

**CENTER LINE**  
*RS*

**brands you trust.**



**CENTER LINE® Series RS Butterfly Valves**  
**ASME/Imperial**

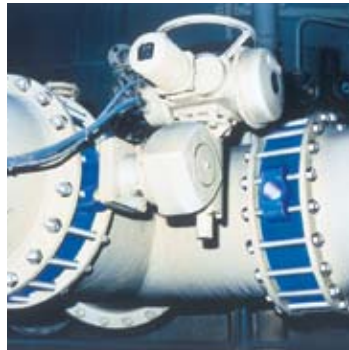
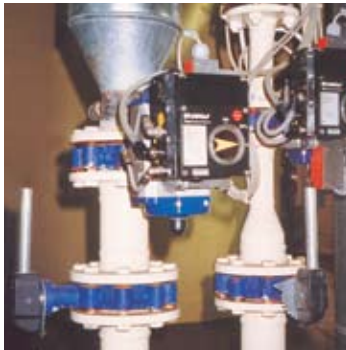
**CRANE**

Energy Flow Solutions

[www.craneenergy.com](http://www.craneenergy.com)

## Key Features

**A resilient seated butterfly valve with superior design features and materials of construction to provide repeatable tight shutoff in severe abrasive and corrosive environments for a variety of applications.**



## Key Features

- 1 Replaceable cartridge seat design with solid backup ring
- 2 Only 2 wetted parts, disc and seat, with no exposed metal-to-metal contact points, for maximum corrosion resistance
- 3 Self-centering disc with smooth finish and spherical edge reduces wear and resists corrosion and abrasion

## Overview & Applications



### Overview

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|                      |   |
|----------------------|---|
| <b>Size:</b>         | 1½" - 56"   |
| <b>Class:</b>        | ASME 150  |
| <b>Temperature:</b>  | 14° to +300°F   |
| <b>Face to Face:</b> | All short pattern                                       |
| <b>Body Types:</b>   | Wafer with Centering Lugs<br>Wafer<br>Lugged<br>Flanged |

### Applications

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Power – Flue Gas Desulfurization, water and chemical isolation  
 Sugar – juice slurry, water, syrup, lime, melt water, and finish product isolations  
 Vacuum Systems – vacuum isolations  
 Chemical – water systems, reliability requirements  
 Oven OEMs  
 Cleaning machine OEMs – used by automobile manufacturers  
 Steel – cooling water applications

## Design Features

### Design Features

#### Corrosion resistance

With Center Line® Series RS Butterfly Valves only two parts of the valve come in contact with the medium. This means that neither the body nor mechanical parts such as the shaft are exposed to the corrosive environment.

The only two parts in contact with the medium are the body lining and the disc. These are available in a selection of materials so that a suitable corrosion resistant combination can be chosen for most any application.

#### Bi-directional shutoff

Center Line® Butterfly Valves are liquid and gas-tight in both flow directions. The disc presses with uniform compression into the elastic cartridge seat over the entire circumference of the valve.

