ALUP Kompressoren

Refrigeration Air Dryers

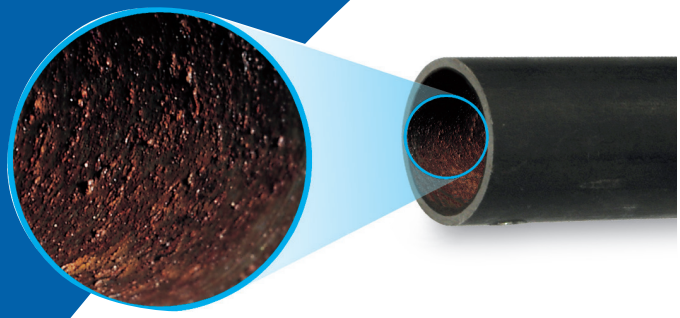
ADQ

Capacity:
21-4200 m^3/h

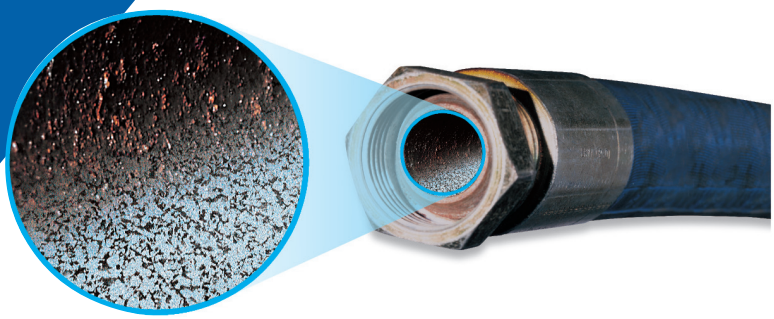
Water Contamination in Compressed Air

The water contained in a compressed air system will vary according to ambient conditions, i.e. temperature and humidity. After compression the water vapour will travel into the system in exactly the same way as the compressed air itself.
A basic compressed air system will include an aftercooler which will allow the removal of some of the condensate, despite this however a large quantity of water will enter the distribution system.

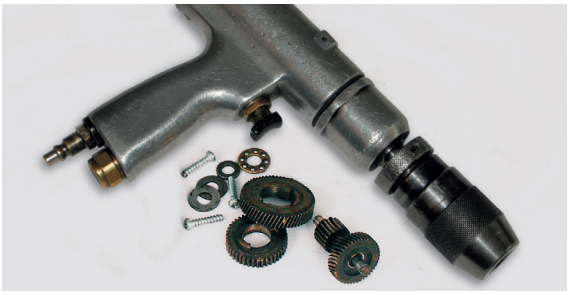
Following entry into the distribution system, the compressed air will undergo further cooling and expansion and as a result condensate will collect in the distribution pipe work and ancillary devices.



Over time the condensate in the pipe work may cause corrosion and subsequently failure and leaks. Furthermore the condensate present in all of the downstream pneumatic equipment will cause serious damage resulting in breakdowns, additional maintenance and increased production costs. In applications where compressed air is in contact with the final product, damage may occur to the product itself increasing costs further.



The ADQ refrigerated compressed air dryer employs refrigeration technology in order to cool the compressed air to the optimum temperature in order to remove condensate (dewpoint) and is designed to remove up to 99 % of the condensate present.



THE DANGERS AND RISKS OF WATER CONTAMINATION

- Corrosion to the distribution system:
the water that collects in the system over time will cause corrosion and consequently leaks, increasing your compressed airconsumption and therefore energy costs. Furthermore the scale formed inside the pipe work distribution system as a result of corrosion will increase pressure losses resulting in a further increase in energy and operating costs.

- Malfunction to pneumatically operated machinery and devices:
The contamination in all of the pneumatic equipment will result in lower productivity, poor reliability, increased maintenance and down time resulting in an overall reduction in manufacturing efficiency.

- Spoilt products:
The contamination in compressed air will have a direct influence on the quality of the manufactured goods. Imperfections caused by poor finishing when paint spraying or the presence of contamination in packaging, electronic or pharmaceutical applications can have a dramatic impact on product quality and performance.

