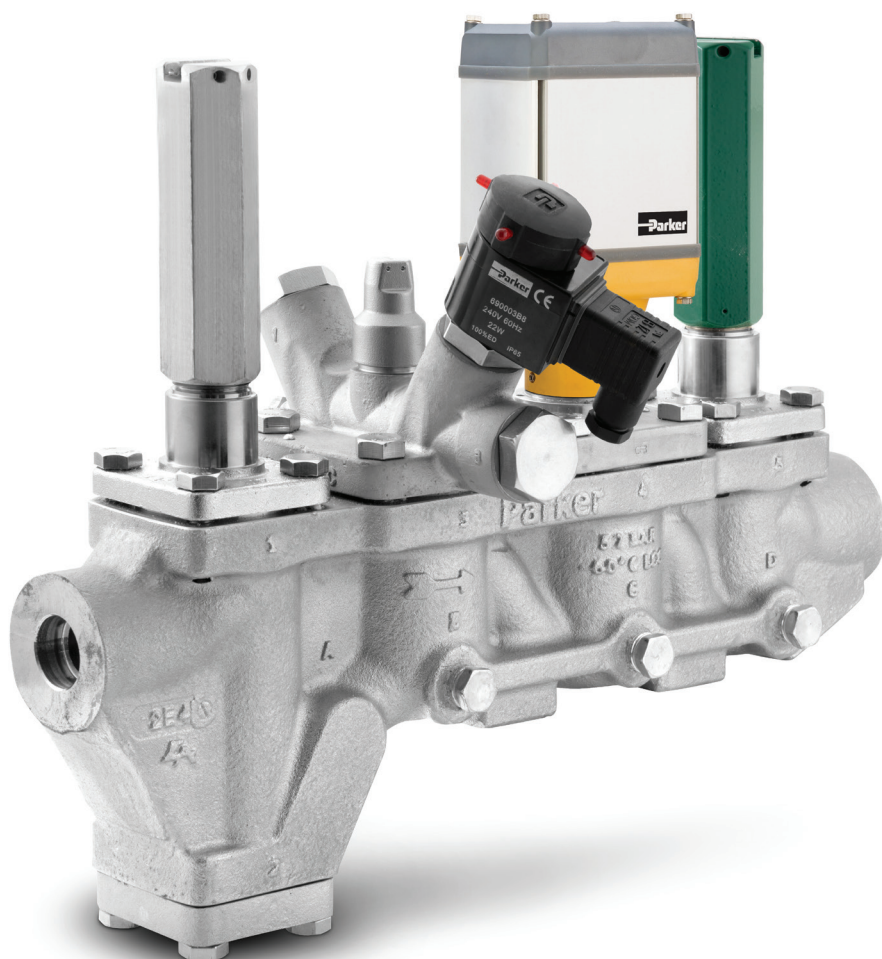




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Parker Valve Station (PVS) Sizing Guide

Catalog C12-PVS



ENGINEERING YOUR SUCCESS.

PVS Suction Capacities (Tons)

Pressure Regulators

R717	Evap Temp, °F Evap Press, PSI	Pressure Drop (psi)	¾" 30%	¾" 65%	¾"	1"	1¼"	1½"	2" 100%	2" GSS	2 1/2"	3"
	50°F 74.5	2 5 10 20	7 11 15 21	14 22 30 41	21 33 45 62	28 44 61 82	36 57 79 107	64 101 140 190	118 185 257 349	108 169 235 320	167 262 364 493	200 314 436 592
	40°F 58.6	2 5 10 20	6 10 14 18	13 20 27 37	19 30 41 55	25 39 54 73	33 51 71 95	58 91 126 169	107 167 232 311	98 153 212 285	151 236 326 439	181 284 392 527
	30°F 45.0	2 5 10	6 9 12	11 18 24	17 27 36	23 35 49	30 46 63	53 82 113	96 150 206	88 138 189	136 212 292	163 255 350
	20°F 33.5	2 5 10	5 8 11	10 16 22	15 24 32	20 32 43	26 41 56	47 73 100	86 134 182	79 123 167	122 190 259	147 228 311
	10°F 23.8	2 5 10	4.5 7 9	9 14 19	14 21 28	18 28 38	24 36 49	42 65 87	77 119 161	70 109 147	109 168 227	131 202 272
	0°F 15.7	2 3 5	4.0 5 6	8 10 12	12 15 18	16 19 25	21 25 32	37 45 57	68 83 104	63 76 96	96 116 148	115 140 177
	-10°F 9.0	2 3	3.5 4.3	7 9	11 13	14 17	18 22	33 40	60 72	55 66	85 102	102 122
	-20°F 3.6	2	3.1	6.2	9	12	16	29	53	48	74	89
	-30°F -0.8	2	2.7	5.3	8	11	14	25	46	42	64	76
	-40°F -4.3	2	2.3	4.5	7	9	12	21	38	35	54	65

Capacities for R717 based on 86°F liquid. Capacities are maximum and have no reserve for excess loads. Capacities apply to any PVS regulator (or solenoid) regardless of variation used.

