



**API 6D  
DOUBLE  
BLOCK AND  
BLEED (DBB)  
BALL VALVE**

*You Solution Partner*  
1978 - ∞



## API 6D DOUBLE BLOCK AND BLEED (DBB) BALL VALVE



Batusan, with the trademark BatuValve started manufacturing Ball Valves in 1978. Since then, continues to serve the industry with dedication to quality, product innovation and commitment to customer service. We manufacture all our products %100 in our production facility in Turkey. We use European originated raw materials. Our trust in our products allows us to provide 2 year unlimited warranty.

Our main product line is Ball Valves. We also produce Check valves, Strainers and Flow Indicators. Being a leader manufacturer in Turkey for 43 years. Apart from the Turkish industry, we export our products with pride to Germany, Bulgaria, Serbia, Poland, Croatia, Bosnia-Herzegovina, Greece, Lebanon, Saudi Arabia, Russia, Iran, Egypt, Yemen, Afghanistan, Austria, Vietnam, Equador, Colombia, Brasil, Ukraine, France, Algeria, Morocco, Tunisia, Gabon and so on. We also produce OEM products for some of the most known global brands from Italy, Germany, Austria, etc.

Our products have been installed throughout the world, handling a wide variety of applications in the Gas, Oil, Refining, Chemical, Food, Power Generation and Pipeline Transmission industries.

We have been emphasizing R&D department and always expanding our product line serving the needs of our customers. We have most of the Industrial valve manufacturing certificates, including;

ISO 9001: 2015, API 6D "0695", TSE, TS 9809, TSE EN 331, TSE 3148, TSE TS 16767, TSE TS 11494, TOV SOD CE 0036, TOV IT 18 ATEX 056 AR, TA LUFT, EN 14432, API 6FA FIRE SAFE, API 607, FIRE SAFE, ISO 10497 FIRE SAFE, EAC-1, EAC-2, ROS TEKHNAZDOR, TH 02, HYGIENE, GAS, GAZMER, EGAS, BELARUS



## API 6D DOUBLE BLOCK AND BLEED (DBB) BALL VALVE SPECIFICATIONS

Batu API 6D Double Block And Bleed (DBB) trunion ball valves are designed to include many features for you as a result of a detailed R&D study. Extra options are available upon request.

### LOW TORQUE BALL VALVES

ANTI-BLOWOUT STEM DESIGN

ANTI STATIC DEVICE

ISO 5211 MOUNTING FLANGE

LOW EMISSION VALVES

DOUBLE BLOCK & BLEED

EMERGENCY SEALANT INJECTION

- \* DBB
- \* DIB-1
- \* DIB-2

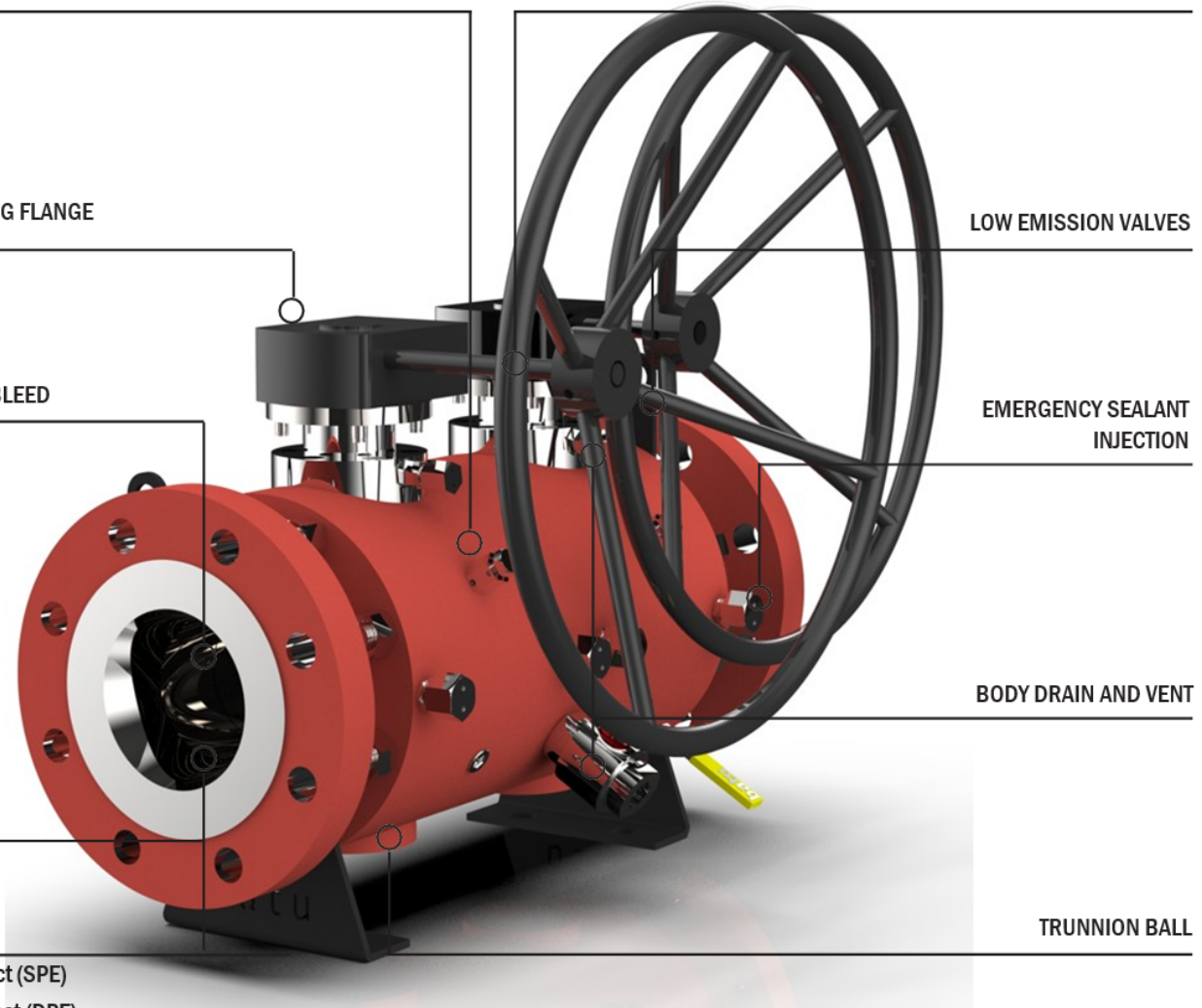
BODY DRAIN AND VENT

FIRE-SAFE DESIGN

SEAT

TRUNNION BALL

- \* Single Piston Effect (SPE)
- \* Double Piston Effect (DPE)



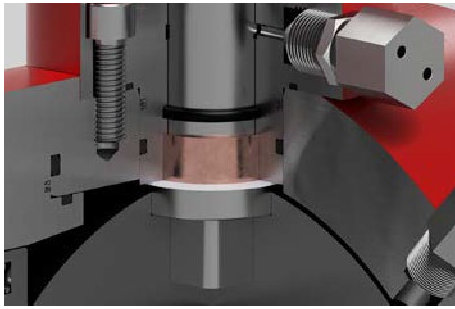
FEATURES	
DIMENSIONS	½" - 56"
CONNECTIONS TYPES	RF / RTJ / BW / SW
WORKING PRESSURE	ANSI 150 - 2500
WORKING TEMPERATURE	-46 °C - .+210 °C
OPERATION	LEVER / GEAR BOX / ACTUATOR

STANDARDS	
DESING	API 6D & ASME B16.34 & EN ISO 17292
DIMENSIONS	API 6D & ASME B16.10
CONNECTIONS	ASME B16.5 & ASME B16.47 Series A
FIRE-SAFE	API 6FA & API 607 & ISO 10497
TESTING	API 6D & API 598

**TECHNICAL SPECIFICATIONS**

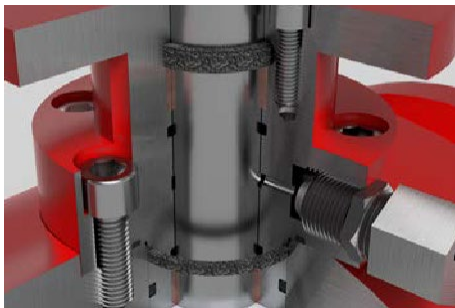
FEATURE	
Trunnion Ball	Standard
Anti-Blowout Stem Design	Standard
Anti Statik Device	Standard
Fire Safe Design	Standard
ISO 5211 Mounting Flange	Standard
ASME B16.5 & ASME B16.47 Series A	Standard
Soft Seat Design	Standard
Primary Metal Secondary Soft Seat Design	On Request
Metal to Metal Seat Design	On Request
Single Piston Effect (SPE)	Standard
Double Piston Effect (DPE)	On Request
Single/ Double Piston Effect Combination	On Request
Double Block and Bleed Design (DBB)	Standard
Double Isolation and Bleed (DIB 1) Design	On Request
Double Isolation and Bleed (DIB 2) Design	On Request
Drain	Standard
Drain Valve or Check Valve	On Request
Vent (on 6" and larger)	Standard
Vent Valve	On Request
Raised Face Flange	Standard
Ring Joint Flange	Standard
Buttweld Flange	On Request
Socket Flange	On Request
Bennet Injection (on 6" and larger)	Standard
Seat Injection (on 6" and larger)	Standard
Lever	Standard
Lever Lock System	On Request
Gear Box	On Request
Gear Box Lock System	On Request
Mapa and Support (on 6" and larger)	Standard
Valve Open/Close Indicator	Standard

## ANTI-BLOWOUT STEM DESIGN



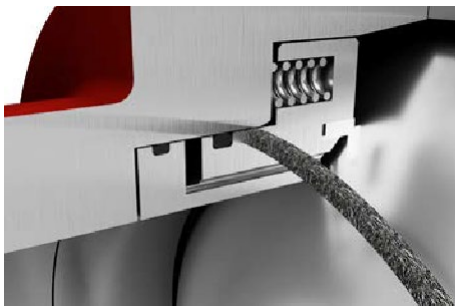
Our Ball valves are designed and manufactured in such a way that when the movement shaft holders and seals are removed, it will not be possible for the stem to go out of the valve due to the effect of pressure, as described by the standards. The stem is designed with a wide lower flange. In this way, the body cover part prevents the stem from dislodging and prevents a possible explosion. This feature allows the shaft seal to be replaced even when the valve is under pressure.

## FIRE-SAFE DESIGN

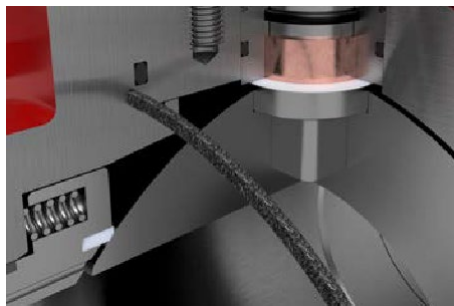


BatuValve ball valves have been subjected to fire tests in accordance with API 6Fa and ISO 10497 standards. Regardless of the soft seat material, they will likely be damaged when exposed to fire conditions. BatuValve offers a fire resistant design that can greatly prevent leaks from seals when valves are damaged by fire. If Teflon and O'ring materials are damaged, a metal-to-metal seal is formed between the secondary metal seat and the ball. The slot-to-body graphite seals, graphite body seals, and graphite gasket end caps are designed to withstand high temperature and will remain undamaged.

Bonnet



Seat

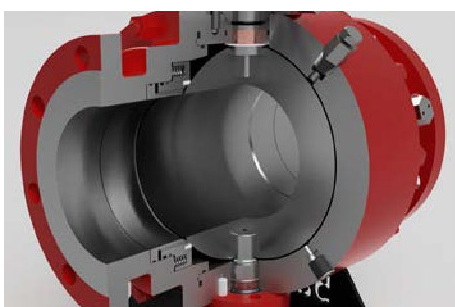


Body



Trunnion

## DRAIN & VENT DESIGN \*

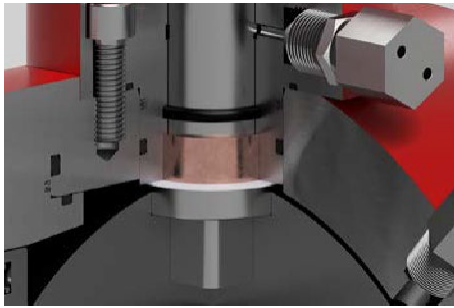


Valves are manufactured with drain and vent discharge outlets designed in accordance with the connection dimensions defined by the standards for the safe discharge of the pressurized fluid or gas remaining in the body when the valves are brought to the closed position.

\* Specify during the order.

