

Data sheet

Solenoid valves

Type EVU



EVU solenoid valves are designed to fit into compact refrigeration systems. Available in direct and pilot operated versions, they can be applied in liquid, suction, and hot gas lines with fluorinated refrigerants.

EVU solenoid valves can be used in many different refrigeration systems and are specially designed for:

- commercial refrigeration systems
- refrigeration appliances
- liquid coolers
- ice cube machines
- mobile refrigeration systems
- heat pump systems
- air conditioning units

EVU valves are available in straightway or angleway design. All valves are semi hermetically sealed and are not serviceable. The standard coil is available with 3-core cable connection and DIN plug.

EVU valve bodies and coils are ordered separately in industrial pack.

Features

- Compact construction small dimensions, low weight for both valve and coil.
- Semi-hermetic construction. Metallic sealing between armature tube and valve body. Bimetal connections to the brass housing benefits:
 - high strength of joints and high vibration resistance
 - maximum external tightness within the whole temperature and pressure operation range
- Bimetal connections simple, fast soldering without the need of wet cloth or refrigeration pliers.
- Direct and servo operated mini piston compact solenoid valve.
- Universal application for
 - liquid, suction, and hot gas applications
 - reduced power consumption
- Simple and fast mounting of coil
 - clip-on/off
- Small encapsulated coils with long life time under extreme conditions.
- Refrigerants:
 - R744, R22/R407C, R404A/R507, R410A, R134a, R407A, R23.
 - For other refrigerants, please contact Danfoss.
- Large MOPD range – up to 36 bar.

Approvals

- UL Recognized Component (Canadian and US)
- PED (97/23/EC A3.P3)
- Low Voltage Directive (LVD) 2006/95/EC



Technical data

Refrigerants
R744, R22/R407C, R404A/R507, R410A, R134a, R407A, R23.
For other refrigerants, please contact Danfoss.

Temperature of medium
-40 – 105 °C max. 130 °C during defrosting

Ambient temperature
-40 – 50 °C

MOPD operating range
0.02 bar up to 36 bar

Humidity
0 – 100% R.H. (0-97% R.H. non-condensation condition if IP level is below IPX5).

Type	Opening differential pressure with standard coil Δp [bar]			Temperature of medium [°C]	Max. working pressure Ps [bar]	K _v -value ¹⁾ [m ³ /h]
	Min.	Max. (=MOPD) liquid ²⁾				
		6 W AC	14 W DC			
EVU 1	0.00	24 ³⁾	19	-40 – 105	70	0.10
EVU 2	0.02	36	28	-40 – 105	70	0.20
EVU 3	0.02	36	28	-40 – 105	70	0.30
EVU 4	0.02	36	28	-40 – 105	70	0.50
EVU 5	0.02	36	28	-40 – 105	70	0.65
EVU 6	0.02	36	28	-40 – 105	70	0.80
EVU 8	0.02	36	25	-40 – 105	70	1.00

¹⁾ The K_v value is the water flow in m³/h at a pressure drop across the valve of 1 bar, $\rho = 1000 \text{ kg/m}^3$.

²⁾ MOPD for media in gas form is approx. 8 bar higher.

³⁾ For coil 208-240 V, 60 Hz, MOPD is 17 bar.

MOPD is measured with highest media and ambient temperature and 15% below nominal voltage.

Rated liquid and suction capacity is based on evaporating temperature $t_e = -10 \text{ °C}$, liquid temperature ahead of the valve $t_l = 25 \text{ °C}$, pressure drop in valve $\Delta p = 0.15 \text{ bar}$.

Rated hot gas capacity is based on condensing temperature $t_c = 40 \text{ °C}$, pressure drop across valve $\Delta p = 0.8 \text{ bar}$, hot gas temperature $t_h = 65 \text{ °C}$ and subcooling of refrigerant $\Delta t_{\text{sub}} = 4 \text{ K}$.

Type	Rated capacity [kW]											
	Liquid				Suction vapour				Hot gas			
	R22/ R407C	R134a	R404A/ R507	R410A	R22/ R407C	R134a	R404A/ R507	R410A	R22/ R407C	R134a	R404A/ R507	R410A
EVU 1	2.01	1.85	1.40	2.01	0.23	0.16	0.20	0.29	0.93	0.73	0.75	1.40
EVU 2	4.02	2.96	2.24	3.22	0.45	0.33	0.40	0.58	1.85	1.47	1.51	2.79
EVU 3	6.03	5.55	4.20	6.03	0.68	0.49	0.60	0.87	2.78	2.20	2.26	4.19
EVU 4	10.05	9.25	7.00	10.05	1.30	0.82	1.00	1.45	4.63	3.67	3.77	6.99
EVU 5	13.07	12.03	9.10	13.07	1.46	1.06	1.30	1.89	6.01	4.77	4.90	9.81
EVU 6	16.08	14.80	11.20	16.08	1.80	1.30	1.60	2.32	7.40	5.86	6.02	11.18
EVU 8	20.10	18.50	14.00	20.10	2.25	1.63	2.00	2.90	9.25	7.33	7.53	13.97

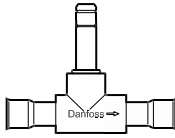
Capacity R744

Due to the fact that EVU only can be used for sub critical R744 application, capacity tables are not illustrated in this technical leaflet. For capacity dimension please refer to Danfoss' interactive calculation and selection tool CoolSelector® (DIR Calc).

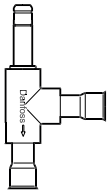
Ordering valve

Normally closed NC

EVU 1-6



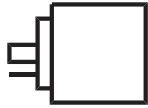
EVU 8



Type	Connection		Code no.
	[in.]	[mm]	
EVU 1	1/4	—	032F7005
	—	6	032F7004
EVU 2	—	6	032F5053
EVU 3	1/4	—	032F5024
	—	6	032F5025
	3/8	—	032F5026
	—	10	032F5027
EVU 4	—	10	032F5037
EVU 5	3/8	—	032F7000
	—	10	032F7001
	—	12	032F7003
EVU 6	3/8	—	032F5046
	—	10	032F5047
	1/2	—	032F5049
	—	12	032F5048
EVU 8	—	12	032F8009

Ordering Coils

DIN spade connection



Alternating current AC

Type	Voltage	Frequency	Power consumption	Code no.	
	[V]	[Hz]		Industrial pack with DIN plug ¹⁾ IP65	Single pack with DIN plug ¹⁾ IP65
EVU 1, EVU 2, EVU 3, EVU 4, EVU 5, EVU 6, EVU 8	24	50 / 60	Holding: 6 W 12 VA Inrush: 26 VA	—	042N7608
	230	50 / 60		—	042N7601
	240	50 / 60		—	042N7602

¹⁾ The three pins on the coil can be fitted with spade tabs, 6.3 mm wide (to DIN 46247). The two current carrying pins can also be fitted with spade tabs, 4.8. mm wide. Max. lead cross section: 1.5 mm².

