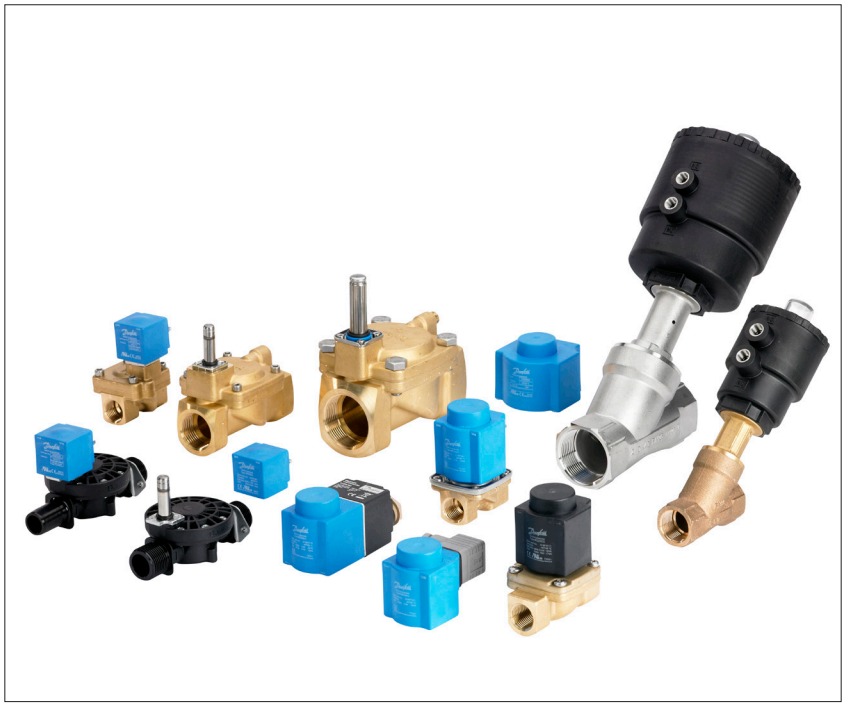
ENGINEERING TOMORROW

Data sheet

Solenoid valves for water supply and steam inlet

Types EV220T, EV220W, EV220B, EV225B, and AV210



Valve range for water supply and steam inlet for water fluid controls:

- Laundry
- Dishwashing
- Main inlet valves
  - Car washing
  - Irrigation
- Water for processing
- Zoning

Features and versions

- Clip-on coil
- Flow range for water in Kv: 0.7 - 40 m^3/h
- Differential pressure: 0 – 20 bar
- Media temperature from 0 – 185 °C
- Ambient temperature: Up to 80 °C
- Coil enclosure: IP65
- Thread connections: From G 3/8 – G 2
- DN 6 – 50
- Water hammer damped
- Built-in filter
- Adjustable closing time available

- EV220T 14-18, NC, polymer
- EV220W 10-22 complete, NC, brass
- EV220B 6 -22, NC, brass
- EV220B 15-50, NC, brass
- EV225B 6-25, NC, DZR brass
- AV210 15-40, NC, bronze and stainless steel

EV220T
Polymer valve body, NC

- WRAS
- In accordance with:
  - Low Voltage Directive 2014/35/EU
    - EN60730-1
    - EN60730-2-8

    (Notified body by Semko)
  - Pressure Equipment Directive 2014/68/EU
  - RoHS Directive 2011/65/EU
- UL recognized

G thread connection

ISO 228-1 connection		Seal material	Orifice size	K_v-value	Media temp.	Differential pressure	Code no.
Inlet	Outlet		[mm]	[m^3/h]	[°C]	[bar]	
G ¾ ext.	¾ hose	EPDM	DN 14	4	0 – 85	0.3 – 10	**042U8105**
G ¾ ext.	G ¾ ext.	EPDM	DN 14	4	0 – 85	0.3 – 10	**042U8125**
G ¾ ext.	¾ hose	EPDM	DN 18	6	0 – 85	0.3 – 10	**042U8155**
G ¾ ext.	G ¾ ext.	EPDM	DN 18	6	0 – 85	0.3 – 10	**042U8175**

See separate table for AS/AZ coils.

NPSM thread connection

NPSM connection		Seal material	Orifice size	K_v-value	Media temp.	Differential pressure	Code no.
Inlet	Outlet		[mm]	[m^3/h]	[°C]	[bar]	
¾–14 NPSM ext.	¾–14 NPSM ext.	EPDM	DN 14	4	0 – 85	0.3 – 10	**042U8135**
¾–14 NPSM ext.	¾–14 NPSM ext.	EPDM	DN 18	6	0 – 85	0.3 – 10	**042U8185**

See separate table for AS/AZ coils.

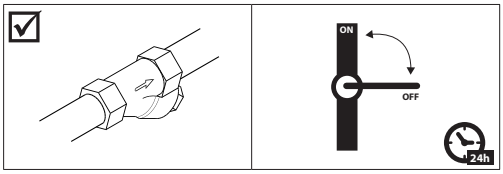
GH thread connection

Garden Hose connection (GH)		Seal material	Orifice size	K_v-value	Media temp.	Differential pressure	Code no.
Inlet	Outlet		[mm]	[m^3/h]	[°C]	[bar]	
¾ - 11.5 NH	¾ hose	EPDM	DN 14	6	0 – 85	0.3 – 10	**042U8145**
¾ - 11.5 NH	¾ hose	EPDM	DN 18	6	0 – 85	0.3 – 10	**042U8195**

See separate table for AS/AZ coils.

[1]) It is recommended to use a filter in front of the valve.

[2]) In water applications, exercise the valves at least once every 24 hours, meaning change the state of the valve. The valve exercise will minimize the risk of the valve sticking due to calcium carbonate, zinc or iron oxide build-up.



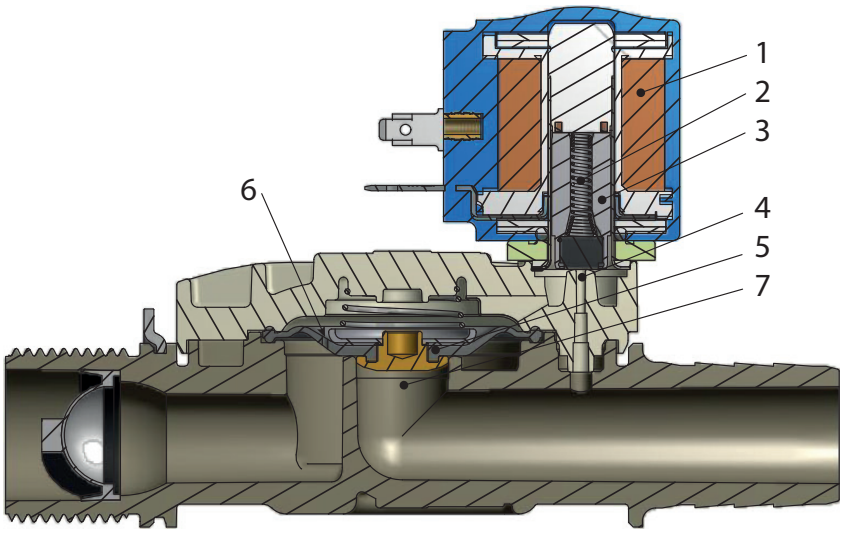
Technical data

Type	EV220T 14	EV220T 18
Time to open [ms] [1])	100	200
Time to close [ms] [1])	400	500
Capacity, K_v [m^3/h]	4	6
Capacity [C_v gal/min]	4.7	7

[1]) Times are indicative and apply to water. Exact times will depend on pressure conditions.

Valve	Max. working pressure (MWP)	10 bar	
	Max. test pressure	20 bar	
	Ambient temperature	Max. 50 °C / 122 °F	
	Media viscosity	50 cSt	
Materials	Body	EMS Grivory HT (Glass-fiber reinforced)	
	Armature	Stainless steel	W no. 1.4105 / AISI 430FR
	Armature stop	Stainless steel	W. no. 1.4105 / AISI 430FR
	Armature tube	Stainless steel	W. no. 1.4303 / AISI 305
	Spring	Stainless steel	W. no. 1.4310 / AISI 301
	O-ring	EPDM	
	Valve plate	EPDM	
	Diaphragm	EPDM	
	Screws	Steel zinc plated delta PT	
Features	Mounting	Metal bracket (see dimension drawing on page 4)	
	Media	Built-in filter mesh width 0.45 mm	

Function

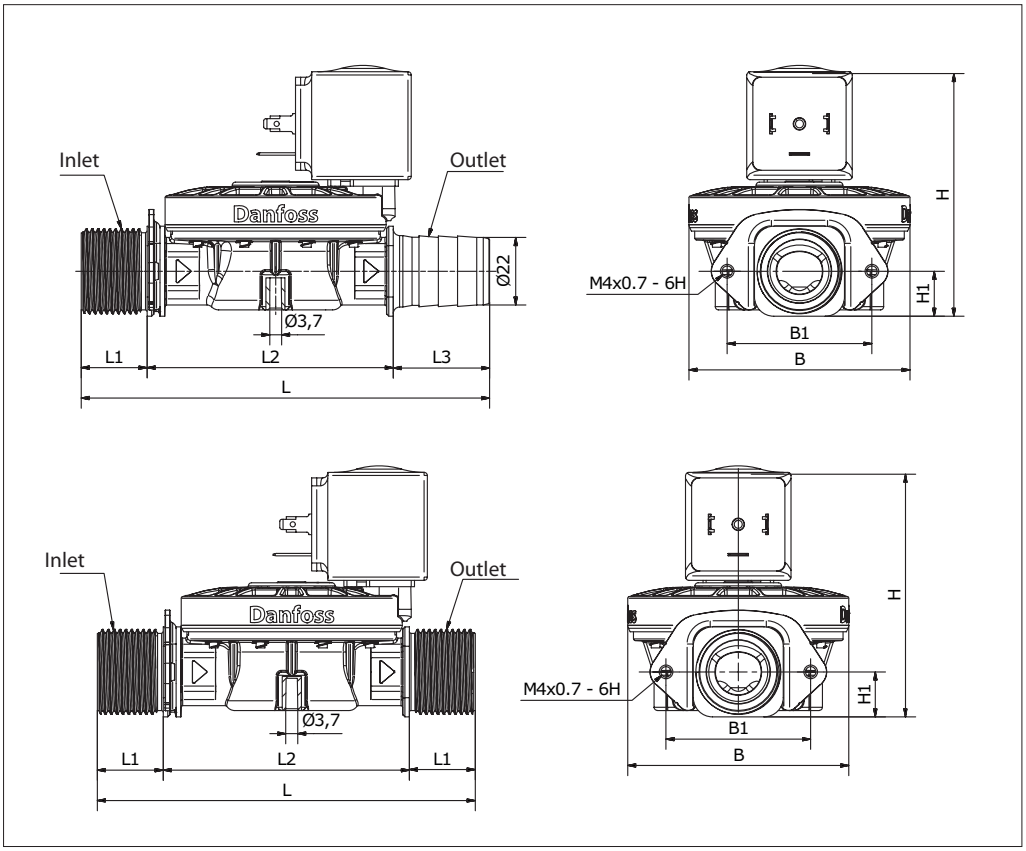


Pos. no.	Description
1	Coil
2	Armature spring
3	Armature
4	Pilot orifice
5	Diaphragm
6	Equalizing orifice
7	Main orifice

Coil voltage disconnected
When voltage is disconnected, the armature spring (2) presses the armature (3) down against the pilot orifice (4). Pressure builds up over the diaphragm (5) via the equalizing orifice (6). The diaphragm closes the main orifice (7) as soon as the pressure over the diaphragm equals the inlet pressure. The valve stays closed for as long as voltage remains disconnected.

