

# COMPRESSED AIR DRYERS

## ► **MKE SERIES** AIR DRYERS INTEGRATED FILTRATION

## COMPRESSED AIR DRYERS ◀

Mikropor is aware of the importance of high quality compressed air and guarantees to provide customers with the highest quality of air. Using clean, dry air is extremely important for all kinds of air powered applications. Moisture or contamination in the air which will come from the standard compressor outlet will cause complicated system errors. These complications will decrease productivity and may affect the production quality of final products.

### **Advantages**

- Low pressure drop saves compressor power
- Quick start and reaction time provides additional production time
- Every dryer is specially designed with the right components to consume the lowest energy
- Highly energy-efficient R134a refrigerant is standard across all models
- A state-of-the-art heat exchanger design provides the highest cost saving in the industry
- Best in class refrigerant compressors consume less energy against competition dryers
- Pressure switches control the condenser's fan motor for saving energy and letting the system operate at desired conditions
- This is not only a dryer, but an air treatment package that delivers an air quality of class 1.4.1 as per ISO 8573:2010 due to integrated filtration

### **Applications**

Mikropor provides an entire range of products for filtration and air purification applications at a cost effective price.

### **Applications Include**

Food production, dairies, breweries, clean conveying air, chemical plants, pure air and cleanroom technology, pharmaceutical industry, weaving machines, photo labs, paint spraying, powder coating, packaging, control and instrument air, sand and/or shot blasting, general air works, microchip production, optics, process air as well as many other markets.

### **The MKE Series Refrigerant Circuit and Insulation**

Mikropor only uses environmentally friendly R134a refrigerant gas in the dryers. This refrigerant is suitable for both low and high temperature applications. R-134a has excellent thermodynamic properties and can operate at very low pressure compared to other refrigerants. This will in turn increase the refrigerant compressor's service life. With R-134a Mikropor dryers can operate at very high ambient temperatures. Mikropor engineers add extra power to the heat exchangers with excellent and extraordinary no loss insulation system. Mikropor dryers supply constant dew point at all flow ranges. This perfect insulation idea continues on the refrigeration circuit side as well. With this insulation concept and oversized condensers (Even for ultra-high ambient temperatures) Mikropor Refrigerated Air Dryers offer the highest technology with its custom solutions.



## Digital Controllers

Digi-Pro digital controller is standard on MKE23-MKE3915

ESD digital controller is standard on MKE5085-MKE12500

### Digi-Pro Digital Controller

Mikropor now produces a new generation of air dryers with Digi-Pro series controllers. With the Digi-Pro series controllers, air dryers have outstanding technology for both functionality and dynamism, as well as appearance. New controller design offers users the possibility of making adjustments with one finger, thus easier accessibility. The touch keys have taken the design and dynamism to a top level of technology. The multi-functional display provides an accurate digital dew point display as well as coded alarm monitoring of the refrigerant dryer.

Digital controller with embedded features,

- Digital dew point monitoring
- Energy-saving mode display
- Periodic maintenance interval display
- Status report
- Hours run meter
- Fahrenheit and Centigrade selection

### ESD Digital Controller

Mikropor Refrigerated Air dryers with ESD Digital controller have a lot of economy features and alarm capabilities. Refrigeration dryers are usually the most efficient dryer solution for the compressed air applications. With the help of the highly engineered ESD, Mikropor Refrigerated Air Dryers will reduce your energy consumption. ESD helps the service technicians to monitor many useful parameters on the dryer and guides them to troubleshoot any problem very easily. ESD is extremely useful when there is no air coming into the dryer when the dryer is running. Especially during the nights, weekends and holidays many companies do not stop their dryers although they do not run compressed air. ESD saves huge amount of money by simply shutting the dryer down automatically when it is not in use.





