

# Climate Solutions for Greenhouse

EMEA & APAC  
2023



# Table of Contents

## Introduction

## Negative Pressure

<b>Munters Solutions for Greenhouses</b>	2
<b>Automation</b>	4
Greenhouse Automation	5
Irrigation Automation	7
Communication	10
<b>Air Extraction</b>	12
Saturn FIVE Munters Drive	13
Saturn FIVE Belt 1.5	14
Saturn FIVE Belt 2.0	15
Saturn ONE Munters Drive	16
Saturn ONE Belt 1.5, 2.0	17
EC 50	18
EM 50	19
ED 36-30-24 HE	20
Darkening Solution & Accessories	21
<b>Air Circulation</b>	23
EDC 18-24 GHp	25
EDT 30 HE	26
EDS 36 HE	27
Accessories	28
<b>Cooling</b>	29
Cooling Pads	30
Munters Plastic Gutter MPG	33
Water Distribution System WDP	36
Darkening Solution	40
<b>Heating</b>	41
GPmp 100/130/160	42
GA 30/95T	46
<b>Air Inlets</b>	47
SMT 24-30-36-50	48
Darkening Solution	49

## Positive Pressure

<b>Ventilation &amp; Air Distribution</b>	51
High Pressure Fan 1	52
High Pressure Fan 2	53
High Pressure Fan 3	54
High Pressure Fan 4	55
PE Plastic Duct	56

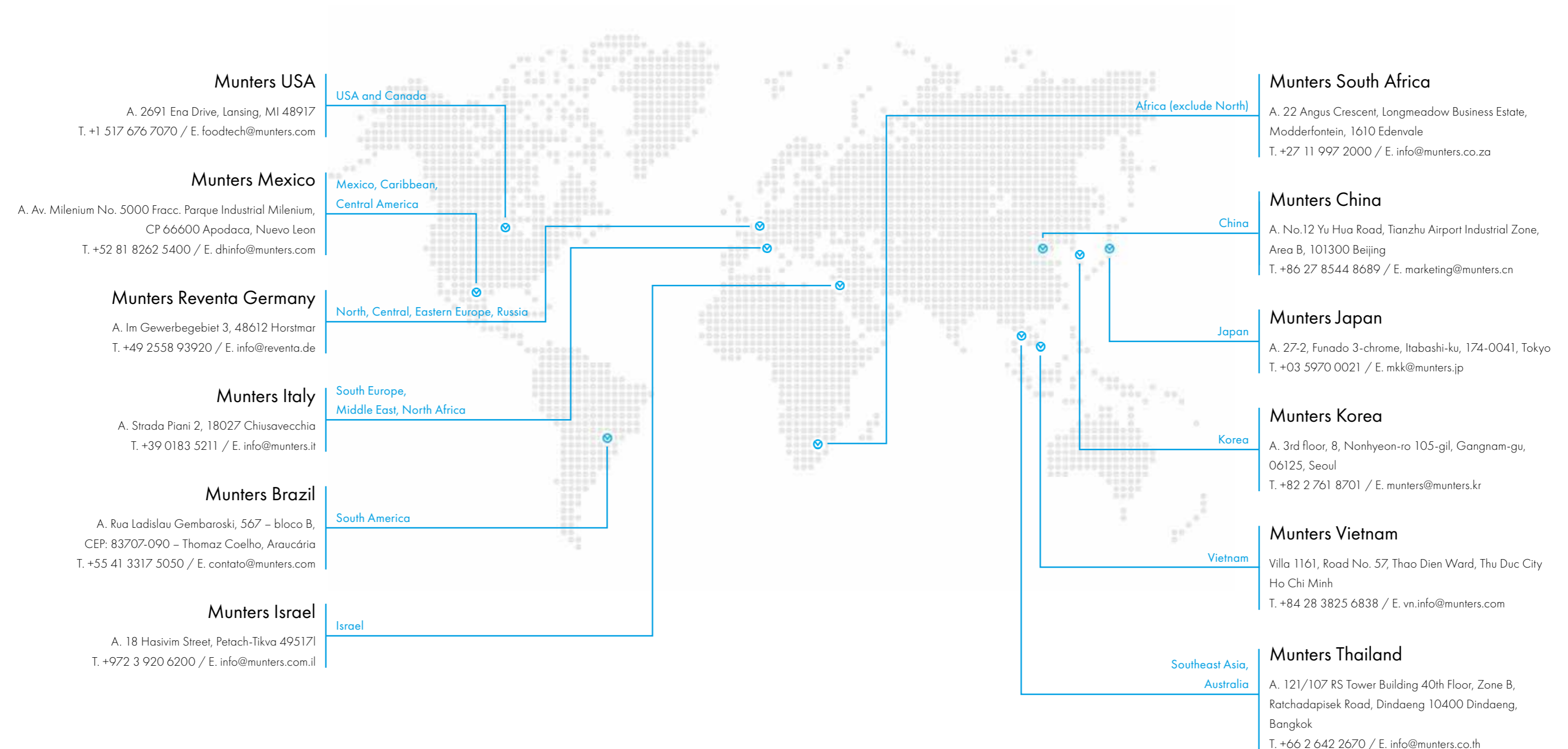
# About Us

## A Leading Global Supplier

Munters is a global leader in innovative, energy-efficient and sustainable climate solutions for mission-critical processes. We offer innovative, efficient and sustainable solutions for customers in many different industries where controlling temperature and humidity is mission-critical. Our solutions reduce customers' climate and environmental impact through lower resource consumption, and in the process contribute to cleaner air, higher efficiency and reduced carbon emissions. Sustainability is an important part of Munters' business strategy and value creation.

## Munters FoodTech

FoodTech is one of the world's leading suppliers of innovative, energy-efficient climate systems for livestock farming and greenhouses, as well as software for controlling and optimizing the entire food production value chain. Our solutions increase productivity while contributing to sustainable food production, where strict requirements are placed on quality, animal health and food safety. With more than 65 years' experience in climate control, Munters offers a full climate solution portfolio, simplified logistics and after sales support, to be "Your Perfect Partner".



# Features



## GREENGUARD Gold Certification

Chemicals emissions are the most significant source of air pollution and respiratory diseases. Cooling pads are made of chemicals-treated paper and during their use, the risk of VOCs emission is not negligible.

Munters CELdek® evaporative cooling pad is GREENGUARD Gold Certified, by the global, independent organization UL. CELdek® pads have been tested according to one of the world's most stringent product emissions standard for emissions from over 360 chemicals, guaranteeing them as having non-harmful emissions and so being healthy for people and surrounding environment.

Yearly testing of the products is required to maintain the certification and this is a signal of Munters persistent high quality of production level.

GREENGUARD Certification is endorsed and accepted by established third party organizations such as LEED, ASHRAE Standard 189.1, Greenstar and more.

Discover more at <https://bit.ly/3nsonZa>



## Munters Protect

Corrosion is caused by a combination of many factors and represents one of the main problems in agricultural application.

To offer a consistent remedy to that, Munters engineered a new coating called Munters Protect, which provides an extremely high protection against corrosion. It ensures a corrosion resistance up to 10 times higher than galvanized steel.

Supported by that, Munters provides a 3 years warranty over passant corrosion on fans coated with Munters Protect.

Discover more at <https://bit.ly/3HwfkOR>



## Munters Drive

When it comes to delivering efficiency, Munters set the bar with its patented motor technology. Designed specifically for agriculture, Munters Drive has reduced costs across dairy, swine, poultry, and greenhouse operations by solving some of the most persistent ventilation issues facing farmers: energy consumption and maintenance. Fans equipped with Munters Drive reduce electric energy consumption by up to 40%, and are part of a sustainable system design. With no belts, bearings, or tensioners, the Munters Drive runs quietly and is virtually maintenance-free. Today, Munters continues to lead the EC motor market with more than 30,000 units operating in the field.

Discover more at <https://bit.ly/3oJpS4H>



## ErP Ecodesign

High efficiency products are the key to success and a low carbon society. This is why Munters is designing products that are fully compliant with the EU ErP Ecodesign directive.

Discover more at <https://bit.ly/3FqAyfc>



# Negative Pressure

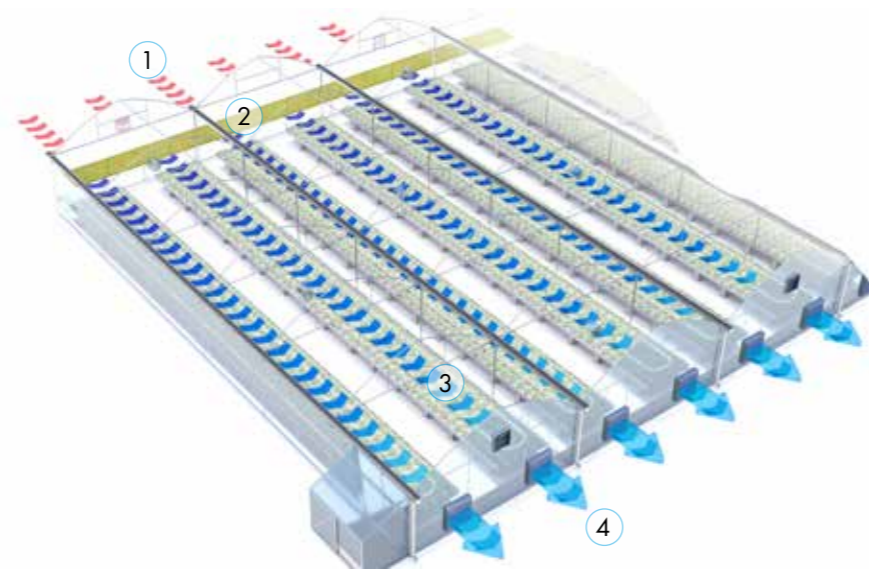
# Munters Solutions for Greenhouses

## Pad-fan Cooling

(1-2) Evaporative cooling system cools down the hot external air entering the greenhouse

(2-3) Air, pulled across the greenhouse from the extraction fans, increases the temperature and generates a temperature gradient

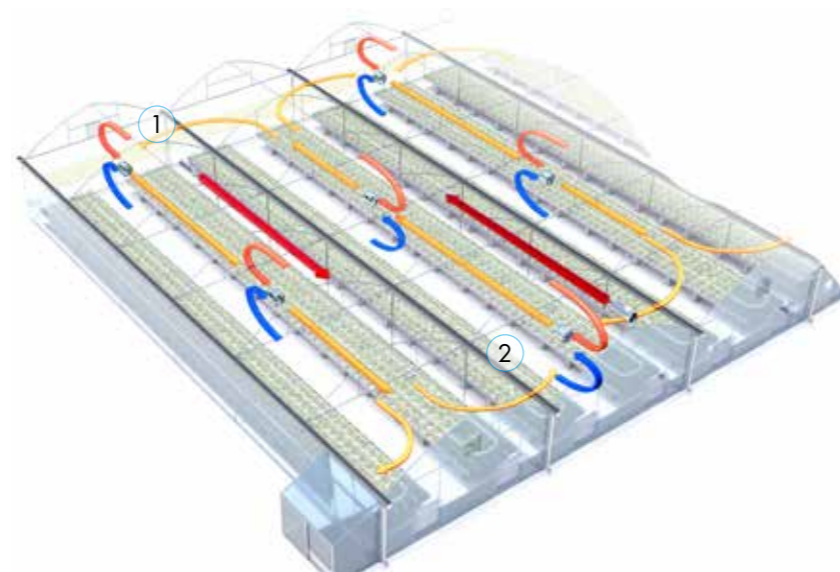
(3-4) Extraction fans, placed on the opposite gable end of the cooling system, move and extract the air



## Heating

(1) Combustion heat generators (heaters) heat the indoor air

(2) Air circulators evenly distribute the air in the greenhouse



## Advantages

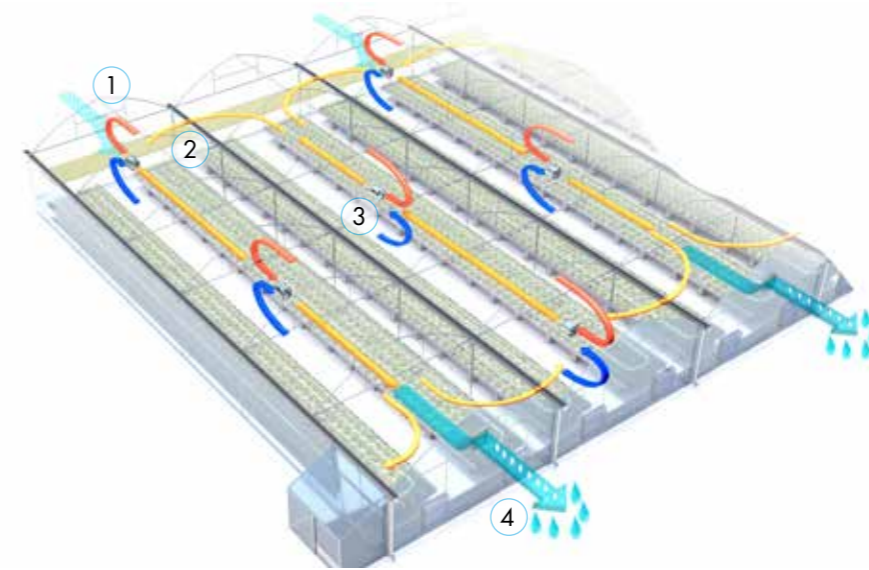
- Extended production period during summer and winter months
- Climate uniformity
- Sustainable solution: higher efficiency, reduced running costs and carbon footprint

## Dehumidification

(1-2) Dry air enters through a shutters system on top side gable

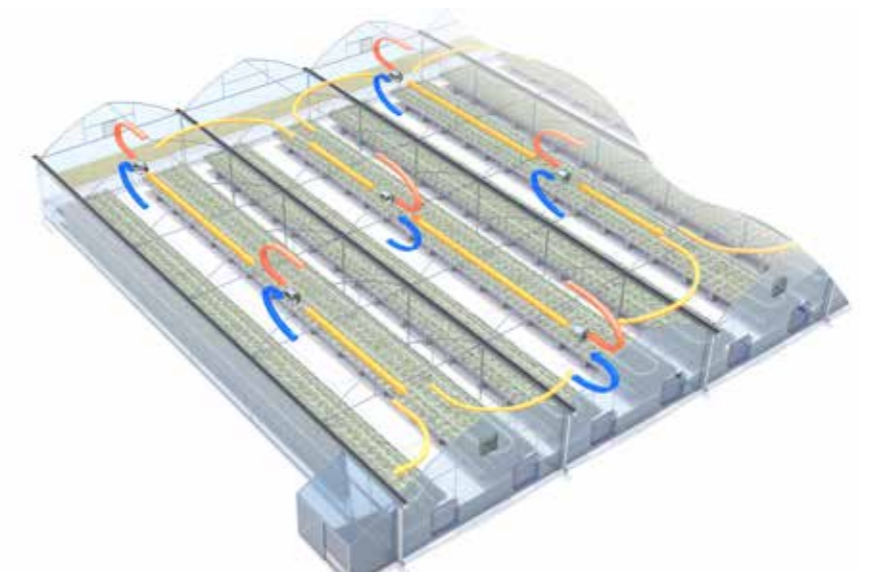
(3) Circulation fans mix and de-stratify air

(4) Axial fans, placed on the gable end, extract humid air



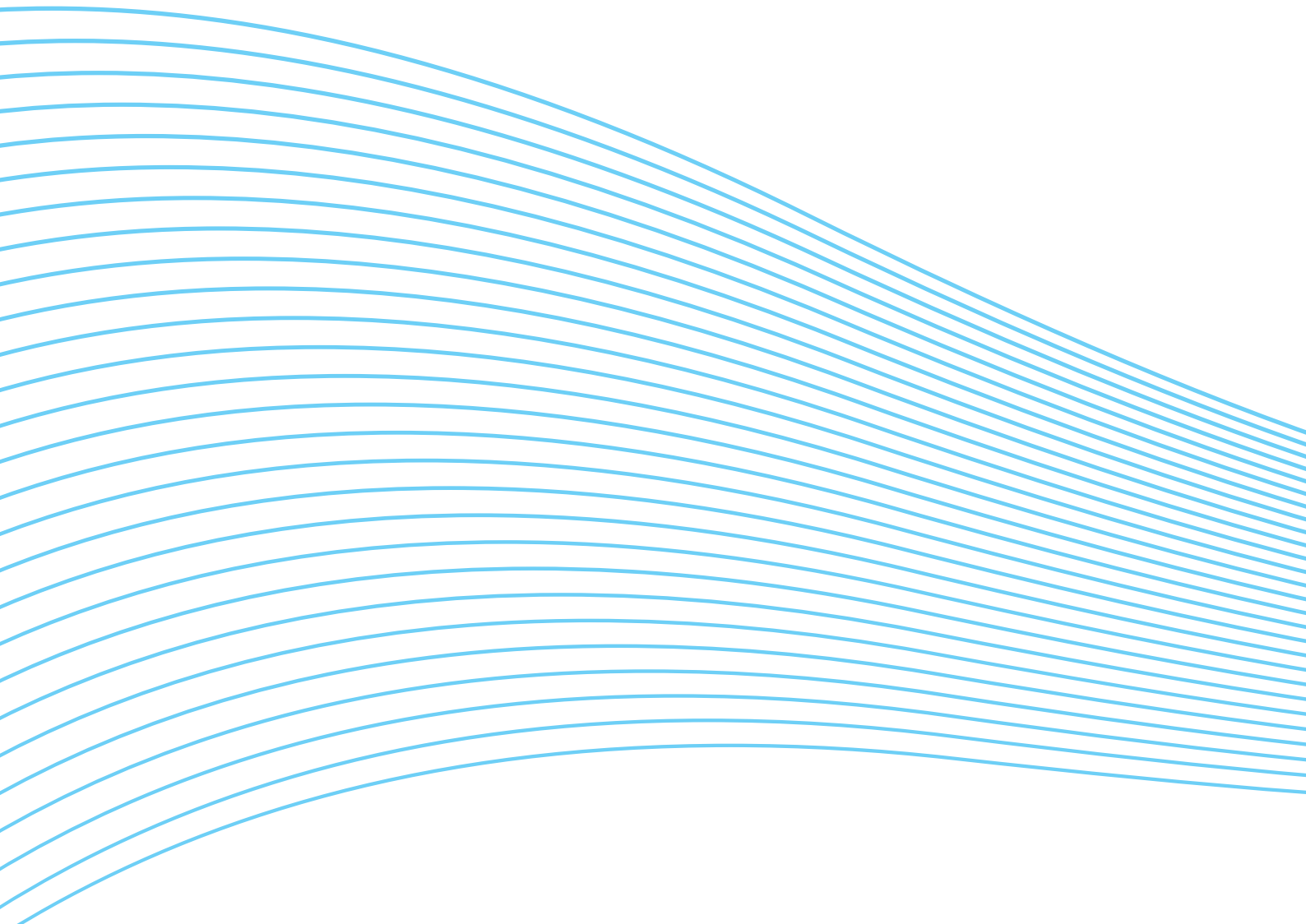
## Destratification

Circulation fans ensure proper air mix and destratification



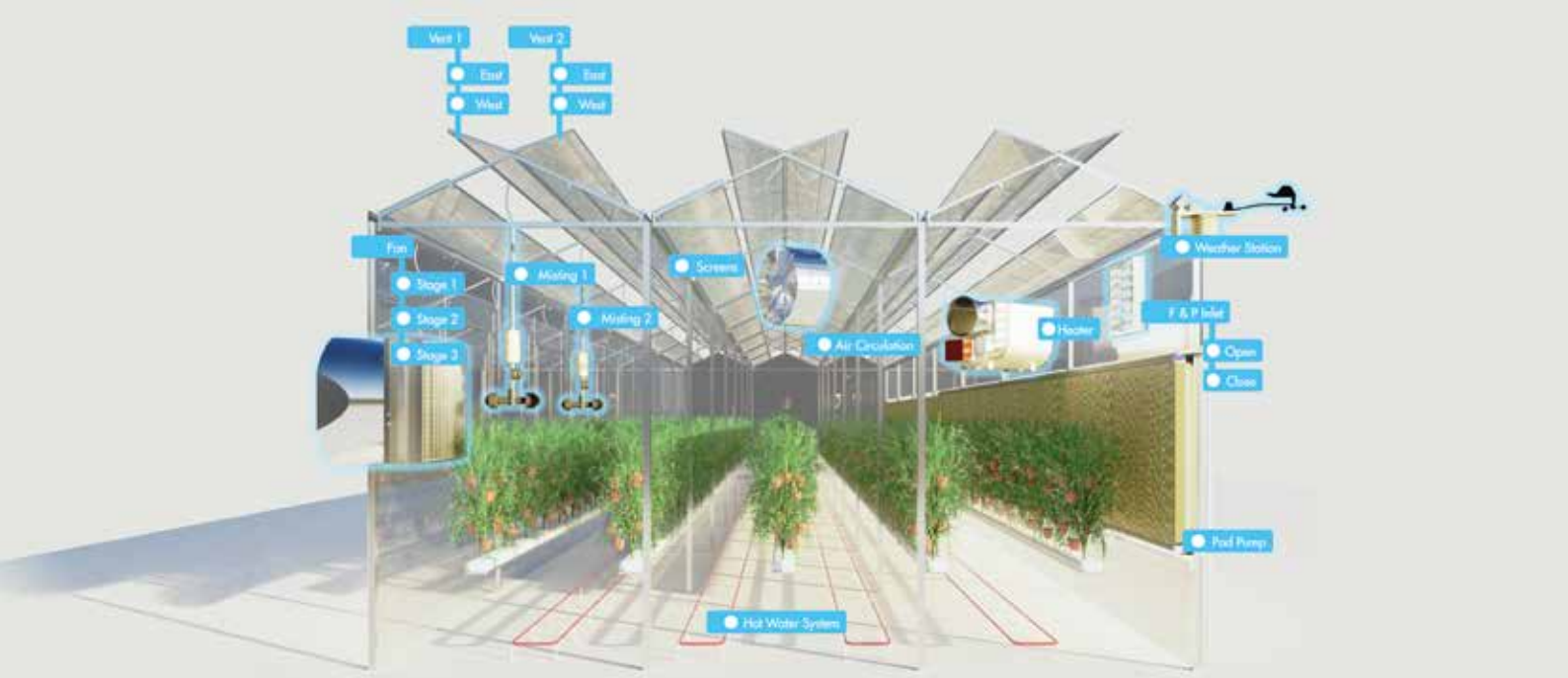
## Advantages

- Reduce risk of spore germinations and pathogens
- Lower relative humidity, hence improved crop transpiration
- Decrease heat needs and losses



