

# Compressed Air Dryers

## Balston Compressed Air Dryers

Balston offers both membrane and PSA technology. Balston Membrane Air Dryers combine superior coalescing technology with a proven, innovative membrane system to supply clean, dry compressed air with dewpoints as low as  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ).

Balston PSA Compressed Air Dryers will reduce the dewpoint of compressed air to  $-100^{\circ}\text{F}$  ( $-73^{\circ}\text{C}$ ). Each dryer is delivered complete and ready for easy installation.



## Product Features:

- Unattended 24 hour operation
- Compact
- Membrane and PSA technologies available
- Silent operation
- No desiccant to change
- Easy to install and operate

Moisture Sensitive Point of Use Areas



Main Ring Applications



Process and Production Equipment



# Compressed Air Dryers

## Membrane Air Dryers



Balston  
Membrane Air Dryers

### 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 twice a year. This semi-annual maintenance takes approximately 5 minutes.

**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**

### Membrane Air Dryers

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 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.

#### Applications

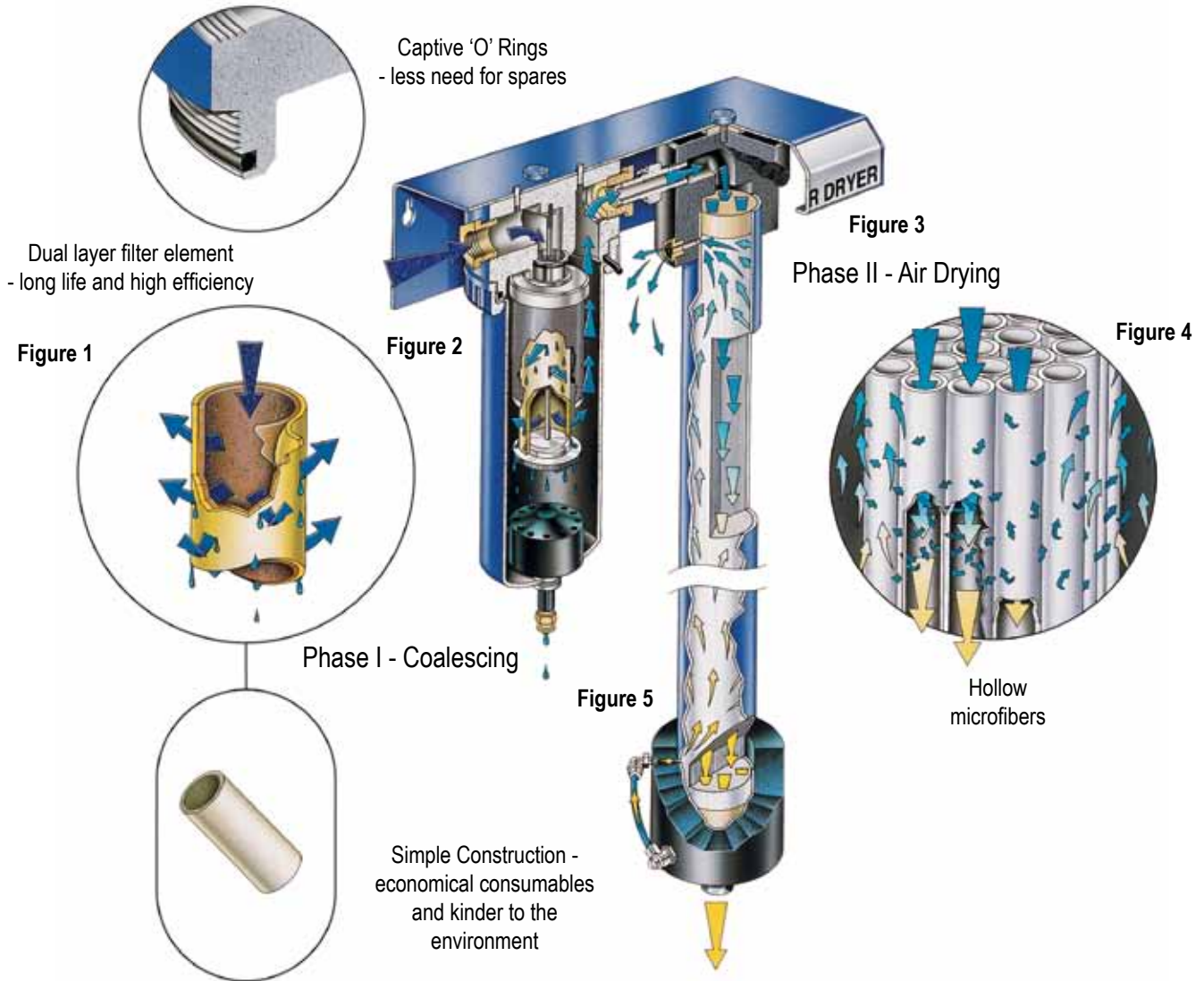
Low dewpoint instrument air	Prevention of freeze-ups
Pneumatic equipment	Dry air for hazardous areas
Pressurizing electronic cabinets	General laboratory air supply
Analytical instrumentation	Protect electrical panel components from moisture damage
Instrument air for analyzer buildings	

