

AC 450 AC900 AC1350 AC1950  
Basic/ACD 350/420bar  
Refrigerated High-Pressure Dryer



**GB** Installation Manual  
Operating Manual

Maintenance Manual  
Spare Part List

## Model / Type

### Model Identification Plate

The model identification plate contains all important data of the refrigerant compressed air dryer. Please specify the product and the serial number in case of queries and service. Guarantee becomes void if the rating plate is removed even partially.

### EC Declaration of Conformity and CE Marking

All compressed air dryers of type AC450/900/1350/1950 have been developed, designed and manufactured as defined by the following directives:

- 2006/42 EG, machines guideline
- 2006/95/EG, low voltage guideline
- 2004/108/EG, EMC electromagnetic compatibility
- 97/23/EG, pressure devices
- 93/68/EEC, CE mark directive

The following harmonised standards have been applied while doing so:

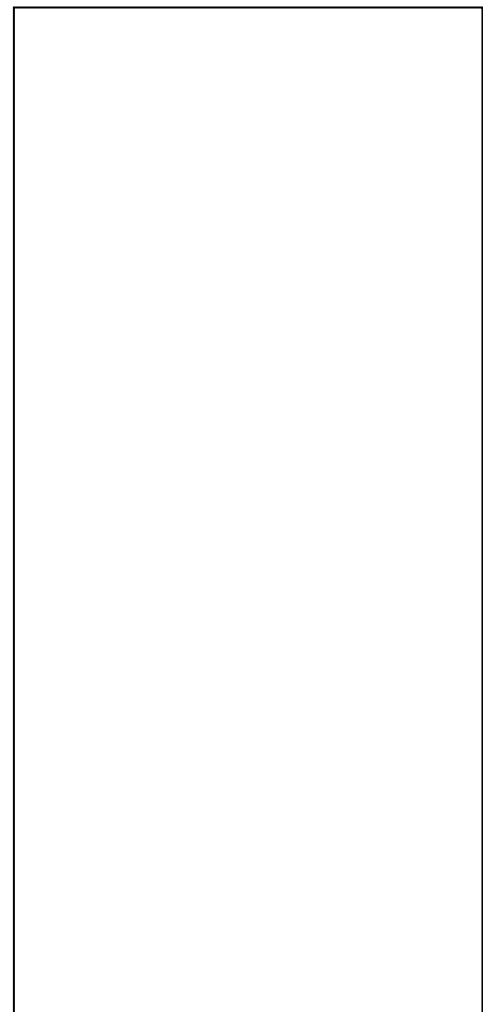
- DIN EN ISO 12100-1 /-2, safety of machines
- EN 983, safety of pneumatic systems
- EN 378-1 to 4, cooling systems and heat pumps
- EN 60335-2-34 safety of electrical devices engine compressors
- EN 61000-6-2 EMC interference resistance
- EN 61000-6-4 EMC interference emission

The following national standards, guidelines and specifications have been used:

- BVG D4 refrigerated systems, heat pumps and cooling devices
- IEC 335-2-34 safety for domestic appliances and applications
- DIN 4361 contact protective devices
- DIN EN 60204.1 electrical equipment for industrial machines

Provisions relating to electrical equipment:

- VDE 0700, Teil24, bzw. IEC 335-2-24



A complete technical documentation is available within the scope of this operating manual.

## Introduction

### Dear Customer,

Thanks that you have decided to buy our refrigeration compressed air dryer. You have chosen one of the most progressive appliances, which will facilitate a durable and trouble-free operation, if installation and operating is correct.



Before installation and initial operation, please read the following instructions very carefully and follow our indications! Only if you observe our regulations and instructions for the refrigeration compressed air dryer, a perfect functioning and so, a reliable compressed air conditioning will be guaranteed. Installation and initial start of operation has to be done through qualified and skilled staff only, and under usual proceedings within the compressed air technology. Here from resulting general rules for the proper installation and operation could possibly not be taken completely into this instruction. We are not liable for non appliancespecific regulations and instructions. If statements in this instruction are contrary to legal or other valid regulations, so they have to be replaced accordingly. Other statements remain untouched. Due to the continuous technical evolution, we reserve the right to introduce any necessary change without giving previous notice.

**This manual must be maintained available in any moment for future references and it has to be intended as inherent part of the relevant dryer.**

These operating instructions must be continuously available at the site where the dryer is used. We recommend to prepare a copy and keep the same in a safe and freely available place next to the dryer. Keep the original document in a safe place.

Notes on supplementary documents: Supplementary documents such as operation manuals for options or pertaining components must always be heeded. They contain additional information, e.g. regarding maintenance, and are therefore necessary for safe operation of the plant.

### Target Groups of these Operating Instructions



These operating instructions are intended for all persons working on and using the dryer. We assume that all such persons are specialist personnel, e.g. fitters, electricians or cooling technicians, respectively instructed personnel.

#### **We assume the following points:**

- There are appropriate operating instructions for the application intended by the operator.
- The staff has been instructed how to handle the compressed air and is aware of the involved risks and the general danger prevention measures.
- The staff has experience in handling compressed air and pneumatic devices, electrical and refrigerated devices.

## Warranty

### Warranty Conditions

According to legal regulations you get a 12-month warranty concerning material defects and manufacturing errors for this product starting from invoice date. Basis for all warranty claims is the purchase receipt. In case of queries we need the model type, serial number and year of construction (model identification plate).

Damages caused through non-observance of the installation and operation instructions are not covered through the warranty. In particular from the warranty are excluded: Wear parts and operating supplies, damages caused by improper installation, damages caused by improper use or overload of the dryer, damages caused by lack of service, damages caused by events, which are not within the sphere of influence of the manufacturer.

**Tampering the safety and security devices is not permissible. During the warranty period only skilled workers of the manufacturer are authorized to work on the cooling system. In the case of warranty claims the refrigeration compressed air dryer has to be in its original condition.**

## Purpose of Use

### Proper Use of the Dryer

It is only permitted to dry compressed air. If other media should be used, any warranty of the manufacturer will expire.



**WARNING! Improper use!** The purpose of the machine is the separation of water and eventual oil particles present in compressed air. The dried air cannot be used for breathing purposes or for operations leading to direct contact with foodstuff without additional conditioning. This dryer is not suitable for the treatment of dirty air or of air containing solid particles.



**CAUTION! Polluted inlet air!** In case of heavily polluted inlet, we recommend the additional installation of a pre-filter to prevent a clogging of the heat exchanger.

## Important Advices

### General

This manual contains indications and instructions about the operation and service of refrigeration compressed air dryers under consideration of safety instructions. Depending on workload, air flow, inlet pressure, inlet and ambient temperature, the dryer can achieve a pressure dew point between 2°C and 10°C.

The dryer is manufactured in accordance with the valid and general approved rules of the newest technology. It corresponds to the listed regulations under EC Declaration of Conformity / CE identification. Local and national rules for accident prevention must be noticed!

The dryer has to be installed always behind the compressed air safety valve. The rules for disposal of condensate have to be observed. In case of non observance of the safety devices and the indications in this operation instruction, the producer is not liable. This is applicable for the operation as well as service and maintenance of the refrigeration compressed air dryer, even though this operation instruction does not explicit refer to it. Interventions into safety devices are not allowed. During the warranty period, only skilled workers of the producer are authorized to work on the refrigeration system. After this, through well experienced staff according DIN EN 378.

**Changes and reparations at the pressure vessel are just allowed to put through by the producer.**

## Important Advices

### Safety Indications



**DANGER! Compressed air!** Compressed air is a highly hazardous energy source. Never work on the dryer or its components with pressure in the system. Never point the compressed air or the condensate drain outlet hoses towards anybody. The user is responsible for the proper installation of the dryer. Failure to follow instructions will void the warranty. Improper installation can create dangerous situations for personnel and/or damages to the machine could occur. Before attempting maintenance in any way, the following pre-conditions must be satisfied: Ensure that no parts of the dryer are under pressure or can get supplied by compressed air during maintenance work.



**DANGER! Supply voltage!** Only qualified personnel are authorized to maintain and to operate electrically powered devices. Before attempting maintenance, the following pre-conditions must be satisfied: Ensure that main power is off, machine is locked out, tagged for service and power cannot be restored during service operations.



**CAUTION! Refrigerant!** The dryer contains FCKW-free refrigerant fluid. Please notice local and national rules for handling refrigerants.



**WARNING! Unauthorized interference!** Warranty does not apply to any unit damaged by accident, modification, misuse, negligence or misapplication. Unauthorized alterations will immediately void the warranty und guaranty.



**CAUTION! No water!** In case of fire, use an approved fire extinguisher. Never use water to extinguish fire (or near the dryer or directly to the dryer directed water).

## Important Advices

### Special Instructions

#### for the use of pressure equipment according to PED Directive 97/23/EC

To ensure the safe operation of pressure equipments, the user must conform strictly to the above directive and the following points:

- The equipment must only be operated within the temperature and pressure limits stated on the manufacturer's data nameplate.
- Welding on heat-exchangers is strictly forbidden.
- The equipment must not be stored in badly ventilated spaces, near a heat source or inflammable substances.
- Vibration must be eliminated from the equipment to prevent fatigue failure.
- Condensate discharge should be checked for operation every day to prevent a build up of condensate in the pressure equipment.
- The maximum working pressure stated on the manufacturer's data nameplate must not be exceeded. Prior to use, the user must fit safety / pressure relief devices.
- All documentation supplied with the equipment (manual, declaration of conformity etc.) must be kept for future reference.
- Do not apply weights or external loads on the vessel or its connecting piping.



**WARNING! Unauthorized interference!** Users of the equipment must comply with all local and national pressure equipment legislation in the country of installation.

## Transport

### Transport, Delivery and Storage

After arrival of the delivery, the goods must inspect immediately in regard of completeness and damage. In the case of damage or loss, the freight forwarder has to report all details to the insurer for the assertion of compensation. Only if an appropriate documentation (i.e. photos) is available, damages can be claimed.

