



Thank You for Attending Our July Webinar

Tips for Improving Control Accuracy and Regulator Efficiency



Your Host

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Featured Speaker

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Richards Industrials

JORDAN VALVE

SLIDING GATE

INTRODUCTION TO THE SLIDING GATE

(AN ALTERNATIVE TO TRADITIONAL TRIM
DESIGNS)

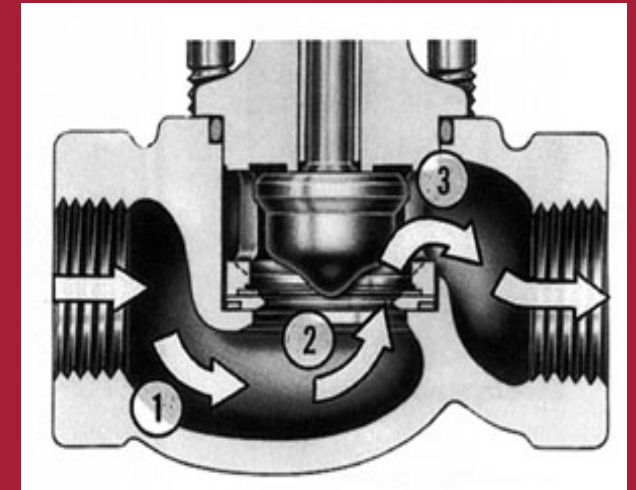
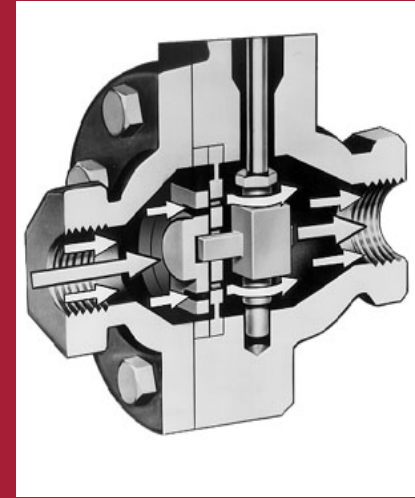
THE SLIDING GATE

- Design
- Materials
- Performance



SLIDING GATE

- An alternative to traditional trim designs
- Available in PRV, BPRV, Temperature Regulators & Control Valves
- Excellent performance in steam, air, lube oil, industrial gasses, water and many other applications



SLIDING GATE SEAT DESIGN

THREE BASIC DESIGNS

- Full Body – smaller sizes
- Full Body – larger sizes, high flow version (i.e. MK701)
- Wafer – all sizes



SEAT DESIGN

DISC

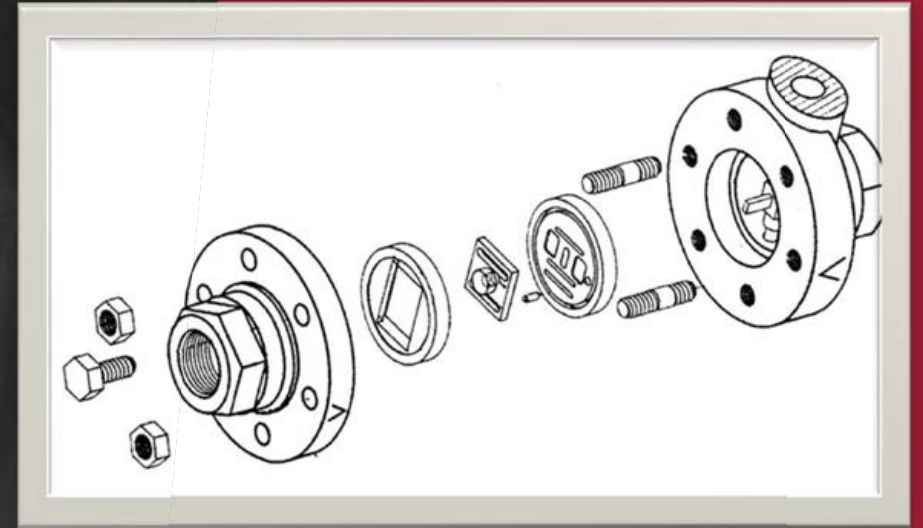
- Moving component
- Coating applied

PLATE

- Stationary component
- External seal
- Cv, Characteristic
- Precision ground, chrome plated

