

# FRIGOQUIP

**THERMOVENT AIR CURTAINS**  
for company doors and factory gates



**Technical catalog September 2020**

## Problems of open company doors and factory gates

Traffic between open gates to the outside area causes high energy costs due to harmful air exchange.

Cold, heavy outside air flows inwards the company close to the floor while warm inside air flows out at the upper part of the open door or gate (Fig.1).

Then, the inflowing cold air needs to be reheated, resulting in additional energy costs.

## Perfect solution: THERMOVENT Air Curtain

An air curtain system mounted above the door helps to reduce costs significantly. (Fig.3).

When the gate opens, the air curtain automatically boots up and a particular shaped air stream is blown directly in front of the entire door opening like an invisible door that separates cold and warm air effectively from each other (Fig.2).

Result: Cold air cannot flow in and warm air cannot flow out.

## Advantages of THERMOVENT air curtain

### Energy-saving

Considerable reduction of heating costs by avoiding warm air losses with open doors.

### Prevent viruses

Additional UVC emitters and cold plasma generators eliminate bacteria and viruses - in times of COVID-19, it is an enormous protection and competitive advantage.

### Free transport of goods

Operating process can be optimized as swing doors are no longer necessary.

### Prevention of accidents

A clear view for your employees guarantee a danger-free goods traffic as the air curtain is mounted above the door opening, discreetly.

### Durability and long life span

The air curtain is located above the door and outside the transport area. Therefore, it cannot be (mechanically) damaged.

### Avoiding insects

With an air curtain, the reliable prevention of the invasion of insects, dust and exhaust gases will be easier than ever.

### Reduction of your company's sick rate

Draught and cold bother your employees and lead to numerous illnesses. With air curtain, you can successfully avoid these costs and make the climate in your company more pleasant.

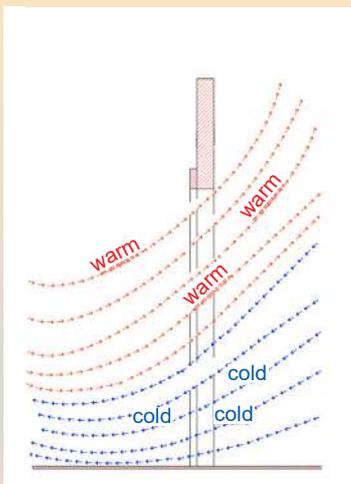


Figure 1

Every time an industrial door is opened, warm air flows out and cold air from the outside flows in.

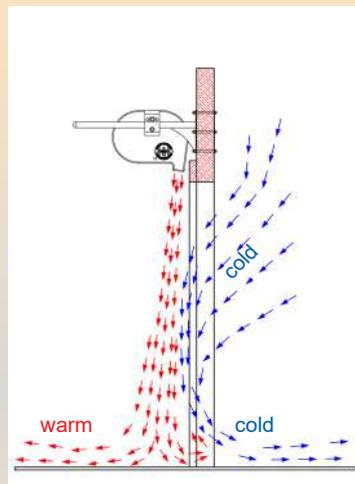


Figure 2

THERMOVENT air curtain place a strongly shaped air stream in front of the door opening, preventing the escape of warm air and the entry of cold air.



Figure 3

Air curtain can be assembled on both sides of the door. Preferably, the installation is carried out on the warm side, in this case in front of a high-speed door in a hall.



THERMOVENT Type A-350 in a tannery



THERMOVENT Type D-425

## THERMOVENT

...for the heat to stay inside, even with open doors!



THERMOVENT Type E-425 in a shipping hall



### 1. Universal - can be mounted over almost all kind of gates

The housings are available in lengths of over 6 meters in a single piece. The air curtain is mounted on two brackets which are installed next to the door opening. It can be pushed up to 1 meter away from the door opening which makes it particularly suitable for wide openings with sectional, sliding or rolling doors as they are located behind the air curtain. Therefore, this technique enables any door to move freely.

### 2. High operating safety

Whenever the gate opens and moves away from the switch, the proximity switch of the air curtain immediately activates itself. The blowers are already running when the door is fully open.

The proximity switch is completely encapsulated without any moving parts. It is also waterproof and operates with only 12 volts. As a safety switch, it cannot cause electrical accidents.

### 3. Extremely low power consumption and quiet - even in permanent use

Our standard motors in use are electronic commutated EC motors which demand up to 50% less power consumption compared to conventional AC motors. Additionally, they are very easy to control and extremely quiet. This makes them particularly suitable for a permanent operation.

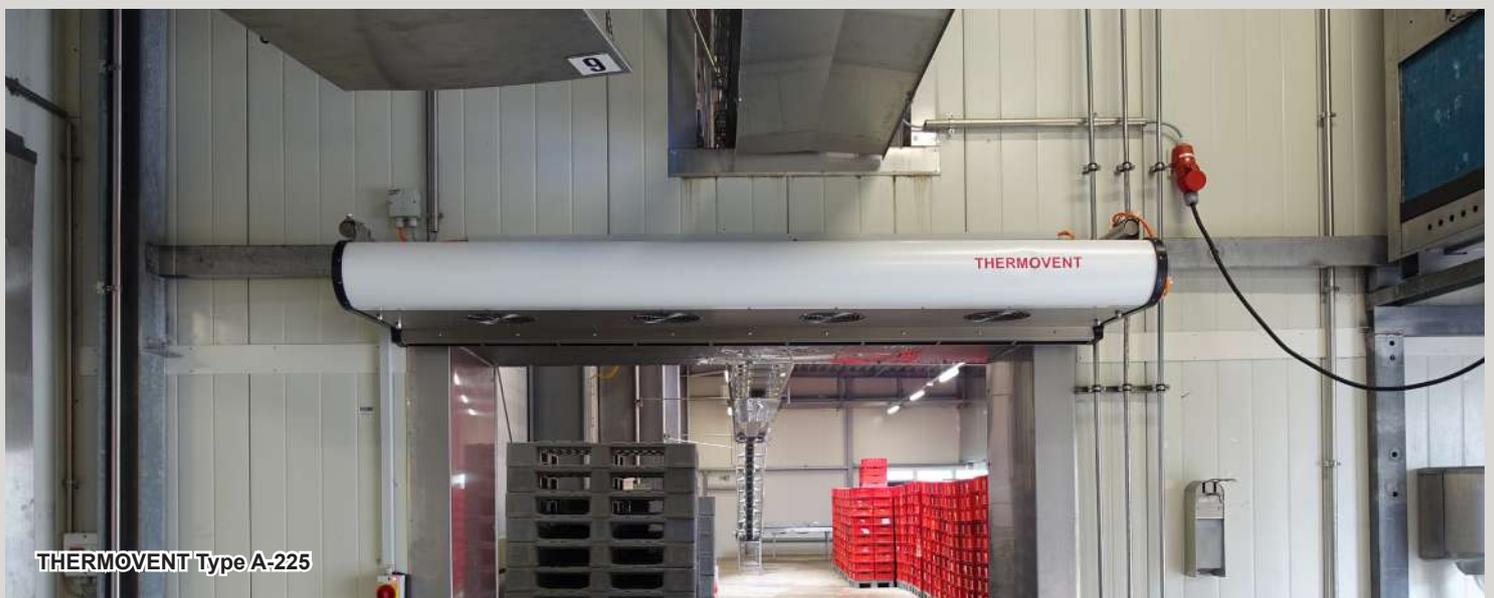
### 4. A vortex-free air stream separates the cold outside air from the warm inside air

A THERMOVENT air curtain can be mounted on both sides of the door opening. To avoid draught or insects, we recommend a mounting on the outside of the hall. To prevent warm air losses, it is recommended to install the air curtain on the inside. Warm air is aspirated from the hall and blown out through blow-out nozzles and an air rectifier at a right angle down to the floor. This airflow entrains the warm air that wants to flow out as well as the cold air that wants to flow in. When the air stream hits the floor, it divides itself into enabling the warm air to stay inside and the cold air to stay outside. THERMOVENT air curtains are corrosion-resistant and suitable for an outdoor use.

### 5. Regulation of air speed and air volume

When adjusting the air curtain, the blow-out angle and the air speed are set. The air speed and volume of our air curtains are infinitely adjustable.

