

Rising stem ball valves

4-8-17

Applications

Mcilvaine is in the early stages of developing this decision guide and welcomes your input as we expand it

Applications for Rising Stem Ball Valves

Rising stem ball valves are primarily used in the oil and gas and petrochemical industry. Applications include

- Molecular Sieve dehydration switches
- Meter isolation
- Block and bypass
- Steam and Gas
- Product segregation
- Dryer switching

Molecular Sieve Switching Valves

- Molecular sieves have been used in the natural gas processing industry for many years to purify and dehydrate natural gas.
- Molecular sieves are the product of choice for the deep dehydration required by LNG (Liquefied Natural Gas) or NGL (Natural Gas Liquids) facilities. The active constituent of a molecular sieve adsorbent is a microporous, crystalline, alkali-metal alumino-silicate, referred to as a zeolite. Originally discovered as minerals in nature, zeolite crystals are now grown synthetically under carefully controlled conditions to yield a product of very high purity and precisely uniform properties.
- The most distinguishing feature of molecular sieves as a class of adsorbents is that they are crystalline rather than amorphous materials. Consequently, they have a definite and highly ordered chemical composition that produces a structure in which all of the unit cells are identical. A unit cell is the smallest repeatable structural unit similar to what a monomer is to a polymer. Essentially the entire adsorption surface is contained inside these unit cells which comprise the zeolite crystal. These unit cells are interconnected by openings (pores) in their adjoining faces.
- The ability to control the size and uniformity of the pore openings is the key to producing a true “sieving” action on a molecular level.

RSBVs will withstand normal dust load

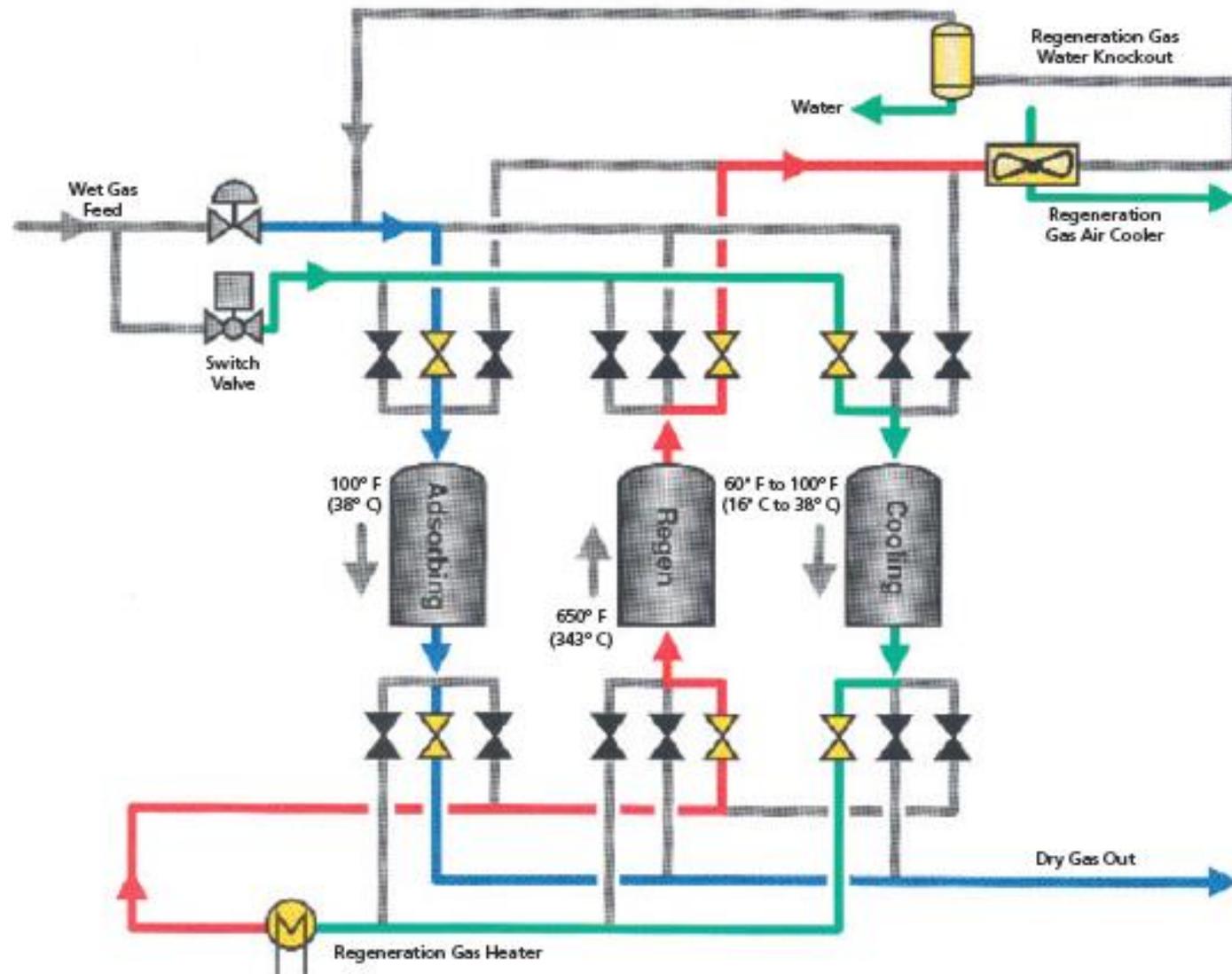
- It is normal for dust or fine powder to escape the beds, especially following new construction or the reworking of a drying tower that involved the change out of desiccant. Valves designed for this service, especially the rising stem ball valves will handle normal dust and carry over without issue. Once a plant is past the construction and start-up phases and has been in operation for a period of time, the most common cause of damage to valve sealing surfaces is molecular sieve desiccant escaping the screens and finding their way into the valves.
- If the desiccant escapes the tower, it can find its way between the valve sealing surfaces. This may result in damage to the closure members when the valve closes on this material, yielding the base material supporting the hard facing. No valve trim is designed to adequately handle this foreign material.
- The solution is proper installation of the molecular sieve desiccant and ceramic balls that make up the components in the drying tower and proper installation of the screens.

Cameron maintains that RSBVs best meet the requirements in molecular sieve switching

- the valve must seal tightly. If it is not possible to obtain tight shutoff, the leaky valve allows wet gas to enter the drying tower during the regeneration cycle. This leakage lengthens the regeneration cycle, wastes precious energy, and will not allow the desiccant to be fully regenerated, resulting in increased operating costs.
- The valve must also withstand high regeneration temperatures. Taking into consideration temperatures typically found in regeneration cycles and considering temporary excursions above typical regeneration temperatures, the switching valve should be designed for a maximum of 800 degrees F (426 degrees C).
- The valves must be capable of withstanding the frequent cycling that is characteristic of dehydration cycles. For example, if a system is on eight hour cycles a valve could cycle three times per day, 7 days per week, and 365 days per year. If planned maintenance of the system is every five years and this maintenance includes rebuilding of the beds and repair of the switching valves, the valve could see 5500 cycles between repairs. Not many valve types are capable of withstanding this many cycles in a hot, dry, and sometimes hostile environment.
- The rising stem ball valve provides tight shutoff, withstands frequent cycling, and handles high temperatures better than other valve types in this service. Other valve types do not have an equal track record in molecular sieve dehydration service because no other valve provides the tight seal and friction free operation in the same manner as a rising stem ball valve (no rubbing between sealing surfaces).

Cameron RSBV valves in molecular sieve drying system

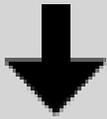
Schematic of Mol Sieve Dryer System Using ORBIT Sequence Switching Valves



Valve requirements and challenges

Typical Challenge

Wet gas leaking through ordinary valves will cause dryer efficiency to decline.



CAMERON'S SOLUTION

ORBIT valves are cammed positively closed, eliminating wet gas leakage.

Typical Challenge

Leaking valves can prolong the regeneration time and waste energy.



