

Refrigerated Compressed Air Dryers

5-6,000 scfm



- Refrigerated Non-Cycling
- Refrigerated Cycling
- Refrigerated High Temperature

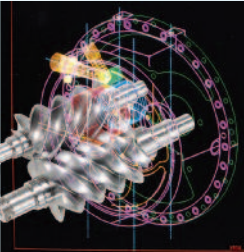
Sullair Capabilities

Sullair Leadership

Since 1965, Sullair has been recognized around the world as an innovator and a leader in rotary screw compression and vacuum technology. For more than 40 years, Sullair

has designed and manufactured its own rotors and air end assemblies at the corporate headquarters in Michigan City, Indiana.

The award-winning rotary screw design sets the industry standards and delivers the quality and reliability one expects from a leader.



products are known around the world for their universally applicable design, outstanding craftsmanship and superior quality.

Sullair's Statistical Process Control

Sullair's Statistical Process Control (SPC) system monitors rotor quality standards to assure consistent compressor and vacuum performance.

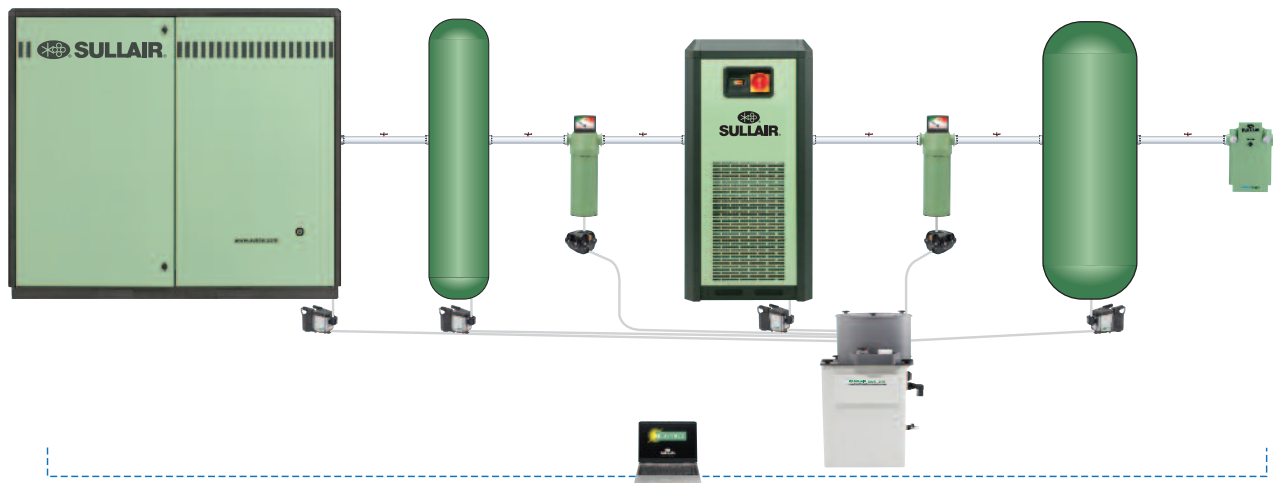
Sullair's Commitment to Innovation

Underlying Sullair's leadership is a dedication to excellence and a commitment to innovation. Sullair is constantly exploring new ideas and seeking new ways to meet industry's need for increasingly energy efficient compressed air and vacuum solutions.

Sullair Technology

Utilizing the most modern technologies, equipment and advanced manufacturing techniques, Sullair designs, manufactures, assembles, and tests the most innovative compressed air and vacuum products in the industry. Sullair

The Sullair Stationary Air Power System



This System includes:

- rotary screw compressor
- wet storage
- refrigerated dryer
- filters to meet your requirement
- dry storage
- flow controller
- drains
- oil/water separator
- ethernet-based eConnect™ to monitor and control the entire system

The Importance of Clean, Dry Compressed Air

How much water is too much?

Any amount of water is too much.

Water jeopardizes everything you want your compressed air system to do. It ruins product and fouls processes.

- Relative humidity is the amount of water vapor in air relative to what it could hold at a given temperature
- Moisture in compressed air remains in a vapor state through the compression cycle, so it is not a problem until it leaves the compressor
- Air discharged from a compressor is approximately 150°F to 450°F
- At 75°F and 75% relative humidity, a 75 hp compressor takes in 46 gallons of water vapor in 24 hours. When this air is cooled to approximately 35°F at 100 psig, the water vapor condenses into 46 gallons of liquid!



