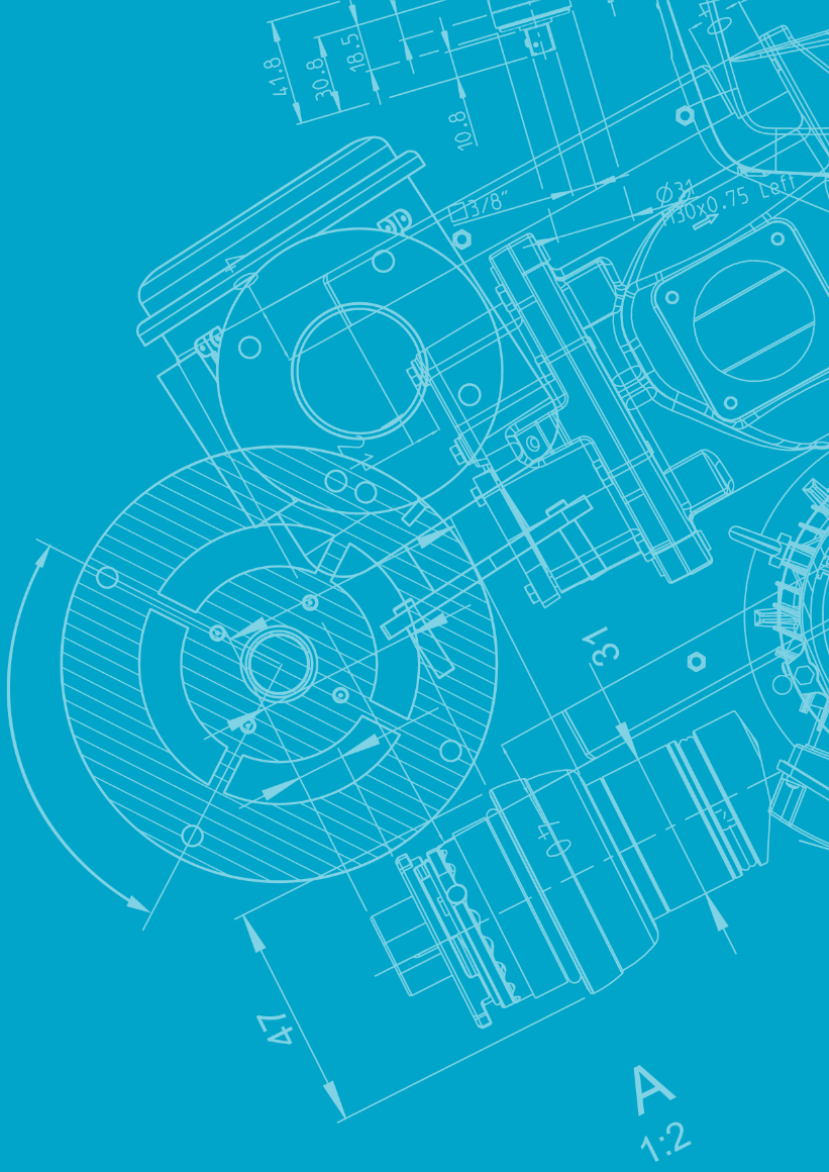
Protecting your systems & processes

High Pressure refrigerant air dryers



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Why dry your compressed air?

Compressed air contains oil, solid particles and water vapors. It is the inherent result of the compression process, which concentrates the natural water vapors and particles in the air that surrounds us. This untreated compressed air poses a substantial risk to your air system and end products. Its moisture content alone can cause corrosion in pipe work, premature failure of pneumatic equipment, product spoilage and more. An air dryer is therefore essential to protect your systems and processes.

Reliable system protection

As dry and clean compressed air is crucial for PET industry, it must be produced reliably, energy efficiently and cost effectively. Our compact refrigerant dryers protect your systems and processes. Their robust design combined with easy maintenance ensures they operate with total reliability and deliver the desired quality of air.

Optimal durability

A reliable, economic and simple solution to avoid condensation and thereby corrosion in your systems.

Low maintenance

Minimum maintenance delivers maximum uptime. This reduces your production costs through less downtime.

Easy installation

This refrigerated air dryer follows the plug-and-play concept, meaning you can easily install your unit.

Reliable and compact

The Atlas Copco FDH75-450 refrigerant dryers keep your compressed air system in optimal shape, removing humidity efficiently and reliably. With a stable pressure dewpoint, these compact, low maintenance dryers are compatible with most compressor technologies and applications.

Robust and compact design

- Solid base frame with very small footprint
- Standard canopy, from smallest to largest size, ensures quiet, clean and safe operation.

Easy installation and maintenance

- The plug and play principle ensures direct air quality.
- This dryer is space-saving and designed in such a way maintenance can be performed easily.

