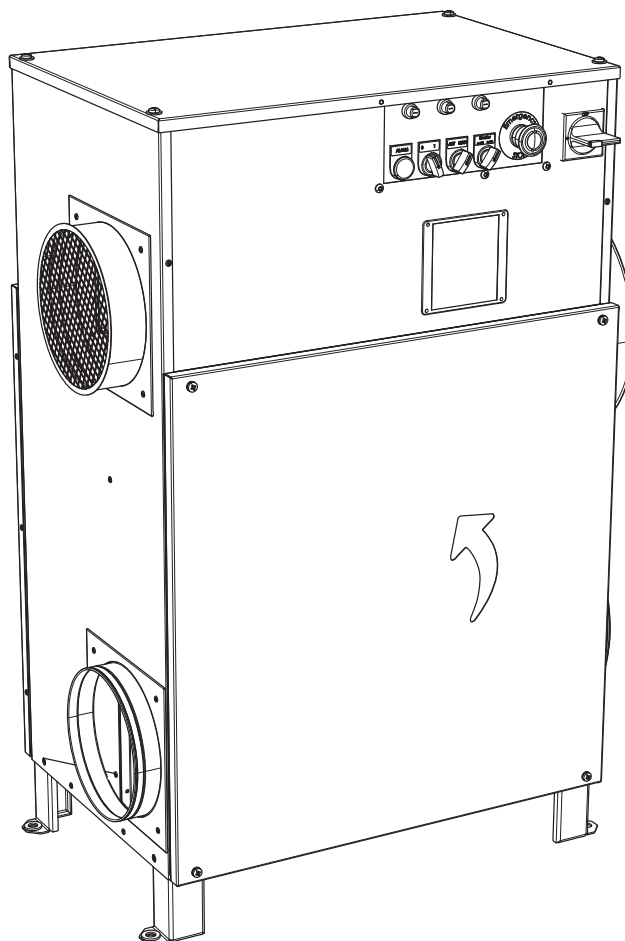


USER'S MANUAL

Document version: EN.02 15.05
Product: RL-60/60L



CE Desiccant dehumidifier

The product picture may differ from the actual product

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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.

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1 SAFETY

1.1 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.

Noncompliance 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.

1.2 ACCENTUATIONS IN THE TEXT



Caution! Identifies hazards that could lead to damage of the equipment.



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



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



Attention! Indicate important information or instruction that requires 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 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 (ATEX).
- Conditioning of air at elevated pressures.
- Air that enters the rotor is not 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:

- 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).

1.3.2 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.

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

1.3.3 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.

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

1.4 SAFETY

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.

1.5 INSPECTION OF GOODS

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.

1.6 SAFETY ADVICE REGARDING TRANSPORTATION



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



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



Warning! If lifting the unit 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 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.




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



Caution! The air dryer or rotor cassette requires installing 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. Do not support the full weight of the ducts onto the unit.
-  **Attention!** Wet air outlet duct must be insulated to prevent condensate and ice build-up during 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 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 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 electrical power is isolated and locked to prevent accidental resetting.

-  **Danger!** Electrical connection are to be made in accordance with local regulations.


-  **Attention!** Check incoming electrical voltage and operating frequency conform 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 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.
- 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 remaining close to an operating machine for any length of time.

1.10 OPERATION


-  **Caution!** Use the normal shut down procedure as described in operation. 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 ambient temperature that exceeds 50°C/122°F (e.g inside a plant room) for longer period of time. This may damage the internal components!


-  **Caution!** Do not process air with 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 operation 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 power isolated before servicing internal components.


-  **Attention!** Advise all operating & maintenance personnel regarding 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 and modify the unit's refrigerant system. Contact your DST representative for any questions (Econosorb & Frigosorb only).

-  **Caution!** 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).

-  **Caution!** Do not rinse the unit with water.

-  **Warning!** Allow fans to come to a complete stop and the unit must 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!** The unit must be manually isolated from the electrical supply by turning the main isolator to "OFF" and secured with a lock pad before conducting any types of service and maintenance work on the unit.

1.12 DISPOSAL/RECYCLING

When the 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 INTRODUCTION

2.1 TYPE PLATE OVERVIEW

The manufactured unit is identified by a type plate. The type plate is position on front or the right side of the unit. The type plate is structured as followed:

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

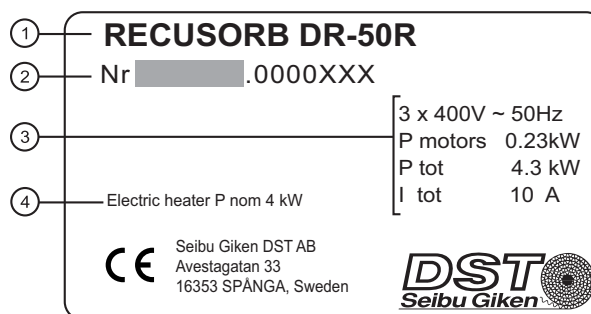


FIGURE 1: Type plate

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 as modified serial number structure which does not match the current structure.

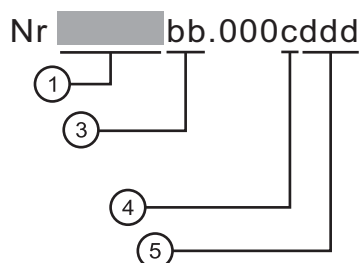


FIGURE 2: Serial number structure for a single-phase unit

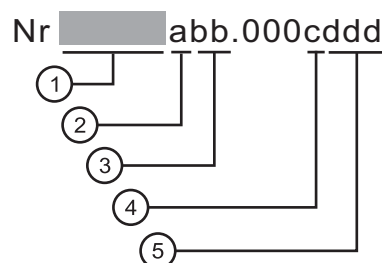


FIGURE 3: Serial number structure for a three-phase unit

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

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

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

SP = Special

Note: The absent of "SP" will indicate it is a standard manufactured unit, e.g. DR-50RSP is a special manufactured unit. DR-50R is a standard manufactured unit.

