

# Knife Gate Valve Designs, Applications and Installations

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A solid orange horizontal bar spanning the width of the slide at the bottom.

# Why use a knife gate valve?

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Simply need isolation

Solids particulates in the media

Compact face to face

Cost effective for high alloys

Low head loss

# Knife Gate Standards

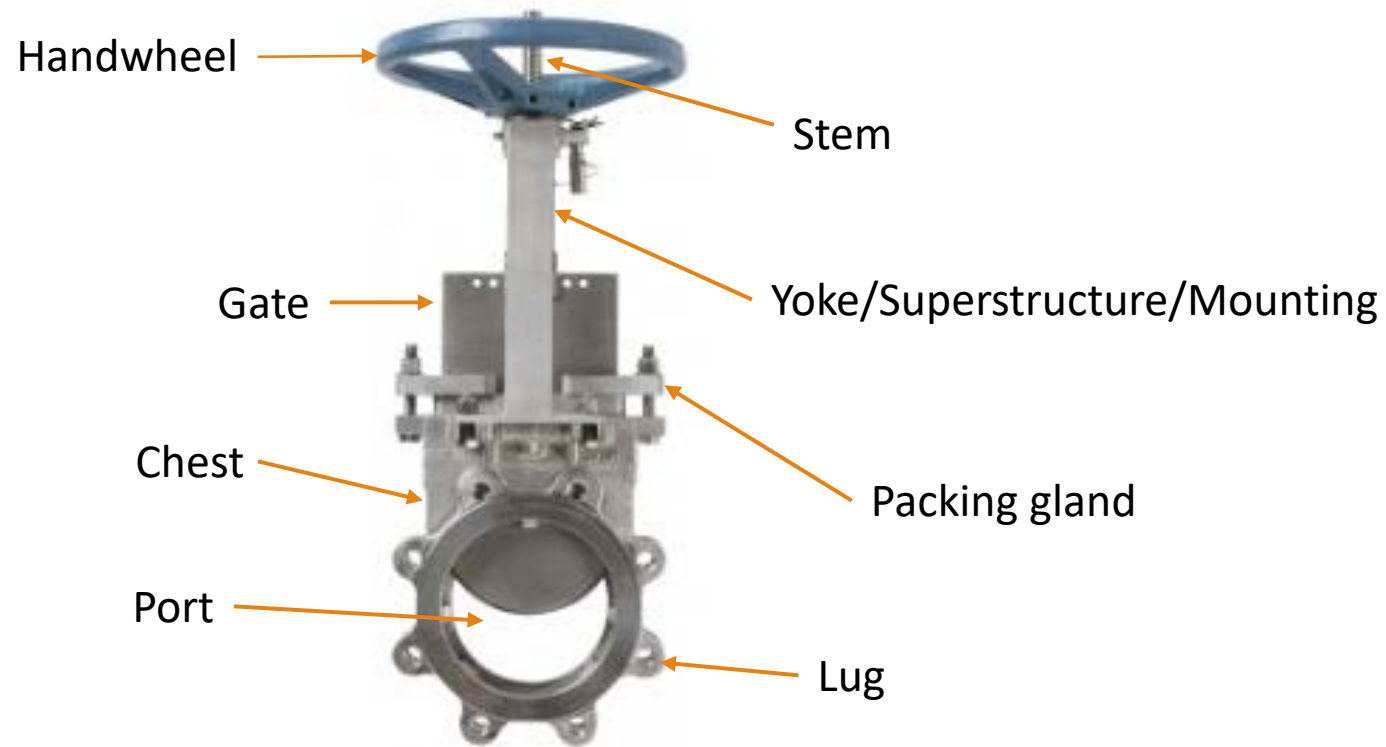
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**MSS-SP-81** = Standard Practice covers all stainless-steel or stainless-steel-lined, cast, or fabricated bonnetless, knife gate valves with flanged ends from size NPS 2 (DN 50) through NPS 36 (DN 900)

**MSS-SP-151**= This Standard Practice establishes requirements and acceptance criteria for shell and seat closure pressure testing of resilient, non-metallic (e.g. ceramic), and metal-to-metal seated knife gate valves of all types.