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

Peter Vogt  
International Filler Corp.

# Compressed Air Dryers

## 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 aut drain 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.

# Compressed Air Dryers

## Membrane Air Dryers for -40°F (-40°C) Dewpoint



Model 76-01



Model 76-02



Model 76-10



Model 76-20



Model 76-40

Flow Rates		Outlet Flow in SCFM (Nm <sup>3</sup> /hr.) at Indicated Operating Pressure for -40°F (-40°C) Atmospheric Dewpoint				
Pressure Dewpoint	60 psig (4.1 BAR) -40°F(-40°C)	80 psig (5.5 BAR) -40°F(-40°C)	100 psig (6.9 BAR) -40°F(-40°C)	120 psig (8.3 BAR) -40°F(-40°C)	140 psig (7.7 BAR) -40°F(-40°C)	
Model 76-01	.3 (.5)	.6 (1)	1 (1.7)	1.3 (2.2)	1.7 (2.9)	
Model 76-02	.6 (1)	1 (1.7)	2 (3.4)	2.4 (4.1)	3.4 (5.8)	
Model 76-10	3.0 (5)	5 (8.5)	10 (17)	13 (22)	17 (29)	
Model 76-20	6.0 (10)	10 (17)	20 (34)	26 (44)	34 (58)	
Model 76-40	12.0 (20)	20 (34)	40 (68)	52 (88)	68 (116)	

Membrane Module Regeneration Flow		Regeneration Flow in SCFM (Nm <sup>3</sup> /hr.) at Indicated Operating Pressure and all dewpoints				
Pressure Dewpoint	60 psig (4.1 BARG)	80 psig 5.5 (BARG)	100 psig (6.9 BARG)	120 psig (8.3 BARG)	140 psig (7.7 BARG)	
Model 76-01	.2 (.34)	.2 (.34)	.3 (.5)	.3 (.5)	.3 (.5)	
Model 76-02	.34 (.58)	.4 (.68)	.5 (.84)	.6 (1)	.7 (1.2)	
Model 76-10	1.7 (2.9)	2.1 (3.6)	2.5 (4.2)	3 (5)	3.3 (5.6)	
Model 76-20	3.4 (5.8)	4.2 (7.1)	5 (8.5)	6 (10)	6.6 (11.2)	
Model 76-40	6.8 (11.6)	8.4 (14.3)	10 (17)	12 (20)	14 (23.8)	

# Compressed Air Dryers

## Membrane Air Dryers for -40°F (-40°C) Dewpoint

### Principal Specifications

Model	76-01	76-02	76-10	76-20	76-40
Nominal Flow Rate At -40°F (-40°C) Dewpoint (1)	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 barg)/150 psig (10.3 barg)	—————▶			
Compressed Air Requirement	Total Air Consumption: Regeneration Flow + Outlet Flow Requirements (see tables on pg.166)				
Max. Pressure Drop	5 psid (.34 barg) (3)	5 psid (.34 barg) (3)	5 psid (.34 barg) (3)	5 psid (.34 barg) (3)	5 psid (.34 barg) (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 (6.9 barg). Outlet flows will vary slightly for other inlet conditions.

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

3 5 psid (.34 barg) 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.

