

# PIONEER

- NONCYCLING AIR & GAS REFRIGERANT DRYERS
- COMPLETE DRYING & FILTRATION SYSTEMS FOR INLET UP TO 350 °F
- NONSTANDARD EQUIPMENT IS OUR SPECIALTY



TEMPERATURE MONITOR

35°

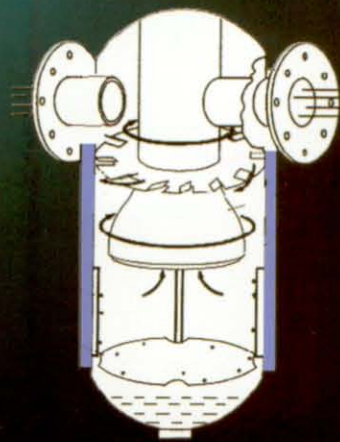
Use the selector switch below to display temperature in degrees Fahrenheit.

- AMBIENT
- INLET
- OUTLET
- SUCTION
- REFRIGERANT DISCHARGE
- EVAPORATOR

TEN-YEAR LIMITED WARRANTY  
**10** years  
OUR SIGNATURE

**Enhanced Performance with Chilled Separator**

**Now standard from R75(ADR400 & up)**



**Distributed by**

**Pioneer Air Systems, Inc.**

1-800-264-1AIR(1247) . [www.pioneerair.com](http://www.pioneerair.com) . [sales@pioneerair.com](mailto:sales@pioneerair.com)

210 Flatfork Road Wartburg , Tennessee 37887, USA . Tel/Fax (423) 346-6693/3865

## Untreated compressed air is destructive

A compressor takes in atmospheric air load with contaminants and moisture. At 75°F(23.9°C) and 75% relative humidity, a 500 SCFM (850 NM<sup>3</sup>HR) air compressor takes in about 90 gallons (340.6 liters) of water in vapor form during a 24-hour period. As air flows into distribution lines, it cools, and water vapors condense. The condensation causes rust, scale, and ultimately leaks in pipes, valves, instruments, and air-operated tools and equipment.

Additionally, air compressed to 100 PSIG (6.9 BAR G) contains 7.8 times the number of contaminants in atmospheric air. These contaminants - including particulates, hydrocarbons, and compressor lubricants as well as water vapor- can be destructive to your downstream equipment causing increased maintenance, down time and shortened equipment life.

## Protect your equipment & save money

A typical Pioneer dryer pays for itself in less than a year by reducing or eliminating maintenance costs and down time.

In Pioneer refrigerated dryer models R30A/W(ADR15 A/W) and larger, the warm, moist air (or gas) enters the air-air heat exchanger where it is pre-cooled by the outgoing cool air. Pre-cooling allows the use of a smaller refrigeration system and lowers the cost of drying. Further cooling of the air to a 35°F(2°C) range is accomplished by the refrigeration. Cooling the air causes the moisture vapor to condense. The condensation is separated by highly efficient separation techniques and drained by automatic drains.

**Chilled Separator standard in Model R75/ADR40 and larger further enhances the dryer performance.**

The dry cool air then flows through the air - air heat exchanger where it is reheated by the incoming warm air. Reheating increased actual air volume and prevents sweating in downstream air lines.

**With the addition of a Mr. Goodaire filtration package, additional moisture, particulates, hydrocarbons and oil aerosols are removed.**



R250/ADR125 thru R600/ADR300

R800/ADR400 & up

R75/ADR40 thru R200/ADR100

R30/ADR15 thru R60/ADR30

R10

## R Series...

For compressors with after coolers, designed for inlet temperature up to 250°F/121°C

- Rust-free copper and brass heat exchanger provide maximum heat transfer
- Patented Triple-Tube Heat Exchangers provide lower, more consistent dew points with lower pressure drops (R75A/W and up)
- Standard Micromonitor R75A/W and up (see page 8)
- 10-year limited warranty
- Automatic drain system with cleanable y-strainer and isolation valve

