Parker
Filtration

Compressed Air Dryers

BALSTON®

Balston Membrane Air Dryers

Offer a reliable, efficient, and economical alternative to pressure swing and refrigerant dryer technologies

Require no electricity thus lowering operating costs

Dewpoints as low as -40°F (-40°C) prevent freeze-ups

Explosion proof

Silent operation

No desiccant to change

Applications

- Low dewpoint instrument air
- Pneumatic equipment
- Pressurizing electronic cabinets
- Analytical instrumentation
- Prevention of freeze-ups
- Dry air for hazardous areas
- General laboratory air supply

- "We have not had one shutdown due to freeze-ups since the Balston Membrane Dryer was installed."

Peter Vogt
International Filler Corp.

Models 76-01, 76-02, 76-10, 76-20, 76-40, and 76-100-4050

Balston Membrane Air Dryers combine a superior coalescing technology with a proven, innovative membrane system to supply clean, dry compressed air with dewpoints as low as -40°F (-40°C). The Balston Membrane Dryers are available in 6 different models which can deliver compressed air at flow rates up to 100 SCFM with a -40°F (-40°C) dewpoint. The Balston Membrane Air Dryers are engineered for easy installation, operation, and long term reliability. The dryers incorporate high efficiency coalescing filtration and the highest efficiency membrane available to provide low cost operation and minimal maintenance.

State-of-the-Art Membrane Technology

Water vapor from the compressed air supply passes through the hollow fibers of the membrane. At the same time, a small portion of the dry air product is redirected along the length of the fibers to sweep out the water vapor laden air which has permeated the membrane. The moisture-laden sweep gas is then vented to the atmosphere, and clean, dry air is supplied to the application. The drying power of the membrane is controlled by varying the compressed air flow rate and pressure. The Balston Membrane Air Dryer is designed to operate continuously, 24 hours per day, 7 days per week. The only maintenance required is changing the prefilter cartridge once a year. This annual maintenance takes approximately 5 minutes.

Parker Hannifin Corporation
Filtration and Separation Division
Tewksbury, MA 1-800-343-4048
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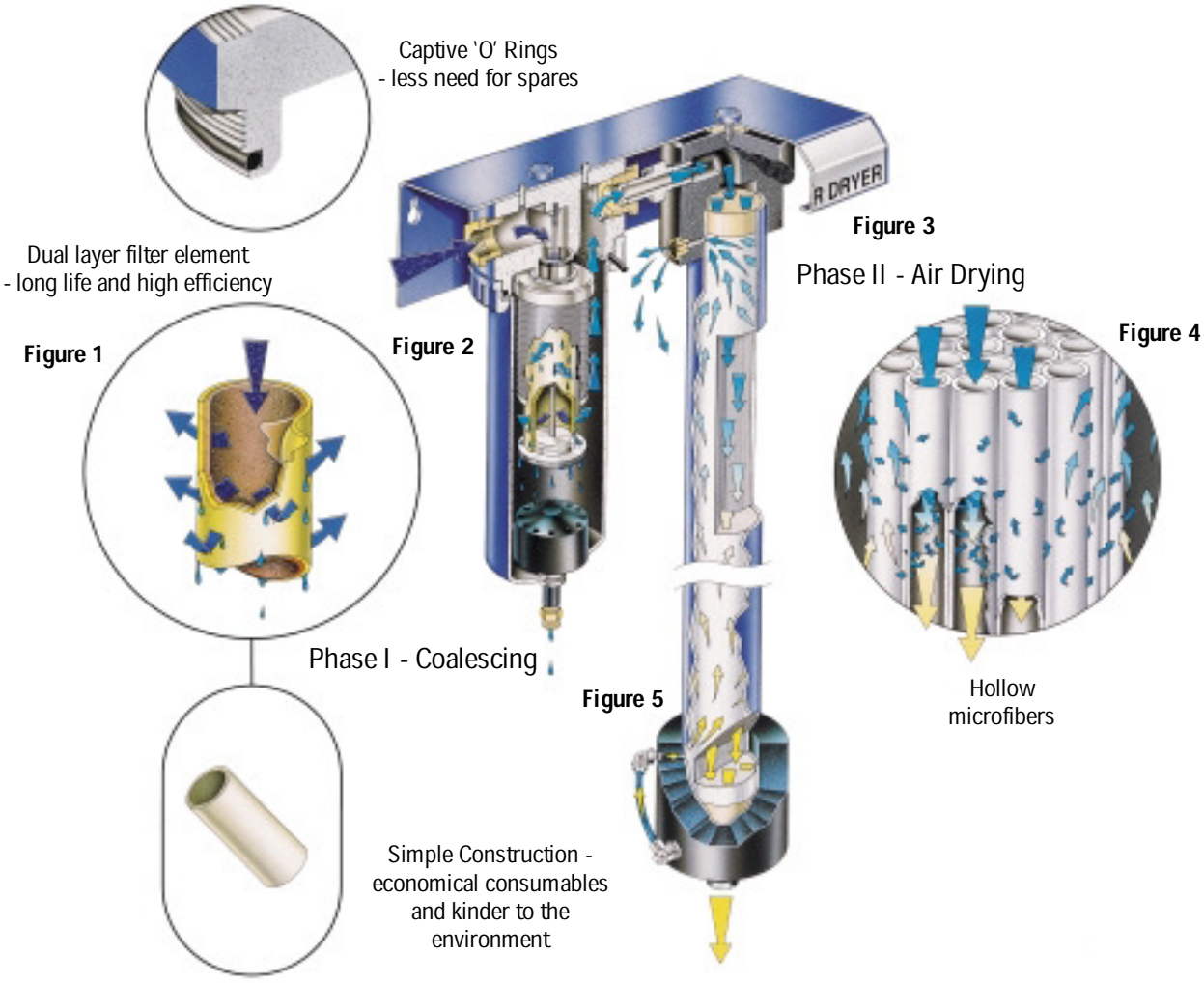
Membrane Air Dryer - Principle of Operation