4. Serial number (**c**) - To indicate if the unit belong to a special or standard manufactured serie.

0 = Standard manufactured serie

7 = Special manufactured serie

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

001, 002, 003, 004...n

2.3 OTHER UNIT INFORMATION

In the appendix, a component list containing spare parts with articles numbers as well as the electrical diagram number for the electrical box. Special unit with custom installed components will have a list of installed options added on the same list.

3 PRODUCT DESCRIPTION

3.1 PRODUCT OVERVIEW

1. Regeneration fan
2. Process fan
3. Dry air out
4. Electrical box with control panel
5. EH3/EH4*
6. Process air in
7. Process filter
8. Rotor
9. Regeneration filter
10. Regeneration air in
11. Regeneration heater
12. Wet air out

*) Option

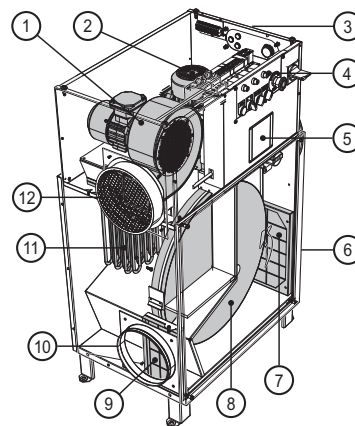


FIGURE 4: Product overview

Variation of installation and components may vary.

3.2 APPLICATIONS

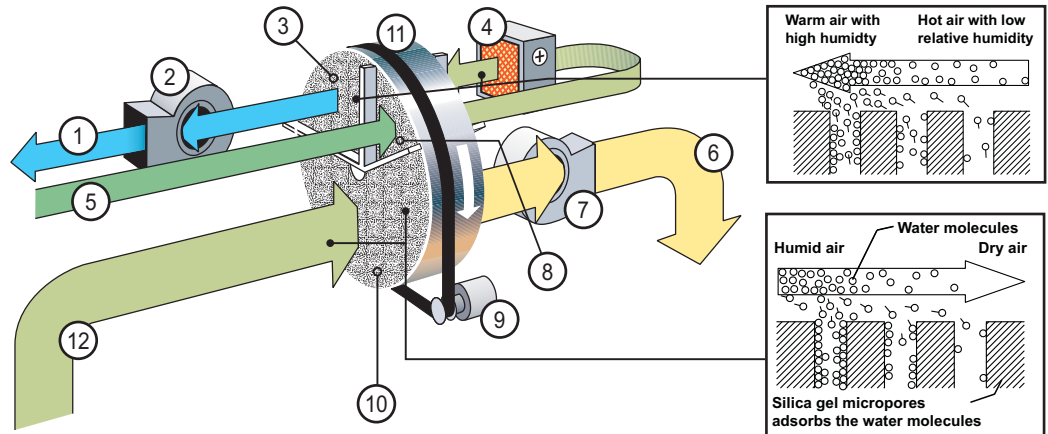
DST desiccant type dehumidifiers are normally used where dry air is essential to the various manufacturing processes used in chemical, pharmaceutical, food or confectionery industries, or where a dry environment is required for storing and handling of moisture sensitive products and raw materials.

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

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 rotor turns slowly.

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. At the same time, another part of the regeneration air is by-passing the purge sector and is mixed with the heated regeneration air. 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!

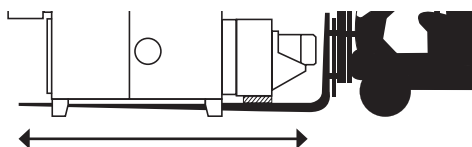


FIGURE 6: Forks in contact with both sides of the frame.

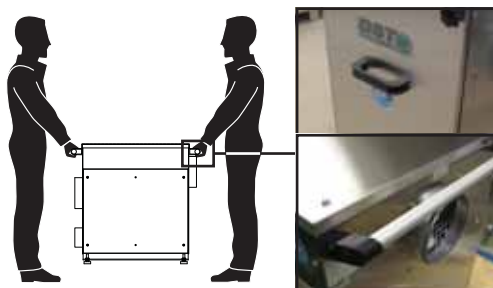


FIGURE 7: Units with handles

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.

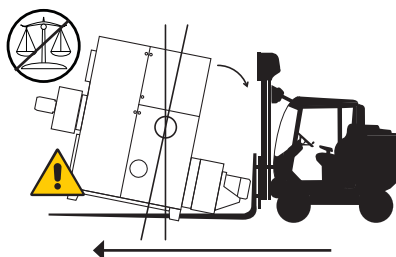


FIGURE 8: Exercise caution when lifting and transport a unit

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 GENERAL DUCT WORK INSTALLATION

The guidelines are to assist the installers and operators to adjust the duct/dehumidifier installation. Consult your 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.*

*) N/A for F-31.

