| **Data sheet** | **Thermostatic expansion valve type TUA/TUAE** |

Introduction

TUA/TUAE valves are made of stainless steel and are therefore very suitable for refrigeration systems in the food industry.

TUA/TUAE valves are available with interchangeable orifice assembly in straightway versions.

TUA/TUAE has been specially developed for soldering into hermetic refrigeration systems.

TUA/TUAE valves can be used in many different forms of refrigeration systems, for example:

- Traditional refrigeration systems
- Heat pump systems
- Air conditioning units
- Refrigeration appliances
- Liquid coolers
- Ice cube machines
- Mobile refrigeration systems

Features

- *Interchangeable orifice assembly designed for:*
  - Easy mounting
  - Optimized tightness

- *Bimetal connections*
  - Simple, fast soldering without the need for wet cloth or refrigeration pliers.

- *Refrigerants*
  R 22, R 134a, R 404A, R 407 C, R 507 and future refrigerants

- *Capacities from 0.6 to 16 kW (0.17 to 4.5 TR) for R 22*
  - Large capacity range in small steps

- *Stable regulation*

- *Biflow function*

- *Compact design*
  - small dimensions and low weight

- *Stainless steel, solder version*
  - high connection strength and tightness
  - capillary tube joints of high strength and vibration resistance

- *Laser-welded, stainless steel thermostatic diaphragm element*
  - optimum function
  - long diaphragm life
  - high pressure resistance

- *Stainless steel double contact bulb*
  - simple and fast installation
  - good heat transfer from pipe to bulb

- *Adjustable superheat*
  - accurate setting
  - adjustable in operation

- *Available with MOP (Max. Operating Pressure)*

- *Wide range of valves*

- *Interchangeable filter for easy cleaning*

Standard range

The standard range can be supplied in the following versions:

Range N	− 40 to +10°C, without MOP
Range N	− 40 to +10°C, MOP +15°C
Range NM	− 40 to − 5°C, MOP 0°C
Range B	− 60 to −25°C, without MOP
Range B	− 60 to −25°C, MOP −20°C

Static superheat (SS) (R 22, R 134a, R 404A and R 407C):

Valves without MOP	5 K
Valves with MOP	4 K

Static superheat (SS) (R 507):

Valves without MOP	6.4 K
Valves with MOP	5.4 K

Capillary tube length 1.5 m

Connections:

Inlet	$^1/_4$ in./6 mm
	$^3/_8$ in./10 mm
Outlet	$^1/_2$ in./12 mm

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Technical data

Max. bulb temperature 100°C

Max. valve body temp. 120°C, short-lived peak 150°C

Permissible working pressure PB = 28 bar

Max. test pressure p' = 36 bar

Biflow operation
With flow in the opposite direction, the rated capacity is reduced by up to 15%.
TUAE with orifice 9, TUA valves (internal equalisation) and valves with MOP cannot be used for biflow operation.

MOP valves

When MOP valves are used, to avoid charge migration the bulb temperature must always be lower than the thermostatic element temperature.

MOP-points

Refrigerant	Range N −40 → +10°C	Range NM −40 → −5°C	Range B −60 → −25°C
	MOP point for evaporating temperature t_e and evaporating pressure p_e [1]		
	t_e = +15°C/+60°F	t_e = 0°C/+32°F	t_e = −20°C/−4°F
R 22	p_e = 100 psig/6.9 bar	p_e = 60 psig/4.0 bar	p_e = 20 psig/1.5 bar
R 134a	p_e = 55 psig/3.9 bar	p_e = 30 psig/1.9 bar	
R 404A / R507	p_e = 120 psig/8.4 bar	p_e = 75 psig/5.0 bar	p_e = 30 psig/2.0 bar
R 407C	p_e = 95 psig/6.6 bar	p_e = 50 psig/3.6bar	p_e = 20 psig/1.4 bar

[1] p_e in bar gauge

Identification

Main valve data is given on the element (fig. 1), on the valve body (fig. 2) and on the bottom of the orifice assembly (fig. 3).

Example valve body

TUAE	= Type (E = external pressure equalisation)
68U2214	= Code number
R 134a	= Refrigerant
MOP 55 / +15°C	= MOP-point in psig / °C
−40 / +10°C	= Evaporating temperature range in °C
−40 / +50°F	= Evaporating temperature range in °F
PB 28 bar/ MWP 400 psig	= Max. working pressure in bar/psig
097D	= Date marking (week 09, year 1997, weekday D = Thursday)
⇒	= Normal flow direction
in.	= Connection in inches (mm = millimetres)

Example orifice assembly

TU	= Valve type
5	= Orifice number
68U1035	= Code no., orifice assembly incl. filter and gasket
327	= Date marking (Week **32**, Year 199**7**)

Fig. 1 Power element

Fig. 2 Valve body

Fig. 3 Orifice assembly

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Data sheet **Thermostatic expansion valve, type TUA/TUAE**
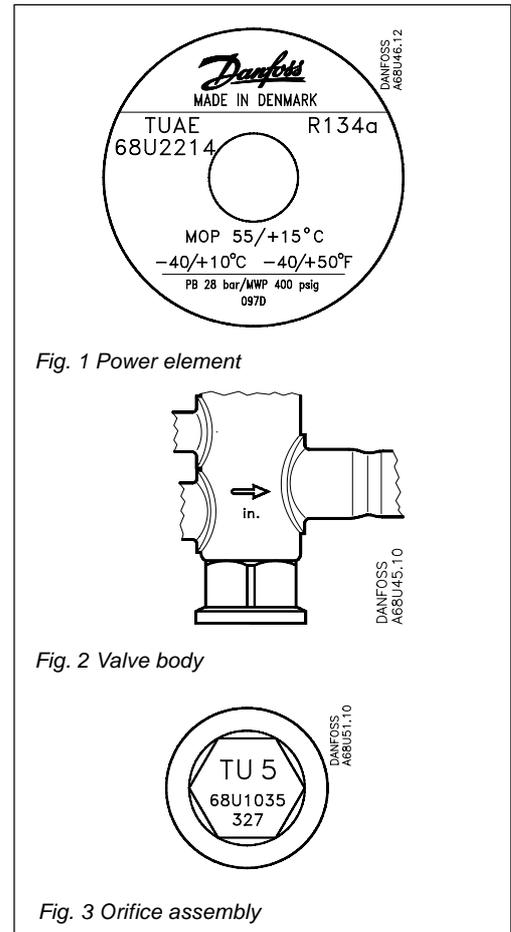
Ordering, components with solder x solder connections

Thermostatic element, without orifice and filter, with bulb strap **R 22, R 134a, R 404A, R 407C, R 507**

