

# Great Lakes Air



ELECTRONIC DRAIN  
5 - YEAR WARRANTY  
35-39°F PRESSURE DEWPOINT  
SS EXPANSION VALVE  
STANDARD ELEC  
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## **ERF Series Non-Cycling Refrigeration Dryers**

## Why Dry Compressed Air

Compressed air is a clean, convenient and versatile energy resource ideal for many industrial, commercial and instrument applications. To optimize a compressed air system the moisture and contaminants naturally concentrated in the compression cycle must be removed to avoid costly equipment failure, product contamination, and distribution system breakdown.

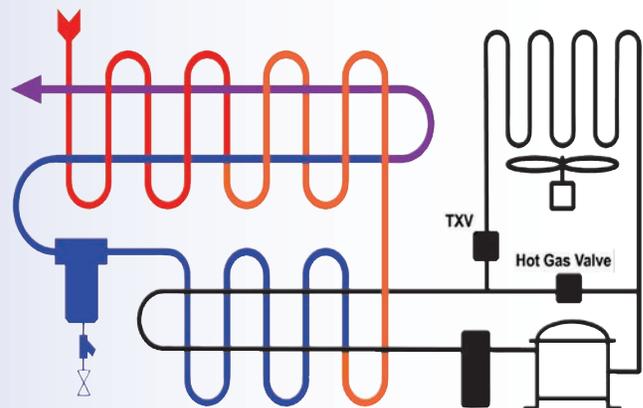
In the compression cycle, ambient air is drawn into the compressor where the gas volume is reduced to increase pressure. Any solids, vapors or aerosols introduced into the compression cycle are concentrated in a direct correlation to the discharge pressure of the system. This concentration process produces saturated compressed air with particulate contaminants and excess liquid at the compressor discharge. Filtration can remove the liquid water and contamination but the moisture (humidity) needs to be removed with a compressed air dryer.

A compressed air dryer suppresses the dewpoint (temperature at which liquid moisture will condense) enabling separation to remove the liquid from the system. By removing the moisture with the dryer reliability, efficiency and productivity can be added to a compressed air system.

- Dry compressed air keeps lubricants from being washed away from air tools, cylinders, air motors, and valves extending product life and reducing maintenance requirements.
- Dry compressed air reduces product contamination in applications such as, mixing, conveying, agitation, cooling, or product blow down.
- Dry compressed air reduces distribution system corrosion that will increase pressure drop and operational costs, generate pipe scale, cause leaks, and require premature replacement.

## ERF Series Air Dryer Operation

The ERF Series air dryer takes hot saturated compressed air into an air cooled heat exchanger, which cools the air, and a gross water separator removes the condensed liquid. The air then enters the Air-Air exchanger where it is pre-cooled by the air discharged from the Air-Refrigeration exchanger. The final cooling is accomplished in the Air-Refrigerant exchanger where it is further cooled to the specified dewpoint, and additional condensed moisture is separated from the air stream. The cool dry air enters the Air-Air exchanger where it acts as the cooling medium for the previous pre-cooling stage. It also reheats the discharge air to increase volume and prevent the compressed air piping from sweating.



## Features and Benefits

# 5-Year Product Warranty

The Great Lakes ERF series refrigerated air dryer is manufactured to the highest quality standards. In an effort to express this quality standard and distinguish our products from competitors, we standardized on the Great Lakes Air industry leading 5-Year product warranty. The Great Lakes warranty covers the entire dryer for 5-Years and excludes only drain maintenance. Many competitive warranties cover only select components and or prorates a charge for replacement. With continuous improvement of quality standards, along with engineering improvements that are moving with current technology, you can be assured that Great Lakes Air Products will provide you with a quality product for years of uninterrupted service.

For detailed warranty coverage and requirements consult ERF warranty publication.

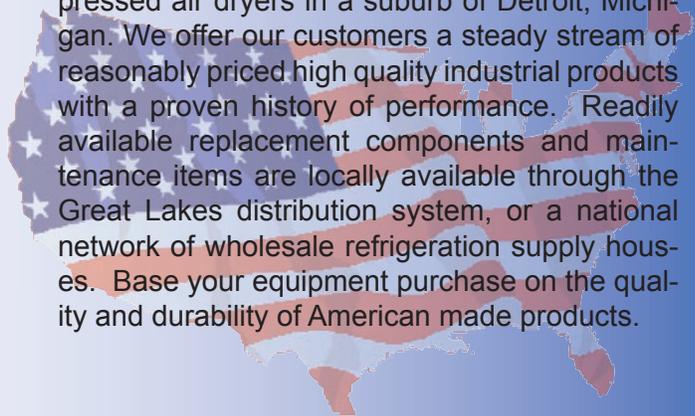
### Environmental Refrigerants

Great Lakes Air utilizes only environmentally friendly EPA approved refrigerants, the ERF series dryers with fractional HP refrigeration compressors utilize HFC (R134A) refrigerant. The larger systems utilize HCFC (R22) refrigerant that will be commercially available until 2020. Optional refrigerant types are available consult your representative for details.



