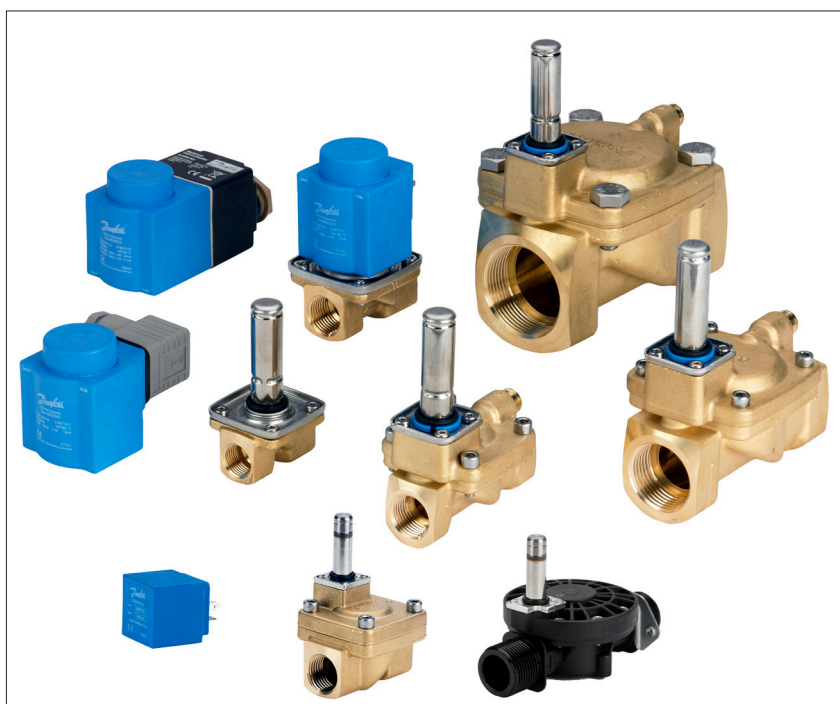


Data sheet

## Solenoid valves for water shut off and leak detection

### Types EV220T, EV220W, EV220B, and EV228B



Solenoid valve range for water leak detection in residential and industrial buildings:

- Houses and apartments
  - Kitchen and bathrooms
- Commercial buildings
- Industrial buildings

Solenoid valves used for shut-off water supply to prevent water damages from leaking systems.

#### Features and versions

- Clip-on coil
- Flow range for water in Kv: 0.7 - 40 m<sup>3</sup> / h
- Differential pressure: 0.3 – 16 bar
- Media temperature from 0 – 120 °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, NC, brass
- EV220B 6-12, NO, brass and DZR brass
- EV220B 6-12, NC, brass
- EV220B 15-50, NO, brass and DZR brass
- EV220B 15-50, NC, brass
- EV228B 15-25, UN (Latching), DZR Brass

## Data sheet | Solenoid valves for water shut off and leak detection, Types EV220T, EV220W, EV220B, and EV228B

### EV220T Polymer valve body, NC



- WRAS
- RoHS Directive 2011/65/EU
- - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
 (Notified body by Semko)
- - Pressure Equipment Directive 2014/68/EU
- UL recognized

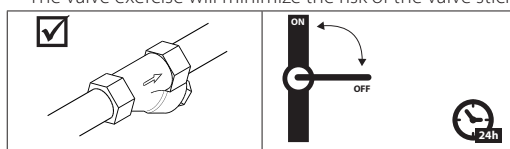
ISO 228-1 connection		Seal material	Orifice size [mm]	K <sub>v</sub> -value [m <sup>3</sup> / h]	Media temperature [°C]	Differential pressure [bar]	Code no.
Inlet	Outlet						
G 3/4 ext.	G 3/4 ext.	EPDM	14	4	0 – 85	0.3 – 10	042U8125
G 3/4 ext.	G 3/4 ext.	EPDM	18	6	0 – 85	0.3 – 10	042U8175

See separate table for AS/AZ coils.

<sup>1)</sup> It is recommended to install a filter in front of the valve.

<sup>2)</sup> 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.



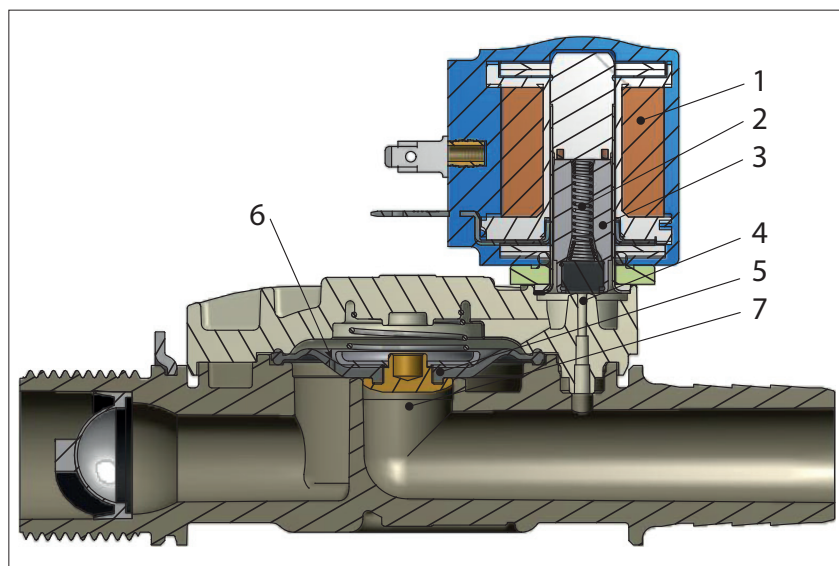
### Technical data

Type	EV220T 14	EV220T 18
Time to open [ms] <sup>3)</sup>	100	200
Time to close [ms] <sup>3)</sup>	400	500
Capacity, K <sub>v</sub> [m <sup>3</sup> /h]	4	6
Capacity C <sub>v</sub> [gal/min]	4.7	7

<sup>3)</sup> Times are indicative and apply to water. Exact times will depend on pressure conditions

Valve	Max. working pressure (MWP)	10 bar	
	Max. test pressure	15 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	
Features	Screws	Steel zinc plated delta PT	
	Mounting	Metal bracket (see dimension drawing on page 4)	
	Media	Built-in filter mesh width 0.45 mm	