Refrigerant	Valve type	Pressure equaliz-ation[1)]	Capillary tube	Connections		Code no.				
				Inlet x outlet		Range N −40 → +10°C		Range NM −40 → −5°C	Range B −60→ −25°C	
			m	in.	mm.	Without MOP	MOP +15 °C	MOP 0 °C	Without MOP	MOP −20°C
R 22	TUA	Int.	1.5	$^1/_4$ x $^1/_2$		068U2234	068U2242	068U2250	068U2258	068U2266
	TUA	Int.	1.5		6 x 12	068U2230	068U2238	068U2246	068U2254	068U2262
	TUA	Int.	1.5	$^3/_8$ x $^1/_2$		068U2235	068U2243	068U2251	068U2259	068U2267
	TUA	Int.	1.5		10 x 12	068U2231	068U2239	068U2247	068U2255	068U2263
	TUAE	Ext. $^1/_4$ in.	1.5	$^1/_4$ x $^1/_2$		068U2236	068U2244	068U2252	068U2260	068U2268
	TUAE	Ext. 6 mm	1.5		6 x 12	068U2232	068U2240	068U2248	068U2256	068U2264
	TUAE	Ext. $^1/_4$ in.	1.5	$^3/_8$ x $^1/_2$		068U2237	068U2245	068U2253	068U2261	068U2269
	TUAE	Ext. 6 mm	1.5		10 x 12	068U2233	068U2241	068U2249	068U2257	068U2265
R 134a	TUA	Int.	1.5	$^1/_4$ x $^1/_2$		068U2204	068U2212	068U2220		
	TUA	Int.	1.5		6 x 12	068U2200	068U2208	068U2216		
	TUA	Int.	1.5	$^3/_8$ x $^1/_2$		068U2205	068U2213	068U2221		
	TUA	Int.	1.5		10 x 12	068U2201	068U2209	068U2217		
	TUAE	Ext. $^1/_4$ in.	1.5	$^1/_4$ x $^1/_2$		068U2206	068U2214	068U2222		
	TUAE	Ext. 6 mm	1.5		6 x 12	068U2202	068U2210	068U2218		
	TUAE	Ext. $^1/_4$ in.	1.5	$^3/_8$ x $^1/_2$		068U2207	068U2215	068U2223		
	TUAE	Ext. 6 mm	1.5		10 x12	068U2203	068U2211	068U2219		
R 404A R 507	TUA	Int.	1.5	$^1/_4$ x $^1/_2$		068U2284	068U2292	068U2300	068U2308	068U2316
	TUA	Int.	1.5		6 x 12	068U2280	068U2288	068U2296	068U2304	068U2312
	TUA	Int.	1.5	$^3/_8$ x $^1/_2$		068U2285	068U2293	068U2301	068U2309	068U2317
	TUA	Int.	1.5		10 x 12	068U2281	068U2289	068U2297	068U2305	068U2313
	TUAE	Ext. $^1/_4$ in.	1.5	$^1/_4$ x $^1/_2$		068U2286	068U2294	068U2302	068U2310	068U2318
	TUAE	Ext. 6 mm	1.5		6 x 12	068U2282	068U2290	068U2298	068U2306	068U2314
	TUAE	Ext. $^1/_4$ in.	1.5	$^3/_8$ x $^1/_2$		068U2287	068U2295	068U2303	068U2311	068U2319
	TUAE	Ext. 6 mm	1.5		10 x 12	068U2283	068U2291	068U2299	068U2307	068U2315
R 407C	TUA	Int.	1.5	$^1/_4$ x $^1/_2$		068U2324	068U2332	068U2340	068U2348	068U2356
	TUA	Int.	1.5		6 x 12	068U2320	068U2328	068U2336	068U2344	068U2352
	TUA	Int.	1.5	$^3/_8$ x $^1/_2$		068U2325	068U2333	068U2341	068U2349	068U2357
	TUA	Int.	1.5		10 x 12	068U2321	068U2329	068U2337	068U2345	068U2353
	TUAE	Ext. $^1/_4$ in.	1.5	$^1/_4$ x $^1/_2$		068U2326	068U2334	068U2342	068U2350	068U2358
	TUAE	Ext. 6 mm	1.5		6 x 12	068U2322	068U2330	068U2338	068U2346	068U2354
	TUAE	Ext. $^1/_4$ in.	1.5	$^3/_8$ x $^1/_2$		068U2327	068U2335	068U2343	068U2351	068U2359
	TUAE	Ext. 6 mm	1.5		10 x 12	068U2323	068U2331	068U2339	068U2347	068U2355

Data sheet | **Thermostatic expansion valve, type TUA/TUAE**

Ordering (continued)

Orifice assembly with filter and gasket. Range N: −40 → +10° C

Orifice no.	Rated capacity in kW [1]					Rated capacity in tons (TR) [1]					Code no.
	R 22	R 134a	R 404A	R 407C	R 507	R 22	R 134a	R 404A	R 407C	R 507	
0	0.60	0.47	0.47	0.63	0.45	0.17	0.13	0.13	0.18	0.13	**068U1030**
1	0.9	0.7	0.70	0.92	0.66	0.25	0.19	0.19	0.26	0.19	**068U1031**
2	1.3	1.0	1.0	1.4	1.0	0.36	0.28	0.28	0.38	0.27	**068U1032**
3	1.8	1.4	1.4	1.9	1.3	0.50	0.39	0.39	0.53	0.38	**068U1033**
4	2.6	2.1	2.1	2.8	2.0	0.75	0.59	0.60	0.80	0.57	**068U1034**
5	3.5	2.7	2.8	3.8	2.7	1.00	0.78	0.79	1.1	0.76	**068U1035**
6	5.3	4.1	4.2	5.7	4.0	1.5	1.2	1.2	1.6	1.1	**068U1036**
7	7.0	5.5	5.6	7.5	5.3	2.0	1.6	1.6	2.1	1.5	**068U1037**
8	11.0	8.2	8.4	11.0	8.0	3.0	2.3	2.4	3.2	2.3	**068U1038**
9	16.0	12.0	12.0	17.0	12.0	4.5	3.5	3.5	4.8	3.4	**068U1039**

Range B: − 60 → − 25° C

Orifice no.	Rated capacity in kW [1]				Rated capacity in tons (TR) [1]				Code no.
	R 22	R 404A	R 407C	R 507	R 22	R 404A	R 407C	R 507	
0	0.52	0.36	0.46	0.39	0.15	0.10	0.13	0.11	**068U1030**
1	0.68	0.50	0.58	0.53	0.19	0.14	0.16	0.15	**068U1031**
2	0.85	0.64	0.70	0.70	0.24	0.18	0.20	0.20	**068U1032**
3	1.2	0.89	1.0	1.0	0.34	0.25	0.28	0.28	**068U1033**
4	1.8	1.3	1.4	1.4	0.50	0.37	0.41	0.41	**068U1034**
5	2.3	1.8	1.9	1.9	0.66	0.50	0.55	0.55	**068U1035**
6	3.5	2.7	2.9	2.9	1.0	0.75	0.82	0.82	**068U1036**
7	4.7	3.5	3.9	3.9	1.3	1.0	1.1	1.1	**068U1037**
8	7.1	5.3	5.8	5.8	2.0	1.5	1.6	1.7	**068U1038**
9	10.4	7.8	8.5	8.6	2.9	2.2	2.4	2.4	**068U1039**

[1] Rated capacity $Q_{nom.}$ is based on:
Evaporating temperature
t_e = +5°C for range N and − 30°C for range B
Condensing temperature
t_c = +32°C
Refrigerant liquid temperature
t_l = +28°C
Opening superheat OS = 4 K

Spare parts
Gasket (24 pcs): 068U0015
Note: to ensure tightness the orifice gasket *must* be exchanged each time the orifice assembly is unscrewed.
Filter (24 pcs): 068U0016

