

Thermostatic expansion valves
TV series

Technical parameter

Max. body temperature: 80 °C
 Max. bulb sensing temperature: 60 °C
 About R134a,R22,R407C,R404A/R507 system:
 Max. working pressure: 3 MPa
 Max. testing pressure: 3.3 MPa

About R410A system:
 Max. working pressure: 4.2 MPa
 Max. testing pressure: 4.6 MPa

Charge selector

Refrigerant	Applications	Operating temperature ranges (Unit: °C)										
		-40	-35	-29	-24	-18	-12	-6	0	4	10	
R134a	Freezers ,Ice makers, Transport refrigeration, Supermarket equipment, Commercial equipment, Bus air conditions, Refrigeration equipment	NC										
		NW15(MOP)										
		NW35(MOP)										
		NW55(MOP)										
R22/R407C	Conditioners & heat pumps, Water cool equipment, Supermarket equipment, Refrigeration air driers	XC/ZC										
		XW35/ZW35(MOP)										
		XW65/ZW65(MOP)										
		XW100/ZW100(MOP)										
R404A/507	Low temperature equipment, Commercial air conditioners, Ice makers, Environmental chambers, Soft ice cream machines	SC										
		SZ										
		SW45										
		SW65 (MOP)										
		SW110 (MOP)										
R410A	Commercial air conditioners, Refrigeration equipment	LC/LC										
		LW195/LW195(MOP)										

Selecting of external equalizer

Applications	Temperature range (°C)	Pressure drop \geq (MPa)
Air conditioning	+10~+2°C	0.022
Commercial	-1~-18°C	0.015
Low temperature	\leq -18°C	0.007

When the pressure drop across evaporator exceeds the data in the table, an external equalizer type valve should be used, otherwise using the internal equalizer type valve.

MOP motor overload protection

Applications	R134a	R22	R407C	R404A/507	R410A
Air conditioning	NW55	XW100	ZW100	SW110	LW195
Commercial	NW35	XW65	ZW65	SW65	-
Low temp.	NW15	XW35	ZW35	SW45	-

Thermostatic expansion valves TV series

Temperature of liquid entering valve correction factor

Refrigerant	Refrigerant liquid temperature °C																
	60	55	50	45	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20
R134a	0.71	0.77	0.83	0.89	0.94	1	1.06	1.11	1.17	1.23	1.28	1.34	1.39	1.45	1.5	1.56	1.61
R22	0.75	0.8	0.85	0.9	0.95	1	1.05	1.1	1.14	1.19	1.24	1.29	1.33	1.38	1.42	1.47	1.51
R407C	0.67	0.74	0.8	0.87	0.94	1	1.06	1.12	1.19	1.24	1.3	1.36	1.42	1.48	1.54	1.59	1.65
R404A/507	0.5	0.61	0.71	0.81	0.91	1	1.09	1.18	1.26	1.34	1.43	1.51	1.59	1.66	1.74	1.82	1.89
R410A	0.76	0.79	0.83	0.88	0.93	1	1.07	1.14	1.20	1.26	1.32	1.38	1.44	1.49	1.55	1.60	1.66

Valve capacities based on vapor free liquid refrigerant at +35°C.

To determine the capacities for other temperatures of vapor free liquid refrigerant entering the valve, multiply the capacities listed in the table of extend capacities.

Static superheat

Static superheat can be adjusted by superheat setting spindles.

The factory setting of static superheat is +3.5°C.

Selecting of a valve size

I. The method of using the extend capacity tables to select a valve size:

First determine:

1. Refrigerant in the system.
2. Temperature of liquid entering the valve.
3. The evaporating temperature.
4. Pressure drop across the valve.
5. The required refrigeration capacity.

Using above data in extend capacity table to select a proper valve.

If liquid refrigerant entering the valve is not at +35°C, please correct the required refrigeration capacity by the temperature of liquid entering valve correction factor table.

II. Other necessary information:

1. Refrigerant charge, see the table of the charge selector.
2. Internal or external equalizer requirement.
3. The length of capillary tube.
4. Size of connections.

III. Discretionarily selecting:

1. MOP function or not, see the table of MOP motor overload protection.

Example of selecting valve

Refrigerant: R22

Pressure drop across valve: $\Delta P = 1.4\text{MPa}$

Evaporating temperature: $t_e = -10^\circ\text{C}$

Capacity of evaporator :40KW(The required refrigeration capacity)

Temperature of liquid entering the valve: 50°C

Lookup the table of temperature of liquid entering valve correction factor, and correct the capacity of evaporator: $40/0.85=47.1\text{KW}$.

