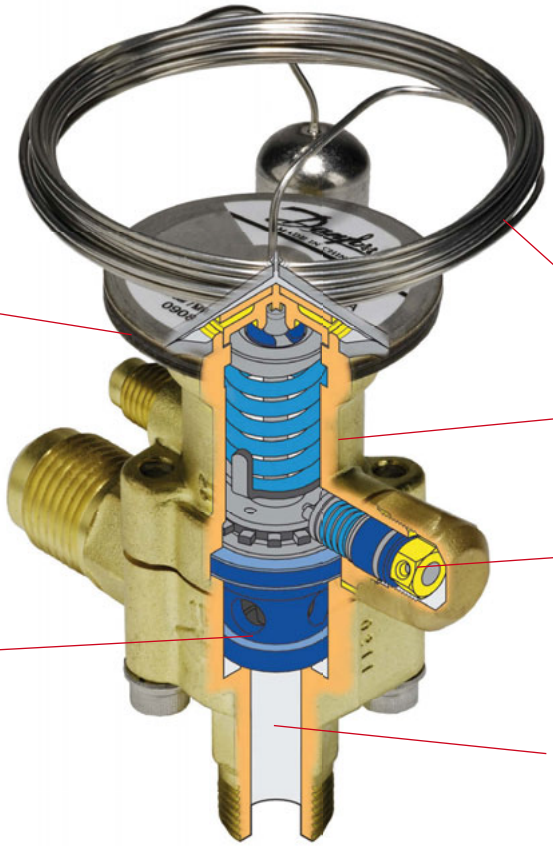
TE5-55 – Thermostatic expansion valves

Thermostatic expansion valves TE5-55 regulate the injection of refrigerant liquid into evaporators for medium sized plants (rated capacities from 8 kW to 182 kW for R404A/R507). 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 should always be kept constant.

Features



Laser-welded power element in stainless steel
- longer diaphragm life
- high pressure tolerance and working pressure
- high corrosion resistance

Stainless steel capillary tube and bulb
- high corrosion resistance
- high strength and vibration resistance

Large parts program ensures minimal stocks

Easy adjustment of superheat setting

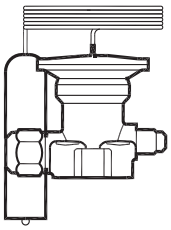
To ensure long operating life, the valve cone and seat are made of a special alloy with particularly good wear qualities.

More connection possibilities
- solder × solder
- flare × flare
- flanges
- straightway or angleway

Applications	Advantages	Facts

· Traditional refrigeration
· Air conditioning units
· Ice cube machines
· Water chillers
	· Interchangeable orifice assembly designed for:
	  · Easy assembly and mounting
	  · Optimised capacity matching
	  · Balanced port (TE55 only)
	· Large temperature range –60 to +10°C
		· Available with MOP (Max. Operating Pressure). Protects the compressor motor against excessive evaporating pressure.
		· Refrigerants: R22, R134a, R404A/R507, R407C
		· Maximum Working Pressure: 28 bar

Technical data and ordering:



Thermostatic element - including bulb strap **R407C**

Valve type	Pressure equalization	Capillary tube	Code no.	
			Range N –40 to +10°C	
	1/4 in. / 6 mm	m	Without MOP	MOP+15°C
TEZ 5	Ext.	3	067B3278	067B3277
TEZ 12	Ext.	3	067B3366	067B3367
TEZ 20	Ext.	3	067B3371	067B3372
TEZ 55	Ext.	3	067G3240	067G3241

Thermostatic element - including bulb strap **R134a**

Valve type	Pressure equalization	Capillary tube	Code no.		
			Range N –40 to +10°C		Range NM –40 to –5°C
	1/4 in. / 6 mm	m	Without MOP	MOP +15°C	MOP 0°C
TEN 5	Ext.	3	067B3297	067B3298	067B3360
TEN 12	Ext.	3	067B3232	067B3233	-
TEN 12	Ext.	5	067B3363	-	-
TEN 20	Ext.	3	067B3292	067B3293	-
TEN 20	Ext.	5	067B3370	-	-
TEN 55	Ext.	3	067G3222	067G3223	-
TEN 55	Ext.	5	067G3230	-	-

