FD 360-1000 Series

Refrigerant Dryers

Complete protection for your application

Compressed air entering the air net is always saturated. When it cools, the moisture will condense, causing damage to your air system and finished products. By removing moisture from compressed air with a pressure dewpoint (PDP) as low as +3°C / +37°F, our FD refrigerant dryers significantly reduce system failures, production downtime and costly repairs. The FD range has been designed in order to be fully integrated into an Atlas Copco smart AIR solution.

Air quality

FD refrigerant dryers are designed in-house. They meet or exceed international standards for compressed air purity and are tested according to ISO 7183:2007.

Efficiency

Internal pressure drop defines the efficiency of refrigerant dryers. Our units are designed to minimize pressure drop and efficiently removing moisture.

Sustainability

A design focused on efficiency combined with low service requirements contributes to a low total cost of ownership and reduced carbon footprint.

Energy efficiency

A unique combination of high-efficiency components, smart unit design and an advanced control system enables you to combine low pressure drop with a low power consumption. With an FD VSD refrigerant dryer, you can maximize your energy savings from the first minute of operation.

Components designed for efficiency

Heat exchanger

The heat exchanger has been designed to reduce the pressure drop and increases the performance of the dryer.

Controller

Our state-of-the art controller uses a saver cycle control. Increasing energy efficiency due to smart regulation based on the dryer load.

Refrigerant compressor

By using a scroll refrigerant compressor this unit consumes an average of 30% less power than reciprocating/piston refrigerant compressors.

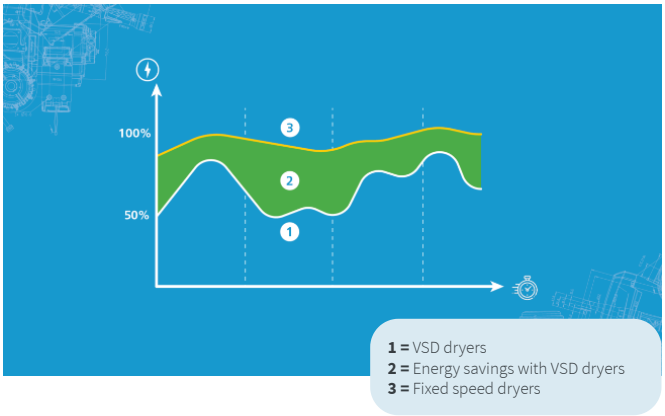
Expansion valves

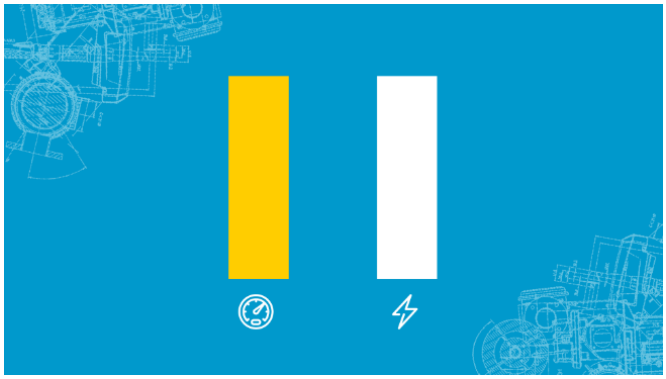
Thermostatic expansion valves regulate the dryer behavior to the most optimal condition depended on the actual operating conditions.

VSD: driving down your energy cost

More than 80% of the dryer's total lifecycle cost is taken up by the energy it consumes. To cut your energy costs, we offer dryers with Variable Speed Drive (VSD) technology. VSD leads to major energy savings, reducing the energy consumption by about 35%, protecting the environment for future generations. In almost every production environment, compressed air flow fluctuates depending on time of the day, actual demand…

Additionally, inlet humidity & operating temperatures vary as well. VSD technology allows the FD VSD dryers to adapt and operate in the most energy efficient way at all operating conditions.





