CompAir

GB

02

High Efficiency Compressed Air Dryers

Adsorption Dryers Modular System

INTELLIGENT AIR TECHNOLOGY

CompAir Adsorption Dryers Modular System

Compressed air purification equipment must deliver uncompromising performance and reliability whilst providing the right balance of air quality with the lowest cost of operation and CO_2 emissions.
Adsorption dryers totally clean and dry compressed air down to -40 °C pressure dewpoint as standard.
For critical applications, adsorption dryers can be specified to provide a pressure dewpoint of -70 °C.
A pressure dewpoint of -26 °C or better will not only prevent corrosion, but will also inhibit the growth of micro-organisms within the compressed air system.

Modular Dryers at a glance

Adsorption Dryers A1TX – A14TX

- Heatless regeneration pressure swing adsorption
- Capacity: 0.13–1.40 m^3/min
- Pressure dew points -25 °C / -40 °C / -70 °C
- Multitronic controller
- Operating pressure 5–16 barg
- Pre- and after-filter are factory mounted

- Optional:
  - A1TXT to A14TXT, with energy saving dew point dependent control
  - Signal splitter, dew point analogue signal 4–20 mA
  - Balance line regeneration air at synchronous control
  - Soft start device at low system pressure
  - Filter silencer additional noise reduction
  - Electronic delta p gauge for pre and after filter from AF012
  - Zero loss drain Bekomat for pre filter

Adsorption Dryers A1TXA – A14TXA

- Heatless regeneration pressure swing adsorption with activated carbon stage
- Rest oil content down to 0.003 mg/m^3
- Oil indicator tube

- Optional:
  - A1TXAT to A14TXAT, with energy saving dew point dependent control
  - Signal splitter, dew point analogue signal 4–20 mA
  - Balance line regeneration air at synchronous control
  - Soft start device at low system pressure
  - Filter silencer additional noise reduction
  - Electronic delta p gauge for pre and after filter from AF012
  - Zero loss drain Bekomat for pre filter

Adsorption Dryers A7XS – A50XS

- Heatless regeneration pressure swing adsorption
- Capacity: 0.68–5.00 m^3/min
- Pressure dew points -20 °C / -40 °C / -70 °C
- Smart controller
- Operating pressure 16 bar / A7XS to A25XS and 13 bar / A30XS to A50XS

- Pre- and after-filter are included
- Optional:
  - A7XSDS – A50XSDS with energy saving dew point control DDS
  - Pneumatic version, A7XP – A50XP

Adsorption Dryers A68XS – A340XS

- Heatless regeneration pressure swing adsorption
- Capacity: 6.8–34 m^3/min
- Pressure dew points -20 °C / -40 °C / -70 °C
- Smart controller with DDS
- Operating pressure 4–13 barg
- Pre- and after-filter are included

- Optional:
  - A68XE – A340XE with advanced energy saving electronic control system
  - Pneumatic version, A68XP–A340XP

Adsorption Dryers A40RS – A190RS

- Heat regenerative thermal swing adsorption
- Capacity: 4.0–20 m^3/min
- Pressure dew points -20 °C / -40 °C / -70 °C
- Smart controller
- Pre- and after-filter are included
- Operating pressure 4–13 barg

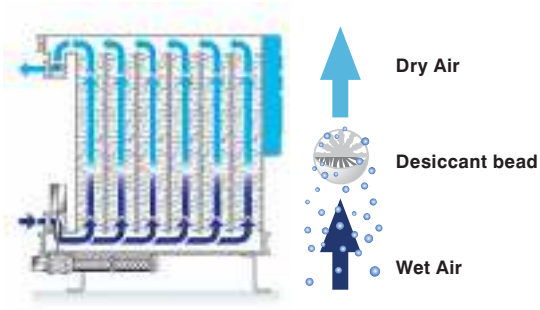
- Optional:
  - A40RSDS–A190RSDS with energy saving dew point control DDS
  - A40REDS–A190REDS with advanced energy saving electronic control system

Operation Procedure

Aluminium extrusions are used throughout for drying chambers and distribution manifolds. This design allows the desiccant material to be retained within the drying chambers and when used in conjunction with the unique snowstorm filling technique, prevents movement of the desiccant material during operation and all but eliminates desiccant attrition and breakdown which leads to loss of pressure dewpoint.

