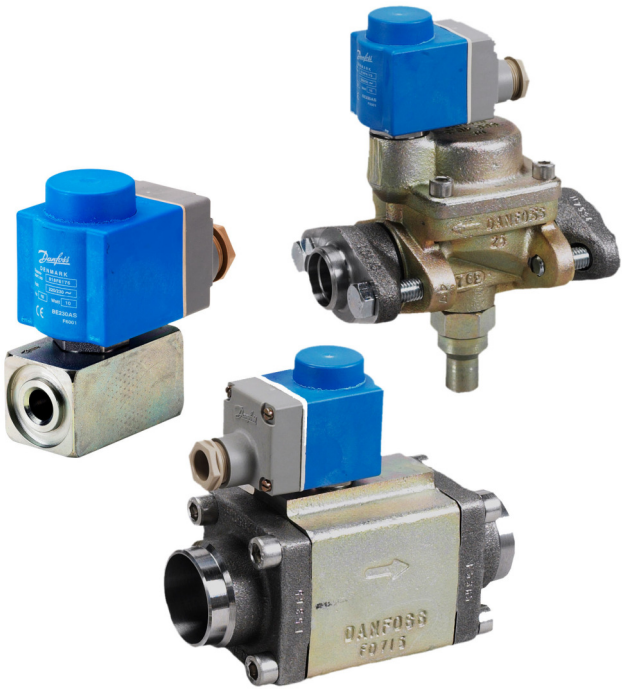
ENGINEERING
TOMORROW

Data Sheet

Solenoid valve
Type **EVRA**

Capable of accommodating the higher pressures of refrigerants and a broader range of applications



EVRA is a direct or servo operated solenoid valve for liquid, suction and hot gas lines with ammonia or fluorinated refrigerants.

EVRA valves are supplied complete or as separate components, i.e. valve body, coil and flanges can be ordered separately.

Features:

- Refrigerants: Applicable to HCFC, HFC and R717 (Ammonia)
- Temperature of medium -40 °C – +105 °C and Max. 130 °C during defrosting
- Classification: DNV, CRN, BV, EAC etc. To get an updated list of certification on the products please contact your local Danfoss Sales Company

Functions

EVRA solenoid valves are designed on two different principles:

1. Direct operation
2. Servo operation

Table 1: Design Function - EVRA 3, EVRA 25, EVRA 32 and EVRA 40

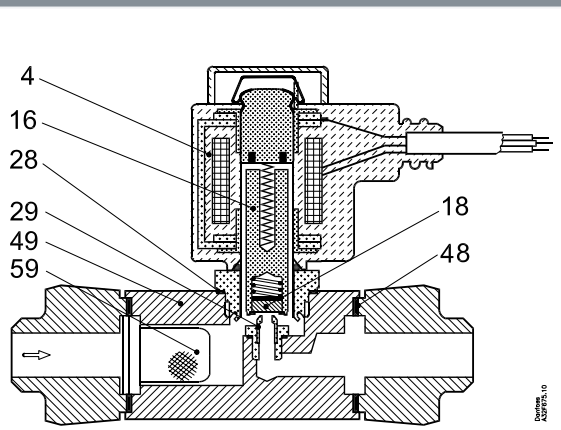
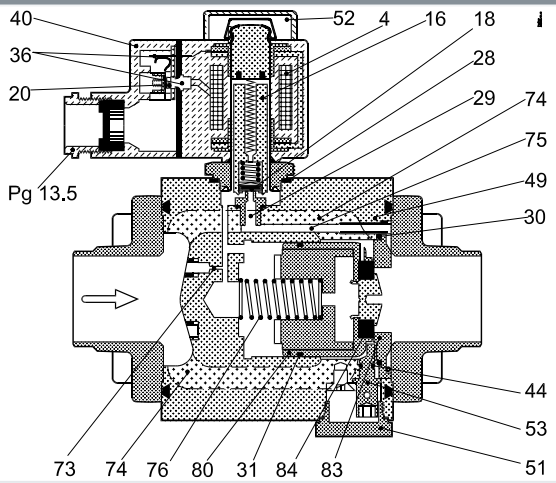
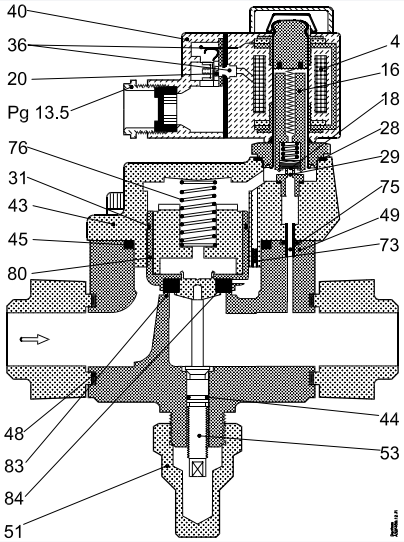
EVRA 3	EVRA 32 and EVRA 40
	

Table 2: Design Function - EVRA 25

EVRA 25


4	Coil
16	Armature
18	Valve plate / Pilot valve plate
20	Earth terminal
24	Connection for flexible steel hose
28	Gasket
29	Pilot orifice
30	O-ring
31	Piston ring
36	DIN plug
40	Terminal box
43	Valve cover
44	O-ring
45	Valve cover gasket
48	Flange gasket
49	Valve body
51	Cover / Threaded plug
53	Manual operation spindle
59	Strainer
73	Equalization hole
74	Main channel
75	Pilot channel
76	Compression spring
80	Diaphragm/Servo piston
83	Valve seat
84	Main valve plate

Direct operation

EVRA 3 is direct operated. The valve opens direct for full flow when the armature (16) moves up into the magnetic field of the coil. This means that the valve operates with a min. differential pressure of 0 bar. The teflon valve plate (18) is fitted direct on the armature (16).

Inlet pressure acts from above on the armature and the valve plate. Thus, inlet pressure, spring force and the weight of the armature act to close the valve when the coil is currentless.

