

# StarlettePlus-E Refrigeration Dryers

SPS 10 - 250  
60Hz - UL Listed



Untreated compressed air is wet. 100% saturated as it leaves the compressor aftercooler, water vapor 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 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 vapor.

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.

Designed with environmentally friendly, low Global Warming Potential (GWP) refrigerant gas, R513A, Parker's SPS Series Refrigeration Dryers are the best choice for quality, performance and the environment.



## Advantages

- Parker StarlettePlus-E refrigeration dryers are developed around a state-of-the-art aluminum heat exchanger (E-Pack), with a patent pending all-in-one design.
- The E-Pack heat exchanger is designed with a large air/air heat exchanger to pre-cool the incoming hot, saturated compressed air and therefore reduce energy consumption.
- The highly efficient E-Pack design results in a refrigeration circuit that uses a smaller volume of refrigerant than other comparable dryers and offers one of the lowest absorbed powers in the industry.
- The E-Pack design utilizes 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 over all operating conditions.
- Environmentally friendly, low Global Warming Potential (GWP) refrigerant gas, R513A, on all units.
- All models are equipped as standard with a digital controller that includes an indication of compressed air temperature, volt free alarm contact, service reminder and integral timed drain control.
- All StarlettePlus-E models are ETL listed.
- Optional Energy Saving (ES) models (SPS075 – SPS0250) saves energy by matching power consumption to compressed air demand. The ES models adjust to partial load conditions by allowing the refrigerant compressor to cycle off.



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Technical Data

| Dryer Models  |                    | Min Operating Pressure |       | Max Operating Pressure |       | Min Operating |    | Max Operating |    | Max Ambient |    | Electrical Supply | Electrical Supply (Optional) | Thread | Noise Level | Refrigerant Type |
|---------------|--------------------|------------------------|-------|------------------------|-------|---------------|----|---------------|----|-------------|----|-------------------|------------------------------|--------|-------------|------------------|
|               |                    | psi g                  | bar g | psi g                  | bar g | °F            | °C | °F            | °C | °F          | °C |                   |                              |        | dB(A)       |                  |
| SPS 010 - 050 | ISO 8573-1 Class 5 | 29                     | 2     | 232                    | 16    | 41            | 5  | 149           | 65 | 122         | 50 | 115V 1ph 60Hz     | N/A                          | NPT    | <75         | R513A            |
| SPS 075-175   |                    |                        |       | 203                    | 14    |               |    |               |    |             |    | 230V 1Ph 60Hz     | 230V 1Ph 60Hz                |        |             |                  |
| SPS 200 - 250 |                    |                        |       |                        |       |               |    |               |    |             |    | 230V 1ph 60Hz     | N/A                          |        |             |                  |

Flow Rates

| Model    | Pipe Size | Inlet Flow Rate |        |       |       | kW   |
|----------|-----------|-----------------|--------|-------|-------|------|
|          |           | cfm             | m³/min | m³/hr | L/s   |      |
| SPS 010  | 1/2"      | 10              | 0.28   | 17.0  | 4.7   | 0.16 |
| SPS 015  | 1/2"      | 15              | 0.42   | 25.5  | 7.1   | 0.17 |
| SPS 025  | 1/2"      | 25              | 0.71   | 42.5  | 11.8  | 0.19 |
| SPS 035  | 3/4"      | 35              | 0.99   | 59.5  | 16.5  | 0.18 |
| SPS 050  | 3/4"      | 50              | 1.42   | 85.0  | 23.6  | 0.20 |
| SPS 075  | 1"        | 75              | 2.12   | 127.4 | 35.4  | 0.36 |
| SPS 0100 | 1"        | 100             | 2.83   | 169.9 | 47.2  | 0.37 |
| SPS 0125 | 1"        | 125             | 3.54   | 212.4 | 59.0  | 0.38 |
| SPS 0150 | 1 1/2"    | 150             | 4.25   | 254.9 | 70.8  | 0.56 |
| SPS 0175 | 1 1/2"    | 175             | 4.96   | 297.3 | 82.6  | 0.69 |
| SPS 0200 | 1 1/2"    | 200             | 5.66   | 339.8 | 94.4  | 0.90 |
| SPS 0250 | 1 1/2"    | 250             | 7.08   | 424.8 | 118.0 | 0.91 |

Stated flows are for operation at the following climatic conditions: 100°F (38°C) Ambient Temperature, 100°F (38°C) Inlet Temperature and 100 psi g (7 bar g) Inlet Pressure.

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 inlet temperature, maximum ambient temperature, minimum inlet pressure 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.

