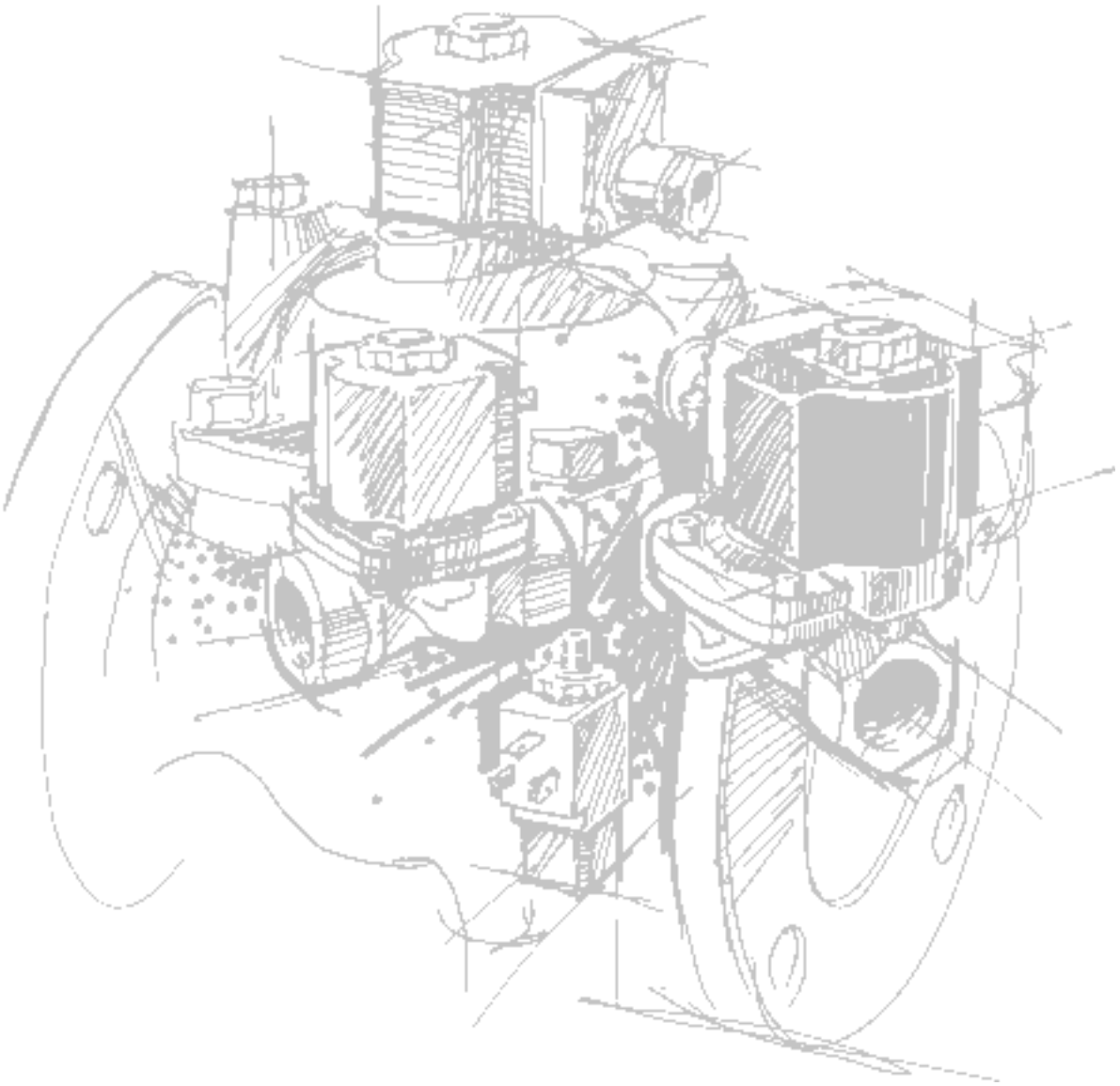
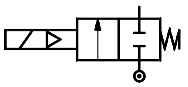
Data sheet