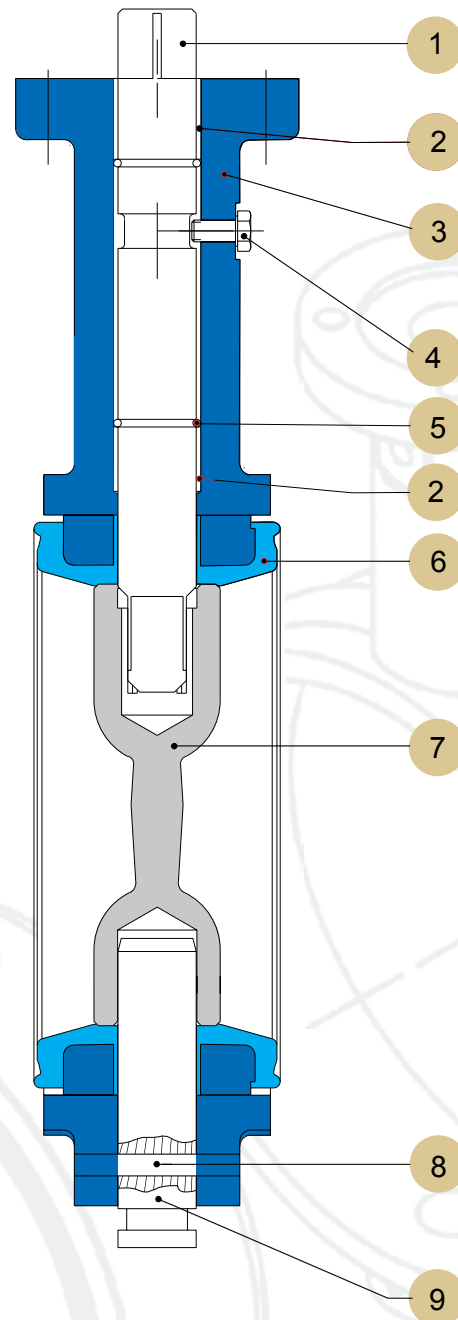
#### Replaceable cartridge seat

The replaceable seat consists of a reinforced back-up ring, on which the elastomer seat material is vulcanized. When mounting the valve between the pipe flanges this stable seat cannot be deformed or displaced. The cartridge design also prevents deformation when the valve is cycled, such as stretching and bulging of the elastomer in front of the moving disc.

The fixed connection between elastomer and back-up ring allows the use of the valve in full vacuum and high flow velocities. The slightly protruding sealing lip of the seat also serves as the flange seal.

#### Square disc/shaft connection

Eliminates the need for pins allowing axial movement and self-centering of the disc. This eliminates excess wear and stress of the elastomer seat.



- |   |                      |
|---|----------------------|
| 1 | Shaft                |
| 2 | Bushing              |
| 3 | Body                 |
| 4 | Stem Retainer        |
| 5 | Round Wire Snap Ring |
| 6 | Cartridge Seat       |
| 7 | Disc                 |
| 8 | Lower Stem Pin       |
| 9 | Lower Stem           |

## Design Features



### **Blow-out proof shaft**

All Center Line® Series RS Butterfly Valves feature a lock at the valve neck to prevent shaft blow-out.

### **Actuator mounting**

All Center Line® Series RS Butterfly Valves feature an ISO 5211 top flange for simple mounting of hand lever, gear, pneumatic or other actuators. A conversion – even during operation – from manual to automatic actuator and reverse is possible without any difficulties.

### **Actuator adaptation**

Center Line® Series RS Butterfly Valves are available for 3 operating pressures – 51 psi, 145 psi and 232 psi. The actuator size can be selected individually against the pipeline pressure available, so smaller actuators can be utilized when torque requirements are low.



### **Maintenance-free operation**

The shafts of the Center Line® Series RS Butterfly Valves are mounted in self-lubricating DU® bearings eliminating the need for maintenance even after a long operating period.

## Models Available

### Models Available

With the proven modular system, Center Line<sup>®</sup> Series RS Butterfly Valves can be directly equipped with a variety of actuators. Available ex stock, various manual or automatic actuators can be fitted and assembled quickly to meet your needs. A number of accessories are available.



**Wafer body**

1½" - 24"  
ASME 150



**Lug-type body**

1½" - 24"  
ASME 150

**Standards & Certificates**



**Flange body**

28" - 56"  
ASME B16.47 - Type A

Design: EN 593  
API 609  
MSS-SP67

Face-To-Face Dimension: EN 558-1, Series 20  
ISO 5752-short, Series 20  
API 609  
MSS-SP67

Top Flange: ISO 5211

Flange Connection: EN 1092-1  
EN 1759-1  
ASME B16.5, Class 150  
ASME B16.47 - Type A

Testing: EN 12266  
API 598

Marking: EN 19  
MSS SP-25  
PED 97/23 EC

Quality Assurance: ISO 9001

Approvals: DVGW - Gas  
Leybold Systems Vacuumtest  
PED 97/23 EC  
Canadian Registration Number (CRN)  
FDA  
GOST

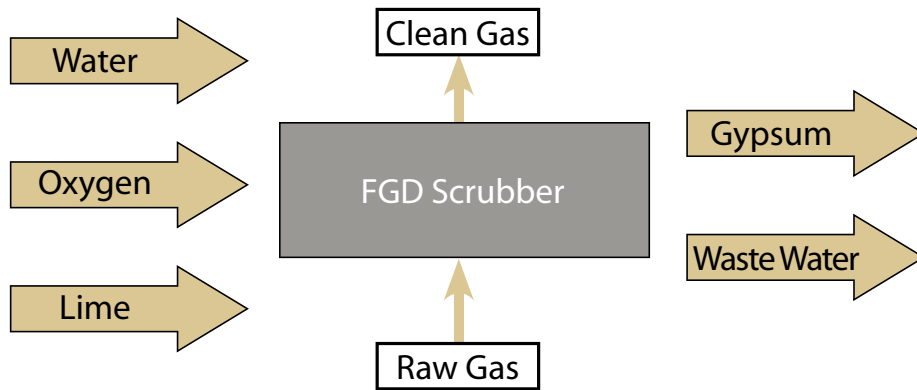


# Overview of Flue Gas Desulfurization

## What is Flue Gas Desulfurization (FGD)?

Flue Gas Desulfurization is the removal of sulfur oxides, produced during the burning of fossil fuel, from atmospheric emissions.

