Data sheet

Solenoid Valve Type EVUL

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

EVUL 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

Features

- Compact and light weight.
- Fully hermetic construction in stainless steel.
- Laser welded bimetal connections.
- High vibration resistance
- Excellent leak integrity
- Bimetal connections for fast soldering.
- No need of wet cloth / heat sink by soldering.
- Servo operated mini piston, sturdy and compact solenoid valve.
- Universal application for – liquid, suction, and hot gas applications.
- Minimum power consumption.
- Simple and fast mounting of coil.
- Encapsulated coils provide long life time even under extreme conditions.
- High MOPD capacity – up to 36 bar / 522 psi.
- Build in filter in the inlet.

Approvals

Underwriter laboratories PED (97/23/EC A3.P3)
Low Voltage Directive (LVD) 2006/95/EC
Refrigerants: R744, R22/R407C, R404A/R507, R410A, R134a and R407A.
For other refrigerants, please contact Danfoss.

Technical data

Max. working pressure PS/MWP: 90 bar / 1305 psi
Temperature of media: -40 °C – 105 °C / -40 °F – 221 °F
Ambient temperature: -40 °C – 60 °C / - 40 °F – 140 °F
MOPD operating range: EVUL 1 – 8: 0.002 - 36 bar / 0.029 - 522 psi
MOPD is measured with highest media and ambient temperature and 15% below nominal voltage.
MOPD (Max. Opening Pressure Differential) for media in gas form is approximately 0.97 bar greater.
K_v value is the water flow in m^3/hour at a pressure drop across valve $\Delta p = 1$ bar, $\rho = 1000$ Kg/m^3.
C_v value is the water flow in [gal/min] at a pressure drop across valve $\Delta p = 1$ psi, $\rho = 10$ lbs/gal

Liquid - Rated capacity [Kw] **SI units**

Type	R22	R407C	R134a	R404A/R507	R407A	R410A	K_v value [m^3/hour]
EVUL 1	2.15	2.01	1.65	1.38	1.85	2.02	0.10
EVUL 2	4.29	4.02	3.31	2.76	3.70	4.04	0.20
EVUL 3	6.44	6.03	4.96	4.14	5.55	6.06	0.30
EVUL 4	10.74	10.05	8.27	6.91	9.25	10.10	0.50
EVUL 5	13.96	13.06	10.75	8.98	12.02	13.13	0.65
EVUL 6	16.10	15.07	12.40	10.36	13.87	15.15	0.75
EVUL 8	19.32	18.09	14.88	12.43	16.65	18.18	0.90

Suction vapor - Rated capacity [Kw] **SI units**

Type	R22	R407C	R134a	R404A/R507	R407A	R410A	K_v value [m^3/hour]
EVUL 1	0.17	0.16	0.13	0.14	0.16	0.21	0.10
EVUL 2	0.34	0.32	0.26	0.29	0.31	0.41	0.20
EVUL 3	0.51	0.48	0.38	0.43	0.47	0.62	0.30
EVUL 4	0.86	0.79	0.64	0.71	0.78	1.04	0.50
EVUL 5	1.11	1.03	0.83	0.93	1.01	1.35	0.65
EVUL 6	1.28	1.19	0.96	1.07	1.17	1.56	0.75
EVUL 8	1.54	1.43	1.15	1.29	1.40	1.87	0.90

Hot gas - Rated capacity [Kw] **SI units**

Type	R22	R407C	R134a	R404A/R507	R407A	R410A	K_v value [m^3/hour]
EVUL 1	0.40	0.42	0.32	0.34	0.41	0.49	0.10
EVUL 2	0.80	0.85	0.64	0.67	0.82	0.98	0.20
EVUL 3	1.20	1.27	0.96	1.01	1.22	1.46	0.30
EVUL 4	2.00	2.11	1.60	1.69	2.04	2.44	0.50
EVUL 5	2.61	2.75	2.08	2.19	2.65	3.17	0.65
EVUL 6	3.01	3.17	2.40	2.53	3.06	3.66	0.75
EVUL 8	3.61	3.80	2.88	3.03	3.67	4.39	0.90

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

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

Technical data
(continued)

Liquid - Rated capacity [1] [TR] **US units**

Type	R22	R407C	R134a	R404A/R507	R407A	R410A	C_v-value [gal/min]
EVUL 1	0.62	0.58	0.47	0.39	0.53	0.57	0.12
EVUL 2	1.23	1.15	0.93	0.79	1.06	1.15	0.23
EVUL 3	1.85	1.73	1.40	1.18	1.59	1.72	0.35
EVUL 4	3.08	2.88	2.33	1.97	2.65	2.87	0.58
EVUL 5	4.00	3.74	3.02	2.57	3.44	3.73	0.75
EVUL 6	4.62	4.32	3.49	2.96	3.97	4.31	0.87
EVUL 8	5.54	5.18	4.19	3.55	4.77	5.17	1.04

Suction vapor - Rated capacity [1] [TR] **US units**

Type	R22	R407C	R134a	R404A/R507	R407A	R410A	C_v-value [gal/min]
EVUL 1	0.05	0.05	0.04	0.04	0.05	0.06	0.12
EVUL 2	0.10	0.10	0.08	0.09	0.09	0.12	0.23
EVUL 3	0.15	0.14	0.12	0.13	0.14	0.19	0.35
EVUL 4	0.26	0.24	0.20	0.22	0.24	0.31	0.58
EVUL 5	0.34	0.31	0.25	0.28	0.31	0.40	0.75
EVUL 6	0.39	0.36	0.29	0.32	0.35	0.47	0.87
EVUL 8	0.46	0.43	0.35	0.39	0.42	0.56	1.04

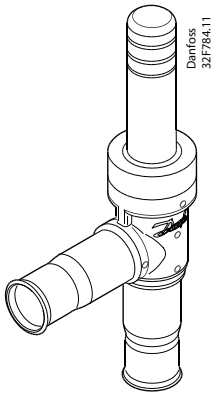
Hot gas - Rated capacity [1] [TR] **US units**

Type	Rated capacity [1] [TR]						C_v-value
	Hot gas						
	R22	R407C	R134a	R404A/ R507	R407A	R410A	[gal/min]
EVUL 1	0.09	0.10	0.07	0.08	0.09	0.11	0.12
EVUL 2	0.19	0.19	0.15	0.15	0.18	0.22	0.23
EVUL 3	0.28	0.29	0.22	0.23	0.28	0.33	0.35
EVUL 4	0.46	0.48	0.37	0.38	0.46	0.54	0.58
EVUL 5	0.60	0.62	0.48	0.49	0.60	0.70	0.75
EVUL 6	0.70	0.72	0.56	0.57	0.69	0.81	0.87
EVUL 8	0.83	0.86	0.67	0.68	0.83	0.98	1.04

[1] *Rated liquid and suction vapor capacity are based on:*
Evaporating temperature t_e = 40 °F
Liquid temperature ahead of valve t_l = 100 °F
Pressure drop Δp across valve
– with liquid: Δp = 2 psi for R134a
Δp = 3 psi for R22, R404A and R507 – with suction vapor: Δp = 1 psi

Rated hot gas capacity is based on:
Condensing temperature: t_c = 100 °F
Hot gas temperature: t_h = 140 °F
Pressure drop across valve: Δp = 2 psi

Ordering Valve

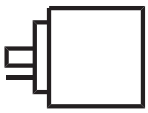


Normally closed (NC)

Valve Type	[in.]		[mm]	
	Connections	Code no.	Connections	Code no.
EVUL 1	1/4	032F8200	6 mm	032F8227
EVUL 2	1/4	032F8201	6 mm	032F8228
EVUL 3	1/4	032F8202	6 mm	032F8229
	3/8	032F8203	10 mm	032F8230
EVUL 4	1/4	032F8204	6 mm	032F8231
	3/8	032F8205	10 mm	032F8232
	1/2	032F8206	12 mm	032F8233
EVUL 5	3/8	032F8207	10 mm	032F8234
	1/2	032F8208	12 mm	032F8235
EVUL 6	3/8	032F8209	10 mm	032F8236
	1/2	032F8210	12 mm	032F8237
EVUL 8	1/2	032F8211	12 mm	032F8238

Ordering Coils

DIN spade connection



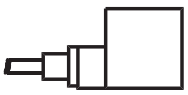
Alternating current a.c.

Type	Voltage	Frequency	Code no.		Power consumption
	[V]	[Hz]	Industrial pack with DIN plug [1] IP65	single pack	
EVUL	24	50 / 60	—	042N7608	Holding: 6 W 12 VA In rush: 26 VA
	230		—	042N7601	
	240		—	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.

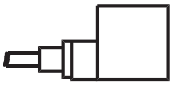
Cable connection



Alternating current a.c.

Type	Voltage	Frequency	Code no.		Power consumption
	[V]	[Hz]	Industrial pack with 1 m cable IP67	single pack	
EVUL	115	50 / 60	—	042N7662	Holding: 6 W 12 VA In rush: 26 VA
	230		042N8651	042N7651	
	240		042N8652	—	

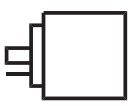
Cable connection



Direct current d.c.

Type	Voltage	Code no.		Power consumption
	[V]	Industrial pack with 1 m cable IP67	single pack	
EVUL	12	042N8696	042N7696	14 W
	24	042N8697	042N7697	

DIN spade connection



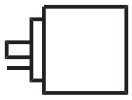
Direct current d.c.