Low pressure drop

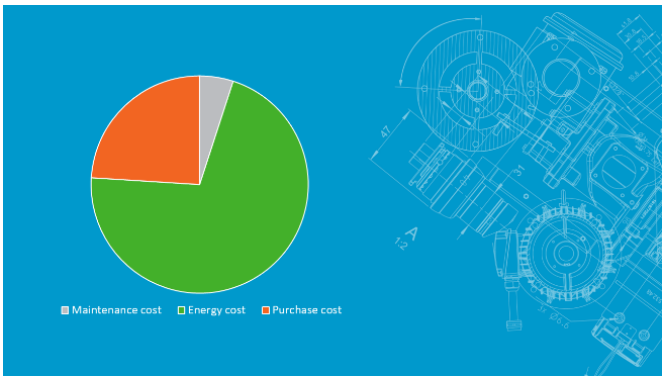
The lower the internal pressure drop of the dryer, the lower the pressure that you need to achieve with the air compressor, and the less energy the air compressor consumes. We have therefore put considerable efforts into minimizing pressure drop of the FD dryer.

Our FD dryers are designed to have a very low internal pressure drop thereby minimizing the compressor power consumption.

Low total cost of ownership

A unique combination of highly efficient components, a variable speed drive, an advanced control system and refrigerant technology allows you to use a reliable way to bring the dewpoint down to 3°C / 38°F with minimum energy.

From service perspective the activities are limited to cleaning the unit and inspecting the drain.



A step ahead in monitoring and controls

It is not only components using cutting edge technology that define the ultimate energy efficiency of the FD and FD VSD dryers it is also how these components are sized and regulated during operation.

FD dryers are equipped with the Elektronikon® Mk5 touch unit controller that is designed to be compatible with our air compressors and avoid energy losses.

The Elektronikon® Touch controller is specially designed to maximize the performance of your FD refrigerant dryer under a variety of conditions. It provides you with increased energy efficiency, lower energy consumption and reduced maintenance times.

Engineered to enhance your profit

Ensuring the reliability of your operations is essential. Our FD dryers are tested according to ISO7183 certification that guarantees consistent quality with a supply of clean and dry air. Every component is optimized for long life and easy servicing to achieve smooth and efficient operations for your business.

FD 360-1000 VSD

1 Heat Exchanger

Inhouse designed for minimum pressure drop and maximum heat transfer. Integrated water separator removes nearly 100% of the condensate without usage of any consumables.

2 Controller – Elektronikon Mk5 Touch

The Elektronikon Mk5 Touch unit controller is specially designed to maximize the performance of your FD refrigerant dryer under all conditions.
The default integrated Smartlink makes the machine condition accessible any time, any place at the tip of your fingers.

3 Compressor refrigerant

For the compressor the unit merges the unique feature of scroll technology to reduce the power consumption by 30% compared to traditional piston compressors. Scroll compressors also reduce noise and vibrations. Both fixed speed and VSD (Variable Speed Drive) versions are available.

4 Refrigerant

FD dryers use R410A refrigerant. R410A is a widely accepted refrigerant with proven performance. Combined with low energy consumption, these dryers have a low carbon footprint.
FD VSD dryers use R513A to reduce the Global Warming Potential of the refrigerant gas by 70%, greatly improving the carbon footprint of the machine. By taking this step, we bring this technology to the next level on the sustainability ladder.

5 Microchannel condenser

The condenser plays a critical role in the refrigerant circuit and is with his generous design able to handle even the most challenging operating conditions. The microchannel technology allows replacing the rather large tube and fin condensers to further reduce both carbon and floorspace footprint.

6 Hot gas bypass + Thermostatic Expansion Valve

The hot gas bypass will avoid the risk on frost damage in the machine and is supported with an expansion valve to adjust cooling power of the refrigerant to the required dew point. Minimizing the risk on clogging with an adjustable valve, this design has proven itself over many years on both reliability and best in class efficiency.

7 Electronic zero loss drains

For maximal reliability a mechanical drain with anti-sticking floater is selected together with the control in an IP65 enclosed box.

8 Liquid seperator

Right before the compressor a liquid separator makes sure only gas enters the compressor.

9 Refrigerant filter

To guarantee the most optimal efficiency throughout the years the refrigerant filter will remove whatever clogging might accumulate throughout the years of operation.