Servo operation

EVRA 25, 32 and 40 are servo operated piston valves. The valves are closed with currentless coil. The servo piston (80) with main valve plate (84) closes against the valve seat (83) by means of the differential pressure between inlet and outlet side of the valve, the force of the compression spring (76) and possibly the piston weight.

When current to the coil is switched on, the pilot orifice (29) opens. This relieves the pressure on the piston spring side of the valve. The differential pressure will then open the valve. The minimum differential pressure needed for full opening of the valves is 0.2 bar.

NOTE:
The manual opener of EVRA 25 is intended to be activated only during initial pressure testing of the refrigeration system. After pressure testing or service-related manual forced opening of the manual opener the spindle must be turned fully back to back-seated position to avoid any packing gland leakage. Furthermore it is essential that the sealing cap is properly reinstalled. This will eliminate any risk of leakage from the manual opener.

Media

Refrigerants

Applicable to HCFC, HFC and R717 (Ammonia).

New refrigerants

Danfoss products are continually evaluated for use with new refrigerants depending on market requirements.

When a refrigerant is approved for use by Danfoss, it is added to the relevant portfolio, and the R number of the refrigerant (e.g. R513A) will be added to the technical data of the code number. Therefore, products for specific refrigerants are best checked at store.danfoss.com/en/, or by contacting your local Danfoss representative.

Product specification

Pressure and temperature data

Table 3: Pressure and temperature

Description	Values
Temperature of medium	-40 °C – +105 °C (Max. 130 °C during defrosting)

NOTE:
Ambient temperature and enclosure for coil - Refer Data sheet "Solenoid coil" (AI237186440089en-000801)

Table 4: Pressure and temperature

Type	Opening differential pressure with standard coil (Δp bar)				Temperature of medium [1] [°C]	Max. working pressure PB [bar]	k_v-value [2] [m³/h]
	Min.	Max. (= MOPD) liquid [3]					
		10 W AC	12 W AC	20 W DC			
EVRA 3	0	21	25	14	-40 – 105	42	0.23
EVRA 25	0.2	21	25	14	-40 – 105	42	10
EVRA 32	0.2	21	25	14	-40 – 105	42	16
EVRA 40	0.20	21	25	14	-40 – 105	42	25

[1] Max. 130 °C during defrost
[2] The k_v value is the water flow in m³/h at a pressure drop across valve of 1 bar, ρ = 1000 kg/m³
[3] MOPD for media in gas form is approx. 1 bar greater

Material specification

Figure 1: EVRA 3

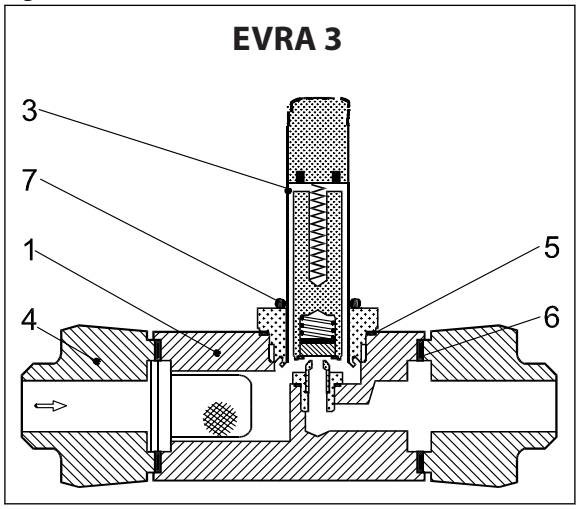


Table 5: EVRA 3

No.	Description	Material	Analysis	Mat.no.	W.no.	ISO	EN
1	Valve body	Free-cutting steel	11MnPb30				10277-3
3	Armature tube	Stainless steel	X2CrNi19-11				10088
4	Flange	Steel	S235JRG2				10025
5	Gasket	Aluminium	Al 99.5				10210
6	Gasket	asbestos-free					
7	Armature tube nut	Stainless steel	X8CrNiS18-9				10088

