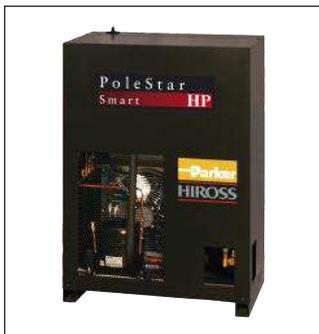




aerospace  
climate control  
electromechanical  
**filtration**  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



# Refrigeration drying solutions



ENGINEERING YOUR SUCCESS.

# Protect the Environment

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## and your Investments

Compressed air is a fundamental source of energy for the large majority of industrial processes. However, air from a compressor is often too humid, contaminated or hot to be used in the production chain without prior treatment.

The application of high-quality air ensures continuity and reliability of industrial applications, the highest quality standards for finished products and the optimization of production costs. Parker Hiross offers a range of refrigerated air drying solutions including:

- **Low and medium-capacity cycling refrigeration dryers**, products which have made Parker Hiross the world leader in the field of refrigerated air drying. The current ranges - Starlette Plus®, PoleStar Smart® and PoleStar Smart® HP - are the products of more than forty years of experience in the research, development and production of compressed air treatment systems.
- **High-capacity cycling refrigeration dryers**, available as standard models or custom-made to customer requirements.
- **Adsorption dryers**, for 'supercharged' drying, where a dewpoint in the -40°C to -70°C range is required.

### Caring for the environment:

Parker Hiross has been awarded ISO14001 certification and puts environmental standards at the heart of its production and design. Its refrigeration dryers guarantee:

- **Zero pollution risks**, due to its refrigeration system, which has been researched, developed and accurately tested to avoid any refrigerant loss.
- **Top energy efficiency**, reducing electrical energy consumption to a minimum.

### A safe investment:

Parker Hiross refrigeration dryers furthermore offer:

- **Energy awareness**, using components and features which deliver maximum efficiency and energy savings.
- **Low maintenance needs**, due to technological advances in research, development, production and testing.

*Free your Energy*

# with the Parker Hiross solutions

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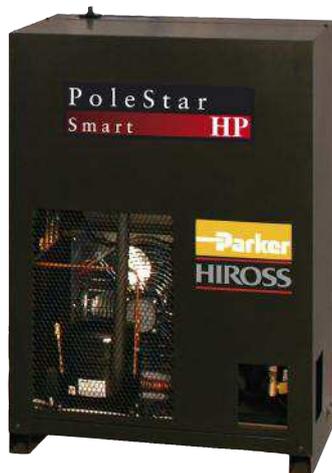
Refrigeration dryers



Starlette Plus®  
(0,2 - 6 m<sup>3</sup>/min)



PoleStar Smart®  
(7,5 - 180 m<sup>3</sup>/min)



PoleStar Smart® HP  
for high pressure  
(3 - 63 m<sup>3</sup>/min)

# Refrigeration dryers

## Starlette Plus®



In industrial applications, operational requirements vary widely and flexibility is a key factor. Using advanced technology, Starlette Plus® guarantees continuous performance and superior efficiency in every type of situation. It can be easily adapted to all working conditions, maintaining impeccable dewpoint control and the lowest possible operating costs.

Pressure drops normally account for a third of dryer's overall costs. With Starlette Plus®, pressure drops are reduced to a minimum (on average less than half that of alternative systems), leading to significantly lower running costs.

With its state-of-the-art PlusPack heat exchangers (patent pending) and the most compact dimensions of any system in its class, Starlette Plus® is the superior choice for any application.

PlusPack guarantees ideal dewpoints in any operating conditions and very low pressure drops (on average below 0.13 barg), as well as an extremely compact footprint.

### Versions

- with timed drain;
- with electronic drain.

### Operation

Hot and humid compressed air is cooled in the compressor by a refrigeration circuit. The condensate in the air turns from a gaseous to a liquid state, allowing it to be separated and removed from the compressed air.

### The range Starlette Plus® SPL002-060

In the standard model:

- Maximum operational pressure of 16 barg.
- Ambient temperature up to 50°C.
- Inlet air temperature up to 65°C.
- R134a environmentally friendly refrigerant in all models.
- PlusDrainer float drain.

