Rovalve

Solid cast knife gate valve provides value and performance with many standard features not found in other, commodity, knife gate valves.

Advantages of Rovalve S20 Knife Gate Valves

The Rovalve S20 knife gate valve is especially suited for many varied applications in today's process industries. Designed to provide shut-off of liquids, slurries, solids and other media in a wide range of pressures and temperatures, they offer several advantages over plug valves, butterfly valves, ball valves and other knife gate configurations.

Featuring a round, unobstructed port, the Rovalve S20 allows more GPM with less potential for wear on the port and seat areas when compared to other reduced port valve types. The port configuration is designed to allow difficult materials such as pulp stock, ash, sludge and limestone slurries flow through with low pressure drop.

The tip of the gate is beveled and intended to slice through slurries, allowing the gate to seal properly against the metal to metal seat, assisted by integral guides and wedges. In addition, the gate edges are beveled, allowing the packing to seal creating a superior packing assembly with no sharp corners.

While the standard S20 is suitable for many applications, it is also an extremely adaptable platform for modification to suit specific applications. Hard surface seat, purge ports, reverse flow guides and other configurations are available to suit your needs, see page 2.

Features and Benefits

- 304, 316, 317 or WCB solid cast, one-piece body designed and qualified through FEA analysis to meet the pressure rating and shell test requirements of MSS SP-81
- Face-to-face per MSS SP-81 through 36".
- Precision machined seat with multiple gate guides provides tight one-way shut-off.
- Gate edge is beveled for easier packing seal and longer packing life.
- Meets MSS SP-81 shutoff requirement of 40 cc per inch per minute at 40 psi (water test).
- Port diameter exceeds requirements of MSS SP-81 and is equal to SCH 40 pipe through full size range.

Full Range of Operators and Accessories Available

- Handwheel (standard)
- Manual bevel gear (recommended above 24")
- Non-rising stem actuator
- Cable lockout for manual handwheel valves
- Lock-Pin style lockouts for open, closed or both positions
- Air/hydraulic/spring cylinders
- Electric motor operators
- Control accessories
- Extension stems, floorstands, stem guides

General Applications

- Pulp and paper
- Chemical
- Petrochemical
- Power
- Mining
- Waste water

Technical Data

Size range:	2" to 24" 150 psi CWP
	30" and 36" 100 psi CWP at ambient temperature
Testing:	Per MSS SP-81

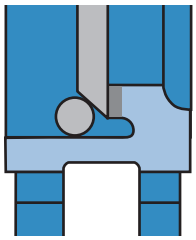
tyco Flow Control

Metal-to-metal Seat

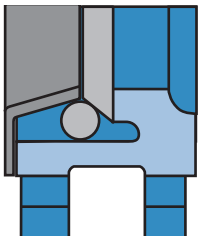
Multiple Gate Guides and Wedges, Beveled Gate
To assure proper closure and seating, the S20 knife gate is provided with multiple top gate guides and bottom seating wedges. The top gate guides direct the gate through its stroke and can help minimize damage to the gate in a reverse flow condition. The bottom seating wedges are positioned to mechanically force the gate toward the seat giving you the best shutoff possible. The S20 gate has a full 45° angled bevel that cuts through solids and assures the position of the gate every time.

Options

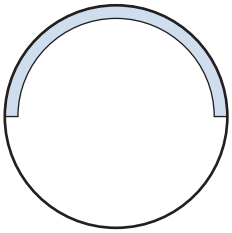
Hard Surface Seat for Abrasive Service
The hardface overlay on the seat surface protects from premature wear and failure.



Deflector Cone
Used on highly abrasive applications where the media passing through can wear the valve seat or cause jamming.

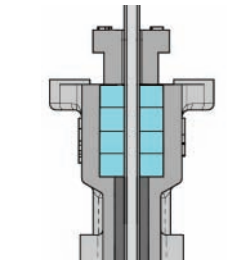


Adapt for Reverse Flow
The 180° backing ring provides support over the top hemisphere of the port. This protects the gate from reverse flow damage.