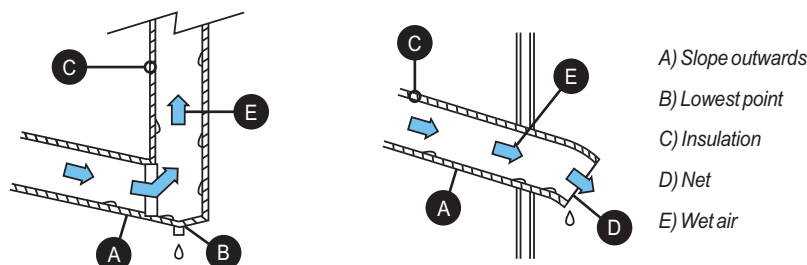


FIGURE 9: Installation of wet air out duct

4.3 HUMIDISTAT/ELECTRONIC CONTROLLER INSTALLATION

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

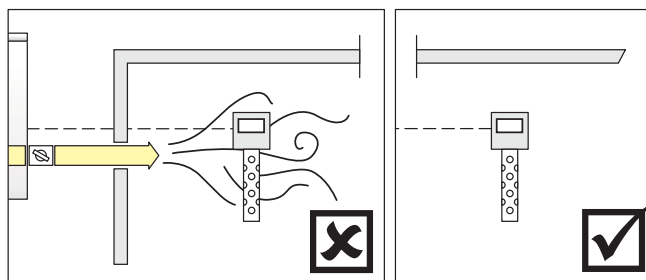


FIGURE 10: Humidistat positioning

4.4 ELECTRICAL CONNECTION

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

4.4.1 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.

4.4.2 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.

4.4.3 HUMIDISTAT CONNECTIONS

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

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.

4.4.4 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.

4.4.5 REMOTE CONTROL

The unit has a connection point for a remote switch.

See electrical diagram for connections details.

See “7 Functions” for more details.

4.4.6 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 has to 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 "41 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.

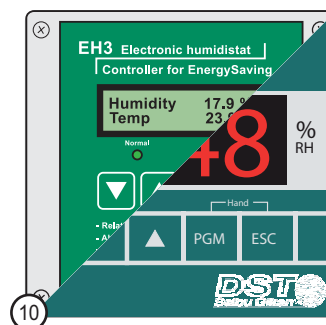
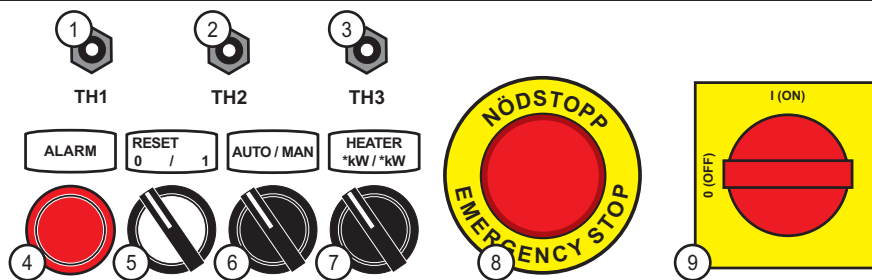
5.2 START-UP TEST AND ADJUSTMENT

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 CONTROL PANEL

1. [TH1] - Safety thermostat for regeneration heater - Reset switch
2. [TH2] - Control thermostat for regeneration heater
3. [TH3] - Safety thermostat for wet air outlet - Reset switch
4. [ALARM] - General alarm light
5. [0/RESET/1] - Combined operating switch ("ON=1" or "OFF=0") and run light indicator. The switch also acts as a reset switch when the emergency stop button has been used.
6. [AUTO/MAN] - Mode switch for AUTO or MAN
7. [HEATER] - Switch for selecting heater power**
8. [EMERGENCY] - Emergency stop button
9. [MAIN] - Main isolation switch
10. Electronic controller* / Humidistat*



*) Option
**) N/A when fitted with steam heater

FIGURE 11: Control panel

Note: Control panel layout - for guidance only. Panel supplied may differ from that shown.

6.2 START

Start the unit.

1. Turn [MAIN]-switch to "I".
2. Turn [AUTO/MAN]-switch to "MAN" for continuous dehumidification or "AUTO" for automatic-mode with connected humidistat/regulator signal.
3. Select capacity by choose the output on [Heater] switch*.
4. Turn [0/1] to "1" and the unit starts running.

*) N/A on DR-50 and DC-50. See "6.1 Control panel".

⚠ Caution!

When "Automatic restart" selected. The unit starts automatically after a power failure. It is important that all personnel involved with installation, operation, maintenance and service of the unit are made aware of this function.

6.3 STOP

Unit will shut down.

-A timed cooling down period on the regeneration fan is initiated before turned off.

1. Turn [0/1] to "0".

⚠ Caution!

Do not use the main isolator switch to turn off the unit. Always use the described stop procedure to turn off the unit.

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.

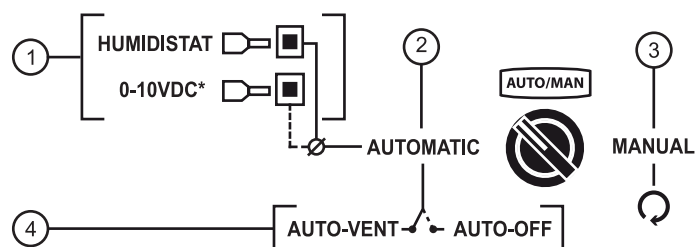
Reset is only required when a operation is halted by hardware failure or triggered a safety mechanism. See troubleshooting for more information.

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

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. Manual control - Dehumidification is manually controlled using pre-set settings.
3. Automatic control - Dehumidification is automatically controlled using a humidistat or regulator signal
4. Selectable sub-mode when dehumidification stops.

*) Option.

FIGURE 12: 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 sub-mode is available as standard to save energy or to ventilate when the dehumidification need is achieved. See "7.1.2 AUTO-VENT or AUTO-OFF" to select sub-modes.
- **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.

