Portable Compressed Air Treatment

Portable Desiccant Dryers
PPD Series

Parker

ENGINEERING YOUR SUCCESS.

Engineering Excellence

For over 50 years, Parker Hannifin's Industrial Gas Filtration and Generation Division has established itself as an industry leader in the design, development and manufacture of a wide range of filtration and separation products.

Designed to meet the needs of global customers through a dedicated focus on key market sectors, Parker's products deliver a unique combination of innovation and excellence in the most demanding applications, helping our valued customers to maximize the productivity and profitability of their manufacturing and process operations.

Parker's engineering expertise and broad range of core technologies uniquely positions the company to help solve the world's greatest engineering challenges, while delivering real and lasting value to every customer.

A Powerful Utility

Compressed air is safe and reliable power source that is widely used throughout industry. Often referred to as the fourth utility, compressed air is used by nearly every company for some aspect of their operations. While gas, water and electricity are supplied to site by a utility's supplier and to strict quality specifications, compressed air is generated on-site. This means that the quality of the compressed air and cost of producing it are the responsibility of the end user.

Operating an efficient product facility allows for higher volumes and better quality products to be manufactured. To achieve maximum performance, the best compressed air quality is required. The problem with compressed air systems is that they inherently suffer from performance and reliability issues. Almost all the problems associated with the compressed air system and subsequent product related quality issues can be directly attributed to compressed air contamination.

Compressed air contaminants are derived from the atmospheric air, the air compressor, air storage tanks and the distribution piping. From these sources, users should be aware of 10 major contaminants: water vapor, water aerosols, liquid water, atmospheric dirt, solid particles, microorganisms, oil vapor, oil aerosols, liquid oil, and rust/pipe scale. Effectively removing or reducing these contaminants down to acceptable levels requires a combination of compressed air filtration and dehumidification equipment.

Air quality requirements for compressed air will differ from application to application, and so will the required combination of compressed air treatment products. Various compressed air filter technologies are used to remove the vast majority of compressed air contaminants. When installed in proper series, compressed air filters remove water and oil aerosols, atmospheric dirt, solid particles, rust/pipe scale and microorganisms.

At the heart of every compressed air system is a compressed air dryer, which is the only type of purification system capable of removing water vapor. For critical applications that require a very dry air or facilities that have compressed air distribution piping in freezing environments, a desiccant dryer, also known as an adsportion dryer, must be utilized.

Adsorption dryers reduce water vapor in compressed air by passing air over a regenerative desiccant material, which strips the moisture from the air. This extremely efficient method of drying provides a constant, low pressure dewpoint. A typical pressure dewpoint specified for an adsorption dryer is -40°F, as this prevents corrosion and inhibits the growth of micro-organisms.

Portable Desiccant Compressed Air Dryers

A series of comprehensive compressed air treatment systems each equipped with multiple stages of a filtration, a twin tower desiccant (adsorption) dryer, optional integrated aftercooler and water separator package, and industry leading Programmable Logic Controller (PLC). Packaged on portable, heavy-duty skid these highly engineered systems ensure high quality compressed air in accordance with ISO8573-1, the international standard for compressed air quality.

Stage

1. **General Purpose Coalescing[1] Pre-Filter:** Particle removal down to 1 micron. Max remaining oil content of 0.5 mg/m3.
2. **High Efficiency Coalescing[1] Pre-Filter:** Particle removal down to 0.01 micron. Max remaining oil content of 0.01 mg/m3.
3. **Desiccant Dryer:** Reduces water vapor to a pressure dewpoint of -40˚F (-40˚C) or better.
4. **General Purpose Dry Particulate After-Filter:** Particle removal down to 1 micron.

Optional: Air Cooled Aftercooler with Water Separator: Cools air to within 15˚F of ambient temperature & removes bulk condensed liquid

[1]Particle removal includes water & oil aerosols. Stated maximum remaining oil content is at 7˚F (21˚C).

ISO8573-1 is the primary document used from the ISO8573 series as it is this document which specifies the amount of contamination allowed in each cubic meter of compressed air. It also lists the main contaminants as Solid Particulate, Water and Oil. The purity levels for each contaminant are shown separately in tabular form, however for ease of use, this table combines all three contaminants into one easy to use table.

