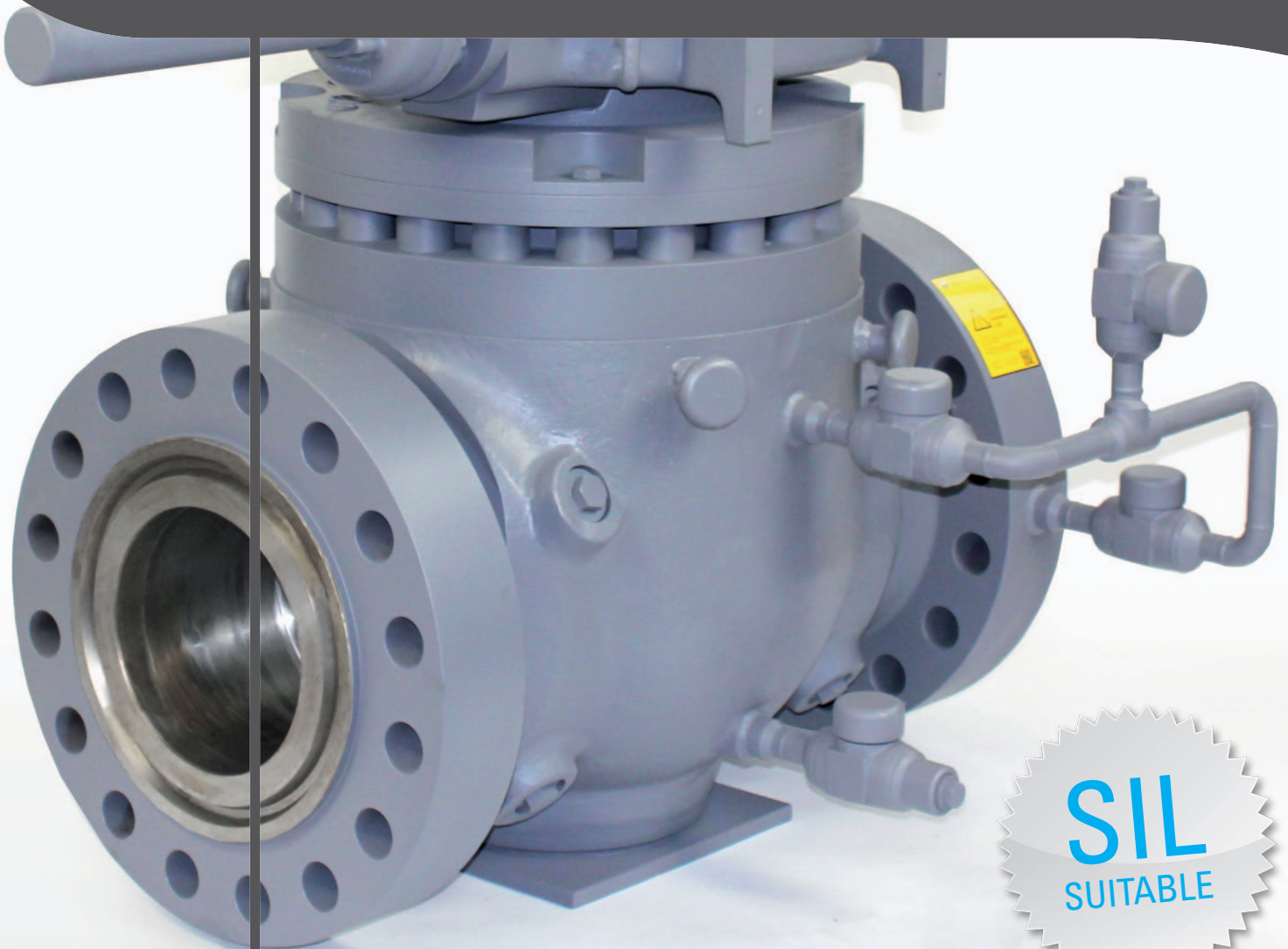


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**SCHUCK TYPE U BALL VALVE**

Shut-off valve in pipelines and systems for highly demanding operating conditions and high-maintenance media.

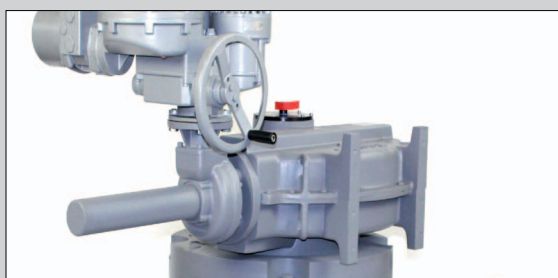


**SIL**  
SUITABLE

---

## SCHUCK TYPE U BALL VALVE

Shut-off valve in pipelines and systems for highly demanding operating conditions and high-maintenance media.



### APPLICATIONS

Shut-off valve for above ground applications in plants, on stations, platforms, pumping stations, etc.

Minimum temperature  $-60^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$

Normal temperature  $-29^{\circ}\text{C}$  to  $+120^{\circ}\text{C}$

Maximum temperature  $-29^{\circ}\text{C}$  to  $+160^{\circ}\text{C}$

### MANUFACTURING

**Manufacturing, testing & design standards**

EN 12266 -1 API 6D, ISO 14313 / API 6D, AD2000, ASME Sec. VIII Div. 1

**Seal tightness, function & fire safety**

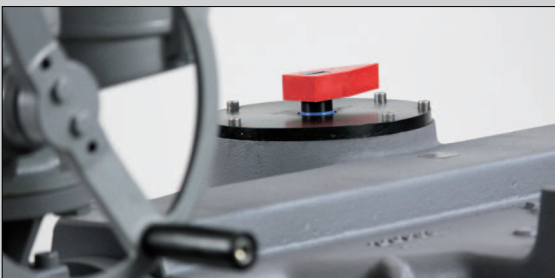
ISO5208, DIN 3230 T5 PG3 for gas , ISO 10497/API 607

You can find more detailed information in the glossary.



