

5/4-way diverting valve with large curved radius Series 29b

Application:

Stainless steel - Pigging valve systems: as diverting, and with pig stopper for inlet / outlet metering system.

- Nominal diameters DN 50 to DN 150
- Nominal pressure PN 25, PN 40
- Temperature up to 200°C.

The valve consists of a main body, with five screwed-on, side bodies.

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

- Inside diameter of piping according to DIN 2430
- Large curved radius (4D)
- Complex mounted ball
- Spring loaded seating rings
- Control shaft, sealed with a V-ring packing, pre-loaded with spring washers,
- blow-out proof control shaft,
- anti-static version with conductive shaft bearing,
- flange with raised face form B1 or form B2 acc. DIN EN 1092-1, clearance free with special flanges: male/female face specially for pigging equipment, or specially designed for customer requirements,
- Connections for actuators acc. DIN ISO 5211.

Versions:

The valve is a 5/4-way ball valve, with a unique constructed ball for the best possible pig cleaning.

The valve can be equipped with an actuator, and incremental controlled coupling for positioning.

Even in different positions, the lower connector is still linked to each one of the connectors at the top.

The valve performs the following functions for the different types of designs:

- in 1-pigging system: - as diverting,
 - with intergrated pig stopper
 as inlet-/outlet metering
- in 2-pigging system: - as diverting

Special versions:

- minimised cavity with PTFE-strips,
- different connecting designs,
- with intergrated pig stopper.

