High Efficiency Compressed Air Dryers

 Adsorption Dryers
Classical 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 CO₂ 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.

## Adsorption Dryers A18TX - A930TX

- Heatless Regeneration-Pressure-Swing Adsorption
- Capacity: 2.0 – 95 m³/min
- Pressure dewpoints -25 °C / -40 °C / -70 °C
- Adsorption dryer pre and after filter, AF series
- Multitronic control
- Design pressure 16 bar(g) (A18TX - A157TX) and 10 bar(g) (A190TX - A930TX) (higher design pressures available on request)

## Adsorption Dryers A18TXA - A157TXA with activated carbon stage

Adsorption dryers of the Series A_TXA as unit with activated carbon stage constitute a reliable purification unit which meets extreme requirements when the compressed air must not only be dried, but also be odourless and free from oil.

- Heatless Regeneration-Pressure-Swing Adsorption
- Capacity: 2.0 – 17 m³/min
- Pressure dewpoints -25 °C / -40 °C / -70 °C
- Adsorption dryer pre and after filter, AF series
- Remaining oil content 0.003 mg/m³
- Multitronic control
- Design pressure 16 bar(g)

## Operating Procedure

### Pre-filtration
pre-filter removal efficiency:
- 99.9999 % of particles and liquids down to 0.01 micron
- oil down to 0.01mg/m³
- incl. float drain

### Adsorption (drying)
Air flow through the vessel from bottom to top. The desiccant absorbs the water vapour from the compressed air up to achieve a pressure dewpoint of -25 / -40 or -70 °C.

### Re-pressurisation
- Re-pressurisation takes place with the aid of a calibrated orifice when exhaust valves are closed

### After-filter
- at the outlet of the dryers an after-filter removes any desiccant dust which may migrate from the desiccant bed. ≤ 1 micron removal.
- incl. manual drain

### Desorption (regeneration)
Regeneration air (purge air) expands via the calibrated orifice, flowing from top to bottom.

The moisture retained during the adsorption phase is removed with the partial flow of dry purge air via a silencer.
Heatless Regenerative Adsorption Dryers
A18TX – A930TX and A18TXA – A157TXA

**Dryer pressure vessels**
welded design in accordance with PED (European Pressure vessel requirements).
Minimum of 1,000,000 pressure swing cycles
> **10 years continuous operation**

**10-minute cycle**
12 pressure swings per hour ensure a maximum purge air requirement of 14.3% in comparison with in the market usually used 6 minutes (purge air requirement of 18.1%)
= **5.6% energy saving**

**Desiccant**
highly activated desiccant ensures stable pressure dewpoints of –25 °C / –40 °C / –70 °C
> for **high process security**

**Valve design**
directly acting main and exhaust valves.
Precise valve setting
> **stability in all operating conditions**

**Regeneration cycle**
operating condition are exactly preset of the purge air (passive pre-setting of the purge air)
> **adjustable via the multitronic control system**

**Wet area in receiver**
self-cleaning wedge wire desiccant support screen, located at the inlet of each vessel protects the desiccant against extensive moisture loading
> **i.e. extended service life**

**Multitronic control**
Multitronic, ideally suited to meet the monitoring requirements of heatless adsorption drying. This flexible control system enables parameters to be adjusted to suit even the most arduous of operating conditions. From continuous monitoring and status feedback to pressure dewpoint control, Multitronic provides the user with valuable "need to know" information.

**Allows to adjust drying time**

**Operating status LEDs on the control box display indicate:**
- Operational status
- Adsorption-phase
- Desorption-phase
- Economy cycle

**Selector switch I-0-2 for fixed or variable cycle setting**
(compressor synchronisation optional)

**Direct pressure dewpoint measurement including digital display**

**Remote output for setting the value of the pressure dewpoint limit**

**Adjustable target dewpoint from -25 °C to -70 °C.**

**A18TX(A)T - A157TX(A)T** with factory mounted energy saving dew point control and remote monitoring

**Accessories not fixed, retrofit**
Dew point meter for dew point dependent control
Signal splitter, for remote monitoring
Regeneration gas return at synchronous control
Soft start device at low system pressure
Filter silencer for further noise reduction
Electronic delta p gauge for pre and after filter
Zero loss drain Bekomat for pre filter

**Options factory fitted on request**
Marine painting
Pneumatic version, A18TXP - A157TXP
Vessel approval ASME VIII Div.1

**A190TXT - A930TXT** with factory mounted energy saving dew point control and remote monitoring

**Options factory fitted on request**
Marine Painting
Vessel Approval ASME VIII Div.1
Design PN 16
Stainless steel vessels
Vacuum Heat-Regenerative Adsorption Dryers
A70TVTT – A2417TVTT

The vacuum heat-regenerative adsorption dryer range providing optimum efficiency, reliability and a constant high-level of performance. This level of efficiency is especially reflected in proven, accurate dewpoint control. The constant reproduceable dewpoint is achieved using a split-bed of propriety desiccant, whilst regeneration is undertaken in a vacuum. This type of regeneration utilising active-heating and intensive vacuum supported cooling defines the industry standard for heat-regenerative dryers.

