

Thermo®-Expansion Valve Series T

Exchangeable Power Assemblies and Orifices

Features

- Modular design for economical logistics and easy assembly and servicing
- Very good stability is attained because of the large forces generated by the large diaphragm diameter
- High quality materials and processes for high reliability and long lifetime
- Superior partial load performance due to double seat orifice design (TJRE, TERE, TIRE & THRE)
- Biflow capability for applications in heat pumps
- Capillary tube length 1.5 m (TCLE, TJRE) and 3 m (TERE, TIRE & THRE)
- PS: 31 bar, TS: -45 ... +65°C
- No CE marking according art. 3.3 PED 97/23 EC

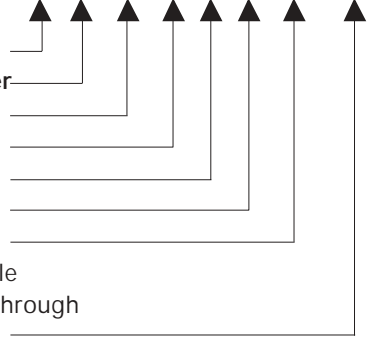


TCLE

Type Code

- Valve Series
- External Equalizer
- Capacity Code
- Refrigerant Code
- Charge Code
- MOP Code
- Flange Style
- WL = Angle Style
- DL = Straight through
- Connection

TCL E 100 H W 100 WL 10x16



Selection Chart for Orifice

Series	R 134a		R 22		R 404A/R 507		R 407C		Orifice
	Type	Nominal Capacity kW	Type	Nominal Capacity kW	Type	Nominal Capacity kW	Type	Nominal Capacity kW	
TCLE	25 MW	1,5	50 HW	1,9	25 SW	1,3	50 NW	2,1	X 22440-B1B
	150 MW	6,1	200 HW	7,9	150 SW	5,6	200 NW	8,5	X 22440-B3B
	250 MW	13,5	300 HW	17,3	250 SW	12,2	400 NW	18,7	X 22440-B4B
	550 MW	23,6	750 HW	30,4	600 SW	21,5	750 NW	32,9	X 22440-B6B
	900 MW	37,2	1200 HW	47,8	1000 SW	33,8	1150 NW	51,7	X 22440-B8B
	TJRE	13 MW	57	18 HW	74	14 SW	51	17 NW	80
TERE	19 MW	81	26 HW	104	20 SW	72	25 NW	112	X 9117-B7B
	31 MW	135	45 HW	174	34 SW	120	42 NW	188	X 9117-B9B
TIRE									
THRE	55 MW	197	75 HW	253	61 SW	174	71 NW	273	X 9144-B11B

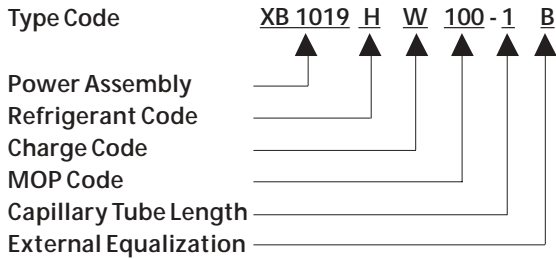
Nominal capacities at +38°C condensing temperature, +4°C evaporating temperature (saturated temperatures / dew point) and 1 K liquid subcooling at the inlet of the expansion valve.

Valve selection for other operating conditions see page 22 - 24.

MOP		Evaporating Temperature Range °C				
Code	(bar)	R 134a	R 22	R 404A	R 407C	R 507
15	1,0	-45 to -16				
35	2,4	-45 to 0	-45 to -15			
40	2,8			-45 to -18		-45 to -18
55	3,8	-45 to 11		-45 to -10		-45 to -10
65	4,5		-45 to 0			
75	5,2			-45 to -2		-45 to -2
80	5,5			-45 to 0		-45 to 0
100	6,9		-45 to 13		-45 to 14	

Available upon special request:

- Power assembly with solder connection for external pressure equalization
- Non-standard MOPs
- Non-standard charges
- Non-standard connection sizes (selection see page 35)



