

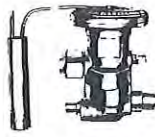


THERMO EXPANSION VALVES

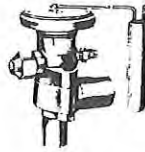
FOR R12, R22, R500, R502.

These Thermo Valves, with adjustable superheat and replaceable, interchangeable components are ideal for original equipment and field replacements in Air Conditioning and Refrigeration applications.

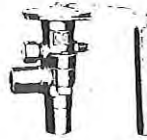
* Safe Working Pressure 3103kPa (450PSIG) * Safe Working Temperature 149°C (300°F)



TCL



TJL



TER



TIR



THR

R 12			R 22			R 500			R 502			STD. CONN. SIZE	TYPE EQUAL & CAP LGTH.	ALL PURPOSE CAGE	
CAT NO	VALVE TYPE	* TONS (kW) @ 60# PD	CAT NO	VALVE TYPE	* TONS @ 100# PD	CAT NO	VALVE TYPE	* TONS @ 60# PD	CAT NO	VALVE TYPE	* TONS @ 100# PD			CAT NO	PART NO NEW OLD
1027	TCL(E) 1/4FW	0.25 (0.9)	10232	TCL(E) 1/2HW	0.5	10257	TCLE 25CW	0.25	10281	TCL(E) 1/4RW	0.25	3/8ODF	1/4SAE	102117	X22440-B1B XC709-B7B
1028	TCL(E) 1/2FW	0.5 (1.8)	10233	TCL(E) 1HW	1.0	10258	TCLE 75CW	0.75	10282	TCL(E) 1/2RW	0.5			102118	X22440-B2B XC709-B000B
1029	TCL(E) 1FW	1.0 (3.5)	10234	TCL(E) 2HW	2.0	10259	TCLE 100CW	1.5	10283	TCL(E) 1RW	1.0			X	102119
10210	TCL(E) 2FW	2.0 (7.0)	10235	TCL(E) 3HW	3.0	10260	TCLE 250CW	2.5	10284	TCL(E) 2RW	2.0	5/8ODF	EXT.	102120	X22440-B4B XC709-B0B
						10261	TCLE 300CW	3.0				1/2ODF		102121	XC709-B6B
10212	TCL(E) 3FW	3.0 (10.6)	10237	TCL(E) 5HW	5.0	10262	TCLE 400CW	4.0	10286	TCL(E) 3RW	3.0	X		5Ft.	102122
10213	TCL(E) 4FW	4.0 (14.1)	10238	TCL(E) 7½HW	7.5	10263	TCLE 500CW	5.0	10287	TCL(E) 4½RW	4.5	5/8ODF	EXT.	102123	X22440-B6B XC709-B4B
						10264	TCLE 700CW	7.0						102124	XC709-B2B
10215	TCL(E) 6½FW	6.5 (22.9)	10240	TCL(E) 10HW	10.0	10265	TCLE 800CW	7.5	10289	TCL(E) 7RW	7.0	5/8ODF		102125	X22440-B7B XC709-B3B
10216	TCL(E) 7½FW	7.5 (26.4)	10241	TCL(E) 12HW	12.0	10266	TCLE 900CW	8.5	10290	TCL(E) 8RW	8.0	X	EXT.	102126	X22440-B8B XC709-B5B
10217	TJLE 800FW	6.5 (22.9)	10242	TJLE 1400HW	10.9	10267	TJLE 1000CW	9.5	10291	TJLE 900RW	7.3	7/8ODF		102127	XC724-B4B
10218	TJLE 1100FW	8.3 (29.2)	10243	TJLE 1800HW	13.9	10268	TJLE 1400CW	13.0	10292	TJLE 1200RW	9.3			102128	XC724-B5B
10219	TER 13FW	13.0 (45.7)	10244	TER 22HW	22.0	10269	TER 15CW	15.0	10293	TER 14RW	14.0	7/8ODF	EXT.	102129	X9117-B6B
10220	TER 15FW	15.0 (52.8)	10245	TER 26HW	26.0	10270	TER 18CW	18.0	10294	TER 16RW	16.0	X		102116	X9117-B7B
10221	TER 20FW	20.0 (70.3)	10246	TER 35HW	35.0	10271	TER 25CW	25.0	10295	TER 21RW	21.0			1-1/8 ODM	102130
10222	TER 25FW	25.0 (87.9)	10247	TER 45HW	45.0	10272	TER 30CW	30.0	10296	TER 27RW	27.0		10Ft.	102131	X9117-B9B
10223	TIR 35FW	35.0 (123)	10248	TIR 55HW	55.0	10273	TIR 40CW	40.0	10297	TIR 37RW	37.0			102132	X9166-B10B
10224	THR 45FW	45.0 (158)	10249	THR 75HW	75.0	10274	THR 52CW	52.0	10298	THR 48RW	48.0	1-1/8 ODM		102133	X9144-B11B
10225	THR 55FW	55.0 (193)	10250	THR 100HW	100	10275	THR 65CW	65.0	10299	THR 60RW	60.0	1-1/8 ODM	102134	X9144-B13B	

*Capacity in Tons or kW's is based on 4.4°C(40°F) evaporator temperature and 38°C(100°F) vapour free liquid entering the valve at pressure drops of — R12 & R500 414kPa (60PSIG), R22 & R502 690kPa (100PSIG).

VALVE TYPE	CAP. LENGTH	ALCO POWER ELEMENT ASSEMBLIES							
		R 12		R 22		R 500		R 502	
		CAT.NO.	PART NO.	CAT.NO.	PART NO.	CAT.NO.	PART NO.	CAT.NO.	PART NO.
TCLE	5 ft.	102135	XB1019FW1B	102136	XB1019HW1B	102138	XB1019CW1B	102137	XB1019RW1B
TJLE	10 ft.	102148	XB1019FW2B	102150	XB1019HW2B	—	—	102106	XB1019RW2B
TJR									
TER	5 ft.	102139	XC726FW1B	102105	XC726HW1B	102142	XC726CW1B	102141	XC726RW1B
TIR	10 ft.	102104	XC726FW2B	102140	XC726HW2B	102168	XC726CW2B	102107	XC726RW2B
THR									

Small Bulb Assemblies, longer Capillary lengths, specials — available on application.

ALWAYS SELECT TX VALVES FOR ACTUAL OPERATING CONDITIONS RATHER THAN NOMINAL VALVE CAPACITIES. THE REQUIRED TONNAGE AT THE DESIRED EVAP. TEMP. AND THE P.D. ACROSS THE VALVE SHOULD BE KNOWN.

REFER FOLLOWING TECH. PAGES 102 — a, b, c, d, e FOR TECHNICAL DETAILS AND CAPACITY TABLES.



T SERIES ALL PURPOSE THERMO® EXPANSION VALVES

OLD VS. NEW NOMENCLATURE

New cage assemblies are interchangeable with the old versions. To modernize our product, minor changes have been made in the construction of cage assemblies. The new constructions have been identified by a new cage assembly part number and a new valve type number.

OLD STYLE				NEW STYLE			
VALVE TYPE			CAGE ASSEMBLY PART NUMBER	VALVE TYPE			CAGE ASSEMBLY PART NUMBER
R-12	R-22	R-502		R-12	R-22	R-502	
TCL(E)25F	TCL(E)50H	TCL(E)25R	XC709-B7*	TCL(E)1/4F	TCL(E)1/2H	TCL(E)1/4R	X22440-B1*
TCL(E)50F	TCL(E)100H	TCL(E)50R	XC709-B000*	TCL(E)1/2F	TCL(E)1H	TCL(E)1/2R	X22440-B2*
TCL(E)100F	TCL(E)200H	TCL(E)100R	XC709-B00*	TCL(E)1F	TCL(E)2H	TCL(E)1R	X22440-B3*
TCL(E)200F	TCL(E)300H	TCL(E)200R	XC709-B0*	TCL(E)2F	TCL(E)3H	TCL(E)2R	X22440-B4*
TCL(E)250F	TCL(E)400H	TCL(E)250R	XC709-B6*	TCL(E)3F	TCL(E)5H	TCL(E)3R	X22440B5*
TCL(E)300F	TCL(E)500H	TCL(E)300R	XC709-B1*	TCL(E)4F	TCL(E)7-1/2H	TCL(E)4-1/2R	X22440-B6*
TCL(E)400F	TCL(E)700H	TCL(E)450R	XC709-B4*	TCL(E)6-1/2F	TCL(E)10H	TCL(E)7R	X22440-B7*
TCL(E)600F	TCL(E)900H	TCL(E)650R	XC709-B2*	TCL(E)7-1/2F	TCL(E)12H	TCL(E)8R	X22440-B8*
TCL(E)650F	TCL(E)1000H	TCL(E)700R	XC709-B3*				
TCL(E)750F	TCL(E)1200H	TCL(E)800R	XC709-B5*				

NOTE: Delete letter 'E' from valve type for internally equalized valve. *Equalizer code letter 'A' (internal) or 'B' (external) is added to the basic numbers shown to make complete cage assembly part number.

SELECTION

To select a valve size from tables, first determine:

1. The required refrigeration load in tons.
2. The liquid inlet temperature.
3. The evaporator temperature.
4. The pressure drop across the valve.
5. If liquid refrigerant entering thermo valve is some temperature other than 100°F select the multiplier for refrigerant and temperature to correct the required refrigerant load in tons to table conditions. Multiply required load by multiplier.
6. Using required load, or corrected required load, enter extended capacity table for proper refrigerant at the system evaporator temperature.

7. Select the valve capacity under the proper pressure drop column that most closely matches the required refrigeration load.
8. Finally determine:
Refrigerant charge
Tubing length
Size and style of connections
Options required:
 - a. Motor overload protection
 - b. Rapid response bulb.
 - c. Internal bleed port.

SUPERHEAT ADJUSTMENT

Alco Thermo Valves are factory set for the static superheat settings listed below, unless orders specify otherwise:

FACTORY SUPERHEAT SETTINGS					
R12		R22		R502	
REFRIGERANT CHARGE	SUPERHEAT CODE	REFRIGERANT CHARGE	SUPERHEAT CODE	REFRIGERANT CHARGE	SUPERHEAT CODE
FW	6A	HW	6A	RW	6A
FW35	6A	HW65	6A	RW65	6A
FW15	10C	HW35	10C	RW35	10C

Superheat code explanation-Numerals indicate static superheat in degrees F. Letter indicates bulb bath temperature. (A=32°F, C=0°F)

To adjust valve to other superheat settings:

1. Remove seal cap on side of valve.
2. Turn the Adjusting Stem clockwise to increase the superheat and counter clockwise to decrease the superheat. (Approximately 1/2° F per turn.)
3. Reinstall Seal Cap.

MOTOR OVERLOAD PROTECTION (MOP)				
APPLICATION	R12	R22	R500	R502
COMMERCIAL	FW35	HW65	CW45	RW65
LOW TEMP.	FW15	HW35	CW20	RW35

VALVE NOMENCLATURE				
TER	22	H	W	65
Valve Type	Capacity in Tons	System Refrigerant F=R12 H=R22 R=R502	Charge & Bulb W-Standard WS-Rapid Response	MOP (Optional)

ORDERING PROCEDURE : TURN TO PAGE 102 AND QUOTE CATALOGUE NO. OF ITEM REQUIRED.

T-SERIES SINGLE OUTLET THERMO® VALVE EXTENDED CAPACITY TABLE FOR REFRIGERANT 12 (TONS)

VALVE SIZE	EVAPORATOR TEMPERATURE ° F																							
	+50						+40						+20						0					
	40	60	80	100	125	150	60	80	100	125	150	175	60	80	100	125	150	175	60	80	100	125	150	175
TCL(E)1/4	.25	.31	.36	.40	.45	.49	.30	.35	.39	.43	.47	.51	.29	.33	.37	.42	.46	.50	.21	.23	.26	.29	.32	.34
TCL(E)1/2F	.46	.57	.66	.74	.82	.90	.56	.65	.72	.81	.89	.96	.54	.62	.70	.78	.85	.92	.38	.44	.49	.55	.60	.65
TCL(E)1F	.96	1.2	1.4	1.5	1.7	1.9	1.2	1.3	1.5	1.7	1.8	2.0	1.1	1.3	1.4	1.6	1.8	1.9	.77	.89	1.0	1.1	1.2	1.3
TCL(E)2F	1.8	2.1	2.5	2.8	3.1	3.4	2.1	2.4	2.7	3.0	3.3	3.6	2.0	2.3	2.6	2.9	3.2	3.4	1.4	1.6	1.8	2.0	2.2	2.4
TCL(E)3F	2.5	3.1	3.6	4.0	4.5	4.9	3.0	3.5	3.9	4.4	4.8	5.2	2.9	3.4	3.8	4.2	4.6	5.0	2.0	2.4	2.6	2.9	3.2	3.5
TCL(E)4F	3.7	4.5	5.2	5.8	6.5	7.1	4.4	5.1	5.7	6.4	7.0	7.5	4.2	4.9	5.5	6.1	6.7	7.2	3.0	3.4	3.8	4.3	4.7	5.1
TCL(E)6-1/2F	5.1	6.2	7.2	8.0	8.9	9.8	6.1	7.0	7.8	8.8	9.6	10.4	5.8	6.7	7.5	8.4	9.2	9.9	4.1	4.7	5.3	5.9	6.5	7.0
TCL(E)7-1/2F	6.1	7.5	8.6	9.6	10.8	11.8	7.3	8.5	9.5	10.6	11.6	12.5	7.0	8.1	9.1	10.1	11.1	12.0	4.9	5.7	6.4	7.1	7.8	8.4

VALVE SIZE	EVAPORATOR TEMPERATURE ° F																							
	-10						-20						-30						-40					
	80	100	125	150	175	200	80	100	125	150	175	200	80	100	125	150	175	200	80	100	125	150	175	200
TCL(E)1/4F	.20	.22	.25	.27	.29	.31	.16	.18	.20	.22	.24	.25	.14	.16	.18	.20	.21	.23	.13	.14	.16	.17	.19	.20
TCL(E)1/2F	.37	.41	.46	.50	.54	.58	.30	.34	.38	.42	.45	.48	.26	.29	.32	.36	.38	.41	.23	.26	.29	.32	.34	.37
TCL(E)1F	.75	.84	.94	1.0	1.1	1.2	.63	.70	.78	.86	.93	.99	.54	.60	.67	.73	.79	.85	.47	.52	.58	.64	.69	.74
TCL(E)2F	1.4	1.5	1.7	1.9	2.0	2.2	1.1	1.3	1.4	1.6	1.7	1.8	1.0	1.1	1.2	1.4	1.5	1.6	.86	.96	1.1	1.2	1.3	1.4
TCL(E)3F	2.0	2.2	2.5	2.7	2.9	3.1	1.7	1.9	2.1	2.3	2.5	2.6	1.4	1.6	1.8	1.9	2.1	2.2	1.2	1.4	1.5	1.7	1.8	2.0
TCL(E)4F	2.9	3.2	3.6	3.9	4.2	4.5	2.4	2.7	3.0	3.3	3.6	3.8	2.1	2.3	2.6	2.8	3.0	3.2	1.8	2.0	2.3	2.5	2.7	2.8
TCL(E)6-1/2F	3.9	4.4	4.9	5.4	5.8	6.2	3.3	3.7	4.2	4.5	4.9	5.3	2.8	3.2	3.5	3.9	4.2	4.5	2.5	2.8	3.1	3.4	3.7	3.9
TCL(E)7-1/2F	4.8	5.3	5.5	6.5	7.0	7.5	4.0	4.5	5.0	5.5	5.9	6.3	3.4	3.8	4.3	4.7	5.1	5.4	3.0	3.3	3.7	4.1	4.4	4.7

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE ° F																							
	+50						+40						+20						0					
	40	60	80	100	125	150	60	80	100	125	150	175	60	80	100	125	150	175	60	80	100	125	150	175
TJLE800FW	5.4	6.6	7.6	8.6	9.6	10.5	6.5	7.5	8.4	9.4	10.3	11.1	6.2	7.2	8.0	9.0	9.9	10.6	4.4	5.0	5.7	6.3	6.9	7.5
TJLE1100FW	6.9	8.4	9.7	10.9	12.2	13.3	8.3	9.6	10.7	11.9	13.1	14.1	7.9	9.2	10.2	11.5	12.5	13.5	5.6	6.4	7.2	8.0	8.8	9.5

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE ° F																							
	-10						-20						-30						-40					
	80	100	125	150	175	200	80	100	125	150	175	200	80	100	125	150	175	200	80	100	125	150	175	200
TJLE800FW	4.2	4.7	5.3	5.8	6.2	6.7	3.5	4.0	4.4	4.9	5.2	5.6	3.0	3.4	3.8	4.1	4.4	4.8	2.7	3.0	3.3	3.7	3.9	4.2
TJLE1100FW	5.4	6.0	6.7	7.4	8.0	8.5	4.5	5.1	5.7	6.2	6.7	7.2	3.9	4.3	4.8	5.3	5.7	6.1	3.4	3.8	4.2	4.6	5.0	5.3

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE																							
	+50° F						+40° F						+20° F						0° F					
	40	60	80	100	125	150	60	80	100	125	150	175	60	80	100	125	150	175	60	80	100	125	150	175
TER 13FW	10.8	13.3	15.3	17.1	19.1	21.0	13.0	15.0	16.8	18.8	20.6	22.2	12.5	14.4	16.1	18.0	19.7	21.3	8.7	10.1	11.3	12.6	13.8	14.9
TER 15FW	12.5	15.3	17.7	19.8	22.1	24.2	15.0	17.3	19.4	21.7	23.7	25.6	14.4	16.6	18.6	20.8	22.7	24.6	10.1	11.6	13.0	14.6	15.9	17.2
TER 20FW	16.6	20.4	23.5	26.3	29.4	32.2	20.0	23.1	25.8	28.9	31.6	34.2	19.2	22.2	24.8	27.7	30.3	32.8	13.4	15.5	17.4	19.4	21.3	23.0
TER 25FW	20.8	25.5	29.4	32.9	36.8	40.3	25.0	28.9	32.3	36.1	39.5	42.7	24.0	27.7	31.0	34.6	37.9	41.0	16.8	19.4	21.7	24.3	26.6	28.7
TIR 35FW	29.1	35.7	41.2	46.1	51.5	56.4	35.0	40.4	45.2	50.5	55.3	59.8	33.6	38.8	43.3	48.5	53.1	57.3	23.5	27.2	30.4	34.0	37.2	40.2
THR 45FW	37.5	45.9	53.0	59.3	66.3	72.6	45.0	52.0	58.1	64.9	71.1	76.8	43.2	49.8	55.7	62.3	68.2	73.7	30.3	34.9	39.1	43.7	47.8	51.7
THR 55FW	45.8	56.1	64.8	72.4	81.0	88.7	55.0	63.5	71.0	79.4	87.0	93.9	52.8	60.9	68.1	76.2	83.4	90.1	37.0	42.7	47.7	53.3	58.4	63.1

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE																							
	-10° F						-20° F						-30° F						-40° F					
	80	100	125	150	175	200	80	100	125	150	175	200	80	100	125	150	175	200	80	100	125	150	175	200
TER 13FW	8.4	9.4	10.6	11.6	12.5	13.3	7.1	7.9	8.9	9.7	10.5	11.2	6.1	6.8	7.6	8.3	9.0	9.6	5.3	5.9	6.6	7.3	7.8	8.4
TER 15FW	9.7	10.9	12.2	13.3	14.4	15.4	8.2	9.4	10.3	11.2	12.1	13.0	7.0	7.8	8.8	9.6	10.4	11.1	6.1	6.8	7.6	8.4	9.0	9.7
TER 20FW	13.0	14.5	16.2	17.8	19.2	20.5	10.9	12.2	13.7	15.0	16.2	17.3	9.3	10.4	11.7	12.8	13.8	14.7	8.2	9.1	10.2	11.2	12.1	12.9
TER 25FW	16.2	18.2	20.3	22.2	24.0	25.7	13.7	15.3	17.1	18.7	20.2	21.6	11.7	13.0	14.6	16.0	17.2	18.4	10.2	11.4	12.8	14.0	15.1	16.1
TIR 35FW	22.7	25.4	28.4	31.1	33.6	35.9	19.1	21.4	23.9	26.2	28.3	30.2	16.3	18.3	20.4	22.4	24.2	25.8	14.3	16.0	17.8	19.5	21.1	22.6
THR 45FW	29.2	32.7	36.5	40.0	43.2	46.2	24.6	27.5	30.5	33.7	36.4	39.0	21.0	23.5	26.3	28.8	31.1	33.2	25.1	22.9	25.1	27.1	29.0	29.0
THR 55FW	35.7	39.9	44.7	48.9	52.8	56.5	30.1	33.6	37.6	41.2	44.5	47.5	25.7	28.7	32.1	35.1	38.0	40.6	22.4	20.5	22.4	20.5	28.0	30.7

R12

REFRIGERANT LIQUID TEMP.	MULTIPLIER FACTOR
80° F	1.112
90° F	1.056
110° F	.943
120° F	.885
130° F	.828
140° F	.769

Valve capacities are based on 100° F. vapor free refrigerant liquid entering the valve. To determine the valve capacities for other temperatures of vapor free refrigerant liquid entering the valve, multiply the capacities listed above by the multiplier factors listed below. Nominal Capacities are shown in the outlined columns.



