



SCHUCK GROUP

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SCHUCK TYPE S BALL VALVE

The two- or three-piece shut-off valve for high-maintenance and demanding media.



SIL
SUITABLE

SCHUCK TYPE S BALL VALVE

The two- or three-piece shut-off valve for high-maintenance and demanding media.



APPLICATIONS

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

Min. temp. range -60° C to +120° C

Standard temp. range -29° C to +120° C

Max. temp. range -29° C to +200° C

MANUFACTURING

Manufacturing, testing and design

standards EN 12266 -1 API 6D ISO 14313 / API 6D, ASME B16.34, ASME Sec. VIII Div.1

Leak, functioning and fire safety

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

For further information see the glossary.



PRODUCT FEATURES

- » Split body ball valve with 2- or 3-piece body design
- » Can be used for gases and liquids
- » Extensive maintenance options
- » Double-stem seal with fire-safe package
- » Trunnion-mounted
- » Design pressure up to CLASS 1500
- » Anti-static design
- » Piggable
- » With anti-blow-out stem
- » Available as a single or double piston
- » Available in PMSS, SO and MM design
- » Temperature ranges from -60° C to +160° C
- » Compatible to fugitive emissions standards



DESIGN

Suitable for use with the following media: natural and acid gas, oil, oil with sulfur, hot and cold water.

With flanged, welded or welded flange ends

Available from 2" to 36"

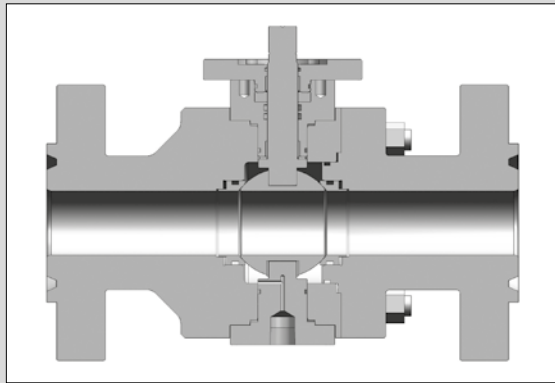
Design pressure up to CLASS 1500

Larger nominal diameters on request

SCHUCK TYPE S BALL VALVE

Typ S 2" to 3", Typ S 4" to 36"

Type overview and design



SERIES 2" TO 3"

2-part body with flanges or weld ends

Floating ball plug 2" above 100 bar

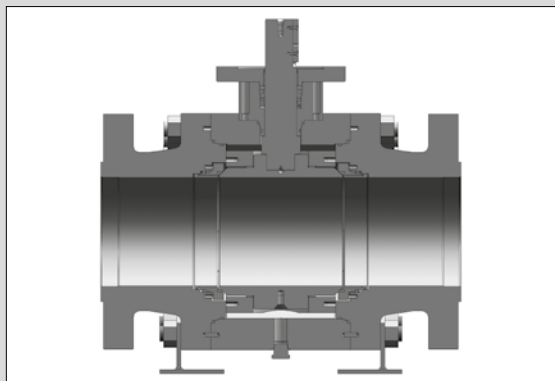
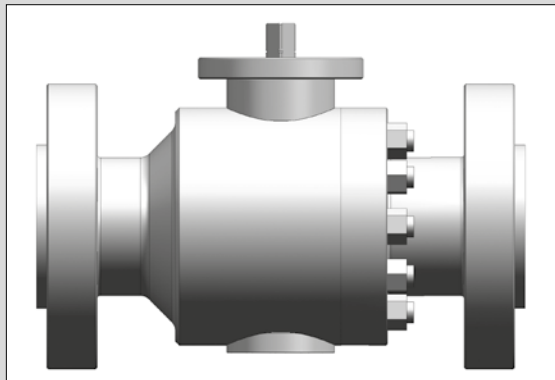
Trunnion-mounted (\geq NPS2) with self-centring seating ring system with pre-tensioned spring elements

Main seal: soft sealing (SO), primary metal secondary soft (PMSS) or metal to metal sealing (MM)

Operating stem protected against blow-outs

Double-trunnion seal with fire-safe seal

Swivel angle limited by stop washers (for design with actuating lever)



