

# Atlas Copco

## Refrigerant air dryers



**FX1-16**  
60 Hz



**Atlas Copco**



## Total capability, total responsibility

Right at the heart of your business, Atlas Copco delivers quality compressed air for superior operational capacity. From compressed air generation to point of use, you can choose from our wide range of products to create a complete compressed air system tailored to your specific needs. All Atlas Copco products are engineered to integrate seamlessly, ensuring the highest level of reliability and energy efficiency. As a result, Atlas Copco can take full responsibility for your compressed air infrastructure with a guarantee of best-in-class quality. With a global presence in over 150 countries, we can provide an unrivalled service to maintain and continually improve your compressed air system performance.

Backed by 100 years at the forefront of compressed air, Atlas Copco products offer the finest quality and efficiency. Our goal is to be First in Mind—First in Choice™. That is why Atlas Copco's pursuit of innovation never ceases, driven by the dedication to meet and exceed your demands. Always working with you, we are committed to providing the customized air solution that is the driving force behind your business.

***Atlas Copco:  
Customized Quality Air Solutions through  
Innovation, Interaction and Commitment.***

First in Mind—First in Choice™

# Air treatment – a smart investment

## ▶ Why invest in dry quality air?

Wherever you go in the world, whatever application you look at, you will find Atlas Copco dryers in silent operation around the clock. Industry leading companies invest in dry quality air, because they know it's the best solution for a long term, trouble-free operation. Why shouldn't you follow their example? No shop is too small, no air requirement too low to benefit from what FX dryers have to offer: simple and reliable operation, excellent protection of your products and systems against damage or corrosion. Size doesn't matter, results do.



# FX dryers – the smart choice

## ▶ The hidden danger of untreated air

When the air that surrounds us is compressed, its vapour and particle concentration increases dramatically. The compression process causes the oil and water vapours to condense into droplets, and then mix with the high concentration of particles. The resulting mixture is an abrasive oily sludge that in many cases is also acidic. Without air treatment equipment, much of this corrosive sludge will enter the compressed air system, corroding the pipe work, damaging pneumatic tools and equipment as well as potentially compromising final product quality.



## ▶ Poor air quality costs you money

If the corrosive sludge is allowed to enter the compressed air system, it will not be long before problems start to appear. These are some of the most common, and most expensive problems:

- ▶ Tools and equipment break down more regularly, experience a shorter lifetime and reduced power.
- ▶ The end product, or other materials that come into contact with the contaminated air, can suffer spoilage and quality degradation.
- ▶ The compressed air pipe work will corrode, leading to leaks and a loss of valuable compressed air.

As an example, a small leak of just 3 mm is roughly equivalent to wasting 3.7 kW of electricity. In a year, this would cost around €1800 in wasted energy alone.

## ▶ The simple solution for a costly problem

The FX range of refrigerant dryers offer a reliable, cost effective and simple solution. To avoid condensation and therefore all chance of corrosion and damage, the compressed air needs to be dried, which is exactly what the FX units are designed to do.

These simple reliable units remove water from the air and the risk from your system, ensuring that your money doesn't just disappear into thin air !



- ▶ Protect your pipes.
- ▶ Protect your production.
- ▶ Protect your reputation.

Good air quality saves money.

The Atlas Copco FX dryer is the smart choice.

# FX refrigerant dryers

## ▶ The benefits add up

### Solid performance

- ▶ Steady pressure dew point
- ▶ No freezing of condensed moisture
- ▶ No chance of moisture entering the compressed air system.

### Simple reliability

- ▶ Quality components, generously sized
- ▶ Simple and proven design
- ▶ Effective control system (hot gas bypass).

### Easy installation

- ▶ Plug and play concept
- ▶ Single electrical connection
- ▶ All units pre-commissioned
- ▶ Self regulating.

### Minimal maintenance

- ▶ Long service intervals
- ▶ Few component replacements
- ▶ Ergonomic design for fast access to key components.



