD Actuator is constructed of a lightweight, self-lubricating Black Amalgon cylinder, aluminum cylinder heads and stainless steel piston rod. Black Amalgon is resistant to chemical and corrosive attack and is more dent resistant than aluminum or brass. Pneumatic positioners can be used to either close or open the valve upon increase of signal pressure. Optional electropneumatic positioners accept a standard ISA 4-20 mA signal. Listed below is an actuator sizing chart based on 60 psi plant air. Air to open/fail closed and air to close/fail open actuators are available up to 12 inches.

Electrically actuated knife gate valves are actuated by AUMA electric operators as a standard. These operators can be supplied with either 220-volt or 440-volt three-phase service and have a NEMA 4 rating. Standard features include Class F insulation, a double-lead ACME stem thread, bronze drive nut, declutchable handwheel override, opening and closing torque and stroke limit switches, three pushbutton station with selector switch and position indicator. Other electric operators, ratings and services are available. A modulation version is available that accepts the standard ISA 4-20mA input signal. When ordering electrically actuated knife gates, please specify electrical service and pressure drop across the valve.

**FLOW
CHARACTERISTICS
FULL-PORT
SERIES G**



Series G Pneumatic and Electric Actuator Sizing Chart Based on 60 psi Actuator Air Pressure

Line Press.	0-25 psi		26-50 psi		51-75 psi		76-100 psi		100-150 psi	
Size	Pneumatic	Electric	Pneumatic	Electric	Pneumatic	Electric	Pneumatic	Electric	Pneumatic	Electric
2"	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1
3"	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1
4"	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1	RD-4	SA07.1
6"	RD-4	SA07.1	RD-4	SA07.1	RD-6	SA07.1	RD-6	SA07.1	RD-6	SA07.5
8"	RD-6	SA07.5	RD-6	SA07.5	RD-6	SA07.5	RD-6	SA07.5	RD-8	SA07.5
10"	RD-8	SA07.5	RD-8	SA07.5	RD-8	SA07.5	RD-8	SA07.5	RD-8	SA07.1
12"	RD-8	SA07.5	RD-8	SA07.5	RD-8	SA10.1	RD-8	SA10.1	RD-10	SA10.1
14"	RD-8	SA10.1	RD-8	SA10.1	RD-10	SA10.1	RD-10	SA10.1	RD-12	SA14.1
16"	RD-10	SA10.1	RD-10	SA10.1	RD-12	SA14.1	RD-12	SA14.1	RD-12	SA14.1
18"	RD-10	SA14.1	RD-10	SA14.1	RD-12	SA14.1	RD-12	SA14.1	RD-14	SA14.1
20"	RD-12	SA14.1	RD-12	SA14.1	RD-14	SA14.5	RD-14	SA14.5	RD-16	SA14.5
24"	RD-14	SA14.5	RD-14	SA14.5	RD-16	SA14.5	RD-16	SA14.5	RD-20	SA16.1

Series G Large Diameter

- ▶ Robust construction
- ▶ Low-profile design
- ▶ Low operating torque
- ▶ Custom fabrication available



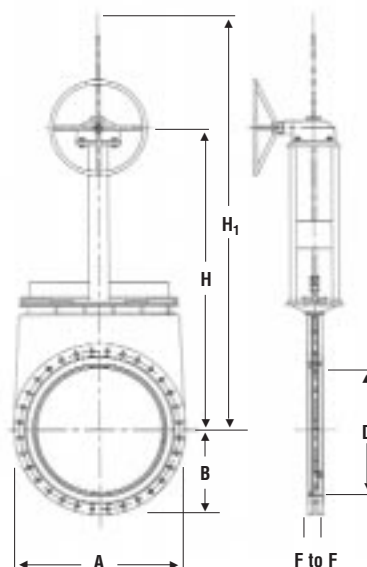
Materials of Construction

- ▶ Fabricated carbon steel body
- ▶ Lined with either 304, 316 or 316L
- ▶ 316 metal or EPDM resilient seats
- ▶ Manual bevel gear, electric or hydraulic actuator
- ▶ ANSI class 150