Type	Voltage	Code no.		Power consumption
	[V]	Industrial pack with DIN spade IP00	single pack	
EVUL	12	042N8686	—	14 W
	24	042N8687	042N7687	

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

Ordering Coils
(continued)

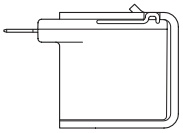
0.25 in. US spade connection



Alternating current a.c.

Type	Voltage [V]	Frequency [Hz]	Code no. Industrial pack with US DIN spade IP00	Code no. single pack	Power consumption
EVUL	208 – 240	50 / 60	**042N8201**	—	Holding: 7 W 14 VA In rush: 28 VA
	24		**042N8203**	—	

0.25 in. US spade connections



Alternating current a.c.

Valve Type	Voltage [V]	Frequency [Hz]	Code no. Industrial pack 40-off	Code no. Single pack	Power consumption
EVUL	208 – 240	50/60	**042N8230**	**042N4230**	Holding: 8 W / 16 VA In rush: 32 VA
	110 – 120		**042N8233**	**042N4233**	
	24		**042N8236**		

Accessories

Part	Description	Code no.
	DIN plug	**042N0156**
	O-ring for sealing the coil. Industrial pack (50 pcs.) **NB: Valve body suppplied with O-ring**	**032F6115**

Capacity

Liquid capacity Q_e [kW] SI Units

Type	K_v	Pressure drop across valve Δp [bar]				
		0.1	0.2	0.3	0.4	0.5
						R22
EVUL 1	0.10	1.6	2.3	2.9	3.3	3.7
EVUL 2	0.20	3.3	4.7	5.7	6.6	7.4
EVUL 3	0.30	4.9	7.0	8.6	9.9	11.0
EVUL 4	0.50	8.2	11.6	14.3	16.5	18.4
EVUL 5	0.65	10.7	15.1	18.5	21.4	23.9
EVUL 6	0.75	12.3	17.5	21.4	24.7	27.6
EVUL 8	0.90	14.8	20.9	25.7	29.6	33.1
						R134a
EVUL 1	0.10	1.52	2.15	2.63	3.04	3.40
EVUL 2	0.20	3.04	4.30	5.27	6.08	6.80
EVUL 3	0.30	4.56	6.45	7.90	9.12	10.20
EVUL 4	0.50	7.60	10.75	13.17	15.20	17.00
EVUL 5	0.65	9.88	13.98	17.12	19.76	22.10
EVUL 6	0.75	11.40	16.13	19.75	22.81	25.50
EVUL 8	0.90	13.68	19.35	23.70	27.37	30.60
						R404A/R507
EVUL 1	0.10	1.1	1.6	1.9	2.2	2.5
EVUL 2	0.20	2.2	3.1	3.9	4.5	5.0
EVUL 3	0.30	3.3	4.7	5.8	6.7	7.5
EVUL 4	0.50	5.6	7.9	9.6	11.1	12.4
EVUL 5	0.65	7.2	10.2	12.5	14.5	16.2
EVUL 6	0.75	8.3	11.8	14.5	16.7	18.7
EVUL 8	0.90	10.0	14.2	17.3	20.0	22.4
						R407C
EVUL 1	0.10	1.6	2.2	2.7	3.1	3.5
EVUL 2	0.20	3.1	4.4	5.4	6.3	7.0
EVUL 3	0.30	4.7	6.7	8.1	9.4	10.5
EVUL 4	0.50	7.8	11.1	13.6	15.7	17.5
EVUL 5	0.65	10.2	14.4	17.6	20.4	22.8
EVUL 6	0.75	11.8	16.6	20.4	23.5	26.3
EVUL 8	0.90	14.1	20.0	24.4	28.2	31.5
						R410A
EVUL 1	0.10	1.6	2.3	2.8	3.2	3.6
EVUL 2	0.20	3.2	4.6	5.6	6.4	7.2
EVUL 3	0.30	4.8	6.8	8.4	9.7	10.8
EVUL 4	0.50	8.1	11.4	14.0	16.1	18.0
EVUL 5	0.65	10.5	14.8	18.1	20.9	23.4
EVUL 6	0.75	12.1	17.1	20.9	24.2	27.0
EVUL 8	0.90	14.5	20.5	25.1	29.0	32.4

Capacities are based on:
Liquid temperature: t_l = 25 °C ahead of valve,
Evaporating temperature: te= -10 °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 factors for liquid temperature t_v

t_v [°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
R404A/507	0.65	0.72	0.81	0.86	0.93	1.00	1.09	1.20	1.33	1.51	1.74
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]

SI Units **R22**

Type	K_v	Pressure drop Δp [bar]	Evaporating temperature t_e [°C]					
			-40	-30	-20	-10	0	10
EVUL 1	0.10	0.1	0.091	0.118	0.149	0.183	0.222	0.264
		0.15	0.108	0.142	0.180	0.222	0.270	0.322
		0.2	0.121	0.160	0.205	0.254	0.310	0.370
EVUL 2	0.20	0.1	0.183	0.236	0.297	0.366	0.443	0.528
		0.15	0.216	0.284	0.360	0.445	0.539	0.644
		0.2	0.241	0.321	0.410	0.509	0.619	0.741
EVUL 3	0.30	0.1	0.274	0.355	0.446	0.549	0.665	0.792
		0.15	0.324	0.426	0.539	0.667	0.809	0.966
		0.2	0.362	0.481	0.615	0.763	0.929	1.111
EVUL 4	0.50	0.1	0.456	0.591	0.744	0.916	1.108	1.321
		0.15	0.541	0.709	0.899	1.112	1.348	1.611
		0.2	0.603	0.802	1.025	1.272	1.548	1.852
EVUL 5	0.65	0.1	0.593	0.768	0.967	1.190	1.440	1.717
		0.15	0.703	0.922	1.169	1.445	1.753	2.094
		0.2	0.784	1.043	1.332	1.654	2.012	2.407
EVUL 6	0.75	0.1	0.684	0.887	1.116	1.373	1.661	1.981
		0.15	0.811	1.064	1.349	1.667	2.023	2.416
		0.2	0.904	1.204	1.537	1.909	2.321	2.778
EVUL 8	0.90	0.1	0.821	1.064	1.339	1.648	1.994	2.377
		0.15	0.973	1.277	1.618	2.001	2.427	2.899
		0.2	1.085	1.444	1.844	2.290	2.786	3.333

Correction factors

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.

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 liquid temperature t_v

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

Capacity
(continued)

Suction vapour capacity Q_e [kW]

SI Units **R134a**

Type	K_v	Pressure drop Δp [bar]	Evaporating temperature t_e [°C]					
			-40	-30	-20	-10	0	10
EVUL 1	0.10	0.1	0.056	0.078	0.104	0.134	0.169	0.208
		0.15	0.062	0.091	0.124	0.162	0.204	0.253
		0.2	0.065	0.100	0.139	0.183	0.233	0.290
EVUL 2	0.20	0.1	0.111	0.156	0.208	0.268	0.338	0.417
		0.15	0.125	0.182	0.248	0.323	0.409	0.507
		0.2	0.130	0.201	0.278	0.366	0.467	0.580
EVUL 3	0.30	0.1	0.167	0.234	0.312	0.402	0.506	0.625
		0.15	0.187	0.274	0.372	0.485	0.613	0.760
		0.2	0.196	0.301	0.417	0.550	0.700	0.871
EVUL 4	0.50	0.1	0.278	0.390	0.520	0.671	0.844	1.042
		0.15	0.312	0.456	0.620	0.808	1.022	1.267
		0.2	0.326	0.501	0.696	0.916	1.167	1.451
EVUL 5	0.65	0.1	0.361	0.507	0.676	0.872	1.097	1.355
		0.15	0.405	0.593	0.806	1.050	1.329	1.646
		0.2	0.424	0.652	0.905	1.191	1.517	1.886
EVUL 6	0.75	0.1	0.416	0.585	0.780	1.006	1.266	1.563
		0.15	0.468	0.684	0.930	1.211	1.533	1.900
		0.2	0.489	0.752	1.044	1.374	1.750	2.176
EVUL 8	0.90	0.1	0.500	0.702	0.936	1.207	1.519	1.876
		0.15	0.561	0.821	1.116	1.454	1.840	2.280
		0.2	0.587	0.902	1.252	1.649	2.100	2.612

Correction factors

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.

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 liquid temperature t_v

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
(continued)

Suction vapour capacity Q_e [kW] — SI Units **R404A/R507**

Type	K_v	Pressure drop Δp [bar]	Evaporating temperature t_e [°C]					
			-40	-30	-20	-10	0	10
EVUL 1	0.10	0.1	0.075	0.099	0.127	0.159	0.196	0.239
		0.15	0.089	0.119	0.154	0.194	0.239	0.291
		0.2	0.100	0.135	0.176	0.222	0.275	0.335
EVUL 2	0.20	0.1	0.150	0.198	0.254	0.319	0.393	0.477
		0.15	0.179	0.239	0.308	0.388	0.479	0.583
		0.2	0.201	0.271	0.352	0.444	0.550	0.670
EVUL 3	0.30	0.1	0.225	0.297	0.381	0.478	0.589	0.716
		0.15	0.268	0.358	0.462	0.581	0.718	0.874
		0.2	0.301	0.406	0.527	0.666	0.825	1.005
EVUL 4	0.50	0.1	0.375	0.495	0.635	0.797	0.982	1.194
		0.15	0.447	0.596	0.769	0.969	1.197	1.457
		0.2	0.502	0.677	0.879	1.110	1.375	1.676
EVUL 5	0.65	0.1	0.488	0.644	0.826	1.036	1.277	1.552
		0.15	0.582	0.775	1.000	1.260	1.556	1.893
		0.2	0.653	0.880	1.142	1.444	1.788	2.178
EVUL 6	0.75	0.1	0.563	0.743	0.953	1.195	1.474	1.790
		0.15	0.671	0.895	1.154	1.453	1.796	2.185
		0.2	0.754	1.016	1.318	1.666	2.063	2.514
EVUL 8	0.90	0.1	0.675	0.891	1.143	1.434	1.768	2.148
		0.15	0.805	1.074	1.385	1.744	2.155	2.622
		0.2	0.904	1.219	1.582	1.999	2.475	3.016

Correction factors

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.

