

Update
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Product Catalog

Filter- und Trocknertechnik GmbH

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Filter- und Trocknertechnik GmbH

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Compressed Air Filter Elements


Suitable for:

- Alup
- Atlas Copco
- Balston
- Bea Filtri
- Beko
- Boge
- Ceccato
- Compair
- CTA
- Delair
- Deltech
- Domnick Hunter

- Dollinger
- Ecoair
- EWO
- Filtri
- Finite
- Flair
- Gemoc
- Hankison
- Hiross
- Ingersoll Rand
- Kaeser
- Knocks
- Mark

- MTA
- Omega Air
- O.M.I.
- Pneumatic Products
- Prevost
- Schneider
- Trocair
- Ultrafilter
- Walker
- Worthington
- Zander
- Weitere auf Anfrage

Activated Carbon Filters for Oil-Water Separators


Suitable for:

- Alup (Aquamat)
- Atlas Copco (OSD / OSW)
- Beko (Öwamat)
- Boge (Öwamat / Okomat)
- Domnick Hunter

- Ecoair (TS)
- Gardner Denver
- Hankison (HS)
- Hiross (OWS)
- Jorc (Enviro / Puro mini)
- Kaeser (Aquamat)

- Ultrafilter (Ultrasep)
- Wortmann (WO / Drukomat)
- Schneider (Owatec)
- Sabroe (Divisor / SAB)
- Zander (Ecosep)

Spare Parts for Air Compressors / Vacuum Pumps

Oil Separators, Oil Filters, Air Filters, Inlet Filter Mats, Drive Belts, Ventil Kits, Couplers, Vanes etc.


Suitable for:

- Abac
- Aerzen
- Airblok
- Airmac
- Airman
- Alup
- Atmos
- Atlas Copco
- Axeco
- Balcke Dürr
- Bauer
- Becker
- Becker & Söhne
- Bellis & Morcom
- Blitz Schneider
- Boge
- Bottarini
- Broomwade

- Busch
- Ceccato
- Compair
- Demag
- Donaldson
- Ecoair
- Fiac
- Fini
- Flottmann
- Frick
- Gardner Denver
- Hitachi
- Hydrovane
- Ingersoll Rand
- Irmer & Elze
- Joy
- Kaeser
- Knecht
- Leybold

- Mahle
- Mann & Hummel
- Mannesmann Demag
- Mark
- Mattei
- Mehrer
- Purolator
- Renner
- Rietschle
- Rotorcomp
- Sabroe
- Schneider
- Stenhoj
- Sullair
- Tamrotor
- Volvo Penta
- Wittig
- Worthington
- Others on request

Elements for Hydraulic Filters

Suitable for:

- Eppensteiner / EPE
- Fleetguard / ST-Filter

- Hydac
- Internormen
- Mahle

- Mann+Hummel
- Pall
- Parker

- SF-Filter
- Stauff
- Others on request

Service and Spare Parts for Various Machines

Refrigerant Dryers:

- Spare Parts
- Refrigeration Compressors and Accessories

Adsorption Dryers:

- Spare Parts
- Desiccants (Alugel, Silicagel, Molsieb)
- Sound Adsorbers

Activated Carbon

- Adsorbers:**
- Active Charcoal Fillings

Bekomat:

- Wear Part Kits
- Diaphragms

Emulsion Splitting Plants:

- Splitting Agent
- Filter Bags

Service / Rental

10 Service-Points in Germany

Nationwide Service:

- Refrigerant Dryers
- Adsorption Dryers
- Oil-Water Separators
- Compressed Air Filters
- Volumeflow Meters
- Dewpoint Meters

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Refrigeration Dryers



■ Smard SC ■ Smard ■ FTGD ■ HPKT

Adsorption Dryers



■ ED compact ■ ED ■ MWE ■ DB

Compressed Air Filters



- Activated Carbon Adsorbers
- Deltech Compressed Air Filters
- Deltech Color Change Filters
- Filter Heaters
- High Pressure Filters up to 350 bar
- Filters for Special Applications
- Sterile Filters / Steam Filters
- System Filters
- Vacuum Filters medical
- Vacuum Pumps (Protection-/Exhaust-Filters)
- Centrifugal Water Separators

Condensate Processing / Oil-Water Separators



■ Oil-Water Separators



■ Pre Separators for Oil-Water Separation Systems



■ Portable Emulsion Splitting Plants



■ Condensate Drains (timer controlled or electronic level controlled)

Other Products



■ Storage Tank Breather Dryers



■ Point of Use Dryers



■ Air Cooled Standard Coolers



■ Volumeflow- and Dewpoint Meters

2nd Hand Compressors and Dryers



- We buy
- We sell
- We arrange

Constantly updated Internet Database: www.gebrauchtkompressoren.de

Visit our Website

www.fut-gmbh.de

OR

www.gebrauchtkompressoren.de

- Always up-to-date information about our products
- Used compressors and dryers
- Email-distributor for used machine-inquiries
- Data base for alternative oil-filters, oil-separators and air filters
- Our sales partners can always download important datasheets and much more...



Information about our Maintenance Service

We offer our own service organization in Germany, independent of manufacturers and we are convinced to guarantee an optimum service for the full range of compressed air appliances by competent and experienced mechanics and at reasonable travelling and labour costs.

Nationwide **Service** for:

- Compressed Air Refrigeration Dryers
- Compressed Air Adsorption Dryers
- Oil-Water Separators
- Compressend Air Filters

Replacement parts and service for **all brands**:

- Alup - Atlas Copco – Beko – Boge
- Compair – Delair/ Deltech /FLAIR – domnick hunter
- Ecoair – Ingersoll Rand - Kaeser - Hiross – MTA
- Sabroe – Trocair – Ultratroc/Ultrafilter
- VIA - Zander u.a.

As an economical alternative our **workshop service**:

- You put your machine on a pallet.
- Se organize collection, repair and return.
- You just pay working time and material.

Service Rates

Working rate per hour 66,50 EUR

Travel rate per hour 66,50 EUR

For the first two hours of overtime per day 25 %

For each further hour of overtime 50 %

Saturday hours 50 %

Sunday and holiday hours 100 %

Expenses 36,00 EUR/day

Short installations 4,75 EUR per started hour
max. 36,00 EUR/day

Engineer rate per day 830,50 EUR

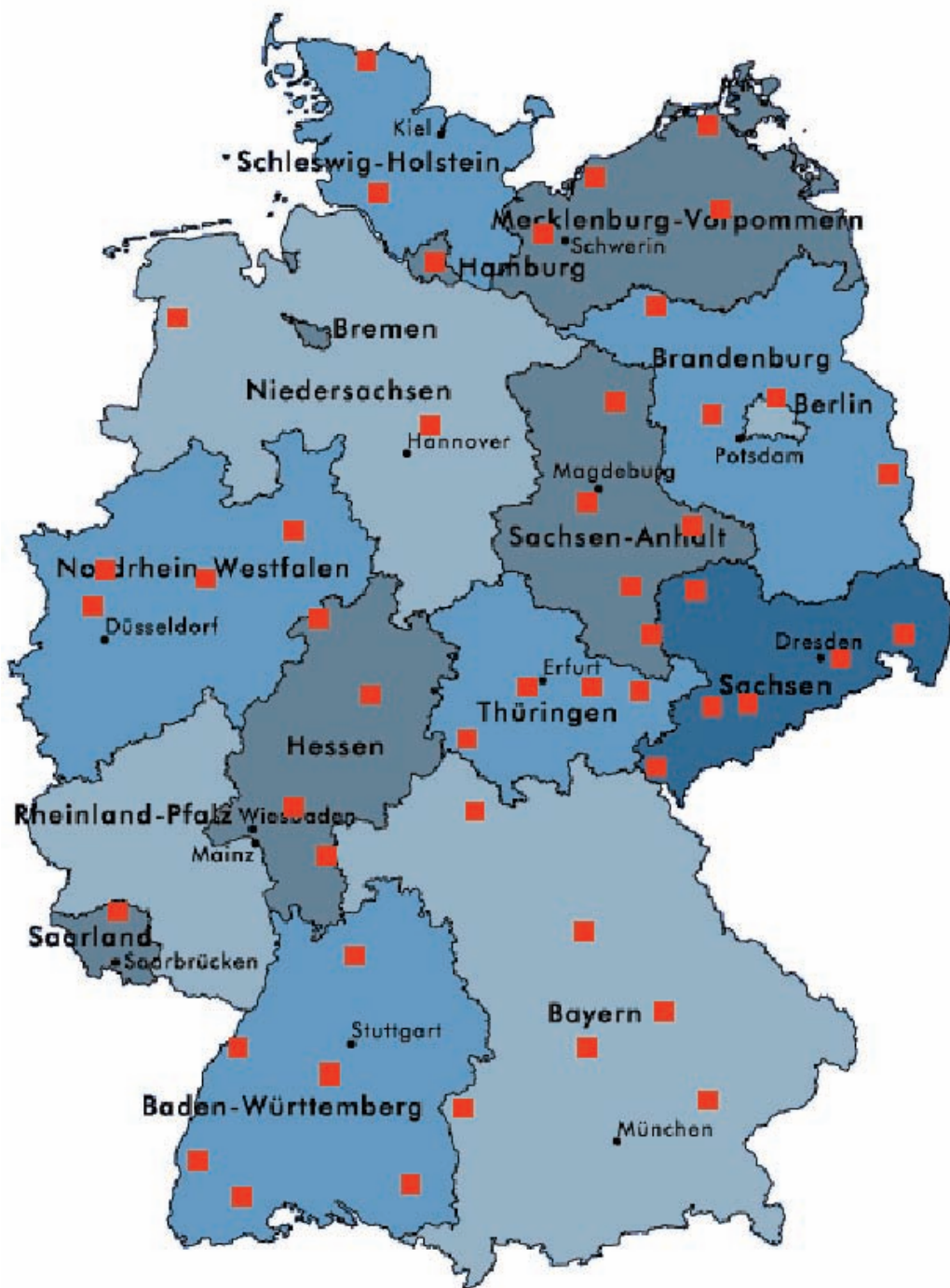
Lodging costs at actuals

Travelling expenses per kilometer 1,02 EUR

All prices plus value added tax
Payment 10 days net

(As at February 1st 2011)

Our Service Bases in Germany



Colour Change Filters

Series 100/115/KC for optimum safety



Colour change for economical change intervals

Low and constant pressure drop

Easy installation - no gauge required

DF 020 series: The disposable DF 020 filter is designed for point-of-use filtration, it removes oil and particles down to 0.5 micron at an efficiency higher than 99.0 %. Colourchange for instant on-stream inspection to provide continuous positive protection of delicate equipment and circuit components. Ideal for instrumentation fluidics and other critical low-flow applications that must be protected.

DF 115 series: Ideal for applications that require "peace of mind" filtration. The unique filter housing combines several mechanisms, such as centrifugal separation of liquid contaminants (water and oil), fine filtration of dust particles (down to 0,5 micron), and adsorption of oil vapour. The adsorption of oil vapour is achieved by a special granular material that changes from white to dark red when saturated. This continuously keeps the user informed of the saturation status of the filter.

- High filtration efficiency (99,99% particles down to 0,5 micron)
- Simple installation
- Easy maintenance
- Completely synthetic
- Extremely low pressure drop (max. 0,15 bar)
- Automatic or manual drain
- Colour change warning of saturation (E and HECE)
- Low replacement costs

DF 100 series: Combines centrifugal, dust, coalescence and adsorption filtration in a single housing. This unique filter provides high performance and a low pressure drop. Oil saturation of the element causes colourchanges of the filter element from white to red. This gives a visual indication of when the element needs changing.

- '3 in 1' filter eliminates need for prefilter
- Ideal 'point of use' filter
- Removes oil, dirt and water in a single unit
- Low pressure drop, maximum 0.15 – 0.20 bar.
- Changes colour for easy maintenance
- No gauge required

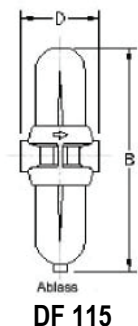
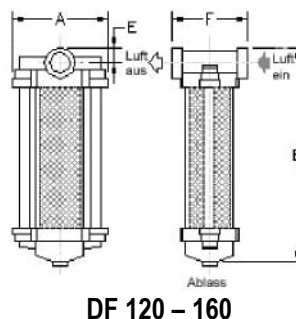
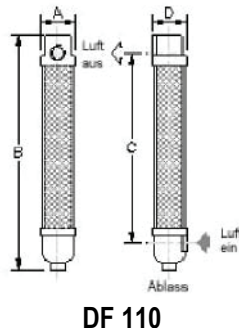
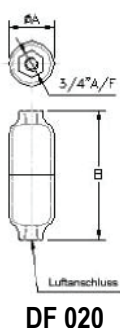
Model	Filtration		Flow	Pressure max.	Dimensions (mm)						Connection BSP		Weight
	Particle	Oil			A	B	C	D	E	F	Inlet/Outlet	Drain	
DF	micron	mg/m ³	m ³ /h	bar(g)									kg
020	0,5	0,5	3,5	3.5	34	102	-	-	-	-	1/8	-	0,1
115A+M	0,5	0,5	25	10	-	300	-	105	-	-	1/2	aut.+man.	1
115A+M HEC	0,5	0,01	25	10	-	300	-	105	-	-	1/2	aut.+man.	1
115M K	0,5	0,005	25	10	-	300	-	105	-	-	1/2	Manual	1
110	0,5	0,5	20	10	58	410	338	58	25	-	1/2	1/4	2
120	0,5	0,5	50	10	152	400	-	-	18	104	1/2	1/4	3,5
130	0,5	0,5	84	10	165	410	-	-	25	120	1	1/4	4
140	0,5	0,5	170	10	216	467	-	-	25	155	1	1/2	10
150	0,5	0,5	320	10	254	495	-	-	31	190	1 1/2	1/2	12
160	0,5	0,5	470	10	320	546	-	-	28	235	1 1/2	1/2	20
110 K	0,5	0,003	20	10	58	410	338	58	25	-	1/2	1/4	2
120 K	0,5	0,003	50	10	152	400	-	-	18	104	1/2	1/4	3,5
130 K	0,5	0,003	84	10	165	410	-	-	25	120	1	1/4	4
140 K	0,5	0,003	170	10	216	467	-	-	25	155	1	1/2	10
150 K	0,5	0,003	320	10	254	495	-	-	31	190	1 1/2	1/2	12
160 K	0,5	0,003	470	10	320	546	-	-	28	235	1 1/2	1/2	20
KC 11	0,5	0,003	15	10	58	410	338	58	25	-	1/2	1/4	2
KC 12	0,5	0,003	38	10	152	400	-	-	18	104	1/2	1/4	3,5
KC 13	0,5	0,003	64	10	165	410	-	-	25	120	1	1/4	4
KC 14	0,5	0,003	128	10	216	467	-	-	25	155	1	1/2	10
KC 15	0,5	0,003	242	10	254	495	-	-	31	190	1 1/2	1/2	12
KC 16	0,5	0,003	357	10	320	546	-	-	28	235	1 1/2	1/2	20

Multiplier for different inlet pressures in bar (g)

bar (g)	2	3	4	5	6	7	8	9	10
Multiplier	0,37	0,50	0,62	0,75	0,87	1,0	1,12	1,25	1,37

Hints for activated carbon filtration:

A high compressed air temperature reduces the lifespan of the filter elements. An optimum will be reached at a temperature of max. 20°C. An optimum adsorption of the hydrocarbons will be reached by a long contact time. Choose activated carbon filters with twice the air capacity for optimum filtration and lifespan. The activated carbon filters series DF 100 can be operated without pre-filtration. Pre-filters however will extend the lifespan of the elements.



Materials

Colour change filters are designed from plastics like Lexan and Polycarbonate, which must not exceed the indicated maximum pressure. Exceeding of the maximum pressure or of the maximum air flow can lead to damage of the filter. Heavily pulsating air streams, or sudden pressure shocks can lead to damages and should absolutely be avoided. In this case we recommend to install a downstream particle filter, please contact our technicians. Plastic parts must not get in touch with solvents, solvent vapour or other aggressive substances.

- Technical details to change without notice -

Compressed Air Filters 2000



Your benefits with Deltech® filters

Easy maintenance: snap up filter elements (9 - 750)

Operational reliability: high quality components

Energy saving: low pressure drop

Problem free application: silicone free

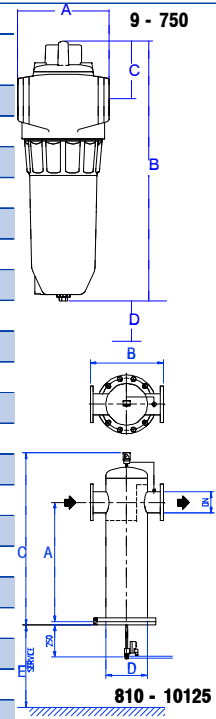
Standard models of the Deltech® PF, HF, DF and CF filters		PF	HF	DF	CF	9 - 36	54 - 216	285 - 750	810-10125
Medium	: Compressed air	•	•	•	•	•	•	•	•
Differential Pressure Indication	: Pop-up indicator	•	•	•	-	•	-	-	-
	: Differential Pressure Gauge	•	•	•	-	-	•	•	•
	: Differential Pressure Gauge with potential free alarm contact	○	○	○	-	-	○	○	○
Housing	: Aluminium	•	•	•	•	•	•	•	-
	: Steel bowl	○	○	○	○	-	-	○	-
	: Steel, lube-resistant	○	○	○	○	-	-	-	○
Condensate drain	: Automatic float drain	•	•	-	-	•	•	•	-
	: Timer controlled drain valve	○	○	-	-	○	○	○	•
	: Level controlled electronic drain valve	○	○	-	-	○	○	○	○
	: Manual drain	-	-	•	•	•	•	•	•
Colour	: RAL 9001 (white)	•	•	•	•	•	•	•	•
Filtration efficiency	: 99.9% of particles at 10 μ	-	-	-	-	•	•	•	-
	: 99.999% of particles at 1 μ	•	-	•	-	•	•	•	•
	: 99.999% of particles at 0.01 μ	-	•	-	-	•	•	•	•
Residual oil content at 20 C	: 0.5 mg/m ³	•	-	-	-	•	•	•	•
	: 0.01 mg/m ³	-	•	-	-	•	•	•	•
	: 0.003 mg/m ³	-	-	-	•	•	•	•	•
Location	: Indoors	•	•	•	•	•	•	•	•
IP rating	: IP 65	•	•	•	•	-	-	-	•
Vessel code	: CE	•	•	•	•	-	-	-	•
	: Different vessel codes	○	○	○	○	-	-	-	○

• standard
○ optional
- not applicable

Design data	minimum	design	maximum	PF	HF	DF	CF
Inlet pressure	2 bar(g)	7 bar(g)	16 bar(g)	•	•	•	•
Ambiant temperature	+2 C	-	+55 C	•	•	•	•
Operation temperature	+2 C	-	+65 C	•	•	-	•
	+2 C	-	+80 C	○	○	•	○

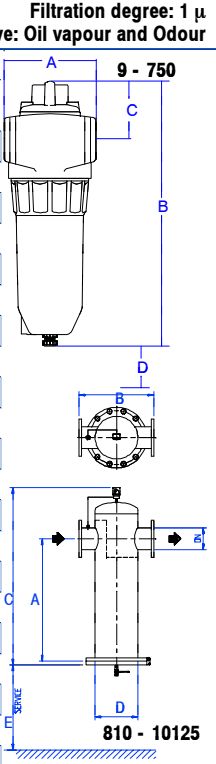
* Use the multipliers when the conditions are different from standard. Refer to the table on the other side of this page.
Flair also issues a computer program capable of making the selection for you.

