

# INSTRUCTION MANUAL



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## Dehumidifier **RECUSORB R-051/061**



*The product picture may differ from the actual product*





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## Appendix

1. Component list
2. Dimensions
3. EC declaration of conformity

Electrical wiring diagram is located inside the electric box (The electric diagram has a drawing number. This number should correspond to the sticker with a drawing number found inside the electric cabinet).

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# 1 SAFETY

## 10.1 AIM OF THIS DOCUMENTATION

This document is included at delivery and is therefore an integral part of the equipment. It describes the machine's design and configuration at the time of delivery.

In the interest of safety, please study this documentation before installing or operating the equipment.

Instructions relating to safety, handling, operation and maintenance are to be followed.

Non-compliance can result in serious personal injury or damage to the machinery and may invalidate manufacturers' liabilities and warranties.

This documentation includes guidance for:

- Installers
- Operators
- Maintenance staff

Please retain this documentation throughout the lifetime of the equipment.

## 10.2 ACCENTUATIONS IN THE TEXT



**Attention!** This is advice on safety! Identifies potential hazards that may cause injury to personnel.



Actions which must be taken to reduce risk of injury are marked like this.



Additional useful information is labelled like this.

## 10.3 INSPECTION OF GOODS

The equipment was factory tested and inspected before delivery.



**Attention!** Check for transportation damage!



Continue the use of this product only if you assess it as being undamaged and faultless. Any damage must be recorded by the forwarder at time of delivery and reported to the supplier of the equipment at the earliest opportunity.



Please check condition of the equipment carefully for damage upon receipt and after removal of all packaging.

## 10.4 SAFETY

### 10.4.1 GENERAL ADVICE

This equipment conforms to the appropriate European regulations and directives and is designed and manufactured to be safe and reliable in operation.

Continued safety and reliability is entirely dependent on correct handling, installation, operation and maintenance of the equipment supplied.

## 10.5 INTENDED USE

This equipment is specifically designed for atmospheric air drying. It is unsuitable for any other use. For further advice please contact your DST representative.

Unless specifically stated in this manual, the following applications are prohibited:

- Conditioning of gases (other than air).
- Conditioning of air contaminated with chemicals or aggressive elements.
- Conditioning of air containing flammable or explosive elements.
- On rooms or air systems having a potentially explosive atmosphere (Ex-Zones).
- Conditioning of air at elevated pressures.
- Unless the air that enter the unit is properly filtered with at least G4 class.

### 10.5.1 SAFETY ADVICE REGARDING TRANSPORTATION



**Attention!** Heavy equipment being dropped!



Only use tested and certified lifting equipment to offload and position the unit.



If a fork lift is used to move the unit, please ensure the load is evenly balanced.



If lifting the unit on a pallet, ensure the unit is firmly secured to the pallet.



Evacuate and secure the danger area during lifting and positioning of the unit.



If the unit comes with lifting eye bolt, use appropriate equipment and beams to lift the unit (See lifting instruction inside the manual).

### 10.5.2 SAFETY ADVICE - MECHANICAL



**Attention!** Mechanical hazards!



Installation, testing, commissioning preventative and corrective maintenance must be carried out by a qualified person or under supervision of a qualified person. Wherever possible, all mechanical work must be carried out with the electric supply switched off.


A qualified person (mechanical) is defined in this manual as:


- A mechanical technician or engineer qualified to service and maintain air conditioning plant and associated systems.
- Has completed the appropriate health and safety training.
- Has read and is familiar with the contents of this manual.
- Is professionally competent to commission and service this type of equipment.



For your own safety, wear the appropriate personal protective equipment (PPE).


### 10.5.3 SAFETY ADVICE - ELECTRICAL


 **Attention!** This equipment will contain high voltage electrical components!


 Wherever possible, all electrical work must be carried out with the electric supply switched off. It is recommended that electrical isolators are locked in the off position. All electrical work must be carried out by a qualified person or under supervision of a qualified person.


A qualified person (electrical) is defined in this manual as:


- An electrical technician or engineer qualified to service and maintain air conditioning plant.
- Has completed the appropriate health and safety training.
- Has read and is familiar with the contents of this manual.


 For your own safety, wear the appropriate personal protective equipment (PPE).


 **Attention!** If the unit control panel isolation switch is off, the incoming cable terminals may still be live!


 If working on the unit's isolation switch, ensure that electrical power is isolated and locked to prevent accidental resetting.


 **Attention!** Permitted Voltage!

 Check incoming electrical voltage and operating frequency conform to the electrical wiring diagram and the manufacturer's type plate attached to the unit.

 Electrical connection are to be made in accordance with local regulations.

 **Attention!** Loose terminal connections!

 Due to vibration during transportation it is advised that electrical terminals are checked for security and retightened where necessary.


 The following connecting terminals in the electrical control cabinet should be checked periodically and retightened if necessary:


- Connecting terminals in the main isolator switch.
- Connecting terminals in main components of the heater circuits.
- Connecting terminals in main components of the fans circuits.


Periodical as defined in this manual means:

- During installation.
- Two months after commissioning date.
- During annual maintenance.


 **Attention!** Electrical parameters!

 Parameters used in the electrical protection and alarm circuits must not be modified or adjusted. Factory (default) parameters are shown in the electrical wiring diagrams.


 **Attention!** Safety functions!


 The operation of all electric safety devices are to be checked at commissioning and during service/maintenance. Under no circumstances are these devices to be deactivated (e.g. adjustment or bridging).


 **Attention!** Defective electrical components!


 Defective electrical components and defective wiring must be replaced immediately. The equipment must not be operated until the defect has been repaired and the unit has been retested.


### 10.5.4 UNIT RELATED SAFETY ADVICE

 **Attention!** Danger from incorrect installation!


 The air dryer is designed for internal installation. For external use it will require a weatherproof enclosure.


 Do not rinse the unit with water.


 Use of the air dryer in areas having a potentially explosive atmosphere (Ex-area) or treatment of air with potential explosive/flammable components is prohibited.

 The air dryer requires installing on a horizontal plane.


 The air ducts shall be connected load and vibration free.


 **Attention!** As standard, the air dryer is equipped with electrical resistive heater elements (regeneration air heater).


 For normal shut down, switch off the unit using the OFF-button. If switching the unit off in an EMERGENCY, the main isolator switch or emergency stop button may be used. However, residual heat from the heater elements will remain in the unit and this can result in damage to components close to the heater and release of the safety thermostat TH1.

 For maintenance purposes shut down the unit using the OFF button and allow the system to cool down before attempting to access internal components.


 **Attention!** Automatic restart after power failure! (Option)


 If the automatic restart function was selected (option), to prevent unintentional restart, ensure that the main isolator switch is off and power isolated before servicing internal components.


 Advise all operating & maintenance personnel regarding automatic restart function if applicable.


 Do not remove the warning notice on the machine which alerts personnel to the dangers of an automatic restart function.


 **Attention!** Condensate in wet air outlet duct.


 Due to concentrated water content in the wet air outlet duct, incidental condensate may flow back into the machine and damage the equipment. To prevent this, install the wet air outlet duct at a slight gradient. If the duct needs to be installed at high level, fix a condensate drain at the lowest point of the duct.

 Wet air ductwork must be insulated to prevent condensate.

 Ensure that the condensate drain does not create an ice hazard in winter.

 **Attention!** Equipment fans can produce noise levels above 80 dB (A) depending on ductwork connection used.

 Use ear protection, if remaining close to an operating machine for any length of time.

 Pay attention to accessibility requirements for maintenance and service purposes.



## 10.5.5 HAZARDOUS OPERATING CONDITIONS

Operation of the system is deemed to be hazardous, if:

- Is not operated inside or is not protected within a weatherproof enclosure.
- Is not operated within the permitted operating parameters (see technical specifications).
- Is operated outside the scope of 'normal' use (see intended use).

## 10.5.6 RESPONSIBILITIES OF THE OPERATOR

It is the responsibility of the operator of the system to ensure that all personnel engaged with installation, operation, maintenance and service of the equipment have read and understand the relevant sections of this manual.

## 10.5.7 MINIMISING HAZARDS

To ensure risk to personnel is minimised:

- Ensure that all activities relating to this equipment are carried out by qualified and authorised staff only.
- Identify and prevent potential safety hazards in the environment.

Failure-free Operation

- To ensure a failure-free operation, please make the following arrangements:
- Keep this manual ready to hand with the unit.
- Use the machine as intended only.
- Only use the machine if it is fully functional.
- Check the condition of the machine before using.
- Check the machine on operational efficiency at regular intervals.
- Carry out maintenance and testing at the prescribed intervals.

## 10.6 DISPOSAL/RECYCLING



When unit is no longer in use and taking out of service - dismantle the unit and recycle the components according to the local regulations. Contact your DST representative for any questions.

# 2 PRINCIPLE OF OPERATION

## 2.1 APPLICATIONS

DST desiccant type dehumidifiers are normally used where dry air is essential to the various manufacturing processes used in chemical, pharmaceutical, food or confectionery industries, or where a dry environment is required for storing and handling of moisture sensitive products and raw materials.

The well proven air drying technology using the adsorption principle provides great flexibility in solving humidity problems. It offers the user independent humidity control, down to dew points far lower than the effective operating range of refrigeration dehumidifiers.

## 2.2 DESIGN

The dehumidifiers are made as complete units including rotor, fans, rotor motor and rotor drive transmission, heater for the regeneration, controls and electrical equipment.

