

Cotes dehumidifier C30E/C30C/C30C

Manual number: 140720

Revision: F

COTES ALL-ROUND C30E/C30C

How to install, set up, operate and service your
Cotes C30E/C30C dehumidifier



CONTENTS

SECTION 1 / GENERAL BACKGROUND	3
ABOUT THIS HANDBOOK	3
ABOUT MANAGING HUMIDITY	5
ABOUT COTES	6
SECTION 2 / THE DEHUMIDIFIER	7
ABOUT THE COTES C30E/C30C RANGE OF DEHUMIDIFIERS	7
HOW IT WORKS	10
FEATURES AND BENEFITS	12
SECTION 3 / TECHNICAL DETAILS	13
SERIAL NUMBER/IDENTIFICATION	13
SPECIFICATIONS	14
ASSEMBLIES AND COMPONENTS	17
SOUND LEVELS	21
SECTION 4 / INSTALLATION	22
HOW TO INSTALL THIS DEHUMIDIFIER	22
HOW TO INSTALL A CONDENSATION UNIT OR HEAT RECOVERY UNIT	25
HOW TO INSTALL A C30C (COLD STORE MODEL)	25
HOW TO COMMISSION THIS DEHUMIDIFIER	28
SECTION 5 / OPERATION	30
HOW TO OPERATE THE C30E/C30C DEHUMIDIFIER	30
SECTION 6 / SERVICE AND REPAIR	31
HOW TO SERVICE AND REPAIR THIS DEHUMIDIFIER	31
SECTION 7 / FORMALITIES AND GENERAL/LEGAL INFO	42
WARRANTIES	42
LEGAL NOTICES	43
EU DECLARATION OF CONFORMITY	44
HOW TO UPDATE AND IMPROVE THIS COTES DEHUMIDIFIER	46
WHO TO CONTACT	47
ELECTRICAL DIAGRAMS	APPENDIX

SECTION 1 / GENERAL BACKGROUND

ABOUT THIS HANDBOOK

This is the installation and service handbook for your Cotes dehumidifier.

You should read the whole handbook before installing and/or starting the dehumidifier unit for the first time. It is important that you and your colleagues are familiar with the correct operating procedures and all precautionary safety measures, in order to avoid any damage to the surroundings, materials or installations, as well as to prevent any personal injury.

This handbook is mainly intended for use by technicians who install and operate this Cotes dehumidifier unit, who carry out preventive maintenance and who replace defective parts.

Anyone using Cotes dehumidifier units, or whose responsibilities include supervising their operation, will also benefit from reading this handbook and from consulting it as a practical help should the need arise.

Product number for this handbook

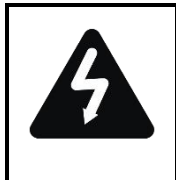
The product number of this particular service handbook is 140720.

This is the number you need to give us if you would like to order additional copies for your staff, colleagues or service personnel, or for technical staff from outside your company.

SYMBOLS USED IN THIS HANDBOOK



This tells you to perform a particular action



Important to note, because items in the dehumidifier can cause injury or affect people's health



You need to pay special attention to this



NOTE

It is each operator's responsibility to read and understand this manual and other information and to employ the correct operating and maintenance procedures.

ABOUT MANAGING HUMIDITY

Cotes humidity management technology – cost-effective and energy-efficient

The moisture in the air all around us has surprising – and often costly – effects on the materials, structures and processes at the heart of virtually all business processes and industrial activity.

Cotes humidity management technologies enable you to control the levels of moisture in the air inside any building, installation or facility, using only a bare minimum of energy.

And effective control of the basic parameters for your operations is good business.

ABOUT COTES

World leader

Cotes is one of the world's leading experts in the field of adsorption dehumidification, providing technology and expertise that enable companies to achieve better control of the humidity always present in the air.

Better management of the humidity in the air also makes it possible to improve and optimise a wide range of industrial processes, prevent damage and corrosion in many types of structures, and reduce energy consumption in all kinds of installations where air specifications are important.

Big benefits

Cotes dehumidification units provide exceptional advantages.

- Our know-how and experience make sure each customer gets the right equipment to tackle all the practical needs and operating priorities associated with the specific installation
- Our units are exceptionally reliable, and can withstand even harsh treatment unusually well
- They are very easy to maintain and service
- They only use a minimum of energy in order to achieve maximum effect.

We aim to provide our customers with the most technically effective and energy-efficient solution for the best price. This ensures the best possible return on investment, as well as peace of mind about having made the best decision.

SECTION 2 / THE DEHUMIDIFIER

ABOUT THE COTES C30E/C30C RANGE OF DEHUMIDIFIERS

The Cotes C30E/C30C range of dehumidifiers is designed and configured for a wide range of industrial uses. Prominent among these is humidity management in storage facilities and basement areas, in water works and in many kinds of process industry in which stable, well-controlled air conditions are crucial.

C30E units are configured to minimise the overall energy consumption of the dehumidification process. C30C units are specially designed to operate inside cold storage facilities.

The dehumidifiers in the C30E/C30C range are designed for easy cleaning, with configuration options that include a heat recovery module or a condensation module and additional filters, if needed.

Design priorities

The Cotes C30E/C30C range features an eye-catching modern industrial design appearance, along with exceptional reliability.

It is designed to ensure the unhindered passage of air through the unit, which reduces

- energy consumption
- pressure losses
- noise levels

All the components, ancillary equipment and features are optimised for better performance, exceptional service life and ease of maintenance.

Capacities

The Cotes C30E/C30C range currently features models with nominal air volumes of 300 m³/hour.

At process air inlet conditions of 20°C and 60% relative humidity (%RH), the capacities (the amount of water which can be removed from the air) of these units are between 0.9 kg/hour and 1.9 kg/hour.

Configuration priorities

The Cotes C30 range is available with three different configurations – BASIC, SENSOR and PLUS.

Configuration- BASIC

The Configuration-A configuration provides:

- High dehumidification capacity
- High energy efficiency
- Stainless steel cabinet
- Easy installation
- Low-noise running
- Low maintenance costs, reducing the overall operating cost

Easy cleaning

- Hour counter, to keep track of how long the unit has been in operation
- Attachment of external humidity sensor (external humidify control and sensors are not included as standard, but are available for purchase from Cotes)
- Mechanical hour counter, to keep track of how long the unit has been in operation
- Remote start/stop option

Configuration - SENSOR

In addition to the Configuration - BASIC features, the Configuration-SENSOR provides:

- Current sensor that provides you valuable information about the status of the regeneration filter, heating element and the regeneration fan.
- External fault signal
- External operation signal

Configuration - PLUS

In addition to the Configuration - BASIC features, the Configuration-PLUS provides:

- Rotor guard
- Process filter guard
- Efficient and adjustable EC fans for process and regeneration circuit
- Current sensor that provides you valuable information about the status of the regeneration filter, heating element and the regeneration fan.
- External fault signal
- External operation signal

Operating conditions

For the process and regeneration air inlet, the following operating conditions must be respected:

Relative humidity	0–100%
Temperature	0–40°C
Pressure	Ambient \pm 100 Pa

It is only possible to deviate from these ranges if such deviations were specifically mentioned when the order was placed, and special considerations have been incorporated into the unit in order to deal with this.

**NOTE**

Operating conditions for the air inlet flows must be respected.

Storage conditions

For storing the dehumidifier, the following conditions must be respected:

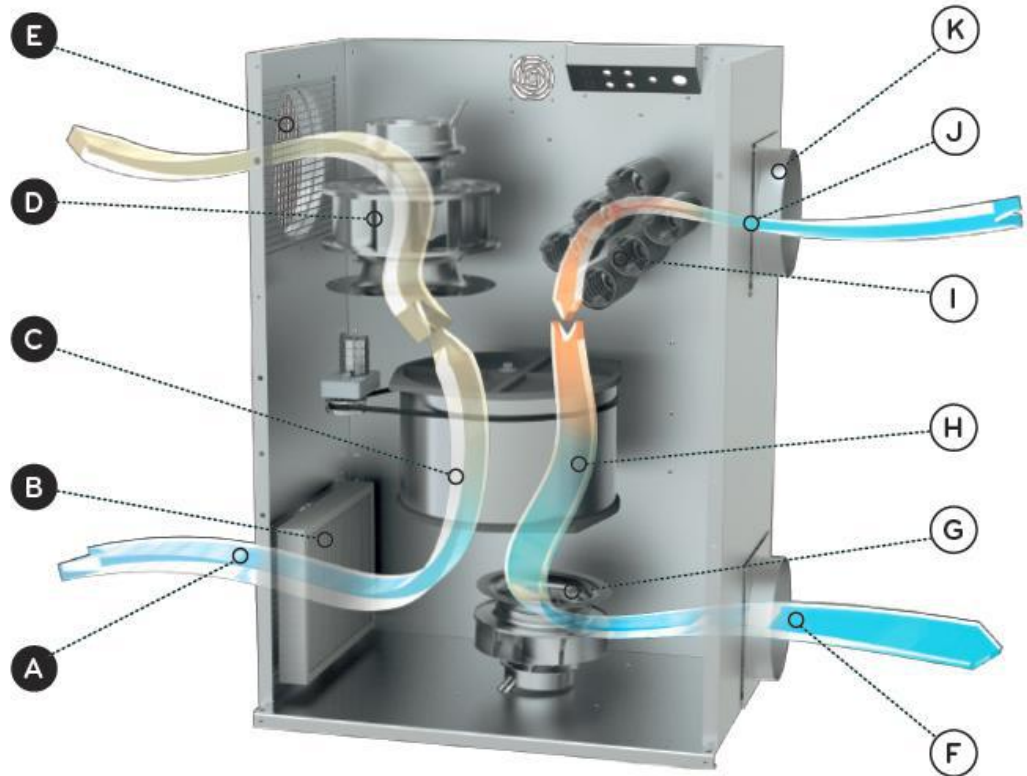
Relative humidity	0–90%
Temperature	-20°C to 50°C

It is only possible to deviate from these ranges if such deviations were specifically mentioned when the order was placed, and special considerations have been incorporated into the unit in order to deal with this.

