



Solenoid valve

EV220S

Description

EV220S is a range of streamlined compact servo-operated 2/2 way solenoid valves with connections from 1/4" to 2", special designed to fit in applications where space is limited.

EV220S can be used in the following applications:

Water shut off (EPDM version) - (building control, commercial tap water supply, leak detection, heating and cooling, water for industrial processing, laundry and dishwashing, car washing)

Oil, air neutral media's (FKM version) - (air compressors, factory processes, pump cooling)

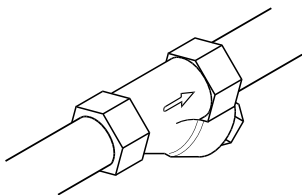
Features & benefits

- Clip on coil
- Coil enclosure: Up to IP67
- WRAS approved with EPDM sealing
- NC and NO version
- In accordance with
 - Low Voltage Directive 2014/35/EU
 - EN60730-1
 - EN60730-2-8
 - Pressure Equipment Directive 2014/68/EU
 - RoHS Directive 2011/65/EU
 - cURus

Applications

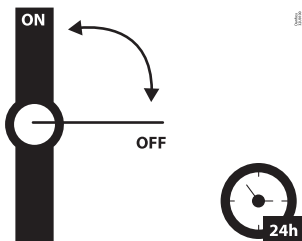
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

Figure: Filter



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.

Figure: Exercise: Valve on/off



Guidelines for water

To minimize scaling, and corrosion attack it is recommended that the water passing the valve have the following values:

- Hardness 6-18 °dH to avoid scaling (chalk / lime stone build up).
- Conductivity 50 – 800 µS/cm to avoid brass dezincification and corrosion.
- Above 25°C media temperature avoid stagnant water inside the valve to avoid dezincification and corrosion attack.
- Drinking water (Ph 6-9)


Ordering

Product code numbers

Connection type	Orifice size [mm]	Kv value [m ³ /h]	Seal Material	Coil type	Approval	Code number	Function
G	10.00	1.600	EPDM		WRAS	042U4608	NC
G	10.00	1.600	FKM		c UL us	042U4609	NC
G	10.00	1.600	EPDM		c UL us	042U4610	NC
G	10.00	1.600	FKM		c UL us	042U4611	NC
G	13.00	3.000	FKM		c UL us	042U4612	NC
G	13.00	3.000	EPDM		c UL us	042U4613	NC
G	14.00	4.000	EPDM		c UL us	042U4614	NC
G	14.00	4.000	FKM		c UL us	042U4615	NC
G	17.00	5.000	EPDM		c UL us	042U4617	NC
G	17.00	5.000	FKM		c UL us	042U4618	NC
G	13.00	3.000	EPDM		c UL us	042U4619	NC
G	22.00	7.000	EPDM		c UL us	042U4620	NC
G	50.00	32.000	EPDM		PED	042U4621	NC
G	22.00	7.000	EPDM		c UL us	042U4622	NC
G	22.00	7.000	FKM		c UL us	042U4623	NC
G	25.00	11.000	EPDM		WRAS	042U4625	NC
G	32.00	15.000	EPDM			042U4632	NC
G	32.00	15.000	FKM		PED	042U4633	NC
G	40.00	18.000	EPDM		c UL us	042U4640	NC
G	40.00	18.000	FKM			042U4641	NC
G	50.00	32.000	EPDM		PED	042U4650	NC
G	50.00	32.000	FKM		CE	042U4651	NC
G	18.00	7000.000	FKM		c UL us	042U4719	NC
G	18.00	7.000	EPDM		c UL us	042U4720	NC
G	14.00	4.000	EPDM	AS	CE	042U491419	NC
G	14.00	4.000	EPDM	AS		042U491432	NC
G	17.00	5.000	EPDM	AS	CE	042U491719	NC
G	17.00	5.000	EPDM	AS		042U491732	NC
G	22.00	7.000	EPDM	AS	WRAS	042U492219	NC
G	22.00	7.000	EPDM	AS		042U492232	NC
G	32.00	15.000	EPDM	AS	CE	042U493232	NC
G	40.00	18.000	EPDM	AS	WRAS	042U494032	NC
G	50.00	32.000	EPDM	AS	c UL us	042U495019	NC
G	50.00	32.000	EPDM	AS		042U495032	NC
G	10.00	1.600	EPDM		c UL us	042U6108	NO
G	10.00	1.600	FKM		c UL us	042U6109	NO
G	10.00	1.600	EPDM		c UL us	042U6110	NO
G	10.00	1.600	FKM		c UL us	042U6111	NO
G	13.00	3.000	FKM		c UL us	042U6112	NO
G	13.00	3.000	EPDM		WRAS	042U6113	NO
G	14.00	4.000	EPDM		c UL us	042U6114	NO
G	14.00	4.000	FKM		c UL us	042U6115	NO
G	17.00	4.000	FKM		c UL us	042U6116	NO
G	17.00	4.000	EPDM		WRAS	042U6117	NO

