ENGINEERING TOMORROW

Data sheet

Servo-operated 2/2-way solenoid valves

Type EV220B 6 - EV220B 22
Type EV220BW 12 NO

EV220B 6 - EV220B 22 and EV220BW 12 NO is a direct servo-operated 2/2-way solenoid valve program with connections from 1/4" to 1".
This program is especially for OEM applications demanding a robust solution and moderate flow rates.

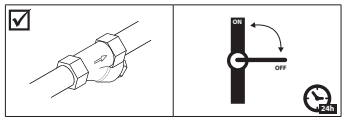
Features and versions:

- For water, oil, compressed air and similar neutral media
- Flow range from 0.2 – 19 m^3/h
- Differential pressure from 0.1 – 20 bar
- Media temperature from -30 – 100 °C
- Ambient temperature: Up to 80 °C
- Coil enclosure: Up to IP67
- Thread connections: From G ¼ – G 1
- DN 6 – 22
- Viscosity: Up to 50 cSt
- Brass version NC and NO
- DZR brass version NC and NO
- FKM and EPDM
- Also available with NPT thread

Brass valve body, NC

Connection ISO 228/1	Seal material	Orifice size	K_v-value [m^3/h]	Differential pressure min. to max. [bar] /coil type					Media temperature min. to max. [°C]	Code number
				BA / BD	BB / BE / BR /B Y	BB /BE / BR / BY	BG	BG		
				9 [W a.c]	10 [W AC]	18 [W DC]	12 [W AC]	20 [W DC]		
G 1/4	EPDM [1]	6	0.7	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	**032U1236**
	FKM [2]			0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	0 – 100	**032U1237**
G 3/8	EPDM [1]			0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	**032U1241**
	FKM [2]			0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	0 – 100	**032U1242**
	EPDM [1]	10	1.5	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	**032U1246**
	FKM [2]			0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	0 – 100	**032U1247**
G 1/2	EPDM [1]			0.1 – 20	01. – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	**032U1251**
	FKM [2]			0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	0 – 100	**032U1252**
	EPDM [1]	11.5	2.3	0.1 – 10	0.1 – 10	0.1 – 10	0.1 – 10	0.1 – 10	-30 – 100	**032U1279**
	EPDM [1]	12	2.5	0.3 – 10	0.3 – 10	–	0.3 – 10	0.3 – 10	-30 – 100	**032U1256**
	FKM [2]			0.3 – 10	0.3 – 10	–	0.3 – 10	0.3 – 10	0 – 100	**032U1255**
G 3/4	EPDM [1]	18	6.0	0.3 – 10	0.3 – 10	–	0.3 – 10	0.3 – 10	-30 – 100	**032U1261**
	FKM [2]			0.3 – 10	0.3 – 10	–	0.3 – 10	0.3 – 10	0 – 100	**032U1260**
G 1	EPDM [1]	22		0.3 – 10	0.3 – 10	–	0.3 – 10	0.3 – 10	-30 – 100	**032U1263**
	FKM [2]			0.3 – 10	0.3 – 10	–	0.3 – 10	0.3 – 10	0 – 100	**032U1266**

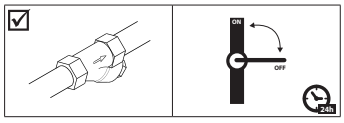
[1] EPDM is recommended for water.
[2] FKM is suitable for oil and air. For water at max. 60 °C.
[3] It is recommended to use a filter in front of the valve.
[4] In water applications, exercise the valves at least once every 24 hours, meaning change the state of the valve. The valve exercise will minimize the risk of the valve sticking due to calcium carbonate, zinc or iron oxide build-up.
[5] 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.