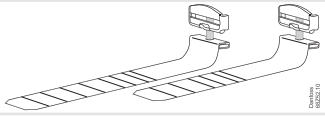
Thermostatic element - including bulb strap **R404A/R507**

Valve type	Pressure equalization	Capillary tube	Code no.					
			Range N–40 to +10°C		Range NM–40 to –5°C	Range NL –40 to –15°C	Range B –60 to –25°C	
	1/4 in. / 6 mm	m	Without MOP	MOP +15°C	MOP 0°C	MOP –10°C	Without MOP	MOP –20°C
TES 5	Ext.	3	067B3342	-	067B3357	067B3358	067B3344	067B3343
TES 12	Ext.	3	067B3347	-	067B3345	067B3348	-	067B3349
TES 12	Ext.	5	067B3346	-	-	-	-	067B3350
TES 20	Ext.	3	067B3352	-	067B3351	067B3353	-	067B3354
TES 20	Ext.	5	067B3356	-	-	-	-	067B3355
TES 55	Ext.	3	067G3302	-	067G3303	067G3304	-	067G3305
TES 55	Ext.	5	067G3301	-	-	-	-	067G3306

Thermostatic element - including bulb strap **R22/R407C**

Valve type	Pressure equalization	Capillary tube	Code no.					
			Range N –40°C to +10°C		Range NM –40 to –5°C	Range NL –40 to –15°C	Range B –60 to –25°C	
	1/4 in. / 6 mm	m	Without MOP	MOP+15°C	MOP 0°C	MOP –10°C	Without MOP	MOP –20°C
TEX 5	Ext	3	067B3250	067B3267	067B3249	067B3253	067B3263	067B3251
TEX 12	Ext.	3	067B3210	067B3227	067B3207	067B3213	-	067B3211
TEX 12	Ext.	5	067B3209	-	-	-	-	067B3212
TEX 20	Ext.	3	067B3274	067B3286	067B3273	067B3275	-	067B3276
TEX 20	Ext.	5	067B3290	-	-	-	-	067B3287
TEX 55	Ext.	3	067G3205	067G3220	067G3206	-	-	067G3207
TEX 55	Ext.	5	067G3209	-	-	-	-	067G3217

Bulb strap (delivered with the element)



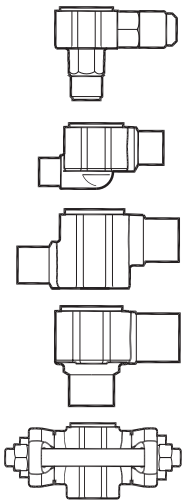
Type	Length	Max. diameter of suction line	Code no.
TE5 and TE12	225 mm	2 1/8 in. (54 mm)	067N0558
TE20 and TE55	350 mm	3 1/8 in. (78 mm)	067N0559

Technical data and ordering:

Orifice assembly

SI N	R134a		R404A/R507		R407C		R22		Orifice no.	Code no.
	kW	TR	kW	TR	kW	TR	kW	TR		
TE5 - 0.5	6.7	1.9	8.1	2.3	10.7	3.1	10.4	3.0	0.5	067B2788
TE5 - 1	12.2	3.5	14.8	4.2	19.6	5.6	19.0	5.4	1	067B2789
TE5 - 2	17.0	4.8	20.4	5.8	27.1	7.7	26.3	7.5	2	067B2790
TE5 - 3	21.8	6.2	26.2	7.5	34.7	9.9	33.8	9.6	3	067B2791
TE5 - 4	29.7	8.5	35.5	10.1	47.3	13.5	45.9	13.1	4	067B2792
TE12 - 5	37.7	10.7	50.0	14.3	56.0	16.0	57.0	16.2	5	067B2708
TE12 - 6	50.0	14.3	64.0	18.2	74.0	21.1	76.0	21.7	6	067B2709
TE12 - 7	66.0	18.8	81.0	23.1	94.0	26.8	98.0	27.9	7	067B2710
TE20 - 8	78.0	22.2	87.0	24.8	117.0	33.3	128.0	36.5	8	067B2771
TE20 - 9	92.0	26.2	101.0	28.8	136.0	38.7	150.0	42.7	9	067B2773
TE55 - 10	111.0	31.6	127.0	36.2	161.0	45.8	168.0	47.9	10	067G2701
TE55 - 11	122.0	34.8	138.0	39.3	175.0	49.9	183.0	52.1	11	067G2704
TE55 - 12	134.0	38.2	151.0	43.0	191.0	54.4	202.0	57.6	12	067G2707
TE55 - 13	166.0	47.3	182.0	51.9	231.0	65.8	245.0	69.8	13	067G2710

