

# 3-way diverting valve with large curved radius Series 29a

## Application:

Stainless steel - pigging valve system: As diverting, and with pig stopper for Inlet / Outlet metering system.

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

The valve consists of a main body, with three screwd-on side bodies, in a star formation.

The 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 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. to DIN ISO 5211,

## Versions:

The valve is a 3-way ball valve, with a unique constructed ball, which enables the best possible pig cleaning.

The valve is equipped with actuators for either two or three operating positions, and 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,
- form „Swallow“ to fit as T-piece,
- form „Horn“ to fit in parallel piping.



Fig. 1 -3-way diverting valve, in star formed version with actuator, series 31a

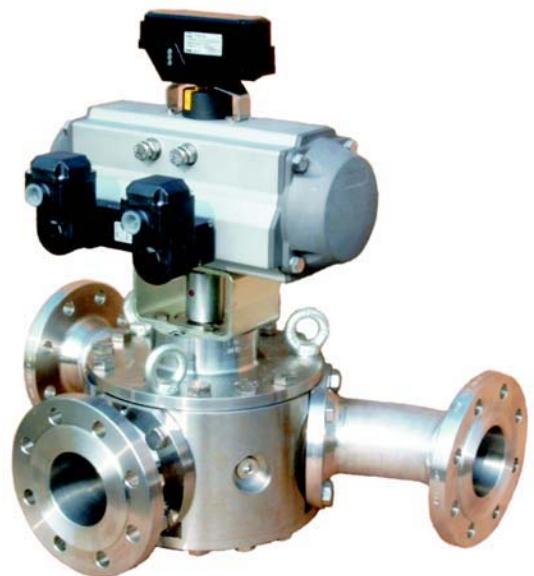


Fig. 2 -3-way diverting valve, in swallow design, with actuator series 31a

# Diverting valve Series 29a

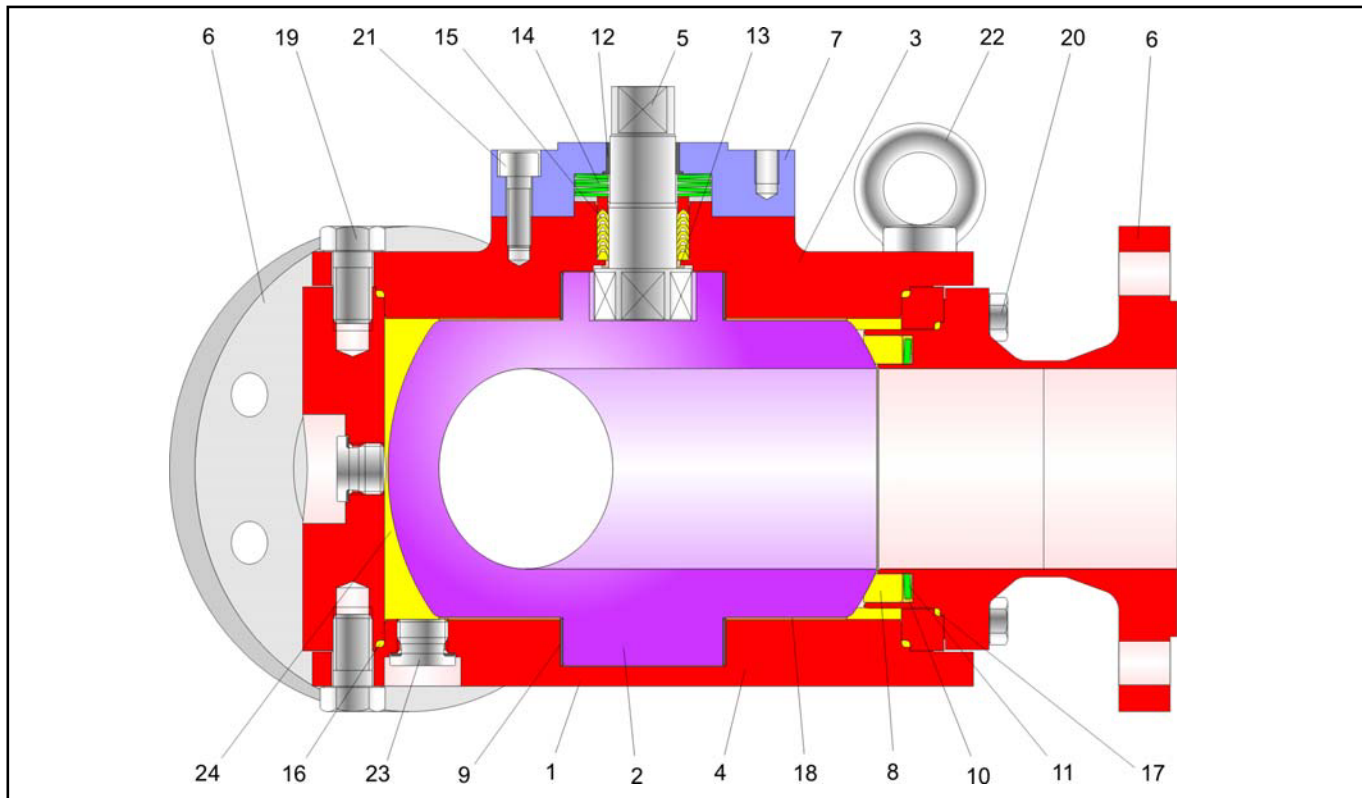


Fig 3 - Sectional drawing of diverting valve, series 29a

Pos.	Description	Pos.	Description
1	Main body	13	Bearing bushing
2	Ball	14	Set of spring washers
3	Bonnet flange	15	V-ring packing
4	Base flange	16	O-ring
5	Control shaft	17	O-ring
6	Body	18	Plate
7	Stuffing box	19	Screws
8	Sealing ring	20	Hex. screws
9	Bearing bush	21	Socket screw
10	lining for spring washers	22	Ring screw
11	Spring washer	23	Plug screw
12	Bearing sleeve	24	Half bearing shell

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 (120°)
- Manual gear box ( 120°)
- Control shaft extension (100mm),
- Interchangeable pneumatic, or electric actuator (120°),
- Limit switch,