Phase I - Coalesing Filtration

Prior to entering the membrane drying module, the compressed air passes through a high efficiency coalescing filter to remove oil and water droplets and particulate contamination with an efficiency of 99.99% at 0.01 micron. The liquids removed by filter cartridge continuously drip from the filter cartridge into the bottom of the housing, where they are automatically emptied by an autodrain assembly (see Fig. 1 and Fig. 2). The air leaving the prefilter, therefore, is laden only with water vapor, which will be removed in the membrane module.

Phase II - Drying

The water vapor in the compressed air is removed by the principle of selective permeation through a membrane (see Fig. 3). The membrane module consists of bundles of hollow membrane fibers (see Fig. 4), each permeable only to water vapor. As the compressed air passes through the center of these fibers, water vapor permeates through the walls of the fiber, and dry air exits from the other end of the fiber. A small portion of the dry air (regeneration flow) is redirected along the length of the membrane fiber to carry away the moisture-laden air which surrounds the membrane fibers. The remainder of the dry air is piped to the application.

Parker Hannifin Corporation
Filtration and Separation Division
Tewksbury, MA 1-800-343-4048
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Product Specifications

Model 76-01 Model 76-02 Model 76-10 Model 76-20 Model 76-40 Model 76-100-4050

Flow Rates	Outlet Flow (SCFM) at Indicated Operating Pressure (psig) for -40°F (-40°C) Pressure Dewpoint				
Pressure Dewpoint	60 psig -40°F (-40°C)	80 psig -40°F (-40°C)	100 psig -40°F (-40°C)	120 psig -40°F (-40°C)	140 psig -40°F (-40°C)
Model 76-01	.3	.6	1	1.3	1.7
Model 76-02	.7	1	2	2.6	3.4
Model 76-10	3.3	5	10	13	17
Model 76-20	6.6	10	20	26	34
Model 76-40	13.2	20	40	52	68
Model 76-100-4050	33	50	100	130	170

Membrane Module Regeneration Flow	Regeneration Flow (SCFM) at Indicated Operating Pressure (psig) and all dewpoints				
Pressure Dewpoint	60 psig	80 psig	100 psig	120 psig	140 psig
Model 76-01	.2	.2	.3	.3	.3
Model 76-02	.34	.4	.5	.6	.7
Model 76-10	1.7	2.1	2.5	3	3.5
Model 76-20	3.4	4.2	5	6	7
Model 76-40	6.8	8.4	10	12	14
Model 76-100-4050	17	21	25	30	35

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Specifications and Ordering Information