Red Valve manufactures the Series G in line sizes up to 144 inches for large-diameter pipeline installations. Large Series G valves are constructed similarly to smaller valves but feature a fabricated carbon steel body as opposed to cast iron. All wetted parts of the valve are still stainless steel, but they can be constructed of 304, 316 or 316L material. Large Series G valves benefit from Red Valve's vast experience in large-diameter pipeline products and feature a robust construction designed to handle the immense forces involved in large-diameter pipelines.

The Series G is available with a bevel-gear manual operator or electric motor actuator. Due to the size of the valve, electric operation is normally preferable. Large Series G valves are used in a variety of applications, ranging from pumping stations and flood control to mining and power generation.

Please specify working pressure as construction will vary.



4

Valve Size D	Length F to F	Width A	Height B	Height Closed H	Height Open H ₁	Stem Diameter	Gate Thickness	Maximum Working Pressure psi
30"	6"	38 3/4"	19 3/8"	75"	111"	2 3/4"	Gate thickness varies per pressure requirement.	Engineered per application from 25-150 psi
36"	7"	46"	23"	90"	132"	3 1/2"		
42"	7"	53"	26 1/2"	105"	153"	3"		
48"	7 1/2"	59 1/2"	29 3/4"	120"	174"	3 1/2"		
54"	9"	66 1/4"	33 1/4"	135"	195"	3 1/2"		
60"	9"	73"	36 1/2"	150"	216"	3 1/2"		
66"	9"	80"	40"	165"	237"	4"		
72"	9 1/4"	86 1/2"	43 1/4"	180"	258"	4"		

For sizes to 144 inches, contact factory.

Flexgate

The Flexgate, — heavy-duty, rugged, and engineered for operator dependability, low maintenance and excellent abrasion resistance. This product was designed for rugged applications found in mining, power plants, pulp mills, wastewater treatment, sludge and abrasive slurry or solids handling plants. Standard knife gate valves are not equipped to handle these difficult applications. The operational cost savings to your plant is realized in less downtime, less maintenance, fewer repairs and valves that open and close when you need them to.

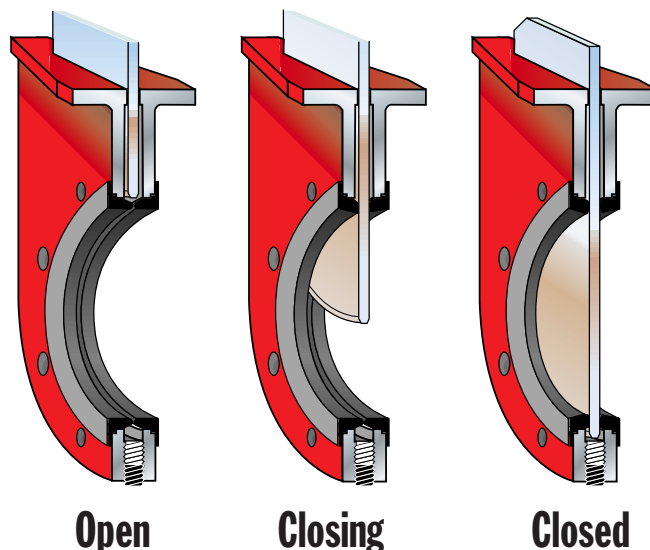
Maintenance Ease

The topworks, including the gate, can be maintained easily. The only replacement parts are the cartridge slurry sleeves and packing. The valve's unique design allows the slurry sleeves to be replaced easily. Valve disassembly is not required to replace slurry sleeves. Simply unbolt the valve from the line, leaving in one bolt and rotate the valve 180°; remove the old seats and insert the new slurry sleeves.

