MAKING MODERN LIVING POSSIBLE

Thermostatic expansion valves

T2/ TE2

Dedicated to the Chinese market

Technical brochure

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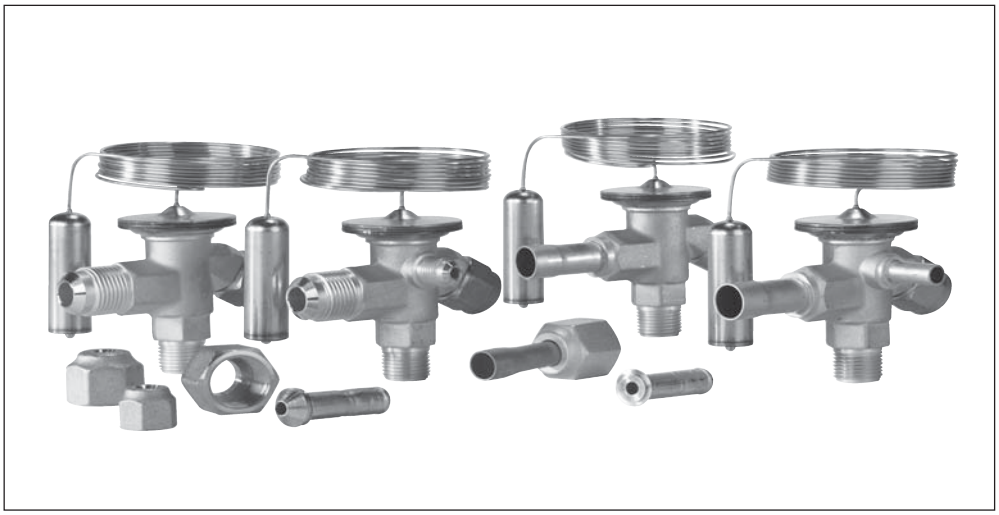
Introduction



Thermostatic expansion valves regulate the injection of refrigerant liquid into evaporators. Injection is controlled by the refrigerant superheat. Therefore the valves are especially suitable for liquid injection in "dry" evaporators where the superheat at the evaporator outlet is proportional to the evaporator load.

Features

- *Large temperature range*
  Equally applicable to freezing, refrigeration and air conditioning applications.
- *Interchangeable orifice assembly*
  - easier stocking
  - easy capacity matching
  - better service.
- *Rated capacities from 0.5 to 15.5 kW (0.15 to 4.5 TR) for R22.*
- *Can be supplied with MOP*
  (Max. Operating Pressure)
  Protects the compressor motor against excessive evaporating pressure during normal operation.
- *Stainless steel bulb*
  Fast and easy to install.
  Good temperature transfer from pipe to bulb.
- *Valves for special temperature ranges can be supplied.*

Technical data

Max. temperature
Bulb, when valve is installed: 100°C
Bulb, element not mounted: 60°C

Min. temperature
T 2 → TE 2: –60°C

Max. test pressure
PT = 38 bar

Max. working pressure
PS/MWP = 34 bar

MOP-points

Refrigerant	Range N –40°C → +10°C	Range NM –40°C → –5°C	Range NL –40°C → –15°C	Range B –60°C → –25°C
	MOP-point in evaporating temperature t_e and evaporating pressure p_e			
	+15°C / +60°F	0°C / +32°F	–10°C / +15°F	–20°C / –4°F
R22	100 psig/6.9 bar	60 psig/4.0 bar	35 psig/3.5 bar	20 psig/1.5 bar
R407C	95 psig/6.6 bar			
R134a	55 psig/5.0 bar	30 psig/3.1 bar	15 psig/2.1 bar	
R404A/R507	120 psig/9.3 bar	75 psig/6.2 bar	50 psig/4.4 bar	30 psig/3.1 bar

Superheat

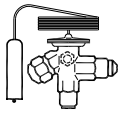
SS = static superheat
OS = opening superheat
SH = SS + OS = total superheat
Q_{nom} = rated capacity
Q_{max} = maximum capacity

Static superheat SS can be adjusted with setting spindle.

The standard superheat setting SS is 5 K for valves without MOP and 4 K for valves with MOP.
The opening superheat OS is 6 K from when opening begins to where the valve gives its rated capacity $Q_{nom.}$

Example
Static superheat SS = 5 K
Opening superheat OS = 6 K
Total superheat SH = 5 + 6 = 11 K