CAMERON'S SOLUTION

The ORBIT valve design eliminates rubbing between seat sealing surfaces, ensuring zero leakage and conserving energy.

Typical Challenge

Daily operation in hot, abrasive service can create high maintenance costs.



CAMERON'S SOLUTION

ORBIT valves provide reliable long life in hot, abrasive service, with reduced maintenance.

Valve requirements

Must Seal Tightly – If it is not possible to obtain tight shutoff, a leaky valve will allow wet gas to enter the drying tower during the regeneration cycle, thus lengthening the cycle, wasting energy, and preventing the desiccant from being fully regenerated, which increases operating costs.

Must Withstand High Regeneration Temperatures – Switching valves should be designed for a maximum of 800° F (426° C) based on the high temperatures encountered during typical regeneration cycles.

Must Withstand Frequent Cycling – Switching valves can experience nearly 5500 cycles before unplanned maintenance (a span of roughly five years). It is imperative that the selected valve operates at peak performance despite long periods between shutdowns.

Valve health recommendations from Cameron

- 1. Install the valves into a clean system.
- 2. Keep the molecular sieve desiccant and ceramic balls in the drying tower.
- 3. Maintain recommended air pressure on the actuator so the appropriate closing force is applied (and not exceeded).
- 4. Control the speed of operation to conform to manufacturer recommendations.
- 5. Ensure properly sized instrument piping is installed.
- 6. Follow the manufacturer's recommended preventative maintenance program.
- 7. Properly repair valves and actuators according to the manufacturer's recommended procedures.

Suppliers

Mcilvaine is in the early stages of developing the supplier analyses and welcomes your input as we expand this section

ATV RSBV

- A low maintenance valve, particularly appropriate for gas processing with high temperature and cycling service. Low maintenance valve due to the non-contact between ball and seat during the stroking action, Tight sealing in both direction, Extended Temperature range (from -46°C to 450°C)
- ATV offers a full range of Rising Stem Ball Valves mainly suitable for gas processing, such as for high temperature and cycling service, on molecular sieves and dehydrating units in gas treatment, isomerization units and other processing plants.
- Rising Stem Ball Valves are the most suitable for these severe service applications requiring the highest reliability because the sealing surfaces do not contact during stroking with the benefit of long life without maintenance. Peculiarity of ATV Rising Stem Ball Valve is that when the ball is in close position, the tight sealing between the ball and the single fixed seat is granted in both directions. Rising Stem Ball Valves can be operated with manual gear or with electric, pneumatic or hydraulic actuators.
- Materials are sourced from qualified suppliers on the base of specifications that reflect the industry standards (ASTM, NORSOK, BS, DIN or others), but do also incorporate additional requisitions resulting from long experience.
- ATV designs, manufactures and tests its products in accordance with all the relevant Industry standards and codes (API, ANSI, ASME, BS, ISO, NACE, PED and others). ATV rising stem ball valves are pressure tested to API 6D requirements.
- ATV stresses its willingness to produce engineered valves; therefore, it welcomes requests for special size, class and design requirement
- Sizes 2" ÷ 24" Class ANSI 600, 2" ÷ 20" Class ANSI 900, 2" ÷ 12" Class ANSI 1500 and 2500. Larger sizes available on request.

BSM RSBV

The non-contact movement of the ball in combination with the single seated design provides a broad operating temperature range due to the negligible influences of thermal expansion. Each linear operation, from opening to closing and back again, is a friction-free movement between seat and ball that significantly reduces valve wear and tear and does therefore guarantee an excellent sealing performance over a long period of time. The top-entry design provides easy access to the valve's internals. It allows visual inspection inside the valve without removing the valve from the pipeline. So it is maintenance friendly and resulting in important downtime reduction. The BSM Non-contact Rising Stem Ball Valve using a unique designed turning mechanism. The unique mechanism is fully enclosed within the valve body thus making it fully protected against environmental influences and reduces the need for lubrication. This results in an exceptionally long lifetime. BSM Valves produces all the parts in-house.

Applications (market operations):

- Molecular sieve / switches valves
- Gas dehydration and regeneration
- Hydrogen service
- Dryer switching
- Block and bypass
- Cryogenic Service
- Emergency shutdown service / Emergency blow down service
- Hot oil
- Flowlines
- Meter isolation
- Offshore
-

Calvary RSBV

- The Calvary RSBV is a trunnion mounted Rising Stem Ball Valve design, suitable to a wide range of applications. The mechanical (or cam) movement of the ball provides a friction free operation, eliminating wear between the sealing surfaces and extending the valve life. The design also eliminates the “pinch point” or “pressure cut” commonly found with normal quarter turn valves. The combination of linear operation and friction free sealing provide a superior valve in demanding application including those requiring high cycles or quicker closing times. The features resulting from the rugged design make it suitable for both common and more difficult applications throughout the energy industry.
- **FEATURES INCLUDE:**
- Cast and Forged Steel Construction
- Positive (Zero-Leak) Closure
- Mechanical Sealing/Operation
- High Reliability/Repeatability
- Positive Stem Retention
- No Pinch Point – 360 Dispersed Flow
- Single Seat Requires No By-Pass System
- **Data Sizes:** 2” thru 20” Full Port or Reduced Port
Pressure Classes: 150, 300, 600, 900, 1500
Operating Temperatures: -50F to +500F (-46C to +426C)

Cameron ORBIT RSBV

- The Cameron ORBIT rising stem ball valve is ideal for applications when zero leakage and frequent operation are demanded. They are used globally in gas processing plants using molecular sieve systems in switching service.
- Every ORBIT rising stem ball valve incorporates a proven tilt-and-turn operation that eliminates seal rubbing, which is the primary cause of valve failure. When an ORBIT rising stem ball valve is closed, the core is mechanically wedged tightly against the seat, ensuring positive shutoff.
- When a valve begins to open, the core tilts away from the seat and line flow passes uniformly around the core face. This eliminates the localized high-velocity flow that typically creates uneven seat wear in ordinary ball, gate, and plug valves. The core then rotates to the fully open position.
- The absence of seal rubbing during both opening and closing means easy, low-torque valve operation and long-term reliable performance. When valve leakage cannot be tolerated, ORBIT's operating principle can be relied upon to deliver a positive shutoff. Features include
- No rub between sealing surfaces
- Injectable packing
- Single-seat design and long life
- Optimum flow – full port or reduced port openings give high C_v figures
- Top-entry design and dual stem guides

- Self-cleaning
- Low-torque operation
- Wear-resistant hard facing on core
- Mechanical cam closure

