



BR 28a · Cavity-free Piggable Metering Valve DIN and ANSI Version



Applications

Stainless steel ball valve, consisting of a piggable T-piece and integrated dosing ball valve with a recessed ball, for dosing in piggable pipelines:

- **Nominal diameters 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 integrated ball valve, and the 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
- Seat rings, spring-loaded on one side
- Floating ball, i.e. sealed by both seat rings
- Control shaft sealed by a V-ring packing loaded by a 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

Versions

The 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
 - With optional, special blind flange as end station with media inlet and media outlet
- In the **Two-pig system**:
 - With optional, special blind flange as end station with media inlet and media outlet
 - To meter, for additional substances directly into the media flow
 - With option "Stopper ball valve" BR 28y as media inlet or media outlet



Fig. 1: Metering valve series 28a with quarter-turn actuator, series 31a

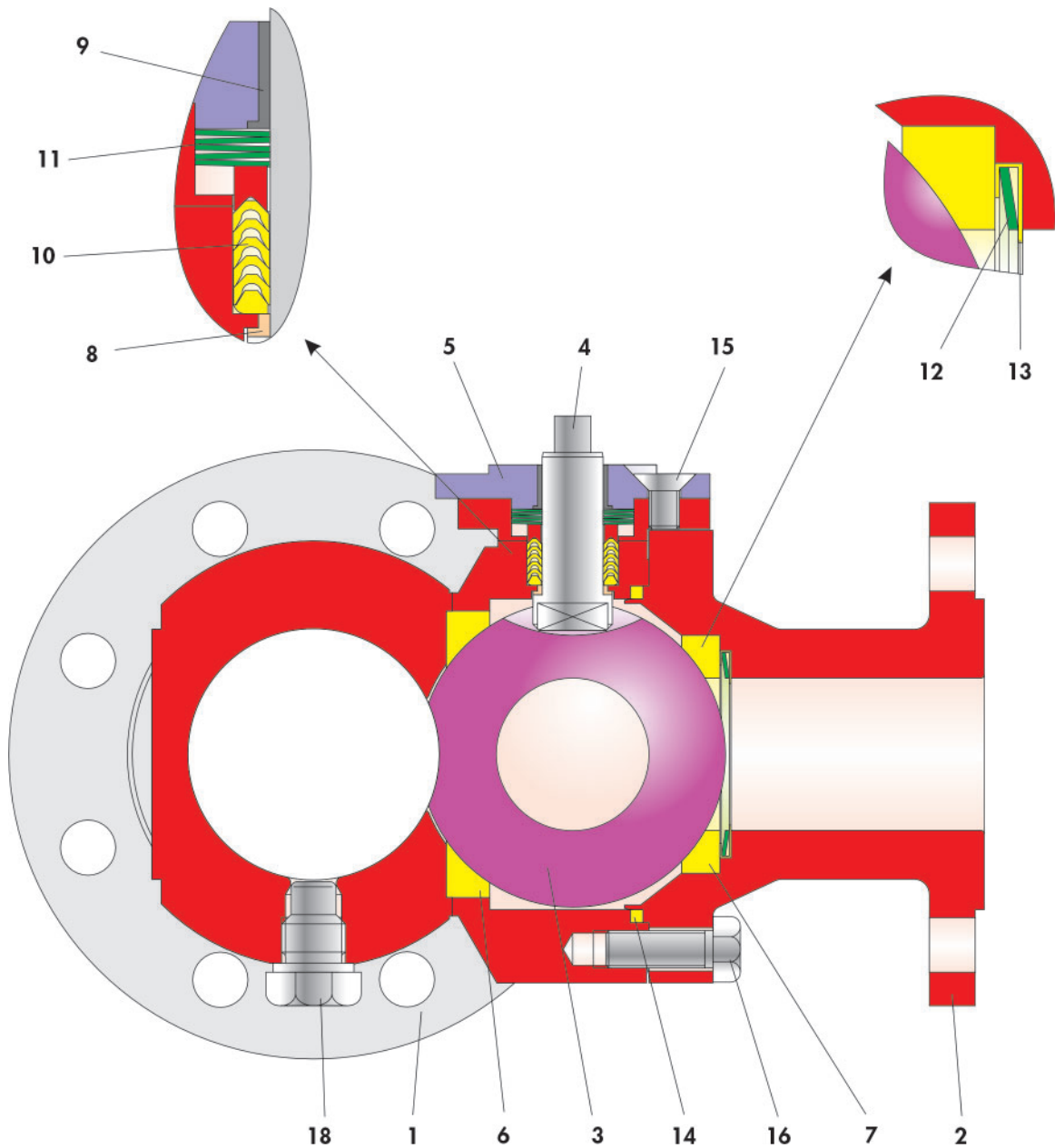


Fig. 2: Sectional drawing of metering ball valve BR 28a

Table 1: List of parts

Item	Description
1	Main body
2	Side body
3	Ball
4	Control shaft
5	Stuffing box flange
6	Seat ring
7	Seat ring
8	Bearing bush
9	Bearing bush

Item	Description
10	V-ring packing
11	Disc spring set
12	Disc spring
13	Disc spring jacket
14	Sealing
15	Screw
16 ¹⁾	Screw / Stud bolt