Solenoid valves
2/2-way servo-operated
Type EV220B
DN 6-12

September 2000

DKACV.PD.200.C2.02
520B0659



De-energized
closed

Type EV220B
for neutral liquids and gases
DN 6 - 12 B

$G\ ^1/_4$ - $G\ ^1/_2$

Features

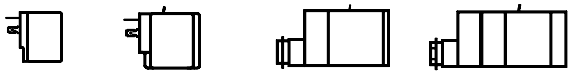
- For robust industrial application
- For water, oil, compressed air and similar neutral media
- Flow range for water: 0.2 to 8 m³/h
- Differential pressure: Up to 30 bar
- Viscosity: Up to 50 cSt
- Ambient temperature: Up to 80°C
- Coil enclosure: Up to IP 67
- Thread connections: From $G\ ^1/_4$ to $G\ ^1/_2$
- Also available with NPT thread. Please contact Danfoss.

Technical data

Type	EV220B 6 B	EV220B 10 B	EV220B 12 B
Installation	Vertical solenoid system is recommended (see DKACV.PT.600.A)		
Pressure range	0.1 to 30 bar		
Max. test pressure	EV220B 6 -10 B: 50 bar. EV220B 12 B: 16 bar		
Time to open [1])	40 ms	50 ms	60 ms
Time to close[1])	250 ms	300 ms	300 ms
Ambient temperature	40 to 80°C (depending on coil type, see data for the coil selected)		
Medium temperature	EPDM: -30 to + 100°C. FKM: 0 to + 100°C		
Viscosity	max. 50 cSt		
Materials	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 or FKM Valve plate: EPDM or FKM Diaphragm: EPDM or FKM		

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

Coil options



Type: BA
9 W ac
15 W dc

Type: BB
10 W ac
18 W dc

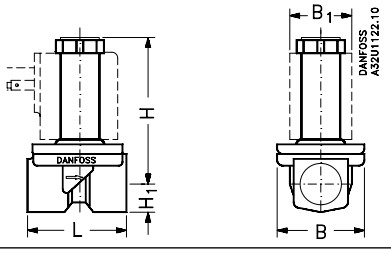
Type: BE (IP67)
10 W ac
18 W dc

Type: BG
12 W ac
20 W dc

Danfoss also offers hum-free coils for noise sensative applications and EEx m II T4 coils for use in explosion risk areas - please see coil data sheet DKACV.PD.600.A

See DKACV.PD.600.A

Dimensions and weight

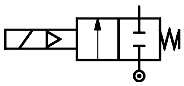


Type	L [mm]	B [mm]	B_1 [mm] Coil type BA	B_1 [mm] Coil type BB/BE	B_1 [mm] Coil type BG	H_1 [mm]	H [mm]	Weight without coil [kg]
EV220B 6 B	45.5	43.5	32	46	66	13.0	74.0	0.22
EV220B 10 B	51.0	48.0	32	46	66	13.0	77.0	0.29
EV220B 12 B	58.0	50.0	32	46	66	13.0	77.0	0.35

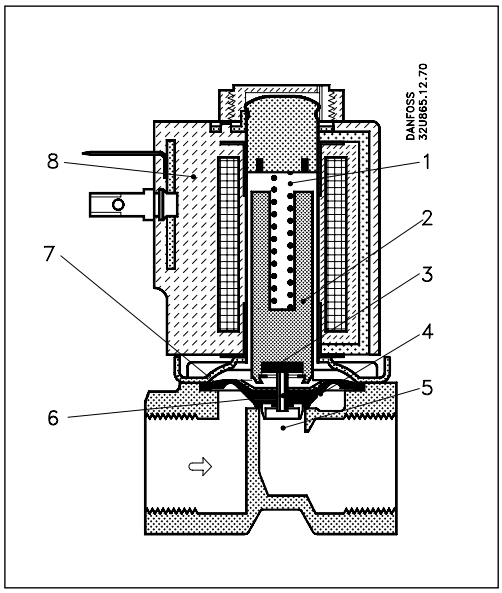
G 1/4 - G 1/2

Type EV220B
for neutral liquids and gases
DN 6 - 12 B

De-energized
closed



Function



1. Armature spring
2. Armature
3. Valve plate
4. Equalising 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 equalising 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 equalising 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.