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

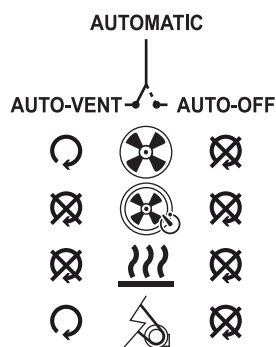
Note: AUTO-mode is only operable when a humidistat/regulator signal is connected.

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

7.1.2 AUTO-VENT OR AUTO-OFF

Automatic mode allows the user to select two sub-modes, when dehumidification stops. The unit will automatically start dehumidify again when the humidity rises above the setpoint on the humidistat or regulator signal.

- **AUTO-VENT** is a ventilation mode that provides a constant airflow by keeping the process fan running.
- **AUTO-OFF** is not a ventilation mode, unit stops all fans and is powered down to a sleep mode.



Note: When the dehumidification stops, a timed cooling down period on the regeneration fan will be initiated to remove potential residual heat from the heaters. See cooling down timer in "11 Technical data".

Note: Factory default setting on AUTO-VENT and AUTO-OFF varies among models. For units with PLC, view and change the mode in the PLC. For units without PLC, change the mode by changing the terminal link wire inside the electrical cabinet. See electrical diagram for default ventilation mode on the unit.

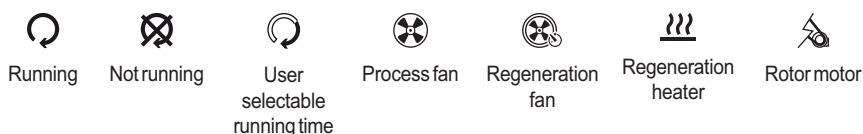


FIGURE 13: Sub-modes for automatic control

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).

Mode	Two-step humidistat (Applies for electrical heater)		One-step humidistat (Applies for steam heater)	
	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.

**) The unit enters a sub-mode.

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/others	0...10VDC	0...100%

Note (For units without PLC): AUTO-OFF and AUTO-VENT feature is disabled when fitted with energy saving.

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

See "8.6 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	A overheat protection device that stops the unit if the temperature exceeds the set limit	Inside the regeneration heater compartment	Yes
TH2	Control thermostat	Controls the set regeneration temperature	Inside the regeneration heater compartment	No
TH3	Safety thermostat	A overheat protection device that stops the unit if the temperature exceeds the set limit	In 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 heater only.

See "11 Technical data" for default temperature settings.

See electrical diagram for more information.

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.

! Caution!

Unless otherwise specified, units fitted with regeneration heater coils (water, oil or steam), are not equipped with TH1.

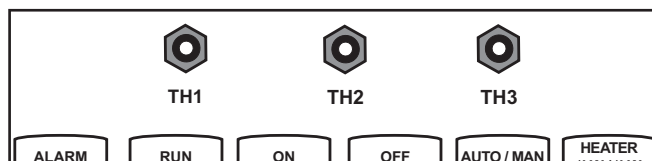


FIGURE 14: Reset buttons and settings

The safety thermostats and control thermostats are located on the control panel with the reset buttons on the front. The settings are placed inside of the unit behind TH1, TH2 and TH3.

8 OPTION & ACCESSORY

8.1 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.

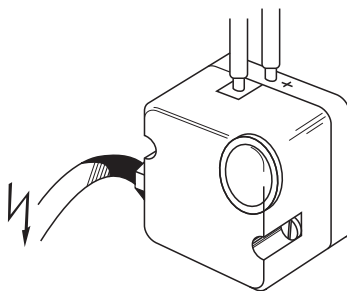


FIGURE 15: Electronic filter guard

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.

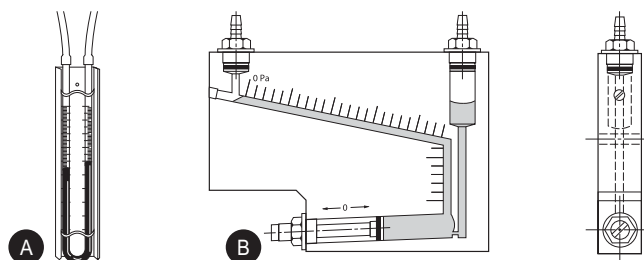


FIGURE 16: Manometer - mechanical filter guard

A) For use up to 400Pa

B) For use up to 500Pa

Note: Only applicable when filter box is selected. See "8.5 Filter box".

8.2 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: Rotation guard is included in Energy saving 2 and 3.

8.3 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 breakers may not function properly.

8.4 INSULATION

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

Note: Only applicable when filter box is selected, "8.5 Filter box".

8.5 FILTER BOX

Add-on component to allow sub options to be installed and to improve process airflow.

Available sub-options for filter box:

- 19 mm insulation
- Filter guard
- F7 Filter

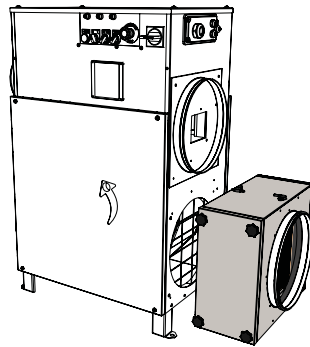


FIGURE 17: Filter box -Add-on module

8.6 ENERGY SAVING

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

Option 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 or EH4.

Option 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. See illustration below.

Note: Only applicable for electric heater.

