MAP

Application Solutions

Food Processing and Packaging

Background

The Food Processing and Packaging Industry is an extremely competitive market that requires processors to produce high-quality products that exceed customer expectations. To meet changing demands among a variety of products, food packaging requires fluid processes that work at a variety of speeds and volume throughout. When packaging and sealing perishable food product, a modified atmosphere within the sealed package must be produced to ensure the high quality and extended freshness of the final product.

Application

In the Food Industry, the freshness of the food product determines quality and shelf life. The presence of residual oxygen within a food package allows bacteria growth, reducing the quality of the product, and shortening the shelf life. Preventing the damage caused by air contamination will ensure the integrity of the packaged food to help exceed customer expectations. A Parker Balston Nitrogen Generator will produce pure nitrogen to blanket the food and fill all voids within a package. This will displace oxygen, extend shelf life, and maintain original food quality and taste.

Case Study

Combining many different processes to distribute food goods at a maximized freshness requires constant attention to the removal of contaminants and impurities. Nitrogen gas is required during the sealing process to package food in a sterile and controlled environment. This atmosphere helps deliver the highest possible quality, taste and freshness, and extends the shelf-life of the product. Maidstone Coffee of Rochester, New York trusts Parker Balston Nitrogen Generators to create this environment. All Maidstone coffee packages are flushed with nitrogen to ensure product integrity and quality while extending shelf life. Without the correct amount of nitrogen, the packages will succumb to mold growth, moisture migration, and insect infestation. Parker Balston Nitrogen Generators meet all variable flow control needs for Maidstone, as well as the 95%-99.9% purity ranges. Since installation, Maidstone has never had a problem with their generator. Flushing their coffee packages with a Parker Balston Nitrogen Generator continues to ensure that Maidstone produces high-quality food products meeting the demands and expectations of its customers.

BALSTON®

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Features and Benefits

- PSA and Membrane technology available
- Improves food quality by eliminating oxygen, moisture, and all other contaminants within packages
- Lower cost by eliminating costly gas cylinders
- Compact - frees up floor space
- Hassle-free, easy to install, easy to operate
- Safe and reliable
- Maintains consistent nitrogen production
- Extends product shelf life and ensures original product quality and integrity

Principal Specifications - DB Series PSA Nitrogen Generators

Flow Rate (SCFH)									
% Nitrogen	DB-5	DB-10	DB-15	DB-20	DB-1200	DB-1600	DB-1900	DB-2500	DB-4000
99.99	141	281	421	561	284	378	452	602	943
99.95	204	409	613	817	532	714	852	1,136	1,769
99.9	240	480	720	960	736	992	1,178	1,571	2,480
99.5	345	689	1034	1378	1,200	1,600	1,900	2,500	4,000
99	416	831	1247	1663	1,490	2,010	2,360	3,148	5,028
98	499	998	1496	1995	1,894	2,555	3,000	4,000	6,388
97	570	1140	1710	2280	2,200	2,975	3,394	4,659	7,442
96	630	1259	1889	2518	—	—	—	—	—
95	694	1387	2081	2774	2,850	3,845	4,516	6,022	9,618

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Principal Specifications - Models DB-5, DB-10, DB-15, DB-20

Model Number	DB-5, DB-10	DB-15, DB-20
Nominal Conditions		
Feed Pressure	110 psig	110 psig
Temperature	80°F	80°F
Ambient Pressure	1 Atm.	1 Atm.
Compressed Air Specifications		
Maximum Pressure	140 PSIG	140 PSIG
Temperature Range	60°F - 105°F	60°F - 105°F
Dewpoint	40°F atmospheric dewpoint or better	40°F atmospheric dewpoint or better
Residual Oil Content	Trace	Trace
Particles	<.01 micron	<.01 micron
Atmospheric Dewpoint		
Atmospheric Dewpoint	-70°F (-56°C)	-70°F(-56°C)
Commercially Sterile	Yes	Yes
Particles >.1 micron	None	None
Suspended Liquids	None	None
Recommended Inlet Pressure (Min.)	110 psig (7.6 barg)	110 psig (7.6 barg)
Max Inlet Pressure	140 psig (9.7 barg)	140 psig (9.7 barg)
Max Outlet Pressure (Based on nominal conditions and standard 20 gallon nitrogen tank)	Flow 43-315 SCFH: 80 psig Flow 400-563 SCFH: 75 psig Flow 800-1508 SCFH: 50 psig	Flow 130-750 SCFH: 80 psig Flow 945-1689 SCFH: 75 psig Flow 810-2250 SCFH: 50 psig
Min. / Max. Ambient Temperature	40°F/95°F (4°C/35°C)	40°F/95°F (4°C/35°C)
Ambient Conditions		
Temperature	45°F - 90°F	45°F - 90°F
Ambient Pressure	Atmospheric	Atmospheric
Air Quality	Clean air without contaminants	Clean air without contaminants
Dimensions, Weight and Connections		
Dimensions	28.5"L x 32.25"D x 76.25"H	28.5"L x 50"D x 76.25"H
Weight	520 lbs (DB-5), 738 lbs (DB-10)	1,082 lbs (DB-15), 1,250 lbs (DB-20)
Inlet	1/2" NPT	1" NPT
Outlet	1/2" NPT	3/4" NPT
Electrical Requirement	120VAC/60Hz, 1.5 Amp	120VAC/60Hz, 1.5 Amp