Selection Chart for Power Assemblies and Recommended Flanges

Orifice	Connection Standard-Flange, Angle Solder/ODF		Power Assembly
	mm	inch	
X 22440-B1B	C 501 - 5 mm 10 x 16	C 501 - 5 3/8 x 5/8	XB1019...1 B
X 22440-B2B			
X 22440-B3B			
X 22440-B3,5B			
X 22440-B4B			
X 22440-B5B	C 501 - 7 mm 12 x 16	C 501 - 7 1/2 x 5/8	
X 22440-B6B	A 576 mm 16 x 22 (22 x 28 ODM)	A 576 5/8 x 7/8 (7/8 x 1 1/8 ODM)	
X 22440-B7B			
X 22440-B8B			
X 11873-B4B	10331 22 x 22	10331 7/8 x 7/8 (1 1/8 x 1 1/8 ODM)	
X 11873-B5B	9153 22 x 22	9153 7/8 x 7/8 (1 1/8 x 1 1/8 ODM)	XC726...2B
X 9117-B6B			
X 9117-B7B			
X 9117-B8B			
X 9117-B9B			
X 9166-B10B			
X 9144-B11B	9149 22 x 22	9149 7/8 x 7/8 (1 1/8 x 1 1/8 ODM)	
X 9144-B13B			

Accessories

	Type	Order-No.
Gasket Set for T Series Valves	X 13455 - 1	027 579
Service Tool for T Series	X 99999	800 005
Heat Transfer Paste Thermal Mastik	PS 984	026 650
Joint Sealing 'Leak Lock'	PS 1255 - 7	053 517
Steel Screws for Following Flange Types: C501 , 9761 , 6346 , A576 9148 , 9149, 9152, 9153, 10331 , 10332	Screw ST 32 Screw ST 48	803 573 803 574



Correction Tables for Thermo Expansion Valves, Series TI, TX6, T and L

Valve selection for operating conditions other than +38°C/+4°C and 1 K liquid subcooling at the inlet of the expansion valve:

$$Q_n = Q_o \times K_t \times K_{\Delta p}$$

- Q_n : Nominal valve capacity
- Q_o : Required cooling capacity
- K_t : Correction factor for evaporating and liquid temperature
- $K_{\Delta p}$: Correction factor for pressure drop at valve

Liquid Temperature entering Valve °C	Correction Factor K_t															
	R 134a															
	Evaporating Temperature °C															
	+30	+25	+20	+15	+10	+5	0	-5	-10	-15	-20	-25	-30			
+60	1,22	1,25	1,27	1,30	1,33	1,36	1,40	1,44	1,48	1,75	2,08	2,46	2,94			
+55	1,14	1,16	1,18	1,21	1,23	1,26	1,29	1,33	1,36	1,60	1,90	2,25	2,68			
+50	1,07	1,08	1,10	1,13	1,15	1,17	1,20	1,23	1,26	1,48	1,76	2,07	2,46			
+45	1,00	1,02	1,04	1,06	1,08	1,10	1,12	1,15	1,17	1,38	1,63	1,92	2,28			
+40	0,93	0,96	0,98	0,99	1,01	1,03	1,05	1,08	1,10	1,29	1,52	1,79	2,12			
+35	0,90	0,91	0,92	0,94	0,96	0,97	0,99	1,01	1,03	1,21	1,43	1,68	1,99			
+30	0,85	0,86	0,88	0,89	0,91	0,92	0,94	0,96	0,98	1,14	1,35	1,58	1,87			
+25		0,82	0,83	0,85	0,86	0,87	0,89	0,91	0,92	1,08	1,27	1,49	1,76			
+20			0,80	0,81	0,82	0,83	0,85	0,89	0,88	1,02	1,21	1,41	1,67			
+15				0,77	0,78	0,79	0,81	0,82	0,84	0,97	1,15	1,34	1,58			
+10					0,75	0,76	0,77	0,78	0,80	0,93	1,09	1,28	1,51			
+5						0,73	0,74	0,75	0,76	0,89	1,04	1,22	1,44			
0							0,71	0,72	0,73	0,85	1,00	1,17	1,37			
-5								0,69	0,70	0,82	0,96	1,12	1,31			
-10									0,68	0,79	0,92	1,07	1,26			
Correction Factor $K_{\Delta p}$																
Δp (bar)	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0
$K_{\Delta p}$	3,50	2,48	2,02	1,75	1,57	1,43	1,32	1,24	1,17	1,11	1,06	1,01	0,97	0,94	0,90	0,88
Δp (bar)	8,5	9,0	9,5	10,0	10,5	11,0	11,5	12,0	13,0	14,0	15,0	16,0	17,0	18,0	19,0	20,0
$K_{\Delta p}$	0,85	0,83	0,80	0,78	0,76	0,75	0,73	0,72	0,69	0,66	0,64	0,62	0,60	0,58	0,57	0,55

For the proper sizing of thermo expansion valves in cases of subcooling of more than 15 K please use the correction factors on page 6 of this brochure.

