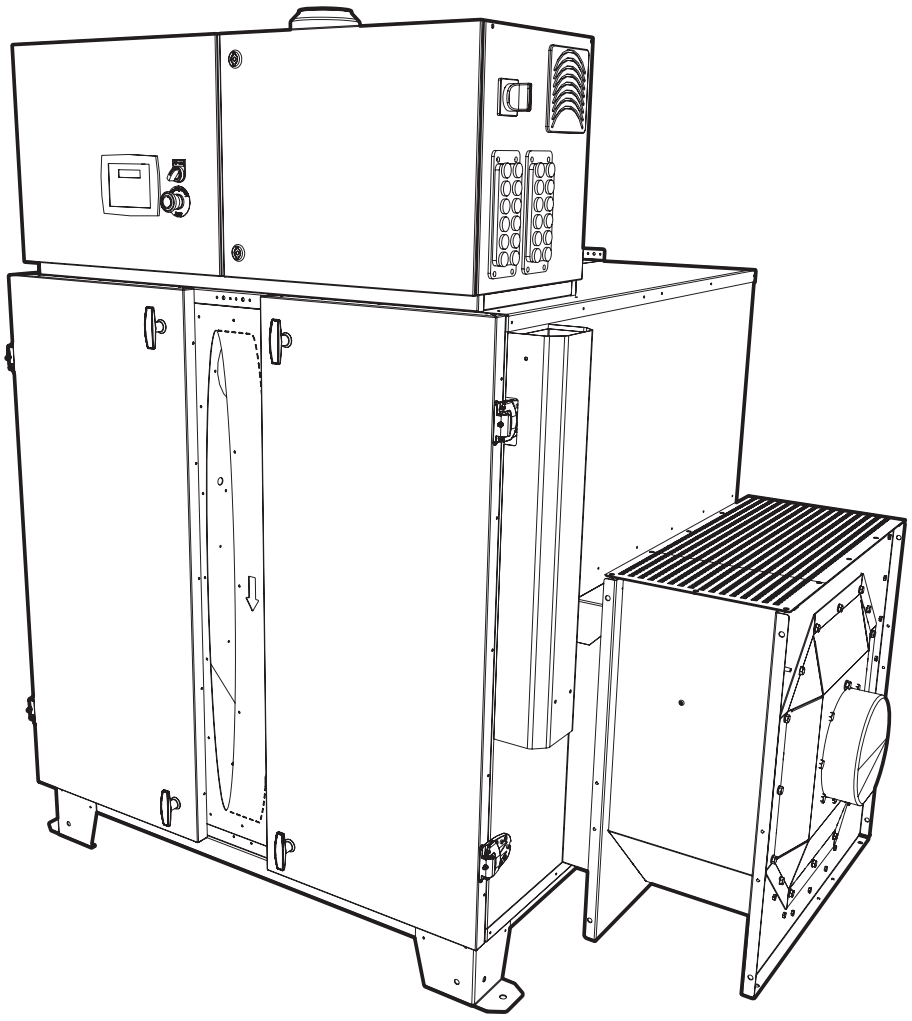
USER'S MANUAL

Document version: EN.01 18.05
Product: RLZ-81/82/101/102/102L/104



CE

Desiccant dehumidifier

Product supplied may differ from that illustrated

DST Seibu Giken

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Contents

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Appendix

1. Component list
2. Dimension
3. Harmful chemicals and solvents for rotors
4. CE-declaration

Electrical wiring diagram is stored in the document pocket, depending on the unit, inside or outside the electrical box. The electric diagram has a drawing number. This number should correspond to the sticker with a drawing number found inside the electric cabinet.

If applicable, separate users' manuals for components with separate controls are found in the document pocket.

Figures

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1 SAFETY

1.1 AIM OF THIS DOCUMENT

This document accompanies 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 document before installing or operating the equipment.

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

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

This document includes guidance for:

- Installers
- Operators
- Maintenance staff

Please retain this document throughout the lifetime of the equipment.

1.2 EMPHASISED TEXT

Caution! Indicates hazards that could result in damage to the equipment.

Warning! Indicates *"potentially"* hazardous situations that could result in damage to the equipment, serious personal injury or death.

Danger! Indicates *"imminently"* hazardous situations that could result in damage to the equipment, serious personal injury or death.

Attention! Indicates important information or instructions that require special attention.

1.3 INTENDED USE

This equipment is specifically designed for atmospheric air drying. It is unsuitable for any other use. For further advice please contact a 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
- in rooms or air systems having a potentially explosive atmosphere (ATEX)
- conditioning of air at elevated pressures
- air entering the rotor that has not been properly filtered with at least G4 class
- compounds in the air that will possibly deteriorate the silica gel rotor - see appendix for detailed information

1.3.1 HAZARDOUS OPERATING CONDITIONS

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

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

1.3.2 RESPONSIBILITIES OF THE OPERATOR

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

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

1.3.3 MINIMISING HAZARDS

To ensure that 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.

To ensure a failure-free operation:

- 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 for operational efficiency at regular intervals.
- Carry out maintenance and testing at prescribed intervals.

1.4 SAFETY

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

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

1.5 INSPECTION OF GOODS

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

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

1.6 SAFETY ADVICE REGARDING TRANSPORTATION

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

Warning! If a forklift is used to move the unit, please ensure the load is evenly balanced.

Warning! If lifting the unit or cassette on a pallet, ensure the unit is firmly secured to the pallet.

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

1.7 INSTALLATION

Attention! Installation, testing, commissioning and maintenance must be carried out by a qualified person or under the supervision of a qualified person. Wherever possible, all mechanical work must be carried out with the electrical 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 who
- 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.

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

Caution! The air dryer must be installed on a horizontal plane.

Attention! The air ducts must be vibration-free and sizable enough to prevent pressure build-up when conveying the incoming and outgoing air

from the unit.

Attention! The incoming and outgoing outlets on the machine are not designed to bear any weight from the air ducts system.

Attention! The wet air outlet duct must be insulated to prevent condensate and ice build-up in cold conditions.

1.8 ELECTRICAL INSTALLATION

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

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

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

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

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

Danger! Electrical connections are to be made in accordance with local regulations.

Attention! Check that the incoming electrical supply conforms to the electrical wiring diagram and the manufacturer's type plate attached to the unit.

Caution!! Loose terminal connections! Due to vibration during transportation it is advised that electrical terminals be 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 fan circuits

Periodically as defined in this manual means:

- during installation
- during maintenance

Caution! 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, technical data or parameter list.

Warning! This equipment will contain high voltage electrical components!

1.9 COMMISSIONING

Attention! Equipment fans can produce noise levels above 80 dB (A). Use ear protection if someone are near an operating machine for any length of time.

1.10 OPERATION

Caution! Use the normal shut-down procedure in the operating chapter. 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.

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

Caution! Do not expose the unit to an ambient temperature that exceeds 50 °C/122 °F (e.g inside a plant room) for a long period of time. This may damage the internal components!

Caution! Do not process air at a temperature higher than 40°C/104°F. This may damage the internal components!

1.11 MAINTENANCE

Caution! 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.

Caution! For maintenance purposes, use the normal shut-down procedure as described in the operating chapter and allow the system to cool down before attempting to access internal components.

Danger! To prevent unintentional restart, ensure that the main isolator switch is off and the power is isolated before servicing internal components.

Attention! Advise all operating and maintenance personnel of the automatic restart function if applicable.

Attention! Pay attention to accessibility requirements for maintenance and service purposes.

Danger! Only certified personnel are allowed to adjust, repair or modify the unit's refrigerant system. Contact a DST representative for any questions (Econosorb & Frigosorb only).

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

Caution! Do not expose the unit to water jets during the washing-down procedure!

Caution! Do not wash the rotor!

Warning! Allow the fans to come to a complete stop and the unit to be isolated from the electrical supply before removing any panels!

Warning! The unit is equipped with a heating element. Do not touch the equipment whilst it is hot. Allow the unit to cool for at least **30 minutes** before any service or maintenance is performed.

Danger! Manually isolate the unit from the electrical supply by turning the main isolator to *"OFF"* and secure it with a lock pad before conducting any type of service and maintenance work on the unit

1.12 DISPOSAL/RECYCLING

When the unit is no longer in use, dismantle the unit and recycle the components according to local regulations. Contact a DST representative if you have any questions.

2 INTRODUCTION

2.1 TYPE PLATE OVERVIEW

The manufactured unit is identified by a type plate. The type plate is positioned on front or the right side of the unit. The details on the type plate are set out as follows:

1. Model designation
2. Serial number
3. Electrical supply information
4. Regeneration heater power

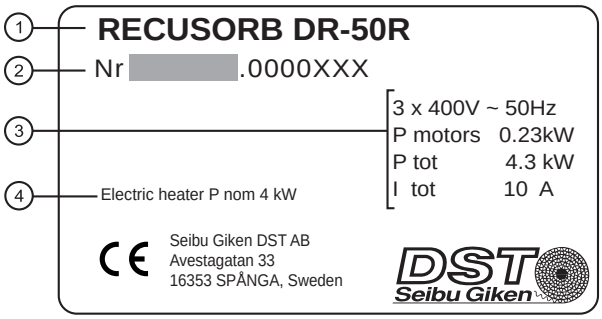


FIGURE 1: Type plate

2.2 SERIAL NUMBER STRUCTURE

The serial number printed on the type plate is composed of codes to enable a fast identification of the unit. Units manufactured pre 2006 use a modified serial number structure which does not match the current structure.

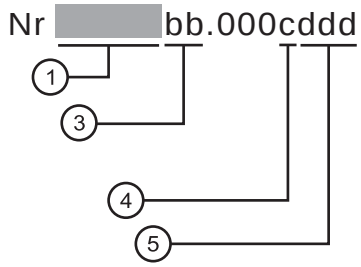


FIGURE 2: Serial number structure for a single-phase unit

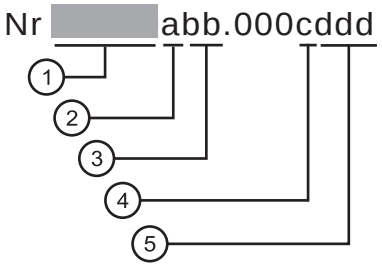


FIGURE 3: Serial number structure for a three-phase unit

1. Model designation
2. Regeneration heater (**a**) - the type of heater the unit is equipped with.

   R = Resistive (electric)
   G = Gas
   S = Steam
   HW = Hot water
   WW = Warm water
   D = Diesel
   O = Oil

3. Special unit (**bb**) - code to indicate a special manufactured unit

   SP = Special

   Note: The absence of SP indicates a standard manufactured unit; e.g. DR-50RSP is a special manufactured unit, and DR-50R is a standard manufactured unit.

4. Serial number (**c**) - to indicate whether the unit belongs to a special or standard manufactured series

   0 = Standard manufactured series

   7 = Special manufactured series

5. Serial number (**ddd**) - serial number of the manufactured unit (**ddd**)

   001, 002, 003, 004...

2.3 OTHER UNIT INFORMATION

In the appendix, a component list details spare parts with articlenumbers as well as the electrical diagram number for the electrical box. If there is a special unit with custom-installed components that list will include a list of installed options.

3 PRODUCT DESCRIPTION

3.1 PRODUCT OVERVIEW

1. Process filter
2. Regeneration filter
3. Process fan
4. Dry air out
5. Electrical box with control panel
6. Regeneration fan
7. Wet air out
8. Regeneration air in
9. Process air in

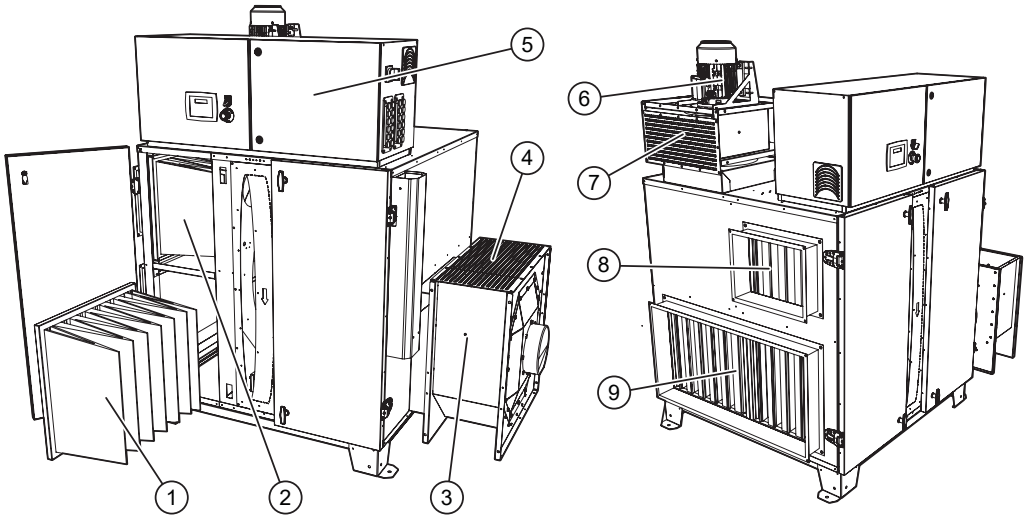


FIGURE 4: Product overview

Variation of installation and components may vary.

3.2 APPLICATIONS

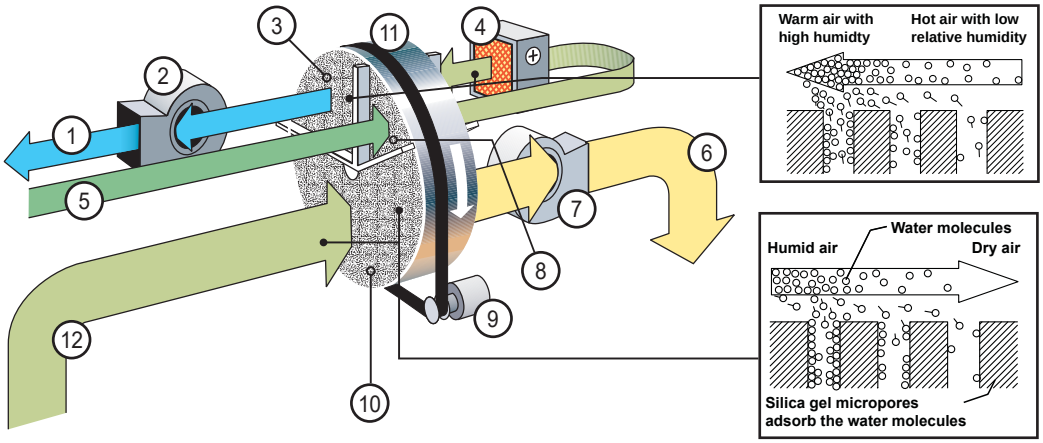
DST desiccant-type dehumidifiers are normally used where dry air is essential to the various manufacturing processes used in chemical, pharmaceutical, food or confectionery industries, or where a dry environment is required for the storing and handling of moisture-sensitive products and raw materials.

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.

3.3 PRINCIPLE OF OPERATION

This is 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 sector as the rotor slowly turns.