Brass and DZR Brass valve Body, NO

Connection ISO 228/1	Seal material	Orifice size	Body material	K_v-value [m^3/h]	Differential pressure min. to max. [bar] / coil type					Media temperature min. to max. [°C]	Code number
					BA / BD	BB / BE /BR / BY	BB / BE /BR / BY	BG	BG		
					9 [W AC]	10 [W AC]	18 [W DC]	12 [W AC]	20 [W d.c]		
G 3/8	EPDM [1]	6	Brass	0.7	0.1 – 10					-30 – 100	**032U1238**
	FKM [2]	6	Brass	0.7						0 – 100	**032U1239**
G 1/2	FKM [2]	10	Brass	1.0						0 – 100	**032U1249**
G1/2	EPDM [1]	12	Brass	2.5	0.3 - 10					-30 – 100	**132U1261**
G1/2	EPDM [1]	12	DZR Brass	2.5						-30 – 100	**132U1267**

[1] EPDM is recommended for water.
[2] FKM is suitable for oil and air. For water at max. 60 °C.
[3] It is recommended to use a filter in front of the valve.
[4] 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.
[5] 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.



Technical data, NC and NO

Type	EV220B 6	EV220B 10	EV220B / BW 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

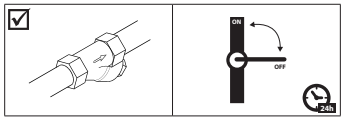
[1] The times are indicative and apply to water. The exact times will depend on the pressure conditions.

Installation	Vertical solenoid system is recommended.		
Max. working pressure	NC	DN 6 - 10 DN 11.5 - 22	0.1 - 20 bar 0.3 - 10 bar
	NO	DN 6 - 10	0.1 - 10 bar
	NO	DN12	0.3 - 10 bar
Max. test pressure	EV220B 6 – EV220B 10	50 bar	
	EV220B 11.5 – EV220B 22	16 bar	
Ambient temperature	BA	Up to 40 °C	
	BD / BE DC / BB DC	Up to 50 °C	
	BB / BE AC / BG	Up to 80 °C	
Viscosity	Max. 50 cSt		
Materials	Valve body	Brass / DZR Brass	W.no.2.0402 / CNZn36Pb2AS (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 or FKM	
	Valve plate	EPDM or FKM	
	Diaphragm	EPDM or FKM	

Dezincification resistant brass (DZR) brass valve body NC

Connection ISO 228/1	Seal material	Orifice size	K_v-value [m^3/h]	Differential pressure min. to max. [bar] /coil type					Media temperature min. to max. [°C]	Code number
				BA	BB / BE / BR / BY		BG			
				9 [W AC]	10 [W AC]	18 [W DC]	12 [W AC]	20 [W DC]		
G 3/8	EPDM[1)]	6	0.7	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	**032U5807**
	EPDM[1)]	10	1.5	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	**032U5809**
G 1/2	EPDM[1)]	10	1.5	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	**032U5810**

1) EPDM is recommended for water.
2) It is recommended to use a filter in front of the valve.
3) 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
4) 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.v



Technical data NC, Dezincification resistant brass (DZR)

Main type	EV220B 6	EV220B 10	EV220B 12
Time to open [ms] 1)	40	50	60
Time to close [ms] 1)	250	300	300

