GREAT LAKES AIR

35-39°F PRESSURE DEWPOINT

ECTRONIC DRAIN

SS EXPANSION VALVE

5 -YEAR WARRANTY

GTX Series
Thermal Xchange Cycling Refrigeration Dryers

Why Dry Compressed Air?

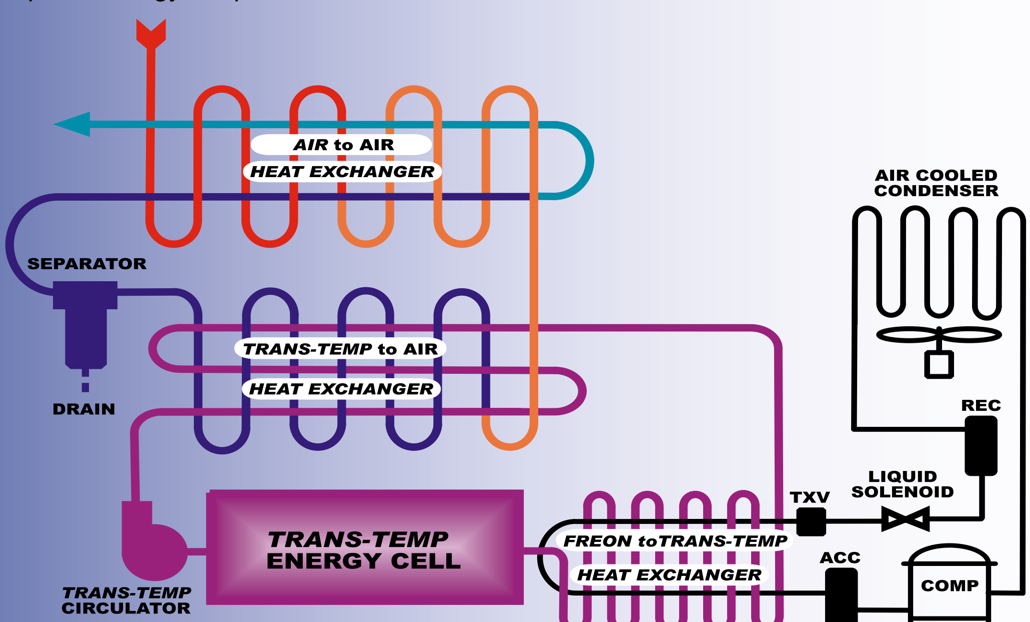
Compressed air is a clean, convenient and versatile energy source ideal for many commercial, or industrial applications. Air compressors draw in ambient air where the gas volume is reduced to increase pressure and store energy. Any solids, vapors or aerosols drawn into the compressor is concentrated in direct proportion to the ratio of compression. This process produces saturated compressed air with particulate contaminants and excess liquid at the compressor discharge. Filtration can remove the liquids and solid contamination but the moisture in a gaseous state (humidity) needs to be removed with a compressed air dryer. The dryer chills the compressed air condensing the humidity into a liquid. This enables a separation device to remove it from the system. Removing the moisture from a compressed air system optimizes reliability, efficiency, and productivity by avoiding costly equipment failure, product contamination, and distribution system breakdown.

How A Cycling Dryer Works

Rising energy costs have forced equipment efficiency and operating costs to become a significant factor in the purchase of new equipment. A basic non-cycling refrigerated dryer is specified by matching the capacity of the dryer, with the maximum capacity requirement of the compressed air system. This design is very efficient when the loads are balanced. Unfortunately in many applications, compressed air systems experience wide fluctuations that range from 0 to 100% of full load. If the compressed air load falls, the refrigeration system of a non cycling dryer must dump or waste energy to balance the system. The GTX cycling refrigerated air dryer uses a fully loaded refrigeration system to store energy in the TRANS-TEMP energy cell during low load periods. By operating the refrigeration system fully loaded, you maximize the operating efficiency, reducing energy costs. When the ENERGY CELL reaches maximum charge, the refrigeration compressor CYCLES OFF, allowing the energy cell to continue providing the required energy for cooling and drying the compressed air system.

Sequence of Operation

Saturated compressed air enters the dryer and is initially cooled in the ***Air to Air*** heat exchanger by the cold outgoing air. The TRANS-TEMP Fluid from the energy storage cell further cools the compressed air in the ***Trans-Temp to Air*** heat exchanger. Liquid that has been condensed by the reduced air temperature is removed in the high efficiency separator. The cold air is then reheated as it pre-cools the inlet air via the ***Air to Air*** heat exchanger. The refrigeration system maintains the temperature in the energy cell with a microprocessor based controller and operates only as required. The energy cell is capable of maintaining dewpoint, allowing the refrigeration compressor to be cycled off, reducing the required energy of operation.