Installation

Smart AIR Solutions are a complete air or gas solution designed to provide our customers with the lowest life cycle costs for their equipment.

8 • FD 360-1000 Series

1 Compressors

Often people buy the same size compressor, but to optimize the system it's better to make a combination of different size compressors, technologies and controls.
Compressors come in all size and variants, but in almost all cases we need to dry the air to avoid downstream corrosion or end product contamination. This can be realized by a full feature dryer integrated in the compressor or with a standalone dryer allowing you to size if for your specific operating conditions.

2 Downstream air treatment

Besides dryers Atlas Copco offers a broad spectrum of products for air treatment. The filter range can successfully remove oil, water and dust from basic filtration up to the level of sterile filtration. The Atlas Copco gas generators offer a broad scope of products in on site oxygen and nitrogen generation.

3 Central controller

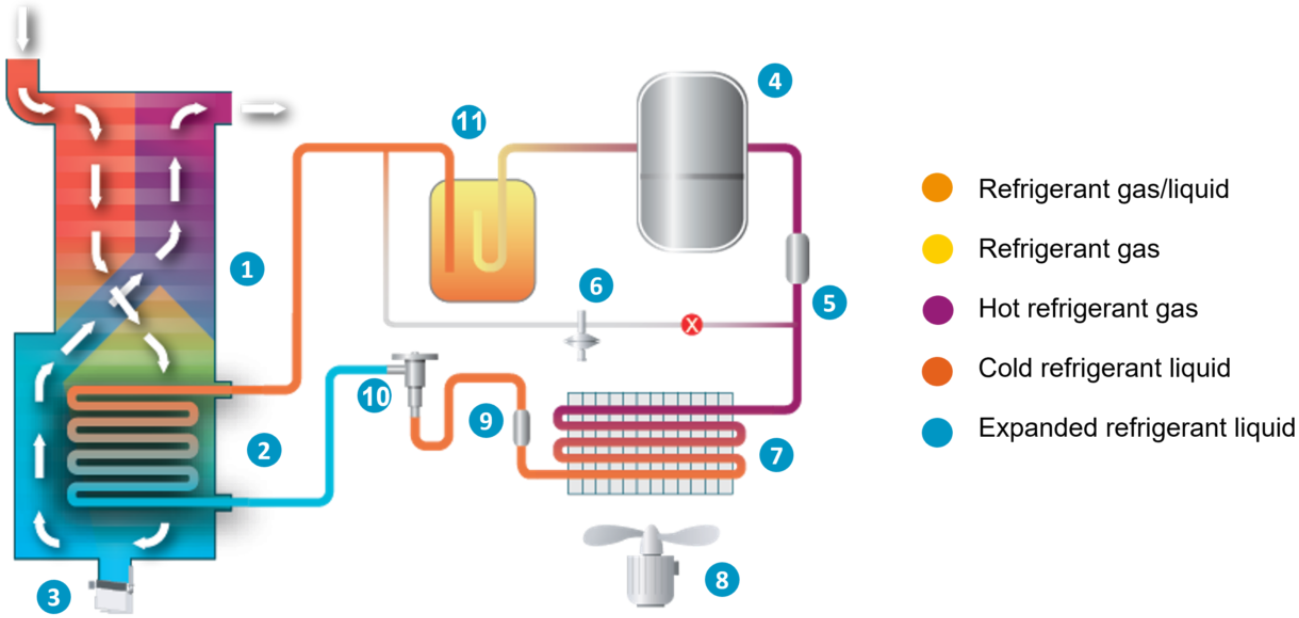
Having a central controller reduces the required average pressure band which results in a lower average operating pressure of your machines. By reducing the pressure by 1 bar (or 14.5 psi), your energy usage lowers by 7%.
By reducing the pressure by 1 bar (or 14.5 psi) decreases air leakages by 13%.
Multiple embedded functions in the Optimizer 4.0 in which pressure, capacity and speed can be regulated.

