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Electric Expansion Valves

Bulletin 100-20-1, January 2011

Parker SPORLAN

ENGINEERING YOUR SUCCESS.

This supplement to Bulletin 100-20 (September 2008) details the updated Sporlan series of Electric Expansion Valves. Built on a foundation of more than 75 years of refrigerant flow control designs, and over 20 years of experience in electronic superheat control, these valves are a perfect fit for today's demanding applications.

From the unique uni-body construction and quad-position cable found on the SER-B through SER-D, to the multiple body configurations and built-in sight glass on the SERI-G through SERI-L, these valves are designed for flexibility, reliability, and ease of use.

Equipped with advanced pin designs and Digital Linear Actuators, Sporlan Electric Expansion Valves have minimal energy requirements, without sacrificing performance. And with nine valves that cover a capacity range of 400 Tons, valve selection and SKU reduction are simplified.

Available Connections

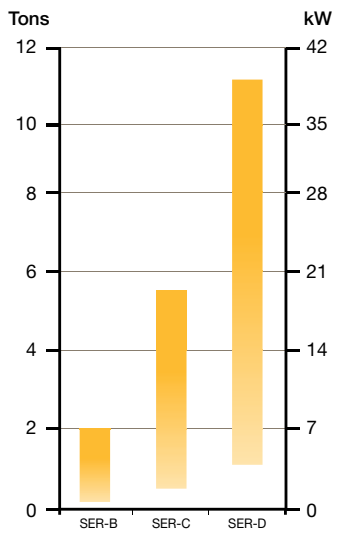
Valve Type	INLET - Inches (ODF)	OUTLET - Inches (ODF)	Configuration	Cable Length		Cable Ends
				Feet	Meters	
SER-B*	1/4, 3/8	3/8, 1/2, 5/8	Angle	10, 20	3, 6	S - Stripped and Tinned
SER-C*	1/4, 3/8	3/8, 1/2, 5/8	Angle			
SER-D*	3/8, 1/2, 5/8	1/2, 5/8, 7/8, 1-1/8	Straight Through Offset			
SERI-G*	5/8, 7/8	1/2, 5/8, 7/8, 1-1/8	Angle or Straight Through Offset	10, 40	3, 12	
SERI-J*	7/8, 1-1/8	7/8, 1-1/8, 1-3/8				
SERI-K†	1-1/8	7/8, 1-1/8, 1-3/8, 1-5/8				
SERI-L†	1-1/8, 1-3/8	1-1/8, 1-3/8, 1-5/8				
SEHI-175	1-1/8, 1-3/8, 1-5/8	2-1/8	Straight Through Offset	10, 20, 30, 40	3, 6, 9, 12	
SEHI-400	1-5/8, 2-1/8, 2-5/8	1-5/8, 2-1/8, 2-5/8, 3-1/8 (ODM)	Angle			

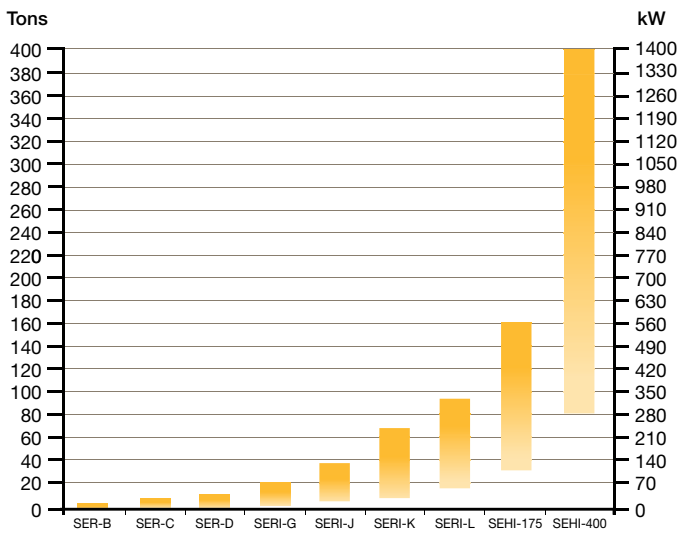
*Suitable for bi-directional applications.
† Bi-sealing, reduced flow in reverse direction.

Specifications

Valve	SER-B, -C, -D	SERI-G, -J, -K, -L	SEHI-175	SEHI-400
Motor Type	2 phase, bipolar wet motor			
Compatible Refrigerant	All common CFC, HCFC and HFC refrigerants, including R-410A and subcritical R-744			All common CFC, HCFC and HFC refrigerants
Compatible Oils	All common Mineral, Polyolester and Alkybenzene oils			
Supply Voltage	12 VDC -5% +10% measured at the valve leads			
Cable Type	IP67 Removable Quad-Position	Removable	Hermetic	Hermetic
Phase Resistance	100 ohms ± 10%	100 ohms ± 10%	75 ohms ± 10%	75 ohms ± 10%
Current Range	120 ma / winding	120 ma / winding	160 ma / winding	160 ma / winding
Power Input	2.8 watts	2.8 watts	3.8 watts	3.8 watts
Recommended Step Rate	200 / second	200 / second	200 / second	200 / second
Number of Steps	2500	2500	6386	6386
Full Motor Transit Time	12.5 seconds	12.5 seconds	34 seconds	34 seconds
Resolution	.000092" (.0023 mm) / step	.00012" (.003 mm) / step	.00008" (.002 mm) / step	.00008" (.002 mm) / step
Stroke	0.23" (5.8 mm)	.297" (7.5 mm)	.500" (12.7 mm)	.500" (12.7 mm)
MOPD	580 psid (40 bar)	500 psid (34 bar)	500 psid (34 bar)	300 psid (21 bar)
MRP	700 psig (48 bar)	700 psig (48 bar)	620 psig (43 bar)	500 psig (34 bar)
Max Internal Leakage	100 cc/min @ 100 psig (6.9 bar), dry air			
Max External Leakage	.10 oz/yr @ 300 psig (2.8 gram/yr @ 20 bar)			
Operating Temp Range	-50°F to 155°F (-45°C to 68°C)			
Materials of Construction	Brass, copper, synthetic seals, stainless steel			

Capacity





R-407C at 100°F (38°C) liquid, 100 psi (7 bar) pressure drop, and 40°F (5°C) evaporator temperature.

