

Thermostatic Expansion Valve

TCE/TCBE Series

Application

TCE/TCBE thermostatic expansion valves are used to adjust the supply of refrigerant in evaporator by controlling the superheat. The sensor bulb is placed at the outlet of the evaporator. TCE/TCBE thermostatic expansion valves are applicable to large capacity systems, such as bus and central air conditioning system, heat pump, and water chillers.

Features

- Straightway design;
- Bleed function;
- Bi-Flow design;
- Adjustable superheat;
- Laser welding of power element, long lifetime of diaphragm;
- Available with MOP;



Approvals

UL, CE.

Technical Data

Applicable Refrigerants: R134a, R404A, R507, R407C, and R410A

Max. Sensor Bulb Temperature: 100°C

Max. Valve Body Temperature: 110°C

Max. Operating Pressure: 4.6 MPa

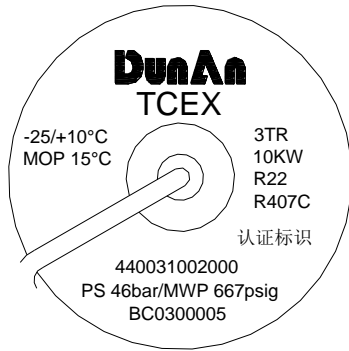
Max. Test Pressure: 5.1 MPa

External Balance Connection: 1/4 in.

Capillary Lengths: 1500 mm

Thermostatic Expansion Valve

Identification



Refrigerant

Z: R407C N: R134a L: R410A
S: R404A/R507
K: R448A/R449A

Example

TCEX = Type (X=R22)
3 TR = Nominal Capacity in Tons
10 kW = Nominal Capacity in kW
R22/R407C = Refrigerant
-25/+10°C = Evaporating Temperature Range
MOP 15°C = Max. Evaporating Pressure
BP15 = Bleed 15%
440031002000 = Code Number
PS 46bar/MWP 667psig = Max. Working Pressure
EF2300001 = Date Marking

MOP Options

Refrigerant	Range N -40°C ~ +10°C	Range K -25°C ~ +10°C MOP 15°C
R404A/R507	(Without MOP)	8.3 bar
R407C	(Without MOP)	6.6 bar
R134a	(Without MOP)	3.8 bar
R410A	(Without MOP)	11.4 bar

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Nominal Capacity

Model	Orifice No.	R134a		R404A/R507		R407C		R410A		R32		R290	
		kW	TR	kW	TR	kW	TR	kW	TR	KW	TR	KW	TR
TCE	3.5	6	1.5	7	2	9	2.5	12	3.5	18	5	10	3
	4.5	8	2.5	9	2.5	13	3.5	16	4.5	24	7	14	4
	6.5	12	3.5	14	4	19	5	24	6.5	35	10	19	5
	9	17	4.5	18	5	25	7	32	9	47	13	25	7
	11	20	5.5	21	6	30	8.5	37	11	54	15	32	9
	13	24	7	26	7.5	36	10	45	13	68	19	36	10
	14	29	8	31	9	39	11	50	14	74	21	44	12
TCBE	15	29	8	31	9	42	12	54	15	81	23	44	12
	19	37	10	39	11	53	15	68	19	102	29	54	15
	23	44	12	45	13	62	18	79	23	120	34	63	18

The nominal capacity is based on:

1. Evaporating Temperature $T_e=4.4^\circ\text{C}$;
2. Liquid Temperature Before Valve $T_l=37^\circ\text{C}$;
3. Condensing Temperature $T_c=38^\circ\text{C}$;
4. Static Superheat $SS=4\text{K}$;
5. Opening Superheat $OS=4\text{K}$.

