
SCHUCK BALL VALVES TYPE G

The maintenance-free, fully-welded shut-off valve
for liquids and gases.



SCHUCK BALL VALVES TYPE G

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- PRODUCT FEATURES**
- » Maintenance-free sealing and bearing technology
 - » Spherical with low weight, suitable for high pressures and bending moments
 - » Anti-static design
 - » Piggable
 - » With anti-blow-out stem
 - » Available as single or double piston
 - » Three sealing systems available (PMSS, SO & MM)
 - » Temperature ranges from -60° C to +160° C
 - » German Clean Air Act approval
 - » Boroscope opening from 14" standard
 - » High Differential Seat Test (see Glossary)
 - » Fire Safe approval



APPLICATIONS

Isolating valve for maintenancefree above- and below-ground instalations in pipelines, on compressorstations and platforms.

Min. temperature range -60°C to +50°C
 Standard temperature range -29°C to +50°C
 Max. temperature range -29°C to +160°C



MANUFACTURING

Standards and approvals Schuck Group
 DIN ISO 9001, PED 97/23/EG, AD2000 – HP0, AD2000 – W0, DVGW, ÖVGW, SVGW, API Q1, API 6D

Standards and approvals Ball Valve Type G
 DIN EN 14141, VdTÜV-Merkblatt Armatur 100, ISO14313, EN 12266-1, EN 12266-2, DIN 30690-1, DIN 3230 T5, AD2000, AD 2000 – HP 2/1 (TÜV, DIN EN 3834-3, DIN EN ISO 15614, TRD 100, API 6FA / BS 6755, EN 10497

For futher information see the glossary.



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 ½" to 60"
 Design pressure up to CLASS 1500



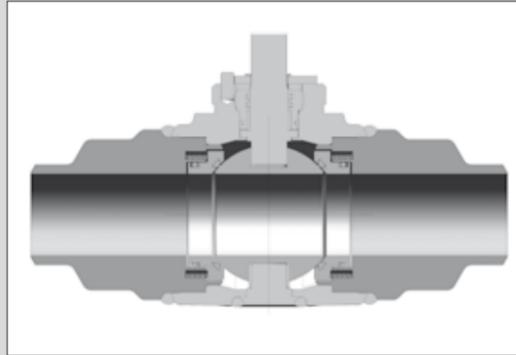
MATERIALS

Body: P355NL1 acc. to A537 Cl.1 / A350 LF2
 Ball: A350LF2, chrome-/nickel-plated
 Flange: C21 acc. to A105, A350LF2
 Operating stem: S420NL / A276 Type 420
 Seat ring: 1.4006 (X12Cr13) / A182 F6a, partially chrome-plated
 For futher information see the glossary.
 Other materials on request.

SCHUCK BALL VALVES TYPE G

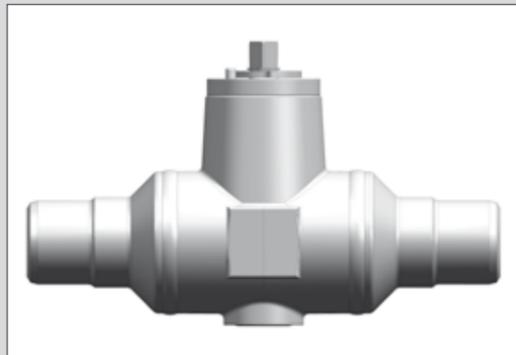
Type G 1/2" to 2", Type G 3" to 12", Typ G 14" to 56"

Type overview and design

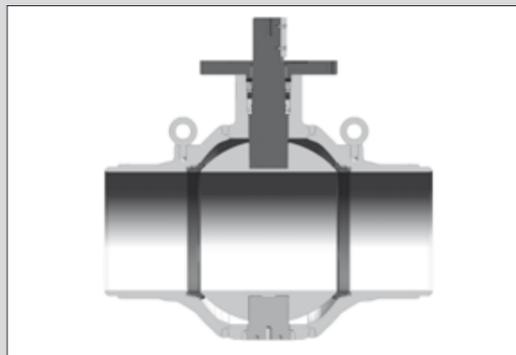


SERIES 1/2" TO 2"

- 3-part body
- With flanges or weld ends
- For above or below-ground installation
- Floating ball plug 2" above 100 bar
- Trunnion-mounted with self-centering seating ring system with pre-tensioned spring elements
- Anti blow out stem
- Double independent stem seal with additional fire safe sealing
- Main seal: Standard is metal to metal, option: primary metal secondary soft (PMSS)
- Swivel angle limited by stop washers



TO 2" CLASS 1500



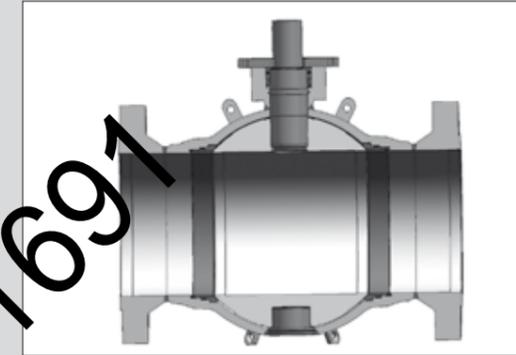
SERIES 3" TO 12"

- 3-part body
- With flanges or weld ends
- For above- or below-ground installation
- Secondary sealant injection to seat and stem (as of 6")
- Drain and vent connections
- Trunnion-mounted ball
- Stem protected against blow-out by ring nut