Capacity

R 22

Capacity in kW for range **N = −40 → +10°C** *and opening superheat OS = 4 K*

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
		Evaporating temperature +10°C								**Evaporating temperature 0°C**							
TU	0	0.42	0.53	0.60	0.65	0.68	0.70	0.71	0.72	0.40	0.50	0.56	0.60	0.63	0.65	0.67	0.67
	1	0.61	0.79	0.89	1.0	1.0	1.0	1.1	1.1	0.55	0.71	0.80	0.86	0.91	0.93	0.95	0.96
	2	0.9	1.2	1.3	1.5	1.6	1.6	1.7	1.7	0.73	1.0	1.1	1.2	1.3	1.3	1.4	1.4
	3	1.2	1.6	1.8	2.0	2.1	2.2	2.3	2.3	1.0	1.3	1.5	1.7	1.8	1.8	1.9	1.9
	4	1.8	2.4	2.8	3.1	3.2	3.4	3.5	3.5	1.5	2.0	2.3	2.5	2.7	2.8	2.8	2.8
	5	2.4	3.2	3.7	4.1	4.3	4.5	4.6	4.7	2.0	2.7	3.1	3.4	3.5	3.7	3.8	3.8
	6	3.7	4.9	5.6	6.1	6.5	6.7	6.9	7.1	3.1	4.0	4.6	5.0	5.3	5.5	5.7	5.8
	7	4.9	6.5	7.5	8.2	8.6	9.0	9.2	9.4	4.1	5.4	6.2	6.7	7.1	7.4	7.6	7.7
	8	7.3	9.6	11.2	12.2	12.9	13.4	13.7	13.9	6.1	8.0	9.2	10.1	10.6	11.0	11.3	11.5
	9	10.9	14.5	16.7	18.2	19.3	20.0	20.5	20.9	9.1	12.1	13.8	15.0	15.9	16.4	16.8	17.1
		Evaporating temperature −10°C								**Evaporating temperature −20°C**							
TU	0	0.36	0.46	0.51	0.55	0.57	0.59	0.60	0.61		0.40	0.45	0.48	0.50	0.52	0.53	0.53
	1	0.47	0.62	0.70	0.75	0.79	0.81	0.82	0.83		0.51	0.57	0.62	0.65	0.67	0.68	0.69
	2	0.60	0.78	0.89	1.0	1.0	1.1	1.1	1.1		0.61	0.70	0.76	0.79	0.82	0.84	0.85
	3	0.8	1.1	1.3	1.4	1.4	1.5	1.5	1.5		0.9	1.0	1.1	1.1	1.2	1.2	1.2
	4	1.2	1.6	1.9	2.0	2.1	2.2	2.2	2.3		1.3	1.5	1.6	1.6	1.7	1.7	1.8
	5	1.7	2.2	2.5	2.7	2.8	2.9	3.0	3.0		1.7	1.9	2.1	2.2	2.3	2.3	2.3
	6	2.5	3.2	3.7	4.0	4.3	4.4	4.5	4.6		2.5	2.9	3.1	3.3	3.4	3.5	3.5
	7	3.3	4.3	5.0	5.4	5.7	5.9	6.0	6.1		3.4	3.9	4.2	4.4	4.5	4.6	4.7
	8	5.0	6.5	7.5	8.1	8.5	8.8	9.0	9.1		5.1	5.8	6.3	6.6	6.8	7.0	7.1
	9	7.4	9.7	11.1	12.0	12.6	13.1	13.3	13.5		7.6	8.6	9.3	9.7	10.1	10.3	10.4
		Evaporating temperature −30°C								**Evaporating temperature −40°C**							
TU	0		0.34	0.38	0.40	0.42	0.44	0.44	0.45			0.31	0.33	0.34	0.35	0.36	0.36
	1		0.39	0.45	0.48	0.51	0.52	0.53	0.54			0.33	0.36	0.38	0.39	0.39	0.40
	2		0.47	0.53	0.57	0.60	0.62	0.63	0.63			0.39	0.42	0.44	0.45	0.46	0.46
	3		0.66	0.74	0.80	0.84	0.87	0.88	0.89			0.55	0.59	0.61	0.63	0.64	0.65
	4		1.0	1.1	1.2	1.2	1.3	1.3	1.3			0.80	0.86	0.90	0.92	0.94	0.95
	5		1.3	1.5	1.6	1.7	1.7	1.7	1.8			1.1	1.2	1.2	1.2	1.3	1.3
	6		1.9	2.2	2.4	2.5	2.5	2.6	2.6			1.6	1.7	1.8	1.8	1.9	1.9
	7		2.6	2.9	3.2	3.3	3.4	3.5	3.5			2.1	2.3	2.4	2.5	2.5	2.5
	8		3.9	4.4	4.8	5.0	5.1	5.2	5.3			3.2	3.5	3.6	3.7	3.8	3.8
	9		5.7	6.5	7.0	7.3	7.5	7.7	7.7			4.7	5.1	5.3	5.5	5.5	5.6

Correction for subcooling Δt_{sub}
The evaporator capacity used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the evaporator capacity by the correction factor given below.

Note:
Insufficient subcooling can produce flash gas.

Correction factor for subcooling Δt_{sub}

	Δt_{sub}									
	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
R 22	1.00	1.06	1.11	1.15	1.2	1.25	1.3	1.35	1.39	1.44

Selection example

Refrigerant = R 22
Evaporating temperature t_e = −10°C
Pressure drop in valve Δp = 10 bar
Subcooling Δt_{sub} = 15 K
Evaporator capacity = 3 kW
Correction value (table) = 1.11
The corrected evaporator capacity thus becomes 3 divided by 1.11 = 2.7 kW

Since the expansion valve capacity must be equal to or slightly more than the corrected evaporator capacity of 2.7 kW, a TUB/TUBE with orifice 5 and a table capacity of 2.8 kW would be a suitable choice.

Capacity *(continued)*
*Capacity in kW for range **B = −60 → −25°C** and opening superheat OS = 4 K*

R 22

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
		Evaporating temperature −25°C								**Evaporating temperature −30°C**							
TU	0	0.36	0.45	0.50	0.54	0.56	0.58	0.59	0.59	0.33	0.42	0.46	0.49	0.52	0.53	0.54	0.54
	1	0.48	0.62	0.69	0.74	0.77	0.79	0.81	0.81	0.42	0.54	0.61	0.66	0.68	0.70	0.71	0.72
	2	0.61	0.79	0.89	0.96	1.01	1.04	1.06	1.07	0.52	0.67	0.75	0.81	0.85	0.88	0.89	0.90
	3	0.85	1.10	1.25	1.34	1.41	1.45	1.48	1.50	0.73	0.93	1.1	1.1	1.2	1.2	1.3	1.3
	4	1.3	1.6	1.9	2.0	2.1	2.1	2.2	2.2	1.1	1.4	1.6	1.7	1.8	1.8	1.8	1.9
	5	1.7	2.2	2.5	2.7	2.8	2.9	2.9	3.0	1.4	1.9	2.1	2.2	2.4	2.4	2.5	2.5
	6	2.5	3.3	3.7	4.0	4.2	4.3	4.4	4.5	2.1	2.8	3.1	3.4	3.5	3.6	3.7	3.7
	7	3.4	4.4	5.0	5.4	5.6	5.8	5.9	6.0	2.9	3.7	4.2	4.5	4.7	4.9	4.9	5.0
	8	5.1	6.6	7.5	8.0	8.4	8.7	8.9	8.9	4.3	5.6	6.3	6.8	7.1	7.3	7.4	7.5
	9	7.6	9.7	11.0	11.9	12.4	12.8	13.1	13.2	6.4	8.2	9.3	10.0	10.4	10.7	10.9	11.0