If a damage appears which could cause further damages, the customer is committed to restrict the damages to a minimum. For damage and consequential damage which could be prevented, there is no liability.



**WARNING! Possible damage!** Even when packaged, keep the machine protected from severity of the weather. Keep the dryer always in vertical position when transported or stored. Turning it upside down some parts could be irreparably damaged. If not in use, the dryer can be stored in its packaging in a dust free and protected site at a temperature of 2°C - 43°C, and a specific humidity not exceeding 90%. Should the stocking time exceed 6 months, please contact the manufacturer.



**NOTICE: Recycling!** The packaging materials are recyclable. Dispose of material in compliance with the rules and regulations in force in the destination country.



If damages are discovered after initial operation, the user is committed to undertake any action to avoid consequential damage. First actions could be to switch off the compressed air circuit and the main power connection.

Check for visible loss or damage, if no visible damage is found place the unit near to the installation point and unpack the contents.

- It is recommended to move the still packaged unit using suitable trolleys or hoists. We advise against any manual transport. Notice weight and dimensions of the dryer (model identification plat / technical data sheet).
- Always keep the dryer in the upright vertical position. Damage to components could result if unit is laid on its side or if placed upside down.
- Handle with care. Heavy blows could cause irreparable damage.



**Only upright vertical position!**



**Lying horizontal position forbidden!**



## Assembly and Installation

### Installation Site

The main dimensions are shown at the dimensioned drawing of the refrigeration compressed air dryer. The weight is mentioned on the model identification plate.

Failure to install dryer in the proper ambient conditions will affect the dryer's ability to condense refrigerant gas. This can cause higher loads on the compressor, loss of dryer efficiency and performance, overheated condenser fan motors, electrical component failure and dryer failure due to the following: compressor loss, fan motor failure and electrical component failure. Failures of this type will affect warranty considerations.

#### Minimum installation requirements:

- Select a clean dry area, free from dust, and protected from atmospheric disturbances.
- The supporting area must be smooth, horizontal and able to hold the weight of the dryer.
- For a wall mounting, the wall has to be perfect vertical and able to hold the weight of the dryer. Only use the existing fastening points of the housing. The dryer has to be mounted in perfect upright position.
- Minimum ambient temperature +2°C, maximum ambient temperature +43°C.
- Allow at least 1 meter of clearance on each side of the dryer for proper ventilation and circulation through the condenser. The space is also necessary to facilitate maintenance operations.



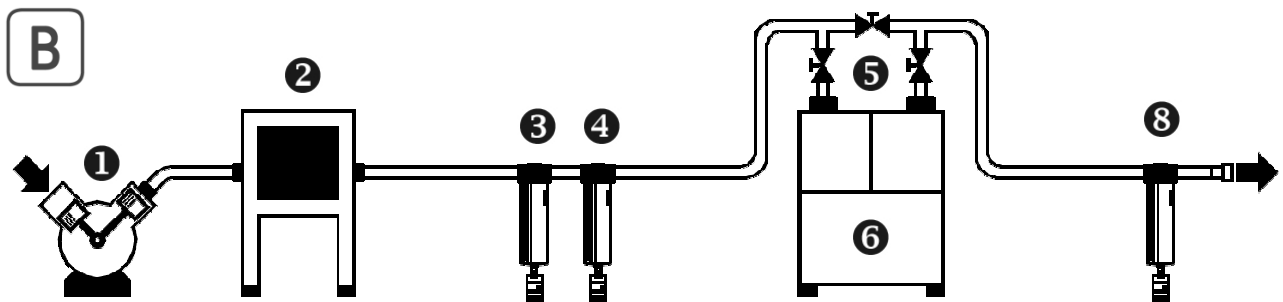
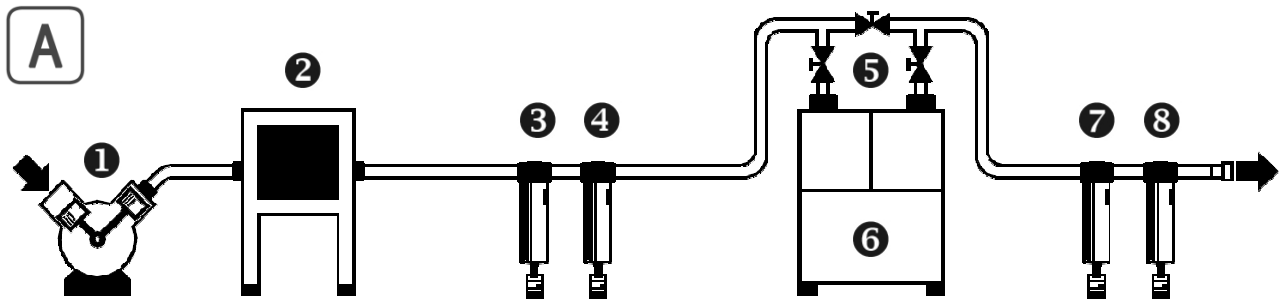
**CAUTION! Ambient conditions!** Do not install dryer in an environment of corrosive chemicals, explosive gasses, poisonous gasses; steam heat, areas of high ambient conditions or extreme dust and dirt.



**CAUTION! No water!** In case of fire, use an approved fire extinguisher. Never use water to extinguish fire (or near the dryer or directly to the dryer directed water).

## Assembly and Installation

### Installation Layout



- |               |                 |                        |
|---------------|-----------------|------------------------|
| ① Compressor  | ③ Pre-Separator | ⑥ Compressed Air Dryer |
| ② Aftercooler | ④ Pre-Filter    | ⑦ Separator            |
|               | ⑤ By-Pass       | ⑧ Final Filter         |

**Type A** installation with downstream separator (and mechanically operated venting unit) is suggested for dryer model "BASIC". **Type B** installation is suggested for dryer model "ACD" which is already equipped with a built-in separator and condensate drain.

We suggest to install the compressed air dryer between pre-filter and separator (Type A „BASIC“) / final filter (Type B „ACD“). We also suggest to install a by-pass line to separate the compressed air dryer from the compressed air circuit without any pressure losses or operational interruptions.



**WARNING! Improper use!** The purpose of the machine is the separation of water and eventual oil particles present in compressed air. The dried air cannot be used for breathing purposes or for operations leading to direct contact with foodstuff without additional conditioning. This dryer is not suitable for the treatment of dirty air or of air containing solid particles.

## Assembly and Installation

### Connection to the Compressed Air System

All operations mentioned below to be performed by qualified personnel only.



**DANGER! Compressed air!** Never work on compressed air system under pressure. The user is responsible to ensure that the dryer will never be operated with pressure exceeding the maximum pressure rating on the unit data tag. Over-pressurizing the dryer could be dangerous for both the operator and the unit.



The dryer has to be installed always behind the compressed air safety valve. It is not allowed to shore up any pipe on the top of the dryer. It is necessary to have per pipe at least one fix bearing point for each pipe close to the refrigeration compressed air dryer. Furthermore the dryer has to be connected vibration-free with the main pipe system. The air temperature and the flow entering the dryer must comply within the limits stated on the data nameplate. The system connecting piping must be kept free from dust, rust, chips and other impurities, and must be consistent with the flow-rate of the dryer. In order to perform maintenance operations, a by-pass system is recommended.



**CAUTION: Pressure-relieve necessary!** Provide a mechanically operated venting unit if the refrigerate compressed air dryer has no built-in condensate drain (BASIC-model) or the condensate drain installed at the time of delivery (ACD-model) has been removed or replaced with another type. Always ensure venting of the device!

### Condensate Drain (only ACD-Model)

All operations mentioned below to be performed by qualified personnel only.



**DANGER! Compressed air and pressurized condensate!** The condensate is discharge at the system pressure. Drain line should be secured. Never point the condensate drain line towards anybody. The drain cannot be connected to pressurized systems.



**NOTICE: Environment protection:** Don't dispose the condensate in the environment. The condensate collected in the dryer may contain oil and dirt particles released in the air by the compressor. Dispose the condensate in compliance with the local rules.



Lay the condensate drain line outside the device with an adequately dimensioned gradient and without counter pressure. Avoid unwanted pipe bends and level differences as well.

## Assembly and Installation

### Electrical Connections

All operations mentioned below to be performed by qualified personnel only.



**DANGER! Supply voltage!** Be sure to check the local codes in your area. The electrical connection and the safety systems have to apply. Before connecting the unit to the electrical supply, verify carefully the data nameplate for the proper electrical information.



**Before you build up the electrical connections you have to turn off the main switch of the dryer.**



The dryer has to be installed as shown at the circuit diagram. The cross section of the power supply cables must comply with the consumption of the dryer, while keeping into account also the ambient temperature, the conditions of the mains installation, the length of the cables, and the requirements enforced by the local Power Provider.



**WARNING! Automatic start!** After you built up the electrical connections, the dryer can start automatically.

### Remote Monitoring Connection (AC1350/1950)

The models PT 85-120 HP 350/420, equipped with electronic control type ST122, have a remote monitoring option, i.e. a floating collective fault notification. It can be optionally activated as a "normally closed contact" or a "normally open contact". Depending on the model, your device has a floating fault notification that is to be connected directly with the electronic control unit, or optionally with a pre-connected fault notification cable that is laid from the casing.

## Commissioning

### General Instructions / Pre-Conditions

Pre-conditions: The dryer is correctly mounted and connected to the compressed air pipe system. The condensate derivative is connected. The electrical connection is built up. Notice chapter „Assembly and Installation“!

If damages are discovered after initial operation, the user is committed to undertake any action to avoid consequential damage. First actions could be to switch off the compressed air circuit and the main power connection.



Qualified personnel must perform the start-up. When installing and operating this equipment, comply with all national electrical code and any applicable federal, state and local codes. Who is operating the unit is responsible for the proper and safe operation of the dryer.



**CAUTION! Exceeding of operating parameters!** Verify that the operating parameters match with the nominal values stated on the data nameplate of the dryer (voltage, frequency, air pressure, air temperature, ambient temperature, etc.).