PF/HF	Capacity		Connection		Dimensions					Weight	Filter element		
	1 bar a, 20°C m³/h	in- and outlet	in- and outlet	drain	A	B	C	D	E		PF	HF	
9	30	1/4" BSP	-	86	230	63	90	-	1.0	PFD 9	HFD 9	1	
18	60	3/8" BSP	-	86	230	63	90	-	1.0	PFD 18	HFD 18	1	
36	120	1/2" BSP	-	86	279	63	90	-	1.1	PFD 36	HFD 36	1	
54	180	3/4" BSP	-	114	330	86	120	-	2.4	PFD 54	HFD 54	1	
90	300	1" BSP	-	114	443	86	120	-	2.7	PFD 90	HFD 90	1	
135	450	1 1/2" BSP	-	146	412	92	150	-	5.0	PFD 135	HFD 135	1	
216	720	1 1/2" BSP	-	146	533	92	150	-	5.5	PFD 216	HFD 216	1	
285	950	2" BSP	-	178	557	111	180	-	11.0	PFD 285	HFD 285	1	
405	1350	2" BSP	-	178	748	111	180	-	13.0	PFD 405	HFD 405	1	
540	1800	3" BSP	-	206	880	128	200	-	18.0	PFD 540	HFD 540	1	
750	2500	3" BSP	-	206	1007	128	200	-	20.0	PFD 750	HFD 750	1	
810	2700	DN100	3/8"	900	460	1245	220	800	90	8113 PFD	8113 HFD	2	
1215	4050	DN100	3/8"	900	520	1260	273	800	130	8113 PFD	8113 HFD	3	
1620	5400	DN150	3/8"	930	570	1330	324	800	160	8113 PFD	8113 HFD	4	
2025	6750	DN150	3/8"	930	570	1330	324	800	160	8113 PFD	8113 HFD	5	
2430	8100	DN150	3/8"	930	610	1335	356	800	210	8113 PFD	8113 HFD	6	
3645	12150	DN200	3/8"	960	720	1415	457	800	320	8113 PFD	8113 HFD	9	
5265	17550	DN250	3/8"	985	770	1475	508	800	450	8113 PFD	8113 HFD	13	
6480	21600	DN250	3/8"	985	870	1495	610	800	620	8113 PFD	8113 HFD	16	
7290	24300	DN250	3/8"	985	870	1495	610	900	620	8113 PFD	8113 HFD	18	
10125	33750	DN300	3/8"	1015	980	1600	711	950	800	8113 PFD	8113 HFD	25	



Deltech® DF filters
Deltech® CF filters

Model	Capacity		Connection		Dimensions					Weight	Filter element			
	1 bar a, 20°C m³/h	in- and outlet	in- and outlet	drain	A	B	C	D	E		DF	CF	qty	
9	30	1/4" BSP	-	86	239	206	63	31	90	-	1.0	DFD 9	CFD 9	1
18	60	3/8" BSP	-	86	239	206	63	31	90	-	1.0	DFD 18	CFD 18	1
36	120	1/2" BSP	-	86	288	256	63	31	90	-	1.1	DFD 36	CFD 36	1
54	180	3/4" BSP	-	114	339	306	86	53	120	-	2.4	DFD 54	CFD 54	1
90	300	1" BSP	-	114	452	419	86	53	120	-	2.7	DFD 90	CFD 90	1
135	450	1 1/2" BSP	-	146	421	388	92	59	150	-	5.0	DFD 135	CFD 135	1
216	720	1 1/2" BSP	-	146	542	509	92	59	150	-	5.5	DFD 216	CFD 216	1
285	950	2" BSP	-	178	566	533	111	78	180	-	11.0	DFD 285	CFD 285	1
405	1350	2" BSP	-	178	757	725	111	78	180	-	13.0	DFD 405	CFD 405	1
540	1800	3" BSP	-	206	905	872	128	96	200	-	18.0	DFD 540	CFD 540	1
750	2500	3" BSP	-	206	1032	999	128	96	200	-	20.0	DFD 750	CFD 750	1
810	2700	DN100	3/8"	900	460	1245	220	800	90	8113 DFD	8113 CFD	2		
1215	4050	DN100	3/8"	900	520	1260	273	800	130	8113 DFD	8113 CFD	3		
1620	5400	DN150	3/8"	930	570	1330	324	800	160	8113 DFD	8113 CFD	4		
2025	6750	DN150	3/8"	930	570	1330	324	800	160	8113 DFD	8113 CFD	5		
2430	8100	DN150	3/8"	930	610	1335	356	800	210	8113 DFD	8113 CFD	6		
3645	12150	DN200	3/8"	960	720	1415	457	800	320	8113 DFD	8113 CFD	9		
5265	17550	DN250	3/8"	985	770	1475	508	800	450	8113 DFD	8113 CFD	13		
6480	21600	DN250	3/8"	985	870	1495	610	800	620	8113 DFD	8113 CFD	16		
7290	24300	DN250	3/8"	985	870	1495	610	900	620	8113 DFD	8113 CFD	18		
10125	33750	DN300	3/8"	1015	980	1600	711	950	800	8113 DFD	8113 CFD	25		



Filtration degree: 1 µ
Remove: Oil vapour and Odour

Filter element	PF	HF	DF	CF	
Initial pressure drop (dry)	0.03	0.08	0.03	0.03	bar(g)
Initial pressure drop (wet)	0.14	0.19	-	-	bar(g)
Element change-out at	0.40	0.40	0.40	-	bar(g)
Colour	green	blue	red	silver	

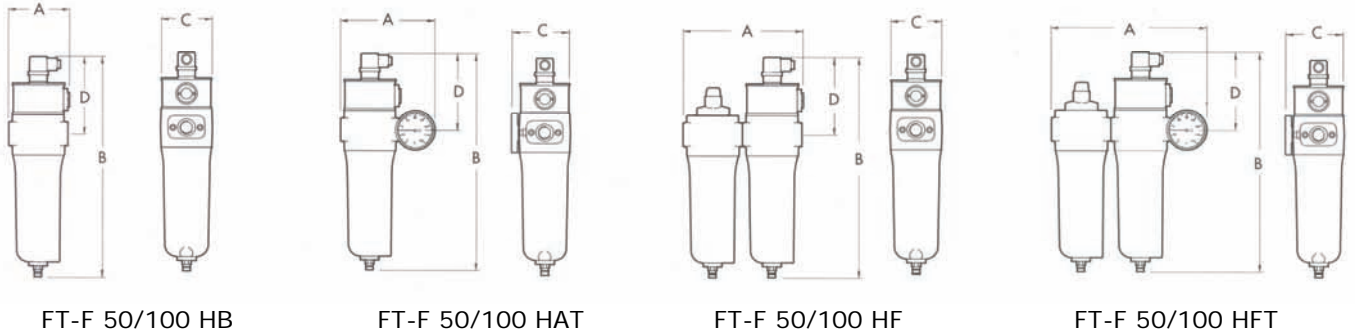
Multiplier for different inlet pressures in bar(g)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Multiplier 9 - 750	0.40	0.50	0.62	0.75	0.87	1.00	1.12	1.25	1.37	1.50	1.62	1.75	1.87	2.00	2.12
Multiplier 810 - 10125		0.71	0.79	0.87	0.93	1.00	1.06	1.12	1.17	1.22	1.27	1.31	1.37	1.41	1.46

- Techn cal details to change w thout notice -

Compressed Air Heater

Series FT-F

Compressed air in-line heater packages with unique features to ensure variable compressed air temperature control from 20°C (68°F) to 120°C (248°F), ideally suitable for industrial or breathing air applications. The compressed air line heater systems use an open wound heating coil and a high accuracy output temperature sensing device. This combination of fast responding heater and sensor allows the unit to adjust quickly to any variations in flow rate or line pressure, without deviation in the output temperature. The heater is controlled by a compact solid state temperature controller mounted on top of the unit. The temperature is set using a rotary knob located at the top of the unit. The temperature is set using a rotary knob located at the top of the unit. The exact temperature output is indicated by a bi-metallic thermometer clearly visible at the front of the heater, providing an independent indication of controller operation. Heaters can also be supplied, directly mounted to filtration pre-filters to ensure that process air is clean.



Type	Connection BSP	Max. pressure (bar g)	Material	Dimension (mm)		Weight (kg)
				Height	Width	
FT-F 50 HB	3/8	16	Aluminium	340	90	1,00
FT-F-50 HF	3/8	16	Aluminium	340	175	2,50
FT-F 50 HT	3/8	16	Aluminium	340	140	1,50
FT-F 50 HFT	3/8	16	Aluminium	340	225	2,50
FT-F 100 HB	1/2	16	Aluminium	340	90	1,00
FT-F 100 HF	1/2	16	Aluminium	340	175	5,00
FT-F 100 HT	1/2	16	Aluminium	340	140	3,00
FT-F 100 HFT	1/2	16	Aluminium	340	225	9,00

Supply voltage	230 V AC	115 V AC
Power rating	1,5 kW	1,5 kW
Maximum working pressure	16 bar g	16 bar b
Controlled output range	20°C to 120°C	20°C to 120°C
Minimum inlet temperature	-20°C	-20°C

Notes:

1. Cool to touch heaters are manufactured from aluminium and carry the CE mark.
2. If used in a breathing air installation, the air line heater and filter packages will not remove certain types of gases including Carbon Monoxide and Carbon Dioxide.
3. Condensate drain: internal automatic float drain
4. All filter bodies are electrophoretically painted and then coated with blue polyester powder paint finish to eliminate corrosion.
5. Airline heaters must not operate where liquid oil and water are present.
6. Heaters and filter heaters are silicon free.

- Technical details to change without notice -

Filter- und Trocknertechnik GmbH

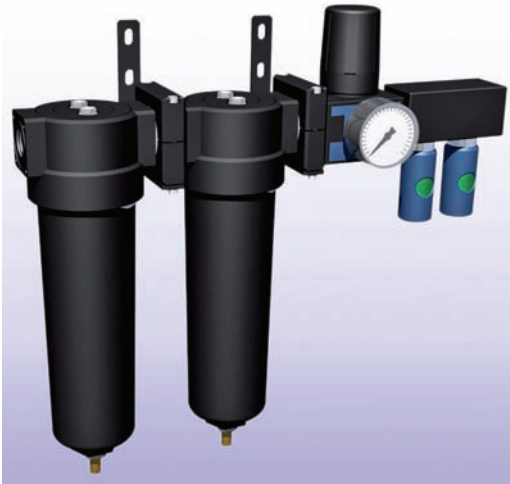
Mühlenstraße 21, D-24855 Bollingstedt • Tel.: +49-(0)4625-189042 • Fax: +49-(0)4625-189048

Internet: www.fut-gmbh.de • e-mail: info@fut-gmbh.de

Filter Series Paint System

FT-PS

High quality compressed air for the highest demands



The quality of colour painting compressed air is always a big problem.

Water and impurities from atmospheric air, which remain in compressed air, cause troubles in paint spraying industry. The result is non-uniformly layer of paint colour and varnish.

Filter Series Paint System may be used for purifying compressed air, non-toxic and non-combustible gaseous media. It separates the solid, liquid and partially gaseous components from the air flowing through the unit. Without a filter, these components would lead to negative effects in regard to the follow-up devices resp. the work results achieved with it as well as the worker health protection.

Model	Connection	Flow	Dimension			Design					
			Lenght mm	Height mm	Width mm	A1	A2	A3	A4	A5	A6
FT-PS-50	1/2	155	270	135	276	•				•	2
FT-PS-55	1/2	235	270	135	345	•				•	2
FT-PS-60	1/2	78	380	135	276	•	•			•	2
FT-PS-65	1/2	120	380	135	345	•	•			•	2
FT-PS-70	1/2	78	490	135	276	•	•	•		•	2
FT-PS-75	1/2	120	490	135	345	•	•	•		•	2
FT-PS-80	1/2	78	580	135	276		•	•	•	•	4
FT-PS-85	1/2	120	580	135	345		•	•	•	•	4

Design

- A1 = Water Separator
- A2 = Microfilter 0,1 µm
- A3 = Microfilter 0,01 µm
- A4 = Active carbon
- A5 = Pressure regulator
- A6 = Quick coupling

- Technical details to change without notice -

Sterile Filters FT-PSF

Permanent operational safety, economically and environmentally friendly

The revolutionary segment filter system is the economical and safe solution to filtration requests in the food- and beverage industry as well as in the chemical-, pharmaceutical or electronic industry.



The all metal design of stainless steel prevents bursting or a collapse of the filter candle from pressure shocks, vibration or hot steam sterilization, as with traditional simple filter candles. The filter membranes guarantee a one hundred per cent sterile filtration, even to the most stringent standards. The sandwich construction provides an individual adaption of performance in all areas of filtration of gases or liquids.

A reduction of the operational filtration costs (up to 70%) and a simplification of the spare part stock are the result of the interchangeability of the filter membranes.

Endurance tests by independent and neutral institutes have shown that the sterile filters for more than 150 sterilization cycles performed without any claim! The filter media membranes also act as a seal between the stainless steel segments in the sandwich design of the filter. The direction of flow can thus be reversed without any problems. Changing the filter media is a simple and quick operation.

New filtration technology for all ranges of filtration

The segment filter system **enables** an absolutely safe filtration in all ranges of gas-, air-, compressed air-, steam- and liquid filtration.

The economical kit system

The filter media, easy and simple replaceable by the user, reduces the operational costs compared to conventional filter candles up to 70 %. An additional advantage is the essential simplification of the spare part stock.

The great filtration range

The filter material is available with retention rates from 0,2 to 300 micron. Mainly used is a chemical resistant material like teflon, polysulfone and stainless steel.

Sterilization

Sterile filters can be sterilized in-line with hot steam up to 150 times.

Highest operational safety

The filter components made solely of stainless steel 1.4301 or 1.4571 in Germany.

Guarantee

5-years material warranty for all stainless steel filter components.

Operation control / check up

Used filter membranes can be tested by the user for analyzation of withhold particles.

Filter housings

All filter housings of the standard series like PSF and PDF (except 602 –606) have 2 drain ports at the filter housing bottom, which can be used for primary/secondary condensate draining, resp. for sample collection.



Filters PSF

Filter membranes

Model	Flow		Connection G/DIN 11851 Milkpipe	Connection BSP / R"	Element Type SF	Part no.	Model	Quantity	Part no.
	nom.	max.							
	(m ³ /h)	(m ³ /h)							
602 FT-PSF	40	60	15	1/2	60/02	9000600	EM-60/3T	2	9000624
604 FT-PSF	80	120	15	1/2	60/04	9000601	EM-60/3T	4	9000624
606 FT-PSF	120	180	15	1/2	60/06	9000602	EM-60/3T	6	9000624
6002 FT-PSF	40	60	15	1/2	60/02	9000603	EM-60/3T	2	9000624
6004 FT-PSF	80	120	15	1/2	60/04	9000604	EM-60/3T	4	9000624
6006 FT-PSF	120	180	15	1/2	60/06	9000605	EM-60/3T	6	9000624
8202 FT-PSF	120	180	25	1	82/02	9000606	EM-82/3T	2	9000630
8204 FT-PSF	240	360	25	1	82/04	9000607	EM-82/3T	4	9000630
8206 FT-PSF	360	540	40	1 1/2	82/06	9000608	EM-82/3T	6	9000630
8208 FT-PSF	480	720	40	1 1/2	82/08	9000609	EM-82/3T	8	9000630
8210 FT-PSF	600	900	40	1 1/2	82/10	9000610	EM-82/3T	10	9000630
1008 FT-PSF	680	1020	50	2	100/08	9000611	EM-100/3T	8	9000637
1010 FT-PSF	850	1275	50	2	100/10	9000612	EM-100/3T	10	9000637
1012 FT-PSF	1020	1530	50	2	100/12	9000613	EM-100/3T	12	9000637
1014 FT-PSF	1190	1785	50	2	100/14	9000614	EM-100/3T	14	9000637
1408 FT-PSF	1360	2040	50	2	140/08	9000615	EM-140/3T	8	9000638
1410 FT-PSF	1700	2250	50	2	140/10	9000616	EM-140/3T	10	9000638
1412 FT-PSF	2040	3060	50	2	140/12	9000617	EM-140/3T	12	9000638
1414 FT-PSF	2380	3570	65	2 1/2	140/14	9000618	EM-140/3T	14	9000638
1416 FT-PSF	2720	4080	65	2 1/2	140/16	9000619	EM-140/3T	16	9000638
1418 FT-PSF	3060	4590	65	2 1/2	140/18	9000620	EM-140/3T	18	9000638
1420 FT-PSF	3400	5100	80	3	140/20	9000621	EM-140/3T	20	9000638
1426 FT-PSF	4420	6630	80	3	140/26	9000622	EM-140/3T	26	9000638
1432 FT-PSF	5440	8160	80	3	140/32	9000623	EM-140/3T	32	9000638

Notes

Flow at 1 bar (a) and 20°C at 7 bar (g) working pressure
 Design pressure 10 / 16 bar (g)
 Material filter housings: stainless steel 1.4301

Recommended sterilization procedures

Saturated Steam: 20 minutes at 121°C
 Hot Air: 12 hours at 121°C

Pressure Stages

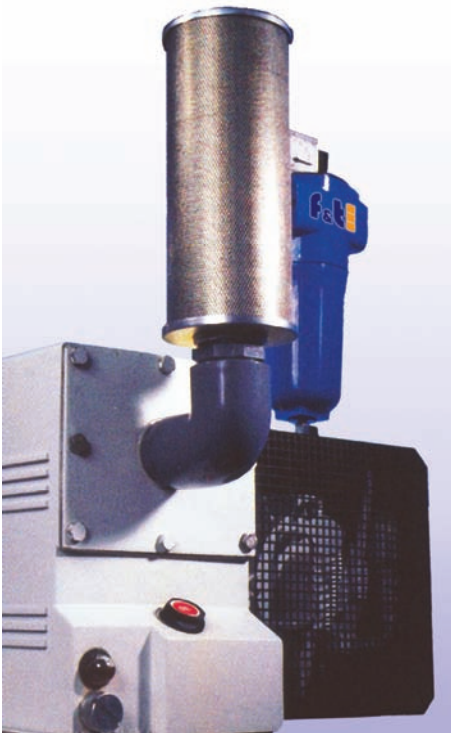
602 FT-PSF - 606 FT-PSF: 10 bar ü
 6002 FT-PSF - 1432 FT-PSF: 16 bar ü

- Technical details to change without notice -

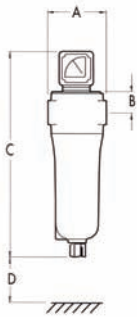
Vacuum Pump Exhaust Filters



FT offers three types of vacuum pump exhaust filters all of which are designed for oil mist removal from oil injected vacuum pumps. The simplex range FT-VFE filters with high performance coalescing filter elements are designed for oil mist removal from pumps which do not have internal oil separators. The duplex two stage filter model VFC is designed for total oil mist oil odour removal by using a high performance coalescer with second stage activated carbon filter. Both simplex and duplex filters are manufactured from diecast aluminium with a polyester powder coating. All are supplied with a drain valve plus a differential pressure gauge for the simplex range.

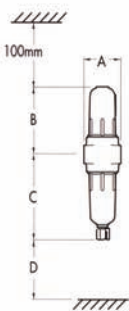


For rotary vane type vacuum pumps with internal oil separation, oily odours are often a problem especially in confined areas. The model FT-VFO filter is designed for this application. This filter element with internal threaded connection and high performance activated carbon filter media can be fitted directly to the pump outlet to provide a safe working environment.



Models
FT-16 VFE to FT-550 VFE

Filter Model	Pipe Size	Flow Rate		Element Model	Number of Elements	Dimensions mm				Weight kg
		Nm³/h	SCFM			(A)	(B)	(C)	(D)	
FT-16 VFE	1/2	16	10	E16 VFE	1	88	32	315	100	1,3
FT-25 VFE	3/4	25	15	E25 VFE	1	88	32	315	75	1,3
FT-45 VFE	1	45	25	E45 VFE	1	125	39	365	100	3,5
FT-65 VFE	1 1/4	65	40	E65 VFE	1	125	39	365	100	3,5
FT-125 VFE	1 1/2	125	75	E125 VFE	1	135	50	545	150	4,4
FT-165 VFE	2	165	100	E165 VFE	1	135	50	545	150	4,4
FT-250 VFE	2	250	150	E250 VFE	1	135	50	745	150	5,0
FT-350 VFE	2 1/2	350	200	E350 VFE	1	200	68	805	200	11,5
FT-450 VFE	3	450	265	E450 VFE	1	200	68	925	200	11,5
FT-550VFE	3	550	325	E550 VFE	1	230	65	1050	300	19

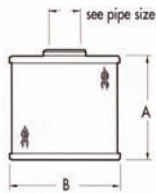


Model FT-16 VFC

FT-16VFC	1/2	16	10	E16 VFC / EO2 VFAC	1/1	90	200	225	100	1,25
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SPECIFICATION	GRADE VFE		GRADE VFC	
Particle removal	0,1 µm		0,1 µm	
Maximum oil carryover at 20°C (68°F)	1 mg/m³	1 ppm	0,1 mg/m³	0,1 ppm
Maximum temperature	120°C	248°F	120°C	248°F
Pressure loss – clean and dry	25 mbar	0,36 psi	30 mbar	0,44 psi
Pressure loss – oil saturated	70 mbar	1 psi	75 mbar	1,1 psi
Pressure loss – change element	150 mbar	2,2 psi	to suit application, at least every 6 month	
Maximum test pressure	4 bar abs.	60 psi abs.	4 bar abs.	60 psi abs.

- Vacuum pump exhaust filters are manufactured from aluminium and carry the CE mark.
- Threaded connections are BSP parallel to ISO /1 or NPT to ANSI B2.1 if supplied within North America.
- Direction of air flow, inside to out, through filter element.
- Model FT 16VFC, element VFC in the lower section is for oil removal while elements AC in the upper section are for odour removal.
- Grade AC activated carbon filter elements must not operate in oil saturated conditions and will not remove certain types of gases including Carbon monoxide and carbon dioxide.
- Differential pressure gauges are fitted to models FT-16 VFE to FT-550VFE.
- Manual drain valves, model MDV25 are fitted to all models.
- Drain flasks are available for liquid collection
- Mounting brackets are available for all models.
- All filter bodies are electrophoretically painted and then coated with blue polyester powder paint finish to eliminate corrosion.
- Vacuum pump exhaust filters and filter elements are suitable for use with mineral and synttetic oils.
- Flow rate refers to vacuum pump displacement.
- Vacuum pump exhaust filters and filter elements are silicone free.

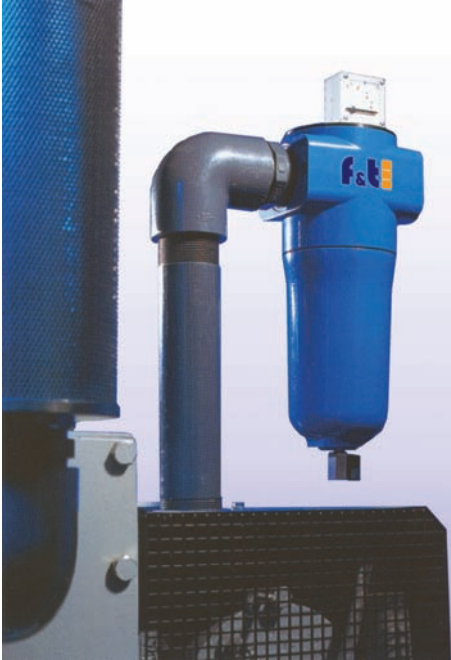


Models
FT-16 VFO to FT-250 VFO

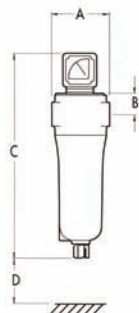
Element Model	Pipe Size	Flow Rate		Element Model	Dimensions mm		Weight kg
		Nm³/h	SCFM		(A)	(B)	
FT-50 VFO	3/4	50	30	O50VFO	150	80	0,76
FT-75 VFO	1	75	45	O75VFO	150	100	0,88
FT-100 VFO	1 1/4	100	60	O100FVO	150	130	0,96
FT-150 VFO	1 1/2	150	90	O150FVO	250	130	1,1
FT-250 VFO	2	250	150	O250FVO	300	130	1,16

- FT-VFO products must not operate in oil saturated conditions
- FT-VFO products must be changed at least every six month
- Maximum operating temperature 120°C (248°F)

Vacuum Pump Protection Filters



FT offers a full range of Vacuum pump protection filters from ¼" to 3" connection sizes. The range covers the most popular size of vacuum pump with flow rates up to 550 Nm³ (325 scfm) however larger fabricated models are available upon request. With a vacuum rating of 0,1Torr they are suitable for both rough vacuum and high vacuum applications. The 5 micron VLR grade is designed for bulk liquid and high dirt removal to prevent liquid contamination and damage to rotating parts. The high efficiency 1 micron VX1 grade is designed to remove very fine particulate matter which may damage the pump or process application. The filter elements use a high dirt loading glass microfibre filter medium backed up with stainless steel metalwork and nylon endcaps to offer low pressure loss performance. These models incorporate the unique FuT designed 'push on' filter element, which reduces maintenance time and allows the filter to be located in the most confined places. The filter housings are manufactured from diecast aluminium with a tough polyester powder coating and are supplied complete with differential pressure gauge and drain valve.