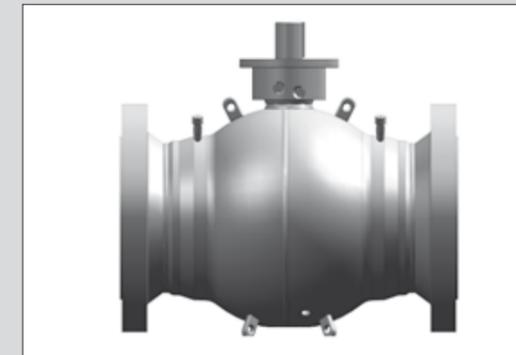
- Triple trunnion seal incl. fire-safe seal
- Main seal: primary metallic/secondary soft (PMSS), metal to metal (MM) or soft sealing (SO)
- Seats: double piston / single piston

TO 12" CLASS 900

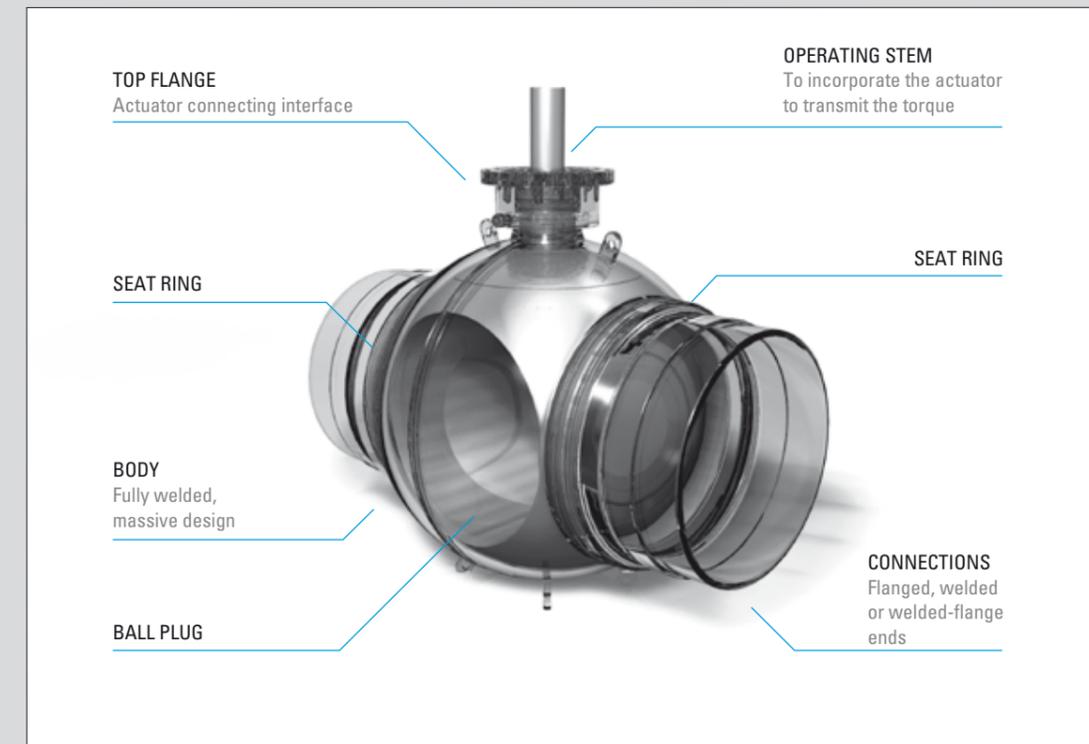


SERIES 14" BIS 60"

- Spherical body
- 2-part body
- With flanges or weld ends
- For above- or below-ground installation
- Secondary sealant injection for main seal and actuator trunnions
- Draining and venting connections
- Trunnion-mounted ball plug
- Anti blow out stem (shrink-fit and welded)
- Triple trunnion seal with additional fire-safe seal
- Main seal: primary metallic/secondary soft (PMSS), soft sealing (SO)
- Seats: double piston or single piston



TO 60" CLASS 900



SCHUCK BALL VALVES TYPE G

Design features

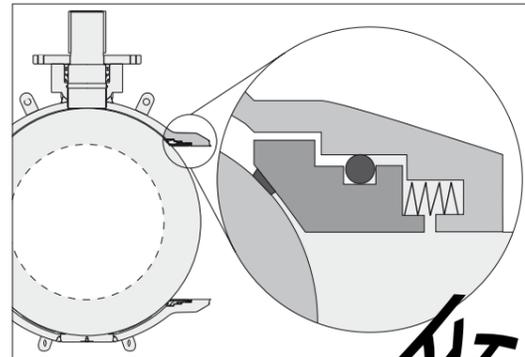
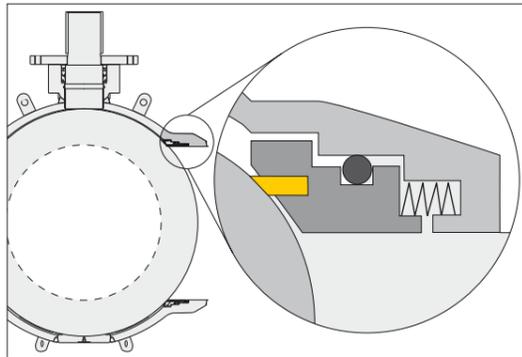
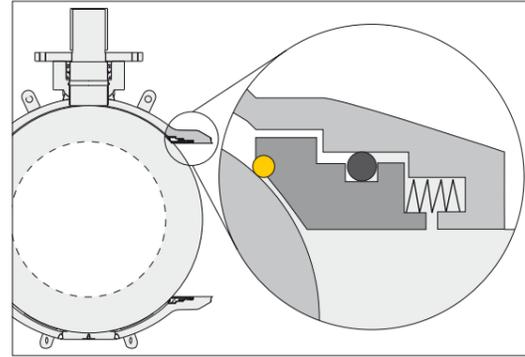
Sealing systems

Top left: Schuck seat ring

Top right: primary metallic secondary soft-sealing system

Bottom left: soft sealing system

Bottom right: metal to metal 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 BALL VALVES TYPE G