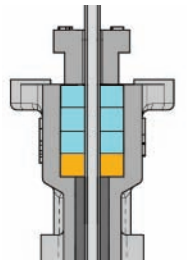


The Rovalve S20 is available with numerous optional packing types and special packing arrangements to help ensure superior performance.

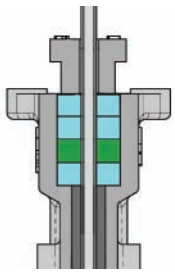
Standard Packing
Is an asbestos free Teflon® impregnated synthetic suitable for services up to 500°F and a pH of 3-11, other packings include pure Teflon® (0-13 pH) and food-grade Teflon® and hi-temperature variations.



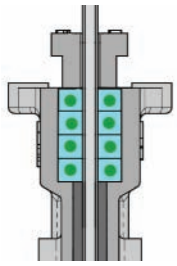
Gate Wiper
In viscous and scaling applications, a gate wiper can be added. Made from various materials, the wiper is fit to scrape the gate and deter solids from entering the packing area



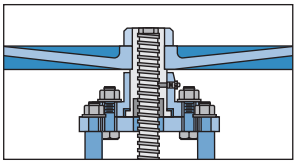
Enhanced Packing
Features Self-Mold SM636, a pliable packing material that forms itself to the interior of the packing box, filling any voids.



Cored Power Packing
Provides superior packing life with fewer adjustments, available in many different configurations.

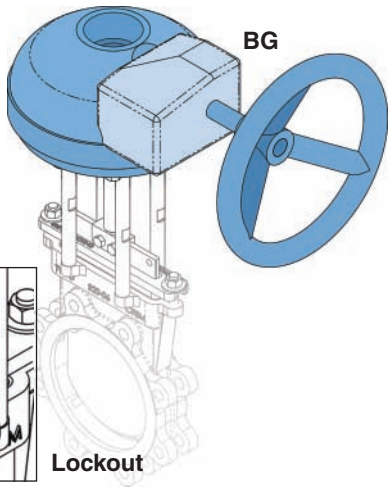


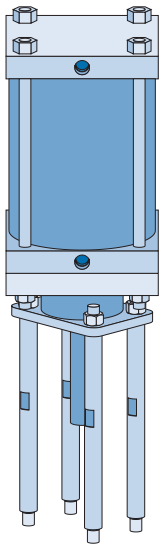
4-Post Yoke with Top-removal Stem Nut



To increase stem nut life and provide for easier maintenance, the new 4-Post Yoke includes a unique top removal encapsulated stem nut assembly. The stem nut is supported on both the top and bottom bearing surfaces, literally surrounded in a blanket of lubrication. Maintenance is simple with the encapsulated stem nut, replacement is easy and quick; remove the handwheel and retaining bolts, pull the retainer free, and then rotate the old stem nut off the stem. There is no need to remove the yoke assembly. Reverse the process to reassemble, and you are back in operation.

The wide stance of the 4-Post Yoke provides excellent support and easy access to the gate bolts. Can be converted to AC or BG in the field; the clean design allows simple adaptation of lockouts and limit switches.