Type	Orifice no.	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
		Evaporating temperature −40°C								**Evaporating temperature −50°C**							
TU	0	0.27	0.34	0.37	0.40	0.42	0.43	0.43	0.44	0.20	0.25	0.28	0.30	0.31	0.32	0.33	0.33
	1	0.31	0.39	0.44	0.47	0.50	0.51	0.52	0.52	0.21	0.27	0.30	0.32	0.34	0.35	0.35	0.35
	2	0.36	0.46	0.52	0.56	0.59	0.60	0.61	0.62	0.25	0.31	0.35	0.38	0.39	0.40	0.41	0.41
	3	0.51	0.65	0.73	0.79	0.82	0.85	0.86	0.87	0.35	0.44	0.50	0.53	0.55	0.57	0.58	0.58
	4	0.75	0.96	1.1	1.2	1.2	1.2	1.3	1.3	0.51	0.65	0.72	0.77	0.81	0.83	0.84	0.85
	5	1.0	1.3	1.4	1.6	1.6	1.7	1.7	1.7	0.68	0.87	0.97	1.0	1.1	1.1	1.1	1.1
	6	1.5	1.9	2.2	2.3	2.4	2.5	2.5	2.6	1.0	1.3	1.4	1.5	1.6	1.7	1.7	1.7
	7	2.0	2.6	2.9	3.1	3.2	3.3	3.4	3.4	1.4	1.7	1.9	2.1	2.2	2.2	2.3	2.3
	8	3.0	3.9	4.4	4.7	4.9	5.0	5.1	5.2	2.1	2.6	2.9	3.1	3.3	3.4	3.4	3.4
	9	4.5	5.7	6.4	6.8	7.1	7.3	7.5	7.5	3.0	3.8	4.3	4.6	4.8	4.9	5.0	5.0

Type	Orifice no.	2	4	6	8	10	12	14	16
		Evaporating temperature −60°C							
TU	0	0.14	0.17	0.19	0.21	0.21	0.22	0.22	0.22
	1	0.14	0.18	0.20	0.22	0.22	0.23	0.23	0.23
	2	0.16	0.21	0.23	0.25	0.26	0.26	0.27	0.27
	3	0.23	0.29	0.33	0.35	0.36	0.37	0.38	0.38
	4	0.34	0.43	0.48	0.51	0.53	0.54	0.55	0.55
	5	0.45	0.57	0.64	0.68	0.71	0.73	0.74	0.74
	6	0.67	0.85	0.95	1.01	1.05	1.08	1.09	1.10
	7	0.91	1.1	1.3	1.4	1.4	1.5	1.5	1.5
	8	1.4	1.7	1.9	2.1	2.1	2.2	2.2	2.2
	9	2.0	2.5	2.8	3.0	3.1	3.2	3.2	3.2

Correction for subcooling Δt_{sub}
The evaporator capacity used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the evaporator capacity by the correction factor given below.

Note:
Insufficient subcooling can produce flash gas.

Correction factor for subcooling Δt_{sub}

	Δt_{sub}									
	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
R 22	1.00	1.06	1.11	1.15	1.2	1.25	1.3	1.35	1.39	1.44

Capacity *(continued)*

*Capacity in kW for range **N = −40 → +10°C** and opening superheat OS = 4 K*

R 134a

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16

Evaporating temperature +10°C (left) — **Evaporating temperature 0°C** (right)

Type	Orifice no.	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0	0.38	0.46	0.50	0.53	0.54	0.54			0.35	0.42	0.46	0.48	0.49	0.49		
	1	0.57	0.69	0.76	0.79	0.81	0.81			0.50	0.61	0.66	0.69	0.70	0.71		
	2	0.82	1.1	1.2	1.2	1.3	1.3			0.66	0.84	0.93	0.98	1.0	1.0		
	3	1.1	1.4	1.6	1.7	1.8	1.8			0.92	1.2	1.3	1.4	1.4	1.4		
	4	1.7	2.2	2.5	2.6	2.7	2.7			1.4	1.8	1.9	2.0	2.1	2.1		
	5	2.3	2.9	3.3	3.5	3.6	3.6			1.8	2.3	2.6	2.7	2.8	2.8		
	6	3.4	4.4	4.9	5.2	5.4	5.5			2.8	3.5	3.9	4.1	4.2	4.3		
	7	4.6	5.9	6.6	7.0	7.2	7.2			3.7	4.7	5.2	5.5	5.6	5.7		
	8	6.8	8.7	9.8	10.3	10.6	10.8			5.5	7.0	7.8	8.2	8.4	8.5		
	9	10.2	13.1	14.6	15.5	15.9	16.0			8.3	10.4	11.5	12.2	12.4	12.5		

Evaporating temperature −10°C (left) — **Evaporating temperature −20°C** (right)

Type	Orifice no.	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0	0.31	0.37	0.40	0.42	0.43	0.43			0.31	0.34	0.35	0.35	0.35			
	1	0.41	0.51	0.55	0.58	0.58	0.58			0.39	0.43	0.44	0.45	0.45			
	2	0.51	0.64	0.70	0.74	0.75	0.76			0.47	0.51	0.53	0.54	0.54			
	3	0.71	0.89	0.98	1.0	1.1	1.1			0.65	0.72	0.75	0.76	0.76			
	4	1.1	1.3	1.5	1.5	1.6	1.6			0.96	1.05	1.10	1.12	1.1			
	5	1.4	1.8	2.0	2.1	2.1	2.1			1.3	1.4	1.5	1.5	1.5			
	6	2.1	2.7	2.9	3.1	3.1	3.2			1.9	2.1	2.2	2.2	2.2			
	7	2.8	3.5	3.9	4.1	4.2	4.2			2.6	2.8	3.0	3.0	3.0			
	8	4.3	5.3	5.9	6.2	6.3	6.3			3.9	4.3	4.4	4.5	4.5			
	9	6.3	7.9	8.7	9.1	9.3	9.3			5.7	6.2	6.5	6.6	6.6			

Evaporating temperature −30°C (left) — **Evaporating temperature −40°C** (right)

Type	Orifice no.	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0		0.25	0.27	0.28	0.28	0.28			0.18	0.19	0.20	0.20	0.20			
	1		0.28	0.30	0.32	0.32	0.32			0.19	0.21	0.21	0.21	0.21			
	2		0.32	0.35	0.37	0.37	0.37			0.22	0.24	0.25	0.25	0.25			
	3		0.46	0.50	0.52	0.53	0.52			0.31	0.34	0.35	0.35	0.35			
	4		0.67	0.73	0.76	0.77	0.76			0.45	0.49	0.50	0.51	0.51			
	5		0.90	0.98	1.02	1.03	1.0			0.61	0.66	0.68	0.68	0.68			
	6		1.3	1.5	1.5	1.5	1.5			0.90	0.97	1.0	1.0	1.0			
	7		1.8	2.0	2.0	2.1	2.1			1.2	1.3	1.4	1.4	1.4			
	8		2.7	3.0	3.1	3.1	3.1			1.8	2.0	2.1	2.1	2.1			
	9		4.0	4.3	4.5	4.5	4.5			2.7	2.9	3.0	3.0	3.0			

Correction for subcooling Δt_{sub}
The evaporator capacity used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the evaporator capacity by the correction factor given below.

Note:
Insufficient subcooling can produce flash gas.