Figure 2: EVRA 25 and EVRA 32/40

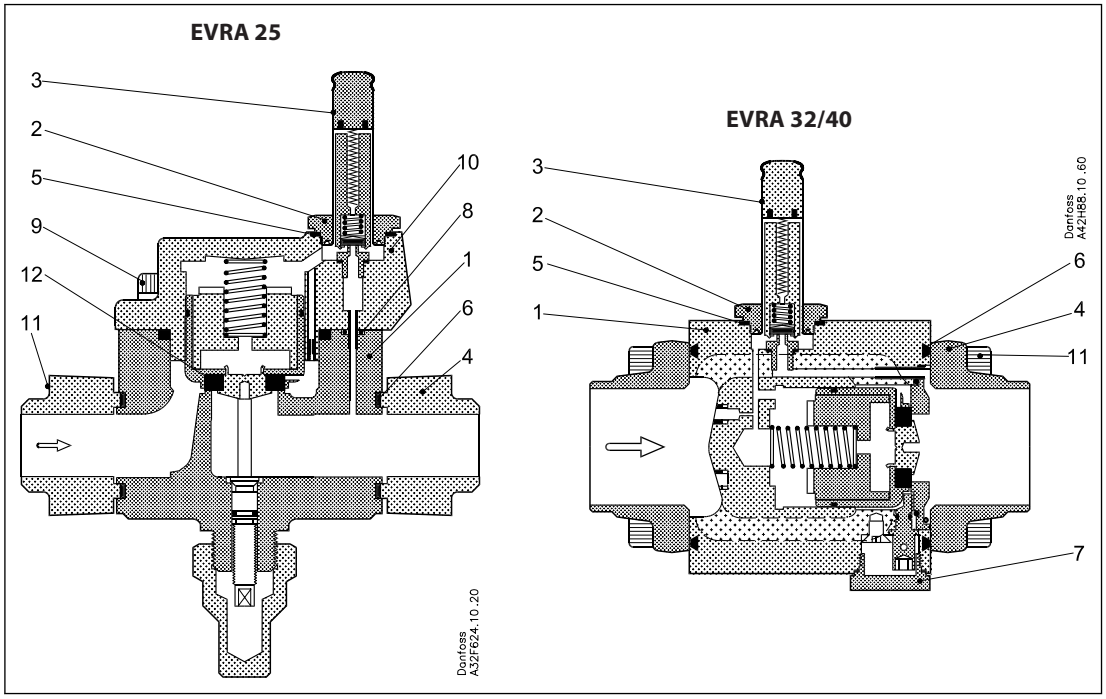


Table 6: EVRA 25 and EVRA 32/40

No.	Description	Solenoid valves	Material	Analysis	Mat.	W.nc	ISO	EN
1	Valve body	EVRA 25/32/40	Cast-iron	GJS-400-18-LT				1563
2	Armature tube nut	EVRA 25/32/40	Stainless steel	X8CrNiS 18-9				10088
3	Armature tube	EVRA 25/32/40	Stainless steel	X2CrNi19-11				10088
4	Flange	EVRA 25	Steel	S235JRG2				10025
	Flange	EVRA 32/40	Steel	P285QH				10222-4
5	Gasket	EVRA 25/32/40	Stainless steel/NBR	X10CrNi18-8				1.431
6	Gasket	EVRA 25	asbestos-free					
	Gasket	EVRA 32/40	Rubber	Cr				
7	Cover/thread plug	EVRA 25	Free-cutting steel	11SMnPb30				10277-3
	Cover/thread plug	EVRA 32/40	Stainless steel	X5CrNi17-10				10088
8	Gasket	EVRA 25	Rubber	CR				
9	Bolts	EVRA 25	Stainless steel	A2-70			3506	
10	Cover	EVRA 25	Cast-iron	GJS-400-18-LT				1563
11	Bolts	EVRA 25/32/40	Stainless steel	A2-70			3506	
12	Valve seat	EVRA 25	Teflon (PTFE)					

Rated capacity

Table 7: Rated capacity

Type	Rated capacity [1] [kW]								Rated capacity [2] [kW]			
	Liquid				Suction vapour				Hot gas			
	R717	R22	R134a	R404A	R717	R22	R134a	R404A	R717	R22	R134a	R404A
EVRA 3	21.8	4.6	4.3	3.2				6.5	2.1	1.7	1.7	
EVRA 25	947	201	186	141	59.7	22.8	16.3	20.4	284	92.3	73.2	75.3
EVRA 32	1515	322	297	225	95.5	36.5	26.1	32.6	454	148	117	120
EVRA 40	2368	503	464	351	149	57	40.8	51	710	231	183	188

[1] Rated liquid and suction vapour capacity is based on evaporating temperature t_e = -10 °C, liquid temperature ahead of valve t_l = +25 °C, and pressure drop across valve Δp = 0.15 bar.

[2] Rated hot gas capacity is based on condensing temperature t_c = +40 °C, pressure drop across valve Δp = 0.8 bar, hot gas temperature t_h = +65 °C, and subcooling of refrigerant Δtsub = 4 K.

Liquid capacity

Table 8: Liquid capacity Ql kW

R 717 (NH_3)					
Type	Liquid capacity Q_e kW at pressure drop across valve Δp bar				
	0.1	0.2	0.3	0.4	0.5
EVRA 3	17.8	25.1	30.8	35.6	39.8
EVRA 25	773.0	1093	1340	1547	1729
EVRA 32	1237	1749	2144	2475	2766
EVRA 40	1933	2734	3349	3867	4322

Table 9: Liquid capacity Ql kW

R 22					
Type	Liquid capacity Q_e kW at pressure drop across valve Δp bar				
	0.1	0.2	0.3	0.4	0.5
EVRA 3	3.8	5.3	6.6	7.6	8.5
EVRA 25	165	232	285	329	368
EVRA 32	263	372	455	526	588
EVRA 40	411	581	712	822	919

Table 10: Liquid capacity Ql kW

R 134a					
Type	Liquid capacity Q_e kW at pressure drop across valve Δp bar				
	0.1	0.2	0.3	0.4	0.5
EVRA 3	3.5	4.9	6.0	7.0	7.8
EVRA 25	152	214	263	303	339
EVRA 32	243	343	420	485	542
EVRA 40	379	536	656	758	847

Table 11: Liquid capacity Ql kW

R 404A					
Type	Liquid capacity Q_e kW at pressure drop across valve Δp bar				
	0.1	0.2	0.3	0.4	0.5
EVRA 3	2.6	3.7	4.6	5.3	5.9
EVRA 25	115	162	199	230	257
EVRA 32	184	260	318	367	411
EVRA 40	287	406	497	574	642

NOTE:
Capacities are based on liquid temperature t_l = +25 °C ahead of valve, evaporating temperature t_e = -10 °C, and superheat 0 K.

Correction factors

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

Table 12: Correction factors

t_v °C	-10	0	10	20	25	30	40	50
R 717 (NH_3)	0.84	0.88	0.92	0.97	1	1.03	1.09	1.16
R 22, R 134a	0.76	0.81	0.88	0.96	1	1.05	1.16	1.31
R 404A	0.7	0.76	0.84	0.94	1	1.07	1.24	1.47

Suction vapour capacity

Table 13: Suction vapour capacity Qe kW

R 717 (NH_3)							
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
	0.1	22.6	30.0	39.5	48.7	59.2	70.8
EVRA 25	0.15	26.7	35.9	46.3	59.7	72.5	86.7
	0.2	29.8	40.5	52.7	66.4	83.7	100
	0.1	36.2	47.8	63.2	77.9	94.7	113
EVRA 32	0.15	42.7	57.4	74.1	95.5	116	139
	0.2	47.7	64.8	84.3	106	134	160
	0.1	56.5	74.8	98.8	122	148	177
EVRA 40	0.15	66.8	89.8	116	149	181	217
	0.2	74.5	101.0	132	166	209	251