SERIES 4" TO 36"*

3-part body with flanges or weld ends

Secondary sealant injection for seats and operating stem

Draining and venting connections

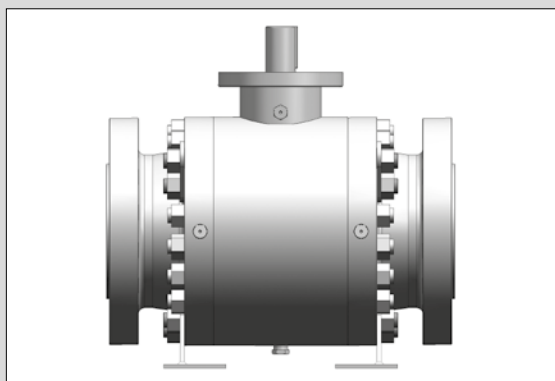
Trunnion-mounted ball plug

Anti blow out stem

Triple trunnion seal with additional fire-safe package

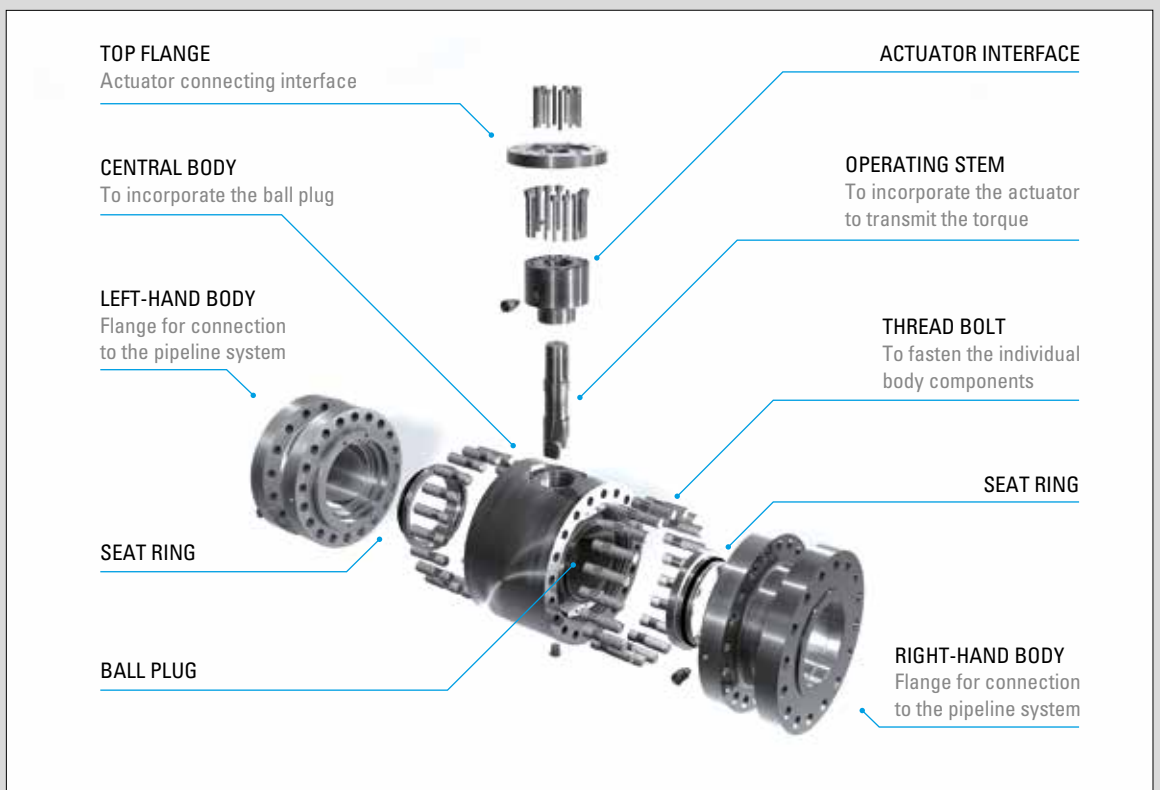
Main seal: PMSS, SO, MM

Main seal: double piston / single piston



*Larger nominal diameters on request





SCHUCK TYPE S BALL VALVE

Design features

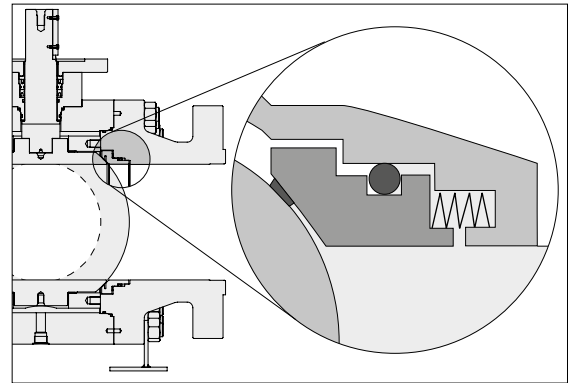
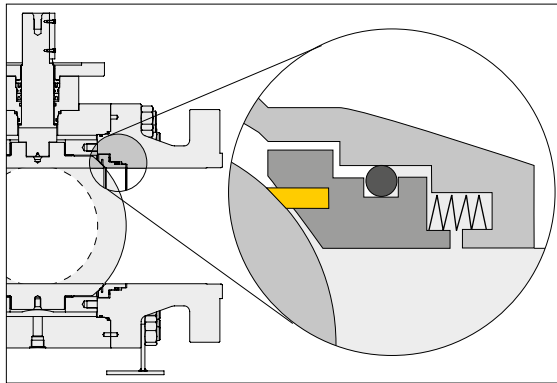
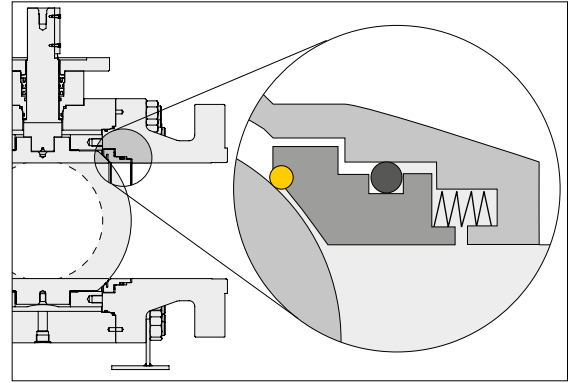
Sealing systems

Top left: Schuck seat ring

Top right: primary metallic secondary soft-sealing system

Bottom left: soft sealing system

Bottom right: metal to metal sealing system



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 metallic/secondary soft-sealing seating ring (PMSS)

metallic seal plus elastomer seal

Wear-resistant and not sensitive to dirt

Schuck standard, broad range of applications

Soft sealing seating ring (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 sealing seating ring (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 S BALL VALVE