*Free your Energy*

# Refrigeration dryers



PlusPack 3-in-1 heat exchangers (patent pending), in solid aluminium with air-to-air free-cooler exchanger, evaporator and 'slow flow' demister separator and integrated air connections.



## Features

- Reliable airtight piston compressors which do not require preheating.
- Simple and secure refrigeration circuits which do not require adjustment during operation and undergo vigorous quality testing in production.
- Large adjustable condenser and fan compartments to guarantee optimal performance even in extreme conditions.
- Security protection in the refrigeration circuit, increasing reliability and safeguarding the air dryer.
- Simple disassembly, with easy access to the internal components for efficient maintenance.
- Drain positioned in a niche, allowing easy access without the need to remove the top panel.

*The Parker Hiross solutions*

# Refrigeration dryers

## PoleStar Smart®



With the most advanced components, the latest technology and intelligent controls, the PoleStar Smart® air dryer offers guaranteed reliability and the lowest energy consumption in its field.

The price of the air dryer - calculated over a five-year period - amounts to around 25% of the total cost, with operational and maintenance costs making up the rest.

PoleStar Smart® has been designed to reduce direct and indirect energy consumption and keep maintenance to an absolute minimum.

Technical interventions are made simple by easy access to all air dryer components and the provision of maintenance kits.

### Operation

Although it looks like a traditional refrigerated air dryer, PoleStar Smart® boasts an array of new special energy-saving and maximum efficiency features.

Its innovative SmartSave feature and the new SmartPack heat exchanger, in solid aluminium, are two pending patents designed to optimize electricity consumption in response to load variations, maintaining a constant optimal dew-point.

Its SmartSave feature ensures the refrigeration compressor is employed as little as possible. The integrated electronic condensate drain is operated by microprocessor controller and saves energy by avoiding compressed air wastage.

### The range

#### PoleStar Smart® PST075-1800

In the standard model:

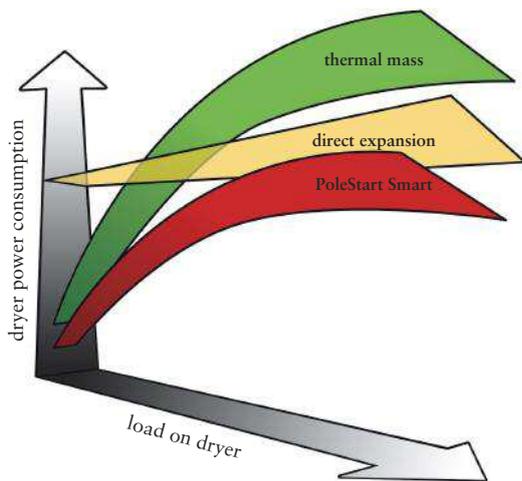
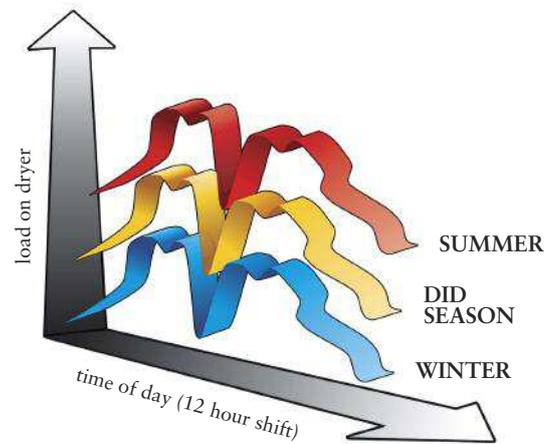
- Maximum 14 barg operational pressure
- Ambient temperature up to 50°C.
- Inlet air temperature up to 65°C.
- R407C environmentally friendly refrigerant in all models.
- SmartSave in models from PST120 upwards.
- Water condenser models from PST220 upwards.

*Free your Energy*

# Refrigeration dryers

## Minimal direct energy costs

- The **SmartSave** patent-pending feature (in model PST120 upwards) automatically and precisely adjusts energy consumption in response to actual operating conditions (air variability and seasonal changes), avoiding unnecessary waste.
- **SmartControl** controls the SmartSave feature, with multiple sensors guaranteeing maximum savings and avoiding dewpoint surges.
- **SmartPack's** all-in-one design and thermal insulation are further energy-saving features.