The packing material is contained in a unique “inverted” packing box that simplifies replacement. The valve can remain inline, while the topworks gate, and packing box are removed. This design eliminates the need to dig old packing from deep within the valve body.

The Flexgate also comes standard with flush ports in the valve's base. Ball valves can be piped to the flush port(s), or, the flush port(s) can be piped downstream.

Closing Action of the Flexgate Knife Gate Valve



The Flexgate is designed for on/off service. A heavy-duty, stainless steel gate passes through two cartridge-reinforced rubber slurry sleeves. These rubber slurry sleeves provide a compression interference fit resulting in a droptight seal. When the valve is in the open position, the full port eliminates flow obstructions, keeping abrasive wear to a minimum.

Option Selection Chart

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Manual Operated Flexgate



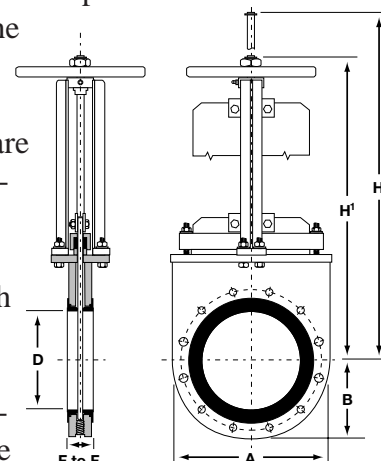
Materials of Construction

- 7** ▶ Cast iron body through 30"; fabricated steel 36" - 72"; optional 304SS or 316SS body
- ▶ Gate ASTM A240 T-316
Optional 17-4 pH, Hastelloy C or teflon-coated 316 stainless steel
- ▶ Slurry sleeves available in Pure Gum Rubber, Buna-N, EPDM and Viton®

Red Valve's Flexgate Slurry Knife Gate Valve is built with a cast iron or fabricated steel body and features a heavy-duty stainless steel gate. Removable rubber cartridge seats on either side of the gate provide a bi-directional seal and excellent wear resistance. The seats are metal reinforced and available in a wide variety of elastomers for abrasion resistance and chemical compatibility. A port at the base of the valve allows for flushing.

The Flexgate Valve provides a bi-directional shutoff. A heavy-duty topworks is standard. The relatively simple design eliminates expensive overhauls, unscheduled shutdowns and costly replacement parts – the only replacement parts are the slurry seats and packing.

Flexgate Valves of 3" - 12" are provided with standard hand-wheel mechanisms featuring cast handwheels, machined 303 stainless steel stems with yoke sleeves and thrust washers designed to reduce operating torque. It is recommended that manual Flexgate Valves 12" and larger be specified with a 4:1 bevel gear actuator to reduce rim pull. Pneumatic and electric operators are available.



