Data sheet



Desuperheating valve
TEAT

Used to inject refrigerant into the suction line of the refrigeration system

Description

Refrigerant injection into the suction line
TEAT valves are used to inject refrigerant into the suction line of the refrigeration system to reduce the high discharge temperatures that can occur when the system operates with highly superheated suction vapor.
This applies when, for example:

- A compressor runs either with low suction pressure or with high condensing temperature
- A compressor runs with both low suction pressure and high condensing temperature. This applies especially to systems with R 22
- A compressor receives highly superheated suction vapor
- A compressor runs with capacity regulation by hot gas bypass

Two-stage refrigeration plant
TEAT valves are also used in two-stage refrigeration plant to control liquid injection into the intercooler. The bulb is installed on the discharge line from the high-pressure compressor. The theoretically obtainable discharge temperature for given operating conditions can be found in the h, log p diagram for the refrigerant concerned.

Temperature regulation of the medium
TEAT valves have a further application: the temperature regulation of the medium, e.g. the temperature of the oil in a screw compressor.

Features & benefits

- Refrigerants applicable to HCFC, non-flammable HFC and R717 (Ammonia)
- The temperature regulation of the medium, e.g. the temperature of the oil in a screw compressor

Ordering

Product code numbers

Table: Ordering

Type and rated capacity (TR)	Regulating range °C	Flange connection	Code no.		
			Assembled valve	Separate orifice assembly	Separate thermostatic element
TEAT 20 – 1	35 – 65	½ × ½	(1)	068G2050	068G3262
	55 – 95	½ × ½	(1)	068G2050	068G3260
	90 – 130	½ × ½	(1)	068G2050	068G3261
TEAT 20 – 2	35 – 65	½ × ½	068G6125	068G2051	068G3262
	55 – 95	½ × ½	068G6062	068G2051	068G3260
	90 – 130	½ × ½	068G6065	068G2051	068G3261
TEAT 20 – 3	35 – 65	½ × ½	(1)	068G2052	068G3262
	55 – 95	½ × ½	(1)	068G2052	068G3260
	90 – 130	½ × ½	(1)	068G2052	068G3261
TEAT 20 – 5	35 – 65	½ × ½	068G6126	068G2053	068G3262
	55 – 95	½ × ½	068G6061	068G2053	068G3260
	90 – 130	½ × ½	068G6127	068G2053	068G3261
TEAT 20 – 8	35 – 65	½ × ½	068G6128	068G2054	068G3262
	55 – 95	½ × ½	068G6063	068G2054	068G3260
	90 – 130	½ × ½	068G6066	068G2054	068G3261
TEAT 20 – 12	35 – 65	½ × ½	(1)	068G2055	068G3262
	55 – 95	½ × ½	(1)	068G2055	068G3260
	90 – 130	½ × ½	(1)	068G2055	068G3261
TEAT 20-20	35 – 65	½ × ½	068G6068	068G2056	068G3262
	55 – 95	½ × ½	068G6064	068G2056	068G3260
	90 – 130	½ × ½	068G6067	068G2056	068G3261
TEAT 85 – 33	35 – 65	¾ × ¾	068G6129	068G2057	068G3262
	55 – 95	¾ × ¾	068G6070	068G2057	068G3260
	90 – 130	¾ × ¾	068G6072	068G2057	068G3261
TEAT 85 – 55	35 – 65	¾ × ¾	068G6130	068G2058	068G3262
	55 – 95	¾ × ¾	068G6073	068G2058	068G3260
	90 – 130	¾ × ¾	068G6131	068G2058	068G3261
TEAT 85 – 85	35 – 65	¾ × ¾	068G6069	068G2059	068G3262
	55 – 95	¾ × ¾	068G6071	068G2059	068G3260
	90 – 130	¾ × ¾	068G6132	068G2059	068G3261

(1) This valve size must be ordered as a complete valve + a separate orifice assemble in the required size.
Example: TEAT 20-3 must be ordered as **068G6125** + **068G2052**.
The orifice in the complete TEAT 20-2 valve must then be changed with the separate orifice assemble.

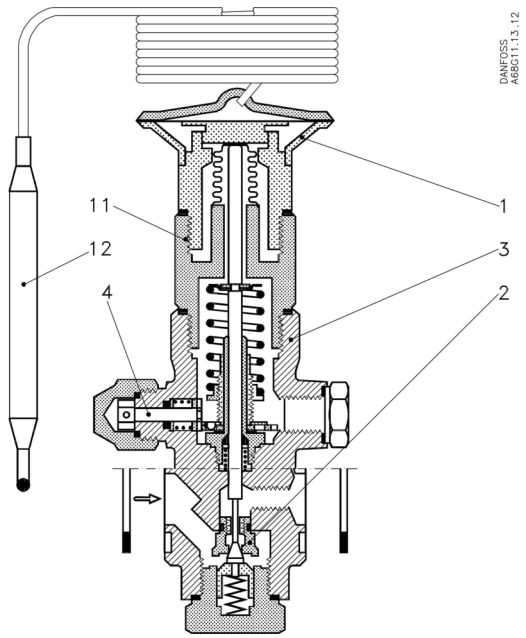
NOTE:

Separate filter with gaskets, stay bolts and nuts

For TEAT 20, code no. **006-0042** for TEAT 85, code no. **006-0048**.

