

Solenoid valves 2/2-way servo-operated

Type EV220B 15-50

Features



EV220B NC and NO

- For robust industrial application
- For water, steam, oil, compressed air and gases
- Flow range for water: 2.2 to 160 m³/h
- Differential pressure: Up to 16 bar
- Viscosity: Up to 50 cSt
- Ambient temperature: Up to +80°C
- Media temperature from -30°C to +140°C
- Coil enclosure: Up to IP 67
- Thread connections: From G ½ to G 2
- Water hammer damped
- Built in filter for protection of pilot system
- Adjustable closing time available (see page 7)
- Also available with NPT thread. Please contact Danfoss.

Technical data for NC and NO

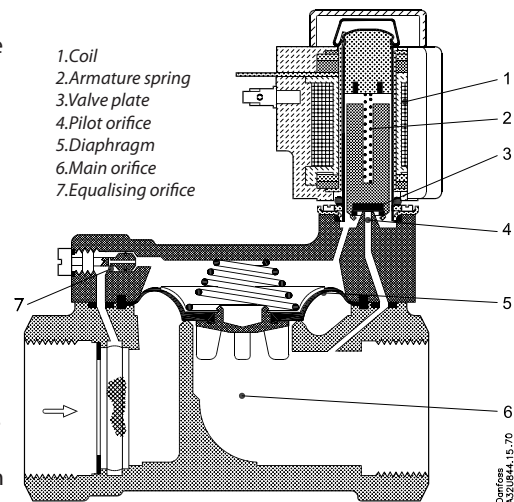
Main type	EV220B 15B	EV220B 20B	EV220B 25B	EV220B 32B	EV220B 40B	EV220B 50B
Installation	Optional, but vertical solenoid system is recommended.					
Pressure range	EPDM/NBR: 0.3 - 16 bar		0.3 - 10 bar for liquids on NO versions			
	FKM: 0.3 - 10 bar					
Max. test pressure	25 bar					
Time to open ¹⁾	40 ms	40 ms	300 ms	1000 ms	1500 ms	5000 ms
Time to close ¹⁾	350 ms	1000 ms	1000 ms	2500 ms	4000 ms	10000 ms
Ambient temperature	Type: BA	9 W ac/15 W dc		Up to + 40°C		
	Type: BB	10 W ac/18 W dc		Up to + 80°C		
	Type: BE	10 W ac/18 W dc (IP67)		Up to + 80°C		
	Type: BG	12 W ac/20 W dc		Up to + 80°C		
	Type: BO	10 W ac/10 W dc		Up to + 40°C		
	Type: BP	16 W dc		Up to + 55°C		
Medium temperature	EPDM:	-30 - + 120°C and +140°C / 4 bar (low pressure steam)				
	FKM:	0 - +100°C and +60°C for water				
	NBR:	-10 - +90°C				
Viscosity	max. 50 cSt					
Materials	Valve body:	Brass..... W.no. 2.0402				
	Armature:	Stainless Steel, W.no. 1.4105/AISI 430 FR				
	Armature tube:	Stainless Steel, W.no. 1.4306/AISI 304 L				
	Armature stop:	Stainless Steel, W.no. 1.4105/AISI 430 FR				
	Springs	Stainless Steel, W.no. 1.4310/AISI 301				
	O-rings:	EPDM, FKM or NBR				
	Valve plate:	EPDM, FKM or NBR				
	Diaphragm:	EPDM, FKM or NBR				

¹⁾ The times are indicative and apply to water. The exact times will depend on the pressure conditions. Closing times can be changed by replacement of the equalising orifice.

Function NC

Coil voltage disconnected (closed):

When the voltage is disconnected, the valve plate (3) is pressed down against the pilot orifice (4) by the armature spring (2). The pressure across the diaphragm (5) is built up via the equalising orifice (7). The diaphragm closes the main orifice (6) 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 (1), the pilot orifice (4) is opened. As the pilot orifice is larger than the equalising orifice (7), the pressure across the diaphragm (5) drops and therefore it is lifted clear of the main orifice (6). 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.