**NOTE**

Storage conditions for the dehumidifier must be respected.

HOW IT WORKS



Two flows of air

The effect of Cotes adsorption dehumidifiers basically stems from the action of two flows of air.

The drying process (A to E)

The incoming moisture-laden flow of air (process air) (A) enters one side of the cabinet and gets filtered by a process air filter (B). The air then passes through a slowly turning rotor (C) whose inner surfaces are coated with desiccant silica crystals that attract the water molecules passing through.

When the moist air passes through the rotor, water molecules are adsorbed and lodge in the pores on the surface of the silica gel. This means the air leaves the rotor containing less moisture (humidity) than when it entered (E). And because the adsorption process releases energy to the air, the temperature increases during the process. The process air is controlled by a process air fan (D).

The regeneration process (F to J)

The second air flow (the regeneration air) (J) is filtered by a regeneration air filter (K), and heated by heating elements (I) to reduce its relative humidity. On its way through the rotor (H), this heat evaporates the moisture previously adsorbed by the silica crystals in the rotor. The resulting water vapour now leaves the dehumidifier in the outgoing regeneration air (F). The regeneration air is controlled by a regeneration air fan (G).

Fans

All units in the C30E/C30C range of adsorption dehumidifiers are fitted with two fans as standard.

Cotes adsorption dehumidifiers are always configured with a certain amount of “external pressure” to make sure that ducting does not cause a reduction in the amount of air.

For details about the fans fitted to this particular Cotes dehumidifier, see page 20.

Filters

All models of Cotes adsorption dehumidifiers are fitted with filters to remove undesirable particles or other pollutants from the incoming process and regeneration air.

Filters of the G4 class are fitted to Cotes C30E/C30C units as standard in order to filter the incoming process and regeneration air.

Heating units

Cotes C30E/C30C dehumidifiers are fitted with electrical heating units of the PTC-type, in order to control the temperature of the regeneration air entering the unit.

For details about heating units fitted to this particular Cotes dehumidifier, see page 19.

Heat recovery unit (HR module)

Cotes adsorption dehumidifiers can be fitted with a heat exchanger to make sure that part of the thermal energy from the regeneration air leaving the unit is extracted, and reused for preheating the incoming regeneration air.

The heat exchanger is placed in an external box equipped with inlets and outlets for the incoming and outgoing regeneration air.

The heat recovery unit can save as much as 20% on energy consumption, and can be fitted to all configurations of C30E/C30C dehumidifiers, but you have to install the appropriate ducting and damper for outgoing regeneration air.

Water condensation unit (LK module)

Cotes adsorption dehumidifiers can be fitted with water condensation units in order to condense some of the water from the regeneration air leaving the dehumidifier. This is beneficial when a regeneration air outlet is not a good idea or cannot be fitted.

When a water condensation unit is installed, the regeneration air forms a closed circuit, using ambient air passing through heat exchangers to cool the regeneration air to below condensation temperature.

A water condensation unit can be fitted to all configurations of C30 dehumidifiers.

For details about the heat recovery unit or water condensation unit fitted to this particular Cotes dehumidifier, please contact your Cotes dealer, or Cotes.

FEATURES AND BENEFITS

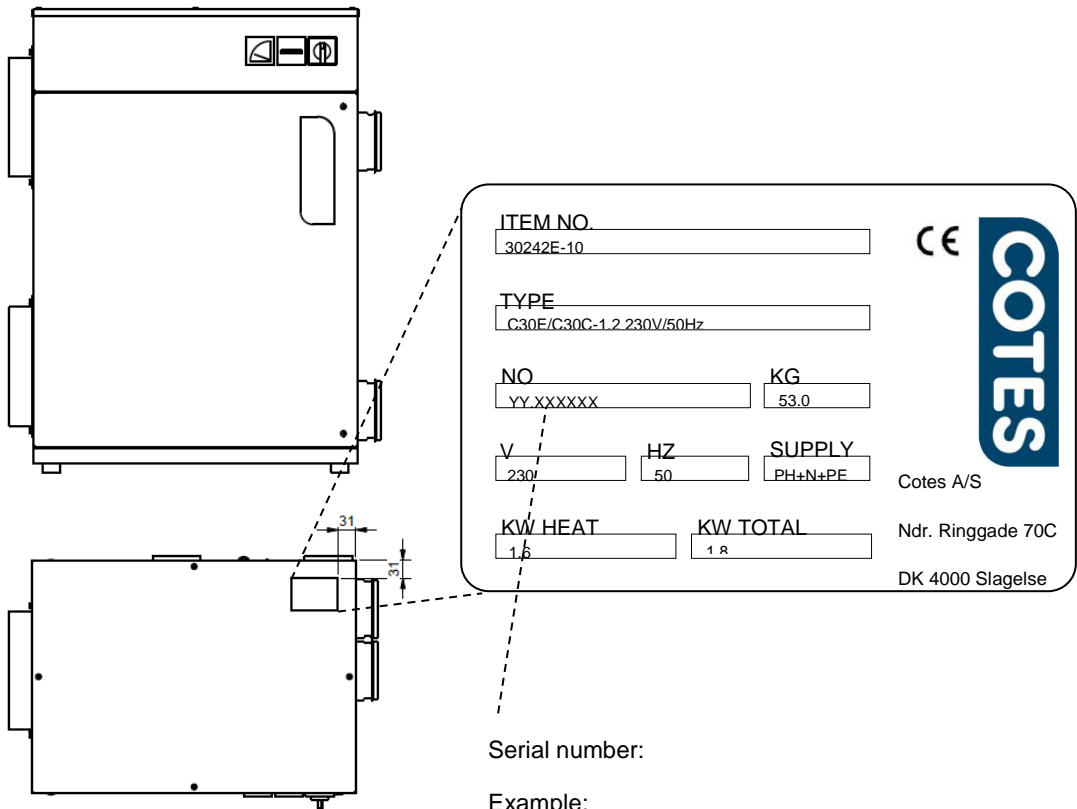
Highlighted features	How customers benefit
Appearance/cabinet	
Eye-catching industrial design appearance.	Visually attractive units that can be mounted in highly visible positions.
Robust structure.	Longer service life. Better return on investment.
Equipment configurations inside the cabinet	
All fans are mounted inside the cabinet.	Can be mounted in a wider range of positions and structures, even where there is public access, etc.
Easy to mount additional insulation and noise suppression equipment.	Configurations individually customised to each project/installation.
Key components are standardised units easily available throughout the world.	Less downtime. Savings on maintenance and service work.
Most effective rotor currently available anywhere in the world.	Most humidity removed from the flow of air at lowest cost.
Highly durable rotor bushes.	Savings on maintenance and service work. Greater operating efficiency.
Access	
Large door that provide rapid, easy access.	Savings on maintenance and service work. Less downtime means greater operating efficiency.
Filters that are easy to get out, and quick to change.	Savings on maintenance and service work. Greater operating efficiency.

SECTION 3 / TECHNICAL DETAILS

SERIAL NUMBER/IDENTIFICATION

This is the installation and service handbook for your Cotes dehumidifier.

The serial number/identification code for your particular model is located in the top of the dehumidifier (see drawing below).



Serial number:

Example:

15.12345

15		12345
		= Serial number

15 = Year of production

SPECIFICATIONS

Please note that specifications and controls given in this handbook are in some situations approximate.