The rated capacity is based on:
Evaporating temperature t_e = +4.4 °C
Condensing temperature t_c = +38 °C
Refrigerant temperature ahead of valve t_l = +37 °C



Valve body

Type	Connection Inlet × Outlet		Code no.			
	in.	mm	Flare angleway	Solder angleway	Solder straightway	Solder flanges
TE 5	1/2 × 5/8	-	067B4013	067B4009 [1)]	067B4007 [1)]	-
	1/2 × 7/8	-	-	067B4010 [1)]	067B4008 [1)]	-
	5/8 × 7/8	-	-	067B4011 [1)]	067B4032 [1)]	-
	7/8 × 1 1/8	-	-	067B4034 [2)]	067B4033 [2)]	-
TE 5	-	12 × 16	067B4013	067B4004 [1)]	067B4002 [1)]	-
	-	12 × 22	-	067B4005 [1)]	067B4003 [1)]	-
	-	16 × 22	-	067B4012 [1)]	067B4035 [1)]	-
	-	22 × 28	-	067B4037 [2)]	067B4036 [2)]	-
TE 12	5/8 × 7/8	-	-	-	-	067B4025 [1)]
	7/8 × 1	-	-	-	-	067B4026 [1)]
	7/8 × 1 1/8	-	-	067B4023 [2)]	067B4021 [2)]	-
TE 12	-	16 × 22	-	-	-	067B4027 [1)]
	-	22 × 25	-	-	-	067B4015 [1)]
	-	22 × 28	-	067B4017 [2)]	067B4016 [2)]	-
TE 20	7/8 × 1 1/8	-	-	067B4023 [2)]	067B4021 [2)]	-
	-	22 × 28	-	067B4017 [2)]	067B4016 [2)]	-
TE 55	1 1/8 × 1 3/8	-	-	067G4004 [3)]	067G4003 [3)]	-
	-	28 × 35	-	067G4002 [3)]	067G4001 [3)]	-

[1)] ODF × ODF
[2)] ODF × ODM
[3)] ODM × ODM
ODF = Internal diameter
ODM = External diameter

When the subcooling ≠ 4 K then:
Plant capacity / Factor = Table value

Example:
Refrigerant = R404A
Q_{nom} = 10 kW
t_e = -10°C
t_c = 45°C
Dt_{sub} = 25 K