Ordering NC

Conne- ction ISO228/1	Seal material	k _v - value [m ³ /h]	Media temp.		Type designation		Pressure range all coil types		Code no. without coil		
			Min. [°C]	Max. [°C]	Main type	Specification	Min. [bar]	Max. ⁶⁾ [bar]		WRAS ⁷⁾	
G ½	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	4	-30	+120 ⁴⁾	EV220B 15B	G 12E NC000	0.3	16	032U7115	Yes	
			-10	+90	EV220B 15B	G 12N NC000		16			032U7170
			0	+100 ⁵⁾	EV220B 15B	G 12F NC000		10			032U7116
G ¾	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	8	-30	+120 ⁴⁾	EV220B 20B	G 34E NC000	0.3	16	032U7120	Yes	
			-10	+90	EV220B 20B	G 34N NC000		16			032U7171
			0	+100 ⁵⁾	EV220B 20B	G 34F NC000		10			032U7121
G 1	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	11	-30	+120 ⁴⁾	EV220B 25B	G 1E NC000	0.3	16	032U7125	Yes	
			-10	+90	EV220B 25B	G 1N NC000		16			032U7172
			0	+100 ⁵⁾	EV220B 25B	G 1F NC000		10			032U7126
G 1 ¼	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	18	-30	+120 ⁴⁾	EV220B 32B	G 114E NC000	0.3	16	032U7132	Yes	
			-10	+90	EV220B 32B	G 114N NC000		16			032U7173
			0	+100 ⁵⁾	EV220B 32B	G 114F NC000		10			032U7133
G 1 ½	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	24	-30	+120 ⁴⁾	EV220B 40B	G 112E NC000	0.3	16	032U7140	Yes	
			-10	+90	EV220B 40B	G 112N NC000		16			032U7174
			0	+100 ⁵⁾	EV220B 40B	G 112F NC000		10			032U7141
G 2	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	40	-30	+120 ⁴⁾	EV220B 50B	G 2E NC000	0.3	16	032U7150	Yes	
			-10	+90	EV220B 50B	G 2N NC000		16			032U7175
			0	+100 ⁵⁾	EV220B 50B	G 2F NC000		10			032U7151

¹⁾EPDM is suitable for water and steam (steam max. +140° C / 4 bar).

²⁾NBR is suitable for oil, water and air

³⁾FKM is suitable for oil and air. For water at max. +60 °C

⁴⁾Low pressure steam, 4 bar: Max. +140°C

BA ac/dc and BB/BE dc coils: Max. +100°C

BO and BP coils: Max. +90°C

⁵⁾For water: Max. +60°C

BO and BP coils: Max. +90°C

⁶⁾For higher differential pressure than stated, please contact Danfoss.

⁷⁾Approved by Water Regulations Advisory Scheme (WRAS)

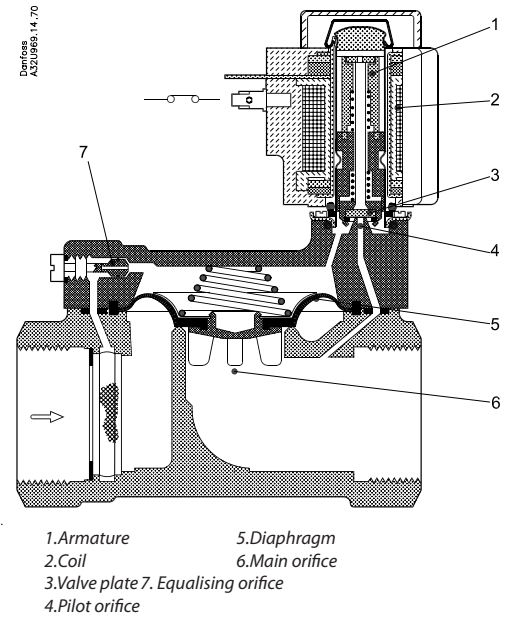
Function NO

Coil voltage disconnected (open):

When the voltage to the coil (2) is disconnected, the pilot orifice (4) is open. As the pilot orifice is larger than the equalising orifice (7), the pressure across the diaphragm (5) drops and therefore it is lifted clear of the main orifice (6). 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 (4). The pressure across the diaphragm (5) is built up via the equalising orifice (7). The diaphragm closes the main orifice (6) 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 NO