ORDERING PROCEDURE : TURN TO PAGE 102 AND QUOTE CATALOGUE NO. OF ITEM REQUIRED

T-SERIES SINGLE OUTLET THERMO® VALVE EXTENDED CAPACITY TABLE FOR REFRIGERANT 22 (TONS)

VALVE SIZE	EVAPORATOR TEMPERATURE ° F																							
	+50						+40						+20						0					
	PRESSURE DROP ACROSS VALVE PSI																							
	75	100	125	150	175	200	75	100	125	150	175	200	75	100	125	150	175	200	100	125	150	175	200	225
TCL(E)1/2H	.45	.51	.57	.62	.67	.72	.43	.50	.56	.61	.66	.71	.42	.49	.55	.60	.65	.69	.40	.45	.49	.53	.57	.60
TCL(E)1H	.82	.95	1.1	1.2	1.3	1.3	.81	.94	1.1	1.2	1.2	1.3	.80	.92	1.0	1.1	1.2	1.3	.74	.83	.91	.98	1.1	1.1
TCL(E)2H	1.7	2.0	2.2	2.4	2.6	2.8	1.7	1.9	2.2	2.4	2.6	2.7	1.4	1.9	2.1	2.3	2.5	2.7	1.5	1.7	1.8	2.0	2.2	2.3
TCL(E)3H	3.1	3.6	4.0	4.4	4.7	5.1	3.1	3.5	4.0	4.3	4.7	5.0	3.0	3.4	3.9	4.2	4.6	4.9	2.8	3.1	3.4	3.7	4.0	4.2
TCL(E)5H	4.5	5.2	5.8	6.3	6.8	7.3	4.4	5.1	5.7	6.3	6.8	7.2	4.3	5.0	5.6	6.1	6.6	7.0	4.0	4.5	4.9	5.3	5.7	6.1
TCL(E)7-1/2H	6.5	7.5	8.4	9.2	9.9	10.6	6.4	7.4	8.3	9.1	9.8	10.5	6.2	7.2	8.1	8.8	9.5	10.2	5.9	6.5	7.2	7.7	8.3	8.8
TCL(E)10H	8.9	10.3	11.5	12.6	13.7	14.6	8.8	10.2	11.4	12.5	13.5	14.4	8.6	9.9	11.1	12.2	13.2	14.1	8.1	9.0	9.9	10.7	11.4	12.1
TCL(E)12H	10.8	12.5	13.9	15.3	16.5	17.6	10.7	12.3	13.8	15.1	16.3	17.4	10.4	12.0	13.4	14.7	15.9	17.0	9.7	10.9	11.9	12.9	13.8	14.6

VALVE SIZE	EVAPORATOR TEMPERATURE ° F																							
	-10						-20						-30						-40					
	PRESSURE DROP ACROSS VALVE PSI																							
	125	150	175	200	225	250	125	150	175	200	225	250	125	150	175	200	225	250	125	150	175	200	225	250
TCL(E)1/2H	.37	.41	.44	.47	.50	.52	.31	.34	.37	.39	.42	.44	.26	.28	.31	.33	.35	.37	.22	.24	.26	.28	.30	.31
TCL(E)1H	.70	.77	.83	.89	.94	.99	.59	.65	.70	.75	.79	.83	.49	.54	.58	.62	.66	.69	.41	.45	.49	.52	.55	.58
TCL(E)2H	1.4	1.6	1.7	1.8	1.9	2.0	1.2	1.3	1.4	1.5	1.6	1.7	1.0	1.1	1.2	1.3	1.4	1.4	.85	.93	1.0	1.1	1.1	1.2
TCL(E)3H	2.6	2.9	3.1	3.3	3.5	3.7	2.2	2.4	2.6	2.8	3.0	3.1	1.9	2.0	2.2	2.4	2.5	2.6	1.6	1.7	1.9	2.0	2.1	2.2
TCL(E)5H	3.8	4.2	4.5	4.8	5.1	5.4	3.2	3.5	3.8	4.1	4.3	4.5	2.7	2.9	3.2	3.4	3.6	3.8	2.3	2.5	2.7	2.8	3.0	3.2
TCL(E)7-1/2H	5.5	6.0	6.5	7.0	7.4	7.8	4.7	5.1	5.5	5.9	6.2	6.6	3.9	4.3	4.6	4.9	5.2	5.5	3.3	3.6	3.9	4.1	4.4	4.6
TCL(E)10H	7.6	8.3	9.0	9.6	10.2	10.7	6.4	7.0	7.6	8.1	8.6	9.1	5.4	5.9	6.3	6.8	7.2	7.6	4.5	4.9	5.3	5.7	6.0	6.4
TCL(E)12H	9.1	10.0	10.8	11.6	12.3	12.9	7.7	8.5	9.2	9.8	10.4	10.9	6.5	7.1	7.7	8.2	8.7	9.2	5.4	5.9	6.4	6.9	7.3	7.7

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE ° F																							
	+50						+40						+20						0					
	PRESSURE DROP ACROSS VALVE PSI																							
	75	100	125	150	175	200	75	100	125	150	175	200	75	100	125	150	175	200	100	125	150	175	200	225
TJLE1400HW	9.6	11.0	12.3	13.5	14.6	15.6	9.4	10.9	12.2	13.4	14.4	15.4	9.2	10.6	11.8	13.0	14.1	15.0	8.6	9.7	10.6	11.4	12.2	12.9
TJLE1800HW	12.2	14.1	15.7	17.2	18.6	19.9	12.0	13.9	16.0	17.0	18.4	19.7	11.7	13.6	15.2	17.0	17.9	19.2	11.0	12.3	13.5	15.0	15.5	16.5

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE ° F																							
	-10						-20						-30						-40					
	PRESSURE DROP ACROSS VALVE PSI																							
	125	150	175	200	225	250	125	150	175	200	225	250	125	150	175	200	225	250	125	150	175	200	225	250
TJLE1400HW	8.1	8.9	9.6	10.3	10.9	11.5	6.9	7.5	8.1	8.7	9.2	9.7	5.7	6.3	6.8	7.3	7.7	8.1	4.8	5.3	5.7	6.1	6.4	6.8
TJLE1800HW	10.3	11.3	12.2	13.1	13.9	14.6	8.7	9.6	10.3	11.1	11.7	12.4	7.3	8.0	8.7	9.3	9.8	10.3	6.1	6.7	7.3	7.8	8.2	8.7

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE																							
	+50° F						+40° F						+20° F						0° F					
	PRESSURE DROP ACROSS VALVE (PSI)																							
	75	100	125	150	175	200	75	100	125	150	175	200	75	100	125	150	175	200	100	125	150	175	200	225
TER 22HW	19.3	22.3	24.9	27.3	29.4	31.5	19.1	22.0	24.6	26.9	29.1	31.1	18.6	21.4	24.0	26.3	28.4	31.1	17.4	19.4	21.3	23.0	24.6	26.1
TER 26HW	22.8	26.3	29.4	32.2	34.8	37.2	22.5	26.0	29.1	31.8	34.4	36.8	21.9	25.3	28.3	31.0	33.5	35.8	20.5	23.0	25.2	27.2	29.0	30.8
TER 35HW	30.7	35.4	39.6	43.4	46.8	50.1	30.3	35.0	39.1	42.9	46.3	49.5	29.5	34.1	38.1	41.8	45.1	48.2	27.6	30.9	33.9	36.6	39.1	41.5
TER 45HW	39.4	45.5	50.9	55.8	60.2	64.4	39.0	45.0	50.3	55.1	59.5	63.6	38.0	43.9	49.0	53.7	58.0	62.0	35.5	39.7	43.5	47.0	50.3	53.3
TIR 55HW	48.2	55.6	62.2	68.2	73.6	78.7	47.6	55.0	61.5	67.4	72.8	77.8	46.4	53.6	59.9	65.6	70.9	75.8	43.5	48.6	53.2	57.5	61.4	65.2
THR 75HW	65.7	75.9	84.8	92.9	100.4	107.3	64.9	75.0	83.9	91.9	99.2	106.1	63.3	73.1	81.7	89.5	96.7	103.4	59.6	66.2	72.6	78.4	83.8	88.9
THR 100HW	87.6	101.2	113.1	123.9	133.8	143.1	86.6	100.0	111.8	122.5	132.3	141.4	84.4	97.4	109.0	119.3	128.9	137.8	79.0	88.3	96.7	104.5	111.7	118.5

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE																							
	-10° F						-20° F						-30° F						-40° F					
	PRESSURE DROP ACROSS VALVE (PSI)																							
	125	150	175	200	225	250	125	150	175	200	225	250	125	150	175	200	225	250	125	150	175	200	225	250
TER 22HW	16.4	17.9	19.3	20.7	21.9	23.1	13.8	15.2	16.4	17.5	18.6	19.6	12.7	13.7	14.6	15.5	16.4	17.2	10.6	11.5	12.3	13.0	13.7	14.4
TER 26HW	19.3	21.2	22.9	24.5	25.9	27.3	16.3	17.9	19.3	20.7	21.9	23.1	15.0	16.2	17.3	18.3	19.3	20.3	12.6	13.6	14.5	15.4	16.2	17.0
TER 35HW	26.0	28.5	30.8	32.9	34.9	36.8	22.0	24.1	26.0	27.8	29.5	31.1	20.2	21.8	23.3	24.7	26.0	27.3	16.9	18.3	19.5	20.7	21.8	22.9
TER 45HW	33.5	36.7	39.6	42.3	44.9	47.3	28.3	31.0	33.5	35.8	38.0	40.0	25.9	28.0	29.9	31.8	33.4	35.1	21.7	23.5	25.1	26.6	28.0	29.4
TIR 55HW	40.9	44.8	48.4	51.7	54.9	57.8	34.6	37.9	40.9	43.7	46.4	48.9	31.7	34.2	36.6	38.8	40.9	42.9	26.6	28.7	30.7	32.5	34.3	36.0
THR 75HW	55.8	61.1	66.0	70.5	74.8	78.9	47.2	51.7	55.8	59.6	63.3	66.7	43.2	46.7	49.9	52.9	55.8	58.5	36.2	39.1	41.8	44.3	46.7	49.0
THR 100HW	74.4	81.4	88.0	94.0	99.8	105.1	62.9	68.9	74.4	79.5	84.3	88.9	57.6	62.2	66.5	70.6	74.4	78.0	48.3	52.1	55.7	59.1	62.3	65.4

Valve capacities are based on 100° F. vapor free refrigerant liquid entering the valve. To determine the valve capacities for other temperatures of vapor free refrigerant liquid entering the valve, multiply the capacities listed above by the multiplier factors listed below. Nominal Capacities are shown in the outlined columns.

R22

REFRIGERANT LIQUID TEMP.	MULTIPLIER FACTOR
80° F	1.111
90° F	1.056
110° F	.944
120° F	.886
130° F	.828
140° F	.768



ORDERING PROCEDURE : TURN TO PAGE 102 AND QUOTE CATALOGUE NO. OF ITEM REQUIRED

T-SERIES SINGLE OUTLET THERMO® VALVE EXTENDED CAPACITY TABLE FOR REFRIGERANT 502 (TONS)

VALVE SIZE	EVAPORATOR TEMPERATURE ° F																							
	+50						+40						+20						0					
	PRESSURE DROP ACROSS VALVE PSI																							
	100	125	150	175	200	225	100	125	150	175	200	225	125	150	175	200	225	250	150	175	200	225	250	275
TCL(E)1/4R	.35	.39	.43	.46	.49	.53	.34	.38	.42	.45	.48	.51	.36	.39	.42	.45	.48	.51	.37	.40	.43	.45	.48	.50
TCL(E)1/2R	.64	.72	.78	.85	.91	.96	.63	.70	.77	.83	.89	.95	.67	.73	.79	.85	.90	.95	.68	.73	.78	.83	.87	.92
TCL(E)1R	1.3	1.5	1.6	1.8	1.9	2.0	1.3	1.4	1.6	1.7	1.8	1.9	1.4	1.5	1.6	1.7	1.9	2.0	1.4	1.5	1.6	1.7	1.8	1.9
TCL(E)2R	2.4	2.7	3.0	3.2	3.4	3.6	2.4	2.7	2.9	3.1	3.4	3.6	2.5	2.8	3.0	3.2	3.4	3.6	2.6	2.8	3.0	3.1	3.3	3.5
TCL(E)3R	3.5	3.9	4.3	4.6	4.9	5.2	3.4	3.8	4.2	4.5	4.8	5.1	3.6	4.0	4.3	4.6	4.9	5.1	3.7	4.0	4.2	4.5	4.8	5.0
TCL(E)4-1/2R	5.1	5.7	6.2	6.7	7.2	7.6	5.0	5.5	6.1	6.6	7.0	7.4	5.3	5.8	6.2	6.7	7.1	7.5	5.3	5.8	6.2	6.5	6.9	7.2
TCL(E)7R	7.0	7.8	8.5	9.2	9.9	10.5	6.8	7.6	8.4	9.0	9.6	10.2	7.3	8.0	8.6	9.2	9.7	10.3	7.4	7.9	8.5	9.0	9.5	10.0
TCL(E)8R	8.4	9.4	10.3	11.1	11.9	12.6	8.2	9.2	10.1	10.9	11.6	12.4	8.8	9.6	10.4	11.1	11.8	12.4	8.9	9.6	10.2	10.9	11.5	12.0

VALVE SIZE	EVAPORATOR TEMPERATURE ° F																								
	-10						-20						-30						-40						
	PRESSURE DROP ACROSS VALVE PSI																								
	150	175	200	225	250	275	150	175	200	225	250	275	150	175	200	225	250	275	150	175	200	225	250	275	300
TCL(E)1/4R	.35	.38	.41	.43	.45	.48	.36	.38	.41	.43	.45	.47	.29	.31	.33	.35	.36	.38	.23	.25	.26	.27	.29	.30	
TCL(E)1/2R	.66	.71	.76	.81	.85	.89	.68	.73	.77	.81	.85	.89	.54	.58	.61	.65	.68	.71	.43	.46	.49	.51	.54	.56	
TCL(E)1R	1.3	1.5	1.6	1.6	1.7	1.8	1.4	1.5	1.6	1.7	1.8	1.1	1.2	1.3	1.3	1.4	1.5	.9	1.0	1.0	1.1	1.1	1.2		
TCL(E)2R	2.5	2.7	2.9	3.0	3.2	3.4	2.5	2.7	2.9	3.0	3.2	3.3	2.0	2.2	2.3	2.4	2.6	2.7	1.6	1.7	1.9	2.0	2.0	2.1	
TCL(E)3R	3.6	3.8	4.1	4.4	4.6	4.8	3.7	3.9	4.2	4.4	4.6	4.8	2.9	3.1	3.3	3.5	3.7	3.8	2.4	2.5	2.7	2.8	3.0	3.1	
TCL(E)4-1/2R	5.2	5.6	6.0	6.3	6.7	7.0	5.3	5.7	6.0	6.4	6.7	7.0	4.3	4.6	4.8	5.1	5.3	5.6	3.4	3.7	3.9	4.1	4.3	4.5	
TCL(E)7R	7.1	7.7	8.2	8.7	9.2	9.6	7.3	7.8	8.3	8.8	9.2	9.6	5.9	6.3	6.6	7.0	7.4	7.7	4.7	5.0	5.3	5.6	5.9	6.2	
TCL(E)8R	8.6	9.3	9.9	10.5	11.1	11.6	8.8	9.4	10.0	10.6	11.1	11.6	7.1	7.6	8.0	8.5	8.9	9.3	5.7	6.1	6.4	6.8	7.1	7.4	

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE ° F																							
	+50						+40						+20						0					
	PRESSURE DROP ACROSS VALVE PSI																							
	100	125	150	175	200	225	100	125	150	175	200	225	250	275	300	175	200	225	250	275	300	175	200	225
TJLE900RW	7.5	8.3	9.1	10.0	10.5	11.2	7.3	8.2	8.9	9.6	10.3	10.9	7.8	8.5	9.2	9.8	10.4	11.0	7.9	8.5	9.1	9.7	10.1	10.6
TJLE1200RW	9.5	10.6	11.6	12.6	13.4	14.3	9.3	10.4	11.4	12.3	13.2	14.0	9.9	10.8	11.7	12.5	13.3	14.0	10.0	10.8	11.6	12.3	12.9	13.6

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE ° F																								
	-10						-20						-30						-40						
	PRESSURE DROP ACROSS VALVE PSI																								
	150	175	200	225	250	275	150	175	200	225	250	275	150	175	200	225	250	275	150	175	200	225	250	275	300
TJLE900RW	7.6	8.2	8.8	9.3	9.8	1.3	7.8	8.4	8.8	9.4	9.8	10.2	6.3	6.7	7.1	7.5	7.9	8.2	5.0	5.4	5.7	6.0	6.3	6.6	
TJLE1200RW	9.7	10.5	11.2	11.9	12.5	13.1	10.0	10.7	11.3	11.9	12.5	13.1	8.0	9.0	9.1	9.6	10.0	10.0	10.5	6.4	6.9	7.3	7.7	8.4	

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE																							
	+50° F						+40° F						+20° F						0° F					
	PRESSURE DROP ACROSS VALVE (PSI)																							
	100	125	150	175	200	225	100	125	150	175	200	225	125	150	175	200	225	250	150	175	200	225	250	275
TER 14RW	14.3	16.0	17.5	18.9	20.2	21.5	14.0	15.7	17.1	18.5	19.8	21.0	14.9	16.3	17.6	18.9	20.0	21.1	15.1	16.3	17.4	18.5	19.5	20.4
TER 16RW	16.4	18.3	20.0	21.6	23.1	24.5	16.0	17.9	19.6	21.2	22.6	24.0	17.0	18.7	20.2	21.6	22.9	24.1	17.2	18.6	19.9	21.1	22.3	23.3
TER 21RW	21.5	24.0	26.3	28.4	30.4	32.2	21.0	23.5	25.7	27.8	29.7	31.5	22.4	24.5	26.5	28.3	30.0	31.6	22.6	24.5	26.1	27.7	29.2	30.7
TER 27RW	27.6	30.9	33.8	36.5	39.0	41.4	27.0	30.2	33.1	35.7	38.2	40.5	28.7	31.5	34.0	36.4	38.6	40.6	29.1	31.4	33.6	35.6	37.6	39.4
TIR 37RW	37.8	42.3	46.3	50.0	53.5	56.7	37.0	41.4	45.3	48.9	52.3	55.5	39.4	43.1	46.6	49.8	52.8	55.7	39.9	43.1	46.1	48.4	51.5	54.0
TIR 48RW	49.1	54.9	60.1	64.9	69.4	73.6	48.0	53.7	58.8	63.5	67.9	72.0	51.1	56.0	60.5	64.6	68.6	72.7	51.7	55.9	59.7	63.4	66.8	70.0
THR 60RW	61.3	68.6	75.1	81.1	86.7	92.0	60.0	67.1	73.5	79.4	84.9	90.0	63.9	70.0	72.6	80.8	85.7	90.3	64.7	69.8	74.7	79.2	83.5	87.6

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE																								
	-10° F						-20° F						-30° F						-40° F						
	PRESSURE DROP ACROSS VALVE (PSI)																								
	150	175	200	225	250	275	150	175	200	225	250	275	150	175	200	225	250	275	150	175	200	225	250	275	300
TER 14RW	14.6	15.8	16.9	17.9	18.9	19.8	15.0	16.1	17.0	18.0	18.8	19.7	12.0	12.9	13.7	14.4	15.1	15.8	9.7	10.3	10.9	11.5	12.1	12.6	
TER 16RW	16.7	18.0	19.3	20.4	21.6	22.6	17.2	18.4	19.5	20.5	21.5	22.5	13.8	14.7	15.6	16.4	17.2	18.0	11.0	11.8	12.5	13.2	13.8	14.4	
TER 21RW	30.6	33.0	35.3	37.4	39.5	41.4	22.5	24.1	25.6	26.9	28.2	29.5	18.1	19.3	20.5	21.6	22.6	23.6	14.5	15.5	16.4	17.3	18.2	19.0	
TER 27RW	28.2	30.4	32.5	34.5	36.4	38.1	29.0	31.0	32.8	34.6	36.3	37.9	23.2	24.8	26.3	27.7	29.1	30.4	18.6	19.9	21.1	22.2	23.3	24.4	
TIR 37RW	38.6	41.7	44.6	47.3	49.9	52.3	39.7	42.5	45.0	47.5	49.8	52.0	31.8	34.0	36.1	38.0	39.9	41.7	25.5	27.3	28.9	30.5	32.0	33.4	
THR 48RW	50.1	54.1	57.8	61.3	64.7	67.8	51.5	55.1	58.4	61.6	64.6	67.4	41.3	44.1	46.8	49.3	51.7	54.0	33.1	35.4	37.5	39.6	41.5	43.3	
THR 60RW	62.6	67.6	72.3	76.7	80.8	84.8	64.4	68.8	73.0	77.0	80.7	84.3	51.6	55.2	58.5	61.7	64.7	67.5	41.4	44.2	46.9	49.4	51.9	54.2	

Valve capacities are based on 100° F. vapor free refrigerant liquid entering the valve. To determine the valve capacities for other temperatures of vapor free refrigerant liquid entering the valve, multiply the capacities listed above by the multiplier factors listed below. Nominal Capacities are shown in the outlined columns.