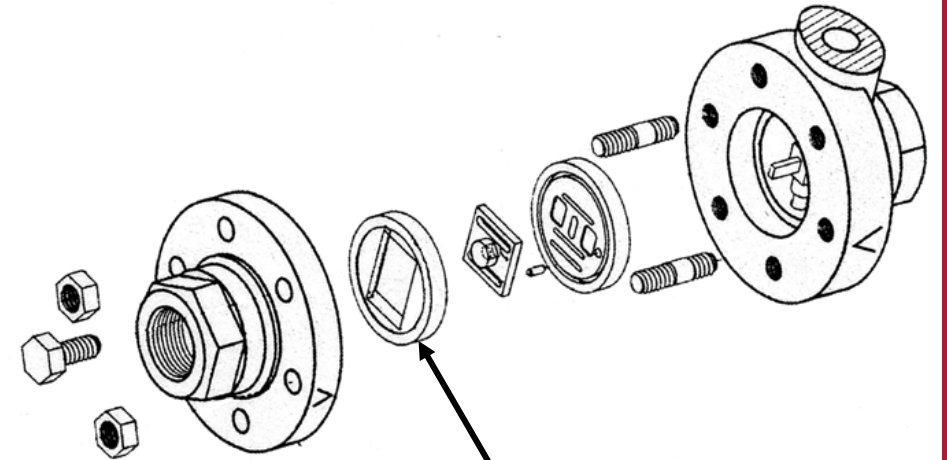
GUIDE

- Guides disc on vertical axis
- Maintains disc proximity to plate



DISC GUIDE

Guides the disc on a vertical axis while providing a seal between the plate and valve body cap



Disc Guide

VALVE DISC

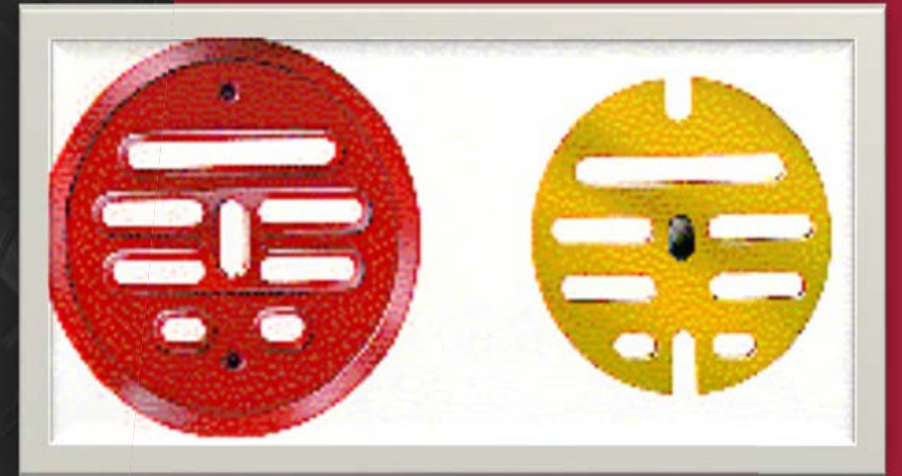
MOVING SEAT COMPONENT

Number, size, and shape of the orifices can be varied depending on C_v , valve size, and flow characteristic