G	18.00	7.000	FKM		c UL us	042U6119	NO
G	18.00	7.000	EPDM		c UL us	042U6120	NO
G	22.00	7.000	FKM		c UL us	042U6121	NO
G	22.00	7.000	EPDM		WRAS	042U6122	NO
G	32.00	15.000	FKM		CE	042U6131	NO
G	32.00	15.000	EPDM			042U6132	NO
G	40.00	18.000	FKM		CE	042U6139	NO
G	40.00	18.000	EPDM		c UL us	042U6140	NO
G	50.00	32.000	FKM			042U6149	NO
G	50.00	32.000	EPDM			042U6150	NO
G	14.00	4.000	EPDM	AS	c UL us	042U651419	NO
G	14.00	4.000	EPDM	AS	WRAS	042U651432	NO
G	17.00	7.000	EPDM	AS		042U651719	NO
G	17.00	7.000	EPDM	AS		042U651732	NO
G	22.00	7.000	EPDM	AS		042U652219	NO
G	22.00	7.000	EPDM	AS	CE	042U652232	NO

Accessories code numbers



042N7616

Solenoid coil, AZ012DS, DIN Spade, Supply voltage [V] DC: 12, Multi pack

Electrical connection: DIN Spade,
Supply voltage [V] DC: 12,
Enclosure rating IP: IP00

Related products

042U4608

042U4609

042U4610

042U4611

042U4612

042U4613

042U4614

042U4615

042U4617

042U4618

042U4619

042U4620

042U4621

042U4622

042U4623

042U4625

042U4632

042U4633

042U4640

042U4641

042U4650

042U4651

042U4719

042U4720

042U6108

042U6109

042U6110

042U6111

042U6112

042U6113

042U6114

042U6115

042U6116

042U6117

042U6119

042U6120

042U6121

042U6122

042U6131


042U6132

042U6139

042U6140

042U6149

042U6150



042N7617

Solenoid coil, AZ024DS, DIN Spade, Supply voltage [V] DC: 24, Multi pack

Electrical connection: DIN Spade,
Supply voltage [V] DC: 24,
Enclosure rating IP: IP00

Related products

042U4608

042U4609

042U4610

042U4611

042U4612

042U4613

042U4614

042U4615

042U4617

042U4618

042U4619

042U4620

042U4621

042U4622

042U4623

042U4625

042U4632

042U4633

042U4640

042U4641

042U4650

042U4651

042U4719

042U4720

042U491002

042U491302

042U491702

042U6108

042U6109

042U6110

042U6111

042U6112

042U6113

042U6114

042U6115

042U6116

042U6117

042U6119

042U6120

042U6121

042U6122

042U6131


042U6132

042U6139

042U6140

042U6149

042U6150



042N7608

Solenoid coil, AS024CS, DIN Spade, Multi pack

Electrical connection: DIN Spade,
Actuator size: 9 mm, Enclosure rating IP: IP00

Related products

042U4608

042U4609

042U4610

042U4611

042U4612

042U4613

042U4614

042U4615

042U4617

042U4618

042U4619

042U4620

042U4621

042U4622

042U4623

042U4625

042U4632

042U4633

042U4640

042U4641

042U4650

042U4651

042U4719

042U4720

042U491019

042U491319

042U491419

042U491719

042U492219

042U6108

042U6109

042U6110

042U6111

042U6112

042U6113

042U6114

042U6115

042U6116

042U6117

042U6119

042U6120

042U6121

042U6122

042U6131

042U6132

042U6139

042U6140


042U6149

042U6150

042U651419

042U651719

042U652219



042N7601

Solenoid coil, AS230CS, DIN Spade, Supply voltage [V] AC: 230, Multi pack

Electrical connection: DIN Spade,
Supply voltage [V] AC: 230,
Frequency [Hz]: 50/60 Hz, Enclosure rating IP: IP00