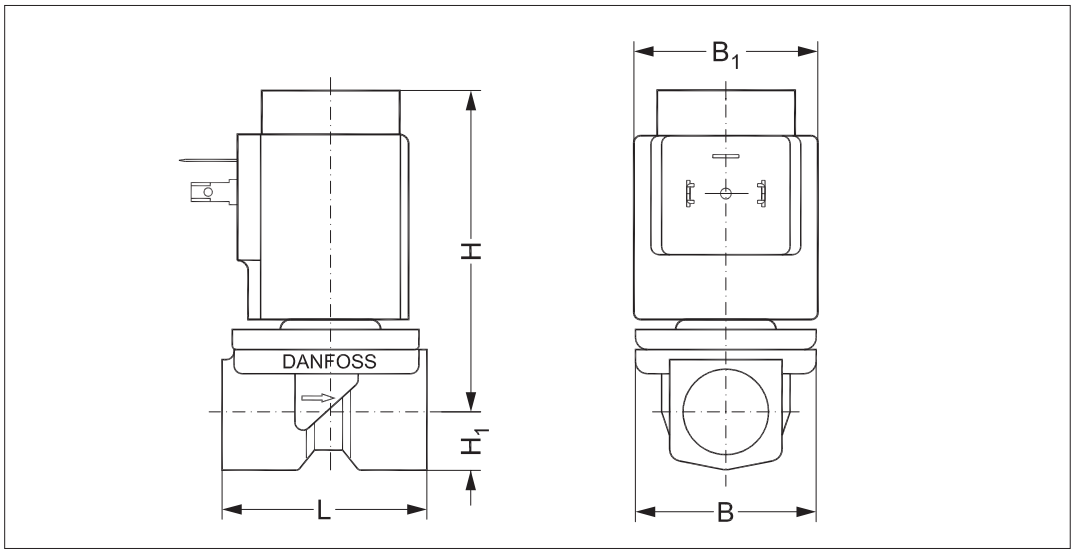
1) The times are indicative and apply to water. The exact times will depend on the pressure conditions.

Installation	Vertical solenoid system is recommended		
Max. working pressure	20 bar	20 bar	10 bar
Max. test pressure	50 bar	50 bar	16 bar
Ambient temperature	BA:	Up to 40 °C	
	BD / BE DC / BB DC:	Up to 50 °C	
	BB / BE AC / BG:	Up to 80 °C	
Viscosity	Max. 50 cSt		
Materials	Valve body	Dezincification resistant brass (DZR)	CuZn36 Pb2As / 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
	Valve seat	Stainless Steel	W.no. 1.4404 / AISI 316L
	O-rings	EPDM	
	Valve plate	EPDM	
	Diaphragm	EPDM	

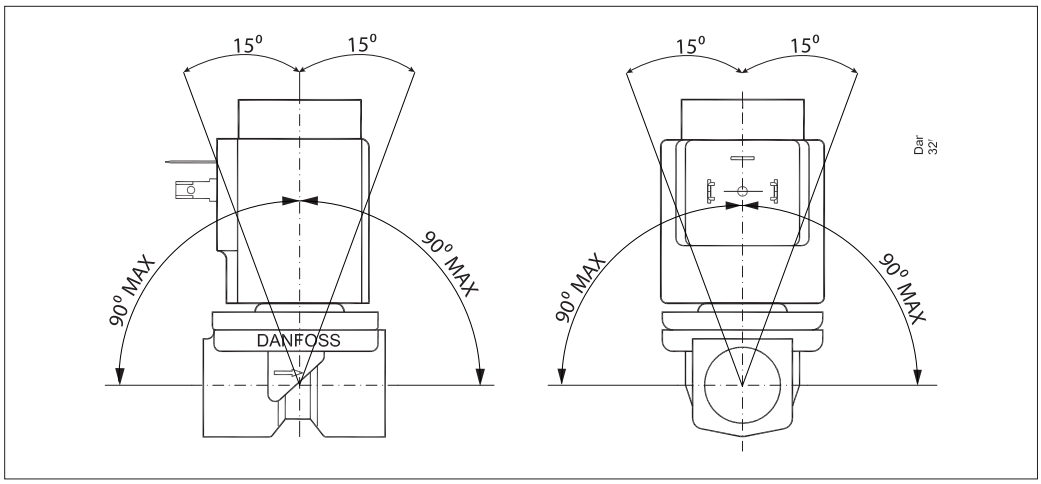
Dimensions and weight: Brass, DZR brass, NC and NO

Type	Weight gross valve body without coil [kg]	L [mm]	B [mm]	B_1 [mm] / Coil type			H [mm]	H_1 [mm]
				BA	BB / BE	BG		
EV220B 6B	0.22	45.5	43.5	32	46	68	78	13
EV220B 10B / EV220B11.5B	0.29	51.5	48.0	32	46	68	81	13
EV220B 12 / EV220BW 12	0.35	58.0	54.0	32	46	68	81	13
EV220B 18B	0.65	90.0	60.0	32	46	68	87	22
EV220B 22B	0.65	90.0	60.0	32	46	68	91	22