Liquid Temperature entering Valve °C	Correction Factor K_t															
	R 22															
	Evaporating Temperature °C															
	+30	+25	+20	+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
+60	1,22	1,23	1,24	1,25	1,26	1,28	1,30	1,31	1,38	1,58	1,84	2,16	2,56	3,04	3,55	4,23
+55	1,14	1,15	1,16	1,17	1,19	1,20	1,22	1,23	1,29	1,42	1,72	2,02	2,39	2,83	3,30	3,94
+50	1,08	1,09	1,10	1,11	1,12	1,13	1,15	1,16	1,21	1,39	1,62	1,89	2,24	2,66	3,10	3,68
+45	1,02	1,03	1,04	1,05	1,06	1,07	1,08	1,10	1,15	1,31	1,52	1,79	2,11	2,50	2,91	3,46
+40	0,97	0,98	0,99	1,00	1,01	1,02	1,03	1,04	1,09	1,24	1,45	1,69	2,00	2,37	2,75	3,27
+35	0,92	0,93	0,94	0,95	0,96	0,97	0,98	0,99	1,03	1,18	1,37	1,61	1,89	2,24	2,60	3,09
+30	0,88	0,89	0,90	0,91	0,92	0,93	0,94	0,95	0,99	1,13	1,31	1,55	1,83	2,13	2,47	2,93
+25		0,85	0,86	0,87	0,88	0,89	0,89	0,90	0,94	1,08	1,25	1,46	1,72	2,03	2,36	2,80
+20			0,83	0,83	0,84	0,85	0,86	0,87	0,90	1,03	1,19	1,40	1,64	1,94	2,25	2,66
+15				0,80	0,81	0,81	0,82	0,83	0,87	0,99	1,14	1,34	1,57	1,86	2,15	2,55
+10					0,78	0,78	0,79	0,80	0,83	0,95	1,10	1,28	1,51	1,78	2,06	2,44
+5						0,75	0,76	0,77	0,80	0,91	1,06	1,23	1,45	1,71	1,98	2,34
0							0,73	0,74	0,77	0,88	1,02	1,19	1,39	1,65	1,90	2,25
-5								0,71	0,74	0,85	0,98	1,14	1,34	1,58	1,83	2,17
-10									0,72	0,82	0,95	1,10	1,30	1,53	1,77	2,09
Correction Factor $K_{\Delta p}$																
Δp (bar)	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	8,0	9,0
$K_{\Delta p}$	4,25	3,00	2,46	2,13	1,90	1,74	1,61	1,50	1,42	1,35	1,28	1,23	1,18	1,14	1,06	1,00
Δp (bar)	10,0	11,0	12,0	13,0	14,0	15,0	16,0	17,0	18,0	19,0	20,0	21,0	22,0	23,0	24,0	25,0
$K_{\Delta p}$	0,95	0,91	0,87	0,83	0,80	0,78	0,75	0,73	0,71	0,69	0,67	0,66	0,64	0,63	0,61	0,60

Liquid Temperature entering Valve °C	Correction Factor K_t															
	R 404A															
	Evaporating Temperature °C															
	+30	+25	+20	+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
+60	1,56	1,59	1,64	1,69	1,74	1,81	1,88	1,96	2,06	2,43	2,95	3,56	4,37	5,38	6,71	8,47
+55	1,32	1,35	1,38	1,42	1,46	1,50	1,55	1,61	1,68	1,96	2,36	2,83	3,43	4,16	5,12	6,34
+50	1,16	1,18	1,20	1,23	1,26	1,30	1,34	1,38	1,43	1,67	1,99	2,37	2,85	3,43	4,18	5,14
+45	1,04	1,05	1,07	1,10	1,12	1,15	1,18	1,22	1,26	1,46	1,74	2,05	2,46	2,95	3,57	4,35
+40	0,94	0,96	0,97	0,99	1,02	1,04	1,07	1,09	1,13	1,30	1,55	1,82	2,17	2,59	3,13	3,80
+35	0,87	0,88	0,90	0,91	0,93	0,95	0,97	1,00	1,02	1,18	1,40	1,64	1,96	2,33	2,80	3,38
+30	0,81	0,82	0,83	0,84	0,86	0,88	0,90	0,92	0,94	1,08	1,28	1,50	1,78	2,11	2,53	3,05
+25		0,76	0,77	0,79	0,80	0,82	0,83	0,85	0,87	1,00	1,18	1,39	1,64	1,94	2,32	2,79
+20			0,73	0,74	0,75	0,77	0,78	0,80	0,81	0,94	1,10	1,29	1,52	1,80	2,15	2,58
+15				0,70	0,71	0,72	0,73	0,75	0,76	0,88	1,03	1,21	1,42	1,68	2,00	2,40
+10					0,67	0,68	0,69	0,71	0,72	0,83	0,97	1,13	1,34	1,58	1,88	2,25
+5						0,65	0,66	0,67	0,68	0,78	0,92	1,07	1,26	1,49	1,77	2,11
0							0,63	0,64	0,65	0,75	0,88	1,02	1,20	1,41	1,67	2,00
-5								0,61	0,62	0,71	0,83	0,97	1,14	1,34	1,59	1,90
-10									0,60	0,68	0,80	0,93	1,09	1,28	1,52	1,81
Correction Factor $K_{\Delta p}$																
Δp (bar)	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	8,0	9,0
$K_{\Delta p}$	4,55	3,21	2,62	2,27	2,03	1,86	1,72	1,61	1,52	1,44	1,37	1,31	1,26	1,21	1,14	1,07
Δp (bar)	10,0	11,0	12,0	13,0	14,0	15,0	16,0	17,0	18,0	19,0	20,0	21,0	22,0	23,0	24,0	25,0
$K_{\Delta p}$	1,02	0,97	0,93	0,89	0,86	0,83	0,80	0,78	0,76	0,74	0,72	0,70	0,69	0,67	0,66	0,64