Ordering, components



Thermostatic element with sensor band, without orifice, filter cone, nuts

Refrigerant	Valve type	Pressure equalization	Capillary tube	Connection		Code no.			
				Inlet × outlet [1]		Range N –40 to +10°C			Range B –60 to +25°C
						Without MOP		With MOP	With MOP
						Flare connection	Solder outlet & equalization	Flare connection	Flare connection
			m	in. × in.	mm × mm				
R22	TX 2	Int.	1.5	3/8 × 1/2	10 × 12	**068Z8000**	**068Z8006**		**068Z8004**
	TEX 2	Ext.	1.5	3/8 × 1/2	10 × 12	**068Z8001**	**068Z8007**		**068Z8005**
R407C	TZ 2	Int.	1.5	3/8 × 1/2	10 × 12	**068Z8002**			
	TEZ 2	Ext.	1.5	3/8 × 1/2	10 × 12	**068Z8003**			
R134a	TN 2	Int.	1.5	3/8 × 1/2	10 × 12	**068Z8008**	**068Z8010**		
	TEN 2	Ext.	1.5	3/8 × 1/2	10 × 12	**068Z8009**	**068Z8011**		
R404A/ R507	TS 2	Int.	1.5	3/8 × 1/2	10 × 12	**068Z8012**	**068Z8016**		
	TES 2	Ext.	1.5	3/8 × 1/2	10 × 12	**068Z8013**	**068Z8017** **068Z8018** [1]	**068Z8014**	**068Z8015**

[1] I-pack

Orifice assembly with filter

Range N: –40 to +10°C

Orifice no.	Rated capacity in tons (TR)				Rated capacity in kW				Code no.	
	R22	R407C	R134a	R404A R507	R22	R407C	R134a	R404A R507	Flare	Solder adaptor only
0X	0.15	0.16	0.11	0.11	0.50	0.50	0.40	0.38	**068-8000**	
00	0.30	0.30	0.25	0.21	1.0	1.1	0.90	0.70	**068-8001**	**068-8008**
01	0.70	0.80	0.50	0.45	2.5	2.7	1.8	1.6	**068-8006**	**068-8009**
02	1.0	1.1	0.80	0.60	3.5	3.8	2.6	2.1	**068-8007**	
03	1.5	1.6	1.3	1.2	5.2	5.6	4.6	4.2	**068-8002**	**068-8010**
04	2.3	2.5	1.9	1.7	8.0	8.6	6.7	6.0	**068-8003**	**068-8011**
05	3.0	3.2	2.5	2.2	10.5	11.3	8.6	7.7	**068-8004**	
06	4.5	4.9	3.0	2.6	15.5	16.7	10.5	9.1	**068-8005**	

Range B: –60 to –25°C

Orifice no.	Rated capacity in tons (TR)		Rated capacity in kW		Code no.	
	R22	R404A R507	R22	R404A R507	Flare	Solder adaptor only
0X	0.15	0.11	0.50	0.38	**068-8000**	
00	0.20	0.21	0.70	0.70	**068-8001**	**068-8008**
01	0.30	0.45	1.0	1.6	**068-8006**	**068-8009**
02	0.60	0.60	2.1	2.1	**068-8007**	
03	0.80	1.0	2.8	3.5	**068-8002**	**068-8010**
04	1.2	1.4	4.2	4.9	**068-8003**	**068-8011**
05	1.5	1.7	5.2	6.0	**068-8004**	
06	2.0	1.9	7.0	6.6	**068-8005**	

The rated capacity is based on:
Evaporating temperature t_e = +5°C for range N and
t_e = –30°C for range B
Condensing temperature t_c = +32°C
Refrigerant temperature ahead of valve t_l = +28°C