Ideal for heavy and subtropical conditions

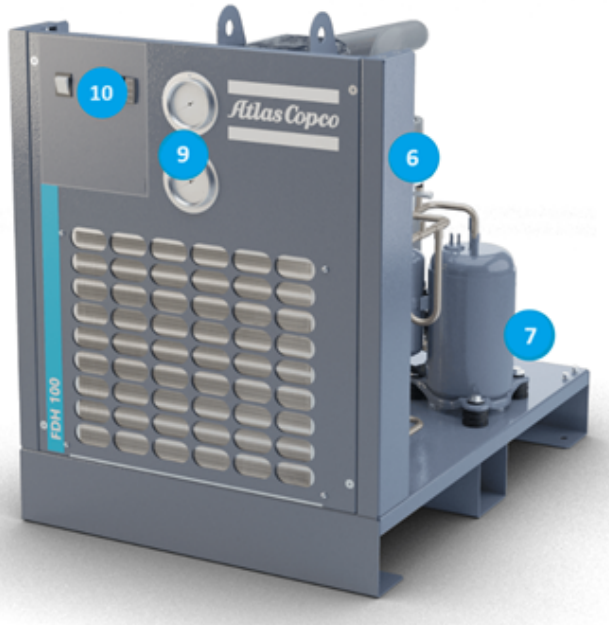
- Delivering quality compressed air in heavy ambient conditions is common practice for this dryer thanks to its design with high reference conditions & high limit conditions.
- Even during temporary overload continuous operation is guaranteed.

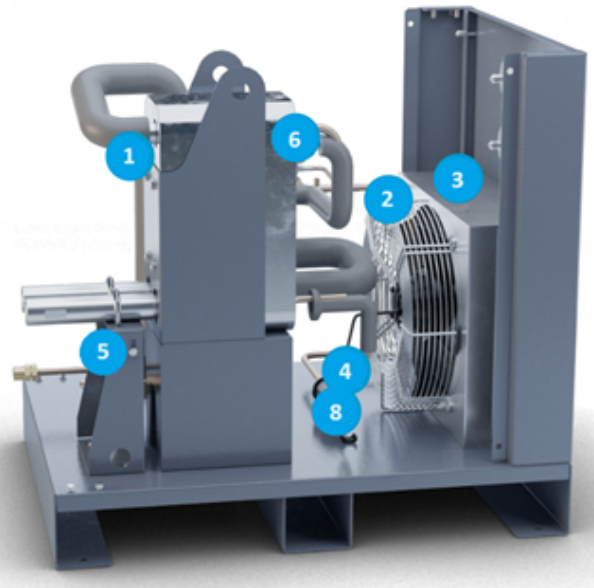

Atlas Copco
FDH 100

Air treatment

Designed to perform in heavy and even subtropical conditions, the HF dryer delivers you simple and reliable operation, excellent protection of your products and systems against damage or corrosion.

FDH 100





1 Heat exchanger

- Minimum pressure drop and maximum heat transfer efficiency design.
- Removal of nearly 100% condensate by mechanical separator.
- No consumables.

2 Motor fan

Silent heat exchanger motor fan

3 Condenser

- Copper pipes & aluminum fins to condense the refrigerant.
- With a large exchange surface for high thermal exchange.

4 Refrigerant filter

- To remove moisture and particles from the refrigerant system.
- Maximum working pressure: 45 bar.

5 Electrical timer drain

- Each of the dryer heat exchangers is equipped with a separate zero air loss automatic drain.
- No additional connections or interconnections required that could cause leakages or drain system malfunctions.

6 Hot gas bypass valve

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.

7 Refrigerant compressor

- Accurately sized for best performance with the lowest energy consumption in mind.

8 Capillary

Copper tube to reduce refrigerant pressure.

9 High & low pressure gauge

To indicate the evaporating & condensing pressure of the refrigerant.

10 LAT indicator

Lowest Air Temperature (LAT) measurement to verify the air quality.

Smart AIR Solutions

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

1 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.

2 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.

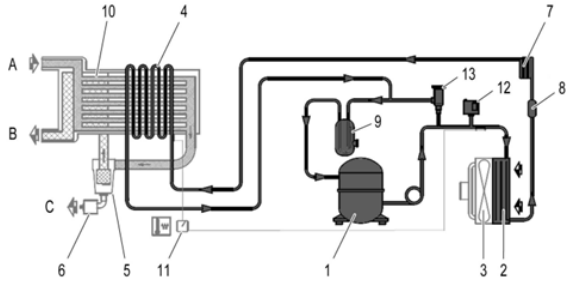
3 Downstream air treatment

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.

4 Air receiver

A correctly sized air receiver brings both energy efficiency and system reliability. It allows a narrow pressure band and limits the un-& offload cycles to reduce stress on element bearings and other internal components.

