



COMTESSE Air Curtain

This Instruction Manual contains important instructions and safety precautions. Please read and observe all instructions provided in this Manual prior to installing the Air Curtain to ensure a correct and safe operation of the device. This Manual including technical specification is subject to change without prior notice. Please keep this Manual for future reference. Instructions provided in this Manual shall be considered an integral part of the product. Any changes or interventions to the inner connexion are prohibited, and lead to cancellation of the warranty. We recommend to use the accessories supplied by us. In the case other than original accessories or regulations are used the product may be damaged. The manufacturer is not responsible for damage occurred as a result of using non-original accessories (regulations), or improper use of the accessories (regulations).

1 DECLARATION OF CONFORMITY / CERTIFICATION

Declaration of Conformity / Certification

The COMTESSE air curtains are manufactured in compliance with the applicable international regulations and legislative, and they meet the requirements for electrical, mechanical and noise-related safety.

Regulations

Government Order No. 170/1997 Coll., that lays down the technical requirements for machinery (corresponding with the Directive 98/37/EC of the European Parliament and of the Council of 22 June 1998 on the approximation of the laws of the Member States relating to machinery)

Government Order No 168/1997 Coll., that lays down the technical requirements for low voltage electrical equipment (corresponding with the Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits)

Government Order No. 169/1997 Coll., that lays down the technical requirements for products relating to their electromagnetic compatibility (transposing the Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility)

2 COMTESSE AIR CURTAIN

2.1 USE AND OPERATION CONDITIONS

Prior to installing the air curtain please read this Instruction Manual and observe instructions provided therein. The Manual include important information not only for installation and application, but also safety and maintenance instructions for the air curtain. Air curtain shall be installed and connected by qualified professional in accordance with the installation instructions and applicable regulations. Warranty may become void if these instructions and regulations are not adhered to.

- The Comtesse air curtains are designed for an indoor use in dry areas with the ambient temperature ranging from 1°C up to +40 °C for transportation of air free of oil, chemical vapours and other impurities
- Relative air humidity should not exceed 80%
- If an air curtain was exposed to other than operating temperatures during transport (this applies to temperatures lower than 0 °C), after removal from its package it shall be kept at an ambient temperature for at least 2 hours to balance the temperature inside the air curtain
- Within immediate vicinity and within 100mm distance from air curtain in all directions can be placed only incombustible materials (not burning, not glowing, not charring) or hardly combustible materials (not burning, mostly glowing and charring e.g. plasterboard). These materials, however, shall not cover suction nor exhaust parts. Safe distances of combustible materials from electrical products are governed by the national technical standards

OPERATION INSTRUCTIONS

- The following provisions apply to the safe distance of the building structure surfaces, flooring and objects made of combustible materials from the air curtain fitted with electrical heating:
 - Safe distance of combustible materials in the main air flow direction (behind outlet) is 500 mm
 - Safe distance of combustible materials above the air curtain is 500 mm
 - Safe distance of combustible materials in all other directions is 100 mm
- IP rating of the air curtain is IP20
- As per requirements of EN 292-2+A1:2000, EN 60335-1: 1997, a lockable switch shall be installed in the vicinity of devices designed for ~400V with the minimum contacts distance of 3 mm, unless the device is connected via mains plug
- A main switch disconnecting all mains poles shall be installed in the power supply
- Minimum specified distances shall be observed for each installation, see figure
- Electrical wiring of the air curtain shall be performed by authorized personnel only, see "Electric System Connection"
- Never run damaged air curtain
- Air curtain operators shall be trained and familiarized with this Instruction Manual
- We recommend retaining this Instruction Manual for future reference

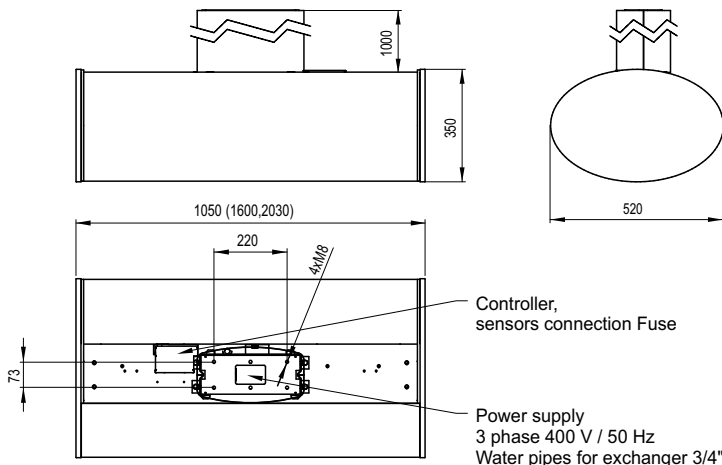
2.2 DESCRIPTION

The COMESSE air curtain is designed for horizontal installation above the door opening. It is offered in standard lengths of 1, 1.5 and 2 m. In the version without heating unit, the curtain is equipped with manual electronic regulation. In the version with water or electric heating, the curtain is equipped with integrated electric and water heating control and a new control panel with LCD display. In the automatic mode, the air and heating outputs are regulated automatically in compliance with required room temperature, actual room temperature and outdoor temperature. In the manual mode three fan speed and three steps of heating can be regulated. All Comtesse air curtains can be chained connected together and controlled through a single controller. DS door contact, SH timer and TER-P room thermostat can be connected to Comtesse air curtain.

The air curtain is delivered suspension holder inclusive with all connections made inside power supply and heating medium connections. The standard colors are silver metallic, champagne metallic and dark grey metallic.

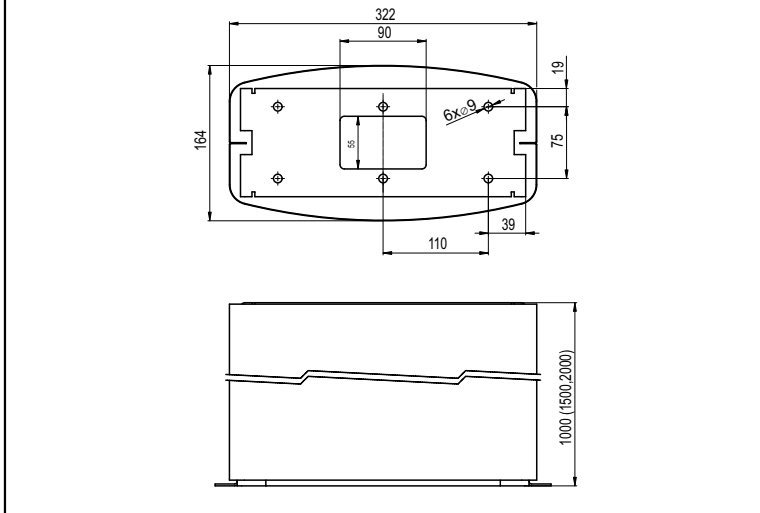
2.3 MAIN PARAMETERS

Dimensions of air curtain



OPERATION INSTRUCTIONS

Dimensions of the suspension holder



Basic parameters

Type	Door height [m]	Air curtain length [mm]	Air flow [m ³ /h]	Noise level [dB(A) 3m]	Heater output [kW]	Power voltage [V/Hz]	Current [A]	Weight [kg]
VCC-C-10S-1	6	1050	2550	50,5	-	230/50	1,1	29
VCC-C-15S-1		1600	3825	53	-	230/50	1,7	41
VCC-C-20S-1		2030	5100	54,5	-	230/50	2,2	50
VCC-C-10E-2		1050	2500	50,5	9,5	400 + N/50	14,9	32
VCC-C-15E-2		1600	3750	53	15	400 + N/50	23,4	45
VCC-C-20E-2		2030	5000	54,5	19	400 + N/50	29,7	54
VCC-C-10W-2		1050	2400	50	20,1*	230/50	1,1	37
VCC-C-15W-2		1600	3600	52,5	31,6*	230/50	1,7	52
VCC-C-20W-2		2030	4800	54	42,8*	230/50	2,2	62

* Values are measured at ambient temperature 18°C and temperature drop 90/70°C

Parameters for electric heater

Type	Air flow [m ³ /h]	Heat output [kW]	Outlet temperature increase Δt [°C]
VCC-C-10E-2	2500	9,5	10,6
VCC-C-15E-2	3750	15,0	11,1
VCC-C-20E-2	5000	19,0	10,6

Parameters for water exchanger

Values are measured at ambient temperature 18°C and temperature drop 90/70°C.