Models
FT-5 VFP to FT-550 VFP

Filter Model	Pipe Size	Flow Rate		Element Model	Dimensions mm				Weight kg
		Nm ³ /h	SCFM		(A)	(B)	(C)	(D)	
FT-5 VFP	1/4	5	3	E5 VFP	88	32	315	100	1,0
FT-10 VFP	3/8	10	6	E10 VFP	88	32	315	100	1,0
FT-16 VFP	1/2	16	10	E16 VFP	88	32	315	100	1,3
FT-25 VFP	3/4	25	15	E25 VFP	125	39	365	100	2,7
FT-45 VFP	1	45	25	E45 VFP	125	39	365	100	2,7
FT-65 VFP	1 1/4	65	40	E65 VFP	125	39	365	100	2,7
FT-125 VFP	1 1/2	125	75	E125 VFP	135	50	545	150	4,4
FT-165 VFP	2	165	100	E165 VFP	135	50	545	150	4,4
FT-250 VFP	2	250	150	E250 VFP	135	50	745	150	5,0
FT-350VFP	2 1/2	350	200	E350 VFP	200	68	805	200	11,5
FT-450VFP	3	450	265	E450 VFP	200	68	925	200	15,5
FT-550VFP	3	550	325	E550 VFP	230	65	1050	300	19

SPECIFICATION	GRADE VLR		GRADE VX1	
Particle removal	5 µm		1 µm	
Maximum temperature	120°C	248°F	120°C	248°F
Pressure loss – clean and dry	20 mbar	0,3 psi	40 mbar	0,6 psi
Pressure loss – change element	100 mbar	1,5 psi	100 mbar	1,5 psi
Maximum working pressure	4 bar abs.	60 psi abs.	4 bar abs.	60 psi abs.
Maximum working vacuum	0,1 Torr	full vacuum	0,1 Torr	full vacuum

- Vacuum pump protection filters are manufactured from aluminium and carry the CE mark.
- Threaded connections are BSP parallel to ISO /1 or NPT to ANSI B2.1 if supplied within North America.
- Direction of air flow, inside to out, through filter element.
- Differential pressure gauges are fitted to models FT-5 VFP to FT-550VFP.
- Manual drain valves, model MDV25 are fitted to all models.
- Drain flasks are available for liquid collection
- Mounting brackets are available for all models.
- All filter bodies are electrophoretically painted and then coated with blue polyester powder paint finish to eliminate corrosion.
- Vacuum pump protection filters and filter elements are suitable for use with mineral and synthetic oils.
- Vacuum pump exhaust filters and filter elements are silicone free.

CORRECTION FACTOR

For maximum flow rate, multiply model flow rate shown in the above table by the correction factor corresponding to the working vacuum.

Operating Vacuum	m bar abs	Atmospheric	900	800	700	600	500	400	500 mm hg	300	200
	torr	760	675	600	525	450	375	300	260	225	150
	psia	14,7	13	11,6	10,2	8,7	7,3	5,8	3,8	3,3	2,9
Correction factor		1	0,93	0,86	0,79	0,71	0,64	0,57	0,53	0,5	0,43

- Technical details to change without notice -

Medical Vacuum Filters



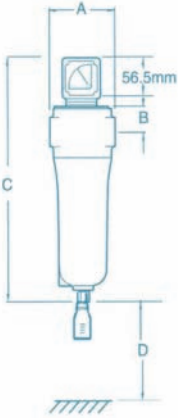
FT offers a comprehensive range of medical vacuum filters for use in centralised hospital vacuum plant installations. Medical vacuum filters are specifically designed to protect plant installations from liquid, solid and bacterial contamination.

For easy identification, liquids are collected in a transparent vacuum drain flask which can be easily removed for sterilisation.

Medical vacuum grade filter elements incorporate a high efficiency, low pressure loss borosilicate glass microfiber media to capture particulates, bacteria and liquid aerosols in addition to a pre-filtration layer manufactured from open cell reticulated foam.

Differential pressure indicators and manual drain valves are fitted as standard to all models.

Sterilisable glass vacuum drain flasks (100ml or 250ml depending upon model) are supplied as standard.



Filter Model	Pipe Size	Flow Rate		Element Model	Number of Elements	Dimensions mm				Weight kg
		Nm ³ /h	SCFM			(A)	(B)	(C)	(D)	
FT-6 VFM	3/8	6	3,5	E 6 VFM	1	88	32	315	100	1,3
FT-12 VFM	1/2	12	7	E 12 VFM	1	88	32	315	100	1,5
FT-15 VFM	3/4	15	9	E 15 VFM	1	88	32	365	100	1,5
FT-36 VFM	1	36	21	E 36 VFM	1	125	39	365	100	2,7
FT-72 VFM	1 1/4	72	42	E 72 VFM	1	125	39	365	150	3,5
FT-120 VFM	1 1/2	120	70	E 120 VFM	1	135	50	545	200	4,4
FT-180 VFM	2	180	106	E 180 VFM	1	135	50	745	200	5,0
FT-240 VFM	3	240	141	E 240 VFM	1	200	68	925	200	15,5
FT-300 VFM	3	300	177	E 300 VFM	1	230	68	1050	300	19,0

Flow rate above is rated flow at atmospheric pressure (1000mbar) and 20°C.

For maximum flow rates at other pressures, refer to chart below:

Port connections available as either BSP Parallel (ISO 7/1) or NPT (ANSI B2.1).

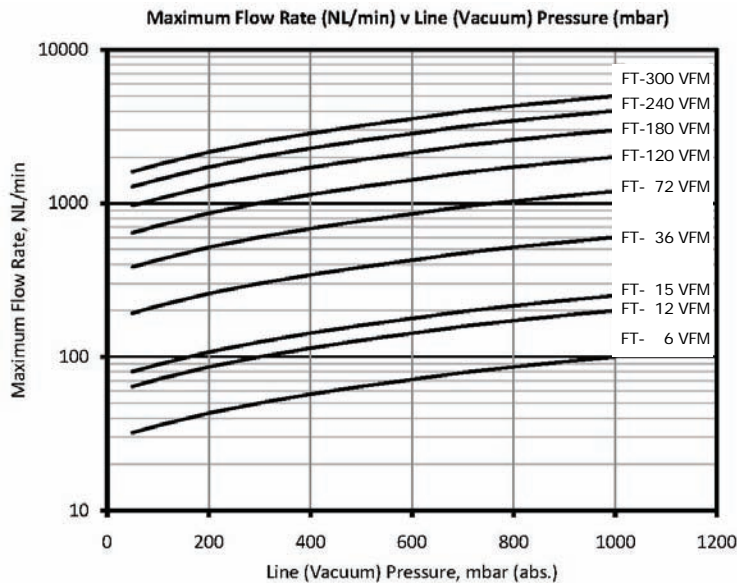
Larger, multi-element fabricated product also available for increased flow rates.

SPECIFICATION	GRADE MV	
Particle Removal Efficiency	>99.995%	
Maximum Working Pressure	Atmospheric and Full Vacuum	
Maximum Working Temperature	60°C	140°F
ΔP, Pressure Loss (Clean)	35mbar	0.5psig
ΔP, Pressure Loss (Element Change)	100mbar	1.5psig

Particle removal efficiency tested in accordance with the requirements of BS 3928 -1969: Method for Sodium Flame Test for Air Filters.

Units can be leak tested above atmospheric pressure provided that the drain valve is closed and the drain flask is removed.

CONSTRUCTION MATERIALS	
Housing	Element
Diecast aluminium alloy housings coated with both an electrophoretic treatment (e-coat) followed by an external polyester powder paint finish. Sterilisable glass vacuum flask. High nitrile seals. Differential indicator components – Polyamide (PA)	Glass filled polyamide (PA) endcaps with high nitrile seals. Stainless steel perforated inner and outer cylinders. Borosilicate glass microfiber media. Reticulated open cell foam pre-filter sleeving. Polyurethane bonding and encapsulation materials.



- Technical details to change without notice -

Elements for Compressed Air Filters



Suitable for

- | | | | | |
|---------------|------------------|------------|----------------------|---------------|
| ■ Alup | ■ Compair | ■ EWO | ■ Ingersoll Rand | ■ Prevost |
| ■ Atlas Copco | ■ CTA | ■ Filtri | ■ Kaeser | ■ Schneider |
| ■ Balston | ■ Delair | ■ Finite | ■ Mark | ■ Trocair |
| ■ Bea Filtri | ■ Deltech | ■ Flair | ■ MTA | ■ Ultrafilter |
| ■ Beko | ■ domnick hunter | ■ Gemoc | ■ O.M.I. | ■ Walker |
| ■ Boge | ■ Dollinger | ■ Hankison | ■ Omega Air | ■ Worthington |
| ■ Ceccato | ■ Ecoair | ■ Hiross | ■ Pneumatic Products | ■ Zander |

Optimum combination of price and performance

Our high-performance filter elements are produced with advanced technology and high-quality materials

Filtration performance and interchangeability guaranteed
(ISO 8573-1:1991 e)

- Technical details to change without not ce -

Condensate drains



DELTOMATIC 1000

The reliable electronic timer controlled condensate drain for small condensate quantities.

Connection : in 1/2" , out 6 mm
: 230 V 50 Hz

Incl. dirt trap and stopcock.
Other voltages on request.

FT-KAmatic 2000

The reliable electronic timer controlled condensate drain with a large valve cross-section for larger condensate quantities.

Connection : 3/8" BSP
Voltage : 230 V 50 Hz

Other voltages on request.



X-Drain, electronic level controlled

Electronic level controlled condensate drain for Compressor capacity up to 1700 m³/min. / dryer capacity up to 3250 m³/min.

Connection : out 1/2"- 3/8"
Voltage : 90 – 250 VAC

Other voltages on request.

Other details see **X-Drain-Datasheet** (0703).

- Technical details to change without notice -

X DRAIN

Electronic Level-Controlled Drain



X DRAIN



Secure Condensate Management... Optimized Compressed Air Quality!

Condensate is generated when compressed air is cooled below the dew point temperature.

The water vapour contained in the compressed air reaches its saturation point and condenses into water. The bigger water droplets collect at the lowest points of the compressed air ring main however the finer water droplets and aerosols are carried along within the air stream and impair the efficiency and operational safety of the entire compressed air system.

In a modern compressed air installation, the heat exchangers, filters and dryers are considered the norm for a good air system, however proper and efficient management and treatment of the condensate discharge is often neglected. Important requirements for a modern treatment system are:

- High operational safety,
 - No contamination and blockage of the drain
 - Alarm in case of malfunction
 - Simple functional test
 - A resistance against all standard compressor oil types
- High economical efficiency,
 - No loss of compressed air
 - Low installation and maintenance/service work
 - Low investment

ty and efficiency and therefore should be an integral part of every modern compressed air installation.



X-DRAIN – The definitive system for condensate treatment

Simple time-controlled solenoid valves have proved to be effective in the past but do not meet current safety and reliability requirements. Implementation of the electronic level-controlled X-DRAIN will meet these new standards and improve reliability and reduce unnecessary costs.

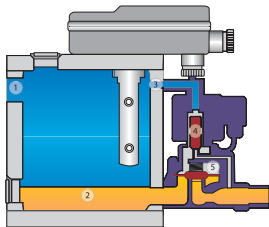


Figure 1: Condensate flowing in through inlet port (1) is collected in the reservoir (2). System air pressure passes through the pilot supply line (3) into the area above the valve diaphragm (5). The solenoid valve (4) is closed and the larger surface above the membrane holds the membrane in place and prevents any compressed air loss.

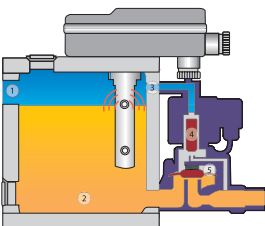


Figure 2: When the level of condensate (2) in the reservoir rises to its maximum level, this activates a capacitive sensor, the pilot supply line is then closed by the solenoid valve. The pressure above the diaphragm is reduced and the membrane lifts off the valve seat and the condensate flows out through the drain line (8).

Capacitive Sensor

This monitors the level of condensate received from the compressed air system and manages its effective discharge.



Minimal loss of compressed air

Two sensors (low-level and high-level) control the discharge of the condensate. The discharge valve closes the outlet before there is any loss of the costly-produced compressed air.

Automatic Discharge Function

In the event of the condensate not being discharged to the minimal level within two minutes, an alarm is generated automatically. The automatic drain will then implement a default setting which will activate the solenoid valve for 5 seconds every 3 minutes until returned to normal operation by the user.



Standard Mode



Alarm Mode

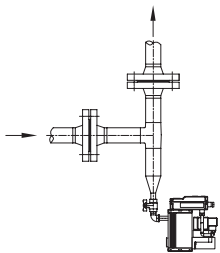


Durability (Hard-Wearing)

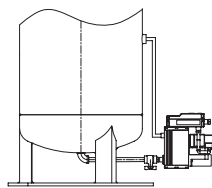
- Rigid housing material, typically used in the aircraft industry and semiconductor industry
- Corrosion and abrasion resistant for a long life in an industrial environment
- Efficient design available for 7 models
- Cast moulded and anodized housing design

Convenient to install and maintain

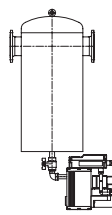
- Easy installation into both new and existing systems
- Housings are easy to clean
- Built-in strainer prevents valve blockage and damage



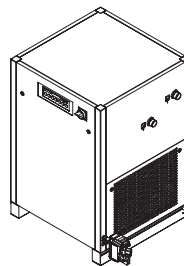
Piping



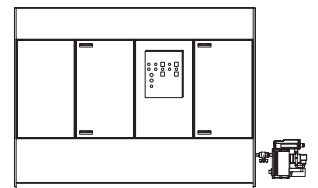
Receiver / Tank



Compressed Air Filter

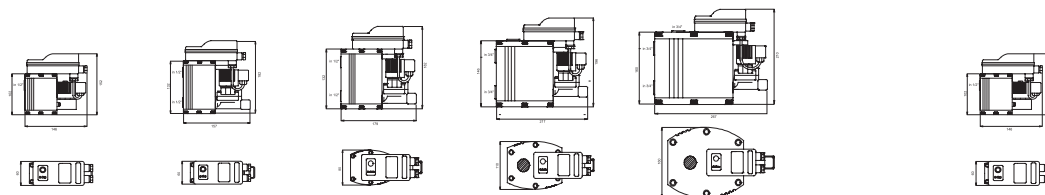


Air Dryer



Compressor

Technical Data X-DRAIN



Model	SXD- 1	SXD- 3	SXD- 10	SXD- 30	SXD- 100	SXD- 300	SXD- 3 HP
Capacity							
Compressor Capacity (m ³ /min)	4 - 5,5	12 - 16,5	40 - 55	120 - 165	400 - 550	1200 - 1700	12 - 16,5
Refrigerated dryer ^{*1} (m ³ /min)	8,0- 11	24 - 33	80 - 115	240 - 330	800 - 1150	2300 -3250	24 - 33
Filter-downstream ^{*2} (m ³ /min)	40 - 55	120 - 165	400 - 550	1200 - 1600			120 - 16
Min. / Max. Operating Pressure (bar)	0,8 - 16	0,8 - 16	0,8 - 16	0,8 - 16	0,8 - 16	0,8 - 16	0,8 - 50
Min. / Max. Operating Temperature (°C)	+ 1 - + 80	+ 1 - + 80	+ 1 - + 80	+ 1 - + 80	+ 1 - + 80	+ 1 - + 80	+ 1 - + 80
Voltage (V AC)	90 - 250	90 - 250	90 - 250	90 - 250	90 - 250	90 - 250	90 - 250
Frequency (Hz)	50 - 60	50 - 60	50 - 60	50 - 60	50 - 60	50 - 60	50 - 60
Condensate	oil-contaminated + oil-free						
Housing	Aluminium, hard-coated						
Condensate inlet	2 x 1/2"	2 x 1/2"	3 x 3/4"		1 x 1" + 2 x 3/4"		2 x 1/2"
Condensate outlet			1 x 1/2 "				1 x 3/8"
Weight (Kg)	1,10	1,45	2,10	2,40	4,10	6,50	1,85

*1 referred to 1 bar(a) and 20°C at 7 bar working pressure, compressor inlet 25°C at 60% r.H., compressor discharge temperature 35°C, dew-point dryer 3°C

*2 Condensate aftercooler or fridge dryer already removed.

Capacity depends on different climate zones

Options on request Technical Alterations reserved

- Technical details to change without notice -

Your Benefits with Smard Refrigerated Dryers



- **Low energy demand**
- **Non-corrosive air circuit of copper and high-grade steel**
- **Powder-coated steel construction**
- **Unique heat exchange technology**



Smard Refrigerated Dryers		SC 5-30	MRD 47-53	MRD 80	MRD 105-273	MRD 333-400	MRD 500
Medium	: Compressed air	Standard	Standard	Standard	Standard	Standard	Standard
Housing	: High-grade steel plate	Standard	Standard	Standard	Standard	Standard	Standard
Color - panel	: RAL 9001 (white) powder-coated	Standard	Standard	Standard	Standard	Standard	Standard
Color - frame	: Gray, powder-coated	Standard	Standard	Standard	Standard	Standard	Standard
Inlet and outlet	: Right (inlet) & rear-side (outlet)	---	Standard	Standard	Standard	Standard	---
	: Left	---	---	---	---	---	Standard
	: Rear-side	Standard	---	---	---	---	---
	: Bypass	Option	Option	Option	Option	Option	Option
Refrigerant	: R134a	Standard	Standard	---	---	Standard	---
	: R404	---	---	---	---	---	Standard
	: R407c	---	---	Standard	Standard	---	---
Condenser	: Air cooled	Standard	Standard	Standard	Standard	Standard	Standard
	: Water cooled	---	---	---	---	Option	Option
Heat exchanger	: Tubes of copper	Standard	---	---	---	---	---
	: High-grade steel plates	---	Standard	Standard	Standard	Standard	Standard
Installation	: Indoors	Standard	Standard	Standard	Standard	Standard	Standard
IP rating	: IP 23	Standard	Standard	Standard	Standard	---	---
	: IP 44	---	---	---	---	Standard	Standard
Dew point indication	: Analog indicator	Standard	Standard	Standard	---	---	---
	: Digital LED	---	---	---	Standard	Standard	Standard
	: Digital with warning light	---	---	---	Standard	Standard	Standard
	: Digital with potential-free alarm contact	---	Option	Option	Option	Standard	Standard
Condensate drain	: Time controlled	Standard	Standard	Standard	---	---	---
	: X-Drain level controlled, electronic	---	Option	Option	Standard	Standard	Standard
Power supply	: 230V 1 phase 50 Hz	Standard	Standard	Standard	Standard	---	---
	: 400V 3 phases 50 Hz	---	---	---	---	Standard	Standard
	: Other operating voltages on request	Option	Option	Option	Option	Option	Option

Standard equipment and options show country specific differences.

Design data *	Min.	Design	Max.	SC 5-30	MRD 47-53	MRD 133-266	MRD 333-400	MRD 500
Inlet pressure	2 bar(ü)	7 bar(ü)	16 bar(ü)	Standard	Standard	Standard	Standard	Standard
Inlet temperature	+4 C	+35 C	+49 C	Standard	Standard	Standard	Max +55 C	Max +55 C
Ambient temperature	+7 C	+25 C	+43 C	Standard	Standard	Standard	Max +45 C	Max +45 C

* Use the multipliers when the conditions are different from the design conditions. Refer to the table on the other side of this page.

