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MANUAL EEV

ELECTRONIC EXPANSION VALVE



MANUALVEEV4-01T-20527-2608

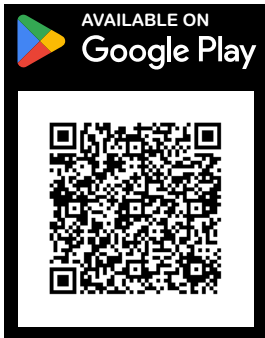
1. DESCRIPTION

The Electronic Expansion Valve (EEV) is a device of advanced technology that offers precise and efficient control of the refrigerant fluid flow in refrigeration and air conditioning systems. Opposite traditional mechanical expansion valves, which depend on system pressure to control refrigerant flow, the electronic expansion valve uses electronic sensors to monitor system temperature and pressure and adjust refrigerant flow more precisely and efficient.

The electronic expansion valve is controlled by a central electronic controller, which receives information from the sensors and determines the amount of refrigerant that must be released to the evaporator. This more precise control helps maximize the efficiency of the refrigeration or air conditioning system, saving energy and extending the equipment life.

2. VALVE SELECTION

- To select the valves, download the **FG Toolbox** Application (using the QR below) and use the **VEE Selector** tool to select the valve according to the characteristics of the installation.



- 1 - Open the **FG Toolbox** application and access the **VEE Selector**;
- 2 - Fill in the required information;
- 3 and 4 - The application will suggest the appropriate valve and controller models for the application;
- 5 and 6 - You will be able to generate a report of the valve and controller recommended for your application;

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VEE Selector

Electronic Expansion Valve Selection
Full Gauge Controls®



Contact Info

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System Summary

Refrigerant Fluid:	R507A	Evaporator Capacity:	12.00 kW
Condensation Temperature:	45°C	Subcooling:	3°C
Evaporation Temperature:	-15°C	Superheating:	6°C
Type of Application:	Refrigeration		
Application Name:	Câmara Fria de Congelados		

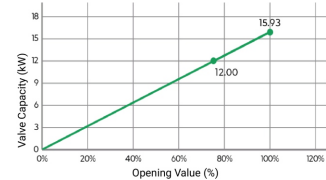
Electronic Expansion Valve

Code	SB130D	
04548	EXPANSION VALVE MODULE SB130D 3.0 mm	
	Orifice:	3.0 mm
	Valve Body:	Detachable
	Filter:	Yes (100 mesh sieve)
	Ambient Min. Temp:	-40°C (-40°F)
	Ambient Max. Temp:	60°C (140°F)
	Steps:	500
	Min. Steps/Sec:	30
	Max. Steps/Sec:	90
	MOPD direct:	507 psi (35 bar)
	Mechanical Module:	Sanhua
	Operating Pressure:	609 psi (42 bar)

Performance Curve

Maximum capacity
15.93kW

Opening Value
75.35% (12.00 kW)



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VEE Selector

Electronic Expansion Valve Selection
Full Gauge Controls®



Electronic Controller

Code	VX1025E	
4460	VX1025E PLUS VER.04 12Vdc - CTRL P/ VALV EXP(KIT VEE)(WHITE)	
	Temperature Control:	Yes
	Sitrad Pro:	Yes
	Energy Backup:	Yes
	VEE Driver Functionality:	Yes
	HMI:	Integrated
	Pressure Sensor:	1x SB68-232A (0 - 232 psi)
	Internal Clock (RTC):	Yes
	Installation Type:	Painel
	Dimensional:	76,0 x 34,0 x 94,0 mm (3,0" x 1,34" x 3,7")
	Controller Supply Voltage:	12Vdc
	External Power Supply:	Input: 100~240 Vac Output: 12Vdc / 15W
	Temperature Sensor:	1x Ambient, 1x Defrost, 1x Superheating
	Output to VEE:	1 unipolar type output

To access specific information from the controller and electronic expansion valve manuals, have the respective manuals at your fingertips through the FG Finder app.



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3. COIL TYPES

Full Gauge's line of electronic expansion valves is available with two types of coils: unipolar and bipolar. The type of coil interferes with the choice of electronic controller.

Coil Types	Valve Models
Unipolar	SB103T, SB105T, SB108, SB108T, SB110, SB110T, SB114, SB114T, SB114D, SB118, SB118T, SB118D, SB124, SB124T, SB124D, SB130, SB130T, SB130D, SB132, SB132T, SB132D, SB145, SB152, SB155, SB162, SB513, SB517, SB520, SB525, SB530, SB535, SB540, SB840, SB845, SB855 AND SB865
Bipolar	SB2012, SB2025, SB2050, SB2100, SB2150

4. MAXIMUM REFRIGERATION CAPACITY

Application 1: Cold (kW)										Condensation temperature: 45°C (113°F)						Subcooling: 3K		
										Evaporation temperature: - 10°C (14°F)						Superheating: 6K		
Valves	R22	R23	R32	R134A	R290	R404A	R407A	R407C	R407F	R410A	R422A	R422D	R427A	R441A	R448A	R449A	R450A	R452A
SB103T	1,2	NI	2,1	0,9	1,2	0,8	1,1	1,2	1,3	1,4	NI	NI	NI	NI	1,2	1,1	0,8	0,9
SB105T	1,8	NI	3,2	1,4	1,9	1,2	1,8	1,9	2,0	2,2	NI	NI	NI	NI	1,8	1,7	1,2	1,3
SB108	3,0	NI	5,2	2,3	3,0	2,0	2,8	3,0	3,2	3,4	1,8	1,9	2,7	3,1	2,8	2,8	2,0	2,1
SB108T	3,0	NI	5,2	2,3	3,0	2,0	2,8	3,0	3,2	3,4	1,8	1,9	2,7	3,1	2,8	2,8	2,0	2,1
SB110	4,8	NI	8,5	3,7	4,9	3,3	4,6	4,9	5,2	5,6	2,9	3,2	4,4	5,1	4,6	4,5	3,2	3,4
SB110T	4,8	NI	8,5	3,7	4,9	3,3	4,6	4,9	5,2	5,6	2,9	3,2	4,4	5,1	4,6	4,5	3,2	3,4
SB114	9,1	NI	16,1	7,0	9,3	6,2	8,7	9,3	9,8	10,6	5,2	5,8	8,2	9,5	8,6	8,6	6,1	6,5
SB114T / SB114D	9,1	NI	16,1	7,0	9,3	6,2	8,7	9,3	9,8	10,6	5,2	5,8	8,2	9,5	8,8	8,6	6,1	6,5
SB118	12,6	NI	22,2	9,6	12,9	8,5	12,0	12,8	13,6	14,7	7,2	8,0	11,4	13,1	12,1	11,9	8,4	9,0
SB118T / SB118D	12,6	NI	22,2	9,6	12,9	8,5	12,0	12,8	13,6	14,7	7,2	8,0	11,4	13,1	12,1	11,9	8,4	9,0
SB124	17,3	NI	30,4	13,2	17,6	11,6	16,4	17,6	18,6	20,1	9,9	11,0	15,6	17,9	16,6	16,2	11,5	12,2
SB124T / SB124D	17,3	NI	30,4	13,2	17,6	11,6	16,4	17,6	18,6	20,1	9,9	11,0	15,6	17,9	16,6	16,2	11,5	12,2
SB130	32,3	NI	56,9	24,5	32,8	21,5	30,5	32,7	34,6	37,4	NI	NI	NI	NI	30,9	30,2	21,3	22,7
SB130T / SB130D	24,4	NI	43,0	18,6	24,9	16,5	23,2	24,8	26,2	28,5	NI	NI	NI	NI	23,5	23,0	16,2	17,3
SB132	35,6	NI	62,6	27,0	36,1	23,7	33,7	36,1	38,2	41,3	NI	NI	NI	NI	34,1	33,3	23,5	25,0
SB132T / SB132D	26,8	NI	47,1	20,4	27,4	18,1	25,5	27,3	28,8	31,3	NI	NI	NI	NI	25,7	25,2	17,8	19,0
SB145	59,8	NI	105,3	45,7	61,2	40,4	56,9	60,9	64,4	69,8	NI	NI	NI	NI	57,5	56,4	39,9	42,5
SB152	80,0	NI	140,9	61,2	81,9	54,1	76,1	81,5	86,2	93,4	NI	NI	NI	NI	77,0	75,5	53,4	56,8
SB155	92,6	NI	163,1	70,8	94,8	62,6	88,1	94,3	99,7	108,1	NI	NI	NI	NI	89,1	87,3	61,8	65,7
SB162	112,7	NI	198,4	86,1	115,3	76,2	107,1	114,7	121,3	131,5	NI	NI	NI	NI	108,3	106,2	75,2	80,0
SB2012	82,3	NI	144,8	62,8	84,1	55,5	78,3	83,7	88,5	96,0	NI	NI	NI	NI	79,2	77,4	54,7	58,4
SB2025	170,7	NI	300,7	130,4	174,6	115,3	162,5	173,9	183,7	199,4	NI	NI	NI	NI	164,3	160,7	113,5	121,2
SB2050	343,2	NI	604,4	261,9	350,8	231,7	326,5	349,6	369,2	400,8	NI	NI	NI	NI	330,1	322,8	228,2	243,6
SB2100	487,4	NI	858,4	372,1	498,3	329,1	463,7	496,4	524,3	569,1	NI	NI	NI	NI	468,9	458,5	324,1	346,0
SB2150	848,3	NI	1493,6	647,4	867,2	572,5	806,9	863,9	912,3	990,4	NI	NI	NI	NI	816,0	797,9	563,9	602,1
SB513	8,8	NI	15,5	6,5	8,9	5,8	8,2	8,8	9,4	10,2	4,9	5,6	8,0	NI	8,3	8,2	5,6	6,2
SB517	12,1	NI	21,5	8,9	12,3	8,1	11,3	12,1	13,0	14,2	6,8	7,8	11,0	NI	11,5	11,3	7,7	8,5
SB520	16,0	NI	28,5	11,6	16,1	10,7	14,9	15,9	17,2	18,8	8,9	10,3	14,5	NI	15,2	14,9	10,1	11,2
SB525	22,0	NI	38,9	16,2	22,3	14,6	20,5	22,0	23,6	25,6	12,2	14,1	20,0	NI	20,9	20,4	14,1	15,4
SB530	29,9	NI	53,3	22,0	30,3	20,0	28,0	30,0	32,3	35,2	16,7	19,3	27,3	NI	28,5	27,9	19,1	21,0
SB535	33,1	NI	58,8	24,2	33,4	22,0	30,8	33,0	35,5	38,8	18,4	21,3	30,1	NI	31,4	30,8	21,1	23,2
SB540	37,4	NI	66,8	27,4	37,8	25,0	35,0	37,4	40,3	44,1	20,9	24,1	34,1	NI	35,6	34,9	23,8	26,3
SB840	65,9	NI	116,4	49,2	66,9	43,8	61,6	66,1	70,9	76,7	36,7	42,5	60,2	NI	62,7	61,4	42,9	46,2
SB845	97,9	NI	173,1	72,5	99,1	65,0	91,3	97,9	105,2	114,1	54,5	63,1	89,2	NI	93,0	91,3	63,2	68,7
SB855	103,8	NI	183,7	76,8	105,2	69,1	96,9	103,8	111,6	121,1	57,8	66,9	94,6	NI	98,7	96,7	67,0	72,9
SB865	118,7	NI	210,5	87,6	120,3	79,0	110,7	118,8	127,6	138,8	66,2	76,4	108,2	NI	112,8	110,5	76,3	83,3

