



REFRIGERATED AIR DRYERS | 75-2000 SCFM

# RPCA Energy Saving Series



# Sustainable Energy Saving Solutions

Gardner Denver is a place where innovation is constant and the real-world needs of our customers are understood. We transform market-inspired ideas into actioned solutions enabling our global customers to meet their sustainability goals and thrive in a complex, ever-changing marketplace.

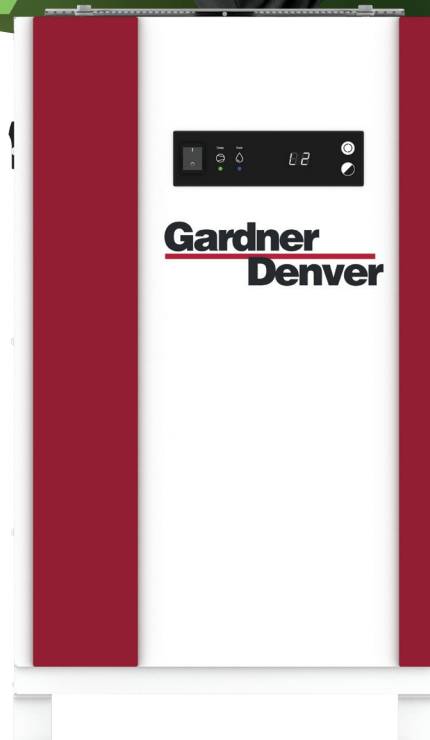
Utilizing the latest advancements in heat transfer technology, RPCA Series refrigerated dryers deliver reliable, energy-efficient moisture removal across a 75–2000 SCFM range using low GWP refrigerants, R513A and R454C.

## The RPCA Series with Standard Energy Saving System

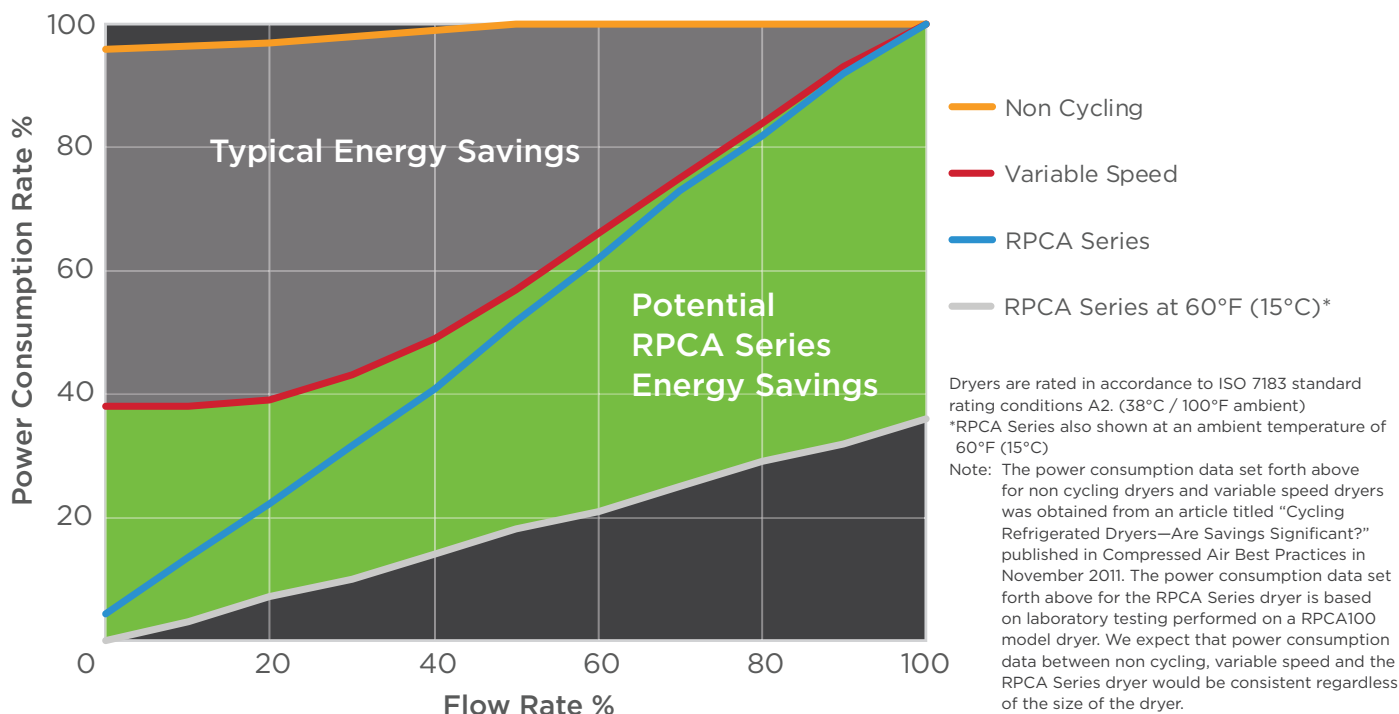
The ESS (Energy Saving System) is capable of transferring heat energy through a change of state. During the thermal change process, the media's temperature remains constant—known as latent heat transfer. Latent heat transfer occurs when the media changes from a solid to liquid or a liquid to solid. The state of the media is monitored by a temperature probe that automatically engages the refrigeration compressor to power on or off according to varying inlet load profiles. Because the ESS is capable of storing and releasing heat energy without a change in temperature, the refrigerant compressor cycles less frequently and saves energy.

