



CRV Variable Operation Refrigeration Dryers

1200 - 2400 scfm



domnick hunter

www.domnickhunter.com

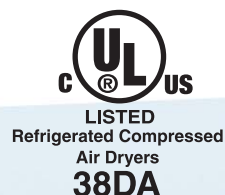
Why an energy saving refrigeration air dryer?

The Problem

Compressed air is an essential power source that is widely used throughout industry. This safe, powerful and reliable utility can be the most important part of your production process. However, your compressed air will contain water, dirt, wear particles, bacteria and even degraded lubricating oil which all mix together to form an unwanted abrasive sludge. This sludge, often acidic, rapidly wears tools and pneumatic machinery, blocks valves and orifices causing high maintenance and costly air leaks. It also corrodes piping systems and can bring your production process to an extremely expensive standstill! Only compressed air that is clean and dry will ensure maximum savings.

The Solution

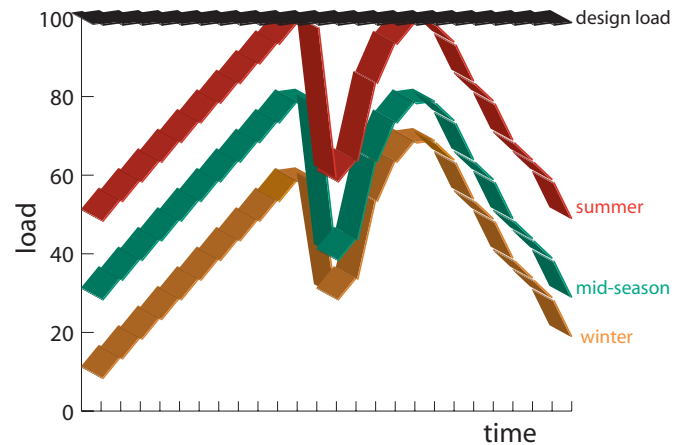
These costly contamination problems can be avoided by installing a domnick hunter CRV compressed air refrigeration dryer package complete with OIL-X EVOLUTION filtration. The package is suitable for use with any compressor type and provide air quality to ISO 8573.1 Class 1.4.1. Dryers are available from stock for quick and easy delivery.



Energy Saving Dryers

A refrigeration dryer is typically selected to achieve its design performance at the user's most extreme working conditions. (ie. a warm summer day with the air compressor operating at maximum load)

This maximum condition, however, is very rarely achieved in everyday conditions. First, the air compressor load will vary significantly during a working day and will rarely be at full load, thereby significantly reducing the load on the dryer itself.



typical daily system load

Furthermore, average temperatures are well below the maximum inlet and ambient temperatures for which the system has been sized. Reduced temperatures at colder moments during the day and overall temperature reductions during the mid-season and winter add a further reduction to the load on the dryer.

The result is that the refrigeration dryer could, if it were to adapt its working cycle to the real load it is under, save significant amounts of energy.

domnick hunter variable operation dryers do just that, continuously and precisely altering their operation according to the load, in the full 0 -100% operating range.

The result is close dew point control with power consumption reduction up to 80%.

CRV: the most intelligent dryer available

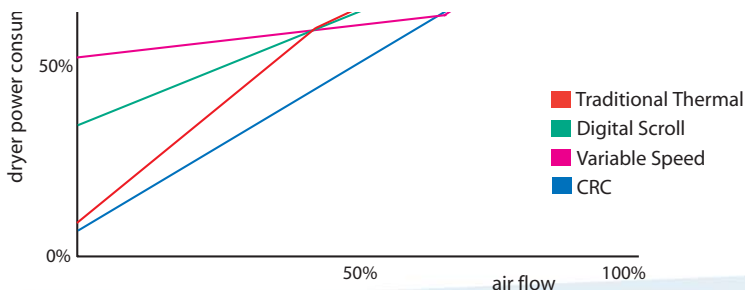
The CRV is truly a unique concept in energy saving refrigeration drying. No technology available today can match its innovative approach towards achieving maximum energy savings whatever the working conditions. And all this in a package offering tight dew point control and compact dimensions.