Coil voltage connected (open)
When voltage is applied to the coil (1), the pilot orifice (4) is opened. Since the pilot orifice is larger than the equalizing orifice (6), pressure over the diaphragm (5) falls and the diaphragm is lifted clear of the main orifice (7). The valve stays open for as long as the required minimum differential pressure is present and voltage is applied to the coil.

Dimensions and weight



G thread connection

Orifice size [mm]	ISO 228-1 connection		L	L1	L2	L3	B	B1	H	H1
	Inlet	Outlet	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DN 14	G ¾ ext.	G ¾ ext.	117.5	20.5	76.5	—	68.8	45.0	77.7	14.0
DN 14	G ¾ ext.	¾ Hose	127.5	20.5	76.5	30.0	68.8	45.0	77.7	14.0
DN 18	G ¾ ext.	G ¾ ext.	117.5	20.5	76.5	—	68.8	45.0	79.9	14.0
DN 18	G ¾ ext.	¾" Hose	127.5	20.5	76.5	30.0	68.8	45.0	79.9	14.0

NPSM thread connection

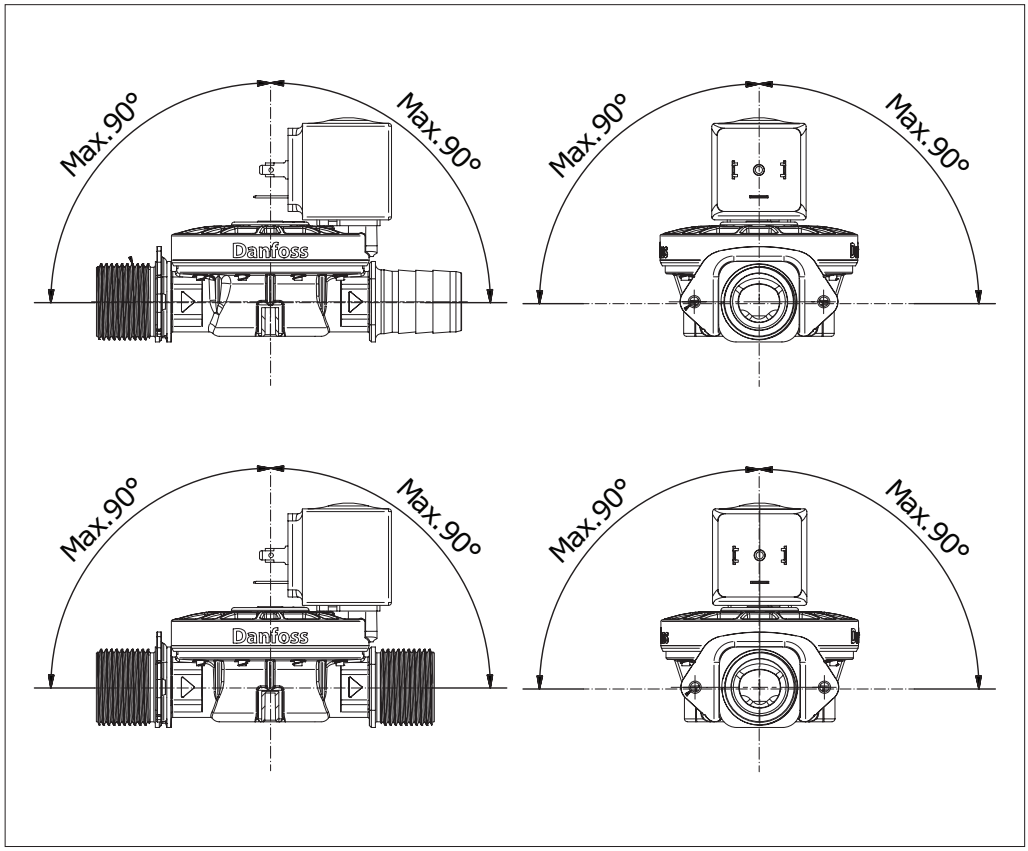
Orifice size [mm]	NPSM connection		L	L1	L2	L3	B	B1	H	H1
	Inlet	Outlet	[in]	[in]	[in]	[in]	[in]	[in]	[in]	[in]
DN 14	¾ – 14 NPSM ext.	¾ – 14 NPSM ext.	4.61	0.81	2.99	—	2.78	1.77	3.03	0.55
DN 14	¾ – 14 NPSM ext.	¾ Hose	5.0	0.81	2.99	1.18	2.78	1.77	3.03	0.55
DN 18	¾ – 14 NPSM ext.	¾ – 14 NPSM ext.	4.61	0.81	2.99	—	2.78	1.77	3.11	0.55
DN 18	¾ – 14 NPSM ext.	¾ Hose	5.0	0.81	2.99	1.18	2.78	1.77	3.11	0.55

Valve type	Gross weight Valve body without coil [kg]	Gross weight Valve body including AM coil, plug [kg]
EV220T 14 – 18	0.16	0.30

GH thread connection

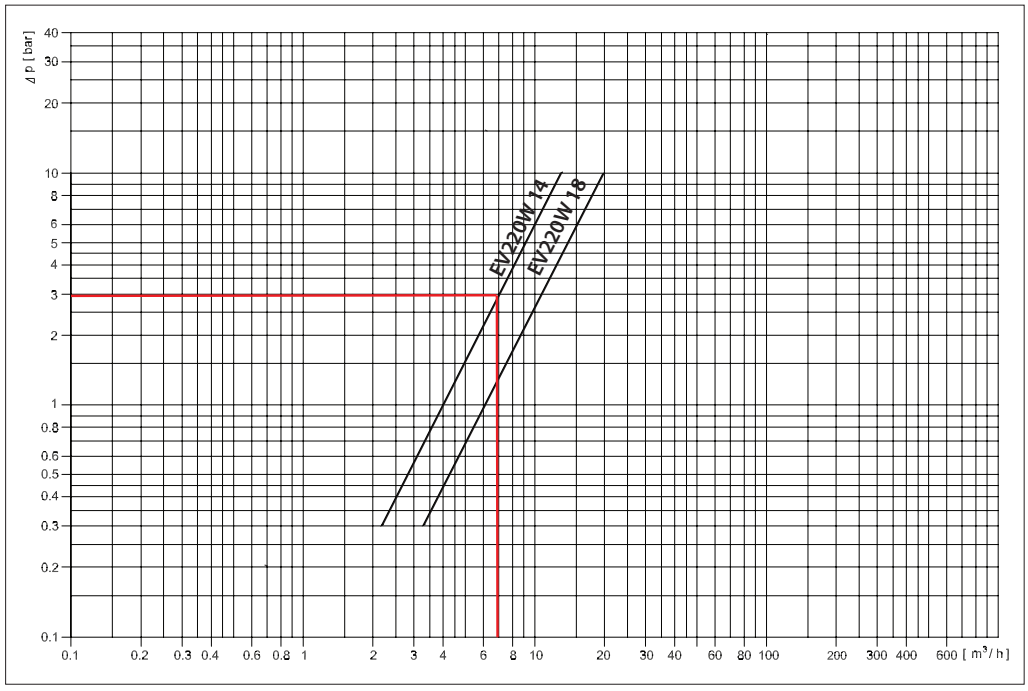
Orifice size [mm]	Garden Hose connection		L	L1	L2	L3	B	B1	H	H1
	Inlet	Outlet	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DN 14	¾ - 11.5 NH	¾ hose	127.5	20.5	76.5	30.0	68.8	45.0	77.7	14.0
DN 18	¾ - 11.5 NH	¾ hose	127.5	20.5	76.5	30.0	68.8	45.0	77.7	14.0

Mounting angle

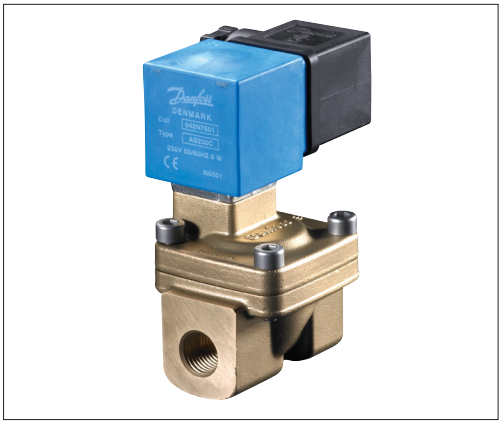


Capacity diagram

Example for water: Capacity for EV220T at a differential pressure of 3 bar: Approx. 7 m³h



EV220W
Brass valve body, NC

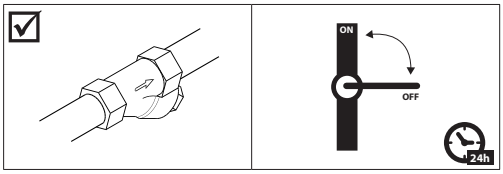


- WRAS
- In accordance with:
  - Low Voltage Directive 2014/35/EU
    - EN60730-1
    - EN60730-2-8