The dryer requires fewer components than conventional cycling designs and does not require a cooling media circulation pump, storage tank and glycol to refrigerant heat exchanger. All cooling is accomplished in the 3-in-1 heat exchanger.

The media within the ESS is non-toxic, does not require replacement and maintains its thermal properties regardless of age. In the frozen state the media will not thermally expand, maintaining the long-term integrity of the heat exchanger assembly.



## ENERGY SAVINGS COMPARISON



### Energy Saving Sustainability

The RPCA Series lowers air system power costs and improves productivity by matching power consumption to compressed air demand.

In a typical manufacturing facility, up to 30% of electricity consumed is for generating and treating compressed air. To reduce total cost of operation and qualify for utility company incentive programs, proper air treatment equipment selection and application is required.

### Load Matching Performance

Compressed air load profiles in most manufacturing facilities fluctuate. The RPCA Series provides cost-effective energy savings by matching electrical power consumed in direct proportion to air demand. Linear load matching is achieved from 0% up to 100% demand.

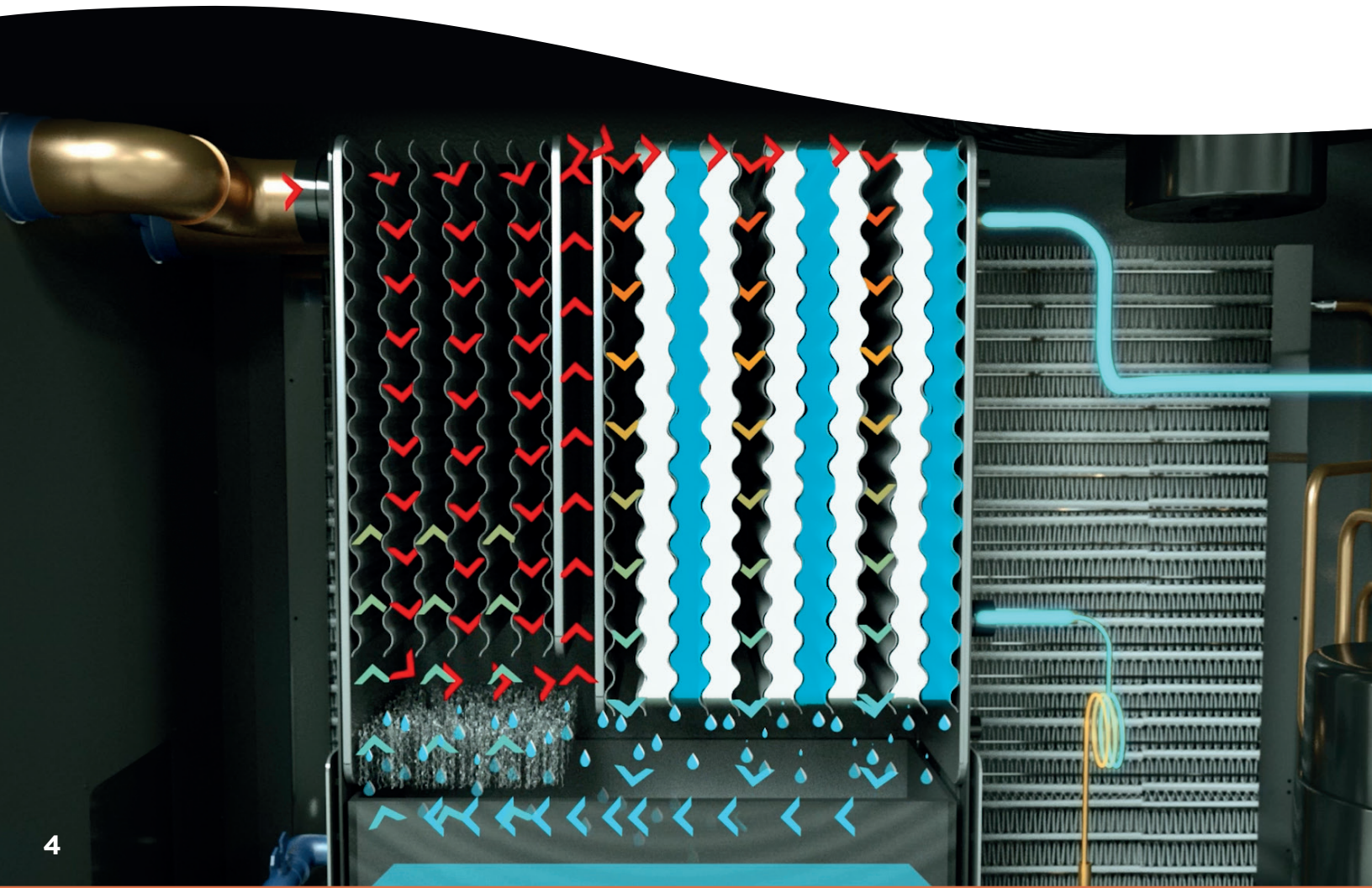
Non-cycling dryers operate with the refrigeration compressor running continuously, regardless of inlet load conditions. Minimal energy savings are realized from 100% down to 0% inlet air load.

### Linear Energy Savings

RPCA Series dryers automatically power (on/off) the refrigeration compressor in response to inlet load conditions. As the inlet air load is reduced, the power requirement to dry the air is matched in proportion to the demand. For example, at 60% inlet air load, a non-cycling dryer consumes 96% of the full load power consumption, a 4% energy savings. By comparison, at 60% inlet air load, the RPCA Series consumes only 60 % of the full load power, a 40% energy savings.

