

Datasheet Ball Valve Type 546



Advantages

- Manual or automatically operated valve with / without electrical position feedback
- Ergonomic handle with integrated tool for dismounting the union bushing
- Lockable handle (optional)
- Integrated fixation system with mounted threaded inserts

Dimensions	
d16DN10 up to d110DN100 (d160DN150), 3/8" – 4" (6")	
Materials	
Valve body	PVC-U, PVC-C, ABS, PP, PVDF
Handle	PPGF 30
Connectors	
Solvent cement / fusion sockets ISO, ASTM, JIS, BS	
Solvent cement / fusion spigot ISO	
Threaded socket Rp Rp, NPT, Rc	
Fixed and Backing flanges ISO, ANSI, BS, JIS	
Butt fusion spigots in SDR11 or SDR17.6	
Butt fusion spigots PE100	
Accessories	
Multi-Functional Model (MFM) in PPGF equipped with internal limit switches for reliable electrical position feedback	
Various automation possibilities with electric or pneumatic actuators	
Handle extension	

Sealing materials	
O-Rings	EPDM, FPM, FFPM
Ball seal	PTFE, PVDF
Actuation	
Manual operated	
Lockable handle	
Pneumatic FC, FO, DA with / without manual override	
Electric AC:100-230 V, AC/DC: 24 V, with / without manual override	
Approvals	
DVGW, ACS, ABS, NSF, WRAS, DIBt, RINA, BV, FDA, SEPRO, TSSA	

kv 100-Values

DN mm	Zoll Inch	d mm	kv 100 l/min ($\Delta p = 1 \text{ bar}$)	Cv 100 gal/min ($\Delta p = 1 \text{ psi}$)	kv 100 m³/h ($\Delta p = 1 \text{ bar}$)
10	3/8	16	70	4.9	4
15	1/2	20	185	12.9	11
20	3/4	25	350	24.5	21
25	1	32	700	49.0	42
32	1 1/4	40	1000	70.0	60
40	1 1/2	50	1600	112.0	96
50	2	63	3100	217.1	186
65	2 1/2	75	5000	350.0	300
80	3	90	7000	490.0	420
100	4	110	11000	770.0	660

The kv values for each intermediate valve position can be determined using the flow value characteristic and kv 100 values.

Electric actuated Ball Valves

Type 107 is based on the ball valve type 546 (d16DN10 to d63DN50) with the electric actuator EA11. The type 107 is designed for automated standard applications with no special demands



Ball valves type 130-135 are based on the ball valve type 546 (d16DN10 to d110DN100) and the electric actuator EA21 (DN10-DN50) or EA31 (DN65-DN100). Type range 130-135 is designed as modular upgradable ball valve for Applications, which request special process demands.



Type 107, Type 130 - 135					
Ball Valve electric	Electric Actuator	Manual Ball Valve	Dimensions	Materials	Standards
Type 107	EA 11	Type 546	DN 10 - DN 50	PVC-U, PVC-C, ABS, PP, PVDF	all standards
Type 130	EA 21/31	Type 546	DN 10 - DN 100	PVC-U, PVC-C, ABS,	ISO/DIN
Type 131	EA 21/31	Type 546	DN 10 - DN 100	PP	all standards
Type 132	EA 21	Type 546	DN 10 - DN 50	PVDF	all standards
Type 133	EA 21/31	Type 546	DN 10 - DN 100	PVC-U, PVC-C,	ASTM/ANSI
Type 134	EA 21/31	Type 546	DN 10 - DN 100	PVC-U, ABS,	BS
Type 135	EA 21/31	Type 546	DN 10 - DN 100	PVC-U, PVC-C, PP, PVDF	JIS

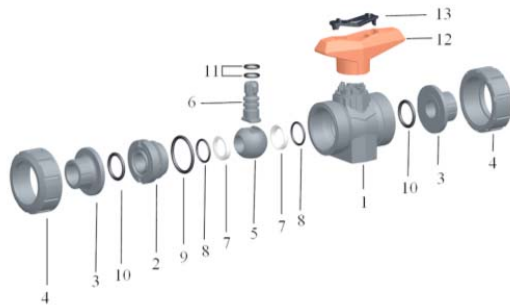
Pneumatic actuated Ball Valves

Ball valves type 230- 235 are based type 546 (d16DN10 to d63DN50) and pneumatic actuator PA11 (DN10-DN25), PA21 (DN32-DN50), PA30-PA45 (DN65-DN100). Type range 230-235 is designed as modular adjustable ball valve for applications, which demand special process requirements.