Adsorption Dryers A70TVTT - A2417TVTT

- Heat Regeneration-Pressure-Swing Adsorption
- Capacity: 7 – 241 m³/min
- Pressure dewpoints -25 °C / -40 °C / -70 °C
- Design pressure 10 bar(g) higher pressures on request
- Design temperature limits: Adsorption 60 °C / Regeneration 200 °C. Higher temperatures on request
- Dryer memory control ZDMC
- Self-cleaning wedge-wire desiccant support screen, located at the inlet of each vessel protects the desiccant against extensive moisture loading

Operating Procedure
Vacuum Heat-Regenerative Adsorption dryers
A70TVTT – A2417TVTT

- Low energy costs
  Savings of up to 25% possible when compared to conventional systems.

- Dual split-bed desiccant
  An optimum balance between water resistant and water retentive adsorption material for dewpoint stability.

- Active heating under vacuum
  Enabling a vaporization temperature of 98 °C.

- Low regeneration temperature
  Enabling desorption of the moisture under vacuum conditions.

- Intensive cooling
  Takes place in a vacuum at full vacuum pump capacity without temperature increase.

- Regeneration performed without purge air
  Due to high temperature differential even towards the end of the short cooling-phase.

- Re-pressurisation on the wet-side
  Guarantees zero purge air requirement. Air is solely used for pressure stabilisation.

- Reliable dewpoints - down to -70 °C
  Standard dewpoints -25 °C and -40 °C.

- Changeover avoiding dewpoint peak
  Atmospheric moisture entering the desiccant bed during the regeneration and cooling phase never reaches the drying zone (i.e. Regeneration with atmospheric air entering the dryer from bottom to top).

- Operating status and alarms
  Pressure, inlet temperature, heating, vacuum pump, operation and receiver changeover.

- Options factory fitted
  PROFIBUS interface
  Control S7 Siemens
  Insulation of surfaces > 60 °C, galvanised metal sheet cover
  Marine Painting

- Customised design on request
  Regeneration using heat of compression or steam
  Design PN 16, stainless steel, certification according to alternative rules
  Loop system in closed circuit cooling the atmospheric regeneration air-recommended at high ambient temperature

Electronic dryer control panel (ZDMC) with full-colour LCD touch-panel display

- Colour LCD touch display
  (320 x 240 Pixel) user-friendly menu guide, protection class IP65.

- Integrated colour schematic diagram with status indication

- 2 MB internal memory and SD card for permanent trend-recording
  The last 4 weeks data are held via a trend display, for full process evaluation.

- Programming language STEP7 (= Siemens S7)
  simple re-programming with SIEMENS-SIMATIC-S7-Manager, for special applications and customer requirements.

- ModBus and Ethernet connection (RJ45 and Traffic-LEDs),
  (for data transfer and remote operation, (RFC1006, Send, Receive, Read, Write)

- Energy saving dew point dependent control and remote monitoring
  Single alarm potential free contacts
Adsorption Dryer Pre and After Filter, AF-Series

Adsorption dryers are designed specifically 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 – validated according to ISO12500 – the removal of these contaminants is guaranteed and air quality in accordance with ISO 8573-1 : 2010 can be delivered. Compressed air filters are now recognised as being an integral part of the dryer system. Dust, dirt and oil mist filtration is common enough today. CompAir emphasises, not only the filtration efficiency but, importantly, links this to energy costs in terms of low pressure differential, product consistency and reliability.

CompAir Filter

Housings with threaded connection from G 1/4 to G2 1/2", DIN EN ISO228 (BSP)
- High grade aluminium casting
- Alochromed internally and externally to prevent corrosion
- Epoxyd powder coated to ensure top quality of protective finish

Flanged housings DN 80 to DN 250, DIN EN 1092-1
- Welded mild steel vessels
- Sand blasted, cleaned and degreased
- Polyester primed internally and externally
- Acrylic paint outside

Both types of housings are built to the highest quality standards thanks to the attention of quality surface treatment, CompAir offers a 10 year guarantee on the filter housings.