## Competitive advantage of THERMOVENT air curtains





THERMOVENT Type D-425 with side bulkheads to avoid lateral

### 6. Fast and easy service

The system is electronically controlled. There is a plug-in device including all electronics and control components. In case of malfunction, that device can be easily removed and replaced. This eliminates the need for time-consuming troubleshooting and ensures fast repair. Thus, a worldwide 24-hour service is possible.



### 7. Very long-lasting, maintenance-free and reliable

The air curtain is corrosion-resistant and sound-insulated. The housing is made of a modern sandwich material with surfaces of painted aluminium and polyethylene in between. This material has good features regarding sound insulation, corrosion and stability.



THERMOVENT Type A-425 in shipping hall



THERMOVENT Type A-300



THERMOVENT Type A-300 in loading area

## Function check with a windmill

The perfect adjustment of a THERMOVENT air curtain can be checked with the help of the supplied windmill.

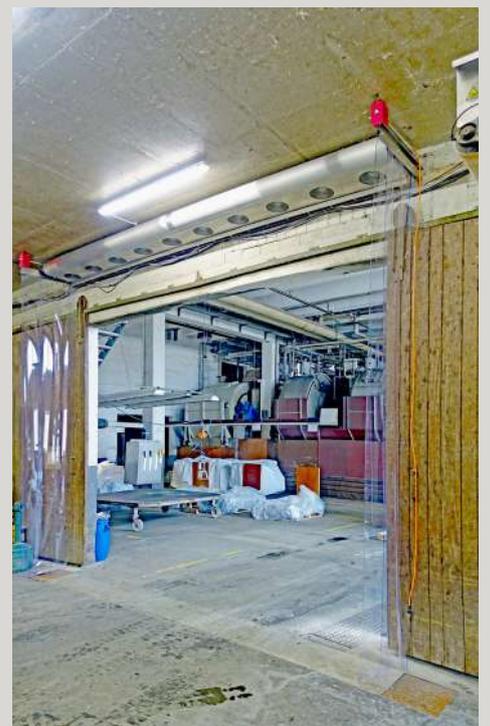
It needs to be placed on the door sill, directly underneath the air flow. The air speed and the blow-out angle are correctly adjusted as soon as the windmill does not rotate any more. Only then, it is guaranteed that no more harmful air exchange can take place.



THERMOVENT Type B-500 HB in the shipping area for pharmaceutical products



THERMOVENT Type A-500





THERMOVENT Type F-300 with hot water heating above sectional doors in a dispatch area

## THERMOVENT ...for the heat to stay inside, even with open doors!

### Cost saving through a THERMOVENT Air Curtain

Warm air is about 20% lighter than cold air. Therefore, it flows out at a speed of approximately 1m/sec through the upper part of an open door. Simultaneously, cold air enters the hall through the lower area of the door opening as it is heavier.

With an outside temperature of 0°C and a factory gate with a measurement of 5 x 5m, about 12.5 m<sup>3</sup> of warm air flows out per second when the door is opened. This means that in two minutes, there is a loss of 1,500 m<sup>3</sup>.

At the same time, the same amount of cold air flows in and needs to be reheated which cause high energy expenditure as 1 liter of fuel oil is needed to warm up the cold air from 0°C to 20°C.

The formula for calculating the energy consumption to heat air

$$Q = m \times c \times dt$$

Q = Energy MJ

m = Mass of air 1,293 Kg/m<sup>3</sup>

x = Air volume m<sup>3</sup>

c = Heat constant of air 1.005

dt = Temperature difference 20°C

39 MJ = 1.293 x 1500 X 1.005 X 20

35 MJ = 1 liter fuel oil

The cost of an open, unprotected gate is about 1 Euro in the winter and 0.5 Euro in the summer. With 25 gate openings daily, the costs for warm air losses amount to approximately 5,000 Euro annually. With the use of an air curtain, 80-90% of the warm air losses can be saved.





## Horizontal blowing air curtain: Model HB

All of our air curtains can also be supplied in a horizontal blowing design.

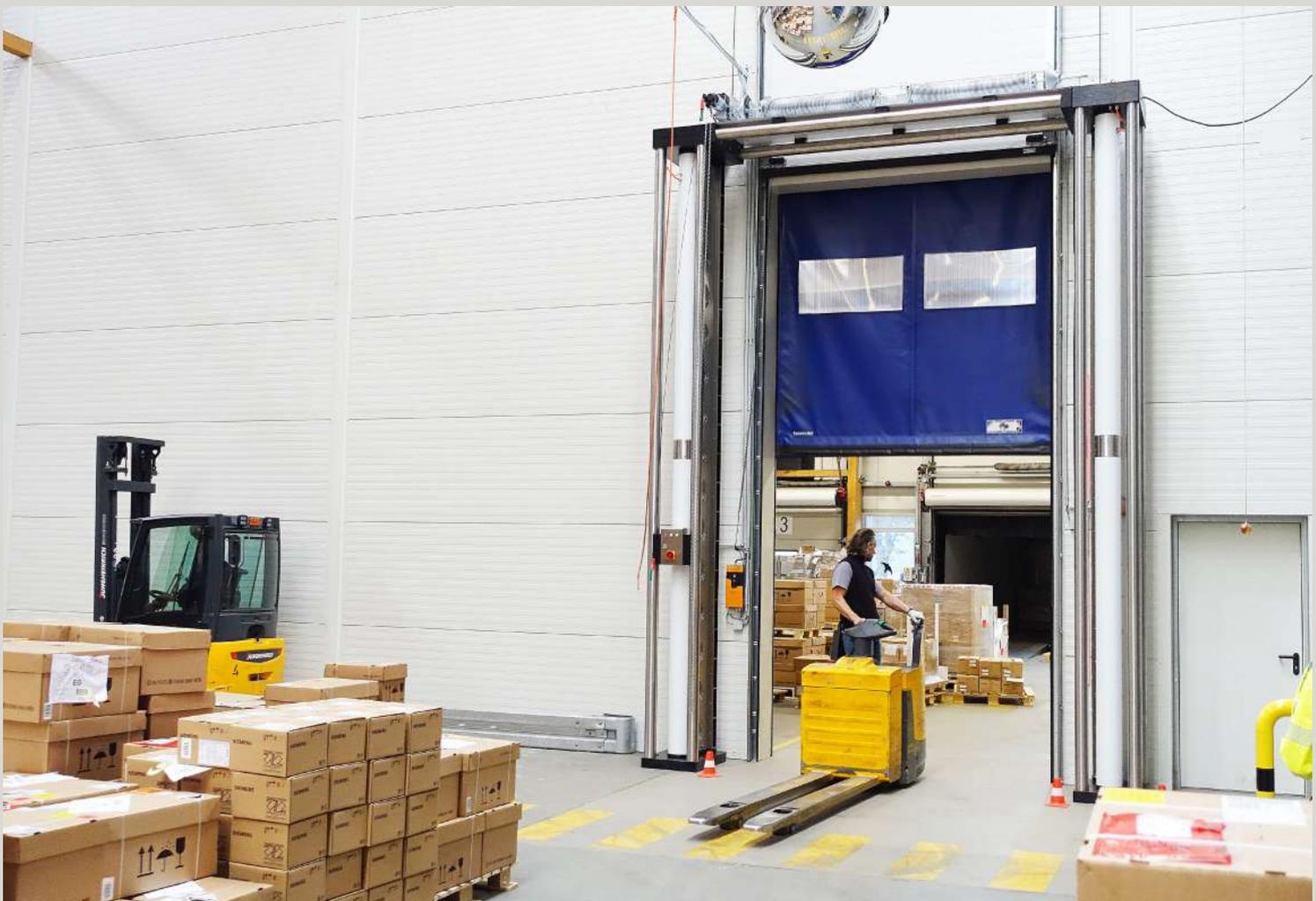
They dispose of the same features as the standard model offered in this catalog. For instance, they are self-supporting in a single piece and installed in a housing made of stainless steel tubes. Additionally, the HB can be swivelled. This way, an easy and optimal adjustment can be assured.

The electronic control system is also located in the housing and delivered ready to plug in.

For wider doors, two HB air curtains are used. They are installed on each side of the door opening to blow against each other.

For smaller doors, only one air curtain is necessary. In this case, it is mounted on one side of the door, blowing against a baffle wall.

The stainless steel tubes are used to protect against mechanical damage as, unlike the normal installation which is above the door, in this position the air curtains are endangered by forklifts.





## Assembly

THERMOVENT air curtains are usually installed centrally above the door opening on the inside of the hall.