R502	
REFRIGERANT LIQUID TEMP.	MULTIPLIER FACTOR
80° F	1.160
90° F	1.080
110° F	.919
120° F	.838
130° F	.756
140° F	.679



ORDERING PROCEDURE : TURN TO PAGE 102 AND QUOTE CATALOGUE NO. OF ITEM REQUIRED

**ALCO
TECHNICAL DATA**



POWER CHARGE FOR THERMAL SENSING ELEMENTS

Alco Controls has made a change in the temperature rating of their "W" charge from -46 to +10°C (-50 to +50°F) TO -23 to +10°C (-10 to +50°F).

The content of the "W" charge is unchanged and in many cases will perform well at low temperature. However with the world emphasis on energy conservation and a big shift to R502 in many low temperature and supermarket

applications, it was found that in this low temperature range of -46 to -23°C (-50 to -10°F) there are more efficient charges - the Alco "W-MOP" and "WZ" charges. Where the "W" charge has been used successfully in the past at low temperature it can continue to be used. If, however, improved performance is required in the low temperature range it is suggested that the Alco "W-MOP" or "WZ" charge be used.

ALCO EXPANSION VALVE CHARGES - TECHNICAL DETAILS			
ALCO DESIGNATION	TYPE	MAJOR CHARACTERISTICS	TYPICAL APPLICATIONS
"W"	Gas Adsorption	- Flat S/H -23 to +10°C (-10 to +50°F) - Rapid pull down - Rapid response to suction line temperature changes - Will not lose control in cross ambient conditions - MOP not available	Commercial Refrigeration Medium Temperature and Air Conditioning

MOP

Maximum Operating Pressure or as sometimes referred to as Motor Overload Protection is the ability of the TX Valve to close down, starve or completely shut-off if the suction pressure should approach a dangerously high predetermined limit condition. The Alco "W-MOP" charge can be supplied if needed for system protection: e.g. Immediately after defrost or on self-contained truck refrigeration systems.

CAUTION: The "W-MOP" charge will be effected by extreme cross ambient conditions. If this condition should exist, install an electric strip heater (available from your Alco Supplier) around top part of TX valve.

"W-MOP"	Gas Cross Charge	- Flat S/H -46 to -1°C (-50 to +30°F) - Rapid pull down - Rapid response to suction line temperature changes - Will cross ambient (Refer MOP paragraph above)	Commercial Refrigeration Low and Medium Temperature
"WZ"	Liquid Cross Charge	- Decreased S/H with decreased evaporator temp. - Temp. range -46 to -12°C (-50 to +10°F) - Slow pull down - Slow response to suction line temperature changes - Will not cross ambient - MOP not available	Commercial Refrigeration Low Temperature

ALCO CROSS-REFERENCE REPLACEMENT CHARGE SYMBOLS FOR THERMO-VALVES

OLD CHARGE SYMBOL	REPLACEMENT CHARGE SYMBOL	OLD CHARGE SYMBOL	REPLACEMENT CHARGE SYMBOL	OLD CHARGE SYMBOL	REPLACEMENT CHARGE SYMBOL		
AIR CONDITIONING		COMMERCIAL REFRIGERATION		LOW TEMPERATURE **			
REFRIGERANT 12							
F or FL	FW	F or FL	FW	---	---		
FZ		FZ		FZ	FW		
FX		FX		FX			
FC		FC		FC			
FW		FW		FW			
FG55		FG35		FW35	FW15	FW15	
FW55		FW35		FW35	FO15		
FQ55	FQ35	---	---				
FGA	FWS	---	---	---	---		
FLA		FGS35	FGS35	---	---		
FGS		FWS	FWS	FWS	FWS		
FWS	FWS	FWS	FWS	FWS	FWS		
REFRIGERANT 22							
H or HL	HW	H or HL	HW	---	---		
HZ		HZ		HZ	HW		
HX		HX		HX			
HC		HC		HC			
HW		HW		HW			
HG100		HG65		HW65	---	HW35	
HW100		HW65		HW65	HW35		
HQ100		HO65		---	HQ35		
HGA		HWS		---	---	---	---
HLA				---	---	---	---
HW85	HWS		HWS	HWS	HWS		
HGS	HWS	HWS	HWS	HWS	HWS		
HWS	HWS	HWS	HWS	HWS	HWS		
REFRIGERANT 502							
RL	RW	RL	RW	---	---		
RW		RW		RW	RW		
RW110		RW65		RW65	RW35	RW35	
RWS		RWS		RWS	RWS	RWS	
REFRIGERANT 500							
CL	CW	CL	CW	---	---		
CZ		CZ		CZ	CW		
CW		CW		CW	CW		
CW85		CW45		CW45	CW20	CW20	
CG65		---		---	---	---	

NOTES

** For LOW TEMPERATURE applications, improved performance may be obtained by use of "WZ" or "W-MOP" charges. Refer details at top of this page.

ORDERING

Prefix type of charge required by the Refrigerant Code letter :-

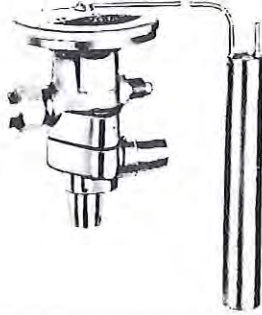
R12 = F R22 = H
R502 = R R500 = C

When ordering "W-MOP" also specify Suffix Code which is normally detailed on the pages covering the required valve type.



ZZ SERIES THERMO EXPANSION VALVES

FOR LOW TEMPERATURE APPLICATIONS



ZZ Series Thermo Valves are designed for mechanical refrigeration systems used for cooling low temperature chambers and cabinets, specifically where the desired evaporator temperature is below -40°C (-40°F).

- FEATURES :** Large Diaphragm Area provides proper control sensitivity.
 External Superheat Adjustment.
 Take apart construction for easy field servicing.
 External Equalizer — 1/4 SAE Male Flare.

NOMINAL CAPACITIES														STD. CONN. SIZES	
R12*			R13**			R13B1**			R14**			R22*			
Cat. No.	Valve Type	Tons	Cat. No.	Valve Type	Tons	Cat. No.	Valve Type	Tons	Cat. No.	Valve Type	Tons	Cat. No.	Valve Type	Tons	
1031	ZZC1/4FW	0.2	10313	ZZC1BG	1.0	10325	ZZC1DG	1.0	10337	ZZC3/4ZG	0.8	10349	ZZC3/4HW	0.7	3/8"ODF
1032	ZZC1/2FW	0.5	10314	ZZC21/2BG	2.5	10326	ZZC21/2DG	2.5	10338	ZZC11/2ZG	1.8	10350	ZZC11/2HW	1.5	X
1033	ZZC1FW	1.0	10315	ZZC4BG	4.0	10327	ZZC41/2DG	4.5	10339	ZZC21/2ZG	2.8	10351	ZZC21/2HW	2.5	5/8"ODF
1034	ZZC11/2FW	1.5	10316	ZZC6BG	6.0	10328	ZZC7DG	7.0	10340	ZZC5ZG	4.9	10352	ZZC4HW	4.0	1/2"ODF
1035	ZZC2FW	2.0	10317	ZZC9BG	9.0	10329	ZZC10DG	10.0	10341	ZZC8ZG	8.4	10353	ZZC6HW	6.0	X
1036	ZZC3FW	3.0	10318	ZZC13BG	13.0	10330	ZZC15DG	15.0	10342	ZZC10ZG	10.5	10354	ZZC8HW	8.0	5/8"ODF
1037	ZZJR4FW	4.0	10319	ZZJR16BG	16.0	10331	ZZJR17DG	17.0	10343	ZZJR15ZG	15.4	10355	ZZJR10HW	10.0	
1038	ZZER5FW	5.0	10320	ZZER20BG	20.0	10332	ZZER20DG	20.0	10344	ZZER18ZG	18.2	10356	ZZER12HW	12.0	7/8"ODF
1039	ZZER6FW	6.0	10321	ZZER21BG	21.0	10333	ZZER23DG	23.0	10345	ZZER21ZG	21.0	10357	ZZER13HW	13.0	X
10310	ZZER8FW	8.0	10322	ZZER29BG	29.0	10334	ZZER30DG	30.0	10346	ZZER28ZG	28.0	10358	ZZER18HW	18.0	1-1/8"
10311	ZZER9FW	9.0	10323	ZZER34BG	34.0	10335	ZZER38DG	38.0	10347	ZZER35ZG	35.0	10359	ZZER21HW	21.0	ODM
10312	ZZIR12FW	12.0	10324	ZZIR48BG	48.0	10336	ZZIR50DG	50.0	10348	ZZIR49ZG	49.0	10360	ZZIR30HW	30.0	

NOMINAL CAPACITIES														STD. CONN. SIZES	
R170**			R502*			R503**			R504**			R1150**			
Cat. No.	Valve Type	Tons	Cat. No.	Valve Type	Tons	Cat. No.	Valve Type	Tons	Cat. No.	Valve Type	Tons	Cat. No.	Valve Type	Tons	
	ZZC11/2EG	1.5	10361	ZZC3/4RW	0.7		ZZC1OG	1.0		ZZC1QG	1.0		ZZC2VG	1.5	3/8"ODF
	ZZC31/2EG	3.5	10362	ZZC11/2RW	1.5		ZZC2OG	2.0		ZZC21/2QG	2.6		ZZC4VG	3.9	X
	ZZC5EG	5.0	10363	ZZC21/2RW	2.5		ZZC31/2OG	3.5		ZZC4QG	4.0		ZZC6VG	6.0	5/8"ODF
	ZZC9EG	9.0	10364	ZZC31/2RW	3.5		ZZC6OG	6.0		ZZC7QG	7.0		ZZC10VG	10.0	1/2"ODF
	ZZC16EG	16.0	10365	ZZC5RW	5.0		ZZC10OG	10.0		ZZC12QG	12.0		ZZC18VG	18.0	X
	ZZC20EG	20.0	10366	ZZC8RW	8.0		ZZC13OG	13.0		ZZC15QG	15.0		ZZC22VG	22.0	5/8"ODF
	ZZJR30EG	30.0	10367	ZZJR9RW	9.0		ZZJR20OG	20.0		ZZJR22QG	22.0		ZZJR33VG	33.0	
	ZZER35EG	35.0	10368	ZZER11RW	11.0		ZZER23OG	23.0		ZZER26QG	26.0		ZZER39VG	39.0	7/8"ODF
	ZZER40EG	40.0	10369	ZZER13RW	13.0		ZZER27OG	27.0		ZZER30QG	30.0		ZZER45VG	45.0	X
	ZZER50EG	50.0	10370	ZZER18RW	18.0		ZZER36OG	36.0		ZZER40QG	40.0		ZZER60VG	60.0	1-1/8"
	ZZER65EG	65.0	10371	ZZER19RW	19.0		ZZER45OG	45.0		ZZER50QG	50.0		ZZER75VG	75.0	ODM
	ZZIR94EG	94.0	10372	ZZIR29RW	29.0		ZZIR62OG	62.0		ZZIR70QG	70.0		ZZIR105VG	105.0	

Nominal Capacities are based on a vapour free liquid entering the valve and the conditions listed in Table 1 below

POWER ASSEMBLY CHARGES

* "W" charges available for R12, R22 & R502 for Temp. Range -23 to 10°C (-10 to +50°F).

"WZ" charges are recommended for the Temperature Range -46 to -12°C (-50 to +10°F).

"W-MOP" pressure limiting charges are also available for refrigerants R12 and R502 in the following MOP ratings and for the temperature range -46 to -1°C (-50 to +30°F):-

- R12 FW-MOP15 FW-MOP35 FW-MOP55
- R502 RW-MOP35 RW-MOP65 RW-MOP110

To order, add the MOP value after the "W-MOP" charge symbol.

**Gas pressure limiting "G" charges are listed for refrigerants R-13, R-13B1 with 125 psig M.O.P. rating.

To order, add 125 after the charge symbol "G".

TABLE 1

Refrig.	Liquid Temperature	Evaporator Temperature	P.D. Across Valve	
			psig	kPa
R-12	+20°F(-6.7°C)	-40°F(-40°C)	100	690
R-13	0°F(-17.8°C)	-40°F(-40°C)	150	1034
R-13B1	0°F(-17.8°C)	-40°F(-40°C)	150	1034
R-14	-100°F(-73.3°C)	-150°F(-101°C)	225	1551
R-22	+20°F(-6.7°C)	-40°F(-40°C)	150	1034
R-170	0°F(-17.8°C)	-40°F(-40°C)	150	1034
R-502	+20°F(-6.7°C)	-40°F(-40°C)	150	1034
R-503	0°F(-17.8°C)	-40°F(-40°C)	200	1379
R-504	+20°F(-6.7°C)	-40°F(-40°C)	100	690
R-1150	-40°F(-40°C)	-150°F(-101°C)	200	1379

REMOTE BULB TUBING

Standard tubing length is 5 ft. (1.5m) or 10 ft. (3m).

Gas-charged valves should be installed so that the power assembly will be warmer than the remote bulb to assure positive and accurate control from the bulb. Where severe cross-ambient conditions can exist, it may be necessary to use an Alco Strip Heater (PS1519-1) Cat.No. 10375. It should be wrapped around the power assembly body and secured with the fastening spring that is provided. This will assure positive control from the remote bulb. The Strip Heater is rated 15 Watts at 230V and is suitable for AC or DC voltages from 115 to 240 volts.

REFER TO FOLLOWING TECH. PAGES FOR DETAILED SPECIFICATIONS AND SELECTION DATA



ZZ SERIES THERMO EXPANSION VALVES

EXTENDED CAPACITIES

These capacities are based on a vapour free liquid temperature entering the valve at 0°F (-17.8°C); a -40°F (-40°C) evaporator temperature; a maximum superheat change of 7°F (4°C) and standard factory setting.

To determine the capacities for evaporator temperatures other than -40°F (-40°C), multiply the capacities listed for the available pressure drop by the correction factor shown in the appropriate table.

EXTENDED CAPACITIES FOR R-13 (IN TONS)														
VALVE TYPE	PRESSURE DROP ACROSS VALVE - PSI													
	30	50	70	90	110	130	150	170	190	210	230	250	270	290
ZZC1BG	.45	.58	.68	.77	.86	.93	1.00	1.06	1.12	1.18	1.24	1.29	1.34	1.39
ZZC2-1/2BG	1.12	1.44	1.71	1.94	2.14	2.33	2.50	2.66	2.81	2.96	3.09	3.22	3.35	3.47
ZZC4BG	1.79	2.31	2.73	3.10	3.42	3.72	4.00	4.26	4.50	4.73	4.95	5.16	5.37	5.56
ZZC6BG	2.68	3.46	4.10	4.65	5.14	5.58	6.00	6.39	6.75	7.10	7.43	7.74	8.05	8.34
ZZC9BG	3.80	4.91	5.81	6.58	7.28	7.91	8.50	9.05	9.56	10.06	10.52	10.96	11.41	11.81
ZZC13BG	5.59	7.22	8.54	9.68	10.70	11.63	12.50	13.31	14.06	14.79	15.47	16.12	16.77	17.37

CORRECTION FACTORS FOR R-13							
EVAPORATOR TEMPERATURE °F	VAPOR FREE LIQUID TEMPERATURE ENTERING VALVE °F						
	+20	0	-20	-40	-60	-80	-100
-40	.8526	1.0000	1.1450	1.2830	1.4180	1.5510	1.6840
-60	.8164	.9627	1.1070	1.2440	1.3800	1.5110	1.6640
-80	.7775	.9225	1.0650	1.2020	1.3360	1.4680	1.5990
-100	.5447	.6512	.7570	.8561	.9546	1.0510	1.1480
-120	.3603	.4345	.5084	.5777	.6463	.7144	.7820
-140	.1945	.2370	.2793	.3189	.3582	.3972	.4359
-160	.1205	.1486	.1765	.2030	.2288	.2546	.2804
-180	.0724	.0905	.1085	.1256	.1422	.1588	.1755
-200	.0459	.0583	.0706	.0824	.0938	.1053	.1166

EXTENDED CAPACITIES FOR R-13B1 (IN TONS)														
VALVE TYPE	PRESSURE DROP ACROSS VALVE - PSI													
	30	50	70	90	110	130	150	170	190	210	230	250	270	290
ZZC1DG	.44	.58	.68	.77	.86	.93	1.00	1.06	1.12	1.18	1.24	1.29	1.34	1.39
ZZC2-1/2DG	1.12	1.44	1.71	1.94	2.14	2.33	2.50	2.66	2.81	2.96	3.10	3.23	3.36	3.48
ZZC4-1/2DG	2.01	2.60	3.08	3.49	3.85	4.19	4.50	4.79	5.06	5.32	5.57	5.81	6.04	6.26
ZZC7DG	3.13	4.04	4.79	5.42	5.99	6.52	7.00	7.46	7.88	8.28	8.67	9.03	9.39	9.73
ZZC10DG	4.47	5.77	6.84	7.75	8.56	9.31	10.00	10.65	11.25	11.83	12.38	12.90	13.42	13.90
ZZC15DG	6.71	8.66	10.26	11.62	12.85	13.96	15.00	15.98	16.88	17.75	18.57	19.35	20.13	20.85

CORRECTION FACTORS FOR R-13B1								
EVAPORATOR TEMPERATURE °F	VAPOR FREE LIQUID TEMPERATURE ENTERING VALVE °F							
	+60	+40	+20	0	-20	-40	-60	-80
-40	.6894	.7946	.8980	1.0000	1.1009	1.2006	1.2990	1.3996
-60	.4113	.4771	.5417	.6057	.6687	.7312	.7929	.8538
-80	.2831	.3306	.3776	.4239	.4697	.5151	.5597	.6041
-100	.1675	.1973	.2267	.2556	.2843	.3128	.3408	.3686
-120	.0648	.0770	.0891	.1010	.1128	.1245	.1360	.1472

INSTALLATION INSTRUCTIONS

REMOTE BULB LOCATION

The external remote bulb meets the requirements of most installations. It should be clamped securely to the suction line near the evaporator outlet, and on a horizontal run. On lines under 7/8" OD the remote bulb may be installed on top of the line; on 7/8" OD and over, the remote bulb should be installed at the position of about 4 or 8 o'clock. (See Figure 1)

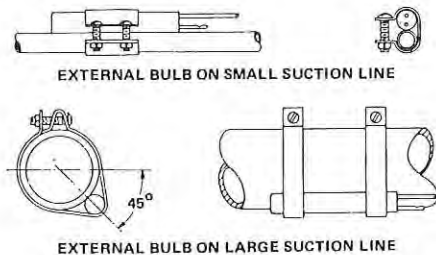


FIGURE 1

INSTALLATION INSTRUCTIONS CONTINUED NEXT PAGE

ORDERING PROCEDURE : TURN TO PAGE 103 AND QUOTE CATALOGUE NO. OF ITEM REQUIRED



ZZ SERIES THERMO EXPANSION VALVES

EXTENDED CAPACITIES

These capacities are based on a vapour free liquid temperature entering the valve at +20°F (-6.7°C); a -40°F (-40°C) evaporator temperature; a maximum superheat change of 70°F (40°C) and standard factory setting. To determine the capacities for evaporator temperatures other than -40°F (-40°C), multiply the capacities listed for the available pressure drop by the correction factor shown in the appropriate table.