Ordering - valve body

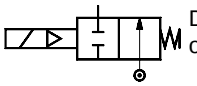
Connection ISO 228/1	Seal material	k_v-value [m³/h]	Media temp. Min. [°C]	Media temp. Max. [°C]	Type designation: Main type	Type designation: Specification	**Code no. without coil**: Standard	**Code no. without coil**: WRc[3]	Permissible differential pressure (bar): Min.	Max. BA: 9 W ac	Max. BA: 15 W dc	Max. BB/BE: 10 W ac	Max. BB/BE: 18 W dc	Max. BG: 12 W ac	Max. BG: 20 W dc
G 1/4	EPDM[1]	0.7	-30	+100	EV220B 6 B	G 14E NC000	**032U1236**	**Yes**	0.1	20	-	20	10	20	20
G 1/4	FKM[2]	0.7	0	+100	EV220B 6 B	G 14F NC000	**032U1237**	**-**	0.1	20	-	20	10	20	20
									0.1	30	-	30	-	30	30
G 3/8	EPDM[1]	0.7	-30	+100	EV220B 6 B	G 38E NC000	**032U1241**	**Yes**	0.1	20	-	20	10	20	20
G 3/8	FKM[2]	0.7	0	+100	EV220B 6 B	G 38F NC000	**032U1242**	**-**	0.1	20	-	20	10	20	20
									0.1	30	-	30	-	30	30
G 3/8	EPDM[1]	1.5	-30	+100	EV220B 10 B	G 38E NC000	**032U1246**	**Yes**	0.1	20	-	20	10	20	20
G 3/8	FKM[2]	1.5	0	+100	EV220B 10 B	G 38F NC000	**032U1247**	**-**	0.1	20	-	20	10	20	20
									0.1	30	-	30	-	30	30
G 1/2	EPDM[1]	1.5	-30	+100	EV220B 10 B	G 12E NC000	**032U1251**	**Yes**	0.1	20	-	20	10	20	20
G 1/2	FKM[2]	1.5	0	+100	EV220B 10 B	G 12F NC000	**032U1252**	**-**	0.1	20	-	20	10	20	20
									0.1	30	-	30	-	30	30
G 1/2	EPDM[1]	2.5	-30	+100	EV220B 12 B	G 12E NC000	**032U1256**	**-**	0.3	10	-	10	-	-	10
G 1/2	FKM[2]	2.5	0	+100	EV220B 12 B	G 12F NC000	**032U1255**	**-**	0.3	10	-	10	-	-	10

[1]) EPDM is suitable for water only.
[2]) FKM is suitable for oil and air. May also be used for water and neutral aqueous solutions if the water temperature does not exceed 60 °C.
[3]) Approved by WRc

= only gas

Ordering - coils

See separate data sheet for coils DKACV.PD.600.A



De-energized
open

Type EV220B NO
for neutral liquids and gases
DN 6 - 10 B

G $^3/_8$
G $^1/_2$

Features

- For robust industrial application
- For water, oil, compressed air and similar neutral media
- Flow range for water: 0.2 to 3.15 m³/h
- Differential pressure: Up to 10 bar
- Viscosity: Up to 50 cSt
- Ambient temperature: Up to 80°C
- Coil enclosure: Up to IP 67
- Thread connections: G $^3/_8$ and G $^1/_2$
- Water hammer damped
- Also available with NPT thread. Please contact Danfoss.

