



Thermostatic expansion valve

TD 1 / TDE 1

Description

TD 1 / TDE 1 is a thermostatic expansion valve designed to regulate refrigerant injection into evaporators. The injection depends on the refrigerant superheat at the evaporator outlet, where the bulb must be placed.

TD 1 / TDE 1 is constructed for hermetic sealed systems and supplied as angle way and straightway version.

OEM Applications:

- GDM (Glass Door Merchandiser)
- Commercial fridge and freezer
- Heat Pump

Features & benefits

- Refrigerants: R134a, R1234yf, R22, R290, R404A, R407C, R452A, R454C, R455A, R513A. Other refrigerants are on request
- Rated capacity from 0.87 to 6.86 kW / 0.25 to 1.95 TR for R290
- Stainless steel bulb with Danfoss patented bulb strap ensures fast, easy installation and provides excellent temperature transfer from pipe to bulb.
- Supplied with fixed superheat setting as well as adjustable straightway version for setting customization
- Permanent filter at inlet
- Optional bleed function
- Compact and hermetic construction
- Stainless steel capillary tube
 - Flexible lightweight capillary tube, tolerates more bending for trouble-free installation and longer life
 - Greater resistance to vibration during operation because of low weight
- Laser-welded stainless steel power element, capillary tube, and bulb deliver optimum regulation performance with long diaphragm life and high pressure strength.
- MOP (Max. Operating Pressure) function is available

Ordering

Product code numbers

Figure: TD 1 / TDE 1



As the TD 1 / TDE 1 valve is typically an OEM valve, limited code number programme has been set up.

Other code numbers are available on demand.

The valves including bulb strap are supplied in multi pack or industrial pack.

Multi pack: 20 pcs pr. full pack, min. order quantity = 1 pcs.

Industrial pack: 32 pcs pr. pack (min. ordering quantity).

Please contact Danfoss.

Table: Range N -40 – 10 °C / -40 – 50 °F and range AC -25 – 15 °C / -15 – 60 °F with MOP 20 °C / 68 °F

Refrigerant	Type	Flow Direction	Orifice no.	Range	Rated Capacity		Bleed	Connection ODF inlet*outlet		Code no. Multi pack
					kW	TR		[in]	[mm]	
R134a	TD1	Angleway	0	N	0.46	0.13	–	¼ * ⅜		068N5602
	TD1	Angleway	1	N	0.70	0.20	15%	¼ * ⅜		068N5614
	TD1	Angleway	2	N	1.19	0.34	15%	¼ * ⅜		068N5656
	TD1	Angleway	3	N	2.01	0.57	15%	¼ * ⅜		068N5665
	TD1	Angleway	4	N	2.83	0.80	15%	⅜ * ½		068N5692
	TD1	Angleway	5	N	3.81	1.08	15%	⅜ * ½		068N5695
	TD1	Angleway	3	AC	2.01	0.57	–		6*10	068N5668
	TD1	Angleway	4	AC	2.83	0.80	–		10*12	068N5684
R290	TD1	Angleway	0	N	0.87	0.25	–	¼ * ⅜		068N5603
	TD1	Angleway	1	N	1.27	0.36	–	¼ * ⅜		068N5607
	TD1	Angleway	2	N	2.02	0.58	–	¼ * ⅜		068N5634
	TD1	Angleway	3	N	3.14	0.89	–	¼ * ⅜		068N5662
	TD1	Angleway	4	N	4.36	1.24	–	⅜ * ½		068N5690
	TD1	Angleway	5	N	6.86	1.95	–	⅜ * ½		068N5697
	TD1	Angleway	2	AC	2.02	0.58	–		6*10	068N5648

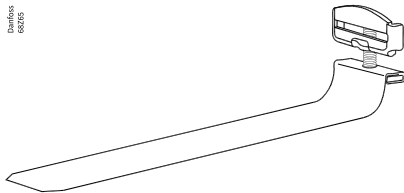
The rated capacity is based on: Evaporating temperature $t_e = 5 \text{ °C} / 41 \text{ °F}$,