Design features

Ball seats

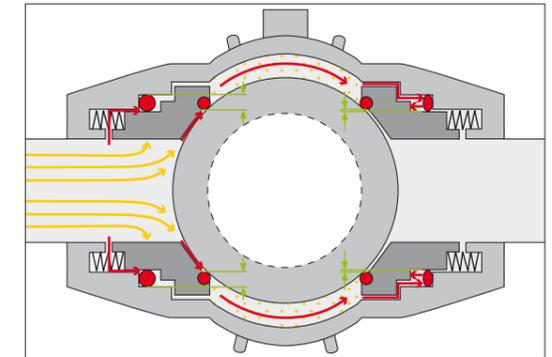
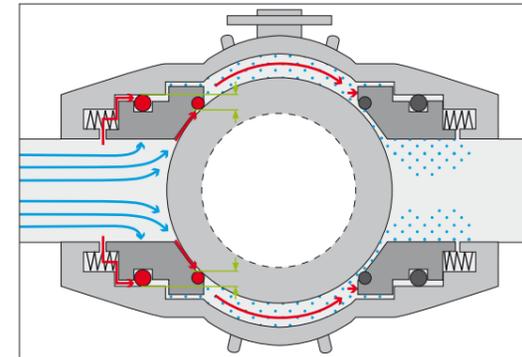
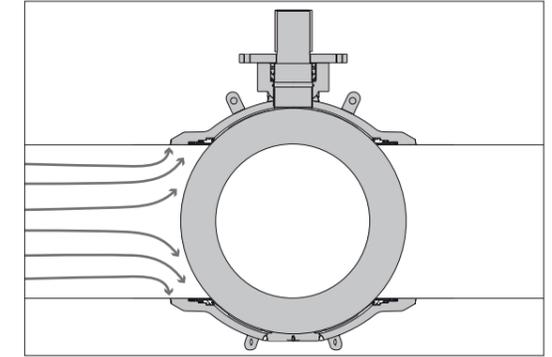
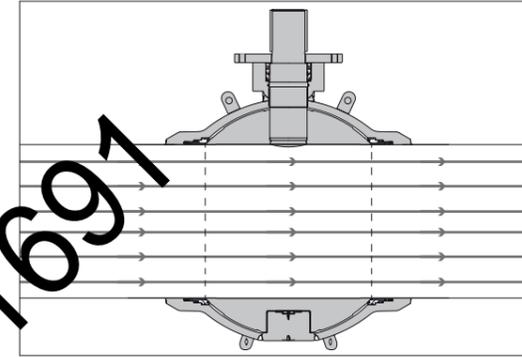
Top left: Ball valve flow in open position

Top right: Ball valve in closed position

Bottom left: Single piston sealing system

Bottom right: Double piston sealing system

Drawing legend:
 Medium (blue)
 Pressure (red)
 Differential pressure surface (green)



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

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SCHUCK BALL VALVES TYPE G

Design features
Venting, draining

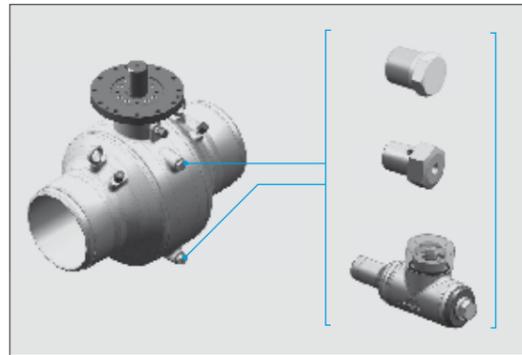
Top left: Venting ball valve of an above-ground ball valve



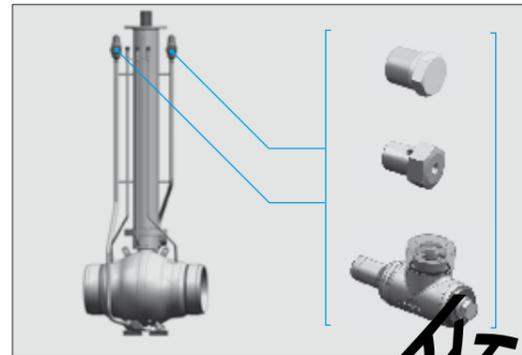
Top right: Venting ball valve of a below-ground ball valve



Bottom left: The different connectors for draining/venting for an above-ground ball valve



Bottom right: The different connectors for draining/venting for a below-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.

BELOW-GROUND CONFIGURATION

Venting and draining plug, bleeder plug, ball valve

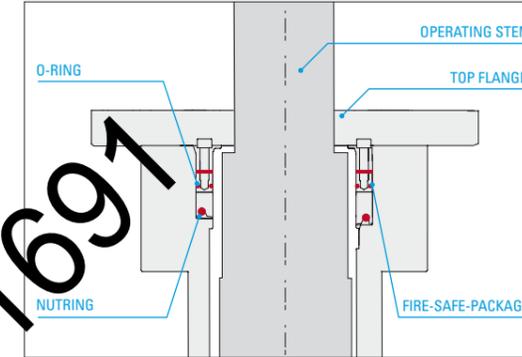
ABOVE-GROUND CONFIGURATION

Venting and draining plug, bleeder plug, ball valve

SCHUCK BALL VALVES TYPE G

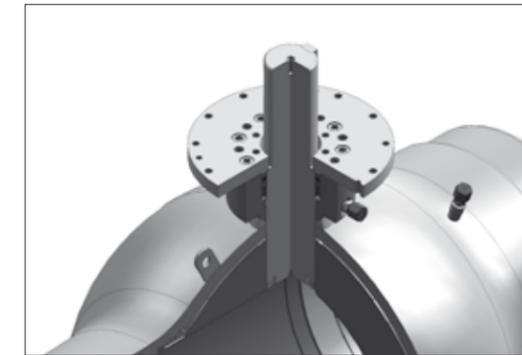
Design features
Operating Stem

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



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

Bottom left: Sectional view of the Type G 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 G 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