Conne- ction ISO228/1	Seal material	k _v - value [m ³ /h]	Media temp.		Type designation		Pressure range all coil types		Code no. without coil		
			Min. [°C]	Max. [°C]	Main type	Specification	Min. [bar]	Max. ⁶⁾ [bar] ⁷⁾			
G ½	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	4	-30 -10 0	+120 ⁴⁾ +90 +100 ⁵⁾	EV220B 15B	G 12E NO000	0.3	16	032U7117		
					EV220B 15B	G 12N NO000				16	032U7180
					EV220B 15B	G 12F NO000					
G ¾	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	8	-30 -10 0	+120 ⁴⁾ +90 +100 ⁵⁾	EV220B 20B	G 34E NO000	0.3	16	032U7122		
					EV220B 20B	G 34N NO000				16	032U7181
					EV220B 20B	G 34F NO000					
G 1	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	11	-30 -10 0	+120 ⁴⁾ +90 +100 ⁵⁾	EV220B 25B	G 1E NO000	0.3	16	032U7127		
					EV220B 25B	G 1N NO000				16	032U7182
					EV220B 25B	G 1F NO000					
G 1 ¼	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	18	-30 -10 0	+120 ⁴⁾ +90 +100 ⁵⁾	EV220B 32B	G 114E NO000	0.3	16	032U7134		
					EV220B 32B	G 114N NO000				16	032U7183
					EV220B 32B	G 114F NO000					
G 1 ½	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	24	-30 -10 0	+120 ⁴⁾ +90 +100 ⁵⁾	EV220B 40B	G 112E NO000	0.3	16	032U7142		
					EV220B 40B	G 112N NO000				16	032U7184
					EV220B 40B	G 112F NO000					
G 2	EPDM ¹⁾ NBR ²⁾ FKM ³⁾	40	-30 -10 0	+120 ⁴⁾ +90 +100 ⁵⁾	EV220B 50B	G 2E NO000	0.3	16	032U7152		
					EV220B 50B	G 2N NO000				16	032U7185
					EV220B 50B	G 2F NO000					

¹⁾EPDM is suitable for water and steam (steam max. +140° C / 4 bar).

²⁾NBR is suitable for oil, water and air

³⁾FKM is suitable for oil and air. For water at max. +60 °C

⁴⁾Low pressure steam, 4 bar: Max. +140°C

BA ac/dc and BB/BE dc coils: Max. +100°C

BO and BP coils: Max. +90°C

⁵⁾For water: Max. +60°C

BO and BP coils: Max. +90°C

⁶⁾For higher differential pressure than stated, please contact Danfoss.

⁷⁾Only 10 bars on liquids

Features



EV220BD for slightly aggressive liquids and gases.

- 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 16 bar
- Viscosity: Up to 50 cSt
- Ambient temperature: Up to +80°C
- Media temperature: from -30 to +140°C
- Coil enclosure: Up to IP 67
- Thread connections: From G ½ to G 2
- Water hammer damped
- Built in filter for protection of pilot system

Technical data

Main type	EV220B 15BD	EV220B 20BD	EV220B 25BD	EV220B 32BD	EV220B 40BD	EV220B 50BD
Installation	Optional, but vertical solenoid system is recommended.					
Pressure range	EPDM: 0.3 - 16 bar					
Max. test pressure	25 bar					
Time to open ¹⁾	40 ms	40 ms	300 ms	1000 ms	1500 ms	5000 ms
Time to close ¹⁾	350 ms	1000 ms	1000 ms	2500 ms	4000 ms	10000 ms
Ambient temperature	Type: BA 9 W ac/15 W dc Up to +40°C Type: BB 10 W ac/18 W dc Up to +80°C Type: BE 10 W ac/18 W dc (IP67) Up to +80°C Type: BG 12 W ac/20 W dc Up to +80°C Type: BO 10 W ac/10 W dc Up to +40°C Type: BP 16 W dc Up to +55°C					
Medium temperature	EPDM: -30 - +120°C and +140°C / 4 bar (low pressure steam)					
Viscosity	max. 50 cSt					
Materials	Valve body: Dezincification resistant brass CuZn36Pb2As/CZ132 Armature: Stainless Steel,..... W.no. 1.4105/AISI 430 FR Armature tube: Stainless Steel,..... W.no. 1.4306/AISI 304 L Armature stop: Stainless Steel,..... W.no. 1.4105/AISI 430 FR Springs: Stainless Steel,..... W.no. 1.4310/AISI 301 Orifices: Stainless Steel,..... W.no. 1.4404/AISI 316L 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. Closing times can be changed by replacement of the equalising orifice.