When the pressure drop across evaporator exceeds the data in the table, an external equalizer type valve should be used, otherwise using the internal equalizer type valve.

The capacity of thermostatic expansion valve is usually larger than capacity of evaporator.

Selecting the model ASTVE10X or BWTVE10X in the extend capacity table.

Thermostatic expansion valves ASTV、BWTV、ETV series

Introduction



ASTV, BWTV, ETV series thermostatic expansion valves can be used for refrigeration cabinet, ice machine, dehumidify unit, and refrigeration and air conditioning requirements in a wide range of temperature. The nominal capacities of ETV are 14~100 tons, can fit for large refrigeration systems.

Characteristics

1. Constant superheat adjusting performance.
2. Wide range of evaporating temperature: -40→+10 °C.
3. Can be supplied with MOP (Max. Operating Pressure).
4. The large effective area of diaphragm makes the valve have stable functions.

Dimension of ASTV(SSATV),BWTV(SSBTV) (Unit: mm)

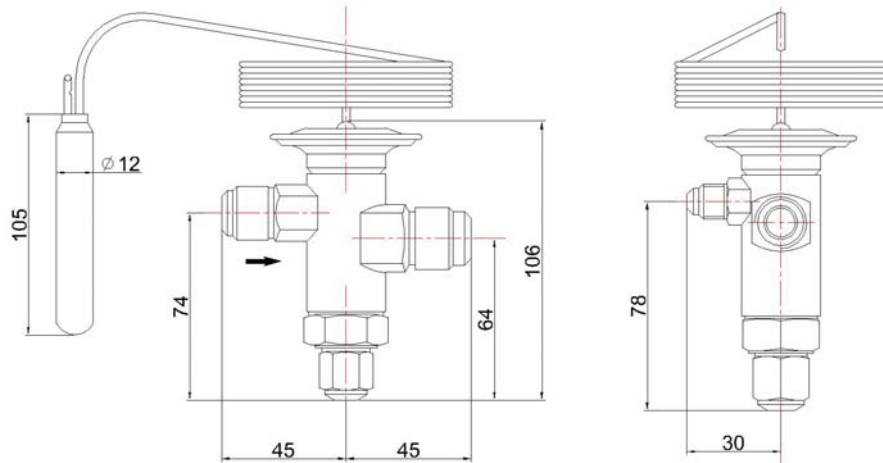
Valve type	R134a		R22		R407C		R404A/R507		R410A		Connect Inlet × Outlet (in.)	Capillary tube (m)	Equalization
	Model	Nominal capacity (KW)	Model	Nominal capacity (KW)	Model	Nominal capacity (KW)	Model	Nominal capacity (KW)	Model	Nominal capacity (KW)			
ASTV(E) BWTV(E)	1.5N	6.5	2X	7	2Z	7	1.5S	5.3	2L	7	3/8×1/2	1.5	Internal of external equalizer 1/4" SAE or ODF
	2N	8.8	3X	10.5	3Z	10.5	2S	7	3.5L	12.3			
	2.5N	11	4X	14	4Z	14	2.5S	8.8	4L	14			
	3N	13.2	5X	17.5	5Z	17.5	3S	10.5	6L	21	1/2×5/8		
	5.5N	19.3	7.5X	26.3	7.5Z	26.3	5S	14	9L	31.5			
	7.5N	26.3	10X	35	10Z	35	6.5S	22.8	12L	42			
9N	31.5	12X	42	12Z	42	8S	28	14L	49				
ETV	11N	39	14X	49	14Z	49	9S	32	-	-	5/8×7/8 ODF	1.5	external equalizer 1/4" SAE
	13N	46	18X	63	18Z	63	11S	39	-	-			
	16N	56	22X	77	22Z	77	14S	49	-	-			
	19N	67	26X	92	26Z	92	16S	56	-	-	7/8×9/8 ODF		
	25N	88	35X	123	35Z	123	22S	77	-	-			
	31N	109	45X	158	45Z	158	28S	94	-	-			
	45N	158	55X	193	55Z	193	39S	137	-	-			
	55N	193	75X	264	75Z	264	50S	176	-	-			
68N	239	100X	352	100Z	352	60S	211	-	-				