EXTENDED CAPACITIES FOR R-22 (IN TONS)														
VALVE TYPE	PRESSURE DROP ACROSS VALVE - PSI													
	30	50	70	90	110	130	150	170	190	210	230	250	270	290
ZZC3/4HW	.33	.43	.51	.58	.64	.70	.75	.80	.84	.89	.93	.97	1.01	1.04
ZZC1-1/2HW	.67	.87	1.02	1.16	1.28	1.40	1.50	1.60	1.69	1.77	1.86	1.93	2.01	2.08
ZZC2-1/2HW	1.12	1.44	1.71	1.94	2.14	2.33	2.50	2.66	2.81	2.96	3.09	3.22	3.35	3.47
ZZC4HW	1.79	2.31	2.73	3.10	3.42	3.72	4.00	4.26	4.50	4.73	4.95	5.16	5.37	5.56
ZZC6HW	2.46	3.17	3.76	4.26	4.71	5.12	5.50	5.86	6.19	6.51	6.81	7.09	7.38	7.64
ZZC8HW	3.58	4.62	5.46	6.20	6.85	7.45	8.00	8.52	9.00	9.46	9.90	10.32	10.74	11.12

CORRECTION FACTORS FOR R-22										
EVAPORATOR TEMPERATURE °F	VAPOR FREE LIQUID TEMPERATURE ENTERING VALVE °F									
	+60	+40	+20	0	-20	-40	-60	-80	-100	
-40	.8302	.9162	1.0000	1.0809	1.1590	1.2347	1.3076	1.3788	1.4484	
-60	.5639	.6241	.6827	.7393	.7940	.8968	.8979	.9478	.9964	
-80	.4031	.4475	.4907	.5324	.5727	.6118	.6494	.6862	.7222	
-100	.2975	.3313	.3642	.3960	.4268	.4565	.4852	.5132	.5406	
-120	.2404	.2687	.2961	.3227	.3484	.3733	.3972	.4207	.4436	

EXTENDED CAPACITIES FOR R-502 (IN TONS)														
VALVE TYPE	PRESSURE DROP ACROSS VALVE - PSI													
	30	50	70	90	110	130	150	170	190	210	230	250	270	290
ZZC3/4RW	.34	.43	.51	.58	.64	.70	.75	.80	.84	.89	.93	.97	1.01	1.04
ZZC1-1/2RW	.67	.87	1.02	1.16	1.28	1.40	1.50	1.60	1.69	1.77	1.86	1.94	2.01	2.08
ZZC2-1/2RW	1.12	1.44	1.71	1.94	2.14	2.33	2.50	2.66	2.81	2.96	3.10	3.22	3.36	3.48
ZZC3-1/2RW	1.56	2.02	2.39	2.71	3.00	3.26	3.50	3.73	3.94	4.14	4.33	4.52	4.70	4.86
ZZC5RW	2.24	2.89	3.42	3.87	4.28	4.65	5.00	5.32	5.62	5.92	6.19	6.45	6.71	6.95
ZZC8RW	3.35	4.33	5.12	5.81	6.42	6.98	7.50	7.99	8.44	8.87	9.28	9.68	10.06	10.42

CORRECTION FACTORS FOR R-502										
EVAPORATOR TEMPERATURE °F	VAPOR FREE LIQUID TEMPERATURE ENTERING VALVE °F									
	+60	+40	+20	0	-20	-40	-60	-80		
-40	.7700	.8800	1.0000	1.1100	1.2200	1.3300	1.4400	1.5500		
-60	.4800	.5600	.6400	.7100	.7800	.8600	.9300	1.0000		
-80	.2900	.3400	.3900	.4400	.4900	.5400	.5800	.6300		
-100	.2400	.2700	.3000	.3400	.3700	.4000	.4400	.4800		

INSTALLATION INSTRUCTIONS CONTINUED

REMOTE BULB LOCATION

Do not under any circumstances locate the remote bulb where the suction line is trapped. (See Figure 2). If the liquid refrigerant collects at the point of remote bulb location, the Thermo Expansion Valve operation will be erratic and possibly the valve thought to be defective. Large fluctuations in superheat in the suction gas are usually the result of trapped liquid at the remote bulb location. Even on properly designed suction lines, it is sometimes necessary to move the remote bulb a few inches either way from the original location to obtain best valve action. Always locate the remote bulb on the evaporator side of any refrigerant liquid-to-suction heat exchanger.

REMOTE BULB WELL

When it becomes desirable to increase the sensitivity of the remote bulb to a change in the refrigerant gas temperature leaving the evaporator, it may be necessary to use a remote bulb well (See Figure 3). This is particularly true for short coupled installations and installations with large suction lines (2-1/8" OD or larger).

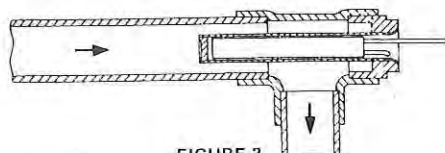


FIGURE 3

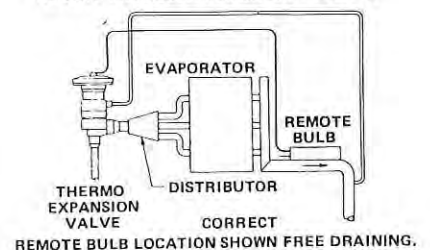
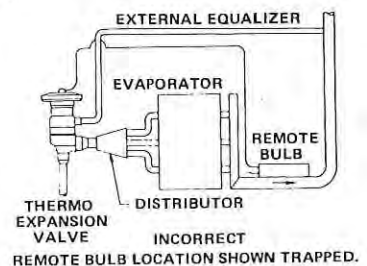
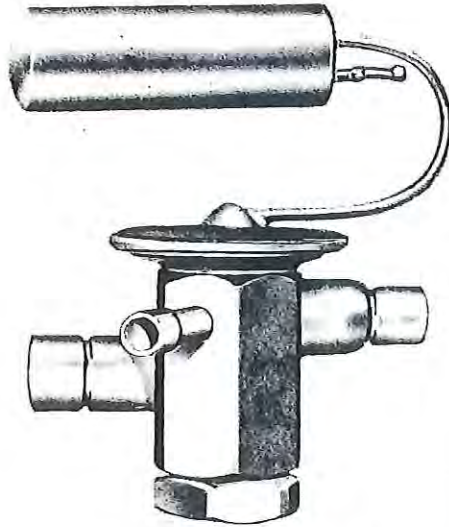


FIGURE 2

ORDERING PROCEDURE : TURN TO PAGE 103 AND QUOTE CATALOGUE NO. OF ITEM REQUIRED



FACTORY SET SUPERHEAT

Standard factory superheat setting is 6A (6°F at 32°F bulb bath temperature).

ANE SERIES R22 THERMO EXPANSION VALVES

ALCO ANE SERIES THERMO EXPANSION VALVES ARE DESIGNED ESPECIALLY FOR HEAT PUMP AND AIR CONDITIONING APPLICATIONS REQUIRING STABLE AND ACCURATE CONTROL OVER A WIDE RANGE OF OPERATING CONDITIONS

FEATURES

1. New HB charge meets compressor manufacturer's superheat requirements for both heat pump and air conditioning service.
2. Bleed type pressure equalization to accommodate PSC type compressors.
3. Factory set superheat prevents unauthorized field tampering.
4. Compact integral construction with straight through or angle connections adapts to any installation.
5. SAE Flare or ODF solder connections available.
6. Safe Working Pressure 450 psig. (3103 kPa).
7. Safe Working Temperature 300°F (149°C).
8. Also available for R12 (ANE/FW) and R502 (ANE/RW).

CAT. NO.	VALVE TYPE	NOM. CAP.* TONS R22 @ 100 PSI (690 kPa) PD.	CONNECTIONS ST. THRU or ANGLE SAE Flare or ODF Sold.		EXT. EQUAL CONN. INS.	REMOTE BULB TUBING LENGTH
			IN	OUT		
1041	ANE 1HB	1	3/8"	3/8"	1/4 SAE	30"
1042	ANE 1½HB	1½				
1043	ANE 2HB	2				
1044	ANE 2½HB	2½				
1045	ANE 3HB	3	1/2"	5/8"		5 ft.
1046	ANE 4HB	4				
1047	ANE 5HB	5				

* Nominal Capacities are based on 40°F (4.4°C) evaporator temperature and 100°F (37.8°C) vapour free liquid refrigerant entering the valve. 12.28T - 12/77.

VALVE SELECTION — TO SELECT A VALVE SIZE FROM TABLE 1 FIRST DETERMINE.

1. The required refrigerant load in Tons.
2. The temperature and pressure of the vapour free liquid refrigerant entering the valve.
3. Note that the capacities in Table 1 are based on 100°F (37.8°C) vapour free liquid refrigerant entering the valve. To convert a required load based on a liquid refrigerant temperature other than 100°F (37.8°C), divide said load by the appropriate factor in Table 2. This corrected required load will then be compatible with the extended capacities in Table 1.
4. The evaporator temperature.
5. The pressure drop across the valve.
6. Using the required load, or corrected required load, enter the extended capacity table (Table 1) for the proper refrigerant at the system evaporator temperature.
7. Select the valve capacity under the proper pressure drop column that most closely matches or slightly exceeds the required or corrected required refrigeration load.
8. Finally determine :
The remote bulb tubing length.
The size of the inlet and outlet ODF or SAE connections.

R22 EXTENDED CAPACITIES

TABLE 1

VALVE TYPE No.	EVAPORATOR TEMPERATURE — °F —																							
	50						40						20						0					
	PRESSURE DROP ACROSS VALVE — PSI —																							
	75	100	125	150	175	200	75	100	125	150	175	200	75	100	125	150	175	200	100	125	150	175	200	225
ANE1 HB	.88	1.0	1.1	1.2	1.3	1.4	.87	1.0	1.1	1.2	1.3	1.4	.79	.92	1.0	1.1	1.2	1.3	.72	.80	.88	.95	1.0	1.1
ANE1½HB	1.3	1.5	1.7	1.9	2.0	2.2	1.3	1.5	1.7	1.8	2.0	2.1	1.2	1.4	1.5	1.7	1.8	1.9	1.1	1.2	1.3	1.4	1.5	1.6
ANE2 HB	1.8	2.0	2.3	2.5	2.7	2.9	1.7	2.0	2.2	2.4	2.6	2.8	1.6	1.8	2.0	2.2	2.4	2.6	1.4	1.6	1.8	1.9	2.0	2.2
ANE2½HB	2.2	2.5	2.8	3.1	3.3	3.6	2.2	2.5	2.8	3.1	3.3	3.5	2.0	2.3	2.6	2.8	3.0	3.2	1.8	2.0	2.2	2.4	2.5	2.7
ANE3 HB	2.6	3.0	3.4	3.7	4.0	4.3	2.6	3.0	3.4	3.7	4.0	4.2	2.4	2.7	3.1	3.4	3.6	3.9	2.2	2.4	2.6	2.9	3.1	3.2
ANE4 HB	3.5	4.0	4.5	5.0	5.4	5.7	3.5	4.0	4.5	4.9	5.3	5.7	3.2	3.7	4.1	4.5	4.8	5.2	2.9	3.2	3.5	3.8	4.1	4.3
ANE5 HB	4.4	5.1	5.7	6.2	6.7	7.2	4.3	5.0	5.6	6.1	6.6	7.1	4.0	4.6	5.1	5.6	6.1	6.5	3.6	4.0	4.4	4.8	5.1	5.4

VALVE TYPE No.	EVAPORATOR TEMPERATURE — °F —																							
	-10						-20						-30						-40					
	PRESSURE DROP ACROSS VALVE — PSI —																							
	125	150	175	200	225	250	125	150	175	200	225	250	150	175	200	225	250	275	150	175	200	225	250	275
ANE1 HB	.69	.75	.81	.87	.92	.97	.57	.63	.68	.73	.77	.81	.51	.55	.59	.62	.66	.69	.40	.43	.46	.49	.52	.54
ANE1½HB	1.0	1.1	1.2	1.3	1.4	1.5	.86	.94	1.0	1.1	1.2	1.2	.76	.82	.88	.93	.98	1.0	.60	.65	.69	.74	.78	.81
ANE2 HB	1.4	1.5	1.6	1.7	1.8	1.9	1.1	1.3	1.4	1.5	1.5	1.6	1.0	1.1	1.2	1.2	1.3	1.4	.80	.87	.93	.98	1.0	1.1
ANE2½HB	1.7	1.9	2.0	2.2	2.3	2.4	1.4	1.6	1.7	1.8	1.9	2.0	1.3	1.4	1.5	1.6	1.6	1.7	1.0	1.1	1.2	1.2	1.3	1.4
ANE3 HB	2.1	2.3	2.4	2.6	2.8	2.9	1.7	1.9	2.0	2.2	2.3	2.4	1.5	1.6	1.8	1.9	2.0	2.1	1.2	1.3	1.4	1.5	1.6	1.6
ANE4 HB	2.8	3.0	3.3	3.5	3.7	3.9	2.3	2.5	2.7	2.9	3.1	3.2	1.9	2.0	2.2	2.3	2.5	2.6	1.5	1.6	1.7	1.9	2.0	2.1
ANE5 HB	3.4	3.8	4.1	4.4	4.6	4.9	2.9	3.1	3.4	3.6	3.9	4.1	2.5	2.7	2.9	3.1	3.3	3.4	2.0	2.2	2.3	2.5	2.6	2.7

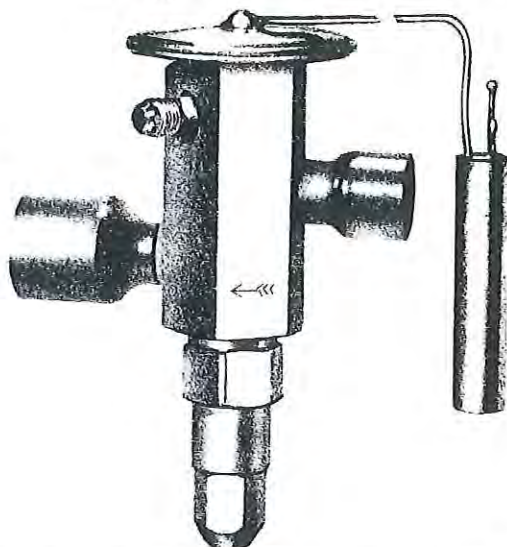
NOTE: Valve capacities are based on 100°F (37.8°C), vapour free liquid free refrigerant entering the valve. To determine the capacities for other temperatures of vapour free liquid refrigerant entering the valve, multiply the capacities listed above by the correction factors listed in Table 2 below. Nominal Capacities are shown in the outlined column.

TABLE 2

LIQUID TEMPERATURE °F (°C)	60 (15.6)	70 (21.1)	80 (26.7)	90 (32.2)	110 (43.3)	120 (48.9)	130 (54.4)	140 (60)
CORRECTION FACTOR	1.22	1.17	1.11	1.06	0.94	0.89	0.83	0.77



TRAE SERIES THERMO[®] EXPANSION VALVES



TRAE SERIES THERMO VALVES ARE DESIGNED ESPECIALLY FOR LARGE CAPACITY AIR CONDITIONING, REFRIGERATION AND CHILLER APPLICATIONS WHERE STABLE AND ACCURATE CONTROL, OVER WIDE LOAD AND EVAPORATOR TEMPERATURE RANGES, IS REQUIRED.

FEATURES

1. "W" charge for evaporator temperature range -23 to +10°C (-10 to +50°F)
"WZ" charge for evaporator temperature range -46 to -12°C (-50 to +10°F)
2. Balanced, Double-port design for smooth, stable control capability at low load conditions (down to 15% of nominal valve capacity).
3. Externally adjustable superheat
4. Integral body construction, straight through connections.
5. Safe Working Pressure 450 PSIG (3103 kPa).
6. Safe Working Temperature 300°F (148.9°C).
7. Ratings through 40 tons (R22) in one body size.
8. Designed specifically for R12, R22 and R502 applications.

TABLE 1 NOMINAL VALVE CAPACITIES									VALVE* BODY SIZE	LINE CONNECTIONS ODF-SOLDER		
R 12			R 22			R502				INLET	OUTLET	
CAT. NO.	VALVE TYPE	TONS @ 60psi PD.	CAT. NO.	VALVE TYPE	TONS @ 100psi PD.	CAT. NO.	VALVE TYPE	TONS @ 100psi PD.				
1051	TRAE 7½FW	7½	1059	TRAE 10HW	10	10517	TRAE 8RW	8	1	5/8	7/8	
1052	TRAE 10FW	10	10510	TRAE 15HW	15	10518	TRAE 12RW	12		1-1/8		1-1/8
1053	TRAE 12FW	12	10511	TRAE 20HW	20	10519	TRAE 14RW	14		1-3/8		1-3/8
1054	TRAE 18FW	18	10512	TRAE 30HW	30	10520	TRAE 20RW	20				
1055	TRAE 25FW	25	10513	TRAE 40HW	40	10521	TRAE 30RW	30				
1056	TRAE 30FW	30	10514	TRAE 50HW	50	10522	TRAE 35RW	35	2	7/8	7/8	
1057	TRAE 35FW	35	10515	TRAE 60HW	60	10523	TRAE 40RW	40		1-1/8	1-1/8	
1058	TRAE 40FW	40	10516	TRAE 70HW	70	10524	TRAE 50RW	50		1-3/8	1-3/8	

Equalizer - 1/4" SAE External
Remote Bulb Tubing Length - 5ft.

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Note: Nominal capacities are based on 40°F (4.4°C) evaporator temperature and 100°F (37.8°C) vapour free liquid refrigerant entering the valve. For other evaporator temps., liquid temps., and pressure drops across the valve, refer to next page.

VALVE SELECTION

1. The required refrigerant load in Tons.
2. The temperature and pressure of the vapour free liquid refrigerant entering the valve.
3. Note that the capacities in Table 2 are based on 100°F (37.8°C) vapour free liquid refrigerant entering the valve. To convert a required load based on a liquid refrigerant temperature other than 100°F (37.8°C), divide said load by the appropriate factor in Table 3. This corrected required load will then be compatible with the extended capacities in Table 2.
4. The evaporator temperature.
5. The pressure drop across the valve.
6. Using the required load, or corrected required load, enter the extended capacity table (Table 2) for the proper refrigerant at the system evaporator temperature.
7. Select the valve capacity under the proper pressure drop column that most closely matches or slightly exceeds the required or corrected required refrigeration load.
8. Finally determine :
The remote bulb tubing length.
The size of the inlet and outlet ODF connections.

SUPERHEAT ADJUSTMENT

Standard factory superheat setting for FW, HW, and RW charges is 6A (6°F at 32°F bulb bath temperature).

To adjust valve to other superheat settings.

1. Remove seal cap from bottom of valve. This will expose wrench flats (3/16-inch square) which are provided at the bottom of the adjusting stem.
2. Turn the adjusting stem in a clockwise direction (when viewed from bottom of valve) to increase the superheat and counter-clockwise to decrease superheat (approximately 2°F per turn, R22 applications).
3. When desired superheat setting is attained, reinstall seal cap.

NOTE: Allow adequate time between adjustments for system to stabilize before checking superheat.

SAFETY INSTRUCTIONS

1. Read Installation and Safety instructions thoroughly. Failure to follow instructions may result in valve failure, system damage, and/or personal injury.
2. Do not use on service conditions or fluids not specifically cataloged.
3. Foreign matter in the Thermo valve may cause diaphragm failure, flooding, or starving. To insure that the system is thoroughly clean and dry we recommend the use of a liquid line filter-drier and moisture liquid indicator.
4. Proper valve sizing is important. An over-sized valve may result in erratic control. An undersized valve may considerably reduce system capacity.

* TRAE BODY SIZE I

Available Tonnages: 10, 15, 20, 30, 40 – R22

* TRAE BODY SIZE II

Available Tonnages: 50, 60, 70 – R22

Refer to TECH. Page 105-a for Extended Capacity Tables.

