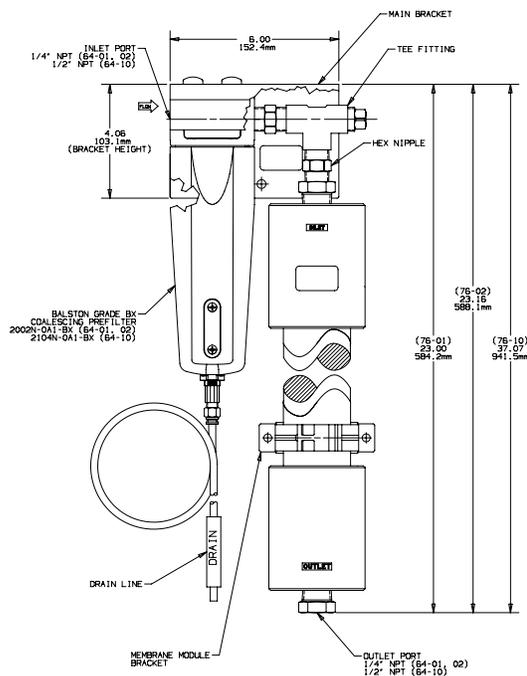
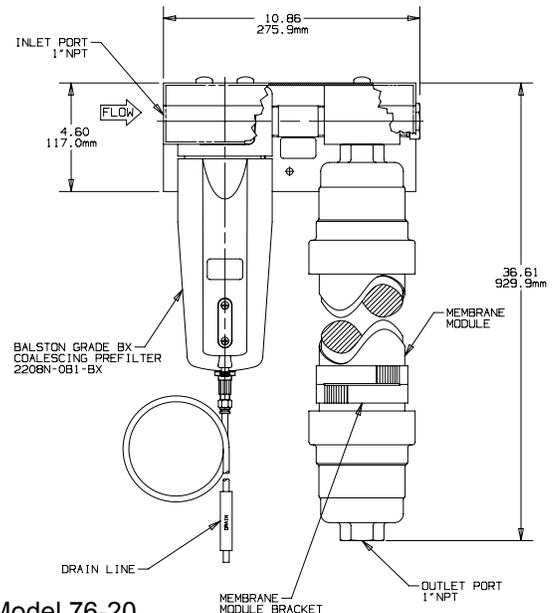


Installation, Operation, and Maintenance Manual

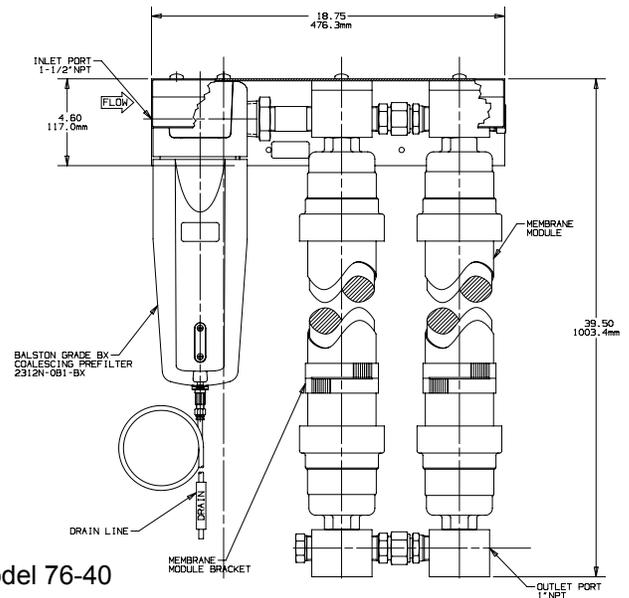
Balston® Model 76-01, 76-02, 76-10, 76-20 and Membrane Air Dryers



Models 76-01, 76-02, 76-10



Model 76-20



Model 76-40

Figure 1 - Overall Dimension Drawings

These instructions must be thoroughly read and understood before installing and operating this product. Modification of the unit will result in voiding the warranty. If you have any questions or concerns, please call the Technical Services Department at 800-343-4048, 8AM to 5PM Eastern Time or email at balstontechsupport@parker.com (North America only). For other locations, contact your local representative.

