BROEN BALLOMAX® BALL VALVES
TRUNNION MOUNTED – FOR DISTRICT HEATING AND DISTRICT COOLING
Climate change is our common challenge

Energy efficiency is one of the greatest challenges of our times and for district energy BROEN delivers ready solutions to meet the globally rising demand for energy efficiency.

Based on the heritage from leading edge innovations in Danish district heating, BROEN Ballomax® offers the most comprehensive range of proven ball valves for distribution and transmission of district energy in residential, commercial and industrial applications and are today a key component in district heating and district cooling networks throughout the world.


Our brand is our promise.
BROEN Ballomax® – our response

For more than 30 years the reliable design of BROEN Ballomax® has proven itself and it remains the best choice in district heating today.

Thus, BROEN Ballomax® is competitive when it comes to Low Cost of Ownership - the valve lasts as long as the district heating network.

BROEN offers complete solutions for district energy – valves, actuators, gears, flanges and spindle extenders.

The most recognized valve technology is not something we just claim, but something we have to live up to every single day.

To us quality is not just a key to market access – it goes far beyond that.

BROEN Ballomax®is your certainty of energy efficiency, reliability and low operating costs.

BROEN Ballomax® energy efficiency - designed to last.

- PED 2014/68/EU – module H
- EN12266-1 and -2
- EN488:2015
BROEN Ballomax® trunnion mounted ball valves feature a small volume of cavity, as the ball is close to the body.

For demanding district energy applications

BROEN Ballomax® trunnion mounted ball valves are manufactured according to the strictest requirements for valves. High quality materials are – together with district heating expertise collected over several decades – the essential components of the best valves.

Trunnion valves feature a double bearing construction, which means that the ball is anchored both at the top and at the bottom. This increases the life of the seals and reduces the friction and torque significantly, when the valve is activated. Which in turn means, that savings can be achieved when choosing gear.

The energy-optimized design ensures minimal pressure loss, making the optimal choice when dimensioning for energy optimization.

Valves equipped with a drain valve – commonly called a ”tell-tale valve” – ensures, that the dead space between the ball and the valve body can be emptied completely, so that it is possible to determine if the valve closes 100% tightly – hence its name Double Block and Bleed. This feature, can be further supplied with a tube and a ball valve to facilitate accessibility and operation.

Our trunnion valves are tested according to EN 12266-1 and -2, and are delivered with full traceability.

The valves are designed to the highest temperature demands and are suitable for steam, super-heated water, hot water and cooling.
Installation above ground level in buildings, installation channels and wells:
- Full bore | Reduced bore
- Weld-Weld | Flange-Flange
- Coated surface
- PN16 - PN25 - PN40
- DN50-1000 (nominal sizes up to 1400 on request)

Options:
- Corrosion protection up to C5
- DBB outlet valve
- Base feet
- Stainless steel ball
- Variable stem extension
- DBB outlet valve lockable
- Lubrication system

Certificates:
- DBB by Bureau Veritas
- PED 2014/68/EU – module H
- 3.1 certificate according to EN 10204
- EN 12266-1 and 2

Installation below ground level
EN488:2015:
- Full bore | Reduced bore
- Weld-Weld
- Sand blasted surface
- PN25
- DN150-1000 (nominal sizes up to 1400 on request)

Options:
- Stainless steel ball
- Variable stem extension
- Insulation

Certificates:
- EN 488:2015
- PED 2014/68/EU – module H
- 3.1 certificate according to EN 10204
- EN 12266-1 and 2

Trunnion mounted ball valves
Fully welded

Actuation: Manual, electric or other

Tested and adjusted prior to delivery
Technical features:

- Produced according to PED 2014/68/EU – module H
- Functional and pressure test according to EN 12266-1 and -2
- Flange dimensions according to EN 1092-1
- Butt-weld ends according to EN 12627
- Actuator mounting flange ISO 5211
- Electronickel coated ball
- Optional stainless steel ball

Fully welded trunnion mounted ball valves

Our fully welded BROEN Ballomax® trunnion mounted ball valves can be delivered for operation above ground level with a range of features and advantages:

- Small volume of cavity, as the ball is close to the body
- Our Double Block and Bleed (DBB) system is certified by Bureau Veritas
- With DBB, the tightness can be controlled while, the valve is in operation
- Lubrication system is standard from DN350 upwards
- 3.1 traceability certificate according to EN10204
- The valve can be delivered either as full bore or reduced bore
- Delivery with or without base plate
Anti blow-out proof stem design
The anti blow-out design prevents the stem from blowing out after disassembly of the stem sealing top cover, while the valve is under pressure.

