

# Special Ball Valves, Rising Stem Ball Valves



**SchuF** 

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*SchuF is fully registered, accredited and certified worldwide*



# SchuF Worldwide Group

**For over 100 years SchuF valves have stood for innovation and quality at the highest level.**

Together with our customers, we invent, design and manufacture valves customised to exact tolerances, processes or special operating conditions. SchuF Fetterolf valves can be found in standard and in many severe service applications in the Chemical, Polymer, Pharma, Oil, Gas, Offshore and Refining industries.

The invention of the Lift Plug valve in 1911 and piston & disc bottom outlet valves in the nineteen-twenties by the founder of SchuF- Josef Frank- were the first of a long line of valve inventions and innovative designs. Continuing research and development in materials (used in valve bodies and trim), design as well as complex processes enable SchuF today to offer valve solutions for applications with high pressure, high temperature and difficult media; or a combination of all three.

The integration of Fetterolf Corporation in 2004 further broadened the Group's product portfolio, innovation and geographical reach. Today the SchuF Fetterolf product line includes control, isolation, sampling, switching and safety related valves.

The exceptional quality and longevity of SchuF Fetterolf valves is a result of the precise attention to process detail, creative design, and the use of the appropriate high quality materials. In addition to its own high internal company standards, SchuF is ISO 9001, GOST and PED certified and can manufacture according to ASME, DIN, NACE, API, Fire Safe, GMP, JIS or any other internationally recognised standard.



***SchuF Fetterolf is represented in over 65 countries worldwide and has design and production facilities in Germany, Ireland, India, the United States and the United Kingdom.***

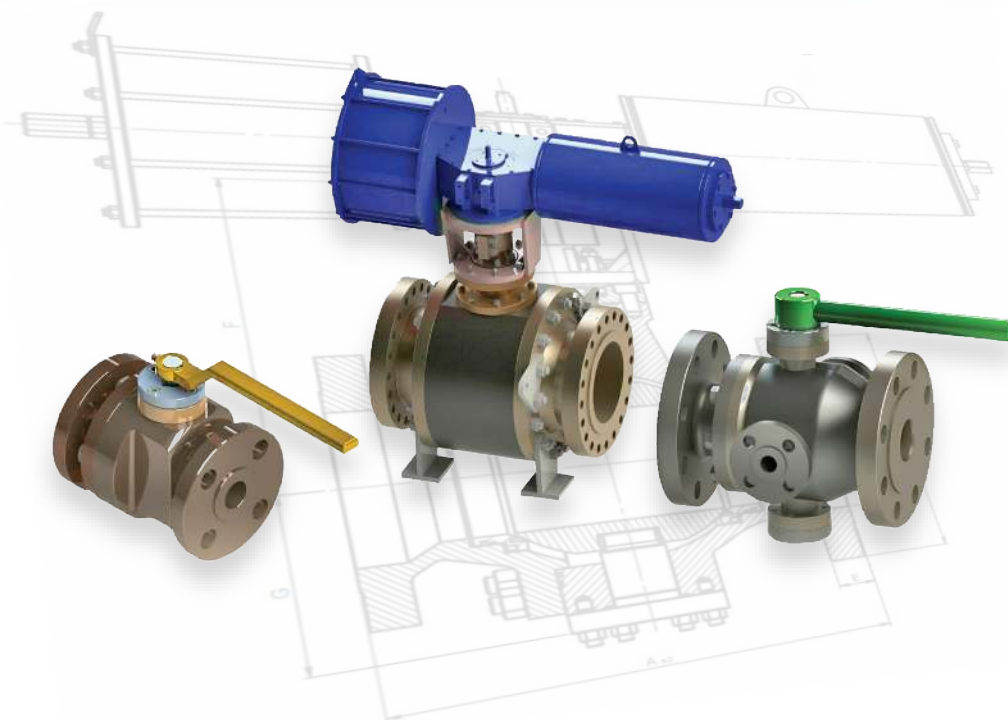


# Ball Valves

## Overview

SchuF Ball Valves are designed and manufactured to exceed the leading industry standards. Every single valve manufactured at SchuF is individually designed for the particular operating conditions and process medium of that specific installation.

- **Sealing options** are available in both **soft** and **metal** designs, allowing maximum flexibility for all types of process.
- SchuF Ball Valves are **highly customisable**, with a wide variety of **coatings** and **special material** options being available.
- **Customer-specific connections** along with **heating jackets**, **purges**, **flushing ports**, **emergency sealing** and **lantern rings** are available.
- **Fire-Safe Valves** are available which are tested in **accordance with API 6FA/API 607/ISO 10497**.
- For compliance with safety-related management system assessments, appropriate levels of **SIL Certification** can be supplied as necessary.
- **Fugitive Emission Compliance** to **ISO 15848** and **TA-Luft** can be supplied according to customer requirements.
- Both **Trunnion-Mounted Ball Valves** and **Floating Ball Valves** are available with a wide range of additional options.
- Ball Valves are available in both **side-entry** and **top-entry** configurations, along with **full-** or **reduced-bore**, in **welded-** and **bolted-body** constructions.





# Rising Stem Ball Valves

## Design Features

The Rising Stem Ball-Valves use a unique cam system to rotate the ball as the stem raises or lowers. The stem itself does not rotate, and this linear-only travel makes the valve highly suited to frequent cyclic operations while keeping routine maintenance to a minimum.

When closing, the Ball sealing face is only pressed against the seat after the ball has completed its rotation movement, completely removing frictional wear and extending component service.

Operating the valve utilises a single actuator, which can be a manual handwheel (with or without gearbox) or electric, pneumatic or hydraulic.

### Applications and Services

- Stem extension for high temperature service.
- Stem extension and gas column for cryogenic service.
- Slurry and sand service (special design).
- Bellows sealing for dangerous media and zero emissions.
- 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.
- Flow lines.

#### Single Actuator

Linear Stem travel and rotational Ball movement are both driven by the operation of a single actuator

#### Anti-blowout Stem

The inherent anti-blowout stem design ensures safety even for the most challenging applications

#### Backseat Seal

The Backseat Seal design allows stem to be repacked when valve is under pressure and in fully open position

#### Unique Cam System

Cam arrangement provides friction-free ball/seat mating during opening and closing cycles

