Technical Data Sheet

BORA High Pressure Fridge Dryers

Technical alterations reserved / R01/2012/11/08

The compressed air is being fed into the dryer and being pre-cooled in the air-to-air heat exchanger by the outgoing cold compressed air. The pre-cooled air then passes through the refrigerant-to-air heat exchanger where it is being further cooled down to the required pressure dew point. The moisture in the compressed air condenses out and gathers and discharges automatically. Finally, the cold discharged air is being reheated by the incoming compressed air. This saves energy and prevents any moisture forming beyond the dryer in the compressed air system. The cooling capacity of the refrigeration cycle is being controlled by a hot gas bypass which assures the dryer functionabilty for partial loads, too.

	volume flow*		press. drop	power supply	protec. Class	power cons.**	cooling air requir.**	air con.	weight
	m³/h	m³/min	bar	V/Ph/Hz		kW	m³/h	BSP	kg
DHP 0025 AX	25	0,42	0,25	230/1/50-60	IP 20	0,16	200	3/8”	28
DHP 0045 AX	45	0,75	0,24	230/1/50-60	IP 20	0,18	200	3/8”	29
DHP 0075 AX	72	1,20	0,25	230/1/50-60	IP 20	0,22	300	3/8”	32
DHP 0090 AX	90	1,50	0,23	230/1/50-60	IP 20	0,23	300	3/4”	38
DHP 0135 AX	135	2,25	0,23	230/1/50 or 60	IP 20	0,46	300	3/4”	39
DHP 0180 AX	180	3,00	0,24	230/1/50 or 60	IP 30	0,69	380	3/4”	50
DHP 0240 AX	240	4,00	0,24	230/1/50 or 60	IP 30	0,75	380	3/4”	53
DHP 0315 AX	315	5,25	0,20	230/1/50 or 60	IP 40	0,70	450	1”	89
DHP 0450 AX	450	7,50	0,22	230/1/50 or 60	IP 40	0,84	450	1”	101
DHP 0615 AX	615	10,25	0,22	230/1/50 or 60	IP 40	1,10	1900	1”	115
DHP 0810 AX	810	13,50	0,23	230/1/50 or 60	IP 40	1,45	2500	1.1/2”	156
DHP 1010 AX	1.008	16,80	0,22	400/3/50 or 460V/3/60	IP 40	2,17	3400	1.1/2”	188
DHP 1260 AX	1.260	21,00	0,22	400/3/50 or 460V/3/60	IP 42	2,55	5400	2”	252
DHP 1620 AX	1620	27,00	0,23	400/3/50 or 460V/3/60	IP 42	2,85	7200	2”	265
DHP 2280 AX	2.280	38,00	0,20	400/3/50 or 460V/3/60	IP 42	3,50	7400	2”	391

* according to ISO 7183 @ 40 bar g **at 50 Hz frequency

Donaldson Filtration Deutschland GmbH
Büssingstr. 1
42781 Haan
Tel.: +49 (0) 2129 569 0
Fax: +49 (0) 2129 569 100
E-Mail: CAP-de@donaldson.com
Web: www.donaldson.com

Subject to change 11/2012

Donaldson® Ultrafilter

DHP 0025 AX - DHP 2280 AX

Features of Bora dryer DHP 0025 AX - DHP 2280 AX	Benefits
Copper brazed stainless steel heat exchanger (DHP0025AX-DHP0075AX coaxial copper HE)	Designed for low pressur drop and high cooling performance
High overload capacity to a pressure dew point of approx.+20 °C	In case of overload, the dryer will only switch off at a dew point above than appr. +20 °C
All dryer in metal cabinet construction	Optimum protection against mechanical damage and against dirt
Lightweight & compact design	Minimum space requirement (on stock, for transport and for the installation in the compressed air network)
Potetential free alarm contact (from DHP 0090 AX)	Economical operation and safe system installation in the compressed air network
RS485 serial port (from DHP 1260 AX)	Remote control. Connection to supervisors system or PC.

Product descritption

Complete compressed air drying system with timed solenoid valve condensate drain, electronic dew point indicator, metal housing, all units air cooled, enviromental friendly refrigerant.

Colour: RAL 5019 Capri blue.

Operating Pressure :
DHP 0025 AX - DHP 1010 AX : max. 50 bar g
DHP 1260 AX - DHP 2280 AX : max. 45 bar g

Refrigerant :
DHP 0025 AX - DHP 0135 AX : R134a
DHP 0180 AX - DHP 2280 AX : R407C

Air inlet temperature :
max. 65 °C

Sound pressure level (at a distance of 1m)
DHP 0025 AX - DHP 1010 AX : < 70 dB(A)
DHP 1260 AX - DHP 2280 AX : < 75 dB(A)

Ambient temperature :
min. +2°C / max. +50 °C

Declaration of conformity:
acc. to 2006/42/EC

Pressure dew point :
+3 °C

Sizing

Comp. air inlet temp.	°C	25	30	35	40	45	50	55	60	65
Factor	fti	1,20	1,12	1,00	0,83	0,69	0,59	0,50	0,44	0,39

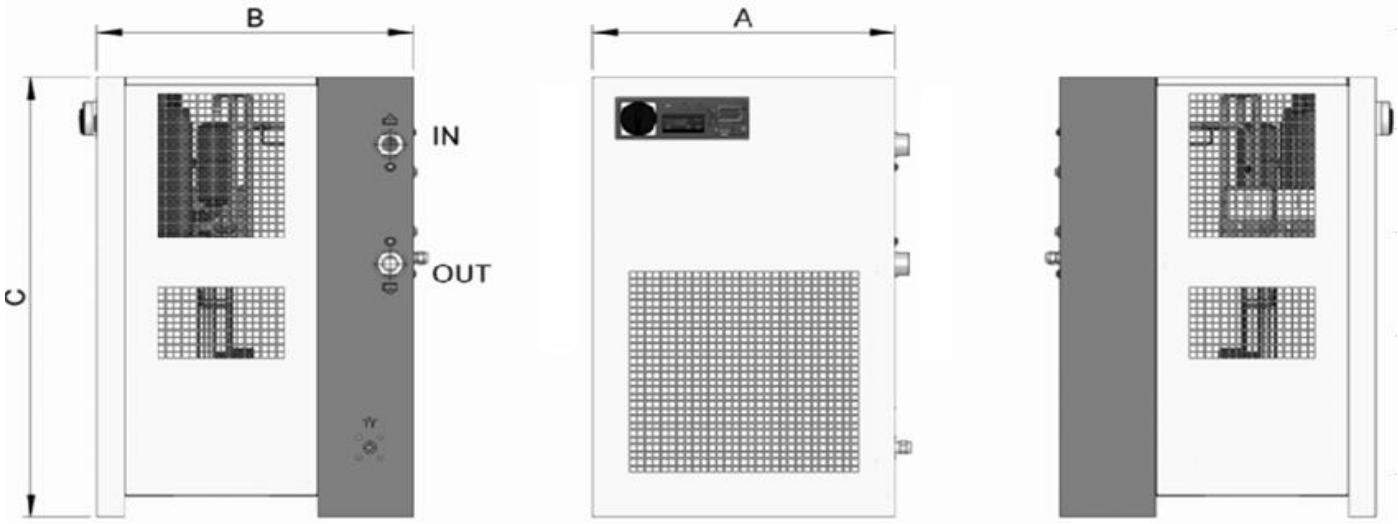
Pressure dew point	°C	3	5	7	10
Factor	ftpd	1,00	1,09	1,19	1,37