Selection:
10 kW / 1.46 = 6.85 kW → TE5, Orifice 01

Thermostatic element + Orifice + Valve body

Capacities

Capacity in kW, range N -40 °C to +10 °C. Opening superheat sh= 4.4 K

Valve type/ Orifice	Cond. temp.[3] [°C]	R134a					R404A/R507					R407C					R22			
		Capacity in [kW]					Capacity in [kW]					Capacity in [kW]					Capacity in [kW]			
		Evaporating temp. [°C]					Evaporating temp. [°C]					Evaporating temp. [°C]					Evaporating temp. [°C]			
		-30	-10	-5	0	5	-40	-35	-30	-10	0	-10	-5	0	5	10	-35	-30	0	5
TE5 - 0.5	25	3.3	5.0	5.4	5.7	5.8	3.7	4.2	4.8	6.9	7.5	8.6	9.2	9.7	10.0	10.0	5.1	5.7	8.9	8.9
TE5 - 1	25	6.1	9.2	9.8	10.3	10.6	6.8	7.7	8.8	12.7	13.7	15.7	16.8	17.6	18.2	18.2	9.4	10.5	16.2	16.2
TE5 - 2	25	8.6	12.8	13.7	14.4	14.6	9.5	10.9	12.3	17.6	18.8	21.8	23.3	24.4	25.0	24.9	13.2	14.8	22.3	22.2
TE5 - 3	25	11.0	16.5	17.7	18.6	19.0	12.0	13.8	15.6	22.6	24.4	28.1	30.0	31.6	32.4	32.4	16.8	18.8	28.9	28.8
TE5 - 4	25	14.9	22.5	24.2	25.4	25.9	16.1	18.5	21.1	30.8	33.1	38.2	40.9	42.9	44.0	43.7	22.6	25.5	39.3	38.9
TE12 - 5	25	19.3	29.0	31.2	33.0	33.9	20.7	24.2	27.9	43.9	48.9	45.1	49.2	53.0	55.0	56.0	27.7	31.2	51.0	51.0
TE12 - 6	25	25.2	38.4	41.4	43.9	45.2	24.9	29.3	34.1	55.0	62.0	59.0	65.0	70.0	73.0	75.0	35.8	40.5	67.0	68.0
TE12 - 7	25	33.8	52.0	56.0	59.0	61.0	32.5	37.9	43.9	72.0	81.0	78.0	86.0	93.0	98.0	100.0	46.9	53.0	90.0	91.0
TE20 - 8	25	39.1	60.0	64.0	68.0	69.0	35.7	41.8	48.4	75.0	83.0	96.0	104.0	110.0	113.0	1130	62.0	71.0	113.0	112.0
TE20 - 9	25	45.4	72.0	78.0	82.0	85.0	39.5	46.5	54.0	88.0	100.0	112.0	123.0	131.0	137.0	137.0	69.0	80.0	136.0	135.0
TE55 - 10	25	53.0	84.0	92.0	98.0	102.0	46.5	55.0	65.0	108.0	124.0	130.0	142.0	153.0	162.0	166.0	75.0	86.0	150.0	153.0
TE55 - 11	25	59.0	93.0	102.0	109.0	113.0	51.0	61.0	71.0	118.0	136.0	143.0	156.0	168.0	177.0	181.0	83.0	95.0	165.0	167.0
TE55 - 12	25	64.0	103.0	113.0	121.0	126.0	55.0	65.0	77.0	130.0	151.0	156.0	172.0	186.0	197.0	202.0	90.0	103.0	183.0	187.0
TE55 - 13	25	80.0	130.0	142.0	152.0	157.0	67.0	79.0	94.0	159.0	183.0	192.0	211.0	228.0	241.0	246.0	111.0	127.0	225.0	228.0
TE5 - 0.5	35	3.4	5.3	5.9	6.4	6.8	3.5	4.0	4.6	7.1	8.1	8.8	9.6	10.4	11	11.4	5.27	5.93	10.0	10.4
TE5 - 1	35	6.29	9.85	10.8	11.6	12.4	6.3	7.3	8.37	12.9	14.8	16.2	17.7	19.0	20.1	20.9	9.69	10.9	18.4	19.1
TE5 - 2	35	8.83	13.8	15.0	16.2	17.1	8.9	10.3	11.8	18.0	20.4	22.6	24.6	26.4	27.8	28.7	13.6	15.3	25.4	26.2
