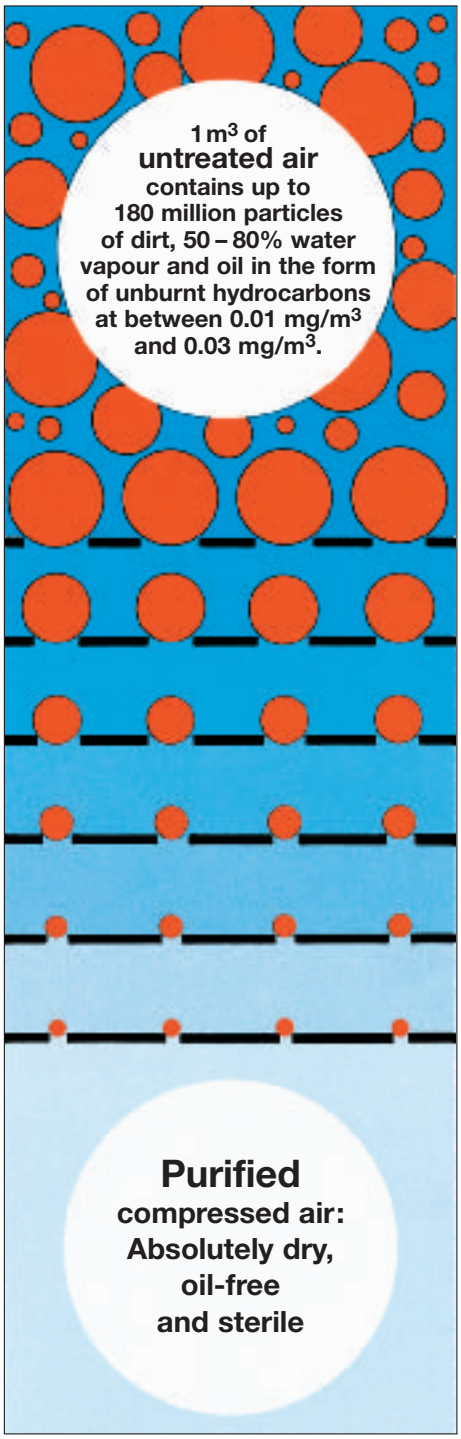
The Highest Quality
Compressed air treatment
Compressed air storage
Condensate management

Air. CompressedAir. BogeAir.

BOGE

Solutions to improve air quality
Guidance on the treatment of compressed air



Compressed air is used today in diverse industrial sectors. The multitude of applications range from untreated blow-down air to absolutely dry, oil-free and sterile compressed air for the pharmaceutical and food industry. This rich spectrum of applications demands individual levels of compressed air treatment, designed precisely for each application.

1 m³ of compressor intake air can contain up to 180 million particles of dirt. Besides these particles of dirt, the intake air can also contain 50 – 80% water vapour and oil in the form of unburnt hydrocarbons from machinery and waste gases. In addition, tiny amounts of lubricating oil and dust from the compressor can get into the compressed air network. When compressed to 10 bar for example, the concentration of these harmful substances increases eleven-fold, i. e. 1 m³ of compressed air can contains up to 2 billion particles of dirt. Depending on the application, these particles of dirt will have to be removed until the compressed air becomes absolutely dry, oil-free and sterile.

The table on page 3 gives a summary of levels of achievable air quality. However, it can only show an overview of the possibilities. When choosing a treatment system, the starting point must be to accurately determine the use of the air – the application. This establishes the required quality for the compressed air.

Compressed air treatment requires:

- additional investment cost
- maintenance work on treatment systems

But correct compressed air treatment:

- increases the service life of compressed air operated equipment
- improves the quality of your products
- increases your competitiveness
- increases your company's profitability
- reduces the risk of operating problems
- reduces repair costs for compressed air operated equipment
- reduces purchasing costs for piping systems

At the planning stage, the experienced BOGE team can advise you about the type of compressed air treatment most suited for your application. This support protects you from installing a higher – or lower – level of air treatment equipment than necessary. BOGE can provide you with the optimum solution for your application, both from the point of view of cost and quality.

Contents:

Air treatment to match your requirements

Not all compressed air is the same

Untreated compressed air contains water vapour (humidity) as well as particles of dust and oil. These impurities can cause problems in compressed air equipment, resulting in expensive downtime, high maintenance costs and reduced product quality.

The advantages of using BOGE air treatment technology

Greater availability of pneumatic tools and equipment

- trouble-free operation
- minimum maintenance
- low operating costs

Consistent product quality

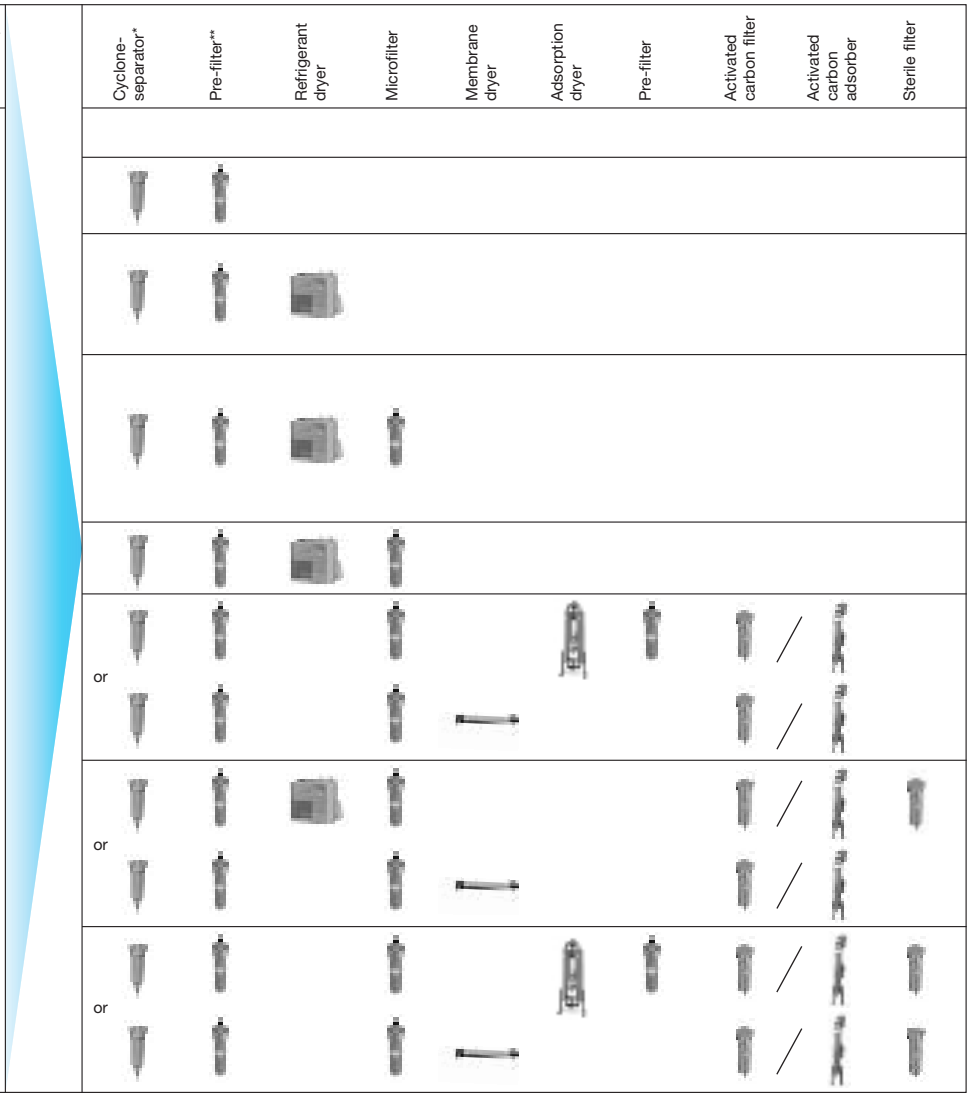
- reliability and long service life for compressed air equipment
- economic work processes
- increased competitiveness
- increased profitability

Low-cost installation of the compressed air pipe network

- pipes free of condensation and rust
- horizontal pipe runs
- branch lines direct to the work place
- pipelines without the need for condensate collectors

Compressed Air Treatment Overview:

Application for compressed air	Quality Class*** Dust	Water	Oil	Air compressor
• General industrial air • Blow-down air	—	—	—	BOGE- SCREW OR PISTON COMPRESSOR
• Sandblasting • Simple painting work	3	—	—	
• Conveying air • General factory air • High-quality sandblasting • Simple paint spraying	3	4	5	
• Pneumatic tools • Control air • Paint spraying • Air Conditioning • Fluidics • Measuring and control systems	1	4	1	
• Dental laboratory • Photographic laboratory	1	4	1	
• Control air • Instrument air • Pneumatics • High-quality paint spraying • Surface finishing • Breathing air	1	1-3	1	
• Medical system • Breathing Air • High quality conveying air • Food industry	1	3-4	1	
• Breweries • Dairies • Pharmaceutical industry	1	1-3	1	

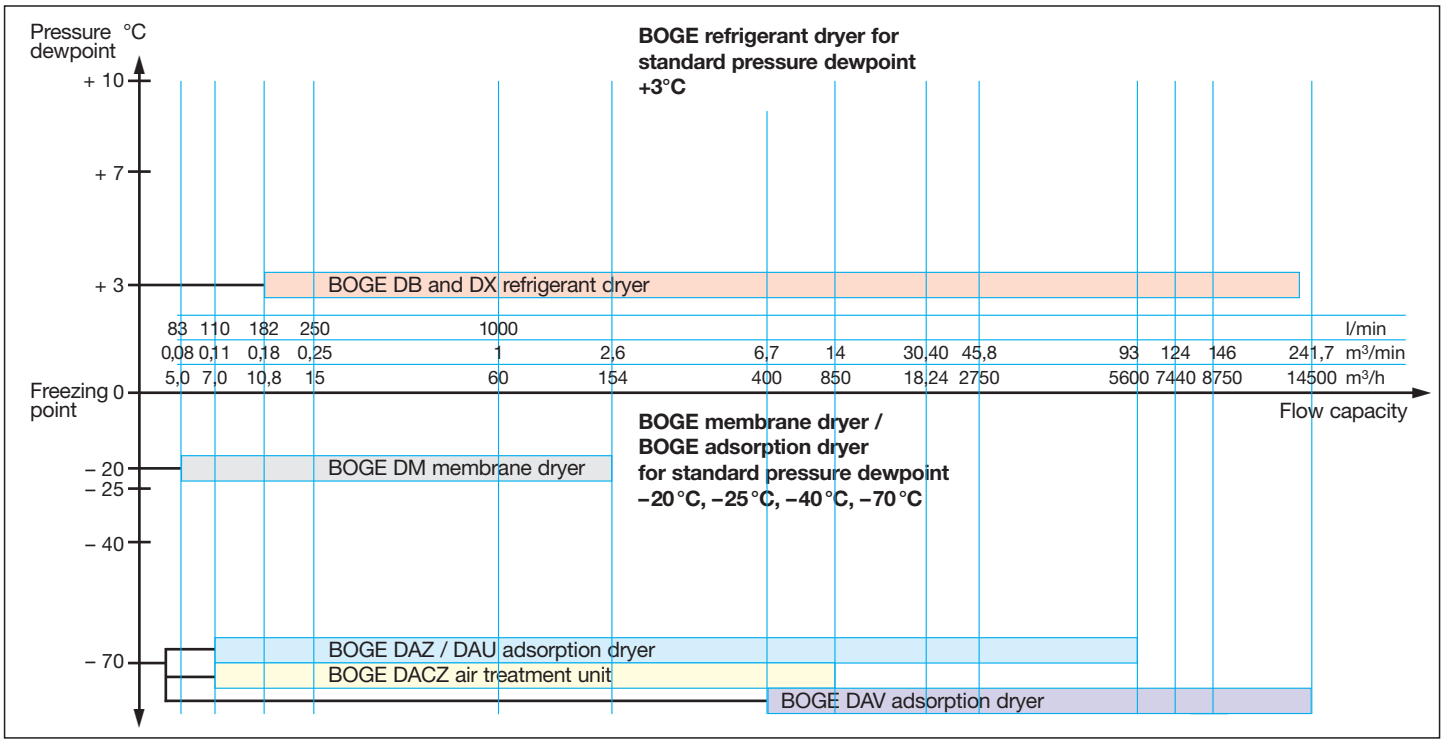


* Only for compressors without compressed air receiver

** Coarser impurities separated out to extend service life of microfilter

*** ISO 8573-1:1991

A complete range of quality drying solutions
BOGE Compressed Air Dryers



DB, DX = Refrigerant dryer
DM = Membrane dryer
DAZ / DAU = Adsorption dryer, heatless
DAV = Adsorption dryer, heat-regeneration with vacuum cooling
DACZ = Air treatment unit comprising DAZ adsorption dryer, heatless with activated carbon adsorber