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. Purge sector
9. Rotor motor
10. Process sector
11. Rotor
12. Process air inlet



RECUSORB Light *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. The rotor rotates and enters a small purge sector where part of the incoming regeneration air is pre-heated. As a result, the regeneration air is pre-heated before the air enters the regeneration heater, thus reducing the amount of energy to heat the air in the regeneration heater. Purge sector will also deadsorb some of the water molecules before the rotor enters the process sector.*

Now that the excess heat in the rotor material is reduced by the purge sector. This will reactivate the rotor materials to prepare it for adsorption. When the rotor finally enters the process sector, the adsorbing starts immediately until the rotor passes over to the regeneration sector. In this sector the hot air will heat the rotor materials and deadsorbs the water molecules in to the air and exits through the wet air outlet.

FIGURE 5: Principle of operation & rotor

4 INSTALLATION

4.1 UNIT INSTALLATION

Follow the directions regarding installation of heavy and medium weight dehumidifiers.

Note: Use the installation guidelines as a reference only.

4.1.1 FORK 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 using 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.
- Units equipped with handles are very heavy. Do not lift the unit single-handedly! Always ask for assistance or use lifting aid!

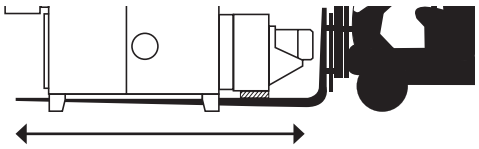


FIGURE 6: Forks in contact with both sides of the frame.

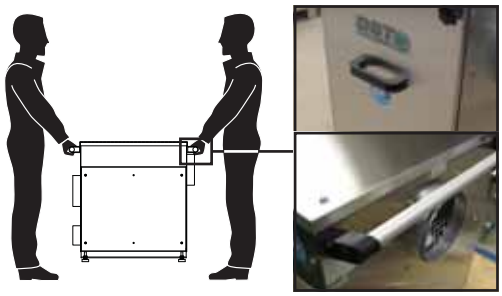


FIGURE 7: Units with handles

4.1.2 TRANSPORT

Dehumidifiers with external fans or a high centre of gravity runs the risk of tipping. Use caution when lifting and moving the dehumidifier.

Note:

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

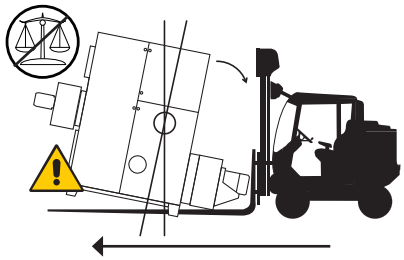


FIGURE 8: Exercise caution when lifting and transport a unit

If not balanced, the unit may run the risk of tipping during transport.

See *"11 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 vary depending on the model. To avoid incorrect positioning, see the dimensional drawing in the appendix for service space and foot bolt-hole dimensions.

4.2 SECURING THE UNIT

Note: Applies for R-51/61, RZ and CZ only.

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

At delivery, the brackets are used to secure the unit to the pallet for transportation. Do not discard the foot brackets (!) Remove and reuse them if required.

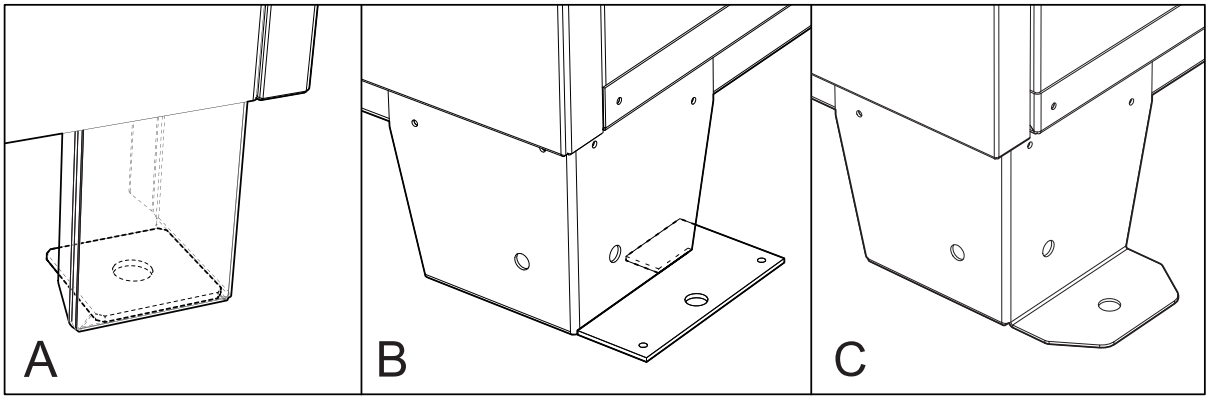


FIGURE 9: Transportation bracket

A) R-51/61 B) RZ/CZ C) RLZ

Note: RLZ has integrated brackets to fix the unit onto a pallet or a foundation.

4.3 GENERAL DUCT WORK INSTALLATION

The guidelines are to assist the installers and operators to adjust the duct/dehumidifier installation. Consult a DST representative or local mechanical installation company for more information.

- Avoid recirculation from the separate airflows, direct entering and exiting airflow away from each other.
- Check if the dry air is well distributed in the dehumidified area.
- The regeneration air in and wet air out has to be connected to the outside of the dehumidified area, preferable outdoor.*
- To increase the lifetime of the filter, it is recommended taking air from a higher level where dust and other particles are kept at minimum.*
- Install dry air out duct/channel at a high level.
- To maximize the drying capacity, free blowing on dry air out without airflow reduction is recommended.
- Allow wet air to disperse freely when exiting the duct.**
- It is recommended to insulate the wet air duct.**
- The wet air duct must be installed at a sloping outwards angle, due to risk of condensation inside the duct work. The setup will also prevent condensation flowing back into the dehumidifier.**
- If the duct needs to be installed higher than the wet air outlet, fix a condensate drain at the lowest point of the duct.**
- Do not connect the air outlet to a ventilation system which can create pressure that will result in reverse airflow through the dehumidifier.

** N/A for DR-31 T10.*

*** N/A for F-31 and AQ-30/31.*

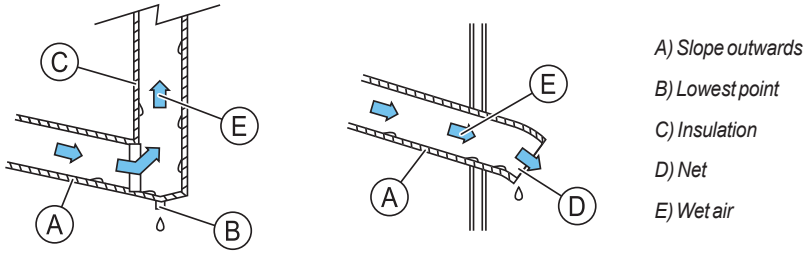


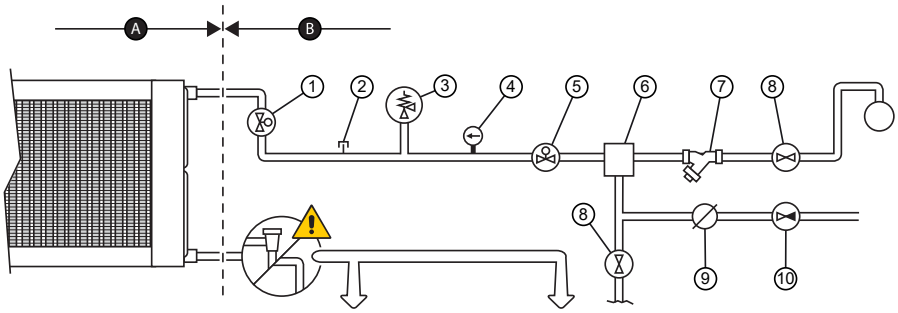
FIGURE 10: Installation of wet air out duct

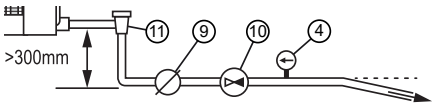
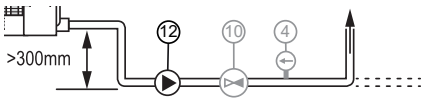
4.4 PIPE WORK CONNECTIONS

Pipe work should be connected in accordance with good engineering practise and ensure connections is made to screwed fittings on the unit. Follow the mandatory and recommended piping installation.

4.4.1 DST SCOPE OF SUPPLY AND EXTERNAL CONTRACTOR SUPPLY

To ensure failure-free operation, DST recommends the external steam supply connection and setup as followed. DST will not be held accountable for any hardware damage that might occur if the recommendations are not complied.



Installation	Alternative installation
	
Draining condensate using gravity, install the condensate pipe slope downwards. Minimum slope: 1:100 (1 cm to every 1 metre).	If it is not possible to install the condensate pipe slope downwards, install an automatic pumping trap to remove the condensate upwards.

1. Control valve + actuator*
2. Automatatic air vent
3. Relief valve
4. Pressure gauge
5. Auto ball valve + actuator**
6. Separator
7. Strainer
8. Stop or ball valve
9. Float & thermostatic steam trap
10. Check valve
11. Vaccum breaker
12. Automatic pumping trap

A) DST scope of supply

B) External contractor

** DST supply as option*

*** Closed when the dehumidifer is not in operation or closes automatically during power failure*

FIGURE 11: Steam coil and pipe installation

During installation, the installers "MUST" configure the condensate pipe with vertical drop of >300mm to prevent condensate water flowing into the coil and an control valve + actuator (optional).

It is the responsibility of the steam system installer to ensure that condensate is effectively drained from the coil under all load conditions. Failure to comply will result in premature failure of the coil and invalidate the warranty.

Attention!

Standard steam coil information:

- *Maximum working pressure: 10 Bar*
- *Test pressure: 13 Bar*
- *Maximum operating temperature: 185°C*
- *Saturated steam: >0.95DF*
- *If condensate temperature on outlet pipe is <7°C, equip the steam coil with a frost protection device.*

4.5 HUMIDISTAT/ELECTRONIC CONTROLLER INSTALLATION

Install the humidistat/electronic controller away from the dry air out path to avoid false readings.

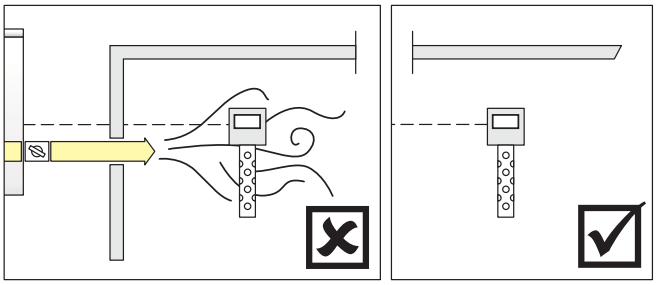


FIGURE 12: Humidistat positioning

4.6 ELECTRICAL CONNECTION

Electrical components should be connected to the supply according to the local regulations and requirements.

4.6.1 POWER SUPPLY

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

4.6.2 EARTH LEAKAGE CIRCUIT BREAKER

Due to the high capacitive currents present in the AC drive, earth leakage circuit breakers may not function properly.

Note: This is only applicable if the unit is equipped with a frequency converter.

4.6.3 HUMIDISTAT CONNECTIONS

The dehumidifier has a connection for a 1-step* or 2-step** humidistat. This is optional for some models.

See electrical diagram for connections.

See *"7 Functions"* for more details.

** For models with no selectable heater output.*

*** For models with at least two selectable heater output.*

4.6.4 0-10VDC SIGNAL

Units with optional connections points for an electronic humidity controller or another regulator signal is marked on the electrical diagram.

See *"7 Functions"* for more details.

See electrical diagram for connections.

4.6.5 REMOTE CONTROL

The unit has a connection point for a remote switch.

See electrical diagram for connections details.

See *"7 Functions"* for more details.

4.6.6 POTENTIAL-FREE SIGNALS

Potential free contacts are marked on the electrical diagram for connecting external indicators. These indicators are used to transmit signals to a remote centre, to indicate if unit or fans are still in operation.

Standard indicator

- Alarm indicator
- Run indicator*
- Regeneration fan indicator*
- Process fan indicator*

Optional indicators (N/A for certain units)

- Filter guard (regeneration) 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.

** Standard indicator may differ depending on model and configuration. See electrical diagram for more information.*

5 OPERATION CHECK & ADJUSTMENT

5.1 PRE-OPERATION CHECK

⚠ Danger!

The operator of the system must ensure that all personnel who are involved with installation, operation and maintenance of the machine have read the "1 Safety" sections of this 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 fitted, ensure that both air balance dampers are fully open and check that the air paths of the duct work are not obstructed in any way.
3. Check that the filters are securely in place.
4. Confirm both motor overload protectors are set to Start/On position.
5. If fitted with condenser or cooler, install a water trap.
6. Confirm thermostat and overheat protection settings are in accordance with table shown *"11 Technical data"*.
7. Confirm the incoming electrical power cable is secure and ensure that live wires are securely located in the correct terminals. Ensure the earth wire is securely located onto the earth strap or earth terminal provided.
8. 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 *"I"* and check the supply voltage is correct.
3. Briefly start the unit and then turn it off. Promptly check if the process fan and regeneration fan is rotating in the correct direction. If incorrect check *"9 Troubleshooting"*. See *"6 Operating"* on *"Start"* and *"Stop"*.
4. If fitted, balance the airflows, using the dampers in the duct work or adjust the frequency of each frequency converter to obtain the required values.
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 technical data and electrical diagram.
6. Measure the current on both fans and compare with the electrical specifications printed on the fan motor casing. If the current is too high, reduce the airflow slightly by closing down on the respective balance damper.
7. If connected, check remote control operation.
8. If connected, check remote alarm function (see 5 above).
9. If connected, check humidistat/electronic humidity controller function.

6 OPERATING

6.1 KEYS

1. **[MAN/AUTO]** - Enable or disable the humidistat/external regulator control
2. **[EMERGENCY STOP]** - Stops the unit in case of emergency
3. **[ON/1]** - Start
4. **[OFF/2]** - Stop
5. **[Heater/5]** - Selecting the active heater steps for electric heater.
6. **[Temp/7]** - Temperature setting for TH2 and TH3
7. **[Mode/8]** - Select different mode (AUTO-OFF or AUTO VENT)
8. **[Hour-proc/9]** - Run time for process fan
9. **[Info/6]** - Function description/Back
10. **[Hour-reg/0]** - Total run time for regeneration heaters
11. Navigation keys
    - [▲] - Present value, software version and browse up
    - [▼] - Set points and browse down
    - [▶] - Browse right
    - [◀] - Browse left
12. **[↵]** - Select choice, confirm choice
13. **[(i)]** - Display firmware information

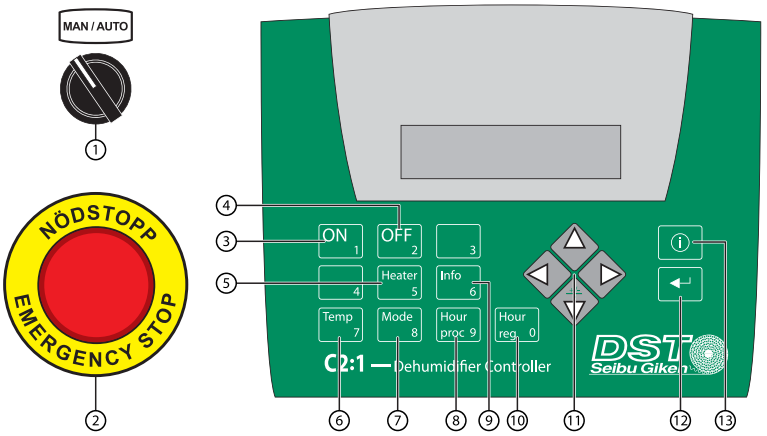


FIGURE 13: PLC-keys

There might additional controls such as indicators for alarm and filter guards- See the provided electrical diagram for the individual unit for more information.