ISO8573-1:2010 CLASS	Solid Particulate				Water		Oil
	Maximum number of particles per m^3			Mass Concentration mg/m^3	Vapor Pressure Dewpoint	Liquid g/m^3	Total Oil (aerosol liquid and vapor) mg/m^3
	0.1 - 0.5 micron	0.5 - 1 micron	1 - 5 micron				
0	As specified by the equipment user or supplier and more stringent than Class 1						
1	⩽ 20,000	⩽ 400	⩽ 10	-	⩽ -94°F (-70°C)	-	0.01
2	⩽ 400,000	⩽ 6,000	⩽ 100	-	⩽ -40°F (-40°C)	-	0.1
3	-	⩽ 90,000	⩽ 1,000	-	⩽ -4°F (-20°C)	-	1
4	-	-	⩽ 10,000	-	⩽ 37.4°F (3°C)	-	5
5	-	-	⩽ 100,000	-	⩽ 44.6°F (7°C)	-	-
6	-	-	-	⩽ 5	⩽ 50°F (10°C)	-	-
7	-	-	-	5 - 10	-	⩽ 0.5	-
8	-	-	-	-	-	0.5 - 5	-
9	-	-	-	-	-	5 - 10	-
X	-	-	-	>10	-	>10	>10

Optimized System Design

To achieve the stringent air quality levels required for today's modern production facilities, a careful approach to system design, commissioning and operation must be employed.

Compressed air treatment using just one purification technology or at one point in the compressed air system is not enough to achieve high purity levels defined by ISO8573-1. Multiple stages of purification should be employed to ensure the most effective solution for high quality compressed air.

To guarantee maximum performance and reliability, Parker's PPD Series portable desiccant compressed air dryers are comprehensive filtration and dehumidification systems that protect the entire compressed air network, providing the best quality compressed air, exactly where it is needed.

Parker PPD Standard Features

- Selectable cycle modes deliver a continuous dewpoint of -40°F with Standard Cycle or dewpoints as low as -100°F with Short Cycle.
- Heavy duty, compact & light weight design for portable field applications
- Draggable skid with lifting lugs & fork holes for ease of transportation
- Dual coalescing pre-filters remove particulates, including water and oil aerosols, down to 0.01 micron and deliver a max remaining oil content of 0.01 mg/m3.
- Rugged zero-air-loss mechanical drains ensure safe, reliable disposal of heavily contaminated condensate
- Industry leading Allen Bradley® Programmable Logic Controller (PLC)
- NEMA 4X enclosure allows for outdoor operation and offers a superior level of protection from corrosion and extreme environments
- Air sample port for on-site dewpoint sampling
- Hour meter records elapsed run time
- Control panel includes on/off switch and lights for power, run, stop and failure-to-switch alarm
- Locally mounted pressure gauges desiccant tanks and purge setting
- Fitted with multiple inlet/outlet connections types (Boss, NPT & Flange)
- Integrated inlet and outlet isolation valves
- Adjustable purge valve allows for on-site adjustment to purge pressure for varying flow and pressure conditions
- DIN connectors with LED on switching valves enhance troubleshooting and reduce time to service

[1]Achieving pressure dewpoints lower than -40°F require dryer operation in Short Cycle mode and an increased purge rate. Consult factory or user manual for more information.

Parker PPD Optional Features

- Integrated pneumatic air-cooled aftercooler package cools compressed air down to within 15°F of ambient temperature. Package includes:
  - Y-strainer at dryer inlet for removal of unwanted particulates
  - Water separator to remove bulk liquids condensed during cooling
  - 64 oz. oil mist lubricator
- Advanced Allen Bradley® Programmable Logic Controller (PLC). Upgrade includes:
  - Modbus communications via RS485 or Ethernet
  - Dewpoint probe installed at dry air outlet
  - Digital pressure dewpoint display
  - Control panel includes on/off switch and lights for power, run, stop, failure-to-switch alarm and high humidity alarm

How to Order

Series	+	Flow Rate (scfm)	+	Controller Type		+	Pre-Treatment Options		=	Example
PPD		500		B	Basic PLC		N	No aftercooler package		PPD1600RA
		1000		R	Advanced PLC		A	Integrated aftercooler package & water separator		
		1600								
		3000								

Product Specifications

Model	Flowrate[1,2]		Standard Pressure Dewpoint[6]		Air In/Out	Power Supply	Protection Class	Dryer FLA
	cfm	m3/hr	˚F	˚C				
PPD500*N	500	847	-40	-40	2” BOSS/NPT/FLG	120V - 1Ph 50-60Hz	NEMA 4	2
PPD500*A	500	847			2” BOSS/NPT/FLG			
PPD1000*N	1000	1695			3” BOSS/NPT/FLG			
PPD1000*A	1000	1695			3” BOSS/NPT/FLG			
PPD1600*N	1600	2712			3” BOSS/NPT/FLG			
PPD1600*A	1600	2712			3” BOSS/NPT/FLG			
PPD3000*N	3000	5085			(2) 3” BOSS/NPT, (1) 4” FL			