Automation





# Greenhouse Automation



## GreenClimate

Munters GreenClimate controller helps to achieve a higher climate uniformity and the desired indoor conditions, managing parameters like:

- Temperature (cooling, heating)
- Relative humidity (ventilation, air circulation, heating)
- Climate uniformity (air circulation)

GreenClimate can manage up to 4 independent zones:

- Weather station information is shared between all climate zones
- A network of interconnected controllers is able to control up to 50 zones

Note: communication cards sold separately, must be added when ordering the controller

Text	Description
GRH	Greenhouse
EN	English
DO	Digital Output
DI	Digital Input
AI	Analog Input
Z	Zone
DD	Double Door

Product description	Code
GREEN CLIMATE -GRH-EN-MUR-230V-DO16-8DI-11AI-1Z	960-01-00001
GREEN CLIMATE -GRH-EN-MUR-230V-DO16-8DI-11AI-1Z-DD	960-01-00002
GREEN CLIMATE -GRH-EN-MUR-115V-DO16-8DI-11AI-1Z	960-01-00003
GREEN CLIMATE -GRH-EN-MUR-115V-DO16-8DI-11AI-1Z-DD	960-01-00004
GREEN CLIMATE -GRH-EN-MUR-230V-DO16-8DI-11AI-2Z	960-01-00005
GREEN CLIMATE -GRH-EN-MUR-230V-DO16-8DI-11AI-2Z-DD	960-01-00006
GREEN CLIMATE -GRH-EN-MUR-115V-DO16-8DI-11AI-2Z	960-01-00007
GREEN CLIMATE -GRH-EN-MUR-115V-DO16-8DI-11AI-2Z-DD	960-01-00008
GREEN CLIMATE -GRH-EN-MUR-230V-DO16-8DI-11AI-3Z	960-01-00009
GREEN CLIMATE -GRH-EN-MUR-230V-DO16-8DI-11AI-3Z-DD	960-01-00010
GREEN CLIMATE -GRH-EN-MUR-115V-DO16-8DI-11AI-3Z	960-01-00011
GREEN CLIMATE -GRH-EN-MUR-115V-DO16-8DI-11AI-3Z-DD	960-01-00012
GREEN CLIMATE -GRH-EN-MUR-230V-DO16-8DI-11AI-4Z	960-01-00013
GREEN CLIMATE -GRH-EN-MUR-230V-DO16-8DI-11AI-4Z-DD	960-01-00014
GREEN CLIMATE -GRH-EN-MUR-115V-DO16-8DI-11AI-4Z	960-01-00015
GREEN CLIMATE -GRH-EN-MUR-115V-DO16-8DI-11AI-4Z-DD	960-01-00016

# Accessories



## Expansion Box

- Water and dust tight
- Indoor use only
- Each controller can support up to 3 expansion boxes
- Adds up to 64 relays
- Maximum of 256 relays in a network
- Cards not included, sold separately

Product description	Code
GREEN CLIMATE EXP-L -GRH-EN-MUR-230V	960-02-00001
GREEN CLIMATE EXP-L -GRH-EN-MUR-115V	960-02-00002



## Weather Station

Provides data on outdoor conditions:

- Temperature
- Humidity
- Wind speed
- Wind direction
- Rain detection
- Radiation

Product description	Code
GREEN W.STATION-WD-WS-SR-MUR-230V	960-07-00001
GREEN W.STATION-WD-WS-SR-MUR-115V	960-07-00002



## CO<sub>2</sub> Sensor

Measures CO<sub>2</sub> and sends data to GreenClimate to increase ventilation, needed to add CO<sub>2</sub>, or to manage CO<sub>2</sub> injection through tanks or direct heaters.

- Range: 0 - 5000 PPM
- Accuracy: +/- 3%
- Data transmitted using a 4 - 20 mA output

Product description	Code
CO2-GRH-MUR	960-14-10007

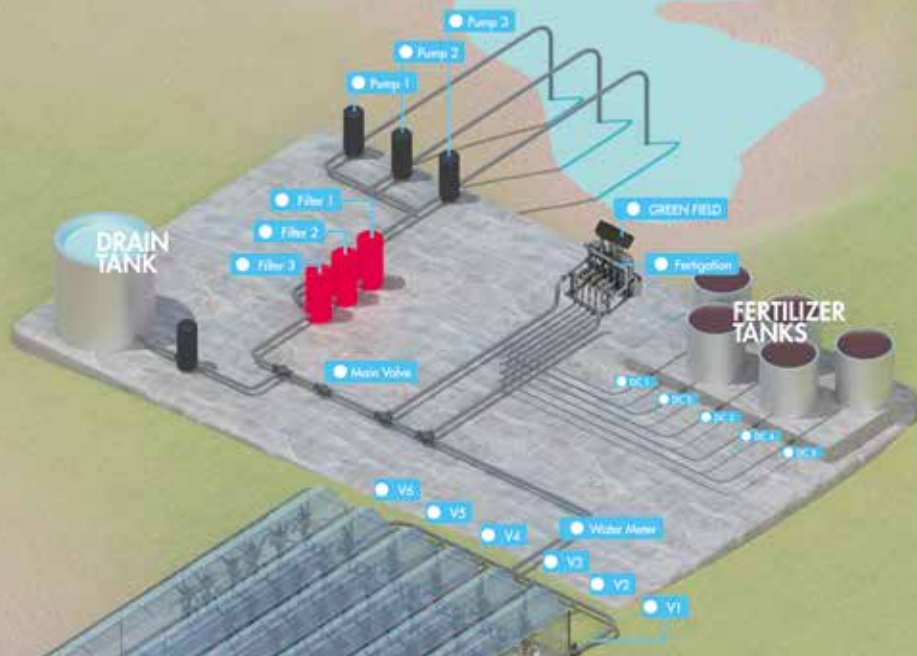


## GreenBox T+H

Unit includes a temperature and a humidity sensor and sends data to GreenClimate to initiate dehumidification, heating or cooling processes.

- Relative humidity range: 0 - 100%. User define RH set point to trigger dehumidification process
- Temperature range: -30° to +50° C
- Easy to maintain or repair in the unfortunate case of malfunction

Product description	Code
GREEN BOX-GRH-EN-MUR-T	960-08-00004
GREEN BOX-GRH-EN-MUR-T-RH	960-08-00005



# Irrigation Automation



## GreenField

Munters GreenField controller provides control and management over irrigation systems, maximizing the yield and the quality of the harvest while automating irrigation and fertigation processes. GreenField helps to boost plants growth and gives the exact amount of water and nutrients the plant needs, to reduce waste and environmental impact.

- Modular design allows scalability to grower's exact needs
- Precision operation with dynamic irrigation programs, responding to environmental inputs
- Punctual control over fertilizer supply and dosing programs
- Supports large amount of analog input/output devices, digital/pulse inputs, relays dry contacts, DC latch outputs
- Up to 64 outputs or 256 with expansion boxes

Note: communication cards sold separately, must be added when ordering the controller

Text	Description
GRH	Greenhouse
EN	English
DO	Digital Output
DI	Digital Input
AI	Analog Input
Z	Zone
DD	Double Door

Product description	Code
GREEN FIELD -GRH-EN-MUR-230V-DO16-8DI-11AI	960-03-00001
GREEN FIELD -GRH-EN-MUR-230V-DO16-8DI-11AI-DD	960-03-00002
GREEN FIELD -GRH-EN-MUR-115V-DO16-8DI-11AI	960-03-00003
GREEN FIELD -GRH-EN-MUR-115V-DO16-8DI-11AI-DD	960-03-00004
GREEN FIELD-GRH-EN-MUR-230V-DO0-8DI-11AI-PAN	960-03-00014

# Irrigation Automation



## GreenField ECO

Munters GreenField ECO controller provides control and management over small to medium size irrigation systems, maximizing the yield and the quality of the harvest while automating irrigation and fertigation processes. A cost-effective, not scalable solution with a large range of functionalities.

- Advanced EC/pH control
- Irrigation according to quantity, time, external conditions
- Dynamic irrigation and dosing programs
- Up to 15 outputs
- No modular expansion capabilities
- Hardware package supports analog and digital inputs
- Program supports filter flushing, cooling, misting programs

Note: communication cards sold separately, must be added when ordering the controller

Product description	Code
GREEN FIELD ECO -GRH-EN-MUR-230V-DO15-6DI-5AI	960-04-00001
GREEN FIELD ECO -GRH-EN-MUR-230V-DO15-6DI-5AI-DD	960-04-00002
GREEN FIELD ECO -GRH-EN-MUR-115V-DO15-6DI-5AI	960-04-00003
GREEN FIELD ECO -GRH-EN-MUR-115V-DO15-6DI-5AI-DD	960-04-00004



## GreenJet

Munters GreenJet is a complete fertigation unit and includes pump, dosing channels and water loop.

Compatible with Munters GreenField, GreenField ECO and EC-pH, all sold separately.

# Accessories



Text	Description
MT	Metal Panel Mount
D	Dual Sensors Readings

## Green EC-pH

This transmitter is designed to receive a signal from the EC and pH sensors that measure the water acidity (pH) and electrical conductivity (EC) and translate the signal into a 4 – 20 mA output to be read by GreenField or GreenField ECO or third party controller.

- Accurate EC data for an exact supply of fertilizer
- pH measurement to prevent nutrient deficiencies or toxicity
- Available in plastic box (single unit) or metal box (single or double unit)

Product description	Code
GREEN EC-PH -GRH-EN-MUR	960-05-00001
GREEN EC-PH -GRH-EN-MUR-MT	960-05-00002
GREEN EC-PH -GRH-EN-MUR-D-MT	960-05-00003



Product description	Code
EC ELECTRODE PT100 12 MM	960-99-00043

Product description	Code
PH GLASS 12 MM BNC CONNECTOR	960-99-00044



## Expansion Box

- Water and dust tight
- Indoor use only
- Each controller can support up to 3 expansion boxes
- Adds up to 64 relays
- Maximum of 256 relays in a network
- Cards not included, sold separately

Product description	Code
GREEN FIELD EXP-L-GRH-EN-MUR-230V	960-15-10001
GREEN FIELD EXP-L-GRH-EN-MUR-115V	960-15-10002



## Weather Station

Provides data on outdoor conditions:

- Temperature
- Humidity
- Wind speed
- Wind direction
- Rain detection
- Radiation

Product description	Code
GREEN W.STATION-WD-WS-SR-MUR-230V	960-07-00001
GREEN W.STATION-WD-WS-SR-MUR-115V	960-07-00002

# Communication



## GreenField App

Munters GreenField App, an advanced app used to connect to GreenField or GreenField ECO controllers, enables full management over the irrigation and fertigation operations anywhere, anytime.

- 24/7 access to irrigation controllers
- Simple and enhanced user experience
- Web, Cloud, and cellular connectivity
- Push notifications
- Multiple user privileges
- Irrigation controllers analytics
- Multi language support

Compatible with Munters GreenField or GreenField ECO and available for iOS and Android by downloading the application RotemNet Web. For networks with Munters GreenClimate controller, Munters GreenNet is the only viable option.



## GreenNet

GreenNet communication and management PC software can manage an entire line of controllers (climate or irrigation and climate). This software allows the farmer to collect and view data, displayed in tables or graphs, and to change settings remotely using the TeamViewer platform.

- User friendly Graphic User Interface
- Remote control over configuration and management
- Analytics of each controller's performance
- Available with climate controller or irrigation and climate (combined) controllers



## CommBox

Munters CommBox enables remote access to Munters climate, irrigation and fertigation controllers (GreenClimate, GreenField and GreenField ECO) from any computer, tablet or smartphone. Once the connection to the system is set, CommBox allows controllers management through Munters GreenField App or Munters GreenNet.

Product Description	Compatible with	Code
COMMBOX-GRH-EN-MUR-JB485-WEB	GreenField App	960-13-10001
COMMBOX-GRH-EN-MUR-CMGB-JB485-WEB*	GreenField App	960-13-10029
COMMBOX-GRH-EN-MUR-JB485	GreenNet	960-13-10019
COMMBOX-GRH-EN-MUR-CMGB-JB485*	GreenNet	960-13-10027
CommBox retrofit kit for GreenField App MSATA SSD 32GB COMMBOX GREENFIELD APP	GreenField App	960-99-00114

\*With global modem

# Accessories



## Communication Card

The communication card RS485 is required to connect the controller to CommBox. Suitable for GreenClimate and GreenField.

Product description	Code
GREENHOUSE CONT. COMMUNICATION RS485 CARD	960-99-00006



## Digital Outputs Card (24V and dry contact)

The digital outputs cards are needed to add up to 8 digital outputs to the controller (or to the expansion box).

- Up to 5 cards 24V can be installed in the controller (or in the expansion box)
- Up to 3 dry contact cards can be installed in the controller (or in the expansion box)

Product description	Code
24V digital outputs (8) card	960-99-00002
Dry contact digital outputs (8) card	960-99-00003



## Digital Inputs Card

The digital inputs card is needed to add up to 8 digital inputs to the controller.

- Up to 3 dry contact cards can be installed in the controller (or in the expansion box)

Product description	Code
Dry contact digital inputs (8) card	960-99-00004



## Analog Outputs Card\*

The analog outputs card is needed to add up to 4 (4-20 mA) analog outputs to the controller. The card includes surge and lightning protection circuits (external protection not required).

- Up to 2 cards can be installed in the controller

Product description	Code
Analog outputs (4) card	960-99-00037

\*Compatible only with Munters GreenField controller (dosing channel control)

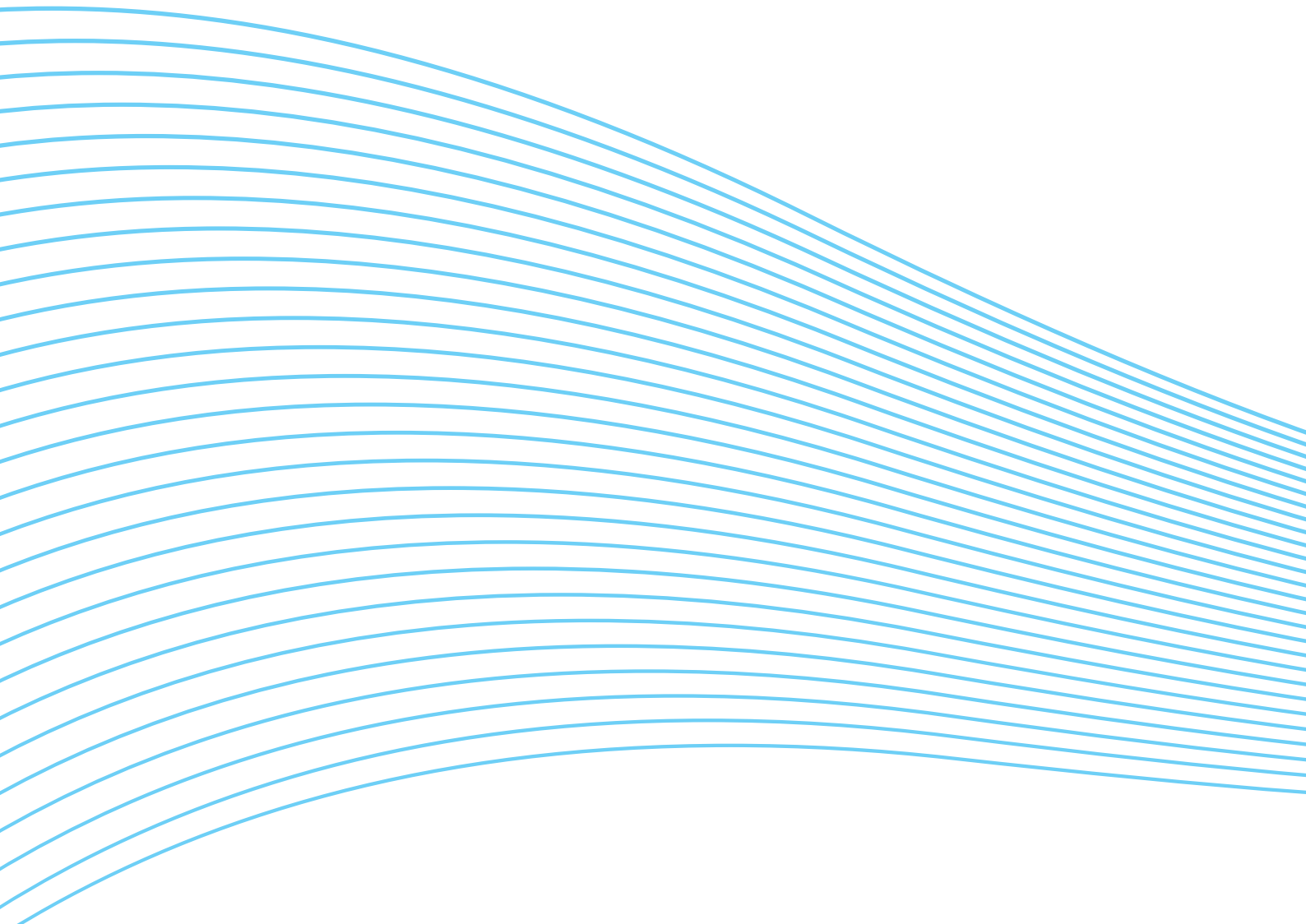


## Analog Inputs Card

The analog inputs card is needed to add up to 11 (4-20 mA / 0-5 V) analog outputs to the controller (or to the expansion box). The card includes surge and lightning protection circuits (external protection not required).

- Up to 4 cards can be installed in the controller (or in the expansion box)

Product description	Code
Analog inputs (11) card	960-99-00005



# Air Extraction

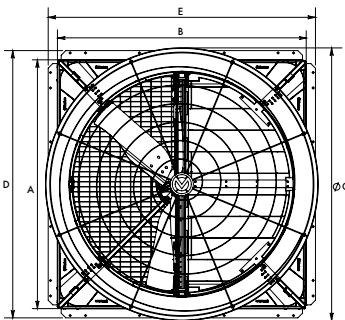


# Saturn FIVE Munters Drive



## Features

- Innovative butterfly damper, in plastic, without actuator, by closing tightly avoids air drafts, and its fast opening prevents flies and bugs from entering
- High performance guaranteed over a long service life, while ensuring corrosion resistance and minimal maintenance
- Optimal airflow combined with energy efficiency. Munters Drive saves up to 40% on electricity costs
- Two installation options available: wall mount and through wall mount

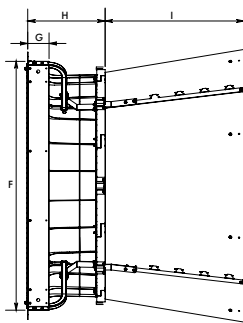


## Available models

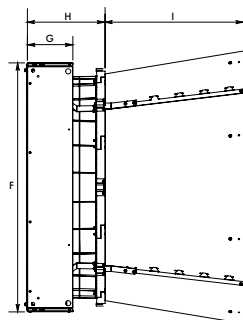
Model	Motor	Voltage	Current	Code
Saturn FIVE wall mount	Munters Drive	400 V	3.8 A	2712186EU
Saturn FIVE through wall mount				2612119EU

## Dimensions

	A	B	C	D	E	F	G	H	I
Wall mount	1615 mm	1615 mm	1770 mm	1735 mm	1735 mm	1615 mm	139 mm	504 mm	900 mm
Through wall mount	1615 mm	1615 mm	1770 mm	-	-	1615 mm	295 mm	504 mm	900 mm



Wall mount



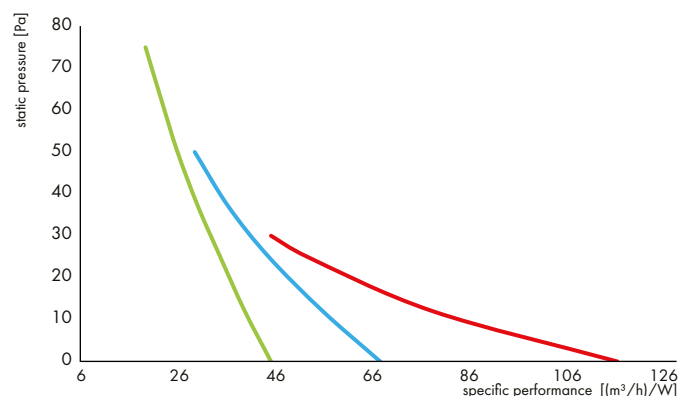
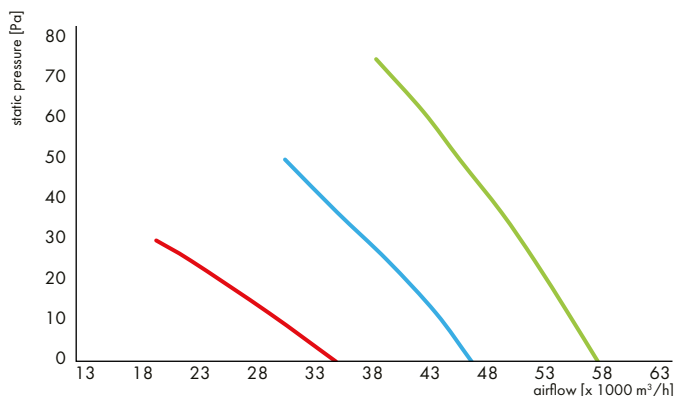
Through wall mount