Impurities and quality classes according to ISO 8573-1:2001

Class	Solid impurities				Humidity	Max. oil content mg/m³
	Max. particle size per m³				Max. pressure dewpoint	
	Max. particle size in µm					
	< = 0,1	0,1 < d < = 0,5	0,5 < d < = 1,0	1,0 < d < = 5,0		
0	As specified by user					
1	A/R	100	1	0	< = –70°C	< = 0,01 mg/m³
2	A/R	100.000	1.000	10	< = –40°C	< = 0,1 mg/m³
3	A/R	A/R	10.000	500	< = –20°C	< = 1 mg/m³
4	A/R	A/R	A/R	1.000	< = + 3°C	< = 5 mg/m³
5	A/R	A/R	A/R	20.000	< = + 7°C	–
6	–	–	–	–	< = +10°C	–
	Classes 6 and 7 are defined according to the maximum particle size and maximum density. Class 6: d < = 5 µm and density < = 5 mg/m³ Class 7: d < = 40 µm and density < = 10 mg/m³				Classes 7 to 9 are defined according to their liquid water content. Class 7: C_w < = 5 mg/m³ Class 8: 0.5 g/m³ < C_w < = 5 mg/m³ Class 9: 5 g/m³ < C_w < = 10 mg/m³	

BOGE DB and DX range of Refrigerant Dryers

Capacity: 0.167 – 237.5 m³/min., 6 – 8386 cfm
Max. operating pressure: 16 bar, 235 psig

The advantages of using a BOGE refrigerant dryer

Pressure dewpoint +3 °C
- *consistent high-quality compressed air*
- *lower pressure differential*
- *saving on running costs by avoiding high compression*

Large heat-exchanger surface, pressure dewpoint up to +15 °C possible at maximum ambient temperature of +50 °C and maximum compressed air inlet temperature of +70 °C
- *Higher flow capacity protect against production problems during brief extreme conditions*

Dryer control dependent on capacity Series from DB 15
- *Avoidance of unnecessary energy costs Saving potential up to 90%*

Refrigerant R 134a through the whole range
- *ozone-friendly*
- *environmentally friendly operation*
- *minimum amount of refrigerant required*

Refrigerant Dryers

One of the most economic methods of treating compressed air is with a refrigerant dryer. By cooling the compressed air down to near freezing point, the water and oil vapour are condensed and particles of dirt are bound together, the resulting condensate is then separated from the air flow.

In many cases, the pressure dewpoint need only be a few degrees lower than the ambient temperature to prevent condensate from forming in the pipes.

Intelligent Saving

Microprocessorized load dependent regulation of DB and DX series refrigerant dryers. DX series equipped with energy saving suction pressure or frequency regulation.
Saving potentials up to 90%.

Reduced quantity of refrigerant

R 134a is the standard refrigerant used throughout the whole DB and DX range. Unlike more traditional refrigerant dryers, the quantity required has been reduced considerably by up to 70%.

Environmentally friendly BOGE refrigeration technology

Anyone involved in refrigeration technology, has a special responsibility. That is why when designing the DB and DX series, right from the outset, a great deal of importance was attached to the environmentally friendly manufacture, operation and final waste-disposal of our refrigerant dryers.

Technical data for the BOGE DB series of Refrigerant Dryers
Flow capacity 0.167 – 27.5 m³/min., 6 – 972 cfm

Type	Flow capacity			Pressure differential at full load		Electr. power consumption		Electr. power supply V/		Compressed air connection	Cooling air required		Dimensions W x D x H	Weight
DB	l/min	m³/h	cfm	bar	psig	kW	HP	50 Hz	60 Hz	G	m³/h	cfm	mm	kg
1	167	10	6	0.11	1.6	0.13	0.18	230	230	3/8″	260	153	350 x 300 x 375	21
2	250	15	9	0.23	3.3	0.14	0.19	230	230	3/8″	260	153	350 x 300 x 375	22
3	300	18	11	0.26	3.7	0.15	0.20	230	230	3/8″	260	153	350 x 300 x 375	23
6	585	35	21	0.35	5.0	0.16	0.20	230	230	1/2″	240	141	350 x 350 x 400	25
7	670	40	24	0.29	4.1	0.25	0.34	230	230	1/2″	240	141	350 x 350 x 400	26
10	1000	60	35	0.29	4.1	0.27	0.37	230	230	3/4″	450	265	450 x 450 x 500	38
12	1135	68	40	0.32	4.6	0.33	0.45	230	230	3/4″	450	265	450 x 450 x 500	40
15	1500	90	53	0.16	2.3	0.35	0.48	230	230	3/4″	450	265	450 x 450 x 500	44
18	1750	105	62	0.13	1.9	0.46	0.63	230	230	1″	740	435	600 x 450 x 550	48
23	2250	135	80	0.18	2.6	0.70	0.95	230	230	1″	740	435	600 x 450 x 550	50
27	2585	155	91	0.23	3.3	0.74	1.00	230	230	1″	1000	590	600 x 450 x 550	52
30	3000	180	106	0.26	3.7	0.76	1.03	230	230	1″	1000	590	600 x 450 x 550	53
50	4585	275	162	0.27	3.9	0.88	1.20	230	–	1 1/2″	1300	766	600 x 600 x 650	74
60	6000	360	212	0.31	4.4	0.95	1.29	230	–	1 1/2″	920	540	600 x 600 x 650	85
70	6670	400	236	0.31	4.4	1.08	1.47	230	–	1 1/2″	920	540	600 x 600 x 650	95
85	8170	490	289	0.23	3.3	1.25	1.70	230	–	1 1/2″	920	540	600 x 600 x 650	99
110	10500	630	371	0.32	4.6	1.28	1.74	230	–	2″	2900	1705	900 x 800 x 1230	150
115	11000	660	389	0.31	4.4	1.45	1.97	230	–	2″	2900	1705	900 x 800 x 1230	155
130	12500	750	442	0.22	3.1	1.80	2.45	230	–	2″	2900	1705	900 x 800 x 1230	168
150	14670	880	518	0.31	4.4	2.40	3.26	400	–	2″	2600	1530	900 x 800 x 1230	175
180	17750	1065	627	0.30	4.3	2.56	3.48	400	–	2 1/2″	3100	1825	900 x 800 x 1230	176
190	18500	1110	654	0.28	4.0	2.80	3.80	400	–	2 1/2″	2600	1530	900 x 800 x 1230	181
225	22500	1350	795	0.16	2.3	2.95	4.01	400	–	2 1/2″	2600	1530	900 x 800 x 1230	186
235	23500	1410	830	0.19	2.7	3.10	4.22	400	–	2 1/2″	2600	1530	900 x 800 x 1230	191
275	27500	1650	972	0.31	4.4	3.25	4.42	400	–	2 1/2″	2600	1530	900 x 800 x 1230	197

Installation Requirements

For standard dryer designs, the room temperature and ambient temperature must not exceed +50 °C or fall below +2 °C. Sufficient clearance must be provided on all sides of the dryer to ensure good circulation of the cooling air.
A suitably dimensioned drainage pipe must be installed to remove condensate.

Explanations / Installation data

Flow capacity is based on the compressor's air intake +20 °C and 1 bar

- **Compressed air temperature +35 °C** (max. +55 °C or +60 °C is possible)
- **Operating pressure 7 bar** (max. 16 bar is possible)
- **Ambient temperature +25 °C** (max. +45 °C or +50 °C is possible)
- **Pressure dewpoint +3 °C** (different pressure dewpoints are possible) measured at dryer outlet

Technical data according to DIN ISO 7183.

For higher pressures and temperatures, different pressure dewpoints, and dryer capacities for values differing from DIN ISO 7183, available upon request.

Refrigeration system:
Complete refrigeration system with fully hermetic, refrigerant compressor.

Condensate drainage:
- Cyclone/Float DB 1 – DB 12
- Solenoid valve controlled dependent on capacity.
- Option: Bekomat from DB 10 – DB 275

Pressure dewpoint display:
Pressure dewpoint trend display on models DB 1 – DB 275

Multifunction display (from DB 15):
- Monitoring of pressure dewpoint
- Relative humidity at dryer outlet
- Malfunction display
  - Dewpoint sensor defect
  - Ambient temperature sensor defect
  - EEPROM error
  - Low voltage
  - Dewpoint too high
- Dewpoint too low (Anti-freeze protection)
- Malfunction history
- Maintenance interval expired
- Operating state condensate
- Operating hours

Refrigerant: R 134a

Options:
On models DB 1 to DB 275:
- Bypass assembly
- potential-free fault indication
- special voltages
- water-cooling (from model D 110 onwards)
- wall mounting on models DB 1 to DB 15 Series DB 18 – DB 30 as option
- internal frost protection (down to –10 °C) from model DB 15 onwards

Conversion factors

According to DIN ISO 7183, refrigerant dryers are designed for 7 bar operating pressure, an ambient temperature of 25 °C and an inlet temperature of 35 °C. For different operating pressures and temperatures, the following conversion factors should be used.

Ambient/cooling water temperature	(°C)	25		30		35		40		45		50				
Factor	f_1	1		0.97		0.94		0.87		0.75		0.62				
Inlet temperature	(°C)	30		35		40		45		50		55		60		
Factor	f_2	1.29		1		0.85		0.72		0.58		0.48		0.38		
Operating pressure	(bar)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Factor	f_3	0.6	0.7	0.8	0.88	0.94	1	1.04	1.06	1.09	1.1	1.12	1.14	1.15	1.16	1.17

Example (for dewpoint 3°C)

Delivery quantity	m³/h	750		Factor			
Ambient temperature (f_1)	°C	40	=	0.87	= $\frac{V}{f_1 \times f_2 \times f_3}$	= $\frac{750}{0.87 \times 0.72 \times 1.14}$	= 1050 **DB 180**
Inlet temperature (f_2)	°C	45	=	0.72			
Operating overpressure (f_3)	bar	13	=	1.14			

Technical data for the BOGE DX series of Refrigerant Dryers
Flow capacity 30 – 237.5 m³/min., 1059 – 8379 cfm

Type	Flow capacity			Pressure differential at full load		Electr. power consumption 100% full load	50% part load	0% off load	Electr. power supply	Compressed air connection	Cooling air required at aircooling		Cooling water required at watercooling		Dimensions W x D x H	Weight
DX	m³/min	m³/h	cfm	bar	psig	kW	kW	kW	V/50 Hz	(DIN 2633)	m³/h	cfm	m³/h	cfm	mm	kg
300	30.0	1800	1059	0.12	1.74	3.1	1.7	0.4	400	DN 100	4800	2823	1.0	0.588	900 x 1175 x 1725	412
330	33.3	2000	1176	0.14	2.03	3.2	1.9	0.4	400	DN 100	4800	2823	1.1	0.647	900 x 1175 x 1725	420
380	38.3	2300	1353	0.19	2.76	3.4	2.0	0.4	400	DN 100	4800	2823	1.3	0.765	900 x 1175 x 1725	425
465	46.6	2800	1647	0.24	3.48	3.9	2.3	0.5	400	DN 100	5200	3058	1.6	0.941	900 x 1175 x 1725	435
580	58.3	3500	2058	0.11	1.60	5.9	3.4	0.7	400	DN 150	9600	5645	2.0	1.176	1200 x 1200 x 1940	610
715	71.6	4300	2529	0.16	2.32	6.6	3.8	0.8	400	DN 150	9600	5645	2.5	1.470	1200 x 1200 x 1940	630
915	91.6	5500	3234	0.24	3.48	8.0	4.6	1.0	400	DN 150	10400	6115	2.9	1.710	1200 x 1200 x 1940	670
1165	116.7	7000	4116	0.19	2.76	9.9	5.6	1.2	400	DN 200	19200	11290	4.0	2.350	2225 x 1200 x 1970	995
1455	145.8	8750	5145	0.17	2.47	12.4	7.0	1.6	400	DN 200	19200	11290	5.2	3.060	2225 x 1200 x 1970	1165
1750	175.0	10500	6174	0.22	3.19	14.6	8.2	1.8	400	DN 200	20800	12231	6.4	3.760	2225 x 1200 x 1970	1225
2080	208.3	12500	7350	0.22	3.19	18.6	10.3	2.3	400	DN 250	23000	13524	7.5	4.410	3345 x 1200 x 2030	1710
2375	237.5	14250	8379	0.20	2.90	20.2	11.2	2.5	400	DN 250	23000	13524	8.5	5.000	3345 x 1200 x 2030	1940

Installation Requirements

For standard dryer designs, the room temperature and ambient temperature must not exceed +50 °C or fall below +2 °C. Sufficient clearance must be provided on all sides of the dryer to ensure good circulation of the cooling air.
A suitably dimensioned drainage pipe must be installed to remove condensate.