Trunnion extension

Any length
Freely selectable coating thickness
Suitable for manhole installation if required

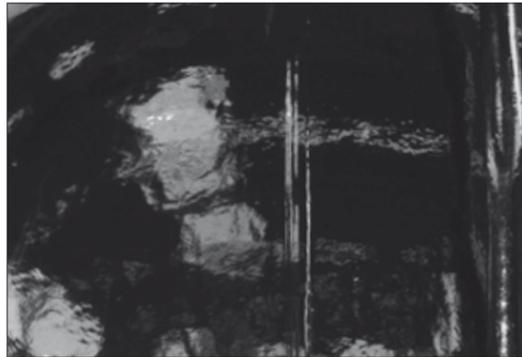
SCHUCK BALL VALVES TYPE G

Design features

Outside coating

Left: The Schuck PROTEGOL coating in black for below-ground ball valves

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



DESCRIPTION

Even a robust component like the fully-welded Schuck Type G 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 + 8µm

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 BALL VALVES TYPE G

Accessories

Inner coating

AVAILABLE ACCESSORIES

Left: PROTEGOL inner coating in a Schuck Type G 60" ball valve

Right: uncoated Schuck Type G ball valve



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).

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

For gas standard without inner coating

For water with PROTEGOL coating

Other inner coatings for the respective media on request

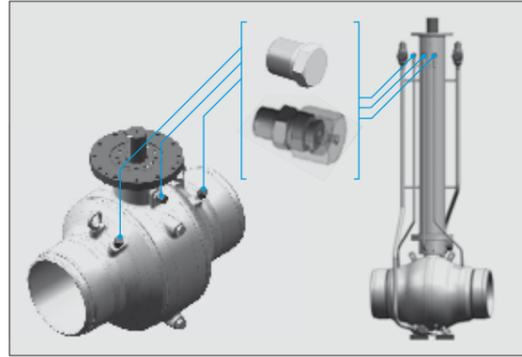
SCHUCK BALL VALVES TYPE G

Design features

Secondary injection of sealant

Left: Injection heads for a below-ground ball valve for injection from the top.

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

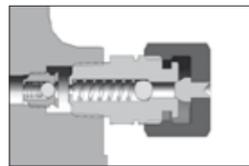


DESCRIPTION

Fully-welded Type G ball valves up to DN 150 (6") 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.

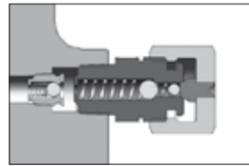
The choice of sealant is based on the medium, temperature and pressure. Very high pressures may be needed for injection depending on the sealant. The sealant press and all the lines must be designed for that pressure (up to 1000 bar).

CONFIGURATIONS



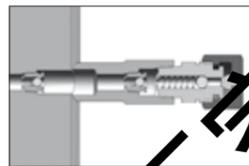
Secondary sealant injection (standard)

Injection head
Check valve



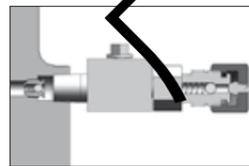
Secondary sealant injection

Double injection head
Check valve



Secondary sealant injection

Injection head
No check valves



Secondary sealant injection

Injection head
Block ball valve
Check valve

SCHUCK BALL VALVES TYPE G

Design features

Support feet

Left: Special foot with a plate welded onto transport eyebolts

Right: Standard support foot 02 with 2 welded-on flat steel bars below the transport eyebolts



DESCRIPTION

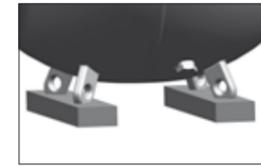
Regardless of whether it is for above or below-ground installation, the Schuck Type G ball valve needs a firm footing for transport, installation or mounting. Especially for large nominal diameters, it is important to guarantee safety and prevent injuries and/or damage.

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.

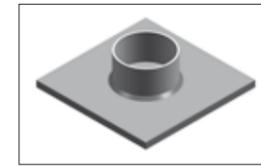
CONFIGURATIONS



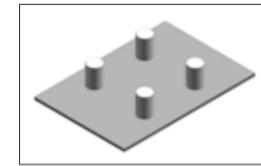
Support foot 01
As of 14" with transport eyebolts (flattened for stability)



Support foot 02
As of 14" with 2 flat steel bars below the transport eyebolts



Support foot 03
From 3" to 12" without transport eyebolts



Support foot 04
From 3" to 16" with plate welded on directly

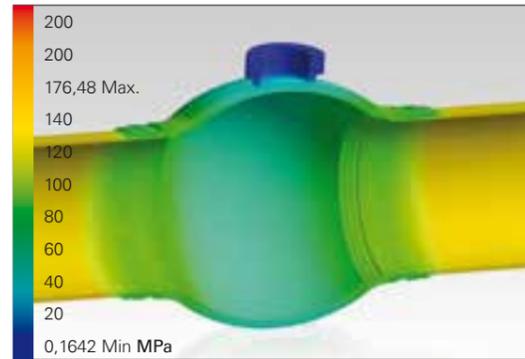
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SCHUCK BALL VALVES TYPE G

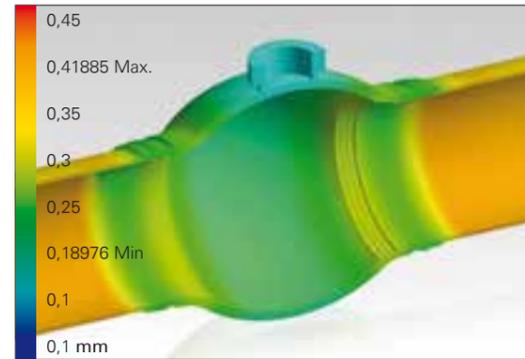
Design features

Spherical body

Top left: Pressure distribution for a spherical ball valve. Example for 10 MPa internal pressure.