## R & ADR Series benefits

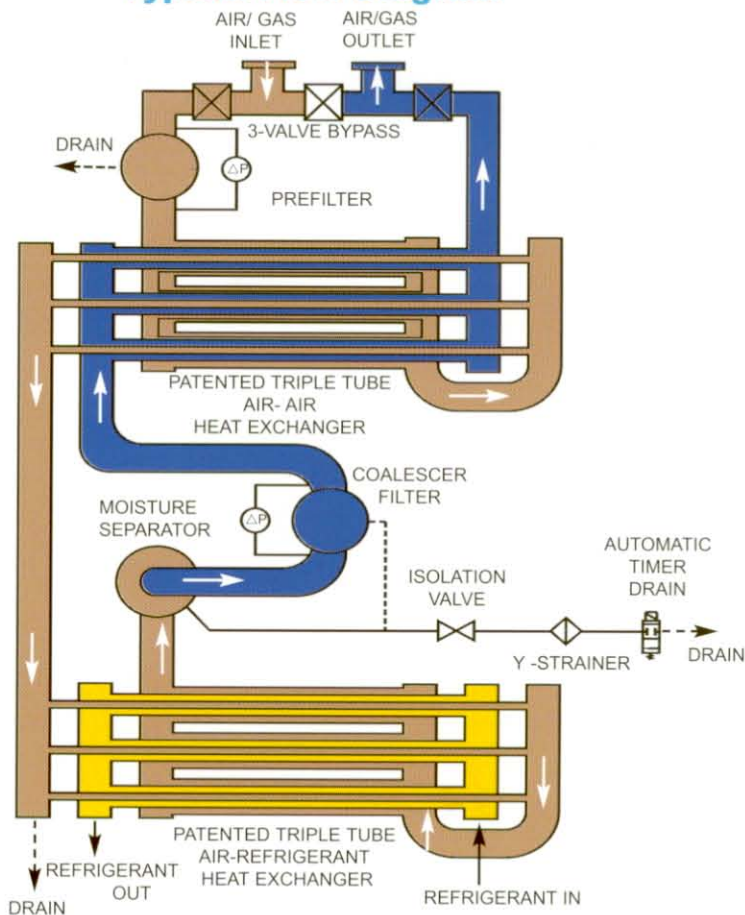
1. 10-year limited compressor warranty
2. 10-year limited heat exchanger warranty
3. MicroMonitor with 10-year limited warranty
4. Removable insulation
5. Electric automatic drain
6. Lower dew points
7. Efficient centrifugal separator; chilled separator standard in R75/ADR40 & up
8. Easy access cabinets- standard up to R600A/W, ADR300A/W ; optional in larger sizes
9. NEMA1 control panel standard; NEMA 4, 7, or 12 and custom control panels available
10. Lower pressure drops - in a 100 PSIG/6.89 BAR G compressed air system, 2 PSIG/0.14 BAR G less pressure drop saves 1% in energy costs. Low pressure drops are inherent in Pioneer heat exchangers
11. Compact design - Triple-tube heat exchanger design reduces floor space requirements and shipping costs. The air - air heat exchanger also reduces refrigeration horsepower and dryer size
12. Environmentally safer refrigerant R-134a and R-22 are standard
13. Dew point adjustment

## ADR Series...

For compressors without after cooler designed for inlet temperature up to 250°F/121°C

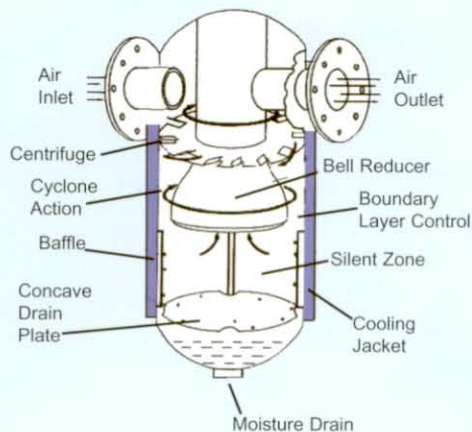
- 10 - 20% increase in actual volume by reheating the outgoing air with the incoming warm air
- Lower pressure drop - 2 PSIG/0.14 BAR G compared to 8 PSIG/ 0.55 Bar G in a typical after cooler, separator, and dryer installation
- Air cooled models eliminate water usage
- Higher temperatures and lower relative humidity reduce likelihood of freeze-up in downstream air lines
- Simplified installation

## Typical Flow Diagram



## Chilled Separator = Enhanced Performance

The separator housing is chilled with the refrigerant. It prevents any rise in air temperature and further cools the air for better dew point - **NOW STANDARD IN SIZES R75/ADR40 & UP.**



Since our founding in 1980, nearly half of our business has been building custom equipment to meet the strictest specifications. Our engineering staff and well-equipped factory are prepared to meet and exceeded your expectations.