## PRODUCT FEATURES

- » Top entry ball valve with U-shaped housing
- » Use in gas, oil and water pipeline systems
- » Wearing part renewal without valve demounting
- » Double-pin seal with fire-safe packing
- » Trunnion-mounted
- » Pressure rating up to CLASS 2500
- » Piggable
- » With anti-blow-out stem
- » Available as a single or double piston effect
- » Three sealing systems available (PMSS, SO & MM)
- » Temperature ranges from -60° C to +160° C
- » Secondary sealant injection port facility



## DESIGN

Suitable for use with natural sweet and sour gas, oil, oil with sulfur, hot and cold water.

Top entry valves are primarily flanged in the pipeline.

Available from 6" to 42"

up to CLASS 2500

## MATERIALS

Body: ASTM A 350 size LF2, GS-21 Mn5, ASTM A 352 Gr. LCC (mod)

Ball: G-X20Cr14V, ASTM A 217 Gr. CA-15, TSTE 355/nickel-plated, ASTM A 350 Gr. LF2/ENP, A 479 Type 410

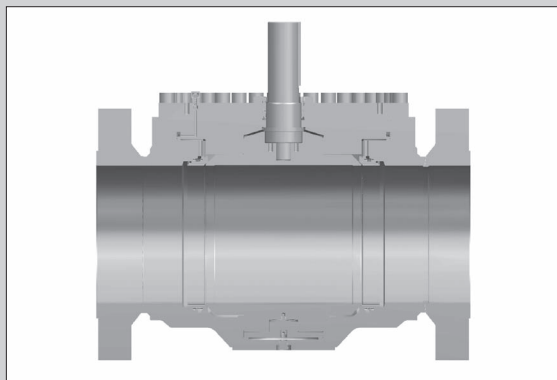
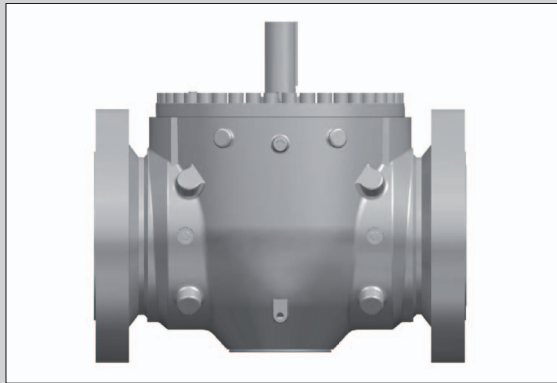
Flange/welded end: TSTE 355, ASTM A 350 Gr. LF2, ASTM A352 Gr. LCC (mod)

Other materials on request.

# SCHUCK TYPE U BALL VALVE

Typ U 6 to 48", Typ U 6" to 42", Typ U 6" to 24", Typ U 6" to 12"

Type overview and design



## TYP U 69/88 WITHOUT SEAT BUSHING

U-shaped housing (top entry) with bonnet for fast, easy replacement of wearing parts

Trunnion-mounted ball plugs

Main seal with pre-tensioned spring elements, soft sealing (SO), primary metal & secondary soft (PMSS) or metal to metal sealing (MM)

Actuator trunnion protected against blow-outs

Venting and draining connections

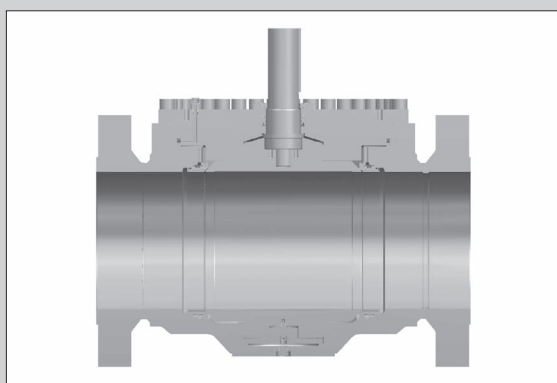
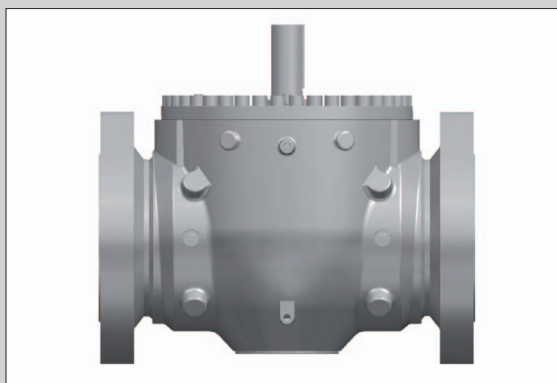
Connections for secondary sealants, optionally for main seal, trunnion seal and lid seal.

Double trunnion seal with additional fire safe seal, replaceable under pipeline pressure

Main seal double block and bleed, unilaterally sealing (single piston) with self-relieving body cavity

Available from 6" to 48",

up to ANSI CLASS 900



## TYP U 69/88 WITH SEAT BUSHING

Pot-shaped housing (top entry) with bonnet for fast, easy replacement of wearing parts

Trunnion-mounted ball plugs

Main seal with pre-tensioned spring elements, soft sealing (SO), primary metal & secondary soft (PMSS) or metal to metal sealing (MM)

Actuator trunnion protected against blow-outs

Venting and draining connections

Connections for secondary sealants, optionally for main seal, trunnion seal and lid seal.

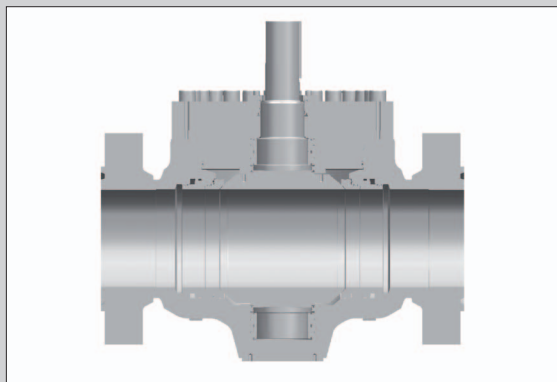
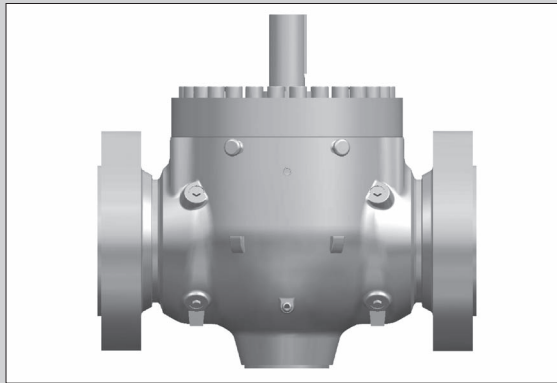
Double trunnion seal with additional fire safe seal, replaceable under pipeline pressure