Model	Capacity m³/h		Connection BSP	Dimensions (mm)			Weight kg	Supply voltage V/ph/hz	Power consumption kW
	Tp +3°C	Tp +7°C		height	width	depth			
Smard SC series									
Smard SC 5	20	---	3/8	382	320	320	19	230/1/50	0,24
Smard SC 10	30	---	3/8	382	320	320	19	230/1/50	0,24
Smard SC 18	60	---	3/4	568	368	394	28	230/1/50	0,34
Smard SC 24	80	---	3/4	568	368	394	30	230/1/50	0,42
Smard SC 30	100	---	3/4	568	500	500	41	230/1/50	0,58
Smard MRD series									
Smard 47	140	155	1	601	363	861	50	230/1/50	0,55
Smard 53	160	175	1	601	363	861	53	230/1/50	0,60
Smard 80	240	265	1	601	363	921	58	230/1/50	1,04
Smard 105	315	345	2	761	443	971	72	230/1/50	1,33
Smard 120	360	395	2	761	443	971	78	230/1/50	1,59
Smard 157	470	515	2	761	443	971	85	230/1/50	1,81
Smard 194	580	640	2	811	493	1151	100	230/1/50	2,32
Smard 227	680	750	2	811	493	1151	112	230/1/50	2,80
Smard 273	820	900	2	811	493	1251	134	230/1/50	2,95
Smard 333	1.100	1.210	2 1/2	1510	1129	857	266	400/3/50	2,55
Smard 400	1.300	1.430	2 1/2	1510	1129	857	285	400/3/50	2,95
Smard 500	1.700	1.870	3	1510	1129	857	335	400/3/50	5,70

Use the following multipliers for deviating conditions to choose the correct dryer:

Multiplier for different inlet pressures in bar (ü) (F1)												
bar(ü)	3	4	5	6	7	8	9	10	11	12	13	14
Smard SC 5 - MRD 500	0,79	0,87	0,92	0,96	1,00	1,03	1,07	1,10	1,13	1,16	1,18	1,21

Multiplier for different inlet temperatures in °C (F2)					
C	+35	+40	+45	+50	+55
Smard SC 5 - MRD 500	1,00	0,84	0,71	0,63	0,55

Multiplier for different ambient temperatures in °C (F3)					
C	+25	+30	+35	+40	+45
Smard SC 5 - SC 30	1,00	1,00	1,00	1,00	1,00
Smard MRD 47 - MRD 500	1,00	0,94	0,89	0,83	0,78

Example	Calculation
Compressor capacity (V1)	: 850 m³/h
Working pressure (F1)	: 10 bar(ü)
Inlet temperature (F2)	: +45 C
Ambient temperature (F3)	: +35 C
V2	: Required dryer capacity
	$V2 = V1 : (F1 \times F2 \times F3) = 850 : (1,1 \times 0,71 \times 0,89) = 1223 \text{ m}^3/\text{h}$ → Smard 400 is suitable

- Technical details to change without notice -

Your Benefits with FT-GD Refrigerated Dryers

Standard design of FT-GD compressed air refrigerant dryers		FT-GD 1300-6600	FT-GD 9000-11400
Medium	: Compressed air	standard	standard
Housing	: Galvanized steel	standard	standard
Housing	: RAL 7035 (white) powder coated	standard	standard
Inlet and outlet	: On the right side of the housing	standard	standard
Refrigerant	: R407 C	standard	standard
Condenser	: Air cooled	standard	standard
Condenser	: Water cooled	option	option
Refrigeration circuit - axial fan	: On top with protective grid	standard	standard
Refrigeration circuit	: One refrigerant compressor	standard	--
Refrigeration circuit	: Two refrigerant compressors, 50 – 100 % control	--	standard
Heat exchanger	: Aluminium high performance modules	standard	standard
Refrigeration circuit	: High pressure pressostat	standard	standard
Refrigeration circuit	: Fan pressostat	standard	standard
Refrigeration circuit	: Low pressure pressostat	standard	--
Refrigeration circuit	: Low pressure/ pressure transmitter	--	standard
Refrigeration circuit	: Refrigerant manometer	standard	standard
Refrigeration circuit	: Thermostat at compressor outlet	standard	standard
Air circulation	: Compressed air pressure gauge at compr.air inlet	standard	standard
Installation	: Indoors	standard	standard
IP rating	: IP 54	standard	standard
Dew point indication	: Electronic controlled	standard	standard
	: Dew point temperature digital	standard	standard
	: Compressed air inlet temperature digital	standard	standard
Condensate drain	: Time controlled	standard	standard
	: Level controlled	option	option
Power supply	: 400V /3 phases/ 50 Hz	standard	standard
	: Other operating voltages on request	option	option

Standard equipment and options show country specific differences.

Design data*	Min.	Design	Max.
Inlet pressure	2 bar(g)	7 bar(g)	12 bar(g)
Inlet temperature	+4 C	+35 C	+65 C
Ambient temperature	+7 C	+25 C	+43 C

* Use the multipliers when the conditions are different from the design conditions. Refer to the table on the other side of this page.



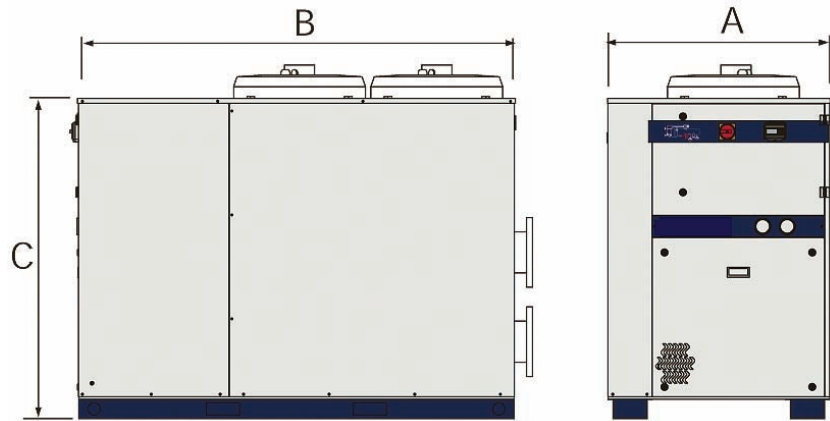
Model	Capacity (1) m³/h	Dimensions (mm)			Weight (2) kg	Connection	Power consumption (3) kW
		(A)	(B)	(C)			
FT-GD 1300	1300	660	1230	1400	244	DN 80	2.14
FT-GD 1700	1700	660	1230	1400	254	DN 80	3.35
FT-GD 2250	2250	660	1230	1400	276	DN 80	3.77
FT-GD 2700	2700	660	1230	1400	318	DN 100	5.05
FT-GD 3600	3600	660	1230	1400	332	DN 100	7.09
FT-GD 4600	4600	910	1790	1447	526	DN 150	8.12
FT-GD 5400	5400	910	1790	1447	551	DN 150	9.69
FT-GD 6600	6600	910	1790	1447	624	DN 150	11.88
FT-GD 9000	9000	930	2860	2064	1077	DN 200	15.32
FT-GD 11400	11400	930	2860	2064	1102	DN 200	19.72

(1) The rated capacity corresponds to ISO 7183 at intake air conditions 20 °C, 1 bar(a) and the following operating conditions: Inlet pressure 7 bar(g), Inlet temperature 35 °C, ambient temperature 25 °C and dew point 3 °C.

(2) Net weight

(3) The electric power consumption refers to standard operating conditions.

- Maximum inlet pressure 12 bar
- Maximum inlet temperature 65 °C
- Maximum ambient temperature 43 °C
- Power supply: 400V ±10% / 3Ph / 50Hz



Use the following multipliers for deviating conditions to choose the correct dryer:

Multipliers CAPACITY (reference values): CAPACITY = NOMINAL VALUE (7 bar) x K1 x K2 x K3 x K4.

Inlet pressure	bar g	3	4	5	6	7	8	9	10	11	12
	K1	0.69	0.80	0.88	0.95	1.00	1.05	1.09	1.14	1.17	1.20
Inlet temperature	°C	30	35	40	45	50	55	60	65		
	K2	1.26	1.00	0.82	0.67	0.55	0.47	0.45	0.43		
Ambient temperature	°C	20	25	30	35	40	43				
	K3	1.08	1.00	0.93	0.87	0.80	0.75				
Dew point	°C	3	4	5	6	7	8	9	10		
	K4	1.00	1.07	1.12	1.18	1.24	1.32	1.38	1.47		

- Technical details to change without notice -

High Pressure Dryer HPKT 30 - 2000



- FROM 30 TO 2000 Nm³/h
- R134a or R404a
- 230V-1-50Hz or 400V-3-50Hz or 440V-3-60Hz
- AIRCOOLED CONDENSER
- 50 bar ELECTRONIC TIMED DRAIN
- AUTOMATIC CRANK-CASEHEATER
- PRESSURE AND TEMPERATURE REGULATED REFRIGERANT CIRCUIT
- EVAPORATION PRESSURE ADJUSTMENT
- EVAPORATION PRESSURE GAUGE
- RECESSED CONTROL PANEL
- EFFICIENTLY VENTILATED
- DETACHABLE FRONT PANEL FOR EASY ACCESS
- ANTI-CORROSION STEEL FRAME CHASSIS
- ZINC PLATED STEEL, POWDER COATED CABINET
- CE CERTIFIED

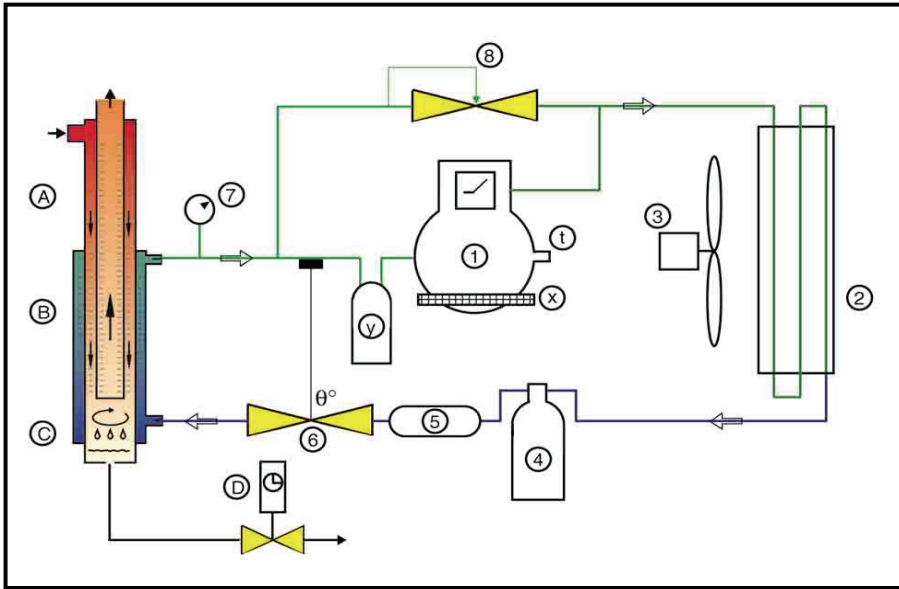
AN EFFICIENT TECHNOLOGY : THE PET DRYER RANGE WITH THE "3 in 1" MONOBLOC

- Highly effective, unique in its simplicity and totally reliable, our heat exchanger provides superb drying performances to the PET dryer.
- The air/air economizer reduces by 58 % the electrical requirements: you save on both running and capital costs.
- The refrigerated separator gives much better performances than any other one because it prevents from water re-evaporation after separation: coalescence is guaranteed up to 150% of the nominal airflow.
- Because the "3 in 1" doesn't require the interconnecting lines needed by the others, it saves on pressure drop: less energy is required from your compressor.
- The thermostatic expansion valve, which ensures the filling without any risk of liquid stroke in the compressor, is combined with a by-pass valve keeping the evaporation pressure steady. These regulation devices, together with other thermo and pressure switches provide reliable and efficient working all the time. Thus, the fridge compressor is totally protected.
- The dew point remains constant from 0 to 100 % of the load
- Our super dryers are completely tested for leakages and running performances.
- Wherever installed after the air compressor, the PET dryers always perform efficiently.

OPTIONS :

- 380V-3-60Hz
- Thermostatic warning (free of potential contact)
- Water cooled condenser
- Air pressure and temperature manometers

High Pressure Dryer HPKT 30 - 410



AIR CIRCUIT:

- A: air-air economizer
- B: air-refrigerant exchanger
- C: refrigerated separator
- D: electronic timed drain

REFRIGERANT CIRCUIT:

- 1: hermetic compressor
- 2: air cooled condenser
- 3: condenser fan
- 4: liquid receiver
- 5: filter dryer
- 6: thermostatic expansion valve
- 7: evaporation pressure gauge
- 8: hot gas by-pass valve

SAFETY DEVICES:

- t: klixon
- x: crank-case heater
- y: liquid separator

TYPE	Airflow		In/Out (G")	ΔP (bar)	Condenser airflow (m³/h)	Power Abs. (kW)	Dimensions			Weight (kg)	Refrigerant
	(l/min)	(m³/h)					H (mm)	L (mm)	W (mm)		
HPKT 30	500	30	3/8	0,020	100	0,2	335	500	360	25	R134a
HPKT 40	666	40	3/8	0,085	370	0,2	335	500	360	25	R134a
HPKT 55	916	55	3/8	0,140	340	0,2	335	500	360	30	R134a
HPKT 90	1500	90	3/4	0,015	370	0,2	475	677	410	45	R134a
HPKT 135	2250	135	3/4	0,030	340	0,3	475	677	410	50	R134a
HPKT 190	3166	190	3/4	0,040	410	0,5	475	677	410	55	R134a
HPKT 220	3666	220	3/4	0,040	800	0,6	475	677	410	60	R134a
HPKT 360	6000	360	1	0,070	980	0,9	603	700	490	80	R134a
HPKT 410	6833	410	1	0,080	980	1,1	603	700	490	90	R134a

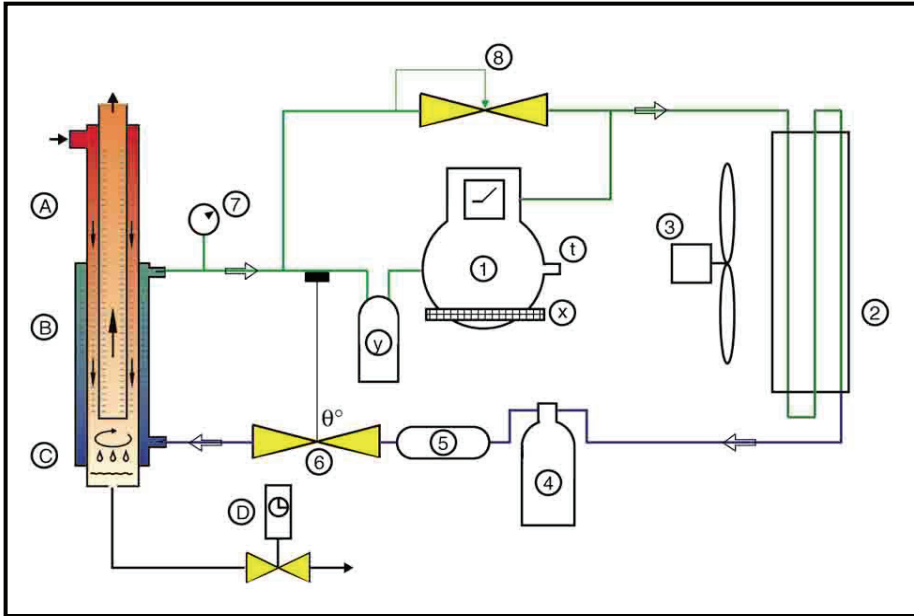
Working pressure: nom. 45 bar, max. 50 bar
 Inlet temperature: nom. 35°C, max. 60°C
 Ambient temperature: nom. 25°C, max. 45°C, min. 4°C

HOW TO SELECT A PET DRYER:

- Determine your highest requested airflow.
- Enter your data (pressure, ambient and inlet T°) in the CORRECTION FACTORS table.
- Corrected flow = requested flow x F1 x F2 x F3
- Select a dryer matching the corrected flow. (if not, choose the dryer directly bigger)

CORRECTION FACTORS											
Pressure	20	25	30	35	40	45	50				
Factor F1	1,15	1,10	1,06	1,04	1,02	1	0,99				
Ambient					20	25	30	35	40	42	
Factor F2					0,93	1	1,07	1,15	1,22	1,27	
Inlet temp.					30	35	40	45	50	55	60
Factor F3					0,83	1	1,16	1,32	1,45	1,54	1,69

High Pressure Dryer HPKT 450 - 2000



AIR CIRCUIT:

- A: air-air economizer
- B: air-refrigerant exchanger
- C: refrigerated separator
- D: electronic timed drain

REFRIGERANT CIRCUIT:

- 1: hermetic compressor
- 2: aircooled condenser
- 3: condenser fan
- 4: liquid receiver
- 5: filter dryer
- 6: thermostatic expansion valve
- 7: evaporation pressure gauge
- 8: hot gas by-pass valve

SAFETY DEVICES:

- t: klixon
- x: crank-case heater
- y: liquid separator

TYPE	Airflow		On/Out (G")	ΔP (bar)	Condenser airflow (m ³ /h)	Power Abs. (kW)	Dimensions			Weight (kg)	Refrigerant
	(l/min)	(m ³ /h)					H	L (mm)	W (mm)		
HPKT 450	7500	450	1 1/2	0,09	980	1,0	1040	750	700	130	R134a
HPKT 575	9580	575	1 1/2	0,11	980	1,1	1320	800	700	160	R134a
HPKT 700	11660	700	1 1/2	0,13	980	1,4	1320	800	700	190	R134a
HPKT 900	15000	900	1 1/2	0,11	2250	1,4	1320	800	700	195	R134a
HPKT 1150	19170	1150	DN 50	0,10	2250	2,1	1585	800	700	285	R134a
HPKT 1300	21660	1300	DN 50	0,07	2250	2,1	1585	800	700	355	R134a
HPKT 2000	33330	2000	DN 50	0,12	4800	3,4	1585	1000	1120	455	R134a

Working pressure: nom. 45 bar, max. 50 bar,

Ambient temperature: nom. 25°C, max. 45°C, min. 4°C

Inlet temperature: nom. 35°C, max. 60°C

CORRECTION FACTORS

Pressure (bar)	20	25	30	35	40	45	50				
Factor F1	1,15	1,10	1,06	1,04	1,02	1	0,99				
Ambient					20	25	30	35	40	42	
Factor F2					0,93	1	1,07	1,15	1,22	1,27	
Inlet temp.					30	35	40	45	50	55	60
Factor F3					0,83	1	1,16	1,32	1,45	1,54	1,69

- Technical details to change without not ce -

Filter- und Trocknertechnik GmbH

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Internet: www.fut-gmbh.de • e-mail: info@fut-gmbh.de

Membrane Dryer

Your advantages with
Deltech® Membrane Dryers

DMD Series (Light construction)

DMM Series (Pressure-resistant aluminium housing)



- Multifunctional applications
- No electrical connection needed
- No moving parts
- No liquid condensate to be treated
- No oxygen loss

The DMM and DMD Deltech membranes are an excellent alternative to refrigerant and adsorption dryers. Membrane dryers can be selected independently from the desired pressure dew point and need no maintenance. In order to protect the delicate membrane surface, a particle and oil-fine filtration is required. The appropriate filter combinations are available in our Deltech filter program.

The purge air, saturated with water vapour is dispersed freely in the environment without any noise exposure and without the need for a condensate treatment.

Membrane dryers are specially suitable as point-of-use dryers or in areas where there is no electrical power supply available. Due to the dew point suppression, membranes provide in combination with refrigerant dryers extreme low pressure dew points.

Membrane dryers make use of a small quantity of the compressed air as purge air. The quantity of purge air depends, among others, on the desired pressure dew point. In the model DMM, the membrane bundle is located in a pressure-resistant housing. This construction offers the possibility to interrupt the purge air flow by means of an optionally mounted solenoid valve, which can be operated from the compressor on-off contact.





Technical Data Deltech Membrane Dryers DMM and DMD Series							Option
Model	Inlet m³/h	Outlet m³/h	Connection in/out	Weight kg	Ø mm	Length mm	Inlet filter combination
DMM 1	2,4	2,0	R 3/8"	2,5	209	281	PF/HF 18
DMM 2	7,9	6,8	R 3/8"	2,8	209	387	PF/HF 18
DMM 3	16,4	13,9	R 1/2"	3,0	209	486	PF/HF 36
DMM 4	24,0	20,7	R 1/2"	3,6	209	696	PF/HF 36
DMM 5	42,0	35,8	R 3/4"	5,9	267	498	PF/HF 54
DMM 6	70,2	60,6	R 3/4"	6,2	267	696	PF/HF 54
DMM 7	117,0	99,0	R 1"	7,6	310	747	PF/HF 90
DMM 8	186,0	158,0	R 1"	15,9	346	885	PF/HF 90
DMM 9	240,0	205,0	R 1"	18,1	346	1040	PF/HF 90
DMD 20.1	2,6	2,3	R 3/8"	0,6	53	312	PF/HF 18
DMD 20.2	10,1	8,8	R 3/8"	0,8	53	671	PF/HF 18
DMD 20.3	15,8	13,9	R 3/8"	2,2	99	389	PF/HF 18
DMD 20.4	33,7	29,8	R 1/2"	3,1	99	683	PF/HF 36
DMD 20.5	56,1	49,6	R 1/2"	4,9	99	1041	PF/HF 36
DMD 20.6	110,0	97,0	R 3/4"	6,0	125	1050	PF/HF 54

The flow capacity is based on the intake volume of compressed air by the compressor at 20°C and 1 bar (a)

All data acc. to DIN 7183: Working pressure: 7 bar, Pressure dew point: +3°C, Working temperature 35°C

The technical data are for the dryers without filters.

A selection in case of divergent working conditions can be made using the following correction factors.

F1 Capacity factors* for different working pressure

4 bar	6 bar	7 bar	8 bar	9 bar	10 bar	11-14 bar
0,4	0,8	1	1,2	1,4	1,7	on request

F2 Capacity factors* for different working temperature

5°C	25°C	35°C	40°C	50°C	higher temp.
1,7	1,2	1	0,9	0,8	on request

F3 Capacity factors* for different pressure dew point

-40°C	-30°C	-10°C	+3°C	+10°C
0,4	0,5	0,7	1	1,1

*These data are approximate and may slightly vary from model to model.

*In case of deviation of more than one factor, the factors should be multiplied.

Selection formula: = $\frac{\text{Compressor capacity}}{F1 \cdot F2 \cdot F3}$

Design data:	Min.	Nom.	Max.	Purge air consumption for PDP:	+3°C	approx. 15%
Inlet pressure:	4 bar (g)	7 bar (g)	14 bar (g)		-10°C	approx. 17%
Inlet temperature:	5°C	35°C	66°C		-20°C	approx. 22%
Pressure dew point:	-40°C	+3°C	+10°C		-40°C	approx. 24%

- Techn cal details to change w thout notice -

Adsorption Dryers Euro Dry compact

Your benefits with Deltech® Euro-dry compact dryers

Easy maintenance: service and maintenance kits

Operational reliability: high quality components

Energy saving: low pressure drop



Deltech® ED desiccant compressed air dryers		2	3	5	7	10	17	23	36	55	72
Medium	: Compressed air	•	•	•	•	•	•	•	•	•	•
Dew point indication	: Optical colour change indicator	•	•	•	•	•	•	•	•	•	•
Drying system	: Twin tower adsorption	•	•	•	•	•	•	•	•	•	•
Regeneration system	: Heatless	•	•	•	•	•	•	•	•	•	•
Adsorption vessel material	: Aluminium	•	•	•	•	•	•	•	•	•	•
Housing material	: Carbon steel	•	•	•	•	•	•	•	•	•	•
	: Stainless steel	○	○	○	○	○	○	○	○	○	○
Housing surface treatment	: Epoxy finish	•	•	•	•	•	•	•	•	•	•
Colour	: RAL 9001 (white)	•	•	•	•	•	•	•	•	•	•
Inlet	: Lower left or right	•	•	•	•	•	•	•	•	•	•
Outlet	: Upper left or right	•	•	•	•	•	•	•	•	•	•
Desiccant	: Delsorb HQ-A4	•	•	•	•	•	•	•	•	•	•
Power supply	: 220V -240V 50Hz	•	•	•	•	•	•	•	•	•	•
	: 220V -240V 60Hz	•	•	•	•	•	•	•	•	•	•
	: 110V -120V 50Hz	•	•	•	•	•	•	•	•	•	•
	: 110V -120V 60Hz	•	•	•	•	•	•	•	•	•	•
	: Pneumatic (explosion proof)	○	○	○	○	○	○	○	○	○	○
Timer	: Electronic with memory	•	•	•	•	•	•	•	•	•	•
Noise level	: <78 dB(A) Leq	•	•	•	•	•	•	•	•	•	•
IP rating	: IP 23	•	•	•	•	•	•	•	•	•	•
	: IP 54	○	○	○	○	○	○	○	○	○	○
Mounting	: Wall mounting	•	•	•	•	•	•	•	•	-	-
	: Floor standing	-	-	-	-	-	-	-	-	•	•
Filters	: Deltech® pre- and afterfilter package	•	•	•	•	•	•	•	•	•	•

• standard
○ optional
- not applicable

Options may vary per country.