6.2 START

The unit will initiate starting sequence by activating the process fan, rotor motor, reg. fan and heaters.

- The start-up will last for 15 seconds.

1. Select mode: *"MAN"* or *"AUTO"* on **[MAN/AUTO]** switch (Use *"AUTO"* if a humidistat/external regulator is connected, use *"MAN"* if else).
2. Press **[ON/1]**. Display shows *"Start up"* and the unit will initiate starting procedure.

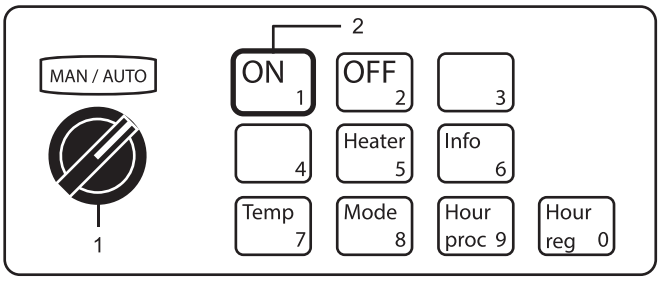


FIGURE 14: Starting the dehumidifier in AUTO/OFF or AUTO/VENT

6.3 STOP

The unit will start to shut down and come to a complete stop.

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

- During "REG FAN OFF DELAY", press [↵] to return to start display.

1. Press **[OFF/2]**.

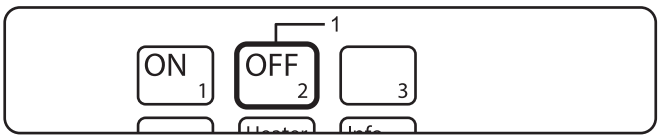


FIGURE 15: Stopping the dehumidifier

6.4 RUN TIME - HEATERS

Monitors the total running time for heaters.

- Can only be used during operation (Feature not available if the unit is equipped with gas, hot water or steam heater).

1. Press **[Hour-reg/0]** to view run time for heater group 1.
2. Press **[Hour-reg/0]** again to view the rest of the heater groups and to exit the menu.

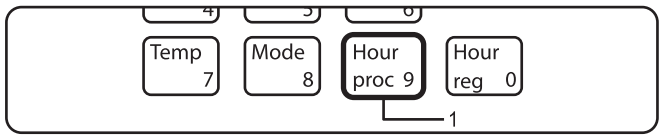


FIGURE 16: Run time for heaters

6.5 RUN TIME - PROCESS FAN

Monitors the running time for process fan.

- Can only be used during operation.

1. Press **[Hour-proc/9]** to display run time for process fan.
2. Press **[Hour-proc/9]** again to exit.

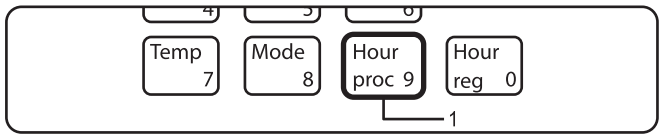


FIGURE 17: Run time for process fan in operation

6.6 CHECK TEMPERATURE

Check the temperature on regeneration heater and wet air out.

- Other configuration settings will be displayed after the temperature display.

1. Press and hold **[Info/6]** to display regeneration temperature (TH2).
2. Press **[Info/6]** to view wet air temperature (TH3).
3. Press **[Info/6]** repeatedly to exit.

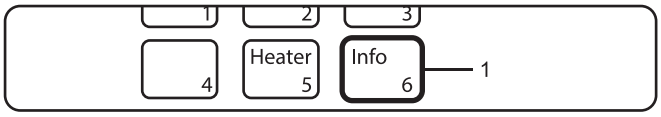


FIGURE 18: Current temperature

6.7 ADJUSTING TH2 &TH3 SETPOINT

Adjusting the TH2 and TH3 through the PLC.

- The adjustment can only be set when the unit is turned off.

- Unit without electrical heater and gas heater not equipped with TH1.

- TH1 will not be displayed since it is a mechanical overheat protector. It is located inside the electrical cabinet.

1. Press and hold **[Temp/7]** until the menu shows up.
2. Enter the password (1919) with the numerical keys and press **[↵]**.
3. Enter TH2 temperature setting by pressing the numerical keys.
4. Press **[↵]** to confirm and **[↵]** again to continue.
5. Enter TH3 temperature setting by pressing the numerical keys.
6. Press **[↵]** to confirm and **[↵]** again to exit.

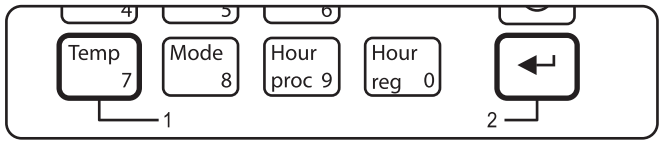


FIGURE 19: TH2 and TH3

⚠ Caution!

Do not set TH1, TH2 and TH3 temperature setting beyond the recommended value stated in the technical data. Consult DST-representative before changing the set points.

6.8 SETTING THE PROCESS AIRFLOW

Set the process airflow capacity for the dehumidfication mode and ventilation mode.

1. Press and hold **[Mode/8]** until the menu shows up.
2. Input the process fan airflow in % for the dehumidfication mode by pressing the numerical keys.
3. Press **[↵]** to move to the next setting.
4. Input the process fan airflow in % for the ventilation mode by pressing the numerical keys.
5. Press **[↵]** to confirm and **[↵]** again to exit.

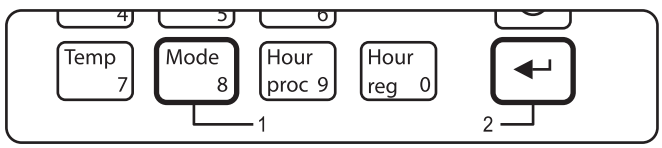


FIGURE 20: Process airflow setting

6.9 SELECTING ACTIVE HEATER STEPS

Select the number of active heater steps.

- Feature not available if the unit is equipped with coil heaters.

- The adjustment can only be set when the unit is turned off.

1. Press **[Heater/5]** to enter menu.
2. Select the number active heater step by pressing the numerical keys.
3. Press **[↵]** to confirm and **[↵]** again to exit.

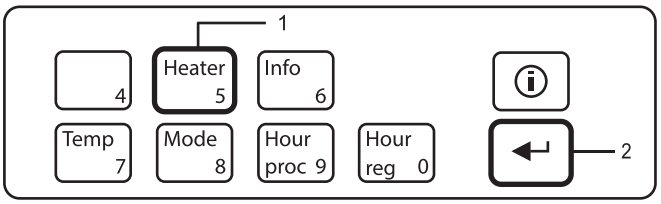


FIGURE 21: Active heater selection

Note: If the unit is fitted with Energy saving 2, input **57 %** or lower to deactivate one of the heater steps and to reduce the start-up current. If inputting 58 % and above, the start-up current will be same as if the heater power is at 100 %.

6.10 RESET THE PLC

Once the error has been corrected, use the PLC to reset itself and restart the unit. If the unit does not start up, check the display for errors and correct it.

- The adjustment can only be set when the unit is turned off.

1. Press **[OFF/2]** to remove the errors on the display.

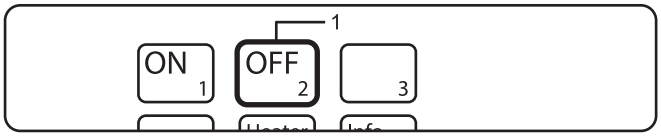


FIGURE 22: Reset PLC

6.11 PLC OPERATION MESSAGES

During operation the following messages may appear on the PLC. These messages are not to be confused with PLC error codes.

MESSAGES DURING OPERATION			
HUMIDISTAT 2 INPUT OPEN	Operating with reduced dehumidification capacity in auto-mode.	**STARTING UP FILTERS OK**	Initiating the start-up sequence and checking filters.
OPERATION ##kW [MODE]	During operation, the output will vary depending on the size of the unit. No output is displayed if the unit is installed with coil heater. Selected dehumidification mode during operation.	**STARTING UP SYSTEM OK**	Initiating the start-up sequence. All system are fully operational.
OPERATION EH3	When the attached electronic humidity controller EH3 is giving off a signal of 0.5V or lower in a period 5 minutes or more.	**STARTING UP HUMIDISTAT1 OPEN**	Starting up with dehumidification capacity turned off in auto-mode (Overrides Humidistat 2).
OPERATION TH2 Reg temp ##°C	When the maximum temperature of TH2 has been reached. The PLC deactivates the heater step by step to reduce the temperature.	**STARTING UP HUMIDISTAT2 OPEN**	Starting up with reduced dehumidification capacity in auto-mode.
OPERATION REMOTE	The connected remote has shut down the dehumidifier.	**STARTING UP** REMOTE OPEN	The connected remote is open during start-up sequence.
REGFAN OFF DELAY #### C #### s	During shut down or standby (if an external regulator is connected or humidistat 1 & 2 is opened). The display will also show the current heater temperature and countdown until the regeneration fan stops.	**UNIT STOPPED BY HUMIDISTAT**	Starting up with dehumidification capacity turned off in auto-mode. Humidistat 1 is open (Overrides Humidistat 2)
STARTING UP DIRTY FILTER	Initiating the start-up sequence. Change process or regeneration filter.	**UNIT STOPPED BY LOW HUMIDITY**	When the attached external regulator is giving off a signal 0.5V or lower in a period 5 minutes or more.

FIGURE 23: PLC operation messages

6.12 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.

Reset is only required when a operation is halted by hardware failure or triggered a safety mechanism. See troubleshooting for more information.

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

6.13 CONFIGURATION CHECK

During non-operation, check the configuration according to the specification.

- The configuration check can only be accessed when the unit is turned off.

1. Press and hold **[Info/6]** until the menu shows up.
2. Pressing **[↵]** to move to the next status screen.
3. Continue pressing **[↵]** to exit.

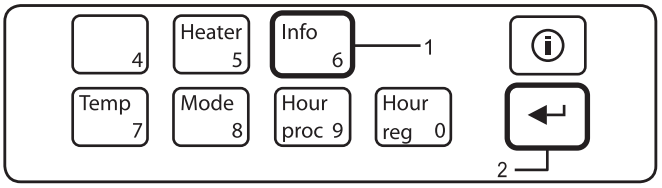
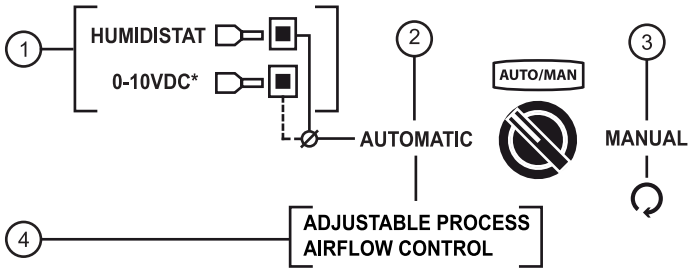


FIGURE 24: Configuration check

7 FUNCTIONS

7.1 DEHUMIDIFICATION FUNCTION

The unit is equipped with multiple modes to control the dehumidification. It allows automatic control with connected humidistat or regulator signal*, or manual override. A selectable option to set the ventilation modes during automatic mode is also possible.



1. *Connections for a humidistat or regulator signal when controlling the dehumidification.*
2. *Automatic control - Dehumidification is automatically controlled using a humidistat or regulator signal*
3. *Manual control - Dehumidification is manually controlled using pre-set settings.*
4. *The airflow on the process fan is adjustable for the dehumidification mode and ventilation mode.*

** Option*

FIGURE 25: Illustration of automatic and manual functions

7.1.1 AUTOMATIC OR MANUAL

Main operation control is operated by selecting automatic or manual mode on the [AUTO/MAN]-switch.

- **AUTOMATIC [AUTO]** - Dehumidification capacity is controlled automatically by a humidistat/regulator signal. A user selectable ventilation mode or an adjustable airflow feature* is available as standard to save energy or to ventilate when the dehumidification need is achieved.
- **MANUAL [MAN]** - The unit will run on selected settings until manually turned off. This mode will also prevent a humidistat or a regulator signal from shutting down the unit.

** Applicable for RLZ-series only.*

Note: Electrical heater output is selectable. Available for certain models only. See *"6 Operating"*.

Note: AUTO-mode is only operable when a humidistat/regulator signal is connected.

Note: If the unit is fitted with Energy saving, the regeneration heater will operate on full effect in MAN-mode.

7.1.2 AUTOMATIC MODE - AIRFLOW

Dehumidification is controlled automatically using a humidistat/regulator signal. In this mode the process airflow capacity is adjustable if the unit is dehumidifying or ventilating. The factory defualt settings for process airflow capacity is set as followed and is adjustable on the PLC.

Dehumidification airflow	Ventilation airflow
100%	50%

Note: When operating in manual mode, settings for ventilation airflow settings is disabled.

7.1.3 HUMIDISTAT CONNECTION

Standard units have the option to use the built-in Humidistat inputs to control the dehumidification using a 1-step or 2-step humidistat.

The built-in humidistat controls the dehumidification by reducing the regeneration heater in steps. Use a 2-step humidistat to control the heater output in three steps (maximum power, reduced power and zero power) or a 1-step humidistat for heating output in two steps (maximum power and zero power).

	Two-step humidistat (Applies for electrical heater)		One-step humidistat (Applies for steam heater)	
Mode	Humidistat inputs	Heater output	Humidistat input	Heater output
1	Humidistat step 2 (Closed) Humidistat step 1 (Closed)	Full power	Humidistat (Closed)	Full power
2	Humidistat step 2 **(Opened)** Humidistat step 1 (Closed)	Reduced power*	*N/A*	*N/A*
3	Humidistat step 2 **(Opened)** Humidistat step 1 **(Opened)**	Zero power	Humidistat **(Opened)**	Zero power

** See technical data for details on electrical heater output for reduced power.*

See electrical diagram for details and connections.

7.1.4 0-10VDC CONNECTION

Note: Option

This feature replaces the standard built-in humidistat inputs when Energy saving 2 or 3* is fitted. A 0-10VDC regulator is used to control the dehumidification capacity on a precision level when the built-in Humidistat input feature is insufficient.

Electronic humidity controller	Regulator signal	Capacity output
EH3 T2/others	0...10VDC	0...100%

** N/A for R-51/60/61, RL-60/61/71.*

See *"8.8 Energy saving"* for more feature description.

See electrical diagram for customer connection.

7.2 REMOTE CONTROL SWITCH

Connections for a external power switch is available as standard. The remote power switch allows the user to shut down or turn on the unit from another location.

Note: The external power switch overrides the manual and automatic mode and must be restored to start the unit.

See electrical diagram for connections.

7.3 TEMPERATURE SAFETY DEVICES

Integral *"fail-safe"* temperature devices will protect the unit from damage caused by component failure, incorrect settings or abnormal operating conditions.