#### Top-Entry Design

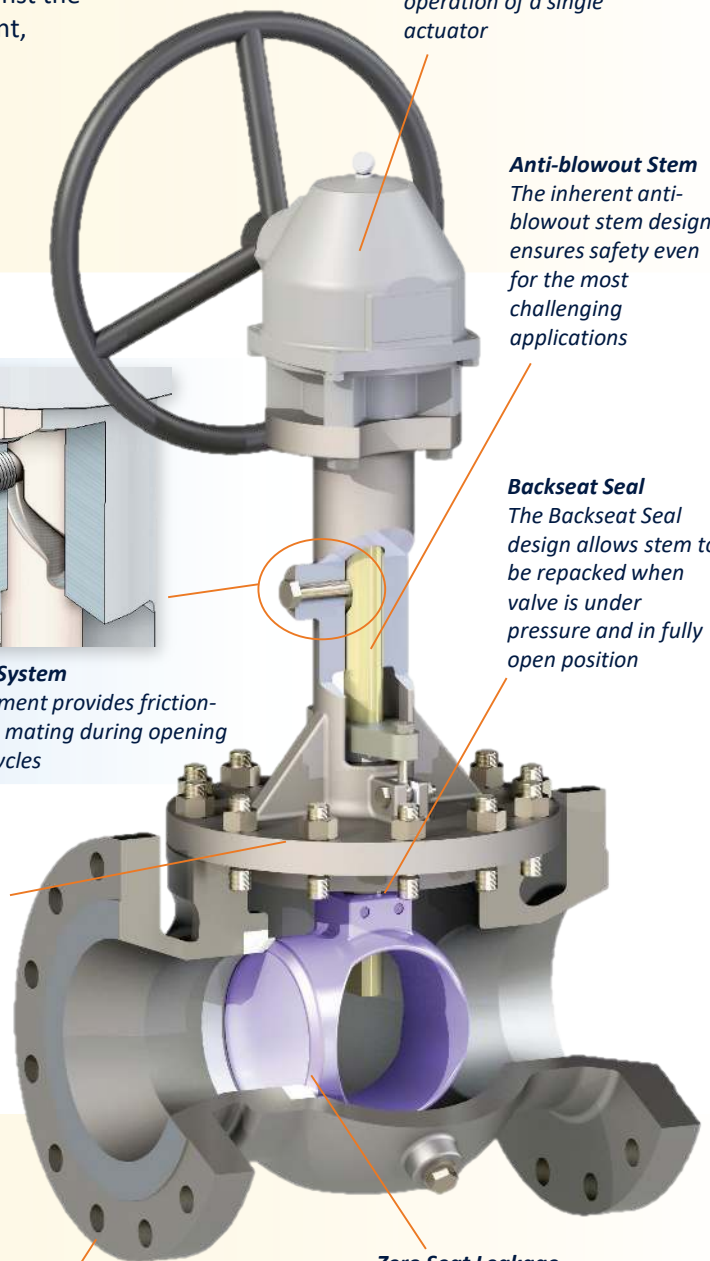
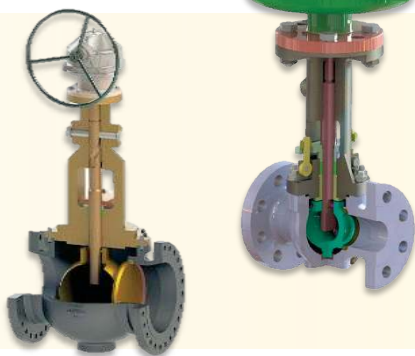
Allows simple in-line inspection and maintenance

#### Zero Seat Leakage

Seat tightness up to ANSI FCI-70-2 Class VI (with the use of special lapping on the Stellite-6 ball and seat sealing area) ensures zero seat leakage

#### Sturdy Design

Minimum heavy-valve wall thickness to API 600/API 6D provides extra corrosion resistance



## Special Ball Valves

### Jacketed Ball Valve

SchuF can supply full or partial jacketing for all ball valves according to customer requirements- for either heating or cooling, and using any media that may be required.

Valves can be supplied with any customer-specified connection method for the heating/cooling media- threaded, flanged, welded, or any type of proprietary coupling system. The number and location of connection ports and drains can also be specified according to the customer requirements for each and every valve position.

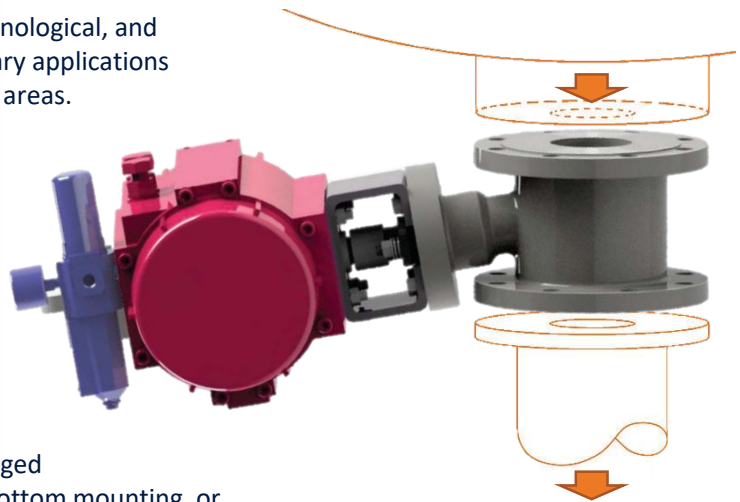


### Flush Bottom Valve

Tank flushing is a critical issue in the pharmaceutical, biotechnological, and micro-biotechnological process industries, as well as in sanitary applications utilised in batch processing reactors, tanking and API-related areas.

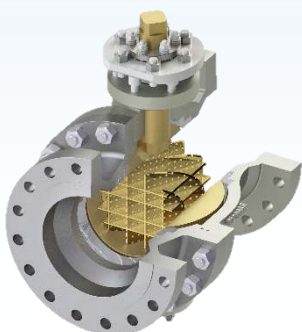
For optimum flushing of tank bottoms, SchuF has designed a state-of-the-art, application-friendly **Segmented Ball Valve**. This is a flush-bottom valve with a single moving part, zero dead-space and cavity-free design, which opens into the tank/outlet flange for 100% flushing and convenient mounting to the tank bottom. As a result, this single valve can resolve many problems associated with tank bottom issues.

The standard **Flush Bottom Valve** can be supplied with a flanged connection, where a one-size-larger flange is used for tank-bottom mounting, or a welded connection, in which case size-to-size mating applies. **Flush Bottom Valves** are supplied with quarter-turn pneumatic rotary actuators, and additional heating or cooling jackets can be supplied on request.



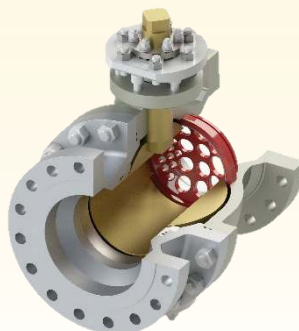
### Noiseless

This is another multistage ball valve, where the stage number, hole configuration and general trim design are chosen to meet process conditions, focussing particularly on noise control.



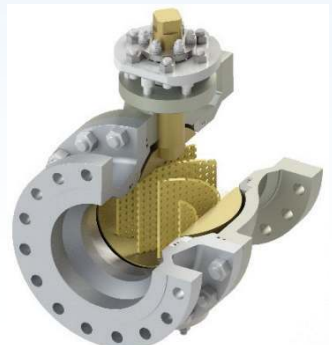
### Disc Controller

This multistage ball valve, suitable for gas applications, offers good control capability (employing a drilled disk designed to meet process conditions) as well as some vibration and noise control.



### Stream Tuner

This is a multistage ball valve, where the stage number, hole configuration and general trim design are chosen to meet process conditions, providing vibration- and noise-control.