Table 1 Technical data C30E/C30C

Type		C30E/C30C			LK	HR
	Model	0,9	1.2	1.9	-	-
Dry air, nominal**	m ³ /hour	300	300	300	-	-
Regeneration air, nominal*	m ³ /hour	50	65	85	-	-
External pressure, dry air (at nominal air flow)	Pa	200	200	200	-	-
External pressure, regeneration air (at nominal air flow)	Pa	150	180	140	-	-
Capacity at 20°C, 60% relative humidity	kg/hour	0.9	1.2	1.9	-	-
Electric heater, maximum	kW	1.2	1.6	2.7	-	-
Fuse, min	A	10	10	5	-	-
Fuse, max	A	10	10	16		
Maximum connected load	kW	1.4	1.8	2.9	0.05	-
Voltage	V	230	230	400	230	-
Frequency	Hz	50	50	50	50	-

Ground		PH+N+PE	PH+N+PE	3PH+N+PE (3PH+PE)	PH+N+PE	-
Sound pressure ISO11201 (with ducts mounted)	dB(A)	52	54	54	-	-

Table 2 Measurements

Type		C30E/C30C			LK	HR
Model		0.9	1.2	1.9	-	-
L x W x H cabinet	mm	398 x 554 x 771			398 x 554 x 771	398 x 354 x 771
L x W x H total	mm	437 x 631 x 789			409 x 555 x 790	398 x 391 x 789
Weight	kg	52	53	53	35	21
Regeneration air outlet	mm	Ø100			200x180 (ø200)	Ø100
Regeneration air inlet	mm	Ø100			200x180 (ø200)	Ø100
Process air inlet	mm	200x180 (ø200)				
Process air outlet	mm	200x180 (ø200)				
Drain size	inch				½"	½"

Table 3 Technical data C30C

	Type	C30C
	Model	0.2
Dry air, nominal**	m ³ /hour	300
Regeneration air, nominal*	m ³ /hour	50
External pressure, dry air (at nominal air flow)	Pa	200
External pressure, regeneration air (at nominal air flow)	Pa	150
Capacity at -25°C, 90% relative humidity	kg/hour	0.2
Capacity at -18°C, 90% relative humidity	kg/hour	0.3
Electric heater, max.	kW	1.2
External duct heater, max.	kW	1.0
Fuse	A	10
Maximum connected load	kW	1.4
Voltage	V	230
Frequency	Hz	50
Ground		PH+N+PE
Sound pressure ISO11201 (with ducts mounted)	dB(A)	50

ASSEMBLIES AND COMPONENTS

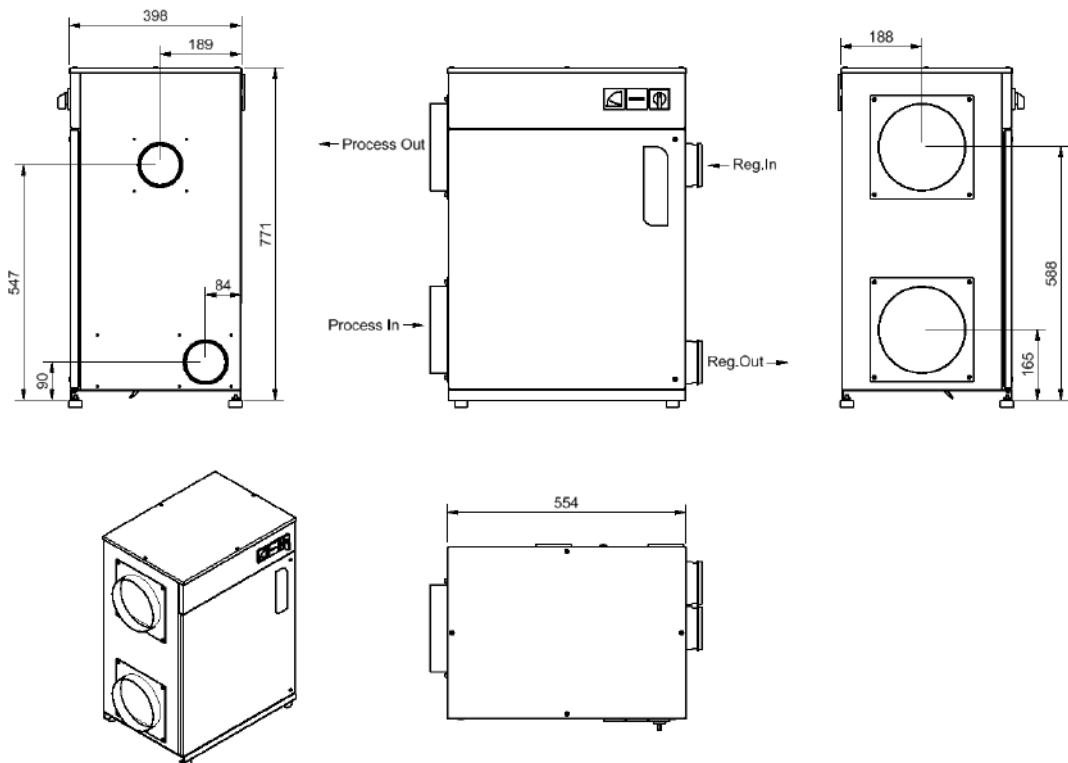
Customised to meet your needs

Cotes dehumidifier units are based on a modular design that enables our customers to select from a broad range of carefully selected components and assemblies, to meet specific installation and operating requirements.

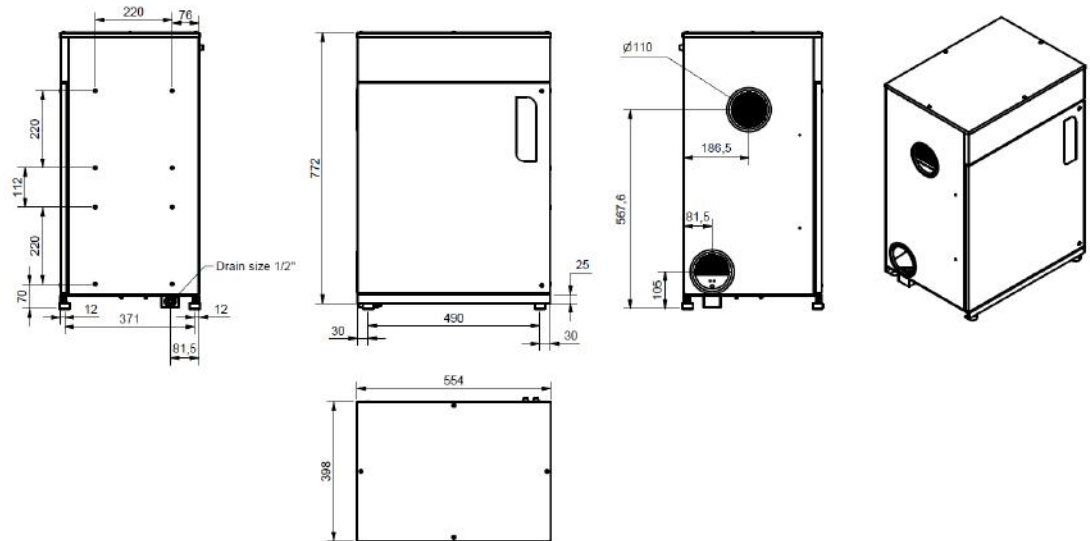
Your Cotes C30E/C30C dehumidifier has been configured to meet the particular requirements of your installation.