Function, NC



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

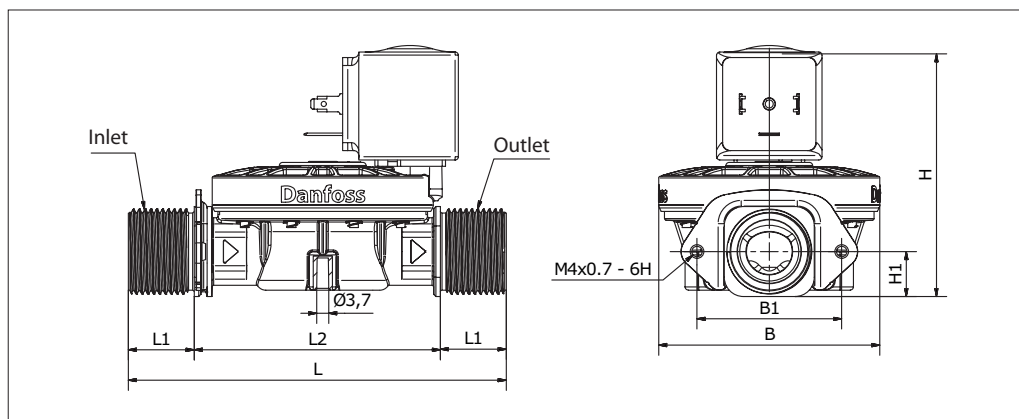
**Coil voltage disconnected (Closed)**

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)**

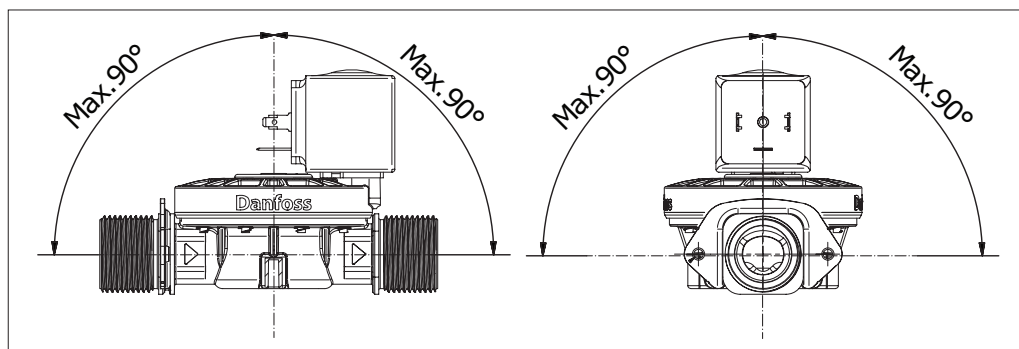
When voltage is applied to the coil (1), the pilot orifice (4) is opened. Since the pilot orifice is larger than the equalizing orifice (6), pressure over the diaphragm (5) falls and the diaphragm is lifted clear of the main orifice (7). The valve stays open for as long as the required minimum differential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

**Dimensions and weight**

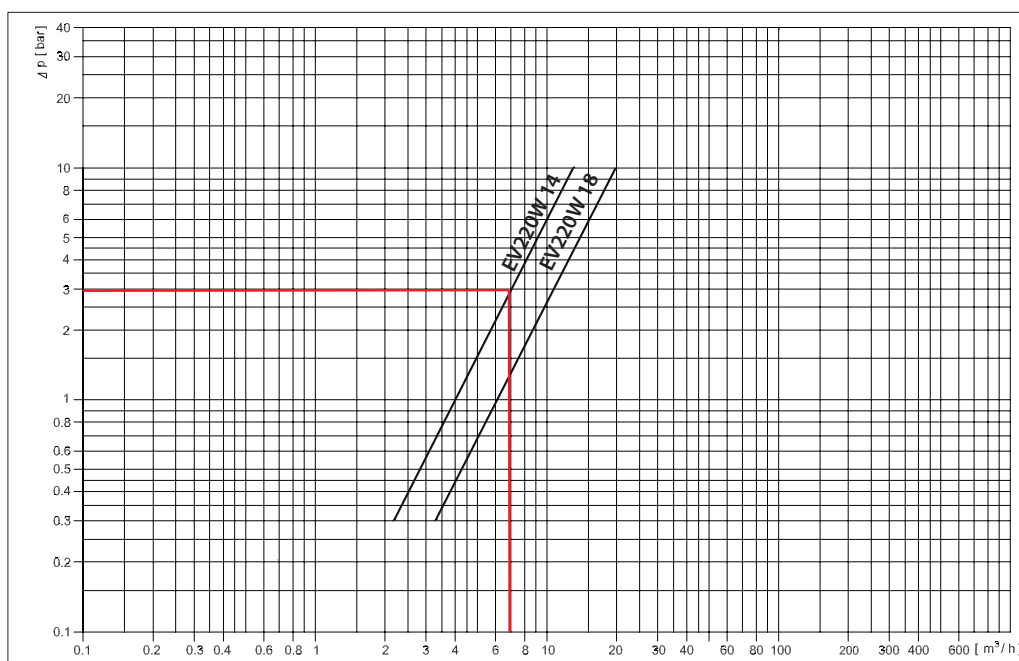


Orifice	ISO 228-1 connection		L [mm]	L1 [mm]	L2 [mm]	B [mm]	B1 [mm]	H [mm]	H1 [mm]
	Inlet	Outlet							
DN 14	G 3/4 ext.	G 3/4 ext.	127.5	20.5	76.5	68.8	45.0	77.7	14.0
DN 18	G 3/4 ext.	G 3/4 ext.	127.5	20.5	76.5	68.8	45.0	79.9	14.0

**Mounting angle**



**Capacity diagram**  
**Example for water:**  
**Capacity for EV220T at a differential pressure of 3 bar:**  
**Approx. 7 m<sup>3</sup> / h**



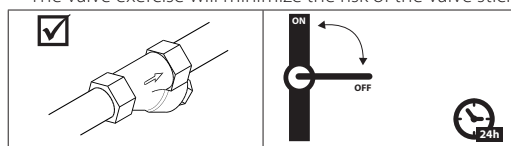
**EV220W**  
**Brass valve body, NC**


- WRAS
- RoHS Directive 2011/65/EU
- - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
- UL recognized

ISO228/1 connection	Seal material	Orifice size	K <sub>v</sub> -value	Media temp.	Differential pressure	Code no.
		[mm]	[m <sup>3</sup> /h]	[°C]	[Bar]	
G 3/8	EPDM	10	1.6	0 – 100	0.3 – 10	042U4410
G 1/2	EPDM	14	4	0 – 100	0.3 – 10	042U4414
G 3/4	EPDM	18	7	0 – 100	0.3 – 10	042U4418
G 1	EPDM	22	7	0 – 100	0.3 – 10	042U4422

See separate table for AC/AZ coils

- <sup>1)</sup> It is recommended to install a filter in front of the valve.  
<sup>2)</sup> 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.

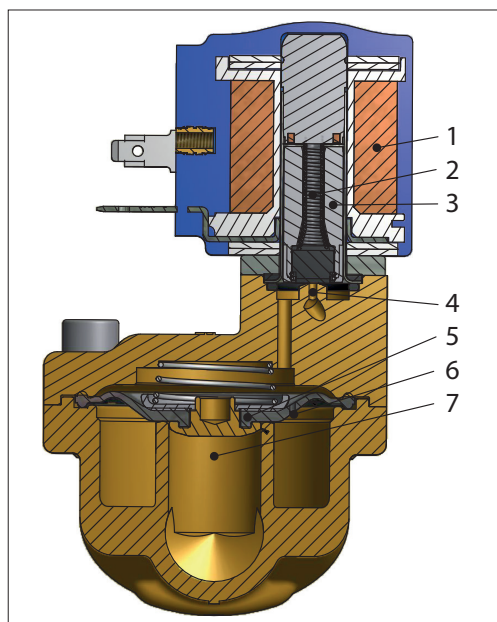

**Technical data**

Type	EV220W 10	EV220W 14	EV220W 18	EV220W 22
Time to open [ms] <sup>3)</sup>	50	100	200	200
Time to close [ms] <sup>3)</sup>	300	400	500	500

<sup>3)</sup> 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. 50 cSt		
Materials	Valve body	Brass	W. no. 2.0401
	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	
Diaphragm valve cone	Brass CW614N, W.no. 2.0401		

