



**GRN Series  
Refrigeration Dryers**



## 5 - Year Product Warranty

Great Lakes Air Products has produced high quality refrigeration dryers since its founding. In an effort to express this quality standard, as well as distinguish its products in the marketplace, it initiated an industry leading 5-Year product warranty on standard refrigerated air dryers. The warranty requires no additional purchases or contracts and covers the entire dryer for 5-Years, and excludes only maintenance items through a simple purchase.

Great Lakes Air has supported its 5-Year Warranty since 1983 while many other industry warranties have been implemented and revoked, others cover only select components, or prorate charges for components at the time of replacement.

With continuous improvement in engineering and quality standards, that are a product of current technology, you can be assured that Great Lakes Air Products will provide you with a quality product for years of uninterrupted service.



*Detailed warranty coverage and requirements can be referenced in the GRN warranty publication.*

## UL Listed Product Series

UL is recognized as a world leader in product testing and certification that provides an unbiased “Third Party Certification” of equipment and components. Prior to granting “LISTED” certification the product or component must be approved through comprehensive procedures, guidelines, and standards such as safety, sustainability, and performance.

When a unit is UL Listed, it means the components inside are also UL recognized components. This means that the manufacturers of these approved components are inspected at a minimum of four times per year. This ensures the products are being manufactured to the UL standard and the quality of the product is maintained. Looking for UL marks and labels when purchasing products ensure a safe, reliable, and honest manufactured product.



The product is verified as being fully compliant with ANSI/UL 1995 & CSA C22.2 No. 236-15, Heating and Cooling Equipment Standards.

<ul style="list-style-type: none"> <li>• Component Selection and Application</li> </ul>	<ul style="list-style-type: none"> <li>• Component Serviceability</li> </ul>
<ul style="list-style-type: none"> <li>• Minimum Safety Components</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum Cabinet Design</li> </ul>

Some models of the GRN series are not UL listed, refer to the “Design and Specification Information” table for specific model status.

UL Listed models applies only to standard design products. The addition of optional designs or accessories removes UL Listing.

## Made with Pride in the USA

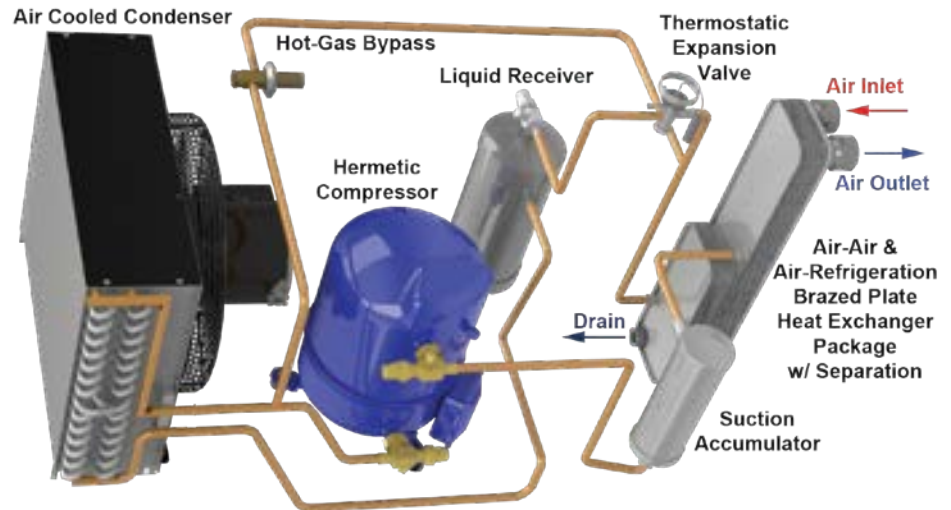
Great Lakes Air Products manufactures all of its compressed air dryers in southeastern Michigan which has a long and rich history in manufacturing. We offer our customers a steady stream of value driven, high quality, industrial grade products with decades of proven performance. Readily available replacement components and maintenance items are locally available through the Great Lakes distribution network. Base your equipment purchase on the quality and durability of American made products.



## GRN Series Air Dryer Operation

The GRN Series air dryer takes hot saturated compressed air and cools it in a two stage heat exchange process. The first stage is a high efficiency Air-Air heat exchanger where the compressed air is cooled by air discharged from the stage two Air-Refrigeration exchanger. The second stage of cooling is accomplished in the Air-Refrigerant heat exchanger where the refrigeration system cools the process gas to a specified Dewpoint. The moisture condensed from the drop in temperature is separated and removed from the system. The cold and dry air is then becomes the cooling medium for the first stage as well as reheated prior to discharge from the dryer.