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 liquid temperature t_v

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

Capacity
(continued)

Suction vapour capacity Q_e [kW]

SI Units **R407C**

Type	K_v	Pressure drop Δp [bar]	Evaporating temperature t_e [°C]					
			-40	-30	-20	-10	0	10
EVUL 1	0.10	0.1	0.077	0.104	0.134	0.170	0.210	0.255
		0.15	0.090	0.124	0.162	0.206	0.255	0.311
		0.2	0.100	0.139	0.184	0.235	0.293	0.357
EVUL 2	0.20	0.1	0.154	0.207	0.269	0.339	0.419	0.510
		0.15	0.181	0.248	0.324	0.411	0.510	0.622
		0.2	0.199	0.279	0.368	0.470	0.585	0.715
EVUL 3	0.30	0.1	0.231	0.311	0.403	0.509	0.629	0.765
		0.15	0.271	0.372	0.486	0.617	0.765	0.933
		0.2	0.299	0.418	0.553	0.705	0.878	1.072
EVUL 4	0.50	0.1	0.386	0.518	0.672	0.848	1.048	1.275
		0.15	0.452	0.619	0.810	1.028	1.275	1.555
		0.2	0.499	0.697	0.921	1.175	1.463	1.787
EVUL 5	0.65	0.1	0.501	0.674	0.873	1.102	1.363	1.658
		0.15	0.588	0.805	1.053	1.336	1.658	2.021
		0.2	0.648	0.906	1.197	1.528	1.901	2.323
EVUL 6	0.75	0.1	0.579	0.778	1.008	1.272	1.573	1.913
		0.15	0.679	0.929	1.215	1.542	1.913	2.332
		0.2	0.748	1.045	1.381	1.763	2.194	2.680
EVUL 8	0.90	0.1	0.694	0.933	1.209	1.526	1.887	2.296
		0.15	0.814	1.115	1.458	1.850	2.296	2.798
		0.2	0.897	1.254	1.658	2.115	2.633	3.216

Correction factors

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.

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 liquid temperature t_v

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

Capacity
(continued)

Suction vapour capacity Q_e [kW] — SI Units **R410A**

Type	K_v	Pressure drop Δp [bar]	Evaporating temperature t_e [°C]					
			-40	-30	-20	-10	0	10
EVUL 1	0.10	0.1	0.117	0.150	0.187	0.229	0.276	0.329
		0.15	0.141	0.182	0.228	0.279	0.337	0.402
		0.2	0.160	0.207	0.261	0.321	0.388	0.463
EVUL 2	0.20	0.1	0.235	0.300	0.375	0.459	0.553	0.657
		0.15	0.282	0.363	0.455	0.559	0.674	0.803
		0.2	0.320	0.415	0.522	0.642	0.776	0.925
EVUL 3	0.30	0.1	0.352	0.450	0.562	0.688	0.829	0.986
		0.15	0.423	0.545	0.683	0.838	1.012	1.205
		0.2	0.480	0.622	0.783	0.963	1.164	1.388
EVUL 4	0.50	0.1	0.587	0.750	0.936	1.146	1.382	1.644
		0.15	0.706	0.909	1.138	1.397	1.686	2.008
		0.2	0.799	1.037	1.305	1.605	1.940	2.313
EVUL 5	0.65	0.1	0.763	0.976	1.217	1.490	1.796	2.137
		0.15	0.917	1.181	1.480	1.816	2.192	2.610
		0.2	1.039	1.348	1.696	2.086	2.522	3.007
EVUL 6	0.75	0.1	0.880	1.126	1.405	1.720	2.072	2.465
		0.15	1.059	1.363	1.708	2.096	2.529	3.012
		0.2	1.199	1.555	1.957	2.407	2.910	3.469
EVUL 8	0.90	0.1	1.056	1.351	1.686	2.064	2.487	2.958
		0.15	1.270	1.635	2.049	2.515	3.035	3.614
		0.2	1.439	1.866	2.348	2.889	3.492	4.163

Correction factors

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.

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 liquid temperature t_v

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]

SI Units **R22**

Type	K_v	Pressure drop across valve Δp [bar]	[1] Condensing temp. t_c [°C]				
			20	30	40	50	60
EVUL 1	0.10	0.1	0.29	0.31	0.33	0.34	0.34
		0.2	0.41	0.44	0.46	0.48	0.48
		0.4	0.57	0.61	0.65	0.67	0.68
		0.8	0.79	0.85	0.90	0.94	0.95
		1.6	1.05	1.15	1.23	1.29	1.32
EVUL 2	0.20	0.1	0.58	0.62	0.65	0.68	0.69
		0.2	0.82	0.88	0.92	0.95	0.97
		0.4	1.14	1.23	1.29	1.34	1.36
		0.8	1.57	1.70	1.80	1.87	1.91
		1.6	2.10	2.30	2.46	2.58	2.65
EVUL 3	0.30	0.1	0.88	0.93	0.98	1.01	1.03
		0.2	1.23	1.31	1.38	1.43	1.45
		0.4	1.72	1.84	1.94	2.01	2.04
		0.8	2.36	2.55	2.70	2.81	2.86
		1.6	3.14	3.45	3.70	3.88	3.97
EVUL 4	0.50	0.1	1.46	1.56	1.63	1.69	1.71
		0.2	2.05	2.19	2.30	2.38	2.42
		0.4	2.86	3.07	3.23	3.35	3.40
		0.8	3.94	4.25	4.50	4.68	4.77
		1.6	5.24	5.75	6.16	6.46	6.62
EVUL 5	0.65	0.1	1.90	2.02	2.12	2.19	2.23
		0.2	2.67	2.85	2.99	3.09	3.14
		0.4	3.72	3.99	4.20	4.35	4.43
		0.8	5.12	5.52	5.85	6.08	6.20
		1.6	6.81	7.48	8.01	8.40	8.61
EVUL 6	0.75	0.1	2.19	2.33	2.45	2.53	2.57
		0.2	3.08	3.28	3.45	3.57	3.63
		0.4	4.29	4.60	4.85	5.02	5.11
		0.8	5.90	6.37	6.75	7.02	7.16
		1.6	7.86	8.63	9.24	9.69	9.94
EVUL 8	0.90	0.1	2.63	2.80	2.94	3.04	3.08
		0.2	3.69	3.94	4.14	4.29	4.35
		0.4	5.15	5.52	5.82	6.03	6.13
		0.8	7.08	7.65	8.10	8.42	8.59
		1.6	9.43	10.35	11.09	11.63	11.92

[1] Bubble point

Evaporating temp. t_e = -10 °C
Hot gas temp. $t_h = t_c + 25$ K
Subcooling Δt_{sub} = 4 K

Correction factors

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 factortable below.

When sizing valves, the table value must be multiplied by a correction factor depending onevaporating temperature te.

Correction factors for evaporating temperature t_e

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

Capacity
(continued)

Hot gas capacity Q_h [kW]

SI Units **R134a**

Type	K_v	Pressure drop across valve Δp [bar]	[1] Condensing temp. t_c [°C]				
			20	30	40	50	60
EVUL 1	0.10	0.1	0.23	0.25	0.26	0.26	0.26
		0.2	0.32	0.34	0.36	0.37	0.37
		0.4	0.45	0.48	0.50	0.52	0.51
		0.8	0.60	0.65	0.69	0.71	0.72
		1.6	0.76	0.85	0.93	0.97	0.98
EVUL 2	0.20	0.1	0.46	0.49	0.51	0.52	0.52
		0.2	0.65	0.69	0.72	0.74	0.73
		0.4	0.89	0.96	1.01	1.03	1.03
		0.8	1.20	1.31	1.38	1.43	1.43
		1.6	1.51	1.71	1.85	1.94	1.96
EVUL 3	0.30	0.1	0.69	0.74	0.77	0.78	0.78
		0.2	0.97	1.03	1.08	1.10	1.10
		0.4	1.34	1.44	1.51	1.55	1.54
		0.8	1.80	1.96	2.08	2.14	2.15
		1.6	2.27	2.56	2.78	2.91	2.95
EVUL 4	0.50	0.1	1.16	1.23	1.28	1.31	1.30
		0.2	1.62	1.72	1.80	1.84	1.83
		0.4	2.23	2.40	2.51	2.58	2.57
		0.8	3.00	3.27	3.46	3.57	3.58
		1.6	3.78	4.27	4.63	4.85	4.91
EVUL 5	0.65	0.1	1.50	1.60	1.67	1.70	1.69
		0.2	2.10	2.24	2.34	2.39	2.38
		0.4	2.90	3.12	3.27	3.35	3.34
		0.8	3.90	4.25	4.50	4.64	4.66
		1.6	4.91	5.55	6.01	6.30	6.38
EVUL 6	0.75	0.1	1.74	1.84	1.92	1.96	1.95
		0.2	2.43	2.59	2.70	2.76	2.75
		0.4	3.35	3.59	3.77	3.86	3.86
		0.8	4.50	4.90	5.19	5.36	5.37
		1.6	5.67	6.40	6.94	7.27	7.37
EVUL 8	0.90	0.1	2.08	2.21	2.31	2.35	2.34
		0.2	2.91	3.10	3.24	3.31	3.30
		0.4	4.02	4.31	4.52	4.64	4.63
		0.8	5.40	5.88	6.23	6.43	6.45
		1.6	6.80	7.69	8.33	8.72	8.84

[1] Bubble point

Evaporating temp. t_e = -10 °C
Hot gas temp. $t_h = t_c + 25$ K
Subcooling Δt_{sub} = 4 K

Correction factors

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 factortable below.