Working principle



1. Refrigerant compressor
2. Condensor
3. Motor fan
4. Air-to-refrigerant heat exchanger/evaporator
5. Water-air-separator
6. Condensate drain
7. Capillary tube
8. Filter
9. Liquid separator
10. Air-to-air heat exchanger
11. Dew point indicator
12. High pressure switch
13. Hot gas bypass valve

Air flow

Compressed air which needs to be dried enters the HE A-A section (10) and is then cooled by the outlet, in lower temperature & dried air. Due to the fact that the temperature decreases, the water vapor within the inlet air starts to condense. Then the air flows into the evaporator (4) and is cooled further down to the evaporating temperature of the refrigerant. More liquid water condenses. The cold air with liquid water droplet then flows through the WSD (5) where the liquid water is separated from the air. Liquid water is exhausted out via the drain valve (6). Next, the cold & dried air flows back to the HE A-A section (10) where it is warmed up by the inlet hot & wet air and then goes out through the air outlet of the heat exchanger.

Refrigerant flow

The refrigerant compressor (1) drives high temperature, high pressure refrigerant gas through the water-cooled/air-cooled condenser (2), where the refrigerant gas condenses into liquid refrigerant. Then the liquid refrigerant flows through the dryer filter (8) (to avoid moisture & particles), and then to the expansion element (expansion valve or capillary) (7). After passing through the expansion element (7), the refrigerant switches to much lower temperature & pressure. This refrigerant then enters the evaporator (4) and absorbs heat from the inlet hot compressed air to evaporate. After evaporating, gas (or gas/liquid mixture) refrigerant goes back to the suction of the refrigerant compressor (1) after the gas/liquid separator (9) (to avoid possible liquid-shock). The high pressure protection switch (12) is applied to avoid refrigerant pressure over-limit. At no-load or quite low-load, the hot gas bypass valve (HGB) (13) would bypass the hot-gas-refrigerant from the compressor outlet to avoid possible freezing (iceblock) failure.

Automatic regulation system

The condenser pressure must be kept as constant as possible to obtain stable operation. The fan control switch therefore stops and starts the cooling fan (3). If, under partial or no load, the evaporator pressure drops below a certain level, the hot gas bypass valve (9) opens and hot, high-pressure gas is fed to the evaporator circuit to prevent the evaporator pressure from dropping any further.

Product grouping

Model	FAD		Max. working pressure	Power supply	Refrigerant
	m^3/min	l/s	bar		
FDH75	4.5	75	43	230V/1PH/50Hz 230V/1PH/60Hz	R410A
FDH100	6	100			
FDH150	9	150			
FDH250	15	250			
FDH450	27.5	450			

Technical specifications

Model	Nominal power		Dimensions						Nominal PDP	Compressed air connection	Drain connection
	50 Hz	60 Hz	Length		Width		Height		40 barg		
	W	W	mm	inch	mm	inch	mm	inch	°C		
FDH75	750	900	750	29.53	570	22.44	725	28.54	3	G1" F	G1/2" M
FDH100	750	900	750	29.53	570	22.44	725	28.54	3	G1" F	G1/2" M
FDH150	1050	1150	950	37.40	660	25.98	800	31.50	3	G1" F	G1/2" M
FDH250	1650	1550	1350	53.15	880	34.65	1035	40.75	7	G2-1/2" F	G1/2" M
FDH450	2950	3350	1350	53.15	880	34.65	1035	40.75	7	G2-1/2" F	G1/2" M

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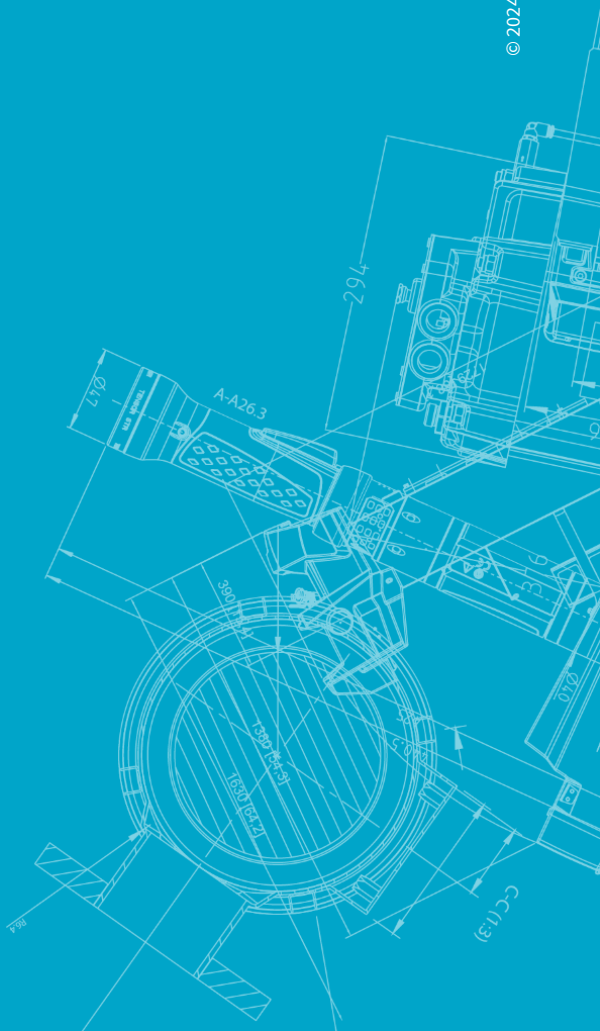

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