Type	Air flow [m ³ /h]	Heat output [kW]	Outlet temperature increase [°C]	Water flow [l/s]	Pressure loss [kPa]
VCC-C-10W-2	2400	20,10	42,8	0,25	2,84
VCC-C-15W-2	3600	31,64	44,0	0,39	3,33
VCC-C-20W-2	4800	42,85	44,4	0,53	3,04

Values are measured at ambient temperature 18°C and temperature drop 80/60°C.

Type	Air flow [m ³ /h]	Heat output [kW]	Outlet temperature increase [°C]	Water flow [l/s]	Pressure loss [kPa]
VCC-C-10W-2	2400	16,35	38,1	0,20	2,06
VCC-C-15W-2	3600	25,83	39,2	0,31	2,45
VCC-C-20W-2	4800	35,10	39,6	0,43	2,26

Values are measured at ambient temperature 18°C and temperature drop 70/50°C.

Type	Air flow [m ³ /h]	Heat output [kW]	Outlet temperature increase [°C]	Water flow [l/s]	Pressure loss [kPa]
VCC-C-10W-2	2400	12,58	33,5	0,15	1,37
VCC-C-15W-2	3600	19,98	39,2	0,24	1,57
VCC-C-20W-2	4800	27,29	34,8	0,33	1,47

OPERATION INSTRUCTIONS

Values are measured at ambient temperature 18°C and temperature drop 60/40°C.

Type	Air flow [m ³ /h]	Heat output [kW]	Outlet temperature increase [°C]	Water flow [l/s]	Pressure loss [kPa]
VCC-C-10W-2	2400	8,78	28,8	0,11	0,78
VCC-C-15W-2	3600	14,11	29,6	0,17	0,88
VCC-C-20W-2	4800	19,43	30,0	0,24	0,88

The hot water exchanger made of CU/Al material is intended for a maximum operational temperature of water of +130°C and a maximum corresponding operational pressure of 1,8 MPa.

2.4 TRANSPORT AND STORAGE

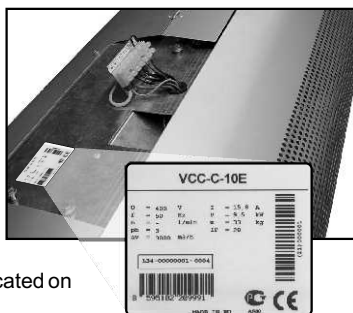
Wooden crating is used for shipping the air curtain, which protects the unit against damage. Suspension holder is packaged separately in a box. When handling the unit it is necessary to avoid mechanical damage e.g. by falling. The air curtain shall be kept in dry areas under storage temperature of 0 °C up to +40 °C.



2.5 DELIVERY INSPECTION

On delivery please make sure immediately that the packaged product does not show any traces of damage. Please check that you received product you had ordered. If any defect is identified do not unpack the air curtain and report the defect to the supplier immediately.

In case that package is damaged, report the same to the freight carrier. If the claim is not presented in a timely manner, all corresponding future claims shall be rejected. Position of the product label is indicated on the picture.



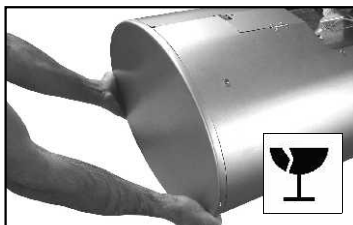
Standard delivery of the air curtain includes the following items:

- Comtesse air curtain
- Suspension holder, 1 m length (standard length), including two covers and accessories
- Basic or comfort control panel
- Interconnection cable, 5 m length
- External temperature sensor with 5 m cable (in the version with water or electric heating)
- Instruction manual

2.6 UNPACKING

When unpacking remove the suspension holder first, which forms a standard part of the delivery and it is packaged separately. Continue by removing the air curtain. Then remove the plastic packaging materials. All steps shall be carried out carefully to avoid damage to the air curtain casing and especially plastic side of the air curtain. Please keep the Instruction Manual, which is located under the protective cover.

The product is shipped in protective cover. All packaging materials used are environment-friendly and they can be re-used or recycled. Please contribute to the environment protection actively. Ensure a proper disposal and recovery of the packaging materials.



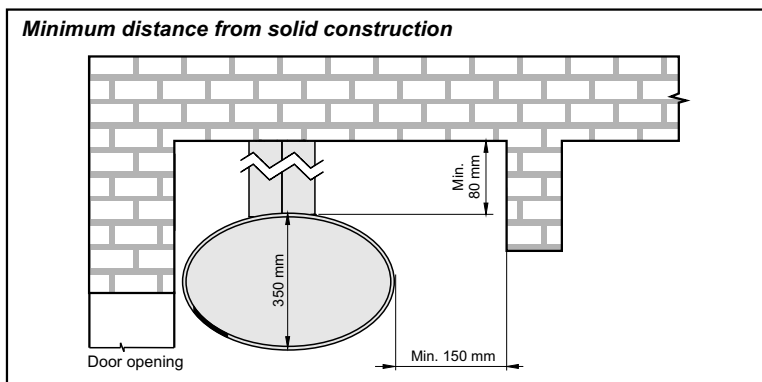
OPERATION INSTRUCTIONS

3 INSTALLATION AND ASSEMBLY

3.1 ASSEMBLY INTO WORK POSITION

Principles of air curtain installation and ensuring its proper operation:

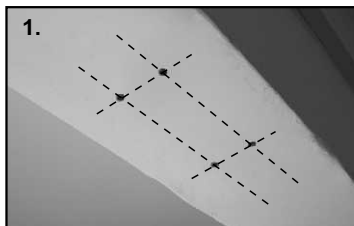
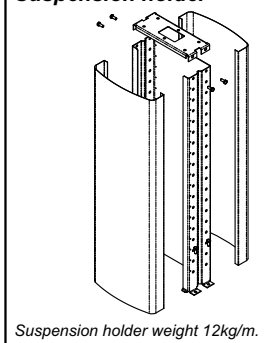
1. The air curtain should be located as close to the door opening edge as possible.
2. The air curtain should be be at least 80 mm wider than the door opening covered by the unit.
3. Distance of the air curtain from the ceiling shall be at least 100 mm, unless specified otherwise. See "Safety and Operating Conditions". This distance is needed to perform connection of the air curtain and heater to the heating water supply and power supply. The air-curtain suction shall be located at least 150 mm from the solid wall in order to avoid obstruction of air supply to the unit.
4. If there is a foyer in front of the area protected by the air curtain, it is preferred to install the unit in the protected area. If the unit was installed in the foyer, the heat savings would be considerably smaller and it would be impossible to use the air curtain to heat the area protected.