R-134a Capacities in Tons (at Evaporator Temperature °F)

	Valve Type	Nominal Capacity	40°F								20°F								0°F							
			Pressure Drop Across Valve (psi)																							
			40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180
R-134a	SER-B	1.5	1.26	1.54	1.78	1.99	2.18	2.36	2.52	2.67	1.20	1.46	1.69	1.89	2.07	2.24	2.39	2.54	1.14	1.39	1.61	1.80	1.97	2.13	2.28	2.41
	SER-C	4.2	3.42	4.18	4.83	5.40	5.92	6.39	6.83	7.25	3.24	3.97	4.58	5.12	5.61	6.06	6.48	6.87	3.09	3.78	4.36	4.88	5.35	5.77	6.17	6.55
	SER-D	8.5	6.95	8.51	9.83	11.0	12.0	13.0	13.9	14.7	6.59	8.07	9.32	10.4	11.4	12.3	13.2	14.0	6.28	7.69	8.88	9.93	10.9	11.7	12.6	13.3
	SERI-G	16	13.3	16.3	18.8	21.1	23.1	24.9	26.6	28.2	12.8	15.6	18.0	20.1	22.0	23.8	25.4	26.9	12.1	14.8	17.1	19.1	21.0	22.6	24.2	25.7
	SERI-J	29	24.0	29.3	33.9	37.9	41.5	44.8	47.9	50.8	22.9	28.1	32.4	36.2	39.6	42.8	45.7	48.5	21.8	26.7	30.8	34.4	37.7	40.7	43.5	46.2
	SERI-K	53	43.4	53.2	61.4	68.7	75.2	81.3	86.9	92.1	41.5	50.8	58.7	65.6	71.8	77.6	83.0	88.4	39.4	48.4	55.8	62.4	68.3	73.9	79.0	83.7
	SERI-L	72	59.2	72.5	83.7	93.6	103	111	118	126	56.1	68.8	79.4	88.8	97.2	105	112	119	53.5	65.5	75.6	84.5	92.6	100	107	113
	SEHI-175	126	103	126	146	163	179	193	206	219	98.5	121	139	156	171	184	197	209	94	115	133	148	162	175	187	199
	SEHI-400	307	250	307	354	396	434	469	501	531	238	291	336	376	412	445	475	504	226	277	320	358	392	423	453	480

R-134a Capacities in kW (at Evaporator Temperature °C)

	Valve Type	Nominal Capacity	5°C								-10°C								-20°C							
			Pressure Drop Across Valve (bar)																							
			2.5	4	5.5	7	8.5	10	11.5	13	2.5	4	5.5	7	8.5	10	11.5	13	2.5	4	5.5	7	8.5	10	11.5	13
R-134a	SER-B	5.3	4.22	5.34	6.26	7.06	7.78	8.44	9.05	9.62	4.00	5.06	5.94	6.70	7.38	8.00	8.58	9.13	3.81	4.82	5.65	6.38	7.03	7.62	8.18	8.69
	SER-C	14	11.4	14.5	17.0	19.1	21.1	22.9	24.5	26.1	10.9	13.7	16.1	18.2	20.0	21.7	23.3	24.7	10.3	13.1	15.3	17.3	19.1	20.7	22.2	23.6
	SER-D	29	23.3	29.4	34.5	38.9	42.9	46.5	49.9	53.1	22.1	27.9	32.7	36.9	40.7	44.1	47.3	50.3	21.0	26.6	31.2	35.2	38.8	42.0	45.1	47.9
	SERI-G	56	44.5	56.4	66.1	74.5	82.2	89.3	95.2	102	41.8	53.0	62.1	70.0	77.2	83.7	90.1	95.2	40.0	50.6	59.3	66.9	73.7	80.0	85.9	91.2
	SERI-J	101	80.2	101	119	134	148	161	172	183	75.3	95.2	111	126	139	150	162	172	71.9	91.0	107	121	133	144	154	164
	SERI-K	184	145	184	216	243	268	291	312	332	137	173	202	229	252	273	292	311	130	165	194	218	241	261	280	297
	SERI-L	251	198	251	294	332	365	396	425	452	188	238	279	315	347	376	403	429	179	226	266	300	330	358	384	408
	SEHI-175	437	345	437	512	578	637	691	740	787	324	410	481	542	598	648	695	739	310	392	459	518	571	619	664	706
	SEHI-400	1061	839	1061	1244	1404	1547	1678	1799	1913	796	1006	1180	1331	1467	1591	1707	1814	758	959	1124	1268	1397	1516	1625	1728

R-407C Capacities in Tons (at Evaporator Temperature °F)