TE5 - 3	35	11.3	17.6	19.3	20.8	22.1	11.1	12.9	14.8	22.9	26.3	28.8	31.4	33.8	35.7	370	17.1	19.3	32.7	33.9
TE5 - 4	35	15.2	24.0	26.3	28.4	30.1	14.9	17.3	19.9	31.2	35.7	39.1	42.7	46.0	48.6	50.0	22.9	25.9	44.5	45.9
TE12 - 5	35	19.5	30.3	33.3	36.1	38.5	18.6	21.8	25.3	42.3	51.0	44.2	49.2	54.0	58.0	62.0	27.7	31.2	55.0	58.0
TE12 - 6	35	25.1	39.8	43.9	47.8	51.0	22.3	26.3	30.7	53.0	64.0	58.0	64.0	71.0	77.0	82.0	35.4	40.1	74.0	77.0
TE12 - 7	35	33.3	52.0	58.0	63.0	68.0	27.8	32.6	37.9	66.0	81.0	73.0	82.0	92.0	100.0	107.0	45.5	51.0	95.0	101.0
TE20 - 8	35	39.2	62.0	69.0	74.0	79.0	32.4	38.0	44.3	74.0	87.0	96.0	105.0	114.0	122.0	127.0	62.0	70.0	125.0	129.0
TE20 - 9	35	44.4	73.0	81.0	88.0	95.0	34.9	41.1	48.2	84.0	101.0	108.0	120.0	132.0	143.0	151.0	67.0	76.0	146.0	153.0
TE55 - 10	35	51.0	85.0	95.0	105.0	114.0	40.6	48.7	58.0	103.0	126.0	126.0	141.0	155.0	169.0	180.0	72.0	83.0	162.0	172.0
TE55 - 11	35	56.0	94.0	105.0	116.0	126.0	44.2	53.0	63.0	112.0	137.0	138.0	153.0	169.0	184.0	196.0	79.0	91.0	177.0	187.0
TE55 - 12	35	61.0	103.0	116.0	128.0	139.0	47.1	57.0	67.0	121.0	150.0	149.0	167.0	185.0	202.0	216.0	85.0	98.0	194.0	207.0
TE55 - 13	35	75.0	128.0	144.0	159.0	172.0	56.0	68.0	80.0	146.0	181.0	181.0	203.0	225.0	245.0	262.0	103.0	119.0	237.0	251.0
TE5 - 0.5	45	3.4	5.5	6.1	6.7	7.3	3.1	3.6	4.1	6.8	8.0	8.7	9.5	10.4	11.3	12	5.32	5.98	10.6	11.3
TE5 - 1	45	6.3	10.1	11.2	12.3	13.4	5.65	6.6	7.6	12.3	14.7	15.9	17.6	19.2	20.7	22.1	9.76	11.0	19.5	20.7
TE5 - 2	45	8.8	14.1	15.7	17.2	18.6	7.94	9.3	10.7	17.2	20.4	22.4	24.6	26.8	28.9	30.5	13.7	15.4	27.2	28.7
TE5 - 3	45	11.2	17.9	19.9	21.9	23.7	9.85	11.5	13.2	21.6	25.9	28.0	30.9	33.9	36.6	38.9	17.1	19.3	34.5	36.6
TE5 - 4	45	14.9	24.3	27.1	29.8	32.4	13.0	15.3	17.7	29.4	35.4	38.0	42.2	46.3	50.0	53.0	22.7	25.7	47.1	49.9
TE12 - 5	45	19.0	30.0	33.3	36.7	40.1	16.1	18.8	21.9	37.8	47.4	40.9	46.0	51.0	57.0	61.0	27.1	30.3	56.0	60.0
TE12 - 6	45	24.3	39.1	43.7	48.5	53.0	19.0	22.5	26.4	46.9	60.0	53.0	60.0	67.0	75.0	82.0	34.2	38.6	74.0	80.0
TE12 - 7	45	31.7	50.0	56.0	62.0	68.0	23.1	27.0	31.3	56.0	72.0	65.0	73.0	83.0	92.0	102.0	43.3	48.3	92.0	100.0
TE20 - 8	45	38.0	62.0	69.0	76.0	83.0	28.0	32.9	38.4	67.0	83.0	90.0	100.0	111.0	121.0	130.0	60.0	68.0	127.0	136.0
TE20 - 9	45	42.1	70.0	79.0	88.0	97.0	29.5	34.8	40.7	73.0	93.0	97.0	110.0	123.0	137.0	149.0	63.0	71.0	144.0	156.0
TE55 - 10	45	47.4	83.0	94.0	105.0	117.0	33.4	40.5	48.5	91.0	117.0	116.0	131.0	147.0	164.0	179.0	67.0	78.0	163.0	177.0