ADQ dryers Air purity

For many companies in today's competitive global market, the treatment of compressed air is not an option, but a necessity to reduce operating costs and increase production efficiency.

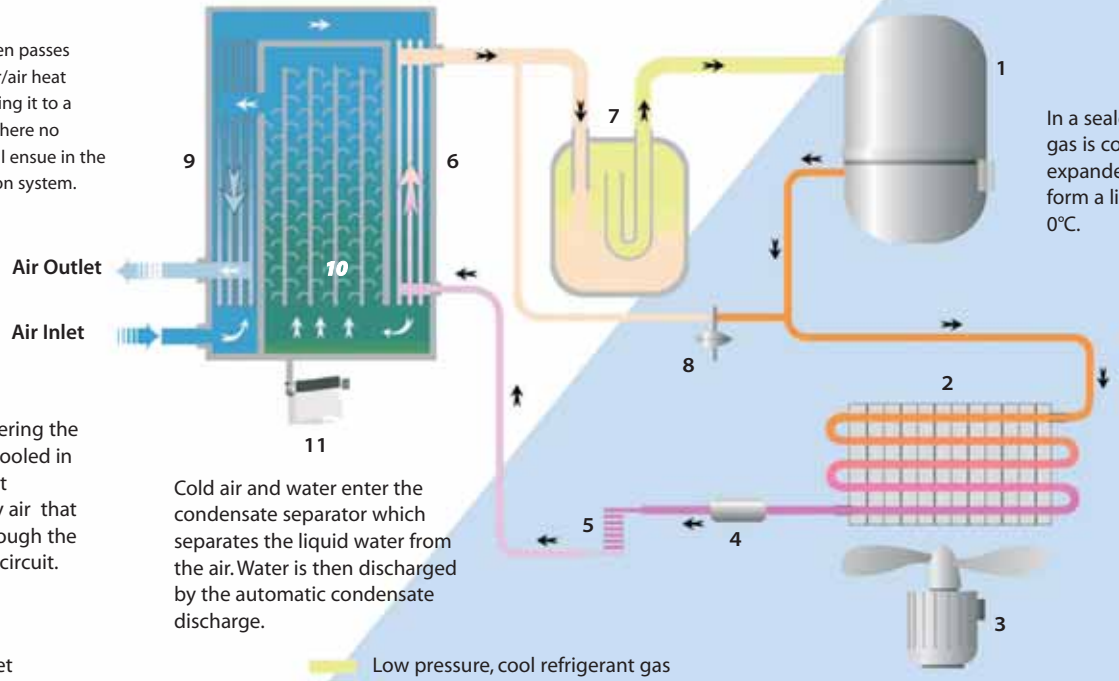
Being an efficient and simple technology, refrigeration dryers represent the preferred solution for the majority of these applications.

The ALUP Kompressoren ADQ dryers have been developed to supply dry compressed air for your production process, with a minimum power requirement and low pressure drop for optimum efficiency.

Pre-cooled air enters the air/refrigerant gas heat exchanger where the compressed air temperature is reduced. This causes condensate to develop and the correct dewpoint to be achieved.

The cold air then passes through the air/air heat exchanger, raising it to a temperature where no condensate will ensue in the pipe distribution system.

In a sealed circuit, refrigeration gas is compressed, condensed, expanded and then cooled to form a liquid at approximately 0°C.



Warm air entering the dryer is pre-cooled in an air/air heat exchanger by air that has been through the refrigeration circuit.

Cold air and water enter the condensate separator which separates the liquid water from the air. Water is then discharged by the automatic condensate discharge.

- Air Inlet
- Primary condensate flow
- Secondary condensate flow
- Air Outlet
- Refrigerant gas/liquid mixture
- Low pressure, cool refrigerant gas
- High pressure, hot refrigerant gas
- High pressure, refrigerant liquid
- Low pressure refrigerant liquid

1 Refrigerant compressor
2 Refrigerant condenser
3 Fan
4 Refrigerant filter
5 Capillary tube
6 Air/refrigerant heat exchanger
7 Liquid separator
8 Hot gas by-pass valve
9 Air/air heat exchanger
10 Condensate separator
11 Automatic condensate discharge