General Description

The Balston Membrane Air Dryers (see Figure 1) provide clean, dry compressed air from an existing compressed air supply through the use of state-of-the-art membrane technology. The dryers are capable of delivering dry air with a dewpoint of -40°F (-40°C). No electrical supply is required to use the Balston Membrane Air Dryer. Each membrane dryer is equipped with a high efficiency coalescing prefilter to remove oil, water, and particulate contamination to 0.01 micron.

CELL: SMD

Bulletin TI-7601V



Installation and Operation

All installation, operation, and maintenance procedures for the Balston Membrane Air Dryers should be performed by suitable personnel using reasonable care.



Warning: Use PTFE tape on all threaded components. Use of pipe sealants other than PTFE tape will damage the membrane and void the warranty.

General

For installations which run continuously, install a bypass line to handle air flow when the membrane dryer is off-line for periodic maintenance (see Figure 3). The bypass line should be equipped with a redundant drying system, or adequate filtration to condition the air to acceptable standards for short-term use.

Mounting

The Balston 76-01, 76-02, and 76-10 Membrane Air Dryer modules may be wall mounted in a vertical or horizontal position; however, the 76-20 and 76-40 modules may only be mounted in a vertical position. Note: Prefilters should always be mounted in a vertical position. The dryers are shipped from the factory ready to install with the module in the vertical position. For vertical installation (all models), simply secure the main bracket to the wall using the keyhole slots (see Figure 2) and install the membrane module bracket near the unsupported end of the module. For horizontal installation, the membrane module must