Main seal double action sealing system (double piston) or unilaterally sealing (single piston) with self-relieving body cavity

Readjustable pressure of spring elements via setting screws accessible from outside

Available 6" to 42", up to ANSI





### TYP U 15/10 AND 25/11 WITH SEAT BUSHING

U-shaped housing (top entry) with lid for fast, easy replacement of wearing parts

Trunnion-mounted ball plugs

Main seal with pre-tensioned spring elements, soft sealing (SO), primary metal & secondary soft (PMSS) or metal to metal sealing (MM)

Actuator trunnion protected against blow-outs

Venting and draining connections

Connections for secondary sealants, optionally for main seal, trunnion seal and lid seal.

Double trunnion seal with additional fire safe seal, replaceable under pipeline pressure

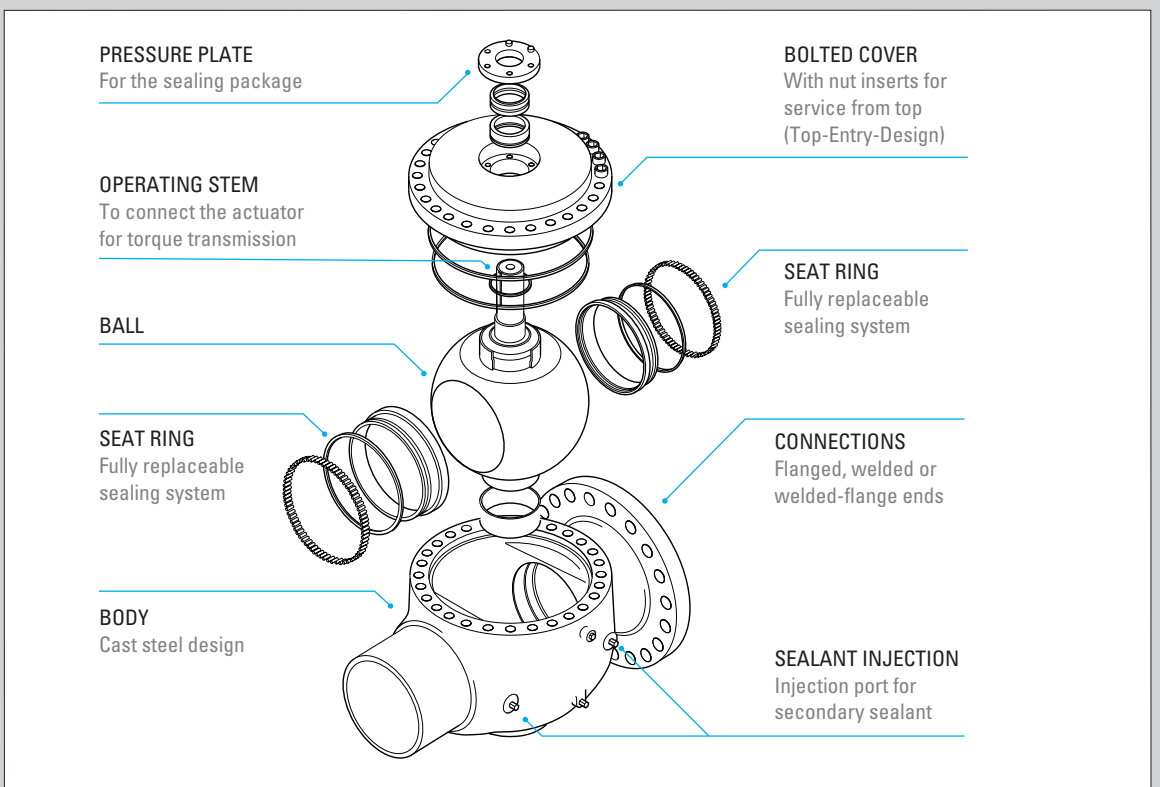
Main seal double action sealing system (double piston) or unilaterally sealing (single piston) with self-relieving body cavity

Readjustable pressure of spring elements via setting screws accessible from outside

**UP TO CLASS 2500**

Available from 6" to 24", ANSI CLASS 1500

Available from 6" to 12", ANSI CLASS 2500



# SCHUCK TYPE U BALL VALVE

## Design features

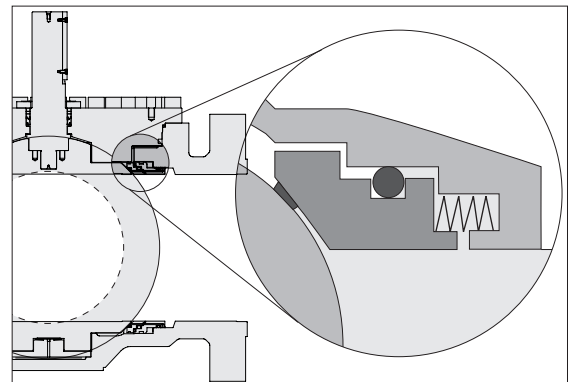
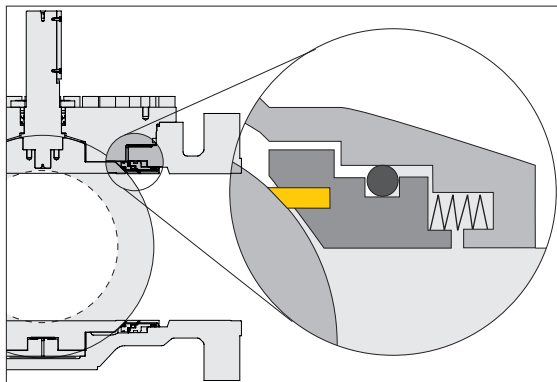
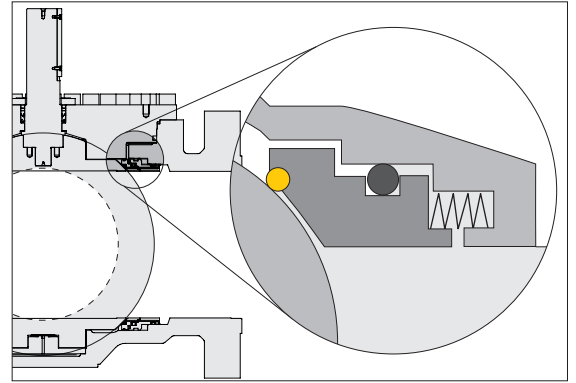
## Sealing systems