VALVE PLATE

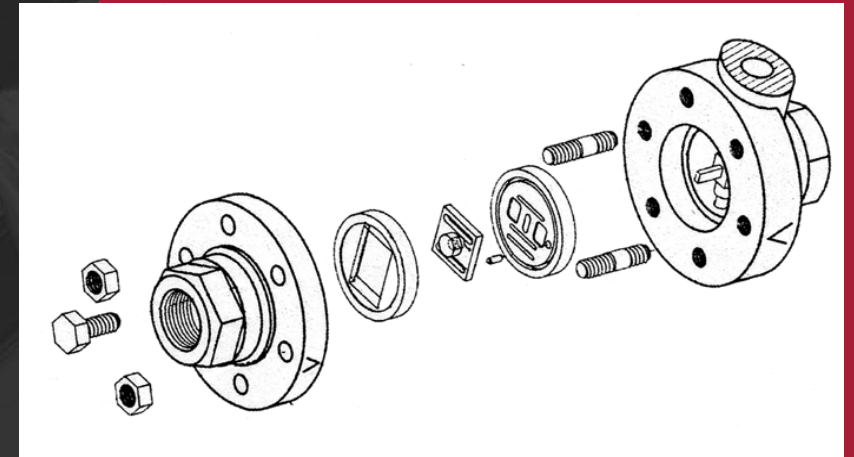
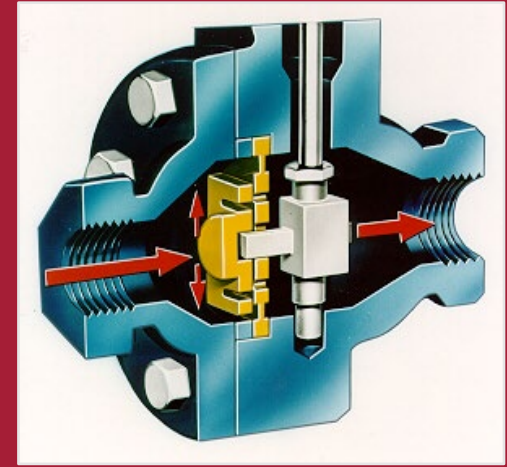
- Fixed member of seat set
- Undercut areas reduce friction, equalize pressure, and allow easy movement of disc
- Hard chrome plating applied to 303SS & 316SS for hardness exceeding Stellite
- Precision ground and lapped to resist galling by reducing friction



SLIDING GATE DESIGN

FULL BODY $\leq 2''$

- Disc guide seals with cap, holds disc to plate
- Valve stem through plate to move
- Rectangular disc



SLIDING GATE DESIGN

FULL BODY $\geq 2"$

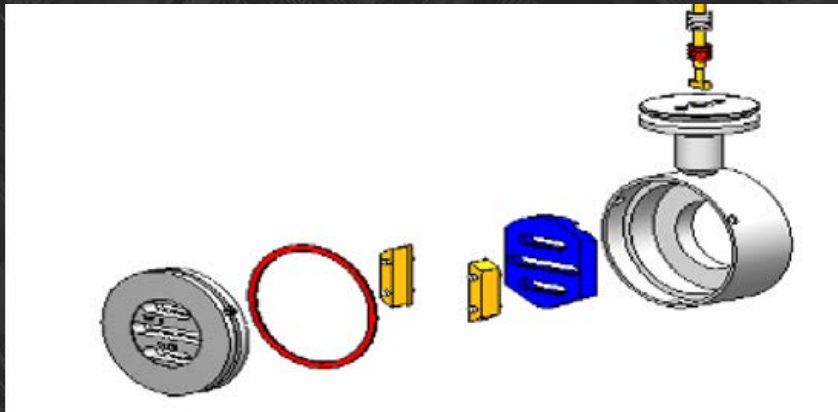
- Disc slots for guide pins
- Stem through plate to move disc
- Pressure ring or spring to disc to plate



SLIDING GATE DESIGN

WAFER – ALL SIZES

- Guides on side of disc
- Stem connects on top of disc
- Plate is outlet



SEAT MATERIALS



- 303 or 316SST
- JORCOTE (Current standard).
Extremely hard; low coefficient of friction
- Teflon coated (required for O2 service)

SLIDING GATE SEAT MATERIALS

JORCOTE ADVANTAGE

- 3 times harder than stainless – provides excellent wear, erosion & galling resistance
- Lower coefficient of friction than Teflon – gives higher pressure drop capability and less offset
- Longer lasting seats – lab tested to 1,000,000 cycles in 70 psi steam – still maintained Class IV leakage and displayed negligible wear/friction
- Operation from sub-zero to 550°F (288°C)
- Standard seat material

SLIDING GATE SEAT MATERIALS

- Teflon available for special circumstances
- For alloy trim materials (monel, inconel, etc) either Teflon or Jorcote will be used