From vacuum to 10,000 PSIG ;10 to 15,000 SCFM; air or corrosive and flammable gases. If your application has to do with drying and cleaning compressed air or gas chances are Pioneer is your best choice.

Shown on this pages are just a few of the many application for custom-build equipment, PLCs, remote monitoring , and other customize control are available to meet your needs.

**Just Call**

**1-800-264-1AIR**  
**for up to 10-hours of Free Consultation and Engineering**



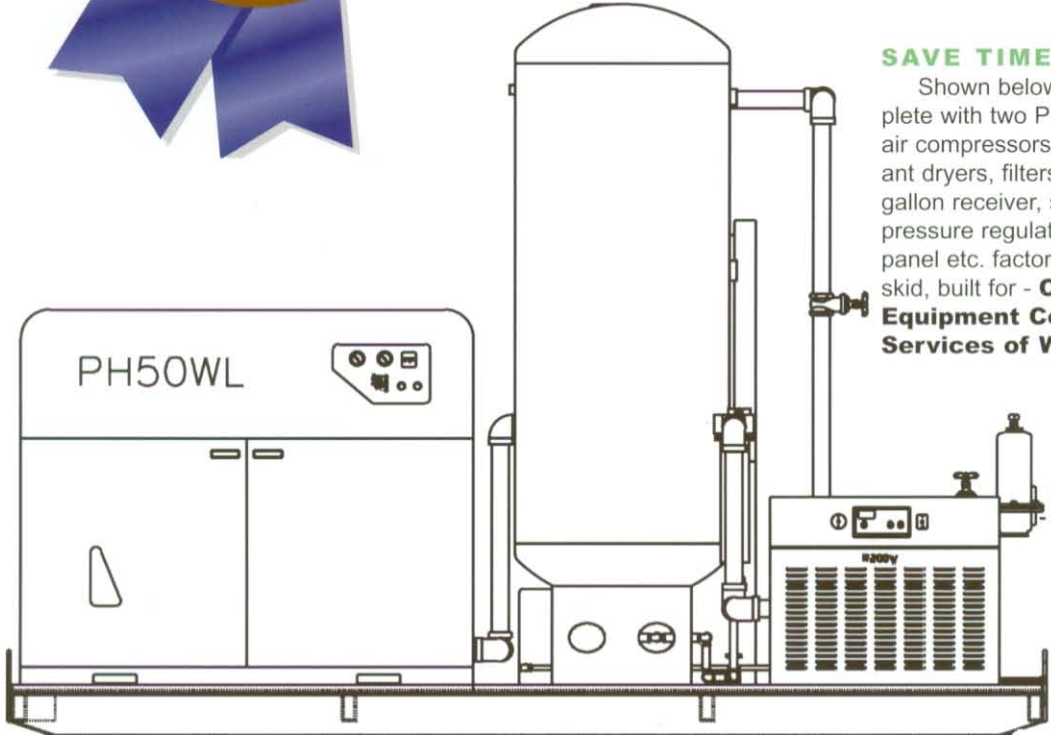
**Above :** Explosion proof digester/landfill gas dryer with stainless steel heat exchanger, separator and piping



**Right :** Oil & Oil-Free Compressors

**SAVE TIME & MONEY -**

Shown below a duplex system complete with two Pioneer-Hanshin 50.00 HP air compressors, two PIONEER refrigerant dryers, filters, oil-water separator, 240 gallon receiver, safety disconnect switch, pressure regulator, instrument & gauge panel etc. factory assembled on a single skid, built for - **Centri Dyne Equipment Company (Gemark Services of West Virginia).**