Capacity

R22

Capacity in kW for range N: –40°C to +10°C

Valve 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**							
TX 2/TEX 2-0.15	0X	0.37	0.48	0.55	0.60	0.63	0.65	0.65	0.67	0.37	0.48	0.55	0.59	0.63	0.65	0.66	0.66
TX 2/TEX 2-0.3	00	0.87	1.1	1.2	1.3	1.4	1.4	1.4	1.5	0.84	1.0	1.2	1.3	1.3	1.4	1.4	1.4
TX 2/TEX 2-0.7	01	2.2	2.8	3.2	3.4	3.6	3.7	3.8	3.8	1.9	2.4	2.7	3.0	3.1	3.2	3.3	3.3
TX 2/TEX 2-1.0	02	3.0	4.0	4.7	5.1	5.4	5.6	5.8	5.8	2.6	3.4	4.0	4.3	4.6	4.8	4.9	5.0
TX 2/TEX 2-1.5	03	5.4	7.2	8.3	9.1	9.7	10.0	10.2	10.3	4.6	6.1	7.1	7.8	8.2	8.5	8.7	8.8
TX 2/TEX 2-2.3	04	8.1	10.8	12.5	13.8	14.5	15.0	15.4	15.5	6.9	9.1	10.5	11.5	12.2	12.7	13.0	13.2
TX 2/TEX 2-3.0	05	10.2	13.6	15.7	17.2	18.3	18.9	19.3	19.5	8.8	11.6	13.3	14.6	15.5	16.1	16.4	16.6
TX 2/TEX 2-4.5	06	12.6	16.7	19.3	21.0	22.3	23.1	23.5	23.7	10.8	14.2	16.3	17.8	18.9	19.6	20.0	20.2
		Evaporating temperature –10°C								**Evaporating temperature –20°C**							
TX 2/TEX 2-0.15	0X	0.37	0.47	0.53	0.57	0.60	0.63	0.64	0.64		0.44	0.50	0.54	0.57	0.59	0.61	0.61
TX 2/TEX 2-0.3	00	0.79	0.96	1.1	1.2	1.2	1.3	1.3	1.3		0.88	1.0	1.1	1.1	1.2	1.2	1.2
TX 2/TEX 2-0.7	01	1.6	2.0	2.3	2.5	2.6	2.7	2.8	2.8		1.7	1.9	2.0	2.2	2.3	2.3	2.3
TX 2/TEX 2-1.0	02	2.2	2.9	3.3	3.6	3.8	4.0	4.1	4.1		2.4	2.7	2.9	3.1	3.2	3.3	3.3
TX 2/TEX 2-1.5	03	3.9	5.1	5.9	6.4	6.8	7.1	7.3	7.3		4.2	4.8	5.2	5.5	5.8	5.9	6.0
TX 2/TEX 2-2.3	04	5.8	7.6	8.7	9.5	10.1	10.5	10.8	10.9		6.2	7.1	7.7	8.2	8.5	8.7	8.8
TX 2/TEX 2-3.0	05	7.4	9.6	11.0	12.0	12.8	13.3	13.6	13.8		7.9	9.0	9.8	10.3	10.8	11.0	11.2
TX 2/TEX 2-4.5	06	9.1	11.8	13.5	14.7	15.6	16.2	16.6	16.8		9.6	11.0	11.9	12.6	13.1	13.5	13.7
		Evaporating temperature –30°C								**Evaporating temperature –40°C**							
TX 2/TEX 2-0.15	0X		0.40	0.45	0.49	0.52	0.55	0.56	0.57			0.42	0.45	0.48	0.50	0.52	0.53
TX 2/TEX 2-0.3	00		0.79	0.90	0.96	1.0	1.1	1.1	1.1			0.80	0.86	0.92	0.95	0.98	0.99
TX 2/TEX 2-0.7	01		1.4	1.5	1.7	1.8	1.8	1.9	1.9			1.3	1.4	1.4	1.5	1.5	1.6
TX 2/TEX 2-1.0	02		1.9	2.2	2.7	2.5	2.6	2.6	2.7			1.7	1.9	2.0	2.0	2.1	2.1
TX 2/TEX 2-1.5	03		3.4	3.9	4.2	4.4	4.6	4.7	4.8			3.1	3.4	3.5	3.7	3.8	3.8
TX 2/TEX 2-2.3	04		5.0	5.7	6.2	6.5	6.8	7.0	7.1			4.6	4.9	5.2	5.4	5.6	5.7
TX 2/TEX 2-3.0	05		6.4	7.2	7.8	8.3	8.6	8.8	9.0			5.8	6.3	6.6	6.9	7.1	7.2
TX 2/TEX 2-4.5	06		7.8	8.8	9.6	10.1	10.5	10.8	11.0			7.1	7.7	8.1	8.4	8.7	8.8

Capacity in kW for range B: –60°C to –25°C

Valve 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**							
TX 2/TEX 2-0.2	00	0.69	0.83	0.94	1.0	1.1	1.1	1.1	1.2	0.66	0.79	0.89	0.96	1.0	1.1	1.1	1.1
TX 2/TEX 2-0.3	01	1.2	1.5	1.7	1.9	2.0	2.0	2.1	2.1	1.1	1.4	1.5	1.7	1.8	1.8	1.9	1.9
TX 2/TEX 2-0.6	02	1.7	2.1	2.4	2.6	2.8	2.9	2.9	3.0	1.5	1.9	2.2	2.3	2.5	2.6	2.6	2.7
TX 2/TEX 2-0.8	03	3.0	3.8	4.3	4.7	5.0	5.2	5.3	5.3	2.7	3.4	3.9	4.2	4.4	4.6	4.7	4.8
TX 2/TEX 2-1.2	04	4.4	5.6	6.4	6.9	7.3	7.6	7.8	7.9	3.9	5.0	5.7	6.2	6.5	6.8	7.0	7.1
TX 2/TEX 2-1.5	05	5.6	7.1	8.1	8.7	9.3	9.6	9.9	10.0	5.0	6.4	7.2	7.8	8.3	8.6	8.8	9.0
TX 2/TEX 2-2.0	06	6.8	8.7	9.8	10.7	11.3	11.8	12.1	12.3	6.1	7.8	8.8	9.6	10.1	10.5	10.8	11.0
		Evaporating temperature –40°C								**Evaporating temperature –50°C**							
TX 2/TEX 2-0.2	00	0.60	0.71	0.80	0.86	0.92	0.95	0.98	0.99	0.54	0.65	0.72	0.78	0.82	0.85	0.87	0.88
TX 2/TEX 2-0.3	01	0.90	1.1	1.3	1.4	1.4	1.5	1.5	1.6	0.74	0.92	1.0	1.1	1.2	1.2	1.3	1.3
TX 2/TEX 2-0.6	02	1.2	1.6	1.7	1.9	2.0	2.1	2.1	2.1	1.0	1.3	1.4	1.5	1.6	1.7	1.7	1.7
TX 2/TEX 2-0.8	03	2.2	2.8	3.1	3.4	3.5	3.7	3.8	3.8	1.8	2.3	2.6	2.7	2.9	3.0	3.1	3.1
TX 2/TEX 2-1.2	04	3.2	4.0	4.6	4.9	5.2	5.4	5.6	5.7	2.6	3.3	3.7	4.0	4.2	4.4	4.5	4.6
TX 2/TEX 2-1.5	05	4.1	5.1	5.8	6.3	6.6	6.9	7.1	7.2	3.4	4.2	4.7	5.1	5.4	5.6	5.8	5.9
TX 2/TEX 2-2.0	06	5.0	6.3	7.1	7.7	8.1	8.4	8.7	8.8	4.1	5.1	5.8	6.2	6.6	6.9	7.1	7.2
		Evaporating temperature –60°C															
TX 2/TEX 2-0.2	00	0.50	0.60	0.66	0.71	0.75	0.77	0.79	0.80								
TX 2/TEX 2-0.3	01	0.64	0.79	0.88	0.95	1.0	1.0	1.1	1.1								
TX 2/TEX 2-0.6	02	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.4								
TX 2/TEX 2-0.8	03	1.6	1.9	2.2	2.3	2.4	2.5	2.6	2.6								
TX 2/TEX 2-1.2	04	2.2	2.8	3.1	3.4	3.6	3.7	3.8	3.9								
TX 2/TEX 2-1.5	05	2.9	3.6	4.0	4.3	4.6	4.8	4.9	5.0								
TX 2/TEX 2-2.0	06	3.5	4.4	4.9	5.3	5.6	5.8	6.0	6.1								