Design data	min	design	max	2	3	5	7	10	17	23	36	55	72
Inlet pressure*	4 bar(g)*	7 bar(g)	10 bar(g)*	•	•	•	•	•	•	•	•	•	•
	10 bar(g)*	14 bar(g)	16 bar(g)*	○	○	○	○	○	○	○	○	○	○
Inlet temperature*	+5°C*	+35°C	+50°C*	•	•	•	•	•	•	•	•	•	•
	-60°C*	-40°C	-20°C*	•	•	•	•	•	•	•	•	•	•
Pressure dew point*	-70°C*	-70°C		○	○	○	○	○	○	○	○	○	○
				•	•	•	•	•	•	•	•	•	•
Ambient temperature	+2°C	+25°C	+50°C	•	•	•	•	•	•	•	•	•	•
Relative humidity compressed air inlet		100%		•	•	•	•	•	•	•	•	•	•
Purge air consumption		15%		•	•	•	•	•	•	•	•	•	•

* Use the multipliers when the conditions are different from the design conditions. Refer to the table on the other side of this page.

Flair also issues a computer program capable of making the selection for you.

Filter- und Trocknertechnik GmbH

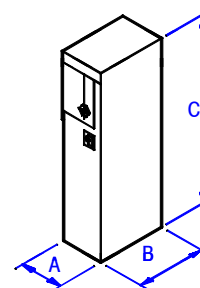
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Internet: www.fut-gmbh.de • e-mail: info@fut-gmbh.de

Model	Capacity*	Dimensions			Wei_ht	Connection	Pressure drop	El. power
		A	B	C				
	m ³ /h	mm	mm	mm	kg	" BSP	bar	W
ED 2	5.8	137	237	653	13	1/4	0.01	47
ED 3	9.7	137	237	653	13	1/4	0.02	47
ED 5	17.5	137	237	653	17	1/4	0.08	47
ED 7	22.4	137	237	941	19	1/4	0.11	47
ED 10	33.4	137	237	941	24	1/4	0.26	47
ED 17	56.1	198	368	824	37	3/4	0.07	47
ED 23	77.4	198	368	824	43	3/4	0.11	47
ED 36	120.9	198	368	1325	64	3/4	0.32	47
ED 55	183.1	477	415	1326	110	1 1/4	0.20	64
ED 72	241.4	477	415	1326	130	1 1/4	0.32	64

* Nominal dryer capacity according to DIN ISO 7183, pressure dew point -40°C

The capacity of the dryer is based on the intake volume of the compressor at 20 °C, 1 bar(a)



The following data can be used to convert the inlet air conditions to the required dryer capacities.

Capacity correction for different inlet pressures in bar(g)

bar(g)	4	5	6	7	8	9	10	11	12	13	14	15	16
Multiplier capacity	IP	0.47	0.65	0.88	1.00	1.08	1.14	1.20	For selection, consult your distributor				

Capacity correction for different inlet temperatures in °C

°C	+5	+30	+35	+40	+45	+50	
Multiplier capacity	IT	1.00	1.00	1.00	0.88	0.70	0.60

Capacity correction for different outlet pressure dew points in °C

°C	-10	-20	-30	-40	-50	-60	-70		
Multiplier capacity	ID	1.12	1.10	1.05	1.00	0.89	0.72	For selection, consult your distributor	

Example

Calculation:

Air volume (V1) at dryer inlet : 40 m³/h
 Inlet pressure (IP) : 10 bar(g)
 Inlet temperature (IT) : +40°C
 Outlet dew point : -40°C
 V2 : Required dryer capacity, corrected for 35°C, 7 bar(g)

$$V2 = \frac{V1}{IP * IT * ID} = \frac{40}{1.20 * 0.88 * 1.00} = 37.9 \text{ m}^3/\text{h}$$

Dryer model ED17 is suitable.

Adsorption Dryers Euro Dry

Your benefits with Deltech® Euro-dry dryers

Operational reliability: high quality components; pneumatic piston valves

Energy saving: low pressure drop, Energy Management System (optional)

Flexible and reliable due to proven technology

PED compliant



Standard models of the Deltech® ED desiccant compressed air dryers

		ED 48-ED 288	ED 360-ED 1785
Medium	: Compressed air	●	●
Drying system	: Twin tower adsorption	●	●
Regeneration system	: Heatless	●	●
Vessel code	CE/Directive/97/23/CEE (PED)	●	–
	Safety relief valves	○	○
Piping	: Threaded	●	○
	: Welded with DIN flanges	○	●
Adjustable regeneration air quantity		●	–
Humidity indicator		●	–
Maintenance free non-return valve		●	–
Coating	: RAL 9001 (white)	●	●
	Special surface treatment	○	○
Inlet	: Bottom section on the back	●	●
Outlet	: Top section on the back	●	●
Desiccant	: Delsorb HQ-A4	●	●
Power supply	: 230V 50 Hz	●	●
	Alternative electrical power supplies	○	○
	Full pneumatic control	○	○
Timer	: Electronic with memory	●	●
	PLC controlled energy management system	○	○
Noise level	: < 78 dB(A)	●	●
Standard silencers provided		●	●
IP rating	: IP 65	●	●
Location	: Indoors	●	●
Mounting	: Floor standing; anchor holes provided	●	●
Filters	: Deltech® pre- and after filters mounted to the dryer	○	○
For optimum performance, Deltech® pre- and after filters should be used			

- standard
- optional
- not applicable

Design data

	min.	design	max.	ED 48-ED 288	ED 360-ED 1785
Inlet pressure*	4 bar(g)	7 bar(g)	10 bar(g)	●	●
Inlet temperature*	+5°C	+35°C	+50°C	●	●
Pressure dewpoint*	-70°C	-40°C	-20°C	●	●
Ambient temperature	+5°C	-	+50°C	●	●
Relative humidity inlet air		100%		●	●
Purge air consumption % of nominal inlet capacity at 7 bar(g)		15%		●	●

Max. inlet pressure 16 bar(g)
available as option

* Use the correction factor when the conditions are different from standard. Refer to the graph on the other side of this page.

Model	Capacity		Dimensions			Weight	Connection		Power cons.
	m ³ /h	mm	mm	mm	kg		"BSP	mm DIN	
	*	A	B	C			flanges	kW	
ED 48	160	750	750	1955	190	1	-	0.06	
ED 81	270	750	1150	1970	310	1½	-	0.06	
ED 129	430	750	1150	1990	425	1½	-	0.06	
ED 183	610	750	1150	1990	585	1½	-	0.06	
ED 220	735	750	1150	1990	685	2	-	0.06	
ED 288	960	750	1150	2000	755	2	-	0.06	
ED 360	1200	1300	1500	1930	800	-	80	0.06	
ED 445	1490	1400	1500	1950	1000	-	80	0.06	
ED 540	1800	1450	1500	2070	1200	-	80	0.06	
ED 635	2120	1500	1500	2090	1360	-	80	0.06	
ED 750	2500	1700	1500	2190	1570	-	100	0.06	
ED 865	2880	1750	1700	2220	1810	-	100	0.06	
ED 1135	3790	1900	1950	2300	1955	-	100	0.06	
ED 1785	5950	2040	2400	2500	2420	-	150	0.06	

* Nominal dryer capacity according to DIN ISO 7183, pressure dew point -40°C

The capacity of the dryer is based on the intake volume of the compressor at 20 °C, 1 bar(a)

Above listed dryer capacities are based on standard operating conditions:

Pressure at dryer inlet : 7 bar g
 Temperature at dryer inlet : 35°C
 Pressure dewpoint at dryer outlet : -40°C

Deviations of these operating conditions might effect the performance of the dryer.

To calculate the dryer capacity under the "worst case" operating conditions (lowest inlet pressure, highest inlet temperature, lowest required pressure dewpoint) use the correction graph.

Selection example:

Pressure at dryer inlet : 4 bar g
 Temperature at dryer inlet : 45°C
 Pressure dewpoint at dryer outlet : -20°C

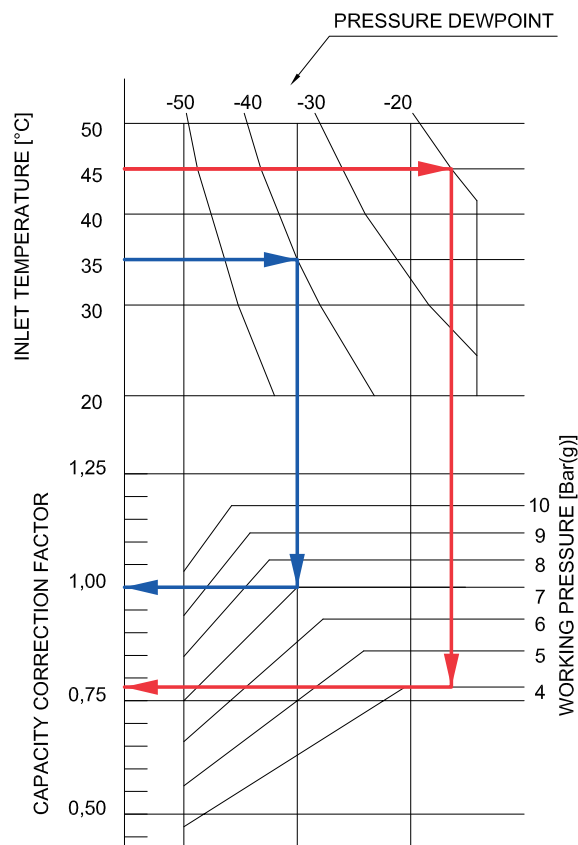
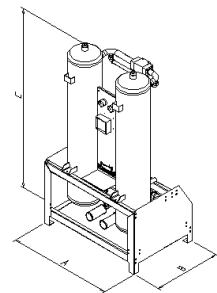
Following the red arrows from 45°C to -20°C then down to the 4 barg line, we find a correction factor of 0,78.

The dryer capacity will be reduced down to 78% of the max. dryer capacity.

The blue arrows show a correction factor 1 for standard operating conditions.

How to select the right dryer:

$$\frac{\text{Compressor capacity}}{0,78} = \text{required dryer capacity}$$



- Techn cal details to change w thout notice -

EnergieManagementSystem (EMS)

für Adsorptionstrockner



Die Baureihe der kaltregenerierenden **Deltech ZW / Eurodry** – Adsorptionstrockner hat sich als sehr zuverlässig im oft harten Alltagseinsatz erwiesen.

Bei Leistungen von 160 bis 4450 m³/h werden sichere Drucktaupunkte von –40 °C oder optional bis –70 °C erreicht.

Um das System noch effizienter zu gestalten, kann es mit einem EnergieManagementSystem (EMS) ausgerüstet oder auch nachgerüstet werden.

Beladungsabhängige Steuerung

Je nach Belastung des Trocknersystems ist es nicht notwendig, immer im gleichen Zeitintervall, eine komplette Regenerationsphase des Trockenmittels durchzuführen. Durch die Messung der Restfeuchtigkeit am Druckluftaustritt, regelt das EMS selbstständig, wann eine Regeneration durchgeführt werden muss. Das EnergieManagementSystem reduziert dadurch den Energieverbrauch für die Regeneration auf ein Minimum, welches benötigt wird, um den geforderten Drucktaupunkt zu gewährleisten.

Das EnergieManagementSystem EMS 2 ist ein digitales System mit digitaler Anzeige und anwenderfreundlichen Zusatzfunktionen.

Anwenderfreundlich

Das EMS 2 lässt sich einfach und zuverlässig bedienen, es verfügt über ein Display, über welches der Betreiber ständig die aktuellen Betriebsdaten des **Deltech ZW / Eurodry** Adsorptionstrockners abfragen kann.

Höchste Zuverlässigkeit

Da das EnergieManagementSystem EMS 2 ständig den Drucktaupunkt am Druckluftaustritt überwacht und auswertet, ist es das zur Zeit zuverlässigste System.

Einfache Nachrüstung

Da das System EMS 2 exakt auf die Baureihe **Deltech ZW / Eurodry** abgestimmt ist, lassen sie sich sehr einfach in schon bestehende Adsorptionstrockner integrieren. Sie fügen sich absolut in den Aufbau und das Design ein.

Wenn Sie weitere Details erfahren wollen, dann beraten wir Sie gerne.

- Technische Details unter Vorbehalt -

Adsorption Dryers MWE



Your benefits with Deltech® MWE dryers

Operational reliability: high quality components

Energy saving: low pressure drop



Standard models of the Deltech® MWE desiccant compressed air dryers		74 - 308	385 - 1284
Medium	: Compressed air	•	•
Drying system	: Twin tower adsorption	•	•
Regeneration system	: Internal heat regenerated, with control thermostats	•	•
Vessel code	: CODAP 90-C-0.7, Service de Mines	•	•
	All European pressure vessel codings	○	○
	Safety relief valves	○	○
Piping	: Threaded	•	○
	: Welded with DIN flanges	○	•
Coating	: RAL 9001 (white)	•	•
	Special surface treatment	○	○
Inlet	: Bottom section on back side	•	•
Outlet	: Top section on back side	•	•
Desiccant	: Delsorb HQ-A4	•	•
Power supply	: main power 400V 50Hz 3 phases	•	•
	control voltage 230V 50Hz 1 phase	•	•
	main switch lockable	•	•
	Alternative electrical power supplies	•	•
Timer	: Cam switch	•	•
	Energy management systems	○	○
Noise level Standard silencers provided	: < 70 dB(A) LEQ	•	•
IP rating	: IP 43	•	•
	IP 54 for control box	○	○
Location	: Indoors	•	•
Mounting	: Floor standing; anchor holes provided	•	•
Filters	: Deltech® pre- and afterfilters mounted to the dryer	○	○

For optimum performance, Deltech® pre- and afterfilters should be used.

• standard
○ optional
- not applicable

Design data	minimum	design	maximum	74 - 308	385 - 1284
Inlet pressure	4 bar(g)*	7 bar(g)*	10 bar(g)*	•	•
	10 bar(g)*	14 bar(g)*	16 bar(g)*	○	○
Inlet temperature	+5°C*	+35°C*	+50°C*	•	•
Pressure dew point		-40°C		•	•
Ambient temperature	+5°C	-	+50°C	•	•
Relative humidity inlet air		100%		•	•
Purge air consumption % of nominal inlet capacity at 7 bar(g)		2.2%*		•	•

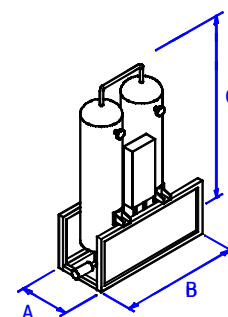
* Use the multipliers when the conditions are different from standard. Refer to the table on the other side of this page.

Flair also issues a computer program capable of making the selection for you.

Model	Capacity	Dimensions			Weight	Connection		Power consumption	
	m ³ /h *	mm A	mm B	mm C	kg	"BSP	mm DIN flange	kW average	kW installed
MWE 74	245	450	760	2170	300	1	-	1.7	3.6
MWE 120	400	500	1000	2280	450	1 1/2	-	2.7	5.4
MWE 196	653	550	1050	2620	670	1 1/2	-	3.6	7.2
MWE 236	785	600	1200	2750	800	2	-	4.5	9.0
MWE 308	1026	650	1250	2750	950	2	-	5.4	10.8
MWE 385	1282	700	1400	3050	1300	-	80	7.2	14.4
MWE 575	1916	800	1550	3050	1900	-	80	10.8	21.6
MWE 675	2250	900	1650	3050	2110	-	80	12.6	25.2
MWE 801	2670	950	1850	3175	2400	-	100	14.4	28.8
MWE 1077	3590	1050	1950	3175	3100	-	100	18.9	37.8
MWE 1284	4280	1100	2000	3175	3400	-	100	22.5	45.0

* Nominal dryer capacity according to DIN ISO 7183, pressure dew point -40°C

The capacity of the dryer is based on the intake volume of the compressor at 20°C, 1 bar(a)



The following data can be used to convert the inlet air conditions to the required dryer capacities.

Capacity correction for different inlet pressures in bar(g)

bar(g)	4	5	6	7	8	9	10	11	12	13	14	15	16
Multiplier capacity	IP	0.63	0.75	0.88	1.00	1.12	1.25	1.37	For selection, consult your distributor				

Capacity correction for different inlet temperatures in °C

°C	+5	+30	+35	+40	+45	+50	
Multiplier capacity	IT	1.00	1.00	1.00	0.60	0.38	0.25

Example

Air volume (V1) at dryer inlet : 900 m³/h
 Inlet pressure (IP) : 10 bar(g)
 Inlet temperature (IT) : +40°C
 V2 : Required dryer capacity, corrected for 35°C, 7 bar(g)

Calculation:

$$V2 = \frac{V1}{IP * IT} = \frac{900}{1.37 * 0.60} = 1095 \text{ m}^3/\text{h}$$

Dryer model MWE 385 is suitable.

- Techn cal details to change w thout notice -

Performance

- Fully automatic and continuous operation
- Skid provided with foundation holes
- Two pressure vessels with filling and removal parts
- Blower with electric motor
- Sheet steel control box manufactured to IP-54
- Two temperature indicators on top of the adsorbers
- Two pressure indicators with block valves
- Pressurizing system to be used before switching over
- Compressor start/stop contact for extension of the drying period
- PLC operation, with the following features:
 - locking of the status of the program at control voltage switch off or power failure
 - fast run of the program to check the sequence
 - reset possibility of the program
- Electrical heater with control thermostat
- Heat insulation of heater, vessels and hot piping, 50 mm glasswool covered with aluminium sheet, 1 mm thick
- Terminals for remote general alarm
- Painting Epoxy enamel 70 µm, colour RAL 9001 white
- Piping Carbon steel
- Pilot airlines Copper

Options

- Pressure dewpoint -70°C (see DB-LD leaflet)
- Various power supplies
- Pre and after filters
- Energy savings
 - * Dewpoint change-over
 - * Steam regeneration
- Operation safety features
 - * Limit switches
 - * Pressure control device
- Maintenance features
 - * By-passes
 - * Outdoor location adaptations
 - * Instrumentation

Standard working conditions

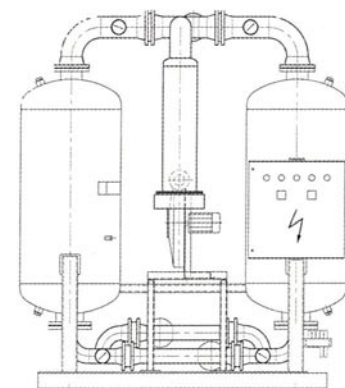
- Pressure dewpoint : -40°C
- Nominal inlet pressure : 7 bar g*
- Inlet temperature : +35°C
- Relative humidity : 100%
- Power supply : 400V-3-50Hz

* Use the multipliers when the conditions are different from these. Refer to the tables on the other side of this page.

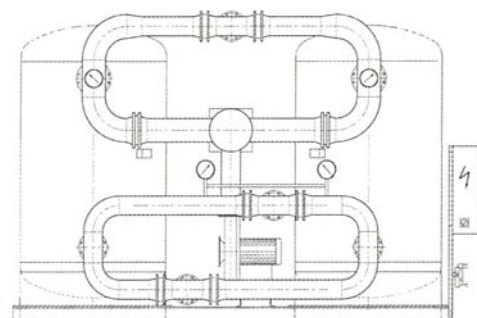
Design data

- Inlet pressure : minimum 5 bar g
 : maximum 10 bar g
- Inlet temperature : minimum +5°C
 : maximum +45°C
- Ambient temperature : minimum 0°C
 : maximum +40°C

Desiccant Dryers DB



Delair® DB 22-30



Delair® DB 31-35

delair® DB Compressed Air Dryers

Model	Capacity	Dimensions (mm)			Weight	Connection*	Rating, kW		Max. kWh***
	m ³ /min**	Length	Width	Height	kg	mm	Reg. fan	Heater	per hour
DB-22	10.8	1900	1480	2870	1300	DN 50	3	8.1	5.9
DB-23	16.3	1950	1540	2905	1600	DN 50	3	12.0	8.9
DB-24	25.3	2300	1590	2985	1950	DN 80	3	18.3	13.1
DB-25	32.8	2400	1640	2864	2150	DN 80	3	23.4	16.5
DB-26	43.0	2700	1730	2972	2700	DN 80	5.5	30.6	21.3
DB-27	54.8	2800	1840	2972	3250	DN 100	5.5	38.7	26.7
DB-28	72.2	3350	1695	3136	4200	DN 150	5.5	51.0	35.7
DB-29	93.5	3550	2180	3220	5400	DN 150	7.5	66.3	46.5
DB-30	115.8	3800	2280	3327	6900	DN 150	7.5	81.6	57.5
DB-31	140.2	5070	2190	2800	8200	DN 150	11	100.8	70.3
DB-32	158.2	5270	2360	3050	9800	DN 200	11	113.4	78.7
DB-33	183.7	5370	2445	3050	11000	DN 200	11	132.3	92.8
DB-34	201.5	5470	2550	3050	12000	DN 200	11	144.9	101.2
DB-35	228.7	5670	2643	3100	13500	DN 200	15	163.8	113.8

* Connections available in ANSI and DIN

** at 1 bar a and +20 C

*** Average power consumption at full load at design conditions and cycle 2 x 6 hours

The following data can be used to convert the inlet conditions to the required dryer capacities

Multiplier for various inlet temperatures (°C) and inlet pressure (bar g)

Inlet temperature (°C)	Inlet pressure (bar g)					
	5	6	7	8	9	10
30	0.97	1.13	1.30	1.49	1.62	1.78
35	0.69	0.85	1.00	1.12	1.25	1.37
40	0.43*	0.60	0.74	0.85	0.95	1.02

* pressure dewpoint of -30 C

Lower and higher inlet pressure, higher inlet temperature, higher capacity and lower dewpoints on request.