Dimensions

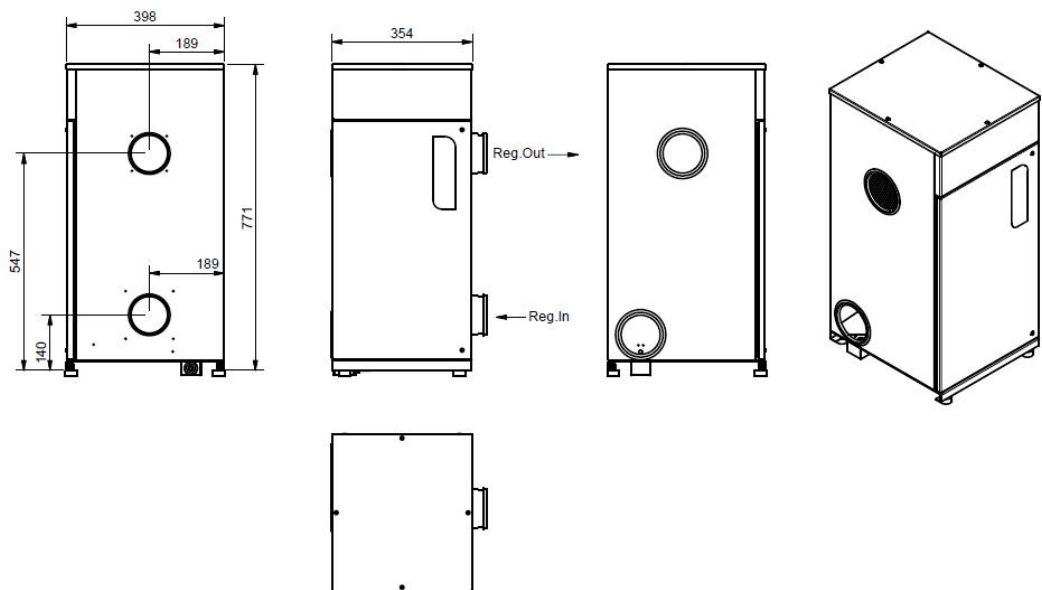
C30E/C30C dehumidifier



Condensation module

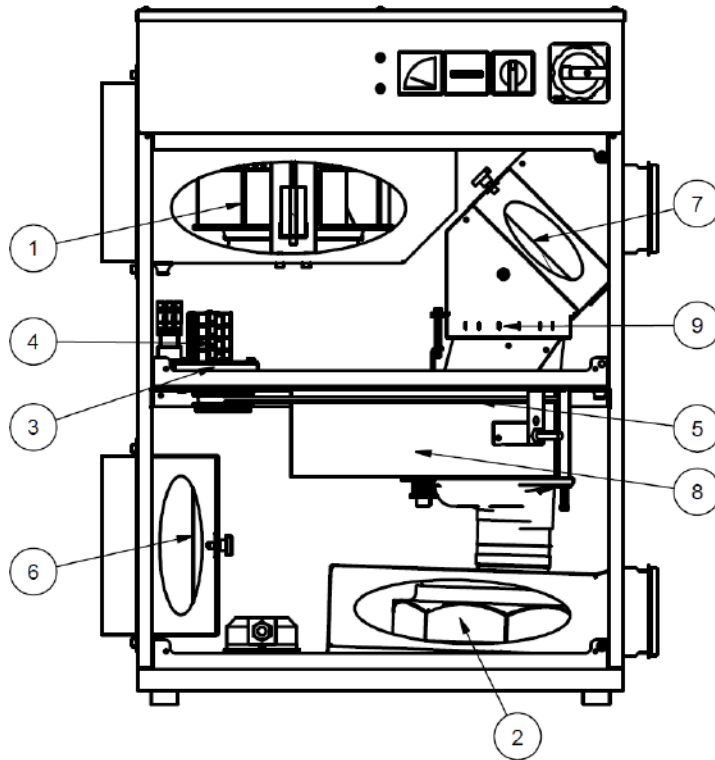


Heat recovery module

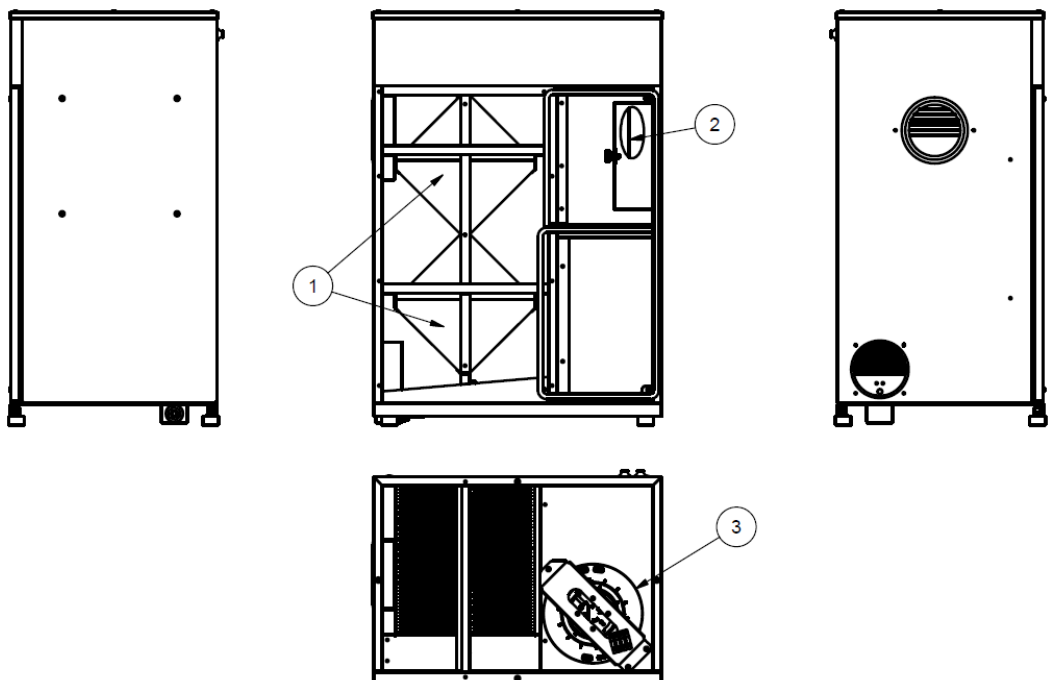


Spare parts

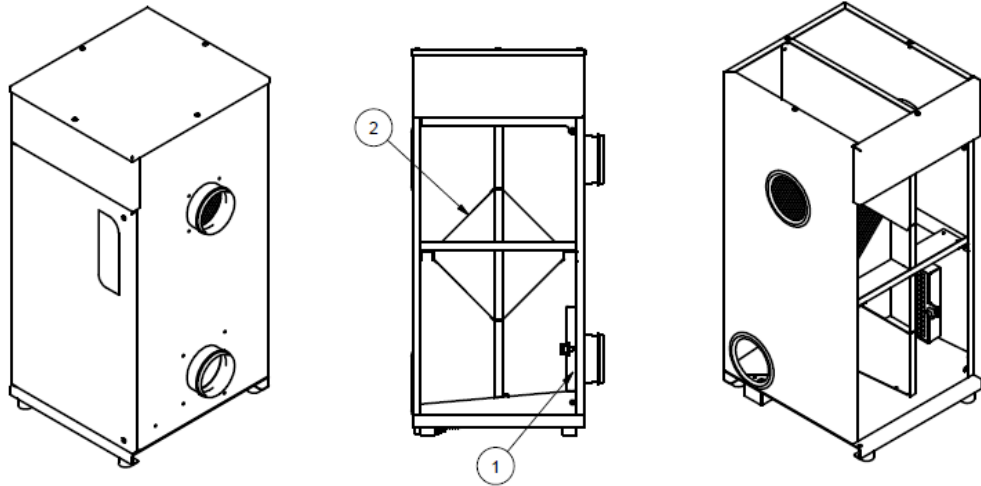
C30E/C30C dehumidifier



Condensation module



Heat recovery module



Type		C30E			C30C
Pos	Part	0.9	1.2	1.9	0.2
1	Process air fan	111630			111630
2	Regeneration air fan in cabinet	616990	614178		616990
3	Gear	110410			110410
4	Gear motor	110400			110400
5	Drive belt	132109			132109
6	Process filter	130350			130350
7	Regeneration air filter	130268			130268
8	Rotor	124055	124058		124058
9	Heater	111468	111468	614188	111468
With fault sensors					

10	Pressure switch for filter	NA	NA	126843	-
11	Rotor guard	NA	NA	111216	-
12	Current relay	NA	110366	110366	-
CONDENSATION UNIT					
1	Heat exchanger (s)	126951 (2 pcs)			-
2	Condensation air filter	130268			-
3	Condensation fan	801715			-
HEAT RECOVERY UNUT					-
1	Regeneration air filter	130268			-
2	Heat exchanger	126951			-

SOUND LEVELS

Sound dampening and silencers

Please check the maximum sound level permitted for the particular installation you are working with, and select the sound dampening and silencers needed for the dry air outlet duct and the regeneration air outlet duct accordingly.

Sound levels for each particular dehumidifier can be found on page 15.

Measuring sound levels

Sound levels for Cotes dehumidifiers are measured in accordance with the provisions of the ISO11201 standard.

While the sound level is being measured, the dehumidifier is placed on the floor. Ducts for regeneration air and for incoming air/outgoing air are installed and led out of the measuring room.

The sound level is then measured 1 metre outside the front of the cabinet (outside the large cabinet cover), and 1.5 metres above the floor.

SECTION 4 / INSTALLATION

HOW TO INSTALL THIS DEHUMIDIFIER

Removing the packaging

Cotes C30E/C30C dehumidifier units are delivered in a cardboard box. Please dispose of this packaging responsibly, and recycle it if possible.

Handling

Cotes dehumidifiers are built to be very robust, so there is no need for special handling, apart from normal sensible care and attention.

Note the weight of the dehumidifier as specified on page 14. We recommend that you use a forklift to move the dehumidifier around and place it in position.

Where to mount this dehumidifier

Cotes adsorption dehumidifiers are designed for installation indoors. But outdoor cover is available by special order.

The back of the dehumidifier should be placed against an outer wall to make it easier to install the regeneration air ducts.

The three other sides of the unit should have at least 1 metre of unobstructed access, for easy service and maintenance.

