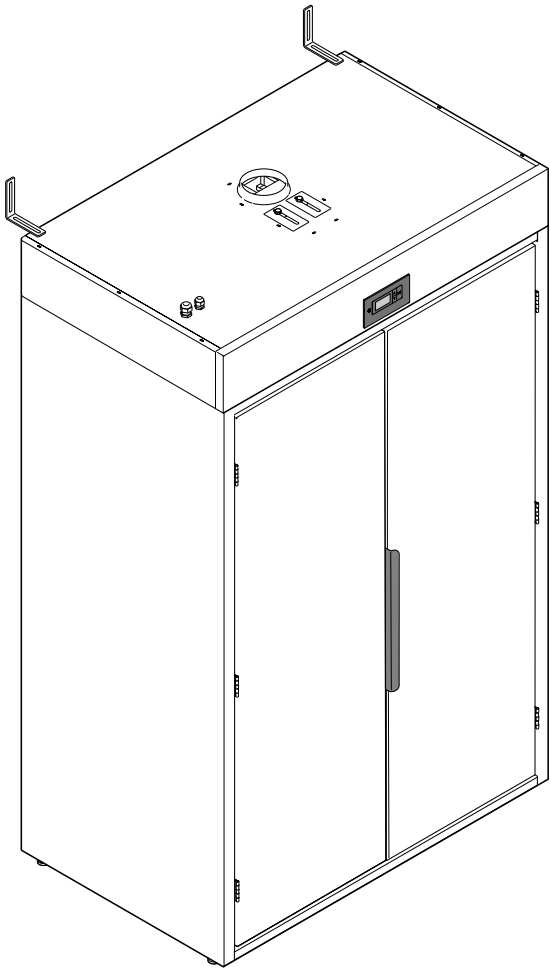
NIMO

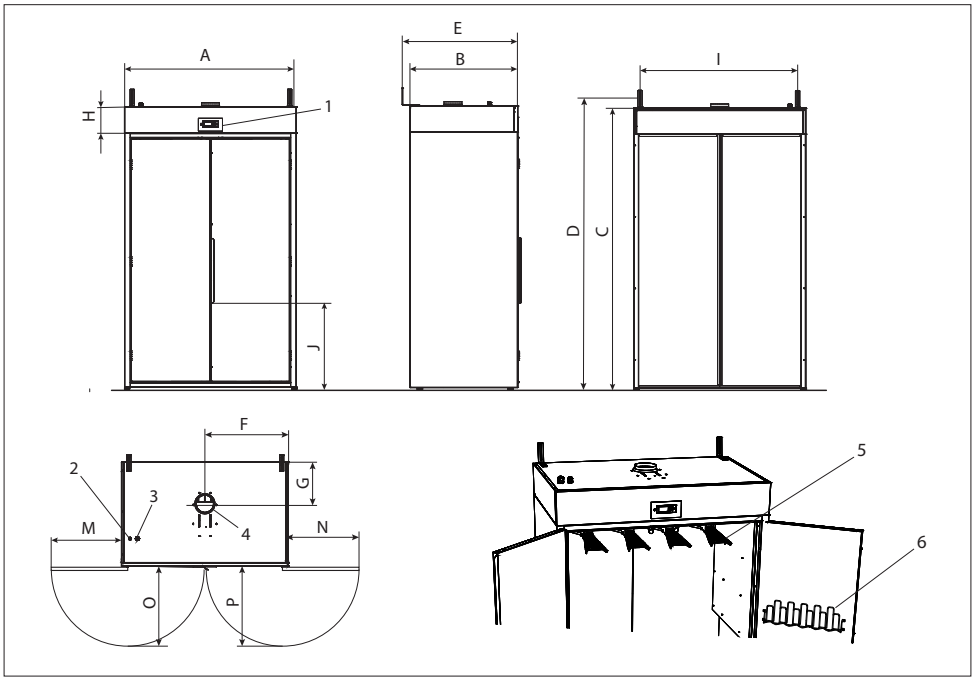
DC 120 WW



427001395

Keep this manual so that it is always available for future use.

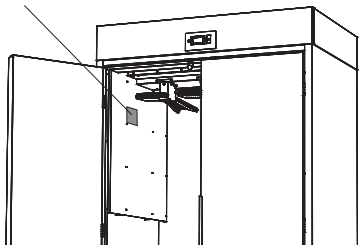
EN Drying Cabinet Service Manual



1	Control panel	4	Exhaust air connection ø125 mm. Connected permanently to separate duct or general ventilation
2	Electrical connection for external fan	5	Hangers
3	Electrical connection to mains	6	Door hangers

	A	B	C	D	E	F	G	H	I	J	M	N	O	P
mm	1200	750	1970	2035	820	600	300	185	1100	600	535	510	580	535

Identification plate



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CE UK CA

Doc. N0: 427001395 / 02

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This advice on safe operation has been compiled to enable you to avoid incorrect use and unnecessary risks of accidents and should be read before the drying cabinet is installed and used.

DO NOT MODIFY THIS PRODUCT

The drying cabinet must be installed and kept indoors.

CAUTION This equipment is intended only to be used to dry fabrics washed in water. Remove all objects from pockets, such as cigarette lighters and matches, before drying.