Top left: Schuck seat ring

Top right: primary metal, secondary soft seated (PMSS)

Bottom left: soft seated (SO)

Bottom right: metal to metal seated (MM)



### DESCRIPTION

Different sealing systems are available depending on applications. Our range of products offers soft-sealing and metallic-sealing systems as well as a primary metallic/secondary soft-sealing system with an integrated seal ring which we developed ourselves. This system is particularly resilient and reliable.

### CONFIGURATIONS

**Primary metal/secondary soft seated (PMSS)**  
metallic seal plus elastomer seal

Wear-resistant and not sensitive to dirt

Schuck standard, broad range of applications

### Soft seated (SO)

A seal ring made of plastic is used for sealing

Larger variety of materials available (PTFE, PA, PEEK, etc.)

High temperatures

Low torque

For high pressures, special media

Variable sealing material and thus optimum for many types of media

### Metal to metal seated (MM)

A metallic contact is used for sealing

High resistance to wear and not sensitive to dirt and deposits

Suitable for high pressures

Wide temperature range

# SCHUCK TYPE U BALL VALVES

## Design features

### Ball seats

Top left: Ball valve flow in open position

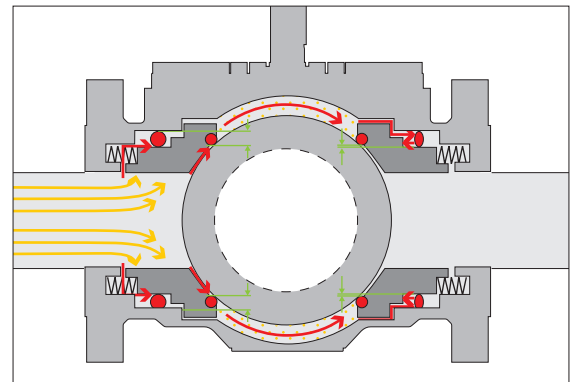
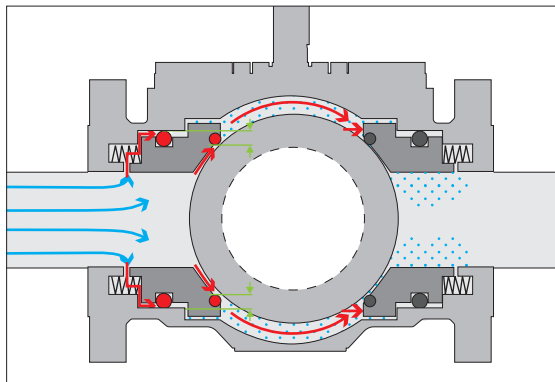
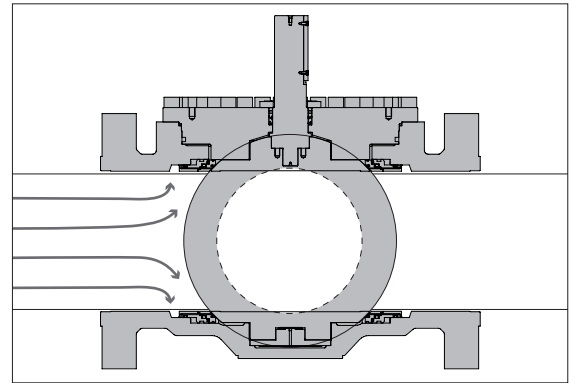
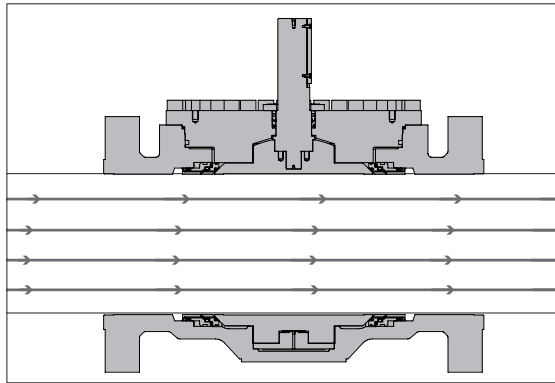
Top right: Ball valve in closed position

Bottom left: Single piston sealing system

Bottom right: Double piston sealing system

Drawing legend:

- Medium
- Pressure
- Differential pressure surface



### DESCRIPTION

Different ball valve sealing systems are used depending on the type of media. Basically, there are different main seals for liquid media and main seals for gaseous media.

The different media require a special adapted sealing system. For the double piston, the seat ring also seals against a pressure load from the body cavity (or alternatively for a pressure increase in the dead space), and is therefore used for gaseous (compressible) media. With the single piston design, the seat rings retract and balance if there is pressure in the dead space. The single piston design is used for liquid (non-compressible) media.