## How It Works

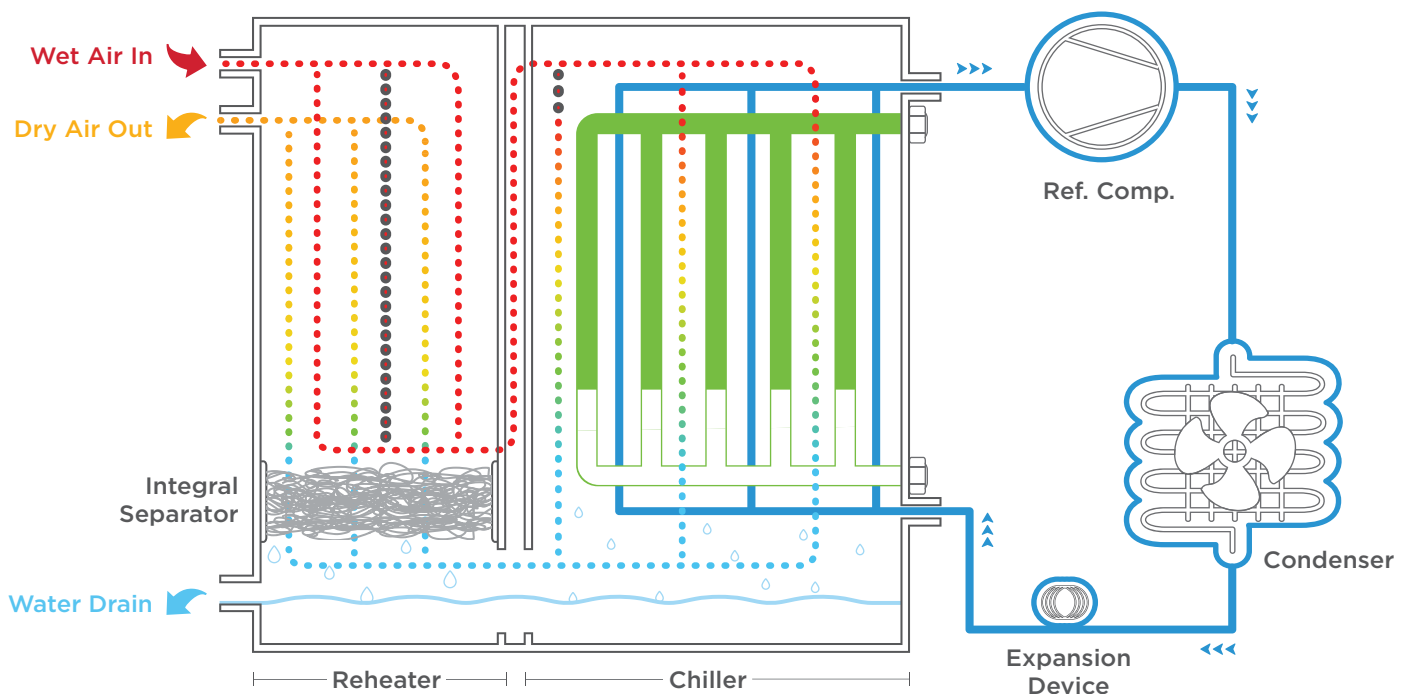
- 1** The RPCA Series utilizes an ESS that allows for heat to transfer medium between the refrigeration and compressed air circuits that serves as a reservoir for thermal storage.
- 2** The thermal reservoir is comprised of a patent-pending heat exchanger filled with a media that efficiently transfers heat energy through a “change of state”.
  - Thermal Change: changing from liquid to solid back to liquid in a continuous cycle.
- 3** The refrigeration circuit operates to cool down the medium until it forms into a solid at which time the refrigeration system powers off.
  - Thermal Change: changing from liquid to solid back to liquid in a continuous cycle.



**4** As the compressed air enters the ESS, the media absorbs heat from the airstream and begins to melt the media at a constant temperature.

**5** When most of the media has turned to liquid the refrigeration system powers on to again cool down the media turning it back into a solid.

**6** This process repeats as required to meet the corresponding compressed air load on the RPCA Series dryer.



# Better by Design

## RPCA Energy Saving Series 75-2000 scfm

The RPCA Series delivers reliable, energy-efficient compressed air drying using environmentally responsible low GWP refrigerants. Designed for durability and easy operation, this cycling dryer reduces environmental impact while maintaining consistent performance.

