DATA SHEET TB 28u

BR 28u · Cavity-free Piggable Segment Ball Valve

DIN and ANSI Version

CE

Applications

Stainless steel valve, consisting of a piggable T-piece and integrated metering ball valve with recessed ball segment:

- **Nominal diameter DN 50 to 200 and NPS2 to 8**
- **Nominal pressure PN 25, PN 40 as well as cl150 and cl300**
- **Temperatures -10 °C to +200 °C (14 °F to 392 °F)**

The valve consists of a main body with an integrated segment ball valve and a side body of the metering ball valve.

The valves in modular assembly design, have the following special features:

- Inside diameter of pipe, according to DIN 2430
- Double bearing mounted ball segment
- Eccentric rotation
- Control shaft sealed by a V-ring packing loaded by disc spring set
- Blow out proof shaft
- Anti static version with conductive shaft bearing
- Piggable flanges in the passage of the ball valve to DIN 2430-2 with projection. Non-piggable flanges are designed in accordance with DIN EN 1092-1 with sealing strip B1 or according to customer-specific requirements.
- Connections for actuators according to DIN ISO 5211

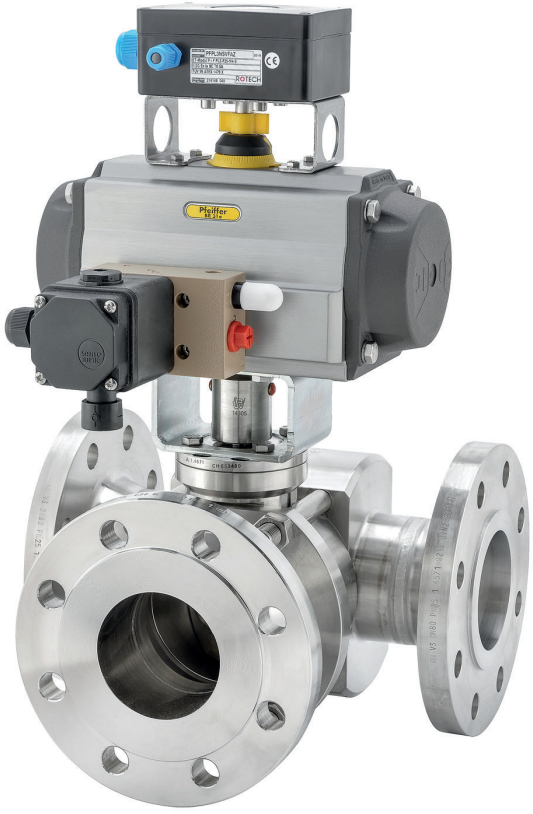

Fig. 1: *BR 28u metering valve with BR 31a quarter-turn actuator*

Versions

The ball valve consists of a T-piece, which, because of its unique construction enables completely cavity-free pigging, and performs the following functions according to various versions:

- In the **One-pig system:**
  - As media inlet for increased hygiene requirements
- In the **Two-pig system:**
  - To meter, for additional substances directly into the media flow with increased hygiene requirements