Function, NC



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

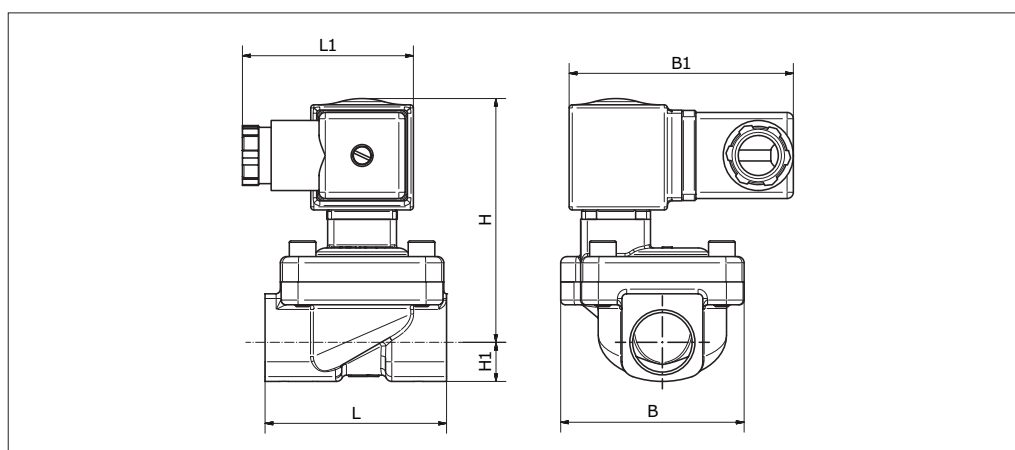
**Coil voltage disconnected (Closed)**

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)**

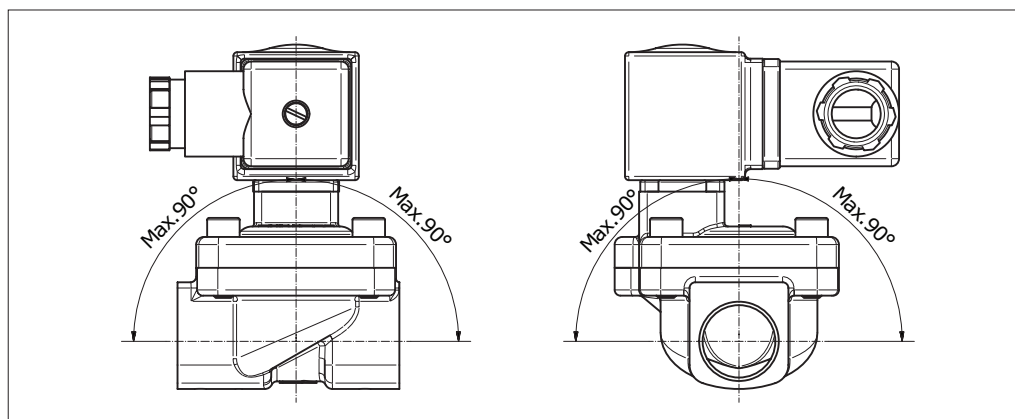
When voltage is applied to the coil (1), the pilot orifice (4) is opened. Since the pilot orifice is larger than the equalizing orifice (6), pressure over the diaphragm (5) falls and the diaphragm is lifted clear of the main orifice (7). The valve stays open for as long as the required minimum differential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

Dimensions and weight

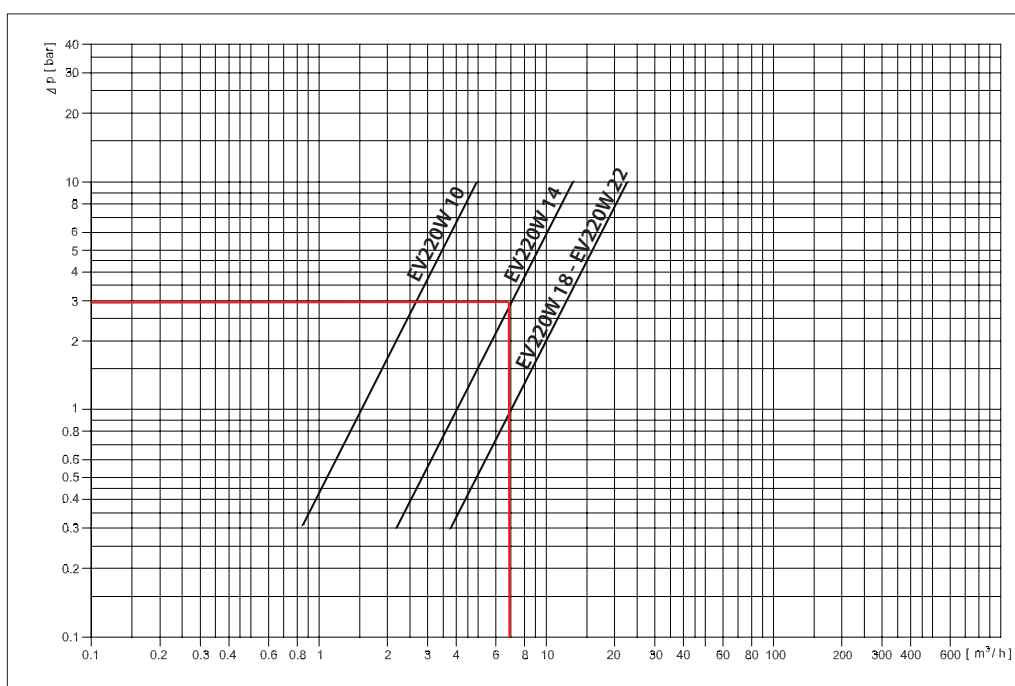


Type	L [mm]	L1 [mm]	B [mm]	B1 Coil AS	H1 [mm]	H		Weight with AS coil [kg]
						NC [mm]	NO [mm]	
EV220W 10	51	50	50	70	13	77	81	0.56
EV220W 14	58	50	58	70	13	78	82	0.62
EV220W 18	90	50	58	70	18	79	83	0.84
EV220W 22	90	50	58	70	22	84	84	1.12

**Mounting angle**



**Capacity diagram**  
**Example for water:**  
**Capacity for EV220W at a**  
**differential pressure of 3 bar:**  
**Approx. 7 m<sup>3</sup> / h**



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



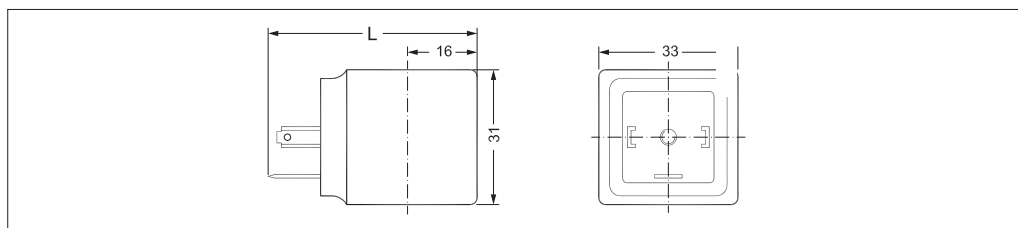
- Enclosure:  
Up to IP65 / NEMA 4
- Used with EV220T and EV220W
- For UL recognised valves
- In accordance with:
  - RoHS Directive 2011/65/EU
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
- UL recognized us

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

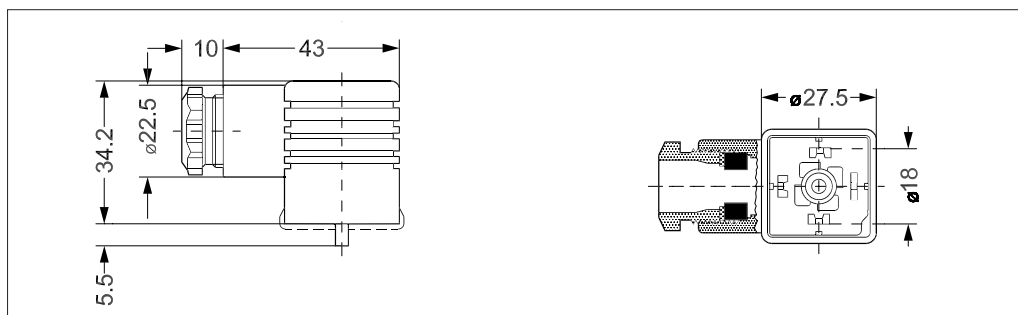
#### Dimensions and weight



L without cable plug	L with cable plug	L with protective cap	Weight
[mm]	[mm]	[mm]	[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 12  
Brass valve body, NO**

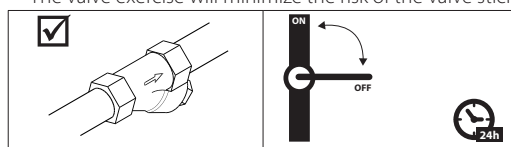

- WRAS
- ACS
- PZH
- In accordance with:
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
  - Pressure Equipment Directive 2014/68/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size	K <sub>v</sub> -value	Media temperature	Max working pressure	Differential pressure	Code no.
		[mm]	[m <sup>3</sup> /h]	[°C]	[Bar]	[Bar]	
G 3/8	EPDM	6	0.7	0 – 100	20	0.1 – 10	032U1238
G 1/2	EPDM	12	2.1	0 – 100	10	0.3 – 10	032U1250

<sup>1)</sup> It is recommended to install a filter in front of the valve.