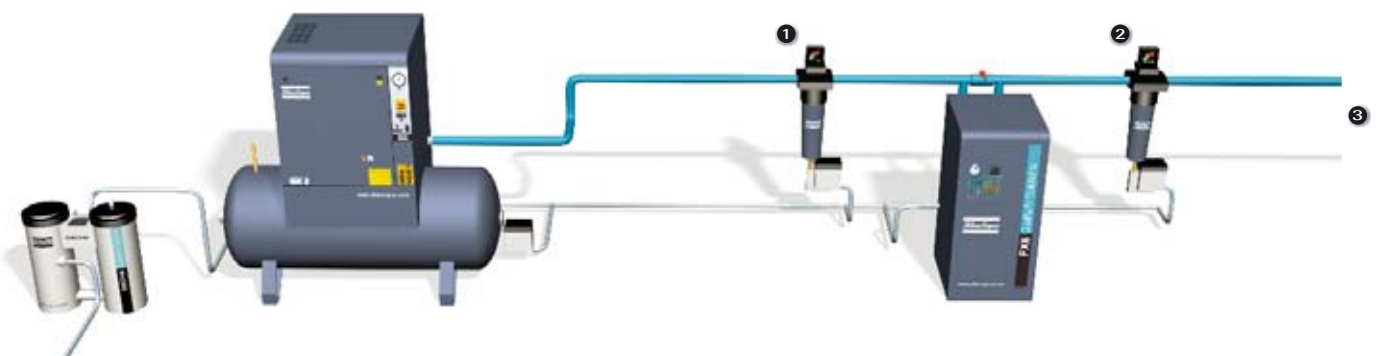
### Significant cost savings

- ▶ Increased reliability and lifetime of tools and equipment
- ▶ Reduced pipe work leaks, meaning reduced energy bill
- ▶ Fewer repairs to tools, machines and pipe work
- ▶ Less inconvenient breakdowns and stoppages
- ▶ Minimal chance of product spoilage through moisture carryover.

## ▶ No installation is complete without filtration

Adding filtration to the installation will further increase the quality of the air, resulting in even less chance that tools and machines will be damaged and final product quality compromised.

- 1 The prefilter will protect the dryer, and also remove free water, particles to 1 micron and oil to 0.1 mg/m<sup>3</sup>.
- 2 The final filter removes particles to 0.01 micron and oil to 0.01mg/m<sup>3</sup>.
- 3 The final result is dry clean air, which allows you to concentrate on your business, without problems.



# FX refrigerant dryers

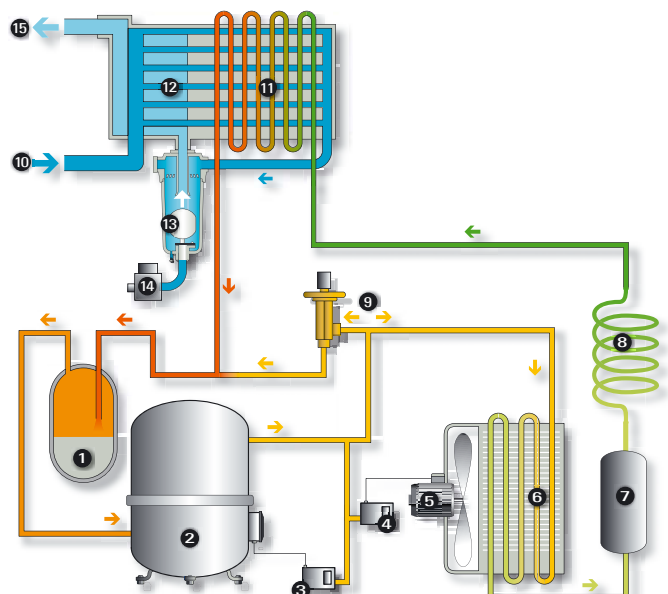
## Industrial performance – simple reliability