5 Filtration efficiency: 99.99% at 0.01 micron.

### 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	2002N-1B1-DX	2002N-1B1-DX	2104N-1B1-DX	2208N-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	-----	---

# Compressed Air Dryers

## IT Series Membrane Air Dryers for +35°F (+2°C) Dewpoint\*

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

Require no electricity thus lowering operating costs

Produce +35°F (+2°C) dewpoint, ideal for critical points of use

Produce +15°F (-9°C) dewpoint in air systems with existing refrigerated air dryers

No moving parts

Silent operation

No desiccant to change



### Applications

Food processing and automation  
Electronics/Dry Boxes  
Coordinate Measurement Machines  
Critical Pneumatic Valves  
Protection of Pneumatic Instrumentation  
Low Dewpoint Instrument Air  
Pneumatic Equipment  
Dry Air for Hazardous Areas

### IT Series Membrane Dryers

There are many variables that will affect the output specification of compressed air. By the time air reaches all its intended point of use, changes in pressure and temperature can contribute to potential contamination. As capital equipment tolerances become tighter and more sensitive to this contamination, maintenance costs will escalate if equipment is not adequately protected. In cases where standard air filtration is not sufficient or where the reliability, performance and operating cost of older dryer technologies is becoming more significant, a Balston Membrane Dryer provides a reliable and economical alternative.

### IT Series Point of Use Membrane Dryers

Balston Membrane Air Dryers combine superior coalescing filtration technology with a proven, innovative membrane system to supply clean, dry, +35°F (+2°C) dewpoint compressed air. If the house compressed air is equipped with a refrigerated dryer, the dewpoint drops to +15°F (-9°C). The Balston Membrane Dryers are available in 8 different models which can deliver compressed air at flow rates up to 100 SCFM (170 NM<sup>3</sup>/Hr).

The systems are engineered for easy installation, operation, and long term reliability. By incorporating high efficiency coalescing filtration and the highest efficiency membrane available, the systems provide low cost operation with the lowest minimal maintenance.

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

# Compressed Air Dryers

## IT Series Membrane Air Dryers for +35°F (+2°C) Dewpoint\*



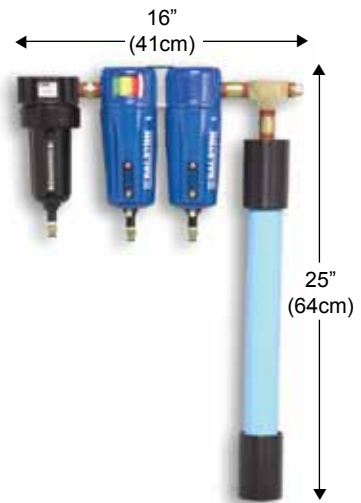
IT0010-35



IT0030-35



IT0080-35



IT0150-35



IT0250-35XX



IT0500-35XX

### Easy to Operate and Maintain

Installation consists of simply connecting a standard compressed air line to the inlet and connecting the outlet to your application. The unit is ready for trouble-free operation. This system is designed to operate 24 hours per day, 7 days per week.

Once the system is operating, it requires little monitoring. The only maintenance involves changing the coalescing prefilter cartridges periodically. The membrane module does not require any maintenance.

### Flow Rates

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)

(1) Total Air Consumption = Regeneration + Outlet Flow.

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

# Compressed Air Dryers

## IT Series Membrane Air Dryers for +35°F (-2°C) Dewpoint\*

### 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)	100/150 psig (6.9/10 barg)	60/100 psig (4.1/6.9 barg)	100/150 psig (6.9/10 barg)	100/150 psig (6.9/10 barg)	100/150 psig (6.9/10 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-OB2-BX	2002N-OB1-BX	2002N-OB1-BX	2004N-1B1-DX 2004N-OB1-BX	2104-1B1-DX 2104-OB1-BX	2104N-1B1-DX 2104-OB1-BX	2208N-1B1-DX 2208N-OB1-BX	2208N-1B1-DX 2208N-OB1-BX	2208N-1B1-DX 2208N-OB1-BX	2208N-1B1-DX 2208N-OB1-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 for assistance call toll free at 800-343-4048, 8AM to 5PM EST

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

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



# Compressed Air Dryers

## Membrane Air Dryers for Coordinate Measurement Machines

### The Only Way To Remove Oil and Dry Compressed Air!

Now there is only one sensible way to remove oil and 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 CMM Air Dryers combine a superior coalescing technology with a proven, innovative membrane system to supply clean, dry compressed air with a constant dewpoint to 35°F (2°C). The Balston CMM Air Dryers are available in 2 different models which can deliver dry, compressed air at flow rates up to 15 SCFM (25.5 Nm<sup>3</sup>/Hr). The Balston Dryers are engineered for easy installation, operation, and long term reliability.