TE55 - 11	45	52.0	91.0	103.0	115.0	128.0	36.2	43.9	52.0	98.0	126.0	126.0	142.0	160.0	177.0	194.0	74.0	85.0	176.0	192.0
TE55 - 12	45	56.0	98.0	111.0	126.0	140.0	38.2	46.4	56.0	105.0	136.0	135.0	153.0	172.0	192.0	211.0	78.0	90.0	191.0	209.0
TE55 - 13	45	68.0	120.0	137.0	154.0	171.0	44.6	54.0	65.0	125.0	162.0	161.0	183.0	207.0	231.0	253.0	93.0	108.0	231.0	252.0
TE5 - 0.5	55	3.3	5.4	6.1	6.7	7.4	2.6	3.0	3.5	5.8	7.2	8.1	9.0	9.9	10.8	11.7	5.3	5.9	10.7	11.6
TE5 - 1	55	6.1	10.0	11.1	12.4	13.6	4.8	5.6	6.4	10.8	13.3	14.9	16.6	18.3	20.0	21.7	9.7	10.9	19.8	21.3
TE5 - 2	55	8.5	14.0	15.6	17.3	19.0	6.7	7.9	9.1	15.2	18.6	21.1	23.4	25.8	28.1	30.3	13.5	15.3	27.8	29.7
TE5 - 3	55	10.8	17.5	19.6	21.8	24.0	8.2	9.6	11.1	18.7	23.2	25.9	28.8	31.9	35.0	37.9	16.8	18.9	34.6	37.2
TE5 - 4	55	14.3	23.7	26.6	29.6	32.7	10.8	12.7	14.8	25.5	31.9	35.1	39.4	43.8	48.2	52.0	22.1	25.0	47.5	51.0
TE12 - 5	55	18.0	28.3	31.7	35.2	39.0	13.3	15.5	18.0	31.1	39.9	36.0	40.6	45.6	51.0	56.0	26.1	29.0	53.0	58.0
TE12 - 6	55	22.8	36.8	41.4	46.4	52.0	15.5	18.3	21.4	38.4	50.0	46.4	53.0	60.0	67.0	75.0	32.6	36.5	71.0	78.0
TE12 - 7	55	29.4	45.8	51.0	57.0	64.0	18.6	21.6	24.9	43.4	57.0	55.0	62.0	70.0	79.0	88.0	40.8	45.0	84.0	92.0
TE20 - 8	55	35.9	58.0	66.0	73.0	81.0	23.1	27.1	31.5	55.0	71.0	80.0	90.0	100.0	112.0	122.0	57.0	64.0	123.0	134.0
TE20 - 9	55	38.9	64.0	73.0	82.0	92.0	23.8	27.9	32.6	59.0	77.0	84.0	95.0	108.0	121.0	135.0	58.0	66.0	134.0	148.0
TE55 - 10	55	42.6	76.0	87.0	99.0	112.0	25.7	31.5	38.1	74.0	98.0	101.0	116.0	132.0	148.0	165.0	61.0	71.0	155.0	171.0
TE55 - 11	55	46.5	83.0	95.0	108.0	122.0	27.7	33.9	40.9	79.0	105.0	109.0	125.0	142.0	159.0	178.0	66.0	77.0	167.0	184.0
TE55 - 12	55	49.4	89.0	102.0	117.0	132.0	28.9	35.5	42.9	84.0	112.0	116.0	132.0	151.0	170.0	191.0	70.0	81.0	179.0	199.0
TE55 - 13	55	59.0	107.0	123.0	141.0	160.0	33.1	40.9	49.6	98.0	131.0	136.0	156.0	178.0	202.0	227.0	81.0	95.0	213.0	237.0

[3] Condensing temperature at bubble point.

Subcooling correction factor 'f$_{sub}$' **'f$_{sub}$' = saturated condensing temp. - liquid temp. at valve inlet**

Refrigerant	Subcooling [K]										
	2	4	10	15	20	25	30	35	40	45	50
R134a	0.97	1.00	1.09	1.16	1.23	1.30	1.37	1.44	1.51	1.58	1.65
R404A/R507	0.97	1.00	1.10	1.19	1.27	1.35	1.43	1.52	1.60	1.68	1.76
R407C	0.97	1.00	1.08	1.15	1.22	1.29	1.36	1.43	1.50	1.57	1.64
R22	0.98	1.00	1.07	1.13	1.19	1.25	1.30	1.36	1.42	1.47	1.53