SCHUCK GROUP

# SCHUCK BALL VALVES TYPE G

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

# SCHUCK BALL VALVES TYPE G

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

### 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.

## 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

## 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

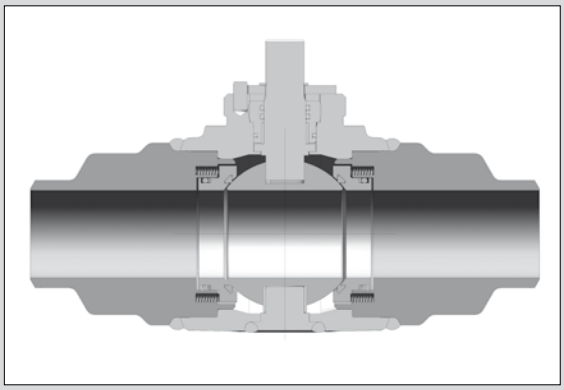
Seat ring: 1.4006 (X12Cr13) / A182 F6a, partially chrome-plated

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 ½” 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-cantering seating ring system with pre-tensioned spring elements

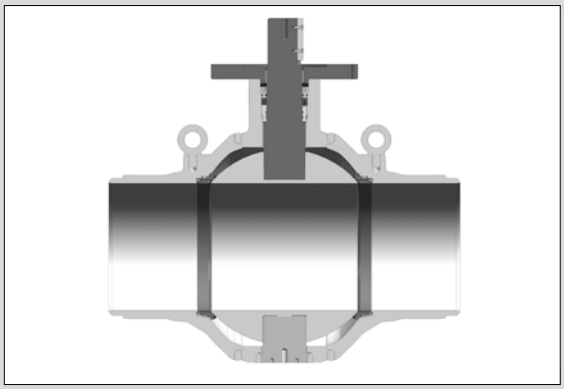
Anti blow out stem

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 for seat and stem (as of 6”)

drain and vent connections

trunnion-mounted ball

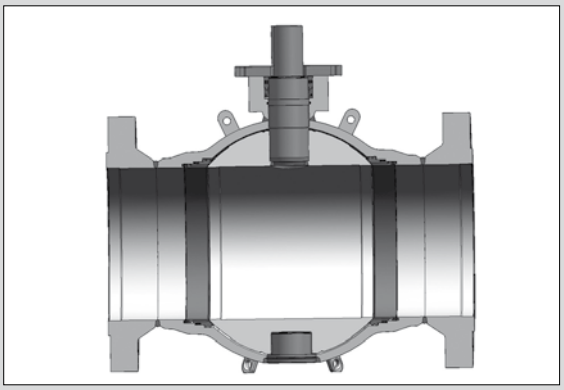
stem protected against blow-out by ring nut

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

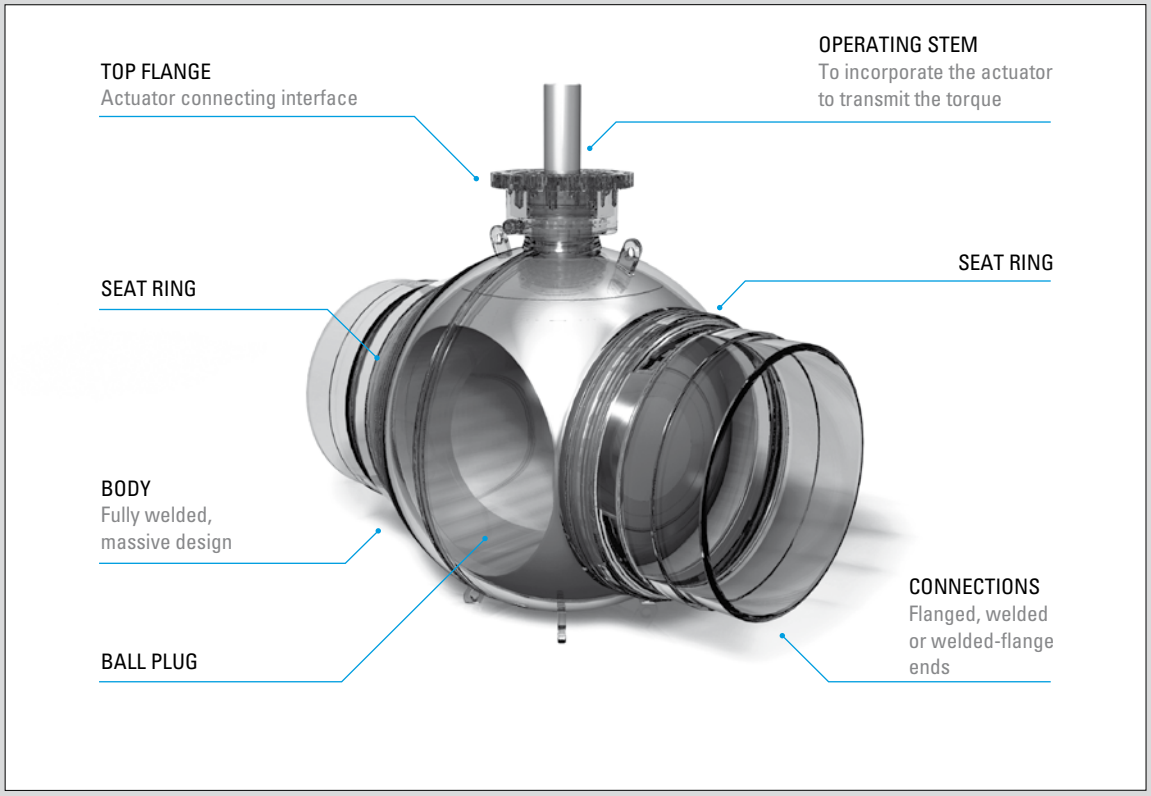
Anti blow out stem (shrink-fit and welded)