<sup>2)</sup> 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 12
Time to open [ms] <sup>3)</sup>	40	60
Time to close [ms] <sup>3)</sup>	250	600

<sup>3)</sup> The times are indicative and apply to water. The exact times will depend on the pressure conditions.

<b>Installation</b>	Vertical solenoid system is recommended		
<b>Max. test pressure</b>	EV220B 6	30 bar	
	EV220B 12	15 bar	
<b>Ambient temperature</b>	BB DC	Up to 50 °C	
	BB AC	Up to 80 °C	
	EEC BE 240 CS	Up to 55 °C	
<b>Viscosity</b>	Max. 50 cSt		
<b>Materials</b>	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	
	Valve plate	EPDM	
	Diaphragm	EPDM	
Diaphragm valve cone	Brass CW614N, W.no. 2.0401		

**EV220B 6 - EV220B 12  
DZR Brass valve body, NO**

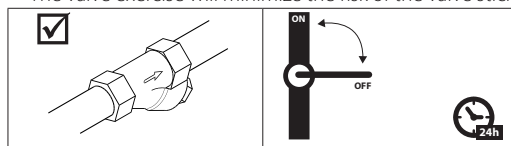

- WRAS
- In accordance with:
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
  - Pressure Equipment Directive 2014/68/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size	Kv-value	Media temperature	Max working pressure	Differential pressure	Code no.
		[mm]	[m <sup>3</sup> /h]	[°C]	[Bar]	[Bar]	
G 3/8	EPDM	6	0.7	0 – 100	20	0.1 – 10	032U5818
G 1/2	EPDM	12	2.1	0 – 100	10	0.3 – 10	032U5821

<sup>1)</sup> It is recommended to install a filter in front of the valve.

<sup>2)</sup> 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.

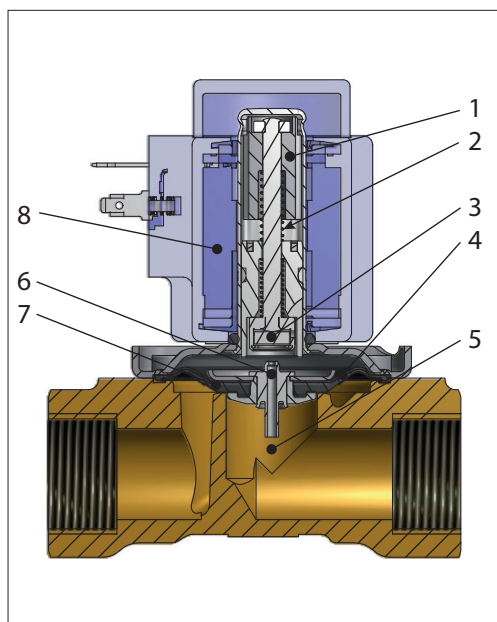

**Technical data**

Type	EV220B 6	EV220B 12
Time to open [ms] <sup>3)</sup>	40	60
Time to close [ms] <sup>3)</sup>	250	600

<sup>3)</sup> The times are indicative and apply to water. The exact times will depend on the pressure conditions.

<b>Installation</b>	Vertical solenoid system is recommended		
<b>Max. test pressure</b>	EV220B 6	30 bar	
	EV220B 12	15 bar	
<b>Ambient temperature</b>	BB DC	Up to 50 °C	
	BB AC	Up to 80 °C	
	EEC BE 240 CS	Up to 55 °C	
<b>Viscosity</b>	Max. 50 cSt		
<b>Materials</b>	Valve body	DZR Brass	W.no. CuZn36Pb2As/CZ132
	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	
	Valve plate	EPDM	
	Diaphragm	EPDM	
Diaphragm valve cone	Stainless steel	W.no. 1.4404	

Function, NO



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

**Coil voltage disconnected (open):**

When the voltage to the coil (8) is disconnected, the pilot orifice (6) is open. 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 will be open for as long as the minimum differential pressure across the valve is maintained, and for as long as the voltage to the coil is disconnected.

**Coil voltage connected (closed):**

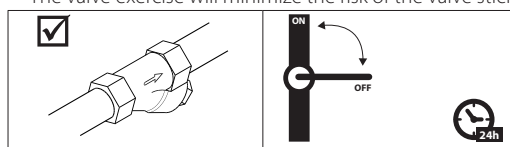
When voltage is applied to the coil, the valve plate (3) is pressed down against the pilot orifice (6). The pressure across the diaphragm (7) is built up via the equalizing orifice (4). The diaphragm closes the main orifice (5) as soon as the pressure across the diaphragm is equivalent to the inlet pressure.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

**EV220B 6 - EV220B 12  
Brass valve body, NC**


- WRAS
- ACS
- PZH
- In accordance with:
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
  - Pressure Equipment Directive 2014/68/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size	K <sub>v</sub> -value	Media temperature	Differential pressure	Code no.
		[mm]	[m <sup>3</sup> /h]	[°C]	[Bar]	
G 3/8	EPDM	6	0.7	0 – 100	0.1 – 10	032U1241
G 1/2	EPDM	12	2.5	0 – 100	0.3 – 10	032U1255

- <sup>1)</sup> It is recommended to install a filter in front of the valve.  
<sup>2)</sup> 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.

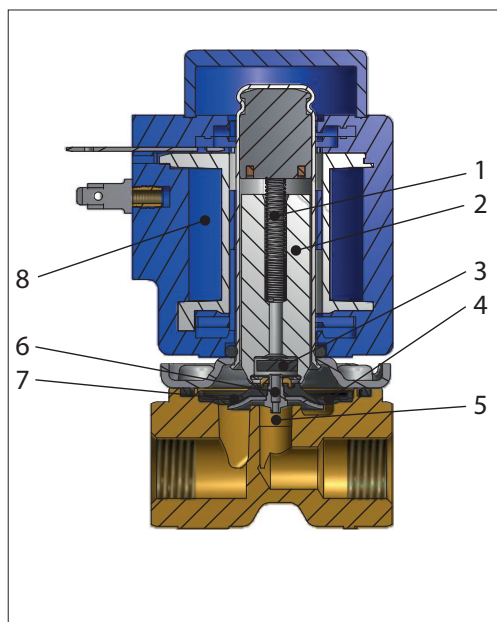

**Technical data**

Type	EV220B 6	EV220B 12
Time to open [ms] <sup>3)</sup>	40	60
Time to close [ms] <sup>3)</sup>	250	300

<sup>3)</sup> The times are indicative and apply to water. The exact times will depend on the pressure conditions.

