Technical brochure

Solenoid valves 2/2-ways servo-operated type EV225B

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

The design is based on a PTFE diaphragm concept, ensuring high reliable function even in connection with contaminated steam.

Valve body in dezincification resistant brass and valve seats made in stainless steel for ensuring a long life even in connection with aggressive steam media.

Features

- 2/2-way
- Specifically designed for steam applications, 160°C or 185°C
- Servo-operated
- DN 6 - DN 25
- Ambient temperature: +40°C
- G 1/4" to G 1"
- DZR brass valve body
- NC (normally closed)

ISO 228/1 or UL listed version with NPT for North America (EVSIS/UL)

Versions:

- EV225B used with BQ coil
  - ac voltage up to 185°C,
  - dc voltage up to 140°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

Ordering

NC valve body

Connection ISO 228/1	Seal material	K_v value (m^3/h)	Media temperature		Type designation		Pressure range (bar)/coil type					Code no. without coil
			ac coil max (°C)	dc coil max (°C)	Main type	Specification	Min.	Max BQ 10 W ac	Max BN 20 W dc	Max BB 10 W ac	Max BB 18 W dc	
G 1/4	PTFE	0.9	185	160	EV225B 6 BD	G14T NC000	0.2	10	5	5	3.6	**032U3802**
G 3/8	PTFE	2.2	185	160	EV225B 10 BD	G38T NC000	0.2	10	5	5	3.6	**032U3803**
G 1/2	PTFE	2.2	185	160	EV225B 10 BD	G12T NC000	0.2	10	5	5	3.6	**032U3804**
G 1/2	PTFE	3.0	185	160	EV225B 15 BD	G12T NC000	0.2	10	5	5	3.6	**032U3805**
G 3/4	PTFE	5.0	185	160	EV225B 20 BD	G34T NC000	0.2	10	5	5	3.6	**032U3806**
G 1	PTFE	6.0	185	160	EV225B 25 BD	G1T NC000	0.2	10	5	5	3.6	**032U3807**

NC valve body and BQ clip-on coil

Connection ISO 228/1	Seal material	K_v value (m^3/h)	Media temperature	Type designation		Pressure range (bar)		Complete code no. with coil and power connector			
			ac coil max (°C)	Main type	Specification	Min.	Max 10 W ac	24 V 50 Hz	110 V 60 Hz	230 V 50 Hz	220 V 60Hz
G 1/2	PTFE	2.2	185	EV225B 10 BD	G12T NC000	0.2	10	**032U380416**	**032U380420**	**032U380431**	**032U380429**
G 1/2	PTFE	3.0	185	EV225B 15 BD	G12T NC000	0.2	10	**032U380516**	**032U380520**	**032U380531**	**032U380529**
G 3/4	PTFE	5.0	185	EV225B 20 BD	G34T NC000	0.2	10	**032U380616**	**032U380620**	**032U380631**	**032U380629**
G 1	PTFE	6.0	185	EV225B 25 BD	G1T NC000	0.2	10	**032U380716**	**032U380720**	**032U380731**	**032U380729**

NC valve body and BN clip-on coil

Connection ISO 228/1	Seal material	K_v value (m^3/h)	Media temperature	Type designation		Pressure range (bar)		Complete code no. with coil and power connector
			dc coil max (°C)	Main type	Specification	Min.	Max 20 W dc	24 V dc
G 1/2	PTFE	2.2	160	EV225B 10 BD	G12T NC000	0.2	5	**032U380402**
G 1/2	PTFE	3.0	160	EV225B 15 BD	G12T NC000	0.2	5	**032U380502**
G 3/4	PTFE	5.0	160	EV225B 20 BD	G34T NC000	0.2	5	**032U380602**
G 1	PTFE	6.0	160	EV225B 25 BD	G1T NC000	0.2	5	**032U380702**

Technical data

Main type	EV225B 6-25
Installation	Vertical solenoid system is recommended
Pressure range	Max. 10 bar
Max. test pressure	25 bar
Time to open [1]	Max. 0.2 s
Time to close [1]	Max. 0.2 s
Ambient temperature	Max. 40°C at a medium temperature of 185°C
Medium temperature	185°C with ac coil / 160°C with dc coil
Viscosity	max. 50 cSt

Materials

Valve body	Dezincification resistant brass
Armature/Armature stop	Stainless steel, W. no. 1.4105 / AISI 430FR
Armature tube	Stainless steel, W. no. 1.4306 / AISI 304L
Spring	Stainless steel, W. no. 1.4310 / AISI 301
Diaphragm	PTFE
Valve plate	PTFE
Valve seat	Stainless steel, W. no. 1.43105 / AISI 403
External gaskets	O-ring: AFLAS

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

Ordering

Type BQ
Steam coil to 185°C

Coil voltage	Type	Coil output W	Temperature °C	Differential pressure	Appendix	Code No.
24 V 50Hz	BQ	10	185	10	16	**018F4517**
110 V 60Hz	BQ	10	185	10	20	**018F4519**
230 V 50Hz	BQ	10	185	10	31	**018F4511**
220 V 60Hz	BQ	10	185	10	29	**018F4520**