Type	Thermostat function	Thermostat description	Thermostat location	Reset is required
TH1	Safety thermostat	An overheat protection device that stops the unit if the temperature exceeds the set limit	Inside the regeneration heater compartment	Yes
TH2	Control thermostat	A device that controls the set regeneration temperature	Inside the regeneration heater compartment	No
TH3	Safety thermostat	An overheat protection device that stops the unit if the temperature exceeds the set limit	In the proximity of wet air outlet	Yes

Temperature device types used will vary between models fitted with a PLC and those without a PLC. See below.

Units with PLC	Units without PLC
Two shielded electronic sensors, programmed on PLC as TH2 and TH3. Reset TH3 on PLC. Mechanical thermostat TH1* – reset on thermostat.	Only mechanical thermostats installed - TH1, TH2 and TH3 Mechanical thermostat TH1* and TH3 - reset on thermostats.

** Applies for electric and gas heater only.*

See *"11 Technical data"* for default temperature settings.

See electrical diagram for the location of the thermostats.

Attention!

If TH1 or TH3 are tripped, an automatic safe shut down procedure will be initiated. On units fitted with a PLC an alarm code will be displayed. On units without a PLC an alarm is indicated by a red light on the control panel. The shut down procedure includes a timed cooling down period and, if fitted, closing of associated valve actuators.

Attention!

Should TH1 trip, it will automatically disable the regeneration heater circuit breakers. These must be reset before attempting to restart the unit.

7.4 PRESSURE NOZZLES

Pressure nozzles can be used to control or monitor airflows, using gauges or pressure sensitive devices. The air nozzles are marked on the unit.

7.5 FREQUENCY CONVERTER TO FANS

The frequency converter is used to set the desired airflow without dampers and reduce start-up current.

See electrical diagram for more information and location of the frequency converter.

Note: Due to the high capacitive currents present in the AC drive, earth current leakage breaker may not function properly.

8 OPTION & ACCESSORY

8.1 FROST PROTECTION DEVICE

Monitors the return water temperature from the coil and sound an alarm to the control panel.

The device will close the dampers at the regeneration air in and wet air out and sound an alarm if the temperature of the return water is below a certain temperature.

The alarm temperature can be changed via a potentiometer, which is located in the cabinet. This is not recommended, consult a DST representative for more information.

See electrical diagram for more information on the devices.

Available for hot/warn water and steam coil only.

See *"10 Technical data"* for temperature setting.

8.2 FILTER GUARD

Filter guard is a pressure indicator which tells the condition of the filter. Different options are available for purchase and comes in different varieties, such as a mechanical (differential U-tube manometer) or an electronic filter guard.

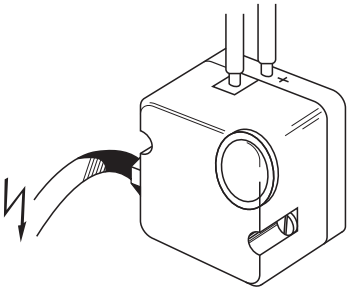


FIGURE 26: Electronic filter guard

If the differential pressure increases beyond the recommended value, the filter needs to be replaced as soon as possible. This is indicated by warning light or a message on the PLC.

See "11 Technical data" for recommended pressure for each filter type.

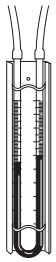
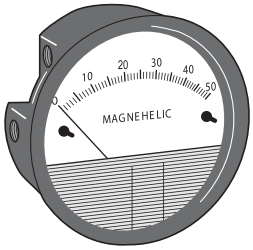


FIGURE 27: Manometer - mechanical filter guard



FIGUR 1: Manometer - mekanisk filtervakt (Magnehelic)

8.3 ROTATION GUARD

A safe guard feature that stops the unit from overheating in case of a sudden stop in the rotor rotation. The rotation guard will stop the unit and turn on an alarm indicator or display an error message on the PLC.

Note: Included in Energy saving 2 and 3.

8.4 ADJUSTABLE ROTOR SPEED

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

8.5 INSULATION

19mm or 32mm (foamed rubber) insulation can be added along the inside of the process air compartment or regeneration air compartment, or both to prevent possible condensation on the inside or the outside surface of the unit.

8.6 REACTIVATION HEATER COILS

Optional heating other than standard electrical or steam heating are available.

Note: Control valve is included in the delivery.

8.7 ICE-FAN

If an increased airflow is needed, the standard process can be replaced and fitted with a powerful ICE-fan.

Note: A frequency converter may be required for certain models.

Data flow and other technical data is located in the datasheet.

8.8 ENERGY SAVING

To save energy, the unit can be fitted with different *"Energy saving"* features.

Energy saving 1: The dehumidifier is controlled by a 1- or 2-step humidistat. E.g., an electric-mechanical HMH, or the electronic controllers EH3 T2 or EH4.

Energy saving 2: Controls the heater for units with electrical heater. The unit is fitted a linearly control, which controls the heater output linearly. The dehumidifier is controlled by an external signal 0-10VDC, e.g., from a electronic controller EH3 T2. See illustration below.

Note: Only applicable for electric heater.

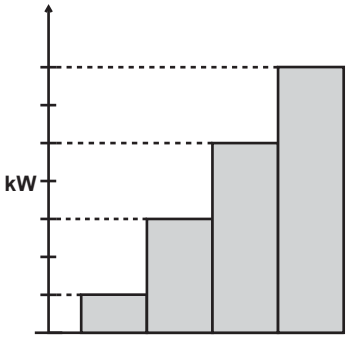


FIGURE 28: Binary control

Example of binary control with heater output controlled in steps.

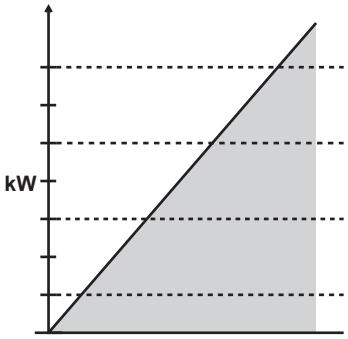


FIGURE 29: Linearly control

Example of linearly control for linear heater output.

Option Energy saving 3: Controls the regeneration airflow and thereby the steam consumption for units with steam heater. The dehumidification capacity is controlled approximately 15% up to full capacity. The dehumidifier is controlled by a signal 0-10VDC, e.g., from a humidity controller EH3 T2.

See *"11 Technical data"* for binary heating steps.

8.9 ELECTRONIC HUMIDITY CONTROLLER AND ELECTRONIC HUMIDISTAT

Control the dehumidification process using the advanced electronic humidity controller EH3 T2 or the simpler electronic humidistat EH4. The devices can be built in the electrical box next to the control panel or loose device for on-site installation.

See *"8.8 Energy saving" for more information on what features they can be installed on.*

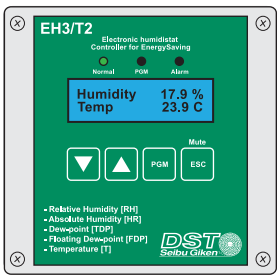


FIGURE 30: EH3 T2

Electronic humidity controller with multiple settings and advanced control for dehumidification,

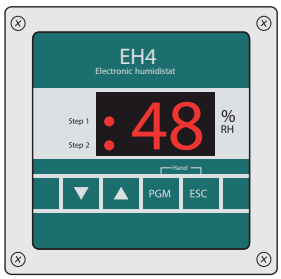


FIGURE 31: EH4

2-step humidistat for less demanding dehumidification control.

Note: Data sheet and user's manual is available separately.

9 TROUBLESHOOTING

9.1 PLC ERROR CODES

The dehumidifier will automatically shut down if an error is detected. During shut down, a timed cooling down period on the regeneration fan is initiated before turned off. See below for error codes.

CODE	EXPLANATION	CAUSE	SOLUTION
Fuse F1 or F2 alt. Motorst Q1 or Q2	Process fan overload. Regeneration fan overload.	Excessive airflow. Short-circuit or fan malfunction.	Check fan. Check setpoint of Q1/F1 or F2/Q2. Reset F1/Q1 or F2/Q2 – check and adjust airflow. Have a qualified electrical technician to investigate.
Fuse F3-5 or TH1 **Note:** Not applicable when fitted with steam.	Regeneration air thermostat TH1 has tripped. Regeneration heater overload.	TH1 setting incorrect. TH1 defective (fail safe). Incorrect shut down. Insufficient regeneration airflow. Excessive regeneration heater power. Regeneration heater malfunction.	Check TH1 setting. Check correct operation of TH1. Reset TH1 - reset F3 - F5. Check regeneration airflow and fan operation. Check TH2 setting. Check and replace heater.
F40	Overload in the transformer.	Short-circuit or transformer malfunction.	Check transformer.
Frost guard GT81	Frost protection device has tripped and stopped the machine.	Temperature on the hot water outlet or condensate outlet is below 7°C.	Check water supply and insulation for potential thermal loss.
Wet air temp TH3	Wet air thermostat tripped (TH3).	TH3 setting incorrect. Excessive regeneration airflow. Excessive regeneration heater power . Incorrect or intermittent rotor rotation. Insufficient system moisture load.	Check TH3 setting. Check and adjust regeneration airflow. Check TH2 setting. Check rotor drive system. Check process airflow and fan operation. Check process inlet moisture content. Check RH controller set point/output control signal. Reset TH3.
Rotor stopped	Rotation guard sensor has not detected movement	Rotor drive system failure. Sensor failure or incorrect clearance.	Check drive motor & transmission (correct belt tension). Check clearance gap between sensor and rotor marker.
Fr. converter U1-U2	Frequency converter alarm	Frequency converter internal alarm activated – fault code shown.	Refer to converter manual for fault code explanation.
Emergency stop	Operation terminated	Emergency button activated.	Pull the emergency button to restore.

FIGURE 32: PLC alarm table solutions

9.2 GENERAL TROUBLESHOOTING

Check for following if the unit will not start-up.

PROBLEM	CAUSE	SOLUTION
Unit will not start. PLC is displaying nothing.	No power to unit. No power to control circuit.	Confirm electric supply and check local isolator is on. Check remote control is set to 'On/Run' position. Check all circuit breakers are set to 'Start/On' position. Have a qualified electrical technician to investigate.
The PLC is displaying an error, but the unit will not start.	Alarm circuit is preventing start-up.	Check TH1 & TH3 thermostats are set. Check all circuit breakers are set to 'Start/On' position. Check fan motor overloads are set to 'Start/On' position. Check error on PLC - Restore error and reset PLC.
The PLC is displaying a message, but the dehumidifier does not appear to be operating.	The measured value is below the control set point. Remote stop/start is disabled.	Operation can be checked by lowering control set point or switching to 'manual' operation. Check remote control is set to 'On/Run' position and if the cable is undamaged. Check error on PLC - Restore error and reset PLC.
The RUN-light is on, but no regeneration airflow is detected. **Note:** Applicable for DC-50 only.	The flow guard has detected no airflow movement and deactivated the regeneration heater.	Remove blockages or open dampers on the regeneration airflow. Check regeneration fan.

FIGURE 33: General troubleshooting table and solution

9.3 CAPACITY TROUBLESHOOTING

The dehumidifier performance can be roughly checked by feeling the temperature of the uninsulated duct work near the unit.

PROBLEM	OBSERVATION	SOLUTION
The dehumidifier does not maintain required condition or achieve expected performance, despite being operated at full power.	Dry air outlet duct is warm and wet air outlet duct is very warm (normal operation).	Check actual moisture load against calculated design moisture load. Check controller set point/output signal. Check airflows are set as specified, adjust as necessary. Check air filters. Check dehumidifier casing and duct work for air leakage. Check rotor alignment and condition of radial and peripheral rotor seals.
	Both outlet air ducts are cold (no alarm).	Check regeneration airflow and fan operation. Check regeneration heater operation. Check controller set point/output signal. Check TH2 setting.
	Dry air outlet duct is cold, wet air outlet duct is hot (no alarm).	Check rotor rotation. Check process airflow and fan operation.
Measured airflows are lower than specified.	Fan is not rotating in direction indicated by arrow on fan motor casing. The incoming phase supply is incorrect.	Isolate mains electrical power supply to the unit. Change over two of the three incoming phase supply wires. Re-check fan rotation.

FIGURE 34: Capacity troubleshooting and solution table

10 MAINTENANCE

10.1 REGULAR SERVICE INTERVAL

Service time	Run time in hours (x1000)	0	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'	44'	48'
	Calender time in months	0	6	12	18	24	30	36	42	48	54	60	66	72
Inspect filter - replace if necessary		X	X	X	X	X	X	X	X	X	X	X	X	X
Clean and inspect the unit				X		X		X		X		X		X
Inspect fan - replace if necessary				X		X		X		X		X		X
Inspect features and functionality		X		X		X		X		X		X		X
Inspect electric, feature, cables and eletrical components - replace if worn or damaged				X		X		X		X		X		X
Inspect access panels, locks and panel seals - replace if necessary				X				X				X		
Inspect duct and duct connections		X				X				X				X
Inspect heater and cooler				X		X		X		X		X		X
Inspect humidistat/humidity sensor - replace if necessary				X		X		X		X		X		X
Inspect rotor motor - replace if necessary				X		X		X		X		X		X
Inspect radial & peripheral seals - replace if worn or damaged				X		X		X		X		X		X
Check operation of geared drive motor, drive pully, belt/chain, rotor - adjust as neccessary*				X		X		X		X		X		X
Inspect rotor for contamination or damage - clean/repair (contact DST)		X		X		X		X		X		X		X
Inspect condenser*				X		X		X		X		X		X
Inspect evaporator*				X		X		X		X		X		X
Inspect compressor*				X		X		X		X		X		X
Inspect cooling system*		X		X		X		X		X		X		X
Safety feature check (if fitted)														
Function test on thermostats				X		X		X				X		X
Function test on the freeze alarm		X		X		X		X		X		X		X
Function test on rotation guard alarm, check and adjust sensor clearance		X		X				X				X		
Function test on damper, actuator and valves		X		X		X		X		X		X		X
Function test on post-cooling function		X		X		X		X		X		X		X

FIGURE 35: Service chart

This is a general service chart and the time interval vary depending on the operating condition. Some options listed here may not be installed or available for this specific unit.

⚠ Danger!

All personnel involved with installation, operation and maintenance of this unit should familiarise themselves with the safety section of this manual.

**Applicable for Frigosorb and Econosorb.*

10.2 WASHING THE ROTOR

The D-MAX rotor has a distinct advantage over other types of desiccant rotors in that dust and grease can be washed out of the material without the need for reimpregnation after treatment. In all normal applications however it must be emphasised that washing of the rotor should be considered as a last resort having alleviated all other possible defects first.

⚠ Caution!

Please contact a DST-representative before attempting to wash the rotor!