Example:

Capacity : 55 m³/min
 Inlet pressure : 8 bar g
 Inlet temperature : +40°C
 Pressure dewpoint : -40°C
 V1 : Actual capacity at revised conditions
 V2 : Actual capacity (at 1 bar a/20°C)

Calculation:

$$V1 \frac{V2}{\text{multiplier}} = \frac{55}{0.85} = 64.7 \text{ m}^3/\text{min}$$

Dryer model delair® DB-28 is suitable.



HybriDryer





Synergy results in economic

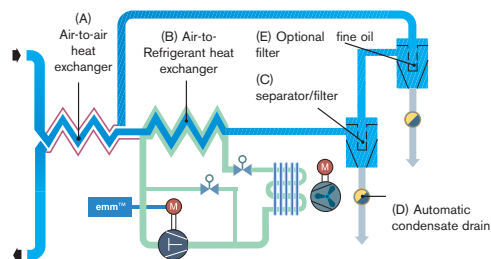
Compressed air for highest requirements

Certain production processes such as instrument air, air for pneumatic control systems and process engineering solutions, feed air for the transport of powdery materials in the chemical, pharmaceutical and food processing industries etc. require dependably treated, high-quality compressed air – technically oil-free and very dry – with pressure dew points of under 0°C down to -40°C.

If the compressed air is channeled through extensive pipe networks or in areas exposed to ambient weather conditions, disturbances due to frozen condensate are – especially in winter time – the order of the day.

Until now the economical treatment of a dew point under 0°C was only achievable by using desiccant dryers. For capacities over 1000m³/h mostly heated regenerative desiccant dryers (blower purge dryers) were used, which, in comparison to heat-less regenerative desiccant dryers, are more cost-effective.

Ways to compressed air treatment



The principle of the refrigerated compressed air dryer

They are used in areas, where the compressed air network is exposed only to temperatures above the freezing point.

Warm, saturated compressed air is firstly being cooled down via an Air-to-Air heatexchanger (A) and than further cooled down in an Air-to Refrigerant heatexchanger (B), which is being controlled by a expansion valve. The water vapor condenses into liquid and is than separated from the compressed air stream in the cyclone/demister separator/filter (C) and discharged by the fully automatic condensate drain (D).

The cool, dry air is now being used to cool the warm incoming compressed air by means of the Air-to-Air heat exchanger (A).

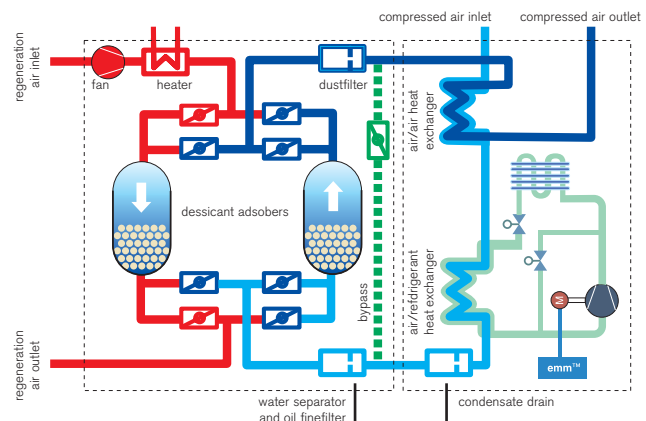
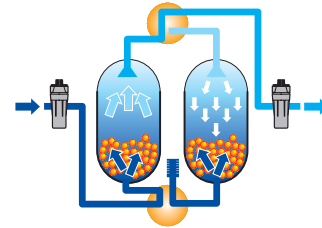
The principle of the desiccant dryer

Desiccant dryers are being used, when the compressed air system is exposed to temperatures below the freezing point or when a particularly low dew point is required for a specific applications.

The air is channeled through a vessel filled with an adsorption media (activated Alumina), where the water vapor is being captured at the surface of the adsorbent.

These drying agents can be regenerated and used again and again. The dryers have two desiccant vessels.

The compressed air supply is being controlled, so that only one vessel dries, whereas the other vessel is being regenerated. Heated regenerative desiccant dryers (blower purge dryers) are being regenerated using a blower and mostly an electric operated heater.



The HybriDryer unites all advantages

The DELTECH Hybriddryer is a combination of a refrigeration dryer and a heated regenerative desiccant dryer. The saturated compressed air first enters the refrigeration dryer, it is cooled down to +3°C and the water vapor is condensed. The condensate is then separated from the compressed air flow in the separator filter.

After that the air leaves the refrigeration dryer circulation. The absolute temperature and the dew point are still at +3°C and the relative humidity is 100%! - the ideal condition of the adsorbent is achieved!

The compressed air is then introduced into the desiccant dryer, where it is dried to dew points of -25°C to -40°C.

The still cold compressed air is then supplied to the integrated air-to-air heat exchanger and thus cools the inflowing compressed air.

An ambient air temperature controlled bypass in the combination makes it possible to bypass the desiccant dryer during the summer period and only use it in the winter time, as required. Thus the slightly higher investment costs justify themselves even more clearly by the considerably lower operating expenses.

Technical advantage: the DELTECH HybriDryer Series

All the advantages of the HybriDryer at a glance

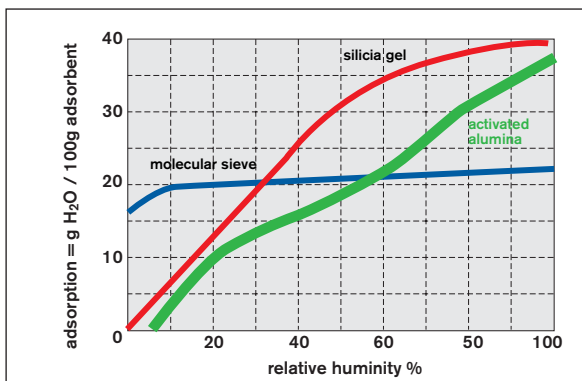


Flexible

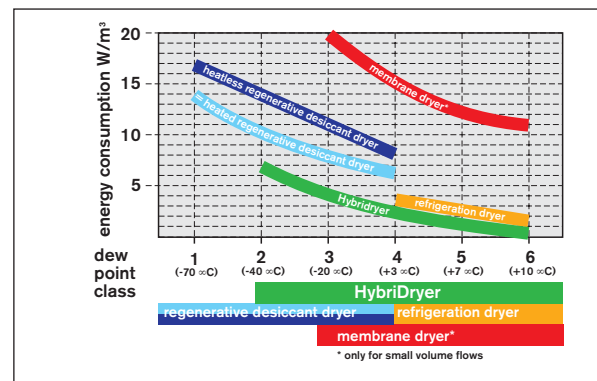
Environmentally friendly

Economical

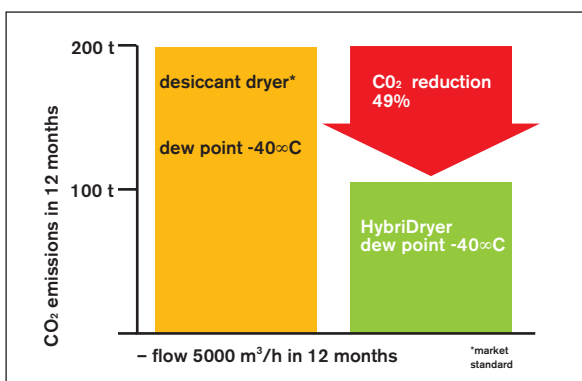
- Low operating expenses in comparison with heated regenerative desiccant dryers
- Selectable summer/winter operation (+3°C / -25°C / -40°C)
- Constant pressure dew point
- No temperature or dew point peaks during switch over
- No loss of compressed air
- Efficient finest oil filtration at the coolest point
- Extended lifetime of the adsorbent through extremely low regeneration temperatures
- Optimal outlet temperatures
- Volume flows of 1200 to 9000 m³/h (higher capacities upon request)
- Lowest operating expenses



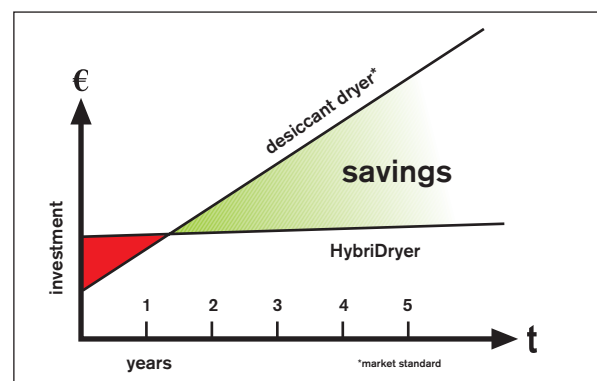
ideal condition for the adsorbent activated alumina



dew point classes and their energy requirements



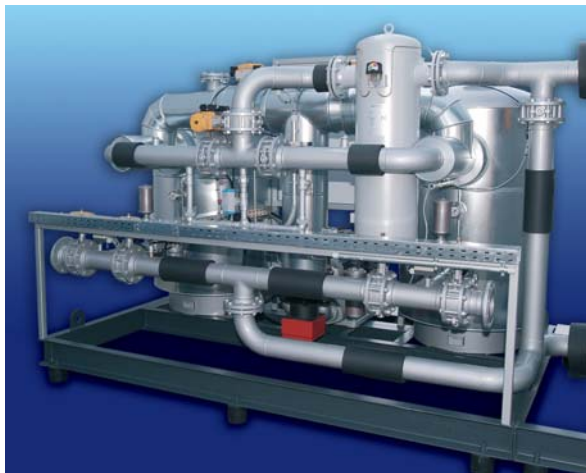
CO₂ reductions with the HybriDryer



cost savings with the HybriDryer



Deltech



The desiccant dryer section displaying the bypass for "summer/winter" operation



The refrigeration dryer section of the HybriDryer with the refrigeration specifics

Technical Data

					operation +3°C	operation -40°C
DHD 400	1200	4300	2250	1550	3,1	5,7
DHD 500	1500	4300	2250	1550	4,3	7,5
DHD 670	2000	4600	2250	1900	6,7	10,8
DHD 835	2500	4600	2250	1900	7,5	12,4
DHD 1000	3000	4600	2250	1900	9,4	15,7
DHD 1335	4000	4600	2250	1900	11,5	19,4
DHD 1670	5000	5150	2600	3250	11,5	21,2
DHD 2000	6000	5150	2600	3200	13,8	25,4
DHD 2335	7000	5500	2600	3600	15,3	28,6
DHD 2670	8000	5500	2600	3600	17,7	32,7
DHD 3000	9000	5550	2600	3700	20,0	35,7

Volume flow acc. to VDI 2045 for suction conditions +20°C and 1 bar absolute, operating pressure 7 bar, compressed air inflow temperature +35°C, ambient temperature +25°C, power connection 400/3/50

Subject to technical alterations

Deltech Hybridryer

Deltech introduces an innovative compressed air filter- and dryer system, which will reduce energy consumption by more than 50%. A perfect combination and integration of refrigerant- and adsorption-technologies offers highest efficiency. This unique system adapts automatically to changing demands in both compressed air and pressure dew point. The enormous potential in energy savings allows the replacement of existing adsorption dryers (both heatless- or heat- reactivated) with very short pay-back time.



**Energy saving-CO2 reduction!
Modern technology!
Reliable Quality and Performance!**

These are the key issues to which new industrial developments are measured. In compressed air systems where the quality demands of the application (ref. to ISO 8573-1 class 1 to 7) often requires high investments and implementation of the wrong technologies will result in excessive operational- and service- costs. In order to meet required quality standards drying and filtration of compressed air are unavoidable. Only the right choice of equipment to this purpose will increase the efficiency and economical use of the compressed air installation.

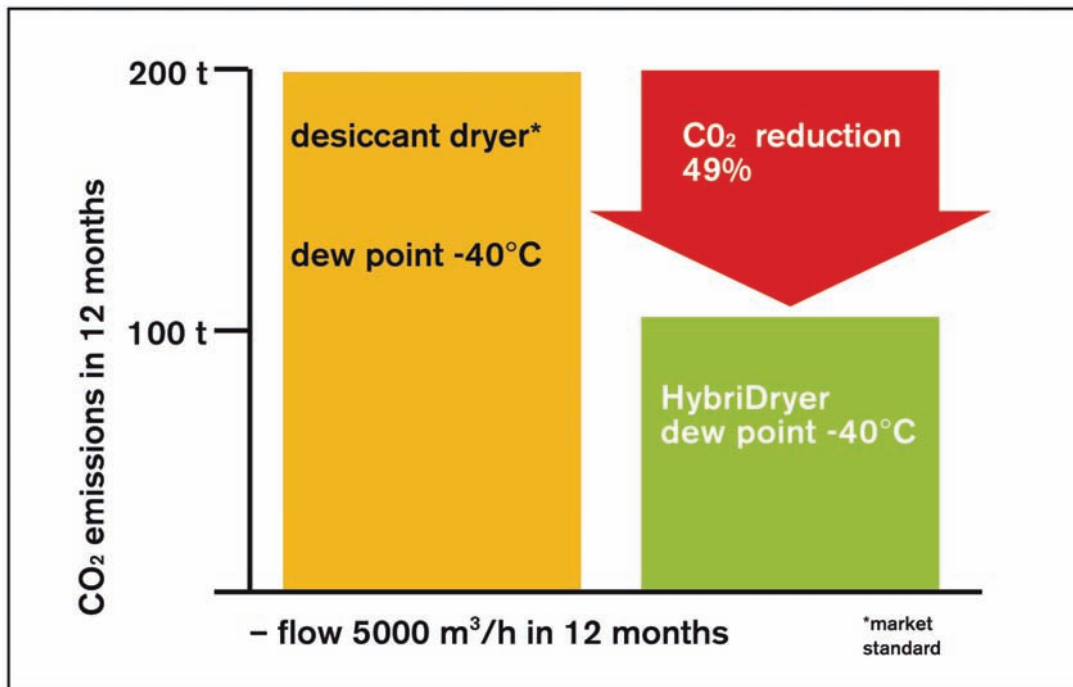
Quality Class	Dust filtration μm	Oil filtration mg/m^3	Pressure dew point $^{\circ}\text{C}$	Water content gr/m^3
1	0,1	0,01	-70	0,003
2	1	0,1	-40	0,12
3	5	1	-20	0,88
4	15	5	3	6
5	40	25	7	7,8
6	-	-	10	9,4
7	-	-		
Not specified			35	39

Compressed air quality according to ISO 8573-1

In many cases the selection of the right compressor from the right manufacturer is given much more attention than the selection of the required air treatment equipment. Unfortunately for many compressor vendors, the prime consideration is selling the compressor. The level of knowledge of filtration and drying often does not match the priority which should be given to this subject.

The energy consumption of the air treatment package can vary from 5% (Class 4 air quality) to 30% (Class 1 air quality), depending on the technology used. In view of the fact that compressor manufacturers compete with energy-saving arguments of far below 5% over their competitors, it is obvious that the “real” savings are to be made with the right selection of the air-treatment equipment.

Deltech has over 60 years of experience in developing filtration- and drying- systems for compressed air. With the newly developed Hybrid system, **Deltech** offers a package which suits most industrial applications, offering the highest possible economical use. Hybrid technology will offer an important contribution to today's *desire* and *obligation* for energy savings and CO₂ reduction.



CO₂ reductions with the HybriDryer

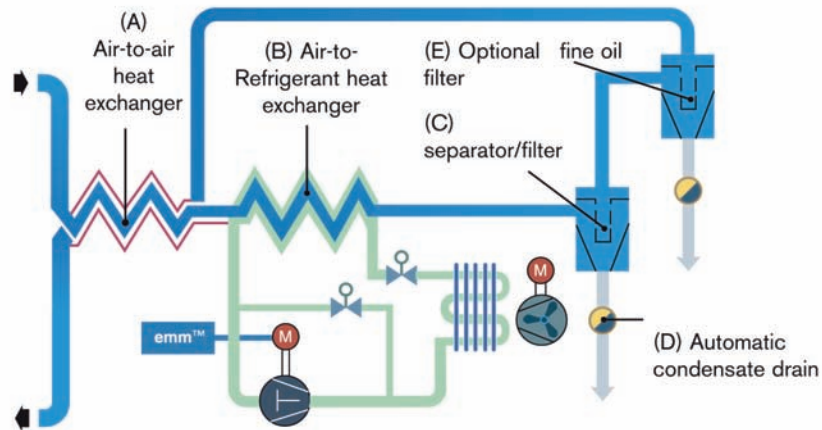
Basic requirement

Many industrial processes (e.g. instrument air, pneumatic cylinders and valves, conveying of powder or granular matter, or other chemical, pharmaceutical and food production processes) demand a relatively high compressed air quality, which means free from oil and particles and with a pressure dew point as low as -40°C.

In all compressed air installations condensation of remaining water vapour must be avoided. While under “summer conditions” a pressure dew point of +3°C can be sufficient, remaining water vapour might condense and freeze under “winter conditions”. Freezing condensate will cause costly problems to products, processes and equipment. Hybrid technology adapts to these requirements by offering the required pressure dew point (as low as -40°C) matching most process- and ambient- conditions.

Refrigeration dryers

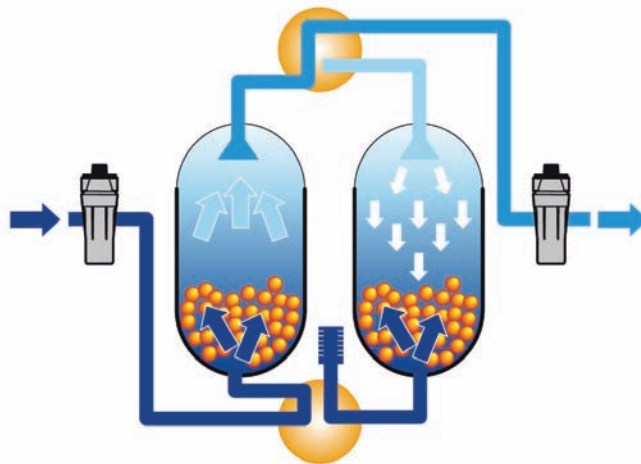
provide 3°C pressure dew point and use about 2% of the compressor power consumption. It is however not possible to use this pressure dew point under “winter conditions”.



Schema: Refrigeration dryer.

Adsorption dryers

So far pressure dew points below 0 °C could only be achieved by using standard adsorption technology, whereby the regeneration of the saturated adsorbents require about 15% of the compressor capacity (for heatless systems) or about 8% of the compressor power consumption (for heated systems). The energy saved by means of heated regeneration justifies the somewhat higher investment with a short pay-back time.



Schema: Adsorption dryer.

Combining technologies

A simple calculation shows the basic logic of combining a refrigerant system with an adsorbent system:

- Compressed air at 35°C (standard to ISO 7183) contains 39 gr. of water vapour.
- Compressed air at 3°C (standard to ISO 7183) contains 6 gr. of water vapour.
- Compressed air at -40°C (standard to ISO 7183) contains 0,12 gr. of water vapour.

Below an example for drying 2,500 m³/h of compressed air at 7 bar (g) and 35°C.

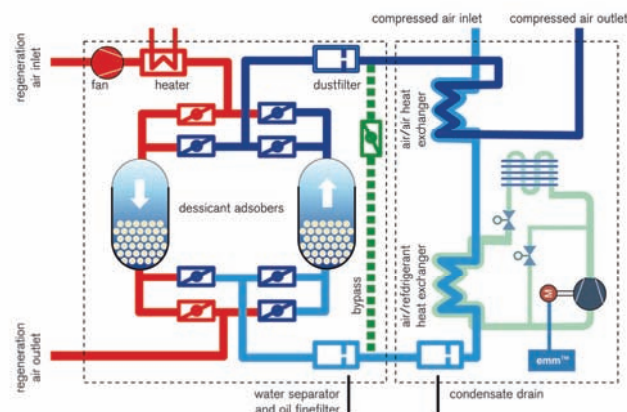
1. Drying to a pressure dew point of +3°C using a refrigeration dryer.
The energy consumption of the dryer is approx. 5 kW.
The reduction of water vapour content is 39 – 6 = 33 gr.
The energy consumption per gram of water reduction is 5 : 33 = 0,15 kW/gr.
2. Drying to a pressure dew point of -40°C using a heat regenerated adsorption dryer.
The energy consumption is approx. 20,6 kW.
The reduction of water vapour content is 39 – 0,12 = 38,88 gr. Energy consumption per gram of water is 20,6 : 38,88 = 0,53 kW/gr., which is 3,5 times higher compared to refrigeration systems.
3. Using the combination of refrigeration dryer and an adsorption dryer will result in following energy consumption:
Refrigeration dryer uses 5 kW. Remaining water vapour content is 6 grams.
The adsorption dryer removes 5,88 grams and uses 5,88 x 0,53 kW = 3,1 kW.
Total energy consumption of the combination is 5 kW + 3,1 kW = 8,1 kW.

Conclusion

Providing a pressure dewpoint of -40°C using only an adsorption dryer costs 20,6 kW.
Providing a pressure dewpoint of -40°C using the combination costs 8,1 kW.

The logic consequence would be a combination of the two drying systems, where pre-drying is done with a refrigeration dryer and the final pressure dew point of -40°C is reached with an adsorption dryer. This principle is not new and already in use in many applications.

The **Hybrid technology** is a further development of this principle, where both systems are integrated. As shown in the schema below, the refrigeration system supplies cold (+3°C) compressed air to the adsorption dryer. The adsorption process shows its highest efficiency when the compressed air is cold (+3°C) and fully saturated (R.H. is 100%). Since 85% of the water content has been removed by the refrigerant dryer, the adsorption dryer only needs to remove the remaining 15%, under ideal process conditions. This allows long adsorption times using an adsorption dryer of reduced size. After the adsorption process the cold dry air (-40°C pressure dew point) is led back to the air/air heat exchanger of the refrigerant dryer, where it is reheated to 27°C.