# Knife Gate Part Terminology

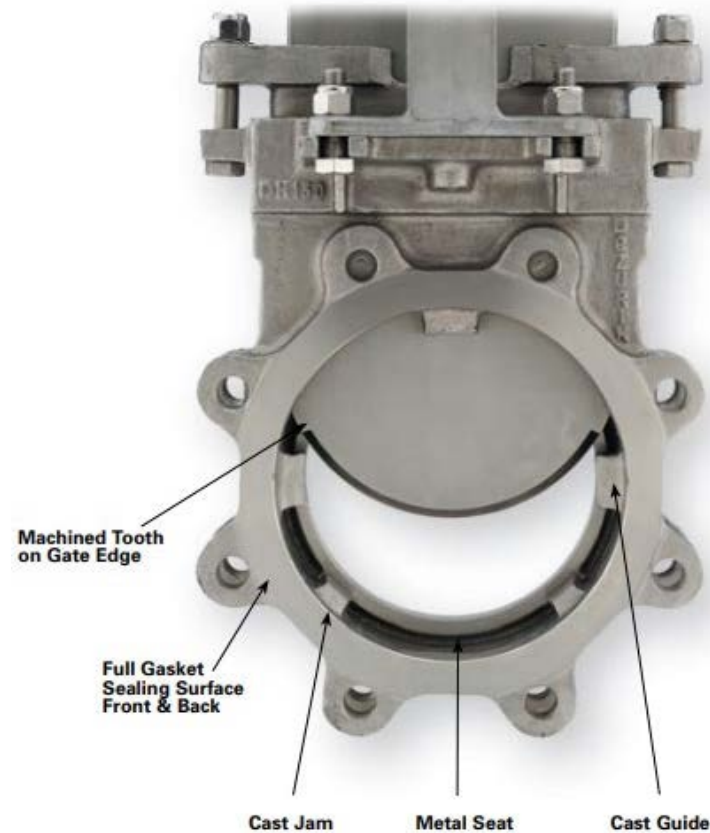
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# Knife Gate Designs

## Unidirectional

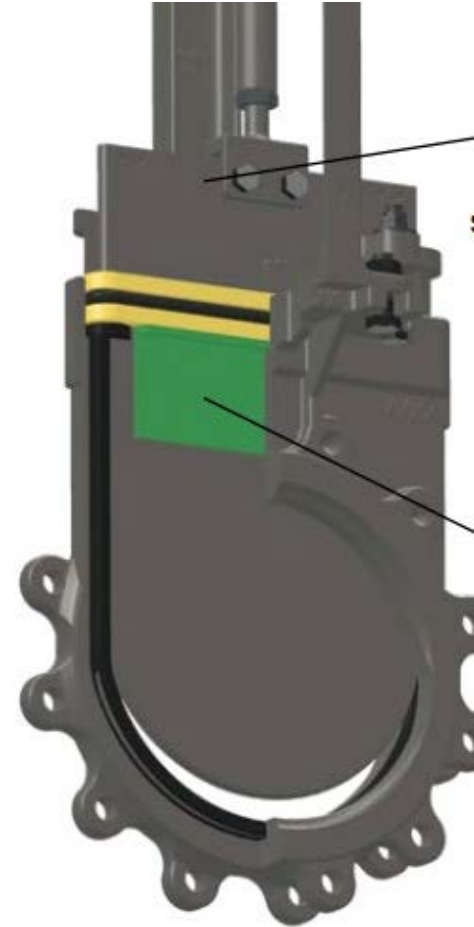
- Metal or resilient seated
- Pressure assisted sealing
- Jams assist in sealing
- Potential guides for gate