Multiple Operation Mode

The CRV is two dryers in one. It combines the merits of thermal mass and variable speed operation, offering a variable operation dryer which continuously and accurately matches its operating mode to the real working conditions.

The operation mode is controlled by CRV's advanced microprocessor, which automatically adapts dryer operation in order to achieve unmatched energy savings.



CRV energy saving curve versus leading traditional solutions

Energy savings are further improved due to performance enhancing concepts that maximize savings:

- “frequency enhancements” during variable speed operation
- and “soft compressor start” during cycling operation.

The result is a dryer that offers the very lowest energy consumption at all load conditions, offering significant savings and excellent dew point control when compared with all solutions currently available on the market. If the very lowest energy consumption across a broad working range is the goal, then CRV is the solution.

Variable Speed Operation

The CRV features an inverter for operation at medium to high air flows.

The compressor runs continuously with the inverter varying the compressor power to the actual working conditions. Energy consumption is reduced accordingly.

The CRV also offers the unique “frequency enhancement” concept to effectively increase the variable speed operating span by up to 50% compared with conventional variable speed dryers. The CRV continues to save energy when traditional variable speed dryers cannot.



frequency enhanced inverter

Cycling Operation

Cycling operation takes place at lower air flows, with the compressor cycling on and off according to the effective load on the dryer.

The inverter controlled “soft compressor start” process allows the compressor to start up twice as often as traditional dryers. The result is tight dew point control and improved compressor service life.

The unique cold mass exchanger is encased in a special high density thermal shield insulation (TSI) and acts as the thermal mass. At reduced loads CRV maintains accurate dew point control without using any more energy than required.

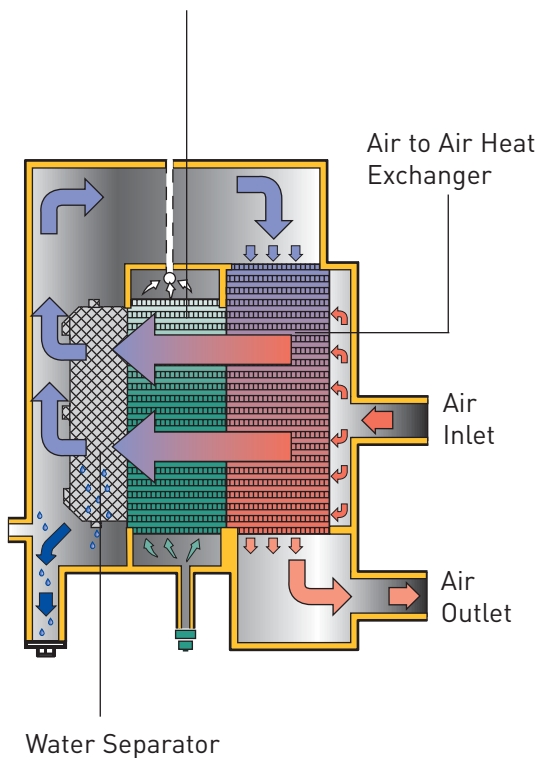
Unique heat exchanger technology

All-in-one Patented Technology

The CRV features:

- Aluminum heat exchangers for maximum ease of use.
- Tightest dew point control and excellent long-term durability.
- Compact design.
- Unique 3-in-1 configuration including:
 - Precool-reheater stage
 - Final cooling stage
 - Separation stage

Evaporator (air to refrigerant heat exchanger)



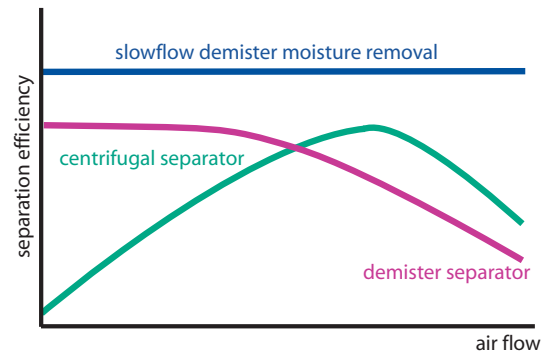
Easy to Use

The use of aluminum throughout offers notably better resistance to aggressive air than copper solutions without suffering the reduced energy efficiency of stainless steel heat exchangers.

