Calibrated Seat Rings

for BR 20 and 26 Ball valves used in throttling service

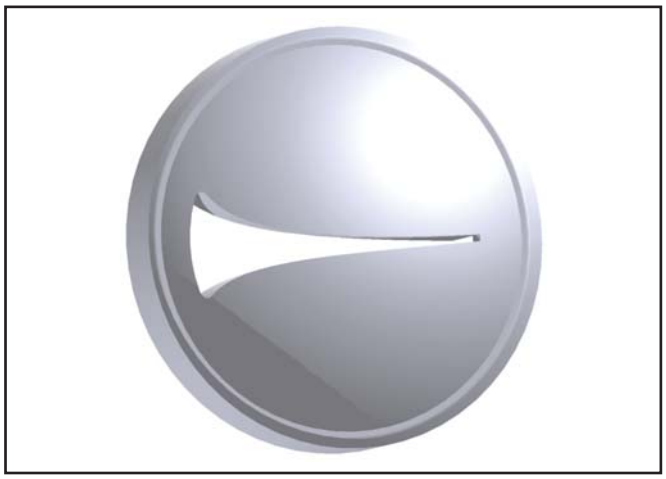

Fig. 1 – Calibrated seat ring

Versions:

For throttling service with small pressure drops and high flow rates. Optional calibrated seat ring versions are available for the following Pfeiffer ball valves:

- BR 20a PTFE-lined Ball valves
- BR 20b PFA-lined Ball valves
- BR 26a Precious Metal Ball valves
- BR 26d Stainless Steel Ball valves

Calibrated seat rings for other valves are available on request

The seat rings are available for the following valve sizes and flow rates:

- DN 25 / NPS1 kvs 6.3 to 16, equal percentage/linear
- DN 40 / NPS1½ kvs 6.3 to 25, equal percentage/linear
- DN 50 / NPS2 kvs 6.3 to 63, equal percentage/linear
- DN 80 / NPS3 kvs 25 to 100, equal percentage/linear
- DN 100 / NPS4 kvs 25 to 200, equal percentage/linear

Refer to Table 2 for an exact assignment of kvs coefficients and valve size.

Special versions:

- Seat 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 seat ring.

Ball valves fitted with calibrated seat rings have an directional arrow on the body to indicate the direction of flow. On installation in the pipeline, observe the indicated flow of direction.

The special design of the seat ring allows the medium to be controlled.

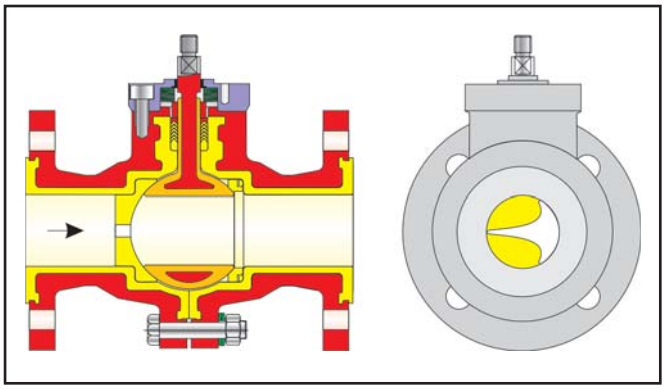

Fig. 2 – Example of a ball valve

Technical data:

Nominal size	DN 25 to 100 / NPS1 to NPS4
Leakage rate	< 10^{-6} mbar l/s
Rangeability	40:1 / 100:1
Characteristic	Equal percentage / linear

Table 1 – Technical data

Kvs coefficients:

Kvs	DN 25 / NPS1	DN 40 / NPS1½	DN 50 / NPS2	DN 80 / NPS3	DN 100 / NPS4
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

Table 2 – Kvs coefficients

Further Kvs coefficients available on request.

Specifications subject to change
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Data sheet DB 20a-kd_EN

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.

Ball valve selection and sizing:

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

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

2) $\Delta p < 3\ bar$

The Kv coefficient can be calculated as follows:

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

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:

$\frac{\Delta p}{p1} \leq 0{,}4$

Notice!
Continuous operation with cavitation is not permitted.

Valve characteristics:

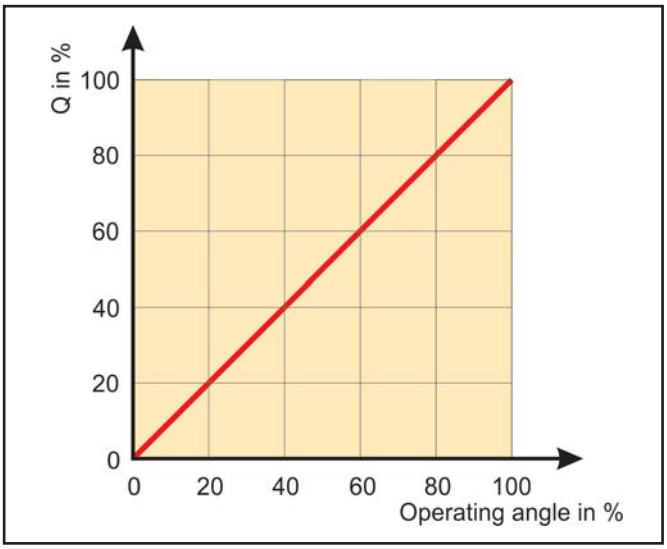

Fig. 3 – Linear characteristic

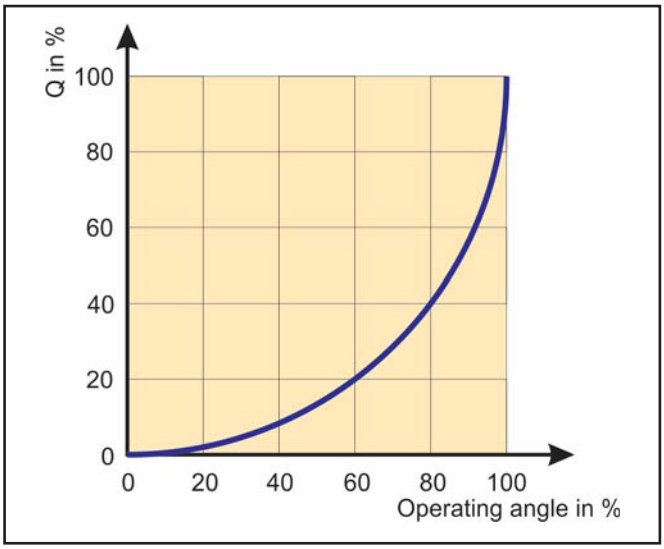

Fig. 4 – Equal percentage characteristic

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