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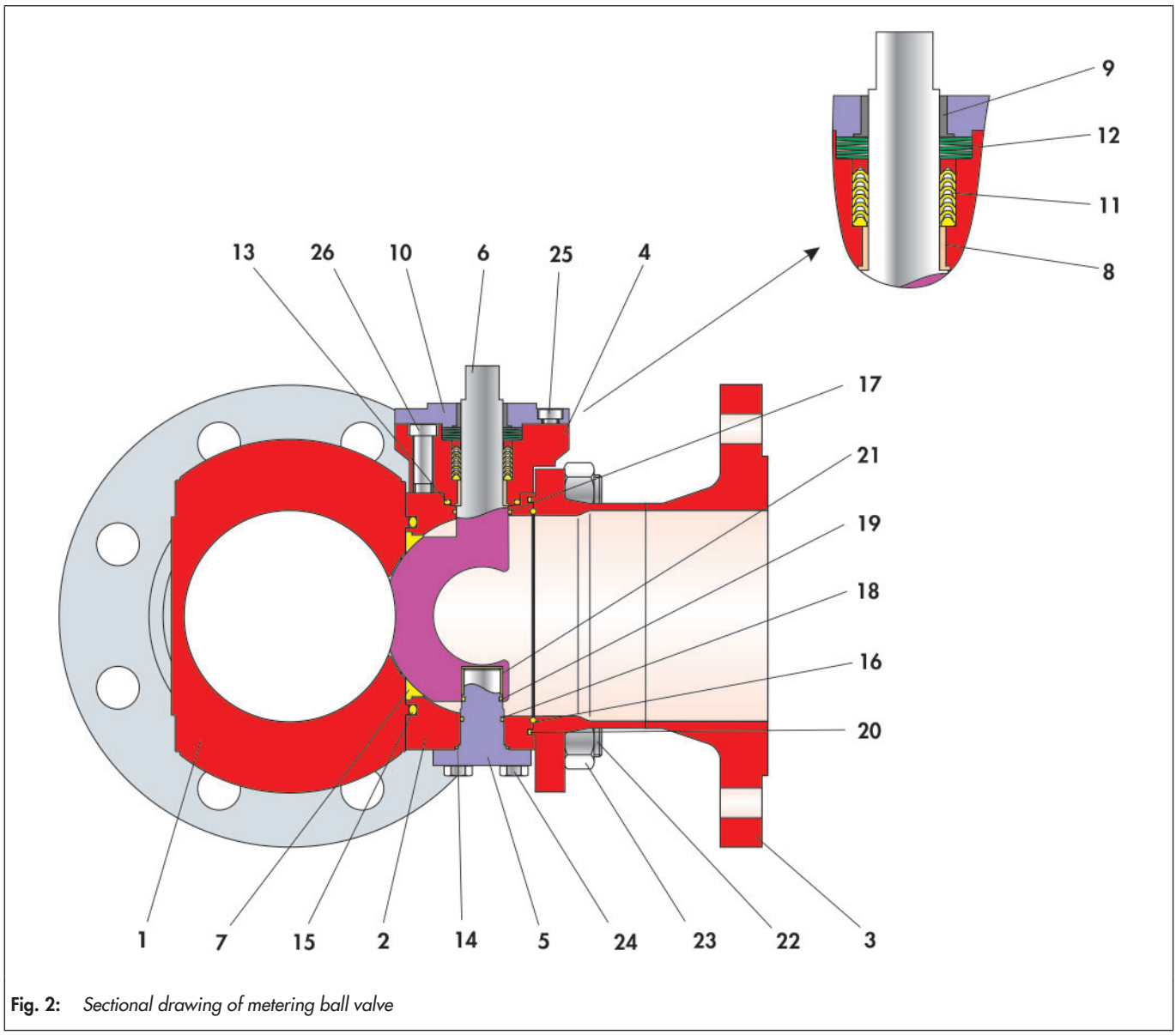

Fig. 2: *Sectional drawing of metering ball valve*

Table 1: *List of parts*

Item	Description
1	Main body
2	Middle body
3	Side body
4	Packing bush
5	Trunnion
6	Rotary plug
7	Seat ring
8	Bearing bush
9	Bearing bush
10	Stuffing box flange
11	V-ring packing
12	Disc spring set
13	O-ring

Item	Description
14	O-ring
15	O-ring
16	O-ring
17	O-ring
18	O-ring
19	O-ring
20	O-ring
21	Bearing bush
22 [1)]	Screw / Stud bolt
23 [1)]	Nut
24	Screw
25	Screw
26	Screw

[1)] Depending on the nominal width, stud bolts can be fitted with nuts or screws.

Special versions

- Special flange design at the inlet
- Heating jacket

Additional equipment and add-on pieces

The following accessories are available for the metering valve, either separately or in combination:

- Hand-lever (90°)
- Manual gear-box (90°)
- Shaft extension (100 mm standard)
- Pneumatic and electric quarter-turn actuators
- Limit switch
- Solenoid valves
- Positioner
- Supply air pressure regulator/filter

Further accessories are available according to customer specifications.