17 ¹⁾	Nut
18	Screw plug

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

Special versions

- With contamination safeguard, to automatically detect leakage from the metering ball valve
- With a special blind flange, to form an end-station
- 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)
- Interchangeable 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

The BR 28a metering ball valves are used for metering the medium in a pigging piping system.

The shape of the ball, ensures that the pigging pipeline is not constricted.

The ball (3) with its cylindrical passage slew around the middle axis.

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

The sealing of the ball (3) is with interchangeable seat rings (6 and 7).

The control shaft is sealed with a maintenance free PTFE - V-packing (10), which is pre-loaded by a disc spring set (11) located above the packing.

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

i Info

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

Fail-safe position

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

• Ball valve with actuator „Spring closes“

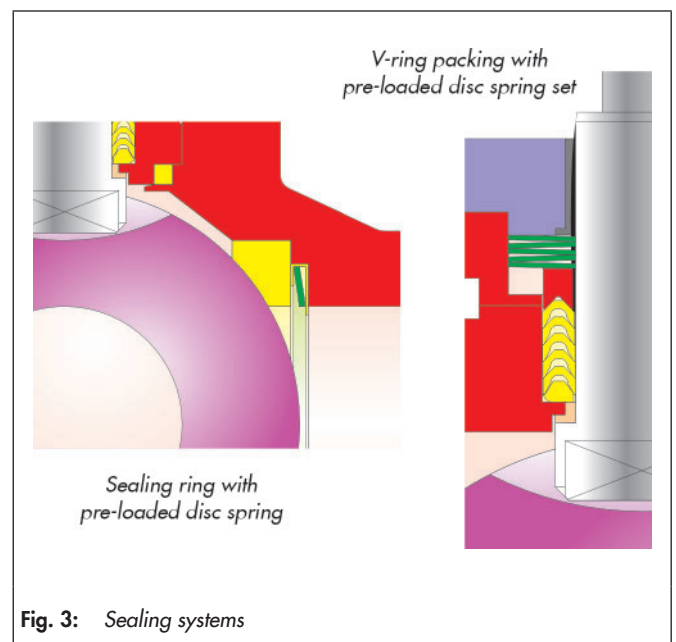
Upon air failure, the metering valve is closed.

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
- Seat in graphite

Advantages of spring supported sealing system



- 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
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- **All in all:**
Extremely economic!