Correction for subcooling Δt_{sub}

Note:
Insufficient subcooling can produce flash gas.

The evaporator capacities used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the required evaporator capacity by the correction factor below. Selections can then be made from the tables above.

Δt_u	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
Correction factor	1.00	1.06	1.11	1.15	1.20	1.25	1.30	1.35	1.39	1.44

Example
Refrigerant = R22
Evaporator capacity Q_e = 5 kW
Subcooling = 10 K

Correction factor from table = 1.06
Corrected capacity = 5 : 1.06 = 4.72 kW

Capacity

R407C

Capacity in kW for range N: –40°C to +10°C

Valve 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**							
TZ 2/TEZ 2 - 0.16	0X	0.40	0.50	0.56	0.61	0.63	0.64	0.63	0.64	0.40	0.50	0.56	0.60	0.63	0.64	0.64	0.63
TZ 2/TEZ 2 - 0.30	00	0.90	1.1	1.2	1.3	1.4	1.4	1.4	1.4	0.87	1.0	1.2	1.3	1.3	1.4	1.4	1.3
TZ 2/TEZ 2 - 0.80	01	2.3	2.9	3.3	3.4	3.6	3.6	3.7	3.6	2.0	2.5	2.8	3.0	3.1	3.1	3.2	3.2
TZ 2/TEZ 2 - 1.1	02	3.1	4.1	4.8	5.2	5.4	5.5	5.6	5.6	2.7	3.5	4.1	4.3	4.6	4.7	4.8	4.8
TZ 2/TEZ 2 - 1.6	03	5.6	7.4	8.5	9.2	9.7	9.8	9.9	9.9	4.8	6.3	7.2	7.9	8.2	8.3	8.4	8.4
TZ 2/TEZ 2 - 2.5	04	8.4	11.1	12.8	13.9	14.5	14.7	14.9	14.9	7.2	9.4	10.7	11.6	12.2	12.4	12.6	12.7
TZ 2/TEZ 2 - 3.2	05	10.6	14.0	16.0	17.4	18.3	18.5	18.7	18.7	9.2	11.9	13.6	14.7	15.5	15.8	15.9	15.9
TZ 2/TEZ 2 - 4.9	06	13.1	17.2	19.7	21.2	22.3	22.6	22.8	22.8	11.2	14.6	16.6	18.0	18.9	19.2	19.4	19.4
		Evaporating temperature –10°C								**Evaporating temperature –20°C**							
TZ 2/TEZ 2 - 0.16	0X	0.38	0.48	0.54	0.57	0.60	0.62	0.62	0.61		0.45	0.51	0.54	0.56	0.57	0.59	0.57
TZ 2/TEZ 2 - 0.30	00	0.82	1.0	1.1	1.2	1.2	1.3	1.3	1.2		0.90	1.0	1.1	1.1	1.2	1.2	1.1
TZ 2/TEZ 2 - 0.80	01	1.7	2.0	2.3	2.5	2.6	2.6	2.7	2.7		1.7	1.9	2.0	2.2	2.2	2.2	2.2
TZ 2/TEZ 2 - 1.1	02	2.3	3.0	3.3	3.6	3.8	3.9	4.0	3.9		2.4	2.7	2.9	3.1	3.1	3.2	3.1
TZ 2/TEZ 2 - 1.6	03	4.1	5.2	6.0	6.4	6.8	7.0	7.1	6.9		4.3	4.8	5.2	5.4	5.6	5.7	5.6
TZ 2/TEZ 2 - 2.5	04	6.0	7.8	8.8	9.5	10.1	10.3	10.5	10.4		6.3	7.2	7.7	8.1	8.2	8.4	8.3
TZ 2/TEZ 2 - 3.2	05	7.7	9.8	11.1	12.0	12.8	13.0	13.2	13.1		8.1	9.1	9.8	10.2	10.5	10.6	10.5
TZ 2/TEZ 2 - 4.9	06	9.5	12.0	13.6	14.7	15.6	15.9	16.1	16.0		9.8	11.1	11.9	12.5	12.7	13.0	12.9
		Evaporating temperature –30°C								**Evaporating temperature –40°C**							
TZ 2/TEZ 2 - 0.16	0X		0.41	0.45	0.49	0.51	0.53	0.53	0.53			0.42	0.44	0.46	0.48	0.48	0.49
TZ 2/TEZ 2 - 0.30	00		0.81	0.90	1.0	1.0	1.1	1.0	1.0			0.80	0.84	0.90	0.90	0.90	0.90
TZ 2/TEZ 2 - 0.80	01		1.4	1.5	1.7	1.8	1.7	1.8	1.8			1.3	1.4	1.3	1.4	1.4	1.5
TZ 2/TEZ 2 - 1.1	02		1.9	2.2	2.7	2.5	2.5	2.5	2.5			1.7	1.9	1.9	1.9	2.0	1.9
TZ 2/TEZ 2 - 1.6	03		3.5	3.9	4.2	4.3	4.4	4.5	4.5			3.1	3.3	3.4	3.5	3.5	3.5
TZ 2/TEZ 2 - 2.5	04		5.1	5.8	6.1	6.4	6.5	6.7	6.6			4.6	4.8	5.0	5.1	5.2	5.2
TZ 2/TEZ 2 - 3.2	05		6.5	7.3	7.7	8.1	8.3	8.4	8.4			5.8	6.2	6.3	6.6	6.6	6.6
TZ 2/TEZ 2 - 4.9	06		8.0	8.9	9.5	9.9	10.1	10.3	10.2			7.1	7.5	7.8	8.0	8.1	8.1

