BROEN

VALVE TECHNOLOGIES

BROEN BALLOMAX® TRUNNION BALL VALVES

District heating

BROEN BALLOMAX® *Designed to last*

broen.com

Global company, local knowledge

BROEN was founded in 1948 and was one of the pioneers in the development of the district heating network in Denmark. With time, BROEN became a world-leading manufacturer of ball valves. The BROEN offer also features ball valves for gas and fuels which rely on nearly 40 years of experience.

At present, BROEN is a global enterprise with 5 production plants in Denmark, Poland, and the United States, with over 580 employees, and distributing its products to more than 50 countries worldwide.

Vision and values

Our vision is simple: we strive to be the best in the development of ball valve technology. This is fundamental for our business and leads us to become strong and stable business operating within the time zones of three continents.

Our continuously expanded offer of ball valves, constant search for new technological solutions, and a broad network of local partners and distributors allow us to always be close to our customers and provide them with flexible top-quality services and cuttingedge products of the highest grade.

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VALVE TECHNOLOGIES

BROEN BALLOMAX®
– quality and certification

The largest part of BROEN production constitute BROEN BALLOMAX® ball valves with accessories for heating systems, which are the company's flagship product and showcase BROEN manufactures ball valves based on the EN ISO 9001 Quality Management System. Every product of the company meets the requirements of the Pressure Equipment Directive 2014/68/EU (PED) - Module H.

The solutions and materials used in production are subject to multiple checks and stress tests at the company's research laboratory. This allows for selection and choice of only the best technological and material solutions that entirely meet the expectations of the most demanding customers and installations.

Each of the BROEN BALLOMAX® type AH ball valves is subject to full quality control and pressure tests, which guarantee tightness and reliability of products.

List of the most significant certificates

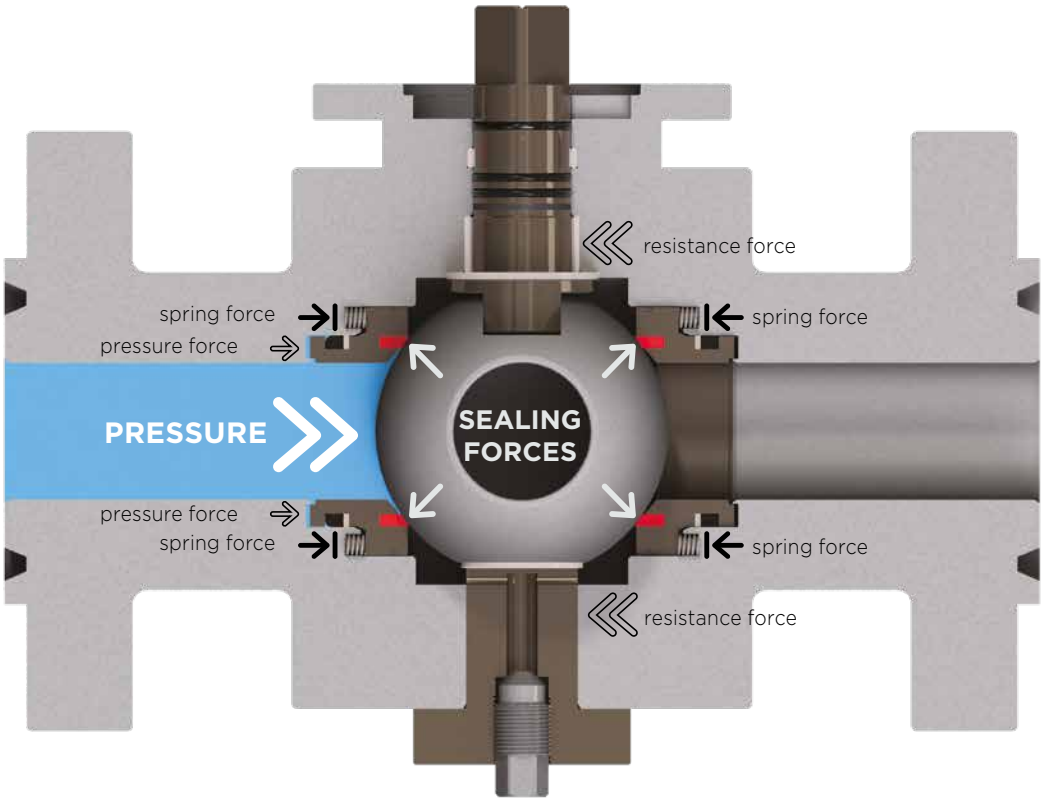
CE certificate (PED 2014/68/UE)	CE mark Module H. Ball valves – design, production, control of finished product and pressure testing.
Euroheat & Power certificate	Quality check. District heating valves according to the requirements of Euroheat & Power Certification and conformity with the standard EN 488.
EN ISO 3834-2 certificate	Confirmation of the quality requirements in the welding system.
ISO 9001:2015	Design, production, sales and service of ball valves and metalworking services.
ISO 45001:2024	Occupational health and safety management system.
ISO 14001:2015	Environmental management system.
EN 488 certificate T1 + T2	Underfloor fittings and service ball valves for KMR systems
СЕРТИФІКАТ ВІДПОВІДНОСТІ	Conformity based on full quality assurance (Module H). Ukrainian market.
Modul H Certificate (Serbia)	Conformity based on full quality assurance (Module H). Serbian market.

Trunnion ball

- The stem and the trunnion play the role of the thrust bearings, holding the ball in the body.
- The sealing function is performed by both seals embedded in sliding seats supported by springs.
- The sealing force of the upstream gasket is provided by the medium pressure and spring forces.
- As pressure increases, the sealing force of the upstream gasket increases.
- For low pressures, the sealing force is provided by springs.
- The construction of the valve with seats working independently of the body and ball ensures tightness of closure regardless of the temperature.