TRAE SERIES CAPACITY TABLES



TABLE 2. EXTENDED CAPACITIES
R12 EXTENDED CAPACITIES (TONS)

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE (°F)																							
	50						40						20						0					
	PRESSURE DROP ACROSS VALVE -PSI-																							
TRAE 7½FW	6.2	7.5	8.7	9.7	10.9	11.9	7.4	8.5	9.6	10.7	11.7	12.6	7.1	8.2	9.2	10.2	11.2	12.1	5.9	6.8	7.6	8.5	9.3	10.1
TRAE 10FW	9.0	11.0	12.7	14.2	15.9	17.4	10.8	12.5	13.9	15.6	17.1	18.4	10.4	12.0	13.4	15.0	16.4	17.7	8.6	10.0	11.1	12.4	13.6	14.7
TRAE 12FW	10.0	12.2	14.1	15.8	17.7	19.4	12.0	13.9	15.5	17.3	19.0	20.5	11.5	13.3	14.9	16.6	18.2	19.7	9.6	11.1	12.4	13.8	15.1	16.4
TRAE 18FW	15.2	18.6	21.4	24.0	26.8	29.3	18.2	21.0	23.5	26.3	28.8	31.1	17.5	20.2	22.5	25.2	27.6	29.8	14.5	16.8	18.7	21.0	23.0	24.8
TRAE 25FW	20.8	25.5	29.4	32.9	36.8	40.3	25.0	28.9	32.3	36.1	39.5	42.7	24.0	27.7	31.0	34.6	37.9	41.0	20.0	23.0	25.8	28.8	31.5	34.1
TRAE 30FW	28.1	34.5	39.8	44.5	49.8	54.5	33.8	39.0	43.6	48.8	53.4	57.7	32.4	37.4	41.9	46.8	51.3	55.4	27.0	31.1	34.8	38.9	42.6	46.1
TRAE 35FW	30.6	37.5	43.3	48.5	54.2	59.3	36.8	42.5	47.5	53.1	58.2	62.8	35.3	40.8	45.6	51.0	55.8	60.3	29.4	33.9	37.9	42.4	46.4	50.2
TRAE 40FW	36.5	44.7	51.6	57.7	64.5	70.6	43.8	50.6	56.5	63.2	69.2	74.8	42.0	48.5	54.2	60.7	66.4	71.8	35.0	40.4	45.1	50.4	55.3	59.7

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE (°F)																							
	-10						-20						-30						-40					
	PRESSURE DROP ACROSS VALVE -PSI-																							
TRAE 7½FW	5.7	6.3	7.1	7.8	8.4	9.0	4.6	5.2	5.8	6.3	6.8	7.3	3.7	4.2	4.6	5.1	5.5	5.9	2.9	3.3	3.6	4.0	4.3	4.6
TRAE 10FW	8.3	9.2	10.3	11.3	12.2	13.1	6.8	7.6	8.4	9.2	10.0	10.7	5.4	6.1	6.8	7.4	8.0	8.6	4.2	4.8	5.3	5.8	6.3	6.7
TRAE 12FW	9.2	10.3	11.5	12.6	13.6	14.5	7.5	8.4	9.4	10.3	11.1	11.9	6.0	6.7	7.5	8.3	8.9	9.5	4.7	5.3	5.9	6.5	7.0	7.5
TRAE 18FW	13.9	15.6	17.4	19.1	20.6	22.0	11.4	12.7	14.2	15.6	16.8	18.0	9.1	10.2	11.4	12.5	13.5	14.5	7.2	8.0	8.9	9.8	10.6	11.3
TRAE 25FW	18.0	20.1	22.5	24.6	26.6	28.4	15.6	17.5	19.6	21.4	23.1	24.7	12.6	14.0	15.7	17.2	18.6	19.9	9.8	11.0	12.3	13.5	14.5	15.5
TRAE 30FW	25.9	28.9	32.3	35.4	38.3	40.9	21.2	23.7	26.4	29.0	31.3	33.4	17.0	19.0	21.2	23.2	25.1	26.8	13.3	14.9	16.6	18.2	19.7	21.0
TRAE 35FW	28.2	31.5	35.2	38.6	41.7	44.5	23.0	25.8	28.8	31.5	34.1	36.4	18.5	20.7	23.1	25.3	27.3	29.2	14.5	16.2	18.1	19.8	21.4	22.9
TRAE 40FW	33.5	37.5	41.9	45.9	49.6	53.0	27.4	30.6	34.3	37.5	40.5	43.3	22.0	24.6	27.5	30.1	32.5	34.8	17.2	19.3	21.5	23.6	25.5	27.2

R22 EXTENDED CAPACITIES (TONS)

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE (°F)																							
	50						40						20						0					
	PRESSURE DROP ACROSS VALVE -PSI-																							
TRAE 10HW	10.3	11.9	13.3	14.6	15.8	16.9	10.2	11.8	13.2	14.5	15.6	16.7	10.0	11.5	12.9	14.8	15.2	16.3	10.4	11.6	12.7	13.7	14.7	15.6
TRAE 15HW	15.1	17.4	19.5	21.3	23.0	24.6	14.9	17.2	19.2	21.1	22.8	24.3	14.5	16.8	18.7	20.5	22.2	24.3	15.1	16.9	18.5	20.0	21.4	22.7
TRAE 20HW	16.8	19.4	21.7	23.8	25.7	27.5	16.6	19.2	21.5	23.5	25.4	27.2	16.2	18.7	20.9	22.9	24.8	26.5	16.9	18.9	20.7	22.4	23.9	25.4
TRAE 30HW	25.5	29.4	32.9	36.1	38.9	41.6	25.2	29.1	32.5	35.6	38.5	41.2	24.6	28.4	31.7	34.7	37.5	40.1	25.6	28.6	31.4	33.9	36.2	38.4
TRAE 40HW	35.0	40.5	45.2	49.6	53.5	57.2	34.6	40.0	44.7	49.0	52.9	56.6	33.8	39.0	43.6	47.8	51.6	55.2	35.2	39.4	43.1	46.6	49.8	52.8
TRAE 50HW	47.3	54.6	61.1	66.9	72.3	77.3	46.8	54.0	60.4	66.1	71.4	76.4	45.6	52.6	58.8	64.4	69.6	74.4	47.5	53.1	58.2	62.9	67.2	71.3
TRAE 60HW	51.6	59.6	66.6	73.0	78.8	84.3	60.7	58.9	65.9	72.1	77.9	83.3	49.7	57.4	64.2	70.3	75.9	81.2	51.8	58.0	63.5	68.6	73.3	77.8
TRAE 70HW	61.4	70.9	81.0	86.9	93.8	100.3	60.7	70.1	78.4	85.9	92.7	99.1	59.2	68.3	76.4	83.7	90.4	96.6	61.7	70.6	78.6	86.3	93.6	100.6

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE (°F)																							
	-10						-20						-30						-40					
	PRESSURE DROP ACROSS VALVE -PSI-																							
TRAE 10HW	9.6	10.5	11.3	12.1	12.9	13.6	8.0	8.7	9.4	10.1	10.7	11.3	7.2	7.7	8.3	8.8	9.3	9.7	5.8	6.2	6.6	7.0	7.4	7.8
TRAE 15HW	14.0	15.3	16.5	17.7	18.8	19.8	11.6	12.7	13.8	14.7	15.6	16.5	10.4	11.3	12.1	12.8	13.5	14.1	8.4	9.1	9.7	10.3	10.8	11.4
TRAE 20HW	15.6	17.1	18.5	19.7	20.9	22.1	13.0	14.2	15.4	16.4	17.4	18.4	11.7	12.6	13.5	14.3	15.1	15.8	9.4	10.1	10.8	11.5	12.1	12.7
TRAE 30HW	23.6	25.9	28.0	29.9	31.7	33.4	19.6	21.6	23.3	24.9	26.4	27.8	17.7	19.1	20.4	21.6	22.8	23.9	14.2	15.3	16.4	17.4	18.3	19.2
TRAE 40HW	32.5	35.6	38.9	41.1	43.6	46.0	27.1	29.6	32.0	34.2	36.3	38.3	24.3	26.2	28.0	29.7	31.4	32.9	19.5	21.1	22.5	23.9	25.2	26.4
TRAE 50HW	43.9	48.1	51.9	55.5	58.9	62.1	36.5	40.0	43.2	46.2	49.0	51.7	32.8	35.4	37.9	40.2	42.3	44.4	26.4	28.5	30.4	32.3	34.0	35.7
TRAE 60HW	47.9	52.4	56.6	60.6	64.2	67.7	39.9	43.7	47.2	50.4	53.5	56.4	35.8	38.6	41.3	43.8	46.2	48.4	28.4	31.0	33.2	35.2	37.1	38.9
TRAE 70HW	57.0	62.4	67.4	72.1	76.4	80.6	47.4	52.0	56.1	60.0	63.6	67.1	42.6	46.0	49.1	52.1	54.9	57.6	34.2	37.0	39.5	41.9	44.2	46.3

R502 EXTENDED CAPACITIES (TONS)

VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE (°F)																							
	50						40						20						0					
	PRESSURE DROP ACROSS VALVE -PSI-																							
TRAE 8RW	8.5	9.5	10.4	11.2	12.0	12.7	8.3	9.3	10.2	11.0	11.7	12.5	8.8	9.7	10.5	11.2	11.9	12.5	9.2	9.9	10.6	11.2	11.8	12.4
TRAE 12RW	12.4	13.8	15.1	16.4	17.5	18.6	12.1	13.5	14.8	16.0	17.1	18.2	12.9	14.1	15.2	16.3	17.3	18.2	13.3	14.4	15.4	16.3	17.2	18.1
TRAE 14RW	13.8	15.4	16.9	18.3	19.5	20.7	13.5	15.1	16.5	17.9	19.1	20.3	14.4	15.7	17.0	18.2	19.3	20.3	14.9	16.1	17.2	18.2	19.2	20.2
TRAE 20RW	21.0	23.4	25.7	27.7	29.6	31.4	20.5	22.9	25.1	27.1	29.0	30.8	21.8	23.9	25.8	27.6	29.3	30.9	22.6	24.4	26.1	27.7	29.2	30.6
TRAE 30RW	28.7	32.1	35.2	38.0	40.6	43.1	28.1	31.4	34.4	37.2	39.7	42.2	29.9	32.8	35.4	37.8	40.1	42.3	31.0	33.5	35.8	38.0	40.0	42.0
TRAE 35RW	38.8	43.4	47.6	51.4	54.9	58.3	38.0	42.5	46.5	50.3	53.7	57.0	40.5	44.3	47.9	51.2	54.3	57.2	41.9	45.3	48.4	51.3	54.1	56.7
TRAE 40RW	42.3	47.3	51.8	56.0	59.8	63.5	41.4	46.3	50.7	54.8	58.5	62.1	44.1	48.3	52.1	55.7	59.1	62.6	45.7	49.3	52.7	55.9	58.9	61.8
TRAE 50RW	50.4	56.3	61.7	66.7	71.3	75.6	49.3	55.1	60.4	65.2	69.7	74.0	52.5	57.5	62.1	66.4	70.4	74.2	54.4	58.7	62.8	66.6	70.2	73.6

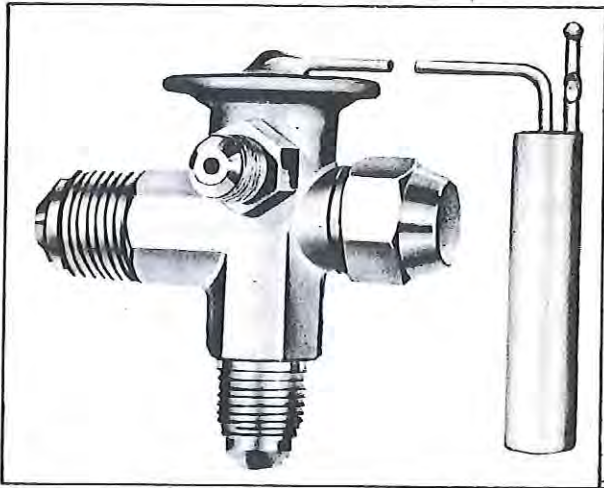
VALVE TYPE NUMBER	EVAPORATOR TEMPERATURE (°F)																							
	-10						-20						-30						-40					
	PRESSURE DROP ACROSS VALVE -PSI-																							
TRAE 8RW	8.3	9.0	9.6	10.2	10.8	11.3	7.5	8.0	8.5	9.0	9.4	9.9	6.4	6.8	7.2	7.6	8.0	8.4	5.3	5.7	6.0	6.3	6.6	6.9
TRAE 12RW	12.2	13.1	14.0	14.9	15.7	16.5	11.0	11.7	12.4	13.1	13.7	14.4	9.3	9.9	10.5	11.1	11.7	12.2	7.7	8.2	8.7	9.2	9.7	10.1
TRAE 14RW	13.6	14.7	15.7	16.6	17.5	18.4	12.2	13.1	13.9	14.6	15.3	16.0	10.4	11.1	11.8	12.4	13.0	13.6	8.6	9.2	9.8	10.3	10.8	11.3
TRAE 20RW	20.6	22.3	23.8	25.2	26.6	27.9	18.6	20.0	21.1	22.2	23.3	24.3	15.8	16.8	17.9	18.8	19.8	20.6	13.1	14.0	14.8	15.6	16.4	17.1
TRAE 30RW	28.3	30.5	32.6	34.6	36.5	38.3	25.5	27.3	28.9	30.5	31.9	33.4	21.6	23.1	24.5	25.8	27.1	28.3	17.9	19.2	20.3	21.4	22.5	23.5
TRAE 35RW	38.2	41.3	44.1	46.8	49.3	51.7	34.4	36.8	39.1	41.2	43.2	45.1	29.2	31.2	33.1	34.9	36.6	38.2	24.2	25.9	27.5	29.0	30.4	31.7
TRAE 40RW	41.6	45.0	48.1	51.0	53.8	56.4	37.5	40.1	42.6	44.9	47.0	49.1	31.8	34.0	36.1	38.0	39.9	41.7	26.4	28.2	29.9	31.6	33.1	34.6
TRAE 50RW	49.6	53.5	57.2	60.7	64.0	67.1	44.7	47.8	50.7	53.4	56.0	58.5	37.9	40.5	43.0	45.3	47.5	49.6	31.4	33.6	35.7	37.6	39.4	41.2



RCD SERIES THERMO® EXPANSION VALVES

FOR R12 - R22 - R502

THE ALCO RCD AND RCDE SERIES EXPANSION VALVES ARE SPECIFICALLY DESIGNED FOR COMPACT REFRIGERATED DISPLAY CASES, REACH-IN AND WALK-IN COOLERS, AND OTHER COMMERCIAL APPLICATIONS RANGING FROM HIGH TO LOW TEMPERATURES



FEATURES

- Interchangeable and Removeable Cage Assemblies for Servicing and Capacity Determination
- "W" Charge for Evaporator Temp. Range -23 to +10°C (-10 to +50°F) "WZ" Charge for Evaporator Temp. Range -46 to -12°C (-50 to +10°F)
- Removeable Inlet Strainer
- Forged Brass Body
- All Position Mounting
- Small Compact — fits any Installation
- Corrosion Resistant materials — For Food Service Applications
- Internal (RCD) and External (RCDE) Equalizer

REFRIG.	CAT. NO.	TYPE RCD (Int. Equal)	CAT. NO.	TYPE RCDE (Ext. Equal)	NOMINAL * CAPACITY		LINE CONNECTIONS mm (ins.) SAE Inlet & Outlet	CAPILLARY TUBE LENGTH
					kW	Tons		
R12	1061	RCD¼FW	1067	RCDE¼FW	0.95	0.27	6 or 10 x 12 (1/4 or 3/8 x 1/2)	1.5 m 5 ft.
	1062	RCD½FW	1068	RCDE½FW	1.83	0.52		
	1063	RCD1FW	1069	RCDE1FW	3.52	1.00		
	1064	RCD1½FW	10610	RCDE1½FW	4.75	1.35		
	1065	RCD2FW	10611	RCDE2FW	6.86	1.95		
	1066	RCD3FW	10612	RCDE3FW	10.16	2.89		
R22	10613	RCD½HW	10619	RCDE½HW	1.51	0.43		
	10614	RCD1HW	10620	RCDE1HW	2.92	0.83		
	10615	RCD1½HW	10621	RCDE1½HW	5.63	1.60		
	10616	RCD2HW	10622	RCDE2HW	7.60	2.16		
	10617	RCD3HW	10623	RCDE3HW	10.97	3.12		
	10618	RCD5HW	10624	RCDE5HW	16.25	4.62		
R502	10625	RCD¼RW	10631	RCDE¼RW	1.06	0.30		
	10626	RCD½RW	10632	RCDE½RW	2.07	0.59		
	10627	RCD1RW	10633	RCDE1RW	3.97	1.13		
	10628	RCD1½RW	10634	RCDE1½RW	5.35	1.52		
	10629	RCD2RW	10635	RCDE2RW	7.70	2.19		
	10630	RCD3RW	10636	RCDE3RW	11.43	3.25		

12.34T Sept.1978

* Nominal Capacity based on +4°C (40°F) Evaporator Temperature and +38°C (100°F) vapour-free liquid refrigerant entering the valve at pressure drops of : R12 414 kPa (60 PSIG), R22 & R502 690 kPa (100 PSIG).

External Equalizer Connection 6 mm (¼") SAE.

MOTOR OVERLOAD PROTECTION If Required by Compressor Manufacturer			
APPLICATION	R12	R22	R502
COMMERCIAL	FW35	HW65	RW65
LOW TEMP.	FW15	HW35	RW35

SAFETY INSTRUCTIONS

Proper valve sizing is important. An over-sized valve may result in erratic control. An undersized valve may considerably reduce system capacity.
Do not exceed Safe Working Pressure 3100 kPa (450 PSIG)
Do not exceed Safe Temperature Limits 100°C (212°F)

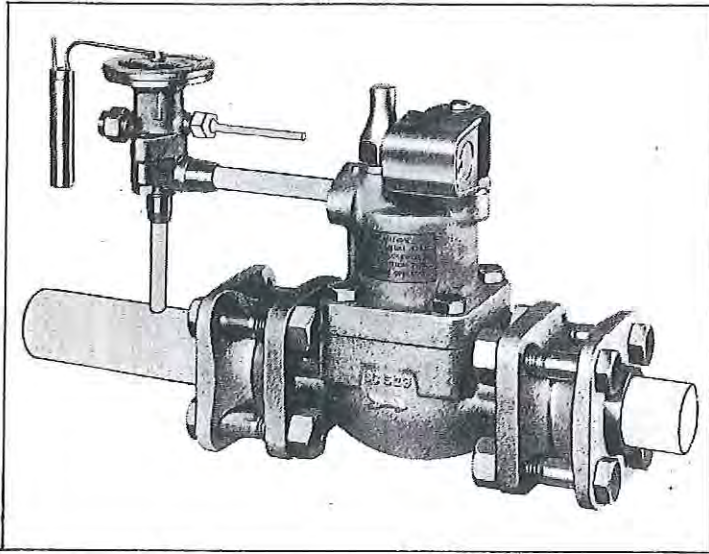
CAGE ASSEMBLY RATINGS & CAT. NO's							
CAGE NUMBER	CAT. NO.	NOMINAL CAPACITY — kW (Tons)					
		R12		R22		R502	
		kW	Tons	kW	Tons	kW	Tons
A	10637	0.88	¼	1.76	½	0.88	¼
B	10638	1.76	½	3.52	1	1.76	½
C	10639	3.52	1	5.28	1½	3.52	1
D	10640	5.28	1½	7.04	2	5.28	1½
E	10641	7.04	2	10.56	3	7.04	2
F	10642	10.56	3	17.60	5	10.56	3

FURTHER DETAILS AND MANUFACTURERS BULLETIN ON REQUEST



POS SERIES PILOT OPERATED THERMO® VALVES

FOR R12 - R22 - R500



The POS Series Valve is designed for large capacity applications in the Air Conditioning temperature range (above 0°C (32°F), such as Chillers, where the evaporator has been designed for thermo expansion control from the superheat of the suction gas.

FEATURES

The POS series valve is piloted by a "T" series thermo valve and is controlled by an integral solenoid to provide positive liquid shut-off.

This piloted operated principle provides the advantage of a long stroke and the use of a characterized port for smooth modulation over the widest possible load range, maintaining positive control with loads reduced as low as 15% of nominal valve capacity.

The POS series valves are recommended for refrigeration systems having some form of compressor capacity reduction such as compressor cylinder unloading.

SYSTEM REFRIGERANT									SPECIFICATIONS				
R-12			R-22			R-500			SIZE AND STYLE OF CONNECTIONS		OVERALL DIMENSIONS		
CAT. NO.	VALVE TYPE	Nominal Capacity @ 60# PD.-Tons	CAT. NO.	VALVE TYPE	Nominal Capacity @ 100# PD.-Tons	CAT. NO.	VALVE TYPE	Nominal Capacity @ 60# PD.-Tons	Pilot Conn.	Line Conns.	Hgt.	Lgth.	Wdth. Body
1071	POS20F1	20.0	1072	POS20H1	20.0	1073	POS25C1	24.5	1/2" ODF (integral) *1/2" Male Flare	1-1/8" ODF (2-Bolt, Flanged)	8 1/2"	6 3/32"	3 13/16"
1075	POS30F1	30.0	1074	POS30H1	30.0	1078	POS35C1	37.0					
1079	POS40F1	40.0	1076	POS40H1	40.0	10710	POS50C1	49.4					
10711	POS50F1	50.0	10712	POS75H1	75.0	10714	POS60C1	61.6	1-3/8" ODF (2-Bolt, Flanged)	8 15/16"	7 3/32"	4 9/16"	
10715	POS75F1	75.0	10713	POS100H1	100.0	10717	POS90C1	92.5					
10718	POS100F1	100.0	10720	POS150H1	150.0	10722	POS125C1	123.4	1/2" ODF (Flanged) *1/2" Male Flare	2-1/8" ODF (4-Bolt, Flanged)	9 25/32"	10 25/32"	3 3/4"
10719	POS125F1	125.0	10721	POS200H1	200.0	10723	POS150C1	154.1					
10724	POS150F1	150.0	—	—	—	10725	POS175C1	185.0					
10726	POS200F1	200.0	—	—	—	10727	POS240C1	245.0	2-5/8" ODF (4-Bolt, Flanged)	11 19/32"	13 7/8"	5 1/8"	

* Available on request.