NI = Not Informed

Application 1: Cold (kW) (cont.)									Condensation temperature: 45°C (113°F)							Subcooling: 3K	
									Evaporation temperature: - 10°C (14°F)							Superheating: 6K	
Valves	R452B	R454A	R454B	R454C	R455A	R457A	R507A	R508B	R513A	R515B	R516A	R600A	R744	R1270	R1234YF	R1234ze(E)	
SB103T	1,8	1,3	1,6	1,0	1,1	0,1	0,8	NI	0,8	0,8	0,9	0,8	NI	1,6	0,6	0,7	
SB105T	2,4	1,8	2,5	1,5	1,7	0,1	1,2	NI	1,2	1,1	1,2	1,3	NI	2,1	1,0	1,1	
SB108	3,9	2,9	4,0	2,4	2,7	0,2	1,9	NI	1,9	1,7	1,9	2,0	NI	3,4	1,6	1,8	
SB108T	3,9	2,9	4,0	2,4	2,7	0,2	1,9	NI	1,9	1,7	1,9	2,0	NI	3,4	1,6	1,8	
SB110	6,4	4,7	6,5	4,0	4,3	0,4	3,2	NI	3,0	2,7	3,0	3,2	NI	5,5	2,6	2,8	
SB110T	6,4	4,7	6,5	4,0	4,3	0,4	3,2	NI	3,0	2,7	3,0	3,2	NI	5,5	2,6	2,8	
SB114	12,0	8,9	12,4	7,5	8,2	0,7	6,0	NI	5,8	5,2	5,8	6,0	NI	10,5	4,9	5,4	
SB114T / SB114D	12,0	8,9	12,4	7,5	8,2	0,7	6,0	NI	5,8	5,2	5,8	6,0	NI	10,5	4,9	5,4	
SB118	16,6	12,3	17,1	10,4	11,3	1,0	8,3	NI	8,0	7,2	8,0	8,3	NI	14,5	6,8	7,5	
SB118T / SB118D	16,6	12,3	17,1	10,4	11,3	1,0	8,3	NI	8,0	7,2	8,0	8,3	NI	14,5	6,8	7,5	
SB124	22,8	16,8	23,5	14,2	15,5	1,3	11,4	NI	10,9	9,8	10,9	11,3	NI	19,9	9,3	10,2	
SB124T / SB124D	22,8	16,8	23,5	14,2	15,5	1,3	11,4	NI	10,9	9,8	10,9	11,3	NI	19,9	9,3	10,2	
SB130	NI	NI	NI	NI	NI	NI	20,9	NI	20,2	NI	NI	NI	NI	NI	17,2	18,9	
SB130T / SB130D	32,2	23,7	33,2	20,1	21,9	1,9	16,1	NI	15,4	13,9	15,4	16,0	NI	28,1	13,2	14,4	
SB132	NI	NI	NI	NI	NI	NI	23,0	NI	22,2	NI	NI	NI	NI	NI	19,0	20,8	
SB132T / SB132D	35,2	26,0	36,4	22,1	24,0	2,1	17,6	NI	16,9	15,2	16,9	17,6	NI	30,7	14,4	15,8	
SB145	79,0	58,2	81,3	49,5	53,8	4,6	39,5	NI	37,7	34,2	37,8	40,6	NI	68,9	32,2	35,4	
SB152	105,7	77,9	108,8	66,2	72,0	6,1	52,8	NI	50,5	45,7	50,6	54,3	NI	92,2	43,1	47,4	
SB155	122,4	90,2	126,0	76,6	83,3	7,1	61,1	NI	58,4	52,9	58,5	62,8	NI	106,7	49,9	54,9	
SB162	148,8	109,7	153,2	93,2	101,3	8,6	74,3	NI	71,1	64,4	71,2	76,4	NI	129,8	60,7	66,8	
SB2012	108,6	80,0	111,9	67,9	73,8	6,3	54,1	NI	51,9	46,9	51,9	NI	NI	94,7	44,4	48,6	
SB2025	225,4	166,2	232,3	140,9	153,2	13,1	112,3	NI	107,8	97,5	107,8	NI	NI	196,6	92,1	100,9	
SB2050	453,1	333,9	466,8	283,2	308,0	26,3	225,8	NI	216,7	195,9	216,7	NI	NI	395,1	185,2	202,9	
SB2100	643,5	474,2	662,9	402,2	437,3	37,4	320,7	NI	307,8	278,3	307,8	NI	NI	561,2	263,1	288,1	
SB2150	1119,8	825,3	1153,4	699,9	761,1	65,0	558,0	NI	535,6	484,2	535,7	NI	NI	976,6	457,7	501,5	
SB513	11,8	8,4	11,9	7,1	7,8	NI	5,7	NI	5,4	4,8	5,4	5,6	NI	10,1	4,6	5,0	
SB517	16,4	11,7	16,6	9,8	10,7	NI	7,9	NI	7,4	6,6	7,4	7,7	NI	14,0	6,3	6,8	
SB520	21,7	15,4	21,9	13,0	14,2	NI	10,4	NI	9,7	8,6	9,7	10,0	NI	18,4	8,3	8,9	
SB525	29,6	21,2	29,9	17,8	19,4	NI	14,2	NI	13,5	12,1	13,5	14,1	NI	25,3	11,5	12,5	
SB530	40,5	28,9	41,0	24,4	26,6	NI	19,4	NI	18,3	16,3	18,4	19,0	NI	34,6	15,6	16,9	
SB535	44,7	31,9	45,2	26,8	29,3	NI	21,4	NI	20,2	18,0	20,2	20,9	NI	38,1	17,2	18,6	
SB540	50,7	36,2	51,3	30,4	33,2	NI	24,3	NI	22,8	20,2	22,9	23,5	NI	43,2	19,4	20,9	
SB840	88,6	63,6	89,7	53,7	58,4	NI	42,6	NI	40,8	36,7	40,9	43,2	NI	75,8	34,8	38,0	
SB845	131,6	94,4	133,2	79,6	86,7	NI	63,2	NI	60,2	54,1	60,4	63,3	NI	112,6	51,4	55,9	
SB855	139,8	100,1	141,5	84,4	92,0	NI	67,1	NI	63,8	57,3	64,0	67,0	NI	119,4	54,5	59,2	
SB865	160,1	114,4	162,0	96,6	105,3	NI	76,8	NI	72,9	65,2	73,0	76,2	NI	136,7	62,1	67,4	