Advantages

- Can be used with any medium, even those with a high coefficient of thermal expansion.
- Tightness at full differential pressure guaranteed.
- Wide range of application temperatures.
- Low torque, Can be used regardless of the valve size (DN).
- Application for low and high pressures.

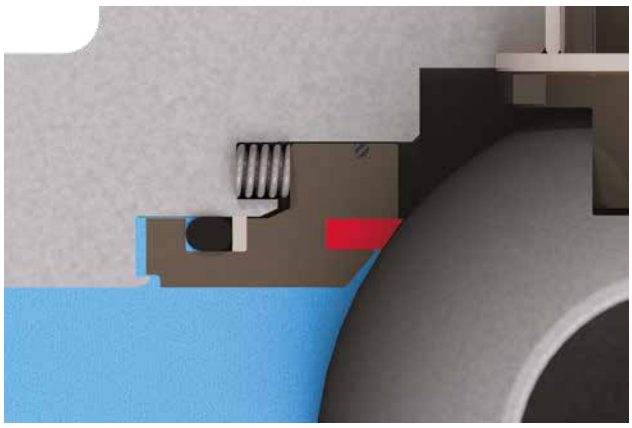


Ball sealing system

Tightness of the ball valve is guaranteed by seals made of elastomeric materials, thermoplastics, and even metal, which guarantee the „A" tightness class according to EN 12266-1 (visually undetectable leakage).

SOFT Soft type sealing

A seal based on a plastic material (e.g. PTFE, PTFE + C) embedded in a seat made of stainless steel, or carbon steel with a protective chrome or nickel coating.



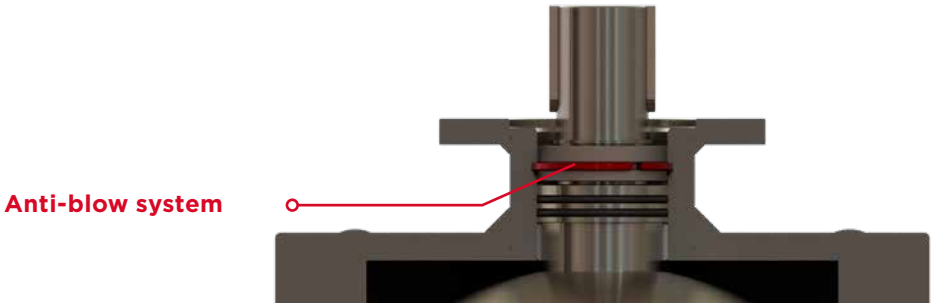
STEM
– sealing and anti-blow system

Stem sealing system comprises sealing rings appropriately selected for the temperature range and type of medium which the ball valve is intended for.

Standard stem sealing system consists of two sealing rings. In case of ball valves designed for thermal insulation, the sealing system consists of three levels.

Anti-Blow system prevents the stem from being pushed out of the valve body when the valve is under pressure. This is achieved by using a special split ring, impossible to disassemble under pressure.

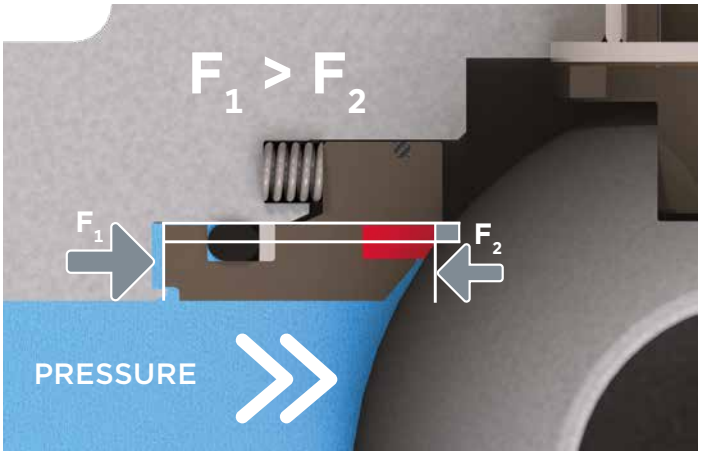
Example of Anti-Blow system implemented with a special ring.

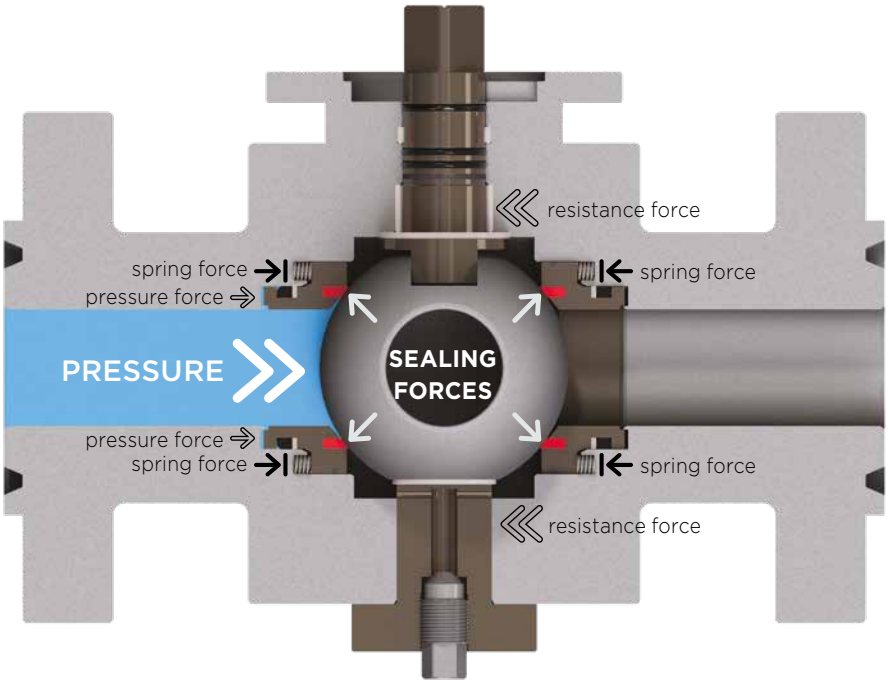


SPE system
– single piston effect

SPE (Single Piston Effect) is a one-way sealing system with a compensation function, preventing excessive pressure build-up in the valve cavity by automatically equalizing the pressure to the value in the installation.