For the proper sizing of thermo expansion valves in cases of subcooling of more than 15 K please use the correction factors on page 6 of this brochure.

Liquid Temperature entering Valve °C	Correction Factor K_t Evaporating Temperature °C													
	R 407C													
	+30	+25	+20	+15	+10	+5	0	-5	-10	-15	-20	-25		
+55	1,20	1,21	1,23	1,26	1,28	1,31	1,34	1,37	1,40	1,63	1,98	2,42		
+50	1,10	1,11	1,13	1,15	1,17	1,19	1,22	1,24	1,27	1,48	1,79	2,18		
+45	1,02	1,03	1,05	1,06	1,08	1,10	1,12	1,14	1,17	1,35	1,64	2,00		
+40	0,95	0,96	0,98	0,99	1,01	1,02	1,04	1,06	1,08	1,25	1,52	1,84		
+35	0,89	0,90	0,92	0,93	0,94	0,96	0,98	0,99	1,01	1,17	1,41	1,71		
+30	0,85	0,85	0,87	0,88	0,89	0,90	0,92	0,93	0,95	1,10	1,32	1,60		
+25		0,81	0,82	0,83	0,84	0,85	0,87	0,88	0,90	1,03	1,25	1,51		
+20			0,78	0,79	0,80	0,81	0,82	0,84	0,85	0,98	1,18	1,43		
+15				0,75	0,76	0,77	0,78	0,80	0,81	0,93	1,12	1,35		
+10					0,73	0,74	0,75	0,76	0,77	0,89	1,07	1,29		
+5						0,71	0,72	0,73	0,74	0,85	1,02	1,23		
0							0,69	0,70	0,71	0,81	0,98	1,18		
-5								0,67	0,68	0,78	0,94	1,13		
-10									0,65	0,75	0,90	1,08		

Correction Factor $K_{\Delta p}$																
Δp (bar)	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	8,0	9,0
$K_{\Delta p}$	4,78	3,33	2,72	2,36	2,11	1,92	1,78	1,67	1,57	1,49	1,42	1,36	1,31	1,26	1,18	1,11
Δp (bar)	10,0	11,0	12,0	13,0	14,0	15,0	16,0	17,0	18,0	19,0	20,0	21,0	22,0	23,0	24,0	25,0
$K_{\Delta p}$	1,05	1,01	0,96	0,92	0,89	0,86	0,83	0,81	0,79	0,76	0,75	0,73	0,71	0,70	0,68	0,67

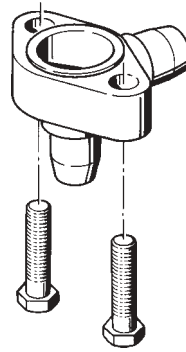
Attention: See page 6 for determining of conditions for systems with R 407C.