Technical data type BQ

Voltage tolerances	230 V ac coils: +6%, -15%
	Other ac coils: +10%, -15%
Power consumption, inrush	ac coils: 44 VA
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	IP 65
Ambient temperature	Max. 40°C
Duty rating	Continuous

Type BN dc
Steam coils to 160°C

Coil voltage	Type	Coil output W	Temperature °C	Differential pressure	Appendix	Code No.
24 V dc	BN	20	160	15	02	**018F6968**

Technical data type BN

Voltage tolerances	±10%
Power consumption, inrush	20 W
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	IP 65
Ambient temperature	Max. 40°C
Duty rating	Continuous

Type BB ac
Steam coils to 160°C

Coil voltage	Type	Coil output W	Temperature °C	Differential pressure	Appendix	Code No.
24 V 50Hz	BB	10	160	5	16	**018F7358**
24 V 60Hz	BB	10	160	5	14	**018F7365**
115 V 50Hz	BB	10	160	5	22	**018F7361**
110 V 60Hz	BB	10	160	5	21	**018F7360**
230 V 50Hz	BB	10	160	5	31	**018F7351**
230 V 60Hz	BB	10	160	5	32	**018F7363**
240 V 50Hz	BB	10	160	5	33	**018F7352**
380 V 50Hz	BB	10	160	5	37	**018F7353**

Type BB dc
Steam coils to 140°C

12 V dc	BB	18	140	3.6	01	**018F7396**
24 V dc	BB	18	140	3.6	02	**018F7397**

Technical data type BB

Voltage tolerances	230 V ac coils: +6%, -15%
	Other ac coils: +10%, -15% / dc: ±10%
Power consumption, inrush	ac coils: 44 VA / dc, 18 W
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	IP 65
Ambient temperature	Max. 40°C
Duty rating	Continuous

Accessories:
power connector

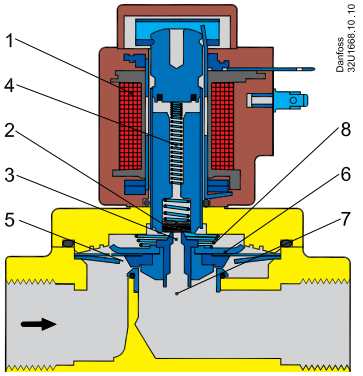
Type	Code No.
GDM 2011 (grey) Cable plug according to DIN 43650-A PG11	**042N0156**

Function

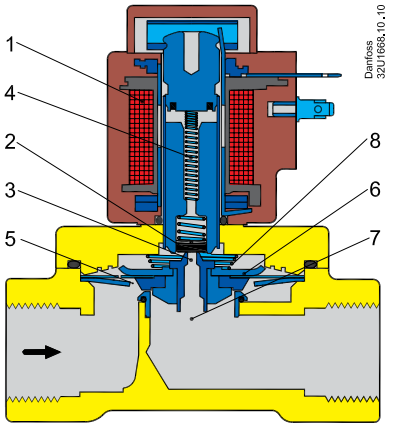
Coil voltage disconnected (closed):
When the voltage is disconnected, the valve plate (2) is pressed down against the pilot orifice (3) by the armature spring (4). The pressure across the diaphragm (6) is built up via the equalizing orifice (5). The diaphragm/piston closes the main orifice (7) as soon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

EV225B 6-10



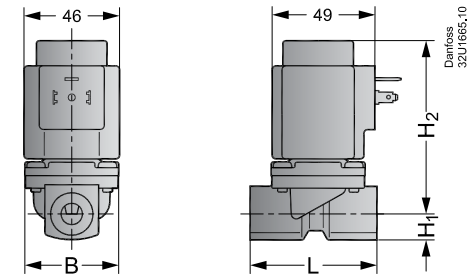
EV225B 15-25

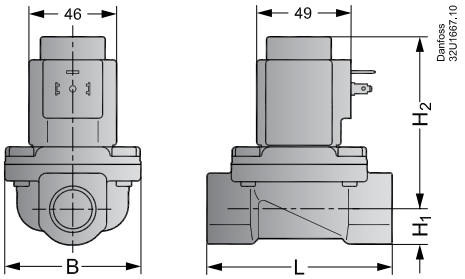


1. *Coil*
2. *Valve plate*
3. *Pilot orifice*
4. *Armature spring*
5. *Equalising orifice*
6. *Diaphragm*
7. *Main orifice*
8. *Closing spring*