The compensation system used by BROEN complies with API 6D/EN 13942 standards and is max. 133% of the nominal pressure of the valve.

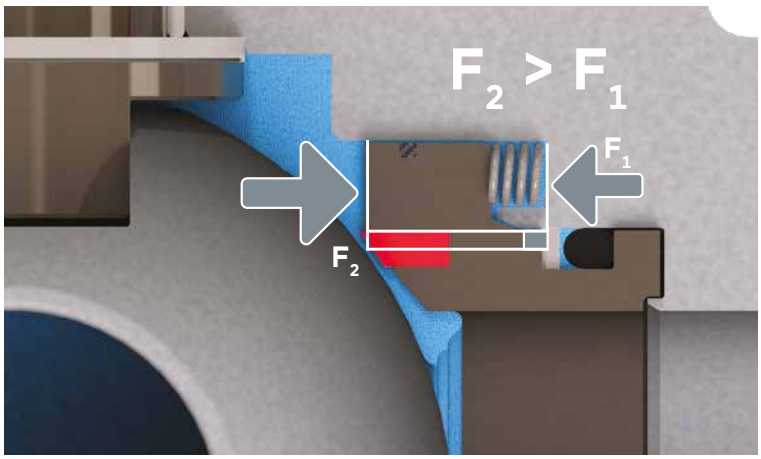


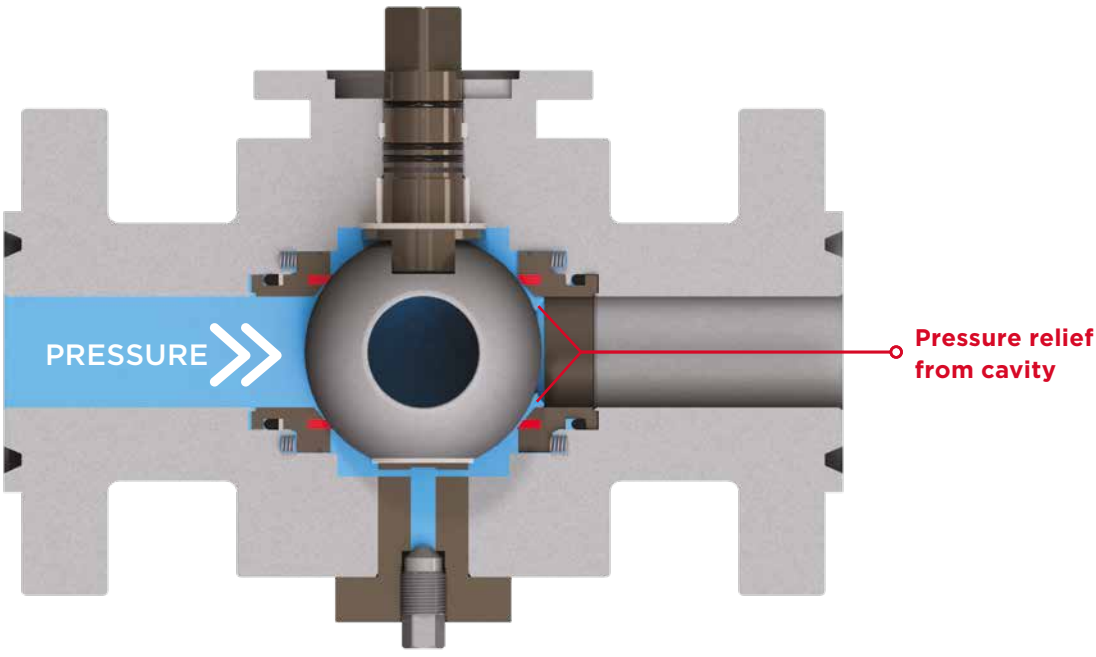


Compensation system
- principle of operation

The medium enclosed in the valve cavity can obtain a significant increase of pressure due to, e.g., heating it with heat supplied from the outside (especially for liquids with a high coefficient of volumetric expansion).

The increase in pressure in the space between the ball and the cavity reduces the value of the sealing forces until the excess volume of the medium is dropped (pressure discharge).

