

PTFE - lined Drain Ball Valve Series 21a

Application:

Tight-closing PTFE-lined drain ball valve for corrosive media, especially with high process demand in chemical plants:

- nominal diameters from DN 50 to DN 150,
- nominal pressure PN 10,
- temperatures -10°C up to 200°C.

The drain ball valves consist of a PTFE ball valve with a pneumatic quarter-turn actuator or a hand-lever. The valves, which are of modular construction, have the following features:

- Body of EN-JS 1049 with PTFE liner processed by isostatic pressing.
- Exchangeable PTFE seat rings.
- PTFE ball and integral stem of stainless steel with PTFE coating processed by isostatic pressing.
- Stem sealing with a cup spring life-loaded PTFE packing.
- For on-off operation with a particularly small leakage rate („bubble-tight version“).
- Anti blow out valve shaft.
- Connections according to DIN ISO 5211.

Versions:

PTFE drain ball valve Series 21a in the following designs:

- PTFE drain ball valve with hand-lever.
- PTFE drain ball valve with gear-operated actuator.
- PTFE drain ball valve with pneumatic quarter-turn actuator,
(for details see respective data sheet).

Special designs:

- Liner with special PTFE compounds.
- Lining PTFE - conductive.
- Heating.
- Stem sealing with two PTFE V-ring packings and test connection.
- Flange groove according to DIN 2512.
- Various materials for ball and sealing rings.
- Nominal pressure PN 16 on request.



Fig. 1 - Drain Ball Valve Series 21a

Drain Ball Valve Series 21a

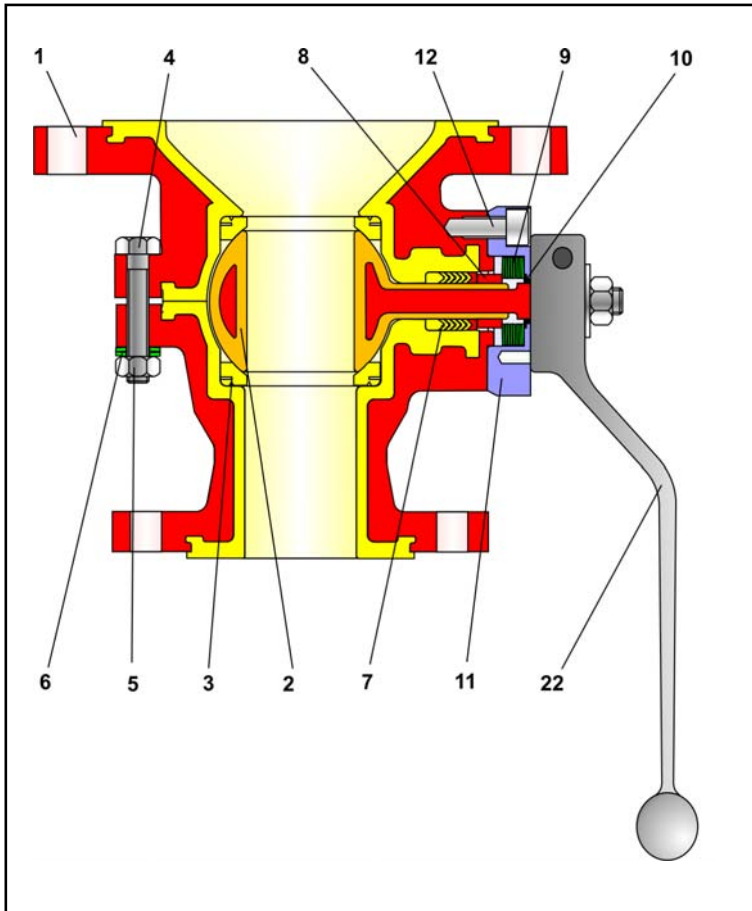


Fig. 2 - PTFE-Drain Ball Valve Series 21a

Pos.	Description	Pos.	Description
1	Body with lining	8	Thrust washer
2	Ball with coating	9	Set of spring washers
3	Set of seatrings	10	Bearing bushing
4	Screw	11	Stuffing box
5	Nut	12	Screw
6	Spring washer	13	Hand-lever
7	V-ring packing		

Table 1 - Parts list

Additional equipment and add-on pieces:

For the control valves, the following accessories are available either individually or in combination:

- Pneumatic and electric actuators.
- Positioner.
- Limit switch.
- Solenoid valves.
- Air sets.

Further accessories are available on request for customer specifications

Principle of operation:

Please note, normally the bottom drain valves of series 21a is assembled with the bigger sized flange at the bottom flange of the vessel.