Technical data

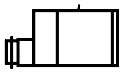
Installation	Vertical solenoid system is recommended, see DKACV.PT.600.A	
Pressure range	0.1 to 10 bar	
Max. test pressure	50 bar	
Time to open [1])	EV220 6 B: 40 ms	EV220 10 B: 50 ms
Time to close [1])	EV220 6 B: 250 ms	EV220 10 B: 300 ms
Ambient temperature	(max. 80°C depending on coil type, see data for the coil selected)	
Medium temperature	EPDM: - 30 to + 100 °C. FKM: 0 - +100 °C	
Viscosity	max. 50 cSt	
Materials	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 or FKM Valve plate: EPDM or FKM Diaphragm: EPDM or FKM	

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

Coil options

Type: BA
9 W ac
15 W dc

Type: BB
10 W ac
18 W dc

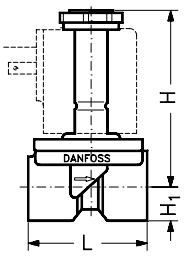


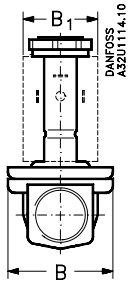
Type: BE (IP67)
10 W ac
18 W dc

Danfoss also offers hum-free coils for noise sensative applications and EEx m II T4 coils for use in explosion risk areas - please see coil data sheet DKACV.PD.600.A

See DKACV.PD.600.A

Dimensions and weight



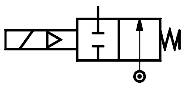


Type	L [mm]	B [mm]	B_1 [mm] Coil type BA	B_1 [mm] Coil type BB/BE	H_1 [mm]	H [mm]	Weight without coil [kg]
EV220B 6 B NO	45.5	43.5	32	46	13	79	0.22
EV220B 10 B NO	51.0	48.0	32	46	13	82	0.29

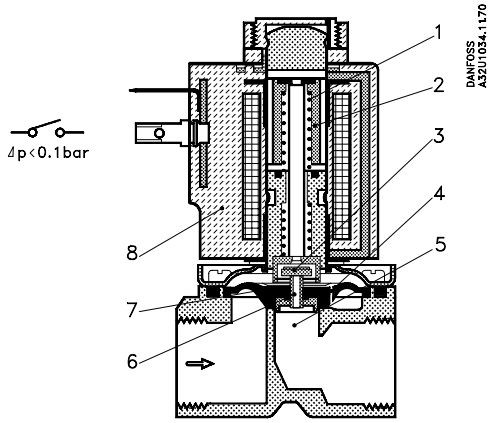
G $^3/_8$
G $^1/_2$

Type EV220B NO
for neutral liquids and gases
DN 6 - 10 B

De-energized
open



Function



1. Opening spring
2. Armature
3. Valve plate
4. Equalising 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 equalising 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 equalising 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.

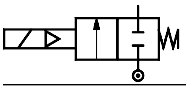
Ordering - valve body

Connection ISO 228/1	Seal material	k_v-value [m³/h]	Media temp. Min. [°C]	Media temp. Max. [°C]	Type designation: Main type	Type designation: Specification	**Code no. without coil**	Permissible differential pressure (bar): Min.	Max. BA: 9 W ac	Max. BA: 15 W dc	Max. BB: 10 W ac	Max. BB: 18 W dc	Max. BE: 10W ac	Max. BE: 18 W dc
G $^3/_8$	EPDM[1])	0.7	-30	+100	EV220B 6 B	G 38E NO000	**032U1238**	0.1	10	10	10	10	10	10
G $^3/_8$	FKM[2])	0.7	0	+100	EV220B 6 B	G 38F NO000	**032U1239**	0.1	10	10	10	10	10	10
G $^1/_2$	FKM[2])	1.0	0	+100	EV220B 10 B	G 12F NO000	**032U1249**	0.1	10	10	10	10	10	10

[1]) EPDM is suitable for water only.
[2]) FKM is suitable for oil and air. May also be used for water and neutral aqueous solutions if the water temperature does not exceed 60 °C.