  (Notified body by Semko)
  - Pressure Equipment Directive 2014/68/EU
  - RoHS Directive 2011/65/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size [mm]	K_v-value [m^3/h]	Media temp. [°C]	Differential pressure [Bar]	Coil voltage/ power consumption	Code no.
G 3/8	EPDM	10	1.6	0 – 100	0.2 – 10	*)	**042U4410**
G 3/8	EPDM	10	1.6	0 – 100	0.2 – 10	230V 50/60Hz 8W	**042U471032**
G 3/8	EPDM	10	1.6	0 – 100	0.2 – 10	24V 50/60Hz 9.5W	**042U471019**
G 3/8	EPDM	10	1.6	0 – 100	0.2 – 10	24V DC 6.5W	**042U471002**
G ½	EPDM	14	4	0 – 100	0.3 – 10	*)	**042U4414**
G ½	EPDM	14	4	0 – 100	0.3 – 10	230V 50/60Hz 8W	**042U471432**
G ½	EPDM	14	4	0 – 100	0.3 – 10	24V 50/60Hz 9.5W	**042U471419**
G ½	EPDM	14	4	0 – 100	0.3 – 10	24V DC 6.5W	**042U471402**
G ¾	EPDM	18	7	0 – 100	0.3 – 10	*)	**042U4418**
G ¾	EPDM	18	7	0 – 100	0.3 – 10	230V 50/60Hz 8W	**042U471832**
G ¾	EPDM	18	7	0 – 100	0.3 – 10	24V 50/60Hz 9.5W	**042U471819**
G ¾	EPDM	18	7	0 – 100	0.3 – 10	24V DC 6.5W	**042U471802**
G 1	EPDM	22	7	0 – 100	0.3 – 10	*)	**042U4422**
G 1	EPDM	22	7	0 – 100	0.3 – 10	230V 50/60Hz 8W	**042U472232**
G 1	EPDM	22	7	0 – 100	0.3 – 10	24V 50/60Hz 9.5W	**042U472219**
G 1	EPDM	22	7	0 – 100	0.3 – 10	24V DC 6.5W	**042U472202**

*) See separate table for AS/AZ coils.
[1]) It is recommended to use a filter in front of the valve.
[2]) In water applications, exercise the valves at least once every 24 hours, meaning change the state of the valve.
The valve exercise will minimize the risk of the valve sticking due to calcium carbonate, zinc or iron oxide build-up.



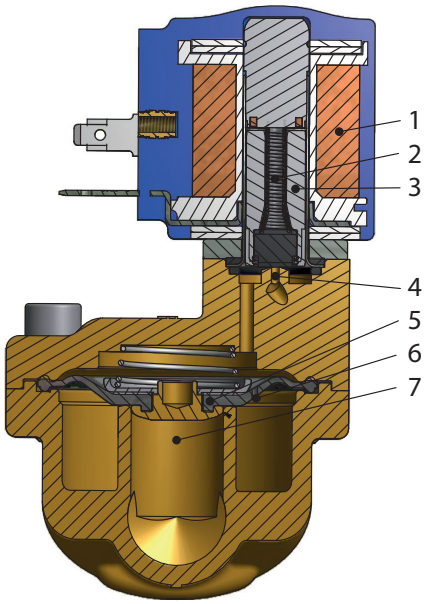
Technical data

Type	EV220W 10	EV220W 14	EV220W 18	EV220W 22
Time to open [ms] [1)]	50	100	200	200
Time to close [ms] [1)]	300	400	500	500

[1)] Times are indicative and apply to water. Exact times will depend on pressure conditions.

Max. working pressure (MWP)	10 bar		
Max. test pressure	EV220W 10	50 bar	
	EV220W 14 – EV220W 22	25 bar	
Ambient temperature	-40 – 50 °C		
Media temperature	-10 – 100		
Media viscosity	Max. 50cSt		
Materials	Valve body	Brass	CW617N
	Armature	Stainless steel	W. no. 1.4105 / AISI 430FR
	Armature stop	Stainless steel	W. no. 1.4105 / AISI 430FR
	Armature tube	Stainless steel	W. no. 1.4303 / AISI 305
	Spring	Stainless steel	W. no. 14310 / AISI 301
	O-ring	EPDM	
	Valve plate	EPDM	
	Diaphragm	EPDM	

Function

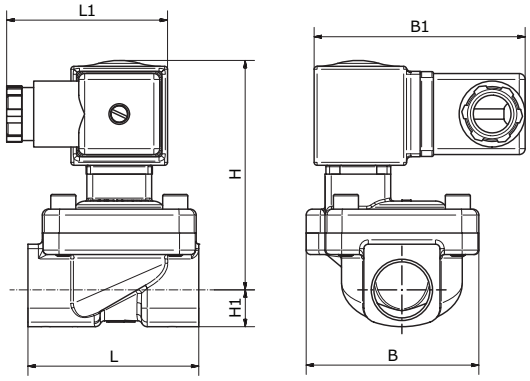


Pos. no.	Description
1	Coil
2	Armature spring
3	Armature
4	Pilot orifice
5	Diaphragm
6	Equalizing orifice
7	Main orifice

Coil voltage disconnected
When voltage is disconnected, the armature spring (2) presses the armature (3) down against the pilot orifice (4). Pressure builds up over the diaphragm (5) via the equalizing orifice (6). The diaphragm closes the main orifice (7) as soon as the pressure over the diaphragm equals the inlet pressure. The valve stays closed for as long as voltage remains disconnected.

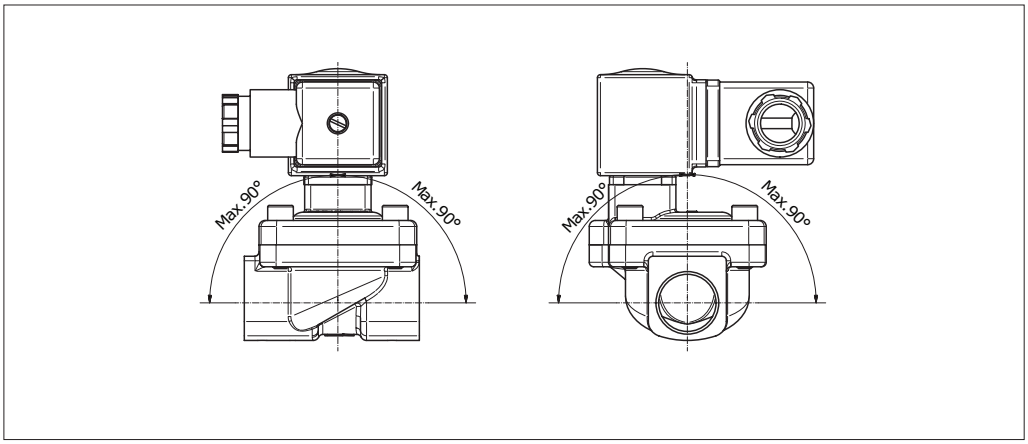
Coil voltage connected (open)
When voltage is applied to the coil (1), the pilot orifice (4) is opened. Since the pilot orifice is larger than the equalizing orifice (6), pressure over the diaphragm (5) falls and the diaphragm is lifted clear of the main orifice (7). The valve stays open for as long as the required minimum differential pressure is present and voltage is applied to the coil.

Dimensions and weight



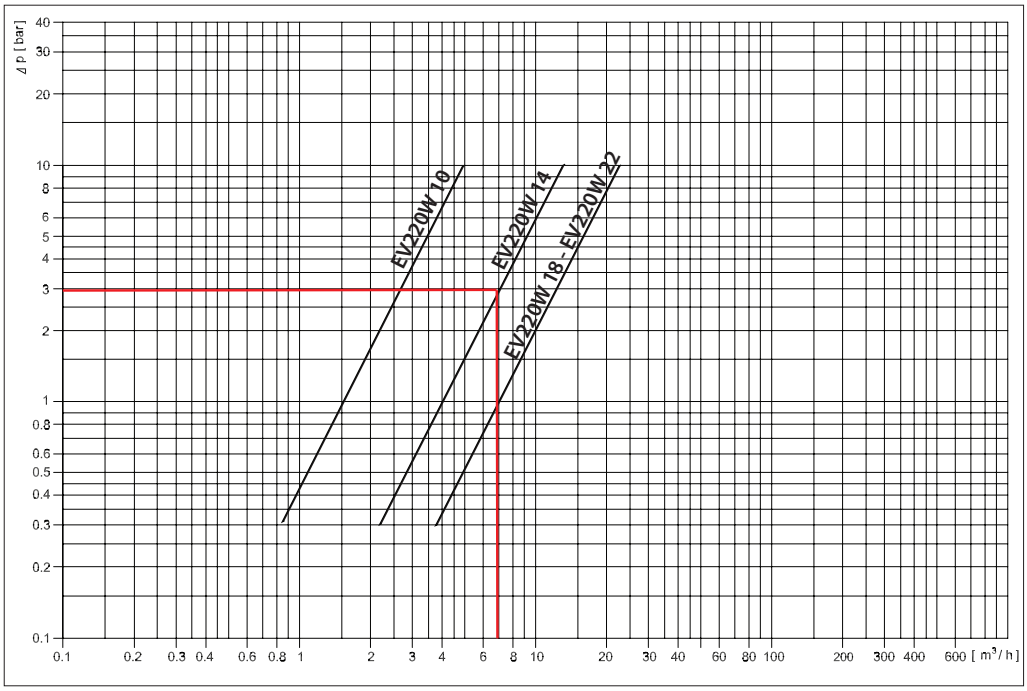
Type	L [mm]	L_1 [mm]	B [mm]	B_1 [mm] Coil AS	H_1 [mm]	H [mm] NC	H [mm] NO	Weight with AS coil [kg]
EV220W 10	51	50	50	70	13	77	81	0.56
EV220W 14	58	50	58	70	13	78	82	0.62
EV220W 18	90	50	58	70	18	79	83	0.84
EV220W 22	90	50	58	70	22	84	84	1.12

Mounting angle

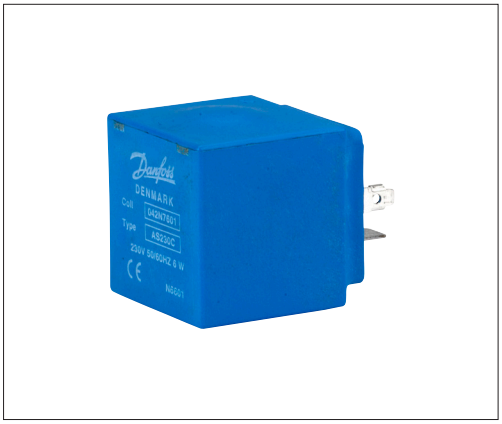


Capacity diagram

Example for water:
Capacity for EV220W at a differential pressure of 3 bar:
Approx. 7 m³h



AS/AZ, Compact UL recognised, clip-on coils



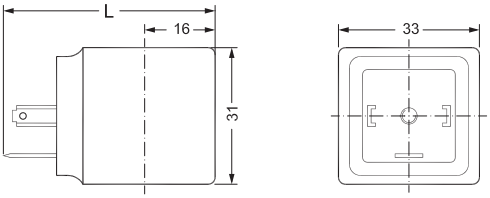
- Enclosure:
  Up to IP65 / NEMA 4
- Used with EV220T and EV220W
- For UL recognised valves
- In accordance with:
  - Low Voltage Directive 2014/35/EU
    - EN60730-1
    - EN60730-2-8
  (Notified body by Semko)
  - RoHS Directive 2011/65/EU