The ball (2) with its cylindrical passage rotates around the middle axis.
The opening angle of the ball determines the flow through the free area between the body (1) and passage.
When the ball valve is opened, the entire profile is available.

The stem is externally equipped with a hand-lever (13).
Optionally, a pneumatic quarter-turn actuator or a gear-operated actuator can be fitted.

The sealing of the ball (2) inside the PTFE-lined body (1) is provided by exchangeable seatrings (3).

The ball stem is sealed by a maintenance-free live-loaded PTFE - V-ring packing (7).
The live-loading is carried out by cup springs (9) positioned above the packing.



Note:

Please, pay attention to the usability acc. to the ATEX 94/9/EG in correspondance to the maintenance sheet before using the ball valve in hazardous area!



Failure position:

In dependance of mounting position of the actuator there are two failure positions, wich take place by pressure relieving or on failure of air supply:

- **Ball valve with actuator “ on failure closing “**
on failure of air supply the ball valve closes.
The opening of the ball valve accures on rising of air supply against the force of the springs.
- **Ball valve with actuator “ on failure opening “**
on failure of air supply the ball valve opens.
The closing of the ball valve accures on rising of air supply against the force of the springs.

Advantages of the cup spring live-loaded sealing system:

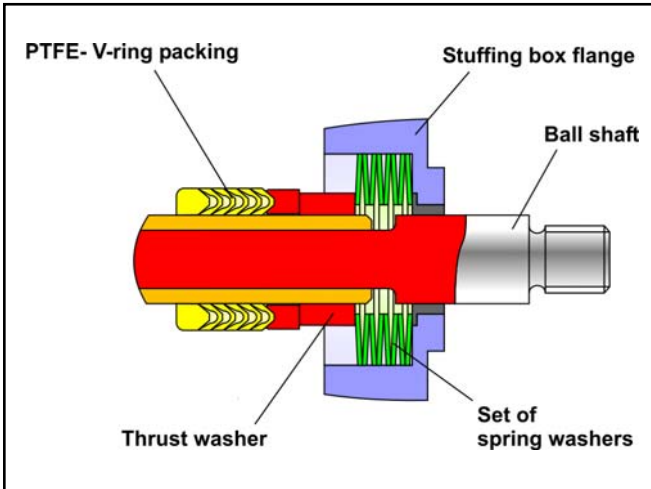


Fig. 3 - Cup spring live-loaded packing

- maintenance-free and self-adjustable
- highest level of tightness, even under extreme pressure and temperature changes,
- longer service life
- **all in all: extremely economic!**

General Technical Data:

Nominal size	Inlet	DN 65	DN 100	DN 100	DN 150	DN 150
	Outlet	DN 50	DN 50	DN 80	DN 80	DN 100
Nominal pressure	PN 10 / 16					
Temperature range	see Pressure-Temperature diagram					
Ball seal	Pure PTFE					
Leakage rate	Leakage rate A acc. to DIN EN 12266-1, P12 (Leakage rate 1 BO acc. to DIN 3230 Part 3)					
Flanges / Connections	acc. to DIN EN 1092-2, Form B					
Packing	cup spring live-loaded PTFE - V-ring packing					

Table 2 – Technical data

Materials:

Body	EN-JS 1049 (GGG 40.3) with PTFE-lining
Ball	1.4313 / 1.4317 with PTFE-casing
Sealing rings	Pure PTFE
Packing	PTFE - V-ring packing
Bearing bushing	PTFE with 25% carbon
Coating	2-Components Pur-Varnish Colour: black, RAL 9005

Table 3 - Materials

Pressure - Temperature Diagram:

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

For process data outside the limits of application, please consult us.