### Made With Pride in the U.S.A.

Great Lakes Air manufactures all of its compressed air dryers in a suburb of Detroit, Michigan. We offer our customers a steady stream of reasonably priced high quality industrial products with a proven history of performance. Readily available replacement components and maintenance items are locally available through the Great Lakes distribution system, or a national network of wholesale refrigeration supply houses. Base your equipment purchase on the quality and durability of American made products.



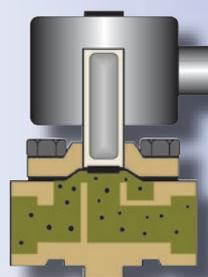
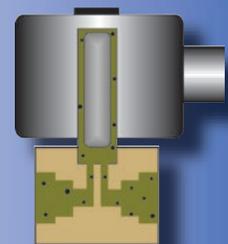
### Low Pressure Drops

The ERF series compressed air dryers manufactured by Great Lakes Air are designed for ultra low pressure drops that range from 1.2 to 3.2 PSID. Competitive products can deliver pressure drops as high as 6.5 PSID. Additional pressure drop can substantially increase the operating cost of your dryer, each pound (PSI) raises the required compressor horsepower by 0.5%. If a facility is required to raise discharge pressure by 3 PSI to overcome component restriction (Pressure Drop), 1.5% additional compressor HP is required.

Assuming a facility operates a 25 HP compressor and has an average electricity cost of \$0.06 kw/H. Adding 3 PSI of pressure drop would needlessly increase annual electrical cost by approximately \$147.00.

### Smart Design Solenoid Drain

Great Lakes Air uses only diaphragm type solenoid valves for it's electronic timed condensate drains. Diaphragm 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 valves have much larger orifices and flow paths than the industry standard direct acting valves.



A larger orifice in conjunction with a strainer virtually eliminates the possibility of clogging a condensate drain valve.

**At Great lakes our quality starts with an industrial design, then integrates the highest quality components, and is finally manufactured under the strictest guidelines to the highest standards. Then the entire package is backed up by the original 5-Year Warranty**

**A**



SS Thermostatic expansion valve that modulates refrigerant flow to match system requirements in fluctuating ambient temperatures and compressed air loads. Capillary tube systems used by other manufacturers will increase or decrease refrigerant flow on 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 SS orifices to specifically matches system design to refrigeration load.

**B**

ERF series dryers utilize electronic timed solenoid drains with an isolation valve and strainer. This simplifies maintenance while protects the drain system form contaminant failure. This is in addition to the superior design of the diaphragm solenoid valve described in the features and benefits of this brochure.



**C**



ERF series dryers are equipped with full service refrigeration valves on both the suction and discharge systems. These valves simplify field maintenance or service as well as reducing refrigerant loss.