Specifications and Compliances

API 6D

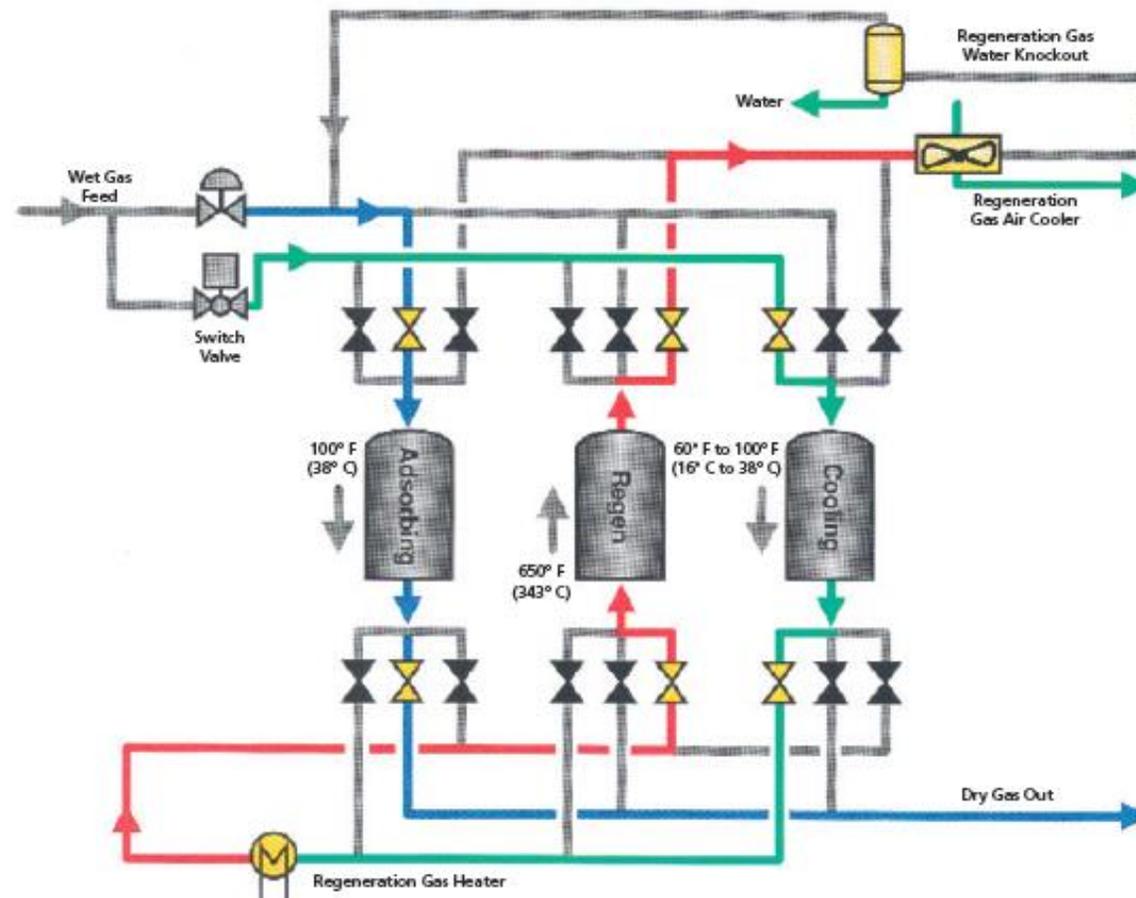
- ISO 9001:2008
- PED 97/23/EC
- ATEX Directive 94/9/EC
- GOST
- GOST-R certificate and RTN permit
- ISO 15848-1 (fugitive emission-type testing)
- Shell GSI SPE 77/300 TAT qualified and TAMAP two-star rating
- ASME B16.34

Cameron ORBIT for Mol sieve switching

- Cameron's ORBIT® valves have set the standard in mol sieve switching valves for more than 40 years. With temperatures cycling between 60° F and 800° F (15° C and 427° C) and tower changes three or four times every day, it takes a tough valve to survive in mol sieve service. Hot, abrasive carryover from mol sieve beds will destroy the seals in ordinary valves, causing leakage and system shutdown. Cameron's ORBIT valves thrive in these difficult conditions, lasting more than two to five times longer than conventional ball valves. Utilizing tilt-and-turn operation and mechanical cam action of the seating surfaces during closure, ORBIT valves avoid the damage caused by scratching and tearing that affects other types of valves. The unique operation of the ORBIT valve achieves tight sealing, again and again, even when there is low differential pressure across the valve. ORBIT rising stem, top-entry valves are approved and used by leading dryer manufacturers because of their reliability in mol sieve service. ORBIT valves are specified by process gas plants and licensors' operations worldwide.

Cameron Mol Sieve dryer system with Orbit valves

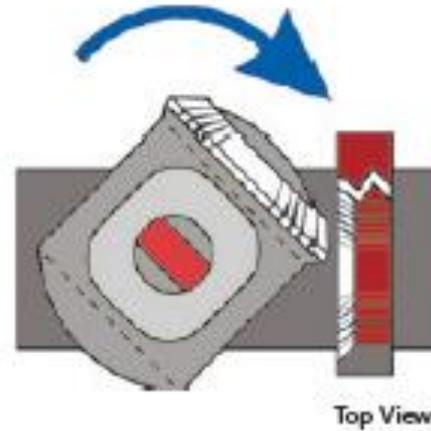
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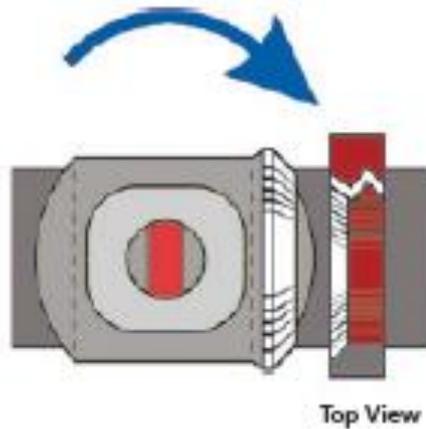
Cameron RSBV movement



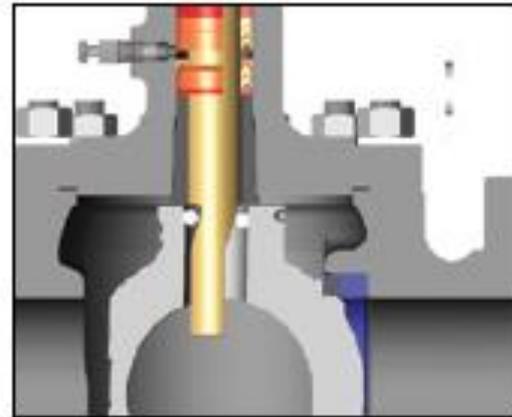
In the fully open position, there is unobstructed flow through the valve.



Precision dual-spiral grooves in the stem act against fixed guide pins, causing the stem and core to rotate.



Continued closing action rotates the core and stem a full 90 degrees without the core touching the seat.

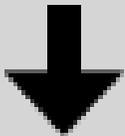


Final closing action mechanically cams the stem down, pressing the core firmly against the seat.

Mol sieve switching challenges and Cameron solution

Typical Challenge

Wet gas leaking through ordinary valves will cause dryer efficiency to decline.

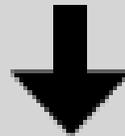


CAMERON'S SOLUTION

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Typical Challenge

Leaking valves can prolong the regeneration time and waste energy.

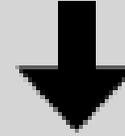


CAMERON'S SOLUTION

The ORBIT valve design eliminates rubbing between seat sealing surfaces, ensuring zero leakage and conserving energy.

Typical Challenge

Daily operation in hot, abrasive service can create high maintenance costs.



CAMERON'S SOLUTION

ORBIT valves provide reliable long life in hot, abrasive service, with reduced maintenance.

Recommendations of Mike Wood of Cameron

Extending the operating life on switching valves used in molecular sieve dehydration service is not rocket science; it is simply paying attention to some simple details.

- .1. Install the valves into a clean system.
2. Keep the molecular sieve desiccant and ceramic balls in the drying tower.
3. Maintain recommended air pressure on the actuator so the appropriate closing force is applied (and not exceeded).
4. Control the speed of operation to conform to manufacturer recommendations.
5. Ensure properly sized instrument piping is installed.
6. Follow the manufacturer's recommended preventative maintenance program.
7. Properly repair valves and actuators according to the manufacturer's recommended procedures.
8. Consult the valve and actuator manufacturer for the appropriate repair parts. If these simple steps are followed, the life of your molecular sieve dehydration switching valve will be greatly extended and will improve performance

Control Seal non-contact Rising Stem Ball Valves



Control Seal non-contact Rising Stem Ball Valves have a single-seat non-friction design that is able to operate and has proven an exceptional long life span under extreme conditions.