Maintenance must be carried out only by the manufacturer, the manufacturer's service agent or similarly qualified persons.

Only approved spare parts may be used.

Make sure that the power supply is turned off before maintaining or replacing parts.

Applicable to installation in the EU

This drying cabinet can be used by children over the age of 8 and persons (including children) with various disabilities or inadequate experience and knowledge, provided they are kept under supervision or are given instructions on how to use the appliance in a safe way and understand the risks that use entails.

Children must not play with the appliance.

Applicable to installation in countries outside the EU
The appliance is not intended for use by persons (including children) with various disabilities or inadequate experience and knowledge.

They may use the appliance only under supervision or if they have received instructions on how to use the appliance from a person who is responsible for their safety.

Children must be supervised to ensure that they do not play with the appliance.

1.1 Symbols

	Caution
	Read the instructions before using the machine
	Exercise caution as the drying cabinet is top-heavy and can easily tip over.

2 Air flow

The cabinet operates with negative pressure in the drying space.

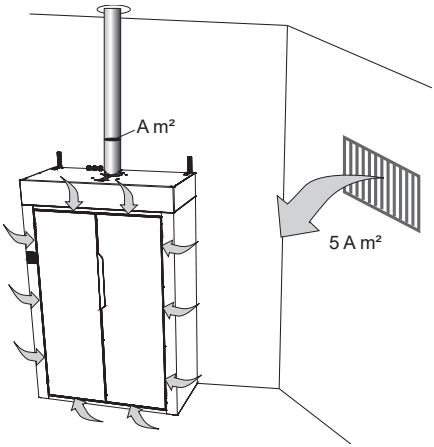
Air is drawn in by two fans through an air intake in the top section of the cabinet and through the door gaps of the cabinet.

The air is heated by three elements on the left side and three elements on the right side of the fan unit and blows across the damp garments through two openings, one on the left and one on the right.

The heated air will then take with it moisture from the garments.

The fan draws in the moist air, which is finally evacuated though the air exhaust hose (duct) on the top of the cabinet.

The air exhaust hose can be connected to the property's air exhaust duct.



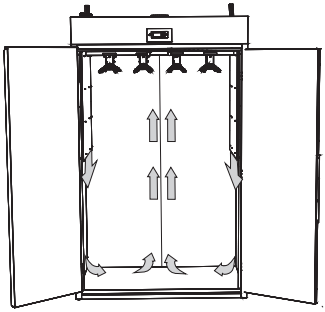
Function test

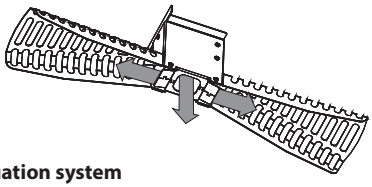
Check that:
- The fan starts
- The heating works by letting the cabinet operate for 5 minutes in a heating program. Open the door to sense whether the cabinet has heated up.

Air flow inside the cabinet

The illustration shows the air flow in the drying cabinet.

Air intake is on both the left-hand and right-hand sides and through the hangers.





Evacuation system

Outgoing air through four filters and on to the exhaust air connection.

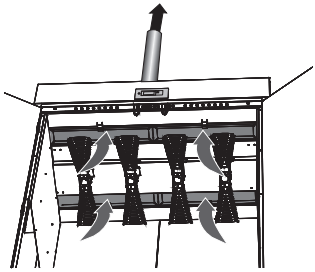
The drying cabinet must be connected directly to the ventilation duct (not via intermediary pipes or hoses).

The drying cabinet has an exhaust air flow rate of up to 250 cubic metres per hour. This air is initially taken from inside the room where the drying cabinet is located.

It is important to make sure that fresh air can enter the space from outside at the same flow rate as the air that is exhausted from the room.

The area of the air intake must be five times larger than the area of the evacuation pipe. The resistance in the grille/damper must not exceed 10 Pa (0.1 mbar).

The drying cabinet works most efficiently if the air flow is optimal.



Check the air flow in the exhaust air duct

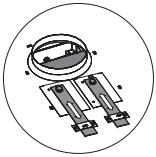
The air flow in the duct must be 200m3/h.

The air flow in the duct can be measured with the help of an air flow meter.

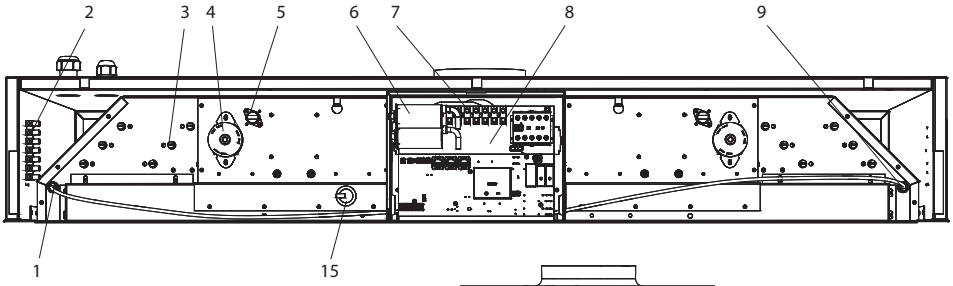
The measuring point should be placed as close to the top of the cabinet as possible in the evacuation channel.

