



## BR 20 and BR 26 · Calibrated seal rings

For ball valves used in throttling service

### Application

Calibrated seal ring for throttling service with steel, stainless steel and lined ball valves:

- **Nominal size DN 25 to 100 and NPS1 to 4**
- **Flow rates kvs 0.63 to 200**

### Versions

For throttling service with small pressure drops and high flow rates.

Optional calibrated seal ring versions are available for the following Pfeiffer ball valves:

- BR 20a PTFE-lined ball valves
- BR 20b PFA-lined ball valves
- BR 26d ball valves
- Calibrated seal rings for other valves are available on request

### Characteristics

In principle, we distinguish between two characteristics:

- equal-percentage (**EP**)
- linear (**lin**).

### Special versions

- Seal ring of special material  
e.g. conductive PTFE
- Special characteristics

### Principle of operation

The process medium flows through the ball valve in the direction indicated by the arrow, against the seal ring.

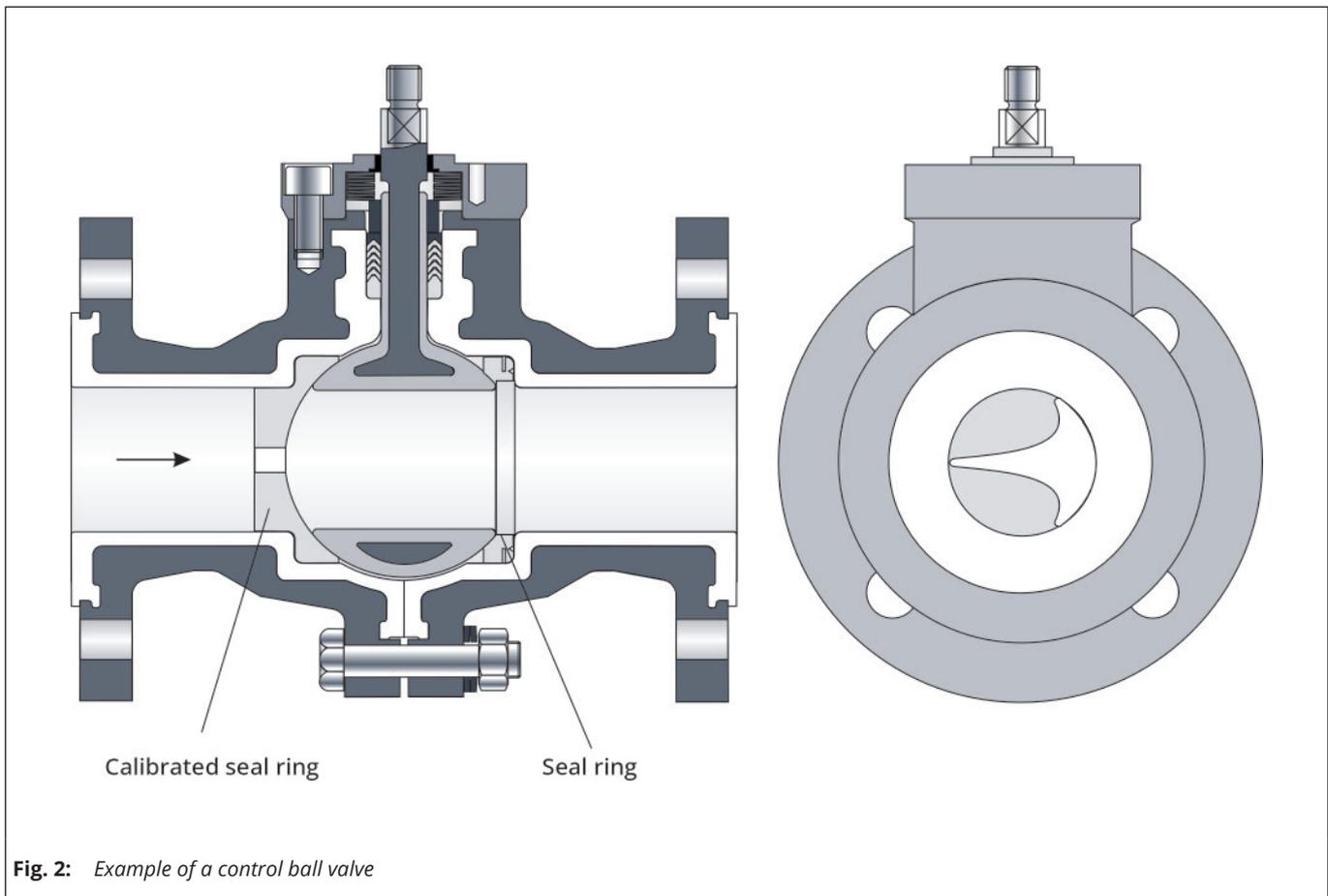
Ball valves fitted with calibrated seal rings have a directional arrow on the body to indicate the direction of flow.

When installing the valve in the pipeline, observe the indicated flow direction.

The special design of the seal ring enables controlled throttling of the medium.



**Fig. 1:** Calibrated seal ring



**Table 1:** General technical data

<b>Nominal size</b>	DN 25 to DN 100 / NPS1 to NPS4
<b>Leakage rate</b>	< 10 <sup>-6</sup> mbar l/s
<b>Rangeability</b>	40 : 1 / 100 : 1
<b>Characteristic</b>	equal percentage / linear

**Table 2:** kvs values – equal-percentage characteristic EP

kvs	DN 25 / NPS1	DN 40 / NPS1½	DN 50 / NPS2	DN 80 / NPS3	DN 100 / NPS4
0.63	<sup>1)</sup> X				
1	<sup>1)</sup> X				
1.6	<sup>1)</sup> X				
4		<sup>1)</sup> X	<sup>1)</sup> X		
6			<sup>1)</sup> X		
6.3	X	X	<sup>1)</sup> X		
10	X	X		<sup>1)</sup> X	
16	X	X	X	<sup>1)</sup> X	
25		X	X	X	<sup>1)</sup> X
30			X	X	X
40			X	X	X
63			X	X	X
80				X	X
100				X	X
125					X
150					X
200					X

<sup>1)</sup> These and further intermediate values are available on request.