Principal Specifications - Models DB-1200, DB-1600, DB-1900, DB-2500 and DB-4000

Dual Bed Nitrogen Generator	DB-1200	DB-1600	DB-1900	DB-2500	DB-4000
Atmospheric Dewpoint	-70°F (-56°C)	-70°F (-56°C)	-70°F (-56°C)	-70°F (-56°C)	-70°F (-56°C)
Particles > .1 micron	None	None	None	None	None
Suspended Liquids	None	None	None	None	None
Recommended Inlet Pressure	110 psig (7.6 barg)	110 psig (7.6 barg)	110 psig (7.6 barg)	110 psig (7.6 barg)	110 psig (7.6 barg)
Max Outlet Pressure	80 psig	80 psig	80 psig	80 psig	80 psig
Min/Max Ambient Temperature	40°F/95°F (4°C/35°C)	40°F/95°F (4°C/35°C)	40°F/95°F (4°C/35°C)	40°F/95°F (4°C/35°C)	40°F/95°F (4°C/35°C)
Inlet Port Size	1-1/2" NPT (female)	1-1/2" NPT (female)	2" NPT (female)	2" NPT (female)	2" NPT (female)
Outlet Port Size	1" NPT (female)	1" NPT (female)	1-1/2" NPT (female)	1-1/2" NPT (female)	1-1/2" NPT (female)
Electrical Requirements	120VAC/60 Hz	120VAC/60 Hz	120VAC/60 Hz	120VAC/60 Hz	120VAC/60 Hz
Dimensions	84"w x 60"d x 102"h (214cmx153cmx259cm)	84"w x 60"d x 123"h (214cmx153cmx313cm)	96"w x 72"d x 108"h (244cmx183cmx275cm)	96"w x 72"d x 132"h (244cmx183cmx336cm)	108"w x 72"d x 138"h (275cmx183cmx351cm)
Shipping Wt.	3,800 lbs. (1,724 kg)	3,800 lbs. (1,724 kg)	3,800 lbs. (1,724 kg)	4,300 lbs. (1,951 kg)	5,300 lbs. (2,404 kg)

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Ordering Information - Models DB5, DB-10, DB-15, DB-20

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

Balston Dual Bed Nitrogen Generator with Oxygen Analyzer	DB0-5	DB0-10	DB0-15	DB0-20
Balston Dual Bed Nitrogen Generator without Oxygen Analyzer	DB-5	DB-10	DB-15	DB-20
Maintenance Kit for Nitrogen Generator with Oxygen Analyzer	MKDB0-5	MKDB0-5	MKDB0-15	MKDB0-15
Maintenance Kit for Nitrogen Generator without Oxygen Analzer	MKDB5	MKDB5	MKDB-15	MKDB-15
Oxygen Sensor	72695	72695	72695	72695

Ordering Information - Models DB-1200, DB-1600, and DB-1900

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

Dual Bed Nitrogen Generator	DB-1200	DB-1600	DB-1900	DB-2500	DB-4000
Prefilter Cartridges, 1st Stage	200-35-DX	200-35-DX	200-80-DX	200-80-DX	200-80-DX
Prefilter Cartridges, 2nd Stage	200-35-BX	200-35-BX	200-80-BX	200-80-BX	200-80-BX
Additional Prefilter Cartridges	200-35-DX	200-35-DX	200-80-DX	200-80-DX	200-80-DX
Final Air Filter	100-18-DX	150-19-DX	150-19-DX	200-35-DX	200-35-DX
Oxygen Monitor					
Standard	72-730	72-730	72-730	72-730	72-730
High Purity (optional)	3290	3290	3290	3290	3290