Model	Min. Operating Pressure		Max. Operating Pressure		Max. Inlet Temperature		Min. Ambient Temperature[4]		Max. Ambient Temperature	
	psi g	bar g	psi g	bar g	˚F	˚C	˚F	˚C	˚F	˚C
PPD500-3000 No Aftercooler	80	5.5	150	10.3	120	49	40	4	120	49
PPD500-1600 With Aftercooler					250	121			105	41

Notes:

1. Flow rate for PPD dryers WITHOUT aftercooler option models based on 100˚F inlet, 100 psig inlet and 100˚F ambient.
2. Flow rate for PPD dryers WITH aftercooler option models based on 250˚F inlet, 100 psig inlet and 85˚F ambient.
3. Designs for other flow rates, pressure and temperatures are available. Consult factory for additional information.
4. Proper freeze protection must be added to equipment operating in temperatures below 40˚F. Consult factory for options.
5. PPD dryers are cETLus listed and conform to ASME Section VIII, Division 1. Consult factory regarding other regulatory certifications.
6. PPD dryers come factory set for -40˚F dewpoint as standard. Adjusting purge pressure and operating in Short Cycle Mode allow for dewpoints as low as -100˚F. Consult factory or user manual for details.

Weights and Dimensions

Model	Height		Width		Depth		Weight	
	in	mm	in	mm	in	mm	lb	kg
PPD500*N	89.8	2281	53.9	1368	64.5	1638	2125	964
PPD500*A	89.8	2281	53.9	1368	64.5	1638	2325	1055
PPD1000*N	92.3	2343	70	1778	84.5	2146	3450	1565
PPD1000*A	92.3	2343	70	1778	84.8	2146	4000	1814
PPD1600*N	100.2	2545	84	2134	90.5	2299	5500	2495
PPD1600*A	100.2	2545	84	2134	90.5	2299	6200	2812
PPD3000*N	96.8	2459	98	2489	98	2489	10150	4604

Note:
Weights and dimensions shown for all PPD models are approximate. Parker reserves the right to make changes without notification. Consult factory for general arrangement drawings.

Correction Factors

See Product Specifications regarding dryer flow rates and design conditions. Use the below correction factors for operating temperatures and pressures that differ from design conditions.

To obtain dryer flow capacity of PPD dryer WITHOUT integrated aftercooler option at new conditions, multiply: rated flow capacity x C1A x C2.

To obtain dryer flow capacity of PPD dryer WITH integrated aftercooler option at new conditions, multiply: rated flow capacity x C1B x C2.

Inlet Temperature Correction Factor								
Maximum Inlet Temperature (C1A)	°F	90	95	100	105	110	115	120
	°C	32	35	38	41	43	46	49
	CF	1.17	1.15	1.00	.87	.76	.66	.58

Ambient Temperature Correction Factor								
Maximum Inlet Temperature (C1B)	°F	75	80	85	90	95	100	105
	°C	32	35	38	41	43	46	49
	CF	1.17	1.15	1.00	.87	.76	.66	.58

Inlet Pressure Correction Factor								
Minimum Inlet Pressure (C2)	psig g	80	90	100	110	120	130	140
	bar g	5.5	6.2	6.9	7.6	8.3	9	9.7
	CF	0.83	0.91	1.00	1.09	1.17	1.26	1.29

Example 1: PPD500 without aftercooler, 90°F inlet temperature and 130 psi g inlet pressure:
Rated Flow x C1A x C2 = New flow capacity
500 scfm x 1.17 x 1.26 = 737 scfm

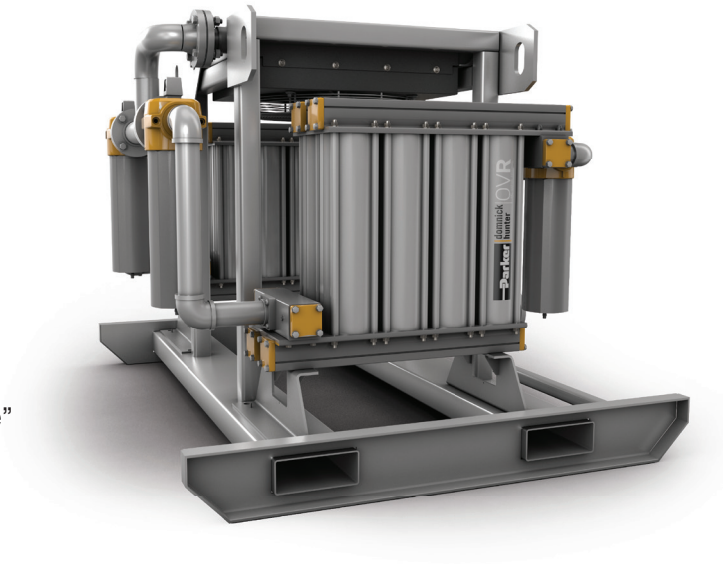
Example 2: PPD1600 with aftercooler (and after cooler turned on), 90°F ambient temperature, and 110 psi g inlet pressure.
Rated Flow x C1B x C2 = New flow capacity
1600 scfm x 0.87 x 1.09 = 1,517 scfm