11 TECHNICAL DATA

	RLZ-81	RLZ-82	RLZ-101	RLZ-102	RLZ-102L	RLZ-104
Capacity						
Capacity [kg/h] 1)	19	25	30.5	49.5	56	70
Nominal dry air flow [m3/h] 2)	2900	3500	4600	7000	9000	10500
External static pressure dry air [Pa] 2)	300	300	300	300	300	200
Nominal wet air flow [m3/h] 2)	750	1000	1300	2100	2400	2500
External static pressure wet air [Pa] 2)	200	200	200	200	200	200
Regeneration heater - Electric						
Heater power [kW]	24	30	40	63	70	80
Number of electric heater steps	2	2	2	2	2	2
Heating power in steps [kW]	1/2 - 10,3 2/2 - 24	1/2 - 12,9 2/2 - 30	1/2 - 17,2 2/2 - 40	1/2 - 27 2/2 - 63	1/2 - 30 2/2 - 70	1/2 - 34,8 2/2 - 80
Heating power with linear control [kW] 4)	0-24	0-30	0-40	0-63	0-70	0-80
Total power - Electrical						
Total motor power [kW]	3.6	4	3.6	7.4	7.4	11.5
Total power [kW]	27.6	34	43.6	70.4	77.4	91.5
Other electrical information						
Supply fuse (Electric) 3x400V/50Hz [A]	50	63	80	125	125	160
Electric compartment protection class	IP54	IP54	IP54	IP54	IP54	IP54
Humidistat connection	24VDC	24VDC	24VDC	24VDC	24VDC	24VDC
Humidistat supply current [A] 5)	< 1	< 1	< 1	< 1	< 1	< 1
Temperature setpoint settings						
Overheat protection TH1 [C]	190	190	190	190	190	190
Thermostat TH2 [C]	140	140	140	140	140	140
Overheat protection TH3 [C]	80	80	80	80	80	80
Other technical data						
Air filter class (regeneration/process)	G4/G4	G4/G4	G4/G4	G4/G4	G4/G4	G4/G4
Filter change at pressure (G4/F7) [Pa]	200/250	200/250	200/250	200/250	200/250	200/250
Noise level [dB(A)] 3)	-	-	-	-	-	-
Regeneration air fan delay [min]	15	15	15	15	15	15
Weight [kg]	294	325	380	503	520	600

1) Valid for inlet conditions 20°C/ 60%RH (equal 1.2 kg/m3).

2) If no data is stated here the volume flow above is given at free blowing airflow.

3) Unit connected to uninsulated ducts. Nominal airflows.

4) Applies for dehumidifiers with installed optional feature.

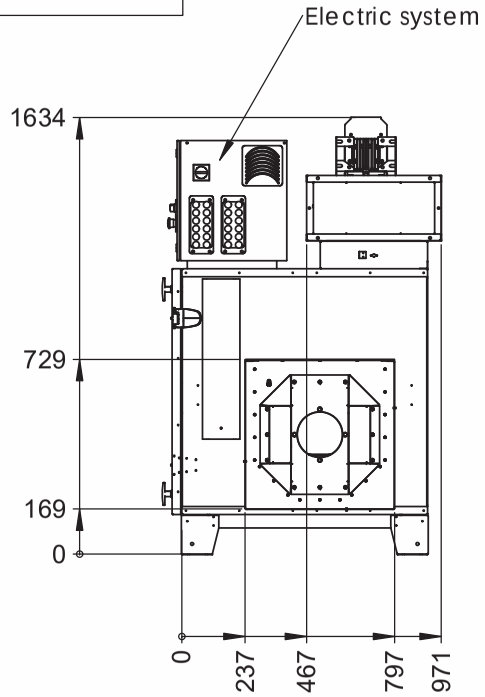
5) The current provided by the humidistat connection. Only use humidistats that are capable of this load current.

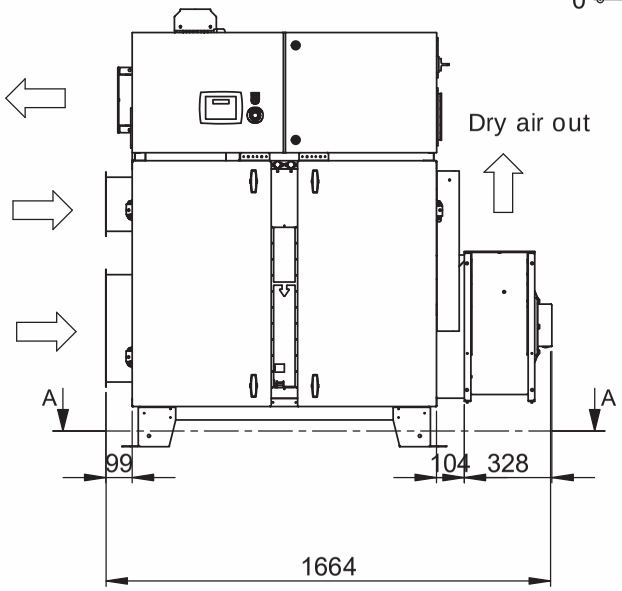
The content of in this document may be subject to change without prior notice. For questions and comments regarding the content in this document, please send it to Seibu Giken DST AB, ATT: Documentation, Avestagatan 33, 163 53 SPÅNGA, SWEDEN.

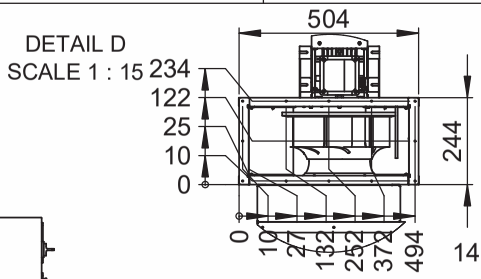
E-mail: info@dst-sg.com, subject: Documentation.

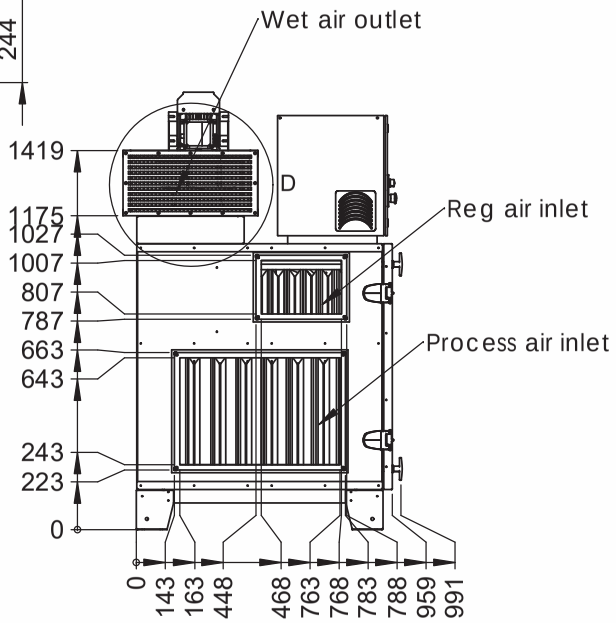
Component list / Komponentlista
RLZ-81/82/101/102/102L/104

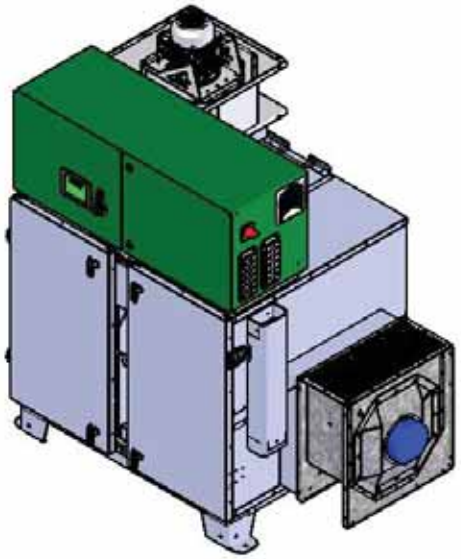
Description	Benämning	Typ, ritn nr o dyl: Type, Drwg No, etc:	81	82	101	102	102L	104	Antal Qty	Art. Nr: Art No:	Anm: Notes:
Rotor unit	**Rotorenhet**										
Rotor	Rotor	DMR 770H10	☑	☐	☐	☐	☐	☐	1	108258	
Rotor	Rotor	DMR 770H20	☐	☑	☐	☐	☐	☐	1	108259	
Rotor	Rotor	DMR 965H10	☐	☐	☑	☐	☐	☐	1	108260	
Rotor	Rotor	DMR 965H20	☐	☐	☐	☑	☑	☐	1	108261	
Rotor	Rotor	DMR 965H40	☐	☐	☐	☐	☐	☑	1	108262	
Periferal seal	Periferitätning	Felt+EPDM, 1x30x2500 (2st)	☑	☑	☐	☐	☐	☐	5m	103132	
Periferal seal	Periferitätning	Felt+EPDM, 1x30x3060 (2st)	☐	☐	☑	☑	☑	☑	6.1m	103133	
Radial seal	Teflonremsa	35x412x0,35mm, Teflon	☐	☐	☑	☑	☑	☑	2	108427	
Radial seal	Teflonremsa	35x500x0,35mm; Teflon	☐	☐	☑	☑	☑	☑	4	108428	
Radial seal	Teflonremsa	35x312x0,35mm; Telfon	☑	☑	☐	☐	☐	☐	2	108425	
Radial seal	Teflonremsa	35x395x0,35mm; Telfon	☑	☑	☐	☐	☐	☐	4	108426	
Hose clamp	Slangklämma	30m; 9mm; Stainless	☑	☑	☐	☐	☐	☐	5m	102179	
Hose clamp	Slangklämma	30m; 9mm; Stainless	☐	☐	☑	☑	☑	☑	7m	102179	
Lock hose clamp	Slangklämma - Lås		☑	☑	☑	☑	☑	☑	2	102180	
	Friktionslist	EPDM 2500x30x0,8	☑	☑	☐	☐	☐	☐	1	111359	
	Friktionslist	EPDM 3110x30x0,8	☐	☐	☑	☑	☑	☑	1	111358	
Rotormotor	Drivmotor	8IN25GN4C-T 25W	☑	☑	☑	☑	☑	☑	1	108503	
Gearhead	Växel	8H10XFN 10:1	☑	☑	☑	☑	☑	☑	1	108105	
Gearhead	Växel	8H60FBN 60:1	☐	☑	☐	☐	☐	☑	1	108104	
Gearhead	Växel	8H36FBN 36:1	☑	☐	☑	☑	☑	☐	1	110196	
Belt tightener	Remspännare	Rulle R 11	☑	☑	☑	☑	☑	☑	1	101375	
	Fjäder till remspännare		☑	☑	☑	☑	☑	☑	2	111485	
Beltpulley	Remskiva	Z=19; DD=76.81	☑	☐	☐	☑	☑	☑	1	106458	
Beltpulley	Remskiva	Z=24; DD=97,02	☐	☐	☑	☐	☐	☐	1	106459	
Beltpulley	Remskiva	Z=16 DD=64.68	☐	☑	☐	☐	☐	☐	1	107323	
Belt	Kilrem	H-1325; l=3365; b=19.1mm	☐	☐	☑	☑	☑	☑	1	106457	
Belt	Kilrem	L=2794; B=19.1; Type 075	☑	☑	☐	☐	☐	☐	1	106456	
Fans	**Fläktar**										
Process fan	Processfläkt	RHAC-31C DC	☑	☐	☐	☐	☐	☐	1	110454	
Process fan	Processfläkt	RHAC-35C DC	☐	☑	☑	☐	☐	☐	1	110455	
Process fan	Processfläkt	RHAC-40C DG	☐	☐	☐	☑	☐	☐	1	110456	
Process fan	Processfläkt	RHAC-45C GG	☐	☐	☐	☐	☑	☐	1	110457	
Process fan	Processfläkt	RHAD-50C 7,5kW 3x400V	☐	☐	☐	☐	☐	☑	1	110458	
Reg.fan	Reg.fläkt	RHAD-28C 1,1 kW 3x400V	☑	☐	☑	☐	☐	☐	1	110450	
Reg.fan	Reg.fläkt	RHAD-28C 1,5 kW 3x400V	☐	☑	☐	☐	☐	☐	1	110451	
Reg.fan	Reg.fläkt	RHAD-28C 2,2 kW 3x400V	☐	☐	☐	☑	☑	☐	1	110452	
Reg.fan	Reg.fläkt	RHAD-31C 4 kW 3x400V	☐	☐	☐	☐	☐	☑	1	110453	
Freq. Converter	Frekvensomformare	FC-101 1,5 kW	☑	☑	☑	☐	☐	☐	1	110299	
Freq. Converter	Frekvensomformare	FC-101 2,2 kW	☐	☐	☐	☑	☑	☐	1	110292	
Freq. Converter	Frekvensomformare	FC-101 4 kW	☐	☐	☐	☐	☐	☑	1	110294	
Freq. Converter	Frekvensomformare	FC-101 7,5 kW	☐	☐	☐	☐	☐	☑	1	110297	
Freq. Converter mounting kit	Frekvensomformare monteringskit	H3	☐	☐	☐	☐	☐	☑	1	110303	Process
Freq. Converter mounting kit	Frekvensomformare monteringskit	H1 / H2	☑	☑	☑	☑	☑	☑	1	110302	Regeneration
Freq. Converter display	Display frekvensomformare	Display	☑	☑	☑	☑	☑	☐	1	110300	
Freq. Converter display	Display frekvensomformare	Display	☐	☐	☐	☐	☐	☑	2	110300	
Filter	**Filter**										
Filter	Filter	HCSS 592x592x360 G4	☐	☐	☑	☑	☑	☑	2	100687	Process
Filter	Filter	HCSS 892X490X360 G4	☑	☑	☐	☐	☐	☐	1	100900	Process
Filter	Filter	HCSS 592x287x360 G4	☑	☑	☐	☐	☐	☐	1	104351	Regeneration
Filter	Filter	HCSS 592x490x360G4	☐	☐	☑	☑	☑	☑	1	105316	Regeneration
Regeneration heater - Resistive heater	**Regenereringsvärmare - Resistivvärmare**										
Reg. heater	Reg. värmare	24kW; 3x400V	☑	☐	☐	☐	☐	☐	1	106355	
Reg. heater	Reg. värmare	30kW; 3x400V	☐	☑	☐	☐	☐	☐	1	108787	
Reg. heater	Reg. värmare	40kW; 3x400V	☐	☐	☑	☐	☐	☐	1	106356	
Reg. heater	Reg. värmare	63kW; 3x400V	☐	☐	☐	☑	☐	☐	1	106357	
Reg. heater	Reg. värmare	70 kW; 3x400V	☐	☐	☐	☐	☑	☐	1	111361	
Reg. heater	Reg. värmare	80kW; 3x400V	☐	☐	☐	☐	☐	☑	1	108765	
Overheat protection	Överhettningsskydd	TH1: heaTHERM 160-200°C	☑	☑	☑	☑	☑	☑	1	106157	
F3 - Circuit breaker	F3 - Aut.säkring	iC60N C40A	☑	☐	☐	☐	☐	☐	1	108898	
F3 - Circuit breaker	F3 - Aut.säkring	iC60N C50A	☐	☑	☐	☐	☐	☐	1	108945	
F3 - Circuit breaker	F3 - Aut.säkring	iC60N C63A	☐	☐	☑	☐	☐	☐	1	108918	
Electric diagram	Elschema	RLZ-81R En1B / Elschema 11280-00	☑	☐	☐	☐	☐	☐	1		
Electric diagram	Elschema	RLZ-82R En1B / Elschema 11281-00	☐	☑	☐	☐	☐	☐	1		
Electric diagram	Elschema	RLZ-101R En1B / Elschema 11282-00	☐	☐	☑	☐	☐	☐	1		
Electric diagram	Elschema	RLZ-102R En1B / Elschema 11283-00	☐	☐	☐	☑	☐	☐	1		
Electric diagram	Elschema	RLZ-102LR En1B / Elschema 11284-00	☐	☐	☐	☐	☑	☐	1		
Electric diagram	Elschema	RLZ-104R En1B / Elschema 11285-00	☐	☐	☐	☐	☐	☑	1		
Other	**Övrigt**										
PLC	PLC	JZ20-11-UA24; Jazz C2:1	☑	☑	☑	☑	☑	☑	1	110320	Incl. in el.box
Sensor	Sensor	PT100 TH3	☑	☑	☑	☑	☑	☑	1	108813	Incl. In PLC
Sensor	Sensor	PT100 TH2	☑	☑	☑	☑	☑	☑	1	107674	Incl. In PLC