<b>Installation</b>	Vertical solenoid system is recommended		
<b>Max. working pressure (MWP)</b>	DN 6	20 bar	
	DN 12	10 bar	
<b>Max. test pressure</b>	EV220B 6	30 bar	
	EV220B 12	15 bar	
<b>Ambient temperature</b>	BB DC	Up to 50 °C	
	BB AC	Up to 80 °C	
	EEC BE 240 CS	Up to 55 °C	
<b>Viscosity</b>	Max. 50 cSt		
<b>Materials</b>	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	
	Valve plate	EPDM	
	Diaphragm	EPDM	
Diaphragm valve cone	Stainless steel W.no. 1.4404		

Function, NC



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

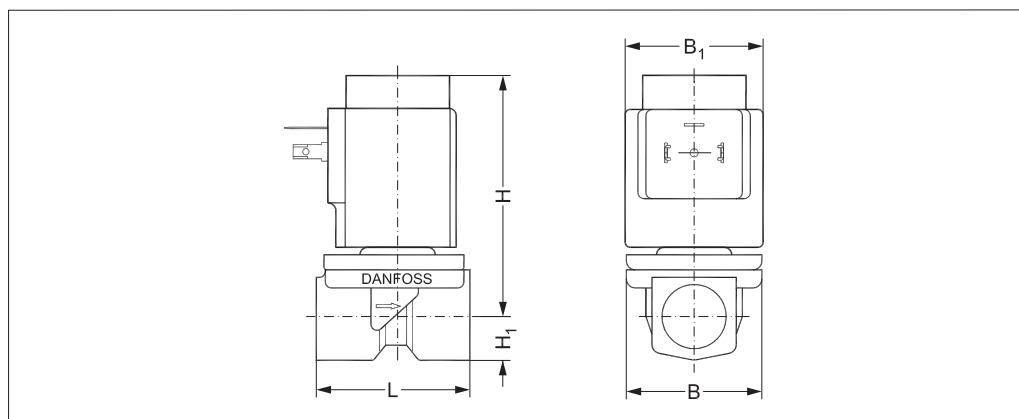
**Coil voltage disconnected (closed):**

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):**

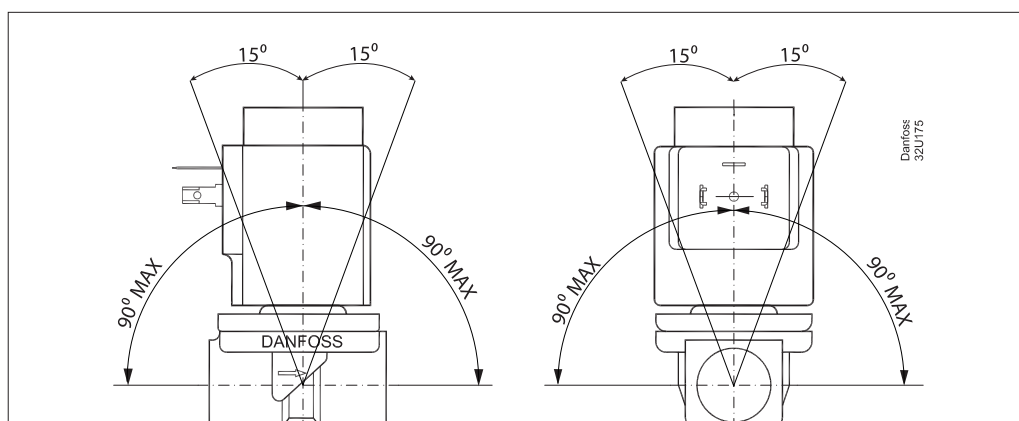
When voltage is applied to the coil, the pilot orifice (6) is opened. As the pilot orifice is larger than the equalizing orifice (4), the pressure across the diaphragm (7) drops and therefore it is lifted clear of the main orifice (5). The valve is now open and will be open for as long as the minimum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

Dimensions and weight

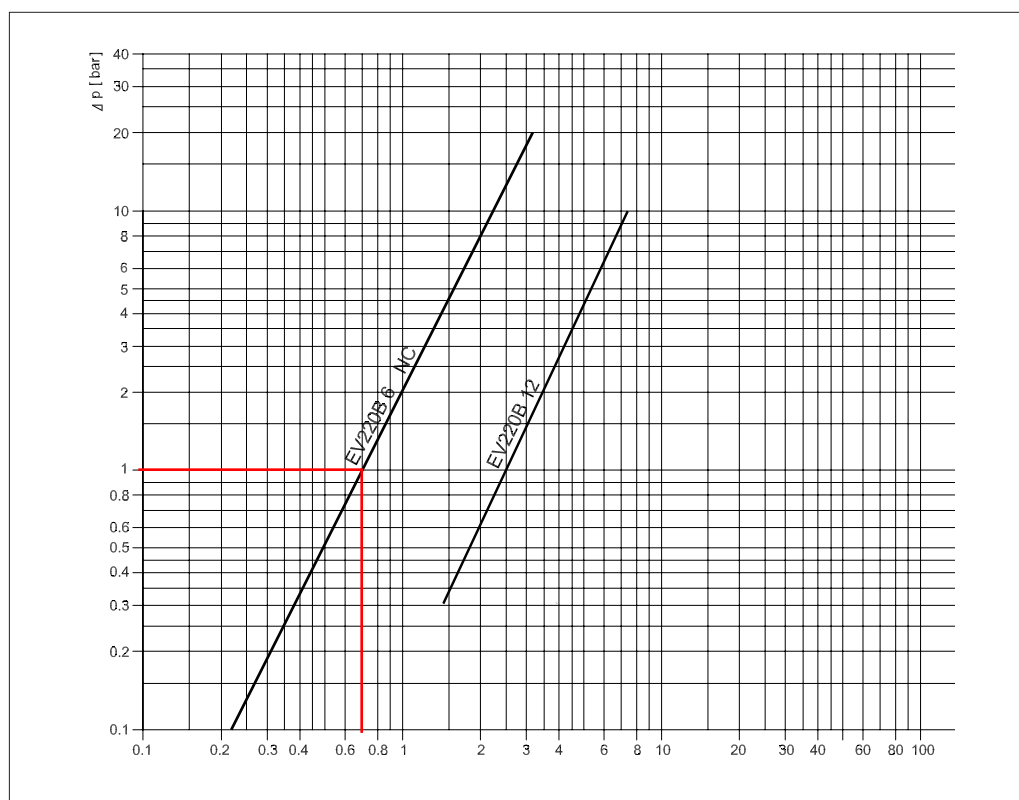


Type	L [mm]	B [mm]	B <sub>1</sub> [mm] / Coil type			H [mm]	H <sub>1</sub> [mm]	Weight gross valve body without coil [kg]
			BA	BB / BE	BG			
EV220B 6B	45.5	43.5	32	46	68	78	13	0.22
EV220B 12B	58.0	54.0	32	46	68	81	13	0.35

**Mounting angle**



**Capacity diagram:**  
**Example, water: EV220B 6**  
**NC, at 1 bar diff. pressure:**  
**Approx: 0.7 m<sup>3</sup>/h**



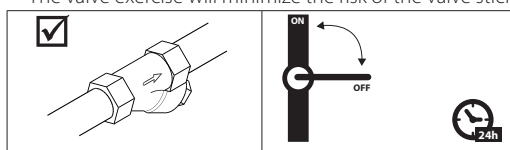
**EV220B 15 - EV220B 50**  
**Brass valve body, NO**


- WRAS
- ACS
- PZH
- In accordance with:
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
  - Pressure Equipment Directive 2014/68/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size	Kv-value	Media temperature	Approval	Differential pressure	Code no.
		[mm]	[m <sup>3</sup> /h]	[°C]		[Bar]	
G ½	EPDM	15	4	0 – 120		0.3 – 10	032U7117
G ¾	EPDM	20	8	0 – 120		0.3 – 10	032U7122
G 1	EPDM	25	11	0 – 120		0.3 – 10	032U7127
G 1 ¼	EPDM	32	18	0 – 120		0.3 – 10	032U7134
G 1 ½	EPDM	40	24	0 – 120		0.3 – 10	032U7142
G 2	EPDM	50	40	0 – 120		0.3 – 10	032U7152

<sup>1)</sup> It is recommended to install a filter in front of the valve.