Size: 1" ~ 36" (DN25 ~ DN900)

Bore: Reduced or Full (Full is piggable)

Pressure: 150# ~ 2500# (PN20 ~ PN420)

Temperature range: -196°C ~ 538°C

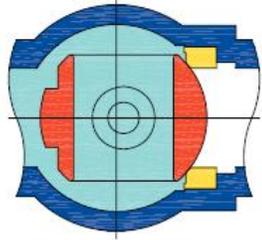
Connections: Wide choice on request

Materials: Wide choice on request

Control seal ball rotation

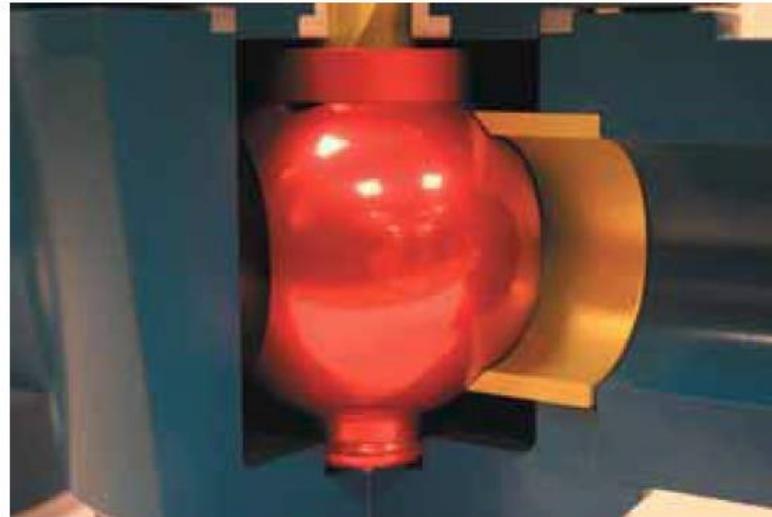
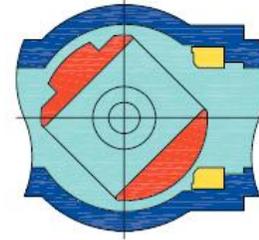
1. Closed position

In the closed position, the ball is tightly pressed against the seat by the mechanical camming action of the stem.



3. Rotating

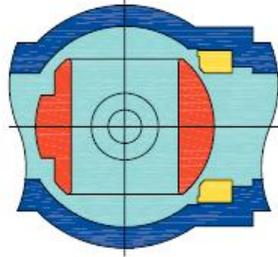
As the stem continues to rise, the interaction of the stem guide and the precision spiral part at the stem causes the ball to begin its friction-free rotation.



Control Seal ball opening

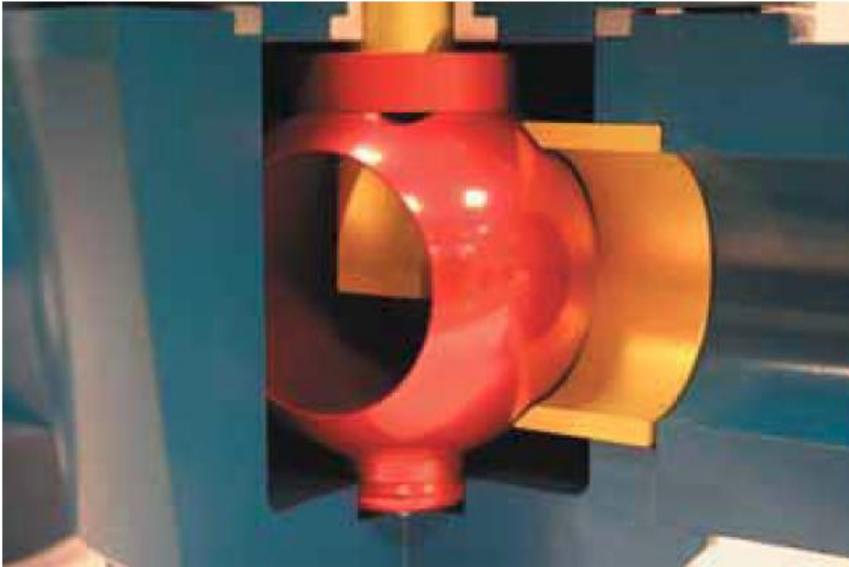
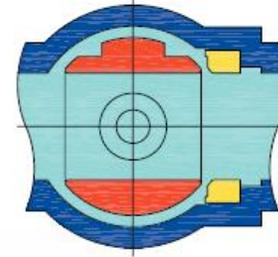
2. Opening

As the handwheel is turned counter-clockwise, the flat, sloping surface on the bottom of the rising stem causes the ball to tilt away from the seat

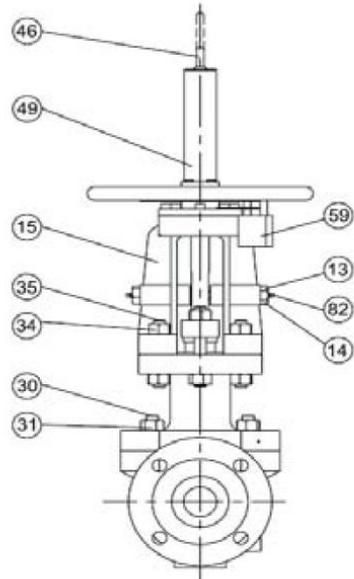
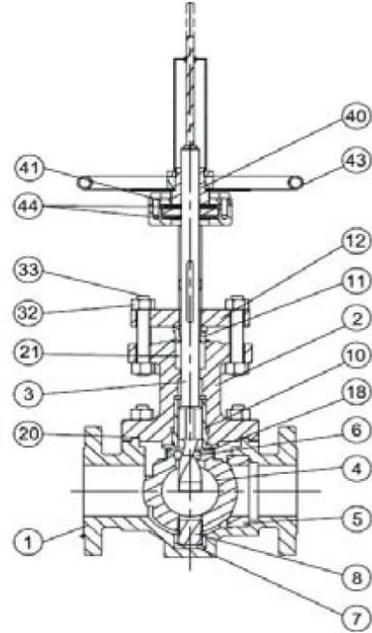


4. Opened position

In the full open position, the stem has raised to its limit and the ball is positioned for straight through flow.