### Customer Testimonial:

“Before we bought a Balston Membrane Dryer, we required two repairs to our CMM; the first cost \$10,000 and the next was over \$6,000. In the more than two years since installing the Balston Membrane Dryer we have not needed any repairs.”

Rick Nisula  
Maintenance Buyer  
Smith's Aerospace

### Product Features:

- Designed specifically for use with CMMs
- Protects CMMs from costly repairs caused by oil and water
- Ideal for supplying pure, dry air to Brown & Sharpe, Zeiss, IMS and MTI CMMs
- No heat or vibration generated; prevents inaccurate measurements
- Guaranteed dewpoint of 35°F (2°C)
- Requires no electricity resulting in lower operating costs
- Complete system with high efficiency coalescing filters
- Silent operation
- Minimal maintenance required

# Compressed Air Dryers

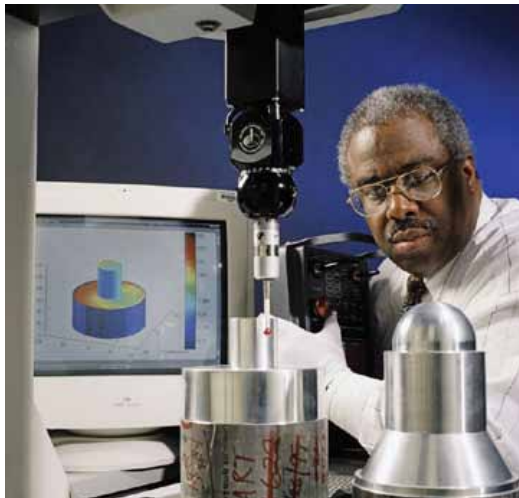
## Membrane Air Dryers for Coordinate Measurement Machines

### 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 hysteresis 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 a 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.

### Principal Specifications 35°F (2°C) Pressure Dewpoint (1)

Model Number	CM0080-35	CM0150-35
Flow @ 100 psig Inlet Pressure	8 scfm (13.6 Nm <sup>3</sup> /Hr)	15 scfm (25.5 Nm <sup>3</sup> /Hr)
Compressed Air Requirements	9.5 scfm (16.1 Nm <sup>3</sup> /Hr)	17.7 scfm (30 Nm <sup>3</sup> /Hr)
Min/Max Inlet Air Temp.	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)
Min/Max Inlet Pressure	60/150 psig (4.1/10 barg)	60/150 psig (4.1/10 barg)
Max. Pressure Drop	3 psid (.2 bard)	3 psid (.2 bard)
Wall Mountable	Yes	Yes
Mechanical Separator Included	F06F18B	F07F38B
Coalescing Prefilters	8002N-0A1-BX	8004N-1A1-DX 8004N-0A1-BX
inlet Port Size	1/4" NPT	1/2" NPT
Outlet Port Size	1/4" NPT	1/2" NPT
Electrical Requirements	None	None
Dimensions (cm)	24"L x 11.1"W x 4"D (61cm x 28.2cm x 6.3cm)	25"L x 16"W x 4.5"D (63.5cm x 40.6cm x 11.4cm)
Shipping Weight	6.68 lbs (3 kg)	14.88 lbs (6.75 kg)

#### Notes:

- 1 Dewpoint specified for saturated inlet air at 100°F (38°C) and 100 psig.
- 2 Filtration efficiency: 99.99% at 0.01 micron.

### Ordering Information

For assistance call toll free at 800-343-4048, 8AM to 5PM EST

Model Number	CM0080-35	CM0150-35
Replacement Filter Elements		
1st Stage	PS702	PS802
2nd Stage	100-12-BX	100-12-DX
3rd Stage	---	100-12-BX

# Compressed Air Dryers

## 5000 Series Smart Dryer Membrane Air Dryers

**Operating costs are 35 - 40% less than a refrigerant air dryer\***

**No electricity required**

**State-of-the-art membrane technology**

**Guaranteed 35°F (-2°C) dewpoint - 13% dryer than refrigerant dryers**

**Guaranteed 15°F (-9°C) in air systems equipped with a refrigerant air dryer**

**Durable - will hold up to the dirtiest compressed air system**

**No requirement for costly maintenance contracts**

**Output capacities to 200 scfm (340Nm<sup>3</sup>/Hr) \*\***

**Complete system with prefilters, autodrain, and pressure indicators**



Model SMRT 5100

### The Only Way To Dry Compressed Air!

Now, there is only one sensible way to dry compressed air! 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 drying.

