

# **Gardner** **Denver**

HIGH INLET TEMPERATURE REFRIGERATED AIR DRYERS

## **GHRN Series**



# Why Dry Compressed Air?

Compressed air has long been described as the fourth utility after electricity, natural gas and water. It is often the perfect energy resource for many industrial, commercial and instrument applications. During the act of compressing air, moisture naturally forms. Removing this moisture is vital to avoid costly equipment failure, product contamination and distribution system breakdown.

- Keep lubricants from being washed away from downstream components extending product life.
- Reduce product contamination in applications such as mixing, conveying, cooling and product blow down.
- Reduce compressed air system corrosion which would increase pressure drop and operational costs.

## What Compressed Air Quality Do I Need?

Answering the “Do I need a dryer?” question is typically easy. Pretty much every compressed air system needs a dryer. The question of “Which dryer do I need?” is more complex. The answer starts by knowing the ISO air quality classes and where in the spectrum your needs fall. The below chart lays out the acceptable contamination levels at the different classes. Your needs will be determined by your equipment and processes that utilize compressed air.

### STANDARDS PER ISO 8573.1

QUALITY CLASSES	SOLID CONTAMINANTS (MAXIMUM PARTICLE SIZE IN MICRONS)	MAXIMUM PRESSURE DEW POINTS		MAXIMUM OIL CONTENT (DROPLETS, AEROSOLS, & VAPOR PPM)	
		° F	° C	W/W	MG/M <sup>3</sup>
0	as specified	as specified		as specified	
1	0.1	-94	-70	0.008	0,01
2	1	-40	-40	0.08	0,1
3	5	-4	-20	0.8	1
4	15	38	3	4	5
5	40	45	7	21	25
6	-	50	10	-	-

# Superior Reliability & Total Energy Efficiency

## Why Design Simplicity?

Mark Twain once said “I didn’t have time to write a short letter, so I wrote a long one instead.” That same line of thought also rings true when it comes to refrigerated air dryers. It’s easy to source a bunch of low-quality components and place them somewhere inside a box and call it a dryer. It takes time, effort and an attention to detail to make a simplified refrigerated dryer.

Time, effort and attention to detail is exactly what went into the design of the Gardner Denver GHRN. The GHRN design has its components laid out in a way that minimizes the footprint of the dryer as well as the interconnecting tubing inside the dryer. When implemented into your compressed air system, the benefits of a simplified design are increased reliability and better efficiency.

Simple to Make Complex.  
Complex to Make Simple.



Every Component  
in a GHRN Dryer  
is Carefully Selected

## Why the Best Componentry?

Quality dryers start with quality components. Through years of research and experience, Gardner Denver knows what it takes to build the best dryers on the market. Every component of the GHRN dryer has been tested and proven to be worthy of being associated with the Gardner Denver name.

# Design Simplicity Means Total Performance

## Simple Reliability

The GHRN design has a long history of performing above and beyond expectations. If you put a GHRN Series unit into your compressed air system, you will experience the reliability that thousands of customers have experienced prior to you. It doesn't get any simpler than that.

## American Made

Every GHRN unit is American Made in southeast Michigan. In addition to guaranteeing a quality product, this location ensures a quick turnaround for any non-stocked dryer orders. The GHRN is also supported out of American locations. Therefore, wherever you are located in North America, you will have superior availability for maintenance and replacement items.



### 5-Year Warranty

Covers stainless steel heat exchangers

### 2-Year Warranty

Covers all independent components  
omitting only maintenance items

### 1-Year Warranty

Covers labor required to repair  
or replace warranty items

See warranty statement for details.

# Simple Energy Efficiency

Simply put, the less money you spend operating your business, the better. The design and componentry used in the GHRN equates to less energy consumed by your dryer, which equates to a lower spend on electricity. The next two pages break down the quality components of the GHRN and how they help reduce energy consumption. Before we dive into the components, let's take a look at pressure drop.

## Low Pressure Drops

Pressure drop in a compressed air system can significantly increase the power consumption of the system and increase your operating costs. Every 2 PSI of realized pressure drop equates to a 1% increase in horsepower consumed. All GHRN refrigerated dryers are designed to have pressure drops ranging from 1.2 to 3.6 PSID. When compared to competitive units that experience pressure drops up to 6.5 PSID, it starts to become apparent that GHRN dryers can significantly reduce your utility bill.

