



Donaldson
FILTRATION SOLUTIONS

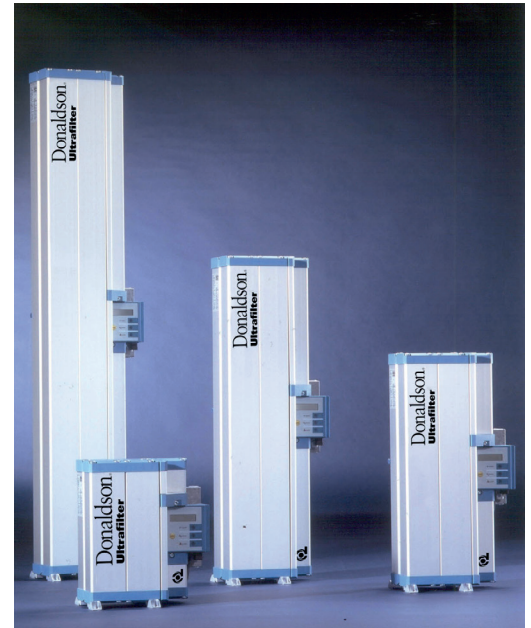
Compressed Air Filtration

Ultrapure 2000 Standard / Superplus Mini / Midi

Types 0005-0100

MAIN FEATURES & BENEFITS

- Breathing air unit with adsorption dryer, CO-, CO₂-, NO_x- and SO₂ removal as well as prefilter, afterfilter and automatic condensate drain
- Indications for filter elements and desiccant/ purifier cartridges replacement
- Version Superplus with capacity control
- Version Superplus with Economizer Function, online calculation of optimum exchange point of filter elements by continuous evaluation of energy cost versus cost of replacement filter element
- Multifunction unit - all moving parts and all electronic components integrated in a function block, therefore easy and efficient maintenance



Ultrapure 2000 Standard

INDUSTRIES



- Medical application



- Paint and finish industry



- Machine building industry and plant engineering / construction

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Donaldson®
Ultrafilter

PRODUCT DESCRIPTION

The Ultrapure 2000 breathing air systems are purification units based on adsorption dryers Ultrapac® 2000 to supply breathing air in excess of all relevant international standards and medical prescriptions.

The purification consists of several stages:

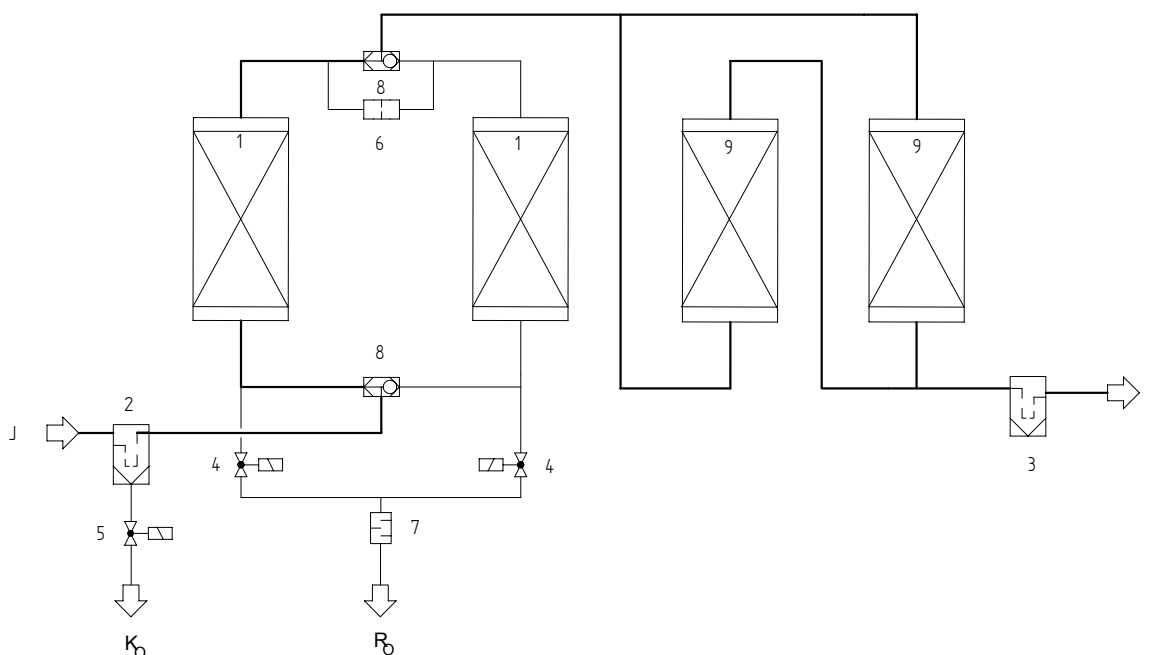
Compressed air is led through the inlet of the unit (J) and across the pre filter (2). At this stage, the air is cleaned from particles and condensate. The condensate is removed via a membrane condensate drain (5). The following desiccant dryer reduces the water vapour content of the compressed air down to a pressure dew point of -40°C (equivalent to a remaining water content of 0.11 g/m^3). In the following purification stages (SP, AK, OX) (9) the content of CO_2 is adsorbed to a level far below 500 ppm the content of SO_2 below 1 ppm and the content of NO_x below 2 ppm. In the AK stage oil vapours, hydrocarbons, taste and odours are adsorbed to a level far below 0.003 mg/m^3 .