Sub-cooled liquid: For each 10°F liquid is colder than base temperature, INCREASE TABLE VALUES by 3% for R717.

Note: For liquid overfeed applications (nominal 2:1 to 5:1 ratio), add 20% to the evaporator load and select a regulator based on this increased load value.

Note on PVS Valve Station Capacities: Listed capacities are based on the control valve portion of the valve station. The listed pressure drops are across the control valve. For the complete valve train please allow an additional 2-3 times the listed pressure drop.

PVS Suction Capacities (kW)

Pressure Regulators

R717	Evap Temp, °C Evap Press, Bar	Pressure Drop (bar)	20mm 30%	20mm 65%	20mm	25mm	32mm	40mm	50mm 100%	50mm GSS	65mm	80mm
	10°C 5.1	0.14 0.34 0.69 1.38	25 39 53 74	49 77 106 144	74 116 158 218	98 155 215 288	127 200 278 376	225 355 492 668	414 650 903 1228	379 596 828 1126	587 920 1279 1735	704 1104 1534 2081
	4.4°C 4.0	0.14 0.34 0.69 1.38	21 35 49 63	46 70 95 130	67 106 144 193	88 137 190 257	116 179 250 334	204 320 443 594	376 587 815 1093	344 538 747 1002	532 831 1148 1545	638 998 1377 1854
	-1.1°C 3.1	0.14 0.34 0.69	21 32 42	39 63 84	60 95 127	81 123 172	106 162 222	186 288 397	338 528 726	309 484 665	477 747 1026	572 896 1231
	-6.7°C 2.3	0.14 0.34 0.69	18 28 39	35 56 77	53 84 113	70 113 151	91 144 197	165 257 352	304 473 641	279 433 588	430 667 912	517 800 1094
	-12.2°C 1.6	0.14 0.34 0.69	16 25 32	32 49 67	49 74 98	63 98 134	84 127 172	148 229 306	270 418 566	248 383 518	384 591 798	461 709 957
	17.8°F 1.1	0.14 0.20 0.34	14 18 21	28 35 42	42 53 63	56 67 88	74 88 113	130 158 200	241 291 367	221 267 337	338 409 519	405 491 623
	-23.3°C 0.6	0.14 0.20	12 15	25 32	39 46	49 60	63 77	116 141	211 253	193 232	300 359	360 430
	-28.9°C 0.2	0.14	11	22	32	42	56	102	186	170	262	314
	-34.4°C -0.05	0.14	9	19	28	39	49	88	160	147	224	268
	-40°C -0.3	0.14	8	16	25	32	42	74	135	124	190	228

Capacities for R717 based on 30°C liquid. Capacities are maximum and have no reserve for excess loads. Capacities apply to any PVS regulator (or solenoid) regardless of variation used.

Sub-cooled liquid: For each 5°C liquid is colder than base temperature, INCREASE TABLE VALUES by 3% for R717.

Note: For liquid overfeed applications (nominal 2:1 to 5:1 ratio), add 20% to the evaporator load and select a regulator based on this increased load value.

Note on PVS Valve Station Capacities: Listed capacities are based on the control valve portion of the valve station. The listed pressure drops are across the control valve. For the complete valve train please allow an additional 2-3 times the listed pressure drop.

PVS Capacities (Tons)

Solenoid Valves

R717	Port Size (Inch)	Type	Liquid Capacities ①		Suction Capacities ②			
			2 psi pressure drop	4 psi pressure drop	2 psi pressure drop		4 psi pressure drop	
					20°F	0°F	20°F	0°F
	3/4"	30%	91	129	5.1	4.1	7	5.8
	3/4"	65%	182	258	10.3	8.2	15	11.6
	3/4"	100%	273	387	15.4	12.3	22	17.4
	1"		364	515	21	16	29	23
	1-1/4"		469	663	26	21	37	30
	1-1/2"		833	1178	47	37	67	53
	2"	100%	1456	2912	116	92	—	—
	2"	GSS	—	—	75	60	—	—
	2-1/2"		1995	3989	159	126	—	—
	3"		2673	5346	213	169	—	—

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① R717 liquid capacities are based on 20°F liquid with no flashing, 5°F evaporator temperature and no liquid overfeed. For liquid overfeed, multiply evaporator tons by recirculating rate and size valve to the tons result. Use of 20°F liquid for capacities in this table is sufficiently accurate for most liquid overfeed systems. To convert to 86°F liquid, multiply values in the table by 0.9.