Valve Size D	F to F	A	B	Height Close H'	Height Open H	Height Pneumatic Actuated C	Stem Diameter	Gate Thickness	Max. Working Pressure (psi)	
									Gate Material	
									316SS	17-4pH
3"	2"	8"	3 7/8"	17 1/8"	20 3/8"	27 1/2"	3/4"	1/4"	150	150
4"	2"	9 1/4"	4 3/4"	18 1/4"	22 5/8"	29 1/2"	3/4"	1/4"	150	150
6"	2 1/4"	11 1/2"	5 7/8"	21 1/16"	27 3/16"	33 1/2"	1"	1/2"	150	150
8"	2 3/4"	14"	7"	26 9/16"	34 9/16"	38 5/8"	1"	1/2"	150	150
10"	2 3/4"	16 3/4"	8 3/8"	32 7/16"	43 5/8"	49 7/8"	1"	1/2"	150	150
12"	3"	20 1/8"	10 1/16"	37"	50 7/8"	55"	1"	1/2"	100	150
14"	3"	21 1/2"	11"	43 5/8"	57 5/8"	59"	1"	9/16"	100	150
16"	3 1/2"	24"	12 1/2"	47 1/2"	63"	63"	1 1/2"	5/8"	100	150
18"	3 1/2"	25 3/4"	13 1/4"	52 5/8"	70"	83 3/4"	1 1/2"	3/4"	100	150
20"	4 1/2"	27 1/2"	13 3/4"	57 15/16"	74 1/8"	*	1 1/2"	7/8"	100	150
24"	4 1/2"	32 1/2"	16"	66 11/16"	86 15/16"	*	1 1/2"	1"	100	150
30"	5"	38 3/4"	19"	88 5/8"	120 5/8"	*	2"	1 1/8"	75	125
36"	5 1/8"	46"	23"	96"	134 7/8"	*	2"	1 1/4"	75	125
42"	5 1/8"	53"	26 1/2"	100"	137 1/4"	*	2 1/2"	1 1/4"	50	75
48"	6 3/8"	59 1/2"	29 3/4"	108 3/4"	154 1/4"	*	2 3/4"	1 1/2"	50	75
54"	9"	66 1/4"	33 1/4"	135"	195"	*	3 1/2"	1 1/2"	40	50
60"	9"	73"	36 1/2"	150"	216"	*	3 1/2"	1 1/2"	30	50
66"	9"	80"	40"	165"	237"	*	4"	1 1/2"	25	50
72"	9 1/4"	86 1/2"	43 1/4"	180"	258"	*	4"	1 3/4"	25	50