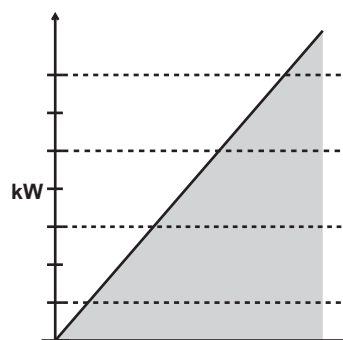


FIGURE 18: Linearly control

Example of linearly control for linear heater output.

8.7 ELECTRONIC HUMIDITY CONTROLLER AND ELECTRONIC HUMIDISTAT

Control the dehumidification process using the advanced electronic humidity controller EH3 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 “8.6 Energy saving” for more information on what features they can be installed on.

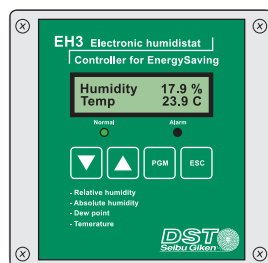


FIGURE 19: EH3

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

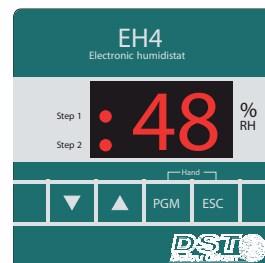


FIGURE 20: EH4

2-step humidistat for less demanding dehumidification control.

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

9 TROUBLESHOOTING

9.1 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
If the unit stops and the ALARM-light is lit	Process fan overload Regeneration fan overload	Excessive airflow Short-circuit or fan malfunction	Check fan Check setpoint of F1/F2 or Q1/Q2 Reset F1/Q1 or F2/Q2 – check and adjust airflow Have a qualified electrical technician to investigate
	Regeneration air thermostat TH1 has tripped Regeneration heater overload Note: Not applicable when fitted with steam	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
	Overload in the transformer	Short-circuit or transformer malfunction	Check transformer
	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
	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 Turn the [0/1]-switch to "0"-position and main switch to "0/OFF"-position to restore.
	Frequency converter alarm	Frequency converter internal alarm activated – fault code shown	Refer to converter manual for fault code explanation
EMERGENCY STOP BUTTON is lit	Operation terminated	Emergency button activated [0/1]-switch is active (if fitted with auto restart)	Pull the emergency button to restore Turn the [0/1]-switch to "0"-position to restore
The unit is running and the ALARM Δ P-light is lit Note: Applicable for RL-71 only.	Internal pressure balance is not optimal	Pressure on regeneration air inlet is higher than process air inlet	Throttle the damper on regeneration air in until ALARM Δ P-light is turned off Check the airflow guard Check the airflow guard setting (recommended is 20Pa)

FIGURE 21: Troubleshooting table and solution

9.2 GENERAL TROUBLESHOOTING

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

PROBLEM	CAUSE	SOLUTION
Unit will not start. None of the light indicators are on.	No power to unit No power to control circuit The emergency stop button is active	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 Pull the emergency stop button and then turn the operating switch to "0".
The ALARM-light is on 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
The RUN-light is on, 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.
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 22: 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 23: Capacity troubleshooting and solution table

10 MAINTENANCE

10.1 REGULAR INSPECTION INTERVAL

It is recommended that the machine should go through a basic inspection on a regular basis during start-up, stopping or per operation round.

1. Check for physical damages and foreign objects by inspecting the dehumidifier internally and externally.
2. Check filter and change if necessary.
3. Check the rotor drive system during operation
4. Check on all moving components, fans especially, for unnatural noises.
5. Check the regeneration heater for heating, and if fitted, coolers for cooling.
6. Check for any air infiltration through panels or worn-out sealings.
7. Check electrical equipment is in order, i.e electrical cabinet or panels are locked and secured or loose components. This can only be performed by a certified electrician.
8. Water trap is working as well as the drip pan is transporting the condensate into the drain (if fitted with condenser or cooler).

10.2 REGULAR SERVICE INTERVAL

Depending on the application or the industry, an assessment from a service engineering should determine if the interval of the service should increase or decrease.

Service time	Run time in hours in 1 000	0	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'	44'	48'
	Calendar time in months	0	6	12	18	24	30	36	42	48	54	60	66	72
Unit														
Inspect and change filter 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, fan wheel, casing, motor and bearings, renew if necessary			X		X		X		X		X		X	
Inspect features and functionality		X		X		X		X		X		X		X
Inspect electric and control system, cables, electrical components and functionality				X		X		X		X		X		X
Inspect access panels, locks and seals				X				X				X		
Inspect duct and duct connections		X				X				X				X
Inspect heater and cooler				X		X		X		X		X		X
Inspect and/or renew humidistat/humidity sensor if necessary				X		X		X		X		X		X
Inspect rotor motor and/or renew if necessary				X		X		X		X		X		X
Inspect and/or renew seals on removable panels if necessary				X		X		X		X		X		X
Inspect and/or renew peripheral seals if necessary				X		X		X		X		X		X
Inspect rotor seals and/or renew if necessary				X		X		X		X		X		X
Inspect and/or renew drive chain in the rotor drive system if necessary				X		X		X		X		X		X
Inspect rotor		X		X		X		X		X		X		X
Safety feature check														
Inspect overheat protection				X		X		X				X		X
Renew and inspect the freeze protection device if necessary		X		X		X		X		X		X		X
Inspect rotation guard and/or renew if necessary		X		X				X				X		
Inspect damper, actuator and valves		X		X		X		X		X		X		X
Inspect post-cooling function		X		X		X		X		X		X		X

FIGURE 24: Service chart

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



Danger!