Type	Tambient [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Power consumption		Approval	Code no.
					[W]	[VA]		
AS024CS	-40 – 50	24	-10%, +6%	50	9.5	18	c UL us	042N7608
		24	-10%, +6%	60	7.0	14		
AS230CS	-40 – 50	230	-10%, +6%	50	8.0	16	c UL us	042N7601
		208 - 240	±6%	60	7.0	14		
AZ012DS	-40 – 50	12	-10%, +6%	DC	6.0	–	c UL us	042N7616
AZ024DS	-40 – 50	24	-10%, +6%	DC	6.5	–	c UL us	042N7617

Technical data

Design	In accordance with UL 429
Insulation of coil windings	Class H according to IEC 85
Connection	Spade connector in accordance with DIN 43650 form A
Enclosure, IEC 529	IP00 with DIN spade connector, IP65 with cable plug
Plug type	Cable plug (042N0156)

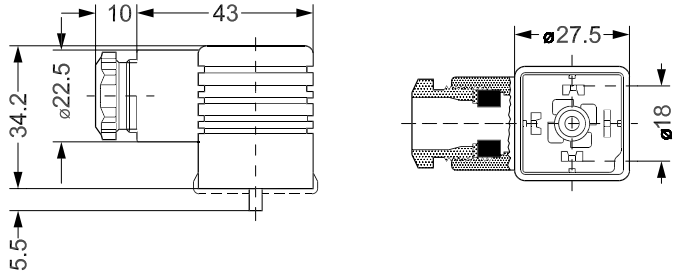
Dimensions and weight



L without cable plug [mm]	L with cable plug [mm]	L with protective cap [mm]	Weight [kg]
48	72	64	0.10

Accessories: Cable plug

Type, Form A	Code no.
GDM 2011 (grey) cable plug according to DIN 43650-A PG11	042N0156



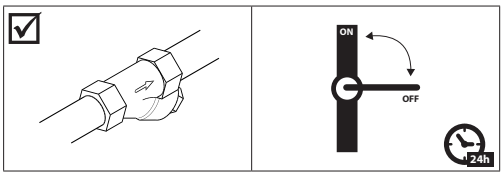
EV220B 6 - EV220B 22
Brass valve body, NC

- WRAS
- ACS
- PZH
- In accordance with:
  - Low Voltage Directive 2014/35/EU
    - EN60730-1
    - EN60730-2-8

  (Notified body by Semko)
  - Pressure Equipment Directive 2014/68/EU
  - RoHS Directive 2011/65/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size	K_V-value	Media temp.	Differential pressure	Code no.
		[mm]	[m^3/h]	[°C]	[Bar]	
G 3/8	EPDM	6	1.5	0 – 100	0.1 – 20	**032U1246**
G 1/2	EPDM	12	2.5	0 – 100	0.3 – 10	**032U1256**
G 3/4	EPDM	18	6.0	0 – 100	0.3 – 10	**032U1261**
G 1	EPDM	22	6.0	0 – 100	0.3 – 10	**032U1263**

[1]) It is recommended to use a filter in front of the valve.
[2]) In water applications, exercise the valves at least once every 24 hours, meaning change the state of the valve.
The valve exercise will minimize the risk of the valve sticking due to calcium carbonate, zinc or iron oxide build-up.



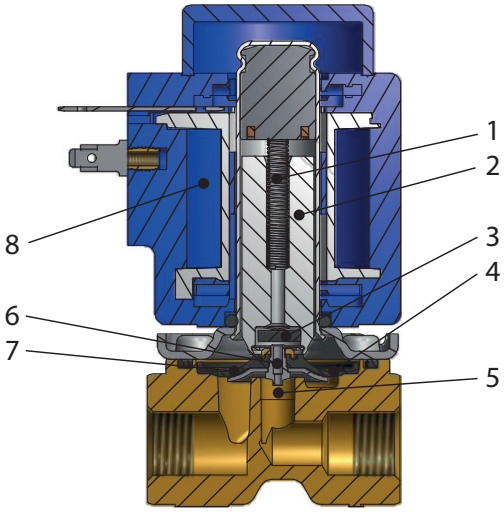
Technical data

Type	EV220B 6	EV220B 10	EV220B 12	EV220B 18	EV220B 22
Time to open [ms] [1])	40	50	60	200	200
Time to close [ms] [1])	250	300	300	500	500

[1]) The times are indicative and apply to water. The exact times will depend on the pressure conditions.

Installation	Vertical solenoid system is recommended		
Max. working pressure (MWP)	DN 10	20 bar	
	DN 12 - 22	10 bar	
Max. test pressure	EV220B 10	30 bar	
	EV220B 12 – EV220B 22	15 bar	
Ambient temperature	BB DC	Up to 50 °C	
	BB AC	Up to 80 °C	
	EEC BE240CS	Up to 55 °C	
Viscosity	Max. 50 cSt		
Materials	Valve body	Brass	W.no. 2.0402
	Armature	Stainless steel	W.no. 1.4105 / AISI 430FR
	Armature tube	Stainless steel	W.no. 1.4306 / AISI 304L
	Armature stop	Stainless steel	W.no. 1.4105 / AISI 430FR
	Springs	Stainless steel	W.no. 1.4310 / AISI 301
	O-rings	EPDM or FKM	
	Valve plate	EPDM or FKM	
	Diaphragm	EPDM or FKM	

Function

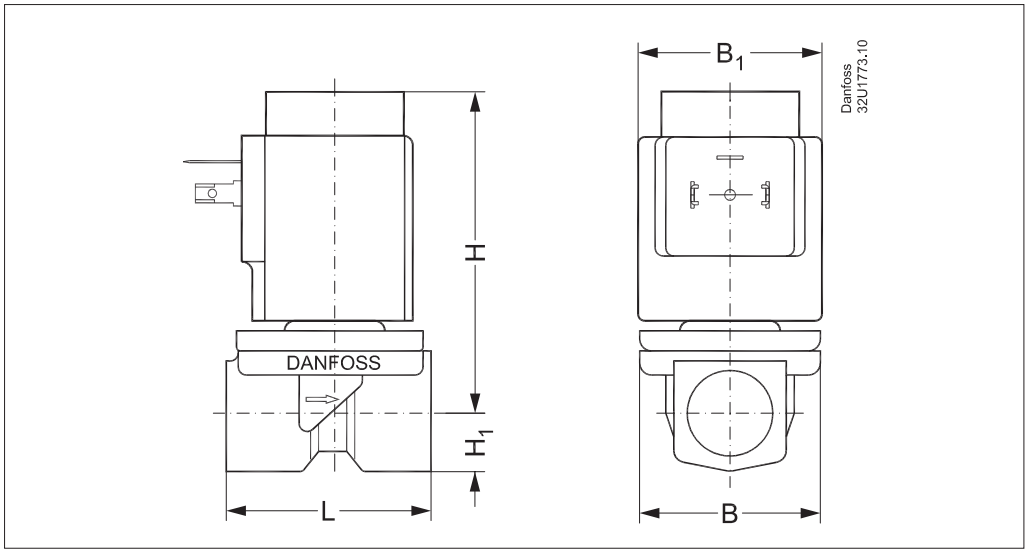


Pos. no.	Description
1	Armature spring
2	Armature
3	Valve plate
4	Equalizing orifice
5	Main orifice
6	Pilot orifice
7	Diaphragm
8	Coil

Coil voltage disconnected (closed):
When the supply voltage to the coil (8) is disconnected, the valve plate (3) is pressed down against the pilot orifice (6) by the armature spring (1). The pressure across the diaphragm (7) is built up via the equalizing orifice (4). The diaphragm closes the main orifice (5) as soon as the pressure across the diaphragm is equivalent to the inlet pressure. The valve will be closed for as long as the voltage to the coil is disconnected.

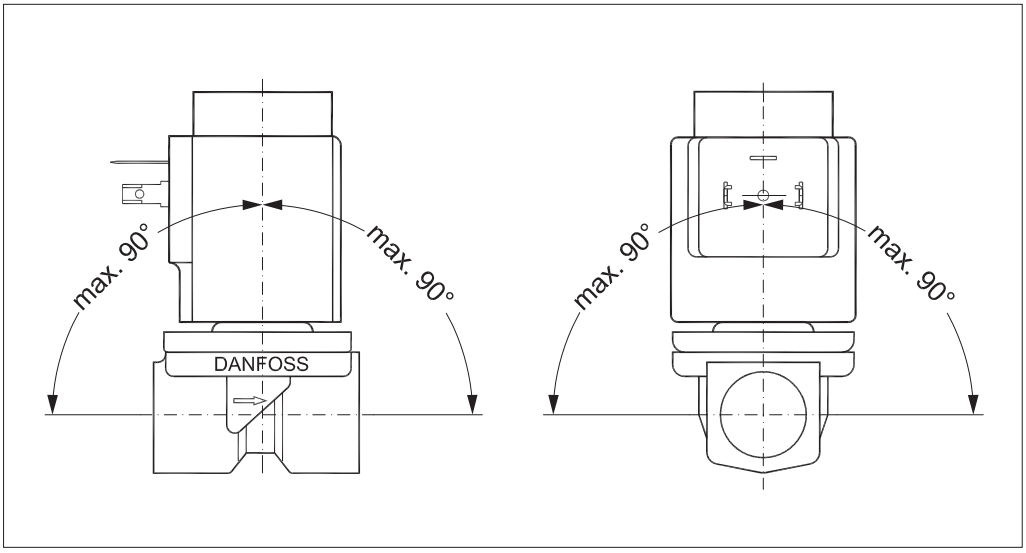
Coil voltage connected (open):
When voltage is applied to the coil, the pilo orifice (6) is opened. As the pilot orifice is larger than the equalizing orifice (4), the pressure across the diaphragm (7) drops and therefore it is lifted clear of the main orifice (5). The valve is now open and will be open for as long as the minimum differential pressure across the valve is maintained, and for as long as there is voltage to the coil.

