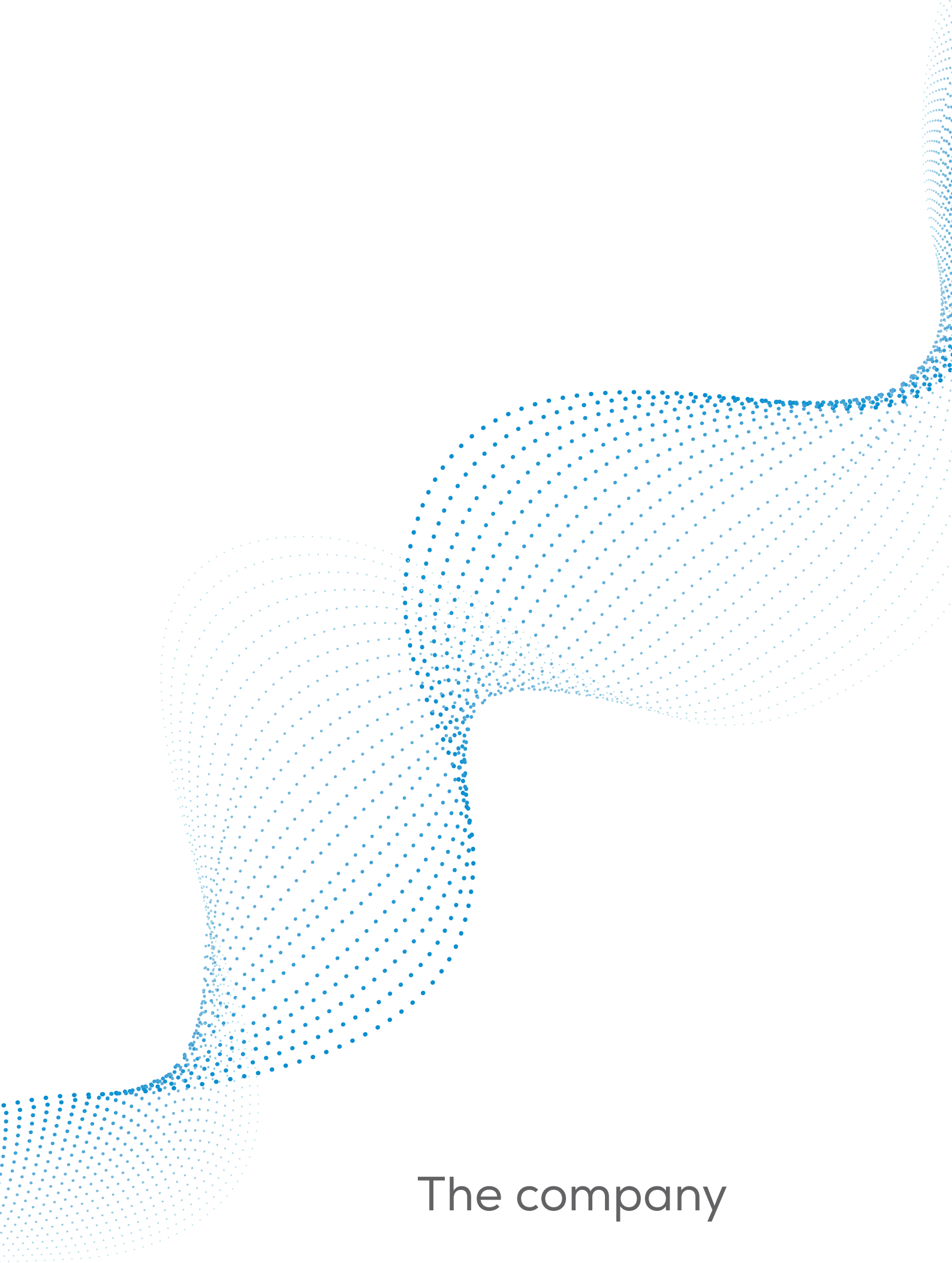


Climate Solutions for poultry and pig





The company

Munters in short

A world leading supplier of climate solutions for the future

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 conducts operations in two business areas: AirTech and FoodTech. Munters run 17 plants, four assembly hubs, 3 software development centers and has manufacturing and sales offices in approximately 30 countries around the world. Munters employs around 3,500 persons. The headquarters are located in Kista, Sweden.