The operator of the system has to ensure that all personnel who are involved with installation, operation and maintenance of the machine have read the "Safety" sections of this manual.

10.3 WASHING THE ROTOR

The 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.

Washing the rotor is not a maintenance process but a method to restore the rotor's adsorption ability. This should only be carried out as last resort and in an extreme case if other attempt to restore the adsorption ability is futile.



Caution!

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

11 TECHNICAL DATA

RL-60 RL-60L

Capacity		
Capacity [kg/h] 1)	4	5
Nominal dry air flow [m ³ /h] 2)	850	1000
External static pressure dry air [Pa] 2)	300	100
Nominal wet air flow [m ³ /h] 2)	180	250
External static pressure wet air [Pa] 2)	-	-
Regeneration heater - Electric		
Heater power [kW]	5.4	7.5
Number of electric heater steps	2	2
Heating power in steps [kW]	1/2 - 3 2/2 - 5,4	1/2 - 4,5 2/2 - 7,5
Heating power with linear control [kW] 4)	0-5.4	0-7.5
Humidistat 2 opens and reduce the effect to [kW]	3	4.5
Regeneration heater - Steam 4)		
Heater power [kW]	-	-
Operating pressure [bar(g)]	-	-
Max. Operating pressure [bar(g)]	-	-
Steam consumption [kg/h]	-	-
Freeze protection alarm [°C] 4)	-	-
Total power - Electrical		
Total motor power [kW]	0.62	0.8
Total power [kW]	6.02	8.3
Other electrical information		
Supply fuse 3x400V/50Hz [A]	16	25
Electric compartment protection class	IP54	IP54
Humidistat connection	230VAC	230VAC
Humidistat supply current [A] 5)	< 1	< 1
Temperature setpoint settings		
Overheat protection TH1 [C]	190	190
Thermostat TH2 [C]	180	180
Overheat protection TH3 [C]	80	80
Other technical data		
Air filter class (regeneration/process)	G4/G4	G4/G4
Filter change at pressure (G4/F7) [Pa]	200/250	200/250
Noise level [dB(A)] 3)	-	-
Regeneration air fan delay [min]		
Weight [kg]	68	68

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.

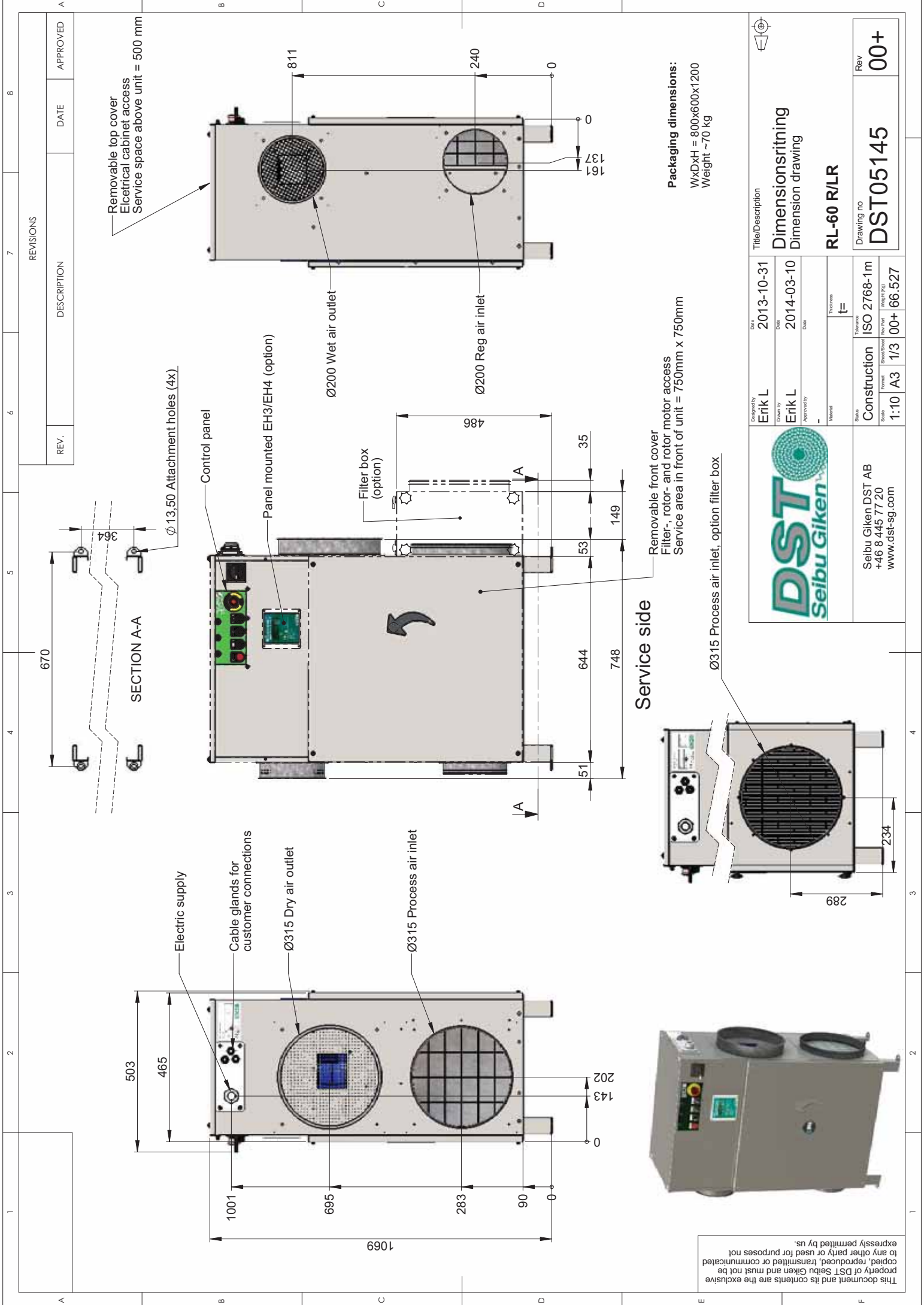
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Seibu Giken DST AB, ATT: Documentation, Avestagatan 33, 163 53 SPÅNGA, SWEDEN.