	Valve Type	Nominal Capacity	40°F								20°F								0°F							
			Pressure Drop Across Valve (psi)																							
			75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-407C	SER-B	2.0	1.74	2.01	2.25	2.46	2.66	2.85	3.02	3.18	1.68	1.94	2.17	2.38	2.57	2.75	2.91	3.07	1.62	1.87	2.09	2.29	2.47	2.64	2.80	2.95
	SER-C	5.5	4.72	5.46	6.10	6.68	7.22	7.72	8.18	8.63	4.56	5.26	5.89	6.45	6.96	7.45	7.90	8.32	4.38	5.06	5.66	6.20	6.69	7.15	7.59	8.00
	SER-D	11	9.61	11.1	12.4	13.6	14.7	15.7	16.6	17.5	9.27	10.7	12.0	13.1	14.2	15.1	16.1	16.9	8.91	10.3	11.5	12.6	13.6	14.6	15.4	16.3
	SERI-G	21	17.9	20.7	23.2	25.4	27.5	29.3	31.1	32.8	17.2	19.9	22.3	24.4	26.3	28.2	29.9	31.5	16.5	19.0	21.3	23.3	25.2	26.9	28.5	30.0
	SERI-J	37	32.3	37.3	41.7	45.7	49.4	52.8	55.9	59.0	31.0	35.8	40.1	43.9	47.4	50.7	53.8	56.7	29.6	34.2	38.3	41.9	45.2	48.4	51.3	54.1
	SERI-K	68	58.6	67.7	75.7	82.9	89.3	96.1	101	107	56.3	65.0	72.6	79.6	86.0	91.9	97.5	103	53.7	62.0	69.3	75.9	82.0	87.6	92.7	97.8
	SERI-L	95	81.8	94.5	106	116	125	134	142	149	79.0	91.2	102	112	121	129	137	144	75.9	87.6	98.0	107	116	124	131	139
	SEHI-175	161	139	161	180	197	212	227	241	254	133	154	172	189	204	218	231	244	127	147	165	180	195	208	221	233
	SEHI-400	400	346	400	447	490	529	566	600	632	334	386	432	473	511	546	579	610	321	371	415	454	491	525	556	586

R-407C Capacities in kW (at Evaporator Temperature °C)

	Valve Type	Nominal Capacity	5°C								-10°C								-20°C							
			Pressure Drop Across Valve (bar)																							
			4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18
R-407C	SER-B	7.1	5.40	6.61	7.63	8.54	9.35	10.1	10.8	11.5	5.14	6.30	7.27	8.13	8.90	9.62	10.3	10.9	4.96	6.07	7.01	7.84	8.58	9.27	9.91	10.5
	SER-C	19	14.6	17.9	20.7	23.1	25.4	27.4	29.3	31.1	13.9	17.1	19.7	22.0	24.1	26.1	27.9	29.6	13.4	16.5	19.0	21.2	23.3	25.1	26.9	28.5
	SER-D	39	29.8	36.5	42.1	47.1	51.6	55.7	59.5	63.2	28.4	34.7	40.1	44.8	49.1	53.0	56.7	60.2	27.3	33.5	38.7	43.2	47.3	51.1	54.7	58.0
	SERI-G	73	55.5	67.9	78.5	87.6	96.1	104	111	117	52.4	64.2	74.1	82.9	91.0	97.8	105	111	50.2	61.5	71.1	79.5	86.7	94.4	100	106
	SERI-J	131	99.5	122	141	158	173	187	200	212	94.4	116	133	149	163	177	189	200	90.1	111	128	143	156	169	181	192
	SERI-K	238	181	222	256	286	314	338	362	384	171	209	241	270	296	320	342	363	164	201	232	259	284	307	328	348
	SERI-L	332	254	311	359	401	439	474	507	538	241	296	342	382	418	452	483	512	233	285	329	368	403	436	466	494
	SEHI-175	566	430	526	608	680	744	804	860	912	406	497	574	642	703	760	812	861	389	477	550	615	674	728	778	826
	SEHI-400	1407	1073	1315	1518	1697	1859	2008	2147	2277	1022	1252	1446	1616	1770	1912	2044	2168	985	1207	1393	1558	1707	1843	1971	2090

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
°C	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-134a	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-404A	2.04	1.94	1.84	1.74	1.64	1.54	1.43	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.53
R-407C	1.69	1.62	1.55	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.77	0.69
R-410A	1.79	1.71	1.63	1.55	1.47	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.73	0.62
R-507	1.99	1.89	1.79	1.69	1.59	1.50	1.40	1.30	1.20	1.10	1.00	0.89	0.78	0.66	0.51
R-744	1.13	1.07	1.00	0.93	0.86	–	–	–	–	–	–	–	–	–	–

R-404A Capacities in Tons (at Evaporator Temperature °F)

R-404A	Valve Type	Nominal Capacity	40°F								20°F								0°F							
			Pressure Drop Across Valve (psi)																							
			75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
	SER-B	1.4	1.19	1.38	1.54	1.69	1.82	1.95	2.07	2.18	1.13	1.31	1.46	1.60	1.73	1.85	1.97	2.07	1.07	1.24	1.38	1.51	1.64	1.75	1.85	1.95
	SER-C	3.7	3.24	3.74	4.18	4.58	4.95	5.29	5.61	5.91	3.08	3.55	3.97	4.35	4.70	5.02	5.33	5.62	2.90	3.35	3.75	4.10	4.43	4.74	5.03	5.30
	SER-D	7.6	6.59	7.61	8.50	9.32	10.1	10.8	11.4	12.0	6.26	7.23	8.08	8.85	9.56	10.2	10.8	11.4	5.90	6.82	7.62	8.35	9.02	9.64	10.2	10.8
	SERI-G	15	12.9	15.0	16.7	18.3	19.7	21.1	22.4	23.6	12.2	14.2	15.8	17.3	18.7	20.0	21.3	22.4	11.6	13.3	14.9	16.3	17.6	18.9	20.0	21.1
	SERI-J	27	23.3	26.9	30.0	32.9	35.5	38.0	40.3	42.5	22.0	25.5	28.5	31.2	33.7	36.0	38.2	40.3	20.7	24.0	26.8	29.3	31.7	33.9	36.0	37.9
	SERI-K	49	42.2	48.7	54.5	59.7	64.4	68.9	73.1	77.0	40.0	46.2	51.6	56.5	61.1	65.3	69.3	73.0	37.7	43.4	48.5	53.2	57.5	61.5	65.1	68.7
	SERI-L	65	56.1	64.8	72.4	79.3	85.7	91.6	97.2	102	53.3	61.5	68.8	75.4	81.4	87.0	92.3	97.3	50.3	58.1	64.9	71.1	76.8	82.1	87.1	91.8
	SEHI-175	116	100	116	129	142	153	164	174	183	95.0	110	123	134	145	155	164	173	89.3	103	115	126	136	146	155	163
	SEHI-400	274	237	274	307	336	363	388	411	434	226	260	291	319	345	368	391	412	213	246	275	301	325	348	369	389