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

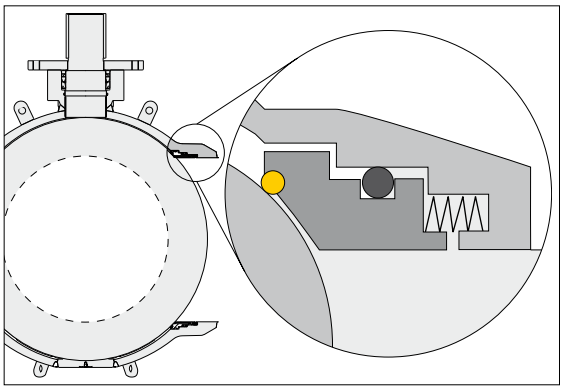
## Sealing systems

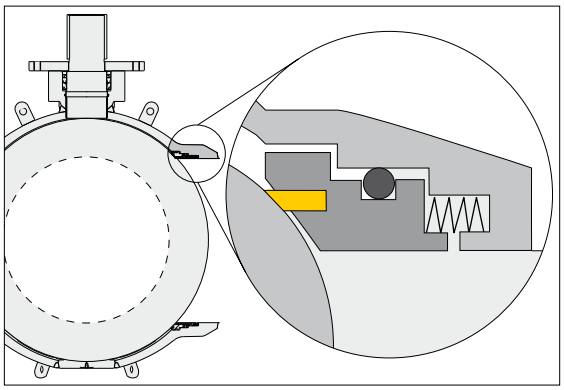
**Top left:** Schuck seat ring

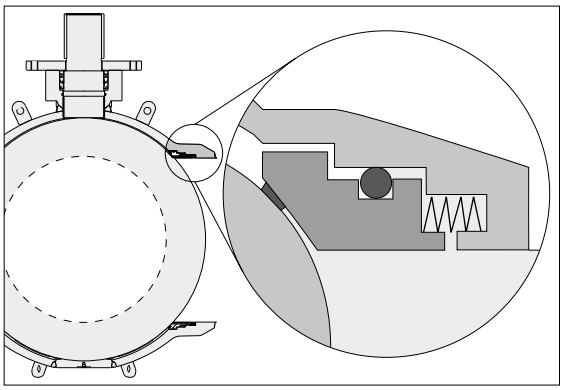
**Top right:** primary metallic secondary soft-sealing system

**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

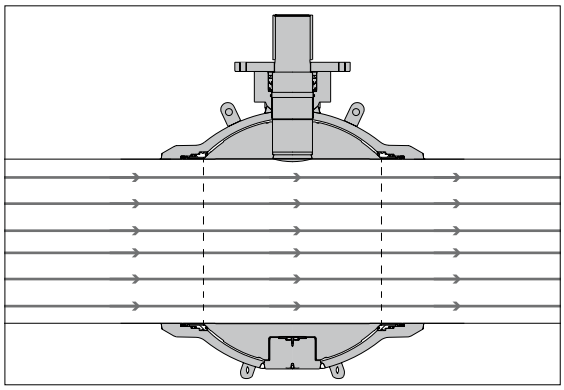
**Top left:** Ball valve flow in open position