ISO connection
According to ISO5211.

Solid ball
Solid balls secure that the valves have a low fluid resistance and consequently high Kvs values.

Fully welded body – designed to last
The fully welded bodies will comply or even exceed requirements for valves used in district heating systems and in industrial applications.

Flanged or welded ends
Valves can be delivered with flanges or with welding ends.

Base plate
Available on request.

Certified DBB
Here illustrated with optional outlet valve. Also available with lockable outlet valve.

Water and steam applications
Optional lubrication system
– standard from DN350.

Single Piston feature
Pressure relieving.

Solid ball
Water and steam applications
Optional lubrication system
– standard from DN350.
General sealing system and stem sealing

Installation above ground level in buildings, installation channels and wells

Ball sealing system
The ball sealing system is a flexible sealing, where the sealing touches the surface of the ball and secures tightness class "A" according to EN 12266-1 and ISO5208.

The sealing is made of PTFE with a carbon content of 20% and is chambered in the metallic seat ring. The PTFE C density element is in permanent contact with the spherical surface by the spiral springs. O-ring seals made of high-quality EPDM seal the seat ring chamber against the housing guide.

Stem sealing description
The design of our stem sealing has proven itself for years and is a heritage of the Zawgaz trunnion ball valve design, which has now been updated and engineered as integrated part of the BROEN trunnion mounted ball valves.

The sealing of the stems used in the valves manufactured by BROEN depends on the operating temperatures of the valve and the working medium, for which the given valve is dedicated.

For temperatures < 150°C: Sealing provided from O-ring EDPM
For temperatures > 150°C: Sealing provided from O-ring FFKM

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Bearing</td>
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<td>2</td>
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<td>EPDM / &gt; 150°C FFKM</td>
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<td>Split ring cotter</td>
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<td>Stem</td>
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<td>P335NH +Ni-C</td>
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<td>6</td>
<td>Washer</td>
<td>Stainless steel / 1.4021 / AISI 420 / X20Cr13</td>
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<td>7</td>
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<td>Sleeve</td>
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</table>
Double Block and Bleed

Certified Double Block and Bleed (DBB)
The DBB feature allows the release of pressure closed in the cavity between the ball and the body. It enables to check the tightness of the valve, while the valve is still installed.

The DBB system ensures the simultaneous upstream and downstream sealing, while also permitting the release of the overpressure in the cavity, in both fully open and fully closed positions.

DBB from BROEN is certified by Bureau Veritas.

BROEN Ballomax® can be delivered with DBB outlet valve placed different places on the valve body. BROEN Ballomax® Trunnion is delivered with DBB outlet at the bottom as standard.

The drain allows the pressure in the cavity to be released manually, as well as the tightness of the valve to be checked, without the need to shut down the pipeline.
Gears and actuators

Installation above ground level in buildings, installation channels and wells

The synergy of configuring the right gear to the task and making a ball valve operate seamlessly for years is a specialist task and at BROEN we strive to deliver ready solutions, that will operate with a minimum of downtime. We know, that the valve’s availability to operate is a core function for customers’ applications.

BROEN delivers a wide range of competitive actuation possibilities, that we know will secure the availability to operate the valve for many years.

BROEN is able to deliver valves with actuators from any proven supplier.

We counsel and advice our customers all the way to ensure, that valve, gears and cabling are optimized to each other and we deliver regulated and commissioned valves to validate the operation of the valves.

BROEN Worn gear
A sturdy and solid manual gear of high quality.

BROEN Planetary gear
A sturdy and solid manual gear of high quality.

Electric gears
We supply customer specific ball valves with custom built pre-adjusted electric gears from leading gear manufacturers.
Ever since BROEN was established our passion for valve technology has been a major part of our core competences.

Our brand is our promise.
Our fully welded trunnion mounted valves can be delivered for operation below ground with a range of features:

In addition to standard height, BROEN offers the optimal possibility for columns with stem extensions according to customers requests are possible.

All trunnion mounted valves will be supplied with 3.1 traceability certificates in order to document the quality of the valve.

**Technical features:**

- Positioning indicator – ball position indicated on the top of the spindle
- Produced according to EN 488:2015
- Produced according to PED 2014/68/EU – module H
- Functional and pressure tested according to EN 12266-1 and -2
- Butt-weld ends tested according to EN 12627
- Actuator mounting flange ISO 5211
- Electronickel coated ball
- Optional stainless steel ball
DN 150-1000 | Full bore or reduced bore  
PN25  
Temp. -20°C to max. +200°C  

* Temperature ranges according to sealing materials.