Power supply shall be ensured prior to installing the air curtain in the required position. This depends on the particular application of the unit and on its electrical parameters (See "Electric System Connection" for additional information). If an air curtain with a water heater is used, cold and warm water supply shall also be secured (See "Connecting the Water Heat Exchanger" for additional information)!!! A suspension holder for the ceiling installation is shipped together with the Comtesse air curtain as a standard accessory. The package also includes the following installation accessories:

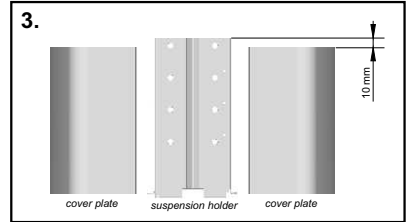
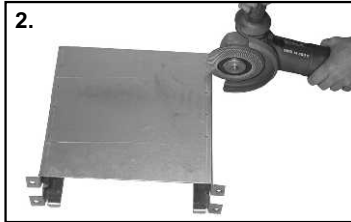
- basic suspension holder
- two cover plates for the suspension holder
- ceiling mounting bracket
- bolts

Suspension holder

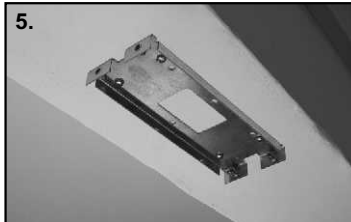


Mark out the air curtain installation place including required length of the suspension holder.

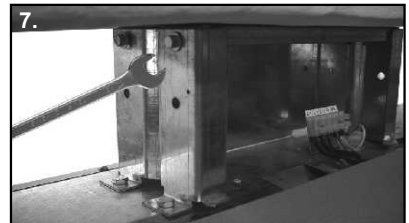
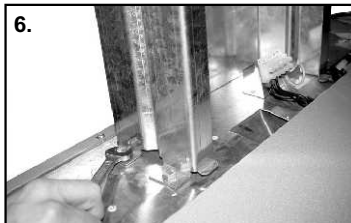
OPERATION INSTRUCTIONS



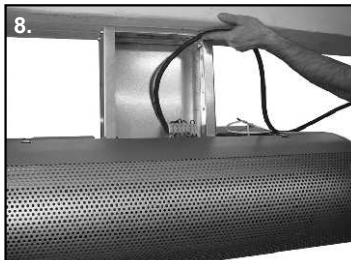
Adjust length of the suspension holder and both cover plates to required length (The suspension holder has small openings through which the axis of the cut to shorten the column to required length must be routed; the covering metal sheet must be 10 mm shorter than the holder).



Adapt the suspension holder and both cover plates to a required length.



Bolt the support holder down to the air curtain, suspend and put bolts to the prepared bracket.

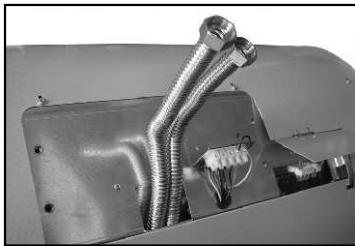


Bring in the power supply and, if appropriate, the heating medium. Cover the support holder by cover plates.

OPERATION INSTRUCTIONS

3.2 CONNECTING THE WATER HEATER

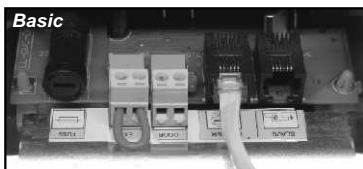
- A three-way valve is built in the curtain to re-route the heating water inlet to the outlet branch after curtain heating switch-off. (The curtain is equipped with an energy-saving function switching the curtain off after switching off curtain heating.)
- The flexible hoses routed through the suspension column serve to connect the water heating unit (gaskets $\frac{3}{4}$ " cap nuts)
- Connection and pressure tests of the heater shall be performed by authorized technician skilled in the field of water installations. All standards and regulations valid in the country of installation shall be adhered to
- The heater is designed for water with the maximum pressure of 1.6 MPa and temperature of up to +90 °C
- Water must be connected as identified on the hoses (water inlet and outlet must not be interchanged)
- The connection sequence of the cold and warm water to the heater outlets is of no significance provided that a minimum water pressure is maintained in the heating system
- We recommend to install stop valves on the heater inlet and outlet to allow closure of the water line



3.3 ELECTRIC SYSTEM CONNECTION

The unit shall be isolated from the mains prior to making any intervention inside the air curtain!

- **The air curtain wiring shall only be performed based on a professional project prepared by the qualified electric systems designer. Installation may only be carried out by skilled electrician. All applicable national regulations and directives shall be observed during installation**
- The air curtain shall be connected using the NTSC system. This means that a neutral conductor shall always be connected
- The connecting point for the main supply is placed in the middle of the curtain from above (under the column cover)
- The controller, the space sensor, the door contact and the external contact are connected in the curtain upper part next to the column, under a cover secured with a screw
- Prior to installation please make sure that terminal marking complies with marking on the wiring diagram. Should any doubt arise, please contact your supplier and do not perform wiring in any case
- Electrical parameters are indicated on the product label located on the air curtain housing
- The air curtain shall be protected by appropriate circuit breaker in accordance with its electrical parameters. Over-dimensioned protection is not recommended due to safety reasons!

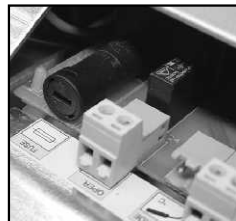
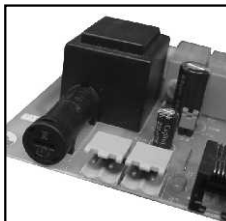


Caution: In case of fire the air curtain shall be extinguished by CO₂ fire-extinguisher. Never use the water fire-extinguisher!

OPERATION INSTRUCTIONS

The following table provides the recommended supply cable sizes for the Comtesse air curtains:

Type	Cable [pc x mm ²]
VCC-C-10S,W	3 x 0,50
VCC-C-15S,W	3 x 0,50
VCC-C-20S,W	3 x 0,75
VCC-C-10E-2	5 x 2,50
VCC-C-15E-2	5 x 6,00
VCC-C-20E-2	5 x 6,00

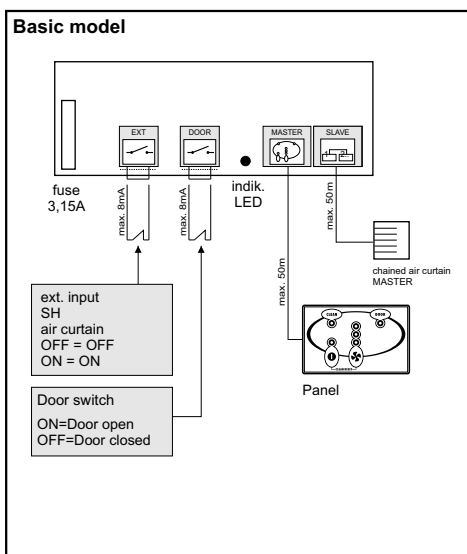
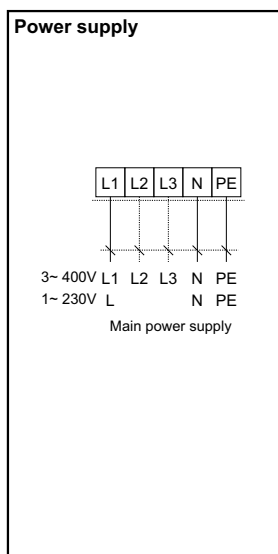


The Comtesse air curtains are fitted with 3.15 A fuse. This fuse protects the electronic board and fans. It is located on the electronic board next to contacts used for connecting the sensors.