Liquid remaining after the aftercooler: 14.7 gallons (32%)



Liquid remaining after a refrigerated dryer: 1.8 gallons (.4%)

Refrigerated Dryers

Sullair offers these configurations of refrigerant dryers

- **RN – Refrigerated Non-Cycling**
5 to 325 scfm
- **RD – Refrigerated Digital Cycling**
400 to 6,000 scfm
- **RC – Refrigerated Cycling**
150 to 3,000 scfm
- **RH – Refrigerated High Temperature**
15 to 100 scfm



All Sullair refrigerated dryers have these advantages and features:

- Energy saving – true green product
 - 3-in-1 heat exchanger
 - High efficiency compressors
- Globally marketable refrigerant R-134a
- Standard electronic timer drains for 35 scfm and above
- Refrigerant analyzer indicator
- Fan cycle switch
- Easy removable side panels and parts
- Consistent dew point performance
- Low power consumption
- Low pressure drop
- Insulated heat exchanger
- Evaporator with multi-stage separator stainless steel demister
- High quality fan motors
- Oversized condenser

Max Inlet Temperature: 150°F
(180°F High Temperature)
Max Inlet Pressure: 230 psig
Max Ambient Temperature 115°F

Features of the Sullair Refrigerated Dryers



Refrigerated Non-Cycling Dryers RN Series: 5-325 scfm

- No dew point swings
- Compact footprint
- Variable flow capacity from 10% to 100%
- High inlet temperature (up to 150°F)
- Counter-current, variable flow heat exchanger
- Non-velocity sensitive demister/separator
- Consistent dew point



Refrigerated Digital Cycling Dryers RD Series: 400-6,000 scfm

- Optimum dew point levels for the highest system performance
- Cycling control for increased energy savings
- Energy efficient scroll compressor
- Low operating cost
- Optional communication package
- Consistent dew point



Refrigerated Cycling Dryers RC Series: 150-3,000 scfm

- Stainless steel pump and cold storage tank
- Thermal expansion valve
- Programmable temperature controller
- Energy savings at low loads
- Intermittent compressor operation
- Simple refrigerant circuit
- Thermal mass storage medium
- Accurate dew point control

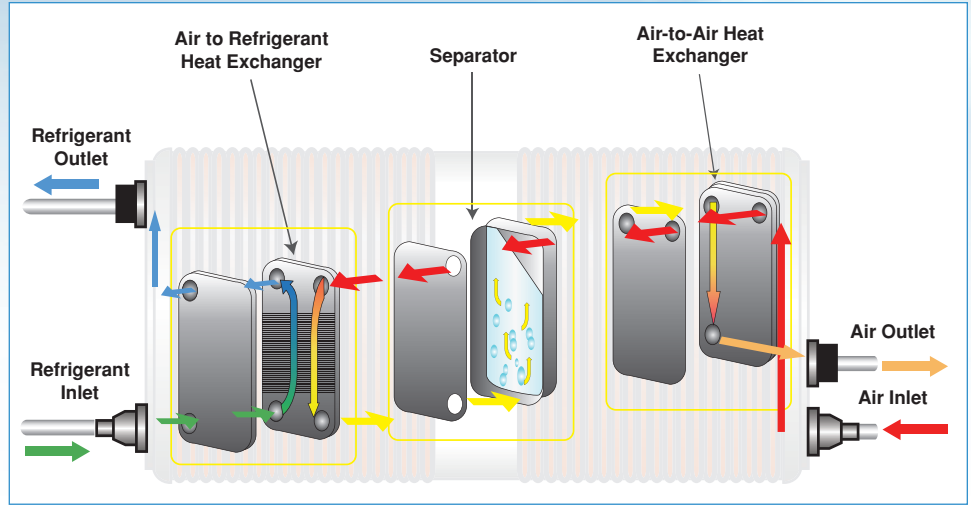


High Temperature Dryers RH Series: 15-100 scfm

- Inlet temperature up to 180°F
- Independent air cooled after-cooler
- Moisture separator
- Two independent timer drains
- Easy removable panels and maintenance
- Rated at 50°F dew point