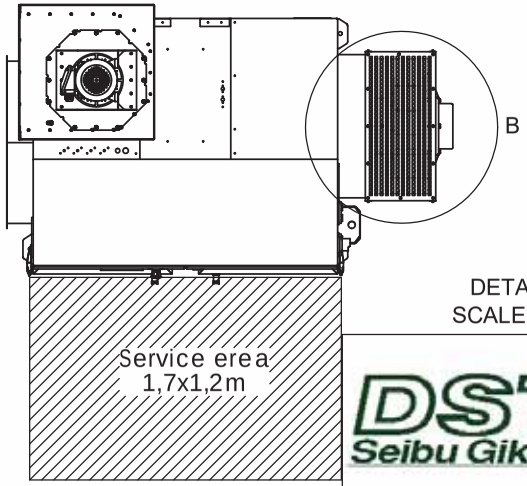


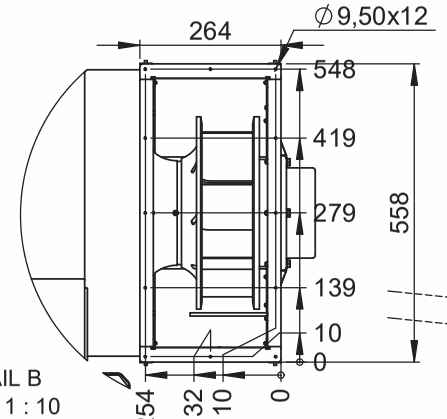


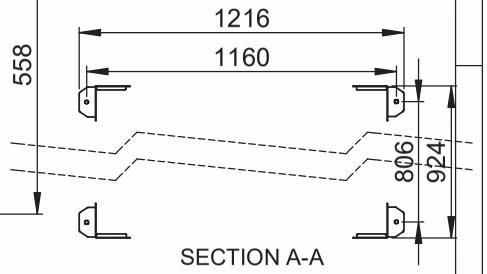












DST Seibu Giken

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Designed by: Aynur P	Date: 2018-02-19		
Drawn by: Aynur P	Date: 2018-02-19		
Approved by: -	Date:		
Material:	Thickness: t=		
Status: Construction	Tolerance: ISO 2768-1m		
Scale: 1:20	Format: A3	Sheet/Sheet: 1/1	Rev Part: 00+	Weight (Kg): 279.355

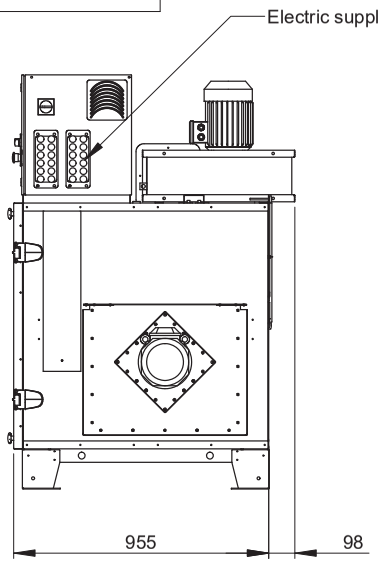
Title/Description

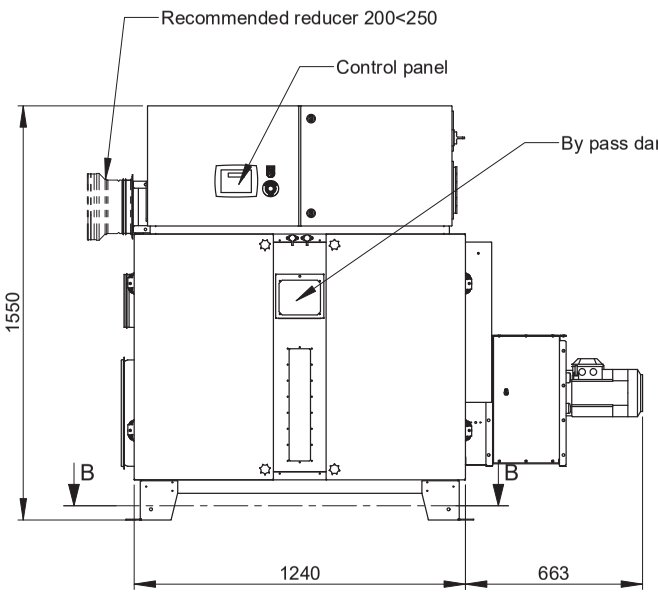
Installationsritning RLZ-81R
Installation drawing

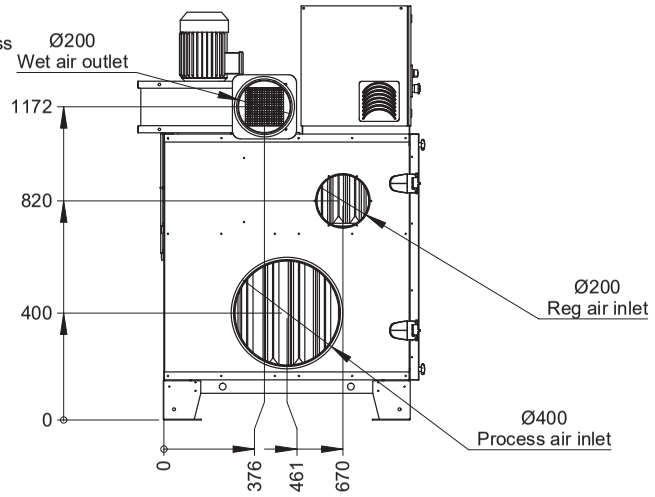
RLZ-81R

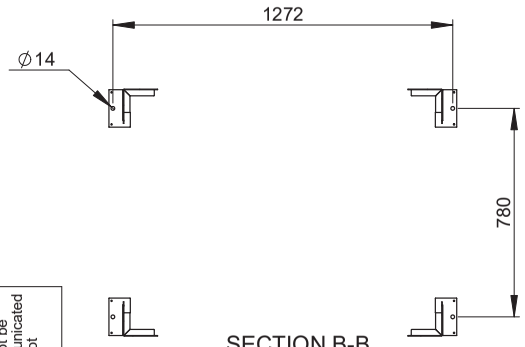
Drawing no	Rev
DST09924	00+

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
03	Wet air outlet changed to Ø200. Recommendation for reducer inserted. Mass properties revised.	2016-06-09	EL

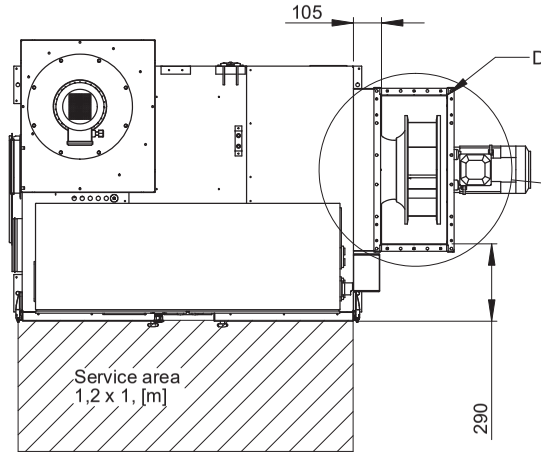




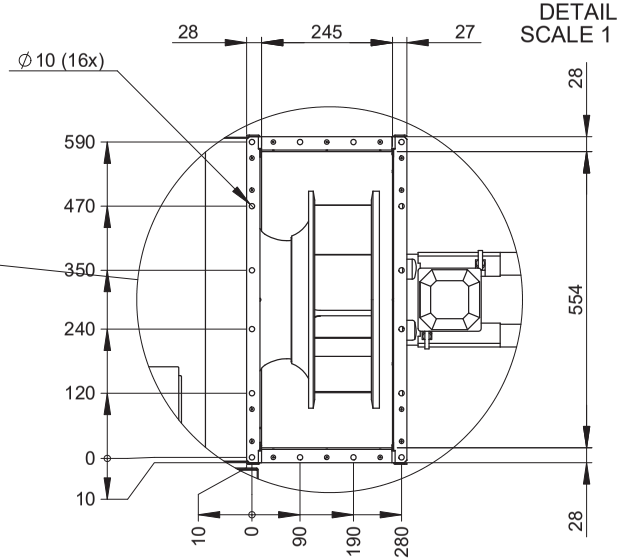




SECTION B-B



DETAIL F
SCALE 1 : 10



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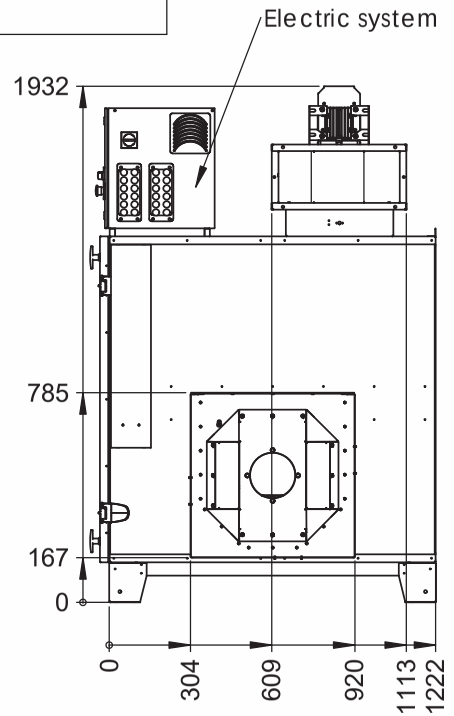
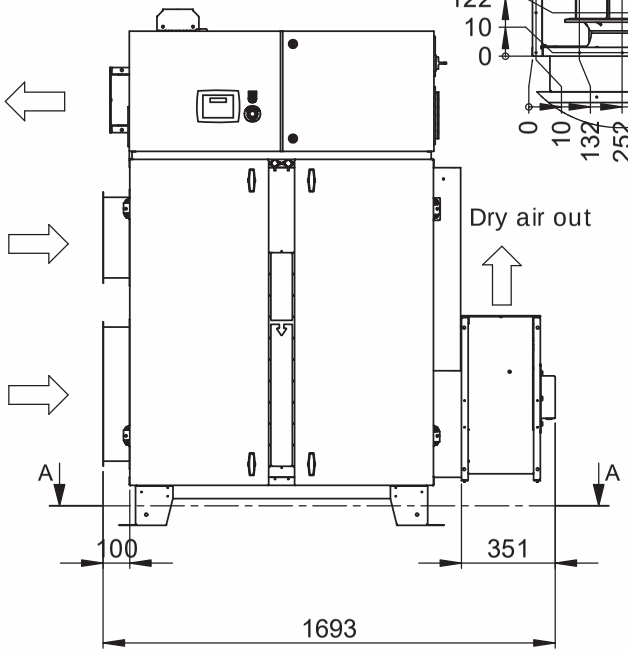
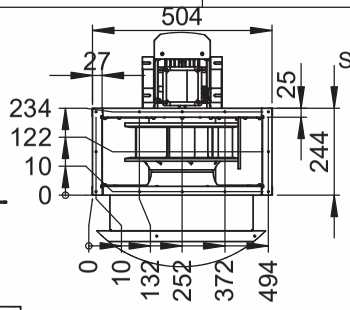
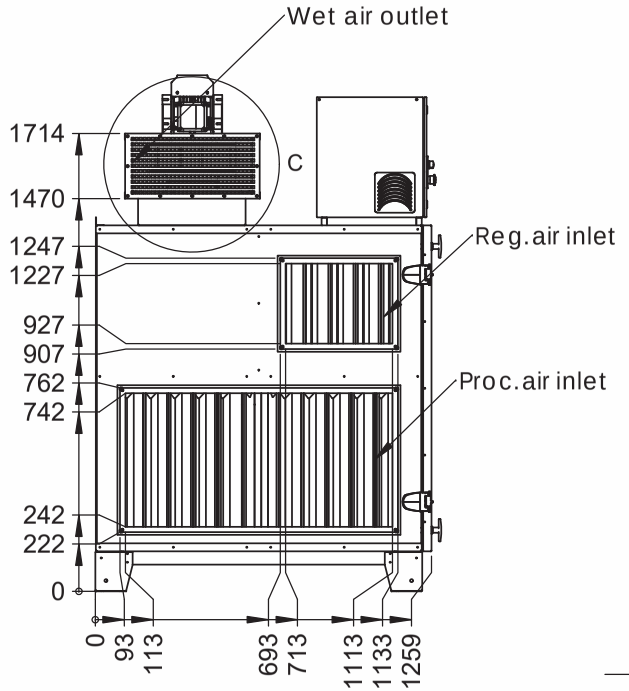
Designed by: Catarina S	Date: 2014-01-27	Title/Description: Installationsritning RLZ-82
Drawn by: Erik L	Date: 2014-05-05	Installation drawing **RLZ-82**
Approved by: -	Date:	
Material:	Thickness: t=	
Status: Construction	Tolerance: ISO 2768-1m	
Scale: 1:20 / Format: A3 / Sheet/Sheet: 1/1 / Rev Part: 03 / Weight (Kg): 325.000		Drawing no: DST05371 / Rev: 03