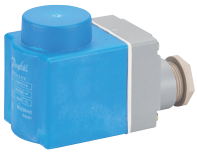
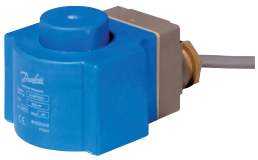
Dimensions



Mounting angle



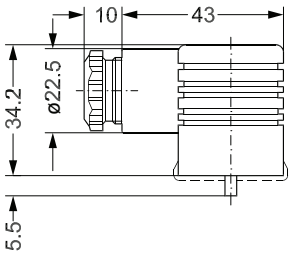
Below coils can be used with EV220B 6 - EV220B 22

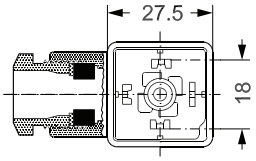
Coil	Type	Power consumption	Enclosure	Features
	BA / BD, screw on	8.5 - 15 W AC 14 W DC	IP00 with spade connector	IP20 with protective cap, IP65 with cable plug
	BB /BY, clip on	11 - 16 W AC 14 - 16 W DC	IP00 with spade connector	IP20 with protective cap, IP65 with cable plug
	BR, clip on	12 - 14 W AC 16 W DC	IP00 with spade connector	IP20 with protective cap, IP65 with cable plug Design for marine application
	BE, clip on	11 - 17 W AC 15 - 16 W DC	IP67	With terminal box
	BF, clip on	11 - 15 W AC 14 - 16 W DC	IP67	With 1 m cable
	BG, clip on	11 - 16 W AC 16 - 20 W DC	IP67	With terminal box
	BN, clip on	22 W AC 20 W DC	IP67	Hum free With terminal box and 1 m cable
	BO, screw on	10 W AC 10 W DC	IP67 only including seal kit 018Z0090	For explosion-risk environment zone 1. With terminal box and 5 m cable

For further information and for ordering, see separate data sheet for coils.

Accessories: Cable plug

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



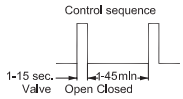


Universal electronic multi-timer, type ETM

Application	Voltage [V AC]	To use with coil	Ambient temperature [°C]	Code number
External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button). Electrical connection DIN 43650 A / EN 175 301-803-A	24 – 240.	BA, BD, BB	-10 – 50	**042N0185**

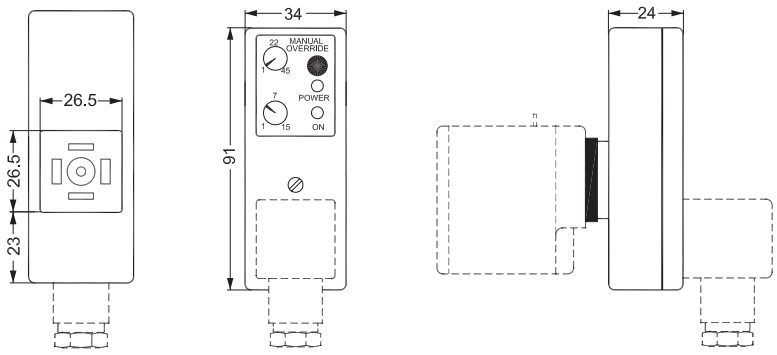
- Outside adjustments
- Light weight and small size
- External adjustable timing from 1 minute to 45 minutes with 1 to 15 seconds drain open
- One solid state timer fits all coil voltages from 24-240 V AC
- Light diodes for indication
- All in one unit
- Manual override (test button)