How the Energy Saving 3-in-1 Heat Exchanger Works

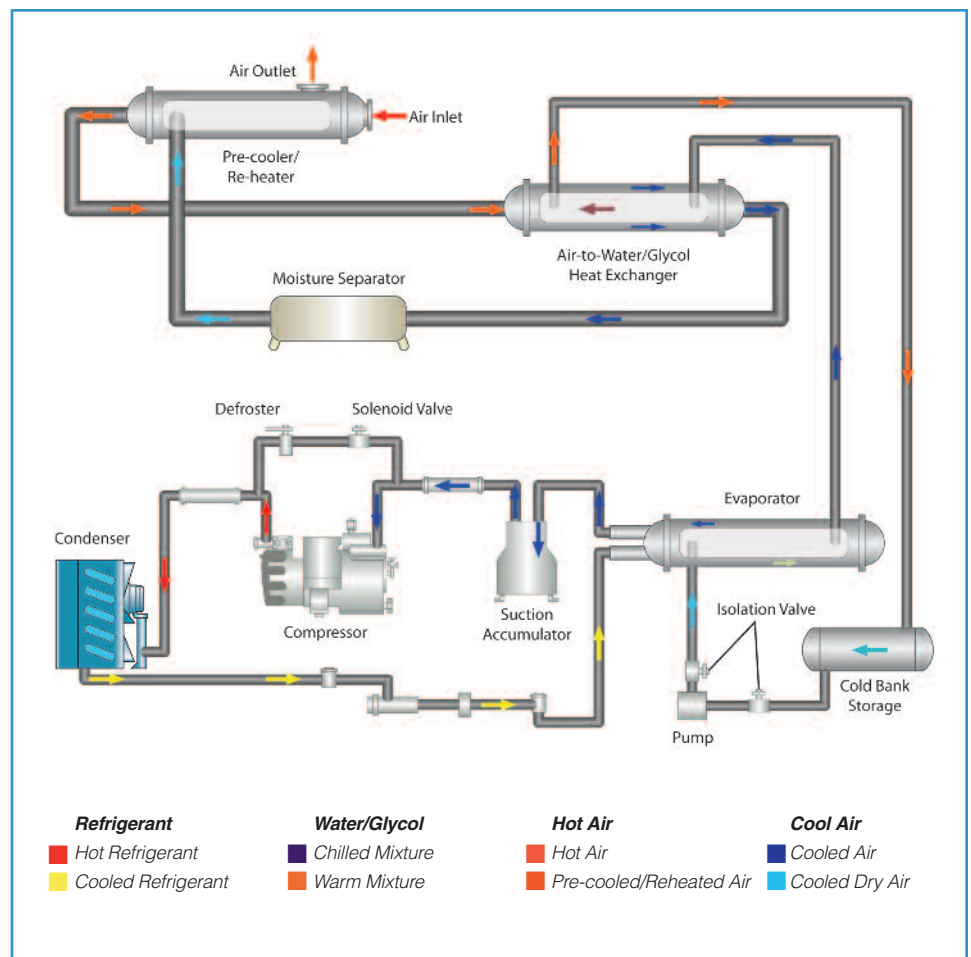
- Warm air enters the Air to Air Heat Exchanger and exchanges heat with the cooler air leaving.
- The air proceeds to the Dryer Section and is cooled using either mechanical refrigeration or liquid to a designated dew point.
- The mixture of cold air and moisture enters the separation chamber. The moisture condenses into liquid and is isolated from the air stream and is dispensed with a timer drain.
- The dry air then proceeds back through the Recuperation Section where it is heated by the incoming warm air.



How Refrigerated Cycling Dryers Work

Hot saturated air from the after-cooler enters the air-to-air heat exchanger, where the air is pre-cooled by the cold, dry air leaving the heat exchanger. The pre-cooled air then enters the air/glycol heat exchanger where it is cooled to its final dew point by chilled water/glycol, flowing in the counter-current direction through the shell. The chilled air passes through the moisture separator, which has a high efficiency of separation at different flow rates. Condensate is removed from the system using a timed drain valve. Finally, the cold, dry air is reheated in the air-to-air heat exchanger by the incoming hot air for maximum volumetric efficiency before exiting the dryer.

The water/glycol is chilled by a cycling refrigeration system and continuously pumped through the shell side of the air/glycol heat exchanger. The glycol flow rate remains constant, regardless of compressed air load. The refrigeration compressor unloads and/or cycles OFF when preset temperature is reached for water/glycol, thus minimizing electrical power consumption.



Comprehensive Controls

Advanced, user-friendly microprocessor controls

Models RC-400, RD-400 and larger dryers include:

- Digital multi-functional display
- Digital dew point temperature read-out for an accurate indication of actual working conditions
- Multiple alarm safety with easy-to-understand coded messages
- Extensive programmability allows system to be personalized to individual user needs
- Status reports for quick reference to dryer operation
- Indicator to optimize preventive maintenance
- Volt-free alarm contact offers a remote status signal
- The controller has 8 temperature sensor inputs