## Savings Example

Let's walk through some examples. Let's assume your operation uses a 50 HP compressor, runs 8,000 hours per year and realizes an electricity cost of \$0.08 per kW/hr. This chart shows the cost impact of a 4, 8 and 12 PSI pressure drop.

PRESSURE DROP	INCREASED POWER CONSUMPTION	INCREASED ENERGY COSTS
4 PSI	2.0%	\$477
8 PSI	4.0%	\$954
12 PSI	6.0%	\$1,432



# Quality Components Make the Difference



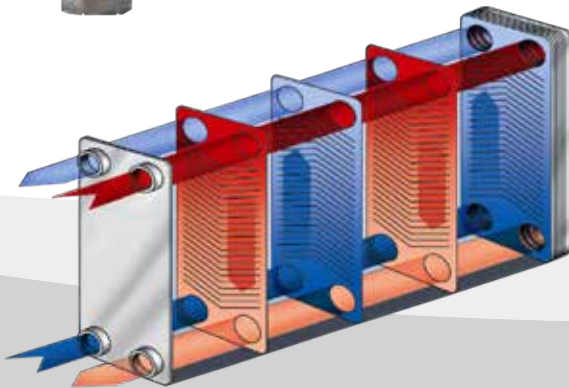
When it comes to building world-class equipment, quality components are a must. Before offering a two year standard warranty, every component of our GHRN has been tested and proven to be superior.

## Stainless Steel Thermostatic Expansion Valve

As opposed to a capillary tube system that will change refrigerant flow on ambient conditions with no regard to system load, our thermostatic expansion valves modulate refrigerant flow in fluctuating ambient temperatures and compressed air loads. Without perfect operating conditions, a capillary tube system can and will cause premature refrigeration compressor failure.

## Stainless Steel Heat Exchanger

The low pressure drop realized by GHRN dryers is due in large part to the stainless steel heat exchanger. In addition to low pressure drop, the large chevron pattern of the heat exchanger reduces the chance of fouling.



## Diaphragm Non-Fouling Solenoid Drain Valves

All timed condensate drains featured in the GHRN use diaphragm-type solenoid valves. Diaphragm valves keep the contaminant-laden condensate away from the internal moveable piston. If contaminant in the condensate stream fouls and restricts movement of the piston, the valve will fail.



## Full Suction & Discharge Service Ports

In order to make maintenance and field service as easy as possible, Gardner Denver equips each GHRN dryer with full suction and discharge refrigeration service valves.

## Stainless Steel Gauge with No-Leak Sweat Connection

Panel-mounted gauges are often a refrigerant leak point for dryers. With this in mind, the GHRN utilizes gauges with braised connections and coiled vibration eliminators.