Dimensions and weight



Type	L [mm]	B [mm]	B_1 [mm] / Coil type BA	B_1 [mm] / Coil type BB / BE	B_1 [mm] / Coil type BG	H [mm]	H_1 [mm]	Weight gross valve body without coil [kg]
EV220B 6B	45.5	43.5	32	46	68	78	13	0.22
EV220B 12B	58.0	54.0	32	46	68	81	13	0.35
EV220B 18B	90.0	60.0	32	46	68	87	22	0.65
EV220B 22B	90.0	60.0	32	46	68	91	22	0.65

Mounting angle



Capacity diagram:

Example, water: EV220B 6 NC, at 1 bar diff. pressure: Approx: 0.7 m³/h

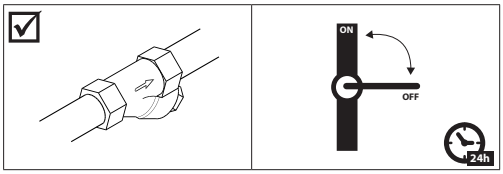
EV220B 15 - EV220B 50
Brass valve body, NC

- WRAS
- ACS
- PZH
- In accordance with:
  - Low Voltage Directive 2014/35/EU
    - EN60730-1
    - EN60730-2-8

  (Notified body by Semko)
  - Pressure Equipment Directive 2014/68/EU
  - RoHS Directive 2011/65/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size [mm]	K_v-value [m^3/h]	Media temp. [°C]	Differential pressure [Bar]	Approval	Code no.
G ½	EPDM	15	4	0 – 100	0.3 – 16	WRAS	**032U7115**
G ¾	EPDM	20	8	0 – 100	0.3 – 16	WRAS	**032U7120**
G 1	EPDM	25	11	0 – 100	0.3 – 16	WRAS	**032U7125**
G 1 ¼	EPDM	32	18	0 – 100	0.3 – 16	WRAS	**032U7132**
G 1 ½	EPDM	40	24	0 – 100	0.3 – 12		**032U7140**
G 2	EPDM	50	40	0 – 100	0.3 – 12		**032U7150**

[1]) It is recommended to use a filter in front of the valve.
[2]) In water applications, exercise the valves at least once every 24 hours, meaning change the state of the valve.
The valve exercise will minimize the risk of the valve sticking due to calcium carbonate, zinc or iron oxide build-up.



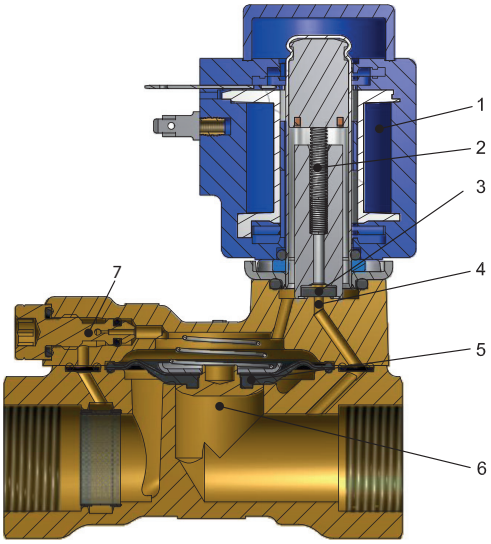
Technical data

Type	EV220B 15B	EV220B 20B	EV220B 25B	EV220B 32B	EV220B 40B	EV220B 50B
Time to open [ms] [1])	40	40	300	1000	1500	5000
Time to close [ms] [1])	350	1000	1000	2500	4000	10000

[1]) The times are indicative and apply to water. The exact times will depend on the pressure conditions.
Closing times can be changed by replacement of the equalizing orifice.

Installation	Optional, but vertical solenoid system is recommended.		
Max. working pressure (MWP)	16 bar		
Max. test pressure	25 bar		
Ambient temperature	BB DC	Up to 50 °C	
	BB AC	Up to 80 °C	
	EEC BE240CS	Up to 55 °C	
Viscosity	Max. 50 cSt		
Materials	Valve body/cover	Brass	W.no. 2.0402
	Armature	Stainless steel	W.no. 1.4105 / AISI 430 FR
	Armature tube	Stainless steel	W.no. 1.4306 / AISI 304 L
	Armature stop	Stainless steel	W.no. 1.4105 / AISI 430 FR
	Springs	Stainless steel	W.no. 1.4310 / AISI 301
	O-rings	EPDM	
	Valve plate	EPDM	
	Diaphragm	EPDM	

Function

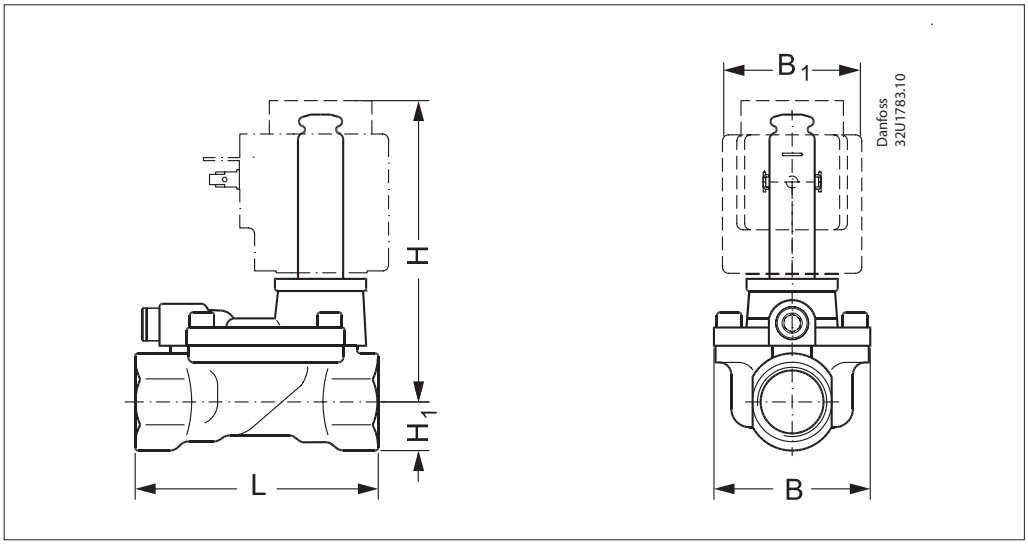


Pos. no.	Description
1	Coil
2	Armature spring
3	Valve plate
4	Pilot orifice
5	Diaphragm
6	Main orifice
7	Equalizing orifice

Coil voltage disconnected (closed):
When the voltage is disconnected, the valve plate (3) is pressed down against the pilot orifice (4) by the armature spring (2). The pressure across the diaphragm (5) is built up via the equalizing orifice (7). The diaphragm closes the main orifice (6) as soon as the pressure across the diaphragm is equivalent to the inlet pressure. The valve will be closed for as long as the voltage to the coil is disconnected.

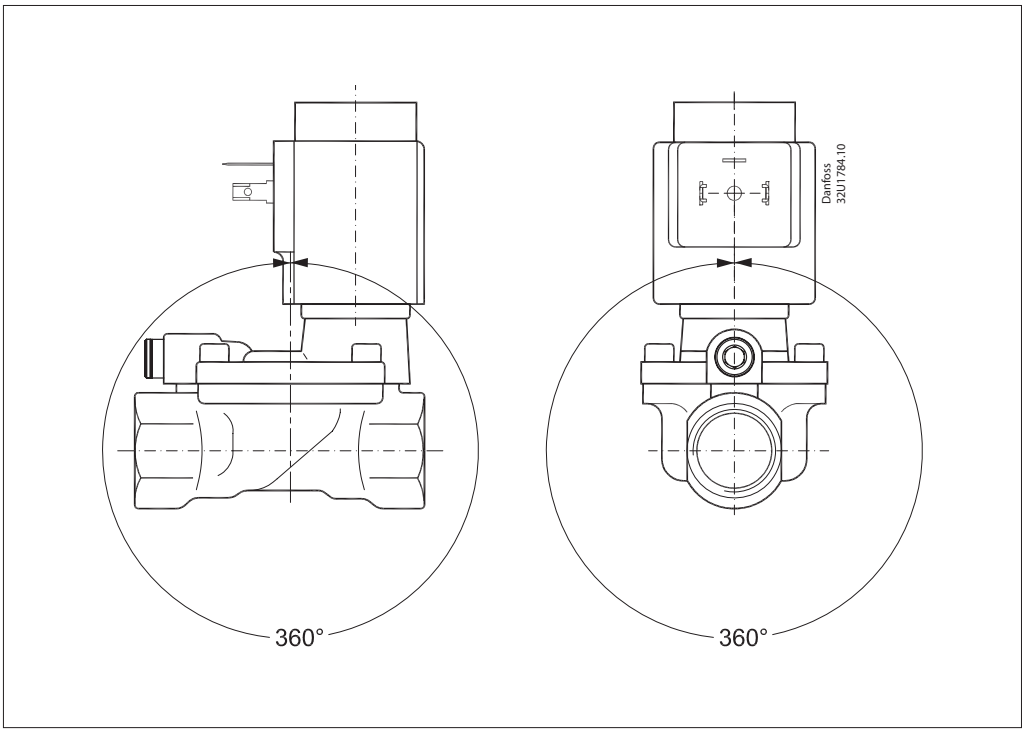
Coil voltage connected (open):
When voltage is applied to the coil (1), the pilot orifice (4) is opened. As the pilot orifice is larger than the equalizing orifice (7), the pressure across the diaphragm (5) drops and therefore it is lifted clear of the main orifice (6). The valve is now open for unimpeded flow and will be open for as long as the minimum differential pressure across the valve is maintained, and for as long as there is voltage to the coil.