Design features

Ball seats

Top left: Ball valve flow in open position

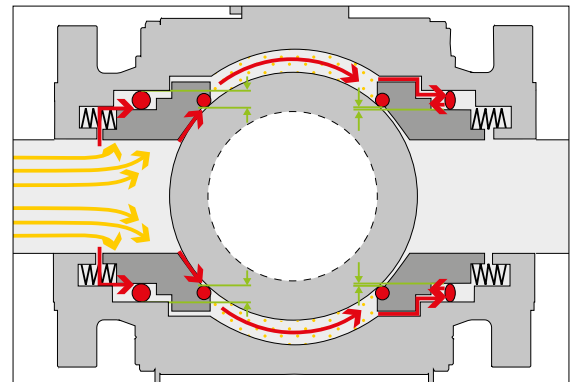
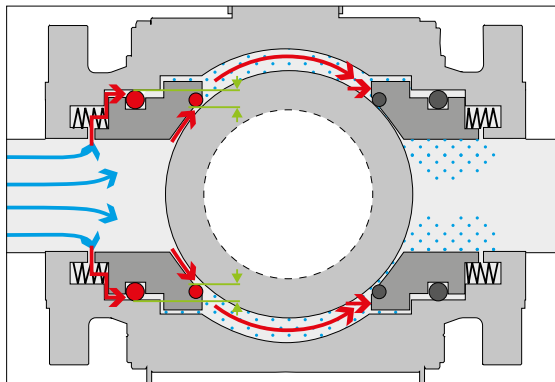
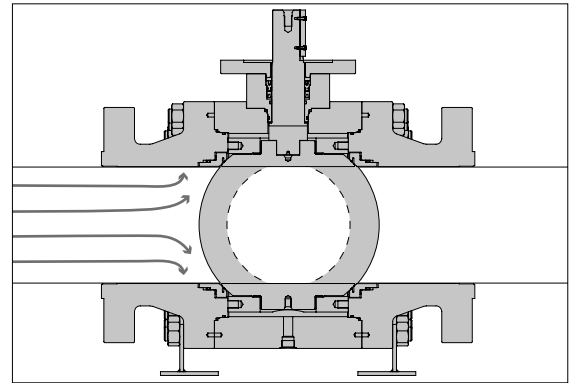
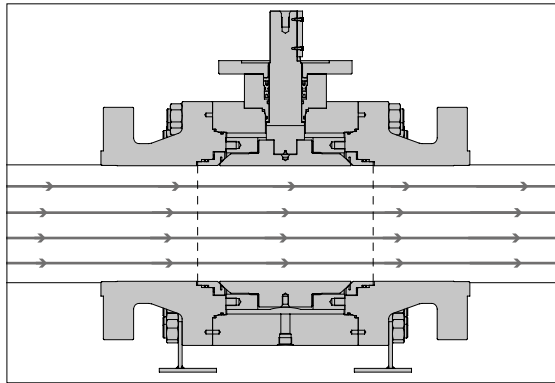
Top right: Ball valve in closed position

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 dead space (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 open 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 dead space pressure
 Used for non-compressible liquid media

Double Piston

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

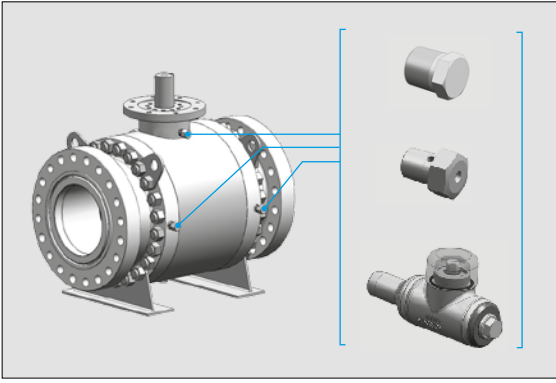
SCHUCK TYPE S BALL VALVE

Design features

Venting, draining

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

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



DESCRIPTION

Different attachments can be removed for emptying and venting the dead space. 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 free the dead space 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 ball valve.

ABOVE-GROUND CONFIGURATION

Venting and draining
plug, bleeder plug, ball valve

SCHUCK TYPE S BALL VALVE

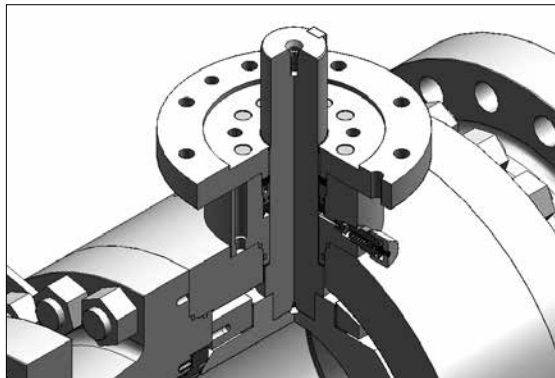
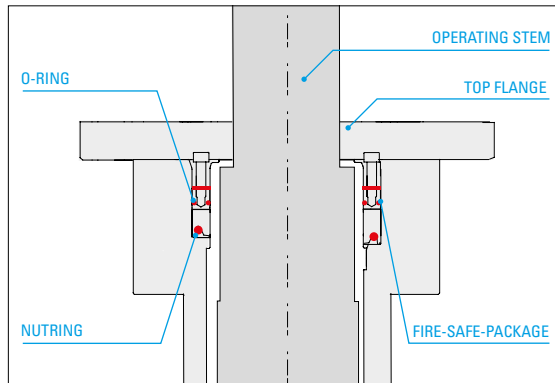
Design features

Operating stem

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

Right: Type S ball valve as a sectional model.

Bottom left: Sectional view of the Type S 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 fully-welded ball valve.

The operating stem found on the Schuck Type S 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. This was tested for a Schuck Type G ball valve up to a nominal width of 60".

CONFIGURATIONS

Trunnion seal

Triple trunnion seal and fire safe package

German Clean Air Act approved

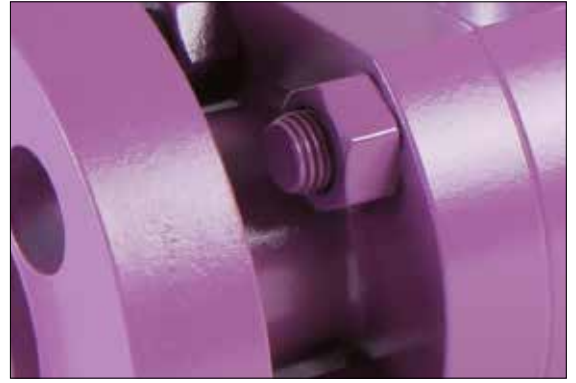
SCHUCK TYPE S BALL VALVE

Design features

Outside coating

Left: The Schuck standard coating in yellow

Right: Schuck Type S 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 S BALL VALVE