<sup>2)</sup> 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**

Main type	EV220B 15B	EV220B 20B	EV220B 25B	EV220B 32B	EV220B 40B	EV220B 50B
Time to open [ms] <sup>3)</sup>	40	40	300	1000	1500	5000
Time to close [ms] <sup>3)</sup>	350	1000	1000	2500	4000	10000

<sup>3)</sup> 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.

<b>Installation</b>	Optional, but vertical solenoid system is recommended		
<b>Max. working pressure (MWP)</b>	10 bar		
<b>Max. test pressure</b>	20 bar		
<b>Ambient temperature</b>	BB DC		
	BB AC		
	EEC BE240CS		
<b>Viscosity</b>	Max. 50 cSt		
<b>Materials</b>	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		

**EV220B 15 - EV220B 25**  
**DZR Brass valve body, NO**

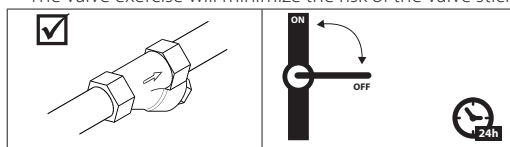

- WRAS
- PZH
- In accordance with:
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
  - Pressure Equipment Directive 2014/68/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size	K <sub>v</sub> -value	Media temperature	Differential pressure	Code no.
		[mm]	[m <sup>3</sup> /h]	[°C]	[Bar]	
G 1/2	EPDM	15	4	0 – 120	0.3 – 10	<b>032U5817</b>
G 3/4	EPDM	20	8	0 – 120	0.3 – 10	<b>032U7162</b>
G 1	EPDM	25	11	0 – 120	0.3 – 10	<b>032U5826</b>

<sup>1)</sup> It is recommended to install a filter in front of the valve.

<sup>2)</sup> 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**

Main type	EV220B 15B	EV220B 20B	EV220B 25B
Time to open [ms] <sup>3)</sup>	40	40	300
Time to close [ms] <sup>3)</sup>	1000	1000	1000

<sup>3)</sup> The times are indicative and apply to water.

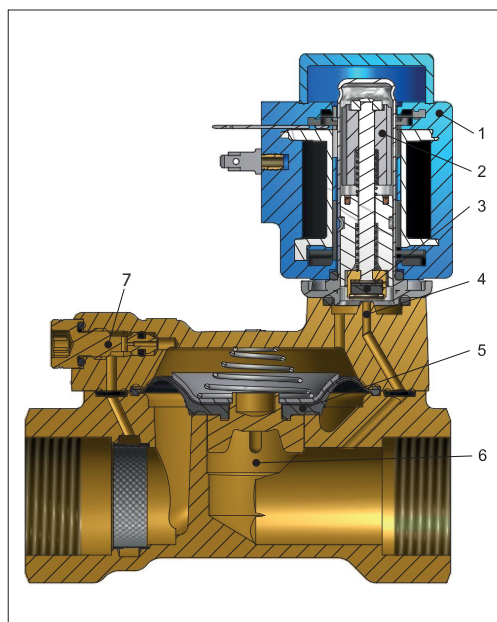
The exact times will depend on the pressure conditions.

Closing times can be changed by replacement of the equalizing orifice.

<b>Installation</b>	Optional, but vertical solenoid system is recommended		
<b>Max. working pressure (MWP)</b>	10 bar		
<b>Max. test pressure</b>	20 bar		
<b>Ambient temperature</b>	BB DC	Up to 50 °C	
	BB AC	Up to 80 °C	
	EEC BE240CS	Up to 55 °C	
<b>Viscosity</b>	Max. 50 cSt		
<b>Materials</b>	Valve body/cover	DZR Brass	W.no. CuZn36Pb2As/CZ132
	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, NO



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 (open):**

When the voltage to the coil (1) is disconnected, the pilot orifice (4) is open. 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 will be open for as long as the minimum differential pressure across the valve is maintained, and for as long as the voltage to the coil is disconnected.

**Coil voltage connected (closed):**

When voltage is applied to the coil (1), the valve plate (3) is pressed down against the pilot orifice (4). 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 there is voltage to the coil.

**EV220B 15 - EV220B 50**  
**Brass valve body, NC**

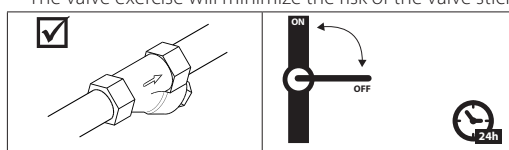

- WRAS
- ACS
- PZH
- In accordance with:
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
  - Pressure Equipment Directive 2014/68/EU
- UL recognized

ISO228/1 connection	Seal material	Orifice size	K <sub>v</sub> -value	Media temperature	Approval	Differential pressure	Code no.
		[mm]	[m <sup>3</sup> /h]	[°C]		[Bar]	
G 1/2	EPDM	15	4	0 – 100		0.3 – 16	032U7115
G 3/4	EPDM	20	8	0 – 100		0.3 – 16	032U7120
G 1	EPDM	25	11	0 – 100		0.3 – 16	032U7125
G 1 1/4	EPDM	32	18	0 – 100		0.3 – 12	032U7132
G 1 1/2	EPDM	40	24	0 – 100		0.3 – 12	032U7140
G 2	EPDM	50	40	0 – 100		0.3 – 12	032U7150

<sup>1)</sup> It is recommended to install a filter in front of the valve.

<sup>2)</sup> 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**

Main type	EV220B 15B	EV220B 20B	EV220B 25B	EV220B 32B	EV220B 40B	EV220B 50B
Time to open [ms] <sup>3)</sup>	40	40	300	1000	1500	5000
Time to close [ms] <sup>3)</sup>	350	1000	1000	2500	4000	10000

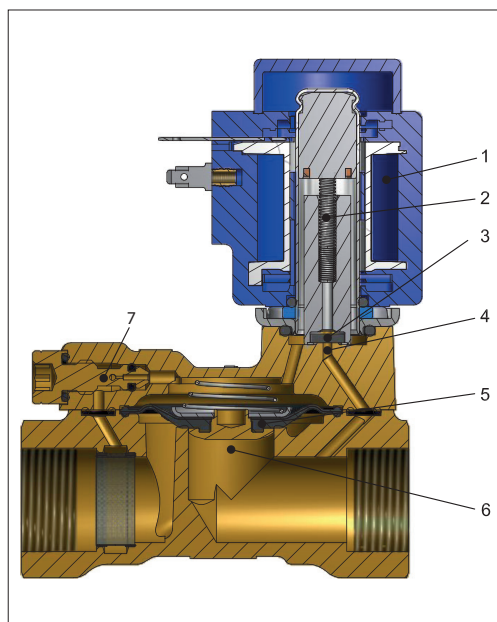
<sup>3)</sup> The times are indicative and apply to water.

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. test pressure	20 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, NC



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.

**EV228B 15 - EV228B 25  
Latching DZR brass**

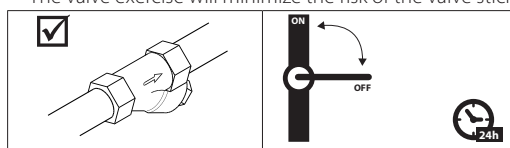

- In accordance with:
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8
  - Pressure Equipment Directive 2014/68/EU

ISO228/1 connection	Seal material	Orifice size	K <sub>v</sub> -value	Media temperature	Differential pressure	Code no.
		[mm]	[m <sup>3</sup> /h]	[°C]	[Bar]	
G 1/2	EPDM	15	4	0 – 60	0.3 – 10	032U7468
G 3/4	EPDM	20	8	0 – 60	0.3 – 10	032U7469
G 1	EPDM	25	11	0 – 60	0.3 – 10	032U7470

<sup>1)</sup> It is recommended to install a filter in front of the valve.