### CONFIGURATIONS

#### Single Piston

Sealing force is increased by the line pressure  
 Self-relieving due to increased body cavity pressure  
 Used for non-compressible liquid media

#### Double Piston

Sealing force is increased by the line pressure and the body cavity pressure  
 Self-pressing seating ring  
 Inlet and outlet side sealing  
 Used for compressible gaseous media

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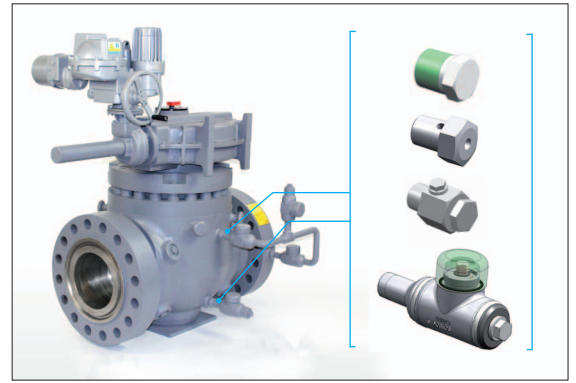
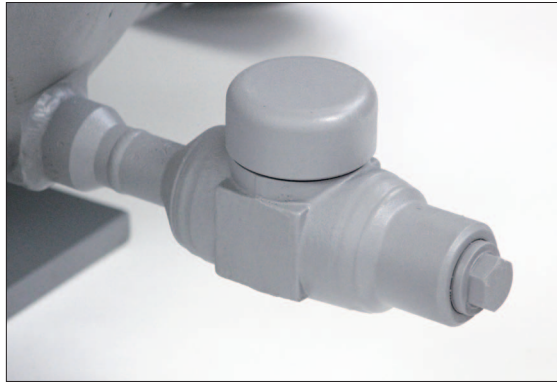
# SCHUCK TYPE U BALL VALVES

## Design features

### Venting, draining

Top left: Venting ball valve of an above-ground ball valve

Top right: The different connections for draining/venting for an above-ground ball valve



#### DESCRIPTION

Different attachments can be removed for emptying and venting the body cavity. Just the right attachment is available for any application and any customer request, from the lowest-cost plug variation, continuing with the bleeder plug, up to a ball valve.

Here, the connector on the bottom is for draining, and the connector on top is for venting.

Draining and venting are used, for example, for service work in order to relief the body cavity of pressure and condensate. These attachments are also used for pressure and leak testing, and are thus an indispensable instrument for a safe and reliable operation of the ball valve.

#### ABOVE-GROUND CONFIGURATION

##### Vent and drain options

Plug, bleeder plug, venting valve, ball valve



# SCHUCK TYPE U BALL VALVES

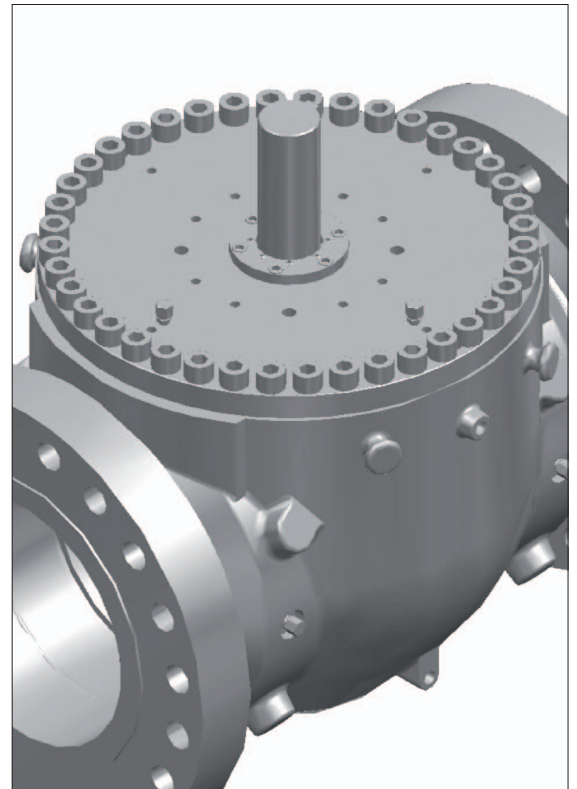
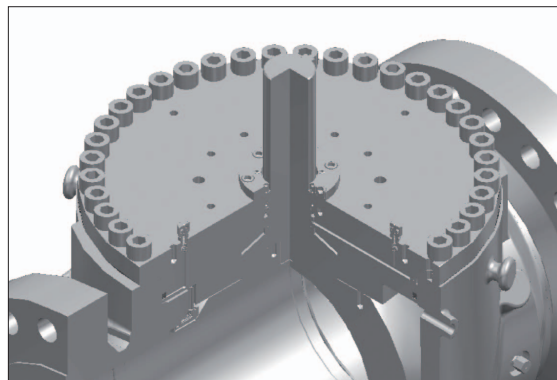
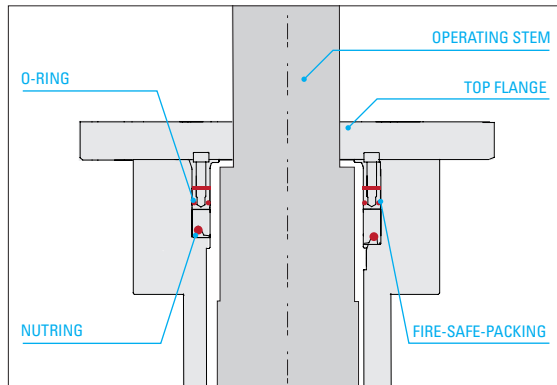
## Design features

## Operating Stem

**Top left:** The triple trunnion seal of operating stem.

**Right:** Type U ball valve, below-ground with trunnion, trunnion extensions, and trunnion seals.

**Bottom left:** Sectional view of the Type U ball valve with operating stem



### DESCRIPTION

The operating stem is the connecting element of the ball valve. It is used to ultimately actuate and control the valve. Extremely high torque can be exerted on it (up to 600,000 Nm). For that reason, the operating stem, its installation, as well as the sealing codetermine the reliable operation of a Top entry ball valve.

The operating stem found on the Schuck Type U ball valve is protected against blow-outs by a press-fit construction and additional welding-in.

Trunnion seals can also be replaced under full line pressure.

### CONFIGURATIONS

**Trunnion seal**

Double trunnion seal and fire safe package

TA-Luft approved

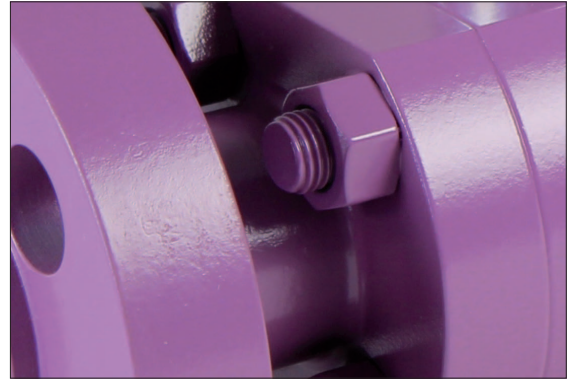
# SCHUCK TYPE U BALL VALVE

## Design features

## Outside coating

**Left:** The Schuck standard coating in yellow

**Right:** Schuck ball valve with outer coat in any RAL tone requested by the customer



### DESCRIPTION

Even a robust component like the fully-welded Schuck Type S ball valve must be protected against the effects of weather and mechanical damage above ground and also for below-ground installation. The coating is decisively responsible for this important protection. It is applied to the ball valve at the end of the production chain using a predetermined minimum layer thickness.