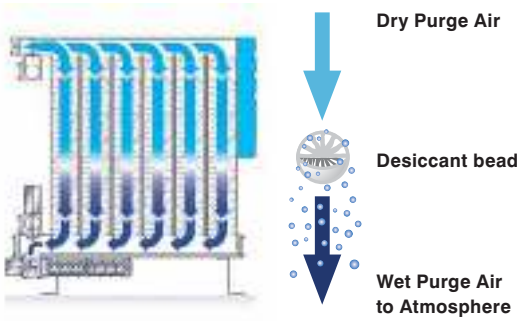
Adsorption Dryer Operation - Drying Cycle

The proces air enters the dryer through the inlet and is directed into the on-line drying chamber via the inlet valves and lower manifold. The air is evenly distributed through the drying columns and passes over the desiccant material, reducing the water vapour content. The dried process air then combines in the upper manifold and exits the dryer via the outlet check valves.



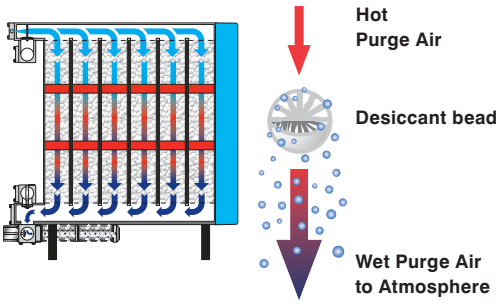
Adsorption Dryer Operation - Regeneration Cycle Heatless Pressure Swing Adsorption

At the start of the regeneration cycle, the exhaust valve of the dryer is closed and the off-line chamber is at full line pressure. The air in the off-line chamber has a dewpoint equal to the air leaving the dryer. The exhaust valve is then opened and the dry air within the chamber expands rapidly as it leaves the dryer via the exhaust silencer, forcing water to be removed from the desiccant material. Once the off-line chamber has de-pressurised, a continuous bleed of dried process air is directed into the off-line upper manifold. This air is known as purge air. With the exhaust valve open, the purge air expands from line pressure to atmospheric pressure and flows downwards through the columns, over the off-line desiccant material. As the purge air at line pressure contains a fixed amount of water vapour, allowing it to expand means the purge air becomes even drier, increasing its capacity to remove water from the saturated desiccant bed.



Adsorption Dryer Operation - Regeneration Cycle Heat Regenerative Thermal Swing Adsorption

The regeneration cycle of a dryer is similar to that of the heatless dryer described above, however to reduce the amount of purge air required, heat is added to assist the process. Two heater assemblies are strategically placed in each drying column to heat the purge air, optimising regeneration. The heaters are switched on after the column has de-pressurised, to again reduce energy consumption. The combination of dry purge air and heat uses less energy to remove the water from the saturated desiccant bed than is consumed by purge air alone. After a preset time, the heaters are switched off and the off-line bed is allowed to cool before changeover.



Unique Extruded Aluminum Construction

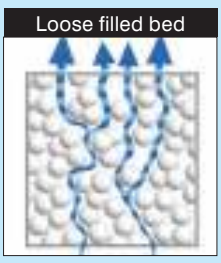
A1TX - A14TX and A7XS - A50XS models

- A TX and A XS models use only single extrusions, with a pressure die-cast inlet and outlet assembly
- Compressed air capacity within these ranges is increased by varying the length of the drying columns
- The greater the flow required, the longer the drying column

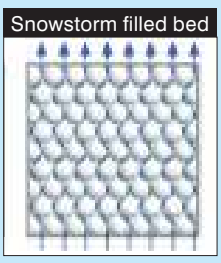
A68XS - A340XS models

- These models use multiple drying columns of equal length to provide required compressed air capacity
- The greater the flow required, the more drying columns are used (up to the maximum length of the manifold)

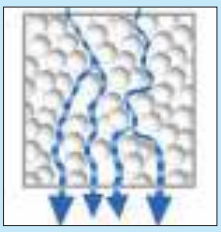
Adsorption Dryers
A068XS - A340XS



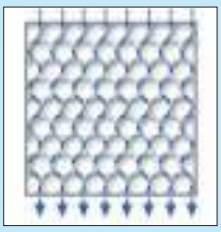
Inconsistent drying and desiccant attrition



Consistent drying with no desiccant attrition



Inconsistent Regeneration



Consistent Regeneration

Adsorbent fill method - snowstorm filling

Unique to CompAir modular dryers is the snowstorm filling technique used to charge the drying chambers with adsorbent desiccant material. The benefits of the snowstorm filling technique include:

- *Achieves maximum packing density for the desiccant material, fully utilising all of the available space envelope*
- *Prevents channelling of air through the desiccant as seen on traditional twin tower designs. Due to channelling, twin tower designs require more desiccant to achieve an identical dewpoint, increasing physical size, operational and maintenance costs*
- *Prevents desiccant attrition which can lead to dusting, blocked filters and loss of dewpoint*
- *Allows 100 % of the available desiccant material to be used for drying, therefore reducing the amount of desiccant required and maintenance costs*
- *100 % of the desiccant is regenerated ensuring consistent dewpoint*
- *Provides a low, equal resistance to air flow allowing multiple drying chambers and multiple dryer banks to be used, a feature only available with Adsorption Dryer*
- *Ensures continuous dewpoint performance*

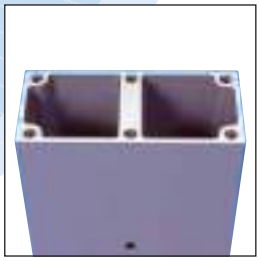
CompAir Features and Benefits

Adsorption Dryers with activated carbon stage A1TXA - A14TXA

Adsorption Dryers A1TX - A14TX

- Adsorption dryers provide efficient removal of water vapour from compressed air
- Delivered air quality is in accordance with ISO 8573-1:2010
- Improves production efficiency and reduces maintenance costs and downtime
- Pressure Dewpoint's of -20 °C / -25 °C, -40 °C and -70 °C
- Ideal for both compressor room and point of use applications
- Low noise level
- CompAir's unique modular construction and snowstorm filling of the adsorbent desiccant material provides:
  - Consistent dewpoint performance
  - A smaller, more compact and lightweight dryer
  - Simple to install and easy to maintain
  - Fully corrosion protected inside and out
  - Approvals to International Standards (PED, CSA/UL/CRN)
  - Eliminates the need for costly annual pressure vessel inspections
  - 10 year guarantee on pressure envelope

Distribution Manifold



Drying Column

- *Distribution manifolds and drying columns are all constructed from lightweight, high tensile extruded aluminium*
- *The shape of the extrusion varies on each model range*
- *All extrusions are below 150 mm (6") in diameter, which is under the pressure vessel inspection requirements of ASME*
- *Fully corrosion protected*

Compressed air pre & after filtration

Adsorption dryers are designed only for the removal of water vapour, and not liquid water, water aerosols, oil, particulates or micro-organisms. Only by using CompAir compressed air pre and after filtration the removal of these contaminants is guaranteed and air quality in accordance with ISO 8573-1:2010 be delivered.

Adsorbent desiccant material

Selected for optimum dewpoint performance, dryers delivering a -40 °C pressure dewpoint utilise a split bed of activated alumina and molecular sieve. For critical applications, dryers delivering a -70 °C pressure dewpoint are filled with a special blend of molecular sieve.

All desiccant materials are specially selected to provide:

- Optimum adsorption and regeneration capacity - to ensure consistent dewpoint
- Low dusting - to prevent blockage of down-stream filtration
- High crush strength - to prevent breakdown of the desiccant during operation
- High resistance to aggressive and oil-free condensate - for compatibility with all types of air compressor, their lubricants and condensate

Conversion Factors to Dryer Capacity
at alternative operating conditions

Heatless Regenerative Adsorption Dryer A1TX - A14TX and A1TXA - A14TXA												
Inlet Temperature max. °C	Working Pressure min. barg											
	5	6	7	8	9	10	11	12	13	14	15	16
35	0.75	0.89	1.00	1.13	1.26	1.31	1.36	1.49	1.62	1.71	1.79	1.90
40	0.64	0.78	0.91	1.00	1.08	1.16	1.24	1.36	1.47	1.57	1.67	1.77
45	0.61	0.73	0.82	0.94	1.03	1.07	1.10	1.23	1.35	1.46	1.57	1.66
50	0.59	0.67	0.79	0.86	0.99	1.03	1.07	1.18	1.29	1.38	1.46	1.55

Example: Pressure dew point: -70 °C, conversion factor 0.53. Example: Flow 0.45 m³/min. 35 °C, 5 barg = 0.45/0.75/0.53 = 1.13 m³/min: Choose type A12TX or use selection software.

Heatless Regenerative Adsorption Dryer A7XS - A340XS													
Inlet Temperature max. °C	Working Pressure min. barg, A30XS - A340XS max. 13 barg												
	4	5	6	7	8	9	10	11	12	13	14	15	16
35	0.63	0.75	0.88	1.00	1.12	1.25	1.37	1.49	1.61	1.75	1.85	2	2.13
40	0.60	0.72	0.84	0.96	1.08	1.20	1.32	1.43	1.56	1.69	1.79	1.92	2.04
45	0.55	0.66	0.77	0.88	0.99	1.10	1.20	1.32	1.41	1.54	1.61	1.75	1.85
50	0.47	0.55	0.64	0.73	0.82	0.91	1.00	1.09	1.18	1.28	1.35	1.45	1.56