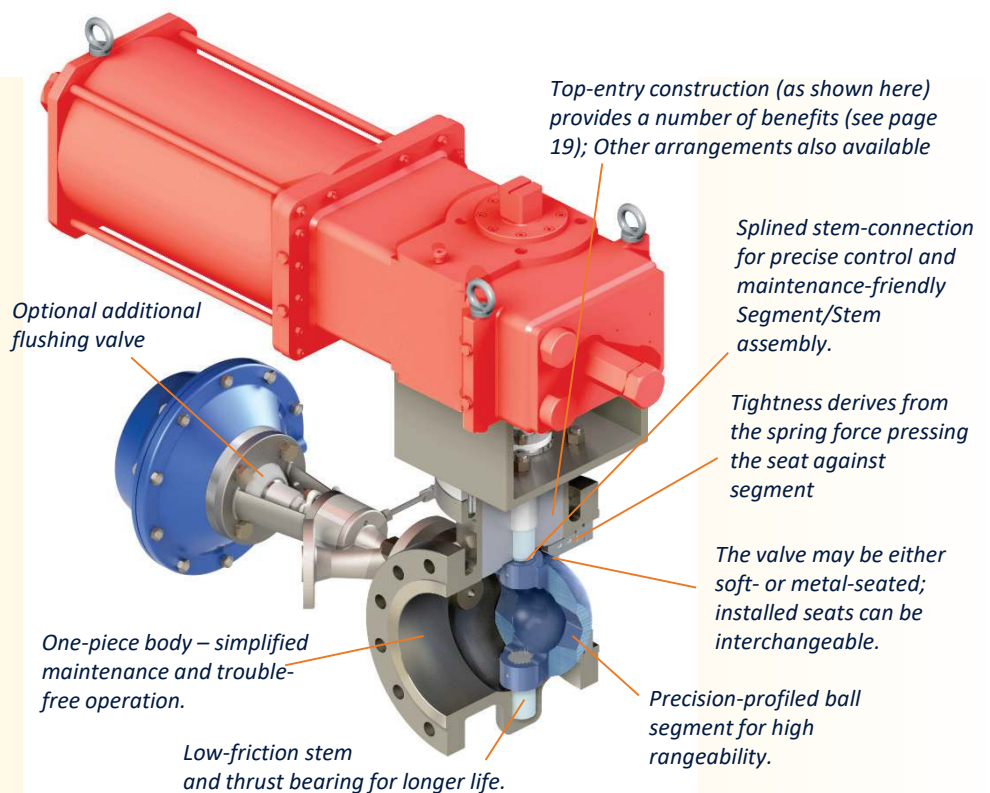
# Segmented Ball Valves

## Design Features

The **Segmented Ball Valve**, with a specially- engineered port flow profile, is designed for defined throttling or on-off applications in various industries where media in slurry form are common- industries including pulp & paper, chemical, power, oil & gas, PTA production and mining.

Segmented Ball Valves offer superior performance in the area of erosive media control.

In addition, these valves feature highly-accurate positioning together with high flow capacity, while the optimised valve flow ensures minimum pressure-drops.



## Segmented Body

- One-piece body design which offers greater rigidity against fluctuating pipe loads.
- Eliminates the leak path associated with two-piece body designs.
- Available as flangeless or with flanged-end connections

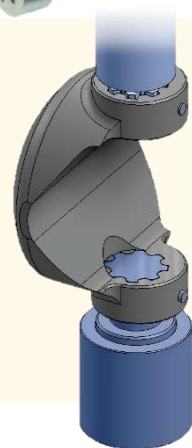


*Right: Segmented Ball Valve with integral pneumatically-actuated flushing valve*



## Segmented Ball

- Carefully designed with characterized V-port to offer rangeability in excess of 300:1, ideal for throttling applications in high-consistency pulp services or slurry applications.
- Perfectly-ground spherical surface with rounded edges ensures lower operating torques for metal-seated valves.
- Hard-coated spherical surface prevents galling.
- The segment itself is carefully designed for appropriate optimum flow.
- The seat is supported during high-pressure openings to prevent any rocking motion, ensuring accurate positioning and longevity of valve service.





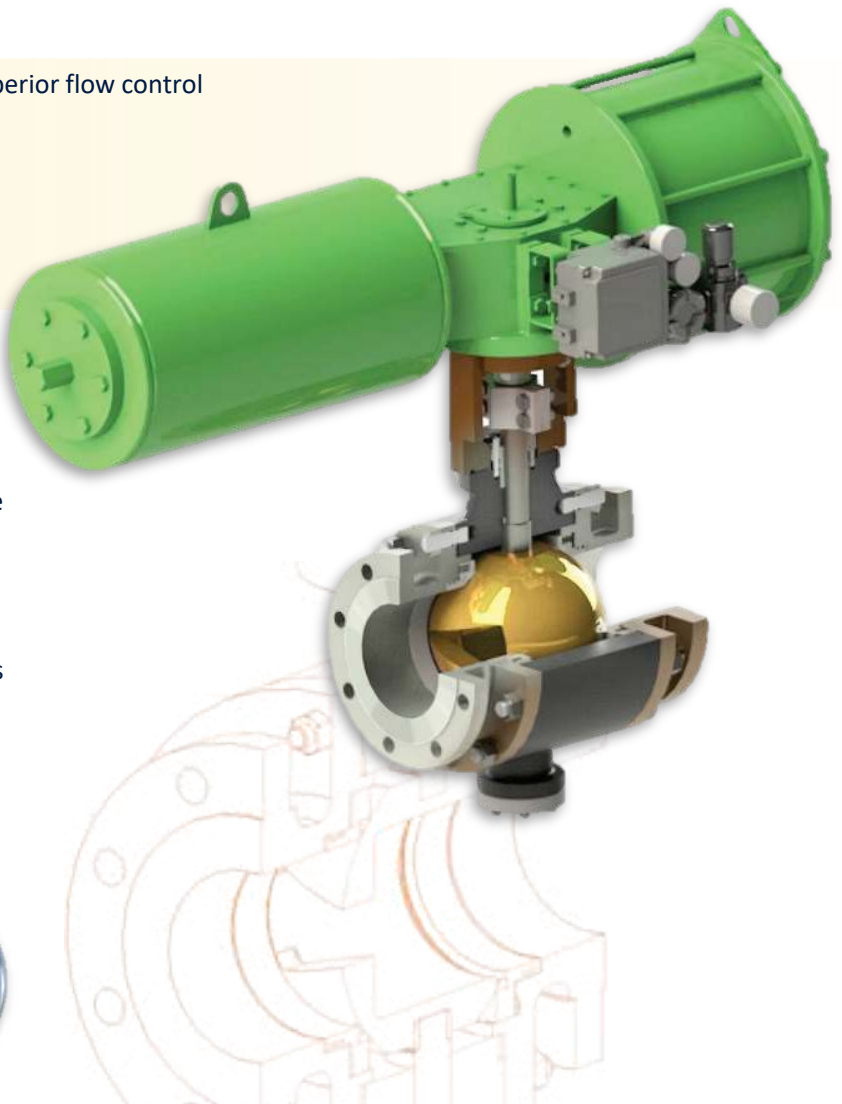
# V-Notch (V-Port) Ball Valves

## Design Features

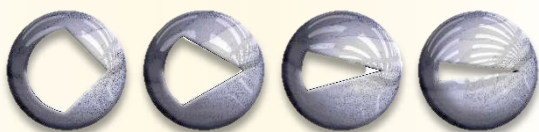
These quarter-turn control ball-valves provide superior flow control capability across a range of control applications.

They are more compact, lighter in weight, and much less expensive than comparably-sized globe valves and segmented control valves.