Adjust the air flow

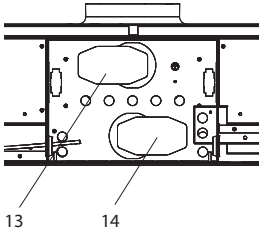
If necessary, adjust the air flow using the outlet damper mounted on top of the cabinet.



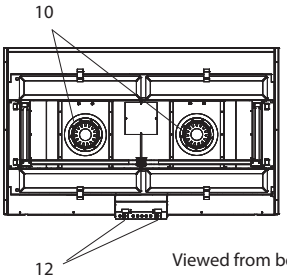
3 Components of the fan unit



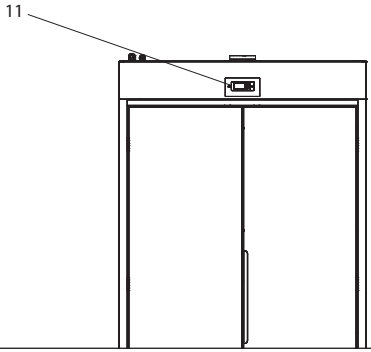
Moisture sensor: See section 7.2.



With electronic unit removed



Viewed from below



1	Temperature sensor, temperature of the cabinet. Left-hand side
2	Terminal block, mains
3	Element
4	Main control - Overheat cut-out
5	Thermostat / Overheat cut-out
6	Condenser
7	Internal terminal block
8	Electronic unit with circuit board

9	Temperature sensor, temperature of the cabinet. Right-hand side
10	Fan motors
11	Control panel
12	Door switch
13	Damper actuating motor, evacuated volume of air
14	Damper actuating motor, controls the drying process internally and externally
15	Moisture sensor

4 Fan motor and condenser

Function

The cabinet has two fans that create correct air flow in the cabinet.

The condenser creates correct operating conditions for the fan.

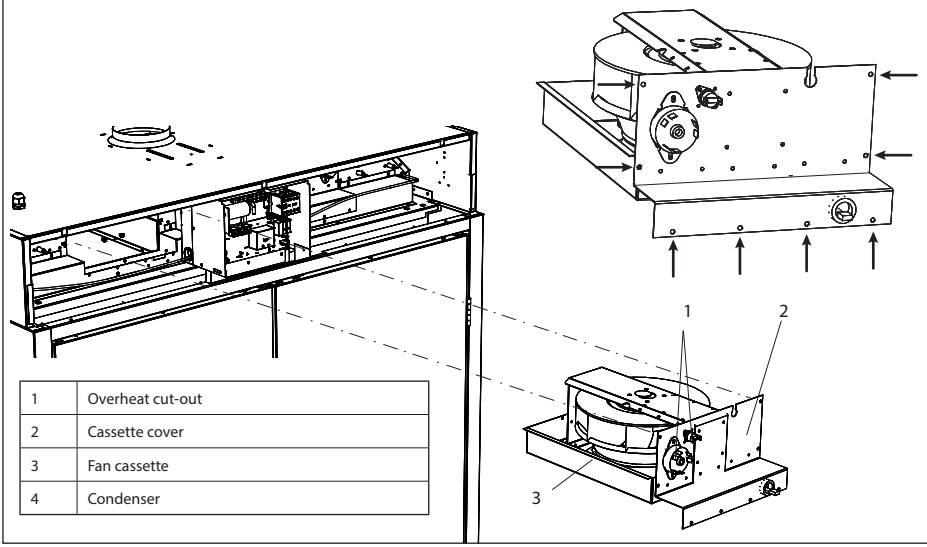
Fault tracing

- If neither of the fans is running, check that there is power supply from the electronics.
- If one of the fans is not running, replace the associated condenser.
- If that does not help, replace the fan.
- Does the fan sound wrong? Replace fan and condenser.

NB: When replacing a fan motor, the associated condenser must also be replaced.

4.1 Replacement of fan

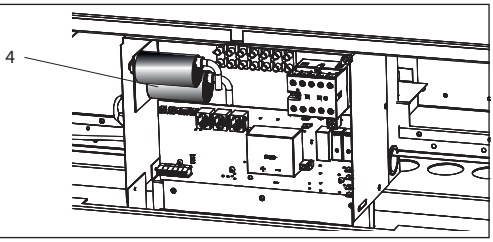
- **Disconnect the power supply to the appliance.**
- Disconnect the flat blade contacts on the two overheat cut-outs (1).
- Remove the cassette cover (2) holding the fan cassette (3). The cassette cover is attached by 8 screws in the chassis, while 8 screws hold the fan cassette.
- Detach the screws highlighted by arrows.
- Pull out slightly to reveal the flat blade contacts for the fan. Detach these.
- Pull the unit out completely.
- Remove the fan from the motor attachment.
- Install the new fan on the motor attachment.
- Slide in the fan cassette so that it is easy to connect the fan cable and secure it.
- Slide the fan unit in fully.
- Re-install the cassette cover and connect cables.
- Re-install the front panel.



1	Overheat cut-out
2	Cassette cover
3	Fan cassette
4	Condenser

4.2 Replacement of condenser

- Detach the **condenser** belonging to the fan to be replaced from the terminal block**.** The condenser is installed with a serrated washer and nut.
- Re-install the new condenser with serrated washer and nut, and connect the cables to the terminal block.
- Re-install the front panel.