Explanations / Installation data

Flow capacity is based on the compressor's air intake +20 °C and 1 bar

- **Compressed air temperature +35 °C** (max. +70 °C is possible)
- **Operating pressure 7 bar** (max. 16 bar is possible)
- **Ambient temperature +25 °C** (max. +50 °C is possible)

Pressure dew point 3°C:
Technical data according to DIN ISO 7183
Pressure dew point freely adjustable between:

- Normal, summer and automatic mode
- Pressure dew point display
- Max. operating pressure up to 16 bar
- Air inlet temperature up to 70°C
- Ambient temperature up to 50°C

Energy Saving:
Intelligent load dependent refrigerant dryer regulation using:

- Suction pressure regulation on DX 300 thru DX 465
- Frequency control on DX 580 thru DX 2375 Standard energy saving potentials up to 90%

Display:

- Easy to read display of all major operation parameters
- Permanently lit display
- Informative display of energy consumption

Communication:

- Standard CAN Bus interface
- Potential free operating message
- Potential free DTP error message

Standard:

- Environment friendly coolant R134a
- Electronically level controlled condensate drain without pressure loss

Optional:

- By-pass for all DX models
- Water cooled version for DX 300 thru DX 915
- Air cooled version for DX 1165 thru DX 2375
- Frost proof inside installation up to –10°C

Conversion factors

According to DIN ISO 7183, refrigerant dryers are designed for 7 bar operating pressure, an ambient temperature of 25°C and an inlet temperature of 35°C. For different operating pressures and temperatures, the following conversion factors should be used.

Ambient/cooling water temperature	(°C)	25	30	35	40	45	50								
Factor	f_1	1	0.98	0.93	0.84	0.72	0.56								
Inlet temperature	(°C)	30	35	40	45	50	55	60	65	70					
Factor	f_2	1.20	1	0.82	0.67	0.55	0.45	0.38	0.34	0.30					
Operating pressure	(bar)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Factor	f_3	0.6	0.7	0.8	0.88	0.94	1	1.04	1.06	1.09	1.1	1.12	1.14	1.15	1.16	1.17

Example (for dewpoint 3°C)

Delivery quantity	m³/h	3500		Factor				
Ambient temperature (f_1)	°C	40	=	0.84	=	$\frac{V}{f_1 \times f_2 \times f_3}$	= $\frac{3500}{0.84 \times 0.55 \times 1.09}$	= 6950 **DX 1165**
Inlet temperature (f_2)	°C	50	=	0.55				
Operating overpressure (f_3)	bar	10	=	1.09				

BOGE-Membrane Dryer, DM...V Series

Flow capacity: 125 – 2150 l/min., 4.41 – 75.90 cfm
Max. operating pressure: 12 bar, 175 psig

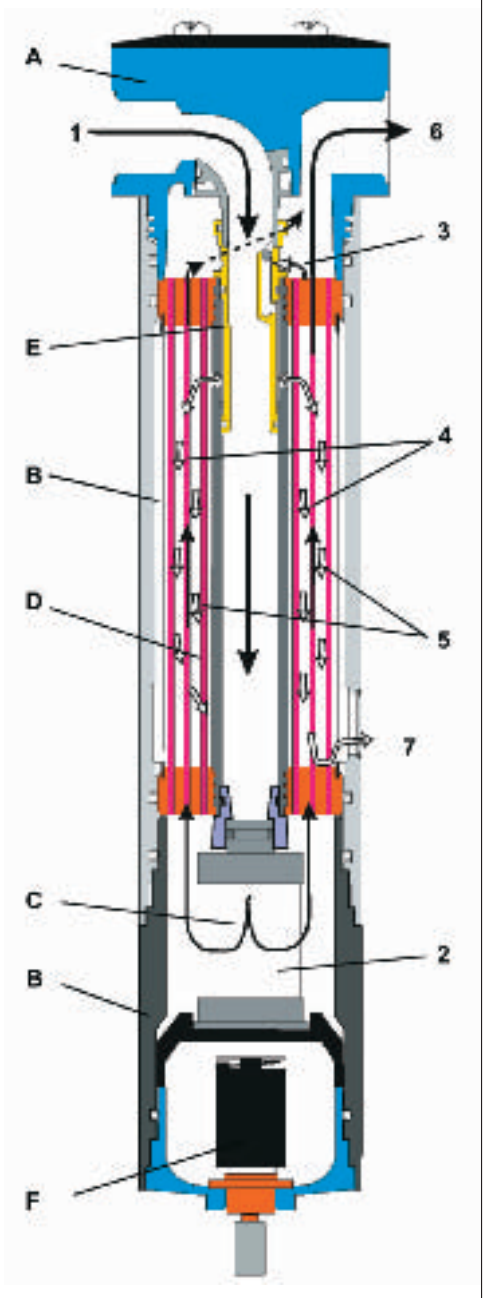
Dry compressed air can save you money!

Compressed air always contains humidity, traces of compressor oil and particles of dust. These impurities can lead to serious problems.

Pockets of corrosion or deposits can form on tooling and pneumatics, reducing efficiency and spoiling product quality.

Maintenance work is required resulting in costly downtime.

Membrane Dryers are used to reduce the pressure dewpoint. Preferably to be installed between compressor and compressed air receiver.



Membrane Dryer Layout
A : Head (inlet / outlet)
B : Housing / Filter housing
C : Internal filter
D : Membrane element including main pipe
E : Nozzle with adapter
F : Float drain

Function

(**1**) Saturated compressed air enters via the dryer cap (**A**) and flows down the central pipe (**D**).

(**2**) A small internal filter (**C**) removes any remaining aerosols and particles into the drain area at the bottom.
The saturated air exits the filter and the flow direction is reversed to pass through the carefully bundled membranes.

(**3**) Simultaneously, from the dry air outlet chamber, a measured amount of the dry air is re-introduced to the top of the membrane pack and flows as purge air (**4**) between the membranes.

(**5**) This purge air flows in the opposite direction to the drying air (inside the membranes) and captures the water molecules that permeate the membrane. The purge air is re-humidified and then passes out of the dryer (**7**) back to atmosphere.

(**6**) Dry compressed air exits the membrane dryer.

(**7**) The re-humidified purge air escapes to atmosphere.

Pressure dewpoint reduced (Δt) between 20°C and 55°C
- *a multitude of applications are suitable for the Membrane Dryer*

Pre-filter with condensate drain supplied standard
- *technically oil-free compressed air*

No moving parts, no motors
- *electrical energy savings*

CFC free
- *significant contribution to protecting the ozone layer and the environment*

Water separation by means of pre-filtration
- *dependable operation of membrane dryer*

Compact unit
- *easy to install, small space required*
- *minimum installation costs*

Type	Max. operating pressure		Flow volume Dryer Inlet		Purge air			Flow volume Dryer Outlet		Compressed air connection	Dimensions L x W x H	Weight
DM...V	bar	psig	l/min	cfm	Δt	l/min	cfm	l/min (air used)	cfm	IN / OUT	mm	kg
05	7	100	300	10.59	20 K	30	1.06	270	9.53	G 3/8	167 x 60 x 522	3.0
05	9	130	420	14.83	20 K	38	1.34	382	13.49	G 3/8	167 x 60 x 522	3.0
05	12	175	620	21.89	20 K	50	1.77	570	20.12	G 3/8	167 x 60 x 522	3.0
05	7	100	180	6.35	35 K	30	1.06	150	5.30	G 3/8	167 x 60 x 522	3.0
05	9	130	250	8.83	35 K	38	1.34	212	7.48	G 3/8	167 x 60 x 522	3.0
05	12	175	370	13.06	35 K	50	1.77	320	11.30	G 3/8	167 x 60 x 522	3.0
05	7	100	125	4.41	55 K	30	1.06	95	3.35	G 3/8	167 x 60 x 522	3.0
05	9	130	175	6.81	55 K	38	1.34	137	4.84	G 3/8	167 x 60 x 522	3.0
05	12	175	255	9.00	55 K	50	1.77	205	7.24	G 3/8	167 x 60 x 522	3.0
06	7	100	400	14.12	20 K	40	1.41	360	12.71	G 3/8	167 x 60 x 582	3.2
06	9	130	560	19.77	20 K	50	1.77	510	18.00	G 3/8	167 x 60 x 582	3.2
06	12	175	825	29.13	20 K	65	2.30	760	26.83	G 3/8	167 x 60 x 582	3.2
06	7	100	240	8.47	35 K	40	1.41	200	7.06	G 3/8	167 x 60 x 582	3.2
06	9	130	335	11.83	35 K	50	1.77	285	10.06	G 3/8	167 x 60 x 582	3.2
06	12	175	500	17.65	35 K	65	2.30	435	15.36	G 3/8	167 x 60 x 582	3.2
06	7	100	170	6.00	55 K	40	1.41	130	4.59	G 3/8	167 x 60 x 582	3.2
06	9	130	235	8.30	55 K	50	1.77	185	6.53	G 3/8	167 x 60 x 582	3.2
06	12	175	345	12.18	55 K	65	2.30	280	9.88	G 3/8	167 x 60 x 582	3.2
09	7	100	600	21.18	20 K	60	2.12	540	19.06	G 3/4	210 x 80 x 592	4.5
09	9	130	835	29.48	20 K	75	2.65	760	26.83	G 3/4	210 x 80 x 592	4.5
09	12	175	1230	43.42	20 K	100	3.53	1130	39.89	G 3/4	210 x 80 x 592	4.5
09	7	100	360	12.71	35 K	60	2.12	300	10.59	G 3/4	210 x 80 x 592	4.5
09	9	130	505	17.83	35 K	75	2.65	430	15.18	G 3/4	210 x 80 x 592	4.5
09	12	175	750	26.48	35 K	100	3.53	650	22.95	G 3/4	210 x 80 x 592	4.5
09	7	100	245	8.65	55 K	60	2.12	185	6.53	G 3/4	210 x 80 x 592	4.5
09	9	130	345	12.18	55 K	75	2.65	270	9.53	G 3/4	210 x 80 x 592	4.5
09	12	175	510	18.00	55 K	100	3.53	410	14.47	G 3/4	210 x 80 x 592	4.5
13	7	100	800	28.24	20 K	80	2.82	720	25.42	G 3/4	210 x 80 x 642	4.8
13	9	130	1110	39.18	20 K	105	3.71	1005	35.48	G 3/4	210 x 80 x 642	4.8
13	12	175	1650	58.25	20 K	130	4.59	1520	53.66	G 3/4	210 x 80 x 642	4.8
13	7	100	485	17.12	35 K	80	2.82	405	14.30	G 3/4	210 x 80 x 642	4.8
13	9	130	675	23.82	35 K	105	3.71	570	20.12	G 3/4	210 x 80 x 642	4.8
13	12	175	1000	35.30	35 K	130	4.59	870	30.71	G 3/4	210 x 80 x 642	4.8
13	7	100	330	11.65	55 K	80	2.82	250	8.83	G 3/4	210 x 80 x 642	4.8
13	9	130	465	16.42	55 K	105	3.71	360	12.71	G 3/4	210 x 80 x 642	4.8
13	12	175	680	24.00	55 K	130	4.59	550	19.42	G 3/4	210 x 80 x 642	4.8
14	7	100	1050	37.07	20 K	120	4.24	930	32.83	G 3/4	210 x 80 x 712	5.1
14	9	130	1470	51.89	20 K	150	5.30	1320	46.60	G 3/4	210 x 80 x 712	5.1
14	12	175	2150	75.90	20 K	200	7.06	1950	68.84	G 3/4	210 x 80 x 712	5.1
14	7	100	710	25.06	35 K	120	4.24	590	20.83	G 3/4	210 x 80 x 712	5.1
14	9	130	990	34.95	35 K	150	5.30	840	29.65	G 3/4	210 x 80 x 712	5.1
14	12	175	1460	51.54	35 K	200	7.06	1260	44.48	G 3/4	210 x 80 x 712	5.1
14	7	100	485	17.12	55 K	120	4.24	365	12.89	G 3/4	210 x 80 x 712	5.1
14	9	130	680	24.00	55 K	150	5.30	530	18.71	G 3/4	210 x 80 x 712	5.1
14	12	175	1000	35.30	55 K	200	7.06	800	28.24	G 3/4	210 x 80 x 712	5.1

BOGE DAZ series Adsorption Dryers

heatless with pre- and after filters

Flow capacity: 8–6100 m³/h, 4–3587 cfm
Max. operating pressure: 10 and 16 bar, 150 and 230 psig

Heatless adsorption dryers with pressure dewpoints to –70 °C are suitable when D series refrigerant dryers with pressure dewpoints of + 3 to +7 °C will not meet the requirement.

Before drying, the standard BOGE FP-series micro-filter removes any solid and liquid impurities up to 0.01 mm from the compressed air supply.
In the adsorption dryer, the desiccant material adsorbs moisture from the air, resulting in clean, dry compressed air. Pressure dewpoints to –40 °C can be achieved with the standard model.

In parallel with moisture adsorption, regeneration takes place in a second vessel. With type DAZ heatless adsorption dryers, compressed air which has already been dried is used to regenerate the desiccant.

BOGE DACZ series Treatment System

DAZ Adsorption Dryer and DCZ Activated Carbon Adsorber with pre-filter and after-filter

Flow capacity: 8–950 m³/h, 4–559 cfm
Max. operating pressure: 10 and 16 bar, 150 and 230 psig

Heatless adsorption dryers with built-in activated carbon adsorbers are installed where the compressed air is required to have a residual oil content down to 0.003 mg/m³ and a pressure dewpoint to –70 °C.