Working overpressure	bar (g)	15	20	25	30	35	40	45	50
Factor	fp	0,57	0,70	0,80	0,88	0,94	1,00	1,05	1,10

Temperature of cooling air	°C	25	30	35	40	45	50
Factor	fte	1,00	0,96	0,90	0,82	0,72	0,60

$$V_{korr} = \frac{V}{fti \times ftpd \times fp \times fte}$$

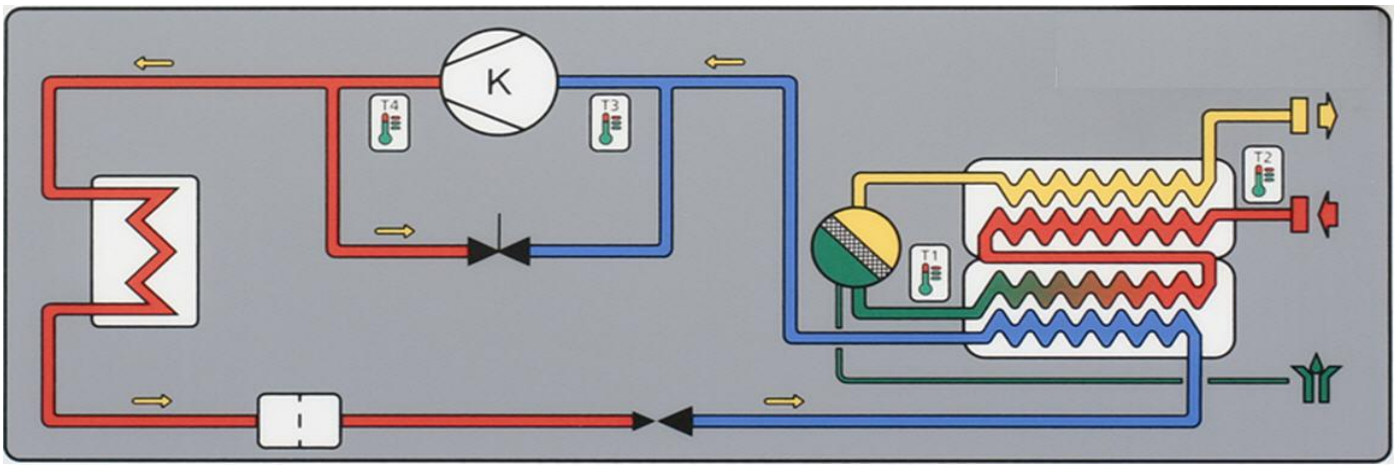
DHP 0025 AX - DHP 2280 AX



Size	A wight mm	B depth mm	C height mm	location of air connection
1	370	515	475	back side
2	345	420	740	right side
3	485	455	825	right side
4	555	580	885	right side
5	665	725	1105	back side
6	790	725	1105	right side

For detailed dimensions please request the dimension sheet.

Function diagram (exemplary)



Donaldson
FILTRATION SOLUTIONS

REFRIGERATION COMPRESSED AIR DRYER BOREAS VARIOPULSE

The intelligent Refrigeration Compressed

Why is Compressed Air processed?

Compressed air is an essential form of driving and process energy in all fields of industrial and production manufacturing. Compressed air must be dry, free of oil and clean to avoid expensive production breakdowns.

Compressed air is produced by compressing air which is sucked into the compressor. This usually contains pollutants, dirt particles and always moisture in the form of water vapour, which condenses spontaneously in the compressed air and can then lead to disruptions in operations and thereby to substantial but avoidable costs.

DV 1800 AP

How does a Boreas work?

To process the compressed air, it is fed into the refrigeration compressed air dryer and is pre-cooled in an air/air heat exchanger. This pre-cooling is conducted in counter-flow with the expelled, cooled compressed air and therefore operates completely without additional energy. Further cooling to the pressure dewpoint is conducted in a refrigerant/air heat exchanger cooled by a refrigerant cycle. Throughout the entire cooling process, moisture is precipitated from the compressed air as condensate and is automatically drained. Before being expelled the processed compressed air is re-heated in the air/air heat exchanger by means of the entering compressed air.

Variopulse: A technical Leader in Dryer Control Systems

This microprocessor-based controller constantly processes data such as the cooling temperature, the pressure in the refrigeration cycle, the ambient temperature and dryer-specific parameters and thereby calculates the current operating status.

Depending on the demand on the refrigeration compressed air dryer, the Variopulse controller regulates the performance of the condenser and the compressor via a frequency converter or the suction pressure control. At a very low demand, the refrigerant compressor is even switched off intermittently. With its function as a thermal accumulator, the heat exchanger permits a rapid response to changing demands and prevents dewpoint peaks.

Air Dryer: Boreas Variopulse

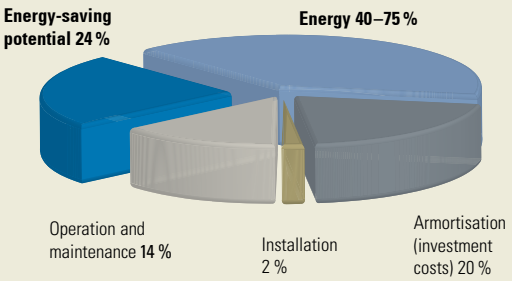
Frequency Converter or Suction Pressure Control – two Ways to one Objective: Energy-saving

With the Boreas Variopulse DV 1800 AP to DV 2800 AP, the performance of the refrigerant circulation system is controlled in the partial load range by a suction pressure control. This closes the suction pipe of the refrigerant compressor so that only a small proportion of the refrigerant flows through a bypass to the compressor. This then compresses less refrigerant than at peak load and therefore consumes substantially less energy.

The Boreas Variopulse dryers sizes DV 3500 AP to DV 28500 WP employ a frequency converter to control the performance. With this system, a frequency converter continuously controls the speed of one of the refrigerant compressor.

With these two control concepts and the Variopulse controller, the energy consumption falls in linear proportion to the dryer load by up to 90 % at zero load. This leads to an extremely low energy consumption in the zero, partial and peak load ranges.

The Energy Costs exceed the Investment Costs within a very short Time.