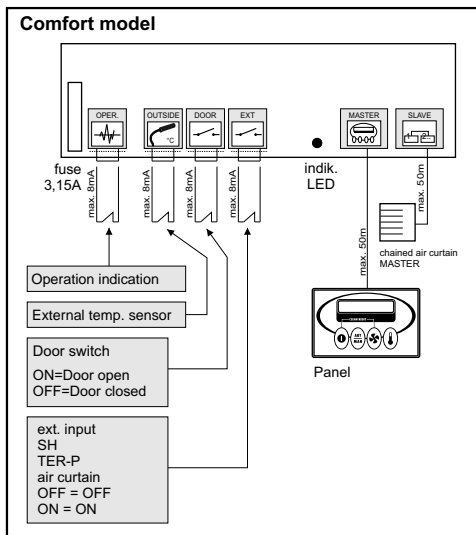
Electronic board layout:

- Output for controller (telephone cable with the possibility of flipping the terminals over)
- Output for air curtains chaining (telephone cable with the possibility of flipping the terminals over)
- Output for door contact
- Input for external input timer (switches the air curtain off)
- Power supply indication + error indication by LED located on the electronic board
- Input for external temperature sensor
- Output air curtain operation indication

Comtesse air curtain wiring diagram



OPERATION INSTRUCTIONS



Wiring diagrams attached to the product take precedence over wiring diagrams provided in this Instruction Manual!

If the unit is connected to other than original control system it is necessary that the measuring and control elements are connected by a company having supplied such control system.

All the wiring diagrams displayed in the manual are only informative. When assembling the product follow exclusively the label values, instructions and diagram placed directly on the product, or supplied with the product.

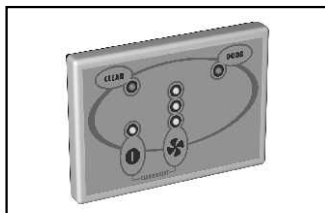
3.4 CONNECTING THE CONTROLLERS

The unit shall be isolated from the mains prior to making any intervention inside the air curtain!

The air curtain wiring shall only be performed based on a professional project prepared by the qualified electric systems designer.

Two types of electronic controllers are supplied with the air curtain. The basic model includes the LED indication, while the Comfort version is fitted with a LCD display. The controller is connected to the electronic circuit board using supplied telephone cables (item # KABEL 05) terminated with a single-line connector.

- One end of electronic cable is connected to "CONTROL" connector on the electronic circuit board, while the other end is connected to the controller's electronics
- The recommended maximum cable length is 50 meters
- The cable should not be routed along with the power cables and it should be located in a sufficient distance therefrom (based on a relevant standard, however, not less than 150 mm)!!!
- Please make sure that the connector snapped in.
- Cable sheathing shall never be damaged when fixing the cable to a wall or similar structure. (The screws fixing the plate to the wall must not protrude into the space of the electronic board.)
- If the cable is not wired just after installation of the controller and air curtain, the cable connectors or ends shall be provided with an insulating tape immediately to protect them against prospective mechanical damage of short-circuit
- The cable connector shall not come into contact with water or any other liquid



OPERATION INSTRUCTIONS

3.5 BASIC CONTROL

The standard version is intended for air curtain without heating unit only.



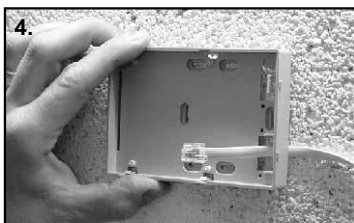
Carefully press the latch of the controller housing using screw-driver.



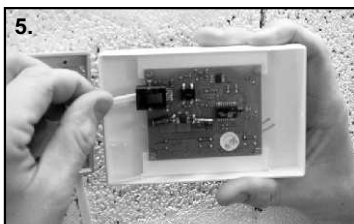
Open the controller and remove the top cover from the lower latches. Keep the read section.



Make passage in the rear wall for the connection cable.

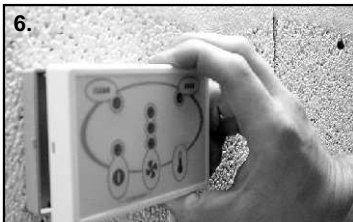


Pull the connection cable through the passage prior to attaching the rear section of the controller to the wall.



Plug the connector into socket on the printed circuit board.

OPERATION INSTRUCTIONS



Put the controller's electronics on the lower latches on the rear section of the

3.6 COMFORT CONTROL

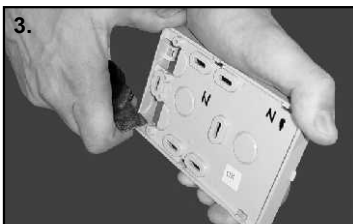
The comfort version is intended for air curtain with electric or water heating unit only.



Carefully press the latch of the controller housing using screw-driver.



Open the controller and remove the top cover from the lower latches. Keep the read section.

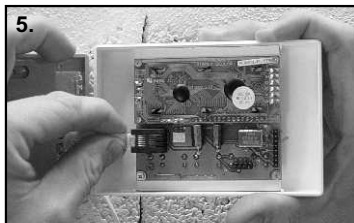


Make passage in the rear wall for the connection cable.



Pull the connection cable through the passage prior to attaching the rear section of the controller to the wall.

OPERATION INSTRUCTIONS



Plug the connector into socket on the printed circuit board.

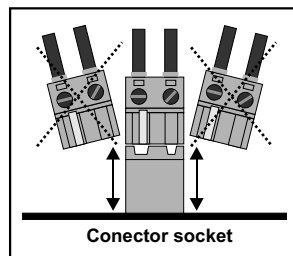


Put the controller's electronics on the lower latches on the rear section of the panel and snap them in place.

3.7 CONNECTING EXTERNAL SWITCHES

A great deal of external control elements can be connected to the air curtain depending on the particular control type.

- Air curtain shall be isolated from the mains when connecting external elements!
- All external control elements shall be connected exactly as specified on the wiring diagram and they shall be used for the specified purpose
- The connectors shall be connected to the electronic board using adequate force only, which always needs to be exerted perpendicularly to the base
- Elements shall be connected using cable supplied by our company. If such cable is not provided, use a cable meeting specifications provided underneath

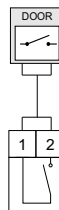


Door contact

The door contact is used for controlling the air curtain operation based on door opening/closing. The air curtain starts running as soon as the door opens. Behavior of the air curtain after closing the door depends on the given control type. The door contact is available for both control types. An exact functional description is given in "Control" chapter broken down by individual types.



- Potential free contact with max. voltage of 12 V
- Two-core cable with 0,5 mm cross-section
- Maximum cable length: 50 m
- NO contact



Door contact
Basic version



Door contact
Comfort version

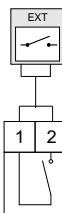
OPERATION INSTRUCTIONS

External switch (SH timer)

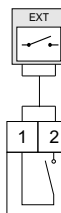
The external switch is used for activating/deactivating the entire air curtain operation. The timer is adapted for fixing to the DIN strip and we recommend to install it into distribution box. The timer shall be equipped with a separate power supply.