<sup>2)</sup> 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**

Main type	EV228B 15B	EV228B 20B	EV228B 25B
Time to open [ms] <sup>3)</sup>	40	40	300
Time to close [ms] <sup>3)</sup>	350	1000	1000

<sup>3)</sup> 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.

<b>Installation</b>	Optional, but vertical solenoid system is recommended		
<b>Max. working pressure (MWP)</b>	10 bar		
<b>Max. test pressure</b>	20 bar		
<b>Ambient temperature</b>	Up to 50 °C		
<b>Viscosity</b>	Max. 50 cSt		
<b>Materials</b>	Valve body/cover	DZR Brass	W.no. CuZn36Pb2As/CZ132
	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		
<b>Switch power (on/off)</b> 018F7396 (12V DC)			

**Function**

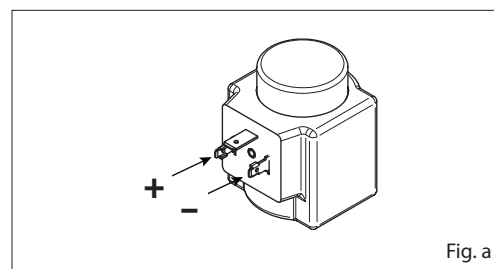
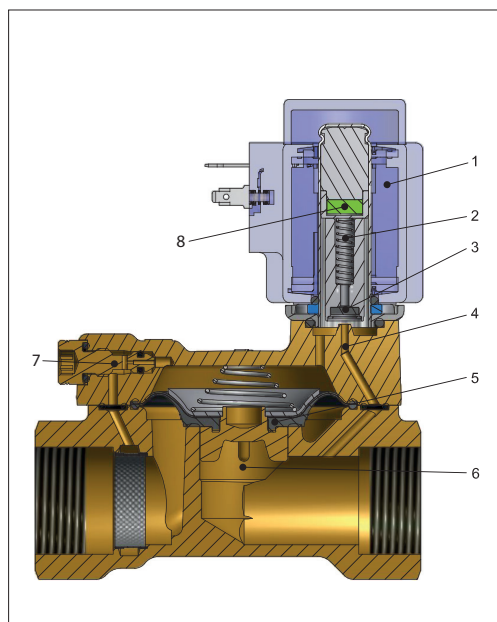


Fig. a

When **-** (minus) is supplied to the right terminal pin and **+** (plus) to the left (see fig. a), the valve plate 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 stay closed, until the poles are switched (see fig. b).

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

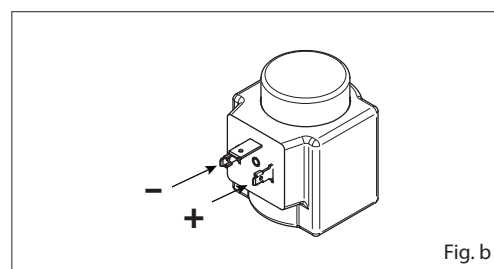
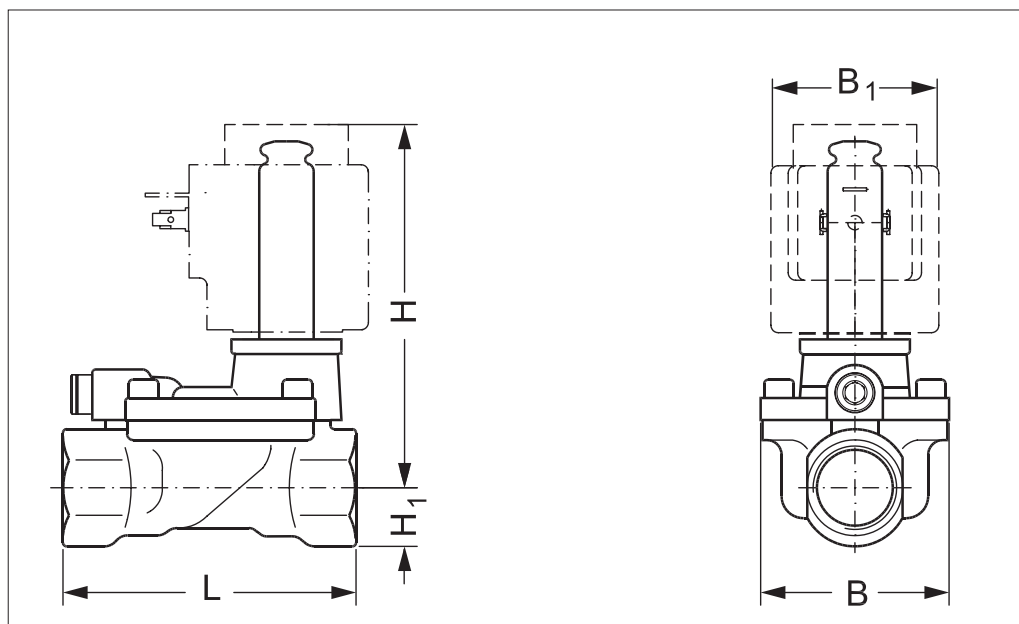


Fig. b

**Switching poles**

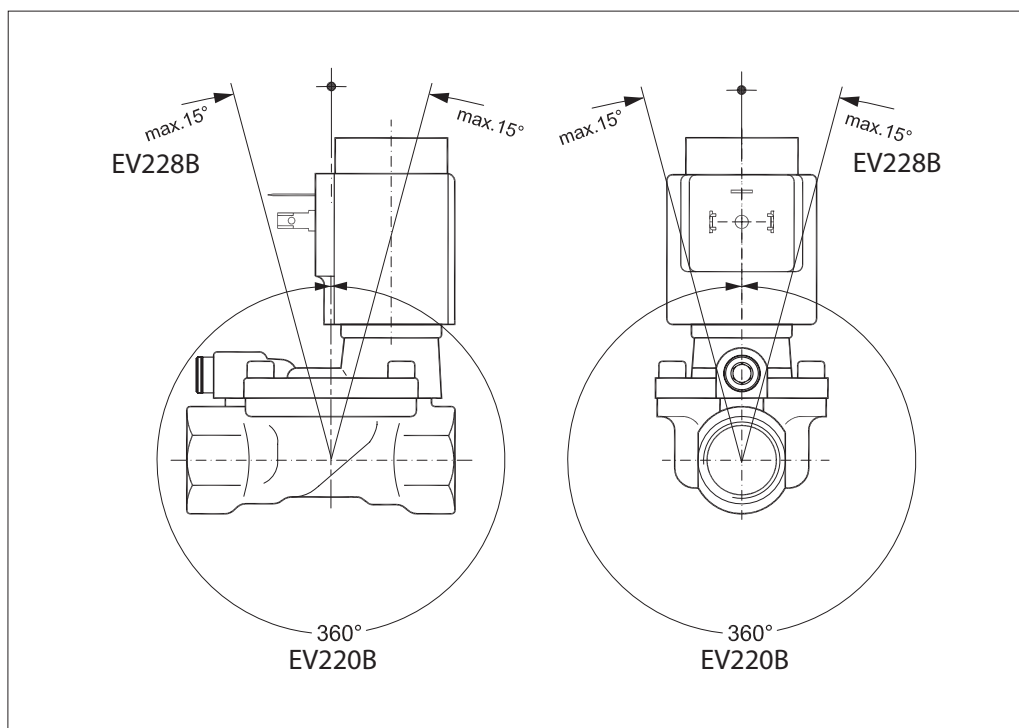
When **+** (plus) is supplied to the right terminal pin and **-** (minus) to the left (see fig. b), the pilot orifice (4) is opened. As the pilot orifice is larger than the equalizing orifice (7), the pressure across the diaphragm (5) drops and therefore it is lifted clear of the main orifice (6). The valve is now open for flow and will stay open as long as the minimum differential pressure across the valve is maintained, until the poles are switched back (see fig. a).