- Solenoid valves,
- Air pressure supply regulator / filter,

further accessories are available according to customer specifications.

## Principle of operation:

The principle function of the 3-way diverting valve, series 29a is to divert the medium in different directions in the pig piping system.

The ball ( 2 ) 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 manual gear box, or optionally with a pneumatic actuator. The sealing of the ball ( 2 ) is with exchangeable seat rings ( 8 ). The control shaft is sealed with a maintenance free PTFE V-ring packing ( 15 ) which is pre-loaded with spring washers ( 14 ) located above the packing.



## Control- and safety positions:

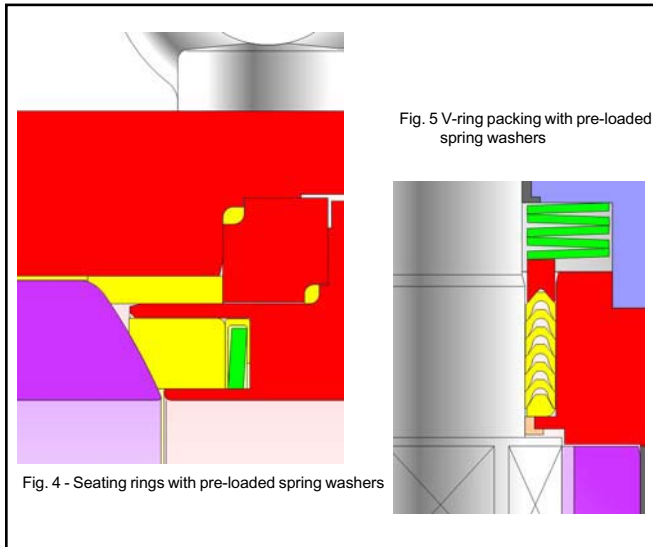
The setup position, and the control functions of the actuator are variable. The assembly and fitting of the 3-way diverting valve can be according to the special requirements of the customer.

Detailed specifications regarding the control and safety positions can be found in the instructions EB 29a\_EN



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

## Advantages of the pre-loaded spring washer 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
- **Conclusion:**  
*higher level of efficiency, 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	Leak rate A acc. DIN EN 12266-1, test P12 (Leak rate 1 BO acc. DIN 3230 part 3)
Flanges	DIN EN 1092-1, form variable
Stuffing box	PTFE- V-ring packing with pre-loaded spring washers

Table 2 - technical data

## Material:

Main body	1.4571 / 1.4408
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
V-ring packing	PTFE - V-ring-packing with spring washers made of 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 - Materials

