



KRD SERIES

REFRIGERATED COMPRESSED
AIR DRYERS



- KRD models range in capacity from 230 to 4250 cfm
- Aluminum and Stainless Steel Heat Exchangers

THE KRD DRYER OFFERS:

- Reliable performance
- Economical operation
- Constant low dewpoint
- 100% condensate removal
- Minimum pressure drop
- Ecological refrigerant gas
- Easy service
- ISO 9001 Certification gives you the confidence that the KRD Series dryers will meet your needs and expectations



IDEALLY SUITED FOR CONVENTIONAL AND SENSITIVE APPLICATIONS

The KRD Refrigerant dryers are ideally suited for use in typical applications including valve and cylinder control, air powered tools, automotive shops, and other general and industrial uses. Additionally, the SSD dryers are also suitable for use in sensitive applications including in the food, electronics, and pharmaceutical industries.



TECHNICAL DESIGN

Kaishan Technologies commitment to providing our customers with product that performs reliably, is economical to operate with superior service life is evident in the design and construction of our KRD Series refrigeration dryers.

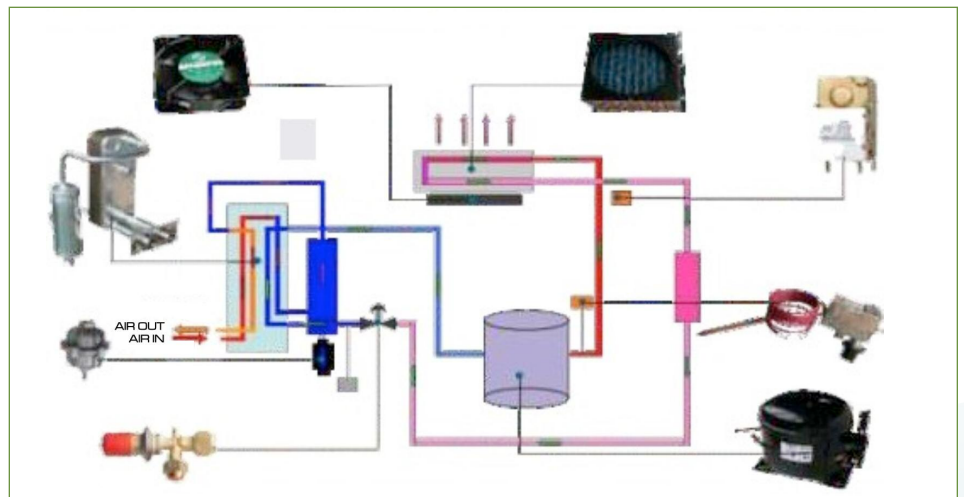
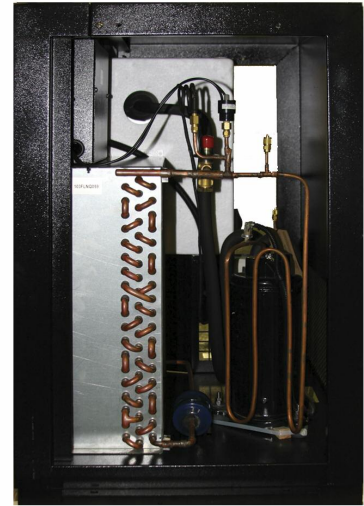
Uniquely designed plate heat exchangers insure optimum heat transfer efficiency with exceptional service life. Kaishan heat exchangers are constructed of stainless steel for all SSD models and aluminum for all KRD models 230 cfm and up. Condenser surfaces are anti-corrosion coated to insure superior service life and performance as well as ease in cleaning. Pre-cooler, evaporator and high efficiency separator are all anti-corrosion coated yielding extended service life.

High efficiency separator provides optimum separation performance with varying loads, maintaining excellent dew point performance.

Key refrigeration components are supplied by internationally recognized manufacturers insuring reliable operation, air quality output and ease in troubleshooting and replacement.

Fully hermetic refrigeration compressors use R134A or R407C refrigerants providing reliable and environmentally friendly operation.

Optional coalescing filters extend the life of the KRD dryer in applications where lubricated compressors are employed by protecting critical heat transfer components.