- Potential free contact with max. voltage of 12 V
- Two-core cable with 0,5 mm cross-section
- Maximum cable length: 50 m
- Timer power cord: three-core, 1,5 mm dia., 230 V / 50 Hz



Timer
Basic version



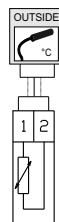
Timer
Comfort version

External temperature sensor

This sensor is provided to the Comfort version only including cable and it forms a standard part of the delivery. The sensor cannot be connected to the basic version. The sensor scans the outdoor temperature and provides data to the electronics accordingly, which regulates the air curtain in automatic mode.



- Potential free contact with max. voltage of 12 V
- Three-core cable with 0,35 mm cross-section
- Maximum cable length. 5 m

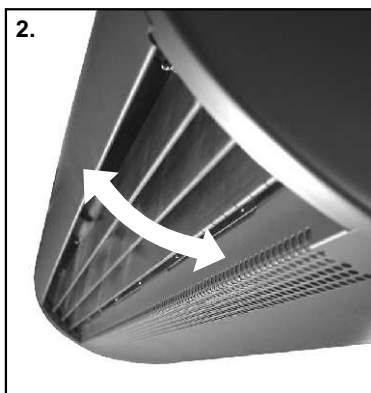
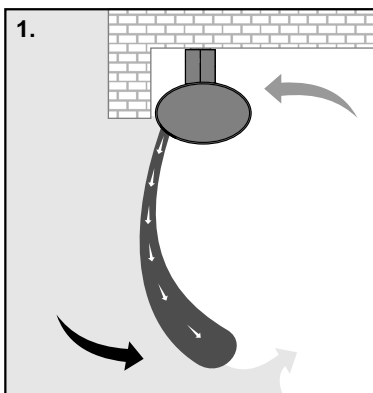


Outdoor
temperature sensor

3.8 SETTING UP THE EXHAUST GRILLE WITH LAMELLAS

The Comtesse air curtain allows setting up the exhaust lamellas exactly as required by particular installations.

- We recommend to adjust the exhaust lamellas slightly to pre-blowing in order to achieve an optimum screening effect (see Fig. 1)
- Setting is carried out by pushing the required side of the exhaust grille and its displacement (see Fig. 2)

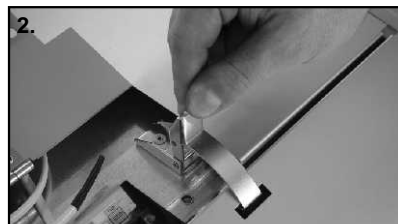


OPERATION INSTRUCTIONS

3.9 REPLACING THE FLUORESCENT LAMP

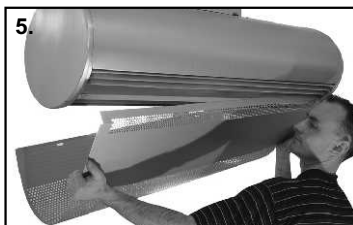
A fluorescent lamp is located at the exhaust grille of the air curtain, which turns on with the air curtain activation. The fluorescent lamp lifetime is at least 15,000 operating hours. Then it is necessary to replace the fluorescent lamp. Standard fluorescent tubes **with T8 base and 840 light colour shade** are used in the curtain.

Air curtain type	Qty and size of fluorescent tubes
VCC-C-10	1 Pc fluorescent tube length 970mm 36W
VCC-C-15	1 Pc fluorescent tube length 1500mm 58W
VCC-C-20	2 Pcs fluorescent tube length 970mm 36W



Loosen the screw fixing the electronic compartment cover to release the hidden case closure.

Release the other case closures.



Have the cover suspended on the case closures and release the bottom part from the groove by the outlet blades carefully to get access for fluorescent tube replacement.

Replace the fluorescent tube and repeat the assembly process.

OPERATION INSTRUCTIONS

3.10 FINAL CHECK PRIOR TO COMMISSIONING

Before commissioning the air curtain please check whether the installation meets the following conditions:

- Installation shall meet conditions specified in the "Safety and Operating Conditions" section
- Mechanical installation shall comply with conditions mentioned in the "Assembly" section
- Wiring shall be in accordance with conditions provided in the "Electric System Connection" and the "Controller Connection" sections
- If the air curtain is fitted with the water heater, it shall meet conditions specified in the "Connecting the Water Heater" section
- The device operators were trained and provided with this Instruction Manual

Any change or modification in the internal wiring of the air curtain is not allowed. Warranty shall become void should these requirements not be adhered to. We recommend to use genuine accessories supplied by our company. In case of any doubt with regards to using any non-genuine accessories please contact your supplier.

4 OPERATING INSTRUCTIONS

4.1 SAFETY PRECAUTIONS

- Never run damaged air curtain
- The product is an electrical device and thus all safety precautions with regards to handling electrical devices shall be adhered to
- Air curtain operators shall be trained and familiarized with this Instruction Manual
- The device shall only be used for the specified purpose
- It is forbidden to connect controller, sensors, power supply or to perform any other activities on the unit when it is connected to the power supply and the main switch is in I (ON) position (see air curtain description for switch information)
- Never open the air curtain housing when the fan is turning and the unit is operating
- Never put your hands into the suction or exhaust ports of the air curtain, when the fan is turning and the unit is operating
- To prevent reaching into the curtain outlet, it is recommended to install the curtain so that its bottom edge is at least 2400mm above the floor or reaching into the curtain outlet is prevented using other suitable way
- Do not cover suction nor exhaust port of the air curtain

Caution: In case of fire the air curtain shall be extinguished by CO₂ or dry powder fire-extinguisher. Never use the water fire-extinguisher!

4.2 FAILURE STATES


















The following items shall be checked prior to commissioning the air curtain:

- Does the installation conform with all instructions provided in this Manual?
- Is the air curtain free of any tools or other objects that may have been left inside and could damage the unit?
- Is the air curtain closed properly?
- Is the power supply and/or heating water supply connected properly?
- Is the control panel connected properly?

OPERATION INSTRUCTIONS

4.3 CONTROL

Overview of Functions and Sensors Connection

		 Basic model	 Comfort model
	Type of control	Manual	Manual / Auto
	Air flow regulation	3 speeds	3 speeds
	Electric heater regulation	NO	3 levels
	Door contact connection	YES	YES
	Room thermostat connection	NO	YES
	Timer connection	YES	YES
	External temperature sensor	NO	YES
 CLEAN	Air curtain cleaning interval indication based on operating hours	YES	YES
 DOOR	Door switch state indication	YES	YES
 ALARM	Electric heater overheating indication	NO	YES
 ALARM	Water heater freezing indication	NO	YES
	Electric heater aftercooling	NO	30 s
	Air curtains chaining	up to 6 units	up to 6 units
	Light indication of selected function	YES	YES
	Interconnection of air curtain and remote control	Low voltage cable (12V) Max. length 50 m	Low voltage cable (12V) Max. length 50 m

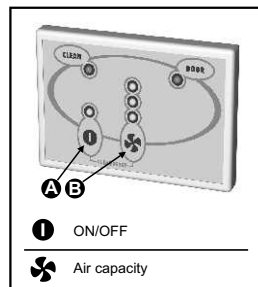
* The Comfort version allows a stepless regulation of both electric and water heat output.

4.4 USING THE BASIC VERSION

Basic air curtain with water heating

The following buttons are available on the basic controller for water heating. The A button turns the air curtain ON/OFF. The B button selects the air speed in three steps. Air curtain operation and selected fan speed level are indicated by LEDs located above each button. When the door switch is used, it ensures activation/deactivation of the air curtain. When the door opens, the switch will ensure air curtain activation at pre-selected fans speed.