Correction for subcooling Δt_{sub}

Note:
Insufficient subcooling can produce flash gas.

The evaporator capacities used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the required evaporator capacity by the correction factor below. Selections can then be made from the tables above.

Δt_u	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
Correction factor	1.00	1.08	1.14	1.21	1.27	1.33	1.39	1.45	1.51	1.57

Capacity

R134a

Capacity in kW for range N: –40°C to +10°C

Valve type	Orifice no.	Pressure drop across valve Δp bar					Pressure drop across valve Δp bar				
		2	4	6	8	10	2	4	6	8	10
		Evaporating temperature +10°C					**Evaporating temperature 0°C**				
TN 2/TEN 2 - 0.11	0X	0.34	0.43	0.47	0.50	0.51	0.33	0.42	0.46	0.47	0.49
TN 2/TEN 2 - 0.25	00	0.71	0.86	0.93	0.97	0.98	0.65	0.78	0.86	0.89	0.91
TN 2/TEN 2 - 0.5	01	1.5	1.9	2.1	2.2	2.2	1.3	1.6	1.7	1.8	1.8
TN 2/TEN 2 - 0.8	02	2.0	2.6	3.0	3.1	3.2	1.7	2.2	2.4	2.6	2.6
TN 2/TEN 2 - 1.3	03	3.6	4.7	5.3	5.6	5.8	3.0	3.9	4.4	4.6	4.7
TN 2/TEN 2 - 1.9	04	5.4	7.0	7.8	8.3	8.6	4.5	5.7	6.4	6.8	7.0
TN 2/TEN 2 - 2.5	05	6.9	8.9	9.9	10.8	10.9	5.7	7.3	8.1	8.6	8.8
TN 2/TEN 2 - 3.0	06	8.4	10.8	12.1	12.8	13.2	7.0	8.9	10.0	10.5	10.8
		Evaporating temperature –10°C					**Evaporating temperature –20°C**				
TN 2/TEN 2 - 0.11	0X	0.30	0.38	0.43	0.44	0.44	0.28	0.35	0.39	0.41	0.42
TN 2/TEN 2 - 0.25	00	0.59	0.70	0.77	0.81	0.82	0.53	0.62	0.69	0.72	0.73
TN 2/TEN 2 - 0.5	01	1.0	1.3	1.4	1.5	1.5	0.81	1.00	1.1	1.2	1.2
TN 2/TEN 2 - 0.8	02	1.4	1.8	2.0	2.1	2.1	1.1	1.4	1.5	1.6	1.7
TN 2/TEN 2 - 1.3	03	2.5	3.1	3.5	3.7	3.8	2.0	2.5	2.8	2.9	3.0
TN 2/TEN 2 - 1.9	04	3.6	4.6	5.1	5.4	5.6	2.9	3.6	4.0	4.3	4.4
TN 2/TEN 2 - 2.5	05	4.6	5.8	6.5	6.9	7.1	3.7	4.6	5.1	5.4	5.5
TN 2/TEN 2 - 3.0	06	5.7	7.1	8.0	8.4	8.6	4.5	5.6	6.2	6.6	6.8
		Evaporating temperature –30°C					**Evaporating temperature –40°C**				
TN 2/TEN 2 - 0.11	0X	0.25	0.32	0.35	0.37	0.38	0.23	0.28	0.32	0.33	0.34
TN 2/TEN 2 - 0.25	00	0.48	0.55	0.61	0.64	0.64	0.44	0.50	0.54	0.56	0.57
TN 2/TEN 2 - 0.5	01	0.66	0.80	0.88	0.93	0.95	0.54	0.65	0.72	0.76	0.77
TN 2/TEN 2 - 0.8	02	0.90	1.1	1.2	1.3	1.3	0.74	0.89	0.98	1.0	1.0
TN 2/TEN 2 - 1.3	03	1.6	2.0	2.2	2.3	2.3	1.3	1.6	1.8	1.9	1.9
TN 2/TEN 2 - 1.9	04	2.3	2.9	3.2	3.3	3.4	1.9	2.3	2.6	2.7	2.7
TN 2/TEN 2 - 2.5	05	3.0	3.6	4.0	4.2	4.3	2.4	2.9	3.2	3.5	3.5
TN 2/TEN 2 - 3.0	06	3.6	4.4	4.9	5.2	5.3	3.0	3.6	4.0	4.2	4.3