Heat Regenerative Adsorption Dryer A40RS - A190RS										
Inlet Temperature max. °C	Working Pressure min. barg									
	4	5	6	7	8	9	10	11	12	13
25	0.69	0.83	0.96	1.10	1.24	1.37	1.52	1.64	1.79	1.92
30	0.63	0.75	0.88	1.00	1.12	1.25	1.37	1.49	1.61	1.75
35	0.63	0.75	0.88	1.00	1.12	1.25	1.37	1.49	1.61	1.75
40	0.47	0.57	0.67	0.76	0.85	0.94	1.04	1.14	1.22	1.33
45	0.36	0.43	0.51	0.58	0.65	0.72	0.79	0.86	0.93	1.01
50	0.28	0.37	0.39	0.49	0.51	0.56	0.61	0.67	0.72	0.79

Example:

Compressed air to be treated

Flow max.:	2 m³/min
Pressure min.:	5 barg
Inlet temperature max.:	35 °C
Dew-point:	– 40 °C
Selected dryer range A7XS – A340XS	
Factor from table:	0.75

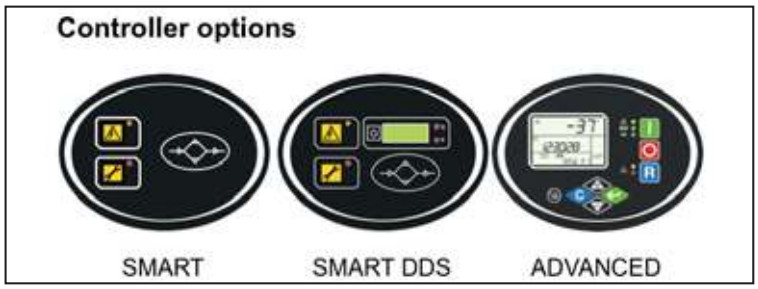
$$\frac{\text{flow}}{\text{conversion factor}} = \textbf{Dryer nominal capacity min.}$$

$$\frac{2\ m^3/min}{0.75} = \textbf{2.67 m3/min}$$

Choose: Typ A30XS or use selection software

Adsorption Dryer Controller Features

Controller Options	Function								
	Power on Indication	Fault Indication	Display fault condition values	Service interval Indication	Service countdown timers	Configurable alarm settings	Remote Volt Free Alarm Contacts"	Filter Service Timer	DDS Energy Mgmt System
Smart	•	•		•			•		
Smart DDS	•	•		•			•		•
Multitronic	•	•	•	•	•	•	•		•
Advanced	•	•	•	•	•	•	•	•	•
Pneumatic	•								



Controllers


Multitronic

CompAir

Technical Data

Heatless Regeneration Pressure Swing Adsorption Dryers

Type	Capacity*	Dimension mm			Inlet & Outlet Connection	Design Pressure	Weight	Pre-filter	After-filter
	m³/min	Width	Height	Depth	EN ISO 228-1	bar (g)	kg	Type	Type
A001TX	0.13	326	400	216	G1/4"	16	11.5	AF005XL	AF005LH
A002TX	0.24	326	575	216	G1/4"	16	15.5	AF005XL	AF005LH
A004TX	0.41	326	825	216	G1/4"	16	20.0	AF005XL	AF005LH
A006TX	0.57	326	1075	216	G1/4"	16	25.0	AF005XL	AF005LH
A009TX	0.96	493	1203	300	G1/2"	16	48.0	AF012XLD	AF012LHD
A012TX	1.21	493	1428	300	G1/2"	16	56.5	AF012XLD	AF012LHD
A014TX	1.40	493	1628	300	G3/4"	16	62.5	AF017XLD	AF017LHD
A_TXA with activated carbon stage									
A001TXA	0.13	459	400	216	G1/4"	16	15.0	AF005XL	AF005LH
A002TXA	0.24	459	575	216	G1/4"	16	20.0	AF005XL	AF005LH
A004TXA	0.41	459	825	216	G1/4"	16	28.0	AF005XL	AF005LH
A006TXA	0.57	459	1075	216	G1/4"	16	35.0	AF005XL	AF005LH
A009TXA	0.96	683	1203	300	G1/2"	16	68.0	AF012XLD	AF012LHD
A012TXA	1.21	683	1428	300	G1/2"	16	81.0	AF012XLD	AF012LHD
A014TXA	1.40	683	1628	300	G3/4"	16	92.0	AF017XLD	AF017LHD
Electric connection 230 V / 1 / 50 – 60Hz, installed power 0.04 kW, protection class IP54									