Munters Reventa is part of the the business area 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.



Founder Carl Munters





Sustainability

We are part of the solution

Sustainability is at the heart of our business. We not only offer energy efficient air treatment solutions for cleaner air and better animal welfare. We also ensure that our business is sustainable by setting ambitious goals in terms of safety, diversity and ethical business practices.

At Munters, sustainability is divided in three different groups, as shown in the diagram alongside. These three parts form the framework for Munters' sustainability agenda.

Global Compact and Agenda 2030

Since 2018, Munters has committed to report in accordance with the ten principles of the UN Global Compact's on human rights, labor, the environment and anti-corruption. The code of conduct for employees and the special code of conduct for suppliers are based on these ten principles and explain Munters' stand on issues such as the environment, social responsibility, business ethics and human rights.

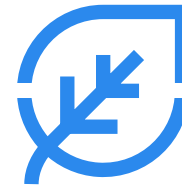
Compliance with these policies is monitored each year and reported to the Board of Directors. Munters also reports to CDP (formely known as the Carbon Disclosure Project)..



People & Society



Responsible business practices



Resource efficiency





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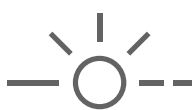
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Munters Reventa

Climate systems for poultry and swine

At the location in Horstmar/Germany, more than 110 employees produce and manufacture the products and systems.

Professional and innovative climate technology offers a perspective to modern agriculture. Thanks to this, it is possible to unify the factors of animal welfare, ecology and economic efficiency in such a manner that the demand for high quality food can be met in the long term. However, sustainability also means that all of our products have been designed for a long service life and the highest possible efficiency. You should be certain that your customers can continue to fully depend on the reliable function of our products even several years.



Administration building in Horstmar, Germany

Services

Information materials, design drawings, efficiency calculations, videos, planning aids and trainings.

You will find further useful information on our website, in particular in the dealer area, which offers detailed and additional documentation. Also visit us on the social media platforms or watch our interesting videos covering all areas of our production range on YouTube.



Munters Reventa Germany
 Im Gewerbegebiet 3
 D-48612 Horstmar

Opening times:

Monday – Thursday 08:00 – 17:00
 Friday 08:00 – 15:00

Dispatch times*:

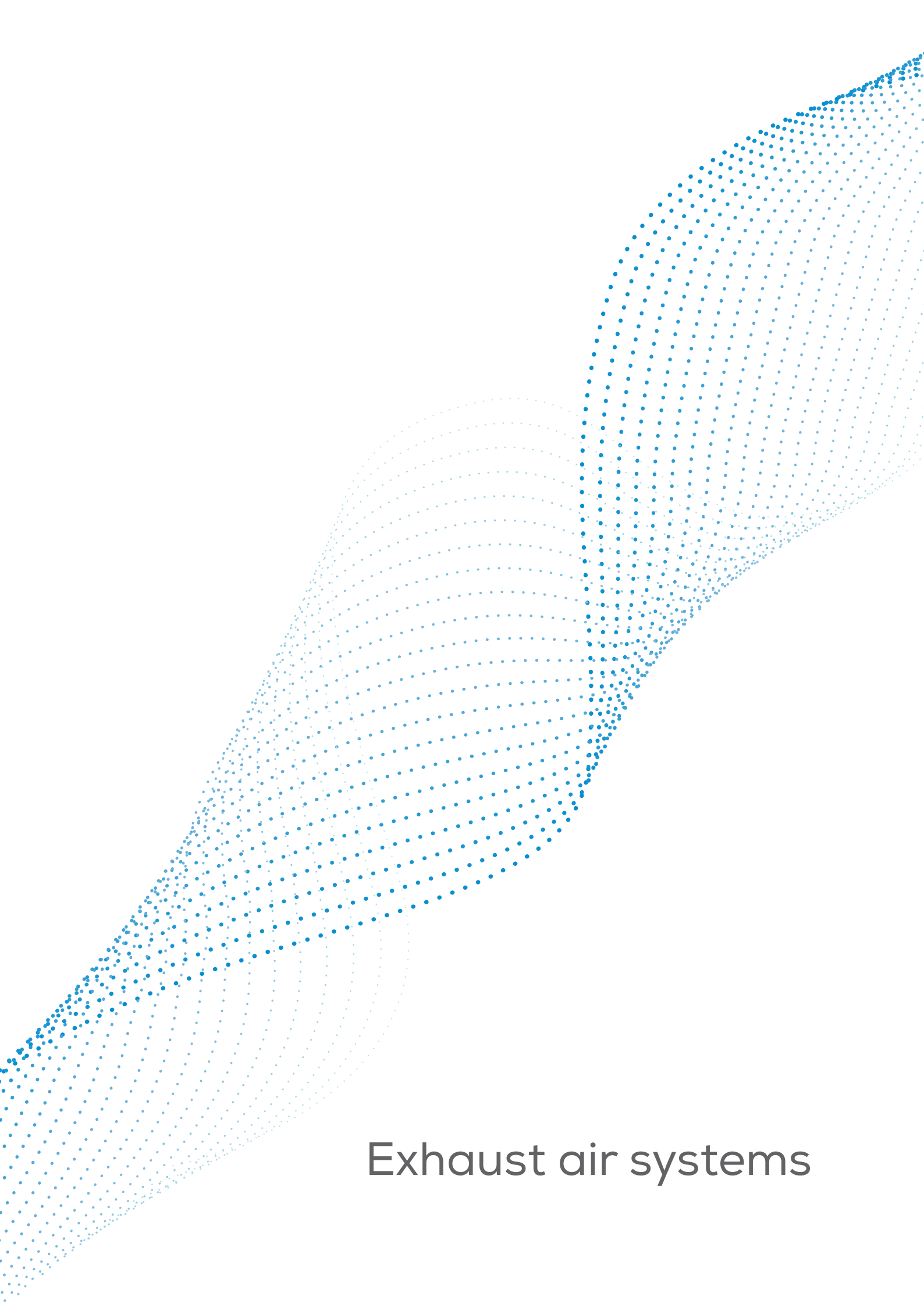
Monday – Thursday 07:00 – 15:00
 Friday 07:00 – 12:00

*HGV arrival



Express delivery service
 Stock goods that are ordered by 12 p.m. are ready for shipment by 16 p.m.

Technical changes and further development reserved.
 Status 1/2024



Exhaust air systems

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Exhaust air duct systems

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Exhaust air treatment

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Exhaust air systems

Well proven in practice

With exhaust air ducts and air extraction fans the contaminated stable air is optimally transported outside. That saves energy and provides for animal-friendly climate. Irrespective of the individual farm size, the system portfolio meets all requirements and includes:

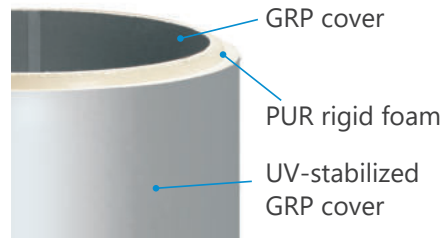
- Insulated exhaust air chimneys »vario-clip«® and »AGROFLEX«
- Uninsulated TU-exhaust air chimneys
- Air extraction fans
- Exhaust air washer »LAVAMATIC«®

The exhaust air ducts »vario-clip«® and »AGROFLEX«® consists of a "sandwich construction" with highly insulated polyurethane rigid foam in the core and a hard GRP outer and inner coating. The insulation reduces the formation of condensation.

The scope of service includes the most important components for efficient exhaust air conveyance: Diffusers, roofing panels, fans as a module cartridge, shutter modules, intake nozzles, etc.