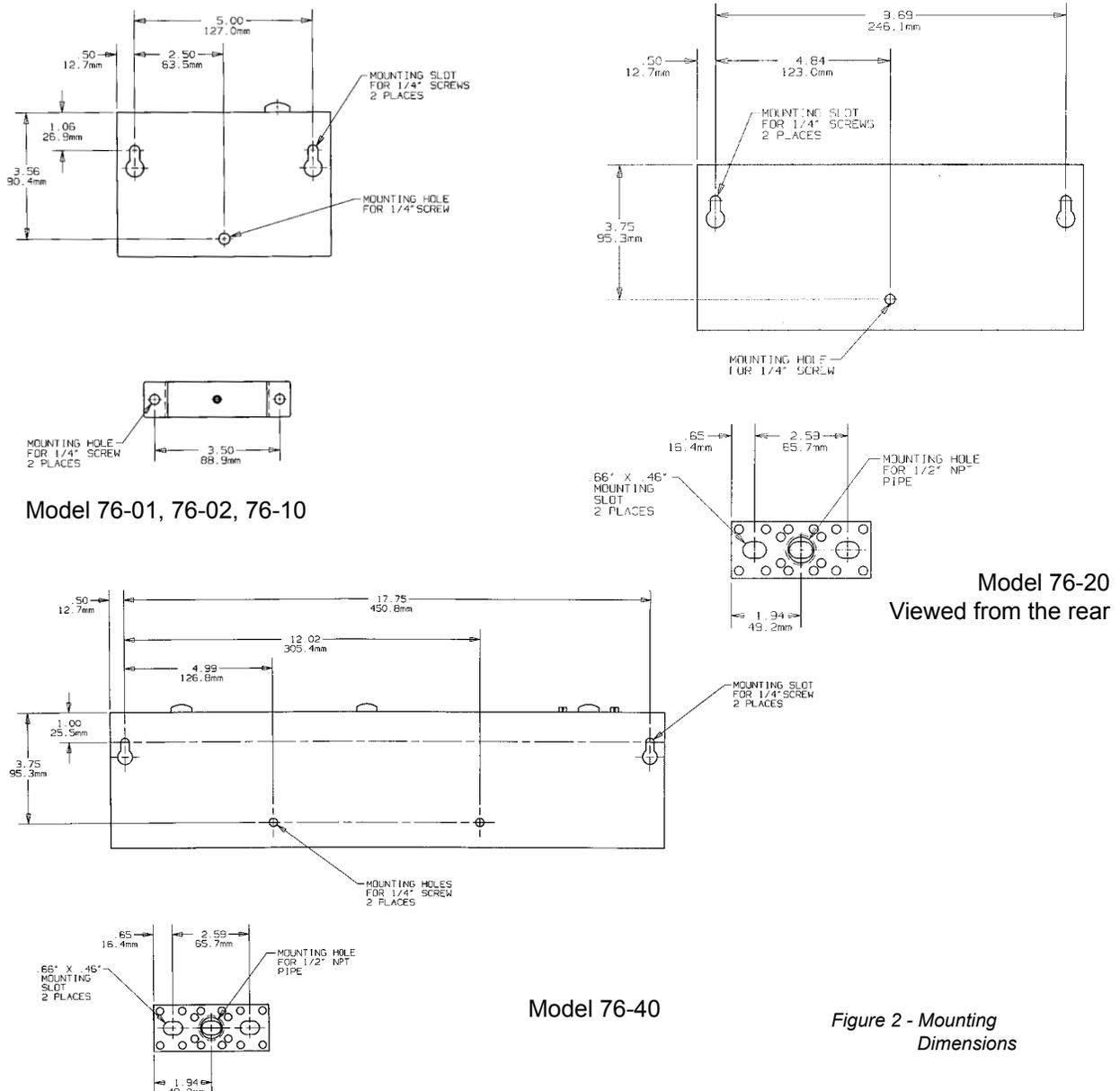


Figure 2 - Mounting Dimensions



be re-oriented **prior to mounting**. First, disconnect the membrane module from the "tee" fitting at the top of the module by loosening the hex nipple (see Figure 1). Next, remove the pipe plug from the "tee" fitting. Install the membrane module where the pipe plug used to be, and insert the pipe plug where the membrane module used to be, using PTFE tape (included) on all threaded fittings. Finally, mount the Balston Membrane Air Dryer on the wall using the keyhole slots on the back of the main bracket (see Figure 2) and install the membrane module bracket near the unsupported end of the module for stability. **All mounting hardware should be adequately sized to support the weight of the dryer in its mounted position.**

Compressed Air

If compressed air is supplied to the dryer from an elevated air line, a drip leg must be installed directly upstream from the dryer (see Figure 3). The compressed air supply pressure should be between 60 psig and 150 psig (4.1 barg and 10.3 barg) for proper operation of the dryer. The compressed air temperature should be within 10°F (6°C) of the ambient temperature and should not exceed 100°F (38°C) for optimal operation of the membrane dryer. **Do not exceed inlet air recommended temperatures or the performance and life of the module may be adversely affected and the warranty will be void.** If the compressed air supply contains excess water and/or oil, install an additional coalescing prefilter upstream from the Balston Membrane Air Dryer (see Recommended Accessories section).



Shutoff Valve - A shutoff valve should be installed directly upstream from the dryer to facilitate routine maintenance and troubleshooting procedures. **Use only a gate valve or other slow-opening valve upstream from the dryer.** Use of a valve which is not slow-opening will pressurize the membrane too quickly and may cause it to rupture. Membrane failures resulting from improper valve installation will not be covered under warranty.

Pressure Regulator - A pressure regulator should be installed directly upstream from the membrane dryer to set and maintain the inlet air pressure. Maintaining a constant inlet air pressure is critical to the performance of the system. Do not exceed 150 PSI inlet pressure.

A pressure regulator should also be installed downstream from the membrane dryer to control the output pressure.

Flow Controller - It is important to control the output flow from the dryer to avoid exceeding the rated capacity of the dryer. Install a flow controller downstream from the membrane dryer to control the flow to the process or equipment that uses the dry compressed air. If the maximum flow rate of the dryer is exceeded, the output air may not meet the published dewpoint specification. Dryer flow capacities as a function of inlet pressure are detailed in Table 1 in the Specifications section of this bulletin.