When sizing valves, the table value must be multiplied by a correction factor depending onevaporating temperature te.

Correction factors for evaporating temperature t_e

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

Capacity
(continued)

Hot gas capacity Q_h [kW]

SI Units **R404A/R507**

Type	K_v	Pressure drop across valve Δp [bar]	[1] Condensing temp. t_c [°C]				
			20	30	40	50	60
EVUL 1	0.10	0.1	0.26	0.27	0.27	0.26	0.23
		0.2	0.37	0.38	0.38	0.36	0.32
		0.4	0.52	0.53	0.53	0.51	0.46
		0.8	0.72	0.74	0.74	0.71	0.64
		1.6	0.96	1.01	1.02	0.98	0.89
EVUL 2	0.20	0.1	0.53	0.54	0.53	0.51	0.46
		0.2	0.74	0.76	0.75	0.72	0.65
		0.4	1.04	1.06	1.06	1.02	0.91
		0.8	1.43	1.48	1.48	1.42	1.28
		1.6	1.93	2.01	2.03	1.97	1.79
EVUL 3	0.30	0.1	0.79	0.81	0.80	0.77	0.69
		0.2	1.11	1.14	1.13	1.08	0.97
		0.4	1.56	1.59	1.59	1.52	1.37
		0.8	2.15	2.22	2.22	2.13	1.93
		1.6	2.89	3.02	3.05	2.95	2.68
EVUL 4	0.50	0.1	1.32	1.35	1.34	1.28	1.15
		0.2	1.85	1.90	1.88	1.80	1.62
		0.4	2.59	2.66	2.65	2.54	2.29
		0.8	3.58	3.69	3.69	3.55	3.21
		1.6	4.81	5.03	5.08	4.92	4.47
EVUL 5	0.65	0.1	1.71	1.75	1.74	1.66	1.49
		0.2	2.41	2.46	2.45	2.34	2.11
		0.4	3.37	3.45	3.44	3.30	2.97
		0.8	4.66	4.80	4.80	4.62	4.17
		1.6	6.26	6.54	6.61	6.40	5.81
EVUL 6	0.75	0.1	1.98	2.02	2.00	1.92	1.72
		0.2	2.78	2.84	2.83	2.70	2.43
		0.4	3.89	3.99	3.97	3.81	3.43
		0.8	5.37	5.54	5.54	5.33	4.81
		1.6	7.22	7.55	7.62	7.38	6.70
EVUL 8	0.90	0.1	2.37	2.42	2.41	2.30	2.07
		0.2	3.34	3.41	3.39	3.25	2.92
		0.4	4.67	4.78	4.76	4.57	4.12
		0.8	6.45	6.65	6.65	6.40	5.78
		1.6	8.67	9.06	9.15	8.86	8.04

[1] Bubble point

Evaporating temp. t_e = -10 °C
Hot gas temp. $t_h = t_c + 25$ K
Subcooling Δt_{sub} = 4 K

Correction factors

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 t_e changes valve capacity; see correction factortable below.

When sizing valves, the table value must be multiplied by a correction factor depending onevaporating temperature te.

Correction factors for evaporating temperature t_e

t_l [°C]	-40	-30	-20	-10	0	10
R404A/R507	0.85	0.90	0.95	1.00	1.05	1.09

Capacity
(continued)

Hot gas capacity Q_h [kW]

SI Units **R407C**

Type	K_v	Pressure drop across valve Δp [bar]	[1] Condensing temp. t_c [°C]				
			20	30	40	50	60
EVUL 1	0.10	0.1	0.31	0.33	0.34	0.34	0.34
		0.2	0.44	0.46	0.48	0.49	0.48
		0.4	0.62	0.65	0.67	0.68	0.67
		0.8	0.85	0.90	0.94	0.96	0.94
		1.6	1.14	1.23	1.29	1.32	1.31
EVUL 2	0.20	0.1	0.63	0.66	0.68	0.69	0.68
		0.2	0.88	0.93	0.96	0.97	0.95
		0.4	1.23	1.30	1.35	1.37	1.34
		0.8	1.70	1.81	1.88	1.91	1.89
		1.6	2.28	2.46	2.59	2.65	2.62
EVUL 3	0.30	0.1	0.94	0.99	1.02	1.03	1.01
		0.2	1.32	1.39	1.44	1.46	1.43
		0.4	1.85	1.95	2.02	2.05	2.02
		0.8	2.55	2.71	2.82	2.87	2.83
		1.6	3.42	3.69	3.88	3.97	3.94
EVUL 4	0.50	0.1	1.57	1.65	1.70	1.72	1.69
		0.2	2.20	2.32	2.40	2.43	2.39
		0.4	3.08	3.25	3.37	3.41	3.36
		0.8	4.25	4.52	4.70	4.78	4.72
		1.6	5.70	6.15	6.46	6.62	6.56
EVUL 5	0.65	0.1	2.04	2.14	2.21	2.24	2.20
		0.2	2.87	3.02	3.12	3.15	3.10
		0.4	4.00	4.23	4.38	4.44	4.37
		0.8	5.52	5.88	6.11	6.21	6.13
		1.6	7.41	8.00	8.40	8.60	8.53
EVUL 6	0.75	0.1	2.35	2.47	2.55	2.58	2.53
		0.2	3.31	3.48	3.60	3.64	3.58
		0.4	4.62	4.88	5.06	5.12	5.04
		0.8	6.37	6.78	7.05	7.17	7.07
		1.6	8.55	9.23	9.70	9.92	9.84
EVUL 8	0.90	0.1	2.82	2.97	3.06	3.10	3.04
		0.2	3.97	4.18	4.32	4.37	4.29
		0.4	5.54	5.86	6.07	6.14	6.05
		0.8	7.65	8.13	8.46	8.60	8.49
		1.6	10.26	11.07	11.64	11.91	11.81

[1] Bubble point

Evaporating temp. t_e = -10 °C
Hot gas temp. $t_h = t_c + 25$ K
Subcooling Δt_{sub} = 4 K

Correction factors

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 t_e changes valve capacity; see correction factortable below.

When sizing valves, the table value must be multiplied by a correction factor depending onevaporating temperature te.

Correction factors for evaporating temperature t_e

t_l [°C]	-40	-30	-20	-10	0	10
R407C	0.92	0.95	0.98	1.00	1.02	1.04

Capacity
(continued)

Hot gas capacity Q_h [kW]

SI Units **R410A**

Type	K_v	Pressure drop across valve Δp [bar]	Condensing temp. t_c [°C]				
			20	30	40	50	60
EVUL 1	0.10	0.1	0.37	0.39	0.40	0.40	0.39
		0.2	0.52	0.54	0.56	0.56	0.54
		0.4	0.73	0.76	0.79	0.79	0.77
		0.8	1.01	1.07	1.11	1.12	1.08
		1.6	1.38	1.47	1.54	1.56	1.51
EVUL 2	0.20	0.1	0.73	0.77	0.79	0.80	0.77
		0.2	1.03	1.09	1.12	1.13	1.09
		0.4	1.45	1.53	1.58	1.59	1.54
		0.8	2.02	2.14	2.21	2.23	2.16
		1.6	2.76	2.95	3.07	3.11	3.02
EVUL 3	0.30	0.1	1.10	1.16	1.19	1.20	1.16
		0.2	1.55	1.63	1.68	1.69	1.63
		0.4	2.18	2.29	2.37	2.38	2.30
		0.8	3.03	3.20	3.32	3.35	3.24
		1.6	4.14	4.42	4.61	4.67	4.54
EVUL 4	0.50	0.1	1.84	1.93	1.99	1.99	1.93
		0.2	2.59	2.72	2.80	2.82	2.72
		0.4	3.63	3.82	3.94	3.97	3.84
		0.8	5.05	5.34	5.53	5.58	5.40
		1.6	6.90	7.37	7.68	7.78	7.56
EVUL 5	0.65	0.1	2.39	2.51	2.58	2.59	2.50
		0.2	3.36	3.53	3.64	3.66	3.54
		0.4	4.72	4.97	5.13	5.16	4.99
		0.8	6.56	6.94	7.19	7.25	7.02
		1.6	8.97	9.58	9.98	10.11	9.83
EVUL 6	0.75	0.1	2.75	2.89	2.98	2.99	2.89
		0.2	3.88	4.08	4.20	4.22	4.08
		0.4	5.44	5.73	5.92	5.95	5.76
		0.8	7.57	8.01	8.29	8.36	8.10
		1.6	10.35	11.05	11.51	11.67	11.34
EVUL 8	0.90	0.1	3.31	3.47	3.57	3.59	3.47
		0.2	4.66	4.89	5.04	5.07	4.90
		0.4	6.53	6.88	7.10	7.14	6.91
		0.8	9.09	9.61	9.95	10.04	9.72
		1.6	12.42	13.26	13.82	14.00	13.61

[1] Bubble point

Evaporating temp. t_e = -10 °C
Hot gas temp. $t_h = t_c + 25$ K
Subcooling Δt_{sub} = 4 K

Correction factors

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 t_e changes valve capacity; see correction factortable below.