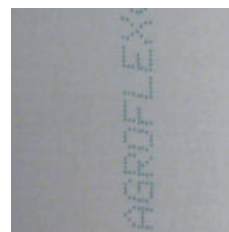
"sandwich construction" »vario-clip«® / »AGROFLEX«®



Overview diameter of air ducts

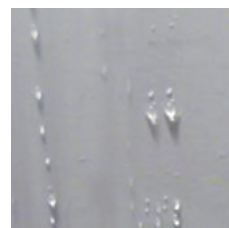
Ø Inner (mm)	vario-clip	AGRO-FLEX
520	•	•
580		•
650	•	•
730	•	•
820	•	•
920	•	•
1,090		•
1,270	•	

Comparison of condensate formation between »AGROFLEX«® and another brand (uninsulated)



»AGROFLEX« duct: 0.022 W/mK
 Duct diameter: ø 650 mm
 Outdoor temperature: - 22 °C
 Internal temperature: 20 °C
 Temperature difference: 42 K

»AGROFLEX«® duct:
 no formation of condensate



Exhaust air treatment

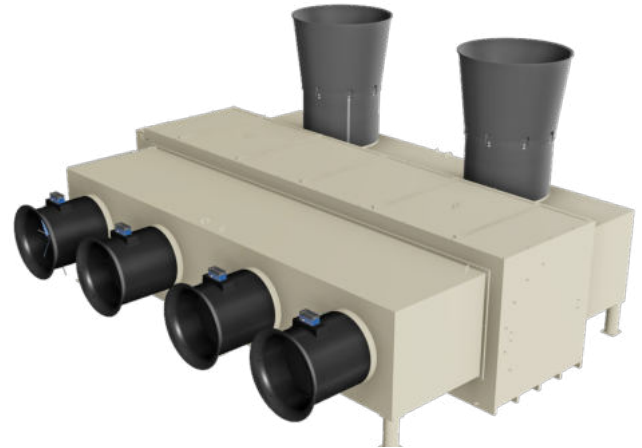
For poultry- and pig-stables

Effective exhaust air treatment and dust filtration are growing in importance when it comes to livestock farming.

Effective solutions are in demand, in particular in light of the discussion on the subject of bioaerosols and the associated question of approvals for new stable structures.

The LAVAMATIC® drum washer serves for instance for the cleaning of exhaust air of poultry and pig stables and comes as a complete, prefabricated module.

Beyond that, an optional biostage for the reduction of odors is available.

