

StarlettePlus-E Refrigeration Dryers

SPS 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.

Environmentally friendly Refrigeration Dryers, that work with Low GWP refrigerant in compliance with the requirements of the F-Gas Regulation (EU 517/2014), are the best choice to protect your investment, the climate and the environment.



Advantages

- Parker StarlettePlus-E refrigeration dryers are developed around a state-of-the-art aluminium heat exchanger (E-Pack)
- 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
- In compliance with the F-Gas regulation, Low GWP environmentally friendly refrigerant R513A on all units. A protection for the environment and an insurance for the investment
- 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 SPS026 - SPS100) 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 |
| SPS | +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 | | | | |
| SPS 004-062 | 2 | 29 | 16 | 232 | 5 | 41 | 65 | 149 | 50 | 122 | 230V 1ph 50Hz / 60Hz | N/A | BSPP | <75 |
| SPS 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 | | | |
| SPS 004 | ½" | 7 | 0.4 | 24 | 14 | 0.13 | 8 | 0.47 | 28 | 16 | 0.16 | | |
| SPS 007 | ½" | 12 | 0.7 | 42 | 25 | 0.14 | 13 | 0.78 | 47 | 28 | 0.17 | | |
| SPS 009 | ½" | 15 | 0.9 | 54 | 32 | 0.15 | 17 | 1.00 | 60 | 35 | 0.19 | | |
| SPS 014 | ¾" | 23 | 1.4 | 84 | 49 | 0.15 | 27 | 1.60 | 96 | 57 | 0.18 | | |
| SPS 018 | ¾" | 30 | 1.8 | 108 | 64 | 0.16 | 34 | 2.07 | 124 | 73 | 0.20 | | |
| SPS 026 | 1" | 43 | 2.6 | 156 | 92 | 0.29 | 49 | 2.93 | 176 | 104 | 0.36 | | |
| SPS 032 | 1" | 53 | 3.2 | 192 | 113 | 0.30 | 61 | 3.63 | 218 | 128 | 0.37 | | |
| SPS 040 | 1" | 67 | 4.0 | 240 | 141 | 0.31 | 76 | 4.53 | 272 | 160 | 0.38 | | |
| SPS 052 | 1 ½" | 87 | 5.2 | 312 | 184 | 0.46 | 100 | 6.02 | 361 | 212 | 0.56 | | |
| SPS 062 | 1 ½" | 103 | 6.2 | 372 | 219 | 0.57 | 119 | 7.15 | 429 | 253 | 0.69 | | |
| SPS 080 | 1 ½" | 133 | 8.0 | 480 | 282 | 0.73 | 154 | 9.25 | 555 | 327 | 0.90 | | |
| SPS 100 | 1 ½" | 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 low GWP refrigerant R513A.

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 |
| SPS | • | • | • | On E-Saving Models | | • | • | On E-Saving Models |

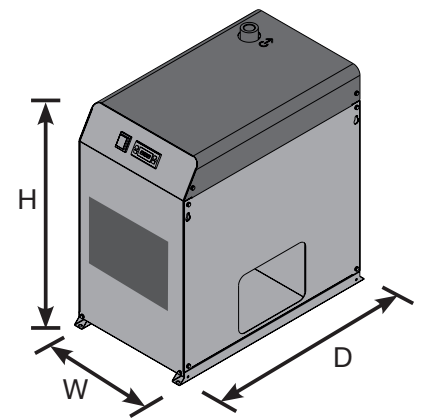
Recommended Filtration

| Model | Pipe Size BSP or NPT | Dryer Inlet | Dryer Outlet |
|---------|----------------------|----------------------------|-----------------------------|
| | | General Purpose Pre-Filter | High Efficiency Post Filter |
| SPS 004 | 1/2" | AOPX010C | AAPX010C |
| SPS 007 | 1/2" | AOPX015C | AAPX015C |
| SPS 009 | 1/2" | AOPX015C | AAPX015C |
| SPS 014 | 3/4" | AOPX020D | AAPX020D |
| SPS 018 | 3/4" | AOPX020D | AAPX020D |
| SPS 026 | 1" | AOPX025E | AAPX025E |
| SPS 032 | 1" | AOPX025E | AAPX025E |
| SPS 040 | 1" | AOPX025E | AAPX025E |
| SPS 052 | 1 1/2" | AOPX030G | AAPX030G |
| SPS 062 | 1 1/2" | AOPX030G | AAPX030G |
| SPS 080 | 1 1/2" | AOPX035G | AAPX035G |
| SPS 100 | 1 1/2" | AOPX035G | AAPX035G |

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