Related products

042U4608

042U4609

042U4610

042U4611

042U4612

042U4613

042U4614

042U4615

042U4617

042U4618

042U4619

042U4620

042U4621

042U4622

042U4623

042U4625

042U4632

042U4633

042U4640

042U4641

042U4650

042U4651

042U4719

042U4720

042U491032

042U491332

042U491432

042U491732

042U492232

042U493232

042U494032

042U495032

042U6108

042U6109

042U6110

042U6111

042U6112

042U6113

042U6114

042U6115

042U6116

042U6117

042U6119

042U6120

042U6121

042U6122

042U6131

042U6132

042U6139

042U6140

042U6149

042U6150

042U651432

042U651732

042U652232

Figure: Cable plug



Table: Cable plug

Cable plug size	Description	Code Number
DN 18	Cable plug IP65	042N1278

Universal electronic multi-timer Type ET 20 M


Figure: Type ET 20 M



Table: Type ET 20 M

Type	Voltage	Suitable for coil types	Code Number
	[V]		
BA024A	24 – 240	AL, AM, AS, AZ, BA, BD, BB	042N0185


Spare parts code numbers



042U2098
Spare part, EV220S/W 6.0 - 50 EPDM NO, Actuator set
 Product Type: Spare part, Used for product: EV220S/W 6.0 - 50 EPDM NO, Type designation: Actuator set, Service kit, Function: NO

Related products


042U6108 042U6110 042U6113 042U6114 042U6117 042U6120
 042U6122 042U6132 042U6150 042U651419 042U651432
 042U651719 042U651732 042U652219 042U652232



042U2104
Spare part, EV220S 10 EPDM, Diaphragm set
 Product Type: Spare part, Used for product: EV220S 10 EPDM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products


042U4608 042U4610 042U491002 042U491019 042U491032
 042U6108 042U6110



042U2096
Spare part, EV220S/W 6.0 - 50 EPDM NC, Actuator set
 Product Type: Spare part, Used for product: EV220S/W 6.0 - 50 EPDM NC, Type designation: Actuator set, Service kit, Function: NC

Related products


042U4608 042U4610 042U4613 042U4614 042U4617 042U4622
 042U4632 042U4640 042U4650 042U4720 042U491002
 042U491019 042U491032 042U491302 042U491319 042U491332
 042U491419 042U491432 042U491702 042U491719 042U491732
 042U492219 042U492232 042U493232 042U494032 042U495032



042U2114
Spare part, EV220S/W 32 EPDM, Diaphragm set
 Product Type: Spare part, Used for product: EV220S/W 32 EPDM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4632 042U493232 042U6132



042U2108
Spare part, EV220S 14 EPDM, Diaphragm set
 Product Type: Spare part, Used for product: EV220S 14 EPDM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4614 042U491419 042U491432 042U6114 042U651419
 042U651432



042U2110
Spare part, EV220S 17 EPDM, Diaphragm set
 Product Type: Spare part, Used for product: EV220S 17 EPDM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4617 042U491702 042U491719 042U491732 042U6117
 042U651719 042U651732



042U2097

**Spare part, EV220S/W 6.0 - 50
FKM/NBR NC, Actuator set**

Product Type: Spare part, Used for product: EV220S/W 6.0 - 50 FKM/NBR NC, Type designation: Actuator set, Service kit, Function: NC

Related products

042U4609 042U4611 042U4612 042U4615 042U4618 042U4623
042U4633 042U4641 042U4651 042U4719



042U2115

**Spare part, EV220S/W 32
FKM/NBR, Diaphragm set**

Product Type: Spare part, Used for product: EV220S/W 32 FKM/NBR, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4633 042U6131



042U2106

**Spare part, EV220S 13 EPDM,
Diaphragm set**

Product Type: Spare part, Used for product: EV220S 13 EPDM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4613 042U491302 042U491319 042U491332 042U6113