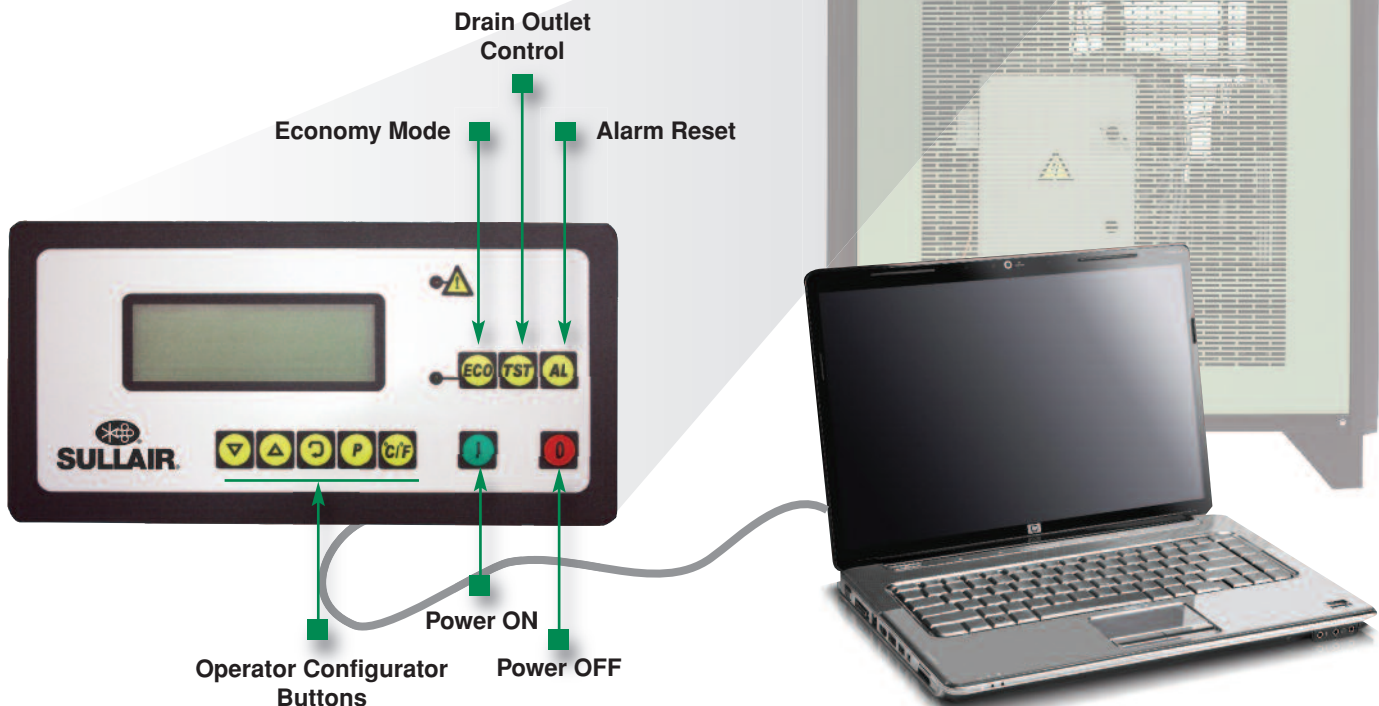
Models RN and RH dryers use simple analog indicators and controls.

- Off switch with light
- Dew point indicator



Operator interface

Closeup of panel shows its many features.



The front panel view of the controller contains a four line 20 character LCD display, 9 buttons and one alarm indicator LED.

Remote monitoring capabilities (optional)

The Sullair controller has a communications interface that can be used for remotely monitoring. Modbus RTU protocol is used for communication. The user can remotely start the dryer, stop the dryer, reset any alarm and monitor:

- Evaporator temperature
- Inlet air temperature
- Ambient temperature
- Refrigerant gas high and low temperature
- Fan, compressor and condenser working conditions
- Dew point
- Drain function
- Working hours

Intelligent Integral Zero-Loss Drain

The condensate drain is one of the most important components

All refrigerated dryers come standard with a high quality timer drain. A truly unique zero loss drain is offered as an option. With the zero loss drain, condensate is collected in a chamber, segregated from the air flow. As condensate builds, it activates a drain level sensor built into the chamber. This opens an external solenoid valve to evacuate the condensate, closing the valve again before any air escapes. The drain cycle continually adjusts itself to working conditions.



Self-diagnostic software avoids fault situations. And should an error occur, an alarm will be signaled and the drain will continue to operate on a pre-programmed timed drain cycle. The controls for the drain are part of the microprocessor's fully integrated control and alarm system. Sullair offers a drain alcove on all its standard dryers. This simple solution is a major benefit to the user. The drain is one of the most important components within the dryer. If it doesn't work properly the dryer's whole operation is compromised.

R-134a Refrigerant: Environmentally Considerate and Efficient

All Sullair refrigerant dryers use R-134a refrigerant

Why R-134a?

Features of R-134a:

- Does not deplete ozone
- Thermodynamic properties similar to R-12 (dichlorodifluoromethane)
- 100% chlorine free
- Environmentally considerate
- Completely inert
- High and low temperature refrigerant
- Operates at nearly half the pressure of other refrigerants, so the compressor life span will increase.
- R-134a makes the refrigerated dryer much more tolerant to adverse conditions such as high ambient temperature.

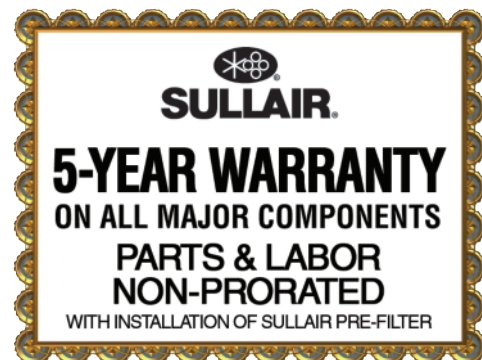
The Sullair Warranty

All Inclusive "Peace of Mind" Warranty

Sullair backs our commitment to quality with an unparalleled, non-prorated 5-year warranty (*parts and labor*) on the major components. No other manufacturer offers a warranty that is as all inclusive. (Note: a Sullair pre-filter must be installed upstream of the dryer as a prerequisite for this warranty.)