The main or core stream is generated by an air rectifier which makes it homogeneous and free of turbulence. The air speed needs to be high enough to ensure that the core stream reaches the ground.

However, the air speed must not be too high as otherwise, it will blend with the entrained air.

To make sure that the core stream is optimally aligned, the air curtain can be swivelled.

### Components:

- Housing with nozzle, blower and control
- Two stainless steel consoles
- Proximity switch with cable and connectors
- Fixing material for masonry or optionally for clamp mounting on a panel wall
- Windmill for function test

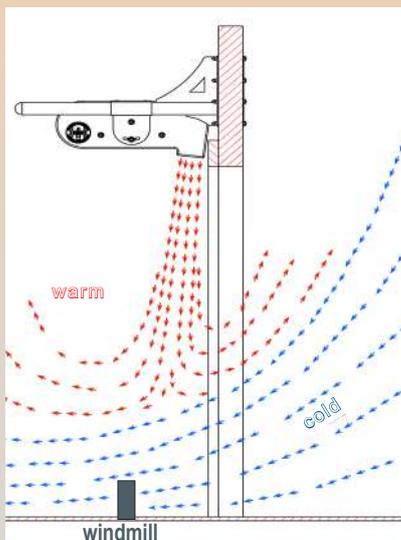
1. A THERMOVENT air curtain is positioned centrally above a door opening, fixed with two consoles.
2. The air curtain's side with the blow-out nozzle must be pushed onto the consoles as far as possible.
3. The proximity switch automatically activates the air curtain when the door opens.

As soon as the door dissociates itself from the switch, the blowers start running.

4. The blowing angle needs to be adjusted, so the air flow hits the floor in front of the door vertically at an angle of 5° to 10°.
5. The air volume is controlled via a speed controller. Adjust it, so the air flow just reaches the floor.
6. An optimal adjustment is guaranteed when no exchange of air between the outside air and the one of the hall is possible. To test if there is an air exchange, the supplied windmill needs to be placed on the threshold underneath the air curtain.

When the air curtain is switched off, the windmill rotates driven by the inflowing cold air. When the air curtain is active and the potentiometer turned up, the windmill will slow down until it eventually stops. When the windmill does not move, both nozzle angle and air speed are correctly adjusted.

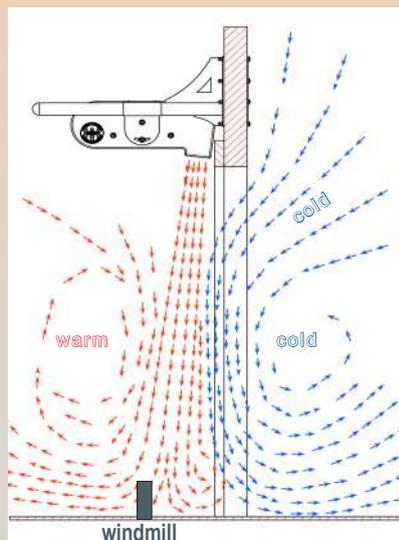
7. Air curtains must not be installed in front of swing doors as they hinder the air stream of the air curtain.
8. The nozzle should be about 10 cm wider than the door opening. Additionally, we recommend side bulkheads made of soft PVC strips for the avoidance of side air intake.



### Wrong setting

Air speed set too low. Air flow does not reach the ground and cold air escapes.

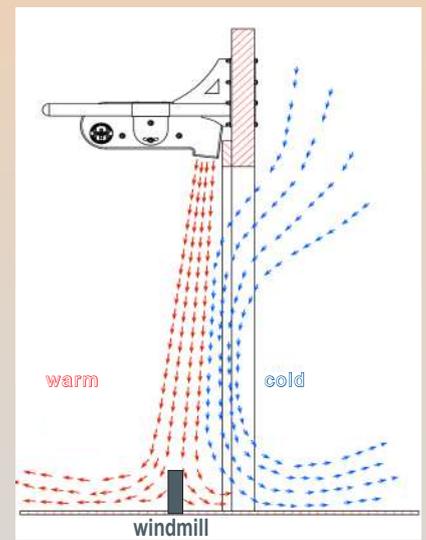
Increase air speed!



### Wrong setting

Air speed set too high. Disturbing air turbulences are created.

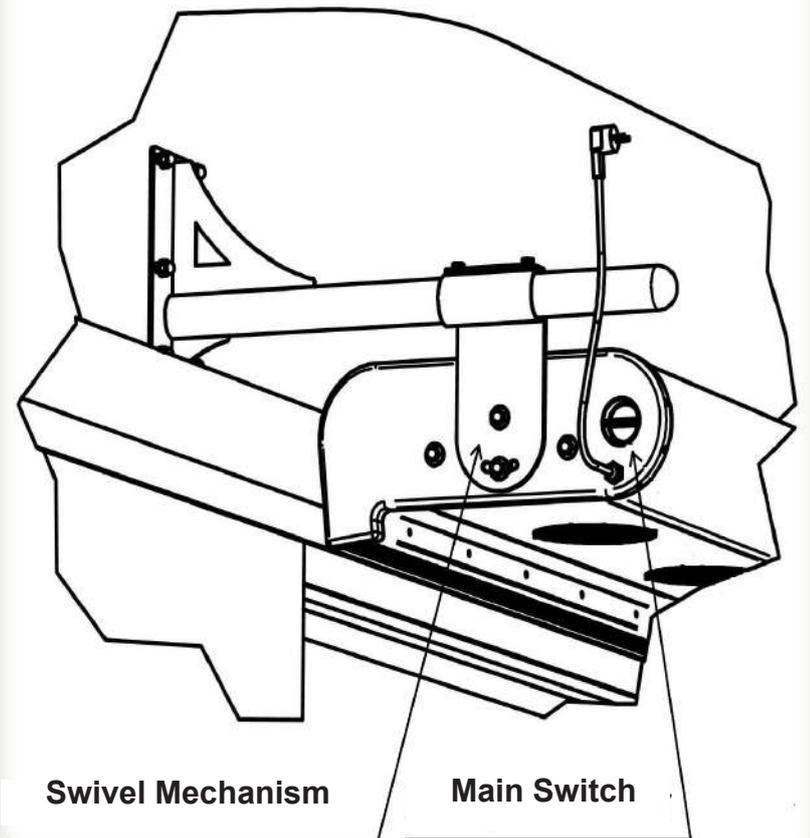
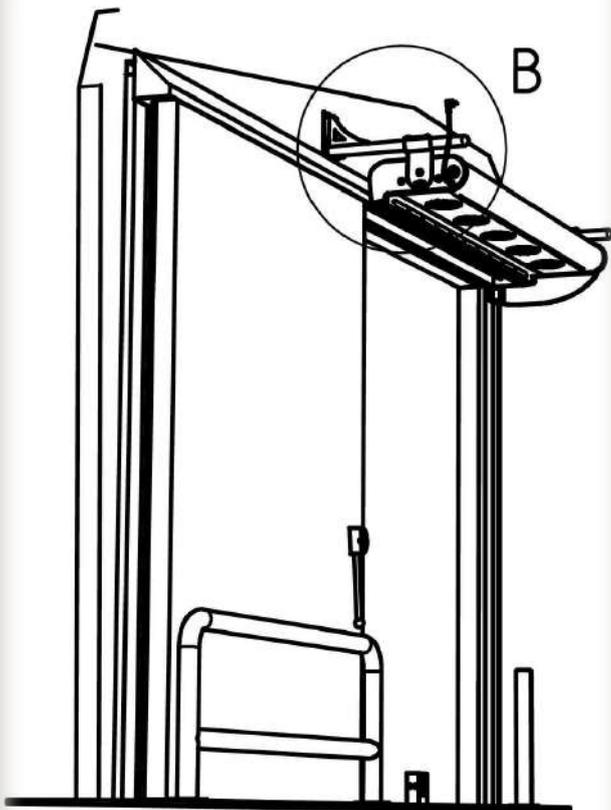
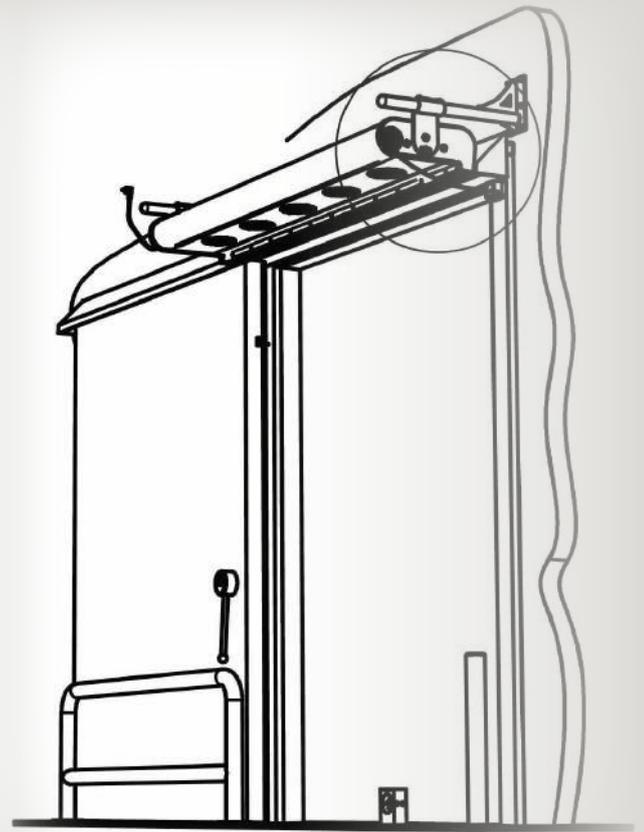
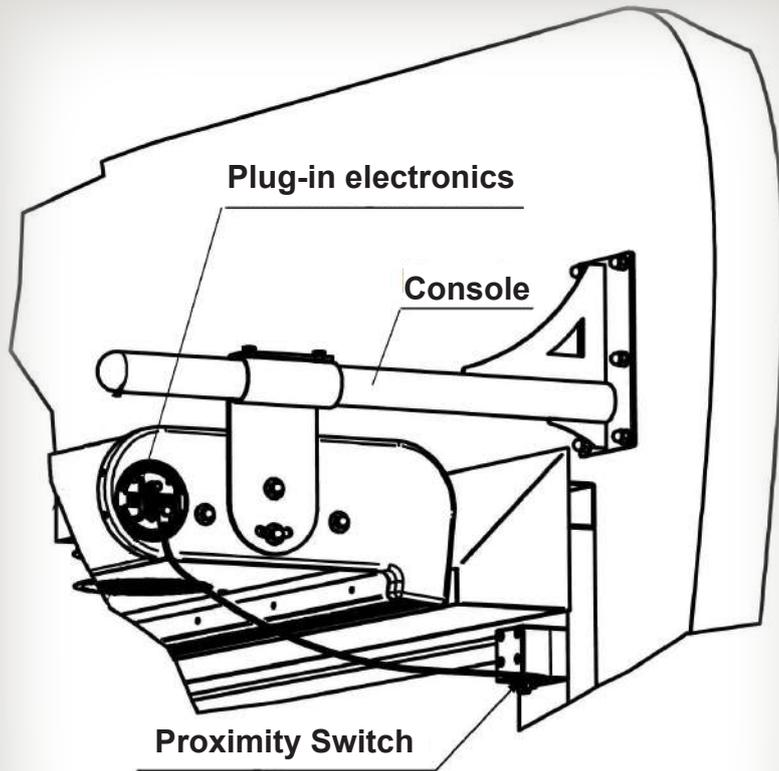
Reduce air speed!