- V-notch ball valves which utilise custom-designed port profiles offer top-level rangeability and repeatability.
- Exceptional interface capabilities are available with PLCs and automated control systems.
- These valves exceed Class VI offering bubble-tight shutoff with zero leakage.
- High flow capacity
- Ability to function with fluids containing solids and fibres.
- Ease of maintenance.
- SchuF high-quality pneumatic and electric control actuators



*Below: A range of custom-designed port profiles are available to provide the specific flow-control characteristics required*



## V-CONTROL BALL VALVE APPLICATIONS

- **TEMPERATURE CONTROL** - With shut-off ability meeting class VI requirements, these valves are ideal for steam / temperature control.
- **FLOW CONTROL** - The high flow capacity and repeatability of the V-control series valves make this the ideal choice for flow control service.
- **STEAM CONTROL** - The V-control series provide tight shutoff. The live-loaded smart-stem design eliminates typical problems of downstream leakage and stem leakage usually associated with globe-style steam-control valves.
- **CAVITATION** - In applications where the possibility of cavitation exists, these valves can be installed with the **V** downstream, helping prevent damage to the valve body

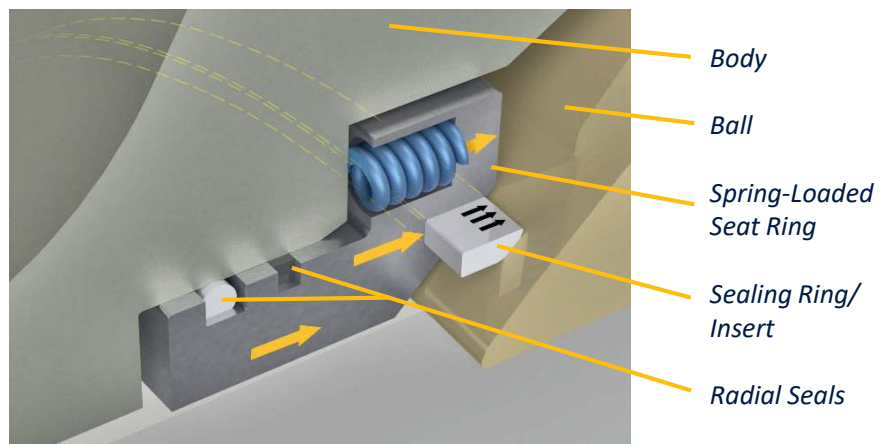


# Soft-Seating and Metal-Seating Options

## Soft-Seated Valves

Soft-seated Ball Valves use a thermoplastic material, such as PTFE, which will provide a tight seal even with low sealing forces. An insert of the sealing material (see below) is held in place in the seat, and in the case of trunnion-mounted valves, a spring-loaded support ring provides the sealing force, pressing against the ball to provide the process seal. In the case of floating-ball valves, the process pressure pushes the ball against the seal on the opposite side.

Soft-seated valves are excellent where chemical resistance and zero leakage (i.e. for gas applications) is important. For higher-temperature processes and more abrasive media, a more durable sealing ring material can be utilised, such as Antimony-Impregnated Carbon Graphite. All soft-seated valves provide a secondary metal seal in the case of any compromised soft-seat situation.



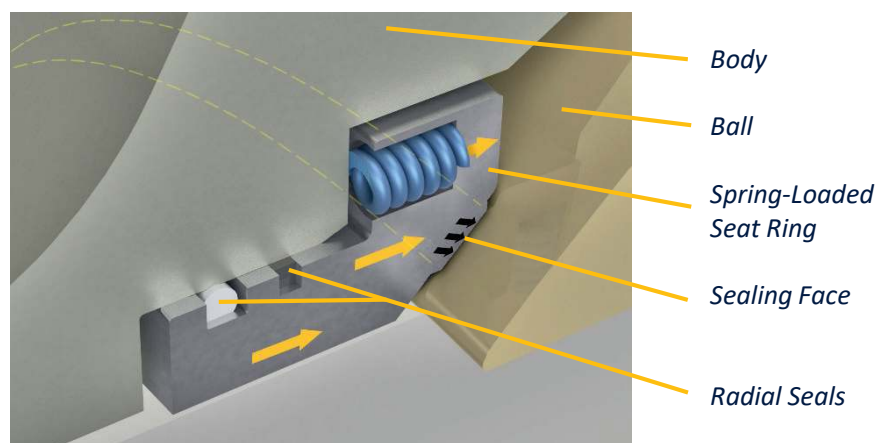
*Above - Soft seat with thermoplastic insert*

## Metal-seated

Metal-seated Ball Valves provide the solution where a soft-seated valve is unsuitable due to high (or cryogenic) temperatures, chemically aggressive media or severe service with abrasive/corrosive media. In these valves, the contact area between the seats and the ball is entirely metal-to-metal. This arrangement will provide Class IV Shutoff and thus metal-seated ball valves are excellent for isolation operations.

The ball and seat sealing surfaces can be supplied with a range of finishes and materials to maximise their effectiveness in the face of differing operational parameters (temperature, media type), such as tungsten carbide, chrome carbide or various cobalt-chromium alloys.

Other coatings are available on request.



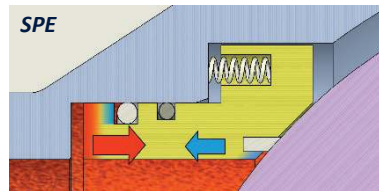
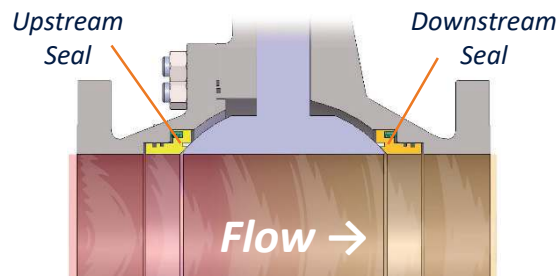
*Above – Metal-to-metal seat*

## Seat Configurations

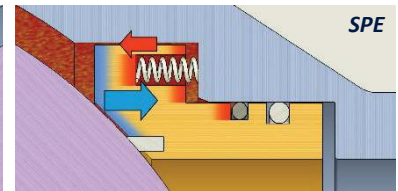
### Standard Seat Configuration: *Single-Piston Effect (SPE-SPE)*

When pressure acts from the upstream or downstream side, SPE seats are pushed against the ball by the piston effect, ensuring tight shutoff. When pressure acts from the body cavity, SPE seats are designed to be pushed *away* from the ball, relieving cavity pressure into the line. For this reason, SPE seats are also known as 'self-relieving'. With a pair of SPE configuration seats, cavity relief always takes place through the lower pressure side.

- *Typical applications: Pipeline ball valves in liquid services, to prevent pressure build-up in body cavities due to changes in temperatures.*



**Upstream Seal:** The larger surface area facing upstream results in more force (red arrow) pushing the seal **against** the ball- this applies to the downstream seal also, where pipeline pressure also pushes the seal against the ball

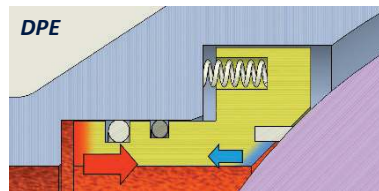


**Downstream Seal:** In the event of an upstream-seal leak, or pressure being received through the body cavity, the larger surface area of the seat ring exposed on the body cavity side results in more force (blue arrow) pushing the seal **away** from the ball

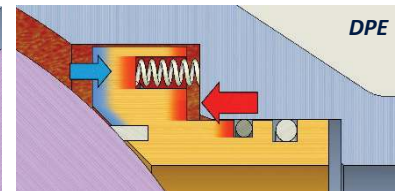
### Optional Seat Configuration: *Double Piston Effect (DPE-DPE)*

DPE seats are designed to be pushed against the ball in all cases, whether pressure comes from the body cavity or from the upstream or downstream side. For that reason, valves with DPE seats cannot perform cavity relief. When used in liquid services, for example, the use of an additional relief valve is recommended.