The SMART Dryer™ utilizes sophisticated technology to monitor system parameters and automatically adjusts the regenerative sweep flow as required. The variable sweep system results in significant energy savings and low operating costs.

The SMART Dryer™ technology offers another advantage over refrigerant air drying technology as it does not produce condensate. An average 25 HP compressor system can produce up to 1,800 gallons (6.8 m<sup>3</sup>) of oily condensate per year! The refrigerant dryer condenses it into an oily/water emulsion which has to be disposed of at a high cost to you! The Balston® Membrane Air Dryer is designed to operate continuously, 24 hours a day, 7 days a week. The only maintenance required is changing the prefilter cartridges twice a year, which take approximately 5 minutes and requires no tools!

\*Non-cycling refrigerant air dryer

\*\* Consult Factory for higher flow rates

Applications	Benefits
<b>General Compressed Air Mainlines</b>	<b>Easy to install - no electrician required to install or maintain system</b>
<b>Process Controls</b>	
<b>HVAC Systems</b>	
<b>Instrument Cabinets</b>	
<b>CNC/CMM Machinery</b>	
<b>Fire and Sprinkler Systems</b>	
<b>Pneumatic Controls</b>	
<b>Dry Air for Hazardous Areas</b>	
<b>Chemical Blanketing and Packaging</b>	
<b>Electronics/Dry Boxes</b>	
<b>Laser Optics</b>	
<b>Spray Painting</b>	
<b>Bag House Controls</b>	
	<b>No refrigerants or freons - environmentally friendly</b>
	<b>Complete system with prefilters, auto drains, and pressure gauges</b>
	<b>Compact size</b>

# Compressed Air Dryers

## 5000 Series Smart Dryer Membrane Air Dryers

### Why buy a Balston SMART Dryer™ instead of a cycling refrigerant air dryer?

The Balston SMART Dryer will save YOU money and offer better performance!

All Balston SMART Dryers require no electricity.

All air dryers are sized based on the maximum capacity output of a compressed air system with inlet conditions assumed to be 100°F inlet temperature, 100 psig inlet pressure and 100°F ambient temperature. In the majority of installations, it is unlikely air dryers will be required to operate under these extreme conditions. Most importantly, the majority of compressed air systems are not operating at the maximum output capacity.

Refrigerant and desiccant air dryers, sized to meet these operating conditions are designed to run continuously regardless of the system's demands, when in fact the actual system conditions are far less.

The result is significant operating costs in wasted energy and wear and tear on refrigerant compressors, cooling systems, drains and other componentry.

In a typical manufacturing plant operating one 8 hour shift with a 100 SCFM (170 Nm<sup>3</sup>/Hr) compressor system running at 75% capacity (on average over the 8 hour shift), a typical non-cycling refrigerant air dryer would cost \$716 in just electrical costs alone, compared to the Balston SMART Dryer with only \$436 in electrical costs. If you factor in the annual maintenance costs of \$600 for a non-cycling refrigerant dryer compared to \$130 for the Balston SMART Dryer, there is a total annual savings of over \$750.

Recently, refrigerant manufacturers have responded to this issue by developing a cycling air dryer which cools a cold storage heat sink reservoir. Once the reservoir is cooled to the minimum temperature the compressor (refrigerant) is shut off. The compressor cycles back on when the temperature of the storage reservoir reaches a preset upper limit. This reduces the total energy consumption of the dryer however it could produce significant variations in output dewpoints.