The advantages of using the BOGE DAC treatment system

Complete and ready for use
- *saving on installation and piping costs for pre-filters and after-filters (up to DAZ 160)*

Generously dimensioned inlet and outlet valves
- *low differential pressure, saving on energy costs*

Compressor synchronization control
- *energy saving*

Robust, flexible adsorption principle
- *maximum availability*

Microprocessor-based control
- *Adjustment of pressure dewpoint an option*

Display of function on front panel of switch cabinet
- *Permanently displayed status*

Regeneration without an external energy supply
- *economic, trouble-free operation*

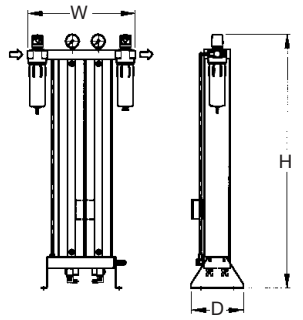
10-Minute Cycle
- *approx. 6% energy saving*

Optional dewpoint control
- *energy saving by controlling the volume of purge air, depending on pressure, volume and temperature*

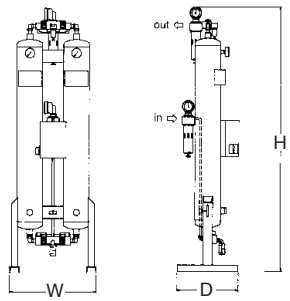
Condensate removed via the purge air
- *no costs for condensate removal/drainage*

Standard pressure dewpoint – 40 °C
- *no condensate formed in pipework installed outside*

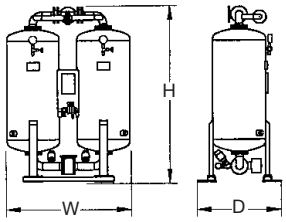
CFC-free
- *significant contribution to protecting the ozone layer and environment*



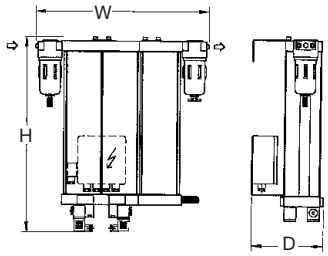
DAZ 4-14



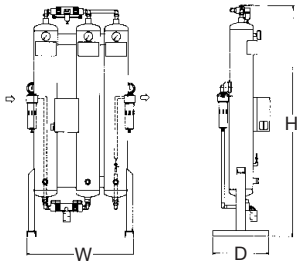
DAZ 25-160



DAZ 200-1020



DACZ 4-14



DACZ 25-160

Type DAZ	Capacity* m³/h	cfm	Dimensions W/D/H mm	Con-nec-tion	Wt.** kg
4	8	4	312/ 210/ 390	G ¼	9
5	15	8	312/ 210/ 565	G ¼	13
6	25	13	359/ 210/ 815	G ¼	17
8	35	21	359/ 210/1085	G ¼	25
9	56	30	436/ 300/1185	G ⅜	52
11	72	40	436/ 300/1410	G ⅜	65
14	86	50	436/ 300/1610	G ½	77
25	145	85	565/ 490/1730	G 1	121
35	200	118	592/ 490/1740	G 1	142
45	255	150	634/ 490/1810	G 1	176
60	360	212	660/ 490/1840	G 1	220
70	400	235	823/ 585/1930	G 1½	280
100	620	365	875/ 585/1925	G 1½	365
125	750	441	905/ 585/2000	G 1½	465
160	950	559	1020/ 780/2020	G 2	560
200	1200	706	1060/ 840/2070	DN 50	640
260	1550	912	1270/ 900/2120	DN 65	830
340	2000	1176	1350/ 990/2160	DN 65	955
420	2500	1470	1530/1040/2210	DN 80	1075
500	3000	1764	1600/1100/2255	DN 80	1500
645	3800	2235	1875/1200/2385	DN 100	1990
810	4850	2852	1925/1250/2660	DN 100	2410
1020	6100	3587	2160/1150/3585	DN 125	2850

Type DACZ	Capacity* m³/h	cfm	Dimensions W/D/H mm	Wt. kg
4	8	4	445/ 210/ 390	12
5	15	8	445/ 210/ 565	17
6	25	13	445/ 210/ 815	24
8	35	21	445/ 210/1065	34
9	56	30	629/ 300/1185	72
11	72	40	629/ 300/1410	90
14	86	50	629/ 300/1610	107
25	145	85	770/ 490/1650	155
35	200	118	820/ 490/1665	186
45	255	150	885/ 490/1730	262
60	360	212	935/ 490/1765	324
70	400	235	1140/ 585/1815	369
100	620	365	1245/ 585/1815	485
125	750	441	1305/ 585/1935	629
160	950	559	1465/ 620/1950	720

Upon request

* Capacity in m³/h at 1 bar to DIN ISO 7183
Max. operating pressure DAZ 4 – DAZ 160 **16** bar
DAZ 200 – DA 1020 **10** bar
Electrical connection 230 V; 50 Hz; 0.021 kW
(Dimensions and weights for models DA/DAC 200 onwards do not include pre-filters and after filters)
Receiver as per PED individual acceptance / CE standard
**from DAZ 200 weight without filter

Conversion factors to determine dryer size for PDP down to –40 °C

	Effective bar											
°C	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
35	0.75	0.89	1.00	1.08	1.26	1.31	1.36	1.49	1.62	1.70	1.79	1.90
40	0.64	0.78	0.91	1.00	1.08	1.16	1.24	1.35	1.47	1.57	1.67	1.77
45	0.61	0.73	0.82	0.94	1.03	1.07	1.10	1.22	1.35	1.46	1.57	1.66
50	0.59	0.67	0.79	0.86	0.99	1.03	1.07	1.18	1.29	1.37	1.46	1.55

Higher inlet temperatures available upon request
Subject to modification

Examples:

380 m³/h of air is to be dried at 8 bar operating pressure and +35 °C.
Pressure dewpoint required: –40 °C.

a) To calculate the specific dryer capacity:

$$\frac{\text{effective capacity m}^3/\text{h}}{\text{factor}} =$$

$$\frac{380\ \text{m}^3/\text{h}}{1.08} = 352\ \text{m}^3/\text{h}$$

Type DAZ 60 is selected.

b) To calculate the max dryer capacity in m³/h
Nominal capacity m³/h x factor
(DAZ 60) = 360 m³/h x 1.08 = 389 m³/h

Adsorption Dryer, DAU...N Series

heatless

Flow capacity: 5 – 2750 m³/h, 3 – 1620 cfm
max. operating pressure: 16 bar including DAU 170 N
max. operating pressure: 10 bar from DAU 225 N onward

Heatless adsorption dryers with pressure dewpoints to –70 °C

Before drying, the standard BOGE FU ...N series microfilter reliably removes any solid or liquid impurities up to 0.01 µm from the compressed air supply.

In the adsorption dryer, the desiccant material adsorbs moisture from the air, resulting in clean, dry compressed air. Pressure dewpoints to –40 °C can be achieved with the standard model.

In parallel with moisture adsorption, regeneration takes place in a second vessel. With type DAU ...N heatless adsorption dryers, compressed air which has already been dried is used to regenerate the desiccant.

Your benefits

Generously dimensioned inlet and outlet valves
low differential pressure, saving on energy costs

Robust, flexible adsorption principle
maximum availability

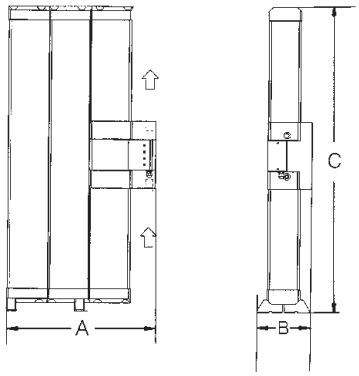
Regeneration without external energy supply
economic, trouble-free operation

Optional dewpoint control
energy saving by controlling the volume of purge air, depending on pressure, volume and temperature

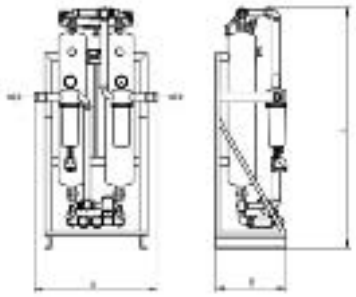
Condensate removal via purge air
no additional costs for condensate removal

Standard pressure dewpoint –40 °C
no condensate fallout in pipework installed outside

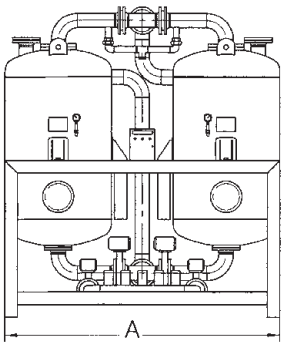
CFC-free
significant contribution to protecting the ozone layer and environment

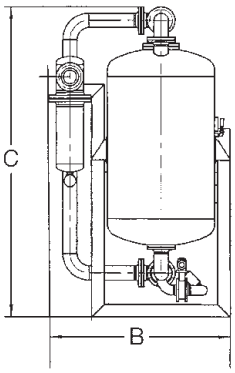


DAU 1 N – 17 N



DAU 26 N – 170 N





DAU 225 N – 460 N

Type DAU...N	Capacity* m³/h	cfm	Regeneration Air (1 bar, +20 °C) m³/h	cfm	Air Outlet min.) (1 bar, +20 °C) m³/h	cfm	Pressure Loss New Condition mbar	Dimensions A/B/C mm	Con-nec-tion G	Weight kg
1	5	3	0.85	0.5	4.1	2.4	65	300/121/343	½	7
2	10	6	1.70	1.0	8.1	4.8	95	300/121/591	½	11
3	15	9	2.55	1.5	12.2	7.2	115	300/121/853	½	15
5	25	15	4.25	2.5	20.3	11.9	250	300/121/1377	½	24
6	35	20	5.95	3.5	28.4	16.7	75	531/195/665	1	29
8	50	30	8.50	5.0	40.6	23.9	100	531/195/917	1	38
11	65	40	11.1	6.5	52.8	31.1	125	531/195/1169	1	48
13	80	45	13.6	8.0	65.0	38.2	170	531/195/1421	1	57
17	100	60	17.0	10.0	61.3	36.0	250	531/195/1673	1	67
26	150	90	23.0	13.5	122.0	71.7	170	745/500/2020	1	200
30	175	105	26.3	15.5	148.75	87.5	100	895/550/1890	1	255
38	225	130	34.0	20.0	182.51	107.3	125	915/550/1890	1½	277
51	300	175	45.0	26.5	242.98	142.9	160	965/600/1890	1½	321
71	375	220	56.0	32.9	303.46	178.4	190	1015/600/2205	1½	398
91	550	320	83.0	48.8	446.0	262.3	180	1240/650/2150	2	431
110	650	380	98.0	57.6	527.0	309.9	220	1240/750/2175	2	506
140	850	500	128.0	75.3	688.98	405.1	260	1290/750/2295	2	585
170	1000	590	150.0	88.2	809.94	476.2	180	1510/850/2390	2½	676
225	1350	795	202.5	119.1	1093.95	643.2	190	1500/950/2555	DN 80	870
275	1650	970	247.5	145.5	1336.93	786.1	230	1700/1050/2365	DN 80	1000
325	1950	1150	292.5	172.0	1579.91	929.0	160	1800/1163/2585	DN 100	1106
375	2250	1325	337.5	198.5	1822.89	1071.9	180	1900/1290/2605	DN 100	1350
460	2750	1620	412.5	242.6	2227.86	1310.0	240	2000/1340/2695	DN 100	1530

*Capacity relative to 1 bar according to DIN ISO 7183

Design: DAU 1 N – 17 N, Correction factor f

Temperature \ Operating pressure bar (ü)	4	5	6	7	8	9	10	11	12	13	14	15	16
25°C	0,69	0,82	0,96	1,10	1,24	1,38	1,50	1,50	1,50	1,50	1,50	1,50	1,50
30°C	0,69	0,82	0,96	1,10	1,24	1,38	1,50	1,50	1,50	1,50	1,50	1,50	1,50
35°C	0,63	0,75	0,88	1,00	1,13	1,26	1,38	1,50	1,50	1,50	1,50	1,50	1,50
40°C	0,48	0,58	0,68	0,77	0,87	0,96	1,06	1,16	1,25	1,35	1,45	1,50	1,50
45°C	0,38	0,45	0,53	0,60	0,68	0,75	0,83	0,90	0,98	1,05	1,13	1,20	1,28
50°C	0,30	0,36	0,42	0,48	0,54	0,60	0,66	0,72	0,78	0,84	0,90	0,96	1,02

$V_{corr} = \frac{V_{nom}}{f}$ Example: V_{nom} = 22 m³/h, inlet temperature = 30 °C, operating pressure = 10 bar (ü)

$V_{corr} = \frac{22\ Nm^3/h}{1,50}$ = 14,66 m³/h. calculated dryer size: DAU 3 N

Design: DAU 26 N – 460 N

Operating pressure bar (ü)	4	5	6	7	8	9	10	11	12	13	14	15	16
Correction factor (f_p)	0,63	0,75	0,88	1,0	1,12	1,25	1,38	1,50	1,63	1,75	1,88	2,0	2,13