Where not to mount it

Unless it has been arranged with Cotes and special considerations have been made, the unit should not be placed outdoors.

The unit should not be placed inside an office or in other locations where the sound pressure level must be kept to a minimum.



NOTE

Dehumidifier must be placed indoors, and protected from rain and water.
Outdoor cover is available by special order.

Things to be careful about

Electrical work should only be carried out by an authorised electrician.

**NOTE**

Electrical work should only be carried out by an authorised electrician.

Connections needed – electrical

First, make sure that the main switch is OFF.

**NOTE**

Make sure power is switched off before installing and servicing.

Now the power circuit cable can be connected to the main switch of the dehumidifier.

Connections needed – ductwork**NOTE**

To ensure low pressure drop and low sound pressure levels, please request assistance from a company that specialises in ductwork.

The ductwork for the process air should be selected with regard to the external pressure available from the process air fan and the space available for ducting. A 200mm-diameter duct is normally recommended for the process air flow.

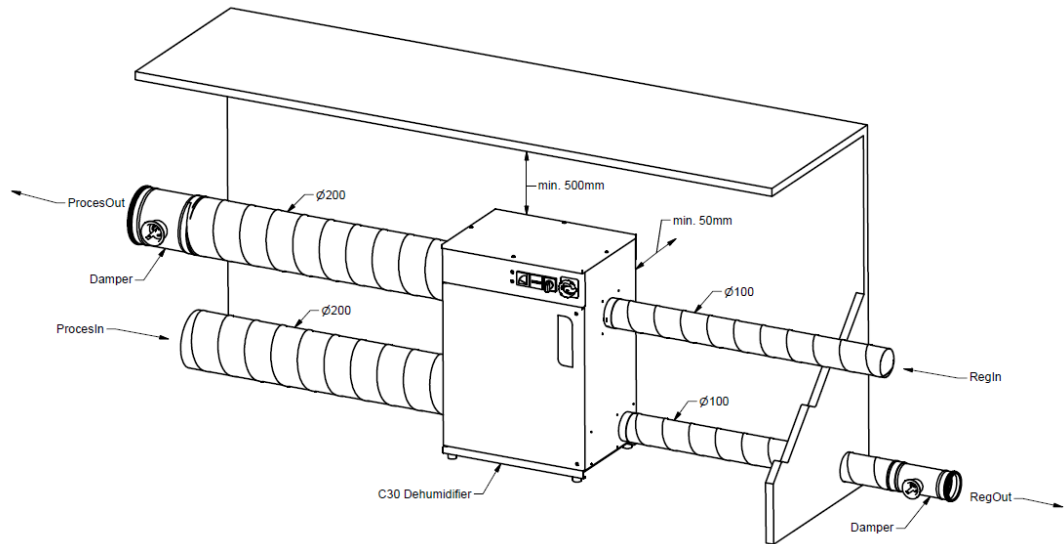
When installed, the process air flow should be adjusted by means of a damper.

The regeneration air should be led to and taken from the outdoors.

The ductwork for the regeneration air should be selected with regard to the external pressure available from the regeneration air fan and the space available for ducting. A 100mm-diameter duct is normally recommended for the regeneration air flow.

The regeneration air outlet should be made to drain downwards towards the outlet, to allow any condensate to run out.

There must be at least 500mm unrestricted access above the dehumidifier for easy access.



If this draining downwards is not possible, drill a $\phi 6$ mm hole in the lowest part of the duct, so that any accumulated water can drain away.



NOTE

The regeneration air outlet should be made to drain downwards towards the outlet for draining.

If this is not possible, drill a $\phi 6$ mm hole in the lowest part of the duct, so that any accumulated water can drain away.

A damper for adjusting the regeneration air flow must be installed on the outlet in order to adjust the regeneration air flow. If not, the regeneration air flow will – in most cases – be too high, making it impossible to reach the desired temperature for the regeneration air and thus making the unit less efficient. Use a standardised tool for measuring the velocity according to specifications.

Safety precautions

Dehumidifiers in the C30E/C30C range weigh approximately 45–56 kg and should therefore only be moved using a forklift or similar equipment

Any work in the electrical box should only be carried out by authorised electricians.

Any duct connections to and from the dehumidifier should only be carried out by authorised plumbers.

HOW TO INSTALL A CONDENSATION UNIT OR HEAT RECOVERY UNIT

Removing the packaging

Cotes condensation units (LK module) and heat recovery units (HR module) are delivered in a cardboard box. Please dispose of this packaging responsibly, and recycle it if possible.

Handling

Cotes condensation units and heat recovery units are built to be very robust, so there is no need for special handling, apart from normal sensible care and attention.

Note that the weight of the condensation unit is 35 kg and the weight of the heat recovery module is 21 kg. We recommend that you use a forklift to move such units around and to place them in position.

Where to mount the condensation or heat recovery unit

The condensation and heat recovery units are designed for indoor installation mounted directly onto the Cotes adsorption dehumidifier on the right side connecting the units to the regeneration air flow.

Note that both units cannot be mounted on the dehumidifier at the same time. The condensation or heat recovery unit must be installed 0–5 mm away from the C30 dehumidifier.

Connections needed for the condensation unit – electrical

First, make sure that the main switch is OFF.

The condensation unit has a pre-mounted cable connected to the condensation air fan. This cable must be directly connected to the terminals 106X2 1-2-PE in the electrical board located in the C30 dehumidifier.

HOW TO INSTALL A C30C (COLD STORE MODEL)

Removing the packaging

Cotes C30C units are delivered in a cardboard box. Please dispose of this packaging responsibly, and recycle it if possible.

Handling

Cotes C30C units are built to be very robust, so there is no need for special handling, apart from normal sensible care and attention.

Note that the C30C unit weighs approximately 51 kg. We recommend that you use a forklift to move such units around and to place them in position.

Where to mount this dehumidifier

Cotes C30C adsorption dehumidifiers are specially designed for installation inside cold storage facilities.

The back of the dehumidifier should be placed against the wall, with room for the regeneration air ducts to pass easily to and from the dehumidifier and out of the cold storage area.

The three other sides of the unit should have at least 1 metre of unobstructed access, for easy service and maintenance.

Where not to mount it

The unit must not be installed outside the cold storage space unless this has been arranged with Cotes and special adjustments have been made to the unit.

Connections needed – electrical

First, make sure that the 1kW external heater is connected to 230V/50Hz and the external control current is connected to the electrical board, as described in the electrical diagram on page 300 for the C30C cold storage model. The external heater pre-heats the regeneration air before it enters the C35C dehumidifier.

The C30C electrical cabinet has a small built-in fan heater to protect all the electrical components from the cold storage temperatures. The fan heater operates for 30 minutes before the dehumidifier starts, as a safety precaution when the main switch is on.



NOTE

The C30C dehumidifier has a built-in fan heater in order to protect the electrical components. A 30-minute timer is activated when the main switch is turned on.

Connections needed – ductwork

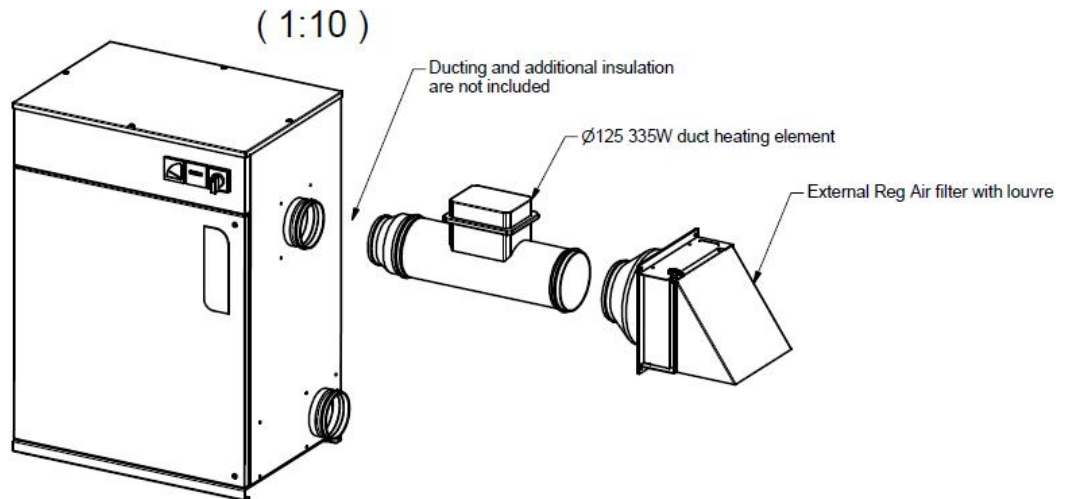
The ductwork for the process air should be selected with regard to the external pressure available from the process air fan and the space available for ducting. A 200mm-diameter duct is normally recommended for the process air flow.