Table 2: General technical data

	DIN	ANSI
Nominal size	DN 50 ... 200	NPS2 ... 8
Nominal pressure	PN 25 ... 40	d150 ... 300
Temperature range	-10 °C ... +200 °C (14 °F ... 392 °F)	
Ball sealing	PTFE	
Leakage rate	Leakage rate A acc. 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	1.4408 / 1.4571	A182 F316 / A351 CF8M
Control shaft	1.4462	ASTM A182 Gr. F51
Seat rings	PTFE	
Disc spring	1.4401 coated with 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: Max. permissible torque, required torque and breakaway torque

Pressure difference		Δp in bar			0	2	4	6	8	10	16	25
Nominal diameter		M _{dmax.} in Nm		M _d in Nm	M _{dI} in Nm							
DN	NPS	1.4462	1.4542									
50	2	204	317	8	11	11	12	13	14	16	19	25
80	3	654	1018	40	57	63	69	75	81	87	105	141
100	4	654	1018	42	60	66	72	79	85	91	110	148
125	5	998	1553	On request								
150	6	998	1553	59	84	93	101	111	119	128	155	208
200	8	857	1883	83	118	130	141	155	167	180	217	291

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

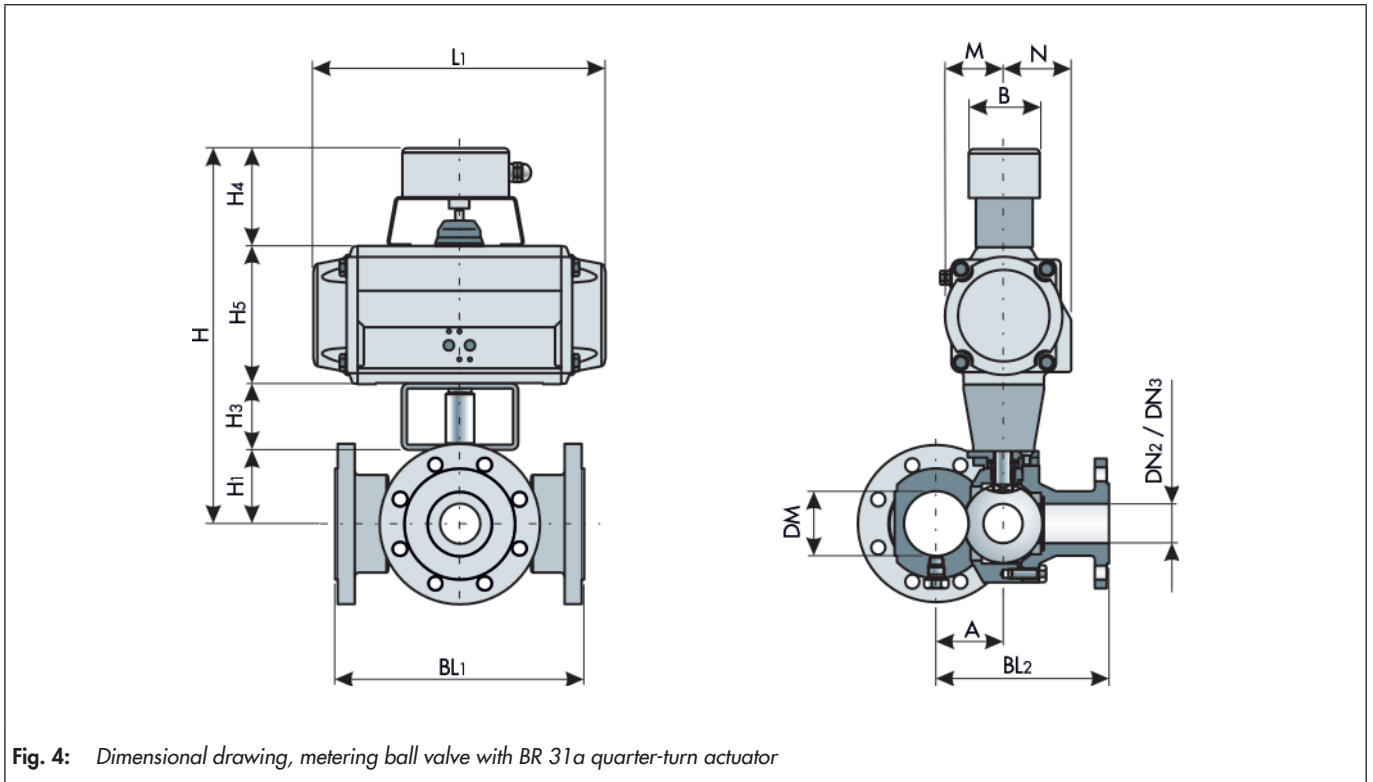


Fig. 4: Dimensional drawing, metering ball valve with BR 31a quarter-turn actuator