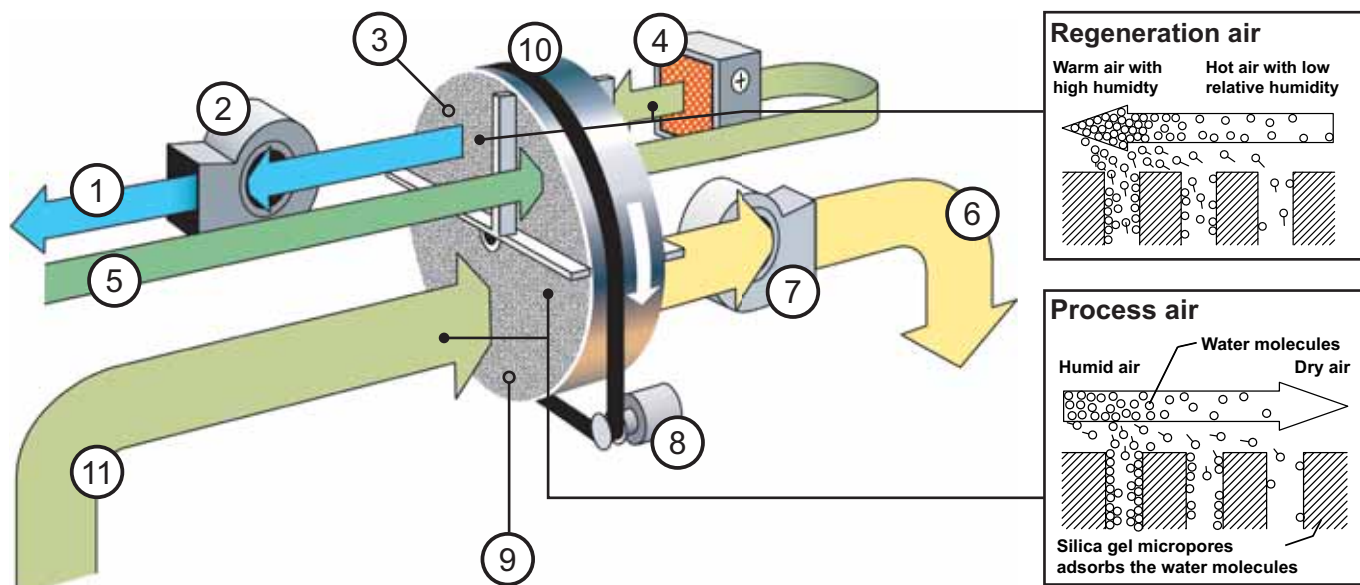
The water vapour is effectively adsorbed from the treated air in the SSCR silica gel rotor.

The regeneration heater is normally electric, but steam and hot water-heater are available as option.

## 2.3 PRINCIPLE OF OPERATION

It works on a continuous process with two air streams of different flow rates, normally having a flow ratio of approximately 3:1. The greater flow, *process air*, is dried as it passes through the dehumidifier, while the smaller flow, *regeneration air*, is used to heat the rotor material to drive the adsorbed moisture vapour from the desiccant. The moisture which is removed from the process air, is transferred over to the other as the SSCR rotor turns slowly.

FIGURE 1: Principle of operation & rotor

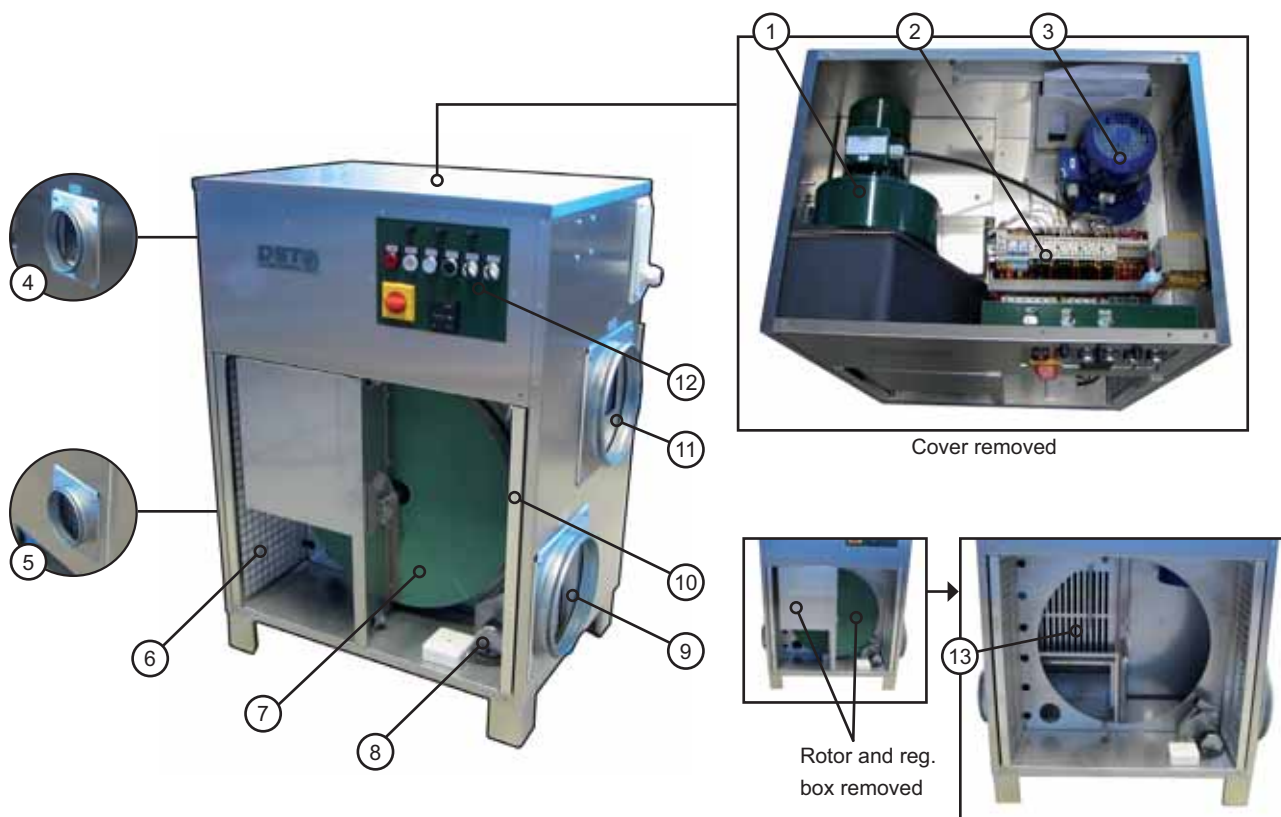


1. Wet air outlet
2. Regeneration air fan
3. Regeneration sector
4. Regeneration heater
5. Regeneration air in
6. Dry air outlet
7. Process air fan
8. Rotor motor
9. Process sector
10. Rotor
11. Process air inlet

**RECUSORB** is a continuous dehumidifier with internal energy recovery and able to reach very low dew points. During regeneration, sensible heat is adsorbed by the rotor material. This heat is transferred to a purge sector where the incoming regeneration air is preheated and its moisture content reduced. While less heat is now required to reach the final regeneration temperature, the air will also be at a much lower relative humidity. As a result of this, the dry air outlet is both cooler and drier than that achieved by other desiccant systems.

# 3 PRODUCT DESCRIPTION

## 3.1 PRODUCT OVERVIEW



1. Regeneration air fan
2. Electric panel
3. Process air fan
4. Wet air outlet
5. Regeneration air inlet
6. Regeneration air filter
7. Dehumidification rotor
8. Rotor motor
9. Process air inlet
10. Process air filter
11. Dry air outlet
12. Electric switch panel
13. Regeneration air heater

The dehumidifier has a housing of stainless steel. The galvanized spigots are in standard sizes and have rubber flanges. The unit is divided into two parts; one lower where the air treatment takes place and one upper where the electric compartment and the fan motors are situated.

## 3.2 DISMANTLING

When dismantling, the unit must be electrically disconnected. The main switch must be turned to (0). If it is necessary, it is possible to lock the switch in this position.

If the unit has been in operation it should be left to cool off, for at least 30 minutes, before dismantling.

The upper part is easily reached by taking off the unit's lid which is fastened with four screws. The lower part is reached through doors on the front and rear of the unit. The doors are attached to the unit with four screws.

### 3.3 COMPONENTS DESCRIPTION

#### 3.3.1 ROTOR

The heart of a DST dehumidifier is the very efficient patented SSCR silica gel rotor. The rotor matrix is manufactured from alternate layers of flat and corrugated sheets of silica gel and metal silicates, chemically bonded into a tissue of inorganic fibres. It is made to form a vast number of axial air channels running parallel through the structure. The large internal surface area combined with the special micro structure of the SSCR silica gel material, ensures maximum contact area to give the rotor an extremely high capacity for adsorbing water vapour.

*Section of a dehumidifier rotor from Seibu Giken. The high number of channels means that moisture is adsorbed with extra efficiency!*

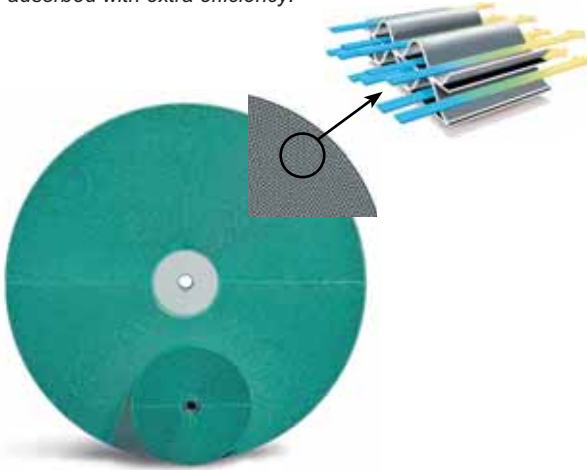


FIGURE 2: Rotor

#### 3.3.2 ROTOR MOTOR

The rotor is driven by a single phase rotor motor over a timing belt transmission. A belt tensioner ensures that the drive belt does not slip and from overloading the rotor motor..

#### 3.3.3 FILTER

The air filters is available in both F7 and G4 in bag filter or panel filter. See "10 Technical data" for more information.

#### 3.3.4 FAN

The two fans are of medium pressure radial type, directly driven by three-phase AC motors.

#### 3.3.5 REACTIVATION HEATER

The regeneration heater is normally a resistive electric heater with selective heating option.

#### 3.3.6 ELECTRICAL CABINET

The control panel is located at the front of the electrical panel. The electric cabinet houses multiple electronic devices and control units, such as contactors, fuses, motor protectors, relays, transformer.

See electrical diagram for more information.

#### 3.3.7 OVERHEAT PROTECTIONS AND THERMOSTAT

The TH1, TH2, and TH3 thermostats are located inside the switch cabinet, in the upper part. TH1 and TH3 are overheat protectors with reset buttons, which stops the machine and put out a master alarm when triggered.

The TH2 thermostat is an adjustable thermostat used to adjust the regeneration heating.

- TH1: Overheat protector for regeneration heating
- TH2: Adjustable thermostat for regeneration heating
- TH3: Overheat protector for wet air outlet

**Note:** When TH1 and/or TH3 is triggered, the overheat protector automatically triggers the regeneration heater fuses as well.