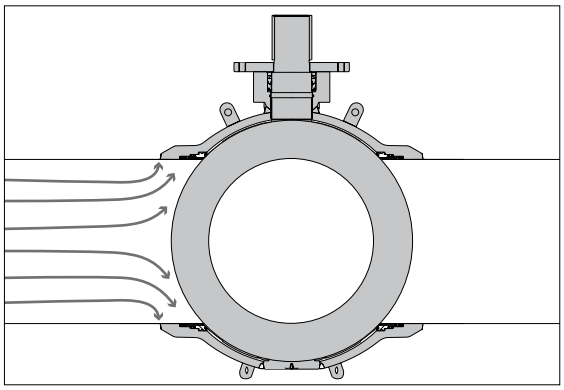
**Top right:** Ball valve in closed position

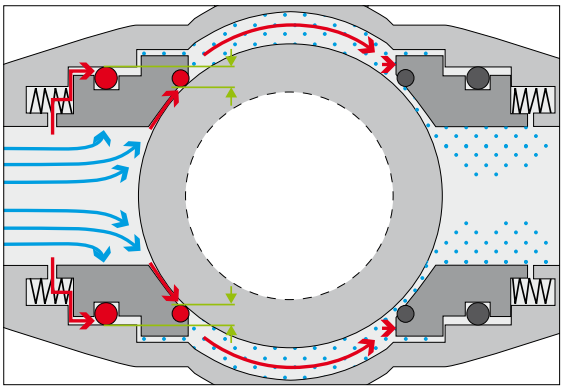
**Bottom left:** Single piston sealing system

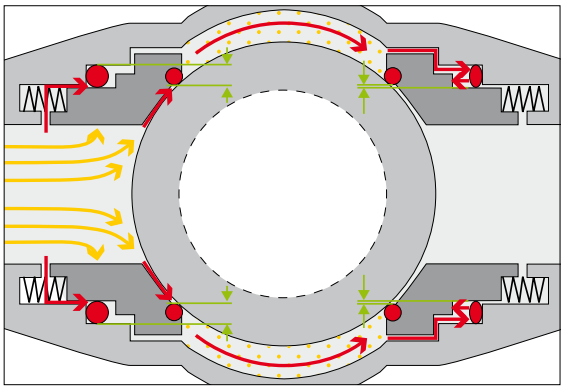
**Bottom right:** Double piston sealing system

Drawing legend:
- Medium
- 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 BALL VALVES TYPE G

## Design features

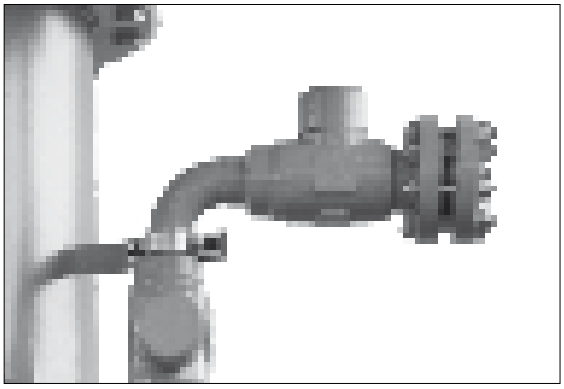
## Venting, draining

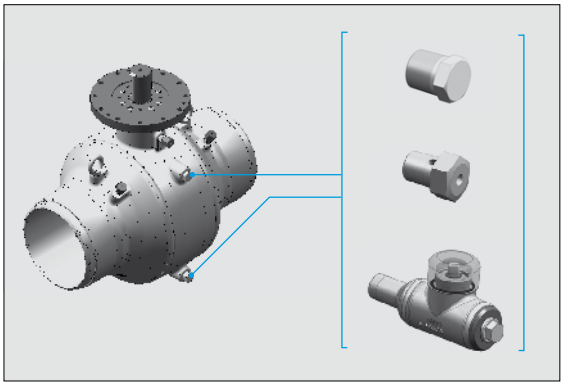
**Top left:** Venting ball valve of an above-ground ball valve