SPECIFICATIONS FOR KDR SERIES

| Model | Conn. (inches) | Capacity (1) | | Dimensions (inches) | | | Weight lbs | Recommended | |
|-----------|-------------------|--------------|-----|---------------------|-------|--------|---------------|-------------|-------------|
| | | m3/min | cfm | Length | Width | Height | | Prefilter | Afterfilter |
| KRD20SSD | 1/2 NPT | 0.6 | 21 | 20 | 10 | 20 | 55 | KLF35KO | KLF35KA |
| KRD30SSD | 1/2 NPT | 0.9 | 32 | 20 | 10 | 20 | 55 | KLF35KO | KLF35KA |
| KRD40SSD | 1/2 NPT | 1.2 | 42 | 24 | 12 | 20 | 66 | KLF60KO | KLF60KA |
| KRD50SSD | 1/2 NPT | 1.5 | 53 | 24 | 12 | 20 | 66 | KLF60KO | KLF60KA |
| KRD60SSD | 1/2 NPT | 1.8 | 64 | 24 | 12 | 20 | 66 | KLF60KO | KLF60KA |
| KRD85SSD | 3/4 NPT | 2.4 | 85 | 30 | 14 | 22 | 110 | KLF125KO | KLF125KA |
| KRD100SSD | 3/4 NPT | 3.0 | 106 | 30 | 14 | 22 | 110 | KLF125KO | KLF125KA |
| KRD125SSD | 3/4 NPT | 3.6 | 127 | 30 | 14 | 22 | 121 | KLF125KO | KLF125KA |
| KRD140SSD | 3/4 NPT | 4.0 | 142 | 30 | 14 | 22 | 121 | KLF170KO | KLF170KA |
| KRD200SSD | 1.25 NPT | 6.0 | 212 | 30 | 23 | 35 | 172 | KLF300KO | KLF300KA |
| KRD300SSD | 1.5 NPT | 8.5 | 300 | 28 | 20 | 35 | 200 | KLF300KO | KLF300KA |
| KRD400SSD | 1.5 NPT | 11.3 | 400 | 28 | 20 | 35 | 250 | KLF470KO | KLF470KA |

(1) Capacity @ 100 psig / 100°F (38°C) • Operating Range: MAWP 232 psig • Refrigerant type: R134A

Max Inlet Temp: 140°F (60°C)
Ambient Temp: 41–104°F (5–40°C)

Voltage: 115/1 PH/60HZ 230V/1PH/60HZ
Other voltages available, consult factory.

| Model | Conn. (inches) | Capacity (1) | | Dimensions (inches) | | | Weight lbs | Recommended | |
|---------|-------------------|--------------|------|---------------------|-------|--------|---------------|-------------|-------------|
| | | m3/min | cfm | Length | Width | Height | | Prefilter | Afterfilter |
| KRD230 | 1.5 NPT | 6.5 | 230 | 30 | 23 | 36 | 172 | KLF300KO | KLF300KA |
| KRD300 | 1.5 NPT | 8.8 | 312 | 30 | 23 | 36 | 176 | KLF300KO | KLF300KA |
| KRD400 | 1.5 NPT | 11.0 | 389 | 30 | 23 | 36 | 187 | KLF470KO | KLF470KA |
| KRD500 | 2 NPT | 13.0 | 460 | 39 | 28 | 41 | 286 | KLF470KO | KLF470KA |
| KRD600 | 2 NPT | 17.0 | 602 | 39 | 28 | 41 | 308 | KLF700KO | KLF700KA |
| KRD800 | 2 NPT | 22.0 | 779 | 39 | 28 | 41 | 308 | KLF700KO | KLF700KA |
| KRD1000 | 2.5 NPT | 27.0 | 956 | 39 | 32 | 63 | 550 | KLF900KO | KLF900KA |
| KRD1200 | 2.5 NPT | 33.0 | 1168 | 39 | 32 | 63 | 572 | KLF1400KO | KLF1400KA |
| KRD1300 | 2.5 NPT | 37.0 | 1310 | 39 | 32 | 63 | 594 | KLF1400KO | KLF1400KA |
| KRD1600 | 4 FLG | 45.0 | 1593 | 45 | 44 | 69 | 1100 | KLF1750KO | KLF1750KA |
| KRD2000 | 4 FLG | 55.0 | 1947 | 49 | 44 | 69 | 1122 | KLF2100KO | KLF2100KA |
| KRD2300 | 4 FLG | 65.0 | 2301 | 49 | 44 | 69 | 1210 | KLF2300KO | KLF2300KA |
| KRD2600 | 6 FLG | 73.0 | 2584 | 49 | 44 | 69 | 1276 | KLF2500KO | KLF2500KA |
| KRD2900 | 6 FLG | 80.0 | 2832 | 79 | 60 | 70 | 1760 | KLF2800KO | KLF2800KA |
| KRD3200 | 6 FLG | 90.0 | 3186 | 79 | 60 | 70 | 1782 | KLF4200KO | KLF4200KA |
| KRD3600 | 6 FLG | 100.0 | 3540 | 79 | 60 | 70 | 1870 | KLF4200KO | KLF4200KA |
| KRD4500 | 6 FLG | 120.0 | 4248 | 79 | 60 | 70 | 1914 | KLF4200KO | KLF4200KA |