See temperature setting for TH1, 2 and 3 on "10 Technical data".

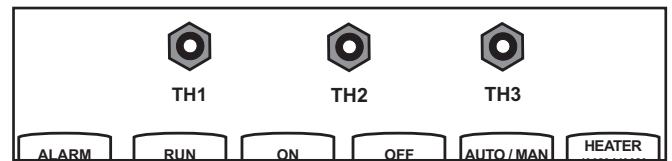


FIGURE 3: Reset buttons and settings

The thermostat and overheat protectors are located on the control panel with the reset buttons on the front. The settings are placed inside of the unit behind TH1, TH2 och TH3.

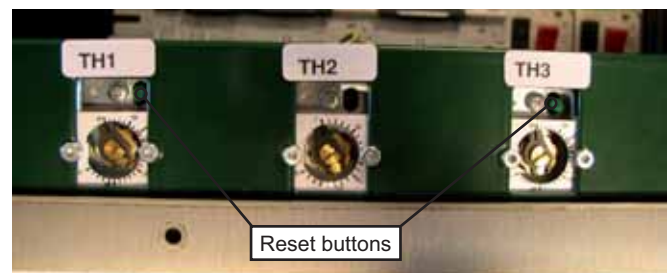


FIGURE 4: Reset button and settings are accessible by removing the top cover (Discontinued model).

#### 3.3.8 TH4 THERMOSTAT (OPTION)

An additional TH4 thermostat, for which, like the TH2, the sensor is installed in the wet air outlet, switches the regeneration heating's upper heating stage off in partial load mode. This prevents a collective fault if the TH3 thermostat is triggered. The resulting energy savings in partial load mode are an additional benefit. The TH4 thermostat is located next to the TH1-3 thermostats inside the switch cabinet.

The TH4 thermostat is located next to the TH1-3 thermostats inside the switch cabinet.

#### 3.3.9 FILTER GUARDS (OPTION)

Filter guards for process air and reg. air are available as an option, such as, mechanical differential U-tube manometer or an electronic filter guard with a warning light. The electronic filter can be combined with pressure gauges (MagnaHelic) to display the current pressure.

The indicator will light up if the pressure increases beyond the recommended value, the filter needs to be replaced as soon as possible. See "10 Technical data" for recommended pressure.

*\*Variation of installation and components may vary.*



FIGURE 5: Warning light indicator\*

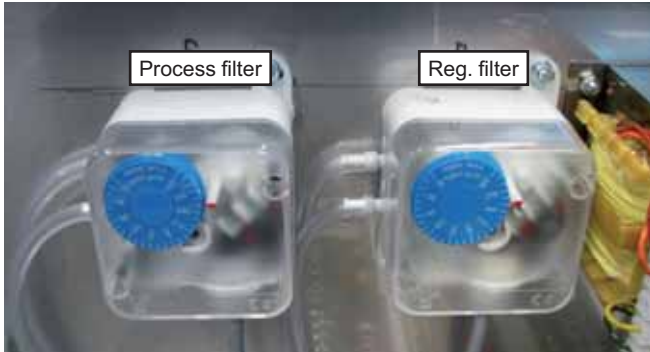


FIGURE 6: Settings for filter guard\*

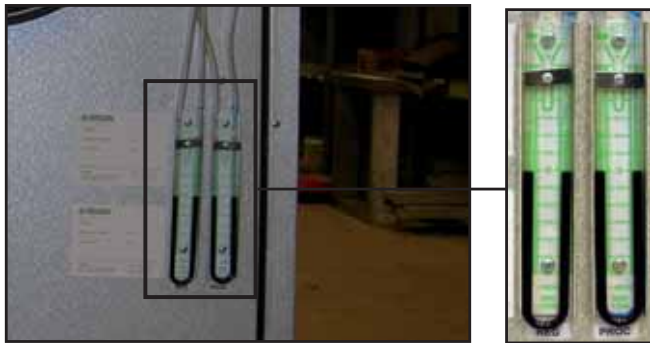


FIGURE 7: Differential U-tube manometers\*



To change the pressure setting, remove the cover by loosening the two screws. Rotate the blue wheel to alter the setting according to specified need.

FIGURE 8: Filter guard is installed inside the electrical cabinet\*

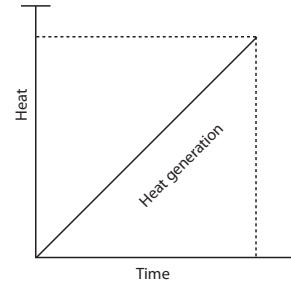
### 3.3.10 CONTROL OF THE REACTIVATION HEATER (OPTION)

For accurate control of the heating effect, the heater can be controlled linearly by adjusting the heating effect stepless. The effect is controlled by a thyristor, which is mounted inside the electric cabinet. The thyristor receives its analogue input signal of 0-10vdc from an external regulator or a humidity controller EH3.

The device pulses out power to the regeneration heater in order to control the heater. The length of the pulses varies depending on the analogue input signal (0-10vdc). The higher the analogue signal = the longer it pulses, which in turn produces a higher heater output. If the analogue signal is low = the shorter it pulses, which in turn produces a lower heater output.

See “3 Product description” for more details on energy efficiency.

See “3 Product description” for details on rotation guard device.



Linearly control

FIGURE 9: Reactivation heater control

### 3.3.11 AUTOMATIC RESTART (OPTION)

Automatic restart after power failure. Also equipped with a emergency stop button and labelled with a warning sign.



FIGURE 10: Sticker

### 3.3.12 EMERGENCY STOP BUTTON (OPTION)

Press the emergency stop button to halt the machine immediately in case of emergency. Always installed on the front electrical panel when the unit is equipped with automatic restart.

### 3.3.13 ROTATION GUARD (OPTION)

Monitors the rotor rotation. If the rotor stops spinning, the unit will stop and display an alarm on the control panel.

### 3.3.14 ADJUSTABLE ROTOR SPEED (OPTION)

Stepless setting of the rotor speed. Manually controlled from the PLC or a control box with a built-in potentiometer.

### 3.3.15 ENERGY SAVING (OPTION)

To save energy, the unit can be fitted with 3 different “Energy saving versions”.

**Energy saving 1:** The dehumidifier is controlled by 1- or 2-step humidistats. E.g. an electric-mechanical HMH, or the controllers EH3 or EH4.

**Energy saving 2:** Controls the heater for units with electric heater. Can be linear, via a thyristor, or binary. The dehumidifier is controlled by an external regulator signal 0-10vdc, e.g. from a electronic controller EH3.

**Energy saving 3:** Controls the regeneration airflow and thereby the steam consumption for units with steam heater. The dehumidification capacity is controlled from around 15% up to full capacity. The dehumidifier is controlled by a regulator signal 0-10vdc, e.g. from a electronic controller EH3.

See appendix on energy saving.

# 4 INSTALLATION

## 4.1 UNIT INSTALLATION

Follow the direction regarding installation of heavy and medium heavy dehumidifiers.

**Note:** Use the installation guidelines as a reference only.

### 4.1.1 LIFTING

The unit can be off-loaded and positioned using a fork lift by lifting between the feet of the unit, alt. on some dehumidifiers, lift the unit by the built-in handles.

- The forks must be of sufficient length to be in contact with both sides of the base frame.
- The forks should be initially positioned centrally across the middle sections of the unit but must be checked for balance prior to final lifting.
- The unit with handles is very heavy (!). At least two persons are needed to lift the unit without forklift.

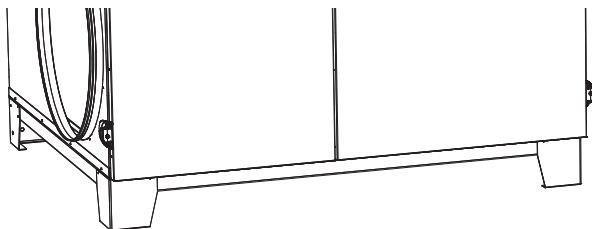


FIGURE 11: Base of the unit

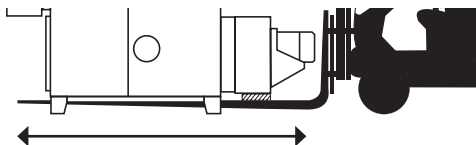
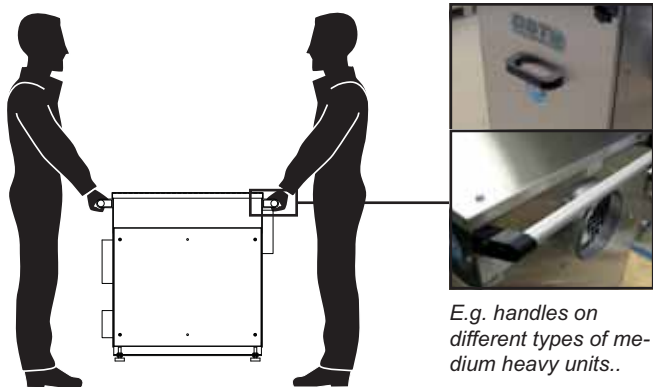


FIGURE 12: Forks with sufficient length



E.g. handles on different types of medium heavy units..

FIGURE 13: At least two persons are needed to lift the unit, if equipped with handles.

### 4.1.2 TRANSPORT

Due to risk of tipping over, use caution when lifting & moving dehumidifiers with external fans or with high centre of mass, .

**Note:**

- If necessary, use support beams during movement.

- Secure any panels, doors or loose equipment.
- Keep the unit balanced at all time when moving the unit.
- See safety chapter regarding lifting safety

Units with external fans or high centre of mass may run the risk of tipping over during transport.

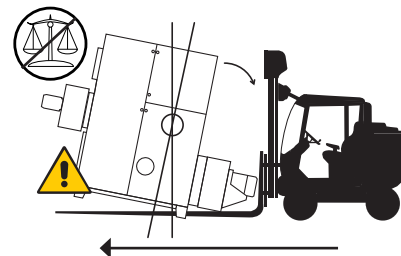


FIGURE 14: Risk of tipping over

During movement, balance the unit with support beams or similar if necessary. Otherwise use caution during transport.