Pressue dewpoint	Remaining water content	Inlet temperature °C	20	25	30	35	40	45	50
–40 °C	0,11 g/m³	Correction factor Temperature (f_T)	1,2	1,2	1,1	1,0	–	–	–
		Pressure dewpoint (°C)	–40	–40	–40	–40	–	–	–

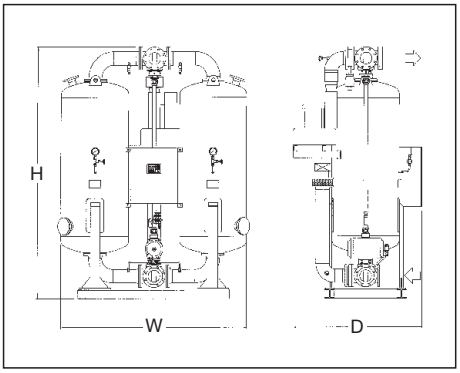
$V_{corr} = \frac{V_{nom}}{f_p \cdot f_T}$ Example: V_{nom} = 200 m³/h, inlet temperature = 30 °C, operating pressure = 10 bar (ü), DTP –40 °C

$V_{corr} = \frac{200\ m^3/h}{1,38 \cdot 1,1}$ = 131,8 m³/h. calculated dryer size: DAU 225 N

BOGE DAV Adsorption Dryer

Externally heated regeneration with vacuum drying, complete with pre-filter and after-filter

Flow capacity: 420 – 14500 m³/h, 247 – 8526 cfm
Max. operating pressure: 10 bar, 150 psig



Examples:

a) Compressed air to be dried:

Volume of flow	3000 m³/h
Min. operating pressure	5 bar (ü)
Max. inlet temperature	+30 °C
Pressure dewpoint	–25 °C
Factor from table	0.80

$$\frac{\text{effective capacity}}{\text{factor from table}} =$$

$$\frac{3000\ m^3/h}{0.80} = 3750\ m^3/h$$

Selected: type DAV 685

b) To calculate the max. dryer capacity:
Nominal capacity x factor from table
4100 x 0.80 = 3280 m³/h

c) Reserve dryer capacity:
Max. dryer capacity – volume of flow
3280 m³/h – 3000 m³/h = 280 m³/h

Vacuum regenerated adsorption drying is the energy efficient solution for higher volumes of compressed air. Dewpoints to –70°C is possible!

Before entering the dryer, a BOGE 'F' series micro-filter removes solids and impurities from the compressed air to 0.01 mg/m³. In the drying tower, the desiccant media removes moisture from the air to a dewpoint of -40oC (standard models).

The parallel tower regenerates the wet desiccant bed. First it de-pressurises to atmosphere, simultaneously the vacuum pump beings to draw ambient air, that is pre-heated on entry, through the wet desiccant to complete the regeneration process.

The advantages of using the BOGE DAV Adsorption Dryer

- **Energy efficient system**
  Savings of up to 25% compared to conventional systems
- **2-stage drying**
  Optimised flow distribution through media bed
  Self cleaning media reduces Δp and increases moisture separation
- **Low regeneration temperature**
  Vacuum regeneration ensures energy efficient moisture removal at lower temperatures than traditional heat regeneration
- **Vacuum cooling**
  After drying the media the heater switches off and the vacuum pump sucks ambient air through the bed to cool it
- **Pressure equalisation on wet side**
  Regeneration takes place at atmospheric pressure. Venting tower is therefore total purge loss
- **Consistent pressure dewpoint in operation**
  Because ambient air drawn in from the drying process
- **Constant pressure dew point at changeover**
  Because compressed air re-pressurises dry tower
- **Pressure dewpoints to –70 °C**
  Possible as well as the standard –25°C or –40°C
- **Function display**
  For pressure, temperature, heater operation, vacuum pump and changeover
- **Alternative energy**
  Regeneration using steam, hot water and other is available as an option
- **Modular options:**
  Purge air by-pass, thermistor controlled heaters, frequency controlled vacuum pumps

DAV	Volume of flow* m³/min.	m³/h	cfm	Con-nection DN	Width W (mm)	Height H (mm)	Depth D (mm)	Weight without filter kg	Power required kWh/h
75	7.0	420	241	40	1215	1955	992	460	3.1
85	8.5	510	293	40	1214	2204	992	560	3.8
105	10.7	640	370	50	1306	2247	1082	750	5.2
145	14.2	850	487	50	1360	2271	1120	800	6.7
200	19.7	1180	681	80	1560	2664	1264	1150	10.9
250	25.0	1500	863	80	1610	2680	1279	1350	12.8
330	33.0	1980	1141	80	1700	2730	1585	1720	16.3
390	39.2	2350	1353	100	2020	2845	1447	1880	18.1
455	48.8	2930	1688	100	2080	2870	1580	2350	22.5
555	59.2	3550	2047	100	2170	2940	1740	2850	27.8
685	68.3	4100	2365	150	2450	3190	1780	4000	32.2
790	79.0	4740	2735	150	2550	3210	2110	4100	38.9
875	87.5	5250	3029	150	2550	3230	1955	4200	44.9
1035	103.5	6210	3582	150	2600	3500	1910	4950	52.3
1185	118.3	7100	4094	150	2650	3520	1940	5700	56.4
1335	133.3	8000	4611	200	3100	3585	2180	6400	67.1
1535	153.3	9200	5306	200	3150	3605	2300	7400	75.6
1800	180.0	10800	6224	200	3250	3670	2355	8700	85.3
2050	205.0	12300	7088	250	3500	3855	2515	11500	98.9
2415	241.7	14500	8359	250	3600	3895	2570	13500	111.4

*m³/h at 1 bar to DIN 7183. Higher capacities and lower pressure dewpoints down to –70 °C are available upon request.
Receiver as per PED individual acceptance / CE standard

Conversion factors, depending on pressure and temperature

bar (ü) / t °C	4	5	6	7	8	9	10
30	0.69	0.80	0.90	1.02	1.06	1.17	1.29
35	0.44	0.62	0.80	1.00	1.05	1.16	1.28
40	0.28	0.42	0.59	0.70	0.79	0.88	0.96

Subject to modification

BOGE DCZ Activated Carbon Adsorbers

Flow capacity: 8 – 950 m³/h, 4 – 559 cfm
Max. operating pressure: 16 bar, 230 psig

Activated carbon adsorbers are recommended for installation downstream of compressed air dryers with filters, in order to eliminate odour and clean any residual oil aerosols to 0.003 mg/m³.

Even after filtering out solid and liquid contaminants up to 0.01 µm, and installing a compressed air dryer, compressed air can still contain oil vapour.
Oil vapour can be passed by the compressor or be drawn in from the atmosphere. Oil contamination can depend on the type of oil and the temperature of operation.

The BOGE DC activated carbon adsorber is used wherever there is the requirement for the highest quality compressed air. The compressed air flows from top to bottom of the adsorber vessel, through a bed of special activated carbon. Optimal contact time, air flow-rate, bed depth and the quality of the activated carbon ensure high-quality compressed air.

The advantages of using the BOGE DC activated carbon adsorber

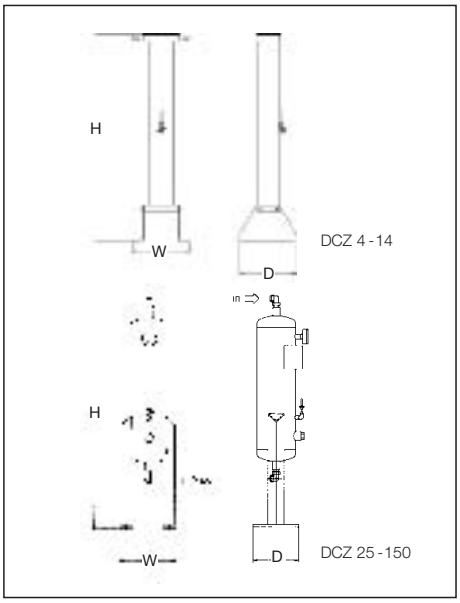
Large volume of activated carbon
- *'Technically' oil-free, breathing quality air at 0.003 mg/m³*

Optimum technical design
- *high-quality compressed air*

Oil indicator supplied as standard
- *ensures consistent air quality*

Optional FP (dust) filter fitted upstream extends active carbon life
- *reduced maintenance downtime*

For safety reasons, it is recommended that a type V filter should also be installed downstream (option), as very fine solid particles from the activated carbon bed may contaminate the compressed air.



Type DCZ	Capacity* m³/h	cfm	Dimensions W/D/H mm	Connection	Max. Pressure bar	Weight kg
4	8	4	214/ 210/ 390	G ¼	16	2.9
5	15	8	214/ 210/ 565	G ¼	16	4.4
6	25	13	214/ 210/ 815	G ¼	16	6.0
8	35	21	214/ 210/1065	G ¼	16	9.0
9	56	30	313/ 300/1185	G ⅜	16	23.0
11	72	40	313/ 300/1410	G ⅜	16	28.0
14	86	50	313/ 300/1610	G ½	15	33.0
25	145	85	265/ 280/1650	G 1	16	45
35	200	118	290/ 280/1680	G 1	16	54
45	255	150	340/ 340/1730	G 1	16	75
60	360	212	367/ 340/1750	G 1	16	92
70	400	235	395/ 420/1795	G 1½	16	103
100	620	365	440/ 420/1800	G 1½	16	134
125	750	441	485/ 420/1914	G 1½	16	177
160	950	559	520/ 500/1950	G 2	16	209

Higher capacities are available upon request
* m³/h at 1 bar to DIN ISO 7183
Receiver as per PED individual acceptance / CE standard

Examples:

Compressed air to be treated:

Volume of flow	150 m³/h
Min. operating over-pressure	8 bar (ü)
Factor P from table	1.08
Factor T from table	0.85
Max. inlet temperature	+40 °C

$$\frac{\text{eff. capacity}}{\text{factor P + T}} = \frac{150\ \text{m}^3/\text{h}}{1.08 \cdot 0.85} = 163.4\ \text{m}^3/\text{h}$$

Selected Type: DCZ 35

Conversion factor: Pressure

bar	4	5	6	7	8	9	10	12	14	16
Factor P	0.62	0.75	0.89	1.00	1.08	1.26	1.36	1.62	1.79	2.14

Temp. °C	20	25	30	35	40	45	50
Factor T	1.01	1.01	1.01	1.0	0.85	0.75	0.5

Subject to modification

BOGE V series, pre-filters

Pre-filters separate out coarse impurities from the compressed air.
BOGE pre-filters remove solids from compressed air **with an efficiency of 99.99 % relative to 3 µm.**

Cost-efficient use of BOGE pre-filters

Upstream of compressed air dryer and micro-filter
- for applications where the intake air has a very high dust content
- for compressors with a high oil carry-over characteristic.

Type [1]	Capacity [m³/h] [2]	Connection	Dimensions [mm] A	B	C	D	Wt. [kg]	Filter element Number/ type
Aluminium housing with threaded connector as per DIN 2999								
V 5	30	G ¼	60	167	14	60	0.8	1/5 V
V 10	50	G ¼	87	209	21	75	1.5	1/10 V
V 12	70	G ⅜	87	209	21	90	1.5	1/12 V
V 20	100	G ½	87	279	21	160	1.7	1/20 V
V 30	180	G ¾	130	315	43	135	4.3	1/30 V
V 50	300	G 1	130	415	43	235	5	1/50 V
V 80	470	G 1½	130	515	43	335	5.5	1/80 V
V 120	700	G 1½	130	715	43	525	6.9	1/120 V
V 160	940	G 2	164	823	48	520	9.6	1/160 V
V 250	1450	G 2	164	1073	48	770	17.9	1/250 V
Steel housing with flanged connector as per DIN 2633								
VF 250	1850	DN 80	380	1260	175	530	54	1/250 V
VF 400	2920	DN 80	440	1310	205	530	80	1/400 V
VF 490	3700	DN 100	500	1440	230	550	108	2/250 V

Max. operating pressure 16 bar
[1]) incl. automatic condensate drain, differential pressure gauge from V 10 onwards
[2]) relative to 20 °C and 1 bar absolute at 7 bar over pressure

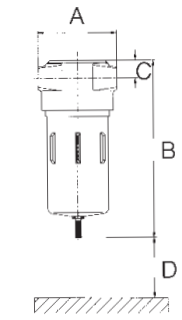
Conversion factor f at other operating pressures

Over-pressure in bar	1	2	3	4	5	6	**7**	8	9	10
f =	0.25	0.38	0.5	0.63	0.75	0.88	**1**	1.13	1.25	1.38

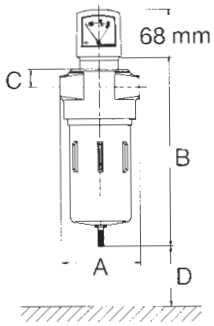
Differential pressure and efficiency

Differential pressure in clean condition	Δp 0.02 bar
Efficiency	99.99 % at 3 µm

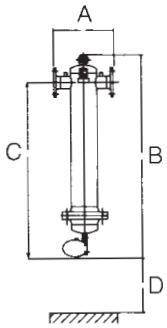
Higher pressures and capacities are available upon request



V 5



V 10 to V 250
with differential
pressure gauge



VF 250 to VF 490
with differential
pressure gauge

BOGE VU …N series, pre-filters

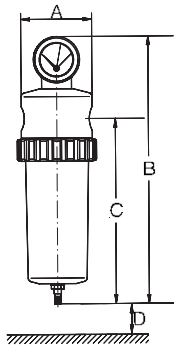
Pre-filters separate out coarse impurities from the compressed air
BOGE pre-filters remove solids from compressed air **with an efficiency of 100 % relative to 25 µm.**

Cost-efficient use of BOGE pre-filters

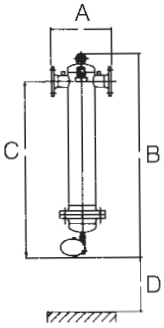
Upstream of compressed air dryer and micro-filter
- for applications where the intake air has a very high dust content
- for compressors with a high oil carry-over characteristic.