The refrigeration system is comprised of a compressor that boosts the refrigeration gas pressure. As the pressure is boosted the temperature is increased through heat of compression. The heat is removed and the Freon gas is condensed to a liquid by an air or water cooled heat exchanger. The high pressure liquid is collected in a receiver then feed to the expansion valve where it is expanded at a regulated volume.



The expansion of the liquid causes the Freon to cool which is the equal and opposite reaction to the heat generated by compression. The cold Freon adsorbs the heat of the compressed air stream and evaporates to a gas. Any residual liquid is collected and evaporated in a suction accumulator prior to reentering the compressor before the process repeats.

## Engineered for a Green Future

The GRN series refrigerated compressed air dryer is designed with the most current technology and methodology for the 21st century.

- **Enhanced High Efficiency Heat Exchangers**

The enhanced efficiency of the heat exchanger allows closer approach temperatures in both the Air-Air and Air-Refrigeration exchangers reducing the required BTU/h input of the refrigeration system required to meet or exceed ISO Class 8573 class 4 pressure dewpoints.

- **Reduced Operating Costs & Carbon Footprint**

The reduction of required refrigeration BTU/h input correlates to smaller refrigeration requirements and reduction of operational input watts.

- **Reduced Manufacturing Carbon Footprint**

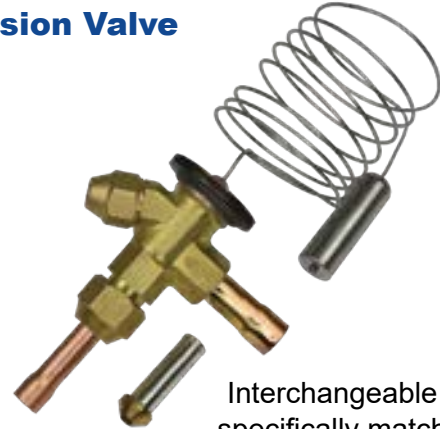
The Carbon Footprint required to manufacture a refrigeration dryer has also been reduced in the GRN series. It has a reduced material and equipment footprint which requires less materials to manufacture thus reducing its carbon footprint.



# Quality Products start with Quality Components

## Thermostatic Expansion Valve

Thermostatic expansion valve that modulates refrigerant flow to match system requirements in fluctuating ambient temperatures and compressed air load. Low cost capillary tube systems used by other manufacturers will increase or decrease refrigerant flow based upon ambient conditions with no regard to system load. High ambient temperatures or slightly clogged condensers will increase refrigerant flow without a load to balance the system. Operation under these conditions can cause premature compressor failure.



Interchangeable orifices specifically match system design to refrigeration load.

## High Quality Gauges



Stainless steel panel mounted gauges with brazed connections and coiled vibration eliminator removes the possibility of a refrigerant leak from a common leak point in competitors dryers.

## Heavy Duty Piston Refrigeration Compressor with Rotolock Service ports

Heavy duty, industrial service piston type refrigeration compressor with proven durability that is designed to handle the fluctuating loads of a compressed air refrigeration dryer.



## Refrigerant Pressure Switches & Fan Cycle Control

Fan Cycle pressure switch controls allow a stable and precise refrigerant operating band in various or changing ambient conditions.

Rotolock service valves allow isolation as well as access to the refrigeration system that aids in the long term service and maintenance of a refrigeration dryer.



## Hot-Gas Bypass Valve

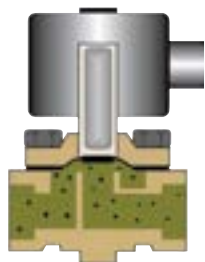
Heavy duty hot-gas bypass valves are specifically designed for the high pressure applications required with modern refrigerants.

High / Low pressure switches will protect the refrigeration system from out of range operation that could cause compressor failure. The high limit requires manual reset in the event of an overpressure condition which prevents the refrigeration system from short cycling in the event of condenser cooling medium loss, high ambient conditions, or dirty/clogged air cooled condensers.

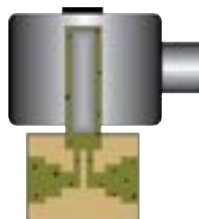
\*Individual components apply to the GRN series as a whole, not all components apply to each GRN model.\*

# Quality Products start with Quality Components

## Smart-Design Solenoid Drain



Diaphragm Style Solenoid



Direct Acting Solenoid

Unlike the commonly utilized direct acting solenoid drain valves, diaphragm style valves keep the main stream of contaminant laden condensate away from the internal moveable piston. If particulate contaminant in the condensate stream fouls and restricts movement of the piston, the valve will fail. Diaphragm type valves also have much larger orifice and flow paths substantially reducing the possibility of clogging the drain valve.

The **Smart-Design** solenoid drain package utilizes electronic timers with diaphragm type solenoid valves and incorporates an isolation valve and strainer. This simplifies maintenance while further protecting the high quality drain system from contaminant failure.