Functions

Figure: TEAT



Temperature variations in the discharge pipe where the bulb is placed act on the thermal charge in the bulb (**12**). This changes the pressure in the thermostatic element (**1**) and thus gives modulating liquid injection.

If leakage in the thermostatic element does occur, it will not result in refrigerant loss.

The thermostatic element is screwed to the intermediate section (**11**) of the valve. A bellow on the intermediate section means that the suction pressure cannot influence the valve setting.

The movement of the setting spindle (**4**) is transferred through a gearwheel mechanism. The orifice assembly (**2**) is identical to that of TEA thermostatic expansion valves.

NOTE:
The TEAT is not able to close completely tight, so a solenoid valve is needed to shut off liquid supply, when the system stops.

Media

Refrigerants

Applicable to HCFC, non-flammable HFC and R717 (Ammonia).

New refrigerants

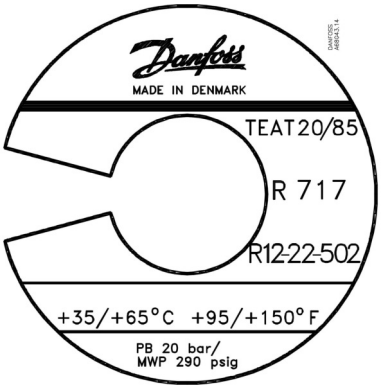
Danfoss products are continually evaluated for use with new refrigerants depending on market requirements.

When a refrigerant is approved for use by Danfoss, it is added to the relevant portfolio, and the R number of the refrigerant (e.g. R513A) will be added to the technical data of the code number. Therefore, products for specific refrigerants are best checked at store.danfoss.com/en/, or by contacting your local Danfoss representative.

Product details

Design

Identification
Figure: Element label



The thermostatic element
Has a label giving valve type, temperature range and max. test pressure.

Figure: Orifice assembly marking



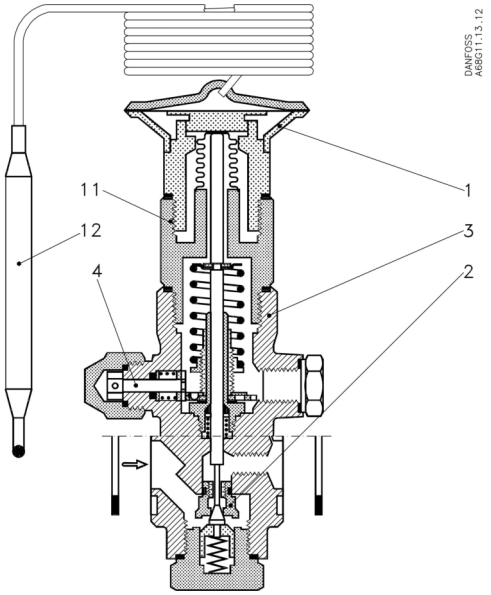
The orifice assembly
Is common to TEAT, TEA and TEVA. The rated capacity, e.g. 8 TR (= 28 kW) for the refrigerant ammonia is given on the orifice assembly.

The orifice assembly can be used for both ammonia and fluorinated refrigerants.

Materials

- Valve housing made of GGG40.3
- Gaskets are non-asbestos

Figure: TEAT



Part. No	Description
1	Thermostatic element (diaphragm)
2	Orifice assembly
3	Valve body
4	Setting spindle
11	Intermediate section
12	Bulb

Capacity

Table: Rated capacity in kW

Type and rated capacity (TR)	Rated capacity in kW[1] at Δp = 8 bar					
	R717 (NH_3)	R22	R134a	R404A	R12	R502
TEAT 20 – 1	3.3	0.8	0.7	0.6	0.5	0.6
TEAT 20 – 2	6.4	1.5	1.2	1.1	0.9	1.1
TEAT 20 – 3	9.7	2.3	1.7	1.6	1.3	1.6
TEAT 20 – 5	16	3.6	3	2.9	2.3	2.7
TEAT 20 – 8	25.6	6.2	4.6	4.4	3.5	4.4
TEAT 20 – 12	38.4	9.2	6.9	6.7	5.3	6.5
TEAT 20 – 20	64	15.4	13.1	12.6	10	10.8
TEAT 85 – 33	106	26	19.5	18.8	14.9	18
TEAT 85 – 55	173	42.4	31.8	30.6	24.3	27.4
TEAT 85 – 85	274	66.3	50.3	48.4	38.4	46.5

[1] The rated capacity is valve capacity at +5 °C evaporating temperature, +32 °C condensing temperature and 4K subcooling of the liquid in front of the valve.