R-404A	Valve Type	-20°F								-40°F							
		Pressure Drop Across Valve (psi)															
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
	SER-B	1.00	1.16	1.29	1.42	1.53	1.64	1.74	1.83	0.93	1.08	1.20	1.32	1.42	1.52	1.62	1.70
	SER-C	2.72	3.14	3.51	3.84	4.15	4.44	4.71	4.96	2.53	2.92	3.26	3.58	3.86	4.13	4.38	4.62
	SER-D	5.53	6.39	7.14	7.82	8.45	9.03	9.58	10.1	5.14	5.94	6.64	7.27	7.86	8.40	8.91	9.39
	SERI-G	10.8	12.4	13.9	15.2	16.5	17.6	18.6	19.6	9.90	11.6	12.9	14.1	15.2	16.3	17.3	18.2
	SERI-J	19.4	22.4	25.0	27.4	29.6	31.6	33.6	35.4	17.9	20.7	23.2	25.4	27.5	29.3	31.1	32.8
	SERI-K	35.1	40.5	45.4	49.6	53.6	57.4	60.9	64.2	32.6	37.6	42.1	46.1	49.7	53.2	56.4	59.4
	SERI-L	47.1	54.4	60.8	66.6	71.9	76.9	81.6	86.0	43.8	50.6	56.5	61.9	66.9	71.5	75.9	80.0
	SEHI-175	83.4	96.3	108	118	127	136	144	152	77.3	89.3	99.8	109	118	126	134	141
	SEHI-400	199	230	257	282	305	326	345	364	185	214	239	262	283	303	321	338

R-404A Capacities in kW (at Evaporator Temperature °C)

R-404A	Valve Type	Nominal Capacity	5°C								-10°C								-20°C							
			Pressure Drop Across Valve (bar)																							
			4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18
	SER-B	4.9	3.70	4.54	5.24	5.86	6.42	6.93	7.41	7.86	3.45	4.23	4.88	5.46	5.98	6.46	6.90	7.32	3.27	4.01	4.62	5.17	5.66	6.12	6.54	6.94
	SER-C	13	10.0	12.3	14.2	15.9	17.4	18.8	20.1	21.3	9.36	11.5	13.2	14.8	16.2	17.5	18.7	19.9	8.87	10.9	12.5	14.0	15.4	16.6	17.7	18.8
	SER-D	27	20.4	25.0	28.9	32.3	35.4	38.2	40.9	43.3	19.0	23.3	26.9	30.1	33.0	35.6	38.1	40.4	18.0	22.1	25.5	28.5	31.2	33.7	36.1	38.3
	SERI-G	53	40.0	48.9	56.4	63.2	69.2	74.7	79.9	84.7	37.1	45.4	52.4	58.7	64.3	69.4	74.2	78.7	35.0	42.9	49.6	55.4	60.7	65.5	70.1	74.4
	SERI-J	95	71.8	88.4	102	114	124	134	144	152	66.7	81.8	94.4	105	116	125	133	142	63.1	77.2	89.3	100	109	118	126	133
	SERI-K	171	130	160	184	206	225	244	261	276	121	148	171	191	210	226	242	257	114	140	162	181	198	214	229	242
	SERI-L	228	174	213	246	275	301	326	348	369	162	199	229	256	281	303	324	344	154	188	217	243	266	287	307	326
	SEHI-175	408	309	379	438	489	536	579	619	656	287	352	406	454	498	538	575	610	271	332	384	429	470	508	543	576
	SEHI-400	964	736	902	1041	1164	1275	1378	1473	1562	686	841	971	1085	1189	1284	1373	1456	650	796	919	1028	1126	1216	1300	1379

R-404A	Valve Type	-30°C								-40°C							
		Pressure Drop Across Valve (bar)															
		4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18
	SER-B	3.08	3.77	4.36	4.87	5.33	5.76	6.16	6.53	2.88	3.53	4.08	4.56	5.00	5.40	5.77	6.12
	SER-C	8.35	10.2	11.8	13.2	14.5	15.6	16.7	17.7	7.82	9.58	11.1	12.4	13.5	14.6	15.6	16.6
	SER-D	17.0	20.8	24.0	26.9	29.4	31.8	34.0	36.0	15.9	19.5	22.5	25.2	27.6	29.8	31.8	33.7
	SERI-G	32.9	40.3	46.6	52.0	57.0	61.5	65.8	69.8	30.7	37.7	43.4	48.5	53.2	57.5	61.5	65.2
	SERI-J	59.2	72.5	83.7	93.5	103	111	118	126	55.3	67.7	78.1	87.6	96.1	104	111	117
	SERI-K	107	132	152	170	186	201	215	228	100	122	142	158	173	188	201	213
	SERI-L	145	177	205	229	251	271	289	307	135	166	192	214	235	253	271	287
	SEHI-175	255	312	361	403	442	477	510	541	238	291	337	376	412	445	476	505
	SEHI-400	612	750	866	968	1061	1146	1225	1299	573	702	811	907	993	1073	1147	1216

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
°C	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-134a	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-404A	2.04	1.94	1.84	1.74	1.64	1.54	1.43	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.53
R-407C	1.69	1.62	1.55	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.77	0.69
R-410A	1.79	1.71	1.63	1.55	1.47	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.73	0.62
R-507	1.99	1.89	1.79	1.69	1.59	1.50	1.40	1.30	1.20	1.10	1.00	0.89	0.78	0.66	0.51
R-744	1.13	1.07	1.00	0.93	0.86	–	–	–	–	–	–	–	–	–	–

R-410A Capacities in Tons (at Evaporator Temperature °F)