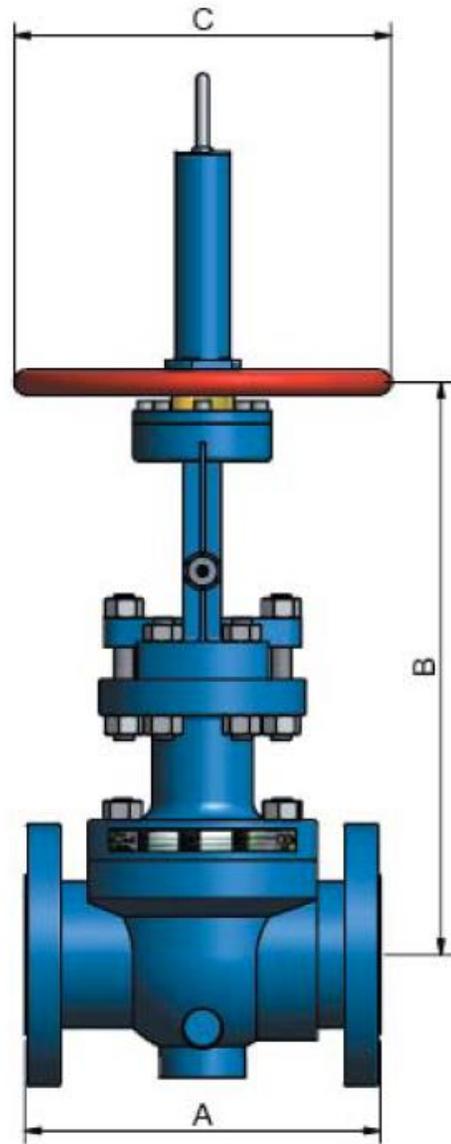


Control Seal rising stem ball valve details

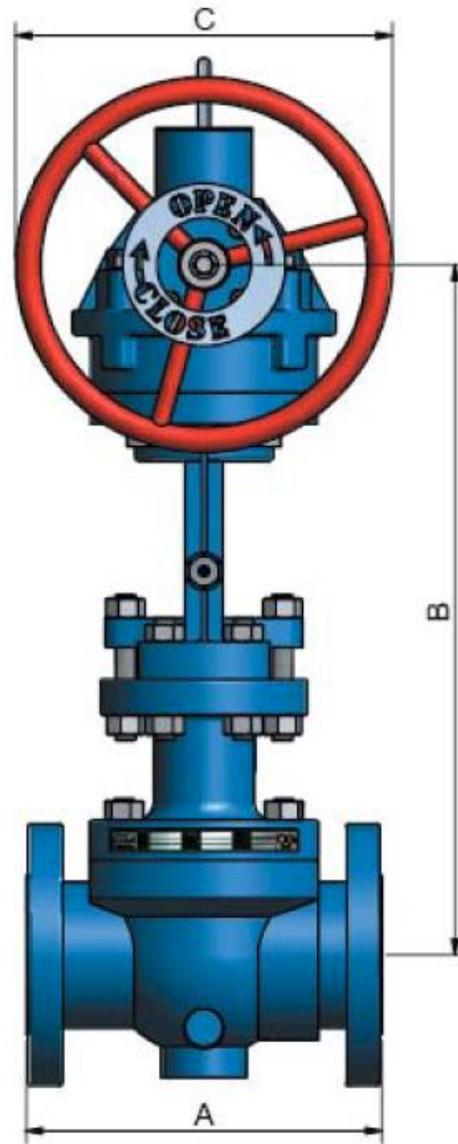


Part no.	Description
1	Body
2	Bonnet
3	Stem
4	Ball
5	Seat
6	Roll pins
7	Trunnion bushing
8	Adjusting ball
10	Bonnet bushing
11	Gland
12	Gland flange
13	Stem guide
14	Stem guide locking bolt
15	Yoke
18	Low friction cap
20	Gasket
21	Packing
30	Body / bonnet stud
31	Body / bonnet nut
32	Gland flange nut
33	Gland flange stud
34	Bonnet / yoke nut
35	Bonnet / yoke stud
40	Yoke nut
41	Bearing cover
43	Handwheel
44	Bearings
46	Indicator
49	Protection cap
59	Locking device (optional)
82	Grease nipple

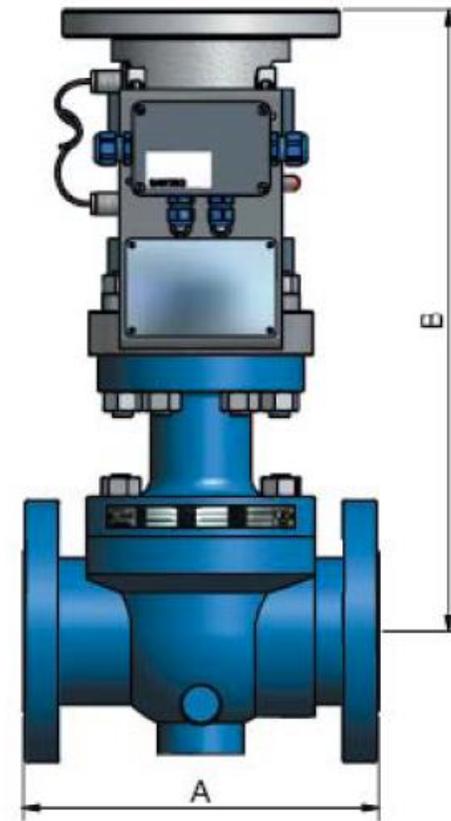
Control Seal handwheel, gear box and actuator operations



Handwheel Operated



Gearbox Operated



Actuator Operated



Rising Stem Ball Valve

Standard Features

Non-Abrasive Opening and Closing

The transition and turn feature eliminates seal abrasion and rubbing, which is the major cause of seat wear in conventional ball, gate, and plug valves.

Single Seat Design

The single, stationary seat in the Rising Stem Ball Valve seals in both directions. The valves utilize only one size seat per valve model. Seat size uniformity makes repair easier and eliminates confusion.

Self Cleaning

Transitioning the core away from the seat before rotation causes immediate flow around the entire core face. Foreign material is flushed away from the seat without localized, high velocity flow.

Ease of Maintenance

The top entry design simplifies maintenance with in-line inspection and repair after system depressurizing.

Reduced Torque Operation

Lower torques are achieved by the core transitioning away from the seat prior to rotation.

Secondary Stem Seal Injection

Standard injection fittings help control fugitive emissions and allows time to arrange stem seal maintenance.

Dual Guide Pins

The lift and turn action of the stem is controlled by guide pins interacting with stem slots. Proper loading of the stem is assured and premature wear is avoided.

Wear Resistant Hard Facing on Core

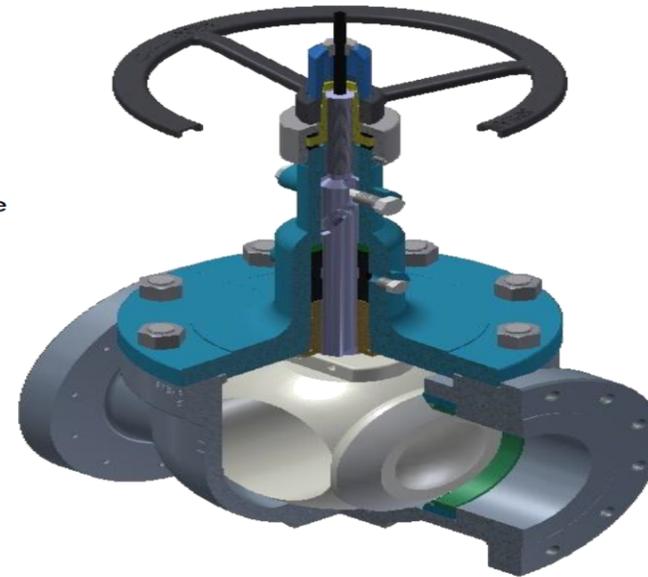
Without compromising seal integrity, the Rising Stem Ball Valve core face utilizes a hard, polished material that can endure the most difficult applications.

Valve Position Indicator

All Rising Stem Ball Valves are equipped with a position indicator showing percentage of opening.

Life Long Cycles

Rising Stem Ball Valves outlast typical gate, globe, plug, and ball valves.





Operating Principle

The Rising Stem Ball Valve transitions away from the seat before turning. Seat rubbing is eliminated, reducing the primary cause of valve failure and increasing valve life.

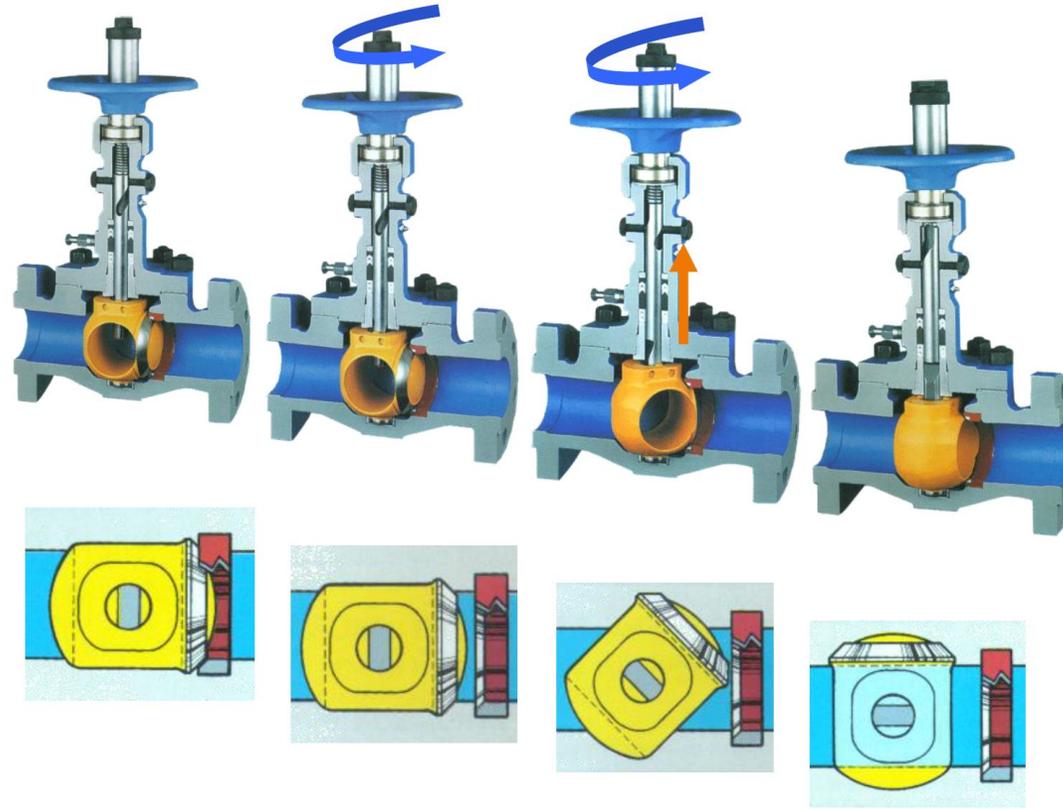
When the valve begins to open, the core transitions away from the seat evenly, allowing line flow to pass around the core face uniformly.