Type 230 - 235					
Ball Valve pneumatic	Pneumatic Actuator	Manual Ball valve	Dimensions	Materials	Standards
Type 230	PA 11 - PA 45	Type 546	DN 10 - DN 100	PVC-U, PVC-C, ABS,	ISO/DIN
Type 231	PA 11 - PA 45	Type 546	DN 10 - DN 100	PP-H	all standards
Type 232	PA 11 - PA 45	Type 546	DN 10 - DN 50	PVDF	all standards
Type 233	PA 11 - PA 45	Type 546	DN 10 - DN 100	PVC-U, PVC-C,	ASTM/ANSI
Type 234	PA 11 - PA 45	Type 546	DN 10 - DN 100	PVC-U, ABS,	BS
Type 235	PA 11 - PA 45	Type 546	DN 10 - DN 100	PVC-U, PVC-C, PP-H, PVDF	JIS

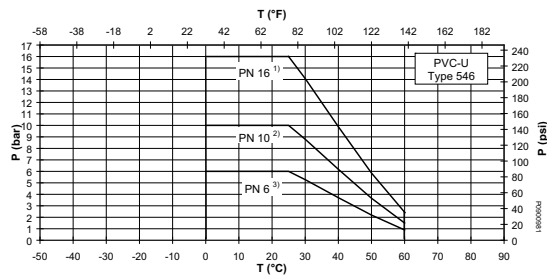
Design



1. Body	8. Backing seal
2. Union Bush	9. Body seal
3. Connection part	10. Union seal
4. Union nut	11. 2x Stem seals
5. Ball	12. Standard handle
6. Stem	13. Handle clip
7. Ball seal	

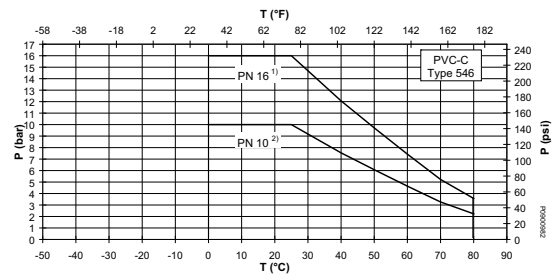
P / T-Diagrams

PVC-U



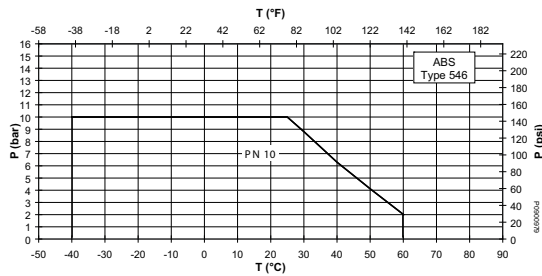
- P: Permissible pressure in bar, psi, T: Temperature in °C, °F
- 1) The central part of ball valve is designed for the nominal pressure PN 16
 - 2) Depending on the valve end, the nominal pressure is reduced to PN 10
 - 3) Depending on the valve end, the nominal pressure is reduced to PN 6

PVC-C



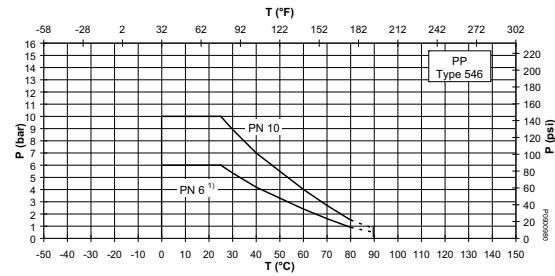
- P: Permissible pressure in bar, psi, T: Temperature in °C, °F
- 1) The central part of ball valve is designed for the nominal pressure PN 16
 - 2) Depending on the valve end, the nominal pressure is reduced to PN 10

ABS



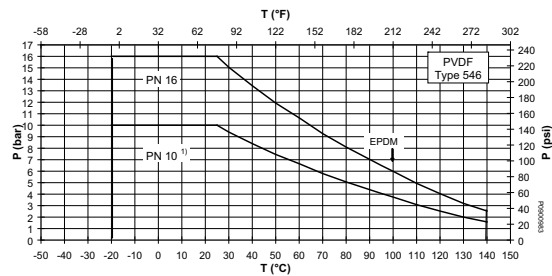
- P: Permissible pressure in bar, psi, T: Temperature in °C, °F

PP



- P: Permissible pressure in bar, psi, T: Temperature in °C, °F
- 1) E. g. ball valve with PP or PE100 spigot end, SDR 17