Filter for adsorption dryers with pressure differential gauge

<table>
<thead>
<tr>
<th>Filter elements</th>
<th>Efficiency 99.9999%, particles ≤ 0.01µm, rest oil ≤ 0.01mg/m³ (1 bar, 20 °C)</th>
<th>Efficiency 99.95%, particles ≤ 1µm (1 bar, 20 °C)</th>
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<tbody>
<tr>
<td>Prefilter Series AF_XL(D)</td>
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<tr>
<td>Afterfilter Series AF_LH(D)</td>
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</table>

Accessories:
- Electronic delta p gauge for pre and after filter
- Zero loss drain Bekomat for pre filter

Conversion factor for dryer capacity, A18TX to A930TX

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Conversion factor</th>
<th>Pressure bar(g)</th>
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<tbody>
<tr>
<td>35</td>
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<tr>
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<tr>
<td>50</td>
<td>0.59</td>
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</table>

Heat Regenerative Adsorption Dryer:

a) Compressed air to be treated
Flow: 50 m³/min
Pressure: 5 bar(g)
Maximum inlet temp: 30 °C
Dew-point: -25 °C
Factor from table: 0.80

Example of calculation:

Heat: 50 m³/min x 62.5 m³/min = 3125 m³/min
Flow x conversion factor = 88.33 x 0.80 = 54.67 m³/min

Choose: Typ A683TV

Conversion factor for dryer capacity, A70TVT to A2417TVT

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Conversion factor</th>
<th>Pressure bar(g)</th>
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<tbody>
<tr>
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<td>1.00</td>
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<tr>
<td>50</td>
<td>1.06</td>
<td>1.05</td>
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<tr>
<td>55</td>
<td>1.17</td>
<td>1.16</td>
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<tr>
<td>60</td>
<td>1.29</td>
<td>1.28</td>
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</table>

b) Calculation of maximum flow.
Flow x conversion factor = 62.5 m³/min

Choose: Typ A683TV

c) Reserve available equals maximum flow - actual flow
54.67 m³/min - 50 m³/min = 4.67 m³/min
### Technical Data – Heatless Regeneration Pressure Swing Adsorption Dryers

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity*</th>
<th>Dimensions in mm</th>
<th>Inlet &amp; Outlet Connection</th>
<th>Weight</th>
<th>Pre-filter</th>
<th>After-filter</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>m³/min</td>
<td>Width</td>
<td>Height</td>
<td>Depth</td>
<td>DIN ISO 228-1</td>
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<td>2020</td>
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**Pre-filter and After-filter are not factory mounted**

### Technical Data – No Loss Vacuum Heat Regeneration Adsorption Dryers

<table>
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<th>Type**</th>
<th>Capacity*</th>
<th>Dimensions in mm</th>
<th>Inlet &amp; Outlet Connection</th>
<th>Weight</th>
<th>Average power consumption kWh/h</th>
<th>Pre-filter</th>
<th>After-filter</th>
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<tbody>
<tr>
<td></td>
<td>m³/min</td>
<td>Width</td>
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<td>Depth</td>
<td>DIN EN 1092-1</td>
<td>kg</td>
<td>Type</td>
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<td>3480</td>
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</tr>
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</table>

**Electric connection 400 V / 3 / 50 Hz (60 Hz on request), control voltage 230 V / 1 / 50 − 60Hz, protection class IP54, on request: 115 V / 1 / 60Hz and 24 V DC

*) Relating to ISO 7183, A: 1 bar (a), 20 °C, inlet temperature + 35 °C, saturated, at 7 bar g and pressure dew point − 25 °C. USE SELECTION SOFTWARE

**) Pre- and after filter are not factory mounted

Electric connection 230V / 1 / 50 – 60Hz, installed power 0.04kW, protection class IP54, on request: 115V / 1 / 60Hz and 24V DC
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

Advanced Compressor Technology

Lubricated
• Rotary Screw
  > 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®

Complete Air Treatment Range
• Filter
• Refrigerant Dryer
• Desiccant Dryer
• Condensate Management
• Heat of Compression Dryer

Modern Control Systems
• CompAir DELCOS Controllers
• SmartAir Master Sequencer

Value Added Services
• Air Audit
• Performance Reporting
• Leak Detection

Leading Customer Support
• Custom Engineered Solutions
• Local Service Centres
• Genuine CompAir Parts and Lubricants

CompAir policy is one of continuous improvement and we therefore reserve the right to alter specifications and prices without prior notice. All products are sold subject to the Company’s conditions of sale.