	Valve Type	Nominal Capacity	40°F								20°F								0°F							
			Pressure Drop Across Valve (psi)																							
			80	120	160	200	240	280	320	360	80	120	160	200	240	280	320	360	80	120	160	200	240	280	320	360
R-410A	SER-B	2.5	1.78	2.19	2.52	2.82	3.09	3.34	3.57	3.79	1.75	2.14	2.47	2.76	3.02	3.27	3.49	3.70	1.70	2.08	2.40	2.69	2.94	3.18	3.40	3.61
	SER-C	6.8	4.84	5.93	6.84	7.65	8.38	9.05	9.68	10.3	4.73	5.80	6.70	7.49	8.20	8.86	9.47	10.0	4.61	5.65	6.52	7.29	7.98	8.62	9.22	9.78
	SER-D	14	9.84	12.1	13.9	15.6	17.0	18.4	19.7	20.9	9.63	11.8	13.6	15.2	16.7	18.0	19.3	20.4	9.38	11.5	13.3	14.8	16.2	17.5	18.8	19.9
	SERI-G	27	19.1	23.4	27.0	30.2	33.1	35.8	38.3	40.6	18.7	22.9	26.4	29.5	32.3	34.9	37.3	39.6	18.1	22.2	25.6	28.7	31.4	33.9	36.3	38.5
	SERI-J	49	34.4	42.2	48.7	54.4	59.6	64.4	68.8	73.0	33.6	41.1	47.5	53.1	58.2	62.8	67.2	71.2	32.6	40.0	46.1	51.6	56.5	61.0	65.2	69.2
	SERI-K	88	62.4	76.4	88.2	98.7	108	117	125	132	60.9	74.6	86.1	96.3	105	114	122	129	59.1	72.4	83.6	93.5	102	111	118	125
	SERI-L	119	83.8	103	119	133	145	157	168	178	82.0	100	116	130	142	153	164	174	79.9	97.8	113	126	138	149	160	169
	SEHI-175	210	148	182	210	234	257	277	296	314	145	177	204	229	250	271	289	307	140	172	199	222	243	263	281	298
	SEHI-400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

R-410A Capacities in kW (at Evaporator Temperature °C)

	Valve Type	Nominal Capacity	5°C								-10°C								-20°C							
			Pressure Drop Across Valve (bar)																							
			5	8	11	14	17	20	23	26	5	8	11	14	17	20	23	26	5	8	11	14	17	20	23	26
R-410A	SER-B	8.9	5.98	7.56	8.86	10.0	11.0	12.0	12.8	13.6	5.85	7.40	8.67	9.78	10.8	11.7	12.5	13.3	5.69	7.20	8.44	9.53	10.5	11.4	12.2	13.0
	SER-C	24	16.2	20.5	24.0	27.1	29.9	32.4	34.8	36.9	15.9	20.1	23.5	26.5	29.2	31.7	34.0	36.2	15.4	19.5	22.9	25.8	28.5	30.9	33.1	35.2
	SER-D	49	33.0	41.7	48.9	55.1	60.8	65.9	70.7	75.2	32.3	40.8	47.8	54.0	59.5	64.5	69.2	73.5	31.4	39.7	46.6	52.5	57.9	62.8	67.3	71.6
	SERI-G	95	63.9	80.8	95.2	107	118	128	137	145	61.8	78.1	91.8	104	114	123	133	141	60.1	76.1	89.3	100	111	120	129	137
	SERI-J	171	115	145	171	192	212	230	247	263	111	140	165	186	205	223	238	253	108	137	161	181	200	217	232	247
	SERI-K	309	208	264	309	349	384	417	447	475	201	255	299	337	371	403	433	460	196	248	291	328	361	392	421	447
	SERI-L	416	281	355	416	470	518	561	602	640	275	347	407	460	506	549	589	626	267	338	397	447	493	535	573	610
	SEHI-175	735	495	626	735	829	913	990	1062	1129	479	605	710	801	883	957	1027	1091	466	589	691	779	859	932	999	1062
	SEHI-400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

R-744 Capacities in Tons (at Evaporator Temperature °F)

	Valve Type	Nominal Capacity	0°F					-20°F					-40°F				
			Pressure Drop Across Valve (psi)														
			100	150	200	250	300	150	200	250	300	350	200	250	300	350	400
R-744	SER-B	4	3.10	3.80	4.39	4.91	5.37	3.80	4.39	4.91	5.38	5.81	4.36	4.88	5.34	5.77	6.17
	SER-C	12	8.41	10.3	11.9	13.3	14.6	10.3	11.9	13.3	14.6	15.8	11.8	13.2	14.5	15.7	16.7
	SER-D	24	17.1	21.0	24.2	27.1	29.6	21.0	24.2	27.1	29.7	32.0	24.1	26.9	29.5	31.8	34.0
	SERI-G	47	32.8	40.2	46.5	51.9	56.9	40.3	46.5	52.0	56.9	61.5	46.2	51.7	56.6	61.1	65.3
	SERI-J	84	59.1	72.4	83.6	93.4	102	72.5	83.7	93.5	102	111	83.1	92.9	102	110	118
	SERI-K	150	107	131	152	169	186	131	152	170	186	201	151	169	185	199	213
	SERI-L	206	146	178	206	230	252	179	206	231	253	273	205	229	251	271	290
	SEHI-175	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	SEHI-400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

R-744 Capacities in kW (at Evaporator Temperature °C)

	Valve Type	Nominal Capacity	-20°C				-30°C				-40°C			
			Pressure Drop Across Valve (bar)											
			8	12	16	20	12	16	20	24	16	20	24	28
R-744	SER-B	15	11.8	14.4	16.6	18.6	14.4	16.6	18.6	20.4	16.5	18.5	20.2	21.9
	SER-C	42	31.9	39.1	45.1	50.4	39.0	45.1	50.4	55.2	44.8	50.1	54.9	59.3
	SER-D	85	64.9	79.4	91.7	103	79.4	91.7	103	112	91.2	102	112	121
	SERI-G	164	122	149	173	193	149	173	193	211	172	192	210	227
	SERI-J	294	220	269	311	347	269	310	347	380	309	345	378	408
	SERI-K	535	398	488	563	630	487	563	629	689	560	626	685	740
	SERI-L	725	552	677	781	874	676	781	873	957	776	868	951	1027
	SEHI-175	–	–	–	–	–	–	–	–	–	–	–	–	–
	SEHI-400	–	–	–	–	–	–	–	–	–	–	–	–	–