## Standard Features and Option

S= Standard    O = Available Option

R10-15

R20-60  
ADR15-30

R75-100  
ADR40-50

R125-600  
ADR65-300

R800 & up  
ADR400 & up

### Features

Float drain	S	O	O	O	O
Drain with adjustable on/off time	O	S	S	S	S
Drain Manual override and memory	O	S	O	O	O
Power cord and plug	S	O	O	O	O
Compressor overload	S	S	S	S	S
Start relay	S	S	S	S	S
Easy-access cabinet	S	S	S	S	O
Fan cycling	O	O	S	S	S
Crank case heater	O	O	O	S <sup>1</sup>	S
Ten -year prorated heat exchanger warranty	S	S	S	S	S
Three -valve bypass	O	O	O	O	O
Low ambient temperature package	O	O	O	O	O
Stainless steel heat exchanger	O	O	O	O	O
High Pressure, up to 10,000 PSIG	O	O	O	O	O

### Refrigeration

R-134a refrigerant	S <sup>2</sup>	S <sup>2</sup>	S <sup>2</sup>	O	O
Refrigeration system cycling	O	O	O	S	S
Refrigerant low pressure safety	O	O	S <sup>1</sup>	S <sup>1</sup>	S
Refrigerant high pressure safety	O	O	S <sup>1</sup>	S <sup>1</sup>	S
Ten-year prorated compressor warranty	S	S	S	S	S

### Instrumentation

MicroMonitor w/ten-year warranty	O	O	S	S	S
Power switch with indicator	O	S	S	S	S
High temperature light	S <sup>2</sup>	S <sup>2</sup>	O	O	O
Refrigerant analyzer gauge	O	S	S	S	S
Dew point meter	O	O	O	O	O
NEMA 4,12, and 7 <sup>3</sup>	O	O	O	O	O
Additional gauges/instrumentation	O	O	O	O	O
PLC/Remote monitoring	O	O	O	O	O

### Filtration

Mr. Goodaire	O	O	O	O	O
Mr. Goodaire Economy	O	O	O	O	O
Cold Coalescer w/timer drain	O	O	O	O	O
Carbon Adsorber Alert	O	O	O	O	O
Oil-Sep Coalescer Plus	O	O	O	O	O

Table 1

Notes

1. Three phase units only    2. Single phase only    3. Micromonitor not included

## Mr. Goodaire

### Includes:

- \* Prefilter
- \* Cold coalescer
- \* Multi-point timer-operated drain system complete with a cleanable "y" strainers and isolation valves
- \* Three valve bypass for the complete system
- \* Filters mounted for easy element replacement
- \* Lower installation cost. Simply connect inlet, outlet, drain and utilities
- \* No cost overruns. Dryers, filters and drains are all included-prepiped and prewired

**Mr. Goodaire Economy - Includes all features of Mr Goodaire except three valve by pass**

## SIMPLY THE BEST!!!



### Example :

- Conditions:** Maximum air flow 425 SCFM/722 NM<sup>3</sup>/HR; inlet air pressure 90 PSIG/6.2BAR G; inlet air temperature 120°F/48.9°C; ambient temperature 100°F/ 37.8°C
- Required dryer capacity =**  
Maximum flow x TC ( Table 2) x PC ( Table 3) x AC (Table 4)

In this example , the required minimum dryer capacity is :

$$425 \times 1.3 \times 1.07 \times 1.0 = 591.2 \text{ SCFM}$$

From **Tables 6**, Model R600A is recommended.

### Correction Factors

#### TC- Inlet temperature correction factor R Series

Inlet Temp °F/°C		TC
80/26.7		.077
90/32.2		0.87
100/37.8		1.00
110/43/3		1.15
120/48.9		1.30
130/54.4		1.40

Table 2

#### PC-Inlet Pressure correction factor R/ADR Series

Inlet Pressure PSIG/BAR G		PC
40/2.76		1.60
50/3.45		1.50
60/4.14		1.40
70/4.83		1.30
80/5.52		1.15
90/6.21		1.07
100/6.90		1.00
110/7.59		0.95
120/8.28		0.90
130/8.97		0.85
140/9.66		0.80
150/10.35		0.75

Table 3

#### AC-Ambient temperature correction factor R/ADR Series

AMBIENT TEMP °F/°C		AC
100/37.8		1.0
110/43.3		1.1

Table 4

### Required Information

- Air Flow**
- Inlet Pressure**
- Inlet Temperature**
- Ambient Temperature**
- Required Dew Point**
- Air Cooled ?**
- Water Cooled ?**
- Available Voltage**
- Air Quality**

### Longest warranty in the industry



Ten-Year prorated heat exchanger, compressor, and Micro Monitor & Controller warranty is standard.