Nominal capacities base on +38°C condensing temperature, +4°C evaporating temperature and 1K liquid sub cooling at the inlet of the expansion valve. Valve pressure drop for R134a is rated at 0.41MPa. Valve pressure drop for R22, R407C and R404A/507 is rated at 0.69MPa. Valve pressure drop for R410A is rated at 1.35MPa

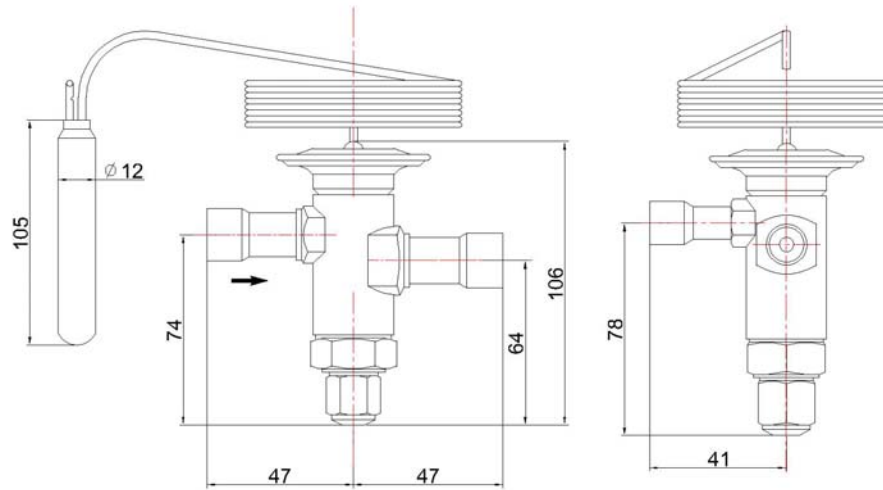
Thermostatic expansion valves
ASTV、BWTV、ETV、SSATV、SSBTV series

Dimension (Unit: mm)

ASTV、SSATV series



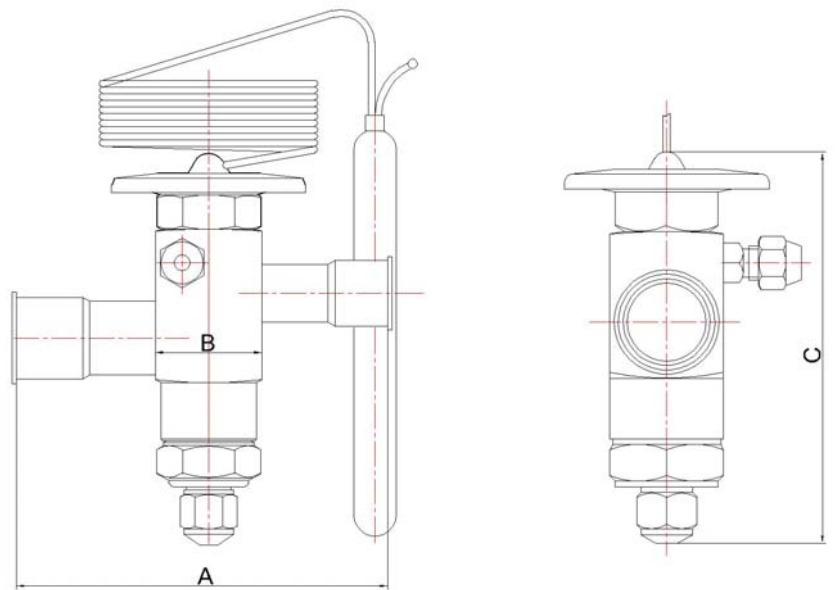
BWTV、SSBTV series



ETV series

Model	Dimension			Bulb size Dia. × Length
	A	B	C	
ETV14X~22X	122	28	116	Φ 12 × 110
ETV26X~55X	135	35	150	Φ 18 × 160
ETV75X~100X	140	40	150	Φ 18 × 160

The model in the table is based on refrigerant R22.



Thermostatic expansion valves

ASTV、BWTV、ETV、SSATV、SSBTV series

Ordering

ASTV,BWTV series

Connection	Valve code	Equalization	Nominal capacity	Refrigerant code
AS	TV	E	7.5	X
AS: Flare SAE BW: Solder ODF	Thermostatic expansion valve code	“E” indicates external equalizer (Omit for internal equalizer)	Nominal capacity(tons)	N — R134a X — R22 Z — R407C S—R404A/R507 L—R410A

The model ASTVE7.5X is an example in the table.