Correction for subcooling Δt_{sub}

Note:
Insufficient subcooling can produce flash gas.

The evaporator capacities used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the required evaporator capacity by the correction factor below. Selections can then be made from the tables above.

Δt_u	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
Correction factor	1.00	1.08	1.13	1.19	1.25	1.31	1.37	1.42	1.48	1.54

Capacity

R404A / R507

Capacity in kW for range N: –40°C to +10°C

Valve 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**							
TS 2/TES 2 - 0.11	0X	0.28	0.35	0.40	0.42	0.43	0.43	0.42	0.41	0.30	0.37	0.41	0.42	0.43	0.43	0.43	0.41
TS 2/TES 2 - 0.21	00	0.67	0.82	0.90	0.94	0.96	0.96	0.93	0.90	0.68	0.80	0.87	0.90	0.92	0.93	0.91	0.87
TS 2/TES 2 - 0.45	01	1.7	2.1	2.3	2.4	2.5	2.5	2.4	2.3	1.5	1.9	2.0	2.1	2.2	2.2	2.2	2.1
TS 2/TES 2 - 0.6	02	2.3	3.0	3.4	3.6	3.7	3.7	3.7	3.6	2.1	2.6	3.0	3.1	3.2	3.3	3.2	3.1
TS 2/TES 2 - 1.2	03	4.2	5.4	6.0	6.4	6.6	6.7	6.6	6.4	3.7	4.7	5.3	5.6	5.8	5.8	5.7	5.6
TS 2/TES 2 - 1.7	04	6.2	8.1	9.1	9.7	10.0	10.0	9.8	9.6	5.5	7.1	7.9	8.3	8.6	8.6	8.5	8.3
TS 2/TES 2 - 2.2	05	7.9	10.2	11.4	12.2	12.5	12.6	12.3	12.0	7.0	8.9	10.0	10.5	10.8	10.9	10.8	10.4
TS 2/TES 2 - 2.6	06	9.7	12.5	14.0	14.9	15.3	15.3	15.1	14.7	8.6	10.9	12.2	12.9	13.2	13.3	13.1	12.7
		Evaporating temperature –10°C								**Evaporating temperature –20°C**							
TS 2/TES 2 - 0.11	0X	0.30	0.37	0.40	0.42	0.42	0.42	0.41	0.41		0.35	0.38	0.40	0.39	0.40	0.39	0.38
TS 2/TES 2 - 0.21	00	0.65	0.76	0.82	0.84	0.87	0.87	0.85	0.83		0.70	0.75	0.77	0.79	0.79	0.79	0.76
TS 2/TES 2 - 0.45	01	1.3	1.6	1.7	1.8	1.8	1.9	1.8	1.8		1.3	1.5	1.5	1.5	1.5	1.5	1.5
TS 2/TES 2 - 0.6	02	1.8	2.2	2.5	2.6	2.7	2.7	2.7	2.6		1.9	2.0	2.1	2.2	2.2	2.2	2.1
TS 2/TES 2 - 1.2	03	3.1	4.0	4.5	4.7	4.8	4.8	4.8	4.7		3.3	3.7	3.8	3.9	3.9	3.9	3.8
TS 2/TES 2 - 1.7	04	4.7	6.0	6.6	7.0	7.1	7.2	7.1	6.9		4.9	5.4	5.6	5.8	5.8	5.7	5.6
TS 2/TES 2 - 2.2	05	5.9	7.6	8.4	8.8	9.0	9.1	9.0	8.7		6.2	6.9	7.2	7.3	7.3	7.2	7.1
TS 2/TES 2 - 2.6	06	7.3	9.3	10.3	10.8	11.0	11.1	11.0	10.7		7.6	8.4	8.8	8.9	8.9	8.8	8.6
		Evaporating temperature –30°C								**Evaporating temperature –40°C**							
TS 2/TES 2 - 0.11	0X			0.35	0.37	0.36	0.37	0.36	0.35			0.32	0.33	0.33	0.33	0.32	0.32
TS 2/TES 2 - 0.21	00			0.67	0.70	0.70	0.70	0.69	0.67			0.60	0.61	0.62	0.61	0.60	0.59
TS 2/TES 2 - 0.45	01			1.2	1.2	1.2	1.2	1.2	1.2			0.92	0.96	0.97	0.96	0.94	0.91
TS 2/TES 2 - 0.6	02			1.6	1.7	1.7	1.7	1.7	1.6			1.3	1.3	1.3	1.3	1.3	1.2
TS 2/TES 2 - 1.2	03			2.9	3.0	3.1	3.1	3.0	2.9			2.3	2.4	2.4	2.4	2.3	2.2
TS 2/TES 2 - 1.7	04			4.3	4.5	4.5	4.5	4.5	4.4			3.3	3.5	3.5	3.5	3.4	3.3
TS 2/TES 2 - 2.2	05			5.5	5.7	5.7	5.7	5.7	5.5			4.3	4.4	4.5	4.4	4.4	4.2
TS 2/TES 2 - 2.6	06			6.7	6.9	7.0	7.0	6.9	6.8			5.2	5.4	5.5	5.4	5.3	5.2