The ***Trans-Temp Energy Cell***™ integrates a proprietary blend of non-hazardous, completely biodegradable fluids that attains an ideal balance of thermal storage and thermal conductivity. The energy cell is encased in a heavy duty non ferrous vessel that is insulated to maintain energy efficiency.

Energy Savings Calculation

Compressed air volume, temperature, & pressure along with ambient temperature are variable conditions that affect the energy load on a refrigeration dryer. The two most significant variables are inlet volume and temperature. Use the following sample calculation to determine annual energy savings of a GTX cycling dryer.

Sample Calculation for GTX-500 Step #1

Determine an average compressed air consumption

Shift	SCFM	Min	Hours of operation	System Volume FT^3
1st	500	60	40	1,200,000
2nd	475	60	40	1,200,000
3rd	275	60	35	577,500
Weekend	150	60	16	144,000
Actual volume consumption (weekly)				3,121,500

Determine the total possible load for the compressed air dryer by multiplying the rated capacity of:

500 x 10,080 = 5,745,600

(GTX-500) x (60 min x 168 Hrs a week) = 5,745,600

Divide actual volume consumption by
Total possible load consumption

3,121,500 / 5,745,600 = 0.54 or 54% Actual Load

Sample Calculation for GTX-500 Step #2

Temperature correction has a high variance due to multiple factors like region, season, and time of day. Select an average dryer inlet temperature taking into account cool evening temperatures. If an annual average is to general to get an accurate result. Average temperature by seasons and break the cost savings calculation into individual seasons.

Temperature		Multiplier	Temperature		Multiplier
60°F	15.5°C	0.29	85°F	29.4°C	0.64
70°F	21.1°C	0.40	90°F	32.2°C	0.74
75°F	23.8°C	0.47	100°F	37.7°C	1.0
80°F	26.6°C	0.55	110°F	43.3°C	1.32

Sample Calculation for GTX-500 Step #3

In step #1 the average compressed air consumption calculated to 54% of full load conditions. Assuming a midwest average inlet temperature of 85°F select the multiplier of .64 or 64%. Multiply the average consumption by the temperature correction factor to attain a total percentage of load.

.54 x .64 = .345 or 35%

Select the GTX-500 row and extrapolate 35% from the 30% and 40% columns.

$2,326 + $2,714 / 2 = $2,520 Annual savings

Cost Savings at % of full load operating conditions							
Model	80%	70%	60%	50%	40%	30%	20%
GTX-100A	$149.64	$224.45	$299.27	$374.09	$448.91	$523.72	$598.54
GTX-125A	$180.46	$270.68	$360.91	$451.14	$541.37	$631.60	$721.82
GTX-180A	$211.22	$316.83	$422.44	$528.04	$633.65	$739.26	$844.87
GTX-225A	$371.42	$557.14	$742.85	$928.56	$1,114.27	$1,299.98	$1,485.70
GTX-300A	$400.35	$600.52	$800.69	$1,000.87	$1,201.04	$1,401.21	$1,601.39
GTX-400A	$606.33	$909.50	$1,212.66	$1,515.83	$1,818.99	$2,122.16	$2,425.32
GTX-500A	$775.53	$1,163.30	$1,551.06	$1,938.83	$2,326.59	$2,714.36	$3,102.12
GTX-600A	$862.65	$1,293.98	$1,725.31	$2,156.63	$2,587.96	$3,019.29	$3,450.61
GTX-800A	$1,218.26	$1,827.39	$2,436.52	$3,045.66	$3,654.79	$4,263.92	$4,873.05
GTX-1000A	$1,587.78	$2,381.66	$3,175.55	$3,969.44	$4,763.33	$5,557.22	$6,351.11
GTX-1350A	$1,648.23	$2,472.35	$3,296.46	$4,120.58	$4,944.69	$5,768.81	$6,592.93
GTX-1800A	$2,311.62	$3,467.42	$4,623.23	$5,779.04	$6,934.85	$8,090.66	$9,246.47
GTX-2000A	$2,542.74	$3,814.11	$5,085.47	$6,356.84	$7,628.21	$8,899.58	$10,170.95
GTX-2250A	$2,971.17	$4,456.76	$5,942.35	$7,427.94	$8,913.52	$10,399.11	$11,884.70

Savings are calculated on a basis of $0.10 per kw/h

5-Year Product Warranty

The Great Lakes GTX series refrigerated air dryer is manufactured to the highest quality standards. Over 25 years ago in a decision to express this quality standard and distinguish our products from competitors, we standardized on an industry leading ***5-Year Product Warranty***. This unique warranty covers the entire dryer for 5-Years and excludes only maintenance items. Many competitive warranties cover only select components, and or prorates a charge for component replacement. With continuous improvement of quality standards, along with engineering improvements that are moving ahead of 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 the GTX warranty publication.