042U2113

**Spare part, EV220S/W 18/22
FKM, Diaphragm set**

Product Type: Spare part, Used for product: EV220S/W 18/22 FKM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4623 042U4719 042U6119 042U6121



042U2116

**Spare part, EV220S/W 40
EPDM, Diaphragm set**

Product Type: Spare part, Used for product: EV220S/W 40 EPDM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4640 042U494032



042U2099

**Spare part, EV220S/W 6.0 - 50
FKM/NBR NO, Actuator set**

Product Type: Spare part, Used for product: EV220S/W 6.0 - 50 FKM/NBR NO, Type designation: Actuator set, Service kit, Function: NO

Related products

042U6109 042U6111 042U6112 042U6115 042U6116 042U6119
042U6121 042U6131 042U6139 042U6149



042U2119

**Spare part, EV220S/W 50
FKM/NBR, Diaphragm set**

Product Type: Spare part, Used for product: EV220S/W 50 FKM/NBR, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4651 042U6149



042U2112

**Spare part, EV220S/W 18/22
EPDM, Diaphragm set**

Product Type: Spare part, Used for product: EV220S/W 18/22 EPDM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4622 042U4720 042U492219 042U492232 042U6120
042U6122 042U652219 042U652232



042U2109

**Spare part, EV220S 14 FKM,
Diaphragm set**

Product Type: Spare part, Used for product: EV220S 14 FKM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4615

042U6115



042U2117

**Spare part, EV220S/W 40
FKM/NBR, Diaphragm set**

Product Type: Spare part, Used for product: EV220S/W 40 FKM/NBR, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4641

042U6139



042U2118

**Spare part, EV220S/W 50
EPDM, Diaphragm set**

Product Type: Spare part, Used for product: EV220S/W 50 EPDM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4650

042U495032

042U6150



042U2105

**Spare part, EV220S 10 FKM,
Diaphragm set**

Product Type: Spare part, Used for product: EV220S 10 FKM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4609

042U4611

042U6109

042U6111



042U2107

**Spare part, EV220S 13 FKM,
Diaphragm set**

Product Type: Spare part, Used for product: EV220S 13 FKM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products

042U4612

042U6112



042U2111

**Spare part, EV220S 17 FKM,
Diaphragm set**

Product Type: Spare part, Used for product: EV220S 17 FKM, Type designation: Diaphragm set, Service kit, Function: NC, NO

Related products


042U4618

042U6116

Overview

Product portfolio

Table: Portfolio overview

Features	EV220S
	
Body material	Brass
DN [mm]	10 – 50
Connection	G1/4" – G2"
Sealing material	EPDM, FKM
Function	NC, NO
K_v [m ³ /h]	1.6 – 32
Differential pressure range [bar]	0.2 – 10
Temperature range [°C]	-30 – 100

Functions

Operation

Function, NC

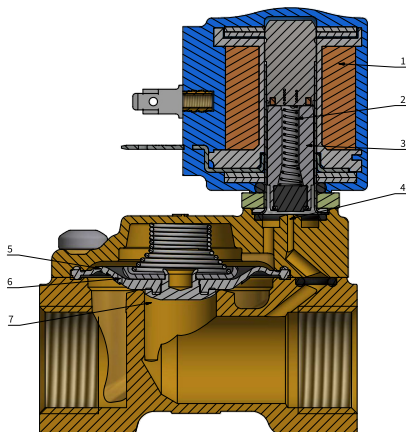
Coil voltage disconnected (Closed)

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.

Figure: Function, NC



1	Coil
2	Armature spring
3	Armature
4	Pilot orifice
5	Diaphragm
6	Equalizing orifice
7	Main orifice

Function, NO

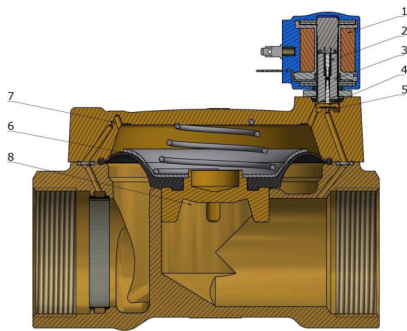
Coil voltage disconnected (Open)

When voltage is disconnected, the pilot orifice (5) is opened. Since the pilot orifice is larger than the equalizing orifice (7), pressure over the diaphragm (6) falls and the diaphragm is lifted clear of the main orifice (8). The valve stays open for as long as the required minimum differential pressure is present and voltage is not applied to the coil.