# Knife Gate Designs

## Bidirectional

- Resilient seated
- Actuator force sealing
- Normally not used on dry media



# Knife Gate Designs

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## Urethane Lined

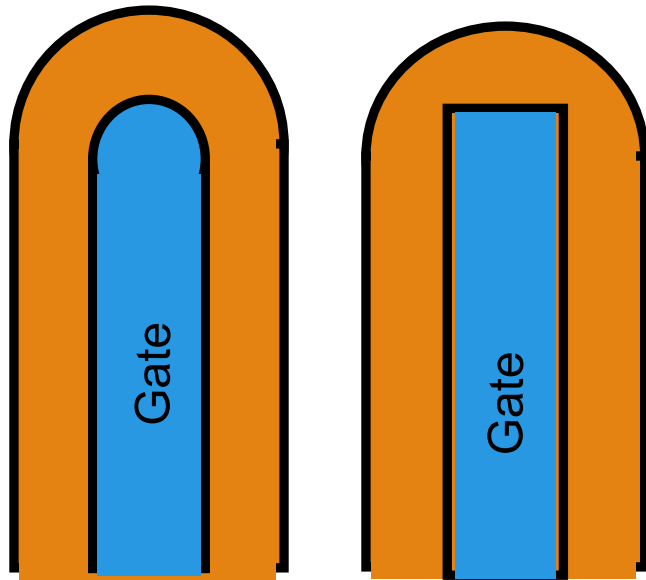
- Bidirectional
- Urethane should line entire valve
- Good for abrasive applications
- Multiple urethanes for different chemicals



# Packing Design

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- Gate edge to match packing chamber profile
  - Reduces pinch point of packing
  - Improves packing life



- Machined/Smooth packing chamber for uniform sealing of packing
- Anti-extrusion piece and energizing ring improve packing performance



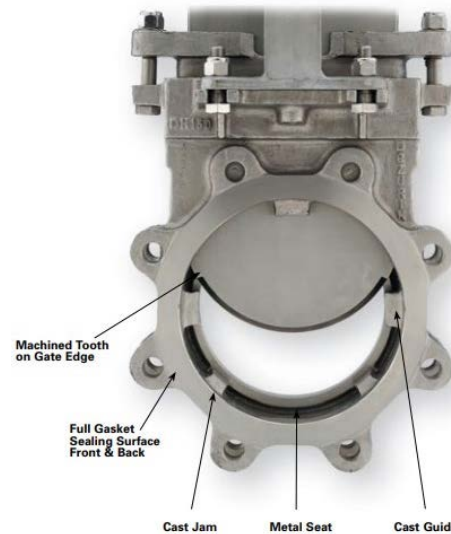


# Knife Gate Applications

## Pulp and Paper

- Pump isolation
- 3-4% Pulp stock
- Tight shut off not necessary

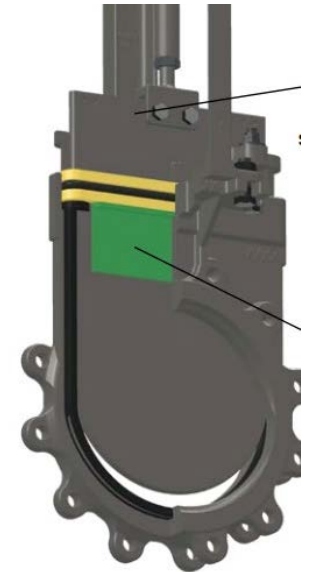
Metal Seated  
Unidirectional



Resilient Seated  
Unidirectional



Resilient Seated  
Bidirectional



# Knife Gate Applications

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Liquid slurry and pneumatically conveyed dry material