Table 14: Suction vapour capacity Qe kW

R 22							
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
	0.1	9.1	11.8	15.2	18.6	22.4	26.6
EVRA 25	0.15	10.9	14.2	17.9	22.8	27.4	32.6
	0.2	12.2	16.1	20.4	25.3	31.7	37.6
	0.1	14.6	18.9	24.3	29.8	35.8	42.6
EVRA 32	0.15	17.4	22.7	28.8	36.5	43.8	52.2
	0.2	19.6	25.7	32.6	40.5	50.7	60.2
	0.1	22.8	29.5	38.1	46.5	56	66.5
EVRA 40	0.15	27.2	35.4	45	57	68.6	81.5
	0.2	30.5	40.2	51	63.3	79.2	94

NOTE:
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 te and pressure drop Δp across 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 evaporator capacity must be multiplied by a correction factor depending on liquid temperature tl ahead of expansion valve. When the corrected capacity is known, the selection can be made from the table.

Table 15: Correction factors

t_v °C	-10	0	10	20	25	30	40	50
R 717 (NH_3)	0.84	0.88	0.92	0.97	1	1.03	1.09	1.16
R 22	0.76	0.81	0.88	0.96	1	1.05	1.16	1.31

Suction vapour capacity

Table 16: Suction vapour capacity Qe kW

R 134a							
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
	0.1	5.8	7.9	10.5	13.9	17.2	21.1
EVRA 25	0.15	6.6	9.3	12.5	16.3	21.1	25.9
	0.2	7.3	10.4	14.1	18.5	23.4	29.9
	0.1	9.3	12.6	16.8	22.2	27.7	33.8
EVRA 32	0.15	10.6	14.9	20.0	26.1	33.8	41.4
	0.2	11.7	16.6	22.6	29.6	37.4	47.8

R 134a							
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
EVRA 40	0.1	14.5	19.8	26.3	34.8	43.3	52.8
	0.15	16.5	23.3	31.3	40.8	52.8	64.8
	0.2	18.3	26.0	35.3	46.3	58.5	74.8

Table 17: Suction vapour capacity Qe kW

R 404A							
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
EVRA 25	0.1	7.7	10.1	13.3	16.6	20.4	24.6
	0.15	9.1	12.1	15.8	20.4	25	30.3
	0.2	10.3	13.8	18.0	22.7	28.8	35
EVRA 32	0.1	12.3	16.2	21.3	26.6	32.6	39.4
	0.15	14.6	19.4	25.3	32.6	40	48.5
	0.2	16.5	22.0	28.8	36.3	46.1	56
EVRA 40	0.1	19.3	25.3	33.3	41.5	51	61.5
	0.15	22.9	30.3	39.5	51	62.5	75.6
	0.2	25.8	34.5	45.0	56.8	72.1	87.5

NOTE:
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 te and pressure drop Δp across 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 evaporator capacity must be multiplied by a correction factor depending on liquid temperature tl ahead of expansion valve. When the corrected capacity is known, the selection can be made from the table.

Table 18: Correction factors

t_v °C	-10	0	10	20	25	30	40	50
R 134a	0.76	0.81	0.88	0.96	1	1.05	1.16	1.31
R 404A	0.7	0.76	0.84	0.94	1	1.07	1.24	1.47

Hot gas capacity

Table 19: Hot gas capacity Qh kW

R 717 (NH_3)						
Type	Pressure drop across valve Δp bar	Hot gas capacity Q_e kW				
		Evaporating temp. t_e =-10 °C. Hot gas temp. $t_h = t_c + 25$ °C.Subcooling Δtsub=4K				
		Condensing temperature t_c °C				
		20	30	40	50	60
EVRA 3	0.1	1.8	2.1	2.3	2.5	2.6
	0.2	2.6	2.9	3.2	3.5	3.7
	0.4	3.8	4.2	4.6	4.9	5.3
	0.8	5.1	6.0	6.5	7.1	7.6
	1.6	7.4	8.3	9.1	9.9	10.9
EVRA 25	0.1	80.2	89.1	98.0	107.0	115.0
	0.2	114	127	139	151.0	163.0
	0.4	163	181	198	215.0	231.0
	0.8	227	260	284	307.0	330.0
	1.6	324	358	394	429.0	475.0

R 717 (NH_3)						
Type	Pressure drop across valve Δp bar	Hot gas capacity Q_e kW				
		Evaporating temp. t_e =-10 °C. Hot gas temp. $t_h = t_c$ + 25 °C.Subcooling Δtsub=4K				
		Condensing temperature t_c °C				
		20	30	40	50	60
EVRA 32	0.1	128	143	157	171.0	184.0
	0.2	183	203	223	242.0	260.0
	0.4	261	289	317	344.0	370.0
	0.8	362	416	455	492.0	528.0
	1.6	518	574	631	688.0	761.0
EVRA 40	0.1	201	223	244	267.0	287.0
	0.2	286	317	348	378.0	407.0
	0.4	408	452	495	537.0	578.0
	0.8	566	650	710	769.0	825.0
	1.6	809	897	986	1074	1188

NOTE:
An increase in hot gas temperature th of 10 K, based on th = t_c +25 °C, reduces valve capacity approx. 2% and vice versa. A change in evaporating temperature te changes valve capacity; see correction factor table below.