If DIN plug is used (DIN 43650) the leads must be connected in the socket. The socket is fitted with a Pg 11 screwed entry for 6 – 12 mm.

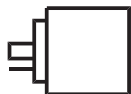
Cable connection



Alternating current AC

Type	Voltage	Frequency	Power consumption	Code no.	
	[V]	[Hz]		Industrial pack with 1 m cable IP67	Single pack with 1 m cable IP67
EVU 1, EVU 2, EVU 3, EVU 4, EVU 5, EVU 6, EVU 8	115	50 / 60	Holding: 6 W 12 VA Inrush: 26 VA	—	042N7662
	230	50 / 60		042N8651	042N7651
	240	50 / 60		042N8652	—

US DIN spade connection (DIN plug EN175301-803 type A)



Alternating current AC

Type	Voltage	Frequency	Power consumption	Code no.	
	[V]	[Hz]		Industrial pack with US DIN spade IP00	Single pack with US DIN spade IP00
EVU 1, EVU 2, EVU 3, EVU 4, EVU 5, EVU 6, EVU 8	208 – 240	50 / 60	Holding: 7 W 14 VA Inrush: 28 VA	042N8201	042N4201
	24	50 / 60		042N8203	042N4203

Data sheet | Solenoid valves, Type EVU

Ordering Coils

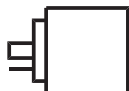
Cable connection



Direct current DC

Type	Voltage	Power consumption [W]	Code no.	
	[V]		Industrial pack with 1 m cable IP67	Single pack with 1 m cable IP67
EVU 1, EVU 2, EVU 3, EVU 4, EVU 5, EVU 6, EVU 8	12	14	042N8696	042N7696
	24	14	042N8697	042N7697

DIN spade connection (DIN plug EN175301-803 type A)



Direct current DC

Type	Voltage	Power consumption [W]	Code no.	
	[V]		Industrial pack with DIN spade IP00	Single pack with DIN spade IP00
EVU 1, EVU 2, EVU 3, EVU 4, EVU 5, EVU 6, EVU 8	12	14	042N8686	—
	24	14	042N8687	042N7687

* DC coils with 0.25 in. US spade can be supplied on request.

Accessories

Part	Description	Code no.
	DIN plug (EN175301-803 type A)	042N0156
	O-ring for sealing the coil. Industrial pack (50 pcs.) NB: Valve body supplied with O-ring	032F6115
	Bracket for fixing of valve. Industrial pack	032F8036

Capacity
Liquid capacity Q_l [kW]

Type	Liquid capacity Q _l [kW] at pressure drop across valve Δp [bar]					
	0.10	0.15	0.20	0.30	0.40	0.50

R22/R407C

EVU 1	1.64	2.01	2.33	2.85	3.29	3.68
EVU 2	3.28	4.02	4.66	5.70	6.58	7.36
EVU 3	4.92	6.03	6.99	8.55	9.87	11.04
EVU 4	8.20	10.05	11.65	14.25	16.45	18.40
EVU 5	10.66	13.07	15.15	18.53	21.39	23.92
EVU 6	13.12	16.08	18.65	22.80	26.32	29.44
EVU 8	16.40	20.10	23.30	28.50	32.90	36.80

R134a

EVU 1	1.52	1.85	2.14	2.63	3.03	3.39
EVU 2	2.43	2.96	3.42	4.21	4.85	5.42
EVU 3	4.56	5.55	6.42	7.89	9.09	10.17
EVU 4	7.60	9.25	10.70	13.15	15.15	16.95
EVU 5	9.88	12.03	13.91	17.10	19.70	22.04
EVU 6	12.16	14.80	17.12	21.04	24.24	27.12
EVU 8	15.20	18.50	21.40	26.30	30.30	33.90

Capacities are based on:
 – liquid temperature
 $t_l = 25\text{ °C}$ ahead of valve,
 – evaporating temperature
 $t_e = -10\text{ °C}$,
 – superheat 0 K.

Correction factors

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve/evaporator.

When the corrected capacity is known, the selection can be made from the table.

Correction factor for liquid temperature t_l

t_l [°C]	-10	0	10	15	20	25	30	35	40	45	50
R22/R407C	0.76	0.82	0.88	0.92	0.96	1.00	1.05	1.10	1.16	1.22	1.30
R134a	0.73	0.79	0.86	0.90	0.95	1.00	1.06	1.12	1.19	1.27	1.37

Capacity
Liquid capacity Q_l [kW]
(continued)

Type	Liquid capacity Q _l [kW] at pressure drop across valve Δp [bar]					
	0.10	0.15	0.20	0.30	0.40	0.50

R404A/R507

EVU 1	1.52	1.40	1.62	1.99	2.29	2.57
EVU 2	1.84	2.24	2.59	3.18	3.66	4.11
EVU 3	3.45	4.20	4.86	5.97	6.87	7.71
EVU 4	5.75	7.00	8.10	9.95	11.45	12.85
EVU 5	7.48	9.10	10.53	12.94	14.89	16.71
EVU 6	9.20	11.20	12.96	15.92	18.32	20.56
EVU 8	11.50	14.00	16.20	19.90	22.90	25.70

R410A

EVU 1	1.52	2.01	2.33	2.85	3.29	3.68
EVU 2	2.62	3.22	3.73	4.56	5.26	5.89
EVU 3	4.92	6.03	6.99	8.55	9.87	11.04
EVU 4	8.20	10.05	11.65	14.25	16.45	18.40
EVU 5	10.66	13.07	15.15	18.53	21.39	23.92
EVU 6	13.12	16.08	18.64	22.80	26.32	29.44
EVU 8	16.40	20.10	23.30	28.50	32.90	36.80

Capacities are based on:
 – liquid temperature
 $t_l = 25\text{ °C}$ ahead of valve,
 – evaporating temperature
 $t_e = -10\text{ °C}$,
 – superheat 0 K.

Correction factors

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve/evaporator.

When the corrected capacity is known, the selection can be made from the table.