- Pump isolation
- Hopper bottom isolation
- Drip tight or air tight seal is key

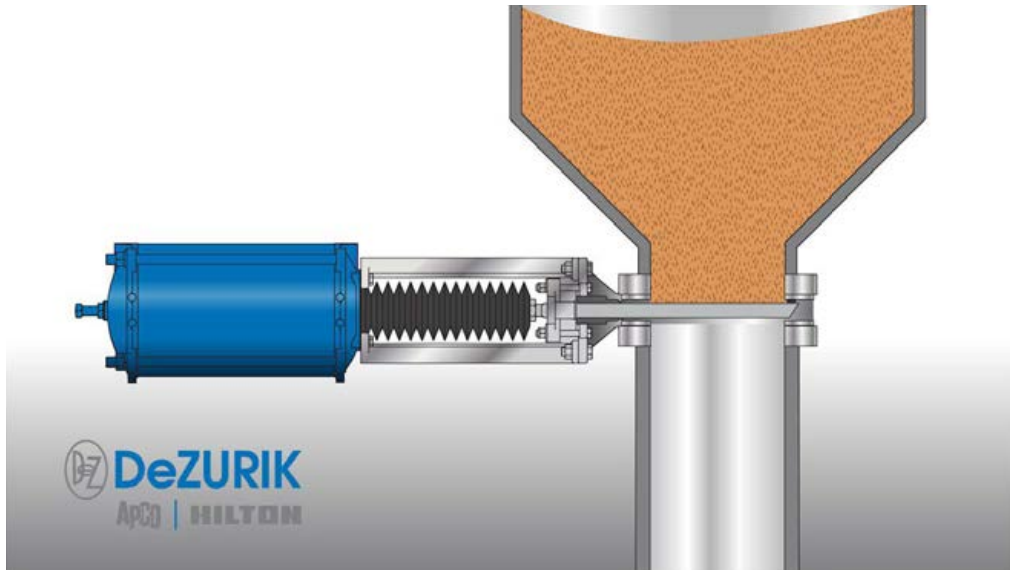


# Knife Gate Applications

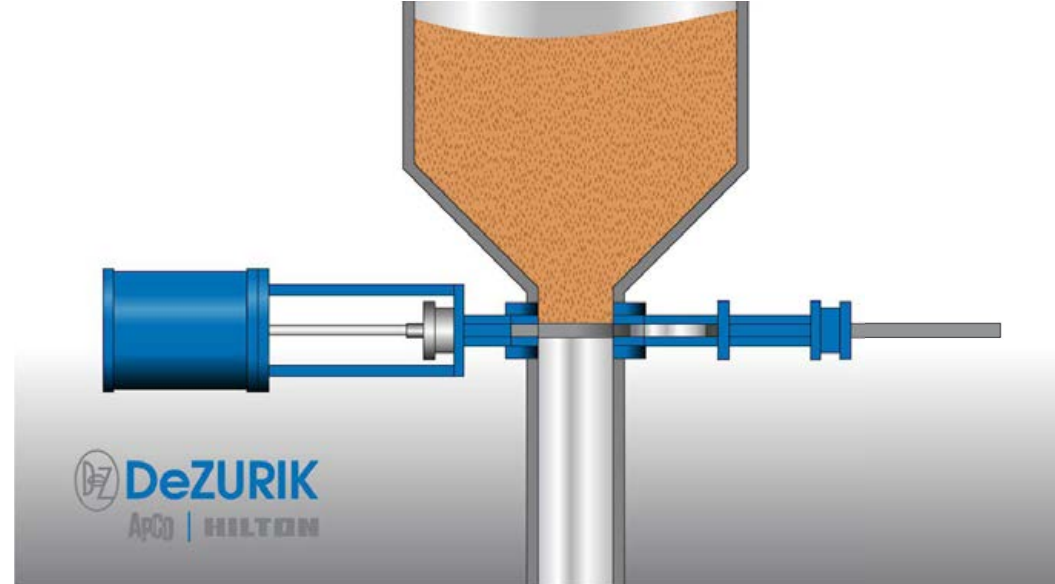
Dry material gravity flow

- Material shutoff required

If non-standing static column  
standard knife gate can be used  
installed **SEAT UP**.