Minimum Drying Capacity = System Flow x CFIT x CFAT x CFMIP

CFIT - Correction Factor Minimum Inlet Temperature

| Minimum Inlet Temperature | °F | 90   | 95   | 100 | 110  | 120  | 130  | 140  | 149  |
|---------------------------|----|------|------|-----|------|------|------|------|------|
|                           | °C | 32   | 35   | 38  | 43   | 49   | 54   | 60   | 65   |
| Correction Factor         |    | 0.74 | 0.82 | 1   | 1.33 | 1.76 | 2.38 | 2.60 | 2.67 |

CFAT - Correction Factor Maximum Ambient Temperature

| Maximum Ambient Temperature | °F | 60   | 70   | 80   | 90   | 95   | 100 | 110  | 120  | 122  |
|-----------------------------|----|------|------|------|------|------|-----|------|------|------|
|                             | °C | 16   | 21   | 27   | 32   | 35   | 38  | 43   | 49   | 50   |
| Correction Factor           |    | 0.93 | 0.93 | 0.93 | 0.93 | 0.96 | 1   | 1.08 | 1.16 | 1.18 |

CFMIP - Correction Factor Minimum Inlet Pressure

| Minimum Inlet Pressure | psi g | 45   | 60   | 80   | 100 | 125  | 150  | 160  | 175  | 203  | 232  |
|------------------------|-------|------|------|------|-----|------|------|------|------|------|------|
|                        | bar g | 3    | 4    | 5.5  | 7   | 8.5  | 10   | 11   | 12   | 14   | 16   |
| Correction Factor      |       | 1.40 | 1.17 | 1.09 | 1   | 0.88 | 0.82 | 0.81 | 0.79 | 0.75 | 0.71 |

## Controller Functions

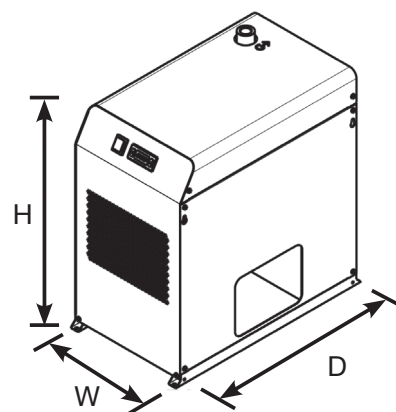
| Dryer Model                 | Power On Indication | Visual Fault Indication | Compressed Air Temperature | EST - Energy Saving Technology | Dryer Service Indicator | Fault Relay: Power Loss | 4-20mA for Dewpoint Retransmission |
|-----------------------------|---------------------|-------------------------|----------------------------|--------------------------------|-------------------------|-------------------------|------------------------------------|
| SPS 010 - 250               | X                   | X                       | X                          |                                | X                       | X                       |                                    |
| SPS 075 - 250 w/ EST Option | X                   | X                       | X                          | X                              | X                       | X                       | X                                  |

## Recommended Filtration

| Model    | Pipe Size | Dryer Inlet                | Dryer Outlet                 | Filtration Performance                               | General Purpose Pre-filter | High Efficiency After Filter |
|----------|-----------|----------------------------|------------------------------|--|----------------------------|------------------------------|
|          |           | General Purpose Pre Filter | High Efficiency After Filter |  |                            |                              |
| SPS 010  | ½"        | AOP010CNFI                 | AAP010CNFI                   | Filtration Grade                                     | Grade AO                   | Grade AA                     |
| SPS 015  | ½"        | AOP015CNFI                 | AAP015CNFI                   | Filtration Type                                      | Coalescing                 | Coalescing                   |
| SPS 025  | ½"        | AOP015CNFI                 | AAP015CNFI                   | Particle Reduction (inc water & oil aerosols)        | Down to 1 micron           | Down to 0.01 micron          |
| SPS 035  | ¾"        | AOP020DNFI                 | AAP020DNFI                   | Maximum Remaining Oil Aerosol Content at 70°F (21°C) | ≤0.5 mg/m³ (≤0.5 ppm(w))   | ≤0.01 mg/m³ (≤0.01 ppm(w))   |
| SPS 050  | ¾"        | AOP020DNFI                 | AAP020DNFI                   |  |                            |                              |
| SPS 075  | 1"        | AOP025ENFI                 | AAP025ENFI                   |  |                            |                              |
| SPS 0100 | 1"        | AOP025ENFI                 | AAP025ENFI                   |  |                            |                              |
| SPS 0125 | 1"        | AOP025ENFI                 | AAP025ENFI                   |  |                            |                              |
| SPS 0150 | 1 ½"      | AOP030GNFI                 | AAP030GNFI                   |  |                            |                              |
| SPS 0175 | 1 ½"      | AOP030GNFI                 | AAP030GNFI                   |  |                            |                              |
| SPS 0200 | 1 ½"      | AOP035GNFI                 | AAP035GNFI                   |  |                            |                              |
| SPS 0250 | 1 ½"      | AOP035GNFI                 | AAP035GNFI                   |  |                            |                              |