BATUSAN reserves the right to change design, construction and material while staying within the standards.

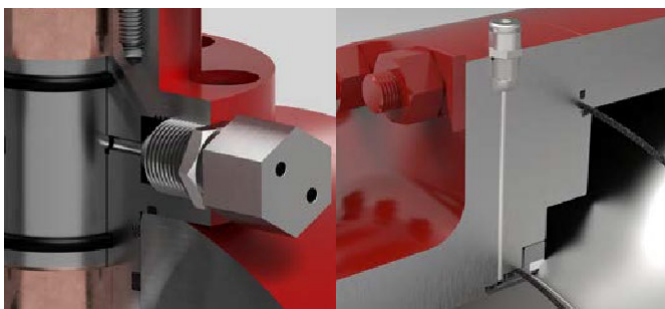
## ANTI STATIC DESIGN



Ball Valves used in flammable and combustible fluid circuits such as petrol, LPG, LNG must be protected against static electricity. The spring and ball used in the stem ensure that any static electricity that may occur is grounded to the pipeline. In this way, the electrostatic charge that may occur on the ball is prevented.

BATU Ball Valves are designed and manufactured in accordance with these requirements.

## LUBRICATION AND EMERGENCY SEALANT INJECTION \*

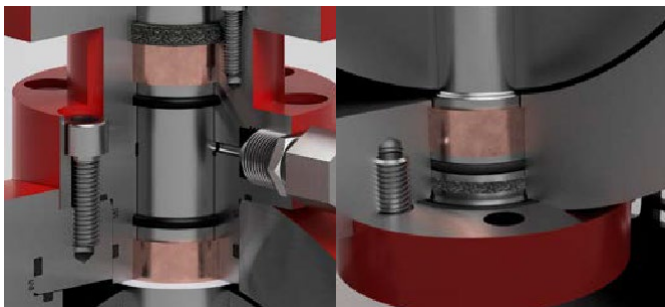


Bonnet

Cover

Glacers on the bonnet and covers allow easy lubrication of the drive shaft and the hoops. Lubrication should be carried out periodically. These greaser can be used to inject sealant in emergency situations such as fire and other accidents.

## LOW TORQUE

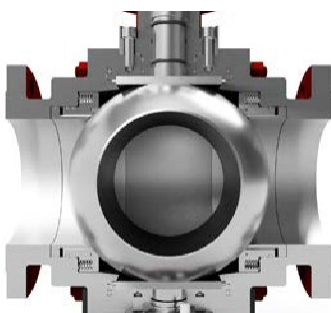


Throat

Seat

All split body trunnion ball valves have a very low torque value. Every valve produced is subjected to torque test.

## HIGH PRESSURE – LOW PRESSURE SEALING DESIGN



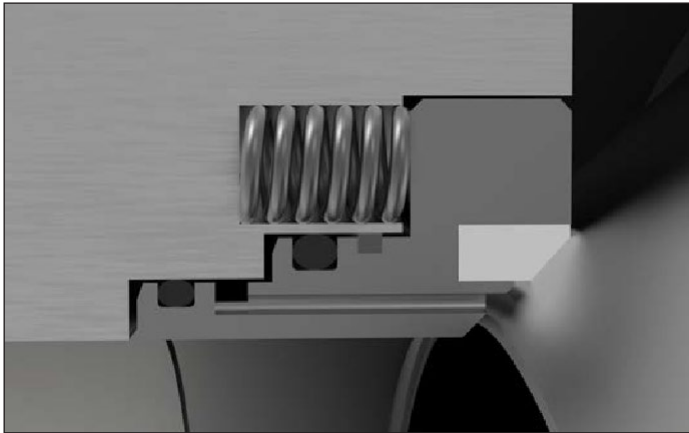
The sealing performance of the ball valves at higher pressures are more important than at low pressures. At high pressures, sealing is ensured by forming a good contact between the sealing ring and the ball surface with the effect of the fluid pressure applied from the back surface of the Sealing seat ring. When the pressure behind the ring reaches a low value, this contact force decreases. In this case, the spring force supporting the seat ring ensures enough force is applied so the contact between the sealing ring and the ball surface and the sealing function are maintained.

\* Specify during the order.

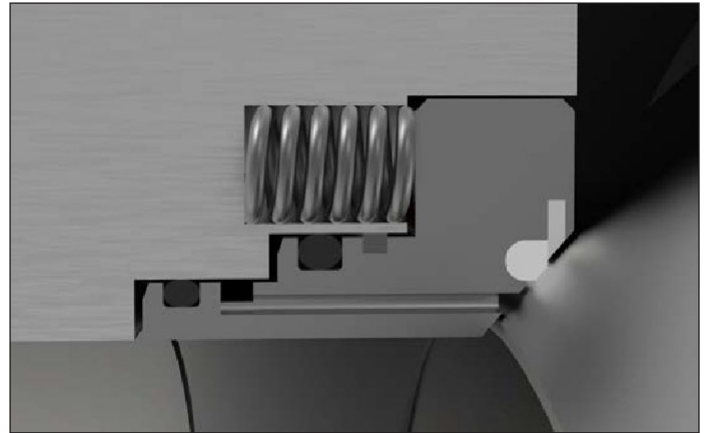
BATUSAN reserves the right to change design, construction and material while staying within the standards.

**SEAT RING DESIGN**

**SOFT SEAT DESIGN**



*Soft Seat Design*



*Primary Metal Secondary Soft Seat Design \**

In standard trunnion ball valves, a flexible teflon material is placed between the seat and the ball to provide a soft seating motion and sealing in addition to the metal-to-metal fit.

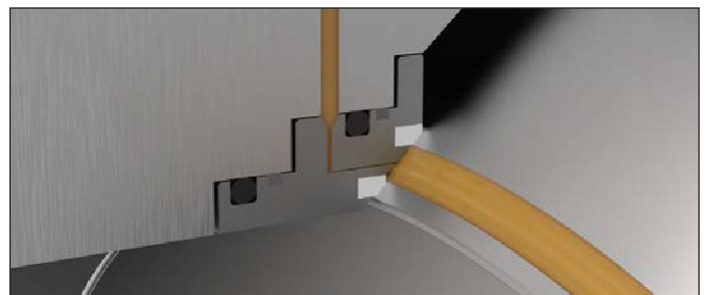
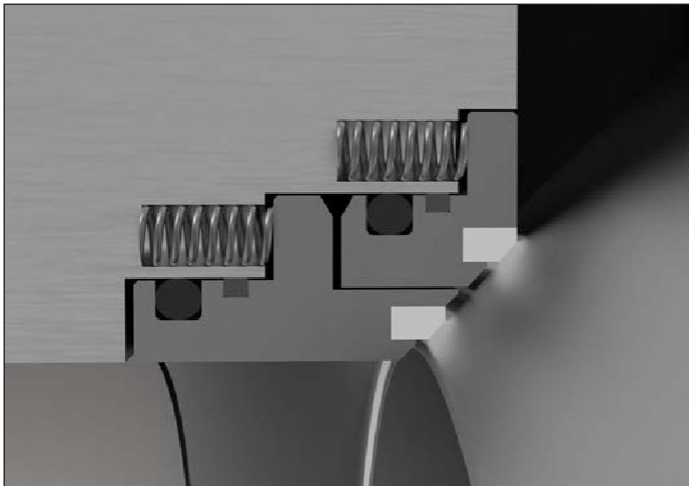
**METAL TO METAL SEAT DESIGN \***



*Figure-3 - Metal to metal hoop design\**

If there are abrasive substances in the pipeline or temperatures that prevent the use of Teflon, metal-to-metal hoop designs may be preferred. The areas where the ball and the seat touch each other have a hard surface.

**DOUBLE SEAT DESIGN \***



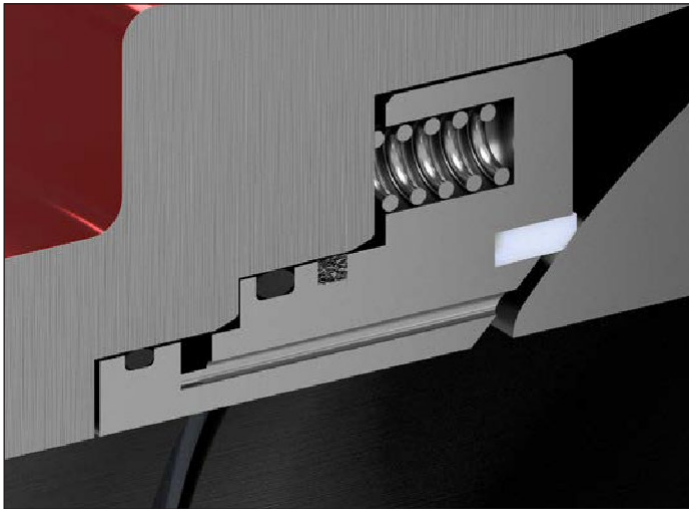
Trunnion valves use double seat and double teflon to achieve greater sealing.

\* Specify during the order.

BATUSAN reserves the right to change design, construction and material while staying within the standards.

## SEAT

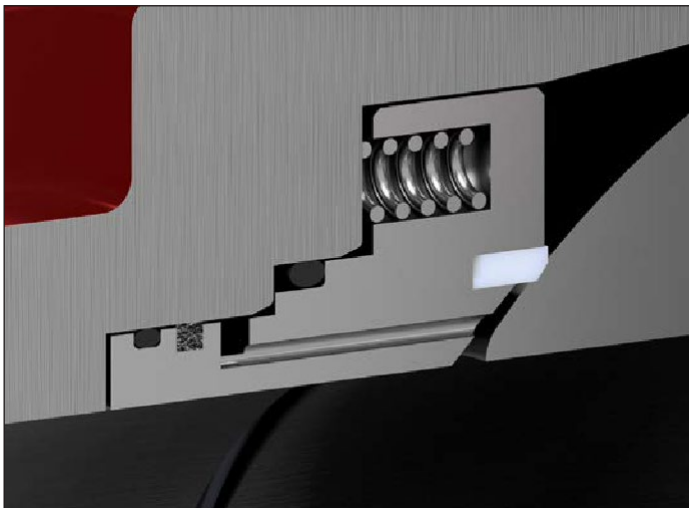
### SINGLE PISTON EFFECT (SPE)



This is the standard type of bearing. When pressure is applied from both sides, SPE bearings are pushed towards the ball by the piston effect, providing a tight closing and sealing. If the pressure in the body cavity exceeds the pressure on either side of the line while the valve is in the closed position, the bearing on that side will be pushed back and the body pressure will be discharged to the low-pressure side of the line. Due to this feature, SPE type bearings are also called “Self-pressure relieving”, which discharge high pressure on their own.

Typical Application Areas: Pipeline ball valves in liquid services where it is necessary to prevent pressure increase in the body cavity due to temperature changes.

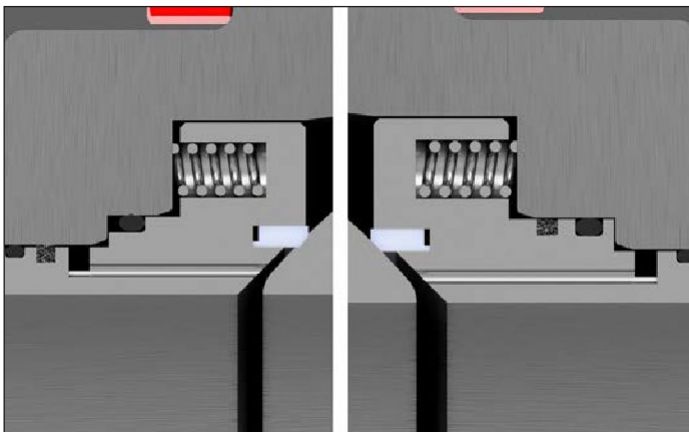
### DOUBLE PISTON EFFECT (DPE) \*



It is an optional ring-seat type. DPE seats are designed to be pushed towards the ball by the piston effect in both cases, whether the pressure comes from the valve body cavity or from the upstream or downstream side of the pipeline. DPE seated valves do not automatically release the pressure in the body cavity. Therefore, it is recommended to use a relief valve in liquid services.

Typical application areas; It is recommended in welded body valves when it is necessary to create an additional safe barrier between the upstream and downstream sides and where the maintenance of the seats is not foreseen.