NOTE:

Subcooling of the liquid in front of the valve is essential for the function of the valve. Lack of subcooling will lead to malfunction of the valve and increased wear on orifice.

Table: Extended capacities in kW R717

R717[1]					
Valve size	Pressure drop across valve Δp bar				
	4	6	8	11	15
20 – 1	2.3	2.8	3.3	3.6	4.7
20 – 2	4.8	5.7	6.4	7.2	7.9
20 – 3	7.2	8.5	9.7	10.8	11.7
20 – 5	12.1	14.2	16	18	19.8
20 – 8	18.6	22.1	25.6	28.5	31.4
20 – 12	29.1	33.7	38.4	43	47.1
20 – 20	47.7	57	64	72.1	79.1
85 – 33	80.2	94.2	106.4	118.6	130.3
85 – 55	136.1	157	176.8	197.7	215.2
85 – 85	203.5	239.6	274.5	302.4	334.9

[1] The rated capacity is valve capacity at +5 °C evaporating temperature, +32 °C condensing temperature and 4K subcooling of the liquid in front of the valve.

Table: Extended capacities in kW R22

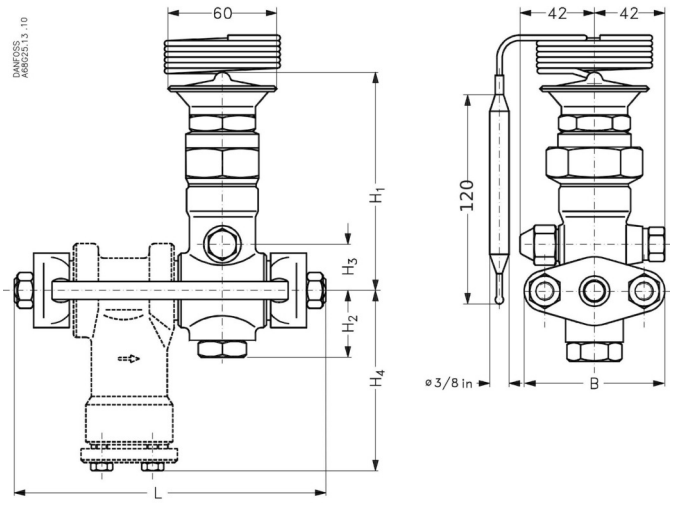
Valve size	R22[2]				
	Pressure drop across valve Δp bar				
	4	6	8	11	15
20 – 1	0.6	0.7	0.8	0.9	1
20 – 2	1.2	1.4	1.5	1.7	1.9
20 – 3	1.7	2	2.3	2.6	2.9
20 – 5	2.7	3.1	3.6	4	4.8
70 – 8	4.4	5.2	6.2	6.9	7.6
20 – 12	7	8.1	9.2	10.4	11.3
20 – 20	11.5	13.7	15.4	17.2	18.8
85 – 33	19.3	22.4	25.6	28.5	31.4
85 – 55	32.6	37.8	42.4	47.7	52.3
85 – 85	48.8	58.2	66.3	72.1	81.4

[2] The rated capacity is valve capacity at +5 °C evaporating temperature, +32 °C condensing temperature and 4K subcooling of the liquid in front of the valve.

Pressure and temperature data

Description	Values
P band	20 °C
Capillary tube length	5 m
Max. bulb temperature	150 °C
Max. working pressure	PS = 20 bar
Max. test pressure	p' = 30 bar

Dimensions



Type	H_1 [mm]	H_2 [mm]	H_3 [mm]	H_4 [mm]	L		B [mm]	Weight	
					Excl. strainer [mm]	Incl. strainer [mm]		Excl. strainer [kg]	Incl. strainer [kg]
TEAT 20	121.5	37	25	96	110	164	80	2.1	3
TEAT 85	131.5	37	35	106	125	199	95	3	4.5

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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
Export Control Declaration	Desuperheating valve	Danfoss	
Export Control Declaration	Thermostatic expansion valve	Danfoss	
Manufacturer's Declaration	Danfoss MD 033F0686.AT	Danfoss	PED, Pressure
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.02-22	LLC CDC EURO TYSK - Ukraine	PED, Pressure
Manufacturer's Declaration	Danfoss MD 033F0691.AK	Danfoss	EU RoHS
UA Declaration	Danfoss UA 2023-01-10 Valves PL01 PL40	Danfoss	PED, Pressure

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