For one year from the date of purchase, Pioneer Air Systems, Inc. will replace or repair, or provide free of charge any part or parts found to be defective in material or workmanship.

The customer shall contact factory to obtain authorization before returning equipment or to obtain field service. One-year mechanical parts only warranty applies to equipment outside the mainland, U.S.A., Canada and Mexico. Ten-year warranty does not apply to nonstandard equipment.

Manufacturers is not responsible for incidental, consequential, shipping and handling charges.

The system manufacturer shall have product liability insurance coverage.

### Heat rejection - R & ADR Series

**R Series :** Approximately 50 BTU/MIN (12.6 KCal/Min) per 100 SCFM ( 170 NM<sup>3</sup>/HR) to ambient/water  
**ADR Series :** Approximately 100 BTU/ MIN (25.2 KCal/Min) per 100 SCFM ( 170 NM<sup>3</sup>/HR) to ambient/water

#### Required Water Flow per 100 SCFM(170NM<sup>3</sup>/HR @ 20 PSIG(minimum))

Water Temp °F/°C	R Series	R Series
50/10.0	0.40 GPM ( 1.5 L/M)	0.80 GPM ( 3 L/M)
60/15.6	0.50 GPM ( 1.9 L/M)	1.00 GPM ( 3.8 L/M)
70/21.1	0.65 GPM ( 2.5 L/M)	1.30 GPM ( 5 L/M)
80/26.7	1.00 GPM ( 3.8 L/M)	2.00 GPM(7.6 L/M)
90/32.2	1.50 GPM ( 5.7 L/M)	3.00 GPM ( 11.4 L/M)

Table 5

# R and ADR Dimensions

Dryer capabilities based on standard conditions. For sizing assistance, see page 6.