### SINGLE/ DOUBLE PISTON EFFECT COMBINATION (SPE-DPE) \*



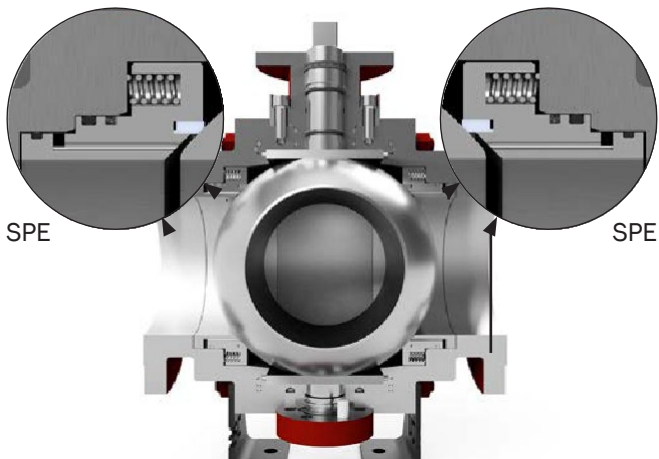
Upstream of the line, the SPE seat provides self-pressure relief. Downstream, the DPE seat provides a double barrier in case of damage to the upstream seat. This configuration includes a preferred installation orientation with the SPE seat facing upwards. With SPE-DPE configurations, the cavity discharge always occurs via the SPE seat.

Typical applications: Booster valves, Pig launchers / receivers. The DPE seat provides double insulation to the Pig trap and also allows automatic relief of the body cavity in the event of pressure build-up.

\* Specify during the order.

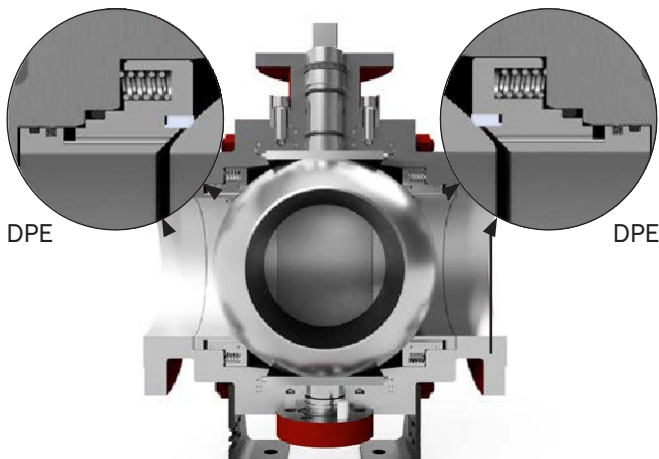
BATUSAN reserves the right to change design, construction and material while staying within the standards.

## DOUBLE BLOCK AND BLEED DESIGN (DBB)



This is the standart seat type. When pressure is applied on both sides, SPE-SPE seats are pushed towards the ball with the effect of a piston, providing a tight closing and sealing. If the pressure in the stem cavity rises above the pressure on either side of the line while the valve is in the closed position, the seat on that side will be pushed back and the in-shell pressure will be released to the low pressure side of the line. Due to this feature, SPE type seats are also called “Self pressure relieving”, which releases high pressure by itself. Typical Fields of Application: Pipeline ball valves in fluid services where the pressure increase in the body cavity due to temperature changes is required.

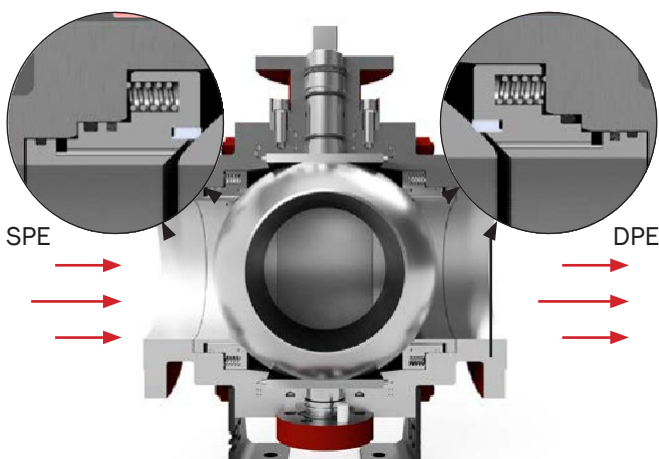
## DOUBLE ISOLATION AND BLEED (DIB 1) \*



It is an optionally available seat type. DPE seats, whether the pressure comes from the valve body cavity or from the upper or lower side of the pipeline; In both cases, it is designed to be pushed towards the sphere by the piston effect. DPE seated valves do not automatically relieve pressure in the body cavity. For this reason, the use of a drain valve is recommended in fluid services.

Typical application areas; where it is necessary to create an additional safety barrier between the upstream and downstream sides and where maintenance of the seats is not envisaged. It is also recommended for valves with welded body.

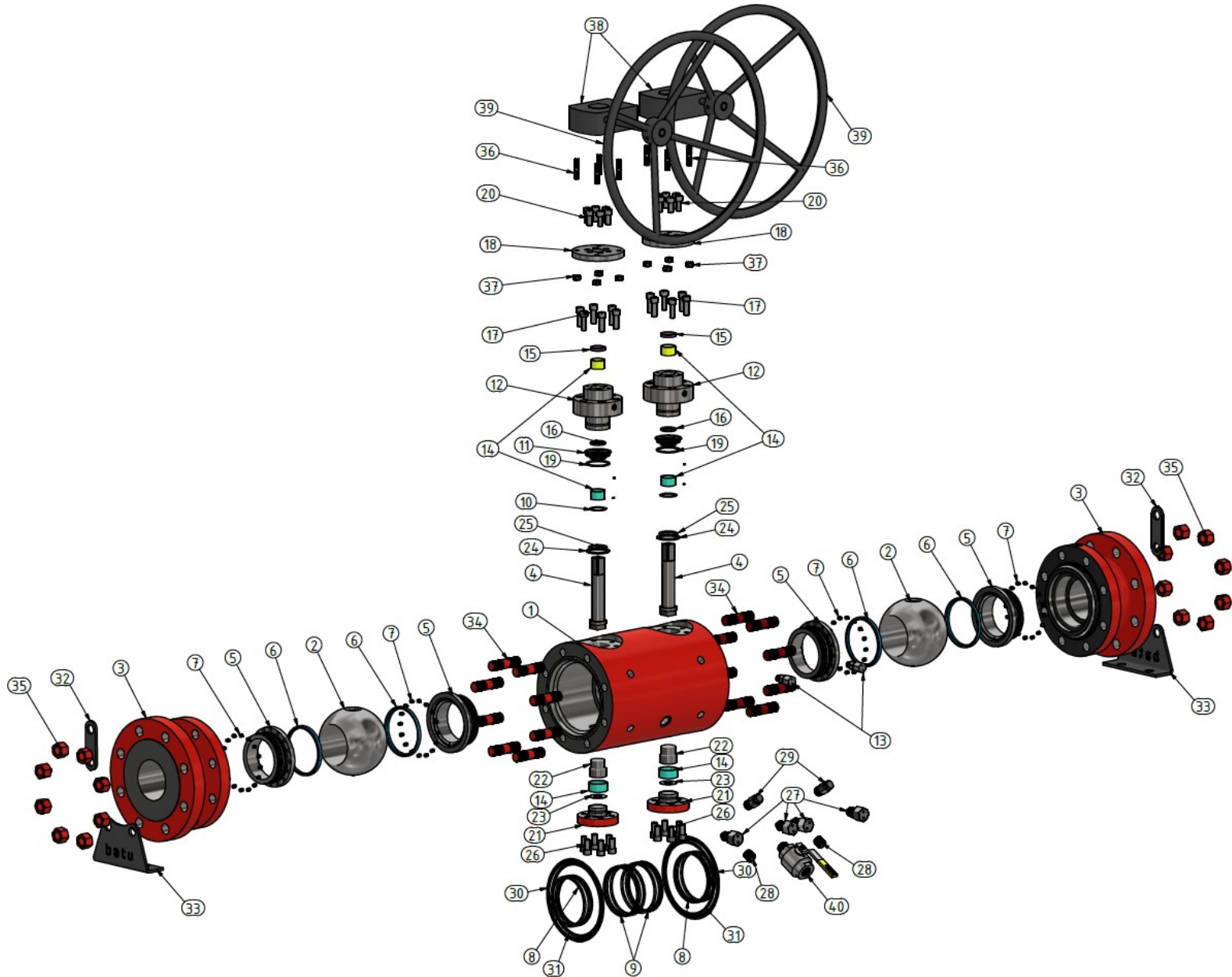
## DOUBLE ISOLATION AND BLEED (DIB 2) \*



On the upstream side of the line, the SPE seat provides self-pressure relief. On the downstream side, the DPE seat provides a double barrier in case the upstream seat is damaged. This configuration includes a preferred installation direction with the SPE seat facing up. With SPE-DPE configurations, the cavity pressure evacuation always takes place via the SPE seat side.

\* Specify during the order.

BATUSAN reserves the right to change design, construction and material while staying within the standards.



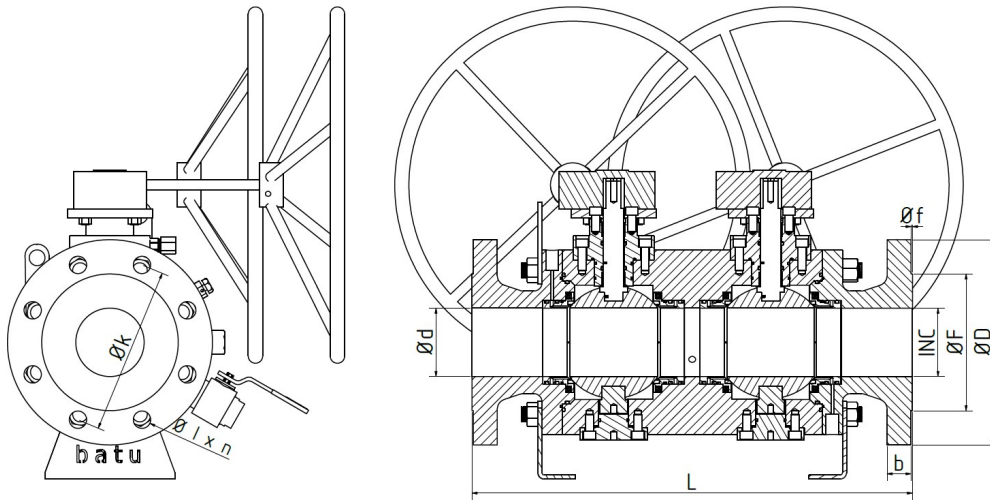
Item	Part Name
1	BODY
2	BALL
3	COVER
4	STEM
5	SEAT RETAINER
6	SEAT
7	SEAT SPRING
8	SEAT SEAL
9	FIRE SAFE RING
10	STEM PACKING
11	BONNET SEAL
12	BONNET
13	BONNET GREASER

Item	Part Name
14	DRY BEARING
15	BONNET SEAL
16	FIRE SAFE RING
17	BONNET BOLT
18	BONNET FLANGE
19	FIRE SAFE RING
20	FLANGE BOLT
21	TRUNNION PLATE
22	TRUNNION STEM
23	TRUNNION PACKING
24	TRUNNION SEAL
25	FIRE SAFE RING
26	TRUNNION BOLT

Item	Part Name
27	GREASER
28	DRAIN
29	VENT
30	BODY SEAL
31	FIRE SAFE RING
32	LIFTING DEVICE
33	SUPPORT
34	STUD
35	NUT
36	BOLT
37	NUT
38	GEAR BOX
39	WHEEL
40	DRAIN VALVE

**TYPE: BKV-FL-TG CLASS 150 (PN 20)**

**FULL BORE / FLANGED**



**STANDARDS**

Desing	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
19.6 Bar	17.7 Bar

**TEST PRESSURE**

PN	Class	Shell	Closure	Gas
20	150	29.4 Bar	21.6 Bar	6 Bar

INC	Ø d	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1	25	230	243	108	12,7	1,5	6,35	50,8	63,5	79,2	15,9	4
1 ½	40	282	295	127	15,9	1,5	6,35	73,0	82,6	98,6	15,9	4
2	50	330	343	152	17,5	1,5	6,35	91,9	102,0	120,6	19,1	4
3	80	390	403	190	22,4	1,5	6,35	127,0	133,0	152,4	19,1	4
4	100	440	453	229	22,4	1,5	6,35	157,2	171,0	190,5	19,1	8
6	150	630	643	279	23,9	1,5	6,35	215,9	219,0	241,3	22,3	8
8	201	830	843	343	26,9	1,5	6,35	269,7	273,0	298,4	22,3	8
10	252	900	913	406	28,4	1,5	6,35	323,8	330,0	362,0	25,4	12
12	303	960	973	483	30,2	1,5	6,35	381,0	406,0	431,8	25,4	12
14	334	1100	1113	533	33,3	1,5	6,35	412,8	425,0	476,2	28,6	12
16	385	1250	1263	597	35,1	1,5	6,35	469,9	483,0	539,8	28,6	16
18	436	1440	1453	635	38,1	1,5	6,35	533,4	546,0	577,8	31,8	16
20	487	1550	1563	693	41,1	1,5	6,35	584,2	597,0	635,0	31,8	20
24	589	1800	1813	813	46,0	1,5	6,35	692,2	711,0	749,3	35,0	20