Condensing temperature $t_c = 32 \text{ °C} / 90 \text{ °F}$,

Refrigerant temperature ahead of valve $t_1 = 28 \text{ °C} / 82 \text{ °F}$

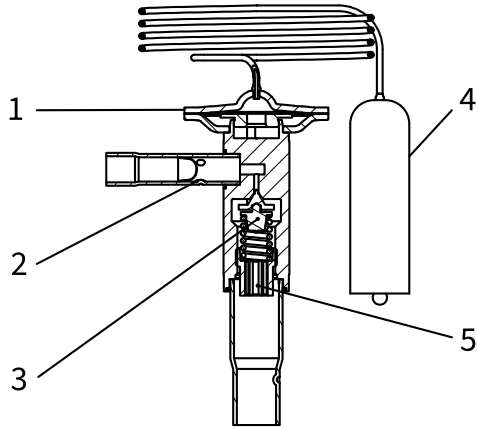
Table: The bulb strap can also be sold separately

Code no.	Description	Pack mode	Quantity/pack
068U3525	Accessory bag with short bulb straps I/45	I	45
068U3520	Accessory bag with short bulb strap M/25	M	25

Figure: Bulb strap

Functions

Figure: Angle way fixed superheat setting



1	Thermostatic element (diaphragm)
2	Strainer
3	Fixed orifice assembly
4	Bulb with capillary tube
5	Locked setting screw

TD 1 / TDE 1 valves have a fixed orifice assembly. Both straight way and angle way configuration is available and the angle way version is designed with fixed superheat setting only.

The valves are available with internal or external pressure equalization. External pressure equalization should always be used on systems with liquid distributors.

The stainless-steel capillary tube and bulb with Danfoss patent bulb strap give reliable connection. It gives fast and precise reaction to temperature changes in the evaporator.

Product details

General data

Max. bulb temperature: 120 °C / 248 °F

Max. valve housing temperature: 150 °C / 302 °F

Max. working pressure: PS / MWP = 34 bar / 500 psig

Max. test pressure: 37.5 bar / 540 psig

Capillary tube length: 0.75 m / 30 inch

Bleed: 15% or 30%

Orifice No.	R134a		R1234yf		R407C		R290		R404A		R452A		R454C		R455A		R513A		R22	
	KW	TR	KW	TR	KW	TR	KW	TR	KW	TR	KW	TR	KW	TR	KW	TR	KW	TR	KW	TR
0	0.46	0.13	0.36	0.10	0.90	0.26	0.87	0.25	0.83	0.24	0.85	0.24	0.80	0.23	0.95	0.27	0.42	0.12	0.82	0.23
1	0.70	0.20	0.54	0.15	1.31	0.37	1.27	0.36	1.13	0.32	1.17	0.33	1.16	0.33	1.35	0.38	0.63	0.18	1.19	0.34
2	1.19	0.34	0.91	0.26	2.09	0.59	2.02	0.58	1.78	0.51	1.85	0.53	1.83	0.52	2.13	0.61	1.06	0.30	1.89	0.54
3	2.01	0.57	1.52	0.43	3.24	0.92	3.14	0.89	2.37	0.67	2.54	0.72	2.79	0.79	3.15	0.90	1.76	0.50	2.95	0.84
4	2.83	0.80	2.14	0.61	4.51	1.28	4.36	1.24	3.36	0.95	3.58	1.02	3.89	1.10	4.41	1.25	2.47	0.70	4.10	1.16
5	3.81	1.08	2.94	0.84	7.08	2.01	6.86	1.95	5.79	1.65	6.08	1.73	6.20	1.76	7.18	2.04	3.43	0.97	6.43	1.83

NOTE: This product is approved for R290, R455A, R454C, R1234yf by ignition source assessment in accordance to standard EN ISO80079-36

⁽¹⁾ The rated capacity is based on

Evaporating temperature $t_e = 5 \text{ °C} / 41 \text{ °F}$

Condensing temperature $t_c = 32 \text{ °C} / 90 \text{ °F}$

Liquid temperature $t_l = 28 \text{ °C} / 82 \text{ °F}$

Identification

Figure: Type TD 1 / TDE 1



The valve is fitted with a product label (on top of the diaphragm) which holds information as follows: valve type, rated capacity, refrigerant, evaporating temperature range, MOP point, BP (bleed port %), max. working pressure PS/MWP and production date code.