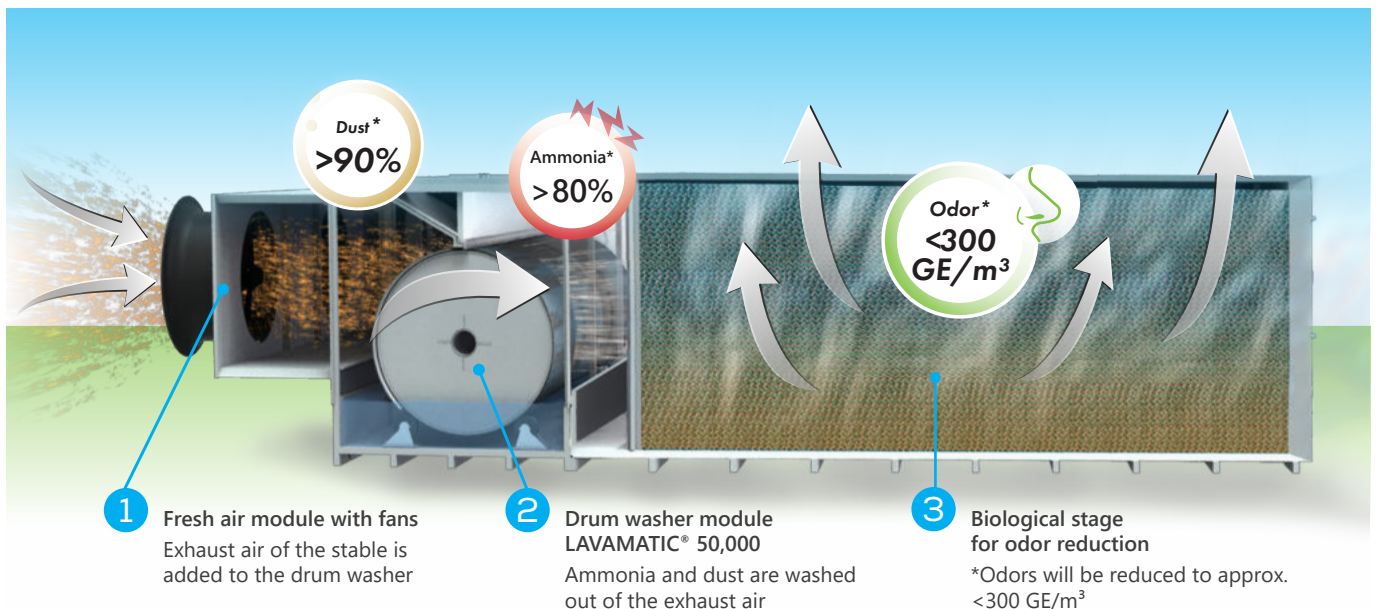


LAVAMATIC® 100,000 with exhaust air module



LAVAMATIC® 50,000 with exhaust air module

Functional principle of LAVAMATIC®–System with biological stage (*Separation depends on the polluted concentration of the raw gas)





»AGROFLEX«® air duct air flow with fans from

ZIEHL-ABEGG 

Type	ø inner (mm)	ø outer (mm)	Voltage (V)	Air flow (m ³ /h) - Pressure (Pa)		
				0	30	50
M500-ST-D4-A7	520	580	400	9,100	8,300	7,600
M560-ST-D6-A7	580	640	400	10,000	8,800	7,600
M630-FF-D6-A5	650	710	400	14,200	12,500	10,600
M710-ST-D6-A7	730	790	400	19,500	17,600	16,000
M800-ST-D6-A7	820	880	400	26,000	23,900	22,000
M910-FF-D6-A3	920	980	400	26,100	23,100	20,700
M910-FN-D6-A5	920	980	400	31,100	29,000	27,400
M1070-ST-D6-A3	1,090	1,150	400	48,100	45,100	43,100
M1070-ST-D8-A3	1,090	1,150	400	39,900	35,500	32,700
M1070-ST-D10-A5	1,090	1,150	400	34,500	30,400	27,300
M1250-ST-D10-A7	1,270	1,330	400	52,300	46,200	42,500
M500-ST-W4-A7	520	580	230	8,700	7,900	7,300
M560-FF-W6-A5	580	640	230	9,900	8,600	7,200
M630-FF-W6-A5	650	710	230	13,900	12,400	10,500
M710-ST-W6-A7	730	790	230	18,500	16,600	14,800
M800-FF-W6-A3	820	880	230	20,900	18,100	15,000
M910-FF-W6-A3	920	980	230	25,300	22,000	18,600

»AGROFLEX«® duct (3 m) with PUR intake nozzle, diffuser and shutter.

Overview exhaust air systems

Duct end, top

	Page	Article
1	1.12	Diffusers
	1.13	Rain hoods
	1.13	Motor-controlled cover flaps
	1.14	Covering rings
	1.18	Storm bracing