Accessories

Inner coating

AVAILABLE
ACCESSORIES

Left: Inner coating in a Schuck Type S ball valve

Right: Inner coating in a Schuck Type S 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 S 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

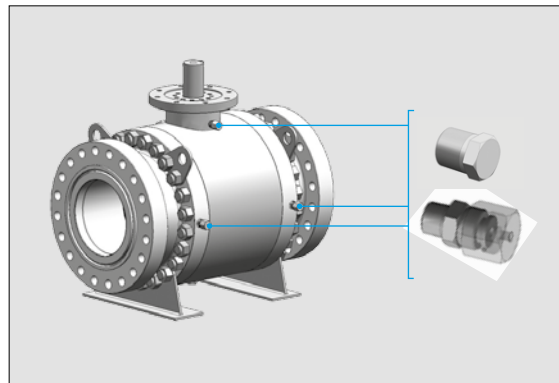
SCHUCK TYPE S BALL VALVE

Design features

Secondary injection of sealant

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

Right: The different connectors for the secondary sealant injection for an above-ground ball valve.

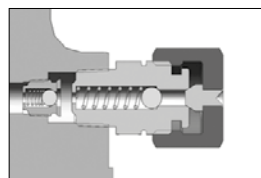


DESCRIPTION

Split Body Type S ball valves up to NPS4 are by default equipped with injection heads for injecting 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.

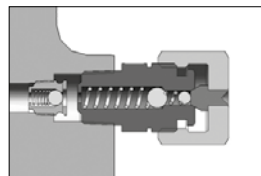
The choice of sealant is based on the medium, temperature and pressure. Very high pressures may be needed for injection depending on the sealant. The sealant press and all the lines must be designed for that pressure (up to 1000 bar).

CONFIGURATIONS



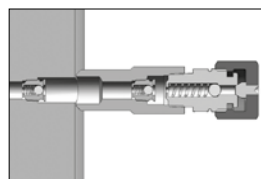
Secondary sealant injection (standard)

Injection head
Check valve



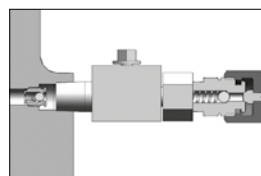
Secondary sealant injection

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 S BALL VALVE

Design features

Support feet

Left: Standard support foot 01 with 2 welded-on flat steel bars

Right: Special foot

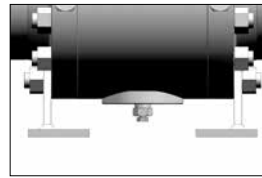


DESCRIPTION

Regardless of whether it is for above or below-ground installation, the Schuck Type S ball valve needs a firm footing for transport, installation or mounting. Especially for large nominal diameters, it is important to guarantee safety and prevent injuries and/or damage.

Special solutions such as the variation shown above with a plate welded onto transport eyebolts, for example, are of course possible at any time at the customer's request.

CONFIGURATIONS



Support foot 01
Two flat Steel bars

SCHUCK TYPE S BALL VALVE

Accessories Bypass lines



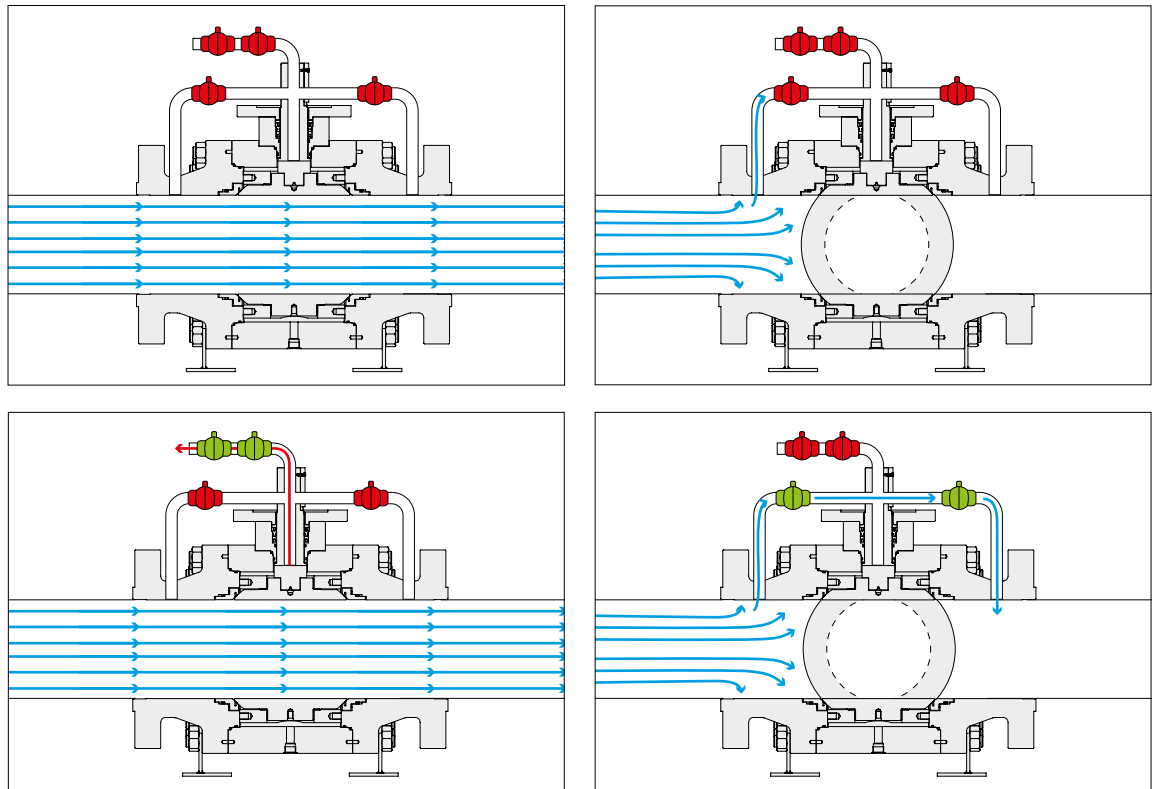
Top left: Bypass lines with an open ball valve in the open position.