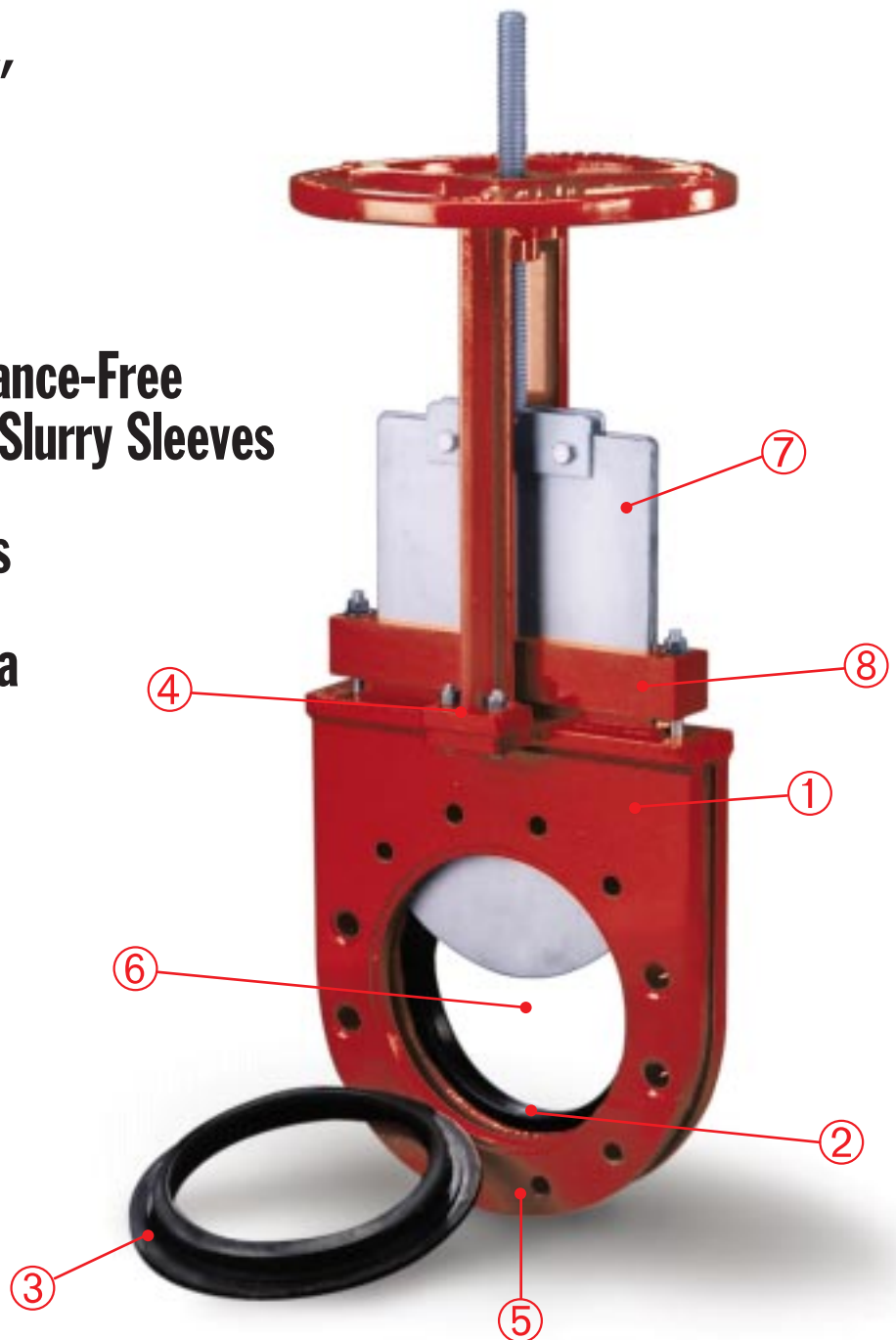
* Consult Factory

Flexgate Knife Gate Valves

Specially designed for use on slurries

- ① Cast Iron Body to 24"
- ② Bi-Directional, Droptight Shutoff
- ③ Dependable, Maintenance-Free Design - Replaceable Slurry Sleeves
- ④ Heavy-Duty Top Works
- ⑤ Flush Port Allows for a Controlled and Safer Work Environment
- ⑥ 100% Full-Port Design
- ⑦ Heavy-Duty 150 psi Stainless Steel Gate
- ⑧ Inverted Packing Box

5



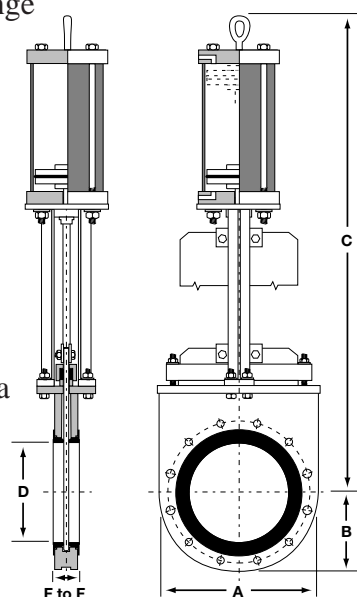
Actuated Flexgate



Red Valve's Flexgate Valves are available with pneumatic, electric or hydraulic actuators. Other options include limit switches, solenoids and air regulators.

The actuated Flexgate provides long-term abrasion resistance under high-cycle conditions. The valve self-cleans each time it is cycled and is ideal for automated operations.

Red Valve manufactures its pneumatic actuators using Black Amalgon, a fiberglass-reinforced epoxy resin. The actuator material is inert to most corrosive chemicals, hydraulic fluids, water and oil. It has an operating temperature range from -90°F to 225°F and can withstand maximum working pressures of 250 psi. Inside actuator walls are polished and impregnated with molydisulfide for reduced friction and wear. The piston seal is a long-lasting O-ring. The piston rod is sealed with a lip seal, which is protected by a rod wiper ring. This wiper ring prevents dirt from being dragged through the seal.



8

Elastomer Slurry Sleeve Selection *

	Pure Gum Rubber	EPDM	Viton®	Buna-N
Continuous Temperature (°F)	165°	250°	300°	180°
Intermittent Temperature (°F)	185°	300°	400°	240°
Minimum Temperature (°F)	-60°	-60°	-10°	-40°
Abrasion Resistance	Excellent	Excellent	Good	Good

*Consult the Red Valve chemical compatibility charts for final selection.