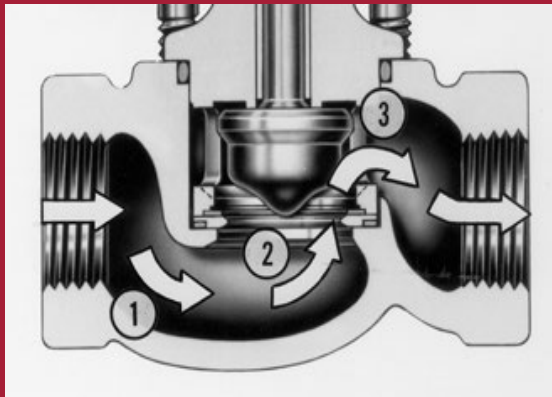
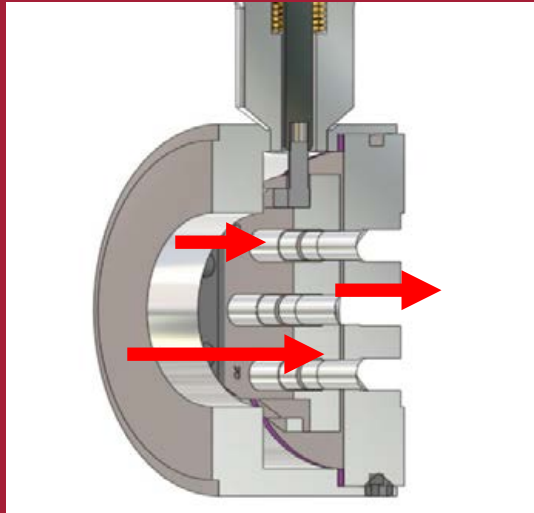
SLIDING GATE PERFORMANCE

- Straight thru flow
- Short stroke
- Multiple orifice design
- Constant contact in seats
- Disc/Plate overlap
- Easy maintenance
- Seat materials
- Class IV metal to metal seals
- All of these features mean less offset (greater accuracy) than other style regulators

SLIDING GATE PERFORMANCE

STRAIGHT THROUGH FLOW

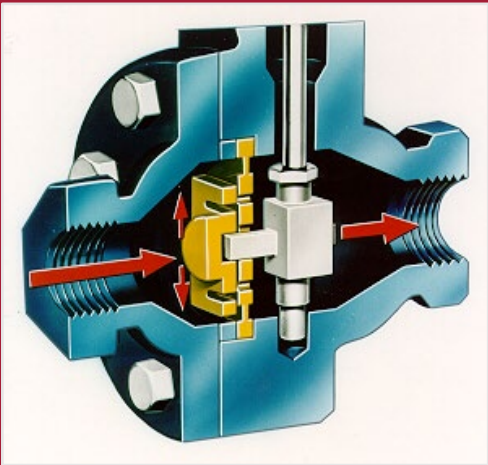
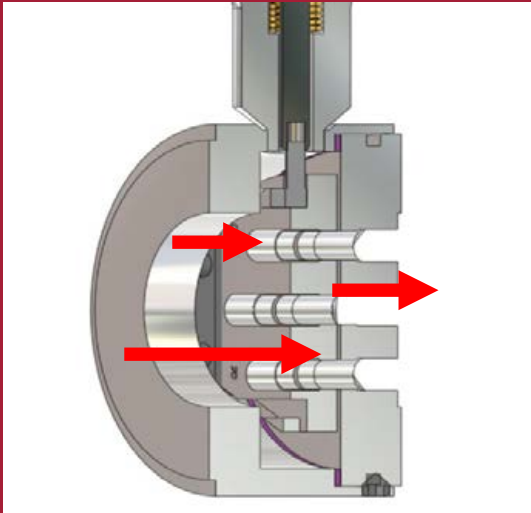
- Control element perpendicular to flow
- Less turbulence, superior trim life
- Better sealing
- Less actuating force
- Even force over entire stroke
- Better turndown
- Self-lapping/cleaning



SLIDING GATE PERFORMANCE

SHORT STROKE

- Faster response to input signals
- Less droop (greater accuracy) in PRVs
- Smaller actuators
 - Lighter weight
 - Less air consumption
- Less packing wear
- Longer diaphragm life