## Technical specifications

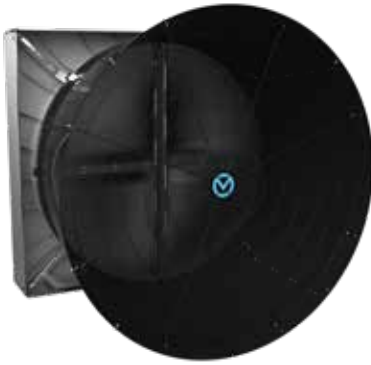
	Munters Drive	
Nominal power	hp	2.0
Propeller diameter	mm [inch]	1400 [55]
Nominal propeller speed	rpm	625
Transmission	Direct drive	
Number of blades/material	3/Munters Protect	
Weight of fully equipped fan	kg	110
Max power consumption/max current	W/A	1985/3.8
Protective class of electric motor	IP55	
Noise level <sup>1</sup>	Db(a)	75.6

<sup>1</sup>Noise measured according to ISO 3744

	rpm	BESS Lab	
	625	500	375
			#22113



# Saturn FIVE Belt 1.5

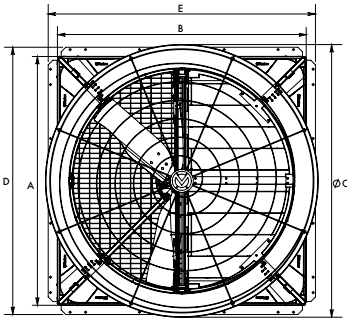


## Features

- Innovative butterfly damper, in plastic, without actuator, by closing tightly avoids air drafts, and its fast opening prevents flies and bugs from entering
- High performance guaranteed over a long service life, while ensuring corrosion resistance and minimal maintenance
- Optimal airflow combined with energy efficiency
- Two installation options available: wall mount and through wall mount

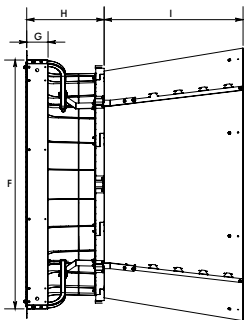
## Available models

Model	Motor	Voltage	Frequency	Current	Code
Saturn FIVE wall mount	1.5 hp	400 V	50 Hz	3.3 A	2712142EU
			60 Hz	5.3 A	2712143EU
Saturn FIVE through wall mount			50 Hz	3.3 A	2612100EU
			60 Hz	5.3 A	2612101EU

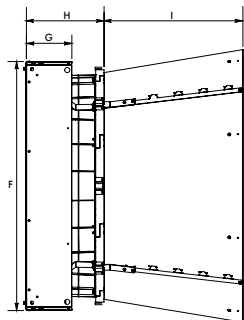


## Dimensions

	A	B	C	D	E	F	G	H	I
Wall mount	1615 mm	1615 mm	1770 mm	1735 mm	1735 mm	1615 mm	139 mm	504 mm	900 mm
Through wall mount	1615 mm	1615 mm	1770 mm	-	-	1615 mm	295 mm	504 mm	900 mm



Wall mount



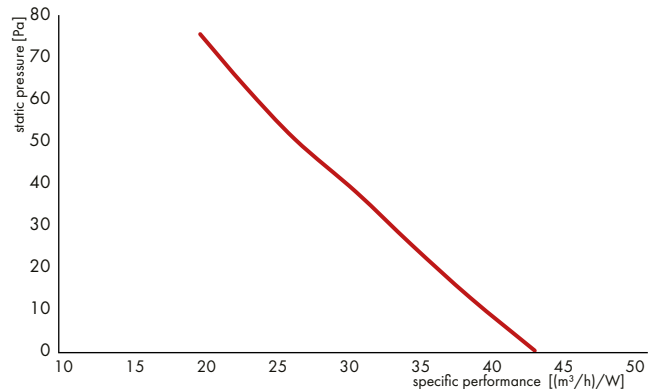
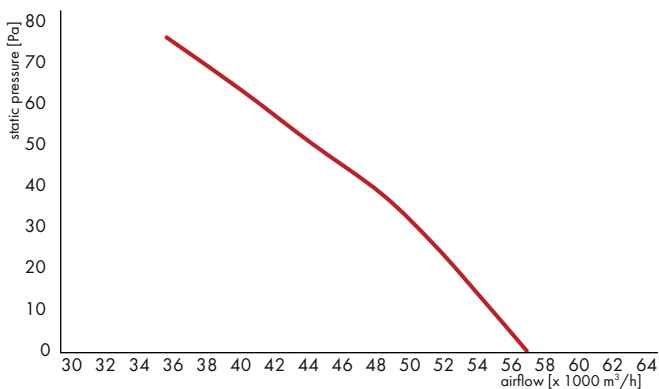
Through wall mount

## Technical specifications

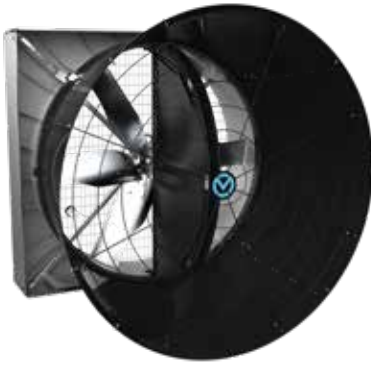
Belt 1.5	
Nominal power	hp 1.5
Propeller diameter	mm [inch] 1400 [55]
Number of blades/material	3/Munters Protect
Transmission	Belt drive
Weight of fully equipped fan	kg 100
Max power consumption/max current <sup>1</sup>	W/A 1850/3.3
Protective class of electric motor	IP55
Noise level <sup>2</sup>	Db(a) 75.6

<sup>1</sup>50 Hz 400 V specification, <sup>2</sup>Noise measured according to ISO 3744

Motor	BESS Lab
—hp 1.5 IE3	#22429



# Saturn FIVE Belt 2.0

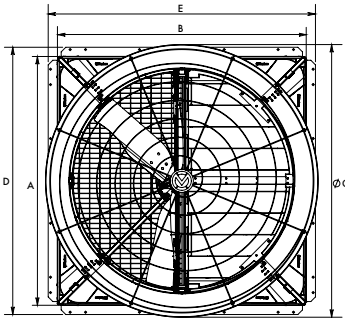


## Features

- Innovative butterfly damper, in plastic, without actuator, by closing tightly avoids air drafts, and its fast opening prevents flies and bugs from entering
- High performance guaranteed over a long service life, while ensuring corrosion resistance and minimal maintenance
- Optimal airflow combined with energy efficiency
- Two installation options available: wall mount and through wall mount

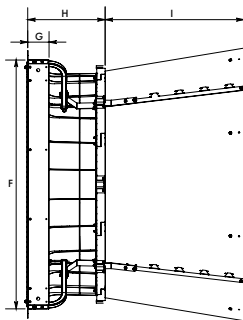
## Available models

Model	Motor	Voltage	Frequency	Current	Code
Saturn FIVE wall mount	2.0 hp	400 V	50 Hz	4.3 A	2712149EU
			60 Hz	4.4 A	2712150EU
Saturn FIVE through wall mount			50 Hz	4.3 A	2612107EU
			60 Hz	4.4 A	2712108EU

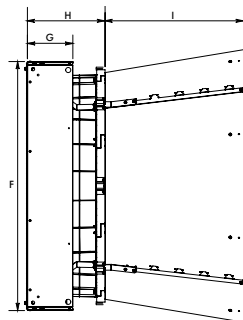


## Dimensions

	A	B	C	D	E	F	G	H	I
Wall mount	1615 mm	1615 mm	1770 mm	1735 mm	1735 mm	1615 mm	139 mm	504 mm	900 mm
Through wall mount	1615 mm	1615 mm	1770 mm	-	-	1615 mm	295 mm	504 mm	900 mm



Wall mount



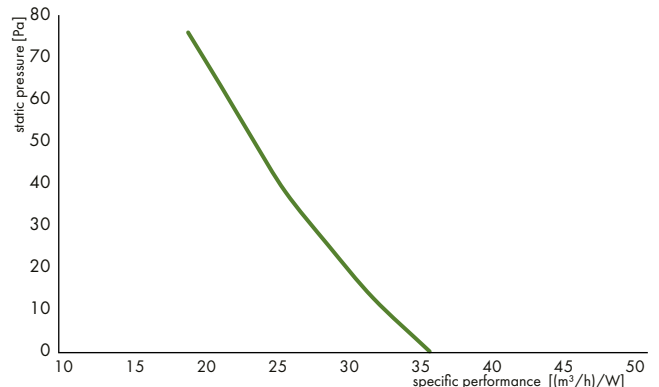
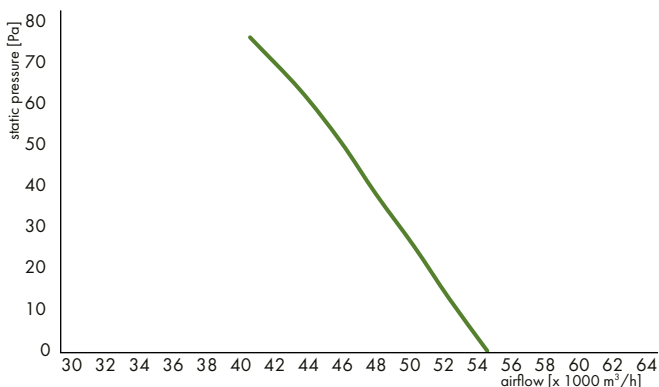
Through wall mount

## Technical specifications

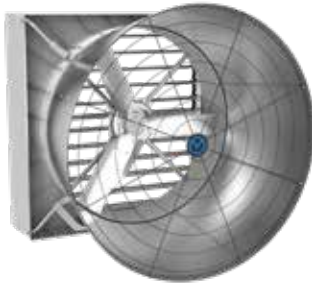
Belt 2.0	
Nominal power	hp 2.0
Propeller diameter	mm [inch] 1400 [55]
Number of blades/material	6/Munters Protect
Transmission	Belt drive
Weight of fully equipped fan	kg 120
Max power consumption/max current <sup>1</sup>	W/A 2485/4.3
Protective class of electric motor	IP55
Noise level <sup>2</sup>	Db(a) 76.9

<sup>1</sup>50 Hz 400 V specification, <sup>2</sup>Noise measured according to ISO 3744

Motor	BESS Lab
—hp 2.0 IE3	#22106



# Saturn ONE Munters Drive



## Features

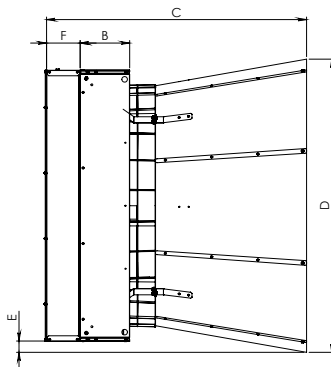
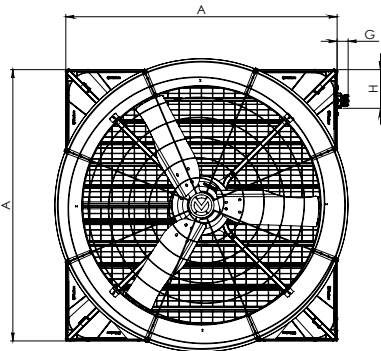
- Optimized conveyor shape built with composite material
- Fewer moving parts reduce maintenance needs and costs
- Smooth inner housing edges increase airflow efficiency
- Reduced noise emission
- Energy efficient ventilation system, saving up to 60% of electricity with EC motor
- Patented Anti-Gravity Shutter (AGS) reduces light, air infiltration, dust deposit and noise. Detachable

## Available models

Model	Motor	Voltage	Current	Code
Saturn ONE through wall mount	Munters Drive	400 V	3.7 A	2611100EU

## Dimensions

A	B	C	D	E	F	G	H
1615 mm	295 mm	1518 mm	1745 mm	80 mm	173 mm	65 mm	230 mm

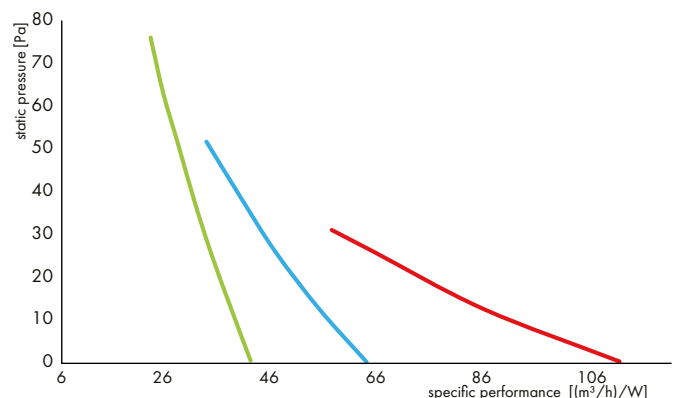
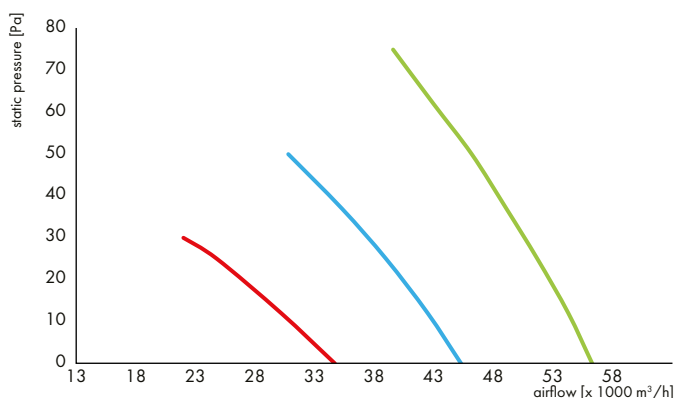


## Technical specifications

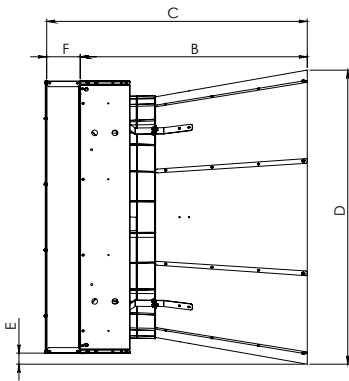
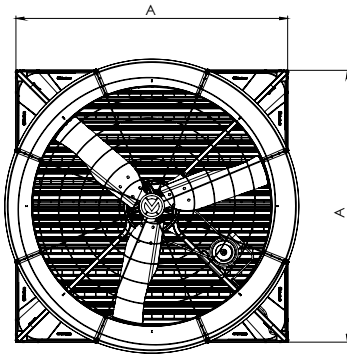
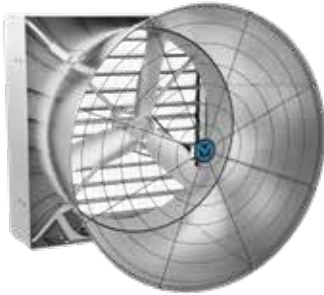
	Munters Drive	
Nominal power	hp	2.0
Motor type	EC - Permanent Magnet	
Propeller diameter	mm [inch]	1400 [55]
Nominal propeller speed	rpm	625
Transmission	Direct drive	
Number of blades/material	3/Munters Protect	
Weight of fully equipped fan	kg [lbs]	120 [264]
Max power consumption/max current <sup>1</sup>	W/A	2000/3.7
Min/Max operating temperature	°C [°F]	-15/+40 [5/104]
Max operating pressure	Pa	75
Noise level <sup>2</sup>	Db(a)	74.3

<sup>1</sup>50 Hz 400 V specification, <sup>2</sup>Noise measure according to ISO 3744

	rpm	BESS Lab
	626	#21133
	500	
	374	



# Saturn ONE Belt 1.5, 2.0



## Features

- Optimized conveyor shape built with composite material
- Fewer moving parts reduce maintenance needs and costs
- Smooth inner housing edges increase airflow efficiency
- Reduced noise emission
- Energy efficient ventilation system
- Patented Anti-Gravity Shutter (AGS) reduces light, air infiltration, dust deposit and noise. Detachable

## Available models

Model	Motor	Voltage	Frequency	Current	Code
Saturn ONE through wall mount	1.5 hp	400 V	50 Hz	3 A	2611106EU
			60 Hz	3.1 A	2611111EU
	2.0 hp		50 Hz	4.1 A	2611105EU
			60 Hz	4.2 A	2611130EU

## Dimensions

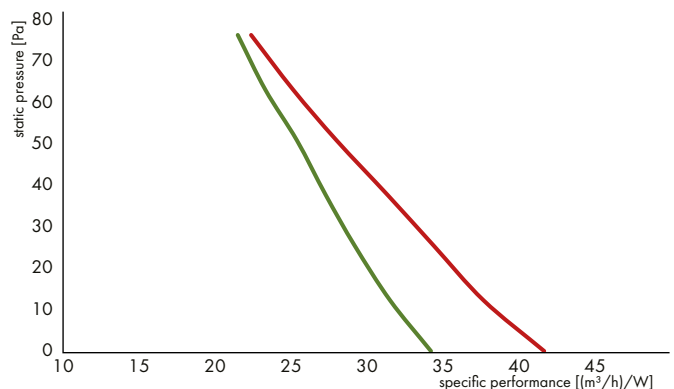
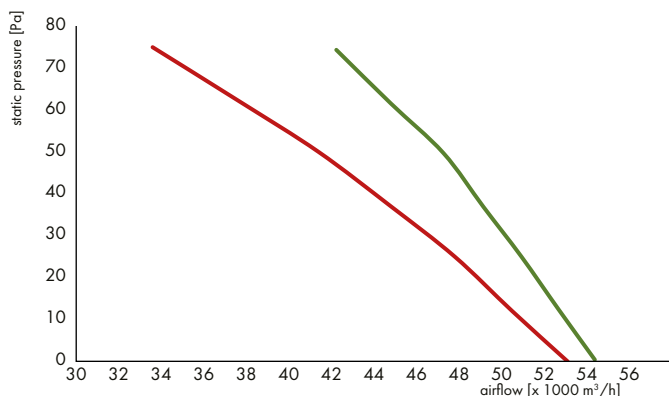
A	B	C	D	E	F
1615 mm	1345 mm	1518 mm	1745 mm	80 mm	173 mm

## Technical specifications

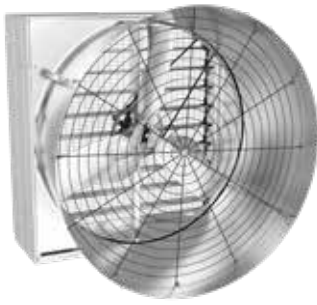
		Belt 1.5	Belt 2.0
Nominal power	hp	1.5	2.0
Propeller diameter	mm [inch]	1400 [55]	
Number of blades/material		3/Munters Protect	6/Munters Protect
Transmission		Belt drive	
Weight of fully equipped fan	kg	114	122
Max power consumption/max current <sup>1</sup>	W/A	1900/3	2350/4.1
Protective class of electric motor		IP55	
Noise level <sup>2</sup>	Db(a)	75.3	76.9

<sup>1</sup>50 Hz 400 V specification, <sup>2</sup>Noise measure made according to ISO 3744

Motor	BESS Lab	Motor	BESS Lab
— hp 1.5 IE3	#21109	— hp 2.0 IE3	#21113



# EC 50



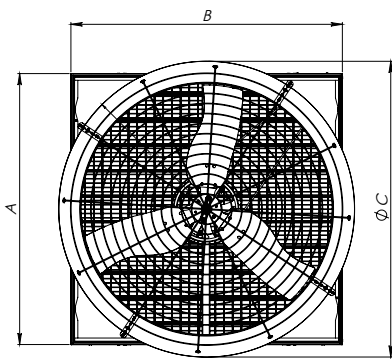
## Features

- Superior durability with Munters Protect coating, 3 years warranty against corrosion
- Fast and easy installation
- Energy efficient fan thanks to the discharge cone
- Suited for large greenhouses, where high flow rate is needed

## Available models

Model	Motor	Voltage	Frequency	Current	Code	EU Code
EC50	1.0 hp	400 V	50 Hz	2.1 A	2607165T	2607165TEU
			60 Hz	-	Upon request	-
	1.5 hp		50 Hz	2.9 A	2607645T	2607645TEU
			60 Hz	-	Upon request	-

## Dimensions



A	B	C	D	E	F
1375 mm	1375 mm	1500 mm	-	90 mm	450 mm
G	H	I	L	M	
630 mm	275 mm	M8	143 mm	830 mm	

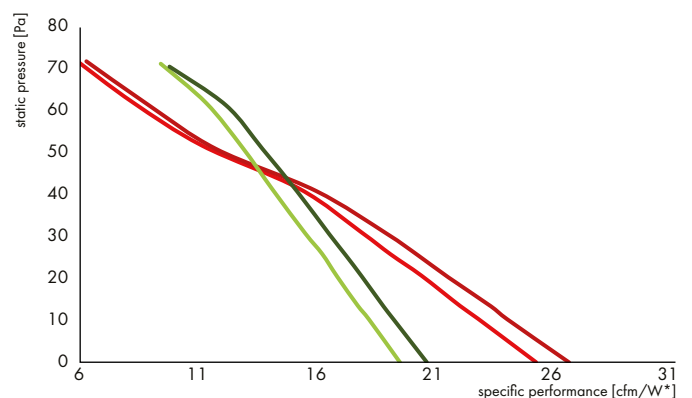
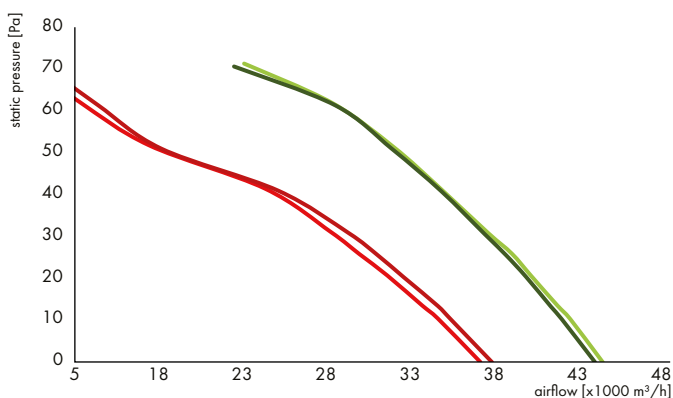
## Technical specifications