Liquid Temperature entering Valve °C	Correction Factor K_t Evaporating Temperature °C															
	R 507															
	+30	+25	+20	+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
+60	1,54	1,57	1,61	1,65	1,71	1,76	1,83	1,90	1,98	2,36	2,84	3,44	4,23	5,25	6,61	8,45
+55	1,30	1,33	1,36	1,39	1,43	1,47	1,52	1,57	1,62	1,92	2,29	2,75	3,35	4,11	5,11	6,44
+50	1,15	1,17	1,19	1,22	1,24	1,28	1,31	1,35	1,40	1,64	1,95	2,33	2,81	3,43	4,23	5,29
+45	1,03	1,05	1,07	1,09	1,11	1,14	1,17	1,20	1,23	1,45	1,71	2,04	2,45	2,97	3,64	4,53
+40	0,94	0,96	0,97	0,99	1,01	1,03	1,06	1,08	1,11	1,30	1,53	1,82	2,18	2,63	3,22	3,98
+35	0,87	0,88	0,90	0,91	0,93	0,95	0,97	0,99	1,01	1,18	1,39	1,65	1,97	2,37	2,89	3,56
+30	0,81	0,82	0,83	0,85	0,86	0,88	0,89	0,91	0,93	1,09	1,28	1,51	1,80	2,17	2,63	3,23
+25		0,77	0,78	0,79	0,80	0,82	0,83	0,85	0,87	1,01	1,18	1,40	1,66	1,99	2,42	2,97
+20			0,73	0,74	0,75	0,77	0,78	0,79	0,81	0,94	1,10	1,30	1,54	1,85	2,24	2,74
+15				0,70	0,71	0,72	0,73	0,75	0,76	0,88	1,03	1,21	1,44	1,73	2,09	2,55
+10					0,67	0,68	0,69	0,70	0,72	0,83	0,97	1,14	1,35	1,62	1,95	2,38
+5						0,64	0,65	0,67	0,68	0,78	0,92	1,07	1,27	1,52	1,83	2,23
0							0,62	0,63	0,64	0,74	0,87	1,02	1,20	1,43	1,73	2,10
-5								0,60	0,61	0,70	0,82	0,96	1,14	1,35	1,63	1,98
-10									0,58	0,67	0,78	0,91	1,08	1,28	1,54	1,87

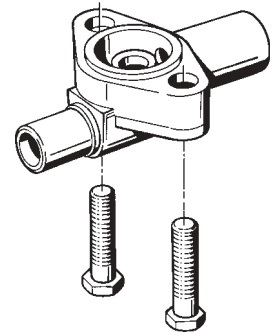
Correction Faktor $K_{\Delta p}$																
Δp (bar)	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	8,0	9,0
$K_{\Delta p}$	4,63	3,27	2,67	2,31	2,07	1,89	1,75	1,64	1,54	1,46	1,40	1,34	1,28	1,24	1,16	1,09
Δp (bar)	10,0	11,0	12,0	13,0	14,0	15,0	16,0	17,0	18,0	19,0	20,0	21,0	22,0	23,0	24,0	25,0
$K_{\Delta p}$	1,03	0,99	0,94	0,91	0,87	0,85	0,82	0,79	0,77	0,75	0,73	0,71	0,70	0,68	0,67	0,65

For the proper sizing of thermo expansion valves in cases of subcooling of more than 15 K please use the correction factors on page 6 of this brochure.