ETV series

Valve code	Nominal capacity	Refrigerant code
ETV	14	X
Valve code	Nominal capacity (tons)	N — R134a X — R22 Z — R407C S—R404A/R507

The model ETV14X is an example in the table.

SSATV,SSBTV series

Connection	Valve code	Nominal capacity	Refrigerant code
SSA	TV	7.5	X
SSA: Flare SAE SSB: Solder ODF	Thermostatic expansion valve code	Nominal capacity (tons)	N — R134a X — R22 Z — R407C S—R404A/R507

The model SSATV7.5X is an example in the table.

Thermostatic expansion valves
ASTV、BWTV、ETV、SSATV、SSBTV series

R134a Extend capacity KW (Extend KW capacities based on vapor free liquid refrigerant at +35°C)

Model R134a		Evaporating temperature (°C)																	
		10						0						-10					
		Pressure drop across valve (MPa)																	
		0.3	0.4	0.6	0.7	0.8	1	0.4	0.6	0.7	0.8	1	1.1	0.4	0.6	0.7	0.8	1	1.1
ASTV(E) BWTV(E) SSATV SSBTV	1.5N	4.4	5.1	6.3	6.8	7.2	8.1	4.9	6	6.5	6.9	7.8	8.1	4.7	5.8	6.3	6.7	7.5	7.8
	2N	5.8	6.8	8.3	8.9	9.6	10.7	6.5	8	8.6	9.2	10.3	10.8	6.3	7.7	8.3	8.8	9.9	10.4
	2.5N	7.1	8.2	10	10.9	11.6	13	7.9	9.7	10.4	11.2	12.5	13.1	7.6	9.3	10	10.7	12	12.6
	3N	9.2	10.6	13	14.1	15	16.8	10.2	12.5	13.5	14.4	16.2	16.9	9.8	12	13	13.9	15.5	16.3
	5.5N	17.4	20.1	24.6	26.5	28.4	31.7	19.3	23.6	25.5	27.3	30.5	32	18.6	22.7	24.6	26.2	29.4	30.8
	7.5N	23.4	27	33.1	35.7	38.2	42.7	26	31.8	34.4	36.7	41.1	43.1	25	30.6	33	35.3	39.5	41.4
	9N	27.5	31.7	38.9	42	44.9	50.2	30.5	37.4	40.4	43.2	48.3	40.6	29.4	35.9	38.8	41.5	46.4	48.7
ETV	11N	33	38	47	51	54	61	37	45	49	52	58	61	35	43	47	50	56	59
	13N	40	46	56	61	65	73	44	54	59	63	70	73	43	52	56	60	67	71
	16N	49	57	70	75	80	90	55	67	72	77	87	91	53	65	70	74	83	87
	19N	57	66	80	87	93	104	63	77	84	89	100	105	61	74	80	86	96	101
	25N	76	87	107	115	123	138	84	103	111	119	133	139	81	99	107	114	128	134