Type [1]	Capacity at 7 bar over pressure [m³/h] [2]	Con-nec-tion	Dimensions [mm] A	B	C	D	Wt.[3] [kg]	Filter element Number/ type
Aluminium housing with threaded connector								
VU 6 N	35	G ¼	70	285	190	90	1,0	1/6 VU
VU 15 N	80	G ⅜	80	285	190	90	1,0	1/15 VU
VU 19 N	125	G ½	80	335	220	120	1,0	1/19 VU
VU 29 N	175	G ¾	95	360	245	150	1,9	1/29 VU
VU 60 N	450	G 1	110	430	310	200	2,2	1/60 VU
VU 110 N	650	G 1½	150	585	415	280	6,5	1/110 VU
VU 180 N	850	G 2	150	585	415	280	6,5	1/180 VU
VU 240 N	1175	G 2	160	795	625	450	10,0	1/240 VU
VU 320 N	1350	G 2½	180	935	755	580	12,6	1/320 VU
VU 450 N	1650	G 2½	180	1185	1005	850	13,7	1/450 VU
VU 465 N	1950	G 3	180	1185	1005	850	13,7	1/465 VU
VU 480 N	2250	G 3	210	1195	1015	850	20,0	1/480 VU
Steel housing with flanged connector as per DIN 2633								
VFU 320 N	1350	DN 50	280	1015	830	580	28	1/320 VF
VFU 480 N	1650	DN 65	320	1315	1120	850	36	1/480 VF
VFU 700 N	2250	DN 80	360	1350	1135	850	64	1/700 VF
VFU 720 N	3500	DN 100	410	1370	1140	850	86	1/720 VF

Max. operating pressure 16 bar
[1]) incl. automatic condensate drain
[2]) relative to 20 °C and 1 bar absolute at 7 bar over pressure and normal operating conditions
[3]) weight without filter element



VU 6 N to VU 725 N
with differential
pressure gauge



VFU 320 N to VFU 720 N
with differential
pressure gauge

Conversion factor f at other operating pressures

Over-pressure in bar	1	2	3	4	5	6	**7**	8	9	10
f =	0.25	0.38	0.5	0.65	0.75	0.88	**1**	1.13	1.25	1.38

Differential pressure and efficiency

Differential pressure in clean condition	Δp 0.03 bar
Efficiency	100 % relative to pore width

Higher pressures and capacities are available upon request

BOGE FP series, microfilters

Microfilters separate out extremely fine impurities in the compressed air.
BOGE microfilters remove solids from compressed air with an efficiency of 99.99999% relative to 0.01 µm and a residual oil content up to 0.01 mg/m³.

Cost-efficient use of BOGE microfilters
As the main filter in the compressed air line or as an end-of-line filter upstream of pneumatic equipment.

BOGE activated carbon filter, series A

Activated carbon filters remove flavours and odours from compressed air.
In combination with BOGE microfilters, BOGE activated carbon filters remove solids from compressed air with an efficiency of 99.99999% relative to 0.01 µm and a residual oil content of up to 0.005 mg/m³.

Cost-efficient use of BOGE activated carbon filters
Downstream from compressed air dryers, in combination with microfilters if technically oil-free and clean compressed air is required

Type [1]	Capacity [2] [m³/h]	Connection	Dimensions [mm] A	B	C	D	Combination FP/A A	Wt. [kg]	Wt. combination F/PA [kg]	Filter element Number/ type FP or A
Aluminium housing with threaded connector as per DIN 2999										
FP5/A5	30	G ¼	60	165	14	60	120	0.8	1.6	1/5 FP/A
FP10/A10	50	G ¼	87	215	21	75	174	1.5	3	1/10 FP/A
FP12/A12	70	G ⅜	87	215	21	90	174	1.5	3	1/12 FP/A
FP20/A20	100	G ½	87	285	21	160	174	1.7	3.4	1/20 FP/A
FP30/A30	180	G ¾	130	325	43	135	260	4.3	8.9	1/30 FP/A
FP50/A50	300	G 1	130	425	43	235	260	5	10.7	1/50 FP/A
FP80/A80	470	G 1½	130	525	43	335	260	5.5	11.6	1/80 FP/A
FP120/A120	700	G 1½	130	725	43	525	260	6.9	14.2	1/120 FP/A
FP160/A160	940	G 2	164	825	48	520	340	9.6	19.7	1/160 FP/A
FP250/A250	1450	G 2	164	1075	48	770	340	17.9	25.8	1/250 FP/A
Steel housing with flanged connector as per DIN 2633										
FFP250/AF200	1850	DN 80	380	1280	175	530	760	54	108	1/250 FP/A
FFP400/AF400	2920	DN 80	440	1320	205	530	880	80	160	1/400 FP/A
FFP490/AF490	3700	DN 100	500	1440	230	550	1000	108	215	2/250 FP/A

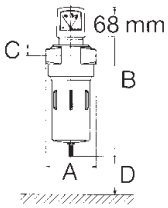
Max. operating pressure 16 bar
[1]) incl. automatic condensate drain on model FP 5 onwards, differential pressure gauge on model FP 10 onwards
[2]) relative to 20 °C and 1 bar absolute at 7 bar over pressure, technical data for series FP and A are identical

Conversion factor f at other operating pressures

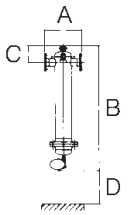
Over-pressure in bar	1	2	3	4	5	6	**7**	8	9	10
f =	0.25	0.38	0.5	0.63	0.75	0.88	**1**	1.13	1.25	1.38

Differential pressure and efficiency	Series FP	
Differential pressure in clean condition Efficiency	Δp 0.06 bar 99.99999 % relative to 0.01 µm Residual oil content max. 0.01 mg/m³	
	Series A	Series FP/A
Differential pressure in clean condition Efficiency	Δp 0.03 bar Residual oil content = 0.003 mg/m³	Δp 0.2 bar 99.99999 % relative to 0.01 µm

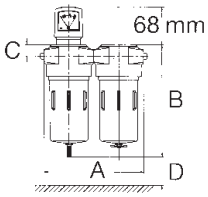
Higher pressures and capacities are available upon request



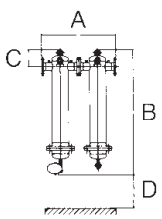
FP 10 to FP 250
with differential pressure gauge



FFP 250 to FFP 490
with differential pressure gauge



Combination of FP filter and A 10 to 250
with differential pressure gauge



Combination of FFP filter and AF 250 to 490
with differential pressure gauge

Microfilter FU...N

Activated carbon filter AU...N

BOGE FU...N series, microfilters

Microfilters separate out extremely fine impurities in the compressed air.
BOGE microfilters remove solids from compressed air with an efficiency of 99.99999% relative to 0.01 µm and a residual oil content up to 0.01 mg/m³.

Cost-efficient use of BOGE microfilters
As the main filter in the compressed air line or as an end-of-line filter upstream of pneumatic equipment.

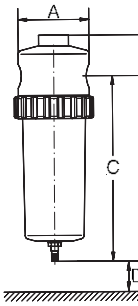
BOGE AU...N series, activated carbon filters

Activated carbon filters remove flavours and odours from compressed air.
In combination with BOGE microfilters, BOGE activated carbon filters remove solids from compressed air with an efficiency of 99.99999% relative to 0.01 µm and a residual oil content of up to 0.003 mg/m³.

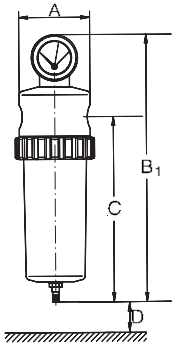
Cost-efficient use of BOGE activated carbon filters
Downstream from compressed air dryers, in combination with microfilters if technically oil-free and clean compressed air is required

Type [1]	Capacity at 7 bar over pressure [m³/h] [2]	Connection	Dimensions [mm] A	B_2	B_1	C	D	Wt.[3] [kg]	Filter-element Number/ type FU or AU
Aluminium housing with threaded connector									
FU 6 N/AU 6 N	35	G ¼	70	210	285	190	90	1.0	1/6 FU/AU
FU 15 N/AU 15 N	80	G ⅜	80	210	285	190	90	1.0	1/15 FU/AU
FU 19 N/AU 19 N	125	G ½	80	260	335	220	120	1.5	1/19 FU/AU
FU 29 N/AU 29 N	175	G ¾	95	280	360	245	150	1.9	1/29 FU/AU
FU 60 N/AU 60 N	450	G 1	110	355	430	310	200	2.2	1/60 FU/AU
FU 110 N/AU 110 N	650	G 1½	150	470	585	415	280	6.5	1/110 FU/AU
FU 180 N/AU 180 N	850	G 2	150	470	585	415	280	6.5	1/180 FU/AU
FU 240 N/AU 240 N	1175	G 2	160	610	795	625	450	10.0	1/240 FU/AU
FU 320 N/AU 320 N	1350	G 2½	180	750	935	755	580	12.6	1/320 FU/AU
FU 450 N/AU 450 N	1650	G 2½	180	1000	1185	1005	850	13.7	1/450 FU/AU
FU 465 N/AU 465 N	1950	G 3	180	1000	1185	1005	850	13.7	1/465 FU/AU
FU 480 N/AU 480 N	2250	G 3	210	1010	1195	1015	850	20.0	1/480 FU/AU
Steel housing with flanged connector as per DIN 2633									
FFU 320 N/AFU 320 N	1350	DN 50	280	1015		830	580	28	1/320 FU/AU
FFU 480 N/AFU 480 N	1650	DN 65	320	1315		1120	850	36	1/480 FU/AU
FFU 700 N/AFU 700 N	2250	DN 80	360	1350		1135	850	64	1/700 FU/AU
FFU 720 N/AFU 720 N	3500	DN 100	410	1370		1140	850	86	1/720 FU/AU

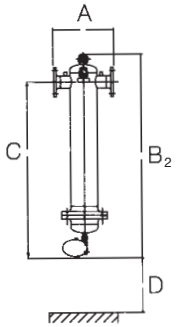
Max. operating pressure 16 bar
[1]) incl. automatic condensate drain on model FU 6 N onwards
[2]) relative to 20 °C and 1 bar absolute at 7 bar over pressure and normal operating conditions, technical data for series FU...N and AU...N are identical
[3]) weight without filter element



AU 6 N to
AU 480 N



FU 6 N to
FU 720 N
with differential
pressure gauge



FFU 320 N to AFU 720 N
with differential
pressure gauge

Conversion factor f at other operating pressures

Over-pressure in bar	1	2	3	4	5	6	**7**	8	9	10
f =	0.25	0.38	0.5	0.65	0.75	0.88	**1**	1.13	1.25	1.38

Differential pressure and efficiency	Series FU...N	
Differential pressure in clean condition	Δp 0.12 bar	
Efficiency	99.99999 % relative to 0.01 µm Residual oil content max. 0.01 mg/m³	
	Series AU...N	Series FU...N/AU...N
Differential pressure in clean condition	Δp 0.08 bar	Δp 0.2 bar
Efficiency	Residual oil content = 0.003 mg/m³	99.99999 % relative to 0.01 µm

Higher pressures and capacities are available upon request

BOGE Cyclone Separators

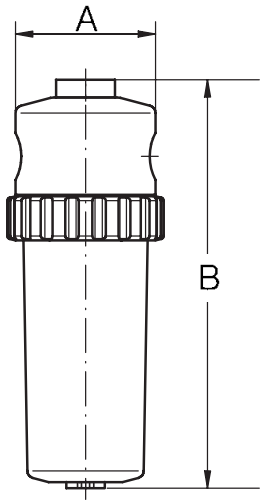
BOGE-High-capacity Cyclone Separators

Cyclone separators remove liquids, fine mists and solids from the compressed air

Cost-efficient use of BOGE cyclone separators
Directly downstream of the compressor
- if no compressed air receiver is fitted
- if compressed air receiver is a long distance away
- if the compressed air pipeline rises vertically

Type	Flow capacity* m³/min. at			Compressed air connection	Max. operating pressure	Dimensions mm	
	8 bar	10 bar	13 bar		bar	A	B
Z 20	2.28	2.91	3.64	G ½	16	80	260
Z 40	4.13	5.25	6.56	G ¾	16	95	280
Z 65	6.88	8.75	10.93	G 1	16	110	355
Z 90	10.08	12.84	16.03	G 1¼	16	110	355
Z 125	13.75	17.50	21.88	G 1½	16	150	470
Z 170	18.26	23.24	29.05	G 2	16	150	470
Z 275	30.25	38.50	48.13	G 2½	16	180	580
Z 375	41.25	52.92	65.63	G 3	16	180	580

*relates to the compressor's intake condition (+ 20 °C, 1 bar)



Cyclone separator with BEKOMAT electronic level-controlled condensate drain (option).