Correction factor for liquid temperature t_l

t_l [°C]	-10	0	10	15	20	25	30	35	40	45	50
R404A	0.65	0.72	0.81	0.86	0.93	1.00	1.09	1.20	1.33	1.51	1.74
R507C	0.65	0.73	0.81	0.87	0.93	1.00	1.08	1.19	1.31	1.47	1.69
R410A	0.73	0.79	0.86	0.90	0.95	1.00	1.06	1.14	1.23	1.33	1.47

Capacity
Suction vapour
capacity Q_e [kW]

Type	Pressure drop across valve Δp [bar]	Suction vapour capacity Q_e [kW] at evaporating temperature t_e [°C]					
		-40	-30	-20	-10	0	10

R22/R407C

EVU 1	0.10	0.09	0.11	0.15	1.19	0.23	0.26
	0.15	0.11	0.14	0.18	0.23	0.28	0.33
	0.20	0.12	0.16	0.20	0.25	0.31	0.38
EVU 2	0.10	0.18	0.24	0.30	0.38	0.45	0.53
	0.15	0.22	0.28	0.35	0.45	0.55	0.65
	0.20	0.24	0.33	0.40	0.50	0.63	0.75
EVU 3	0.10	0.27	0.35	0.45	0.56	0.68	0.79
	0.15	0.33	0.41	0.53	0.68	0.83	0.98
	0.20	0.37	0.49	0.60	0.75	0.94	1.13
EVU 4	0.10	0.46	0.59	0.75	0.94	1.13	1.32
	0.15	0.55	0.69	0.88	1.13	1.38	1.63
	0.20	0.61	0.82	1.00	1.25	1.57	1.88
EVU 5	0.10	0.59	0.77	1.35	1.22	1.46	1.71
	0.15	0.71	0.90	1.57	1.46	1.79	2.11
	0.20	0.79	1.06	1.79	1.63	2.04	2.44
EVU 6	0.10	0.73	0.94	1.20	1.50	1.80	2.10
	0.15	0.87	1.10	1.40	1.80	2.20	2.60
	0.20	0.98	1.30	1.60	2.00	2.50	3.00
EVU 8	0.10	0.91	1.18	1.50	1.88	2.25	2.63
	0.15	1.09	1.38	1.75	2.25	2.75	3.25
	0.20	1.22	1.63	2.00	2.50	3.13	3.75

Capacities are based on liquid temperature $t_l = 25$ °C ahead of evaporator.

The table values refer to the evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp in valve.

Capacities are based on dry, saturated vapour ahead of valve. During operation with superheated vapour ahead of valve, the capacities are reduced by 4% for each 10 K superheat.

Correction factors

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve/evaporator. When the corrected capacity is known, the selection can be made from the table.

Correction factors for evaporating temperature t_e

t_v [°C]	10	15	20	25	30	35	40	45	50
R22/R407C	0.90	0.93	0.96	1.00	1.04	1.08	1.13	1.18	1.24

**Capacity
Suction vapour
capacity Q_e [kW]**
(continued)

Type	Pressure drop across valve Δp [bar]	Suction vapour capacity Q_e [kW] at evaporating temperature t_e [°C]					
		-40	-30	-20	-10	0	10

R134a

EVU 1	0.10	0.06	0.08	0.11	0.14	0.18	0.21
	0.15	0.07	0.09	0.13	0.16	0.21	0.25
	0.20	0.07	0.11	0.14	0.19	0.24	0.30
EVU 2	0.10	0.12	0.16	0.21	0.28	0.35	0.43
	0.15	0.13	0.19	0.25	0.33	0.43	0.50
	0.20	0.15	0.22	0.28	0.38	0.48	0.60
EVU 3	0.10	0.17	0.24	0.32	0.41	0.53	0.64
	0.15	0.20	0.28	0.38	0.49	0.64	0.75
	0.20	0.22	0.33	0.41	0.56	0.71	0.90
EVU 4	0.10	0.29	0.40	0.53	0.69	0.88	1.07
	0.15	0.33	0.47	0.63	0.82	1.07	1.25
	0.20	0.37	0.55	0.69	0.94	1.19	1.50
EVU 5	0.10	0.38	0.51	0.68	0.90	1.14	1.38
	0.15	0.43	0.60	0.81	1.06	1.38	1.63
	0.20	0.47	0.71	0.90	1.22	1.55	1.95
EVU 6	0.10	0.45	0.63	0.84	1.10	1.40	1.70
	0.15	0.53	0.74	1.00	1.30	1.70	2.00
	0.20	0.58	0.87	1.10	1.50	1.90	2.40
EVU 8	0.10	0.58	0.79	1.05	1.38	1.75	2.13
	0.15	0.66	0.93	1.25	1.63	2.13	2.50
	0.20	0.73	1.09	1.38	1.88	2.38	3.00

Capacities are based on liquid temperature $t_l = 25$ °C ahead of evaporator.

The table values refer to the evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp in valve.

Capacities are based on dry, saturated vapour ahead of valve. During operation with superheated vapour ahead of valve, the capacities are reduced by 4% for each 10 K superheat.

Correction factors

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve/evaporator. When the corrected capacity is known, the selection can be made from the table.

Correction factors for evaporating temperature t_e

t_v [°C]	10	15	20	25	30	35	40	45	50
R134a	0.88	0.92	0.96	1.00	1.05	1.10	1.16	1.23	1.31

**Capacity
Suction vapour
capacity Q_e [kW]**
(continued)

Type	Pressure drop across valve Δp [bar]	Suction vapour capacity Q_e [kW] at evaporating temperature t_e [°C]					
		-40	-30	-20	-10	0	10

R404A/R507

EVU 1	0.10	0.08	0.10	0.14	0.16	0.20	0.25
	0.15	0.09	0.12	0.16	0.20	0.25	0.30
	0.20	0.10	0.14	0.18	0.23	0.29	0.35
EVU 2	0.10	0.16	0.20	0.28	0.33	0.40	0.50
	0.15	0.18	0.24	0.33	0.40	0.50	0.60
	0.20	0.21	0.28	0.35	0.45	0.58	0.70
EVU 3	0.10	0.23	0.30	0.41	0.49	0.60	0.75
	0.15	0.27	0.36	0.49	0.60	0.75	0.90
	0.20	0.31	0.41	0.53	0.68	0.86	1.10
EVU 4	0.10	0.39	0.50	0.69	0.82	1.00	1.25
	0.15	0.46	0.61	0.82	1.00	1.25	1.50
	0.20	0.52	0.69	0.88	1.13	1.44	1.75
EVU 5	0.10	0.51	0.65	0.90	1.06	1.30	1.62
	0.15	0.59	0.79	1.06	1.30	1.62	1.95
	0.20	0.67	0.90	1.14	1.46	1.87	2.27
EVU 6	0.10	0.62	0.80	1.10	1.30	1.60	2.00
	0.15	0.73	0.97	1.30	1.60	2.00	2.40
	0.20	0.82	1.10	1.40	1.80	2.30	2.80
EVU 8	0.10	0.78	1.00	1.38	1.63	2.00	2.50
	0.15	0.91	1.21	1.63	2.00	2.50	3.00
	0.20	1.03	1.38	1.75	2.25	2.88	3.50

Capacities are based on liquid temperature $t_l = 25$ °C ahead of evaporator.

The table values refer to the evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp in valve.

Capacities are based on dry, saturated vapour ahead of valve. During operation with superheated vapour ahead of valve, the capacities are reduced by 4% for each 10 K superheat.