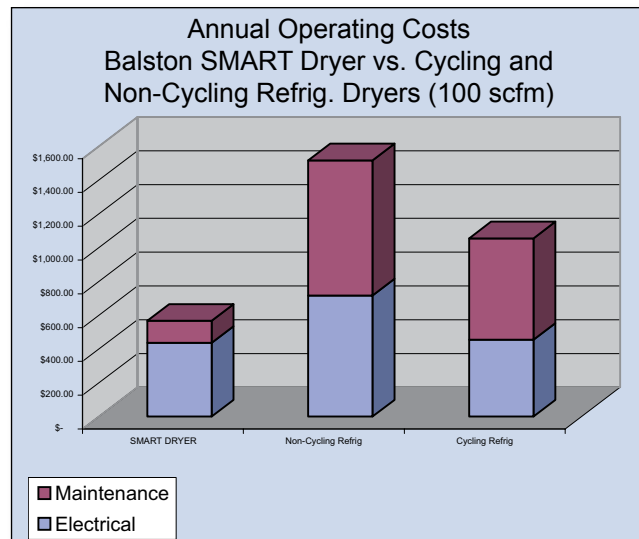
The Balston SMART Dryer does not require refrigerant, compressors, cooling systems or other componentry that carries high operating costs (energy) and maintenance costs. The Balston SMART Dryer utilizes sophisticated technology to monitor the system parameters and automatically adjusts the regenerative sweep flow as required. The variable sweep system results in significant energy savings and low operating costs with no fluctuation in output dewpoints.

In a typical manufacturing plant operating an 8 hour shift with 100 SCFM (170 Nm<sup>3</sup>/Hr) compressor system

running at 75% capacity (on average over the 8 hour shift), a typical cycling refrigerant air dryer would cost \$454.00 in electrical costs alone, compared to the Balston SMART Dryer with only \$436.00 in electrical costs. If you factor in the annual maintenance cost of \$800 for a cycling refrigerant dryer compared to \$130.00 for the Balston SMART Dryer, there is a total annual savings of over \$685.00

Additionally, there are no moving parts, no freons that need recharging, no compressors to be serviced and no cooling coils to be cored and cleaned.

Most importantly, the Balston SMART Dryer is producing a constant 35°F dewpoint which is 13% dryer than a cycling refrigerant air dryer (ppm weight in air).



### Here's What Our Customers Say

"Our compressed air system is now completely dry and clean at a very reasonable cost. And we gain at least three hours of production time each week by not having to shut down to clean rusted valves..."

Wayne Etchells, Vice President  
Melton Corporation, Cranston, R.I.

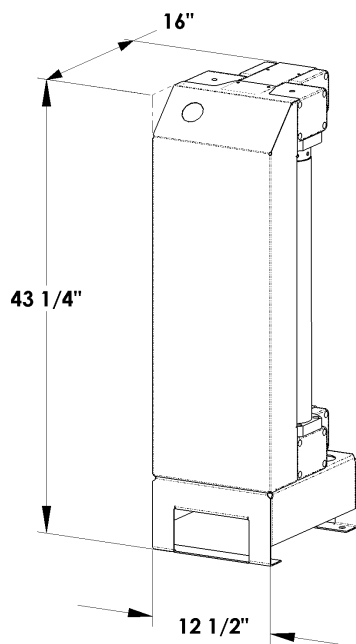
"This new type of membrane dryer was just what we needed to eliminate problems with water building up in compressed air lines...Since the day we installed it, we haven't had a single problem with rust. The time and money we save by not having to repair spindles and air motors pays for the cost of the dryer every few months."