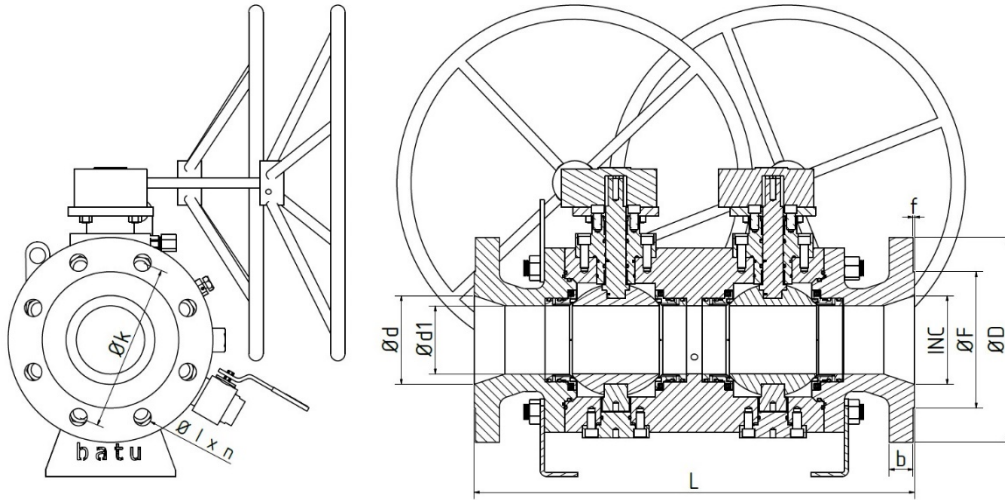
In 4" and below valves, a handle is used instead of a handwheel.

RF flange is used as standard. If a different flange is requested, it must be stated in the order form.

BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 150 (PN 20)**

**REDUCED BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
19.6 Bar	17.7 Bar

**TEST PRESSURE**

PN	Class	Shell	Closure	Gas
20	150	29.4 Bar	21.6 Bar	6 Bar

INC	Ø d	Ø d1	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1 ½ x 1	40	25	282	295	127	15,9	1,5	6,35	73,0	82,6	79,2	15,9	4
2 x 1 ½	50	40	330	343	152	17,5	1,5	6,35	91,9	102,0	120,6	19,1	4
3 x 2	80	50	390	403	190	22,4	1,5	6,35	127,0	133,0	152,4	19,1	4
4 x 3	100	80	440	453	229	22,4	1,5	6,35	157,2	171,0	190,5	19,1	8
6 x 4	150	100	630	643	279	23,9	1,5	6,35	215,9	219,0	241,3	22,3	8
8 x 6	201	150	830	843	343	26,9	1,5	6,35	269,7	273,0	298,4	22,3	8
10 x 8	252	201	900	913	406	28,4	1,5	6,35	323,8	330,0	362,0	25,4	12
12 x 10	303	252	960	973	483	30,2	1,5	6,35	381,0	406,0	431,8	25,4	12
14 x 10	334	252	1100	1113	533	33,3	1,5	6,35	412,8	425	476,2	28,6	12
14 x 12	334	303	1100	1113	533	33,3	1,5	6,35	412,8	425,0	476,2	28,6	12
16 x 12	385	303	1250	1263	597	35,1	1,5	6,35	469,9	483	539,8	28,6	16
16 x 14	385	334	1250	1263	597	35,1	1,5	6,35	469,9	483,0	539,8	28,6	16
18 x 16	436	385	1440	1453	635	38,1	1,5	6,35	533,4	546,0	577,8	31,8	16
20 x 16	487	385	1550	1563	693	41,1	1,5	6,35	584,2	597	635	31,8	20
20 x 18	487	436	1550	1563	693	41,1	1,5	6,35	584,2	597,0	635,0	31,8	20
24 x 20	589	487	1800	1813	813	46,0	1,5	6,35	692,2	711,0	749,3	35,0	20

In 4" and below valves, a handle is used instead of a handwheel.

RF flange is used as standard. If a different flange is requested, it must be stated in the order form.

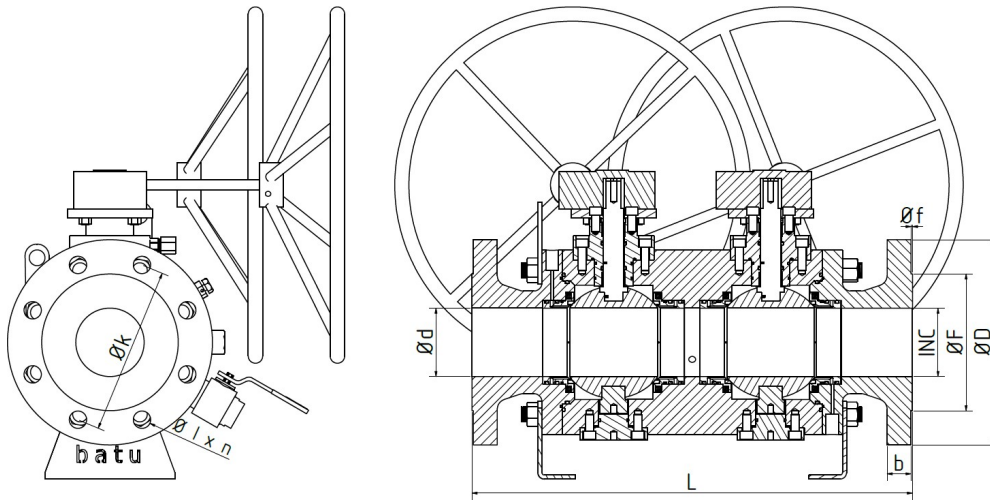
BATUSAN reserves the right to change design, construction and material while staying within the standards.

# API 6D Double Block and Bleed (DBB) Ball Valve



**TYPE: BKV-FL-TG CLASS 300 (PN 50)**

**FULL BORE / FLANGED**



## STANDARDS

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

## WORKING PRESSURE (Group 1.1 Materials)

-29 / +38 °C	100 °C
51.1 Bar	46.6 Bar

## TEST PRESSURE

PN	Class	Shell	Closure	Gas
50	300	76.7 Bar	56.2 Bar	6 Bar

INC	Ø d	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1	25	238	254	124	15,7	1,5	6,35	50,8	69,8	88,9	19,1	4
1 ½	40	288	304	155	19,0	1,5	6,35	73,0	90,4	114,3	22,3	4
2	50	336	352	165	20,6	1,5	7,92	91,9	108,0	127,0	19,1	8
3	78	400	416	210	26,9	1,5	7,92	127,0	146,0	168,1	22,3	8
4	100	465	481	254	30,2	1,5	7,92	157,2	175,0	200,2	22,3	8
6	150	720	736	318	35,1	1,5	7,92	215,9	241,0	269,7	22,3	12
8	201	880	896	381	39,6	1,5	7,92	269,7	302,0	330,2	25,4	12
10	252	1050	1066	444	46,0	1,5	7,92	323,8	356,0	387,4	28,6	16
12	303	1200	1216	521	49,3	1,5	7,92	381,0	413,0	450,8	31,8	16
14	334	1350	1366	584	52,3	1,5	7,92	412,8	457,0	514,4	31,8	20
16	385	1500	1516	648	55,6	1,5	7,92	469,9	508,0	571,5	35,0	20
18	436	1650	1666	711	58,7	1,5	7,92	533,4	575,0	628,6	35,0	24
20	487	1800	1816	775	62,0	1,5	9,52	584,2	635,0	685,8	35,0	24
24	589	2100	2116	914	68,3	1,5	11,13	692,2	749,0	812,8	41,3	24

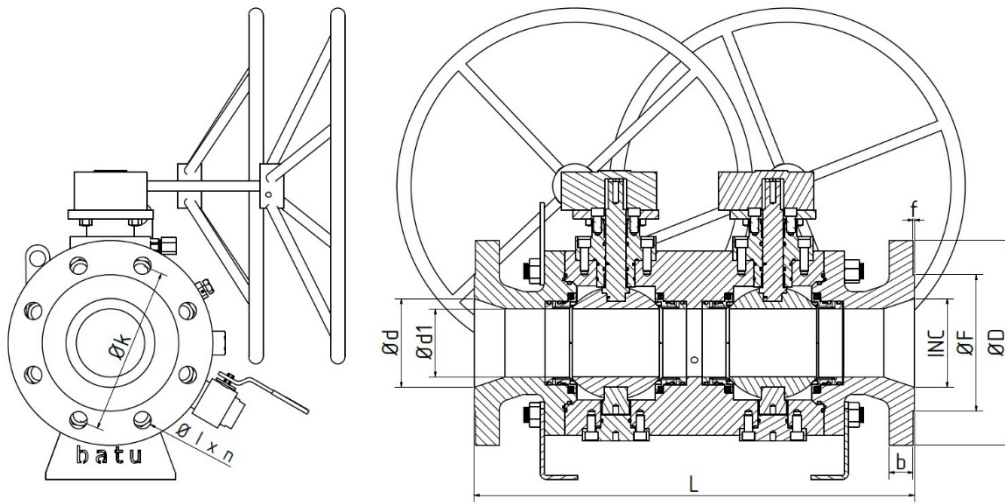
In 4" and below valves, a handle is used instead of a handwheel.

RF flange is used as standard. If a different flange is requested, it must be stated in the order form.

BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 300 (PN 50)**

**REDUCED BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
51.1 Bar	46.6 Bar

**TEST PRESSURE**

PN	Class	Shell	Closure	Gas
50	300	76.7 Bar	56.2 Bar	6 Bar

INC	Ø d	Ø d1	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	Mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1 ½ x 1	40	25	288	304	155	19	1,5	6,35	50,8	69,8	88,9	19,1	4
2 x 1 ½	50	40	336	352	165	20,6	1,5	7,92	91,9	108,0	127,0	19,1	8
3 x 2	80	50	400	416	210	26,9	1,5	7,92	127,0	146,0	168,1	22,3	8
4 x 3	100	80	465	481	254	30,2	1,5	7,92	157,2	175,0	200,2	22,3	8
6 x 4	150	100	720	736	318	35,1	1,5	7,92	215,9	241,0	269,7	22,3	12
8 x 6	201	150	880	896	381	39,6	1,5	7,92	269,7	302,0	330,2	25,4	12
10 x 8	252	201	1050	1066	444	46,0	1,5	7,92	323,8	356,0	387,4	28,6	16
12 x 10	303	252	1200	1216	521	49,3	1,5	7,92	381,0	413,0	450,8	31,8	16
14 x 10	334	252	1350	1366	584	52,3	1,5	7,92	412,8	457,0	514,4	31,8	20
14 x 12	334	303	1350	1366	584	52,3	1,5	7,92	412,8	457,0	514,4	31,8	20
16 x 12	385	303	1500	1516	648	55,6	1,5	7,92	469,9	508,0	571,5	35,0	20
16 x 14	385	334	1500	1516	648	55,6	1,5	7,92	469,9	508,0	571,5	35,0	20
18 x 16	436	385	1650	1666	711	58,7	1,5	7,92	533,4	575,0	628,6	35,0	24
20 x 16	487	385	1800	1816	775	62,0	1,5	9,52	584,2	635,0	685,8	35,0	24
20 x 18	487	436	1800	1816	775	62,0	1,5	9,52	584,2	635,0	685,8	35,0	24
24 x 20	589	487	2100	2116	914	68,3	1,5	11,13	692,2	749,0	812,8	41,3	24

In 4" and below valves, a handle is used instead of a handwheel.

RF flange is used as standard. If a different flange is requested, it must be stated in the order form.