After closing the door, the switch will ensure deactivation of the entire air curtain after about 20 seconds. Any type of switch can be used instead of the door switch, e.g. timer.



OPERATION INSTRUCTIONS

DOOR indication

DOOR position indication (closed lit, open not lit)

As set by the user, the curtain is either switched off or runs at speed No. 1 or 2 when the door is closed.

When chaining the air curtains it is possible to connect multiple door contacts each air curtain will be controlled by the connected door contact. The **DOOR LED** indication on the controller is lit only when all doors are closed. With the door closed it is not possible to change the air curtain speed level and the **DOOR LED** will start flashing for 5 seconds.

CLEAN indication

The **CLEAN** diode lights up to the operation clock the interval of which can be changed in the service mode. The air curtain **CLEAN** indication is reset by pushing both buttons on the controller simultaneously (On/Off + Fan button).

If multiple air curtains are interconnected, the **CLEAN** service interval will be indicated based on an air curtain, which will reach the specified operating hours first.

4.4.1 SERVICE MODE OF BASIC VERSION

The following can be set in the service mode:

a) Times for indicating the air curtain cleaning interval

CLEAN indication times can be set based on the air pollution level within installation area. The service interval setup function is activated by pressing the fan button for 5 seconds. **CLEAN** LED will start flashing and none of the three LEDs above the fan button is lit. The times are selected using the fan button:

- no LED on = air curtain cleaning not indicated
- one LED above fan button is on = long air curtain cleaning interval
1000/1500* hours
- two LEDs on = medium air curtain cleaning interval (default setting)
600/900* hours
- three LEDs on = short air curtain cleaning interval 350/500* hours

Another parameter can be adjusted after pressing the On/Off button - see point b)

* Values apply to Comfort water/electric model.

b) Behavior of the air curtain when using the door switch with door in closed position

Three operating modes are available for the air curtain at closed door. The air curtain is either switched off with 20s run-out or 30s cool-down, or switches over to the first or second fan speed. Activation is performed by pressing the fan button for more than 5 seconds. Then it is necessary to press the On/Off button to move to the door switch setting mode. The **DOOR** closed indication LED will start flashing and the following functions can be set by pressing the fan button:



- one LED lit above the fan = air curtain will activate the first fan speed with closed door (default setting)
- two LEDs lit above the fan = air curtain will activate the second fan speed with closed door
- no LED is lit = air curtain is off with closed door

Confirming parameters adjusted in the service mode: Do not press any button for 3 seconds or press the On/Off button.

OPERATION INSTRUCTIONS

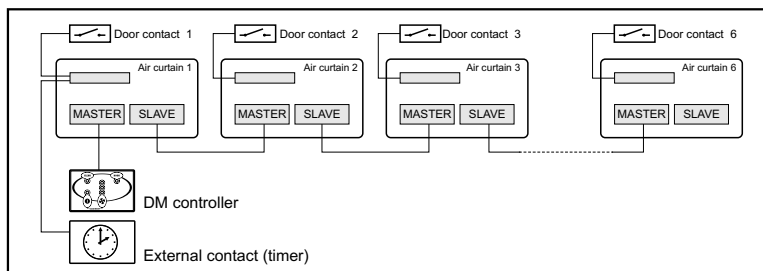
4.4.2 CHAINING THE AIR CURTAINS OF BASIC VERSION

The basic controller allows so called air curtain chaining. This means that max. 6 air curtains can be linked at the same time in the same operating mode. In practice this means that any air curtain is connected to the controlled as Master. Other air curtains (Slave) are then connected to the Master via communication cable and they are controlled by the Master unit. The same cable type shall be used for interconnecting the air curtains and for connection to the controller. Chained air curtains can be controlled by the following external switching elements:

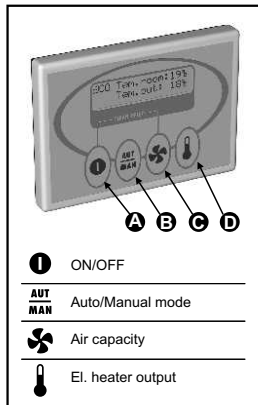
External contact SH timer		<ul style="list-style-type: none"> - can be connected to any air curtain - timer controls all air curtains connected in chain
Door switch		<ul style="list-style-type: none"> - can be connected separately to each air curtain (max. 6 pcs.) - in case of chaining, each air curtain would operate accordingly to its own connected door contact - the control panel will display the Door Contact indication only if all doors are closed - if user wishes to change speed or heating level of the air curtain, it will not be possible and the DOOR indicator will start flashing for about 5 seconds.

If any of the motors starts overheating and thermal fuse deactivates such motor, other motors will continue operating. In case that any of electric heaters starts overheating, the safety thermostat shuts it down. All other heaters will remain operating. If multiple air curtains are interconnected, the CLEAN service interval will be indicated based on an air curtain, which will reach the specified operating hours first.

Possible layout of chained air curtains is illustrated on the figure underneath:



4.5 USING THE COMFORT VERSION



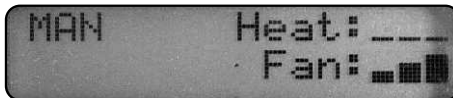
Comfort air curtain with electrical/water heating
A single universal type of controller is available for the Comfort model of the Comtesse air curtain. This controller is designed both for water and electrical versions.

Controller of the Comfort version of the Comtesse air curtain has four functional buttons. The A button turns the air curtain ON/OFF. The B button selects between the manual and automatic operating modes. The C button adjusts the air capacity in three levels and the D button serves for setting the electrical/water heater output.

OPERATION INSTRUCTIONS

4.5.1 MANUAL OPERATING MODE OF COMFORT VERSION

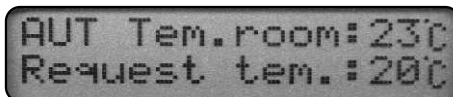
Indication of the manual operating mode (**MAN**) is shown on the display. **Heat** level and **Fan** speed setting are displayed in the right section of



the display. Using corresponding buttons it is possible to select cyclically three levels of electrical/water heating output, which keep the constant outlet temperature. Three fan speed levels can also be selected. Electronics will not allow to set an unsuitable combination of selections. This applies to the electrical heater, which cannot be activated until the fans are turned on. Electrical heater cannot set to the full output when the fan speed is adjusted to the minimum level. Similar restriction does not apply to the water heater. In the **MAN** operating mode it is possible to select heating for any ambient temperature.

4.5.2 AUTOMATIC OPERATING MODE OF COMFORT VERSION

Indication of the automatic operating mode (**AUT**) is shown on the display. Required room temperature (**Request tem.**) is displayed in the right



section of the display, which can be adjusted using appropriate button between 18 °C and 24 °C or OFF. The outlet temperature and fan speed level are controlled automatically according to the selected temperature, outdoor temperature and inlet temperature. This arrangement reduces energy consumption and operating costs by up to 20%. Measured room temperature is shown on the top line **Tem. room.**



The control system keeps constant temperature in the room. The PID control system is used to ensure the maximum operating comfort both for electrical and water heater, where three-way valve with bypass is used. Automatic operating mode (**AUT**) of the air curtain does not function if external temperature sensor is not connected. If attempt to activate the **AUT** mode is made, an error message is displayed indicating that external sensor has not been connected.