Correction factors

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Correction factors for evaporating temperature t_e

t_v [°C]	10	15	20	25	30	35	40	45	50
R404A	0.84	0.89	0.94	1.00	1.07	1.16	1.26	1.40	1.57
R507	0.84	0.89	0.94	1.00	1.07	1.16	1.26	1.39	1.57

**Capacity
Suction vapour
capacity Q_e [kW]**
(continued)

Type	Pressure drop across valve Δp [bar]	Suction vapour capacity Q_e [kW] at evaporating temperature t_e [°C]					
		-40	-30	-20	-10	0	10

R410A

EVU 1	0.10	0.12	0.16	0.20	0.24	0.29	0.33
	0.15	0.15	0.18	0.23	0.29	0.35	0.41
	0.20	0.17	0.22	0.26	0.32	0.40	0.47
EVU 2	0.10	0.25	0.31	0.39	0.48	0.57	0.66
	0.15	0.30	0.37	0.46	0.58	0.70	0.82
	0.20	0.30	0.44	0.52	0.65	0.80	0.95
EVU 3	0.10	0.37	0.47	0.59	0.72	0.86	0.99
	0.15	0.45	0.55	0.68	0.87	1.05	1.23
	0.20	0.51	0.65	0.79	0.97	1.19	1.42
EVU 4	0.10	0.62	0.78	0.98	1.21	1.43	1.66
	0.15	0.75	0.92	1.14	1.45	1.75	2.05
	0.20	0.86	1.09	1.31	1.62	1.99	2.37
EVU 5	0.10	0.81	1.01	1.27	1.57	1.86	2.15
	0.15	0.98	1.20	1.48	1.88	2.27	2.66
	0.20	1.11	1.42	1.70	2.1	2.59	3.07
EVU 6	0.10	0.99	1.25	1.56	1.93	2.29	2.65
	0.15	1.20	1.47	1.82	2.32	2.79	3.28
	0.20	1.37	1.74	2.1	2.58	3.18	3.78
EVU 8	0.10	1.24	1.56	1.95	2.41	2.86	3.31
	0.15	1.50	1.84	2.28	2.90	3.49	4.10
	0.20	1.71	2.18	2.62	3.23	3.98	4.73

Capacities are based on liquid temperature $t_l = 25$ °C ahead of evaporator.

The table values refer to the evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp in valve.

Capacities are based on dry, saturated vapour ahead of valve. During operation with superheated vapour ahead of valve, the capacities are reduced by 4% for each 10 K superheat.

Correction factors

When sizing valves, the plant capacity must be multiplied by a correction factor depending on liquid temperature t_l ahead of valve/evaporator.

When the corrected capacity is known, the selection can be made from the table.

Correction factors for evaporating temperature t_e

t_v [°C]	10	15	20	25	30	35	40	45	50
R410A	0.89	0.92	0.96	1.00	1.05	1.11	1.18	1.26	1.37

Capacity
Hot gas capacity Q_h [kW]

Type	Pressure drop across valve Δp [bar]	Hot gas capacity Q_h [kW]				
		Evaporating temp. $t_e = -10$ °C. Hot gas temp. $t_h = t_c + 25$ °C. Subcooling $\Delta t_{sub} = 4$ K				
		Condensing temperature t_c [°C]				
		20	30	40	50	60

R22

EVU 1	0.10	0.30	0.31	0.33	0.34	0.35
	0.20	0.43	0.45	0.46	0.43	0.49
	0.40	0.60	0.64	0.66	0.69	0.70
	0.80	0.83	0.85	0.93	0.99	0.99
	1.60	1.16	1.24	1.30	1.35	1.36
EVU 2	0.10	0.60	0.63	0.65	0.68	0.70
	0.20	0.85	0.90	0.93	0.85	0.98
	0.40	1.20	1.28	1.33	1.38	1.40
	0.80	1.65	1.70	1.85	1.98	1.98
	1.60	2.33	2.48	1.60	2.70	2.73
EVU 3	0.10	0.90	0.94	0.98	1.01	1.05
	0.20	1.28	1.35	1.39	1.28	1.46
	0.40	1.80	1.91	1.99	2.06	2.10
	0.80	2.48	2.55	2.78	2.96	2.96
	1.60	3.49	3.71	3.90	4.05	4.09
EVU 4	0.10	1.50	1.57	1.63	1.69	1.75
	0.20	2.13	2.25	2.32	2.13	2.44
	0.40	3.00	3.19	3.32	3.44	3.50
	0.80	4.13	4.25	4.63	4.94	4.94
	1.60	5.82	6.19	6.50	6.75	6.82
EVU 5	0.10	1.95	2.03	2.11	2.20	2.27
	0.20	2.76	2.92	3.01	2.76	3.17
	0.40	3.90	4.15	4.31	4.47	4.55
	0.80	5.36	5.52	6.01	6.42	6.42
	1.60	7.56	8.05	8.45	8.77	8.86
EVU 6	0.10	2.40	2.50	2.60	2.70	2.80
	0.20	3.40	3.60	3.70	3.40	3.90
	0.40	4.80	5.10	5.30	5.50	5.60
	0.80	6.60	6.80	7.40	7.90	7.90
	1.60	9.30	9.90	10.40	10.80	10.90
EVU 8	0.10	3.00	3.13	3.25	3.38	3.50
	0.20	4.25	4.50	4.63	4.25	4.88
	0.40	6.00	6.38	6.63	6.88	7.00
	0.80	8.25	8.50	9.25	9.88	9.88
	1.60	11.63	12.38	13.00	13.50	13.63

An increase in hot gas temperature t_h of 10 K, based on $t_h = t_c + 25$ °C, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table below.

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e .

Correction factors for evaporating temperature t_e

t_e [°C]	-40	-30	-20	-10	0	10
R22	0.92	0.95	0.98	1.00	1.02	1.04

Capacity
Hot gas capacity Q_h [kW]
(continued)

Type	Pressure drop across valve Δp [bar]	Hot gas capacity Q_h [kW]				
		Evaporating temp. $t_e = -10$ °C. Hot gas temp. $t_h = t_c$ 25 °C. Subcooling $\Delta t_{sub} = 4$ K				
		Condensing temperature t_c [°C]				
		20	30	40	50	60