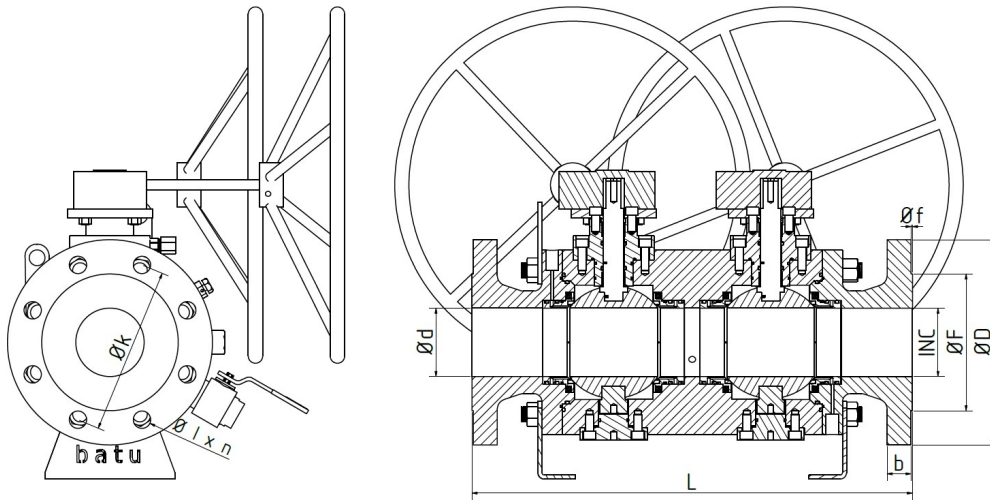
BATUSAN reserves the right to change design, construction and material while staying within the standards.

# API 6D Double Block and Bleed (DBB) Ball Valve



**TYPE: BKV-FL-TG CLASS 600 (PN 100)**

**FULL BORE / FLANGED**



## STANDARDS

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

## WORKING PRESSURE (Group 1.1 Materials)

-29 / +38 °C	100 °C
102.1 Bar	93.2 Bar

## TEST PRESSURE

PN	Class	Shell	Closure	Gas
100	600	153.2 Bar	112.3 Bar	6 Bar

INC	Ø d	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1	25	252	255	124	17,5	6,4	6,35	50,8	69,8	88,9	19,1	4
1 ½	40	325	328	155	22,4	6,4	6,35	73,0	90,4	114,3	22,3	4
2	50	353	356	165	25,4	6,4	7,92	91,9	108,0	127,0	19,1	8
3	80	462	465	210	31,8	6,4	7,92	127,0	146,0	168,1	22,3	8
4	100	697	700	273	38,1	6,4	7,92	157,2	175,0	215,9	25,4	8
6	150	877	880	356	47,8	6,4	7,92	215,9	241,0	292,1	28,6	12
8	201	1050	1053	419	55,6	6,4	7,92	269,7	302,0	349,2	31,8	12
10	252	1250	1253	508	63,5	6,4	7,92	323,8	356,0	431,8	35,0	16
12	303	1400	1403	559	66,5	6,4	7,92	381,0	413,0	489,0	35,0	20
14	334	1550	1553	603	69,8	6,4	7,92	412,8	457,0	527,0	38,1	20
16	385	1700	1703	686	76,2	6,4	7,92	469,9	508,0	603,2	41,3	20
18	436	1850	1853	743	82,6	6,4	7,92	533,4	575,0	654,0	44,5	20
20	487	2000	2003	813	88,9	6,4	9,52	584,2	635,0	723,9	44,5	24
24	589	2300	2303	940	101,6	6,4	11,13	692,2	749,0	838,2	50,8	24

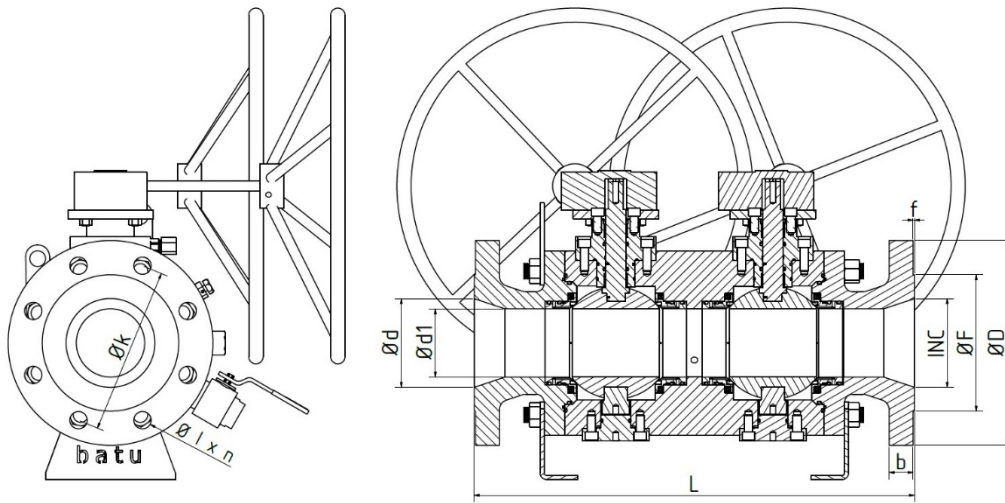
In 4" and below valves, a handle is used instead of a handwheel.

RF flange is used as standard. If a different flange is requested, it must be stated in the order form.

BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 600 (PN 100)**

**REDUCED BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
102.1 Bar	93.2 Bar

**TEST PRESSURE**

PN	Class	Shell	Closure	Gas
100	600	153.2 Bar	112.3 Bar	6 Bar

INC	Ø d	Ø d1	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1 ½ x 1	40	25	325	328	155	22,4	6,4	6,35	73,0	90,4	114,3	22,3	4
2 x 1 ½	50	40	353	356	165	25,4	6,4	7,92	91,9	108,0	127,0	19,1	8
3 x 2	80	50	462	465	210	31,8	6,4	7,92	127,0	146,0	168,1	22,3	8
4 x 3	100	80	697	700	273	38,1	6,4	7,92	157,2	175,0	215,9	25,4	8
6 x 4	150	100	877	880	356	47,8	6,4	7,92	215,9	241,0	292,1	28,6	12
8 x 6	201	150	1050	1053	419	55,6	6,4	7,92	269,7	302,0	349,2	31,8	12
10 x 8	252	201	1250	1253	508	63,5	6,4	7,92	323,8	356,0	431,8	35,0	16
12 x 10	303	252	1400	1403	559	66,5	6,4	7,92	381,0	413,0	489,0	35,0	20
14 x 10	334	252	1550	1553	603	69,8	6,4	7,92	412,8	457	527	38,1	20
14 x 12	334	303	1550	1553	603	69,8	6,4	7,92	412,8	457,0	527,0	38,1	20
16 x 12	385	303	1700	1703	686	76,2	6,4	7,92	469,9	508	603,2	41,3	20
16 x 14	385	334	1700	1703	686	76,2	6,4	7,92	469,9	508,0	603,2	41,3	20
18 x 16	436	385	1850	1853	743	82,6	6,4	7,92	533,4	575,0	654,0	44,5	20
20 x 16	487	385	2000	2003	813	88,9	6,4	9,52	584,2	635	723,9	44,5	24
20 x 18	487	436	2000	2003	813	88,9	6,4	9,52	584,2	635,0	723,9	44,5	24
24 x 20	589	487	2300	2303	940	101,6	6,4	11,13	692,2	749,0	838,2	50,8	24

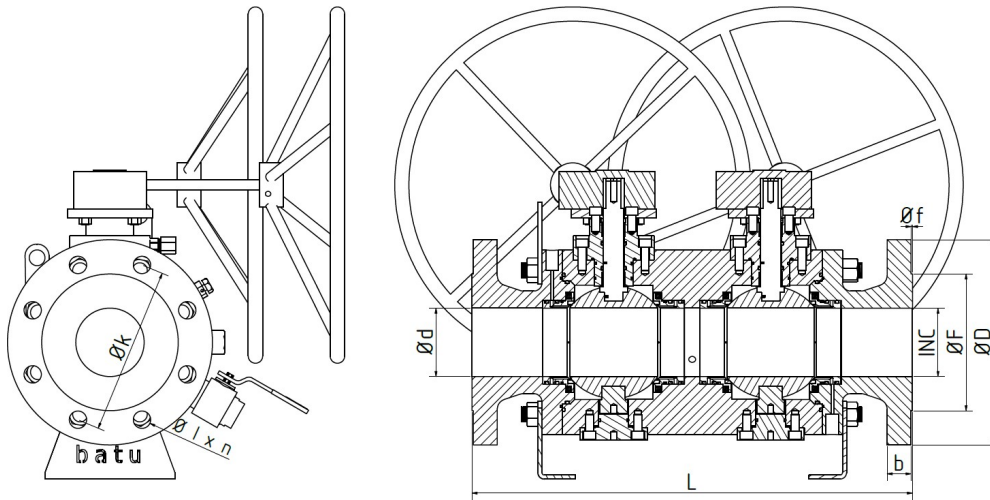
In 4" and below valves, a handle is used instead of a handwheel.

RF flange is used as standard. If a different flange is requested, it must be stated in the order form.

BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 900 (PN 150)**

**FULL BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
153.2 Bar	139.8 Bar

**TEST PRESSURE**

PN	Class	Shell	Closure	Gas
150	900	229.8 Bar	168.5 Bar	6 Bar

INC	Ø d	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1	25	330	333	149	28,4	6,4	-	50,8	-	101,6	25,4	4
1 ½	40	400	403	178	31,8	6,4	-	73,0	-	124,0	28,6	4
2	50	464	467	216	38,1	6,4	7,92	91,9	-	165,1	25,4	8
3	78	647	650	241	38,1	6,4	7,92	127,0	155,0	190,5	25,4	8
4	100	747	750	292	44,5	6,4	7,92	157,2	181,0	235,0	31,8	8
6	150	977	980	381	55,6	6,4	7,92	215,9	241,0	317,5	31,8	12
8	201	1197	1200	470	63,5	6,4	7,92	269,7	308,0	393,7	38,1	12
10	252	1400	1403	546	69,8	6,4	7,92	323,8	362,0	469,9	38,1	16
12	303	1600	1603	610	79,2	6,4	7,92	381,0	419,0	533,4	38,1	20
14	322	1800	1803	641	85,9	6,4	11,13	412,8	467,0	558,8	41,3	20
16	373	2000	2003	705	88,9	6,4	11,13	469,9	524,0	616,0	44,5	20
18	423	2200	2203	787	101,6	6,4	12,7	533,4	594,0	685,8	50,8	20
20	471	2400	2403	857	108,0	6,4	12,7	584,2	648,0	749,3	54,0	20
24	570	2800	2803	1041	139,7	6,4	15,88	692,2	772,0	901,7	66,7	20

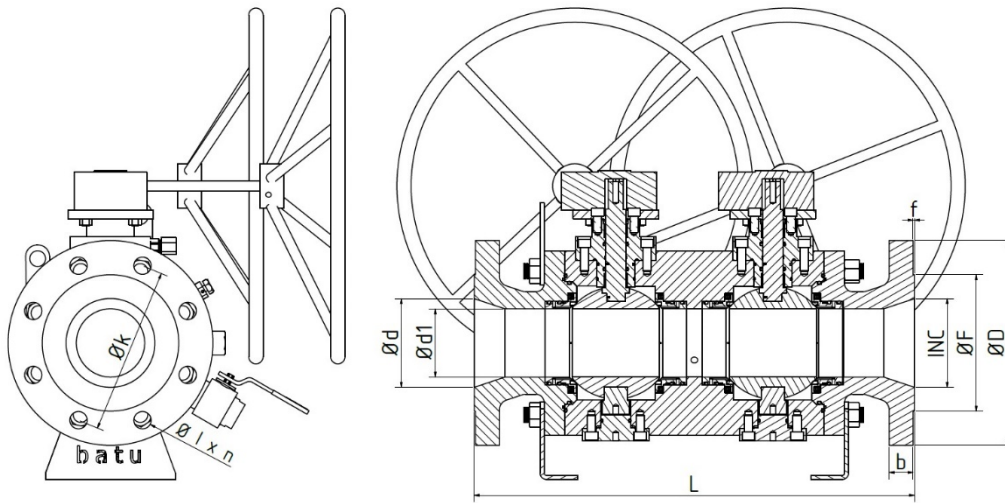
In 4" and below valves, a handle is used instead of a handwheel.

RF flange is used as standard. If a different flange is requested, it must be stated in the order form.

BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 900 (PN 150)**

**REDUCED BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
153.2 Bar	139.8 Bar

**TEST PRESSURE**

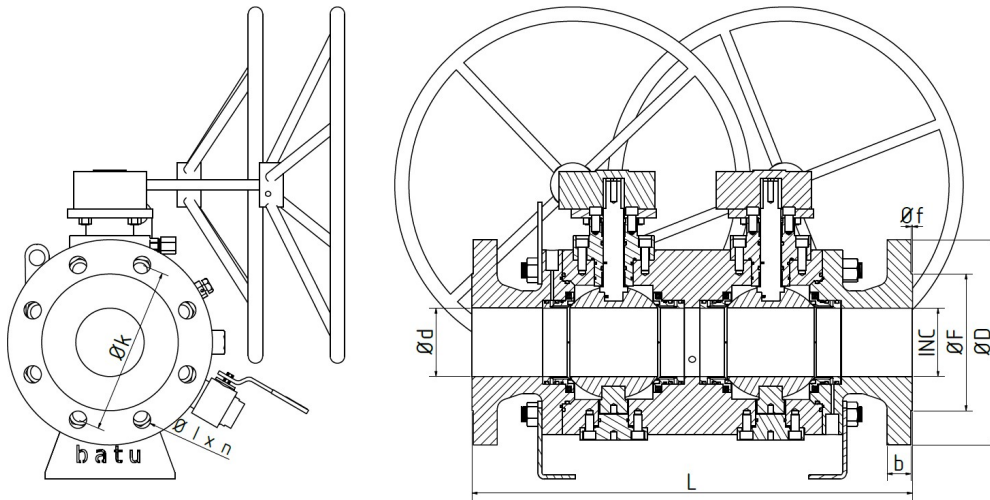
PN	Class	Shell	Closure	Gas
150	900	229.8 Bar	168.5 Bar	6 Bar

INC	Ø d	Ø d1	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1 ½ x 1	40	25	330	333	178	31,8	6,4	-	73,0	-	124,0	28,6	4
2 x 1 ½	50	40	464	467	216	38,1	6,4	-	91,9	-	165,1	25,4	8
3 x 2	78	50	647	450	241	38,1	6,4	7,92	127,0	155,0	190,5	25,4	8
4 x 3	100	78	747	750	292	44,5	6,4	7,92	157,2	181,0	235,0	31,8	8
6 x 4	150	100	977	980	381	55,6	6,4	7,92	215,9	241,0	317,5	31,8	12
8 x 6	201	150	1197	1200	470	63,5	6,4	7,92	269,7	308,0	393,7	38,1	12
10 x 8	252	201	1400	1403	546	69,8	6,4	7,92	323,8	362,0	469,9	38,1	16
12 x 10	303	252	1600	1603	610	79,2	6,4	7,92	381,0	419,0	533,4	38,1	20
14 x 10	334	252	1800	1803	641	85,9	6,4	11,13	412,8	467,0	558,8	41,3	20
14 x 12	334	303	1800	1803	641	85,9	6,4	11,13	412,8	467,0	558,8	41,3	20
16 x 12	385	303	2000	2003	705	88,9	6,4	11,13	469,9	524,0	616,0	44,5	20
16 x 14	385	334	2000	2003	705	88,9	6,4	11,13	469,9	524,0	616,0	44,5	20
18 x 16	436	385	2200	2203	787	101,6	6,4	12,7	533,4	594,0	685,8	50,8	20
20 x 16	487	385	2400	2403	857	108,0	6,4	12,7	584,2	648,0	749,3	54,0	20
20 x 18	487	436	2400	2403	857	108,0	6,4	12,7	584,2	648,0	749,3	54,0	20
24 x 20	589	487	2800	2803	1041	139,7	6,4	15,88	692,2	772,0	901,7	66,7	20

In 4" and below valves, a handle is used instead of a handwheel.  
 RF flange is used as standard. If a different flange is requested, it must be stated in the order form.  
 BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 1500 (PN 250)**

**FULL BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
255.3 Bar	233.0 Bar

**TEST PRESSURE**

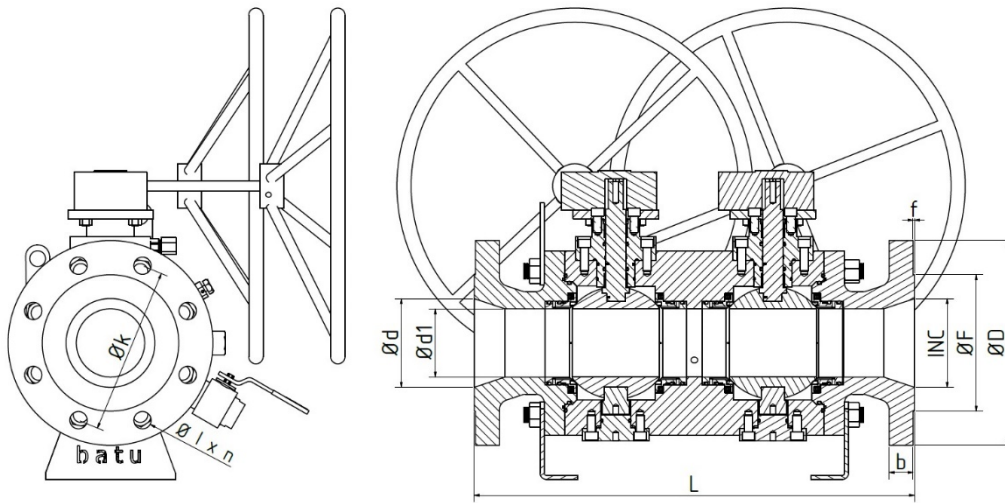
PN	Class	Shell	Closure	Gas
250	1500	383 Bar	280.8 Bar	6 Bar

INC	Ø d	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1	25	-	-	149	28,4	6,4	6,35	50,8	71,4	101,6	25,4	4
1 ½	40	-	-	178	31,8	6,4	6,35	73,0	91,9	124,0	28,6	4
2	50	464	467	216	38,1	6,4	7,92	91,9	124,0	165,1	25,4	8
3	75	697	700	267	47,8	6,4	7,92	127,0	168,0	203,2	31,8	8
4	100	827	830	311	53,8	6,4	7,92	157,2	194,0	241,3	35,0	8
6	144	1084	1090	394	82,6	6,4	9,52	215,9	248,0	317,5	38,1	12
8	192	1340	1350	483	91,9	6,4	11,13	269,7	318,0	393,7	44,5	12
10	239	1600	1610	584	108,0	6,4	11,13	323,8	371,0	482,6	50,8	12
12	287	1850	1860	673	124,0	6,4	14,27	381,0	438,0	571,5	54,0	16
14	315	2100	2110	749	133,4	6,4	15,88	412,8	489,0	635,0	60,4	16
16	360	2350	2310	826	146,0	6,4	17,48	469,9	546,0	704,8	66,7	16
18	406	2600	2610	914	162,1	6,4	17,48	533,4	613,0	774,7	73,0	16
20	454	2850	2860	984	177,8	6,4	17,48	584,2	673,0	831,8	79,4	16

In 4" and below valves, a handle is used instead of a handwheel.  
 RF flange is used as standard. If a different flange is requested, it must be stated in the order form.  
 BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 1500 (PN 250)**

**REDUCED BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
255.3 Bar	233.0 Bar

**TEST PRESSURE**

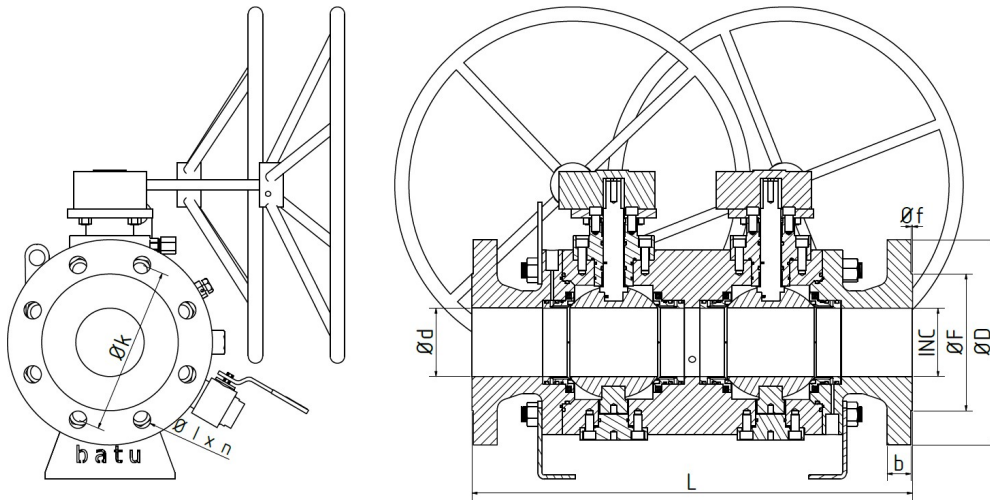
PN	Class	Shell	Closure	Gas
250	1500	383 Bar	280.8 Bar	6 Bar

INC	Ø d	Ø d1	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1 ½ x 1	40	25	-	-	159	28,4	6,4	6,35	63,5	81,0	111,1	25,4	4
2 x 1 ½	50	40	464	467	216	38,1	6,4	7,92	91,9	124,0	165,1	25,4	8
3 x 2	75	50	697	700	267	47,8	6,4	7,92	127,0	168,0	203,2	31,8	8
4 x 3	100	75	827	830	311	53,8	6,4	7,92	157,2	194,0	241,3	35,0	8
6 x 4	155	100	1084	1090	394	82,6	6,4	9,52	215,9	248,0	317,5	38,1	12
8 x 6	192	144	1340	1350	483	91,9	6,4	11,13	269,7	318,0	393,7	44,5	12
10 x 8	239	192	1600	1610	584	108,0	6,4	11,13	323,8	371,0	482,6	50,8	12
12 x 10	287	239	1850	1860	673	124,0	6,4	14,27	381,0	438,0	571,5	54,0	16
14 x 10	315	239	2100	2100	749	133,4	6,4	15,88	412,8	489,0	635,0	60,4	16
14 x 12	315	287	2100	2110	749	133,4	6,4	15,88	412,8	489,0	635,0	60,4	16
16 x 12	360	287	2350	2360	826	146,0	6,4	17,48	469,9	546,0	704,8	66,7	16
16 x 14	360	315	2350	2360	826	146,0	6,4	17,48	469,9	546,0	704,8	66,7	16
18 x 16	406	360	2600	2610	914	162,1	6,4	17,48	533,4	613,0	774,7	73,0	16
20 x 16	454	360	2850	2860	984	177,8	6,4	17,48	584,2	673,0	831,8	79,4	16
20 x 18	454	406	2850	2860	984	177,8	6,4	17,48	584,2	673,0	831,8	79,4	16

In 4" and below valves, a handle is used instead of a handwheel.  
 RF flange is used as standard. If a different flange is requested, it must be stated in the order form.  
 BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 2500 (PN 420)**

**FULL BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
425.5 Bar	388.3 Bar

**TEST PRESSURE**

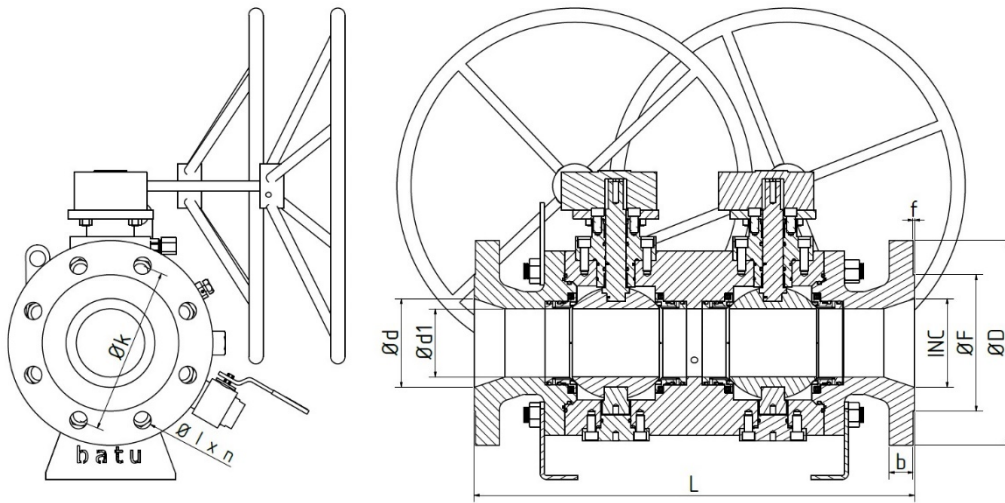
PN	Class	Shell	Closure	Gas
420	2500	638.3 Bar	468.1 Bar	6 Bar

INC	Ø d	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1	25	-	-	159	35,1	6,4	6,35	50,8	82,6	108,0	25,4	4
1 ½	38	-	-	203	44,4	6,4	7,92	73,0	114,0	146,0	31,8	4
2	42	652	655	235	50,8	6,4	7,92	91,9	133,0	171,4	28,6	8
2 ½	52	652	655	267	57,2	6,4	9,522	104,6	149,0	196,8	31,8	8
3	62	864	870	305	66,5	6,4	9,53	127,0	168,0	228,6	35,0	8
4	87	990	1000	356	76,2	6,4	11,13	157,2	203,0	273,0	41,3	8
6	131	1317	1330	483	108,0	6,4	12,7	215,9	279,0	368,3	54,0	8
8	179	1484	1500	552	127,0	6,4	14,27	269,7	340,0	438,2	54,0	12
10	223	1800	1822	673	165,1	6,4	17,48	323,8	425,0	539,8	66,7	12
12	265	2000	2022	762	184,2	6,4	17,48	381,0	495,0	619,3	73,0	12

In 4" and below valves, a handle is used instead of a handwheel.  
 RF flange is used as standard. If a different flange is requested, it must be stated in the order form.  
 BATUSAN reserves the right to change design, construction and material while staying within the standards.