② R717 suction capacities are based on 86°F condensing temperature and the evaporator temperatures listed. See PVS suction capacities on page 2 for other pressure drops and for corrections for liquid overfeed and sub-cooled liquid.

Note on PVS Valve Station Capacities: Listed capacities are based on the control valve portion of the valve station. The listed pressure drops are across the control valve. For the complete valve train please allow an additional 2-3 times the listed pressure drop.

PVS Capacities (kW)

R717	Port Size (mm)	Type	Liquid Capacities ①		Suction Capacities ②			
			0.14 bar pressure drop	0.28 bar pressure drop	0.14 bar pressure drop		0.28 bar pressure drop	
					-6.7°C	-17.8°C	-6.7°C	-17.8°C
	20	30%	320	454	18	14	25	20
	20	65%	640	907	36	29	53	41
	20	100%	960	1361	54	43	77	61
	25		1280	1811	74	56	102	81
	32		1649	2332	91	74	130	106
	40		2930	4143	165	130	236	186
	50	100%	5121	10241	408	324	—	—
	50	GSS	—	—	264	211	—	—
	65		7015	14030	559	443	—	—
	80		9400	18801	749	594	—	—

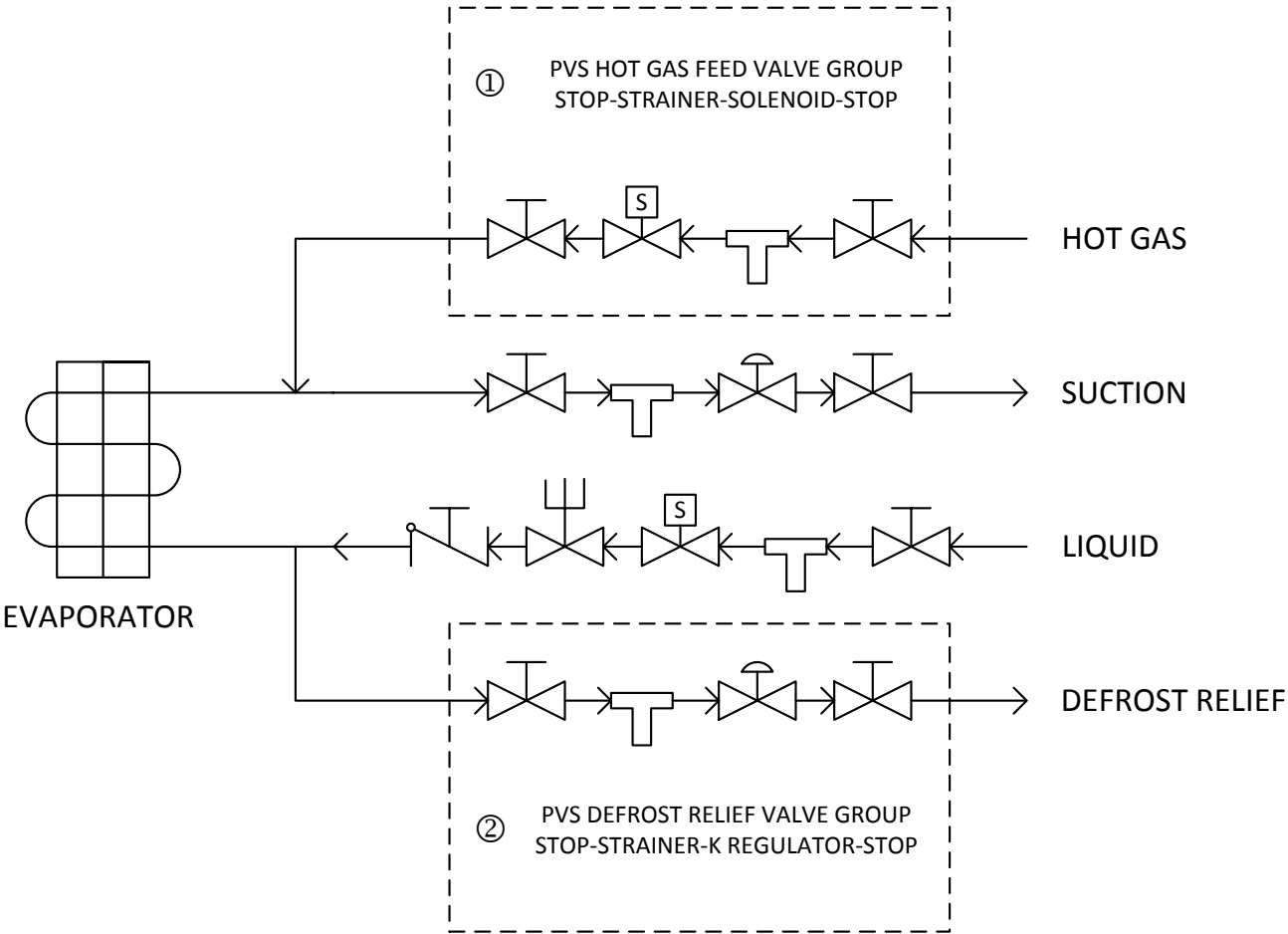
All capacities are maximum for the conditions listed and have no reserve for excess loads.