	EC50	
Nominal power	hp	1.0    1.5
Propeller diameter	mm [inch]	1270 [50]
Number of blades/material		3/Munters Protect
Number of shutter blades		10
Transmission		Belt drive
Weight of fully equipped fan	kg	106    108
Max power consumption/max current <sup>1</sup>	W/A	1150/2.1    1810/2.9
Max operating temperature	°C [°F]	50 [122]
Max operating pressure	Pa	50
Motor insulation grade/protective class		F/IP55
Noise level <sup>2</sup>	Db(a)	69.7    75.2

<sup>1</sup>50 Hz 400 V specification, <sup>2</sup>Noise measure made according to ISO 3744

Motor 1.0 hp		Motor 1.5 hp	
— IE3	— IE1	— IE3	— IE1

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa). \*1 cfm/W = 1.7 m<sup>3</sup>/hW



# EM 50



## Features

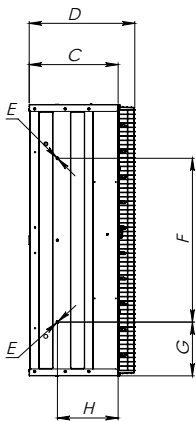
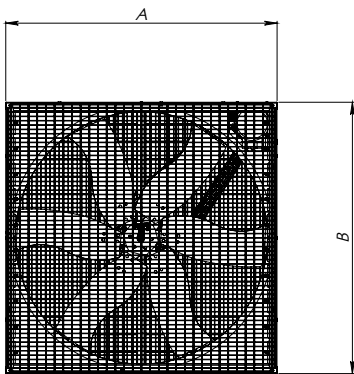
- Superior durability with Munters Protect coating, 3 years warranty against corrosion
- Reliable, proven in the market for 40 years
- Light and air draft reduction, when shutter is closed
- Suited for pad-fan cooling

## Available models

Model	Motor	Voltage	Frequency	Current	Code	EU Code
EM50	1.0 hp	400 V	50 Hz	2.2 A	2601065	2601065EU
			60 Hz	2.1 A	2601125	-
	1.5 hp		50 Hz	3.4 A	2601425	2601425EU
			60 Hz	3.3 A	2601545	-

## Dimensions

A	B	C	D	E	F	G	H
1375 mm	1375 mm	450 mm	540 mm	M8	830 mm	275 mm	308 mm



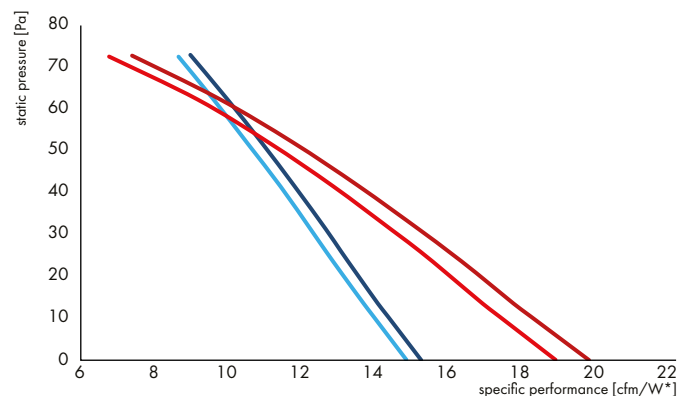
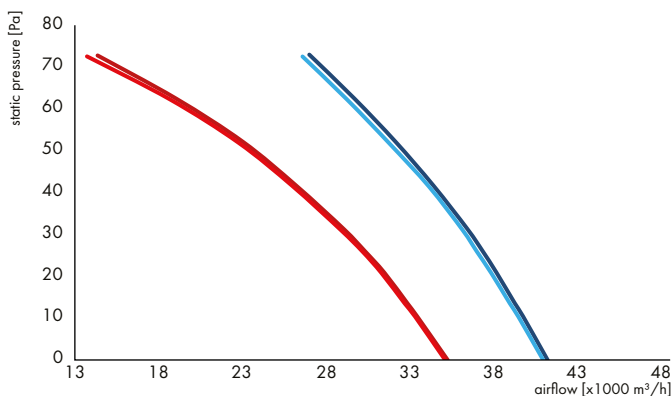
## Technical specifications

	EM50	
Nominal power	hp	1.0    1.5
Propeller diameter	mm [inch]	1270 [50]
Number of blades/material	6/Munters Protect	
Number of shutter blades	10	
Transmission	Belt drive	
Weight of fully equipped fan	kg	84    86
Max power consumption/max current <sup>1</sup>	W/A	1150/2.2    1810/3.4
Max operating temperature	°C [°F]	50 [122]
Max operating pressure	Pa	50
Motor insulation grade/protective class	F/IP55	
Noise level <sup>2</sup>	Db(a)	67.6    70.4

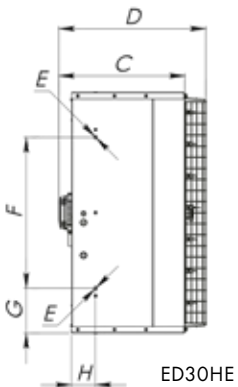
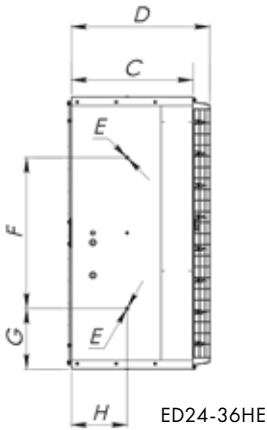
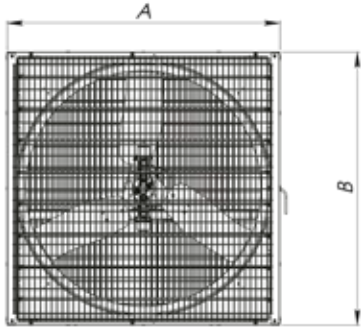
<sup>1</sup>50 Hz 400 V specification, <sup>2</sup>Noise measure made according to ISO 3744

Motor 1.0 hp	Motor 1.5 hp
— IE3	— IE1
— IE3	— IE1

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa). \*1 cfm/W = 1.7 m<sup>3</sup>/hW



# ED 36-30-24 HE



## Features

- Superior durability with Munters Protect coating, 3 years warranty against corrosion
- Low maintenance
- Suited for humidity controlled ventilation

## Available models

Model	Motor	Voltage	Frequency	Current	Code	EU Code
ED36HE	0.75 hp	400 V	50 Hz	1.9 A	2790200	2790200EU
			60 Hz	1.8 A	2790210	-
ED30HE	0.5 hp	400 V	50 Hz	1.3 A	2608250	2608250EU
			60 Hz	1.2 A	2608291	-
ED24HE	0.5 hp	400 V	50 Hz	1.3 A	2608600	2608600EU
			60 Hz	1.2 A	Upon request	-

## Dimensions

	A	B	C	D	E	F	G	H
ED36HE	1085 mm	1085 mm	485 mm	555 mm	M8	600 mm	242 mm	222 mm
ED30HE	950 mm	950 mm	500 mm	585 mm	M8	600 mm	175 mm	95 mm
ED24HE	750 mm	750 mm	485 mm	620 mm	M8	475 mm	137 mm	150 mm

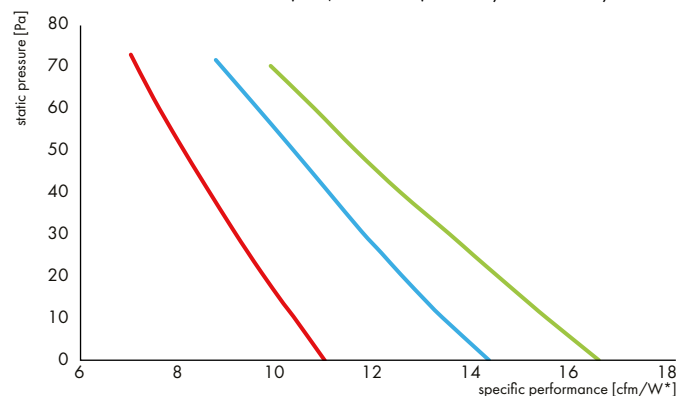
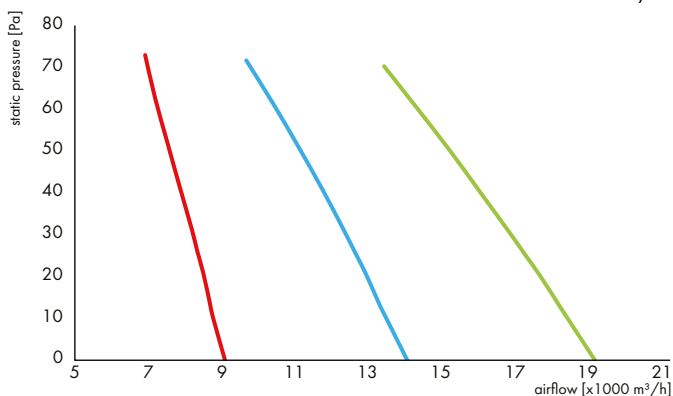
## Technical specifications

		ED36HE	ED30HE	ED24HE
Nominal power	hp	0.75	0.5	0.5
Propeller diameter	mm [inch]	915 [36]	770 [30]	610 [24]
Number of blades/material		3/Munters Protect		
Number of shutter blades		8	7	5
Transmission		Direct drive		
Weight of fully equipped fan	kg	70	60	49
Max power consumption/max current <sup>1</sup>	W/A	800/1.9	720/1.3	610/1.3
Max operating temperature	°C [°F]	50 [122]		
Max operating pressure	Pa	50		
Motor insulation grade/protective class		F/IP55		
Noise level <sup>2</sup>	Db(a)	71.2	69.8	72.5

<sup>1</sup>50 Hz specification, <sup>2</sup>Noise measure made according to ISO 3744

— ED36HE, — ED30HE, — ED24HE

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa). \* 1 cfm/W = 1.7 m<sup>3</sup>/hW





# Darkening Solution



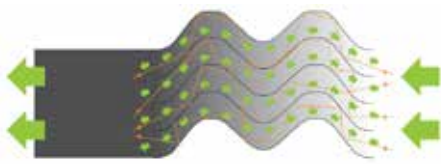
## Light filter

- 55-50-36-30-24" sizes
- Suitable for box and cone fans
- 2.000.000:1 light reduction factor
- Delivered unassembled, but also available assembled

## Available models

Product description	Compatible with	Width x Height x Depth [mm]	Code
Light filter LFd24	ED24HE	750 x 750 x 230	2653014
Light filter LFd30	ED30HE	960 x 960 x 230	2653013
Light filter LFd36	ED36HE	1100 x 1090 x 230	2653012
Light filter LFd50	EC50, EM50	1380 x 1380 x 230	2653006
Light filter LFd55 <sup>1</sup>	Saturn ONE, Saturn FIVE Munters Drive, Belt 2.0	1630 x 1630 x 230	2653024

<sup>1</sup>Not advised for Saturn ONE, FIVE Belt 1.5



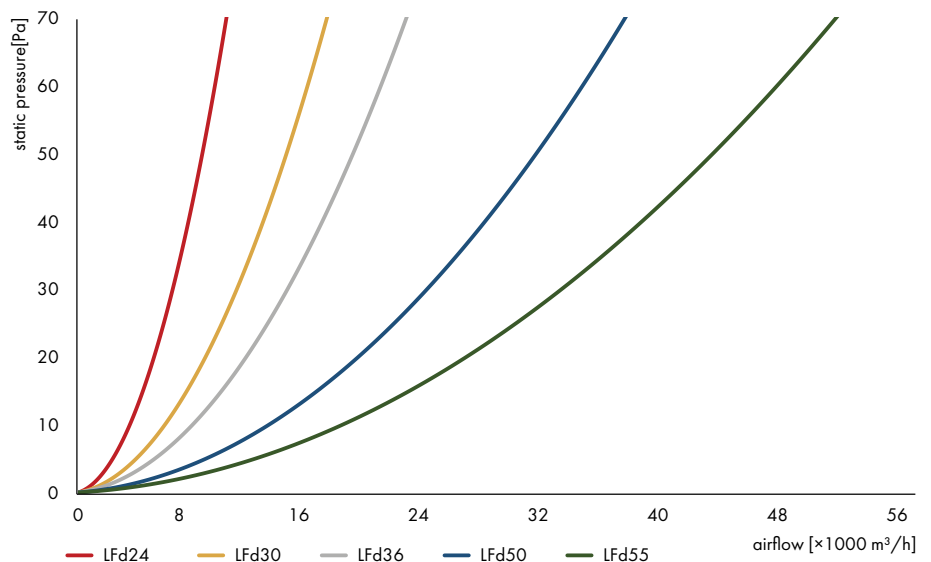
## Principles of Operations

Curved vanes create many reflections to absorb light while creating a smooth passage for airflow

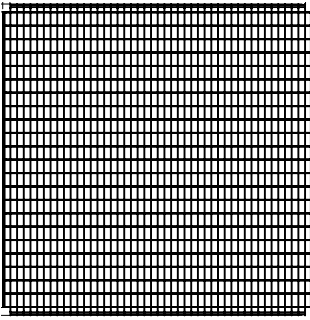
## LFd spacers for fans

Product description	Note	Code
Kit Spacer ED30HE for LFd	For adjusting the LFd to the ED30HE	2520640
Kit Spacer EC50 for LFd	For adjusting the LFd to the EC50	2520600

## LFd performance curves



# Accessories



## Protection mesh

- 55-50-36-30-24" sizes
- Suitable for box and cone fans
- Placed externally and required for protection purposes (i.e. installation under 2.7 m)

## Available models

Product description	Compatible with	Width x Height x Depth [mm]	Code
Safety kit with pyramidal mesh 24"	ED24HE	710 x 705 x 130	2658100
Safety kit with pyramidal mesh 30"	ED30HE	915 x 915 x 80	2658000
Safety kit with pyramidal mesh 36"	ED36HE	1030 x 1055 x 66	2657800
Safety kit with pyramidal mesh 50"	EC50, EM50	1320 x 1370 x 90	2657700
Safety kit with flat mesh 55" <sup>1</sup>	Saturn ONE	1586 x 1586 x 5	2611120

<sup>1</sup>Saturn FIVE fans are provided with flat mesh

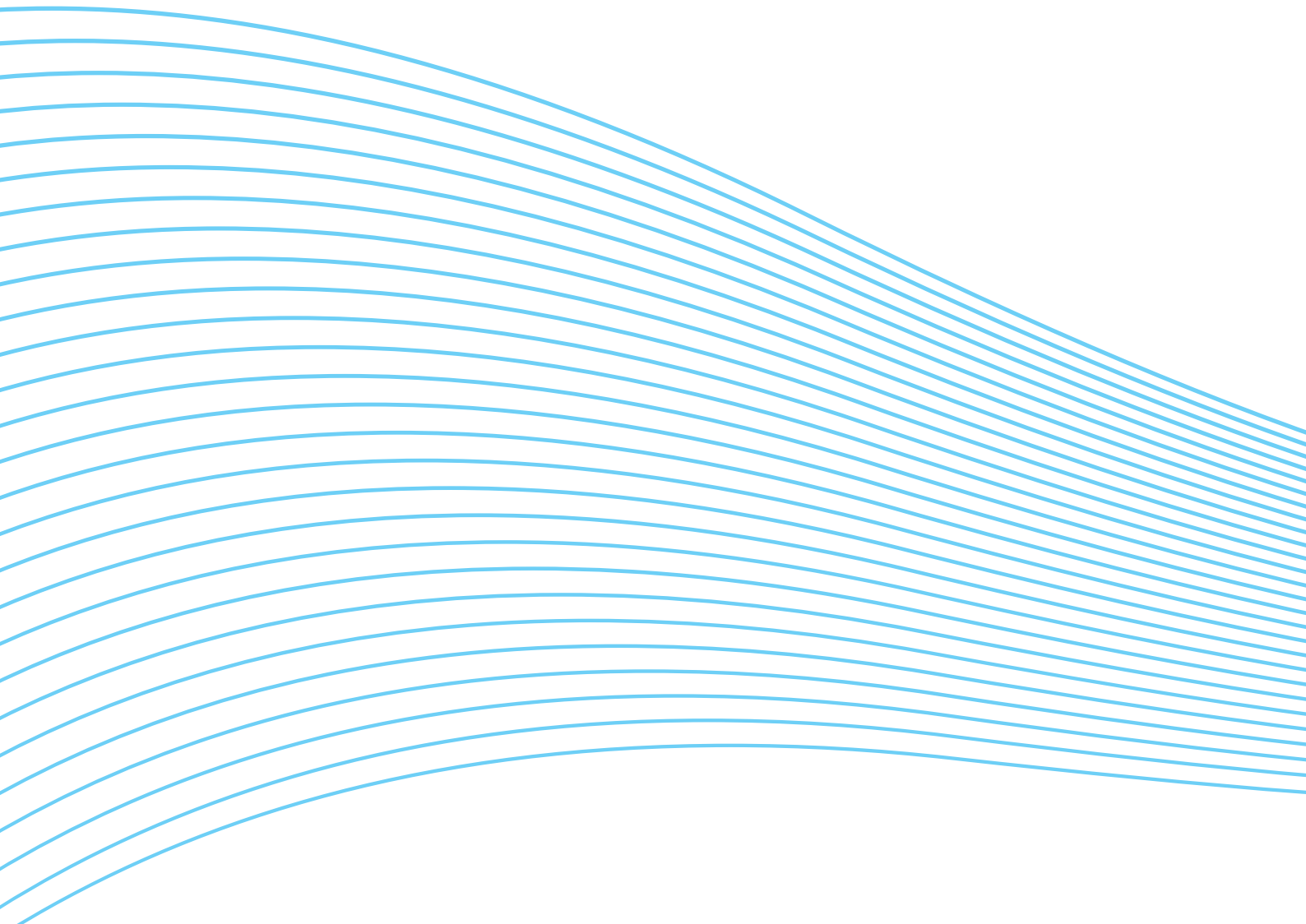


## Insulation panel

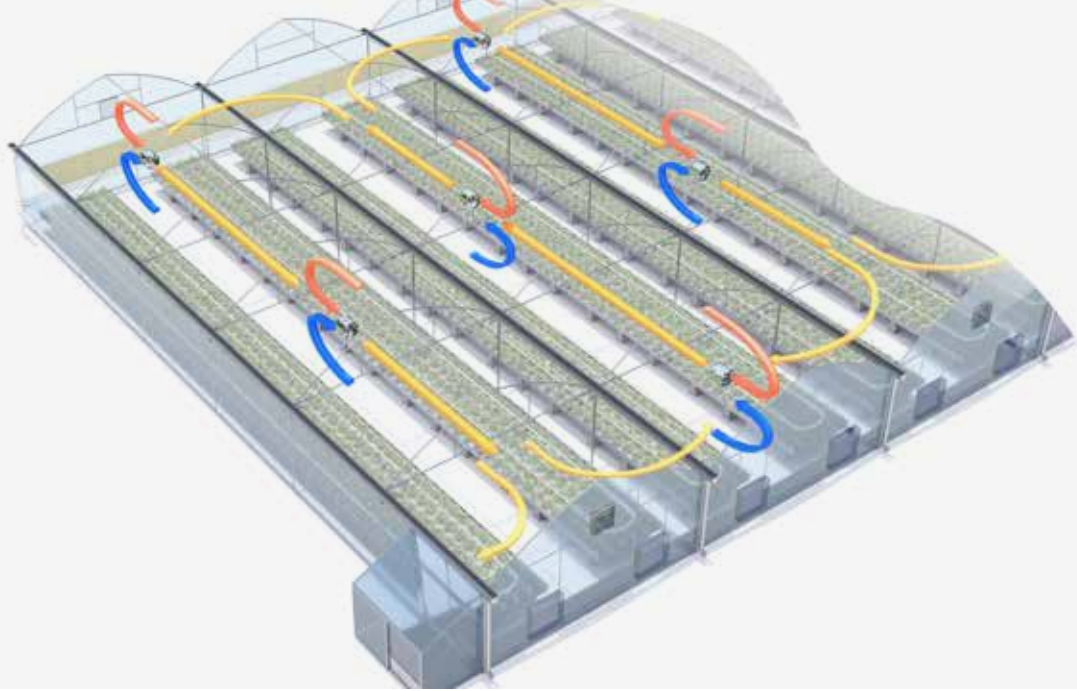
- 50-36" sizes
- Suitable for box and cone fans
- U-value = 0.95 W/m<sup>2</sup>/K
- Reduced heat losses through the fan shutter during cold season
- Can be installed both on inside and outside section

## Available models

Product description	Compatible with	Width x Height x Depth [mm]	Code
FI Insulation panel 36"	ED36HE	1092 x 1092 x 35	2602001
FI Insulation panel 50"	EC50, EM50	1382 x 1382 x 35	2602000



# Air Circulation



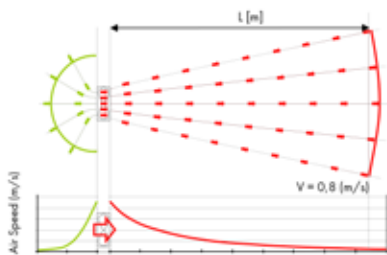
# Air Circulation

## Design specifications

To ensure a good air circulation and heat distribution the ventilation system should be able to:

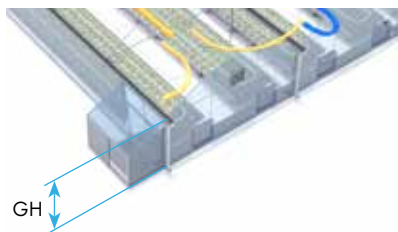
- Guarantee at least 3-5 air movements per hour
- Cover the entire greenhouse floor area

## Airthrow specifications



Circulator	Length (L) <sup>1</sup>	Gable Height (GH) range
EDC24GHp	30 m	GH > 3.5m
EDC18GHp	25 m	GH > 2.5m
EDT30HE	30 m	GH > 3.5m
EDS36HE <sup>2</sup>	25 m	GH > 3.5m

<sup>1</sup>Considering a residual airtspeed of 0.8 m/s, <sup>2</sup>Product developed for high airtspeed and flowrate



## Geometrical specifications

Gable Height (GH)	Munters suggests
> 2.5 m	EDC18GHp
> 3.5 m	EDC24GHp, EDT30HE, EDS36HE

# EDC 18-24 GHp

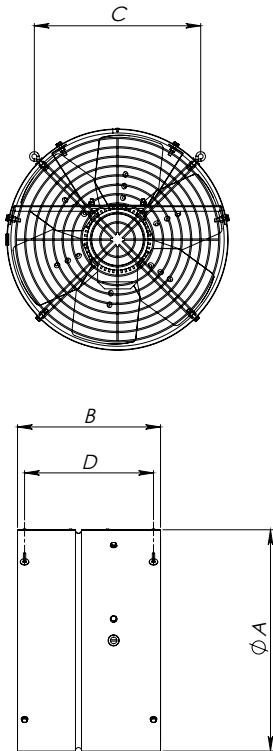


## Features

- Superior durability with Munters Protect coating, 3 years warranty against corrosion
- Fast and easy installation
- Compact design
- Ensuring temperature and humidity uniformity
- Reduced energy consumption

## Available models

Model	Motor	Voltage	Frequency	Current	Code	EU Code
EDC18GHp	0.5 hp	400 V	50 Hz	1.3 A	2606501	2606501EU
			60 Hz		2606502	-
		220 V	50 Hz	2.7 A	2606503	-
			60 Hz	3 A	2606504	-
EDC24GHp	0.5 hp	400 V	50 Hz	1.3 A	2609105	2608600EU
			60 Hz		2609106	-
		220 V	50 Hz	2.6 A	2609109	-
			60 Hz	3.4 A	2609111	-



## Dimensions

	A	B	C	D
EDC18GHp	472 mm	305 mm	355 mm	275 mm
EDC24GHp	623 mm	305 mm	458 mm	275 mm

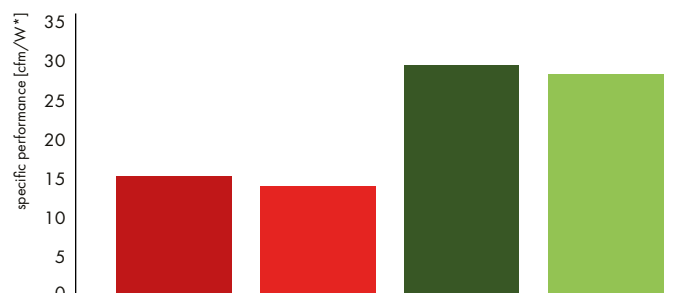
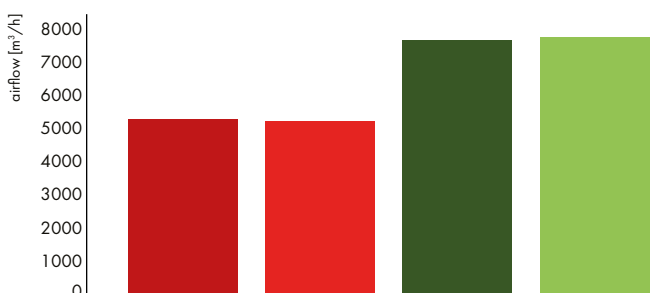
## Technical specifications

		EDC18GHp	EDC24GHp
Nominal power	hp		0.5
Propeller diameter	mm [inch]	450 [18]	600 [24]
Number of blades/material		6/Munters Protect	
Nominal propeller speed	rpm	1400	900
Weight of fully equipped fan	kg	14	20
Max power consumption/max current <sup>1</sup>	W/A	620/1.3	500/1.3
Motor insulation grade/protective class		F/IP55	
Noise level <sup>2</sup>	Db(a)	69.2	65.7

<sup>1</sup>50 Hz 400 V specification, 60 Hz available upon request, <sup>2</sup>Noise measure made according to ISO 3744

	EDC18GHp	EDC24GHp
	■ IE2	■ IE1
	■ IE2	■ IE1

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa). \*1 cfm/W = 1.7 m<sup>3</sup>/hW



# EDT 30 HE



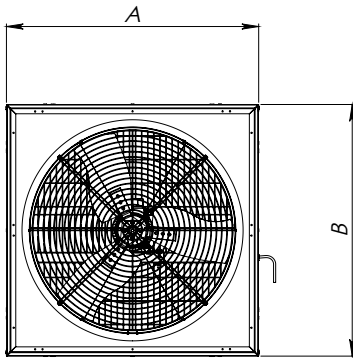
## Features

- Superior durability with Munters Protect coating, 3 years warranty against corrosion
- Easy installation
- Energy efficient solution
- Suitable for air distribution with the plastic duct 780 mm

## Available models

Model	Motor	Voltage	Frequency	Current	Code
EDT30HE	0.5 hp	400 V	50 Hz	1.6 A	2609300
			60 Hz	1.5 A	Upon request

## Dimensions



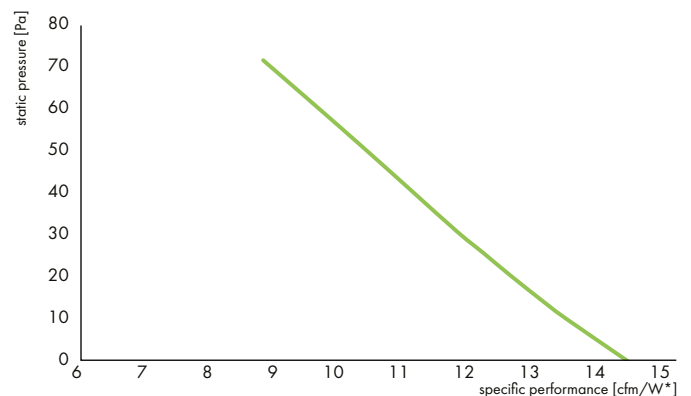
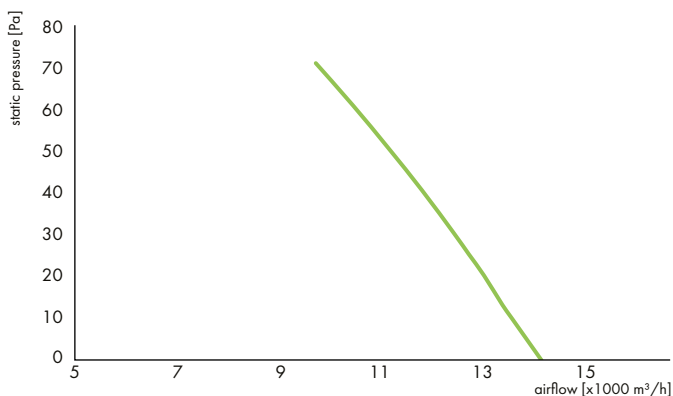
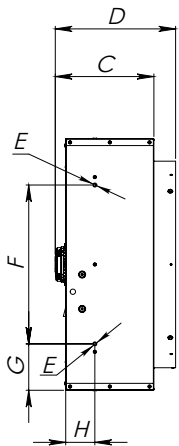
A	B	C	D	E	F	G	H
950 mm	950 mm	375 mm	455 mm	M8	600 mm	175 mm	110 mm

## Technical specifications

		EDT30HE
Nominal power	hp	0.5
Propeller diameter	mm [inch]	770 [30]
Number of blades/material		6/Munters Protect
Transmission		Direct drive
Weight of fully equipped fan	kg	41
Max power consumption/max current <sup>1</sup>	W/A	720/1.6
Max operating temperature	°C [°F]	50 [122]
Max operating pressure	Pa	50
Motor insulation grade/protective class		F/IP55
Noise level <sup>2</sup>	Db(a)	69.7

<sup>1</sup>50 Hz 400 V specification, 60 Hz available upon request, <sup>2</sup>Noise measure made according to ISO 3744

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa). \*1 cfm/W = 1.7 m<sup>3</sup>/hW



# EDS 36 HE



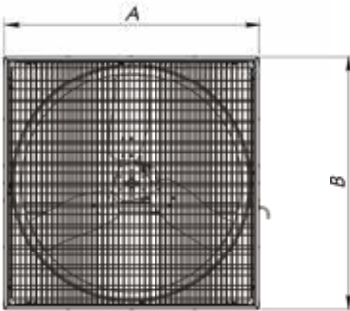
## Features

- Superior durability with Munters Protect coating, 3 years warranty against corrosion
- Easy installation
- High airflow capacity
- Energy efficient solution
- Optimized temperature and humidity distribution

## Available models

Model	Motor	Voltage	Frequency	Current	Code
EDS36HE	0.75 hp	400 V	50 Hz	1.6 A	2791000
			60 Hz	1.5 A	2791020

## Dimensions



A	B	C	D	E	F	G	H	I
1085 mm	1085 mm	395 mm	450 mm	M8	1040 mm	21 mm	46.5 mm	300 mm

## Technical specifications

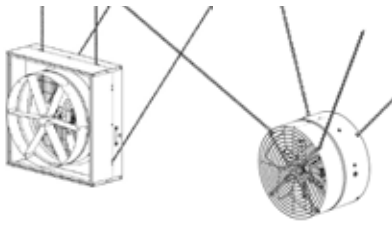
		EDS36HE
Nominal power	hp	0.75
Propeller diameter	mm [inch]	915 [36]
Number of blades/material		6/Munters Protect
Nominal propeller speed	rpm	900
Weight of fully equipped fan	kg	60
Max power consumption/max current <sup>1</sup>	W/A	800/1.6
Motor insulation grade/protective class		F/IP55
Noise level <sup>2</sup>	Db(a)	70.9

<sup>1</sup>50 Hz 400 V specification, 60 Hz available upon request, <sup>2</sup>Noise measure made according to ISO 3744

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa). \* 1 cfm/W = 1.7 m<sup>3</sup>/hW

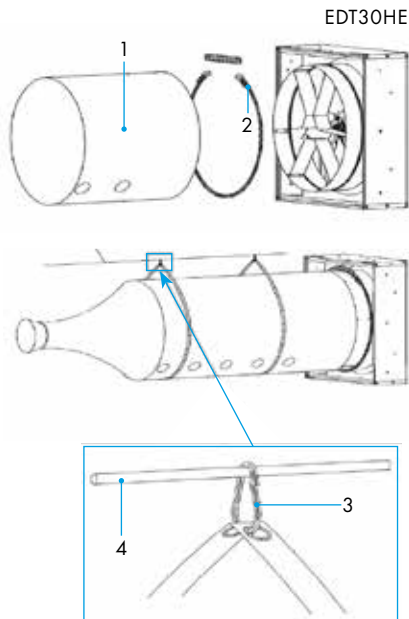


# Accessories



## Kit suspension chain

Name	Product description	Code
Kit suspension chain	Chains kit for EDC suspension (12.5 m)	2910221
	Chains kit for EDT suspension (10 m)	2910222



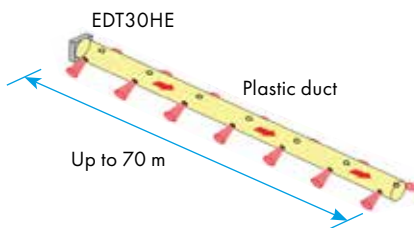
## Plastic duct and fixing accessories

Name	Product description	Code
1 - Plastic duct	Plastic duct 780 mm for hot air distribution	2658200
2 - Fixing duct kit	Kit for fixing the duct to the fan section	2654600
3 - Hanging belt	For hanging the duct to the coated cable*	2655200
4 - Coated cable	Cable that suspend the plastic duct	22823700

\*One hanging belt each 1.5 m of plastic duct is required

## Solution with plastic inflated duct

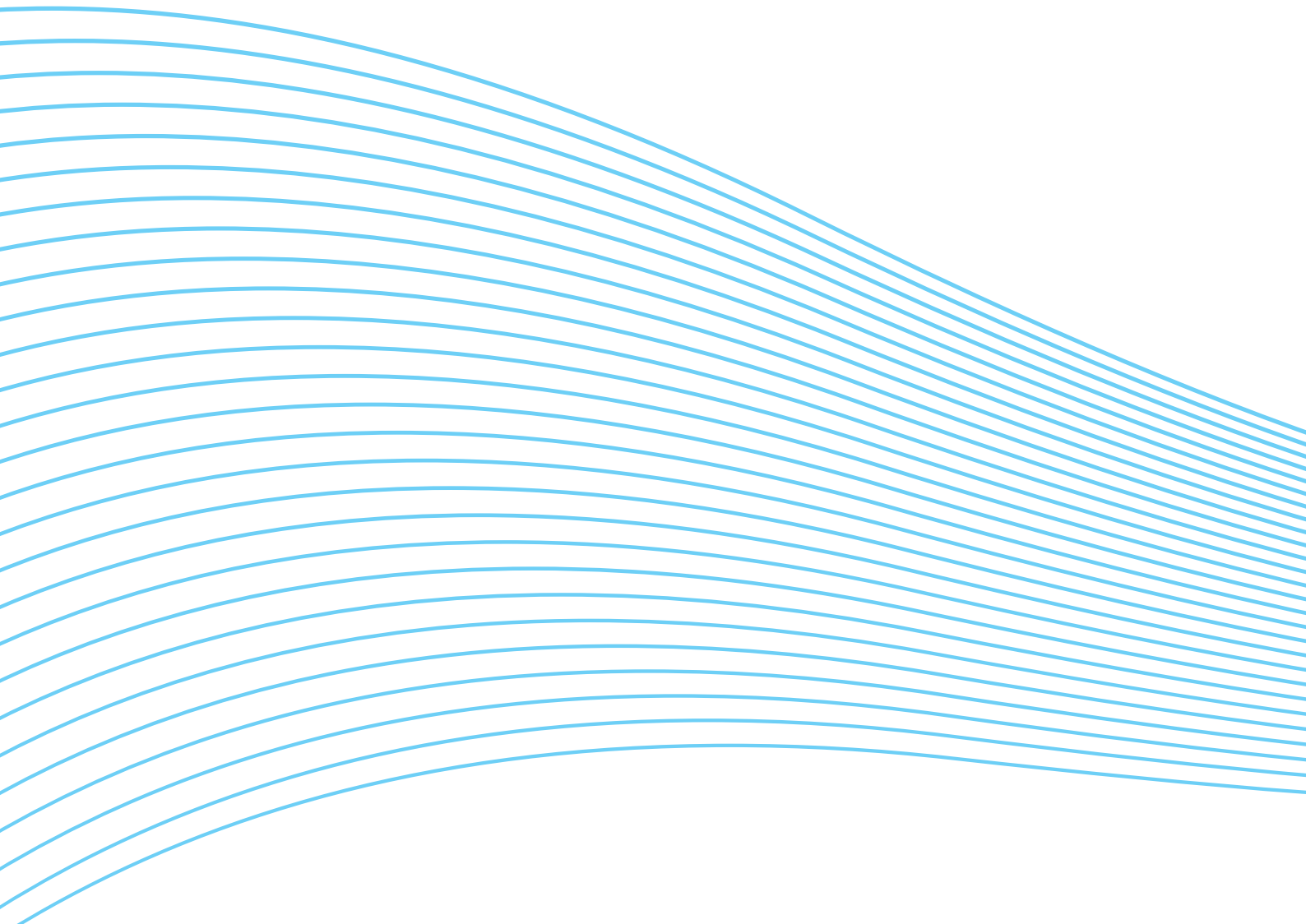
Air distribution up to 70 m with a 780 mm plastic duct and a EDT30HE inflating fan.



Name	Code
EDT30HE	See available fans
Plastic duct 780	2658200
Fixing duct kit	2654600
Hanging belt*	2655200
Coated cable	22823700
EDT chains kit	2910222

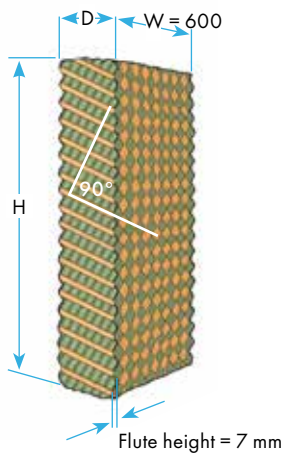
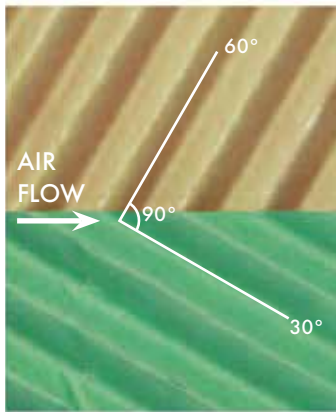
\*One hanging belt each 1.5 m of plastic duct is required





Cooling

# Cooling Pads



## CELdek® 7090

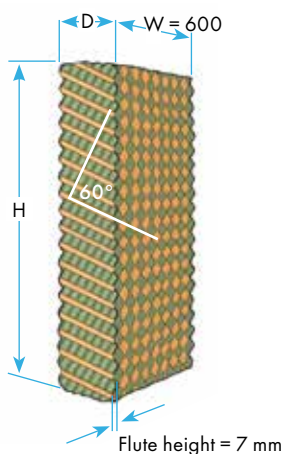
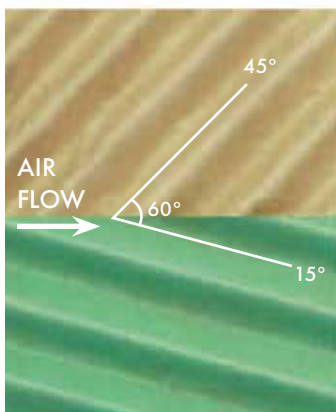
- High saturation efficiency
- Moderate pressure drop
- Very hot and dry climates
- Ensuring big temperature drop
- Compatible with MPG gutter system and WDP gutter system

## Available CELdek® 7090 pad models

Model	Depth (D)	Height (H)	Code
CELdek® 7090	100 mm	1000 mm	2960825
		1200 mm	2960790
		1500 mm	2960690
		1800 mm	2960615
	150 mm	2000 mm	2960555
		1000 mm	2960820
		1200 mm	2960785
		1500 mm	2960685
		1800 mm	2960610
		2000 mm	2960550

## CELdek® 7060

- Moderate saturation efficiency
- Low pressure drop
- Ideal for large greenhouses
- Ensuring high ventilation rates
- Compatible with MPG gutter system and WDP gutter system



## Available CELdek® 7060 pad models

Model	Depth (D)	Height (H)	Code
CELdek® 7060	100 mm	1000 mm	2961560
		1200 mm	2961510
		1500 mm	2961450
		1800 mm	2961385
		2000 mm	2961315
	150 mm	1000 mm	2961555
		1200 mm	2961505
		1500 mm	2961445
		1800 mm	2961380
		2000 mm	2961310

# Cooling Pads

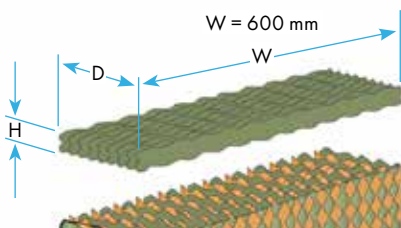


## RCP CoolPad

- Moderate-low saturation efficiency
- Moderate-low pressure drop
- High reliability due to the plastic material
- Suited for dusty environment
- Compatible with MPG gutter system
- Easy cleaning procedure

## Available RCP CoolPad models

Model	Depth (D)	Height (H)	Code
RCP CoolPad	150 mm	1000 mm	504991510
		1200 mm	504991512
		1500 mm	504991515
		1800 mm	504991518
		2000 mm	504991520
		2500 mm	504991525



## Available CELdek® 70120 distribution pad models

Model	Depth (D)	Height (H)	Code
CELdek® 70120	100 mm	30 mm	2961810
	150 mm		2961790

## Minimum order quantities

Model	Height (H)	100 mm	150 mm
CELdek® 7090 CELdek® 7060	1000 mm	22 pcs/box	14 pcs/box
	1200 mm	11 pcs/box	7 pcs/box
	1500 mm		
	1800 mm		
	2000 mm		
CELdek® distribution 70120	30 mm	30 pcs/box (small) 300 pcs/box (big)	20 pcs/box (small) 200 pcs/box (big)

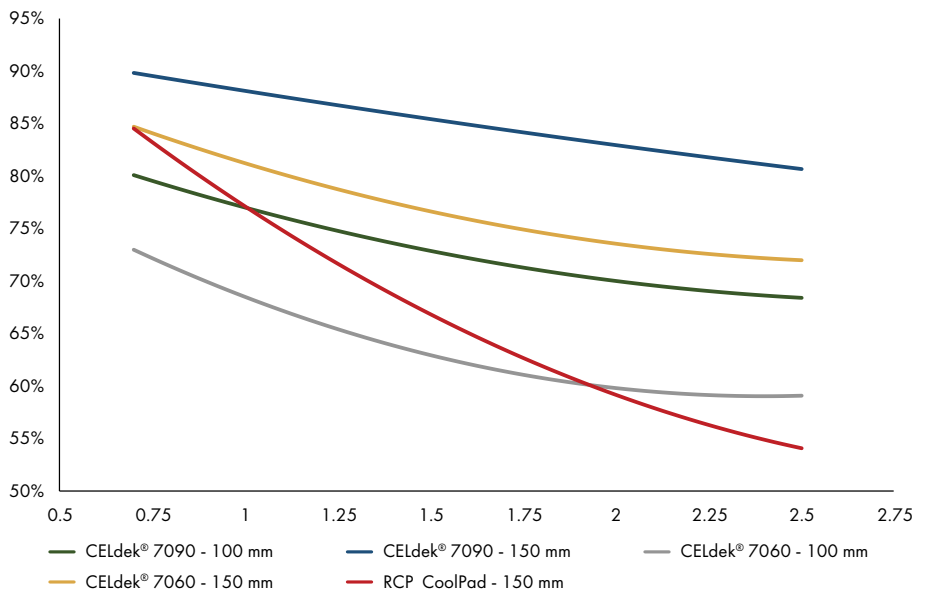
# Cooling Pads

## Performances comparison - Cooling efficiency

With the same airspeed the cooling efficiency of the CELdek® 7090 is higher than CELdek® 7060, the efficiency of the plastic pad reduces rapidly with the increase of airspeed.