The CRV features a modular design concept.

Excellent Dew Point Performance

Wide air channels and low air velocities maximize dew point performance.



The oversized "slowflow" demister is non-velocity sensitive and therefore offers perfect cross separation whatever the airflow. Standard demisters provide inferior separation at high air flows and centrifugal separators provide inferior separation at low air flows.

Reduced Power Consumption

The use of aluminum allows for an extremely high exchange surface area, offering an improved exchange efficiency when compared with other materials.

The all-in-one design with extremely low air velocities provides class leading pressure drop levels and offers the user notable energy savings. The oversized precool-reheater offers a high freecooling effect for additional reduction in power consumption.

Special high density thermal shield insulation (TSI) ensures low thermal transmission from the heat exchanger and maximizes energy efficiency.

Advanced technical solutions

Microprocessor Control

Advanced microprocessor controls are standard. The microprocessor controls have been specifically designed to allow it to maximize its variable operation potential.

The following features are offered:

- User friendly.
- Digital multi-function display.
- Digital dew point temperature read-out for a highly accurate indication of the actual working conditions.
- Energy saving indication (10 segment), informing the user that the dryer is in energy saving mode.
- Multiple alarm safety with easy to understand coded alarm messages.
- Extensive programmability to allow the system to be personalized to individual customer needs.
- Status Report (historical data), offering a quick reference to dryer operation.
- Maintenance indicator to allow the user to optimize preventative maintenance.
- Dryer hour counter and compressor hour counter indicate energy savings.
- Volt-free alarm contact offering a remote status signal.
- Optional RS485 serial port connection available.



CRV microprocessor

Refrigerant R407C

R407C, used on all models, is the most environmentally friendly refrigerant available.

Benefits include:

- Zero ODP, ensuring compliance with the Montreal Protocol, no damage to the ozone layer and no planned phase-out date.
- Around 10% less power consumption than R134a, and 5% less than R404A.
- 50% less Global Warming Potential than R404A.

Easy to Use

The CRV offers the user maximum peace of mind.

- High operating limits.
- Easily removable panels with frontal access to all major components.
- Compact unit dimensions.
- Drain niche for easy drain access.
- Condenser pre-filter for improved performance and reduced maintenance.
- User friendly control section.



drain niche

The Best Long-Term Investment

The CRV is produced in a state-of-the-art manufacturing site featuring the most advanced production processes.

Stringent individual testing of each unit, including multiple helium leak tests, ensure that the user receives a product designed for years of trouble-free operation.



helium leak test

domnick hunter service back-up ensures that the compressed air system will be operating at optimum conditions at all times.

Technical Specifications

CRV1200 - CRV2400

Ambient temperature:	100°F (38°C)
Inlet temperature:	100°F (38°C)
Inlet pressure:	100 psi g (7 bar g)