- TD 1 = internal equalization
- TDE 1 = external equalization
- 0.34 TR = Rated capacity Q in TR
- 1.2 kW = Rated capacity Q in kW
- R290 = Refrigerant
- BP15 = bleed port 15% (blank stand for no bleed)
- -40 / 10 °C [-40 / 50 °F] = Evaporating temperature range
- 068N5617 = Code number
- PS 34 bar / MWP 500 psig = Max. Working Pressure in bar and psig
- BE3921B = Production date code (BE = China, 39 = Production week, 21 = Year 2021, B = Tuesday)

Pressure and temperature data

Table: Max. operating pressure

Refrigerant	Range K -25 – 10 °C / -15 – 50 °F	Range AC -25 – 15 °C / -15 – 60 °F
	MOP point in evaporating temperature t_e and evaporating pressure p_e	
	15 °C / 60 °F	20 °C / 68 °F
R134a	55 psig / 3.8 bar	70 psig / 4.8 bar
R290	90 psig / 6.3 bar	105 psig / 7.4 bar
R22	100 psig / 6.9 bar	120 psig / 8.1 bar
R407C	95 psig / 6.6 bar	110 psig / 7.8 bar
R404A	120 psig / 8.3 bar	140 psig / 9.9 bar

For R455A, R454C, R1234yf, contact Danfoss for more information.

To avoid charge migration when MOP valves are used, the bulb temperature must be lower than the thermostatic element temperature.

Valve selection based on capacity calculation

As for extended capacity calculations and valve selection based on capacities and refrigerants, please refer to Coolselector®2. Rated and extended capacities are calculated with the Coolselector®2 calculation engine to ARI standards with the ASEREP equations based on laboratory measurements of selected valves.

Open the Coolselector tool and select thermostatic expansion valve.

Coolselector can be downloaded from <https://www.danfoss.com/en/service-and-support/downloads/dcs/coolselector-2/> or used online on <http://coolselectoronline.danfoss.com>

Dimensions

Figure: TD1/TDE1 adjustable superheat setting, weight approx. 0.15 kg (2.54 lbs)