### 1 Stainless steel brazed plate 3-in-1 heat exchanger, with Energy Saving System

- Phase Change Material (PCM) thermal storage maintains a stable dew point while improving energy efficiency
- Smooth, non-fouling stainless steel surfaces promote low resistance to flow, optimizing air system efficiency
- Integral demister/separator captures liquid condensate and solid particles

### 2 No-air-loss, demand drain efficiently removes condensate without loss of compressed air

- Condensate drain lines terminate at discharge connections conveniently located on the side of the dryer
- Failure-to-discharge alarm on the operator interface enhances system reliability

### 3 High-efficiency, up-flow aluminum air-cooled condenser

- Pulls ambient air through the condenser and releases out the top of the dryer condenser
- Provides cooler condensing air and greater efficiency

### 4 Reliable, semi-hermetic refrigerant compressor

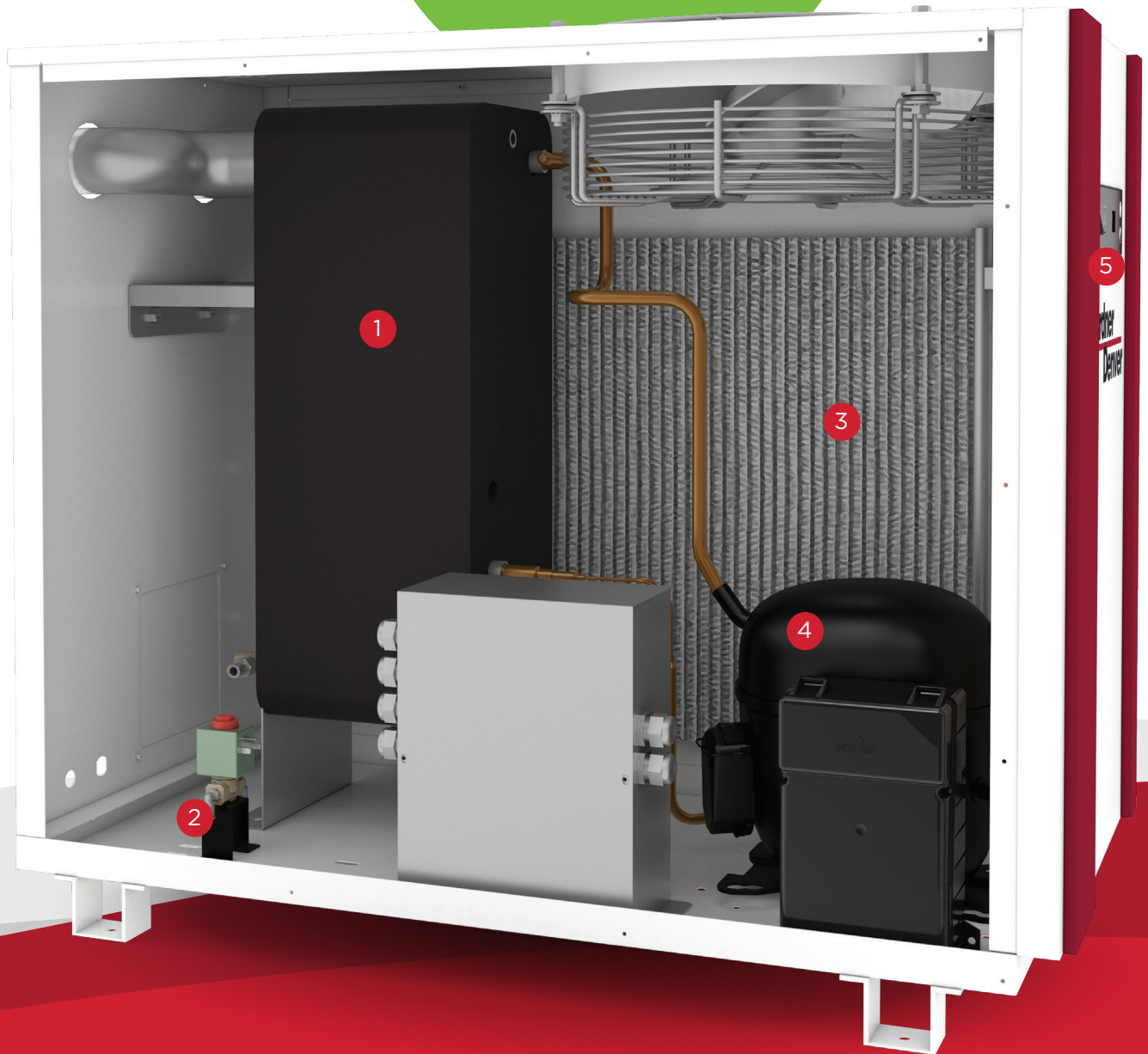
- Rugged design, for long-term operation
- Low GWP refrigerant enhances sustainability, R513a and R454c