### Electrical Wires are Separated From Refrigerant Side

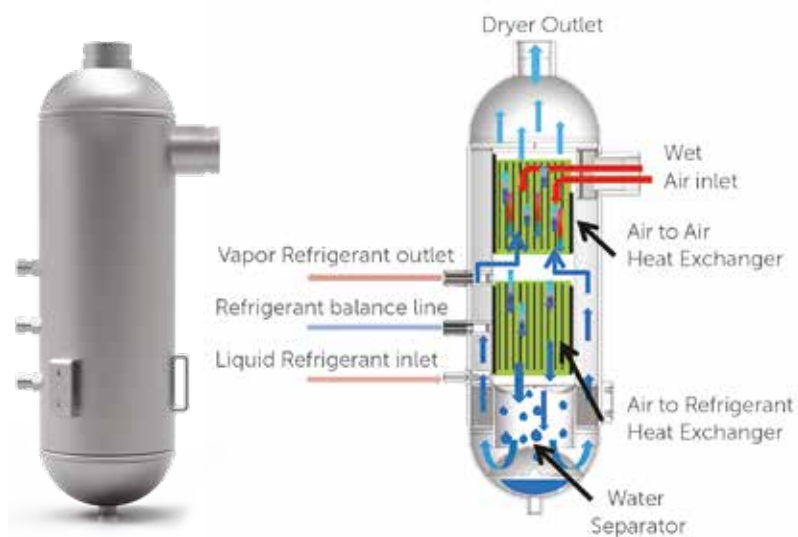
There are very few electrical wires inside the refrigerant side of the dryer. Electrical box has an external cover with access from the outside of the dryer. Therefore there is no need to open dryer panels electrical access.

### Compact Design

Mikropor dryers are highly reliable, efficient and have small space demands and offer low cost ownership. Mikropor Refrigerated Air Dryers are suitable for the smallest installation spaces. Having two filters integrated into the dryer frame offers a huge advantage to the service technicians and end users. The integrated filters save labor time, piping cost and space at the facilities where the Mikropor Dryer is used. The compact size also offers flexibility and economy during their transport.

### Aluminium Plate Heat Exchanger is Standard

- Very low pressure drop
- Thin aluminium plate thickness
- High heat transfer surface area
- Strong due to external thick cylindrical wall
- Water separator is optimized for best performance



### Scroll Compressors

Scroll Compressors are energy efficient and strong against liquid shocks. For energy saving, scroll compressors are used for 400 m<sup>3</sup>/h and above MKE Dryers.

### Easy Access

Easy access to the cooling components in seconds by the help of screw free panels and plastic handles. Easy for service and offers more working space. Service technicians save time by not having to remove fasteners.



## ► MKE SERIES AIR DRYERS INTEGRATED FILTRATION

### Zero Clearance Compressed Air Filters with High Performance Elements

Compressed Air Filter kit is standard on the Mikropor Dryers. The filter with X Element (coalescing filter for water removal) is used for up to 1 micron particles and the Filter with Y Element (coalescing filter for oil removal) is used to remove oil down to 0.01 ppm. Zero clearance design helps service technicians to replace the element in minutes. Mikropor Refrigerated Air Dryers are designed by engineers who have received all of the design feedback from field engineers and service technicians. This service friendly design makes Mikropor dryers very unique in the industry. Dryer Filter kit which has two elements, two automatic drains and two viton o-rings helps the customers to operate the dryer at its best performance until the next planned maintenance. Replacing drains on the filters is critical when replacing elements because drains will get clogged with dirt and oil over time.

### Grooved Couplings and Fittings

On compressed air lines, grooved couplings and fittings are commonly used in the industry. These couplings increase flexibility on connections, help the service technician to dismantle and assemble pipes easily and quickly.



### Excessive Water Droplet Drains

Liquid water droplets coming from the line to the inlet of the dryer are separated by the inlet filter and drained. Filter auto drains have manual valves on them. This allows the system to be depressurized when these filters go to service.

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## Replacement Filter Element

Pressure drop is a huge concern in compressed air. In many applications high pressure drops will cause a decrease in the pressure at the point of use. Sometimes this low pressure is not enough for the machines or processes to perform correctly. In addition, dirt particles and oil in the compressed air system may block the filters quickly. It is important for the end users and service technicians to recognize if there is a problem in the system. The performance of the filters directly affects the pressure drop and system performance. Therefore, it is very important that the filter elements are changed at the filter service time. An alarm/warning indicating that the filters are changed periodically is provided by a digital controller on the Mikropor Air Dryer. When this alarm triggers, the filter must be changed to avoid loss of performance and pressure drop.