In the OX stage a catalyst converts CO to CO_2 and thereby reduces the carbon monoxide level down below 5 ppm.

The final particle filter (3) removes all particles which might be carried over from the adsorption and /or catalyst stages.

The Ultrapure 2000 is designed and developed for the following applications:

- **Breathing air:**
Removal of oil and particles as well as smells and odours, CO , CO_2 , SO_2 and NO_x
- **Laser units:**
Purification of cutting gas ore purging gas
- **Downstream equipment:**
Creation of oil and particle free compressed air for various downstream equipment applications, e.g. packaging machinery



PRODUCT SPECIFICATIONS

Features Ultrapure 2000 series	Benefits
Purification package including adsorption dryer, CO-, CO ₂ -, NO _x - and SO ₂ removal, pre-, afterfilter and automatic condensate drain	Turnkey System, no additional installation cost; all components from one hand, therefore perfect technical match
Guaranteed and validated separation efficiency	Breathing air quality in excess of all relevant international standards, as e.g. Pharmacopée Européenne; DIN EN 12021; DIN EN ISO 7396-1; BS4275; ANSI/CGA G.7.1; Z180, 1M85; AS2299-1979; NZL5813
Desiccant in cartridges	Easy storage, transport and Installation; optimum fixation of desiccant; no risk of fluidizing of desiccant
Compact, space saving design	Installation in smallest spaces, possible also as retrofit
Component exchange display	High operating safety, due to calculation of optimum exchange point for filter elements and desiccant cartridges.
Unique Multifunction Block	All moving parts and all electronic components integrated in a function block, therefore easy and efficient maintenance

Features Ultrapure 2000 Superplus	Benefits
Intermittent operation standard	Link between dryer and compressor possible on central applications, therefore saving of regeneration air
Capacity control	Adjustment of adsorption cycles to the actual inlet water load, therefore saving of regeneration air and reduction of operating cost
Self-Diagnosis-System	Sensor-controlled monitoring of regeneration air flow, therefore without-gap-monitoring of dryer functions and of system pressure
Text Display	Display of all operating status, of fault indication and maintenance intervals in clear text messages
Info-Channel	Interface for transmission of alarm- and maintenance messages
Economizer-Function	Online calculation of optimum exchange point of filter elements by continuous evaluation of energy cost versus cost of replacement filter element

SIZING / TECHNICAL DATA

Ultrapure 2000	Volume flow in m ³ /h (1 bar, 20°C)*	Regeneration air losses (average) m ³ /h (1 bar, 20°C)	Volume flow out (min.) m ³ /h (1 bar, 20°C)	Pressure loss initial mbar	Prefilter MF	Afterfilter FF	Quantity of cartridges
0005	5	0,85	3,95	65	02/05	02/05	2
0010	10	1,70	7,90	95	03/05	03/05	4
0015	15	2,55	11,85	115	04/10	04/10	6
0025	25	4,25	19,75	250	06/10	06/10	10
0035	35	5,95	27,65	75	04/20	04/20	4
0050	50	8,50	39,50	100	05/20	05/20	6
0065	65	11,05	51,35	125	05/25	05/25	8
0080	80	13,60	63,20	170	07/25	07/25	10
0100	100	17,00	79,00	250	07/25	07/25	12

*Related to 1 bar (abs) and 20 °C at intake of compressor and 7 bar (g) and 35 °C inlet temperature

Sizing

f	4 bar(g)	5 bar(g)	6 bar(g)	7 bar(g)	8 bar(g)	9 bar(g)	10 bar(g)	11 bar(g)	12 bar(g)	13 bar(g)	14 bar(g)	15 bar(g)	16 bar(g)
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

$$\dot{V}_{\text{corr}} = \frac{\dot{V}_{\text{nom}}}{f}$$

Example: $\dot{V}_{\text{nom}} = 22 \text{ m}^3/\text{h}$, Inlet temperature = 30°C, Operating pressure = 10 bar (g)