Ordering

Conec- tion ISO 228/1	Seal material	k _v - value [m ³ /h]	Media temp.		Type designation		Pressure range all coil types		Code no. without coil
			Min. [°C]	Max. [°C]	Maintype	Specification	Min. [bar]	Max. ³⁾ [bar]	Approved by WRAS
G ½	EPDM ¹⁾	4	-30	+120 ²⁾	EV220B 15BD	G 12E NC000	0.3	16	032U5815
G ¾	EPDM ¹⁾	8	-30	+120 ²⁾	EV220B 20BD	G 34E NC000	0.3	16	032U5820
G 1	EPDM ¹⁾	11	-30	+120 ²⁾	EV220B 25BD	G 1E NC000	0.3	16	032U5825
G 1 ¼	EPDM ¹⁾	18	-30	+120 ²⁾	EV220B 32BD	G 114E NC000	0.3	16	032U5832
G 1 ½	EPDM ¹⁾	24	-30	+120 ²⁾	EV220B 40BD	G 112E NC000	0.3	16	032U5840
G 2	EPDM ¹⁾	40	-30	+120 ²⁾	EV220B 50BD	G 2E NC000	0.3	16	032U5850

¹⁾ EPDM is suitable for water and steam (steam max. +140° C / 4 bar).

²⁾ Low pressure steam, 4 bar: Max. +140°C
 BA ac/dc and BB/BE dc coils: Max. +100°C
 BO and BP coils: Max. +90°C

³⁾ For higher differential pressure than started, please contact Danfoss.

Features



EV220B Stainless Steel

- For robust industrial application
- For neutral and 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 16 bar
- Viscosity: Up to 50 cSt
- Ambient temperature: Up to +80°C
- Media temperature: from -30 to +140°C
- Coil enclosure: Up to IP 67
- Thread connections: From G 1/2 to G 2
- Water hammer damped
- Built in filter for protection of pilot system

Technical data

Main type	EV220B 15SS	EV220B 20SS	EV220B 25SS	EV220B 32SS	EV220B 40SS	EV220B50SS
Installation	Optional, but vertical solenoid system is recommended.					
Pressure range	EPDM : 0.3 - 16 bar FKM: 0.3 - 10 bar					
Max. test pressure	25 bar					
Time to open ¹⁾	40 ms	40 ms	300 ms	1000 ms	1500 ms	5000 ms
Time to close ¹⁾	350 ms	1000 ms	1000 ms	2500 ms	4000 ms	10000 ms
Ambient temperature	Type: BA 9 W ac/15 W dc Up to + 40°C Type: BB 10W ac/18 W dc Up to + 80°C Type: BE 10 W ac/18 W dc (IP67) Up to + 80°C Type: BG 12 Wac/20 W dc Up to + 80°C Type: BO 10 W ac/10 W dc Up to + 40°C Type:BP 16 W dc Up to + 55°C					
Medium temperature	EPDM: -30 - + 120°C and +140°C / 4 bar (low pressure steam) FKM: 0 - +100°C and 60°C for water					
Viscosity	max. 50 cSt					
Materials	Valve body: Stainless Steel,W.no. 1.4581/AISI 318 Armature: Stainless Steel,W.no. 1.4105/AISI 430 FR Armature tube:Stainless Steel,W.no. 1.4306/AISI 304 L Armature stop: Stainless Steel,W.no. 1.4105/AISI 430 FR Springs: Stainless Steel,W.no. 1.4310/AISI 301 Orifices: Stainless Steel,W.no. 1.4404/AISI316L 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. Closing times can be changed by replacement of the equalising orifice.