Top right: Total deformation for a spherical ball valve. Example for 10 MPa internal pressure.



Right page: Schuck Type G ball valve

All illustrations are given as examples

DESCRIPTION

With its spherical shape, the Schuck Type G ball valve has the optimum shape for a resilient and hardwearing pressure vessel.

Due to its spherical shape, the ball valve has minimum wall thickness, low weight and optimum flexural strength. In addition, the dead space volume and the overall deformation are minimized.

The FEM calculation illustrates the effectiveness of the spherical shape, and the stress and deformation characteristics of the pressure vessel can be determined that way.

The spherical shape ensures uniform stress and deformation behavior under the effect of forces and torques in pipelines.

CONFIGURATIONS

The spherical shape is optimum for the following requirements

- High compressive strength
- High flexural strength and dimensional stability
- Optimum economic design

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SCHUCK BALL VALVES TYPE G

Accessories Bypass lines



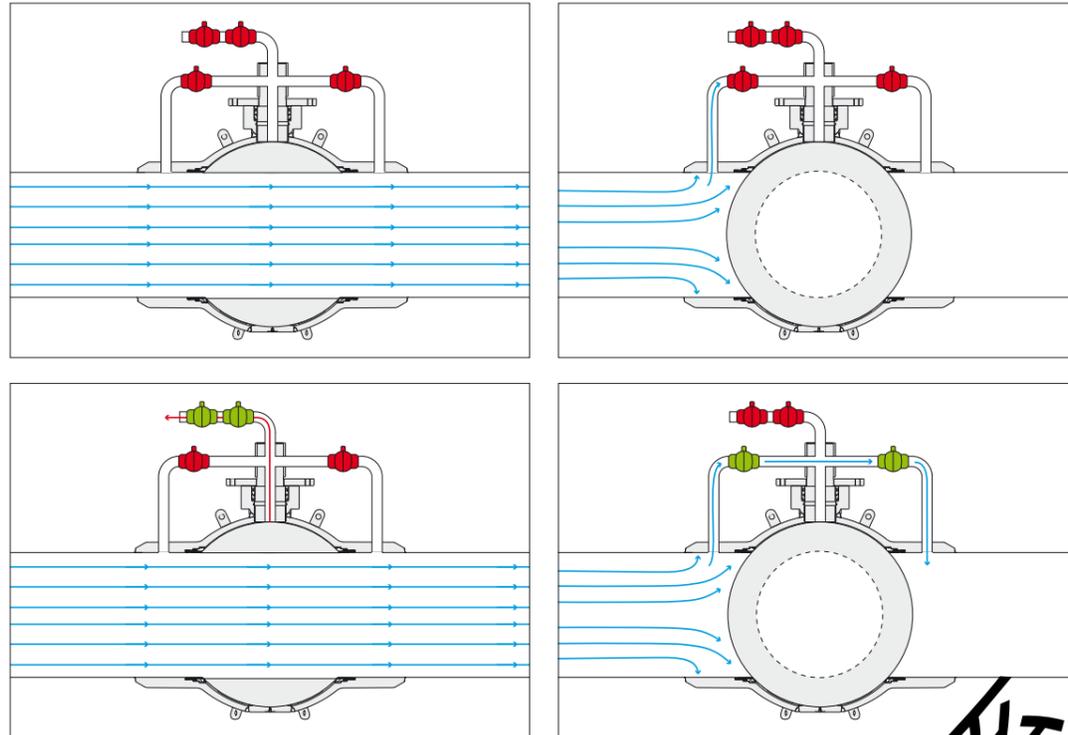
Top left: Bypass lines with an open ball valve in the open position.

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 G 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 device for high-pressure ball valves for all line components

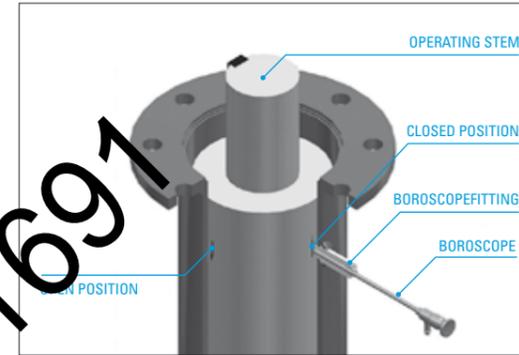
SCHUCK BALL VALVES TYPE G

Accessories Boroscope with boroscope opening and markings



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 G 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

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SCHUCK BALL VALVES TYPE G

Accessories Actuators

AVAILABLE ACCESSORIES

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



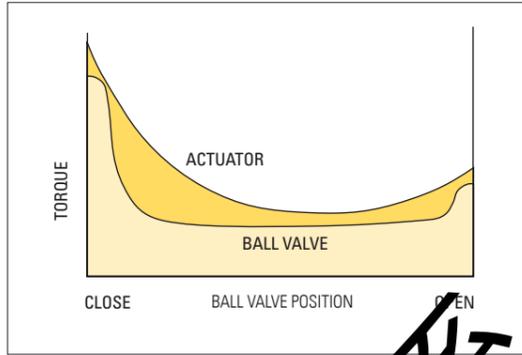
Top right: Schuck Type C electro-hydraulic actuator on a Schuck Type G ball valve



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 G ball valve with Schuck Type SHC hydraulic compact control



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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 G 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.