Flanges for Valves



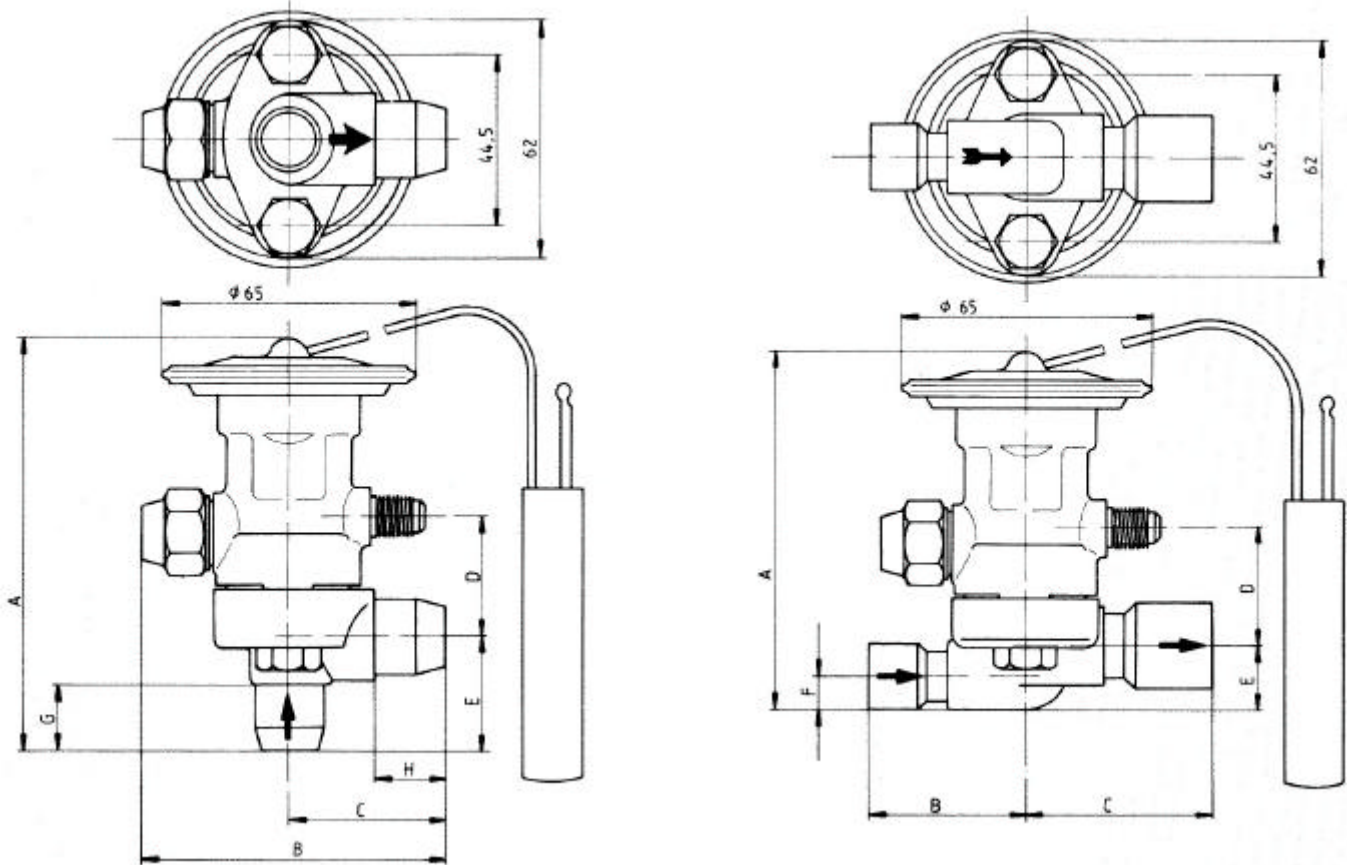
Angle Style Flange



Straight Through Flange

Angle Style		Straight Through		Connections				for Valve Series
Type	Order No.	Type	Order No.	mm		inch		
				Solder ODF	Solder ODM	Solder ODF	Solder ODM	
C 501 - 4	803 230			—	—	3/8 x 1/2	—	TCLE ZZCE LCLE 935 A-G CPHE 1 CPHE 2
C 501 - 4 MM	803 231			10 x 12	—	—	—	
C 501 - 5	803 232	9761 - 3	803 240	—	—	3/8 x 5/8	—	
C 501 - 5 MM	803 233	9761 - 3 MM	803 241	10 x 16	—	—	—	
C 501 - 7	803 234	9761 - 4	803 350	—	—	1/2 x 5/8	—	
C 501 - 7 MM	803 235	9761 - 4 MM	803 243	12 x 16	—	—	—	
—	—	6346 - 17	803 330	16 x 22	—	5/8 x 7/8	—	
A 576	803 238	—	—	—	—	5/8 x 7/8	7/8 x 1-1/8	
A 576 - MM	803 239	—	—	16 x 22	22 x 28	—	—	
10331	803 338	10332	803 324	22 x 22	—	7/8 x 7/8	1-1/8 x 1-1/8	
9153 9153 MM	803 244 803 245	9152 9152 MM	803 286 803 287	— 22 x 22	— 28 x 28	7/8 x 7/8 —	1-1/8 x 1-1/8	TERE TIRE ZZERE ZZIRE LERE LIRE CPHE 3,5 CPHE 4 CPHE 5
9149	803 284	9148	803 283	22 x 22	—	7/8 x 7/8	1-1/8 x 1-1/8	THRE CPHE 6