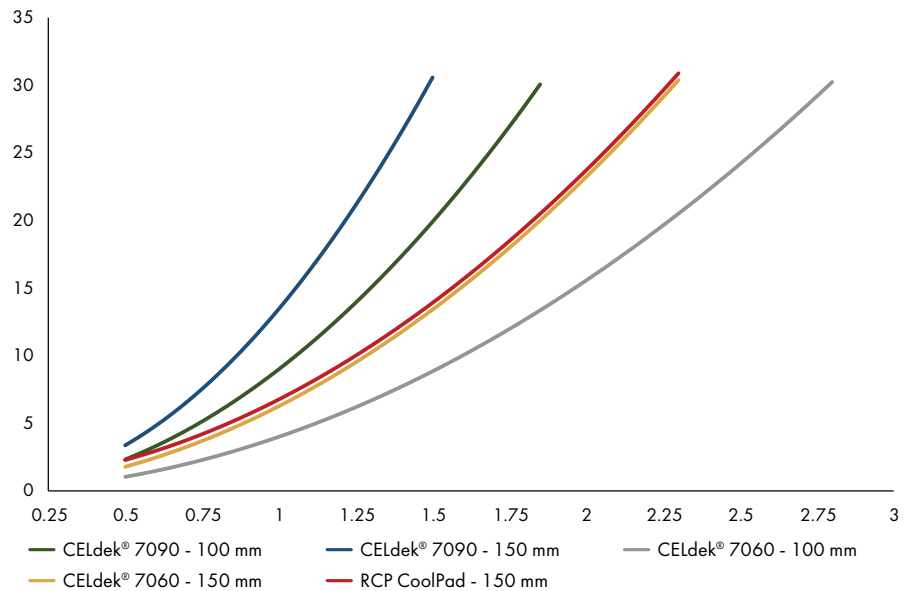
Test boundary conditions: Saturation efficiencies calculated with the following wash rates:

- 60 l/min/m<sup>2</sup> for CELdek® pads
- 120 l/min/m<sup>2</sup> for RCP CoolPad

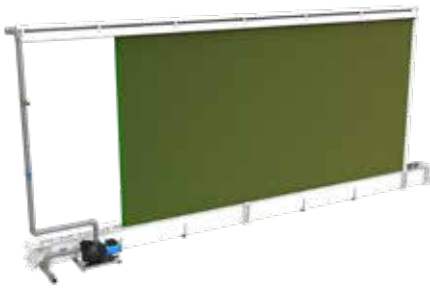


## Performances comparison - Pressure drop

With the same airspeed the pressure drop of the CELdek® 7060 is lower than CELdek® 7090, the pressure drop of the plastic pad is near to the one of the 7060 150 mm pad.



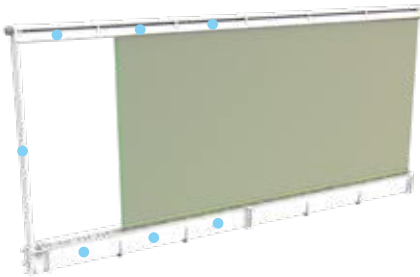
# Munters Plastic Gutter MPG



## Features

- Glue-free system
- Incorporated water tank
- "Clip-in" system to ease inspection, cleaning, pad replacement
- No corrosion risk
- Long durability
- Distribution pad not required
- Compatible with CELdek® pad 150 mm and RCP CoolPad 150 mm

## Base element



Name	Compatible with	Code
Base element 3 m including lateral kit	CELdek®	579205889
	RCP CoolPad	579205890
Base element 6 m including lateral kit	CELdek®	579205794
	RCP CoolPad	579205797

## Middle element



Name	Compatible with	Code
Middle element 6 m	CELdek®	579205795
	RCP CoolPad	579205798
Middle element 3 m	CELdek®	579205796
	RCP CoolPad	579205799

# Munters Plastic Gutter

## Distribution kit



Name	Compatible with	Code
Distribution kit	CELdek®/RCP CoolPad	579205800

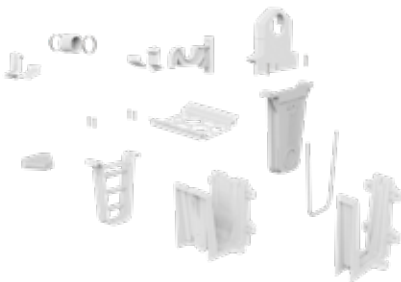
Including floating valve 3/4"

## Pump support bracket kit



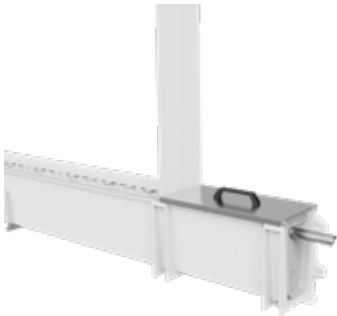
Name	Code
Pump Support Kit	579205949IT

## Spare parts kit



Name	Code
Spare Parts Kit	579205879

## Inspection kit



Name	Code
Inspection Kit (for floating valve)	579205880

## Flushing kit



Name	Code
Flushing Kit	579205881IT

# Munters Plastic Gutter

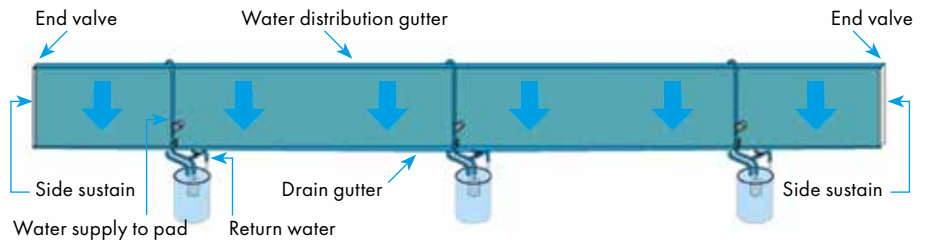
Motor	Pump		Code	Length	Water feed Middle (M)/Side (S)	MPG elements with CELdek®
	Voltage	Frequency				
0.5 hp	Single-phase 220 V	50 Hz	575006084	3 m	M/S	●
		60 Hz	575006145	6 m	M/S	●
				9 m	M/S	● ●
				12 m	M/S	● ●
				15 m	M/S	● ● ●
1.0 hp	Three-phase 400 V	50 Hz	575006086	18 m	M/S	● ● ●
		60 Hz	575006146	21 m	M/S	● ● ● ●
				24 m	M/S	● ● ● ●
				27 m	M	● ● ● ● ●
				30 m	M	● ● ● ● ●
2.0 hp	Three-phase 400 V	50 Hz	575006087	33 m	M	● ● ● ● ● ●
		60 Hz	575006147	36 m	M	● ● ● ● ● ●
				39 m	M	● ● ● ● ● ● ●
				42 m	M	● ● ● ● ● ● ●

Motor	Pump		Code	Length	Water feed Middle (M)/Side (S)	MPG elements with RCP CoolPad
	Voltage	Frequency				
1.0 hp	Three-phase 400 V	50 Hz	575006086	3 m	M/S	●
		60 Hz	575006146	6 m	M/S	●
				9 m	M/S	● ●
				12 m	M/S	● ●
				15 m	M	● ● ●
2.0 hp	Three-phase 400 V	50 Hz	575006087	18 m	M	● ● ●
		60 Hz	575006147	21 m	M	● ● ● ●
				24 m	M	● ● ● ●

● Base Element 6 m long, ● Middle Element 6 m long, ● Middle Element 3 m long, ● Base Element 3 m long (single element)

- Wash rates: 60 l/min per m<sup>2</sup> top surface for CELdek® pad, 120 l/min per m<sup>2</sup> top surface for RCP CoolPad
- Max weight per unit length = 85 kg/m (+ 25% of the structural robustness for suspended installations)

# Water Distribution System WDP



The Water Distribution System consists of all the components required for a correct operation of a CELdek® cooling pad wall and is compatible with CELdek® pad 7090 and 7060.

## Plumbing kit, pipe sections and nipples

Name	Note	Code
Plumbing kit for bleed off	Components to provide water from the tank to the gutter system and for bleed off	2680400
Pipe section 1 m D40	Needed to reach a water distribution point higher than 3 m	2258500
Nipples D40	Needed to add any additional pipe section	2257200

## Gutter systems

The gutter system includes the upper and bottom gutters, the water distribution pipe, the top cover, the pipe brackets and the lateral top gutter.

Name	Length	Depth	Code
Stainless steel gutter system	3000 mm	152 mm	2675000
		102 mm	2675100
	2400 mm	152 mm	2675200
		102 mm	2674800
	1800 mm	152 mm	2674200
		102 mm	2674900
	1200 mm	152 mm	2674500
		102 mm	2674600
	600 mm	152 mm	2674400
		102 mm	2674300



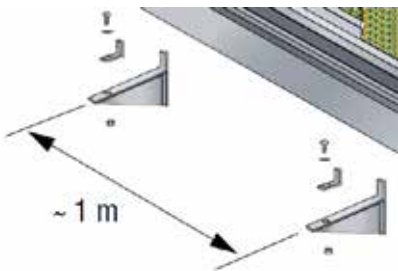
# Water Distribution System

## Gutter system sides



Name	Length	Depth	Code
Stainless steel sides*	3205 mm	152 mm	2662201v
		102 mm	2659802v
	2705 mm	152 mm	2669824v
		102 mm	Upon request
	2205 mm	152 mm	2669809v
		102 mm	2669810v
	2005 mm	152 mm	2669813v
		102 mm	2669935v
	1705 mm	152 mm	2669832v
		102 mm	2669833v
	1405 mm	152 mm	2667120v
		102 mm	2659800v
	1205 mm	152 mm	2665798v
		102 mm	2665709v

\*Two sides are required for each cooling pad wall



## Bottom gutter support

Name	Note	Code
Bottom gutter support	Bottom gutter supports are required for sustaining the bottom gutter*	2453355

\*One support each meter of gutter is required



## Plumbing kit for gutter with pipe

Name	Note	Code
Plumbing kit for gutter with pipe	Required for water draining when required*	2680600

\*One plumbing kit is required for each padwall

# Water Distribution System

Depth	Pad		Submersible pump				Water tank	
	Length	Motor	Voltage	Frequency	Current	Code	Size	Code
100 mm	12 m	0.33 hp	Single-phase 230 V	50 Hz	1.43 A	2231710	300 l	2258800
			Single-phase 230 V	60 Hz	1.47 A	2232010		
	18 m	0.5 hp	Single-phase 230 V	50 Hz	2.1 A	2231720	500 l	2258900
			Single-phase 230 V	50 Hz	3.92 A	2231800		
	24 m	0.75 hp	Single-phase 230 V	60 Hz	4.53 A	2232100	500 l	2258900
			Three-phase 230 V*	60 Hz	2.56 A	2232200		
			Three-phase 400 V*	60 Hz	2.46 A	2232400		
			Three-phase 400 V*	50 Hz	2.6 A	2232300		
	30 m	1.0 hp	Single-phase 230 V	50 Hz	6.2 A	2431840	1000 l	2259000
			Single-phase 230 V	60 Hz	6.4 A	2431842		
150 mm	8 m	0.33 hp	Single-phase 230 V	50 Hz	1.43 A	2231710	300 l	2258800
			Single-phase 230 V	60 Hz	1.47 A	2232010		
	12 m	0.5 hp	Single-phase 230 V	50 Hz	2.1 A	2231720	500 l	2258900
			Single-phase 230 V	50 Hz	3.92 A	2231800		
	16 m	0.75 hp	Single-phase 230 V	60 Hz	4.53 A	2232100	500 l	2258900
			Three-phase 230 V*	60 Hz	2.56 A	2232200		
			Three-phase 400 V*	60 Hz	2.46 A	2232400		
			Three-phase 400 V*	50 Hz	2.6 A	2232300		
	24 m	1.0 hp	Single-phase 230 V	50 Hz	6.2 A	2431840	1000 l	2259000
			Single-phase 230 V	60 Hz	6.4 A	2431842		

\*Floating valve not included

- Wash rate: 60 l/min per m<sup>2</sup> top surface
- Maximum height of water distribution point: 3 m. In case of a higher point, contact your Munters representative

# Water Distribution System



## Draining kit with pipe

Name	Note	Code
Draining kit with pipe	It is required for draining the water back from the bottom gutter to the tank*	2680750

\*One draining kit is required each 12 m of gutter system. In case the number is not equal to the number of pumping stations, two draining kits will be provided for each pump/tank.

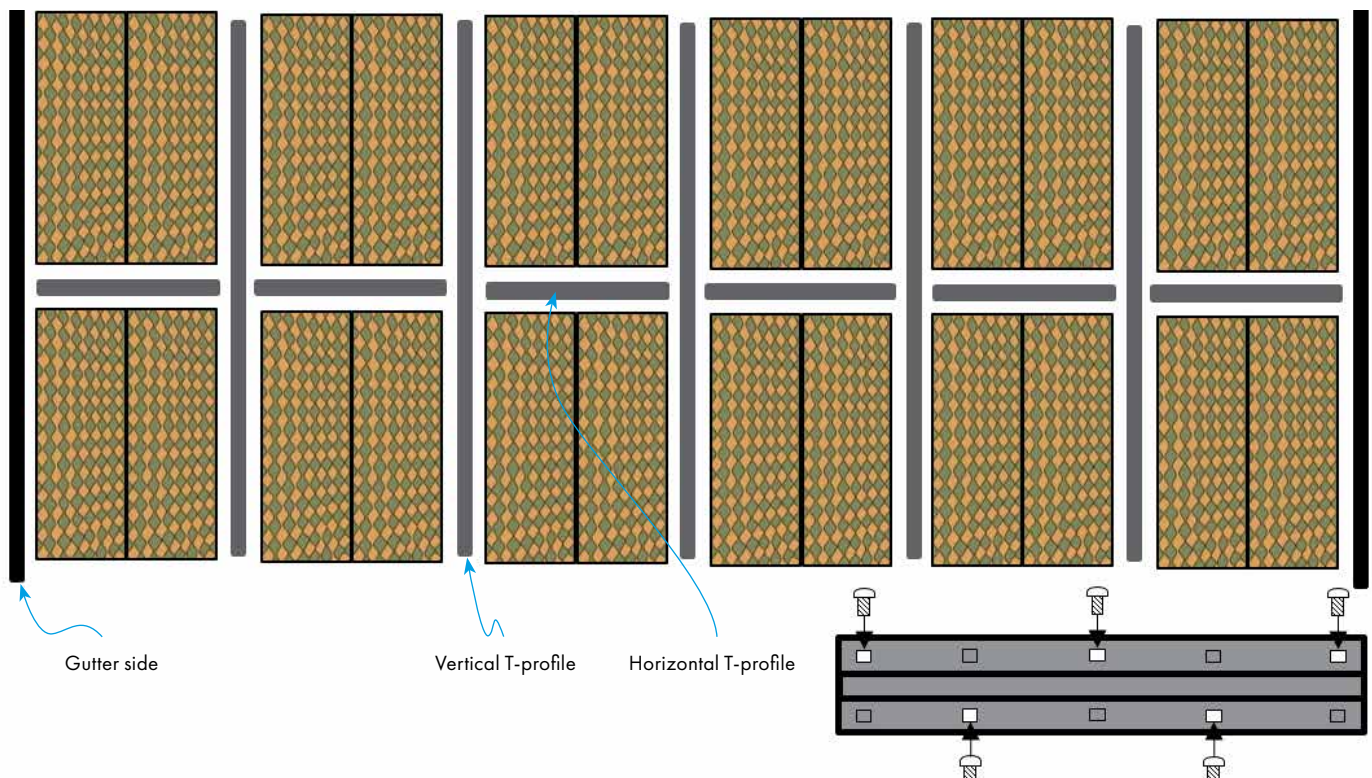
## T-profiles stainless steel

Name	Length	Code
T-profile stainless steel*	3000 mm section	2660200
	2500 mm section	2660500
	2400 mm section	2660400
	2000 mm section	2660000
	1800 mm section	2460300
	1500 mm section	2661010
	1200 mm section	2660700
	1000 mm section	2661000
	600 mm section	2660600

\*T-profiles are required in case of a double wall (higher than 2000 mm). They are needed to keep the pad stable preventing from pad bending risk.

## Mounting scheme for T-profiles

- Horizontal T-profiles are always 1200 mm long (one every 2 pads)
- Vertical T-profiles length equals the wall height
- One set of bolts to be provided each meter of T-profile



# Darkening Solution

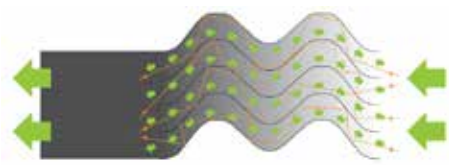


## Light filter

- Sizes adaptable to the pad wall
- 2.000.000:1 light reduction factor
- Delivered unassembled, but also available assembled

## Available models

Model	Compatible with	Height x Width [mm]	Code
LFd-p - short	MPG WDP	1050 x 625	2653400
		1250 x 625	2653450
		1550 x 625	2653500
		1850 x 625	2653550
		2050 x 625	2653600
LFd-p - long	MPG WDP	1050 x 1215	2653650
		1250 x 1215	2653700
		1550 x 1215	2653750
		1850 x 1215	2653800
		2050 x 1215	2653850



## Principles of Operations

Curved vanes create many reflections to absorb light while creating a smooth passage for airflow

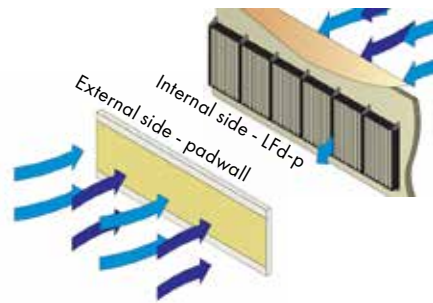
## LFd wall support

Model	Compatible with	Note	Code
Wall support LFd / LFd-p	All pads	For fixing the LFd filter to the cooling pad	2653310