John Napier, Maintenance Engineer  
King Machine, Akron, OH

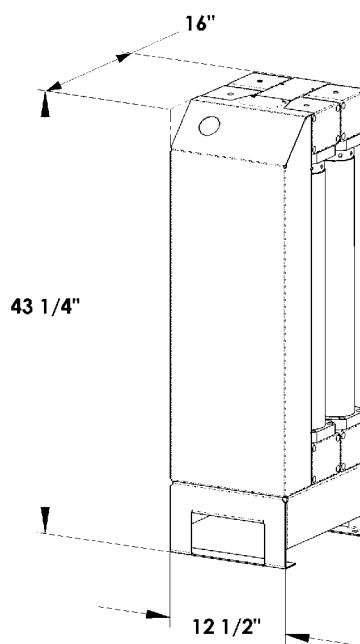
# Compressed Air Dryers

## 5000 Series Smart Dryer Membrane Air Dryers

Model SMRT5100  
Front View



Model SMRT5200  
Front View



### Principal Specifications

Model Number	Membrane Air Dryers SMRT5100	SMRT5200
Max Flow Rate @35°F(2°C) dewpoint	100 SCFM (170 Nm <sup>3</sup> /Hr)	200 SCFM (340 Nm <sup>3</sup> /Hr)
Dewpoint	35°F (2°C) / 15°F (-9°C) (1)	35°F (2°C) / 15°F (-9°C) (1)
Min/Max Inlet Air Temp.	40°F/120°F (4°C/49°C)	40°F/120°F (4°C/49°C)
Ambient Temp. Range	40°F/110°F (4°/43°C)	40°F/110°F (4°/43°C)
Min/Max Inlet Pressure	80 psig/150 psig (5.5 barg/10 barg)	80 psig/150 psig (5.5 barg/10 barg)
Max Inlet Dewpoint	120°F (49°C)	120°F (49°C)
Max Compressed Air Requirement	113 SCFM (192 Nm <sup>3</sup> /Hr)	226 SCFM (384 Nm <sup>3</sup> /Hr)
Max Pressure Drop	10 psid (0.7 bard) (2)	10 psid (0.7 bard) (2)
Inlet/Outlet Port Size	1 1/2"NPT(male)	2"NPT(male)
Physical Dimensions	12.5"w x 43.25"h x 16"d (3) (31.75cm x 109.9cm x 40.6cm)	12.5"w x 43.25"h x 16"d (3) (31.75cm x 109.9cm x 40.6cm)
Shipping Weight	175 lbs(86 kg)	250 lbs(113kg)

Notes:

- 1 35°F (2°C) Dewpoint specified for saturated inlet air at 100°F(38°C) and max. flow at 100 psig (6.9 barg). 15°F (-9°C) Dewpoint specified for saturated inlet air at 50°F (10°C) and max. flow at 100 psig (6.9 barg).
- 2 Max. pressure drop measured at max flow rate @ 100 psig (6.9 barg). Pressure drop will increase at lower feed pressures - consult factory.
- 3 Excluding coalescing prefilter assembly.
- 4 Filtration efficiency: 99.99% at 0.01 micron.

### Ordering Information For assistance call 1-800-343-4048

Model Number	SMRT5100	SMRT5200
Coalescing Prefilter Assembly	2312N-1B1-DX 2312N-1B1-BX	A15/80-DX A15/80-BX
Replacement Prefilter Cartridges (every 6 months)	200-35-DX 200-35-BX	200-80-DX 200-80-BX
Membrane Replacement Module	D01-0086	D01-0086
Automatic Drain Kit	21552	21552

# Compressed Air Dryers

## Cabinet Dryers Eliminate Moisture Problems in Electrical Cabinets and Motors

### Balston CD Series Cabinet Dryers

You demand a lot from your electrical cabinets and motors. They are subject to nightly high pressure, hot wash downs and then expected to remain dry in a refrigerated area. Over time most cabinets develop moisture inside which leads to premature component failures. This interrupts production and costs you money. Expensive vortex coolers or heaters don't work. Vortex coolers use a considerable amount of air and have a high operating cost. Heaters simply raise the humidity of the air inside the cabinet and don't eliminate the moisture.

The Parker Balston Cabinet Dryer serves to reduce the humidity inside the cabinet to less than 10% RH. Any water that infiltrates the cabinet evaporates quickly. Electrical components stay clean and dry which prolongs their life.

### Avoid costly down time!

Many plants struggle with moisture problems by managing downtime emergencies. Emergencies divert limited maintenance personnel and disrupt production at the cost of thousands of dollars per hour. The Cabinet Dryer reduces these maintenance and lost production costs by 80% or more. A typical customer will see savings of \$10K - 15K per year. The Cabinet Dryer will operate continuously and reliably without operator attention thus freeing up valuable maintenance personnel who are better devoted to important routine maintenance work rather than daily emergency response.