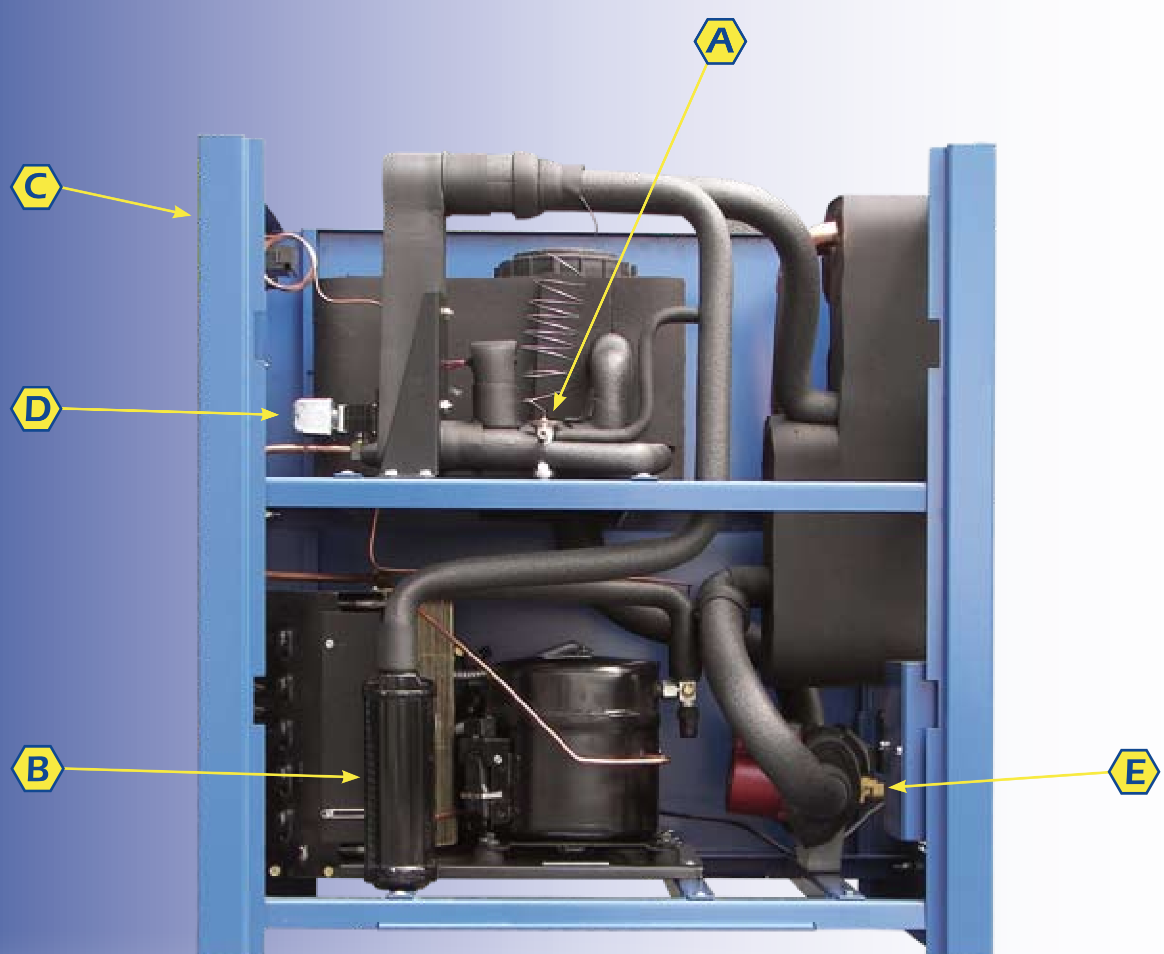
Made With Pride in the U.S.A.

Great Lakes Air manufactures all of it's compressed air dryers at one of it's southeast, Michigan facilities. We offer our customers a steady stream of high quality industrial products with a proven history of performance. Replacement and maintenance components are readily available through the Great Lakes distribution system or are also available through several national networks of wholesale refrigeration supply houses.