Ordering

R134a: Opening Superheat = 4K, Range N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEN	3.5	3/8x5/8	1/4	440080020000
	3.5	1/2x5/8	1/4	440080020100
	4.5	1/2x7/8	1/4	440080020200
	6.5	1/2x5/8	1/4	440080020300
	6.5	1/2x7/8	1/4	440080020400
	6.5	5/8x7/8	1/4	440080020500
	9	5/8x7/8	1/4	440080020600
	11	5/8x7/8	1/4	440080034700
	13	5/8x7/8	1/4	440080020700
	13	5/8x1-1/8	1/4	440080020800
	14	5/8x7/8	1/4	440080020900
TCBEN	15	5/8x7/8	1/4	440080021000
	15	5/8x1-1/8	1/4	440080021100
	19	5/8x1-1/8	1/4	440080021200
	19	7/8x1-1/8	1/4	440080021300
	23	7/8x1-1/8	1/4	440080021400
	23	7/8x1-3/8	1/4	440080021500

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Thermostatic Expansion Valve

Ordering

R134a: Opening Superheat = 4K, Range K

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEN	3.5	3/8 × 5/8	1/4	440080021600
	3.5	1/2 × 5/8	1/4	440080021700
	4.5	1/2 × 7/8	1/4	440080021800
	6.5	1/2 × 5/8	1/4	440080021900
	6.5	1/2 × 7/8	1/4	440080022000
	6.5	5/8 × 7/8	1/4	440080022100
	9	5/8 × 7/8	1/4	440080022200
	11	5/8 × 7/8	1/4	440080034800
	13	5/8 × 7/8	1/4	440080022300
	13	5/8 × 1-1/8	1/4	440080022400
	14	5/8 × 7/8	1/4	440080022500
TCBEN	15	5/8 × 7/8	1/4	440080022600
	15	5/8 × 1-1/8	1/4	440080022700
	19	5/8 × 1-1/8	1/4	440080022800
	19	7/8 × 1-1/8	1/4	440080022900
	23	7/8 × 1-1/8	1/4	440080023000
	23	7/8 × 1-3/8	1/4	440080023100

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Ordering

R404A/R507: Opening Superheat = 4K, Range N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCES	3.5	3/8 x 5/8	1/4	440080023200
	3.5	1/2 x 5/8	1/4	440080023300
	4.5	1/2 x 7/8	1/4	440080023400
	6.5	1/2 x 7/8	1/4	440080023500
	6.5	1/2 x 5/8	1/4	440080023600
	6.5	5/8 x 7/8	1/4	440080023700
	9	1/2 x 5/8	1/4	440080023800
	9	5/8 x 7/8	1/4	440080023900
	11	5/8 x 7/8	1/4	440080034900
	13	5/8 x 7/8	1/4	440080024000
	13	5/8 x 1-1/8	1/4	440080024100
TCBES	14	5/8 x 7/8	1/4	440080024200
	15	5/8 x 7/8	1/4	440080024300
	15	5/8 x 1-1/8	1/4	440080024400
	19	5/8 x 1-1/8	1/4	440080024500
	19	5/8 x 1-1/8	1/4	440080024600
	23	7/8 x 1-1/8	1/4	440080024700

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Thermostatic Expansion Valve

Ordering

R404A/R507: Opening Superheat = 4K, Range K

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCES	3.5	3/8 x 5/8	1/4	440080024800
	3.5	1/2 x 5/8	1/4	440080024900
	4.5	1/2 x 7/8	1/4	440080025000
	6.5	1/2 x 7/8	1/4	440080025100
	6.5	1/2 x 5/8	1/4	440080025200
	6.5	5/8 x 7/8	1/4	440080025300
	9	1/2 x 5/8	1/4	440080025400
	9	1/2 x 7/8	1/4	440080025500
	11	5/8 x 7/8	1/4	440080034900
	13	5/8 x 7/8	1/4	440080025600
	13	5/8 x 1-1/8	1/4	440080025700
TCBES	14	5/8 x 7/8	1/4	440080025800
	15	5/8 x 7/8	1/4	440080025900
	15	5/8 x 1-1/8	1/4	440080026000
	19	5/8 x 1-1/8	1/4	440080026100
	19	5/8 x 1-1/8	1/4	440080026200
	23	7/8 x 1-1/8	1/4	440080026300