The coating standards of our Schuck ball valves meet all demands.

All coatings are inspected and approved by an in-house expert or by an expert hired by the customer.

Through these measures, we can guarantee the highest degree of protection against corrosion for your ball valve.

The outer coating can be implemented in any RAL color at your request.

### CONFIGURATIONS

**Coatings for moderate corrosiveness > 200µm**  
Außenbeschichtung Outer coating "C3"  
ISO 12944-2

Temperature range: up to 120°C

Fields of application: above ground, urban and industrial atmospheres, moderate pollution from sulfur dioxide. Coastal regions with low salt load

**Coatings for high corrosiveness > 240µm**  
Outer coating "C4" ISO 12944-2

Temperature range: up to 120°C

Fields of application: above ground, industrial areas and coastal regions with moderate salt load

**Coatings for very high corrosiveness > 300µm**  
Outer coating "C5" ISO 12944-2

Temperature range: up to 120°C

Fields of application: above ground, coastal and offshore areas with high salt load

### COATING SYSTEMS

#### Sigmadur

Dimensions: 50µm + 80 µm

Temperature range: -30°C to +160°C

Fields of application: above-ground and high temperatures

**PROTEGOL UR 32-55 (Polyurethan) > 1,5 mm**  
Temperature range: -30°C to +80°C (briefly up to 110 °C)

Fields of application: below-ground, resistance to water, acids, alkaline solutions, and oil

# SCHUCK TYPE U BALL VALVE

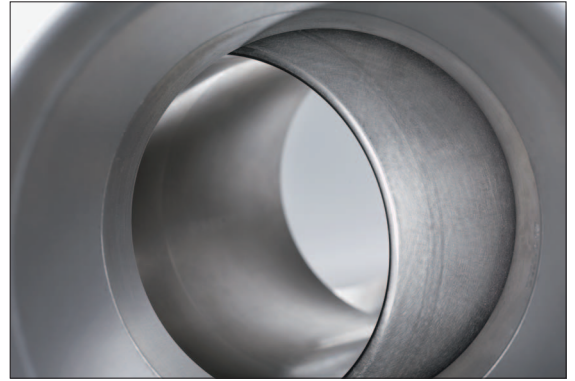
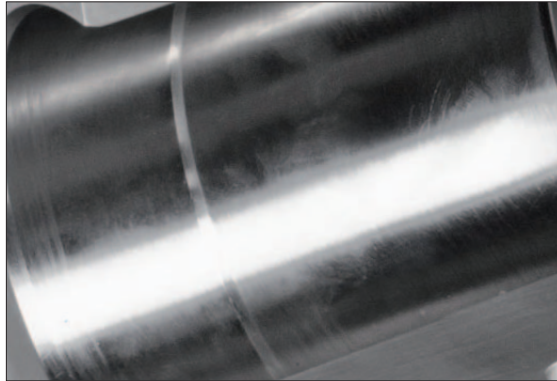
## Accessories

### Inner coating

AVAILABLE  
ACCESSORIES

**Left:** Inner coating in a Schuck Type U ball valve

**Right:** Inner coating in a Schuck Type U ball valve with view of the ball



#### DESCRIPTION

The medium-compatible inner coating gives the ball valve the perfect inner skin that protects it against damage caused by the medium and prevents any possible contamination of the medium (e.g. for drinking water).

The possibility of armoring through cladding is particularly important for the Type U ball valve, mainly for special applications like sour gas, for example. Depending on the application and customer requirements, the lining applied through cladding protects the inside of the ball valve against aggressive and corrosive media and wear due to its material, thickness and the clad area.

All coatings are inspected and approved by an in-house expert or by third party.

Through these measures, we can guarantee the highest degree of protection against corrosion for your ball valve.

#### CONFIGURATIONS

Cladding e.g. Inconel, AISI 316, tungsten carbide, nickel, chrome, others on request

For gas standard without inner coating

Other inner coatings for the respective media on request

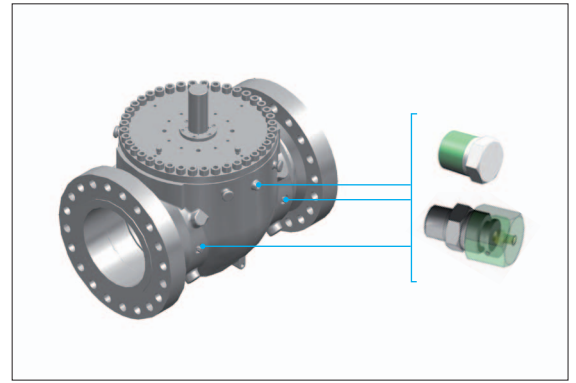
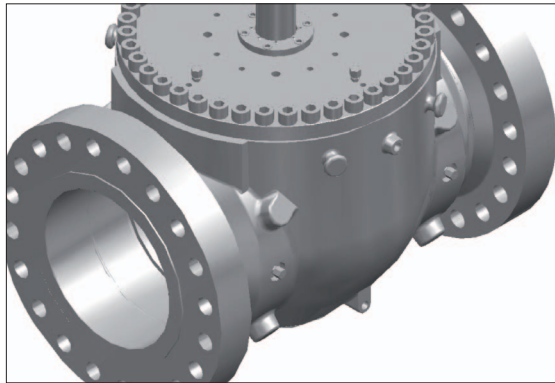
# SCHUCK TYPE U BALL VALVE

## Design features

### Secondary injection of sealant

**Left:** Injection heads for a above-ground ball valve type Uu for injection.

**Right:** The different connectors for the secondary sealant injection for a Type U above-ground ball valve.

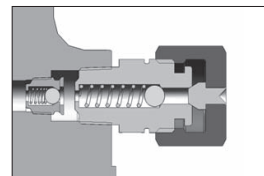


#### DESCRIPTION

It is possible to equip Type U top entry ball valves for the injection of a secondary sealant. In an emergency, a suitable secondary sealant can be injected if there is a leak at the seating rings or the actuator trunnions.