The multifunction Display

- Current pressure dewpoint
- Operating mode normal/ summer/automatic
- Energy consumption in relation to the overall service life
- Error messages
- Malfunction history
- Expired maintenance intervals
- Condensate drain operating status
- Operating hours
- Refrigerant compressor on/off
- Current energy consumption

Features and Advantages

- Variopulse controller as standard
- Permanently illuminated multifunction display
- Constant pressure dewpoint without dewpoint peaks
- Load-dependant energy consumption, reduction by up to 90 % in proportion to the rated energy consumption
- Aluminium heat exchanger
- Level-controlled condensate drain
- CAN-BUS interface for remote monitoring or to read data using a laptop computer as standard
- Display adjustable for °C or °F
- No energy-wasting hot gas bypass
- High overload capacity due to use of environmentally friendly refrigerant R-134a

The intelligent Refrigeration Compressed

Aluminium Heat Exchanger

- Generously proportioned high performance air/air and refrigerant/air heat exchangers
- Integrated condensate separation system
- Insensitive to dirt due to generously proportioned flow ducts
- Low air pressure difference
- Insensitive to corrosion due to the use of aluminium in special production processes which have been tried and tested for decades

R-134a as Refrigerant

The Boreas Variopulse types use as standard the refrigerant R-134a. With an ozone depletion factor of 0, this refrigerant for example loses less of its efficiency at high ambient temperatures than other common refrigerants. This leads to a substantial reduction in the susceptability to failure of the machine.

Piston Refrigerant Compressor

With permissible coolant temperatures of +2 to +50 °C (atmospheric air or cooling water), the piston compressors used in the Boreas Variopulse provide benefits over the frequently used scroll compressors.

Due to their design, scroll compressors work with optimum effectiveness in only a narrow range of operation. In contrast, piston compressors achieve very good efficiency over a substantially wider range. This leads to a low dewpoint at overload or a lower energy consumption under partial loads in comparison with scroll compressors.

DV 5500 AP

CE/CE0045

Air Dryer: Boreas Variopulse

Electrical Cabinet with integrated Display

- Compact electrical cabinet with all operating units at the front
- Permanently illuminated display indicating all relevant information

Frequency Converters

- The frequency converter used to control the performance regulates the speed of the refrigerant compressor (DV 3500 AP to 28500 WP)
- In the smaller refrigeration compressed air dryers, the performance is controlled by a solenoid valve in a suction pressure control system instead of a frequency converter (DV 1800 to 2800 AP)

Level-controlled Condensate Drain

All Boreas Variopulse refrigeration compressed air dryers are equipped with a level-controlled condensate drain. This fully prevents compressed air losses.

High-performance Condensers

The entire Boreas Variopulse series is available with both water-cooled plate condensers and air-cooled condensers.

Refrigerant Cycle

Mainly in high-quality copper pipe. At places subject to vibrations, stainless steel pipes are used to attain long product life cycles.

Boreas Variopulse DV 1800 AP to

Technical Data

Case	Type	Flow rate	Flow rate	Pressure drop	Electrical connection	Power consumption kW			Cooling air consumption	Cooling water consumption
		m^3/h	m^3/min	bar	3~/50 Hz	100 % Peak load	50 % Partial load	0 % Zero load	m^3/h	m^3/h
0	DV 1800 AP	1800	30.0	0.12	400 V	3.1	1.7	0.4	4800	1.0
	DV 2000 AP	2000	33.3	0.14	400 V	3.2	1.9	0.4	4800	1.1
	DV 2300 AP	2300	38.3	0.19	400 V	3.4	2.0	0.4	4800	1.3
	DV 2800 AP	2800	46.6	0.24	400 V	4.3	2.5	0.6	5200	1.6
1	DV 3500 AP	3500	58.3	0.11	400 V	6.9	4.0	0.8	9600	2.0
	DV 4300 AP	4300	71.6	0.16	400 V	7.1	4.1	0.9	9600	2.5
	DV 5500 AP	5500	91.6	0.24	400 V	10.8	6.2	1.4	10400	2.9
2	DV 7000 WP	7000	116.6	0.19	400 V	12.6	7.1	1.5	19200	4.0
	DV 8750 WP	8750	145.8	0.17	400 V	15.3	8.6	2.0	19200	5.2
	DV 10500 WP	10500	175.0	0.22	400 V	17.3	9.7	2.1	20800	6.4
3	DV 12500 WP	12500	208.3	0.22	400 V	21.9	12.1	2.7	23000	7.5
	DV 14250 WP	14250	237.5	0.20	400 V	23.9	13.3	3.0	23000	8.5
Twin	DV 17500 WP	17500	291.6	0.17	400 V	30.6	17.3	3.8	38400	10.4
	DV 21000 WP	21000	350.0	0.22	400 V	34.6	19.6	4.4	41600	12.8
	DV 25000 WP	25000	416.6	0.22	400 V	43.8	24.3	5.5	46000	15.0
	DV 28500 WP	28500	475.0	0.20	400 V	47.8	26.6	6.0	46000	17.0

Design

Flow rate in relation to the suction status of the air compressor (+20 °C, 1 bar) at compressed air inlet +35 °C, operating pressure 7 bar, ambient temperature + 25 °C, dewpoint +3 °C, measured at the dryer outlet according to DIN ISO 7183, power consumption at +25 °C ambient temperature/cooling water temperature.

Operating pressure	min. 2 bar max. 16 bar
Ambient temperature	min. +2 °C max. +50 °C

Inlet temperature	max. +70 °C
Noise level	dB (A) < 80

Operating pressure (bar g)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Factor f_p	0.60	0.70	0.80	0.88	0.94	1.00	1.04	1.06	1.09	1.10	1.12	1.14	1.15	1.16	1.17

Compressed air inlet temperature (°C)	30	35	40	45	50	55	60	65	70
Factor f_{ti}	1.20	1.00	0.82	0.67	0.55	0.45	0.38	0.34	0.30

Ambient temperature/cooling water temperature (°C)	25	30	35	40	45	50
Factor f_{tc}	1.00	0.98	0.93	0.84	0.72	0.56

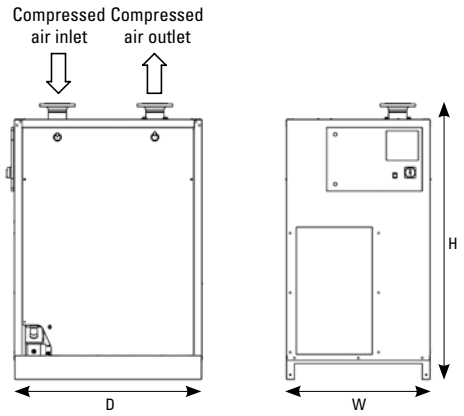
Pressure dewpoint (°C)	3	5	7	10	15
Factor f_{ta}	1.00	1.10	1.21	1.35	1.58

Corrected dryer performance =
Standard dryer performance x f_p x f_{ta} x f_{tc} x f_{ti}