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
°C	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-134a	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-404A	2.04	1.94	1.84	1.74	1.64	1.54	1.43	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.53
R-407C	1.69	1.62	1.55	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.77	0.69
R-410A	1.79	1.71	1.63	1.55	1.47	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.73	0.62
R-507	1.99	1.89	1.79	1.69	1.59	1.50	1.40	1.30	1.20	1.10	1.00	0.89	0.78	0.66	0.51
R-744	1.13	1.07	1.00	0.93	0.86	–	–	–	–	–	–	–	–	–	–

R-422D Capacities in Tons (at Evaporator Temperature °F)

R-422D	Valve Type	Nominal Capacity	40°F								20°F								0°F							
			Pressure Drop Across Valve (psi)																							
			40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180
	SER-B	1.1	0.88	1.08	1.25	1.39	1.53	1.65	1.76	1.87	0.83	1.02	1.18	1.31	1.44	1.55	1.66	1.76	0.78	0.95	1.10	1.23	1.35	1.46	1.56	1.65
	SER-C	2.9	2.39	2.92	3.38	3.77	4.13	4.47	4.77	5.06	2.25	2.76	3.19	3.56	3.90	4.22	4.51	4.78	2.11	2.59	2.99	3.34	3.66	3.95	4.22	4.48
	SER-D	5.9	4.86	5.95	6.87	7.68	8.41	9.08	9.71	10.3	4.58	5.61	6.48	7.25	7.94	8.57	9.17	9.72	4.30	5.26	6.07	6.79	7.44	8.04	8.59	9.11
	SERI-G	12	9.5	11.7	13.5	15.1	16.5	17.8	19.1	20.2	8.9	11.0	12.7	14.2	15.5	16.8	18.0	19.1	8.4	10.3	11.9	13.3	14.5	15.8	16.8	17.8
	SERI-J	21	17.2	21.0	24.2	27.1	29.7	32.1	34.3	36.4	16.1	19.8	22.9	25.5	28.0	30.2	32.3	34.3	15.1	18.5	21.4	23.8	26.2	28.3	30.2	32.0
	SERI-K	38	31.1	38.1	44.0	49.2	53.8	58.2	62.2	65.9	29.3	35.9	41.4	46.3	50.7	54.8	58.6	62.1	27.4	33.5	38.7	43.3	47.4	51.3	54.7	58.1
	SERI-L	51	41.4	50.7	58.5	65.4	71.6	77.4	82.7	87.7	39.0	47.8	55.2	61.7	67.6	73.0	78.1	82.8	36.6	44.8	51.7	57.8	63.4	68.4	73.2	77.6
	SEHI-175	88	72.2	88.4	102	114	125	135	144	153	68.1	83.4	96.3	108	118	127	136	144	63.8	78.2	90.3	101	111	119	128	135
	SEHI-400	214	175	214	248	277	303	327	350	371	165	202	234	261	286	309	330	350	155	190	219	245	268	290	310	328

R-422D	Valve Type	-20°F								-40°F							
		Pressure Drop Across Valve (psi)															
		40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180
	SER-B	0.72	0.89	1.03	1.15	1.26	1.36	1.45	1.54	0.67	0.82	0.95	1.06	1.16	1.25	1.34	1.42
	SER-C	1.97	2.41	2.78	3.11	3.40	3.68	3.93	4.17	1.82	2.22	2.57	2.87	3.14	3.40	3.63	3.85
	SER-D	4.00	4.90	5.65	6.32	6.92	7.48	7.99	8.48	3.69	4.52	5.22	5.84	6.39	6.91	7.38	7.83
	SERI-G	7.81	9.51	11.0	12.3	13.5	14.6	15.5	16.5	7.11	8.83	10.1	11.3	12.4	13.4	14.3	15.2
	SERI-J	14.0	17.2	19.8	22.1	24.3	26.2	28.0	29.7	12.9	15.8	18.2	20.4	22.4	24.1	25.8	27.4
	SERI-K	25.4	31.1	35.9	40.1	43.9	47.5	50.8	53.9	23.4	28.6	33.1	37.0	40.5	43.8	46.8	49.5
	SERI-L	34	41.7	48.1	53.8	59.0	63.7	68.1	72.2	31.4	38.5	44.5	49.7	54.5	58.8	62.9	66.7
	SEHI-175	59	72.8	84.0	93.9	103	111	119	126	54.9	67.2	77.6	86.7	95.0	103	110	116
	SEHI-400	144	176	204	228	250	270	288	306	133	163	188	210	231	249	266	282

R-422D Capacities in kW (at Evaporator Temperature °C)

R-422D	Valve Type	Nominal Capacity	5°C								-10°C								-20°C							
			Pressure Drop Across Valve (bar)																							
			2.5	4	5.5	7	8.5	10	11.5	13	2.5	4	5.5	7	8.5	10	11.5	13	2.5	4	5.5	7	8.5	10	11.5	13
	SER-B	3.8	2.96	3.74	4.39	4.95	5.45	5.91	6.34	6.74	2.73	3.46	4.05	4.57	5.04	5.46	5.86	6.23	2.57	3.25	3.82	4.30	4.74	5.14	5.52	5.87
	SER-C	10	8.02	10.1	11.9	13.4	14.8	16.0	17.2	18.3	7.41	9.37	11.0	12.4	13.7	14.8	15.9	16.9	6.97	8.82	10.3	11.7	12.9	13.9	15.0	15.9
	SER-D	21	16.3	20.6	24.2	27.3	30.1	32.6	35.0	37.2	15.1	19.1	22.3	25.2	27.8	30.1	32.3	34.4	14.2	17.9	21.0	23.7	26.2	28.4	30.4	32.3
	SERI-G	41	31.9	40.7	47.5	53.6	58.9	64.0	68.7	73.0	29.4	37.4	43.7	49.3	54.3	59.0	63.5	67.3	27.9	35.0	41.1	46.3	51.1	55.6	59.5	63.3
	SERI-J	74	57.7	72.9	85.3	96.4	106	115	124	131	53.0	67.2	78.8	88.9	97.9	106	114	121	49.7	63.2	74.0	83.3	91.9	100	107	114
	SERI-K	134	104	132	155	175	192	209	224	238	96.3	122	143	161	178	193	207	219	90.6	114	134	151	167	181	194	206
	SERI-L	178	139	176	206	232	256	278	298	317	128	162	190	215	237	257	275	293	121	153	179	202	223	242	259	276
	SEHI-175	311	242	307	359	405	447	485	519	552	224	283	332	376	413	446	479	509	211	267	313	353	390	420	453	479
	SEHI-400	754	588	744	872	984	1084	1176	1261	1340	543	687	805	909	1001	1086	1165	1238	511	647	758	856	943	1023	1097	1166