## Features & Benefits

Description	GRN 10	GRN 20 - 50	GRN 75-100	GRN 125-200	GRN 250-300	GRN 125-400	GRN 500-650	GRN 800-3000
	Single Phase					Three Phase		
<b>Power &amp; Instrumentation</b>								
Refrigeration Suction Gauge	●	●	●	●	●	●	●	●
Refrigeration Discharge Gauge	-	-	-	-	-	-	●	●
Air Outlet Pressure Gauge	-	-	-	-	-	-	-	●
On/Off Power Switch	-	●	●	●	●	●	●	●
Corded Service Feed	●	●	●	-	-	-	-	-
Junction Service Feed	-	-	-	●	●	●	●	●
<b>Refrigeration System</b>								
Piston Refrigeration Compressor	●	●	●	●	●	●	●	●
Thermostatic Expansion Valve	-	-	-	●	●	●	●	●
Automatic Expansion Valve	●	●	●	-	-	-	-	-
Hot Gas Bypass Capacity Control	-	-	-	●	●	●	●	●
Relay/Contactor	●	●	●	●	●	●	●	●
Overload Protection	●	●	●	●	●	●	●	●
Oil Sight Glass	-	-	-	-	●	●	●	●
Crankcase Heater	-	-	-	-	●	●	●	●
Fan Cycle Control	-	-	-	-	●	●	●	●
High Pressure Shutdown	-	-	●	●	-	-	-	-
High/Low Press Shutdown	-	-	-	-	●	●	●	●
Rotolock Isolation Service Valves	-	-	-	-	●	●	●	●
<b>Condensate Drain</b>								
Strainer with Isolation Valve	-	-	●	●	●	●	●	●
Smart Design Solenoid Drain	-	-	●	●	●	●	●	●

## Optional Digital System Monitor



GRN series model 250 and larger are available with an optional digital system monitor. The electronic module monitors:

**Air Inlet Temperature**  
**Ambient Temperature**

**Air Outlet Temperature**  
**Dewpoint Temperature**

The unit has a 4-20 mA output for data logging or remote system monitoring. The monitor is not a controller and is not integrated into the dryer operation. The monitors independence eliminates the possibility of a dryer shutdown, due to electronic failure.

## Non Standard Condition Capacity Correction

Inlet Temperature °F		90			100			110			120		
Ambient Temperature °F		90	100	110	90	100	110	90	100	110	90	100	110
Inlet Air Pressure	70 psig	1.10	1.01	0.86	0.81	0.74	0.63	0.60	0.55	0.47	0.45	0.42	0.35
	80 psig	1.23	1.13	0.96	0.90	0.83	0.70	0.67	0.62	0.52	0.51	0.47	0.40
	90 psig	1.35	1.24	1.06	1.00	0.91	0.78	0.74	0.68	0.58	0.56	0.51	0.44
	100 psig	1.48	1.36	1.15	1.09	1.00	0.85	0.81	0.75	0.63	0.61	0.56	0.48
	110 psig	1.61	1.47	1.25	1.18	1.09	0.92	0.88	0.81	0.69	0.66	0.61	0.52
	120 psig	1.73	1.59	1.35	1.09	1.17	0.99	0.95	0.87	0.74	0.72	0.66	0.56
	130 psig	1.86	1.70	1.45	1.37	1.26	1.07	1.02	0.94	0.80	0.77	0.71	0.60
	140 psig	1.98	1.82	1.55	1.46	1.34	1.14	1.09	1.00	0.85	0.82	0.75	0.64
	150 psig	2.11	1.93	1.64	1.55	1.42	1.21	1.16	1.06	0.90	0.87	0.80	0.68
175 psig	2.40	2.20	1.87	1.80	1.65	1.41	1.37	1.25	1.07	1.05	0.96	0.82	

To obtain flow capacities at conditions other than standard (**SCFM @ 100 PSIG, 100°F Inlet & 100°F Ambient**), locate the multiplier at the interception of actual operating conditions. Multiply the standard rated capacity of the dryer by the selected multiplier. The result is the flow capacity of that dryer under corrected conditions. Flow rates in excess of design due to capacity correction can result in increased pressure drop.