## Result

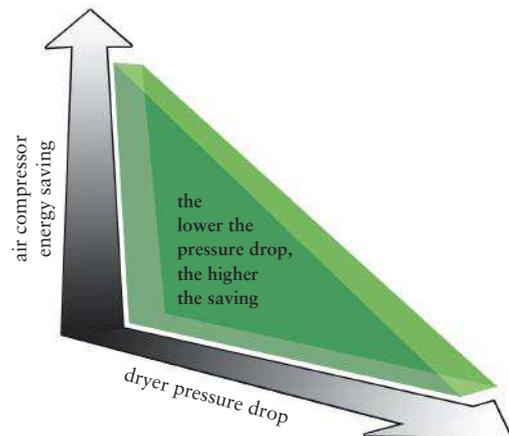
The most effective air dryer on the market, in all operating conditions. PoleStar Smart® leads the market with the lowest full-load power consumption due to its:

- oversized heat exchanger
- compliant scroll compressors
- R407C environmentally friendly refrigerant
- direct operation, avoiding the increased energy consumption of thermal mass-type air dryers.

PoleStar Smart® consumes less energy at full load and saves more energy at partial loads. Electrical consumption usually accounts for around 50% of the air dryer's total cost over a five-year period.

## Reduced indirect costs

- Electricity required by the compressor to compensate for pressure drops in the air dryer accounts for around 25% of its total cost over 5 years. PoleStar Smart® offers average pressure drops which are about **one half** those of conventional systems.
- The air compressor requires additional energy to offset the drop in compressed air pressure caused by traditional condensate drains. **SmartDrainer**, standard in models PST120 upwards, automatically adjusts its drainage pattern to avoid compressed air loss, thereby saving energy.



*The Parker Hiross solutions*

# Refrigeration dryers

## PoleStar Smart®

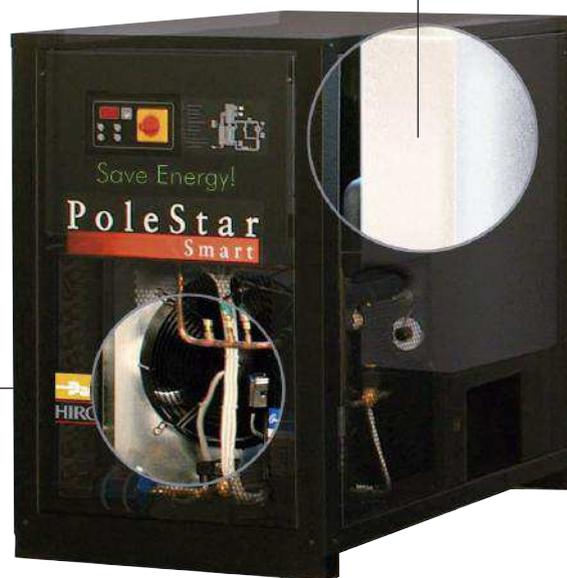


The **SmartPack** exchanger (patent pending) is an extremely robust, all-in-one model with no connection pipes. SmartPack offers among the lowest pressure drop levels in its class, guaranteeing considerable energy savings. Maximum dewpoint performance is assured by:

- large air channels leading to low air flow velocity
- an oversized demister separator offering optimum condensate separation at partial air flows
- a dewpoint sensor positioned in the air flow to ensure optimum control.

The generously-sized air-to-air section and Thermal Shield Insulation (TSI) contribute to a very lower power consumption.

The condenser prefilter is available from model PST120 upwards.



PoleStar Smart® features exclusive **compliant scroll compressors** (from PST120 models upwards), offering energy savings of up to 20% compared to other systems.

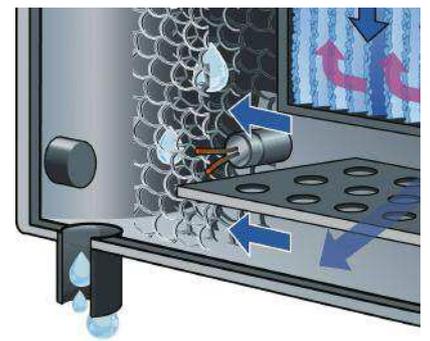
Totally resistant to liquid refrigerant returns and with 50% less moving parts than other models, these compressors are extremely reliable and almost indestructible. Low vibration levels also serve to prolong the refrigeration circuit life.