Principal Specifications

Model	76-01	76-02	76-10	76-20	76-40	76-100-4050
Max. Flow Rate At -40°F (-40°C) Dewpoint (1)	1 SCFM	2 SCFM	10 SCFM	20 SCFM	40 SCFM	100 SCFM
Min/Max Inlet Air Temp. (2)	40°F/120°F (4°C/49°C)	→	→	→	→	→
Ambient Temp. Range	40°F - 120°F (4°C - 49°C)	→	→	→	→	→
Min/Max Inlet Pressure	60 psig/150 psig	→	→	→	→	→
Compressed Air Requirement	Total Air Consumption: Regeneration Flow (above) + Outlet Flow Requirements (see tables on pg. 3)					
Max. Pressure Drop (3)	5 psid	5 psid	5 psid	5 psid	5 psid	5 psid
Wall Mountable	Yes	Yes	Yes	Yes	Yes	No
Prefilter (included) (4)	A912A-BX	A912A-BX	A915A-BX	75962-BX	A960-BX	15/80-DX, 15/80-BX
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)	2" NPT (male)
Electrical Requirements	None	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)	51"W x 66"H x 28"D (129cm x 167cm x 71cm)
Shipping Weight	9 lbs. (4 kg)	10 lbs. (5 kg)	18 lbs. (9 kg)	20 lbs. (9 kg)	35 lbs. (16 kg)	550 lbs. (250 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

For Assistance, call toll-free at 1-800-343-4048 8AM to 5PM Eastern Time

Description	Model Number					
Balston Membrane Air Dryer	76-01	76-02	76-10	76-20	76-40	76-100-4050
Replacement Prefilter Cartridges	100-12-BX	100-12-BX	100-18-BX	150-19-BX	200-35-BX	200-80-DX 200-80-BX
Optional Additional Coalescing Prefilter	A912A-DX	A912A-DX	A915A-DX	75962-DX	A960-DX	15/80-DX
Replacement Filter Cartridges for Optional Prefilter	100-12-DX	100-12-DX	100-18-DX	150-19-DX	200-35-DX	200-80-DX
Pressure Regulator (0-130 psig) 1/2" NPT Ports	72-130	72-130	72-130	72-130	---	---
Differential Pressure Indicator Assembly	---	---	---	---	41-071(1)	---

(1) optional accessory

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SMD Series Dryers

Balston Membrane Air Dryers

Applications

- General Compressed Air Mainlines
- Process Controls
- HVAC Systems
- Instrument Cabinets
- CNC/CMM Machinery
- Fire and Sprinkler Systems
- Pneumatic Controls
- Dry Air for Hazardous Areas
- Chemical Blanketing and Packaging
- Electronics/Dry Boxes
- Laser Optics

Benefits

- Easy to install...no electrician required to install or maintain the system
- No refrigerants or freons...environmentally friendly
- Similar configuration of inlet/outlet ports to that of refrigerant dryers for easy replacement installation
- Complete system with prefilters, auto drains and a dripleg

Guaranteed dewpoint of 35°F (2°C)

No electricity required and no moving parts.

Explosion proof

No requirement for expensive annual service contracts

Output capacities up to 1200 SCFM

The Only Way To Dry Compressed Air!

Now, there is only one sensible way to dry compressed air! Refrigerant air dryers are becoming a thing of the past. High efficiency, durable membrane technology is quickly becoming the standard for drying compressed air. Parker Hannifin is leading the way with membrane technology that consumes the least amount of compressed air for regeneration.

Balston SMD Series Dryers combine a superior coalescing technology with a proven, innovative membrane system to supply clean, dry compressed air with constant dewpoint to 35°F (2°C). The Balston SMD Series Dryers are available in 14 different models which can deliver dry, compressed air at flow rates up to 1200 SCFM.* The Balston Dryers are engineered for easy installation, operation, and long term reliability.

State-of-the-Art Membrane Technology

Water vapor from the compressed air supply passes through the hollow fibers of the membrane. At the same time, a small portion of the dry air product is redirected along the length of the fibers to sweep out the water vapor laden air which has permeated the membrane. The moisture-laden sweep gas is then vented to the atmosphere, and clean, dry air is supplied to the application. The drying power of the membrane is controlled by varying the compressed air flow rate and pressure. This technology offers another advantage over refrigerant air drying technology as it does not produce condensate. An average 100 CFM compressor system can produce up to 1,800 gallons of oily condensate per year! The refrigerant dryer condenses it into an oily/water emulsion which has to be disposed of at high cost to you! The Balston Membrane Air Dryer is designed to operate continuously, 24 hours per day, 7 days per week. The only maintenance required is changing the prefilter cartridges twice a year. This annual maintenance takes approximately 5 minutes.