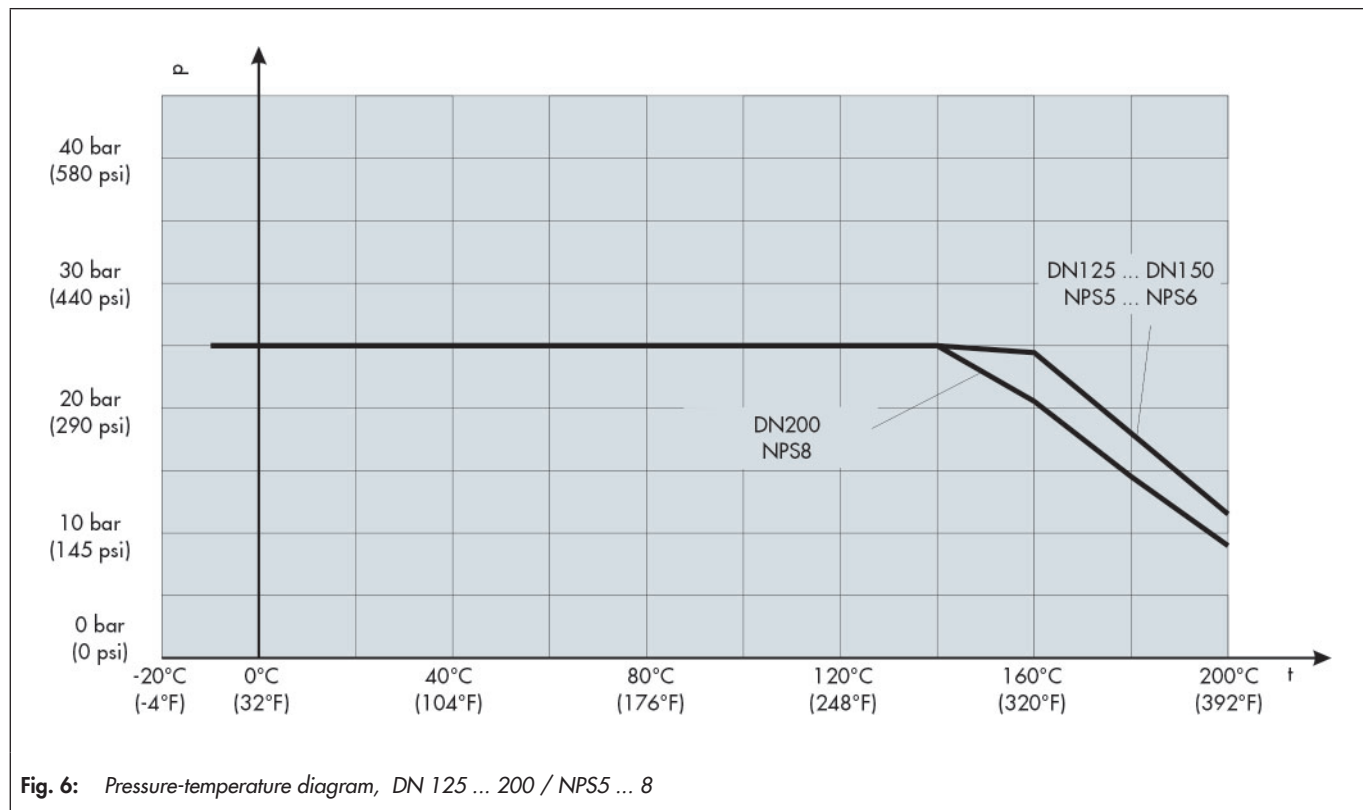
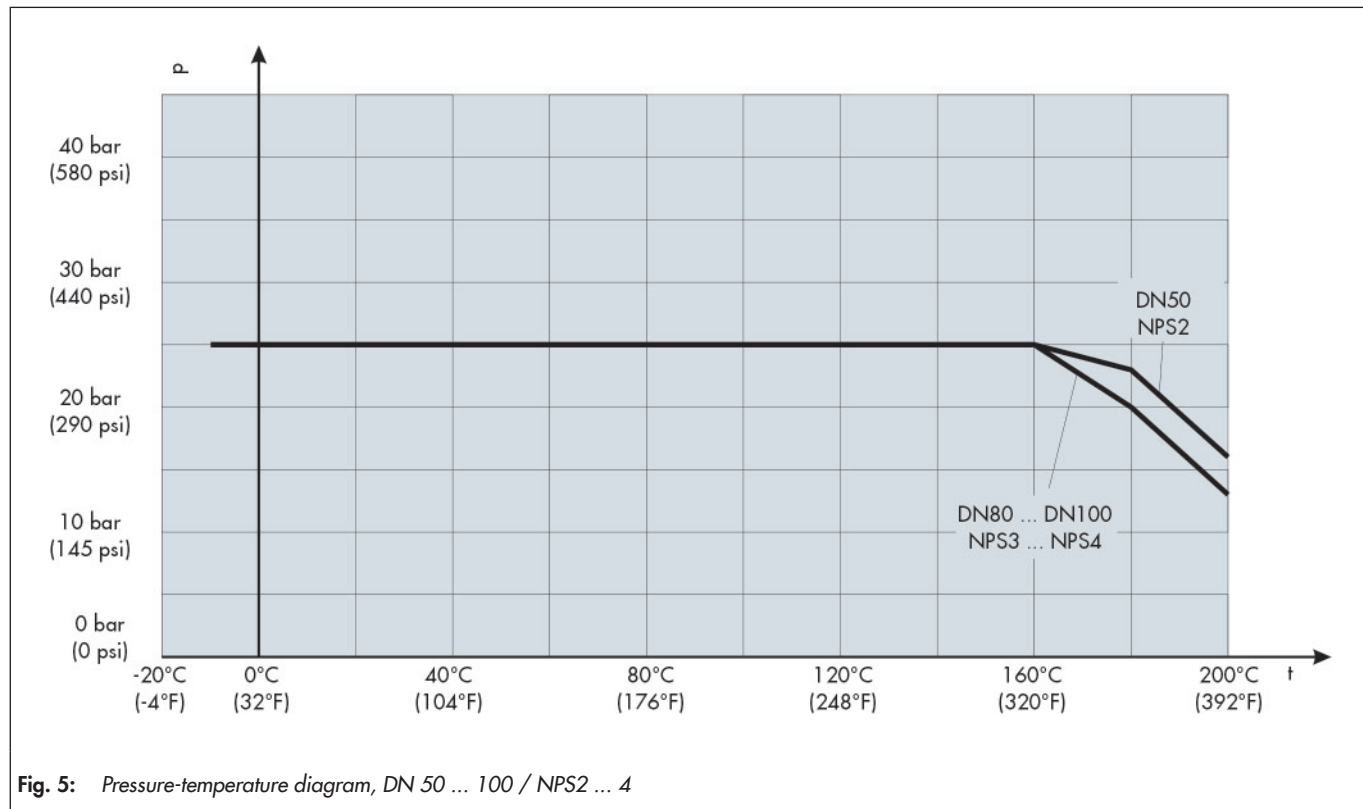
Table 5: Dimensions in mm and weights in kg

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	131.7	159.3	206.5
BL1	230	310	350	430	480	600
BL2	150	220	230	260	320	380
A	48	85	94	123	140	125
DN2	25	50	80	80	100	125
DN3	50	80	100	125	125	150
H1	66	92	110	133	145	160
Actuator SRP	150	220	300	300	450	900
H	H1 + H3 + H4 + H5					
H3	60	80	80	80	80	80
H4	110	110	110	110	110	110
B	80	80	80	80	80	80
DIN ISO connection	F05	F07	F07	F10	F12	F14
Weight in kg	25	40	55	65	105	176

Actuator SRP	150	220	300	450	900
L1	259	304	333	394.5	474
H5	127	145	157	177	220.5
M	55.5	64	69.5	80	99
N	63	72	77	86	101
Weight in kg SRP	6.5	9.8	12.6	18.1	31.6

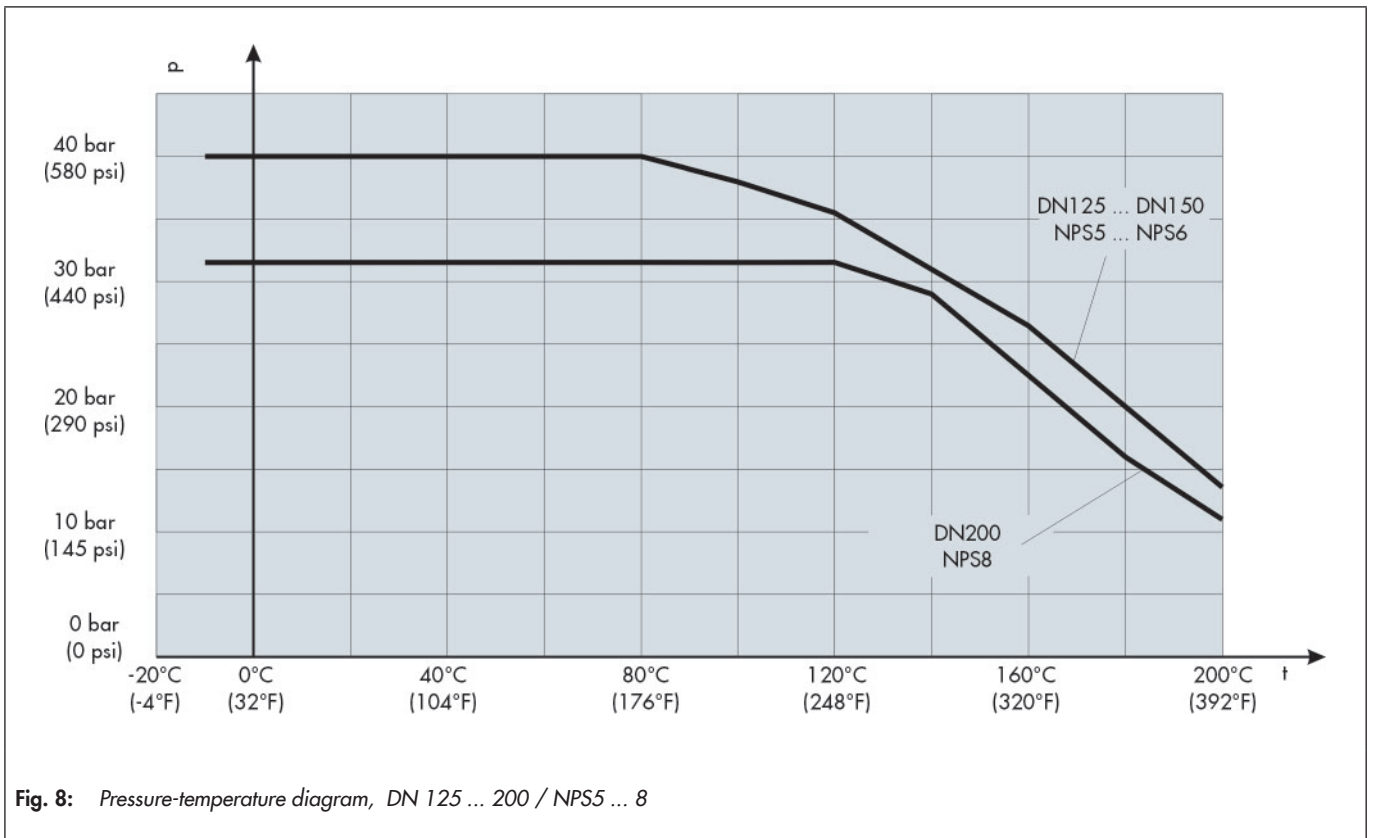
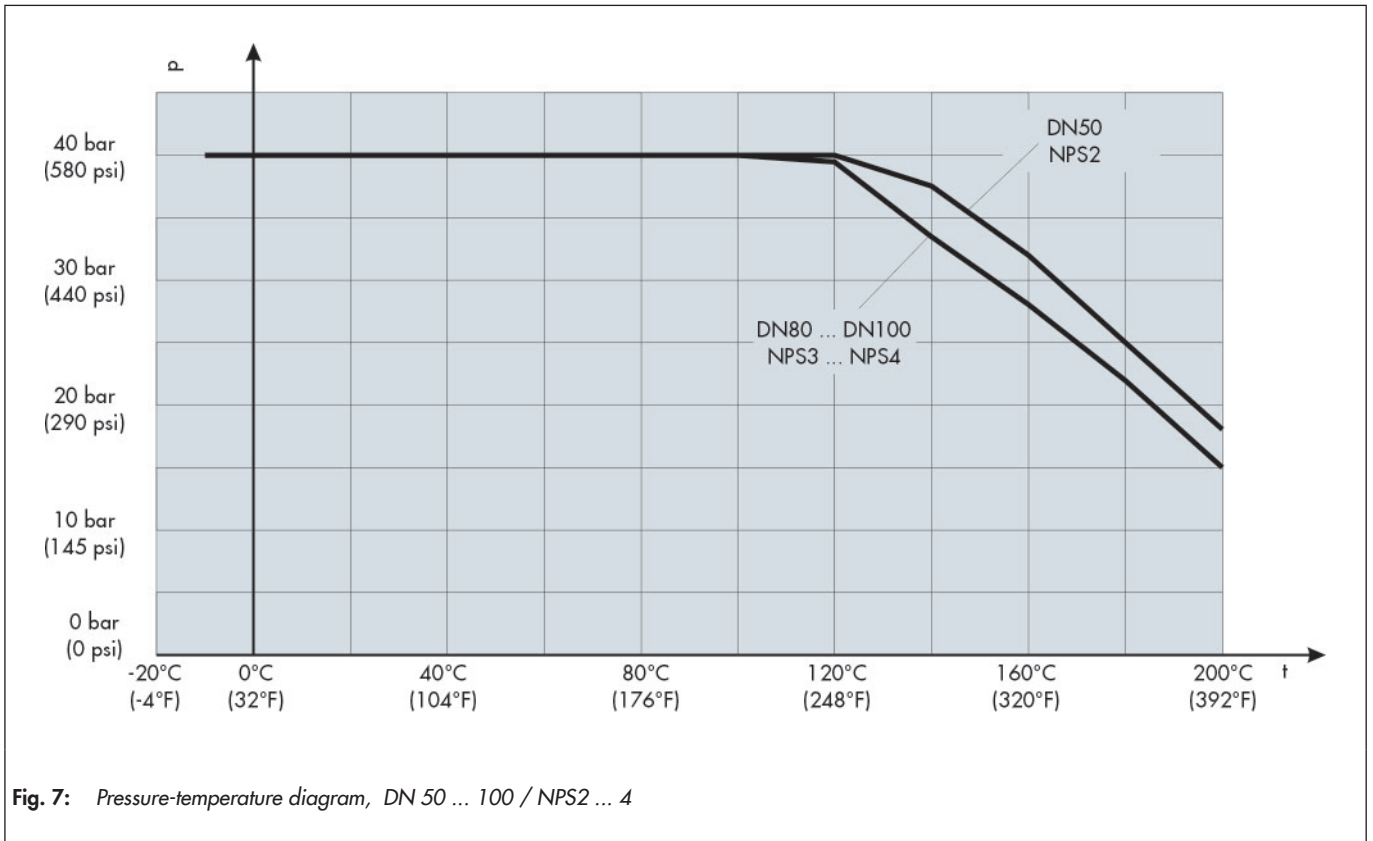
Pressure-temperature diagram, PN 25 / c1150

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



Pressure-temperature diagram, PN 40 / cI300

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



Selection and sizing of the metering valve

1. Determine the nominal diameter
2. Select the valve acc. to table 2, table 3 and the pressure-temperature diagram Fig. 5-8
3. Select the actuator acc. table 5
4. Select additional equipment / accessories

Ordering text

Metering valve in stainless steel: BR 28a
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 28a
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.