Capacity in kW for range B: –60°C to –25°C

Valve 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**							
TS 2/TES 2 - 0.21	00	0.57	0.67	0.72	0.73	0.74	0.85	0.74	0.71	0.53	0.64	0.67	0.70	0.70	0.70	0.69	0.67
TS 2/TES 2 - 0.45	01	0.98	1.2	1.3	1.5	1.4	1.4	1.4	1.31	0.88	1.07	1.2	1.2	1.2	1.2	1.2	1.2
TS 2/TES 2 - 0.6	02	1.3	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.2	1.5	1.6	1.7	1.7	1.7	1.7	1.6
TS 2/TES 2 - 1.0	03	2.4	3.0	3.3	3.4	3.5	3.5	3.4	3.3	2.1	2.7	2.9	3.0	3.1	3.1	3.0	2.9
TS 2/TES 2 - 1.4	04	3.5	4.4	4.8	5.0	5.1	5.1	5.1	4.9	3.1	3.9	4.3	4.5	4.5	4.5	4.5	4.4
TS 2/TES 2 - 1.7	05	4.4	5.6	6.1	6.4	6.5	6.5	6.4	6.3	3.9	4.9	5.5	5.7	5.7	5.7	5.7	5.5
TS 2/TES 2 - 1.9	06	5.4	6.8	7.5	7.8	7.9	7.9	7.9	7.6	4.8	6.1	6.7	6.9	7.0	7.0	6.9	6.8
		Evaporating temperature –40°C								**Evaporating temperature –50°C**							
TS 2/TES 2 - 0.21	00		0.56	0.60	0.61	0.62	0.61	0.60	0.59		0.49	0.53	0.54	0.54	0.53	0.52	0.50
TS 2/TES 2 - 0.45	01		0.85	0.92	0.96	0.97	0.96	0.94	0.91		0.51	0.57	0.60	0.60	0.60	0.60	0.59
TS 2/TES 2 - 0.6	02		1.2	1.3	1.3	1.3	1.3	1.3	1.2		0.91	0.99	1.0	1.0	1.0	0.98	0.95
TS 2/TES 2 - 1.0	03		2.1	2.3	2.4	2.4	2.4	2.3	2.2		1.6	1.8	1.8	1.8	1.8	1.8	1.7
TS 2/TES 2 - 1.4	04		3.0	3.3	3.5	3.5	3.5	3.4	3.3		2.4	2.6	2.7	2.7	2.7	2.6	2.6
TS 2/TES 2 - 1.7	05		3.9	4.3	4.4	4.5	4.4	4.4	4.2		3.0	3.3	3.4	3.5	3.4	3.4	3.3
TS 2/TES 2 - 1.9	06		4.7	5.2	5.4	5.5	5.5	5.3	5.2		3.7	4.0	4.2	4.2	4.2	4.1	4.0
		Evaporating temperature –60°C															
TS 2/TES 2 - 0.21	00			0.46	0.48	0.47	0.45	0.45	0.43								
TS 2/TES 2 - 0.45	01			0.58	0.60	0.60	0.58	0.56	0.54								
TS 2/TES 2 - 0.6	02			0.78	0.80	0.80	0.78	0.75	0.72								
TS 2/TES 2 - 1.0	03			1.4	1.4	1.4	1.4	1.4	1.3								
TS 2/TES 2 - 1.4	04			2.0	2.1	2.1	2.1	2.0	2.0								
TS 2/TES 2 - 1.7	05			2.6	2.7	2.7	2.7	2.6	2.5								
TS 2/TES 2 - 1.9	06			3.2	3.3	3.3	3.3	3.2	3.1								

Correction for subcooling Δt_{sub}

Note:
Insufficient subcooling can produce flash gas.

