CYCLING REFRIGERATED AIR DRYERS

RES Series
RES Value

Why consider a RES cycling dryer for your compressed air system?

ENERGY SAVINGS!

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

The RES Series air dryer automatically cycles the refrigeration compressor on and off in response to inlet load conditions. As the inlet air load is reduced, the refrigeration compressor cycles off, providing you with savings.

The load matching design saves energy and reduces your costs.

**saving** [sey-ving]  
- noun  
1. a reduction or lessening of expenditure or outlay: a saving of 10 percent.  
2. something that is saved.  
3. savings, sums of money saved by economy and laid away

**energy** [en-er-jee]  
- noun  
1. any source of usable power, as fossil fuel, electricity, or solar radiation.  
2. the capacity for vigorous activity; available power.  
3. Physics. the capacity to do work.  
Symbol: E

Harness Energy Savings with Gardner Denver RES

![Graph showing energy savings comparison between Non-Cycling and RES systems](image-url)
How does the Gardner Denver RES Cycling Dryer Compare?

Built-in air filtration unmatched in the industry

1. The standard dryer is equipped with a Grade B filter/separator
   - ISO Quality Class 3: Remaining solid particulate
   - ISO Quality Class 5: Remaining oil concentration
   - ISO Quality Class 5: Pressure dew point

2. Optional Grade E high efficiency coalescing filters are available
   - ISO Quality Class 1: Remaining solid particulate
   - ISO Quality Class 1: Remaining oil concentration
   - ISO Quality Class 5: Pressure dew point

Benefits of Built-in Filtration

- Ease of installation
- Smaller total footprint
- Lower total installed cost

No-air-loss condensate drain standard

Rebate eligibility

Premium Warranty

2 Years—Standard
3 Years—Extended
5 Years—Total

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

Compressed Air Circuit

1. Warm, saturated compressed air enters the dryer through the inlet pipe connection.

2. Air travels through the air-to-air heat exchanger and the glycol-to-air heat exchanger. Propylene glycol surrounds the passages and cools the air to the desired pressure dew point.

3. Moisture, solid particulates and oil aerosols are removed by the filter/separator. A no-air-loss condensate drain discharges contaminants from the system.

4. Dry, filtered air exits the dryer for use.

The Cooling Process

Glycol Circuit

5. Glycol exits the air-to-glycol heat exchanger and then enters the glycol storage tank.

6. A circulation pump continuously moves the thermal medium throughout the circuit.

7. A thermal sensor monitors the glycol temperature and turns the refrigeration compressor off whenever the glycol is cooled to its lowest temperature. The cooling medium continues to dry the air. After the medium warms up, the thermal sensor restarts the refrigeration compressor.

8. The glycol-to-refrigerant heat exchanger chills the thermal media and travels back to the air-to-glycol heat exchanger.
Features

Optimized Cabinet Design
■ Promotes ease of access from all four sides
■ Certified to CSA C22.2 No. 236-05 / UL 1995

Stainless Steel Brazed Plate Heat Exchangers
■ Compact, thermally efficient
■ Ensures delivery of an ISO 8573.1: 2009 Air Quality Class 5 pressure dew point

Integral Filtration
■ Standard Filter/Separator removes solids down to 3.0 microns and oil aerosols to 5.0 mg/m³
■ Optional Cold Coalescer removes solids down to 0.01 microns and oil aerosols to < 0.01 mg/m³

No Air Loss Condensate Drains
■ Mechanical float drain is standard on models 90–140 scfm (153–238 nm³/h)
■ Electric demand drain is standard on models 190–675 scfm (323–1148 nm³/h)

Hermetically Sealed Refrigerant Compressor
■ Environmentally friendly R-134a refrigerant
■ High reliability, long service life

Rugged Glycol Reservoir
■ Stores food-grade propylene glycol cooling media
■ Leak-free, rotational molded construction