Schematic Hybridryer.

Before entering the adsorption dryer, the cold air flows through a high-efficiency demister/water separator and through a 0,01 micron oil fine-filter. At this low filtration temperature the efficiency of the oil fine-filter is about 10 times higher than at a filtration temperature of 20°C. Before entering back into the refrigeration dryer the air is cleaned from desiccant dust particles in a 1 micron dust filter.

Energy Management

Further savings are automatically achieved whenever the operating conditions become more favourable. In case the air capacity or the inlet temperature is reduced, the energy management systems on both the refrigerant dryer and the adsorption dryer adapt their drying capacity immediately. For this purpose the refrigerant dryer is equipped with digital scroll technology, which controls the cooling capacity of the refrigerant system. The adsorption dryer is equipped with a dew point controller, which measures the saturation degree of the adsorbing material and starts the regeneration cycle as required.

Dew point Selection

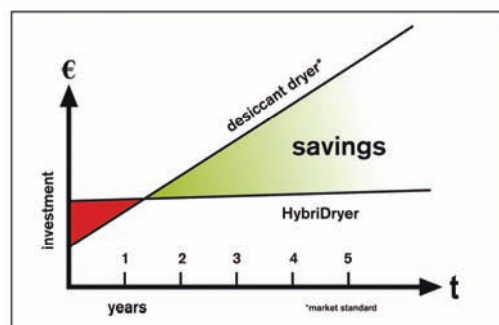
Hybridryers offer the user the possibility of selecting his required pressure dew point. Under “winter conditions” the pressure dew point of the adsorption dryer can be selected from between -25 and -40°C.

A real Highlight of the Hybridryer is the selection of the “summer” mode.

The adsorption dryer can be bypassed so that the refrigeration dryer provides +3°C pressure dew point without using energy for the adsorption dryer. Operation of the bypass can also be done automatically by using an ambient temperature sensor (optional).

The following summary shows the extraordinary advantage of the Hybrid technology and the savings which can be achieved by the synergy of this combination:

- Lowest operating cost compared to standard adsorption dryers (heatless and heat regenerated)
- Winter/Summer selection mode offers significant saving potential.
- Constant and selectable pressure dew point.
- Efficient cooling of the regenerated adsorber by means of 1% cold compressed air, thus avoiding temperature- and dew point spikes at cycle changeover.
- Most efficient oil fine filtration by „Cold Coalescing“ filter.
- Extended desiccant life time due to low regeneration temperature (only 130°C) and very long adsorption time (min. 8 hours).
- Automatic energy reduction using Digital Scroll Technology and dew point-controlled adsorption time under low-load conditions.
- Compact skid-mounted design, saving floor space and allowing container packaging.
- The important savings in energy consumption measured against the relatively low investment cost enable a very short pay-back time for this state-of-the-art air treatment package.

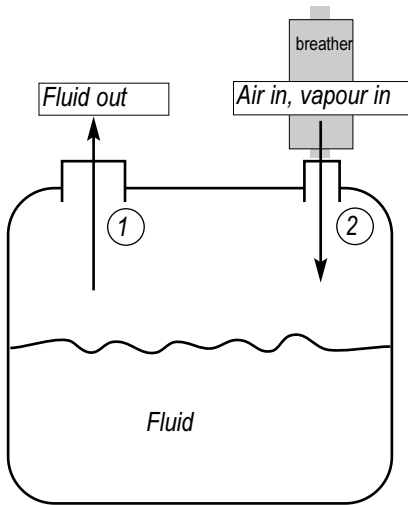
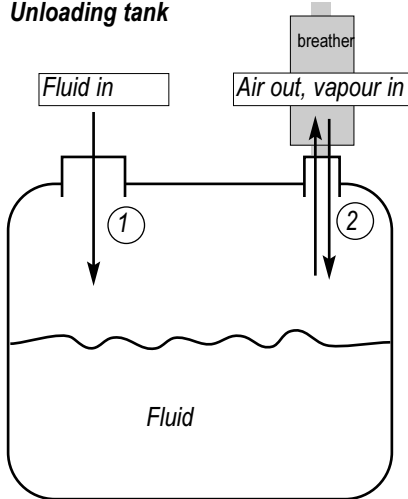


cost savings with the HybridDryer

Schema: Energy savings versus investment cost.

Deltech designs and produces Hybrid packages in their production facilities in Moers/Germany. Hybrid dryers contribute to energy and CO₂ reducing programs and are subsidized in many European countries. Please check your local authorities for support programs.

Desiccant Breathers


Unloading tank

Loading tank

Delair is the world's most experienced manufacturer of air treatment products. With more than 60 years' experience in the design and development of compressed air, atmospheric air and gas conditioning equipment, the comprehensive range of Delair® products can take care of all your air and gas treatment needs. From standard refrigerated dryers, desiccant dryers, filters and atmospheric air dryers to turnkey systems for projects and full-service contracts. With brands such as Delair®, Deltech® and Dollinger®. Equally important, with these brands you are assured of quality: Delair® has an ISO 9001 certification. Delair is a member of United Dominion Industries, a conglomerate of industrial manufacturing companies with more than 12,000 employees.

Breathers are widely used on tanks, that contain valuable fluids like oil or petrol. A tank has two openings: one to load and unload and one airhole, to prevent a vacuum. The breather is placed on this opening (see picture opposite). During loading and unloading of the tanks, air can enter the closed system via opening 2. Due to temperature changes moisture vapor will appear in the tank. A breather prevents moisture from entering any vented closed system operating at atmospheric pressure, as entering air passes through the breather and moisture vapour is adsorbed.

The saturation-degree of the desiccant is indicated by colour change. Delair offers a series of breathers available in a wide range of capacities.

Technical specifications

Modell	Dimensions	Quantity desiccant	Connection	Max. flow	Art.no.
AK-100	85 x 210 mm	0.6 kg	¾"	400 l/hr	0138285
AK-250	150 x 340 mm	1 kg	¾"	1250 l/hr	0138293
AK-500	240 x 540 mm	12.5 kg	¾"	7500 l/hr	0135499
AK-500 stainless steel	240 x 540 mm	12,5 kg	¾"	7500 l/hr	P/0135499

Larger models available on request.



- Technical details to change without not ce -

Activated Carbon Filters for Oil-Water Separators



Suitable for oil-water separators of many manufacturers:

- Alup (Aquamat)
- Atlas Copco (OSD / OSW)
- Beko (Öwamat)
- Boge (Öwamat / Ökomat)
- Domnick Hunter (H2 Oil-X / ES)
- Ecoair (TS)
- Gardner Denver
- Hankison (HS)
- Hiross
- JORC (Enviro / Puro mini)
- Kaeser (WO / Aquamat)
- Ultrafilter (Ultrasep)
- Wortmann (WO / Drukomat)
- Sabroe (Divisor / SAB)
- Schneider (Öwatec)
- Zander (Ecosep S / WT / SL)

Our filterbags are a competitively priced alternative to the originals

Optimum activated carbon quality
Strong filter material, specifically shaped and sewed for each model
100 % quality control

Converting List Alternative Elements

(March 2011)

BEKO Öwamat	BOGE Öwamat	ATLAS COPCO OSW	KAESER Aquamat	ECOAIR TS	SCHNEIDER Öwatec	Lieferumfang Delivery range	Artikelnr. Part No.
Öwamat 1 u. 2	Öwamat 1 u. 2	OSW 5 u. 11	Aquamat 1 u.2		Öwatec 10/40	1 x AK; 1 x VF	9000001
Öwamat 3	Öwamat 3		Aquamat 3	TS 3		1 x AK	9000003
Öwamat 4	Öwamat 4	OSW 30	Aquamat 4	TS 4	Öwatec 130	1 x AK; 1 x VF	9000004
Öwamat 5	Öwamat 5		Aquamat 5	TS 15		2 x AK	9000005
Öwamat 5R	Öwamat 5R	OSW 55	Aquamat 5R		Öwatec 175	1 x AK; 1 x VF	9000040
Öwamat 6	Öwamat 6	OSW 110	Aquamat 6	TS 16	Öwatec 250	2 x AK; 1 x VF	9000006
Öwamat 8	Öwamat 8	OSW 315	Aquamat 8			2 x AK; 1 x VF	9000007
Öwamat 20	Öwamat 20		Aquamat 20	TS 60		1 x AK	9000008
		OSD 90					9500087
		OSD 22					9500092
Öwamat 6						Vorfilter/Prefilter	9000042
Öwamat 20	Koaleszenzfilter für Druckentlastungskammer					Vorfilter/Prefilter	9000045

WORTMANN KAESER WO	WORTMANN Drukomat	HANKISON HS	ZANDER Ecosep S / WT 1 - 4	SABROE Divisor	Lieferumfang Delivery range	Artikelnr. Part No.
	Drukomat 1 / mini	1086 W	HS 60	Ecosep S1	1 x AK	9000009
WO I-II	Drukomat 2,4,8,15	1087 W	HS 140-900	Ecosep S2-S15, WT 1-2	Divisor I E-II E	1 x AK
WO III	Drukomat 30	2x1087 W	HS 1800	Ecosep S30, WT 3	Divisor III E	2 x AK
WO IV	Drukomat 60, 61	4x1087 W	HS 3600	Ecosep S60, WT 4	Divisor IV E	4 x AK
WO I - IV	Drukomat 2,4,8,15,30,60,61	1088 L	HS 140-3600	Ecosep S2-S60, WT 1-4	Divisor I E-IV E	1 x AK-LF
	Drukomat 15,30,60,61	VF 1094	HS 900-3600	Ecosep S15-S60		1 x VF

ULTRAFILTER Ultrasep SP	ALUP Aquamat	BOGE Ökomat	GARDNER DENVER	SABROE SAB	SCHNEIDER	Lieferumfang Delivery range	Artikelnr. Part No.
Ultrasep SP 5	120	Ökomat 5	GDW 5			1 x AK; 1 x VF	9000031
Ultrasep SP 7,5/10	250	Ökomat 10	GDW 10	SAB 25	Typ 50	1 x AK; 1 x VF	9000015
Ultrasep SP 15	450	Ökomat 15	GDW 15	SAB 45	Typ 75	1 x AK; 1 x VF	9000016
Ultrasep SP 30	900	Ökomat 30	GDW 30	SAB 90		2 x AK; 1 x VF	9000017
Ultrasep SP 60	1800	Ökomat 60	GDW 60	SAB 180		2 x AK; 1 x VF	9000018
Ultrasep SP 120	3600	Ökomat 120	GDW 120	SAB 360		4 x AK; 2 x VF	9000019
Ultrasep SP 240	7200	Ökomat 240	GDW 240	SAB 720		8 x AK; 4 x VF	9000020

ULTRAFILTER Ultrasep P				SCHNEIDER	Lieferumfang Delivery range	Artikelnr. Part No.
Ultrasep P 7,5				Typ 40	1 x AK	9000021
Ultrasep P 15					1 x AK	9000022
Ultrasep P 30				Typ 120	1 x AK	9000023
Ultrasep P 60					2 x AK	9000024
Ultrasep P 120					4 x AK	9000025
Ultrasep P 240					8 x AK	9000026

DOMNICK HUNTER H2 OIL-X und ES	HIROSS OWS	ZANDER Ecosep SL	Lieferumfang Delivery range	Artikelnr. Part No.
H2 OIL-X SE 2010			1 x AK; 1 x VF	9000027
H2 OIL-X SE 2015			1 x AK; 1 x VF	9000028
H2 OIL-X SE 2030			2 x AK; 1 x VF	9000029
ES 2100, ES 2150, ES 2200	OWS 001 / 060 / 075	Ecosep SL1, SL2, SL5	1 x AK; 1 x VF	9000033
ES 2300	OWS 125	Ecosep SL 8	1 x AK; 1 x VF	9000034
ES 2400	OWS 185	Ecosep SL 15	2 x AK; 1 x VF	9000035
ES 2500	OWS 355	Ecosep SL 30	1 x AK; 1 x VF	9000036
ES 2600	OWS 485	Ecosep SL 60	2 x AK; 1 x VF	9000037
EntlüftungsfILTER / Ventfilters ES 2100 - ES 2200		EntlüftungsfILTER / Ventfilters SL 1 - SL 5	1 x EF	9000038
EntlüftungsfILTER / Ventfilters ES 2300 - ES 2600		EntlüftungsfILTER / Ventfilters SL 8-SL 60	1 x EF	9000039

JORC Enviro	Lieferumfang Delivery range	Artikelnr. Part No.
Enviro	1 x AK; 1 x VF	9000047
Puro mini	2 x AK	9000048

AK=activated carbon for water side VF= prefilter EF= ventfilters
AK-LF=activated carbon for waste air (relief chamber)

On request we can classify further series for you

- Technical details to change without notice -

FT-OVG

Vorschaltgerät für Öl-Wassertrenner für Druckluftkondensat



Vorwort

In den letzten Jahren wurden Betreiber von Druckluftanlagen vermehrt mit dem Problem von verstopften und daraus resultierend überlaufenden Öl-Wassertrennern konfrontiert. Als eine der möglichen Ursachen wird der Einsatz von synthetischen und teilsynthetischen Ölen vermutet, weiterhin kommt dieses Phänomen auch bei dem Einsatz von frequenzgeregelten Kompressoren vor.

Durch die Weiterentwicklung der Kompressoren werden heute andere Schmiermittel eingesetzt als vor 20 Jahren. Diese Öle müssen den höheren Ansprüchen an die Kompressorentchnik gerecht werden. Die Folge ist der Einsatz von teilsynthetischen und synthetischen Ölen. Nachteil dieser Kompressorenöle ist eine schwierigere Entsorgung mit einem auf Aktivkohleabsorption basierenden Öl-Wassertrenner. Hochviskose Emulsionen verblocken die Aktivkohle und lassen die Geräte relativ schnell havarieren, bzw. verkürzen die Standzeiten der Aktivkohlefilter auf bis zu 25 % der früheren Intervalle.

Dass dieses Problem in der Branche erkannt ist, zeigt sich daran, dass verschiedene Hersteller bereits Öl-Wassertrenner ohne Schwerkrafttrennung anbieten. Eine genaue Ursachenforschung hat es bisher noch nicht gegeben. Dem Betreiber wird in den meisten Fällen die Anschaffung einer Emulsionsspaltanlage vorgeschlagen, womit Investitionen im fünfstelligen Bereich erforderlich werden.

Das Vorschaltgerät FT-OVG kann diese Problematik kostengünstig lösen und das Kondensat vorreinigen. An der Oberfläche bildet sich eine Ölschicht, bei entsprechender Schichtdicke fließt das Öl automatisch in den bauseitigen Ölkanister.

Funktion

Kondensatzulauf unter Druck und drucklos möglich

Das Kondensat wird vom Kompressor, Kessel oder Trockner dem Vorschaltgerät möglichst unter Druck zugeführt (**1 x Anschluss 25 mm Rohr**).

Beruhigungsraum

Hier erfolgt die mechanische Trennung mittels Schwerkrafttrennung.

Ölablauf

Der Ölablauf ist auf max. 3 cm über dem Wasserspiegel. Anschluss G 1" a.

Filtrierung

Oleophiles Material aus Kunststofffasern filtert die Emulsionen aus. Durch die Koalierungseigenschaften wird ebenfalls der Hauptanteil des freien Öls abgeschieden und der Öl-Wassertrenner entlastet.

Kondensatablauf

Das ablaufende Kondensat ist nur vorgereinigt und muss unbedingt in einen nachgeschalteten Öl-Wassertrenner geleitet werden. Anschluss G 1" a.

Das Kondensat darf nicht direkt in den Abwasserkanal eingeleitet werden.

Niveaustab im Deckel

Bewegt sich nach oben aus dem Deckel, wenn der Filter verblockt ist.

Allgemeine Beschreibung

Das Druckluftkondensat wird durch den Kondensatzulauf in das Gerät geleitet. Im Beruhigungsraum erfolgt die mechanische Trennung mittels Schwerkrafttrennung. Das im Verhältnis zu Wasser leichtere Öl schwimmt an der Oberfläche und wird kontinuierlich über den Öl-Ablauf in einen bauseitigen Kanister geführt.

Das immer noch mit Öl verschmutzte Kondensat gelangt in den am Boden des Gerätes befindlichen oleophilen Strickfilter. Dieser Strickfilter ist in der Lage Öle, Schmutzpartikel und organische Flüssigkeiten bis zum Vielfachen seines Eigengewichtes aufzusaugen (Adsorption) und stößt Wasser ab (hydrophob). Wir empfehlen den Austausch des Filters alle 3 Monate.

Das Kondensat strömt weiter zum Boden und gelangt vom Geräteboden durch die äußere Kondensatsteigleitung zum Kondensatauslass. Das austretende Kondensat muss zur vollständigen Reinigung in den nachgeschalteten Öl-Wassertrenner geleitet werden.

Installations- und Betriebsanleitung

Bitte beachten Sie die vorliegende Installations- und Betriebsanleitung vor der Montage und Inbetriebnahme des FT-OVG. Nur so ist die einwandfreie Funktion und damit eine zuverlässige Kondensat-Vorreinigung sichergestellt.

Sicherheit:

Installations- und Betriebsanleitung genau lesen, um Schäden und Verletzungen zu vermeiden. Stellen Sie sicher, dass im Schadensfall kein Öl oder ungereinigtes Kondensat in die Kanalisation gelangen kann. Den bauseitigen Ölkanister immer dicht verschrauben und so aufstellen, dass kein Kondensat in die Kanalisation gelangen kann. Überprüfen Sie das Gerät regelmäßig auf Dichtigkeit.

Führen Sie dem Gerät nur Druckluftkondensat zu, um die Funktion nicht zu gefährden.

Einsatzbereich:

Das Gerät ist sowohl für stationäre als auch mobile Anwendungen geeignet.

Stellen Sie sicher, dass das austretende Kondensat in einen Öl-Wassertrenner geleitet wird, damit die gültigen Grenzwerte der örtlichen Entwässerungssatzungen eingehalten werden.

Gemäß Wasserhaushaltsgesetz beträgt der Einleitgrenzwert für Kompressorenkondensate 20 mg/l. Diese Werte können regional abweichen.

Den zulässigen Leistungsbereich nicht überschreiten.

Medium: Druckluftkondensat.

Zulässige Medium/Umgebungstemperatur: +5...+60 °C.

Montage:

Montieren Sie den FT-OVG mittels den Montagehülsen und 12 mm Schlüsselschrauben an die Wand. Das Gerät sollte so installiert werden, dass der Kondensatablauf oberhalb des Kondensateintritts des nachgeschalteten Öl-Wassertrenner ist.

Im Neuzustand ist der Filtereinsatz bereits im Gerät montiert.

Die Kondensatsammelleitung stets mit kontinuierlichem Gefälle zum FT-OVG verlegen (mind. 1°).

Die Kondensatsammelleitung fest mit dem Kondensateinlauf verbinden.

Vermeiden Sie Wassersäcke in den Kondensat Zu- und Ablaufleitungen

Den Ölauffangbehälter so aufstellen dass Ölauslauf vermieden wird. Bitte beachten Sie die örtlichen

gesetzlichen Aufstellvorschriften (Versiegelte Bodenfläche oder Auffangwanne). Im Schadenfall darf kein ungereinigtes Kondensat oder Öl in die Kanalisation oder das Erdreich gelangen!

Den Ölauffangbehälter anschließen, auf gleichem Bodenniveau wie FT-OVG aufstellen, damit der Ölablauf funktioniert. Ölablauf-Rohr dicht mit Behälter verschrauben, damit auch bei Überlastung kein Öl auslaufen kann.

Die Kondensatablaufleitung mit kontinuierlichem Gefälle zum Kondensateintritt des nachgeschalteten Öl-Wassertrenners montieren.

Deckel des FT-OVG abnehmen und den Behälter mit Frischwasser befüllen. Wenn Wasser am Wasserauslauf austritt, Zufuhr abstellen.

Der FT-OVG ist betriebsbereit, Kondensat kann eingeleitet werden.

Dichtigkeits-Kontrolle, Schläuche und Anschlüsse regelmäßig überprüfen und ggf. Verschraubungen nachziehen.

Kontrollieren Sie regelmäßig die Funktion des Gerätes.

Niveaueinstellung im Deckel:

- Bewegt sich nach oben aus dem Deckel, wenn das Filter verblockt ist
- Kondensatzufuhr stoppen
- Deckel öffnen
- FT-OVG entleeren
- Kondensatzulaufrohr durch leichtes drehen nach außen schieben
- Filtereinsatz entfernen
- Gerät reinigen
- Filtereinsatz ersetzen und am Boden des FT-OVG placieren.
- Frischwasser einfüllen, wenn Wasser am Wasserauslauf austritt, Zufuhr abstellen.
- Kondensatzulaufrohr durch leichtes drehen nach innen schieben, dass der Ausfluss mittig ist
- Deckel schließen
- Kondensatzufuhr öffnen
- **Gebrauchten Filtereinsatz ordnungsgemäß entsorgen**

Es fällt kein Öl an:

Je nach Auslastung und Kondensatbeschaffenheit fließt erst nach einiger Zeit Öl aus dem Ölaustritt des FT-OVG, dies ist normal, weil sich im FT-OVG zunächst eine dicke Ölschicht bilden muss.

Austretendes Öl als Altöl entsorgen.