When installed, the process air flow should be adjusted by means of a damper.

The regeneration air must be led to and taken from the outdoors. The ductwork must always be insulated from and to the cold storage. Such insulation is not included when purchasing a C30C dehumidifier.

The regeneration air outlet should be made to drain downwards towards the outlet, to allow any condensate to run out.

There must be at least 500mm unrestricted access above the dehumidifier for easy access.



If this draining downwards is not possible, drill a $\varnothing 6$ mm hole in the lowest part of the duct, so that any accumulated water can drain away.



NOTE

The regeneration air inlet and outlet ductwork must be insulated at all times within the cold store. Furthermore, the external heater, filter frame and electrical box must be installed according to specifications.

A damper for adjusting the regeneration air flow must be installed on the outlet in order to adjust the regeneration air flow. If not, the regeneration air flow will – in most cases – be too high, making it impossible to reach the desired temperature for the regeneration air and thus making the unit less efficient. Use a standardised tool for measuring the velocity according to specifications.

Safety precautions

C30C dehumidifiers weigh approximately 51 kg and should therefore only be moved using a forklift or similar equipment

Any work in the electrical box should only be carried out by authorised electricians.

Any duct connections to and from the dehumidifier should only be carried out by authorised plumbers.

HOW TO COMMISSION THIS DEHUMIDIFIER



NOTE

Only trained/authorised electricians are allowed to carry out any work required in the electrical box of this Cotes dehumidifier.

When the cover of the electrical box is open, the power supply must be switched off at the mains switch.

Procedure

a) Check the electrical installation before starting the dehumidifier, switch on the mains switch.

- 400V – Check the voltage between the terminals L1, L2, L3 (= 400V). If Neutral is present then check one of the phases and Neutral (= 230V)
- 230V – Check phase and Neutral (= 230V)
- Is the ground cable connected, and of the correct specifications?
- Is any hygrometer (if fitted) correctly connected?

b) To check the connected duct system

- Is the recommended damper installed in the regeneration air outlet duct
- Is the recommended damper installed in the process air outlet duct
- Do the regeneration air outlet ducts drain away from the dehumidifier, to make sure that any condensed water flows away?
- If the regeneration air outlet does not drain away from the dehumidifier, check whether there is a 6mm-diameter hole drilled in the lowest part of the duct, so that any accumulated water can drain away.

c) Suggested damper positions/air flow settings at commissioning

Dampers/settings should be set in the following positions.

- Damper at process air outlet: Fully open.
- Damper at regeneration air outlet: Fully open.

d) Once the dehumidifier is operating, you should adjust the air flows

Adjust the dampers on process air and regeneration air so the incoming air flow matches the nominal values given on page 14. Check the air flows using a suitable instrument (pitot pipe/thermo-anemometer or similar) in the duct. If it is difficult to measure the flow in the regeneration pipe, the regeneration flow may be adjusted by the current consumption on the machine. As a PTC-type

heater is used, the current consumption of the dehumidifier is dependent on the flow. Adjustment of flow by current is a less accurate method.

The nominal current is:

Model	C30E/C30C-0.9	C30E/C30C-1.2	C30E/C30C-1.9
Nominal Current [A]	6,0	7,8	3,5

Adjusting the current sensor relay

The current sensor relay is monitoring the current used by the PTC heating element. If the regeneration flow is reduced or stopped (by a damaged fan) the current uptake by the heater drops. The reduced flow is often caused by a blocked filter but it can also be caused by a damaged heater or regeneration fan.

The sensor is adjusted from factory but is recommended to do an adjustment on site. The adjustment of the sensor is done after adjusting the flow (see above) by:

1. Read power consumption on the ampere meter on the front of the machine.
2. Unplug the machine or turn off the main switch.
3. Open electrical board by removing multiple screws in the top.
4. Adjust relay to 80-90 % of measured (1) depending on how big margin you wish. 90 % is the recommended value.

SECTION 5 / OPERATION

HOW TO OPERATE THE C30E/C30C DEHUMIDIFIER

The C30E/C30C is designed for maximum dehumidification, and the standard setting is that it is kept running at all times. This configuration is kept as simple as possible, which is why there is no dehumidification management installed.

STARTING AND STOPPING THE DEHUMIDIFIER

You switch the dehumidifier on at the main switch.

After a short period, the dehumidifier is ready to operate. When the main switch is on, the integrated green signal lamp will light up.

To turn the dehumidifier on, switch the rotary switch to manual or auto. Switch the rotary switch back to neutral position to turn the dehumidifier off.

When the dehumidifier is operating, the green signal lamp is on.

HOUR COUNTER

The mechanical hour counter is located on the front of the machine.

ALARM

The red signal lamp in the front of the panel lights up if an alarm occurs and the external alarm relay is closed.

The dehumidifier cannot provide information about what type of alarm has been triggered. An alarm can be triggered by (for example) by malfunctions in gear, heater, the process air fan or the regeneration air fan. The alarm can also be triggered by a blocked process filter. Furthermore, a switch or relay may have been deactivated and needs to be activated again. The alarm is reset by switching off the machine.

EXTERNAL HUMIDITY MANAGEMENT

You can purchase an external humidity hygostat to manage when the dehumidifier is operating or not. Contact Cotes or your Cotes dealer for more information.

SECTION 6 / SERVICE AND REPAIR

HOW TO SERVICE AND REPAIR THIS DEHUMIDIFIER

Service and maintenance work on this dehumidifier

Cotes designs its dehumidifier units so that they are as robust as possible, and only need a minimum of service and maintenance.

None of the components require lubrication or adjustment.

The only maintenance work you need to do is listed below.

Once a month

- Check or replace the filters for incoming air and regeneration air.
- Check that the fans are operating (by listening to check whether they are turning).

Once a year

We also recommend the following annual checks.

- Check the working hours of any component inside. See time-to-change limits below:
 - Process air filter. Depends on the working environment. Specified for 8,700 hours under normal conditions.
 - Regeneration air filter. Depends on the working environment. Specified for 8,700 hours under normal conditions.
 - Air filter for electrical box. Depends on the working environment. Specified for 8,700 hours under normal conditions.
 - Process air fan: 30,000 hours
 - Regeneration air fan: 25,000 hours
 - Motor and gear for rotor: 25,000 hours
 - Heaters: 40,000 hours
 - Rotor: 50,000 hours
 - Electrical board: 50,000 hours
- External humidity sensor should be calibrated or replaced (with recycled instruments)
- Check the inside of the cabinet for any signs of dirt or corrosion. Check that the drive belt for the rotor is still tight and that no parts of it are too worn or close to the breaking point.
- Check that the insulation on all electrical cables is intact, with no mechanical or heat damage.
- Check that the insulation on the electric heater(s) is intact.
- Check that all cables inside the electrical box are properly attached, all miniature circuit breakers (MCBs) are switched on and all components are intact.
- Test that all electric components are working as intended – for example by following the instructions in the “Commissioning” section of this handbook.

Service/repair work on this dehumidifier**Safety instructions**

Before opening the dehumidifier, make sure that the electric current is switched off at the mains before you open top cover or front door.

The QS1 safety switch should also be switched off.

You should never just turn off the power to the dehumidifier while it is running. The correct procedure is to switch the rotary switch to neutral position, after which the machine runs a cooling cycle before the regeneration air fan stops. Turning off the dehumidifier properly prevents any over-heating.

**WARNING**

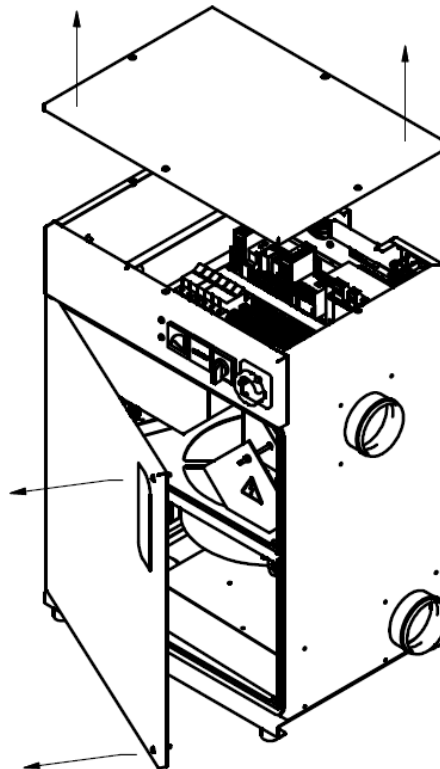
Make sure that electric current is switched off at the mains before you open top cover or front door

The QS10 safety switch should also be switched off.

Easy access for quick service

The electrical switchboard (contacts, fuse breakers, thermal relays, etc.) is placed in the electrical box in the top of the dehumidifier cabinet, directly under the top cover, to make them easy to get to.

All other electrical components (fan motors, gear motor, heating elements, etc.) are easy to access when the service door for these parts is opened.