(1) Capacity @ 100 psig / 100°F (38°C) • Operating Range: MAWP 218 psig • Refrigerant type: R407C

Available Options: Water Cooled, High Pressure and High Temperature

Max Inlet Temp : 140°F (60°C)

Voltages: 230V/1PH/60HZ 460V/3PH/60HZ

Ambient Temp : 41–104°F (5–40°C)

Other voltages available, consult factory.

CORRECTION FACTORS

TABLE 1: TEMPERATURE AND PRESSURE

| Inlet Pressure (PSIG) | Inlet Temperature (F°/C°) | | | | |
|--------------------------|---------------------------|-------|--------|--------|--------|
| | 80/27 | 90/32 | 100/38 | 110/43 | 130/54 |
| 50 | 1.35 | 1.50 | 0.84 | 0.69 | 0.44 |
| 80 | 1.50 | 1.17 | 0.95 | 0.79 | 0.52 |
| 100 | 1.55 | 1.23 | 1.00 | 0.82 | 0.56 |
| 125 | 1.63 | 1.31 | 1.07 | 0.91 | 0.61 |
| 150 | 1.70 | 1.37 | 1.13 | 0.95 | 0.64 |

Table 1 Example: 110 scfm @ 100 psi @ 110°F
110/0.82 = 134 scfm corrected flow Choose Model KRD140SSD

TABLE 2: AMBIENT TEMPERATURE

| Ambient Temperature F°/C° | 80/27 | 90/32 | 100/38 | 110/43 |
|---------------------------------|-------|-------|--------|--------|
| Multiplier | 1.12 | 1.06 | 1.00 | 0.94 |

Table 2 Example: 110 scfm @ 100 psi @ 100°F
Ambient temperature 90°F 110 x 1.06 = 117 scfm
Choose Model KRD125SSD

KRD-HIT SERIES

FEATURES and BENEFITS

- Accommodates Inlet Temperatures up to 176°F (80°C)
- Accommodates Inlet Pressures up to 218 psig
- Produces Outlet Dew Point 36 to 50°F (2 to 10°C)
- Fully Automatic
- Compact Design/Small Footprint/Minimal Space Requirements
- Environmentally Friendly Refrigerants R134a & R407c
- Minimum weld points; lower risk of refrigerant leaks
- Oversized Pre-Cooler & Counter flow design minimizes energy costs
- Demister style water separator insures optimum liquid separation at full and part load conditions
- Rugged, hermetically sealed refrigeration compressor provides years of trouble free service
- Automatic temperature controls maintains precise chilled air temperature
- Refrigeration side insulation saves energy, yields optimum heat transfer efficiency and protects from ambient fouling
- CE Safety Certification
- Models KRD40-SSD-HIT through KRD100-SSD-HIT all incorporate stainless steel heat exchangers and wetted parts.

Kaishan Technologies' KRD-HIT series refrigerated air dryers are designed with integral air-to-air heat exchangers, allowing the dryers to be matched to air compressors with outlet temperatures up to 176°F (80°C). Especially designed for smaller compressors that do not incorporate heat exchangers.