5 Door switch

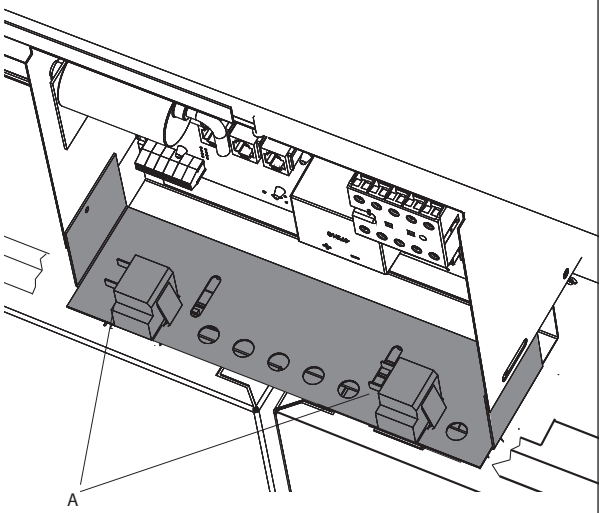
Function
Starting regulation, the cabinet cannot start unless the door is closed.

If the door switch is not activated, the cabinet will not start.

Fault tracing
- **Disconnect the power supply to the drying cabinet.**
- Use multimeter with buzzer function.
- Check that the cables to the door switch are intact and properly attached. It is connected with 3 flat blades against the door switch and with a contact on the circuit board. The contact of the door switch is normally open. Check that there is contact between the pins when the switch is activated.

5.1 Replacement of door switch

- **Disconnect the power supply to the appliance.**
- Detach the two flat blade connections on the door switch to be replaced.
- Press the door switch (A) out from the door panel plate in the fan box.
- Install the new door switch in the reverse order.



6 Overheat cut-out

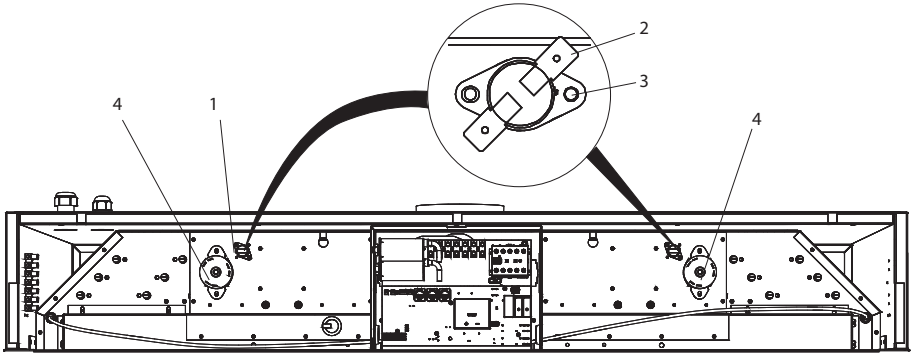
6.1 Thermostat / Overheat cut-out for heat regulation

Function
This overheat cut-out interrupts the drying process if the cabinet becomes warmer than the set optimal value. The thermostat is reset automatically when the temperature has fallen below the factory-set value.

Fault tracing
Disconnect the power supply to the drying cabinet.

Thermostat / Overheat cut-out for regulation of heat. At normal operating temperature the contact is closed, NC. Cut-out temperature 110 °C.

Replacement of thermostat
- Detach the flat blade contacts (2) in the faulty thermostat. Carefully unscrew the two retaining screws (3).
- Replace the thermostat.
- Re-install in reverse order.



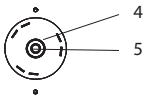
6.2 Main regulator / Overheat cut-out for overheated drying cabinet

Function
If the drying cabinet is overheated, these overheating thermostats open and the drying cabinet switches off. The drying cabinet cannot be used until the overheating thermostats are reset.

Reset manually with a button in the middle of the overheating thermostats.

Resetting is done by a service technician after the cause has been established and rectified.

Reset the overheating thermostats.
- **Disconnect the power supply to the appliance.**
- Press the reset button (5) on the overheating thermostat that has been opened (check both).



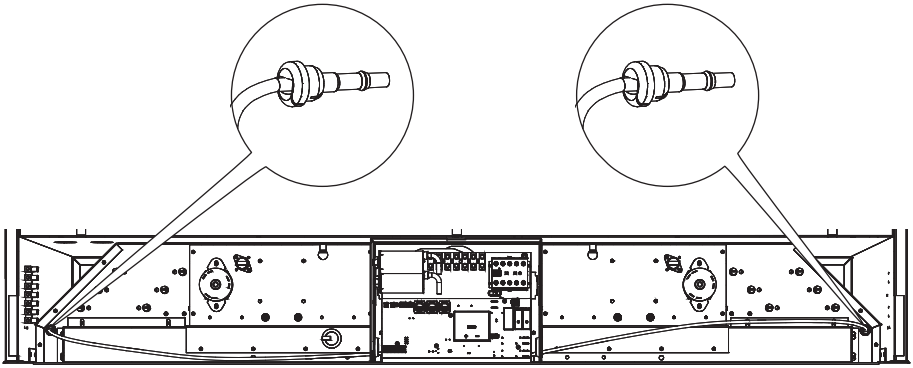
Resetting must not be done until the cause of the overheating has been verified and rectified. Check, for example, the fans and the filter.