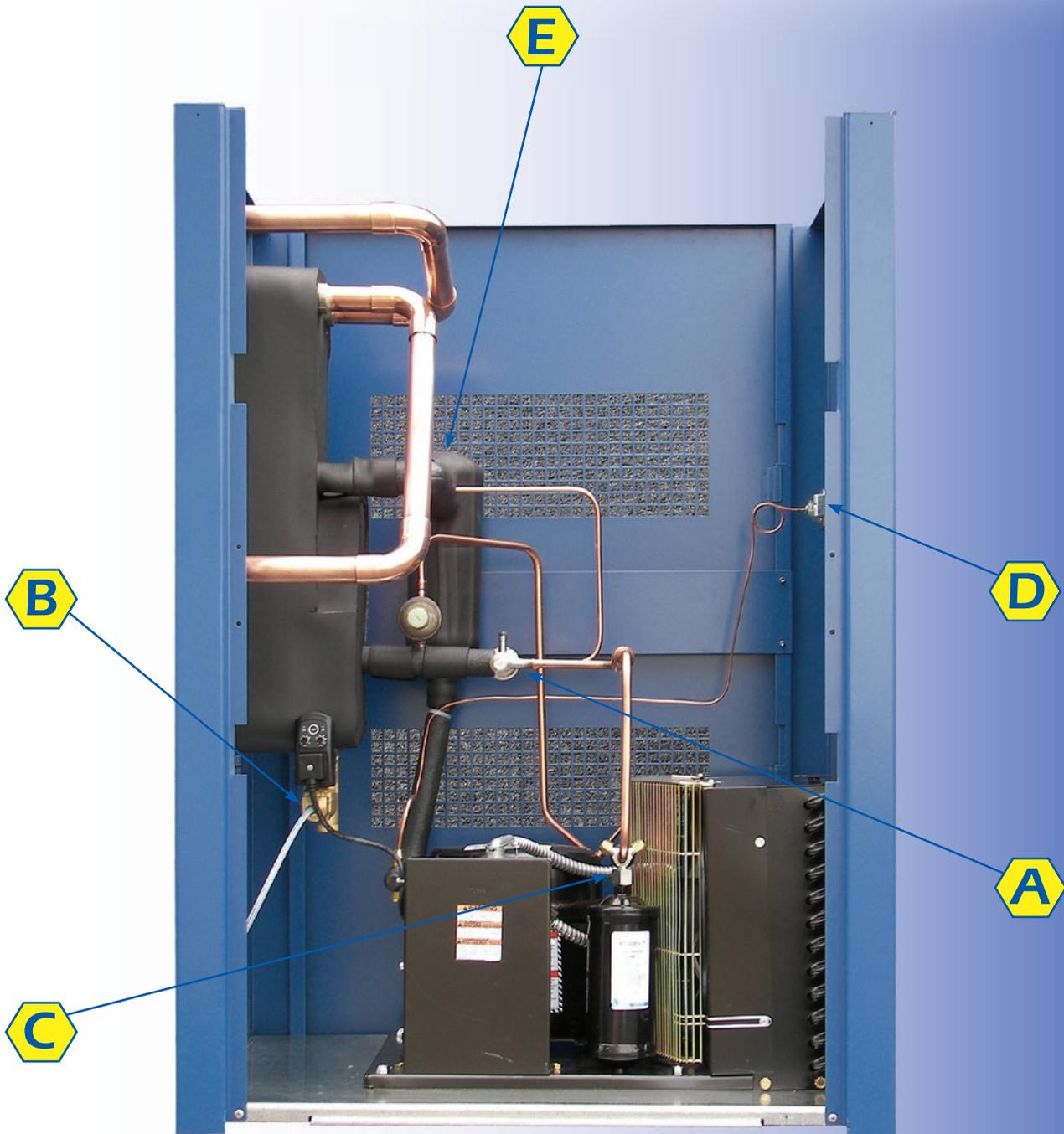
**D**

SS panel mounted gauges with braised connections and coiled vibration eliminators removes the possibility of a refrigerant leak from a common leak point in competitive dryers.

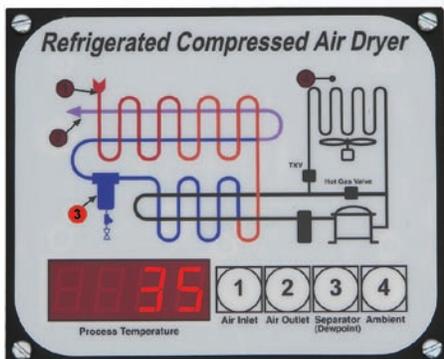


**E**

Great Lakes Air uses suction accumulators to further remove any possibility of refrigerant liquid return to the compressor that could cause premature compressor failure



## Optional Digital System Monitor



ERF series dryers model are available with an optional digital system monitor. This electronic module monitors air inlet temperature, air outlet temperature, ambient temperature, and separation (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	1.00	0.92	0.84	0.80	0.73	0.67	0.66	0.60	0.55	0.50	0.45	0.41
	80 psig	1.12	1.03	0.94	0.90	0.82	0.75	0.73	0.67	0.61	0.55	0.51	0.46
	90 psig	1.24	1.14	1.04	0.99	0.91	0.83	0.81	0.75	0.68	0.61	0.56	0.51
	100 psig	1.36	1.25	1.13	1.09	1	0.91	0.89	0.82	0.74	0.67	0.62	0.56
	110 psig	1.48	1.36	1.23	1.18	1.08	0.99	0.97	0.89	0.81	0.73	0.67	0.61
	120 psig	1.60	1.46	1.33	1.28	1.17	1.06	1.04	0.96	0.87	0.79	0.72	0.66
	130 psig	1.72	1.57	1.43	1.37	1.26	1.14	1.12	1.03	0.94	0.85	0.78	0.71
	140 psig	1.83	1.68	1.53	1.47	1.35	1.22	1.20	1.10	1.00	0.91	0.83	0.76
	150 psig	1.95	1.79	1.63	1.56	1.43	1.30	1.28	1.17	1.07	0.97	0.89	0.81

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 rated capacity of the selected dryer by the selected multiplier. The result is the corrected flow capacity of that dryer under corrected conditions. Flow rates in excess of design due to capacity correction can result in increased pressure drop.