BOGE compressed air treatment systems

Filter/water separators (max. 16 bar)
in compact block design. Other equipment can be connected on both sides.
Condensate drainage manually or using an automatic drain.

Size of connection	G ¼	G ⅜	G ½	G ¾
Dimensions: Length installed (width) mm	40	48	70	70
Height mm	120	158	202	202
Rating at 6 bar pressure (p_1)	**m³/min**			
and pressure drop Δp = 1 bar	1,8	2,0	3,2	3,5

Pressure control valve, complete with pressure gauge (max. 25 bar)
in compact block design. Other equipment can be connected on both sides.
Easy to adjust by turning the large handwheel.

Size of connection	G ¼	G ⅜	G ½	G ¾
Dimensions: Length installed (width) mm	40	48	70	70
Height mm	105	98	134	134
Rating at 10 bar pressure (p_1),	**m³/min**			
6 bar secondary pressure and pressure	2,0	3,2	7,0	8,0
drop Δp = 1 bar according to DIN ISO 6953				

Lubricators (max. 16 bar)
Automatic operation, in compact block design. Other equipment can be connected on both sides.

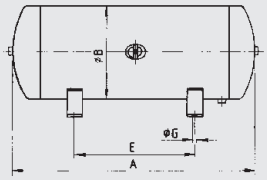
Size of connection	G ¼	G ⅜	G ½	G ¾
Dimensions: Length installed (width) mm	40	48	70	70
Height mm	140	171	224	224
Rating at 6 bar pressure (p_1)	**m³/min**			
and pressure drop Δp = 1 bar	3,4	4,4	4,6	7,5

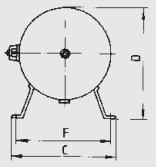
Combi-system (filter/pressure control valve), complete with pressure gauge (max. 16 bar)
Filter and pressure control valve combined in one space-saving, block-design unit.
Condensate drainage manually or using an automatic drain.
Pressure control valve with secondary ventilation.
Can be adjusted by turning the large handwheel.

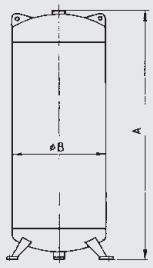
Size of connection	G ¼	G ⅜	G ½	G ¾
Dimensions: Length installed (width) mm	40	48	70	70
Height mm	175	203	273	273
Rating at 10 bar pressure (p_1),	**m³/min**			
6 bar secondary pressure and pressure	2,0	3,0	5,5	6,5
drop Δp = 1 bar according to DIN ISO 6953				

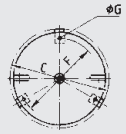
Accessories:
Fixing bracket (wall mounting)
Set of couplings
Set of 30 micron filters
Set of 5 micron filters
Set of 30 micron filters/regulators
Set of 5 micron filters/regulators

BOGE compressed air storage









Galvanised compressed air receivers, operating pressure 11 bar

Capacity litres	Dim. mm A	ØB	C	D	E	F	ØG	Weight kg	Air-Inlet	Air outlet Ball	Inspection apertures
Horizontal receivers											
50	780	300	380	380	400	320	14	30	G ½	G ⅜	2 x 1 sleeve on the back
90	995	350	390	500	550	330	14	37	G ¾	G ⅜	
150	1360	400	410	480	800	350	14	66	G ½	G ½	
270	1540	500	570	625	800	500	19	100	G ½	G ½	1 hand hole
350	1610	550	620	660	900	550	19	125	G ¾	G ¾	
500	1730	600	670	705	1100	600	24	150	G 1¼	G 1	
1000	2070	800	790	885	1200	720	24	285	G 1¼	G 1¼	2 hand holes
2000	2170	1150	1200	1325	1300	1100	23	555	G 1½	G 2	or 1 manhole
3000	2675	1250	1350	1450	1500	1250	23	765	G 1½	G 2	(option)
5000	3500	1400	1500	1600	2200	1400	23	1170	G 1½	G 2	1 manhole

	A	ØB	C	F	ØG	height when installed	Weight kg	Air-Inlet	Air outlet Ball	Inspection apertures
Vertical receivers										
270	1765	500	500	460	13	1780	100	G 1	G ½	
350	1835	550	550	510	13	1845	125	G 1	G ¾	1 hand hole
500	1980	600	655	525	22	2070	150	G 1½	G 1½	
1000	2340	800	800	670	22	2400	285	G 1½	G 2	2 hand holes
2000	2390	1150	1000	1000	23	2510	555	G 2½	G 2½	or 1 manhole
3000	2790	1250	1250	1150	23	2865	765	G 2½	G 2½	(option)
5000	3730	1400	1400	1300	23	3800	1170	G 2½	G 2½	1 manhole
5000	3730	1400	1400	1300	23	3800	1180	DN 100	DN 100	1 manhole

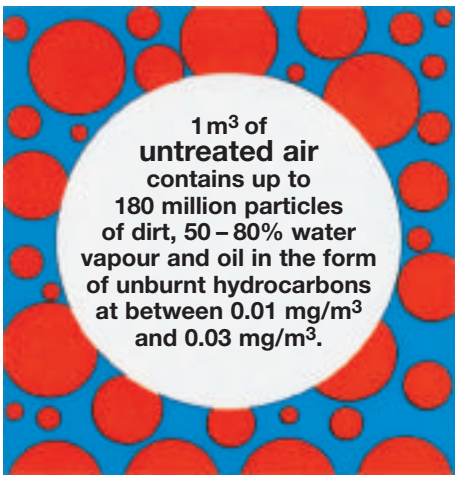
Galvanised compressed air receivers, operating pressure 16 bar

Capacity litres	Dim. mm A	ØB	C	D	E	F	ØG	Weight kg	Air-Inlet	Air outlet Ball	Inspection apertures
Horizontal receivers											
50	780	300	380	380	400	320	14	37	G ½	G ⅜	2 x 1 sleeve on the back
150	1310	400	410	480	800	350	14	74	G ½	G ½	
250	1380	500	570	625	800	500	19	113	G ¾	G ½	
350	1600	550	620	660	900	550	19	145	G ¾	G ¾	1 hand hole
500	1780	600	670	705	1100	600	24	180	G 1¼	G 1	
1000	2100	800	790	885	1200	720	24	355	G 1¼	G 1¼	2 hand holes
2000	2170	1150	1200	1325	1300	1100	23	720	G 1½	G 2	or 1 manhole
3000	2675	1250	1350	1450	1500	1250	23	935	G 1½	G 2	(option)
5000	3500	1400	1500	1600	2200	1400	23	1340	G 1½	G 2	1 manhole

	A	ØB	C	F	ØG	height when installed	Weight kg	Air-Inlet	Air outlet Ball	Inspection apertures
Vertical receivers										
250	1605	500	500	380	13	1615	113	G 1	G ½	
350	1835	550	550	510	13	1845	145	G 1	G ¾	1 hand hole
500	1995	600	600	525	22	2100	180	G 1½	G 1½	
1000	2340	800	800	670	22	2400	355	G 1½	G 2	2 hand holes
2000	2410	1150	1150	1000	23	2510	720	G 2½	G 2½	or 1 manhole
3000	2790	1250	1250	1150	23	2865	935	G 2½	G 2½	(option)
5000	3730	1400	1400	1300	23	3800	1340	G 2½	G 2½	1 manhole
5000	3730	1400	1400	1300	23	3800	1350	DN 100	DN 100	1 manhole

Compressed air receivers with higher operating pressures are available upon request

BOGE condensate management



Condition of the ambient air

Besides nitrogen and oxygen, the ambient air also contains impurities and moisture in the form of water (aerosols) or water vapour (relative humidity).

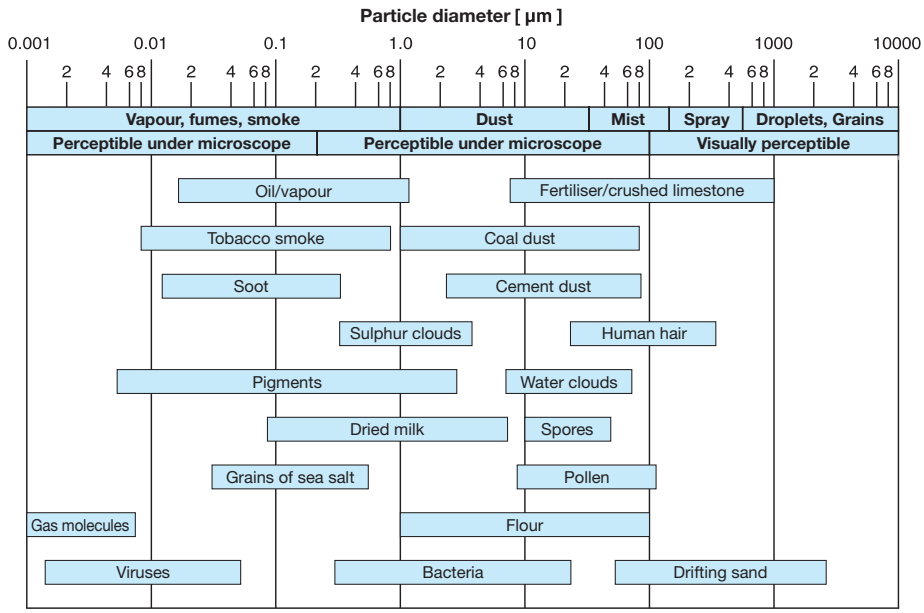
Impurities in the ambient air

Depending on the location, ambient air contains various impurities which cannot be seen by the naked eye. They can impair the reliability of compressed air equipment and furthermore, they can reduce the quality of products produced using the compressed air.

Behaviour of impurities during compression

When air is compressed, the concentration of impurities increases.

The impurities and moisture drawn in from the atmosphere is precipitated as condensate in the compressed air installation; depending on the concentration of its constituents, it can be oily, greasy and/or aggressive.



The most important impurities in ambient air and their sizes

Location	Limits [mg/m³]		Average value [mg/m³]	
	Atmospheric	at 10 bar	Atmospheric	at 10 bar
In the country	5 - 50	55 - 550	15	165
In towns	10 - 100	110 - 1100	30	330
In industrial areas	20 - 500	220 - 5500	100	1100
In large factories	50 - 900	550 - 9900	200	2200

Concentrations of particles in ambient air

Clean and Dry Compressed Air

Condensate precipitated in the compressed air system

Impurities from the compressed air system are washed out in the form of condensate.

Condensate precipitated from the compressed air

The amount of condensate in compressed air depends on the humidity of the intake air, the temperature and the volume of air.

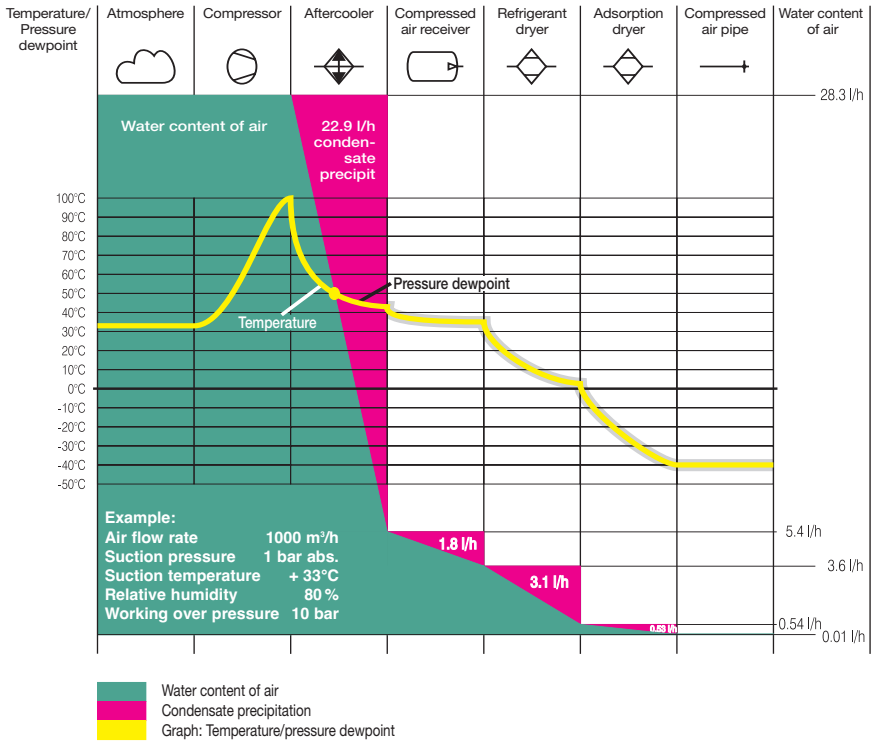
Condensate precipitates in different amounts at different places in a compressed air installation and in the compressed air pipe network.