Coil voltage connected (Closed)

When voltage is applied to the coil (1), the armature spring (2) presses the armature (3) down against the pilot orifice (5). Pressure builds up over the diaphragm (6) via the equalizing orifice (7). The diaphragm closes the main orifice (8) as soon as the pressure over the diaphragm equals the inlet pressure. The valve stays closed for as long as voltage remains connected.

Figure: Function, NO



1	Coil
2	Armature spring
3	Armature
4	Armature seal
5	Pilot orifice
6	Diaphragm
7	Equalizing orifice
8	Main orifice

Media

Refrigerants

Media	EPDM	Water, drinking water, brine
	FKM	Oil, compressed air

Media temperature [°C]	EPDM	-30-100 °C
	EPDM WRAS	NC: 0 - 85 °C; NO: 0 - 60 °C
	FKM	-10 - 90 °C

Product details

General data

Table: Technical data

Ambient temperature [°C]	Up to 50°C	
K _v value [m ³ /h]	DN10	1.6 m ³ /h
	DN13	3 m ³ /h
	DN14	4 m ³ /h
	DN17	5 m ³ /h
	DN22	7 m ³ /h
	DN32	15 m ³ /h
	DN40	18 m ³ /h
	DN50	32 m ³ /h
Min. Opening differential pressure [bar]	DN10	0.2 bar
	DN13 – 50	0.3 bar
Max. Opening differential pressure [bar]	10 bar	
Max. working pressure [bar]	10 bar	
Max. test pressure [bar]	15 bar	
Viscosity [cSt]	Max. 50 cSt	

Capacity diagram

Example for water: Capacity for EV220S 14 at a differential pressure of 3 bar: Approx. 7 m³/h