### ▶ Refrigerant circuit

- 1 Refrigerant separator**  
ensures that only refrigerant gas can enter the compressor, as liquid would cause damage.
- 2 Refrigerant compressor**  
brings the gaseous refrigerant to a high pressure and a high temperature.
- 3 Max. pressure switch**  
(only FX13-15)
- 4 Fan control pressure switch**  
(only FX13-15)
- 5 Condenser fan**
- 6 Condenser**  
cools the refrigerant slightly so that it changes from gas to liquid; refrigerant is more effective in the liquid state.
- 7 Capillary filter**  
protects the expansion device from harmful particles.
- 8 Capillary tube**  
reduces the refrigerant's pressure, thereby lowering its temperature and increasing its cooling capacity; the refrigerant is now almost all liquid, with some residual gas.
- 9 Hot gas bypass**  
regulates the amount of refrigerant passing through the air-to-refrigerant heat exchanger, ensuring a stable pressure dewpoint, and eliminating the chance of the condensate freezing.

### ▶ Air circuit

- 10 Air inlet**  
hot saturated air enters the dryer and is cooled by the outgoing air via the air-to-air heat exchanger. Reducing the temperature of the inlet air reduces the load on the refrigerant circuit.
- 11 Air-to-refrigerant heat exchanger**  
transfers heat from the compressed air to the cold refrigerant, forcing water vapour in the compressed air to condense. The more effective the heat transfer, the cooler the air becomes and the more water vapour condenses.
- 12 Air/ air heat exchanger**
- 13 Water separator**  
collects and drains off condensate from the cooled air flow. The more efficient the separation, the better the pressure dewpoint, as droplets which are not collected reevaporise and degrade the pressure dewpoint. The collected droplets are reliably evacuated from the separator through an electronic drain.
- 14 Automatic drain**
- 15 Air outlet**  
re-heats the outgoing air to prevent condensation on the factory's pipework.



FX 1-5 Brazed plate heat exchanger  
FX 6-16 Aluminium plate heat exchanger

# Technical data

## ▶ FX refrigerant dryer range - 60 Hz

Model	Outlet pressure dewpoint 41 °F/+5 °C				Outlet pressure dewpoint 39 °F/+4 °C				Maximum working pressure		Electrical supply	Dimensions						Weight		Compr. air connec- tions
	Inlet capacity		Pressure drop		Inlet capacity		Pressure drop					Lenght		Width		Height				
	l/s	cfm	bar	psi	l/s	cfm	bar	psi				bar	psi	mm	inch	mm	inch			
FX1	7	14	0.20	2.88	6	13	0.15	2.18	13	189	115-230/1/60Hz	500	19.7	350	13.8	484	19.1	19	42	3/4" NPT
FX2	12	24	0.33	4.79	10	21	0.25	3.63	13	189	115-230/1/60Hz	500	19.7	350	13.8	484	19.1	19	42	3/4" NPT
FX3	16	35	0.33	4.79	14	30	0.25	3.63	13	189	115-230/1/60Hz	500	19.7	350	13.8	484	19.1	20	44	3/4" NPT
FX4	23	49	0.33	4.79	20	42	0.25	3.63	13	189	115-230/1/60Hz	500	19.7	350	13.8	484	19.1	25	55	3/4" NPT
FX5	35	74	0.40	5.75	30	64	0.30	4.35	13	189	115-230/1/60Hz	500	19.7	350	13.8	484	19.1	27	60	3/4" NPT
FX6	45	95	0.42	6.14	39	83	0.32	4.64	13	189	115-230/1/60Hz	500	19.7	370	14.6	804	31.7	51	112	1" NPT
FX7	58	122	0.50	7.29	50	106	0.38	5.51	13	189	115-230/1/60Hz	500	19.7	370	14.6	804	31.7	51	112	1" NPT
FX8	69	146	0.24	3.45	60	127	0.18	2.61	13	189	115-230/1/60Hz	560	22.0	460	18.1	829	32.6	61	135	1 1/2" NPT
FX9	79	167	0.33	4.79	68	144	0.25	3.63	13	189	115-230/1/60Hz	560	22.0	460	18.1	829	32.6	68	150	1 1/2" NPT
FX10	100	211	0.24	3.45	87	184	0.18	2.61	13	189	115-230/1/60Hz	560	22.0	460	18.1	829	32.6	73	161	1 1/2" NPT
FX11	125	264	0.26	3.84	108	229	0.20	2.90	13	189	230/1/60Hz	560	22.0	580	22.8	939	37.0	90	198	1 1/2" NPT
FX12	148	313	0.36	5.18	128	271	0.27	3.92	13	189	230/1/60Hz	560	22.0	580	22.8	939	37.0	90	198	1 1/2" NPT
FX13	192	407	0.26	3.77	167	354	0.20	2.90	16	232	460/3/60Hz	990	39.0	795	31.3	925	36.4	173	381	2" NPT
FX14	230	488	0.33	4.79	200	424	0.25	3.63	16	232	460/3/60Hz	975	38.4	795	31.3	925	36.4	178	392	2" NPT
FX15	288	611	0.46	6.67	250	530	0.35	5.08	16	232	460/3/60Hz	975	38.4	795	31.3	925	36.4	183	404	2" NPT
FX16	345	731	0.46	6.67	300	636	0.35	5.08	16	232	460/3/60Hz	975	38.4	795	31.3	925	36.4	183	404	2" NPT