Model <sup>a</sup>	SCFM/NM <sup>3</sup> HR 35°F/2°C PDP	MODEL	SCFM/NM <sup>3</sup> HR 35°F/2°C PDP	NOM H.P	DIMENSION (IN/MM)			AIR IN/OUT	APPROX SHIP WT. <sup>b,c</sup> LB/KG
					L	W	H		
R10A/W	10/17			1/8	16/407	14/356	11/280	3/8 OD	47/21
R15A/W	15/25			1/5	20/508	15/381	16/407	1/2 NPT	55/25
R20A/W	20/34			1/5	20/508	15/381	16/407	1/2 NPT	71/32
R30A/W	30/51	ADR15A/W	15/25	1/5	20/508	15/381	16/407	1/2 NPT	80/36
R40A/W	40/68	ADR20A/W	20/34	1/4	23/584	18/457	17/432	3/4 NPT	170/77
R50A/W	50/85	ADR25A/W	25/42	1/3	23/584	18/457	17/432	3/4 NPT	180/82
R60A/W	60/102	ADR30A/W	30/51	1/3	23/584	18/457	17/432	3/4 NPT	190/86
R75A/W	75/127	ADR40A/W	40/68	1/2	32/813	26/661	28/712	1 1/2 NPT	290/132
R100A/W	100/170	ADR50A/W	50/85	1/2	32/813	26/661	28/712	1 1/2 NPT	300/136
R125A/W	125/212	ADR65A/W	65/110	3/4	32/813	26/661	28/712	1 1/2 NPT	320/145
R150A/W	150/255	ADR75A/W	75/127	3/4	32/813	26/661	28/712	1 1/2 NPT	340/154
R200A/W	200/340	ADR100A/W	100/255	1	32/813	26/661	28/712	1 1/2 NPT	350/159
R250A/W	250/425	ADR125A/W	125/212	1 1/2	45/1143	34/864	36/914	2 NPT	440/200
R325A/W	325/550	ADR150A/W	150/255	1 1/2	45/1143	34/864	36/914	2 NPT	520/236
R400A/W	400/680	ADR200A/W	200/340	2	45/1143	34/864	36/914	2 1/2 NPT	620/281
R500A/W	500/850	ADR250A/W	250/425	3	45/1143	34/864	36/914	2 1/2 NPT	630/286
R600A/W	600/1020	ADR300A/W	300/510	3	45/1143	40/1016	36/914	3 NPT	700/318
R800A/W	800/1360	ADR400A/W	400/680	4	60/1524	40/1016	36/914	3 NPT	1130/513
R1000A/W	1000/1700	ADR500A/W	500/850	5 1/2	60/1524	40/1016	52/1320		1280/581
R1200A/W	1200/2040	ADR600A/W	600/1020	5 1/2	60/1524	41/1041	52/1320	4 FLG	1350/614
R1400A/W	1400/2380	ADR700A/W	700/1190	7 1/2	60/1524	45/1143	52/1320	4 FLG	1450/658
R1600A/W	1600/2720	ADR800A/W	800/1360	7 1/2	60/1524	49/1245	69/1753	4 FLG	1700/771
R1800A/W	1800/3060	ADR900A/W	900/1530	10	60/1524	52/1321	69/1753	4 FLG	1800/816
R2000A/W	2000/3400	ADR1000A/W	1000/1700	10	60/1524	66/1677	69/1753	4 FLG	2000/907
R2250A/W	2250/3825	ADR1125A/W	1125/1912	12	82/2083	66/1677	69/1753	6 FLG	2100/958
R2500A/W	2500/4250	ADR1250A/W	1250/2125	12	82/2083	66/1677	87/2210	6 FLG	3000/1361
R3000A/W	3000/5100	ADR1500A/W	1500/2550	7 1/2 (2)	94/2388	66/1677	87/2210	6 FLG	3500/1588
R3500A/W	3500/5950	ADR1750A/W	1750/2975	10 (2)	104/2642	66/1677	87/2210	6 FLG	4000/1814
R4000A/W	4000/6800	ADR2000A/W	2000/3400	10 (2)	114/2896	66/1677	87/2210	6 FLG	4500/2041
R4500A/W	4500/7650	ADR2250A/W	2250/3825	10 (2)	122/3099	66/1677	92/2337	6 FLG	5000/2268
R5000A/W	5000/8500	ADR2500A/W	2500/4250	12 (2)	132/3353	66/1677	92/2337	8 FLG	5500/2495
R6000A/W	6000/10200	ADR3000A/W	3000/5100	30 <sup>d</sup>	138/3505	72/1829	92/2337	8 FLG	6200/2818
R7000A/W	7000/11900	ADR3500A/W	3500/5950	35 <sup>d</sup>	146/3709	72/1829	92/2337	8 FLG	8000/3629
R8000A/W	8000/13600	ADR4000A/W	4000/6800	40 <sup>d</sup>	152/3861	72/1829	92/2337	10 FLG	9000/4082
R9000A/W	9000/15300	ADR4500A/W	4500/7650	50 <sup>d</sup>	152/3861	72/1829	92/2337	10 FLG	10000/4536
R10000A/W	10000/17000	ADR5000A/W	5000/8500	50 <sup>d</sup>	152/3861	72/1829	92/2337	10 FLG	11000/4990

Table 6

Notes:

- For larger sizes or higher pressures up to 10,000 PSIG/690 BAR G consult factory
- 'A'=air-cooled 'W'=water-cooled
- Notify factory for 50°/10°C PDP
- For gas applications, consult factory
- For Mr. Goodaire, add 25% to approx. ship weight
- For air-cooled R6000A and up, add 10% to approx. ship weight
- For air cooled ADR3000A and up, add 10% to approx. ship weight
- Semi Hermetic compressor
- Sizes R6000A & up, dimensions are for water-cooled. Consult factory for air-cooled
- Sizes ADR3000A & up, dimensions are for water-cooled. Consult factory for air-cooled

## R Standard Conditions

- 100°F/37.8°C inlet
- 100 PSIG/ 6.89 BAR G inlet (up to 250°F/121°C) oversize by 10%
- 100 PSIG/6.89 BAR G inlet 100°F/37.8°C ambient
- 35°F/2°C pressure dew point
- 2.0 PSIG/0.14 BAR G typical pressure drop
- For 50°F PDP multiply the capacity by 1.2

For conditions other than standard, see correction factors, page 6

## ADR Standard Conditions

- 200°F/93° inlet
- For each 10°F/6°C rise in inlet temperature (up to 250°F/121°C) oversize by 10%
- For higher inlet temperature, consult factory
- 100PSIG/6.89 BAR G inlet
- 100°F/37.8°C ambient
- 35°F/2°C pressure dew point
- 2.0 PSIG/0.14 BAR G typical pressure drop
- For 50°F PDP multiply the capacity by 1.2