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

Komponentlista / Component list RL-60

Description	Antal Qty.	Benämning	Typ, ritn nr o dyl Type, Drwg No etc	60	60L	Art. Nr Art No	Tillverkare / Leverantör Manufact. / Supplier	Anmärkningar Notes
Rotor unit		Rotorenhet						
Rotor	1	Rotor	DMR-550H05	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	108676	Seibu Giken /	
Radial seal	0,15m	Teflonremsa	0,35x35x1000mm; Teflon	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	105241		
Rotormotor	1	Drivmotor	80.547.0 6 rpm 230V 50Hz 0,033A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	108887		
Belt/pulley	1	Remskiva	30 5M 09 axel 8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	100642		
Belt	1	Drivrem	1870 5M 09	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	104654		
Fans		Fläktar						
Proc.fan	1	Processfläkt	GSF-2-160/62 037T 0,37 kW 230/400V 1,0A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	108450		
Reg.fan	1	Reg.fläkt	GSF-2-146/62-025T 3x230/400V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	108985		
Filter		Filter						
Filter	1	Filter	333x328 mmG4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-		Process
Filter	1	Filter	135x245mmG4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-		Regeneration
Regeneration heater - Resistive heater		Regenereringsvärmare - Resistivvärmare						
Reg.heater	1	Reg. värmare	5,4 kW 3x230/400V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	108989		
Reg.heater	1	Reg. värmare	7,5 kW 3x230/400V	<input type="checkbox"/>	<input checked="" type="checkbox"/>	108990		
Overheat protection	1	Överhettningsskydd	TH1: heaTHERM 160-200°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	106157		
Electric box	1	Elcentral	Dwg: 10600-00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	108990		
Electric box	1	Elcentral	Dwg:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	108991		
Other		Övrigt						
Overheat protection	1	Överhettningsskydd	TH3: heaTHERM 50-100°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	106158		
Thermostat	1	Termostat	TH2: heaTHERM 0-200°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	106159		



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Designed by	Erik L	Date	2013-10-31
Drawn by	Erik L	Date	2014-03-10
Approved by	-	Date	-
Material	Thickness t=		
Status	Construction	ISO 2768-1m	Rev
Scale	1:10	Formal	Sheet/Sheet
Scale	A3	1/3	00+ 66.527

Seibu Giken DST AB
+46 8 445 77 20
www.dst-sg.com

Title/Description
Dimensionsritning
Dimension drawing

RL-60 R/LR

Drawing no
DST05145

Rev
00+

Harmful chemicals and solvents for rotors

SEIBU GIKEN CO.,LTD.

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

	Substance	Note	Chemical formula	Cause
1	Oil vapor		N/A	Clogs the micro pores on the silica gel/zeolite.
2	Ammonia	2ppm and above, prolonged exposure	NH ₃	Degrades the silica gel/zeolite.
3	Amine		RNH ₂	
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	Clogs 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		AlCl ₃	
13	Seawater		N/A	Deteriorates the honeycomb's physical structure.
14	Strong acid	pH=3 and below	N/A	
15	Plasticizer		N/A	Clogs the micro pores on the silica gel/zeolite.
16	Nitrogen oxides	High concentration, excessive exposure	NO _x	Deteriorates the honeycomb's physical structure.
17	Sulfur oxides	High concentration, excessive exposure	SO _x	
18	High-temperature steam	Exposed to vapor of 100 and above.	N/A	Cracks occurs on the honeycomb.
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.

CE-DECLARATION

(Conformité Européenne)



- | | | |
|--------------------------------------|------------------------------------|------------------------------------|
| 1. (S) FÖRSÄKRAN-OM-ÖVERENSSTÄMMELSE | 6. (D) KONFORMITÄTSEKTLÄRUNG | 11. (E) DECLARACION-DE-CONFORMIDAD |
| 2. (CZ) PROHLÁŠENÍ-O-SHODĚ | 7. (I) DICHIARAZIONE-DI-CONFORMITÀ | 12. (GB) DECLARATION-OF-CONFORMITY |
| 3. (DK) OPFYLDSESERKLÆRING | 8. (NL) CONFORMITEITSVERKLARING | 13. (EE) VASTAVUSDEKLARATSIOON |
| 4. (FI) VAKUUTUS YHDENMUKAISUUDESTA | 9. (N) SAMSVARSEKTLÆRING | 14. (PL) DEKLARACJA ZGODNOŚCI |
| 5. (F) DECLARATION-DE-CONFORMITE | 10. (SK) VYHLÁŠENIE-ZHODY | |

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

A-30B/Bp (A)
CS-5/5L
DR-010B
DR-010B MH1/V3
DR-20B/30D
DR-31 T10
DR-40 T10/T16
DR-50 (A)
DC-5

DC-10
DC-20
DC-30 T10/T16
DC-31 T10/T16
DC-50 (A)
F-31
R-060BR (A)
R-51/61 (A/B/E)
RL-60/60L (A)