This eliminates the localized high velocity flow that typically creates uneven seat wear in ordinary ball, gate and plug valves.

As the stem continues to rise, the interaction of the stem guide and the precision spiral grooves on the stem causes the core to begin its friction-free rotation to the full open position.

Durable, reliable performance and low torque valve operation is achieved by the absence of seal rubbing during both opening and closing.

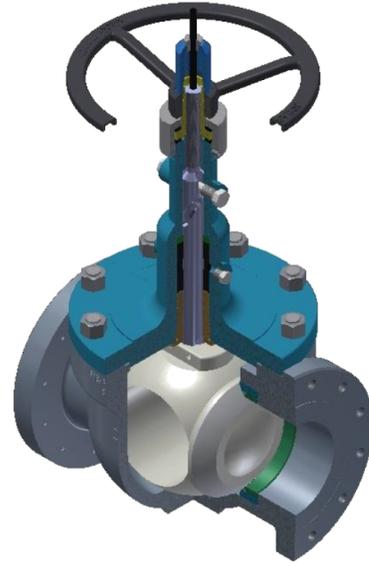
Once a Rising Stem Ball Valve is closed, the mechanically wedged core provides a tight, positive shut-off.





Rising Stem Ball Valve

Applications and Product Options



Applications:

Flow lines	Suction and Discharge
Meter Isolation	Isolation
Measurement	Saltwater Injection
Gas Compression Skids	Blending Operations
Dryer Switching	Heat Transfer
Block and Bypass	Fluids / Hot Oil
Product Segregation	Specialty Gas Service
Emergency Shutdown	Ammonia Service

Product Range and Options

Materials

Numerous materials options are available. Depending on service condition requirements, carbon steel, stainless steel, duplex SS, high nickel alloys and other special materials are available. Added durability in corrosive situations is achieved with available internal and external coatings.

Seats

Standard stainless steel seats are soft seated. Because of the lack of seal abrasion and because they are mechanically compressed shut, the seats survive in severe applications.

Operations

Hand or power operation can be selected.

Customizing

Handwheel extensions, safety interlocks, position indicator limit switches, custom painting and special inspection can be provided.

Maintenance and Repairs

Contact Spearhead for inspection, maintenance and repairs for all Rising Stem Ball Valve products.

Rising Stem Ball Valve

Actuation



Rising Stem Ball Valves can be actuated with double acting, spring close and spring open linear piston pneumatic actuators. Electric and hydraulic actuators are also available with extensive instrumentation options.



DHV RSBV

Basic Design: ASME B1634

Sizes: 2"-24"

Pressures: ANSI 150lb-1500lb

Materials: Cast Carbon / Stainless Steel

Ends: RF, RTJ, BW

Fire Safe Design/Test: API 607

Features

One Piece Body

Top Entry Design

Soft & Metal Seat

Rising Stem Type

Sealant Injection Fitting

Low Torque & Long Service Life

NACE

Options

Gears & Automation



FCA RSBVs

- FCA Rising stem ball valves are specially engineered for heavy duty applications outstanding at high pressure working conditions, up to ASME Class 2500# and sizes up to 24". The BR model valve solution ensures a perfect performance at primary and secondary sealing due to an accurate design concept at any size considering soft and metal seated configurations. Ideal for applications where no leakage, energized seated and frequent operation valves are demanded, principally for the oil&gas industry.
BR model valve is designed to provide a frictionless sealing structure where the ball is detached from the seat by a linear movement before the rotation takes place. This unique and long life design significantly reduces valve wear and minimizes maintenance frequency. In addition, top entry design allows maintenance and visual inspection inside the valve without removing it from the pipeline.
Due to its linear operation, backseat is provided for the stem to prevent possible blowout and to allow packing replacement while the valve is under pressure at fully open position. For metal to metal seating designs, lapping technique is applied to Stellite seating surfaces to achieve a zero leakage characteristic.
FCA Ball valves come with a variety of end connections: Flanged type, as standard, comes with Raised Face (RF) according to ASME Class 150#, 300# and 600#, and with Ring-Type-Joint flanges (RTJ) for Class ratings of 900#, 1500# and 2500#. Buttwelded ends can also be supplied, with schedule according to customer specifications.