*Free your Energy*

# Refrigeration dryers

A standard feature on models from PST120 upwards, **SmartControl** maximizes ease of use. The multifunctional display gives a digital dewpoint reading and indicates coded alarms.

SmartControl manages the SmartSave (patent pending) function and informs the user when the air dryer is in energy saving mode. Maintenance intervals are automatically indicated, while a status report (showing the last eight events) and working hour counter simplify service. Standard volt-free contacts and an optional RS485 serial card allow remote monitoring and support if needed.



The **SmartDrainer** is fitted in models PST120 and upwards. The draining chamber is integrated into the heat exchanger, while the valve mechanism is located in an easily accessible drain niche.

SmartDrainer constantly adjusts itself to operating fluctuations, ensuring zero air loss and significant reductions in power consumption.

Self-diagnostic troubleshooting software helps preventing breakdowns and in the case of errors, an alarm sounds and the drain continues to follow a pre-programmed drain pattern.

*The Parker Hiross solutions*

# 50 barg refrigeration dryers

## PoleStar Smart<sup>®</sup> HP



### Operation

Cycling refrigeration dryers for high-pressure applications.

### The range PoleStar Smart<sup>®</sup> HP PSH030-630

The standard model features:

- Maximum 50 barg operational pressure
- Ambient temperature up to 50°C.
- Inlet air temperature up to 65°C.
- Environmentally friendly R407C refrigerant in all models.
- Performance-enhancing condenser prefilter in PSH120 models and upwards.
- The heat exchanger is made of copper brazed stainless steel plates.
- Inlet and outlet air collectors and condensate separator are entirely made of stainless steel to increase resistance to corrosion effects.
- Integrated timed drain on all models across the range.

Recent technological advances and the use of highly sophisticated production processes have led to increased market demand for compressed air at pressures of up to 50 barg.

The excellent dewpoint stability from **stainless steel compressed air circuits** in conjunction with the numerous complex tests which each air dryer must undergo, means that PoleStar Smart HP can guarantee the highest possible quality of finished product.

These also include the most complex technological processes, such as the production of bottles in PET recyclable plastic. In other words, maximum performance at minimum cost.

PoleStar Smart HP furthermore conforms to all major international directives and regulations, including the European PED 97/23 directive and North American ASME standards.

Parker Hiross offers a complete range of products (filters, separators, refrigerants and condensate drains) providing optimal treatment of compressed air and gas even at 50 barg pressure.