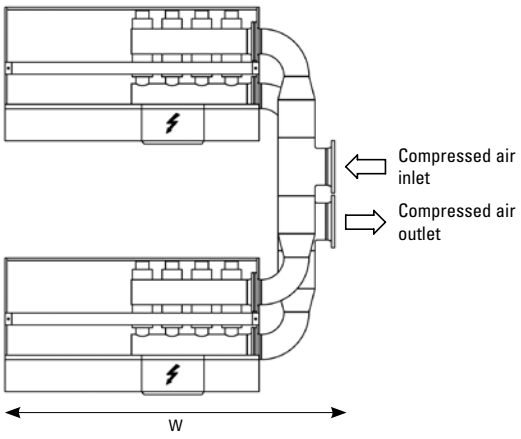
DV 28500 WP Twin: Technical data

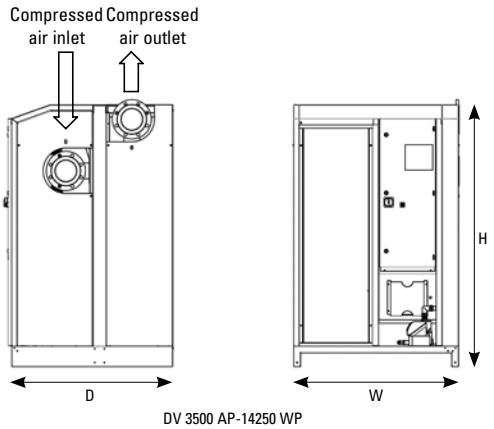
Dimensions

Case	Type	Air connections	Condensate drain	Weight	Dimensions mm		
		DN	DN	kg	Width	Height	Depth
0	DV 1800 AP	100	14	412	900	1725	1175
	DV 2000 AP	100	14	420	900	1725	1175
	DV 2300 AP	100	14	425	900	1725	1175
	DV 2800 AP	100	14	435	900	1725	1175
1	DV 3500 AP	150	14	610	1200	1940	1200
	DV 4300 AP	150	14	630	1200	1940	1200
	DV 5500 AP	150	14	670	1200	1940	1200
2	DV 7000 WP	200	14	995	2225	1970	1200
	DV 8750 WP	200	14	1165	2225	1970	1200
	DV 10500 WP	200	14	1225	2225	1970	1200
3	DV 12500 WP	250	14	1710	3345	2030	1200
	DV 14250 WP	250	14	1940	3345	2030	1200
Twin	DV 17500 WP	250	14	2730	2885	1970	3400
	DV 21000 WP	300	14	2890	2885	1970	3400
	DV 25000 WP	350	14	3860	4145	2080	3400
	DV 28500 WP	350	14	4320	4145	2080	3400

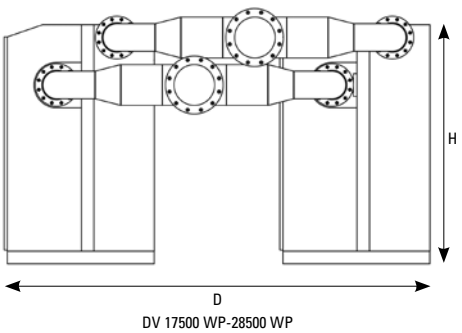


DV 1800 AP-2800 AP





DV 3500 AP-14250 WP



DV 17500 WP-28500 WP

Annual Energy Savings with the microprocessor-based Variopulse Controller as a Unit with Suction Pressure Control or Speed Control with a Frequency Converter.

Annual energy savings of 35 % or more

	Comparison of the energy consumption of different systems			
	Boreas Variopulse DV 7000 WP	Standard refrigeration compressed air dryer with hot gas controller	Standard refrigeration compressed air dryer with accumulator	Standard speed-controlled refrigeration compressed air dryer
Flow rate	7000 m³/h	7000 m³/h	7000 m³/h	7000 m³/h
Pressure dewpoint	3 °C	3 °C	3 °C	3 °C
Annual energy consumption	37351 kWh	60574 kWh	49260 kWh	42965 Wh
Annual energy costs in Euros	**2,988,–**	**4,846,–**	**3,941,–**	**3,437,–**

This example of energy saving is based on the following principles: Industrial production in one shift, 5 working days per week, standby mode on days off work and an electricity price of 8 Eurocents per kilowatt hour. The pressure loss is not taken into account in the calculation, but leads to additional energy costs of 40–80 %.

Donaldson® Ultrafilter

Compressed Air Filtration · Filters for Sterile Air, Steam and Liquids · Refrigerant Drying · Adsorption Drying · Condensate Drains · Condensate Purification Systems · Process Air and Gas Processing

Donaldson FILTRATION SOLUTIONS

Total Filtration Management

Donaldson offers a wide variety of solutions to reduce your energy costs, improve your productivity, guarantee production quality and help protect the environment.

Total Filtration Service

A compressive range of services especially designed to keep your production at peak performance and at the lowest total cost of ownership.

Please contact us:
Donaldson Europe B.V.B.A.
Research Park Building No. 1303 · Interleuvenlaan 1
B-3001 Leuven · Belgium
Phone +32(0)16 38 38 11 · Fax +32(0)16 40 00 77
CAP-europe@donaldson.com · www.donaldson.com

GB – 2012/1

Donaldson
FILTRATION SOLUTIONS

BURAN
REFRIGERATION COMPRESSED AIR DRYER

Compact Design

There is more to Compressed Air than just compressing Air

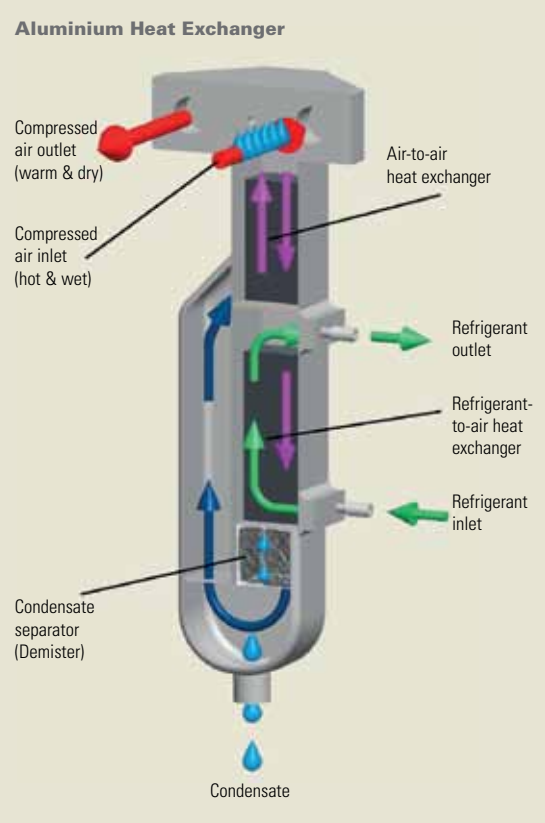
Compressed air is an indispensable source of operating and processing power in all areas of industrial and technical production. The compressed air is generated by raising the pressure of large volumes of ambient air. Usually this air contains harmful substances, such as dirt particles and moisture in the form of water vapour. The water vapour condenses and can lead to operational breakdowns and considerable but avoidable costs. To prevent production downtimes compressed air must be clean, dry and oil-free.