4 SMARTLINK

Monitor your compressed air installation with SMARTLINK
Knowing the status of your compressed air equipment at all times is
the surest way to achieve optimal efficiency and maximum availability.
Go for energy efficiency
Customized reports on the energy efficiency of your compressor room.
Increase uptime
All components are replaced on time, ensuring maximum uptime.
Save money
Early warnings avoid breakdowns and production loss.

Flowchart

Engineered with premium components, working principle of air-cooled version of FD series guarantees long-lasting durability and consistent operations.



1. Air to air part Heat exchanger
Incoming compressed air is cooled down by the outgoing dry cold compressed air.
2. Integrated water separator
The compressed air is cooled to the required dewpoint by the refrigerant. The water vapor condenses into water droplets.
3. Integrated water seperator
The moisture is collected and evacuated by the electronic zero loss drain.
4. Refrigerant compressor
The refrigerant compressor compresses the gaseous refrigerant to a higher pressure.
5. Oil separator
Filters compressor oil from refrigerant and guides it back to the compressor.
6. Hot gas bypass valve
The hot gas bypass valve prevents the heat exchanger from freezing at lower load conditions.
7. Refrigerant condenser
The refrigerant condenser cools the refrigerant so that it changes from a gas to a liquid.
8. Fans air cooled versions
The fans generate the required cooling air flow.
9. Refrigerant filter
The refrigerant filter protects the entire system from water and solid particles.
10. Expansion valve
The thermostatic expansion valve further reduces the pressure which cools the refrigerant.
11. Liquid separator
The liquid separator ensures that only gaseous refrigerant enters the compressor, avoiding cavitation in the refrigerant compressor.

Scope of supply

Air treatment	Inlet and outlet connections
	– DIN / ANSI flanges
	– BSPT / NPT thread
	Heat exchanger with integrated water separator
	400/3/50 and 380-460-575/3/60 electrical connection
	Electrical approval: IEC / cULus
	Zero loss condensate drain
Refrigerant	R410A (Fixed Speed Units) and R513A (VSD)
Unit controller	Elektronikon Mk5 Touch controller
	IP54 protection
	Voltage free contacts for remote alarm / warning signals
Framework	Base frame with forklift slot holes
	Unit canopy
SMARTlink	

Additional features and options

- Pre-setting of controller for imperial or metric usage
- Transportation protection

Technical specifications – 50Hz

FD fixed-speed Metric

Model	Inlet flow		Power	Pressure drop	Inlet/outlet connections	Suggested prefilter	Refrigerant R410A	CO2 equivalent	Dimensions			Weight
									width	length	height	
	l/s	m3/hr	kW	mbar	DIN PN16 / ANSI 150#	PD+ / UD+	kg	ton co2	mm			kg
FD 360	360	1296	3.5	200	ISO7/R3"	360	1.7	3,4	1020	1120	1400	230
FD 460	460	1656	3.7			525	3.0	6,3			1600	325
FD 530	530	1908	4.6			630	3.4	7,1				338
FD 660	660	2376	6.1		DN100	970F	4.8	10,0			1830	390
FD 880	880	3168	6.9				5.8	12,1		1520		508
FD 1000	1000	3600	7.1			1260F						

FD fixed-speed Imperial

Model	Inlet flow	Power	Pressure drop	Inlet/outlet connections	Suggested prefilter		CO2 equivalent	Dimensions			Weight
								width	length	height	
	cfm	hp	psi	DIN PN16 / ANSI 150#	PD+ / UD+	lbs	ton CO2	inch			lbs
FD 360	763	4.7	2.9	ISO7/R3"	360	3,6	3,4	40	44	55	507
FD 460	975	5			525	6,6	6,3			63	717
FD 530	1123	6.2			630	7,5	7,1				745
FD 660	1398	8.2		DN100	970F	10,6	10,0			72	860
FD 880	1864	9.3				12,8	12,1		60		1120
FD 1000	2119	9.5			1260F				60		

Reference conditions: Performance data per ISO 7183:2007
Ambient temperature: 25°C, 77°F
Inlet compressed air temperature: 35°C, 95°F
Inlet pressure: 7 bar(e)/102 psig
Inlet humility: 100% RH
Outlet pressure dewpoint: 3°C / 37.4°F