PVDF

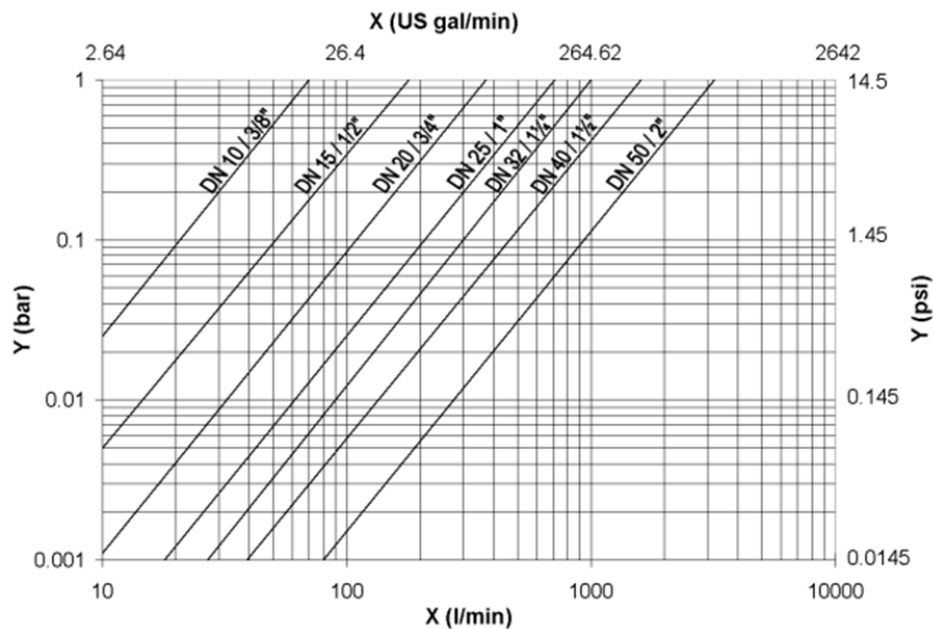


- P: Permissible pressure in bar, psi, T: Temperature in °C, °F
- 1) E. g. ball valve with threaded sockets EPDM seal, max. 100 °C

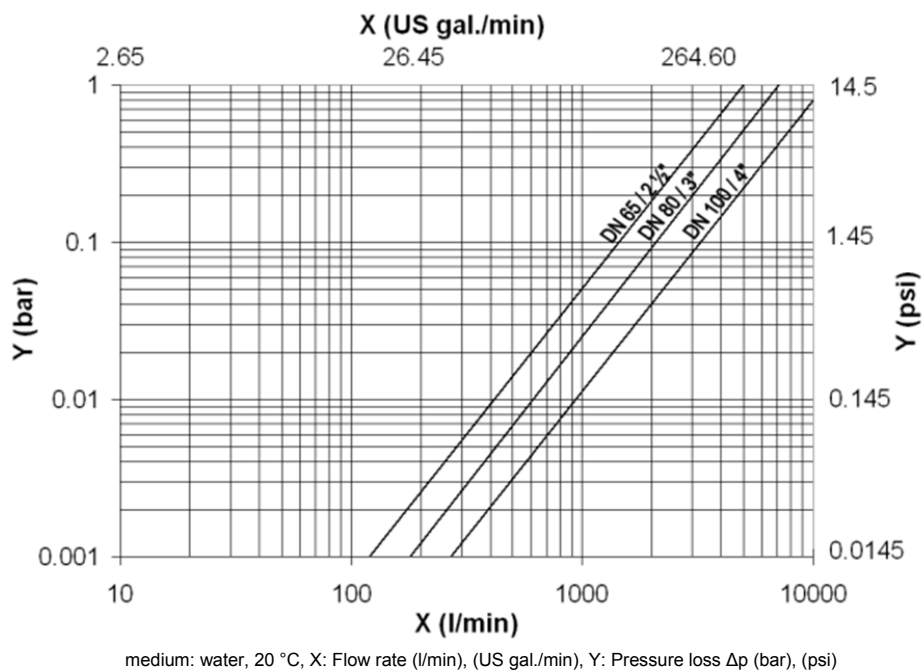
The pressure temperature diagrams are based on a lifetime of 25 years and the medium water or similar media.

