

# Membrane Air Dryers for Testing Laboratory

Market Application Publication



## Background:

In most manufacturing environments, the use of compressed air is an integral part of the production process. Compressed air is used for a variety of applications including air tools, production presses, dry boxes, automation packaging equipment and in testing labs. The importance of clean, dry compressed air is reflected in the manufacturer's need to ensure their facility operates as efficiently as possible while avoiding downtime wherever possible. Compressed air contaminates such as oil, water, particulate and high dewpoint can all contribute to poor performance of pneumatic equipment. Until recently, a manufacturer could only choose between refrigerated or desiccant technologies to control their compressed air. Often times the requirements for these technologies include large capital investment, significant floor space, electrical service, noise level considerations and frequent maintenance of consumable parts.



## Contact Information:

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## Features and benefits:

- Membrane Technology offers dewpoints from +35°F (2°C) to -40°F (-40°C).
- Silent operation, no moving parts, no electricity
- Compact wall mount design, no need to use valuable production floor space
- Minimal maintenance requirement
- No refrigerants or desiccant to change

## Application:

Parker Balston Membrane Air Dryers combine proven coalescing filtration with state of the art membrane technology. Placed at the point of use, this product ensures a continuous source of air free from moisture and particulate with controlled dewpoints in the range of +35°F (2°C) to -40°F (-40°C). The compact design mounts easily to the wall and frees up production floor space and the silent operation allows for installation close to equipment operators. The use of a Membrane Air Dryer results in the trouble free operation of pneumatic equipment, instrumentation and critical air valves, cylinders and pneumatic tools.

## Case Study:

When choosing to add air drying equipment, companies must evaluate several conditions before selecting the best product for their application. Most importantly, the dryer must produce air at a dewpoint which meets their specifications. Next, the physical size of the unit must be considered for installation purposes. Finally, the noise level of the product should be reviewed as they are often installed near operators of the equipment.

EPI is a New England based producer of custom compounds and engineered resins. For Dan Wells, Laboratory Supervisor, choosing a dryer for

his testing lab included considering all of these factors. “For our application, we could not afford the floor space requirement of a refrigerated dryer and the noise of a desiccant dryer would not be practical..... We use a Balston Membrane Air Dryer to provide air with a consistent dewpoint and humidity specification. Since installing the dryer, we haven’t had any issues with re-working test materials and have kept testing times down.” He also states that “In the past, high humidity would routinely scrap \$200-\$500 worth of samples and delay delivery to our customers due to re-work. Using the Balston Membrane Dryer has eliminated this problem.”

## Principal Specifications:

Model	76-01	76-02	76-10	76-20	76-40
Max. Flow Rate At -40°F (-40°C) Dewpoint	1 SCFM [1.7 Nm <sup>3</sup> /Hr][1]	2 SCFM [3.4 Nm <sup>3</sup> /Hr][1]	10 SCFM [1.7 Nm <sup>3</sup> /Hr][1]	20 SCFM [3.4 Nm <sup>3</sup> /Hr][1]	40 SCFM [6.8 Nm <sup>3</sup> /Hr][1]
Min/Max Inlet Air Temp.	40°F/120°F [4°C/49°C] [2]	→			
Ambient Temp. Range	40°F - 120°F [4°C - 49°C]	→			
Min/Max Inlet Pressure	60 psig [4.1 slpm]/150 psig [10.3 slpm]	→			
Compressed Air Requirement	Total Air Consumption: Regeneration Flow + Outlet Flow Requirements				
Max. Pressure Drop	5 psid [.34 bard] [3]	5 psid [.34 bard] [3]	5 psid [.34 bard] [3]	5 psid [.34 bard] [3]	5 psid [.34 bard] [3]
Wall Mountable	Yes	Yes	Yes	Yes	Yes
Prefilter (included)	Yes [4]	Yes [4]	Yes [4]	Yes [4]	Yes [4]
Inlet/Outlet Port Size	1/4" NPT (female)	1/4" NPT (female)	1/2" NPT (female)	1" NPT (female)	1 1/2" NPT (female)/ 3/4" NPT (female)
Electrical Requirements	None	None	None	None	None
Dimensions	6"W x 22"H x 5"D [15cm x 58cm x 13cm]	6"W x 23"H x 5"D [15cm x 58cm x 13cm]	6"W x 37"H x 5"D [15cm x 94cm x 13cm]	12"W x 37"H x 7"D [30cm x 94cm x 18cm]	19"W x 39"H x 8"D [48cm x 99cm x 21cm]
Shipping Weight	9 lbs. [4 kg]	10 lbs. [5 kg]	18 lbs. [9 kg]	20 lbs. [9 kg]	35 lbs. [16 kg]

### Notes:

**1** Dewpoint specified for saturated inlet air at 100°F (38°C) and 100 psig. Outlet flows will vary slightly for other inlet conditions.

**2** Inlet compressed air dewpoint must not exceed the ambient air temperature.

**3** 5 psid at -40°F (-40°C) dewpoint operating parameters.

**4** If compressed air is extremely contaminated, a Balston Grade DX prefilter should be installed directly upstream from the membrane dryer.