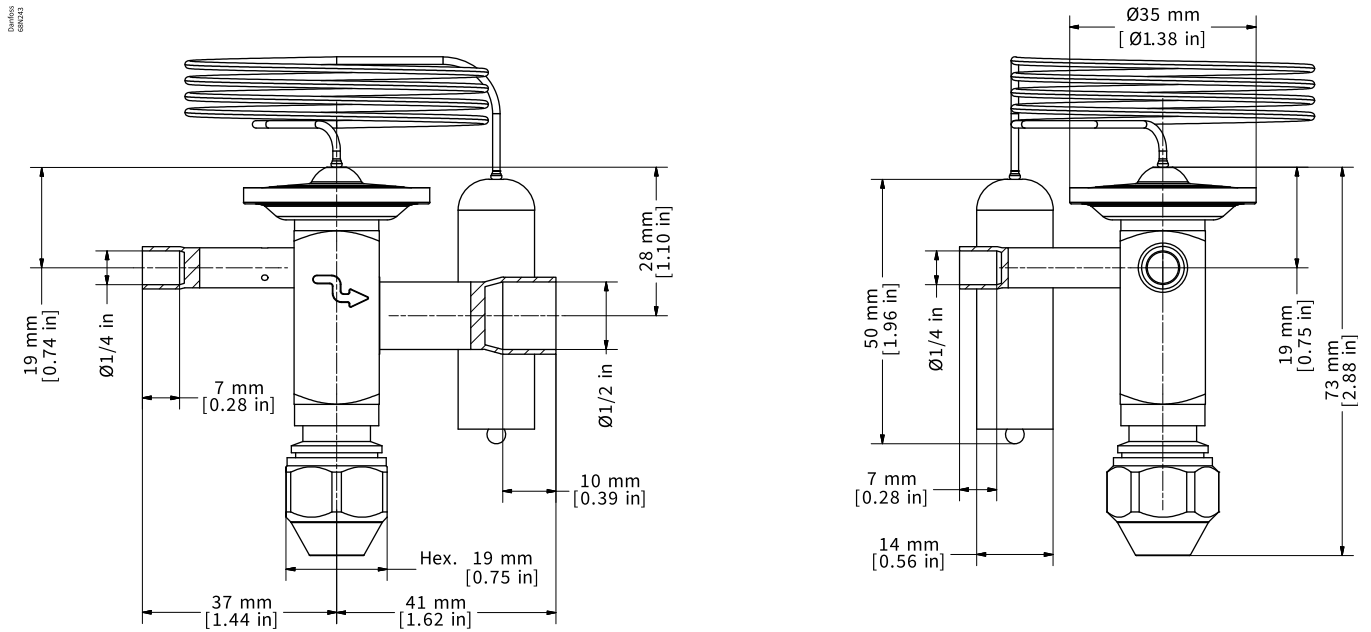


Figure: TD1/TDE1 fixed superheat setting, weight approx. 0.15 kg (2.54 lbs)

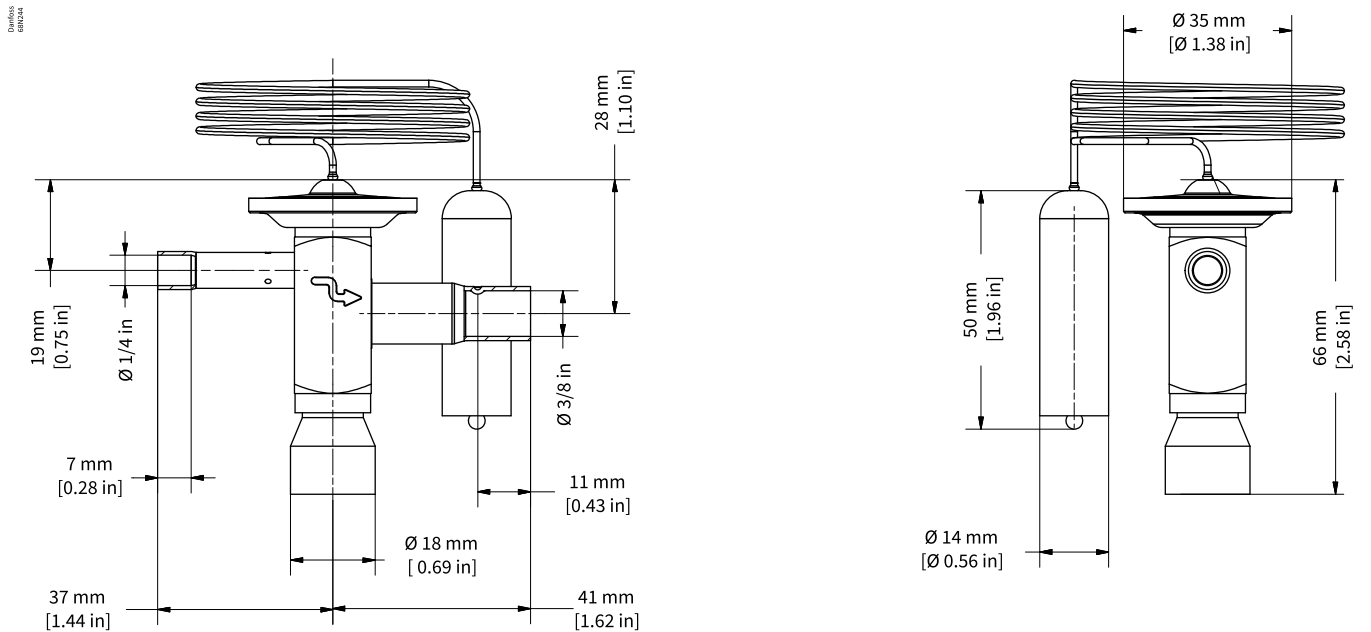


Figure: TD1/TDE1 fixed superheat setting, weight approx. 0.15 kg (2.54 lbs)