Correction factor

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

Table 20: Correction factor

t_o °C	-40	-30	-20	-10	0	10
R 717 (NH_3)	0.89	0.91	0.96	1	1.06	1.1

Hot gas capacity

Table 21: Hot gas capacity Qh kW

R 22						
Type	Pressure drop across valve Δp bar	Hot gas capacity Q_e kW				
		Evaporating temp. t_e =-10 °C. Hot gas temp. $t_h = t_c$ +25 °C.Subcooling Δtsub=4K				
		Condensing temperature t_c °C				
		20	30	40	50	60
EVRA 3	0.1	0.68	0.72	0.76	0.78	0.79
	0.2	0.97	1.0	1.1	1.1	1.1
	0.4	1.4	1.5	1.5	1.6	1.6
	0.8	1.9	2.0	2.1	2.3	2.3
	1.6	2.7	2.9	3.0	3.1	3.2
EVRA 25	0.1	29.6	31.4	32.9	34.0	34.4
	0.2	42.1	44.6	46.7	48.2	48.8
	0.4	60.2	63.8	66.6	68.6	69.4
	0.8	82.5	87.9	92.3	98.2	99.2
	1.6	117.0	124.0	130.0	135.0	137.0
EVRA 32	0.1	47.4	50.2	52.6	54.4	55.0
	0.2	67.4	71.4	74.7	77.1	78.1
	0.4	96.3	102.0	107.0	110.0	111.0
	0.8	132.0	140.0	148.0	157.0	159.0
	1.6	187.0	199.0	209.0	216.0	219.0
EVRA 40	0.1	74.0	78.5	82.3	85.0	86.0
	0.2	105.0	112.0	117.0	121.0	122.0
	0.4	151.0	159.0	167.0	172.0	174.0
	0.8	206.0	222.0	231.0	246.0	248.0
	1.6	291.0	310.0	326.0	337.0	342.0

NOTE:
An increase in hot gas temperature th of 10 K, based on th = t_c +25 °C, reduces valve capacity approx. 2% and vice versa. A change in evaporating temperature te changes valve capacity; see correction factor table below.

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

Table 22: Correction factor

t_o °C	-40	-30	-20	-10	0	10
R 22	0.9	0.94	0.97	1	1.03	1.05

Hot gas capacity

Table 23: Hot gas capacity Qh kW

R 134a						
Type	Pressure drop across valve Δp bar	Hot gas capacity Q_e kW Evaporating temp.te =-10 °C. Hot gas temp. $t_h = t_c$ +25 °C.Subcooling Δtsub=4K Condensing temperature t_c °C				
		20	30	40	50	60
	0.1	0.54	0.57	0.6	0.61	0.6
	0.2	0.77	0.82	0.85	0.86	0.85
EVRA 3	0.4	1.1	1.2	1.2	1.2	1.2
	0.8	1.5	1.6	1.7	1.8	1.8
	1.6	2.2	2.3	2.4	2.5	2.4
	0.1	23.6	24.9	25.9	26.4	26.2
	0.2	33.6	35.5	36.8	37.4	37.1
EVRA 25	0.4	46.6	51.0	52.7	53.4	52.9
	0.8	66.2	70.2	73.2	77.0	76.0
	1.6	95.2	101.0	105.0	107.0	106.0
	0.1	37.6	39.8	41.4	42.1	41.8
	0.2	53.8	56.8	58.9	59.8	59.4
EVRA 32	0.4	74.7	81.6	84.3	85.4	84.6
	0.8	106.0	112.0	117.0	123.0	122.0
	1.6	152.0	161.0	167.0	170.0	169.0
	0.1	58.8	62.3	64.7	65.8	65.3
	0.2	84.1	88.8	92.1	93.5	92.8
EVRA 40	0.4	117.0	127.0	132.0	134.0	132.0
	0.8	166.0	176.0	183.0	192.0	190.0
	1.6	238.0	252.0	262.0	266.0	265.0

NOTE:
An increase in hot gas temperature th of 10 K, based on $t_h = t_c$ +25 °C, reduces valve capacity approx. 2% and vice versa. A change in evaporating temperature te changes valve capacity; see correction factor table below.

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

Table 24: Correction factor

t_o °C	-40	-30	-20	-10	0	10
R 134a	0.88	0.92	0.98	1	1.04	1.08

Hot gas capacity

Table 25: Hot gas capacity Qh kW

R 404A						
Type	Pressure drop across valve Δp bar	Hot gas capacity Q_e kW Evaporating temp. t_e =-10 °C. Hot gas temp. $t_h = t_c + 25$ °C.Subcooling Δtsub=4K Condensing temperature t_c °C				
		20	30	40	50	60
EVRA 3	0.1	0.62	0.63	0.62	0.59	0.54
	0.2	0.87	0.89	0.88	0.83	0.76
	0.4	1.2	1.3	1.3	1.2	1.1
	0.8	1.7	1.7	1.7	1.7	1.5
	1.6	2.4	2.5	2.4	2.3	2.1
EVRA 25	0.1	26.8	27.4	26.9	25.6	23.3
	0.2	37.9	38.4	38.2	36.3	33.0
	0.4	54.2	54.9	54.5	51.7	47.0
	0.8	74.2	75.6	75.3	74.0	67.2
	1.6	105.0	107.0	105.0	101.0	92.5
EVRA 32	0.1	43.0	43.8	43.0	40.9	37.3
	0.2	60.6	61.4	61.1	58.1	52.8
	0.4	86.7	87.8	87.2	82.7	75.2
	0.8	119.0	121.0	120.0	118.0	107.0
	1.6	167.0	171.0	168.0	162.0	148.0
EVRA 40	0.1	67.0	68.5	67.3	64.0	58.3
	0.2	94.8	96.0	95.5	90.8	82.5
	0.4	136.0	137.0	136.0	129.0	117.0
	0.8	186.0	189.0	188.0	185.0	168.0
	1.6	262.0	266.0	263.0	253.0	231.0

NOTE:
An increase in hot gas temperature th of 10 K, based on th = t_c +25 °C, reduces valve capacity approx. 2% and vice versa. A change in evaporating temperature te changes valve capacity; see correction factor table below.