## Correction Factor for MKE Air Dryers

Inlet Temperature (°C)	F1	Ambient Temperature (°C)	F2	Pressure (bar)	F3
30	1.29	20	1.05	4	0.80
35	1	25	1	6	0.94
40	0.92	30	0.98	7	1
45	0.78	35	0.93	8	1.04
50	0.65	40	0.84	10	1.11
60	0.45	50	0.7	12	1.16
-	-	-	-	14	1.22
-	-	-	-	16	1.25

## Example for Choosing the Correct Dryer;

If a compressor delivers 200 m<sup>3</sup>/h at 6 bar the dryer inlet temperature is 40°C and ambient temperature is 30°C

Please choose your Dryer as follows;

$$200 / 0.94 / 0.92 / 0.98 = 236 \text{ m}^3/\text{h}$$

The correct dryer for this application is MKE305

## MKE Technical Specifications

Model	Capacity (m³/h)	Voltage	Connection Size	Filter Quantity and Type	Element Type	Pressure Drop (mbar)	Control Type	Max. Working Pressure (bar)	Max. Ambient Temp. (°C)	Max. Inlet Temp. (°C)
MKE-23	23	230/1/50	1/2"	1*GKO45X + 1* GKO45Y	MKO45 KIT	115	Digi-Pro	16	45	50
MKE-38	38	230/1/50	1/2"	1*GKO45X + 1* GKO45Y	MKO45 KIT	170	Digi-Pro	16	45	50
MKE-53	53	230/1/50	1/2"	1*GKO45X + 1* GKO45Y	MKO45 KIT	280	Digi-Pro	16	45	50
MKE-70	70	230/1/50	1/2"	1*GKO70X + 1* GKO70Y	MKO70 KIT	250	Digi-Pro	16	45	50
MKE-100	100	230/1/50	3/4"	1*GKO150X + 1* GKO150Y	MKO150 KIT	100	Digi-Pro	16	45	50
MKE-155	155	230/1/50	3/4"	1*GKO150X + 1* GKO150Y	MKO150 KIT	220	Digi-Pro	16	45	50
MKE-190	190	230/1/50	3/4"	1*GKO150X + 1* GKO150Y	MKO150 KIT	320	Digi-Pro	16	45	50
MKE-210	210	230/1/50	1 1/2"	1*GKO500X + 1* GKO500Y	MKO500 KIT	220	Digi-Pro	16	45	50
MKE-305	305	230/1/50	1 1/2"	1*GKO500X + 1* GKO500Y	MKO500 KIT	320	Digi-Pro	16	45	50
MKE-375	375	230/1/50	1 1/2"	1*GKO500X + 1* GKO500Y	MKO851 KIT	200	Digi-Pro	16	45	50
MKE-495	495	230/1/50	2"	1*GKO851X + 1* GKO851Y	MKO1210 KIT	310	Digi-Pro	16	45	50
MKE-623	623	230/1/50	2"	1*GKO1210X + 1* GKO1210Y	MKO1210 KIT	240	Digi-Pro	16	45	50
MKE-930	930	230/1/50	2"	1*GKO1210X + 1* GKO1210Y	MKO1210 KIT	150	Digi-Pro	16	45	50
MKE-1200	1200	230/1/50	2"	1*GKO1210X + 1* GKO1210Y	MKO1820 KIT	190	Digi-Pro	16	45	50
MKE-1388	1388	400/3/50	3"	1*GKO1820X + 1* GKO1820Y	MKO1820 KIT	350	Digi-Pro	16	45	50
MKE-1800	1800	400/3/50	3"	1*GKO1820X + 1* GKO1820Y	MKO1820 KIT	290	Digi-Pro	16	45	50
MKE-2500	2500	400/3/50	3"	1*GKO2700X + 1* GKO2700Y	MKO2700 KIT	190	Digi-Pro	16	45	50
MKE-2775	2775	400/3/50	3"	1*GKO2700X + 1* GKO2700Y	MKO2700 KIT	350	Digi-Pro	16	45	50
MKE-3330	3330	400/3/50	DN100	Not Included	Not Included	270	Digi-Pro	16	45	50
MKE-3915	3915	400/3/50	DN100	Not Included	Not Included	380	Digi-Pro	16	45	50
MKE-5085	5085	400/3/50	DN100	Not Included	Not Included	320	ESD-3	16	45	50
MKE-5850	5850	400/3/50	DN100	Not Included	Not Included	350	ESD-3	16	45	50
MKE-6975	6975	400/3/50	DN150	Not Included	Not Included	320	ESD-3	16	45	50
MKE-7875	7875	400/3/50	DN150	Not Included	Not Included	350	ESD-3	16	45	50
MKE-9000	9000	400/3/50	DN150	Not Included	Not Included	350	ESD-3	16	45	50
MKE-10500	10500	400/3/50	DN200	Not Included	Not Included	350	ESD-3	16	45	50
MKE-12500	12500	400/3/50	DN200	Not Included	Not Included	350	ESD-3	16	45	50