R-422D	Valve Type	-30°C								-40°C							
		Pressure Drop Across Valve (bar)															
		2.5	4	5.5	7	8.5	10	11.5	13	2.5	4	5.5	7	8.5	10	11.5	13
	SER-B	2.41	3.05	3.57	4.03	4.44	4.82	5.17	5.49	2.24	2.84	3.32	3.75	4.13	4.48	4.81	5.11
	SER-C	6.53	8.26	9.69	10.9	12.0	13.1	14.0	14.9	6.08	7.69	9.01	10.2	11.2	12.2	13.0	13.9
	SER-D	13.3	16.8	19.7	22.2	24.5	26.6	28.5	30.3	12.4	15.6	18.3	20.7	22.8	24.7	26.5	28.2
	SERI-G	25.9	32.6	38.4	43.2	47.8	51.8	55.3	58.8	23.8	30.5	35.6	40.1	44.1	48.0	51.5	54.6
	SERI-J	46.6	58.9	69.0	77.9	85.8	93.0	99.9	106	43.0	54.5	64.1	72.2	79.8	86.3	92.6	98.5
	SERI-K	84.3	107	125	141	155	169	181	193	78.4	99.0	116	131	144	157	168	178
	SERI-L	113	143	168	189	209	226	243	258	105	133	156	176	194	211	226	240
	SEHI-175	197	250	293	330	364	394	424	450	184	232	273	307	339	369	395	418
	SEHI-400	479	606	710	801	883	958	1027	1092	446	564	661	746	822	891	956	1016

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
°C	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-134a	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-404A	2.04	1.94	1.84	1.74	1.64	1.54	1.43	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.53
R-407C	1.69	1.62	1.55	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.77	0.69
R-410A	1.79	1.71	1.63	1.55	1.47	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.73	0.62
R-507	1.99	1.89	1.79	1.69	1.59	1.50	1.40	1.30	1.20	1.10	1.00	0.89	0.78	0.66	0.51
R-744	1.13	1.07	1.00	0.93	0.86	–	–	–	–	–	–	–	–	–	–

R-507A Capacities in Tons (at Evaporator Temperature °F)

R-507A	Valve Type	Nominal Capacity	40°F								20°F								0°F							
			Pressure Drop Across Valve (psi)																							
			75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
	SER-B	1.3	1.16	1.34	1.49	1.64	1.77	1.89	2.00	2.11	1.10	1.27	1.42	1.55	1.68	1.79	1.90	2.01	1.03	1.19	1.34	1.46	1.58	1.69	1.79	1.89
	SER-C	3.6	3.14	3.62	4.05	4.44	4.79	5.12	5.44	5.73	2.98	3.44	3.84	4.21	4.55	4.86	5.16	5.44	2.81	3.24	3.62	3.97	4.29	4.58	4.86	5.12
	SER-D	7.4	6.38	7.37	8.24	9.03	9.75	10.4	11.1	11.7	6.06	6.99	7.82	8.57	9.25	9.89	10.5	11.1	5.71	6.59	7.37	8.07	8.72	9.32	9.89	10.4
	SERI-G	15	12.7	14.6	16.3	17.9	19.4	20.7	21.9	23.1	12.0	13.9	15.5	17.0	18.4	19.6	20.8	21.9	11.3	13.0	14.6	16.0	17.3	18.4	19.6	20.7
	SERI-J	26	22.8	26.4	29.4	32.2	34.9	37.2	39.4	41.7	21.6	24.9	27.9	30.5	33.0	35.3	37.4	39.4	20.3	23.5	26.3	28.7	31.0	33.2	35.2	37.1
	SERI-K	48	41.3	47.7	53.4	58.4	63.2	67.5	71.6	75.5	39.1	45.2	50.6	55.3	59.8	63.9	67.8	71.5	36.9	42.6	47.6	52.1	56.3	60.2	63.8	67.3
	SERI-L	63	54.4	62.8	70.2	76.9	83.0	88.8	94.2	99.3	51.6	59.6	66.6	73.0	78.8	84.3	89.4	94.2	48.6	56.1	62.8	68.7	74.2	79.4	84.2	88.7
	SEHI-175	113	98.1	113	127	139	150	160	170	179	93.0	107	120	131	142	152	161	170	87.5	101	113	124	134	143	152	160
	SEHI-400	266	230	266	297	325	352	376	399	420	218	252	282	309	334	357	378	399	206	238	266	291	314	336	356	376