1	Thermostat / Overheat cut-out for regulation of heat
2	Flat blade contact
3	Fixing screw
4	Main regulator / Overheat cut-out for overheated drying cabinet
5	Reset button

7 Regulation of drying process

Function
The drying process is controlled by two **temperature sensors,** KTY81-110, and one **moisture sensor**. The moisture sensor reads off the cabinet moisture. If the sensors do not work properly, the laundry will not dry.

7.1 Temperature sensors



Fault tracing
Check the sensors by measuring them with the aid of the table in the section Technical Data. If the values are not correct according to the table, the sensors must be replaced.

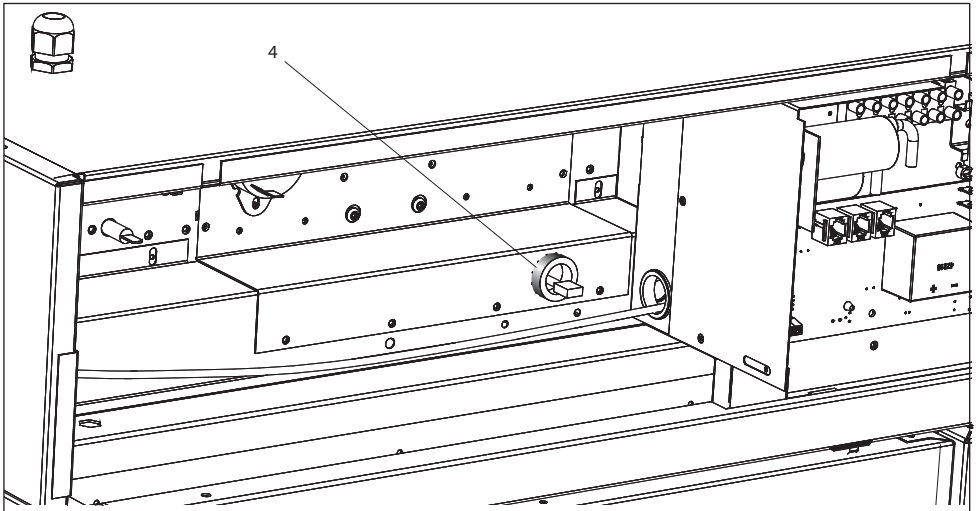
Replacement of temperature sensor
- **Disconnect the power supply to the appliance.**
- Carefully detach the cable sleeve and replace the temperature sensor.
- Re-install in reverse order.

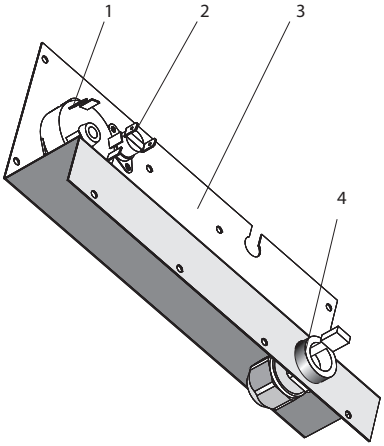
7.2 Moisture sensor

The moisture is installed in the fixing plate for a left-hand fan unit.

Function

The drying process is controlled using a moisture sensor, HIH 4000. The drying process is interrupted when air humidity in the cabinet has fallen to a set value. If the sensor does not work properly, the laundry will not dry fully or or will dry too much.





- **Disconnect the power supply to the appliance.**
- Detach the flat blade contacts on the two overheat cut-outs.
- Remove the fixing plant (3) which is secured with 16 screws.
- The moisture sensor now becomes accessible for replacement.
- Re-install in reverse order.

1	Thermostat - Overheat cut-out
2	Main control - Overheat cut-out
3	Fixing plate
4	Moisture sensor

8 Heating element

Function
Generates heat in the cabinet.

Fault tracing
The power supply to the drying cabinet must be disconnected.

In measurement of a cold element, the resistance value must be between 48.8 and 56.7 ohms between element connection and ground.

Carry out an isolation test, measure between outer casing and element. The value must be above 10 ohms.

It is also possible to measure power/current to check that the coil is intact. This can be done most easily with the cabinet in operation.

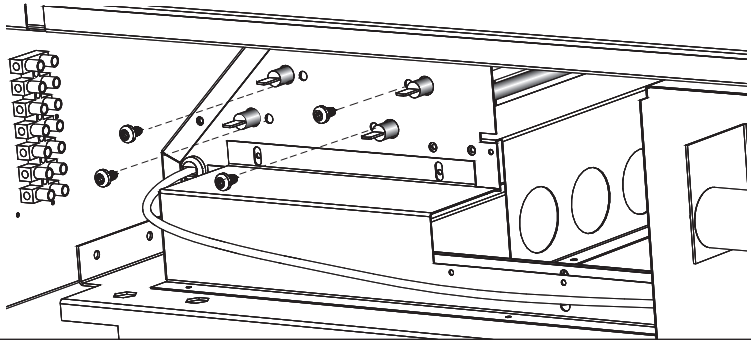
8.1 Replacement of heating element

- **Disconnect the power supply to the appliance.**
- Remove the **cassette cover.** The cassette cover is attached with 8 screws.
- Pull the fan cassette out slightly so that you have access to detach the connection of the fan motor and then pull out the whole **cassette.**

Remove the fan unit in accordance with section 4.1.