R134a

EVU 1	0.10	0.24	0.25	0.26	0.26	0.26
	0.20	0.34	0.36	0.37	0.38	0.37
	0.40	0.47	0.51	0.53	0.54	0.53
	0.80	0.66	0.70	0.73	0.77	0.76
	1.60	0.95	1.01	1.05	1.07	1.03
EVU 2	0.10	0.47	0.50	0.52	0.53	0.52
	0.20	0.67	0.71	0.74	0.75	0.74
	0.40	0.93	1.02	1.06	1.07	1.06
	0.80	1.32	1.41	1.47	1.54	1.52
	1.60	1.90	2.01	2.09	2.13	2.12
EVU 3	0.10	0.70	0.75	0.78	0.79	0.78
	0.20	1.01	1.07	1.11	1.13	1.11
	0.40	1.40	1.53	1.58	1.61	1.59
	0.80	1.98	2.11	2.20	2.31	2.28
	1.60	2.85	3.02	3.12	3.20	3.17
EVU 4	0.10	1.18	1.25	1.30	1.32	1.31
	0.20	1.68	1.78	1.85	1.88	1.86
	0.40	2.33	2.55	2.64	2.68	2.65
	0.80	3.31	3.52	3.67	3.85	3.80
	1.60	4.76	5.03	5.23	5.33	5.29
EVU 5	0.10	1.53	1.62	1.68	1.72	1.70
	0.20	2.18	2.31	2.40	2.44	2.41
	0.40	3.03	3.32	3.43	3.48	3.44
	0.80	4.30	4.57	4.77	5.00	4.94
	1.60	6.18	6.54	6.80	6.92	6.88
EVU 6	0.10	1.88	1.99	2.07	2.11	2.09
	0.20	2.69	2.84	2.95	3.00	2.97
	0.40	3.73	4.08	4.28	4.28	4.23
	0.80	5.29	5.60	5.86	6.16	6.08
	1.60	7.61	8.05	8.37	8.52	8.46
EVU 8	0.10	2.35	2.49	2.59	2.64	2.61
	0.20	3.36	3.55	3.69	3.75	3.71
	0.40	4.66	5.10	5.28	5.35	5.29
	0.80	6.61	7.03	7.33	7.70	7.60
	1.60	9.51	10.06	10.46	10.65	10.58

An increase in hot gas temperature t_h of 10 K, based on $t_h = t_c$ 25 °C, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table below.

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e .

Correction factors for evaporating temperature t_e

t_e [°C]	-40	-30	-20	-10	0	10
R134a	0.88	0.92	0.96	1.00	1.04	1.08

Capacity
Hot gas capacity Q_h [kW]
(continued)

Type	Pressure drop across valve Δp [bar]	Hot gas capacity Q_h [kW]				
		Evaporating temp. $t_e = -10$ °C. Hot gas temp. $t_h = t_c + 25$ °C. Subcooling $\Delta t_{sub} = 4$ K				
		Condensing temperature t_c [°C]				
		20	30	40	50	60

R404A/R507

EVU 1	0.10	0.27	0.27	0.27	0.26	0.23
	0.20	0.38	0.39	0.38	0.36	0.33
	0.40	0.54	0.55	0.54	0.52	0.47
	0.80	0.74	0.76	0.75	0.74	0.67
	1.60	1.05	1.07	1.05	1.01	0.90
EVU 2	0.10	0.54	0.55	0.54	0.51	0.47
	0.20	0.76	0.77	0.76	0.73	0.66
	0.40	1.09	1.10	1.09	1.03	0.94
	0.80	1.49	1.51	1.51	1.48	1.34
	1.60	2.09	2.13	2.11	2.03	1.80
EVU 3	0.10	0.81	0.82	0.81	0.77	0.70
	0.20	1.14	1.16	1.14	1.09	0.99
	0.40	1.63	1.64	1.63	1.55	1.41
	0.80	2.23	2.27	2.26	2.22	2.01
	1.60	3.14	3.20	3.16	3.04	2.70
EVU 4	0.10	1.35	1.37	1.35	1.28	1.17
	0.20	1.90	1.93	1.91	1.82	1.65
	0.40	2.72	2.74	2.72	2.58	2.35
	0.80	3.72	3.78	3.77	3.70	3.36
	1.60	5.23	5.33	5.17	5.07	4.50
EVU 5	0.10	1.75	1.77	1.75	1.66	1.51
	0.20	2.46	2.50	2.50	2.36	2.14
	0.40	3.53	3.56	3.56	3.35	3.05
	0.80	4.83	4.91	4.91	4.81	4.36
	1.60	6.80	6.93	6.92	6.56	5.85
EVU 6	0.10	2.16	2.18	2.15	2.05	1.86
	0.20	3.03	3.08	3.05	2.90	2.64
	0.40	4.34	4.38	4.35	4.13	3.76
	0.80	5.94	6.05	6.02	5.92	5.37
	1.60	8.37	8.52	8.43	8.10	7.20
EVU 8	0.10	2.70	2.73	2.69	2.56	2.33
	0.20	3.79	3.85	3.81	3.63	3.30
	0.40	5.43	5.48	5.44	5.16	4.70
	0.80	7.43	7.56	7.53	7.40	6.70
	1.60	10.46	10.65	10.54	10.13	9.00

An increase in hot gas temperature t_h of 10 K, based on $t_h = t_c + 25$ °C, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table below.

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e .

Correction factors for evaporating temperature t_e

t_e [°C]	-40	-30	-20	-10	0	10
R404A	0.85	0.90	0.95	1.00	1.05	1.09
R507	0.84	0.89	0.95	1.00	1.05	1.10

Capacity
Hot gas capacity Q_h [kW]
(continued)

Type	Pressure drop across valve Δp [bar]	Hot gas capacity Q_h [kW]				
		Evaporating temp. $t_e = -10$ °C. Hot gas temp. $t_h = t_c + 25$ °C. Subcooling $\Delta t_{sub} = 4$ K				
		Condensing temperature t_c [°C]				
		20	30	40	50	60

R410A

EVU 1	0.10	0.47	0.49	0.49	0.49	0.47
	0.20	0.67	0.70	0.70	0.62	0.66
	0.40	0.95	0.99	1.00	1.00	0.95
	0.80	1.30	1.32	1.40	1.43	1.33
	1.60	1.84	1.92	1.96	1.96	1.84
EVU 2	0.10	0.95	0.97	0.98	0.98	0.95
	0.20	1.34	1.40	1.40	1.23	1.32
	0.40	1.90	1.99	2.00	2.00	1.89
	0.80	2.61	2.64	2.79	2.85	2.67
	1.60	3.68	3.84	3.93	3.92	3.68
EVU 3	0.10	1.42	1.46	1.47	1.47	1.42
	0.20	2.02	2.09	2.10	1.85	1.98
	0.40	2.84	2.97	3.00	2.99	2.84
	0.80	3.01	2.95	4.19	4.30	4.00
	1.60	5.51	5.76	5.89	5.87	5.52
EVU 4	0.10	2.37	2.43	2.46	2.45	2.37
	0.20	3.36	3.49	3.50	3.08	3.30
	0.40	4.74	4.95	5.01	4.99	4.73
	0.80	6.52	6.59	6.99	7.17	6.67
	1.60	9.19	9.60	9.82	9.79	9.20
EVU 5	0.10	3.08	3.15	3.19	3.18	3.07
	0.20	4.37	4.54	4.54	4.00	4.28
	0.40	6.16	6.43	6.51	6.49	6.14
	0.80	8.47	8.57	9.08	9.31	8.67
	1.60	11.95	12.47	12.76	12.73	11.96
EVU 6	0.10	3.79	3.88	3.93	3.92	3.78
	0.20	5.38	5.58	5.59	4.93	5.27
	0.40	7.58	7.91	8.01	7.98	7.56
	0.80	10.43	10.54	11.18	11.46	10.67
	1.60	14.70	15.35	15.70	15.66	14.72
EVU 8	0.10	4.74	4.85	4.91	4.90	4.73
	0.20	6.75	6.98	6.99	6.16	6.59
	0.40	9.48	6.98	10.01	9.98	9.45
	0.80	13.04	13.18	13.97	14.33	13.34
	1.60	18.38	19.19	19.63	19.58	18.40

An increase in hot gas temperature t_h of 10 K, based on $t_h = t_c + 25$ °C, reduces valve capacity approx. 2% and vice versa.