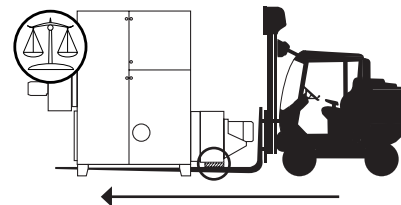


FIGURE 15: E.g. Moving the unit with support object

See "10 Technical data" for weight information.

### 4.1.3 POSITIONING

Position the machine with adequate working space around the unit to allow inspection and service. Size of unit and the position of the access panels/doors varies depending on the series. Follow the below recommendation to avoid misplacement.

- Adequate space must be left clear in front and/or rear of the unit to allow access doors/panels to be opened and removal of rotor.
- The free floor area in front of the inspection doors should be as wide as the unit.
- See dimension for measurement, working space and foot bolt-hole dimensions.

### 4.1.4 SECURING THE UNIT

To allow securing of the dehumidifier to the floor or to a pedestal, four brackets with pre-drilled bolt-holes are included with the unit.

At the delivery these are fixed onto the pallets to secure the unit during transportation. Do not discard the foot brackets (!) Remove and reuse them if necessary.

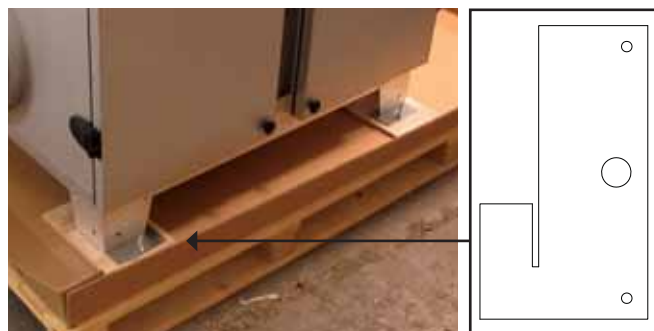


FIGURE 16: Foot brackets fixed on a pallet during transport

Brackets are only included if they have secured the unit onto to the pallet. See above.

## 4.2 GENERAL DUCT WORK INSTALLATION

The intended area to be dehumidified may vary significantly in terms of size of the facility, the amount infiltration and other conditions. Use the recommendations below as a general guideline only. Consult your DST representative or local mechanical installation company for more information.

The guidelines are to assist the installers and operators to adjust the duct/dehumidifier installation and to maximize performance. Please follow the recommendations in order to achieve maximum performance.

- To avoid recirculation, direct wet air out (3) away from the regeneration air in (4) of the unit. Same goes for process air in (1) and the dry air out (7).
- Check if the dry air (7) is well distributed in the dehumidified area.
- Adjust any dampers on process air in (1 & 2) and/or regeneration air in (4) according to the desired airflows and dehumidification need.
- Process air in (1 & 2) is taken from indoor area or ambient depending on the amount of infiltration. Installing an intersection piece with damper (8) will enable the unit to use air, simultaneous or separately, from indoor and ambient.
- The regeneration air in (4) and wet air out (3) has to be connected to outside.
- The position of the dampers (5, 8 & 6) may differ on-site.
- Use the installation principle as reference only. The position of the fan and in/outlets may vary.

### 4.2.1 INSTALLATION SETUP INSIDE A ROOM

When the unit is installed in the same room as the intended dehumidification area, use damper (5) to adjust the capacity.

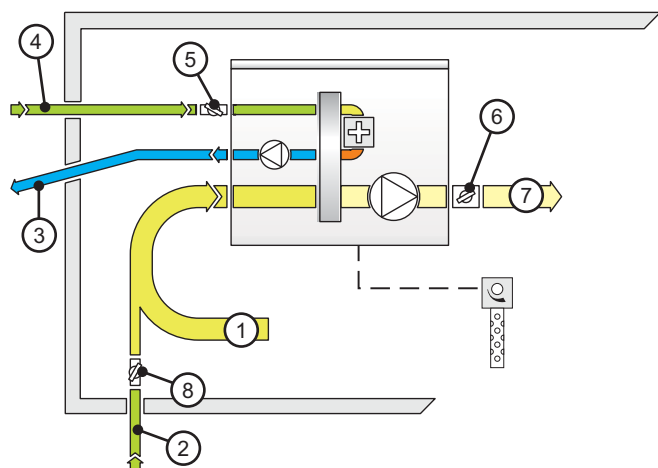
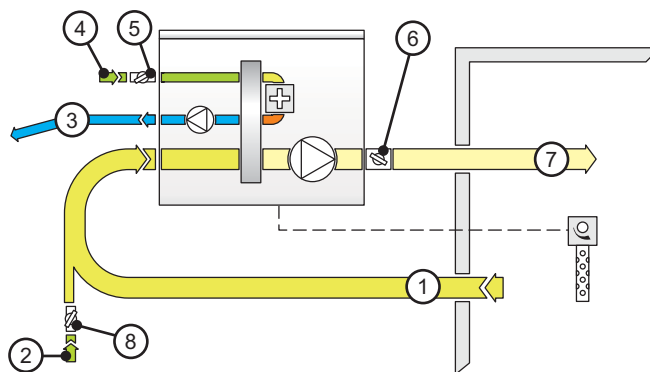


FIGURE 17: Dehumidifier placed inside a room

- |                             |  |                              |
|-----------------------------|--|------------------------------|
| 1. Process air in (indoor)  |  | Fan (blowing left)           |
| 2. Process air in (ambient) |  | Fan (blowing right)          |
| 3. Wet air out              |  | Humidity sensor / humidistat |
| 4. Regeneration air in      |  | Heater                       |
| 5. Regeneration air damper  |  | Damper                       |
| 6. Dry air damper           |  |                              |
| 7. Dry air out              |  |                              |
| 8. Process air damper       |  |                              |

### 4.2.2 INSTALLATION SETUP OUTSIDE A ROOM

If installed outside of the dehumidified room (in a separate room, e.g. plant room), the dehumidifier must be connected to the room via ducts with the process air in (1) and the dry air out (7).



Dehumidifier placed outside the room

### 4.2.3 INFILTRATION

If necessary, use the damper on process air in (2) to create a overpressure in order to counteract the infiltration.

- An area with no or very little infiltration, does not require an additional ambient air. Doing so may cause an unnecessary overpressure and decreased performance.
- The area needs to be properly sealed in order to minimize moisture load inside the dehumidified space.
- A room with high infiltration rate should have some ambient air into the room. Depending on the amount of infiltration, adjust the damper (8) on the process air in to create a sufficient mixture.

### 4.2.4 FRESH AIR DEHUMIDIFICATION

It is recommended to take the process air intake (1) and regeneration air in (4) from outside if:

- 1) The intended dehumidification area is polluted with harmful substances and other particles
- 2) It is not possible to use the return air from indoor by any other reasons.

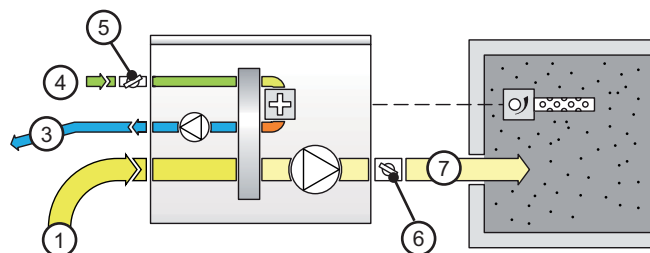


FIGURE 18: Return air taken from outside

### 4.2.5 WET AIR OUT

Additional installation remark regarding wet air out (3):

- It is recommended to insulate the wet air duct and have it installed at a sloping outwards angle, due to risk of condensation inside the ductwork. The setup will also prevent the condensate to flow back into the dehumidifier.
- If the duct must be installed higher than the outlet, a small drain hole is to be made for discharge of condensate at the lowest point in the ductwork.



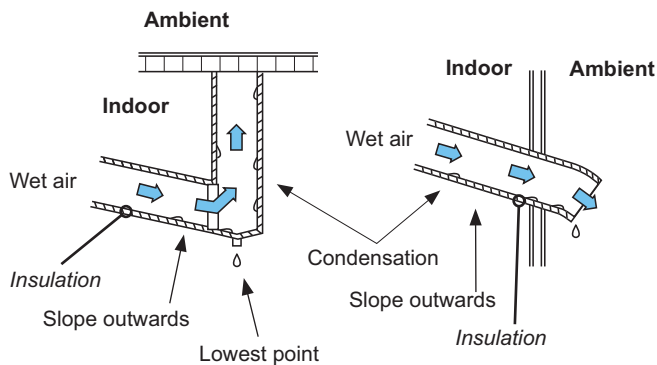


FIGURE 19: Installation of wet air out duct

### 4.2.6 REGENERATION AIR IN & WET AIR OUT

Installation remarks regarding regeneration air in (4):

- Avoid recirculation together with wet air out (3).
- The intake of regeneration air in (4) should be placed lower than the wet air out (3).
- Allow the wet air to disperse freely when exiting the duct.
- Avoid to forward the wet air against the back pressure of another air fan inside a duct. Chances are, the wet air will be rerouted to somewhere else than ambient.
- To increase the lifetime of the filter, it is recommended to intake regeneration air (4) from higher level where dust and other particles are kept at minimum.

### 4.2.7 PROCESS AIR IN & DRY AIR OUT

Installation remarks regarding process air in (1):

- Avoid recirculation together with regeneration air in (4).
- Install dry air out (7) duct/channel on a high level.
- To increase the lifetime of the filter, it is recommended to intake air from higher level where dust and other particles are kept at minimum.
- For potential infiltration, use the process air damper (8) to create a sufficient overpressure inside the room.
- If a certain dew point is desired, use dry air damper (6) to adjust the dry air flow.
- To maximize an absolute drying capacity of the system (in H<sub>2</sub>O kg/hour), the amount of the dry air has to be brought on the maximum value (free dry air outlet without reduction).

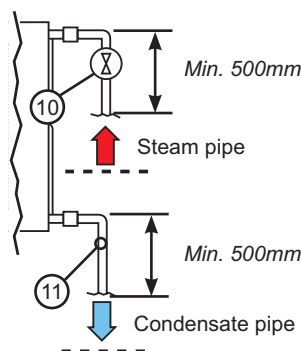
## 4.3 CONNECTING THE STEAM COIL

Follow the recommended steam coil and pipe installation, as well as the mandatory installation. Failure to do so, may damage the steam coil.