**Note:** Water condenser is available between models MKE-623 and MKE-12500

## ► MK HP HIGH PRESSURE SERIES

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This design achieves a hyper-efficient 100% contact between the air and refrigerant circuits, delivering state-of-the-art performance and great cooling efficiency.

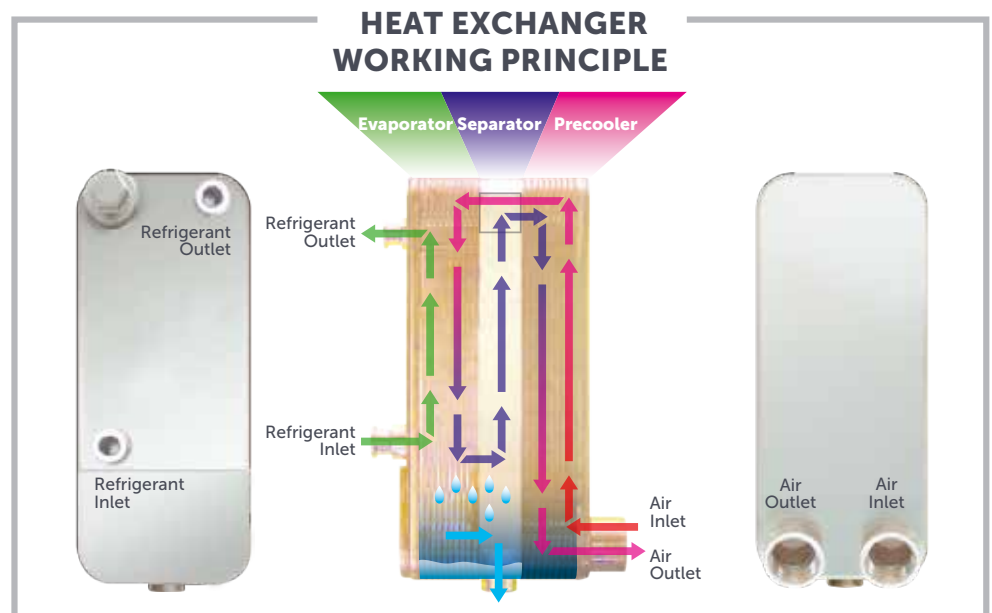
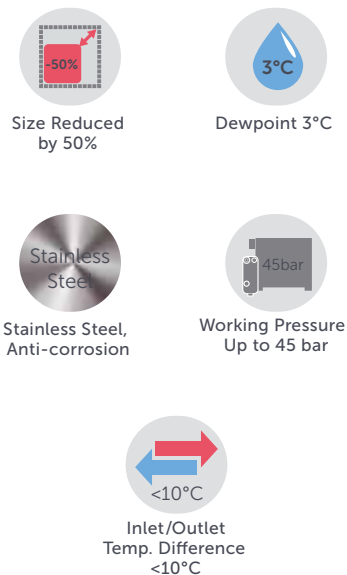
The state-of-the-art 3-in-1 design features very low differential pressure delivering significant energy savings. The 3-in-1 Heat-Exchanger is compact and allows the dryer to be smaller and reduces the space required for the dryer. Mikropor offers a variety of 3-in-1 dryers equipped with the 3-in-1 Heat-Exchanger to meet a full range of capacity and power requirements.



**40 bar**



Mikropor High Pressure Dryers have stainless steel brazed plate heat exchangers.



Mikropor MK-HP range High Pressure Air Dryer Series have state of the art stainless steel brazed plate heat exchanger. It is designed for high pressure air dryers. The heat exchanger has the following sections in one module;

- Air/Air heat exchanger (Economizer)
- Air/Refrigerant heat exchanger (Evaporator)
- Water separator

With reliable stainless steel and optimized efficiency design, Mikropor MK-HP heat exchangers supply size reduction, anti corrosion and great heat transfer.