**WARNING! Open housing!** Never operate equipment with panels removed.

## Commissioning

### Sequence of Operations



This procedure should be followed on first start-up, after periods of extended shutdown or following maintenance procedures. Qualified personnel must perform the start-up.

#### **Step-1 – Checks before initial start:**

- Remove packaging and material which could obstruct the area around the dryer.
- Ensure that all the steps of the chapter "Assembly and Installation" have been observed.
- Ensure that the connection to the compressed air system is correct and that the piping is suitably fixed and supported.
- Ensure that the condensate drain pipe is properly fastened and connected to a collection system or container (only ACD model type).
- Ensure that the by-pass system (if installed) is closed and the dryer is isolated.

#### **Step-2 – Dryer start-up:**

- Turn on the main switch.
- Wait some minutes until the dryer reached its operating temperature.

#### **Step-3 –Compressed air network connection:**

- Open the air inlet valve very slowly and carefully.
- Open the air outlet valve very slowly and carefully.
- Slowly close the central by-pass valve of the system (if installed).
- Check the piping for air leakage.
- Ensure the drain is regularly cycling (only ACD model type, wait for its first interventions).

## Commissioning

### Start up / Shut down

For short periods of inactivity, (max 2-3 days) we recommend that power over the electrical connection is maintained to the dryer.

#### Start up:

- Check the condenser for cleanliness.
- Start the dryer by turning-on the main switch.
- Wait some minutes until the dryer reached its operating temperature.
- Now you can switch on the air compressor.

#### Shut down:

- Check the temperature indicated on the electronic control unit.
- Now shut down the air compressor.
- After a few minutes, shut down the dryer by turning-off the main switch.



**CAUTION: The number of starts must be no more than 6 per hour.** The dryer must stop running for at least 5 minutes before being started up again. The user is responsible for compliance with these rules. Frequent starts may cause irreparable damage.



**NOTICE: Pressure dew point display!** A dew point within 0°C and +10°C displayed on the electronic control unit is correct according to the possible working conditions (flow-rate, temperature of the incoming air, ambient temperature, etc.). During the operation, the refrigerating compressor will run continuously. The dryer must remain on during the full usage period of the compressed air, even if the air compressor works intermittently.

## Commissioning

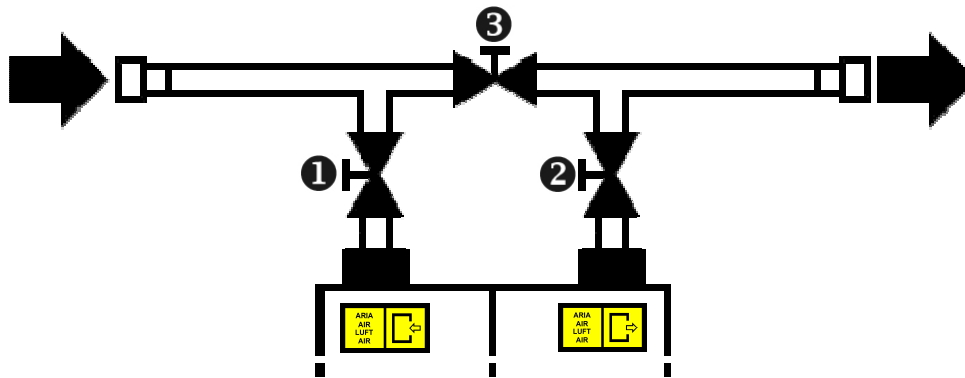
### Connection with Compressed Air Network



Ensure that the by-pass system (if installed) is closed and the dryer is isolated.

**Please follow exactly the operation sequence 1-2-3 mentioned below!**

- 1** Open the **air inlet valve** very slowly and carefully.
- 2** Open the **air outlet valve** very slowly and carefully.
- 3** Slowly **close the central by-pass valve** of the system (if installed).



**CAUTION! Damage by pressure shocks!** The exposure with pressure of the refrigerant compressed air dryer has to happen slowly. The valve operations must necessarily be done slowly to avoid pressure shock.

### By-Pass Line (optional)

A bypass line can be used for separating the compressed air dryer from the compressed air circuit without any pressure losses or operational interruptions.



## Decommissioning

### Sequence of Operations



Qualified personnel must perform the decommissioning. When shutting down this equipment, comply with all national electrical code and any applicable federal, state and local codes.

#### **Step-1 – Disconnection from compressed air network:**

- Slowly open the central by-pass valve of the system (if installed).
- Close the air outlet valve slowly and carefully.
- Close the air inlet valve slowly and carefully.

#### **Step -2 – Relieve pressure of the dryer:**

- ACD-Model: Relieve the pressure of the dryer step by step over the built-in condensate drain. BASIC-Model: Relieve the pressure of the dryer step by step over the condensate drain of the downstream separator.
- Ensure that afterwards not components of the dryer are under pressure any more.

#### **Step -3 – Dryer shut down:**

- Turn off the main switch.

#### **Step -4 – Disconnection from power:**

- For only short periods of inactivity the electrical connection can stay maintained to the dryer.



**Double-check very carefully Step-3 and Step-4. Ensure that the dryer is really switched off.**



**DANGER! Compressed air and pressurized condensate!** The condensate is discharged at the system pressure. Never point the condensate drain line towards anybody.



**DANGER! Compressed air!** Ensure that after finished decommissioning no components of the dryer are under pressure any more.

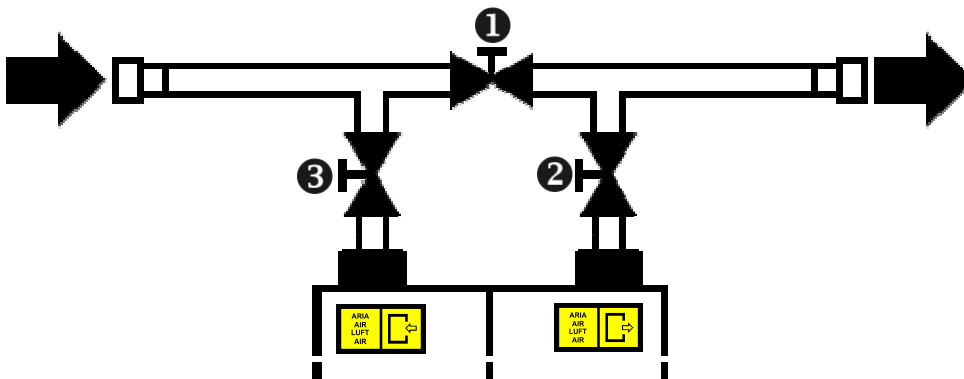
## Decommissioning

### Disconnection from Compressed Air Network



please follow exactly the operation sequence 1-2-3 mentioned below!

- ① Slowly **open the central by-pass valve** of the system (if installed).
- ② **Close the air outlet valve** slowly and carefully.
- ③ **Close the air inlet valve** slowly and carefully.



### Pressure-Relieve of the Dryer

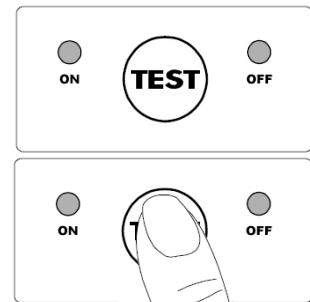


For venting the refrigerant compressed air dryer use the built-in condensate drain (ACD model) or a comparable equipment to be mounted at the compressed air outlet (BASIC model).

#### Model with a condensate drain built-in timer (ACD model):

Press the test button of the solenoid valve having a built-in timer for venting. Then disconnect the compressed air dryer from the electric circuit.

Please follow the installation and operating manual for the condensate drain included in the scope of supply.



**CAUTION: Pressure-relieve necessary!** Provide a mechanically operated venting unit if the refrigerate compressed air dryer has no built-in condensate drain (BASIC-model), or the condensate drain installed at the time of delivery (ACD-model) has been removed or replaced with another type. Always ensure venting of the device!



**CAUTION: Power failure!** The device cannot be vented using the condensate drain having an electric built-in timer in case of power failure.

## Maintenance / Service

### Check / Maintenance

Maintenance is more economic than repairs. It helps in identifying malfunctions in time, ensures continuous operation and longer service life of the device. Maintain and check the following assemblies and components repeatedly, at the latest after every 12 months as described.



Before attempting any maintenance operation on the dryer, shut it completely down (see chapter „Decommissioning“) and wait at least 15 minutes.



Only qualified personnel should perform troubleshooting and or maintenance operations. Make sure that maintenance personnel have read and understand the safety and operation instructions in this manual.



#### **Check – daily or every 12 hours of operation:**

- Verify that the dew point displayed on the electronic control is correct.
- ACD-Model: Check the proper operation of the condensate drain systems.



#### **Maintenance – monthly or every 250 hours of operation:**

- Verify the condenser for cleanliness.
- ACD-Model: Check the proper operation of the condensate drain systems.



#### **Maintenance – monthly or every 3000 hours of operation:**

- Verify for tightness all the screws of the electric system, inspect the cables.
- Cleaning of the condenser.
- ACD-Model: Cleaning of the condensate drain.
- Visual inspection of heat-exchanger unit and insulation.
- Inspect refrigerating circuit for signs of oil and refrigerant leakage.



**DANGER! Compressed air and mains voltage!** Prior to performing any maintenance or service, be sure that no part of the machine is powered no part of the machine is under pressure.



**DANGER! Hot surfaces!** Some components can reach high temperature during operation. Avoid contact until system or component has dissipated heat.