Reliable Thermal Media Circulation Pump
■ Continuously moves cooling medium through the dryer
■ Cartridge design promotes reliability and ease of service
Two Levels of Control

**Standard Level I (RES90–RES675)**

Easy to monitor controls provide dryer status

- Dryer on/off switch
- Dryer on light
- Thermal medium temperature
- Dryer energized (RES190–RES675)
- Compressor on light

**Optional Level II (RES190–RES675)**

RES Series Level II microprocessor controller

- Operator Interface Displays:
  - Date/time/operating status
  - Hours to service
  - Total compressor operating time
- Energy Savings Interface:
  - Daily average load
  - Monthly average load
  - Annualized energy savings in dollars or euros
  - Scheduler mode for automatic start/stop operation

CAPACITY CORRECTION FACTORS

<table>
<thead>
<tr>
<th>INLET PRESSURE</th>
<th>80° F</th>
<th>90° F</th>
<th>100° F</th>
<th>110° F</th>
<th>120° F</th>
<th>130° F</th>
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<tbody>
<tr>
<td>30 PSIG</td>
<td>1.24</td>
<td>0.92</td>
<td>0.71</td>
<td>0.56</td>
<td>0.44</td>
<td>0.35</td>
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<tr>
<td>50 PSIG</td>
<td>1.40</td>
<td>1.07</td>
<td>0.83</td>
<td>0.66</td>
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<td>80 PSIG</td>
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<td>1.25</td>
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<td>0.82</td>
<td>0.68</td>
<td>0.56</td>
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<tr>
<td>125 PSIG</td>
<td>1.67</td>
<td>1.30</td>
<td>1.05</td>
<td>0.86</td>
<td>0.72</td>
<td>0.61</td>
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<tr>
<td>150 PSIG</td>
<td>1.71</td>
<td>1.34</td>
<td>1.08</td>
<td>0.90</td>
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<td>175 PSIG</td>
<td>1.75</td>
<td>1.37</td>
<td>1.11</td>
<td>0.92</td>
<td>0.78</td>
<td>0.66</td>
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<tr>
<td>200 PSIG</td>
<td>1.77</td>
<td>1.39</td>
<td>1.14</td>
<td>0.95</td>
<td>0.80</td>
<td>0.68</td>
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<tr>
<td>250 PSIG</td>
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<td>1.43</td>
<td>1.17</td>
<td>0.98</td>
<td>0.83</td>
<td>0.72</td>
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STANDARDS PER ISO 8573.1

<table>
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<tr>
<th>QUALITY CLASSES</th>
<th>SOLID CONTAMINANTS (MAXIMUM PARTICLE SIZE IN MICRONS)</th>
<th>MAXIMUM PRESSURE DEW POINTS °F °C W/W MG/M³</th>
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<tbody>
<tr>
<td>0</td>
<td>as specified as specified as specified</td>
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<tr>
<td>1</td>
<td>0.1 -94 -70 0.008 0,01</td>
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<tr>
<td>2</td>
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<td>3</td>
<td>5 -4 -20 0.8 1</td>
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<tr>
<td>4</td>
<td>15 38 3 4 5</td>
<td></td>
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<tr>
<td>5</td>
<td>40 45 7 21 25</td>
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<tr>
<td>6</td>
<td>- 50 10 - -</td>
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</table>

CORRECTION FACTORS FOR AMBIENT TEMPERATURE*

<table>
<thead>
<tr>
<th>AMBIENT TEMPERATURE</th>
<th>80° F</th>
<th>90° F</th>
<th>100° F</th>
<th>110° F</th>
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</thead>
<tbody>
<tr>
<td>27°C</td>
<td>1.12</td>
<td>1.06</td>
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*Air-cooled models only.
For water-cooled use a 1.15 multiplier if cooling water is less than 95° F (35° C).
## RES Specifications