A change in evaporating temperature t_e changes valve capacity; see correction factor table below.

Correction factors

When sizing valves, the table value must be multiplied by a correction factor depending on evaporating temperature t_e .

Correction factors for evaporating temperature t_e

t_e [°C]	-40	-30	-20	-10	0	10
R410A	0.92	0.95	0.98	1.00	1.02	1.03

Capacity
Hot gas capacity G_h [kg/s]

Type	Hot gas temp. t_h [°C]	Cond. temp. t_c [°C]	Hot gas capacity G_h [kg/s] at pressure drop across valve Δp [bar]								
			0.50	1	2	3	4	5	6	7	8

R22/R407C

EVU 1	90	25	0.003	0.005	0.006	0.007	0.007	0.007	0.007	0.007	0.007
	90	35	0.004	0.005	0.007	0.008	0.009	0.009	0.010	0.010	0.010
	90	45	0.004	0.006	0.008	0.010	0.011	0.011	0.012	0.012	0.012
EVU 2	90	25	0.007	0.009	0.012	0.014	0.015	0.015	0.015	0.015	0.015
	90	35	0.008	0.011	0.014	0.017	0.018	0.019	0.019	0.019	0.019
	90	45	0.009	0.012	0.017	0.020	0.022	0.023	0.024	0.024	0.024
EVU 3	90	25	0.010	0.014	0.018	0.021	0.022	0.022	0.022	0.022	0.022
	90	35	0.012	0.016	0.021	0.025	0.027	0.028	0.029	0.029	0.029
	90	45	0.023	0.018	0.025	0.029	0.032	0.035	0.036	0.036	0.037
EVU 4	90	25	0.017	0.023	0.031	0.035	0.037	0.037	0.037	0.037	0.037
	90	35	0.019	0.027	0.036	0.042	0.045	0.047	0.048	0.048	0.048
	90	45	0.022	0.031	0.042	0.049	0.054	0.058	0.060	0.061	0.061
EVU 5	90	25	0.022	0.030	0.040	0.045	0.047	0.048	0.048	0.048	0.048
	90	35	0.025	0.035	0.046	0.055	0.059	0.061	0.062	0.062	0.062
	90	45	0.028	0.040	0.054	0.064	0.070	0.075	0.077	0.079	0.079
EVU 6	90	25	0.027	0.037	0.049	0.055	0.058	0.059	0.059	0.059	0.059
	90	35	0.031	0.043	0.057	0.067	0.072	0.075	0.077	0.077	0.077
	90	45	0.035	0.049	0.066	0.078	0.086	0.092	0.095	0.097	0.098
EVU 8	90	25	0.034	0.046	0.061	0.069	0.073	0.074	0.074	0.074	0.074
	90	35	0.039	0.054	0.071	0.084	0.090	0.092	0.096	0.969	0.096
	90	45	0.043	0.061	0.083	0.098	0.108	0.115	0.119	0.121	0.122

R134a

EVU 1	90	25	0.003	0.004	0.005	0.005	0.005	—	—	—	—
	90	35	0.004	0.005	0.006	0.007	0.007	0.007	0.007	—	—
	90	45	0.004	0.006	0.007	0.009	0.009	0.009	0.009	0.009	0.009
EVU 2	90	25	0.006	0.008	0.010	0.010	0.010	—	—	—	—
	90	35	0.007	0.010	0.012	0.014	0.014	0.014	0.014	—	—
	90	45	0.008	0.011	0.015	0.017	0.018	0.018	0.018	0.018	0.018
EVU 3	90	25	0.009	0.012	0.015	0.015	0.015	—	—	—	—
	90	35	0.011	0.014	0.018	0.021	0.021	0.021	0.021	—	—
	90	45	0.012	0.017	0.022	0.026	0.027	0.027	0.027	0.027	0.027
EVU 4	90	25	0.015	0.020	0.025	0.026	0.026	—	—	—	—
	90	35	0.018	0.024	0.031	0.035	0.035	0.035	0.035	—	—
	90	45	0.020	0.028	0.037	0.043	0.045	0.046	0.046	0.046	0.046
EVU 5	90	25	0.020	0.026	0.033	0.033	0.033	—	—	—	—
	90	35	0.023	0.031	0.040	0.045	0.046	0.046	0.046	—	—
	90	45	0.026	0.036	0.048	0.055	0.059	0.059	0.059	0.059	0.059
EVU 6	90	25	0.024	0.032	0.040	0.041	0.041	—	—	—	—
	90	35	0.028	0.038	0.049	0.055	0.056	0.056	0.056	—	—
	90	45	0.032	0.045	0.059	0.068	0.072	0.073	0.073	0.073	0.073
EVU 8	90	25	0.030	0.040	0.050	0.051	0.051	—	—	—	—
	90	35	0.035	0.048	0.061	0.069	0.070	0.070	0.070	—	—
	90	45	0.040	0.056	0.074	0.085	0.090	0.091	0.091	0.091	0.091

An increase in hot gas temperature of 10 K, reduces valve capacity approx. 2% and vice versa.