## Wartung / Service

## Error-Diagnosis / Checklist

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Device does not work, green control lamp of On-/Off-switch does not shine	Interrupted power supply	Re-establish the power supply
	Defective On-/Off-switch	Contact manufacturer/service
	General defect	
Moisture in compressed air	Compressed air inlet/outlet connected incorrectly	Connect compressed air inlet/outlet correctly, check installation
	Extraordinary high condensate formation	Adjust time control of condensate drain according to the specific condensate formation
	Condensate outlet blocked	Clear condensate outlet, check installation
	Fault of condensate drain	Push the test button, clean the condensate drain, contact manufacturer/service
	Too low operating pressure	Adhere to operation data
Temperature > +10°C	Compressed air dryer overloaded	Check operating conditions, ensure proper cooling air circulation, condensor cleaning
	Defective refrigerant circuit	Contact manufacturer/service
	Defective fan/condenser	
	Defective performance regulation	
Temperature < 0°C	Too low ambient temperature	Adhere to operation data
	Defective performance regulation	Contact manufacturer/service

## Maintenance / Service

### Maintenance Operation on the Refrigerating Circuit



**CAUTION! Refrigerant!** Maintenance and service on refrigerating systems must be carried out only by certified refrigerating engineers only, according to local rules. All the refrigerant of the system must be recovered for its recycling, reclamation or destruction.



**NOTICE! Environment protection!** Do not dispose this fluid in the environment. It has to be disposed according to legal regulations.



This dryer comes ready to operate and filled with R134a or R404A type refrigerant fluid. In case of refrigerant leak contact a certified refrigerating engineer. The room is to be aired before any intervention. If is required to re-fill the refrigerating circuit, contact a certified refrigerating engineers. Refer to the dryer nameplate for refrigerant type and quantity:

Refrigerant	Chemical Formula	TLV	GWP
R134a - HFC	CH <sub>2</sub> FCF <sub>3</sub>	1000 ppm	1300
R404a - HFC	CH <sub>2</sub> FCF <sub>3</sub> /C <sub>2</sub> H <sub>2</sub> F <sub>5</sub> /C <sub>2</sub> H <sub>3</sub> F <sub>3</sub>	1000 ppm	3784

### Maintenance Operation on the Condenser Unit



The degree of contamination of the condenser/liquefier can adversely affect the performance of the device. Clean the air-cooled condensers/liquefiers using a soft brush. Additional cleaning may be required apart from maintenance intervals depending on the degree of contamination and operating conditions.

### Maintenance Operation on the Condensate Drain (only ACD-Model)



Check and clean the drain. Replace all wearing parts and seals as well. A defective drain can affect the performance of the compressed air dryer adversely, neutralise its effect completely or lead to losses in the compressed air circuit. Within the scope of a visual inspection, also check all connections of the drain on the heat exchanger unit and the condensate drain line for leak-tightness.

### Maintenance Operation on the Heat Exchanger Unit



Inspect the heat exchange unit and its insulation visually for damage or condensate formation. The formation of condensate indicates damaged insulation and refrigeration loss. The consequences can be increased energy consumption and reduced performance of the device.

## Dismantling

### Dismantling of the Dryer

If the dryer is to be dismantled, it has to be split into homogeneous groups of materials.



**NOTICE! Environment protection!** We recommend to comply with the safety rules in force for the disposal of each type of material. The chilling fluid contains droplets of lubrication oil released by the refrigerating compressor. Do not dispose this fluid in the environment. It has to be discharged from the dryer with a suitable device and then delivered to a collection centre where it will be processed to make it reusable.

## Electronic Control ST710 - AC 450/900

### Function / Operation





ST710 controls all the operations, the alarms and the operational setting of the dryer. The two-channel thermostat has a three-digit LED-Display, 5 buttons and 1 contact output.



**CAUTION! Warranty lost!** Any change of the original setup will lead to a total loss of warranty.



### Operation Buttons

	<b>Button UP</b> is for programming/setup by manufacturer.
	<b>Button Down</b> is for programming/setup by manufacturer.
	<b>Button SET</b> is for programming/setup by manufacturer.
	<b>Button ON/OFF/STANDBY</b> No function for this dryer type/model.

## Electronic Control ST710 - AC 450/900

## LED-Display

2.5	Pressure dew point display during operation. Blinking display at temperature alarm.
F <sub>1</sub> L/F <sub>1</sub> H	Error sensor-1: Sensor-mistake/short-circuit. Check/replace sensor-1..
EP	Data loss in parameter memory (rule-contacts are dead). Switch off the dryer and restart it.
---	Button lock active.



**CAUTION: Pressure dew point alarm!** A dew point within 0°C and +10°C displayed on the electronic control unit is correct according to the possible working conditions (flow-rate, temperature of the incoming air, ambient temperature, etc.). Values out of this temperature range will trigger an alarm.



**CAUTION! Switching Celsius/Fahrenheit!** The display of temperatures can reconvert between degrees Fahrenheit and degrees Celsius. Changing this parameter, the scheduled values keep their number-area and the adjustment range. They need to become manually adjusted.

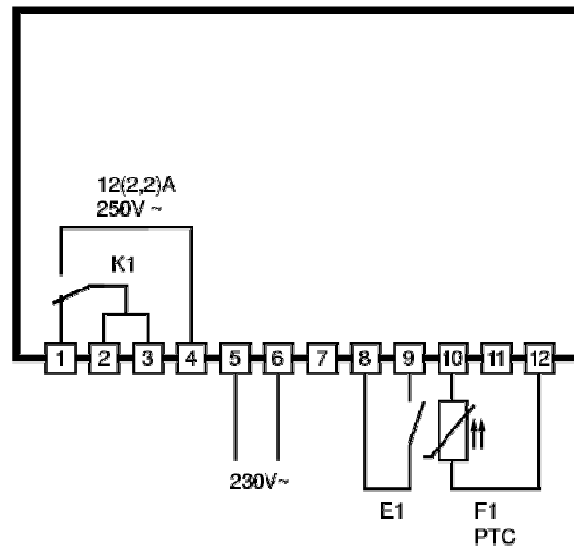


## Electronic Control ST710 – AC 450/900

## Connection Scheme

**Circle-1 – Sensor-F1 – power control, alarm:**

Thermostatic temperature regulation of the magnetic valve for performance control, with additional control of alarm temperatures.



## Electronic Control ST122 – AC 1350/1950

### Function / Operation

ST122 / S8-Digi controls all the operations, the alarms and the operational setting of the dryer. The two-channel thermostat has a three-digit LED-Display, 4 buttons and 3 contact outputs.







**CAUTION! Warranty lost!** Any change of the original setup will lead to a total loss of warranty.



**WARNING! Unauthorized interference!** Any change of the control setup can affect or negate the function of the dryer, can cause damages of the dryer, can affect persons and environment.



### Operation Buttons

	<b>Button UP</b> is for programming/setup by manufacturer.
	<b>Button Down</b> is for programming/setup by manufacturer.
	<b>Button SET</b> is for programming/setup by manufacturer.
	<b>Button ON/OFF/STANDBY</b> No function for this dryer type/model.

## Electronic Control ST122 - AC 1350/1950

## LED-Display

2.5	Pressure dew point display during operation. Blinking display at temperature alarm.
F <sub>1</sub> L/F <sub>1</sub> H	Error sensor-1: Sensor-mistake/short-circuit. Check/replace sensor-1.
F <sub>2</sub> L/F <sub>2</sub> H	Error sensor-2: Sensor-mistake/short-circuit. Check/replace sensor-2.
EP	Data loss in parameter memory (rule-contacts are dead). Switch off the dryer and restart it.
---	Button lock active.






**CAUTION: Pressure dew point alarm!** A dew point within 0°C and +10°C displayed on the electronic control unit is correct according to the possible working conditions (flow-rate, temperature of the incoming air, ambient temperature, etc.). Values out of this temperature range will trigger an alarm.



**CAUTION! Switching Celsius/Fahrenheit!** The display of temperatures can reconvert between degrees Fahrenheit and degrees Celsius. Changing this parameter, the scheduled values keep their number-area and the adjustment range. They need to become manually adjusted.

## Status Indicators

	LED (red light) is on at active temperature regulation over solenoid valve.
	No function for this dryer type/model.
	LED (red light) is blinking at alarms, if the pressure dew point is out of standard range.

## Electronic Control ST122 – AC 1350/1950

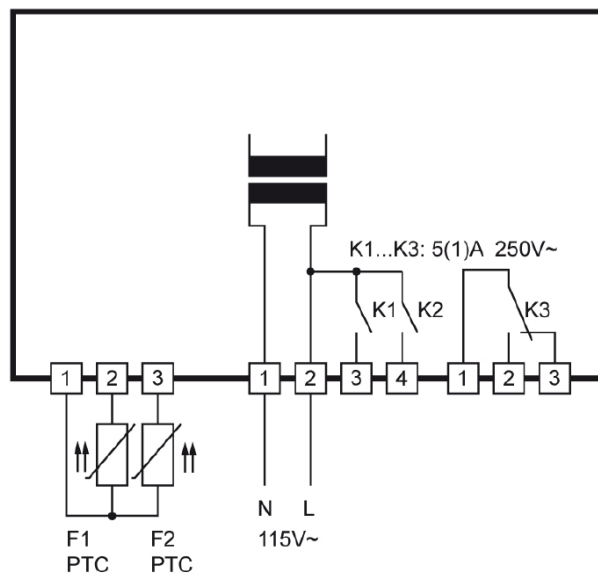
### Connection Scheme

**Circle-1 – Sensor-F1 – power control, alarm:**

Thermostatic temperature regulation of the magnetic valve for performance control, with additional control of alarm temperatures.

**Circle-2:**

No function for this dryer type/model.



## Condensate Drain (only ACD-Model)

### Function / Operation

The condensate draining is done by a direct acting valve, especially designed for high pressure applications. The solenoid valve is controlled by a timer. The timer controls the opening time („sec.“-seconds) and the opening interval („min.“-minutes) of the solenoid valve.



Please follow the installation and operating manual for the condensate drain included in the scope of supply.



Check the setup of the timer. The pre-settings for opening time („sec.“-seconds) and opening interval („min.“-minutes) have to become adjusted to the real condensate load..