**TYPE: BKV-FL-TG CLASS 2500 (PN 420)**

**REDUCED BORE / FLANGED**



**STANDARDS**

Design	API 6D & ASME B16.34
Size	API 6D & ASME B16.10
Connections	ASME B16.5 & ASME B16.47 (Series A)

**WORKING PRESSURE (Group 1.1 Materials)**

-29 / +38 °C	100 °C
425.5 Bar	388.3 Bar

**TEST PRESSURE**

PN	Class	Shell	Closure	Gas
420	2500	638.3 Bar	468.1 Bar	6 Bar

INC	Ø d	Ø d1	L (RF)	L (RTJ)	Ø D	b	f (RF)	f (RTJ)	Ø F (RF)	Ø F (RTJ)	Ø k	Ø l	n
Inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	adet
1 ½ x 1	32	25	-	-	203	44,4	6,4	7,92	73,0	114,0	146,0	31,8	4
2 x 1 ½	42	38	652	655	235	50,8	6,4	7,92	91,9	133,0	171,4	28,6	8
3 x 2	62	42	864	870	305	66,5	6,4	9,53	127,0	168,0	228,6	35,0	8
4 x 3	87	62	990	1000	356	76,2	6,4	11,13	157,2	203,0	273,0	41,3	8
6 x 4	131	87	1317	1330	483	108,0	6,4	12,7	215,9	279,0	368,3	54,0	8
8 x 6	179	131	1484	1500	552	127,0	6,4	14,27	269,7	340,0	438,2	54,0	12
10 x 8	223	179	1800	1822	673	165,1	6,4	17,48	323,8	425,0	539,8	66,7	12
12 x 10	265	223	2000	2022	762	184,2	6,4	17,48	381,0	495,0	619,3	73,0	12

In 4" and below valves, a handle is used instead of a handwheel.  
 RF flange is used as standard. If a different flange is requested, it must be stated in the order form.  
 BATUSAN reserves the right to change design, construction and material while staying within the standards.

CERTIFICATES

**Certificate of Authority to use the Official API Monogram**  
**License Number: 6D-0995** ORIGINAL

The American Petroleum Institute hereby grants to  
**BATUSAN MAKINA SANAYI VE TİCARET A.Ş.**  
 Dilovası Org. San. Bölgesi  
 2. Kısım D-2015 Sok. No: 6 Dilovası  
 Kocaeli  
 Turkey

the right to use the Official API Monogram™ on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1™ and API-6D and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **6D-0995**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Ball Valves

QMS Exclusions: Servicing

Effective Date: **APRIL 26, 2022**  
 Expiration Date: **APRIL 26, 2025**

To verify the authenticity of this license, go to [www.api.org/compositesite](http://www.api.org/compositesite).

*Amel Siddiqi*  
 Senior Vice President of Global Industry Services

**SERTİFİKA**  
 TÜV SÜD Slovakia s.r.o.  
 Yönetim sistemleri sertifikasyon merkezi  
 SNAS akreditasyonu  
 akreditasyon numarası no: 0311  
 İşbu belge ile

**BATUSAN MAK. SAN. VE TİC. A.Ş.**  
 Ahmet Yesevi Mah. Yesevi Cd. No:82  
 DUMANKAYA DIZAYN ST.BBL.K. 1205 PENDİK  
 TR - 34893-İSTANBUL

Merkezi  
**BATUSAN MAK. SAN. VE TİC. A.Ş.**  
 DİLOVASI OSB 2.KISIM D-2015 SOK. NO:6  
 41455 DİLOVASI / KOCAELİ

Kalite yönetim sistemini uygulamakta ve kullanmakta

**BURAK TİPİ YANING ENYEVİLLİ KÜRESEL VANALAR, KÜRESEL VANALAR, ÇEK VANALAR, GLOBE VANALAR, SÜRÜKLÜ VANALAR, BUNAR KAPAKLARI, AHS GÖSTERGELERİ, KELEKİR VANALAR, İĞNELİ VANALAR, PİSKİL TUTUCULAR, KOMPANZATÖRLER, BASINÇ DÜĞURÜCÜLER, RADYATÖR VANALARI VE FLANŞLARIN TASARIM, İMALATI VE SATIŞI.**

Denetim raporu no: 0095/2019/QIAS/RI  
 yönetim sistemleri standardı şartlarını sağlanmış olduğuna kâinatmıştır.  
**EN ISO 9001:2015**

Sertifika 2020-02-06 tarihinden 2023-01-11 tarihine kadar geçerlidir.  
 Sertifika Kayıt No: Q 00957-2  
 Yeniden Belgelendirme Denetim Tarihi: 16.12.2019  
 Bitiş Tarihi: 2022-02-06

TÜV SÜD Slovakia s.r.o.  
 Yönetim sistemleri sertifikasyon merkezi  
 TÜV SÜD gmbh (type)  
 Jarmarská 8, 83 Bratislava

**KING CERT**  
**SERTİFİKA**  
 Batusan Mak. San. ve Tic. A.Ş.

Merkez: Ahmet Yesevi Mah. Yesevi Cad. No: 82 Dumankaya Düzayn Slt. B Blok: 1 / 20 Pendik/İstanbul Türkiye  
 Fabrika: Dilovası OSB 2. Kısım D-2015 Sokak No: 6 Dilovası Kocaeli Türkiye

**ISO 45001:2018**  
 İş Sağlığı ve Güvenliği Yönetim Sistemi

Kapsam : Burak Tipi Yaning Enmyevelli Küresel Vanalar, Küresel Vanalar, Çek Vanalar, Globe Vanalar, Sürüklü Vanalar, Buhar Kapakları, Ahs Göstergeleri, Kelekir Vanalar, İğneli Vanalar, Piskil Tutucular, Kompansatörler, Basınc Düğurcüler, Radyatör Vanaları ve Flanşların, Tasarım, İmalat ve Satış /AİFA Kolu: 18

İAS ACCREDITED  
 Management System  
 Certificate No: 1823-18

Sertifika Yayımlı Tarihi: 03.07.2022  
 İlk Sınavın Tarihi: 03.07.2022  
 İlk Gözlem Tarihi: 03.07.2022  
 Son Gözlem Tarihi: 03.07.2025  
 Sertifika No: 1823/2022

*Amel Siddiqi*  
 King Cert International Certification Ltd.  
 Director

**KING CERT**  
**SERTİFİKA**  
 Batusan Mak. San. ve Tic. A.Ş.

Merkez: Ahmet Yesevi Mah. Yesevi Cad. No: 82 Dumankaya Düzayn Slt. B Blok: 1 / 20 Pendik/İstanbul Türkiye  
 Fabrika: Dilovası OSB 2. Kısım D-2015 Sokak No: 6 Dilovası Kocaeli Türkiye

**ISO 14001:2015**  
 Çevre Yönetim Sistemi

Kapsam : Burak Tipi Yaning Enmyevelli Küresel Vanalar, Küresel Vanalar, Çek Vanalar, Globe Vanalar, Sürüklü Vanalar, Buhar Kapakları, Ahs Göstergeleri, Kelekir Vanalar, İğneli Vanalar, Piskil Tutucular, Kompansatörler, Basınc Düğurcüler, Radyatör Vanaları ve Flanşların, Tasarım, İmalat ve Satış /AİFA Kolu: 18

İAS ACCREDITED  
 Management System  
 Certificate No: 1823-18

Sertifika Yayımlı Tarihi: 03.07.2022  
 İlk Sınavın Tarihi: 03.07.2022  
 İlk Gözlem Tarihi: 03.07.2022  
 Son Gözlem Tarihi: 03.07.2025  
 Sertifika No: 1823/2022

*Amel Siddiqi*  
 King Cert International Certification Ltd.  
 Director

**TUF CERT**  
**SERTİFİKA**  
**CERTIFICATE**

Period, Peroksisiva ve Doğalga Evidlenmesi Kalite Yönetim Sistemi  
 Periodic, Peroksisiva and Natural Gas Industry Quality Management System

Bu Kalite Yönetim Sistemi aşağıda belirtilen kuruluş için  
 This is a Certificate for the Quality Management System of

**BATUSAN MAK. SAN. VE TİC. A.Ş.**  
 Ahmet Yesevi Mah. Yesevi Cad. No:82 Dumankaya Düzayn St. B Blok. 1/20 Pendik/İSTANBUL/TR

**BATUSAN MAK. SAN. VE TİC. A.Ş.**  
 Dilovası OSB 2.Kısım D-2015 Sok. No:6 Dilovası/KOCAELİ/TR

Bülgem olarak değerlendirilmiş ve aşağıda yasa standardı gerekliliklerine uyumlu olduğu tespit edilmiştir.  
 Has been independently assessed and is compliant with the requirements of

**ISO/TS 29001**  
 Bu sertifikayı, aşağıdaki ürün veya hizmet analitik için uygundur.  
 This certificate is applicable to the following product or service ranges:

Burak Tipi Yaning Enmyevelli Küresel Vanalar, Küresel Vanalar, Çek Vanalar, Globe Vanalar, Sürüklü Vanalar, Buhar Kapakları, Ahs Göstergeleri, Kelekir Vanalar, İğneli Vanalar, Piskil Tutucular, Kompansatörler, Basınc Düğurcüler, Radyatör Vanaları ve Flanşların, Tasarım, İmalat ve Satış  
 Design, Production and Sales of Burak Type Fire Safe Ball Valves, Ball Valves, Check Valves, Globe Valves, Gate Valves, Steam Traps, Sight Glasses, Safety Valves, Needle Valves, Strainers, Rubber Joints, Pressure Reducers, Radiator Valves and Flanges.

Sertifika No: 0095/2019/QIAS/RI  
 Yönetim Sistemi Sertifikasyon Merkezi  
 TÜV SÜD gmbh (type)  
 Jarmarská 8, 83 Bratislava

**TSE**  
**TÜRK STANDARLARI ENSTİTÜSÜ**  
**TÜRK STANDARLARINA UYGUNLUK BELGESİ**  
**TURKISH STANDARDS INSTITUTION**  
**CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS**

Belge Numarası / Reference Number of License: 18.12.1893  
 Belge No / Certificate Number: 18.12.1893  
 Belge Sahibi Kuruluşun Adı / Name of the License Holder: BATUSAN MAKINA SAN VE TIC A.S.  
 Belge Sahibi Kuruluşun Adres / Address of the License Holder: AHMET YESEVİ MAH. YESEVİ CAD. NO:82 D 09 PENDİK İSTANBUL/TÜRKİYE  
 Üretim Yeri Adı / Name of the Manufacturing Place: BATUSAN MAKINA SANAYI VE TİCARET ANKARA BRŞETİ  
 Üretim Yeri Adres / Address of the Manufacturing Place: BATUSAN MAKINA SANAYI VE TİCARET ANKARA BRŞETİ DİLOVASI ORGANİZE SANAYİ BÖLGESİ 2.KISIM D-2015 SOK. NO:6 DİLOVASI KOCAELİ/TÜRKİYE  
 İTİFAK ÜÇLÜK BELGE NUMARASI (Forma) / Reference Number of License of Affiliation: 18.12.1893  
 İTİFAK ÜÇLÜK BELGE NUMARASI (Forma) / Reference Number of License of Affiliation: 18.12.1893

18.12.2020  
 Belgelendirme Merkez Başkanı Adına  
 AHMET NURİ KAZIĞAL  
 TSE İSTANBUL BELGELENDİRME MÜDÜRÜ

**TSE**  
**TÜRK STANDARLARI ENSTİTÜSÜ**  
**TÜRK STANDARLARINA UYGUNLUK BELGESİ**  
**TURKISH STANDARDS INSTITUTION**  
**CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS**