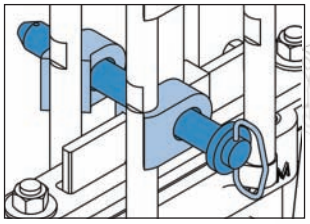




Optional Lockouts

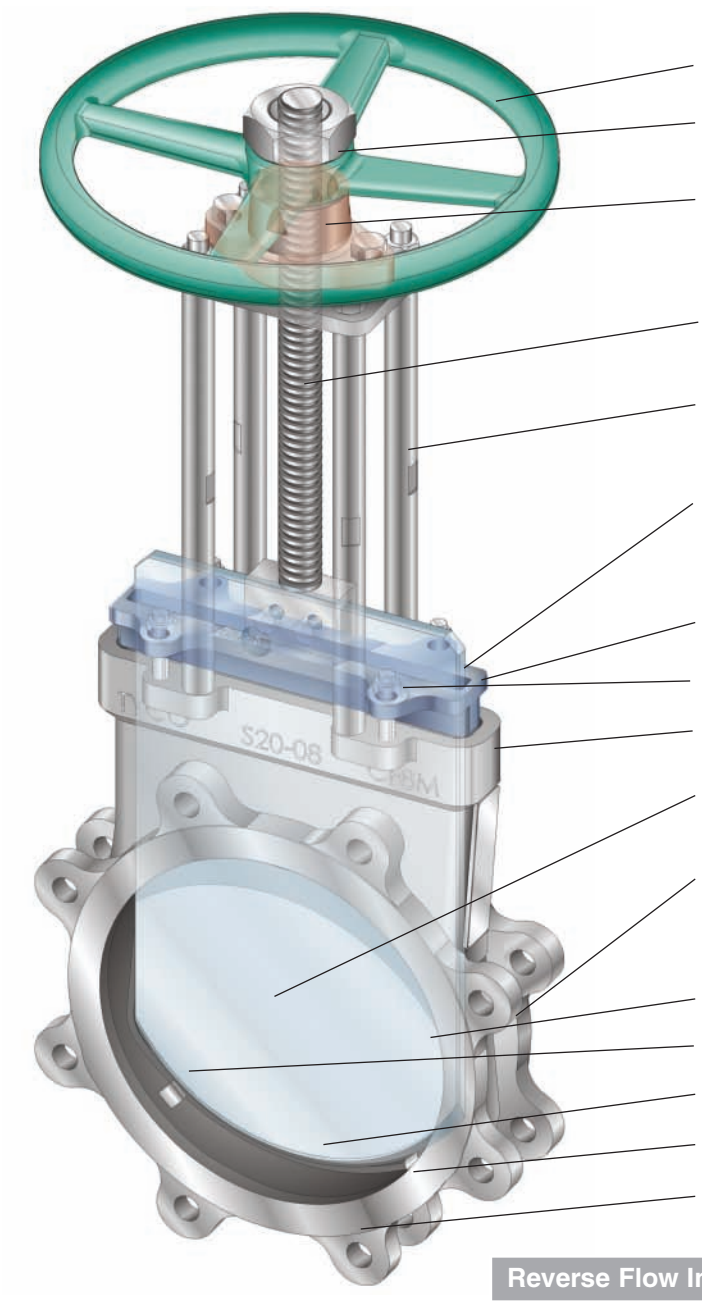
The S20 features several different lockout assembly alternatives:

- Cable lockout for manual handwheel.
- Heavy duty lockout assembly with lockpin for both open and closed positions for MH or AC valves.
- BG Lockout for use on bevel gear actuators.
- Energy lockouts for AC or HC valves.



Lockout

Rovalve Figure S20 Solid Cast Knife Gate Valve
2" to 36"



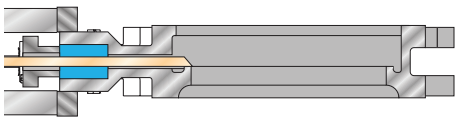
Features

- Handwheel, cast ductile iron
- Self-locking handwheel retaining nut
- Encapsulated, acid-resistant bronze stem nut with superior support for smooth operation. Stem nut is replaceable from the top, without removing the yoke.
- Stem, heavy cross-section 304 stainless steel stem, single-lead Acme threads for ease of operation
- New 4-Post Yoke, available in stainless or carbon steel, can be field modified to bevel gear or air cylinder without welding
- Edge of gate is beveled for longer packing life
- Packing Gland, cast 304, 316, 317 or WCB
- Locknuts used on all bolting
- Packing, multiple rows of AFPL or other packing
- Gate, beveled gate to cut through solids and provide tight uni-directional shutoff
- One-piece, solid cast, 304, 316, 317 or WCB body designed and qualified through FEA analysis to meet the pressure rating and shell test requirements of MSS SP-81
- Full port to Sch 40 pipe through full size range
- Gate guides to assure proper seating
- Seat, Metal-to-metal
- Machined raised gasket faces
- Flanges drilled and tapped to ANSI B16.5/150