### 5 Controller with backlit LCD display provides ease of monitoring and operating status

- RPCA75 & RPCA100
  - Energy saving (%), dryer operating time, refrigeration compressor operating time, active fault message, dew point status, air inlet temperature display, and alarm history
- RPCA150 to RPCA2000
  - Energy saving (%), dryer operating time, refrigeration compressor operating time, active fault message and dew point status
  - USB connection port to download operating data and upgrade firmware
  - Remote monitoring capability - Modbus RTU via RS485 communications port



Simple  
Reliable  
Energy Efficient



# International Air Quality Class Standards

## ISO 8573-1 Air Quality Standard

ISO 8573-1, the international standard for compressed air quality, defines the amount of contamination permissible in compressed air.

The ISO standard identifies three primary forms of contamination in compressed air systems: solid particles, water and oil. These contaminants are classified and assigned a quality class, ranging from Class 0, the highest purity level, to Class 6, the most relaxed.



RPCA Series refrigerated air dryers offer the perfect balance between technology and simplicity to dry compressed air systems to ISO 8573-1 Air Quality Class 4-5 pressure dew points.

Note: Bundle Filtration Option When Purchased with the Dryer (FP)

### Option Pre-Filtration

FIL series C grade filtration removes solid and oil contaminants from the air stream before entering the dryer.

#### ISO Air Quality Class:

- Solids – Class 2
- Remaining oil – Class 4
- Removes solids 1.0 micron and larger
- Remaining oil content < 2.0 mg/m<sup>3</sup>

### Option After-Filtration

FIL series E grade filtration provides high efficiency oil removal protecting downstream equipment.

#### ISO Air Quality Class:

- Solids – Class 1
- Remaining oil – Class 1
- Removes 99.999+% of solids ≥ 0.01 micron
- Remaining oil content < 0.01 mg/m<sup>3</sup>



## *Premium Warranty*

2 Years—Standard

3 Years—Extended

5 Years—Total

Parts and labor included.  
Contact your local distributor for more details.