Belge Numarası / Reference Number of License: 09.06.2006  
 Belge No / Certificate Number: 21.04.2021  
 Belge Sahibi Kuruluşun Adı / Name of the License Holder: BATUSAN MAKINA SAN VE TIC A.S.  
 Belge Sahibi Kuruluşun Adres / Address of the License Holder: AHMET YESEVİ MAH. YESEVİ CAD. NO:82 D 09 PENDİK İSTANBUL/TÜRKİYE  
 Üretim Yeri Adı / Name of the Manufacturing Place: BATUSAN MAKINA SANAYI VE TİCARET ANKARA BRŞETİ  
 Üretim Yeri Adres / Address of the Manufacturing Place: BATUSAN MAKINA SANAYI VE TİCARET ANKARA BRŞETİ DİLOVASI ORGANİZE SANAYİ BÖLGESİ 2.KISIM D-2015 SOK. NO:6 DİLOVASI KOCAELİ/TÜRKİYE  
 İTİFAK ÜÇLÜK BELGE NUMARASI (Forma) / Reference Number of License of Affiliation: 18.12.1893  
 İTİFAK ÜÇLÜK BELGE NUMARASI (Forma) / Reference Number of License of Affiliation: 18.12.1893

18.08.2020  
 Belgelendirme Merkez Başkanı Adına  
 AHMET NURİ KAZIĞAL  
 TSE İSTANBUL BELGELENDİRME MÜDÜRÜ

**TSE**  
**TÜRK STANDARLARI ENSTİTÜSÜ**  
**TÜRK STANDARLARINA UYGUNLUK BELGESİ**  
**TURKISH STANDARDS INSTITUTION**  
**CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS**

Belge Numarası / Reference Number of License: 09.06.2006  
 Belge No / Certificate Number: 24.01.2021  
 Belge Sahibi Kuruluşun Adı / Name of the License Holder: BATUSAN MAKINA SAN VE TIC A.S.  
 Belge Sahibi Kuruluşun Adres / Address of the License Holder: AHMET YESEVİ MAH. YESEVİ CAD. NO:82 D 09 PENDİK İSTANBUL/TÜRKİYE  
 Üretim Yeri Adı / Name of the Manufacturing Place: BATUSAN MAKINA SANAYI VE TİCARET ANKARA BRŞETİ  
 Üretim Yeri Adres / Address of the Manufacturing Place: BATUSAN MAKINA SANAYI VE TİCARET ANKARA BRŞETİ DİLOVASI ORGANİZE SANAYİ BÖLGESİ 2.KISIM D-2015 SOK. NO:6 DİLOVASI KOCAELİ/TÜRKİYE  
 İTİFAK ÜÇLÜK BELGE NUMARASI (Forma) / Reference Number of License of Affiliation: 18.12.1893  
 İTİFAK ÜÇLÜK BELGE NUMARASI (Forma) / Reference Number of License of Affiliation: 18.12.1893

24.01.2020  
 Belgelendirme Merkez Başkanı Adına  
 AHMET NURİ KAZIĞAL  
 TSE İSTANBUL BELGELENDİRME MÜDÜRÜ

(\*You can access all the certifi cates we have on our website [www.batusan.com/sertifi\\_kalar.html](http://www.batusan.com/sertifi_kalar.html).





## FACTORY & HEAD OFFICE

Dilovası Org. San. Bölgesi 2.Kısım D-2015 Sok. No : 6 Dilovası-Gebze / KOCAELİ TÜRKİYE

GSM: +90 532 681 32 76 / +90 507 866 00 74

PHONE: +90 262 754 48-49 / +90 262 754 99 31-32

[www.batuvale.com](http://www.batuvale.com) - [export@batusan.com](mailto:export@batusan.com)

Foreign enquiries please call: +90 532 681 32 76 / +90 507 866 00 74



# Ball valve innovations enhance LNG and CNG station efficiency

New ball valve designs improve LNG and CNG station performance, offering better efficiency and reduced emissions.

By Zahra Farrokhi,  
Batu Valve Türkiye



Ball valves engineered for demanding LNG and CNG applications

**L**iquefied Natural Gas (LNG) and Compressed Natural Gas (CNG) stations are pivotal in global energy infrastructure, offering cleaner alternatives to traditional fossil fuels. The efficiency and reliability of these stations depend on various factors, with valve technology playing a critical role. Ball valves have emerged as a preferred choice due to their robust design, ease of operation and reliability under high-pressure conditions. This article explores the latest advancements in ball valve technology driving improvements in efficiency and reliability in LNG and CNG stations, focusing on materials, sealing technologies, automation and maintenance practices.

## The role of ball valves in LNG and CNG stations

Ball valves are widely used in LNG and CNG stations due to their ability to provide a tight seal, even under extreme conditions. Their design, featuring a spherical disc that controls flow through a hollow, perforated centre, allows for quick shutoff and efficient flow control. The evolution of ball valve technology has significantly enhanced their performance in terms of durability, operational efficiency and safety,

making them indispensable in the LNG and CNG sectors (Smith & Jones, 2023).

## Advancements in ball valve materials

A key advancement in ball valve technology is the development of new materials that enhance valve performance under the demanding conditions of LNG and CNG applications. Traditional materials such as carbon steel are now being replaced or augmented with advanced alloys and composite materials that offer superior resistance to corrosion, wear and extreme temperatures (Doe & Roe, 2022).



Figure 1. Precision-engineered ball valves, key components in LNG and CNG flow control

For example, valves made from duplex stainless steel or Inconel alloys have demonstrated up to 30% longer service life in LNG applications compared to traditional materials. These materials also exhibit better resistance to the cryogenic temperatures typical of LNG stations, ensuring that the valves maintain their integrity and functionality even in harsh environments (Evans & Brown, 2023).

**Innovations in sealing technology**

Sealing technology has also seen significant improvements, particularly with the introduction of advanced polymer seals and metal-to-metal sealing systems. These innovations are crucial for maintaining the integrity of ball valves in high-pressure LNG and CNG systems (Garcia & Martinez, 2024). Advanced polymer seals, such as those made from perfluoroelastomers (FFKM), provide enhanced resistance to the wide temperature fluctuations and aggressive chemicals found in these environments. These seals have been shown to reduce leakage rates by up to 25%, contributing to overall system efficiency and safety (Garcia & Martinez, 2024). Furthermore, metal-to-metal sealing systems have been refined to offer even greater durability and reliability, particularly in applications where zero leakage is critical. This type of sealing is particularly advantageous in LNG stations, where the potential for leaks can have serious safety and environmental consequences (Evans & Brown, 2023).

**Enhanced design and manufacturing techniques**

Recent advancements in design and manufacturing techniques have also played a crucial role in the evolution of ball valve

Aspect	Traditional ball valves	Advanced ball valves
<b>Material composition</b>	Carbon steel, basic stainless steel	Duplex stainless steel, Inconel alloys, composites
<b>Sealing technology</b>	Basic elastomer seals	Advanced polymer seals, metal-to-metal sealing
<b>Durability</b>	Moderate, prone to wear and corrosion	High, enhanced resistance to corrosion and fatigue
<b>Operational efficiency</b>	Standard, with manual operation	High, with automation and smart technologies
<b>Leakage rate</b>	Higher, especially under extreme conditions	Lower, improved by advanced sealing technologies
<b>Maintenance requirements</b>	Frequent, with higher risk of failure	Reduced, with predictive maintenance capabilities
<b>Manufacturing techniques</b>	Traditional casting and machining	CAD, FEA, additive manufacturing
<b>Weight</b>	Standard weight, no optimization	20% lighter due to advanced materials and design
<b>Fatigue resistance</b>	Moderate, lower in high-pressure environments	20% improvement, critical for reliability

technology. The use of computer-aided design (CAD) and finite element analysis (FEA) has allowed engineers to optimise valve designs for better flow characteristics, reduced weight and improved durability (Zhang & Li, 2024). Additive manufacturing (AM), or 3D printing, is another significant development, enabling the production of complex valve components that are lighter yet stronger than those produced through traditional manufacturing methods. This has resulted in ball valves that are not only more efficient but also more reliable in operation (Chen & Zhao, 2024). In particular, 3D-printed valve components have shown a 20% improvement in fatigue resistance, which is

crucial for the long-term reliability of valves in high-pressure environments like LNG and CNG stations (Chen & Zhao, 2024).

**Automation and smart valve technologies**

The integration of automation and smart technologies into ball valves has revolutionised their operation in LNG and CNG stations. Modern ball valves are now equipped with sensors and actuators that enable real-time monitoring and remote control, greatly enhancing operational efficiency and safety (Harris & White, 2023). Smart valves can detect and respond to changes in flow, pressure and temperature automatically, reducing the risk of human error and improving overall system reliability. Studies have shown that the implementation of smart valve technology can reduce maintenance costs by up to 15% and decrease unplanned downtime by 20% (Lee & Kim, 2023). Additionally, the use of predictive maintenance algorithms, powered by data from smart valves, allows operators to anticipate and address potential issues before they lead to costly failures (Harris & White, 2023). This proactive approach not only extends the lifespan of the valves but also ensures that LNG and CNG stations operate at peak efficiency.

**Comparative analysis: traditional vs. advanced ball valve technologies**

The table below compares traditional ball valve technologies with the latest



Figure 2. Ball valves built for longevity and performance in harsh LNG and CNG conditions



Figure 3. Optimised valve design for reliable performance in gas stations

advancements in various key aspects relevant to LNG and CNG applications.

### Lifecycle cost analysis

The lifecycle costs of ball valves have also been significantly reduced due to these technological advancements. Traditional ball valves often require frequent maintenance and replacement due to wear and tear, particularly in the harsh environments of LNG and CNG stations. However, the use of advanced materials and smart technologies in modern ball valves has resulted in a 25% reduction in maintenance costs and a 20% extension in valve lifespan (Lee & Kim, 2023). The table below provides a comparative analysis of lifecycle costs between traditional and advanced ball valves.

### Environmental impact and sustainability

The advancements in ball valve technology also contribute significantly to

Cost aspect	Traditional ball valves	Advanced ball valves
Initial purchase cost	Lower	Higher
Maintenance frequency	High (every 2-3 years)	Low (every 4-5 years)
Replacement costs	Higher (frequent replacements)	Lower (extended lifespan)
Operational downtime costs	Higher due to frequent issues	Lower due to predictive maintenance
Total lifecycle cost	High	25% Lower

environmental sustainability. The reduced leakage rates and improved sealing technologies minimise the emission of methane, a potent greenhouse gas, from LNG and CNG stations. Studies have shown that the implementation of advanced ball valves can reduce methane emissions by up to 30%, aligning with global efforts to combat climate change (Garcia & Martinez, 2024).

Furthermore, the use of additive manufacturing in valve production reduces material waste by approximately 20%, contributing to more sustainable manufacturing practices (Zhang & Li, 2024). The integration of smart technologies also supports more efficient energy use in valve operation, reducing the overall carbon footprint of LNG and CNG stations (Harris & White, 2023).

### Case study of the implementation of advanced ball valves in LNG stations

In 2023, a major LNG station operator in Asia implemented advanced ball valve technologies across its facilities to improve efficiency and reliability. The operator replaced outdated carbon steel valves with new duplex stainless steel valves equipped with smart automation features.

Outcomes:

- **Efficiency gains:** The station reported a 15% improvement in operational efficiency due to the reduced leakage rates and enhanced flow control provided by the new valves (Smith & Jones, 2023).
- **Cost savings:** Maintenance costs were reduced by 20% due to the predictive maintenance features enabled by smart valve technology (Lee & Kim, 2023).
- **Environmental impact:** The enhanced sealing technology significantly reduced methane emissions, contributing to the operator's sustainability goals (Garcia & Martinez, 2024).
- **Reliability:** The station experienced a 25% reduction in unplanned downtime, further improving its operational reliability (Evans & Brown, 2023).

This case study demonstrates the tangible benefits of adopting advanced ball valve technologies in LNG applications, highlighting their role in maximising efficiency and ensuring safe operations.

### Conclusion

The evolution of ball valve technology is playing a critical role in enhancing the efficiency and reliability of LNG and CNG stations. Through advancements in materials, sealing technologies, manufacturing techniques and the integration of smart technologies, modern ball valves offer significant improvements over traditional designs. As the demand for cleaner energy sources continues to grow, these innovations will be essential in ensuring that LNG and CNG stations operate safely, efficiently and sustainably. ■



Figure 4. Automated ball valves with smart technology for real-time monitoring and control

### About Batu Valve Türkiye

Batu Valve Türkiye is a manufacturer of advanced valve solutions for Liquefied Natural Gas (LNG) and Compressed Natural Gas (CNG) applications. The company offers innovative ball valves designed to enhance efficiency, durability and reliability in high-pressure environments. Batu Valve's products meet the demanding needs of LNG and CNG stations, ensuring safe and sustainable operations in the global energy infrastructure. Explore more at [www.batuvalve.com](http://www.batuvalve.com).