Condensate forms when the temperature of the compressed air falls below the pressure dewpoint. The pressure dewpoint is the temperature at which the compressed air can be cooled without condensate precipitating. In our example of a compressed air installation, condensate precipitates in the compressor after-cooler, in the compressed air receiver, in the refrigerant dryer and adsorption dryer. Condensate can also precipitate in the downstream air-line if the compressed air cools much below the pressure dewpoint, –40 °C in our example.

The condensate from oil-lubricated compressors consists of impurities and moisture drawn in from the atmosphere, as well as oil particles in the form of aerosols and vapours from the oil lubrication system of the compressor.

Only proper condensate separation, drainage, removal and treatment will ensure, environmentally friendly operation.

Water content and Condensate precipitation in the air



Different amounts of condensate in a compressed air installation

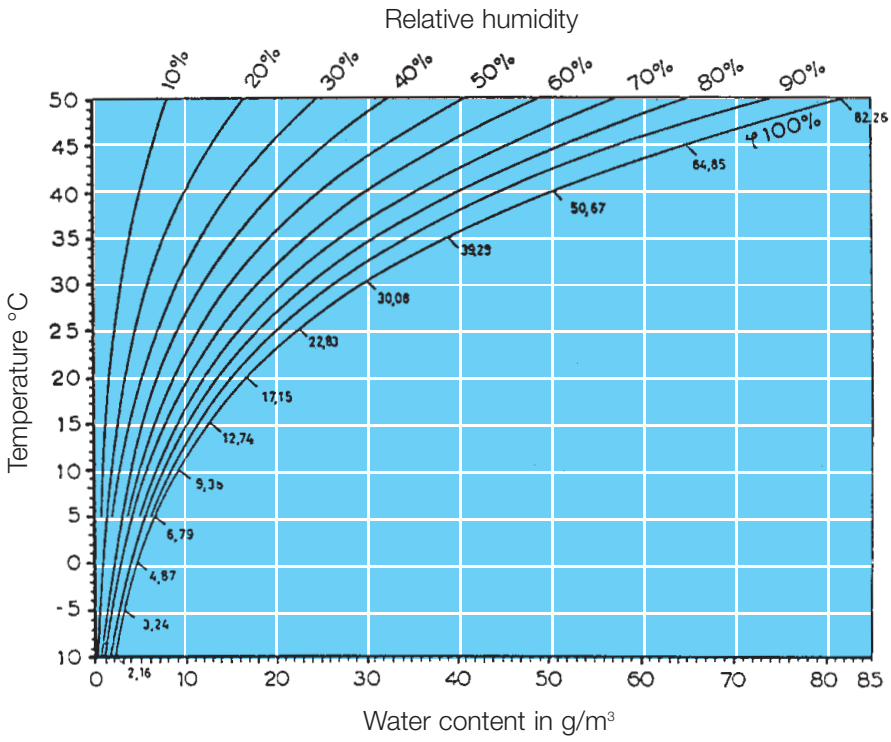


Diagram to determine the water content of air in g/m³ at various temperatures and degrees of saturation (relative humidity).

Condensate drainage

Mechanical condensate float drains

Float drains have to be sized specifically to match the calculated volume of condensate.

The advantage of a float drain is that it only opens when condensate actually accumulates. In this way, there is no loss of compressed air.

Float drains are maintenance-intensive. Problems can occur due to dirty, greasy or solid condensate.

Float-controlled

Float drain	85 mm Ø, H = 185 mm	Connection: In G 1/2, Out G 3/8

Electrical solenoid condensate drains

Electrical solenoid drains are less maintenance-intensive than float drains. The large internal cross-section ensures that the condensate is drained away without restriction, even with viscous condensates. They can be used for all applications, thanks to step-by-step adjustment of the discharge time and interval.

The advantage of time-controlled solenoids is their great adaptability for summer and winter running and for different sizes of machine.

Condensate precipitation is variable. Whilst float drains only discharge when condensate is present, the solenoid always opens at pre-set times. This means that when there is little condensate, expensively produced compressed air is constantly being blown away. The noise of this can be detrimental to the environment.

Solenoid-controlled

Konsatronic 3	Discharge intervals: 0.5 – 45 mins., Duration: 0.5 – 10 secs.	Connection: G 3/8

Loss-free electronic level-controlled condensate drains; the ultimate solution

Capacity controlled drainage without compressed air loss, working automatically with the actual condensate precipitated. The large cross-section drain ports ensure safe drainage of even the dirtiest of condensates.

Special intelligent control-electronics control drainage. They also monitorthe status of the equipment. Faults on the drain unit are notified by LED and can be forwarded to a central monitoring point via a potential-free contact.

Loss-free electronic, level-controlled

Type	Max. compressor output m^3/min	Max. dryer output m^3/min 100 % saturated	use for a, b	Dimensions, mm W/D/H	Connection In/Out
Bekomat 10	1.5	3	a, b	134/ 50/110	G ½/G ¼
Bekomat 20	4	8	a, b	140/ 72/140	G ½/G ¼
Bekomat 21	4.2	8.4	a, b	171/ 69/105	G ½/G ¼
Bekomat 12	6.3	12.6	a	65/150/141	G ½/G ⅜
Bekomat 13	28	56	a	93/212/162	G ½/G ½
Bekomat 14	126	252	a	120/252/180	G ¾/G ½
Bekomat 16 CO	1400	2800	a, b	280/280/280	G ¾/G ½

Output figures based on central European climate conditions

a = condensate with oil

b = oilfree, aggressive condensate

Why does condensate from oil-lubricated compressors need to be treated?

Unless condensate is treated or removed completely, then serious environmental damage can occur. Only 1 Litre of condensate is required to contaminate 1.000.000 Litres of water!

All industrial nations now forbid the drainage of condensate from oil-lubricated compressors into main drains. Laws now require the separation of condensate into oil and water and only allow water to be drained away.

In oil-free compressors, the compressed air does not come into contact with oil. Therefore, it follows that the condensate has no contact with oil. Clearly, any airborne traces of oil drawn in are also found in the condensate; the amount depends on the compressor's location.

Types of condensate

Condensate from oil-lubricated compressors can occur in the form of:

- emulsions
- dispersed mixtures

An analysis of the condensate will determine the scope of separation required. Can a simple oil/water separator be used or should an expensive separation or filtration system be used, or does the condensate collected require the services of a specialist company?

Emulsions

Emulsions (milky mixtures) are a bond of oil and water which cannot be separated by gravity. Emulsions can only be purified using expensive and costly emulsion separating equipment.

Dispersed mixtures

Unlike emulsions, dispersed mixtures can be purified by gravity, using relatively inexpensive oil/water separators.

Condensate test

There is a simple test to determine whether the condensate is an emulsion or a dispersed mixture.

Fill a clean glass with condensate. Stir the liquid and after a short time, the oil separates from the water. The oil floats to the surface. The remaining water is clear. The dispersed mixture can be separated out, using an oil/water separator.

If, after stirring, the condensate forms as cloudy water under the layer of oil, then you can assume that it is an emulsion which can only be separated out using an emulsion separating unit.

Condensate treatment options

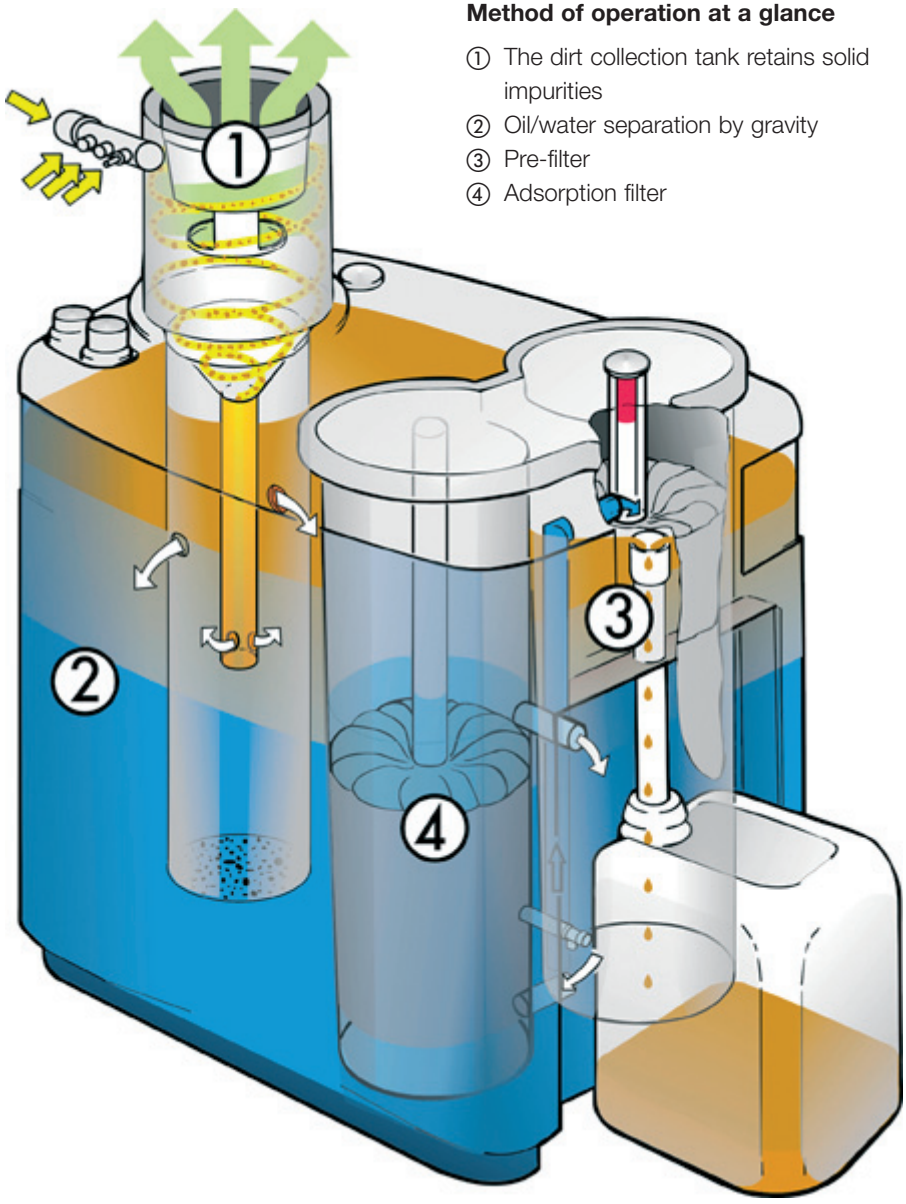
Depending on national regulations and the operator's environmental policy, the condensate from oil-lubricated compressors must be treated before it is disposed of into the main drain system. There are two possibilities:

1. **Collect the condensate and have it removed by a specialist company; this is generally very expensive.**
2. **Treat it directly on site.**

As the condensate consists of 99% water and only 1% oil, "on-site treatment" using the BOGE oil/water separator is the most economic solution.

Method of operation at a glance

① The dirt collection tank retains solid impurities
② Oil/water separation by gravity
③ Pre-filter
④ Adsorption filter



BOGE oil/water separator

- Larger overflow for ‘lumpy’ oils
- No oil residue in the filter
- Dual filter monitoring: integral level warning and optical reference – (test procedure to compare samples)

Economic

- Unit to suit all installations, no additional power costs
- Low maintenance
- Optimum use of filters

Optimum separation

In order to maintain uniform quality for condensate treatment, it is necessary to change the pre-filter and adsorption filter periodically. The sample test will show if the filter needs to be changed.

Condensate drainage

Type	Piston compressors Max. compressor output in m³/min	Screw compressors Max. compressor output in m³/min	Dimensions, mm W/D/H
ÖWAMAT 1	0,7	1,0	200/ 200/ 525
ÖWAMAT 2	1,4	2,5	445/ 360/ 755
ÖWAMAT 4	3,3	5,5	665/ 540/1000
ÖWAMAT 5R	6,5	11,0	680/ 590/1150
ÖWAMAT 6	16,8	22,0	915/ 670/1245
ÖWAMAT 8	52,0	70,0	1200/1000/1615

Output details for central European climate.

BOGE Bielefeld plant: State-of-the-art production facilities guarantee the highest manufacturing quality.

Air at its best: Made in Germany

We at BOGE

We at BOGE plan, develop, manufacture, distribute and service compressed air supply systems for customers in the field of plant construction, industry and workshops.

Our ranges of services include the following:

- Planning and engineering of compressed air systems
- Oil-free piston, screw and turbo compressors
- Oil-lubricated piston and screw compressors
- Compressed air purification
- Compressed air distribution and storage
- Compressed air accessories
- Compressed air service
- System control and display.

In Germany we are one of the market leaders in our sector. Worldwide we are represented by our own branch offices, subsidiaries and distribution and service partners.

BOGE

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