

StarlettePlus-E Refrigeration Dryers

SPE 004 - 100



Untreated compressed air is wet. 100% saturated as it leaves the compressor aftercooler, water vapour in the compressed air cools as it enters the air receiver and distribution piping, resulting in the formation of condensed liquid water and water aerosols. Wet compressed air leads to corrosion, the growth of micro-organisms and the formation of oily, acidic compressor condensate.

For a manufacturing facility reliant on compressed air for automation, these contaminants can directly impact safety, productivity and efficiency.

Compressed air treatment is therefore essential and for non-critical uses of compressed air, the refrigeration dryer is an ideal choice.

Refrigeration Dryers

Refrigeration dryers use a closed loop cooling system to lower the temperature of the compressed air to just above freezing, causing condensation of water vapour.

Most of the condensed liquid is then removed by an integral water separator and drained away. Prior to leaving the dryer, the compressed air is re-heated by the incoming compressed air to prevent condensation on the outside of the downstream distribution piping.

Refrigeration dryers should always be installed with general purpose and high efficiency coalescing filters and are an effective way to reduce water vapour, liquid water and water aerosols for general purpose compressed air applications.



Advantages

- Parker StarlettePlus-E refrigeration dryers are developed around a state-of-the-art aluminium heat exchanger (E-Pack), with a patent pending all-in-one design
- The E-Pack heat exchanger has a large air/air heat exchanger to pre-cool the incoming compressed air and reduce energy consumption
- The highly efficient E-Pack design results in a refrigerant circuit with lower absorbed power and uses a smaller volume of refrigerant than other comparable dryers
- The E-Pack design utilises low pressure drop, cross flow heat exchangers to reduce operational costs
- The E-pack heat exchanger includes a high efficiency. Stainless steel demister separator for liquid removal
- All models are equipped as standard with a digital controller that provides an indication of compressed air temperature, volt free alarm contact, service reminder and integral timed drain control
- StarlettePlus-E models are dual frequency (50Hz or 60Hz)
- Optional Energy Saving model versions (models SPE026 - SPE100) enables the dryer to save additional energy at partial load by cycling the refrigerant compressor while cooling the inlet air using the cold reserve stored in the E-Pack mass



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Dryer Performance

Dryer Models	Dewpoint (Standard)		Dewpoint (Option 1)		Dewpoint (Option 2)	
	°C	°F	°C	°F	°C	°F
SPE	+3	+37	+7	+45	+10	+50

Technical Data

Dryer Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature		Max Ambient Temperature		Electrical Supply (Standard)	Electrical Supply (Optional)	Thread Connections	Noise Level
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F				
SPE 004-062	2	29	16	232	5	41	65	149	50	122	230V 1ph 50Hz / 60Hz	N/A	BSPP	<75
SPE 080-100			14	203										

Flow Rates

Model	Pipe Size	Inlet Flow Rate 50 Hz					50Hz kW	Inlet Flow Rate 60Hz					60Hz kW
		L/s	m³/min	m³/hr	cfm	L/s		m³/min	m³/hr	cfm			
SPE 004	1/2"	7	0.4	24	14	0.13	8	0.47	28	16	0.16		
SPE 007	1/2"	12	0.7	42	25	0.14	13	0.78	47	28	0.17		
SPE 009	1/2"	15	0.9	54	32	0.15	17	1.00	60	35	0.19		
SPE 014	3/4"	23	1.4	84	49	0.15	27	1.60	96	57	0.18		
SPE 018	3/4"	30	1.8	108	64	0.16	34	2.07	124	73	0.20		
SPE 026	1"	43	2.6	156	92	0.29	49	2.93	176	104	0.36		
SPE 032	1"	53	3.2	192	113	0.30	61	3.63	218	128	0.37		
SPE 040	1"	67	4.0	240	141	0.31	76	4.53	272	160	0.38		
SPE 052	1 1/2"	87	5.2	312	184	0.46	100	6.02	361	212	0.56		
SPE 062	1 1/2"	103	6.2	372	219	0.57	119	7.15	429	253	0.69		
SPE 080	1 1/2"	133	8.0	480	282	0.73	154	9.25	555	327	0.90		
SPE 100	1 1/2"	167	10.0	600	353	0.74	191	11.48	689	406	0.91		

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure, 25 °C cooling air temperature, 35 °C air inlet temperature and +3°C pressure dewpoint. All models supplied with refrigerant R134a

For flows at other conditions, apply the correction factors shown below.