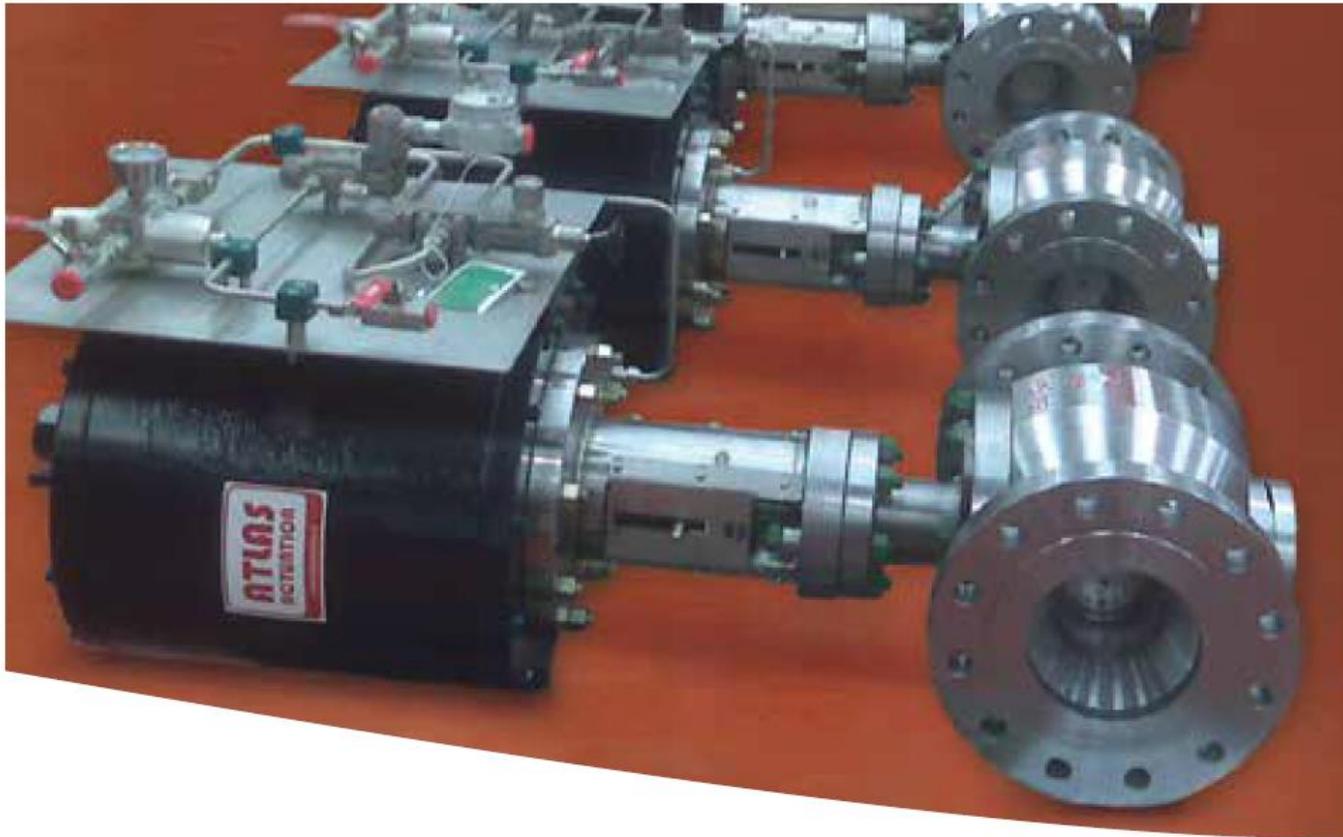
FCA Design Details

DESIGN STANDARD	API / ASME
SIZE	DN50/2" to DN600/24"
MATERIALS	Body: ASTM A216 WCB / A351 CF8M / A995 4A Ball: ASTM A105+ENP / A182 F316 / A182 F304 / A182 F51
SEAT	METAL-METAL / PTFE / RPTFE / NYLON / MOLON / PEEK / VITON / DEVLON
OPERATION TYPE	Manual / Gearbox / Electric Actuator / Pneumatic Actuator / Hydraulic Actuator
SECTORS	Oil & Gas / Petrochemical Plants
APPLICATIONS	Molecular Sieve dehydration switches / Meter isolation / Block and bypass / Steam and Gas / Product segregation / Dryer switching / etc...
ACCESSORIES & OPTIONS	Full or Reduced Bore, Injectors, Drain & Vent valves, Locking devices, Limit switches, Proximity switches, Solenoid valve, Filters, Emergency System, Junction box, Stem extension

Flowserve Valbart RSBV

- The RSBV uses a unique helix system that opens and closes the valve without rotation. The linear only operation of the stem makes it an excellent choice for frequent cycling.
- Each linear operation, from opening to closing and back again, is a friction-free movement between seat and ball that significantly reduces valve wear and keeps routine maintenance to a bare minimum.
- The outside yoke and screw, with stuffing box-type gland packing, including gland and gland flange, eliminates the need for special tools when adjusting or repacking the stem seal. Top entry convenience allows visual inspection inside the valve without removing the valve from the pipeline.
- The stem also has a backseat to prevent possible blowout and repacking stem seals under pressure when the valve is fully open. A special lapping technique applied to the Stellite6® ball and seat sealing areas allows for zero seat leakage. Heavy wall thickness provides extra corrosion allowance to reduce wear and extend the valve lifetime.

Flowserve helix coil stem



Features / Benefits

- *Helix coil stem ensures friction-free open and close*
- *Linear stem operation without rotation for optimal actuation*
- *Metal seat tightness up to ANSI Class VI and zero leak*
- *Heavy wall thickness in excess to ASME/ANSI B16.34*
- *Outside screw and yoke design, no special tools for stem packing adjustment needed*

Flowserve RSBV Specifications

RSBV specifications

Sizes	1" through 24"
Pressure Ratings	ANSI Classes 150 through 2500, DIN PN 10 through PN 320
End Connections	Flanged RF/RJ, Butt weld, Socket weld, Hub end, Screwed
Face to Face	To B16.10, Manufacturer Std. or at special request
Trim Area	Full bore or Reduced bore to API 6D dimensions or at special request
Packing Options	Graphite or PTFE or combination composition at request
Flow Direction	Preferred flow toward seat or Bi Directional at request
Leakage Rates	To API 598 or BS 6755 or ANSI FCI-70-2 Class V or VI
Flow Coefficients	Cv Value as per the enclosed tables pages 6 through 11
Temperature Range	From minus 196 °C to 600 °C

Product range

ANSI Pressure Class	Size Range
150	1" – 24"
300	1" – 24"
600	1" – 24"
900	1" – 20"
1500	1" – 16"
2500	1" – 8"

Certifications

Qualification Certifications and Approvals	
ISO-9001	API to ISO TS-29001
API-6A	SIL-2
API-6D	ISO-15848 1 & 2
API-6DSS	PED 97/23/EC



Metso Molecular Sieve Switching

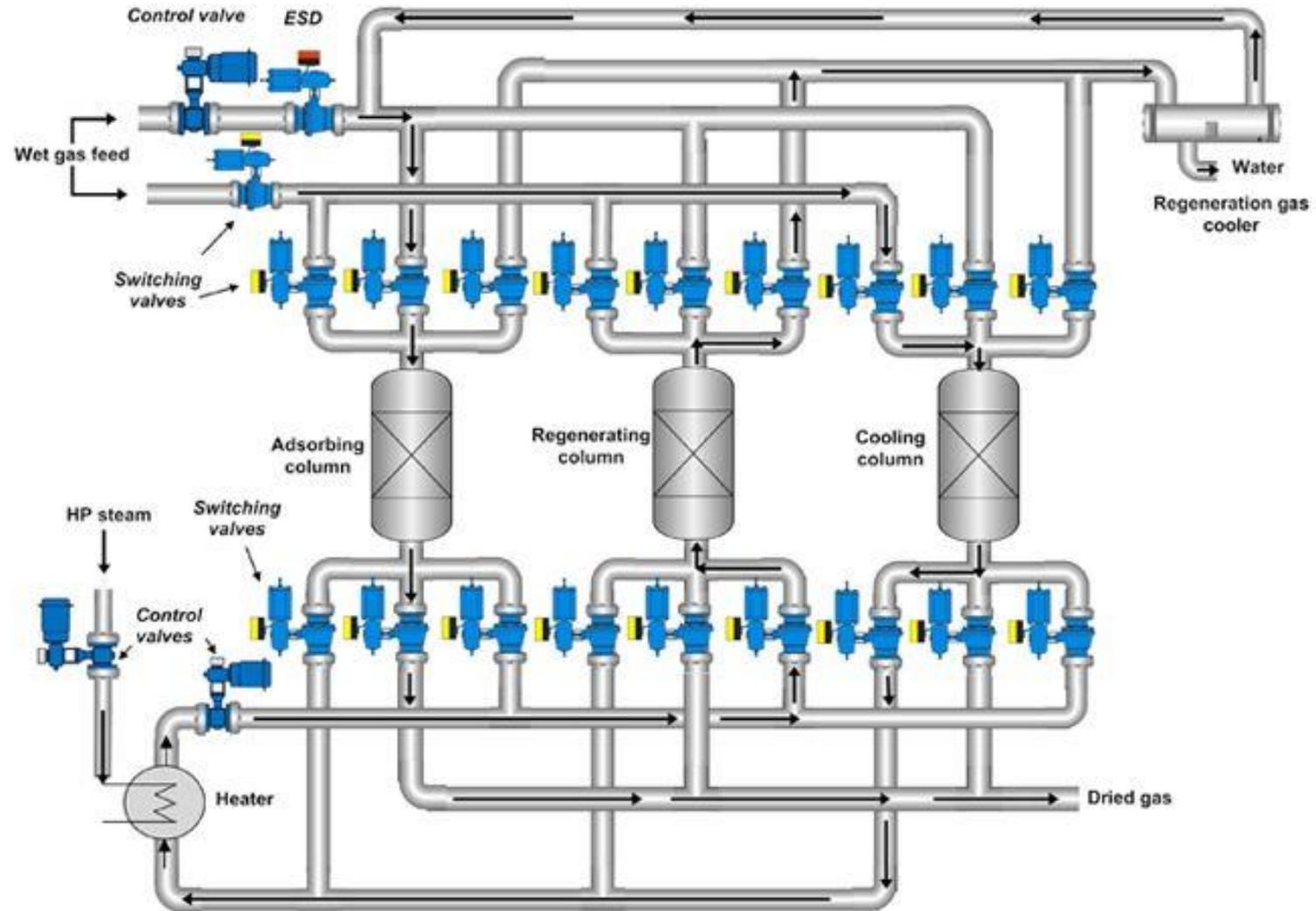


Diagram is intended to be representation and not to be viewed as actual process flow diagram.