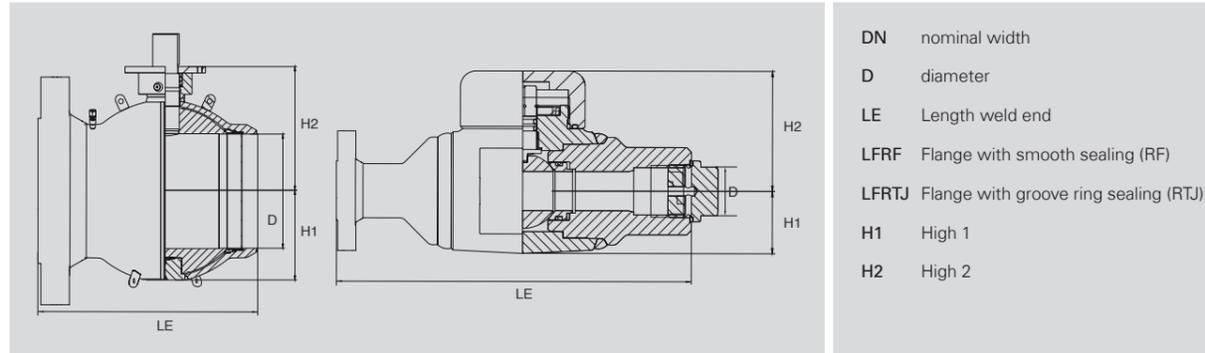
CONFIGURATIONS

- Gas over oil actuator system - Type G
- Pneumatic actuator system - Type K
- Electro-hydraulic actuator system - Type C
- Electro-hydraulic compact control - Type SHC
- Direct gas system - Type K
- 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 BALL VALVES TYPE G

CLASS 150

With flange or weld end



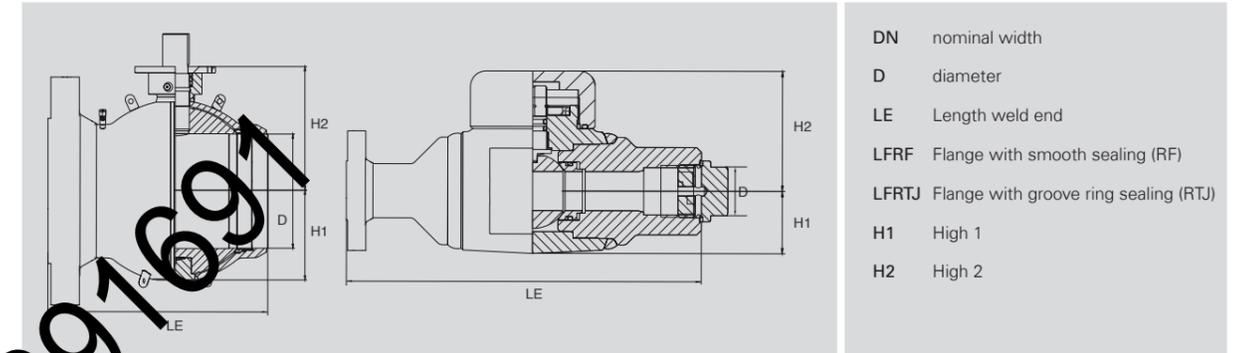
Schuck ball valve type G / CLASS 150

DN inch	DN mm	D	LE	LFRF	LFRTJ	H1	H2	Weight LE	Weight LF RF/LF RTJ
1/2	15	13	165	165	163,5	25	42	2	4
1	25	25	216	216	216	40	62,5	6	10
2	50	50	292	216	232	56	94	14	17
3	80	74	356	283	298	95	211	30	42
4	100	100	432	305	321	120	226	56	64
6	150	150	559	394	406	160	280	115	148
8	200	201	660	457	470	202	340	215	225
10	250	252	787	533	546	245	380	350	395
12	300	303	838	610	622	276	435	490	555
14	350	334	889	686	699	320	440	411	453
16	400	385	991	762	775	345	485	785	860
18	450	436	1092	864	876	400	520	955	1012
20	500	487	1194	914	927	416	562	999	1141
22	550	538	1295	-	-	460	606	1285	1653
24	600	589	1397	1067	1080	490	642	2174	2432
26	650	633	1448	1143	-	520	680	2346	2578
28	700	684	1549	1245	-	550	720	2948	2766
30	750	735	1651	1295	-	574	790	3550	4165
32	800	779	1778	1372	-	630	810	4558	4232
34	850	830	1930	1473	-	680	850	4972	6185
36	900	874	2083	1524	-	695	888	6050	6860
40	1000	976	2100	-	-	790	1016	8200	-
42	1050	1020	2200	-	-	830	1028	10200	-
44	1100	1066	2200	-	-	880	1096	11650	-
48	1200	1166	2300	2057	-	970	1165	13800	12865
56	1400	1360	2500	-	-	1125	1334	21000	-

SCHUCK BALL VALVES TYPE G

CLASS 300

With flange or weld end



Schuck ball valve type G / CLASS 300

DN inch	DN mm	D	LE	LFRF	LFRTJ	H1	H2	Weight LE	Weight LF RF/LF RTJ
1/2	15	13	165	165	163,5	25	42	2	4
1	25	25	216	216	216	40	62,5	6	10
2	50	50	292	216	232	56	94	14	17
3	80	74	356	283	298	95	211	30	42
4	100	100	432	305	321	120	226	56	64
6	150	150	559	403	419	160	280	115	148
8	200	201	660	502	518	202	340	215	252
10	250	252	787	568	584	245	380	350	432
12	300	303	838	648	664	276	435	490	609
14	350	334	889	762	778	320	440	411	571
16	400	385	991	838	854	345	485	785	771
18	450	436	1092	914	930	400	520	955	1012
20	500	487	1194	991	1010	416	562	1006	1308
22	550	538	1295	1092	1114	460	606	1285	1653
24	600	589	1397	1143	1165	490	642	2174	2524
26	650	633	1448	1245	1270	520	680	2346	2632
28	700	684	1549	1346	1372	550	720	2948	3114
30	750	735	1651	1397	1422	574	790	3550	4395
32	800	779	1778	1524	1553	630	810	4558	4466
34	850	830	1930	1626	1654	680	850	4972	6325
36	900	874	2083	1727	1756	695	888	6050	7020
40	1000	976	2100	-	-	790	1016	8200	-
42	1050	1020	2200	-	-	830	1028	10200	-
44	1100	1066	2200	-	-	880	1096	11650	-
48	1200	1166	2300	-	-	970	1165	13800	-
56	1400	1360	2500	-	-	1125	1334	21000	-