Purchase the quality and durability of an American made product.

Environmental Refrigerants

Great Lakes Air GTX series utilizes only non ozone depleting Hydro-fluorocarbons or HFC refrigerants approved by the EPA and Montreal protocol. Models with fractional HP refrigeration compressors utilize R134A refrigerant. The larger systems utilize R404A refrigerant which has no phase out program. Optional refrigerant types are available consult your representative for details.



Design Features & Benefits

Low Pressure Drops

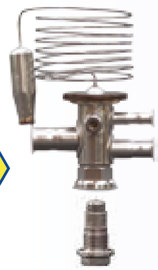
GTX series compressed air dryers are designed for ultra low pressure drops that average 3.7 PSID. Pressure drop can substantially increase the operating cost of your dryer, each pound of pressure drop (PSID) raises the required compressor horsepower by 0.5%. If a facility is required to raise discharge pressure by 3 PSI to overcome component restriction (Pressure Drop), 1.5% additional compressor HP is required.

Adjustable Dewpoint

This feature allows the user to adjust the temperature of the Trans-Temp Energy Cell affecting the dryer dewpoint. Increasing dewpoint in applications that do not require optimum dewpoint suppression will further increase energy savings. The controller has a bright LED display, alarm text messaging, and a display that will read in °F or °C.

Component Level Reliable Design

A



SS thermostatic expansion valve with interchangeable SS orifices to matches system design to refrigeration load. This modulates refrigerant flow to match modulating system requirements caused by ambient temperatures and changing 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.

B

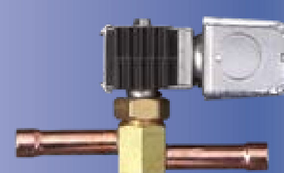
The addition of a suction accumulator further reduces the possibility of refrigerant liquid returning to the compressor causing premature failure. The addition of liquid receivers provide a stable feed to the refrigeration expansion valve. This provides pump down ability and additional refrigeration storage avoiding a critical charge system. Full service refrigeration valves are standard on both the suction and discharge systems.

C

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

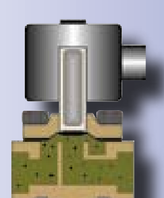
D

During refrigeration compressor off cycles the liquid line solenoid isolates the high side from the low side of the refrigeration system. This prevents refrigeration liquid from condensing in the TRANS-TEMP energy cell then slugging the compressor with that condensed refrigerant during restart. The the liquid line solenoid adds years of trouble free service to your refrigeration compressor and GTX series dryer.

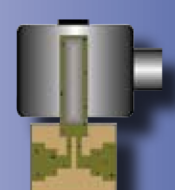


E

Great Lakes dryers utilize high quality diaphragm type solenoid valves as drains in addition to an isolation valve and strainer. Diaphragm valves isolate contaminants from the internal piston that would normally foul and restrict it's movement causing failure. Diaphragm valves also have much larger orifices and flow paths that in conjunction with the strainer virtually eliminates the possibility of clogging a condensate drain valve.



Great Lakes Premium
Diaphragm Valves



Industry Standard
Direct Acting Valves

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 that 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 the selected dryer under corrected operating conditions. Flow rates in excess of design due to capacity correction can result in increased pressure drop.

Example: Model GTX-500 operating at 110°F, & 100 PSIG inlet with a 100°F ambient the corrected maximum dryer capacity would be: 500 x 0.82 = 410 SCFM if your volume requirements are 475 SCFM the GTX-500 is to small and the next larger unit must be selected.