The KRD-HIT series refrigerated air dryers will produce clean, dry compressed air in ambient environments up to 122°F (50°C) at pressures up to 218 psig.



CORRECTION FACTORS FOR KRD-HIT

As indicated in the TECHNICAL SPECIFICATION TABLE for the KRD-HIT series dryer, published capacities are based on inlet compressed air conditions of 140°F(60°C) at 100 psig, with an ambient temperature of 100°F(38°C). When those conditions vary, the dryer can be resized to reflect your specific application – either by modifying the dryer capacity or by calculating capacity. The following tables provide instruction for sizing.

Correction Factors (Ambient Temperature) C1

| | | | | | | | |
|--------------------|-------|-------|-------|--------|--------|--------|--------|
| Ambient Temp °F/°C | 77/25 | 86/30 | 95/35 | 100/38 | 104/40 | 113/45 | 122/50 |
| Corr Factor C1 | 1.15 | 1.10 | 1.02 | 1.00 | 0.89 | 0.79 | 0.69 |

Correction Factors (Inlet Air Temperature) C2

| | | | | | | | |
|------------------|--------|--------|--------|--------|--------|--------|--------|
| Inlet Temp °F/°C | 122/50 | 131/55 | 140/60 | 149/65 | 158/70 | 167/75 | 176/80 |
| Corr Factor C2 | 1.03 | 1.02 | 1.00 | 0.87 | 0.78 | 0.70 | 0.64 |

Correction Factors (Operating Pressure) C3

| | | | | | | | | | | | | |
|-------------------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Oper Press (psig) | 58 | 73 | 87 | 102 | 116 | 131 | 145 | 160 | 174 | 189 | 203 | 218 |
| Corr Factor C3 | 0.86 | 0.92 | 0.93 | 1.0 | 1.04 | 1.08 | 1.11 | 1.15 | 1.18 | 1.22 | 1.25 | 1.28 |

To calculate the capacity of any given model, determine correction factors based on operating conditions:

Example: Model - KRD85-SSD-HIT

Ambient Temp 104 CF1 = 0.89

Inlet Temp: 149 CF2 = 0.87

Inlet Press: 160 CF3 = 1.15

Adjusted Capacity $85 \times 0.89(\text{CF1}) \times 0.87(\text{CF2}) \times 1.15(\text{CF3}) = 76 \text{ scfm}$

To determine appropriate dryer size based on given flow:

Example:

Inlet Flow (scfm) 150

Ambient Temp 100 CF1 = 1.0

Inlet Temp 176 CF2 = 0.64

Operating Press 160 CF3 = 1.15

Calculate adjusted flow $150 \times 1.0(\text{CF1}) \times 0.64(\text{CF2}) \times 1.15(\text{CF3}) = 110 \text{ scfm}$ Select Dryer Model KRD210-HIT

TECHNICAL SPECIFICATIONS FOR KRD-HIT

| Model | m3/m | cfm | Voltage | Conn (NPT) | Power (kw) | L | W | H | Weight (lbs) | Optional Afterfilter |
|----------------|------|-----|----------|------------|------------|----|----|----|--------------|----------------------|
| KRD40-SSD-HIT | 1.2 | 42 | 120/1/60 | 1/2 | 0.30 | 26 | 13 | 22 | 77 | KLF60KA |
| KRD85-SSD-HIT | 2.4 | 85 | 120/1/60 | 1 | 0.61 | 32 | 17 | 24 | 154 | KLF125KA |
| KRD100-SSD-HIT | 3.0 | 106 | 20/1/60 | 1 | 0.76 | 32 | 17 | 24 | 165 | KLF125KA |
| KRD210-HIT | 6.0 | 212 | 230/1/60 | 1-1/2 | 1.09 | 30 | 28 | 50 | 275 | KLF300KA |
| KRD280-HIT | 8.0 | 282 | 230/1/60 | 1-1/2 | 1.45 | 30 | 28 | 50 | 282 | KLF300KA |
| KRD350-HIT | 10.0 | 353 | 230/1/60 | 1-1/2 | 1.82 | 30 | 28 | 50 | 293 | KLF470KA |
| KRD420-HIT | 12.0 | 424 | 230/1/60 | 2 | 2.18 | 40 | 33 | 57 | 363 | KLF470KA |
| KRD530-HIT | 15.0 | 530 | 230/1/60 | 2 | 2.73 | 40 | 33 | 57 | 385 | KLF700KA |