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 S ball valve can be used more effectively for a longer time.

CONFIGURATIONS

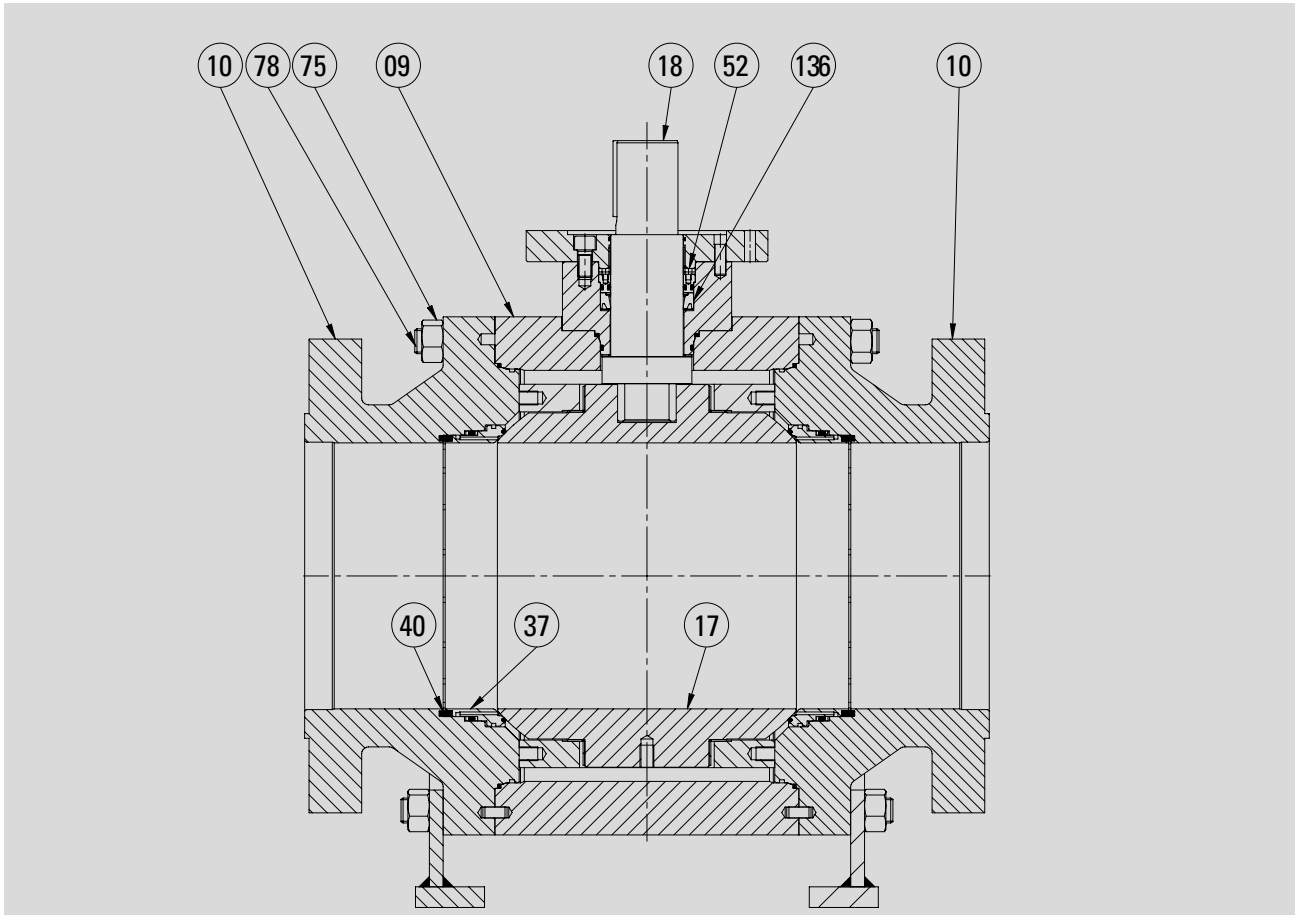
Connection lines between the two pipe connections of the ball valve

Connection lines to the dead space

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

SCHUCK TYPE S BALL VALVE

Materials



Legend

Pos.	Part Name	Standard Material	Alternative Materials
9	BODY	A350 LF2	A105, P355 NH/QH
10	BODY FLANGE	A350 LF2	A105, P355 NH/QH
17	BALL	A350 LF2+ENP	A182 F6a, A182 F51, AISI 316, INCONEL 625
18	STEM	A276 Type 420 (1.4021)	A182 F51, 17-4PH, XM-19
37	SEAT RING	A350 LF2+ENP	A182 F6a, A182 F51, AISI 316, INCONEL 625
	SEAT RING INSERT	PMSS: FKM	Soft: PA, PTFE, PEEK, PEEK/Graphite
40	SPRING	AISI 301 (1.4310)	INCONEL X-750
52	FIRE SAFE GASKETS	GRAPHIT	
75	NUTS	A194 2H	42CrMo4, A194 Gr 7, A194 2HM,
78	BOLDS	A193 B7	42CrMo4, A320 L7, A193 B7M, A320 L7M
136	STEM SEALING (LIP-SEAL)	PUR	PTFE
	BEARINGS	CS/PTFE	SS/PTFE, INCONEL/PTFE
	O-RINGS	FKM	HNBR, FFKM