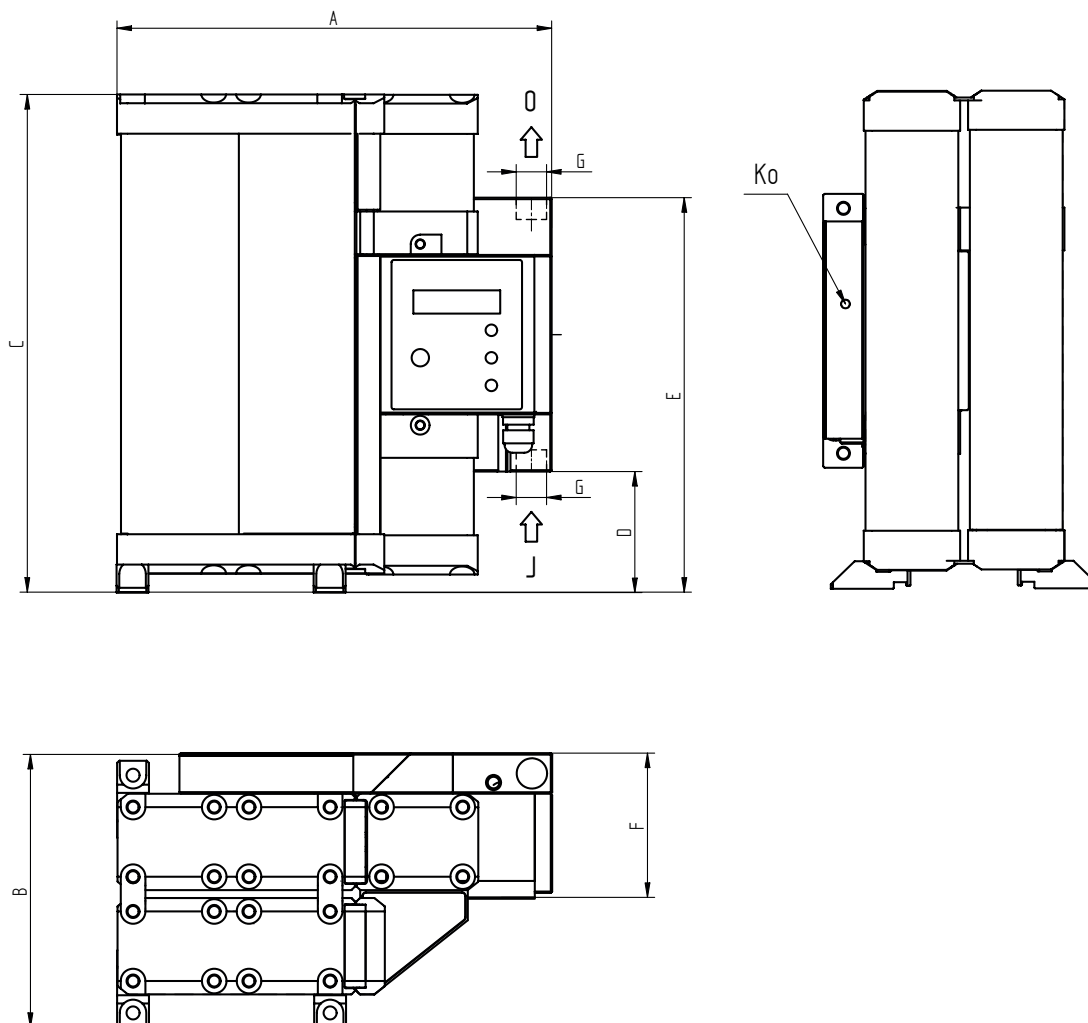
$$\dot{V}_{\text{corr}} = \frac{22 \text{ m}^3/\text{h}}{1,50} = 14,66 \text{ m}^3/\text{h}$$

Calculated dryer size: Type 0015

Technical Data		Air quality related to standard inlet conditions:	
Power consumption:	230 V/50 -60 Hz AC; 110 V/50 -60 Hz AC 24 V DC; 24 V AC on request	Particles	Class 2: ISO 8573-1
Power consumption:	approx. 4 W	Residual oil content	< 0,01 mg/m ³ (class 1: ISO 8573-1)
Operating pressure:	min. 4 bar, max. 16 bar	Oil vapour and hydrocarbons	< 0,003 mg/m ³ (class 2: ISO 8573-1)
Medium:	Compressed air	Water vapours	PDP -40°C (= 0,11 g/m ³) (class 2: ISO 8573-1)
Medium temperature:	min. 5 °C, max. 50 °C	CO₂	< 500 ppm
Ambient temperature:	min. 4 °C, max. 50 °C	CO	< 5 ppm
Compressed air consumption:	17% of the rated flow, in average	SO₂	< 1 ppm
Declaration of conformity:	acc. to 2014/35/EU and 2014/68/EU	NO_x	< 2 ppm
		Taste and odours	taste and odour free