**DANGER! Supply voltage!** Only qualified personnel are authorized to open the electric control cabinet.

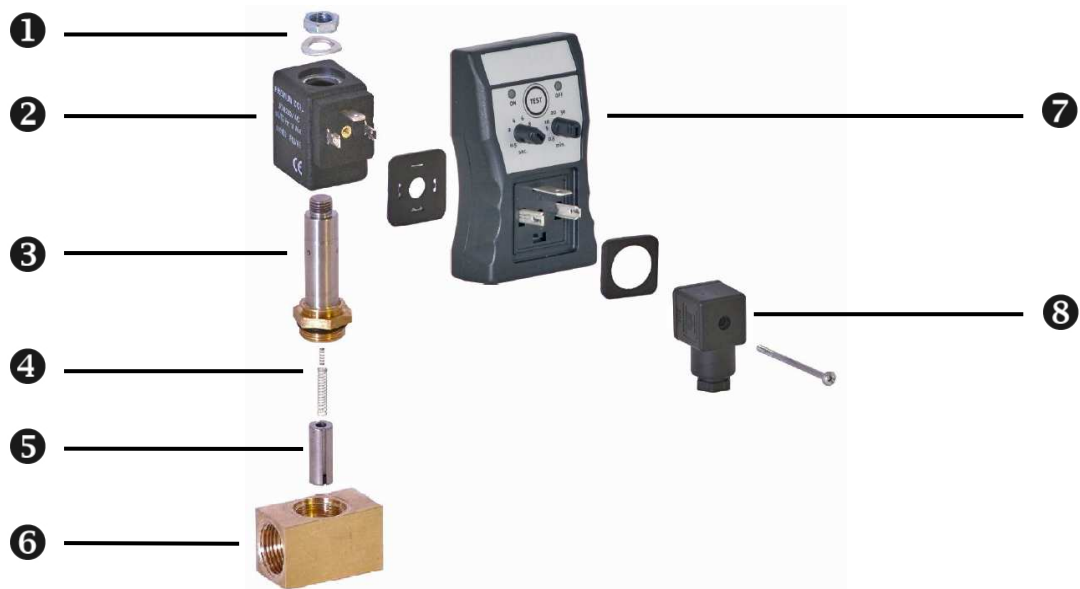


**WARNING! Open housing!** Never operate equipment with panels removed.



## Condensate Drain (only ACD-Model)

### Design



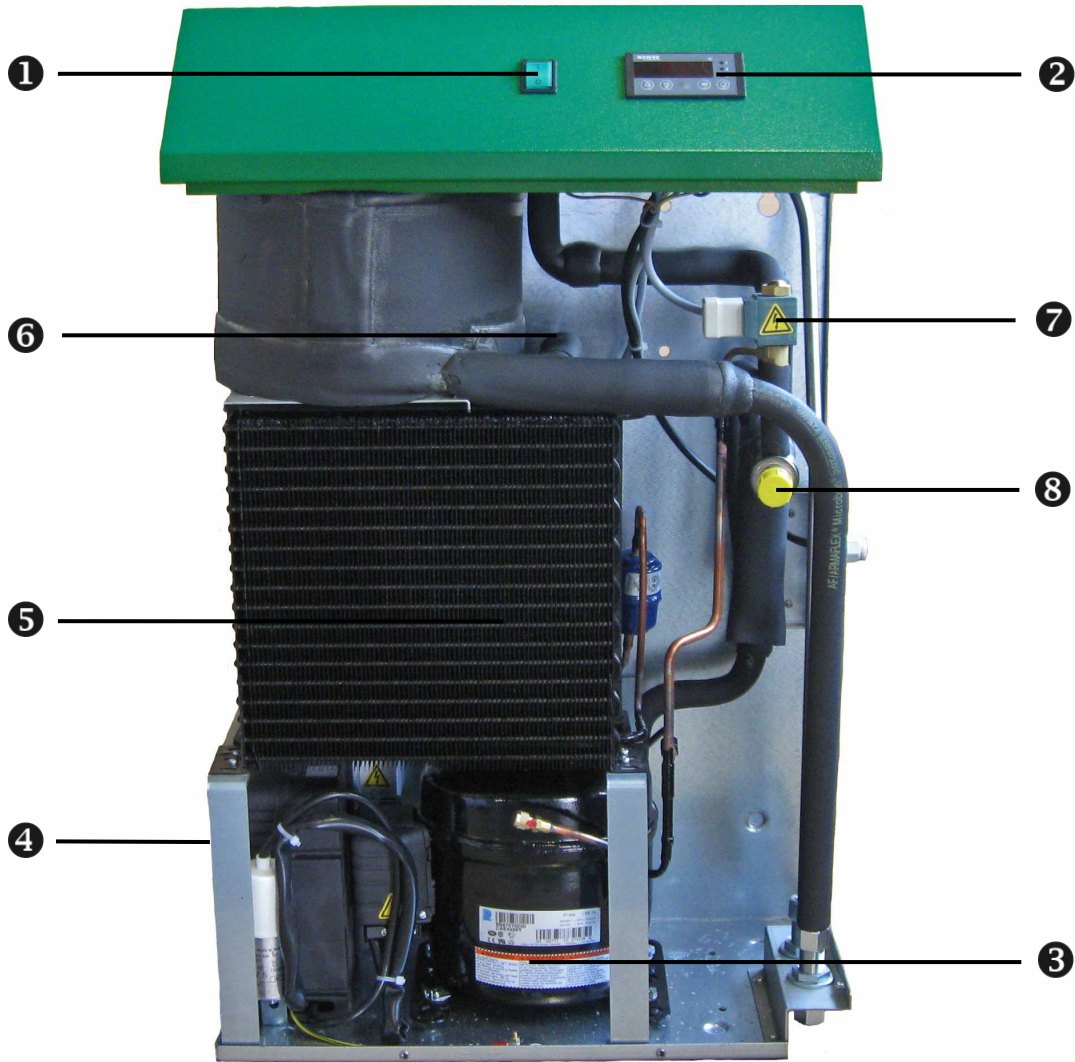
- 1 Top nut / washer
- 2 Coil
- 3 Valve shaft

- 4 Springs small/large
- 5 Plunger
- 6 Valve body

- 7 Control/Timer
- 8 Plug

Spare Parts / Components

Sketch / Design – BASIC-Model



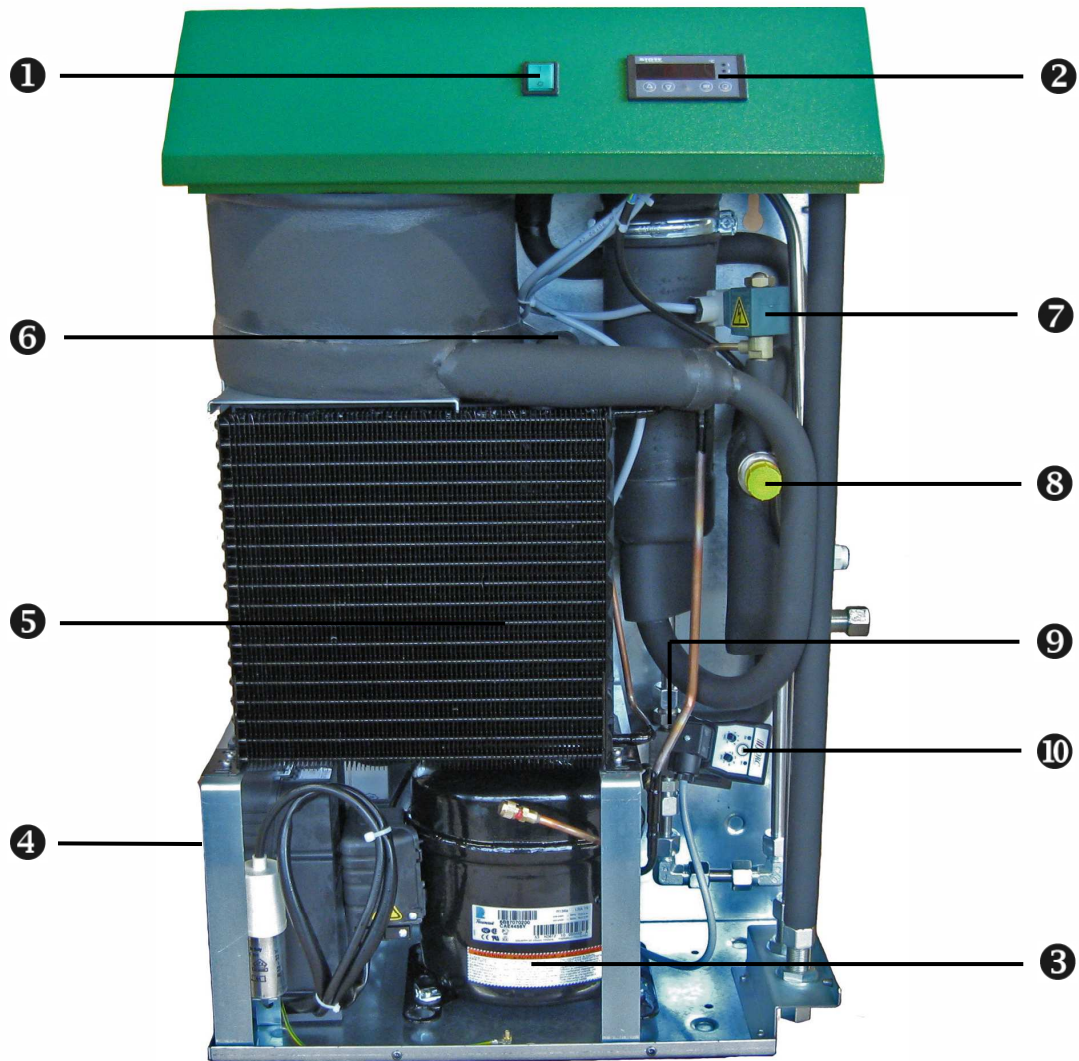
- 1 Main switch On/Off
- 2 Digital control unit
- 3 Refrigerant compressor