Principle of operation

BR 28u ball valves are used to meter media into a piggable piping system.

The shape of the ball segment ensures that the pigging pipe is not constricted.

The ball segment forms the rotary plug (6) with the control shaft.

The rotary plug (6) with its cylindrical passage slew around the control shaft.

The slewing angle of the ball segment determines the flow rate between the body (1), and ball passage.

The ball segment (6) is sealed by a interchangeable seat ring (7).

The control shaft is sealed with a maintenance free PTFE - V-ring packing (11), which is pre-loaded by a disc spring set (12) located above the packing.

The control shaft is externally equipped with a manual gearbox, or optionally with a pneumatic quarter turn actuator.

Info

Before using the segment ball valve in hazardous areas, check whether this is possible according to ATEX 2014/34/EU by referring to the mounting and operating instructions ▶ EB 28u.

Fail-safe position

Because of the segment ball valve application in a pigging pipe-system, the safety position „Spring closes“ should be preferred at all times.

- **Segment Ball valve with actuator „Spring closes“**
  Upon air failure, the metering valve is closed. The valve opens when the signal pressure increases, acting against the force of the springs.

Optional material combination

- Shaft and ball on request
- Seat rings in PTFE-compounds
- Sealing in graphite

Advantages of spring supported sealing system

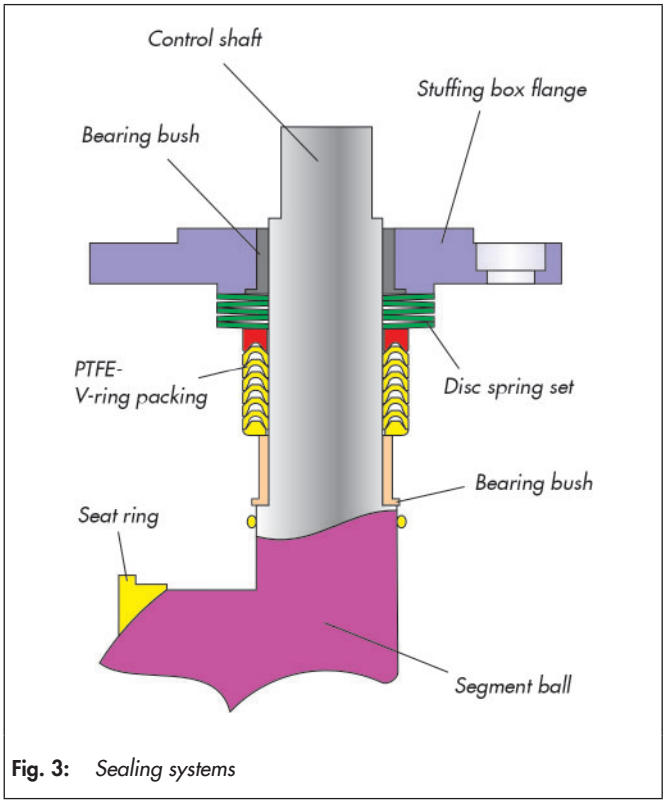

Fig. 3: *Sealing systems*

- Maintenance free and self adjusting
- Two active seat rings
- Highest level of sealing effectiveness, even by extreme pressure- and temperature variations
- Longer service life
- Lower torque increase by rising temperature, therefore smaller actuators required for automation
- ***All in all:***
  Extremely economic!