## Ordering Information:

Model Number	76-01	76-02	76-10	76-20
Replacement Prefilter Cartridges	100-12-BX	100-12-BX	100-18-BX	150-19-BX
Optional Additional Coalescing Prefilter	2002N-1B1-DX	2002N-1B1-DX	2104N-1B1-DX	2006N-1B1-DX
Replacement Filter Cartridges for Optional Prefilter	100-12-DX	100-12-DX	100-18-DX	150-19-DX
Pressure Regulator (0-130 psig) 1/2" NPT Ports	72-130	72-130	72-130	72-130

# Flow Rates:

## at 35°F (2°C) Pressure Dewpoint (1)

Model Number	IT0010-35	IT0030-35	IT0080-35	IT0150-35	IT0250-3560	IT0250-3500	IT0500-3560	IT0500-3500	IT1000-3560	IT1000-3500
Flow @ 100 psig Inlet Pressure, scfm (Nm <sup>3</sup> /Hr)	1 (1.7)	3 (5.1)	8 (13.6)	15 (25.5)	25 (42.5)	N/A	50 (85)	N/A	100 (170)	N/A
Flow @ 101-150 psig Inlet Pressure, scfm (Nm <sup>3</sup> /Hr)	1 (1.7)	3 (5.1)	8 (13.6)	15 (25.5)	N/A	25 (42.5)	N/A	50 (85)	N/A	100 (170)
Regeneration Flow @ 100 psig, scfm (Nm <sup>3</sup> /Hr) (1)	0.25 (.42)	0.5 (.85)	1.5 (2.5)	2.7 (4.6)	4.5 (7.6)	4.5 (7.6)	9.0 (15.3)	9.0 (15.3)	18.0 (30.6)	18.0 (30.6)

**Notes:**

1 Dewpoint specified for saturated inlet air at 100°F (38°C) and 100 psig

## Principal Specifications:

Model Number	IT0010-35	IT0030-35	IT0080-35	IT0150-35	IT0250-3560	IT0250-3500	IT0500-3560	IT0500-3500	IT1000-3560	IT1000-3500
Min/Max Inlet Air Temp.	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)
Min/Max Ambient Air Temp.	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)
Min/Max Inlet Pressure	60/150 psig (4.1/10 barg)	60/150 psig (4.1/10 barg)	60/150 psig (4.1/10 barg)	60/150 psig (4.1/10 barg)	60/100 psig (4.1/6.9 barg)	60/150 psig (4.1/6.9 barg)	60/100 psig (4.1/6.9 barg)	60/150 psig (4.1/6.9 barg)	60/150 psig (4.1/6.9 barg)	60/150 psig (4.1/6.9 barg)
Max. Pressure Drop (1)	3 psid (.2 bard)	3 psid (.2 bard)	3 psid (.2 bard)	3 psid (.2 bard)	5 psid (.34 bard)	5 psid (.34 bard)	5 psid (.34 bard)	5 psid (.34 bard)	5 psid (.34 bard)	5 psid (.34 bard)
Wall Mountable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mechanical Separator (Included)	F14F17B	F06F18B	F06F18B	F07F38B	F07F38B	F07F38B	F07F38B	F07F38B	F602-08WJR	F602-08WJR
Coalescing Prefilters (1)	8A02N-0B2-BX	2002N-0B1-BX	2002N-0B1-BX	2004N-1B1-DX 2004N-0B1-BX	2104-1B1-DX 2104-0B1-BX	2104N-1B1-DX 2104-0B1-BX	2208N-1B1-DX 2208N-0B1-BX	2208N-1B1-DX 2208N-0B1-BX	2208N-1B1-DX 2208N-0B1-BX	2208N-1B1-DX 2208N-0B1-BX
Inlet Port Size	1/4" NPT	1/4" NPT	1/4" NPT	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT	1" NPT	1" NPT
Outlet Port Size	1/4" NPT	1/4" NPT	1/4" NPT	1/2" NPT	1" NPT	1" NPT	1" NPT	1" NPT	1" NPT	1" NPT
Electrical Requirements	None	None	None	None	None	None	None	None	None	None
Dimensions (cm)	17.5"Lx8"Wx2.5"D (44.5 x 20.3 x 6.3)	18.1"Lx10"Wx4"D (45.2 x 10.5 x 6.3)	24"Lx11.1"Wx4"D (61 x 28.2 x 6.3)	25"Lx16"Wx4.5"D (63.5 x 40.6 x 11.4)	26"Lx18"Wx6"D (66 x 45.7 x 15.2)	26"Lx18"Wx6"D (66 x 45.7 x 15.2)	39"Lx21"Wx6"D (99 x 53.3 x 15.2)	39"Dx21"Wx6"D (99 x 53.3 x 15.2)	47"Dx28"Wx7"D (119 x 71 x 18)	47"Dx28"Wx7"D (119 x 71 x 18)
Shipping Weight	1.62 lbs (.73 kg)	6.68 lbs (3 kg)	6.68 lbs (3 kg)	14.88 lbs (6.75 kg)	24.5 lbs (11.11 kg)	24.5 lbs (11.11 kg)	36.5 lbs (16.55 kg)	36.5 lbs (16.55 kg)	52 lbs (24 kg)	52 lbs (24 kg)

**Notes:**

1 If compressed air is extremely contaminated, a Grade DX prefilter should be installed directly upstream of the membrane dryer.

2 Filtration efficiency: 99.99% at 0.01 micron.

## Ordering Information:

Model Number	IT0010-35	IT0030-35	IT0080-35	IT0150-35	IT0250-3560	IT0250-3500	IT0500-3560	IT0500-3500	IT1000-3560	IT1000-3500
Replacement Prefilter Cartridges*										
Stage 1	PS403	PS702	PS702	PS802	PS802	PS802	PS802	PS802	EK602VB	EK602VB
Stage 2	---	---	---	5/100-12-DX	5/100-18-DX	5/100-18-DX	5/100-19-DX	5/150-19-DX	5/150-19=DX	5/150-19-DX
Stage 3	5/050-05-BX	5/100-12-BX	5/100-12-BX	5/100-12-BX	5/100-18-BX	5/100-18-BX	5/150-19-BX	5/150-19-BX	5/150-19-BX	5/150-19-BX

**Notes:**

\* If the house compressed air is equipped with a refrigerated dryer, the dewpoint drops to +15°F (-9°C).

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