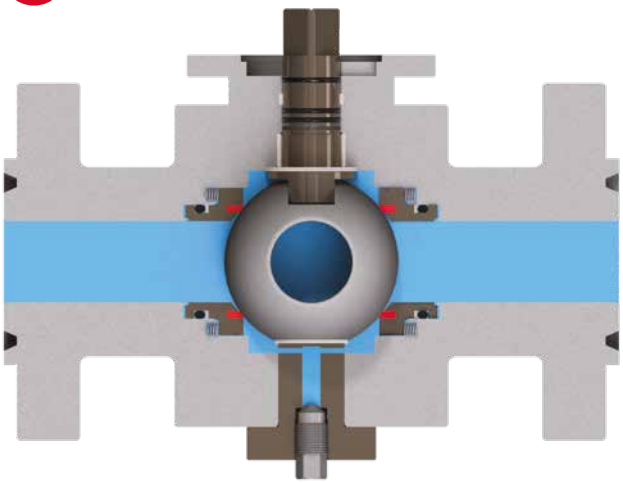




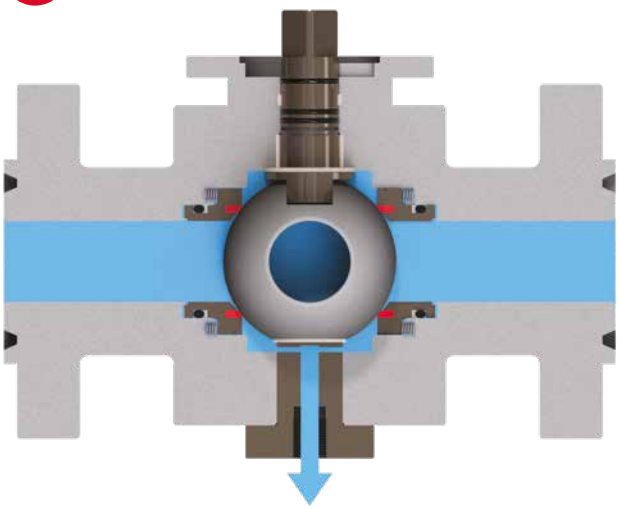
DBB system
– Double block and bleed

The DBB system allows to release the pressure contained in the cavity. Depending on the version, it can operate in closed or open position. This makes it possible to check valve tightness without taking the valve out of service.

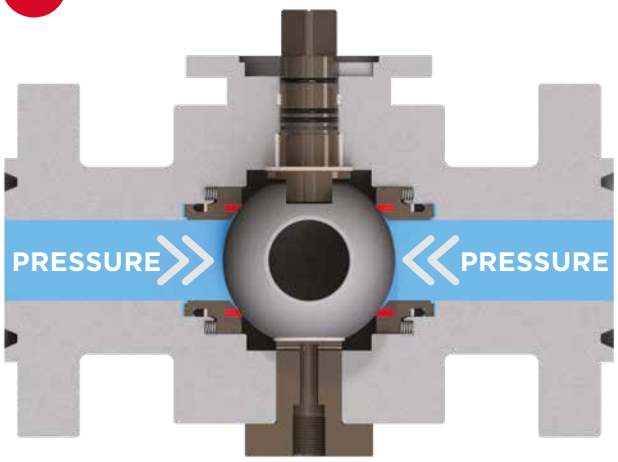
A



B



C



IMPORTANT!
The DBB function ensures tightness of the valve at a pressure on the left and right side of the valve.

- **A** Both sides of the valve and cavity are filled with the medium.
- **B** Removal of the medium from the cavity
- **C** Pressure on both sides of the valve. No pressure in the cavity.

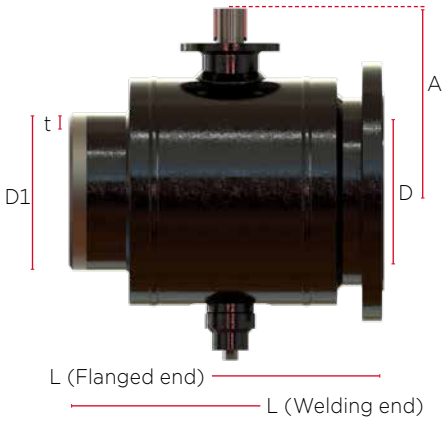
Fully welded ball valve
Full bore
PN 16, PN 25, PN 40

Component	Material
Body	P355NH/QH1/NL1/NL2/N
Flanged end	P355NH/QH1/NL1/NL2/N
Welding end	P355NH/QH1/NL1/NL2/N
Ball	A350LF2 +ENP
Stem	X20Cr13
Main sealing	PTFE+C
O-ring	EPDM/AFLAS®

Temperature range
-20°C – +150°C
-10°C – +200°C

SOFT SPE DBB

	End type	PN	D	L	A	D1	T	Actuator connection	Weight
DN 150	Welding	16, 25, 40	142	457	230	168,3	7,1	F12 Ø35	67
	Flanged	16, 25, 40		350		-	-		-
DN 200	Welding	16, 25, 40	190	521	259	219,1	8,8	F12 Ø35	120
	Flanged	16, 25, 40		457		-	-		-
DN 250	Welding	16, 25, 40	237	559	319	273,0	10,0	F14 Ø50	193
	Flanged	16, 25, 40		533		-	-		-
DN 300	Welding	16, 25, 40	285	635	368	323,9	10,0	F14 Ø60	300
	Flanged	16, 25, 40		610		-	-		-
DN 350	Welding	16, 25, 40	332	762	408	355,6	11,0	F16 Ø60	467
	Flanged	16, 25, 40		686		-	-		-
DN 400	Welding	16, 25, 40	375	838	532	406,4	12,5	F25 Ø72	724
	Flanged	16, 25, 40		762		-	-		-
DN 500	Welding	16, 25, 40	475	991	609	508,0	12,5	F30 Ø72	1329
	Flanged	16, 25, 40		914		-	-		-
DN 600	Welding	16, 25, 40	588	1143	684	610,0	12,5	F30 Ø80	2119
	Flanged	16, 25, 40		1067		-	-		-



* possibility of replacing the seal together with the stem.
Available up to nominal diameter DN 1000

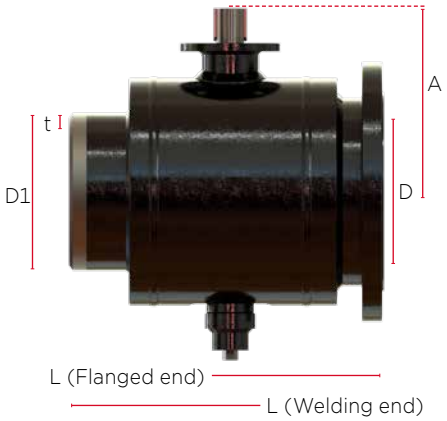
Fully welded ball valves
Reduced bore
PN 16, PN 25, PN 40