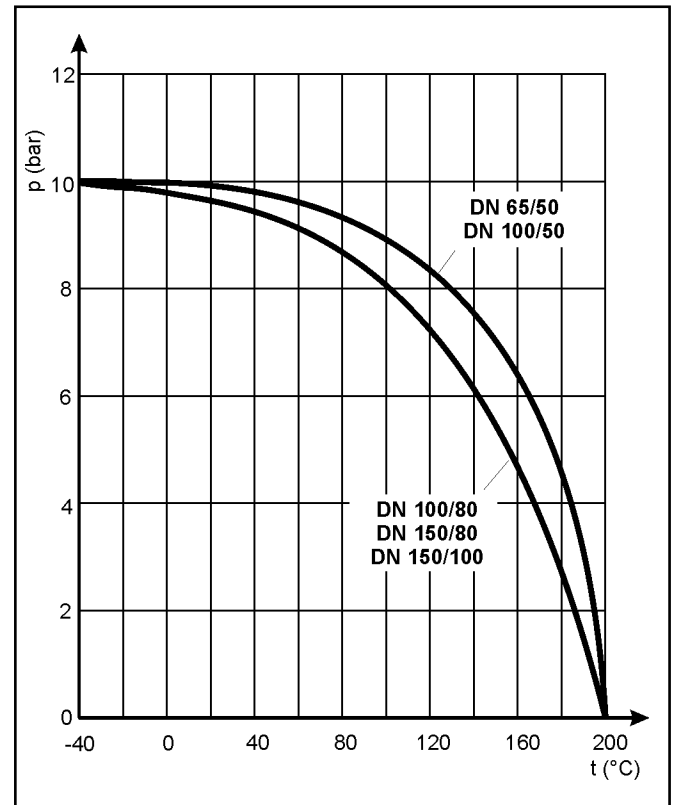


Fig. 4 - Pressure-Temperature Diagram

Operating and breakaway torques:

DN	Differential pressure Δp in bar	perm. operating torque M_{Dmax} in Nm	required operating torque M_d in Nm	breakaway torque M_{di} in Nm					
				0	2	4	6	8	10
65/50	140	15	23	23	23	23	23	23	28
100/50				23	23	23	23	23	28
100/80	608	38	57	57	60	65	70	80	
150/80				92	99	110	120	130	
150/100	833	60	90	92	99	110	120	130	

Table 4 - Max. permissible operating torque, required operating torques and breakaway torques

The breakaway torques indicated are average values which were measured at the appropriate differential pressures with air at 20°C. Operating temperature, medium as well as longer periods of operation can lead to a notable change in breakaway and operating torques. The listed max. permissible operating torques are valid for the standard materials in table 3.

Dimensions and weights:

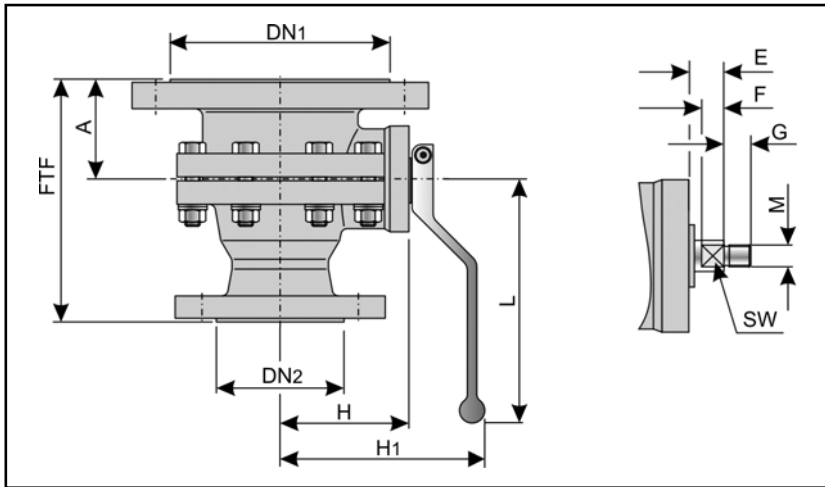


Fig. 5 – Drain Ball Valve

DN1	65	100	100	150	150
DN2	50	50	80	80	100
FTF	190	190	245	250	270
A	75	75	90	95	95
H	103	103	138,5	138,5	161
H1	178.5	178.5	206.5	206.5	229
E	19	19	23	23	19
F	12	12	16	16	12
G	15	15	18	18	18
L	220	220	365	365	365
M	M12	M12	M16	M16	M16
SW	12	12	16	16	20
DIN ISO Connection	F05	F05	F07	F07	F07
Weight in kg	13	15	19	21	25

Table 5 - Dimensions in mm and weights in kg

Selection and sizing of the drain ball valve:

1. Calculation of the required nominal diameter
2. Selection of the valve in accordance with table 2, table 3 and the Pressure-Temperature diagram
3. Selection of the appropriate actuator from table 4
4. Additional equipment

Order text:

PTFE-drain ball valve type: Series 21a,
DN / PN ,
optional.... special design

Handlever, resp. actuator manufacturer:
air supply: bar,
safety position:

Limit switch manufacturer:
Solenoid valve manufacturer:
Positioner:

Other:



Note: 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 confirm.

For your special requirements please contact our technical sales department

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