Capacity
Hot gas capacity G_h [kg/s]
(continued)

Type	Hot gas temp. t_h [°C]	Cond. temp. t_c [°C]	Hot gas capacity G_h [kg/s] at pressure drop across valve Δp [bar]								
			0.50	1	2	3	4	5	6	7	8

R404A/R507

EVU 1	90	25	0.004	0.006	0.008	0.009	0.010	0.010	0.010	0.010	0.010
	90	35	0.005	0.007	0.009	0.011	0.012	0.012	0.012	0.013	0.013
	90	45	0.005	0.008	0.010	0.012	0.014	0.014	0.015	0.015	0.016
EVU 2	90	25	0.009	0.012	0.016	0.018	0.019	0.019	0.020	0.020	0.020
	90	35	0.010	0.014	0.018	0.021	0.023	0.023	0.025	0.025	0.025
	90	45	0.011	0.015	0.020	0.024	0.027	0.027	0.029	0.031	0.032
EVU 3	90	25	0.013	0.012	0.023	0.027	0.029	0.029	0.030	0.030	0.030
	90	35	0.014	0.020	0.027	0.031	0.035	0.035	0.037	0.038	0.038
	90	45	0.016	0.023	0.030	0.036	0.041	0.041	0.044	0.046	0.048
EVU 4	90	25	0.022	0.030	0.039	0.045	0.048	0.048	0.050	0.050	0.050
	90	35	0.024	0.034	0.045	0.053	0.058	0.058	0.062	0.063	0.063
	90	45	0.027	0.038	0.051	0.060	0.068	0.068	0.073	0.077	0.080
EVU 5	90	25	0.028	0.038	0.051	0.059	0.062	0.062	0.064	0.065	0.065
	90	35	0.031	0.044	0.059	0.069	0.075	0.075	0.080	0.082	0.082
	90	45	0.035	0.049	0.066	0.079	0.088	0.088	0.094	0.099	0.104
EVU 6	90	25	0.034	0.047	0.062	0.072	0.077	0.077	0.079	0.080	0.080
	90	35	0.038	0.054	0.072	0.085	0.093	0.093	0.098	0.101	0.101
	90	45	0.043	0.061	0.082	0.097	0.108	0.108	0.116	0.122	0.128
EVU 8	90	25	0.043	0.059	0.078	0.090	0.096	0.096	0.099	0.100	0.100
	90	35	0.048	0.068	0.090	0.106	0.116	0.116	0.123	0.126	0.126
	90	45	0.054	0.076	0.102	0.121	0.135	0.135	0.145	0.153	0.160

R410A

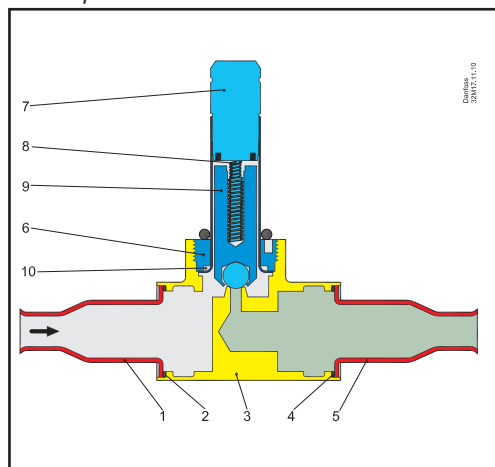
EVU 1	90	25	0.005	0.007	0.010	0.013	0.015	0.017	0.018	0.018	0.018
	90	35	0.006	0.008	0.012	0.015	0.017	0.019	0.021	0.022	0.022
	90	45	0.007	0.010	0.014	0.017	0.019	0.021	0.024	0.025	0.027
EVU 2	90	25	0.008	0.011	0.016	0.019	0.022	0.025	0.027	0.027	0.027
	90	35	0.009	0.013	0.018	0.022	0.025	0.028	0.031	0.033	0.033
	90	45	0.010	0.014	0.020	0.025	0.029	0.032	0.035	0.038	0.041
EVU 3	90	25	0.012	0.017	0.023	0.029	0.033	0.037	0.040	0.040	0.040
	90	35	0.013	0.019	0.027	0.033	0.038	0.042	0.046	0.050	0.050
	90	45	0.015	0.022	0.030	0.037	0.043	0.048	0.053	0.057	0.061
EVU 4	90	25	0.020	0.028	0.039	0.048	0.055	0.062	0.067	0.067	0.067
	90	35	0.022	0.031	0.044	0.054	0.063	0.070	0.077	0.083	0.083
	90	45	0.025	0.036	0.051	0.062	0.072	0.080	0.088	0.095	0.101
EVU 5	90	25	0.026	0.036	0.051	0.062	0.072	0.080	0.087	0.087	0.087
	90	35	0.029	0.041	0.058	0.071	0.082	0.091	0.100	0.108	0.108
	90	45	0.033	0.047	0.066	0.081	0.093	0.104	0.114	0.123	0.132
EVU 6	90	25	0.031	0.044	0.063	0.077	0.088	0.099	0.107	0.107	0.107
	90	35	0.036	0.050	0.071	0.087	0.101	0.112	0.123	0.133	0.133
	90	45	0.041	0.057	0.081	0.099	0.115	0.128	0.140	0.152	0.162
EVU 8	90	25	0.039	0.055	0.078	0.096	0.111	0.124	0.134	0.134	0.134
	90	35	0.044	0.063	0.089	0.109	0.126	0.141	0.154	0.166	0.166
	90	45	0.051	0.072	0.101	0.124	0.143	0.160	0.176	0.190	0.203

An increase in hot gas temperature of 10 K, reduces valve capacity approx. 2% and vice versa.

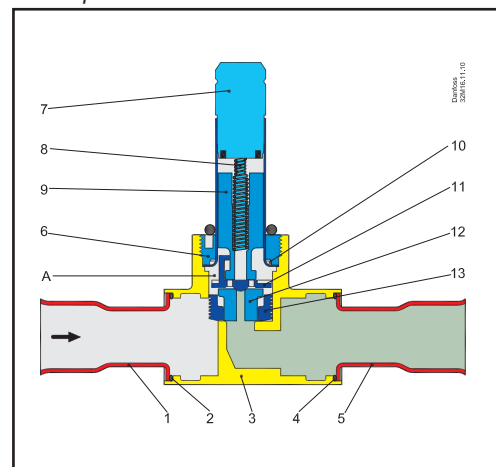
Design / Function

- 1. Solder connection
- 5. Solder connection
- 2. Solder ring
- 4. Solder ring
- 3. Valve housing
- 6. Union nut
- 7. Armature tube
- 8. Return spring
- 9. Armature
- 10. Support ring
- 11. Pilot plate (servo)
- 12. Seat plate (servo)
- 13. Piston (servo)

Direct operated



Servo operated



Direct operated

EVU 1 is direct operated. The valve opens directly for full flow when the armature (9) moves up into the magnetic field of the coil.

This means that the valve can operate a 0 bar differential pressure. Thus, inlet pressure and spring force act to close the valve when the coil is currentless.

Servo operated

EVU 2 to 8 are servo operated piston solenoid valves. The servo piston principle results in a fast operating and compact valve that is able to open against a high differential pressure. The valve closes rather soft, because the pilot system does not fully close before the main orifice has closed. This minimizes liquid hammer.

When the coil is currentless, the main orifice, seat plate (12) and pilot orifice (on the pilot plate (11)) are closed. The pilot orifice and main orifice are held closed by the armature spring force and the differential pressure between inlet and outlet sides.

When current is applied to the coil, the armature (9) is drawn up into the magnetic field and thus lifts the pilot plate (11) and opens for the pilot orifice so that the de-energising of the servo chamber (A) starts and the pressure is relieved to the level of the outlet side. As the inlet pressure that acts on the bottom of the piston (13) now is higher than the pressure in the servo chamber (A), the piston is moved upwards and lifts both the pilot plate (11) and the seat plate (12). When the seat plate is lifted, the main orifice opens for full flow.