If static standing column o-port  
gate should be used.



## DeZURIK

### Valve Requirements

Size	Quantity	Delivery Date Required		
<b>Mating Flanges</b>	<b>Face to Face</b>	<b>Shut Off</b>	<b>Valve used for</b>	<b>Operation</b>
AS 2129 C,D,E	MSS SP 81	MSS SP 81	On/Off Isolation	Hand wheel
ANSI B16.5 #150	MSS SP 135	Class III	Throttling	Bevel Gear
ANSI B16.5 #300	ANSI B16.1	Class IV	Divert	Air Cylinder
DIN 10 or 16	Slurry Valve Long	Class V	Hot Tap	Hydraulic Cylinder
PN 10 or 16	Slurry Valve Short	Vacuum	Other	Electric Motor
Flat Face	Other	Bubble Tight		Other
Other		Other		

Please explain Others from above:

Please upload a photo from below:

**Other Media Considerations:**

Max. CW/P	Max Delta P
Max. Temp.	Min. Temp
% Solids	One Way Flow
Two Way Flow	Min Flow
Max. Flow	Norm Flow
Velocity	Viscosity
GPM	SCFM

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**Chemical make up of media:**

Media: (As completely as possible, describe the inherent conditions of the materials) that the valve will see. Include percentages of solids, particle size, consistency, is media sticky, hard, subject to caking etc.)

## Number of cycles per:

	Will the valve be required to close through a static column of material?	
	Yes	No
Valve normally	Open	Closed

## Temperature

Are maximum temperature conditions	Constant	Fluctuating	Spikes
Duration of spike			

	Year		Month		Maximum
	Week		Day		Minimum
	Hour		Minute		

### Current & Previous Products Used

What product is currently installed in this application? Others used?

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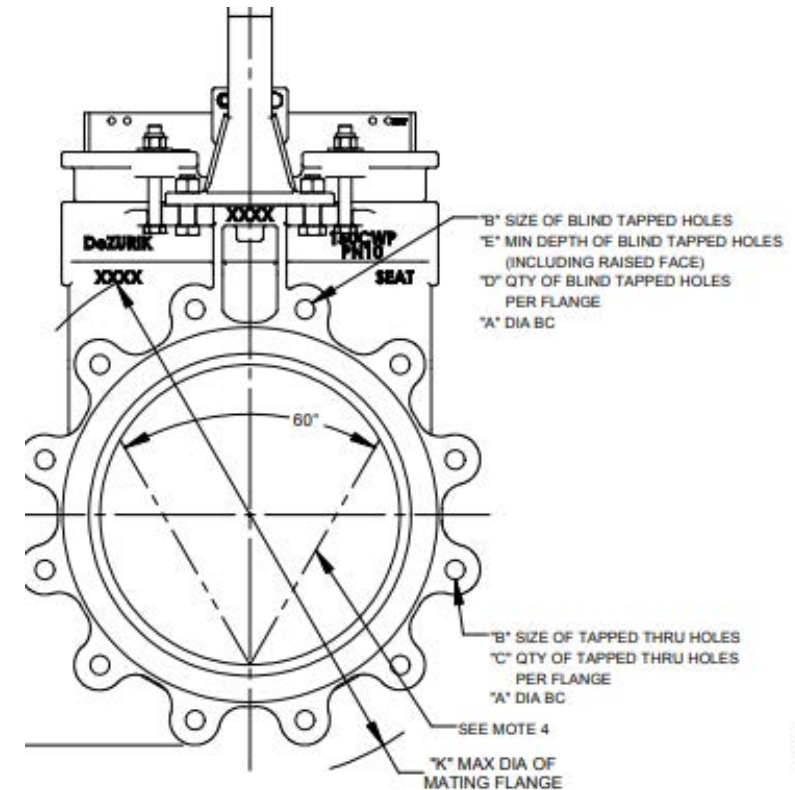
Describe the biggest problem you have with your present application