Component	Material
Body	P355NH/QH1/NL1/NL2/N
Flanged end	P355NH/QH1/NL1/NL2/N
Welding end	P355NH/QH1/NL1/NL2/N
Ball	A350LF2 +ENP
Stem	X20Cr13
Main sealing	PTFE+C
O-ring	EPDM/AFLAS®

Temperature range
-20°C – +150°C
-10°C – +200°C

SOFT SPE DBB

	End type	PN	D	L	A	D1	T	Actuator connection	Weight
DN 200 / DN 150	Welding	16, 25, 40	142	521	230	219,1	8,8	F12 Ø35	76
	Flanged	16, 25, 40		457		-	-		-
DN 250 / DN 200	Welding	16, 25, 40	190	559	259	273,0	10,0	F12 Ø35	135
	Flanged	16, 25, 40		533		-	-		-
DN 300 / DN 250	Welding	16, 25, 40	237	635	319	323,9	10,0	F14 Ø50	213
	Flanged	16, 25, 40		610		-	-		-
DN 350 / DN 300	Welding	16, 25, 40	285	762	368	355,6	11,0	F14 Ø60	330
	Flanged	16, 25, 40		686		-	-		-
DN 400 / DN 350	Welding	16, 25, 40	332	838	408	406,4	12,5	F16 Ø60	518
	Flanged	16, 25, 40		762		-	-		-
DN 500 / DN 400	Welding	16, 25, 40	375	991	532	508,0	12,5	F25 Ø72	762
	Flanged	16, 25, 40		914		-	-		-
DN 600 / DN 500	Welding	16, 25, 40	475	1143	609	610,0	12,5	F30 Ø72	1382
	Flanged	16, 25, 40		1067		-	-		-
DN 700 / DN 600	Welding	16, 25, 40	588	1345	684	711,0	14,2	F30 Ø80	2201
	Flanged	16, 25, 40		1245		-	-		-



* possibility of replacing the seal together with the stem.
Available up to nominal diameter DN 1000

EN488 ball valves for pre-insulation (hex)
Full bore
PN 25

Component	Material
Body	P355NH/QH1/NL1/NL2/N
Sleeve	P235GH
Welding end	P235GH
Ball	A350LF2 +ENP
Stem	X20Cr13
Main sealing	PTFE+C
O-ring	EPDM

Temperature range
up to +150°C

SOFT SPE

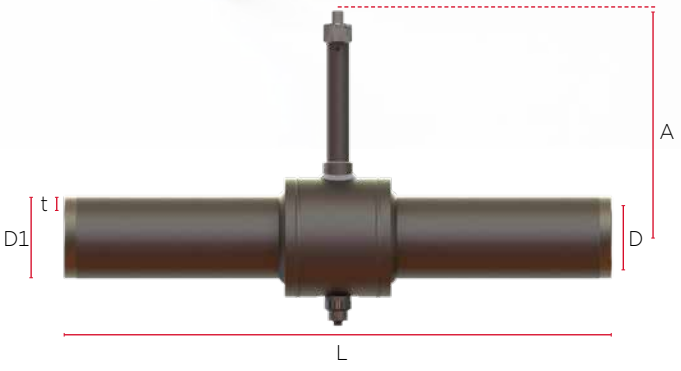
	End type	PN	D	L	A	D1	T	Actuator connection	Weight
DN 150	Welding	25	142	1510	549	168,3	4,0	HEX70 / HEX27	104
DN 200	Welding	25	190	1510	578	219,1	4,5	HEX70 / HEX27	161
DN 250	Welding	25	237	1810	739	273,0	5,0	HEX90 / HEX50	262
DN 300	Welding	25	285	1810	777	323,9	5,6	HEX90 / HEX50	379
DN 350	Welding	25	332	1810	823	355,6	5,6	HEX90 / HEX50	579
DN 400	Welding	25	375	1810	945	406,4	6,3	HEX90 / HEX50	857
DN 500	Welding	25	488	2200	945	508,0	6,3	HEX90 / hex50	1980

Available up to nominal diameter DN 1000

EN488 ball valves for pre-insulation (hex)
Reduced bore
PN 25

Component	Material
Body	P355NH/QH1/NL1/NL2/N
Sleeve	P235GH
Welding end	P235GH
Ball	A350LF2 +ENP
Stem	X20Cr13
Main sealing	PTFE+C
O-ring	EPDM

Temperature range
up to +150°C



SOFT SPE

	End type	PN	D	L	A	D1	T	Actuator connection	Weight
DN 200 / DN 150	Welding	25	142	1510	549	219,1	4,5	HEX70 / HEX27	116
DN 250 / DN 200	Welding	25	190	1510	578	273,0	5,0	HEX70 / HEX27	172
DN 300 / DN 250	Welding	25	237	1810	739	323,9	5,6	HEX90 / HEX50	275
DN 350 / DN 300	Welding	25	285	1810	777	355,6	5,6	HEX90 / HEX50	386
DN 400 / DN 350	Welding	25	332	1810	823	406,4	6,3	HEX90 / HEX50	637
DN 500 / DN 400	Welding	25	375	1810	945	508,0	6,3	HEX90 / HEX50	953

EN488 ball valves for pre-insulation (ISO)
Full bore
PN 25

Component	Material
Body	P355NH/QH1/NL1/NL2/N
Sleeve	P235GH
Welding end	P235GH
Ball	A350LF2 +ENP
Stem	X20Cr13
Main sealing	PTFE+C
O-ring	EPDM