Table 2: *General technical data*

	DIN	ANSI
Nominal size	DN 50 ... 200	NPS2 ... 8
Nominal pressure	PN 25 ... 40	cl150 ... 300
Temperature range	-10 °C ... +200 °C (14 °F ... 392 °F)	
Ball sealing	PTFE	
Leakage rate	Leakage rate A according to DIN EN 12266-1, P12	
Flanges	DIN 2430-2 (V) / DIN EN 1092-1, form variable	DIN 2430 / ASME B16.5
Packing	PTFE- V-ring packing with pre-loaded disc spring set	

Table 3: *Materials*

	DIN	ANSI
Main body	1.4571 / 1.4408	A182 F316 / A351 CF8M
Side body	1.4571 / 1.4408	A182 F316 / A351 CF8M
Ball	1.4462	ASTM A182 Gr. F51
Sealing rings	PTFE	
Packing	PTFE V-ring packing with disc springs in 1.8159, Delta Tone	
Lower bearing bush	PTFE with 25% glass	
Upper bearing bush	PTFE with 25% carbon	
Body sealing	PTFE	

Torque and breakaway torque

Table 4: *Torque and breakaway torque*

Pressure difference	**Δp in bar**			**0**	**2**	**4**	**6**	**8**	**10**	**16**	**25**
Nominal diameter		**Mdmax. in Nm 1.4462**	**Md in Nm**	**Breakaway torque Mdl in Nm**							
DN	**NPS**										
50	**2**	654	8	11	11	12	13	14	16	19	25
80	**3**	654	40	57	63	69	75	81	87	105	141
100	**4**	1112	42	60	66	72	79	85	91	110	148
125	**5**	On request									
150	**6**	1483	59	84	93	101	111	119	128	155	208
200	**8**	On request									

The breakaway torques specified are average values, which were measured with air at 20 °C with the corresponding differential pressures.

Operating temperature, process medium, and long operating periods may affect the permissible torque and breakaway torques considerably.