When the fan unit has been removed, the heating element can be easily accessed. There are three heating elements on each side.

- Disconnect the leads to the heating element to be replaced and remove the element.
- Install and connect the new heating element.
- Slide in the fan unit, connect the fan motor, and screw into place.
- Refit the front panel.



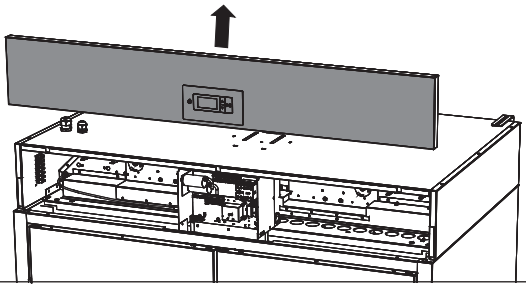
9 Control panel

Function
Program selector for the automatic drying programmes for impregnation of membrane garments or normal drying suitable for padded workwear/emergency services suits.

9.1 Replacement of control panel

Disconnect the power supply to the cabinet before starting work.

- Loosen two screws (torx T20) underneath the front panel. Square holes in the frame.
- Slide the front panel upwards until it detaches from the guide flanges.
- Carefully detach the modular contact located on the rear of the control panel.
- Press in the lock hooks to detach the control panel.
- Connect the cable to the new control panel and press home in the front panel.



10 Damper actuating motors

Function
The cabinet has 2 dampers with associated damper actuating motor.

The **upper damper actuating motor (A)** controls the evacuated volume of air. The **lower damper actuating motor (B)**controls the air flow during the drying process internally and externally. Internally through the clothes hangers and externally through both sides of the air drums.

Fault tracing
Check that there is 230V power supply to the **damper actuating motor.**

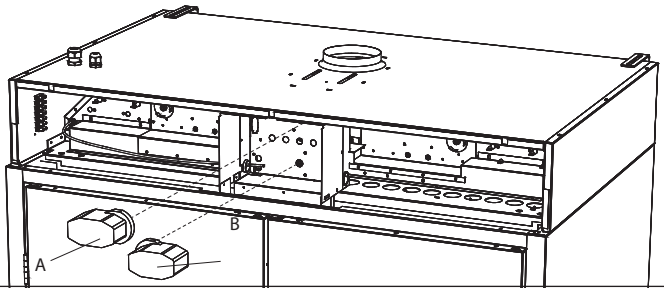
Measure between pin 2 = N (blue cable) and pin 3 = L (white cable) on Mate-N-Lock contact.

If an abnormal value is obtained, the motor should be replaced.

10.1 Replacement of damper actuating motor

Disconnect the power supply to the cabinet.

- Remove the electronic unit.
- Disconnect, 3-pin Mate-N-Lock contact from the associated damper actuating motor.
- Grasp the motor with your hand and pull it out.
- Install in reverse order.



A	Damper actuating motor controlling evacuated volume of air
B	Damper actuating motor controlling the air flow during the drying process

11 Electronic unit

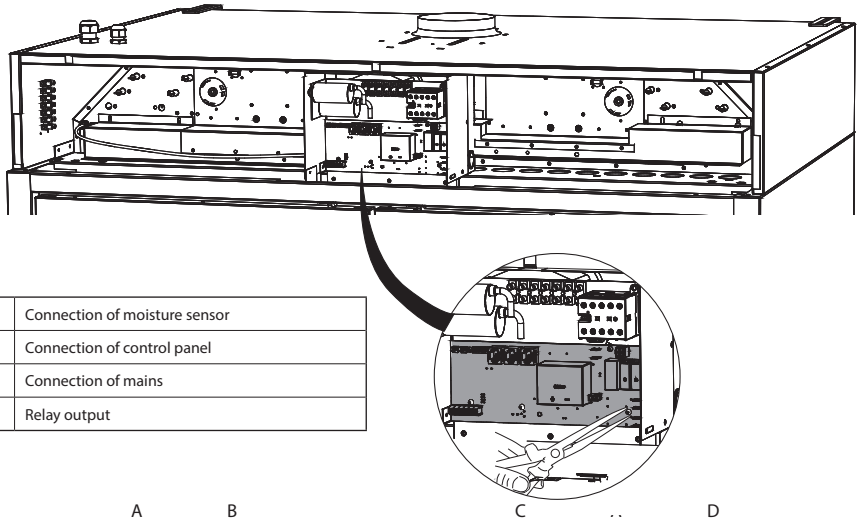
Function
Controlling the drying process.

Fault tracing
- Check that there is power supply to the electronics, 230V. Attachment at the two flat blades (C).
- Start drying programme.
- Check the relay unit of the electronics (D). This closes a circuit to the fan unit.