	31N	94	109	133	144	154	172	105	128	138	148	165	173	101	123	133	142	159	167
	45N	132	152	187	202	216	241	147	180	194	207	232	243	141	173	187	199	223	234
	55N	170	196	240	259	277	310	188	231	249	266	298	312	181	222	240	256	287	300
	68N	206	238	292	315	337	377	229	281	303	324	362	380	220	270	292	312	349	365
Model R134a		Evaporating temperature (°C)																	
		-20						-30						-40					
		Pressure drop across valve (MPa)																	
		0.6	0.7	0.8	1	1.1	1.2	0.6	0.7	0.8	1	1.1	1.2	0.6	0.7	0.8	1	1.1	1.2
ASTV(E) BWTV(E) SSATV SSBTV	1.5N	4.6	5	5.3	5.9	6.2	6.5	3.1	3.3	3.6	4	4.2	4.4	2	2.1	2.3	2.6	2.7	2.8
	2N	5.9	6.3	6.8	7.6	8	8.3	3.9	4.3	4.6	5.1	5.3	5.6	2.5	2.7	2.9	3.3	3.4	3.6
	2.5N	7.1	7.7	8.2	9.2	9.7	10.1	4.8	5.2	5.5	6.2	6.5	6.8	3.1	3.3	3.6	4	4.2	4.4
	3N	9.2	10	10.7	11.9	12.5	13.1	6.2	6.7	7.2	8	8.4	8.8	4	4.3	4.6	5.2	5.4	5.7
	5.5N	17.4	18.8	20.1	22.5	23.6	24.7	11.7	12.7	13.5	15.1	15.9	16.6	7.6	8.2	8.7	9.8	10.2	10.7
	7.5N	23.5	25.3	27.1	30.3	31.8	33.2	15.8	17	18.2	20.4	21.4	22.3	10.2	11	11.7	13.1	13.8	14.4
	9N	27.6	29.8	31.8	35.6	37.3	39	18.5	20	21.4	24	25.1	26.2	11.9	12.9	13.8	15.4	16.2	16.9
ETV	11N	33	36	38	43	45	47	22	24	26	29	30	32	14	16	17	19	20	20
	13N	40	43	46	52	54	57	27	29	31	35	36	38	17	19	20	22	23	25
	16N	50	53	57	64	67	70	33	36	38	43	45	47	21	23	25	28	29	30
	19N	57	62	66	74	77	81	38	42	44	50	52	54	25	27	29	32	34	35
	25N	76	82	88	98	103	107	51	55	59	66	69	72	33	36	38	42	44	46
	31N	95	102	109	122	128	134	64	69	73	82	86	90	41	44	47	53	55	58
	45N	133	143	153	171	179	187	89	96	103	115	121	126	57	62	66	74	78	81
	55N	170	184	197	220	231	241	115	124	132	148	155	162	74	80	85	95	100	104
	68N	207	224	239	267	280	293	139	150	161	180	189	197	90	97	104	116	121	127