### Correct setting

Air speed and blow-out angle are optimally adjusted.

Cold air cannot escape while warm air cannot enter the cold room.



We produce THERMOVENT air curtains as three different models in the „TOP“ series. All the models have the same blower technology. However, they are equipped with different blowing nozzles in order to meet all individual, structural requirements.

**Model 1 NORM:** Angled construction.

This is the normal model which is suitable for low ceilings or in case only a small space is available above the gate. This air curtain is pivoted and can be used with almost every gate.

**Model 2 FLAT:** Flat construction.

The flat design is ideal where space is limited or where the angled design interferes with forklift traffic.

*Prerequisite:* Sufficient space above the doors or gates.

**Model 3 HB:** Horizontally blowing.

This model is used for particularly high doors or when there is no space above the gates.



**Model 1 NORM (A-200)**



**Model 2 FLAT (RA-200)**



**Model 3 HB (B-500-2-HB)**

## Mounting options



### **Back wall mounting Standard construction**

This THERMOVENT air curtain is mounted on the warm side above the door opening with the help of two stainless steel consoles.

This is the standard mounting option.



### **Back wall mounting with consoles for a reduction of the overall width**

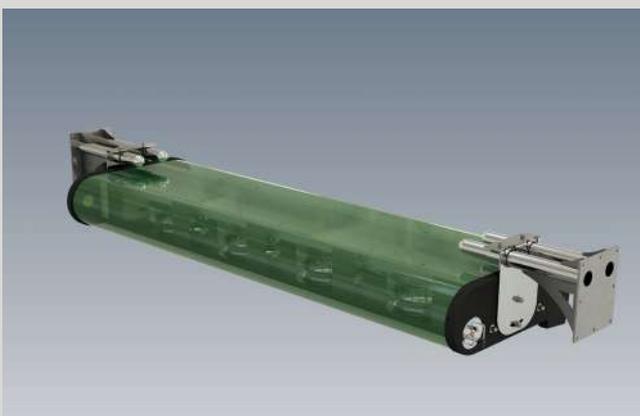
This THERMOVENT air curtain is mounted above the door opening on the wall with the help of two stainless steel consoles.

These consoles take up less space in the width but require more space in the overall height.



### **Ceiling mounting Construction under the ceiling**

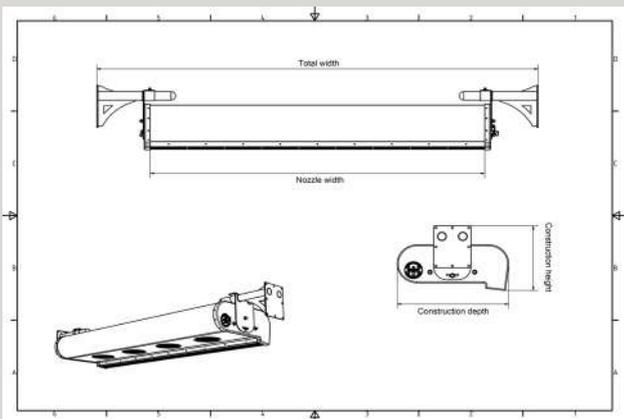
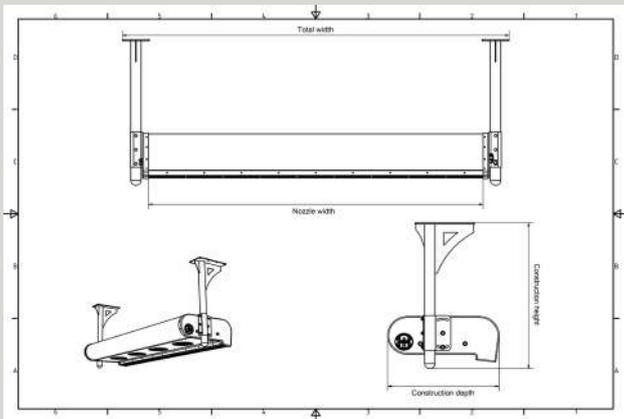
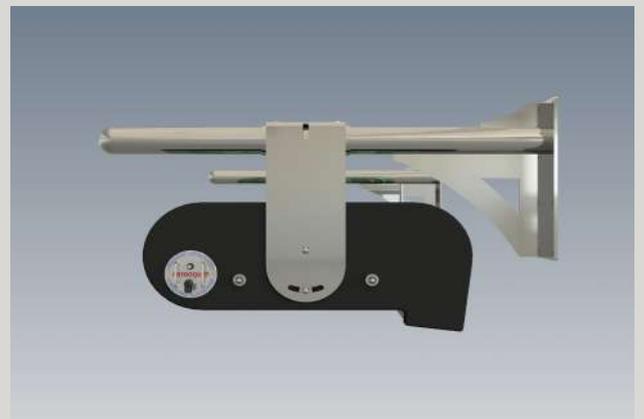
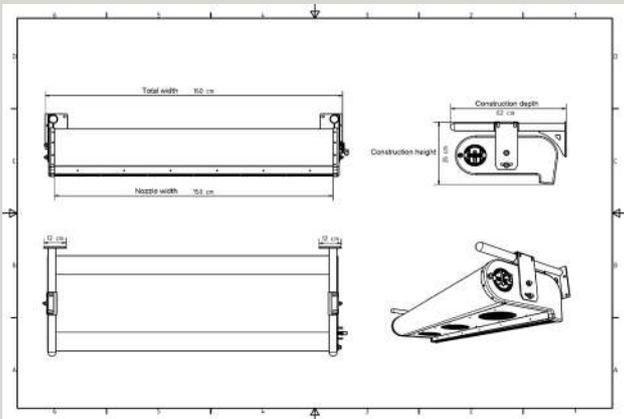
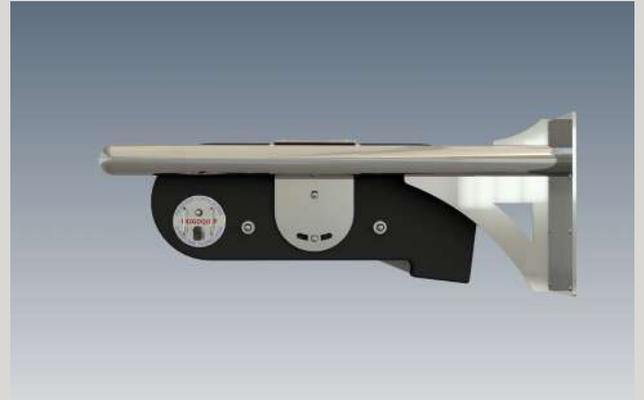
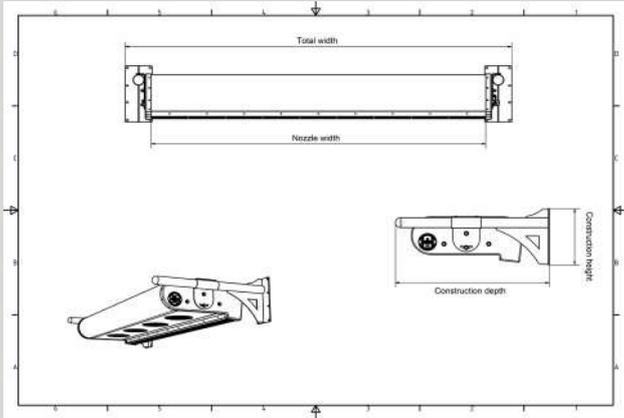
This THERMOVENT air curtain is mounted above the door opening under the ceiling with the help of two stainless steel consoles.