Technical data

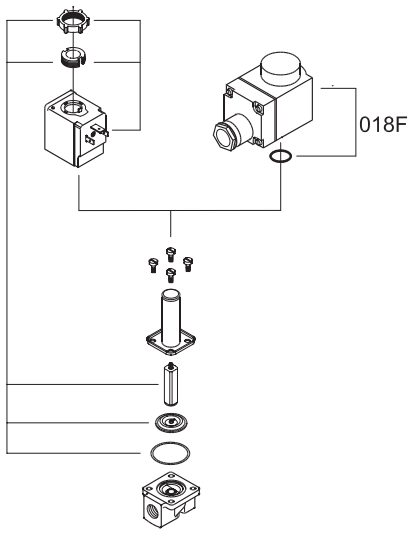


Type	ET 20 M
Voltage	24 – 240 V AC/ 50 – 60 Hz
Power rating	Max. 20 Watt
Enclosure	IP 00, IP65 with cable plug
Electrical connection	DIN connector (DIN 43650-A)
Ambient operating temperature range	-10°C – 50°C
Function	Start with pulse
Interval timer	1 – 45 min.
"On" timer	1 – 15 sec.
Weight	0.084 kg

Dimensions



Spare parts kit for EV220B 6 - EV220B 22 B, NC (brass body)



EV220B 6 - EV220B 10B

EV220B 12 - EV220B 22B

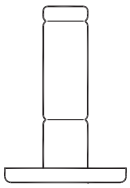
Type	Seal material	Code number
EV220B 6B	EPDM [1]	**032U1062**
EV220B 6B	FKM [2]	**032U1063**
EV220B 10B - EV220B 11.5B	EPDM [1]	**032U1065**
EV220B 10B	FKM [2]	**032U1066**
EV220B 12B	EPDM [1]	**032U1068**
EV220B 12B	FKM [2]	**032U1067**
EV220B 18B - EV220B 22B	EPDM [1]	**032U1070**
EV220B 18B - EV220B 22B	FKM [2]	**032U1069**

[1] EPDM is recommended for water.
[2] FKM is suitable for oil and air. For water at max. 60 °C.

EV220B 6 – EV220B 11.5 spare parts kit comprises:
Locking button
Nut for the coil
Armature with valve plate and spring
Diaphragm
O-ring

EV220B 12 – EV220B 22 spare parts kit comprises:
Locking button
Nut for the coil
Armature with valve plate and spring
Diaphragm

Assembled NO unit

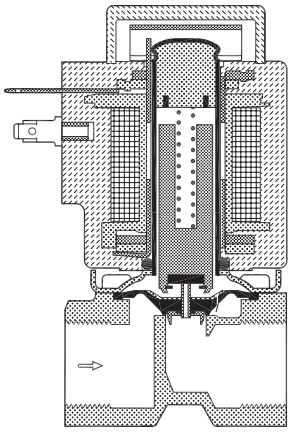


Type	Seal material	Code number
EV220B 6B	EPDM [1]	**032U0165**
EV220B 6B	FKM [2]	**032U0166**
EV220B 10B	FKM [2]	**032U0167**

[1] EPDM is recommended for water.
[2] FKM is suitable for oil and air. For water at max. 60 °C.

Spare part kit comprises:
NO actuator unit
Locking button
Nut for coil
O-ring

Function, NC

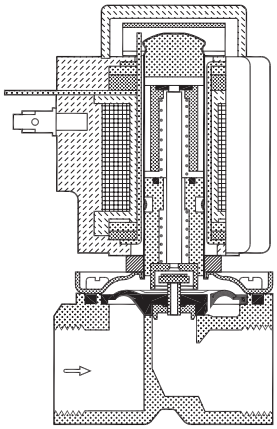


1. *Armature spring*
2. *Armature*
3. *Valve plate*
4. *Equalizing orifice*
5. *Main orifice*
6. *Pilot orifice*
7. *Diaphragm*
8. *Coil*

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.

Function, NO



1. *Opening spring*
2. *Armature*
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.

Capacity diagram:

Example, water: EV220B 10 NC,
at 4 bar diff. pressure: Approx: 3 m³/h