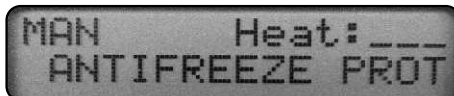
4.5.3 COMMON FUNCTIONS OF COMFORT VERSION

When the door switch is used, it ensures activation/deactivation of the air curtain. The fan speed cannot be controlled with door in closed position. **The Door contact** message is shown on the display. If the air curtain is switched off using the external input, it cannot be controlled and the clock symbol is shown on the display. The water version ensures protection against water exchanger freezing automatically. The antifreeze protection sensor is activated as soon as the air curtain outlet temperature falls below 5 °C. When activated, the air curtain shuts the fans down and opens the servo drive of the three-way valve. Servo drive of the three-way valve opens even when the air curtain is shut down provided that the antifreeze protection sensor is activated. The Antifreeze protection message is shown on the display as long as the sensor is activated. Deactivation takes place automatically when temperature exceeds 10 °C. In case of water version, the three-way valve servo drive is closed after the air curtain is shut down. This arrangement secures maximum energy savings with the air curtain deactivated. The air curtain cleaning interval indication is reset by pressing the On/OFF and Fan buttons on the controller simultaneously. Under these two buttons there is a terminal with label "CLEAN". Reset can also be performed before the air curtain cleaning interval is shown on the display e.g. in case of an early cleaning prior to the specified date. Reset applies to all air curtains in chain.

If a warning message is indicated, the second line of the display may show the following text (blinking):

- Indication of air curtain soiling (time function), displayed message: **Clean**
- Heater overheating indication (for electrical version), displayed message: **Heating alarm**
- Antifreeze protection activated (for water version), displayed message: **Antifreeze protection**

OPERATION INSTRUCTIONS



4.5.4 SERVICE MODE OF COMFORT VERSION

The following parameters can be set in the service mode:

a) Times for indicating the air curtain cleaning interval.

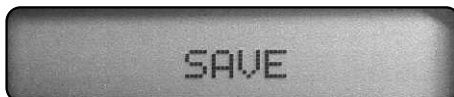
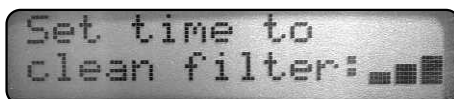
The service interval setup function is activated by pressing the fan button for 5 seconds. The times are then also selected using the fan button:

- Fan off = Air curtain cleaning interval is not indicated
- 1st level = Long air curtain cleaning interval 1000/1500* hours
- 2nd level = Medium air curtain cleaning interval (default setting) - 600/900* hours
- 3rd level = Short air curtain cleaning interval 350/500* hours

*Values apply to water/electrical version.

Do not press any button nor the On/Off button for 5 seconds. The **Save** message will be shown on the display. Settings are now saved.

Another parameter can be adjusted after pressing the On/Off button - see point b)

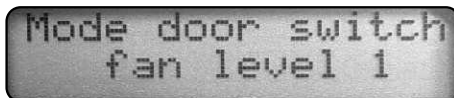


b) Behavior of the air curtain when using the door switch with door in closed position.

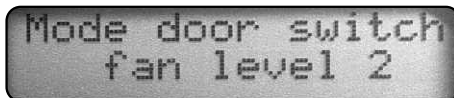
Three operating modes are available for the air curtain at closed door. The curtain is either switched off with 20s run-out or 30s cool-down, or switches over to the first or second fan speed.

Display will show the **Mode door switch** message and the following functions can be set using the Fan speed selection button:

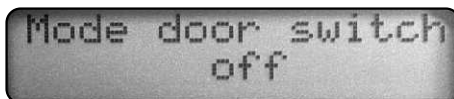
- fan level 1** = Air curtain will activate the first fan speed with closed door (default setting)



- fan level 2** = Air curtain will activate the second fan speed with closed door



- off** = Air curtain shuts down with closed door



OPERATION INSTRUCTIONS

Do not press any button nor the On/Off button for 5 seconds. The **Save** message will be shown on the display. Settings are now saved.



All parameters adjusted apply both to manual and automatic operating modes.

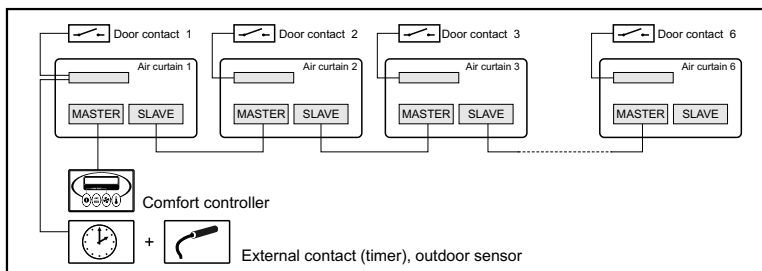
4.5.5 CHAINING THE AIR CURTAINS OF COMFORT VERSION

A single Comfort type controller may control up to 6 air curtains simultaneously in the same operating mode. In practice this means that any air curtain is connected to the controlled as Master. Other air curtains (Slave) are then connected to the Master and they are controlled by the Master unit. The same cable type shall be used for interconnecting the air curtains and for connection to the controller.

External contact SH timer		<ul style="list-style-type: none"> - can be connected to any air curtain - timer controls all air curtains connected in chain
Door switch		<ul style="list-style-type: none"> - can be connected separately to each air curtain (max. 6 pcs.) - in case of chaining, each air curtain will behave according to a connected contact - the controller will display the Door Contact indication only if all doors are closed - if user wishes to change speed or heating level of the air curtain, it will not be possible and the DOOR indicator will start flashing for about 5 seconds.

The **CLEAN** message will be indicated based on an air curtain, which will reach the specified operating hours first. If multiple air curtains are interconnected, the antifreeze protection deactivates the fans and opens the three-way valve servo only for such air curtain, which reported a failure status. The status is indicated on the controller.

If any of the motors starts overheating and thermal fuse deactivates such motor, other motors will continue operating. In case that any of the electric heaters starts overheating, the safety thermostat shuts it down and Heating Alarm message is shown on the panel. All other air curtains will remain operating.



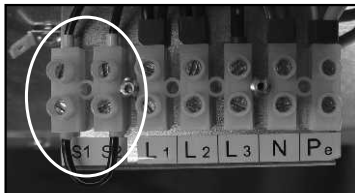
OPERATION INSTRUCTIONS

4.6 COMMON FUNCTION, FLUORESCENT TUBE

A fluorescent lamp is located at the exhaust grille of the air curtain, which turns on with the air curtain activation. In the manual operating mode it is possible to set the fan speed 0 - fan and heater are off - air curtain is deactivated, but the fluorescent lamp is on.

The fluorescent lamp lifetime is at least 15,000 operating hours. Then it is necessary to replace the fluorescent lamp. The air curtain uses the standard fluorescent tubes. See section 3.6 for replacement information.

The lighting mode can be changed using the S1 and S2 terminals. These terminals are located next to the main supply to the air curtain. If they are interconnected (default setting), the lighting system functions as described above. If a switch (230V / 1A) is installed between the terminals, the lighting system can be switched off anytime (if the air curtain is switched off, so is the lighting). If the S1 and S2 terminals are disconnected, 230V is supplied to the S1 terminal (e.g. from the air curtain power supply) and a switch is installed before the S1 terminal, the lighting system will function to the switch position independently on the air curtain status.



4.7 FAILURE CONDITIONS

Prior to performing any activities on the air curtain it is necessary to move the service switch to "O" position and to disconnect the unit from the mains. If you are unsure about individual steps, do not attempt to perform any repairs and obtain professional service!!