Parker ROVR
Rental Oil Vapor Removal System

When compressed air purity in accordance with ISO 8573-1 Class 0 for Total Oil is required, Parker's Rental Oil Vapor Removal (ROVR) filtration system is an essential component of the compressed air treatment system.

Parker's ROVR1600 is a cartridge-based filtration system that is designed, tested and third-party performance certified to reduce oil vapor down to ⩽ 0.003 mg/m3. This adsorption filtration system pairs easily with any of Parker's PPD Series dryers (⩽ 1600 scfm) to deliver 'Technically Oil Free Compressed Air' from either oil-free or oil-lubricated compressors.

Parker ROVR Advantages



- Delivers air quality to ISO8573-1 Class 0 (⩽ 0.003 mg/m3) – Tested in accordance with ISO8573-5 and 3rd party performance validated by Lloyd's Register.
- Suitable for use with oil lubricated and oil free compressors – ROVR provides 'Technically Oil Free Air' when used in conjunction with any of Parker's Portable Desiccant Air Dryers (⩽ 1600 scfm).
- ROVR includes a rugged, heavy-duty "sled-style" skid with lifting lugs and fork holes for ease of transportation and outstanding durability.
- Individual OIL-X pre/post particulate filters and oil vapor removal systems are FDA Title 21 compliant & EC1935 exempt.
- Unique adsorbent fill technique – Providing maximum packing density, eliminating dusting, performance degradation and clogged outlet filters.
- Simple, easy maintenance – Servicing of ROVR is easy as piping can remain in-situ, while the use of active carbon cartridges offers quick, clean, and simple maintenance.
- Integrated pneumatic air cooled after cooler allows for operation in ambient temperatures up to 105˚F (40˚C).

ROVR-1600A Filtration Performance

Model	FIlter Type	Particle Removal (inc Water and Oil Aerosols)	Max Remaining Oil Content[1]	Filtration Efficiency	Initial Dry Differential Pressure	Initial Saturated Differential Pressure	Adsorbent Life[2]	Required Inlet Air Quality[3]
ROVR1600A	Oil Vapor Removal	N/A	⩽ 0.003 mg/m3 ⩽ 0.003 ppm (w)	N/A	< 5 psi < 350 mbar	110	6 months	ISO 8573-1 2.2.2

1. At system operating temperature and when corrected to match system conditions.
2. Due to varying, extreme operating conditions of rental applications, recommended cartridge replacement is 6 months (4000 hours).
3. Parker's portable desiccant air dryers deliver air in accordance with ISO 8573-1 2.2.2

Technical Data

Model	Min. Operating Pressure		Max. Operating Pressure		Min. Operating Temperature		Max. Operating Temperature		Max. Ambient Temperature	
	psi g	bar g	psi g	bar g	°F	°C	°F	°C	°F	°C
ROVR-1600A	87	6	200	14	35	2	122	50	105	40

Model	Max Inlet Flow (cfm)[1]	Replacement Cartridge	No. Required	Pre-filtration Replacement Element	After Filtration Replacement Element
ROVR-1600A	1360	500OVR	2	P055AA	P055AO

1. Stated flows are for operation at 100 psig with reference to 68°F, 14.5 psi (a), 0% relate water vapor pressure. For flows at other pressures, consult factory.

Filtration Tested in Accordance with

Filtration Grade	OVR
Filter Type	Oil Vapor Removal
Test Method Used	ISO 8573-5
ISO 12500-1 Inlet Challenge Concentration	0.05 mg of oil vapor per cubic meter of compressed air.

Weight and Dimensions

Model	Port Size	Height		Width		Depth		Weight	
		in	mm	in	mm	in	mm	lb	kg
PPD500*N	3" FLG	59	1499	66	1677	84	2134	3100	1406

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

Engine Mobile Original Equipment Division
Modesto, California
209 521 7860

HVAC Filtration Division
Jeffersonville, Indiana
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

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Parker Hannifin Corporation
Industrial Gas Filtration and Generation Division
242 Neck Road
Haverhill, MA 01835
Phone 800 343 4048
www.parker.com/igfg

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The products described herein can expose you to chemicals known to the State of California to cause cancer or reproductive harm.
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