### **Assembly between walls Mounting on both side walls**

This THERMOVENT air curtain is mounted in front of the door opening in between the side walls with the help of two stainless steel consoles.

This mounting option is often used in corridors to prevent cold air losses.





Technical Data		FRIGOVENT		Type F and		Type G	
<b>TYPE</b>	Blowers	Weight of FRIGOVENT Type F		<b>FRIGOVENT Typ F</b>		<b>FRIGOVENT Typ G</b>	
<b>nozzle width</b>		FRIGOVENT Type G is 10% heavier		with EC-radial blowers suitable for a clear door opening of		with EC-radial blowers suitable for a clear door opening of	
<b>cm</b>	units	with packing	without packing	Indoor doors up to 300 cm Outdoor doors up to 250 cm depending from windload	Indoor doors up to 350 cm Outdoor doors up to 300 cm depending from windload	Voltage 230/1N~/50	Voltage 400/3N~/50
		kg	kg	air power m <sup>3</sup> /h	nominal adsorption KW	air power m <sup>3</sup> /h	nominal adsorption KW
THERMOVENT				Type F		Type G	
<b>75</b>	1	49	29	<b>1.000</b>	<b>0,150</b>	<b>1.750</b>	<b>0,275</b>
<b>100</b>	2	55	32	<b>2.000</b>	<b>0,150</b>	<b>3.500</b>	<b>0,550</b>
<b>125</b>	2	66	40	<b>2.000</b>	<b>0,300</b>	<b>3.500</b>	<b>0,550</b>
<b>150</b>	3	72	43	<b>3.000</b>	<b>0,300</b>	<b>5.250</b>	<b>0,825</b>
<b>175</b>	3	83	51	<b>3.000</b>	<b>0,450</b>	<b>5.250</b>	<b>0,825</b>
<b>200</b>	4	89	54	<b>4.000</b>	<b>0,450</b>	<b>7.000</b>	<b>1,100</b>
<b>225</b>	4	95	57	<b>4.000</b>	<b>0,450</b>	<b>7.000</b>	<b>1,100</b>
<b>250</b>	5	106	65	<b>5.000</b>	<b>0,600</b>	<b>8.750</b>	<b>1,375</b>
<b>275</b>	5	112	68	<b>5.000</b>	<b>0,600</b>	<b>8.750</b>	<b>1,375</b>
<b>300</b>	6	123	76	<b>6.000</b>	<b>0,750</b>	<b>10.500</b>	<b>1,650</b>
<b>325</b>	6	129	79	<b>6.000</b>	<b>0,750</b>	<b>10.500</b>	<b>1,650</b>
<b>350</b>	7	134	81	<b>7.000</b>	<b>0,750</b>	<b>12.250</b>	<b>1,925</b>
<b>375</b>	7	145	89	<b>7.000</b>	<b>0,900</b>	<b>12.250</b>	<b>1,925</b>
<b>400</b>	8	151	92	<b>8000</b>	<b>0,900</b>	<b>14.000</b>	<b>2,200</b>
<b>425</b>	8	162	100	<b>8.000</b>	<b>1,050</b>	<b>14.000</b>	<b>2,200</b>
<b>450</b>	9	168	103	<b>9.000</b>	<b>1,050</b>	<b>15.750</b>	<b>2,475</b>
<b>475</b>	9	174	106	<b>9.000</b>	<b>1,050</b>	<b>15.750</b>	<b>2,475</b>
<b>500</b>	10	185	114	<b>10.000</b>	<b>1,200</b>	<b>17.500</b>	<b>2,750</b>
<b>525</b>	10	191	117	<b>10.000</b>	<b>1,200</b>	<b>17.500</b>	<b>2,750</b>
<b>550</b>	11	202	125	<b>11.000</b>	<b>1,350</b>	<b>19.250</b>	<b>3,025</b>
<b>575</b>	11	208	128	<b>11.000</b>	<b>1,350</b>	<b>19.250</b>	<b>3,025</b>
<b>600</b>	12	214	131	<b>12.000</b>	<b>1,350</b>	<b>21.000</b>	<b>3,300</b>
OPTIONAL							
Power off switch with control lamp instead of proximity switch for continuous operation of the air curtain.							
Special consoles for reducing the overall width of the air curtain, for mounting under the ceiling or for attachment to the side walls.							
Side bulkheads made of soft PVC strips to avoid lateral warm air intake.							
Separate chrome-nickel steel control box with speed regulator and power off switch instead of integrated switch.							
Housing out of chrome-nickel steel: matt finish surface instead of aluminium-plastic composite material (white).							