Quality is Third Party Certified and Guaranteed.

Dryers are manufactured in an ISO 9001 environment.



Specifications: RN Non-Cycling Models, 60 Hz

Model	Electrical	AC / WC	scfm	In/Out	Drain	Length in	Width in	Height in	Weight lbs
RN-5	115-1-60	AC	5	1/2" NPT	3/8"	14	24	14	70
RN-10	115-1-60	AC	10	1/2" NPT	3/8"	14	24	14	70
RN-15	115-1-60	AC	15	1/2" NPT	3/8"	14	24	14	70
RN-25	115-1-60	AC	25	1/2" NPT	3/8"	14	24	14	74
RN-25	230-1-60	AC	25	1/2" NPT	3/8"	14	24	14	74
RN-35	115-1-60	AC	35	1/2" NPT	3/8"	16	24	18	94
RN-35	230-1-60	AC	35	1/2" NPT	3/8"	16	24	18	94
RN-50	115-1-60	AC	50	1/2" NPT	3/8"	16	24	18	94
RN-50	230-1-60	AC	50	1/2" NPT	3/8"	16	24	18	94
RN-75	115-1-60	AC	75	3/4" NPT	3/8"	15	29	18	124
RN-75	230-1-60	AC	75	3/4" NPT	3/8"	15	29	18	124
RN-100	115-1-60	AC	100	1" NPT	3/8"	15	29	18	145
RN-100	230-1-60	AC	100	1" NPT	3/8"	15	29	18	145
RN-125	115-1-60	AC	125	1" NPT	3/8"	18	32	22	176
RN-125	230-1-60	AC	125	1" NPT	3/8"	18	32	22	176
RN-150	115-1-60	AC	150	1" NPT	3/8"	18	32	22	194
RN-150	230-1-60	AC	150	1" NPT	3/8"	18	32	22	194
RN-175	230-1-60	AC	175	1" NPT	3/8"	22	34	24	217
RN-200	230-1-60	AC	200	1" NPT	3/8"	22	34	24	217
RN-250	230-1-60	AC	250	1-1/2" NPT	3/4"	24	50	28	308
RN-250	230-3-60	AC	250	1-1/2" NPT	3/4"	24	50	28	308
RN-250	460-3-60	AC	250	1-1/2" NPT	3/4"	24	50	28	308
RN-250	575-3-60	AC	250	1-1/2" NPT	3/4"	24	50	28	308
RN-325	230-3-60	AC	325	1-1/2" NPT	3/4"	24	50	28	341
RN-325	460-3-60	AC	325	1-1/2" NPT	3/4"	24	50	28	341
RN-325	575-3-60	AC	325	1-1/2" NPT	3/4"	24	50	28	341

Correction Factors for: RN Models and RD models, page 9

Inlet Pressure (F1)

	50	60	75	100	115	125	150	175	200
psig	50	60	75	100	115	125	150	175	200
bar	3.5	4.1	5	7	7.9	8.5	10	12	14
Factor Pressure: F1	0.75	0.77	0.85	1.00	1.06	1.10	1.16	1.25	1.30

Ambient Temperature (F3)

	60	80	90	100	105	110	115	120
°F	60	80	90	100	105	110	115	120
°C	16	26	32	38	40	43	46	49
Factor Ambient: F3	1.12	1.08	1.06	1.00	0.96	0.90	0.80	0.65

Flow Correction Factors

Capacity correction to be used when operating conditions differ from those shown above. To obtain dryer capacity at new conditions, multiply nominal capacity x F1 x F2 x F3 (x F4).

Inlet Temperature (F2)

	85	90	95	100	110	120	130	140	150
°F	85	90	95	100	110	120	130	140	150
°C	29	32	35	38	43	49	54	60	65
Factor Inlet: F2	1.20	1.14	1.08	1.00	0.75	0.60	0.50	0.45	0.35

Performance Data Based On:

Ambient temperature	100°F
Inlet temperature	100°F
Inlet pressure	100 psig

For flow rates at other conditions, please contact Sullair for correct sizing

Performance data obtained and presented in accordance with CAGI Standard No. ADF 100, "Refrigerated Compressed Air Dryers – Methods for Testing and Rating"