Dimensions and weights

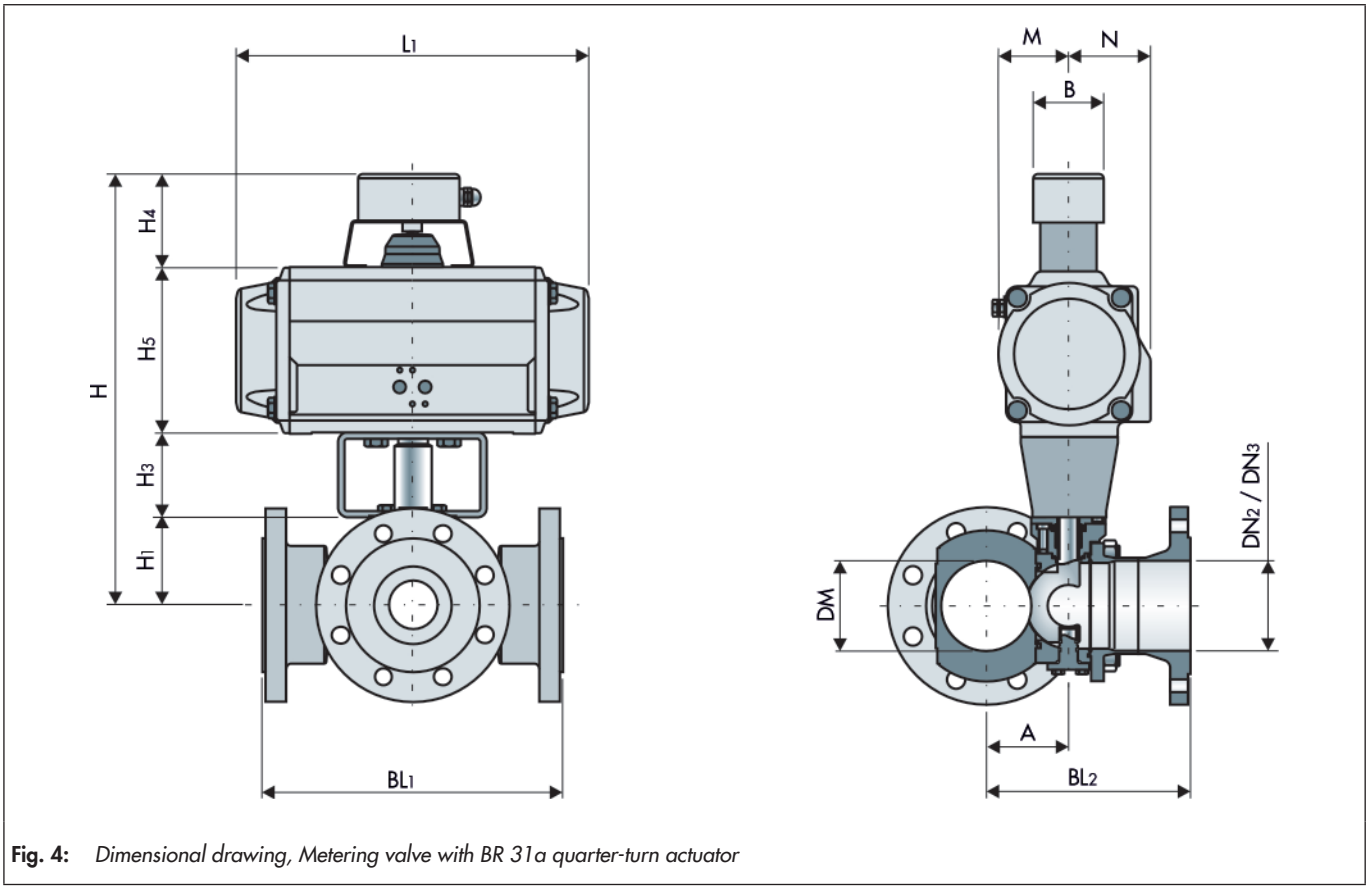

Fig. 4: *Dimensional drawing, Metering valve with BR 31a quarter-turn actuator*

Table 5: *Dimensions in mm and weights in kg*

Nominal size	DN 50	DN 80	DN 100	DN 125	DN 150	DN 200
	NPS2	NPS3	NPS4	NPS5	NPS6	NPS8
DM	54.5	82.5	107.1	On request	159.3	On request
BL1	230	310	350		480	
BL2	150	220	230		320	
A	48	85	94		140	
DN2	25	50	50		100	
DN3	50	80	80		100	
H1	66	92	110		145	
Actuator SRP	100	150	220		300	
H	H1 + H3 + H4 + H5					
H3	60	80	80	On request	80	On request
H4	110	110	110		110	
B	80	80	80		80	
DIN ISO connection	F05	F07	F12		F12	
Weight in kg	25	40	55		105	

Actuator SRP	100	150	220	300
L1	241	259	304	333
H5	115	127	145	157
M	49.5	55.5	64	69.5
N	56.5	63	72	77
Weight in kg SRP	4.4	6.5	9.8	12.6

Pressure-temperature diagram

The range of application is determined by the pressure-temperature diagram.
Process data and medium can affect the values of the diagram.