Buran Refrigeration Compressed Air Dryers

The refrigeration compressed air dryers of the Buran range, dry the air to prevent condensation and corrosion damage. The dryers in a robust metal housing are equipped with an electronic level controlled condensate drain and a dewpoint indicator. The aluminium heat exchanger includes three functions in one: air-to-air heat exchanger, refrigerant-to-air heat exchanger and water separator. Hereby an especially compact design is achieved.

How the Buran functions?

The compressed air is being fed into the dryer and being pre-cooled in the air-to-air heat exchanger by the outgoing cold compressed air. The pre-cooled air then passes through the refrigerant-to-air heat exchanger where it is being further cooled down to the required pressure dewpoint. The moisture in the compressed air condenses out and gathers and discharges automatically. Finally, the cold discharged air is being reheated by the incoming compressed air. This saves energy and prevents any moisture forming beyond the dryer in the compressed air system. The cooling capacity of the refrigeration cycle is being controlled by a hot gas bypass, which will assure secure functioning even during partial loading.



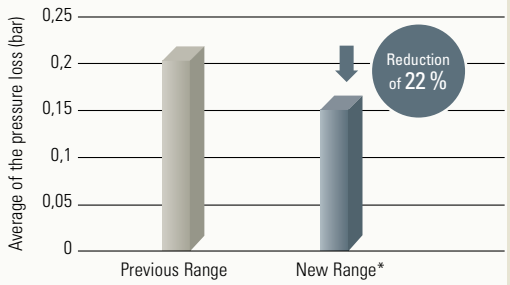
The main feature of the Buran refrigeration compressed air dryer is the aluminium heat exchanger

Low Pressure Losses

Low Operating Costs

Due to the new heat exchanger concept pressure losses are reduced to a minimum and the operating costs are kept low throughout the whole lifetime. By the reduction of the pressure losses the energy efficiency could further be increased. The average pressure loss is 22 % lower than with the previous dryer range.

Increase of the energy efficiency by reduction of pressure loss



The average pressure loss was reduced in comparison to the previous range by 22 %

Annual energy saving by the use of high-efficient technology

	Standard refrigeration compressed air dryer previous range	Standard refrigeration compressed air dryer new range*
Flow (m^3/h)	300	300
Pressure dewpoint (°C)	3 °C	3 °C
Pressure loss (bar)	0.28	0.19
Annual power consumption for pressure loss (kWh)	2,068	1,403

The example for energy savings is based on: 2 shifts industrial production, 5 days a week (4,000 hours per year)
*Buran I-III

Clear, easy visible Control Display

The control panel, which is user-friendly allows for the monitoring of the operating status at a glance:

- The dewpoint is clearly displayed with a 10 point LED indicator
- Easy LED-Display for the operating mode, an alarm and the function of the fan
- Adjustable dewpoint alarm

The display shows all relevant information

Easy Handling

The robust Buran refrigeration compressed air dryers stand out due to the easy handling and ease of maintenance:

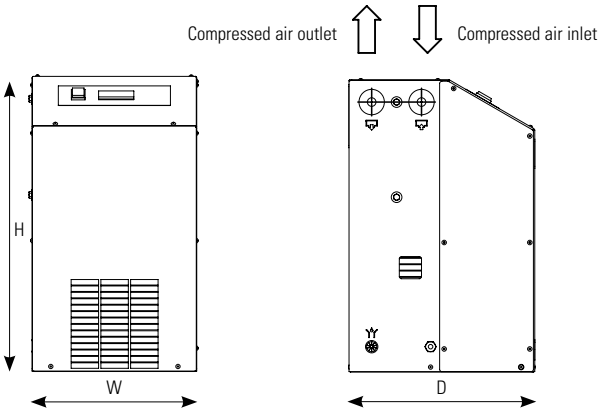
- All connections are accessible from one side (compressed air in- and outlet, electrical connection, condensate drain and inspection drain control)
- Good accessibility of the main components
- Low maintenance time

An easy installation is guaranteed with all connections being located on one side

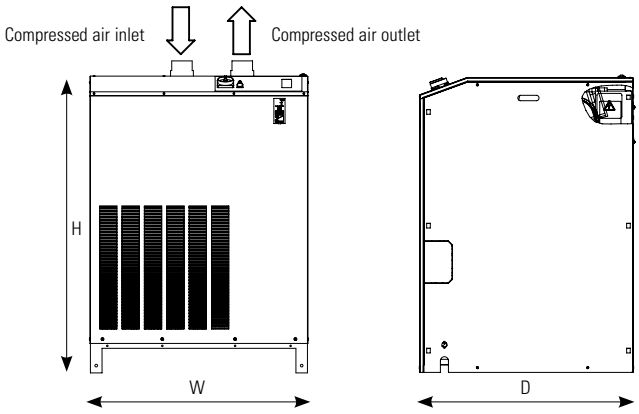
Technical Data

Buran I–IV (Volume Flows from 20 bis 1,650 m³/h)

Housing	Type	Volume flow		Pressure drop	Power supply	Power consumption	Cooling air requirement	Air connection	Weight	Dimensions mm		
		m³/h	m³/min	bar	V/Ph/Hz	kW (50 Hz)	m³/h	BSP	kg	W	H	D
I	DC 0020 AB	20	0.33	0.03	230/1/50-60	0.16	200	½“	26	360	645	410
	DC 0035 AB	35	0.58	0.06	230/1/50-60	0.18	200	½“	27	360	645	410
	DC 0050 AB	50	0.83	0.09	230/1/50-60	0.22	300	½“	29	360	645	410
	DC 0065 AB	65	1.08	0.11	230/1/50-60	0.22	300	½“	31	360	645	410
	DC 0085 AB	85	1.42	0.15	230/1/50-60	0.30	300	½“	32	360	645	410
	DC 0105 AB	105	1.75	0.17	230/1/50-60	0.30	300	1“	33	360	645	410
	DC 0125 AB	125	2.08	0.22	230/1/50	0.46	300	1“	34	360	645	410
II	DC 0150 AB	150	2.50	0.19	230/1/50	0.47	300	1 ¼“	55	480	870	660
	DC 0180 AB	180	3.00	0.22	230/1/50	0.72	380	1 ¼“	56	480	870	660
	DC 0225 AB	225	3.75	0.23	230/1/50	0.80	380	1 ¼“	57	480	870	660
	DC 0300 AB	300	5.00	0.19	230/1/50	0.70	450	1 ½“	68	480	870	660
	DC 0360 AB	360	6.00	0.26	230/1/50	0.76	450	1 ½“	74	480	870	660
III	DC 0450 AB	450	7.50	0.04	230/1/50	0.80	450	2“	116	645	1055	920
	DC 0550 AB	550	9.17	0.16	230/1/50	1.10	1900	2“	120	645	1055	920
	DC 0650 AB	650	10.83	0.23	230/1/50	1.52	1900	2“	121	645	1055	920
	DC 0750 AB	750	12.50	0.10	230/1/50	1.55	2200	2“	155	645	1055	920
	DC 0850 AB	850	14.17	0.14	230/1/50	1.60	3300	2“	165	645	1055	920
Buran IV with electronic control (energy saving function)												
IV	DC 1000 AX	1000	16.67	0.27	400/3/50	2.40	3100	2 ½“	177	904	1230	805
	DC 1175 AX	1175	19.58	0.29	400/3/50	2.56	2600	2 ½“	180	904	1230	805
	DC 1350 AX	1350	22.50	0.21	400/3/50	2.80	2600	2 ½“	185	904	1230	805
	DC 1500 AX	1500	25.00	0.25	400/3/50	2.95	2600	2 ½“	190	904	1230	805
	DC 1650 AX	1650	27.50	0.26	400/3/50	3.10	2600	2 ½“	196	904	1230	805