### Component description

1. Automatic air vent (vacuum valve Spirax sarco, type VB or equal)
2. Safety valve Type SC or equal
3. Pressure gauge
4. Motor valve on/off. Closed when the dehumidifier is not in operation. Type KE or equal
5. Separator
6. Filter. Type Fig or equal
7. Stop valve. Type BSA (mushroom valve alt. M10S (ball valve) or equal
8. Condensate trap, ball float type, spirax sarco, type FT or equal
9. Non-return valve DCV (flange), LCV (thread) or equal
10. Control valve + actuator (optional)
11. Freezing protection device (optional)

### Mandatory component installation & setup on DST's steam coil



**!** During installation, the installers "MUST" configure the steam pipe and condensate pipe with vertical slope of >500mm to prevent condensate water flowing into the coil.

FIGURE 20: Steam coil installation

### DST's recommended pipe installation for external contractor

To ensure failure-free operation, DST recommends the external steam supply connection and setup as followed. Failure to follow the recommendation, DST will not be held accountable for any hardware damage that might occur.

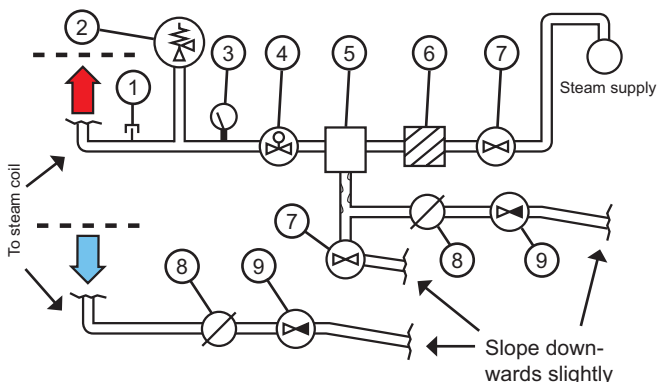


FIGURE 21: Recommended pipe installation



#### General information

- Maximum working pressure: 10 Bar
- Maximum temperature: 185°C
- Steam quality of 8-9 pH and oxygen free
- If the entering steam is <7°C, equip the steam coil with a freeze protection device.
- Test pressure: 13 Bar

## 4.4 CONNECTING THE HOT WATER COIL

Connect the supply pipe to the inlet pipe towards the exiting air flow of the coil, and the return pipe to the outlet pipe towards the entering air flow. The unit is labelled for guidance. See illustration.

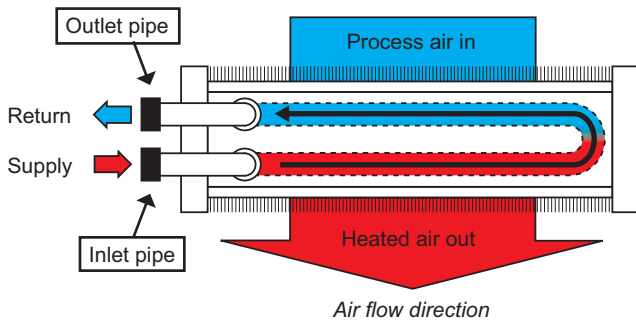


FIGURE 22: Hot water coil

## 4.5 CONNECTING THE COLD WATER COIL

Installation procedure for cold water coil is the same as the hot water coil installation. Supply connection on inlet pipe and return connection on outlet pipe.

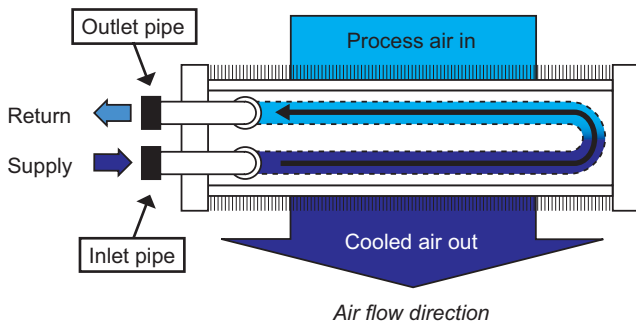


FIGURE 23: Cold water coil (Pre- or post-cooler)

## 4.6 HUMIDISTAT/HUMIDITY SENSOR INSTALLATION

Do not install the humidistat/humidity sensor too close to the dry air flow. It might pick up false readings from the dry air flow and thus shut down the dehumidifier prematurely.

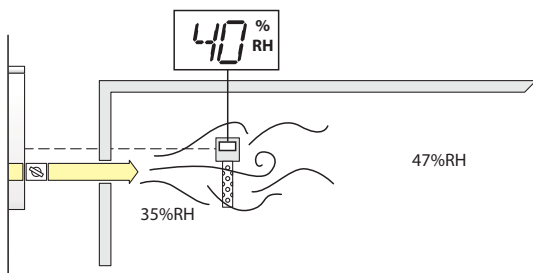


FIGURE 24: Humidistat positioning

## 4.7 ELECTRICAL CONNECTION

### 4.7.1 POWER SUPPLY

The incoming three-phase cable with L1, L2, L3 are to be directly connected to the main switch and PE-cable connected to the earthing bar.

The electrical feed must be provided on-site in accordance with the electrical diagram and local requirements.

See electrical diagram for a detailed layout and description.

### 4.7.2 HUMIDISTAT CONNECTIONS

The dehumidifier has a connection for a 1-step or 2-step humidistat.

See electrical diagram for connections.

See "7 Functionality & mode" for more details.

### 4.7.3 ELECTRONIC CONTROLLER / EXTERNAL REGULATOR

Units with optional connection points for electronic controller (EH3 or other external regulator) are marked on the electrical diagram.

Selecting an electronic controller, EH3, the dehumidification process, can be controlled binary or linearly.

See "7 Functionality & mode" for more details.

See electrical diagram for connections.

### 4.7.4 REMOTE CONTROL

The unit has a connection point for a remote switch.

See electrical diagram for connection details.

See "7 Functionality & mode" for more details.

### 4.7.5 POTENTIAL-FREE SIGNALS

Potential free contacts are marked on the electrical diagram to connect external indicators. These indicators are used to transmit signals to a remote centre, to indicate if unit/devices are still in operation.

#### Standard indicator

- Alarm indicator
- Run indicator
- Reg. fan indicator
- Process fan indicator

#### Optional indicators

- Filter guard (reg) indicator
- Filter guard (process) indicator
- MAN/AUTO indicator

Each indicator, standard or optional, are marked on the electrical diagram to indicate whether it is a normally closed or a normally opened circuit.

# 5 OPERATION CHECK & ADJUSTMENT

## 5.1 PRE-OPERATION CHECK



*The operator of the system has to assure, that all people, which are involved with installation, operation and maintenance or reparation of the machine, read the "1 Safety" parts of the manual.*

1. Inspect and clean the inside of the unit from foreign objects such as rags, tools, particles of metal, and such, that may pose damage to the inside of the unit.
2. If any, ensure that both air balance dampers are open and check that the air paths of the ductwork are not obstructed in any way.
3. Check that the filters are securely in place.
4. Check if the motor protector/fuses has been triggered and the setting on the thermostat and overheat protections are set correctly as shown in "10 Technical Data. "
5. Inspect the wiring of incoming cable.
6. Check that the rating of the electrical supply fuses is correct, see wiring diagram.

## 5.2 START-UP TEST AND ADJUSTMENT

1. Close and secure all access doors
2. Switch the main switch to "1" and check for incoming current.
3. Briefly start the unit and then turn it off. Promptly check if the process fan is rotating in the correct direction. If incorrect check "6 Troubleshooting".

See "6 Operating" on "Start" and "Stop".

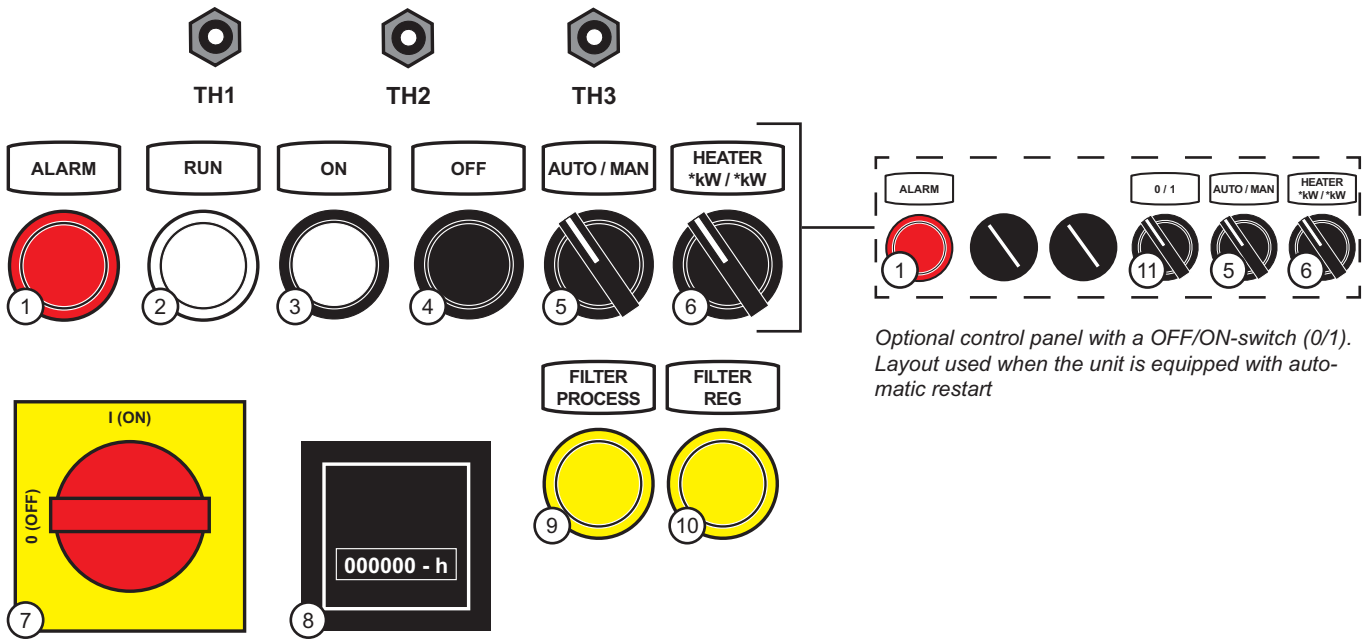
4. If any, balance the airflows, using the dampers in the ductwork (Use the dampers in the air duct to balance the airflow according to your need) or adjust the frequency of each frequency converter

For maximum dehumidifying both dampers should be open. If a greater reduction in moisture content is needed the process air damper should be throttled. If the wet air outlet gets very hot (more than 60°C) the regeneration damper should be throttled to nominal airflow or/and a heater step can be switched off.