## Design and Specification Information

### Dryer Heat Rejection & Cooling Requirements

<b>Air-Cooled Units:</b>	
60 BTU/H per rated SCFM of dryer capacity to ambient	
<b>Water-Cooled Units:</b>	
55.2 BTU/H per SCFM of dryer capacity to cooling fluid	
4.8 BTU/H per SCFM of dryer capacity to ambient	
Fluid Requirements	0.0040 GPM per SCFM of dryer capacity @ 50°F Fluid
	0.0050 GPM per SCFM of dryer capacity @ 60°F Fluid
	0.0065 GPM per SCFM of dryer capacity @ 70°F Fluid
	0.0100 GPM per SCFM of dryer capacity @ 80°F Fluid
	0.0150 GPM per SCFM of dryer capacity @ 90°F Fluid

### Voltage Designations

115/120-1-60	116
208/240-1-60	216
208/240-3-60	236
440/480-3-60	436
575-3-60	536

# Design and Specification Information

GRN -10 / 300 Single Phase												
Model Number	Capacity SCFM @100 PSIG		Refrigeration System		UL Listed Model	Available Voltages	In / Out Ports	Max. Inlet Pressure	Dimensions			Weight
	39°F PDP	50°F PDP	Watts	Freon					H	W	D	
GRN-10A-◆	10	12	206	134a	No	115-1-60	3/8 OD	220 PSIG	10	15	13	50
GRN-20A-◆	20	24	206	134a	Yes		1/2"		20	13	17	58
GRN-25A-◆	25	30	206	134a	Yes		1/2"		20	13	17	59
GRN-40A-◆	40	48	345	134a	Yes		1/2"		20	13	17	68
GRN-50A-◆	50	60	410	134a	Yes		1/2"		20	13	17	69
GRN-75A-◆	75	150	500	134a	Yes		1"		21	17	23	83
GRN-100A-◆	100	120	828	134a	Yes	115-1-60 230-1-60	1"		21	17	23	99
GRN-125A-◆	125	150	1,011	134a	Yes		1"		35	19	23	162
GRN-150A-◆	150	180	1,011	134a	Yes		1-1/4"		35	19	23	168
GRN-200A-◆	200	240	1,450	134a	Yes	230-1-60	1-1/4"		41	22	29	228
GRN-250A-◆	250	295	2,201	404a	Yes		1-1/2"		41	22	29	284
GRN-300A-◆	300	350	2,201	404a	Yes		1-1/2"		41	22	29	306

GRN-250 / 3000 3-Phase Models												
Model Number	Capacity SCFM @100 PSIG		Refrigeration System		UL Listed Model	Available Voltages	In / Out Ports	Max. Inlet Pressure	Dimensions			Weight
	39°F PDP	50°F PDP	Watts	Freon					H	W	D	
GRN-250A-◆	250	295	2,201	404a	Yes	460-3-60 230-3-60 575-3-60	1-1/2"	220 PSIG	41	22	29	284
GRN-300A-◆	300	350	2,201	404a	Yes		2"		41	22	29	306
GRN-400A-◆	400	480	2,593	404a	Yes		2"		41	22	29	315
GRN-500A-◆	500	600	4,882	404a	Yes		2"		49	28	41	499
GRN-650A-◆	650	780	4,882	404a	Yes		2"		49	28	41	571
GRN-800A-◆	800	960	5,701	404a	Yes		3"		60	37	62	920
GRN-1000A-◆	1000	1200	5,701	404a	Yes		3"	60	37	62	1009	
GRN-1200A-◆	1200	1440	7,329	404a	Yes		3"	60	37	62	1200	
GRN-1500A-◆	1500	1800	9,843	404a	Yes		4" Flg.	150 PSIG	60	37	62	1525
GRN-1750A-◆	1750	2100	11,250	404a	Yes		4" Flg.		69	43	68	1611
GRN-2000A-◆	2000	2400	11,250	404a	Yes		4" Flg.		69	43	68	1980
GRN-2250A-◆	2250	2700	14,550	404a	Yes		4" Flg.		69	43	68	2115
GRN-2500A-◆	2500	3000	14,550	404a	No		6" Flg.		86	43	85	2800
GRN-3000A-◆	3000	3615	18,950	404a	No		6" Flg.		86	43	85	3210

## GRN Series Notes:

1. Capacity reflects a maximum 100°F inlet temperature and 100°F ambient
2. The symbol "◆" represents a missing voltage designation see table for appropriate designation
3. Dryer voltage must be specified, motors are not dual voltage
4. Inlet/Outlet connections are NPT unless otherwise specified
5. Watts specified assume 35°F evaporator and 100°F Ambient
6. Dimensions are in inches with a +/- 0.5" Tolerance, complete drawings available at [www.glair.com](http://www.glair.com)
7. Equipment weight is in pounds
8. Dimensions and specifications are subject to change without notice
9. GRN-10A-116 is not UL listed with the model series but is listed under Tecumseh Products Co.

## Other Products from Great Lakes Air Products



**GNX Series Cycling  
Air Dryer**



**GMNX Series High Capacity  
Cycling Air Dryer**



**Regenerative  
Desiccant Air Dryers**



**Compressed Air  
Filtration**



**Nitrogen  
Generators**

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