Buran DC 0020 AB - DC 0850 AB



Buran DC 1000 AX - DC 1650 AX

Volume flow referred to the suction status of the air compressor (+20 °C, 1 bar), with compressed air inlet temperature 35 °C, operating overpressure 7 bar, ambient temperature 25 °C, pressure dewpoint +3 °C, measured at dryer outlet in accordance with ISO 7183. Permitted ambient temperature: min. +2 °C – max. 50 °C, permitted inlet temperature: max. 70 °C, max. operating pressure: DC 0020 AB to DC 0085 AB and DC 1000 AX to DC 1650 AX 16 bar; DC 0105 AB to DC 0850 AB 14 bar, higher pressure on request. Protection class IP 20, noise level: dB(A) <70. All refrigeration compressed air dryers are equipped with an environmental-friendly refrigerant: DC 0020 AB to DC 0150 AB and DC 1000 AX to DC 1650 AX R134a; DC 0180 AB to DC 0850 AB R407C.

Working overpressure	bar (g)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Factor	f_p	0.60	0.70	0.80	0.88	0.94	1.00	1.04	1.06	1.09	1.10	1.12	1.14	1.15	1.16	1.17

Pressure dewpoint	°C	3	5	7	10
Factor	f_{tpd}	1.00	1.12	1.24	1.36

Temperature of the cooling air or cooling water	°C	25	30	35	40	45	50
Factor	f_{te}	1.00	0.97	0.94	0.87	0.75	0.62

Compressed air inlet temperature	°C	30	35	40	45	50	55	60	65	70
Factor	f_{ti}	1.28	1.00	0.88	0.75	0.58	0.48	0.44	0.42	0.40

Corrected dryer capacity =
Standard dryer capacity x fp x ftpd x fte x fti

Easy Handling

Features and Benefits

Aluminium Heat Exchanger

- Low operating costs due to marginal compressed air losses
- No corrosion inside the heat exchanger due to contact with wet compressed air

Hotgas Bypass Control*

- Proven and reliable technology with easy handling
- Constant dewpoint even with changing loads

High Overload Capacity*

- In case of overload, the dryer will only switch off at a dewpoint above than approximately +20 °C

Potential free Alarm Signal

- Economical operation and safe system installation in the compressed air network.

Electronic level controlled Condensate Drain

- No compressed air losses due to condensate removal

Compact & user-friendly

- Minimum space requirement (on stock, for transport and for the installation in the compressed air network).
- Installation is made easy by the access to all connections from one side
- Clearly visible operator control panel
- Minimum maintenance requirements

*Buran I – III

Increase of the Compressed Air Quality with Filtration

With a pre-filter the quality of the compressed air is further increased. The filter protects the dryer by separating liquid water, particles and oil.

*validated according to ISO 12500-1

Everything from one Source

Service with highest Expectations

Our service is always nearby! With our technical service and support network throughout Europe, we can routinely service your production systems as well as provide on-site support whenever needed.

With one of our service centers you receive quick, cost-effective and competent services for all filtration applications from one source.

The Solution for high Volume Flows

Donaldson offers a complete range of refrigeration compressed air dryers to meet your specific needs. For high volume flows our engineering team developed an individual solution, which is tailored to your operating parameters and fulfils highest requirements with regards to energy efficiency.

Our Buran IV refrigeration compressed air dryers (1,000 to 1,650 m³/h) with electronic control as well as the Boreas (1,800 to 28,500 m³/h) and Brisa (10,500 to 50,000 m³/h) range are available for this purpose.

Donaldson®
Ultrafilter

Compressed Air Filtration · Filters for Sterile Air, Steam and Liquids · Refrigerant Drying · Adsorption Drying · Condensate Drains · Condensate Purification Systems · Process Air and Gas Processing

Donaldson®
FILTRATION SOLUTIONS

Total Filtration Management

Donaldson offers a wide variety of solutions to reduce your energy costs, improve your productivity, guarantee production quality and help protect the environment.

Total Filtration Service

A compressive range of services especially designed to keep your production at peak performance and at the lowest total cost of ownership.

Please contact us:
Donaldson Europe B.V.B.A.
Research Park Building No. 1303 · Interleuvenlaan 1
B-3001 Leuven · Belgium
Phone +32(0)16 38 38 11 · Fax +32(0)16 40 00 77
CAP-europe@donaldson.com · www.donaldson.com

GB – 2012/1

Refrigerant Dryers

Refrigerant Compressed Air Dryer with integrated DF Filters

BURAN DC 0020 AB - DC 0850 AB

MAIN FEATURES & BENEFITS

- Purification package incl. refrigerant dryer with integrated pre- and afterfilters and condensate drains.
- Integrated pre filter, type V, for protection of the compressed air dryer against contaminations; Integrated afterfilter UltraPleat® M for the removal of oil aerosols and particles with high retention effiency and very low differential pressure; Safe compliance with the compressed air quality at low energy costs.
- Extremely compact design with robust steel housing. No additional pipings for installation of pre-and afterfilter required.
- Electronic level-controlled condensate drain incl. function monitoring and alarm messages for discharging of the compressed air condensate at the heat exchanger. Optional with pre-and afterfilter upgradeable.
- Electronic controller with dewpoint indicator, operating time counter, alarm display, service display and operating display for compressed air dryer and fan.
- 17 sizes for nominal flow rates up to 850 m³/h enable accurate selection of the suitable refrigerated compressed air dryer on the respective actual flow rate.