*Consult factory for flow rates above 600 SCFM

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Product Specifications

Model 76-25

Model 76-100

Model 76-500 / 76-600

Flow Rates	Outlet Flow (SCFM) at Indicated Operating Pressure (1)					
Pressure Dewpoint	60 psig	80 psig	100 psig	110 psig	120 psig	140 psig
76-25-3560	25	25	25	—	—	—
76-25-3500	—	—	—	25	25	25
76-50-3560	50	50	50	—	—	—
76-50-3500	—	—	—	50	50	50
76-100-3560	100	100	100	—	—	—
76-100-3500	—	—	—	100	100	100
76-200-3560	200	200	200	—	—	—
76-200-3500	—	—	—	200	200	200
76-300-3560	300	300	300	—	—	—
76-300-3500	—	—	—	300	300	300
76-500-3560	500	500	500	—	—	—
76-500-3500	—	—	—	500	500	500
76-600-3560	600	600	600	—	—	—
76-600-3500	—	—	—	600	600	600

Notes:
1 Dewpoint specified for inlet air at 100°F (38°C) and 100 psig (The Compressed Air & Gas Institute Standard for Testing and Rating compressed air dryers) Outlet dewpoint will vary slightly for inlet air >100°F (38°C) conditions; outlet dewpoint will vary with operating pressures other than 100 psig. Consult factory.

Parker Hannifin Corporation
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Balston® Membrane Dryer for Coordinate Measurement Machines

Provide clean, dry air

Balston
Model 76-25 Membrane Dryer

Protects CMMs from costly repairs caused by oil and water

Guaranteed dewpoint of 35°F

Offers a reliable, efficient, and economical alternative to PSA and refrigerant dryer technologies

Ideal for supplying pure, dry air to Starrett, Brown & Sharpe, Zeiss, and MTI CMMs

Requires no electricity resulting in lower operating costs

Silent operation

No desiccant to change

State-of-the-Art Membrane Technology

Water vapor from the compressed air supply passes through the hollow fibers of the membrane. At the same time, a small portion of the dry air product is redirected along the length of the fibers to sweep out the water vapor laden air which has permeated the membrane. The moisture-laden sweep gas is then vented to the atmosphere, and clean, dry air is supplied to the application. The drying power of the membrane is controlled by varying the compressed air flow rate and pressure. The Balston Membrane Air Dryer is designed to operate continuously, 24 hours per day, 7 days per week. The only maintenance required is changing the prefilter cartridge once a year. This annual maintenance takes approximately 5 minutes.

Problems that cause costly repairs to Coordinate Measurement Machines

A CMM has 26 highly sensitive air bearings per machine. If oil and moisture are present in the air system supplying the air bearings, the .5mm hole in the bottom of the air bearing will become clogged producing a "drag" in the machine. As the resistance builds, it causes historesious in the measurements producing an inaccurate measurement.

If this problem is allowed to continue, the bearing will drag on the aluminum ways and wear a groove in the machine. Once a groove develops, the air bearing will not produce lift if air is leaking out through the groove in the machine ways. To correct the problem, a complete rebuild of the machine at the factory is necessary which can be as costly as purchasing a new machine.

If the problem is caught in time, a service team will be required to come to the facility to repair the machine. The team will remove the bearings and the holes and grooves are cleaned with alcohol. Each bearing is then resurfaced with 600-1500 grit paper. Badly corroded or pitted air bearings are replaced at a cost of $200.00 per bearing. Air hoses are also replaced, and all air passages are cleaned. The machine is then reassembled, and the time-consuming and costly task of recalibrating the machine with the ball bar and B89 test is performed as the final step in repairing the machine.

How to avoid costly maintenance problems

Many repairs average upwards of $5,000.00. These costly repairs and downtime can easily be avoided by installing a Balston high efficiency Membrane Air Dryer. The Balston Membrane Air Dryer will provide extremely clean, dry air to a CMM, eliminating the possibility of contamination. The Dryer utilizes patented membrane technology, unsurpassed in performance and durability to dehydrate and purify the compressed air. The Balston Membrane Dryer is the only system designed specifically for CMM applications.

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Balston® Membrane Dryer for Coordinate Measurement Machines

Provide clean, dry air

Balston Membrane Dryers combine a superior coalescing technology with a proven, innovative membrane system to supply clean, dry compressed air with constant dewpoint to 35°F (0°C). The Balston Dryers are engineered for easy installation, operation, and long term reliability.