Correction factor for subcooling Δt_{sub}

	Δt_{sub}									
	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
R 134a	1.00	1.08	1.13	1.19	1.25	1.31	1.37	1.42	1.48	1.54

Capacity (continued)
*Capacity in kW for range **N = −40 → +10°C** and opening superheat OS = 4 K*

R 404A/R 507

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16

Evaporating temperature +10°C (left) — **Evaporating temperature 0°C** (right)

Type	Orifice	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0	0.32	0.40	0.44	0.46	0.46	0.46	0.45	0.44	0.31	0.39	0.42	0.44	0.44	0.44	0.43	0.42
	1	0.47	0.60	0.68	0.69	0.70	0.70	0.68	0.66	0.44	0.56	0.61	0.64	0.64	0.64	0.63	0.61
	2	0.70	0.91	1.0	1.1	1.1	1.1	1.1	1.1	0.60	0.77	0.87	0.92	0.94	0.94	0.93	0.90
	3	0.96	1.2	1.4	1.5	1.5	1.5	1.5	1.5	0.83	1.1	1.2	1.3	1.3	1.5	1.3	1.3
	4	1.5	1.9	2.1	2.3	2.3	2.3	2.3	2.2	1.3	1.6	1.8	1.9	2.0	2.0	1.9	1.9
	5	2.0	2.5	2.8	3.0	3.1	3.1	3.1	3.0	1.7	2.2	2.4	2.6	2.6	2.6	2.6	2.5
	6	2.9	3.8	4.3	4.5	4.7	4.7	4.6	4.5	2.5	3.2	3.6	3.8	3.9	3.9	3.9	3.8
	7	3.9	5.1	5.7	6.0	6.2	6.2	6.1	6.0	3.4	4.3	4.8	5.1	5.2	5.3	5.2	5.0
	8	5.8	7.5	8.4	9.0	9.2	9.2	9.1	8.9	5.0	6.5	7.2	7.6	7.8	7.8	7.7	7.5
	9	8.8	11.3	12.7	13.5	13.8	13.9	13.7	13.39	7.5	9.6	10.8	11.4	11.7	11.7	11.5	11.2

Evaporating temperature −10°C (left) — **Evaporating temperature −20°C** (right)

Type	Orifice	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0	0.29	0.36	0.39	0.40	0.41	0.41	0.40	0.39		0.32	0.35	0.36	0.36	0.36	0.35	0.34
	1	0.39	0.50	0.54	0.57	0.57	0.57	0.56	0.54		0.41	0.46	0.48	0.48	0.48	0.47	0.45
	2	0.50	0.64	0.71	0.75	0.76	0.76	0.75	0.73		0.51	0.56	0.59	0.60	0.60	0.59	0.57
	3	0.70	0.89	0.99	1.0	1.1	1.1	1.1	1.0		0.71	0.79	0.83	0.84	0.84	0.82	0.80
	4	1.0	1.3	1.5	1.6	1.6	1.6	1.6	1.5		1.1	1.2	1.2	1.2	1.2	1.2	1.2
	5	1.4	1.8	2.0	2.1	2.1	2.1	2.1	2.0		1.4	1.6	1.6	1.7	1.7	1.6	1.6
	6	2.1	2.7	3.0	3.1	3.2	3.2	3.1	3.1		2.1	2.3	2.4	2.5	2.5	2.4	2.4
	7	2.8	3.6	4.0	4.2	4.3	4.3	4.2	4.1		2.8	3.1	3.3	3.3	3.3	3.3	3.2
	8	4.2	5.3	5.9	6.3	6.4	6.4	6.3	6.1		4.3	4.7	4.9	5.0	5.0	4.9	4.8
	9	6.2	7.9	8.8	9.3	9.5	9.5	9.3	9.0		6.3	6.9	7.3	7.4	7.4	7.2	7.0

Evaporating temperature −30°C (left) — **Evaporating temperature −40°C** (right)

Type	Orifice	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0			0.3	0.31	0.31	0.31	0.3	0.29			0.24	0.25	0.25	0.25	0.24	0.23
	1			0.36	0.38	0.38	0.38	0.37	0.36			0.27	0.28	0.28	0.28	0.27	0.26
	2			0.43	0.45	0.45	0.45	0.44	0.43			0.32	0.33	0.33	0.33	0.32	0.31
	3			0.60	0.63	0.64	0.63	0.62	0.60			0.45	0.46	0.47	0.46	0.45	0.43
	4			0.89	0.93	0.94	0.93	0.91	0.88			0.65	0.68	0.68	0.67	0.66	0.63
	5			1.2	1.2	1.3	1.2	1.2	1.2			0.88	0.91	0.91	0.90	0.88	0.85
	6			1.8	1.9	1.9	1.9	1.8	1.8			1.3	1.4	1.4	1.3	1.3	1.3
	7			2.4	2.5	2.5	2.5	2.4	2.4			1.8	1.8	1.8	1.8	1.8	1.7
	8			3.6	3.7	3.8	3.8	3.7	3.6			2.6	2.7	2.8	2.7	2.7	2.6
	9			5.3	5.5	5.5	5.5	5.4	5.2			3.9	4.0	4.0	4.0	3.9	3.7

Correction for subcooling Δt_{sub}
The evaporator capacity used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the evaporator capacity by the correction factor given below.

Note:
Insufficient subcooling can produce flash gas.

Correction factor for subcooling Δt_{sub}

	Δt_{sub}									
	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
R 404A/R 507	1.00	1.1	1.2	1.29	1.37	1.46	1.54	1.63	1.7	1.78

Capacity *(continued)*

*Capacity in kW for range **B = −60 → −25°C** and opening superheat OS = 4 K*

R 404A/R 507

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
		Evaporating temperature -25°C								**Evaporating temperature -30°C**							
	0	0.30	0.36	0.39	0.40	0.40	0.40	0.39	0.38	0.28	0.33	0.36	0.37	0.37	0.37	0.36	0.35
	1	0.41	0.51	0.55	0.56	0.57	0.56	0.55	0.53	0.36	0.45	0.49	0.51	0.51	0.50	0.48	0.47
	2	0.53	0.66	0.73	0.76	0.77	0.77	0.75	0.73	0.45	0.57	0.62	0.65	0.65	0.65	0.64	0.61
	3	0.74	0.92	1.01	1.06	1.07	1.07	1.04	1.01	0.64	0.79	0.87	0.91	0.91	0.91	0.89	0.86
TU	4	1.1	1.4	1.5	1.6	1.6	1.6	1.6	1.5	1.0	1.2	1.3	1.3	1.4	1.3	1.3	1.3
	5	1.5	1.8	2.0	2.1	2.1	2.1	2.1	2.0	1.3	1.6	1.7	1.8	1.8	1.8	1.8	1.7
	6	2.2	2.8	3.0	3.2	3.2	3.2	3.1	3.0	1.9	2.4	2.6	2.7	2.7	2.7	2.6	2.6
	7	2.9	3.7	4.1	4.2	4.3	4.3	4.2	4.0	2.5	3.2	3.5	3.6	3.6	3.6	3.5	3.4
	8	4.4	5.5	6.1	6.3	6.4	6.4	6.3	6.1	3.8	4.7	5.2	5.4	5.5	5.4	5.3	5.1
	9	6.5	8.2	9.0	9.4	9.5	9.4	9.2	8.9	5.6	7.0	7.7	8.0	8.1	8.0	7.8	7.5