12.60 April 1980

PILOT THERMO VALVE						Standard Connections ODF	Pilot Solenoid Valve Voltages
SYSTEM REFRIGERANT							
R-12		R-22		R-500			
Cat. No.	Valve Type	Cat. No.	Valve Type	Cat. No.	Valve Type	3/8 x 5/8	230V 50Hz 415V 50Hz Other Voltages to Special Order
10210	TCLE2FW	10235	TCLE3HW	10260	TCLE250CW		

ALCO POS SERIES CAGE ASSEMBLY						
Valve Type		Cat. No.	Part No.	Valve Type R-22	Cat. No.	Part No.
R-12	R-500					
POS20F1	POS25C1	10741	X7361-1	POS20H1	10749	X7361-15
POS30F1	POS35C1	10742	X7361-2	POS30H1	10748	X7361-16
POS40F1	POS50C1	10743	X7361-3	POS40H1	10746	X7361-17
POS50F1	POS60C1	10744	X5651-12	POS50H1	10747	X7361-18
POS75F1	POS90C1	10765	X5651-11	POS75H1	10767	X5651-1
POS100F1	POS125C1		X8508-1	POS100H1	10766	X5651-10
POS125F1	POS150C1		X8508-1	POS125H1		X5651
POS150F1	POS175C1		X5660	POS150H1		X8508-2
POS200F1	POS240C1		X6146	POS200H1		X8508-2

REMOTE BULB WELLS		
Cat. No.	Part No.	Conn. Size
10733	X5091-1	1 1/8 O.D.M.
10734	X5091-2	1 3/8 O.D.M.
10735	X5091-3	1 5/8 O.D.M.
10736	X5091-4	2 1/8 O.D.M.
10737	X5091-5	2 5/8 O.D.M.
10738	X5091-6	3 1/8 O.D.M.
10739	X5092-1	3/4 M.P.T.

When ordering specify the following :-

POS Valve Type Number : (including integral Solenoid Valve voltage and frequency) Example: POS100F1 - 230 volts, 50 cycles.
Pilot Thermo Valve Type Number : (Example: TCLE 2 FW). Note: Unless otherwise specified the Pilot Valve will be supplied with 1.5 m (5 ft.) remote bulb tubing and the "W" power assembly charge for temperature range -23 to +10°C (-10 to +50°F).

SELECTION DETAILS & TABLES - Next Page



POS SERIES THERMO EXPANSION VALVES

SELECTION

1. Sizing the POS Valve

The POS Valve size is determined by the required capacity in tons of refrigeration and the pressure drop across the valve.

The pressure drop across the POS Valve will be the difference between discharge and suction pressures at the compressor, less the pressure drop in the liquid line and less the pressure drop through the evaporator, distributor, and suction line.

After determining the pressure drop across the POS Valve, select one having sufficient capacity for the load requirement at the calculated pressure drop. For example: Load requirement 100 tons capacity Refrigerant 12 at a 60 psi pressure drop. Consulting the Refrigerant 12 Capacity Table, we find under the 60 psi pressure drop column that a POS100F1 will be the proper valve.

2. Pilot Thermo Valve.

The pilot Thermo valve selection depends only on the system refrigerant. The recommended valves are listed on Page 107.

POS VALVE SELECTION TABLE

Valve Type	Pressure Drop Across Valve, psi												
	30	40	50	60	70	80	90	100	110	120	130	140	150
TONS OF REFRIGERATION, REFRIGERANT 12													
POS20F1	14.1	16.3	18.3	20.0	21.6	23.1	24.5	25.8	27.1	28.3	29.4	30.6	31.6
POS30F1	21.2	24.5	27.4	30.0	32.4	34.6	36.7	38.7	40.6	42.4	44.2	45.8	47.4
POS40F1	28.3	32.7	36.5	40.0	43.2	46.2	49.0	51.6	54.2	56.6	58.9	61.1	63.2
POS50F1	35.4	40.8	45.6	50.0	54.0	57.7	61.2	64.5	67.7	70.7	73.6	76.4	79.1
POS75F1	53.0	61.2	68.5	75.0	81.0	86.6	91.9	96.8	102.0	106.0	110.0	115.0	119.0
POS100F1	70.7	81.6	91.3	100.0	108.0	116.0	123.0	129.0	135.0	141.0	147.0	153.0	158.0
POS125F1	88.4	102.0	114.0	125.0	135.0	144.0	153.0	161.0	169.0	177.0	184.0	191.0	198.0
POS150F1	106.0	123.0	137.0	150.0	162.0	173.0	184.0	194.0	203.0	212.0	221.0	229.0	237.0
POS200F1	141.0	163.0	183.0	200.0	216.0	231.0	245.0	258.0	271.0	283.0	294.0	306.0	316.0
Valve Type	Pressure Drop Across Valve, psi												
	80	90	100	110	120	130	140	150	160	170	180	190	200
TONS OF REFRIGERATION, REFRIGERANT 22													
POS20H1	17.9	19.0	20.0	21.0	21.9	22.8	23.7	24.5	25.3	26.1	26.8	27.6	28.3
POS30H1	26.8	28.5	30.0	31.5	32.9	34.2	35.5	36.7	37.9	39.1	40.2	41.4	42.4
POS40H1	35.8	37.9	40.0	42.0	43.8	45.6	47.3	49.0	50.6	52.2	53.7	55.1	56.6
POS50H1	44.7	47.4	50.0	52.0	54.8	57.0	59.2	61.2	63.2	65.2	67.1	68.9	70.7
POS75H1	67.1	71.2	75.0	78.7	82.2	85.5	88.7	91.9	94.9	97.8	101.0	103.0	106.0
POS100H1	89.4	94.9	100.0	105.0	110.0	114.0	118.0	123.0	127.0	130.0	134.0	138.0	141.0
POS125H1	112.0	119.0	125.0	131.0	137.0	143.0	148.0	153.0	158.0	163.0	168.0	172.0	177.0
POS150H1	134.0	142.0	150.0	157.0	164.0	171.0	177.0	184.0	190.0	196.0	201.0	207.0	212.0
POS200H1	179.0	190.0	200.0	210.0	219.0	228.0	237.0	245.0	253.0	261.0	268.0	276.0	283.0
Valve Type	Pressure Drop Across Valve, psi												
	30	40	50	60	70	80	90	100	110	120	130	140	150
TONS OF REFRIGERATION, REFRIGERANT 500													
POS25C1	17.4	20.1	22.6	24.5	26.2	28.2	29.9	31.6	33.3	34.6	36.0	37.5	38.7
POS35C1	26.2	30.4	34.1	37.0	39.6	42.5	45.2	47.7	50.3	52.2	54.4	56.6	58.4
POS50C1	35.0	40.5	45.5	49.4	52.8	56.8	60.3	63.7	67.2	69.6	72.6	75.6	78.2
POS60C1	43.7	50.5	56.7	61.6	66.0	70.8	75.1	79.5	83.7	86.8	90.5	93.2	97.3
POS90C1	65.5	75.8	85.1	92.5	98.8	106.4	112.9	119.3	125.8	130.3	136.0	141.6	146.2
POS125C1	87.6	101.2	113.8	123.4	132.1	142.0	150.6	159.1	167.9	174.0	181.5	188.9	195.0
POS150C1	109.4	126.5	142.0	154.1	165.0	177.0	188.0	198.8	209.5	217.6	226.5	236.0	243.8
POS175C1	131.2	152.0	171.0	185.0	198.0	212.5	225.8	238.3	251.5	260.4	272.0	283.0	292.2
POS240C1	173.9	201.0	225.6	245.0	262.0	281.5	299.0	316.0	333.2	345.8	360.0	374.8	387.5

12.60 April 1980

NOTE : Capacities based on 4.4°C(40°F) evaporating temperature and 38°C(100°F) vapour free liquid entering the valve.

ORDERING PROCEDURE : REFER TO PAGE 107 AND QUOTE CATALOGUE NO. OF ITEM REQUIRED

Danfoss THERMOSTATIC EXPANSION VALVES

TYPE T2 and TE2 FOR R12, R22, R502
 EXPANSION VALVES WITH INTERCHANGEABLE ORIFICE ASSEMBLY
 (A Range of 6 Valves — each with a range of 7 Orifices for Capacity Variation)

Range: -40°C to $+10^{\circ}\text{C}$ (-40°F to $+50^{\circ}\text{F}$)

Valve colour coding — Yellow Label = R 12
 Blue Label = R 22
 Lilac Label = R502

T 2 = Internally Equalized
 TE 2 = Externally Equalized

Superheat: Factory set for 6°C (11°F) at a bulb temperature of 0°C ($+32^{\circ}\text{F}$)

↺ + — ↻ 1 rev ~ 4°C (7°F)

Connections: Angleway
 T 2 — Inlet x Outlet — $1/4'' \times 1/2''$ Flare
 TE 2 — Inlet x Outlet x Equal. Conn. — $1/4'' \times 1/2'' \times 1/4''$ Fl.
 Capillary Tube Length 1.5 m (5 ft.)

VALVE				+	ORIFICE			=	CAPACITY			
REFRIG.	VALVE WITHOUT ORIFICE			PRESS. EQUAL.	+	ORIFICE			=	RATED CAPACITY*		EQUIVALENT OLD VALVE TYPE
	CAT. NO.	MODEL	CODE NO.			CAT. NO.	ORIFICE NO.	CODE NO.		kW	Tons	
R12	10848	TF :	68-3202	INT.	+	10827	0	68-2003	=	0.7	0.2	TF/TEF2-0.2
						10821	1	68-2004		1.0	0.3	TF/TEF2-0.3
						10822	2	68-2005		1.7	0.5	TF/TEF2-0.5
	10849	TEF :	68-3204	EXT.		10823	3	68-2006		3.5	1.0	TF/TEF2-1.0
						10824	4	68-2007		5.2	1.5	TF/TEF2-1.5
						10825	5	68-2008		7.0	2.0	TF/TEF2-2.0
						10826	6	68-2009		10.5	3.0	TF/TEF2-3.0
R22	10850	TX :	68-3206	INT.	+	10827	0	68-2003	=	1.0	0.3	TX/TEX2-0.3
						10821	1	68-2004		1.7	0.5	TX/TEX2-0.5
						10822	2	68-2005		2.8	0.8	TX/TEX2-0.8
	10851	TEX :	68-3209	EXT.		10823	3	68-2006		5.2	1.5	TX/TEX2-1.5
						10824	4	68-2007		8.0	2.3	TX/TEX2-2.3
						10825	5	68-2008		10.5	3.0	TX/TEX2-3.0
						10826	6	68-2009		15.0	4.5	TX/TEX2-4.5
R502	10852	TY :	68-3212	INT.	+	10827	0	68-2003	=	0.7	0.2	TY/TEY2-0.2
						10821	1	68-2004		1.0	0.3	TY/TEY2-0.3
						10822	2	68-2005		1.7	0.5	TY/TEY2-0.5
	10853	TEY :	68-3215	EXT.		10823	3	68-2006		3.5	1.0	TY/TEY2-1.0
						10824	4	68-2007		5.2	1.5	TY/TEY2-1.5
						10825	5	68-2008		7.0	2.0	TY/TEY2-2.0
						10826	6	68-2009		10.0	3.0	TY/TEY2-3.0

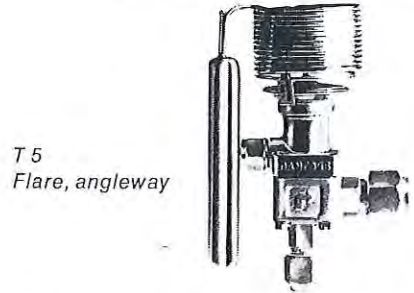
KK.10.A2.02/KD.11.A1.02/KN.11.F3.02

* Rated Capacity at $+5^{\circ}\text{C}$ (40°F) evap. temp. and 32°C (90°F) cond. temp.

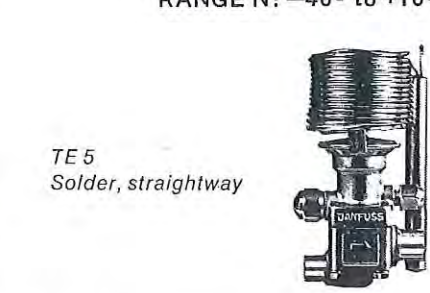


THERMOSTATIC EXPANSION VALVES

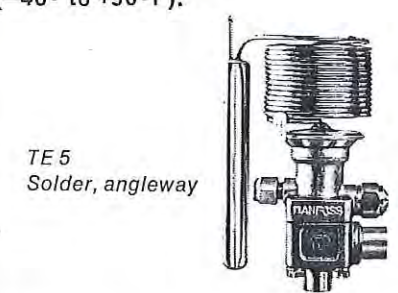
TYPE TE5 FOR R12, R22, R502, R502
RANGE N: -40°C to +10°C (-40°F to +50°F).



TE5
Flare, angleway



TE5
Solder, straightway



TE5
Solder, angleway

1

Refrig	Rated Cap. Tons kW kcal/h	Valve type Press Equal	Assembled Valve Cat.No. — Code No. — Connections						Orifice Assembly		Capacity table (British units) Capacity in tons						
			Flare angle-way inlet x outlet		Solder angle-way inlet x outlet		Solder straight-way inlet x outlet				Evap. temp.		pressure drop across the valve				
			Cat.No.	Code No.	Cat.No.	Code No.	Cat.No.	Code No.	Cat.No.	Code No.	°C	°F	40	100	150	200	225
R12	2 7.03 6000	TEF 5-2 Ext.	10951	68B6227 3/8" x 5/8"	10952	68B6233 1/2" x 5/8"	1092	68B6230 1/2" x 5/8"	10916	No. 1 68B2089	+10	+50	2.0	2.9	3.8		
											-7	+20	1.5	2.0	2.5		
											-18	0	1.2	1.5	1.8		
											-29	-20		1.05	1.3		
											-40	-40		0.57	0.7		
											+10	+50	2.8	3.9	4.7		
											-7	+20	2.4	3.0	3.5		
											-18	0	2.0	2.4	2.7		
											-29	-20		1.8	2.1		
											-40	-40		1.3	1.4		
											+10	+50	5.4	7.0	8.3		
											-7	+20	4.9	5.7	6.4		
											-18	0	4.1	4.6	5.1		
											-29	-20		3.5	3.7		
											-40	-40		2.3	2.4		
											+10	+50	7.6	9.7	10.3		
											-7	+20	6.3	8.0	8.6		
											-18	0		6.9	7.4		
											-29	-20		5.6	5.9		
											-40	-40		4.2	4.6		
R22	3 10.6 9000	TEX 5-3 Ext.	10910	68B6281 3/8" x 5/8"	10911	68B6287 1/2" x 5/8"	10953	68B6284 1/2" x 5/8"	10916	No. 1 68B2089	+10	+50	2.5	3.6	4.9	6.7	
											-7	+20	2.1	2.9	3.7	4.7	
											-18	0		2.2	2.7	3.5	
											-29	-20		1.0	1.9	2.4	
											-40	-40		0.9	1.1	1.4	
											+10	+50	3.7	4.7	5.9	7.4	
											-7	+20	3.3	4.1	4.8	5.7	
											-18	0		3.5	4.0	4.7	
											-29	-20		2.8	3.2	3.7	
											-40	-40		2.0	2.3	2.7	
											+10	+50	6.8	8.6	10.3	12.5	
											-7	+20	6.4	7.5	8.6	9.8	
											-18	0		6.7	7.6	8.6	
											-29	-20		5.3	6.0	6.9	
											-40	-40		3.5	3.9	4.4	
											+10	+50	10.0	13.7	15.1	15.9	16.8
											-7	+20	9.0	11.9	13.0	13.7	13.8
											-18	0	7.8	10.6	11.4	12.2	12.3
											-29	-20		9.2	10.0	10.7	10.8
											-40	-40		7.5	8.3	9.0	9.1
R502	2 7.03 6000	TEY 5-2 Ext.	10956	68B7089 3/8" x 5/8"				68B7092 1/2" x 5/8"	10916	No. 1 68B2089	+10	+50	2.5	3.1	3.7	4.1	4.4
											-7	+20	2.0	2.4	2.7	3.1	3.2
											-18	0		2.1	2.3	2.5	2.6
											-29	-20		1.6	1.8	2.0	2.0
											-40	-40		1.2	1.3	1.5	1.5
											+10	+50	2.8	3.5	4.1	4.7	5.0
											-7	+20	2.5	2.8	3.2	3.5	3.7
											-18	0		2.3	2.6	2.8	3.0
											-29	-20		1.7	1.9	2.1	2.3
											-40	-40		1.3	1.4	1.5	1.5
											+10	+50	5.7	6.8	7.8	8.8	9.3
											-7	+20	5.0	5.5	6.0	6.5	6.8
											-18	0		4.6	5.0	5.3	5.5
											-29	-20		3.5	3.7	4.0	4.1
											-40	-40		2.3	2.4	2.6	2.7
Separate Power Element			R12 Cat.No.10923 Code No.68B3244				R22 Cat.No.10924 Code No.68B3250				R502 Cat. No. 10925 Code No. 68B3257						

Valve Capacity based on 5°C (40°F) evap. temp., 32°C (90°F) cond. temp., with 4°C (7°F) subcooling ahead of valve. KK.10.A2.02

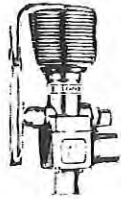


THERMOSTATIC EXPANSION VALVES

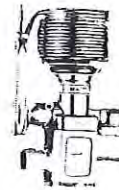
TYPE TE12 FOR R12, R22, R502.

RANGE N : -40 to +10°C (-40 to +50°F)

Maximum Bulb Temp. (Valve fitted) 100°C (+212°F). Maximum Test Press. 2758 kPa (400 psig).



ANGLE-WAY



STRAIGHT-WAY

Refrig.	Valve Type	Press. Equal. 1/4" Fl.	Assembled Valve & Connections				Orifice Assembly		Separate Power Element	
			Solder Straight-way		Solder Angle-way		Cat.No.	Code No.	Cat.No.	Code No.
			Cat.No.	Code No.	Cat.No.	Code No.				
R12	TEF 12-8	ext.	1101	68B5019 7/8" X 1-1/8"			11023	No.3 68B2007	11016	68B3204
	TEF 12-12	ext.	1102	68B5020 7/8" X 1-1/8"	1104	68B5024 7/8" X 1-1/8"	11021	No.4 68B2008		
R22	TEX 12-18	ext.	1103	68B5138 7/8" X 1-1/8"	1108	68B5142 7/8" X 1-1/8"	11021	No.4 68B2008 was 68B2020	11017	68B3210
R502	TEY 12-8	ext.	11012	68B5233 7/8" X 1-1/8"			11023	No.3 68B2007 was 68B2067	11018	68B3218
	TEY 12-12	ext.	11013	68B5234 7/8" X 1-1/8"			11021	No.4 68B2008 was 68B2068		

Standard Capillary Length 3 m (10 ft.) — Standard.