Dimensions and weight

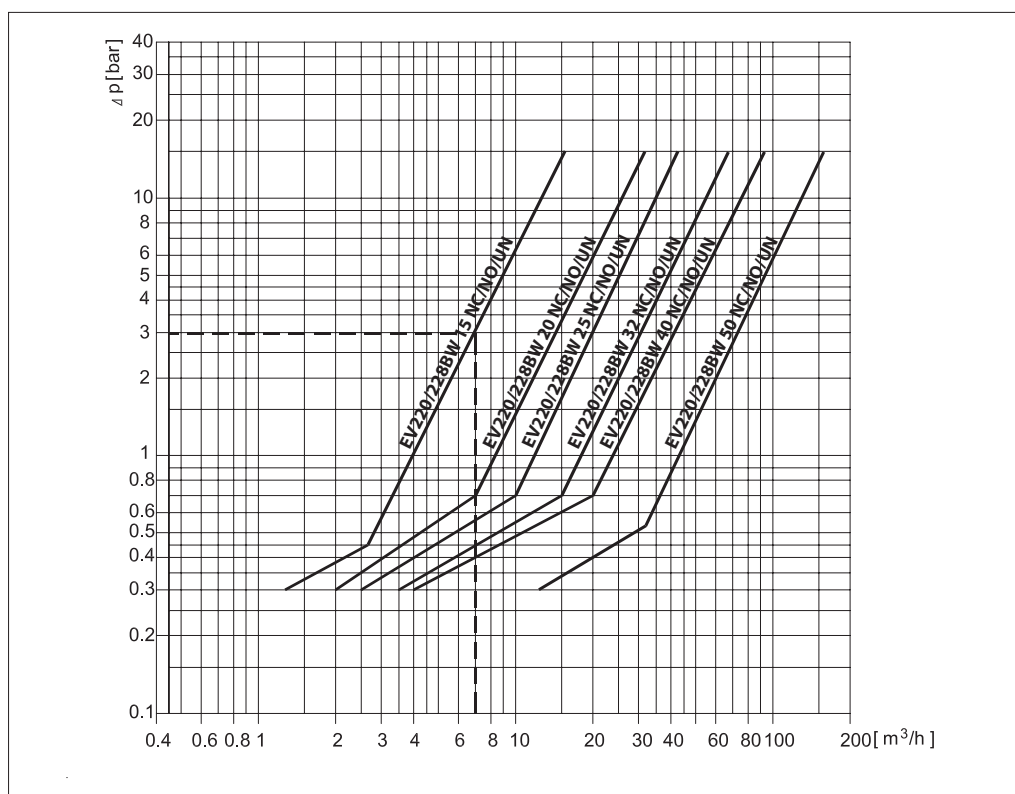


Type	L	B	B <sub>1</sub> [mm] / coil type				H	H <sub>1</sub>	Weight without coil
	[mm]	[mm]	BA	BB / BE	BG / BO	BP	[mm]	[mm]	[kg]
EV220B 15	80.0	52.0	32	46	68	45	99	15.0	0.7
EV228B 15	80.0	52.0	32	46	68	45	99	15.0	0.7
EV220B 20	90.0	58.0	32	46	68	45	103	18.0	0.9
EV228B 20	90.0	58.0	32	46	68	45	103	18.0	0.9
EV220B 25	109.0	70.0	32	46	68	45	113	22.0	1.3
EV228B 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 / EV228B 15B at  
 differential pressure of 3 bar.  
 Approx. 7 m<sup>3</sup>/h



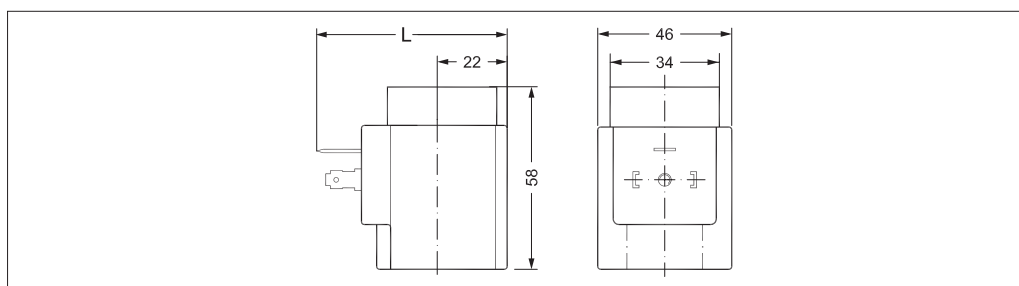
**BB high performance coils**


- Enclosure:
  - IP00 version with DIN 43650 A spade connectors
  - IP20 version with protective cap
  - IP65 version with mounted cable plug
- In accordance with:
  - RoHS Directive 2011/65/EU
  - Low Voltage Directive 2014/35/EU
  - EN60730-1
  - EN60730-2-8

Type	Tambient	Supply voltage	Voltage variation	Frequency	Control	Power consumption		Code no.
	[°C]	[V]				[W]	[VA]	
BB024AS	-40 – 80	24	-15%, +10%	50	NO, NC	11	19	018F7358
BB230AS	-40 – 80	220 - 230	-15%, +10%	50	NO, NC	11	19	018F7351
BB012DS	-40 – 50	12	±10%	DC	NO, NC, Latching	13	-	018F7396
BB024DS	-40 – 50	24	±10%	DC	NO, NC, Latching	16	-	018F7397

**Technical data**

Design	In 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)

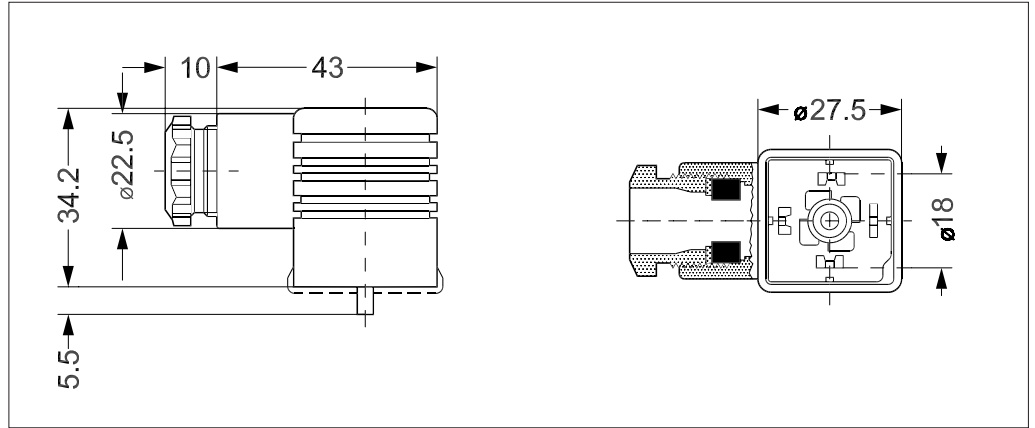
**Dimensions and weight**


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**

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



**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	Control	Power consumption	Code no.
	[°C]	[V]		[Hz]		[W]	
BE240CS	-25 – 55	208 – 240	±10%	60	NC, NO	4	<b>018F6783</b>
		208 – 240	±10%	50	NC, NO	4	

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