TECHNICAL SPECIFICATIONS

Types			ADQ 21	ADQ 36	ADQ 51	ADQ 72	ADQ 110	ADQ 141	ADQ 180	ADQ 216	ADQ 246	ADQ 312	ADQ 390	ADQ 462	ADQ 600	ADQ 720	ADQ 900	ADQ 1080	ADQ 1440	ADQ 1800	ADQ 2100	ADQ 3000	ADQ 4200
Flow treated according to temperature of compressed air input	① 35 °C.	m³/h.	21	36	51	72	110	141	180	216	246	312	390	462	600	720	900	1080	1440	1800	2100	3000	4200
		Cfm	12.4	21.2	30.0	42.4	64.4	83.0	106	127	145	184	230	272	353	424	530	636	848	1060	1237	1766	2472
	40 °C.	m³/h.	17.2	29.5	41.8	59.0	90.2	116	148	177	202	256	320	379	492	590	738	886	1181	1476	1722	2460	3444
		Cfm	10.2	17.4	24.6	34.8	52.8	68	87	104	119	151	189	223	289	348	435	522	695	869	1014	1448	2027
	45 °C.	m³/h.	14.5	24.8	35.2	49.7	75.9	97	124	149	170	215	269	319	414	497	621	745	994	1242	1449	2070	2898
		Cfm	8.6	14.6	20.7	29.3	44.4	57.27	73	88	100	127	159	188	244	293	366	439	585	731	854	1219	1706
Nominal electrical power 1		kW	0.13	0.16	0.19	0.27	0.28	0.61	0.67	0.79	0.87	1.07	1.19	1.45	1.82	2.01	2.64	3.57	3.90	4.46	5.55	6.80	10.20
Power supply voltage		V/Hz/Ph	230/50/1							400/50/3													
Max. operating pressure		bar	16	16	16	16	16	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Refrigerant gases			R134a							R404A													
Air connections		gas/DN	3/4"M	3/4"M	3/4"M	3/4"M	3/4"M	1"F	1"F	1"1/2F	1"1/2F	1"1/2F	1"1/2F	1"1/2F	2"F	2"F	2"F	2"F	3"F	3"F	3"F	DN125	DN125
Weight		Kg.	19	19	20	25	27	44	44	53	60	65	80	80	128	146	158	165	325	335	350	550	600

NOTES:

① Reference conditions
- Operating pressure : 7 bar (100 psi)
- Operating temperature : 35 °C
- Room temperature : 25 °C
- Pressure dew point : +3 °C +/- 1
- Available in different voltages and frequency values

Limit conditions:
- Working pressure : 16 bar (232 psi) (ADQ 21 up to 110)
  : 13 bar (188 psi) (ADQ 141 up to 4200)
- Operating temperature : 55 °C
- Min/Max room temperature : +5 °C; +45 °C

CORRECTION FACTOR FOR CONDITIONS DIFFERING FROM THE PROJECT K = A x B x C

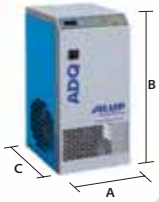
Room temperature	°C	25	30	35	40	45	
	A	1.00	0.92	0.84	0.80	0.74	(ADQ 21 up to 462)
		1.00	0.91	0.81	0.72	0.62	(ADQ 600 up to 4200)

Operating temperature	°C	30	35	40	45	50	55	
	B	1.24	1.00	0.82	0.69	0.58	0.45	(ADQ 21 up to 462)
		1.00	1.00	0.82	0.69	0.58	0.49	(ADQ 600 up to 4200)

Operation pressure	bar	5	6	7	8	9	10	11	12	13	14	15	16	
	C	0.90	0.96	1.00	1.03	1.06	1.08	1.10	1.12	1.13	1.15	1.16	1.17	(ADQ 21 up to 462)
		0.90	0.97	1.00	1.03	1.05	1.07	1.09	1.11	1.12				(ADQ 600 up to 4200)

The new flow rate value can be obtained by dividing the current or real flow rate by the correction factor related to the real operation conditions.

