

Data sheet



ENGINEERING
TOMORROW

Danfoss

Servo-operated 2/2-way solenoid valves for steam Type EV225B



EV225B is a servo-operated 2/2-way solenoid valve for use in steam applications.

The design is based on a PTFE diaphragm concept, ensuring highly reliable function when used in connection with contaminated steam.


Each valve body is made of dezincification resistant brass and the valve seats are made of stainless steel.

This ensures a long life even in when used with highly aggressive steam.

Features and versions

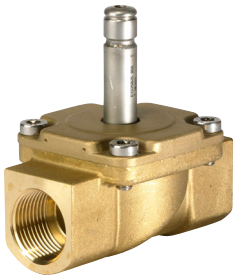
- Specifically designed for steam applications, 160 °C or 185 °C
- Flow range: 0.9 – 6.0 m³/h
- Differential pressure: 0.2 – 10 bar
- Media temperature from 0 – 185 °C
- Ambient temperature: up to 40 °C
- Coil enclosure: up to IP65
- Thread connections: from G 1/4 to G 1
- DN 6 – 25
- DZR brass NC (normally closed)
- EV225B used with BQ coil: AC voltage up to 185 °C
- EV225B used with BN coil: DC voltage up to 160 °C
- EV225B used with BB coil: AC voltage up to 160 °C DC voltage up to 140 °C
- Connection: ISO 228/1

Approvals

All valves are UL/UR approved: 

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DZR brass valve body, NC



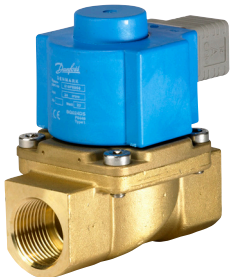
Conne- ction ISO228/1	Seal material	Orifice size [mm]	K _V - value [m³/h]	Differential pressure min. to max. [bar] ³⁾				Media temperature min. to max. [°C]		Code number
				Coil type BQ AC	Coil type BN DC	Coil type BB AC	Coil type BB DC	AC coil	DC coil	
G 1/4	PTFE	6	0.9	0.2 – 10	0.2 – 5	0.2 – 5	0.2 – 3.6	0 – 185	0 – 160	032U3802
G 3/8		10	2.2							032U3803
G 1/2		10	2.2							032U3804
G 1/2		15	3.0							032U3805
G 3/4		20	5.0							032U3806
G 1		25	6.0							032U3807

DZR brass valve body, NC
and BQ clip-on coil



Conne- ction ISO228/1	Seal material	Orifice size [mm]	K _V - value [m³/h]	Differential pressure min. to max. [bar]	Media tempera- ture min. to max. [°C]	Code number, valve body with coil and power connector		
				Coil type BQ AC		Coil type BQ024CS 24V 60 Hz 24V 50 Hz	Coil type BQ120BS 110-120V 60 Hz	Coil type BQ024 CS 208-240V 60 Hz 230V 50 Hz
G 1/2	PTFE	10	2.2	0.2 – 10	0 – 185	032U380416	032U380420	032U380431
G 1/2		15	3.0			032U380516	032U380520	032U380531
G 3/4		20	5.0			032U380616	032U380620	032U380631
G 1		25	6.0			032U380716	032U380720	032U380731

DZR brass valve body, NC
and BN clip-on coil



Connection ISO228/1	Seal material	Orifice size [mm]	K _V - value [m³/h]	Coil voltage [V DC]	Differential pressure min. to max. [bar]	Media temperature min. to max. [°C]	Code number
G 1/2	PTFE	10	2.2	24	0.2 – 5	0 – 160	032U380402
G 1/2		15	3.0				032U380502
G 3/4		20	5.0				032U380602
G 1		25	6.0				032U380702