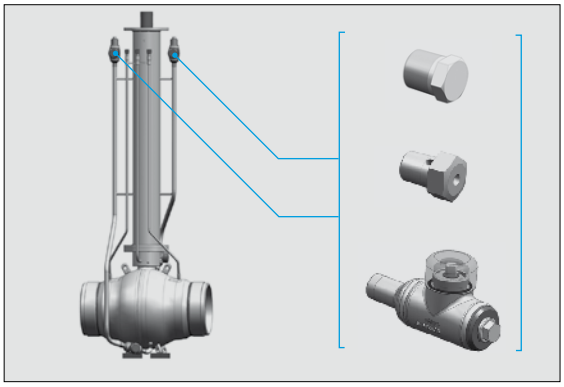
**Top right:** Venting ball valve of a below-ground ball valve

**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

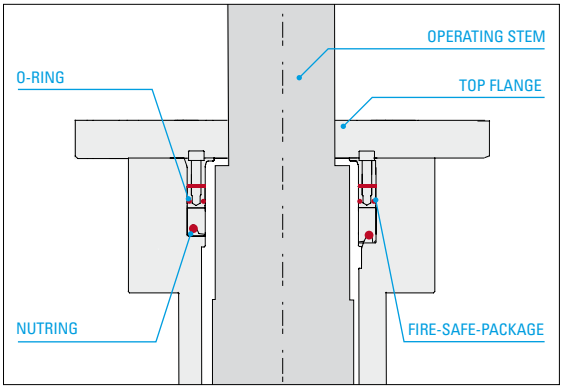
## Design features

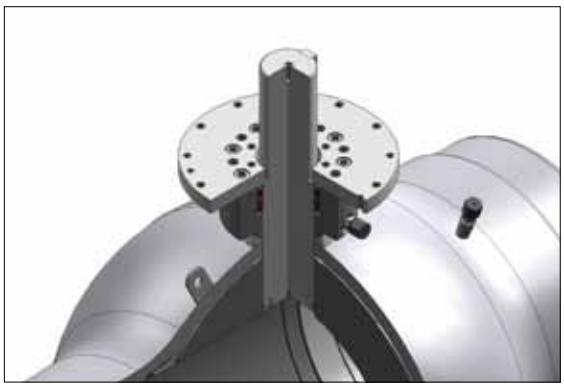
## Operating Stem

**Top left:** The triple trunnion seal of 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

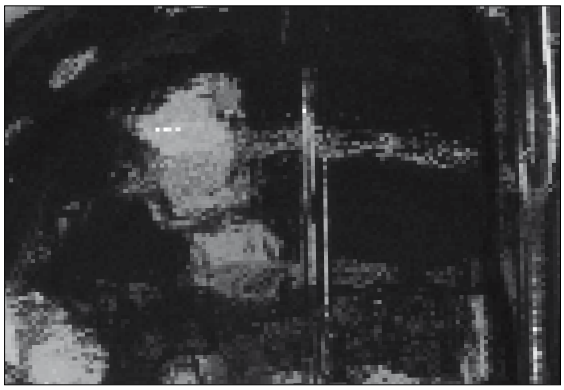
# SCHUCK BALL VALVES TYPE G

## 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 + 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 BALL VALVES TYPE G