HFX Series Membrane Nitrogen Generators

Flow Rates (SCFH) @ 100 psig @ 68°F							Pressure Correction Factors (at Indicated Operating Pressure (PSIG)									
Model	**95**	**96**	**97**	**98**	**99**	**99.5**	**58**	**73**	**87**	**101**	**116**	**130**	**145**	**160**	**174**	**190**
HFX Series Nitrogen Generators																
HFX-1	40	33	26	16	11	–	.52	.65	.86	1	1.15	1.35	1.44	---	---	---
HFX-3	148	120	95	70	42	–	.54	.68	.85	1	1.14	1.3	1.43	---	---	---
HFX-5	279	229	176	131	76	–	.52	.65	.85	1	1.14	1.34	1.43	---	---	---
HFX-7	452	360	283	209	120	–	.53	.66	.86	1	1.14	1.32	1.43	---	---	---
HFX-9	752	600	452	330	201	–	.44	.65	.85	1	1.1	1.3	1.4	---	---	---
HFX-11	1201	992	780	572	248	–	.44	.65	.85	1	1.2	1.4	1.6	---	---	---
Nitrosource Series Nitrogen Generators																
Main-Unit 159.003552	1200.7	990.6	780.5	570.4	330	210	.35	.51	.76	1	1.2	1.4	1.6	1.9	2.1	2.4
NS-1	2401.5	1981.2	1561	1140.7	660	420	.35	.51	.76	1	1.2	1.4	1.6	1.9	2.1	2.4
NS-2	3602.2	2971.8	2341.5	1711.1	990	630	.35	.51	.76	1	1.2	1.4	1.6	1.9	2.1	2.4
NS-3	4803	3962.5	3121.9	2281.4	1320	840	.35	.51	.76	1	1.2	1.4	1.6	1.9	2.1	2.4
NS-4	6003.7	4953.1	3902.4	2851.8	1650	1050	.35	.51	.76	1	1.2	1.4	1.6	1.9	2.1	2.4
NS-5	7204.5	5943.7	4682.9	3422.1	1980	1260	.35	.51	.76	1	1.2	1.4	1.6	1.9	2.1	2.4

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HFX Series Membrane Nitrogen Generators

Principal Specifications - HFX Series Membrane Nitrogen Generators Models HFX1, HFX-3, HFX-5, HFX-7, HFX-9, HFX-11

Model Number	HFX-1, HFX0-1	HFX-3,HFX0-3	HFX-5, HFX0-5	HFX-7, HFX0-7, HFX-9, HFX0-9, HFX-11, HFX0-11
Atmospheric Dewpoint	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)
Commercially Sterile	Yes	Yes	Yes	Yes
Particles > 0.01 micron	None	None	None	None
Suspended Liquids	None	None	None	None
Min/Max Operating Press.(1)	60 psig/145 psig	60 psig/145 psig	60 psig/145 psig	60 psig/145 psig
Max. Press. Drop (at 95% N_2, 125 psig)	10 psig	10 psig	10 psig	10 psig
Recommended Ambient Operating Temperature	77°F (25°C)	77°F (25°C)	77°F (25°C)	77°F (25°C)
Min/Max Inlet Air Temp.	40°F/122°F (2°C/50°C)	40°F/122°F (2°C/50°C)	40°F/122°F (2°C/50°C)	40°F/122°F (2°C/50°C)
Recommended Inlet Air Temperature	77°F (25°C)	77°F (25°C)	77°F (25°C)	77°F (25°C)
Electrical Requirements (2)	None (2)	None (2)	None (2)	None (2)
Dimensions	16.3"h x 12.8"w x 7.5"d (41/4cmx32/5cmx19.1cm)	16"w x 16"d x 50"h (41cmX25cmX91cm)	16"w x 16"d x 50"h (41cmX25cmX91cm)	24"w x 20"d x 69"h (61cmX51cmX175cm)
Shipping Wt.	38 lbs. (17.3 kg)	75 lbs. (34 kg)	106 lbs. (114 kg)	250 lbs. (114 kg)

Notes:
1 Maximum operating pressure in Europe is 8 barg. 2 No electrical power required unless used with an electrical accessory, e.g., an oxygen analyzer.