Application 2: Frozen (kW)										Condensation temperature: 45°C (113°F)					Subcooling: 3K			
										Evaporation temperature: -35°C (-31°F)					Superheating: 6K			
Valves	R22	R23	R32	R134A	R290	R404A	R407A	R407C	R407F	R410A	R422A	R422D	R427A	R441A	R448A	R449A	R450A	R452A
SB103T	1,2	NI	2,2	0,9	1,2	0,7	1,1	1,2	1,2	1,4	NI	NI	NI	NI	1,1	1,1	0,7	0,8
SB105T	1,8	NI	3,4	1,3	1,8	1,1	1,7	1,8	1,9	2,2	NI	NI	NI	NI	1,7	1,6	1,1	1,2
SB108	3,0	NI	5,4	2,1	2,9	1,8	2,7	2,9	3,1	3,4	1,5	1,7	2,6	2,9	2,7	2,6	1,8	1,9
SB108T	3,0	NI	5,4	2,1	2,9	1,8	2,7	2,9	3,1	3,4	1,5	1,7	2,6	2,9	2,7	2,6	1,8	1,9
SB110	4,8	NI	8,8	3,5	4,7	3,0	4,3	4,7	5,0	5,6	2,5	2,8	4,2	4,7	4,4	4,3	2,9	3,1
SB110T	4,8	NI	8,8	3,5	4,7	3,0	4,3	4,7	5,0	5,6	2,5	2,8	4,2	4,7	4,4	4,3	2,9	3,1
SB114	9,1	NI	16,7	6,5	8,9	5,6	8,2	8,9	9,5	10,6	4,5	5,1	7,7	8,6	8,3	8,1	5,6	5,9
SB114T / SB114D	9,1	NI	16,7	6,5	8,9	5,6	8,2	8,9	9,5	10,6	4,5	5,1	7,7	8,6	8,3	8,1	5,6	5,9
SB118	12,6	NI	23,0	9,0	12,3	7,8	11,4	12,2	13,1	14,7	6,2	7,1	10,7	11,8	11,5	11,2	7,7	8,1
SB118T / SB118D	12,6	NI	23,0	9,0	12,3	7,8	11,4	12,2	13,1	14,7	6,2	7,1	10,7	11,8	11,5	11,2	7,7	8,1
SB124	17,2	NI	31,5	12,4	16,8	10,7	15,5	16,8	17,9	20,1	8,5	9,7	14,6	16,2	15,7	15,4	10,5	11,1
SB124T / SB124D	17,2	NI	31,5	12,4	16,8	10,7	15,5	16,8	17,9	20,1	8,5	9,7	14,6	16,2	15,7	15,4	10,5	11,1
SB130	32,2	NI	59,0	22,9	31,3	19,6	28,9	31,3	33,3	37,4	NI	NI	NI	NI	29,4	28,6	19,6	20,5
SB130T / SB130D	24,4	NI	44,5	17,5	23,8	15,1	22,0	23,7	25,3	28,5	NI	NI	NI	NI	22,3	21,8	14,9	15,7
SB132	35,6	NI	64,9	25,4	34,5	21,6	31,9	34,4	36,8	41,3	NI	NI	NI	NI	32,3	31,5	21,5	22,6
SB132T / SB132D	26,7	NI	48,9	19,2	26,1	16,5	24,1	26,0	27,8	31,2	NI	NI	NI	NI	24,4	23,9	16,3	17,2
SB145	59,9	NI	109,2	42,9	58,4	37,0	53,9	58,1	62,1	69,9	NI	NI	NI	NI	54,7	53,4	36,5	38,5
SB152	80,1	NI	146,1	57,4	78,2	49,6	72,1	77,7	83,1	93,5	NI	NI	NI	NI	73,1	71,5	48,8	51,5
SB155	92,7	NI	169,1	66,4	90,4	57,4	83,5	89,9	96,1	108,2	NI	NI	NI	NI	84,6	82,7	56,5	59,7
SB162	112,7	NI	205,7	80,8	110,0	69,8	101,6	109,4	116,9	131,6	NI	NI	NI	NI	102,9	100,6	68,7	72,6
SB2012	82,2	NI	150,1	59,0	80,2	50,8	74,1	79,9	85,3	95,9	NI	NI	NI	NI	75,1	73,4	50,2	52,8
SB2025	170,7	NI	311,7	122,5	166,5	105,5	153,9	165,9	177,0	199,3	NI	NI	NI	NI	155,8	152,4	104,1	109,7
SB2050	343,0	NI	626,6	246,1	334,6	212,0	309,2	333,4	355,9	400,5	NI	NI	NI	NI	313,1	306,3	209,3	220,5
SB2100	487,2	NI	889,9	349,6	475,2	301,1	439,2	473,6	505,5	568,8	NI	NI	NI	NI	444,8	434,9	297,3	313,2
SB2150	847,8	NI	1548,5	608,3	826,9	523,9	764,2	824,0	879,6	989,9	NI	NI	NI	NI	773,9	757,0	517,4	544,9
SB513	8,5	NI	15,7	5,9	8,2	5,2	7,6	8,2	9,0	10,0	4,2	4,9	7,4	NI	7,7	7,6	5,0	5,4
SB517	11,7	NI	21,7	8,1	11,3	7,2	10,4	11,3	12,4	13,8	5,7	6,8	10,1	NI	10,7	10,4	6,9	7,5
SB520	15,5	NI	28,7	10,6	14,9	9,4	13,7	14,8	16,3	18,2	7,6	8,9	13,4	NI	14,0	13,7	9,0	9,9
SB525	21,4	NI	39,4	14,8	20,6	13,0	19,0	20,5	22,4	25,0	10,4	12,3	18,5	NI	19,4	18,9	12,6	13,6
SB530	29,0	NI	53,8	20,0	28,1	17,7	25,8	27,9	30,6	34,2	14,2	16,7	25,1	NI	26,4	25,8	17,1	18,5
SB535	32,0	NI	59,3	22,0	30,9	19,5	28,4	30,7	33,7	37,7	15,6	18,4	27,7	NI	29,1	28,4	18,8	20,4
SB540	36,2	NI	67,3	24,9	35,0	22,1	32,2	34,8	38,2	42,7	17,7	20,9	31,3	NI	32,9	32,2	21,2	23,1
SB840	64,6	NI	118,5	45,1	62,6	39,3	57,3	62,0	67,8	75,3	31,4	37,2	55,8	NI	58,4	57,2	38,5	41,0
SB845	95,3	NI	175,5	66,2	92,2	58,0	84,6	91,5	100,1	111,7	46,5	54,9	82,4	NI	86,4	84,6	56,4	60,6
SB855	101,0	NI	186,1	70,1	97,7	61,6	89,7	97,0	106,1	118,3	49,2	58,2	87,3	NI	91,6	89,7	59,8	64,4
SB865	115,5	NI	213,1	79,8	111,5	70,4	102,4	110,7	121,2	135,4	56,3	66,4	99,7	NI	104,6	102,3	68,1	73,4
NI = Not Informed																		