KK.10.A2.02

Refrig.	Valve Type	Capacities in tons at:										Nominal Rated Capacity			
		Evap. Temp.		Pressure drop across the valve, psi.											
		°C	°F	40	60	80	100	125	150	175	200	225	tons	kW	kcal/h
R12	TEF 12-8	+10 +5 -7 -18 -29 -40	+50 +40 +20 0 -20 -40	7.6 7.4 7.0 6.6 6.8 5.7 4.3	8.2 8.0 7.4 6.8 7.0 5.8 4.3	8.9 8.7 7.8 7.0 7.1 5.9 4.4	9.6 9.4 8.2 7.1 7.3 6.0 4.5	10.4 10.2 8.6 7.3 7.5 6.0 4.5	11.3 11.0 9.2 7.5 6.2 6.2 4.5			8	28.1	24000	
	TEF 12-12	+10 +5 -7 -18 -29 -40	+50 +40 +20 0 -20 -40	11.1 11.0 10.6 9.7 10.3 8.8 6.5	12.2 12.0 11.4 10.3 10.8 9.0 6.5	13.3 13.1 12.2 10.8 11.4 9.0 6.6	14.4 14.2 13.1 11.4 11.9 9.3 6.7	15.5 15.3 13.9 11.9 12.5 9.6 6.8	17.1 16.8 15.1 12.5 9.9 6.8 6.8			12	42.2	36000	
R22	TEX 12-18	+10 +5 -7 -18 -29 -40	+50 +40 +20 0 -20 -40	14.8 14.6 14.3 14.3 14.6 14.6 14.6	16.0 15.5 15.4 14.6 15.6 13.0 13.0	17.3 16.8 16.3 15.6 13.0 13.9 10.2	18.7 18.1 17.6 16.5 13.9 14.7 10.7	20.5 20.0 19.2 17.7 14.7 15.5 11.2	22.5 22.0 20.5 19.0 20.5 16.3 11.8	25.0 24.5 23.0 20.5 22.0 17.0 12.3			18	63.3	54000
R502	TEY 12-8	+10 +5 -7 -18 -29 -40	+50 +40 +20 0 -20 -40	7.6 7.6 7.2 7.2 7.1 6.1 4.6	8.1 8.0 7.5 7.1 7.2 6.1 4.6	8.4 8.3 7.7 7.0 7.3 6.2 4.6	8.8 8.6 8.0 7.4 7.6 6.2 4.6	9.2 9.0 8.2 7.4 7.6 6.3 4.6	9.8 9.5 8.6 9.0 7.8 6.4 4.7	10.3 9.9 10.3 9.3 8.0 6.5 4.7	11.3 10.8 9.6 8.2 6.6 4.8 4.8	8	28.1	24000	
	TEY 12-12	+10 +5 -7 -18 -29 -40	+50 +40 +20 0 -20 -40	11.2 11.4 10.8 10.8 10.3 10.3 10.3	11.9 12.0 11.3 10.3 11.7 10.6 9.1	12.5 12.6 11.7 10.6 11.1 9.3 7.1	13.3 13.2 12.3 11.1 11.3 9.4 7.1	14.0 13.8 12.8 11.3 11.8 9.7 7.2	15.0 14.7 13.6 12.3 12.3 10.0 7.3	15.8 15.4 14.3 12.3 12.7 10.2 7.3	16.6 16.2 14.8 13.2 12.7 10.2 7.3	17.6 17.0 15.5 13.2 13.2 10.4 7.4	12	42.2	36000

Valve capacity based on evaporating temperature +40°F (+5°C), condensing temperature +90°F (+32°C), with 7°F (4°C) subcooling ahead of valve.



THERMOSTATIC EXPANSION VALVES

TYPE TE 20 FOR R12, R22, R502.
RANGE N : -40° to +10° (-40° to +50°F).



TE 20
Solder, straightway

Valve Type	Press. Equal.	ASSEMBLED VALVE & CONNECTIONS				Orifice Assembly New (Old)		Separate Power Element New (Old)	
		Solder Straight-way		Solder Angle-way		Cat.No.	Code No.	Cat.No.	Code No.
		Cat.No.	Code No.	Cat.No.	Code No.				
TEF 20-20 R12	ext.	1111	68B8100 7/8" X 1-1/8"	1114	68B8101 7/8" X 1-1/8"	1116	68B2170 (68B1170)	1119	68B3270 (68B3070)
TEX 20-30 R22	ext.	1112	68B8116 7/8" X 1-1/8"	1115	68B8117 7/8" X 1-1/8"	1117	68B2172 (68B1172)	11110	68B3274 (68B3074)
TEY 20-20 R502	ext.	1113	68B8140 7/8" X 1-1/8"			1118	68B2175 (68B1175)	11111	68B3280 (68B3080)

KK.10.A2.02

Design

Valves consist of three main components:

1. Valve top part with capillary tube and bulb (power element).
2. Interchangeable orifice assembly.
3. Valve housing with connections.

This valve design gives easy fitting and service.

All valves are supplied with 10 ft. (3 m) capillary tube as standard with a bulb of dimensions which are adapted to modern requirements for compact design.

Permissible Pressures and Temperatures:

Maximum permissible bulb temperature: 100°C (212°F).

Maximum permissible test pressure: 400 psig (2758 kPa).

The high maximum test pressure allows the valve to remain in the line during pressure testing.

Identification

The power element has a coloured label on the top. The colour refers to the refrigerant for which the valve can be used:

YELLOW label = R 12.

BLUE label = R 22.

LILAC label = R 502.

The label indicates valve type, refrigerant and temperature range.

The power element has a strap-on label with indication of the rated capacity of the valve. The Orifice Assembly is marked on top of the spring cup.

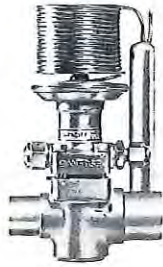
Refrigerant	Evap Temp.		Capacities in tons									Nominal Rated Capacity		
			Pressure drop across the valve psi.											
	°C	°F	40	60	80	100	125	150	175	200	225	tons	kW	kcal/h
R 12	+10	+50	18.7	21.0	22.6	23.7	24.5	25.0				20	70.3	60000
	+5	+40	17.1	19.6	21.2	22.5	23.2	23.7						
	-7	+20	14.0	16.2	17.7	19.0	20.0	20.5						
	-18	0	10.3	11.8	13.2	14.2	14.9	15.2						
	-29	-20		8.2	8.8	9.2	9.5	9.8						
	-40	-40		6.8	7.4	7.7	8.0	8.2						
R 22	+10	+50	23.3	28.3	31.2	32.5	34.2	35.0	35.8	36.2		30	105.5	90000
	+5	+40	21.2	25.0	27.8	30.0	31.7	32.6	33.4	33.8				
	-7	+20	17.5	20.7	23.0	24.5	26.2	27.5	28.2	28.4				
	-18	0		17.0	18.7	20.0	21.0	21.7	22.1	22.5				
	-29	-20			14.2	15.0	15.8	16.5	17.0	17.2				
	-40	-40			12.2	12.8	13.5	13.8	14.2	14.5				
R 502	+10	+50	16.5	19.2	20.8	22.2	23.5	24.7	25.7	26.3	26.7	20	70.3	60000
	+5	+40	16.3	18.3	20.0	21.3	22.5	23.5	24.3	25.0	25.1			
	-7	+20		16.3	17.8	19.0	20.0	20.7	21.2	21.5	21.6			
	-18	0			14.5	15.5	16.2	16.7	17.0	17.2	17.4			
	-29	-20			11.0	11.5	11.8	12.2	12.5	12.5	12.5			
	-40	-40			8.7	9.2	9.5	9.9	10.0	10.0	10.0			

Valve capacity based on evaporating temperature +40°F (+5°C), condensing temperature +90°F (+32°C).



THERMOSTATIC EXPANSION VALVES

TYPE TE55 FOR R12, R22.



TE 55
Solder, straightway

DESIGN

Valve consists of three main components:

1. Valve top part with capillary tube and bulb (power element).
2. Interchangeable orifice assembly.
3. Valve housing with connections.

The two orifice assemblies which are specified in the capacity tables fit the same housing and power element.

All valves are supplied with 3 m (10 ft.) of capillary tube as standard.

ADJUSTMENT

Type TE 55 has a factory setting of 4°C (7°F) superheat at a bulb temperature of 0°C (+32°F) (range "N").

If necessary, this setting can be altered by turning the adjusting spindle. If the spindle is turned clockwise, the superheat is increased, and vice versa.

REFRIG	NOMINAL RATED CAPACITY			VALVE TYPE	PRESS. EQUAL	ASSEMBLED VALVE & CONNECTIONS SOLDER STRAIGHT-WAY		ORIFICE ASSEMBLY		SEPARATE POWER ELEMENT	
	TONS	kW	kcal/h			CAT.NO.	CODE NO.	CAT.NO.	CODE NO.	CAT.NO.	CODE NO.
R12	33	116.1	99000	TEF 55-33	Ext.	1121	68G5001 7/8"x1-1/8"	1128	68G2001	11215	68G3201
	55	193.4	165000	TEF 55-55	Ext.	1122	68G5002 7/8"x1-1/8"	1129	68G2002		
R22	50	175.9	150000	TEX 55-50	Ext.	1123	68G5033 7/8"x1-1/8"	11210	68G2005	11216	68G3205
	85	299	255000	TEX 55-85	Ext.	1124	68G5034 7/8"x1-1/8"	11211	68G2006		

KK.10.A2.02

REFRIG.	VALVE TYPE	Evap. Temp.	CAPACITY IN TONS AT:									
			PRESSURE DROP ACROSS THE VALVE - PSI									
			°C	°F	40	60	80	100	125	150	175	200
R12	TEF 55-33	+10	+50	36.0	41.0	44.2	46.7	48.5	49.7			
		+5	+40	33.5	38.5	41.7	44.3	46.0	47.0			
		-7	+20	28.5	32.5	35.3	37.8	39.7	40.8			
		-18	0	22.5	24.7	26.3	27.8	28.5	29.5			
		-29	-20	15.6	17.2	18.7	19.4	20.0	20.6			
		-40	-40		13.2	14.0	14.7	15.0	15.3			
		TEF 55-55	+10	+50	49.2	57.2	62.5	66.3	69.4	70.3		
	+5		+40	46.0	53.5	59.2	62.2	65.0	66.0			
	-7		+20	39.2	45.2	49.0	52.2	54.5	55.6			
	-18		0	31.2	35.0	37.5	39.4	40.6	41.7			
-29	-20		22.0	24.4	26.0	27.2	28.5	29.2				
	-40	-40		19.4	20.6	21.3	22.0	22.3				
R22	TEX 55-50	+10	+50	41.2	46.9	51.3	55.2	59.0	62.1	63.8	64.1	
		+5	+40	38.8	44.7	48.8	52.2	56.0	58.4	60.7	61.5	
		-7	+20	33.1	38.5	42.8	46.0	49.0	50.8	52.5		
		-18	0		31.0	34.2	36.0	38.3	40.0	41.3	42.0	
		-29	-20			26.3	27.8	29.6	30.8	32.0	32.5	
		-40	-40			21.7	22.5	23.3	23.7	24.0		
		TEX 55-85	+10	+50	72.5	84.0	93.0	100.0	106.0	112.0	115.0	118.0
	+5		+40	69.5	80.7	89.5	95.8	103.0	107.0	111.0	114.0	
	-7		+20	62.0	70.5	78.3	84.6	90.0	94.7	97.9	100.0	
	-18		0		59.0	64.0	68.3	72.5	75.6	77.5	77.9	
-29	-20				48.7	52.5	55.6	57.5	59.2	60.0		
	-40	-40			40.0	42.0	44.0	45.0	45.6			

Valve Capacity based on evaporating temperature +5°C(+40°F), condensing temperature +32°C(+90°F) with +4°C(+7°F) subcooling ahead of valve.

SAGINOMIYA THERMO EXPANSION VALVES

SERIES AFX, BFX, BHX AND ATX FOR R12, R22 AND R502



BFX

Saginomiya TX Valves are precision made to suit all applications.

Type AFX — fitted with internal equaliser.

Types BFX, BHX and ATX — fitted with external equaliser.

Types AFX and BFX — have bellows elements.

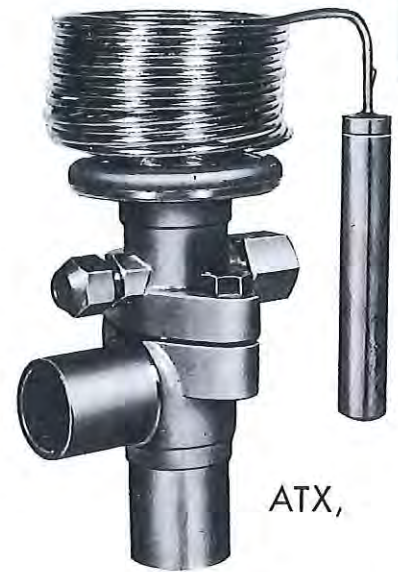
Types ATX & BHX — have diaphragm elements.

TEMPERATURE RANGE

0°C to -30°C

(32°F to -22°F)

Other Temperature Ranges available on application



ATX,

CAT. NO.	VALVE TYPE	NOM. CAP. TONS R12	PRESS. EQUAL. CONN.	AVAIL. CHARGE	PORT DIAM. (mm)	CAPILLARY LENGTH	CONNECTIONS	
	PART NO.						INLET	OUTLET
113101	AFX 3403 BRC	0.3	INT	C (CROSS)	1.2	1.2 m (4 ft.)	3/8" Flare	1/2" Flare
113102	AFX 3405 BRC	0.5			2.0			
113103	AFX 3410 BRC	1.0			2.3			
113104	AFX 3415 BRC	1.5			2.8			
113105	AFX 3420 BRC	2.0			3.7			
113106	AFX 3430 BRC	3.0			5.0			
113110	BFX 3403 BRC	0.3	EXT	C (CROSS)	1.2	1.2 m (4 ft.)	3/8" Flare	1/2" Flare
113111	BFX 3405 BRC	0.5			2.0			
113112	BFX 3410 BRC	1.0			2.3			
113113	BFX 3415 BRC	1.5			2.8			
113114	BFX 3420 BRC	2.0			3.7			
113115	BHX 45030 BRS	3.0	EXT	S (SPEC.)	4.0	1.2 m (4 ft.)	1/2" Flare	5/8" Flare
113116	BHX 45040 BRS	4.0			5.6			
113126	ATX 34006 DRL	0.6	EXT	L (LIQUID)	3.0	1.5 m (5 ft.)	3/8" Solder	1/2" Solder
113127	ATX 34013 DRL	1.3			4.0			
113128	ATX 34023 DRL	2.3			4.0			
113129	ATX 34035 DRL	3.5			5.0			
113130	ATX 57060 DRL	6.0			6.0			
113131	ATX 57080 DRL	8.0			8.0			
113132	ATX 71110 DRL	11.0			10.0			
113133	ATX 71140 DRL	14.0			11.0			
113134	ATX 71160 DRL	16.0			11.0			
113135	ATX 12220 DRL	22.0			11.6			
113136	ATX 12270 DRL	27.0			12.7			
113137	ATX 12330 DRL	33.0			13.8			
113138	ATX 12420 DRL	42.0			15.1			
113139	ATX 12500 DRL	50.0	16.1					
						3.0 m (10 ft.)	1" OD Solder	1" OD Solder

Nominal Capacities based on +5°C (+40°F) Evap. Temp. and +38°C (+100°F) Cond. Temp.

SAGINOMIYA TX VALVES ALSO AVAILABLE FOR REFRIGERANTS R22 & R502
MANUFACTURERS TECHNICAL DATA SHEETS AVAILABLE ON REQUEST

NOTE : FIRST 3 NUMERALS OF CAT. NO. INDICATES PAGE No.



»TERMEX«[®]

THERMOSTATIC EXPANSION VALVE WITH INTERCHANGEABLE CARTRIDGE

CONSTRUCTION : The "TERMEX" thermostatic expansion valve is of unusual design, showing many improvements over previous models. The "TERMEX" is an all metal valve, having a body completely hermetically sealed. The interchangeable cartridge of the "TERMEX" represents an outstanding improvement. This cartridge contains all the most essential moving parts which may be subjected to aging and wear including the needle and seat assembly. Consequently by interchanging this cartridge it is possible to easily repair a valve in the field.

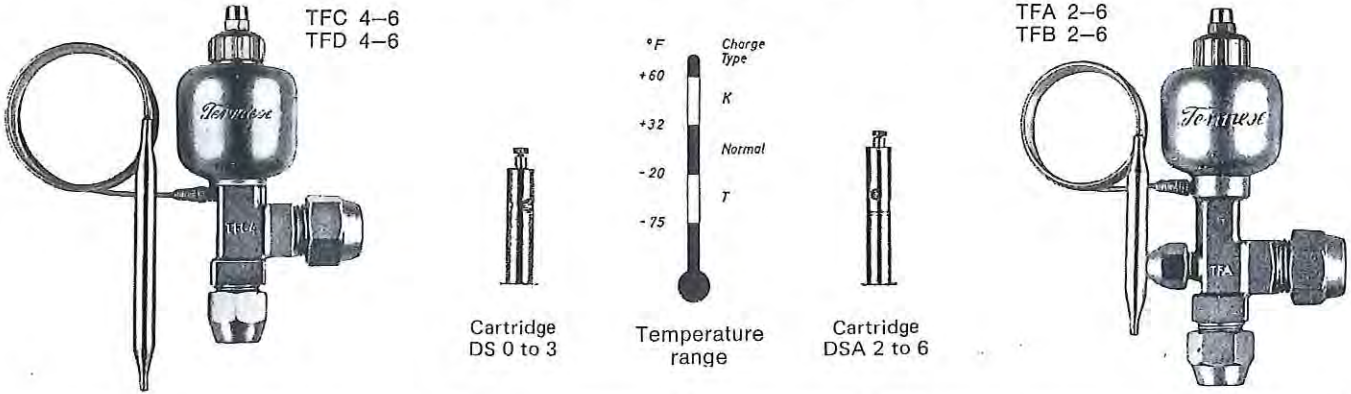
By means of a test plug it can be ascertained whether the charge is intact, and it is only required to remove the cartridge to effect this test. **SELECTIVE CHARGES :** The "TERMEX" is gas charged but contrary to previous charges, only the bulb is sensitive to temperature. Therefore the "TERMEX" may be installed in any temperature and in any position.

STANDARD CHARGE for Evaporation Temperatures Ranging from -30°C to 0°C (-20°F to +32°F).

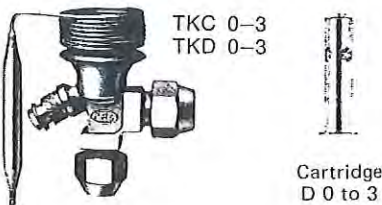
HIGH TEMP. CHARGE (Suffix letter K after valve number) for Evaporation Temperatures Ranging from 0°C to 16°C (+30°F to +60°F).

LOW TEMP. CHARGE (Suffix letter T after valve number) for Evaporation Temperatures Ranging from -30°C to -60°C (-20°F to -75°F).

When ordering High Temp. or Low Temp. Valves make sure to quote the suffix letter K or T after valve number e.g. TFC6K, TFD6T, etc.



Temp. Range	Valve Type			Valve Type			Connections Flare		Press. Equal. Conn.	Cap'l'y Lgth.	Cartridge		Test Plug		
	Cat.No.	R 12	Nom. Cap.	Cat.No.	R 22	Nom. Cap.	Inlet	Outlet			Cat.No.	P/N	Cat.No.	P/N	
Standard Charge -30° to 0°C (-20 to +32°F)	.1141	TFC 0	0.25		TFD 0	0.43	1/4" (3/8")	1/2"	INT.	1 m (3ft.)	11430	DS 0	11438	AF6	
	1142	1	0.33	1148	1	0.56					11431	1			
	1143	2	0.66	1149	2	1.12					11432	2			
	1144	3	1.20	11410	3	2.04					11433	3			
	1145	4	2.40	11411	4	4.08					11434	DSA4			
	1146	5	3.40	11412	5	5.78						11435			5
	1147	6	4.80	11413	6	8.16	11436	6							
	11460	TFA 2	0.60	11465	TFB 2	1.02	3/8" (1/2")	5/8"		EXT.	2 m (6ft.)	11447	DSA2	11438	AF6
	11461	3	1.20	11466	3	2.04						11437	3		
	11462	4	2.40	11467	4	4.08						11434	4		
11463	5	3.40	11468	5	5.78	11435			5						
11464	6	4.80	11469	6	8.16	11436			6						
Low Temp. Charge -30° to -60°C (-20° to -75°F)	11414	TFC1T	0.66	11418	TFD1T	0.56	1/4" (3/8")	1/2"	INT.		1 m (3ft.)	11431	DS 1	11438	AF6
	11415	2T	1.20	11419	2T	1.12						11432	2		
	11416	3T	2.40	11420	3T	2.04						11433	3		
	11417	4T		11421	4T	4.08						11434	DSA4		
HighTemp. Charge 0° to 16°C (+30 to +60°F)	11422	TFA 3K	1.20	11426	TFB 3K	2.04	3/8" (1/2")	5/8"	EXT.		2 m (6ft.)	11437	DSA 3	11438	AF6
	11423	4K	2.40	11427	4K	4.08				11434		4			
	11424	5K	3.40	11428	5K	5.78				11435		5			
	11425	6K	4.80	11429	6K	8.16				11436		6			



FAS TYPE TKC (R12) – TKD (R22) – TKCZ (R502)
DIAPHRAGM TYPE THERMOSTATIC EXPANSION VALVE

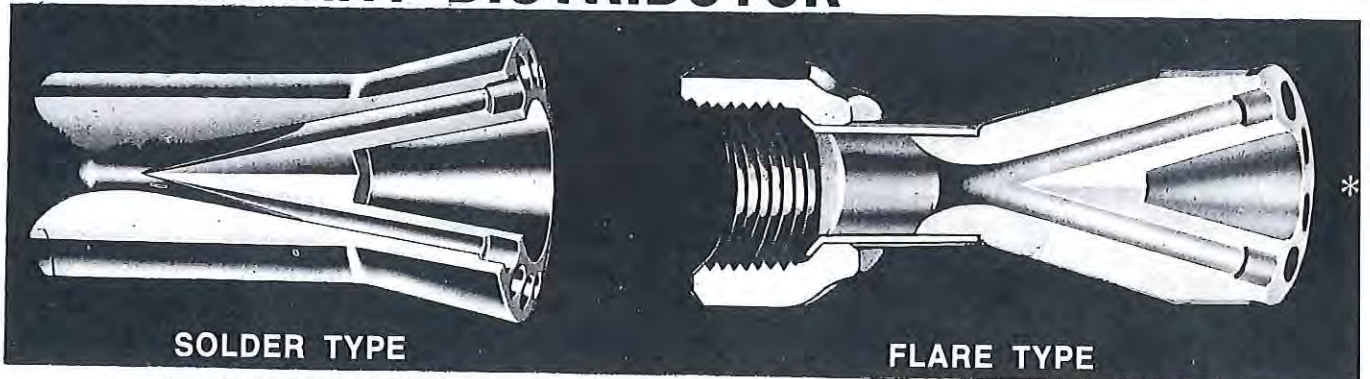
Designed with pressure proved fine steel diaphragm, shorter cartridge, elongated capillary tube, otherwise the same function, connections and advantages as the Types TFC (D).