*Free your Energy*

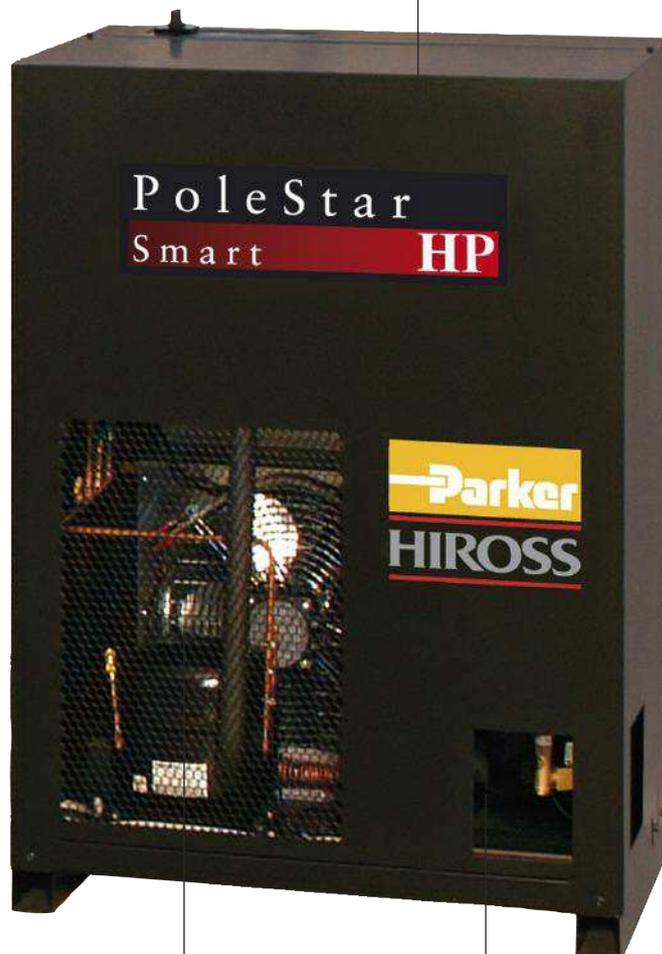
# 50 barg refrigeration dryers

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The **pneumatic circuit**, including a heat exchanger with copper brazed plates and condensate separator, is made of stainless steel to increase resistance to corrosion, which is common in certain environments and processes.

Models from PSH030 to 090 are controlled by an electronic board, models from PSH120 to 630 by the **SmartControl microprocessor**.



PSH120 models and upwards are enhanced by **compliant scroll compressors**.

Integrated timed condensate drain located in a **niche** for easy access and maintenance.

The integral drain is controlled by the electronic board of the dryer.

*The Parker Hiross solutions*

# Technical data

## Starlette Plus®

Model	Air flow		Nominal abs. power kW	Air connections in/out	Dimensions (mm)			Weight kg
	m <sup>3</sup> /min	m <sup>3</sup> /h			A Width	B Height	C Depth	
SPL002	0,2	12	0,12	1/2"	450	430	210	19
SPL004	0,4	24	0,13	1/2"	450	430	210	19
SPL006	0,6	36	0,17	1/2"	450	430	210	19
SPL009	0,9	54	0,25	1/2"	500	505	210	23,5
SPL012	1,2	72	0,25	1/2"	500	505	210	23,5
SPL018	1,8	108	0,49	3/4"	520	565	225	26,5
SPL024	2,4	144	0,57	3/4"	520	565	225	31
SPL030	3,0	180	0,78	3/4"	520	565	225	35
SPL040	4,0	240	0,71	1 1/2"	555	600	425	52
SPL050	5,0	300	0,85	1 1/2"	555	600	425	58
SPL060	6,0	360	1,05	1 1/2"	555	600	425	60

Performances refer to air suction of FAD 20°C, 1 bar A, and the following operating conditions: air suction 25°C/60% RH, 7 barg working pressure, pressure dew point in accordance with class 6 of DIN ISO 8573-1, 25°C cooling air temperature, 35°C compressed air inlet temperature.

All indicated data refers to DIN ISO 7183. Performances have been tested and verified by an external third party. All models supplied with R134a and for operation up to 16 barg and with power supply 230V/1ph/50Hz. Data refers to 50Hz models. 50Hz models with BSPP-F connections.

### Air flow correction factors for differing working conditions

A) working pressure correction factors	barg	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		0,73	0,83	0,9	0,95	1	1,03	1,07	1,09	1,12	1,13	1,15	1,17	1,18	1,19
B) air inlet temperature correction factors	°C	30	35	40	45	50	55	60	65						
		1,22	1	0,83	0,69	0,58	0,49	0,46	0,43						
C) ambient temperature correction factors	°C	20	25	30	35	40	45	50							
		1,05	1	0,94	0,88	0,81	0,75	0,68							

To obtain the required air flow multiply the air flow by the above correction factors (ie. Air flow x A x B x C). Starlette Plus® can operate up to ambient temperature of 50°C and inlet temperature of 65°C. The above correction factors are approximative: for a precise selection always refer to the software selection program or contact your Parker Hiross partner.