Technical data, NC

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

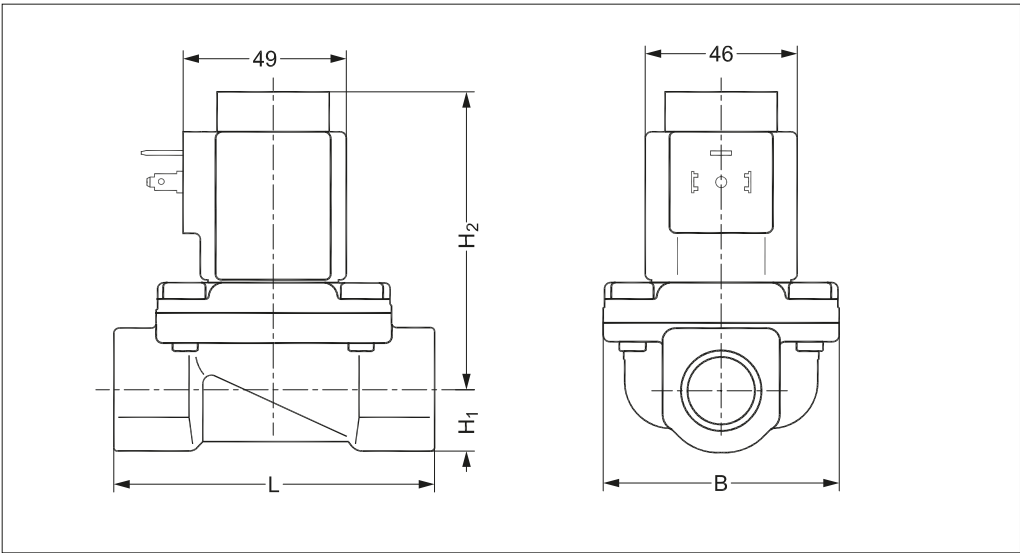
¹⁾ The times are indicative. The exact times will depend on the pressure conditions.

Installation	Vertical solenoid system is recommended		
Max. working pressure (MWP)	10 bar		
Max. test pressure	25 bar (UL 429: 24.1 bar)		
Ambient temperature	Max. 40 °C at a medium 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	PTFE	
	Valve plate	PTFE	
	Valve seat	Stainless steel	
	External gaskets	O-ring: AFLAS	

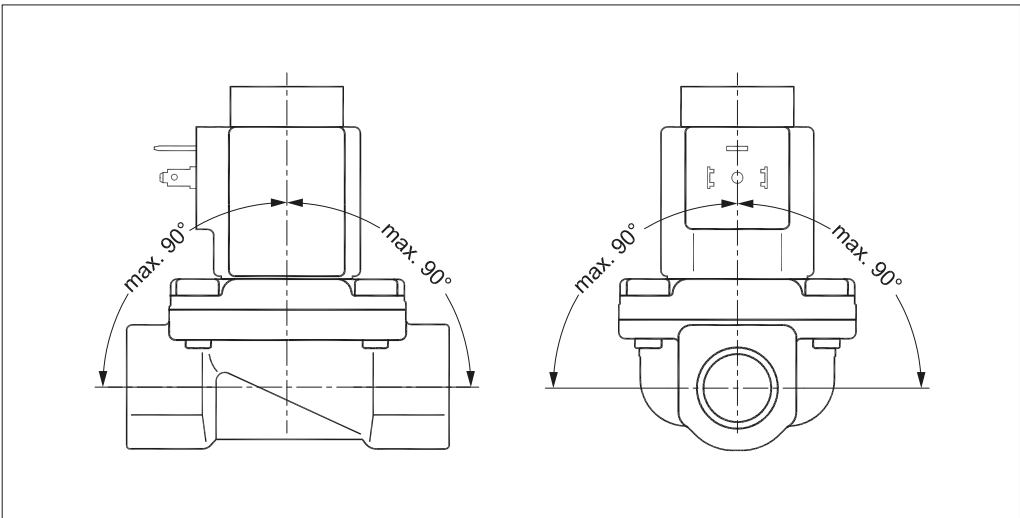
Dimensions and weight

Type	L [mm]	B [mm]	H [mm]	H ₁ [mm]	H ₂ [mm]	Weight gross valve body with coil BQ, BB [kg]	Weight gross valve body with coil BN [kg]
EV225B 6 BD	62	46	98	13	85	0.75	1.03
EV225B 10 BD	62	46	98	13	85	0.72	1.00
EV225B 15 BD	81	56	102	15	87	0.86	1.14
EV225B 20 BD	98	72	110	18	92	1.4	1.68
EV225B 25 BD	106	72	117	21	96	1.7	1.98

Dimensions






Mounting angle



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Coil type BQ AC
Steam coil to 185 °C