Model 76-25

Flow Rates	Outlet Flow (SCFM) at Indicated Operating Pressure (psig)				
Pressure Dewpoint	60 psig	80 psig	100 psig	120 psig	140 psig
	-40°F (40°C) 32°F (0°C)	-40°F (40°C) 32°F (0°C)	-40°F (40°C) 32°F (0°C)	-40°F (40°C) 32°F (0°C)	-40°F (40°C) 32°F (0°C)
Model 76-25-3560	25	25	25	---	---
Model 76-25-3500	---	---	---	25	25

Principal Specifications

Model	76-25-XX
Max. Flow Rate at 35°F (2°C) Dewpoint (1)	25 SCFM
Min/Max Inlet Air Temp. (2)	40°F/100°F (4°C/38°C)
Ambient Temp. Range	40°F/100°F (4°C/38°C)
Min/Max Inlet Pressure	60 psig /140 psig
Compressed Air Requirement	28 SCFM
Max. Pressure Drop	6 psi
Prefilter	76-915-DX, 76-915-BX
Inlet/Outlet Port Size	1/2" NPT (male)
Electrical Requirements	None
Dimensions	18"W X 33"H X 13"D (45cmX85cmX32cm)
Shipping Weight	65 lbs. (30 kg)

Notes:

1 Dewpoint specified for inlet air at 100°F (38°C) and 100 psig (The Compressed air & Gas Institute Standard for Testing and Rating compressed air dryers) Outlet dewpoint will vary slightly for inlet air > 100°F (38°C) conditions. Outlet dewpoint will vary with operating pressures other than 100 psig. Consult factory.

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

3 Compressed air is extremely contaminated, an aftercooler and separator must be installed directly upstream from the membrane dryer. Consult factory for recommendation.

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Specifications and Ordering Information

Principal Specifications

	76-25-35(XX)	76-50-35(XX)	76-100-35(XX)	76-200-35(XX)	76-300-35(XX)	76-500-35(XX)	76-600-35(XX)
Max. Flow Rate At 35°F (2°C) Dewpoint (1)	25 SCFM	50 SCFM	100 SCFM	200 SCFM	300 SCFM	500 SCFM	600 SCFM
Min/Max Inlet Air Temp. (2)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)
Ambient Temp. Range	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)	40°F/100°F (4°C/38°C)
Min/Max Inlet Pressure	60 psig/140 psig	60 psig/140 psig	60 psig/140 psig	60 psig/140 psig	60 psig/140 psig	60 psig/140 psig	60 psig/140 psig
Compressed Air Requirement	28 SCFM	57 SCFM	114 SCFM	228 SCFM	337 SCFM	561 SCFM	673 SCFM
Max. Pressure Drop	6 psi	6 psi	6 psi	6 psi	6 psi	6 psi	6 psi
Prefilter (4)	76-915-DX, 76-915-BX	A962-DX, A962-BX	A962-DX, A962-BX	A960-DX, A960-BX	A15/80-DX, A15/80-BX (4)	AKN-0280-DX, AKN-0280-BX (4)	AKN-0280-DX, AKN-0280-BX (4)
Inlet/Outlet Port Size	1/2" NPT (male)	3/4" NPT (male)	1" NPT (male)	1 1/2" NPT (male)	2" NPT (male)	3" NPT (male)	3" NPT (male)
Electrical Requirements	None	None	None	None	None	None	None
Dimensions	18"W X 33"H X 13"D 45cmX85cmX32cm	26"W X 56"H X 18"D 66cmX142cmX45cm	26"W X 56"H X 18"D 66cmX142cmX45cm	26"W X 56"H X 18"D 66cmX142cmX45cm	51"W X 66"H X 28"D 129cmX167cmX71cm	51"W X 66"H X 28"D 129cmX167cmX71cm	51"W X 66"H X 28"D 129cmX167cmX71cm
Shipping Weight	65 lbs. (30 kg)	175 lbs. (79 kg)	190 lbs. (86 kg)	220 lbs. (100 kg)	550 lbs. (250 kg)	725 lbs (330 kg)	750 (341 kg)

Notes:
1 Dewpoint specified for inlet air at 100°F (38°C) and 100 psig (The Compressed Air & Gas Institute Standard for Testing and Rating compressed air dryers) Outlet dewpoint will vary slightly for inlet air >100°F (38°C) conditions; outlet dewpoint will vary with operating pressures other than 100 psig. Consult factory.