Other materials on request

SCHUCK TYPE S 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

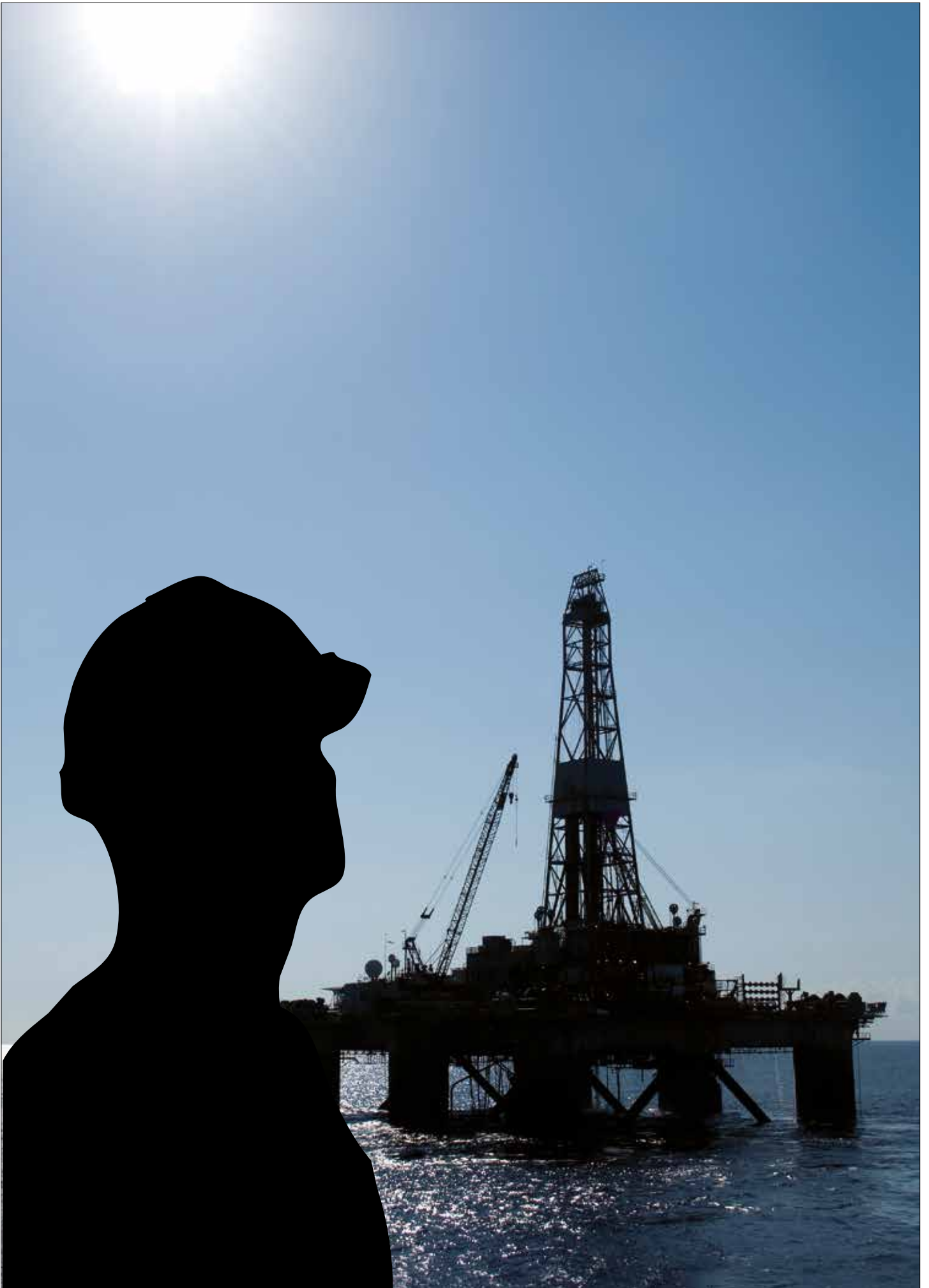
- Project planning
- Logistics planning
- Parts provision
- Part production
- Part reconstruction
- Conversion work
- Initial operation

Spare and new parts

- Spare parts
- New parts
- Processing

Counseling and Training

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



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

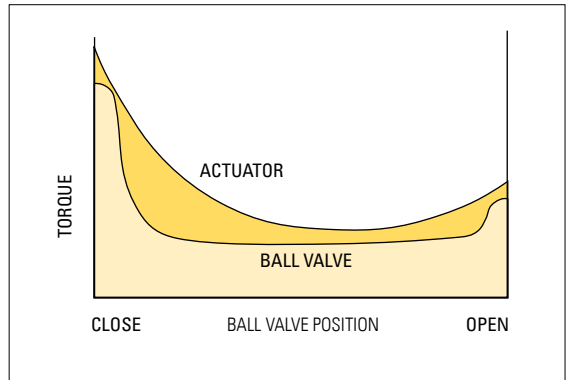


Bottom left: Schuck control cabinet for the hydraulic actuator control



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

Right page: Schuck Type S ball valve with the new Schuck Type SHC hydraulic compact control



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.

CONFIGURATIONS

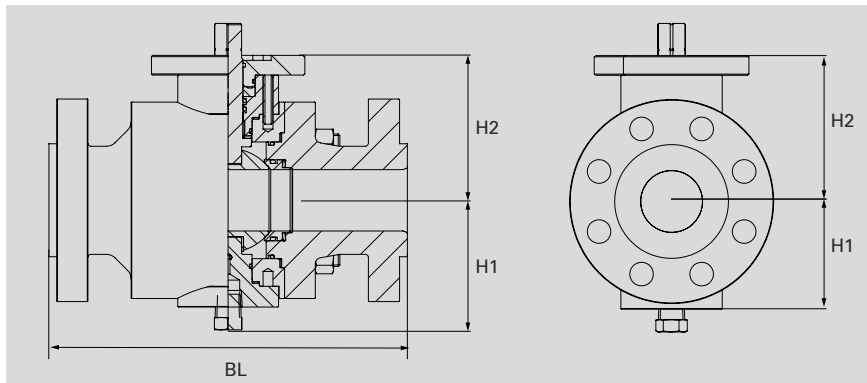
- Gas over oil actuator system - Type G
- Pneumatic actuators systems -Type K
- Electro-hydraulic actuator system - Type C
- Electro-hydraulic compact control - Type SHC
- Direct gas system -Type KY
- Electro-hydraulic actuator system -Type X
- Manual actuator
- Electric actuator systems
- Electro-hydraulic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