Technical Data		FRIGOVENT		Type A		and		Type B	
<b>TYPE</b>	Blowers	Weight of FRIGOVENT Type A		<b>FRIGOVENT Type A</b> with EC-Centrifugal Blowers suitable for clear door openings of		<b>FRIGOVENT Type B</b> with EC-Centrifugal Blowers suitable for clear door openings of			
<b>Nozzle Width</b>		FRIGOVENT Type B is 10% heavier		Cold room doors up to 300cm Freezer doors up to 250cm depending from windload		Cold room doors up to 350cm Freezer doors up to 300cm depending from windload			
<b>cm</b>	units	packing		230 Volt-1Ph.- 50 Hz. <b>from Type A-475</b> <b>400V/3Ph.+N</b>		230 Volt-1Ph.- 50 Hz. <b>from Type B-375</b> <b>400V/3Ph.+N</b>			
	A B	with	without	air power	nominal adsorption	air power	nominal adsorption		
		kg	kg	m³/h	KW	m³/h	KW		
THERMOVENT				Type A		Type B			
<b>75</b>	1	2	59	39	<b>1.000</b>	<b>0,15</b>	<b>2.000</b>	<b>0,30</b>	
<b>100</b>	2	3	70	45	<b>2.000</b>	<b>0,30</b>	<b>3.000</b>	<b>0,45</b>	
<b>125</b>	2	3	80	50	<b>2.000</b>	<b>0,30</b>	<b>3.000</b>	<b>0,45</b>	
<b>150</b>	3	4	92	57	<b>3.000</b>	<b>0,45</b>	<b>4.000</b>	<b>0,60</b>	
<b>175</b>	3	5	102	62	<b>3.000</b>	<b>0,45</b>	<b>5.000</b>	<b>0,75</b>	
<b>200</b>	4	6	113	68	<b>4.000</b>	<b>0,60</b>	<b>6.000</b>	<b>0,90</b>	
<b>225</b>	4	6	123	73	<b>4.000</b>	<b>0,60</b>	<b>6.000</b>	<b>0,90</b>	
<b>250</b>	5	7	135	80	<b>5.000</b>	<b>0,75</b>	<b>7.000</b>	<b>1,05</b>	
<b>275</b>	5	8	145	85	<b>5.000</b>	<b>0,75</b>	<b>8.000</b>	<b>1,20</b>	
<b>300</b>	6	9	157	92	<b>6.000</b>	<b>0,90</b>	<b>9.000</b>	<b>1,35</b>	
<b>325</b>	6	9	167	97	<b>6.000</b>	<b>0,90</b>	<b>9.000</b>	<b>1,35</b>	
<b>350</b>	7	10	178	103	<b>7.000</b>	<b>1,05</b>	<b>10.000</b>	<b>1,50</b>	
<b>375</b>	7	11	188	108	<b>7.000</b>	<b>1,05</b>	<b>11.000</b>	<b>1,65</b>	
<b>400</b>	8	12	200	115	<b>8.000</b>	<b>1,20</b>	<b>12.000</b>	<b>1,80</b>	
<b>425</b>	8	12	210	120	<b>8.000</b>	<b>1,20</b>	<b>12.000</b>	<b>1,80</b>	
<b>450</b>	9	13	221	126	<b>9.000</b>	<b>1,35</b>	<b>13.000</b>	<b>1,95</b>	
<b>475</b>	9	14	231	131	<b>9.000</b>	<b>1,35</b>	<b>14.000</b>	<b>2,10</b>	
<b>500</b>	10	15	243	138	<b>10.000</b>	<b>1,50</b>	<b>15.000</b>	<b>2,25</b>	
<b>525</b>	10	15	253	143	<b>10.000</b>	<b>1,50</b>	<b>15.000</b>	<b>2,25</b>	
<b>550</b>	11	16	265	150	<b>11.000</b>	<b>1,65</b>	<b>16.000</b>	<b>2,40</b>	
<b>575</b>	11	17	275	155	<b>11.000</b>	<b>1,65</b>	<b>17.000</b>	<b>2,55</b>	
<b>600</b>	12	18	285	161	<b>12.000</b>	<b>1,80</b>	<b>18.000</b>	<b>2,70</b>	
OPTIONAL									
All systems available for 110 Volt and 60/50 Hz + side bulkheads made of soft PVC strips to avoid lateral warm air intake (in stock).									
Power off switch + control lamp instead of proximity switch for continuous operation. Housing: Matt finish surface or circular cut.									
Special consoles for reducing the overall width of the air curtain, for mounting under the ceiling or for attachment to the side walls.									
Separate chrome-nickel steel control box with speed regulator and power off switch instead of integrated switch.									
Air curtain designed for use inside a freezer room with special equipment or DUPLEX air curtains: inside and outside (2 units).									



Technical Data		FRIGOVENT		Type C		and		Type D	
<b>TYPE</b>	Blowers	Weight of FRIGOVENT Type C		<b>FRIGOVENT Type C</b> with EC-Centrifugal Blowers suitable for clear door openings of		<b>FRIGOVENT Type D</b> with EC-Centrifugal Blowers suitable for clear door openings of			
<b>Nozzle Width</b>		FRIGOVENT Type D is 10% heavier		Cold room doors up to 400cm Freezer doors up to 350cm depending from windload		Cold room doors up to 450cm Freezer doors up to 400cm depending from windload			
<b>cm</b>	units	with	packing without	kg	kg	air power m <sup>3</sup> /h	nominal adsorption KW	air power m <sup>3</sup> /h	nominal adsorption KW

THERMOVENT				Type C		Type D	
<b>75</b>	1	112	87	<b>2.000</b>	<b>0,200</b>	<b>2.500</b>	<b>0,350</b>
<b>100</b>	2	126	96	<b>4.000</b>	<b>0,400</b>	<b>5.000</b>	<b>0,700</b>
<b>125</b>	2	136	101	<b>4.000</b>	<b>0,400</b>	<b>5.000</b>	<b>0,700</b>
<b>150</b>	3	149	109	<b>6.000</b>	<b>0,600</b>	<b>7.500</b>	<b>1,050</b>
<b>175</b>	3	159	114	<b>6.000</b>	<b>0,600</b>	<b>7.500</b>	<b>1,050</b>
<b>200</b>	4	173	123	<b>8.000</b>	<b>0,800</b>	<b>10.000</b>	<b>1,400</b>
<b>225</b>	4	183	128	<b>8.000</b>	<b>0,800</b>	<b>10.000</b>	<b>1,400</b>
<b>250</b>	5	197	137	<b>10.000</b>	<b>1,000</b>	<b>12.500</b>	<b>1,750</b>
<b>275</b>	5	207	142	<b>10.000</b>	<b>1,000</b>	<b>12.500</b>	<b>1,750</b>
<b>300</b>	6	221	151	<b>12.000</b>	<b>1,200</b>	<b>15.000</b>	<b>2,100</b>
<b>325</b>	6	231	156	<b>12.000</b>	<b>1,200</b>	<b>15.000</b>	<b>2,100</b>
<b>350</b>	7	245	165	<b>14.000</b>	<b>1,400</b>	<b>17.500</b>	<b>2,450</b>
<b>375</b>	7	255	170	<b>14.000</b>	<b>1,400</b>	<b>17.500</b>	<b>2,450</b>
<b>400</b>	8	268	178	<b>16.000</b>	<b>1,600</b>	<b>20.000</b>	<b>2,800</b>
<b>425</b>	8	278	183	<b>16.000</b>	<b>1,600</b>	<b>20.000</b>	<b>2,800</b>
<b>450</b>	9	292	192	<b>18.000</b>	<b>1,800</b>	<b>22.500</b>	<b>3,150</b>
<b>475</b>	9	302	197	<b>18.000</b>	<b>1,800</b>	<b>22.500</b>	<b>3,150</b>
<b>500</b>	10	316	206	<b>20.000</b>	<b>2,000</b>	<b>25.000</b>	<b>3,500</b>
<b>525</b>	10	326	211	<b>20.000</b>	<b>2,000</b>	<b>25.000</b>	<b>3,500</b>
<b>550</b>	11	340	220	<b>22.000</b>	<b>2,200</b>	<b>27.500</b>	<b>3,850</b>
<b>575</b>	11	350	225	<b>22.000</b>	<b>2,200</b>	<b>27.500</b>	<b>3,850</b>
<b>600</b>	12	364	234	<b>24.000</b>	<b>2,400</b>	<b>30.000</b>	<b>4,200</b>

OPTIONAL
All systems available for 110 Volt and 60/50 Hz (in stock).
Power off switch with control lamp instead of proximity switch for continuous operation of the air curtain.
Special consoles for reducing the overall width of the air curtain, for mounting under the ceiling or for attachment to the side walls.
Side bulkheads made of soft PVC strips to avoid lateral warm air intake.
Separate chrome-nickel steel control box with speed regulator and power off switch instead of integrated switch.
Horizontal blowing air curtain with impact protection housing, top cover and baffle wall.



## THERMOVENT Type E and Type X for door widths up to 600 cm and for door heights up to 550 cm

### Features

The air curtains are delivered completely and ready to use. A self-supporting housing with blowers, outlet nozzle, consoles and electronics rack are fully mounted. The housing consists of a white, soundproof aluminum plastic composite. Alternatively, we can produce stainless steel housings. The remaining components of air curtains such as the end caps and the mounting blocks for the consoles are made of polyethylene.

All air curtains are equipped with the latest electronically commutated energy-efficient EC-motors which are up to 30% more energy-saving than conventional AC motors. Therefore, we recommend air curtains with EC blowers for doors that are open for long periods.

The housing and the inlet nozzles of these blowers are made of chrome-nickel steel while the impellers are made of aluminium.