Application 2: Frozen (kW) (cont.)										Condensation temperature: 45°C (113°F)					Subcooling: 3K		
										Evaporation temperature: -35°C (-31°F)					Superheating: 6K		
Valves	R452B	R454A	R454B	R454C	R455A	R457A	R507A	R508B	R513A	R515B	R516A	R600A	R744	R1270	R1234YF	R1234ze(E)	
SB103T	1,8	1,3	1,6	0,9	1,0	0,1	0,7	NI	0,7	0,7	0,8	0,7	NI	1,5	0,6	0,6	
SB105T	2,5	1,7	2,5	1,4	1,5	0,1	1,1	NI	1,1	0,9	1,1	1,1	NI	2,1	0,9	1,0	
SB108	3,9	2,7	4,1	2,2	2,4	0,1	1,8	NI	1,7	1,5	1,7	1,8	NI	3,3	1,4	1,6	
SB108T	3,9	2,7	4,1	2,2	2,4	0,1	1,8	NI	1,7	1,5	1,7	1,8	NI	3,3	1,4	1,6	
SB110	6,4	4,4	6,6	3,7	4,0	0,2	2,9	NI	2,8	2,5	2,8	3,0	NI	5,4	2,3	2,6	
SB110T	6,4	4,4	6,6	3,7	4,0	0,2	2,9	NI	2,8	2,5	2,8	3,0	NI	5,4	2,3	2,6	
SB114	12,2	8,4	12,5	6,9	7,5	0,4	5,5	NI	5,3	4,7	5,3	5,5	NI	10,3	4,4	4,9	
SB114T / SB114D	12,2	8,4	12,5	6,9	7,5	0,4	5,5	NI	5,3	4,7	5,3	5,5	NI	10,3	4,4	4,9	
SB118	16,8	11,6	17,3	9,6	10,4	0,6	7,6	NI	7,3	6,5	7,3	7,6	NI	14,2	6,0	6,7	
SB118T / SB118D	16,8	11,6	17,3	9,6	10,4	0,6	7,6	NI	7,3	6,5	7,3	7,6	NI	14,2	6,0	6,7	
SB124	23,0	15,9	23,7	13,1	14,3	0,8	10,4	NI	9,9	8,8	10,0	10,3	NI	19,4	8,2	9,2	
SB124T / SB124D	23,0	15,9	23,7	13,1	14,3	0,8	10,4	NI	9,9	8,8	10,0	10,3	NI	19,4	8,2	9,2	
SB130	NI	NI	NI	NI	NI	NI	19,0	NI	18,4	NI	NI	NI	NI	NI	15,2	17,0	
SB130T / SB130D	32,5	22,5	33,5	18,6	20,2	1,2	14,6	NI	14,0	12,5	14,1	14,6	NI	27,4	11,6	13,0	
SB132	NI	NI	NI	NI	NI	NI	21,0	NI	20,3	NI	NI	NI	NI	NI	16,8	18,8	
SB132T / SB132D	35,6	24,7	36,7	20,4	22,1	1,3	16,1	NI	15,4	13,7	15,4	16,1	NI	30,0	12,8	14,3	
SB145	79,9	55,3	82,2	45,5	49,4	2,9	35,9	NI	34,4	30,7	34,6	37,1	NI	67,3	28,5	32,0	
SB152	106,9	74,0	109,9	60,9	66,1	3,8	48,0	NI	46,1	41,1	46,3	49,7	NI	90,0	38,1	42,8	
SB155	123,7	85,6	127,2	70,5	76,6	4,4	55,6	NI	53,3	47,5	53,6	57,5	NI	104,2	44,1	49,5	
SB162	150,5	104,2	154,8	85,8	93,1	5,4	67,6	NI	64,8	57,8	65,2	70,0	NI	126,7	53,7	60,3	
SB2012	109,8	76,0	112,9	62,6	68,0	3,9	49,4	NI	47,3	42,2	47,5	NI	NI	92,4	39,2	43,9	
SB2025	228,0	157,8	234,4	129,9	141,3	8,2	102,4	NI	98,2	87,5	98,7	NI	NI	192,0	81,5	91,1	
SB2050	458,2	317,1	471,0	261,1	283,9	16,4	206,0	NI	197,5	175,9	198,4	NI	NI	385,8	163,7	183,1	
SB2100	650,7	450,4	669,0	370,9	403,3	23,3	292,5	NI	280,5	249,9	281,8	NI	NI	547,9	232,6	260,0	
SB2150	1132,4	783,7	1164,2	645,4	701,7	40,6	509,1	NI	488,1	434,8	490,3	NI	NI	953,4	404,7	452,5	
SB513	11,6	7,9	11,8	6,4	7,0	NI	5,0	NI	4,8	4,2	4,8	5,0	NI	9,6	4,0	4,4	
SB517	16,1	10,9	16,3	8,9	9,7	NI	6,9	NI	6,5	5,8	6,6	6,9	NI	13,2	5,4	6,0	
SB520	21,2	14,3	21,5	11,7	12,7	NI	9,1	NI	8,6	7,5	8,6	8,9	NI	17,4	7,1	7,8	
SB525	29,2	19,7	29,5	16,1	17,6	NI	12,6	NI	12,0	10,5	12,0	12,6	NI	24,0	9,9	11,0	
SB530	39,8	26,8	40,3	21,9	23,9	NI	17,2	NI	16,2	14,2	16,3	17,0	NI	32,7	13,4	14,8	
SB535	43,8	29,6	44,4	24,1	26,4	NI	18,9	NI	17,8	15,6	17,9	18,6	NI	36,0	14,7	16,3	
SB540	49,7	33,5	50,3	27,3	29,9	NI	21,4	NI	20,1	17,6	20,2	20,9	NI	40,8	16,6	18,4	
SB840	87,8	59,5	88,9	48,7	53,0	NI	38,0	NI	36,4	32,2	36,6	38,7	NI	72,5	30,1	33,5	
SB845	129,9	87,8	131,5	71,8	78,3	NI	56,2	NI	53,5	47,2	53,8	56,5	NI	107,1	44,2	49,1	
SB855	137,9	93,1	139,6	76,1	83,0	NI	59,6	NI	56,7	50,0	57,0	59,8	NI	113,7	46,9	52,0	
SB865	157,4	106,5	159,4	86,9	94,8	NI	68,1	NI	64,6	56,9	64,9	67,9	NI	129,8	53,4	59,2	

Application 3: CO2 (R744)

Subcooling: 3K
Superheating: 6K

SB110H		Maximum Cooling Capacity (kW)						
Evaporation Temperature (°C)		Condensation Temperature (°C).						
		-30	-20	-10	0	10	20	30
	-60	7,69	8,68	9,38	9,76	9,75	9,23	7,92
	-40	5,05	6,98	8,23	9,00	9,28	8,99	7,88
	-20	NI	NI	5,33	7,09	7,97	8,11	7,35
	0	NI	NI	NI	NI	4,86	6,02	5,93

SB115H		Maximum Cooling Capacity (kW)						
Evaporation Temperature (°C)		Condensation Temperature (°C).						
		-30	-20	-10	0	10	20	30
	-60	16,22	18,33	19,81	20,61	20,59	19,49	16,72
	-40	10,67	14,73	17,38	18,99	19,59	18,98	16,63
	-20	NI	NI	11,25	14,96	16,83	17,12	15,51
	0	NI	NI	NI	NI	10,27	12,71	12,52

SB124H		Maximum Cooling Capacity (kW)						
Evaporation Temperature (°C)		Condensation Temperature (°C).						
		-30	-20	-10	0	10	20	30
	-60	38,71	43,74	47,27	49,18	49,13	46,50	39,90
	-40	25,46	35,14	41,46	45,31	46,74	45,29	39,67
	-20	NI	NI	26,84	35,70	40,15	40,86	37,00
	0	NI	NI	NI	NI	24,50	30,33	29,87

5. COMPATIBILITY WITH REFRIGERANT FLUID	
Valves	Refrigerant Fluid
SB108 SB110 SB114 SB118 SB124	R22, R32, R134A, R290, R404A, R407A, R407C, R407F, R410A, R422A, R427A, R441A, R448A, R449A, R450A, R452A, R507A, R513A, R600A, R1234yf and R1234ze
SB103T SB105T SB108T SB110T SB114T / SB114D SB118T / SB118D SB124T / SB124D SB130T / SB130D SB132T / SB132D SB145 SB152 SB155 SB162	R22, R32, R134A, R290, R404A, R407A, R407C, R407F, R410A, R422A, R422D, R427A, R441A, R448A, R449A, R450A, R452A, R507A, R513A, R600A, R744*, R1234yf e R1234ze *Applicable only on T Series valves
SB130 SB132	R22, R32, R134A, R290, R404A, R407A, R407C, R407F, R410A, R422A, R422D, R427A, R441A, R448A, R449A, R450A, R452A, R507A, R513A, R600A, R1234yf and R1234ze
SB110H SB115H SB124H	R744
SB2012 SB2025 SB2050 SB2100	R22, R32, R134A, R290, R404R, R407A, R407C, R407F, R410A, R448A, R449, R450A, R452A, R454B, R454C, R455A, R507A, R513A, R1234yf and R1234ze
SB513 SB517 SB520 SB525 SB530 SB535 SB540 SB840 SB845 SB855 SB865	R22, R32, R134A, R290, R404A, R407A, R407C, R407F, R410A, R422A, R422D, R427A, R448A, R449A, R450A, R452A, R454A, R454B, R454C, R455A, R507A, R513A, R515B, R516A, R600A, R1270, R1234yf and R1234ze

 Note: For more information on other refrigerants, please contact Full Gauge Controls.