DIMENSIONS / MATERIALS

Ultrapure 2000 Standard / Superplus Mini

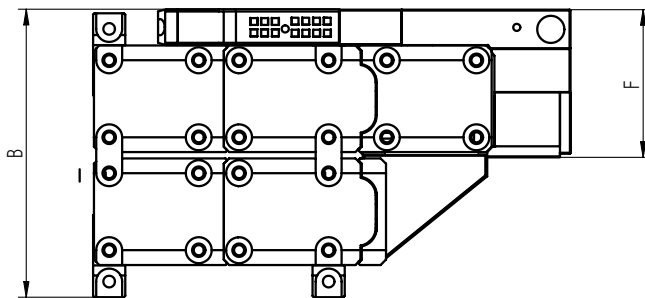
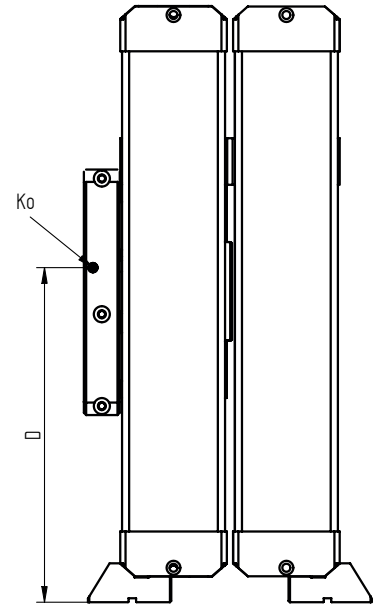
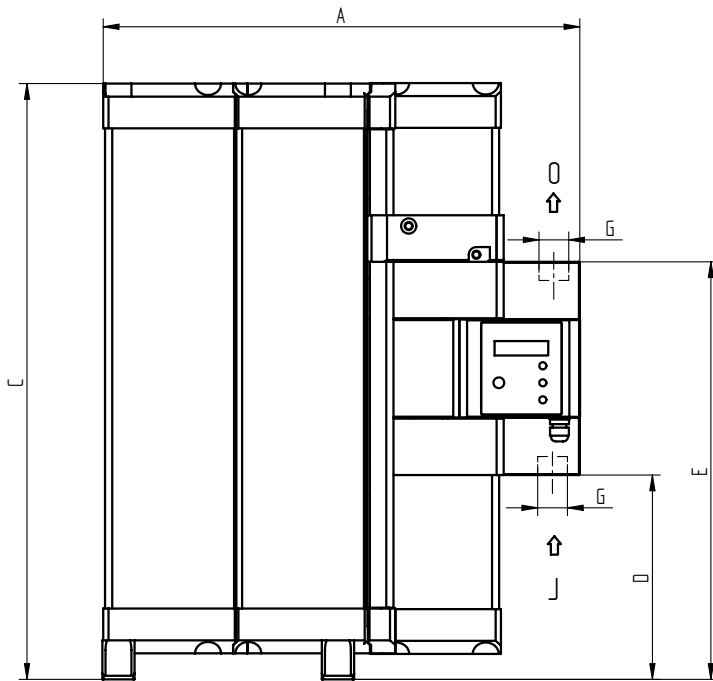


Materials	
Extruded Profiles:	Anodized Aluminium
Adsorber and Filter lids:	Glass fiber enforced polyamide

Dimensions							
Type	G "	A mm	B mm	C mm	D mm	E mm	F mm
0005	G 1/2	300	189	343	84	272	100
0010	G 1/2	300	189	591	208	396	100
0015	G 1/2	300	189	853	339	527	100
0025	G 1/2	300	189	1377	601	788	100

DIMENSIONS / MATERIALS

Ultrapure 2000 Standard / Superplus Midi



Materials	
Extruded Profiles:	Anodized Aluminium
Adsorber and Filter lids:	Glass fiber enforced polyamide

Dimensions							
Type	G "	A mm	B mm	C mm	D mm	E mm	F mm
0035	G 1	532	322	665	230	465	165
0050	G 1	532	322	920	355	595	165
0065	G 1	532	322	1170	485	720	165
0080	G 1	532	322	1420	606	845	165
0100	G 1	532	322	1670	730	970	165