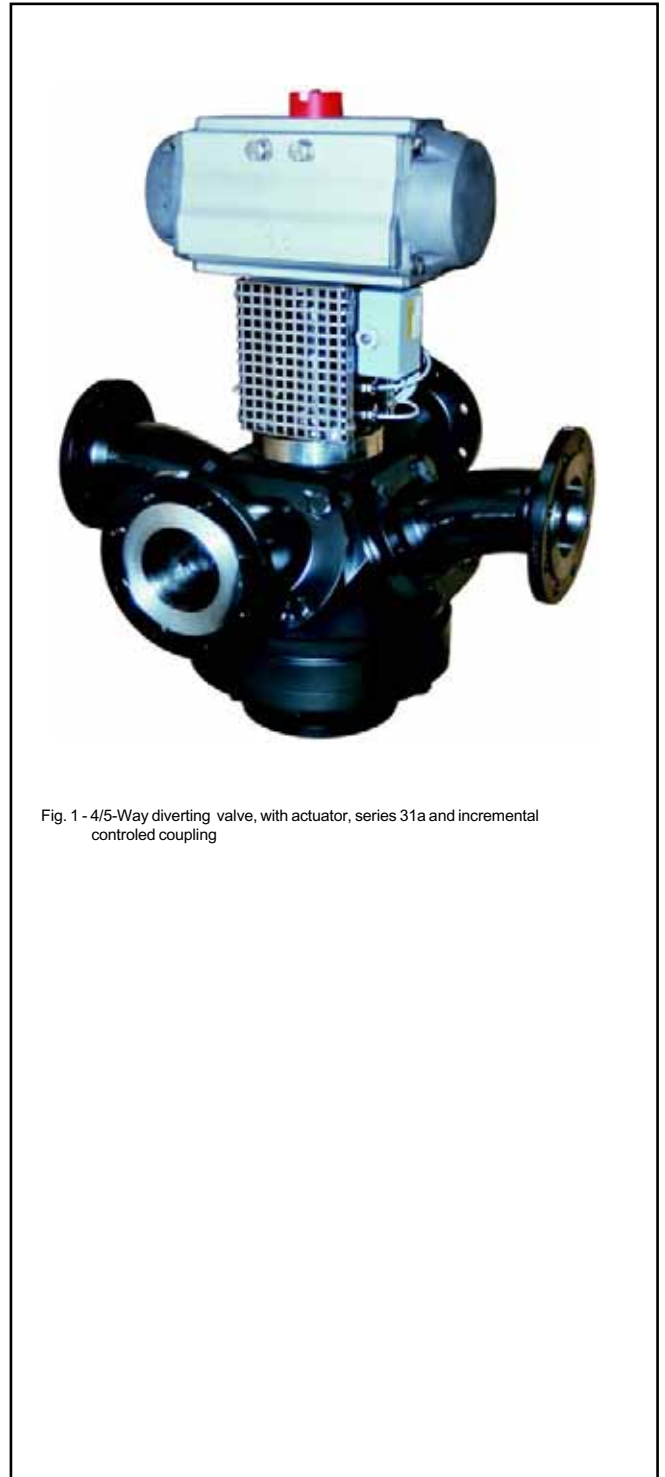


Fig. 1 - 4/5-Way diverting valve, with actuator, series 31a and incremental controlled coupling