Thermostatic expansion valves
ASTV、BWTV、ETV、SSATV、SSBTV series

R22 Extend capacity KW (Extend KW capacities based on vapor free liquid refrigerant at +35°C)

Model R22		Evaporating temperature (°C)																	
		10						0						-10					
		Pressure drop across valve (MPa)																	
		0.5	0.7	0.9	1	1.2	1.4	0.5	0.7	0.9	1	1.2	1.4	0.7	0.9	1	1.2	1.4	1.6
ASTV(E) BWTV(E) SSATV SSBTV	2X	6.2	7.3	8.3	8.7	9.6	10.3	6.04	7.15	8.11	8.55	9.37	10.1	6.98	7.92	8.35	9.15	9.88	10.6
	3X	9.4	11.2	12.7	13.4	14.6	15.8	9.3	10.9	12.4	13.1	14.3	15.5	10.7	12.1	12.8	14	15.1	16.2
	4X	12.2	14.5	16.4	17.3	18.9	20.5	12	14.2	16.1	16.9	18.6	20	13.8	15.7	16.5	18.1	19.6	20.9
	5X	15.5	18.3	20.8	21.9	24	25.9	15.1	17.9	20.3	21.4	23.5	25.4	17.5	19.8	20.9	22.9	24.8	26.5
	7.5X	23.1	27.3	31	32.6	35.8	38.6	22.6	26.7	30.3	32	35	37.8	26.1	29.6	31.2	34.2	36.9	39.5
	10X	31.8	37.6	42.7	45	49.3	53.3	31.1	36.8	41.8	44.1	48.3	52.1	36	40.8	43	47.1	51	54.4
	12X	38.4	45.4	51.5	54.3	59.4	64.2	37.5	44.4	50.4	53.1	58.2	62.9	43.4	49.2	51.9	56.8	61.4	65.6
ETV	14X	46	54	62	65	71	77	45	53	60	64	70	75	52	59	62	68	73	78
	18X	55	65	74	78	85	92	54	64	72	76	83	90	62	70	74	81	88	94
	22X	69	81	92	97	106	115	67	80	90	95	104	112	78	88	93	102	110	117
	26X	81	96	109	115	126	136	79	94	107	112	123	133	92	104	110	120	130	139
	35X	109	129	147	154	169	183	107	126	143	151	166	179	123	140	148	162	175	187
	45X	140	166	188	199	218	235	137	163	184	194	213	230	159	180	190	208	225	240
	55X	172	203	230	243	266	287	168	199	225	238	260	281	194	220	232	254	275	293
	75X	234	277	314	331	363	392	229	271	307	324	355	383	265	300	316	347	374	400
	100X	312	369	419	441	483	522	305	361	410	432	473	511	353	400	422	462	499	533
Model R22		Evaporating temperature (°C)																	
		-20						-30						-40					
		Pressure drop across valve (MPa)																	
		0.9	1	1.2	1.4	1.6	1.7	0.9	1	1.2	1.4	1.6	1.7	0.9	1	1.2	1.4	1.6	1.7
ASTV(E) BWTV(E) SSATV SSBTV	2X	6.7	7.1	7.8	8.4	9	9.3	4.8	5.1	5.6	6	6.4	6.6	3.3	3.5	3.8	4.2	4.4	4.6
	3X	10.3	10.9	11.9	12.9	13.7	14.2	7.4	7.8	8.5	9.2	9.8	10.1	5.1	5.4	5.9	6.4	6.8	7
	4X	13.3	14.1	15.4	16.6	17.8	18.3	9.5	10.1	11	11.9	12.7	13.1	6.6	6.9	7.6	8.2	8.8	9.1
	5X	16.9	17.8	19.5	21	22.5	23.2	12.1	12.7	14	15.1	16.1	16.6	8.3	8.8	9.6	10.4	11.1	11.5
	7.5X	25.2	26.5	29.1	31.4	33.6	34.6	18	19	20.8	22.5	24	24.8	12.4	13.1	14.4	15.5	16.6	17.1
	10X	34.7	36.6	40.1	43.3	46.3	47.7	24.8	26.2	28.7	31	33.1	34.2	17.1	18.1	19.8	21.4	22.9	23.6
	12X	41.8	44.1	48.3	52.2	55.8	57.5	30	31.6	34.6	37.4	40	41.2	20.7	21.8	23.9	25.8	27.6	28.4
ETV	14X	50	53	58	62	67	69	36	38	41	45	48	49	25	26	29	31	33	34
	18X	60	63	69	75	80	82	43	45	50	54	57	59	30	31	34	37	39	41
	22X	75	79	86	93	100	103	54	57	62	67	72	74	37	39	43	46	49	51
	26X	88	93	102	110	118	122	63	67	73	79	85	87	44	46	51	55	58	60
	35X	119	126	138	149	159	164	85	90	99	106	114	117	59	62	68	73	78	81
	45X	153	161	177	191	204	210	110	116	127	137	146	151	76	80	87	94	101	104
	55X	187	197	216	233	249	257	134	141	155	167	179	184	92	97	107	115	123	127
	75X	255	269	295	318	340	351	183	193	211	228	244	251	126	133	146	157	168	173
	100X	340	359	393	424	454	468	244	257	281	304	325	335	168	177	194	210	224	231