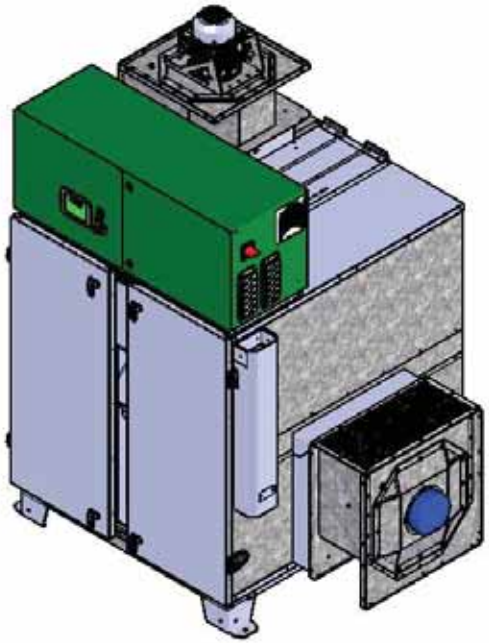


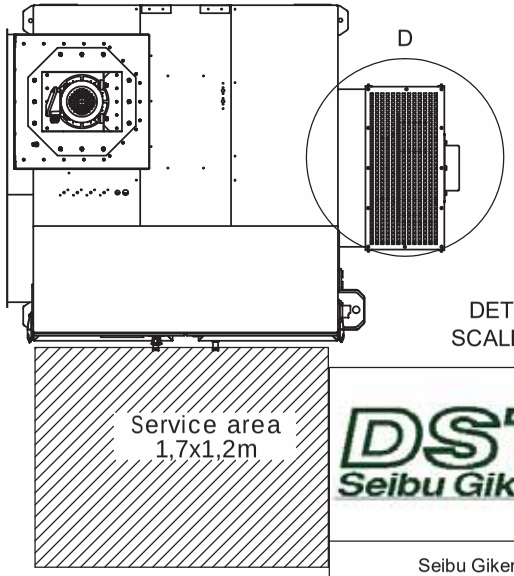


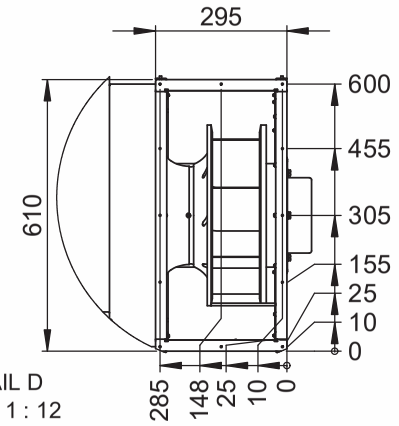


DETAIL C
SCALE 1 : 15

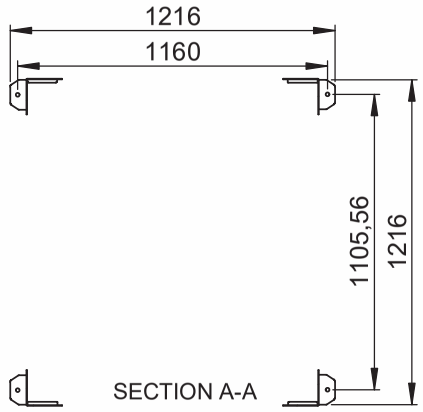








DETAIL D
SCALE 1 : 12



SECTION A-A

Seibu Giken DST AB
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www.dst-sg.com

Designed by	Aynur P
Date	2018-02-23
Drawn by	Aynur P
Date	2018-02-23
Approved by	-
Date	
Material	
Thickness	t=
Status	Construction
Tolerance	ISO 2768-1m
Scale	1:20
Format	A3
Sheet/Sheet	1/1
Rev Part	00+
Weight (Kg)	338.857

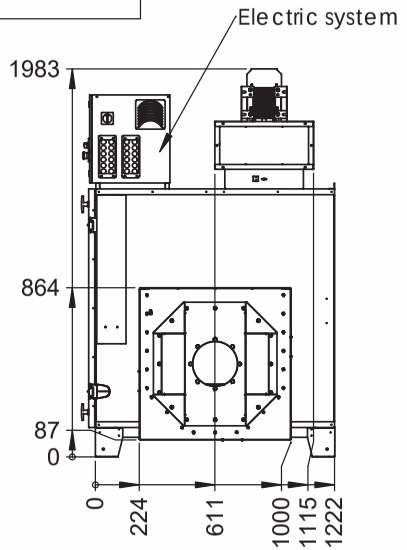
Title/Description

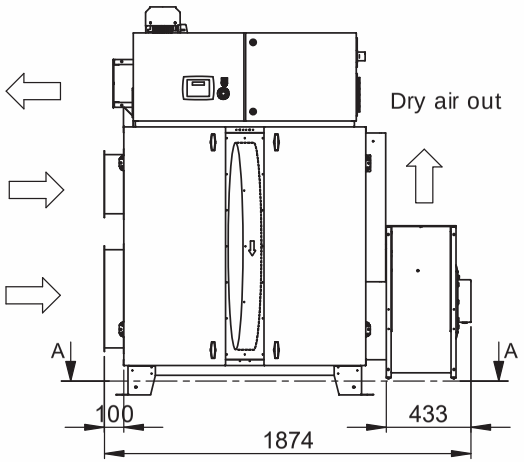
Installationsritning RLZ-101R

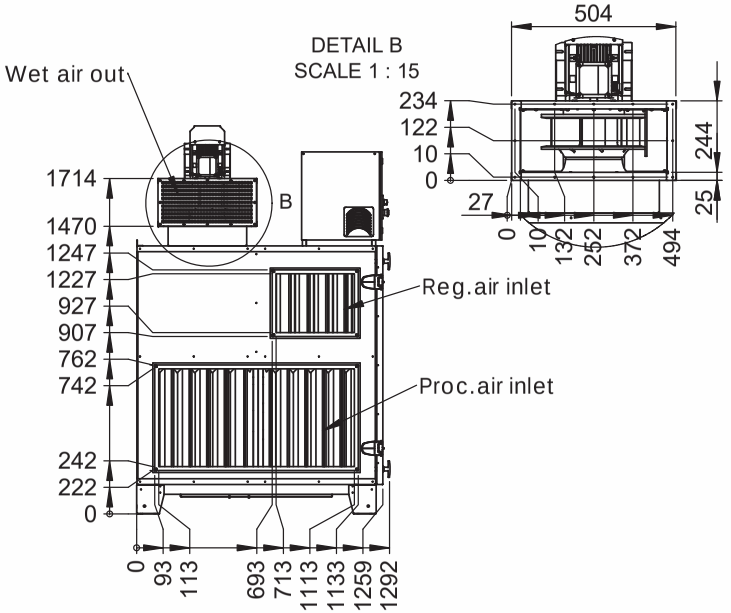
Installations drawing

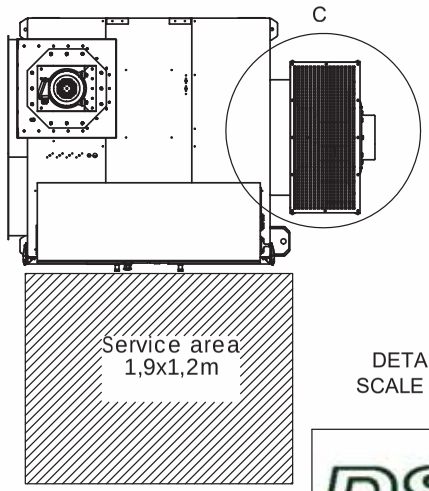
RLZ-101

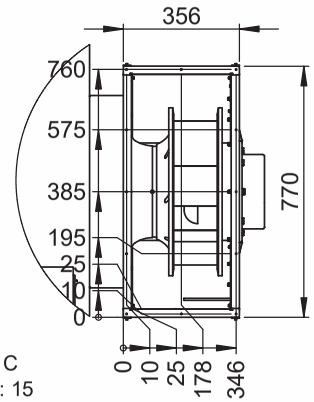
Drawing no	Rev
DST09943	00+



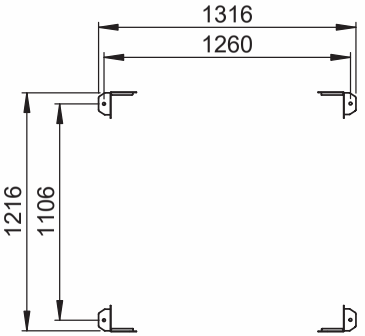




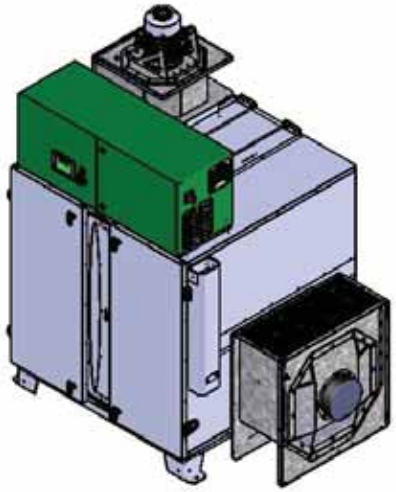




DETAIL C
SCALE 1 : 15



SECTION A-A
SCALE 1 : 25



DST Seibu Giken

Seibu Giken DST AB
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Designed by	Aynur P
Date	2018-05-18
Drawn by	Aynur P
Date	2018-05-18
Approved by	-
Date	
Material	
Thickness	t=
Status	Construction
Tolerance	ISO 2768-1m
Scale	1:50
Format	A3
Sheet/Sheet	1/1
Rev Part	00+
Weight (Kg)	325.735

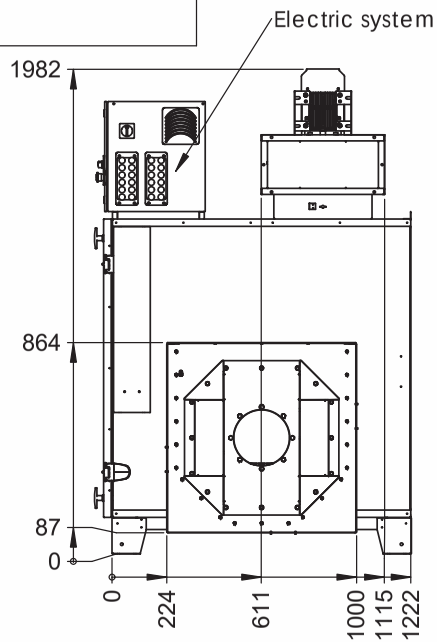
Title/Description

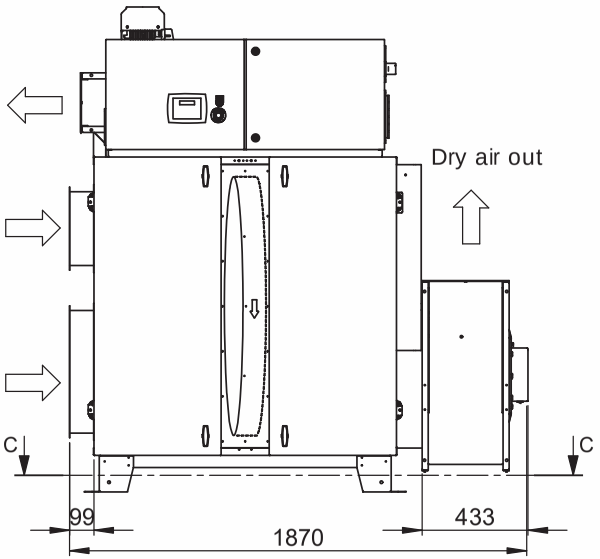
Instlationsritning RLZ-102R

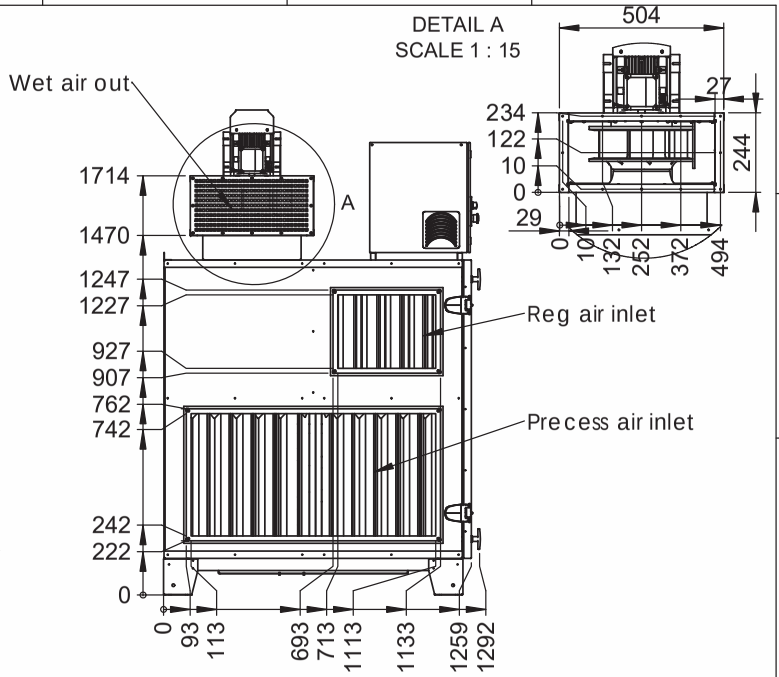
Installations drawing

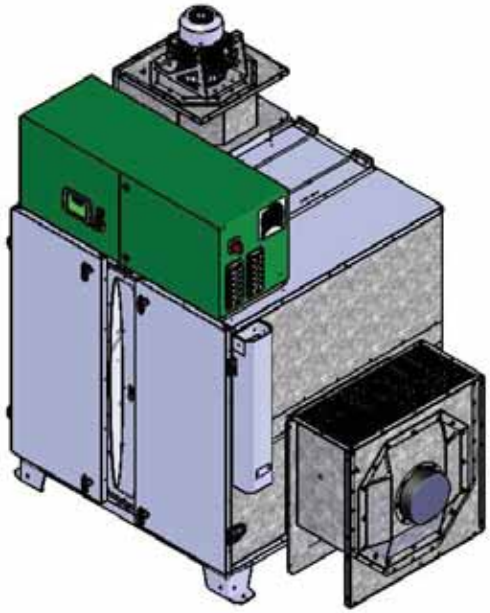
RLZ-102

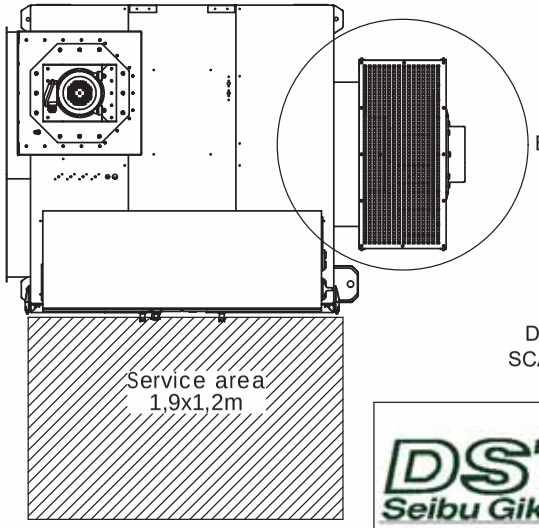
Drawing no	Rev
DST10388	00+

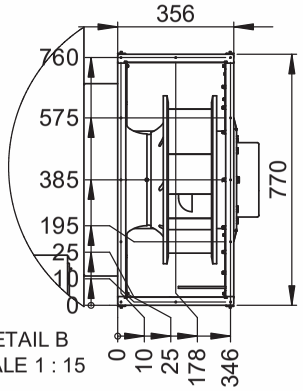


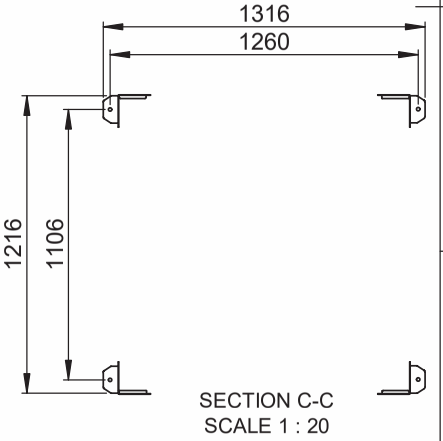












DST Seibu Giken

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Designed by	Aynur P
Date	2018-05-22
Drawn by	Aynur P
Date	2018-05-23
Approved by	-
Date	
Material	
Thickness	
Status	Construction
Tolerance	ISO 2768-1m
Scale	1:50
Format	A3
Sheet/Sheet	1/1
Rev Part	00+
Weight (Kg)	325.735