Dimensions and weight



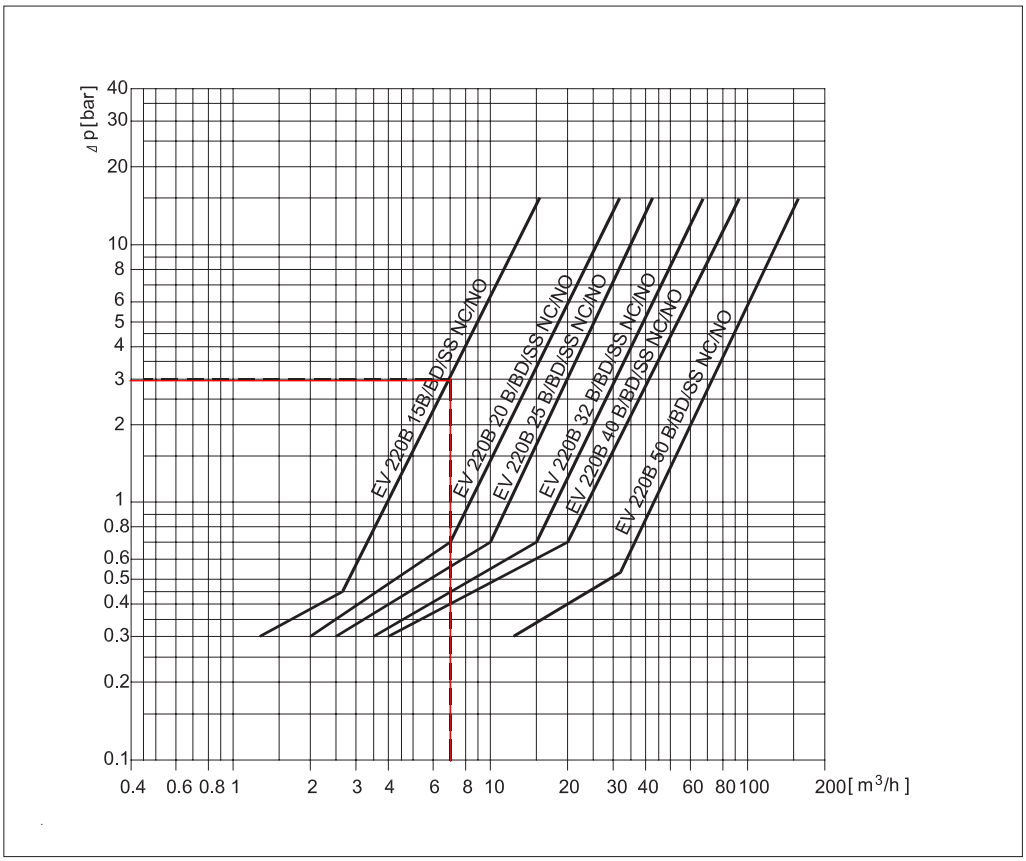
Type	L	B	B1 [mm] / coil type				H	H1	Weight without coil
	[mm]	[mm]	BA	BB / BE	BG / BO	BP	[mm]	[mm]	[kg]
EV220B 15	80.0	52.0	32	46	68	45	99	15.0	0.7
EV220B 20	90.0	58.0	32	46	68	45	103	18.0	0.9
EV220B 25	109.0	70.0	32	46	68	45	113	22.0	1.3
EV220B 32	120.0	82.0	32	46	68	45	120	27.0	2.0
EV220B 40	130.0	95.0	32	46	68	45	129	32.0	3.0
EV220B 50	162.0	113.0	32	46	68	45	135	37.0	4.8

Mounting angle

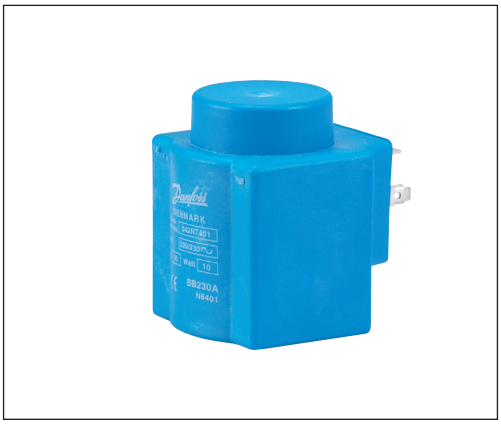


Capacity diagrams:

Example, water:
Capacity for EV220B 15B at differential pressure of 3 bar.
Approx. 7 m³/h



BB/BY, High performance coils



- Enclosure:
  - IP00 version with DIN 43650 A spade connectors
  - IP20 version with protective cap
  - IP65 version with mounted cable plug
- In accordance with:
  - Low Voltage Directive 2014/35/EU
    - EN60730-1
    - EN60730-2-8

    (Notified body by Semko)
  - RoHS Directive 2011/65/EU
- BY coils are UL regonised

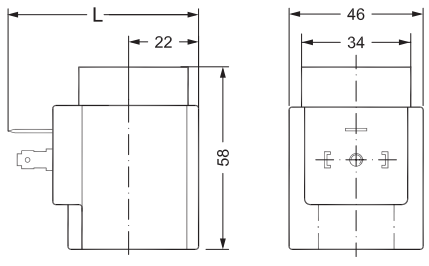
Type	Tambient	Supply voltage	Voltage variation	Frequency	Power consumption		Code no.
	[°C]	[V]		[Hz]	[W]	[VA]	
BB024AS	-40 – 80	24	-15%, +10%	50	11	19	**018F7358**
BB115AS	-40 – 50	115	-15%, +10%	50	11	19	**018F7361**
BB230AS	-40 – 80	220 - 230	-15%, +10%	50	11	19	**018F7351**
BB110CS	-40 – 50	110	±10%	50	15	28	**018F7360**
		110	±10%	60	13	22	
BB024DS	-40 – 50	24	±10%	DC	16	–	**018F7397**

Type	Tambient	Supply voltage	Voltage variation	Frequency	Power consumption		Approval	Code no.
	[°C]	[V]		[Hz]	[W]	[VA]		
BY024CS	-40 – 50	24	±10%	50	14	26		**018F7655**
		24	±10%	60	12	21		
BY240CS	-40 – 50	230	±10%	50	16	32		**018F7658**
		208 - 240	±10%	60	14	28		
BY120CS	-40 – 50	110	±10%	50	14	27		**018F7663**
		110 – 120	±10%	60	14	27		

Technical data

Design	0In accordance with VDE 0580
Insulation of coil windings	Class H according to IEC 85
Connection	Spade connector in accordance with DIN 43650 form A
Enclosure, IEC 529	IP00 with spade connector, IP20 with protective cap, IP65 with cable plug
Duty rating	Continuous
Plug type	Cable plug (042N0156)

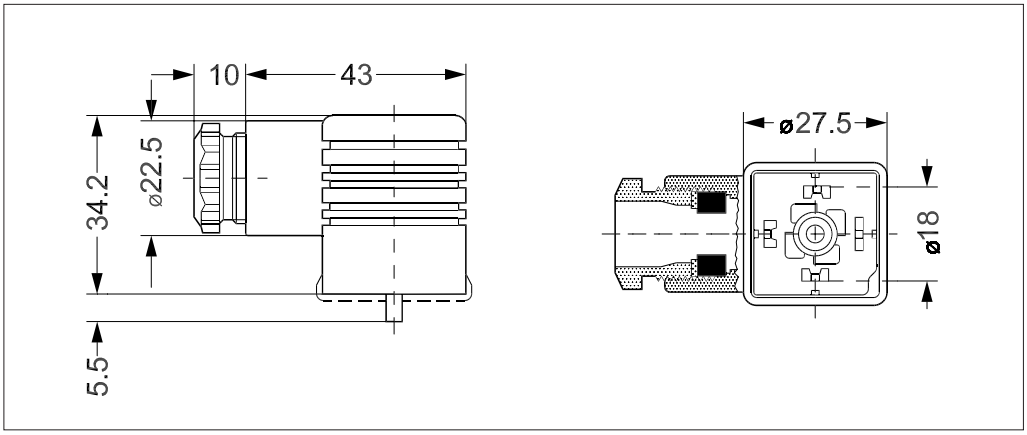
Dimensions and weight



L without cable plug	L with protective cap	L with cable plug	Weight
[mm]	[mm]	[mm]	[kg]
62	77	85	0.24

Accessories: Cable plug

Type, Form A	Code number
GDM 2011 (grey) cable plug according to DIN 43650-A PG11	**042N0156**



EEC Electronic coil controller

EEC electronic coil controller for solenoid valves, type EV220B.

The EEC gives the coil a short over-boost, and controls the armature speed:

- Low power consumption (holding power: 4 W)
- Reduced noise during operation
- Increased MOPD compared to standard coils
- Increased lifetime of the solenoid valve
- Enclosure:
  - IP67 version
- In accordance with:
  - Low Voltage Directive 2014/35/EU
  - EN60730-1

Type	Tambient	Supply voltage	Voltage variation	Frequency	Power consumption	Code no.
	[°C]	[V]		[Hz]	[W]	
BE240CS	-25 – 55	208-240	±10%	60	4	**018F6783**
		208-240	±10%	50	4	

EV225B
DZR brass valve body, NC

- In accordance with:
  - Low Voltage Directive 2014/35/EU
    - EN60730-1
    - EN60730-2-8

  (Notified body by Semko)
  - Pressure Equipment Directive 2014/68/EU
  - RoHS Directive 2011/65/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size [mm]	K_V - value [m^3/h]	Media temperature min. to max. [°C]		Differential pressure min. to max. [bar] [3]	Code no.
				AC coil	DC coil	Coil type BQ 10 W AC	
G 1/4	PTFE	6	0.9	0 – 185	0 – 160	0.2 – 10	**032U3802**
G 3/8	PTFE	10	2.2	0 – 185	0 – 160	0.2 – 10	**032U3803**
G 1/2	PTFE	10	2.2	0 – 185	0 – 160	0.2 – 10	**032U3804**
G 1/2	PTFE	15	3.0	0 – 185	0 – 160	0.2 – 10	**032U3805**
G 3/4	PTFE	20	5.0	0 – 185	0 – 160	0.2 – 10	**032U3806**
G 1	PTFE	25	6.0	0 – 185	0 – 160	0.2 – 10	**032U3807**

Technical data

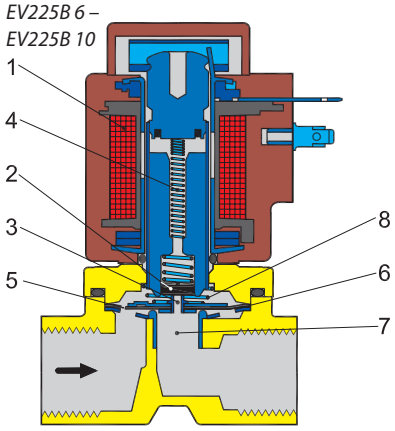
Main type	EV225B 6-25
Time to open [ms] [1]	Max. 0.2 s
Time to close [ms] [1]	Max. 0.2 s

[1] The times are indicative. The exact times will depend on the pressure conditions.