Pressure loss diagrams

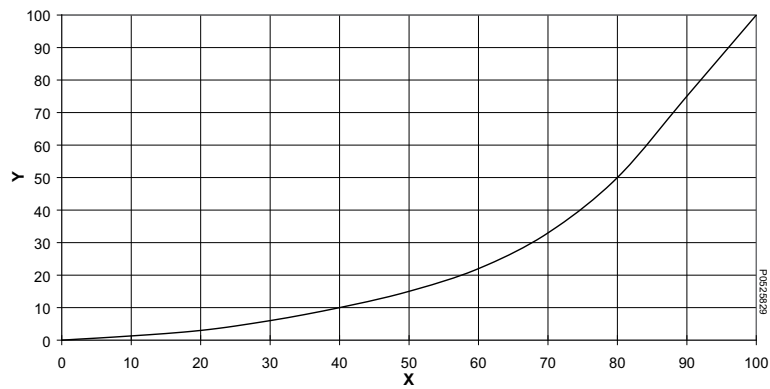
d16DN 10 – d63DN 50



d75DN 65 – DN 100

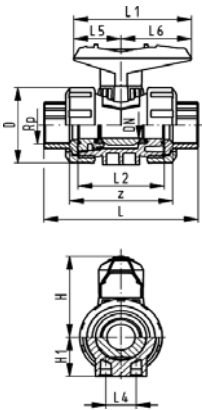


Flow-characteristics

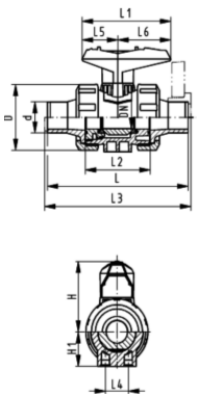


X: Open angle (%), Y: Flow factor kv, cv (%)

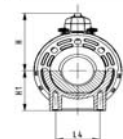
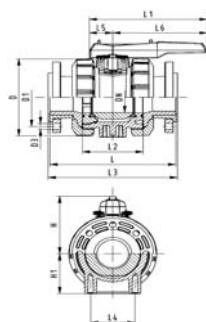
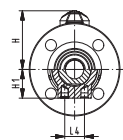
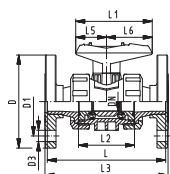
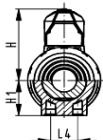
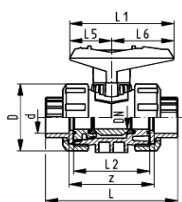
Dimensions



Solvent cement sockets metric										
d	D	H	H1	L	L1	L2	L3	L4	L5	L6
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
16	50	57	27	114	77	56		25	32	45
20	50	57	27	124	77	56	130	25	32	45
25	58	67	30	144	97	65	150	25	39	58
32	68	73	36	154	97	71	160	25	39	58
40	84	90	44	174	128	85	180	45	54	74
50	97	97	51	194	128	89	200	45	54	74
63	124	116	64	224	152	101	230	45	66	87
75	166	149	85	284	270	136	290	70	64	206
90	200	161	105	300	270	141	310	70	64	206
100	238	178	123	340	320	164	350	120	64	256



Solvent cement spigot metric										
d	D	H	H1	L	L1	L2	L4	L5	L6	z
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
16	50	57	27	92	77	56	25	32	45	64
20	50	57	27	95	77	56	25	32	45	64
25	58	67	30	110	97	65	25	39	58	72
32	68	73	36	123	97	71	25	39	58	79
40	84	90	44	146	128	85	45	54	74	94
50	97	97	51	157	128	89	45	54	74	95
63	124	116	64	183	152	101	45	66	87	107
75	166	149	85	233	270	136	70	64	206	144
90	200	161	105	254	270	141	70	64	206	151
100	238	178	123	301	320	164	120	64	256	174



Threaded socket Rp										
Rp	D	H	H1	L	L1	L2	L4	L5	L6	z
Zoll	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3/8	50	57	27	92	77	56	25	32	45	64
1/2	50	57	27	95	77	56	25	32	45	64
3/4	58	67	30	110	97	65	25	39	58	72
1	68	73	36	123	97	71	25	39	58	79
1 1/4	84	90	44	146	128	85	45	54	74	94
1 1/2	97	97	51	157	128	89	45	54	74	95
2	124	116	64	183	152	101	45	66	87	107
2 1/2	166	149	85	233	270	136	70	64	206	144
3	200	161	105	254	270	141	70	64	206	151
4	238	178	123	301	320	164	120	64	256	174

Fixed flange serrated metric												
d	D	D1	D3	H	H1	L	L1	L2	L3	L4	L5	L6
m	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
20	95	65	14	57	27	124	77	56	130	25	32	45
25	105	75	14	67	30	144	97	65	150	25	39	58
32	115	85	14	73	36	154	97	71	160	25	39	58
40	140	100	18	90	44	174	128	85	180	45	54	74
50	150	110	18	97	51	194	128	89	200	45	54	74
63	165	125	18	116	64	224	152	101	230	45	66	87