SCHUCK TYPE S BALL VALVE

CLASS 150

With flange or weld end



NPS	nominal diameters in inch
DN	nominal width
CLASS	Pressure rating
BL RF	constr. length RF Flansch
BL WE	construction length Weld End
BL RTJ	constr. length RTJ Flansch
H1	High 1
H2	High 2

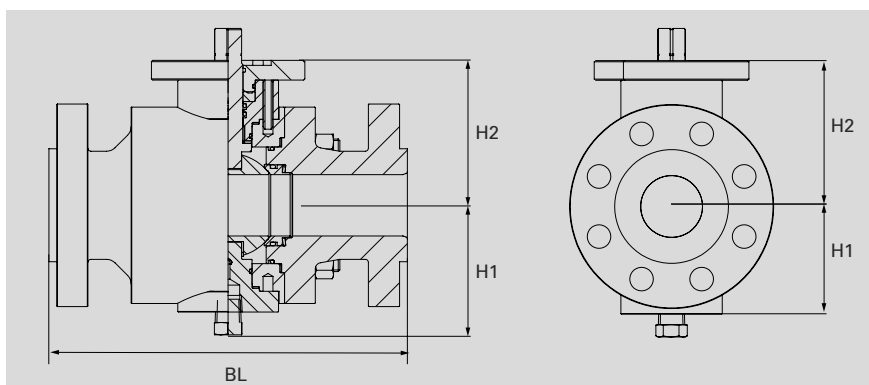
Schuck ball valve type S / CLASS 150

NPS	DN	CLASS	BL RF	BL WE	BL RTJ	H1	H2		
2	50	150	178	216	191	90	130		
3	80	150	203	283	216	110	170		
4	100	150	229	305	241	190	185		
6	150	150	394	457	406	230	280		
8	200	150	457	521	470	275	330		
10	250	150	533	559	546	315	370		
12	300	150	610	635	622	355	415		
14	350	150	686	762	699	400	460		
16	400	150	762	838	775	450	490		
18	450	150	864	914	876	490	550		
20	500	150	914	991	927	540	605		
22	550	150	-	-	-	590	670		
24	600	150	1067	1143	1080	650	725		
26	650	150	1143	1245	-	690	750		
28	700	150	1245	1346	-	740	800		
30	750	150	1295	1397	-	770	820		
32	800	150	1372	1524	-	825	850		
34	850	150	1473	1626	-	850	870		
36	900	150	1524	1727	-	870	900		
40	1000	150	By manufacturer's standard resp. on request.						
42	1050	150							
44	1100	150							
48	1200	150							
56	1500	150							

SCHUCK TYPE S BALL VALVE

CLASS 300

With flange or weld end



NPS	nominal diameters in inch
DN	nominal width
CLASS	Pressure rating
BL RF	constr. length RF Flansch
BL WE	construction length Weld End
BL RTJ	constr. length RTJ Flansch
H1	High 1
H2	High 2

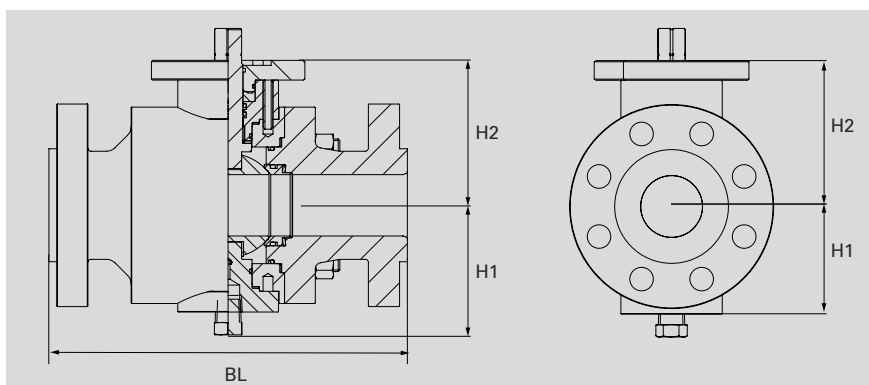
Schuck ball valve type S / CLASS 300

NPS	DN	CLASS	BL RF	BL WE	BL RTJ	H1	H2		
2	50	300	216	216	232	90	130		
3	80	300	283	283	298	110	170		
4	100	300	305	305	321	190	185		
6	150	300	403	457	419	230	280		
8	200	300	502	521	518	275	330		
10	250	300	568	559	584	315	370		
12	300	300	648	635	664	355	415		
14	350	300	762	762	778	400	460		
16	400	300	838	838	854	450	490		
18	450	300	914	914	930	490	550		
20	500	300	991	991	1010	540	605		
22	550	300	1092	1092	1114	590	670		
24	600	300	1143	1143	1165	650	725		
26	650	300	1245	1245	1270	690	750		
28	700	300	1346	1346	1372	740	800		
30	750	300	1397	1397	1422	770	820		
32	800	300	1524	1524	1553	825	850		
34	850	300	1626	1626	1654	850	870		
36	900	300	1727	1727	1756	870	900		
40	1000	300	By manufacturer's standard resp. on request.						
42	1050	300							
44	1100	300							
48	1200	300							
56	1500	300							

SCHUCK TYPE S BALL VALVE

CLASS 400

With flange or weld end



NPS	nominal diameters in inch
DN	nominal width
CLASS	Pressure rating
BL RF	constr. length RF Flansch
BL WE	construction length Weld End
BL RTJ	constr. length RTJ Flansch
H1	High 1
H2	High 2