ISO connection according to ISO5211

Anti blow-out proof stem design
The anti-static design protects against static electric discharges. The anti blow-out design prevents the stem from blowing out after disassembly of the stem sealing top cover, while the valve is under pressure.

Optional stem extension
Stem extensions according to customers requests are possible.

Hexagon connection on top

Water and steam applications

Single Piston feature
Pressure relieving effect.

Fully welded body – designed to last
The fully welded bodies will comply or even exceed requirements for valves used in district heating systems and in industrial applications.

Welded ends
Valves are delivered with welding ends.

Solid ball
Solid balls secure, that the valves have a low fluid resistance and consequently high Kvs values.

EN 488:2015
Designed and produced according to EN 488-2015.
Stem sealing, columns, extensions and insulation

Installation below ground level | EN 488:2015

**Stem sealing**
The design of our stem sealing has proven itself for years and is a heritage from the proven Zawgaw trunnion ball valve design, which has now been updated and engineered as integrated part of the BROEN trunnion mounted ball valves.

The sealing of the stems used in the valves manufactured by BROEN depends on the operating temperatures of the valve and the working medium, for which the given valve is dedicated.

**Columns and extensions**
The stem extension can be made according to customer requested height and all trunnion mounted ball valves are delivered with the ISO 5211 actuator mounting flange.

Trunnion mounted valves for installation below surface level can be delivered with a flange for actuator mounting of a planetary gear or bevelgear installed on various length columns.

**Insulation and operation below ground level**
The BROEN Ballomax® Trunnion mounted valves can also be delivered pre-insulated.
The synergy of configuring the right gear to the task and making a ball valve operate seamlessly for years is a specialist task and at BROEN we strive to deliver ready solutions, that will operate with a minimum of downtime, as we know, that the valve’s availability to operate, is a core function for customers’ applications.

BROEN delivers a wide range of competitive actuation possibilities, that we know will secure the availability to operate the valve for many years.

BROEN is able to deliver valves with actuators from any proven supplier. We counsel and advice our customers all the way to ensure that valve, gears and cabling are optimized to each other and we deliver regulated and commissioned valves to validate the operation of the valve – also in tough underground conditions.

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**Gears and actuation**

**Installation below ground level | EN 488:2015**

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**BROEN Mobile actuator**

A manual gear with a mobile actuator for flexible operations, where the actuation of the valve needs to be transportable.

**BROEN Planetary gear**

A sturdy and solid manual gear of high quality.

**BROEN-Worn gear**

A sturdy and solid manual gear of high quality.

**Electric gears**

We supply customer specific ball valves with custom built electric gears from leading gear manufacturers.
Trunnion mounted ball valves – Reduced flow
Installation above ground level in buildings, installation channels and wells

Size | Pressure | Torque | Kvs values

### DN250-400 RP

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<thead>
<tr>
<th>DN [bar]</th>
<th>DN250 [Nm]</th>
<th>DN300 [Nm]</th>
<th>DN350 [Nm]</th>
<th>DN400 [Nm]</th>
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<tbody>
<tr>
<td>0-10</td>
<td>277</td>
<td>459</td>
<td>663</td>
<td>858</td>
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<td>16</td>
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<td>496</td>
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<td>16</td>
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Trunnion mounted ball valves – Full flow
Installation above ground level in buildings, installation channels and wells

<table>
<thead>
<tr>
<th>Size</th>
<th>Pressure</th>
<th>Torque</th>
<th>Kvs values</th>
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### DN200-350 FB

#### Torque STD

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<th>DN300 [Nm]</th>
<th>DN350 [Nm]</th>
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#### Kvs values

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#### Kvs values

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## Installation below ground level – Reduced bore

**Installation below ground level | EN 488:2015**

Size | Pressure | Torque | Kvs values

### EN 488 DN150-500 RP HEX

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### EN 488 DN150-800 RP ISO

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Installation below ground level – Full bore

Installation below ground level | EN 488:2015

Size | Pressure | Torque | Kvs values

### EN 488 DN150-700 FP HEX

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Kvs values

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### EN 488 DN150-1000 FP ISO

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BROEN Engineered Valve Group
For more than 70 years BROEN has been the global leader in the development and production of valve technology for the control of water, air, gas and oil. BROEN delivers complete solutions for HVAC building installations and is a leading supplier of district energy valves.

We know application and valve technology in depth and in close dialogue with our customers and partners all over the world we create value and reliability with proven valves offering full quality assurance.

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