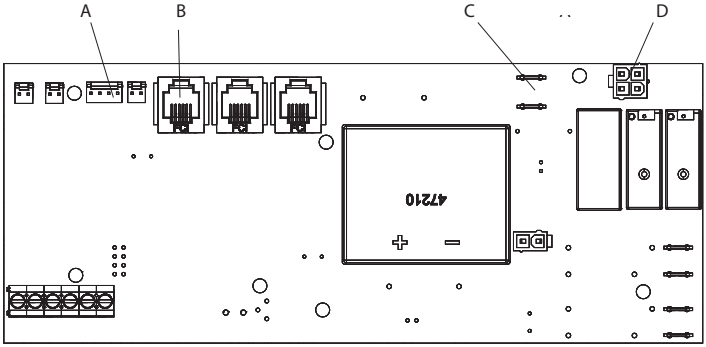
The work must be done with the appliance switched on

11.1 Replacement of circuit board

- **Disconnect the power supply to the cabinet.**
- Disconnect the connections for the moisture sensor (A), control panel (B), connecting cables (C) and cables to the relay output (D) from the circuit board.
- Using needlenose pliers, detach 6 PCB holders on the front of the circuit board. New ones are supplied when the PCB is replaced.
- Install the new circuit board with the new PCB holders.
- Install other parts in reverse order.



A	Connection of moisture sensor
B	Connection of control panel
C	Connection of mains
D	Relay output



12 Setting of drying programme

There are ways of optimising the two automatic programmes of the drying cabinet according to prevailing installation conditions.

This is done by adjusting the parameter values for the automatic programme concerned on the control panel.

The values are displayed as follows:

the **top row** of the display shows the current parameter, e.g. "P 2195", the **bottom row**shows the set value.

Changes must be made only if it is found that the

- ☐ the laundry does not dry sufficiently.
- ☐ the laundry is over-dried – long drying time.

12.1 Introduction

The drying cabinet is equipped with two automatic programmes **Norm dry** and **Impregnation**

Programme **Normal dry** ***controlled by moisture sensor.***
Programme **Impregnation** ***controlled by a moisture sensor and a time factor.***

The drying procedure closes automatically when the laundry is dry.

To decide when the laundry is dry, a measured value is compared against a factory-set parameter. See table in section 13.

Drying processes must always be optimised in small steps; start by adjusting the current parameter 1-2 units up or down, then check the result after the next drying process and make a further adjustment if necessary.

- ☐ If it is found that the laundry does not dry sufficiently in the:

  automatic programme **Normal dry**
  reduce the parameter value for **P 2195.**

  automatic programme **Impregnation**
  increase the parameter value for **P 2205.**

- ☐ If it is found that the laundry is over-dried, long drying time in the:

  automatic programme **Normal dry,**
  increase the parameter value for **P 2195.**

  automatic programme **Impregnation,**
  reduce the parameter value for **P 2205.**

12.2 Procedure

- Make sure that the main ON/OFF switch on the drying cabinet is turned off. The display is unlit.
- Hold down the UP ARROW and DOWN ARROW BUTTONS and press the ON/OFF switch to the "ON" position.

  The display lights up and shows the parameter "P 105" and the set value for P 105.

  The row with the relevant parameter flashes on the display.
- Step through to the relevant parameter by pressing the UP ARROW or DOWN ARROW buttons repeatedly.

  If you go too far, simply continue stepping through until the display shows the correct parameter.
- When the display shows the correct parameter, for example "P 2195", press START/STOP to confirm parameter selection.

  The row now flashes with the set value of the parameter.
- Increase or reduce the parameter value using the UP ARROW or DOWN ARROW buttons.
- To save the set value, press START/STOP.
- To return to operating value, press DOWN ARROW and START/STOP.

12.3 Restoring to factory setting

- Go to parameter display mode as above.
- Hold down the UP ARROW and DOWN ARROW buttons and press START/STOP.
  The factory settings are saved and replace any adjustments made. The display shows the last run programme.

			DEF	MIN	MAX			
Basic Parameter	P_105	Language	1	10	0		Selection of language	
	P_115	Parental control ON/OFF	0	0	1		Means that all button presses have to be maintained for 3 seconds.	
[redacted]	P_140	Test sequence on time in secs	10	0	255	s	Test sequence	
	P_141	Test sequence pause time in secs	3	0	255	s		
	P_150	Enable appl specific runtime params	0	0	255			
Standard	P_2191	Min_operating_time	3	3	30	min	Time that passes before sensors start measuring to run	
	P_2192	Max_operating_time	300	30	500	min	Maximum time for the whole programme.	If exceeded, Error 4 is given.
[redacted]	P_2193	Setpoint_heating	65	30	120	C	The cabinet is heated to this temperature with dampers closed	
	P_2194	Setpoint_drying	72	30	120	C	Regulating temperature for the drying process	
	P_2195	Drying_humidity	12	10	90	RH%	Limit for air humidity when dry	
	P_2196	Deep_drying_time	30	30	120	min	Timed extra drying time inside of clothes	
	P_2197	Drying_outside_time	20	20	120	min	Timed extra drying time outside of clothes	
	P_2198	Recond_outside_time	7	1	60	min	Cooling of clothing outside	
	P_2199	Recond_inside_time	7	1	60	min	Cooling of clothing inside	
Impreg	P_2201	Min_operating_time	3	3	30	min	Time that passes before sensors start measuring to run	
	P_2202	Max_operating_time	300	30	500	min	Maximum time for the whole programme.	If exceeded, Error 4 is given.
[redacted]	P_2203	Setpoint_heating	70	30	120	C	The cabinet is heated to this temperature with dampers closed	
	P_2204	Setpoint_drying	78	30	120	C	Regulating temperature for the drying process	
	P_2205	Drying_humidity	16	10	90	%	Limit for air humidity when dry	
	P_2206	Deep_drying_time	30	30	120	min	Timed extra drying time inside of clothes	
	P_2207	Setpoint_Impr	80	30	120	C	Regulating temperature for the impregnation process	
	P_2208	Impr_time	25	5	60	min	Time for the impregnation process	
	P_2209	Recond_outside_time	7	1	60	min	Cooling of clothing outside	
	P_2211	Recond_inside_time	7	1	60	min	Cooling of clothing inside	