**Connecting 230V motors**

All C30E/C30C dehumidifiers are fitted with 230V AC electric motors for the fans. This means it doesn't matter how the plus/minus cables are connected.

Nevertheless, the gear motor must be connected correctly and you must check that the rotor turns clockwise when connected.

Replacing filters

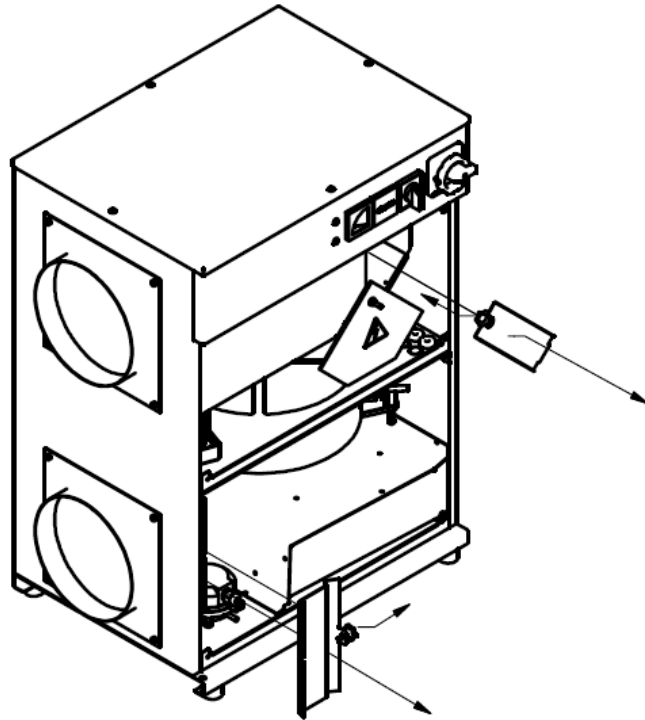
Process air filter; 130350

Regeneration air filter; 130268.

(Except if special filters are specified).

The following is standard procedure for replacing the filters:

- Open front door
- Loosen the finger screws on the filter doors
- Replace the filters



Replacing fansBASIC AND SENSOR:

Process air fan: R2E225; 111630

Model 0.9 regeneration air fan: R3G190; 111610

Models 1.2 and 1.9 regeneration air fan: R2E220; 111633

PLUS:

Process air fan: R3G225; 801716

Model 0.9 regeneration air fan: R3G190; 801715

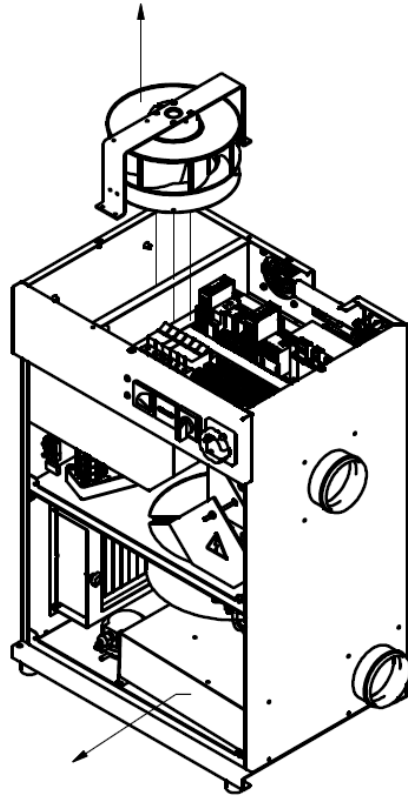
Models 1.2 and 1.9 regeneration air fan: R3G190; 801715

The following is standard procedure for replacing the process air fan;

- Remove top cover
- Disconnect cables for process air fan
- Remove the screws on the fan bracket
- Remove the screws on the fan
- Remove the fan bracket
- Remove the fan
- Replace the process air fan

The following is standard procedure for replacing the regeneration air fan:

- Disconnect cables for regeneration air fan
- Dismount screw clamp fastened to the regeneration air fan box
- Remove the regeneration air fan box
- Insert a replacement regeneration air fan box, or remove the screws on the regeneration air fan box and replace the regeneration air fan

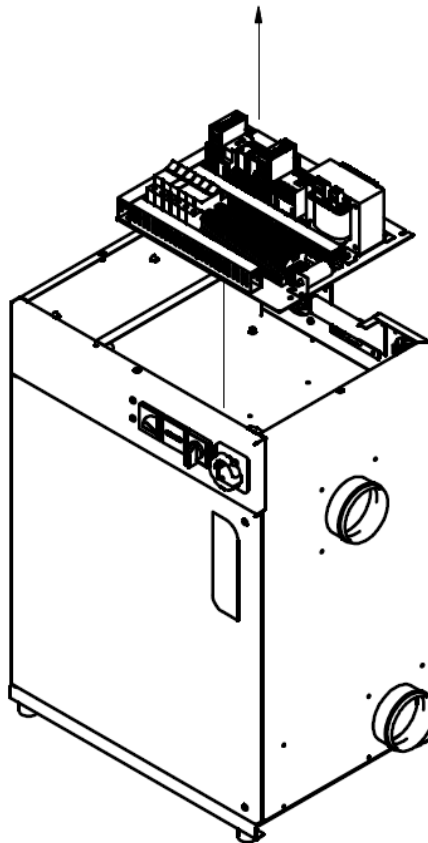


Replacing electrical board

	BASIC	SENSOR	PLUS
0.9 - 230 V	614204	621193	621192
1.2 - 230 V	614203	614569	621192
1.9 - 400 V (3P + PE)	614206	614207	621187
1.9 - 400 V (3P + N + PE)	614307	621189	621188

The following is standard procedure for replacing an electrical board

- Open the top cover
- Disconnect all cables and sensors connected to the electrical board
- Remove the screws fastening the electrical board to the cabinet
- Replace the electrical board

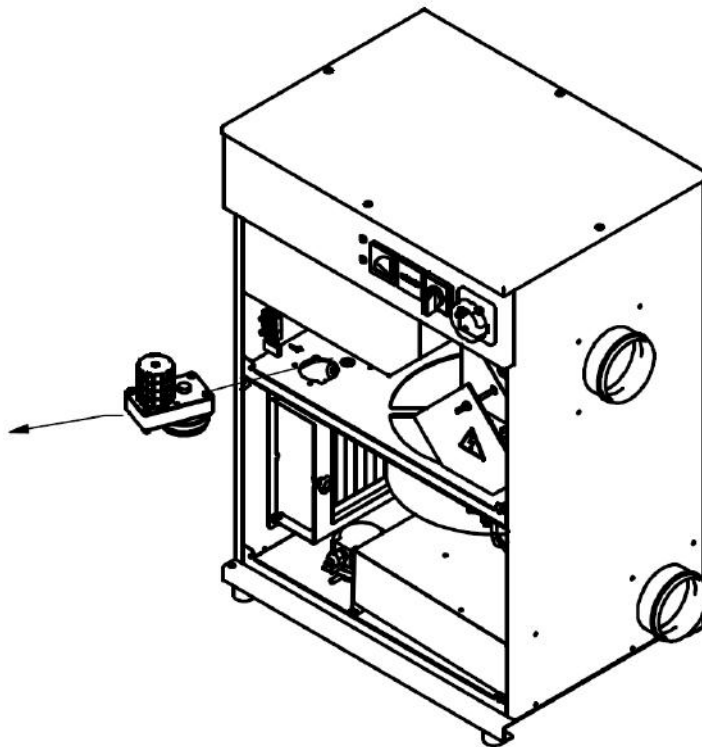


Replacing gear motor

Gear motor set: 110400, 110410, 110430

Remove the drive belt from the pulley, and then remove the gear motor after disconnecting all electrical connections. You should then fit a replacement gear motor.

When re-starting the unit, check that the rotor is moving. If not, swap the two cables on the motor.



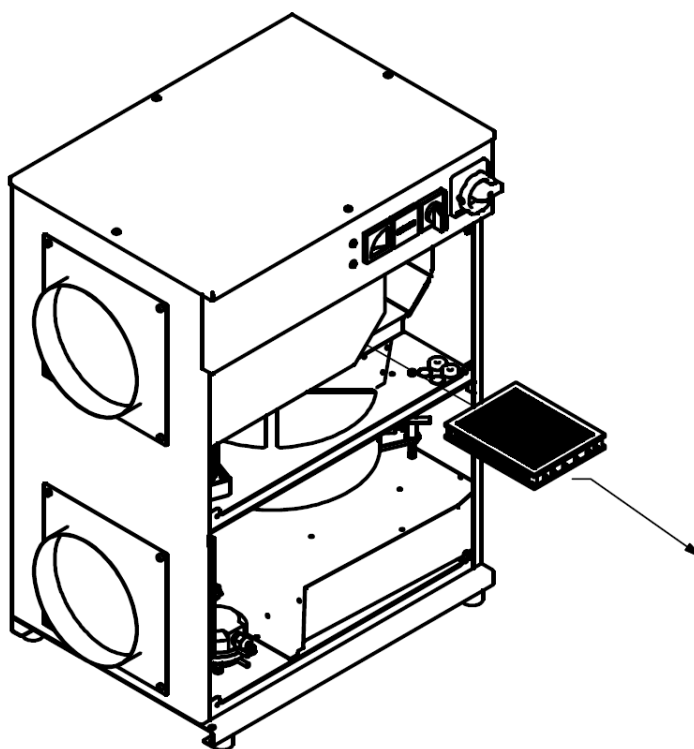
Replacing electric heater

230V heaters: 111468

400V heaters: 614188

The electric heater is mounted under the regeneration air filter box of the dehumidifier.