*Free your Energy*

# Technical data

## PoleStar Smart®

Model	Air flow		Nominal abs. power kW	Air connections in/out	Dimensions (mm)			Weight kg
	m <sup>3</sup> /min	m <sup>3</sup> /h			A Width	B Height	C Depth	
PST075	7,5	450	0.90	1 ½"	703	945	562	83
PST095	9,5	570	1.38	1 ½"	703	945	562	83
PST120	12	720	1.13	2"	706	1064	1046	145
PST140	14	840	1.14	2"	706	1064	1046	145
PST180	18	1080	1.46	2"	706	1064	1046	155
PST220	22	1320	1.68	2 ½"	806	1316	1166	230
PST260	26	1560	2.19	2 ½"	806	1316	1166	240
PST300	30	1800	2.41	2 ½"	806	1316	1166	245
PST350	35	2100	3.06	2 ½"	806	1316	1166	250
PST460	46	2760	3.14	DN100	1007	1690	1097	470
PST520	52	3120	3.54	DN100	1007	1723	1097	490
PST630	63	3780	4.64	DN100	1007	1722	1657	580
PST750	75	4500	5.73	DN150	1007	1722	1657	670
PST900	90	5400	7.63	DN150	1007	1722	1657	690
PST1200	120	7200	8.92	DN150	1007	2048	1657	830
PST1500	150	9000	12.35	DN200	1007	2208	2257	1100
PST1800	180	10800	15.96	DN200	1007	2208	2257	1190

Performances refer to air-cooled models with air suction of FAD 20°C/1 bar A, and the following operating conditions: air suction 25°C/60% RH, 7 barg working pressure, pressure dew point in accordance with class 5 of DIN ISO 8573-1, 25°C cooling air temperature, 35°C compressed air inlet temperature. All indicated data refers to DIN ISO 7183. All models supplied with refrigerant R407C and for operation up to 14 barg. 50Hz models PST075-095 supplied with 230V/1ph/50Hz power supply, models PST120-1800 with 400V/3ph/50Hz. Water-cooled versions available from model 220. PST075-350 models with BSPP-F connections. The 60Hz version of the PoleStar Smart® models is available from 7m<sup>3</sup>/min air flow.

### Air flow correction factors for differing working conditions

A) working pressure correction factors	barg	3	4	5	6	7	8	9	10	11	12	13	14
		0,74	0,83	0,90	0,96	1	1,04	1,07	1,08	1,11	1,12	1,14	1,15
B) air inlet temperature correction factors	°C	30	35	40	45	50	55	60	65				
		1,23	1	0,84	0,70	0,59	0,50	0,45	0,40				
C) ambient temperature correction factors	°C	20	25	30	35	40	45	50					
		1,06	1	0,95	0,90	0,83	0,77	0,72					

To obtain the required air flow multiply the air flow by the above correction factors (ie. Air flow x A x B x C). PoleStar Smart® can operate up to ambient temperature of 50°C and inlet temperature of 65°C. The above correction factors are approximative: for a precise selection always refer to the software selection program or contact your Parker Hiross partner.

# Technical data

## PoleStar Smart® HP

Model	Air flow		Nominal abs. power kW	Air connections in/out	Dimensions (mm)			Weight kg
	m <sup>3</sup> /min	m <sup>3</sup> /h			A Width	B Height	C Depth	
PSH030	3	180	0.53	1 ¼"	703	945	562	83
PSH045	4,5	270	0.55	1 ¼"	703	945	562	83
PSH065	6,5	390	1.33	1 ¼"	703	945	562	85
PSH090	9	540	1.37	1 ¼"	703	945	562	85
PSH120	12	720	1.41	1 ¼"	706	1.064	1.046	152
PSH160	16	960	1.44	1 ¼"	706	1.064	1.046	152
PSH200	20	1.200	1.47	1 ¼"	706	1.064	1.046	152
PSH230	23	1.380	1.52	1 ¼"	706	1.064	1.046	152
PSH290	29	1.740	2.89	2 ½" ANSI	1.007	1.690	1.097	356
PSH380	38	2.280	3.18	2 ½" ANSI	1.007	1.690	1.097	356
PSH460	46	2.760	3.44	2 ½" ANSI	1.007	1.690	1.097	356
PSH630	63	3.780	4.12	2 ½" ANSI	1.007	1.690	1.657	455

Performances refer to air-cooled model with air suction of FAD 20°C / 1 bar A, and the following operating conditions: air suction 25°C / 60%RH, 40 barg working pressure, 25°C cooling air temperature, 35°C compressed air inlet temperature and pressure dewpoint in accordance with class 5 of DIN ISO8573-1. All indicated data refers to DIN ISO 7183. All models supplied with R407C. All models are supplied with timed integrated drain and designed for operation up to 50 barg. 50Hz models 030-090 supplied with 230V / 1Ph / 50Hz power supply, models 120-630 with 400V / 3Ph / 50Hz. Models PSH030-230 supplied with BSPT-F air connections. Flanged models supplied with stainless steel ANSI flanges; counterflanges and DIN flanges available on request. Please contact Parker Hiross for different models and versions.