One of these oxides is Sulfur dioxide (SO<sub>2</sub>) which causes pollution and acid rain. Sulfur oxides also have detrimental effects on humans, soil, plants, and building materials.



## What Type of Environment Must These Valves Withstand?



The clean installation of Center Line® RS valves.

- 1 Highly Corrosive**  
 High chloride content (up to 70,000 ppm)  
 Low pH: 2 – 6  
 Fluorides present: 0 – 500ppm  
 Elevated temperatures: 113 - 162°F
- 2 Highly Abrasive**  
 High concentration of solid particles: up to 50% Calcium Hydroxide  
 Elevated velocity: 7.5 – 11.5 ft/s  
 Elevated pressure: 29 – 116 psi
- 3 The most severe conditions in FGD service are too corrosive for high alloys like Hastalloy® and Super Duplex, but Center Line RS® offers a solution with Hostalen® GUR® coated discs**  
 Temperatures up to 176°F  
 pH as low as 0  
 Chloride up to 70,000 ppm  
 Flouride up to 500 ppm

**Center Line RS valves in FGD Slurry Isolation Service:**

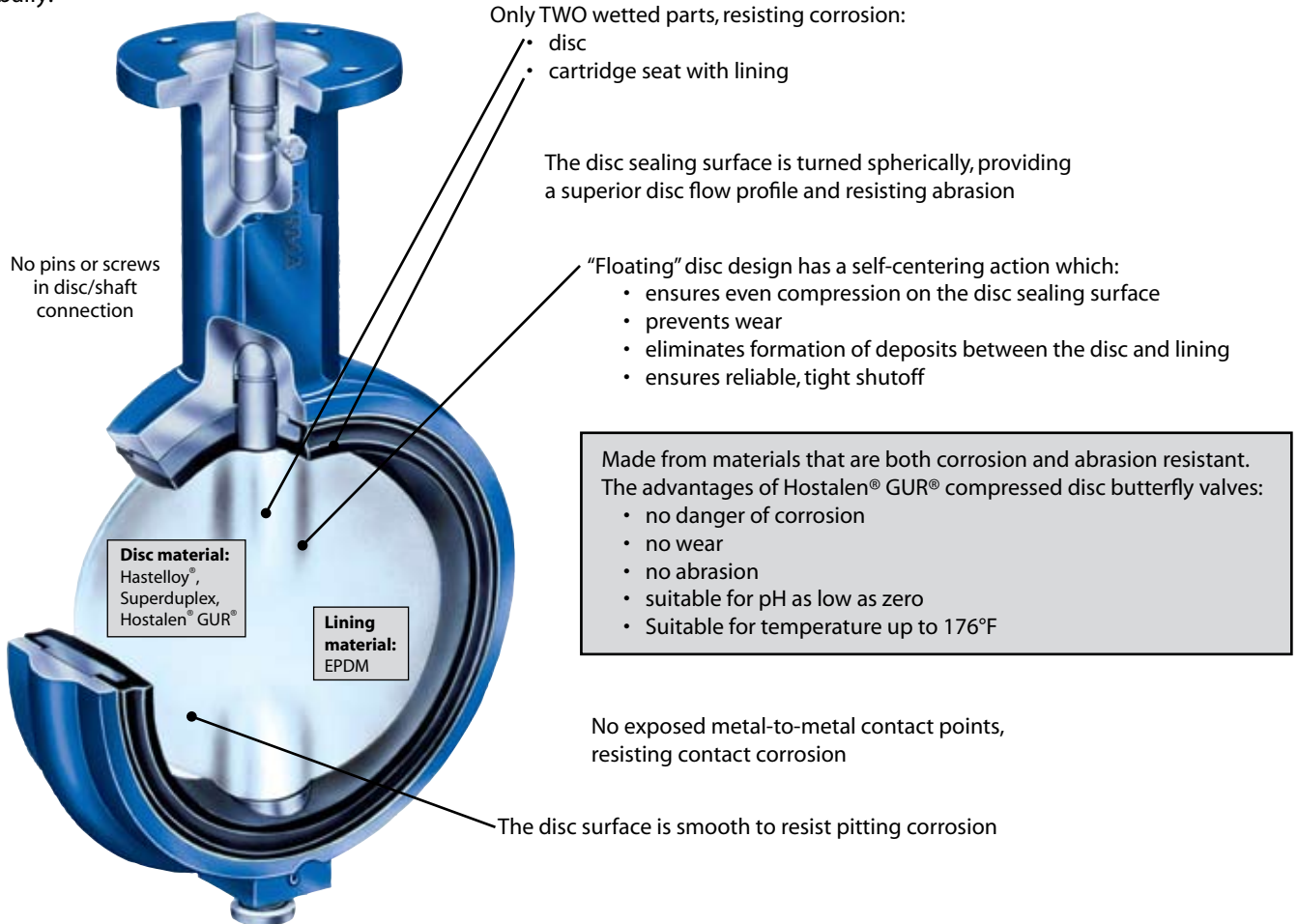
- Corrosion Resistant
- Abrasion Resistant
- Provide reliable, tight shutoff



