



Balston  
Membrane Air Dryers

### Applications

|                                  |                               |
|----------------------------------|-------------------------------|
| Low dewpoint instrument air      | Analytical instrumentation    |
| Pneumatic equipment              | Prevention of freeze-ups      |
| Pressurizing electronic cabinets | 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.

**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**

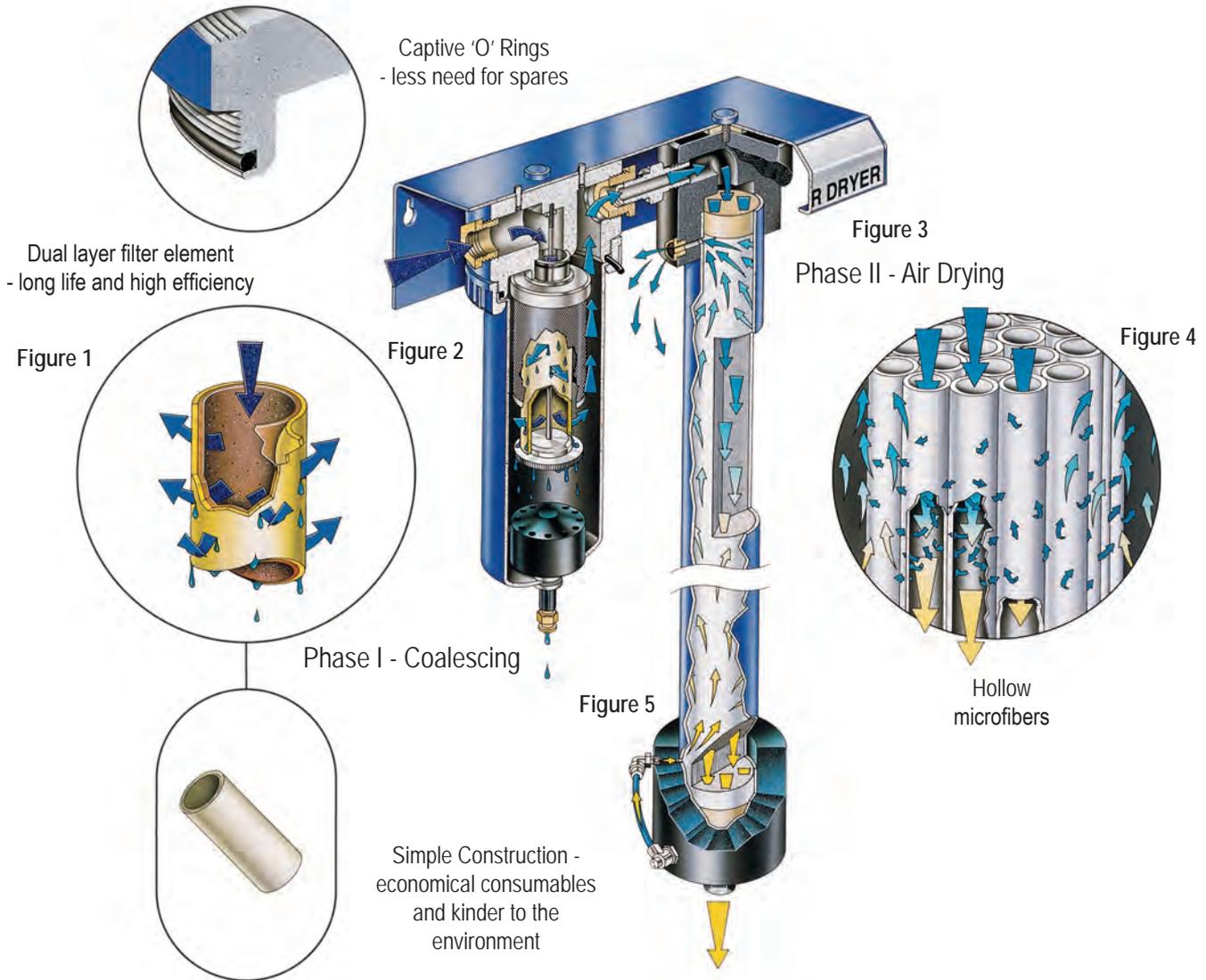
### Models 76-01, 76-02, 76-10, 76-20, 76-40,

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 40 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.