R-507A	Valve Type	-20°F								-40°F							
		Pressure Drop Across Valve (psi)															
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
	SER-B	0.97	1.12	1.25	1.37	1.48	1.58	1.68	1.77	0.90	1.04	1.16	1.27	1.37	1.47	1.56	1.64
	SER-C	2.62	3.03	3.39	3.71	4.01	4.28	4.54	4.79	2.43	2.81	3.14	3.44	3.72	3.98	4.22	4.45
	SER-D	5.34	6.16	6.89	7.55	8.15	8.71	9.24	9.74	4.95	5.72	6.39	7.00	7.56	8.09	8.58	9.04
	SERI-G	10.5	12.2	13.7	15.0	16.2	17.3	18.3	19.3	9.90	11.4	12.7	13.9	15.0	16.1	17.0	17.9
	SERI-J	19.0	21.9	24.6	26.9	29.1	31.1	33.0	34.8	17.7	20.4	22.9	25.0	27.0	28.9	30.6	32.3
	SERI-K	34.5	39.9	44.5	48.8	52.7	56.4	59.8	63.0	32.0	37.1	41.4	45.4	49.0	52.4	55.5	58.6
	SERI-L	45.4	52.5	58.7	64.3	69.4	74.2	78.7	83.0	42.2	48.7	54.5	59.6	64.4	68.9	73.1	77.0
	SEHI-175	81.9	94.6	106	116	125	134	142	150	76.2	87.9	98.3	108	116	124	132	139
	SEHI-400	192	222	248	272	294	314	333	351	179	206	230	252	273	292	309	326

R-507A Capacities in kW (at Evaporator Temperature °C)

R-507A	Valve Type	Nominal Capacity	5°C								-10°C								-20°C							
			Pressure Drop Across Valve (bar)																							
			4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18
	SER-B	4.7	3.59	4.40	5.08	5.67	6.22	6.71	7.18	7.61	3.34	4.09	4.72	5.28	5.78	6.25	6.68	7.08	3.16	3.87	4.47	5.00	5.47	5.91	6.32	6.70
	SER-C	13	9.73	11.9	13.8	15.4	16.9	18.2	19.5	20.6	9.06	11.1	12.8	14.3	15.7	16.9	18.1	19.2	8.57	10.5	12.1	13.5	14.8	16.0	17.1	18.2
	SER-D	26	19.8	24.2	28.0	31.3	34.3	37.0	39.6	42.0	18.4	22.6	26.0	29.1	31.9	34.5	36.8	39.1	17.4	21.3	24.6	27.6	30.2	32.6	34.9	37.0
	SERI-G	51	39.1	47.9	55.3	61.9	67.7	73.2	78.3	83.0	36.3	44.5	51.3	57.5	62.9	68.0	72.7	77.1	34.3	42.1	48.6	54.3	59.5	64.3	68.7	72.9
	SERI-J	93	70.4	85.9	99.5	111	122	132	141	150	65.4	80.1	92.7	104	113	122	131	139	61.8	75.7	87.6	97.8	107	116	123	131
	SERI-K	168	128	156	180	201	221	239	255	271	118	145	167	187	205	222	237	252	112	138	158	178	194	210	224	238
	SERI-L	221	169	206	238	267	292	315	337	358	157	192	222	248	272	293	314	333	148	182	210	235	257	278	297	315
	SEHI-175	397	303	371	429	479	525	567	606	643	281	345	398	445	487	526	563	597	266	326	376	421	461	498	532	565
	SEHI-400	935	713	874	1009	1128	1236	1335	1427	1514	664	813	939	1050	1150	1242	1328	1408	628	769	888	993	1088	1175	1256	1333

R-507A	Valve Type	-30°C								-40°C							
		Pressure Drop Across Valve (bar)															
		4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18
	SER-B	2.97	3.64	4.20	4.70	5.15	5.56	5.94	6.30	2.78	3.40	3.93	4.39	4.81	5.20	5.56	5.89
	SER-C	8.06	9.87	11.4	12.7	14.0	15.1	16.1	17.1	7.53	9.22	10.7	11.9	13.0	14.1	15.1	16.0
	SER-D	16.4	20.1	23.2	25.9	28.4	30.7	32.8	34.8	15.3	18.8	21.7	24.2	26.5	28.7	30.6	32.5
	SERI-G	32.3	39.6	45.7	51.2	56.0	60.5	64.7	68.6	30.3	37.1	42.8	47.9	52.4	56.6	60.5	64.2
	SERI-J	58.1	71.2	82.3	91.8	101	109	116	123	54.5	66.7	77.0	85.9	94.4	102	109	116
	SERI-K	105	129	150	167	183	197	211	224	99.0	121	139	156	171	184	197	209
	SERI-L	140	171	197	221	242	261	279	296	130	160	185	206	226	244	261	277
	SEHI-175	251	307	354	396	434	469	501	531	234	287	332	371	406	439	469	497
	SEHI-400	591	724	836	934	1023	1105	1182	1253	552	676	781	873	956	1033	1104	1171

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
°C	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-134a	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-404A	2.04	1.94	1.84	1.74	1.64	1.54	1.43	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.53
R-407C	1.69	1.62	1.55	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.77	0.69
R-410A	1.79	1.71	1.63	1.55	1.47	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.73	0.62
R-507	1.99	1.89	1.79	1.69	1.59	1.50	1.40	1.30	1.20	1.10	1.00	0.89	0.78	0.66	0.51
R-744	1.13	1.07	1.00	0.93	0.86	–	–	–	–	–	–	–	–	–	–

Components and Accessories:

Product	Description	Item Number
Kelvin II	Superheat Controller without Local Display	952560
	Superheat Controller with Display	952561
	Remote Display Only	952562
IB2Q IB6Q	Interface Board (2500 steps) Interface Board (6386 steps)	983189 952960
Temperature Sensor	External Sensing Bulb	952662
Temperature Well Sensor Kit	Internal Sensing Element	952795
Pressure Transducer	150 psig with Cable	953091
	150 psia with Cable	952995
	300 psig with Cable (R-410A applications only)	952740
	500 psig with Cable (R-744 subcritical applications only)	952504
SMA-12	Test Instrument	953276

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Parker Hannifin Ltd
Climate and Industrial Controls Group
Refrigeration and Air Conditioning Europe
Cortonwood Drive, Brampton
South Yorkshire S73 OUF
United Kingdom
phone +44 (0) 1226 273400
fax +44 (0) 1226 273401
www.parker.com/race