Temperature range
up to +150°C

SOFT SPE

	End type	PN	D	L	A	D1	T	Actuator connection	Weight
DN 150	Welding	25	142	1510	549	168,3	4,0	F12 Ø35	106
DN 200	Welding	25	190	1510	578	219,1	4,5	F12 Ø35	162
DN 250	Welding	25	237	1810	726	273,0	5,0	F14 Ø50	264
DN 300	Welding	25	285	1810	758	323,9	5,6	F14 Ø60	380
DN 350	Welding	25	332	1810	798	355,6	5,6	F14 Ø60	575
DN 400	Welding	25	375	1810	966	406,4	6,3	F25 Ø72	863
DN 500	Welding	25	475	2200	1043	508,0	6,3	F25 Ø72	1668
DN 600	Welding	25	588	2200	1182	610,0	7,1	F30 Ø80	2548

Available up to nominal diameter DN 1000

EN488 ball valves for pre-insulation (ISO)
Reduced bore
PN 25

Component	Material
Body	P355NH/QH1/NL1/NL2/N
Sleeve	P235GH
Welding end	P235GH
Ball	A350LF2 +ENP
Stem	X20Cr13
Main sealing	PTFE+C
O-ring	EPDM

Temperature range
up to +150°C

SOFT SPE

	End type	PN	D	L	A	D1	T	Actuator connection	Weight
DN 200 / DN 150	Welding	16, 25	142	1510	549	219,1	4,5	F12 Ø35	118
DN 250 / DN 200	Welding	16, 25	190	1510	578	273,0	5,0	F12 Ø35	174
DN 300 / DN 250	Welding	16, 25	237	1810	726	323,9	5,6	F14 Ø50	277
DN 350 / DN 300	Welding	16, 25	285	1810	758	355,6	5,6	F14 Ø60	388
DN 400 / DN 350	Welding	16, 25	332	1810	798	406,4	6,3	F14 Ø60	633
DN 500 / DN 400	Welding	16, 25	375	1810	966	508,0	6,3	F25 Ø72	947
DN 600 / DN 500	Welding	16, 25	475	2200	1043	610,0	7,1	F25 Ø72	1857
DN 700 / DN 600	Welding	16, 25	588	2450	1182	711,0	8,0	F30 Ø80	2802

Available up to nominal diameter DN 1000

Ball valves suitable for thermal insulation

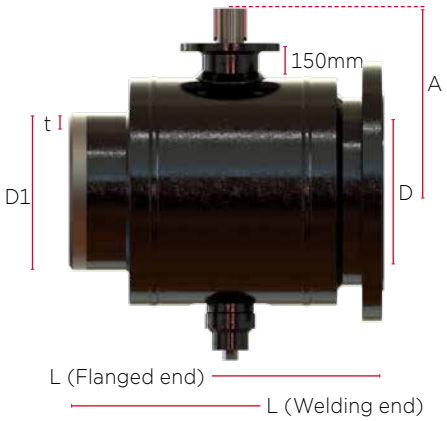
PN 16, PN 25, PN 40

Component	Material
Body	P355NH/QH1/NL1/NL2/N
Flanged end	P355NH/QH1/NL1/NL2/N
Welding end	P355NH/QH1/NL1/NL2/N
Ball	A350LF2 +ENP
Stem	X20Cr13
Main sealing	PTFE+C
O-ring	EPDM/AFLAS®

Temperature range
-20°C – +150°C
-10°C – +200°C

SOFT SPE DBB

	End type	PN	D	L	A	D1	T	Actuator connection	Weight
DN 150	Welding	16, 25, 40	142	457	334	168,3	7,1	F12 Ø35	72
	Flanged	16, 25, 40		350		-	-		-
DN 200	Welding	16, 25, 40	190	521	363	219,1	8,8	F12 Ø35	124
	Flanged	16, 25, 40		457		-	-		-
DN 250	Welding	16, 25, 40	237	559	422	273,0	10,0	F14 Ø50	202
	Flanged	16, 25, 40		533		-	-		-
DN 300	Welding	16, 25, 40	285	635	460	323,9	10,0	F14 Ø60	311
	Flanged	16, 25, 40		610		-	-		-
DN 350	Welding	16, 25, 40	332	762	500	355,6	11,0	F16 Ø60	499
	Flanged	16, 25, 40		686		-	-		-
DN 400	Welding	16, 25, 40	375	838	593	406,4	12,5	F25 Ø72	738
	Flanged	16, 25, 40		762		-	-		-
DN 500	Welding	16, 25, 40	475	991	670	508,0	12,5	F30 Ø72	1339
	Flanged	16, 25, 40		914		-	-		-
DN 600	Welding	16, 25, 40	588	1143	749	610,0	12,5	F30 Ø80	2134
	Flanged	16, 25, 40		1067		-	-		-

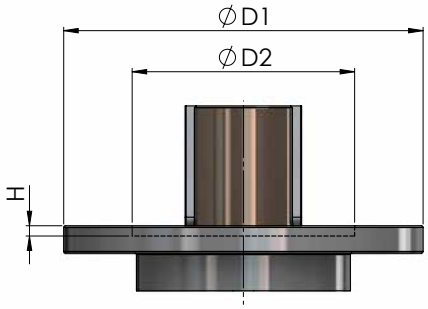


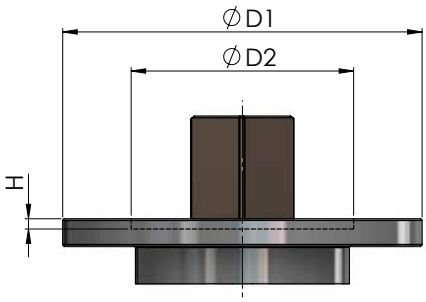
Available up to nominal diameter DN 1000