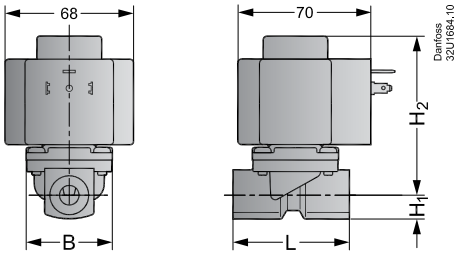
Dimensions and weight

Coil type BQ, BB



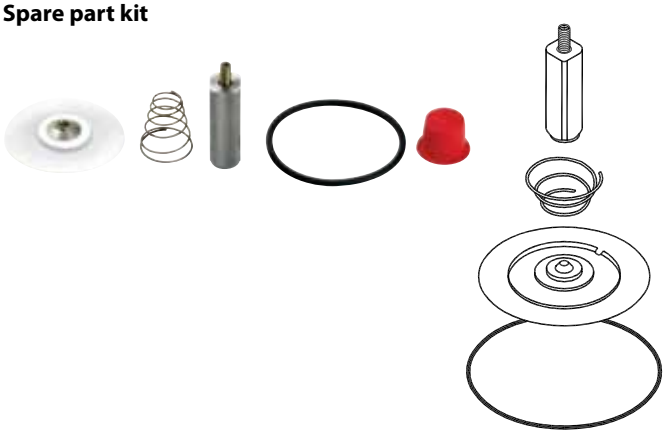


Coil type BN



Type	L [mm]	B [mm]	H [mm]	H_1 [mm]	H_2 [mm]	Weight with coil BQ, BB [Kg]	Weight 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

Spare part kit

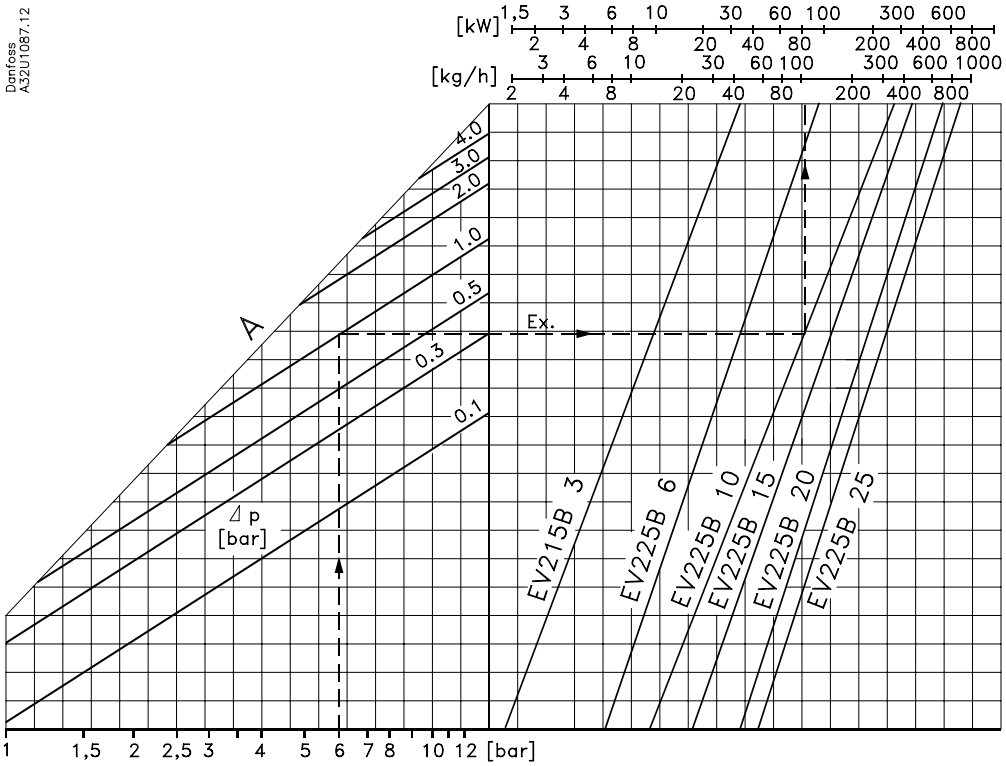


Danfoss
32U1309.10

Spare parts kit for EV225B 6-25
The spare parts kit comprises an armature with valve plate and spring, closing spring, diaphragm and O-ring,

Type	Code No.
EV225B 6-10	**032U3171**
EV225B 15	**032U3172**
EV225B 20-25	**032U3173**

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

Spare part coils for earlier steam valve versions
with only screw to fasten coil to armature tube.

Type BR

Old coil Voltage	Type	Power consumption	Temperature °C	Differential pressure	Code No.
24 V 50 Hz	BR 024A	10	185	10	**032K143682**
24 V 60 Hz	BR 024B	10	185	10	**032K143693**
110 el. 115 V 50 Hz	BR 115A	10	185	10	**032K143683**
110 V 60 Hz	BR 110B	10	185	10	**032K143691**
230 V 50 Hz	BR 250A	10	185	10	**032K143684**
230 V 60 Hz	BR 230B	10	185	10	**032K143694**
240 V 50 Hz	BR 240A	10	185	10	**032K143685**
24 V dc	BR 024D	17	160	5	**032K140902**
220 V 60 Hz	BR 220B	10	185	10	**032K143690**

Technical data

Voltage tolerances	230 V ac coils: +6%, -15%
	Other ac coils: +10%, -15%
Power consumption, inrush	ac coils: 50 VA
Power consumption, holding	ac coils: 20 VA, 10 W ac
Insulation of coil windings	Class H according to IEC 85
Connection	Terminal box; Pg 13.5
Coil enclosure, IEC 529	IP 43
Ambient temperature	Max. 40°C
Duty rating	Continuous