**Table 3: kvs - Werte Linear lin**

kvs	DN 25 / NPS1	DN 40 / NPS1½	DN 50 / NPS2	DN 80 / NPS3	DN 100 / NPS4
0.63	<sup>1)</sup> X				
1	<sup>1)</sup> X				
1.6	<sup>1)</sup> X				
6.3	X	X	X		
10	X	X	X		
16	X	X	X		
25		X	X	X	X
30			X	X	X
40			X	X	X
63			X	X	X
80				X	X
100				X	X
125					X
150					X
200					X

<sup>1)</sup>Diese und weitere Zwischenwerte sind auf Anfrage erhältlich.

**Definition of the Kv coefficient:**

The Kv coefficient represents the flow rate in m³/h of water at 5 to 30°C that flows through a valve at a pressure drop of 1 bar.

The Kv coefficient can be calculated as follows:

Flow rate for liquids	
kg/h	m³/h
$K_v = \frac{W}{\sqrt{1000 * \rho * \Delta p}}$	$K_v = Q \sqrt{\frac{\rho}{1000 * \Delta p}}$

**Sizing and selection of control ball valves:**

The following requirements must be met (at room temperature):

1.

$$\Delta p < \frac{p1}{2}$$

2.

$$\Delta p < 3 \text{ bar}$$

- p1 = Pressure upstream of the valve in bar
- p2 = Pressure downstream of the valve in bar
- Q = Flow rate in m³/h
- W = Flow rate in kg/h
- ρ = kg/m³ density of liquids

After calculating Kv, select the Kvs of the ball valve.

The following applies:

$$K_{vs} \cong 1,3 * K_v$$

**NOTE**

**Cavitation must be avoided!**

The following applies for liquids at room temperature:

$$\frac{\Delta p}{p_1} \leq 0,4$$

Continuous operation with cavitation is not permitted!

**Details and data**

For further details and technical data refer to the associated data sheets:

- BR 20a = ▶ TB 20a
- BR 20b = ▶ TB 20b
- BR 26a = ▶ TB 26a
- BR 26d = ▶ TB 26d
- BR 26s = ▶ TB 26s

**Control characteristics**

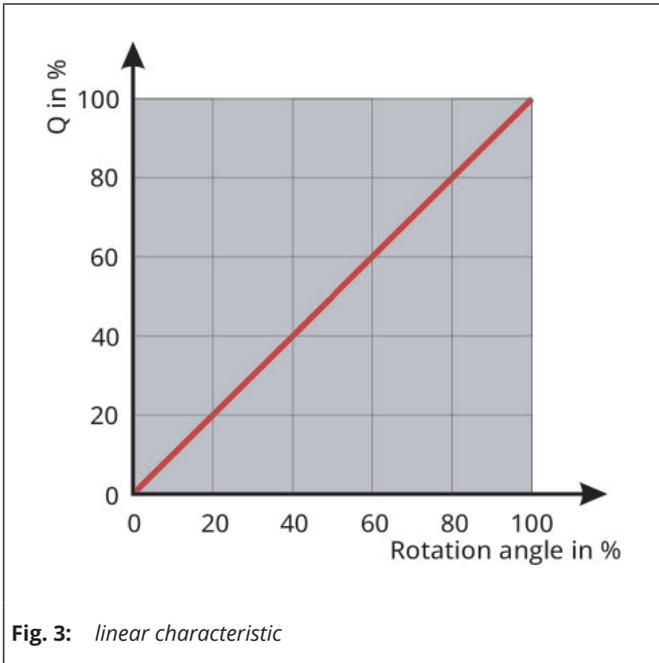


Fig. 3: linear characteristic

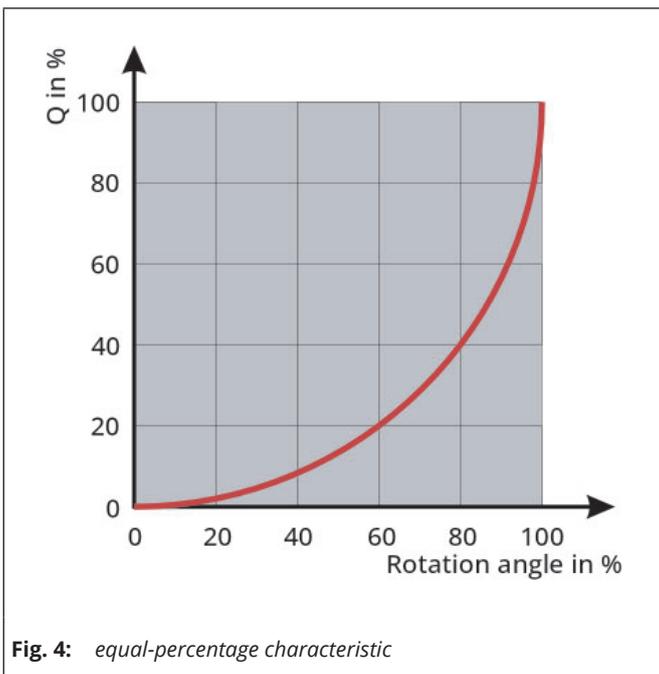


Fig. 4: equal-percentage characteristic