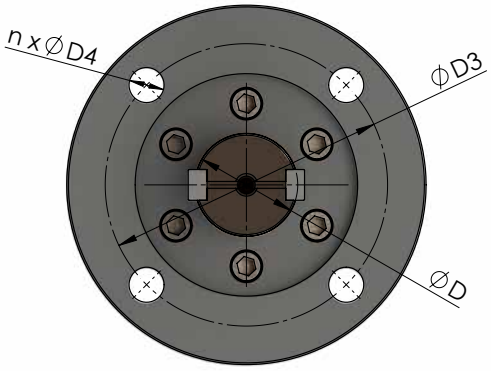
PN-EN ISO 5211

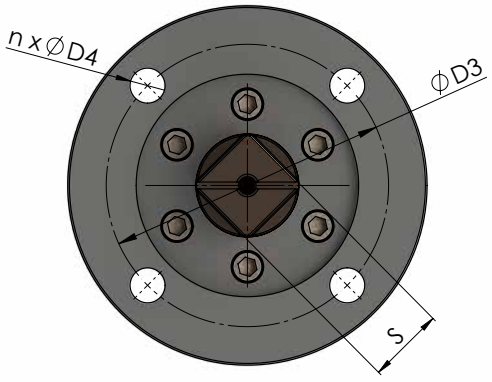
- Connections for broen valve part-turn actuators

ISO Flange	S	ØD	ØD1	ØD2	ØD3	ØD4	n	Hmin.	Torque
[-]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]	[Nm]
F03	9	-	Ø46	Ø25	Ø36	Ø6 (M5)	4	3	32
F04	11	-	Ø54	Ø30	Ø42	Ø6 (M5)	4	3	63
F05	14	-	Ø65	Ø35	Ø50	Ø7 (M6)	4	3	125
F07	17	-	Ø90	Ø55	Ø70	Ø10 (M8)	4	3	250
F10	22	-	Ø125	Ø70	Ø102	Ø12 (M10)	4	3	500
F12	27	-	Ø150	Ø85	Ø125	Ø14 (M12)	4	3	1000
F14	36	Ø48	Ø175	Ø100	Ø140	Ø18 (M16)	4	4	2000
F16	-	Ø60	Ø210	Ø130	Ø165	Ø22 (M20)	4	5	4000
F25	-	Ø72	Ø300	Ø200	Ø254	Ø18 (M16)	8	5	8000
F30	-	Ø98	Ø350	Ø230	Ø298	Ø22 (M20)	8	5	16000
F35	-	Ø160	Ø415	Ø260	Ø356	Ø32 (M30	8	5	32000
F40	-	Ø180	Ø475	Ø300	Ø406	Ø38 (M36)	8	8	63000
F48	-	Ø220	Ø560	Ø370	Ø483	Ø38 (M36)	12	8	125000
F60	-	Ø280	Ø686	Ø470	Ø603	Ø38 (M36)	20	8	250000