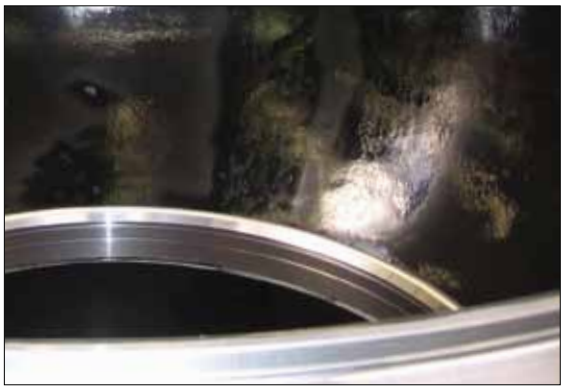
## Accessories

## 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 an expert hired by the customer.

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

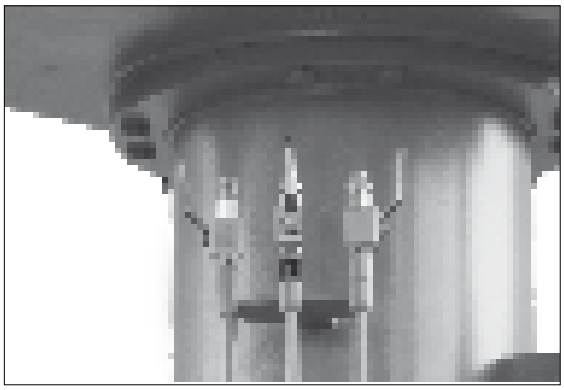
# SCHUCK BALL VALVES TYPE G

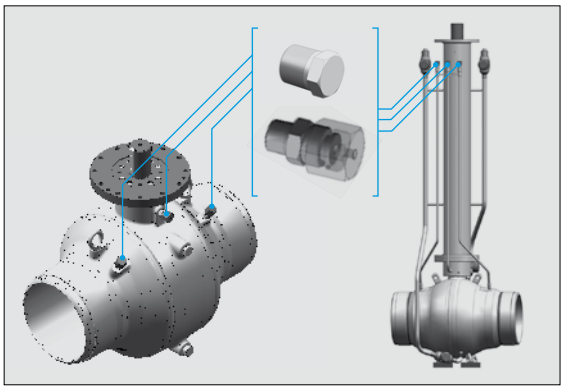
## Design features

## 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.



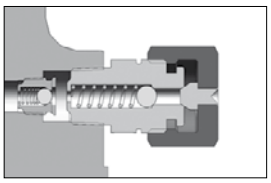


### DESCRIPTION

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).

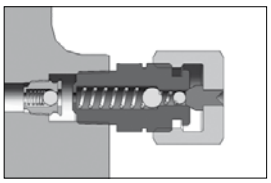
### CONFIGURATIONS



**Secondary sealant injection (standard)**

Injection head

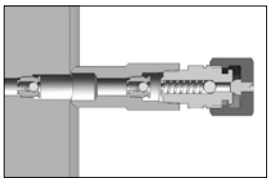
Check valve



**Secondary sealant injection**

Double injection head

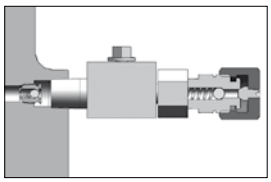
Check valve



**Secondary sealant injection**

Injection head

Two check valves



**Secondary sealant injection**

Injection head

Block ball valve

Check valve

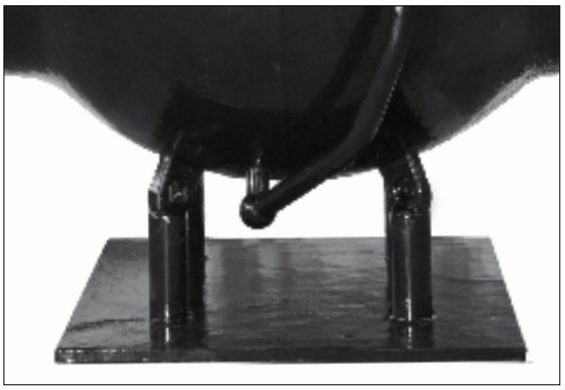
# SCHUCK BALL VALVES TYPE G

## 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

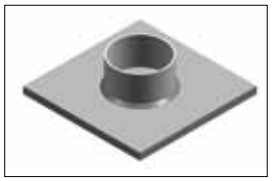
Regardless of whether it is for above or below-ground installation, the Schuck Type G ball valve needs a firm footing for transport, installation or mounting. Especially for large nominal diameters, it is important to guarantee safety and prevent injuries and/or damage.

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.