Compressor - The Balston Membrane Air Dryers maintain a constant "sweep" flow to carry water vapor laden air away from the membrane module. The sweep flow rate at different pressures is shown in Table 2 in the Specifications section of this bulletin. This sweep flow results in a constant "hiss" of air from the module. The total compressed air consumption of the dryer is the sum of the downstream demand plus the "sweep" flow. **The compressor must be adequately sized to supply this volume.**



All inlet piping and fittings should be the same size as the inlet port on the dryer.



Use only PTFE tape on fittings installed upstream and downstream from the dryer. The use of pipe dope could lead to contamination of the dryer.

Drain Lines

The high efficiency coalescing prefilter integral to the Balston Membrane Air Dryer is equipped with an automatic float drain. The 1/4" flexible drain tubing from the drain will pass small quantities of water and compressor oil and should be piped away to a suitable containment device or drain.

Operation

To operate the Balston Membrane Air Dryer, simply open the shutoff valve (customer installed) on the inlet air line, adjust the inlet air pressure using the (customer installed) pressure regulator, and adjust the outlet flow using the (customer installed) flow control device. The flow capacities for different inlet pressures and dewpoints are listed in Table 1 in the Principal Specifications table.

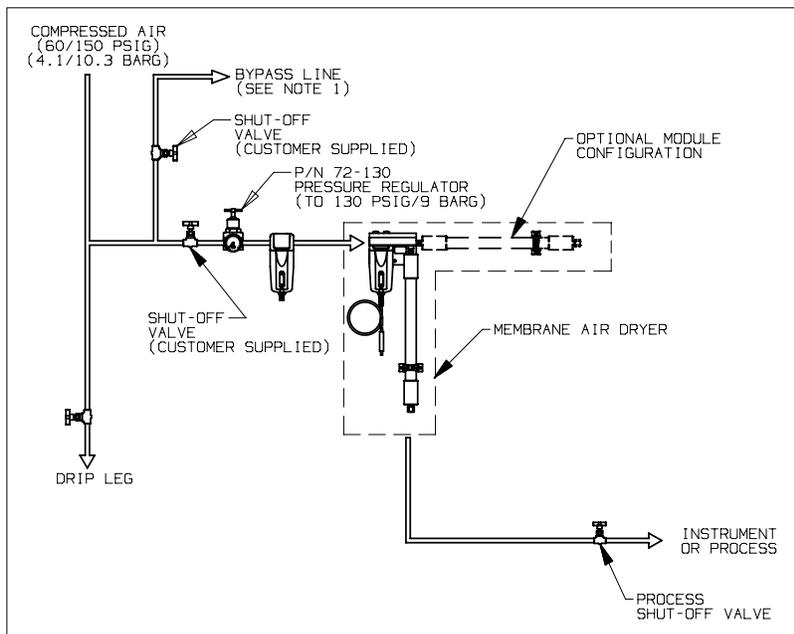


Figure 3 - Recommended Installation

Note: If continuous operation is required, install a bypass line with redundant drying system (see page 2)

Maintenance



Depressurize the dryer prior to performing any service.

The only maintenance required by the Balston Membrane Air Dryer is the replacement of the prefilter cartridge or cartridges (see Table below). The prefilter cartridges on the membrane dryer should be changed every 12 months*, or more often if needed. The prefilters protect the membrane module from contamination. Failure to service the prefilters on a regular basis can result in premature failure of the membrane module and void the warranty. The part numbers for the replacement filters are listed in the Ordering Information table at the end of this Maintenance section. (Note: If the prefilter on the dryer is equipped with a Balston Differential Pressure Indicator, the prefilter cartridge should be changed annually or when the indicator moves to "change", whichever occurs first.)