- 4 Pressure switch
- 5 Fan motor
- 6 Temperature sensor

- 7 Control valve
- 8 By-pass valve

Spare Parts / Components

Sketch / Design – ACD-Model



- 1 Main switch On/Off
- 2 Digital control unit
- 3 Refrigerant compressor

- 4 Pressure switch
- 5 Fan motor
- 6 Temperature sensor

- 7 Control valve
- 8 By-pass valve
- 9 Solenoid valve
- 10 Time relay

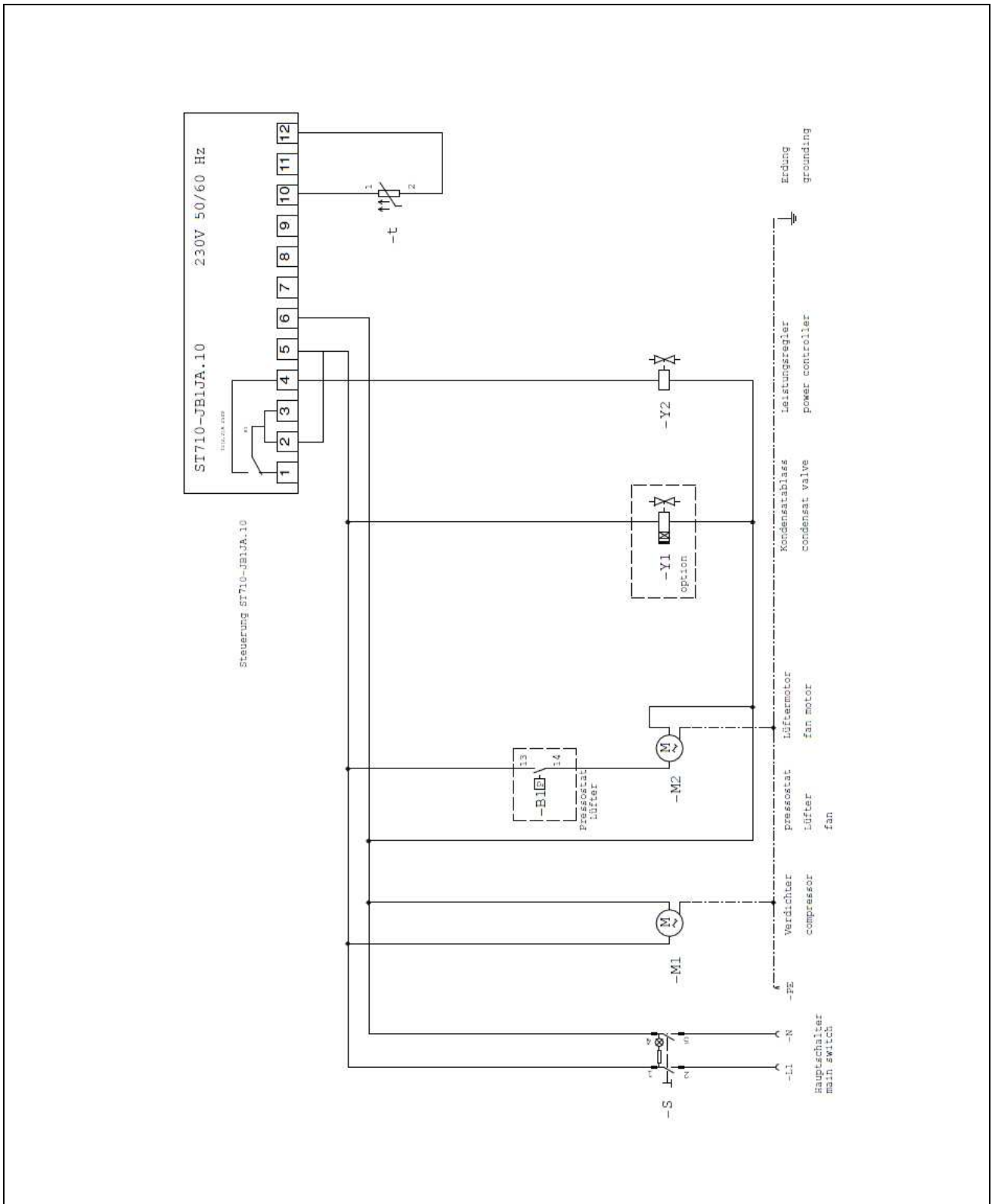


## Spare Parts / Components

## Spare Part List

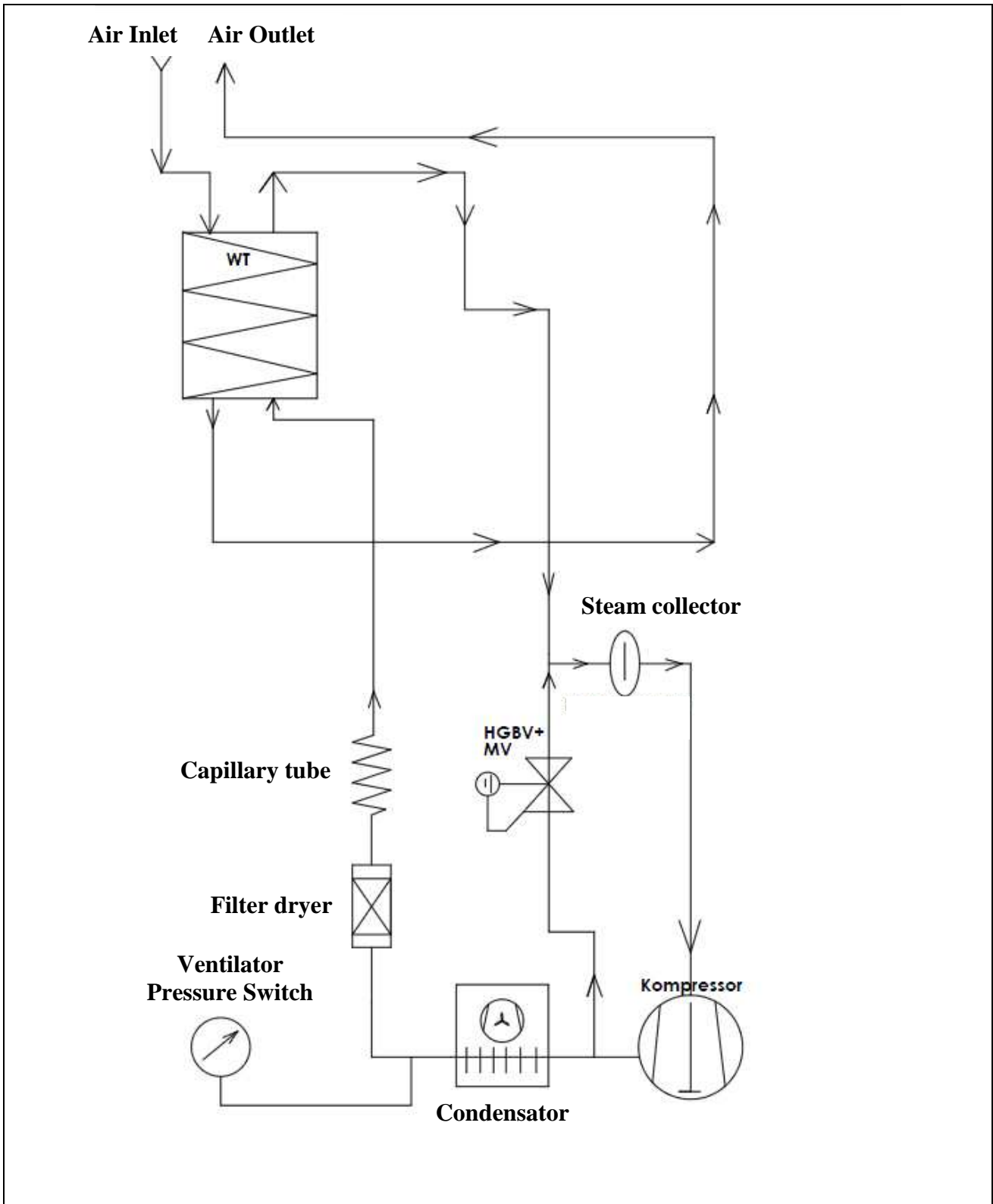
Component		AC 450	AC 900	AC 1350	AC 1950	
①	Main switch On/Off	6663108				
②	Digital control unit	KTA4600610		8816027		
③	Refrigerant compressor	230V 50/60Hz	6600725	6600726	6600712	
		230V 50Hz				6600804
		230V 60Hz				6600884
④	Pressure switch	6540008				
⑤	Fan motor	6600372	6600373	6600374	6600373	
⑥	Temperature sensor	KTA4600152		6501064		
⑦	Control valve	5510212				
⑧	By-pass valve	6550021		6550022		
⑨	Solenoid valve	350bar	5510270			
		420bar	5510271			
⑩	Time relay for solenoid valve	6660088				