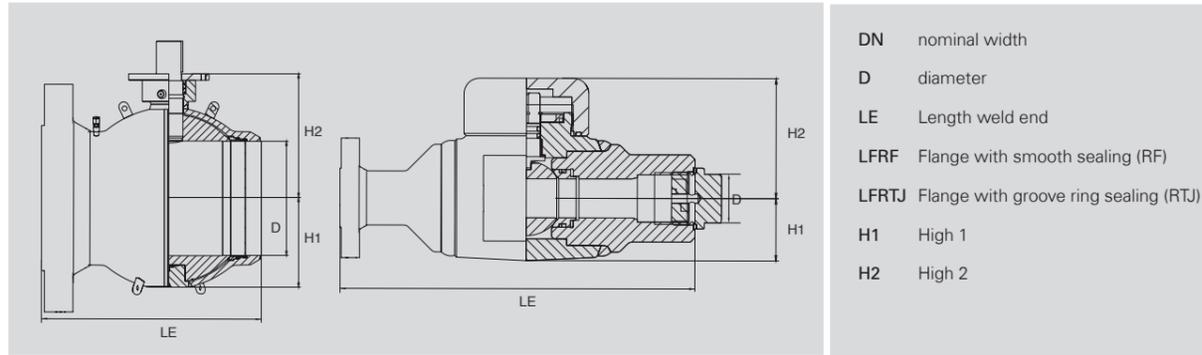
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SCHUCK BALL VALVES TYPE G

CLASS 600

With flange or weld end

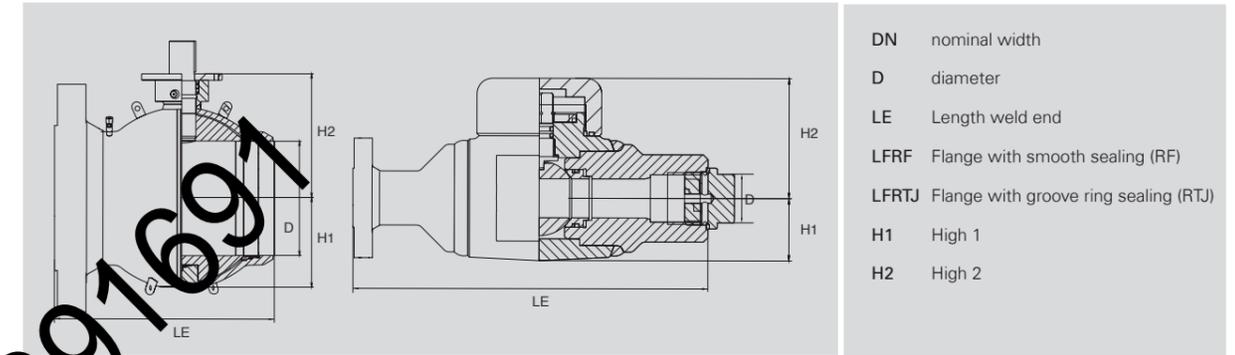


Schuck ball valve type G / CLASS 600									
DN inch	DN mm	D	LE	LFRF	LFRTJ	H1	H2	Weight LE	Weight LF RF/LF RTJ
1/2	15	13	165	165	163,5	25	42	2	4
1	25	25	216	216	216	40	62,5	6	10
2	50	50	292	292	295	56	94	14	17
3	80	74	356	356	359	95	211	37	50
4	100	100	432	432	435	120	226	56	90
6	150	150	559	559	562	160	280	115	168
8	200	201	660	660	664	202	340	215	290
10	250	252	787	787	791	245	380	350	490
12	300	303	838	838	841	276	435	492	689
14	350	334	889	889	892	320	440	415	642
16	400	385	991	991	994	345	485	785	1140
18	450	436	1092	1092	1095	400	520	955	1410
20	500	487	1194	1194	1200	416	562	1224	1542
22	550	538	1295	1295	1305	460	606	1306	1942
24	600	589	1397	1397	1407	490	642	2174	2615
26	650	633	1448	1448	1461	520	680	2346	2927
28	700	684	1549	1549	1562	550	720	2948	3539
30	750	735	1651	1651	1664	574	790	3550	4580
32	800	779	1778	1778	1794	630	810	4558	5566
34	850	830	1930	1930	1946	680	850	4972	6550
36	900	874	2083	2083	2099	695	888	6050	7300
40	1000	976	2100	2159	-	790	1016	8200	9532
42	1050	1020	2200	-	-	830	1028	10200	-
44	1100	1066	2200	-	-	880	1096	11650	-
48	1200	1166	2300	2250	-	970	1165	13800	13720
56	1400	1360	2500	-	-	1125	1334	21000	-