- *Typical applications: Whenever it is necessary to create an additional safe barrier between the upstream and downstream sides. Recommended in welded-body valves, where seat maintenance is not foreseen.*



**Upstream Seal:** Once again, the larger surface area facing upstream results in more force (red arrow) pushing the seal **against** the ball, and this again applies to the downstream seal also, where pipeline pressure applies



**Downstream Seal:** In the event of an upstream-seal leak, or pressure being received through the body cavity, the smaller exposed surface area on the seat ring body cavity side results in more force (red arrow) once again pushing the seal **towards** the ball

### Optional Seat Configuration: *Combined (SPE-DPE)*

Using a combination of seal types provides another option. In this arrangement, the upstream SPE seat ensures self-relieving capability, while the downstream DPE seat provides a back-up barrier in the case of upstream seat damage. This configuration involves a choosing a preferred direction of installation, with the SPE seat facing upstream. With SPE-DPE configurations, cavity relief will always take place through the SPE seat.

- *Typical application: Riser valves, pig launchers/receivers. DPE seat gives double-isolation to the pig trap, allowing automatic relief of the body cavity at the same time, in situations where pressure build-up occurs.*



## Actuator Options

**Hand-operated** valves are supplied either with a lever or gear operator. The use of a wrench is limited to valves equal to or smaller than:

- 4" - Class 150
- 3" - Class 600
- 2" - Class 1500
- 4" - Class 300
- 3" - Class 900
- 1" - Class 2500

*Actuated valves can be supplied with:*

- **Electric actuators**



**Handwheel**

**Electric Actuator**

-With optional manual override

- **Pneumatic actuators**

**Pneumatic Actuator with Scotch Yoke**

-Linear-to-Rotation actuator, quarter-turn, spring-returned



**Pneumatic Actuator with Rack & Pinion**

-Linear-to-Rotation actuators, single-acting, spring-returned



- **Hydraulic actuators**



**Hydraulic Actuator**

-A Double-acting accumulator can be supplied for fail position

- **Electro-Hydraulic actuators**



**Electro-hydraulic Actuator**

-With self-contained bi-directional motor and integral hydraulic cylinder

- **Gas-Over-Oil actuators**

**Gas-Over-Oil Actuator Systems**

-Gas is used to provide the operating force which is converted to hydraulic force via pressurised oil, providing isolation of the cylinder components from contaminants



# Testing Facilities

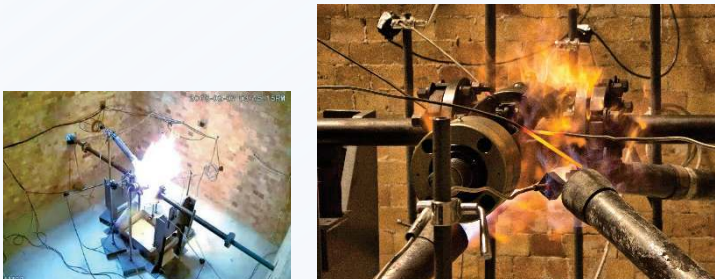
## Fire Safe Valve Testing

The ability of **Fire Safe valves** to resist the flames of a full burn can now be tested in-house at SchuF's new test facility at Coimbatore, India.

The functionality of an entire valve together with those of all its component parts can be tested according to applicable standards- e.g. API607.

All test conditions can be safely controlled in the course of the test and all relevant parameters are monitored and recorded as part of the certification process for each and every valve being tested. A full test report will be created following each test and this will document the performance of the valve in terms of internal and external leakage rates for specific conditions as required by the standard in question.

Customers may also have the option of attending and witnessing a particular test if so desired.



## Double-Cell Test Rigs

SchuF also have the ability to utilise the double-cell test rig in Ireland. This new facility enables SchuF to test all valves and pressure- retaining parts to all major international standards in a safe environment.

It incorporates two separate cells which can operate independently of each other, and each cell is equipped with two high-definition cameras, allowing customers the option of logging in remotely to witness testing over the internet.

The new rig has the following test capability:

**Liquid Shell & Seat test System**

(0–800 bar),

**Gas Shell & Seat test system**

(0–300 bar),

**Vacuum–Air test system**

(–0.5–10 bar),

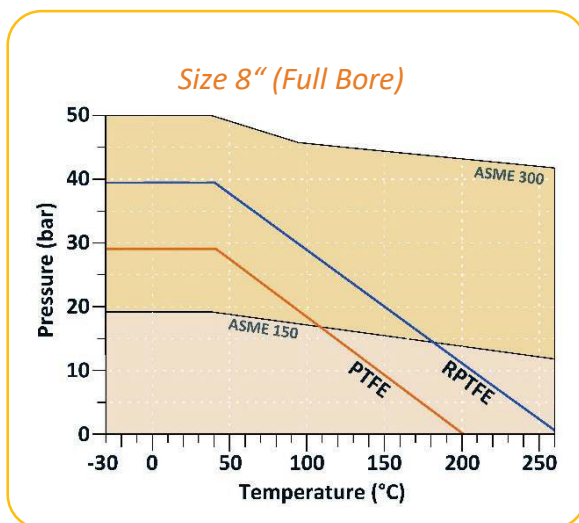
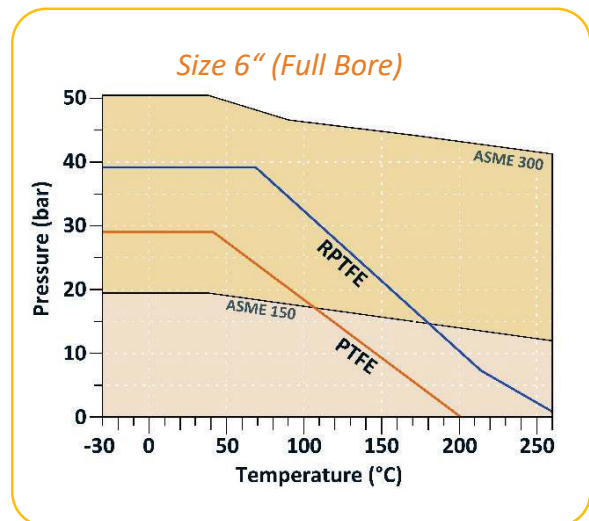
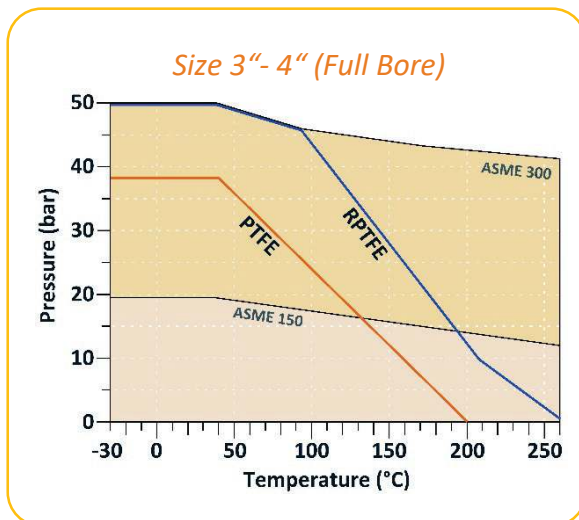
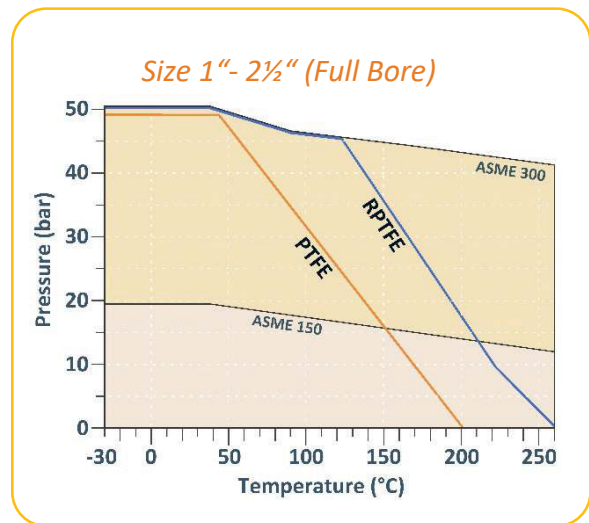
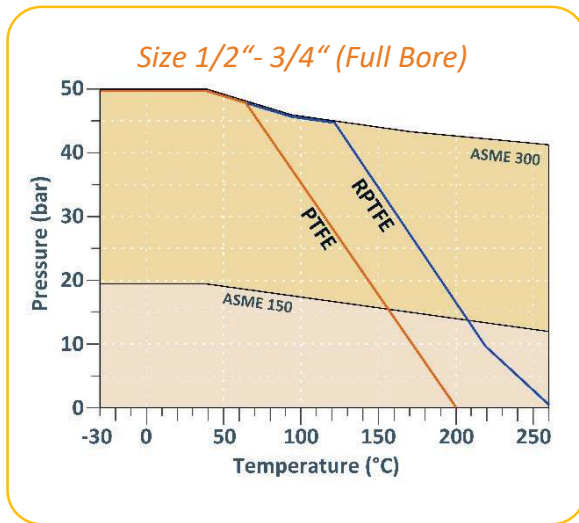
**Helium leakage test system.**