Specifications: RD Digital Cycling Models, 60Hz

Model	Electrical	AC / WC	scfm	In/Out	Drain	Length in	Width in	Height in	Weight lbs
RD-400	230-3-60	AC	400	2" NPT	3/4"	24	50	28	341
RD-400	460-3-60	AC	400	2" NPT	3/4"	24	50	28	341
RD-400	575-3-60	AC	400	2" NPT	3/4"	24	50	28	341
RD-500	230-3-60	AC	500	2" NPT	3/4"	32	59	46	1056
RD-500	460-3-60	AC	500	2" NPT	3/4"	32	59	46	1056
RD-500	575-3-60	AC	500	2" NPT	3/4"	32	59	46	1056
RD-700	230-3-60	AC / WC	700	3" NPT	3/4"	32	59	46	1056
RD-700	460-3-60	AC / WC	700	3" NPT	3/4"	32	59	46	1056
RD-700	575-3-60	AC / WC	700	3" NPT	3/4"	32	59	46	1056
RD-850	230-3-60	AC / WC	850	3" NPT	3/4"	32	59	46	1100
RD-850	460-3-60	AC / WC	850	3" NPT	3/4"	32	59	46	1100
RD-850	575-3-60	AC / WC	850	3" NPT	3/4"	32	59	46	1100
RD-1000	460-3-60	AC / WC	1000	3" NPT	3/4"	32	74	46	1122
RD-1000	575-3-60	AC / WC	1000	3" NPT	3/4"	32	74	46	1122
RD-1200	460-3-60	AC / WC	1200	3" NPT	3/4"	32	74	46	1122
RD-1200	575-3-60	AC / WC	1200	3" NPT	3/4"	32	74	46	1122
RD-1600	460-3-60	AC / WC	1600	4" FLG	1-1/4"	46	80	61	1672
RD-1600	575-3-60	AC / WC	1600	4" FLG	1-1/4"	46	80	61	1672
RD-2000	460-3-60	AC / WC	2000	4" FLG	1-1/4"	46	80	61	1705
RD-2000	575-3-60	AC / WC	2000	4" FLG	1-1/4"	46	80	61	1705
RD-2400	460-3-60	AC / WC	2400	4" FLG	1-1/4"	46	80	83	1925
RD-2400	575-3-60	AC / WC	2400	4" FLG	1-1/4"	46	80	83	1925
RD-3000	460-3-60	AC / WC	3000	4" FLG	1-1/4"	46	80	83	2156
RD-3000	575-3-60	AC / WC	3000	4" FLG	1-1/4"	46	80	83	2156
RD-3800	460-3-60	AC / WC	3800	6" FLG	1-1/4"	46	80	110	2409
RD-3800	575-3-60	AC / WC	3800	6" FLG	1-1/4"	46	80	110	2409
RD-5000	460-3-60	AC / WC	5000	8" FLG	1-1/4"	46	80	110	2420
RD-5000	575-3-60	AC / WC	5000	8" FLG	1-1/4"	46	80	110	2420
RD-6000	460-3-60	AC / WC	6000	8" FLG	1-1/4"	46	80	118	2750
RD-6000	575-3-60	AC / WC	6000	8" FLG	1-1/4"	46	80	118	2750

Specifications: RH High Temperature Models, 60Hz

Model	Electrical	AC / WC	scfm	In/Out	Drain	Length in	Width in	Height in	Weight lbs
RH-15	115-1-60	AC	15	1/2" NPT	3/8"	18	38	18	194
RH-25	115-1-60	AC	25	1/2" NPT	3/8"	18	38	18	194
RH-35	115-1-60	AC	35	1/2" NPT	3/8"	18	38	18	194
RH-50	115-1-60	AC	50	1/2" NPT	3/8"	18	38	18	194
RH-75	115-1-60	AC	75	3/4" NPT	3/8"	22	43	24	308
RH-100	115-1-60	AC	100	3/4" NPT	3/8"	22	43	24	308

Pressure Correction Factor for RH Models (F1)

psig	60	75	90	100	115	125	145	160	175	190	200
bar	4.1	5	6	7	7.9	8.5	10	11	12	13	14
Factor Pressure: F1	0.70	0.75	0.80	0.83	0.86	0.90	0.93	0.96	1.00	1.10	1.12

Ambient Temperature Correction Factor for RH Models (F3)

°F	75	85	95	100	105	115	120
°C	24	29	35	38	40	46	49
Factor Ambient: F3	1.10	1.07	1.03	1.00	0.96	0.82	0.55

Inlet Temperature Correction Factor for RH Models (F2)

°F	90	100	150	180	200	210	220
°C	32	38	65	82	93	98	104
Factor Inlet: F2	1.30	1.27	1.06	1.00	0.85	0.78	0.75

Dew Point Correction Factor for RH Models (F4)

°F	38	41	45	50	55	60
°C	3.3	5.0	7.2	10.0	12.8	15.5
Factor Dew Point: F4	0.65	0.73	0.80	1.00	1.10	1.22

Flow Correction Factors: Capacity correction to be used when operating conditions differ from those shown above. To obtain dryer capacity at new conditions, multiply nominal capacity x F1 x F2 x F3 (x F4).