Roof connection

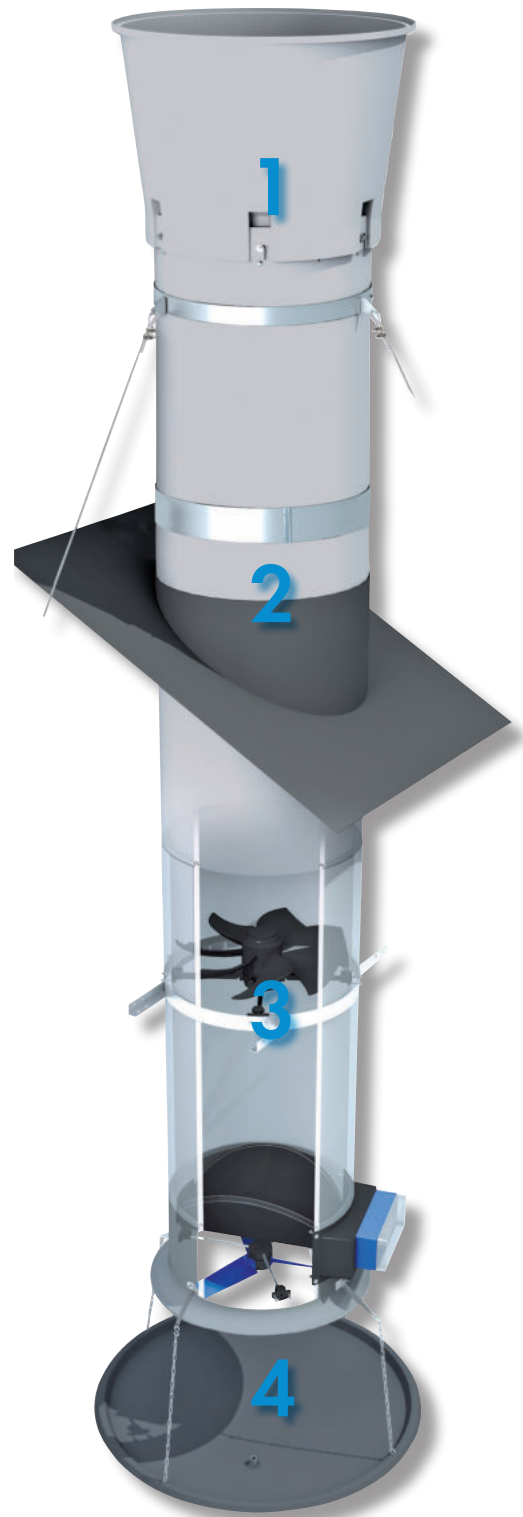
	Page	Article
2	1.16	Roofing panels GRP*
	1.17	Universal roofing panels
	1.17	All-purpose sealing tape
	1.17	Adhesive for roofing panels

Ducts and installation components

	Page	Article
3	1.7	»vario-clip«® air ducts
	1.8	»AGROFLEX«® air ducts
	1.19	Duct clamps
	1.20	Assembly kit Pro
	1.9	Adhesive
	1.21	Anchoring rings
	1.21	Duct rope suspensions
	1.10	Formed pieces
	1.32	Shutters
	1.24	Fan module

Duct end, bottom

	Page	Article
4	1.14	Covering rings
	1.15	Intake nozzles
	1.32	Shutter modules
	1.37	Water collecting basins



Exhaust duct unit Economy

Complete exhaust duct unit. Non-assembled.

Comprised of: Built-in fan 400V, »vario-clip«[®] air duct 1.5 m, diffuser incl. fixing set, covering ring PS/30, fixing rings for fans, one-piece PU shutter, servomotor (0-10 V), intake nozzle PS.

ø inner (mm)	Air flow* (m ³ /h)	Article no. Servomotor	
		24 V	230 V
650	13,350	1986544452	1986544442
730	18,330	1987344452	1987344442
820	24,440	1988244452	1988244442
920	24,530	1989244452	1989244442

*Air flow measured with a differential pressure of 0 Pa



Exhaust duct unit Standard

Complete exhaust duct unit. Non-assembled.

Comprised of: Built-in fan 400V, »vario-clip«[®] air duct 1.5 m, diffuser incl. fixing set, covering ring PS/30, fixing rings for fans, one-piece PU shutter, servomotor (0-10 V) with protective housing IP66, intake nozzle PU.

ø inner (mm)	Air flow* (m ³ /h)	Article no. Servomotor	
		24 V	230 V
650	14,200	1986544450	1986544440
730	19,500	1987344450	1987344440
820	26,000	1988244450	1988244440
920	26,100	1989244450	1989244440

*Air flow measured with a differential pressure of 0 Pa



Exhaust duct unit Superior

Complete exhaust duct unit. Non-assembled.

Comprised of: Built-in fan 400V , »vario-clip«[®] air duct 1.5 m, diffuser incl. fixing set, covering ring PS/30, fixing rings for fans, shutter module with measuring fan, servomotor (0-10 V) with protective housing IP66.