BURAN
DC 0020 AB - DC 0850 AB

INDUSTRIES

- Chemical and electrical industry

- Machine building industry and plant engineering / construction

- Automotive industry

Donaldson Filtration Deutschland GmbH
Büssingstr. 1
D-42781 Haan
Tel.: +49 (0) 2129 569 0
Fax: +49 (0) 2129 569 100
E-Mail: CAP-de@donaldson.com
Web: www.donaldson.com

Donaldson® Ultrafilter

F119003_06_2018_ENG

BURAN DC 0020 AB - DC 0850 AB

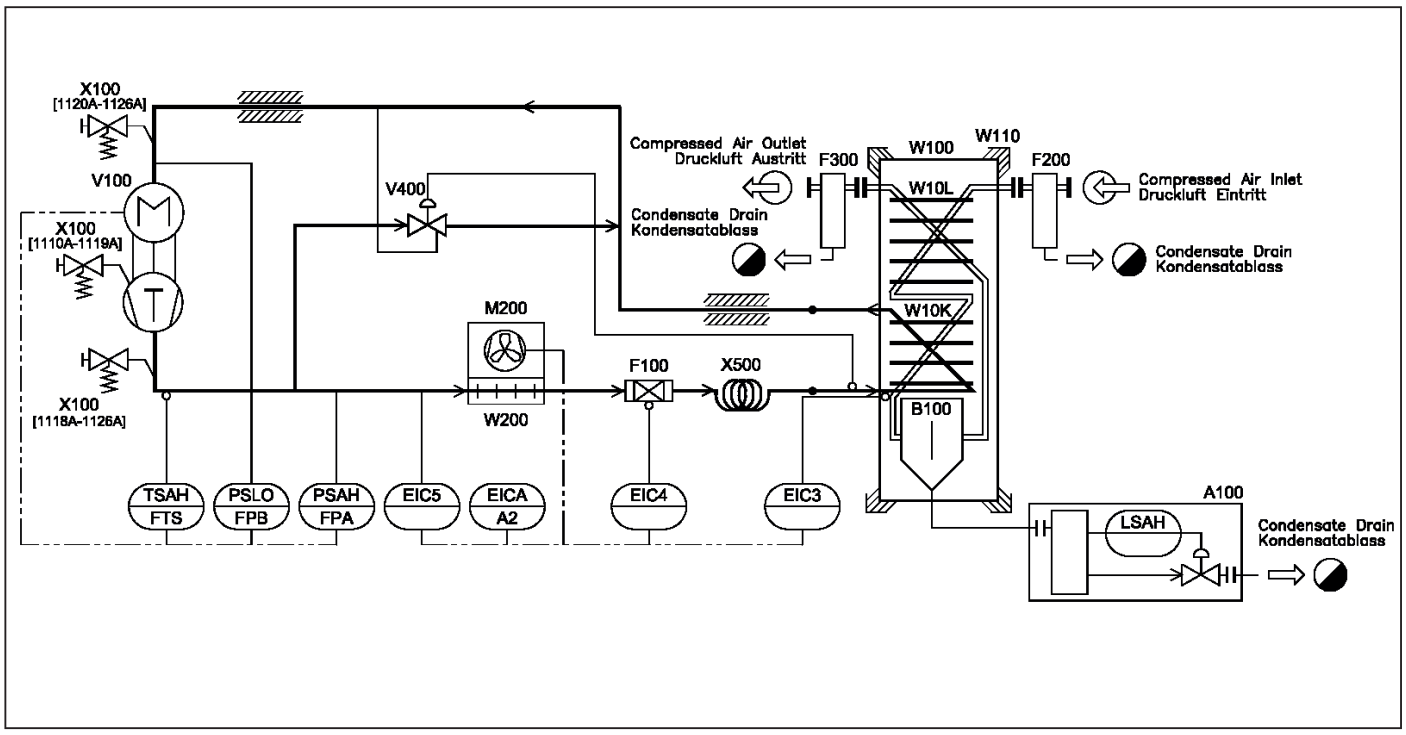
PRODUCT DESCRIPTION

The compressed air is being fed into the dryer and being pre-cooled in the air-to-air heat exchanger by the outgoing cold compressed air.The pre-cooled air then passes through the refrigerant-to-air heat exchanger where it is being further cooled down to the required pressure dew point. The moisture in the compressed air condenses out and gathers and discharges automatically. Finally, the cold discharged air is being reheated by the incoming compressed air. This saves energy and prevents any moisture forming beyond the dryer in the compressed air system.

The cooling capacity of the refrigeration cycle is being controlled by a hot gas bypass which assures the dryer functionabilty for partial loads, too.

Typical applications for the fridge dryers DC 0020 AB - DC 0850 AB are:

- **Central compressed air purification**
  Generation of dry, oil-free and particulate-free compressed air
- **Automotive industry**
  Purification of compressed air for painting applications



BURAN DC 0020 AB - DC 0850 AB

PRODUCT SPECIFICATIONS

Features:	Benefits:
Intelligent over-all concept	Type range, filter performance data, integrated monitoring functions as well as automatic condensate drain adapted for the use in central compressed air applications
Integrated pre-and afterfilter with condensate drain	Pre filter, type V, for protection of the compressed air dryer against contaminations; Afterfilter UltraPleat® M for the removal of oil aerosols and particles with high retention effiency and very low differential pressure; Safe compliance with the compressed air quality at low energy costs.
Validated performance data acc. to ISO 12500-1 and ISO 12500-3 for the integrated pre-and afterfilter	Reliable achievement of the compressed air quality according to ISO 8573-1
Compact and space-saving design with robust steel housing	Little space required at the installation site, no additional piping for the installation of pre-and afterfilter required, low storage space requirements and low transport costs
Electronic level-controlled condensate drain UFM-D at the heat exchanger	No expensive pressure drops, condensate discharge depending on the amount of condensate
Electronic controller with dewpoint indicator, operating time counter, alarm display, service display and operating display for compressed air dryer and fan; potential-free error message	Reliable monitoring of the operating condition and timely display of necessary maintenance work; Remote monitoring via potential-free error message possible
High load capacity up to pressure dew point of + 20°C	In case of overload the refrigerant compressed air dryer switches off only at a pressure dewpoint upper than +20°C
Aluminium heat exchanger	No corrosion within the heat exchanger by contact with moist compressed air; good heat transfer properties combined with low weight

Technical Data	
Operating pressure:	DC 0020 AB - DC 0085 AB: min. 2 bar (g) / max. 16 bar (g) DC 0105 AB - DC 0850 AB: min. 2 bar (g) / max. 14 bar (g)
Ambient temperature:	min. +2°C / max. +50°C
Medium temperature:	max. +70°C
Medium:	Compressed air
Refrigerant:	DC 0020 AB - DC 0150 AB: R134a DC 0180 AB - DC 0850 AB: R407C
Noise pressure level:	< 70 dB (A)
Power supply:	DC 0020 AB - DC 0105 AB: 230V / 1~ / 50-60 Hz (±10%) DC 0180 AB - DC 0850 AB: 230V / 1~ / 50 Hz or 60 Hz (±10%)
Protection class:	IP 22
Declaration of Conformity	
Types DC 0020 AB - DC 0850 AB:	acc. to directive 2006/42/EG appendix IIA