Specifications: RC Cycling Models, 60 Hz

Model	Electrical	AC / WC	scfm	In/Out	Drain	Length in	Width in	Height in	Weight lbs
RC-150	115-1-60	AC	150	1" NPT	3/8"	24	48	7	352
RC-150	230-1-60	AC	150	1" NPT	3/8"	24	48	7	352
RC-175	230-1-60	AC	175	1" NPT	3/8"	24	48	7	363
RC-200	230-1-60	AC	200	1" NPT	3/8"	24	48	7	374
RC-250	230-3-60	AC	250	1 -1/2" NPT	3/4"	30	50	34	550
RC-250	460-3-60	AC	250	1 -1/2" NPT	3/4"	30	50	34	550
RC-250	575-3-60	AC	250	1 -1/2" NPT	3/4"	30	50	34	550
RC-325	230-3-60	AC	325	1 -1/2" NPT	3/4"	30	50	34	616
RC-325	460-3-60	AC	325	1 -1/2" NPT	3/4"	30	50	34	616
RC-325	575-3-60	AC	325	1 -1/2" NPT	3/4"	30	50	34	616
RC-400	230-3-60	AC / WC	400	2" NPT	3/4"	30	50	34	649
RC-400	460-3-60	AC / WC	400	2" NPT	3/4"	30	50	34	649
RC-400	575-3-60	AC / WC	400	2" NPT	3/4"	30	50	34	649
RC-500	230-3-60	AC / WC	500	2" NPT	3/4"	32	59	46	1221
RC-500	460-3-60	AC / WC	500	2" NPT	3/4"	32	59	46	1221
RC-500	575-3-60	AC / WC	500	2" NPT	3/4"	32	59	46	1221
RC-700	230-3-60	AC / WC	700	3" NPT	3/4"	32	59	46	1265
RC-700	460-3-60	AC / WC	700	3" NPT	3/4"	32	59	46	1265
RC-700	575-3-60	AC / WC	700	3" NPT	3/4"	32	59	46	1265
RC-850	230-3-60	AC / WC	850	3" NPT	3/4"	32	59	46	1287
RC-850	460-3-60	AC / WC	850	3" NPT	3/4"	32	59	46	1287
RC-850	575-3-60	AC / WC	850	3" NPT	3/4"	32	59	46	1287
RC-1000	230-3-60	AC / WC	1000	3" NPT	3/4"	32	74	46	1430
RC-1000	460-3-60	AC / WC	1000	3" NPT	3/4"	32	74	46	1430
RC-1000	575-3-60	AC / WC	1000	3" NPT	3/4"	32	74	46	1430
RC-1200	460-3-60	AC / WC	1200	3" NPT	3/4"	32	74	46	1496
RC-1200	575-3-60	AC / WC	1200	3" NPT	3/4"	32	74	46	1496
RC-1600	460-3-60	AC / WC	1600	4" FLG	1-1/4"	46	80	61	2112
RC-1600	575-3-60	AC / WC	1600	4" FLG	1-1/4"	46	80	61	2112
RC-2000	460-3-60	AC / WC	2000	4" FLG	1-1/4"	46	80	61	2112
RC-2000	575-3-60	AC / WC	2000	4" FLG	1-1/4"	46	80	61	2112
RC-2400	460-3-60	AC / WC	2400	4" FLG	1-1/4"	46	80	83	2453
RC-2400	575-3-60	AC / WC	2400	4" FLG	1-1/4"	46	80	83	2453
RC-3000	460-3-60	AC / WC	3000	4" FLG	1-1/4"	46	80	83	2816
RC-3000	575-3-60	AC / WC	3000	4" FLG	1-1/4"	46	80	83	2816

Correction Factors for: RC Models

Inlet Pressure (F1)

psig	50	60	75	100	115	125	150	175	200
bar	3.5	4.1	5	7	7.9	8.5	10	12	14
Factor Pressure: F1	0.75	0.77	0.85	1.00	1.06	1.10	1.16	1.25	1.30

Ambient Temperature (F3)

°F	60	80	90	100	105	110	115	120
°C	16	26	32	38	40	43	46	49
Factor Ambient: F3	1.12	1.08	1.06	1.00	0.96	0.90	0.80	0.65

Inlet Temperature (F2)

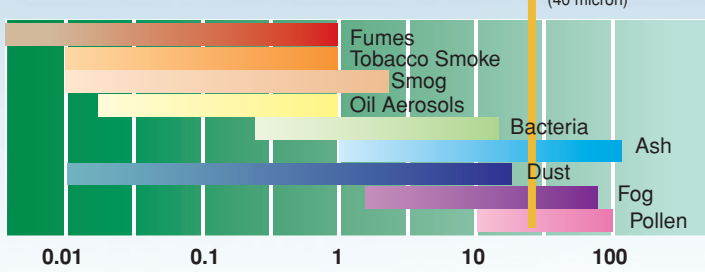
°F	85	90	95	100	110	120	130	140	150
°C	29	32	35	38	43	49	54	60	65
Factor Inlet: F2	1.20	1.14	1.08	1.00	0.75	0.60	0.50	0.45	0.35