## PRODUCT SPECIFICATIONS

| MODEL      | INLET FLOW<br>SCFM | PRESSURE<br>DROP<br>PSI | VOLTAGE  | IN/OUT<br>CONNECTIONS<br>SIZE | POWER<br>CONSUMPTION<br>KW | REFRIGERANT | WIDTH<br>IN | DEPTH<br>IN | HEIGHT<br>IN | WEIGHT<br>LBS |
|------------|--------------------|-------------------------|----------|-------------------------------|----------------------------|-------------|-------------|-------------|--------------|---------------|
| RPCA75A1   | 75                 | 3.4                     | 115/1/60 | 1" NPT                        | 0.48                       | R513A       | 18.5        | 27.9        | 32.3         | 148           |
| RPCA100A1  | 100                | 2.9                     | 115/1/60 | 1" NPT                        | 0.60                       | R513A       | 18.5        | 34.6        | 35.0         | 168           |
| RPCA150A1  | 150                | 1.8                     | 115/1/60 | 2" NPT                        | 1.11                       | R513A       | 21.7        | 40.6        | 36.6         | 240           |
| RPCA200A4  | 200                | 2.3                     | 460/3/60 | 2" NPT                        | 1.28                       | R513A       | 21.7        | 42.9        | 36.6         | 269           |
| RPCA300A4  | 300                | 2.1                     | 460/3/60 | 2" NPT                        | 1.86                       | R513A       | 23.6        | 48.8        | 42.5         | 353           |
| RPCA450A4  | 450                | 3.0                     | 460/3/60 | 2" NPT                        | 2.75                       | R513A       | 23.6        | 54.3        | 47.2         | 443           |
| RPCA550A4  | 550                | 3.3                     | 460/3/60 | 2" NPT                        | 2.91                       | R513A       | 23.6        | 54.3        | 47.2         | 474           |
| RPCA800A4  | 800                | 4.4                     | 460/3/60 | 3" FLG                        | 4.9                        | R454C       | 63.5        | 27.6        | 53.5         | 1012          |
| RPCA1000A4 | 1000               | 4.3                     | 460/3/60 | 3" FLG                        | 5.7                        | R454C       | 63.5        | 27.6        | 53.5         | 1135          |
| RPCA1250A4 | 1250               | 4.6                     | 460/3/60 | 4" FLG                        | 7.6                        | R454C       | 63.5        | 27.6        | 59.4         | 1290          |
| RPCA1500A4 | 1500               | 5.3                     | 460/3/60 | 6" FLG                        | 7.7                        | R454C       | 90.8        | 33.9        | 87.9         | 2469          |
| RPCA2000A4 | 2000               | 5.8                     | 460/3/60 | 6" FLG                        | 10.1                       | R454C       | 90.8        | 33.9        | 87.9         | 2535          |
| RPCA800W4  | 800                | 4.4                     | 460/3/60 | 3" FLG                        | 3.5                        | R454C       | 58.3        | 27.6        | 53.5         | 1014          |
| RPCA1000W4 | 1000               | 4.3                     | 460/3/60 | 3" FLG                        | 4.2                        | R454C       | 58.3        | 27.6        | 53.5         | 1149          |
| RPCA1250W4 | 1250               | 4.6                     | 460/3/60 | 4" FLG                        | 6.1                        | R454C       | 58.3        | 27.6        | 59.4         | 1296          |
| RPCA1500W4 | 1500               | 5.3                     | 460/3/60 | 6" FLG                        | 6.2                        | R454C       | 72.5        | 33.9        | 87.9         | 2624          |
| RPCA2000W4 | 2000               | 5.8                     | 460/3/60 | 6" FLG                        | 9.3                        | R454C       | 72.5        | 33.9        | 87.9         | 2690          |

Performance data presented in accordance with ISO 7183 (Option A2) conditions: 100°F inlet temperature, 100°F ambient temperature and 100 psig conditions.

# PROCAPACITY CORRECTION FACTORS

To adjust the dryer capacity for non-standard conditions, use the Capacity Correction Factors (multipliers) from Tables 1, 2 & 3.

Table 1: Inlet Air Pressure

| INLET AIR PRESSURE | 75 PSIG<br>5.2 BAR | 100 PSIG<br>6.9 BAR | 120 PSIG<br>8.3 BAR | 150 PSIG<br>10.3 BAR | 225 PSIG<br>15.5 BAR |
|--------------------|--------------------|---------------------|---------------------|----------------------|----------------------|
| Multiplier         | 0.86               | 1.00                | 1.04                | 1.09                 | 1.15                 |

Table 2: Inlet Air Temperature

| INLET AIR TEMPERATURE | 80°F / 27°C | 90°F / 32°C | 100°F / 38°C | 110°F / 43°C | 120°F / 49°C |
|-----------------------|-------------|-------------|--------------|--------------|--------------|
| Multiplier            | 1.12        | 1.06        | 1.00         | 0.83         | 0.68         |

Table 3: Ambient Air Temperature

| AMBIENT AIR TEMPERATURE | 80°F / 27°C | 90°F / 32°C | 100°F / 38°C | 110°F / 43°C | 120°F / 49°C |
|-------------------------|-------------|-------------|--------------|--------------|--------------|
| Multiplier              | 1.46        | 1.23        | 1.00         | 0.82         | 0.68         |

Performance data presented in accordance with ISO 7183 (Option A2) conditions: 100°F inlet temperature, 100°F ambient temperature and 100 psig conditions.



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