Type	Orifice no.	**Evaporating temperature -40°C**								**Evaporating temperature -50°C**							
	0		0.28	0.30	0.30	0.31	0.30	0.29	0.28		0.22	0.23	0.24	0.24	0.23	0.22	0.21
	1		0.34	0.37	0.38	0.38	0.38	0.37	0.35		0.24	0.25	0.26	0.26	0.26	0.25	0.24
	2		0.40	0.44	0.45	0.46	0.45	0.44	0.42		0.27	0.30	0.31	0.31	0.30	0.29	0.28
	3		0.57	0.62	0.64	0.64	0.63	0.62	0.59		0.39	0.42	0.43	0.43	0.42	0.41	0.39
TU	4		0.83	0.91	0.94	0.94	0.93	0.91	0.87		0.57	0.61	0.63	0.63	0.62	0.60	0.57
	5		1.1	1.2	1.3	1.3	1.3	1.2	1.2		0.76	0.82	0.84	0.84	0.83	0.81	0.77
	6		1.7	1.8	1.9	1.9	1.9	1.8	1.8		1.1	1.2	1.3	1.3	1.2	1.2	1.2
	7		2.2	2.4	2.5	2.5	2.5	2.4	2.4		1.5	1.6	1.7	1.7	1.7	1.6	1.5
	8		3.4	3.7	3.8	3.8	3.8	3.7	3.5		2.3	2.5	2.6	2.6	2.5	2.4	2.3
	9		4.9	5.4	5.6	5.6	5.5	5.4	5.2		3.3	3.6	3.7	3.7	3.7	3.5	3.4

Type	Orifice no.	**Evaporating temperature -60°C**							
	0			0.16	0.16	0.16	0.16	0.15	0.15
	1			0.17	0.17	0.17	0.17	0.16	0.15
	2			0.19	0.20	0.20	0.19	0.19	0.18
	3			0.27	0.28	0.28	0.27	0.26	0.25
TU	4			0.40	0.41	0.41	0.40	0.38	0.36
	5			0.53	0.55	0.55	0.53	0.51	0.49
	6			0.79	0.81	0.81	0.79	0.76	0.73
	7			1.1	1.1	1.1	1.1	1.0	1.0
	8			1.6	1.7	1.7	1.6	1.6	1.5
	9			2.3	2.4	2.4	2.3	2.3	2.1

Correction for subcooling Δt_{sub}
The evaporator capacity used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the evaporator capacity by the correction factor given below.

Note:
Insufficient subcooling can produce flash gas.

Correction factor for subcooling Δt_{sub}

	Δt_{sub}									
	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
R 404A/R 507	1.00	1.1	1.2	1.29	1.37	1.46	1.54	1.63	1.7	1.78

Capacity *(continued)*

R 407C

*Capacity in kW for range **N = −40 → +10°C** and opening superheat OS = 4 K*

Evaporating temperature +10°C (left) / **Evaporating temperature 0°C** (right)

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0	0.43	0.54	0.60	0.64	0.67	0.68	0.68	0.68	0.41	0.51	0.56	0.60	0.62	0.63	0.63	0.63
	1	0.63	0.81	0.90	0.96	0.99	1.01	1.02	1.01	0.56	0.73	0.81	0.86	0.89	0.90	0.91	0.90
	2	0.90	1.2	1.4	1.5	1.5	1.6	1.6	1.6	0.8	1.0	1.1	1.2	1.2	1.3	1.3	1.3
	3	1.2	1.6	1.9	2.0	2.1	2.2	2.2	2.2	1.0	1.4	1.5	1.7	1.7	1.8	1.8	1.8
	4	1.9	2.5	2.8	3.1	3.2	3.3	3.3	3.3	1.6	2.1	2.3	2.5	2.6	2.7	2.7	2.7
	5	2.5	3.3	3.8	4.1	4.2	4.4	4.4	4.4	2.1	2.7	3.1	3.3	3.5	3.5	3.6	3.6
	6	3.8	5.0	5.7	6.1	6.4	6.6	6.7	6.7	3.1	4.1	4.6	5.0	5.2	5.3	5.4	5.4
	7	5.0	6.6	7.6	8.2	8.6	8.8	8.9	8.9	4.2	5.4	6.2	6.7	6.9	7.1	7.2	7.2
	8	7.5	9.9	11.2	12.2	12.7	13.0	13.2	13.2	6.3	8.2	9.3	9.9	10.4	10.6	10.7	10.7
	9	11.3	14.8	16.9	18.2	19.0	19.5	19.7	19.7	9.3	12.2	13.8	14.8	15.4	15.8	15.9	15.9

Evaporating temperature −10°C (left) / **Evaporating temperature −20°C** (right)

Type	Orifice no.	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0	0.37	0.46	0.51	0.54	0.55	0.56	0.57	0.56	0.33	0.40	0.44	0.47	0.48	0.49	0.49	0.49
	1	0.48	0.62	0.70	0.74	0.76	0.77	0.77	0.77	0.39	0.50	0.56	0.60	0.62	0.63	0.63	0.63
	2	0.60	0.78	0.88	0.94	0.98	1.00	1.01	1.01	0.47	0.60	0.68	0.72	0.75	0.76	0.77	0.76
	3	0.84	1.1	1.2	1.3	1.4	1.4	1.4	1.4	0.66	0.84	0.95	1.0	1.1	1.1	1.1	1.1
	4	1.3	1.6	1.8	2.0	2.0	2.1	2.1	2.1	0.98	1.3	1.4	1.5	1.6	1.6	1.6	1.6
	5	1.7	2.2	2.4	2.6	2.7	2.8	2.8	2.8	1.3	1.7	1.9	2.0	2.1	2.1	2.1	2.1
	6	2.5	3.2	3.7	3.9	4.1	4.2	4.2	4.2	1.9	2.5	2.8	3.0	3.1	3.2	3.2	3.2
	7	3.4	4.3	4.9	5.2	5.5	5.6	5.6	5.6	2.6	3.3	3.7	4.0	4.1	4.2	4.2	4.2
	8	5.0	6.5	7.4	7.9	8.2	8.4	8.4	8.4	3.9	5.0	5.7	6.0	6.2	6.4	6.4	6.4
	9	7.5	9.6	10.9	11.6	12.1	12.3	12.4	12.4	5.8	7.4	8.3	8.9	9.2	9.3	9.4	9.3

Evaporating temperature −30°C (left) / **Evaporating temperature −40°C** (right)

Type	Orifice no.	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
TU	0		0.26	0.29	0.31	0.32	0.32	0.32	0.31		0.29	0.31	0.32	0.32	0.32	0.31	
	1		0.38	0.43	0.45	0.47	0.48	0.48	0.47		0.31	0.33	0.34	0.34	0.35	0.34	
	2		0.45	0.50	0.53	0.55	0.56	0.56	0.56		0.36	0.38	0.40	0.40	0.40	0.40	
	3		0.63	0.71	0.75	0.78	0.79	0.79	0.79		0.51	0.54	0.56	0.56	0.56	0.56	
	4		0.93	1.0	1.1	1.1	1.2	1.2	1.2		0.75	0.79	0.81	0.82	0.82	0.82	
	5		1.3	1.4	1.5	1.5	1.6	1.6	1.5		1.0	1.1	1.1	1.1	1.1	1.1	
	6		1.9	2.1	2.2	2.3	2.3	2.3	2.3		1.5	1.6	1.6	1.6	1.6	1.6	
	7		2.5	2.8	3.0	3.1	3.1	3.1	3.1		2.0	2.1	2.2	2.2	2.2	2.2	
	8		3.8	4.2	4.5	4.6	4.7	4.7	4.7		3.0	3.2	3.3	3.3	3.3	3.3	
	9		5.5	6.2	6.5	6.7	6.8	6.9	6.8		4.4	4.7	4.8	4.9	4.9	4.8	

Correction for subcooling Δt$_{sub}$
The evaporator capacity used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the evaporator capacity by the correction factor given below.

Note:
Insufficient subcooling can produce flash gas.