Ordering

Conec- tion ISO 228/1	Seal material	k _v - value	Media temp.		Type designation		Pressure range all coil types		Code no. without coil	
			Min. [°C]	Max. [°C]	Maintype	Specification	Min. [bar]	Max. ⁵⁾ [bar]		WRAS ⁶⁾
G 1/2	EPDM ¹⁾ FKM ²⁾	4	-30 0	+120 ³⁾ +100 ⁴⁾	EV220B 15SS EV220B 15SS	G 12E NC000 G 12F NC000	0.3 10	16 10	032U8500 032U8506	yes
G 3/4	EPDM ¹⁾ FKM ²⁾	8	-30 0	+120 ³⁾ +100 ⁴⁾	EV220B 20SS EV220B 20SS	G 34E NC000 G 34F NC000	0.3 10	16 10	032U8501 032U8507	yes
G 1	EPDM ¹⁾ FKM ²⁾	11	-30 0	+120 ³⁾ +100 ⁴⁾	EV220B 25SS EV220B 25SS	G 1E NC000 G 1F NC000	0.3 10	16 10	032U8502 032U8508	yes
G 1 1/4	EPDM ¹⁾ FKM ²⁾	18	-30 0	+120 ³⁾ +100 ⁴⁾	EV220B 32SS EV220B 32SS	G 114E NC000 G 114F NC000	0.3 10	16 10	032U8503 032U8509	yes
G 1 1/2	EPDM ¹⁾ FKM ²⁾	24	-30 0	+120 ³⁾ +100 ⁴⁾	EV220B 40SS EV220B 40SS	G 112E NC000 G 112F NC000	0.3 10	16 10	032U8504 032U8510	yes
G 2	EPDM ¹⁾ FKM ²⁾	40	-30 0	+120 ³⁾ +100 ⁴⁾	EV220B 50SS EV220B 50SS	G 2E NC000 G 2F NC000	0.3 10	16 10	032U8505 032U8511	yes

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⁾ Low pressure steam, 4 bar:Max. +140°C

BA ac/dc and BB/BE dc coils: Max. +100°C

BO and BP coils: Max. +90°C

⁴⁾ For water: Max. +60°C

BO and BP coils: Max. +90°C

⁵⁾ For higher differential pressure than stated, please contact Danfoss.

⁶⁾Approved by Water Regulations Advisory Scheme (WRAS).

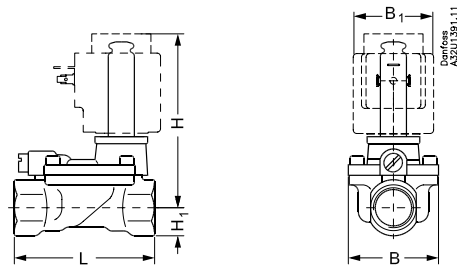
Coil options

				<p>Danfoss also offers hum-free coils for noise sensitive applications and EEx m II T4 coils for use in explosion risk areas - please see coil data sheet IC.PD.600.A</p>
Type: BA	Type: BB	Type: BE (IP67)	Type: BG	
9 W ac	10 W ac	10 W ac	12 W ac	
15 W dc	18 W dc	18 W dc	20 W dc	

Ordering Coils

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

Dimensions and weight



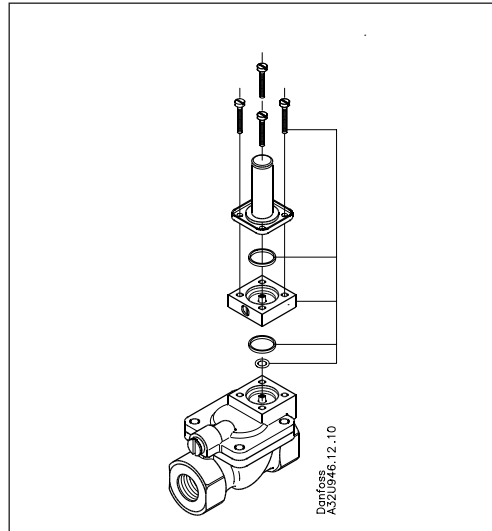
Type	L [mm]	B [mm]	B ₁ [mm] Coil type				H ₁ [mm]	H [mm]	Weight without coil [Kg]
			BA	BP	BB/BE	BG/BO			
EV220B 15	80.0	52.0	32	45	46	68	15.0	99.0	0.8
EV220B 20	90.0	58.0	32	45	46	68	18.0	103.0	1.0
EV220B 25	109.0	70.0	32	45	46	68	22.0	113.0	1.4
EV220B 32	120.0	82.0	32	45	46	68	27.0	120.0	2.0
EV220B 40	130.0	95.0	32	45	46	68	32.0	129.0	3.2
EV220B 50	162.0	113.0	32	45	46	68	37.0	135.0	4.3