Product Selection & Correction Factors

For correct operation, compressed air dryers must be sized using for the maximum (summer) inlet temperature, maximum (summer) ambient temperature, minimum inlet pressure, required outlet dewpoint and maximum flow rate of the installation.

To select a dryer, first calculate the MDC (Minimum Drying Capacity) using the formula below then select a dryer from the flow rate table above with a flow rate equal to or above the MDC.

$$\text{Minimum Drying Capacity} = \text{System Flow} \times \text{CFIT} \times \text{CFAT} \times \text{CFMIP} \times \text{CFOD}$$

CFIT - Correction Factor Maximum Inlet Temperature

Maximum Inlet Temperature	°C	25	30	35	40	45	50	55	60	65
	°F	77	86	95	104	113	122	131	140	149
Correction Factor	50Hz	0.83	0.83	1.00	1.30	1.61	2.00	2.33	2.38	2.50
	60Hz	0.85	0.85	1.00	1.32	1.61	2.04	2.56	2.63	2.78

CFAT - Correction Factor Maximum Ambient Temperature

Maximum Ambient Temperature	°C	20	25	30	35	40	45	50
	°F	68	77	86	95	104	113	122
Correction Factor	50Hz	0.93	1.00	1.02	1.09	1.15	1.22	1.28
	60Hz	0.96	1.00	1.06	1.11	1.18	1.25	1.33

CFMIP - Correction Factor Minimum Inlet Pressure

Minimum Inlet Pressure	bar g	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	psi g	44	58	73	87	100	116	131	145	160	174	189	203	218	232
Correction Factor	50Hz	1.35	1.23	1.11	1.06	1.00	0.93	0.85	0.83	0.81	0.79	0.77	0.75	0.73	0.71
	60Hz	1.45	1.23	1.11	1.06	1.00	0.93	0.85	0.83	0.81	0.79	0.77	0.75	0.73	0.71

CFOD - Correction Factor Outlet Dewpoint

Outlet Dewpoint	°C	+3	+5	+7
	°F	+37	+41	+45
Correction Factor	50Hz	1.00	0.78	0.70
	60Hz	1.00	0.79	0.72

Controller Functions

Dryer Models	Controller Function							
	Power On Indication	Visual Fault Indication	Compressed Air Temperature	EST - Energy Saving Technology	Filter Service Indicator	Dryer Service Indicator	Fault Relay: Power Loss	4-20mA Dewpoint Re-transmission
SPE	•	•	•	On E-Saving Models		•	•	On E-Saving Models

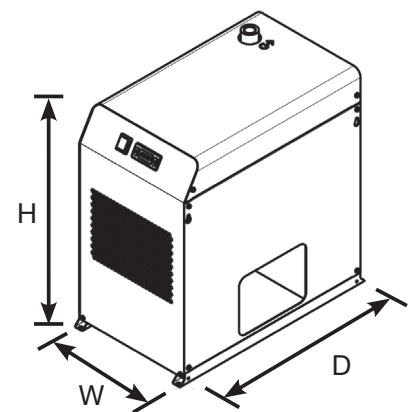
Recommended Filtration

Model	Pipe Size BSPB or NPT	Dryer Inlet	Dryer Outlet
		General Purpose Pre-Filter	High Efficiency Post Filter
SPE 004	1/2"	AOP010C	AAP010C
SPE 007	1/2"	AOP015C	AAP015C
SPE 009	1/2"	AOP015C	AAP015C
SPE 014	3/4"	AOP020D	AAP020D
SPE 018	3/4"	AOP020D	AAP020D
SPE 026	1"	AOP025E	AAP025E
SPE 032	1"	AOP025E	AAP025E
SPE 040	1"	AOP025E	AAP025E
SPE 052	1 1/2"	AOP030G	AAP030G
SPE 062	1 1/2"	AOP030G	AAP030G
SPE 080	1 1/2"	AOP035G	AAP035G
SPE 100	1 1/2"	AOP035G	AAP035G