When sizing valves, the table value must be multiplied by a correction factor depending onevaporating temperature te.

Correction factors for evaporating temperature t_e

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

Capacity

Liquid capacity Q_e [TR] US Units

Type	C_v	Pressure drop across valve Δp [psi]						
		1	2	3	4	5	6	7
R22								
EVUL 1	0.12	0.36	0.50	0.62	0.71	0.80	0.87	0.94
EVUL 2	0.23	0.71	1.01	1.23	1.42	1.59	1.74	1.88
EVUL 3	0.35	1.07	1.51	1.85	2.13	2.39	2.61	2.82
EVUL 4	0.58	1.78	2.51	3.08	3.56	3.98	4.36	4.70
EVUL 5	0.75	2.31	3.27	4.00	4.62	5.17	5.66	6.12
EVUL 6	0.87	2.67	3.77	4.62	5.33	5.96	6.53	7.06
EVUL 8	1.04	3.20	4.53	5.54	6.40	7.16	7.84	8.47
R134a								
EVUL 1	0.12	0.33	0.47	0.57	0.66	0.74	0.81	0.87
EVUL 2	0.23	0.66	0.93	1.14	1.32	1.47	1.61	1.74
EVUL 3	0.35	0.99	1.40	1.71	1.97	2.21	2.42	2.61
EVUL 4	0.58	1.64	2.33	2.85	3.29	3.68	4.03	4.35
EVUL 5	0.75	2.14	3.02	3.70	4.27	4.78	5.24	5.66
EVUL 6	0.87	2.47	3.49	4.27	4.93	5.51	6.04	6.53
EVUL 8	1.04	2.96	4.19	5.13	5.92	6.62	7.25	7.83
R404A/R507								
EVUL 1	0.12	0.2	0.3	0.4	0.5	0.5	0.6	0.6
EVUL 2	0.23	0.5	0.6	0.8	0.9	1.0	1.1	1.2
EVUL 3	0.35	0.7	1.0	1.2	1.4	1.5	1.7	1.8
EVUL 4	0.58	1.1	1.6	2.0	2.3	2.5	2.8	3.0
EVUL 5	0.75	1.5	2.1	2.6	3.0	3.3	3.6	3.9
EVUL 6	0.87	1.7	2.4	3.0	3.4	3.8	4.2	4.5
EVUL 8	1.04	2.1	2.9	3.6	4.1	4.6	5.0	5.4
R407C								
EVUL 1	0.12	0.3	0.5	0.6	0.7	0.7	0.8	0.9
EVUL 2	0.23	0.7	0.9	1.2	1.3	1.5	1.6	1.8
EVUL 3	0.35	1.0	1.4	1.7	2.0	2.2	2.4	2.6
EVUL 4	0.58	1.7	2.4	2.9	3.3	3.7	4.1	4.4
EVUL 5	0.75	2.2	3.1	3.7	4.3	4.8	5.3	5.7
EVUL 6	0.87	2.5	3.5	4.3	5.0	5.6	6.1	6.6
EVUL 8	1.04	3.0	4.2	5.2	6.0	6.7	7.3	7.9
R410A								
EVUL 1	0.12	0.3	0.5	0.6	0.7	0.7	0.8	0.9
EVUL 2	0.23	0.7	0.9	1.1	1.3	1.5	1.6	1.8
EVUL 3	0.35	1.0	1.4	1.7	2.0	2.2	2.4	2.6
EVUL 4	0.58	1.7	2.3	2.9	3.3	3.7	4.1	4.4
EVUL 5	0.75	2.2	3.0	3.7	4.3	4.8	5.3	5.7
EVUL 6	0.87	2.5	3.5	4.3	5.0	5.6	6.1	6.6
EVUL 8	1.04	3.0	4.2	5.2	6.0	6.7	7.3	7.9

Liquid temperature: t_l = 100 °F
Evaporating temperature: t_e = 40 °F
Superheat temperature: (t_e+10 °F) = 50 °F

Correction factors

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity

Suction vapour capacity Q_e [TR]

US Units **R22**

Type	C_v	Pressure drop Δp [psi]	Evaporating temperature t_e [°F]							
			-40	-20	0	10	20	30	40	50
EVUL 1	0.12	1	0.020	0.026	0.033	0.038	0.042	0.047	0.052	0.057
		2	0.027	0.036	0.047	0.052	0.059	0.065	0.072	0.080
		3	0.031	0.043	0.056	0.063	0.071	0.079	0.088	0.097
EVUL 2	0.23	1	0.039	0.052	0.067	0.075	0.084	0.093	0.103	0.114
		2	0.053	0.072	0.093	0.105	0.117	0.131	0.145	0.160
		3	0.062	0.086	0.112	0.127	0.142	0.159	0.176	0.194
EVUL 3	0.35	1	0.059	0.078	0.100	0.113	0.126	0.140	0.155	0.170
		2	0.080	0.108	0.140	0.157	0.176	0.196	0.217	0.240
		3	0.093	0.129	0.168	0.190	0.214	0.238	0.264	0.292
EVUL 4	0.58	1	0.099	0.130	0.167	0.188	0.210	0.233	0.258	0.284
		2	0.133	0.180	0.233	0.262	0.294	0.327	0.362	0.399
		3	0.156	0.214	0.281	0.317	0.356	0.397	0.440	0.486
EVUL 5	0.75	1	0.128	0.170	0.218	0.244	0.273	0.303	0.335	0.369
		2	0.173	0.234	0.303	0.341	0.382	0.425	0.471	0.519
		3	0.202	0.279	0.365	0.412	0.463	0.516	0.572	0.632
EVUL 6	0.87	1	0.148	0.196	0.251	0.282	0.315	0.350	0.387	0.426
		2	0.200	0.270	0.350	0.394	0.441	0.490	0.543	0.599
		3	0.233	0.321	0.421	0.476	0.534	0.595	0.660	0.729
EVUL 8	1.04	1	0.177	0.235	0.301	0.338	0.378	0.420	0.464	0.511
		2	0.240	0.324	0.420	0.472	0.529	0.588	0.652	0.719
		3	0.280	0.386	0.505	0.571	0.641	0.714	0.793	0.875

Correction factors

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

Capacities are based on liquid temperature t_l = 100 °F ahead of the expansion valve and superheat t_s = 7 °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity
(continued)

Suction vapour capacity Q_e [TR] — US Units **R134a**

Type	C_v	Pressure drop Δp [psi]	Evaporating temperature t_e [°F]							
			-40	-20	0	10	20	30	40	50
EVUL 1	0.12	1	0.012	0.017	0.023	0.027	0.031	0.035	0.039	0.044
		2	0.015	0.023	0.032	0.037	0.042	0.048	0.055	0.062
		3	0.016	0.026	0.038	0.044	0.051	0.058	0.066	0.075
EVUL 2	0.23	1	0.024	0.034	0.046	0.053	0.061	0.069	0.078	0.088
		2	0.030	0.045	0.063	0.074	0.085	0.096	0.109	0.123
		3	0.032	0.052	0.075	0.088	0.101	0.116	0.132	0.149
EVUL 3	0.35	1	0.036	0.051	0.070	0.080	0.092	0.104	0.117	0.132
		2	0.045	0.068	0.095	0.110	0.127	0.145	0.164	0.185
		3	0.048	0.078	0.113	0.132	0.152	0.174	0.198	0.224
EVUL 4	0.58	1	0.059	0.085	0.116	0.134	0.153	0.173	0.196	0.220
		2	0.075	0.114	0.159	0.184	0.211	0.241	0.273	0.308
		3	0.080	0.131	0.188	0.219	0.254	0.290	0.330	0.373
EVUL 5	0.75	1	0.077	0.111	0.151	0.174	0.198	0.225	0.254	0.286
		2	0.098	0.148	0.206	0.239	0.275	0.313	0.355	0.400
		3	0.104	0.170	0.244	0.285	0.330	0.378	0.429	0.484
EVUL 6	0.87	1	0.089	0.128	0.174	0.200	0.229	0.260	0.294	0.330
		2	0.113	0.170	0.238	0.276	0.317	0.362	0.410	0.461
		3	0.120	0.196	0.281	0.329	0.380	0.436	0.495	0.559
EVUL 8	1.04	1	0.107	0.153	0.209	0.240	0.275	0.312	0.352	0.396
		2	0.135	0.205	0.286	0.331	0.381	0.434	0.492	0.554
		3	0.144	0.235	0.338	0.395	0.456	0.523	0.594	0.671

Correction factors

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

Capacities are based on liquid temperature t_l = 100 °F ahead of the expansion valve and superheat t_s = 7 °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity
(continued)

Suction vapour capacity Q_e [TR]