SLIDING GATE PERFORMANCE

MULTI-ORIFICE DESIGN

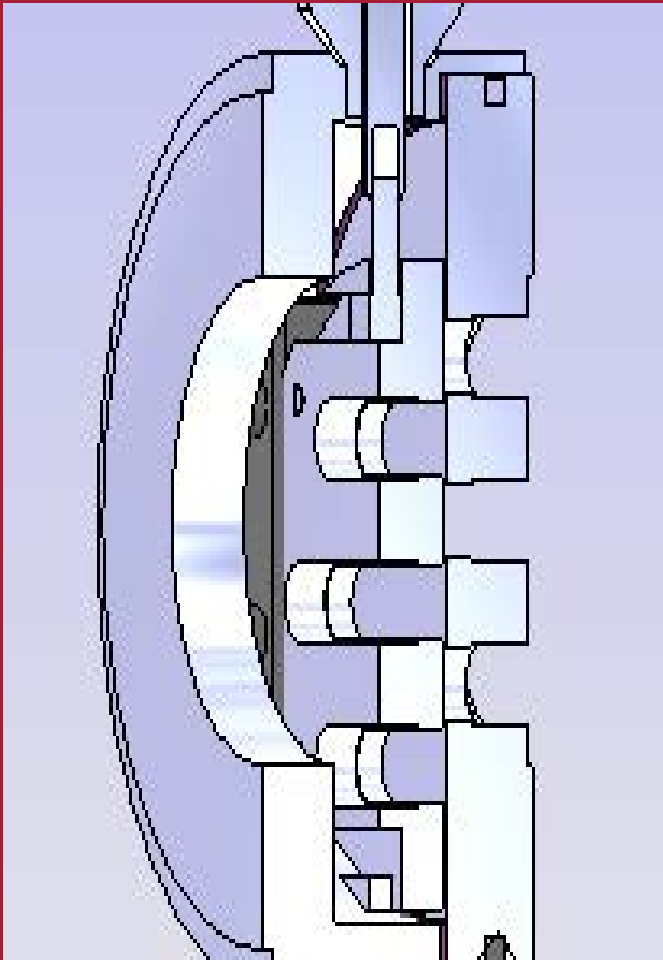
- Less noise
- Distributes wear energy
- Dissipates flow downstream
- Resists damage to cavitation/flashings



SLIDING GATE PERFORMANCE

CONSTANT CONTACT IN SEATS

- No valve "chatter"
- Less mechanical wear
- Stability in low end
- Self-lapping
- Self-cleaning

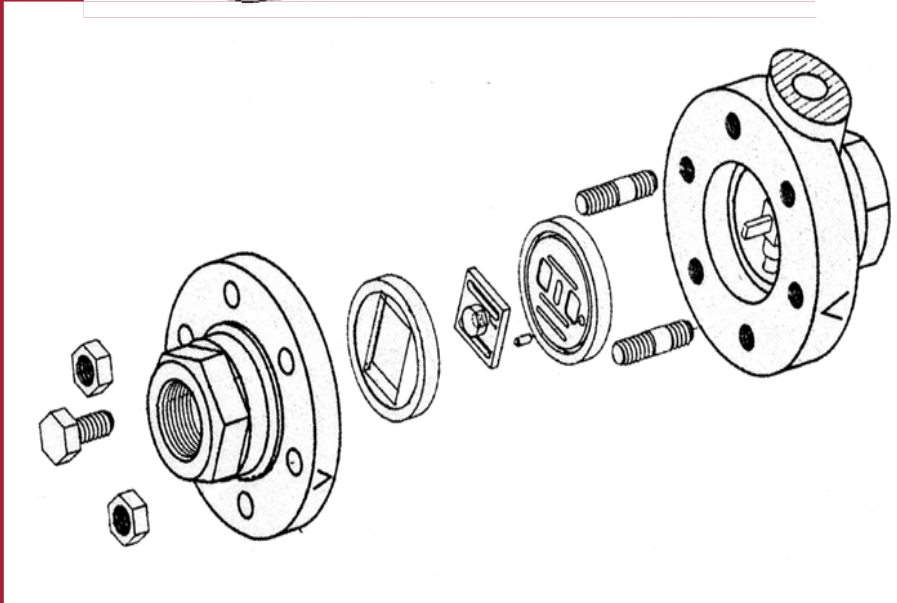
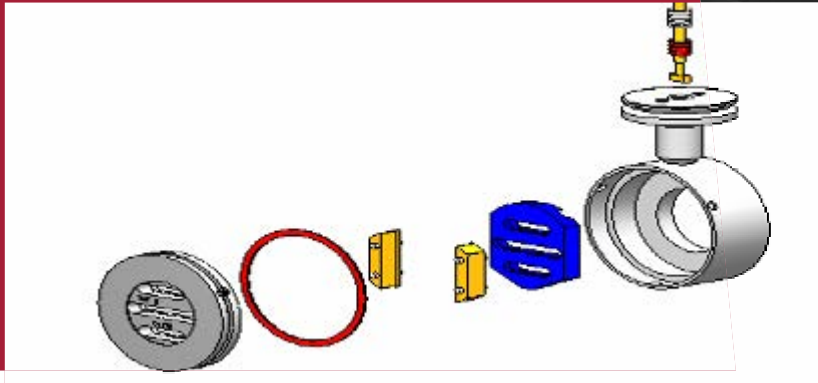