SCHUCK BALL VALVES TYPE G

CLASS 900

With flange or weld end



Schuck ball valve type G / CLASS 900									
DN inch	DN mm	D	LE	LFRF	LFRTJ	H1	H2	Weight LE	Weight LF RF/LF RTJ
1/2	15	13	165	216	216	25	42	2	4
1	25	25	216	254	254	40	62,5	6	10
2	50	50	292	368	371	56	94	17	38
3	80	74	381	381	384	95	211	38	50
4	100	100	457	457	460	120	226	60	96
6	150	150	610	610	613	160	280	130	195
8	200	201	737	737	740	202	340	225	340
10	250	252	838	838	841	245	380	395	555
12	300	303	965	965	968	276	435	540	804
14	350	322	1029	1029	1038	320	440	559	904
16	400	373	1130	1130	1140	345	485	860	1213
18	450	423	1219	1219	1232	400	520	1180	1616
20	500	471	1321	1321	1334	420	590	1490	2620
22	550	522	-	-	-	-	-	-	-
24	600	570	1549	1549	1568	502	687	2765	3885
26	650	617	-	1651	1673	520	680	-	4465
28	700	665	-	-	-	-	-	-	-
30	750	712	-	1880	1902	582	775	-	6385
32	800	760	-	-	-	-	-	-	-
34	850	808	-	-	-	-	-	-	-
36	900	855	-	2286	2315	725	926	-	10860
40	1000	956	-	-	-	-	-	-	-
42	1050	1006	-	-	-	-	-	-	-
44	1100	-	-	-	-	-	-	-	-
48	1200	1149	-	-	-	-	-	-	-
56	1400	1360	2500	-	-	1125	1334	21000	-

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SCHUCK GLOSSARY

Important technical information and definitions

HIGH DIFFERENTIAL SEAT TEST

The high differential seat test underpins the highest quality demands and seamless reliability of SCHUCK ball valves. The test is a very extreme loading test for the seal area including the seating rings.

High differential seat tests are based on real cases in common practice. If a compressor station under pressure experiences a sudden shutdown, the ball valve must then be able to close from the open position with full dead space pressure.

DOUBLE BLOCK AND BLEED

Checking a ball valve that is in operation for leaks

Testing can take place in an open or closed position by monitoring the pressure in the dead space via the drainage or venting connection

Apply pressure to the ball valve passageway (or to both sides in a closed position)

Leak testing of the seat rings by venting or draining

It might also be possible to determine the quantity of the leak

During testing, the specified maximum operating pressure must not be exceeded

SIL

Safety Integrity Level

International standard in compliance with IEC 61508/IEC61511

SIL 1 to SIL 4

Reliability of safety functions

Based on the level, there are design principles that must be complied with to minimize the risk of malfunctions.

All ball valves are evaluated according to SIL.

A SIL manufacturer's declaration can be issued.

MANUFACTURING AND TESTING

DIN ISO 9001 Quality management systems - requirements

PED 97/23/EC Pressure Equipment Directive

AD2000 – HPO General principles for design, manufacture, and hence the associated tests

AD2000 – W0 General principles for materials

DVGW, ÖVGW, SVGW - German/Austrian/Swiss Gas and Water Industry Association

API Q1 Specification for Quality Programs for the Petroleum, Petrochemical and Natural Gas Industry

API 6D Specification for Pipeline Valves

DIN EN 14141 Valves for the transport of natural gas in pipelines – requirements of usability and testing

VdTÜV Merkblatt Valve 100 EC – Prototype testing

ISO 14313 Oil and gas industry, transport pipeline systems, pipeline valves

EN 12266-1, EN 12266-2 Industrial valves – Testing valves made of metal - Part 1: Pressure testing, test methods and acceptance criteria – binding requirements Part 2: Tests, test methods, and acceptance criteria

DIN 30690-1 Components in gas supply systems – Part 1: Requirements of components in gas supply systems

DIN 3230 T5 Technical delivery conditions for isolating valves

AD2000 Rules and requirements

AD 2000 – WP 2/1 (TÜV) Procedure qualification for joining processes – procedure qualification for welding

DIN EN 3834-3 Quality requirements for fusion welding of metallic materials – Part 3: Standard and quality requirements

DIN EN ISO 15614 Requirement and qualification of welding methods for metallic materials – Welding method test

TRD 100 General principles for materials

ISO 10497 / BS 6755 Specification for Fire Test for Valves

EN 10497 Testing of valves – requirements of product certification for fire safety

STANDARD MATERIALS

Stem seal H-Ecopur

Bearing bush TstE355
Equivalent ASTM Material A350LF2

Trunnion TstE355, nickel-plated
Equivalent ASTM material A350LF2, nickel-plated

Seat Fire Safe Graphite

Coil spring 1.4310

O-ring FPM
Equivalent ASTM material Viton

Seat ring 1.4006 (X12Cr13), partially chrome-plated
Equivalent ASTM material A182 F6a, partially chrome-plated

Operating stem S420 NL

Ball plug A350LF2, chrome-plated

Welded End Equivalent ASTM material A350LF2-F52, A694-F52,-F60, - F65

Flange C21
Equivalent ASTM Material A105, A350LF2

Housing P355NL1
Equivalent ASTM Material A537 Cl.1

LIST OF ABBREVIATIONS

DN	Nominal diameter
SW	Spanner width
PN	Nom. pressure
PT	Test pressure
CL	Pressure rating based on American standard
PS/MOP	Maximum operating pressure
FB	Floating mounted ball
TM	Trunnion-mounted ball
RF	Raced face flange
RTJ	Ring type joint flange
SP	Single piston
DP	Double piston
PMSS	Primary metallic/secondary soft sealing
MM	Metallic sealing
SO	Soft sealing
PUR	Polyurethane
SI	Secondary sealant complete (standard as of 6")
SIS	Secondary sealant only on seating ring
SIT	Secondary sealant only on actuator trunnion
oSI	Without sealant
DIN	Deutsches Institut für Normung (German Standardization Institute)
EN	European Norm (Standard)
ISO	International Standards Organization
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
Mgmt	Guide Line
ANSI	American National Standards Institute
DGRL/PED	Pressure Equipment Directive
DVGW	Deutsche Vereinigung des Gas- und Wasserfaches e.V. (German Gas and Water Industry Association)

SCHUCK FREE SPACE

Room for your notes

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We manufacture and distribute components for connecting pipeline systems in more than 50 countries, with 5 international offices and over 40 years of experience.

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