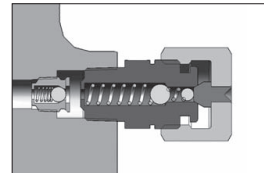
The choice of sealant is based on the medium, temperature and pressure. Very high pressures may be needed for injection depending on the sealant. The sealant press and all the lines must be designed for that pressure (up to 1000 bar).

#### CONFIGURATIONS



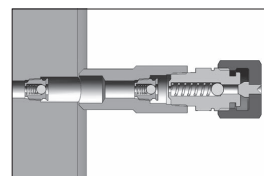
##### Secondary sealant injection (standard)

Injection head  
Check valve



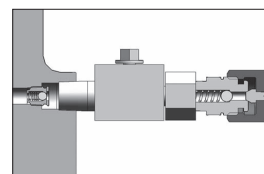
##### Secondary sealant injection

Double injection head  
Check valve



##### Secondary sealant injection

Injection head  
Two check valves



##### Secondary sealant injection

Injection head  
Block ball valve  
Check valve

# SCHUCK TYPE U BALL VALVE

## Accessories Bypass lines



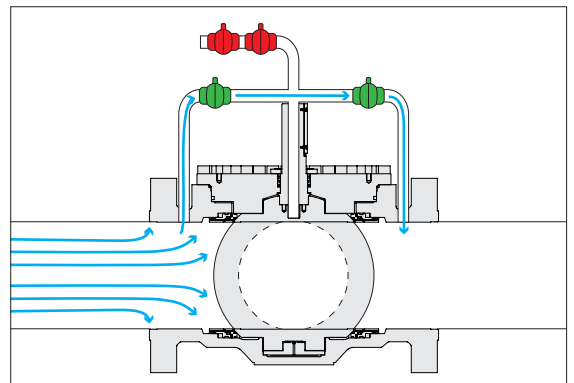
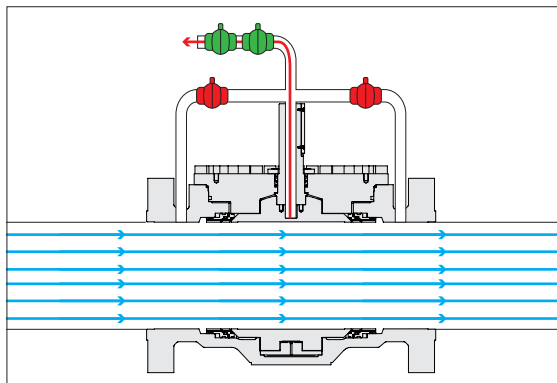
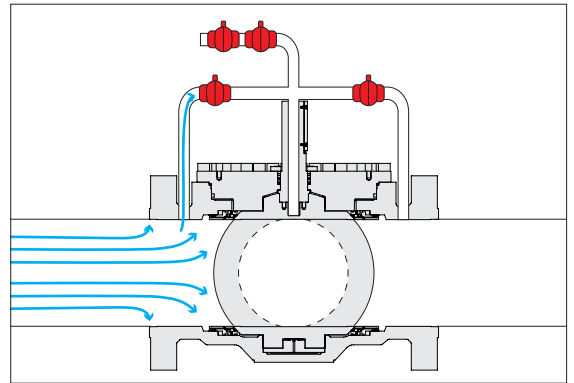
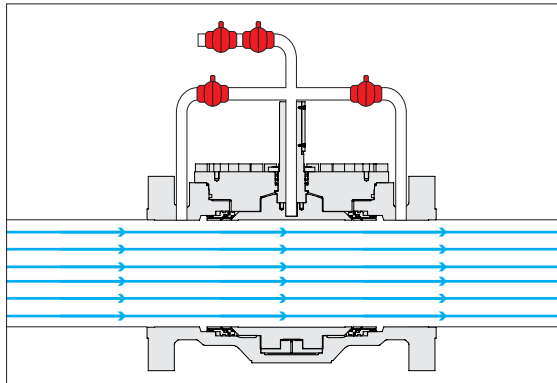
**Top left:** Bypass lines with an open ball valve in the open position.

**Top right:** Bypass lines with closed ball valve in the closed position.

**Bottom left:** Venting the dead space through the bypass line with an open ball valve.

**Bottom right:** Pressure compensation through the bypass lines before actuation of the ball. As a result, the ball seats are noticeably offloaded and the valve operates more gently and with less wear.

All illustrations are given as examples



### DESCRIPTION

High-pressure ball valves are often equipped with a by-pass so that as a rule, pressure equalization of both sides and the dead space can take place before actuating the valve.

This makes switching the valve gentler on the seals and minimizes wear.

Through this simple but effective accessory, the Schuck Type U ball valve can be used more effectively for a longer time.

### CONFIGURATIONS

Connection lines between the two pipe connections of the ball valve

Connection lines to the dead space

Possible shut-off devices via high-pressure ball valves for all line components

# SCHUCK TYPE U BALL VALVE

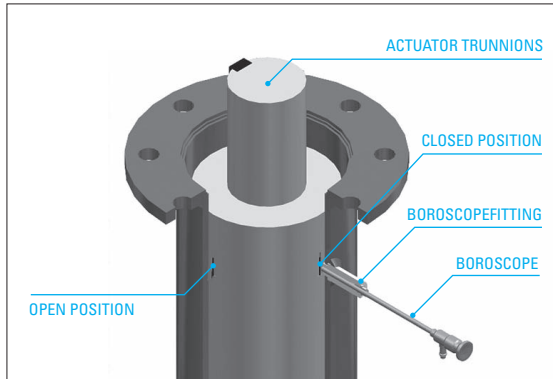
## Accessories

### Boroscope with boroscope opening and markings

AVAILABLE  
ACCESSORIES

**Left:** Setup of the boroscope opening with the position markings and an inserted boroscope.

**Right:** Boroscope with opening for battery operated handheld light source



#### DESCRIPTION

The positioning of the ball plays a decisive role in guaranteeing safe operation of the Schuck Type U ball valve. After installation of the valve, the boroscope opening makes it possible to accurately check the ball position in the end position. Independent of the actuator, both the open position as well as the closed position of the shut-off valve can be set and checked.