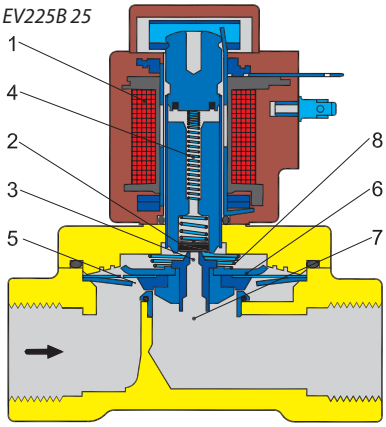
Installation	Vertical solenoid system is recommended		
Max. working pressure (MWP)	10 bar		
Max. test pressure	25 bar		
Ambient temperature	Max. 40 °C at a media temperature of 185 °C		
Viscosity	Max. 50 cSt		
Materials	Valve body	Dezincification resistant brass	
	Armature / armature stop	Stainless steel	W. no. 1.4105 / AISI 430FR
	Spring	Stainless steel	W. no. 1.4306 / AISI 304L
	Armature tube	Stainless steel	W. no. 1.4310 / AISI 301
	Diaphragm	PFTE	
	Valve plate	PFTE	
	Valve seat	Stainless steel	
	External gaskets	O-ring: AFLAS	

Function

EV225B 6 – EV225B 10



EV225B 15 – EV225B 25

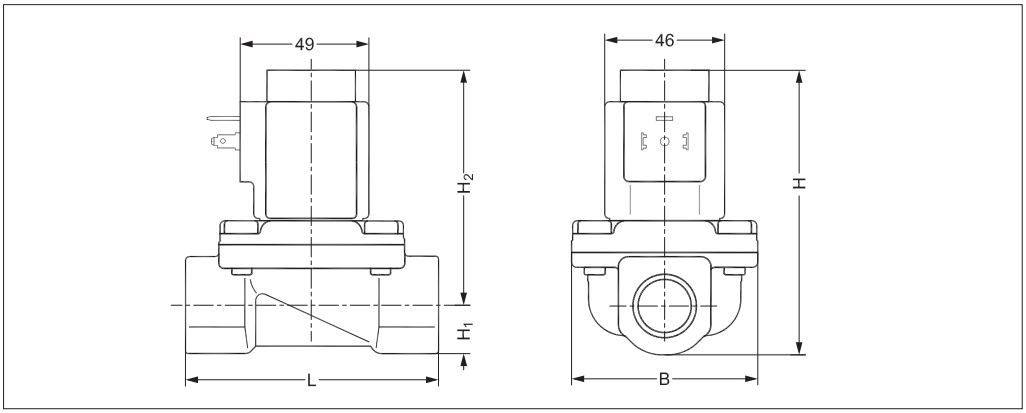


Coil voltage disconnected (closed):
When the voltage is disconnected, the valve plate (2) is pressed down against the pilot orifice (3) by the armature spring (4). The pressure across the diaphragm (6) is built up via the equalizing orifice (5). The diaphragm/piston closes the main orifice (7) as soon as the pressure across the diaphragm/piston is equivalent to the inlet pressure. The valve will be closed for as long as the voltage to the coil is disconnected.

Coil voltage connected (open):
When voltage is applied to the coil (1), the pilot orifice (3) is opened. As the pilot orifice is larger than the equalizing orifice (5), the pressure across the diaphragm (6) drops and therefore it is lifted clear of the main orifice (7). The valve is now open for unimpeded flow and will be open for as long as the minimum differential pressure across the valve is maintained, and for as long as there is voltage to the coil.

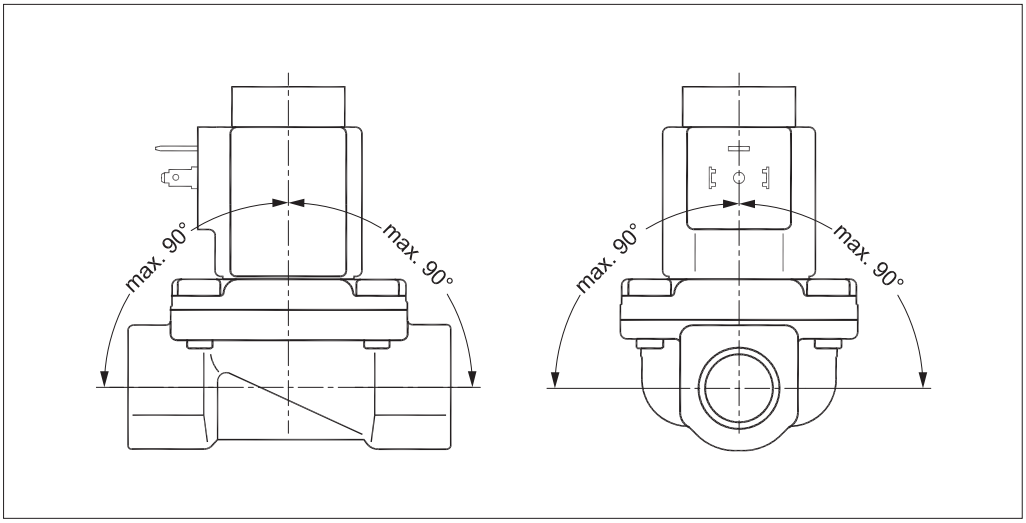
Pos. no.	Description
1	Coil
2	Valve plate
3	Pilot orifice
4	Armature spring
5	Equalizing orifice
6	Diaphragm
7	Main orifice
8	Closing spring

Dimensions and weight



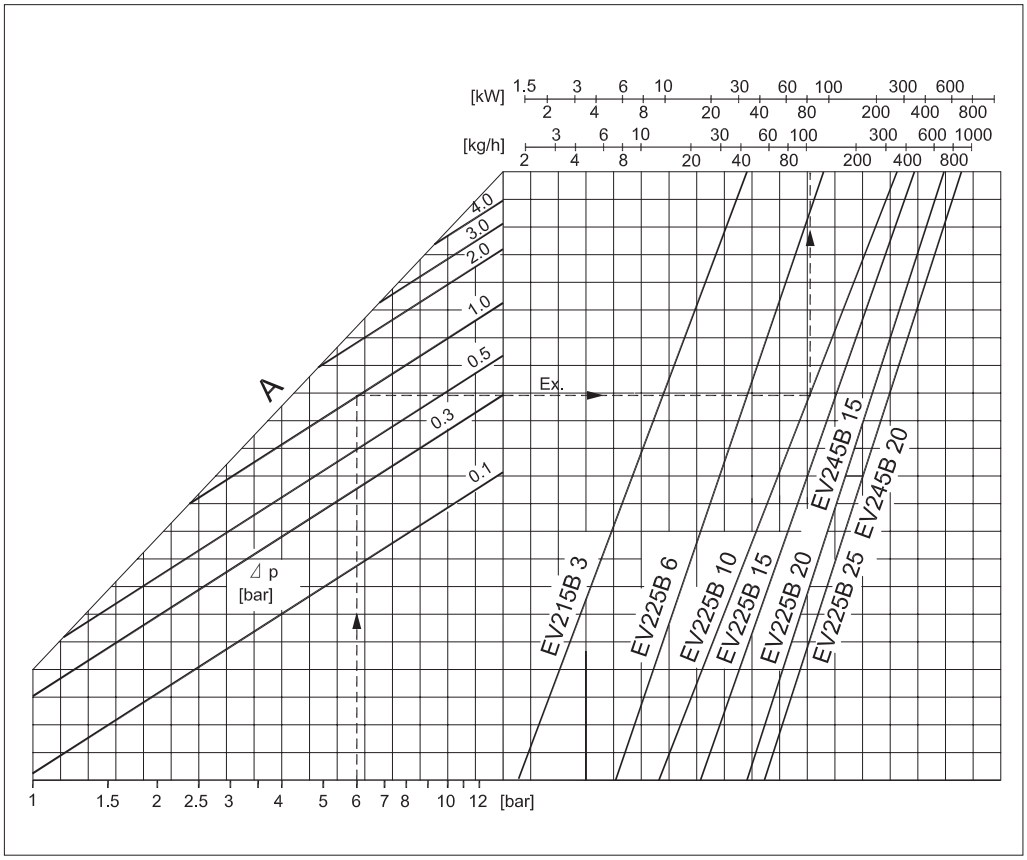
Type	L	B	H	H_1	H_2	Weight gross valve body with coil BB/BY	Weight gross valve body with coil BN
	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	[kg]
EV225B 6 BD	62	46	98	13	85	0.8	1.0
EV225B 10 BD	62	46	98	13	85	0.8	1.6
EV225B 15 BD	81	56	102	15	87	0.9	1.1
EV225B 20 BD	98	72	110	18	92	1.4	1.6
EV225B 25 BD	106	72	117	21	96	1.7	1.9

Mounting angle



Steam capacity diagrams

Example
Capacity for EV225 10 BD; inlet pressure (p_1) of 6 bar absolute; differential pressure at 1 bar: approx. 100 kg/h / 80 kW



Steam coils type BQ and BN

- Enclosure:
  - IP00 version with DIN 43650 A spade connectors
  - IP20 version with protective cap
  - IP65 version with mounted cable plug
- In accordance with:
  - Low Voltage Directive 2014/35/EU
    - EN60730-1
    - EN60730-2-8

    (Notified body by Semko)
  - RoHS Directive 2011/65/EU
- Coils are UL regonised

Coil type BQ AC
Steam coils to 185 °C

Type	Tambient	Supply voltage	Voltage variation	Frequency	Power consumption		Approval	Code no.
	[°C]	[V]		[Hz]	[W]	[VA]		
BQ024CS	-40 – 40	24	-15%, +10%	50	10	17		018F4517
		24	-15%, +10%	60	9.0	16		
BQ120BS	-40 – 40	110 - 120	-15%, +6%	60	13.5	19		018F4519
BQ240CS	-40 – 40	230	-15%, +6%	50	10	17		018F4511
		208 - 240	-6%, +6%	60	9.5	16		

Technical data

Design	In accordance with UL 429
Insulation of coil windings	Class H according to IEC 85
Connection	Spade connector in accordance with DIN 43650 form A
Enclosure, IEC 529	Up to IP65 / NEMA4
Plug type	Cable plug (042N0156)

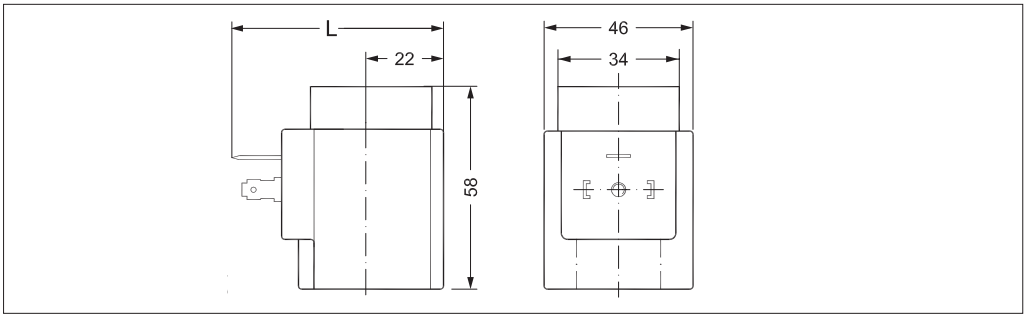
Coil type BN DC
Steam coils to 160 °C

Type	Tambient	Supply voltage	Voltage variation	Frequency	Power consumption		Approval	Code no.
	[°C]	[V]		[Hz]	[W]	[VA]		
BN024DS	-40 – 50	24	±10%	DC	20	–		018F6968