Correction factor

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

Table 26: Correction factor

t_o °C	-40	-30	-20	-10	0	10
R 404A	0.86	0.88	0.93	1	1.03	1.07

Hot gas capacity

Table 27: Hot gas capacity Gh kg/s

R 717 (NH_3)										
Type	Hot gas temperature t_h °C	Condensing temperature t_k °C	Hot gas capacity G_h kg/s at pressure drop across valve Δp bar								
			0.5	1	2	3	4	5	6	7	8
EVRA 3	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	0.009	0.009	0.01	0.01	0.01	0.01
	90	45	0.005	0.006	0.009	0.01	0.011	0.012	0.013	0.013	0.013
EVRA 25	90	25	0.143	0.197	0.26	0.296	0.313	0.316	0.316	0.316	0.316
	90	35	0.168	0.232	0.313	0.364	0.397	0.417	0.425	0.425	0.425
	90	45	0.194	0.269	0.368	0.434	0.482	0.516	1.54	0.555	0.561
EVRA 32	90	25	0.233	0.322	0.424	0.483	0.511	0.516			
	90	35	0.274	0.379	0.511	0.594	0.648	0.681	0.694		
	90	45	0.316	0.439	0.601	0.709	0.787	0.842	0.882	0.906	0.916

R 717 (NH_3)										
Type	Hot gas temperature t_h °C	Condensing temperature t_k °C	Hot gas capacity G_h kg/s at pressure drop across valve Δp bar							
			0.5	1	2	3	4	5	6	7	8
	90	25	0.362	0.503	0.663	0.755	0.798	0.806			
EVRA 40	90	35	0.429	0.592	0.798	0.929	1.013	1.064	1.084		
	90	45	0.495	0.686	0.939	1.107	1.23	1.316	1.378	1.416	1.431

Table 28: Hot gas capacity Gh kg/s

R 22										
Type	Hot gas temperature t_h °C	Condensing temperature t_k °C	Hot gas capacity G_h kg/s at pressure drop across valve Δp bar							
			0.5	1	2	3	4	5	6	7	8
	90	25	0.008	0.011	0.014	0.016	0.017	0.017	0.017	0.017	0.017
EVRA 3	90	35	0.009	0.012	0.017	0.019	0.021	0.022	0.022	0.022	0.022
	90	45	0.01	0.014	0.019	0.022	0.025	0.026	0.027	0.028	0.028
	90	25	0.331	0.453	0.599	0.677	0.715	0.722	0.722	0.722	0.722
EVRA 25	90	35	0.38	0.524	0.704	0.816	0.886	0.925	0.938	0.938	0.938
	90	45	0.431	0.598	0.814	0.956	1.056	1.125	1.169	1.192	1.197
	90	25	0.539	0.739	0.976	1.106	1.168	1.179			
EVRA 32	90	35	0.619	0.856	1.15	1.331	1.446	1.509	1.531		
	90	45	0.704	0.978	1.329	1.562	1.723	1.837	1.909	1.947	1.955
	90	25	0.843	1.155	1.525	1.728	1.825	1.843			
EVRA 40	90	35	0.968	1.338	1.798	2.08	2.26	2.358	2.393		
	90	45	1.1	1.528	2.078	2.44	2.693	2.87	2.383	3.043	3.055

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

Hot gas capacity

Table 29: Hot gas capacity Gh kg/s

R 134a										
Type	Hot gas temperature t_h °C	Condensing temperature t_k °C	Hot gas capacity G_h kg/s at pressure drop across valve Δp bar							
			0.5	1	2	3	4	5	6	7	8
	60	25	0.007	0.009	0.011	0.012	0.012				
EVRA 3	60	35	0.009	0.011	0.014	0.016	0.016	0.016	0.016		
	60	45	0.01	0.012	0.018	0.02	0.021	0.021	0.021	0.021	0.021
	60	25	0.292	0.391	0.486	0.506	0.506				
EVRA 25	60	35	0.341	0.467	0.602	0.668	0.679	0.679	0.679		
	60	45	0.393	0.549	0.725	0.83	0.876	0.885	0.885	0.885	0.885
	60	25	0.478	0.638	0.793	1.826	0.826				
EVRA 32	60	35	0.556	0.763	0.994	1.091	1.108	1.108	1.108		
	60	45	0.641	0.897	1.197	1.354	1.432	1.446	1.446	1.446	1.446
	60	25	0.747	0.998	1.24	1.291	1.291				
EVRA 40	60	35	0.87	1.192	1.553	1.704	1.731	1.731	1.731		
	60	45	1.002	1.402	1.87	2.117	2.237	2.259	2.259	2.259	

Table 30: Hot gas capacity Gh kg/s

R 404A										
Type	Hot gas temperature t_h °C	Condensing temperature t_k °C	Hot gas capacity G_h kg/s at pressure drop across valve Δp bar							
			0.5	1	2	3	4	5	6	7	8
	60	25	0.01	0.013	0.018	0.021	0.022	0.023	0.023	0.023	0.023
EVRA 3	60	35	0.011	0.015	0.02	0.024	0.027	0.028	0.029	0.029	0.03
	60	45	0.012	0.017	0.023	0.028	0.032	0.034	0.035	0.036	0.037

R 404A										
Type	Hot gas temperature t_h °C	Condensing temperature t_k °C	Hot gas capacity G_h kg/s at pressure drop across valve Δp bar							
			0.5	1	2	3	4	5	6	7	8
	60	25	0.411	0.57	0.763	0.878	0.942	0.969	0.978	0.978	0.978
EVRA 25	60	35	0.468	0.653	0.881	1.032	1.136	1.203	1.239	1.241	1.253
	60	45	0.529	0.734	1.0	1.188	1.326	1.43	1.49	1.539	1.566
	60	25	0.672	0.931	1.245	1.432	1.539	1.581	1.581	1.581	1.581
EVRA 32	60	35	0.765	1.069	1.436	1.686	1.854	1.964	2.022	2.025	2.025
	60	45	0.862	1.198	1.632	1.939	1.836	2.34	2.433	2.513	2.557
	60	25	1.05	1.454	1.946	2.238	2.406	2.471	2.471	2.471	2.471
EVRA 40	60	35	1.195	1.657	2.245	2.635	2.897	3.068	3.161	3.166	3.166
	60	45	1.348	1.873	2.55	3.03	3.384	3.65	3.801	3.926	3.995