4/5-way diverting valve Series 29b

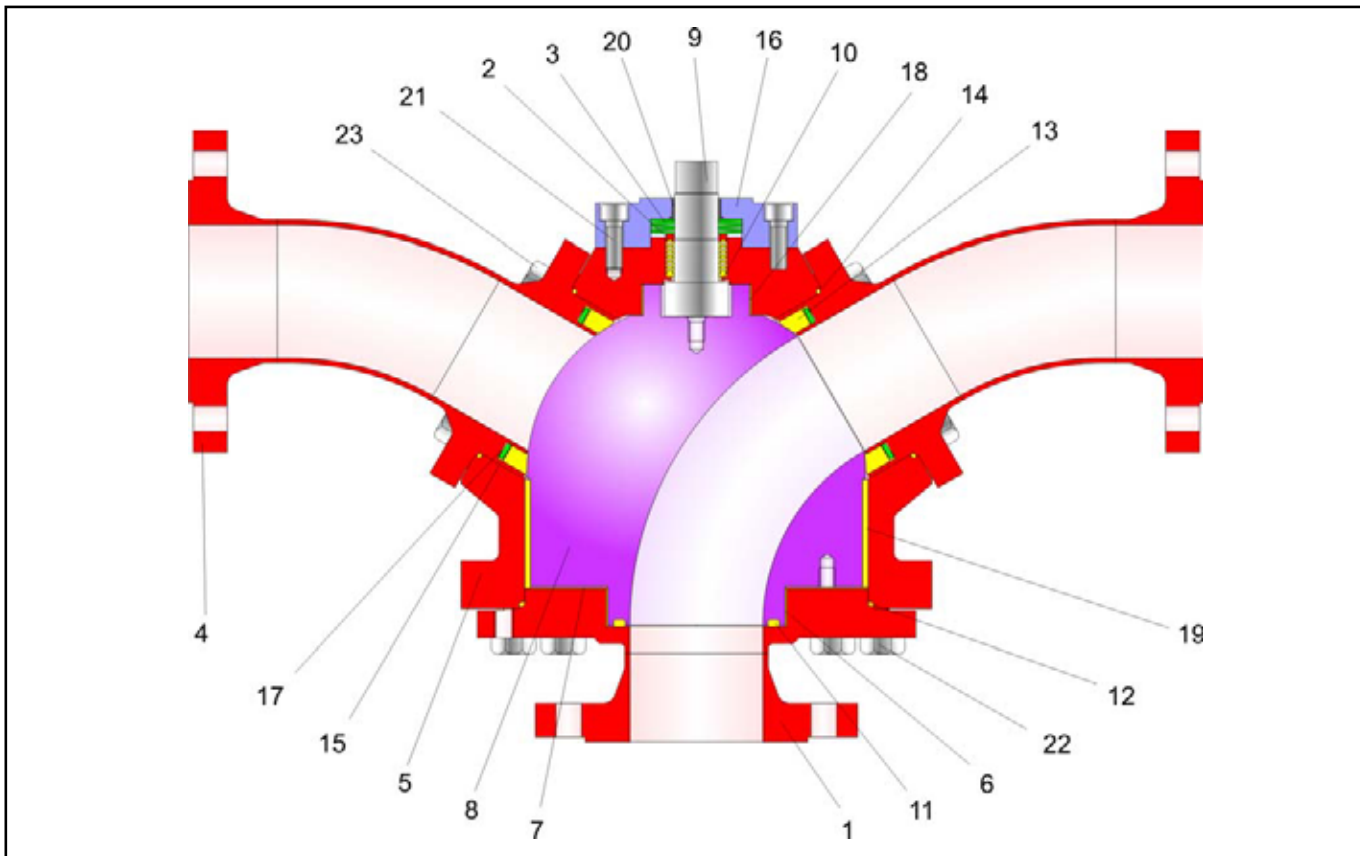


Fig 3 - Sectional view of the 5/4-way diverting valve, series 29b

Pos.	Description	Pos.	Description
1	Base flange	13	Sealing ring
2	V-ring packing	14	O-ring
3	Spring washer set	15	Spring washer
4	Side body	16	Stuffing box flange
5	Main body	17	Lining for spring washer
6	Bearing disc	18	Bearing bushing
7	Disc	19	Cavity sleeve
8	Ball	20	Bearing sleeve
9	Control shaft	21	Socket head screw
10	Bearing sleeve	22	Hexagon screw
11	O-ring	23	Hexagon screw
12	O-ring		

Table 1 - Parts list

Additional equipment and mounting parts:

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

- Hand-lever (4 x 90°)
- Control shaft extension (100mm),
- Interchangeable pneumatic, or electric actuator with incremental controlled coupling,
- Limit switch,
- Solenoid valves,
- Air pressure supply regulator / filter,

further accessories are available acc. to customer specifications.

Principle of operation:

The principle function of the 5/4-way diverting pigging valve, series 29b is to divert the medium in different directions in the pig piping system.

The ball (8) with its cylindrical passage, rotates around the middle axis. The opening angle of the ball determines the flow direction in the pig piping.

The control shaft is externally equipped with a hand-lever, or a pneumatic actuator.

The sealing of the ball (8) is with exchangeable seat rings (13). The control shaft is sealed with a maintenance free PTFE V-ring packing (2), which is pre-loaded with spring washers (3) located above the packing.



Control- and safety positions:

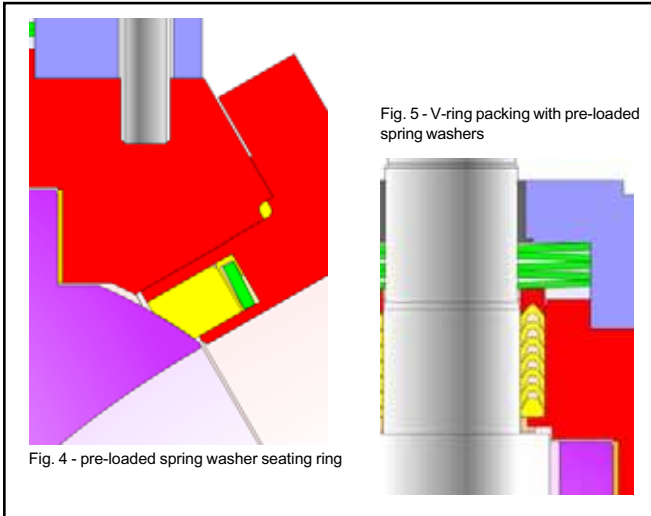
The setup position, and the control functions of the actuator are variable. The assembly and fitting of the 5/4-way pigging diverting valves can be according to the customer special requirements.

Detailed specifications regarding the control and safety positions can be found in the instructions EB 29b_EN.



Note: Before using the ball valve in hazardous areas, check whether this is possible according to ATEX 94/9/EG, refer to the operating instructions <BA 29a>!

Advantages of the pre-loaded spring washer sealing system:



- maintenance free,
- 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,
- **Conclusion:**
higher efficiency level, and extremely economical!