Type	Tambient [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Power consumption		Approval	Code no.
					[W]	[VA]		
BQ024CS	-40T40	24	-15%, +10%	50	10	17	c  US	018F4517
		24	-15%, +10%	60	9.0	16		
BQ120BS	-40T40	110/120	-15%, +6%	60	13.5	19	c  US	018F4519
BQ240CS	-40T40	230	-15%, +6%	50	10	17	c  US	018F4511
		208/240	-6%, +6%	60	9.5	16		

Coil type BN DC
Steam coils to 160 °C



Type	Tambient [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Power consumption		Approval	Code no.
					[W]	[VA]		
BN024DS	-40T50	24	±10%	DC	20	–	c  US	018F6968

Coil type BB AC
Steam coils to 160 °C



Type	Tambient [°C]	Supply voltage [V]	Voltage variation	Frequency [Hz]	Power consumption		Code no.
					[W]	[VA]	
BB024AS	-40T80	24	-15%, +10%	50	11	19	018F7358
BB115AS	-40T50	115	-15%, +10%	50	11	19	018F7361
BB230AS	-40T80	220/230	-15%, +10%	50	11	19	018F7351
BB240AS	-40T80	240	-15%, +10%	50	11	19	018F7352
BB440CS	-40T80	400	±10%	50	14	24	018F7353
		440	±10%	60	15	24	
BB024BS	-40T80	24	-15%, +10%	60	14	23	018F7365
BB110CS	-40T50	110	±10%	50	15	28	018F7360
		110	±10%	60	13	22	
BB230CS	-40T50	220/230	±10%	60	13	24	018F7363
		220/230	±10%	50	16	31	

Type BB DC
Steam coils to 140 °C

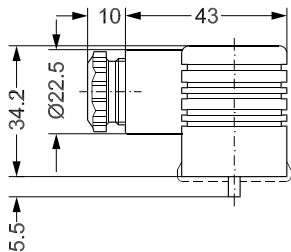
BB012DS	-40T50	12	±10%	DC	13	–	018F7396
BB024DS	-40T50	24	±10%	DC	16	–	018F7397

Technical data	Type BQ, BN, BB
Insulation of coil windings	Class H according to IEC 85
Connection	GDM 2011 (grey) Cable plug according to DIN 43650-A PG11
Coil enclosure, IEC 529	IP65
Ambient temperature	Max. 40°C
Duty rating	Continuous

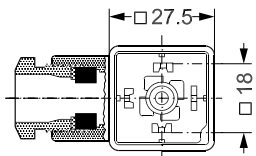
Accessories:
Cable plug



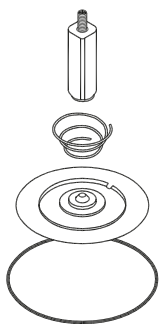
Type	Code number
GDM 2011 (grey), cable plug according to DIN 43650-A PG11	042N0156



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42N256.10



Spare parts kit for EV225B 6 – EV225B 25



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32U1309-10

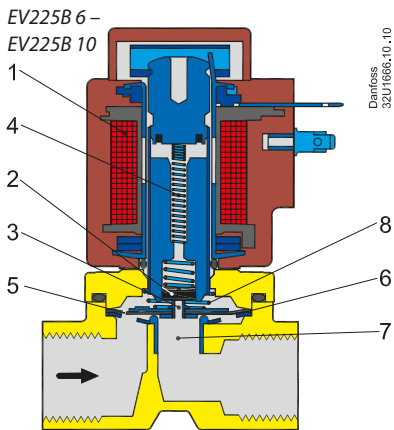
Type	Code number
EV225B 6–10	032U3171
EV225B 15	032U3172
EV225B 20–25	032U3173



The spare parts kit comprises:

- An armature with valve plate and spring
- Closing spring
- Diaphragm
- O-ring

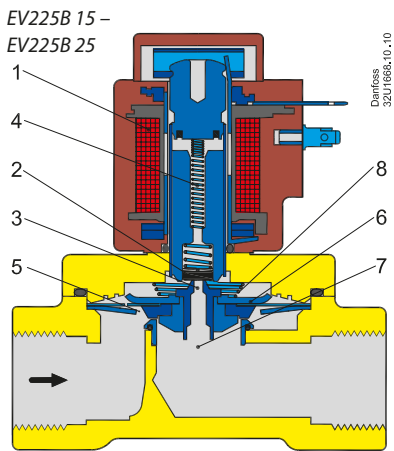
Function NC



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32U1686-10, 10

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.



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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.

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

Steam capacity diagrams

Example

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