Thermostatic expansion valves
ASTV、BWTV、ETV、SSATV、SSBTV series

R407C Extend capacity KW (Extend KW capacities based on vapor free liquid refrigerant at +35°C)

Model R407C		Evaporating temperature (°C)																	
		10						0						-10					
		Pressure drop across valve (MPa)																	
		0.5	0.7	0.9	1	1.2	1.4	0.5	0.7	0.9	1	1.2	1.4	0.7	0.9	1	1.2	1.4	1.6
ASTV(E) BWTV(E) SSATV SSBTV	2Z	6.3	7.5	8.5	8.9	9.8	10.6	6.1	7.2	8.2	8.7	9.4	10.2	7	7.9	8.3	9.1	9.9	10.6
	3Z	9.5	11.3	12.3	13.7	14.8	16.5	9.1	10.9	12.3	13	14	15.5	10.6	11.6	12.7	13.7	14.8	15.5
	4Z	13	14.8	16.5	18.3	19.7	22.2	12.3	14.4	16.5	17.2	19	20.4	13.7	15.5	16.9	18.3	19.7	20.8
	5Z	16	19.1	21.6	22.8	25	27	15.6	18.5	20.9	22.1	24	26.1	17.8	20.2	21.3	23.3	25.2	26.9
	7.5Z	23.2	27.7	31.4	33.1	36.3	39.2	22.6	26.8	30.4	32	34.9	37.9	25.8	29.3	30.9	33.8	36.5	39
	10Z	31.9	38.2	43.3	45.6	50	54	31.2	36.9	41.9	44.1	48.1	52.2	35.6	40.4	42.5	46.6	50.3	53.8
	12Z	38.5	46	52.2	55	60.3	65.1	37.6	44.5	50.5	53.2	57.9	63	42.9	48.7	51.3	56.2	60.7	64.9
ETV	14Z	46	55	62	66	72	78	45	53	60	64	69	75	51	58	61	67	72	77
	18Z	55	66	75	79	86	93	54	64	72	76	83	90	61	70	73	80	87	93
	22Z	69	82	93	98	108	116	67	80	90	95	104	113	77	87	92	101	109	116
	26Z	81	97	110	116	127	138	80	94	107	113	123	133	91	103	109	119	128	137
	35Z	110	131	149	157	172	185	107	127	144	152	165	179	122	139	146	160	173	185
	45Z	141	168	191	201	221	238	138	163	185	195	212	230	157	178	188	206	222	237
	55Z	172	206	233	246	270	291	168	199	226	238	259	282	192	218	229	251	272	290
	75Z	235	281	318	336	368	397	230	272	308	325	353	384	262	297	313	343	370	396
	100Z	313	374	424	447	490	529	306	362	411	433	471	512	349	396	417	457	494	528
Model R407C		Evaporating temperature (°C)																	
		-20						-30						-40					
		Pressure drop across valve (MPa)																	
		0.9	1	1.2	1.4	1.6	1.7	0.9	1	1.2	1.4	1.6	1.7	0.9	1	1.2	1.4	1.6	1.7
ASTV(E) BWTV(E) SSATV SSBTV	2Z	6.3	7	7.6	8.3	8.8	9.1	4.7	5	5.5	5.9	6.3	6.5	3.3	3.4	3.8	4.1	4.4	4.5
	3Z	9.8	10.6	11.6	12.3	13	13.7	7	7.7	8.1	8.8	9.1	9.8	4.9	5.3	5.6	6	6.3	6.7
	4Z	13	14.1	15.5	16.5	17.2	18.3	9.1	10.2	10.9	11.6	12.3	13	6.3	7	7.4	8.1	8.4	9.1
	5Z	16.5	17.8	19.5	21.1	22.5	23.2	12.1	12.7	13.9	15.1	16.1	16.6	8.3	8.8	9.6	10.4	11.1	11.4
	7.5Z	23.9	25.8	28.3	30.6	32.7	33.7	17.5	18.5	20.2	21.8	23.4	24.1	12.1	12.7	14	15.1	16.1	16.6
	10Z	33.1	35.6	39	42.1	45	46.4	24.1	25.4	27.9	30.1	32.2	33.2	16.7	17.6	19.2	20.8	22.2	22.9
	12Z	39.7	42.9	47	50.8	54.3	56	29.1	30.7	33.6	36.3	38.8	40	20.1	21.2	23.2	25.1	26.8	27.6
ETV	14Z	48	51	56	61	65	67	35	37	40	43	46	48	24	25	28	30	32	33
	18Z	57	61	67	73	78	80	42	44	48	52	56	57	29	30	33	36	38	40
	22Z	71	77	84	91	97	100	52	55	60	65	69	72	36	38	42	45	48	49
	26Z	84	91	99	107	115	118	62	65	71	77	82	85	43	45	49	53	57	58
	35Z	113	122	134	145	155	159	83	87	96	103	111	114	57	60	66	71	76	79
	45Z	146	157	172	186	199	205	107	112	123	133	142	146	74	78	85	92	98	101
	55Z	178	192	210	227	243	250	130	137	150	162	174	179	90	95	104	112	120	124
	75Z	198	262	287	310	331	341	178	187	205	221	237	244	123	129	142	153	163	168
	100Z	323	349	382	413	442	455	237	250	273	295	316	325	163	172	189	204	218	225

Thermostatic expansion valves
ASTV、BWTV、ETV、SSATV、SSBTV series

R404A/R507 Extend capacity KW (Extend KW capacities based on vapor free liquid refrigerant at +35°C)

