SPORLAN 201

CATALOGUE 201ME
SEPTEMBER 2002

CONDENSED CATALOGUE 201ME

September 2002

This catalogue is a condensed version of the complete Sporlan Catalogue. By including a minimum of engineering information we are able to provide a small, handy-sized reference of pertinent data and specifications on Sporlan products. If you need additional engineering information, or would like a copy of the complete Sporlan Catalogue, please contact your Sporlan Wholesaler or Acal Sales Office.

CONTENTS

*To request individual Sporlan Product Bulletins, please contact your Sporlan Wholesaler or Acal Sales Office.

Catalogue 201ME is based on Catalog 201.

FOR USE ON REFRIGERATION and/or AIR CONDITIONING SYSTEMS ONLY

THERMOSTATIC EXPANSION VALVES

10

OUTSTANDING FEATURES & BENEFITS OF SPORLAN THERMOSTATIC EXPANSION VALVES

- **SELECTIVE THERMOSTATIC CHARGES** Designed to provide optimum performance for all applications — air conditioning and heat pump, medium and low temperature refrigeration.
- **THERMOSTATIC ELEMENT DESIGN** Long lasting and field proven stainless steel diaphragm and welded element construction.
- **DIAPHRAGM DESIGN** Large flat diaphragm permits precise valve control.
- **REPLACEABLE THERMOSTATIC ELEMENTS** Field replaceable elements on all standard valves.
- **BALANCED PORT DESIGN** Provides perfect pin and port alignment, and prevents changes in pressure drop across the valve from influencing valve operation. Provides excellent control on applications with widely varying operating conditions.
- **PIN CARRIER DESIGN (CONVENTIONAL VALVES)** Provides precise pin and port alignment, and tighter seating.
- **ACCESSIBLE INTERNAL PARTS** Durable, leakproof body joint construction allows the valve to be disassembled, and the internal parts cleaned and inspected.
- **MATERIALS OF CONSTRUCTION** Pin and port materials offer maximum protection against corrosion and erosion.
- **SILVER SOLDERED CONNECTIONS** For leakproof, high strength connection-to-body joints.
- **ADJUSTABLE SUPERHEAT DESIGN** All standard valves are externally adjustable except the Type NI, which is internally adjustable through its outlet connection.

VALVE NOMENCLATURE / ORDERING INSTRUCTIONS — Combine the letters and numbers in the following manner to obtain the complete valve designation. Also include all connection sizes and the capillary tube length.

EXAMPLE

S	V	E	-	5	-	C	1/2" ODF Solder	X	7/8" ODF Solder	X	1/4" ODF Solder	X	5'
Body Type	**Sporlan Code –** REFRIGERANT Element Label Color Code **F** - R-12 - Yellow **E** - R-13 - Blue **V** - R-22 - Green **G** - R-23 - Blue **M** - R-124 - Blue **J** - R-134a - Blue **X** - R-401A - Pink **L** - R-402A - Sand **S** - R-404A - Orange **V** - R-407A - Green **N** - R-407C - Lt. Brown **R** - R-408A - Purple **F** - R-409A - Yellow **R** - R-502 - Purple **W** - R-503 - Blue **P** - R-507 - Teal **W** - R-508B - Blue **A** - R-717 - White	"E" specifies external equaliser. Omission of letter "E" indicates valve with internal equaliser. eg. SV-5-C		Nominal Capacity in tons		Thermostatic Charge	Inlet Connection Size and Style		Outlet Connection Size and Style		Equaliser Connection Size and Style		Capillary Tubing Length (inches or feet)

SPORLAN SELECTIVE CHARGES ENGINEERED for PEAK PERFORMANCE for EACH SPECIFIC APPLICATION

*RECOMMENDED THERMOSTATIC CHARGES											
APPLICATION	REFRIGERANT										ACTUAL THERMOSTATIC CHARGES
	12 409A	22 407A	134a	401A	402A	404A	407C	502 408A	507	717	
AIR CONDITIONING	FCP60	–	JCP60	XCP60	–	–	–	–	–	–	FCP60
	–	VCP100	–	–	–	–	NCP100	–	–	–	VCP100
	–	VGA	–	–	–	–	NGA	–	–	–	VGA
	–	–	–	–	–	SCP115	–	RCP115	–	–	SCP115
COMMERCIAL REFRIGERATION 10°C to – 25°C	FC	–	JC	XC	–	–	–	–	–	–	FC
	–	VC	–	–	–	–	NC	–	–	–	VC
	–	–	–	–	–	SC	–	RC	–	–	SC
	–	–	–	–	LC	–	–	–	PC	–	PC
	–	–	–	–	–	–	–	–	–	AC, AL	AC, AL
LOW TEMPERATURE REFRIGERATION – 20°C to – 40°C	FZ	–	–	–	–	–	–	–	–	–	FZ
	FZP	–	–	–	–	–	–	–	–	–	FZP
	–	VZ	–	–	–	–	–	–	–	–	VZ
	–	VZP40	–	–	–	–	–	–	–	–	VZP40
	–	–	–	–	LZ	SZ	–	RZ	PZ	–	SZ
	–	–	–	–	LZP	SZP	–	RZP	PZP	–	SZP
	–	–	–	–	–	–	–	–	–	AZ, AL	AZ, AL
EXTREME LOW TEMP. REFRIGERATION – 40°C to – 75°C	–	VX	–	–	–	–	–	–	–	–	VX
	–	–	–	–	LX	SX	–	RX	PX	–	SX

*** APPLICATION FACTORS:**

1. The Type ZP charges have essentially the same characteristics as the Type Z charge with one exception: ZP charges produce a pressure limit Maximum Operating Pressure (MOP). ZP charges are not intended as replacements for Z charges. Each should be selected for its own unique purpose.
2. All air conditioning and heat pump charges are intended for use with externally equalised valves.
3. Type L Liquid charges are also available for most commonly used refrigerants in most element sizes.
4. If in doubt as to which charge to use, contact the nearest Acal Sales Office or Sporlan Wholesaler with complete system data.
5. The Type X charges are not to be used with “EBS” and “O” valves.

12, 134a, 401A, 409A

THERMOSTATIC EXPANSION VALVE CAPACITIES for REFRIGERANTS kW

AIR CONDITIONING, HEAT PUMP and COMMERCIAL REFRIGERATION APPLICATIONS

VALVE TYPES		NOMINAL CAPACITY		REFRIGERANT											
				12			134a			401A			409A		
				RECOMMENDED THERMOSTATIC CHARGES											
				FC, FCP60			JC, JCP60			XC, XCP60			FC, FCP60		
				EVAPORATOR TEMPERATURE °C											
		tons	kW	5°	0°	-10°	5°	0°	-10°	5°	0°	-10°	5°	0°	-10°
NI-F-EF-G-EG		1/8	0.44	0.43	0.49	0.44	0.51	0.59	0.52	0.55	0.63	0.57	0.51	0.59	0.53
F-EF-G-EG		1/6	0.59	0.71	0.85	0.82	0.85	1.02	0.97	0.91	1.10	1.05	0.85	1.02	0.99
NI-F-EF-G-EG		1/4	0.88	0.89	1.07	1.02	1.06	1.27	1.21	1.14	1.37	1.33	1.07	1.28	1.23
NI-F-EF-G-EG		1/2	1.76	1.71	1.96	1.74	2.04	2.34	2.08	2.20	2.53	2.27	2.06	2.36	2.11
NI-F-EF-G-EG		1	3.52	3.42	3.93	3.50	4.09	4.68	4.16	4.40	5.06	4.53	4.12	4.73	4.22
F-EF-G-EG		1-1/2	5.28	5.47	6.28	5.60	6.54	7.50	6.65	7.04	8.09	7.25	6.58	7.56	6.76
F&EF(Ext)-G&EG(Ext)-C(Int)-S		2	7.03	6.84	7.84	7.00	8.17	9.37	8.32	8.79	10.1	9.06	8.23	9.45	8.45
C-S		2-1/2	8.79	8.55	9.81	8.74	10.2	11.7	10.4	11.0	12.6	11.3	10.3	11.8	10.6
F&EF(Ext)-C-S		3	10.6	10.3	11.8	10.4	12.3	14.1	12.5	13.2	15.1	13.6	12.3	14.2	12.6
C&S(Ext)		5	17.6	17.2	18.4	14.2	20.6	21.9	16.9	22.2	23.7	18.4	20.7	22.1	17.1
S(Ext)		6	21.1	20.7	22.0	17.0	24.7	26.3	20.3	26.6	28.4	22.0	24.9	26.6	20.6
S(Ext)		10	35.2	31.9	34.8	27.9	38.2	41.5	33.2	41.1	44.8	36.1	38.4	41.9	33.7
H		1-1/2	5.28	5.47	6.28	5.60	6.54	7.50	6.65	7.04	8.09	7.25	6.58	7.56	6.76
H		3	10.6	10.3	11.8	10.3	12.3	14.1	12.2	13.2	15.1	13.3	12.3	14.2	12.3
H		4	14.1	13.7	15.7	13.7	16.3	18.7	16.3	17.6	20.3	17.7	16.5	18.9	16.5
H		5	17.6	17.1	19.6	17.0	20.4	23.4	20.4	22.0	25.3	22.1	20.6	23.6	20.6
H		8	28.1	25.6	29.5	25.6	30.7	35.1	30.5	33.0	37.9	33.2	30.9	35.4	30.9
H		12	42.2	40.0	45.9	39.9	47.8	54.8	47.5	51.4	59.2	51.7	48.1	55.4	48.3
M		13	45.7	44.4	51.0	44.0	53.1	60.9	52.3	57.2	65.7	56.9	53.5	61.4	53.1
M		15	52.8	53.0	60.8	52.3	63.4	72.6	62.4	68.2	78.4	67.9	63.8	73.3	63.3
M		20	70.3	68.4	78.4	67.6	81.7	93.7	80.4	87.9	101	87.5	82.3	94.5	81.6
M		25	88.0	85.5	98.1	84.5	102	117	101	110	126	110	103	118	102
BALANCED PORT THERMOSTATIC EXPANSION VALVES															
BF-EBF-SBF-BQ-EBQ-SBQ		AAA	0.70	0.71	0.85	0.82	0.85	1.02	0.97	0.91	1.10	1.05	0.85	1.02	0.99
BF-EBF-SBF-BQ-EBQ-SBQ		AA	1.17	1.54	1.77	1.58	1.84	2.11	1.87	1.98	2.28	2.04	1.85	2.13	1.90
BF-EBF-SBF-BQ-EBQ-SBQ		A	3.52	3.42	3.93	3.50	4.09	4.68	4.16	4.40	5.06	4.53	4.12	4.73	4.22
BF-EBF-SBF-BQ-EBQ-SBQ		B	6.15	5.81	6.67	5.94	6.95	7.96	7.07	7.48	8.60	7.70	7.00	8.03	7.18
BF-EBF-SBF-BQ-EBQ-SBQ		C	10.6	10.3	11.8	10.4	12.3	14.1	12.5	13.2	15.1	13.6	12.3	14.2	12.6
EBS		5	17.6	17.4	19.3	16.1	20.8	23.1	19.1	22.4	25.0	20.8	21.0	23.3	19.4
EBS		7	24.6	24.0	26.6	22.1	28.7	31.9	26.3	30.9	34.4	28.7	28.9	32.2	26.7
EBS		9	31.7	31.9	34.7	27.4	38.1	41.5	32.6	41.0	44.7	35.4	38.4	41.8	33.0
EBS		12	42.2	45.6	49.7	39.1	54.6	59.3	46.5	58.7	64.1	50.6	55.0	60.0	47.1
O		9	31.7	30.8	35.3	30.9	36.8	42.2	36.9	39.6	45.5	40.1	37.0	42.5	37.4
O		12	42.2	40.0	45.9	40.2	47.8	54.8	47.8	51.4	59.2	52.1	48.1	55.4	48.6
O		16	56.3	53.0	60.8	53.3	63.4	72.6	63.4	68.2	78.4	69.0	63.8	73.3	64.3
O		23	80.9	78.3	93.3	84.9	93.6	112	101	101	120	110	94.3	113	103
O		32	113	109	130	118	130	155	141	140	167	154	131	157	143
O		40	141	136	162	147	163	193	176	175	209	191	164	195	179
V		35	123	120	137	117	143	164	140	154	177	153	144	165	142
V		45	158	154	177	152	184	211	180	198	228	195	185	213	183
V		55	193	188	216	185	225	258	219	242	278	239	226	260	223
W		80	281	291	333	280	347	398	334	374	430	363	350	402	338
W		110	387	407	-	-	487	-	-	524	-	-	490	-	-
VALVE TYPE	CARTRIDGE NO.	REPLACEABLE CARTRIDGE THERMOSTATIC EXPANSION VALVES													
Q-EQ-SQ	0	1/6	0.59	0.68	0.78	0.70	0.82	0.94	0.83	0.88	1.01	0.91	0.82	0.95	0.84
Q-EQ-SQ	1	1/4	0.88	1.54	1.77	1.58	1.84	2.11	1.87	1.98	2.28	2.04	1.85	2.13	1.90
Q-EQ-SQ	2	1/2	1.76	2.22	2.55	2.28	2.66	3.04	2.71	2.86	3.29	2.95	2.67	3.07	2.75
Q-EQ-SQ	3	1	3.52	3.42	3.93	3.50	4.09	4.68	4.16	4.40	5.06	4.53	4.12	4.73	4.22
Q-EQ-SQ	4	1-1/2	5.28	4.79	5.49	4.90	5.72	6.56	5.83	6.16	7.08	6.34	5.76	6.62	5.91
Q-EQ-SQ	5	2	7.03	6.84	7.84	7.00	8.17	9.37	8.32	8.79	10.1	9.06	8.23	9.45	8.45
Q-EQ-SQ	6	2-1/2	8.79	9.23	10.6	9.44	11.0	12.6	11.3	11.9	13.7	12.2	11.1	12.7	11.4

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV bar							
	2	4	6	8	10	12	14	16
	CORRECTION FACTOR, CF PRESSURE DROP							
5°	0.71	1.00	1.22	1.41	1.58	1.73	1.87	2.00
0° & -10°	0.58	0.82	1.00	1.15	1.29	1.41	1.53	1.63

TEV CAPACITY = TEV RATING X CF LIQUID TEMPERATURE X CF PRESSURE DROP
Example: Actual capacity of a nominal 5 ton, R-134a Type S valve at 0°C evaporator, 6 bar pressure drop across the TEV, and 30°C liquid temperature entering the TEV, is: 21.9 kW(from rating chart) x 1.13 (CF liquid temperature) x 1.00 (CF pressure drop) = 24.7 kW.

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C							
	-10°	0°	10°	20°	30°	40°	50°	60°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE							
12	1.56	1.45	1.34	1.23	1.11	1.00	0.88	0.77
134a	1.65	1.53	1.40	1.27	1.13	1.00	0.86	0.72
401A	1.56	1.46	1.34	1.23	1.12	1.00	0.88	0.75
409A	1.52	1.42	1.32	1.21	1.11	1.00	0.89	0.78

THERMOSTATIC EXPANSION VALVE CAPACITIES for REFRIGERANTS kW

22, 407A, 407C

AIR CONDITIONING, HEAT PUMP and COMMERCIAL REFRIGERATION APPLICATIONS

VALVE TYPES		NOMINAL CAPACITY		REFRIGERANT															
				22						407A						407C			
				RECOMMENDED THERMOSTATIC CHARGES															
				VC, VCP100, VGA			VZ, VZP40			VC, VCP100, VGA			VZ, VZP40			NC, NCP100, NGA		
				EVAPORATOR TEMPERATURE °C															
		tons	kW	5°	0°	-10°	-20°	-30°	-40°	5°	0°	-10°	-20°	-30°	-40°	5°	0°	-10°
F-EF-G-EG		1/5	0.70	0.64	0.73	0.69	0.65	0.49	0.39	0.60	0.67	0.63	0.58	0.43	0.33	0.59	0.66	0.80
NI		1/4	0.88	0.80	0.91	0.89	0.93	0.78	0.61	0.74	0.84	0.80	0.83	0.67	0.51	0.73	0.82	0.78
F-EF-G-EG		1/3	1.17	1.12	1.28	1.22	1.10	0.79	0.62	1.04	1.18	1.10	0.98	0.68	0.52	1.02	1.16	1.08
NI-F-EF-G-EG		1/2	1.76	1.45	1.65	1.56	1.42	1.02	0.80	1.34	1.52	1.41	1.26	0.89	0.68	1.32	1.52	1.39
G-EG		3/4	2.64	2.41	2.75	2.60	2.51	1.99	1.55	2.24	2.53	2.35	2.21	1.72	1.32	2.19	2.49	2.32
NI-F-EF-G-EG		1	3.52	3.21	3.67	3.47	3.28	2.52	1.96	2.98	3.38	3.13	2.89	2.18	1.67	2.93	3.32	3.09
F-EF-G-EG		1-1/2	5.28	5.14	5.87	5.56	5.03	3.57	2.79	4.77	5.39	5.01	4.44	3.09	2.36	4.68	5.31	4.95
F&EF(Ext)-G&EG(Ext)-S		2	7.03	6.43	7.34	6.95	6.88	5.74	4.47	5.96	6.74	6.26	6.08	4.96	3.79	5.85	6.63	6.18
F&EF(Int)-G&EG(Int)		2-1/2	8.79	8.03	9.17	8.68	8.26	6.44	5.02	7.46	8.43	7.83	7.30	5.57	4.26	7.31	8.29	7.73
F&EF(Ext)-G&EG(Ext)-C(Int)-S		3	10.6	10.3	11.7	11.1	9.91	6.82	5.32	9.54	10.8	9.99	8.75	5.90	4.50	9.36	10.6	9.89
C-S		4	14.1	14.5	16.5	15.6	14.1	10.0	7.83	13.4	15.1	14.1	12.5	8.69	6.63	13.2	14.9	13.9
F&EF(Ext)-C-S		5	17.6	16.7	19.1	18.1	16.4	11.8	9.22	15.5	17.6	16.3	14.5	10.2	7.81	15.2	17.2	16.1
C&S(Ext)		8	28.1	25.7	29.4	27.2	23.5	15.9	12.3	23.8	27.0	24.5	20.7	13.8	10.4	23.4	26.5	24.2
S(Ext)		10	35.2	32.1	36.7	34.0	29.3	19.9	15.3	29.8	33.8	30.7	25.9	17.2	13.0	29.3	33.2	30.2
S(Ext)		15	52.8	49.8	56.9	52.7	46.2	31.2	24.9	46.2	52.3	47.4	40.8	27.0	21.0	45.3	51.4	46.9
H		2-1/2	8.79	8.04	9.10	8.56	8.12	5.10	4.28	7.46	8.36	7.71	7.20	4.41	3.63	7.32	8.22	7.62
H		5-1/2	19.3	18.0	20.4	19.2	18.0	11.1	9.35	16.7	18.7	17.3	15.9	9.64	7.92	16.4	18.4	17.1
H		7	24.6	22.5	25.5	24.0	21.7	12.5	10.5	20.9	23.4	21.6	19.2	10.8	8.87	20.5	23.0	21.3
H		11	38.7	33.8	38.2	35.9	31.6	17.0	14.3	31.3	35.1	32.4	27.9	14.7	12.1	30.7	34.5	32.0
H		16	56.3	48.9	55.3	52.0	45.6	24.3	20.4	45.3	50.8	46.9	40.3	21.0	17.3	44.5	50.0	46.3
H		20	70.3	71.4	80.8	76.0	68.9	39.6	33.2	66.2	74.2	68.5	60.9	34.2	28.1	65.0	73.0	67.6
M		21	73.9	69.1	78.9	76.7	74.8	53.6	45.2	64.1	72.5	69.2	66.1	46.4	38.3	62.9	71.3	68.3
M		26	91.4	85.2	97.2	94.6	96.8	75.8	63.9	80.0	89.4	85.3	85.5	65.6	54.1	77.5	87.9	84.2
M		34	120	109	125	121	120	89.2	75.2	101	115	110	106	77.2	63.7	99.5	113	108
M		42	148	135	154	150	151	107	86.2	125	142	135	134	92.8	73.0	123	139	133
BALANCED PORT THERMOSTATIC EXPANSION VALVES																			
BF-EBF-SBF-BQ-EBQ-SBQ		AAA	1.17	1.12	1.28	1.22	1.10	0.79	0.61	1.04	1.18	1.10	0.98	0.68	0.52	1.02	1.16	1.08
BF-EBF-SBF-BQ-EBQ-SBQ		AA	2.34	2.41	2.75	2.60	2.51	1.99	1.55	2.24	2.53	2.35	2.21	1.72	1.32	2.19	2.49	2.32
BF-EBF-SBF-BQ-EBQ-SBQ		A	5.28	5.14	5.87	5.56	5.03	3.57	2.79	4.77	5.39	5.01	4.44	3.09	2.36	4.68	5.31	4.95
BF-EBF-SBF-BQ-EBQ-SBQ		B	10.6	9.00	10.3	9.72	8.96	6.59	5.14	8.35	9.44	8.76	7.92	5.70	4.35	8.19	9.29	8.66
BF-EBF-SBF-BQ-EBQ-SBQ		C	19.3	16.7	19.1	18.1	16.4	11.8	9.22	15.5	17.6	16.3	14.5	10.2	7.81	15.2	17.2	16.1
EBS		8	28.1	27.4	30.6	27.6	24.5	16.8	13.0	25.4	28.1	24.9	21.6	14.5	10.9	24.9	27.6	24.6
EBS		11	38.7	37.1	41.4	37.4	33.1	22.7	17.5	34.4	38.0	33.7	29.3	19.7	14.8	33.7	37.4	33.3
EBS		15	52.8	49.8	56.0	49.8	42.0	29.1	23.4	46.2	51.4	44.9	37.1	25.2	19.8	45.3	50.6	44.3
EBS		20	70.3	72.0	79.9	69.7	58.3	40.2	29.6	66.7	73.4	62.8	51.5	34.8	25.1	65.5	72.2	62.0
O		15	52.8	48.3	53.9	48.9	41.3	26.7	21.0	44.8	49.6	44.1	36.5	23.1	17.8	44.0	48.7	43.6
O		20	70.3	71.5	79.8	72.4	64.8	39.6	33.2	66.3	73.3	65.3	57.2	34.2	28.1	65.1	72.1	64.5
O		30	106	98.3	110	99.5	84.9	56.5	49.1	91.2	101	89.6	75.0	48.9	41.6	89.4	99.1	88.6
O		40	141	130	147	132	111	86.1	74.6	120	136	119	98.0	74.5	63.2	118	133	118
O		55	193	177	201	181	150	98.2	83.0	164	184	163	133	85.0	70.4	161	182	161
O		70	246	235	267	240	198	111	90.4	217	245	216	175	96.4	76.6	214	241	214
V		52	183	167	190	184	190	121	101	155	175	166	168	105	85.4	152	172	164
V		70	246	235	267	258	265	167	138	217	246	233	234	144	117	214	241	230
V		100	352	322	365	353	355	215	178	298	336	318	313	186	151	293	330	315
W		135	475	460	523	505	508	307	255	426	480	455	448	266	216	419	472	450
W		180	633	607	-	-	-	-	-	563	-	-	-	-	-	553	-	-
VALVE TYPE	CARTRIDGE NO.	REPLACEABLE CARTRIDGE THERMOSTATIC EXPANSION VALVES																	
Q-EQ-SQ	0	1/3	1.17	1.12	1.28	1.22	1.10	0.79	0.61	1.04	1.18	1.10	0.98	0.68	0.52	1.02	1.16	1.08
Q-EQ-SQ	1	3/4	2.64	2.41	2.75	2.60	2.51	1.99	1.55	2.24	2.53	2.35	2.21	1.72	1.32	2.19	2.49	2.32
Q-EQ-SQ	2	1	3.52	3.21	3.67	3.47	3.28	2.52	1.96	2.98	3.38	3.13	2.89	2.18	1.67	2.93	3.32	3.09
Q-EQ-SQ	3	1-1/2	5.28	4.82	5.50	5.21	4.66	3.22	2.51	4.47	5.05	4.70	4.11	2.79	2.12	4.39	4.97	4.64
Q-EQ-SQ	4	2-1/2	8.79	8.03	9.17	8.68	8.26	6.44	5.02	7.46	8.43	7.83	7.30	5.57	4.26	7.31	8.29	7.73
Q-EQ-SQ	5	3-1/2	12.3	11.2	12.8	12.2	11.5	8.78	6.85	10.4	11.8	11.0	10.1	7.60	5.80	10.2	11.6	10.8
Q-EQ-SQ	6	5	17.6	15.4	17.6	16.7	15.1	10.7	8.33	14.3	16.2	15.0	13.3	9.24	7.06	14.0	15.9	14.8
-- VGA and NGA Thermostatic Charges Only --																			
RIVE		2	7.03	6.88	7.85	7.48	-	-	-	6.38	7.22	6.74	-	-	-	6.26	7.10	6.66
RIVE		3	10.6	10.9	12.5	11.9	-	-	-	10.1	11.5	10.7	-	-	-	9.95	11.3	10.6
RIVE		4	14.1	13.4	15.3	14.6	-	-	-	12.4	14.1	13.2	-	-	-	12.2	13.9	13.0
RIVE		5	17.6	14.5	16.6	15.8	-	-	-	13.5	15.2	14.3	-	-	-	13.2	15.0	14.1

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV bar							
	2	4	6	8	10	12	14	16
	CORRECTION FACTOR, CF PRESSURE DROP							
5°	0.58	0.82	1.00	1.15	1.29	1.41	1.53	1.63
0° & –10°	0.50	0.71	0.87	1.00	1.12	1.22	1.32	1.41
–20° & –30°	0.45	0.63	0.77	0.89	1.00	1.10	1.18	1.26
–40°	0.41	0.58	0.71	0.82	0.91	1.00	1.08	1.15

TEV CAPACITY = TEV RATING X CF LIQUID TEMPERATURE X CF PRESSURE DROP — Example: Actual capacity of a nominal 10 ton R-22 Type S valve at -10°C evaporator, 8 bar pressure drop across the TEV, and 30°C liquid temperature entering the TEV = 34.0 (from rating chart) x 1.11 (CF liquid temperature) x 1.00 (CF pressure drop) = 37.7 kW

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C								
	-20°	-10°	0°	10°	20°	30°	40°	50°	60°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE								
22	1.63	1.53	1.42	1.32	1.21	1.11	1.00	0.89	0.78
407A	1.85	1.71	1.57	1.44	1.30	1.15	1.00	0.84	0.66
407C	1.88	1.74	1.60	1.46	1.31	1.16	1.00	0.84	0.66

404A, 408A, 502

THERMOSTATIC EXPANSION VALVE CAPACITIES for REFRIGERANTS kW

AIR CONDITIONING, HEAT PUMP and COMMERCIAL REFRIGERATION APPLICATIONS

VALVE TYPES		NOMINAL CAPACITY		REFRIGERANT																	
				404A						408A						502					
				RECOMMENDED THERMOSTATIC CHARGES																	
				SC, SCP115			SZ, SZP			RC, RCP115			RZ, RZP			RC, RCP115			RZ, RZP		
				EVAPORATOR TEMPERATURE °C																	
		tons	kW	5°	0°	-10°	-20°	-30°	-40°	5°	0°	-10°	-20°	-30°	-40°	5°	0°	-10°	-20°	-30°	-40°
NI-F-EF-G-EG		1/8	0.44	0.46	0.52	0.49	0.52	0.42	0.37	0.63	0.71	0.69	0.74	0.62	0.55	0.46	0.52	0.49	0.52	0.44	0.38
F-EF-G-EG		1/6	0.59	0.72	0.81	0.77	0.82	0.67	0.58	0.99	1.12	1.08	1.16	0.97	0.86	0.72	0.81	0.78	0.83	0.68	0.59
NI-F-EF-G-EG		1/4	0.88	0.92	1.04	0.98	1.04	0.85	0.73	1.26	1.43	1.38	1.48	1.24	1.09	0.91	1.03	0.99	1.05	0.87	0.76
NI-F-EF-G-EG		1/2	1.76	1.76	1.98	1.88	1.98	1.63	1.40	2.39	2.72	2.62	2.81	2.36	2.08	1.74	1.97	1.88	2.00	1.66	1.45
NI-F-EF-G-EG		1	3.52	3.21	3.65	3.51	3.70	3.03	2.61	4.38	5.02	4.89	5.25	4.39	3.88	3.18	3.63	3.51	3.73	3.09	2.70
F-EF-G-EG		1-1/2	5.28	4.83	5.42	4.98	4.94	4.05	3.49	6.58	7.43	6.95	7.01	5.87	5.19	4.77	5.37	4.98	4.99	4.13	3.61
F&EF(Ext)-G&EG(Ext)-C(Int)-S		2	7.03	6.43	7.22	6.63	6.55	5.40	4.66	8.77	9.90	9.24	9.30	7.83	6.93	6.36	7.17	6.62	6.61	5.51	4.81
F&EF(Ext)-C-S		3	10.6	9.01	10.1	9.22	8.66	6.75	5.82	12.3	13.9	12.8	12.3	9.79	8.65	8.91	10.0	9.22	8.73	6.89	6.01
C-S		4	14.1	12.9	14.4	13.2	12.3	9.46	8.15	17.6	19.8	18.3	17.4	13.7	12.2	12.7	14.3	13.2	12.4	9.64	8.42
C&S(Ext)		6	21.1	17.8	18.8	15.7	15.2	12.3	9.90	24.2	25.8	21.9	21.5	17.8	14.7	17.6	18.7	15.7	15.3	12.5	10.2
S(Ext)		7	24.6	22.7	24.0	20.0	19.3	15.6	12.6	30.9	32.9	27.8	27.4	22.7	18.7	22.4	23.8	20.0	19.5	15.9	13.0
S(Ext)		10	35.2	32.5	34.7	29.9	30.3	26.2	23.5	44.3	47.5	41.7	43.0	38.0	34.9	32.2	34.4	29.9	30.6	26.7	24.3
H		1-1/2	5.28	4.85	5.22	4.66	4.94	3.99	3.31	6.61	7.16	6.49	7.01	5.79	4.91	4.79	5.18	4.66	4.99	4.07	3.41
H		3	10.6	9.05	9.75	8.41	8.24	6.65	5.51	12.3	13.4	11.7	11.7	9.64	8.18	8.85	9.67	8.41	8.31	6.78	5.69
H		4	14.1	12.9	13.9	11.8	11.3	9.31	7.71	17.7	19.1	16.5	16.1	13.5	11.4	12.8	13.8	11.8	11.4	9.50	7.96
H		6-1/2	22.9	21.0	22.6	19.3	18.1	14.5	12.0	28.7	31.0	26.8	25.6	21.0	17.8	20.8	22.4	19.2	18.2	14.8	12.4
H		9	31.7	30.7	33.1	28.1	24.2	16.6	13.8	41.9	45.4	39.2	34.3	24.1	20.4	30.4	32.8	28.1	24.4	16.9	14.2
H		12	42.2	42.0	45.3	38.5	35.0	26.6	22.0	57.2	62.1	53.7	49.6	38.6	32.8	41.6	44.9	38.5	35.3	27.1	22.7
M		15	52.8	50.8	57.3	51.3	46.4	39.7	33.2	69.3	78.6	71.4	65.8	57.5	49.4	50.3	56.8	51.2	46.8	40.4	34.3
M		20	70.3	66.2	74.7	66.2	58.2	49.7	41.7	90.6	103	92.2	82.6	72.0	61.9	65.5	74.1	66.2	58.7	50.7	43.0
M		25	87.9	82.6	93.2	82.6	70.9	58.3	48.9	112	128	115	101	84.5	72.6	81.7	92.4	82.6	71.5	59.5	50.5
M		30	106	99.7	112	99.6	84.2	67.5	56.6	136	154	139	119	97.9	84.2	98.6	112	99.6	86.0	68.8	58.4
BALANCED PORT THERMOSTATIC EXPANSION VALVES																					
BF-EBF-SBF-BQ-EBQ-SBQ		AAA	0.70	0.72	0.82	0.78	0.82	0.67	0.58	0.99	1.12	1.08	1.16	0.97	0.86	0.72	0.81	0.78	0.82	0.68	0.60
BF-EBF-SBF-BQ-EBQ-SBQ		AA	1.17	1.45	1.63	1.55	1.58	1.24	1.07	1.98	2.24	2.15	2.25	1.80	1.59	1.43	1.62	1.55	1.60	1.26	1.10
BF-EBF-SBF-BQ-EBQ-SBQ		A	3.52	3.21	3.65	3.51	3.70	3.03	2.61	4.38	5.02	4.89	5.25	4.39	3.88	3.18	3.63	3.51	3.73	3.09	2.70
BF-EBF-SBF-BQ-EBQ-SBQ		B	7.03	5.95	6.68	6.09	5.70	4.41	3.80	8.13	9.17	8.49	8.08	6.39	5.65	5.89	6.63	6.09	5.74	4.50	3.93
BF-EBF-SBF-BQ-EBQ-SBQ		C	10.6	9.01	10.1	9.22	8.66	6.75	5.82	12.3	13.9	12.8	12.3	9.79	8.65	8.91	10.0	9.22	8.73	6.89	6.01
EBS		6	21.1	18.1	19.7	17.2	15.5	10.6	9.87	24.7	27.1	24.0	21.9	15.4	14.7	17.9	19.6	17.2	15.6	10.8	10.2
EBS		7-1/2	26.4	24.5	26.8	23.4	20.5	13.5	12.6	33.4	36.8	32.6	29.1	19.6	18.7	24.3	26.6	23.4	20.7	13.8	13.0
EBS		10	35.2	30.2	33.3	28.8	24.6	17.9	15.5	41.2	45.7	40.2	34.9	25.9	23.0	29.9	33.0	28.8	24.8	18.2	16.0
EBS		13	45.7	43.1	47.9	41.5	34.7	25.5	20.5	58.7	65.7	57.8	49.2	37.0	30.4	42.6	47.5	41.5	35.0	26.0	21.1
O		9	31.7	30.7	33.1	27.9	23.7	17.1	14.7	41.9	45.3	38.9	33.7	24.7	21.9	30.4	32.8	27.9	23.9	17.4	15.2
O		12	42.2	42.0	45.3	38.2	34.3	27.2	23.5	57.2	62.1	53.3	48.7	39.4	34.9	41.6	44.9	38.2	34.6	27.7	24.2
O		21	73.9	67.9	73.1	60.0	46.3	32.6	28.2	92.4	99.9	83.6	65.7	47.2	41.9	67.1	72.5	60.0	46.7	33.2	29.1
O		30	106	97.2	109	95.4	72.8	48.8	42.2	132	149	133	103	70.7	62.6	96.1	108	95.3	73.5	49.7	43.5
O		35	123	113	126	111	82.7	53.0	45.8	153	174	154	117	76.8	68.1	111	125	110	83.4	54.0	47.3
O		45	158	145	163	142	103	61.0	52.8	198	223	198	146	88.5	78.4	143	161	142	104	62.3	54.5
V		38	134	122	136	122	117	97.6	80.2	167	186	168	166	141	120	121	135	122	118	99.5	82.8
V		50	176	164	182	164	160	139	114	224	249	228	228	202	170	163	181	164	162	142	118
V		70	246	226	250	225	224	195	160	308	342	314	317	282	238	223	248	225	226	199	165
VALVE TYPE	CARTRIDGE NO.	REPLACEABLE CARTRIDGE THERMOSTATIC EXPANSION VALVES																			
Q-EQ-SQ	0	1/6	0.59	0.64	0.73	0.69	0.70	0.55	0.48	0.88	1.00	0.96	1.00	0.80	0.71	0.64	0.72	0.69	0.71	0.56	0.49
Q-EQ-SQ	1	1/4	0.88	1.45	1.63	1.55	1.58	1.24	1.07	1.98	2.24	2.15	2.25	1.80	1.59	1.43	1.62	1.55	1.60	1.26	1.10
Q-EQ-SQ	2	1/2	1.76	2.09	2.38	2.28	2.24	1.63	1.40	2.84	3.26	3.17	3.17	2.36	2.08	2.07	2.36	2.28	2.26	1.66	1.45
Q-EQ-SQ	3	1	3.52	3.22	3.61	3.29	3.06	2.34	2.02	4.39	4.96	4.59	4.34	3.40	3.00	3.18	3.58	3.29	3.09	2.39	2.09
Q-EQ-SQ	4	1-1/2	5.28	5.15	5.78	5.27	5.04	4.05	3.49	7.02	7.93	7.33	7.15	5.87	5.19	5.09	5.73	5.27	5.09	4.13	3.61
Q-EQ-SQ	5	2	7.03	6.76	7.58	6.91	6.66	5.40	4.66	9.22	10.4	9.63	9.45	7.83	6.93	6.68	7.52	6.91	6.72	5.51	4.81
Q-EQ-SQ	6	3	10.6	9.01	10.1	9.22	8.66	6.75	5.82	12.3	13.9	12.8	12.3	9.79	8.65	8.91	10.0	9.22	8.73	6.89	6.01

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV bar							
	2	4	6	8	10	12	14	16
	CORRECTION FACTOR, CF PRESSURE DROP							
5°	0.58	0.82	1.00	1.15	1.29	1.41	1.53	1.63
0° & –10°	0.50	0.71	0.87	1.00	1.12	1.22	1.32	1.41
–20° & –30°	0.45	0.63	0.77	0.89	1.00	1.10	1.18	1.26
–40°	0.41	0.58	0.71	0.82	0.91	1.00	1.08	1.15

TEV CAPACITY = TEV RATING X CF LIQUID TEMPERATURE X CF PRESSURE DROP — Example: Actual capacity of a nominal 3 ton R-404A Type EF valve at -20°C evaporator, 4 bar pressure drop across the TEV, and 30°C liquid temperature entering the TEV = 8.66 (from rating chart)x 1.21 (CF liquid temperature) x 0.63 (CF pressure drop) = 6.60 kW.

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C							
	-10°	0°	10°	20°	30°	40°	50°	60°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE							
404A	2.00	1.81	1.62	1.42	1.21	1.00	0.78	0.55
408A	1.62	1.50	1.38	1.26	1.13	1.00	0.87	0.73
502	1.82	1.66	1.50	1.33	1.17	1.00	0.83	0.66

THERMOSTATIC EXPANSION VALVE CAPACITIES for REFRIGERANTS kW

402A & 507

COMMERCIAL and LOW TEMPERATURE REFRIGERATION APPLICATIONS

VALVE TYPES		NOMINAL CAPACITY		REFRIGERANT											
				402A						507					
				RECOMMENDED THERMOSTATIC CHARGES											
				LC			LZ, LZP			PC			PZ, PZP		
				EVAPORATOR TEMPERATURE °C											
		tons	kW	5°	0°	-10°	-20°	-30°	-40°	5°	0°	-10°	-20°	-30°	-40°
NI-F-EF-G-EG		1/8	0.44	0.46	0.52	0.49	0.53	0.43	0.38	0.45	0.51	0.49	0.51	0.42	0.36
F-EF-G-EG		1/6	0.59	0.72	0.82	0.77	0.82	0.68	0.59	0.71	0.80	0.76	0.80	0.66	0.57
NI-F-EF-G-EG		1/4	0.88	0.92	1.04	0.99	1.05	0.87	0.75	0.91	1.02	0.97	1.02	0.84	0.73
NI-F-EF-G-EG		1/2	1.76	1.75	1.98	1.89	2.00	1.65	1.43	1.73	1.95	1.85	1.95	1.60	1.39
NI-F-EF-G-EG		1	3.52	3.20	3.65	3.52	3.72	3.07	2.66	3.15	3.59	3.44	3.63	2.99	2.58
F-EF-G-EG		1-1/2	5.28	4.81	5.41	5.00	4.98	4.10	3.56	4.74	5.32	4.89	4.86	3.99	3.45
F&EF(Ext)-G&EG(Ext)-C(Int)-S		2	7.03	6.41	7.21	6.64	6.60	5.47	4.74	6.32	7.09	6.50	6.44	5.32	4.60
F&EF(Ext)-C-S		3	10.6	8.98	10.1	9.24	8.72	6.83	5.93	8.84	9.92	9.05	8.51	6.65	5.75
C-S		4	14.1	12.8	14.4	13.2	12.4	9.57	8.30	12.6	14.2	12.9	12.1	9.31	8.05
C&S(Ext)		6	21.1	17.8	18.8	15.7	15.3	12.4	10.1	17.5	18.5	15.4	14.9	12.1	9.77
S(Ext)		7	24.6	22.6	23.9	20.0	19.5	15.8	12.8	22.3	23.5	19.6	19.0	15.4	12.4
S(Ext)		10	35.2	32.4	34.6	30.0	30.5	26.5	23.9	31.9	34.0	29.4	29.8	25.8	23.2
H		1-1/2	5.28	4.83	5.21	4.67	4.98	4.04	3.36	4.76	5.12	4.57	4.86	3.93	3.26
H		3	10.6	9.02	9.73	8.43	8.29	6.73	5.61	8.88	9.56	8.26	8.09	6.55	5.44
H		4	14.1	12.9	13.9	11.9	11.4	9.43	7.85	12.7	13.7	11.6	11.1	9.17	7.62
H		6-1/2	22.9	20.9	22.6	19.3	18.2	14.6	12.2	20.6	22.2	18.9	17.7	14.3	11.8
H		9	31.7	30.6	33.0	28.2	24.3	16.8	14.0	30.1	32.4	27.6	23.7	16.4	13.6
H		12	42.2	41.9	45.2	38.6	35.2	26.9	22.4	41.2	44.4	37.8	34.4	26.2	21.8
M		15	52.8	50.6	57.2	51.4	46.7	40.1	33.8	49.9	56.2	50.3	45.6	39.0	32.8
M		20	70.3	66.0	74.6	66.4	58.6	50.3	42.4	65.0	73.3	65.0	57.2	48.9	41.2
M		25	87.9	82.4	93.1	82.8	71.4	59.0	49.8	81.1	91.4	81.0	69.7	57.4	48.3
M		30	106	99.4	112	99.9	84.8	68.3	57.6	97.9	110	97.8	82.8	66.5	55.9
BALANCED PORT THERMOSTATIC EXPANSION VALVES															
BF-EBF-SBF-BQ-EBQ-SBQ		AAA	0.70	0.72	0.82	0.78	0.82	0.68	0.59	0.71	0.80	0.76	0.80	0.66	0.57
BF-EBF-SBF-BQ-EBQ-SBQ		AA	1.17	1.44	1.63	1.55	1.60	1.26	1.09	1.42	1.60	1.52	1.56	1.22	1.06
BF-EBF-SBF-BQ-EBQ-SBQ		A	3.52	3.20	3.65	3.52	3.72	3.07	2.66	3.15	3.59	3.44	3.63	2.99	2.58
BF-EBF-SBF-BQ-EBQ-SBQ		B	7.03	5.93	6.67	6.11	5.73	4.46	3.87	5.84	6.56	5.98	5.60	4.34	3.76
BF-EBF-SBF-BQ-EBQ-SBQ		C	10.6	8.98	10.1	9.24	8.72	6.83	5.93	8.84	9.92	9.05	8.51	6.65	5.75
EBS		6	21.1	18.0	19.7	17.3	15.6	10.8	10.0	17.7	19.4	16.9	15.2	10.5	9.75
EBS		7-1/2	26.4	24.4	26.7	23.4	20.7	13.7	12.8	24.1	26.3	22.9	20.2	13.3	12.4
EBS		10	35.1	30.1	33.3	28.9	24.8	18.1	15.7	29.6	32.7	28.3	24.2	17.6	15.3
EBS		13	45.7	43.0	47.8	41.6	34.9	25.9	20.8	42.3	47.0	40.7	34.1	25.2	20.2
O		9	31.7	30.6	33.0	28.0	23.9	17.3	15.0	30.1	32.4	27.4	23.3	16.8	14.6
O		12	42.2	41.9	45.2	38.3	34.6	27.5	23.9	41.2	44.4	37.5	33.7	26.8	23.2
O		21	73.9	67.6	73.0	60.2	46.7	33.0	28.6	66.6	71.7	58.9	45.5	32.1	27.8
O		30	106	96.8	109	95.6	73.3	49.4	42.9	95.4	107	93.6	71.6	48.0	41.6
O		35	123	112	126	111	83.3	53.6	46.6	111	124	108	81.2	52.2	45.2
O		45	158	144	162	142	104	61.8	53.7	142	159	139	101	60.1	52.1
V		38	134	122	135	122	118	98.7	81.6	120	133	120	115	96.1	79.2
V		50	176	164	182	164	162	141	116	161	179	161	158	137	113
V		70	246	225	249	226	225	197	163	221	245	221	220	192	158
VALVE TYPE	CARTRIDGE NO.	REPLACEABLE CARTRIDGE THERMOSTATIC EXPANSION VALVES													
Q-SQ-EQ	0	1/6	0.59	0.64	0.72	0.69	0.71	0.56	0.48	0.63	0.71	0.66	0.70	0.54	0.47
Q-SQ-EQ	1	1/4	0.88	1.44	1.63	1.55	1.60	1.26	1.09	1.42	1.60	1.52	1.56	1.22	1.06
Q-SQ-EQ	2	1/2	1.76	2.08	2.37	2.29	2.25	1.65	1.43	2.05	2.33	2.24	2.20	1.60	1.39
Q-SQ-EQ	3	1	3.52	3.21	3.61	3.30	3.08	2.37	2.06	3.16	3.54	3.23	3.00	2.31	2.00
Q-SQ-EQ	4	1-1/2	5.28	5.13	5.77	5.28	5.08	4.10	3.56	5.05	5.67	5.17	4.95	3.99	3.45
Q-SQ-EQ	5	2	7.03	6.73	7.51	6.93	6.70	5.47	4.74	6.63	7.44	6.79	6.54	5.32	4.60
Q-SQ-EQ	6	3	10.6	8.98	10.1	9.24	8.72	6.83	5.93	8.84	9.92	9.05	8.51	6.65	5.75

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV bar							
	2	4	6	8	10	12	14	16
	CORRECTION FACTOR, CF PRESSURE DROP							
5°	0.58	0.82	1.00	1.15	1.29	1.41	1.53	1.63
0° & –10°	0.50	0.71	0.87	1.00	1.12	1.22	1.32	1.41
–20° & –30°	0.45	0.63	0.77	0.89	1.00	1.10	1.18	1.26
–40°	0.41	0.58	0.71	0.82	0.91	1.00	1.08	1.15

TEV CAPACITY = TEV RATING X CF LIQUID TEMPERATURE X CF PRESSURE DROP — Example: Actual capacity of a nominal 3 ton R-402A Type EF valve at -30°C evaporator, 8 bar pressure drop across the TEV, and 20°C liquid temperature entering the TEV = 6.83 (from rating chart)x 1.41 (CF liquid temperature) x 0.89 (CF pressure drop) = 8.57 kW.

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C								
	-20°	-10°	0°	10°	20°	30°	40°	50°	60°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE								
402A	2.16	1.97	1.79	1.60	1.41	1.21	1.00	0.78	0.55
507	2.14	1.94	1.76	1.57	1.38	1.20	1.00	0.79	0.53

717 (Ammonia)

THERMOSTATIC EXPANSION VALVE CAPACITIES for REFRIGERANT kW

COMMERCIAL REFRIGERATION APPLICATIONS

VALVE TYPE	NOMINAL CAPACITY		REFRIGERANT 717 RECOMMENDED THERMOSTATIC CHARGE AC, AL / AZ, AL / AZ — EVAPORATOR TEMPERATURE °C				
	tons	kW	5°	-5°	-15°	-25°	-30°
D	1	3.52	3.45	3.55	3.51	2.31	2.18
	2	7.03	8.16	7.93	7.06	3.99	3.57
	5	17.6	19.9	19.4	17.6	9.83	8.88
	10	35.2	36.6	36.5	35.2	21.1	19.5
	15	52.8	60.5	58.8	52.9	28.3	25.5

VALVE TYPE	NOMINAL CAPACITY		REFRIGERANT 717 RECOMMENDED THERMOSTATIC CHARGE AL — EVAPORATOR TEMPERATURE °C			
	tons	kW	5°	-5°	-15°	-25°
A	20	70.3	67.9	69.3	70.3	58.9
	30	106	109	108	105	88.6
	50	176	178	177	176	148
	75	264	272	271	265	221
	100	352	362	361	353	294

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C								
	-20°	-10°	0°	10°	20°	30°	40°	50°	60°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE								
717	1.28	1.22	1.17	1.11	1.06	1.00	0.94	0.88	0.83

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of -20°C. However, they may be used for any evaporator temperature from -30°C to 5°C, since the variation in the actual factors across these ranges is insignificant.

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV bar						
	2	4	6	8	10	12	14
	CORRECTION FACTOR, CF PRESSURE DROP						
5°	0.58	0.82	1.00	1.15	1.29	1.41	1.53
-5°	0.50	0.71	0.87	1.00	1.12	1.22	1.32
-15° & – 25°	0.45	0.63	0.77	0.89	1.00	1.10	1.18
-30°	0.41	0.58	0.71	0.82	0.91	1.00	1.08

TEV CAPACITY = TEV RATING X CF LIQUID TEMPERATURE X CF PRESSURE DROP — Example: Actual capacity of a nominal 2 ton (7.06 kW) R-717 Type D valve at -15°C evaporator, 8 bar pressure drop across the TEV, and 20°C liquid temperature entering the TEV is : 7.06 kW (from rating chart) x 1.06 (CF liquid temperature) x 0.89 (CF pressure drop) = 6.65 kW.

TEV QUICK REFERENCE GUIDE

VALVE TYPE	NOMINAL CAPACITY RANGE kW R-22	R-134a	R-404A & R-507	CONNECTION TYPES	VALVE DESCRIPTION AND APPLICATION
NI  Specs on Page 11	0.88 thru 3.52	0.44 thru 3.52	0.44 thru 3.52	SAE Flare	Small brass body, angle style valve which is adjustable through its outlet fitting. Inlet connection has a removable 100 mesh strainer. Suitable for small capacity refrigeration applications in which an external adjustment is not required. Typical application: Drink dispensers, ice cubers.
RI  Specs on Page 11	7.03 thru 17.6	–	–	SAE Flare or ODF Solder	Small brass body, externally adjustable valve available only for R-22 air conditioning or heat pump applications. This valve is available with the Rapid Pressure Balancer (RPB) feature for off-cycle pressure equalisation if desired. Suitable for replacing OEM type TEVs used on these applications.
F  Specs on Page 11	0.70 thru 17.6	0.44 thru 10.6	0.44 thru 10.6	SAE Flare	Small brass bar body, externally adjustable valve for small capacity refrigeration systems. SAE flare inlet connection has a removable 100 mesh strainer. General purpose valve for refrigeration and air conditioning.
EF  Specs on Page 11	0.70 thru 17.6	0.44 thru 10.6	0.44 thru 10.6	ODF Solder	Same as the Type F valve except it features ODF solder connections. The inlet connection has a 50 mesh insert type strainer. General purpose valve for refrigeration and air conditioning.
Q  Specs on Page 12	1.17 thru 17.6	0.59 thru 8.79	0.59 thru 10.6	SAE Flare	The brass body Q valve is externally adjustable and has a removable cartridge or orifice. The valve body, cartridge and thermostatic element can be supplied as independent components. This allows body, cartridge and element to be assembled and matched to a specific system. It has a 100 mesh inlet strainer. Typical applications: Refrigeration applications and external equalised versions may be used on air conditioning.
EQ  Specs on Page 12	1.17 thru 17.6	0.59 thru 8.79	0.59 thru 10.6	Extended ODF Solder	Same as the Type Q valve except it features extended ODF connections. A 100 mesh insert strainer is provided with the valve.

TEV QUICK REFERENCE GUIDE

VALVE TYPE	NOMINAL CAPACITY RANGE kW			CONNECTION TYPES	VALVE DESCRIPTION AND APPLICATION
	R-22	R-134a	R-404A & R-507		
SQ  **Specs on Page 12**	1.17 thru 17.6	0.59 thru 8.79	0.59 thru 10.6	Extended ODF Solder	Same as the Type Q valve except it features ODF solder connections and a forged inlet fitting with a removable 100 mesh strainer screen which can be cleaned and/or replaced without removing the valve from the line.
BQ  **Specs on Page 13**	0.44 thru 19.3	0.44 thru 10.6	0.44 thru 10.6	SAE Flare	Balanced port interchangeable cartridge style BQ valve was especially designed to add the benefit of a balanced port to all other advantages of the conventional port Q valve. Typical applications: refrigeration systems with a wide range of operating conditions.
EBQ  **Specs on Page 13**	0.44 thru 19.3	0.44 thru 10.6	0.44 thru 10.6	Extended ODF Solder	Same as the Type BQ valve except it features extended ODF connections. A 100 mesh insert strainer is provided with the valve.
SBQ  **Specs on Page 13**	0.44 thru 19.3	0.44 thru 10.6	0.44 thru 10.6	Extended ODF Solder	Same as the Type BQ valve except it features ODF solder connections and a forged brass inlet fitting with a removable 100 mesh strainer screen which can be cleaned and/or replaced without removing the valve from the line.
G  **Specs on Page 14**	0.70 thru 10.6	0.44 thru 7.03	0.44 thru 7.03	SAE Flare	Forged brass body, externally adjustable valve for small capacity refrigeration systems. Inlet connection has a removable 100 mesh strainer. Typical applications: Refrigerated cases, coolers, freezers, small capacity air conditioners.
EG  **Specs on Page 14**	0.70 thru 10.6	0.44 thru 7.03	0.44 thru 7.03	ODF Solder	Same as the Type G valve except it features ODF solder connections and a forged brass inlet fitting with a removable 100 mesh strainer which can be cleaned and/or replaced without removing the valve from the line.
C  **Specs on Page 14**	10.6 thru 28.1	7.03 thru 17.6	7.03 thru 21.1	SAE Flare	Forged brass body, externally adjustable valve. Inlet connection has a removable 80 mesh strainer. This valve is a larger capacity version of the Type G valve. Typical applications: Refrigerated cases, coolers, freezers, air conditioners.
BF  **Specs on Page 15**	0.44 thru 19.3	0.44 thru 10.6	0.44 thru 10.6	SAE Flare	Same physical size as the Type F valve with SAE flare connections except it features a balanced port construction. Inlet connection has a removable 100 mesh strainer. Typical applications: Small capacity refrigeration that operates over widely varying operating conditions.
SBF  **Specs on Page15**	0.44 thru 19.3	0.44 thru 10.6	0.44 thru 10.6	Extended ODF Solder	Same as the Type BF valve except it features ODF solder connections and a forged brass inlet fitting with a removable 100 mesh strainer which can be cleaned and/or replaced without removing the valve from the line.
EBF  **Specs on Page 15**	0.44 thru 19.3	0.44 thru 10.6	0.44 thru 10.6	Extended ODF Solder	Same as the Type BF valve except it features extended ODF connections. A 100 mesh insert strainer is provided with the valve.

TEV QUICK REFERENCE GUIDE

VALVE TYPE	NOMINAL CAPACITY RANGE kW			CONNECTION TYPES	VALVE DESCRIPTION AND APPLICATION
	R-22	R-134a	R-404A & R-507		
S  **Specs on Page 16**	7.03 thru 52.8	7.03 thru 35.2	7.03 thru 35.2	ODF Solder	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. General purpose valve for air conditioning and refrigeration applications.
EBS  **Specs on Page 16**	28.1 thru 70.3	17.6 thru 42.2	21.1 thru 45.7	Extended ODF Solder	Same physical size as the Type S valve except it features extended ODF connections and a balanced port construction.
O  **Specs on Page 16**	52.8 thru 246	31.7 thru 141	31.7 thru 158	ODF Solder	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. This valve features a balanced port construction, and it is suitable for both air conditioning and refrigeration applications.
H  **Specs on Page 17**	8.79 thru 70.3	5.28 thru 42.2	5.28 thru 42.2	ODF Solder or FPT Flange	Brass bar body, externally adjustable valve with flange connections. Inlet flange bushing has a permanent 16 mesh strainer. The FPT flange connection requires the K-1178 adapter kit. This valve provides the smallest capacity TEVs with flange connections and it is suitable for both air conditioning and refrigeration applications.
M  **Specs on Page 17**	73.9 thru 148	45.7 thru 87.9	52.8 thru 106	ODF Solder or FPT Flange	Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type provides valve capacities greater than the Type H and it is suitable for air conditioning and refrigeration applications. Flanges for the Type M valve are interchangeable with the Type V valve.
V  **Specs on Page 17**	183 thru 352	123 thru 193	134 thru 246	ODF Solder or FPT Flange	Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type features a dual port semi-balanced design. This valve type provides valve capacities greater than the Type M, and is suitable for air conditioning and refrigeration applications. Flanges for the Type V are interchangeable with the Type M.
W  **Specs on Page 17**	475 & 633	281 & 387	–	ODF Solder Flange	Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type features a dual port semi-balanced design and it is primarily for large capacity chillers. This valve type provides the largest valve capacities available for flange connection TEVs.
D  **Specs on Page 18**	R-717 3.52 thru 52.8			FPT or Socket Weld Flange	Gray cast iron body, externally adjustable valve for small capacity ammonia service. Optional XD-074 100 mesh external strainer may be ordered with this valve.
A  **Specs on Page 18**	R-717 70.3 thru 352			FPT or Socket Weld Flange	Gray cast iron body, externally adjustable valve for large capacity ammonia service. Optional 8004 (1/2 FPT) or 8006 (3/4 FPT) 80 mesh external strainer may be ordered with this valve.

THERMOSTATIC EXPANSION VALVES
SPECIFICATIONS

Type-NI

ELEMENT SIZE No. 43, Knife Edge Joint
Standard Tubing Length 76 cm

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	Thermostatic Charges Available	①STANDARD CONNECTIONS – inches SAE Flare	
	Internal Equaliser Only		INLET	OUTLET
22 (V) 407C (N) 407A (V)	NIV-1/4	C Z ZP40	1/4	1/2③
	NIV-1/2			
	NIV-1			
134a (J) 12 (F) 401A (X) 409A (F)	NIJ-1/8	C CP60		
	NIJ-1/4			
	NIJ-1/2			
	NIJ-1		3/8②	
404A (S) 502 (R) 408A (R)	NIS-1/8	C Z ZP	1/4	
	NIS-1/4			
	NIS-1/2			
	NIS-1		3/8②	
507 (P) 402A (L)	NIP-1/8	C Z ZP	1/4	
	NIP-1/4			
	NIP-1/2			
	NIP-1		3/8②	

Type-RIVE

ELEMENT SIZE No. 43, Knife Edge Joint
Standard Tubing Length 76 cm

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	Thermostatic Charges Available	①STANDARD CONNECTIONS inches			
	External Equaliser Only		SAE Flare		④ODF Solder	
			INLET	OUTLET	INLET	OUTLET
22 (V) 407C (N) 407A (V)	RIVE-2	GA only	3/8	1/2	3/8	1/2
	RIVE-3					
	RIVE-4		1/2	1/2	1/2	1/2
	RIVE-5					

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available.
② The 3/8″ SAE inlet fitting has a long taper on the flare surface. A 3/8″ x 1/4″ reducing flare nut will allow 1/4″ OD tubing to be attached to this fitting.
③ The 1/2″ SAE outlet fitting has a long taper. 3/8″ OD tubing can be connected by using 1/2″ x 3/8″ reducing flare nut.
④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2″ ODF will receive 1/2″ OD tubing.
⑤ Nominal 1 ton and larger F valves for R-134a, R-404A, and R-507 type refrigerants, and nominal 1-1/2 ton and larger for R-22 refrigerant require 3/8″ SAE Flare or 3/8″ ODF inlet, minimum.

Tubing lengths other than standard available upon special order at an additional cost.

NOTE: External Equaliser Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

REFRIGERANT (Sporlan Code)	TYPE F & CAPACITY		TYPE EF & CAPACITY		Thermostatic Charges Available	①STANDARD CONNECTION inches SAE Flare / ④ODF Solder	
	SAE Flare		ODF Solder				
	Internal Equaliser	External Equaliser	Internal Equaliser	External Equaliser		INLET	OUTLET
22 (V) 407C (N) 407A (V)	FV-1/5	FVE-1/5	EFV-1/5	EFVE-1/5	C Z ZP40	1/4	1/2
	FV-1/3	FVE-1/3	EFV-1/3	EFVE-1/3			
	FV-1/2	FVE-1/2	EFV-1/2	EFVE-1/2			
	FV-1	FVE-1	EFV-1	EFVE-1			
	FV-1-1/2	FVE-1-1/2	EFV-1-1/2	EFVE-1-1/2		3/8⑤	
	–	FVE-2	–	EFVE-2			
	FV-2-1/2	–	EFV-2-1/2	–			
	–	FVE-3	–	EFVE-3			
	–	FVE-5	–	EFVE-5			
134a (J) 12 (F) 401A (X) 409A (F)	FJ-1/8	FJE-1/8	EFJ-1/8	EFJE-1/8	C CP60	1/4	
	FJ-1/6	FJE-1/6	EFJ-1/6	EFJE-1/6			
	FJ-1/4	FJE-1/4	EFJ-1/4	EFJE-1/4			
	FJ-1/2	FJE-1/2	EFJ-1/2	EFJE-1/2			
	FJ-1	FJE-1	EFJ-1	EFJE-1		3/8⑤	
	FJ-1-1/2	FJE-1-1/2	EFJ-1-1/2	EFJE-1-1/2			
	–	FJE-2	–	EFJE-2			
	–	FJE-3	–	EFJE-3			
404A (S) 502 (R) 408A (R)	FS-1/8	FSE-1/8	EFS-1/8	EFSE-1/8	C Z ZP	1/4	
	FS-1/6	FSE-1/6	EFS-1/6	EFSE-1/6			
	FS-1/4	FSE-1/4	EFS-1/4	EFSE-1/4			
	FS-1/2	FSE-1/2	EFS-1/2	EFSE-1/2			
	FS-1	FSE-1	EFS-1	EFSE-1		3/8⑤	
	FS-1-1/2	FSE-1-1/2	EFS-1-1/2	EFSE-1-1/2			
	–	FSE-2	–	EFSE-2			
	–	FSE-3	–	EFSE-3			
507 (P) 402A (L)	FP-1/8	FPE-1/8	EFP-1/8	EFPE-1/8	C Z ZP	1/4	
	FP-1/6	FPE-1/6	EFP-1/6	EFPE-1/6			
	FP-1/4	FPE-1/4	EFP-1/4	EFPE-1/4			
	FP-1/2	FPE-1/2	EFP-1/2	EFPE-1/2			
	FP-1	FPE-1	EFP-1	EFPE-1		3/8⑤	
	FP-1-1/2	FPE-1-1/2	EFP-1-1/2	EFPE-1-1/2			
	–	FPE-2	–	EFPE-2			
	–	FPE-3	–	EFPE-3			

Type-F and EF

ELEMENT SIZE No. 43, Knife Edge Joint
Standard Tubing Length 76 cm

F

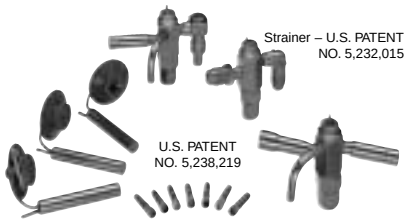
EF

For complete information refer to Bulletins 10-9 and 10-10.

THERMOSTATIC EXPANSION VALVES
Replaceable Cartridge Style
SPECIFICATIONS

Type-Q, EQ, SQ

ELEMENT SIZE No. 43, Knife Edge Joint
Standard Tubing Length 152 cm




QE


EQ


EQ
90° Angle Inlet


SQE

REFRIGERANT (Sporlan Code)	BODY TYPE-CARTRIDGE CODE						CARTRIDGE	NOMINAL CAPACITY		①CONNECTIONS inches
	SAE Flare		Extended ODF Solder							
	⑥ Internal Equaliser	⑦ External Equaliser	⑥ Internal Equaliser	⑦ External Equaliser	⑥ Internal Equaliser	⑦ External Equaliser		tons	kW	Inlet x Outlet
22 (V) 407C (N) 407A (V)	Q-0	QE-0	EQ-0	EQE-0	SQ-0	SQE-0	0	1/3	1.17	***Q & QE Only*** 1/4 x 3/8 SAE 90° Angle Inlet or 1/4 x 1/2 SAE 90° Angle Inlet or **3/8 x 1/2 SAE 90° Angle Inlet** ***EQ Only*** **3/8 x 1/2 ODF④ Straight Thru** or 3/8 x 1/2 ODF 90° Angle Inlet ***EQE Only*** **3/8 x 1/2 ODF④ Straight Thru** or 3/8 x 1/2 ODF 90° Angle Inlet or 3/8 x 5/8 ODF④ Straight Thru or 1/2 x 5/8 ODF Straight Thru or 1/2 x 7/8 ODF Straight Thru ***SQ & SQE Only*** **3/8 x 1/2 ODF④ 90° Forged Inlet**
	Q-1	QE-1	EQ-1	EQE-1	SQ-1	SQE-1	1	3/4	2.64	
	Q-2	QE-2	EQ-2	EQE-2	SQ-2	SQE-2	2	1	3.52	
	Q-3	QE-3	EQ-3	EQE-3	SQ-3	SQE-3	3	1-1/2	5.28	
	Q-4	QE-4	EQ-4	EQE-4	SQ-4	SQE-4	4	2-1/2	8.79	
	Q-5	QE-5	EQ-5	EQE-5	SQ-5	SQE-5	5	3-1/2	12.3	
	Q-6	QE-6	EQ-6	EQE-6	SQ-6	SQE-6	6	5	17.6	
134a (J) 12 (F) 401A (X) 409A (F)	Q-0	QE-0	EQ-0	EQE-0	SQ-0	SQE-0	0	1/6	0.59	
	Q-1	QE-1	EQ-1	EQE-1	SQ-1	SQE-1	1	1/4	0.88	
	Q-2	QE-2	EQ-2	EQE-2	SQ-2	SQE-2	2	1/2	1.76	
	Q-3	QE-3	EQ-3	EQE-3	SQ-3	SQE-3	3	1	3.52	
	Q-4	QE-4	EQ-4	EQE-4	SQ-4	SQE-4	4	1-1/2	5.28	
	Q-5	QE-5	EQ-5	EQE-5	SQ-5	SQE-5	5	2	7.03	
	Q-6	QE-6	EQ-6	EQE-6	SQ-6	SQE-6	6	2-1/2	8.79	
404A (S) 502 (R) 408A (R)	Q-0	QE-0	EQ-0	EQE-0	SQ-0	SQE-0	0	1/6	0.59	
	Q-1	QE-1	EQ-1	EQE-1	SQ-1	SQE-1	1	1/4	0.88	
	Q-2	QE-2	EQ-2	EQE-2	SQ-2	SQE-2	2	1/2	1.76	
	Q-3	QE-3	EQ-3	EQE-3	SQ-3	SQE-3	3	1	3.52	
	Q-4	QE-4	EQ-4	EQE-4	SQ-4	SQE-4	4	1-1/2	5.28	
	Q-5	QE-5	EQ-5	EQE-5	SQ-5	SQE-5	5	2	7.03	
	Q-6	QE-6	EQ-6	EQE-6	SQ-6	SQE-6	6	3	10.6	
507 (P) 402A (L)	Q-0	QE-0	EQ-0	EQE-0	SQ-0	SQE-0	0	1/6	0.59	
	Q-1	QE-1	EQ-1	EQE-1	SQ-1	SQE-1	1	1/4	0.88	
	Q-2	QE-2	EQ-2	EQE-2	SQ-2	SQE-2	2	1/2	1.76	
	Q-3	QE-3	EQ-3	EQE-3	SQ-3	SQE-3	3	1	3.52	
	Q-4	QE-4	EQ-4	EQE-4	SQ-4	SQE-4	4	1-1/2	5.28	
	Q-5	QE-5	EQ-5	EQE-5	SQ-5	SQE-5	5	2	7.03	
	Q-6	QE-6	EQ-6	EQE-6	SQ-6	SQE-6	6	3	10.6	

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available.
④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing or corresponding OD size. Thus 1/2″ ODF will receive 1/2″ OD tubing.
⑥ Valves listed in this column NOT AVAILABLE with MOP Type air conditioning charges.
⑦ Standard External Equaliser 1/4″ SAE (Q Body), 1/4″ ODF (SQ and EQ Body).
NOTE: External Equaliser connection is required whenever valves are used with Sporlan Refrigerant Distributors.

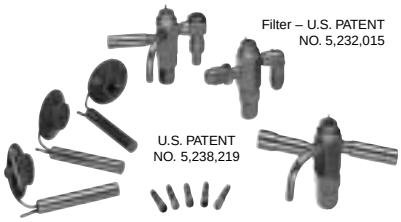
NOMINAL CAPACITIES kW				Q VALVE CARTRIDGE	
R-22, R-407C, & R-407A	R-134A, R-12, R-401A, & R-409A	R-404A, R-502, & R-408A	R-507 & R-402A	Cartridge	Color Code
1.17	0.59	0.59	0.59	0	RED
2.64	0.88	0.88	0.88	1	YELLOW
3.52	1.76	1.76	1.76	2	GREEN
5.28	3.52	3.52	3.52	3	BLUE
8.79	5.28	5.28	5.28	4	PINK
10.6	7.03	7.03	7.03	5	BLACK
17.6	10.6	10.6	10.6	6	WHITE

To select thermostatic charge please see table “recommended thermostatic charges” on page 3.

THERMOSTATIC EXPANSION VALVES

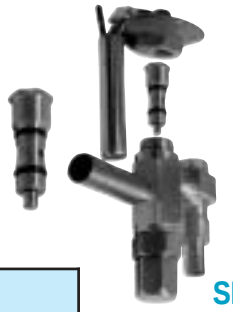
Replaceables Cartridge Style

SPECIFICATIONS



Type-BQ, EBQ, SBQ

Balanced Port Construction
ELEMENT SIZE NO. 43, Knife Edge Joint
Standard Tubing Length: 152 cm



SBQ

BQE

EBQ

EBQ

90˚ Angle Inlet

SBQE

REFRIGERANT (Sporlan Code)	BODY TYPE - CARTRIDGE CODE						Cartridge Code	NOMINAL CAPACITY		①CONNECTIONS inches
	SAE Flare		Extended ODF Solder							
	⑥ Internal Equaliser	⑦ External Equaliser	⑥ Internal Equaliser	⑦ External Equaliser	⑥ Internal Equaliser	⑦ External Equaliser		tons	kW	Inlet x Outlet
22 (V) 407C (N) 407A (V)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/8 to 1/3	0.44 to 1.16	***BQ & BQE Only*** 1/4 x 3/8 SAE 90˚ Angle Inlet or 1/4 x 1/2 SAE 90˚ Angle Inlet or **3/8 x 1/2 SAE 90˚ Angle Inlet** ***EBQ Only*** **3/8 x 1/2 ODF④ Straight Thru** 3/8 x 1/2 ODF 90˚ Angle Inlet ***EBQE Only*** **3/8 x 1/2 ODF④ Straight Thru** 3/8 x 1/2 ODF 90˚ Angle Inlet or 1/2 x 5/8 ODF Straight Thru or 1/2 x 7/8 ODF Straight Thru ***SBQ & SBQE Only*** **3/8 x 1/2 ODF④ 90˚ Forged Inlet**
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/2 to 2/3	1.76 to 2.34	
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	3/4 to 1-1/2	2.64 to 5.3	
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	1-3/4 to 3	6.16 to 10.6	
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	3-1/4 to 5-1/2	11.4 to 19.3	
134a (J) 12 (F) 401A (X) 409A (F)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/8 to 1/5	0.44 to 0.70	
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/4 to 1/3	0.88 to 1.16	
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	1/2 to 1	1.76 to 3.52	
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	1-1/4 to 1-3/4	4.40 to 6.16	
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	2 to 3	7.03 to 10.6	
404A (S) 502 (R) 408A (R)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/8 to 1/5	0.44 to 0.70	
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/4 to 1/3	0.88 to 1.16	
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	1/2 to 1	1.76 to 3.52	
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	1-1/4 to 2	4.40 to 7.03	
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	2-1/4 to 3	7.90 to 10.6	
507 (P) 402A (L)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/8 to 1/5	0.44 to 0.70	
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/4 to 1/3	0.88 to 1.16	
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	1/2 to 1	1.76 to 3.52	
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	1-1/4 to 2	4.40 to 7.03	
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	2-1/4 to 3	7.90 to 10.6	

① Connection shown are most readliy avaliable. Connections shown in Bulletin 10-10 are avaliable.
④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing or corresponding OD size. Thus 1/2″ ODF will receive 1/2″ OD tubing.
⑥ Valve listed in this column should not be assembled with MOP Type air conditioning charges.
⑦ Standard External Equalizer 1/4" SAE (BQ Body), 1/4" ODF (SBQ and EBQ Body).
NOTE: External Equaliser connection is required whenever valves are used with Sporlan Refrigerant Distributors.

NOMINAL CAPACITIES kW				BQ VALVE CARTRIDGE	
R-22, R-407C, & R-407A	R-134A, R-12, R-401A, & R-409A	R-404A, R-502, & R-408A	R-507 & R-402A	Cartridge	Color Code
0.44 to 1.16	0.44 to 0.70	0.44 to 0.70	0.44 to 0.70	AAA	RED
1.76 to 2.34	0.88 to 1.16	0.88 to 1.16	0.88 to 1.16	AA	YELLOW
2.64 to 5.28	1.76 to 3.52	1.76 to 3.52	1.76 to 3.52	A	BLUE
6.16 to 10.6	4.40 to 6.16	4.40 to 7.03	4.40 to 7.03	B	PINK
11.4 to 19.3	7.03 to 10.6	7.91 to 10.6	7.91 to 10.6	C	WHITE

To select thermostatic charge please see table “recommended thermostatic charges” on page 3.

THERMOSTATIC EXPANSION VALVES
SPECIFICATIONS

Type-G and EG

ELEMENT SIZE No. 53, Knife Edge Joint

Standard Tubing Length 152 cm

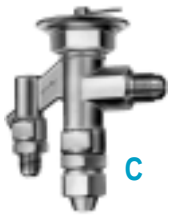
Replaceable Strainer
U.S. PATENT
NO. 5,232,015

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY – Type G SAE Flare		TYPE & CAPACITY – Type EG ODF Solder		①STANDARD CONNECTIONS - inches			
	⑥ Internal Equaliser	External Equaliser 1/4" SAE Flare	⑥ Internal Equaliser	External Equaliser 1/4" ODF Solder	Thermostatic Charges Available	INLET – Type G SAE Flare	INLET – ④ Type EG ODF Solder	OUTLET
22 (V) 407C (N) 407A (V)	GV-1/5	GVE-1/5	EGV-1/5	EGVE-1/5	Refer to Recommended Thermostatic Charges on Page 3	1/4	3/8	1/2
	GV-1/3	GVE-1/3	EGV-1/3	EGVE-1/3				
	GV-1/2	GVE-1/2	EGV-1/2	EGVE-1/2		3/8②		
	GV-3/4	GVE-3/4	EGV-3/4	EGVE-3/4				
	GV-1	GVE-1	EGV-1	EGVE-1				
	GV-1-1/2	GVE-1-1/2	EGV-1-1/2	EGVE-1-1/2				
	–	GVE-2	–	EGVE-2				
	GV-2-1/2	–	EGV-2-1/2	–				
	–	GVE-3	–	EGVE-3				
134a (J) 12 (F) 401A (X) 409A (F)	GJ-1/8	GJE-1/8	EGJ-1/8	EGJE-1/8		1/4		
	GJ-1/6	GJE-1/6	EGJ-1/6	EGJE-1/6				
	GJ-1/4	GJE-1/4	EGJ-1/4	EGJE-1/4				
	GJ-1/2	GJE-1/2	EGJ-1/2	EGJE-1/2		3/8②		
	GJ-1	GJE-1	EGJ-1	EGJE-1				
	GJ-1-1/2	GJE-1-1/2	EGJ-1-1/2	EGJE-1-1/2				
	–	GJE-2	–	EGJE-2				
404A (S) 502 (R) 408A (R)	GS-1/8	GSE-1/8	EGS-1/8	EGSE-1/8		1/4		
	GS-1/6	GSE-1/6	EGS-1/6	EGSE-1/6				
	GS-1/4	GSE-1/4	EGS-1/4	EGSE-1/4				
	GS-1/2	GSE-1/2	EGS-1/2	EGSE-1/2		3/8②		
	GS-1	GSE-1	EGS-1	EGSE-1				
	GS-1-1/2	GSE-1-1/2	EGS-1-1/2	EGSE-1-1/2				
	–	GSE-2	–	EGSE-2				
507 (P) 402A (L)	GP-1/8	GPE-1/8	EGP-1/8	EGPE-1/8		1/4		
	GP-1/6	GPE-1/6	EGP-1/6	EGPE-1/6				
	GP-1/4	GPE-1/4	EGP-1/4	EGPE-1/4				
	GP-1/2	GPE-1/2	EGP-1/2	EGPE-1/2		3/8②		
	GP-1	GPE-1	EGP-1	EGPE-1				
	GP-1-1/2	GPE-1-1/2	EGP-1-1/2	EGPE-1-1/2				
	–	GPE-2	–	EGPE-2				

Type-C

ELEMENT SIZE No. 83, Knife Edge Joint

Standard Tubing Length 152 cm



REFRIGERANT (Sporlan Code)	TYPE & CAPACITY – ⑥ Internal Equaliser	TYPE & CAPACITY – External Equaliser 1/4" SAE Flare Only	Thermostatic Charges Available	①STANDARD CONNECTIONS inches SAE Flare – INLET	①STANDARD CONNECTIONS inches SAE Flare – OUTLET
22 (V) 407C (N) 407A (V)	CV-3	–	Refer to Recommended Thermostatic Charges on Page 3	3/8②	1/2
	CV-4	CVE-4			
	CV-5	CVE-5			
	–	CVE-8		1/2	5/8
134a (J) 12 (F) 401A (X) 409A (F)	CJ-2	–		3/8②	1/2
	CJ-2-1/2	CJE-2-1/2			
	CJ-3	CJE-3			
	–	CJE-5		1/2	5/8
404A (S) 502 (R) 408A (R)	CS-2	–		3/8②	1/2
	CS-3	CSE-3			
	CS-4	CSE-4			
	–	CSE-6		1/2	5/8
507 (P) 402A (L)	CP-2	–		3/8②	1/2
	CP-3	CPE-3			
	CP-4	CPE-4			
	–	CPE-6		1/2	5/8

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available.
② The 3/8″ SAE inlet fitting has a long taper on the flare surface. A 3/8″ x 1/4″ reducing flare nut will allow 1/4″ OD tubing to be attached to this fitting.
④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2″ ODF will receive 1/2″ OD tubing.
⑥ Valves listed in this column NOT AVAILABLE with MOP Type air conditioning charges.

Tubing lengths other than standard available upon special order at an additional cost.

NOTE: External Equaliser Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

For complete information refer to Bulletins 10-9 and 10-10.

THERMOSTATIC EXPANSION VALVES
SPECIFICATIONS

REFRIGERANT (Sporlan Code)	TYPE & PORT SIZE – SAE Flare		NOMINAL CAPACITY RANGE kW	Thermostatic Charges Available	①STANDARD CONNECTIONS – inches		
					SAE Flare		
	Internal Equaliser	External Equaliser			INLET	OUTLET	External Equaliser
22 (V) 407C (N) 407A (V)	BFV-AAA	BFVE-AAA	0.44 thru 1.17	C Z ZP40	1/4	1/2	1/4
	BFV-AA	BFVE-AA	1.76 thru 2.34				
	BFV-A	BFVE-A	2.64 thru 5.28		3/8② Elbow		
	BFV-B	BFVE-B	6.15 thru 10.6				
	BFV-C	BFVE-C	11.4 thru 19.3				
134a (J) 12 (F) 401A (X) 409A (F)	BFJ-AAA	BFJE-AAA	0.44 thru 0.70	C CP60	1/4		
	BFJ-AA	BFJE-AA	0.88 thru 1.17				
	BFJ-A	BFJE-A	1.76 thru 3.52		3/8② Elbow		
	BFJ-B	BFJE-B	4.40 thru 6.15				
	BFJ-C	BFJE-C	7.03 thru 10.6				
404A (S) 502 (R) 408A (R)	BFS-AAA	BFSE-AAA	0.44 thru 0.70	C Z ZP	1/4		
	BFS-AA	BFSE-AA	0.88 thru 1.17				
	BFS-A	BFSE-A	1.76 thru 3.52		3/8② Elbow		
	BFS-B	BFSE-B	4.40 thru 7.03				
	BFS-C	BFSE-C	7.91 thru 10.6				
507 (P) 402A (L)	BFP-AAA	BFPE-AAA	0.44 thru 0.70	C Z ZP	1/4		
	BFP-AA	BFPE-AA	0.88 thru 1.17				
	BFP-A	BFPE-A	1.76 thru 3.52		3/8② Elbow		
	BFP-B	BFPE-B	4.40 thru 7.03				
	BFP-C	BFPE-C	7.91 thru 10.6				

Type-BF

Balanced Port Construction

ELEMENT SIZE No. 43, Knife Edge Joint

Standard Tubing Length 76 cm

BF

REFRIGERANT (Sporlan Code)	TYPE SBF & PORT SIZE – Extended ODF Solder (with replaceable strainer)		TYPE EBF & PORT SIZE – Extended ODF Solder		NOMINAL CAPACITY RANGE kW	Thermostatic Charges Available	①STANDARD CONNECTIONS inches		
							④Extended ODF Solder		
	Internal Equaliser	External Equaliser	Internal Equaliser	External Equaliser			INLET	OUTLET	External Equaliser
22 (V) 407C (N) 407A (V)	SBFV-AAA	SBFVE-AAA	EBFV-AAA	EBFVE-AAA	0.44 thru 1.17	C Z ZP40	3/8	1/2	1/4 Pointed Toward Bottom Cap
	SBFV-AA	SBFVE-AA	EBFV-AA	EBFVE-AA	1.76 thru 2.34				
	SBFV-A	SBFVE-A	EBFV-A	EBFVE-A	2.64 thru 5.28				
	SBFV-B	SBFVE-B	EBFV-B	EBFVE-B	6.15 thru 10.6				
	SBFV-C	SBFVE-C	EBFV-C	EBFVE-C	11.4 thru 19.3				
134a (J) 12 (F) 401A (X) 409A (F)	SBFJ-AAA	SBFJE-AAA	EBFJ-AAA	EBFJE-AAA	0.44 thru 0.70	C CP60			
	SBFJ-AA	SBFJE-AA	EBFJ-AA	EBFJE-AA	0.88 thru 1.17				
	SBFJ-A	SBFJE-A	EBFJ-A	EBFJE-A	1.76 thru 3.52				
	SBFJ-B	SBFJE-B	EBFJ-B	EBFJE-B	4.40 thru 6.15				
	SBFJ-C	SBFJE-C	EBFJ-C	EBFJE-C	7.03 thru 10.6				
404A (S) 502 (R) 408A (R)	SBFS-AAA	SBFSE-AAA	EBFS-AAA	EBFSE-AAA	0.44 thru 0.70	C Z ZP			
	SBFS-AA	SBFSE-AA	EBFS-AA	EBFSE-AA	0.88 thru 1.17				
	SBFS-A	SBFSE-A	EBFS-A	EBFSE-A	1.76 thru 3.52				
	SBFS-B	SBFSE-B	EBFS-B	EBFSE-B	4.40 thru 7.03				
	SBFS-C	SBFSE-C	EBFS-C	EBFSE-C	7.91 thru 10.6				
507 (P) 402A (L)	SBFP-AAA	SBFPE-AAA	EBFP-AAA	EBFPE-AAA	0.44 thru 0.70	C Z ZP			
	SBFP-AA	SBFPE-AA	EBFP-AA	EBFPE-AA	0.88 thru 1.17				
	SBFP-A	SBFPE-A	EBFP-A	EBFPE-A	1.76 thru 3.52				
	SBFP-B	SBFPE-B	EBFP-B	EBFPE-B	4.40 thru 7.03				
	SBFP-C	SBFPE-C	EBFP-C	EBFPE-C	7.91 thru 10.6				

Type-SBF & EBF

Balanced Port Construction

ELEMENT SIZE No. 43, Knife Edge Joint

Standard Tubing Length 76 cm

SBF

Replaceable Strainer
U.S. PATENT
NO. 5,232,015

EBF

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available.
② The 3/8″ SAE inlet fitting has a long taper on the flare surface. A 3/8″ x 1/4″ reducing flare nut will allow 1/4″ OD tubing to be attached to this fitting.
④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing or corresponding OD size. Thus 1/2″ ODF will receive 1/2″ OD tubing.

Tubing lengths other than standard available upon special order at an additional cost.

NOTE: External Equaliser Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

THERMOSTATIC EXPANSION VALVES
SPECIFICATIONS

Type-S

ELEMENT SIZE No. 83, Knife Edge Joint
Standard Tubing Length 152 cm

Type-O

Balanced Port Construction
ELEMENT SIZE Nos. 83 and 33, Knife Edge Joint
Standard Tubing Length 152 cm

U.S. PATENT NUMBER 3,742,722

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY		Thermostatic Charges Available	①STANDARD CONNECTIONS inches ④ODF Solder	
	⑥Internal Equaliser	⑧External Equaliser		INLET	OUTLET
22 (V) 407C (N) 407A (V)	SV-2	SVE-2	Refer to Recommended Thermostatic Charges on Page 3	1/2	5/8
	SV-3	SVE-3			7/8
	SV-4	SVE-4			
	SV-5	SVE-5		5/8	
	–	SVE-8			
	–	SVE-10			
	–	SVE-15		7/8	1-1/8
134a (J) 12 (F) 401A (X) 409A (F)	SJ-2	SJE-2		1/2	5/8
	SJ-2-1/2	SJE-2-1/2			7/8
	SJ-3	SJE-3			
	–	SJE-5		5/8	
	–	SJE-6			
	–	SJE-10		7/8	1-1/8
404A (S) 502 (R) 408A (R)	SS-2	SSE-2		1/2	5/8
	SS-3	SSE-3			7/8
	SS-4	SSE-4			
	–	SSE-6		5/8	
	–	SSE-7			
	–	SSE-10		7/8	1-1/8
507 (P) 402A (L)	SP-2	SPE-2		1/2	5/8
	SP-3	SPE-3			7/8
	SP-4	SPE-4			
	–	SPE-6		5/8	
	–	SPE-7			
	–	SPE-10		7/8	1-1/8

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	Element Size No.	Thermostatic Charges Available	①STANDARD CONNECTIONS inches ④ODF Solder	
	⑧External Equaliser			INLET	OUTLET
22 (V) 407C (N) 407A (V)	OVE-15	83	Refer to Recommended Thermostatic Charges on Page 3 Type X Charges are not available for Type O valves	7/8	1-1/8
	OVE-20				1-3/8
	OVE-30			1-1/8	
	OVE-40	33			
	OVE-55				
	OVE-70				
134a (J) 12 (F) 401A (X) 409A (F)	OJE-9	83		7/8	1-1/8
	OJE-12				1-3/8
	OJE-16			1-1/8	
	OJE-23	33			
	OJE-32				
	OJE-40				
404A (S) 502 (R) 408A (R)	OSE-9	83		7/8	1-1/8
	OSE-12				1-3/8
	OSE-21			1-1/8	
	OSE-30	33			
	OSE-35				
	OSE-45				
507 (P) 402A (L)	OPE-9	83		7/8	1-1/8
	OPE-12				1-3/8
	OPE-21			1-1/8	
	OPE-30	33			
	OPE-35				
	OPE-45				

Type-EBS

Balanced Port Construction

ELEMENT SIZE No. 83, Knife Edge Joint

Standard Tubing Length 152 cm

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	Thermostatic Charges Available	①STANDARD CONNECTIONS – inches ④Extended ODF Solder	
	External Equaliser		INLET	OUTLET
22 (V) 407C (N) 407A (V)	EBSVE-8	Refer to Recommended Thermostatic Charges on Page 3 Type X Charges are not available for Type EBS valves	5/8	7/8
	EBSVE-11		7/8	1-1/8
	EBSVE-15			1-3/8
	EBSVE-20			
134a (J) 12 (F) 401A (X) 409A (F)	EBSJE-5		5/8	7/8
	EBSJE-7		7/8	1-1/8
	EBSJE-9			1-3/8
	EBSJE-12			
404A (S) 502 (R) 408A (R)	EBSSE-6		5/8	7/8
	EBSSE-7-1/2		7/8	1-1/8
	EBSSE-10			1-3/8
	EBSSE-13			
507 (P) 402A (L)	EBSPE-6		5/8	7/8
	EBSPE-7-/12		7/8	1-1/8
	EBSPE-10			1-3/8
	EBSPE-13			

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available.
④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2″ ODF will receive 1/2″ OD tubing.
⑥ Valves listed in this column NOT AVAILABLE with MOP Type air conditioning charges.
⑧ Standard External Equaliser Connection 1/4″ ODF Solder. 1/4″ SAE Flare connection available on request.

Tubing lengths other than standard available upon special order at an additional cost.

NOTE: External Equaliser Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

For complete information refer to Bulletins 10-9 and 10-10.

THERMOSTATIC EXPANSION VALVES

SPECIFICATIONS

Type-H

ELEMENT SIZE No. 33, Knife Edge Joint
Standard Tubing Length 152 cm
Flange Ring Size – 1-1/4″ OD × 1″ ID.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY ⑥ Internal Equaliser	TYPE & CAPACITY ⑨ External Equaliser	Thermostatic Charges Available	①STANDARD CONNECTIONS inches ④ODF Solder Flange INLET	①STANDARD CONNECTIONS inches ④ODF Solder Flange OUTLET
22 (V) 407C (N) 407A (V)	HV-2-1/2	HVE-2-1/2	Refer to Recommended Thermostatic Charges on Page 3	1/2	5/8
	HV-5-1/2	HVE-5-1/2		5/8	7/8
	–	HVE-7			
	–	HVE-11			
	–	HVE-16		7/8	1-1/8
	–	HVE-20			
134a (J) 12 (F) 401A (X) 409A (F)	HJ-1-1/2	HJE-1-1/2		1/2	5/8
	HJ-3	HJE-3		5/8	7/8
	HJ-4	HJE-4			
	HJ-5	HJE-5			
	–	HJE-8			
	–	HJE-12		7/8	1-1/8
404A (S) 502 (R) 408A (R)	HS-1-1/2	HSE-1-1/2		1/2	5/8
	HS-3	HSE-3		5/8	7/8
	HS-4	HSE-4			
	–	HSE-6-1/2			
	–	HSE-9			
	–	HSE-12		7/8	1-1/8
507 (P) 402A (L)	HP-1-1/2	HPE-1-1/2		1/2	5/8
	HP-3	HPE-3		5/8	7/8
	HP-4	HPE-4			
	–	HPE-6-1/2			
	–	HPE-9			
	–	HPE-12		7/8	1-1/8

Type-M

ELEMENT SIZE No. 63, Gasket Joint
Standard Tubing Length 152 cm
Flange Ring Size – 1-3/4″ OD × 1-1/4″ ID.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY ⑨ External Equaliser	Thermostatic Charges Available	①STANDARD CONNECTIONS inches ④ODF Solder Flange INLET	①STANDARD CONNECTIONS inches ④ODF Solder Flange OUTLET
22 (V) 407C (N) 407A (V)	MVE-21	Refer to Recommended Thermostatic Charges on Page 3	7/8	1-1/8
	MVE-26			
	MVE-34			
	MVE-42		1-1/8	
134a(J) 12 (F) 401A (X) 409 (F)	MJE-13		7/8	
	MJE-15			
	MJE-20			
	MJE-25		1-1/8	
404A (S) 502 (R) 408A (R)	MSE-15		7/8	
	MSE-20			
	MSE-25			
	MSE-30		1-1/8	
507 (P) 402A (L)	MPE-15		7/8	
	MPE-20			
	MPE-25			
	MPE-30		1-1/8	

Type-V

ELEMENT SIZE No. 63, Gasket Joint
Standard Tubing Length 152 cm
Flange Ring Size – 1-3/4″ OD × 1-1/4″ ID.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY ⑨ External Equaliser	Thermostatic Charges Available	①STANDARD CONNECTIONS inches ④ODF Solder Flange INLET	①STANDARD CONNECTIONS inches ④ODF Solder Flange OUTLET
22 (V) 407C (N) 407A (V)	VVE-52	Refer to Recommended Thermostatic Charges on Page 3	1-3/8	1-3/8
	VVE-70			
	VVE-100			
134a (J) 12 (F) 401A (X) 409A (F)	VJE-35			
	VJE-45			
	VJE-55			
404A (S) 502 (R) 408A (R)	VSE-38			
	VSE-50			
	VSE-70			
507 (P) 402A (L)	VPE-38			
	VPE-50			
	VPE-70			

Type-W

ELEMENT SIZE No. 63, Small Capacity – Gasket Joint
ELEMENT SIZE No. 7, Large Capacity – Gasket Joint
Standard Tubing Length 305 cm
Flange Ring Size – 2-3/49 OD @ 2-3/169 ID.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY ⑨ External Equaliser	Thermostatic Charges Available	Element Size No.	①STANDARD CONNECTIONS inches ④ODF Solder Flange INLET	①STANDARD CONNECTIONS inches ④ODF Solder Flange OUTLET
22 (V) 407C (N) 407A (V)	WVE-135	⑩	63	1-5/8	2-1/8
	WVE-180	G only	7		
134a (J) 12 (F) 401A (X) 409A (F)	WJE-80	⑩	63		
	WJE-110	G only	7		

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available.
④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2″ ODF will receive 1/2″ OD tubing.
⑥ Valves listed in this column NOT AVAILABLE with MOP Type air conditioning charges.
⑨ Standard External Equaliser Connection 1/4″ SAE Flare, 1/4″ ODF Solder connection available on request.
⑩ Refer to Recommended Thermostatic Charges, Page 3.

Tubing lengths other than standard available upon special order at an additional cost.

NOTE: External Equaliser Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

For complete information refer to Bulletins 10-9 and 10-10.

THERMOSTATIC EXPANSION VALVES
SPECIFICATIONS

REFRIGERANT 717 (AMMONIA)

Type-D

ELEMENT SIZE No. 23, Gasket Joint
Standard Tubing Length 305 cm
Flange Ring Size – 1-1/89 OD @ 3/49 ID.

REFRIGERANT	TYPE & CAPACITY		PORT SIZE mm	Discharge Tube Orifice mm	Thermostatic Charges Available	①STANDARD CONNECTIONS inches FPT	
	Internal Equaliser	External Equaliser 1/8" FPT				Inlet	Outlet
717	DA-1	DAE-1	1.59	0.79	C-Z-L	1/2	1/2
	DA-2	DAE-2		1.59			
	DA-5	DAE-5	2.78	1.98			
	DA-10	DAE-10	4.76	2.78			
	DA-15	DAE-15		3.97			

Type-A

ELEMENT SIZE No. 12, Gasket Joint
Standard Tubing Length 305 cm
Flange Ring Size – 1-3/4″ OD × 1-1/4″ ID.

REFRIGERANT	TYPE & CAPACITY		PORT SIZE mm	Discharge Tube Orifice mm	Thermostatic Charge Available	①STANDARD CONNECTIONS inches FPT	
	Internal Equaliser	External Equaliser 1/8" FPT				Inlet	Outlet
717	AA-20	AAE-20	7.94	3.18	L	1/2	1/2
	AA-30	AAE-30		3.97			
	AA-50	AAE-50	9.53	4.76			
	AA-75	AAE-75		None		3/4	3/4
	AA-100	AAE-100	11.11	None			

RECOMMENDED THERMOSTATIC CHARGES for Refrigerant 717 (Ammonia)

CHARGE	SUCTION TEMPERATURE	TYPICAL APPLICATIONS
C	0°C to -20°C	Chill Rooms, Water Chillers, Milk Trucks
Z	-20°C to -34°C	Locker Plants, Hardening Rooms, Ice Cream Trucks

The **L** charge is suitable for use on ammonia valves at all temperatures above -35°C when applied to evaporators comprising a multiple system connected to a central refrigerating plant and when one or more compressors are used and operated continuously from a common suction line.

The Type **L** charge is also preferred on systems equipped with evaporator pressure regulators.

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available.

Tubing lengths other than standard available upon special order at an additional cost.

NOTE: External Equaliser Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

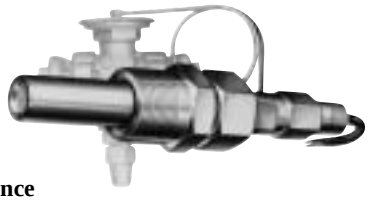
For complete information refer to Bulletins 10-9 and 10-10.

LEVEL-MASTER LIQUID LEVEL CONTROL

U.S. PATENT NO. 2,735,272

A Positive Liquid Level Control for Refrigerants 22, 134a, 507, and 717 Flooded Systems

with these benefits



- **Modulated Flow**
- **No Moving Parts**
- **Tight Closing**
- **Not Affected by Turbulence**
- **Simplified and Economical Installation**
- **Proven Thermostatic Expansion Valve Performance**

DESCRIPTION AND OPERATION

This control is a standard thermostatic expansion valve equipped with a Level-Master Element. The combination provides a simple, economical and highly effective liquid level control, with a standard expansion device.

The bulb of the conventional thermostatic element has been modified to an insert bulb containing a low wattage heater. The insert bulb is installed in the accumulator or surge drum. When the liquid level drops, the bulb is surrounded by vapor, the heater provides the necessary superheat to feed more refrigerant to the evaporator. As the liquid refrigerant contacts the bulb the effect of the heater is nullified, and the valve throttles or closes.

INSTALLATION – GENERAL

The Level-Master is applicable to any system which has been specifically designed for flooded operation. The expansion valve is installed in the liquid line and can be connected to feed into either the accumulator, the liquid leg of the accumulator or coil header.

The insert bulb has a 1-1/4″ male pipe thread and should be installed at the point where the desired liquid level is to be maintained and must be in contact with the refrigerant. While generally installed in a horizontal position, it will operate effectively at any angle or vertical position.

Where the pressure drop between the expansion valve and insert bulb exceeds 0.14 to 0.21 bar, because of line losses due to fittings, accessories, etc., a valve equipped with an external equaliser connection should be used.

To order add “E” as the sixth letter of type designation.

Example: LMC-HFE-12.

There is no operating disadvantage in using an external equaliser connection on any system.

For complete information refer to Bulletin 60-15.

REFRIGERANT DISTRIBUTORS & AUXILIARY SIDE CONNECTORS

The Sporlan Distributor is an efficient refrigerant distributing device that assures uniform feeding of refrigerant to all passes of a multi-circuited evaporator. It can be used with any conventional externally equalised thermostatic expansion valve.

DISTRIBUTOR NOMENCLATURE/ORDERING INSTRUCTIONS

To order (1) type 1126 distributor with 16 – 1/4″ circuits and number 15 nozzle use the following nomenclature:

One	–	**1126**	–	**16**	–	**1/4**	–	**15**
Quantity		Type		Number of Circuits		Circuit Size		Nozzle Orifice Number

REFRIGERANT DISTRIBUTORS

CONNECTION SIZE	TEV MODEL	DISTRIBUTOR TYPE	MAXIMUM NUMBER OF CIRCUITS				NOZZLE TYPE	MATERIAL
			3/16	1/4	5/16	3/8		
1/2 SAE	BI, BBI, BF, BQ C, F, FB,G, I, Q, RI, RC, X	1603	6	4	—	—	PERM.	#360 BRASS
		1606	9	6	4	—	PERM.	
		1605	6	4	—	—	L	
		1608	9	6	4	—	L	
5/8 SAE	BI, BBI, C, FB, I, X	1104	7	6	—	—	J	
		1147	9	7	5	—	J	
1/2 ODM	BI, BBI, EF, EBF, EG, EBQ, EQ, FB, I, RC, RI, S, SBF, SBQ, SQ, X	1613	6	4	—	—	PERM.	
		1616	8	6	4	—	PERM.	
		D260	6	4	—	—	L	
		D262	9	6	4	—	L	
5/8 ODM	BI, BBI, EBF, EBQ, EQ, FB, SBF, RC, RI, S, I, X	1620	6	4	—	—	J	
		1622	9	7	4	—	J	
7/8 ODM	BI, BBI, EBS, EBQ, EQ, FB, I, S, O, X	1112	7	6	4	2	G	
		1113	12	8	6	4	G	
1-1/8 ODM	S, EBS, O, X	1115	15	10	9	6	E	
		1116	20	15	—	—	E	
1-3/8 ODM	EBS, O, S, W	1117	18	15	9	7	C	
		1126	24	18	15	12	C	#377 BRASS
		1128	28	25	21	16	C	
1-5/8 ODM	O, W	1125	28	24	20	16	A	
		1127	37	30	26	20	A	#360 BRASS
		1143	40	36	30	24	A	
TYPE H VALVE	H	1109	10	8	6	4	G	
		1124	30	23	18	15	E	
		1192	11	10	6	6	G	6061-T6 ALUMINUM
TYPE M/V VALVE	M, V	1121	34	24	20	16	C	#360 BRASS
		1193	26	21	18	16	C	6061-T6 ALUMINUM

TYPE 1126

1651 with Auxiliary Side Connection for heat pump, hot gas defrost and hot gas bypass systems.

SIDE CONNECTION DISTRIBUTORS

CONNECTION SIZE	TEV MODEL	DISTRIBUTOR TYPE	MAXIMUM NUMBER OF CIRCUITS				NOZZLE TYPE	SIDE CONNECTION	MATERIAL
			3/16	1/4	5/16	3/8			
1/2 SAE	BI, BBI, BF, BQ, C, F, FB, G, I, Q, RI, RC, X	1650 (R)	7	5	3	—	PERM.	3/8 or 1/2 ODF	#360 BRASS
5/8 SAE	C, BI, BBI, FB, I, X	1652(R)	7	5	3	—			
		1654(R)	12	9	6	4			
		1656(R)	20	12	10	7		1/2 or 5/8 ODF	
5/8 ODM	BI, BBI, EBF, EBQ, EQ, FB, I, S, SBF, RC, RI, X	1651(R)	7	5	3	—	J(R)	3/8 or 1/2 ODF	
7/8 ODM	BI, BBI, EBS, EBQ EQ, FB, S, O, I, X	1653(R)	12	9	6	4	G(R)		
1-1/8 ODM	EBS, S, O, X	1655(R)	20	12	10	7	E(R)	1/2 or 5/8 ODF	
1-3/8 ODM	EBS, O, S, W	1657(R)	26	18	14	11	C(R)	5/8 or 7/8 ODF	
1-5/8 ODM	O, W	1659(R)	32	24	18	14	A(R)	7/8 or 1-1/8 ODF	

ASC (Auxiliary Side Connectors) for hotgas defrost, hot gas bypass and reverse cycle (heat pump) systems.

U.S. PATENT NO. 3,563,055

AUXILIARY SIDE CONNECTORS

TYPE	CONNECTION SIZES – inches			Nozzle Size	Used with Distributor Type
	Inlet ODM Solder	Outlet ODF Solder	Auxiliary ODF Solder		
ASC-5-4	5/8	5/8	1/2	J	1620, 1622
ASC-7-4	7/8	7/8	1/2	G	1112, 1113
ASC-9-5	1-1/8	1-1/8	5/8	E	1115, 1116
ASC-11-7	1-3/8	1-3/8	7/8	C	1117, 1126, 1128
ASC-13-9	1-5/8	1-5/8	1-1/8	A	1125, 1127, 1143

The various auxiliary side connectors (ASC) permit the conversion of conventional Sporlan refrigerant distributors to hot gas bypass, hot gas defrost, or reverse cycle service.

All Sporlan Distributors are qualified for use with R-410A.
For complete information on distributors, auxiliary side connections, and ammonia distributors refer to Bulletin 20-10.

SOLENOID VALVES

REFRIGERANTS 22 – 134a – 401A – 402A – 404A – 407C – 502 – 507 – 717

SPECIFICATIONS

A3F1

E10S250

OB14S2

E25S290

6 Proven Benefits of Sporlan Solenoid Valves

- **Molded coil for most sizes.**
- **Class "F" temperature rating – Coil types MKC-1, OMKC-1.**
- **Class "F" temperature rating – Coil types MKC-2, OMKC-2.**
- **Extremely rugged, simple design – few parts.**
- **"E" Series may be brazed without disassembly.**
- **Tight closing through use of synthetic seating material.**
- **Can be used on Refrigerants 22, 134a, 401A, 402A, 404A, 407C, 502 and 507 because of high MOPD ratings.**

Sporlan Solenoid Valves are made in two general types, normally closed and normally open. The normally closed types may be further sub-divided into direct acting and pilot operated types.

The NORMALLY CLOSED A3 and E3 (Direct Acting) and E5 through the E42 series (Pilot Operated) and the NORMALLY OPEN OB9 and OE9 through the OE42 series may be mounted in either a horizontal or vertical line. The (O)B33, MA5A3, MA17A3, MA32, MA42, and MA50 MUST be mounted in a horizontal line with the coil at the top.

The Sporlan "E" series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E" series can be installed without disassembly using either low or no silver content brazing alloy. The "E" series is interchangeable with the "B" series, solder type valves, providing the overall length can be accommodated.

All valves in the "E" series have the same capacities as the "B" series with the exception of the E42. Its capacity is approximately 15% greater than the MA42.

All Sporlan solenoid valves are designed for liquid, suction and discharge gas applications.

Most Sporlan Solenoid Valves are *Listed by Underwriters' Laboratories, Inc.* – Guide No. Y10Z – File No. MH4576 , *Canadian Standards Association* – Guide 440-A-O, Class 3221, File 19953, and *CE provisions* of the LVD 73/23/EEC.

Listed

Approved

LIQUID CAPACITY SELECTION TABLE

Capacities based on 4°C saturated evaporator temperature and 38°C liquid temperature.

TYPE NUMBER		kW																			
"E" SERIES VALVES	"A" & "B" SERIES VALVES	22					134a					401A					402A				
		PRESSURE DROP – bar*																			
		0.07	0.14	0.21	0.28	0.35	0.07	0.14	0.21	0.28	0.35	0.07	0.14	0.21	0.28	0.35	0.07	0.14	0.21	0.28	0.35
E3	A3	3.19	4.61	**5.71**	6.65	7.49	2.98	**4.30**	5.33	6.21	6.99	3.19	**4.61**	5.72	6.66	7.50	2.09	3.03	**3.75**	4.37	4.92
E5	—	5.69	8.10	**9.96**	11.5	12.9	5.31	**7.56**	9.29	10.8	12.1	5.70	**8.11**	9.97	11.5	12.9	3.75	5.33	**6.55**	7.59	8.50
E6	B6	10.2	14.3	**17.5**	20.2	22.5	9.50	**13.4**	16.3	18.8	21.0	10.2	**14.3**	17.5	20.2	22.5	6.71	9.44	**11.5**	13.3	14.8
E9	B9	16.6	23.4	**28.6**	33.0	36.9	15.5	**21.8**	26.7	30.8	34.4	16.6	**23.4**	28.7	33.1	36.9	10.9	15.4	**18.9**	21.7	24.3
E10	B10	22.7	32.1	**39.3**	45.4	50.7	21.2	**30.0**	36.7	42.3	47.3	22.8	**32.2**	39.4	45.4	50.8	15.0	21.2	**25.9**	29.9	33.4
E14	B14	32.3	45.6	**55.8**	64.4	71.9	30.1	**42.5**	52.1	60.1	67.1	32.3	**45.7**	55.9	64.5	72.0	21.3	30.0	**36.8**	42.4	47.4
E19	B19	49.3	70.0	**85.8**	99.2	111	46.0	**65.3**	80.1	92.6	104	49.4	**70.0**	85.9	99.3	111	32.5	46.1	**56.5**	65.3	73.1
E25	B25	84.3	119	**147**	169	189	78.7	**111**	137	158	177	84.4	**120**	147	170	190	55.5	78.7	**96.5**	111	125
E34	B33	118	166	**204**	236	263	110	**155**	190	220	246	118	**167**	204	236	264	77.4	110	**134**	155	173
—	MA42	215	291	**347**	394	434	201	**271**	324	367	405	216	**292**	348	395	435	143	193	**230**	261	288
E42	—	260	368	**451**	520	582	243	**343**	420	485	543	261	**368**	451	521	582	171	242	**297**	343	383
—	MA50	384	520	**620**	703	775	358	**485**	578	656	722	385	**521**	621	704	776	255	344	**411**	466	513

TYPE NUMBER		kW																			
"E" SERIES VALVES	"A" & "B" SERIES VALVES	404A					407C					502					507				
		PRESSURE DROP – bar*																			
		0.07	0.14	0.21	0.28	0.35	0.07	0.14	0.21	0.28	0.35	0.07	0.14	0.21	0.28	0.35	0.07	0.14	0.21	0.28	0.35
E3	A3	2.10	3.03	**3.75**	4.37	4.92	2.92	4.21	**5.22**	6.08	6.85	2.07	2.99	**3.71**	4.32	4.86	2.05	2.97	**3.68**	4.29	4.82
E5	—	3.76	5.35	**6.57**	7.61	8.52	5.22	7.43	**9.13**	10.6	11.8	3.69	5.26	**6.46**	7.48	8.38	3.68	5.24	**6.44**	7.45	8.35
E6	B6	6.74	9.49	**11.6**	13.3	14.9	9.36	13.2	**16.1**	18.5	20.7	6.61	9.29	**11.3**	13.1	14.6	6.60	9.28	**11.3**	13.1	14.6
E9	B9	11.0	15.5	**18.9**	21.8	24.4	15.3	21.5	**26.3**	30.3	33.9	10.8	15.2	**18.6**	21.4	23.9	10.8	15.2	**18.5**	21.4	23.9
E10	B10	15.0	21.2	**26.0**	30.0	33.5	20.9	29.5	**36.1**	41.7	46.6	14.7	20.8	**25.5**	29.4	32.9	14.7	20.8	**25.5**	29.4	32.8
E14	B14	21.4	30.2	**36.9**	42.6	47.6	29.7	41.9	**51.2**	59.1	66.1	20.9	29.6	**36.2**	41.7	46.6	20.9	29.5	**36.1**	41.7	46.6
E19	B19	32.6	46.2	**56.7**	65.5	73.3	45.3	64.2	**78.7**	91.0	102	32.0	45.4	**55.7**	64.3	72.0	31.9	45.2	**55.5**	64.2	71.8
E25	B25	55.7	78.9	**96.8**	112	125	77.4	110	**134**	155	174	54.7	77.5	**95.0**	110	123	54.6	77.3	**94.8**	110	123
E34	B33	77.7	110	**135**	156	174	108	153	**187**	216	242	76.3	108	**132**	153	171	76.1	108	**132**	152	170
—	MA42	144	195	**233**	264	291	199	270	**322**	365	402	140	189	**225**	255	281	141	190	**227**	257	284
E42	—	172	243	**298**	344	384	239	338	**414**	478	534	169	239	**292**	337	377	168	238	**292**	337	376
—	MA50	257	348	**415**	471	519	356	481	**574**	651	717	249	337	**402**	456	502	251	340	**405**	460	506

*Do not use below 0.07 bar pressure drop, except Types E3 and A3 valves.
Valve types whether Normally Closed or Normally Open have the same capacities, i.e., B10 or OB10, E10 or OE10.
Solenoid valves for brine applications – consult your nearest Acal Sales Office or Sporlan wholesaler.

For complete solenoid valve information — liquid, suction or discharge gas capacities — refer to Bulletin 30-10.

SOLENOID VALVES
SPECIFICATIONS (Cont'd.)

LIQUID CAPACITY SELECTION TABLE
REFRIGERANT 717 (Ammonia)

TYPE With Manual Lift Stem	kW* PRESSURE DROP – bar**				
	0.07	0.14	0.21	0.28	0.35
MA5A3	28	40	49	57	63
MA17A3	251	354	433	499	558
MA32P3	445	631	775	896	1003
MA42P3	1122	1517	1810	2052	2261
MA50P3	2002	2708	3232	3663	4031

*Capacities are based on 30°C liquid temperature and -15°C saturated evaporator temperature.
**Do not use below 0.07 bar pressure drop, except MA5.

SPECIFICATIONS
REFRIGERANT 717 (Ammonia)

TYPE With Manual Lift Stem	FLANGED CONNECTIONS inches	PORT SIZE mm	MOPD AC bar	WATTS
⑱ MA5A3	1/2 NPT Female	3.6	17.2	18
⑰,⑱ MA17A3	3/4 NPT Female	13.5	18.9	18
⑰ MA32P3	1-1/4 NPT Female	25.4	17.2	18
MA42P3	1-1/2 NPT Female	33.3	20.6	18
MA50P3	2 NPT Female	39.7	20.6	18

SPECIFICATIONS
REFRIGERANTS 22 – 134a – 401A – 402A – 404A – 407C – 502 – 507

TYPE NUMBER						CONNECTIONS inches	PORT SIZE mm	MOPD AC bar	WATTS AC
"E" Series Extended Connections			"A" and "B" Series Valves						
Without Manual Lift Stem		With Manual Lift Stem	Without Manual Lift Stem		With Manual Lift Stem				
Normally Closed	Normally Open	Normally Closed	Normally Closed	Normally Open	Normally Closed				
—	—	—	A3P1	—	—	3/8 NPT Female	2.6	20.6	10
—	—	—	A3F1	—	—	1/4 SAE Flare			
E3S120	—	—	A3S1	—	—	1/4 ODF Solder			
E3S130	—	—	A3S1	—	—	3/8 ODF Solder			
E5S120	—	—	—	—	—	1/4 ODF Solder	3.8	20.6	10
E5S130	—	—	—	—	—	3/8 ODF Solder			
—	—	—	B6P1	—	MB6P1	3/8 NPT Female	4.8	20.6	10
—	—	—	B6F1	—	MB6F1	3/8 SAE Flare			
E6S130	—	ME6S130	B6S1	—	MB6S1	3/8 ODF Solder			
E6S140	—	ME6S140	B6S1	—	MB6S1	1/2 ODF Solder			
—	—	—	B9P2	OB9P2	MB9P2	3/8 NPT Female	7.1	*20.6	15
—	—	—	B9F2	OB9F2	MB9F2	3/8 SAE Flare			
E9S230	OE9S230	ME9S230	—	—	—	3/8 ODF Solder			
E9S240	OE9S240	ME9S240	B9S2	OB9S2	MB9S2	1/2 ODF Solder			
—	—	—	B10F2	OB10F2	MB10F2	1/2 SAE Flare	7.9	*20.6	15
E10S240	OE10S240	ME10S240	—	—	—	1/2 ODF Solder			
E10S250	OE10S250	ME10S250	B10S2	OB10S2	MB10S2	5/8 ODF Solder			
—	—	—	⑰ B14P2	OB14P2	⑰ MB14P2	1/2 NPT Female	11.1	*20.6	15
⑰ E14S250	OE14S250	⑰ ME14S250	⑰ B14S2	OB14S2	⑰ MB14S2	5/8 ODF Solder			
—	—	—	⑰ B19P2	OB19P2	⑰ MB19P2	3/4 NPT Female	15.1	*20.6	15
⑰ E19S250	OE19S250	⑰ ME19S250	⑰ B19S2	OB19S2	⑰ MB19S2	5/8 ODF Solder			
⑰ E19S270	OE19S270	⑰ ME19S270	⑰ B19S2	OB19S2	⑰ MB19S2	7/8 ODF Solder			
—	—	—	B25P2	OB25P2	MB25P2	1 NPT Female	19.8	*20.6	15
E25S270	OE25S270	ME25S270	B25S2	OB25S2	MB25S2	7/8 ODF Solder			
E25S290	OE25S290	ME25S290	B25S2	OB25S2	MB25S2	1-1/8 ODF Solder			
E34S290	OE34S290	ME34S290	B33S2	OB33S2	MB33S2	1-1/8 ODF Solder	25.4	*20.6	15
E34S2110	OE34S2110	ME34S2110	B33S2	OB33S2	MB33S2	1-3/8 ODF Solder			
—	—	—	B33S2	OB33S2	MB33S2	1-5/8 ODF Solder			
—	—	—	—	—	MA42P3	1-1/2 NPT Female	33.3	*20.6	**15
E42S2130	OE42S2130	ME42S2130	—	—	MA42S3	1-5/8 ODF Solder			
E42S2170	OE42S2170	ME42S2170	—	—	MA42S3	2-1/8 ODF Solder			
—	—	—	—	—	MA50P3	2 NPT Female	39.7	20.6	18
—	—	—	—	—	MA50S3	2-1/8 or 2-5/8 ODF Solder			

*All normally open valves have an MOPD of 19 bar, except 0B33 and 0E34 at 17 bar.
**MA42P3 and MA42S3 have an AC coil rating of 18 watts.
⑰Available with Direct Connection between plunger and piston on special order. To order add letter "D" prefix to type number. ***EXAMPLE:*** **DB19S2, etc.**
⑱Available with strainer inlet and one flange, with two flanges, or without flanges.

For complete solenoid valve information — liquid, suction or discharge gas capacities — refer to Bulletin 30-10.

SOLENOID VALVES
Refrigerants 22 – 134a – 401A – 402A – 404A – 407C – 502 – 507
SPECIFICATIONS (Cont'd.)

MAXIMUM RATED PRESSURES
Valve Types MA32, MA42 and MA50 Series;
MA5A3 and MA17A3 – **20.6 bar**
Valves Types E34 Series and E42 Series – **31.0 bar**
All other valve types – **34.4 bar**

ELECTRICAL SPECIFICATIONS – Standard Coil Ratings – MKC-1, OMKC-1, MKC-2 and OMKC-2: 24/50-60, 120/50-60, 208-240/50-60. Dual Voltage 4 Wire Coils – 120-208-240/50-60, slight additional cost.

Din Coils – MKC-1E, OMKC-1E, MKC-2E and OMKC-2E: 24/50-60, 120/50-60, 208-240/50-60, 220-240/50

KC-3: 24/50-60, 120/50-60, 208/50-60, 240/50-60. Dual Voltage 4 Wire Coils – 120-240/50-60 slight additional cost. Available with junction box or conduit boss at no extra charge. For other voltages and cycles consult nearest Acal Sales Office or Sporlan Wholesaler. High temperature coils available for all solenoid valves.

INTERCHANGEABILITY OF COILS – One size coil MKC-1 for Types A3, E3, B6, MB6, E5, E6 and ME6 series. One size MKC-2 for types B9, MB9, E9 and ME9 series through the B33, MB33, E34, ME34, E42 and ME42 series. One size KC-3 for MA32, MA42, MA50, MA5A3 and MA17A3 series.

OMKC-2 Coil Assembly is for use on all Normally Open valves.

ORDERING INSTRUCTIONS – *Be sure to specify Valve Type, Connections, Voltage, and Cycles.*

DISC TYPE INDUSTRIAL SOLENOID VALVES for Air, Water, Steam and Light Oil


W3P1

APPLICATION – These valves are suitable for most types of industrial applications. Ideal for water, light oils, air lines to chucking devices, steam lines, etc. Use the **disc type** valves for high temperature and steam applications up to 1.72 bar. Use the teflon **diaphragm type** valve for high temperature and steam applications over 0.34 bar (107°C) but do not exceed 0.68 bar (115°C).
The **W3P1** is the ideal size for use on air chucking devices. Generally, a very tight seat is required for this type of application. This can be achieved by using a neoprene seat in the **W3P1** in place of the standard teflon. **To order specify RW3P1.**

TYPE	STANDARD CONNECTIONS inches	PORT SIZE mm	MOPD AC bar	CAPACITIES						STANDARD COIL RATINGS	
				Air – m³/hr		Water – m³/hr		Steam – kg/hr 0.34 bar ΔP			
				0.34 bar ΔP	0.69 bar ΔP	0.34 bar ΔP	1.38 bar ΔP	Inlet Pressure			
								0.34 bar	0.69 bar	WATTS	COIL
W3P1	1/4 NPT Female	2.77	10.3	4.08	5.78	0.11	0.27	3.40	3.90	10	MKC-1
W6P1	3/8 NPT Female	4.76		12.3	18.4	0.50	1.02	10.4	11.8		
W14P2	1/2 NPT Female	11.1		41.1	67.1	1.34	2.88	34.9	39.9	15	MKC-2
W19P2	3/4 NPT Female	15.1		69.7	104	2.00	4.34	60.3	68.5		
W25P2	1 NPT Female	19.8		126	194	3.29	7.38	101	135		

DIAPHRAGM TYPE INDUSTRIAL SOLENOID VALVES for Air, Water, Steam and Light Oil


R184P1

APPLICATION – These valves are suitable for most types of industrial applications. Ideal for water, light oils, air lines to chucking devices, steam lines, etc. Use the **disc type** valves for high temperature and steam applications up to 1.72 bar. Use the teflon **diaphragm type** valve for high temperature and steam applications over 0.34 bar (107°C) but do not exceed 0.68 bar (115°C).

Diaphragm type industrial solenoid valves are tight seating in applications of normal differential pressure. For applications where differential pressures in the closed position are below 0.34 bar, it is recommended that a Buna-N diaphragm be used in place of the standard teflon diaphragm. **To order specify BR184P1.**

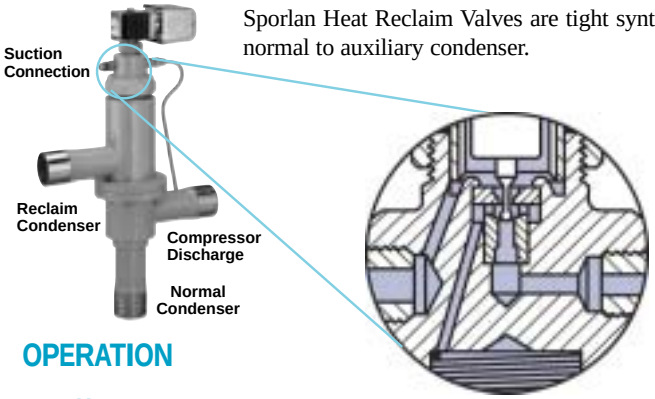
⑲ TYPE	STANDARD CONNECTIONS inches	PORT SIZE mm	MOPD AC bar	CAPACITIES						STANDARD COIL RATINGS	
				Air – m³/hr		Water – m³/hr		Steam – kg/hr 0.34 bar ΔP			
				0.34 bar ΔP	0.69 bar ΔP	0.34 bar ΔP	1.38 bar ΔP	Inlet Pressure			
								0.34 bar	0.69 bar	WATTS	COIL
R183P1	3/8 NPT Female	14.3	10.3	55.2	80.5	1.84	3.66	47.6	69.0	10	MKC-1
BR183P1											
R184P1	1/2 NPT Female	14.3	10.3	62.9	91.8	2.09	4.16	54.0	78.5		
BR184P1											
R246P1	3/4 NPT Female	19.1	10.3	88.9	130	2.93	5.86	76.2	111		
BR246P1											

⑲ "R" type valves have Teflon diaphragm 115°C Max. Fluid Temperature; "BR" type valves have Buna-N diaphragm – 107°C Max. Fluid Temperature.

Use a SPORLAN strainer ahead of every industrial solenoid valve.

For complete information refer to Bulletin 30-10.

THREE WAY HEAT RECLAIM VALVES
for Refrigerants 22 – 134a – 401A – 402A – 404A – 407C – 502 – 507



Sporlan Heat Reclaim Valves are tight synthetic seating three way valves designed specifically to divert hot gas from the normal to auxiliary condenser.

Listed

CE Approved

OPERATION

"B" TYPE

NORMAL (OUTDOOR) CONDENSER – De-energised – With the pilot valve is de-energised, high side pressure is prevented from entering the cavity above the piston-seat assembly. At the same time the upper pilot port is opened to suction pressure. The resulting pressure differential across the piston moves the piston-seat assembly to close the reclaim (upper) main port.

When the upper pilot port is open, the cavity above the piston is open to suction. Pump out of the reclaim condenser is controlled by the bleed rate through the piston. After the reclaim condenser has been pumped out, and the valve continues to operate in the normal condenser mode, **all flow ceases,** thus eliminating high to low side bleed and the resulting capacity loss.

"C" TYPE

NORMAL (OUTDOOR) CONDENSER – De-energised – With the pilot valve de-energised, high side pressure is prevented from entering cavity above the piston-seat assembly. At the same time the upper pilot port is opened to suction pressure.

The resulting pressure differential across the piston moves the piston-seat assembly to close the reclaim (upper) main port. The non bleed piston prevents high to low side bleed with the system operating in the normal condenser mode.

"B" AND "C" TYPE

RECLAIM (REHEAT) CONDENSER – Energised – When the pilot valve is energised, high side pressure is permitted to flow thru the lower pilot port. At the same time the upper pilot port is closed to suction.

High side pressure build-up on top of the piston moves the piston-seat assembly to close the normal condenser port and open the reclaim (upper) main port. With the upper pilot port closed there is no high to low side bleed loss with the system operating in the reclaim mode.

CAPACITY – kW

Capacities are based on 38°C condensing temperature, isentropic compression plus 28°C, evaporator temperature as shown plus 14°C superheat suction gas.

EVAPORATOR TEMP. °C	REFRIGERANT																							
	22								134a								401A							
	PRESSURE DROP - bar																							
	0.14				0.28				0.14				0.28				0.14				0.28			
	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D
5°	16.8	35.9	103	249	23.4	50.3	149	357	14.1	29.9	85.5	206	19.5	41.9	123	295	15.3	32.6	93.3	225	21.3	45.7	134	322
0°	16.6	35.3	102	245	23.0	49.5	146	351	13.8	29.3	83.7	202	19.1	41.0	120	289	15.0	32.0	91.4	220	20.9	44.8	131	316
-5°	16.3	34.7	99.9	240	22.6	48.6	144	345	13.5	28.6	81.8	197	18.7	40.1	118	283	14.7	31.3	89.4	215	20.4	43.9	129	309
-10°	16.0	34.1	98.1	236	22.2	47.7	141	339	13.2	28.0	79.9	192	18.2	39.2	115	276	14.4	30.6	87.5	211	20.0	42.9	126	302
-15°	15.7	33.4	96.2	231	21.8	46.8	138	332	12.8	27.3	77.9	188	17.8	38.2	112	269	14.1	30.0	85.5	206	19.5	41.9	123	295
-20°	15.4	32.8	94.2	227	21.3	45.9	135	325	12.5	26.6	75.9	183	17.4	37.3	109	262	13.8	29.3	83.5	201	19.1	41.0	120	288
-25°	15.1	32.1	92.2	222	20.9	44.9	133	318	12.2	25.9	73.9	178	16.9	36.3	106	255	13.4	28.5	81.4	196	18.6	40.0	117	281
-30°	14.7	31.4	90.1	217	20.4	43.9	130	311	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-35°	14.4	30.7	88.0	212	20.0	42.9	127	304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-40°	14.1	29.9	85.8	207	19.5	41.9	123	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

EVAPORATOR TEMP. °C	REFRIGERANT																							
	402A								404A								407C							
	PRESSURE DROP - bar																							
	0.14				0.28				0.14				0.28				0.14				0.28			
	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D
5°	14.6	31.4	92.1	221	20.3	43.9	132	317	15.0	32.1	93.9	226	20.8	44.9	135	324	17.6	37.7	109	263	24.5	52.8	157	377
0°	14.3	30.7	90.0	216	19.8	42.9	129	310	14.6	31.3	91.7	220	20.3	43.9	132	316	17.3	36.9	107	257	24.0	51.7	154	369
-5°	13.9	29.9	87.8	211	19.3	41.9	126	302	14.2	30.5	89.3	215	19.7	42.8	128	308	16.9	36.1	105	252	23.4	50.6	150	361
-10°	13.6	29.1	85.5	205	18.8	40.8	123	295	13.8	29.7	86.9	209	19.2	41.6	125	300	16.5	35.3	102	246	22.9	49.4	147	352
-15°	13.2	28.3	83.1	200	18.3	39.7	119	286	13.5	28.9	84.4	203	18.7	40.4	121	291	16.1	34.4	99.6	240	22.4	48.2	143	344
-20°	12.8	27.5	80.6	194	17.8	38.5	116	278	13.0	28.0	81.8	197	18.1	39.2	118	282	15.7	33.6	97.1	233	21.8	47.0	140	335
-25°	12.4	26.6	78.1	188	17.2	37.3	112	269	12.6	27.1	79.2	190	17.5	37.9	114	273	15.3	32.7	94.4	227	21.2	45.7	136	326
-30°	12.0	25.8	75.6	182	16.7	36.1	109	260	12.2	26.2	76.5	184	16.9	36.6	110	264	14.9	31.8	91.8	221	20.6	44.5	132	317
-35°	11.6	24.9	73.0	175	16.1	34.9	105	251	11.8	25.2	73.7	177	16.3	35.3	106	254	14.4	30.8	89.1	214	20.0	43.2	128	307
-40°	11.2	24.0	70.3	169	15.5	33.6	101	242	11.3	24.3	70.9	170	15.7	34.0	102	245	-	-	-	-	-	-	-	-

For complete information refer to Bulletin 30-20.

THREE WAY HEAT RECLAIM VALVES (Cont'd.)

Refrigerants 22 – 134a – 401A – 402A – 404A – 407C – 502 – 507

CAPACITY – kW

EVAPORATOR TEMP. °C	REFRIGERANT															
	502								507							
	PRESSURE DROP - bar															
	0.14				0.28				0.14				0.28			
	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D	5D	8D	12D	16D
5°	13.2	28.4	83.1	200	18.4	39.8	120	287	14.5	31.1	91.2	219	20.1	43.6	131	314
0°	13.0	27.8	81.3	195	18.0	38.9	117	280	14.1	30.4	89.0	214	19.6	42.5	128	307
-5°	12.7	27.1	79.4	191	17.6	38.0	114	274	13.8	29.6	86.7	208	19.1	41.4	125	299
-10°	12.3	26.5	77.5	186	17.1	37.1	111	267	13.4	28.8	84.4	203	18.6	40.3	121	291
-15°	12.0	25.8	75.5	181	16.7	36.1	109	260	13.0	28.0	82.0	197	18.1	39.2	118	283
-20°	11.7	25.1	73.4	176	16.2	35.2	106	253	12.7	27.2	79.6	191	17.6	38.0	114	274
-25°	11.4	24.4	71.3	171	15.8	34.2	103	246	12.3	26.3	77.1	185	17.0	36.8	111	266
-30°	11.0	23.7	69.2	166	15.3	33.1	99.5	239	11.9	25.5	74.5	179	16.5	35.6	107	257
-35°	10.7	22.9	67.0	161	14.8	32.1	96.4	231	11.5	24.6	71.9	173	15.9	34.4	103	248
-40°	10.3	22.2	64.8	156	14.3	31.1	93.2	223	11.0	23.7	69.3	167	15.3	33.2	99.7	239

SPECIFICATIONS

MKC-1 COIL						
TYPE	CONNECTION ODF Solder inches	PORT SIZE mm	MOPD AC bar	MAXIMUM RATED PRESSURE bar	STANDARD COIL RATINGS	
					Volts/Cycles	Watts
5D5B 5D5C	5/8	15.9	20.6	31.0	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10
8D7B 8D7C	7/8	19.1				
8D9B 8D9C	1-1/8					
12D11B 12D11C	1-3/8	31.8				
12D13B 12D13C	1-5/8					
12D17B 12D17C	2-1/8					
MKC-2 COIL						
16D17B 16D17C	2-1/8	50.8	20.6	31.0	Same as above	15

Available with junction box or conduit boss at no extra charge.

For voltages other than listed consult Bulletin 30-10.

SELECTION

1. For a given refrigerant, select a valve having a port size with capacity most closely matching the evaporator maximum load requirements at the design evaporator temperature. Take into account the allowable pressure drop across the valve port.
2. Select the proper coil assembly for the valve type and match the voltage requirements. All AC voltage options are available. For voltages not listed in coil specification, consult Bulletin 30-10, or contact your nearest Acal Sales Office or Sporlan Wholesaler.

HEAT RECLAIM SYSTEMS
with HEAD PRESSURE CONTROL
with SPLIT CONDENSER CONTROL
with INTEGRAL CHECK VALVE

When employing heat reclaim on a refrigeration system, the addition of head pressure control is important not only to maintain liquid pressure at the expansion valve inlet, but also to assure availability of quality hot gas at the reclaim heat exchanger.

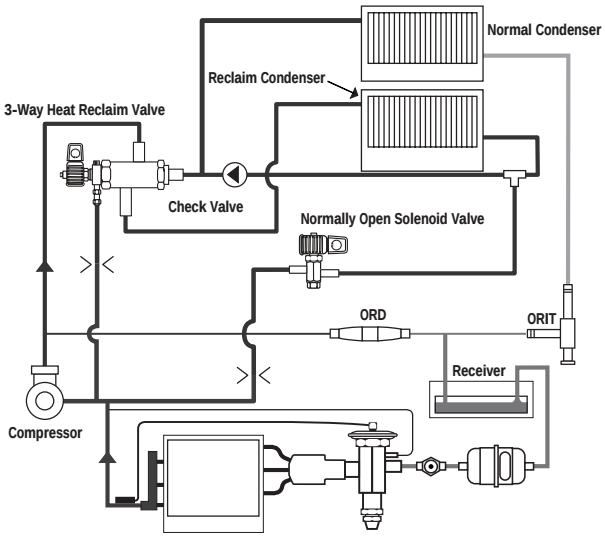
Split condenser valves are important to minimize the required refrigerant charge for wintertime operation.

3 Way heat reclaim valves with Integral check valves are important to minimize installation costs.

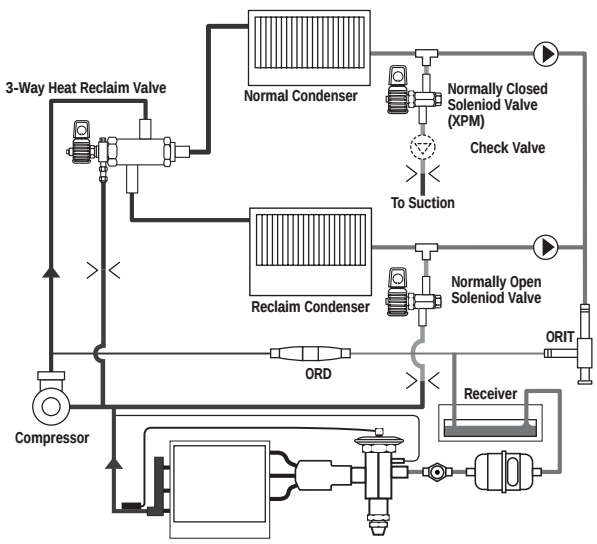
ORDERING INSTRUCTIONS

When ordering complete valves, specify Valve Type, Voltage and Cycles.
When ordering Valve Body ONLY, specify Valve Type.
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-1 120/50-60; MKC-2 120/50-60.



Series Condensers



Parallel Condensers

For complete information refer to Bulletin 30-20.

HOT GAS DEFROST VALVES

10G79B

APPLICATION

Hot gas defrost valves are utilized in systems in which one or more compressors provide refrigeration to multiple refrigerated cases, both medium and low temperature. The 3-way valves are used to control the flow of gas off a discharge header to the various cases (defrost) or suction gas from the cases to the suction header (refrigeration). The direction of flow is dependent upon whether the pilot valve coil is energized or de-energized. These 3-way valves are used for gas defrost only.

When the coil is de-energized, the valve allows the flow of refrigerant in the normal direction for refrigeration. When the valve is energized the piston and seat assembly shifts to close the suction port and open the discharge gas port, to allow hot gas to flow from the discharge header through the valve to the evaporator outlet.

Due to the fact that when de-energized the valves remain closed to the hot gas connection, these can only be applied off a discharge header and not in the main discharge line.

INSTALLATION AND SERVICE

The 10G79B, 10G711B and 10G711C may be installed either upright or on its side. However, it should not be mounted with the coil housing below the valve body. The valve can be soldered in place without disassembly, but the body must be kept cool to avoid damage to the Nylatron synthetic seating material. Body and connections should be wrapped in a wet cloth. The valves may be easily disassembled without unsweating connections.

Listed

CE Approved

SPECIFICATIONS MKC-1 COIL

TYPE	CONNECTIONS ODF SOLDER - inches			MOPD AC bar	MAXIMUM RATED PRESSURE bar	STANDARD COIL RATINGS		Net Weight kg	Shipping Weight kg
	DISCHARGE	SUCTION	EVAPORATOR			VOLTS/CYCLES	Watt		
10G79B	7/8	1-1/8	1-1/8	20.6	34.4	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	2.5	3.2
10G711B		1-3/8	1-3/8					3.0	3.6
10G711C									

For other voltages and cycles please consult your Acal sales office or Sporlan Wholesaler.

CAPACITY kW
10G79, 10G711B and 10G711C

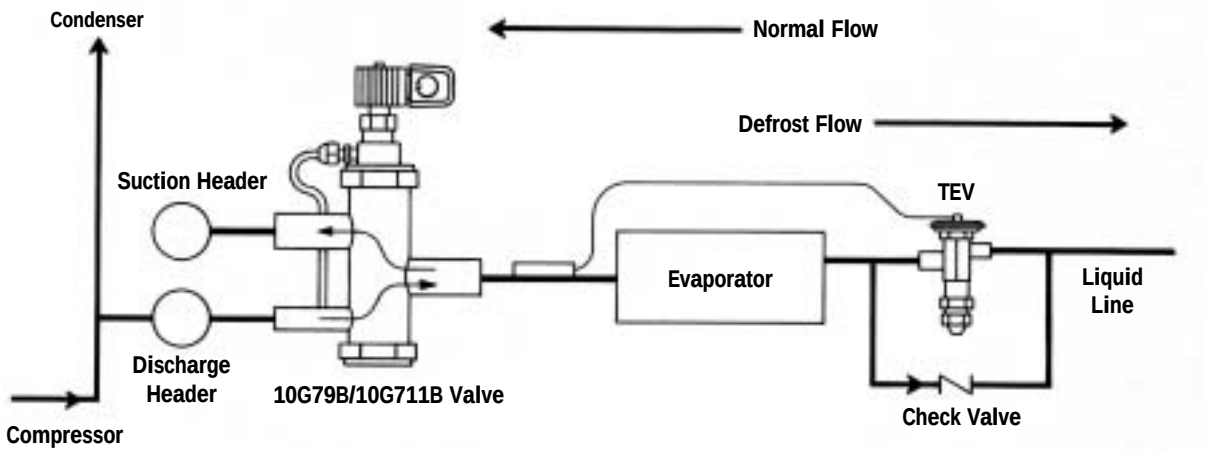
EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS THE VALVE △p - bar							
	0.03				0.07			
	134a	22	404a	507	134a	22	404a	507
-5°	14.7	19.6	16.5	16.2	22.1	29.5	24.8	24.3
-10°	13.0	17.7	14.7	14.4	19.6	26.6	22.1	21.7
-15°	11.5	15.9	13.0	12.8	17.3	23.9	19.6	19.3
-20°	10.1	14.3	11.5	11.3	15.2	21.5	17.3	17.0
-25°	8.87	12.7	10.1	9.98	13.3	19.2	15.2	15.0
-30°	7.72	11.3	8.87	8.74	11.6	17.1	13.3	13.2
-35°	6.69	10.0	7.72	7.62	10.1	15.1	11.6	11.5
-40°	5.76	8.83	6.68	6.60	8.66	13.3	10.0	9.93

Capacities based on a 38°C condenser temperature and 16°C suction temperature.

ORDERING INSTRUCTIONS:

When ordering complete valves, specify Valve Type, Voltage and Cycles.
When ordering Valve Body ONLY, specify Valve Type.
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-1 120/50-60.



For complete information refer to Bulletin 30-20.

Catch-All® THE PERFECT FILTER-DRIER

U.S. PATENT NUMBER 3,407,617

The universal acceptance of the **Catch-All Filter-Drier** is due to its unique molded porous core, consisting of a blend of highly effective desiccants. The quality features built into it assure years of service on any refrigeration system.

MOISTURE – The **Catch-All Filter-Drier** removes moisture from the refrigerant by adsorbing and retaining it deep within the desiccant granules.The blend of dessicants used in the **Catch-All** is specially formulated for exceptional moisture removal.

FOREIGN MATTER – The **Catch-All Filter-Drier** will filter out scale, solder particles, carbon, sludge, dirt, or any other foreign matter with negligible pressure drop. Fine particles that would go through an ordinary strainer are removed down to a minimum size in one pass filtration. The large filtering area of the **Catch-All Filter-Drier** core permits it to collect a large amount of dirt without plug up.

ACID – The **Catch-All Filter-Drier** is unexcelled in acid removal ability. The hydrochloric, hydrofluoric, and various organic acids are adsorbed and held by the desiccant in a manner similar to the adsorption of moisture. Laboratory tests have shown that the Catch-All Filter-Drier's desiccant has an acid removal ability superior to other desiccants used in other refrigeration driers. Compared to other filter-driers designed for today's systems, tests show the ***Catch-All Filter-Drier*** removes much more acid (on an equal weight basis).

OIL SLUDGE AND VARNISH – Even the best refrigeration oils break down to produce varnish, sludge, and organic acids. Only the **Catch-All Filter-Drier** is capable of removing these products of oil decomposition.

SPECIAL APPLICATIONS – A special "HH" core **Catch-All Filter-Drier** is available to remove wax which frequently causes difficulty on low temperature Refrigerant 22 and 502 systems. For cap tube systems, use the C-032-CAP Catch-All which has fittings suitable for attaching to any size capillary tube.

SEALED TYPE – Liquid Line and Suction Line

for Refrigerants 12 – 22 – 134a – 404A – 407C – 410A – 502 – 507

Also Compatible with Refrigerants 123 – 124 – 125 – 401A & B – 402A & B – 408A – 409A

Sealed models are also qualified for use with R-410A.

c UL us LISTED

SPECIFICATIONS

"C" SERIES LIQUID LINE TYPE		SUCTION LINE TYPE	CONNECTION SIZE inches	VOLUME OF DESICCANT cm^3	OVERALL LENGTH mm		SOLDER SOCKET DEPTH mm	DIAMETER of BODY mm
SAE Flare	ODF Solder	ODF Solder			SAE Flare	ODF Solder		
C-032	C-032-S	—	1/4	49	106	97	10	44
—	C-032-CAP C-032-CAP-T	—	Extended 1/4 Male		—	148	—	
C-032-F	—	—	1/4 Male – Inlet 1/4 Female – Outlet		97	—	—	
C-032-FM	—	—	1/4 Female – Inlet 1/4 Male – Outlet		97	—	—	
C-033	C-033-S	—	3/8		119	99	11	
C-052 — C-052-F C-052-FM C-053	C-052-S C-0525-S — — C-053-S	—	1/4 5/16 1/4 Male x 1/4 Female 1/4 Female x 1/4 Male 3/8	82	121 — 106 106 132	106 111 — — 109	10 11 — — 11	62
C-082 — C-053 C-083 C-084	C-082-S C-0825-S C-083-S C-084-S	— — — C-084-S-T-HH	1/4 5/16 3/8 1/2	147	143 — 154 160	130 135 133 138	10 11 11 13	67
C-162 — C-163 C-164 C-165 — —	C-162-S C-1625-S C-163-S C-164-S C-165-S — C-167-S	— — — C-164-S-T-HH C-165-S-T-HH C-166-S-T-HH C-167-S-T-HH	1/4 5/16 3/8 1/2 5/8 3/4 7/8	262	159 — 171 176 184 — —	146 151 149 152 160 171 176	10 11 11 13 16 16 19	76
C-303 C-304 C-305 — —	C-303-S C-304-S C-305-S C-306-S C-307-S C-309-S	— — C-305-S-T-HH C-306-S-T-HH C-307-S-T-HH C-309-S-T-HH	3/8 1/2 5/8 3/4 7/8 1-1/8	492	246 251 259 — — —	226 229 235 245 249 248	11 13 16 16 19 24	76
C-413 C-414 C-415 — —	— C-414-S C-415-S C-417-S C-419-S	— — — C-417-S-T-HH C-419-S-T-HH	3/8 1/2 5/8 7/8 1-1/8	672	243 252 260 — —	— 230 237 249 248	— 13 16 19 24	89
—	—	C-437-S-T-HH C-439-S-T-HH C-4311-S-T-HH C-4313-S-T-HH	7/8 1-1/8 1-3/8 1-5/8	787	—	263 273 278 278	19 24 25 27	121
—	C-607-S C-609-S	C-607-S-T-HH C-609-S-T-HH	7/8 1-1/8	983	—	406 406	19 24	76
COMPACT STYLE		C-144-S-TT-HH C-145-S-TT-HH C-146-S-TT-HH C-147-S-TT-HH C-149-S-TT-HH	1/2 5/8 3/4 7/8 1-1/8	229	—	105 111 123 126 125	13 16 18 19 24	113

UL and ULc Listed - Guide SMGT FIle No. SA-1756A&B.

Maximum Rated Pressure of 44.8 bar, except for the type C-140 Series which has a maximum pressure of 31 bar.

Catch-All® THE PERFECT FILTER-DRIER

The rugged construction of the Replaceable Core Catch-All has proven itself in the field for many years. The design features include:

1. The famous **molded porous core** for maximum contaminant removal. The core cannot swell, powder, or pack — assuring ease of installation and removal.

2. The **bolt and nut attachment** of the end plate provides simple trouble-free installation.

3. The **internal** construction gives a one piece assembly and assures proper core alignment.

4. **A complete** line of connection sizes — **all with copper fittings.**

5. **No plastic parts** are used — all internal parts are plated steel.

6. **A corrosion resistant powder coating** protects the exterior of the shell.

REPLACEABLE CORE TYPE – Liquid Line Application

ODF Solder Connections – Refrigerants 12 – 22 – 134a – 404A – 407C – 502 – 507

Also Compatible with Refrigerants 123 – 124 – 125 – 401A & B – 402A & B – 408A – 409A

TYPE	CONNECTIONS ODF Solder inches	NO. OF CORES	CORE PART NO.	VOLUME OF DESICCANT cm^3	MOUNTING BRACKETS	OVERALL LENGTH mm
C-R424 **C-R425** **C-R427**	1/2 5/8 7/8	1	RCW-42	688	A-175-1	229 230 240
C-485 **C-485-G** **C-487** **C-487-G** **C-489-G** **C-4811-G** **C-4813-G**	5/8 5/8 7/8 7/8 1-1/8 1-3/8 1-5/8	1	RCW-48, RC-4864, or RC-4864-HH	787	A-685	232 232 236 236 241 244 244
C-967 **C-967-G** **C-969** **C-969-G** **C-9611-G** **C-9613-G**	7/8 7/8 1-1/8 1-1/8 1-3/8 1-5/8	2		1573	A-685	377 377 382 382 385 385
C-1449 **C-1449-G** **C-14411** **C-14411-G** **C-14413-G**	1-1/8 1-1/8 1-3/8 1-3/8 1-5/8	3		2360	A-685	523 523 525 525 525
C-19211 **C-19211-G** **C-19213** **C-19213-G** **C-19217-G**	1-3/8 1-3/8 1-5/8 1-5/8 2-1/8	4		3146	A-685	666 666 666 666 666
C-30013 **C-30013-G** **C-30017-G**	1-5/8 1-5/8 2-1/8	3	RCW-100, RC-10098, or RC-10098-HH	4916	A-175-2	710 710 713
C-40017 **C-40017-G** **C-40021-G** **C-40025-G** **C-40029-G** **C-40033-G**	2-1/8 2-1/8 2-5/8 3-1/8 3-5/8 4-1/8	4		6555	A-175-2	878 878 883 875 884 892

NPT PIPE CONNECTIONS

C-484-P **C-966-P** **C-1448-P** **C-19212-P**	1/2 3/4 1 1-1/2	1 2 3 4	RCW-48, RC-4864, or RC-4864-HH	787 1573 2360 3146	A-685	231 373 519 657
C-40016-P	2	4	RCW-100, RC-10098, or RC-10098-HH	6555	A-175-2	875

UL and ULc listed. Guide SMGT File No. SA-1756A & B.

Maximum rated pressure of 34.4 bar, except for the Type C-R420 Series which has a maximum rated pressure of 27.5 bar.

Type numbers with G suffix indicate that unit is supplied with 1/4″ female pipe connection in the end plate and pipe plug. For liquid line service an angle charging valve for system charging purposes can be installed in place of the pipe plug. Angle charging and Schrader type access valves are available from your Sporlan Wholesaler.

Type numbers with P suffix indicates female threaded pipe connections.

AMMONIA CATCH-ALL FILTERS prolong the life of ammonia systems by using the Catch-All to effectively remove scale and other solid contaminants. Select a model from those listed above with female pipe connections.

NOTE: Do not use RPE-48-BD and RPE-100 Filter Elements on Ammonia Systems.

For complete information refer to Bulletin 40-10.

c UL us LISTED

RCW-48

RC-4864

Type C-967

RCW-100

Catch-All® LIQUID LINE RATINGS and SELECTION RECOMMENDATIONS

Refrigerants 12 – 134a – 22 – 407C – 404A – 502 – 507

TYPE	㉒SURFACE FILTERING AREA cm²	RATINGS AT ARI STANDARD CONDITIONS												SELECTION RECOMMENDATIONS (kW)				
		㉑WATER CAPACITY-GRAMS								⑳REFRIGERANT Flow Capacity kW at 0.07 bar △p				REFRIGERATION			AIR CONDITIONING	
		134a* 80 PPM		22 60 PPM		404A & 507* 50 PPM		407C* 80 PPM						Commercial & Low Temperature Equipment			Field Replacement or Field Built Up Systems	
		25°C	50°C	25°C	50°C	25°C	50°C	25°C	50°C	134a	22	404A & 507	407C	134a	22 & 407C	404A & 507	134a	22 & 407C
SEALED TYPE																		
C-032	58	3.7	2.7	3.1	2.5	3.6	2.9	3.0	1.5	4.57	5.28	3.52	4.57	0.88	0.88	0.88	1.76	1.76
C-032-CAP																		
C-032-S																		
C-032-F																		
C-032-FM																		
C-033										11.3	12.3	8.09	11.3					
C-033-S										12.3	13.4	9.14	12.3					
C-052	97	8.7	6.4	7.3	6.0	8.5	6.9	7.2	3.6	6.68	7.39	4.92	6.68	1.17	1.17	1.17	2.64	2.64
C-052-S																		
C-052-F																		
C-0525-S																		
C-052-FM										10.9	12.0	8.09	10.9				3.52	5.28
C-053										13.4	14.4	9.50	13.4					7.03
C-053-S										15.1	16.5	10.9	15.1					
C-082	135	14.4	10.5	12.0	9.8	14.0	11.4	11.8	5.9	6.68	7.39	4.92	6.68	1.76	1.76	1.76	2.64	3.52
C-082-S																		
C-0825-S										11.6	13.0	8.44	11.6	2.64	2.64	2.64	5.28	5.28
C-083										14.8	15.8	10.6	14.8	3.52	3.52	3.52	7.03	7.03
C-083-S										16.5	18.3	12.0	16.5					
C-084										27.8	30.6	20.7	28.1	5.28	5.28			
C-084-S										30.9	33.8	22.5	30.9					
C-162	213	21.8	15.9	18.2	14.9	21.2	17.3	17.8	8.9	6.68	7.39	4.92	6.68	3.52	5.28	2.64	3.52	5.28
C-162-S																		
C-1625-S										11.6	13.0	8.44	11.6					
C-163										14.8	15.8	10.6	14.8	7.03	7.03	7.03	10.6	10.6
C-163-S										16.5	18.3	12.0	16.5					
C-164										32.7	35.5	23.9	32.7	10.6	10.6		17.6	17.6
C-164-S										35.5	38.7	25.7	35.5					
C-165										44.3	48.5	32.4	44.7				17.6	
C-165-S										51.0	55.9	37.3	51.3					
C-303	342	41.6	30.3	34.8	28.4	40.5	32.9	34.0	17.0	14.8	16.2	10.6	14.8	10.6	10.6	7.03	10.6	14.1
C-303-S										16.5	18.6	12.0	16.5					
C-304										32.7	35.5	23.9	32.7		17.6	10.6	17.6	26.4
C-304-S										35.5	38.7	25.7	35.5					
C-305										47.8	52.4	34.8	48.2	14.1		17.6	26.4	
C-305-S										54.5	59.4	39.7	54.5					
C-307-S										69.6	76.0	50.6	70.0	17.6				35.2
C-414	432	56.0	40.7	46.8	38.2	54.4	44.3	45.8	22.9	36.9	40.5	26.7	36.9	17.6	17.6	17.6	17.6	26.4
C-414-S										40.1	43.6	29.2	40.1					
C-415										51.0	55.6	37.3	51.4	26.4	26.4	26.4	26.4	35.2
C-415-S										56.6	61.5	41.5	57.0					
C-417-S										71.4	77.7	52.0	71.8	35.2	35.2		35.2	
C-419-S										78.4	85.5	57.3	78.8		42.2	35.2	42.2	52.8
C-607-S	684	83.2	60.5	69.6	56.7	80.9	65.8	68.0	34.0	93.6	102	68.6	94.3	52.8	52.8	35.2	52.8	70.3
C-609-S										107	117	78.4	108					
REPLACEABLE CORE TYPE WITH HIGH WATER CAPACITY CORES (See Page 30)																		
C-R424	432	54.0	39.2	45.1	36.8	52.5	42.7	44.1	22.1	36.6	40.1	26.7	36.9	10.6	17.6	17.6	17.6	17.6
C-R425										44.0	48.2	32.0	44.0	17.6	26.4		26.4	35.2
C-R427										59.4	65.0	43.6	59.8					
C-485	413	66.3	48.2	55.5	45.2	64.5	52.5	54.3	27.1	47.1	51.4	34.5	47.5	26.4	35.2	26.4	26.4	35.2
C-487										77.0	84.0	56.3	77.4	42.2	52.8	35.2	42.2	52.8
C-489-G										139	152	102	140				52.8	70.3
C-967	826	133	96.4	111	90.4	129	105	109	54.2	126	138	92.2	127	70.3	87.9	52.8	70.3	87.9
C-969										157	171	115	158	87.9	123	87.9	87.9	123
C-1449	1239	199	145	166	136	194	157	163	81.3	190	208	140	192	105	141	105	105	141
C-14411										216	236	157	217	141	176	123	141	176
C-19211	1652	265	193	222	181	258	210	217	108.4	272	297	198	273	176	246	176	176	246
C-19213										319	348	233	320	211	281	193	211	281
C-19217-G										335	366	244	337	229	299	211	229	299
C-30013	1897	406	295	339	277	395	321	332	166	359	394	262	362	264	352	246	264	352
C-40017	2529	541	393	452	369	526	428	443	221	464	471	340	468	387	457	350	387	457

⑳ Based on 30°C Liquid Temperature and a Refrigerant Flow of 400 grams per minute per kW for Refrigerant 134a; 374 grams per minute per kW for Refrigerant 22; 503 grams per minute per kW for Refrigerant 404A; 529 grams per minute per kW for Refrigerant 507 and 375 grams per minute per kW for Refrigerant 407C. Ratings in accordance to ARI Standard 710.

㉑ 20 drops = 1 gram = 1cc.

㉒ The filtration area is equal to the core surface area plus the large internal surface available for depth filtration.

NOTE: The variation in flow ratings of filter-driers having the same size core and shell is caused by the difference in connection sizes used.

*As of this printing, ARI has not established an EPD for R-134a, R-404A, R-407C and R-507.

For complete capacity and selection information refer to Bulletin 40-10.

SUCTION LINE FILTER-DRIER RECOMMENDATIONS

for NEW SYSTEM and CLEANUP AFTER BURNOUT

Catch-All

SUCTION LINE FLOW CAPACITY kW — SEALED TYPE

	REFRIGERANT	CONNECTIONS Inches ODF Solder	134a			22					404A				407C	410A
	EVAPORATOR TEMPERATURE		5°C	–5°C	–15°C	5°C	–5°C	–15°C	–30°C	–40°C	–5°C	–15°C	–30°C	–40°C	5°C	5°C
	PRESSURE DROP bar		0.14	0.10	0.07	0.21	0.14	0.10	0.07	0.035	0.14	0.10	0.07	0.035	0.21	0.21
SEALED TYPE	C-084-S-T-HH	1/2	4.9	3.2	2.1	7.4	4.6	3.2	1.8	1.1	4.6	2.8	1.8	1.1	7.4	9.5
	C-164-S-T-HH	1/2	6.0	3.9	2.5	9.5	6.0	3.9	2.5	1.1	5.6	3.5	2.1	1.1	9.5	12.7
	C-165-S-T-HH	5/8	7.0	4.6	2.8	11.3	7.0	4.6	2.8	1.4	6.7	4.2	2.5	1.4	11.3	14.8
	C-166-S-T-HH	3/4	9.1	6.0	3.5	14.1	8.8	5.6	3.5	1.8	8.4	5.6	3.2	1.8	13.7	18.3
	C-167-S-T-HH	7/8	9.9	6.3	3.9	15.8	9.9	6.3	3.9	1.8	9.5	6.0	3.5	1.8	15.5	20.8
	C-305-S-T-HH	5/8	7.7	4.9	2.8	12.0	7.4	4.9	2.8	1.4	7.0	4.6	2.8	1.4	12.0	15.5
	C-306-S-T-HH	3/4	9.9	6.3	3.9	15.5	9.9	6.3	3.9	1.8	9.5	6.0	3.5	1.8	15.5	20.4
	C-307-S-T-HH	7/8	12.0	7.7	4.6	18.6	11.6	7.7	4.6	2.1	11.3	7.0	4.2	2.1	18.6	24.6
	C-309-S-T-HH	1-1/8	13.4	8.4	5.3	20.8	13.0	8.4	5.3	2.5	12.7	8.1	4.9	2.5	20.4	27.1
	C-417-S-T-HH	7/8	13.4	8.8	5.3	21.1	13.4	8.8	5.3	2.5	12.7	8.1	4.9	2.5	21.1	27.8
	C-419-S-T-HH	1-1/8	14.1	9.1	5.6	21.8	13.7	8.8	5.3	2.8	13.0	8.4	5.3	2.5	21.5	28.1
	C-437-S-T-HH	7/8	17.9	11.6	7.4	28.1	17.6	11.6	7.0	3.5	16.9	10.9	6.7	3.2	27.8	36.6
	C-439-S-T-HH	1-1/8	22.5	14.8	8.8	35.2	22.2	14.4	8.8	4.2	21.1	13.7	8.4	4.2	34.8	46.1
	C-4311-S-T-HH	1-3/8	25.0	16.2	9.9	39.0	24.3	16.2	9.5	4.9	23.6	15.1	9.1	4.6	38.3	50.7
	C-4313-S-T-HH	1-5/8	27.4	17.9	10.9	42.9	26.7	17.6	10.6	5.3	25.7	16.5	10.2	4.9	42.2	55.9
	C-607-S-T-HH	7/8	14.8	9.5	6.0	23.6	14.8	9.5	5.6	2.8	14.1	9.1	5.6	2.8	23.2	30.6
	C-609-S-T-HH	1-1/8	16.9	10.9	6.7	26.4	16.5	10.9	6.3	3.2	15.8	10.2	6.3	3.2	26.0	34.5

SUCTION LINE FLOW CAPACITY kW — SHELLS WITH REPLACEABLE CORES

	REFRIGERANT	CONNECTIONS Inches ODF Solder	134a			22					404A & 507				407C	
	EVAPORATOR TEMPERATURE		5°C	–5°C	–15°C	5°C		–5°C	–15°C	–30°C	–40°C	–5°C	–15°C	–30°C	–40°C	5°C	
	PRESSURE DROP bar		0.14	0.10	0.07	0.21	0.55*	0.14	0.10	0.07	0.035	0.14	0.10	0.07	0.035	0.21	0.55*
REPLACEABLE CORE TYPE	RSF-487-T	7/8	22.5	14.8	8.8	35.5	61.6	22.2	14.4	8.8	4.2	21.5	14.1	8.1	4.2	35.2	60.8
	RSF-489-T	1-1/8	27.4	17.9	10.9	42.9	74.2	26.7	17.6	10.6	5.3	25.7	16.9	9.9	4.9	42.2	72.8
	RSF-4811-T	1-3/8	33.1	21.8	13.0	52.0	90.0	32.7	21.5	12.7	6.3	31.3	20.4	12.0	6.0	51.4	89.0
	RSF-4813-T	1-5/8	35.5	23.6	14.1	55.9	96.7	35.2	22.9	13.7	6.7	33.8	21.8	12.7	6.3	55.2	95.7
	RSF-4817-T	2-1/8	38.7	25.3	15.5	60.5	105	38.0	25.0	14.8	7.4	36.6	23.9	13.7	7.0	59.8	103
	RSF-4821-T	2-5/8	41.9	27.4	16.5	65.4	113	40.8	26.7	16.2	8.1	39.4	25.7	15.1	7.7	64.7	111
	RSF-9611-T	1-3/8	55.1	36.9	23.6	83.7	137	55.9	39.0	25.0	13.7	50.7	34.5	21.8	11.6	80.5	132
	RSF-9613-T	1-5/8	68.6	45.7	28.5	105	172	69.6	48.2	30.6	16.5	63.0	42.9	26.7	14.1	101	166
	RSF-9617-T	2-1/8	68.6	45.7	28.5	105	172	69.6	48.2	30.6	16.5	63.0	42.9	26.7	14.1	101	166
	RSF-9621-T	2-5/8	68.6	45.7	28.5	105	178	70.3	48.2	30.6	16.5	63.0	42.9	26.7	14.1	102	175
	RSF-9625-T	3-1/8	68.6	45.7	28.5	106	183	70.3	48.2	30.6	16.5	63.6	42.9	26.7	14.1	105	179
	C-30013-G	1-5/8	59.4	38.7	23.6	93.6	162	58.7	38.3	22.9	11.3	56.3	36.2	21.8	10.9	92.5	150
	C-30017-G	2-1/8	60.5	39.0	23.9	95.0	164	59.4	39.0	23.2	11.6	57.0	36.6	22.2	10.9	93.9	152
	C-40017-G	2-1/8	73.9	47.8	29.2	116	200	72.5	47.5	28.5	14.0	69.6	45.0	25.3	13.4	114	186
	C-40021-G thru C-40033-G	2-5/8 thru 4-1/8	73.9	47.8	29.2	116	200	72.5	47.5	28.5	14.0	69.6	45.0	25.3	13.4	114	186

*Denotes TEMPORARY INSTALLATION. Cores for system clean-up; RPE-48-BD or RPE-100 Filter Elements are to be installed after clean-up.
Rated in accordance with ARI Standard 730.

SELECTION RECOMMENDATIONS

	TYPE	CONNECTIONS Inches ODF Solder	*FLOW CAPACITY kW EVAPORATOR TEMPERATURE										SELECTION RECOMMENDATIONS HORSEPOWER	
			5°C				–5°C		–15°C		–30°C	–40°C		
			PRESSURE DROP bar											
			0.14	0.21	0.21	0.21	0.10	0.14	0.07	0.10	0.07	0.04	REFRIGERANT	
			REFRIGERANT											
			134a	22	407C	410A	134a	22	134a	22	22	22	22, 407C & 410A	12, 134a, 404A, 502 & 507
SEALED TYPE	C-144-S-TT-HH	1/2 ODF	4.6	7.4	7.4	9.5	2.8	4.6	1.8	3.2	1.4	0.7	2	1
	C-145-S-TT-HH	5/8 ODF	7.4	12.0	12.0	16.2	4.6	7.7	2.8	4.9	2.8	1.4	3	2
	C-146-S-TT-HH	3/4 ODF	10.2	16.9	16.9	21.8	6.3	10.6	3.9	7.0	4.2	2.1	3	2
	C-147-S-TT-HH	7/8 ODF	11.3	18.6	18.6	23.9	7.4	11.6	4.6	7.7	4.6	2.5	5	3
	C-149-S-TT-HH	1-1/8 ODF	14.8	24.6	24.6	31.7	9.5	15.5	5.6	10.2	6.0	3.2	5	3

*Rated in accordance with ARI standard 730.

CATCH-ALL SUCTION LINE FILTER-DRIER SELECTION INSTRUCTIONS

Except for the values in **bold** (R-22/R-407C at 5°C; 0.55 bar pressure drop), the flow capacities are rated at the maximum recommended pressure drop for **permanent** installation.

To ensure the suction line filter-drier has ample contaminant removal ability, selection must be based on flow capacity and the amount of desiccant required for system clean-up. The suction line filter-drier must be large enough to adequately remove acid, moisture and solid contaminants without causing nuisance plug-ups.

Sizing is especially important for sealed type suction line filter-driers since they should be sized to clean a small system with one service call.

To reduce the pressure drop through replaceable core shells, substitute cores with filter elements (see page 30) after the system has been cleaned up. The 6171-5 screen should be discarded when cores are replaced with RPE-48-BD elements in RSF shells.

For complete description of the suggested system cleanup procedure, consult Bulletin 40-10 and 80-10.

SIGNIFICANCE OF THE TYPE NUMBER

The letters and numerals in the Catch-All type number each have a significance. The **"C"** indicates Catch-All. The **FIRST TWO OR THREE DIGITS** indicate cubic inches of desiccant. The **LAST ONE OR TWO DIGITS** indicate fitting size in eighths. For sealed models, a **"-S"** following the last digit indicates solder fittings, and **NO LETTER** indicates a flare fitting. Replaceable core models (C-420 and larger) only have solder connections and the "-S" is omitted.

Examples are:
C-083 is 08 cu. in. or 131 cm^3 and 3/8″ flare.
C-309-S is 30 cu. in. or 492 cm^3 and 1-1/8″ solder.
C-19213 is 192 cu. in or 3146 cm^3 and 1-5/8″ solder.

Other suffix letters indicate special qualities. For example:

"-T" indicates a pressure tap consisting of a Schrader type access valve on the inlet end of the Catch-All.
"-HH" indicates a charcoal style core for wax removal and cleanup after a hermetic motor burnout.
"-F" indicates a female flare outlet fitting with a male flare inlet fitting.
"-FM" indicates a female flare inlet fitting with a male flare outlet fitting.
"-CAP" indicates a Catch-All particularly designed for installation on capillary tube systems.

REPLACEABLE CORES and PLEATED FILTER ELEMENTS – ORDER SEPARATELY

Cores for replaceable core type filter-driers are molded of exactly the same desiccants that are used in the popular sealed filter-driers.

Cores are individually packed in ***metal cans,*** fully activated, and hermetically sealed against moisture and dirt.

Filter Elements are dried and packed in individual sealed metal cans. This method of packaging prevents the element from picking up moisture from the atmosphere.

The method of mounting the cores or filter elements inside the shell by means of center tube construction makes them very ***easy to install and remove.*** Detailed ***instructions*** are printed on each can. Each can contains a ***"triple gasket"*** consisting of a new end plate gasket, an end plate gasket for certain competitive filter-driers, and a core gasket where desired. See the specifications on Page 27 for the number of cores required for each type drier.

RCW-42 — High Water Capacity Core — Order as separate item—Fits ONLY shell types C-R424, C-R425, and C-R427. **Designed specially for use with POE oils.** This core should be used on systems that have a ruptured water cooled condenser, or that have been exposed to the atmosphere, or for some reason have a high amount of moisture in the system.

RC-4864 — Activated Core — Order as separate item—Fits types C-480 thru C-19200 Series Shells and Replaceable Suction Filter (RSF) shells. This is the standard core suitable for most installations in the liquid or suction line.

RCW-48 — High Water Capacity Core — Order as separate item—Fits types C-480 thru C-19200 Series Shells and Replaceable Suction Filter (RSF) shells. **Designed specially for use with POE oils.** This core should be used on systems that have a ruptured water cooled condenser, or that have been exposed to the atmosphere, or for some reason have a high amount of moisture in the system.

RC-4864-HH — Activated Charcoal Core — Order as separate item—Fits types C-480 thru C-19200 Series Shells and Replaceable Suction Filter (RSF) shells. This core should be used for wax removal on low temperature R-22 and R-502 systems, and for cleanup of systems that have had a hermetic motor burnout.

RPE-48-BD — Filter Element — Order as a separate item — Fits types C-480 thru C-19200 Series Shells and **Replaceable Suction Filter (RSF) Shells.** This element should be used in RSF shells installed in the **suction line** to obtain the lowest possible pressure drop. In cleaning up a system after a hermetic motor burnout, cores should be used first. Then after the system is thoroughly clean, this filter element can be installed in the RSF shell.

RC-10098 — Activated Core — Order as separate item—Fits types C-30000 and C-40000 Series Shells. This is the standard core suitable for liquid and suction line applications.

RCW-100 — High Water Capacity Core — Order as separate item—Fits types C-30000 and C-40000 Series Shells. **Designed specially for use with POE oils.** This core should be used on systems that have a ruptured water cooled condenser, or that have been exposed to the atmosphere, or for some reason have a high amount of moisture in the system.

RC-10098-HH — Activated Charcoal Core — Order as separate item—Fits types C-30000 and C-40000 Series Shells. This core should be used for wax removal on low temperature R-22 and R-502 systems, and for cleanup of systems that have had a hermetic motor burnout.

RPE-100 — Filter Element — Order as a separate item—Fits types C-30000 and C-40000 Series Shells. This filter element should be used in the suction line with RSF shells to obtain the lowest possible pressure drop after cores were used for system cleanup.

HH STYLE CATCH-ALL FOR WAX REMOVAL

U.S. PATENT NUMBER 3,407,617

Small amounts of wax are often a problem on **low temperature Refrigerant-22 and Refrigerant-502 systems.** Even well engineered systems frequently contain minute quantities of wax which are sufficient to clog expansion valve screens or cause sticking of the valve. Sporlan has developed a special blend of desiccants including activated charcoal which removes small amounts of wax in the liquid line before this wax can cause trouble at the expansion valve. These Catch-All Filter-Driers have been very successful in correcting trouble jobs in the field.

By installing HH Style Catch-All Filter-Driers in the liquid line of all low temperature Refrigerant-22 and Refrigerant-502 systems these wax problems can be entirely prevented. In addition to their wax removal ability, these filter-driers will remove all of the other harmful contaminants that the standard filter-driers remove.

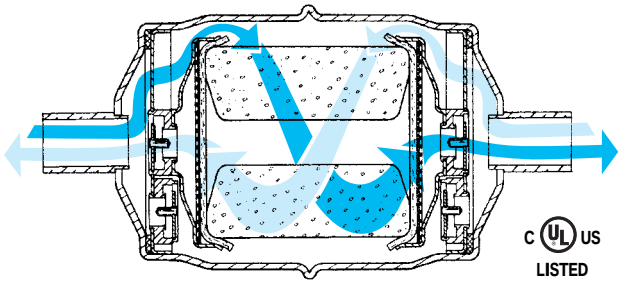
The following **Catch-All Filter-Driers** are available with the HH core to meet the needs of low temperature systems. **For dimensions, refer to the specifications for standard filter-driers or consult Bulletin 40-10.**

TYPE	CONNECTIONS inches	TYPE	CONNECTIONS inches
C-052-HH	1/4 SAE Flare	C-303-HH	3/8 SAE Flare
C-082-HH	1/4 SAE Flare	C-304-HH	1/2 SAE Flare
C-083-HH	3/8 SAE Flare	C-304-S-HH	1/2 ODF Solder
C-162-HH	1/4 SAE Flare	C-305-HH	5/8 SAE Flare
C-163-HH	3/8 SAE Flare	C-305-S-HH	5/8 ODF Solder
C-163-S-HH	3/8 ODF Solder	C-414-HH	1/2 SAE Flare
C-164-HH	1/2 SAE Flare	C-415-HH	5/8 SAE Flare
C-164-S-HH	1/2 ODF Solder	C-417-S-HH	7/8 ODF Solder
C-165-HH	5/8 SAE Flare	RC-4864-HH	Replaceable Core
C-165-S-HH	5/8 ODF Solder	RC-10098-HH	

REVERSIBLE HEAT PUMP FILTER-DRIER

DESIGN BENEFITS

- **A short overall length for easy installation.**
- **Drier operates in either flow direction with low pressure drop.**
- **Proven metal check valves used in construction — no synthetic materials.**
- **The Sporlan dependable molded core used for maximum filtration ability. When the flow direction reverses, dirt already collected remains in the filter-drier.**
- **A carefully engineered blend of desiccants for maximum water capacity and acid removal ability. The HPC-160-HH Series also has the HH style core with activated charcoal which offers maximum ability to remove oleoresin and other reactive chemical constituents in the oil.**
- **Same rugged construction as used in the Catch-All.**



SPECIFICATIONS — FOR NEW INSTALLATIONS AND HFC SYSTEM USE

TYPE NUMBER	CONNECTION SIZE Inches	SELECTION RECOMMENDATIONS kW	DIMENSIONS		FLOW CAPACITY KW AT 0.07 BAR ΔP			WATER CAPACITY						LIQUID CAPACITY grams @ 38°C		
					REFRIGERANT											
			OVERALL LENGTH mm	DIA. mm	R-22	R-407C	R-410A	R-22 grams at 60 ppm		R-407C grams at 80 ppm*		R-410A grams at 80 ppm*		R-22	R-407C	R-410A
								25°C	50°C	25°C	50°C	25°C	50°C			
HPC-103	3/8 Flare	3.52 thru 17.6	171	76	12.0	10.9	11.6	10.8	8.8	10.6	5.3	8.6	5.3	346	303	301
HPC-103-S	3/8 Solder		149													
HPC-104	1/2 Flare		176		15.8	14.4	15.5									
HPC-104-S	1/2 Solder		152													

SPECIFICATIONS — FOR CLEAN-UP AFTER BURNOUT

TYPE NUMBER	CONNECTION SIZE Inches	SELECTION RECOMMENDATIONS kW	DIMENSIONS		FLOW CAPACITY R-22 kW at 0.07 bar ΔP	WATER CAPACITY R-22 grams at 60 ppm		R-22 LIQUID CAPACITY grams @ 38° C
			OVERALL LENGTH mm	DIAMETER mm		25° C	50° C	
HPC-163-HH HPC-163-S-HH	3/8 Flare 3/8 Solder	3.52 thru 17.6	198 176	76	13.0	4.7	4.1	411
HPC-164-HH HPC-164-S-HH	1/2 Flare 1/2 Flare		202 180		14.1			
HPC-165-HH HPC-165-S-HH	5/8 Flare 5/8 Solder		210 187		17.2			

Core volume is 164 cm^3 for HPC-100 Series and 229 cm^3 for HPC-160-HH Series. Core surface filtering area is 116 cm^2 for HPC-100 Series and 168 cm^2 for HPC-160-HH Series.
UL and UL_C Listed — Guide-SMGT-File No. SA-1756A & B.

HPC-100 series has a maxium rated pressure of 44.8 bar. HPC-160 series has a maxium rated pressure of 34.4 bar.
*As of this printing, ARI has not established an EPD for R-407C and R-410A.

For complete information refer to Bulletin 40-10.

STRAINERS

for REFRIGERANTS – BRINE – WATER – AMMONIA

Sporlan Strainers are designed for use on refrigerant liquid or suction lines, brine and water applications and provide protection for controls and operating machinery against foreign material encountered in a system. They provide for free flow with negligible pressure drop.

"Y" TYPE CAST BRONZE STRAINERS

TYPE NO.	CONNECTION SIZE inches	SCREEN AREA cm^2	MESH SIZE
6022	1/4 FPT	13	80
6023	3/8 FPT		
6034	1/2 FPT	19	
6056	3/4 FPT	32	40
6088	1 FPT	52	

"Y" TYPE SEMI-STEEL FLANGED OUTLET STRAINERS

TYPE NO.	CONNECTION SIZE inches	SCREEN AREA cm^2	MESH SIZE
8004	1/2 FPT Inlet	97	80
8006	3/4 FPT Inlet		
9008	1 FPT Inlet	148	60
9010	1-1/4 FPT Inlet		

"XD" SPECIAL PURPOSE STRAINER

TYPE NO.	CONNECTION SIZE inches		SCREEN AREA cm^2	MESH SIZE
	Inlet	Outlet		
XD-074	1/2 FPT	Flange	43	100

Type XD is used primarily with ammonia. It may be used with a companion flange, or bolted to a Type D Thermostatic Expansion Valves and Type MA5A3 Solenoid Valves.

Types 8004 and 8006 Strainers can be bolted direct to the inlet of Type A Thermostatic Expansion Valves or Type MA17A3 Solenoid Valves on Ammonia applications.

Type 9008 and 9010 Strainers bolt directly to inlet of Types MA32P3 and DMA32P3 Solenoid Valves.

For complete information refer to Bulletin 50-10.

Suction Filter

With the exclusive Bi-directional feature

SF-287-T

DESIGN BENEFITS

- **Protects the compressor from dirt**
- **A relief device opens if the filter plugs**
- **Suitable for use with all brazing alloys**
- **Maximum corrosion resistance**
- **Full flow design for low pressure drop**
- **Complete line of sizes**

Sporlan offers an exclusive concept in Suction Filter design — a filter which is Bi-directional. When flow is in **one direction,** the bypass relief feature is active. If the pressure drop across the element becomes excessive the bypass relief will open slightly to maintain sufficient gas flow and assure proper cooling of the hermetic motor.

When the Suction Filter is installed with flow in the **opposite direction,** the bypass relief feature is inactive and will never open, regardless of the increase in pressure drop.

The "-T" in the type number indicates that these models are equipped with an access valve to permit pressure drop readings. The access valve will be operational provided the Suction Filters are installed with the bypass feature inactive.

SF-289-T

c UL us
Listed by Underwriters' Laboratories, Inc.
Guide SMGT-File No. SA-1756A & B.

SPECIFICATIONS

TYPE		CONNECTIONS Inches	FILTER AREA cm^2	DIMENSIONS – mm		
WITHOUT Access Valve	WITH Access Valve			OVERALL LENGTH	SOCKET DEPTH	SHELL DIAMETER
Types with bypass relief feature (Bi-directional Flow)						
SF-283-F	—	3/8 SAE Flare	181	223	—	76
—	**SF-285-T**	5/8 ODF Solder		212	16	
—	**SF-286-T**	3/4 ODF Solder		223	18	
—	**SF-287-T**	7/8 ODF Solder		227	19	
—	**SF-289-T**	1-1/8 ODF Solder		242	23	
—	**SF-489-T**	1-1/8 ODF Solder	310	315	23	
—	**SF-4811-T**	1-3/8 ODF Solder		333	25	
—	**SF-4813-T**	1-5/8 ODF Solder		341	28	
Types without bypass relief feature (Single Flow Direction)						
SF-114	—	1/2 ODF Solder	71	111	13	51
SF-114-F	—	1/2 SAE Flare		133	—	
SF-115	—	5/8 ODF Solder		117	16	
SF-115-F	—	5/8 SAE Flare		141	—	
—	**SF-6417-T**	2-1/8 ODF Solder	2503	278	31	121
—	**SF-6421-T**	2-5/8 ODF Solder			35	

SELECTION RECOMMENDATIONS

TYPE		CONNECTIONS Inches	㉓FLOW CAPACITY kW												㉔NOMINAL SYSTEM HORSEPOWER (Mechanical Power)	
			5°C			– 5°C			– 20°C			– 30°C		– 40°C		
			PRESSURE DROP bar													
			0.14			0.20			0.10		0.14	0.07		0.10	0.07		0.03		
			REFRIGERANT												REFRIGERANT	
WITHOUT Access Valve	WITH Access Valve		134a	22	407C	134a	22	404A	134a	22	404A	22	404A	22	404A	22 407C	134a, 404A, 507
SF-114	–	1/2 ODF	5.3	8.4	8.4	3.5	5.3	5.3	2.1	3.9	3.5	2.5	2.1	1.1	1.1	1	1/2
SF-114-F	–	1/2 SAE	4.6	7.4	7.4	3.2	4.9	4.6	1.8	3.2	3.2	2.1	1.8	1.1	1.1	1	1/2
SF-115	–	5/8 ODF	9.1	14.4	14.4	6.0	9.5	9.1	3.9	6.3	6.0	4.2	3.9	2.1	2.1	2	1
SF-115-F	–	5/8 SAE	8.1	13.0	13.0	5.3	8.4	8.1	3.2	5.6	5.3	3.5	3.2	1.8	1.8	2	1
SF-283-F	–	3/8 SAE	4.2	7.4	7.0	2.8	4.6	4.2	1.8	3.2	2.8	1.4	1.8	1.1	1.1	1	1/2
–	**SF-285-T**	5/8 ODF	14.1	22.5	21.8	9.5	14.1	13.7	6.0	10.2	9.5	6.3	6.0	3.5	3.2	4	1-1/2
–	**SF-286-T**	3/4 ODF	17.9	30.2	28.5	12.0	17.6	17.9	7.4	12.7	12.0	7.7	7.4	4.2	3.9	5	1-1/2
–	**SF-287-T**	7/8 ODF	24.6	39.0	39.7	16.2	25.3	24.6	9.8	17.9	16.2	10.9	10.2	5.3	5.3	7-1/2	3
–	**SF-289-T**	1-1/8 ODF	32.4	52.1	51.3	21.1	33.1	32.4	13.0	23.2	21.5	14.1	13.4	7.4	7.0	7-1/2	5
–	**SF-489-T**	1-1/8 ODF	34.8	56.3	55.2	22.9	35.2	34.5	13.7	24.6	22.9	15.1	14.4	7.7	7.4	10	5
–	**SF-4811-T**	1-3/8 ODF	39.4	64.7	63.3	25.7	40.1	39.4	15.5	27.8	26.0	16.9	16.2	8.8	8.4	12	5
–	**SF-4813-T**	1-5/8 ODF	46.8	76.0	74.9	30.6	47.5	46.8	18.3	33.1	30.6	19.7	19.0	10.2	9.8	15	7
–	**SF-6417-T**	2-1/8 ODF	179	320	313	109	200	185	57.7	125	112	71.4	62.6	32.7	27.8	55	20
–	**SF-6421-T**	2-5/8 ODF	221	419	383	136	247	227	72.5	155	139	90.0	78.4	41.5	35.2	60	30

㉓ Refrigerant 502 flow capacity is 80% of the values shown for Refrigerant 22. For Refrigerant 507 flow capacity use R-404A flow ratings.
㉔ Use Refrigerant 134a nominal system recommendations for R-401A, R-401B, R-402 A, R-402B, R-408A, R-409A and R-502. Ratings are in accordance with ARI Standard 730.

For complete information refer to Bulletin 80-10.

REPLACEABLE Suction Filter

RSF-4817-T

The Replaceable Suction Filter shell, used with RPE-48-BD pleated filter element, is designed to be installed in the suction line of new systems to remove solid contaminants.

DESIGN BENEFITS:

- **Recommended for supermarket systems**
- **Low pressure drop**
- **Can be used with desiccant cores for cleanup after burnout**
- **Various fitting sizes up to 3-1/8″ line size**
- **Access valve supplied for pressure drop measurement or charging**

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HOW IT'S USED – Sporlan Replaceable Suction Filters are installed in the suction line of refrigeration or air conditioning systems to remove contaminants that may be in the system at startup.

The Replaceable Suction Filter has large fittings permitting the use of a small shell on a system with large line sizes, resulting in considerable economy. The angle construction is suitable for flow in either direction, which results in easy installation even on compact racks.

The Replaceable Suction Filters should be used with cores for cleaning up a system after a hermetic motor burnout. Select the RC-4864, RC-4864-HH or RCW-48 replaceable cores. After cleanup, install RPE-48-BD elements in the shells.

SELECTION – The table below gives information for choosing the proper model for a given system. The filter elements are supplied in hermetically sealed metal cans.

SELECTION RECOMMENDATIONS

TYPE	CONNECTIONS inches ODF Solder	SYSTEM SIZE – HORSEPOWER (Mechanical Power)*																NO. OF FILTER ELEMENTS **	FILTER AREA cm²	OVERALL LENGTH mm
		NEW SYSTEMS (using filter elements)			TEMPORARY APPLICATION, CLEANUP AFTER BURNOUT (using cores)															
					AIR CONDITIONING				COMMERCIAL					LOW TEMPERATURE						
		REFRIGERANT			REFRIGERANT															
		12 & 134a	22 & 407C	404A, 502 & 507	12	134a	22	407C	12	134a	22	502	404A	12	134a	22	502	404A			
RSF-487-T	7/8	7	10	10	9	13	20	17	9	10	17	14	15	6	8	14	10	11	One RPE-48-BD	2503	236
RSF-489-T	1-1/8	8	15	12	10	16	20	20	11	12	18	14	16	6	10	16	10	11			238
RSF-4811-T	1-3/8	10	20	15	12	19	25	25	13	15	20	18	18	7	12	20	12	13			244
RSF-4813-T	1-5/8	12	25	20	16	20	25	25	14	16	24	19	22	9	13	21	15	17			244
RSF-4817-T	2-1/8	20	35	25	17	22	30	30	15	17	24	21	22	10	14	23	15	17			238
RSF-4821-T	2-5/8	25	50	35	19	24	30	30	16	19	27	22	24	10	15	25	15	17			248
RSF-9611-T	1-3/8	10	22	18	18	27	33	33	17	21	30	26	27	7	16	29	17	18	Two RPE-48-BD	5006	385
RSF-9613-T	1-5/8	12	28	24	24	29	33	33	19	23	37	28	34	10	18	31	22	24			385
RSF-9617-T	2-1/8	20	40	30	25	32	40	40	21	25	37	32	34	12	20	34	22	24			380
RSF-9621-T	2-5/8	30	50	40	29	38	50	50	25	30	40	35	37	15	24	39	28	31			392
RSF-9625-T	3-1/8	40	80	55	30	38	50	50	25	30	40	35	37	15	24	40	28	31			384

*Flow capacities are shown on page 29.
**Consult Page 30 or Bulletin 40-10 for replaceable core and RPE-48-BD information.
NOTE: Use R-404A ratings for R-507. Use R-502 ratings for R-402A & R-402B and R-408A. Use R-12 ratings for R-401A, R-401B & R-402B and R-409A.

For complete information refer to Bulletin 80-10.

ACID TEST KITS–TYPE TA-1 and AK-3

Takes the Guesswork Out of Service Work

TA-1

Designed to test mineral, alkylbenzene and polyolester oils

1 BUILDS CUSTOMER CONFIDENCE – Show the test results of the acid test kit to customers, or perform the test in their presence. In this way they realize you are using the most up-to-date scientific method for system maintenance.

Showing customers the test results will also help convince them to spend the money necessary to do a proper cleanup job. Customers who are thoroughly confident of your abilities will be more interested in setting up preventative maintenance programs.

2 ACCURATE and RELIABLE – A simple scientific principle is used to precisely measure the amount of acid in an oil sample taken from a contaminated system. The test procedure has been proven by extensive field experience.

3 CONVENIENT – Both the TA-1 and AK-3 are convenient to use. The TA-1 has three pre-measured solutions supplied in bottles with screw caps for easy handling. The AK-3 has all solutions and bottles supplied in a small fitted case. Either kit may be used on the job site, or an oil sample can be saved and tested in the presence of the equipment owner.

4 OIL SAMPLE USED FOR TEST – Since oil is the scavenger, it gives the best indication of acid in the system. Less than an ounce of oil is required.

5 QUICK TO USE – Once the oil sample is obtained . . . it will take only minutes to perform the test. Simply mix solutions and oil to be tested. Shake, and the resulting colour tells the complete story.

6 COST – The cost of the test is very inexpensive, regardless of which kit is used. The TA-1 Kit is more convenient, but for repeated testing the AK-3 is less costly.

Both the TA-1 and AK-3 Kits are normally used on a "pass or fail" basis. If the user desires an indication of the relative **amount** of acid in the oil, then the AK-3 Kit should be selected.

For complete information refer to Bulletin 40-10.

See•All® Moisture and Liquid Indicator

C UL US LISTED

U.S. PATENT NO. 2,844,026

offers these 8 outstanding benefits.

SA-13

1. ONE INDICATOR for REFRIGERANTS 12, 134a, 22, 404A, 410A, 502 and 507. The **See•All Moisture and Liquid Indicator** provides a true moisture indication for Refrigerants 12, 134a, 22, 404A, 502 and 507. The **See•All** is also suitable for Refrigerants R-410A, 401A & B, 402 A & B, 408A and 409A. The dark green indicates dry and a bright yellow indicates wet. The one indicator avoids the confusion found in models with two elements. You **cannot** pick the wrong element when checking the moisture content of the system.

2. RELIABLE and ACCURATELY CALIBRATED COLOUR CHANGE POINTS. The **See•All Moisture and Liquid Indicator** is accurately calibrated in parts per million of moisture for each refrigerant. All moisture indicators change colour on the basis of relative saturation of the refrigerant. Therefore, liquid line temperature must be considered if an accurate calibration is to be obtained. A colour chart is part of the label, for easy comparison.

3. COLOUR CHANGES ARE EASILY DISTINGUISHED and REVERSIBLE. The indicator's colour differs so widely between WET and DRY conditions that there is no possibility of confusion between the two. Colours will reverse as often as moisture concentration in the system changes.

4. LARGE FULL VIEW SIGHT GLASS. The **See•All Moisture and Liquid Indicator** has an extra large crystal clear sight glass for viewing the refrigerant. Bubbles indicate a shortage of refrigerant or a restriction in the liquid line.

5. INDICATOR PROTECTED from DISCOLOURATION and DIRT. The indicator is protected by a filter pad and screen. This prevents washing of the indicator by the refrigerant and protects it from system contamination and turbulence.

6. REPLACEABLE INDICATOR ELEMENT. The colour indicator paper can be changed on the new fused glass models without removing the **See•All** from the line. Replacement is through the bottom (see SA-14SU below). Request the K-SA-4 Kit.

7. DISASSEMBLY OF THE SMALLER SIZES NOT REQUIRED. The extended steel fittings on solder models in the smaller sizes make it unnecessary to disassemble for installation since steel conducts only one eighth as much heat as copper.

8. A DOUBLE DUTY PLASTIC CAP is supplied to keep the glass free from dust, dirt, and grease. It also permits the service engineer to use his own discretion concerning instructions to his customers on observing the **See•All Moisture and Liquid Indicator.**

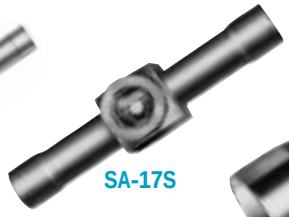
SA-12FM

SA-14U

SA-13UU

SA-13FU

SA-14SU



SA-17S

SA-217

SPECIFICATIONS

CONNECTION SIZES inches	MALE FLARE		FEMALE & MALE FLARE		MALE FLARE X SWIVEL NUT		SWIVEL NUT X SWIVEL NUT		FEMALE FLARE X SWIVEL NUT		SWIVEL NUT X ODF SOLDER		ODF SOLDER	
	Type No.	Overall Length mm	Type No.	Overall Length mm	Type No.	Overall Length mm	Type No.	Overall Length mm	Type No.	Overall Length mm	Type No.	Overall Length mm	Type No.	Overall Length mm
1/4	SA-12	73	SA-12FM	65	—	—	—	—	—	—	—	—	SA-12S	117
3/8	SA-13	86	SA-13FM	75	SA-13U	92	SA-13UU	100	SA-13FU	81	SA-13SU	106	SA-13S	
1/2	SA-14	97	SA-14FM	87	SA-14U	105	SA-14UU	114	SA-14FU	95	SA-14SU	117	SA-14S	124
5/8	SA-15	105	—	—	SA-15U	113	SA-15UU	121	—	—	SA-15SU	124	SA-15S	
7/8	—	—	—	—	—	—	—	—	—	—	—	—	SA-17S	160
1-1/8	—	—	—	—	—	—	—	—	—	—	—	—	SA-19S	
1-3/8	—	—	—	—	—	—	—	—	—	—	—	—	㉕SA-211	202
1-5/8	—	—	—	—	—	—	—	—	—	—	—	—	㉕SA-213	
2-1/8	—	—	—	—	—	—	—	—	—	—	—	—	㉕SA-217	

UL and ULc Listed - Guide SEYW File No. SA-3182

Maximum Rated Pressure for models SA-12 through SA-19S, SA-211, SA-213, and SA-217 is 44.8 bar. Overall width is: 33 mm for 1/4″ and 3/8″ sizes, 40 mm for 1/2″ and 5/8″ sizes, and 35 mm for 7/8″ and 1-1/8″ sizes. Most solder connections can be used as male fittings as well as female fittings. The 1/4″ ODF is 3/8″ ODM, the 3/8″ ODF is 1/2″ ODM, the 1/2″ ODF is 5/8″ ODM, and the 5/8″ ODF is 3/4″ ODM. Models with female flare and/or swivel nut connections are supplied with a copper gasket in the fitting.

㉕These models have copper connections and feature a removable element cartridge — for replacement cartridge specify AC-20.

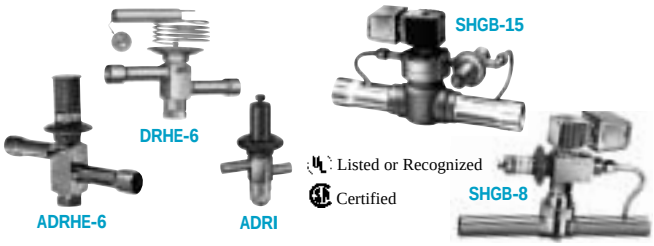
MOISTURE CONTENT PPM

SEE•ALL SHOWS / LIQUID LINE TEMP. ➧	REFRIGERANTS 11 & 12			REFRIGERANT 22			REFRIGERANT 134a			REFRIGERANTS 502, 113 & 114			REFRIGERANTS 404A & 507		REFRIGERANT 410A	
	25°C	**40°C**	50°C	25°C	**40°C**	50°C	25°C	**40°C**	50°C	25°C	**40°C**	50°C	**25°C**	40°C	**25°C**	40°C
Green DRY	Below 5	Below **10**	Below 20	Below 30	Below **45**	Below 60	Below 50	Below **80**	Below 110	Below 10	Below **20**	Below 30	Below 15	Below **30**	Below 75	Below **380**
Chartreuse CAUTION	5-15	**10-30**	20-50	30-90	**45-130**	60-180	50-200	**80-225**	110-310	10-45	**20-65**	30-110	15-90	**30-140**	75-150	**380-550**
Yellow WET	Above 15	Above **30**	Above 50	Above 90	Above **130**	Above 180	Above 200	Above **225**	Above 310	Above 45	Above **65**	Above 110	Above 90	Above **140**	Above 150	Above **550**

BOLD figures are for the average design conditions of refrigerant liquid lines operating at 40°C. Since the actual temperature is not critical, a satisfactory estimate can be made by comparing it to body temperature. If it feels cool to the touch, use 25°C, whereas if it feels warm, use 50°C column figures.

For complete information refer to Bulletin 70-10.

DISCHARGE BYPASS VALVES



The Sporlan line of discharge bypass valves are designed to provide an economical method of compressor capacity control in place of cylinder unloaders or to handle unloading requirements below the last step of cylinder unloading. These modulating control valves automatically bypass the required amount of discharge gas to the low side to maintain the desired minimum evaporator pressure. The valves are applicable on any refrigeration or air conditioning system that operates during periods of low load, which can result in coil icing or short cycling. These valves respond to downstream pressure changes and open when the evaporator pressure falls below the valve setting. At normal loads and evaporator conditions, the valve remains closed and the system operates in a conventional manner.

The DR line of valves consists of three basic types of valves: the adjustable models, the adjustable remote bulb models, and the non-adjustable models.

The SHGB valves are adjustable and pilot operated with a solenoid stop feature that eliminates the need for a hot gas solenoid valve. They were developed for use on larger capacity systems.

APPLICATION – The discharge bypass valve is normally applied in a branch line off the discharge line. To allow system pump down control, a solenoid valve or hand valve must be installed upstream of the discharge DR type bypass valves.

The bypassed hot gas can enter the low side at several locations; however, two of the possible locations are preferred because of superior operating performance: into the side connection of a Sporlan side connection distributor or directly into the suction line. By using the side connection distributor method, the system TEV will act as a desuperheating valve to keep the compressor suction temperature below the recommended maximum temperature published by the compressor manufacturer. When the hot gas is bypassed directly into the suction line, an auxiliary desuperheating TEV may be required. See Bulletins 90-40, 90-40-1, and 90-40-2 for complete application details.

SELECTION and CAPACITY RATINGS – The capacities given in the table below are **valve** hot gas capacities and not the capacities of the system on which the valve is to be applied. To select a valve, first determine the compressor capacity at the minimum allowable evaporating temperature. Then the discharge bypass valve must supply the difference between this compressor capacity and the minimum evaporator load at which the system is to be operated. The valve pressure setting will be that pressure at which the bypass valve must start to open.

Connections – (Standard Connections are in **BOLD** type).
ADRI(E)-1-1/4, – 3/8″ ODF Solder
ADRS(E)-2 – 3/8″, **1/2″,** 5/8″ ODF Solder or 3/8″, 1/2″, 5/8″ SAE Flare
ADRP(E)-3 – 1/2″, **5/8″** ODF Solder or 1/2″, 5/8″ SAE Flare
ADRHE-6 & DRHE-6 – 5/8″, **7/8″,** 1-1/8″ ODF Solder
SHGB(E)-8 – 7/8″ ODF, 1-1/8″ ODF Solder
SHGB(E)-15 – 1-1/8″, 1-3/8″ ODF Solder

Valves with ODF solder connections are supplied standard with 1/4″ ODF external equaliser, 1/4″ SAE Flare external equaliser available on special order. Pilot operated models are supplied with 1/4″ SAE external equaliser.

DISCHARGE BYPASS VALVE CAPACITIES – kW

Capacities based on 3.3°C evaporator temperature change from closed to rated opening (does not apply to pilot operated models), discharge temperature 17°C above isentropic compression, 38°C condensing temperature, 0˚ subcooling, 14°C superheat at the compressor and includes both the hot gas bypassed and liquid refrigerant for desuperheating, regardless of whether the liquid is fed through the system thermostatic expansion valve or auxiliary desuperheating thermostatic expansion valve.

REFRIGERANT	MINIMUM ALLOWABLE EVAP. TEMP. °C		VALVE TYPE & ADJUSTMENT RANGE															
			ADRI-1-1/4 ADRIE-1-1/4			ADRS-2 ADRSE-2		ADRP-3 ADRPE-3		ADRHE-6		DRHE-6 (Adjustable "Remote Bulb" Model)*				SHGB-8 SHGBE-8	SHGB-15 SHGBE-15
		psig	0/55	0/75	0/100	0/30	0/80	0/30	0/80	0/30	0/80	25/35	32/44	55/70	65/80	0/100	0/75
		bar	0/3.79	0/5.17	0/6.90	0/2.07	0/5.52	0/2.07	0/5.52	0/2.07	0/5.52	1.72/2.41	2.21/3.03	3.79/4.83	4.48/5.52	0/6.90	0/5.17
22	5˚		—	2.04	1.86	—	12.3	—	21.1	—	32.2	—	—	69.7	—	55.3	204
	-5˚		1.55	2.25	1.90	—	12.5	—	22.0	—	34.8	—	—	59.5	—	56.0	218
	-15˚		2.22	2.11	1.72	13.7	12.9	26.0	23.2	48.9	38.3	—	—	—	—	57.0	232
	-25˚		2.08	1.76	1.55	13.2	12.8	26.2	23.4	49.6	38.7	—	—	—	—	57.0	243
134a	5˚		1.41	1.51	1.19	—	9.40	—	17.4	—	32.9	33.9	—	—	—	38.3	144
	-5˚		1.44	1.37	1.12	9.15	8.59	17.4	15.5	32.9	25.5	29.2	—	—	—	38.3	151
	-15˚		1.34	1.09	0.98	8.66	—	17.2	—	33.1	—	—	—	—	—	38.7	162
401A	5˚		1.58	1.69	1.37	—	9.71	—	17.4	—	28.1	—	38.7	—	—	43.3	183
	-5˚		1.65	1.58	1.30	10.4	9.82	19.9	17.7	37.6	29.1	—	33.4	—	—	43.6	183
	-15˚		1.55	1.27	1.12	9.96	9.64	19.8	17.6	38.0	29.3	—	—	—	—	44.0	197
402A	5˚		—	—	1.90	—	—	—	—	—	—	—	—	—	—	60.8	—
	-5˚		—	2.29	2.11	—	13.7	—	23.4	—	36.2	—	—	—	—	62.3	222
	-15˚		2.32	2.53	2.00	—	14.1	—	25.2	—	41.2	—	—	—	—	63.0	222
	-25˚		2.43	2.22	1.83	14.8	14.2	28.5	25.8	53.8	42.9	—	—	—	—	63.3	225
404A	5˚		—	—	1.94	—	—	—	—	—	—	—	—	—	—	61.6	—
	-5˚		—	2.36	2.11	—	13.7	—	23.6	—	36.6	—	—	—	75.3	62.3	225
	-15˚		2.35	2.50	1.97	—	14.1	—	25.2	—	41.2	—	—	—	—	63.0	229
	-25˚		2.39	2.15	1.79	14.7	14.1	28.4	25.6	53.8	42.6	—	—	—	—	63.0	229
407C	5˚		—	2.74	2.29	—	14.9	—	26.4	—	42.6	—	—	80.5	—	65.4	260
	-5˚		2.15	2.74	2.22	—	14.9	—	26.4	—	42.6	—	67.9	—	—	65.8	264
	-15˚		2.60	2.39	1.97	15.9	15.2	30.4	27.5	57.3	45.7	—	—	—	—	66.5	267
	-25˚		2.39	1.97	1.76	15.2	14.9	30.4	27.1	58.0	45.4	—	—	—	—	67.2	271
502	5˚		—	—	1.62	—	11.0	—	18.6	—	27.6	—	—	—	67.5	50.3	—
	-5˚		—	1.97	1.72	—	11.2	—	19.4	—	30.1	—	—	—	58.4	51.0	194
	-15˚		1.94	2.00	1.62	12.6	11.5	23.4	20.7	44.0	33.8	—	—	—	—	51.7	207
	-25˚		1.94	1.72	1.44	12.1	11.6	23.5	21.1	44.3	34.9	—	—	—	—	52.1	215
507	5˚		—	—	1.86	—	—	—	—	—	—	—	—	—	—	61.2	—
	-5˚		—	2.28	2.07	—	13.6	—	23.2	—	35.9	—	—	—	—	62.3	225
	-15˚		—	2.50	2.00	—	13.8	—	24.9	—	40.5	—	—	—	—	62.6	225
	-25˚		2.43	2.18	1.83	14.7	14.1	28.2	25.5	53.5	42.2	—	—	—	—	63.0	229

*These models applicable on air conditioning systems only.

For complete information refer to Bulletins 90-40, 90-40-1, and 90-40-2.

CRANKCASE PRESSURE REGULATING VALVES

Crankcase Pressure Regulating Valves are designed to prevent overloading of the compressor motor by limiting the crankcase pressure to a predetermined maximum value during and after a defrost cycle or a normal shut-down period. These valves automatically throttle the vapour flow from the evaporator until the compressor can handle the load.

Sporlan manufactures five adjustable models… CRO-4, CRO-6, CROT-6, CRO-10 and CROT-10 all models respond only to their outlet pressure and modulate to prevent the suction pressure at the compressor from rising above the valve setting. Since these valves are adjustable, the setting may be altered to suit the specific system requirements.

CRO CAPACITIES – The ratings for these valves vary depending on three items: design suction pressure after pulldown, maximum allowable suction pressure recommended by the compressor or unit manufacturer (this is the valve setting), and pressure drop across the valve. The difference between the design suction pressure and the valve setting determines how much of the valve stroke is used. Therefore, the valve setting should be kept as high as possible without exceeding the recommendation of the compressor or unit manufacturer. Once this information is available, the correct CRO can be selected from the data below.

Connections – (Standard Connections are in **BOLD** type).

CRO-4 – 3/8″, 1/2″ ODF Solder and 3/8″, 1/2″ SAE Flare

CRO-6, *CROT-6 – 5/8″, **7/8″**, 1-1/8″ ODF Solder and 1/2″, 5/8″, 3/4″ SAE Flare.

CRO-10, *CROT-10 – 7/8″, 1-1/8″, **1-3/8″** ODF Solder.

*** "T" indicates access valve on inlet connection.**

CRO CAPACITIES – kW

Capacities based on 38°C condensing temperature, 6°C superheat, 0°C subcooling, and 0.14 bar pressure drop across valve.

TYPE AND ADJUSTMENT RANGE	DESIGN EVAPORATOR TEMPERATURE °C	SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 134a						SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 401A					
			VALVE SETTING – bar							VALVE SETTING – bar					
			0.70	1.40	2.00	2.75	3.45	4.15		0.70	1.40	2.00	2.75	3.45	4.15
CRO-4 0/20 psig 0/1.38 bar	-30°	-0.17	1.23	1.23	—	—	—	—	-0.14	1.34	1.34	—	—	—	—
	-20°	0.32	1.37	1.44	—	—	—	—	0.35	1.34	1.51	—	—	—	—
	-15°	0.63	0.67	1.65	—	—	—	—	0.66	0.63	1.76	—	—	—	—
	-10°	0.99	—	1.79	—	—	—	—	1.03	—	1.76	—	—	—	—
CRO-4 0/50 psig 0/3.45 bar	-20°	0.32	0.63	1.41	1.44	1.44	1.44	—	0.35	0.63	1.41	1.51	1.51	1.51	—
	-15°	0.63	0.32	1.19	1.65	1.65	1.65	—	0.66	0.28	1.23	1.76	1.76	1.76	—
	-5°	1.42	—	—	1.34	2.15	2.15	—	1.46	—	0.14	1.34	2.25	2.25	—
	5°	2.48	—	—	—	0.74	2.22	—	2.52	—	—	—	0.67	2.22	—
CRO-4 0/75 psig 0/5.17 bar	-15°	0.63	0.24	0.98	1.65	1.65	1.65	1.65	0.66	0.24	1.02	1.76	1.76	1.76	1.76
	-10°	0.99	—	0.67	1.51	1.90	1.90	1.90	1.03	—	0.67	0.67	1.97	1.97	1.97
	-5°	1.42	—	—	1.09	2.04	2.15	2.15	1.46	—	0.10	1.12	2.11	2.25	2.25
	5°	2.48	—	—	—	0.60	1.79	2.71	2.52	—	—	—	0.56	1.79	2.81
CRO-6 CROT-6 0/60 psig 0/4.14 bar	-20°	0.32	1.34	2.39	3.45	4.50	5.10	5.10	0.35	1.41	2.50	3.66	4.71	5.45	5.45
	-10°	0.99	—	2.18	3.34	4.57	5.77	5.88	1.03	—	2.18	3.52	4.71	6.12	6.26
	-5°	1.42	—	1.65	2.99	4.36	5.73	6.76	1.46	—	—	3.10	4.47	6.05	7.11
	0°	1.92	—	—	2.25	3.80	5.35	6.90	1.95	—	—	2.29	3.83	5.59	7.21
CRO-10 CROT-10 0/60 psig 0/4.14 bar	-20°	0.32	2.22	8.80	11.5	11.5	11.5	11.5	0.35	2.04	8.83	12.2	12.2	12.2	12.2
	-10°	0.99	—	5.98	13.1	13.1	13.1	13.1	1.03	—	5.70	13.9	13.9	13.9	13.9
	-5°	1.42	—	1.30	9.82	14.9	14.9	14.9	1.46	—	—	9.89	15.7	15.7	15.7
	0°	1.92	—	—	3.76	13.4	16.9	16.9	1.95	—	—	3.45	13.0	17.7	17.7
			VALVE SETTING – bar							VALVE SETTING – bar					
			2.75	3.45	4.10	4.80	5.50	6.20		2.75	3.45	4.10	4.80	5.50	6.20
CRO-6 CROT-6 30/110 psig 2.07/7.58 bar	-10°	0.99	3.48	4.26	5.07	5.88	5.88	5.88	1.03	3.59	4.54	5.38	6.19	6.26	6.26
	-5°	1.42	3.45	4.34	5.24	6.16	6.76	6.76	1.46	3.48	4.54	5.52	6.44	7.11	7.11
	0°	1.92	3.10	4.15	5.17	6.23	7.28	7.67	1.95	3.13	4.33	5.50	6.44	7.60	8.06
	5°	2.48	2.50	3.66	4.85	6.02	7.18	8.34	2.52	2.50	3.80	5.03	6.19	7.46	8.62
CRO-10 CROT-10 30/110 psig 2.07/7.58 bar	-10°	0.99	13.1	13.1	13.1	13.1	13.1	13.1	1.03	13.9	13.9	13.9	13.9	13.9	13.9
	-5°	1.42	12.4	14.9	14.9	14.9	14.9	14.9	1.46	12.4	15.7	15.7	15.7	15.7	15.7
	0°	1.92	9.08	15.6	16.9	16.9	16.9	16.9	1.95	8.80	16.2	17.7	17.7	17.7	17.7
	5°	2.48	3.66	11.0	18.3	19.1	19.1	19.1	2.52	3.03	11.3	18.9	19.8	19.8	19.8

TYPE AND ADJUSTMENT RANGE	DESIGN EVAPORATOR TEMPERATURE °C	SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 22						SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 407C					
			VALVE SETTING – bar							VALVE SETTING – bar					
			0.70	1.40	2.00	2.75	3.45	4.15		0.70	1.40	2.00	2.75	3.45	4.15
CRO-4 0/20 psig 0/1.38 bar	-40°	0.04	1.41	1.41	—	—	—	—	-0.16	1.16	1.16	—	—	—	—
	-35°	0.31	0.95	1.58	—	—	—	—	0.07	1.34	1.34	—	—	—	—
	-30°	0.63	—	1.79	—	—	—	—	0.36	0.70	1.55	—	—	—	—
	-25°	1.00	—	0.84	—	—	—	—	0.70	—	1.65	—	—	—	—
CRO-4 0/50 psig 0/3.45 bar	-40°	0.04	0.70	1.41	1.41	1.41	1.41	—	-0.16	0.77	1.16	1.16	1.16	1.16	—
	-30°	0.63	—	0.95	1.79	1.79	1.79	—	0.36	0.31	1.16	1.55	1.55	1.55	—
	-15°	1.95	—	—	0.70	1.97	2.29	—	1.57	—	0.14	1.23	2.04	2.04	—
	-10°	2.54	—	—	—	0.98	2.39	—	2.13	—	—	0.35	1.62	2.32	—
CRO-4 0/75 psig 0/5.17 bar	-40°	0.04	0.56	1.12	1.41	1.41	1.41	1.41	-0.16	0.63	1.16	1.16	1.16	1.16	1.16
	-30°	0.63	—	0.74	1.48	1.79	1.79	1.79	0.36	0.24	0.95	1.55	1.55	1.55	1.55
	-15°	1.95	—	—	0.56	1.55	2.29	2.29	1.57	—	0.10	1.02	1.90	2.04	2.04
	-5°	3.21	—	—	—	—	0.84	2.00	2.77	—	—	—	0.35	1.51	2.50

For complete information refer to Bulletins 90-10.

CRO CAPACITIES – kW

Capacities based on 38°C condensing temperature, 6°C superheat, 0°C subcooling, and 0.14 bar pressure drop across valve port.

TYPE AND ADJUSTMENT RANGE	DESIGN EVAPORATOR TEMPERATURE °C	SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 22						SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 407C					
			VALVE SETTING – bar							VALVE SETTING – bar					
			0.70	1.40	2.00	2.75	3.45	4.15		0.70	1.40	2.00	2.75	3.45	4.15
CRO-6 CROT-6 0/60 psig 0/4.14 bar	-40°	0.04	1.62	2.50	3.41	4.26	4.26	4.26	-0.16	1.44	2.18	2.92	3.38	3.38	3.38
	-30°	0.63	—	2.32	3.41	4.64	5.70	5.70	0.36	1.30	2.29	3.27	4.26	4.33	4.50
	-20°	1.44	—	—	2.50	3.98	5.45	6.93	1.10	—	1.51	2.81	4.12	4.40	4.96
	-5°	3.21	—	—	—	—	3.38	5.21	2.77	—	—	—	2.36	3.34	4.43
CRO-10 CROT-10 0/60 psig 0/4.14 bar	-40°	0.04	5.21	9.78	9.78	9.78	9.78	9.78	-0.16	5.52	7.92	7.92	7.92	7.92	7.92
	-30°	0.63	—	7.07	12.8	12.8	12.8	12.8	0.36	2.29	8.45	10.8	10.8	10.8	10.8
	-20°	1.44	—	—	5.52	14.8	16.3	16.3	1.10	—	0.91	9.00	14.2	14.2	14.2
	-5°	3.21	—	—	—	—	8.00	19.5	2.77	—	—	—	3.24	9.26	16.3
			VALVE SETTING – bar							VALVE SETTING – bar					
			2.75	3.45	4.10	4.80	5.50	6.20		2.75	3.45	4.10	4.80	5.50	6.20
CRO-6 CROT-6 30/110 psig 2.07/7.58 bar	-10°	2.54	2.64	3.76	4.89	5.98	7.11	8.23	2.13	2.88	3.87	4.85	5.84	6.86	7.35
	-5°	3.21	—	2.95	4.19	5.42	6.69	7.92	2.77	2.22	3.34	4.43	5.56	6.69	7.81
	0°	3.97	—	—	3.06	4.43	5.81	7.18	3.50	—	2.32	3.59	4.85	6.12	7.39
	5°	4.83	—	—	—	2.85	4.36	5.88	4.35	—	—	—	3.59	5.00	6.44
CRO-10 CROT-10 30/110 psig 2.07/7.58 bar	-10°	2.54	5.03	12.0	18.2	18.2	18.2	18.2	2.13	8.02	14.2	16.2	16.2	16.2	16.2
	-5°	3.21	—	5.42	13.2	20.3	20.3	20.3	2.77	2.18	9.26	16.3	18.3	18.3	18.3
	0°	3.97	—	—	4.40	13.0	21.7	22.5	3.50	—	1.34	9.25	17.2	20.6	20.6
	5°	4.83	—	—	—	—	11.0	20.5	4.35	—	—	—	7.42	16.3	23.1

TYPE AND ADJUSTMENT RANGE	DESIGN EVAPORATOR TEMPERATURE °C	SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 404A						SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 502					
			VALVE SETTING – bar							VALVE SETTING – bar					
			0.70	1.40	2.00	2.75	3.45	4.15		0.70	1.40	2.00	2.75	3.45	4.15
CRO-4 0/20 psig 0/1.38 bar	-40°	0.32	0.40	1.09	—	—	—	—	0.28	0.74	1.05	—	—	—	—
	-35°	0.64	—	1.27	—	—	—	—	0.60	—	1.19	—	—	—	—
	-30°	1.03	—	0.63	—	—	—	—	0.97	—	0.77	—	—	—	—
	-25°	1.49	—	—	—	—	—	—	1.40	—	—	—	—	—	—
CRO-4 0/50 psig 0/3.45 bar	-40°	0.32	0.31	0.91	1.09	1.09	1.09	—	0.28	0.31	0.88	1.05	1.05	1.05	—
	-30°	1.03	—	0.28	1.09	1.48	1.48	—	0.97	—	0.35	1.09	1.37	1.37	—
	-25°	1.49	—	—	0.56	1.48	1.70	—	1.40	—	—	0.63	1.51	1.58	—
	-15°	2.62	—	—	—	0.74	1.79	—	2.47	—	—	—	0.84	1.79	—
CRO-4 0/75 psig 0/5.17 bar	-40°	0.32	0.24	0.74	1.09	1.09	1.09	1.09	0.28	0.28	0.70	1.05	1.05	1.05	1.05
	-30°	1.03	—	0.24	0.91	1.48	1.48	1.48	0.97	—	0.63	1.19	1.37	1.37	1.37
	-15°	2.62	—	—	—	0.60	1.48	1.93	2.47	—	—	—	0.67	1.41	1.79
	-10°	3.32	—	—	—	—	0.63	1.51	3.13	—	—	—	—	0.74	1.62
CRO-6 CROT-6 0/60 psig 0/4.14 bar	-40°	0.32	0.98	1.69	2.36	3.03	3.31	3.31	0.28	0.98	1.65	2.32	2.99	3.20	3.20
	-30°	1.03	—	1.30	2.22	3.13	4.12	4.57	0.97	—	1.30	2.18	3.10	3.98	4.33
	-20°	2.01	—	—	—	2.18	3.48	4.57	1.90	—	—	—	2.25	3.41	4.54
	-10°	3.32	—	—	—	—	2.53	3.80	3.13	—	—	—	—	2.60	3.87
CRO-10 CROT-10 0/60 psig 0/4.14 bar	-40°	0.32	2.22	6.55	7.46	7.46	7.46	7.46	0.28	2.39	6.54	7.25	7.25	7.25	7.25
	-30°	1.03	—	2.07	7.88	10.1	10.1	10.1	0.97	—	2.57	8.05	9.64	9.64	9.64
	-20°	2.01	—	—	—	5.31	13.4	13.4	1.90	—	—	—	6.33	12.5	12.5
	-10°	3.32	—	—	—	—	6.16	15.7	3.13	—	—	—	—	7.25	14.2
			VALVE SETTING – bar							VALVE SETTING – bar					
			2.75	3.45	4.10	4.80	5.50	6.20		2.75	3.45	4.10	4.80	5.50	6.20
CRO-6 CROT-6 30/110 psig 2.07/7.58 bar	-15°	2.62	1.90	2.78	3.52	4.33	5.24	5.95	2.47	1.93	2.71	3.48	4.22	5.00	5.70
	-10°	3.32	—	2.22	3.06	3.98	5.03	5.81	3.13	—	2.22	3.10	3.94	4.82	5.70
	-5°	4.12	—	—	2.22	3.27	4.43	5.31	3.88	—	—	2.39	3.34	4.33	5.28
	0°	5.02	—	—	—	—	3.34	4.33	4.72	—	—	—	2.36	3.41	4.50
CRO-10 CROT-10 30/110 psig 2.07/7.58 bar	-15°	2.62	3.59	9.04	13.4	13.4	13.4	13.4	2.47	4.29	9.11	12.5	12.5	12.5	12.5
	-10°	3.32	—	4.15	9.47	15.2	15.2	15.2	3.13	—	4.89	10.3	14.1	14.1	14.1
	-5°	4.12	—	—	2.67	9.29	16.5	17.2	3.88	—	—	4.64	10.7	15.9	15.9
	0°	5.02	—	—	—	—	8.23	14.5	4.72	—	—	—	3.06	9.85	16.7

TYPE AND ADJUSTMENT RANGE	DESIGN EVAPORATOR TEMPERATURE °C	SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 402A						SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 507					
			VALVE SETTING – bar							VALVE SETTING – bar					
			0.70	1.40	2.00	2.75	3.45	4.15		0.70	1.40	2.00	2.75	3.45	4.15
CRO-4 0/20 psig 0/1.38 bar	-40°	0.39	0.56	1.09	—	—	—	—	0.38	0.56	1.09	—	—	—	—
	-35°	0.73	—	1.27	—	—	—	—	0.72	—	1.27	—	—	—	—
	-30°	1.14	—	0.35	—	—	—	—	1.13	—	0.35	—	—	—	—
	-25°	1.62	—	—	—	—	—	—	1.61	—	—	—	—	—	—
CRO-4 0/50 psig 0/3.45 bar	-40°	0.39	0.24	0.84	1.09	1.09	1.09	—	0.38	0.28	0.84	1.09	1.09	1.09	—
	-30°	1.14	—	0.17	0.95	1.48	1.48	—	1.13	—	0.17	0.95	1.44	1.44	—
	-25°	1.62	—	—	0.35	1.27	1.69	—	1.61	—	—	0.39	1.30	1.69	—
	-15°	2.81	—	—	—	0.45	1.51	—	2.79	—	—	—	0.49	1.51	—
CRO-4 0/75 psig 0/5.17 bar	-40°	0.39	0.21	0.70	1.09	1.09	1.09	1.09	0.38	0.21	0.70	1.09	1.09	1.09	1.09
	-30°	1.14	—	0.14	0.77	1.44	1.48	1.48	1.13	—	0.14	0.77	1.44	1.44	1.44
	-15°	2.81	—	—	—	0.39	1.23	1.90	2.79	—	—	—	0.39	1.23	1.90
	-10°	3.55	—	—	—	—	0.31	1.19	3.52	—	—	—	—	0.39	1.27

CRO CAPACITIES – kW

Capacities based on 38°C condensing temperature, 6°C superheat, 0°C subcooling, and 0.14 bar pressure drop across valve port.

TYPE AND ADJUSTMENT RANGE	DESIGN EVAPORATOR TEMPERATURE °C	SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 402A						SATURATION SUCTION PRESSURE – bar (Reference)	REFRIGERANT 507					
			VALVE SETTING – bar							VALVE SETTING – bar					
			0.70	1.40	2.00	2.75	3.45	4.15		0.70	1.40	2.00	2.75	3.45	4.15
CRO-6 CROT-6 0/60 psig 0/4.14 bar	-40°	0.39	0.95	1.65	2.32	2.99	3.34	3.34	0.38	0.91	1.62	2.29	2.99	3.27	3.27
	-30°	1.14	—	—	2.07	2.99	3.94	4.57	1.13	—	—	2.07	2.99	3.87	4.54
	-20°	2.17	—	—	—	1.90	3.10	4.22	2.16	—	—	—	1.90	3.06	4.33
	-10°	3.55	—	—	—	—	2.04	3.31	3.52	—	—	—	—	2.04	3.45
CRO-10 CROT-10 0/60 psig 0/4.14 bar	-40°	0.39	1.86	6.26	7.53	7.53	7.53	7.53	0.38	1.83	6.16	7.43	7.43	7.43	7.43
	-30°	1.14	—	—	6.89	10.1	10.1	10.1	1.13	—	—	6.93	10.1	10.1	10.1
	-20°	2.17	—	—	—	3.45	11.1	13.3	2.16	—	—	—	3.62	10.9	13.2
	-10°	3.55	—	—	—	—	3.13	10.9	3.52	—	—	—	—	3.10	11.6
			VALVE SETTING – bar							VALVE SETTING – bar					
			2.75	3.45	4.10	4.80	5.50	6.20		2.75	3.45	4.10	4.80	5.50	6.20
CRO-6 CROT-6 30/110 psig 2.07/7.58 bar	-20°	2.17	1.69	2.53	3.27	4.08	5.00	5.84	2.16	1.72	2.50	3.34	4.15	4.93	5.73
	-10°	3.55	—	1.86	2.71	3.66	4.68	5.63	3.52	—	—	2.81	3.76	4.61	5.56
	-5°	4.38	—	—	—	2.81	3.98	5.03	4.34	—	—	—	2.95	3.94	5.00
	0°	5.33	—	—	—	—	2.74	3.98	5.27	—	—	—	—	2.74	3.94
CRO-10 CROT-10 30/110 psig 2.07/7.58 bar	-15°	2.81	2.32	7.50	12.2	13.3	13.3	13.3	2.79	2.46	7.39	12.7	13.2	13.2	13.2
	-10°	3.55	—	2.15	7.43	13.3	15.0	15.0	3.52	—	—	8.10	13.9	14.9	14.9
	-5°	4.38	—	—	—	6.62	13.8	17.0	4.34	—	—	—	7.46	13.6	16.9
	0°	5.33	—	—	—	—	4.78	12.3	5.27	—	—	—	—	4.68	12.1

CRO-6 & CRO-10 are listed by Underwriters Laboratories, Inc. – Guide – SFJQ – File No. SA5460 and Canadian Standards Association – Certification Record No. LR-19953.
CRO-4 is a recognised component UL Guide No. SFJQ8, File Number SA5460, also is a recognized component in Canada.

INSTALLATION – Crankcase pressure regulating valves are installed in the suction line between the evaporator and compressor, and downstream of any other controls or accessories. When installing CRO's with solder type connections, the internal parts should be protected by wrapping the valve with a wet cloth.

For complete information refer to Bulletin 90-10.

HEAD PRESSURE CONTROL VALVES


ORI-6


OROA-5


ORD-4


LAC-4


LAC-4-DS


ORIT-20-65/225


CROT-15-65/225


LAC-10

Sporlan Head Pressure Control for systems with air cooled condensers can be accomplished with several valve types or combinations. The valve types are: LAC-4, OROA-5, LAC-5, LAC-10, ORI/ORD combination and the ORIT/CROT combination.

Please refer to Bulletins 90-30 and 90-30-2 for a complete explanation of operation and application. The equipment manufacturer should be consulted to determine the additional refrigerant charge required when applying this type of head pressure control to a system. However, if this information is not available from the OEM, Bulletin 90-30-1 shows two methods for calculating the correct amount of extra refrigerant charge.

Figures 1, 2 and 3 are piping schematics only to illustrate the general location of the head pressure control valves listed above. Figure 1 includes an auxiliary check valve in the liquid line between the LAC and the receiver. This check valve should be installed in this instance to prevent refrigerant migration from the warm receiver to the cold condenser during the off cycle. Industry piping procedures must be followed to prevent liquid accumulation on the compressor head during system shutdown.

Sporlan recommends that recognised piping references be consulted for assistance in this regard. Sporlan is not responsible for system design, any damage arising from faulty system design, or for misapplication of its products.

The LAC, OROA, ORI and ORIT are designed for application in the liquid line and should not be applied in the discharge line for any reason. Compressor pulsations can greatly shorten the life of the valves. If any of the valves are applied in any manner other than described here, the Sporlan warranty is void.

LAC-4 – DS (Dual Setting) – The standard LAC-4 has a dome element with a fixed setting. The dual setting feature allows a choice between two fixed settings. The element has an internal spring which is set to maintain the lower setting. The element is then charged with air to obtain the higher setting and the capillary tube is pinched and fused. An example is an LAC-4-100/180-DS. If the capillary tube is left intact the valve will maintain a 180 psig setting. If the capillary tube is clipped then fused again, the valve will maintain a 100 psig setting. It is important to fuse the capillary tube tip after clipping to prevent moisture from entering the element.

For complete information refer to Bulletin 90-30 and 90-30-2.

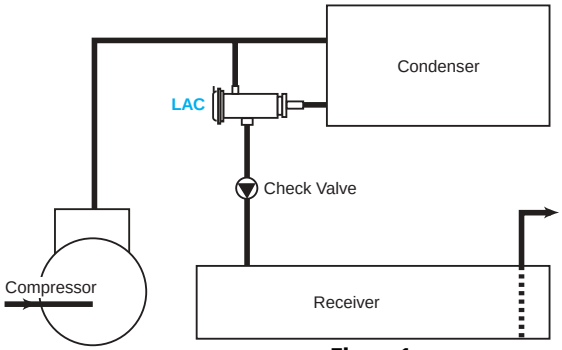


Figure 1

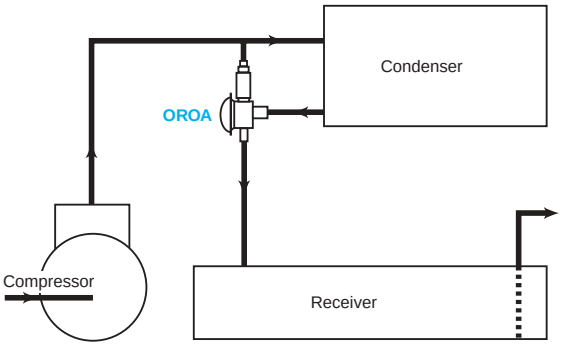


Figure 2

CAPACITIES — Ratings for the common refrigerants are given at several pressure drops for the ORI's, OROA, and LAC below. Maximum capacities for the ORD-4 are given below also. Normally, a 0.14 bar pressure drop across the ORI or OROA is recommended; however, for most applications this can be exceeded, provided the total pressure drop through the condenser and ORI or OROA does not exceed 0.96 bar.

Therefore, to select either valve combination, it is necessary to know the system capacity and refrigerant, the approximate pressure drop through the condenser, the desired pressure setting for the OROA-5 or LAC and the connections necessary. The standard pressure settings for the OROA, and LAC are 6.90 bar for Refrigerant 134a and 12.41 bar for Refrigerants 22 and 502. Other pressure settings are available on special order. The ORI, OROA, and LAC connection size should be at least the same size as the outlet on the condenser where possible. Oversizing these valves is not harmful.

On large systems these valves can be applied in parallel.

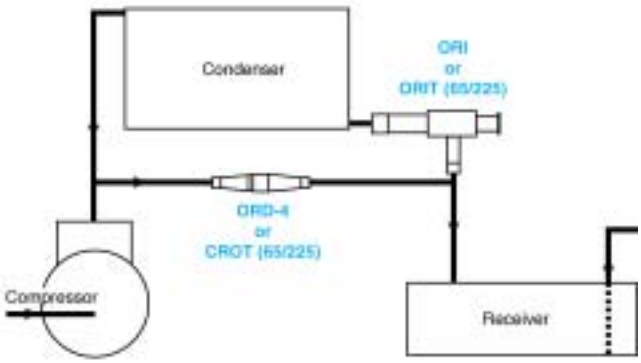


Figure 3

NON-ADJUSTABLE VALVE TYPES

Capacities based on 38°C liquid temperature and 5°C evaporator temperature.

LIQUID FLOW CAPACITIES - kW						
VALVE TYPE	PRESSURE DROP – bar	REFRIGERANT				
		22 and 401A	134a	402A and 404A	407C	502 and 507
OROA-5	0.1	46	42	30	42	29
	0.2	64	60	42	59	41
	0.3	78	73	51	72	50
	0.4	90	84	59	83	58

LAC Capacities listed below are calculated at high ambient (summer) conditions. The low ambient (winter) capacities should also be considered when selecting these valves.

LAC-4 LAC-4-DS	0.1	11	10	7	10	7
	0.2	16	15	10	14	10
	0.3	19	18	12	17	12
	0.4	22	20	14	20	14
LAC-5	0.1	24	22	16	22	15
	0.2	34	32	22	31	22
	0.3	42	39	27	38	27
	0.4	48	45	31	44	31
LAC-10	0.1	51	47	33	46	33
	0.2	71	66	46	65	45
	0.3	85	79	56	78	55
	0.4	98	91	64	90	63

HEAD PRESSURE CONTROL VALVE CAPACITIES – kW

ADJUSTABLE VALVE TYPES and ORD TYPE

Capacities based on 38°C liquid, 5°C evaporator temperature and 8°C change in condensing temperature to stroke the valve.

VALVE TYPE	PRESSURE DROP - bar	REFRIGERANT							
		22	134a	401A	402A	404A	407C	502	507
ORI-6 65/225 psig 4.5/15.5 bar	0.10	34	25	27	26	25	32	23	25
	0.20	50	37	39	37	36	47	33	36
	0.30	62	46	49	46	45	59	41	45
	0.40	72	53	57	54	52	68	48	53
ORI-10 65/225 psig 4.5/15.5 bar	0.10	90	63	67	70	68	87	60	69
	0.20	125	87	92	97	94	120	83	95
	0.30	151	105	112	117	113	145	101	115
	0.40	172	120	128	134	130	166	115	131

Capacities based on 32°C liquid at the receiver, 5°C evaporator temperature and includes both the discharge gas bypassed as well as the liquid capacity flowing through the adjustable ORI valve.

VALVE TYPE	PRESSURE DROP - bar	REFRIGERANT						
		22	134a	401A	402A and 404A	407C	502	507
ORD-4-20 @ -18 °C ambient	1.72	97	76	80	72	83	69	72
	2.07	105	81	86	77	89	74	77

PILOT OPERATED TYPES

Capacities based on 38°C condensing and 5°C evaporator temperature.

VALVE TYPE	PRESSURE DROP - bar	REFRIGERANT				
		22 and 401A	134a	402A and 404A	407C	502 and 507
ORIT-15 65/225 psig 4.5/15.5 bar	0.28*	124	115	81	113	79
	0.40	193	180	126	177	124
	0.50	256	238	167	234	164
ORIT-20 65/225 psig 4.5/15.5 bar	0.28	316	294	205	288	203
	0.40	551	512	357	501	354
	0.50	617	574	400	562	397

* The ORIT valve requires a 0.28 bar pressure drop across the valve port to open.

Capacities are based on 38°C condensing, -20°C minimum ambient, 5°C evaporator, 5.6°C superheat and 28°C added to isentropic discharge temperatures.

VALVE TYPE	PRESSURE DROP - bar	REFRIGERANT						
		22	134a	401A	402A and 404A	407C	502	507
CROT-12 65/225 psig 4.5/15.5 bar	0.70	185	146	155	135	157	130	134
	1.00	220	173	183	160	187	154	160
	1.40	259	203	215	189	220	182	188
CROT-15 65/225 psig 4.5/15.5 bar	0.70	330	259	275	238	279	230	238
	1.00	393	311	329	287	335	276	286
	1.40	464	366	388	338	395	326	337

INSTALLATION — The ORI, OROA, and LAC valves are installed in the condenser liquid drain line and the ORD and CROT are installed in a hot gas bypass line around the condenser. When installing these valves, the internal parts should be protected by wrapping the valves with wet cloths.

Connections –
(Standard connections are in **bold type)**
OROA-5 – **5/8″,** 7/8″ ODF Solder
LAC-4 – **3/8″**, 1/2″ ODF Solder
LAC-5 – 1/2″, 5/8″, 7/8″, 1-1/8″ ODF Solder
LAC-10 –
Discharge Connection:
1-3/8″ ODF Solder
Receiver and Condenser Connections:
7/8″ or 1-1/8″ ODF Solder

ORI-6 – 5/8″, **7/8″,** 1-1/8″ ODF Solder
ORI-10 – 1-1/8″, **1-3/8″** ODF Solder
ORD-4 – **5/8″** ODF Solder
ORIT-15 – **1-3/8″** ODF Solder
ORIT-20 – **1-5/8″** ODF Solder
CROT-12 – **1-1/8″** ODF Solder
CROT-15 – **1-3/8″** ODF Solder

For complete information refer to Bulletin 90-30, 90-30-2 and F90-30-4.

DEFROST DIFFERENTIAL PRESSURE REGULATING VALVES

OLDR-15

DDR-20

In many supermarket applications refrigerant gas from the discharge line or from the top of the receiver is used for defrost. This method of defrost diverts a portion of the hot gas or cool gas (from the top of the receiver) to the suction line and back through the evaporator being defrosted. The gas condenses in the evaporator and flows in reverse, through check valves, around the TEV and liquid line solenoid valve. Liquid refrigerant then flows to the liquid header where it is distributed to evaporators not in the defrost cycle. In order for this reverse flow to occur, the pressure of the defrost header must be greater than the pressure of the liquid header. The difference in pressure is known as the defrost differential.

Several methods are used to obtain the defrost differential. A common **liquid line method** is to install a differential check valve in parallel with a solenoid valve between the receiver and the liquid header. When the solenoid valve is closed during defrost, it allows the differential check valve to control the receiver at a greater pressure than the liquid header. Sporlan offers the (O)LDR-15, (O)LDR-20, XTM and XTO versions for this application. The (O)LDR, XTM or XTO valves combine the features of the liquid differential check valve and the solenoid valve into a single component.

A **discharge line method** is to install a discharge differential pressure regulating valve in the discharge line before the condenser. In order for the reverse flow of hot gas to occur, the pressure of the discharge gas (defrost header) must be greater than the pressure of the receiver (liquid header). Sporlan offers the DDR-20 for this application.

OPERATION

(O) LDR, XTM AND XTO VALVE OPERATION

The (O)LDR is designed to maintain a differential pressure between the receiver and the liquid header. These valves are available in two port sizes, the (O)LDR-15 (25 mm) and the (O)LDR-20 (33 mm).

Sporlan liquid line differential valves have a solenoid bypass feature that allows the valve to remain full open or modulate to maintain a differential. We supply two versions of liquid line differential valves:

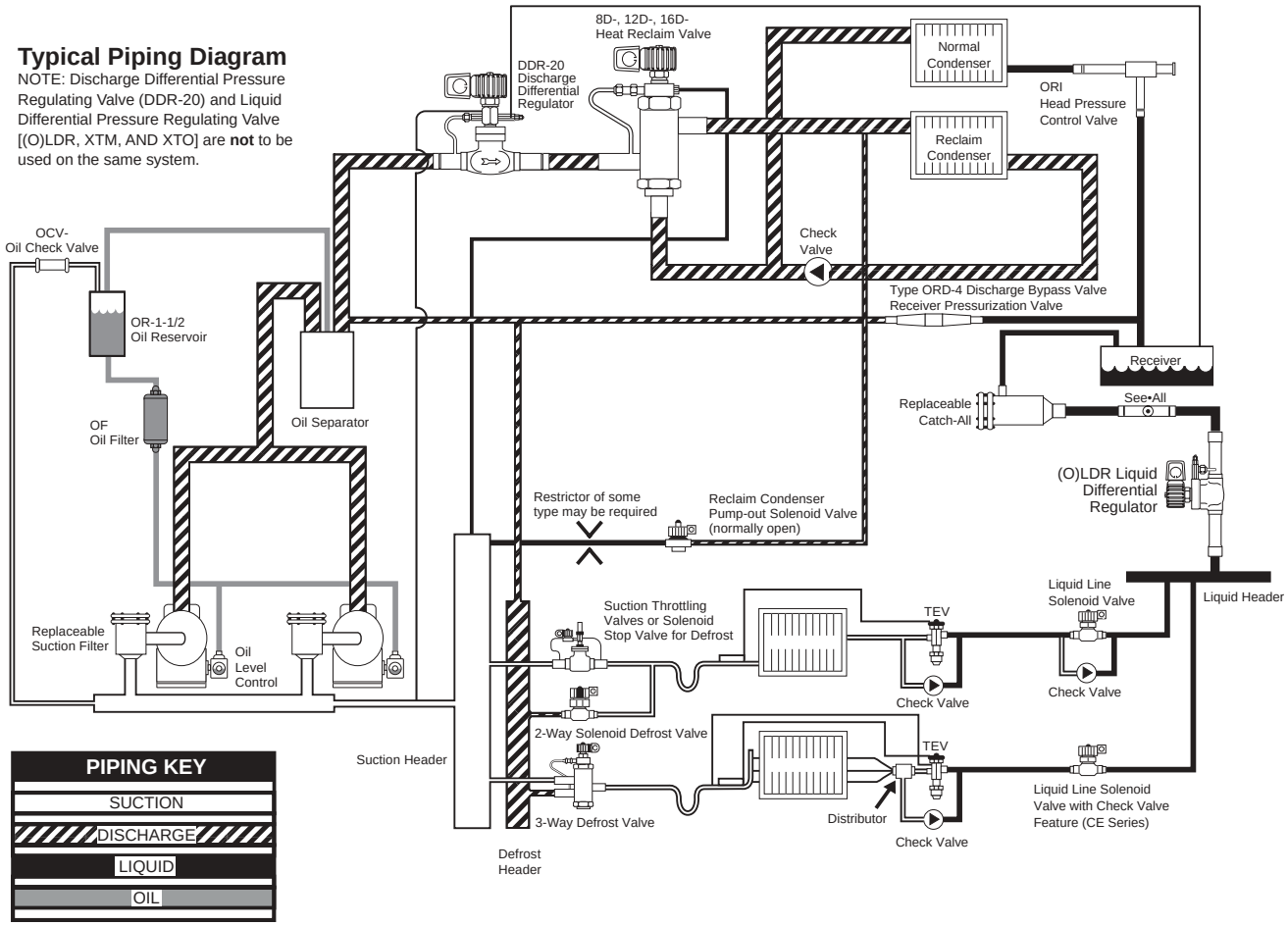
The **OLDR** is in the **full open position** when the coil is de-energised, and it is in the differential operation mode when the coil is energised.

The **LDR** is in the **differential operation mode** when the coil is de-energised, and it is in the full open position when the coil is energised.

The **XTM** is identical in operation to the LDR-15, and the **XTO** is identical in operation to the LDR-20. The special feature of the XTM and XTO versions are the special outlet fitting configurations. Different outlet fittings are indicated by a suffix -1, -4, or -5 (i.e. the XTM-1 has connections 1-3/8″ ODF x 1-3/8″ ODF 90° elbow.) If replacement is necessary it is desirable to use the exact replacement for piping considerations.

Typical Piping Diagram

NOTE: Discharge Differential Pressure Regulating Valve (DDR-20) and Liquid Differential Pressure Regulating Valve [(O)LDR, XTM, AND XTO] are **not** to be used on the same system.



For complete information refer to Bulletin 90-50.

DDR-20 VALVE OPERATION

The DDR-20 is designed to create a differential pressure between its inlet (discharge) pressure and the receiver pressure.

A solenoid bypass feature is incorporated in the valve so that the valve can be made to go full open when there is no need for a differential to be created. Energising the solenoid coil opens the valve fully.

LOCATION AND PIPING

The (O)LDR, XTM and XTO valves are located between the receiver and the liquid header. The DDR-20 is located in the discharge line before the condenser. Figure 1 is a piping schematic only to illustrate the general location of the (O)LDR, XTM, XTO and DDR-20 valves in the system. The two types of defrost differential valves (liquid line and discharge line) are not to be applied on the same system. Sporlan recommends that recognised piping references be consulted for assistance in piping procedures. Sporlan is not responsible for system design, any damage arising from faulty system design, or for misapplication of its products. If these valves are applied in any manner other than as described in this bulletin or other Sporlan literature, the Sporlan warranty is void.

ADJUSTMENT RANGE AND PRESSURE SETTINGS

All defrost differential valves are set by turning the adjusting stem located under the cap on the pilot differential valve. The adjustment range is 0.34 to 3.45 bar. The (O)LDR, XTM and XTO have a factory setting of 1.24 bar differential and the DDR-20 has a factory setting of 2.06 bar differential. Turning the stem clockwise increases the setting, counterclockwise decreases the setting.

DEFROST DIFFERENTIAL PRESSURE REGULATING VALVE CAPACITIES – kW

Capacities based on 5°C evaporator temperature, 38°C condensing temperature, 14°C superheated return gas, discharge temperature 28°C above isentropic compression.

TYPE	REFRIGERANT											
	22			134a			401A			402A		
	Pressure Drop Across Valve - bar											
	0.14	0.21	0.35	0.14	0.21	0.35	0.14	0.21	0.35	0.14	0.21	0.35
LDR-15 OLDR-15 XTM	166	204	263	155	190	246	166	204	264	110	134	173
LDR-20 OLDR-20 XTO	368	451	582	343	420	543	368	451	582	242	297	383
DDR-20	32	39	51	27	33	42	29	35	41	28	35	45
TYPE	REFRIGERANT											
	404A			407C			502			507		
	Pressure Drop Across Valve - bar											
	0.14	0.21	0.35	0.14	0.21	0.35	0.14	0.21	0.35	0.14	0.21	0.35
LDR-15 OLDR-15 XTM	110	135	174	153	187	242	108	132	171	108	132	170
LDR-20 OLDR-20 XTO	243	298	384	338	414	534	239	292	377	238	292	376
DDR-20	29	35	45	34	41	53	26	31	40	28	34	44

SPECIFICATIONS

VALVE TYPE	PORT SIZE mm	DIFFERENTIAL SETPOINT RANGE	CONNECTIONS – inches INLET X OUTLET	COIL
OLDR-15	25.40	5/50 psi 0.34/3.45 bar	1-1/8 ODF × 1-1/8 ODF or 1-3/8 ODF × 1-3/8 ODF	MKC-2
LDR-15				OMKC-2
OLDR-20	33.34		1-5/8 ODF × 1-5/8 ODF or 2-1/8 ODF × 2-1/8 ODF	MKC-2
LDR-20				OMKC-2
XTM-1	25.40		1-3/8 ODF ×1-3/8 ODF, 90° Elbow	OMKC-2
XTM-5			1-1/8 ODF × 1-3/8 ODF, 90° Elbow	
XTO-1	33.34		1-5/8 ODF × 1-5/8 ODF, 90° Elbow	
XTO-4			2-1/8 ODF × 2-1/8 ODF	
DDR-20	33.34		1-5/8 ODF × 1-5/8 ODF	MKC-2

The XTM-1, XTM-5, XTO-1 and XTO-4 are Underwriters Laboratories Listed under Guide No. Y1OZ, File No. MH4576.
Maximum Rated Pressure of 27.58 bar. MOPD of 20.69 bar.

EVAPORATOR PRESSURE REGULATING VALVES

GENERAL – The Sporlan line of evaporator pressure regulating (EPR) valves are designed to provide an accurate and economical means of balancing system capacity and load requirements during "low" loads and/or while maintaining different evaporator conditions on multi-temperature evaporator systems. These valves control evaporator temperature by maintaining evaporator pressure. As the evaporator load increases the **ORI** valves will **O**pen on **R**ise of **I**nlet pressure above the valve's setting to provide more flow capacity to meet the evaporator load. When the evaporator load decreases the valves will modulate closed to maintain the pressure setting of the valve.

Sporlan offers a number of EPR valve types in various sizes, and with optional features to accommodate almost any industry requirement. For more complete information on any of the EPR valve types see your nearest Acal Sales Office or Sporlan Wholesaler.

APPLICATIONS:
- Maintain minimum evaporator temperature to avoid frost on air coils & provide improved humidity control
- Evaporator temperature control for food merchandisers (single & multiple evaporator systems)
- Evaporator temperature control on water chilling units

REQUIRED SIZING INFORMATION:
- Refrigerant type
- Evaporator design capacity
- Design evaporator temperature or minimum evaporator pressure
- Available pressure drop
- Allowable evaporator pressure change (only applies to direct acting models)

VALVE TYPES: ORIT-6 and ORIT-10

ORIT-10

FEATURES:
- Direct acting
- Adjustable
- Hermetic construction (no gaskets or seals)
- Corrosion resistant construction
- Inlet pressure tap (standard)
- Inlet strainer (standard on ODF models)

These direct acting EPRs are offered in two sizes. The direct acting design although economical requires an evaporator pressure change above the minimum evaporator pressure setting to provide the rated flow capacity. The nominal ratings are based on an 0.55 bar evaporator pressure change for the 0/3.45 bar(0/50 psig) adjustment range, and a 0.83 bar change for the 2.07/6.90 bar (30/100 psig) adjustment range. Valves should be selected for the desired maximum variation in evaporator pressure using the capacity multipliers below.

ALLOWABLE EVAPORATOR PRESSURE CHANGE – bar		0.14	0.28	0.41	0.55	0.69	0.83	0.97
CAPACITY MULTIPLIER	ORIT-6, 10-0/50	.3	.6	.8	1.0	1.2	1.3	1.4
	ORIT-6, 10-30/100	—	.2	.6	.7	.9	1.0	1.1

SPECIFICATIONS

VALVE TYPE	PORT SIZE - mm	ADJUSTMENT RANGE	CONNECTIONS
ORIT-6	19.1	**0/50** or 30/100 psig **0/3.45** or 2.07/6.90 bar	1/2 & 5/8 SAE Flare* 5/8, **7/8** & 1-1/8 **ODF Solder**
ORIT-10	30.9		7/8, 1-1/8 & **1-3/8 ODF Solder**

Standard features in **bold.**
*Not available with inlet strainer.

CAPACITIES – kW

Capacities are based on 38°C condensing temperature, 0°C subcooling, 6°C superheat 0.55 bar evaporator pressure change for 0/3.45 bar (0/50 psig) adjustment range, and a 0.83 bar evaporator pressure change for 2.07/6.90 bar (30/100 psig) adjustment range.

VALVE TYPE	EVAPORATOR TEMPERATURE °C	Saturated Pressure – bar (Reference)				REFRIGERANT											
						22			134a			401A			402A		
		REFRIGERANT				Pressure Drop Across Valve – bar											
		22	134a	401A	402A	0.1	0.4	0.7	0.1	0.4	0.7	0.1	0.4	0.7	0.1	0.4	0.7
ORIT-6	5°	4.83	2.48	2.52	6.39	3.85	7.16	8.75	2.89	5.01	5.60	3.01	5.24	5.89	3.31	6.22	7.71
	-5°	3.21	1.42	1.46	4.38	3.19	5.73	6.73	2.29	3.67	3.77	2.41	3.90	4.03	2.68	4.92	5.91
	-15°	1.95	0.63	0.66	2.81	2.58	4.39	4.79	1.76	2.45	2.45	1.88	2.66	2.66	2.13	3.75	4.28
	-25°	1.00	0.05	0.08	1.62	2.04	3.16	3.19	1.29	1.53	1.53	1.40	1.69	1.69	1.65	2.70	2.82
ORIT-10	5°	4.83	2.48	2.52	6.39	9.45	18.7	24.4	7.25	14.2	18.3	7.54	14.8	19.1	8.08	16.0	21.0
	-5°	3.21	1.42	1.46	4.38	7.88	15.5	20.2	5.83	11.3	14.4	6.13	11.9	15.2	6.60	13.0	17.0
	-15°	1.95	0.63	0.66	2.81	6.48	12.6	16.3	4.60	8.77	11.0	4.90	9.35	11.8	5.30	10.4	13.5
	-25°	1.00	0.05	0.08	1.62	5.23	10.1	12.8	3.55	6.58	8.01	3.83	7.12	8.71	4.18	8.12	10.4
VALVE TYPE	EVAPORATOR TEMPERATURE °C	Saturated Pressure – bar (Reference)				REFRIGERANT											
						404A			407C			502			507		
		REFRIGERANT				Pressure Drop Across Valve – bar											
		404A	407C	502	507	0.1	0.4	0.7	0.1	0.4	0.7	0.1	0.4	0.7	0.1	0.4	0.7
ORIT-6	5°	6.03	4.35	5.66	6.32	3.36	6.30	7.78	3.57	6.54	7.87	3.06	5.73	7.05	3.31	6.22	7.70
	-5°	4.12	2.77	3.88	4.34	2.71	4.94	5.90	2.87	5.04	5.75	2.50	4.55	5.41	2.68	4.90	5.90
	-15°	2.62	1.57	2.47	2.79	2.14	3.72	4.19	2.24	3.67	3.82	1.99	3.46	3.89	2.12	3.74	4.28
	-25°	1.49	0.70	1.40	1.61	1.65	2.66	2.74	1.71	2.44	2.44	1.56	2.50	2.58	1.64	2.68	2.80
ORIT-10	5°	6.03	4.35	5.66	6.32	8.23	16.3	21.3	8.79	17.3	22.6	7.50	14.8	19.4	8.08	16.0	21.0
	-5°	4.12	2.77	3.88	4.34	6.69	13.2	17.2	7.13	14.0	18.1	6.17	12.2	15.8	6.59	13.0	16.9
	-15°	2.62	1.57	2.47	2.79	5.35	10.5	13.6	5.70	11.1	14.2	4.99	9.78	12.7	5.28	10.4	13.4
	-25°	1.49	0.70	1.40	1.61	4.19	8.12	10.4	4.46	8.52	10.7	3.97	7.69	9.85	4.15	8.07	10.4

INSTALLATION – When installing ORIT's with solder connections, the internal parts should be protected by wrapping the valve with a wet cloth.

For complete information refer to Bulletin 90-20.

VALVE TYPES (S)ORIT-12, -15, and -20

SORIT-15

Listed
Certified

FEATURES:

- **High side pilot for improved temperature control and low ΔP operation**
- **Adjustable**
- **Optional solenoid "stop" feature to close valve during defrost**
- **Normally open design allows system evacuation without manual operator**

These EPRs are pilot operated using "high side" pressure and require a pilot supply connection from the compressor discharge to operate. They are designed to be "normally open" providing an unparalleled ability to operate with virtually no suction line pressure drop.

The pilot operated design does not require the "allowable evaporator pressure change" necessary with the direct acting models, and can be simply sized based on design evaporator temperature and available pressure drop across the valve at full load conditions.

SPECIFICATIONS

VALVE TYPE	PORT SIZE mm	ADJUSTMENT RANGE	STANDARD COIL RATINGS *MKC-1		CONNECTIONS ODF SOLDER inches
			Volts/Cycles	Watts	
(S)ORIT-12	19.8	0/100 psig 0/6.90 bar	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	1-1/8
(S)ORIT-15	25.4				1-3/8
(S)ORIT-20	33.3				1-5/8

*Available with junction box or conduit boss at no extra charge.
For voltages other than listed consult Bulletin 30-10.

CAPACITIES – kW*

Capacities are based on a 15°C liquid temperature, 0°C superheat at the evaporator, and 14°C superheat at the valve.

VALVE TYPE	EVAPORATOR TEMPERATURE °C	REFRIGERANT 22				134a				401A				401B			
		Pressure Drop Across Valve – bar															
		0.03	0.10	0.40	0.70	0.03	0.10	0.40	0.70	0.03	0.10	0.40	0.70	0.03	0.10	0.40	0.70
(S)ORIT-12	5	7.64	13.9	27.3	35.5	6.09	11.0	21.4	27.4	6.16	11.2	21.7	27.8	6.37	11.6	22.5	28.9
	-5	6.40	11.6	22.7	29.3	4.95	8.94	17.1	21.5	5.04	9.12	17.4	22.0	5.23	9.46	18.2	23.0
	-15	5.29	9.59	18.5	23.6	3.95	7.11	13.3	16.3	4.07	7.31	13.7	16.9	4.23	7.60	14.3	17.8
	-25	4.30	7.76	14.7	18.5	—	—	—	—	—	—	—	—	—	—	—	—
(S)ORIT-15	5	12.6	22.9	44.8	57.9	10.1	18.2	34.9	44.0	10.2	18.4	35.3	44.6	10.5	19.1	36.6	46.5
	-5	10.6	19.2	37.1	47.4	8.18	14.7	27.6	34.1	8.34	15.0	28.2	34.9	8.64	15.6	29.4	36.6
	-15	8.75	15.8	30.1	37.8	6.53	11.7	21.1	25.0	6.72	12.0	21.8	26.0	6.98	12.5	22.9	27.6
	-25	7.11	12.8	23.7	29.0	—	—	—	—	—	—	—	—	—	—	—	—
(S)ORIT-20	5	27.7	50.3	98.5	127	22.1	40.0	76.8	97.4	22.3	40.4	77.7	98.7	23.1	41.8	80.7	103
	-5	23.2	42.1	81.6	105	17.9	32.3	60.9	75.7	18.3	33.0	62.2	77.5	19.0	34.2	64.9	81.3
	-15	19.2	34.7	66.3	83.7	14.3	25.6	46.8	56.1	14.7	26.4	48.4	58.2	15.3	27.5	50.8	61.7
	-25	15.6	28.0	52.4	64.5	—	—	—	—	—	—	—	—	—	—	—	—

VALVE TYPE	EVAPORATOR TEMPERATURE °C	REFRIGERANT 402A				404A				502				507			
		Pressure Drop Across Valve – bar															
		0.03	0.10	0.40	0.70	0.03	0.10	0.40	0.70	0.03	0.10	0.40	0.70	0.03	0.10	0.40	0.70
(S)ORIT-12	5	7.22	13.1	25.9	33.8	7.41	13.5	26.6	34.6	6.53	11.9	23.4	30.5	7.17	13.0	25.7	33.5
	-5	5.97	10.8	21.3	27.6	6.11	11.1	21.7	28.1	5.43	9.87	19.3	25.0	5.92	10.8	21.1	27.3
	-15	4.87	8.82	17.2	22.0	4.96	8.99	17.4	22.4	4.45	8.07	15.6	20.1	4.82	8.74	17.0	21.8
	-25	3.90	7.05	13.5	17.1	3.96	7.16	13.7	17.3	3.59	6.49	12.4	15.6	3.86	6.97	13.4	16.9
(S)ORIT-15	5	11.9	21.7	42.6	55.2	12.3	22.3	43.7	56.5	10.8	19.6	38.4	49.7	11.9	21.6	42.3	54.8
	-5	9.87	17.9	34.9	44.8	10.1	18.3	35.6	45.7	8.98	16.3	31.6	40.5	9.79	17.8	34.6	44.4
	-15	8.05	14.6	28.0	35.5	8.20	14.8	28.4	36.0	7.36	13.3	25.5	32.2	7.97	14.4	27.7	35.2
	-25	6.45	11.6	21.9	27.2	6.55	11.8	22.1	27.4	5.93	10.7	20.0	24.7	6.38	11.5	21.6	26.9
(S)ORIT-20	5	26.2	47.6	93.5	121	26.9	48.9	95.9	124	23.7	43.0	84.4	109	26.0	47.3	92.8	121
	-5	21.6	39.3	76.6	98.8	22.1	40.2	78.2	101	19.7	35.7	69.5	89.4	21.5	39.0	76.0	97.9
	-15	17.6	31.9	61.6	78.5	18.0	32.5	62.6	79.5	16.1	29.2	56.1	71.2	17.5	31.6	61.0	77.7
	-25	14.1	25.5	48.3	60.4	14.4	25.9	48.8	60.8	13.0	23.4	44.2	54.9	14.0	25.2	47.8	59.6

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

Refrigerant Liquid Temperature °C →		-15	-10	-5	0	5	10	15	20	30	35	40
R-22	Correction Factor	1.21	1.17	1.14	1.11	1.07	1.04	1.00	0.96	0.91	0.87	0.84
R-134a		1.25	1.21	1.17	1.14	1.09	1.05	1.00	0.95	0.89	0.84	0.81
R-401A		1.22	1.18	1.14	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.84
R-401B		1.22	1.18	1.14	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.84
R-402A		1.31	1.26	1.21	1.16	1.11	1.06	1.00	0.94	0.86	0.80	0.75
R-404A		1.31	1.27	1.22	1.16	1.12	1.06	1.00	0.94	0.86	0.79	0.74
R-502		1.29	1.25	1.20	1.15	1.11	1.05	1.00	0.94	0.87	0.81	0.77
R-507		1.32	1.28	1.22	1.16	1.12	1.06	1.00	0.94	0.86	0.80	0.75

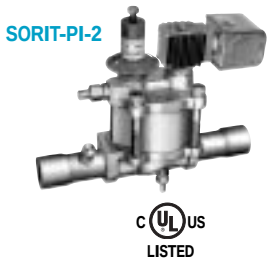
*ARI standard capacities are based on 38°C saturated liquid temperature. Use the correction factor for 40°C liquid temperature and the capacities at 5°C evaporator temperature to determine approximate ARI standard capacity ratings.

Example: The capacity of a (S)ORIT-12 using R-404A, evaporator temperature of -5°C, 0.1 bar pressure drop across the valve and a liquid temperature of 10°C, is equal to 11.1 × 1.06 = 11.8 kW.

INSTALLATION – When installing these valves with solder connections, the internal parts should be protected from overheating by wrapping the valve with a wet cloth.

For complete information refer to Bulletin 90-20-1.

VALVE TYPES (S)ORIT-PI-2, -3, -4, and -5



FEATURES:

- **Piloted internally (No high side connection required).**
- **Superior corrosion resistance.**
- **Optional solenoid "stop" feature. to close valve during defrost.**
- **Optional electric open feature for "two temperature operation".**
- **Manual lift stem (standard) to allow system evacuation.**

These EPRs are **P**iloted **I**nternally using the natural pressure drop across the valve to operate and do not require a "high side" pilot connection. Like the (S)ORIT valves, the pilot operated design does not require the "allowable evaporator pressure change" necessary with the direct acting models, and can be simply sized based on design evaporator temperature and available pressure drop across the valve at full load conditions.

SPECIFICATIONS

VALVE TYPE	PORT SIZE mm	ADJUSTMENT RANGE	STANDARD COIL RATINGS *MKC-1		CONNECTIONS ODF SOLDER inches
			Volts/Cycles	Watts	
(S)ORIT-PI-2	12.7	0/100 psig or 75/150 psig --- 0/6.90 bar or 5.17/10.3 bar	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	5/8, 7/8, 1-1/8, 1-3/8
(S)ORIT-PI-3	19.1				7/8, 1-1/8, 1-3/8, 1-5/8
(S)ORIT-PI-4	25.4				1-1/8, 1-3/8, 1-5/8, 2-1/8
(S)ORIT-PI-5	31.8				1-3/8, 1-5/8, 2-1/8

*Available with junction box or conduit boss at no extra charge. For voltages other than listed consult Bulletin 30-10.

CAPACITIES – kW*

Capacities are based on a 15°C liquid temperature, 0°C superheat at the evaporator and 14°C superheat at the valve.

VALVE TYPE	EVAPORATOR TEMPERATURE °C	REFRIGERANT 22				134a				401A				401B			
		Pressure Drop Across Valve – bar															
		0.03	0.1	0.4	0.7	0.03	0.1	0.4	0.7	0.03	0.1	0.4	0.7	0.03	0.1	0.4	0.7
(S)ORIT-PI-2	5	2.78	8.66	20.3	27.6	2.22	6.92	16.6	20.9	2.24	6.99	16.8	21.2	2.32	7.23	17.5	22.1
	-5	2.33	7.26	17.7	22.6	1.81	5.63	13.1	16.1	1.84	5.73	13.4	16.5	1.91	5.94	14.0	17.3
	-15	1.93	6.01	14.4	17.9	1.45	4.51	9.99	11.7	1.49	4.63	10.3	12.1	1.54	4.81	10.9	12.9
	-25	1.57	4.90	11.3	13.6	—	—	—	—	—	—	—	—	—	—	—	—
(S)ORIT-PI-3	5	3.55	20.3	40.1	53.6	2.84	16.3	32.3	40.9	2.87	16.5	32.7	41.4	2.96	17.0	33.9	43.2
	-5	2.98	17.1	34.3	44.0	2.31	13.3	25.6	31.8	2.35	13.6	26.2	32.5	2.44	14.1	27.3	34.1
	-15	2.47	14.2	27.9	35.2	1.85	10.7	19.7	23.5	1.90	11.0	20.3	24.4	1.97	11.4	21.3	25.8
	-25	2.01	11.6	22.0	27.1	—	—	—	—	—	—	—	—	—	—	—	—
(S)ORIT-PI-4	5	7.72	27.3	54.6	72.1	6.17	21.8	43.5	55.5	6.23	22.0	44.0	56.2	6.44	22.7	45.6	58.5
	-5	6.48	22.9	46.1	59.4	5.02	17.7	34.6	43.4	5.11	18.0	35.4	44.5	5.30	18.7	36.8	46.5
	-15	5.36	18.9	37.6	47.8	4.02	14.2	26.8	32.6	4.13	14.6	27.7	33.8	4.29	15.1	29.0	35.7
	-25	4.36	15.4	29.8	37.2	—	—	—	—	—	—	—	—	—	—	—	—
(S)ORIT-PI-5	5	22.0	42.2	83.1	108	17.6	33.6	65.2	83.6	17.7	34.0	66.0	84.7	18.3	35.1	68.4	88.0
	-5	18.4	35.4	69.1	89.3	14.3	27.2	52.1	65.8	14.6	27.7	53.2	67.3	15.1	28.8	55.4	70.3
	-15	15.3	29.2	56.4	72.1	11.4	21.6	40.5	49.8	11.8	22.3	41.7	51.6	12.2	23.2	43.7	54.3
	-25	12.4	23.6	44.9	56.4	—	—	—	—	—	—	—	—	—	—	—	—

VALVE TYPE	EVAPORATOR TEMPERATURE °C	REFRIGERANT 402A				404A				502				507			
		Pressure Drop Across Valve – bar															
		0.03	0.1	0.4	0.7	0.03	0.1	0.4	0.7	0.03	0.1	0.4	0.7	0.03	0.1	0.4	0.7
(S)ORIT-PI-2	5	2.62	8.18	19.0	26.4	2.70	8.40	19.6	27.0	2.38	7.40	17.2	23.7	2.61	8.13	18.9	26.2
	-5	2.17	6.77	15.9	21.4	2.22	6.93	16.3	21.8	1.98	6.16	14.4	19.3	2.15	6.71	15.7	21.2
	-15	1.77	5.52	13.4	16.9	1.81	5.63	13.6	17.1	1.62	5.05	12.2	15.3	1.76	5.47	13.2	16.7
	-25	1.43	4.43	10.4	12.8	1.44	4.50	10.5	12.9	1.31	4.08	9.52	11.7	1.41	4.38	10.3	12.7
(S)ORIT-PI-3	5	3.36	19.1	37.7	51.0	3.45	19.7	38.7	52.3	3.04	17.3	34.1	46.0	3.33	19.0	37.4	50.7
	-5	2.78	15.9	31.3	41.5	2.84	16.3	32.0	42.3	2.53	14.5	28.5	37.6	2.75	15.8	31.0	41.2
	-15	2.27	13.0	25.9	33.0	2.31	13.3	26.3	33.4	2.07	11.9	23.6	29.9	2.24	12.9	25.6	32.6
	-25	1.82	10.5	20.3	25.3	1.85	10.7	20.5	25.5	1.67	9.65	18.6	23.1	1.80	10.4	20.1	25.0
(S)ORIT-PI-4	5	7.29	25.8	51.6	68.6	7.49	26.5	53.0	70.3	6.60	23.3	46.7	61.8	7.24	25.6	51.2	68.1
	-5	6.04	21.3	42.7	55.9	6.18	21.8	43.7	57.1	5.49	19.4	38.8	50.7	5.99	21.1	42.3	55.5
	-15	4.92	17.4	34.8	44.6	5.02	17.7	35.4	45.3	4.51	15.9	31.8	40.6	4.88	17.2	34.5	44.2
	-25	3.95	13.9	27.4	34.6	4.01	14.2	27.7	34.9	3.64	12.8	25.1	31.5	3.91	13.8	27.1	34.2
(S)ORIT-PI-5	5	20.8	39.9	78.8	103	21.3	41.0	80.9	105	18.8	36.1	71.2	92.7	20.6	39.6	78.3	102
	-5	17.2	33.0	64.7	84.0	17.6	33.7	66.1	85.7	15.6	30.0	58.8	76.1	17.0	32.7	64.2	83.3
	-15	14.0	26.8	52.2	67.2	14.3	27.3	53.1	68.2	12.8	24.5	47.7	61.1	13.9	26.6	51.7	66.6
	-25	11.3	21.5	41.2	52.3	11.4	21.8	41.7	52.8	10.4	19.7	37.8	47.7	11.1	21.2	40.8	51.7

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

Refrigerant Liquid Temperature °C →		-15	-10	-5	0	5	10	15	20	30	35	40
R-22	Correction Factor	1.21	1.17	1.14	1.11	1.07	1.04	1.00	0.96	0.91	0.87	0.84
R-134a		1.25	1.21	1.17	1.14	1.09	1.05	1.00	0.95	0.89	0.84	0.81
R-401A		1.22	1.18	1.14	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.84
R-401B		1.22	1.18	1.14	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.84
R-402A		1.31	1.26	1.21	1.16	1.11	1.06	1.00	0.94	0.86	0.80	0.75
R-404A		1.31	1.27	1.22	1.16	1.12	1.06	1.00	0.94	0.86	0.79	0.74
R-502		1.29	1.25	1.20	1.15	1.11	1.05	1.00	0.94	0.87	0.81	0.77
R-507		1.32	1.28	1.22	1.16	1.12	1.06	1.00	0.94	0.86	0.80	0.75

*ARI standard capacities are based on 38°C saturated liquid temperature. Use the correction factor for 40°C liquid temperature and the capacities at 5°C evaporator temperature to determine approximate ARI standard capacity ratings.

Example: The capacity of a (S)ORIT-PI-3 using R-22, evaporator temperature of -15°C, 0.1 bar pressure drop across the valve and a liquid temperature of 10°C, is equal to 14.2 × 1.04 = 14.8 kW.

INSTALLATION – When installing these valves with solder connections, the internal parts should be protected from overheating by wrapping the valve with a wet cloth.

For complete information refer to Bulletin 90-20-2 and 90-20-2A.

ELECTRONIC TEMPERATURE CONTROL SYSTEMS

Sporlan offers two methods of electronic evaporator temperature and load control – the CDS series step motor Electric Evaporator Pressure Control (EEPR) and SDR series step motor Electric Discharge Bypass Valve (EDBV). Both valve series can be controlled, with the proper algorithm and testing, by a third party, or with the use of a Sporlan TCB interface/control board. All valves are provided with a 305 cm weatherproof power cable with stripped ends for easy connection. Cable lengths other than standard are available on special order.


CDS-16

CDS-9, CDS-16, and CDS-17

The CDS valves are designed for precise and energy efficient control of evaporator temperatures. Proper temperature is obtained by regulating refrigerant flow in the evaporator in response to signals generated by an electronic controller and sensor combination. The valves are built around balanced ports which allow input power of only 4 watts, less than one quarter of the power used by older, heat motor and analog designs. When not actively stepping, power to the motor is removed for further energy savings. The 12 VDC bipolar step motors coupled to the integral gear reduction system, give the valves unsurpassed accuracy and repeatability over the entire operating range.

Because the valves are powered by an external controller, no pilot lines or high to low side bleeds are required. When properly applied, the CDS valves and controllers can replace standard mechanical evaporator pressure regulator (EPR) valves, suction stop solenoid valves, and conventional thermostats. Since these valves have a direct acting motor, they can be sized for minimal pressure drop.

The simple cartridge design permits all moving parts to be replaced as a unit, leaving the valve body in the line. This reduces the chance of leaks developing, and allows maintenance or repair without unsweating the entire valve.

The CDS-9 was designed as a drop in replacement for the older CDS-8 valves now installed in many refrigerated cases. The CDS-9 can be used in place of the CDS-8 with no modifications to the electronic controller. The capacity of the CDS-9 when used with an older controller is the same as the CDS-8.

Sporlan CDS valves are currently available in nominal R-22 capacities from 17 to 123 kW. The capacity tables show actual capacities at specific conditions.

SPECIFICATIONS

TYPE	CONNECTIONS ODF SOLDER – inches	CONFIGURATION	CABLE LENGTH cm	CABLE ENDS
CDS-9	5/8, 7/8, 1-1/8	Straight Through or Angle	305*	S-Stripped and Tinned
CDS-16	1-3/8	Angle		
CDS-17	1-3/8, 1-5/8	Straight Through		

*Other lengths available.

CAPACITIES – kW

TYPE	EVAPORATOR TEMPERATURE °C	REFRIGERANT																	
		22						134a						404A/507					
		PRESSURE DROP ACROSS VALVE Δp bar																	
		0.03	0.07	0.14	0.21	0.34	0.69	0.03	0.07	0.14	0.21	0.34	0.69	0.03	0.07	0.14	0.21	0.34	0.69
CDS-9	5˚	16.9	23.8	33.4	40.7	51.8	70.8	13.4	18.9	26.4	31.9	40.2	53.2	13.0	18.3	25.6	31.0	39.0	51.6
	0˚	15.3	21.6	30.3	36.8	46.7	63.4	12.0	16.8	23.5	28.3	35.4	47.6	11.6	16.3	22.8	27.4	34.3	46.2
	-5˚	13.9	19.5	27.3	33.1	41.9	56.3	10.6	14.9	20.7	24.9	30.8	39.3	10.3	14.5	20.1	24.1	29.9	38.1
	-10˚	12.5	17.5	24.5	29.6	37.3	49.5	9.4	13.1	18.1	21.7	26.6	32.8	9.1	12.7	17.6	21.0	25.8	31.9
	-15˚	11.2	15.6	21.8	26.3	33.0	43.0	8.2	11.4	15.8	18.7	22.6	26.7	8.0	11.1	15.3	18.1	21.9	25.9
	-25˚	9.9	13.9	19.3	23.2	28.8	36.8	7.2	9.9	13.5	15.9	18.9	20.9	7.0	9.6	13.1	15.5	18.3	20.2
	-30˚	8.8	12.3	17.0	20.3	25.0	30.8	6.2	8.5	11.5	13.3	15.4	16.0	6.0	8.3	11.1	13.0	14.9	15.5
	-35˚	7.7	10.8	14.8	17.5	21.2	25.0	5.3	7.3	9.6	11.0	12.0	12.1	5.2	7.1	9.3	10.6	11.6	11.7
CDS-16	5˚	28.0	39.0	54.4	66.2	84.6	117	22.4	31.3	43.6	53.0	66.2	84.0	25.7	35.8	50.0	60.7	77.7	109
	0˚	25.5	35.6	49.6	60.3	77.1	103	20.1	28.0	39.1	47.5	57.7	71.1	23.2	32.3	45.2	54.9	70.2	96.5
	-5˚	23.1	32.3	45.0	54.7	70.0	90.6	17.9	25.0	34.9	41.1	49.8	58.7	20.9	29.1	40.6	49.3	63.1	84.3
	-10˚	20.9	29.2	40.7	49.4	61.7	78.4	15.9	22.2	31.0	35.5	42.1	46.8	18.6	26.1	36.4	44.2	56.3	72.8
	-15˚	18.8	26.2	36.6	44.5	54.0	66.5	14.0	19.6	26.0	30.2	35.0	36.7	16.6	23.2	32.4	39.4	49.0	61.9
	-25˚	16.8	23.5	32.7	38.5	46.6	55.1	12.3	17.2	22.1	25.3	28.1	28.4	14.8	20.6	28.7	34.9	42.2	51.5
	-30˚	15.0	20.9	29.2	33.3	39.6	44.0	10.8	15.0	18.5	20.6	21.7	21.7	13.0	18.2	25.4	29.7	35.8	41.6
	-35˚	13.3	18.5	24.4	28.4	32.8	34.4	9.3	11.9	15.1	16.2	16.4	16.4	11.4	15.9	21.5	25.2	29.8	32.4
CDS-17	5˚	29.2	40.7	56.6	68.7	87.6	125	23.5	32.7	45.5	55.2	71.0	94.0	27.1	37.7	52.5	63.7	81.3	119
	0˚	26.6	37.1	51.6	62.6	79.9	112	21.1	29.3	40.8	49.5	62.5	81.4	24.5	34.1	47.4	57.6	73.5	105
	-5˚	24.2	33.7	46.9	56.9	72.6	99.5	18.8	26.2	36.4	43.9	54.5	69.4	22.1	30.7	42.7	51.8	66.2	93.2
	-10˚	21.9	30.5	42.4	51.4	65.9	87.5	16.7	23.3	32.4	38.2	47.0	58.1	19.8	27.5	38.3	46.5	59.3	81.7
	-15˚	19.7	27.4	38.2	46.3	58.3	76.0	14.8	20.5	27.8	33.0	40.0	47.2	17.7	24.6	34.2	41.5	53.4	70.8
	-25˚	17.7	24.6	34.2	41.0	51.0	65.0	13.0	18.1	23.9	28.1	33.4	36.9	15.7	21.8	30.4	36.8	46.5	60.6
	-30˚	15.7	21.9	30.5	35.9	44.1	54.4	11.3	15.8	20.3	23.6	27.2	28.2	13.8	19.2	26.8	32.3	40.1	51.0
	-35˚	13.9	19.4	26.1	31.0	37.5	44.2	9.9	12.8	17.0	19.3	21.2	21.3	12.1	16.9	23.5	27.7	34.0	41.9

Ratings based on 15˚C liquid and 14˚C superheated vapor.

ORDERING INSTRUCTIONS

When ordering complete valves, specify valve type, connection size, configuration, cable length, and cable ends.

Example: CDS-16, 1-3/8 ODF-10-S.

For complete information refer, to Bulletin 100-40.

SDR-3 and SDR-4

SDR series valves are Step Discharge Regulators, or electrically operated discharge gas bypass valves. Unlike previous mechanical discharge gas bypass valves that only control a downstream pressure, the SDR series offers direct temperature control of air or liquid. The valves use the same 12 VDC bipolar step motor as all other Sporlan step motor operated valves, including the CDS valves on page 46. Balanced pistons and ports, uniquely characterized for hot gas flow, have been incorporated into the design. Seating materials, motors, and gears have all been laboratory and field proven in high temperature gas applications.

With capacities up to 88 kW nominal R-22, the SDR series is suitable for use in small process chillers and environmental chambers, as well as large direct expansion air conditioning applications. The valves may be controlled by third party controllers or by the Sporlan TCB interface/controller shown below. SDR valves are normally installed in the same manner as mechanical discharge gas bypass valves, in a bypass branch of the discharge gas line. The valves may be piped to feed into the evaporator at the distributor, downstream of the evaporator, or at the compressor suction. Contact Sporlan Valve Company for additional piping recommendations. When applied with a third party controller or DDC building management system, the SDR can be used with the TCB as an interface to the existing system. For stand-alone control, the SDR and TCB with sensor will allow close temperature control of the air or liquid stream. See the section below for information on the TCB.

The SDR valves are tight seating and will act as solenoid valves for shut off.

SPECIFICATIONS

TYPE	CONNECTIONS ODF SOLDER – inches	CONFIGURATION	CABLE LENGTH cm	CABLE ENDS
SDR-3	3/8, 1/2, 5/8	Angle	305*	S-Stripped and Tinned
SDR-4	7/8, 1-1/8	Straight Through		

*Other lengths available.

CAPACITIES IN kW

REFRIGERANT	VALVE TYPE	MINIMUM ALLOWABLE EVAPORATOR TEMPERATURE AT REDUCED LOAD °C																	
		5°			-3°			-7°			-18°			-29°			-40°		
		CONDENSING TEMPERATURE °C																	
		26	38	49	26	38	49	26	38	49	26	38	49	26	38	49	26	38	49
22	**SDR-3**	18.9	24.2	30.5	18.9	23.5	29.1	18.6	23.5	28.4	17.2	21.7	26.6	16.1	20.3	24.9	15.1	19.3	23.8
	SDR-4	62.7	88.2	122	67.9	92.4	125	69.3	98.0	127	73.2	98.4	130	75.6	100	131	77.0	104	132
134a	**SDR-3**	13.3	16.5	19.3	12.6	15.4	18.2	12.3	14.7	17.9	10.9	13.3	16.5	9.8	12.3	15.4	9.1	11.6	14.7
	SDR-4	46.6	64.4	83.3	49.7	66.9	85.4	50.8	67.6	86.1	53.2	69.7	87.5	54.6	70.7	88.6	55.3	71.4	89.3
404/507	**SDR-3**	21.0	25.6	30.1	22.1	25.9	29.8	21.4	25.2	29.4	19.6	23.5	27.7	17.5	21.0	26.3	16.8	20.3	25.2
	SDR-4	69.7	91.7	111	80.9	104	126	83.0	105	127	87.5	109	130	85.1	104	123	93.1	115	136
407C	**SDR-3**	18.9	23.1	28.7	18.2	23.1	27.3	17.9	21.7	27.0	16.5	20.3	25.2	15.1	18.9	23.8	14.0	17.9	22.8
	SDR-4	64.1	87.5	119	69.3	97.3	123	71.1	96.3	125	75.6	97.3	128	78.4	100	132	80.5	103	135

NOTE: Capacities are based on discharge temperature 28°C above isentropic compression, 38°C condensing temperature, 0°C subcooling, 14°C superheat at the compressor and includes both the hot gas bypassed and the liquid refrigerant for desuperheating, regardless of whether the liquid is fed through the system thermostatic expansion valve or auxiliary desuperheating expansion valve.

TCB TEMPERATURE CONTROL BOARD / INTERFACE BOARD

The TCB interface/controller was designed to allow all Sporlan step motors to be modulated in response to an externally generated signal. The TCB will accept a 4-20 milliamp, 0-10 volt DC, transistor-transistor logic (TTL) or 120 volt AC pulse width modulated (PWM) signal and will stroke the valve in proportion to that signal. As an interface board, the TCB will allow use of the CDS or SDR valves with an existing DDC system or other generic temperature controller for hot gas bypass, evaporator temperature, or reclaim applications. While the TCB will also control Sporlan's line of SEI and SEH step motor electric expansion valves, an external signal must be generated in response to superheat and not simply temperature. Please contact Sporlan Valve Company for more information.

When the TCB is purchased with optional set point potentiometer and sensor, the TCB becomes a stand alone single point temperature control for the CDS or SDR valves. The sensor is installed in the air stream or affixed to the pipe containing the liquid to be controlled. The potentiometer is set to the temperature desired, and the TCB will modulate the valve to maintain tight temperature control. The TCB can be configured to "close on rise" or "open on rise" and requires only an external 24 volt AC 40 VA power source. The TCB incorporates separate "pump down", "open valve", and "close valve" contacts for use with external relays to allow even greater control choices. The board is 8.89 cm by 10.16 cm and has screw terminals for easy connections. The TCB should be mounted in a control panel or other enclosure.

SMA-12 STEP MOTOR ACTUATOR

The SMA-12 is an instrument designed to help diagnose systems with step motor valves by proving operation of the step motor.

The unit is powered by two 9 volt alkaline batteries and will power any standard 12-volt DC bipolar step motor. Step rate is selectable at 1, 50, 100, or 200 steps per second and will stroke the motor in both the open and closed directions. Green lamps indicate continuity of the motor windings and battery power, and binding posts are provided for quick connection of the motor leads.

In the event of a controller failure, the SMA-12 can be used to manually open or close the valve or manually step it to any position.

The SMA-12 is the basic troubleshooting tool for all step motor valve operated systems.

ITEM NO.	DESCRIPTION	CONNECTOR
953276	SMA-12	Binding Post
953277	SMA-12 w/Pigtail	Packard Pigtail Item #958112

For complete information refer to Bulletin 100-9, 100-50-1 and 100-60.

OIL LEVEL CONTROL SYSTEM

Sporlan's Oil Level Control System Components were developed to offer the refrigeration industry an oil level control system of the highest quality.

The heart of the system is the Oil Level Control which, when matched with the Oil Reservoir and Oil Differential Check Valve, maintains a minimum oil level in the compressor crankcase during all phases of system operation.

OL-1CH

OIL LEVEL CONTROLS

Listed

Underwriter's Laboratories Inc. Recognized Guide No. SFJ02, File No. SA5460

The purpose of the Sporlan Oil Level Control is to regulate the flow of oil to the compressor crankcase to maintain a minimum oil level as specified by the compressor manufacturer for any given application.

The Oil Level Control is adjustable between 1/2 sightglass and 1/4 sightglass at any pressure differential between 0.34 and 2.06 bar with the OL-1CH, OL-1FH, OL-1HH-6 or OL-1NH-2 and between 2.06 and 6.20 bar with the OL-2CH, OL-2FH, OL-2HH-6, OL-2NH-2. The new compact design OL-60XH has a wide range control and serves as an alternative to OL-1 and OL-2 oil level controls. As the level of oil is lowered in the compressor crankcase by being pumped out, the float of the Oil Level Control is lowered and opens a needle valve allowing oil to flow from the oil reservoir to the compressor crankcase.

OIL RESERVOIR Type OR-1-1/2

OR-1-1/2

The Sporlan Oil Reservoir (OR-1-1/2) is a holding vessel to contain the oil that is not within the crankcase, the oil separator, or in circulation. The OR-1-1/2 has an inlet and an outlet service valve so it may be isolated from the rest of the system, or the oil supply from the oil reservoir to the Oil Level Control can be eliminated for service.

The model OR-1-1/2 also contains two sightglasses so the maximum and minimum oil level can be observed. The sightglasses are placed on the shell symmetrically so approximately 1 litre of oil is contained between the lower sightglass and the bottom of the shell; approximately 3.8 litre is contained between the sightglasses; and close to 1 litre is contained between the upper sightglass and the top of the shell. This allows the shell to be mounted vertically with either service valve on top.

Depending on which end of the OR-1-1/2 Oil Reservoir is mounted to the top, the oil service valves will be pointing either right or left for piping convenience.

OIL DIFFERENTIAL CHECK VALVE
Types OCV-5, OCV-10, and OCV-20

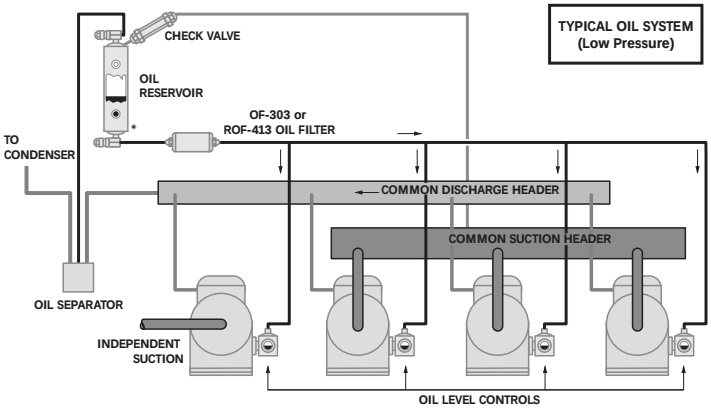
OCV-20

The Sporlan Oil Level Differential Check Valve (OCV) is installed on the 3/8″ SAE fitting on top of the OR-1-1/2, and allows pressure to be relieved from the reservoir to the suction as required to maintain a pressure in the reservoir at a preset level above the suction pressure. The pressure differential created by the OCV assures oil flow from the reservoir to the Oil Level Control providing there is adequate oil in the reservoir.

The OCV will only relieve pressure from the reservoir in excess of its fixed set point. Systems with fluctuating suction pressure as a result of compressor unloaders, staging or other suction line controls must be fitted with an OCV with a differential greater than the suction pressure fluctuation to assure oil flow from the OR-1-1/2 through the oil level control to the compressor crankcase.

Sporlan offers OCV's with a 0.34, 0.69, and 1.37 bar fixed differential setting. However, Sporlan recommends the use of an OCV-20 on all field built up applications.

OIL DIFFERENTIAL CHECK VALVE		
MODEL	**PRESSURE DIFFERENTIAL SETTING**	
OCV-5	5 psi	0.34 bar
OCV-10	10 psi	0.69 bar
OCV-20	20 psi	1.37 bar



OIL LEVEL CONTROLS

MODEL NO.	MAXIMUM ΔP bar	WITH OIL EQUALISER FITTING	COMPRESSOR ADAPTOR	CONFIGURATION TOP VIEW
OL-1CH	2.0	NO	See Page 49 for Compressor Adaptors	
OL-2CH	6.2			
OL-1FH	2.0	YES		
OL-2FH	6.2			
OL-1HH-6	2.0	NO		
OL-2HH-6	6.2			
OL-1NH-2*	2.0	YES		
OL-2NH-2	6.2			
OL-60XH	6.2	YES		
OL-60XH-1		NO		

NOTE: " H" designation indicates 27.5 bar maximum system test pressure, i.e. OL-1CH, etc.

*Replaces OL-1FH-2

For complete information refer to Bulletin 110-10 and 110-10-1.

COMPRESSOR ADAPTORS

COMPRESSOR MANUFACTURER	COMPRESSOR MODEL NUMBER	COMPRESSOR ATTACHMENT PATTERN	SPORLAN ADAPTOR KIT NO.	SEALING METHOD	SIGHTGLASS
Bitzer	2U3-2N5	4 Bolt, 50mm B.C.	AOL-BI	Use seal provided	Use sightglass from compressor
	4Z5-4N20				
	4J13-6F40				
	6E..., 6D...	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1		
Bock	HA3-5, HG3-5, AM/F2-5	4 Bolt, 50mm B.C.	AOL-BO	Use Teflon tape	Use sightglass provided
	HA8, HG6				
	F...	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1	Use seal provided	Use sightglass from compressor
Bristol	—	23.8 mm (15/16") – 20 Thread	AOL-BR/TR		Use sightglass provided
Carrier	EA, ER, 6E Front	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1		Use sightglass from compressor
	DA, DR, 5F, 5H, 6D, 6E	38.1 mm (1-1/2") – 18 Thread	AOL-C		Use sightglass provided
Copeland	Over 17 kW (5 Ton)	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1		Use sightglass from compressor
	Under 3.7 kW (5HP)	28.6 mm (1-1/8") – 12 Thread	AOL-A	Use seal from compressor	Use sightglass provided
	8R, 3D Front, 2D, 4D, 6D	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1	Use seal provided	Use sightglass from compressor
	8D	3 Bolt, 47.6 mm B.C. (1-7/8" B.C.)	Contact Sporlan		
Dorin	4 cyl-15 HP	3 Bolt, 47.6 mm B.C. (1-7/8" B.C.)	Contact Sporlan		
Dunham-Bush	Big 4	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1	Use seal provided	Use sightglass from compressor
Frascold	All models	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1		
Maneurop	MT..., LT...	28.6 mm (1-1/8") – 18 Thread	AOL-MA/TE		Use sightglass provided
Prestcold	E, C	42 mm Thread	AOL-P	Use Teflon tape	
Tecumseh	P, R, S, PA, RA, SA, CK, CM, CH, CG	28.6 mm (1-1/8") – 12 Thread	AOL-A	Use seal from compressor	
	—	28.6 mm (1-1/8") – 18 Thread	AOL-MA/TE	Use seal provided	
Trane	M, R	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1		Use sightglass from compressor
	K	3/4" NPT	AOL-K-1	Use Teflon tape	Use sightglass provided
	—	23.8 mm (15/16") – 20 Thread	AOL-BR/TR	Use seal provided	
York	GC, GS, JS	3 Bolt, 47.6mm B.C. (1-7/8" B.C.)	AOL-R-1		Use sightglass from compressor
	SPORLAN SIGHTGLASS Provided with all adaptor kits except the AOL-R-1, but can be purchased separately in kit form.		S-OL KIT	Kit includes; sightglass, quad ring, O-ring, 3 screws, and 3 locknuts.	

SERIES OIL FILTER

ROF-413

C UL US LISTED

OF-303

DESIGN BENEFITS

- **Virtually eliminates the need for oil changes due to suspended particulate in circulation.**
- **Unsurpassed filtering efficiency**
  99% removal of 3 micron sized particles
  98% removal of 2 micron sized particles.
- **Element utilizes a pleated design for maximum surface area.**
- **Unsurpassed filtration capacities.**
- **High flow capacities with low pressure drop.**
- **Filter element utilizes an O-ring seal.**
- **Inert microglass filter material insures lubricant compatibility.**
- **Dimensions allow for easy replacement of current filter.**

OFE-1

The Sporlan Catch-All or SF-283-F Suction Filter has been used for many years as an oil filter in refrigeration rack systems with mineral or alkylbenzene as the lubricant of choice.

With the use of new polyolester (POE) oils, system chemistry changed. Unlike mineral and alkylbenzene oils, POE oil has solvent-like tendencies. POE oil has the ability to suspend and recirculate small, solid contaminants left from system installation or retrofit. Analysis of POE oil samples taken from actual systems have shown the oil to suspend and recirculate a high concentration of 2-20 micron sized particles, with the largest percentage between 2-10 microns. Although some particles are smaller than bearing tolerances, studies have shown bearing life can still be affected. Bearing wear depends upon the size, hardness, and concentration of particles in circulation. To effectively remove these small particles, Sporlan developed a new type of oil filter.

The **OF Series Oil Filters** are designed to be 99% efficient in removing 3 micron sized particles and yet have sufficient flow capacity at a low pressure drop.

The unsurpassed filtration ability of the **OF Series Oil Filters** will assure clean POE, mineral, or alkylbenzene oil is returned to the compressors. Clean oil insures proper operation of the oil level control and minimizes compressor wear.

The Sporlan **OF Series Oil Filters** were designed to virtually eliminate the need for oil changes resulting from suspended solid contaminants in circulation.

The OF-303-BP illustration below shows the normal flow pattern of oil through the filter.

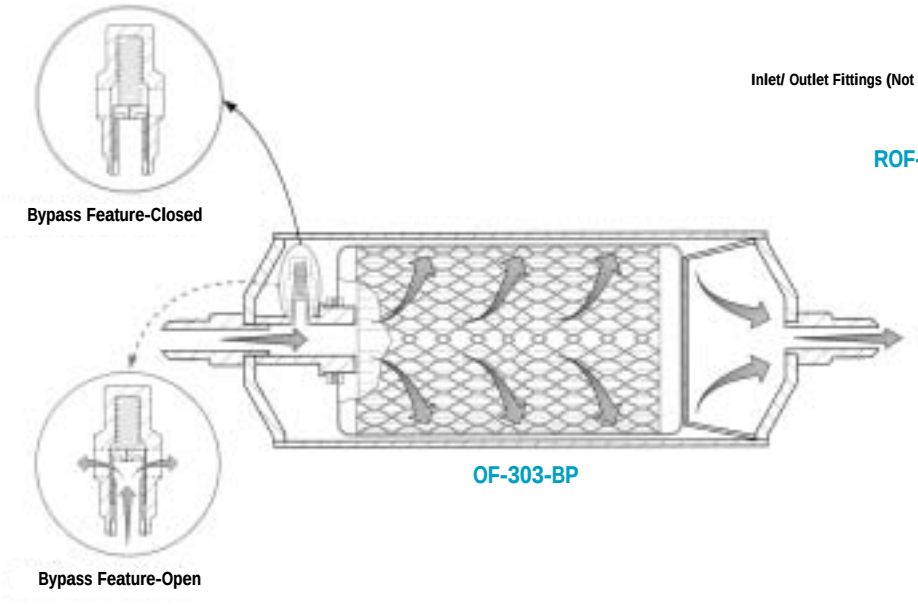
The design of the OF-303 is similar to the OF-303-BP, but the OF-303 is supplied **without** the bypass feature. Either filter can be installed in a horizontal or vertical position.

The ROF-413 uses a replaceable filter element OFE-1.

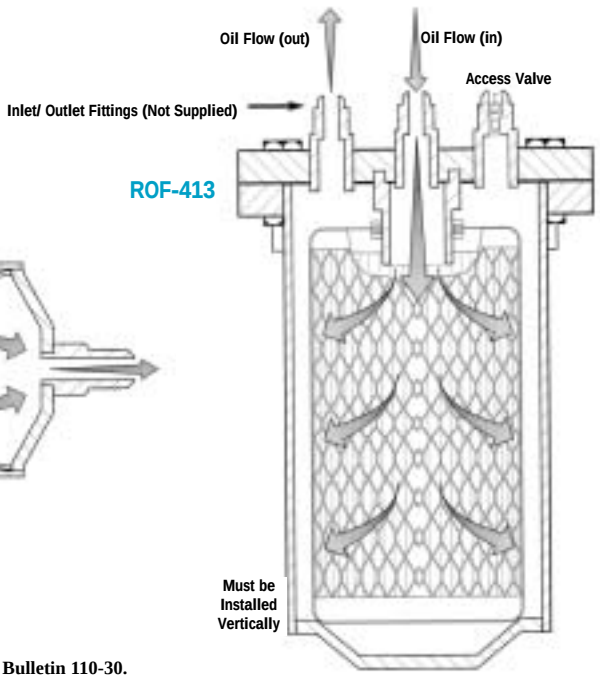
SPECIFICATIONS

UNIT	DESCRIPTION	CONNECTIONS inches	FILTERING AREA cm^2	OVERALL LENGTH mm	SHELL DIAMETER mm	UL RATED WORKING PRESSURE – bar
OF-303	Oil Filter	3/8″ SAE Flare	2097	246	76	34.47
OF-303-BP	Oil Filter with Bypass Feature			270		
ROF-413*	Replaceable Oil Filter	Field Supplied		206	89	27.58

*An OFE-1 Replaceable Filter Element must be purchased separately. The A-175-1 mounting bracket can be used for the ROF-413 Replaceable Oil Filter.
NOTE: The OF Series Oil Filters are not suitable for use on ammonia systems.



OF-303-BP



For complete information refer to Bulletin 110-30.

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