6. TECHNICAL SPECIFICATIONS TABLE

Model	Voltage	Type	Steps	Minimum Steps / Seconds	Maximum Steps / Seconds	Additional Steps
SB103T	12 Vdc ± 10%	Unipolar	500	30	90	50
SB105T	12 Vdc ± 10%	Unipolar	500	30	90	50
SB108	12 Vdc ± 10%	Unipolar	500	30	90	50
SB108T	12 Vdc ± 10%	Unipolar	500	30	90	50
SB110	12 Vdc ± 10%	Unipolar	500	30	90	50
SB110H	12 Vdc ± 10%	Unipolar	500	30	90	50
SB110T	12 Vdc ± 10%	Unipolar	500	30	90	50
SB114	12 Vdc ± 10%	Unipolar	500	30	90	50
SB114T / SB114D	12 Vdc ± 10%	Unipolar	500	30	90	50
SB115H	12 Vdc ± 10%	Unipolar	500	30	90	50
SB118	12 Vdc ± 10%	Unipolar	500	30	90	50
SB118T / SB118D	12 Vdc ± 10%	Unipolar	500	30	90	50
SB124	12 Vdc ± 10%	Unipolar	500	30	90	50
SB124H	12 Vdc ± 10%	Unipolar	500	30	90	50
SB124T / SB124D	12 Vdc ± 10%	Unipolar	500	30	90	50
SB130	12 Vdc ± 10%	Unipolar	500	30	90	50
SB130T / SB130D	12 Vdc ± 10%	Unipolar	500	30	90	50
SB132	12 Vdc ± 10%	Unipolar	500	30	90	50
SB132T / SB132D	12 Vdc ± 10%	Unipolar	500	30	90	50
SB145	12 Vdc ± 10%	Unipolar	500	30	40	50
SB152	12 Vdc ± 10%	Unipolar	500	30	40	50
SB155	12 Vdc ± 10%	Unipolar	500	30	40	50
SB162	12 Vdc ± 10%	Unipolar	500	30	40	50
SB513	12 Vdc ± 10%	Unipolar	480	30	40	48
SB517	12 Vdc ± 10%	Unipolar	480	30	40	48
SB520	12 Vdc ± 10%	Unipolar	480	30	40	48
SB525	12 Vdc ± 10%	Unipolar	480	30	40	48
SB530	12 Vdc ± 10%	Unipolar	480	30	40	48
SB535	12 Vdc ± 10%	Unipolar	480	30	40	48
SB540	12 Vdc ± 10%	Unipolar	480	30	40	48
SB840	12 Vdc ± 10%	Unipolar	500	30	90	48
SB845	12 Vdc ± 10%	Unipolar	500	30	90	48
SB855	12 Vdc ± 10%	Unipolar	500	30	90	48
SB865	12 Vdc ± 10%	Unipolar	500	30	90	48

6.2 - Bipolar								
Model	Voltage	Type	Steps	Minimum Steps / Seconds	Maximum Steps / Seconds	Additional Steps	Rated Current	Holding Current
SB2012	12 Vdc ± 10%	Bipolar	2600	100	300	260	100mA	50mA
SB2025	12 Vdc ± 10%	Bipolar	2600	100	300	260	100mA	50mA
SB2050	12 Vdc ± 10%	Bipolar	2600	100	300	260	100mA	50mA
SB2100	12 Vdc ± 10%	Bipolar	3500	100	300	350	100mA	50mA
SB2150	12 Vdc ± 10%	Bipolar	3800	100	300	380	100mA	50mA

7. MECHANICAL SPECIFICATIONS TABLE

Model	Orifice	Mechanical Module	Valve Body	Ø Inlet	Ø Outlet	Filter	Minimum Room Temperature	Maximum Room Temperature	Valve Leakage (Closed)	Operating Pressure	MOPD Direct
SB103T	0.3 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	725 psi (50 bar)
SB105T	0.5 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	725 psi (50 bar)
SB108	0.8 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	870 psi (60 bar)	500 psi (34,5 bar)
SB108T	0.8 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	725 psi (50 bar)
SB110	1.0 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	870 psi (60 bar)	500 psi (34,5 bar)
SB110H	1.0 mm	Sanhua	Fixed	1/4"	1/4"	No	-30°C (-22°F)	60°C (140°F)	< 600 cm³/min	2030 psi (140 bar)	1450 psi (100 bar)
SB110T	1.0 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	725 psi (50 bar)
SB114	1.4 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	870 psi (60 bar)	500 psi (34,5 bar)
SB114T	1.4 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	725 psi (50 bar)
SB114D	1.4 mm	Sanhua	Removable	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	609 psi (42 bar)	507 psi (35 bar)
SB115H	1.5 mm	Sanhua	Fixed	1/4"	1/4"	No	-30°C (-22°F)	60°C (140°F)	< 600 cm³/min	2030 psi (140 bar)	1450 psi (100 bar)
SB118	1.8 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	870 psi (60 bar)	500 psi (34,5 bar)
SB118T	1.8 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	725 psi (50 bar)
SB118D	1.8 mm	Sanhua	Removable	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	609 psi (42 bar)	507 psi (35 bar)
SB124	2.4 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	870 psi (60 bar)	500 psi (34,5 bar)
SB124H	2.4 mm	Sanhua	Fixed	5/16"	5/16"	No	-30°C (-22°F)	60°C (140°F)	< 1000 cm³/min	2030 psi (140 bar)	1450 psi (100 bar)
SB124T	2.4 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	725 psi (50 bar)
SB124D	2.4 mm	Sanhua	Removable	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	609 psi (42 bar)	507 psi (35 bar)
SB130	3.0 mm	Sanhua	Fixed	5/16"	5/16"	No	-30°C (-22°F)	60°C (140°F)	500 cm³/min	650 psi (45bar)	500 psi (34,5 bar)
SB130T	3.0 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	507 psi (35 bar)
SB130D	3.0 mm	Sanhua	Removable	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	609 psi (42 bar)	507 psi (35 bar)
SB132	3.2 mm	Sanhua	Fixed	5/16"	5/16"	No	-30°C (-22°F)	60°C (140°F)	500 cm³/min	650 psi (45bar)	500 psi (34,5 bar)
SB132T	3.2 mm	Sanhua	Fixed	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	1305 psi (90 bar)	507 psi (35 bar)
SB132D	3.2 mm	Sanhua	Removable	3/8"	1/2"	Yes (100 mesh sieve)	-40°C (-40°F)	60°C (140°F)	< 1 cm³/min	609 psi (42 bar)	507 psi (35 bar)
SB145	4.5 mm	Sanhua	Fixed	5/8"	5/8"	No	-30°C (-22°F)	60°C (140°F)	< 2 cm³/min	710 psi (49 bar)	507 psi (35 bar)
SB152	5.2 mm	Sanhua	Fixed	5/8"	5/8"	No	-30°C (-22°F)	60°C (140°F)	< 3 cm³/min	710 psi (49 bar)	507 psi (35 bar)
SB155	5.5 mm	Sanhua	Fixed	5/8"	5/8"	No	-30°C (-22°F)	60°C (140°F)	< 4 cm³/min	710 psi (49 bar)	507 psi (35 bar)
SB162	6.2 mm	Sanhua	Fixed	5/8"	5/8"	No	-30°C (-22°F)	60°C (140°F)	< 4 cm³/min	710 psi (49 bar)	507 psi (35 bar)
SB2012	7.5 mm	Sanhua	Fixed	5/8"	5/8"	No	-40°C (-40°F)	60°C (140°F)	< 3 cm³/min	725 psi (50 bar)	565 psi (39 bar)
SB2025	7.5 mm	Sanhua	Fixed	5/8"	5/8"	No	-40°C (-40°F)	60°C (140°F)	< 5 cm³/min	725 psi (50 bar)	565 psi (39 bar)
SB2050	11.4 mm	Sanhua	Fixed	7/8"	7/8"	No	-40°C (-40°F)	60°C (140°F)	< 9 cm³/min	725 psi (50 bar)	565 psi (39 bar)
SB2100	14.4 mm	Sanhua	Fixed	1 1/8"	1 3/8"	No	-40°C (-40°F)	60°C (140°F)	< 14 cm³/min	725 psi (50 bar)	565 psi (39 bar)
SB2150	14.8 mm	Sanhua	Fixed	1 1/8"	1 3/8"	No	-40°C (-40°F)	60°C (140°F)	< 26 cm³/min	725 psi (50 bar)	565 psi (39 bar)
SB513	1.3 mm	Danfoss	Fixed	5/16"	5/16"	No	-40°C (-40°F)	80°C (176°F)	< 150 cm³/min	711 psi (49bar)	507 psi (35 bar)
SB517	1.65 mm	Danfoss	Fixed	5/16"	5/16"	No	-40°C (-40°F)	80°C (176°F)	< 150 cm³/min	711 psi (49bar)	507 psi (35 bar)
SB520	2.0 mm	Danfoss	Fixed	5/16"	5/16"	No	-40°C (-40°F)	80°C (176°F)	< 150 cm³/min	711 psi (49bar)	507 psi (35 bar)
SB525	2.5 mm	Danfoss	Fixed	5/16"	5/16"	No	-40°C (-40°F)	80°C (176°F)	< 500 cm³/min	711 psi (49bar)	609 psi (42 bar)
SB530	3.0 mm	Danfoss	Fixed	5/16"	5/16"	No	-40°C (-40°F)	80°C (176°F)	< 500 cm³/min	711 psi (49bar)	609 psi (42 bar)
SB535	3.5 mm	Danfoss	Fixed	5/16"	5/16"	No	-40°C (-40°F)	80°C (176°F)	< 500 cm³/min	711 psi (49bar)	609 psi (42 bar)
SB540	4.0 mm	Danfoss	Fixed	5/16"	5/16"	No	-40°C (-40°F)	80°C (176°F)	< 500 cm³/min	711 psi (49bar)	609 psi (42 bar)
SB840	4.0 mm	Danfoss	Fixed	5/8"	5/8"	No	-30°C (-22°F)	70°C (158°F)	< 800 cm³/min	711 psi (49bar)	565 psi (39 bar)
SB845	4.5 mm	Danfoss	Fixed	5/8"	5/8"	No	-30°C (-22°F)	70°C (158°F)	< 800 cm³/min	711 psi (49bar)	565 psi (39 bar)
SB855	5.5 mm	Danfoss	Fixed	5/8"	5/8"	No	-30°C (-22°F)	70°C (158°F)	< 800 cm³/min	711 psi (49bar)	565 psi (39 bar)
SB865	6.5 mm	Danfoss	Fixed	5/8"	5/8"	No	-30°C (-22°F)	70°C (158°F)	< 800 cm³/min	711 psi (49bar)	565 psi (39 bar)

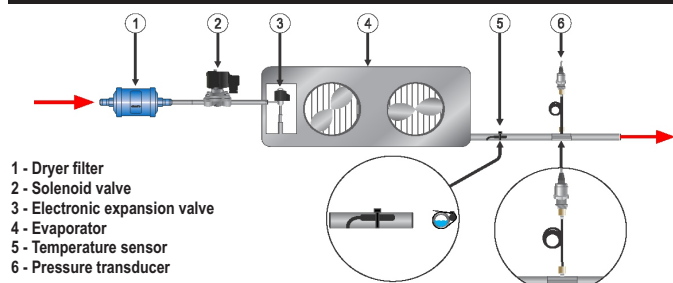
Electronic Expansion Valves (EEVs) with very low internal leakage offer the technical advantage of blocking the liquid flow. Since installing a solenoid valve in the liquid line is standard market practice, the decision to dispense with or maintain its use is up to the technical professional, based on the value in the "Valve Leakage (Closed)" column:

Less than 1 cm³/min: At the professional's discretion (Optional use). The high tightness of the EEV provides the benefit of safely retaining the liquid refrigerant, allowing the designer to choose to dispense with the traditional solenoid valve.

Between 2 and 26 cm³/min: Application analysis is required. Dispensing with the solenoid valve is feasible in common commercial systems equipped with a suitable suction accumulator. However, the professional should assess the need to maintain it in frozen product cold rooms (low temperature), systems with a critical fluid charge, or circuits operating by pump-down.

In the range of hundreds of cm³/min: Mandatory solenoid valve use. Due to the internal leakage rate in this range, the designer must follow standard practice and install the solenoid valve upstream of the EEV to ensure liquid flow interruption during the off-cycle, protecting the compressor against the risk of liquid slugging at startup.

8. FIXING PROCEDURE



To proceed with the EEV installation, follow the procedures and recommendations below:

- Respect the position indicated in the refrigeration installation for the Electronic Expansion Valve (EEV) and the sensors necessary for calculating the superheat;

- Install the temperature sensor close to the evaporator outlet. Use a plastic clamp to fix and elastomeric tape to thermally insulate the temperature sensor next to the piping;

- If the EEV electronic controller has a power backup system for closing the valve in case of power interruption, the installation of the solenoid valve is optional. Check the electronic controller manual;

- It is recommended to use a solenoid valve to protect the cooling system in the event of a power interruption, positioning it close to the EEV (preferably between 5cm (2") to 20cm (8"));

- To avoid damage to the pressure transducer, a valve (schradler, sphere, etc.) must be used to isolate it from the cooling system during the vacuum process. It is recommended to use a flexible capillary (or copper tube) to position the pressure sensor above the level of the suction line;

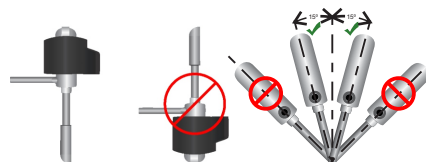
- Observe the pressure transducer placement recommendations to avoid mechanical damage and oil accumulation;

- The installation must have a filter drier to retain possible impurities that are present in the piping.

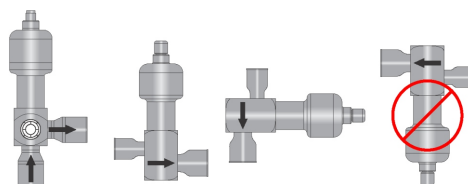
8.1. Installation guidance

For the installation of the EEV, respect the maximum tolerance of $\pm 15^\circ$ in relation to the axis.

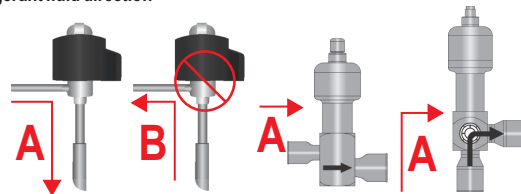
8.1.1. Unipolar



8.1.2. Bipolar



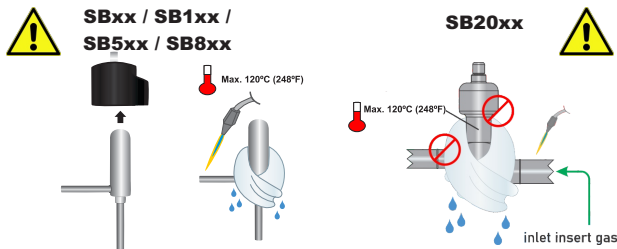
8.2. Refrigerant fluid direction



The recommended direction for the flow of the refrigerant fluid is "A". The use of EEV is not recommended for the "flow" direction of the refrigerant fluid "B". In this direction of flow, EEV does not maintain the specified cooling capacity and has less support for reverse pressure.

9. VALVE WELDING

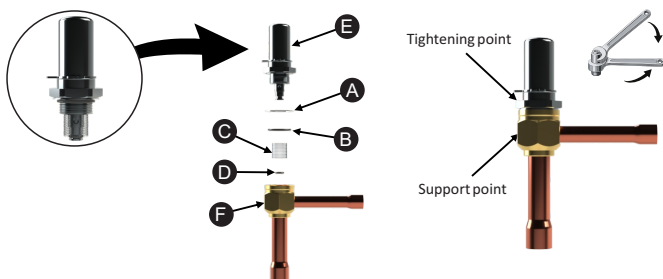
- Before the welding process, remove the coil from the EEV;
- Use a wet rag during the welding process in order to avoid heating the EEV;
- The temperature in the valve body must not exceed 120°C (248°F);
- After welding, replace the EEV coil.



10. ASSEMBLY OF THE REMOVABLE VALVE

Procedure:

- 1- Install the sealing gasket (A) in the recess;
 - 2- Install the O-ring (B) in the groove;
 - 3- Install the filter screen (C) in the limiter;
 - 4- Check the sealing ring (D) in the valve recess;
 - 5- Check that the O-ring (B) and the sealing gasket (A) are correctly installed;
 - 6- After completing the installation, tighten the valve head (E) in the direction and position indicated in the diagram, using two 24 mm open-end wrenches:
- Use one wrench to hold the valve body (F) in place;
 - Use the other wrench to tighten the valve body;
 - 7- Apply a tightening torque of 45 N·m, with a tolerance of ± 3 N·m.



11. COIL ASSEMBLY

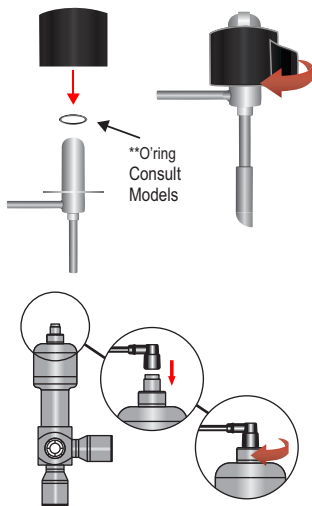
11.1. Unipolar:

- Install the coil over the valve body and rotate the coil to fix it correctly;
- Observe and verify that the coil is properly attached to the valve;
- Never energize the coil unless it is connected and fixed on the valve.

** Assemble O'ring on the models: SB103T, SB105T, SB108, SB108T, SB110, SB110T, SB114, SB114T, SB118, SB118T, SB124, SB124T, SB130T, SB130D, SB132T, SB132D, SB145, SB152, SB155, SB162, SB840, SB845, SB855 and SB865.

11.2. Bipolar

- Connect the cable accordingly upper position of EEV.



12. CABLE LENGTH

12.1. Coil cable length

Coil cable length	Valves
0.7 m	SB110H, SB115H e SB124H
1.5 m	SB103T, SB105T, SB108, SB108T, SB110, SB110T, SB114, SB114T, SB118, SB118T, SB124, SB124T, SB130, SB130T, SB130D, SB132, SB132T, SB132D, SB145, SB152, SB155, SB162, SB513, SB517, SB520, SB525, SB530, SB535 E SB540
2.0 m	SB2012, SB2025, SB2050, SB2100, SB2150, SB840, SB845 SB855 e SB865

12.2. Maximum cable length

For applications where it is necessary to increase the cable distance between the controller and the valve, use the specifications in the following tables.
For both applications, it is recommended to use shielded cables.

Valves: SB103T to SB162, SB513 to SB540, SB840 to SB865

Bitola	Number of cable ways	Maximum length
0,75 mm ²	5	20 meters
1,00 mm ²	5	30 meters
1,50 mm ²	5	45 meters
2,50 mm ²	5	70 meters

Valves: SB2012 to SB2150

Gauge	Number of cable ways	Maximum length
1,00 mm ²	4	100 meters

13. FG MANUAL ACTUATOR - Sold Separately

Accessory for manually opening and closing the electronic expansion valve.

Compatible with the following valves: SB103T, SB105T, SB108, SB108T, SB110, SB110H, SB110T, SB114, SB114T, SB118, SB118T, SB124, SB124H, SB124T, SB130, SB130T, SB130D, SB132, SB132T, SB132D, SB145, SB152, SB155 and SB162.



14. REMOVABLE VALVES - REPAIR KIT

Removable type valves have two repair kit options (spare parts):

14.1. Valve head

Includes valve head (1) + sealing gasket (2) + O-ring (3) + filter screen (4).

14.2. Repair kit

Includes sealing gasket (2) + O-ring (3) + filter screen (4).

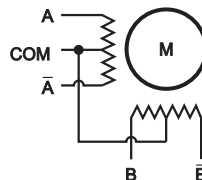


Note: Compatible with the following valves: SB114D, SB118D, SB124D, SB130D and SB132D.

15. COIL INTEGRITY TEST

15.1. Unipolar coil

To check the coil integrity, use a multimeter and check the electrical resistance of each coil, for example, between terminal "A" and terminal "COM". The measured resistance must be in accordance with the value informed for the unipolar coil, in this case $46 \pm 3.0\Omega$.



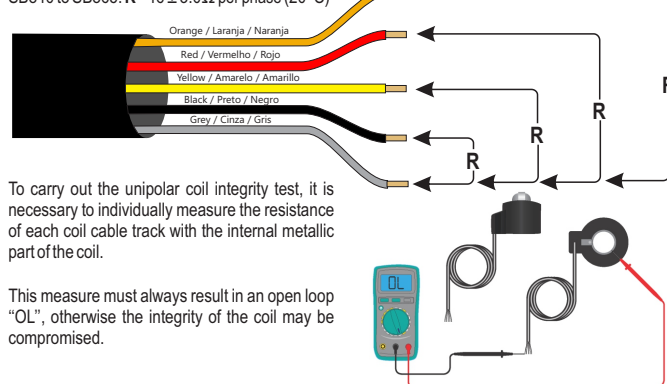
A	Orange / Laranja / Naranja
B	Red / Vermelho / Rojo
A-bar	Yellow / Amarelo / Amarillo
B-bar	Black / Preto / Negro
COM	Grey / Cinza / Gris

Coil resistance:

SB103T to SB162: $R = 46 \pm 3.0\Omega$ per phase (20°C)

SB513 to SB540: $R = 50 \pm 10.0\Omega$ per phase (20°C)

SB840 to SB865: $R = 46 \pm 3.0\Omega$ per phase (20°C)



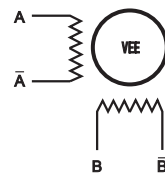
To carry out the unipolar coil integrity test, it is necessary to individually measure the resistance of each coil cable track with the internal metallic part of the coil.

This measure must always result in an open loop "OL", otherwise the integrity of the coil may be compromised.

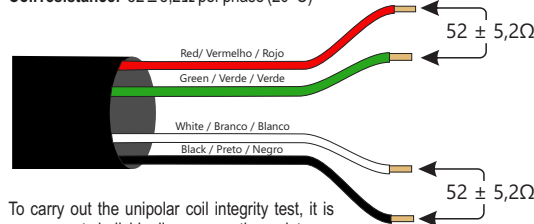
15.2. Bipolar coin

To check the integrity of the coil, use a multimeter and check the electrical resistance between the "A" and "A" coils; "B" and "B". The measured resistance must be in accordance with the value reported for the bipolar coil, in this case $52 \pm 5.2\Omega$. Resistance measurement between different coils must always result in an open loop "OL".

A	Red / Vermelho / Rojo
A-bar	Green / Verde / Verde
B	White / Branco / Blanco
B-bar	Black / Preto / Negro

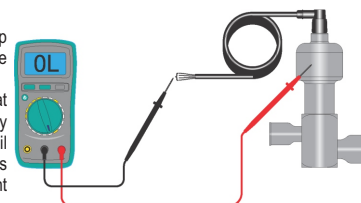


Coil resistance: $52 \pm 5.2\Omega$ per phase (20°C)



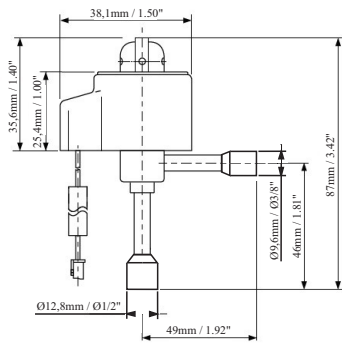
To carry out the unipolar coil integrity test, it is necessary to individually measure the resistance of each coil cable track with the internal metallic part of the coil.

This measure must always result in an open loop "OL", otherwise the integrity of the coil may be compromised.
Connect the cable of the EEV to the controller, at indicated positions. Valve Voltage power supply is 12Vdc $\pm 10\%$. Only energize the valve coil connected to the controller. The motor has permanent magnets that maintain the current position of the valve in case of power failure.

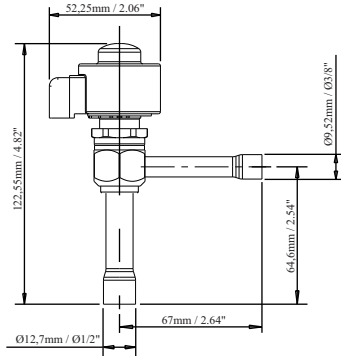


16. VALVES DIMENSIONS

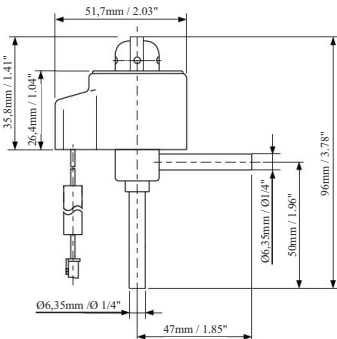
SB103T - SB105T - SB108
SB110 - SB110T - SB114
SB114T - SB118 - SB118T
SB124 - SB124T - SB130T
SB132T



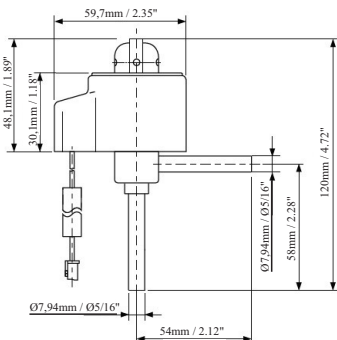
SB114D - SB118D - SB124D
SB130D - SB132D



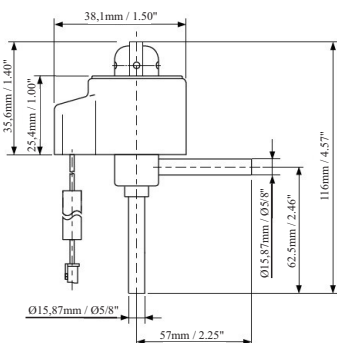
SB110H - SB115H



SB124H

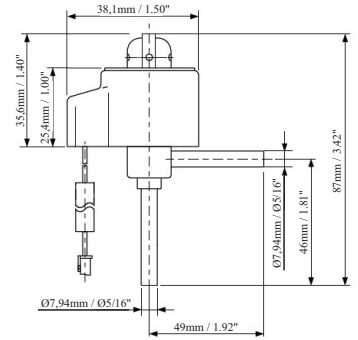


SB145 - SB152 - SB155
SB162

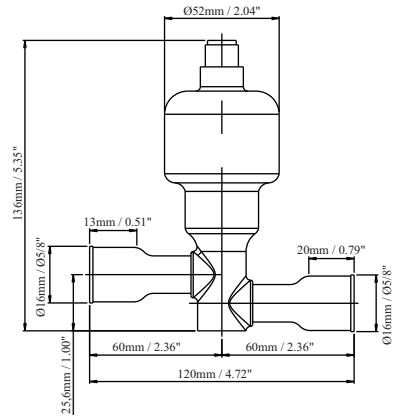


16. VALVES DIMENSIONS

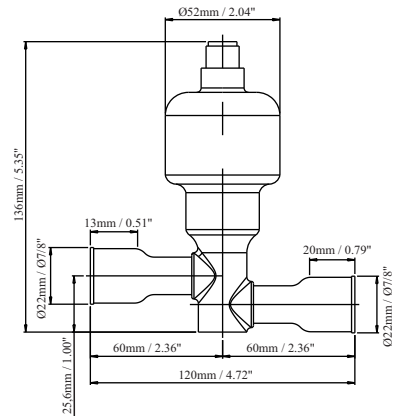
SB130 - SB132



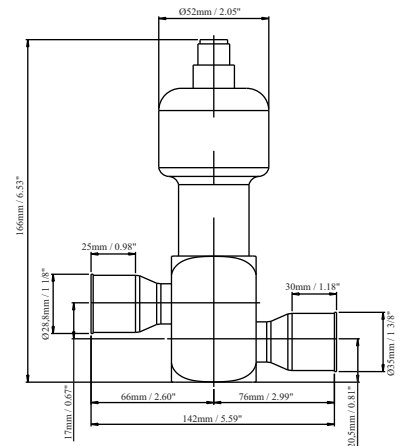
SB2012 - SB2025



SB2050

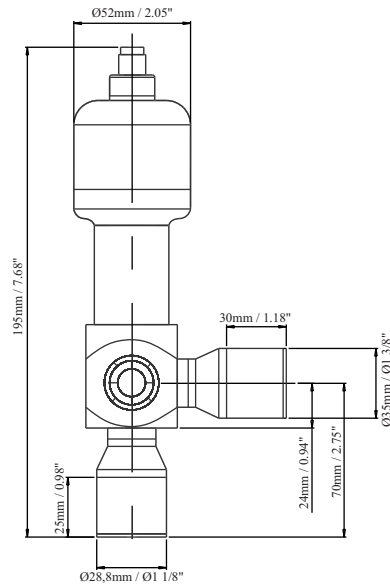


SB2100

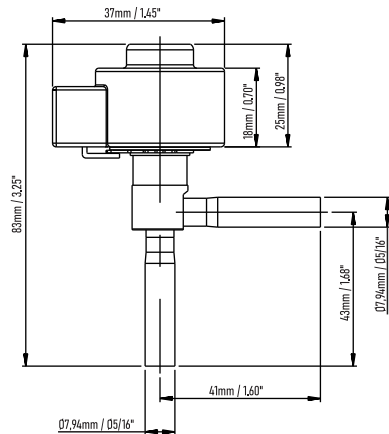


16. VALVES DIMENSIONS

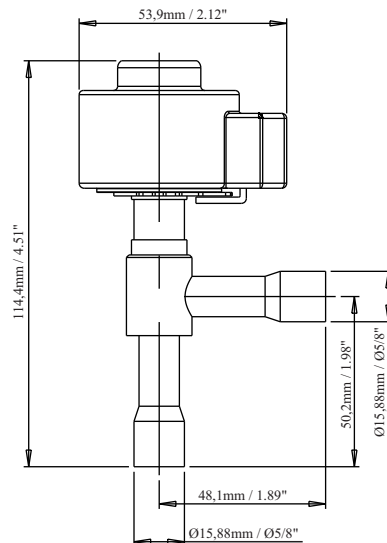
SB2150



SB513 - SB517 - SB520 SB525 - SB530 - SB535 SB540



SB840 - SB845 - SB855 SB865



17. WARRANTY



ENVIRONMENTAL INFORMATION

Packaging:

Full Gauge products use packaging made from entirely recycled materials. Please dispose of it through specialized recyclers.

Product:

The components used in Full Gauge controllers can be recycled and reused if they are dismantled by specialists.

Disposal:

Do not burn or throw controllers in the domestic waste, once they have reached the end of their working life. Follow the current legislation applicable to your area in relation to disposing of electronic waste. If you have any questions, contact Full Gauge Controls.

WARRANTY - FULL GAUGE CONTROLS

Products manufactured by Full Gauge Controls, from May 2005, have a warranty period of 10 (ten) years direct from the factory and 01 (one) year from accredited retailers, starting from the consignment date on the sales invoice. After this year, the warranty will continue to be honored for purchases from retailers if the device is sent directly to Full Gauge Controls. This period is valid in Brazil. Other countries provide a guarantee for 2 years. The products are guaranteed in the event of a manufacturing fault that makes them unsuitable or inappropriate for the uses to which they were intended. The warranty is limited to the maintenance of devices manufactured by Full Gauge Controls, regardless of any other form of costs, such as any indemnity due to damage caused to other equipment.

WARRANTY EXCEPTIONS

The Warranty does not cover transport and / or insurance costs for sending products believed to have defects or to have malfunctioned to Technical Support. The following events are also not covered: natural wear of parts, external damage caused by falls or improper packing of products.

LOSS OF WARRANTY

The product will automatically no longer be covered if:

- The instructions for use and assembly contained in the technical description and installation procedures listed in the NBR5410 standard are not observed;
- It is subjected to conditions beyond the limits specified in its technical description;
- If it is opened up or repaired by a person who is not part of Full Gauge's technical team;
- The damage which has taken place was the result of a fall, blow or impact, water damage, electrical surge or atmospheric discharge.

USING THE WARRANTY

To take advantage of the warranty, the customer must send the product properly packed, together with the corresponding purchase invoice, to Full Gauge Controls. The delivery cost for the product is borne by the client. You will also need to send as much information as possible regarding the defect that has been detected, thus making it possible to streamline the analysis, testing and servicing.

These processes and any eventual maintenance of the product will only be carried out by Full Gauge Controls' Technical Support, at the Company's head office - Rua Júlio de Castilhos, 250 - Zip Code 92120-030 - Canoas - Rio Grande do Sul - Brazil.

Rev. 03

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