### Notes:

Refrigerant types: R134a for FX1-5  
R404a for FX6-16

### Limitations:

Max. ambient temp.: 110 °F  
Min. ambient temp.: 41 °F  
Max. inlet temp.: 131 °F

### Reference conditions:

Ambient temperature: 100 °F  
Inlet temperature: 100 °F  
Working pressure: 102 psi (g)

## ▶ Filter selection

Model	Outlet pressure dewpoint 41 °F/+5 °C			Outlet pressure dewpoint 39 °F/+4 °C		
	Inlet capacity	Pre filter	After filter	Inlet capacity	Pre filter	After filter
	cfm			cfm		
FX1	14	DD9	DD9	13	DD9	DD9
FX2	24	DD17	DD17	21	DD17	DD17
FX3	35	DD17	DD17	30	DD17	DD17
FX4	49	DD32	DD32	42	DD32	DD32
FX5	74	DD44	DD44	64	DD32	DD32
FX6	95	DD44	DD44	83	DD44	DD44
FX7	122	DD60	DD60	106	DD60	DD60
FX8	146	DD120	DD120	127	DD60	DD60
FX9	167	DD120	DD120	144	DD120	DD120
FX10	211	DD120	DD120	184	DD120	DD120
FX11	264	DD120	DD120	229	DD120	DD120
FX12	313	DD150	DD150	271	DD150	DD150
FX13	407	DD280	DD280	354	DD175	DD175
FX14	488	DD280	DD280	424	DD175	DD175
FX15	611	DD280	DD280	530	DD280	DD280
FX16	731	DD280	DD280	636	DD280	DD280

## ▶ Capacity calculation

### Ambient temperature

°F	100	104	110
K1 (corr. factor)	1	0.8	0.74

### Inlet temperature

°F	100	104	113	122	131
K2 (corr. factor)	1	0.82	0.69	0.58	0.45

### Inlet pressure

psi (g)	73	87	102	116	131	145	160	174	189
K3 (corr. factor)	0.9	0.96	1	1.03	1.06	1.08	1.1	1.12	1.13

### Example:

What is the capacity of an FX6 (for a PDP of 41 °F) at the following conditions:

Ambient temperature: 110 °F  
Inlet temperature: 131 °F  
Inlet pressure: 145 psi (g)

Correction factors from the table are:  $K_1 = 0.74$  /  $K_2 = 0.45$  /  $K_3 = 1.08$ :

$$\begin{aligned}
 Q_{\text{actual}} &= K_1 \times K_2 \times K_3 \times Q_{\text{nominal}} \\
 &= 0.74 \times 0.45 \times 1.08 \times 45 \text{ l/s} \\
 &= 16.18 \text{ l/s}
 \end{aligned}$$



In order to be First in Mind—First in Choice™ for all your compressed air needs, Atlas Copco delivers the products and services that help increase your business' efficiency and profitability.

Atlas Copco's pursuit of innovation never ceases, driven by your need for reliability and efficiency. Always working with you, we are committed to providing you the customized quality air solution that is the driving force behind your business.



Never use compressed air as breathing air without prior purification in accordance with local legislation and standards.