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

Dimensions and weights

Table 31: EVRA 3

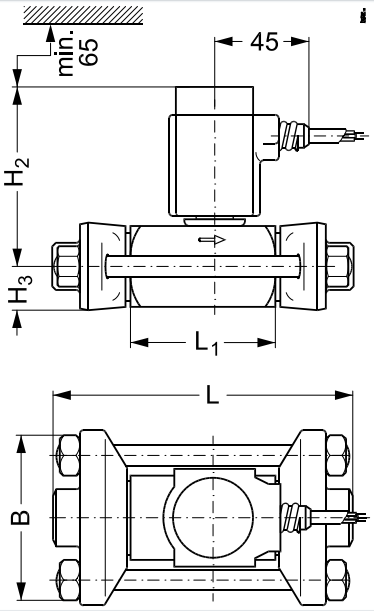
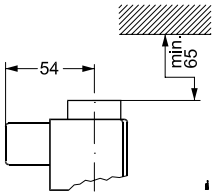
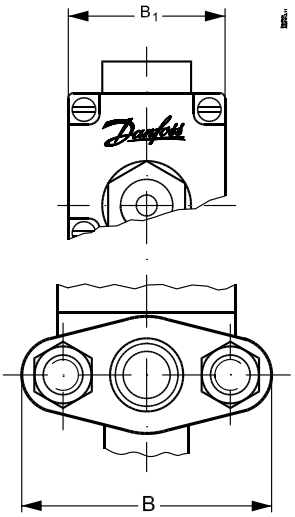
EVRA 3 Coil with cable	EVRA 3 Coil with DIN plugs	EVRA 3 Coil with terminal box
		

Table 32: EVRA 3

Type	H_1	H_2	H_3	H_4	L	L_1	L_5 max.		B	B_1 max.	Weight[1]
							10 W	12 W 20 W			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
EVRA 3		84	19		124	65	75	85	80	68	1.2

[1] With coil, without flanges

Weight of coil:
10 W: approx. 0.3 kg
12 and 20 W: approx. 0.5 kg

Weight of flange set:
For EVRA 3: 0.6 kg

Table 33: EVRA 25, EVRA 32 and EVRA 40 Coil with terminal box

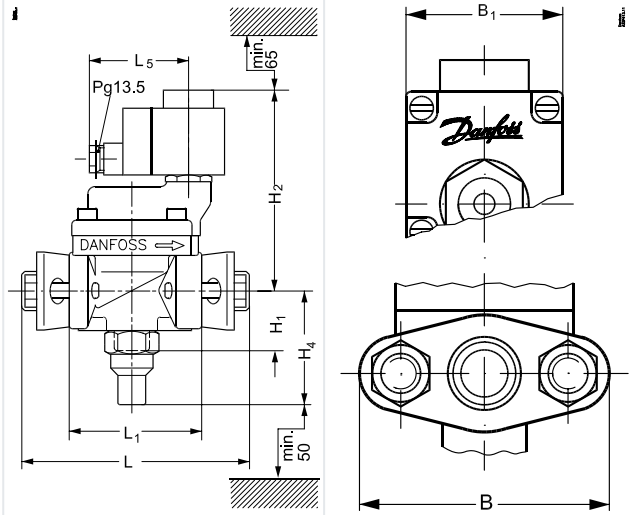
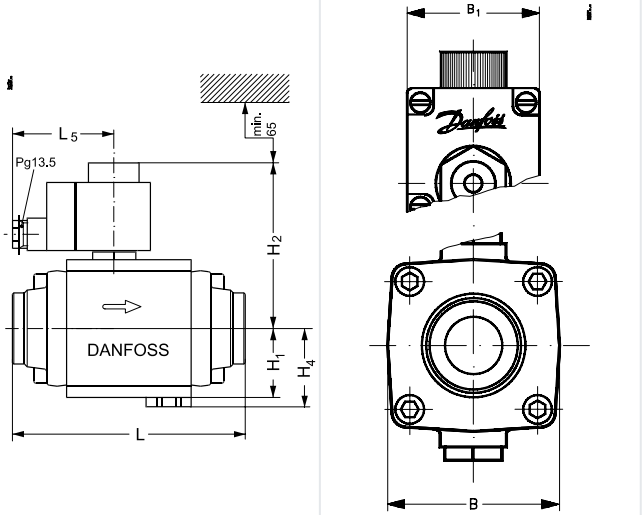
EVRA 25 Coil with terminal box	EVRA 32 and 40 Coil with terminal box
	

Table 34: EVRA 25, EVRA 32 and EVRA 40 Coil with cable and DIN plugs

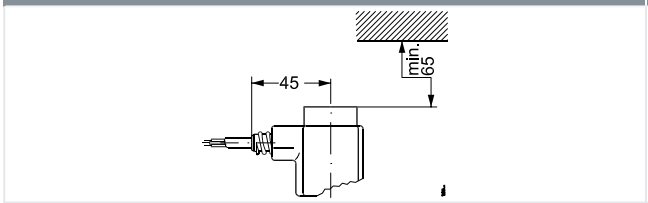
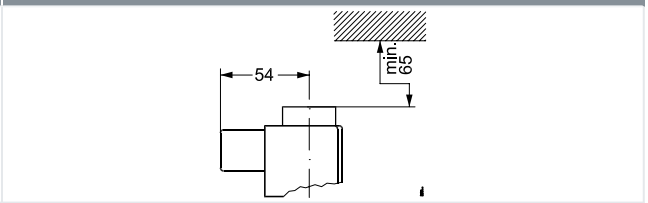
EVRA 25, 32 and 40 Coil with cable	EVRA 25, 32 and 40 Coil with DIN plugs
	

Table 35: EVRA 25, EVRA 32 and EVRA 40

Type	H_1	H_2	H_3	H_4	L	L_1	L_5 max.		B	B_1 max.	Weight[2]
							10 W	12 W 20 W			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
EVRA 25	46	141		78	162	92			95	68	3.0
EVRA 32	47	115		53	175		75	85	80	68	4.0
EVRA 40	47	115		53	175				80	68	4.0