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Ordering

R407C: Opening Superheat = 4K, Range N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCENZ	3.5	3/8 x 5/8	1/4	440080026400
	3.5	1/2 x 5/8	1/4	440080026500
	4.5	1/2 x 7/8	1/4	440080026600
	6.5	1/2 x 5/8	1/4	440080026700
	6.5	1/2 x 7/8	1/4	440080026800
	6.5	5/8 x 7/8	1/4	440080026900
	9	5/8 x 7/8	1/4	440080027000
	11	5/8 x 7/8	1/4	440080035100
	13	5/8 x 7/8	1/4	440080027100
	13	5/8 x 1-1/8	1/4	440080027200
	14	5/8 x 7/8	1/4	440080035300
TCBEZ	15	5/8 x 7/8	1/4	440080027300
	15	5/8 x 1-1/8	1/4	440080027400
	19	5/8 x 1-1/8	1/4	440080027500
	19	7/8 x 1-1/8	1/4	440080027600
	23	7/8 x 1-1/8	1/4	440080027700
	23	7/8 x 1-3/8	1/4	440080027800

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Thermostatic Expansion Valve

Ordering

R407C: Opening Superheat = 4K, Range K

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEZ	3.5	3/8 x 5/8	1/4	440080028000
	3.5	1/2 x 5/8	1/4	440080028100
	4.5	1/2 x 7/8	1/4	440080028200
	6.5	1/2 x 5/8	1/4	440080028300
	6.5	1/2 x 7/8	1/4	440080028400
	6.5	5/8 x 7/8	1/4	440080028500
	9	5/8 x 7/8	1/4	440080028600
	11	5/8 x 7/8	1/4	440080035400
	13	5/8 x 7/8	1/4	440080028700
	13	5/8 x 1-1/8	1/4	440080028800
	14	5/8 x 7/8	1/4	440080035500
TCBEZ	15	5/8 x 7/8	1/4	440080028900
	15	5/8 x 1-1/8	1/4	440080029000
	19	5/8 x 1-1/8	1/4	440080029100
	19	7/8 x 1-1/8	1/4	440080029200
	23	7/8 x 1-1/8	1/4	440080029300
	23	7/8 x 1-3/8	1/4	440080029400

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Ordering

R410A: Opening Superheat = 4K, Range N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEL	3.5	3/8 x 5/8	1/4	440080029500
	3.5	1/2 x 5/8	1/4	440080029600
	4.5	1/2 x 7/8	1/4	440080029700
	6.5	1/2 x 5/8	1/4	440080029800
	6.5	1/2 x 7/8	1/4	440080029900
	6.5	5/8 x 7/8	1/4	440080030000
	9	5/8 x 7/8	1/4	440080030100
	11	5/8 x 7/8	1/4	440080032700
	13	5/8 x 7/8	1/4	440080030200
	13	5/8 x 1-1/8	1/4	440080030300
	14	5/8 x 7/8	1/4	440080035600
TCBEL	15	5/8 x 7/8	1/4	440080030500
	15	5/8 x 1-1/8	1/4	440080030600
	19	5/8 x 1-1/8	1/4	440080030700
	19	7/8 x 1-1/8	1/4	440080030800
	23	7/8 x 1-1/8	1/4	440080030900
	23	7/8 x 1-3/8	1/4	440080031000

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Thermostatic Expansion Valve

Ordering

R410A: Opening Superheat = 4K, Range K

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEL	3.5	3/8 x 5/8	1/4	440080031100
	3.5	1/2 x 5/8	1/4	440080031200
	4.5	1/2 x 7/8	1/4	440080031300
	6.5	1/2 x 5/8	1/4	440080031400
	6.5	1/2 x 7/8	1/4	440080031500
	6.5	5/8 x 7/8	1/4	440080031600
	9	5/8 x 7/8	1/4	440080031700
	11	5/8 x 7/8	1/4	440080035700
	13	5/8 x 7/8	1/4	440080031800
	13	5/8 x 1-1/8	1/4	440080031900
TCBEL	14	5/8 x 7/8	1/4	440080035800
	15	5/8 x 7/8	1/4	440080032000
	15	5/8 x 1-1/8	1/4	440080032100
	19	5/8 x 1-1/8	1/4	440080032200
	19	7/8 x 1-1/8	1/4	440080032300
	23	7/8 x 1-1/8	1/4	440080032400
	23	7/8 x 1-3/8	1/4	440080032500