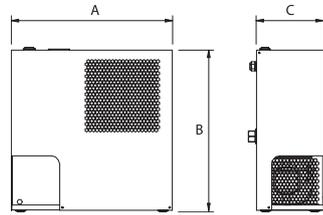
### Air flow correction factors for differing working conditions

A) working pressure	barg	15	20	25	30	35	40	45	50
correction factors		<b>0,85</b>	<b>0,91</b>	<b>0,94</b>	<b>0,97</b>	<b>0,99</b>	<b>1</b>	<b>1,01</b>	<b>1,01</b>
B) air inlet temperature	°C	30	35	40	45	50	55	60	65
correction factors		<b>1,18</b>	<b>1</b>	<b>0,87</b>	<b>0,77</b>	<b>0,69</b>	<b>0,62</b>	<b>0,56</b>	<b>0,50</b>
C) ambient temperature	°C	20	25	30	35	40	45	50	
correction factors		<b>1,02</b>	<b>1</b>	<b>0,98</b>	<b>0,95</b>	<b>0,93</b>	<b>0,90</b>	<b>0,86</b>	

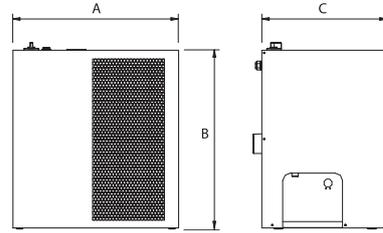
To obtain the required air flow multiply the air flow by the above correction factors (ie. Air flow x A x B x C). PoleStar Smart HP can operate up to ambient temperature of 50°C and inlet temperature of 65°C. The above correction factors are approximative; for a precise selection always refer to the software selection program or contact your Parker Hiross partner.

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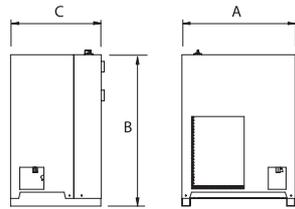
# Dimensional drawings



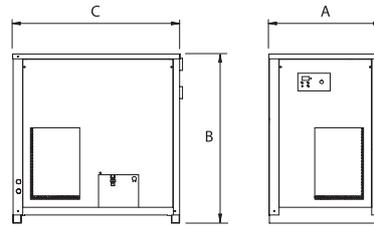
SPL002-030



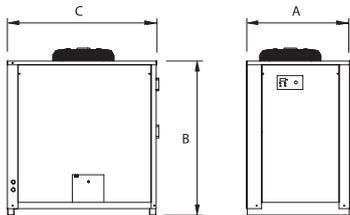
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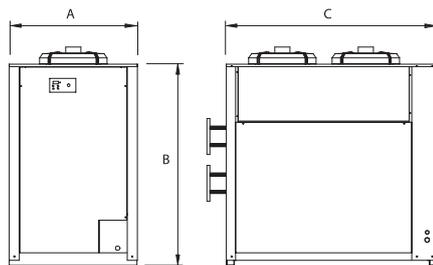
PST075-095  
PSH030-090



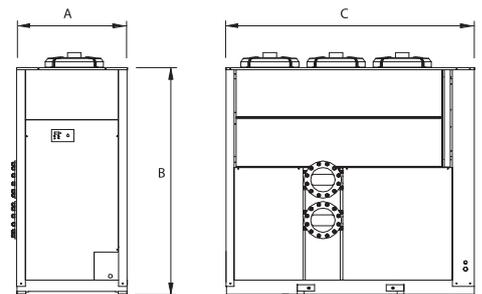
PST120-180  
PSH120-230



PST220-350



PST460-1200  
PSH290-630



PST1500-1800

Data contained in this publication is indicative only. The manufacturer reserves the right to modify data without prior notice.

*The Parker Hiross solutions*

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