RATED CONDITIONS

Working Pressure: 100 psig
 Inlet Temperature 140°F/60°C
 Ambient Temperature 100°F/38°C

OPERATING RANGE

MAWP 218 psig
 Max Inlet Temperature 176°F/80°C
 Max Ambient Temp. 122°F/50°C
 Min Ambient Temp. 41°F/5°C

AVAILABLE OPTIONS

Other voltages
 Cleanable Protection Grid for Dirty Environment (Swing-out Door)
 Higher Working Pressure
 Automatic Timer Drain or Zero Loss Drain

KRD-580 SERIES



Kaishan's KRD-580 Series refrigerant dryers incorporate all of the design criteria of our standard pressure units. With a maximum pressure rating of 653 psig, these units are designed to accommodate the compressed air purification needs of customer applications including PET blow molding, air assisted laser cutting, high pressure pneumatic tools, product packaging, R&D applications within the aeronautical, pharmaceutical and medical industries, as well as high pressure pneumatic component testing.

Integral to the design of the KRD-580 Series refrigerant dryer is a brazed plate, stainless steel heat exchanger for superior corrosion protection and suitability for installations in stringent applications as found in the pharmaceutical, medical and food & beverage industries. The all-in-one design of the highly efficient heat exchanger provides for a small foot print.

Engineered and manufactured with minimal weld points for reduced risk of refrigerant leaks, user-friendly controls and with serviceable components strategically placed to allow ease-of-maintenance, these dryers are built with the demands of today's productivity driven customer in mind.

These robust dryers include a demister style separator for optimum removal efficiency (99+%) of condensed liquids, even under varying loads.

The KRD-580 Series refrigerant dryer include our field proven, heavy duty, hermetically sealed refrigerant compressor yielding years of reliable, trouble free performance.

As with all of Kaishan's refrigerant dryers, the KRD-580 Series refrigerant dryers utilize environmentally friendly refrigerants – either R134a or R407c and are available in CE and/or UL electrical component styles.

An oversized pre-cooler, counter flow design, and refrigeration side insulation yields up to 25% energy savings over most competitive designs.

CORRECTION FACTORS FOR KRD-580

Actual Capacity (scfm) = Rated Capacity x P x T x A

| | | | | | | | | | |
|-------------------------|----------|-------|-------|--------|--------|--------|--------|--------|--------|
| Working Pressure (P) | PSIG | 290 | 363 | 435 | 508 | 580 | 653 | | |
| | P Factor | .93 | 0.96 | 0.97 | 0.99 | 1.00 | 1.01 | | |
| Inlet Temperature (T) | Deg F/C | 86/30 | 90/32 | 100/38 | 110/43 | 120/49 | 130/54 | 140/60 | |
| | T Factor | 1.27 | 1.18 | 1.00 | 0.87 | 0.76 | 0.68 | 0.61 | |
| Ambient Temperature (A) | Deg F/C | 60/16 | 70/21 | 80/27 | 90/32 | 100/38 | 110/43 | 120/49 | 122/50 |
| | | 1.15 | 1.12 | 1.08 | 1.04 | 1.00 | 0.95 | 0.90 | 0.89 |

Example:

Rerating the dryer: KRD700- 580 rated capacity is 706 cfm @ 580 psig/100°F Inlet/100°F Ambient
 Operating at 435 psig; with 110°F inlet and 100°F ambient:
 $706 \times 0.97(P) \times 0.87(T) \times 1.00(A) = 596$ scfm (dryer can handle up to 596 scfm at actual conditions)

Selecting the dryer: 840 scfm; 363 psig; 110°F inlet; 90°F ambient
 (actual conditions) $840(\text{scfm}) \div 0.96(P) \div 0.87(T) \div 1.04(A) = 967$ scfm
 Select Model KRD1060- 580