Ordering Information - Models HFX1, HFX-3, HFX-5, HFX-9, HFX-11

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

			Maintenance Kit Components				
Model	Maintenance Kit	Maintenance Kit w/02 Monitor	Replacement Filter Cartridges 1st stage	Replacement Filter Cartridges 2nd stage	Replacement Filter Cartridges 3rd stage	Final Membrane Filter	Activated Carbon Filter
HFX-1, HFX0-1 (w/O2 monitor)	MK75005	MK750050	100-12-DXE	100-12-BXE	---	9933-05-95	1/7825-08-000
HFX-3, HFX0-3 (w/O2 monitor)	MK7579C	MK75790C	100-12-DXE	100-12-BXE	---	GS-100-12-95	75620
HFX-5, HFX0-5 (w/O2 monitor)	MK7579C	MK75790C	100-12-DXE	100-12-BXE	---	GS-100-12-95	75620
HFX-7, HFX0-7 (w/O2 monitor)	MK7576	MK76760	100-18-DXE	100-18-BXE	100-25-BXE	GS-100-25-95	75303
HFX-9, HFX0-9 (w/O2 monitor)	MK7576	MK75760	100-18-DXE	100-18-BXE	100-25-BXE	GS-100-25-95	75303
HFX-11, HFX0-11 (w/O2 monitor)	MK7576	MK76760	100-18-DXE	100-18-BXE	100-25-BXE	GS-100-25-95	75303

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Nitrosource Series Membrane Nitrogen Generators

Principal Specifications - Nitrosource Series Membrane Nitrogen Generators

Model Number	Main Unit	NS-1	NS-2
Atmospheric Dewpoint	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)
Commercially Sterile	Yes	Yes	Yes
Particles > 0.01 micron	None	None	None
Suspended Liquids	None	None	None
Min/Max Operating Pressure (1)	60 psig/145 psig	60 psig/145 psig	60 psig/145 psig
Max. Pressure Drop	15 psig	15 psig	15 psig
Recommended Ambient Operating Temp.	70°F (21°C)	70°F (21°C)	70°F (21°C)
Min/Max Inlet Air Temp.	50°F/104°F (10°C/40°C)	50°F/104°F (10°C/40°C)	50°F/104°F (10°C/40°C)
Recommended Inlet Air Temp.	70°F (21°C)	70°F (21°C)	70°F (21°C)
Electrical Requirements (2)	90-250 VAC 50-60 Hz	90-250 VAC 50-60 Hz	90-250 VAC 50-60 Hz
Dimensions	29"w x 20"d x 76"h (74cmX107cmX193cm)	29"w x 31"d x 76"h (74cmX51cmX193cm)	29"w x 42"d x 76"h (74cmX79cmX193cm)
Shipping Wt.	450 lbs.	660 lbs.	870 lbs.

Model Number	NS-3	NS-4	NS-5
Atmospheric Dewpoint	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)
Commercially Sterile	Yes	Yes	Yes
Particles > 0.01 micron	None	None	None
Suspended Liquids	None	None	None
Min/Max Operating Pressure (1)	60 psig/145 psig	60 psig/145 psig	60 psig/145 psig
Max. Pressure Drop	15 psig	15 psig	15 psig
Recommended Ambient Operating Temp.	70°F (21°C)	70°F (21°C)	70°F (21°C)
Min/Max Inlet Air Temp.	50°F/104°F (10°C/40°C)	50°F/104°F (10°C/40°C)	50°F/104°F (10°C/40°C)
Recommended Inlet Air Temp.	70°F (21°C)	70°F (21°C)	70°F (21°C)
Electrical Requirements	90-250 VAC 50-60 Hz	90-250 VAC 50-60 Hz	90-250 VAC 50-60 Hz
Dimensions	29"w x 53"d x 76"h (74cmX107cmX193cm)	29"w x 64"d x 76"h (74cmX51cmX193cm)	29"w x 75"d x 76"h (74cmX79cmX193cm)
Shipping Wt.	1290 lbs.	1500 lbs.	1710 lbs.

Notes:
1 For temperatures less than 68°F (20°C) or pressures less than 60 psig, consult factory for flows.
2 No electrical power required unless used with an electrical accessory, e.g., an oxygen analyzer.

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Ordering Information - All Nitrosource Series Models

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

Description	Model #	Maintenance Kit #	O2 Sensor
Main Unit	159.003552	159.003569	2284
Sub Unit	159.003553	159.003570	
Main Unit	NS-1	159.003569	2284
Sub Unit		159.003570	
Main Unit	NS-2	159.003569	2284
2 Sub Unit		159.003570x2	
Main Unit	NS-3	159.003569	2284
3 Sub Unit		159.003570x3	
Main Unit	NS-4	159.003569	2284
4 Sub Unit		159.003570x4	
Main Unit	NS-5	159.003569	2284
5 Sub Unit		159.003570x5	

Example: NS-2 Generator Requires 1 each 159.003569 and 2 each 159.003570

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