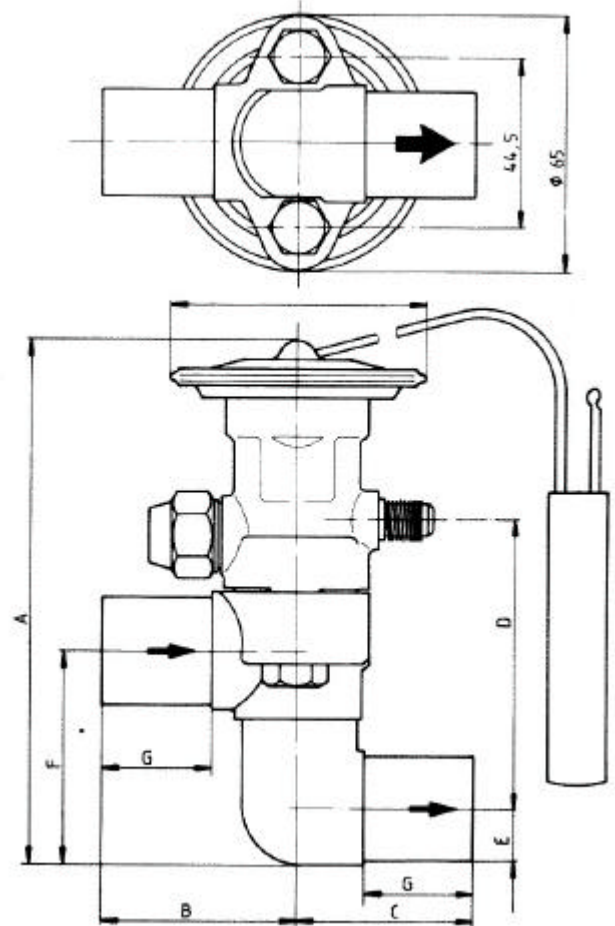
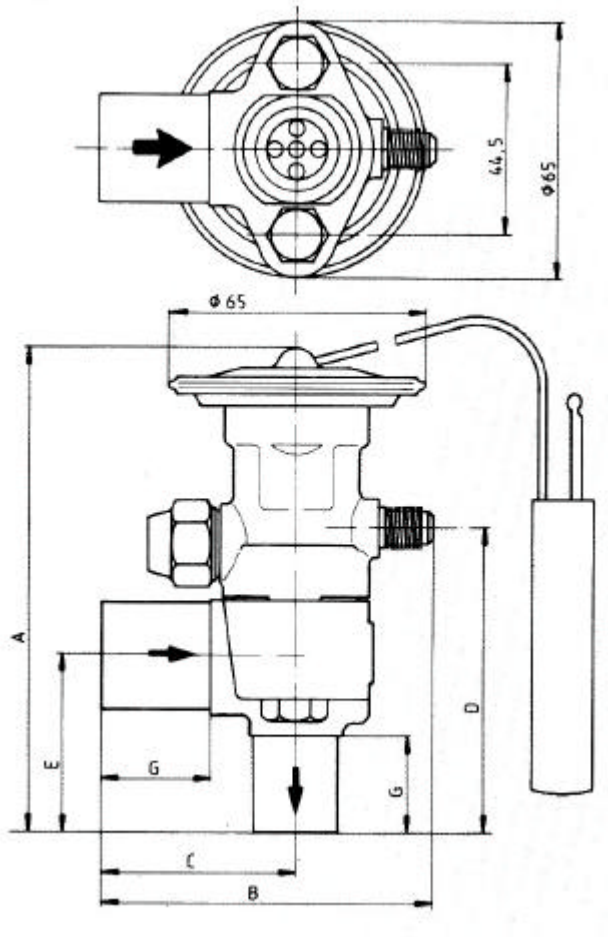
Dimensions TCLE



Angle Style Flanges TCLE		Lay-in length		A	B	C	D	E	F	G	H	Weight kg
Connections		Inlet	Outlet									
3/8	1/2 SAE			106	78	39	30	29				1,1
3/8	5/8 SAE			106				29				
1/2	5/8 SAE			113				35				
10	12 ODF	14	17	105	77	37		27				
10	16 ODF	14	21	105	80	40		-				
12	16 ODF	18	21	108	80	40		-				
16	22 ODF	21	25	124	90	51	43	27	29			
3/8	1/2 ODF	14	17	105	77	37	27					
3/8	5/8 ODF	14	21	105	80	40	27					
1/2	5/8 ODF	18	21	108	80	40	30					
5/8	7/8 ODF	21	25	124	90	51	34					43