## Optional material combination:

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

## Pressure - Temperature - diagram:

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

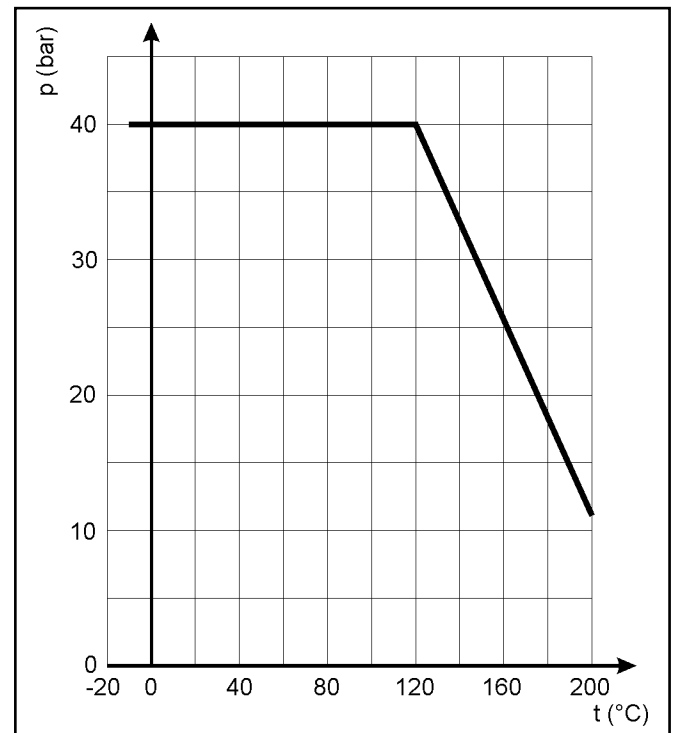


Fig. 6 - Pressure-Temperature-diagram

## 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 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:

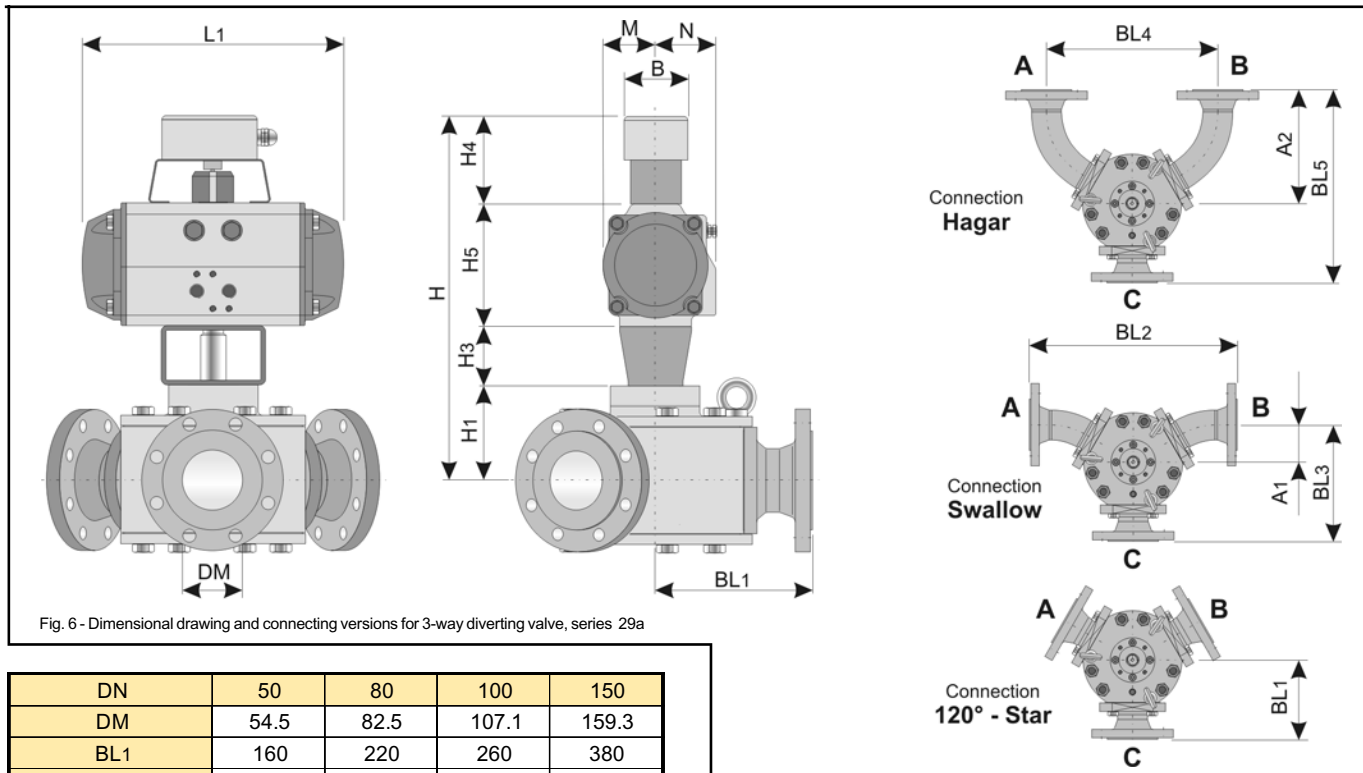


Fig. 6 - Dimensional drawing and connecting versions for 3-way diverting valve, series 29a

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

Actuator DAP (120°)	150	300	600	1200
L1	306	395	500	618
H5	127	157	196	245
M	56	69.5	88	110
N	67	82	99	112
Weight	7	13.5	25.5	48

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

### Selection and sizing of the diverting 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. table 4.
4. Select additional equipment / accessories

### Ordering text:

3-way diverting pigging valve, type 29a,  
 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](mailto:vertrieb@pfeiffer-armaturen.com) • Internet: [www.pfeiffer-armaturen.com](http://www.pfeiffer-armaturen.com)

Specifications and versions are subject to change without notice