Correction factor for subcooling Δt$_{sub}$

	Δt$_{sub}$									
	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
R 407C	1.00	1.08	1.14	1.21	1.27	1.33	1.39	1.45	1.51	1.57

Capacity *(continued)*

R 407C

*Capacity in kW for range **B = −60 → −25°C** and opening superheat OS = 4 K*

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
		Evaporating temperature -25°C								**Evaporating temperature -30°C**							
TU	0	0.34	0.42	0.46	0.49	0.50	0.51	0.51	0.50	0.31	0.38	0.42	0.44	0.45	0.46	0.46	0.46
	1	0.43	0.54	0.61	0.65	0.66	0.67	0.67	0.67	0.37	0.47	0.52	0.56	0.57	0.58	0.59	0.58
	2	0.52	0.67	0.75	0.79	0.82	0.83	0.84	0.83	0.45	0.56	0.63	0.67	0.69	0.70	0.70	0.70
	3	0.73	0.93	1.0	1.1	1.2	1.2	1.2	1.2	0.62	0.79	0.88	0.94	0.97	0.98	0.98	0.98
	4	1.1	1.4	1.5	1.6	1.7	1.7	1.7	1.7	0.92	1.2	1.3	1.4	1.4	1.4	1.5	1.4
	5	1.5	1.8	2.1	2.2	2.3	2.3	2.3	2.3	1.2	1.6	1.7	1.8	1.9	1.9	1.9	1.9
	6	2.2	2.8	3.1	3.3	3.4	3.5	3.5	3.5	1.8	2.3	2.6	2.8	2.9	2.9	2.9	2.9
	7	2.9	3.7	4.1	4.4	4.5	4.6	4.6	4.6	2.5	3.1	3.5	3.7	3.8	3.9	3.9	3.9
	8	4.4	5.6	6.2	6.6	6.8	7.0	7.0	6.9	3.7	4.7	5.3	5.6	5.8	5.8	5.9	5.8
	9	6.5	8.2	9.2	9.7	10.1	10.2	10.3	10.2	5.5	6.9	7.7	8.2	8.4	8.6	8.6	8.5

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		Evaporating temperature -40°C								**Evaporating temperature -50°C**							
TU	0	0.24	0.30	0.33	0.35	0.36	0.36	0.36	0.36	0.17	0.22	0.24	0.25	0.26	0.26	0.26	0.26
	1	0.27	0.34	0.37	0.39	0.41	0.41	0.41	0.41	0.18	0.23	0.25	0.27	0.27	0.28	0.28	0.27
	2	0.31	0.39	0.44	0.46	0.47	0.48	0.48	0.48	0.21	0.27	0.29	0.31	0.32	0.32	0.32	0.32
	3	0.44	0.55	0.61	0.65	0.67	0.68	0.68	0.67	0.30	0.37	0.41	0.44	0.45	0.45	0.45	0.45
	4	0.65	0.81	0.90	0.95	0.98	0.99	0.99	0.98	0.44	0.55	0.60	0.63	0.65	0.66	0.66	0.65
	5	0.86	1.1	1.2	1.3	1.3	1.3	1.3	1.3	0.59	0.73	0.81	0.85	0.88	0.88	0.88	0.87
	6	1.3	1.6	1.8	1.9	2.0	2.0	2.0	2.0	0.87	1.1	1.2	1.3	1.3	1.3	1.3	1.3
	7	1.7	2.2	2.4	2.5	2.6	2.7	2.7	2.6	1.2	1.5	1.6	1.7	1.7	1.8	1.8	1.7
	8	2.6	3.3	3.6	3.9	4.0	4.0	4.0	4.0	1.8	2.2	2.4	2.6	2.6	2.7	2.7	2.6
	9	3.8	4.8	5.3	5.6	5.8	5.8	5.8	5.8	2.6	3.2	3.5	3.7	3.8	3.9	3.9	3.8

Type	Orifice no.	Pressure drop across valve Δp bar							
		Evaporating temperature -60°C							
TU	0	0.12	0.15	0.16	0.18	0.17	0.17	0.17	0.17
	1	0.12	0.15	0.17	0.18	0.18	0.18	0.18	0.18
	2	0.14	0.17	0.19	0.20	0.21	0.21	0.21	0.20
	3	0.20	0.25	0.27	0.29	0.29	0.29	0.29	0.29
	4	0.29	0.36	0.39	0.41	0.42	0.43	0.42	0.42
	5	0.39	0.48	0.53	0.56	0.57	0.57	0.57	0.56
	6	0.58	0.71	0.79	0.83	0.85	0.85	0.85	0.83
	7	0.78	0.96	1.1	1.1	1.1	1.1	1.1	1.1
	8	1.2	1.5	1.6	1.7	1.7	1.7	1.7	1.7
	9	1.7	2.1	2.3	2.4	2.5	2.5	2.5	2.5

Correction for subcooling Δt_{sub}
The evaporator capacity used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the evaporator capacity by the correction factor given below.

Note:
Insufficient subcooling can produce flash gas.

Correction factor for subcooling Δt_{sub}

	Δt_{sub}									
	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
R 407C	1.00	1.08	1.14	1.21	1.27	1.33	1.39	1.45	1.51	1.57

Capacity *(continued)*

Capacity in kW for range **N = −40 to +10°C** *and opening superheat OS = 4 K*

R 410A

Type	Orifice no.	Pressure drop across valve Δp bar								Pressure drop across valve Δp bar							
		3	6	9	12	15	18	21	24	3	6	9	12	15	18	21	24
		Evaporating temperature +10°C								**Evaporating temperature 0°C**							
TU	0	0.56	0.72	0.80	0.85	0.87	0.88	0.87	0.85	0.56	0.70	0.78	0.83	0.85	0.86	0.85	0.84
	1	0.89	1.13	1.26	1.30	1.37	1.38	1.36	1.33	0.84	1.06	1.18	1.24	1.29	1.30	1.29	1.27
	2	1.45	1.90	2.2	2.3	2.4	2.5	2.4	2.4	1.25	1.64	1.86	1.99	2.1	2.1	2.1	2.1
	3	1.98	2.6	3.0	3.2	3.3	3.3	3.3	3.3	1.72	2.3	2.6	2.7	2.9	2.9	2.9	2.9
	4	3.1	4.1	4.6	4.9	5.1	5.2	5.1	5.0	2.6	3.5	3.9	4.2	4.3	4.4	4.4	4.3
	5	4.1	5.3	6.1	6.5	6.7	6.8	6.8	6.7	3.5	4.6	5.2	5.6	5.8	5.9	5.8	5.8
	6	6.2	8.1	9.2	9.9	10.3	10.5	10.4	10.2	5.3	6.9	7.9	8.4	8.7	8.9	8.9	8.8
	7	8.2	10.7	12.7	13.1	13.6	13.8	13.8	13.5	7.0	9.2	10.4	11.1	11.6	11.8	11.8	11.6
	8	12.1	15.8	18.0	19.3	20.0	20.3	20.2	19.9	10.4	13.7	15.5	16.6	17.2	17.5	17.5	17.2
	9	18.3	24.0	27.2	29.1	30.2	30.6	30.5	29.9	15.7	20.5	23.3	24.9	25.8	26.2	26.2	25.7