Model R404A/R507		Evaporating temperature (°C)																	
		10						0						-10					
		Pressure drop across valve (MPa)																	
		0.5	0.7	0.9	1	1.2	1.4	0.5	0.7	0.9	1	1.2	1.4	0.5	0.7	0.9	1	1.2	1.4
ASTV(E)	1.5S	5.2	6.2	7	7.4	8.1	8.8	5	5.9	6.7	7.1	7.8	8.4	4.8	5.6	6.4	6.7	7.4	8
	2S	6.4	7.5	8.5	9	9.9	10.7	6.1	7.2	8.2	8.6	9.4	10.2	5.8	6.8	7.7	8.2	8.9	9.7
BWTV(E)	2.5S	8.2	9.7	11.1	11.7	12.8	13.8	7.9	9.3	10.6	11.1	12.2	13.2	7.5	8.8	10	10.6	11.6	12.5
	3S	10.4	12.3	14	14.7	16.1	17.4	9.9	11.8	13.3	14.1	15.4	16.6	9.4	11.2	12.6	13.3	14.6	15.8
SSATV	5S	15.8	18.7	21.2	22.3	24.5	26.4	15.1	17.8	20.2	21.3	23.4	25.2	14.3	16.9	19.2	20.2	22.2	24
	6.5S	21.3	25.2	28.6	30.1	33	35.6	20.3	24	27.3	28.7	31.5	34	19.3	22.8	25.9	27.3	29.9	32.3
SSBTV	8S	24.8	29.4	33.3	35.1	38.4	41.5	23.7	28	31.8	33.5	36.7	39.7	22.5	26.6	30.2	31.8	34.8	37.6
	9S	32	37	42	45	49	53	30	36	40	43	47	50	29	34	38	40	44	48
ETV	11S	38	44	50	53	58	63	36	42	48	51	56	60	34	40	46	48	53	57
	14S	45	53	60	63	69	75	43	50	57	60	66	71	40	48	54	57	63	68
	16S	51	60	68	72	79	85	49	58	65	69	75	81	46	55	62	65	72	77
	22S	67	79	90	95	104	112	64	76	86	90	99	107	61	72	81	86	94	101
	28S	86	102	115	122	133	144	82	97	110	116	127	137	78	92	104	110	121	130
	39S	118	139	158	167	182	197	112	133	151	159	174	188	107	126	143	151	165	179
	50S	153	181	205	216	237	256	146	173	196	206	226	244	138	164	186	196	214	232
	60S	191	226	256	270	296	320	182	216	245	258	283	305	173	205	232	245	268	290
Model R404A/R507		Evaporating temperature (°C)																	
		-20						-30						-40					
		Pressure drop across valve (MPa)																	
		0.7	0.9	1	1.2	1.4	1.6	0.9	1	1.2	1.4	1.6	1.7	0.9	1	1.2	1.4	1.6	1.7
ASTV(E)	1.5S	4.7	5.4	5.7	6.2	6.7	7.2	3.8	4	4.3	4.7	5	5.2	2.6	2.7	3	3.2	3.4	3.5
	2S	5.8	6.5	6.9	7.5	8.1	8.7	4.6	4.8	5.3	5.7	6.1	6.3	3.1	3.3	3.6	3.9	4.1	4.3
BWTV(E)	2.5S	7.5	8.5	8.9	9.8	10.5	11.3	5.9	6.2	6.8	7.4	7.9	8.1	4	4.2	4.7	5	5.4	5.5
	3S	9.4	10.7	11.2	12.3	13.3	14.2	7.5	7.9	8.6	9.3	10	10.3	5.1	5.4	5.9	6.3	6.8	7
SSATV	5S	14.3	16.2	17.1	18.7	20.2	21.6	11.3	11.9	13.1	14.1	15.1	15.6	7.7	8.1	8.9	9.6	10.3	10.6
	6.5S	19.2	21.8	23	25.2	27.2	29.1	15.3	16.1	17.6	19	20.4	21	10.4	11	12	13	13.9	14.3
SSBTV	8S	22.4	25.4	26.8	29.4	31.7	33.9	17.8	18.8	20.6	22.2	23.7	24.5	12.1	12.8	14	15.1	16.2	16.7
	9S	29	32	34	37	40	43	23	24	26	28	30	31	15	16	18	19	21	21
ETV	11S	34	39	41	45	48	51	27	28	31	34	36	37	18	19	21	23	25	25
	14S	40	46	48	53	57	61	32	34	37	40	43	44	22	23	25	27	29	30
	16S	46	52	55	60	65	70	37	39	42	46	49	50	25	26	29	31	33	34
	22S	60	69	72	79	86	91	48	51	55	60	64	66	33	34	38	41	44	45
	28S	78	88	93	102	110	118	62	65	71	77	82	85	42	44	49	52	56	58
	39S	107	121	127	139	151	161	85	89	98	105	113	116	58	61	66	72	77	79
	50S	138	157	165	181	195	209	110	116	127	137	146	151	75	79	86	93	100	103
	60S	173	196	206	226	244	261	137	144	158	171	183	188	93	98	108	116	124	128