Figure: Capacity diagram

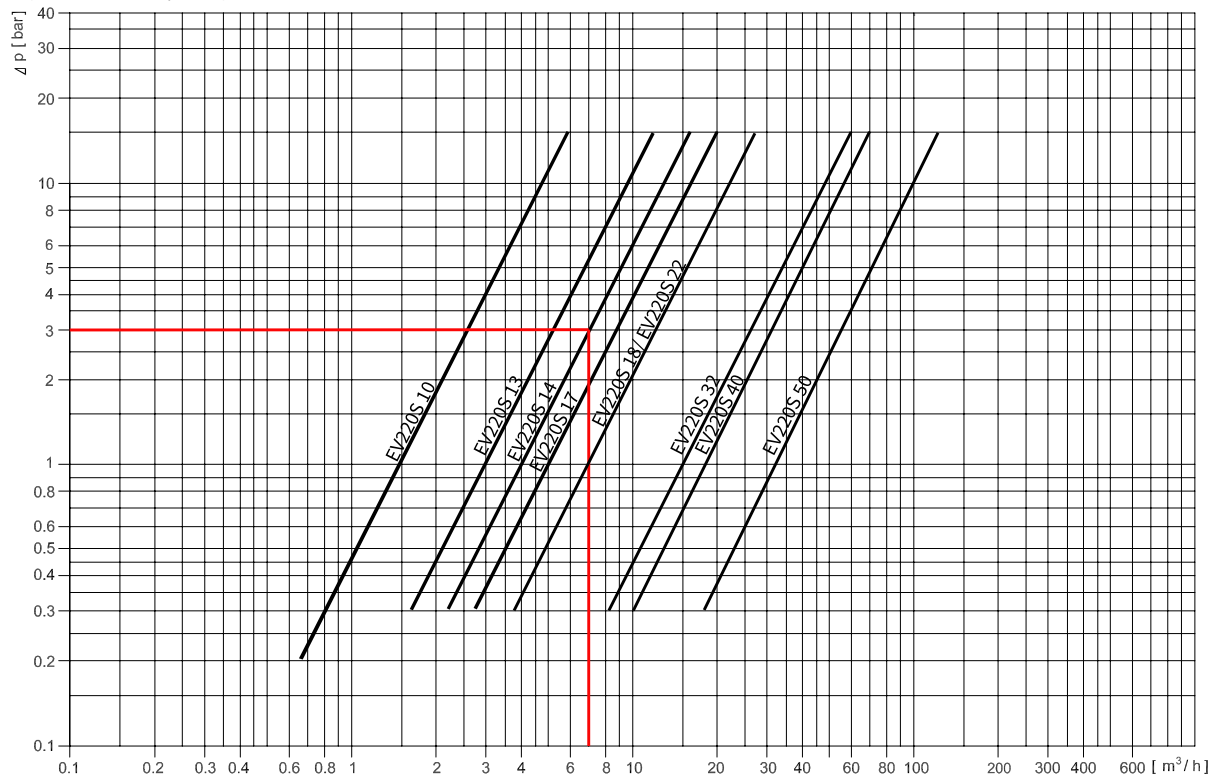


Table: Time to open/close

Type	EV220S 10	EV220S 13	EV220S 14	EV220S 17	EV220S 22	EV220S 32	EV220S 40	EV220S 50
Time to open [ms] (1)	50	100	200	200	200	2500	4000	5000
Time to close [ms] (1)	300	400	500	500	500	4000	6000	10000

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

Materials

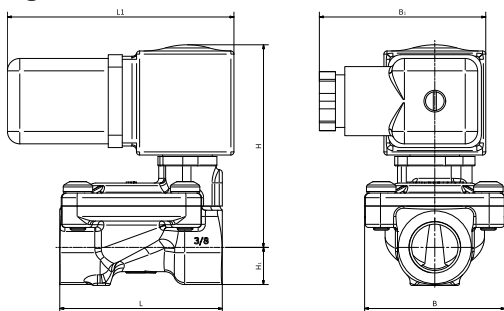
Table 4: Materials

Components	Materials	Specifications
Valve body/cover	Brass	CW617N
Armature/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, FKM	
Valve plate	EPDM, FKM	
Diaphragm	EPDM, FKM	

Dimensions

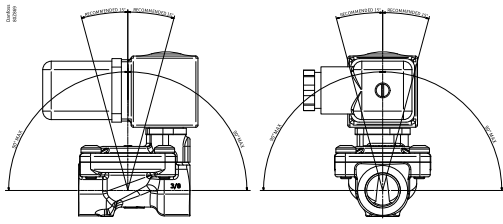
Table: Dimension and weight

Type	Weight with coil & plug	L	L1	B	B1	H1	H[mm]
	[kg]	[mm]	[mm]	[mm]	[mm]	[mm]	NC / NO
EV220S 10	0.42	52.6	73	45.2	53.6	12	65.4
EV220S 13	0.40	58.2	73	45.2	53.6	12	65.4
EV220S 14	0.54	62	73	50.2	53.6	14.7	68.7
EV220S 17	0.50	68.2	73	50.2	53.6	14.7	68.7
EV220S 22	1.00	87.5	73	58.2	53.6	19.5	84.2
EV220S 32	2.00	116.0	73	80.4	53.6	24.8	96.1
EV220S 40	2.80	125.0	73	93.5	53.6	30.7	105.4
EV220S 50	4.30	160.5	73	113.0	53.6	34.9	110.9

Figure: Dimensions

Installation

Figure: Mounting angle



Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
Hygienic Certificate	WRAS 2306007	WRAS - Water Regulations Advisory Scheme	Drinking Water
CB Test Certificate	CB SE-114258	Intertek Semko	
Export Control Declaration	Solenoid valves – Polymer, Bronze, Brass, Cast iron	Danfoss	
EU Declaration	Danfoss EU 033F0682.AA	Danfoss	PED, LVD, Pressure, EU RoHS
Mechanical Safety Certificate	UL MH7648	UL - Underwriters Laboratories inc.	
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.02-22	LLC CDC EURO TYSK - Ukraine	PED, Pressure
Hygienic Certificate	WRAS 2104036	WRAS - Water Regulations Advisory Scheme	Drinking Water
Manufacturer's Declaration	Danfoss MD 033F0232.AA	Danfoss	PED, Pressure

Contact details

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