The filter cartridges in the prefilter assemblies are removed by loosening the filter bowl or collar from the filter head, and unscrewing the element retainer from the base of the cartridge. Insert the new filter cartridge and reassemble the housing in reverse order. The time required to change the prefilter cartridge on the Balston Membrane Air Dryer is approximately 5 minutes.

To ensure consistent product performance and reliability, use only genuine Balston replacement parts and filter cartridges.

*Changing filter cartridges more frequently will translate into direct energy savings and reduced operating costs. Annual electricity costs to operate a typical 100 HP compressor can be as high as \$50,000. Pressure drop in the system adds to this expense. A system operating at 100 psig that is experiencing a 2 psig pressure drop through a filter, requires an additional 1% in operating energy costs or approximately \$500.00+ per year.

Ordering Information

Model Number	76-01, 76-02	76-10	76-20	76-40
Coalescing Prefilter Assembly	2002N-0B1-BX	2104N-0B1-BX	2208N-0B1-BX	2312N-0B1-BX
Replacement Prefilter Cartridges	100-12-BX	100-18-BX	150-19-BX	200-35-BX
Automatic Drain Kit	21552	21552	21552	21552
Replacement Membrane Module	76209 (1)	76221AL	76282AL 76216 (2)	76282AL(2ea.)

1 Replacement Module for 76-01 is P/N 76209.

2 Replacement Module for 76-02 is P/N 76216.

Recommended Accessories

Balston Grade DX Compressed Air Filter Assembly

The Balston Compressed Air Grade DX Filter Assembly is an excellent auxiliary prefilter for the Balston Membrane Air Dryer. See the table below for the recommended filter assembly for each dryer. When used as a prefilter, the Balston Grade DX Compressed Air Filter Assembly will remove excess oil, water and particulate contamination from the compressed air supply which feeds the Membrane Air Dryer.

Ordering Information Recommended Accessories

Part No.	Description
2002N-1B1-DX	Auxiliary Coalescing Prefilter Assembly, 1/4" ports (76-01, 76-02)
2104N-1B1-DX	Auxiliary Coalescing Prefilter Assembly, 1/2" ports (76-10)
2208N-1B1-DX	Auxiliary Coalescing Prefilter Assembly, 1" ports (76-20)
2312N-1B1-DX	Auxiliary Coalescing Prefilter Assembly, 1-1/2" ports (76-40)

Principial Specifications

Model Number	Membrane Air Dryers				
	76-01	76-02	76-10	76-20	76-40
Dew Point	-40°F (-40°C)	-40°F (-40°C)	-40°F (-40°C)	-40°F (-40°C)	-40°F (-40°C)
Min/Max Inlet Air Pressure	60 psig/150psig (4.1 barg/10.3 barg)	60 psig/150 psig (4.1 barg/10.3 barg)			
Maximum Pressure Drop (1)	5 psid (0.35 bar)	5 psid (0.35 bar)	5 psid (0.35 bar)	5 psid (0.35 bar)	5 psid (0.35 bar)
Min/Max Ambient Temperature (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)
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)
Shipping Weight (4)	9 lbs (4 kg)	10 lbs (5 kg)	18 lbs (9 kg)	35 lbs (16 kg)	53 lbs (24 kg)

Note: The Dryers in this bulletin are not recommended for use with FT-IR Spectrometers. Please refer to the AGS Product Catalog for FT-IR Purge Gas Generators.

Notes:

- 1 5 psid (0.35 barg) @ -40°F (-40°C) dewpoint operating parameters.
- 2 The temperature of the inlet compressed air should be no more than 10°F (5.5°C) warmer than the ambient temperature.
- 3 The outlet port on the 76-40 is 1" NPT.
- 4 Shipping weights are approximate. Packaging materials may cause variations.