Ordering - coils

See separate data sheet for coils DKACV.PD.600.A



De-energized
closed

Type EV220B
for slightly aggressive liquids and gases
DN 6 -12 BD (Dezincification resistant brass)

$G\ ^1/_4$ - $G\ ^1/_2$

Features

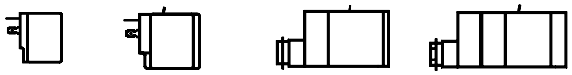
- For robust industrial application
- For neutral and slightly aggressive liquids and gases. Contact Danfoss if you are in doubt about the valve's suitability for the medium in question.
- Differential pressure: Up to 20 bar
- Viscosity: Up to 50 cSt
- Ambient temperature: Up to 80°C
- Coil enclosure: Up to IP 67
- Thread connections: From $G\ ^1/_4$ to $G\ ^1/_2$

Technical data

Type	EV220B 6 BD	EV220B 10 BD	EV220B 12 BD
Installation	Vertical solenoid system is recommended (see DKACV.PT.600.A)		
Pressure range	0.1 to 20 bar		
Max. test pressure	50 bar	50 bar	16 bar
Time to open [1])	40 ms	50 ms	60 ms
Time to close [1])	250 ms	300 ms	300 ms
Ambient temperature	40 to 80°C (depending on coil type, see data for the coil selected)		
Medium temperature	−10 to +90°C		
Viscosity	max. 50 cSt		
Materials	Valve body: Dezincification resistant brass: 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 Valve Seat: Stainless steel, W.no. 1.4404/AISI 316L O-rings: EPDM Valve plate: EPDM Diaphragm: EPDM		

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

Coil options



Type: BA
9 W ac
15 W dc

Type: BB
10 W ac
18 W dc

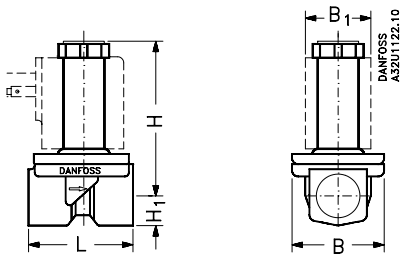
Type: BE (IP67)
10 W ac
18 W dc

Type: BG
12 W ac
20 W dc

Danfoss also offers hum-free coils for noise sensative applications and EEx m II T4 coils for use in explosion risk areas - please see coil data sheet DKACV.PD.600.A

See DKACV.PD.600.A

Dimensions and weight

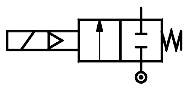


Type	L	B	B_1 [mm]			H_1	H	Weight without coil
	[mm]	[mm]	Coil type BA	Coil type BB/BE	Coil type BG	[mm]	[mm]	[kg]
EV220B 6 BD	45.5	43.5	32	46	66	13.0	74.0	0.22
EV220B 10 BD	51.0	48.0	32	46	66	13.0	77.0	0.29
EV220B 12 BD	58.0	50.0	32	46	66	13.0	77.0	0.35

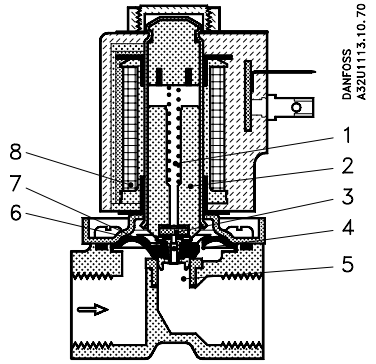
G $^1/_4$ - G $^1/_2$

Type EV220B
for slightly aggressive liquids and gases
DN 6 -12 BD (Dezincification resistant brass)

De-energized
closed



Function



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

Coil voltage disconnected (closed):
When the supply voltage to the coil is disconnected, the valve plate (3) is pressed down against the pilot orifice (6) by the closing spring (1). The pressure across the diaphragm (7) is built up via the equalising 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 equalising 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.

