# The Arctic Energy Range

Low in Energy - High in Efficiency


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## The 'Arctic Energy' range from Hi-line

The new refrigerant Air Dryer range from Hi-line has been designed with reliability at the forefront.

By using the latest technologies and energy efficient heat exchangers, this results in excellent drying performances whilst using the lowest possible energy consumption.

The digital controller only runs the dryer compressor when the dewpoint demands cooling, through the whole dryer, clean, dry compressed air is always delivered.

## Principle of Operation

Wet air enters into the dryer and passes through the heat exchanger. The warm wet air entering the dryer is cooled down by the outgoing cold and dried air which reduces load on the refrigerant compressor, saving energy costs.

Next the compressed air passes through the air to refrigerant heat exchanger which cools the air temperature to the pre-set dewpoint. This is set at +2C, water in the air at this stage condenses and turns into water droplets. This condensate is removed automatically by the autodrain as bulk water. (This should then pass into a Hi-line Gen 2 oil/water separator before going to drain).

Finally, the cool and dry air is reheated by thermally mixing it with the incoming air which also reduces its relative humidity (water-loading), thus preventing pipework corrosion and annoying condensation on downstream pipework.

Large dryers up to 9680 cfm available on a short lead-time, our standard range is available ex-stock Burton for next day delivery.

High Pressure and Thermal Mass dryers available for order.

Service support by our own engineers with Nationwide backup.

## Hi-line Industries Technical Specifications

| Fridge Model | cfm | m3/min | Connection | Power Supply V/Hz | Refrigerant |
|---|---|---|---|---|---|
| FD10 | 8 | 0.23 | ½" | 230/1/50-60 | R134a |
| FD19 | 19 | 0.54 | ½" | 230/1/50-60 | R134a |
| FD23 | 23 | 0.65 | ½" | 230/1/50-60 | R134a |
| FD28 | 28 | 0.79 | ½" | 230/1/50-60 | R134a |
| FD32 | 32 | 0.91 | ½" | 230/1/50-60 | R134a |
| FD41 | 41 | 1.16 | ½" | 230/1/50-60 | R134a |
| FD45 | 45 | 1.27 | ½" | 230/1/50-60 | R134a |
| FD59 | 59 | 1.67 | 1" | 230/1/50-60 | R407c |
| FD83 | 83 | 2.35 | 1" | 230/1/50-60 | R407c |
| FD91 | 91 | 2.58 | 1" | 230/1/50-60 | R407c |
| FD124 | 124 | 3.51 | 1" | 230/1/50-60 | R407c |
| FD136 | 136 | 3.85 | 1" | 230/1/50-60 | R407c |
| FD194 | 194 | 5.49 | 1½" | 230/1/50-60 | R407c |
| FD214 | 214 | 6.06 | 1½" | 230/1/50-60 | R407c |
| FD253 | 253 | 7.16 | 1½" | 230/1/50-60 | R407c |
| FD312 | 312 | 8.83 | 1½" | 230/1/50-60 | R407c |
| FD371 | 371 | 10.51 | 2" | 230/1/50-60 | R407c |
| FD506 | 506 | 14.33 | 2" | 230/1/50-60 | R407c |

Performances are in accordance with ISO 7183

### Reference Conditions

**Inlet compressed air pressure: 7 barg**
**Inlet compressed air temperature: 35°C @ 100% RH**
**Ambient air temperature: 25°C**
**Minimum pressure dew point (PDP): 2°C**

## Capacity Correction for Various Operating Pressure

| Pressure - barg | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|---|---|---|---|
| Factor (Pc) | 0.96 | 0.98 | 1.0 | 1.04 | 1.06 | 1.09 | 1.13 | 1.18 | 1.22 |

| Ambient Temperature - °C | 30 | 35 | 40 | 45 | 50 | 55 |
|---|---|---|---|---|---|---|
| Factor (Ic) | 1.11 | 1.0 | 0.89 | 0.79 | 0.7 | 0.62 |

| Inlet Temperature - °C | 25 | 30 | 35 | 40 | 43 |
|---|---|---|---|---|---|
| Factor (Ac) | 1.0 | 0.95 | 0.90 | 0.85 | 0.84 |

## Example of dryer selection:

Which dryer is required to handle the following worst case conditions?

Maximum compressed air flow of 12 m³/min
Lowest operating pressure of 10 barg
Maximum air inlet temperature of 40°C
Maximum ambient air temperature of 35°C

Corrected Capacity is:
Actual Capacity / (Pc * Ic * Ac) = 12 m³/min / (1.09 * 0.89 * 0.9) = 13.74 m³/min

Dryer Selection is: FD506 for a +2°C PDP

## General Information

- Operating pressure range: 2 to 16 barg
- Maximum inlet air temperature: 55°C
- Ambient temperature range: 0°C to 43°C (47°C option)
- A full range of high performance oil removal and particle filters are also available to suit each dryer

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All specifications and details are subject to change without prior notice.