RL-71 (A/B/E)
RL-71L (A)
RZ-071/081/82/101/102/104
(A/B/C/D/E)
RLZ-82/104 (A/B/C/D/E)
CZ-082/102/102L/104 (A/B/C/D/E)
RU-060/061/062/081/082/101/102
RUF-122/152/172/192/222/242
EF/FF-81/82/101/152

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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: | 3. in overeenstemming is met de volgende norm(en) en voorschrift(en), vooropgesteld dat deze worden toegepast/gebruikt volgens onze instructies: |
| 2. je v souladu s následujícími standardy nebo dalšími normami a předpisy při použití podle našich pokynů: | 9. er i samsvar med følgende standard(er) eller andre normgivende dokument(er) forutsatt at anvendelse skjer i henhold til våre instruksjoner: |
| 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: | 10. je v súlade s nasledujúcimi štandardami alebo ďalšími normami a predpismi pri použití podľa našich pokynov: |
| 4. on toteutettu noudattaen seuraavaa (via) standardia (eja) tai muita ohjeellisia dokumentteja, edellyttäen, että käyttö tapahtuu meidän ohjeita noudattaen. | 11. estan en conformidad con los siguientes standards o cualquier otra normativa documental, que indique que estos se usan de acuerdo a nuestras instrucciones: |
| 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 | 12. are in conformity with the following standard(s) or other normative document(s), provided that these are used in accordance with our instructions. |
| 6. mit den folgenden Richtlinien und Normen konform sind, wobei ein bestimmungsgemäßer Gebrauch in Übereinstimmung mit der jeweils gültigen Betriebsanleitung vorausgesetzt wird. | 13. vastavad järgmisele(tele) standardile(tele) või normatiividele, eeldades, et kasutamine toimub vastavalt meiepoolsetele juhistele: |
| 7. è conforme alle seguenti norme armonizzate, rispettando le nostre istruzioni d'uso: | 14. są w zgodności z wymaganymi normami lub innymi dokumentami normatywnymi pod warunkiem, że są one wykorzystywane zgodnie z instrukcją obsługi: |

Machinery directive (2006/42/EC)
Electromagnetic compatibility (2004/108/EC)
Restriction of Hazardous Substances 2 (2011/65/EC)
Pressure equipment directive (97/23/EC)
EN ISO 12100:2010
EN ISO 62061-1
EN 1886:2007
EN 60439-1
EN 60204-1
EN 62491

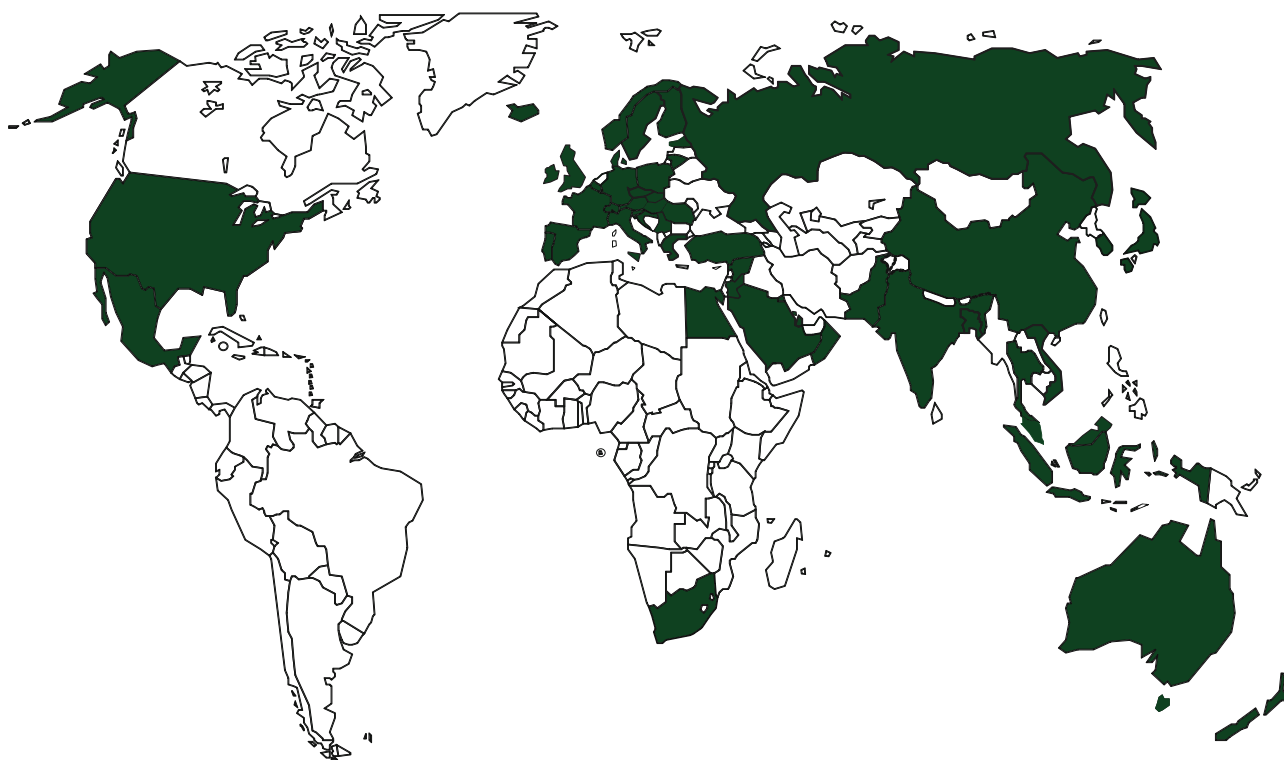


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Date

25/3 2015



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