[2] With coil, without flanges

Weight of coil:
10 W: approx. 0.3 kg
12 and 20 W: approx. 0.5 kg

Weight of flange set:
For EVRA 25: 0.9 kg

Ordering

Ordering valve with coil

Figure 3: Valve with coil

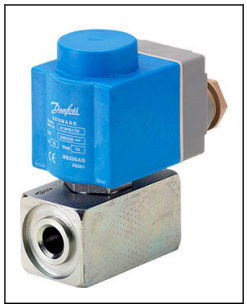


Table 36: Ordering valve with coil

Type	Manual Stem	Inlet connection type	Orifice size [mm]	Max OPD 10W AC [bar]	Max OPD 20W DC [bar]	Coil type	Coil connection	Supply voltage [V] AC	Frequency [Hz]	Power consumption [W]	Singlepack/ Multipack (12 pcs.)	Code number
EVRA 3	No	Flange(1)	3	21	14	BF230AS	Cable (1 m/3.3 ft)	220 - 230	50	10	Multipack	**032F310231**
EVRA 3	No	Flange(1)	3	21	14	BE230AS	Connection Box	220 - 230	50	10	Multipack	**032F310331**
EVRA 3	No	Flange(1)	3	21	14	BE230CS	Connection Box	220 - 230	50/60	10	Multipack	**032F310332**
EVRA 25	Yes	Flange(1)	25	21	14	BE230CS	Connection Box	220 - 230	50/60	10	Singlepack	**032F803432**

(1) Includes flange gaskets and bolts. Flanges are not included. For ordering flanges; please downlad the data sheet AI249786497379 from www.danfoss.com

Ordering valve without coil

Figure 4: valve without coil

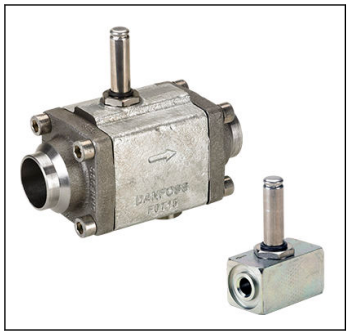


Table 37: Ordering valve without coil

Type	Manual Stem	Inlet connection type	Inlet size [in]	Orifice size [mm]	Max OPD 10W AC [bar]	Max OPD 12W AC [bar]	Max OPD 20W DC [bar]	Required coil type(1)	Singlepack/ Multipack (12 pcs.)	Code number
EVRA 3	No	Flange(2)		3	21	25	14	AC / DC	Multipack	**032F3050**
EVRA 25	Yes	Flange(2)		25	21	25	14	AC / DC	Singlepack	**032F6225**
EVRA 25	No	Flange(2)		25	21	25	14	AC / DC	Singlepack	**032F6226**
EVRA 32	Yes	Butt weld DIN	1¼	22.2	21	25	14	AC / DC	Singlepack	**042H1126**
EVRA 32	No	Butt weld DIN	1¼	22.2	21	25	14	AC / DC	Singlepack	**042H1127**
EVRA 40	Yes	Butt weld DIN	1½	25.4	21	25	14	AC / DC	Singlepack	**042H1128**
EVRA 40	No	Butt weld DIN	1½	25.4	21	25	14	AC / DC	Singlepack	**042H1129**

Type	Manual Stem	Inlet connection type	Inlet size [in]	Orifice size [mm]	Max OPD 10W AC [bar]	Max OPD 12W AC [bar]	Max OPD 20W DC [bar]	Required coil type[1]	Singlepack/ Multipack (12 pcs.)	Code number
EVRA 32	Yes	Butt weld DIN	1½	22.2	21	25	14	AC / DC	Singlepack	**042H1131**
EVRA 40	Yes	Butt weld DIN	2	25.4	21	25	14	AC / DC	Singlepack	**042H1132**
EVRA 32	Yes	Butt weld ANSI 36.10	1¼	22.2	21	25	14	AC / DC	Singlepack	**042H1140**
EVRA 32	Yes	Butt weld ANSI 36.10	1½	22.2	21	25	14	AC / DC	Singlepack	**042H1141**
EVRA 40	Yes	Butt weld ANSI 36.10	1½	25.4	21	25	14	AC / DC	Singlepack	**042H1142**
EVRA 40	Yes	Butt weld ANSI 36.10	2	25.4	21	25	14	AC / DC	Singlepack	**042H1143**

[1] For ordering coils; please download the data sheet AI237186440089 from www.danfoss.com
[2] Includes flange gaskets and bolts. Flanges are not included. For ordering flanges; please downlad the data sheet AI249786497379 from www.danfoss.com

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Table 38: Valid approvals

Type	File name	Document type	Document topic	Approval authority
EVRA(T)	RU Д-DK.БЛ08.B.03639	EAC Declaration	Machinery & Equipment	EAC
	0045 202 1204 Z 00354 19 D 001(00)	Pressure - Safety Certificate		TÜV
	RU Д-DK.БЛ08.B.00189_18	EAC Declaration	EMC	EAC
	RU Д-DK.PA01.B.71727_20	EAC Declaration	PED	EAC
	MD 033F0691.AE	Manufacturers Declaration	RoHS	Danfoss
	MD 033F0686.AH	Manufacturers Declaration	PED	Danfoss
	033F0474.AC	Manufacturers Declaration	ATEX	Danfoss
	EU 033F0685.AK	EU Declaration	EMCD/PED	Danfoss
	RMRS 19.10034.262	Marine - Safety Certificate		RMRS
	DNV GL TAA0000085 Rev. 2	Marine - Safety Certificate		DNV GL
	UL SA7200	Mechanical - Safety Certificate		
	TSSA CRN.0C14029.523467890YTN	Pressure - Safety Certificate	CRN	TSSA

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