Backing flange metric											
d	D	H	H1	H2	L	L1	L2	L4	L5	L6	M
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
75	166	149	85	15	284	270	136	70	64	206	M8
90	200	161	105	15	300	270	141	70	64	206	M8
110	238	178	1123	22	340	320	164	120	64	256	M12

Specifications

All ball valves with metric sizes DN 10 - 100 mm, shall be manufactured with true double union design in accordance with EN ISO 16135. Incorporated into its design shall be a safety stem with a predetermined breaking point above the upper O-ring, preventing any media leaking in the event of damage. The valve nut threads shall be buttress type to allow fast and safe radial mounting and dismounting of the valve during installation or maintenance work. Seats shall be PTFE with backing rings creating self-adjusting seals and constant operating torque. Backing rings and seals shall be EPDM or FPM. The handle shall include in its design an integrated tool for removal of the union bush. Union bushes shall have left-hand threads to prevent possible unscrewing when threaded end connectors are removed from pipe.

Following accessories shall be available:

- A Multi-Functional Model (MFM) in PPGF equipped with internal limit switches for reliable electrical position feedback, is mounted directly between the valve body and the valve handle. This MFM is also the necessary interface for later mounting of actuators.
- Mounting plate in PPGF with integrated inserts for later screw mounting on any support
- Lockable multi-functional handle

Electric actuated Ball Valves

Electric actuators shall be either actuator 1 or actuator 2 (sizes DN10-50 mm) or actuator 3 (sizes DN65-100 mm). They shall be manufactured in accordance with EN 61010-1, EC directives 2004/108/EC (EMC) and 2006/95/EC, LVD and needs to be CE marked. Actuator housing shall be made of PPGF (polypropylene glass fibre reinforced), flame retardant with external stainless steel screws. All electric actuators shall have an integrated emergency manual override and integrated optical position indication.

Electric actuator types shall have the following accessory options:

- Fail-safe unit
- Heating element
- Cycle extension, cycle time monitoring, and cycle counting
- Motor current monitoring
- Position signalisation
- Positioner
- Limit switch kits Ag-Ni, Au, NPN, PNP, NAMUR
- AS Interface Plug Module

Electric actuator specifications of the actuators shall be as follows			
Specification	actuator 1	actuator 2	actuator 3
Nominal torque (Nm)	10	10	60
Control time (s/90°)*	5	5	15
Cycles at 20°C *	150,000	250,000	100,000
Duty cycles ED at 20°C	40%	100%	50%
Protection class	IP65 per EN 60529 - IP67 (for vertical cable mounting and wall feed through)		
Voltage	100-230, 50-60 Hz or 24V=/24V, 50/60 Hz versions		

* = at nominal torque

Pneumatic actuated Ball Valves

Pneumatic actuators shall be actuator 1 (for valve sizes DN 15-25 mm) or actuator 2 (for valve sizes DN 32-50 mm). Pneumatic actuators shall be available as fail safe close, fail safe open and double acting and have an integrated optical position indication. Actuator housing shall be made of Polypropylene fibre glass reinforced (PPGF) and flame retardant. Actuators shall contain a preloaded spring assembly to ensure safe actuator operation and maintenance. Actuators shall contain integrated Namur interface for the easy mounting of positioners, limit switches and accessories. The valve shall be equipped with a Multi-functional-module for reliable electric feedback, mounted directly between the valve body and the actuator as manufacturer standard.

For valve size DN 65, 80, 100 mm pneumatic actuators shall be fail safe to close or open function or double acting function. Pneumatic actuators shall have an integrated optical position indicator. Actuator housing shall be made of hardened anodized aluminium. Actuators shall contain integrated Namur interface for the easy mounting of positioners, limit switches and accessories.

All pneumatically actuated ball valves shall have the following accessories available:

- Pilot valve remote or direct mounted in voltages 24VDC/AC, 110VAC, 230VAC
- Positioner
- Limit switch kits Ag-Ni, Au, NPN, PNP
- Stroke limiter
- Manual override for all sizes up to d 110 mm
- AS Interface control module with incorporated position feedback and a solenoid pilot valve

Planning Fundamentals

The following link will lead you to the Georg Fischer Planning Fundamentals. These detailed documents will support you by choosing the right valve for your application.

http://www.gfps.com/content/gfps.com/en/support_and_services/planning_assistance/planning_fundamentals.html?lang=en