# Benefits of Center Line<sup>®</sup> RS in Flue Gas Desulfurization

## Center Line<sup>®</sup> RS Key Design Features and Materials for FGD

The design and material selection of the Center Line<sup>®</sup> RS valve ensures CRANE<sup>®</sup> can meet any wet FGD slurry isolation valve application. Material selection is the result of 30 years of research and experience, with installations in over 130 FGD systems globally!



## Disadvantages of Knifegates Versus Butterfly Valves

- Unreliable shutoff
- Increased corrosion
- Slurry media can stick at the base of the valve body
- Need for splash containment to drain accumulated solids that may prevent full gate closure
- Much heavier than butterfly
- Handwheel operated valves require 80+ turns to stroke

Hastelloy<sup>®</sup> is a registered trademark of Haynes International, Inc.  
 Hostalen<sup>®</sup> is a registered trademark of Hoechst.  
 GUR<sup>®</sup> is a registered trademark of Ticona/Celanese.



Center Line<sup>®</sup> RS Butterfly Valves

## The Benefits of Center Line<sup>®</sup> RS in Sugar Applications

### The Benefits of Center Line<sup>®</sup> RS in Sugar Applications

- Suitable for full-vacuum conditions as required in the evaporator and the crystallization process
- Materials selection and design enables long-term, leak-tight shutoff in corrosive and abrasive services
- Long life time reduces plant services and cost for inspection and repair
- Field experience in more than 150 sugar plants globally



Center Line<sup>®</sup> RS installed in a juice purification system



Center Line<sup>®</sup> RS installed in a thin juice station

| Area              | Installation/Product      | Center Line <sup>®</sup> RS |                           |
|-------------------|---------------------------|-----------------------------|---------------------------|
|                   |                           | Manual                      | REVO <sup>®</sup> Control |
| Juice Extraction  | Cleaning                  | ■                           | ■                         |
|                   | Beet Slicer               | ■                           |                           |
|                   | Extraction Tower          | ■                           | ■                         |
|                   | Cosette drying            | ■                           | ■                         |
|                   | Conveyance of Raw Juice   | ■                           | ■                         |
| Juice Cleaning    | Lime Milk Tower           | ■                           | ■                         |
|                   | Pre / Main Limer          | ■                           | ■                         |
|                   | Carbonation               | ■                           | ■                         |
|                   | Filtration                | ■                           | ■                         |
|                   | Filter Press              | ■                           | ■                         |
|                   | Conveyance of Thin Juice  | ■                           | ■                         |
| Juice Evaporation | Heat Exchanger            | ■                           | ■                         |
|                   | Evaporator                | ■                           | ■                         |
|                   | Thick Juice Filter        |                             | ■                         |
|                   | Conveyance of Thick Juice |                             | ■                         |
| Crystallization   | Vacum Pan                 | ■                           | ■                         |
|                   | Centrifuge                | ■                           | ■                         |
|                   | Sugar cooling and drying  | ■                           | ■                         |
| Auxiliaries       | Power Station             | ■                           | ■                         |
|                   | Pump Station              | ■                           | ■                         |
|                   | Water Treatment           | ■                           | ■                         |
|                   | Air Supply                | ■                           | ■                         |
|                   | Dosing stations           | ■                           | ■                         |
|                   | Demineralization          | ■                           | ■                         |

## Other Specialty Applications

### Vacuum Coating Systems

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- Solar Cells
- Concentrated Solar Power
- Photovoltaics



### Industrial Cleaning and Filtration Processes

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- Cylinder Blocks
- Gears
- Turned and Milled Parts
- Solar Power

### Industrial Heat Treatment Processes

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- Steel, Copper and Aluminum Industries
- Annealing Processes in Automotive and Mechanical Engineering Industry



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NUCLEAR

VALVE SERVICES

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