### Benefits at a glance

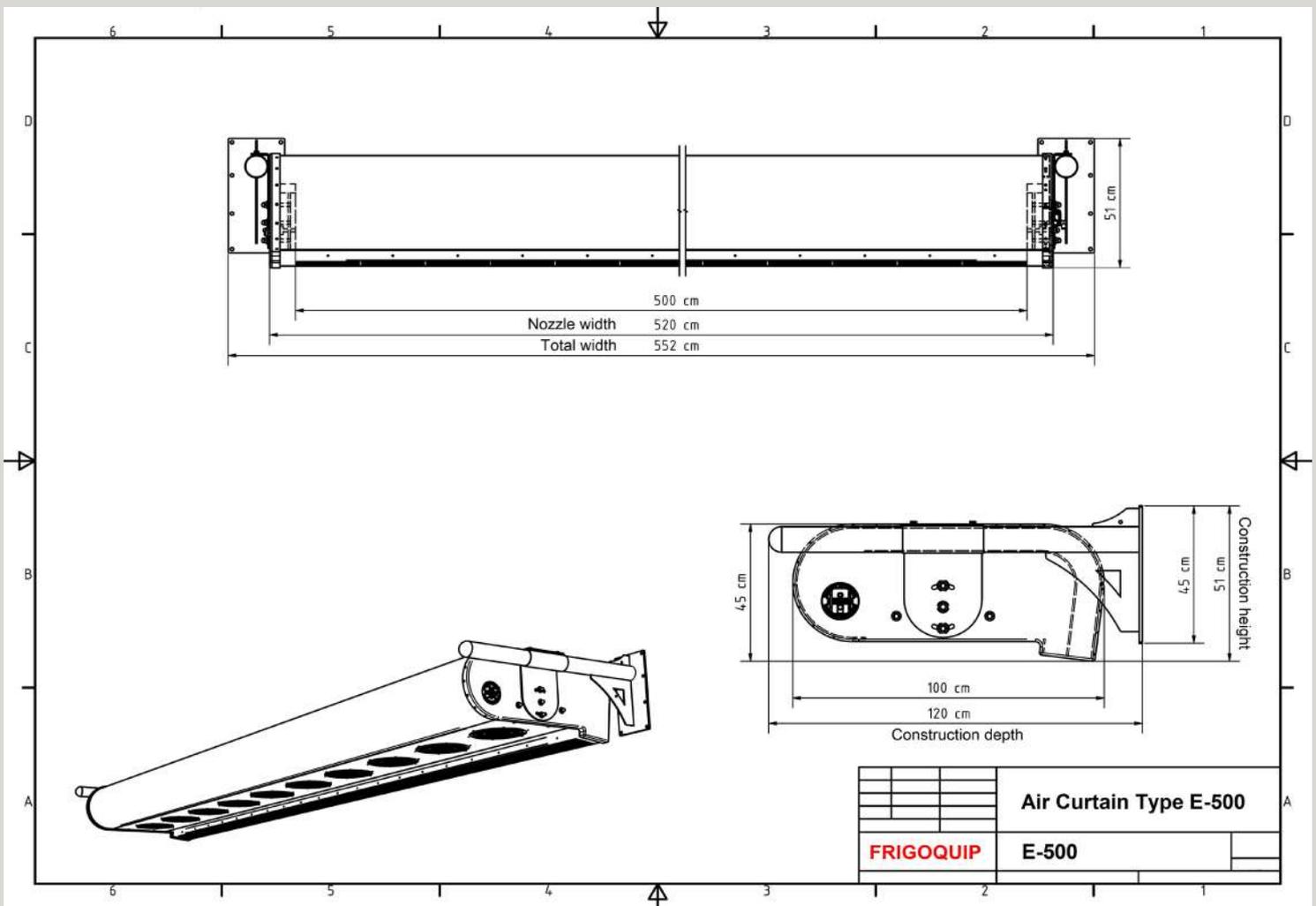
- \* quick start-up
- \* no operating sounds
- \* durable

### Scope of delivery

THERMOVENT air curtain, two stainless steel brackets, a windmill to adjust the system and a proximity sensor including a cable and screws. Stainless steel mounting hardware for mounting at a panel wall or alternatively material to fasten at masonry.

### Assembly

The air curtain can be installed by trained workers. We command several installation teams and assemble air curtains worldwide at a fixed price.



Technical Data		FRIGOVENT		Type E		and		Type X	
<b>Type</b>	Blowers	Weight of FRIGOVENT Type E		FRIGOVENT Type E with EC-Centrifugal Blowers suitable for clear door openings of		FRIGOVENT Type X with EC-Centrifugal Blowers suitable for clear door openings of			
<b>Nozzle Width</b>		FRIGOVENT Type X is 10% heavier		Cold room doors up to 500cm Freezer doors up to 450cm depending from windload		Cold room doors up to 550cm Freezer doors up to 500cm depending from windload			
<b>cm</b>	units	with packing	without	air power	nominal adsorption	air power	nominal adsorption		
		kg	kg	m³/h	KW	m³/h	KW		

THERMOVENT				Type E		Type X	
<b>75</b>	1	133	103	<b>3.000</b>	<b>0,40</b>	<b>3.500</b>	<b>0,45</b>
<b>100</b>	2	148	113	<b>6.000</b>	<b>0,80</b>	<b>7.000</b>	<b>0,90</b>
<b>125</b>	2	158	118	<b>6.000</b>	<b>0,80</b>	<b>7.000</b>	<b>0,90</b>
<b>150</b>	3	172	127	<b>9.000</b>	<b>1,20</b>	<b>10.500</b>	<b>1,35</b>
<b>175</b>	3	182	132	<b>9.000</b>	<b>1,20</b>	<b>10.500</b>	<b>1,35</b>
<b>200</b>	4	197	142	<b>12.000</b>	<b>1,60</b>	<b>14.000</b>	<b>1,80</b>
<b>225</b>	4	207	147	<b>12.000</b>	<b>1,60</b>	<b>14.000</b>	<b>1,80</b>
<b>250</b>	5	222	157	<b>15.000</b>	<b>2,00</b>	<b>17.500</b>	<b>2,25</b>
<b>275</b>	5	232	162	<b>15.000</b>	<b>2,00</b>	<b>17.500</b>	<b>2,25</b>
<b>300</b>	6	247	172	<b>18.000</b>	<b>2,40</b>	<b>21.000</b>	<b>2,70</b>
<b>325</b>	6	257	177	<b>18.000</b>	<b>2,40</b>	<b>21.000</b>	<b>2,70</b>
<b>350</b>	7	272	187	<b>21.000</b>	<b>2,80</b>	<b>25.500</b>	<b>3,15</b>
<b>375</b>	7	282	192	<b>21.000</b>	<b>2,80</b>	<b>24.500</b>	<b>3,15</b>
<b>400</b>	8	296	201	<b>24.000</b>	<b>3,20</b>	<b>28.000</b>	<b>3,60</b>
<b>425</b>	8	306	206	<b>24.000</b>	<b>3,20</b>	<b>28.000</b>	<b>3,60</b>
<b>450</b>	9	321	216	<b>27.000</b>	<b>3,60</b>	<b>31.500</b>	<b>4,05</b>
<b>475</b>	9	331	221	<b>27.000</b>	<b>3,60</b>	<b>31.500</b>	<b>4,05</b>
<b>500</b>	10	346	231	<b>30.000</b>	<b>4,00</b>	<b>35.000</b>	<b>4,50</b>
<b>525</b>	10	356	236	<b>30.000</b>	<b>4,00</b>	<b>35.000</b>	<b>4,50</b>
<b>550</b>	11	371	246	<b>33.000</b>	<b>4,40</b>	<b>38.500</b>	<b>4,95</b>
<b>575</b>	11	381	251	<b>33.000</b>	<b>4,40</b>	<b>38.500</b>	<b>4,95</b>
<b>600</b>	12	396	261	<b>36.000</b>	<b>4,80</b>	<b>42.000</b>	<b>5,40</b>

**OPTIONAL**

All systems available for 110 Volt and 60/50 Hz (in stock).

Side bulkheads made of soft PVC strips to avoid lateral warm air intake.

Power off switch with control lamp instead of proximity switch for continuous operation of the air curtain.

Special consoles for reducing the overall width of the air curtain, for mounting under the ceiling or for attachment to the side walls.

Separate chrome-nickel steel control box with speed regulator and power off switch instead of integrated switch.

Housing out of chrome-nickel steel: matt finish surface instead of aluminium-plastic composite material (white).