### RES Series Options

- Level II Advanced Electronic Controls (models 190–675 scfm)
- Cold coalescing separator elements
- Water-cooled condensing unit (models 190–675 scfm)
- 3 valve block and by-pass
- Four gauge package (panel mounted)

### Table 1: Specifications

<table>
<thead>
<tr>
<th>MODEL</th>
<th>RATED FLOW¹</th>
<th>VOLTAGES</th>
<th>POWER</th>
<th>IN/OUT CONNECTION²</th>
<th>DIMENSIONS</th>
<th>WEIGHT</th>
<th>STD DP³</th>
<th>OPT DP³</th>
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<tbody>
<tr>
<td>RES90</td>
<td>90 153</td>
<td>115/1/60 208-230/1/60 220-240/1/50</td>
<td>0.9</td>
<td>1.0” NPT 38 965 29 737 20 508</td>
<td>249 109 2.8 0.2 4.0 0.3</td>
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<td>RES120</td>
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<td>1.2</td>
<td>1.0” NPT 38 965 29 737 20 508</td>
<td>258 117 3.7 0.3 5.0 0.3</td>
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<td>1.3</td>
<td>1.0” NPT 38 965 29 737 20 508</td>
<td>263 119 4.0 0.3 5.5 0.4</td>
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<td>RES190</td>
<td>190 323</td>
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<td>1.5” NPT 39 991 34 864 32 813</td>
<td>408 185 3.8 0.2 4.6 0.3</td>
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<td>RES245</td>
<td>245 407</td>
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<td>1.5” NPT 39 991 34 864 32 813</td>
<td>478 217 4.2 0.2 6.0 0.4</td>
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<tr>
<td>RES280</td>
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<td>540 244 3.9 0.2 4.1 0.3</td>
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<td>RES360</td>
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<td>2.6</td>
<td>2.5” NPT 58 1473 32 813 42 1067</td>
<td>708 321 3.9 0.2 4.9 0.3</td>
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<td>RES540</td>
<td>540 917</td>
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<td>4.3</td>
<td>2.5” NPT 58 1473 32 813 42 1067</td>
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<tr>
<td>RES675</td>
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<td>208-230/3/60 380-420/3/50 460/3/60 575/3/60</td>
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<td>923 412 5.3 0.3 7.3 0.5</td>
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</tbody>
</table>

1. Rated Flow Capacity - Conditions for rating dryers are in accordance with ISO 7183 (option A2) working conditions: inlet air temperature 100°F (38°C), inlet air pressure 100 psig (6.9 bar), ambient air temperature 100°F (38°C), 100% saturated air, operating on 60 Hz power supply.
2. BSP connections available
3. Pressure drop inclusive of integral filtration
4. Cumulative pressure drop includes Grade B and Grade E filter/separator elements

### Table 2: Flow Rate and Working Pressure

<table>
<thead>
<tr>
<th>FLOW MODELS</th>
<th>SCFM</th>
<th>NM³/H</th>
<th>MAX. WORKING PRESSURE (FLOAT DRAIN)</th>
<th>PSIG</th>
<th>BAR</th>
<th>MAX. WORKING PRESSURE (ELECTRIC DRAIN)</th>
<th>PSIG</th>
<th>BAR</th>
<th>MIN. WORKING PRESSURE</th>
<th>MAX. INLET AIR TEMPERATURE</th>
<th>MIN. INLET AIR TEMPERATURE</th>
<th>MAX. AMBIENT AIR TEMPERATURE</th>
<th>MIN. AMBIENT AIR TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>90–140</td>
<td>153–238</td>
<td>250</td>
<td>17.2</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>130</td>
<td>54</td>
<td>4</td>
<td>110</td>
<td>43</td>
<td>40</td>
<td>4</td>
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<td>140–675</td>
<td>204–1147</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>16.0</td>
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<td>2.1</td>
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<td>54</td>
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</tbody>
</table>
The leader in every market we serve by continuously improving all business processes with a focus on innovation and velocity.