DIMENSIONS

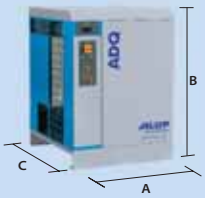


	A	B	C
ADQ21 to ADQ110	350	484	511
ADQ141 to ADQ180	370	764	515
ADQ216 to ADQ312	460	789	575
ADQ390 to ADQ462	580	899	604

Dimensions in mm

	A	B	C
ADQ600 to ADQ1080	735	1016	898
ADQ1440 to ADQ2100	1020	1560	1082
ADQ3000 to ADQ4200	100	1560	2099

Dimensions in mm



COMPACT INSTALLATION

Unique, light, and compact design makes dryer handling easy. The installation of the ADQ dryer is simple and requires no special equipment or foundation work.

To ensure operational reliability of the ADQ dryer range, it is recommended to install a ALUP Kompressoren pre-filter upstream of the dryer and a high efficiency oil removal filter downstream of the dryer to protect the air system against particle and oil contamination.

ADQ dryers

'AUTOMATIC ZERO LOSS' CONDENSATE DRAIN

All models are fitted with a SMART condensate drain. Each unit is specifically sized to each dryer and provides extremely reliable operation. The drain allows the removal of condensate only with no wasteage of compressed air resulting in significant energy savings. The standard alarm facility warns the operator of any malfunction.

- Allows for the discharge of condensate only and NOT compressed air.
- Silent operation provides a more comfortable environment.

OPTIONS FOR ADQ

BY – PASS VALVE + FILTER SUPPORT

The optional by-pass facility allows the system to operate using the filters only during maintenance or malfunction to the dryer thus avoiding any down time.

PS: Filters are not included in the option.

FILTER SUPPORT

This option allows two filters to be installed on the rear side of the dryer, reducing overall dimensions and installation costs.

ENVIRONMENTALLY FRIENDLY

A key objective in the design of the ADQ dryer was to arrive with a product that offers performance, reliability and safety with lowest possible environmental impact. Thanks to the use of new technology and materials this major achievement that would not have been possible even a few years ago is now a reality.

- No compressed air wastage during the condensate discharge phase.
- Noiseless condensate discharge operation.
- Environmentally friendly thanks to the use of R 134a and R404A gas.
- No impact on the ozone layer.
- High energy savings due to low pressure drops throughout the system.
- Cleaner compressed air distribution network for higher quality air supply applications.

Products, Concepts, Solutions

Built on the needs of the customer

For almost 100 years, we at ALUP have produced quality air compressors.

With our innovative system concepts we offer customised solutions for almost all applications.

Our endeavour lies not only in supplying compressors, we offer ourselves as a competent system provider, who is able to offer solutions to all users of compressed air.

That does not only apply to the consultation and installation phase of your new compressor(s), but naturally continues in all areas of service, maintenance and visualisation.

Challenge us!

Screw compressors

- constant speed 2.2 – 400 kW/ 5 – 13 bar
- variable speed controlled and direct drive 5.5 – 260 kW/ 5 – 13 bar
- oil-free, with water injection 15 – 55 kW/ 5 – 10 bar

Piston compressors

- oil-free, up to 10 bar 0.75 – 12 kW
- for normal pressure up to 10 bar 1.5 – 15 kW
- for medium pressure up to 15 bar 1.5 – 15 kW
- for high pressure up to 40 bar 2.2 – 45 kW
- as a booster for an input pressure up to 15 bar and an output pressure up to 40 bar 2.2 – 30 kW

Blower

- at constant speed 1.5 – 55 kW 300 – 1000 mbar
- with speed regulator and direct drive 3.0 – 55 kW 300 – 1000 mbar

Turbo compressors

- oil-free, up to 9 bar 65 – 370 kW

Complete accessories

- refrigeration dryers 0.27 – 100 m^3/min
- desiccant dryers 0.08 – 145 m^3/min
- activated carbon adsorbers 0.08 – 145 m^3/min
- filters, all particle sizes 0.5 – 225 m^3/min
- complete condensate management up to 120 m^3/min

Control, regulate, monitor

- lead-lag control
- consumption-dependant control
- visualisation (we bring your compressed air to the PC)
- tele-monitoring (the hotline of your compressed air station)

Your specialist

www.alup.com

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