## THERMOVENT - TECHNICAL FEATURES

1. All blowers are equipped with electronically commutated infinitely adjustable EC motors which comply with all requirements of the latest EU legislation. It only takes 2 seconds after a door has opened for the air curtain to boot. Compared to commercial AC motors, EC motors are much more efficient. Here are some advantages of EC blower motors:
  - a) Up to 50% lower power consumption.
  - b) Extremely long span life due to design.
  - c) Considerably silent operating noise and no phase angle humming.
  - d) Operation with direct current 48 Volt.
  - e) Safe: Due to extra low voltage, no electrical accidents are possible.
2. We are manufacturing cantilevered air curtains up to a construction length of 8 meters in a single piece. They are mounted on consoles which can be attached to both sides of the door opening. This allows us to install the air curtain far enough away from the door opening which ensures that lifting gates or sectional doors can move and work seamlessly.
3. The entire air curtain can be swivelled. This way, the setting of the air flow's right angle is easy to manage and there is no need to redirect it. Thus, the air flow is free of turbulence and able to perform at its best.
4. An air rectifier, consisting of hundreds of small pipes, is located in the outlet nozzle. With the help of the rectifier, the air stream is blown out turbulence-freely and homogeneously formed. Consequently, very little air is entrained. The range of the stream can therefore go extremely far and contributes considerably to the exemplary functioning of our air curtains.
5. We only use corrosion resistant materials in the production of our air curtains. The consoles are made of chrome-nickel steel and the housing of a sound-insulated composite material and polyethylene. The surfaces consists of aluminium or optionally, chrome-nickel steel can be used. Outlet nozzles and intake grilles, the housing of the TOP series blowers and all screws are made of stainless steel. The impellers are either solid plastic or aluminum. Large-sized parts, such as the caps or the end plates of the horizontal blowing air curtains, are milled from solid plastic blocks.
6. Smaller systems are supplied with a plug for a power connection of 230 volts. Large systems are delivered with a separate control box for a power connection to 400 Volt 3 Ph. For safety reasons, all systems run with an extra low voltage of 48 Volt direct current. For this purpose, the power is rectified and converted in the system. The extra low safety voltage (SELV) is a small electrical voltage which offers a special protection against electric shocks due to its low voltage and the insulation against electric circuits of higher voltages.



## THERMOVENT - Accessories

- a) UVC disinfection modules and cold plasma generators.  
This accessory makes the blown out air stream sterile and electrically charged. This way, that adjacent air layers and near objects are disinfected.
- b) Enclosures for the entire system sideways and upwards. This accessory improves the operating mode.
- c) Air curtain for the prevention of insects.
- d) Separate control boxes enable the control of the air curtain from any location.
- e) Hot water heat exchangers for the hot water heating system.
- f) HEPA filters and control lamps for filter exchange.
- g) Soft PVC side bulkheads prevent lateral warm air intake.
- h) Tandem version: One air curtain on each side, outside and inside, above the door opening for an optimal air sealing. Recommended for long open hours.
- i) Horizontally blowing air curtains. Recommended for particularly high gates or when there is no space above the door. These air curtains are designed to blow against a baffle wall or alternatively in form of two air curtains that blow against each other.
- j) Housing which consists of a very stable, soundproof sandwich material with a polyethylene core and painted aluminum surfaces. Standard color is white. Available in other colors. Entire housing material also available in chrome-nickel steel.

### **FRIGOQUIP** product range:

<b>FRIGOVENT</b>	Air curtains for refrigerator and freezer room doors.
<b>THERMOVENT</b>	Air curtains for service doors and factory gates.
<b>HALLOVENT</b>	Air curtains for airports, warehouses and hotels.
<b>FRIGOALARM</b>	Emergency alarm for cold storage and freezer rooms.
<b>FRIGOFLEX</b>	Swing doors and strip curtains.v
<b>DISINFECTOR</b>	Air disinfection systems for schools, restaurants, sports facilities, meeting rooms and supermarkets.

### How does an air curtain work?

An air curtain is a device that prevents an air exchange through an open door. It consists of a blower with a blow-out nozzle like a door made of air.

There are also synonyms and other terms like air gate, air wall, air barrier and air bulkhead. However, the system of all of these devices work the same.

THERMOVENT air curtains aim to prevent warm air losses when doors are open. Thus, they are installed above the door, on the inside of company doors or factory gates.

Sometimes, it also makes sense to assemble an air curtain on the outside of the gate.

See example below.



### Example: THERMOVENT air curtain outside a hall

To protect against flying insects, dust or odors, the air curtain should be installed on the outside of the door opening.

When doors are open, cold air flows out of freezer room while warm air enters.

### **Our mission is to prevent that exchange of air.**

The blowers and a special rectifier are used to create a laminar, turbulence-free air stream which reaches from above the door opening to the floor at a right angle. The airflow must be strong enough to reach the ground. It is the main air stream which entrains the contiguous secondary streams, the warm air of the hall and the cold outside air.

As soon as the core stream and the entrained air hit the floor, they split.

As a result, the core stream and the entrained warm air of the hall remain inside while the entrained cold air stays outside.

It is important that the core beam is rectified, laminar and turbulence-free. Otherwise, the main and secondary air streams will blend. As long as the different air streams are divided, the air curtain can unfold its full effect.

### **Adjustment of the air curtain**

The blowing speed of all our air curtains is infinitely configurable. The max. air flow speed is approximately 15 m/sec. It becomes slower the closer it approaches the ground.

If the air speed is too low, the air stream will not reach the floor.

If the air speed is too high, it will hit the floor too hard, causing disturbing turbulences.

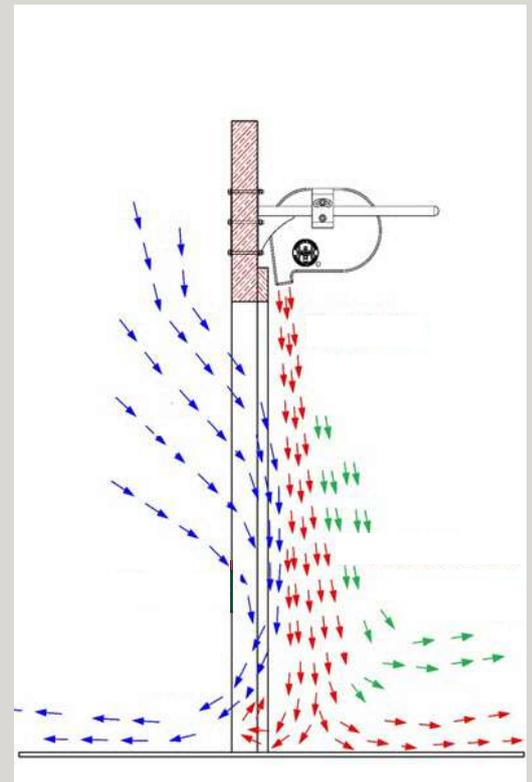
To optimize the blow-out angle, we made sure that our air curtains are pivotable. By loosening a cap nut in the connecting blocks, the air curtain can be easily moved by 10° in- and outwards.

### **How to perform the function check?**

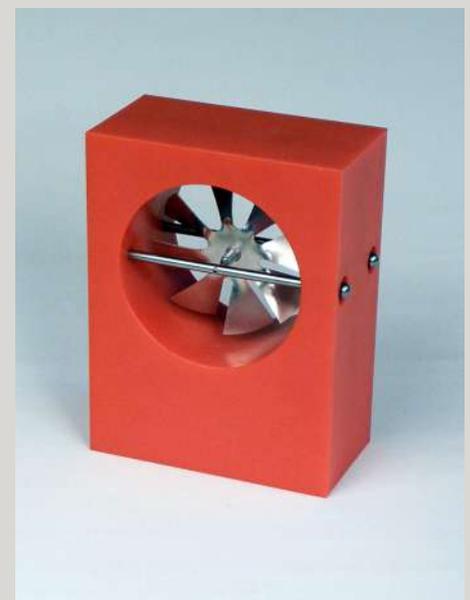
The supplied windmill must be placed directly underneath the air stream. With no air curtain in use, the windmill will rotate due to the inflowing, cold air.

When the air curtain is activated and the air speed increased, the windmill will slow down until it finally stops.

A still standing windmill is proof for a correct adjustment as it means that even in the weakest part of the air stream, namely on the ground, there is no more exchange of air.



Core stream  
Warm secondary stream  
Cold secondary stream





FRIGOQUIP Entrance



FRIGOQUIP Loading zone

**FRIGOQUIP**



**FRIGOQUIP GmbH**

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