To replace that unit, disconnect the wiring, unscrew the protection plate and unscrew regeneration heater box. You can then withdraw the heater from the heater box.

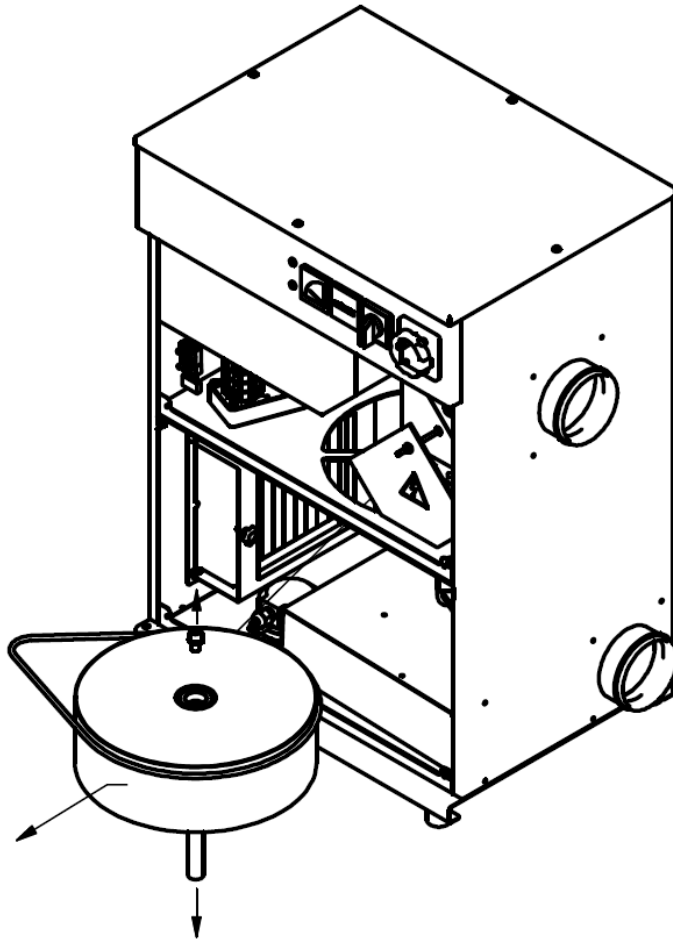


Replacing rotor and shaft

The following is standard procedure for replacing the rotor.

- Open door at the front of the cabinet
- Remove the drive belt from the pulley
- Remove the screws for the rotor shaft
- Remove the screws for the lower divider and spacers in-between the dividers

Carefully slide out the rotor (including the Teflon® disc and rotor shaft) before the rotor shaft can be dismounted at the front.



Troubleshooting

Problem	Cause	Action
The unit (or parts of it) will not start after a power surge/an electrical short circuit	One or more fuse breakers have been triggered	Turn all fuse breakers on
The air is not as dry as expected	The rotor is not turning The regeneration air temperature is lower than expected The regeneration air flow is too low	If the drive belt is intact, change the gear motor Check that the regeneration air flow is not too high Check that all heating elements are functioning Check that the regeneration air filter is not clogged
The regeneration air temperature has large variations	The regeneration air flow is too low	Check that the regeneration air filter is not clogged

If you have any queries or questions, please contact your Cotes dealer.

SECTION 7 / FORMALITIES AND GENERAL/LEGAL INFO

WARRANTIES

Warranty conditions

The Cotes factory warranty is only valid if a documented programme of service and preventive maintenance has been carried out.

Maintenance must have been carried out at intervals of six months or less. Documentation for this must be in the form of a written log/journal, with attested entries.

All spare parts must have been purchased from Cotes or an authorised Cotes dealer.

LEGAL NOTICES

Terms

The information contained in this publication and the products and equipment described herein are subject to change at any time without prior notice.

Cotes A/S has no obligation to inform buyers of the products and equipment of such subsequent changes.

This publication may contain misprints. Cotes A/S is not liable for errors or omissions in this publication or for incidental or consequential damages in connection with the furnishing of or the use of this publication.

Cotes A/S is not liable for any loss or damages, including consequential damages caused by disregard of any advice or warnings in relation to safety in this publication.

This publication cannot be deemed to contain any express or implied warranties of any kind concerning the construction or the suitability of the products described or the fitness of the products for any particular purpose.

This publication is subject to the provisions and requirements laid down in Danish law.

Copyright

All copyright to this publication belongs to Cotes A/S.

All rights reserved. You are not allowed to photocopy, reproduce, adapt, modify, translate, display or transfer any part of this publication to any other media, without explicit prior written permission from Cotes A/S.

EU DECLARATION OF CONFORMITY

Cotes A/S
Ndr. Ringgade 70C
DK-4200 Slagelse
www.cotes.com
info@cotes.com
VAT no. DK 15 20 03 32



Declares at its own liability that the following models of Cotes adsorption dehumidifiers:

C30, C35, C65, CWO65, CR100, CR150, CR200, CR300, CR450, CR600, CR750, CR800T, CR900, CR1200, CR1200S, CR1400T, CR1500, CR2000, CR2500, CR2400T, CR3200T, CR3800T, CR5000T, CR80B, CR80B-FC, CR80B-FCS, CR110B, CR120B, CR110BT, CR120B, CR240B, CR240BT, CR240BW, CR150B, CR150BT, CR300B, CR300BT, CR180B, CR200B, CR200BT, CR400B, CR400BT, CR400BW, CR01LK, CR110LK, CR160LK, CR300LK, CR600LK, CR750LK, CR900LK, CR1200LK, CRP2000E/D/G, CRP4000E/D/G/V, CRP6000E/D/G, CRP8000E/D/G, CRP12000E/D/G, CRP18000E/D/G, CRP25000E/D/G, CRP30000E/D/G, CRP40000E/D/G, CRT3000E/D/G, CRT6000E/D/G/V, CRT9000E/D/G, CRT12000-IR, CRT12000E/D/G, CRT18000E/D/G

CE marking: 16

covered by this declaration complying with the following directives:

Machinery Directive 2006/42/EC

Ecodesign 327/2011 directive 2009/125/EF as regards the eco-design fans driven by motors with input power between and 125W to 500kW

EMC Directive 2004/108/EC

RoHS 2011/65/EC

and are manufactured in compliance with the following harmonised standards:

EN12100:2010

Safety of machinery – general principles for design - Risk assessment and risk reduction

EN 60204-1:2006+A1:2009

Safety of machinery – electrical equipment

Part 1: General requirements

EN 61000-6-3:2007/A1:2011/AC:2012

Electromagnetic compatibility (EMC) -- Part 6-3: Generic standards - Emission standard for industrial environments **commercial and light-industrial environments**

EN 61000-6-2:2005

Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments

EN 61000-3-2:2006+A1:2009+A2:2009

Electromagnetic compatibility (EMC) -- Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

EN 61000-3-3:2013

Electromagnetic compatibility (EMC) — Part 3-2: Limits — Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

DK-Slagelse, 01.01.2016



Thomas Rønnow Olesen

HOW TO UPDATE AND IMPROVE THIS COTES DEHUMIDIFIER

Energy recovery

An energy recovery system can be placed beside the dehumidifier to reduce the amount of energy needed for heating the regeneration air.

Extra insulation

The doors of the Cotes dehumidifier can be insulated to ensure that the sound pressure level of the unit is reduced and to ensure that all energy (both cooling and heating) is kept inside the unit.

Additional/increased filter class

If cleaner air is needed, it is possible to replace the fitted filter with a different filter featuring other specifications.

If an additional filter is required, please contact a Cotes expert and find out how the unit can be changed for this to be done.

Next step

Please contact Cotes or a Cotes dealer to find the best solution.

WHO TO CONTACT

Help when and where you need it

Contact Cotes in Denmark or your local dealer:

Cotes contact information:

Cotes A/S
Ndr. Ringgade 70C
4200 Slagelse
Denmark
+45 5819 6322
info@cotes.com
www.cotes.com