① R717 liquid capacities are based on -7°C liquid with no flashing, -15°C evaporator temperature and no liquid overfeed. For liquid overfeed, multiply evaporator tons by recirculating rate and size valve to the tons result. Use of -7°C liquid for capacities in this table is sufficiently accurate for most liquid overfeed systems. To convert to 30°C liquid, multiply values in the table by 0.9.

② R717 suction capacities are based on 30°C condensing temperature and the evaporator temperatures listed. See PVS suction capacities on page 2 for other pressure drops and for corrections for liquid overfeed and sub-cooled liquid.

Note on PVS Valve Station Capacities: Listed capacities are based on the control valve portion of the valve station. The listed pressure drops are across the control valve. For the complete valve train please allow an additional 2-3 times the listed pressure drop.

Hot Gas Defrost Valves Group



PVS Capacities (Tons)

Hot Gas Defrost Valves Group

R717	Hot Gas Supply Valve ① PVS Port Size	Defrost Relief Valve ② PVS Port Size	Evaporator Temperature				
			20°F	0°F	-20°F	-40°F	-60°F
	3/4" 30%	3/4" 30%	12	9.6	8	7	5.7
	3/4" 65%	3/4" 65%	23	19	16	14	11
	3/4"	3/4"	35	29	24	21	17
	1"	1"	47	38	31	28	23
	1-1/4"	1-1/4"	72	56	45	40	34
	1-1/2"	1-1/2"	170	130	110	90	72
	2" 100%	2"	264	204	156	132	109
	2-1/2"	2-1/2"	310	240	183	155	128
	3"	3"	416	321	246	208	172

Notes:

Nominal capacities listed are based on normal defrost times, saturated hot gas inlet to valve no less than 86°F, a 10°F difference between evaporator temperature and air entering evaporator, and an 47°F defrost temperature.

These capacities can be adjusted depending on the evaporator type and mass, the thickness of frost and other factors affecting the duration of the defrost process.

Equalizing the coil pressure after a defrost is critical to ensure that large suction valves do not open immediately and “shock” the system after the defrost has been terminated. This is especially true on large, low temperature coils, where the difference between the defrost pressure and the house suction is the greatest, and where the internal volume of the coil is largest. The addition of a vent solenoid (usually piped in parallel to the automatic suction valve), which opens for a pre-determined period after defrost (when the hot gas solenoid de-energizes, and the suction stop valve or suction solenoid remains closed), slowly bleeds down the coil pressure. This effectively allows the defrost to terminate in a “soft” and safe manner.

Note on PVS Valve Station Capacities: Listed capacities are based on the control valve portion of the valve station. The listed pressure drops are across the control valve. For the complete valve train please allow an additional 2-3 times the listed pressure drop.

PVS Capacities (kW)

R717	Hot Gas Supply Valve ① PVS Port Size	Defrost Relief Valve ② PVS Port Size	Evaporator Temperature				
			-7C	-18C	-30C	-40C	-50C
	20mm 30%	20mm 30%	42	34	28	25	20
	20mm 65%	20mm 65%	81	67	56	49	39
	20mm	20mm	123	102	84	74	60
	25mm	25mm	165	134	109	98	81
	32mm	32mm	253	197	158	141	120
	40mm	40mm	598	457	387	317	253
	50mm 100%	50mm 100%	928	717	549	464	384
	65mm	65mm	1092	844	645	546	452
	80mm	80mm	1463	1130	864	731	605

Notes:

Nominal capacities listed are based on normal defrost times, saturated hot gas inlet to valve no less than 30°C, a 5°C difference between evaporator temperature and air entering evaporator, and an 8°C defrost temperature.