**Table 1
 Flow Rates**

Outlet Flow (SCFM/lpm) at Indicated Operating Pressure (psig) for -40°F(-40°C) Atmospheric Dewpoint

Model	60 psig (4 barg)	80 psig (5.5 barg)	100 psig (7 barg)	120 psig (8.3 barg)	140 psig (9.6 barg)
76-01	0.3(9)	0.6 (16)	1.0 (28)	1.3 (37)	1.7 (48)
76-02	0.6 (17)	1.0 (28)	2.0 (56)	2.6 (74)	3.4 (96)
76-10	3.0 (85)	5.0(142)	10 (283)	13 (368)	17 (481)
76-20	6.0 (170)	10 (283)	20 (566)	26 (736)	34 (962)
76-40	12.0 (340)	20 (566)	40 (1132)	52 (1472)	68 (186)

**Table 2
 Membrane Module
 Regeneration Flow**

Regeneration Flow (SCFM/lpm) at Indicated Operating Pressure (psig)

Model	60 psig (4 barg)	80 psig (5.5 barg)	100 psig (7 barg)	120 psig (8.3 barg)	140 psig (9.6 barg)
76-01	0.2 (4.8)	0.2 (5.9)	0.3(7)	0.3 (8.5)	0.3 (9.3)
76-02	0.3 (9.3)	0.4 (12)	0.5 (14)	0.6 (16)	0.7 (19)
76-10	1.6 (45)	2.1 (59)	2.5 (71)	3.0 (85)	3.3 (93)
76-20	3.4 (96)	4.2 (119)	5.0 (142)	6.0 (170)	6.6 (186)
76-40	6.8 (192)	8.4 (238)	10.0 (283)	12.0 (340)	14.0 (396)



Recommended Accessories

All troubleshooting activities should be performed by suitable personnel using reasonable care.

Symptom	Course of Action
Moisture Indicator (optional accessory) Turns Yellow	<p>Check Inlet air temperature. If higher than 10°F (5°C) above ambient temperature, install aftercooler upstream from the dryer.</p> <p>Check inlet air pressure (60 psig/4.1 barg minimum).</p> <p>Check flow rate. Do not exceed dryer capacity (see Table 1). Install flow controller downstream.</p>
High Pressure Drop Through Dryer (low flow)	<p>Check drain for leaks. Replace automatic drain kit (P/N 21552) if necessary.</p> <p>Check flow demand. Match process flow requirements to dryer capacity (see Table 1).</p> <p>Check inlet filter for particulate clogging; replace if necessary.</p> <p>Check for leaks in dryer and downstream piping and process.</p>
No Flow Through Dryer	<p>Check supply line source (compressor).</p> <p>Check to make sure all customer installed valves are open.</p> <p>Check fittings and drain for leaks.</p>

Note: To arrange for system service, contact the Technical Services Department at 1-800-343-4048, 8AM-5PM Eastern Time or email at balstontechsupport@parker.com (North America only). For locations outside North America, please call your local representative.

Don't Forget To:

- 1 Complete and mail your registration card.
- 2 Keep your product certification in a safe place.
- 3 Call the Technical Services Department at **800-343-4048**, 8AM to 5PM Eastern Time with any questions or email at balstontechsupport@parker.com (North America only). For locations outside North America, please contact your local representative.

Serial Numbers

The serial number label for the unit (76-01, 76-02, 76-10, 76-20, 76-40) is attached to the mounting bracket, between the prefilter and the membrane module. For your own records, and in case service is required, please record the following:

DATE IN SERVICE _____ SERIAL NO. _____

Please have the serial number available when calling for assistance.

WARRANTY (NORTH AMERICA ONLY)
(FOR INFORMATION CONTACT YOUR LOCAL REPRESENTATIVE)

Parker Hannifin guarantees to the original purchaser of this product, that if the product fails or is defective within 12 months from the date of purchase, when this product is operated and maintained according to the instructions provided with the product, then Parker guarantees, at Parker's option, to replace the product, repair the product, or refund the original price for the product. This warranty applies only to defects in material or workmanship and does not cover: ring and valve wear on compressors, routine maintenance recommended by the instructions provided with this product, or filter cartridges. Any modification of the product without written approval from Parker will result in voiding this warranty. Complete details of the warranty are available on request. This warranty applies to units purchased and operated in North America.



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