14 Error codes / Fault-tracing guide

No.	Name	Description / Action
ERR 01	Error in left temperature sensor for the cabinet temperature	See section 7.1.
ERR 02	Error in right temperature sensor for the cabinet temperature	See section 7.1.
ERR 04	Max. time for drying process exceeded	Pre-set value 300 min can be changed with parameter P 2193
ERR 05	Overheating	See section 6.
ERR 08	Clean filters 100 hours	Clean the lint filter. See Operating Manual.
ERR 12	Timeout communication	The communication between the control panel and the electronics has been temporarily interrupted. See section 11.

To reset an error code, hold down the **START/STOP** button for 5 sec.

Questions	Action
The drying cabinet is not working.	1. Check that the mains lead is firmly attached. 2 Check that no fuse has tripped. 3 Have you pressed the start button? 4 Are the doors closed? 5 The overheat cut-out may have tripped. 6 The main regulator may have tripped.
The door does not close tightly/ is ajar.	Check that the cabinet is level. Check with a spirit level, adjust if necessary with the adjusting feet.
No heat in the cabinet	1 Check the temperature sensors the cabinet temperature. See section 7.1. 2 Check elements. See section 8.
The drying cabinet fails to start.	1 Check that no fuse has tripped. 2 Have you pressed the start button? 3 Are the doors closed? 4 Check connecting cable. 5 Check the control panel. 6 Check the door switch. 7 The overheat cut-out may have tripped. See section 6. 8 The main regulator may have tripped. See section 6.
Drying takes a long time.	1 Check that the correct programme has been selected for the type of laundry. 2 Check moisture sensor. See section 7.2. 3 One of the fans fails to start. See section 4.
The laundry does not become dry.	1 Make sure that the correct programme has been selected for the type of laundry. 2 The overheat cut-out may have tripped. See section 6. 3 One of the fans fails to start. See section 4. 4 Check the door switch. See section 5. 5 Check temperature sensor, temperature of the cabinet. See section 7.1. 6 Check the moisture sensor. See section 7.2. 7 The element fails to start. See section 8.
Fault tracing at component level	Door switch Overheat cut-out Temperature sensor, temperature of the cabinet. Moisture sensor Element Fans Connecting lead Electronic unit (PCB) Control panel

15 Technical data

Capacity	kg tvätt kg pyykkiä kg laundry	15
Dewatering capacity	g/min *)	57
Electrical connection	400V 3N AC 50Hz	
Fuse protection slow,	A	10
automatic fuse	A	13
Motor	W	2 x 155
Heating element output:	W	6 x 1000
Overheat cut-out		Ja/Kyllä/Yes
Evacuated volume of air:	m^3/tim	250
Detachable hangers		4
Net weight	kg	134
Sound pressure level A-weighted emission sound pressure level	dB(A)	< 70

*) 15 kg dry weight at 42% residual moisture

Manufacturing standards
See cabinet identification plate

Wiring diagram
A wiring diagram is packed with the product and is available to download from the manufacturer.

CE declaration
CE declaration (Declaration of Conformity) is packed with the product.

16 Temperature sensor KTY

Measurement table

Ambient temperature, corresponding resistance, temperature coefficient and maximum expected temperature error for KTY81–110.

I cont = 1 mA

Ambient temperature		Temp. coeff.	KTY81-110			
°C	°F	%/K	Resistance (Ω)			Temp. error
			Min	Typ.	Max.	(K)
-55	-67	0,99	475	490	505	±3,02
-50	-58	0,98	500	515	530	±2,92
-40	-40	0,96	552	567	582	±2,74
-30	-22	0,93	609	624	638	±2,55
-20	-4	0,91	669	684	698	±2,35
-10	14	0,88	733	747	761	±2,14
0	32	0,85	802	815	828	±1,91
10	50	0,83	874	886	898	±1,67
20	68	0,80	950	961	972	±1,41
25	77	0,79	990	1000	1010	±1,27
30	86	0,78	1029	1040	1051	±1,39
40	104	0,75	1108	1122	1136	±1,64
50	122	0,73	1192	1209	1225	±1,91
60	140	0,71	1278	1299	1319	±2,19
70	158	0,69	1369	1392	1416	±2,49
80	176	0,67	1462	1490	1518	±2,8
90	194	0,65	1559	1591	1623	±3,12
100	212	0,63	1659	1696	1733	±3,46
110	230	0,61	1762	1805	1847	±3,83
120	248	0,58	1867	1915	1963	±4,33
125	257	0,55	1919	1970	2020	±4,66
130	266	0,52	1970	2023	2077	±5,07
140	284	0,45	2065	2124	2184	±6,28
150	302	0,35	2145	2211	2277	±8,55