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Ordering

R32: Opening Superheat = 4K, Range N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCED	3.5	3/8 x 5/8	1/4	440080032800
	3.5	1/2 x 5/8	1/4	440080032900
	4.5	1/2 x 7/8	1/4	440080033000
	6.5	1/2 x 5/8	1/4	440080033100
	6.5	1/2 x 7/8	1/4	440080033200
	6.5	5/8 x 7/8	1/4	440080033300
	9	1/2 x 5/8	1/4	440080033400
	9	5/8 x 7/8	1/4	440080033500
	11	5/8 x 7/8	1/4	440080033600
	13	5/8 x 7/8	1/4	440080033700
TCBED	14	5/8 x 7/8	1/4	440080033800
	15	5/8 x 7/8	1/4	440080033900

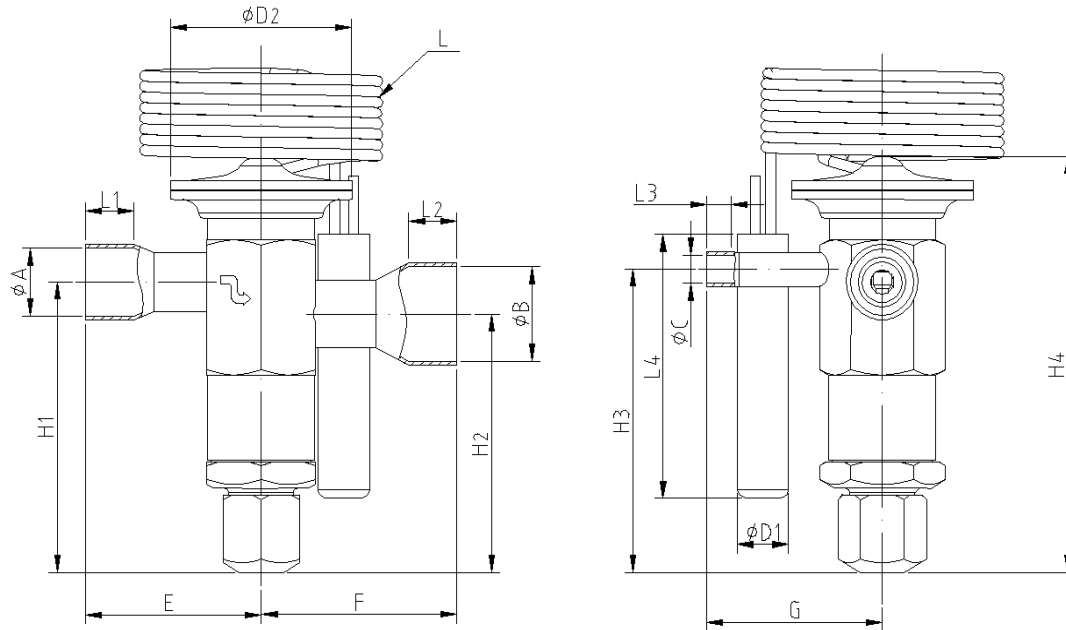
R290: Opening Superheat = 4K, Range N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEP	6.5	5/8 x 7/8	1/4	440080034000
	13	5/8 x 7/8	1/4	440080034100
	15	5/8 x 7/8	1/4	440080034200
TCBEP	19	7/8 x 7/8	1/4	440080034300
	23	7/8 x 7/8	1/4	440080034400

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Thermostatic Expansion Valve

Dimensions



Model	Connection Inlet × Outlet ODF	L	E	F	G	H1	H2	H3	H4	L1	L2	L3	L4	ΦD1	ΦD2	ΦC	Weight
	in.	m	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg
TCE	3/8x5/8	1.5	43.5	43.5	44	68	60.5	71	97.5	12	12	6	62	12.7	45	6.4	0.48
	1/2x5/8	1.5															
	1/2x7/8	1.5															
	5/8x7/8	1.5															
	5/8x1-1/8	1.5	43.5	48.5							60.5						
TCBE	5/8x7/8	1.5	50.5	57.5	44	72.5	65	78.5	106	12	16	6	76	19	53	6.4	0.62
	5/8x1-1/8	1.5	60.5														
	7/8x1-1/8	1.5	57.5	60.5													
	7/8x1-3/8	1.5	57.5	65.5													