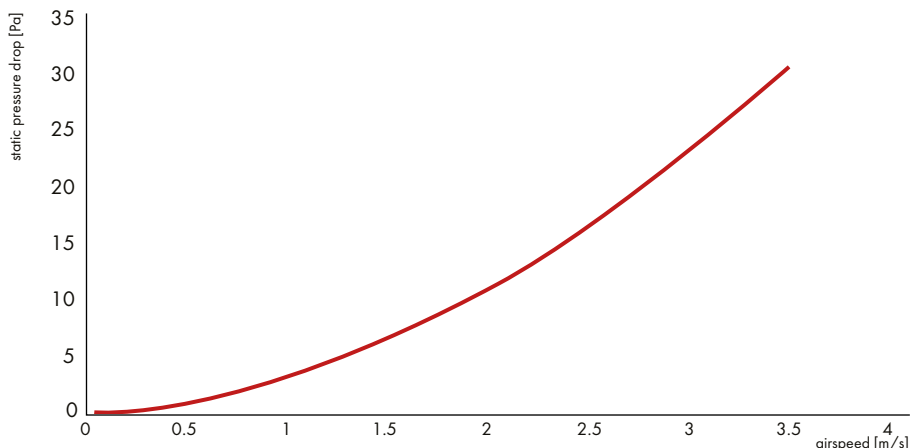
## LFd solution for light reduction

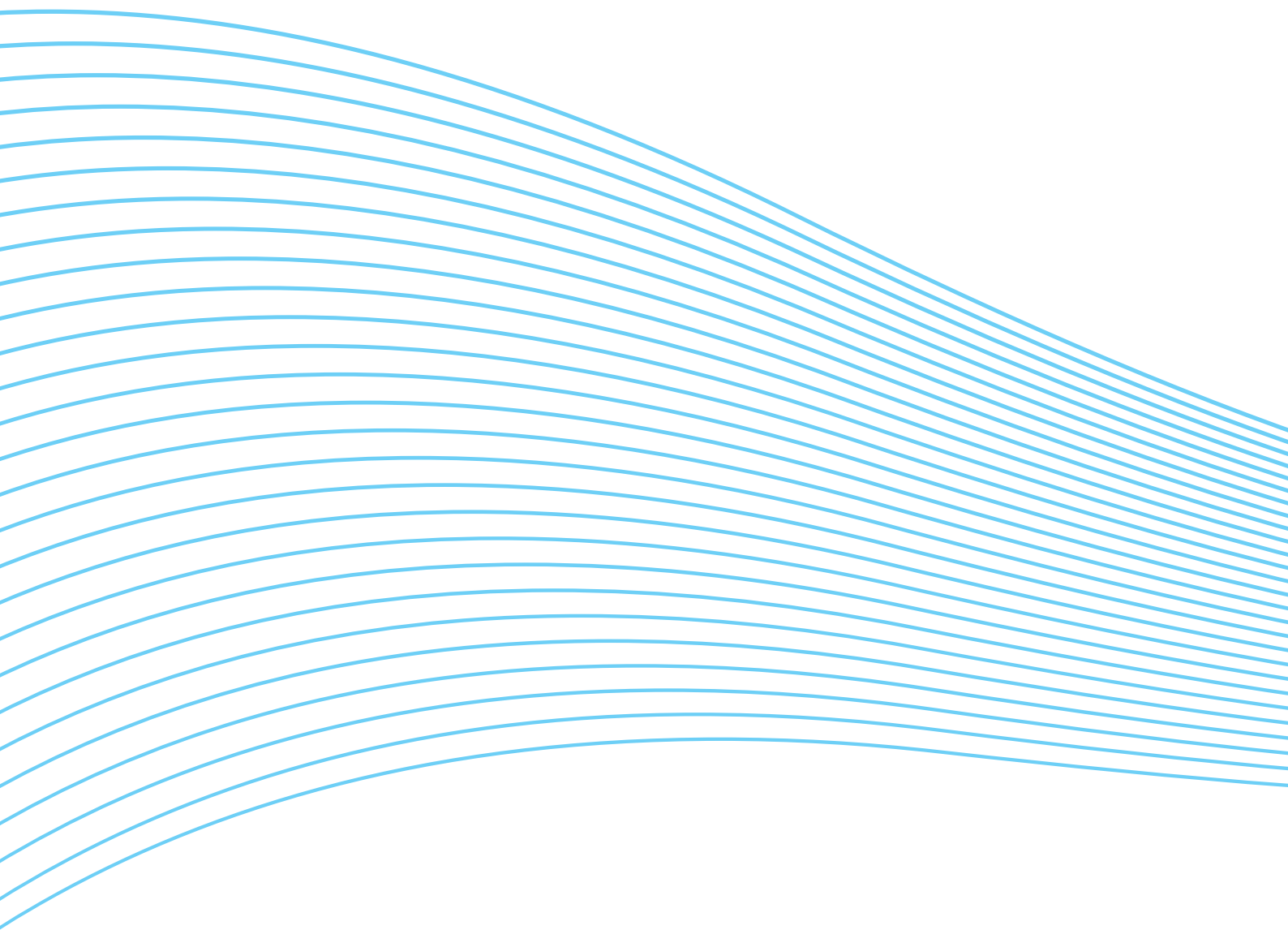
No	Name	Code
1	Light filter LFd	See above
2	Wall support LFd*	2653310

\*2 wall supports needed for fixing each LFd filter plus 2 additional supports at the end of the wall



## LFd performance curve





Heating

# GPmp 100/130/160

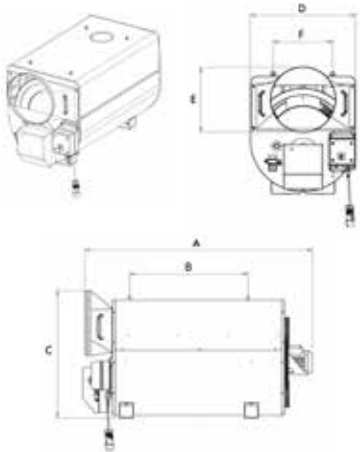


## Features

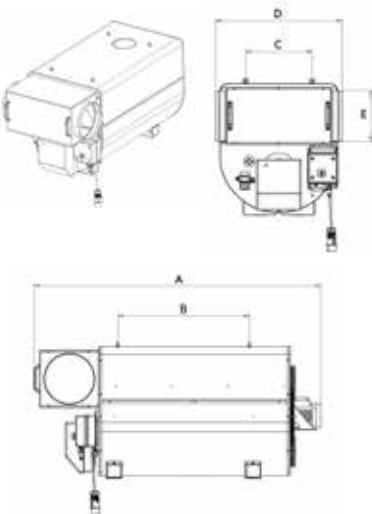
- Corrosion resistant as housing components are made in Munters Protect and combustion chamber in stainless steel
- Oil or gas-fired burners installed, calibrated and set up in the farm
- Thermal efficiency exceeding 90%
- Direct driven motor on axial fan
- Ergonomic design for easy maintenance and full accessibility
- IP55 enclosure of critical components e.g. electrical control box, electric motor
- Equipped with 5-pole plug socket to be managed by controllers or room thermostats



Straight outlet



T-outlet



## Available models

Model	Compatible with	Voltage	Frequency	Code
GPmp100	Natural gas/Propane	400 V	50 Hz	20821444
			60 Hz	20821476
	Oil		50 Hz	20821432
			60 Hz	20821518
GPmp130	Natural gas/Propane	400 V	50 Hz	20821446
			60 Hz	20821348
	Oil		50 Hz	20821435
			60 Hz	20821368
GPmp160	Natural gas/Propane	400 V	50 Hz	20821540
			60 Hz	-
	Oil		50 Hz	20821440
			60 Hz	20821431

## Dimensions – Straight outlet

	A	B	C	D	E	F
GPmp100	1470 mm	650 mm	966 mm	800 mm	500 mm	450 mm
GPmp130	1723 mm	897 mm	966 mm	800 mm	500 mm	450 mm
GPmp160	1768 mm	895 mm	1065 mm	892 mm	600 mm	500 mm

## Dimensions – T-outlet

	A	B	C	D	E
GPmp100	1700 mm	650 mm	450 mm	855 mm	347 mm
GPmp130	1954 mm	897 mm	450 mm	855 mm	347 mm
GPmp160	2030 mm	895 mm	500 mm	905 mm	397 mm

# GPmp 100/130/160

## Technical specifications

		GPmp100	GPmp130	GPmp160
Maximum power output	kW	102.4	129	157
Heating output	kW	93	116.5	141
Airflow <sup>1</sup>	m <sup>3</sup> /h [cfm]	6600 [3885]	7400 [4355]	9800 [5768]
Nominal power	W	1400	2200	2600
Rated voltage (3-phase)	V	230/400		
Rated frequency	Hz	50/60		
Rated current	A	3	5	5.9
Oil consumption	l/h	9.5	12	14.6
Gas consumption	kg/h	7.2 - 9.5	9.3 - 12.4	11.4 - 15.3
Gas pressure	mbar	30 - 50		
Weight (with straight outlet)	kg	155	188	195
Motor insulation grade/protective class		F/IP55		

<sup>1</sup>Airflow data measured at standard conditions (15°; 1013 hPa)

## Available kits for GPmp100

Name	Elbow 90°	TED	Straight outlet	Chimney pipe	Chimney hat	Pass plate	Code
Kit standard	0	0	1	2 m	1	1	20821550
Kit elbow	1	0	1	2 m	1	1	20821551
Kit standard TED	0	1	1	2 m	1	1	20821554
Kit elbow TED	1	1	1	2 m	1	1	20821555

## Available kits for GPmp130

Name	Elbow 90°	TED	Straight outlet	Chimney pipe	Chimney hat	Pass plate	Code
Kit standard	0	0	1	2 m	1	1	20821560
Kit elbow	1	0	1	2 m	1	1	20821561
Kit standard TED	0	1	1	2 m	1	1	20821564
Kit elbow TED	1	1	1	2 m	1	1	20821565

## Available kits for GPmp160

Name	Elbow 90°	TED	Straight outlet	Chimney pipe	Chimney hat	Pass plate	Code
Kit standard	0	0	1	2 m	1	1	20821570
Kit elbow	1	0	1	2 m	1	1	20821571
Kit standard TED	0	1	1	2 m	1	1	20821574
Kit elbow TED	1	1	1	2 m	1	1	20821575

# Accessories

## Room thermostat



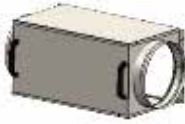
Product name	Code
Digital (TED) room thermostat	20360037
White probe 25° for TED 2.0	20360044

Each room thermostat has 10 m cable included

## Heater outlet



Straight outlet



T-outlet

Product name	Code
Straight outlet for GPmp100/130	20840190
Straight outlet for GPmp160	20840201
T-outlet for GPmp100/130	20840194
T-outlet for GPmp160	20840207

## Plastic duct and fixing accessories

Product name	Code
Plastic duct 400 mm	2693100
Plastic duct 500 mm	2693200
Plastic duct 600 mm	2693300
Fixing duct kit for duct 400 mm	2692500
Fixing duct kit for duct 500 mm	2692900
Fixing duct kit for duct 600 mm	2693000
Hanging belt	2655200
Coated cable	22823700

## Duct diameter selection

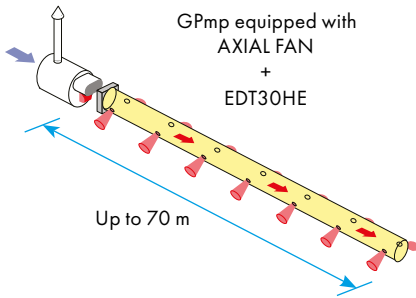
GPmp model	Outlet type	Plastic duct diameter
GPmp100	Straight outlet	500 mm
GPmp100	T-outlet	400 mm
GPmp130	Straight outlet	500 mm
GPmp130	T-outlet	400 mm
GPmp160	Straight outlet	500 mm
GPmp160	T-outlet	400 mm



# Accessories

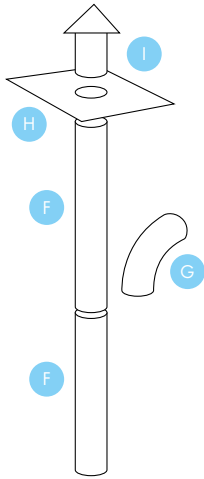
## Solution with plastic inflated duct

Air distribution up to 70 m with a 780 mm plastic duct and a EDT30HE inflating fan.



Product name	Code
GPmp heater with axial fan	See above
EDT30HE	See chapter 2
Plastic duct 780	2658200
Fixing duct kit	2654600
Hanging belt	2655200
Coated cable	22823700
Suspension kit for EDT	2910222

## Flue gas exhaust system



Product name	Diameter	Compatible with	Code
Pipe section 1 m (F)	150 mm	GPmp 100	20840215
	200 mm	GPmp 130/160	20840216
Elbow 90° chimney pipe (G)	150 mm	GPmp 100	20840217
	200 mm	GPmp 130/160	20840218
Pass plate (H)	150 mm	GPmp 100	2402000
	200 mm	GPmp 130/160	2402100
Chimney hat (I)	150 mm	GPmp 100	20840213
	200 mm	GPmp 130/160	20840298

# GA 30/95T



## Features

- 100% thermal efficiency
- Run on LPG, butane or propane at a high pressure
- Easy to install and operate
- Double solenoid valve to shut off faulty gas supply
- Safety switch to prevent overheating
- Pressure sensor to detect airflow obstructions
- Stainless steel
- Optimal solution for emergency heating

## Available models

Model	Voltage	Frequency	Code
GA30	230 V	50 Hz	20821087
		60 Hz	Upon request
GA95T		50 Hz	20820012
		60 Hz	20820011

## Dimensions

	A	B	C	D
GA30	645 mm	532 mm	440 mm	370 mm
GA95T	1140 mm	473 mm	608 mm	378 mm

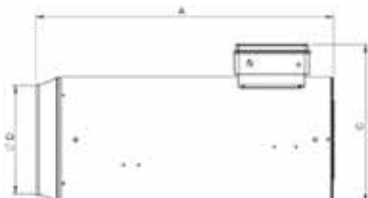
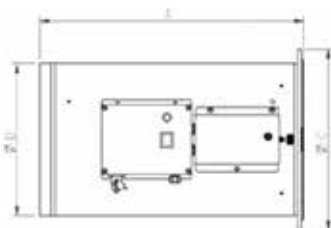
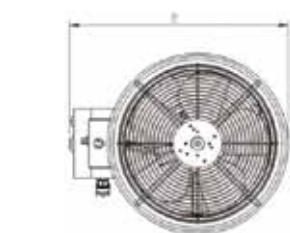
## Technical specifications

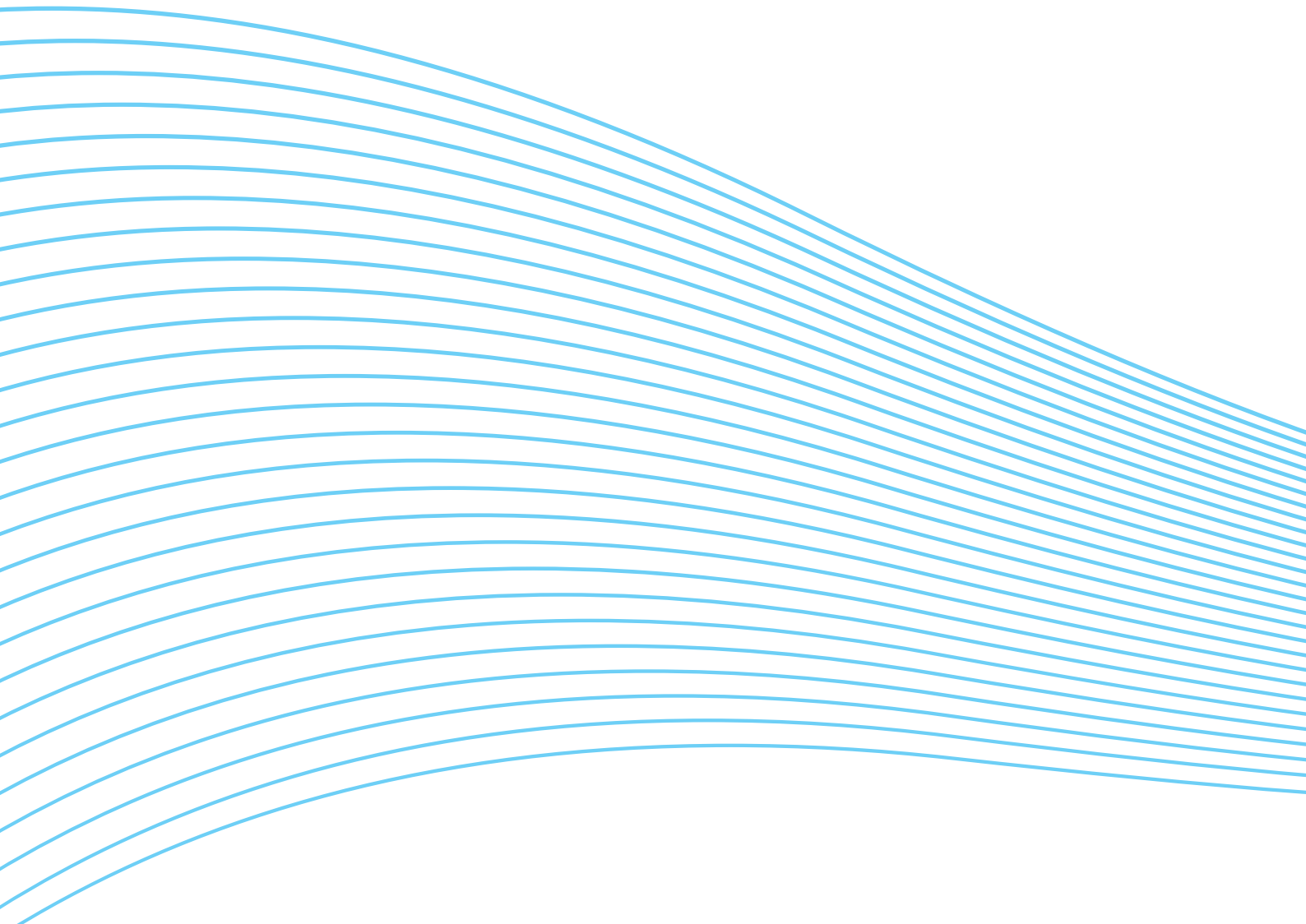
		GA30	GA95T
Heating power	kW	25 - 36	97
Airflow	m <sup>3</sup> /h [cfm]	1700 [1000]	6000 [3560]
Nominal power	W	110	700
Rated voltage	V	230	
Rated frequency	Hz	50	50/60
Rated current	A	4.5	
Gas connection		3/8"	
Gas consumption	kg/h	1.75 - 2.51	6.9
Gas pressure	bar	0.7	2.0
Weight of fully equipped heater	kg	15	32
Motor protective class		IP54	

## Thermostat

Product name	Code
Thermostat for humid environments	20360010

Each thermostat is able to control one heater





Air Inlets

# SMT 24-30-36-50

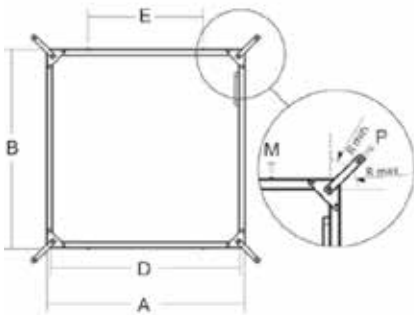


## Features

- 50/36/30/24" sizes
- Individual control with actuator
- Protective mesh included
- IP54 protective class
- 24 V servo motor available with shutters' blades angular positioning feedback

## Available models

Model	Voltage	Control	Code
SMT24	230 V	On-Off	2654700
SMT30	230 V	On-Off	2657100
SMT36	230 V	On-Off	2657200
	24 V	Modular	2657205
SMT50	230 V	On-Off	2656200
	24 V	Modular	2656270



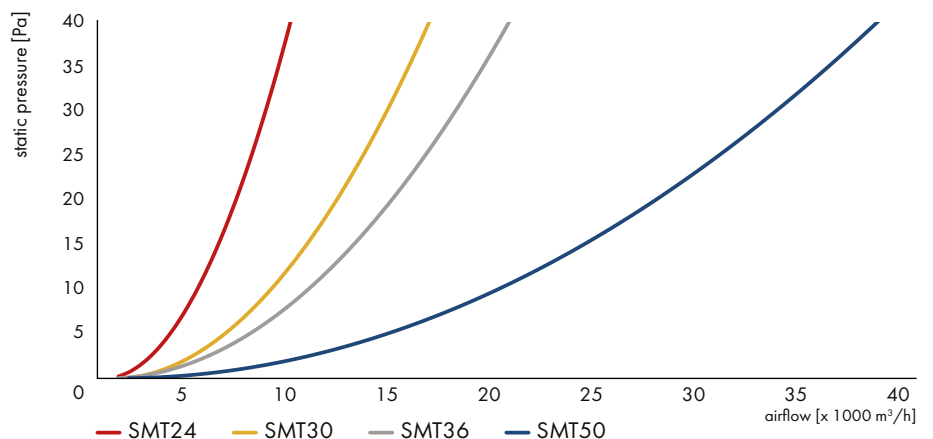
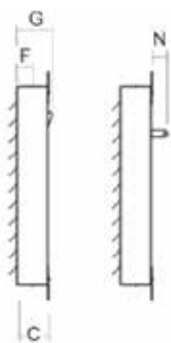
## Dimensions

Model	A	B	C	D	E	F	G
SMT24	745 mm	735 mm	100 mm	644 mm	354 mm	38 mm	115 mm
SMT30	950 mm	995 mm	100 mm	847 mm	557 mm	38 mm	115 mm
SMT36	1090 mm	1085 mm	100 mm	985 mm	695 mm	38 mm	115 mm
SMT50	1380 mm	1380 mm	100 mm	1264 mm	987 mm	38 mm	115 mm

M = M8, N = 43 mm, P = 7 mm, R max = 130, R min = 120 mm

## Technical specifications

	SMT24	SMT30	SMT36	SMT50
Material	Munters Protect	Munters Protect	Munters Protect	Munters Protect
Number of shutter blades	5	7	8	10
Weight	kg	8.5	12	20
Inlet opening	m <sup>2</sup>	0.45	0.8	1.02



# Darkening Solution

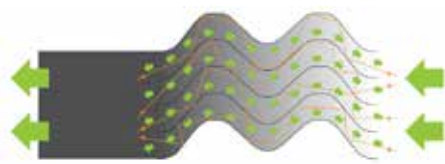


## Light filter

- 50-36-30-24" sizes
- Suitable for shutters
- 2.000.000:1 light reduction factor
- Delivered unassembled, but also available assembled

## Available models

Product description	Compatible with	Width x Height x Depth [mm]	Code
Light filter LfD24	SMT24	750 x 750 x 230	2653014
Light filter LfD30	SMT30	960 x 960 x 230	2653013
Light filter LfD36	SMT36	1100 x 1090 x 230	2653012
Light filter LfD50	SMT50	1380 x 1380 x 230	2653006



## Principles of Operations

Curved vanes create many reflections to absorb light while creating a smooth passage for airflow

## LfD wall support

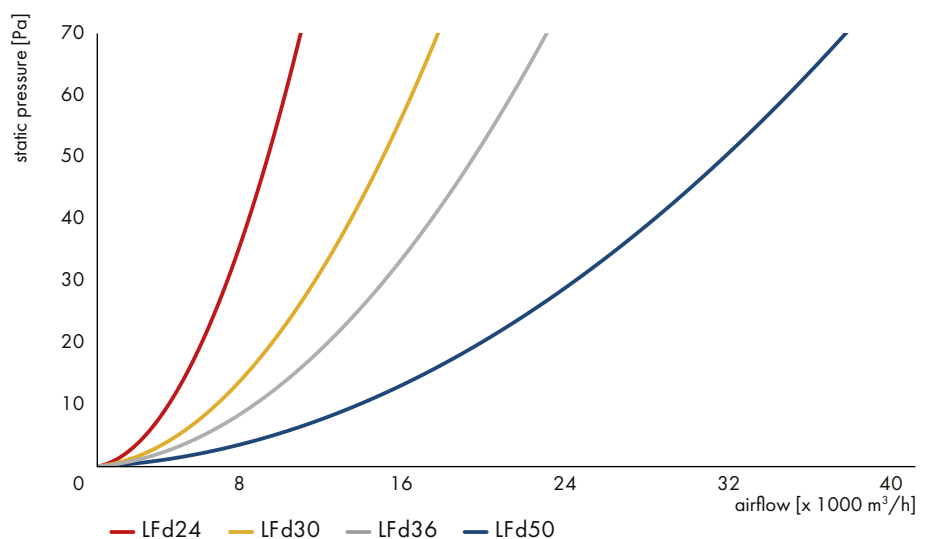
Product description	Compatible with	Note	Code
Wall support LfD / LfD-p	SMT24/30/36/50	For fixing the LfD filter to the shutter	2653310