## Membrane Air Dryer - Principle of Operation



### Phase I - Coalescing Filtration

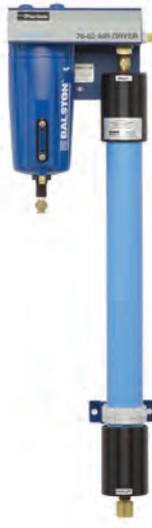
Prior to entering the membrane drying module, the compressed air passes through a high efficiency coalescing filter to remove oil and water droplets and particulate contamination with an efficiency of 99.99% at 0.01 micron. The liquids removed by the filter cartridge continuously drip from the filter 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.



Model 76-01



Model 76-02



Model 76-10



Model 76-20



Model 76-40

| Flow Rates   |                          |                          |                           |                           |                           |
|--|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|
| Outlet Flow (SCFM) at Indicated Operating Pressure (psig) for -40°F (-40°C) Atmospheric Dewpoint |                          |                          |                           |                           |                           |
| Pressure Dewpoint  | 60 psig<br>-40°F (-40°C) | 80 psig<br>-40°F (-40°C) | 100 psig<br>-40°F (-40°C) | 120 psig<br>-40°F (-40°C) | 140 psig<br>-40°F (-40°C) |
| Model 76-01  | .3                       | .6                       | 1                         | 1.3                       | 1.7                       |
| Model 76-02  | .6                       | 1                        | 2                         | 2.4                       | 3.4                       |
| Model 76-10  | 3.0                      | 5                        | 10                        | 13                        | 17                        |
| Model 76-20  | 6.0                      | 10                       | 20                        | 26                        | 34                        |
| Model 76-40  | 12.0                     | 20                       | 40                        | 52                        | 68                        |

| 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        | 3.3      |
| Model 76-20   | 3.4     | 4.2     | 5        | 6        | 6.6      |
| Model 76-40   | 6.8     | 8.4     | 10       | 12       | 14       |

| Principal Specifications                        |  |  |  |   |   |
|---|--|--|--|---|---|
| Model   | 76-01  | 76-02                                    | 76-10                                    | 76-20                                     | 76-40                                     |
| Max. Flow Rate At<br>-40°F (-40°C) Dewpoint (1) | 1 SCFM   | 2 SCFM                                   | 10 SCFM                                  | 20 SCFM                                   | 40 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 + Outlet Flow Requirements (see tables on pg.166) |  |  |   |   |
| Max. Pressure Drop (3)                          | 5 psid   | 5 psid                                   | 5 psid                                   | 5 psid                                    | 5 psid                                    |
| Wall Mountable                                  | Yes  | Yes                                      | Yes                                      | Yes                                       | Yes                                       |
| Prefilter (included) (4)                        | Yes  | Yes                                      | Yes                                      | Yes                                       | Yes                                       |
| Inlet/Outlet Port Size                          | 1/4" NPT (female)  | 1/4" NPT (female)                        | 1/2" NPT (female)                        | 1" NPT (female)                           | 1 1/2" NPT (female)/<br>3/4" NPT (female) |
| Electrical Requirements                         | None   | None                                     | None                                     | None                                      | None                                      |
| Dimensions                                      | 6"W x 22"H x 5"D<br>(15cm x 58cm x 13cm)   | 6"W x 23"H x 5"D<br>(15cm x 58cm x 13cm) | 6"W x 37"H x 5"D<br>(15cm x 94cm x 13cm) | 12"W x 37"H x 7"D<br>(30cm x 94cm x 18cm) | 19"W x 39"H x 8"D<br>(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

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        |
| Replacement Prefilter Cartridges                     | 100-12-BX    | 100-12-BX    | 100-18-BX    | 150-19-BX    | 200-35-BX    |
| Optional Additional Coalescing Prefilter             | 2004N-1B1-DX | 2004N-1B1-DX | 2104N-1B1-DX | 2008N-1B1-DX | 2312N-1B1-DX |
| Replacement Filter Cartridges for Optional Prefilter | 100-12-DX    | 100-12-DX    | 100-18-DX    | 150-19-DX    | 200-35-DX    |
| Pressure Regulator (0-130 psig) 1/2" NPT Ports       | 72-130       | 72-130       | 72-130       | 72-130       | —            |