Media resistance

Please contact Danfoss.

Accessories

Manual override unit

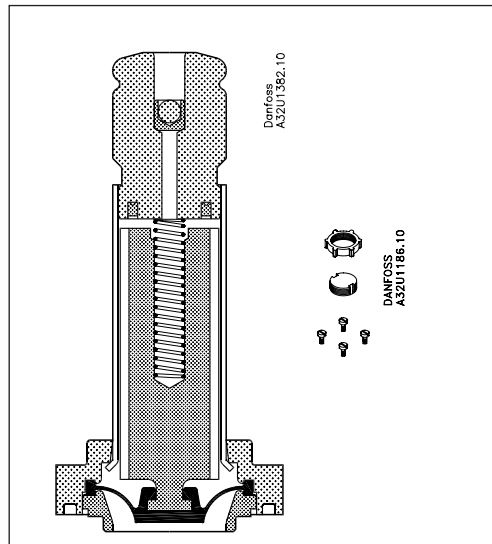


Used for manual override in event of power failure.

Note: Valve height is increased by 16 mm.

Material	Code no.
Brass	032U0150
Stainless steel	032U0149

Isolating diaphragm kit



The isolating diaphragm design ensures that no fluid enters the armature area, which gives the following advantages:

The valve is resistant to aggressive fluids, impurities in the fluid and to calcareous and scale deposits.

The kit consists of assembled isolating unit, O-ring, 4 screws, locking button and nut for the coil.

The kit can be used on all EV220B DN 15-50 and EV210B DN 1.5-3 valves.

Seal material	Code no.
EPDM ¹⁾	042U1009
FKM ²⁾	042U1010

¹⁾EPDM is suitable for water.

²⁾FKM is suitable for oil and air. For water at max.+60°C

Equalizing orifice

The kit comprises an equalizing orifice including O-ring and gasket. The valve's closing time can be changed by installing an equalizing orifice of a size which deviates from the standard valve:

-A shorter closing time is obtained with a larger orifice (the shorter closing time, the greater risk of water hammering)

-A longer closing time is obtained with a smaller orifice.

Orifice	Seal material	Standard in	Code no.	
			Brass	DZR brass ⁴⁾ / Stainless steel
ø 0.5	EPDM ¹⁾	EV220B 15 EV220B 20	032U0082	032U6310
	FKM ²⁾	EV220B 15 EV220B 20	032U0083	032U6313
ø 0.8	EPDM ¹⁾	EV220B 25 EV220B 32 EV220B 40	032U0084	032U6311
	FKM ²⁾	EV220B 25 EV220B 32	032U0085	032U6314
	EPDM ¹⁾	EV220B 50	032U0086	032U6312
ø 1.2	FKM ²⁾	EV220B 40 EV220B 50	032U0087	032U6315
Adjustable	NBR ³⁾	-	032U0681	-
Adjustable	EPDM ¹⁾	-	032U0682	-
Adjustable	FKM ²⁾	-	032U0683	-

1) Approved by WRAS.
EPDM is suitable for water and steam (steam max. +140°C / 4 bar)