STANDARD CHARGE TEMP. RANGE – EXTERNALLY EQUALIZED

VALVE TYPE			VALVE TYPE			VALVE TYPE			CONN.Flare		CAP. LGTH.	CARTRIDGE	
CAT.NO.	R12	CAP.	CAT.NO.	R22	CAP.	CAT.NO.	R502	CAP.	IN	OUT		CAT.NO.	P/N
11483	TKC 0	0.23	11487	TKD 0	0.37	11491	TKCZ 0	0.29	1/4" (3/8")	1/2"	1.5m (5 ft.)	11495	D 0
11484	1	0.33	11488	1	0.54	11492	1	0.42				11496	D 1
11485	2	0.65	11489	2	1.10	11493	2	0.85				11497	D 2
11486	3	1.30	11490	3	2.20	11494	3	1.70				11498	D 3

Nominal Capacities – Tons – Based on +5°C(+40°F)Evap. Temp. and +38°C(+100°F) Cond. Temp.
Limit Points:- R12 Valves up to 448kPa(65 psi), R22 Valves up to 621kPa(90 psi), R502 Valves up to 552kPa(80 psi).

ALCO'S VENTURI-FLO® REFRIGERANT DISTRIBUTOR



DISTRIBUTOR OPERATING PRINCIPLES

The Venturi-Flo distributor consists of a converging section, a throat, and a diverging section as shown in Figure 2. The smooth contoured approach of the converging section (point A) avoids separation of the refrigerant flow from the walls in the transition between the approach and the throat (Point B). The diverging section (Point C) following the throat is used to reduce the high throat velocity of the refrigerant, converting the velocity energy of the refrigerant back to pressure energy. Referring to Figure 2 and the pressure datum line at the top, the inlet pressure (P_1) is reduced to a minimum pressure (P_2) because of the throat, and from this point the pressure then increases to the value (P_3) in the diverging section. The outlet pressure (P_3) is less than the inlet pressure (P_1) by an amount equal to the wall frictional losses. Thus the Venturi provides a smooth even refrigerant flow pattern with a minimum of turbulence and a minimum overall pressure loss.

Figure 1 illustrates the orifice plate or pressure drop type distributor. The pressure drop type consists of a straight approach to an orifice plate, which is a concentric hole in a metal plate. This distributor depends on the high pressure drop across the orifice and the resulting turbulence to provide distribution. The approaching refrigerant streamlines nearest the pipe walls (Point A) turns inward rather abruptly

at the upstream face of the plate, and flows parallel to the plate toward the orifice. This parallel fluid flow continues past the edge of the orifice (Point B) and is swept along through the orifice by the center mass of the refrigerant flow. The refrigerant flow continues through the orifice with the minimum jet area (Point C) forming downstream of the orifice plate. The uncontrolled expansion in the large downstream section (unlike the Venturi with a controlled expansion) causes a turbulent pattern to be set up between the minimum jet area, the orifice plate and the walls (Point D). Thus with the orifice plate the velocity energy is not converted to pressure energy, but rather is dissipated in violent turbulence in the downstream section.

From the above analysis, it can be seen that the Venturi-Flo distributor has two basic advantages over the orifice plate or pressure drop type. First of these is the pressure recovery feature which eliminates the high pressure drop common to the orifice plate type. This allows for closer and more economical valve sizing and more stable valve control. Secondly, the contour flow pattern channels the flow to the tubes which means even distribution; whereas, the orifice plate type depends upon pressure drop and the uncontrolled violent turbulence for distribution.

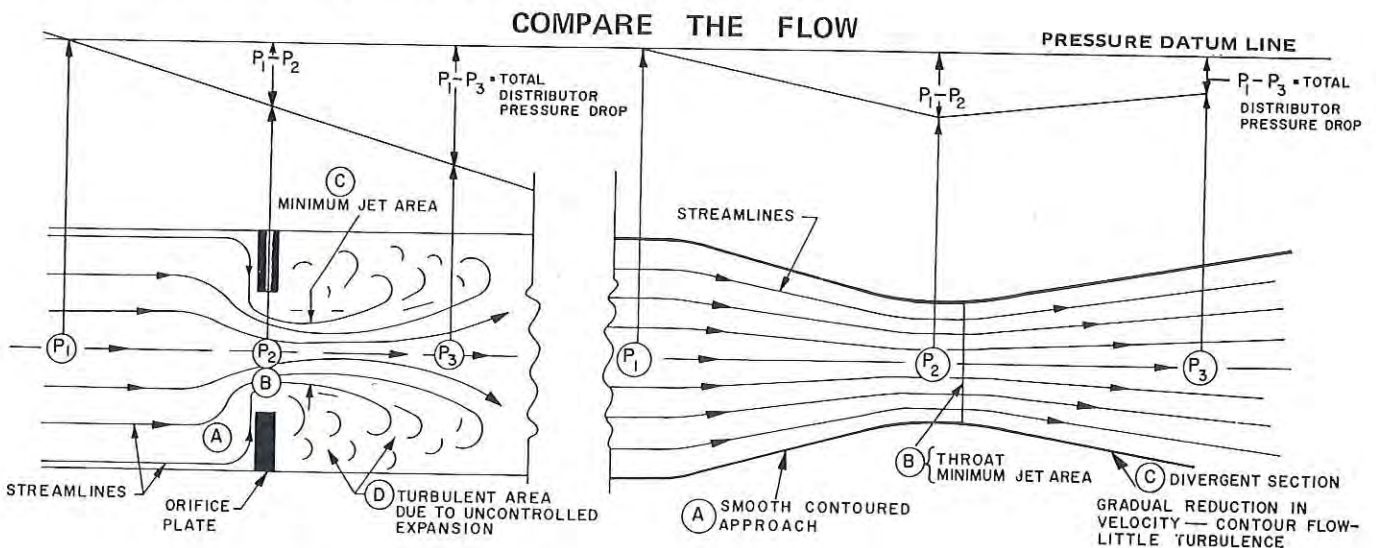


Fig. #1 — Flow Thru An Orifice Plate
No Pressure Recovery — High Pressure Drop

Fig. #2 — Flow Thru A Venturi
Pressure Recovery — Low Pressure Drop

REFER TO FOLLOWING PAGES FOR SELECTION DATA AND ORDERING

VENTURI - FLO REFRIGERANT DISTRIBUTORS



Number of Outlets	SIZE OUTLETS												Number of Outlets
	5/32"		3/16"		1/4"		5/16"		3/8"		1/2"		
	Cat.No.	Type No.	Cat.No.	Type No.	Cat.No.	Type No.	Cat.No.	Type No.	Cat.No.	Type No.	Cat.No.	Type No.	
2	11551	4-2.5-2 5-2.5-2	11526 11534	F4-3-2 5-3-2	11531 11541 115101	F4-4-2 F5-4-2 7-4-2	115126	F4-5-2 5-5-2 7-5-2	115151	F4-6-2 7-6-2			2
3	11552 11522	4-2.5-3 5-2.5-3	11527 11535	F4-3-3 5-3-3	11532 11542 115102	F4-4-3 F5-4-3 7-4-3	115127	5-5-3 7-5-3		7-6-3	115167	11-8-3	3
4	11553	4-2.5-4 5-2.5-4	11528 11536	F4-3-4 5-3-4	11533 11543 115103	F4-4-4 F5-4-4 7-4-4	115128	F4-5-4 5-5-4 7-5-4		7-6-4	115168	11-8-4	4
5	11554	4-2.5-5 5-2.5-5	11529 11537 11579	F4-3-5 5-3-5 7-3-5	11544 115104	4-4-5 F5-4-5 7-4-5	115129	7-5-5 9-5-5		9-6-5	115169	11-8-5	5
6	11555	4-2.5-6 5-2.5-6	11530 11538 11580	F4-3-6 F5-3-6 7-3-6	11545 115105 115106	4-4-6 F5-4-6 7-4-6 9-4-6	115130	7-5-6 9-5-6	115155	9-6-6 11-6-6	115170	11-8-6	6
7	—	—	11539 11581	4-3-7 5-3-7 7-3-7	115107	7-4-7 9-4-7	115131	9-5-7 11-5-7	115156	11-6-7	115171	11-8-7	7
8	11557	4-2.5-8 5-2.5-8	11540	4-3-8 F5-3-8 7-3-8	115108	5-4-8 7-4-8 9-4-8	115132	9-5-8 11-5-8	115157	11-6-8		13-8-8	8
9	11558	4-2.5-9 5-2.5-9	11583	4-3-9 F5-3-9 7-3-9 9-3-9	115109	7-4-9 9-4-9 11-4-9	115133	11-5-9					9
10	11559	4-2.5-10 5-2.5-10 7-2.5-10	11584	7-3-10 9-3-10	115110	7-4-10 9-4-10 11-4-10	115134	11-5-10	115159	11-6-10		13-8-10	10
11	—	—	11585	7-3-11 9-3-11	115111	7-4-11 11-4-11	115135	11-5-11					11
12	11561	F5-2.5-12 7-2.5-12	11586	5-3-12 7-3-12 9-3-12	115112	7-4-12 9-4-12 11-4-12	115136	11-5-12	115161	11-6-12			12
13	11562	F5-2.5-13 7-2.5-13		7-3-13	115113	7-4-13 11-4-13	115137	11-5-13	115162	13-6-13		13-8-13	13
14	11563	F5-2.5-14 7-2.5-14	11588	7-3-14 9-3-14	115114	7-4-14 11-4-14	115138	11-5-14	—	—	—	—	14
15	—	—	—	7-3-15	115115	7-4-15 11-4-15	115139	11-5-15	—	—	—	—	15
16	—	—	11590	7-3-16 9-3-16	115116	7-4-16 11-4-16	115140	13-5-16	—	—	—	—	16
17	—	—	11591	7-3-17 9-3-17	115117	7-4-17 11-4-17	—	—	—	—	—	—	17
18	11567	7-2.5-18	11592	7-3-18 9-3-18	115118	7-4-18 11-4-18	115142	13-5-18	—	—	—	—	18
19	—	—	11593	9-3-19	115119	7-4-19 11-4-19	115143	13-5-19	—	—	—	—	19
20	11569	7-2.5-20	11594	7-3-20 9-3-20	115120	7-4-20 11-4-20	115144	13-5-20	—	—	—	—	20
21	—	—	—	—	115121	7-4-21 11-4-21	115145	13-5-21	—	—	—	—	21
22	—	—	—	—	115122	7-4-22 11-4-22	115146	13-5-22	—	—	—	—	22
23	—	—	—	—	115123	11-4-23	—	—	—	—	—	—	23
24	11573	7-2.5-24	—	7-3-24	115124	7-4-24 11-4-24	—	—	—	—	—	—	24

EXAMPLE OF TYPE NO.								
Solder Type	9	3	12	Flare Type	F5	4	6	Flare fittings also available for Solder Type Distributors on special request.
	Size of Inlet Connection in 1/8ths. =1-1/8ODM	Size of Outlets in 1/16ths =3/16 ODF	Number of Outlets		Size of Inlet Connection in 1/8ths. = 5/8 SAE Female Flare	Size of Outlets in 1/16ths. =1/4 ODF	Number of Outlets	

REFER FOLLOWING PAGES FOR TECHNICAL AND SELECTION DATA



VENTURI - FLO DISTRIBUTOR SELECTION PROCEDURES

Nominal Ratings —

The Selection Tables following, list the nominal distributor capacities in tons of refrigeration at various evaporator temperatures for R-12, R-22 and R-502 refrigerants. These ratings are based on a 15 psi (103 kPa) drop across the distributor and vapor free solid liquid refrigerant, subcooled 1°F (.6°C), entering the expansion valve. For R-500 capacities multiply R-12 capacities by 1.2

Capacity Range —

The Alco distributor has an operating range from a minimum of 25% to a maximum of 150% of the nominal ratings without any loss of distributor efficiency. Do not exceed these limits without consulting your nearest Alco Supplier.

For example; a 9-3-10 distributor with a nominal rating of 5.0 tons R-12 at a 40°F (4.4°C) evaporating temperature has a minimum capacity of 1.25 tons R-12 (25%) and a maximum capacity of 7.5 tons R-12 (150%).

Pressure Drop —

The pressure drop across the Alco Venturi-Flo distributor will vary with load as shown in the following table:

%Nominal Load	Pressure Drop		%Nominal Load	Pressure Drop	
	Psi	kPa		Psi	kPa
150	25	(172)	75	10	(69)
125	20	(138)	50	7.5	(52)
100	15	(103)	25	5	(35)

Taking the above example, the 9-3-10 distributor would have a 25 psi (172kPa) drop when used on a 7.5 ton R-12 application and a 5 psi (35kPa) drop when used on a 1.25 ton R-12 application.

Distributor Tube Length —

Distributor tubes should be of equal length for maximum distribution efficiency. Distributor tube lengths in excess of 36" (915 mm) will cause excessive pressure drops in the tubes with consequent losses in efficiency.

Distributor Selection —

To select an Alco Venturi-Flo distributor the evaporator temperature, refrigerant, number of circuits and total load in tons must be known. With this information the proper distributor can be selected from the normal capacity tables in the following manner:

Using the table with the designed evaporator temperature, read down the "Number of Outlets" column to the number of outlets required; then across on that line to the closest nominal total tonnage rating desired.

For example; a 17 ton R-12, 10 outlet distributor is required to operate at a 20°F (-6.7°C) evaporator temperature. Referring to the nominal capacity table for 20°F (-6.7°C) evaporator temperature and reading across on the 10 outlet line, we find that the closest nominal tons is 13.6 for 10 - 5/16" tube outlets.

Since the required capacity, 17 tons, is less than the maximum capacity allowable (13.6 x 150% = 20.5 tons), the distributor can now be selected from Page 115-a.

On the 10 (Number of Outlets) line, then across to the 5/16" Size Outlet column we find the proper Distributor selection of 11 - 5 - 10.

For designing systems with evaporator temperatures other than shown on the following pages, use the conversion scale below:

Evap. °F	+60	+50	+40	+35	+30	+25	+15	+10	+5	-10	-30
Temp °C	+16	+10	+4	+2	-1	-4	-9	-12	-15	-23	-34
Mult.											
Factor	1.30	1.14	1.00	.92	.83	.76	.62	.56	.51	.37	.25

Use the 40°F (+4.4°C) evaporator temperature rating as a base and multiply it by the multiplying factor shown above to find the rating at that temperature.

EXAMPLE: A 5 outlet, 5/16" tube distributor at 40°F (+4.4°C) for R-12 has a load rating of 10.0 Tons. At 35°F (1.7°C) the multiplying factor is .92. 10.0 Tons times .92 = 9.2 Tons rating at 35°F (1.7°C).

VENTURI-FLO DISTRIBUTOR NOMINAL CAPACITIES

EVAP TEMP	NUMBER OF OUTLETS	SIZE OUTLETS — ODF																		
		5/32"			3/16"			1/4"			5/16"			3/8"			1/2"			
		TONS			TONS			TONS			TONS			TONS			TONS			
		R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502	
+40° F +4.4° C	2	.50	.88	.45	1.0	1.8	.9	2.0	3.5	1.8	4.0	7.0	3.6	7.0	12.3	6.3	—	—	—	
	3	.75	1.32	.68	1.5	2.6	1.4	3.0	5.3	2.7	6.0	10.5	5.4	10.5	18.4	9.5	15.0	26.3	13.5	
	4	1.00	1.76	.90	2.0	3.5	1.8	4.0	7.0	3.6	8.0	14.0	7.2	14.0	24.5	12.6	20.0	35.0	18.0	
	5	1.25	2.20	1.13	2.5	4.4	2.3	5.0	8.8	4.5	10.0	17.5	9.0	17.5	30.6	15.8	25.0	43.8	22.5	
	6	1.50	2.64	1.35	3.0	5.3	2.7	6.0	10.5	5.4	12.0	21.0	10.8	21.0	36.8	18.9	30.0	52.5	27.0	
	7	—	—	—	3.5	6.1	3.1	7.0	12.3	6.3	14.0	24.5	12.6	24.5	42.9	22.0	35.0	61.3	31.5	
	8	2.00	3.52	1.80	4.0	7.0	3.6	8.0	14.0	7.2	16.0	28.0	14.4	28.0	49.0	25.2	40.0	70.0	36.0	
	9	2.25	3.96	2.03	4.5	7.9	4.1	9.0	15.8	8.1	18.0	31.5	16.2	—	—	—	—	—	—	
	10	2.50	4.40	2.25	5.0	8.8	4.5	10.0	17.5	9.0	20.0	35.0	18.0	35.0	61.3	31.5	50.0	87.5	45.0	
	11	—	—	—	5.5	9.6	5.0	11.0	19.3	9.9	22.0	38.5	19.8	—	—	—	—	—	—	
	12	3.00	5.28	2.70	6.0	10.5	5.4	12.0	21.0	10.8	24.0	42.0	21.6	42.0	73.5	37.8	—	—	—	
	13	3.25	5.72	2.93	6.5	11.4	5.9	13.0	22.8	11.7	26.0	45.5	23.4	45.5	79.6	41.0	65.0	113.8	58.5	
	14	3.50	6.16	3.15	7.0	12.3	6.3	14.0	24.5	12.6	28.0	49.0	25.2	—	—	—	—	—	—	
	15	—	—	—	7.5	13.1	6.8	15.0	26.3	13.5	30.0	52.5	27.0	Capacity shown is the total distributor capacity for the indicated number of outlets.						
	16	—	—	—	8.0	14.0	7.2	16.0	28.0	14.4	32.0	56.0	28.8	Ratings are based on average condensing temperature, 15 p.s.i.(103kPa) drop across the distributor, and 1°F (.6°C) subcooled liquid refrigerant entering the expansion valve.						
	17	—	—	—	8.5	14.9	7.7	17.0	29.8	15.3	—	—	—	NOTE: Do not select distributor for use on loads below 25% or above 150% of the above values.						
	18	4.50	7.92	4.05	9.0	15.8	8.1	18.0	31.5	16.2	36.0	63.0	32.4	For R-500 capacities, multiply R-12 capacities by 1.2						
	19	—	—	—	9.5	16.6	8.6	19.0	33.3	17.1	38.0	66.5	34.2							
	20	5.00	8.80	4.50	10.0	17.5	9.0	20.0	35.0	18.0	40.0	70.0	36.0							
	21	—	—	—	—	—	—	21.0	36.8	18.9	42.0	73.5	37.8							
	22	—	—	—	—	—	—	22.0	38.5	19.8										
	23	—	—	—	—	—	—	23.0	40.3	20.7										
	24	6.00	10.6	5.40	12.0	21.0	10.8	24.0	42.0	21.6										

FOR FINAL SELECTION OF DISTRIBUTOR TYPE No. and CATALOGUE NO. REFER TO PAGE 115-a