Filtration Performance	General Purpose Pre-filter	High Efficiency Post Filter
Filtration Grade	Grade AO	Grade AA
Filtration Type	Coalescing	Coalescing
Particle Reduction (inc water & oil aerosols)	Down to 1 micron	Down to 0.01 micron
Maximum Remaining Oil Aerosol Content at 21°C	≤0.5 mg/m ³ (≤0.5 ppm(w))	≤0.01 mg/m ³ (≤0.01 ppm(w))
Filtration Efficiency	99.925%	99.9999%

Weights & Dimensions

Model	Pipe Size BSBP or NPT	Dimensions						Weight	
		Height (H)		Width (W)		Depth (D)		kg	lbs
		mm	ins	mm	ins	mm	ins		
SPE 004	1/2"	520	20.5	300	11.8	400	15.7	24	53
SPE 007	1/2"	520	20.5	300	11.8	400	15.7	24	53
SPE 009	1/2"	520	20.5	300	11.8	400	15.7	25	55
SPE 014	3/4"	580	22.8	330	13.0	550	21.7	35	77
SPE 018	3/4"	580	25.6	330	13.0	550	21.7	36	79
SPE 026	1"	650	25.6	400	15.7	630	24.8	46	101
SPE 032	1"	650	25.6	400	15.7	630	24.8	46	101
SPE 040	1"	650	25.6	400	15.7	630	24.8	47	104
SPE 052	1 1/2"	650	25.6	400	15.7	630	24.8	53	117
SPE 062	1 1/2"	650	25.6	400	15.7	630	24.8	55	121
SPE 080	1 1/2"	840	33.1	450	17.7	780	30.7	80	176
SPE 100	1 1/2"	840	33.1	450	17.7	780	30.7	80	176



Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	IP22 Indoor Use Only
EU	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Approval to ASME VIII Div. 1 not required
AUS	Approval to AS1210 not required
GUS	TR (formerly GOST-R)
For use with Compressed Air Only	

Parker Worldwide

Europe, Middle East, Africa

AE – United Arab Emirates,
Dubai

Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, St. Florian

Tel: +43 (0)7224 66201
parker.austria@parker.com

AZ – Azerbaijan, Baku

Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/NL/LU – Benelux,

Hendrik Ido Ambacht
Tel: +31 (0)541 585 000
parker.nl@parker.com

BG – Bulgaria, Sofia

Tel: +359 2 980 1344
parker.bulgaria@parker.com

BY – Belarus, Minsk

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

CH – Switzerland, Etoy

Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany

Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst

Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup

Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid

Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa

Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve

Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Piraeus

Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budaörs

Tel: +36 23 885 470
parker.hungary@parker.com

IE – Ireland, Dublin

Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IL – Israel

Tel: +39 02 45 19 21
parker.israel@parker.com

IT – Italy, Corsico (MI)

Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty

Tel: +7 7273 561 000
parker.easteurope@parker.com

NO – Norway, Asker

Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal

Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest

Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow

Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga

Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica

Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto

Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul

Tel: +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

UK – United Kingdom, Warwick

Tel: +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park

Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

North America

CA – Canada, Milton, Ontario

Tel: +1 905 693 3000

US – USA, Cleveland

Tel: +1 216 896 3000

Asia Pacific

AU – Australia, Castle Hill

Tel: +61 (0)2-9634 7777

CN – China, Shanghai

Tel: +86 21 2899 5000

HK – Hong Kong

Tel: +852 2428 8008

IN – India, Mumbai

Tel: +91 22 6513 7081-85

JP – Japan, Tokyo

Tel: +81 (0)3 6408 3901

KR – South Korea, Seoul

Tel: +82 2 559 0400

MY – Malaysia, Shah Alam

Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington

Tel: +64 9 574 1744

SG – Singapore

Tel: +65 6887 6300

TH – Thailand, Bangkok

Tel: +662 186 7000

TW – Taiwan, Taipei

Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires

Tel: +54 3327 44 4129

BR – Brazil, Sao Jose dos Campos

Tel: +55 800 727 5374

CL – Chile, Santiago

Tel: +56 2 623 1216

MX – Mexico, Toluca

Tel: +52 72 2275 4200

EMEA Product Information Centre

Free phone: 00 800 27 27 5374

(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL, IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)

Product Information Centre

Free number: 1-800-27 27 537

www.parker.com/gsf



FILCO, spol. s r.o.
Dvorská 464/103
CZ-503 11 Hradec Králové
Tel: +420 495 436 233
info@filco.cz
www.filco.cz