Nether Seal RSBV

- Nether Seal Non Contact Rising Stem Ball Valves are available with hand wheel / gearbox operator as well as electric, pneumatic or hydraulic actuators. Advantages of the Nether Seal design are: - Customized selection of corrosion and wear resistant Materials. - Single Seat design. - Friction free closing and opening, extended lifetime. - Self cleaning closure members due to high velocity flow during opening and closing. - In-line inspection and maintenance possible due to top-entry design. - Linear movement of stem, no rotation. - Non lubricated seal. - Stem packing is adjustable while valve is in service no special tools are needed. - Back seat is available in all valves, renewal of stem packing under pressure is possible.

User comments

User 1: I had seen some Orbit rising stem ball valves at the bottom discharge of clay treaters. The application might otherwise have used Fetterolf or Strahman flush bottom outlet valves. The Orbit valve seem to have been applied mostly in the oil patch / gas production industry such that only the carbon steel body has had significant production. The Orbit valve has a very good stem packing design with injectable PTFE paste sealant for maintenance of tightness.

User 2: As you know there were a few manufacturers of the rising stem ball valve: The Orbit, the Dresser Omega and Control Seal from The Netherlands, all these true rising stem ball valve manufacturers are now part of Cooper Cameron.

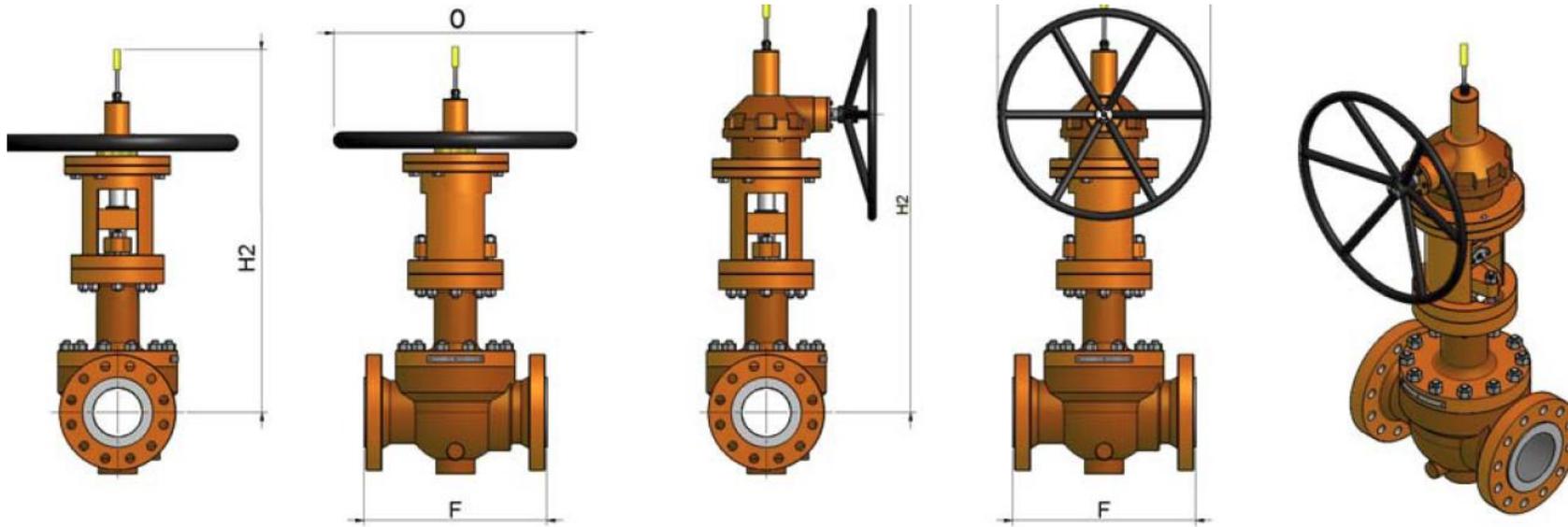
As a spin off from this merger a new Dutch manufacturer has started: Nether Seal, their site is www.netherseal.nl

As you might be aware, both Orbit nor Omega have a below seal design, Nether Seal does!

User 3: Have you tried looking at a remanufactured valve, with the customers approval. A good alternative for saving cost and if time is an issue. CCV which manufactures Orbit has an aftermarket group, Valvserv, which will remanufacture an old Orbit valve. They have a yard filled with valves waiting to be rebuilt

User 4: In services where we have used Orbit (successfully) but are trying to reduce cost and weight we have begun to specify Zwick, Tyco Vanessa, FCX Orton triple offset butterfly valves and for the smaller valves, metal seated floating ball valves like Mogas, Valvtechnologies, Valvtron work well (but require a comparatively large actuator).

Nether Seal 2500 Full port



Size	F		H1/H2	O	Min. Port	Operated	Weight	Cv Value	Valve type no.
[inch]	[mm]		[mm]	[mm]	[mm]	[-]	[Kg]	GPM	[-]
	RF	RTJ							
1	451	454	430	450	25	Handwheel	90	35	R1FC2500H
1½	451	454	527	450	38	Handwheel	95	110	R15FC2500H
2	451	454	660	300	44	Gear-box	140	160	R2FC2500G
3	578	584	791	450	63	Gear-box	210	510	R3FC2500G
4	673	683	963	450	89	Gear-box	405	790	R4FC2500G
6	914	927	1240	850	133	Gear-box	980	2300	R6FC2500G
8	1022	1038	1527	850	181	Gear-box	2000	6370	R8FC2500G
10	1270	1292	1781	850	225	Gear-box	3500	9900	R10FC2500G

Nether Seal applications

APPLICATIONS NON CONTACT RISING STEM BALL VALVES

- Molecular Sieve Frequent Switching service
- De-Hydration of Gas and Re-Generation service
- Produced water service
- Sand-Slurry service
- Hot Oil service
- Steam service
- Hydrocarbons Wet gas service
- Fiscal Gas Metering - Emergency Blow Down service
- Emergency Shut Down service
- High temperature service
- Lethal H₂S (Bellow Seal) service
- High temperature service (+600 degrees C) - Low temperature service (

Rays Rising Stem Ball Valve

AYS Rising Stem Ball Valve with its unique design especially such as the opening process no friction character and turn-off zero leakage. Performance is particularly suitable for special requirements for various extremely harsh working conditions, all-metal structure design, fire proof design, can adapt to low temperatures ranges between -204°C or (-400°F) , and high temperature could be up to 815°C or (1500°F) operating temperature, also can adapt to the impurity medium(including sand, short fibers) condition requirements. Particularly worth pointing out is that we are fully according to the American association of corrosion factory NACE standard requirements in design, material selection meets the requirements in sulfide environment of sulfide stress cracking resistance.



Rays RSBV applications

- Petroleum – Craft cutting and control of offshore platforms, oil slurry system, all cut and control such as water torch, shut off valve and adjusting valve of storage tank, and cut and control of oil pipeline end.
- Natural gas – Craft cutting and control of offshore platforms, all cut and control applications in processing and purification plant, shut off valve and control valve of natural gas storage tank, and cut off applications in the end of transmission pipelines.
- Chemical plant – Application process. Apply to the applications of all cutting off and control, and the cut and control applications of steam system.
- Pulp and paper reduction process application, ethanol reduction process application, and steam application.
- Power station – Application of low pressure steam. Cut and control, regional heating boiler and distribution pipes, and trap valve.
- Steel mill – Furnace gas cut-off valve.

Rays range of pressures and sizes

ANSI Pressure Class	Size Range
150	1" – 24"
300	1" – 24"
600	1" – 24"
900	1" – 20"
1500	1" – 16"
2500	1" – 8"