Title/Description

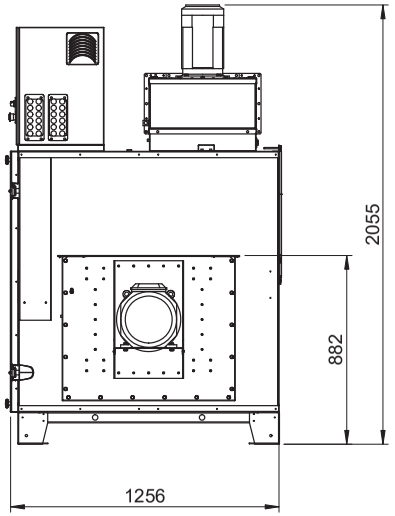
InstallationsritningRLZ-102L

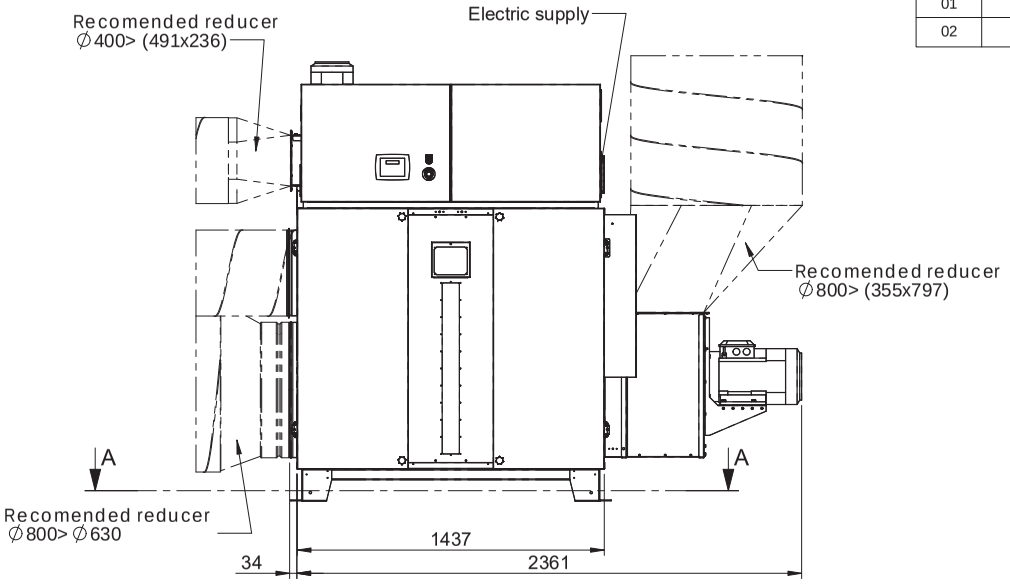
Installation drawing

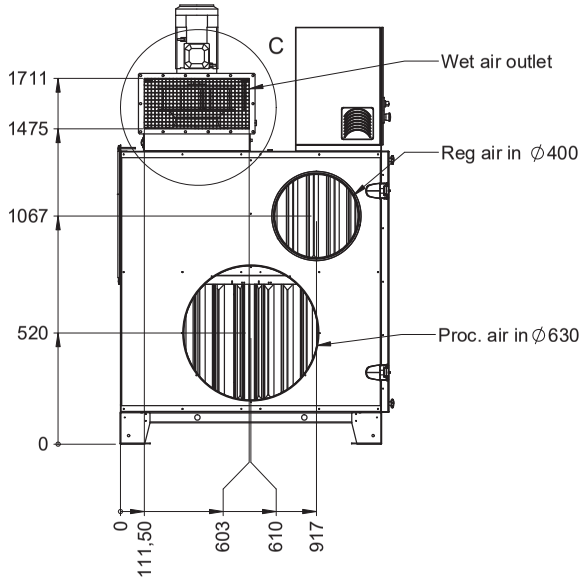
RLZ-102

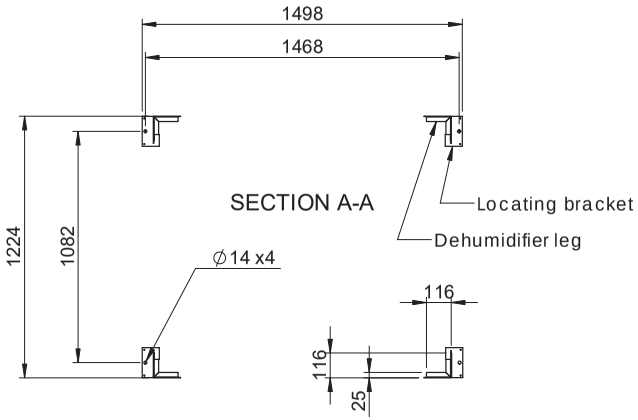
Drawing no	Rev
DST10393	00+

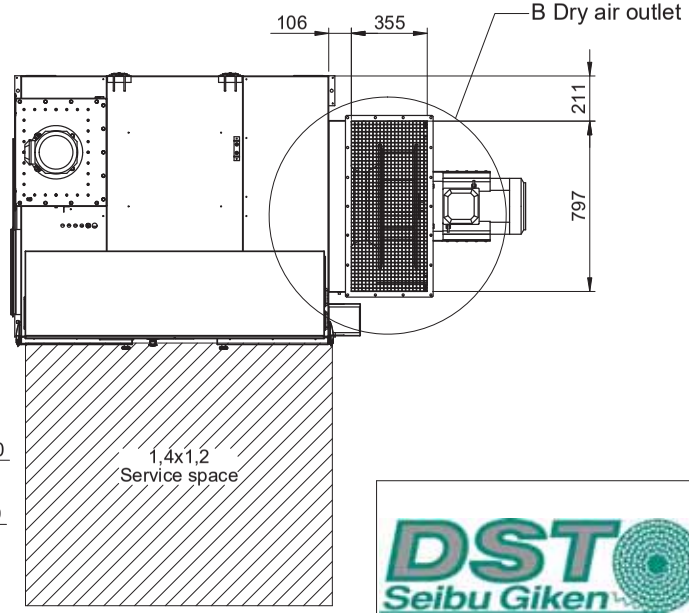
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
01	-	2016-03-24	-
02	Reducer sizes, mass properties, dimensions corrected.	2016-04-25	EL

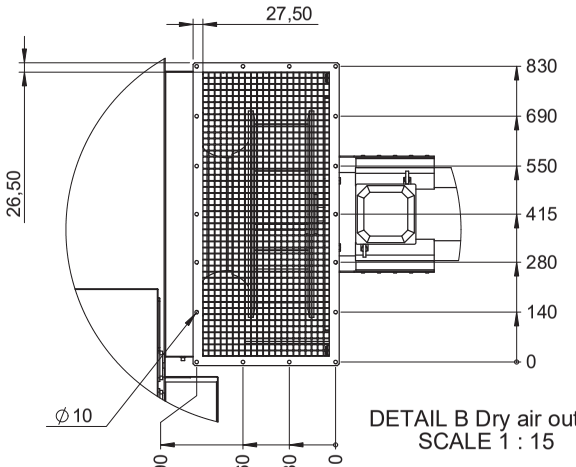




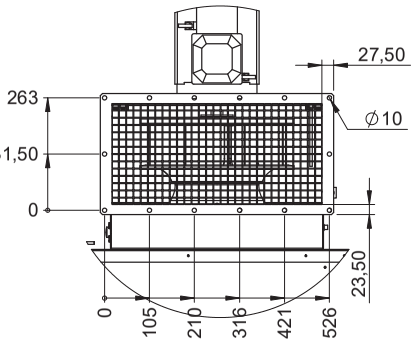








DETAIL B Dry air outlet
SCALE 1 : 15



DETAIL C
SCALE 2 : 25

Seibu Giken DST AB
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Designed by	Catarina S
Date	2014-01-24
Drawn by	Catarina S
Date	2014-01-24
Approved by	-
Date	
Material	
Thickness	t=
Status	Construction
Tolerance	ISO 2768-1m
Scale	1:25
Format	A3
Sheet/Sheet	1/1
Rev Part	02+
Weight (Kg)	558.000

Title/Description
Installationsritning RLZ-104

Installation drawing RLZ-104

Drawing no	Rev
DST05369	02+

Harmful chemicals and solvents for rotors

SEIBU GIKEN CO.,LTD.

Reduced performance and/or rotor degradation is possible when adsorping the following substances.

	Substance	Note	Chemical formula	Cause
1	Oil vapor		N/A	Cloggs the micro pores on the silica gel/zeolite.
2	Ammonia	2ppm and above, prolonged exposure	NH3	Degrades the silica gel/zeolite.
3	Amine		RNH2	
4	Hydrogen fluoride		HF	Corrodes the silica gel/zeolite.
5	Sodium hydroxide	High concentration	NaOH	Dissolves the silica gel/zeolite.
6	Potassium hydrate	High concentration	KOH	Cloggs the micro pores on the silica gel/zeolite.
7	Lithium chloride		LiCl	
8	Sodium chloride		NaCl	
9	Potassium chloride		KCl	
10	Calcium chloride		CaCl	
11	Magnesium chloride		MgCl	
12	Aluminum chloride		AlCl3	
13	Seawater		N/A	
14	Strong acid	pH=3 and below	N/A	Deteriorates the honeycomb's physical structure.
15	Plasticizer		N/A	Cloggs the micro pores on the silica gel/zeolite.
16	Nitrogen oxides	High concentration, excessive exposure	NOx	Deteriorates the honeycomb's physical structure.
17	Sulfur oxides	High concentration, excessive exposure	SOx	
18	High-temperature steam	Exposod to vapor of 100 and above.	N/A	Cracks occurs on the honyecomb.
19	Heat solubility dust		N/A	Dust covers the silica gel/zeolite surface.

There is no guarantee that other substances beyond this list may reduce the dehumidification performance or damage the silica gel/zeolite.

Dehumidifier

CE-declaration multilingual v1.5 RevC 18.05 - CE

CE-DECLARATION (Conformité Européenne)

1. (S) FÖRSÄKRAN OM ÖVERENSTÄMMELSE
2. (CZ) PROHLÁŠENÍ O SHODĚ
3. (DK) OPFYLDELSESERKLÆRING
4. (FI) VAKUUTUS YHDENMUKAISUUDESTA
5. (FR) DECLARATION DE CONFORMITE
6. (DE) KONFORMITÄTSERKLÄRUNG
7. (IT) DICHIARAZIONE DI CONFORMITA
8. (NL) CONFORMITEITSVERKLARING
9. (NO) SAMSVARSERKLÆRING
10. (SK) VYHLÁSENIE ZHODY
11. (DE) DECLARACION DE CONFORMIDAD
12. (GB) DECLARATION OF CONFORMITY
13. (EE) VASTAVUSDEKLARATSIOON
14. (PL) DEKLARACJA ZGODNOŚCI
15. (PT) DECLARAÇÃO DE CONFORMIDADE

1. Härmed intygas att maskintypen:
2. Tímto pohlašujeme, že zařízení typu:
3. Hermed erklæres at maskintypen:
4. Täten todistamme, että kojetyypit:
5. Confirmons par la présente que ces matériels de type :
6. Hiermit erklären wir, dass die Maschinentypen:
7. Si conferma che l'apparecchiatura modello:
8. Bevestigd hierbij dat adsorptieluchtdroger type:
9. Herved erklæres at maskintypen:
10. Týmto prehlasujeme, že zariadenie typu:
11. Confirmo que las maquinas tipo:
12. Hereby confirms that machinery type:
13. Käesolevaga kinnitame, et seadmed:
14. Niniejszym potwierdza, że typ maszyny:
15. Confirma-se, pela presente, que os tipos de máquina:

AQ-30/31	DR-50 (A)	R-51/61 (A/B/E)
CS-5/5L	DC-10	RL-60/60L/61/61L (A)
DC-5	DC-20	RL-71 (A/B/E)
DR-010B	DC-30 T10/T16	RL-71L (A)
DR-010B MH1/V3	DC-31 T10/T16	RZ-071/081/82/101/102/104 (A/B/C/D/E)
DR-20B/30D	DC-50 (A)	RLZ-81/82/101/102/102L/104 (A/B/C/D)
DR-31 T10	F-31	CZ-082/102/102L/104 (A/B/C/D/E)
DR-40 T10/T16	R-060BR (A)	EF/FF/RF/CF-81/82/101/122/152/172/192/222/242

1. är utförd i överensstämmelse med och följer följande standard(er) eller andra normgivande dokument, under förutsättning att användning sker i överensstämmelse med våra instruktioner:
2. je v souladu s následujícími standardy nebo dalšími normami a předpisy při použití podle našich pokynů:
3. er udført i overensstemmelse med og følger følgende standard (er) eller andre normgivende dokumenter, under forudsætning af at anvendelse sker i henhold til vore instruktioner:
4. on toteutettu noudattaen seuraavaa (via) standardia (eja) tai muita ohjeellisia dokumentteja, edellyttäen ,että käyttö tapahtuu meidän ohjeita noudattaen.
5. sont conformes à la (aux) norme(s) suivante(s) ou autre(s) document(s) normatif(s), à condition que ceux-ci soient utilisés conformément à nos instructions
6. mit den folgenden Richtlinien und Normen konform sind, wobei ein bestimmungsgemäßer Gebrauch in Übereinstimmung mit der jeweils gültigen Betriebsanleitung vorausgesetzt wird.
7. è conforme alle seguenti norme armonizzate, rispettando le nostre istruzioni d'uso:
8. in overeenstemming is met de volgende norm(en) en voorschrift(en), vooropgesteld dat deze worden toegepast/gebruikt volgens onze instructies:
9. er i samsvar med følgende standard(er) eller andre normgivende dokument(er) forutsatt at anvendelse skjer i henhold til våre instruksjoner:
10. je v súlade s nasledujúcimi štandardami alebo ďalšími normami a predpismi pri použití podľa našich pokynov:
11. estan en conformidad con los siguientes standars o cualquier otra normativa documental, que indique que estos se usan de acuerdo a nuestras instrucciones:
12. are in conformity with the following standard(s) or other normative document(s), provided that these are used in accordance with our instructions.
13. vastavad järgmisele(tele) standardile(tele) või normatiividele, eeldades, et kasutamine toimub vastavalt meiepoolsetele juhistele:
14. Są w zgodności z wymaganymi normami lub innymi dokumentami normatywnymi pod warunkiem, że są one wykorzystywane zgodnie z instrukcją obsługi:
15. estão em conformidade com a(s) seguinte(s) norma(s) ou outro(s) documento(s) normativo(s), desde que estas sejam utilizadas em conformidade com as nossas instruções:

Machinery directive (2006/42/EC)

Electromagnetic compatibility (2014/30/EU)

Restriction of Hazardous Substances 2 (2011/65/EC)

Pressure equipment directive (2014/68/EU)

EN ISO 12100:2010
EN ISO 62061-1
EN 1886:2007
EN 60439-1
EN 60204-1
EN 62491

DST Seibu Giken

Avestagatan 33, S-163 53, SPÅNGA, Sweden

31/5 2018

Anders Kristoferson
Managing Director
Spånga

Date

(A) R - Resistive electric heater
(B) S - Steam heater
(C) G - Gas heater
(D) O - Oil heater
(E) HW/WW - Hot/warm water heater

Seibu Giken DST AB

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DST Seibu Giken