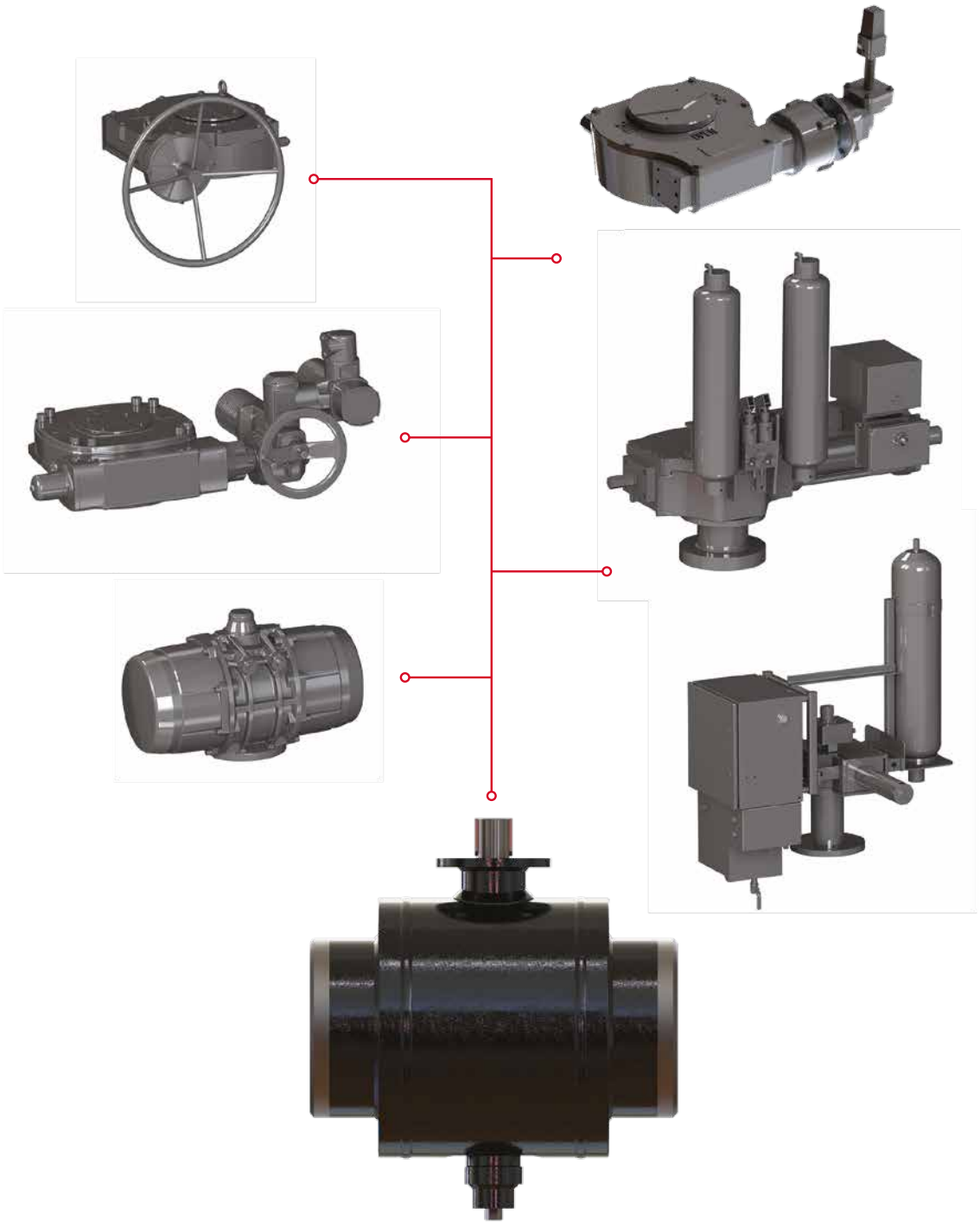


Gears & actuators

Overview of gears and actuators used in BROEN BALLOMAX® type AH ball valves

BROEN BALLOMAX® type AH ball valves are available with a wide range of gears and actuators: manual, electric, pneumatic, electro-hydraulic, pneumo-hydraulic, etc.

Ball valves are equipped with drive connections in accordance with EN ISO 5211.



BROEN planetary gearbox PO-27

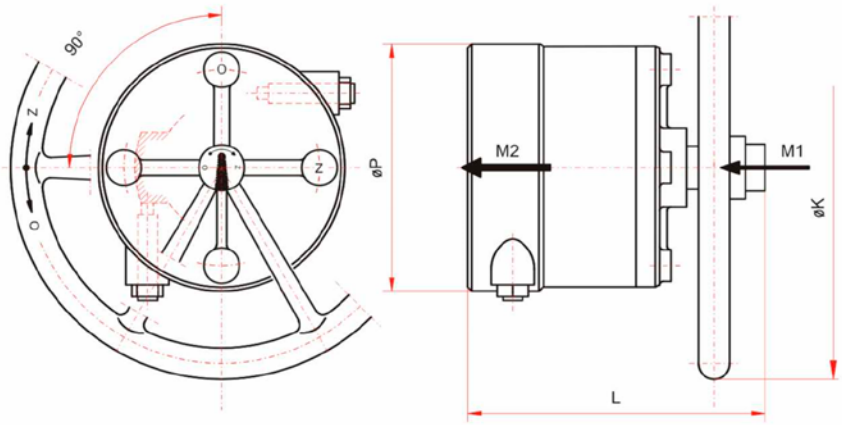
The BROEN PO-27 gearbox is a maintenance-free, two-stage planetary gearbox.

The highly efficient gearbox with Teflon-coated bearing bushes and permanent lubrication of the gears wheels ensures minimal operating forces.

Only **6.75 turns** on the gearbox input side are required for a 90° movement of the ball in the valve.

Two variants are available

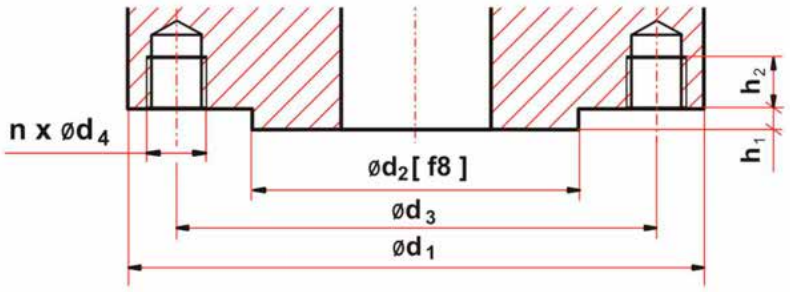
- Mounting on BROEN valves with ISO 5211 gearbox mounting flange
- Mounting on BROEN underground valves according to EN 488 with hexagonal operating



Technical data - basic dimensions of the gear type

Gear type	Gear ratio	M1	M2	tamb.	L	øK	øP	Max. manual force on wheel	Flange acc. to ISO5211	Socket diameter and depth	~weight
		Nm	Nm	oC	mm	mm	mm	N		mm x mm	kg
PO-27/100	1:27	100	2000	-40 ÷ +150	200	450	170	460	F12 F14	Ø22x35 or Ø27x40 or Ø36x50	18,0
PO-27/200	1:27	200	4000	-40 ÷ +150	270	650	220	660	F14 F16	Ø36x60 or Ø60x80 with 18x11 stem	37,3
PO-27/300	1:27	290	6000	-40 ÷ +150	-310	800	300	720	F25	Ø72x 110 with 20x12 stem	54,5

Dimensions of the flange connections on the gear according to ISO 5211



Flange acc. to ISO 5211	Dimensions [mm]						Number of bolts n [pcs.]	Torque MOBR (max) [Nm]
	ød1	ød2	ød3	ød4	h1	h2		
F12	150	85	125	M12	3	18	4	1000
F14	175	100	140	M16	4	20	4	2000
F16	210	130	165	M20	5	30	4	4000
F25	300	200	254	M16	5	30	8	8000

PO-27 gear
wheel-controlled

PO-27 gear
T-key controlled

PO-27 gear
with transport handle

Our brand is our promise

BROEN
VALVE TECHNOLOGIES

BROEN Valve Technologies

BROEN is a leading international manufacturer of valve technology and we operate on three continents across the world with key markets in Europe, China and USA.

For more than 75 years BROEN has been the global leader in the development and production of valve technology for the control of water, air and gas. BROEN delivers complete solutions for HVAC building installations and is a leading supplier of district energy valves and valve technology for natural gas.

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