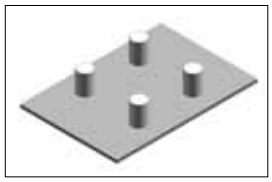
### CONFIGURATIONS

**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

# SCHUCK BALL VALVES TYPE G

## Design features

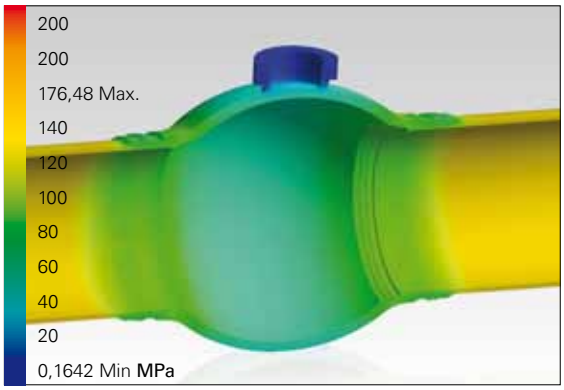
## Spherical body

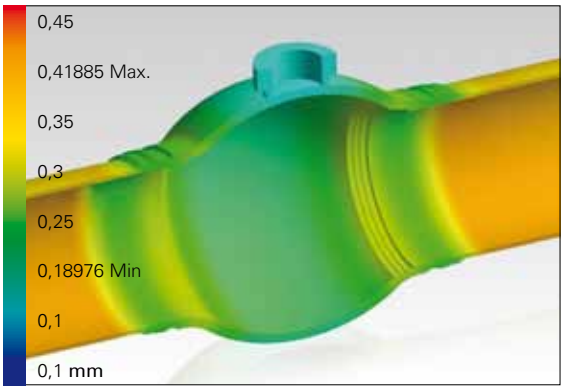
**Top left:** Pressure distribution for a spherical ball valve. Example for 10 MPa internal pressure.

**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

# SCHUCK BALL VALVES TYPE G

## Accessories

## Bypass lines

AVAILABLE ACCESSORIES

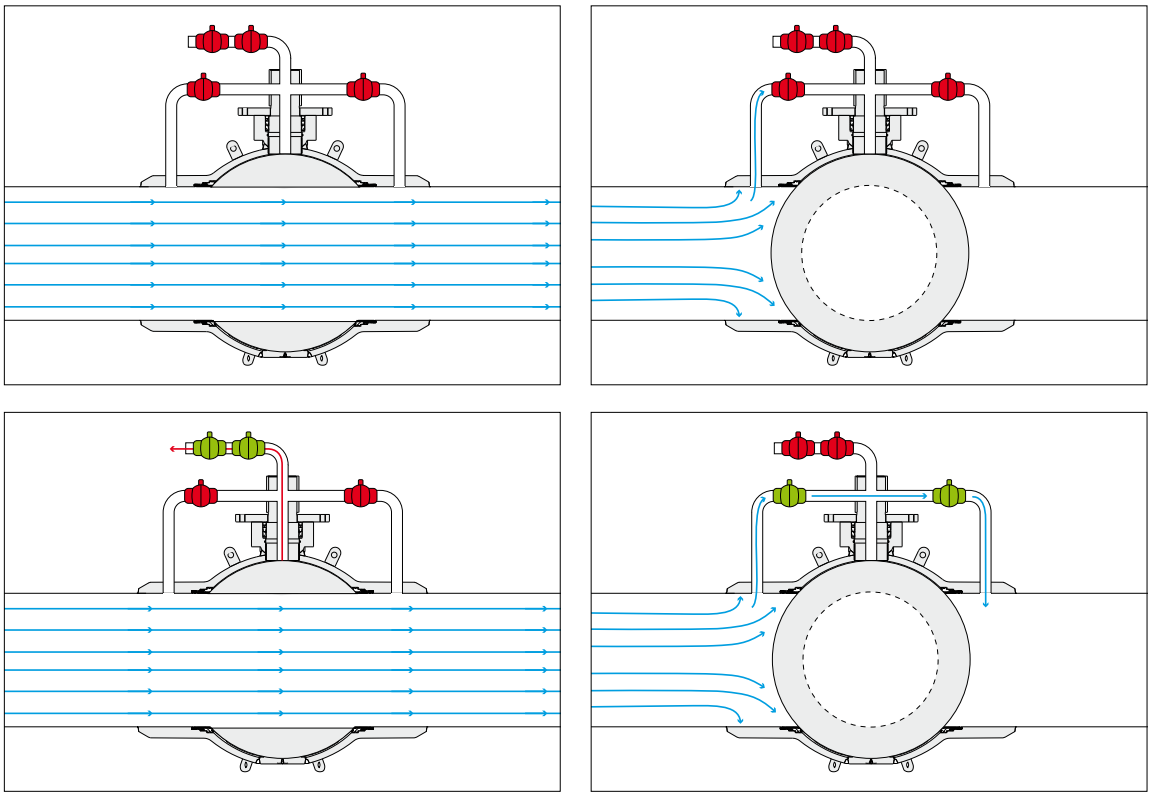
**Top left:** Bypass lines with an open ball valve in the open position.