General technical data:

Nominal diameter	DN 50 to DN 150
Nominal pressure	PN 25 / 40
Temperature range	up to 200°C
Ball sealing	TFM (PTFE)
Leakage rate	Leakage rate A acc. DIN EN 12266-1, test P12 (Leakage rate 1 BO acc. DIN 3230 part 3)
Flange	DIN EN 1092-1, form variable
Stuffing box packing	PTFE- V-ring packing with pre-loaded spring washers

Table 2 - technical data

Material:

Main body	1.4571 / 1.4408
Side body	1.4571 / 1.4408
Ball	1.4571 / 1.4408
Control shaft	1.4462
Sealing rings	TFM (PTFE)
Spring washers	1.4310 lined with PTFE-white
Stuffing box packing	PTFE - V-ring-packing with spring washers made from 1.8159
lower bearing bushing	PTFE with 25% glass
top bearing bushing	PTFE with 25% carbon
Ball - bearing seat	TFM / 50% VA-filled
Body gasket	PTFE

Table 3 - Material

Optional material combination:

- Control shaft and ball on request,
- sealing rings in PTFE-compounds,
- metal sealing systems,
- sealing in graphite.

Pressure - Temperature - diagram:

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

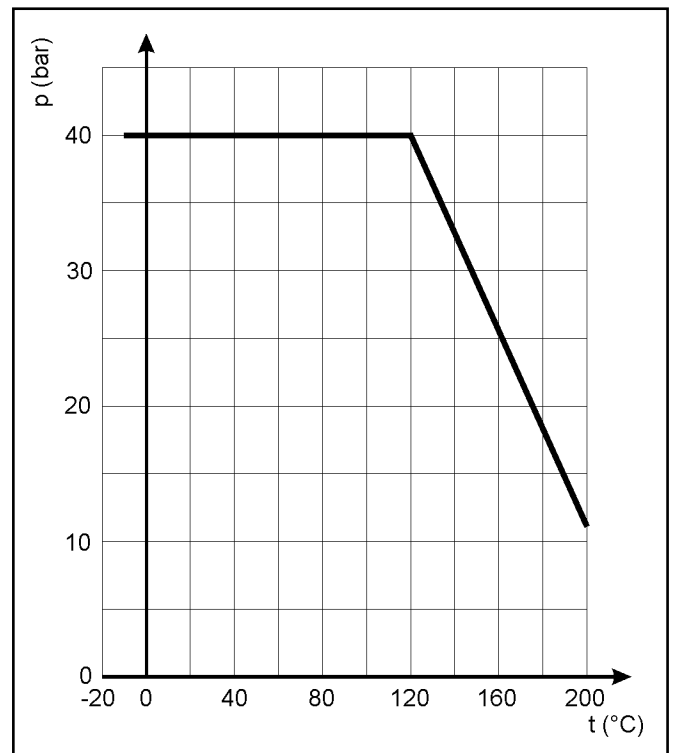


Fig. 6 - Pressure-Temperature-diagram

Torque and breakaway torque:

DN	adm. Torque max adm. in Nm	Starting torque max. adm. in Nm	Breakaway torque max. break in Nm
50	490	130	170
80	745	170	220
100	1200	260	330
150	2400	430	520

Table 4 - max. permissible torque required, required torque, and breakaway torque.

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:

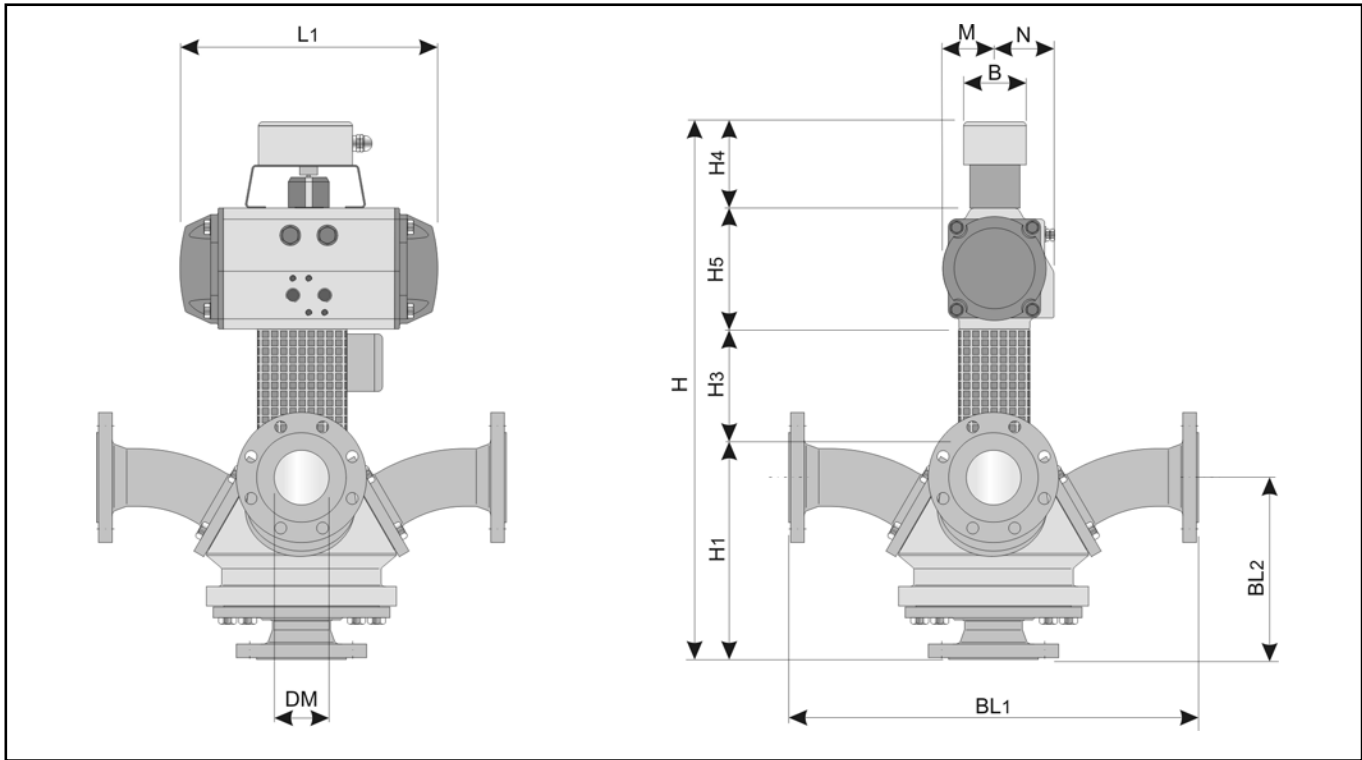


Fig. 6 - Dimensional drawing and connecting variations of diverting valve, series 29a

DN	50	80	100	150
DM	54.5	82.5	107.1	159.3
BL1	420	630	750	1100
BL2	204	280	330	490
H1	260	334	390	585
Actuator DAP	150	300	600	1200
H	H1 + H3 + H4 + H5			
H3	200	200	200	200
H4	110	110	110	110
B	80	80	80	80
DIN/ISO connection	F07	F10	F14	F16
Weight in kg	65	150	260	450

Actuator DAP	150	300	600	1200
L1	268.5	345	437.5	543
H5	127	157	196	245
M	56	69.5	88	110
N	67	82	99	112
Weight	5.4	10.2	19.8	35.5

Table 5 - Dimensions in mm and weights in kg, Actuator series 31a for 5 bar air supply pressure

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
3. Select the actuator acc. to table 4.
4. Select additional equipment / accessories

Ordering text:

5/4-way diverting valve, type: 29b,
 DN / PN , poss. special version
 Actuator: (manufacturer)
 Air pressure: bar,
 Limit switch: (manufacturer)
 Solenoid valve: (manufacturer)
 Others:

For your special requirements, please contact our technical sales department.

Pfeiffer Chemie-Armaturenbau GmbH

Hooghe Weg 41 • 47906 Kempen

Telefon: 02152 / 2005-0 • Telefax: 02152 / 1580

E-Mail: vertrieb@pfeiffer-armaturen.com • Internet: www.pfeiffer-armaturen.com

Specifications and versions are subject to change without notice