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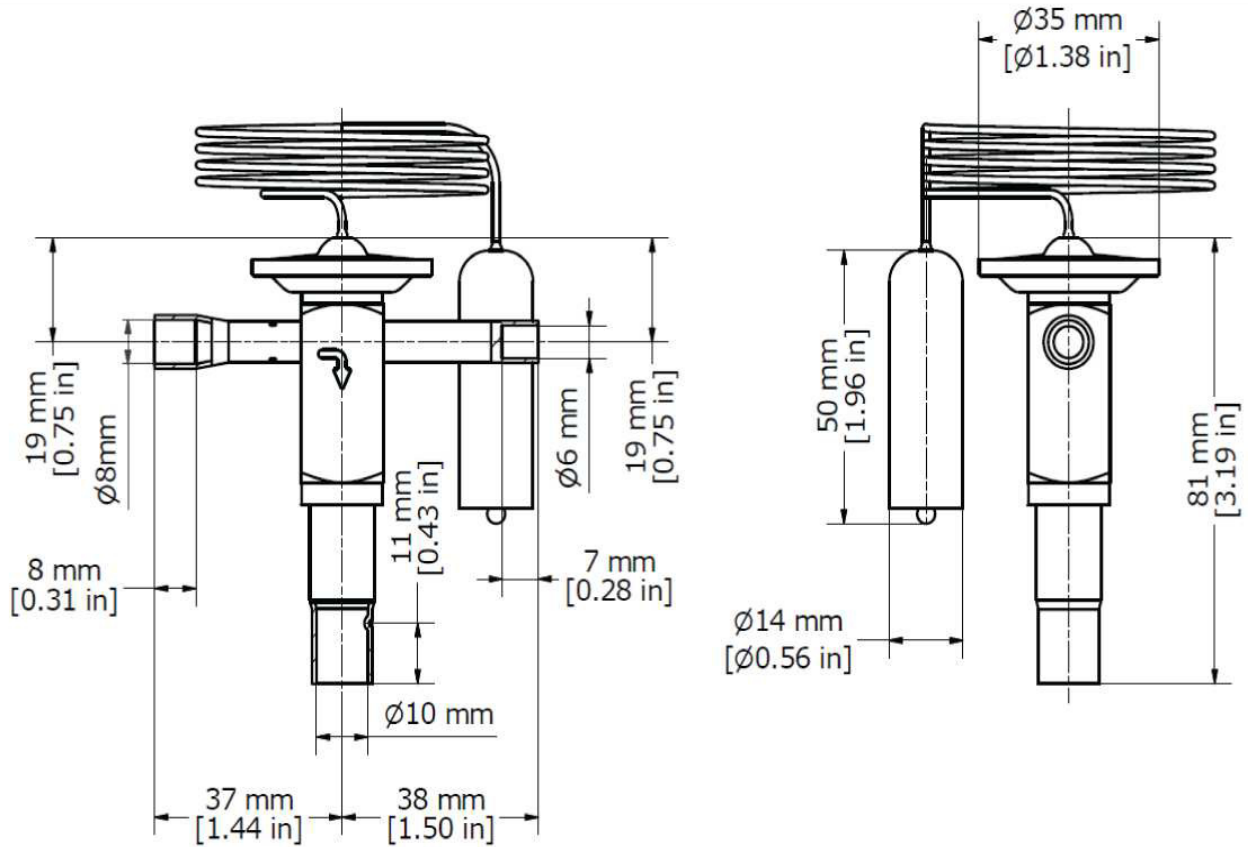


Table: Standard connection size

Connection / Dimension	Size	φD (mm)
Equalization (external)	6 mm	6.00
	¼ in	6.35
Inlet	6 mm	6.00
	8 mm	8.00
	10 mm	10.00
	¼ in	6.35
	⅜ in	9.52
Outlet	10 mm	10.00
	12 mm	12.00
	⅜ in	9.52
	½ in	12.7

Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
Manufacturer's Declaration	Danfoss MD 067R1068.AG	Danfoss	PED, Pressure
Export Control Declaration	Thermostatic Expansion Valve	Danfoss	
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.02-22	LLC CDC EURO TYSK - Ukraine	PED, Pressure
UA Declaration	Danfoss UA 2023-01-10 Valves PL01 PL40	Danfoss	PED, Pressure
Manufacturer's Declaration	Danfoss MD 033F4006 AC	Danfoss	China RoHS
Manufacturer's Declaration	Danfoss MD 033F4017.AF	Danfoss	

Contact details

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