There are markings on the actuator trunnion for the open and closed position. With the help of the boroscope opening and the boroscope, the marking and hence the exact position of the ball in the open and closed position can be determined optically. If the ball valve is used in an above ground variation, then the boroscope opening is on the gear plate. If the valve is used below-ground, then the boroscope opening is on the pipe stands.

Generally, adjusting the open and closed position using the boroscope opening is a more exact setting than using the end position display on the top side of the gear unit.

The associated boroscope has cross hairs that guarantee exact setting and checking of the end position of the ball. In addition, the boroscope has a lighting option, so that the markings on the actuator trunnion are clearly visible.

#### CONFIGURATIONS

##### Boroscope opening

Open position marking

Closed position marking

Boroscope sleeve for insertion of the boroscope

##### Boroscope

Long version D8 x 465 mm

Short version D8 x 200 mm

Accessory: battery operated handheld light source for the boroscope

# SCHUCK TYPE S BALL VALVE

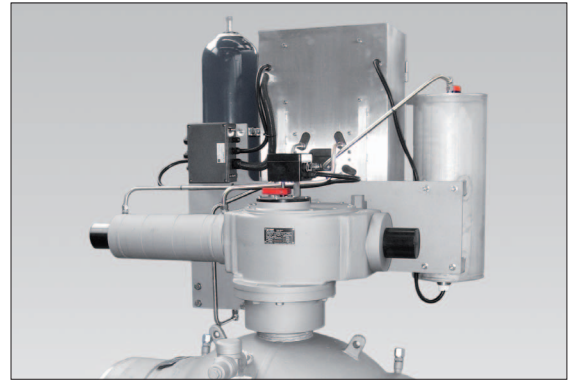
## Accessories Actuators



**Top left:** Schuck gas over oil Type G actuator with solar package including emergency power supply



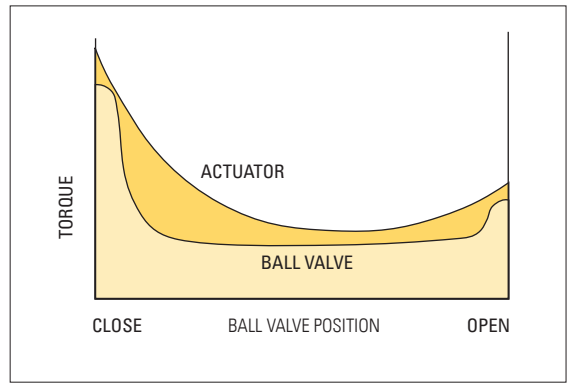
**Top right:** Schuck Type C electro-hydraulic actuator on a Schuck ball valve



**Bottom left:** Schuck control cabinet for the hydraulic actuator control



**Bottom right:** Torque behavior of ball valve and Schuck basic actuators



### DESCRIPTION

A working shut-off valve inevitably also includes a reliable and powerful actuator suitable for the application. The Schuck Group has successfully delivered, developed, manufactured and installed actuator components with modern controllers for almost any application for years.

Schuck actuators are in use worldwide, from the Kazakhstan steppe and the Indian highlands up to Chinese cities with millions of inhabitants.

The Schuck Type S ball valve harmonizes especially well with the company's own actuator systems. A complete solution from a single source guarantees an optimum and effective design of the actuator systems. Of course, we also deliver ball valves with third party actuators.

You can find more information on Schuck actuators in the actuator catalogues or in the Internet at [www.schuck-actuator.com](http://www.schuck-actuator.com).

### CONFIGURATIONS

- Gas over oil actuator system - Type G
- Pneumatic actuators systems -Type K
- Electro-hydraulic actuator system - Type C
- Electro-hydraulic compact control - Type SHC
- Direct gas system -Type KY
- Electro-hydraulic actuator system -Type X
- Manual actuator
- Electric actuator systems
- Electro-hydraulic spring return - Type C7/C8
- Pneumatic spring-return - Type K7/K8

# SCHUCK TYPE U BALL VALVE

## Maintenance and service

**Top left:** Schuck Service assignment – flight of Schuck service specialists into Novy Urengoy, Russia for maintenance work

**Top right:** Schuck Servicecar – always ready for action on-site



### DESCRIPTION

Our job isn't finished when our products have been dispatched. Safety-critical components such as our shut-off valves or Schuck actuator systems need to be properly installed, initialized and maintained.

Maintenance is particularly critical in the calculation and adherence to probabilities of failure (SIL values). It is not only the process itself that is critical, but particularly the quality of the maintenance work performed.

The Schuck Service division assumes these duties. Internationally. Reliably. Expertly. Our range of services covers everything – from maintenance to repair, from renovation to replacement, from new parts to consulting and training. This applies not only to Schuck's own products, but also to many third-party manufacturers.

The team also performs all repair and maintenance work, including procurement of spare parts, for ball valves manufactured by Borsig – in accordance with company tradition. If the necessary spare parts are no longer available, we specially produce these on the basis of available documentation ourselves.

Our international team, with service offices in India, China, Kazakhstan, Uzbekistan and Germany, is always up-to-date, and works both on and off-shore.

### SERVICE

#### Maintenance and servicing

- Condition analysis
- Maintenance plans
- Maintenance

#### Repairs

- Project planning
- Logistics planning
- Spare parts supply
- Spare parts processing
- Spare parts production
- Repairs
- Recommissioning

#### Conversions

- Project planning
- Logistics planning
- Parts provision
- Part production
- Part reconstruction
- Conversion work
- Initial operation

#### Spare and new parts

- Spare parts
- New parts
- Processing

#### Counseling and Training

- Modification consulting
- Realisation consulting
- Product trainings
- Startup procedure trainings
- Service trainings

### CONTACT

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