## Weights & Dimensions

| Model    | Pipe Size | Dimensions |     |           |     |           |     | Weight |    |
|----------|-----------|------------|-----|-----------|-----|-----------|-----|--------|----|
|          |           | Height (H) |     | Width (W) |     | Depth (D) |     |        |    |
|          |           | ins        | mm  | ins       | mm  | ins       | mm  | lbs    | kg |
| SPS 010  | ½"        | 20.5       | 520 | 11.8      | 300 | 15.7      | 400 | 53     | 24 |
| SPS 015  | ½"        | 20.5       | 520 | 11.8      | 300 | 15.7      | 400 | 53     | 24 |
| SPS 025  | ½"        | 20.5       | 520 | 11.8      | 300 | 15.7      | 400 | 55     | 25 |
| SPS 035  | ¾"        | 22.8       | 580 | 13.0      | 330 | 21.7      | 550 | 77     | 35 |
| SPS 050  | ¾"        | 22.8       | 580 | 13.0      | 330 | 21.7      | 550 | 79     | 36 |
| SPS 075  | 1"        | 25.6       | 650 | 15.7      | 400 | 24.8      | 630 | 101    | 46 |
| SPS 0100 | 1"        | 25.6       | 650 | 15.7      | 400 | 24.8      | 630 | 101    | 46 |
| SPS 0125 | 1"        | 25.6       | 650 | 15.7      | 400 | 24.8      | 630 | 104    | 47 |
| SPS 0150 | 1 ½"      | 25.6       | 650 | 15.7      | 400 | 24.8      | 630 | 117    | 53 |
| SPS 0175 | 1 ½"      | 25.6       | 650 | 15.7      | 400 | 24.8      | 630 | 121    | 55 |
| SPS 0200 | 1 ½"      | 33.1       | 840 | 17.7      | 450 | 30.7      | 780 | 176    | 80 |
| SPS 0250 | 1 ½"      | 33.1       | 840 | 17.7      | 450 | 30.7      | 780 | 176    | 80 |



## Quality Assurance / IP Rating / Pressure Vessel Approvals

|                                  |                      |
|----------------------------------|----------------------|
| Development / Manufacture        | ISO 9001 / ISO 14001 |
| Ingress Protection Rating        | IP22 Indoor Use Only |
| For use with compressed air only |                      |

# Parker Filtration Group

## **Aerospace Filtration Division**

Greensboro, North Carolina  
336 668 4444

## **Bioscience & Water Filtration Division**

Bioscience Filtration  
Oxnard, California  
877 784 2234

Water Purification  
Carson, California  
310 608 5600

## **Engine Mobile Aftermarket Division**

Kearney, Nebraska  
308 234 1951

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209 521 7860

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866 247 4827

## **Hydraulic & Fuel Filtration Division**

Metamora, Ohio  
419 644 4311

## **Industrial Gas Filtration & Generation Division**

Lancaster, NY  
800 343 4048

## **Industrial Process Filtration Division**

Mineral Wells, Texas  
940 325 2575

## **Bioscience Engineering Filtration Division EMEA**

Birtley, United Kingdom  
+44 (0) 191 410 5121

## **Engine Mobile Filtration Division EMEA**

Dewsbury, United Kingdom  
+44 (0) 1924 487 037

## **Gas Separation & Filtration Division EMEA**

Team Valley, United Kingdom  
+44 (0) 191 402 9000

## **Gas Turbine Filtration Division**

Alton, United Kingdom  
+44 (0) 1420 541188

## **Hydraulic & Industrial Filtration Division EMEA**

Arnhem, Netherlands  
+31 (0) 26 376 0376

## **Australia Filtration Division**

Castle Hill, Australia  
+61 2 9634 7777

## **China Filtration Division**

Shanghai, China  
+86 21 2067 2067

## **India Filtration Division**

Chennai, India  
+91 22 4391 0700

## **Korea Filtration Division**

Hwaseon City, Korea  
+82 31 359 0852

## **Latin America Filtration Division**

Sao Paulo, Brazil  
+55 12 4009 3500