Valve Size	Working Pressure						Plant Air (psi)
	25psi	50psi	75psi	100psi	125psi	150psi	
3"-4"	RD-4	RD-4	RD-4	RD-4	RD-4	RD-4	60
	RD-4	RD-4	RD-4	RD-4	RD-4	RD-4	80
6"	RD-4	RD-4	RD-4	RD-6	RD-6	RD-6	60
	RD-4	RD-4	RD-4	RD-4	RD-6	RD-6	80
8"	RD-4	RD-6	RD-6	RD-6	RD-6	RD-8	60
	RD-4	RD-4	RD-6	RD-6	RD-6	RD-6	80
10"	RD-6	RD-6	RD-8	RD-8	RD-8	RD-10	60
	RD-4	RD-6	RD-6	RD-6	RD-8	RD-8	80
12"	RD-6	RD-8	RD-8	RD-8	RD-10	RD-10	60
	RD-6	RD-6	RD-8	RD-8	RD-8	RD-10	80
14"	RD-6	RD-8	RD-8	RD-10	RD-10	RD-12	60
	RD-6	RD-6	RD-8	RD-8	RD-10	RD-10	80
16"	RD-6	RD-8	RD-10	RD-10	RD-12	RD-12	60
	RD-6	RD-8	RD-8	RD-10	RD-10	RD-12	80
18"	RD-8	RD-10	RD-10	RD-12	RD-14	RD-14	60
	RD-6	RD-8	RD-10	RD-10	RD-12	RD-12	80

Electric actuators recommended for valve sizes 20"-72".

Accessories

Floorstands

Floorstands are available with bevel gears, electric actuators and handwheels. Standard length is 36 inches to centerline of handwheel. Recommended for valves with long extensions to relieve stem loading.

Special Paints and Coatings

Included in Red Valve's Quality Control Process, special paints and coatings, such as epoxy and tar coating, are available.

Bonnets

Atmospheric and pressure-containing bonnets can be supplied to protect the topworks of the valve.

Pneumatic Actuator and Solenoids

Designed and built by Red Valve, pneumatic actuators use an Amalgon cylinder that is strong and lightweight. Aluminum end plates and a stainless steel piston rod ensure reliable performance. Four-way solenoid valves can be mounted and piped at the factory, making the valve complete and ready for installation.



Bevel Gear Actuators

The standard bevel gear actuator has a gear ratio of 4:1. Other gear ratios are 8:1, 12:1, 16:1 and 24:1.

Limit Switches

When specified, limit switches are yoke-mounted to provide remote indication of valve position. Standard switches are 100 volt, NEMA 4 rated. Other types and options are available.

Engineering and Testing Series G

The following hydrostatic tests are performed per MSS-SP81 test specifications for knife gate valves.



A. Body Test

1. Tested at 1.5 times the rated working pressure.
2. Allowable leakage through the pressure vessel at any pressure: 0

B. Gate Testing – Structural

Tested at 1.1 times the rated working pressure.

C. Seat Test – Leakage

All valves to be tested for leakage past the seat at the rated work pressure (CWP). Knife gate valves also to be tested at 40 psi.

Allowable leakage past the seat:

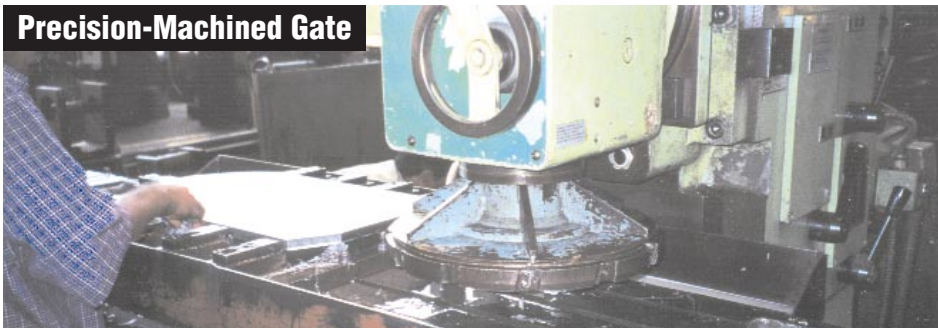
With resilient seat:

- I. 0 cc leakage

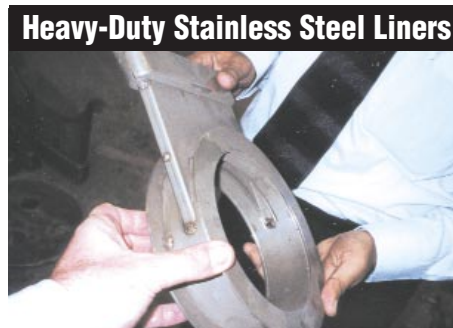
With standard metal-to-metal seat:

- I. through 24" size – 40 cc/min/in
- II. above 24" through 48" – 40 cc/min/in
- III. above 48" through 72" – 50 cc/min/in

Precision-Machined Gate



Heavy-Duty Stainless Steel Liners



Applications



Water and Wastewater Treatment Plants

Large-diameter knife gate valves are often used in water and wastewater treatment plants and stormwater pumping stations. The positive shutoff and reliable performance of Red Valve knife gates make them ideal for a variety of applications, such as pump isolation, on materials ranging from stormwater to raw sewage, grit and sludge. Red Valve manufactures the Series G and Flexgate up to 72 .



Power Industry

Knife gates are very cost-effective for widespread use throughout a fossil-fuel power plant. Fly-ash, bottom ash, lime and cooling water are all popular applications for Red Valve knife gates. Low operating torque provided by the double-seal ACME stem makes them a popular choice of operational personnel. A specially designed, metal-seated valve is available for high-temperature fly and bottom ash.



Pulp and Paper Mills

The knife gate was originally developed for use in the pulp and paper industry and has found many uses throughout the papermaking process. The harsh external environment found in many pulping areas will not affect the performance of a knife gate. The stainless steel gate ensures a positive shutoff, even through pulp fibers. The precision-machined gate keeps packing wear to a minimum.



Mining Industry

Knife gate valves are widely used in copper and phosphate mines and many mining-related processes, such as chemical separation and thickener underflow lines. Replaceable seats on the Flexgate make it ideal for abrasive applications, while the Series G is economical for use on hoppers and water lines. Both offer outstanding performance and value.



General Industry

Chemical processing, brewing, cement, tanneries, sugar mills, chemical plants, animal feed manufacturing and many other industries are benefitting from Red Valve Knife Gate Valves. The Flexgate and Series G are used in many different industries where a low-profile, high-performance valve is needed. Popular installations include hopper discharge valves, pump isolation valves, diverter valves, emergency shutoff valves and tank-drain valves.

A Complete Line Of Quality Products . . . Built To Beat Slurries

The Series 5200 Control Pinch Valve provides accurate, repeatable control on slurries. An elastomer sleeve is the only wetted part, for long-term throttling even on abrasive or corrosive material.



Providing a full 360° pressure reading, Red Valve pressure sensors are the industry standard for protecting instrumentation and ensuring accurate, dependable pressure measurement.



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Red Valve's Series 75 Manual Pinch Valve has the same face-to-face as gate, plug and ball valves. The valve's full-port sleeve is the only wetted part.



*Mr. Spiros G. Raftis, founder
of Red Valve Company*

Red Valve large-diameter influent flow control valves are ideal for wastewater treatment plants. Benefits include full-port, no-hang-up design and accurate control.



Red Valve's Tideflex® Check Valve has a revolutionary design for backflow prevention in sizes from 1/2" to 120".



Redflex® expansion joints, reducers, rubber pipe, vibration pipe and rubber fittings are the industry standard and are manufactured to 96 inches in diameter.