# SchuF Ball Valves – Low Pressure Soft Seal

## Sealing Performance of *PTFE* and *RPTFE* across Valve Size Range



## SchuF Ball Valves - Material Selection

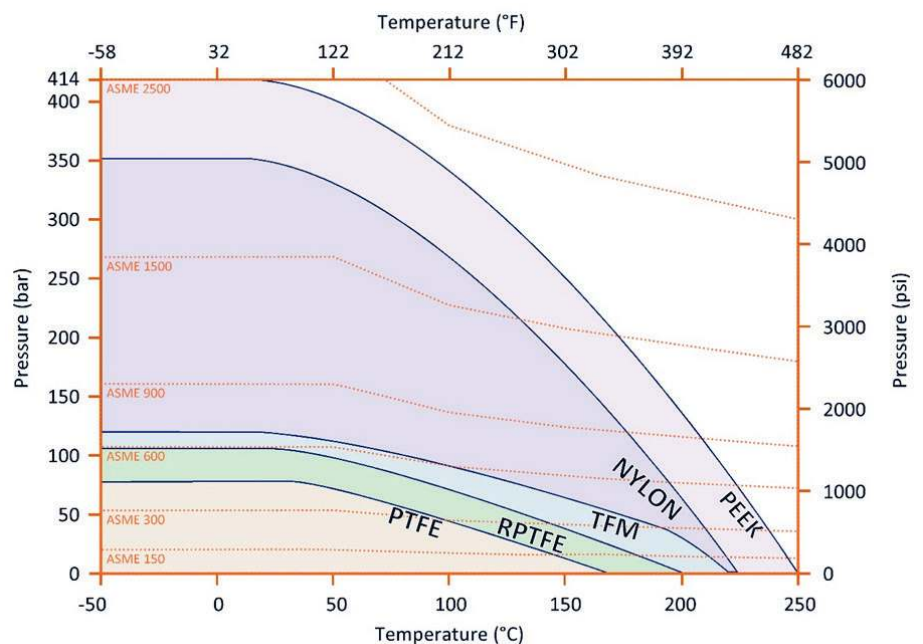
BALL VALVE MATERIALS SELECTION						
Body/ Enclosure	Ball	Stem	Seat Ring	Seat insert	Gland	Spring
A105	A105	AISI4140	A105	RPTFE	A105	AISI302
WCB	A182F316, A182F6A	17.4PH, A182F6A	A182F316, A182F6A	Nylon-Peek, Kel-f	A182F316, A182F6A	INCONEL X750
A350LF2	A105	A350LF2	A350LF2	RPTFE	A350LF2	AISI302
	A182F316	A182F316	A182F316	Nylon-Peek	A182F316	INCONEL X750
	A182F6A	17.4PH, A182F6A	A182F6A	Kel-f	A182F6A	INCONEL X750
A182F316	A182F316	A182F316, A182F51	A182F316	RPTFE, Nylon- Peek, Kel-f	A182F316	INCONEL X750
Titanium Grade 3	Titanium Grade 5	Titanium Grade 5	Titanium Grade 5	TFM 1600/Carbon & Antimony Ring	A105	INCONEL X750
A351 CF8M	A351 CF8M Hard-Faced	17-4PH	A351 CF8M Hard-Faced	A351 CF8M Hard-Faced	A105	INCONEL X750

## Soft Sealing Materials

● Seal materials are selected according to the service of the valve and leakage requirements.

● Zero leakage can be more easily obtained with softer seals, while the resistance to scratches and to other factors (temperature, pressure, erosion) is obtained using harder seals

- Nylon 6 , Nylon 6+MoS2, Nylon + Fibre-glass, Nylon 12
- Devlon,
- Peek-V, Peek-S, Peek-E,
- Peek + PTFE, Peek + Graphite
- Virgin P.T.F.E., P.T.F.E. Carbon filled/mod filled/mod
- P.C.T.F.E.





## Table of Features

FEATURES	SIDE-ENTRY	WELDED BODY	TOP-ENTRY
Trunnion-mounted	Standard	Standard	Standard
Independent Stem and Ball	Standard	Standard	Standard
Independent Floating Seats	Standard	Standard	Standard
Primary Soft seats, Secondary Metal Seats	Standard	Standard	Standard
Primary Metal seats, Secondary Soft Seats	On request	On request	On request
Metal-to-metal Seats	On request	On request	On request
Self-relieving Seats	Standard	Standard	Standard
Single-Piston Seat Effect	Standard	Standard	Standard
Double-Piston Seat Effect	On request	On request	On request
Combination (self-relieving/double piston) Seats	On request	On request	On request
API 6d Design and Construction	Standard	Standard	Standard
Face-to-face Dimensions to API 6d and ANSI B16.10	Standard	Standard	Standard
Fire-Safe Design to API 6FA - API 607 - BS 6755 part 2	Standard	Standard	Standard
Full, Reduced or Venturi Port	On request	On request	On request
Flanged Ends/Weld-Ends/Hub-Ends	On request	On request	On request
Transition Pups for Weld-End Valves	On request	On request	On request
Anti-static Design	Standard	Standard	Standard
Anti-Blowout Stem	Standard	Standard	Standard
Double-Block-And-Bleed	On request	On request	On request
Seat/Ball in-line Integrity checkable in Closed Position	Standard	Standard	Standard
Drain Plug	Standard	Standard	Standard
Drain Valve	On request	On request	On request
Vent Valve (on 6" and larger)	Standard	Standard	Standard
Emergency Sealant Injection on Seats (on 6" and larger)	On request	On request	On request
Stem and Seat Pocket Overlay	On request	On request	On request
All Seal Areas Overlay	On request	On request	On request
All Wetted Parts Overlay	On request	On request	On request
Body Internal Lining	On request	Not Available	On request
Extended Stem for Underground Installation	On request	On request	On request
Extended Bonnet for Low or High Temperature Operation	Standard	Standard	Standard
Locking Device	Standard	Standard	Standard
Lifting Lugs	Standard on $\geq 6"$	Standard on $\geq 6"$	Standard on $\geq 6"$
Supporting Feet	Standard on $\geq 6"$	Standard on $\geq 6"$	Standard on $\geq 6"$
Manual or Actuated Operation	On request	On request	On request
Pup Piece/Additional Welded Pipe sections	On request	On request	On request