Reverse Flow Installation

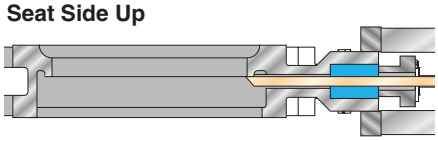
Uni-directional knife gate valves have a preferred direction of shut-off and installation; seat side downstream with the line pressure pushing the gate toward the seat. Even so, in some applications, the reverse may be preferred and has the opportunity to provide enhanced operation. One installation where this can be true is a bin or hopper containing dry solids, with the knife gate installed under the bin in the horizontal position.

Seat Side Down



See the illustrations, in the first view labeled **Seat Side Down**, the solids flow from above, into the inlet port, across the seat and out. With the gate open, the seat area is fully exposed to the media causing potential wear and allowing media to build-up on the seat face. In the closed position, the media sits on top of the gate and can be drawn into the chest when the gate cycles to open.

Seat Side Up



The second illustration, labeled **Seat Side Up**, we have flipped the valve over. In this orientation, the solids flow across the seat first, and out through the valve. The seat area, being protected by the valve body, is not subject to wear or build-up. Additionally, the opportunity for media to pack into the chest is reduced with the gate being wiped by the seat before it is drawn into the chest.

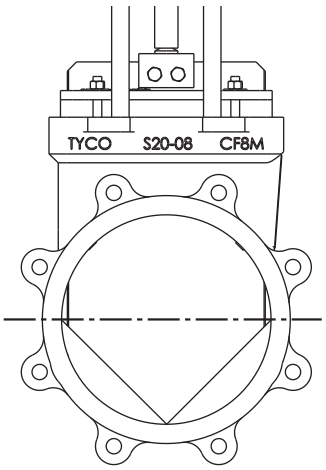
In both cases, the shut-off of the flowing solids is accomplished by the gate crossing the flow path. While shut-off is not as effective when compared to normal directional installation, shut-off may be acceptable in the certain applications when installed in the reverse orientation. Contact Tyco Flow Control for complete details and recommendations on your installation

Specifications

Rovalve Figure S20, 2" to 24"

Bonnetless, knife gate valve, 150 psi design for 150 psi CWP with MSS SP-81 face-to-face, cast [specify material] body and cast [specify material] packing gland. Valve to be provided with [specify material] stainless steel gate with beveled tip to cut through solids and beveled edges to enhance packing life. Seating shall be provided by a machined metal seat for tight shutoff as specified in MSS-SP81 in one direction with gate guides and seating wedges adequate to withstand full reverse pressure without damage with gate in fully closed position. To help deter atmospheric leakage, the valve features an adjustable packing assembly consisting of multiple layers of braided asbestos free Teflon® impregnated synthetic (AFPL*) or equal packing which goes all-around the gate evenly compressed by a one piece packing gland. The valve body to be lug style, drilled and tapped to ANSI B16.5/150 with machined raised gasket faces. It shall be solid cast, one-piece, designed and qualified through FEA analysis to meet the pressure rating and shell test requirements MSS SP-81. Valve is equipped with manual handwheel operator assembly featuring a cast ductile iron handwheel, a 4-post [specify material] yoke with a fully encapsulated acid resistant bronze stem nut which is completely replaceable from the top of the yoke without removing the yoke, including a 304 stainless steel rising stem. All non-stainless exterior surfaces shall be painted to factory standard. Specify Rovalve Figure S20 from Tyco Flow Control.

(See Material Code Chart for specific materials of construction.)



For throttling, the S20 is available with a V-Port option.