4.7.1 ELECTRIC HEATER OVERHEATING

As a standard, the air curtain is protected by operating thermostats with automatic reset. These thermostats are provided separately for each section of the wire electrical heater and deactivate the heater if appropriate section starts overheating. The section is reactivated after cooling down. This failure is not indicated by any controller type. The failure is indicated by inoperative air curtain heating, despite it should provide heat as set on the controller.

The causes of overheating include especially the following:

- Insufficient space in front of the suction grille or restricted suction (see "Air curtain positioning principles"). Ensure a proper installation
- Soiled air curtain
- One or more fans in the air curtain failed contact the service center and have the fan replaced

In all cases of overheating it is necessary to identify the cause and ensure rectification. If a failure is caused by any internal error in the air curtain, please contact authorized service center!

4.7.2 FAN OVERHEATING


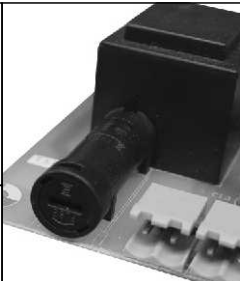
If any of the motors starts overheating and thermal contact deactivates such motor, other motors will continue operating. Thermal contact is automatic. Thermal contact returns to the original position after the motor cooled down and fan is reactivated. This failure is not indicated by any controller type. This condition can be detected by reduced air curtain performance. If the air curtain ensures heating, temperature of flowing air in the point of failure increases. This failure should not be considered minor.

It is necessary to check the air curtain and to identify the fan failure cause. Usual causes include:

- Insufficient space in front of the suction grille or restricted suction (see "Air curtain positioning principles"). Ensure a proper installation
- Defective fan this cause is rare. Please contact authorized service center and have the fan replaced

OPERATION INSTRUCTIONS

4.7.3 TROUBLE-SHOOTING

Air curtain cannot be activated	Check wiring of the air curtain. It shall comply with the wiring diagram provided in this Manual or diagram attached at the top section of the air curtain.	
	Check the power supply. Measure supply current and voltage and make sure they are in accordance with data specified on the product label (located on the air curtain housing). Neutral conductor must also be connected!	
	Make sure that all conductors are connected securely in terminals.	
Air curtain is connected to the power supply, but does not operate properly	Check a correct installation of cable connectors between controller and control electronics. Make sure that correct connector was used in the control electronic board "MASTER". Try to use other cable supplied by the manufacturer and re-check the air curtain operation. If the problem persists, replace the controller and retest the air curtain.	
	A fuse is located on the electronic board. Please check if it is not blown. If this is the case, replace the fuse with a new one having the same electrical ratings.	

Electronic boards indicate the following failure conditions. These are indicated by various flashing sequences of LED. In case of Comfort version, these failure conditions are also shown on the LCD display. If multiple air curtains are used in chain, an error message is displayed if failure occurs in any air curtain. To identify defective air curtain it is necessary to check LEDs of all air curtains connected.



OK status - flashing periodically once a second

No of LED blinks		LED display of Comfort controller	Defect	Solution
Basic model	Comfort model			
-	1 / 10sec	Heating alarm	Emergency thermostat trip	Keep the air curtain running until the eating body cools down and operation is restored.
Lit permanently	2 / 10sec	Clean	Air curtain cleaning interval indicated	Clean the air curtain, reset by pressing the On/Off and Fan keys on the controller simultaneously.
3 / 10sec	3 / 10sec	-	Communication error	Make sure that the cable is connected properly in the controller/air curtain and check for its integrity.
-	4 / 10sec	OUTDOOR SENSOR NO CONNECT	External temperature sensor error	Make sure that sensor of connection cable are undamaged and check for a correct cable connection to the air curtain electronics board.
-	5 / 10sec	SUCTION SENSOR ERROR	Suction temperature sensor error	Please contact the service center.
-	6 / 10sec	OUTLET SENSOR NO CONNECT	Outlet temperature sensor error	Please contact the service center.

OPERATION INSTRUCTIONS

If you were unable to start the air curtain up, please contact the authorized service center and provide all necessary data, such as type designation, installation position, serial number, installation conditions (including electrical specifications), operating hours.

5 MAINTENANCE AND SERVICE

5.1 SAFETY PRECAUTIONS

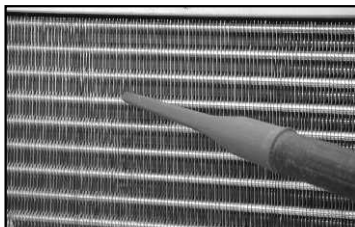
The unit shall be isolated from the mains prior to making any intervention! Maintenance, servicing and repairs may only be performed on air curtain in a standstill condition. This means that fans are not turning and wire heating body is cold.

5.2 MAINTENANCE AND CLEANING PERFORMED BY USER

The Comtesse air curtains are not fitted with a filter. This extends the cleaning intervals considerably and activities connected with filter replacement are not required. We recommend to check the air curtain in selected intervals specified in the service mode. This interval is specified when installing the air curtain and its length depends on the actual operating conditions. Cleaning is required especially for water versions, where choking may occur. Water exchangers used for the Comtesse air curtains feature a special design of lamellas, which ensures considerably longer cleaning intervals compared with the classic design.

To clean the water exchanger, the cover has to be removed (as described in the chapter for fluorescent tube replacement). Exchangers shall be cleaned using a fine brush or compressed air.

If the air curtain turns out to be clean after the CLEAN indication is given, a longer indication interval can be set in the service mode or this indication can be deactivated completely.



5.3 SERVICE

The warranty and post-warranty service is provided by the manufacturer or authorized service organizations. Supplier will provide a list of these organizations on a request. When requesting service it is necessary to include description of a defect and data shown on the product label. The Comtesse air curtains are covered by 36 month guarantee, which commences on the date of sale.

Manufacturer: 2VV, s.r.o. Poděbradská 289, 530 09 Pardubice, Czech Republic
www.2vv.cz, info@2vv.cz
Phone +420 466 741 891, Fax +420 466 741 899

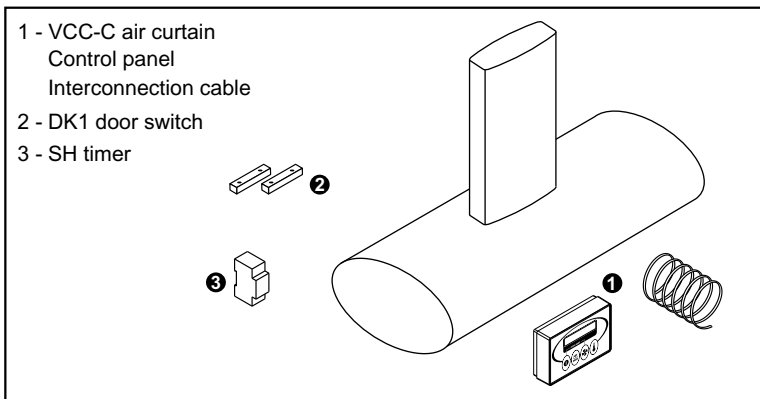
5.4 PRODUCT DISPOSAL

Please render the product unusable prior to disposal. Used products contain raw materials that can be recycled. Please hand these materials over to a salvaging company.

It is preferable to have the product disposed of in a specialized facility, which will ensure recovery of recyclable materials. Unusable parts of the product shall be brought to a controlled dump.

OPERATION INSTRUCTIONS

6 ACCESSORIES



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