For conditions other than standard, see correction factors, page 6

# PIONEER

**Innovative  
Quality  
Systems**

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*"Judged as a major contribution toward more efficient and effective operation of plants in the Chemical Processing Industries"*

- Chemical Processing Magazine

## Specifications (R75/ADR40 & up)

The dryer Pioneer model \_\_\_\_\_ shall be complete in all respect, including integral components, inter connection piping, wiring and controls. The dryer shall require connection to utilities and drain only. For water cooled units, the owner will provide connections to water inlet and outlet. The system shall have a ten- year limited warranty.

Required :

- Air capacity \_\_\_\_\_
- Inlet air temperature \_\_\_\_\_
- Inlet air pressure \_\_\_\_\_
- Max. ambient air temp. \_\_\_\_\_
- Min. ambient air temp. \_\_\_\_\_
- Max. cooling water temp \_\_\_\_\_  
(water cooled only)
- Voltage \_\_\_\_\_

### Required Features :

**1. Heat exchangers and separators** Air-air and air-refrigerant heat exchangers shall be of copper or bass tube in tube or Triple-tube (patented) design. The system shall use a chilled centrifugal separator for maximum efficiency. The separator shall have a cooling jacket of refrigerant to keep it chilled for enhanced performance. The heat exchanger and separator shall have a ten-year prorated warranty

**2. Refrigeration :** includes environmentally safer R134a or R22 refrigerant, hermetic reciprocating compressor with thermal overload protection, 0-100% capacity control, expansion valve, refrigerant dryer air or water-cooled (select one) condenser. A water-cooled system shall include a water regulated valve.

**3. Instrumentation :** MicroMonitor with the following indicators: evaporator temperature or dew point, inlet, outlet, and ambient air temperatures, refrigerant suction and discharge temperatures, refrigerant analyzer gauge, drain 'on' and 'off' timer adjustment with manual override and memory, compressor on ,drain open, and power switches.

**4. Drain system** shall include isolation valve, cleanable 'y' stainer, and timer-operated drain(s) with adjustable 'on' and 'off' timer controls.

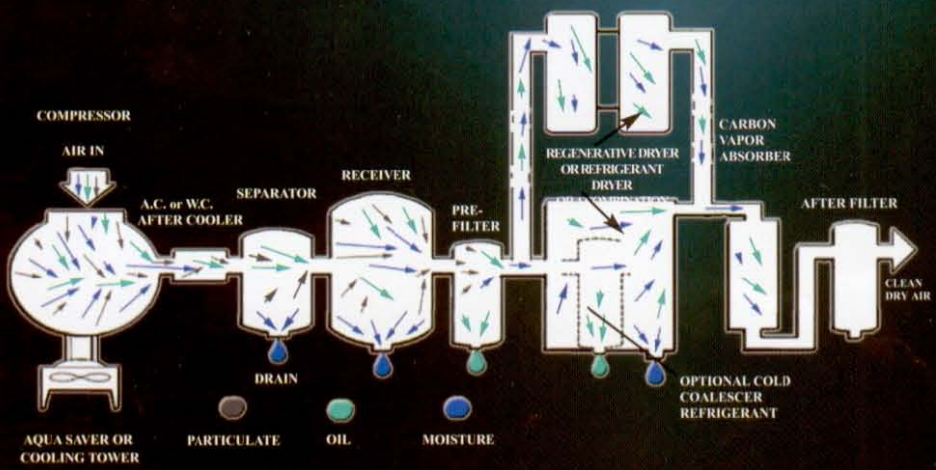
### 5. Easy-access cabinet

Required ? \_\_\_\_\_

Not Required ? \_\_\_\_\_

**6. Mr. Goodaire System** includes prefilter, cold coalescer, multi-point timer - operated drain system complete with cleanable "y" strainers and isolation valves and three valve bypass for the complete system.

**For a Complete Energy efficient Compressed Air Solution..  
call : 1800-264-1AIR(1247) or E-mail : [sales@pioneerair.com](mailto:sales@pioneerair.com)**



## FREE INFORMATION-

ENERGY SAVING  
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