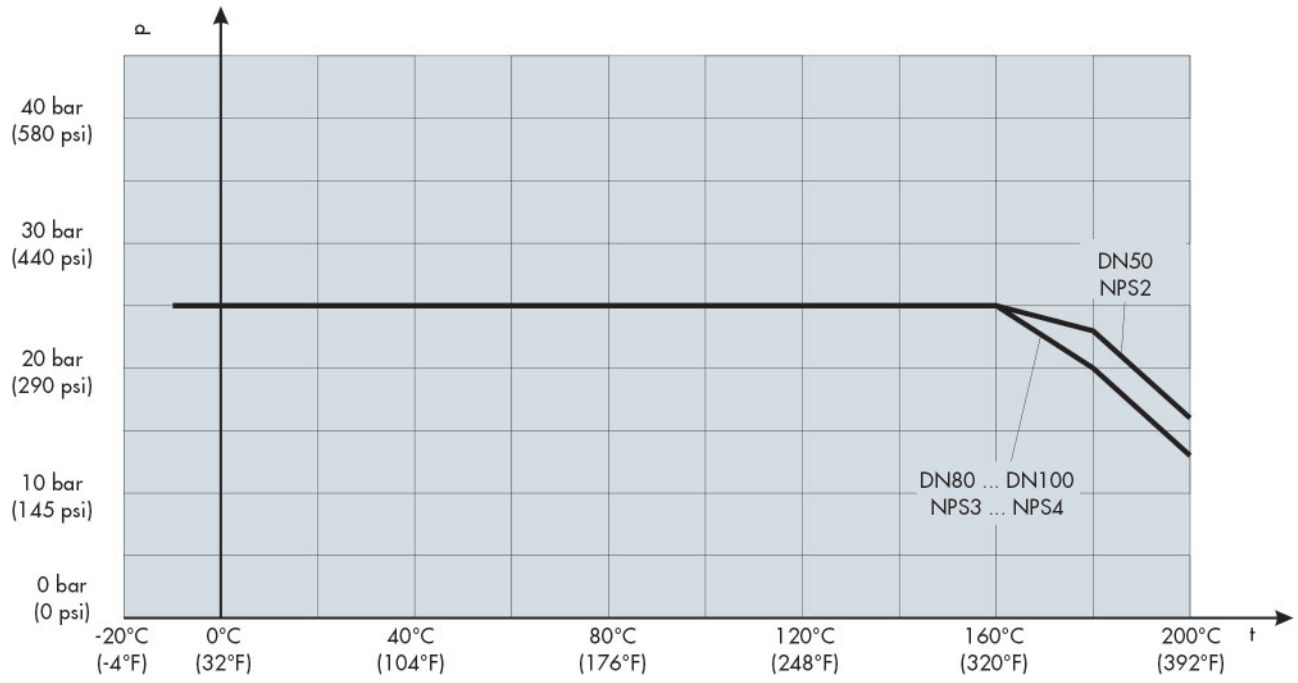

Fig. 5: *Pressure-temperature diagram PN25 / DN50 - DN80*

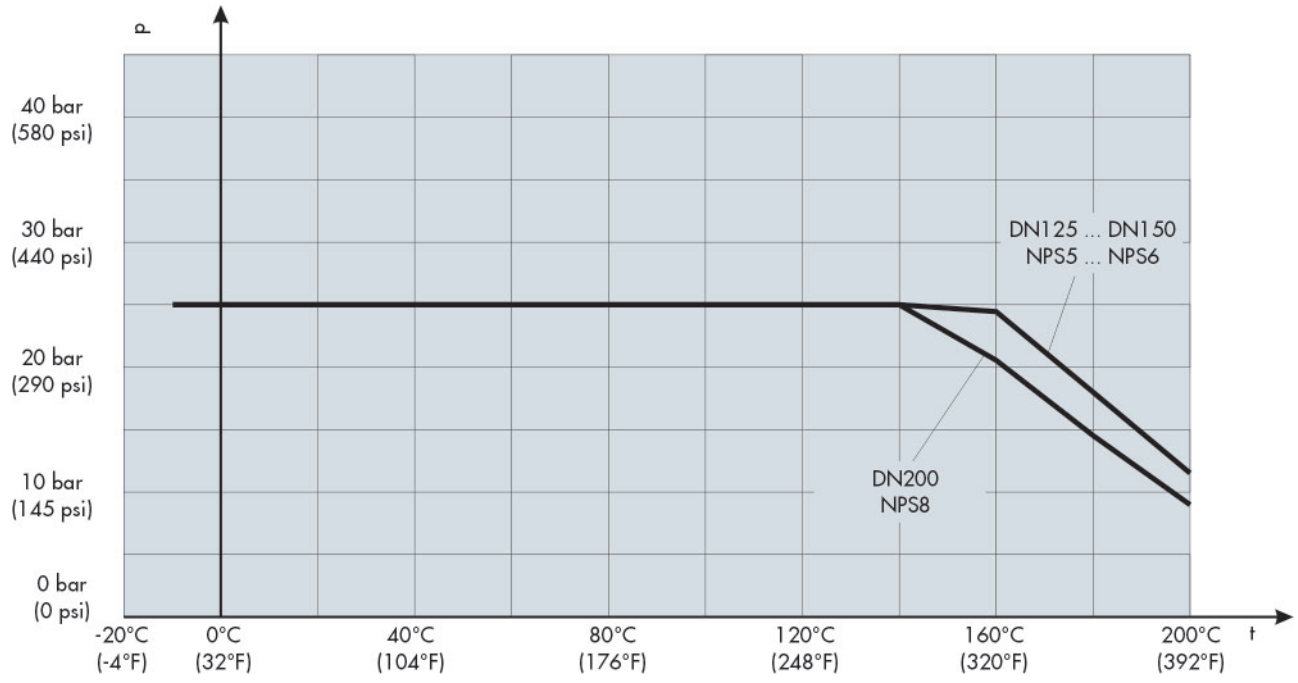

Fig. 6: *Pressure-temperature diagram PN25 / DN125 - DN200*

Pressure-temperature diagram

The range of application is determined by the pressure-temperature diagram.
Process data and medium can affect the values of the diagram.