Ordering - valve body

Connection ISO 228/1	Seal material	k_v-value [m³/h]	Media temp. Min. [°C]	Media temp. Max. [°C]	Type designation: Main type	Type designation: Specification	**Code no. without coil**	Permissible differential pressure (bar): Min.	Max. BA: 9 W ac	Max. BA: 15 W dc	Max. BB: 10 W ac	Max. BB: 18 W dc	Max. BE: 12 W ac	Max. BE: 20 W dc
G $^1/_4$	EPDM[1])	0.7	-10	+90	EV 220B 6 BD	G 14E NC000	**032U5806**	0.1	20	-	20	10	20	20
G $^3/_8$	EPDM[1])	0.7	-10	+90	EV 220B 6 BD	G 38E NC000	**032U5807**	0.1	20	-	20	10	20	20
G $^3/_8$	EPDM[1])	1.5	-10	+90	EV 220B 10 BD	G 38E NC000	**032U5809**	0.1	20	-	20	10	20	20
G $^1/_2$	EPDM[1])	1.5	-10	+90	EV 220B 10 BD	G 12E NC000	**032U5810**	0.1	20	-	20	10	20	20
G $^1/_2$	EPDM[1])	2.5	-10	+90	EV 220B 12 BD	G 12E NC000	**032U5811**	0.3	10	-	10	-	-	10

[1]) EPDM is suitable for water only.

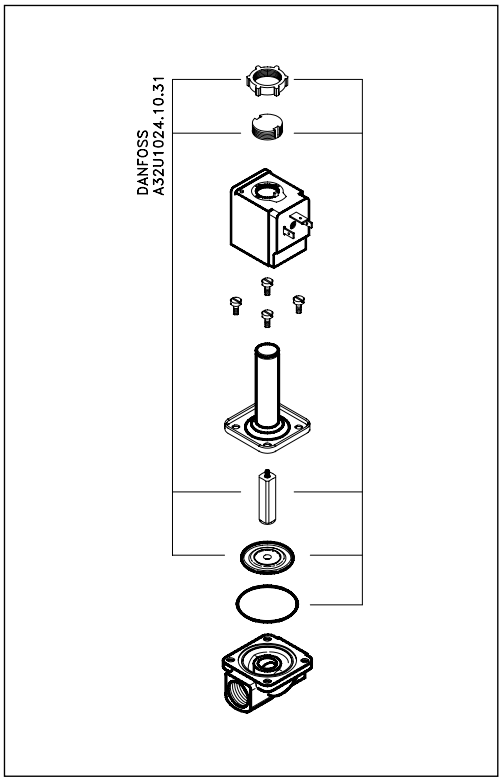
Ordering - coils

See separate data sheet for coils DKACV.PD.600.A

for solenoid valves
2/2-way servo-operated
Type EV220B

Spare parts kit for

- **EV220B 6 - 12 B (brass body)**
- **EV220B 6 - 12 BD (dezincification resistant brass body)**

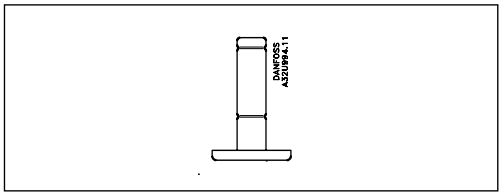


The spare parts kit comprises a locking button, nut for the coil, armature with valve plate and spring, and a diaphragm. For EV220B 6 and 10 the spare parts kit also includes an O-ring.

Type	Seal material	Code no.	
		Standard	WRc
EV220B 6 B	EPDM[1])	**032U1062**	**032U6001**
EV220B 6 B	FKM[2])	**032U1063**	
EV220B 10 B	EPDM[1])	**032U1065**	**032U6002**
EV220B 10 B	FKM[2])	**032U1066**	
EV220B 12 B	EPDM[1])	**032U1068**	**032U6003**
EV220B 12 B	FKM[2])	**032U1067**	

Type	Seal material	Code no.
EV220B 6 BD	EPDM[1])	**032U4280**
EV220B 10 BD	EPDM[1])	**032U4281**
EV220B 12 BD	EPDM[1])	**032U4282**

Assembled normally open (NO) unit



EV220B 6 - 10 B; NO		
Type	Seal material	Code no.
DN 6	EPDM[1])	**032U0165**
DN 6	FKM[2])	**032U0166**
DN 10	NBR[3])	**032U0167**

[1]) EPDM is suitable for water and steam (steam max. 140° C / 4 bar).
[2]) FKM is suitable for oil and air. For water at max. 60 °C.
[3]) NBR is suitable for oil, water and air.

DK-6000 Kolding
Denmark