**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 devices via high-pressure ball valves for all line components

# SCHUCK BALL VALVES TYPE G

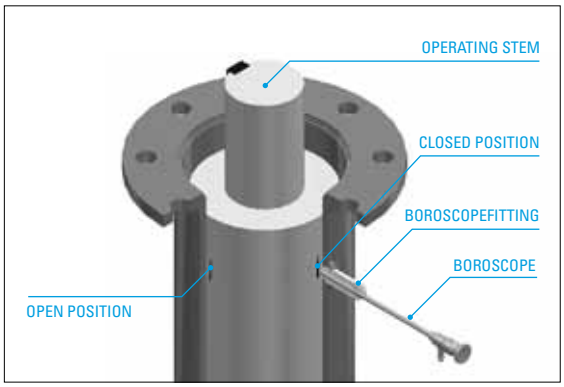
## Accessories

## 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 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

# SCHUCK BALL VALVES TYPE G

## Accessories

## Actuators

AVAILABLE ACCESSORIES

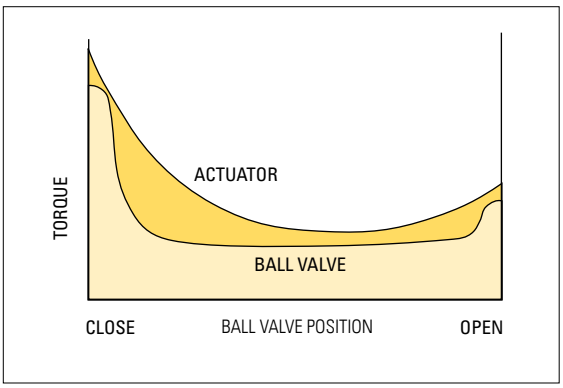
**Top left:** Schuck gas over oil Type G actuator with solar package including emergency power supply

**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




## 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 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

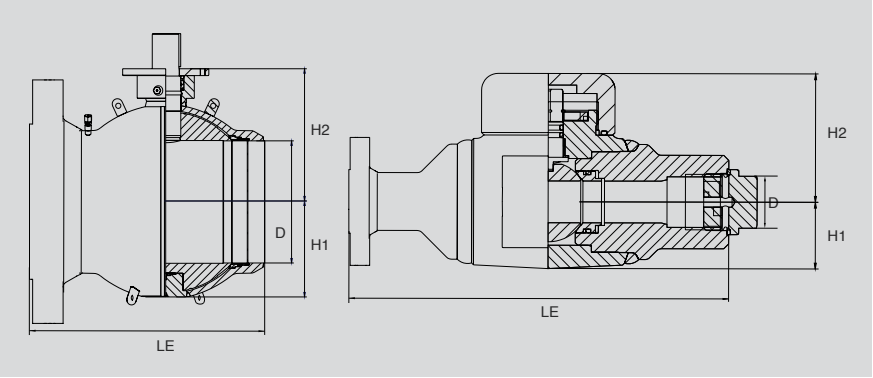
Electro-hydraulic spring return - Type C7/C8

Pneumatic spring-return - Type K7/K8

# SCHUCK BALL VALVES TYPE G

## CLASS 150

## With flange or weld end




| | |
|---|---|
| DN | nominal width |
| D | diameter |
| LE | Length weld end |
| LFRF | Flange with smooth sealing (RF) |
| LFRTJ | Flange with groove ring sealing (RTJ) |
| H1 | High 1 |
| H2 | High 2 |

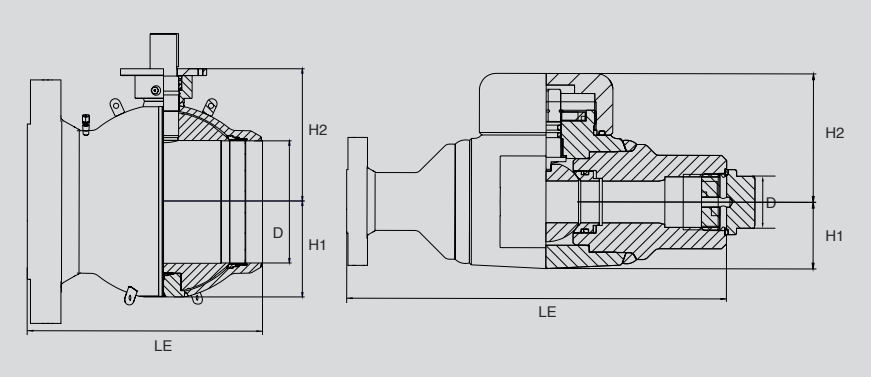
**Schuck ball valve type G / CLASS 150**