2 Inlet compressed air dewpoint must not exceed the ambient air temperature.
3 If compressed air is extremely contaminated, an aftercooler and separator should be installed directly upstream from the membrane dryer. Consult factory for recommendation.

4 Prefilters are included for models 76-300-35(XX), 76-500-35(XX), 76-600-35(XX), but not shown.

Ordering Information

For Assistance, call toll-free at 1-800-343-4048 8AM to 5PM Eastern Time

Description	Model Number						
Balston Membrane (5)	76-25-3500	76-50-3500	76-100-3500	76-200-3500	76-300-3500	76-500-3500	76-600-3500
Air Dryer (6)	76-25-3560	76-50-3560	76-100-3560	76-200-3560	76-300-3560	76-500-3560	76-600-3560
Replacement Prefilter Cartridges (4)							
First Stage	100-18-DX	150-19-DX	150-19-DX	200-35-DX	200-80-DX	200-80-DX	200-80-DX
Second Stage	100-18-BX	150-19-BX	150-19-BX	200-35-BX	200-80-BX	200-80-BX	200-80-BX

Notes:
5 Pressures from 101 PSIG to 140 PSIG.
6 Pressures from 60 PSIG to 100 PSIG.

Balston
Compressed Air
Dryer

Applications

- Pneumatic Tool Stations
- HVAC Systems
- Purge Electrical Boxes
- Air Lines Subject to Sub-Freezing Temperatures
- Blanketing Moisture Sensitive Materials
- Spray Painting
- Pneumatic Instrumentation
- Robotics
- Lasers
- Dry Boxes

Reduce the dewpoint of compressed air to -100°F (-73°C)

Unattended 24 hour operation

Lightweight and compact

No desiccant to change

Model 75-20

Balston regenerative PSA desiccant dryers reduce the atmospheric dewpoint of compressed air without operator attention. Model 75-20 will reduce the dewpoint to -100°F (-73°C). Each dryer is delivered complete and ready for easy installation. Each model has coalescing prefilters, PSA drying towers, automatic drains, a particulate final filter, a moisture indicator, differential pressure indicator, and pretested controls.

Balston regenerative dryers have safe, 12 VDC electrical controls. To install, simply attach the inlet (60 psig minimum) and outlet air lines, plug the electrical transformer into a wall outlet - no electrician required - and the unit is ready for trouble-free operation.

These reliable dryers can be easily installed, operated, and maintained by personnel not trained in instrumentation. In addition to supplying analytical instruments with dry, particulate-free air, the Balston dryers are useful when air comes into contact with moisture-sensitive materials, or when outside compressed air lines are subjected to sub-freezing temperatures.

The 75-20 is a wall mountable unit. It has a 10 SCFM/min. capacity (at 100 psig inlet pressure).

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Specifications and Ordering Information

Principal Specifications

Model	75-20
Dewpoint (1)	-100°F (-73°C)
Max. Dry (outlet) Air Flow Rate for Specified Dew Point (1)	
Inlet Pressure 125 psig	12.0 SCFM (340 lpm)
Inlet Pressure 100 psig	10.0 SCFM (283 lpm)
Inlet Pressure 80 psig	8.3 SCFM (235 lpm)
Inlet Pressure 60 psig	6.5 SCFM (184 lpm)
Air Loss for Regeneration (2)	2.5 SCFM (71 lpm)
Min/Max Inlet Air Pressure	60 psig/125 psig
Max. Inlet Air Temperature (3)	78°F (25°C)
Pressure Drop at Max. Flow Rate	8 psi
Inlet/Outlet Port Size (female)	1/4" NPT
Electrical Requirements (4)	120 VAC/60 Hz.
Shipping Weight	50 lbs. (23 kg)
Dimensions	15"W X 41"H (38cm X 104cm)

Notes:
1 Dewpoint will be lower than specified at lower air flow.

2 Total air required = air loss for regeneration + process demand (up to max. dry air flow rate).

3 Outlet dewpoint will increase at higher inlet compressed air temperatures.

4 Power consumption - less than 10 watts. Each dryer is shipped with a 12 VDC plug-in transformer to connect to the local electrical supply.

Ordering Information

For Assistance, call toll-free at 1-800-343-4048 8AM to 5PM Eastern Time

Description	Model Number
Balston Compressed Air Dryer	75-20
Replacement Filter Cartridges 1st stage (box of 10)	100-18-DX
Replacement Filter Cartridges 2nd stage (box of 10)	100-18-BX
Maintenance Kit, 3-year supply of filter cartridges	MK7525

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