# Quality Standards

## American Petroleum Institute – API

API 6D -Specification for pipeline valves  
API 6D SS -Specification for subsea pipeline valves  
API 6FA -Specification for fire test for valves  
API 598- Valve Inspection & testing  
API 6A-Specification for Wellhead and Christmas Tree Equipment  
API 607-Fire-Tested Valves  
API 605 -Large Diameter Steel Flanges

## American Society of Mechanical Engineers – ASME

ASME B 16.5 -Pipe Flanges & Flanged Fittings.  
ASME B 16.10 - Face-to-Face and End-to-End Dimensions of Valves.  
ASME B 16.25 -Butt welding Ends  
ASME B 16.34 -Valves - Flanged, Threaded, and Welding End  
ASME B 31.3 -Process Piping  
ASME B31.8 -Gas Transmission and Distribution Piping Systems  
ASME B 46.1 -Surface Texture (Surface Roughness, Waviness, and Lay)  
ASME B 16.47 -Large Diameter Steel Flanges

## International Organization for Standardisation – ISO

ISO 9001:2000 -Quality management systems  
ISO 14313 -Petroleum and natural gas industries  
ISO 14001 -Environmental management – ISO

## British Standards

BS EN 10222 -Steel forgings for pressure purposes.  
BS EN 9000 -Quality management systems.  
BS 1560 -Flange Dimension Chart  
BS EN 10213 -Steel castings for pressure purposes  
BS 4504 -Flange Dimensions EN1092-1 BS4504  
BS EN 12266 -Industrial valves. Testing of metallic valves. Pressure tests, test procedures and acceptance criteria. Mandatory requirements  
BS 5351 -Specification for steel ball valves for the petroleum

## Manufacturers Standardization Society – MSS

MSS SP 6 -Standard Finishes For Contact Faces Of Pipe Flanges  
MSS SP 25 -Standard Marking System for Valves, Fittings, Flanges  
MSS SP 44 -Steel Pipe Line Flanges  
MSS SP 45 -Bypass And Drain Connections  
MSS SP 55 -Quality Standard for Steel Castings for Valves, Flanges  
MSS SP 61 -Pressure Testing of Valves  
MSS SP 72 -BALL VALVES WITH FLANGED OR BUTT-WELDING



# Engineering Data- Testing/Leakage Rates

## Valve Testing

100% of valves manufactured by SchuF are tested in excess of API 6D requirements prior to shipping.

## Standard performance tests

- Visual and dimensional check
- High-pressure hydrostatic shell test
- High-pressure hydrostatic seats test
- Low-pressure air seats test
- Stem torque test



LEAKAGE RATES			
ISO 5208 SEAT LEAKAGE RATES AS PER API 6D	Seat Test Type		
	HP Hydrostatic @1.1 rating pressure	LP Pneumatic @ 6 bars	HP Gas @ 1.1 rating pressure
Soft Seated valves	Rate A	Rate A	Rate B
Metal Seated valves	Rate D	Rate B	Rate D

TESTING PRESSURE RANGE												
ASME CLASS	Rating			Body Test			H.P. seat test			Air Seat Test		
	psi	bar	kg/cm <sup>2</sup>	psi	bar	kg/cm <sup>2</sup>	psi	bar	kg/cm <sup>2</sup>	psi	bar	kg/cm <sup>2</sup>
150	275	19	19.3	413	28.5	29	303	20.9	21	100	6	7
300	720	50	51	1080	75	77	792	55	56	100	6	7
600	1440	99	101	2160	148.5	152	1584	108.9	111	100	6	7
900	2160	149	152	3240	223.5	228	2376	163.9	167	100	6	7
1500	3600	248	253	5400	372	380	3960	272.8	278	100	6	7
2500	5988	413	421	8982	619.5	632	6587	454.3	463	100	6	7

# Customer Enquiry Sheet

## Part 1- Your Company Information

Name: _____	Title: _____
Company: _____	Telephone: _____
Email: _____	Fax: _____

## Part 2- Your Order Information

### General:

Quantity: _____	Application: _____
Tag No.: _____	Project Name: _____
Valve Model: _____	Project No.: _____

## Part 3- Valve and Process Information

### Valve Information:

Valve Inlet Size (DN/Inch): _____	Valve Pressure Rating: _____
Valve Outlet Size (DN/Inch): _____	Valve Delta P: _____
Inlet Flanged/Weld-End: _____	Outlet Flanged/Weld-End.: _____
Operating Temp: _____	Operating Pressure: _____
Design Temp: _____	Design Pressure: _____
Body Material: _____	Trim Material: _____
Medium: _____	Fugitive Emissions/Clean Air.: _____
Certificates Etc.: _____	Firesafe Rating: _____
Actuator Type: _____	Air Supply Pressure ( <i>if applicable</i> ): _____
Air-Fail Position: _____	Manual Override: _____

## Part 4- Further Notes/Topics/Info

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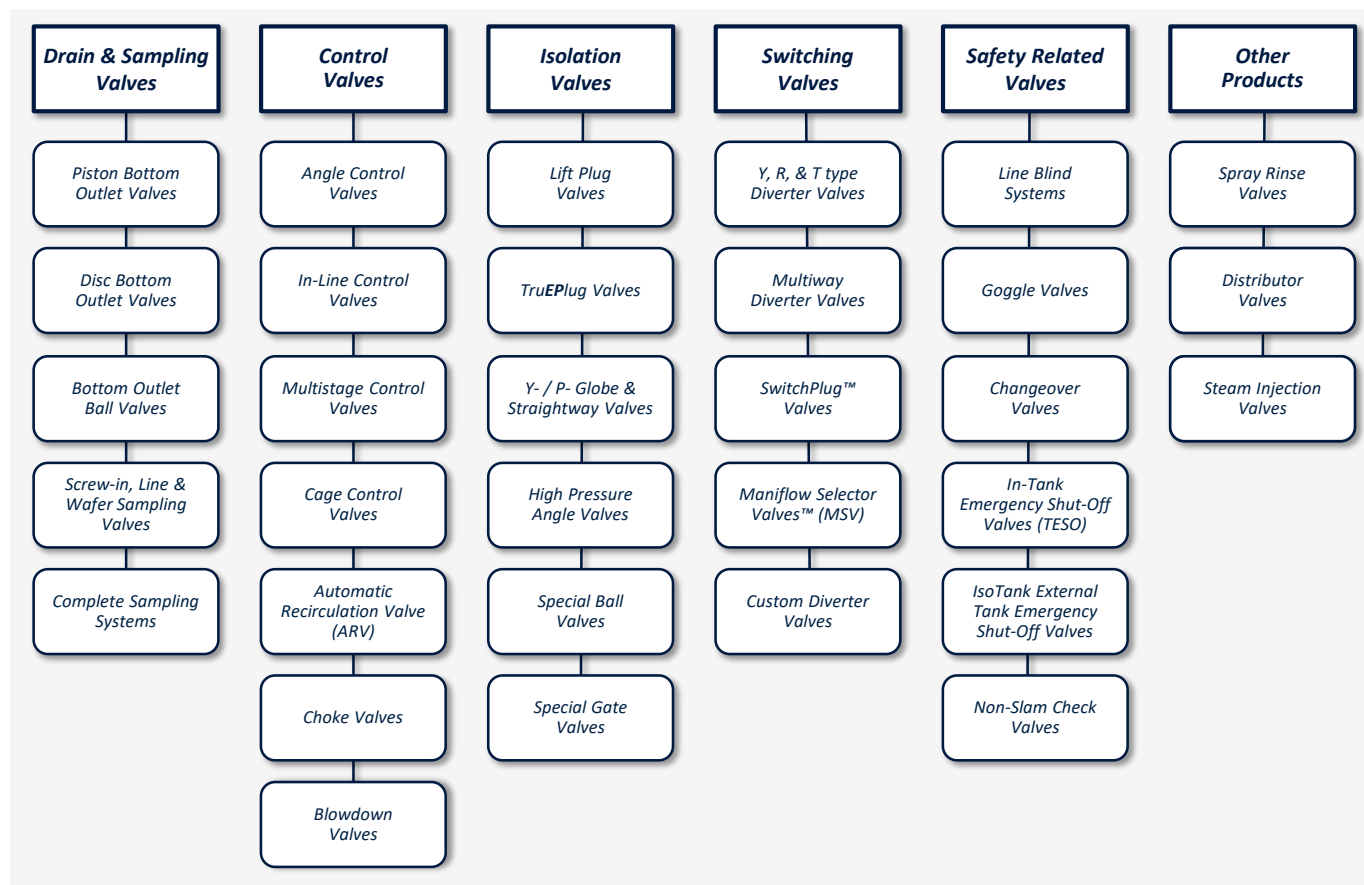
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## Product Portfolio Overview