These capacities can be adjusted depending on the evaporator type and mass, the thickness of frost and other factors affecting the duration of the defrost process.

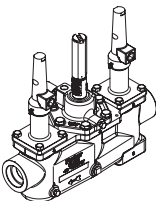
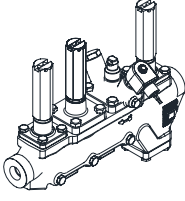
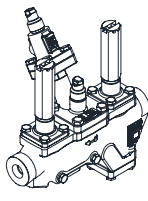
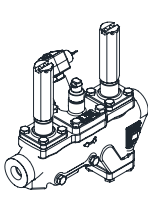
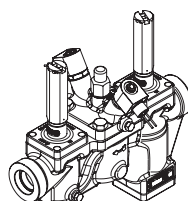
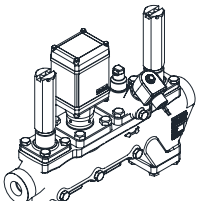
Equalizing the coil pressure after a defrost is critical to ensure that large suction valves do not open immediately and “shock” the system after the defrost has been terminated. This is especially true on large, low temperature coils, where the difference between the defrost pressure and the house suction is the greatest, and where the internal volume of the coil is largest. The addition of a vent solenoid (usually piped in parallel to the automatic suction valve), which opens for a pre-determined period after defrost (when the hot gas solenoid de-energizes, and the suction stop valve or suction solenoid remains closed), slowly bleeds down the coil pressure. This effectively allows the defrost to terminate in a “soft” and safe manner.

Note on PVS Valve Station Capacities: Listed capacities are based on the control valve portion of the valve station. The listed pressure drops are across the control valve. For the complete valve train please allow an additional 2-3 times the listed pressure drop.

Ordering Guide

To Order		Value to Specify
PVS Body Options	Port Size	See Table Below
	End Connection Type	Socket Weld, ANSI Butt Weld, DIN Butt Weld
	End Connection Size	See Table Below
Control Valve Options	Type	Solenoid, Regulator, PEV (w/o solenoid)
	Regulator	Range A (5-150 psi), D (75-280 psig), E (100-750 psig), V: Outlet Only (120 psig)
		Options: S - Electric Shutoff, B - Electric Wide Opening, D - Dual Range, L - Differential Pressure Regulator, K - Reseating Relief, O - Outlet Pressure Regulator
	Solenoid	Voltage & Frequency, Leaded or DIN, LED knob (Green or Red)
Expansion Valve		Hand Expansion, PEV, or none
Check Valve		Yes / No

Port Size		Available Connections	
mm	Inch	SW, ANSI BW (inch)	DIN BW (mm)
20	3/4"	3/4", 1", 1-1/4"	20, 25, 32
25	1"	3/4", 1", 1-1/4"	20, 25, 32
32	1-1/4"	1-1/4", 1-1/2"	32, 40
40	1-1/2"	1-1/2", 2"	40, 50
50	2"	2", 2-1/2"	50, 65
65	2-1/2"	2-1/2", 3"	65, 80
80	3"	2-1/2", 3"	65, 80

Common Valve Configurations					
Suction Stop Regulator	Pumped Liquid Feed	Suction Regulator	Hot Gas Defrost	2 Stage Solenoid	Liquid Feed
					
Shut-Off	Shut-Off	Shut-Off	Shut-Off	Shut-Off	Shut-Off
Strainer	Strainer	Strainer	Strainer	Strainer	Strainer
Regulator	Solenoid	Regulator	Solenoid	Solenoid	Solenoid
—	HEV	—	—	—	PEV
Shut-Off/Check	Shut-Off/Check	Shut-Off	Shut-Off	Shut-Off	Shut-Off

Ordering Examples*		
Application	Ordering Information	Notes
Hot gas feed solenoid	3/4" PVS, 1" SW, solenoid w/ 120/60 leaded coil, green LED	
Pumped liquid feed solenoid	1" PVS, 1-1/4" SW, solenoid w/ 120/60 DIN coil, HEV, check valve	
Relief regulator	1" PVS, 1-1/4" BW, K Regulator, check valve	Check valve is optional
Liquid Feed w/ PEV	3/4" PVS, 1-1/4" SW, solenoid w/ 240/60 leaded coil, PEV, red LED	

*See pages 4 – 6 of list price schedule ILP for additional ordering details.

User Safety Responsibility Statement for All Parker Products

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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