Type**	Capacity*	Dimension mm			Inlet & Outlet Connection	Design Pressure	Weight	Pre-filter	After-filter
	m³/min	Width	Height	Depth	EN ISO 228-1	bar (g)	kg	Type	Type
A007XS	0.68	284	837	302	G1/2"	16	32	CF018G1/2"C	CF018G1/2"E
A009XS	0.91	284	1003	302	G1/2"	16	37	CF018G1/2"C	CF018G1/2"E
A012XS	1.19	284	1168	302	G1/2"	16	42	CF018G1/2"C	CF018G1/2"E
A015XS	1.50	284	1333	302	G1/2"	16	47	CF018G1/2"C	CF018G1/2"E
A018XS	1.84	284	1499	302	G3/4"	16	52	CF036G3/4"C	CF036G3/4"E
A025XS	2.49	284	1747	322	G3/4"	16	60	CF036G3/4"C	CF036G3/4"E
A030XS	3.00	220	1433	566	G1"	13	80	CF066G1"C	CF066G1"E
A037XS	3.68	220	1599	566	G1"	13	90	CF066G1"C	CF066G1"E
A050XS	4.98	220	1847	566	G1"	13	104	CF066G1"C	CF066G1"E
Electric connection 230 V / 1 / 50 – 60Hz, 110 V / 1 / 50 – 60 Hz									
A068XS	6.80	550	1647	687	G2"	13	235	CF132G2"C	CF132G2"E
A102XS	10.18	550	1647	856	G2"	13	316	CF132G2"C	CF132G2"E
A127XS	12.74	550	1892	856	G2"	13	355	CF132G2"C	CF132G2"E
A170XS	16.99	550	1892	1025	G2"	13	450	CF198G2"C	CF198G2"E
A212XS	21.24	550	1892	1194	G2 1/2"	13	543	CF258G21/2"C	CF258G21/2"E
A255XS	25.48	550	1892	1363	G2 1/2"	13	637	CF258G21/2"C	CF258G21/2"E
A297XS	29.73	550	1892	1532	G2 1/2"	13	731	CF372G21/2"C	CF372G21/2"E
A340XS	33.98	550	1892	1701	G2 1/2"	13	825	CF372G21/2"C	CF372G21/2"E
Electric connection 85 V – 265 V / 1 / 50 – 60 Hz									

Heat Regeneration Thermal Swing Adsorption Dryers

Type**	Capacity*	Dimension mm			Inlet & Outlet Connection	Design Pressure	Weight	Pre-filter	After-filter
	m³/min	Width	Height	Depth	EN ISO 228-1	bar (g)	kg	Type	Type
A040RS	3.96	321	1578	717	G2"	10.5	150	CF132G2"C	CF132G2"EHT
A080RS	7.93	321	1578	947	G2"	10.5	245	CF132G2"C	CF132G2"EHT
A120RS	11.89	321	1578	1177	G2 1/2"	10.5	325	CF240G21/2"C	CF240G21/2"EHT
A160RS	15.86	321	1578	1407	G2 1/2"	10.5	440	CF240G21/2"C	CF240G21/2"EHT
A190RS	19.82	321	1578	1637	G2 1/2"	10.5	565	CF240G21/2"C	CF240G21/2"EHT
Electric connection 415 V / 3 +neutral / 50 – 60Hz									

*) Relating to ISO 7183, A: 1 bar(a), ambient temperature +25°C, inlet temperature + 35 °C, saturated, at 7 barg and pressure dew point – 25 °C.
**) Pre- and after filter are not factory mounted

CompAir

Part of the Gardner Denver Group

INNOVATIVE PRODUCTS AND SERVICES

– TRUST COMPAIR TO SUPPLY INTELLIGENT COMPRESSED AIR SOLUTIONS

With over 200 years of engineering excellence, the CompAir brand offers an extensive range of highly reliable, energy efficient compressors and accessories to suit all applications.

An extensive network of dedicated CompAir sales companies and distributors across all continents provide global expertise with a truly local service, ensuring our advanced technology is backed up with the right support.

As part of the worldwide Gardner Denver operation, CompAir has consistently been at the forefront of compressed air systems development, culminating in some of the most energy efficient and low environmental impact compressors on the market today, helping customers achieve or surpass their sustainability targets.

COMPAIR COMPRESSED AIR PRODUCT RANGE

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  > Fixed and Regulated Speed
- Piston
- Portable

Oil-Free

- Water Injected Screw
  > Fixed and Regulated Speed
- Two Stage Screw
  > Fixed and Regulated Speed
- Piston
- High Speed Centrifugal - Quantima®

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