FD VSD Metric

Model	Inlet flow		Power	Pressure drop	Inlet/outlet connections	Suggested prefilter	Refrigerant R513A	CO2 Equivalent	Dimensions			Weight
									width	length	height	
	l/s	m3/hr	kW	mbar	DIN PN16 / ANSI 150#	PD+ / UD+	kg	ton CO2	mm			kg
FD 360 VSD	360	1296	2.5	200	ISO7 / R3"	360	1.8	1.1	1020	1120	1400	235
FD 460 VSD	460	1656	2.6			525	2.9	1.8			1600	330
FD 530 VSD	530	1908	3			630	3.3	2.1				345
FD 660 VSD	660	2376	4.6		DN100	970F	4.7	2.9			1830	405
FD 880 VSD	880	3168	5.4				5.3	3.3		1520		505
FD 1000 VSD	1000	3600	5.8			1260F						

FD VSD Imperial

Model	Inlet flow	Power	Pressure drop	Inlet/outlet connections	Suggested prefilter	Refrigerant R513A	CO2 equivalent	Dimensions			Weight
								width	length	height	
	cfm	hp	psi	DIN PN16 / ANSI 150#	PD+ / UD+	lbs	ton co2	inch			lbs
FD 360 VSD	763	3.4	2.9	ISO7 /R3"	360	4,0	1,1	40	44	55	518
FD 460 VSD	975	3.5			525	6,4	1,8			63	728
FD 530 VSD	1123	4			630	7,2	2,1				761
FD 660 VSD	1398	6.2		DN100	970F	10,3	2,9			72	893
FD 880 VSD	1864	7.2				11,6	3,3		60		1113
FD 1000 VSD	2119	7.8	2,9		1260F						

Reference conditions: Performance data per ISO 7183:2007
Ambient temperature: 25°C, 77°F
Inlet compressed air temperature: 35°C, 95°F
Inlet pressure: 7 bar(e)/102 psig
Inlet humility: 100% RH
Outlet pressure dewpoint: 3°C / 37.4°F

Technical specifications – 60Hz

FD fixed-speed Metric

Model	Inlet flow		Power	Pressure drop	Inlet/outlet connections	Suggested prefilter	Refrigerant R410A		Dimensions			Weight
									width	length	height	
	l/s	m3/hr	kW	mbar	DIN PN16 / ANSI 150#	PD+ / UD+	kg	ton co2	mm			kg
FD 360	360	1296	5.81	200	NPT 3"	360	1.7	3,4	1020	1120	1400	230
FD 460	460	1656	6.03			525	3.0	6,3			1600	325
FD 530	530	1908	6.75			630	3.4	7,1				338
FD 660	660	2376	7.84		ANSI 4"	970F	4.8	10,0			1830	390
FD 880	880	3168	9.3				5.8	12,1		1520		508
FD 1000	1000	3600	9.5			1260F						

FD fixed-speed Imperial

Model	Inlet flow	Power	Pressure drop	Inlet/outlet connections	Suggested prefilter	Refrigerant R513A	CO2 equivalent	Dimensions			Weight
								width	length	height	
	cfm	hp	psi	DINPN16 / ANSI 150#	PD+ / UD+	lbs	ton CO2	inch			lbs
FD 360	763	7.8	2.9	NPT 3"	360	3,6	3,4	40	44	55	507
FD 460	975	8.1			525	6,6	6,3			63	717
FD 530	1123	9.1			630	7,5	7,1				745
FD 660	1398	10.5		ANSI 4"	970F	10,6	10			72	860
FD 880	1864	12.5				12,8	12,1		60		1120
FD 1000	2119	12.7			1260F						

Reference conditions: Performance data per ISO 7183:2007
Ambient temperature: 38°C, 100°F
Inlet compressed air temperature: 38°C, 100°F
Inlet pressure: 7 bar(e)/102 psig
Inlet humility: 100% RH
Outlet pressure dewpoint: 4°C / 39.2°F