Wiring Diagram – AC 450/900

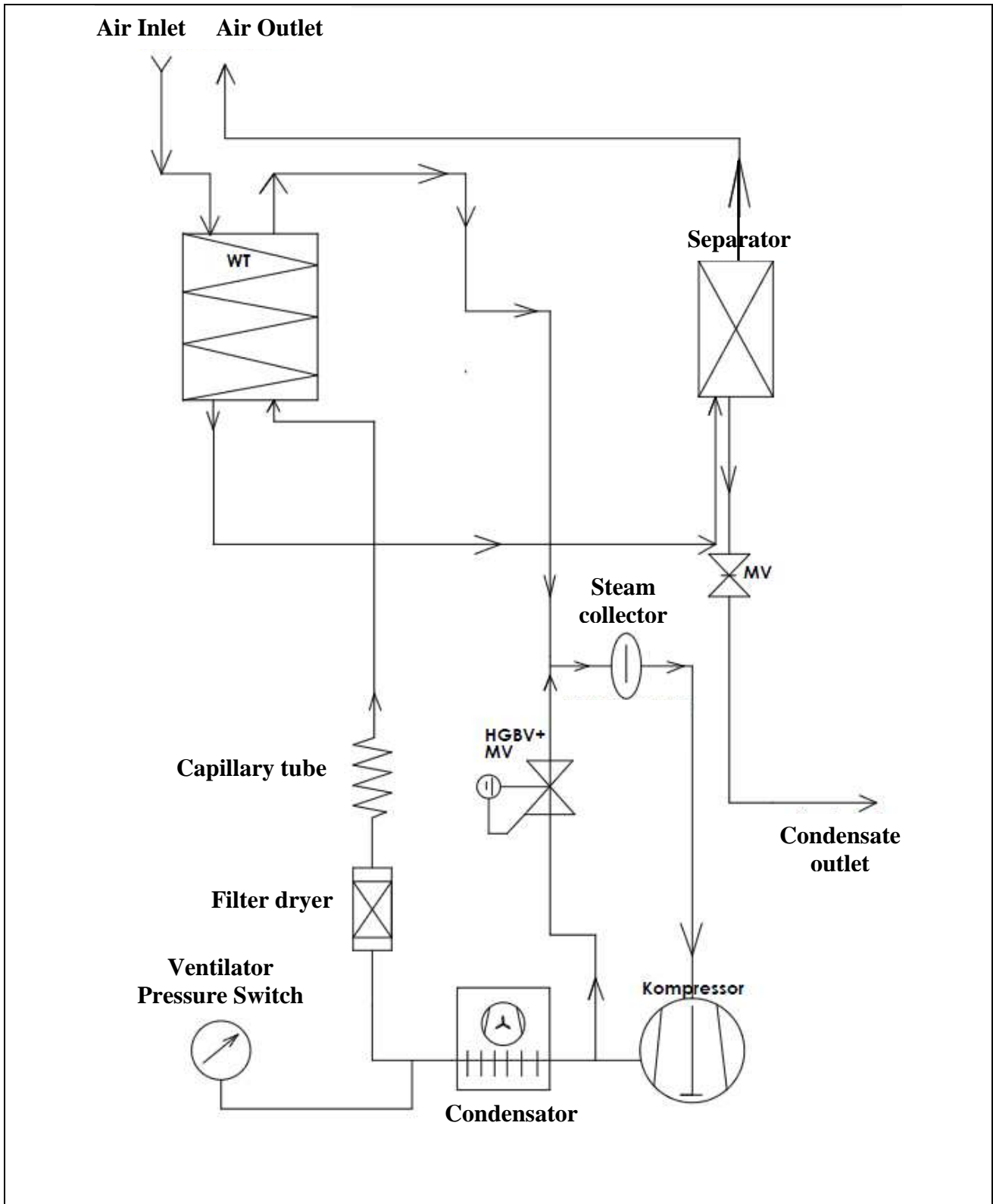




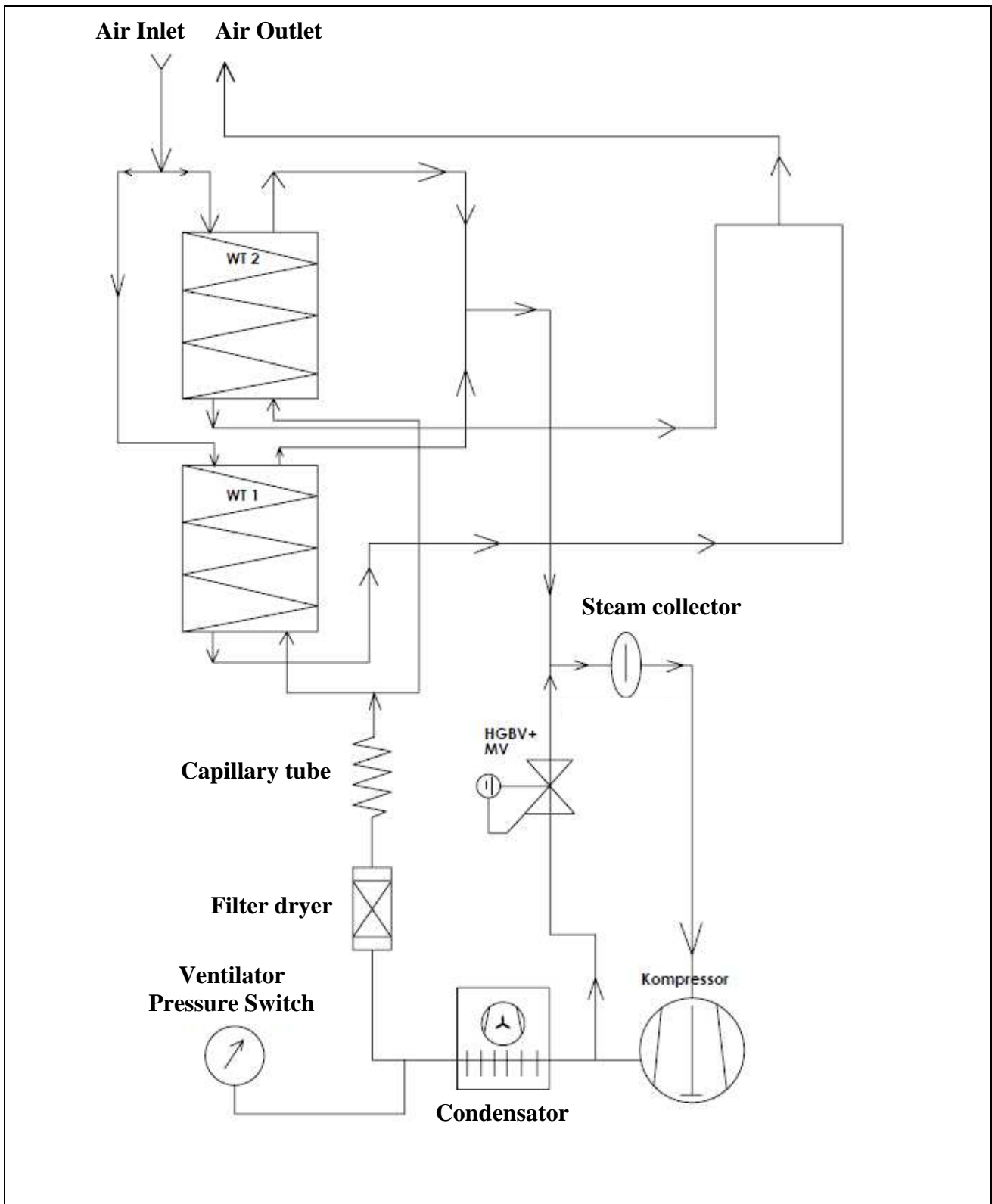
Flow Sheet – AC 450/900 BASIC



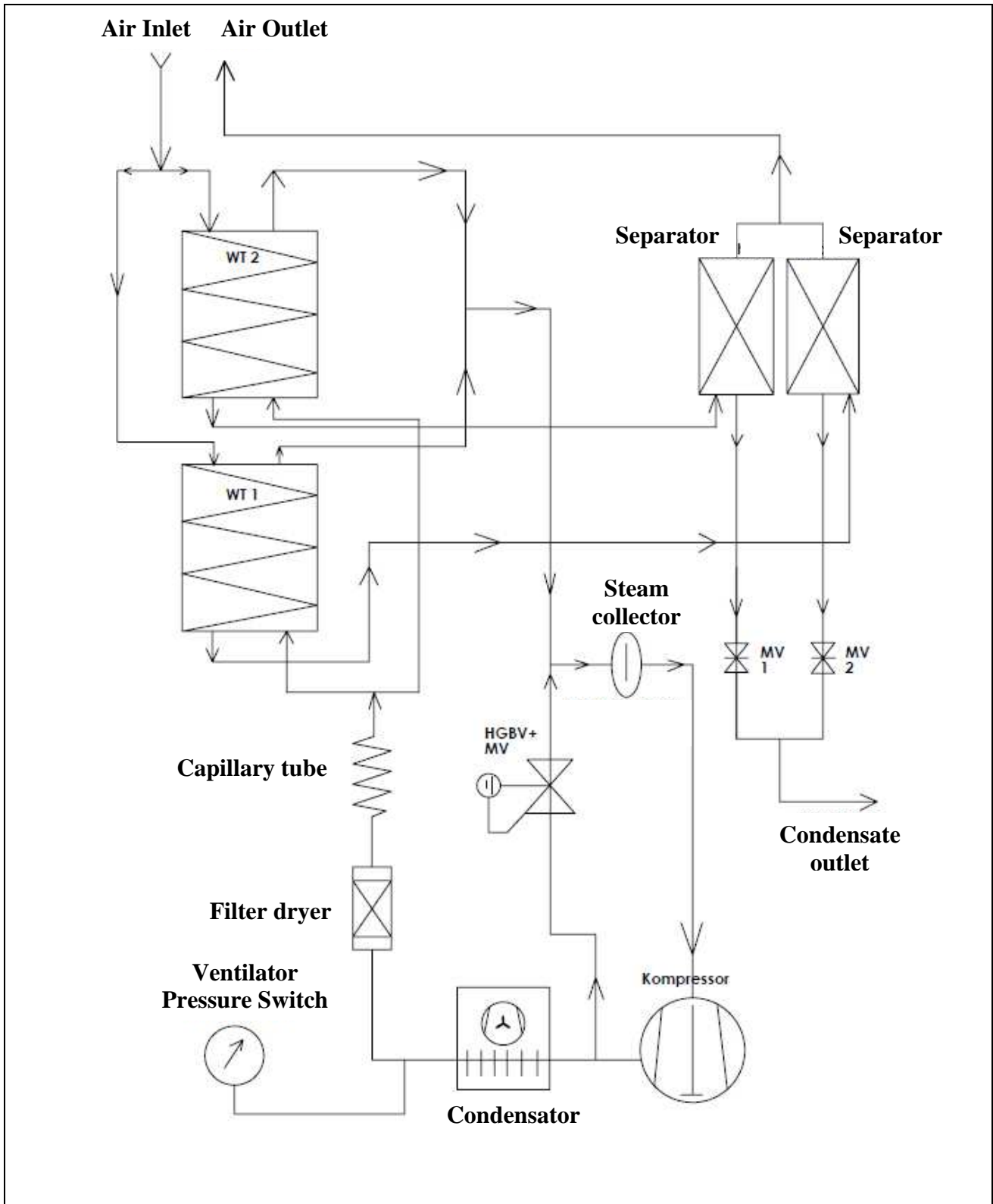
Flow Sheet – AC 450/900 ACD



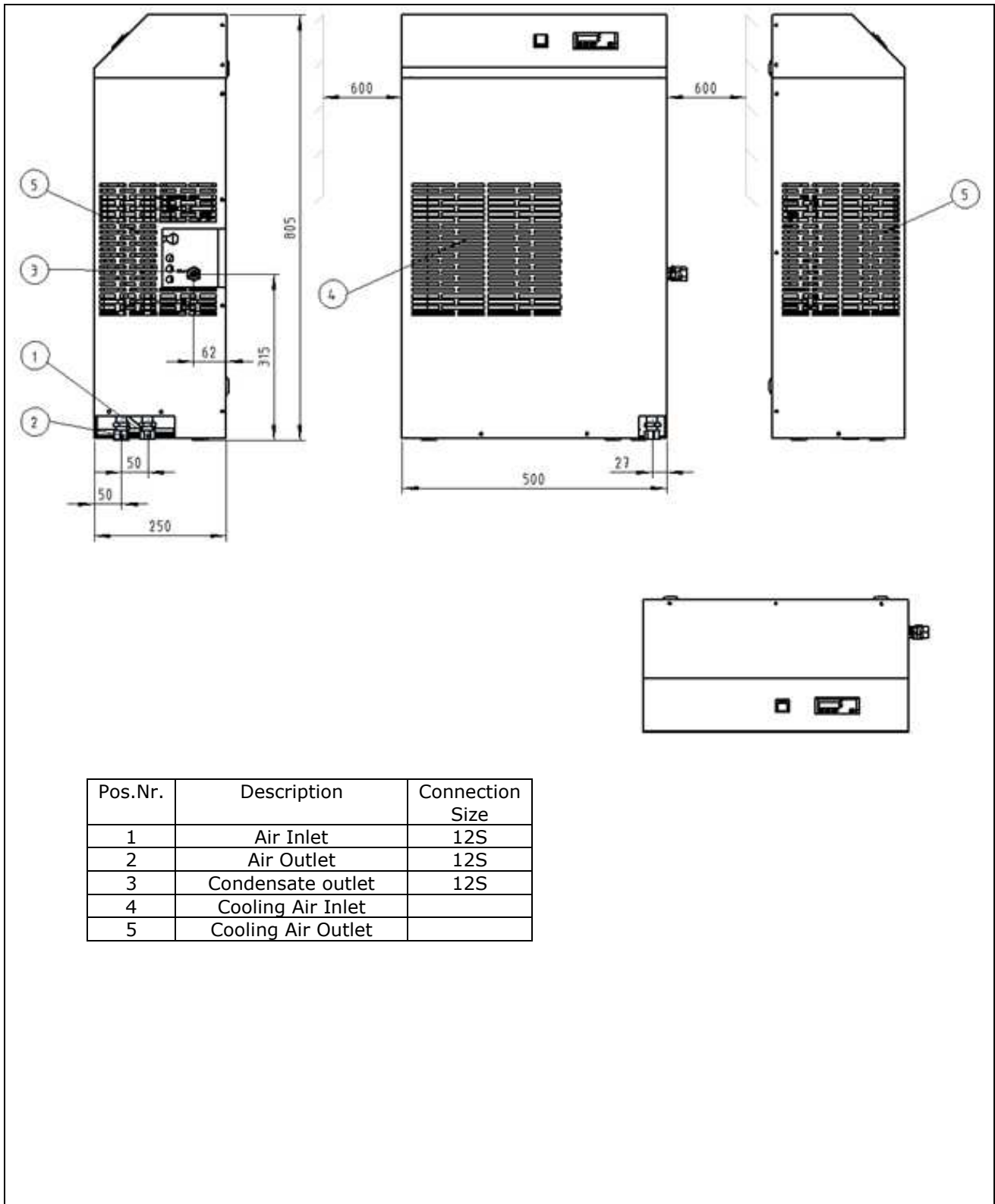
Flow Sheet – AC 1350/1950 BASIC



Flow Sheet – AC 1350/1950 ACD



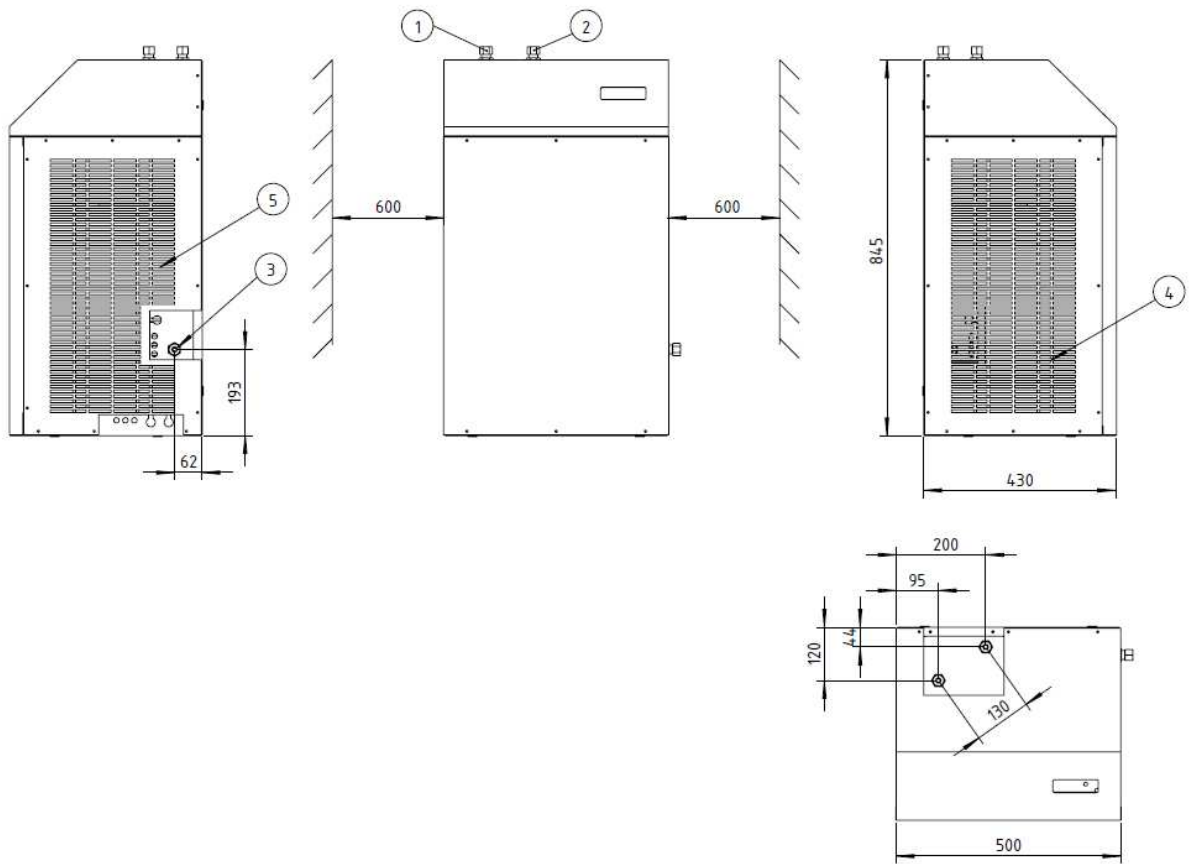
Housing / Dimensions – AC 450/900



Pos.Nr.	Description	Connection Size
1	Air Inlet	12S
2	Air Outlet	12S
3	Condensate outlet	12S
4	Cooling Air Inlet	
5	Cooling Air Outlet	



Housing / Dimensions – AC 1350/1950



Pos.Nr.	Description	Connection Size
1	Air Inlet	12S
2	Air Outlet	12S
3	Condensate outlet	12S
4	Cooling Air Inlet	
5	Cooling Air Outlet	

## Technical Data

BASIC Models without separator, without condensate drain								
Model	Air flow at 3°C PDP		Operating pressure [bar]	Power consumpt. [KW]	Air connection [in/out]	Electr. connection [V/Hz/Ph]	Dimensions [WxDxH]	Weight [kg]
	[m <sup>3</sup> /h]	[l/min]						
AC 450	27	450	250-350/420	0,42	S12	230/50-60/1	500x250x805	39