SLIDING GATE PERFORMANCE

DISC-PLATE OVERLAP

- 1/32" (0,8mm)
- Creates area of closure
- Not line of closure
- Better shutoff for longer time
- Reduces waste, lower cost

EASE OF MAINTENANCE



- Seats are not pressed or screwed into place
- Few moving parts
- Interchangeable Cv values
- Changeable from PRV to BPRV, vice versa
- Control valve action easily changeable

SLIDING GATE - SUMMARY

KEY BENEFITS

- Accuracy
- Ease of maintenance
- Size and weight
- Low long term cost of ownership



JORLON DIAPHRAGM

WHAT IS IT?

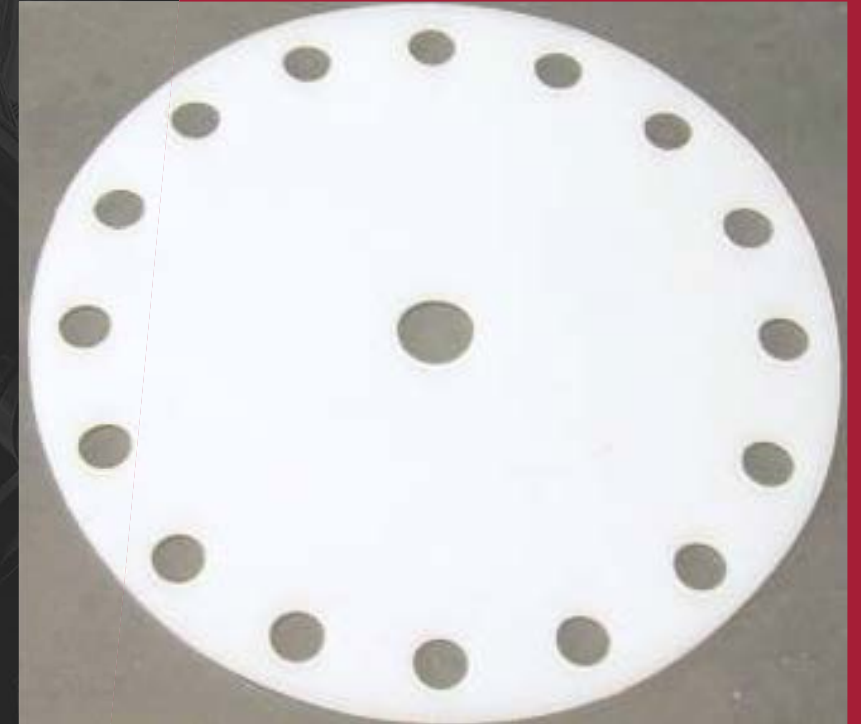
- Modified PTFE designed not to creep/cold flow

WHAT DOES IT DO?

- Resistant to pressure spikes, vacuum, high cycles

WHY IS THAT IMPORTANT?

- Longer life
- Better accuracy
- Excellent pressure, temperature and chemical compatibilities



JORLON DIAPHRAGM – STEAM TEST

MEDIUM PRESSURE

- 225 psi
- SST failed at ~ 1300 cycles
- Jorlon – stopped test @ 258K cycles, no failure

HIGH PRESSURE

- Variable ~ 360 – 430 psi
- Stopped test @ 125K cycles – no failure





Thank You

THANK YOU!

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