5. Check the operation of fault alarms by temporarily reducing the set points of alarm giving thermostats and motor protectors. Do not forget to reset to the original settings according to component list.
6. Measure the current on both fans and compare the electrical specifications printed on the fans. If the current is too high, adjust and decrease the airflow.
7. If remote control is installed- Check remote control operation.

# 6 OPERATING

## 6.1 CONTROL PANEL



Optional control panel with a OFF/ON-switch (0/1).  
Layout used when the unit is equipped with auto-  
matic restart

- 1. **[ALARM]** - Alarm light
- 2. **[RUN]** - Operation light
- 3. **[ON]** - Start the unit
- 4. **[OFF]** - Stop the unit
- 5. **[AUTO/MAN]** - Mode switch for AUTO eller MAN
- 6. **[HEATER]** - Switch for selecting output in kW
- 7. **[MAIN]** - Main switch
- 8. Runtime meter
- 9. **[FILTER PROCESS]** - Warning light for filter guard on process air in\*
- 10. **[FILTER REG]** - Warning light for filter guard on regeneration air in\*
- 11. **[0/1]** - Switch for "ON=1" eller "OFF=0" (with "automatic restart")\*

\*Option

## 6.2 START

Start the unit.

- In MAN-mode, the unit will dehumidify on a continuous process until the operator shuts it down manually. Connected humidistat/electronic controller will not disrupt the dehumidification process.

- "AUTO"-mode only works when a humidistat/electronic controller is installed

1. Turn **[MAIN]** to "1".
2. Turn **[AUTO/MAN]** to "MAN" for continuous dehumidification or "AUTO" for automatic-mode with connected humidistat.
3. Choose the output on **[Heater]**
4. Press **[ON]** (If the unit is equipped with "Automatic restart", turn **[0/1]** to "1").

## 6.3 STOP

Unit will shut down.

- During shut down, the regeneration fan and rotor motor will continue to run for a pre-set time as a part of a cooling stage.

1. Press **[OFF]** (Unit equipped with "Automatic restart", turn **[0/1]** to "0").



When "Automatic restart" is selected. The unit starts automatically after electric failure. It is up to DST's representatives to inform any parties that are involved with installation, operation, maintenance or reparation of the machine about this feature.

## 6.4 RESET BUTTONS & SWITCHES

Fuses, overheat protections or motor protectors are found inside the electrical cabinet. The position and denotation of the devices may vary depending on the unit and configuration.

See troubleshooting for more information.

See the electrical diagram for correct layout and information of the reset devices.

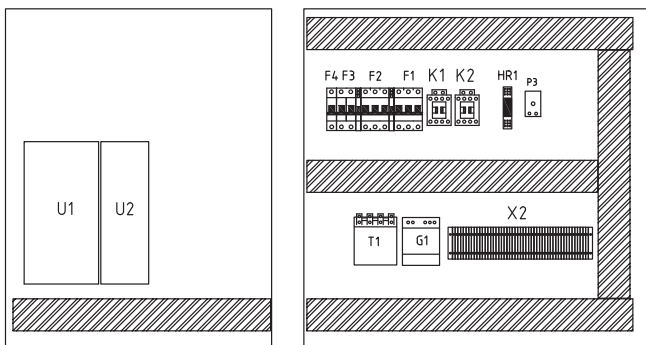


FIGURE 25: Example of a component layout inside an electrical cabinet.



See the electrical diagram for correct layout and information of the reset devices.

## 6.5 START-UP PROCEDURE

During start-up, the unit will go through a series of activation. See illustration.

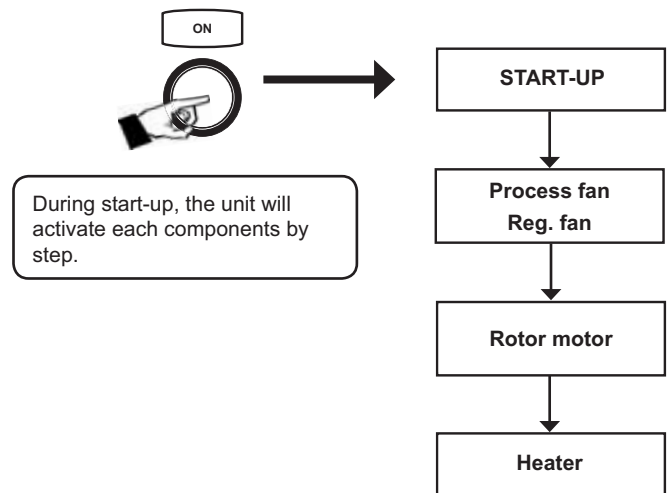


FIGURE 26: Start-up sequence

## 6.6 SHUT DOWN PROCEDURE

During shut down, the unit will incrementally deactivate each moving component. The post-cooling procedure will continue for a pre-set time.

The procedure applies when **[OFF]** is pressed, remotely deactivated or when the auto-mode is bridged to ON/OFF (controlled by a humidistat/ external regulator).

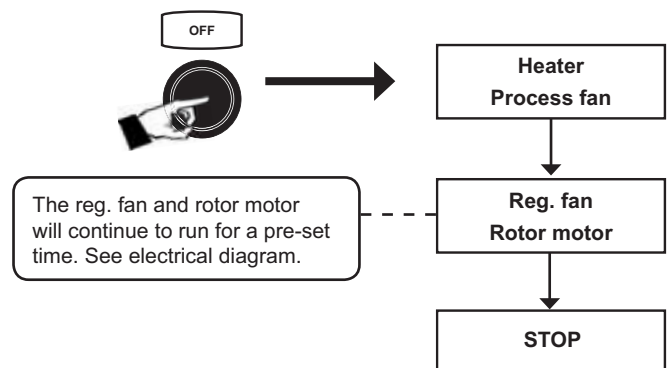


FIGURE 27: Shut down sequence

# 7 FUNCTIONALITY & MODE

The unit is equipped with three different types of dehumidification modes

<b>AUTO/VENT or AUTO/OFF</b>	Set the auto-mode to vent or stop.
<b>HUMIDISTAT 1 &amp; 2</b>	Controlling the heater power with a 1- or 2-step humidistat.

See detailed description of each mode on the following page.

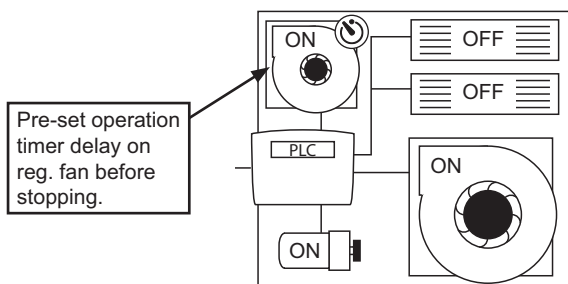
## 7.1 MANUAL, AUTO/VENT OR AUTO/OFF

Switch the unit to MAN-mode if AUTO/VENT or AUTO/OFF is not used. This mode will prevent the dehumidifier from shutting down and reduce heat from an external input. The unit will keep running until the operator shuts it down manually.

**Note:** The unit can also enter the ventilation mode when Humidistat contact 1 is opened or the external controller signal is less than 0.5V (With energy saving step 2 & 3 only):

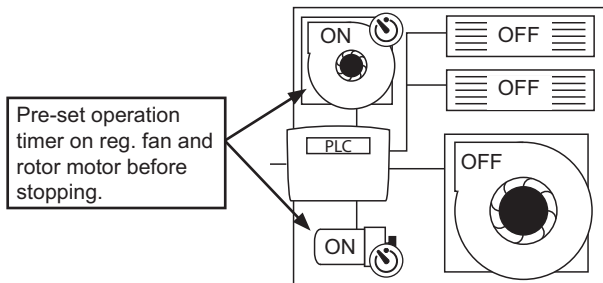
In **MAN**-mode, the unit will dehumidify on a continuous process until the operator shuts it down manually. Connected humidistat/electronic controller will not disrupt the dehumidification process.

In **AUTO/VENT**-mode, the PLC stops the dehumidification process by turning off the heater. Process fan and rotor motor will continue to be in operation continuously. The reg. fan will also continue to run, but only for a pre-set time before shutting down.



**FIGURE 28: AUTO/VENT-mode**

In **AUTO/OFF**-mode, the PLC stops the dehumidification process and shuts down the unit completely. The reg. fan and rotor motor will continue to run, but only for a preset time before shutting down.



**FIGURE 29: AUTO/OFF-mode**

## 7.2 HUMIDISTAT 1 & 2

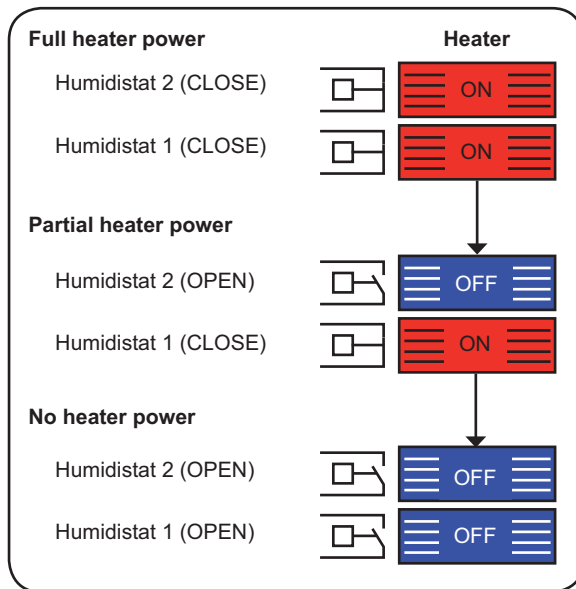
If linearly and binary control is not added (option), use the built-in Humidistat inputs to control the electrical heater using a one-step or two-step humidistat (the humidistat is optional).

If it is a one-step humidistat, it should be connected to humidistat 1, humidistat 2 should then be bridged.

**Note:** During test-run, check if the external humidistat has not opened Humidistat 1 & 2. The unit will not start-up unless they are closed.