Quality Components  
Are a Must



Drying High  
Temp Inlet Air  
Down to 39° F

## GHRN High Inlet Temperature Refrigerated Dryer

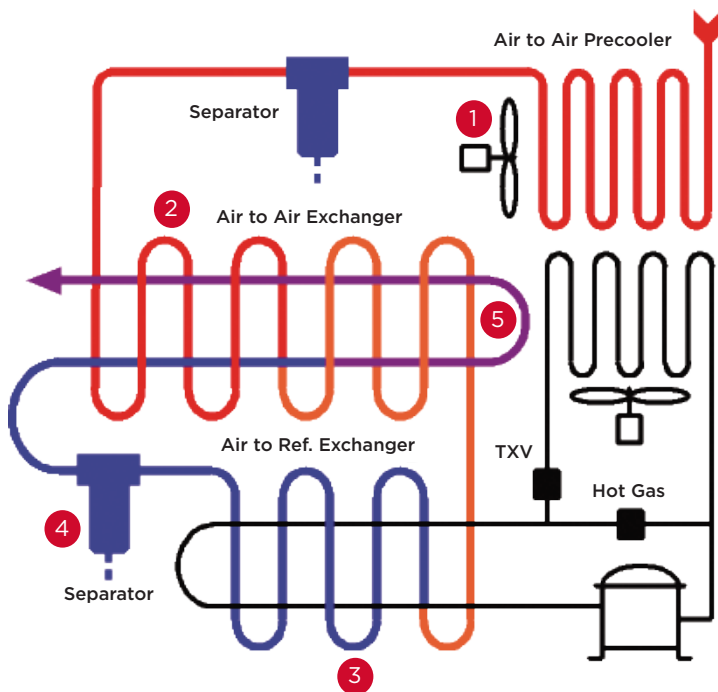
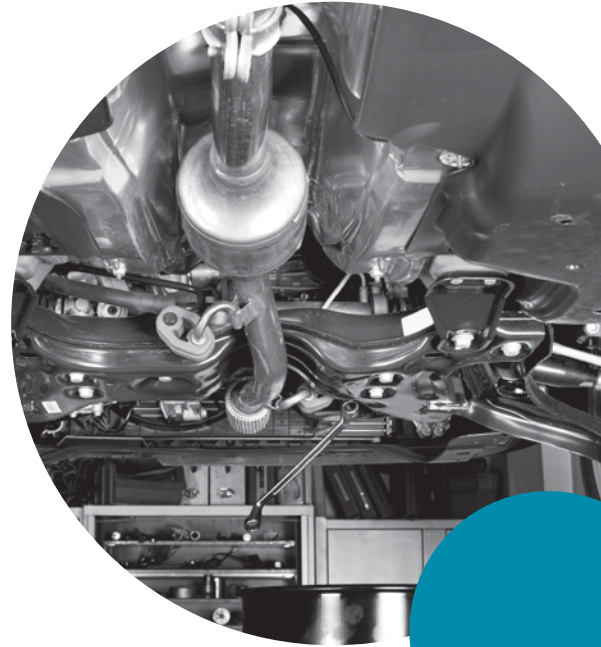
For operations that send a higher temperature air into their dryer system, and need to reach a 39°F pressure dewpoint, the GHRN should have you covered. Many competitive high inlet temperature refrigerated dryers only reach a 50°F dewpoint. If 50°F is all your operation requires, the GHRN can achieve that dewpoint level as well.

- Flows from 24 to 132 CFM (at 100 psig pressure)
- Voltage options to match your needs
- Ambient condition, instrumentation, alarm, pressure and many more options available
- 2-year standard warranty



# GHRN High Inlet Temperature Refrigerated Air Dryer Operation

- 1 Warm saturated air from the air compressor flows in to the GHRN dryer where it is first cooled by the air-to-air pre-cooler and any condensed liquid is removed by the water separator.
- 2 The pre-cooled air then travels through the air-to-air heat exchanger and is further cooled by the dry outgoing air.
- 3 Air then passes through the air-refrigerant heat exchanger where it is cooled for the final time to a specified dew point in which moisture condenses.
- 4 Condensed liquid is separated from the air stream by the separator and drained from the dryer by a diaphragm type solenoid valve.
- 5 The cool dry air is then reheated as it pre-cools the inlet air via the air-to-air heat exchanger which increases volume and prevents the compressed air piping from sweating.





## GHRN SERIES SPECIFICATIONS

MODEL	CAPACITY IN SCFM @				MAXIMUM PRESSURE PSIG	AVAILABLE VOLTAGES	IN/OUT CONNECTIONS NPT	DIMENSIONS INCHES			WEIGHT (LBS)
	50° F PDP		39° F PDP					HEIGHT	WIDTH	DEPTH	
	100 PSIG	120 PSIG	100 PSIG	120 PSIG							
GHRN24	24	28	20	23	230	120/1/60	¾"	23	18	23	117
GHRN30	30	36	25	30			¾"	23	18	23	120
GHRN43	43	50	36	42			¾"	35	19	23	175
GHRN67	67	80	56	66		120/1/60 or 208-230/1/60	¾"	35	19	23	185
GHRN86	86	102	72	85			1"	42	22	29	275
GHRN132	132	155	110	129			1 ½"	42	22	29	288

Capacity reflects a maximum 180°F inlet temperature and 100°F ambient. Dimensions and specifications are subject to change without notice.

## NON-STANDARD CONDITION CAPACITY CORRECTION

CAPACITY CORRECTION	INLET TEMPERATURE		
	125° F	150° F	180° F
100° F	1.18	1.10	1.00
105° F	1.07	1.00	0.91
110° F	0.97	0.90	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 intersection 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.

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