| 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 | 283 | 203 | 216 | 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 | 485 |
| 16 | 400 | 385 | 991 | 762 | 775 | 345 | 485 | 785 | 668 |
| 18 | 450 | 436 | 1092 | 864 | 876 | 400 | 520 | 955 | 880 |
| 20 | 500 | 487 | 1194 | 914 | 927 | 416 | 562 | 999 | 1141 |
| 22 | 550 | 538 | 1295 | – | – | 460 | 606 | 1282 | – |
| 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




| | |
|---|---|
| DN | nominal width |
| D | diameter |
| LE | Length weld end |
| LFRF | Flange with smooth sealing (RF) |
| LFRTJ | Flange with groove ring sealing (RTJ) |
| H1 | High 1 |
| H2 | High 2 |

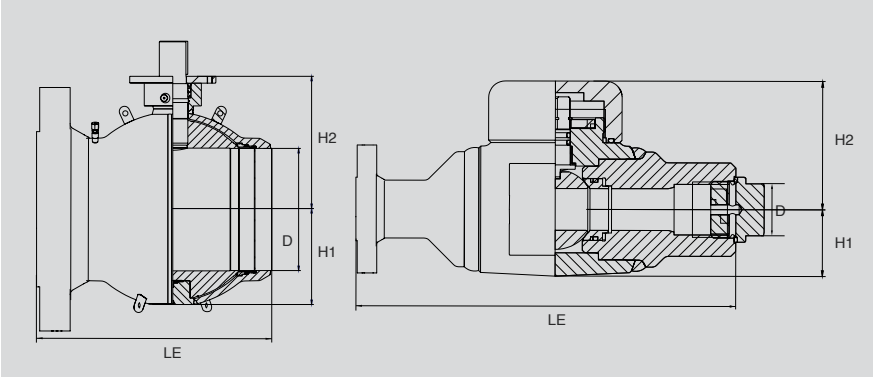
**Schuck ball valve type G / CLASS 300**

| 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 | 283 | 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 | 414 | 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 | – |

# SCHUCK BALL VALVES TYPE G

## CLASS 600

## With flange or weld end




| | |
|---|---|
| DN | nominal width |
| D | diameter |
| LE | Length weld end |
| LFRF | Flange with smooth sealing (RF) |
| LFRTJ | Flange with groove ring sealing (RTJ) |
| H1 | High 1 |
| H2 | High 2 |

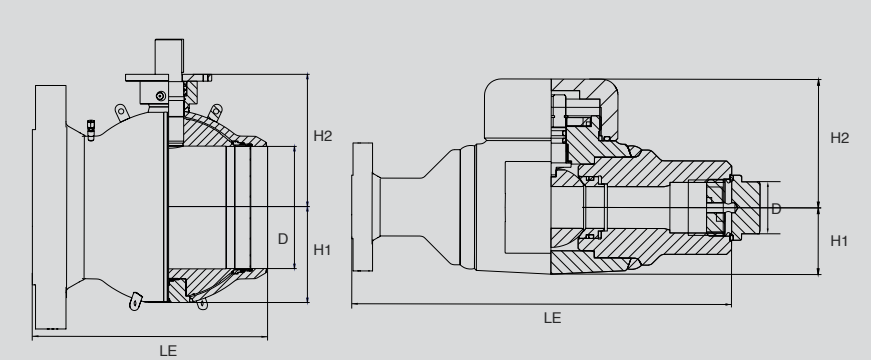
**Schuck ball valve type G / CLASS 600**

| 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 | 894 |
| 18 | 450 | 436 | 1092 | 1092 | 1095 | 400 | 520 | 955 | 1181 |
| 20 | 500 | 487 | 1194 | 1194 | 1200 | 416 | 562 | 1224 | 1542 |
| 22 | 550 | 538 | 1295 | 1295 | 1305 | 460 | 606 | 1301 | 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




| | |
|---|---|
| DN | nominal width |
| D | diameter |
| LE | Length weld end |
| LFRF | Flange with smooth sealing (RF) |
| LFRTJ | Flange with groove ring sealing (RTJ) |
| H1 | High 1 |
| H2 | High 2 |

**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 | – |

# 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 – HP0 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 – HP 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

**Load 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

07.2011 DE MAR00078

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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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SCHUCK GROUP

DESIGN
ENGINEERING
MANUFACTURING
**MADE IN GERMANY**