See electrical diagram for details and connections.

See "10 Technical data" for humidistat 2 power.



**FIGURE 30: Humidistat connection**

## 7.3 REMOTE OPERATION

A connected remote switch will act as a master switch and will shut down the unit (the PLC will display "OPERATION REMOTE"). The dehumidifier cannot start-up on-site using the PLC or the control panel before the remote switch has been restored.

See electrical diagram for connections.

The remote connections is bridged upon delivery. When removing the remote connection, reinsert the terminal link wire.

# 8 TROUBLESHOOTING

## 7.4 ERROR

If an error occurs, the dehumidifier will shut down, but the reg. fan continues to operate in order to cool the regeneration heater for a preset time. See electrical diagram for time setting.

During operational error, the PLC will promptly display a code and shut down the dehumidifier. The table below displays the frequent error codes.

CODE	EXPLANATION	CAUSE	SOLUTION
If the unit stops and the ALARM-light is lit, check following	Process fan is non-functional (F1).	The fan is overloaded and/or is malfunctioning.	Readjust the airflow using dampers. Check fan. Check setpoint of F1/F2. Reset F1/F2.
	Reg. fan non-functional (F2).		
	Overheat protection on reg heater tripped out (TH1).	Temperature is too high.	Check reg fan (F2). Check heater (F3-F5). Check TH1 temperature setting. Check for blockages & moisture load on regeneration airflow. Check regeneration filter. Check regeneration air inlet temperature and reduce the heater output. Check for airflow. Reset TH1 and/or F3-F4. <b>Note:</b> Triggered TH1 will also trigger F3-F4.
	Heater is non-functional (F3-F4).	Heater overload and/or malfunctioning.	
	Freeze protection has tripped and stopped the machine (GT81)	Temperature on the hot water outlet / condensate outlet is below 7°C.	Check water supply and insulation for potential thermal loss.
	Wet air thermostat tripped (TH3).	Temperature is too high.	Check TH3 temperature setting. Check and readjust the process air airflow. Check moisture level in process air flow and reduce the heater output. Adjust the dampers. Check the rotor motor, gear and belt/chain. Reset the TH3 and Fuse F3-F4. <b>Note:</b> Triggered TH3 will also trigger F3-F4.
	Rotation guard sensor has detected no rotor rotation (E2).	Rotor motor and/or rotor gear failure. Belt transmission/slipping belt. Sensor failure or distance too great between sensor and contact screw.	Check the rotor motor and its gear. Check if the belt intact or slipping on the belt pulley and/or rotor. Check the sensor for defect and adjust the distance to the contact screw.
Emergency stop.	The emergency button is active.	Pull the emergency button to restore.	

FIGURE 31: Alarm table and solution



Once the error has been corrected, restart the unit (See "6 Operating" on "Reset button and switches").

## 8.1 GENERAL TROUBLESHOOTING

Check for following if the unit will not start-up and the PLC is not displaying an error code.

PROBLEM	CAUSE	SOLUTION
The dehumidifier will not start-up (RUN-light is lit/ the PLC is not displaying a error message).	The external humidistat has triggered the humidistat 1& 2 and stopped the unit or when the attached external regulator is giving off a signal of 0.5V or lower in a period 5 mins or more.	Readjust the setpoint on the humidistat (the actual RH% is lower than the pre-set setpoint). Check message on PLC and readjust the external regulator's setpoint (the actual RH% is lower than the pre-set setpoint).

FIGURE 32: General troubleshooting table and solution

## 8.2 CAPACITY TROUBLESHOOTING

The dehumidifier performance can be checked simply by checking the temperature of the uninsulated ductwork near the unit.

Normally with the unit working at nominal conditions (with process air at room temperature), the dry air duct should be warm (25-40°C) and the wet air duct should be warm or hot (30-60°C).

If the unit does not maintain the required humidity look for the following causes:

PROBLEM	CAUSE	SOLUTION
The unit does not maintain the desired %RH humidity despite operating at full capacity.	Dehumidification capacity is insufficient although both dry and wet air ducts are warm.	Check the real moisture load and compare to design data. Check the airflow volumes, filter and adjustment of dampers. Check the rotor for correct position and sealing alignment, and ensure that there is no infiltration.
	Both air ducts are cold.	Is the unit switched on? Is any of the motor protections activated? Check that the wet air damper is not closed. Check the regeneration filter. Check operation of the regeneration fan.
	Dry air duct is cold and wet air duct is very hot.	Check rotation of the rotor. Check process air fan. Check that the dry air damper is not closed. Check the process air filter.
The process fan is rotating in the opposite direction	The incoming phase supply wiring is incorrect.	Switch the main switch to "0" and switch off incoming voltage. Change over two of the three incoming phase supply wires.

FIGURE 33: Capacity troubleshooting and solution table

## 8.3 CAPACITY TEST

If no fault can be found after checking as troubleshooting table, a performance test should be carried out on the dehumidifier, proceeding as follows.

- The different moisture contents  $x$  (g/kg), in the four airflows, can be determined by using wet and dry thermometers or calibrated instruments for temp and humidity. To receive the moisture contents the measured temperatures shall be plotted in a psychometric chart.

Process air in:  $x_{PI}$

Process air out:  $x_{PO}$

Regeneration air in:  $x_{RI}$

Wet air out:  $x_{RO}$

- Calculate from the actual temperatures the density of the two outlet airflows  $D_{PO}$  (kg/m<sup>3</sup>) and  $D_{RO}$ .
- Measure the airflow rate in each duct, e.g using a Prandtl tube. The airflow rate is the dynamic pressure,  $\Delta p$  (Pa), which is measured by the difference between the total pressure and static pressure in the duct.

Measurements shall be done in a straight part of the ductwork. In order to avoid faulty measurements caused by turbulent flows, measurements should not be done close after a bend or a fan.

The flow rate in each duct can be calculated as:

$$w = (2 * \Delta p / D)^{1/2} \text{ (m/s)}$$

Where  $D$  is the density according to item 2.

Then calculate the volume air flows,  $V_{PO}$  (m<sup>3</sup>/h) for the dry air and  $V_{RO}$  for the wet air:

$$V = w * A * 3600 \text{ (m}^3\text{/h)}$$

Where  $A$  is the cross section area of each duct.

- Now determine the de-humidification capacity,  $Q$  (kg/h), by the following equation.

$$Q = (Q_P + Q_R) / 2 \text{ (kg/h)}$$

where

$$Q_P = V_{PO} * D_{PO} * (x_{PI} - x_{PO}) / 1000$$

and

$$Q_R = V_{RO} * D_{RO} * (x_{RO} - x_{RI}) / 1000$$

Compare this measured capacity to the capacity which can be calculated from the data sheet.



# 9 MAINTENANCE

Before dismantling the unit, for inspection or service, the following precautions should be noted:



When dismantling the main switch shall be turned to "0".

If the unit has been in operation it should be left to cool off, for at least 30 minutes, before dismantling.

The wet air duct can be very hot if it is not insulated.

DST dehumidifiers are designed to run for long periods with little maintenance requirements. The items listed below shall however be noted;

## 9.1 EXCHANGING FILTERS

The filters should be inspected at regular intervals, the frequency of which can best be judged by experience. In storage applications where clean air conditions normally exist, the filter will typically require changing only every six months. In process work and dusty environments, the filter may need to be changed more often.

A dirty filter will in time affect the drying performance of the dehumidifier.



*On no account should the unit be operated without the correct air filters installed!*

## 9.2 GENERAL MAINTENANCE

Every two years an inspection of all internal components of the dehumidifier should be carried out, the following items being blown with compressed air and cleaned with a vacuum cleaner.

1. Gear motor and belt transmission.
2. Fans.
3. Coils
4. Access doors, hinges, locks and rotor seals.
5. Electric equipment.

Depending on how dirty the dehumidifier was at the first general maintenance, the interval of inspection may be increased or decreased

## 9.3 WASHING THE ROTOR

The SSCR rotor contained in DST dehumidifiers has a distinct advantage over other types of desiccant rotors in that dust can be washed out of the material without any need for reimpregnation after the treatment.

Before dismantling the unit, for inspection or service, the following precautions should be noted:

DST dehumidifiers are designed to run for long periods with little maintenance requirements. The items listed below shall however be noted;

1. Let the dehumidifier be shut-off for at least an hour.
2. Carefully remove the rotor from the unit.
3. Wet the rotor with water and a mild acid based detergent or with industrial alcohol and allow to soak for 30 minutes.
4. Rinse carefully with fresh water, pumped at low pressure through an ordinary hose.
5. Allow the liquid to drain from the rotor structure and blow the channels free with air. Do not to hold the air nozzle too close to the rotor surface.
6. Carefully refit the rotor and its transmission belt into the unit.
7. Ensure that all peripheral and radial seals are placed correctly.
8. Start the dehumidifier again and let it operate, with process fan and rotor motor only, for one hour without heater before the capacity is checked. Repeat the washing with a stronger (Non-alkaline) detergent if the performance has not recovered satisfactorily. Take action when the reactivation or process air in that enter the unit is not lower than 7°C.



*Never use a strong alkaline based detergent, as this may destroy the rotor!*

# 10 TECHNICAL DATA

Dehumidifier Model R-	051	061
Capacity [kg/h] <sup>1)</sup>	7.3	10
Nominal dry air flow [m <sup>3</sup> /h] <sup>2)</sup>	1250	1450
External static pressure [Pa] <sup>3)</sup>	100	100
Nominal wet air flow [m <sup>3</sup> /h] <sup>2)</sup>	430	580
External static pressure [Pa] <sup>3)</sup>	300	300
Heater power [kW]	9	13.5
Electric heater steps [kW]	4.5+4.5	9+4.5
Max supply pressure battery [bar(g)]	6	6
Linearly heater steps [kW] <sup>6)</sup>	0-9	0-13.5
Selectable heating stage [kW] <sup>6)</sup>		
<b>STEP (1) (2)</b>		
4,5 9	X	-
9 13.5	-	X
Humidistat setpoint [%RH] Step 1	-	-
Humidistat setpoint [%RH] Step 2	-	-
Humidistat 1 is opened, the power output reduces to [kW]	4.5	9
Motor power [kW]	1.3	1.3
Supply fuse 3x230V/400V 50Hz [A]	50/25	50/25
Weight [kg]	105	110
Speed of rotor rotation [rph]	42	42
Noise level [db(A)] <sup>4)</sup>	83	83
Air filter class (Process in/Reg in)	G4/G4	G4/G4
Filter change at pressure (reg/process) [Pa] <sup>6)</sup>	200/200	200/200
Electric compartment protection class	IP54	IP54
Humidistat connection	24Vdc	24Vdc
Set point TH1 [°C]	190	190
Set point TH2 [°C]	160	160
Set point TH3 [°C]	80	80

<sup>1)</sup> Valid for inlet conditions 20°C/ 60%RH.