## LfD solution for light reduction

Product name	Code
Light filter LfD	See above
Wall support LfD*	2653310

\*4 wall supports needed for fixing each LfD filter

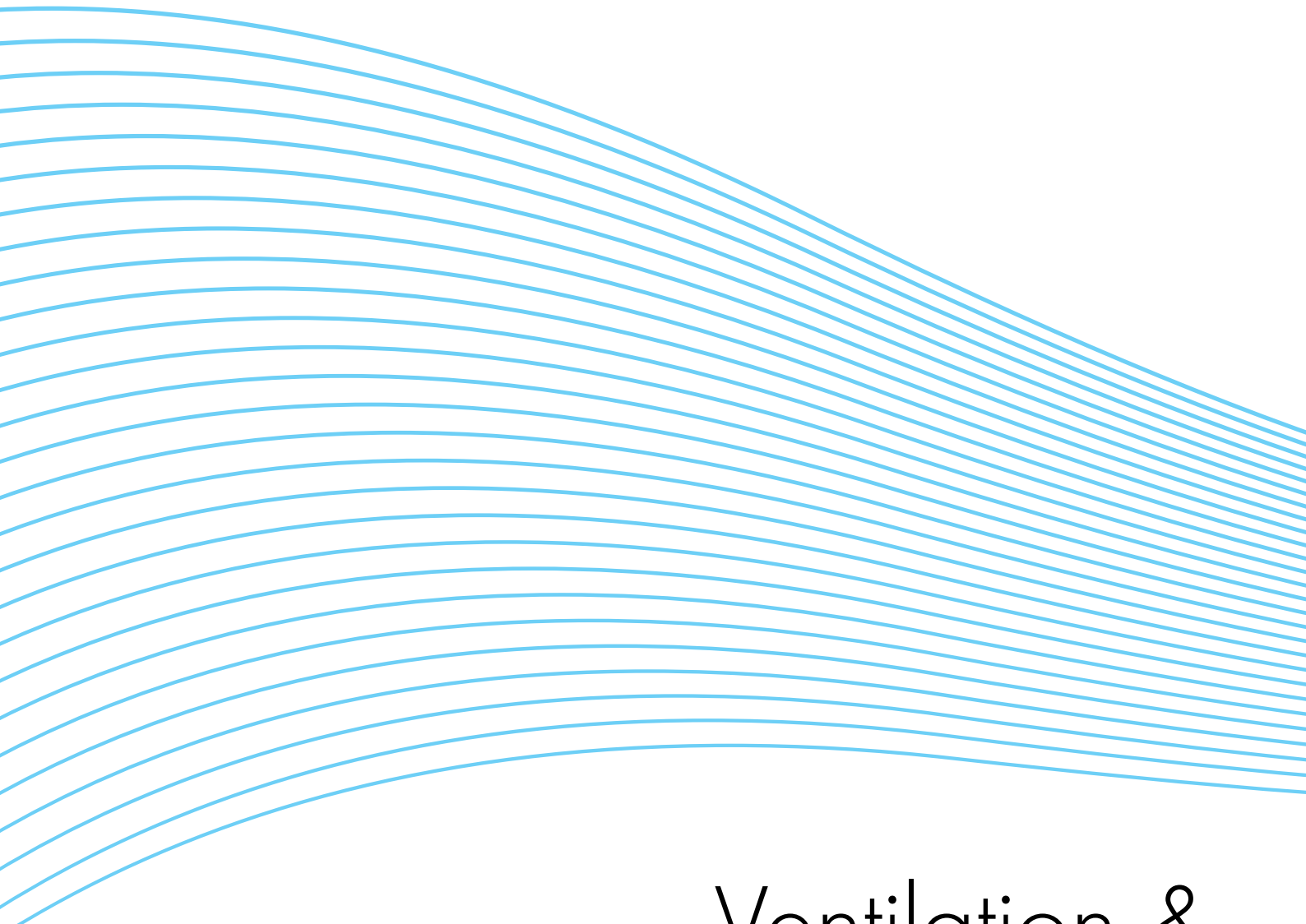
## LfD performance curves





# Positive Pressure

Photo credit: Azienda Agricola Fratelli Lapietra



# Ventilation & Air Distribution

# High Pressure Fan 1

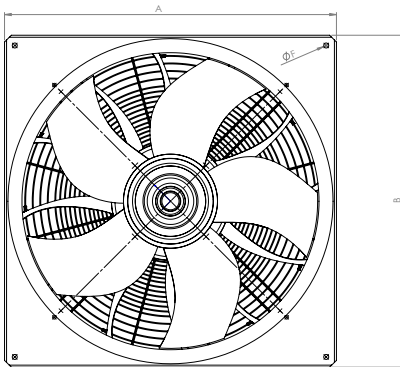


## Features

- Axial fan
- Options for speed control: Modbus and 0-10 V
- 5 blades propeller
- Inverter integrated in the EC motor

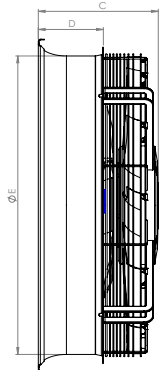
Model	Motor	Voltage	Frequency	Current
Fan 1	2.65 kW	400 V	50/60 Hz	4 A

## Dimensions



A	B	C	D	E	F
970 mm	970 mm	351 mm	190 mm	872 mm	Ø 15

Different fan's frame subject to availability

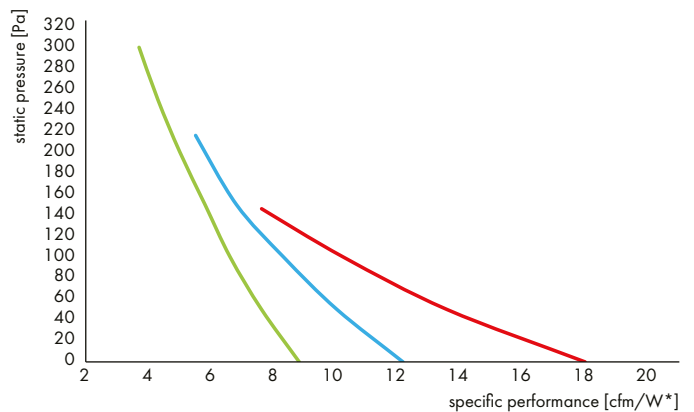
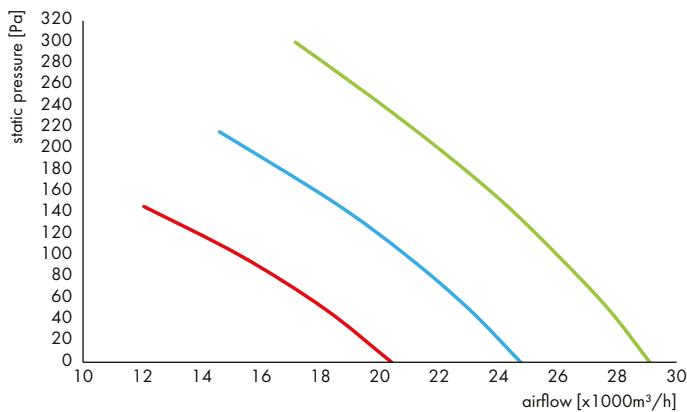


## Technical specifications

High pressure fan 1		
EC motor power	kW	2.65
Number of blades		5
Nominal propeller speed	rpm	1090
Transmission		Direct drive
Weight of fully equipped fan	kg	46.55
Power input	W	2650
Current draw	A	4
Max ambient temperature	°C	60
Max back pressure	Pa	290
Motor insulation grade/protective class		F/IP55

rpm	rpm	rpm
— 1090	— 927	— 763

\*1 cfm/W = 1.7 m<sup>3</sup>/hW





# High Pressure Fan 2

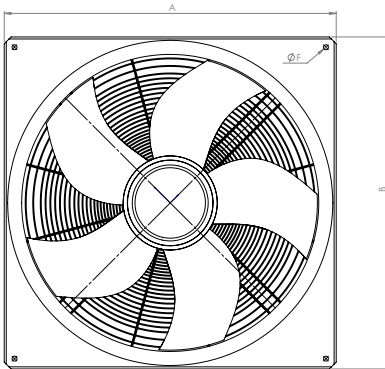


## Features

- Axial fan
- Options for speed control: Modbus and 0-10 V
- 5 blades propeller
- Inverter integrated in the EC motor

Model	Motor	Voltage	Frequency	Current
Fan 2	1.95 kW	400 V	50/60 Hz	3.1 A

## Dimensions

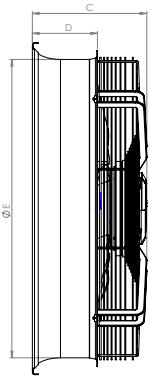


A	B	C	D	E	F
970 mm	970 mm	334 mm	190 mm	872 mm	Ø 15

Different fan's frame subject to availability

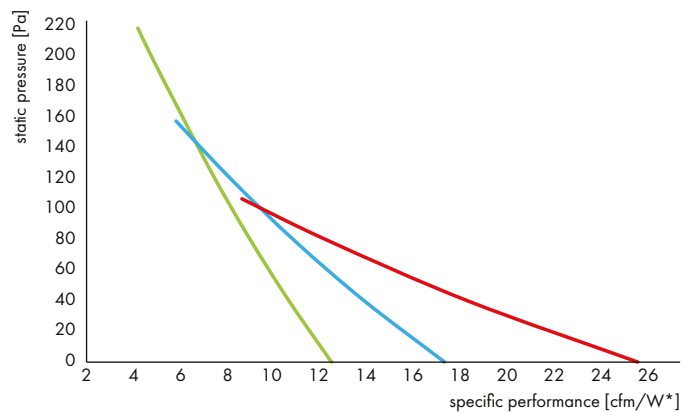
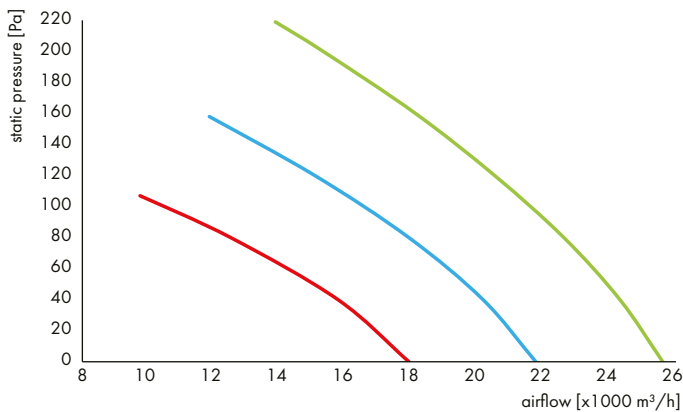
## Technical specifications

High pressure fan 2		
EC motor power	kW	1.95
Number of blades		5
Nominal propeller speed	rpm	940
Transmission		Direct drive
Weight of fully equipped fan	kg	39.85
Power input	W	1950
Current draw	A	3.1
Max ambient temperature	°C	60
Max back pressure	Pa	220
Motor insulation grade/protective class		F/IP55



rpm	rpm	rpm
— 940	— 800	— 658

\*1 cfm/W = 1.7 m<sup>3</sup>/hW



# High Pressure Fan 3

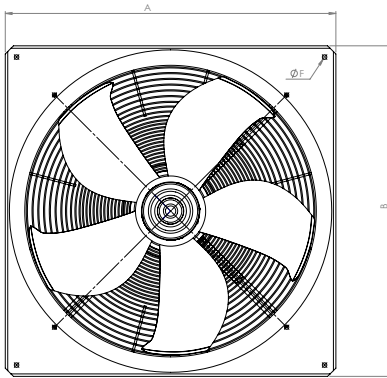


## Features

- Axial fan
- Options for speed control: Modbus and 0-10 V
- 5 blades propeller
- Inverter integrated in the EC motor

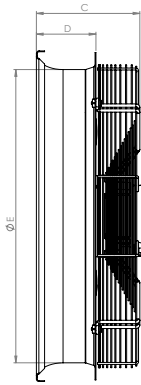
Model	Motor	Voltage	Frequency	Current
Fan 3	1.15 kW	400 V	50/60 Hz	1.8 A

## Dimensions



A	B	C	D	E	F
805 mm	805 mm	252 mm	145 mm	714 mm	Ø 11

Different fan's frame subject to availability

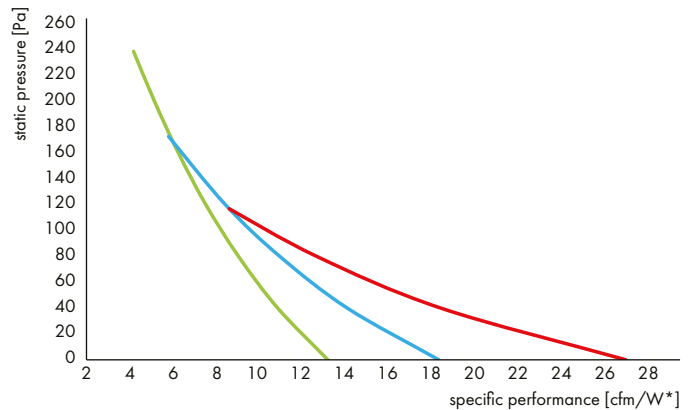
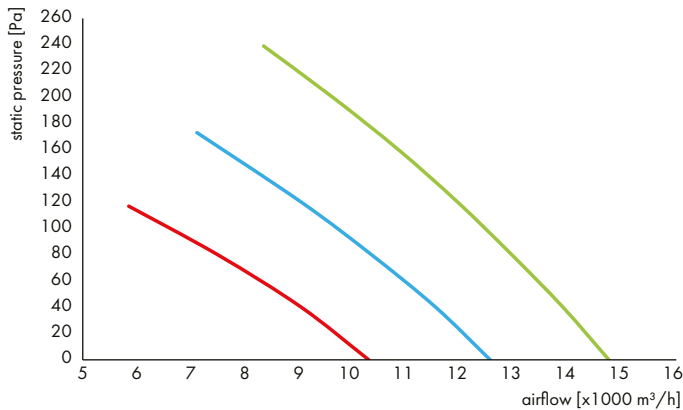


## Technical specifications

High pressure fan 3		
EC motor power	kW	1.15
Number of blades		5
Nominal propeller speed	rpm	1260
Transmission		Direct drive
Weight of fully equipped fan	kg	24.3
Power input	W	1150
Current draw	A	1.8
Max ambient temperature	°C	60
Max back pressure	Pa	240
Motor insulation grade/protective class		F/IP55

rpm	rpm	rpm
— 1260	— 1071	— 882

\*1 cfm/W = 1.7 m<sup>3</sup>/hW



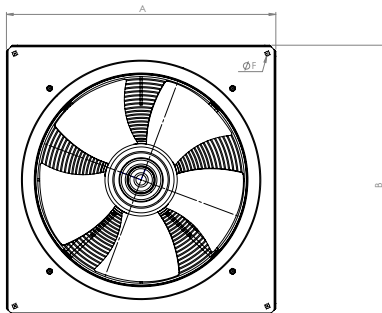
# High Pressure Fan 4



## Features

- Axial fan
- Options for speed control: 0-10 V
- 5 blades propeller
- Inverter integrated in the EC motor

Model	Motor	Voltage	Frequency	Current
Fan 4	0.98 kW	400 V	50/60 Hz	1.6 A

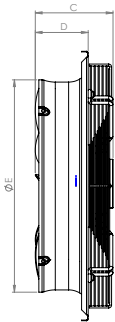


A	B	C	D	E	F
656 mm	656 mm	189 mm	129 mm	517 mm	Ø 11

Different fan's frame subject to availability

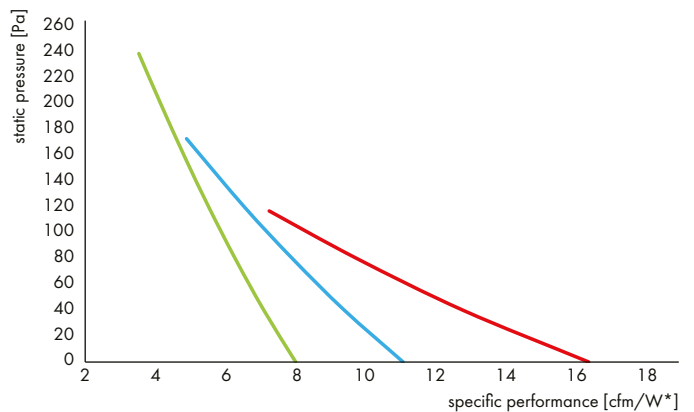
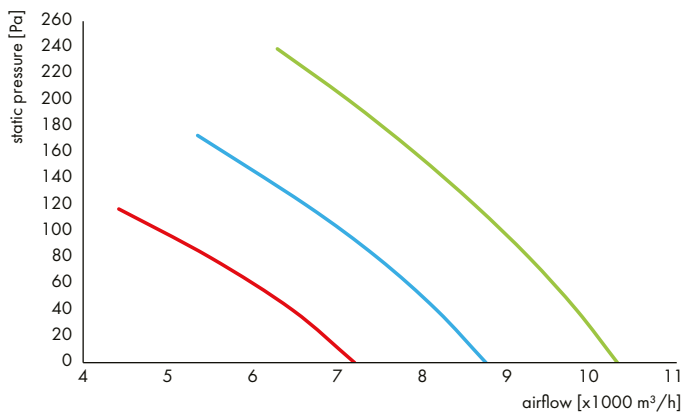
## Technical specifications

High pressure fan 4		
EC motor power	kW	0.98
Number of blades		5
Nominal propeller speed	rpm	1600
Transmission		Direct drive
Weight of fully equipped fan	kg	17.3
Power input	W	980
Current draw	A	1.6
Max ambient temperature	°C	60
Motor insulation grade/protective class		B/IP54



rpm	rpm	rpm
— 1600	— 1360	— 1120

\*1 cfm/W = 1.7 m³/hW



# PE Plastic Duct



Munters provided duct

## Features

- Customized air distribution duct
- Made of UV-stabilized (320 kLy/y)
- Made of three layers of polyethylene
- 150 micron layer thickness
- High tensile strength
- Improved air distribution thanks to the diffusion holes design



Standard duct

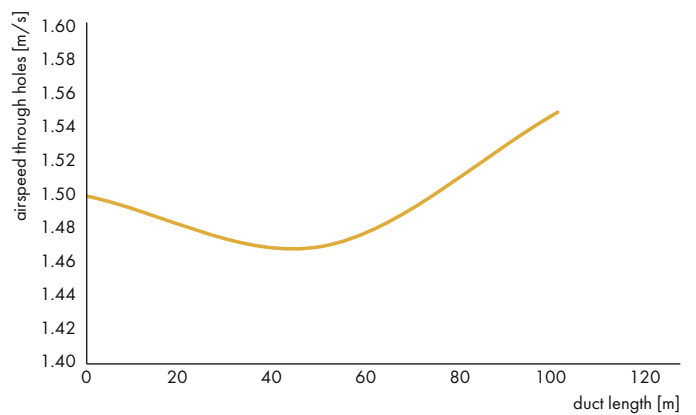
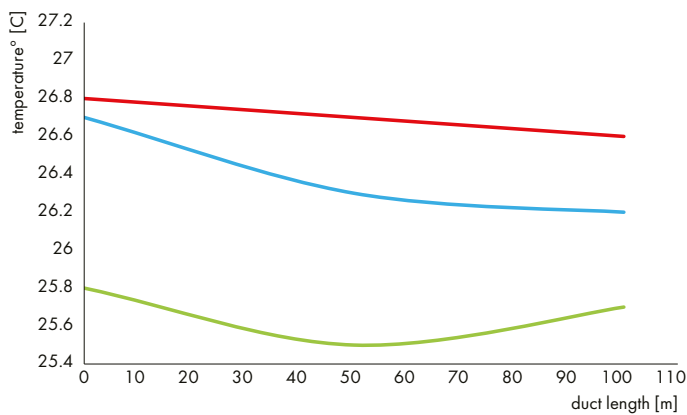
## Available models

Model	Compatible with	Gutter length range*
Duct 900 mm	High pressure fan 1	110-120 m
Duct 850 mm	High pressure fan 1	100-110 m
Duct 800 mm	High pressure fans 1, 2	70-100 m
Duct 700 mm	High pressure fan 3	60-70 m
Duct 650 mm	High pressure fan 3	50-60 m
Duct 600 mm	High pressure fan 4	< 50 m

\*Considering a greenhouse with 9.6 m bays and 5 ducts per each bay (5 plants growing gutters)

— Duct height, — Roots height, — 2200 mm height

Data obtained from a monitoring campaign in a positive pressure greenhouse



# Accessories



## Plenum

- Required to fit the plastic duct into the greenhouse structure
- Dimensions have to be evaluated according to customer's needs



## End cap

- Required to close the end section of the plastic duct
- Adjustable air opening
- Holes supply air also in the middle corridor



## Suspension kit with S-hooks

- Required to hang up the plastic duct



## Clamps

- Required to connect the plastic duct to the plenum and end cap





For more information, visit: [munters.com/greenhouse/](https://munters.com/greenhouse/)

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