Therefore a minimum differential pressure of 0.02 bar is necessary to open the valve and keep it open.

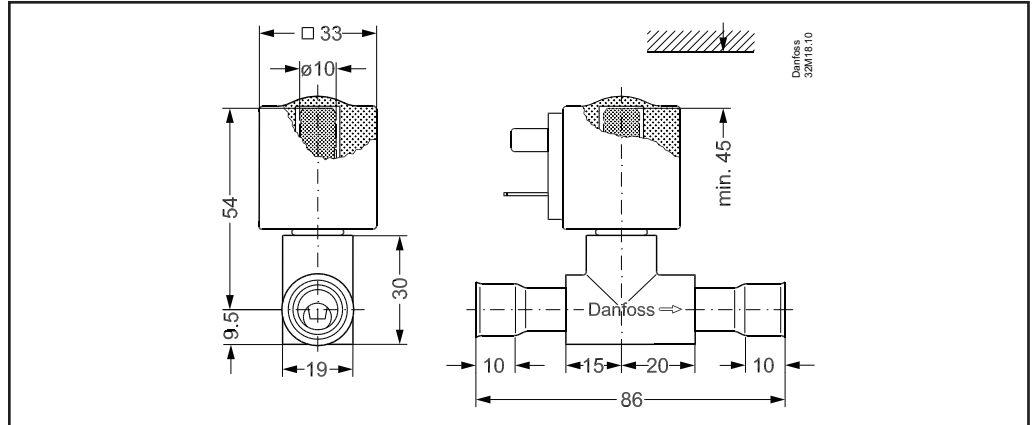
When the current to the coil is switched off, the spring (8) forces the armature (9) down towards the pilot plate (11). The pressure in the servo chamber (A) increases and the piston will no longer be able to hold the seat plate (12) in lifted position, by which the main orifice closes. The armature (9) continues its downwards movement until the pilot orifice on the pilot plate (11) is fully closed.

Material specifications

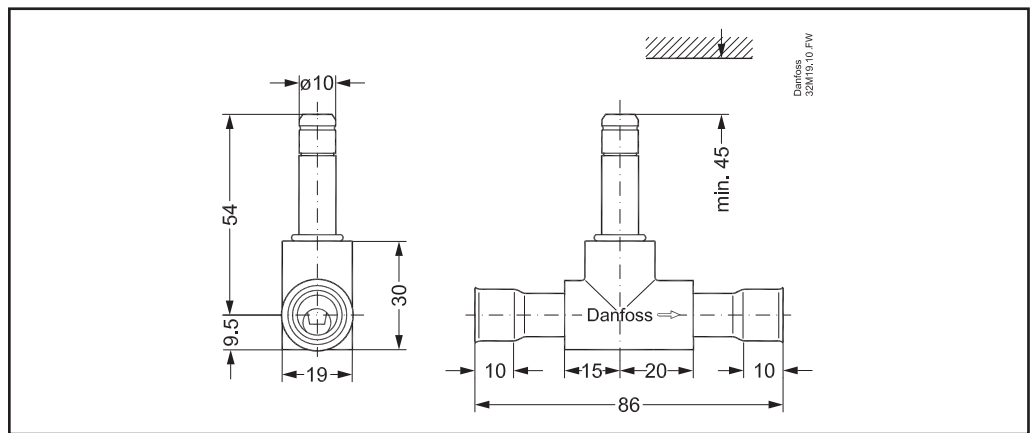
No.	Description	Material	Alloys	Mat. no.	Standard		
					W.no.	DIN	EN
1, 5	Bi-metallic tube	Stainless steel/Cu	—	—	—	—	—
2, 4	Solder ring	Silver	L-Ag 15P	CP102	—	1044	1044
3	Valve body	Brass	CuZn40Pb2	CW617N	2.0402	17672-1	12165
6	Union nut	Brass	CuZn39Pb2	CW612N	2.0380	17672-1	12164
7	Armature tube	Stainless steel	X6CrMoS17	—	1.4105	—	10088
8	Spring	Spring wire stainless	X10CrNi18-8	—	1.4310	—	10088
9	Armature	Stainless steel	X4CrMoS18	—	1.4105SIL	—	10088
10	Support ring	Teflon	PTFE	—	—	—	—
11	Pilot plate	Thermoplast	PEEK	—	—	—	—
12	Seat plate	Teflon	PTFE	—	—	—	—
13	Piston	Brass	CuZn39Pb2	CW612N	2.0380	17672-1	12164

**Dimensions [mm]
and weight [kg]**

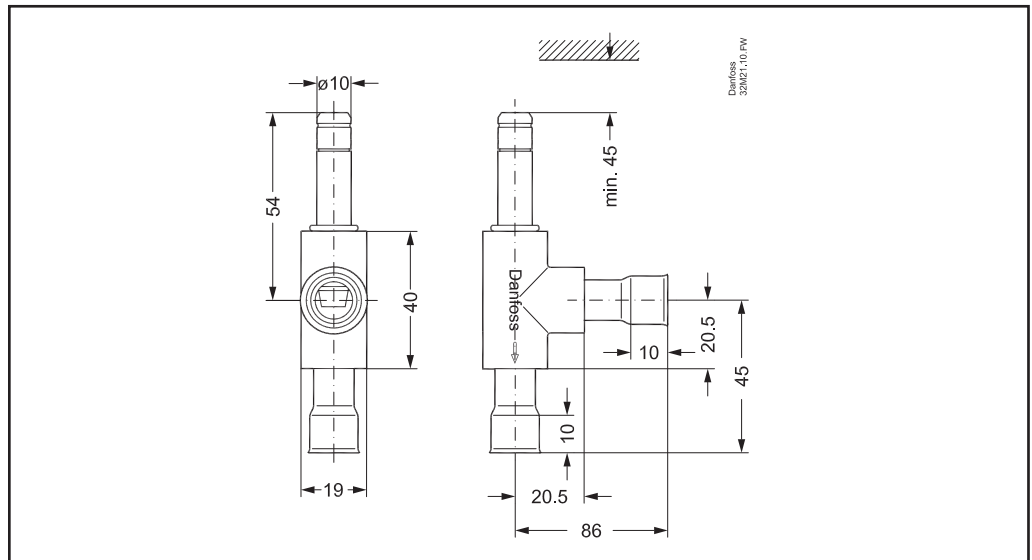
EVU 1 – 6, mounted with coil for DIN connection



EVU 1 – 6



EVU 8



Net weight of coil 6 W:
approx. 0.1 kg
Net weight of coil with cable:
approx. 0.15 kg
Net weight of valve:
approx. 0.1 kg

Note:
The drawings are only representative.

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