Flow Correction Factors

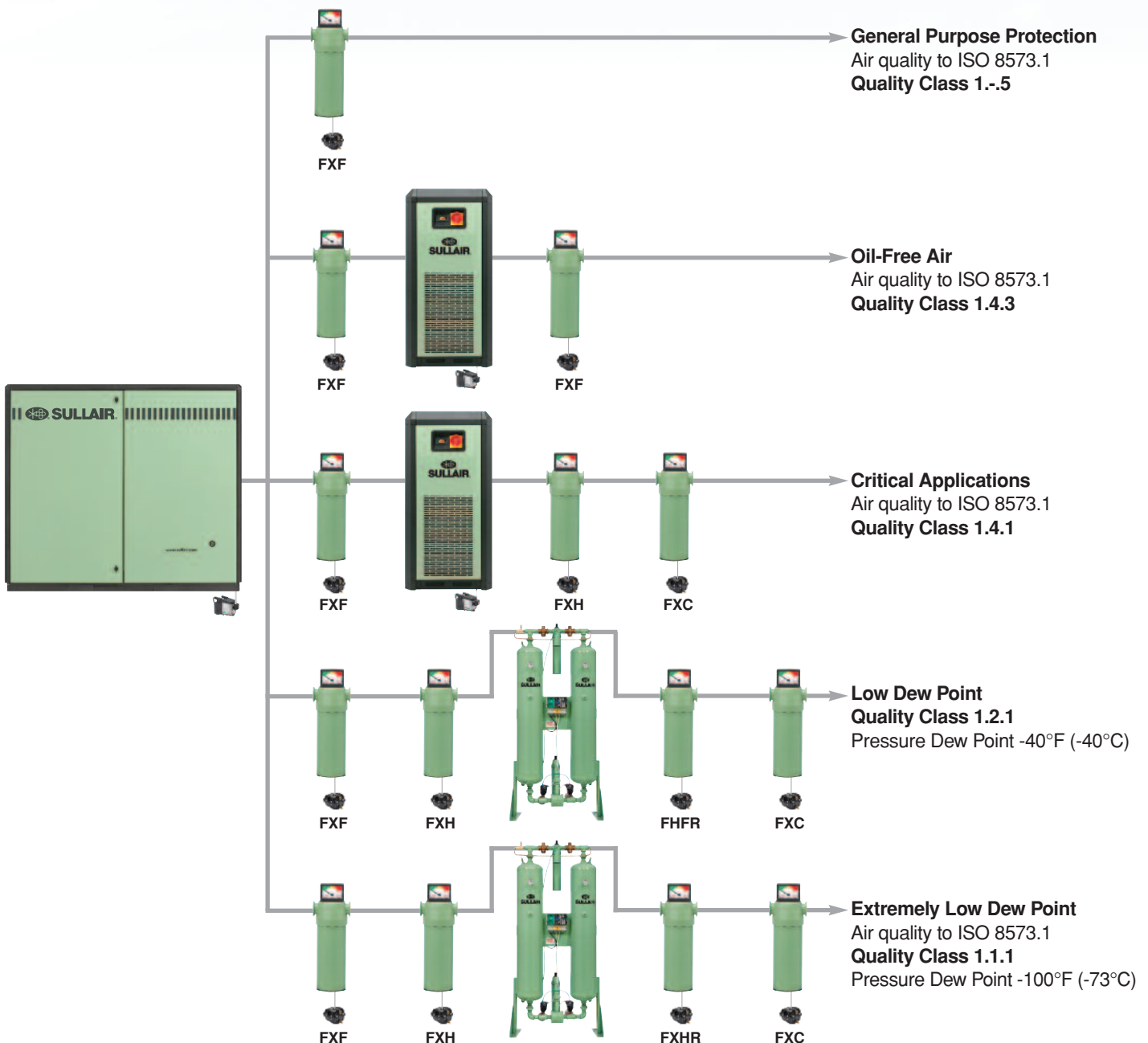
Capacity correction to be used when operating conditions differ from those shown above. To obtain dryer capacity at new conditions, multiply nominal capacity x F1 x F2 x F3 (x F4).

Air Quality Standards ISO 8573.1 Classes

Particle (micron) size of some common substances. Eye Sight Threshold (40 micron)



Class	Solid Particle Maximum number of particles per m ³			Pressure Dew Point °F	Oil (incl. vapor) mg/m ³
	0.1-0.5 micron	0.5-1 micron	1.0-5 micron		
1	100	1	0	-94	0.01
2	100,000	1,000	10	-40	0.1
3	-	10,000	500	-4	1.0
4	-	-	1,000	37	5.0
5	-	-	20,000	45	-
6	-	-	-	50	-



Sullair's Compressed Air Products

www.sullair.com



Fundamental to Sullair's leadership is a dedication to reduce not only the amount of natural resources consumed to create energy, but to minimize environmental impact, in both the manufacture and use of all our products. We are constantly exploring new ideas and seeking new technologies to meet the ever-increasing need for high quality, energy-efficient compressed air products and environmental sustainability.



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