### The Separator Efficiency

- Double centrifugation due to the bottom fin
- Reserved direction for the compressed air
- Gravity effect to the condensed water
- Special anti-return system
- Separator integrated to the system

### Frigorific Circuit

- Two valve regulation system (thermal and by-pass), allowing to fill properly the exchanger and giving a max. temperature to the exchanger
- High quality security test of potential leakage
- Use of hermetic compressor as standard
- High quality, long lasting components
- Quick start and reaction time

### Scroll Compressor

- Better coefficient of power
- Less energy consumption
- Higher resistance to liquid shocks



### Technical Specifications

Model	Flow* (m <sup>3</sup> /h)	Voltage	Inlet - Outlet Connection Size	Max. Working Pressure (bar)	Max. Ambient Temp. (°C)	Max. Inlet Temp. (°C)	Width (mm)	Length (mm)	Height (mm)	Weight (kg)
MK HP 50	50	230V / 1 / 50 Hz	3/4"	45	45	50	361	454	553	36
MK HP 90	90	230V / 1 / 50 Hz	3/4"	45	45	50	361	454	553	38
MK HP 150	150	230V / 1 / 50 Hz	3/4"	45	45	50	401	453	623	45
MK HP 220	220	230V / 1 / 50 Hz	3/4"	45	45	50	401	453	623	45
MK HP 300	300	230V / 1 / 50 Hz	1 1/4"	45	45	50	451	505	761	70
MK HP 400	400	230V / 1 / 50 Hz	1 1/4"	45	45	50	451	505	761	72
MK HP 500	500	230V / 1 / 50 Hz	1 1/4"	45	45	50	451	505	812	78
MK HP 575	575	230V / 1 / 50 Hz	1 1/4"	45	45	50	451	505	812	80
MK HP 775	775	230V / 1 / 50 Hz	1 1/4"	45	45	50	501	675	984	115
MK HP 910	910	230V / 1 / 50 Hz	1 1/4"	45	45	50	501	675	984	120
MK HP 1000	1000	230V / 1 / 50 Hz	2"	45	45	50	727	947	1170	218
MK HP 1160	1160	230V / 1 / 50 Hz	2"	45	45	50	727	947	1170	220
MK HP 1500	1500	230V / 1 / 50 Hz	2"	45	45	50	727	947	1170	225
MK HP 1600	1600	400V / 3 / 50 Hz	2"	45	45	50	797	947	1460	263
MK HP 1800	1800	400V / 3 / 50 Hz	2"	45	45	50	797	947	1460	265
MK HP 2200	2200	400V / 3 / 50 Hz	2 1/2"	45	45	50	797	1162	1495	352
MK HP 2500	2500	400V / 3 / 50 Hz	2 1/2"	45	45	50	797	1162	1495	353
MK HP 2700	2700	400V / 3 / 50 Hz	2 1/2"	45	45	50	797	1162	1495	355
MK HP 3000	3000	400V / 3 / 50 Hz	2 1/2"	45	45	50	797	1162	1495	422
MK HP 3300	3300	400V / 3 / 50 Hz	2 1/2"	45	45	50	797	1162	1495	423
MK HP 3600	3600	400V / 3 / 50 Hz	2 1/2"	45	45	50	797	1162	1495	425

\* Nominal flow is calculated at the following conditions: Inlet Pressure: 40 bar, Inlet Temperature: 35°C  
Ambient Temperature 25°C for other conditions please refer to the correction factor table.

### Correction Factor for MK HP High Pressure Series

Pressure (bar)	F1	Inlet Temp. (°C)	F2	Ambient Temp. (°C)	F3
20	0.84	-	-	-	-
25	0.91	-	-	-	-
30	0.93	-	-	-	-
35	0.96	-	-	-	-
40	1	35	1	25	1
45	1.02	40	0.85	30	0.93
-	-	45	0.72	35	0.87
-	-	50	0.63	40	0.82
-	-	-	-	45	0.79

For maximum flow rate, multiply model flow rate show in the table below by the correction factor corresponding to the working pressure.

Maximum Pressure (45 bar)
Nominal Working Pressure (40 bar)
Refrigerant: R134a