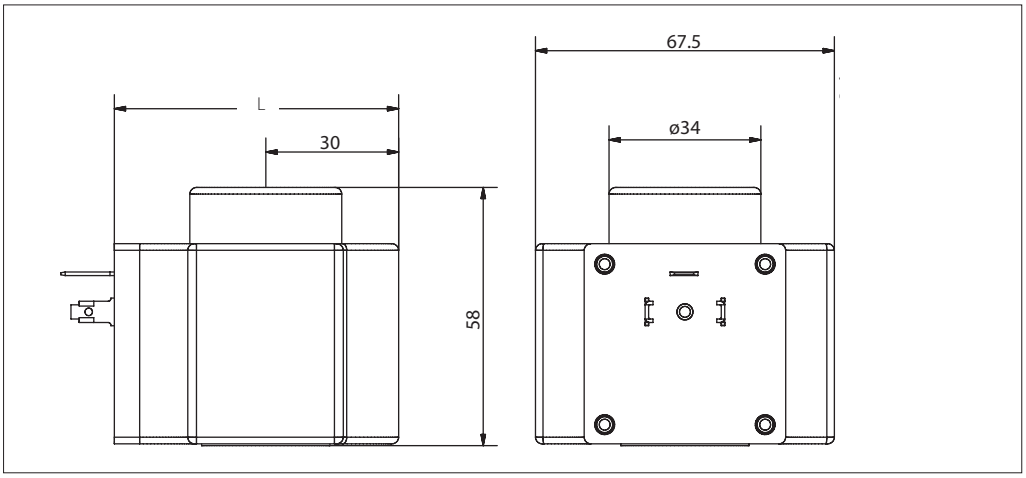
Technical data

Design	In accordance with VDE 0580
Insulation of coil windings	Class H according to IEC 85
Connection	Terminal box or cable plug in accordance with DIN43650 form A
Enclosure, IEC 529	IP65, IP67
Duty rating	Continuous

Dimensions and weight
BQ/BN coils



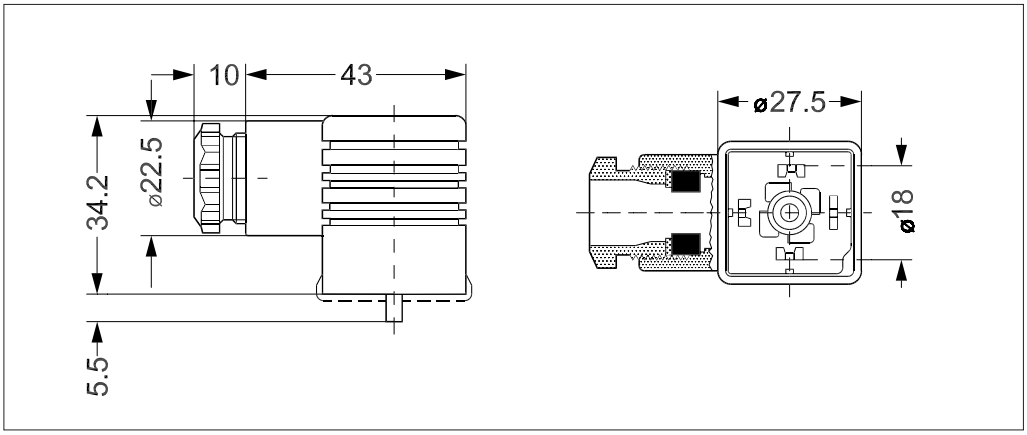
Type	L without cable plug	L with protective cap	L with cable plug	Weight
	[mm]	[mm]	[mm]	[kg]
BQ	62	77	85	0.24



Type	L	Weight
	[mm]	[kg]
BN	64	0.47

Accessories:
Cable plug

Type, Form A	Code no.
GDM 2011 (grey) cable plug according to DIN 43650-A PG11	**042N0156**



AV210
Bronze valve body, NC
ISO thread connection
PTFE seal material

- In accordance with:
  - Low Voltage Directive 2014/35/EU

Mounting: Bi-directional
Closing *against* or closing *with* the flow direction.
Closing *against* is recommended to avoid water hammer.

Connection ISO 228/1	Orifice size	K_V - value	Control head diameter	Differential pressure, min. to max.	Control pressure	Code no.
[in]	[mm]	[m^3/h]	[mm]	[bar]	[bar]	
G 1/2	15	5.7	50	0 – 16	4 – 10	**042N4403**
G 1	25	20	63	0 – 11	4 – 10	**042N4406**
G 1 1/2	40	46	90	0 – 11	4 – 8	**042N4409**

AV210
Stainless steel valve body,
NC ISO thread connection
PTFE seal material

- In accordance with:
  - Pressure Equipment Directive 2014/68/EU

Mounting: Bi-directional
Closing *against* or closing *with* the flow direction.
Closing *against* is recommended to avoid water hammer.

Connection ISO 228/1	Orifice size	K_V - value	Control head diameter	Differential pressure, min. to max.	Control pressure	Code no.
[in]	[mm]	[m^3/h]	[mm]	[bar]	[bar]	
G 1	25	20	63	0 – 11	4 – 10	**042N4454**
G 1 1/2	40	46	90	0 – 11	4 – 8	**042N4457**

Technical data

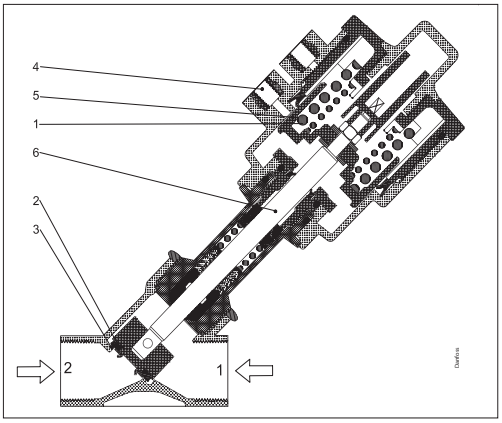
Main type	ø50 – 63 mm control head Closing with the flow direction	ø50 – 63 mm control head Closing against the flow direction	ø90 mm control head Closing with the flow direction	ø90 mm control head Closing against the flow direction
Time to open [ms] [1])	40 – 180	50 – 350	80 – 780	100 – 460
Time to close [ms] [1])	160 – 500	120 – 350	580 – 1270	360 – 790

[1]) The times are indicative.

Design	Piston-operated; angle-seated			
Installation	Optional			
Max. working pressure (MWP)	Bronze	16 bar		
	Stainless steel	25 bar		
Max. test pressure				
Tightness	Internally / Externally		Better than 0.4 mbar l/sec (25 ccm air per min.)	
Pressure range	See ordering			
Ambient temperature	-30 – 60 °C			
Media temperature	-30 – 180 °C			
Viscosity	Max. 600 cSt			
Control media	Air			
Materials	Valve body		Bronze	RG 5
			Stainless steel	AISI 316
	Intermediate piece	Bronze body	Brass	W.no.2.0402
		Stainless steel body	Stainless steel	AISI 316
	Seat control and nut		Stainless steel	AISI 316
	Spindle		Stainless steel	AISI 316
	Spindle gasket		PTFE	
	Gasket		Graphite	
	Valve plate unit		PTFE	
	Control head		PA66	

Type	Approval only apply for ISO versions
AV210 15-25	The products are not allowed to carry CE mark, according to PED 2014/68/EU
AV210 32 - 40 Bronze	CE marked and covered by PED 2014/68/EU, fluid group 1, class I
AV210 32 - 40 SS	CE marked and covered by PED 2014/68/EU, fluid group 1, class I

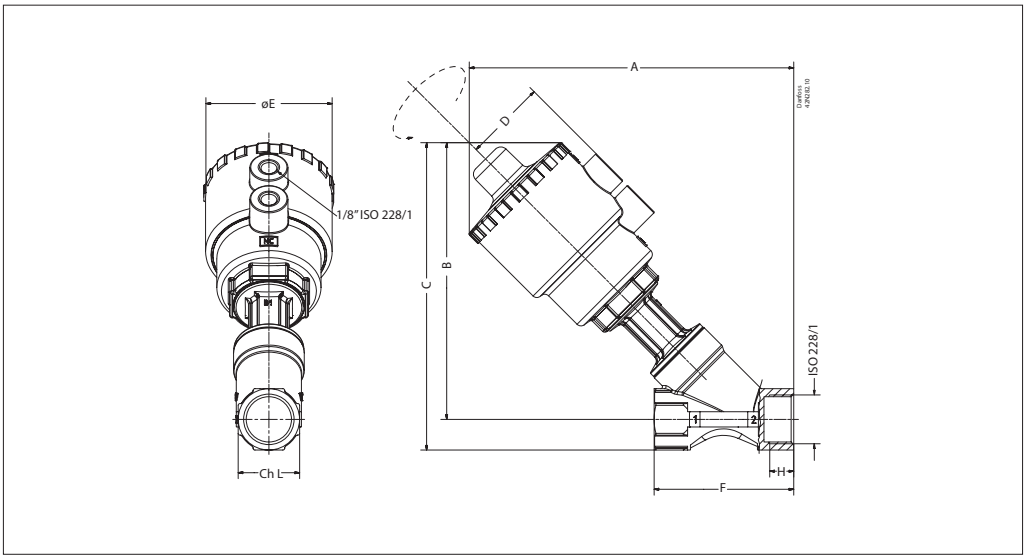
Function



Pos. no.	Description
1	Spring
2	Seat gasket
3	Valve seat
4	Control connection
5	Control piston
6	Spindle

The valve is kept closed by the spring (1), which presses the seat gasket (2) against the valve seat (3). When the pressure is applied to the control connection (4), the control piston (5), the spindle (6) and thus the seat gasket (2) are raised, and the valve opens with or against the pressure of the media.

Dimensions and weight



Bronze valve

ISO 228/1 connection	Orifice size	Control head diameter	A	B	C	D	øE	F	H	ch.L	Weight
[in]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
G ½	15	40	144	121	134	35	61	65	13	27	1.0
G ½	15	50	163	140	153	44	70	65	13	27	1.0
G 1	25	63	206	176	196	50.5	84.4	90	17.5	41	1.6
G 1	25	90	246	216	236	66.2	116.4	90	17.5	41	1.7
G 1 ½	40	90	270	235	264	66.2	116.4	120	18	58	3.4
G 1 ½	40	110	306	271	300	77.4	140.6	120	18	58	4.0

Stainless steel valve

ISO 228/1 connection	Orifice size	Control head diameter	A	B	C	D	øE	F	H	ch.L	Weight
[in]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
G ½	15	50	190	156	169	44	70	85	15	25	1.0
G 1	25	63	219	182	202	50.5	84.4	105	19.5	38	1.6
G 1	25	90	259	222	242	66.2	116.4	105	19.5	38	1.7
G 1 ½	40	90	271	230	258	66.2	116.4	130	18	54	3.4
G 1 ½	40	110	307	266	294	77.4	140.6	130	18	54	4.0

Capacity diagram