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Name	
Company	
Site/Industry	
Address	
City	
State / Post Code	
Phone	
Email	

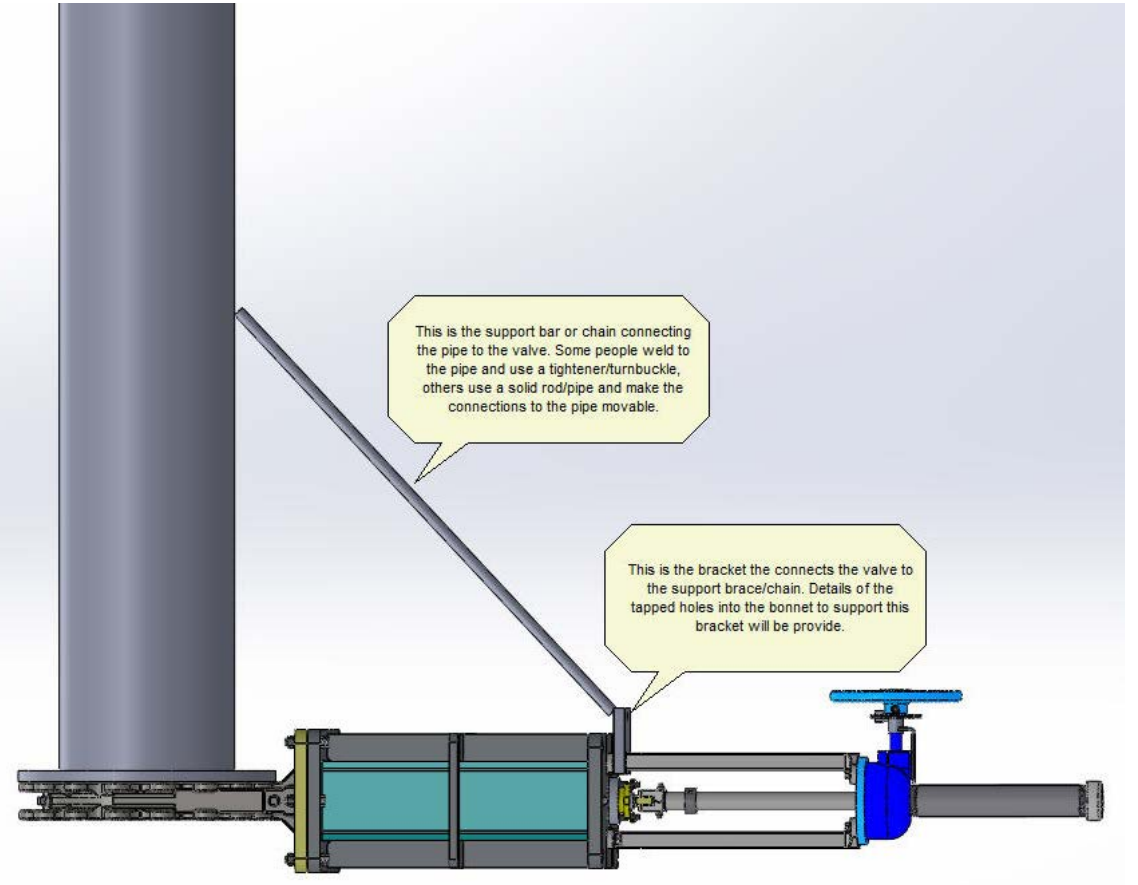
# Knife Gate Installations

- Confirm bolt/stud length for valve
- Confirm correct bolt torque when installing valve in pipeline



# Knife Gate Installations

- If valve is more than one bolt hole from vertical actuator supports are recommended.



# Any Questions?

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