## Standard and Optional Features

ERF series refrigeration dryers are CSA Certified (File# 228603) to the requirements of ANSI/UL 474, 484, 1995 & CAN/CSA C22.2 #236. In the U.S., CSA International is accredited by the Occupational Health and Safety Administration (OSHA) as a Nationally Recognized Testing Laboratory (NRTL). Generally speaking, all OSHA accredited laboratories conduct their tests against the same sets of U.S. standards and codes, regardless of who authors or publishes them. CSA International tests to applicable U.S. standards, which include ANSI, UL, CSA, NSF, and others. In Canada CSA International is accredited as a Certification Organization (CO) and as a Testing Organization (TO) by the Standards Council of Canada (SCC). The following is a partial list of organizations that have accredited CSA International; AMECA, ANSI, City of Los Angeles, IAS, NIST, NVLAP, OSHA, SCC, US/DOE.



Features		ERF Series Model Suffix					
		10/25	40/75	100/200	250/300	400/650	800/2250
Power & Instrument	Refrigerant Suction Gauge	Standard					
	Refrigerant Discharge Gauge	Optional				Standard	
	Air Outlet Pressure Gauge	N/A	Optional				Standard
	Power Cord (15A)	Standard	N/A				
	Illuminated Power On Switch	Optional	Standard				
Refrigeration	Compressor Relay/Contactor	Standard					
	Compressor Overload Protection	Standard					
	Compressor High Pressure Shutdown	N/A	Optional	Standard			
	Compressor Low Pressure Shutdown	N/A	Optional		Standard		
	Compressor Crankcase Heater	N/A			Standard		
	SS Thermostatic Expansion Valve	N/A		Standard			
	Adjustable Hot Gas By-pass Valve	N/A		Standard			
	Suction Accumulator	N/A		Standard			
	Liquid Receiver	N/A		Standard			
	Water Cooled Condenser	N/A	Optional				
Drain	Condensate Strainer with Isolation Valve	N/A	Standard				
	Diaphragm Timed Solenoid Drain Valve	N/A	Standard				
	Automatic Float Drain	Standard	N/A				

# Specifications & Dimensions

Model Number	Capacity In SCFM @		Available Voltages		Refrigeration System		Inlet / Outlet Connections	Maximum Pressure	Dimensions		
	100 PSIG	120 PSIG			HP	Watts			Height	Width	Depth
ERF20A-116	20	23	120-1-60	Not Available	1/6	255	3/4	230 PSIG	23	18	23
ERF25A-116	25	29			1/5	360	3/4		23	18	23
ERF40A-116	40	47			1/4	435	3/4		23	18	23
ERF50A-116	50	58			1/3	560	3/4		23	18	23
ERF75A-116	75	88			1/2	760	3/4		23	18	23
ERF100A-◆	100	115			5/8	1010	1		42	22	29
ERF125A-◆	125	145			3/4	1100	1		42	22	29
ERF150A-◆	150	175			3/4	1100	1-1/2		42	22	29
ERF200A-◆	200	235			1	1360	1-1/2		42	22	29
ERF250A-◆	250	295			230-1-60	Not Available	1-1/2		1850	1-1/2	230 PSIG
ERF300A-◆	300	350	1-1/2	1850			1-1/2	46	32	29	
ERF400A-◆	400	470	2	2457			2	46	32	45	
ERF500A-◆	500	580	3	4028			2	46	32	45	
ERF650A-◆	650	760	3	4028			2	46	32	45	
ERF800A-◆	800	940	4	5000			2-1/2	60	35	56	
ERF1000A-◆	1000	1175	6	6720			3	60	35	56	
ERF1200A-◆	1200	1400	6	6720			3	60	35	56	
ERF1500A-◆	1500	1760	9	9601			4" Flg	80	57	62	
ERF1750A-◆	1750	2055	10-1/2	12183			4" Flg	80	57	62	
ERF2000A-◆	2000	2350	12	13839	4" Flg	80	57	62			
ERF2250A-◆	2250	2650	13.5	15770	4" Flg	80	57	62			

- Notes:
- Capacity reflects a maximum 100°F inlet temperature and 100°F ambient
  - The symbol "◆" represents a missing voltage designation see table for appropriate designation
  - Inlet/Outlet connections are NPT unless otherwise specified
  - Watts specified assume 35°F evaporator and 100°F Ambient
  - Dimensions are in inches, complete drawings available at [www.glair.com](http://www.glair.com)
  - Shipping weight is in pounds and applies to single phase units in the 100-300 SCFM range
  - Dimensions and specifications are subject to change without notice

## 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
100-1-50	115
208/240-1-60	216
200-1-50	215
208/240-3-60	236
200-3-50	235
440/480-3-60	436
575-3-60	535

## Other Products from Great Lakes Air Products



**EDR Series High Inlet Temperature Air Dryer**



**GTX Series Cycling Type Air Dryer**



**GUF Series High Capacity Air Dryer**



**Regenerative Type Desiccant Air Dryers**



**Compressed Air Filtration**



**Condensate Drain Systems**

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