Model	Inlet flow		Power	Pressure drop	Inlet/outlet connections	Suggested prefilter	Refrigerant R513A	CO2 equivalent	Dimensions			Weight
	l/s	m3/hr	kW	mbar	DIN PN16 / ANSI 150#	PD+ / UD+	kg	ton co2	width	length	height	kg
Model	Inlet flow		Power	Pressure drop	Inlet/outlet connections	Suggested prefilter	Refrigerant R513A	CO2 equivalent	Dimensions			Weight
	l/s	m3/hr	kW	mbar	DIN PN16 / ANSI 150#	PD+ / UD+	kg	ton co2	mm			kg
VSD												
FD 530 VSD	530	1908	5.8	200		630	3.3	2,1	1020	1112	1596	345
FD 660 VSD	660	2376	6.4		ANSI 4"	970F	4.7	2,9		1114	1826	405
FD 880 VSD	880	3168	9.8				5.8	3,6		1523		505
FD 1000 VSD	1000	3600	10.7	220		1260F						

FD VSD Imperial

Model	Inlet flow	Power	Pressure drop	Inlet/outlet connections	Suggested prefilter	Refrigerant R513A	CO2 equivalent	Dimensions			Weight
	cfm	hp	psi	DIN PN16 / ANSI 150#	PD+ / UD+	lbs	ton co2	width	length	height	lbs
								inch			
FD 360 VSD	763	6.4	2.9	NPT 3"	360	4,0	1.1	40	44	55	518
FD 460 VSD	975	7.1			525	6,4	1.8			63	728
FD 530 VSD	1123	7.8			630	7,2	2.1				761
FD 660 VSD	1398	8.6		ANSI 4"	970F	10,3	2.9			72	893
FD 880 VSD	1865	13.1				12,7	3.6		60		1113
FD 1000 VSD	2119	14.3			1260F						

Reference conditions: Performance data per ISO 7183:2007
Ambient temperature: 38°C, 100°F
Inlet compressed air temperature: 38°C, 100°F
Inlet pressure: 7 bar(e)/102 psig
Inlet humility: 100% RH
Outlet pressure dewpoint: 4°C / 39.2°F

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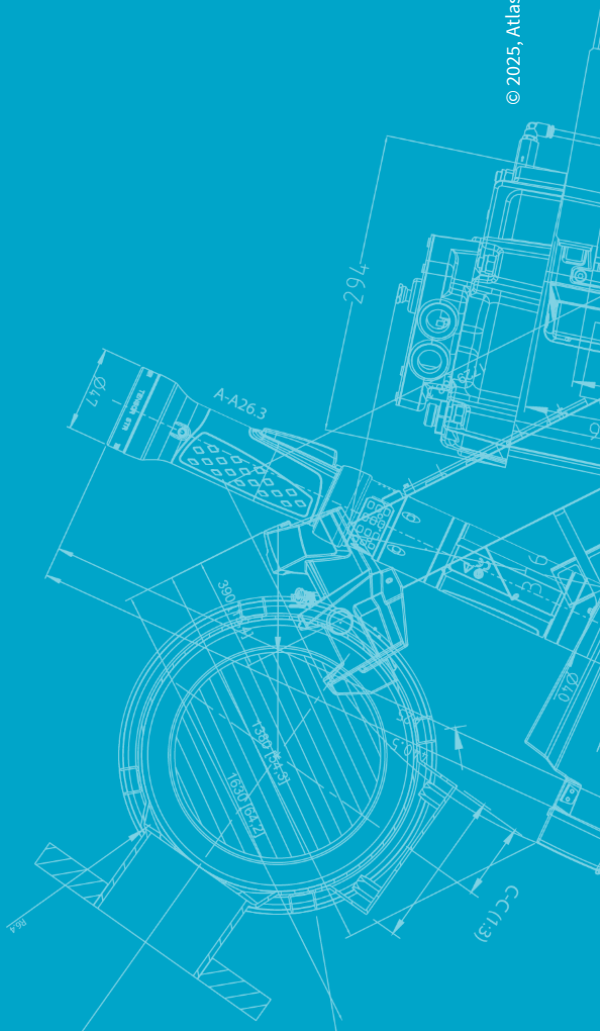

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