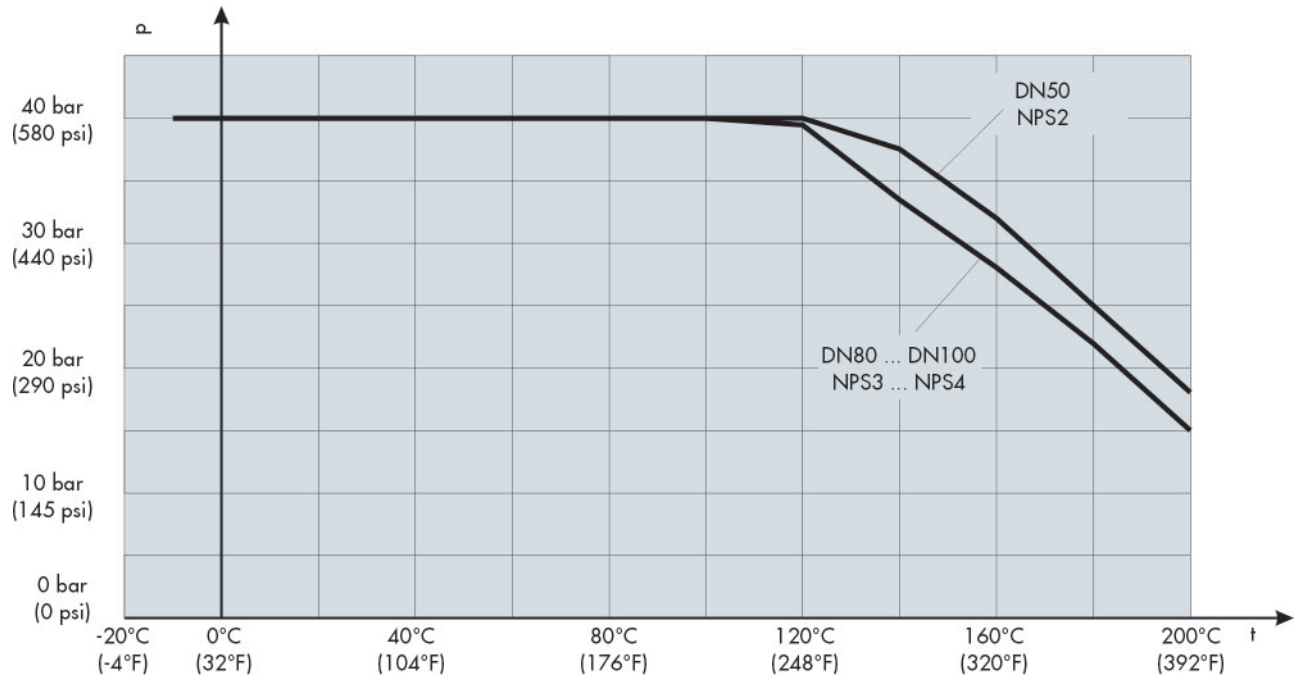

Fig. 7: *Pressure-temperature diagram PN40 / DN50 - DN80*

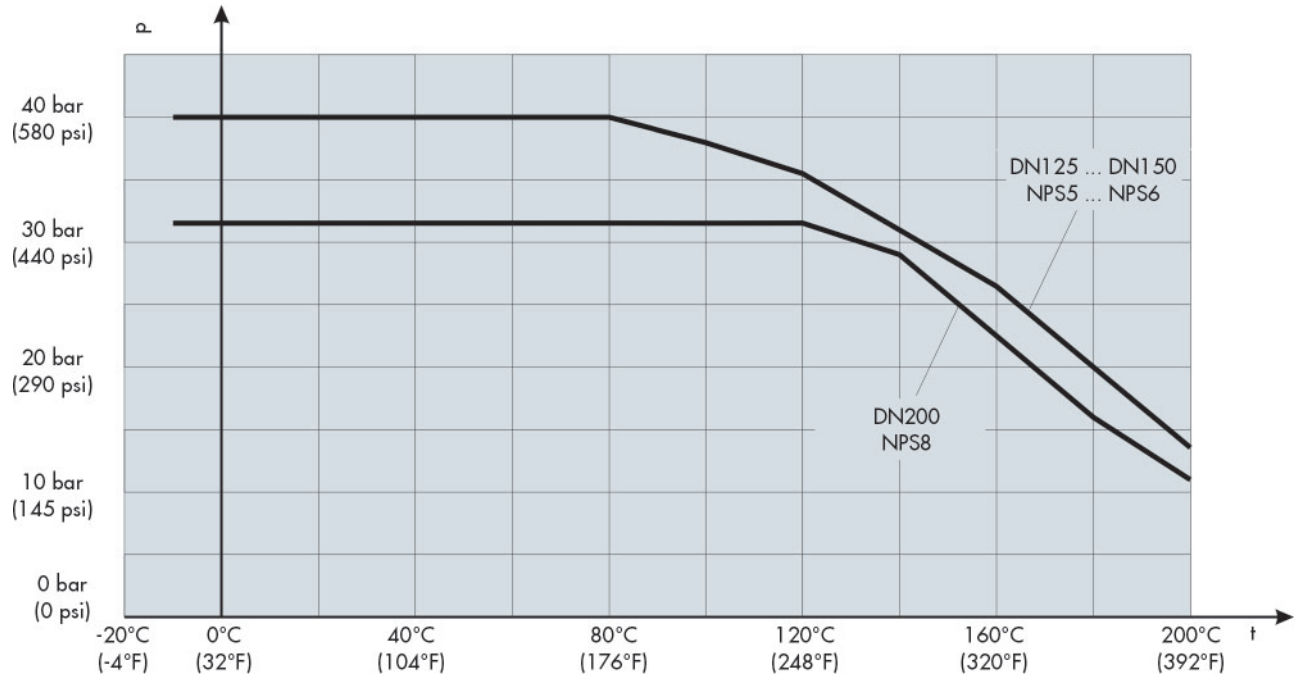

Fig. 8: *Pressure-temperature diagram PN40 / DN125 - DN200*

Selection and sizing of the metering valve

1. Determine the nominal diameter
2. Select the valve according to table 2, table 3 and the pressure-temperature diagram
3. Select the actuator according table 5
4. Select additional equipment / accessories

Ordering text

Metering valve in stainless steel:	BR 28u
Nominal size:	DN/NPS . . . .
Nominal pressure:	PN/Class . . . .
Optional special version:	. . . .
Actuator (brand name):	. . . .
Supply pressure:	. . . . bar/psi
Fail-safe position:	. . . .
Limit switch (brand name):	. . . .
Solenoid valve (brand name):	. . . .
Positioner (brand name):	. . . .
Others:	. . . .

Associated documents

Associated Mounting and Operating Instructions	▶ EB 28u
Associated Safety Manual	▶ SH 28a
For pneumatic actuators	▶ TB 31a

Info

All relevant details regarding the version ordered, which deviate from the specified version in this technical description data, can be taken, if required, from the corresponding order confirmation.

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