Europäischer Abfallschlüssel

EWC 13 02 05 (Mineralöle)

EWC 13 02 06 (Synthetiköle)

Technische Daten FT-OVG

Bestellnummer	: 9400015	Kondensatzulauf	: 1 x 25 mm
Filtereinsatz	: 9400040	Wasserablauf	: G 1 a
Gewicht	: 21 kg	Ölablauf	: G 1 a
Höhe	: 850 mm	Zulässige Medium/ Umgebungstemperatur	: +5...+60 °C
Durchmesser	: 400 mm	Max Zulaufdruck	: 16 bar
Füllvolumen	: 80 Liter		

- Technische Details unter Vorbehalt -

Filter- und Trocknertechnik GmbH

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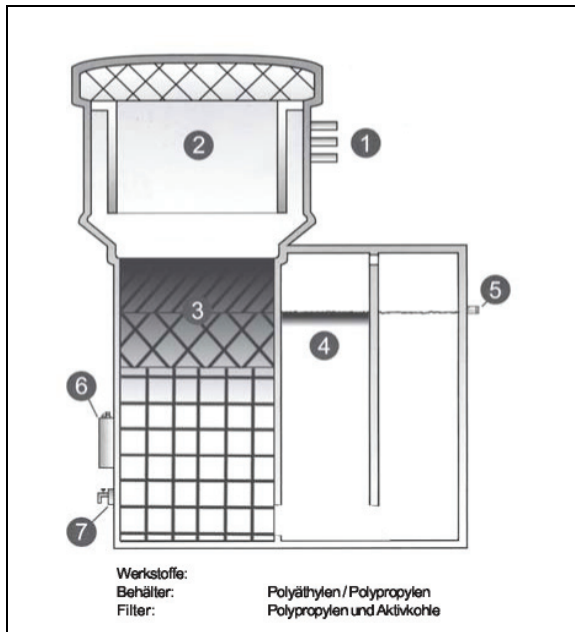
FT-OWT

Oil-water separation-system

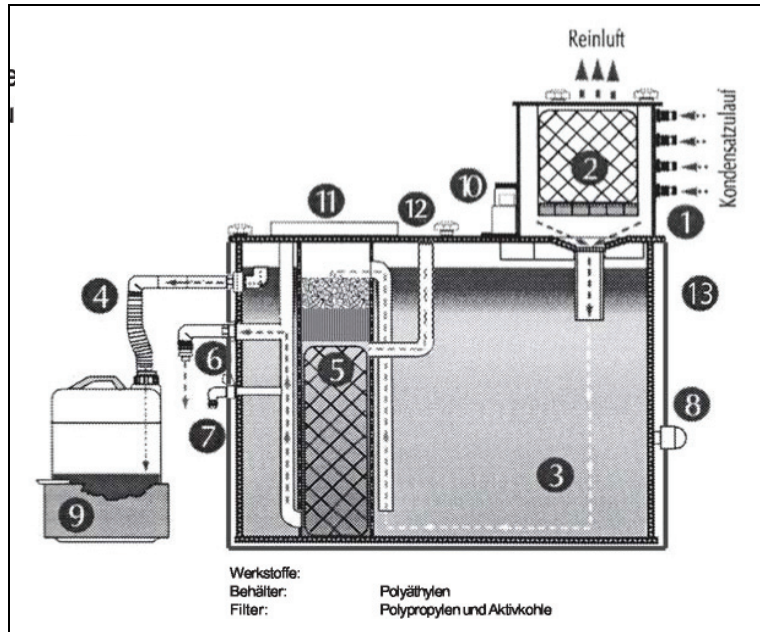


Type

FT-OWT 11/12/13:

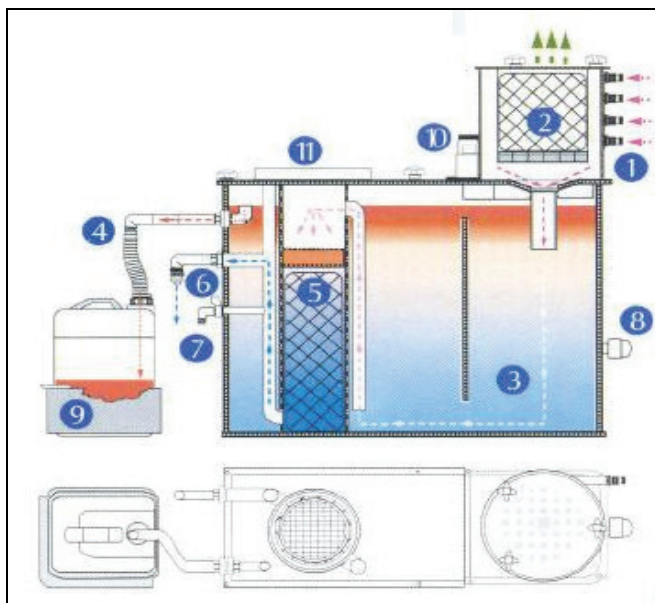


FT-OWT 14:

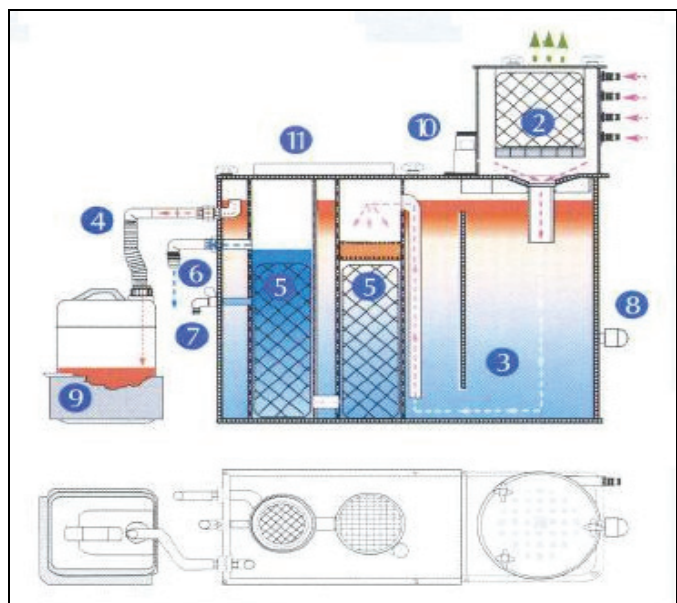


FT-OWT 4/8/15:

(Prefilter is standard from OWT 15)



FT-OWT 30/61:



Functions

1) Condensate feed is possible both under pressure and pressure-less:

The condensate is fed from the compressor, or the tank, or the dryer if possible with pressure.

(4 connections 1/2 inch)

2) Chamber for expansion and de-airation with filter from activated charcoal to filter the exhaust air.

This expansion and de-airation chamber assures a calm surface in the separator, even if the condensate is fed under pressure. The activated charcoal filter eliminates the oil from exhaust air.

3) Settling and Flotation Chamber

This is where the mechanical separation of oil from water takes place.

4) Oil discharge

The angle of draining /discharging the oil is adjustable.

5) Filtering:

Pre-Filter:

Filter of knitted plastic fibres (PP) filters out the larger oil droplets, this relieving the activated charcoal filter.

Activated Charcoal Filter:

Filters out all the remaining oil droplets and guarantees the high overall efficiency.

6) Water discharge

The remaining oil content of the water discharged is less than 10 mg/ltr if the equipment is correctly dimensioned. This water can be discharged directly into the sewers.

7) Test Valve

The test valve permits very simply to take discharge water samples.

8) Heating (auxiliary equipment)

Thermostatically controlled heaters are available for outdoor installation.

9) Oil-collect tank with overflow safe-guard

10) Test Set (check-glass and oil test paper)

See Check and Maintenance Book.

Technical Data

Type FT-OWT	* Compressor capacity up to m ³ /min.	Container Volume liter	Dimensions (mm)			Weight kg	Condensate input inch	Water drain inch	Oil drain inch	Filtering			
			A	B	C					Prefilter Part no.	Charcoal-filter		Part no.
11	1,5	-	240	240	450	5	3x1/2"	1"	-	-	9400040	Water Part no.	
12	2,5	-	240	240	550	7	3x1/2"	1"	-	-	9400041	9400042	9400039
13	3,5	-	280	280	610	10	3x1/2"	1"	-	-	9400033	9400033	9400039
4	4	74	965	600	380	22	4x1/2"	1"	1"	1"	9400043	9400043	9400039
14	6	-	437	325	908	17	3x1/2"	1"	1"	1"	9400034	9400034	9400039
8	8	120	965	620	520	25	4x1/2"	1"	1"	1"	9400038	9400035	9400039
15	15	160	1160	620	520	28	4x1/2"	1"	1"	1"	9400038	2x9400036	9400039
30	30	230	1160	850	520	55	4x1/2"	1"	1"	1"	2x9400038	4x9400037	9400039
61	60	790	1450	1300	1000	90	4x1/2"	2"	2"	2"	2x9400038	4x9400037	9400039

* Capacity valid for screw compressors using non-emulsifying oils. When using other types of compressors and other types of compressor oils, these figures have to be reduced (See Maintenance Book).

Capacity of FT-OWT

in m³/min of installed compressor activity

Compressor Type	Screw Compressors										Rotary Vane Compressors (oil flooded)						Piston Compressors (1 and 2 stage)										
	11	12	13	14	4	8	15	30	61	11	12	13	14	4	8	15	30	61	11	12	13	14	4	8	15	30	61
FT-OWT Separation-system type	11	12	13	14	4	8	15	30	61	11	12	13	14	4	8	15	30	61	11	12	13	14	4	8	15	30	61
Turbin-oil	1,5	2,5	3	6	5	8	15	30	70	1,5	2,5	3	6	4	8	10	25	60	-	-	-	-	2	3	5	10	30
Mineral-rotary oil	1,5	2,5	2	4	3	4	8	18	50	1	2	2	4	2	4	8	15	50	-	-	-	-	-	-	-	-	-
Mineral-piston oil	1,5	2,5	2	4	3	6	10	22	60	1	2	2	4	3	6	10	15	50	-	-	-	-	2	4	8	12	30
Syntetic-oil	-	-	-	-	3	4	8	15	40	-	-	-	-	3	4	8	12	40	-	-	-	-	2	4	8	12	30

Notes:

- 1) The capacities above are maximum figures!!
- 2) Reduce capacity when the installation-place is difficult (warm and/or dusty ambient conditions).
- 3) Divide capacity by 2 for condensate delivered through timed solenoid drains!!
- 4) Heating improves the function of the FT-OWT and allows installation in freezing environment!
Attention: only FT-OWT 14 !

- Technical details to change without not ce -

Emulsionsspaltanlage

FT-Mobil-Split

1.0 Technische Beschreibung der FT-Mobil-Split

Die FT-Mobil-Split ist speziell entwickelt worden, um bei der Reinigung/Service von Öl-Wassertrennern das anfallende Druckluftkondensat aufzubereiten. Mittels eines Reaktionstrennmittels werden der stabilen Emulsion die ölhaltigen Bestandteile entzogen. Die stabile ölhaltige Emulsion wird mit einer manuellen Zugabe von Reaktionstrennmittel gerührt. Es erfolgt durch das Reaktionstrennmittel eine Flockenbildung. In diesen Flocken werden die ölhaltigen Bestandteile der Emulsion aufgenommen. Die trübe Emulsion hellt sich auf. Mit dem Referenzglas wird eine Probe der Emulsion aus dem Reaktionsbehälter entnommen. Ist die Trübung unter der am Referenzglas festgelegten Trübung, wird mittels eines Kugelhahns die aufbereitete Emulsion in den Filtersack abgeführt. Im Filtersack werden die Flocken des Reaktionstrennmittels zurückgehalten. Die Ablaufpumpe kann betätigt werden. Die aufbereitete Emulsion kann in den Kanal gepumpt werden.



1.1 Arbeitsablauf Aufbereitung Druckluftkondensat

Der Öl-Wassertrenner wird geöffnet. Das freischwimmende Öl und Emulsionen, welche sich auf der Oberfläche des Öl-Wassertrenners befinden, werden manuell abgeschöpft.

Achtung: Die Anlage ist nicht in der Lage, freie Öle und deren Emulsionen aufzubereiten, diese müssen immer manuell abgeschöpft werden.

Die Zuführpumpe wird in den Öl-Wassertrenner eingesetzt. Der Schlauch wird in den Reaktionsbehälter eingeführt. Der Kugelhahn „Ablauf“ ist geschlossen. Die Ablaufpumpe wird an den Ablaufschlauch angeschlossen und in der Regel an den Ablauf des Öl-Wassertrenners angeschlossen.

Die Zuführpumpe wird aktiviert und der Reaktionsbehälter befüllt, Abschaltung erfolgt über den Sensor „Max“. Das Rührwerk wird manuell aktiviert, Reaktionstrennmittel wird zugeführt. Nach Ausflockung des Reaktionstrennmittels wird der Servicetechniker auf der Oberfläche des Reaktionsbehälters eine erhebliche Aufhellung der Emulsion erkennen. Das Rührwerk wird abgestellt, eine Probe der aufgearbeiteten Emulsion entnommen. Nach Überprüfung der Trübung mittels Referenzglas kann die Emulsion in den Filtersack abgelassen werden. Dabei ist die Abfuhrpumpe zu aktivieren. Sollte die Trübung über dem Grenzwert liegen, ist eine erneute Dosierung vorzunehmen und über die Beprobung abzusichern, so dass keine Emulsion, welche mehr als 20 mg Kohlenwasserstoffe enthält, in den Kanal abgegeben werden kann.

2.0 Dosierung

Die Dosierung ist eine Erfahrungssache. In der Regel werden zirka 1,5 kg Reaktionstrennmittel für 1 m³ Kondensat benötigt. Ausschlaggebend ist aber immer die Trübung! Es darf niemals aufbereitetes Kondensat, welches über der Trübungsreferenz liegt, in den Kanal abgegeben werden. (Siehe Dosierungstabelle)

3.0 Befüllungsmenge und technische Anweisungen für den praktischen Betrieb

Maximale Befüllungsmenge des Reaktionsbehälters ist 72 l. Bei Erreichen dieses Füllstands wird über den Sensor die Zuführpumpe abgeschaltet. Der kapazitive Sensor erkennt den Füllstand und schaltet die Zuführpumpe ab. In der Praxis besteht die Möglichkeit, dass im Reaktionsbehälter das sich anhaftende Reaktionstrennmittel diesen Sensor irritiert. Er wird dann bei einem Bedeckt - Zustand verbleiben und ist manuell zu reinigen.

Sensor Diode aus = unbedeckt
Sensor Gelb = bedeckt

Beim Ablassen des aufbereiteten Kondensats wird die Ablasspumpe automatisch gestartet. Die abzupumpende Flüssigkeit muss die Pumpe mindestens zu 60% bedecken, der Sensor „Ablauf“ wird bedeckt, im Automatikbetrieb wird nun die aufgearbeitete Emulsion abgepumpt. Die Ablaufpumpe kann im Automatik – Manuellen Betrieb gefahren werden. Die Pumpe wird dann 90 % der aufgearbeiteten Flüssigkeit abpumpen.

Die Standzeiten der Filtersäcke sind unmittelbar abhängig von der Ablassgeschwindigkeit. Der Filtersack ist so konstruiert, dass er keine Flocken des Reaktionstrennmittels durchlässt. Die Flocken des Reaktionstrennmittels werden in der Praxis den Filtersack trotzdem relativ schnell verstopfen. Standzeit für einen Filtersack: zirka 700 l Kondensat.

Die restliche Flüssigkeit aus der Anlage, auch durch den nachtropfenden Filtersack wird über die manuelle Schraube abgelassen.

4.0 Dosiertabelle

Füllmenge	Dosiermaß	Verbrauch
70 l	5 x	1,140 kg/m ³
70 l	6 x	1,370 kg/m ³
70 l	7 x	1,596 kg/m ³
70 l	8 x	1,825 kg/m ³
70 l	10 x	2,228 kg/m ³

Die Dosiermenge ist abhängig vom Kondensat. Sie werden feststellen, dass auch bei relativ ähnlichen Druckluftstationen Kondensate unterschiedlicher Qualität entstehen. Die oben aufgeführten Dosierungsvorschläge sind deshalb auch nur Eckdaten. Entscheidend ist immer die Qualität, welche die aufgearbeitete Emulsion hat. **Es darf niemals Kondensat abgeleitet werden, welches eine Trübung über der des Referenzglases aufzeigt.**

5.0. Technische Daten

Bezeichnung	Parameter
Füllmenge FT-Mobil SPLIT	70 l
Zuführpumpe Lutz B 2 Vario	75 L/min
Ablaufpumpe Jung K3 Niro	6,5 m ³ /h
Reaktionstrennmittel	FT Clean 02
Filtersack	FT 02
Elektroanschluss	230 V AC
Sicherung	10:00 AM
FI Schutzschalter	30 mA
Überfüllungssensor	24 V DC
Rührwerksmotor	24 V DC
Trafo	230V/ 24 V DC
Betriebsanschluss FT-Mobil Split	230 V AC
Anschluss Lutzpumpe	230V AC/10A
Anschluss Jung Pumpe	230V AC/10A
Hauptschalter	Ein/ Aus
Ablaufpumpe	Automatik/ Manuell
Rührwerk	Ein/ Aus

6.0 Lieferumfang

Stück	Bezeichnung
1	FT-Mobil Split
1	Jungpumpe U3KS/2
1	Ablaufschlauch für Jungpumpe
1	Lutzpumpe B2 Vario
1	Filtersieb für Ansaugstutzen Lutzpumpe
1	Zulaufschlauch für Jungpumpe/ FT-Mobil Split
2	Filtersäcke FT 02
25 kg	Reaktionstrennmittel FT Clean 02
1	Dosierlöffel zur Dosierung Reaktionstrennmittel
3	Behälter zum Abskimmen der freien Öle
2	Bedienungsanleitungen zum Betrieb der FT-Mobil Split

7.0 Entsorgung

Das abgearbeitete Reaktionstrennmittel, welches sich im Filtersack befindet, ist inklusive Filtersack ein entsorgungspflichtiges Material. Der Filtersack mit Inhalt ist dem in Ihrem Gebiet zuständigen Entsorgungsunternehmen anzudienen.

Bezeichnung: Ölhaltige Reststoffe
Abfallschlüssel: 150202

8.0 Reaktionstrennmittel und Filtersäcke für Emulsionsspaltanlage Mobile

Best. Nr.	Artikel
	Filtersackset 5 Stk.
	Reaktionstrennmittel FT Clean 02 25 kg

- Technische Details unter Vorbehalt -

Dew Point Meters

FT-TP 506 / FT-TP 556 / FT-TP 460

Compressed air applications always have one problem: Humidity and condensate. Industrial high quality standards require a continuous monitoring of the humidity, with results which are reliable and stable for a long period.



FT-TP 506: measuring range -20...+50°C (**refrigerating dryers**)

FT-TP 556: measuring range -80...+20°C (**adsorption and membrane dryers**)

Both devices are ideally suited for an installation in existing systems. A pre-alarm and a main alarm are triggered by two switching contracts.

Alarm unit (buzzer and continuous red light) available.



Mobile Dew point meters FT-TP 460

The ideal dew point meter for on-site service:

- **Complete set – „everything“ in one case**
- Fast and precise measuring of the dew point of **refrigeration- and adsorption dryers**
- Measuring range -80...50°C Dew point
- Additional measuring of relative humidity (%) and temperature (°C)
- Simply use the snap-on coupling, „click in“ the compressed air and measure.
- Accumulator operation up to 15 hours
- Optional: Data logging on PC

Technical data	FT-TP 506	FT-TP 556	FT-TP 460
Dew point	-20 to +50 °C	-80 to +20 °C	-80 to +50 °C
Pressure range	-1 to +16 bar standard	-1 to +16 bar standard	-1 to +50 bar standard
Power supply	230 VAC	230 VAC	internal rechargeable accumulators 4 x 1,5NiMh AAA
Accuracy	1 to 2 Ctd	1 to 2 Ctd (20 to -50 Ctd) 3 Ctd (-50 to -80 Ctd)	±0,5 Ctd (-10 to +50 Ctd) typical ±2 Ctd at -40 Ctd
Output	4...20 mA	4...20 mA	SDI (Serial Digital Interface)
Protection class	IP 65	IP 65	IP 65
CE conformity to	DIN EN 61326	DIN EN 61326	DIN EN 61326
Operating temperature	-20 to +70 °C (ideal 0 to 50 °C)	-20 to +70 °C	-20 to +70 °C
Storage temperature	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C
Load for analogue output	< 500 Ohm	< 500 Ohm	
Screw in thread	G 1/2 " stainless steel	G 1/2 " stainless steel	G 1/2 " stainless steel
Material of housing	ABS	ABS	Polycarbonate
Sensor protection	Sintered filter 50µm stainless steel	Sintered filter 50µm stainless steel	Sintered filter 50µm stainless steel

- Technical details to change without not ce -

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| ■ Aerzen | ■ Boge | ■ Furakawa | ■ Mark |
| ■ Airblok | ■ Bottarini | ■ Gardner Denver | ■ Mattei |
| ■ Airmac | ■ Broomwade | ■ Gnutti | ■ Mehrer |
| ■ Airman | ■ Busch | ■ Goldstar | ■ Purolator |
| ■ Alup | ■ Ceccato | ■ Hitachi | ■ Renner |
| ■ Ama | ■ Champion | ■ Hydrovane | ■ Rietschle |
| ■ Atmos | ■ Crepelle | ■ Ingersoll Rand | ■ Rotorcomp |
| ■ Atlas Copco | ■ Compair | ■ Irmer & Elze | ■ Sabroe |
| ■ Axeco | ■ Demag | ■ Jenbacher | ■ Schneider |
| ■ Balke Durr | ■ Donaldson | ■ Joy | ■ Stenhoj |
| ■ Bauer | ■ Ecoair | ■ Kaeser | ■ Sullair |
| ■ Becker | ■ Edwards | ■ Knecht | ■ Tamrotor |
| ■ Becker & Söhne | ■ Fiac | ■ Leybold | ■ Timberjack |
| ■ Bellis & Morcon | ■ Fini | ■ Mahle | ■ Volvo Penta |
| ■ BGS | ■ Flottmann | ■ Mann & Hummel | ■ Wittig |
| ■ Blitz Schneider | | | ■ Worthington |

Other makes on inquiry

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| ■ Ama | ■ Champion | ■ Hydrovane | ■ Rietschle |
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| ■ Axeco | ■ Demag | ■ Jenbacher | ■ Schneider |
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| ■ Bauer | ■ Ecoair | ■ Kaeser | ■ Sullair |
| ■ Becker | ■ Edwards | ■ Knecht | ■ Tamrotor |
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| ■ Bellis & Morcon | ■ Fini | ■ Mahle | ■ Volvo Penta |
| ■ BGS | ■ Flottmann | ■ Mann & Hummel | ■ Wittig |
| ■ Blitz Schneider | | | ■ Worthington |

Other makes on inquiry

- Technical details to change without notice -

Hydraulic Filters



Suitable for hydraulic filters of many manufacturers:

- Eppensteiner
- Fleetguard / ST-Filter
- Hydac
- Internormen
- Mahle
- Mann + Hummel
- Pall
- Parker
- SF-Filter
- Stauff

Other makes on inquiry

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