Type	Orifice no.	3	6	9	12	15	18	21	24	3	6	9	12	15	18	21	24
		Evaporating temperature −10°C								**Evaporating temperature −20°C**							
TU	0	0.53	0.67	0.74	0.78	0.80	0.81	0.81	0.79		0.60	0.67	0.70	0.72	0.73	0.73	0.72
	1	0.76	0.96	1.07	1.13	1.16	1.17	1.17	1.15		0.83	0.92	0.97	1.00	1.01	1.00	0.99
	2	1.04	1.35	1.52	1.63	1.69	1.72	1.72	1.70		1.06	1.20	1.28	1.32	1.34	1.34	1.33
	3	1.44	1.86	2.1	2.3	2.3	2.4	2.4	2.4		1.48	1.67	1.78	1.84	1.87	1.87	1.85
	4	2.2	2.8	3.2	3.4	3.5	3.6	3.6	3.5		2.2	2.5	2.7	2.7	2.8	2.8	2.8
	5	2.9	3.7	4.2	4.5	4.7	4.8	4.8	4.8		3.0	3.3	3.5	3.7	3.7	3.7	3.7
	6	4.3	5.6	6.4	6.8	7.1	7.2	7.2	7.1		4.4	5.0	5.3	5.5	5.6	5.6	5.5
	7	5.8	7.5	8.5	9.1	9.4	9.6	9.6	9.5		5.9	6.6	7.1	7.4	7.5	7.5	7.4
	8	8.6	11.2	12.7	13.6	14.1	14.3	14.3	14.1		8.9	10.0	10.7	11.0	11.2	11.2	11.1
	9	12.9	16.8	19.0	20.3	21.0	21.3	21.3	21.0		13.2	14.8	15.8	16.4	16.6	16.6	16.4

Type	Orifice no.	3	6	9	12	15	18	21	24	3	6	9	12	15	18	21	24
		Evaporating temperature −30°C								**Evaporating temperature −40°C**							
TU	0		0.52	0.58	0.61	0.63	0.63	0.63	0.62		0.48	0.50	0.52	0.52	0.52	0.51
	1		0.66	0.74	0.79	0.82	0.82	0.82	0.81		0.56	0.59	0.61	0.62	0.62	0.61
	2		0.81	0.90	0.96	1.00	1.01	1.01	1.00		0.66	0.70	0.72	0.73	0.73	0.72
	3		1.13	1.27	1.35	1.40	1.41	1.41	1.40		0.93	0.98	1.02	1.03	1.03	1.01
	4		1.67	1.87	2.0	2.1	2.1	2.1	2.1		1.36	1.45	1.49	1.51	1.50	1.48
	5		2.2	2.5	2.7	2.8	2.8	2.8	2.8		1.82	1.9	2.0	2.0	2.0	2.0
	6		3.3	3.7	4.0	4.1	4.2	4.2	4.1		2.7	2.9	3.0	3.0	3.0	3.0
	7		4.5	5.0	5.4	5.5	5.6	5.6	5.5		3.6	3.9	4.0	4.0	4.0	4.0
	8		6.7	7.6	8.0	8.3	8.4	8.4	8.3		5.5	5.8	6.0	6.1	6.1	6.0
	9		9.9	11.1	11.8	12.2	12.4	12.4	12.2		8.1	8.6	8.8	8.9	8.9	8.8

Correction for subcooling Δt_{sub}
The evaporator capacity used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the evaporator capacity by the correction factor given below.

Note:
Insufficient subcooling can produce flash gas.

Correction factor for subcooling Δt_{sub}

	Δt_{sub}									
	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
R 410A	1.00	1.08	1.15	1.21	1.27	1.33	1.39	1.45	1.50	1.56

Data sheet **Thermostatic expansion valve, type TUA/TUAE**

Design/ Function

1. Bulb with capillary tube
2. Thermostatic element with diaphragm
3. Setting spindle for adjustment of static superheat SS
4. Orifice assembly
5. Filter
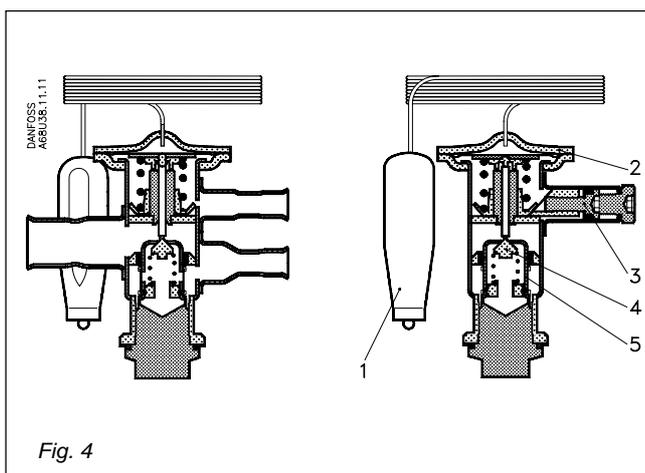
Fig. 4
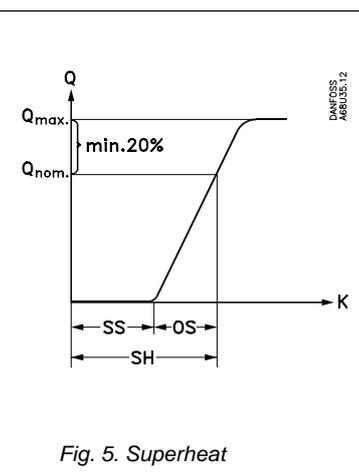
Fig. 5. Superheat

Superheat
See fig. 5
SS = static superheat
OS = opening superheat
SH = SS + OS = total superheat
Q_{nom} = rated capacity
Q_{max} = maximum capacity

Static superheat SS can be adjusted with setting spindle 3, see fig. 4.

The standard superheat setting SS is 5 K for valves without MOP and 4 K for valves with MOP (except R 507).
The opening superheat OS is 4 K from when opening begins to where the valve gives its rated capacity Q_{nom}.

Example
Static superheat   SS = 5 K
Opening superheat   OS = 4 K
Total superheat   SH = 5 + 4 = 9 K

Dimensions and weight
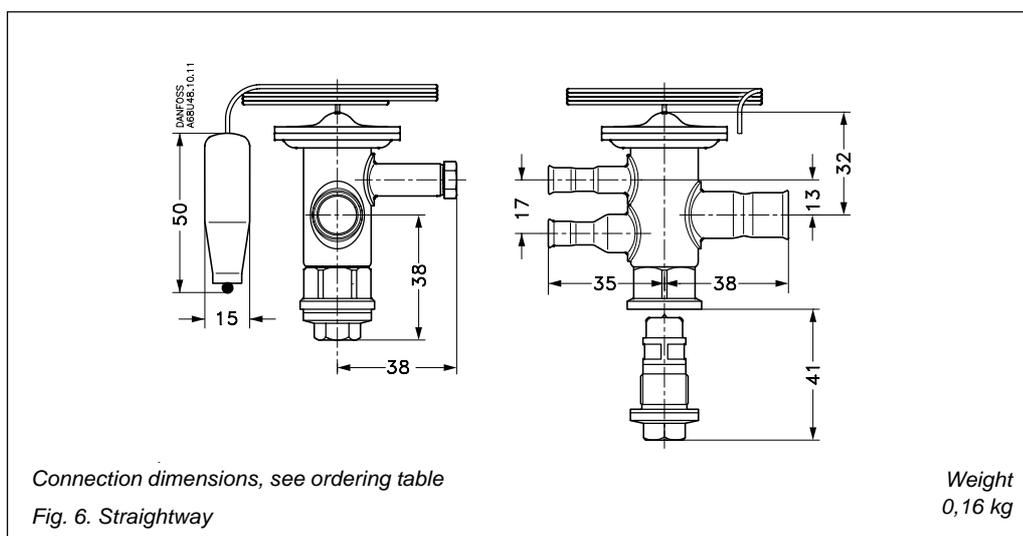
Connection dimensions, see ordering table

Fig. 6. Straightway

Weight 0,16 kg

DK-6430 Nordborg
Denmark