The SchuF Group has delivered over one million valves during its 100-year history, to a wide variety of industries in over 50 countries worldwide.

Headquartered near Frankfurt, Germany, the company has additional design and manufacturing centres in India, Ireland, Italy, UK, and the USA.

The SchuF Group has sales and agent offices servicing virtually every country in the world, and manufacture valve products that control, isolate, divert, and sample liquids, gases, powders, and slurries. Our extensive product range of engineered, customized valves includes:



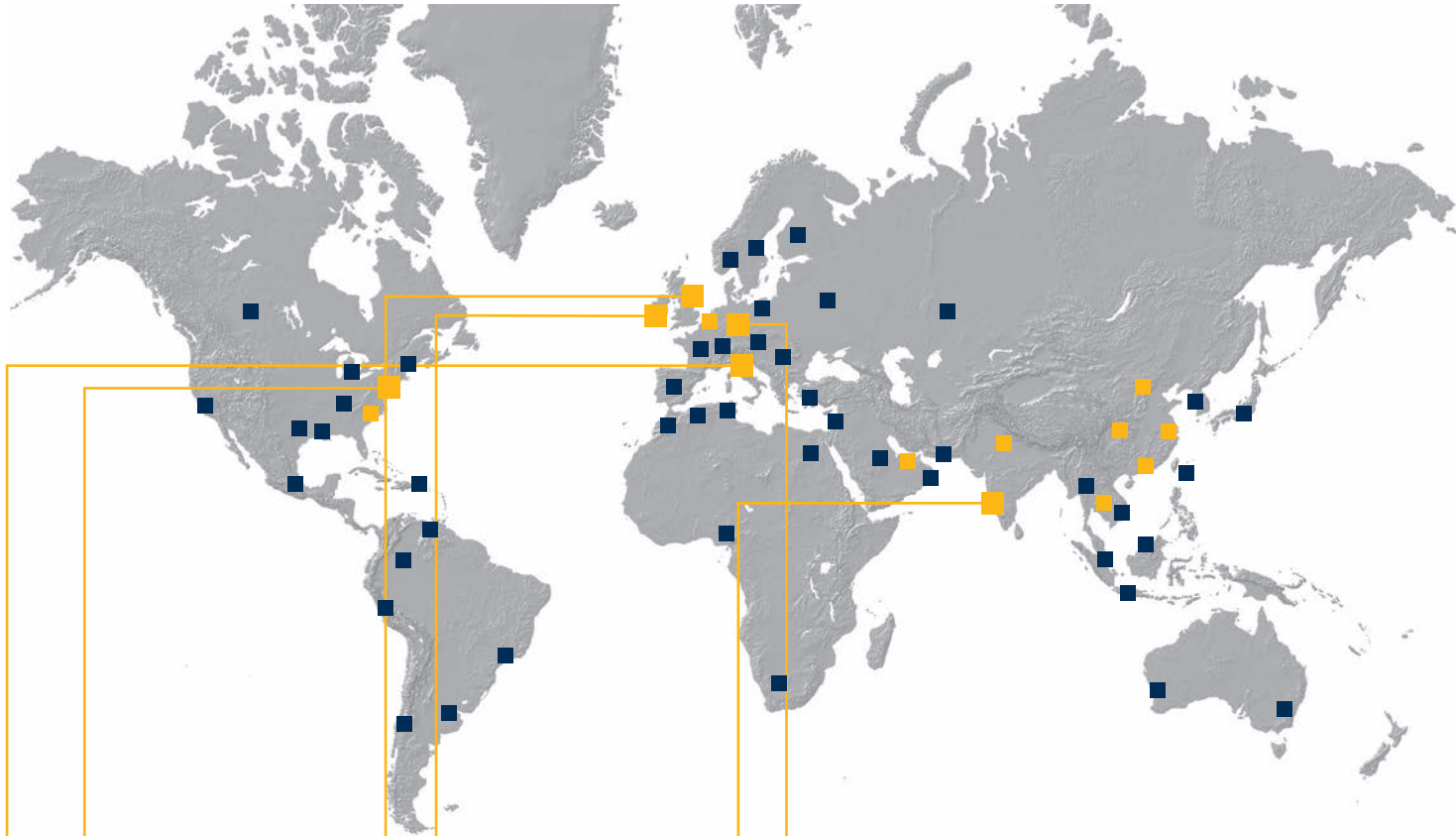
### SchuF Valves Client List:

- |                |                     |                          |
|----------------|---------------------|--------------------------|
| ▪ BASF         | ▪ Indorama Ventures | ▪ PetroCanada            |
| ▪ BAYER        | ▪ INEOS             | ▪ Reliance               |
| ▪ Bechtel      | ▪ Jiangsu Hengli    | ▪ SABIC                  |
| ▪ Borealis     | ▪ Jindal            | ▪ Shinkong Synth. Fibers |
| ▪ BP           | ▪ JSC Tatneft       | ▪ Styrolution            |
| ▪ Celanese     | ▪ Lanxess           | ▪ Suncor                 |
| ▪ Chemtex      | ▪ Lurgi Zimmer      | ▪ Tata Chemicals         |
| ▪ Eastman      | ▪ M & G             | ▪ Taita Chemical Co      |
| ▪ Fluor Daniel | ▪ Motiva            | ▪ Technip                |
| ▪ FORMOSA      | ▪ CHS               | ▪ Tecnimont              |
| ▪ Husky        | ▪ Nan Ya            | ▪ Temex                  |
| ▪ GE Oil & Gas | ▪ OMV Petrom        | ▪ 3M                     |





# SchuF Worldwide



[www.schuf.com](http://www.schuf.com) • [www.schuf.de](http://www.schuf.de)

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**USA Sales Channel**  
**SchuF (USA) Inc.**  
[sales@schuf.us](mailto:sales@schuf.us)

## IRELAND



**SchuF Valve Technology GmbH**  
[sales@schuf.ie](mailto:sales@schuf.ie)

## GERMANY



**SchuF-Armaturen und  
Apparatebau GmbH**  
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## Your Local Agent: