



BR 29a · 3-way Diverting Valve

With large curved radius · DIN and ANSI Version



Applications

Stainless steel valve as diverting in piggable systems

- **Nominal diameters DN 50 to 200 und 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 diverting valve consists of a main body, with three side bodies screwed on in a star shape.

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

- Inside diameter of piping, according to DIN 2430
- Large flexion radius (4D)
- Complex mounted ball
- Spring loaded seat rings
- Control shaft, sealed with a V-ring packing, pre-loaded with 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 diverting valve is a 3-way ball valve, with a unique constructed ball, which enables the best possible pig cleaning.

The diverting valve is equipped with actuators for either two or three operating positions, and performs the following functions for the different types of designs:

- **In One-pigging system:**
 - As diverting between different tank farms
 - With integrated pig stopper as inlet / outlet metering
- **In Two-pigging system:**
 - As diverting between different tank farms

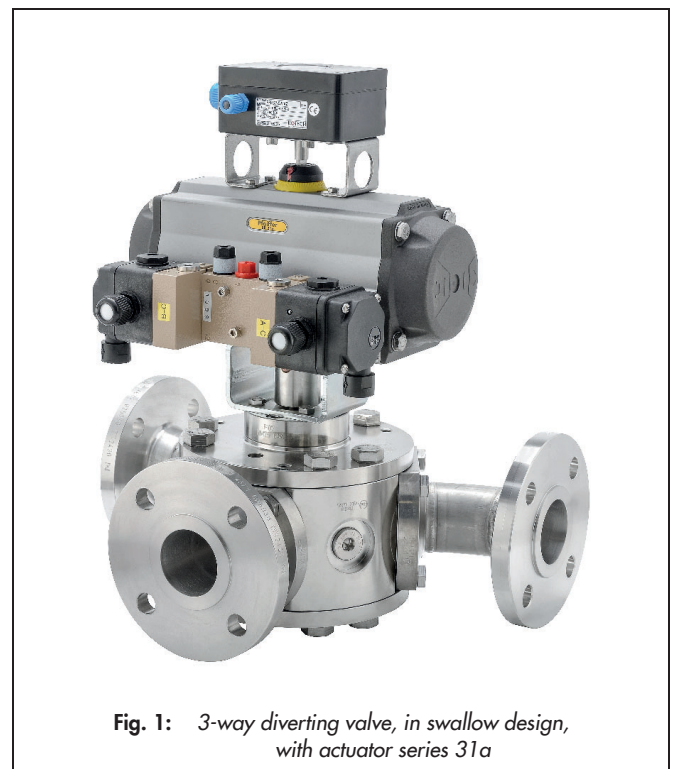


Fig. 1: 3-way diverting valve, in swallow design, with actuator series 31a

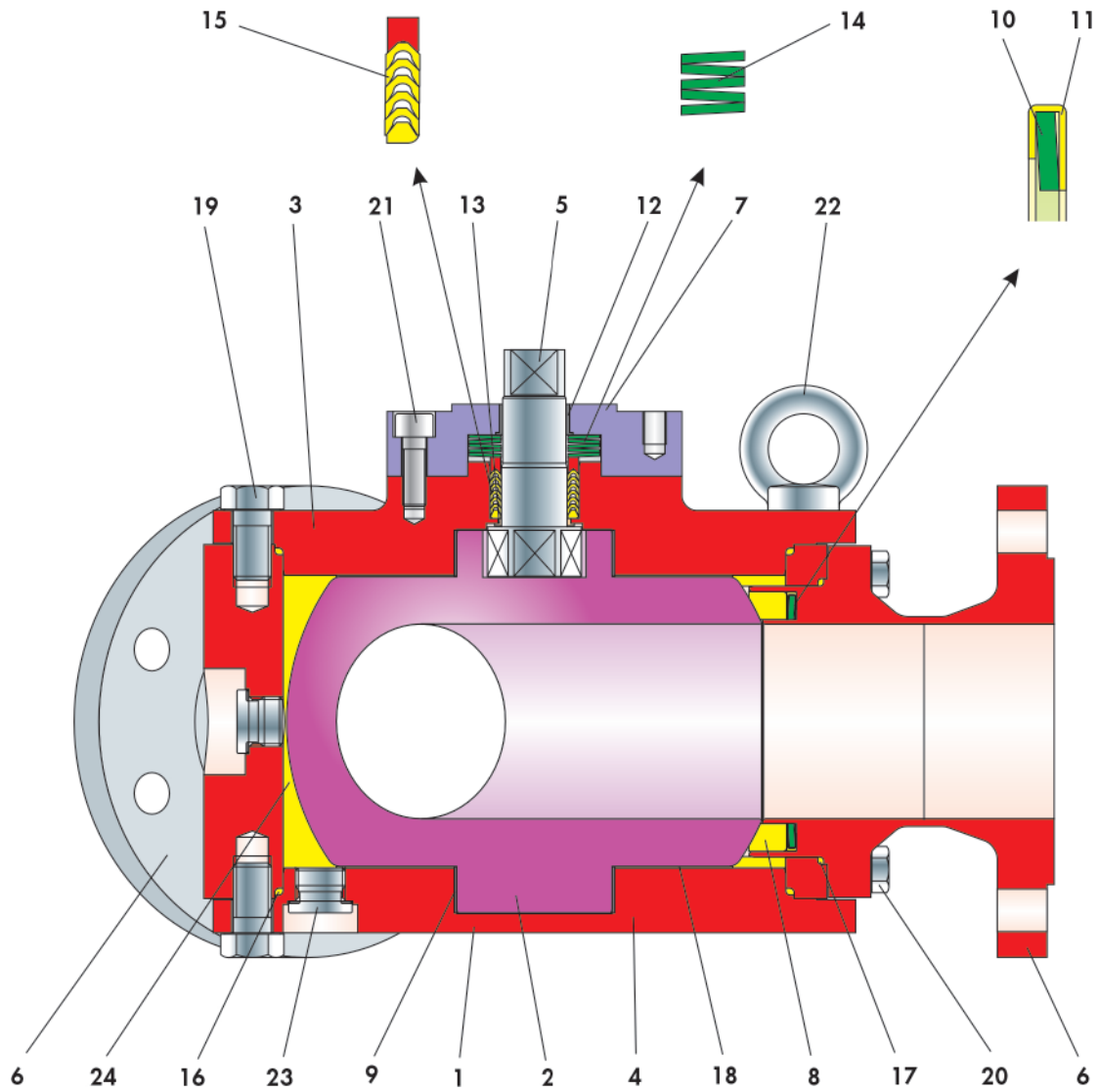


Fig. 2: Sectional drawing of BR 29a diverting valve

Table 1: List of parts

Item	Description
1	Main body
2	Ball
3	Bonnet flange
4	Base flange
5	Control Shaft
6	Side body
7	Stuffing box flange
8	Seat ring
9	Bearing bush
10	Disc spring
11	Disc spring jacket
12	Bearing bush

Item	Description
13	Bearing bush
14	Disc spring set
15	V-ring packing
16	O-ring
17	O-ring
18	Washer
19	Screw
20	Screw
21	Screw
22	Eye bolt
23	Screw plug
24	Cavity bush

Special designs

- Minimised cavity, with PTFE-strips
- Various designs
 - Type "Star"
 - Type "Swallow" to fit as T-piece
 - Type "Horn" to fit in parallel piping
- Heating jacket (body only)
- With pigging signal strips in automatic systems, for mounting magnetic-inductive pigging sensors
- With an incremental controlled coupling as a 3/3-way diverting valve

Additional equipment and add-on pieces

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

- Hand-lever (120°)
- Manual gear box (120°)
- Shaft extension (100 mm standard)
- Interchangeable pneumatic, or electric actuator (120°)
- Limit switch
- Solenoid valves
- Positioner
- Air pressure supply regulator / filter

Further accessories are available on request for customer specifications.

Principle of operation

BR 29a 3-way diverting valve are primarily used to divert media in the pigging pipe system or to connect different tank farms.

The ball (2) with its cylindrical passage slew around the control shaft.

The opening angle of the ball determines the flow direction in the pig piping.

The ball (2) is sealed by exchangeable seat rings (8).

The control shaft is sealed by a PTFE V-ring-packing (15) which is spring supported by disc springs (14) positioned above the packing.

The shaft is equipped with a manual gear box, or optionally with a pneumatic 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 29a.

Versions

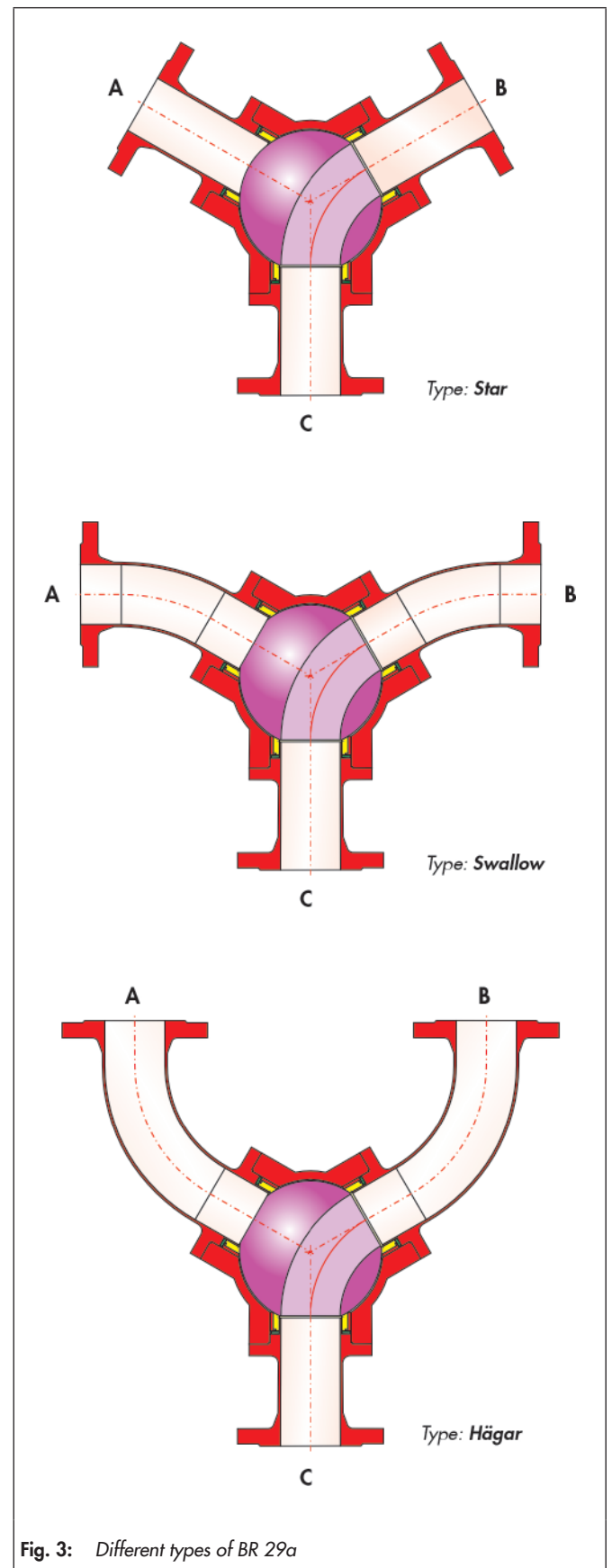


Fig. 3: Different types of BR 29a

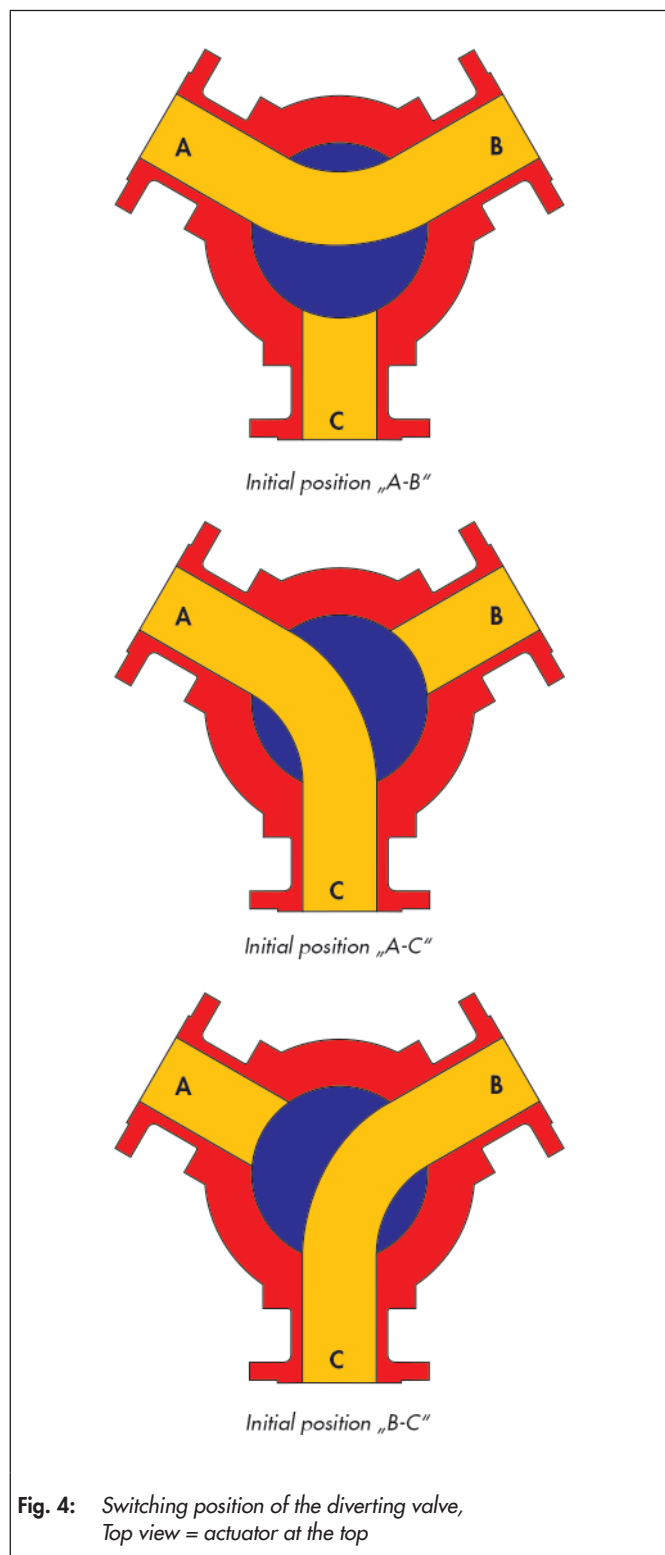
Control- and safety positions

The setup position, and the control functions of the actuator are variable.

Depending on the specific customer requirements, the 3-way diverting valve are constructed and equipped. The design of a double-acting actuator with "STOP" safety position is preferable.

Detailed specifications regarding the control and safety positions can be found in the mounting and operating instructions

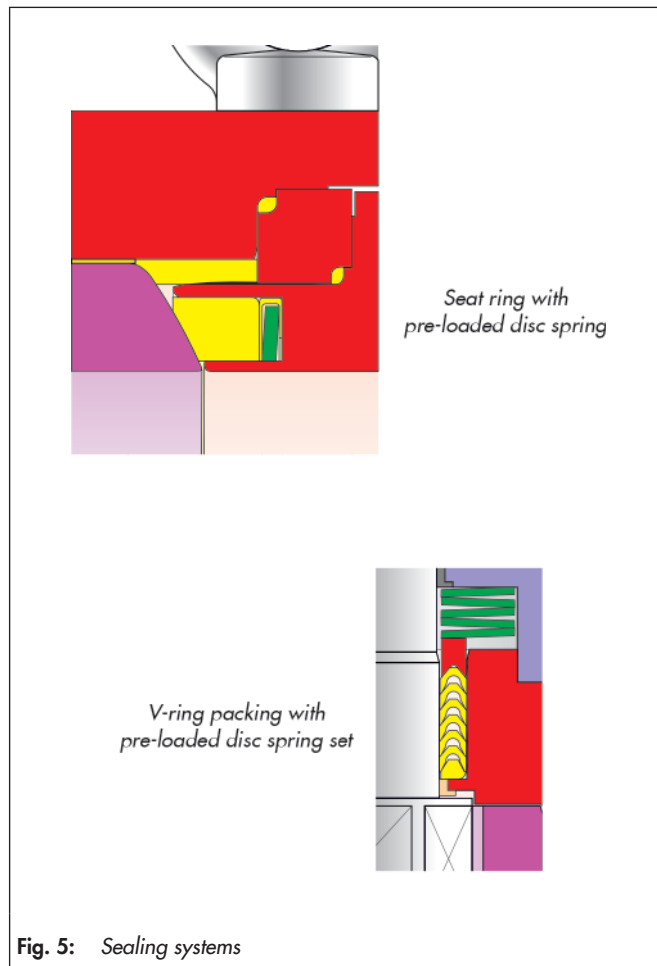
► EB 29a.



Optional material combination

- Shaft and ball on request
- Seat rings in PTFE-compounds
- Sealing 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
- **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 according to DIN EN 12266-1, P12	
Flanges	DIN EN 1092-1	
Packing	PTFE V-ring packing supported by disc springs	

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	1.4571 / 1.4408	A182 F316 / A351 CF8M
Control shaft	1.4462	ASTM A182 Gr. F51
Seat rings	PTFE	
Disc spring	1.4310 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	
Bearing bush	PTFE / 50% VA-filled	
Body sealing	PTFE	

Torque and breakaway torque

Table 4: Torque and breakaway torque

Nominal diameter		adm. Torque max. adm. in Nm	Starting torque max. adm in Nm	Breakaway torque max. break in Nm
DN	NPS			
50	2	490	130	170
80	3	745	170	220
100	4	1200	260	330
125	5	On request		
150	6	2400	430	520
200	8	3000	520	650

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

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

Dimensions and weights

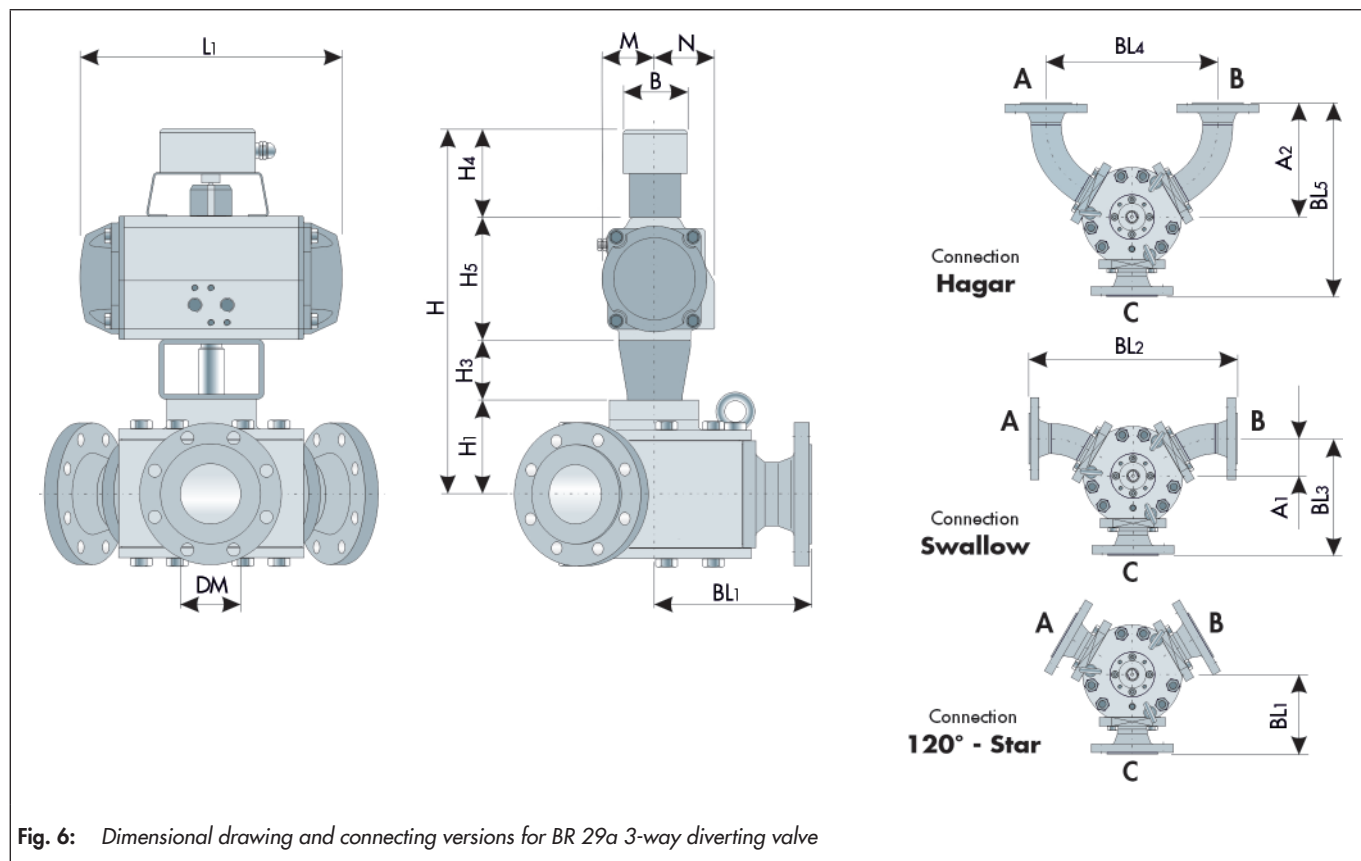


Fig. 6: Dimensional drawing and connecting versions for BR 29a 3-way diverting valve

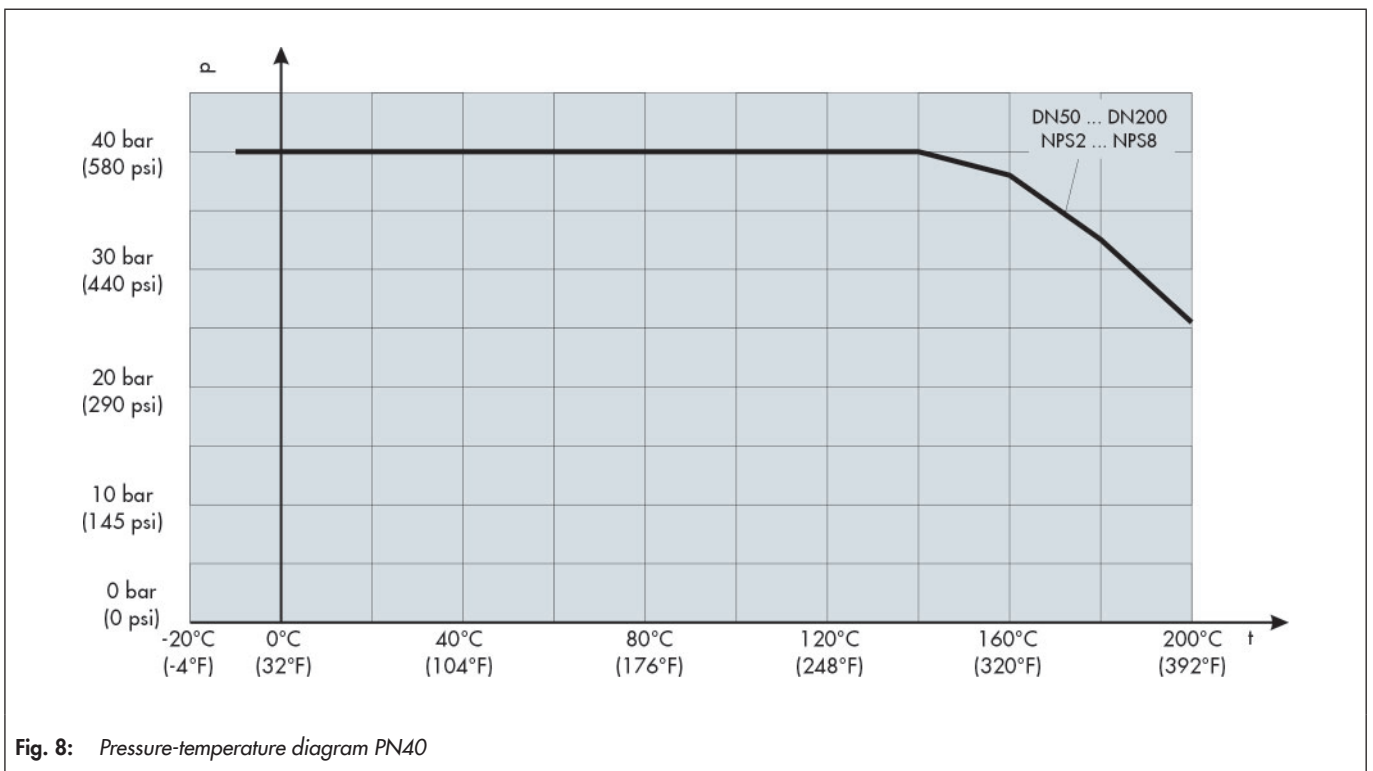
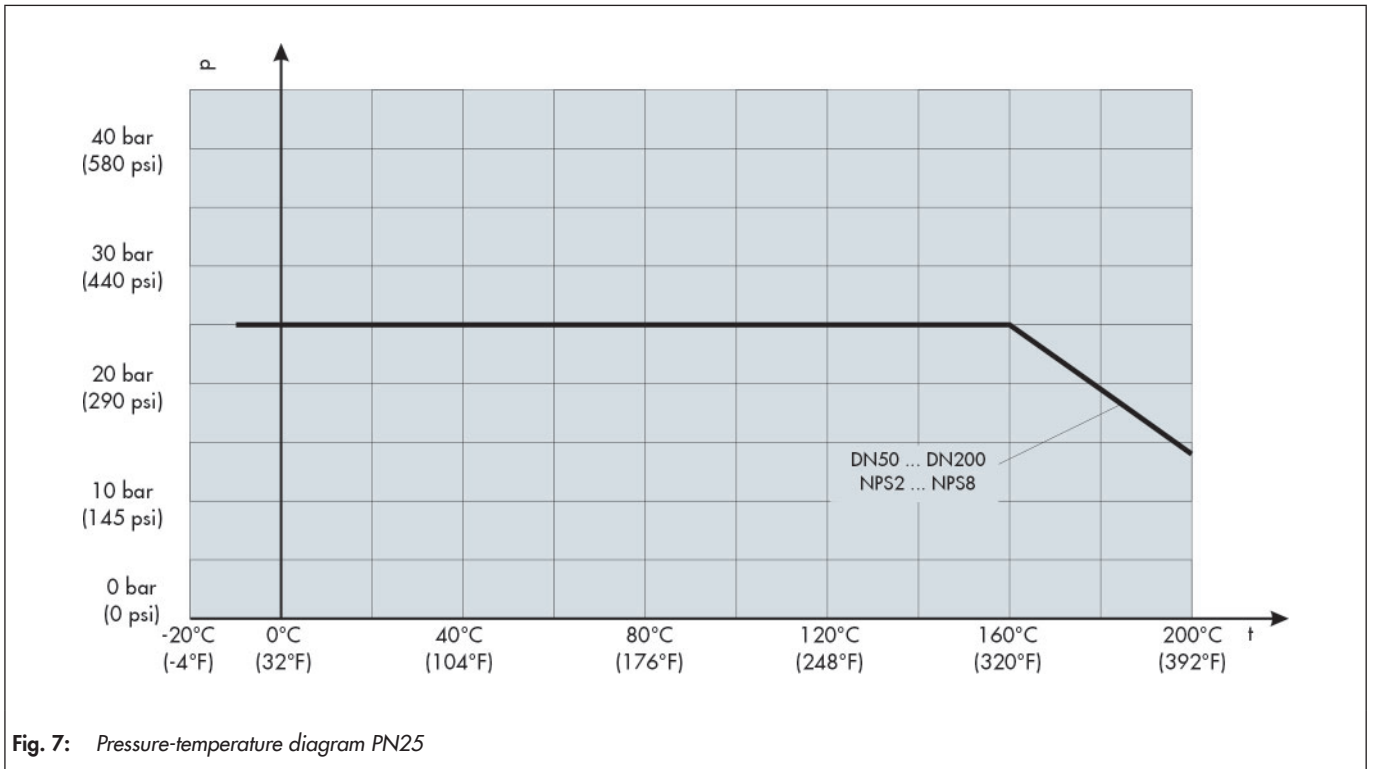
Table 5: Dimensions in mm and weights in kg

Nominal size	DN 50	DN 80	DN 100	DN 150	DN 200
	NPS2	NPS3	NPS4	NPS6	NPS8
DM	54.5	82.5	107.1	159.3	206.5
BL1	160	220	260	380	490
BL2	420	630	750	1100	1030
BL3	234	332	400	590	615
A1	74	112	140	210	205
BL4	330	520	-	-	-
BL5	380	570	-	-	-
A2	220	350	-	-	-
H1	101	128	138	205	235
Actuator DAP (120°)	150	300	600	1200	3000
H	H1 + H3 + H4 + H5				
H3	80	80	90	120	120
H4	110	110	110	110	110
B	80	80	80	80	80
DIN ISO Connection	F07	F10	F12	F14	F16
Weight in kg	40	95	165	290	540

Actuator DAP (120°)	150	300	600	1200	3000
L1	292	377	478	594	-
H5	127	157	196	245	330
M	55.5	69.5	88	110	165
N	63	77	93	111.5	165
Weight in kg	6.31	12.1	23,8	43.5	-

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.



Selection and sizing of the diverting 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

3-way Diverting Valve Type: BR 29a
Nominal size: DN/NPS
Nominal pressure: PN/Class
optional special version

Actuator (brand name):
Supply pressure: bar
Fail-safe position:

Limit switch (brand name):
Solenoid valve (brand name):
Positioner (brand name):

Others:

Associated documents

Associated Mounting and Operating Instructions ▶ EB 29a
Associated Safety Manual ▶ SH 29a
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.