US Units R404A/R507

Type	C_v	Pressure drop Δp [psi]	Evaporating temperature t_e [°F]							
			-40	-20	0	10	20	30	40	50
EVUL 1	0.12	1	0.015	0.020	0.026	0.030	0.034	0.038	0.043	0.048
		2	0.020	0.028	0.037	0.042	0.048	0.054	0.060	0.068
		3	0.023	0.033	0.045	0.051	0.058	0.065	0.074	0.082
EVUL 2	0.23	1	0.029	0.040	0.053	0.060	0.068	0.077	0.086	0.096
		2	0.040	0.055	0.074	0.084	0.096	0.108	0.121	0.135
		3	0.047	0.066	0.089	0.102	0.116	0.131	0.147	0.165
EVUL 3	0.35	1	0.044	0.060	0.079	0.090	0.102	0.115	0.129	0.144
		2	0.060	0.083	0.111	0.126	0.143	0.162	0.181	0.203
		3	0.070	0.099	0.134	0.153	0.174	0.196	0.221	0.247
EVUL 4	0.58	1	0.073	0.100	0.132	0.151	0.170	0.192	0.215	0.240
		2	0.100	0.138	0.184	0.211	0.239	0.269	0.302	0.338
		3	0.117	0.166	0.223	0.255	0.290	0.327	0.368	0.411
EVUL 5	0.75	1	0.095	0.130	0.172	0.196	0.222	0.249	0.280	0.312
		2	0.130	0.180	0.240	0.274	0.310	0.350	0.393	0.439
		3	0.153	0.215	0.290	0.332	0.377	0.426	0.478	0.535
EVUL 6	0.87	1	0.110	0.150	0.198	0.226	0.256	0.288	0.323	0.360
		2	0.149	0.207	0.277	0.316	0.358	0.404	0.453	0.506
		3	0.176	0.248	0.334	0.383	0.435	0.491	0.552	0.617
EVUL 8	1.04	1	0.132	0.180	0.238	0.271	0.307	0.345	0.387	0.432
		2	0.179	0.249	0.332	0.379	0.430	0.485	0.544	0.608
		3	0.211	0.298	0.401	0.459	0.522	0.589	0.662	0.741

Correction factors

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

Capacities are based on liquid temperature t_l = 100 °F ahead of the expansion valve and superheat t_s = 7 °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity
(continued)

Suction vapour capacity Q_e [TR]

US Units **R407C**

Type	C_v	Pressure drop Δp [psi]	Evaporating temperature t_e [°F]							
			-40	-20	0	10	20	30	40	50
EVUL 1	0.12	1	0.016	0.022	0.030	0.034	0.038	0.043	0.048	0.054
		2	0.022	0.031	0.041	0.047	0.053	0.060	0.067	0.075
		3	0.025	0.036	0.049	0.057	0.065	0.073	0.082	0.092
EVUL 2	0.23	1	0.032	0.045	0.059	0.067	0.076	0.086	0.096	0.107
		2	0.043	0.061	0.082	0.094	0.107	0.120	0.135	0.151
		3	0.050	0.072	0.099	0.113	0.129	0.146	0.164	0.183
EVUL 3	0.35	1	0.049	0.067	0.089	0.101	0.115	0.129	0.144	0.161
		2	0.065	0.092	0.123	0.141	0.160	0.180	0.202	0.226
		3	0.075	0.109	0.148	0.170	0.194	0.219	0.246	0.275
EVUL 4	0.58	1	0.081	0.112	0.148	0.169	0.191	0.215	0.240	0.268
		2	0.108	0.153	0.206	0.235	0.267	0.301	0.337	0.376
		3	0.124	0.181	0.247	0.283	0.323	0.365	0.410	0.458
EVUL 5	0.75	1	0.105	0.145	0.193	0.219	0.248	0.279	0.313	0.348
		2	0.141	0.199	0.267	0.305	0.347	0.391	0.438	0.489
		3	0.161	0.236	0.321	0.368	0.419	0.474	0.533	0.595
EVUL 6	0.87	1	0.122	0.168	0.222	0.253	0.286	0.322	0.361	0.402
		2	0.162	0.230	0.308	0.352	0.400	0.451	0.506	0.565
		3	0.186	0.272	0.370	0.425	0.484	0.547	0.615	0.687
EVUL 8	1.04	1	0.146	0.201	0.267	0.304	0.344	0.387	0.433	0.482
		2	0.195	0.275	0.370	0.423	0.480	0.541	0.607	0.678
		3	0.224	0.326	0.444	0.510	0.581	0.657	0.738	0.824

Correction factors

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

Capacities are based on liquid temperature t_l = 100 °F ahead of the expansion valve and superheat t_s = 7 °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Correction factors for liquid temperature t_l

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Capacity
(continued)

Suction vapour capacity Q_e [TR]

US Units **R410A**

Type	C_v	Pressure drop Δp [psi]	Evaporating temperature t_e [°F]							
			-40	-20	0	10	20	30	40	50
EVUL 1	0.12	1	0.024	0.032	0.041	0.046	0.051	0.056	0.062	0.068
		2	0.033	0.044	0.057	0.064	0.071	0.079	0.087	0.096
		3	0.040	0.054	0.069	0.078	0.087	0.096	0.107	0.118
EVUL 2	0.23	1	0.049	0.064	0.081	0.091	0.101	0.112	0.124	0.137
		2	0.067	0.089	0.114	0.128	0.143	0.158	0.175	0.193
		3	0.080	0.107	0.138	0.155	0.173	0.193	0.213	0.235
EVUL 3	0.35	1	0.073	0.096	0.122	0.137	0.152	0.169	0.186	0.205
		2	0.100	0.133	0.171	0.192	0.214	0.237	0.262	0.289
		3	0.120	0.161	0.207	0.233	0.260	0.289	0.320	0.353
EVUL 4	0.58	1	0.121	0.159	0.203	0.228	0.254	0.281	0.311	0.342
		2	0.167	0.222	0.285	0.319	0.356	0.396	0.437	0.482
		3	0.200	0.268	0.345	0.388	0.434	0.482	0.534	0.588
EVUL 5	0.75	1	0.158	0.207	0.264	0.296	0.330	0.366	0.404	0.444
		2	0.218	0.288	0.370	0.415	0.463	0.514	0.569	0.626
		3	0.260	0.348	0.449	0.505	0.564	0.627	0.694	0.764
EVUL 6	0.87	1	0.182	0.239	0.305	0.341	0.380	0.422	0.466	0.513
		2	0.251	0.333	0.427	0.479	0.535	0.594	0.656	0.723
		3	0.299	0.401	0.518	0.582	0.651	0.723	0.800	0.882
EVUL 8	1.04	1	0.218	0.287	0.366	0.410	0.456	0.506	0.559	0.615
		2	0.301	0.399	0.512	0.575	0.641	0.712	0.787	0.867
		3	0.359	0.482	0.622	0.699	0.781	0.868	0.960	1.058

Correction factors

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

Capacities are based on liquid temperature t_l = 100 °F ahead of the expansion valve and superheat t_s = 7 °F. For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity

Hot gas capacity Q_h [TR] — US Units **R22**

Type	C_v	Pressure drop across valve Δp [bar]	Condensing temp. t_c [°F]				
			70	90	100	120	140
EVUL 1	0.12	2	0.090	0.095	0.097	0.099	0.099
		5	0.140	0.149	0.152	0.156	0.156
		10	0.194	0.207	0.211	0.218	0.219
		15	0.231	0.248	0.255	0.264	0.266
		20	0.260	0.281	0.290	0.301	0.304
		25	0.283	0.308	0.318	0.332	0.336
EVUL 2	0.23	2	0.180	0.190	0.194	0.198	0.199
		5	0.281	0.297	0.304	0.312	0.312
		10	0.388	0.413	0.423	0.436	0.438
		15	0.463	0.497	0.510	0.527	0.531
		20	0.520	0.563	0.579	0.601	0.608
		25	0.566	0.617	0.637	0.664	0.673
EVUL 3	0.35	2	0.270	0.285	0.291	0.298	0.298
		5	0.421	0.446	0.456	0.467	0.468
		10	0.582	0.620	0.634	0.653	0.656
		15	0.694	0.745	0.765	0.791	0.797
		20	0.780	0.844	0.869	0.902	0.911
		25	0.848	0.925	0.955	0.996	1.009
EVUL 4	0.58	2	0.451	0.475	0.485	0.496	0.496
		5	0.702	0.744	0.759	0.779	0.781
		10	0.969	1.033	1.057	1.089	1.094
		15	1.157	1.242	1.275	1.318	1.328
		20	1.301	1.407	1.448	1.503	1.519
		25	1.414	1.542	1.592	1.659	1.682
EVUL 5	0.75	2	0.586	0.618	0.630	0.645	0.645
		5	0.913	0.967	0.987	1.013	1.015
		10	1.260	1.343	1.375	1.415	1.422
		15	1.504	1.615	1.657	1.713	1.726
		20	1.691	1.829	1.882	1.954	1.975
		25	1.838	2.005	2.069	2.157	2.187
EVUL 6	0.87	2	0.676	0.713	0.727	0.744	0.745
		5	1.054	1.116	1.139	1.169	1.171
		10	1.454	1.550	1.586	1.633	1.641
		15	1.736	1.863	1.912	1.976	1.992
		20	1.951	2.111	2.172	2.254	2.278
		25	2.121	2.314	2.388	2.489	2.523
EVUL 8	1.04	2	0.811	0.856	0.872	0.893	0.894
		5	1.264	1.339	1.367	1.402	1.405
		10	1.745	1.860	1.903	1.960	1.969
		15	2.083	2.236	2.294	2.372	2.390
		20	2.341	2.533	2.606	2.705	2.734
		25	2.545	2.776	2.865	2.987	3.028

Evaporating temp. t_e = 40 °F
Hot gas temp. $t_h = t_c + 40$ °F
Subcooling Δt_u = 10 °F

Correction factors

The table values refer to hot gas capacity and are given as a function of condensing temperature t_c and pressure drop Δp across the valve.

Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature ($t_h = t_c + 40$ °F).
For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

t_l [°F]	-40	-20	0	20	40	50
Factor	1.18	1.14	1.09	1.04	1	0.97

Capacity
(continued)

Hot gas capacity Q_h [TR]

US Units **R134a**

Type	C_v	Pressure drop across valve Δp [bar]	Condensing temp. t_c [°F]				
			70	90	100	120	140
EVUL 1	0.12	2	0.073	0.077	0.079	0.080	0.079
		5	0.113	0.120	0.122	0.125	0.123
		10	0.153	0.165	0.169	0.173	0.172
		15	0.179	0.195	0.201	0.208	0.208
		20	0.196	0.218	0.226	0.236	0.236
		25	0.208	0.235	0.245	0.258	0.260
EVUL 2	0.23	2	0.146	0.155	0.157	0.160	0.158
		5	0.226	0.240	0.245	0.250	0.247
		10	0.306	0.329	0.338	0.347	0.344
		15	0.358	0.391	0.403	0.416	0.416
		20	0.393	0.436	0.452	0.471	0.473
		25	0.416	0.471	0.491	0.516	0.521
EVUL 3	0.35	2	0.220	0.232	0.236	0.240	0.236
		5	0.339	0.360	0.367	0.375	0.370
		10	0.459	0.494	0.506	0.520	0.516
		15	0.537	0.586	0.604	0.624	0.623
		20	0.589	0.655	0.678	0.707	0.709
		25	0.624	0.706	0.736	0.774	0.781
EVUL 4	0.58	2	0.366	0.386	0.393	0.399	0.394
		5	0.565	0.600	0.612	0.624	0.617
		10	0.765	0.823	0.844	0.866	0.861
		15	0.894	0.977	1.006	1.041	1.039
		20	0.982	1.091	1.130	1.178	1.182
		25	1.040	1.177	1.227	1.290	1.302
EVUL 5	0.75	2	0.476	0.502	0.511	0.519	0.512
		5	0.734	0.780	0.796	0.812	0.803
		10	0.994	1.071	1.097	1.126	1.119
		15	1.162	1.270	1.308	1.353	1.351
		20	1.277	1.418	1.469	1.531	1.537
		25	1.352	1.530	1.595	1.677	1.692
EVUL 6	0.87	2	0.549	0.579	0.590	0.599	0.591
		5	0.847	0.900	0.919	0.937	0.926
		10	1.147	1.235	1.266	1.300	1.291
		15	1.341	1.465	1.510	1.561	1.559
		20	1.473	1.636	1.695	1.767	1.773
		25	1.560	1.766	1.841	1.935	1.952
EVUL 8	1.04	2	0.659	0.695	0.708	0.719	0.709
		5	1.017	1.080	1.102	1.124	1.111
		10	1.377	1.482	1.519	1.560	1.549
		15	1.610	1.758	1.812	1.873	1.870
		20	1.768	1.964	2.034	2.120	2.128
		25	1.872	2.119	2.209	2.322	2.343

Evaporating temp. t_e = 40 °F
Hot gas temp. $t_h = t_c + 40$ °F
Subcooling Δt_u = 10 °F

Correction factors

The table values refer to hot gas capacity and are given as a function of condensing temperature t_c and pressure drop Δp across the valve.

Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature ($t_h = t_c + 40$ °F).
For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

t_l [°F]	-40	-20	0	20	40	50
Factor	1.18	1.14	1.09	1.04	1	0.97

Capacity
(continued)

Hot gas capacity Q_h [TR]

US Units **R404A**

Type	C_v	Pressure drop across valve Δp [bar]	Condensing temp. t_c [°F]				
			70	90	100	120	140
EVUL 1	0.12	2	0.082	0.083	0.082	0.078	0.069
		5	0.128	0.129	0.128	0.122	0.109
		10	0.178	0.180	0.179	0.171	0.153
		15	0.213	0.217	0.216	0.207	0.186
		20	0.241	0.247	0.246	0.237	0.213
		25	0.263	0.271	0.271	0.262	0.236
EVUL 2	0.23	2	0.164	0.165	0.164	0.155	0.139
		5	0.257	0.259	0.257	0.244	0.218
		10	0.356	0.360	0.358	0.342	0.306
		15	0.426	0.434	0.432	0.414	0.372
		20	0.481	0.493	0.492	0.473	0.426
		25	0.525	0.542	0.542	0.523	0.472
EVUL 3	0.35	2	0.247	0.248	0.245	0.233	0.208
		5	0.385	0.388	0.385	0.366	0.327
		10	0.533	0.541	0.537	0.512	0.459
		15	0.639	0.652	0.648	0.621	0.558
		20	0.722	0.740	0.738	0.710	0.639
		25	0.788	0.814	0.814	0.785	0.708
EVUL 4	0.58	2	0.411	0.413	0.409	0.388	0.347
		5	0.642	0.647	0.641	0.610	0.546
		10	0.889	0.901	0.895	0.854	0.765
		15	1.065	1.086	1.081	1.035	0.930
		20	1.203	1.233	1.231	1.183	1.065
		25	1.313	1.356	1.356	1.308	1.181
EVUL 5	0.75	2	0.535	0.537	0.532	0.505	0.451
		5	0.835	0.841	0.834	0.793	0.709
		10	1.156	1.171	1.163	1.110	0.995
		15	1.385	1.412	1.405	1.346	1.209
		20	1.563	1.603	1.600	1.537	1.384
		25	1.707	1.763	1.763	1.700	1.535
EVUL 6	0.87	2	0.617	0.620	0.613	0.582	0.520
		5	0.963	0.971	0.962	0.915	0.818
		10	1.334	1.351	1.342	1.281	1.148
		15	1.598	1.629	1.621	1.553	1.395
		20	1.804	1.850	1.846	1.774	1.597
		25	1.970	2.034	2.034	1.962	1.771
EVUL 8	1.04	2	0.740	0.743	0.736	0.699	0.624
		5	1.156	1.165	1.154	1.098	0.982
		10	1.600	1.622	1.611	1.537	1.378
		15	1.918	1.955	1.945	1.863	1.674
		20	2.165	2.220	2.215	2.129	1.917
		25	2.364	2.441	2.441	2.354	2.125

Evaporating temp. t_e = 40 °F
Hot gas temp. $t_h = t_c + 40$ °F
Subcooling Δt_u = 10 °F

Correction factors

The table values refer to hot gas capacity and are given as a function of condensing temperature t_c and pressure drop Δp across the valve.

Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature ($t_h = t_c + 40$ °F).
For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

t_l [°F]	-40	-20	0	20	40	50
Factor	1.18	1.14	1.09	1.04	1	0.97

Capacity
(continued)

Hot gas capacity Q_h [TR]

US Units **R407C**

Type	C_v	Pressure drop across valve Δp [bar]	Condensing temp. t_c [°F]				
			70	90	100	120	140
EVUL 1	0.12	2	0.097	0.100	0.101	0.101	0.098
		5	0.151	0.157	0.159	0.159	0.154
		10	0.209	0.219	0.221	0.222	0.216
		15	0.250	0.263	0.267	0.269	0.262
		20	0.282	0.299	0.304	0.308	0.300
		25	0.307	0.328	0.335	0.340	0.333
EVUL 2	0.23	2	0.193	0.201	0.202	0.202	0.195
		5	0.302	0.314	0.318	0.318	0.308
		10	0.418	0.437	0.443	0.445	0.431
		15	0.500	0.527	0.535	0.539	0.524
		20	0.564	0.598	0.608	0.615	0.600
		25	0.615	0.657	0.670	0.680	0.665
EVUL 3	0.35	2	0.290	0.301	0.304	0.303	0.293
		5	0.453	0.471	0.476	0.477	0.461
		10	0.626	0.656	0.664	0.667	0.647
		15	0.750	0.790	0.802	0.808	0.786
		20	0.845	0.897	0.912	0.923	0.900
		25	0.922	0.985	1.005	1.020	0.998
EVUL 4	0.58	2	0.483	0.501	0.506	0.506	0.489
		5	0.755	0.785	0.794	0.794	0.769
		10	1.044	1.093	1.107	1.111	1.078
		15	1.250	1.316	1.337	1.347	1.310
		20	1.409	1.494	1.521	1.538	1.500
		25	1.537	1.642	1.675	1.700	1.663
EVUL 5	0.75	2	0.628	0.652	0.658	0.657	0.635
		5	0.981	1.021	1.032	1.033	0.999
		10	1.357	1.421	1.439	1.445	1.402
		15	1.624	1.711	1.737	1.751	1.703
		20	1.832	1.943	1.977	1.999	1.950
		25	1.998	2.134	2.177	2.210	2.161
EVUL 6	0.87	2	0.725	0.752	0.759	0.758	0.733
		5	1.132	1.178	1.191	1.191	1.153
		10	1.566	1.639	1.660	1.667	1.618
		15	1.874	1.975	2.005	2.020	1.965
		20	2.113	2.241	2.281	2.307	2.250
		25	2.305	2.462	2.512	2.550	2.494
EVUL 8	1.04	2	0.870	0.903	0.911	0.910	0.880
		5	1.358	1.414	1.429	1.430	1.384
		10	1.879	1.967	1.993	2.001	1.941
		15	2.249	2.370	2.406	2.424	2.358
		20	2.536	2.690	2.737	2.768	2.700
		25	2.766	2.955	3.015	3.061	2.993

Evaporating temp. t_e = 40 °F
Hot gas temp. $t_h = t_c + 40$ °F
Subcooling Δt_u = 10 °F

Correction factors

The table values refer to hot gas capacity and are given as a function of condensing temperature t_c and pressure drop Δp across the valve.

Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature ($t_h = t_c + 40$ °F).
For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

t_l [°F]	-40	-20	0	20	40	50
Factor	1.18	1.14	1.09	1.04	1	0.97

Capacity
(continued)

Hot gas capacity Q_h [TR]

US Units **R410A**

Type	C_v	Pressure drop across valve Δp [bar]	Condensing temp. t_c [°F]				
			70	90	100	120	140
EVUL 1	0.12	2	0.111	0.114	0.115	0.114	0.108
		5	0.174	0.180	0.181	0.179	0.170
		10	0.242	0.251	0.253	0.251	0.239
		15	0.292	0.304	0.307	0.306	0.290
		20	0.332	0.347	0.351	0.350	0.333
		25	0.365	0.384	0.389	0.389	0.371
EVUL 2	0.23	2	0.222	0.229	0.230	0.228	0.215
		5	0.348	0.359	0.362	0.358	0.339
		10	0.484	0.503	0.507	0.503	0.477
		15	0.584	0.609	0.615	0.611	0.581
		20	0.664	0.695	0.703	0.701	0.667
		25	0.730	0.768	0.778	0.778	0.741
EVUL 3	0.35	2	0.333	0.343	0.345	0.341	0.323
		5	0.521	0.539	0.543	0.537	0.509
		10	0.726	0.754	0.760	0.754	0.716
		15	0.876	0.913	0.922	0.917	0.871
		20	0.996	1.042	1.054	1.051	1.000
		25	1.095	1.152	1.167	1.166	1.112
EVUL 4	0.58	2	0.555	0.572	0.575	0.569	0.538
		5	0.869	0.899	0.905	0.896	0.848
		10	1.211	1.257	1.267	1.257	1.193
		15	1.460	1.522	1.537	1.528	1.452
		20	1.659	1.737	1.757	1.752	1.667
		25	1.825	1.919	1.945	1.944	1.853
EVUL 5	0.75	2	0.721	0.744	0.748	0.740	0.700
		5	1.130	1.168	1.176	1.164	1.102
		10	1.574	1.634	1.647	1.634	1.550
		15	1.898	1.978	1.998	1.987	1.888
		20	2.157	2.258	2.284	2.277	2.168
		25	2.373	2.495	2.528	2.527	2.409
EVUL 6	0.87	2	0.832	0.858	0.863	0.853	0.807
		5	1.304	1.348	1.357	1.343	1.272
		10	1.816	1.885	1.901	1.886	1.789
		15	2.190	2.283	2.305	2.293	2.178
		20	2.489	2.606	2.636	2.628	2.501
		25	2.738	2.879	2.917	2.916	2.780
EVUL 8	1.04	2	0.998	1.030	1.036	1.024	0.969
		5	1.564	1.617	1.628	1.612	1.526
		10	2.179	2.262	2.281	2.263	2.147
		15	2.628	2.739	2.766	2.751	2.614
		20	2.987	3.127	3.163	3.153	3.001
		25	3.285	3.455	3.501	3.499	3.336

Evaporating temp. t_e = 40 °F
Hot gas temp. $t_h = t_c + 40$ °F
Subcooling Δt_u = 10 °F

Correction factors

The table values refer to hot gas capacity and are given as a function of condensing temperature t_c and pressure drop Δp across the valve.

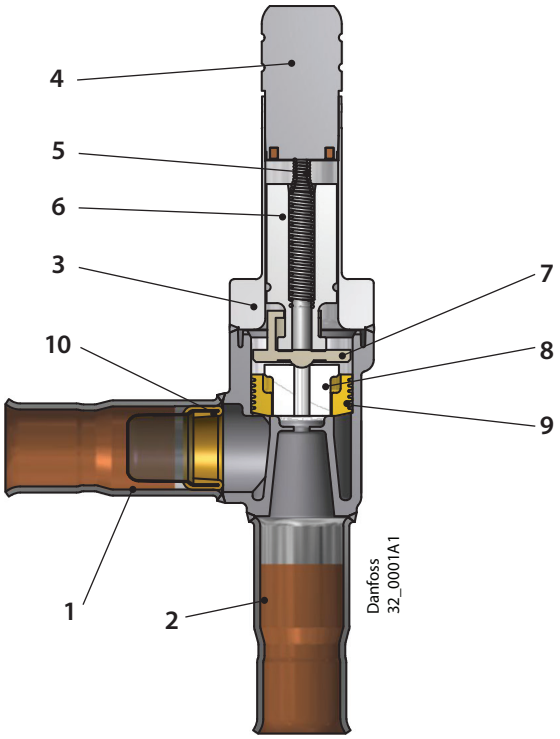
Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature ($t_h = t_c + 40$ °F).
For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

When the valve is used in a hot gas defrost circuit, evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

t_l [°F]	-40	-20	0	20	40	50
Factor	1.18	1.14	1.09	1.04	1	0.97

Design / Function



1. Laser welded connection
2. Laser welded connection
3. Flange
4. Armature tube
5. Return spring
6. Armature
7. Pilot plate (servo)
8. Seat plate (servo)
9. Piston (servo)
10. Inlet filter

Servo operated

EVUL 1 – 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.

Note:
Danfoss recommends that a suitable filter or filter drier (max. size of 40 – 50 µm) is installed ahead of each solenoid valve to keep scale, solder material and other foreign dirt and particles out of the valve.

Note:
By using the valve for oil return application - please contact Danfoss.

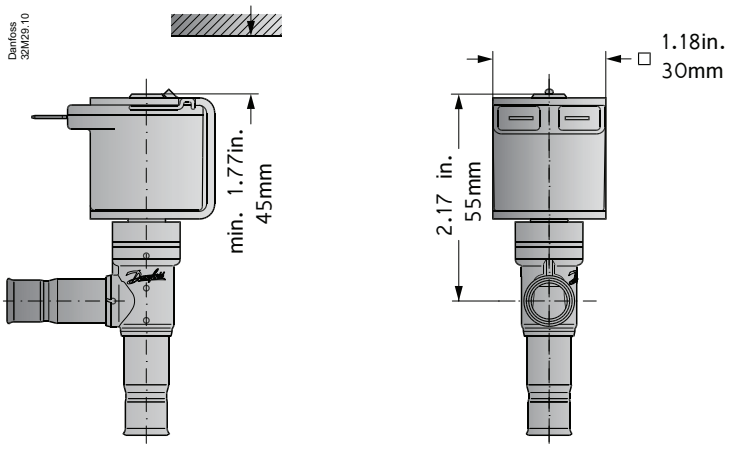
Material specifications

No.	Description	Material
1	**Bi-metallic tube**	Stainless steel / Cu
2	**Bi-metallic tube**	Stainless steel / Cu
4	**Armature tube**	Stainless steel
5	**Spring**	Spring wire stainless
6	**Armature**	Stainless steel

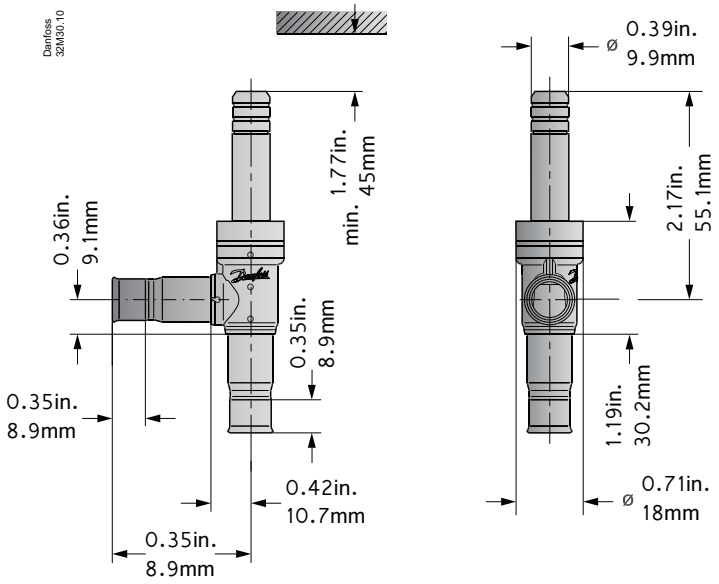
No.	Description	Material
7	**Pilot plate**	Thermoplast
8	**Seat plate**	Teflon
9	**Piston**	Brass
10	**Inlet filter**	Stainless steel/brass

Dimensions [in.] and weights [lbs]

EVUL 1 – 6 and EVUL 8 mounted with coil with 0.25 in. US spade



EVUL 1 – 6 and EVUL 8



Net weight of coil: approx. 0.10 Kg (0.22 lbs)
Net weight of valve: approx. 0.05 Kg (0.11 lbs)