The evaporator capacities used must be corrected if subcooling deviates from 4 K. The corrected capacity can be obtained by dividing the required evaporator capacity by the correction factor below. Selections can then be made from the tables above.

Δt_u	4 K	10 K	15 K	20 K	25 K	30 K	35 K	40 K	45 K	50 K
Correction factor	1.00	1.10	1.20	1.29	1.37	1.46	1.54	1.63	1.70	1.78

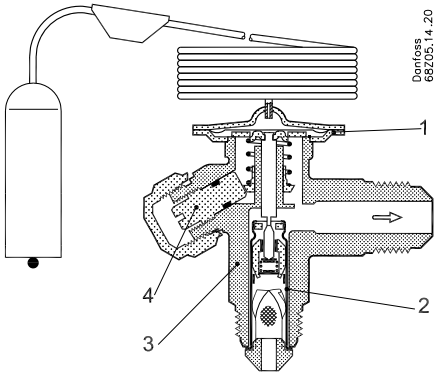
Design
Function

General
T 2 and TE 2 valves have an interchangeable orifice assembly.

For the same valve type and refrigerant, the associated orifice assembly is suitable for all versions of valve body and in all evaporating temperature ranges.
The charge in the thermostatic element depends on the evaporating temperature range.
The valves can be equipped with internal (T 2) or external (TE 2) pressure equalization.

External pressure equalization should always be used on systems with liquid distributors.
The double contact bulb gives fast and precise reaction to temperature changes in the evaporator. It also makes fitting the bulb quick and easy.
The valves are able to withstand the effects that normally occur with hot gas defrosting.

To ensure long operating life, the valve cone and seat are made of a special alloy with particularly good wear qualities.



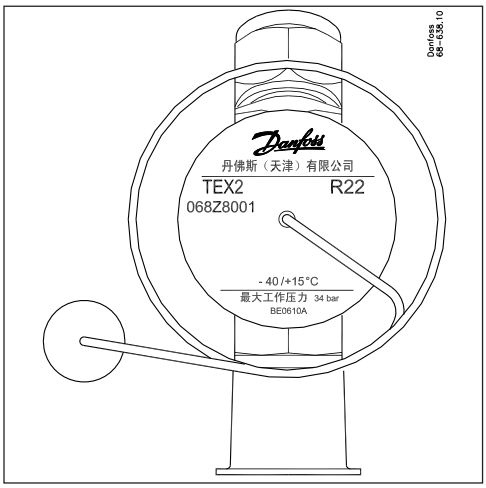
T 2

1. Thermostatic element (diaphragm)
2. Interchangeable orifice assembly
3. Valve body
4. Superheat setting spindle (see instructions)

Identification

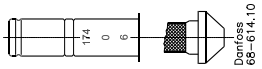
The thermostatic element is fitted with a laser engraving on top of the diaphragm.
This engraving gives valve type (with code number), evaporating temperature range, MOP point, refrigerant, and max. working pressure, PS/MWP.

The code refers to the refrigerant for which the valve is designed:
X = R22
Z = R407C
N = R134a
S = R404A/ R507



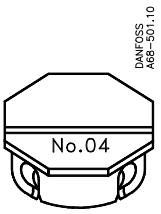
Orifice assembly for T 2 and TE 2
The orifice assembly is marked with the orifice size (e.g. 06) and week stamp + last number in the year (e.g. 174).
The orifice assembly number is also given on the lid of its plastic container.

Orifice assembly and filter for T 2 and TE 2



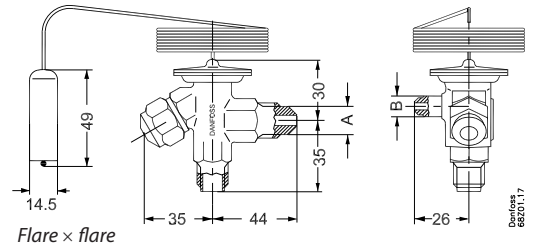
Capillary tube label for T 2 and TE 2
The label gives the orifice size (04) and consists of the lid of the orifice assembly plastic container. It can easily be fastened around the expansion valve capillary tube to clearly identify the valve size.

Capillary tube label T 2 and TE 2

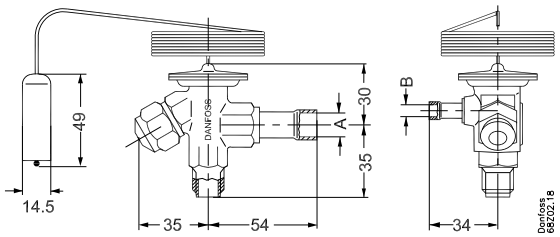


Dimensions and weights

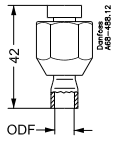
T 2 and TE 2



Flare × flare



Flare × solder



Solder adaptor

Weight: 0.05 kg
0.11 lb

	Outlet A	Equalization B	Weight kg / lb
Flare × flare	1/2" flare	1/4" flare	0.3 / 0.7
Flare × solder	1/2" solder 12 mm solder	1/4" solder 6 mm solder	0.3 / 0.7

ODF	
in.	mm
1/4	6
3/8	10