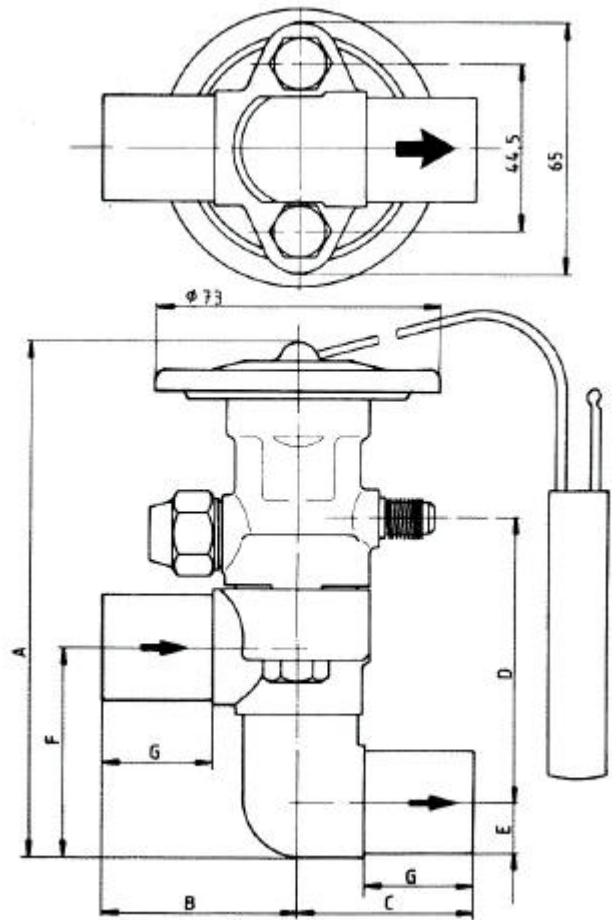
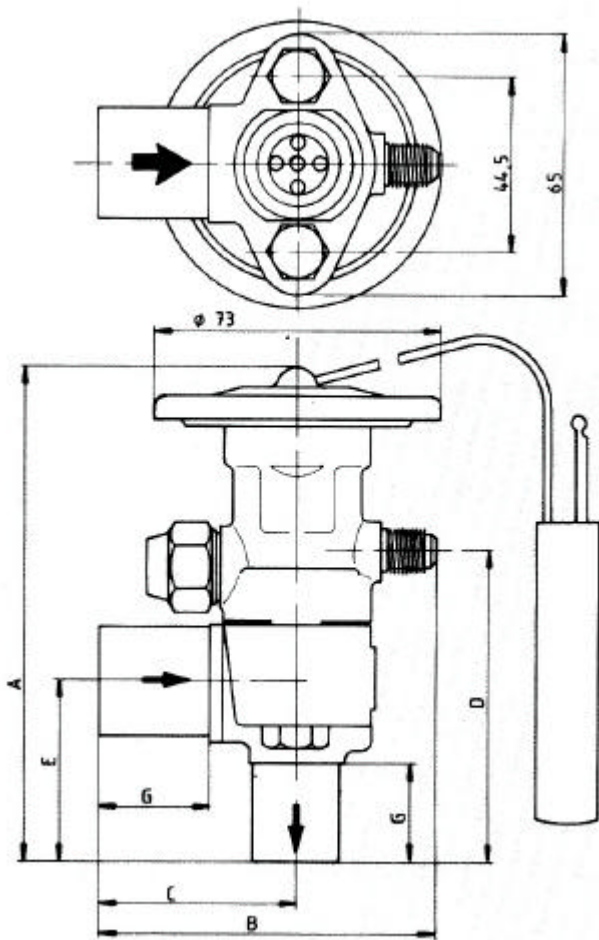
Straight Through Flanges TCLE		Lay-in length		A	B	C	D	E	F	G	H	Weight kg
Connections		Inlet	Outlet									
3/8	1/2 SAE			95	45	50	31	17	10			1,2
3/8	5/8 SAE				45	55						
1/2	5/8 SAE				50	55						
10	12 ODF	8	10	95	36	40	31	17	9			1,1
10	16 ODF	8	13			41						
12	16 ODF	10	13			41						
3/8	1/2 ODF	8	10	95	36	40	31	17	9			1,1
3/8	1/2 ODF	8	13			41						
1/2	1/2 ODF		10			40						
1/2	5/8 ODF	10	13	97	36	41	31	17	9			1,1
1/2	7/8 ODF		19			49						
5/8	5/8 ODF		13	95	41	41	33	10				1,15
5/8	7/8 ODF	13	19			49						
5/8	1-18 ODF		13			60						
5/8	1-18 ODF	19	13			98						

Dimensions TJRE



Angle Style Flanges TJRE		Lay-in length		A	B	C	D	E	F	G	Weight kg
Connections		Inlet	Outlet								
22	22 ODF	19	19	140	85	51	93	59		29	1,3
Straight Through Flanges TJRE											
7/8	7/8 ODF	19	19	137	51	45	75	15	56	29	1,4

Dimensions TERE, TIRE, THRE



Angle Style Flanges Type 9153, 9153-MM for TERE, TIRE												
Connections		Lay-in length		A	B	C	D	E	F	G	Weight kg	
		Inlet	Outlet									
22	22 ODF	19	19	140	87	51	92	59		23	1,4	
7/8	7/8 ODF	19	19	140			92	59		25	1,4	
Angle Style Flanges Type 9149 for THRE												
22,2	22,2 ODF	19	19	154			106	73		25	1,45	
7/8	7/8 ODF	19	19	154	106	73		25	1,45			
Straight Through Flanges Type 9152 for TERE, TIRE												
22,2	22,2 ODF	19	19	139	51	45	74	16,5	58	25	1,5	
7/8	7/8 ODF	19	19	139							1,5	
Straight Through Flanges Type 9148 for THRE												
22,2	22,2 ODF	19	19	139							1,45	
7/8	7/8 ODF	19	19	139							1,45	