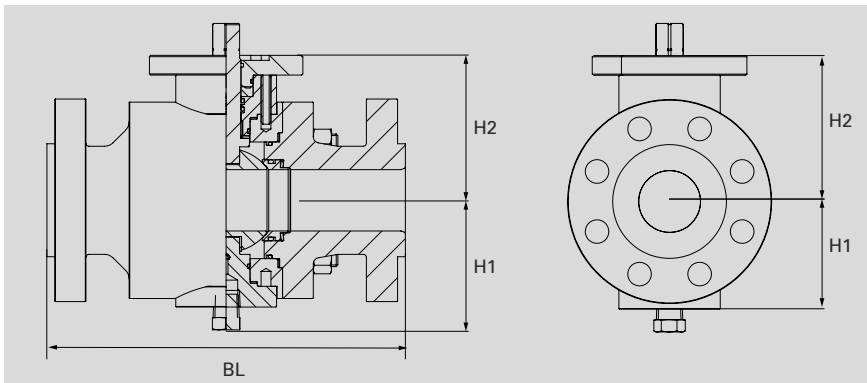
Schuck ball valve type S / CLASS 400

NPS	DN	CLASS	BL RF	BL WE	BL RTJ	H1	H2		
4	100	400	406	406	410	190	185		
6	150	400	495	495	498	230	280		
8	200	400	597	600	600	275	330		
10	250	400	673	673	676	315	370		
12	300	400	762	762	765	355	415		
14	350	400	826	826	829	400	460		
16	400	400	902	902	905	450	490		
18	450	400	978	978	981	490	550		
20	500	400	1054	1054	1060	540	605		
22	550	400	1143	1143	1153	590	670		
24	600	400	1232	1232	1241	650	725		
26	650	400	1308	1308	1321	690	750		
28	700	400	1397	1397	1410	740	800		
30	750	400	1524	1524	1537	770	820		
32	800	400	1651	1651	1667	825	850		
34	850	400	1778	1778	1794	850	870		
36	900	400	1880	1880	1895	870	900		
40	1000	400	By manufacturer's standard resp. on request.						
42	1050	400							
44	1100	400							
48	1200	400							
56	1500	400							

SCHUCK TYPE S BALL VALVE

CLASS 600

With flange or weld end



NPS	nominal diameters in inch
DN	nominal width
CLASS	Pressure rating
BL RF	constr. length RF Flansch
BL WE	construction length Weld End
BL RTJ	constr. length RTJ Flansch
H1	High 1
H2	High 2

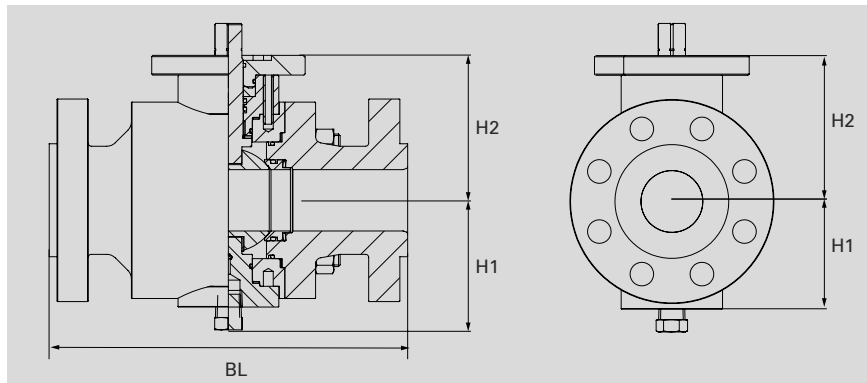
Schuck ball valve type S / CLASS 600

NPS	DN	CLASS	BL RF	BL WE	BL RTJ	H1	H2		
2	50	600	292	292	295	90	130		
3	80	600	356	356	359	110	170		
4	100	600	432	432	435	190	185		
6	150	600	559	559	562	230	280		
8	200	600	660	660	664	275	330		
10	250	600	787	787	791	315	370		
12	300	600	838	838	841	355	415		
14	350	600	889	889	892	400	460		
16	400	600	991	991	994	450	490		
18	450	600	1092	1092	1095	490	550		
20	500	600	1194	1194	1200	540	605		
22	550	600	1295	1295	1305	590	670		
24	600	600	1397	1397	1407	650	725		
26	650	600	1448	1448	1461	690	750		
28	700	600	1549	1549	1562	740	800		
30	750	600	1651	1651	1664	770	820		
32	800	600	1778	1778	1794	825	850		
34	850	600	1930	1930	1946	850	875		
36	900	600	2083	2083	2099	870	900		
40	1000	600	By manufacturer's standard resp. on request.						
42	1050	600							
44	1100	600							
48	1200	600							
56	1500	600							

SCHUCK TYPE S BALL VALVE

CLASS 900

With flange or weld end



NPS	nominal diameters in inch
DN	nominal width
CLASS	Pressure rating
BL RF	constr. length RF Flansch
BL WE	construction length Weld End
BL RTJ	constr. length RTJ Flansch
H1	High 1
H2	High 2

Schuck ball valve type S / CLASS 900

NPS	DN	CLASS	BL RF	BL WE	BL RTJ	H1	H2
2	50	900	368	368	371	110	150
3	80	900	381	381	384	140	200
4	100	900	457	457	460	195	185
6	150	900	610	610	613	240	285
8	200	900	737	737	740	285	245
10	250	900	838	838	841	360	385
12	300	900	965	965	968	410	425
14	350	900	1029	1029	1038	440	465
16	400	900	1130	1130	1140	465	505
18	450	900	1219	1219	1232	505	565
20	500	900	1321	1321	1334	560	625
22	550	900	-	-	-	620	700
24	600	900	1549	1549	1568	675	750
26	650	900	1651	-	1673	720	785
28	700	900	-	-	-	760	825
30	750	900	1880	-	1902	810	855
32	800	900	-	-	-	840	870
34	850	900	-	-	-	870	885
36	900	900	2286	-	2315	900	920
40	1000	900					
42	1050	900					
44	1100	900					
48	1200	900					
48	1500	900					

By manufacturer's standard
resp. on request.