### Product Features:

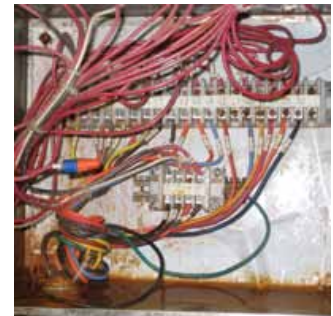
- Designed specifically for wash down areas
- Protects electrical cabinet components from damage caused by water and high humidity
- Minimizes pools of water inside cabinets
- Positive pressure keeps dust out
- Adds no heat to the cabinet
- Reduces cabinet humidity to less than 10% RH
- Requires no electricity, low operating costs
- Easy to install and maintain
- Quiet operation
- Protect motors, touch screens, drives and other critical components



### Do Your Cabinets Look Like This?



Corrosion leads to premature component failure



Water accumulation in electrical cabinet

**A Cabinet Dryer will keep your cabinets looking as good as new**



# Compressed Air Dryers

## Cabinet Dryers Eliminate Moisture Problems in Electrical Cabinets and Motors

### Principal Specifications

Model Number	CD0005	CD0010	CD0030
Cabinet Size Range (2)	0 - 4 FT <sup>3</sup> (0 - 0.11m <sup>3</sup> )	4 - 12 FT <sup>3</sup> (0.11m <sup>3</sup> - 0.34m <sup>3</sup> )	12 - 36 FT <sup>3</sup> (0.34m <sup>3</sup> - 1m <sup>3</sup> )
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)
Min/Max Ambient Air Temp	35°F/120°F (2°C/49°C)	35°F/120°F (2°C/49°C)	35°F/120°F (2°C/49°C)
Air Consumption	0.6 SCFM (17 slpm)	1.25 SCFM (35.4 slpm)	3.5 SCFM (99 slpm)
Min/Max Air Pressure	60 psi/150 psi (4.1 BAR/10.3 BAR)	60 psi/150 psi (4.1 BAR/10.3 BAR)	60 psi/150 psi (4.1 BAR/10.3 BAR)
Delivered Dew Point	-7°F(-22°C) (1)	-7°F(-22°C) (1)	-7°F(-22°C) (1)
Inlet and Outlet Port Size	1/4" NPT	1/4" NPT	1/4" NPT
Electrical Requirements	None	None	None
Dimensions	3"w x 9.2"h x 2"d (7.6cm x 2.34cm x 5cm)	3"w x 15.2"h x 2"d (7.6cm x 38.6cm x 5cm)	4.6"w x 15.3"h x 2.9"d (11.7cm x 38.9cm x 7.4cm)
Shipping Weight	1.5 lbs (0.68 kg)	2 lbs (0.9 kg)	2.5 lbs (1.1 kg)

#### Notes:

- 1 Delivered dewpoint is specified for saturated inlet air at 100°F (38°C) and 100 psig (6.9 BAR).
- 2 If the cabinet is not tightly sealed, consider upsizing to the next module size.
- 3 Filtration efficiency: 99.99% at 0.01micron.
- 4 For heavily contaminated air lines, install additional prefiltration.

### Ordering Information For assistance call toll free at 800-343-4048, 8AM to 5PM EST

Model Number	CD0005	CD0010	CD0030
Replacement Filter Elements	070-063-BX	070-063-BX	070-063-BX
Replacement Auto Drain	C02-2392	C02-2392	C02-2392

### Here's what our customers say:

*"We tried heaters, fans and vortex coolers, our only solution was to use a Parker Balston dryer that continuously purges the cabinet with dry air."*

- Lee Clarkson  
Ross Industries

*"I've been with Smithfield for 15 years and we've had issues with wet electrical cabinets for 15 years. We installed the cabinet dryer on our wet-test cabinet to see if it would work. Our Multivac™ packager was having significant issues. It was out of service 2-3 times per week due to condensation inside the cabinet. When we installed the dryer we noticed a difference right away. The water droplets on the walls of the cabinet were gone and our downtime from moisture was completely eliminated. It worked just like they told me."*

Maintenance Manager  
Large Meat Processing Plant



Compressed Air Dryers

# Offer of Sale

The items described in this document are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any item described in its document, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

**1. Terms and Conditions of Sale:** All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance or an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

**2. Payment:** Payment shall be made by Buyer within 30 days from the date of shipment. Amounts not timely paid shall bear interest at the Maximum rate permitted by law for each month or portion thereof that the Buyer is late making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

**3. Delivery:** Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

**4. Warranty:** Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 12 months from date of shipment to Buyer. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.

**5. Limitation of Remedy:** SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

**6. Changes, Reschedules and Cancellations:** Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

**7. Special Tooling:** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

**8. Buyer's Property:** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

**9. Taxes:** Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

**10. Indemnity For Infringement of Intellectual Property Rights:** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

**11. Force Majeure:** Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's Control.

**12. Entire Agreement/Governing Law:** The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.