BURAN DC 0020 AB - DC 0850 AB

PRODUCT SPECIFICATIONS

Type	Volume flow*	Volume flow*	Pressure drop**	Cooling air requirement	Power supply	Filter housing	Filter element
	m³/h	m³/min.	bar	m³/h	kW		
DC 0020 AB	20	0,33	0,04	200	0,14	DF-0120	V / M 0070
DC 0035 AB	35	0,58	0,04	200	0,17	DF-0120	V / M 0070
DC 0050 AB	50	0,83	0,10	300	0,19	DF-0120	V / M 0070
DC 0065 AB	65	1,08	0,13	300	0,24	DF-0120	V / M 0070
DC 0085 AB	85	1,42	0,14	300	0,28	DF-0120	V / M 0120
DC 0105 AB	105	1,75	0,28	300	0,28	DF-0120	V / M 0120
DC 0125 AB	125	2,08	0,39	300	0,45	DF-0120	V / M 0120
DC 0150 AB	150	2,50	0,15	300	0,47	DF-0320	V / M 0210
DC 0180 AB	180	3,00	0,12	380	0,68	DF-0320	V / M 0210
DC 0225 AB	225	3,75	0,18	380	0,76	DF-0320	V / M 0210
DC 0300 AB	300	5,00	0,36	450	0,71	DF-0320	V / M 0320
DC 0360 AB	360	6,00	0,49	450	0,89	DF-0320	V / M 0320
DC 0450 AB	450	7,50	0,11	450	0,91	DF-0750	V / M 0450
DC 0550 AB	550	9,17	0,15	1900	1,11	DF-0750	V / M 0600
DC 0650 AB	650	10,83	0,32	1900	1,40	DF-0750	V / M 0600
DC 0750 AB	750	12,50	0,25	2500	1,34	DF-0750	V / M 0750
DC 0850 AB	850	14,17	0,33	3300	1,70	DF-0750	V / M 0750

* acc. to ISO 7183
** incl. pre-and afterfilter

SIZING

Operating pressure (bar)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Correction factor fp	0,49	0,66	0,77	0,86	0,93	1,00	1,05	1,10	1,14	1,18	1,21	1,24	1,27	1,30	1,33

Compressed air inlet temperature (°C)	25	30	35	40	45	50	55	60	65	70
Correction factor fte	1,20	1,12	1,00	0,83	0,69	0,59	0,50	0,44	0,39	0,37

Temperature of cooling media (°C)	25	30	35	40	45	50
Correction factor ftu	1,00	0,96	0,90	0,82	0,72	0,60

Pressure dewpoint °C	3	5	7	10
Correction factor ftpd	1,00	1,09	1,19	1,37

Example:

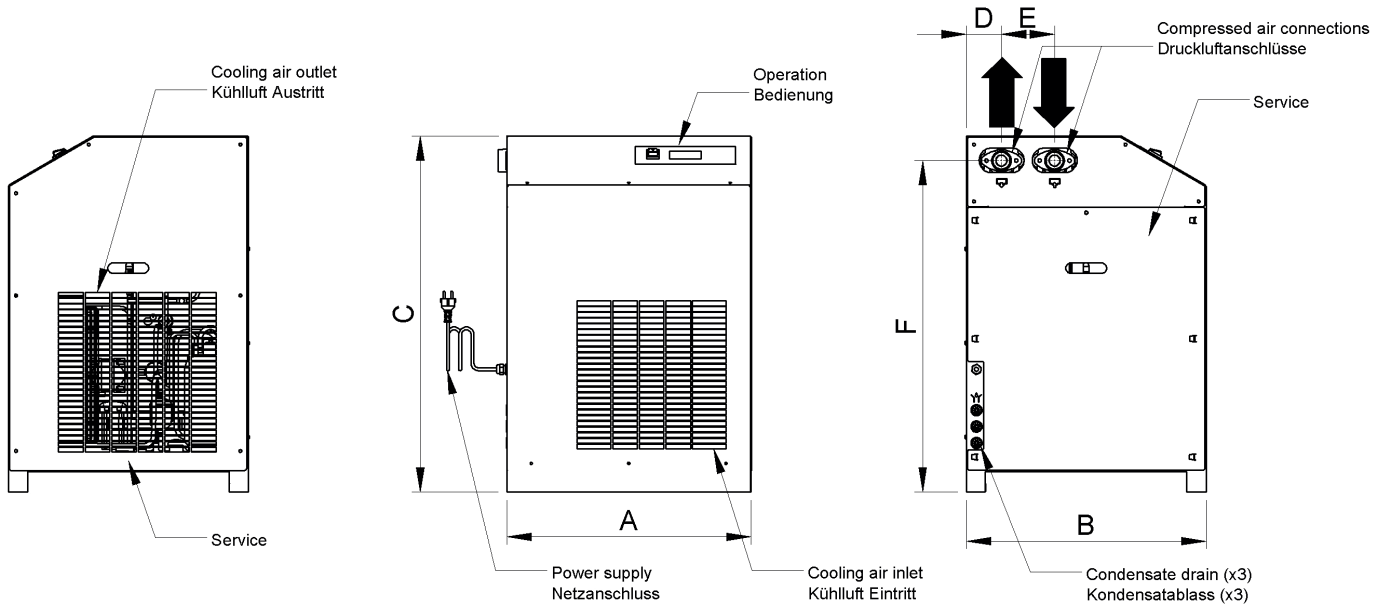
$\dot{V}_{nom}$ = 100 m³/h (intake volume of the compressor), compressed air inlet temperature = 40°C,
cooling air temperature = 35°C, operating pressure = 9 bar, pressure dewpoint = +3°C

$$\dot{V}_{korr} = \frac{\dot{V}_{nom}}{f} = \frac{100\ m^3/h}{0{,}88 \times 1{,}06 \times 0{,}94 \times 1{,}00} = 114\ m^3/h$$

Calculated dryer size:
DC 0125 AB

BURAN DC 0020 AB - DC 0850 AB

DIMENSIONS



Type	A	B	C	D	E	F	Compressed air connections	Weight
	mm	mm	mm	mm	mm	mm	BSP	kg
DC 0020 AB	456	410	645	60	110	595	3/4“	30
DC 0035 AB	456	410	645	60	110	595	3/4“	31
DC 0050 AB	456	410	645	60	110	595	3/4“	33
DC 0065 AB	456	410	645	60	110	595	3/4“	36
DC 0085 AB	456	410	645	60	110	595	3/4“	37
DC 0105 AB	456	410	645	60	110	595	3/4“	37
DC 0125 AB	456	410	645	60	110	595	3/4“	38
DC 0150 AB	600	590	870	85	130	810	1 1/2“	63
DC 0180 AB	600	590	870	85	130	810	1 1/2“	65
DC 0225 AB	600	590	870	85	130	810	1 1/2“	76
DC 0300 AB	600	590	870	85	130	810	1 1/2“	76
DC 0360 AB	600	590	870	85	130	810	1 1/2“	76
DC 0450 AB	805	920	1055	175	220	930	2“	143
DC 0550 AB	805	920	1055	175	220	930	2“	152
DC 0650 AB	805	920	1055	175	220	930	2“	159
DC 0750 AB	805	920	1055	160	345	930	2“	175
DC 0850 AB	805	920	1055	160	345	930	2“	192