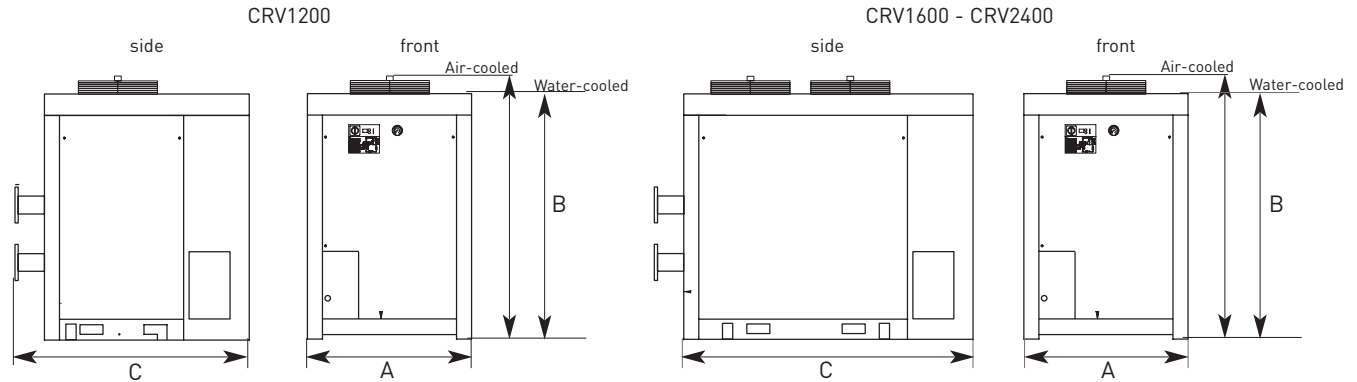
For flow rates at other conditions, please contact domnick hunter for correct sizing.

Air-Cooled

Model	CAGI Condition Nominal Capacity	Air Connections	Adsorbed Power (kW)*	Pressure Drop (psi)	Dimension ins (mm)			Weight		Primary Voltages
					A	B	C	lbs	kg	
CRV1200	1200	3" NPT-M	5.22	3.57	39.8 (1010)	64.6 (1640)	58.7 (1491)	990	449	460V/3Ph/60Hz
CRV1600	1600	4" ANSI	9.09	2.65	39.8 (1010)	64.6 (1640)	78.4 (1991)	1116	506	460V/3Ph/60Hz
CRV2000	2000	6" ANSI	10.26	2.36	39.8 (1010)	64.6 (1640)	78.4 (1991)	1210	549	460V/3Ph/60Hz
CRV2400	2400	6" ANSI	10.26	2.65	39.8 (1010)	64.6 (1640)	78.4 (1991)	1232	559	460V/3Ph/60Hz

Water-Cooled

Model	CAGI Condition Nominal Capacity	Air Connections	Adsorbed Power (kW)	Pressure Drop (psi)	Dimension ins (mm)			Weight		Primary Voltages
					A	B	C	lbs	kg	
CRV1200-W	1200	3" NPT-M	4.62	3.57	39.8 (1010)	59.1 (1501)	58.7 (1491)	990	449	460V/3Ph/60Hz
CRV1600-W	1600	4" ANSI	7.61	2.65	39.8 (1010)	59.1 (1501)	78.4 (1991)	1116	506	460V/3Ph/60Hz
CRV2000-W	2000	6" ANSI	7.26	2.36	39.8 (1010)	59.1 (1501)	78.4 (1991)	1210	549	460V/3Ph/60Hz
CRV2400-W	2400	6" ANSI	7.11	2.65	39.8 (1010)	59.1 (1501)	78.4 (1991)	1232	559	460V/3Ph/60Hz



Technical data

Maximum ambient temperature:	122°F (50°C)
Maximum inlet temperature:	140°F (60°C)
Minimum ambient temperature:	41°F (5°C)
Maximum Pressure:	174 psi g (12 bar g)
Refrigerant:	R407C

Flow correction factors

To obtain dryer capacity at new conditions, multiply nominal capacity x C1 x C2 x C3 x C4.

Ambient Temperature (C1) (air-cooled only)

°F	90	100	110	120	122
°C	32	38	43	49	50
Correction Factor	1.09	1	0.95	0.81	0.72

Inlet Temperature (C2)

°F	90	100	110	120	130	140
°C	32	38	43	49	54	60
Correction Factor	1.24	1	0.84	0.70	0.58	0.47

Inlet Pressure (C3)

Pressure psi g	50	80	100	125	150	174
Pressure bar g	3.5	5.5	6.9	8.6	10.3	12.0
Correction Factor	0.80	0.95	1	1.08	1.13	1.17

Dew point (C4)

°F	45	50
°C	7	10
Correction Factor	1.23	1.40

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