Standard and Optional Features

<table>
<tr><th colspan="2" rowspan="2">Features</th><th colspan="4"></th></tr>
<tr><th>100/125</th><th>180</th><th>225/600</th><th>800/2250</th></tr>
<tr><td rowspan="4">Power & Instrument</td><td>Refrigerant Suction Gauge</td><td colspan="4">Standard</td></tr>
<tr><td>Refrigerant Discharge Gauge</td><td colspan="2">Optional</td><td colspan="2">Standard</td></tr>
<tr><td>Air Outlet Pressure Gauge</td><td colspan="3">Optional</td><td>Standard</td></tr>
<tr><td>Illuminated Power On Switch</td><td colspan="4">Standard</td></tr>
<tr><td rowspan="11">Refrigeration</td><td>Compressor Relay/Contactor</td><td colspan="4">Standard</td></tr>
<tr><td>Compressor Overload Protection</td><td colspan="4">Standard</td></tr>
<tr><td>Compressor High Pressure Shutdown*</td><td colspan="2">Optional</td><td colspan="2">Standard</td></tr>
<tr><td>Compressor Low Pressure Shutdown *</td><td colspan="2">Optional</td><td colspan="2">Standard</td></tr>
<tr><td>Compressor Crankcase Heater</td><td colspan="2">Optional</td><td colspan="2">Standard</td></tr>
<tr><td>SS Thermostatic Expansion Valve</td><td colspan="4">Standard</td></tr>
<tr><td>Liquid Line Solenoid</td><td colspan="4">Standard</td></tr>
<tr><td>Suction Accumulator</td><td colspan="4">Standard</td></tr>
<tr><td>Liquid Receiver</td><td colspan="4">Standard</td></tr>
<tr><td>Air Cooled Condenser</td><td colspan="4">Standard</td></tr>
<tr><td>Water Cooled Condenser</td><td colspan="4">Optional</td></tr>
<tr><td rowspan="3">Drain</td><td>Condensate Strainer with Isolation Valve</td><td colspan="4">Standard</td></tr>
<tr><td>Diaphragm Timed Solenoid Drain Valve</td><td colspan="4">Standard</td></tr>
<tr><td>Zero Loss Drain Installed</td><td colspan="4">Optional</td></tr>
</table>

* supplied with automatic reset manual reset is available as an option

Specifications & Dimensions

Model Number	Capacity in SCFM @100 PSIG &		Refrigeration System			Available Voltages			In / Out Ports	Max. Inlet Pressure	Dimensions Inches			Shipping Weight
	35°F PDP	50°F PDP	HP	Watts	Freon						H	W	D	
GTX-100A-♦	100	120	5/8	954	134A	120V	208/230-1-60 200-1-50	N/A	1”	230 PSIG	34	26	33	320
GTX-125A-♦	125	150	3/4	1130	134A				1”		34	26	33	350
GTX-180A-♦	180	216	1	1319	134A	N/A			1-1/2”		46	33	30	500
GTX-225A-♦	225	270	1-1/2	2234	404A			208/230-3-60 ~ 440/480-3-60 200-3-50 ~ 575-3-60	1-1/2”		46	33	30	525
GTX-300A-♦	300	360	2	2399	404A		N/A		1-1/2”		46	33	45	750
GTX-400A-♦	400	480	2.8	3574	404A				2”		46	33	45	880
GTX-500A-♦	500	600	3	4647	404A				2”		46	33	45	920
GTX-600A-♦	600	720	4	5144	404A				2”		46	33	45	950
GTX-800A-♦	800	960	5	7199	404A				3”	150 PSIG	60	35	56	1525
GTX-1000A-♦	1000	1200	7	9339	404A				3”		60	35	56	1780
GTX-1350A-♦	1350	1620	9	10059	404A				3”		65	42	67	3200
GTX-1800A-♦	1800	2160	10.5	13889	404A				4” Flg		75	57	74	3800
GTX-2000A-♦	2000	2400	12	15208	404A				4” Flg		75	57	74	4050
GTX-2250A-♦	2250	2700	13.5	17654	404A				4” Flg		75	57	74	4375

Notes:
1. Capacity reflects 100°F & 100 PSIG inlet conditions and a 100°F ambient.
2. The symbol "♦" represents a missing voltage designation see table for appropriate designation
3. Inlet/Outlet connections are NPT unless otherwise specified
4. Refrigeration watts specified is an average of all power components through a fully loaded operational cycle.
5. For full load amps and recommended max fuse see owners manual.
6. Dimensions are in inches, complete drawings available at www.glair.com
7. Shipping weight is in pounds
8. Dimensions, weights, and specifications are subject to change without notice

Voltage Designation Table					
115/120-1-60	116	208/240-1-60	216	440/480-3-60	436
100-1-50	115	200-1-50	215	575-3-60	536
		208/240-3-60	236		
		200-3-50	235		

Dryer Heat Rejection & Cooling Requirements

Water-Cooled Units:		***Air-Cooled Units:***
55.2 BTU/H per SCFM of dryer capacity to cooling fluid		60 BTU/H per rated SCFM of dryer capacity to ambient
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	

Other Products from Great Lakes Air Products

GRF Series Non Cycling Refrigerated Air Dryer

EDR Series High Inlet Temperature Air Dryer

Regenerative Type Desiccant Air Dryers

Compressed Air Filtration

Condensate Drain Systems

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