<sup>2)</sup> Volume flow for density 1,20 kg/m<sup>3</sup>.

<sup>3)</sup> If no data is stated here the volume flow above is given at free blowing airflow.

<sup>4)</sup> Unit connected to uninsulated ducts, nominal air flows.

<sup>5)</sup> Units with mechanical and electronic filter guards.

<sup>6)</sup> Applies for dehumidifiers with installed optional feature.

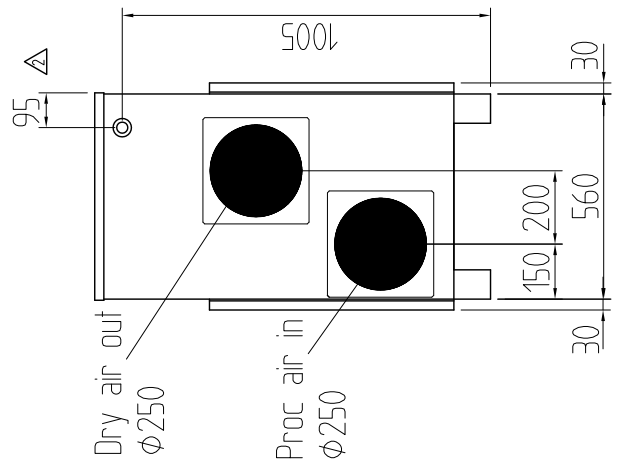
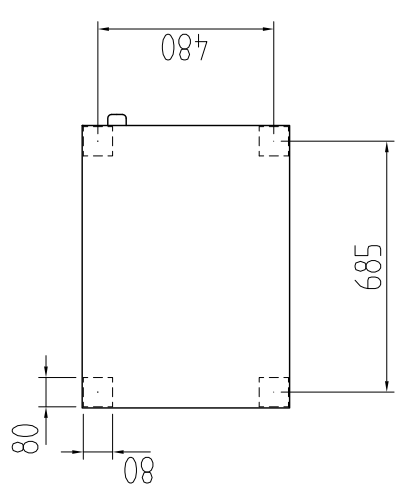
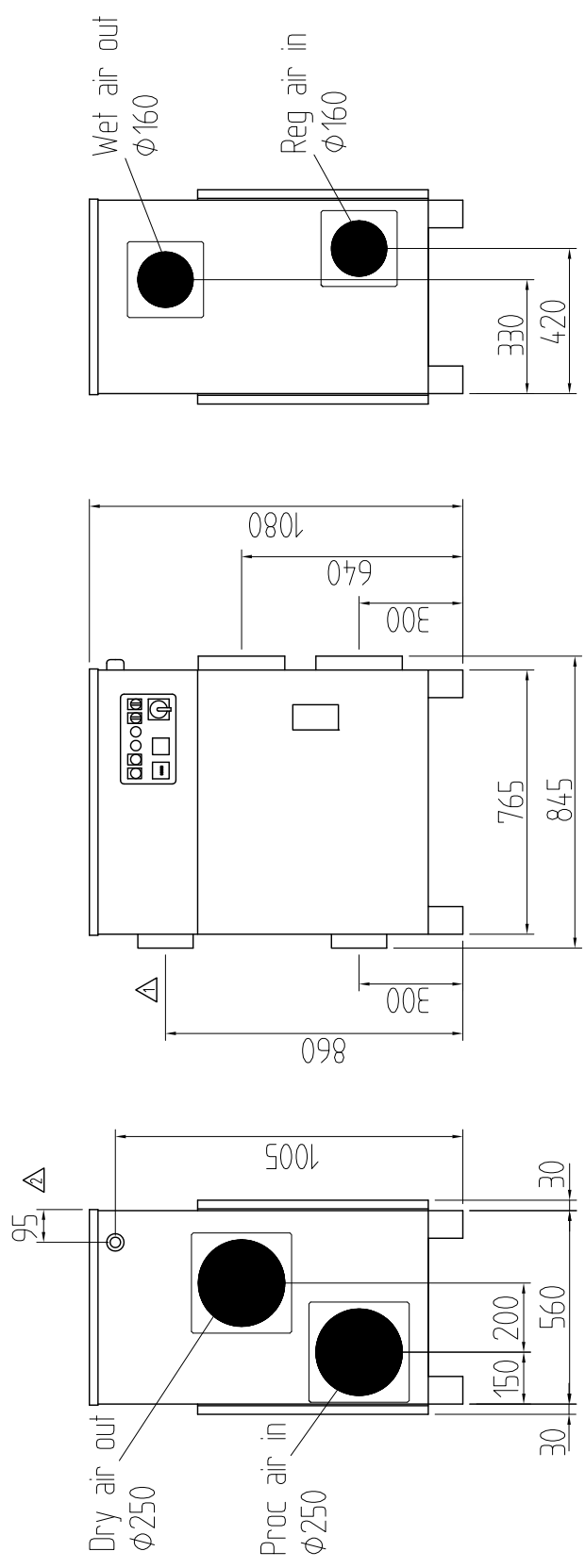
Komponentlista / Component list R-051/061R

Description	Antal Qty.	Benämning	Typ, ritn nr o dyl / Type, Drwg No etc	051	061	Art. Nr	Art No	Tillverkare / Leverantör Manufact. / Supplier	Anmärkingar Notes
<b>Rotor unit /Rotor enhet</b>									
Rotor	1	Rotor	SSCR-U, 550x100 SGM 65/30-4; 200/230V 50-60Hz;	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	105417		Seibu Giken /	
Drivmotor	1	Rotormotor	0,5uF; 5,2W; 10rpm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	104436			
Kuggrem	1	Belt	1870 5M 09	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	104654			
Remskiva	1	Beltpulley	24 5M 09, d=8mm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	100279			
Drivklack	4	Belt drive grip	Dwg 000 2 5461	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Radialtätning	2	Radial seal	Teflon 0,35 x 35 x 295	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	105165			
Radialtätning	2	Radial seal	Teflon 0,35 x 35 x 260	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	105164			
Radialtätning	1	Radial seal	Teflon 0,35 x 35 x 240	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	105152			
<b>Fläktar / Fans</b>									
Processfläkt	1	Proc.fan	GSF-2-180/85-075TSA, 3x400V, 0,75kW, 1,8A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	104659			
Reg.fläkt	1	Reg.fan	GSF-2-180/62.95-055 TS, 3x400V 0,55kW, 1,35A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	104658			
<b>Filter</b>									
Filter proc och reg	2	Filter	255x595x18mm; Camfil CM 360	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	104822			
<b>Regenereringsvärmare / Heater</b>									
Reg. värmare	1	Reg.heater	400V; 9kW	<input checked="" type="checkbox"/>	<input type="checkbox"/>	102212			
Reg. värmare	1	Reg.heater	400V 13,5kW	<input type="checkbox"/>	<input checked="" type="checkbox"/>	100910			
<b>Övrigt / Other</b>									
Elcentral	1	Electric box	Dwg 9910	<input checked="" type="checkbox"/>	<input type="checkbox"/>	104823			
Elcentral	1	Electric box	Dwg 3061/3062	<input type="checkbox"/>	<input checked="" type="checkbox"/>	104823			
Elcentral	1	Electric box	Dwg 10108 (Option)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	107251			See note 2)
Elcentral	1	Electric box	Dwg 3092-01 (Option)	<input type="checkbox"/>	<input checked="" type="checkbox"/>				See note 2)
Överhettningsskydd	1	Thermostat	TH1: heaTHERM 160-200°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	106157			See note 1)
Överhettningsskydd	1	Thermostat	TH3: heaTHERM 50-100°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	106158			
Vätluftstermostat	1	Thermostat	TH2: heaTHERM 0-200°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	106159			
Kopplingsdosa drivmotor	1	Plastic box	Plint box IP65	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	101234			
Borsttätning	0,2m	Brush seal	DX1175-13mm (2x100mm)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	102851			
Fläns	2	Cable inlet	Mini max, Type 0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	102945			


1) Please note: R-061R is delivered with either DWG 3061 or 3062. Check the label inside the electrical unit for correct electrical diagram reference.

2) Electrical diagram number for units equipped with automatic restart only.

Nr	Avi	rdning	Datum	Inf.	Godic
011		häftluft utlopp flyttat	2006-01-20	UJ	
021		Label inlet moved	2006-09-27	AL	



1

Defin	Ant.	Benning	Material	Måttavning	Atom
Konstr	Rev	Konr.	Bock	Scala	Erstat
	AL	Kop.		1:10	Fraem
					Ritnr
 <b>R-51/061 Dimensions</b> Installation drawing					061 1 6553 02
					061 990819

Den här ritning är DST. Detta gäller inte för kopiering eller andra ändringar utan tillstånd från Cooke Industries.

# EC declaration of conformity

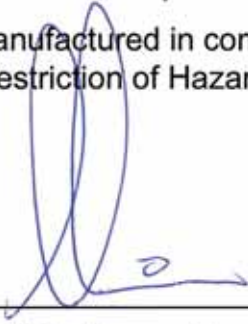
## Manufacturer:

Seibu Giken DST AB  
Avestagatan 33  
S-163 53 SPÅNGA  
Sweden  
Tel: ...46 8 445 77 20 Fax: ...46 8 445 77 39

## Hereby confirms that:

Machinery type R-51/61R

- a) is manufactured in compliance with DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast)
- b) is manufactured in compliance with the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC
- c) is manufactured in compliance with European Standards EN 60204-1:2006, EN ISO 12100-1, EN 12100-2, EN ISO 13857, EN 61000-6-3, and EN 61000-6-1
- d) is manufactured in compliance with European Directive 2002/95/EC for Restriction of Hazardous Substance (RoHS).



Anders Kristoferson, Managing Director

Spånga SEPT 21<sup>ST</sup> 2010



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