TECHNICAL SPECIFICATIONS FOR KRD-580

| Model | m3/m | cfm | Voltage | Conn (NPT) | Power (kw) | L | W | H | Weight (lbs) |
|--------------|------|--------|----------|------------|------------|----|----|----|--------------|
| KRD100- 580 | 3 | 106.0 | 120/1/60 | 3/4 | 0.50 | 30 | 14 | 22 | 110 |
| KRD125- 580 | 3.6 | 127.0 | 120/1/60 | 3/4 | 0.53 | 30 | 14 | 22 | 121 |
| KRD140- 580 | 4 | 141.0 | 120/1/60 | 3/4 | 0.55 | 30 | 14 | 22 | 121 |
| KRD210- 580 | 6 | 212.0 | 230/1/60 | 1.25 | 0.80 | 30 | 22 | 35 | 176 |
| KRD280- 580 | 8 | 282.0 | 230/1/60 | 1.25 | 0.85 | 30 | 22 | 35 | 176 |
| KRD310- 580 | 9 | 318.0 | 230/1/60 | 1.25 | 0.90 | 30 | 22 | 35 | 176 |
| KRD350- 580 | 10 | 353.0 | 230/1/60 | 1.25 | 1.10 | 30 | 22 | 35 | 176 |
| KRD420- 580 | 12 | 424.0 | 230/1/60 | 1.25 | 1.22 | 30 | 22 | 35 | 176 |
| KRD530- 580 | 15 | 530.0 | 460/3/60 | 1.25 | 2.10 | 44 | 34 | 47 | 330 |
| KRD700- 580 | 20 | 706.0 | 460/3/60 | 1.25 | 2.30 | 44 | 34 | 47 | 330 |
| KRD880- 580 | 25 | 883.0 | 460/3/60 | 3 | 2.80 | 44 | 36 | 61 | 594 |
| KRD1060- 580 | 30 | 1059.0 | 460/3/60 | 3 | 2.90 | 44 | 36 | 61 | 594 |
| KRD1230- 580 | 35 | 1236.0 | 460/3/60 | 3 | 3.10 | 44 | 36 | 61 | 660 |
| KRD1400- 580 | 40 | 1412.0 | 460/3/60 | 3 | 4.20 | 44 | 36 | 61 | 770 |
| KRD1760- 580 | 50 | 1766.0 | 460/3/60 | 3 | 4.56 | 44 | 36 | 61 | 1034 |
| KRD2120- 580 | 60 | 2119.0 | 460/3/60 | 3 | 5.60 | 57 | 45 | 65 | 1210 |
| KRD2470- 580 | 70 | 2472.0 | 460/3/60 | 3 | 5.80 | 57 | 45 | 65 | 1254 |
| KRD2800- 580 | 80 | 2825.0 | 460/3/60 | 3 | 5.94 | 57 | 45 | 65 | 1320 |

RATED CONDITIONS

Working Pressure: 580 psig
 Inlet Temperature 100°F/38°C
 Ambient Temperature 100°F/38°C

OPERATING RANGE

MAWP 653 psig
 Max Inlet Temperature 140°F /60°C
 Max Ambient Temp. 122°F/50°C
 Min Ambient Temp. 41°/5°C

AVAILABLE OPTIONS

Other voltages
 Models KRD530- 580 and larger are available with water cooled heat exchanger
 Pre- and After Filtration

KAISHAN COMPRESSOR—THE WORLD'S THIRD LARGEST COMPRESSOR MANUFACTURER



| MODEL | COMPRESSOR TYPE | FEATURES |
|-------|---------------------------|---|
| KRSP2 | Two Stage | World leader in air compressor efficiency |
| KRSP | Single Stage | Patented "SKY" air end, triple SKF bearings |
| KRSD | Single Stage | Direct drive, TEFC motor, low sound enclosure |
| KRSB | Single Stage | Belt drive, economical to own and operate |
| KRSH | Two Stage High Pressure | Pressure up to 580 PSI |
| KRSL | Single Stage Low Pressure | Pressure as low as 15 PSI |
| KRSV | Rotary Screw Vacuum Pump | World class vacuum efficiency |

OTHER KAISHAN PRODUCTS



Filtration



Air Treatment



Portable Compressors



Gas Compressors



Pressure Vessels



Steam Expanders



ORC Expanders

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