Rovalve Figure S20, 30" and 36"

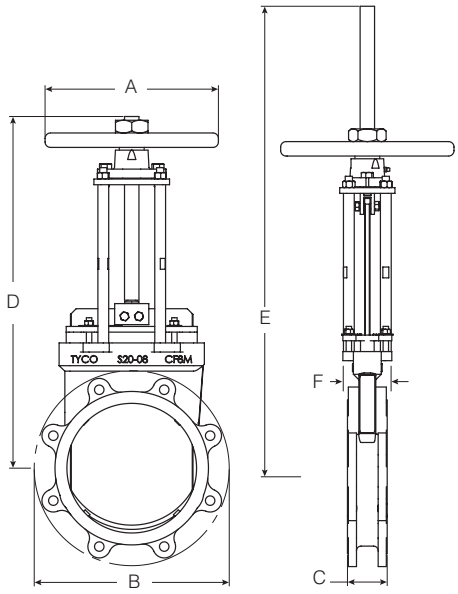
Same as above, 100 psi design for 100 psi CWP, flanges drilled and tapped per MSS SP-44, with manual bevel gear actuator. Specify Rovalve Figure S20 from Tyco Flow Control.

C_V Values

Valve Size (in)	Flow Round Port	Area of Opening	Flow V-Port	Area of Opening
2	214	3.14	157	2.57
3	628	7.07	380	5.78
4	1134	12.57	652	10.28
6	2967	28.91	1423	23.66
8	4855	50.01	2426	40.93
10	7423	78.85	3985	64.53
12	12244	111.91	5815	91.58
14	13555	134.99	6944	110.46
16	15745	176.71	9074	144.61
18	20832	223.68	11145	183.04
20	27142	278.15	14976	227.61
24	38808	402.50	20342	329.37
30	73056	649.18	37097	531.23
36	105650	934.81	51201	764.97

Dimensions and Weights

Valve Size (in)	A	B	C	D	E	F	Wt. (lbs)
2	8	6	1 7/8	12	14 1/4	2 3/4	18
3	8	7 1/2	2	13 3/4	17	2 7/8	22
4	8	9	2	15 1/2	19 3/4	2 7/8	28
6	12	11	2 1/4	20 5/8	26 7/8	3 1/2	53
8	12	13 1/2	2 3/4	24 3/8	32 5/8	3 5/8	72
10	16	16	2 3/4	28 3/4	39	4 1/2	109
12	16	19	3	32 1/4	44 1/2	4 1/2	146
14	20	21	3	35 1/2	49	8	225
16	20	23 1/2	3 1/2	38 7/8	54 1/4	5 3/4	288
18	20	25	3 1/2	43	60 3/8	10	356
20	20	27 1/2	4 1/2	47	66 1/2	11 3/8	488
24	20	32	4 1/2	54 1/2	77 3/4	15 5/8	723
30	18	38 3/4	4 5/8	74 3/8	95 1/4	18	1303
36	18	46	4 5/8	87 3/4	113 7/8	12	1842



Notes:

1. Area is in square inches, flow is in GPM of water at 1 psi pressure drop.
2. Dimensions and other information are not certified and subject to change. Contact your sales representative for certified dimensions.
3 Bevel gear actuator recommended for 30" and 36" S20, envelope dimensions assume BG.

Code of Material

Part	A	B	C	D	F	K
Seat	304	316	304	316	WCB	317
Cast body	Cast 304	Cast 316	Cast 304	Cast 316	WCB	Cast 317
Gate	304	316	304	316	304	317L
Stem	304	304	304	304	304	304
Packing gland	Cast WCB	Cast WCB	Cast 304	Cast 316	Cast WCB	Cast 317
Packing	AFPL	AFPL	AFPL	AFPL	AFPL	AFPL
Bolting	Plated steel	Plated steel	304	304	Plated steel	304
Yoke	Carbon steel	Carbon steel	304	304	Carbon steel	304
Handwheel	Cast ductile	Cast ductile	Cast ductile	Cast ductile	Cast ductile	Cast ductile

AFPL is an asbestos-free, Teflon® impregnated synthetic packing suitable for services up to 500°F and a pH of 3-11; other packings are available.

Note: Cast materials are as follows:
304 SS = CF8
316 SS = CF8M
317 SS = CG8M