AC 900	54	900	250-350/420	0,56	S12	230/50-60/1	500x250x805	41
AC 1350	82	1.350	250-350/420	0,60	S12	230/50-60/1	500x430x845	50
AC 1950	117	1.950	250-350/420	0,70	S12	230/50-60/1	500x430x845	65

ACD Models with separator, with condensate drain								
Model	Air flow at 3°C PDP		Operating pressure [bar]	Power consumpt. [KW]	Air connection [in/out]	Electr. connection [V/Hz/Ph]	Dimensions [WxDxH]	Weight [kg]
	[m <sup>3</sup> /h]	[l/min]						
AC 450	27	450	250-350/420	0,42	S12	230/50-60/1	500x250x805	48
AC 900	54	900	250-350/420	0,56	S12	230/50-60/1	500x250x805	50
AC 1350	82	1.350	250-350/420	0,60	S12	230/50-60/1	500x430x845	59
AC 1950	117	1.950	250-350/420	0,70	S12	230/50-60/1	500x430x845	74

Operating Conditions	
Maximum compressed air inlet temperature	60°C
Permitted ambient temperature	2 - 43°C
Maximum operating pressure	350/420 bar

Reference Conditions	
Pressure dew point (Class 4)	3 °C
Air flow in relation to	20 °C / 1 bar
Compressed air inlet temperature	35 °C
Cooling media temperature	25 °C
Operating pressure	250 - 350/420 bar