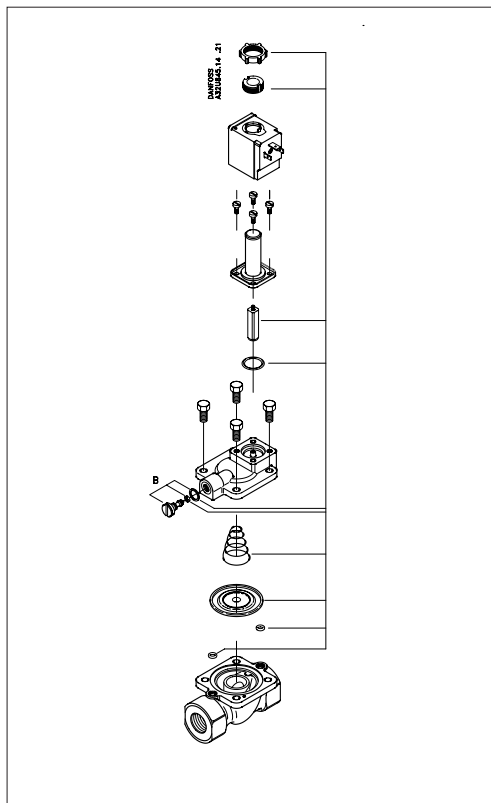
2) FKM is suitable for oil and air.

For water at max. +60°C.

3) NBR is suitable for oil, water and air.

4) Dezincification resistant brass.

Spare parts kit NC



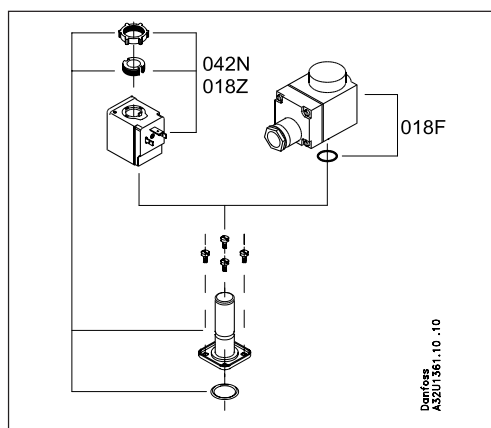
- 1) Approved by WRAS. EPDM is suitable for water and steam (steam max. +140°C / 4 bar).
- 2) FKM is suitable for oil and air. For water at max. +60°C
- 3) NBR is suitable for oil, water and air
- 4) Dezincification resistant brass

The kit comprises a locking button and nut for the coil, armature with valve plate and spring, O-ring for the armature tube, spring and diaphragm, two O-rings for the pilot system, and an O-ring and gas-gasket for the equalising orifice.

Brass versions		
Type	Seal material	Code no.
EV220B 15	EPDM ¹⁾	032U1071
	FKM ²⁾	032U1072
	NBR ³⁾	032U6013
EV220B 20	EPDM ¹⁾	032U1073
	FKM ²⁾	032U1074
	NBR ³⁾	032U6014
EV220B 25	EPDM ¹⁾	032U1075
	FKM ²⁾	032U1076
	NBR ³⁾	032U6015
EV220B 32	EPDM ¹⁾	032U1077
	FKM ²⁾	032U1078
	NBR ³⁾	032U6016
EV220B 40	EPDM ¹⁾	032U1079
	FKM ²⁾	032U1080
	NBR ³⁾	032U6017
EV220B 50	EPDM ¹⁾	032U1081
	FKM ²⁾	032U1082
	NBR ³⁾	032U6018

DZR brass ⁴⁾ and stainless steel versions		
Type	Seal material	Code no.
EV220B 15	EPDM ¹⁾	032U6320
	FKM ²⁾	032U6326
EV220B 20	EPDM ¹⁾	032U6321
	FKM ²⁾	032U6327
EV220B 25	EPDM ¹⁾	032U6322
	FKM ²⁾	032U6328
EV220B 32	EPDM ¹⁾	032U6323
	FKM ²⁾	032U6329
EV220B 40	EPDM ¹⁾	032U6324
	FKM ²⁾	032U6330
EV220B 50	EPDM ¹⁾	032U6325
	FKM ²⁾	032U6331

Spare parts kit NO



The kit comprises a locking button and nut for the coil, Armature unit assembly, O-ring for the armature unit.

Type	Seal material	Code no.
EV220B 15-50	EPDM ¹⁾	032U0296
	FKM ²⁾	032U0295
	NBR ³⁾	032U0299

- 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.

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