ø inner (mm)	Air flow* (m ³ /h)	Article no. Servomotor	
		24 V	230 V
650	14,200	1986544454	1986544444
730	19,500	1987344454	1987344444
820	26,000	1988244454	1988244444
920	26,100	1989244454	1989244444

*Air flow measured with a differential pressure of 0 Pa





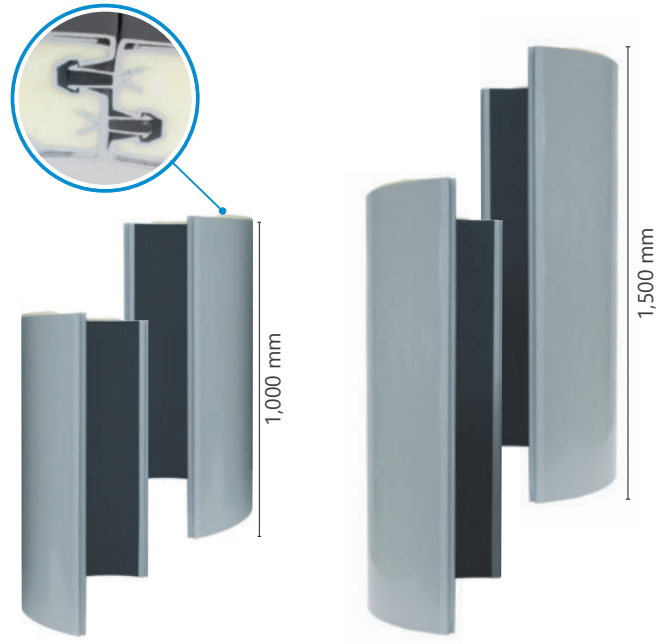
»vario-clip«® air ducts, 1,000 mm

External and internal coating with fibreglass reinforced, UV-stabilized polyester. Duct segments are »clipped together« by means of a patented PVC profile. Tongue and groove system for simple installation.

Wall thickness: 30 mm
Element length: 1,000 mm

ø inner (mm)	ø outer (mm)	Article no.
520	580	V4003__
650	710	V4005__
730	790	V4006__
820	880	V4007__
920	980	V4008__
1,270	1,330	V400127__

Colors: brown = Article no. ____00
 light grey = Article no. ____04



»vario-clip«® air ducts, 1,500 mm

Wall thickness: 30 mm
Element length: 1,500 mm

ø inner (mm)	ø outer (mm)	Article no.
520	580	V4023__
650	710	V4025__
730	790	V4026__
820	880	V4027__
920	980	V4028__
1,270	1,330	V402127__

Colors: brown = Article no. ____00
 light grey = Article no. ____04

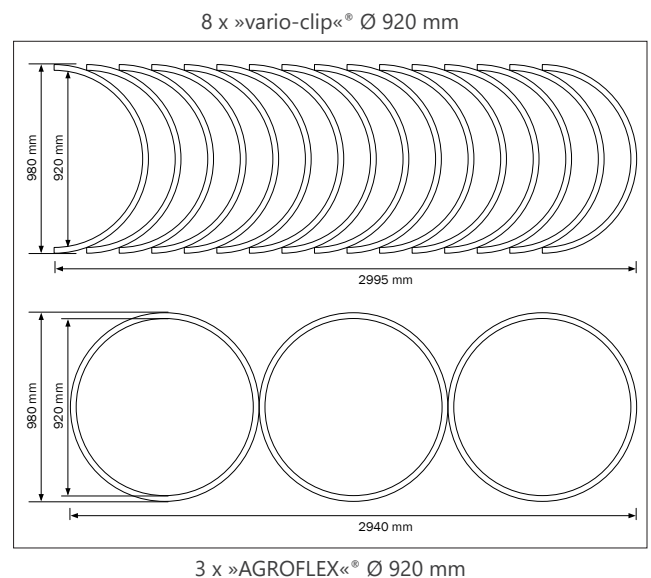


Patented system
German patent and trademark office



»vario-clip«® transport cost reduction of over 50%

Duct segments are »clipped« without additional clamping bands or duct clamps with the help of a PVC profile. In this manner, handling and installation is simplified and a reduction of transport costs of up to 50% is achieved in comparison to the »AGROFLEX«®.



Adhesive see page 1.9



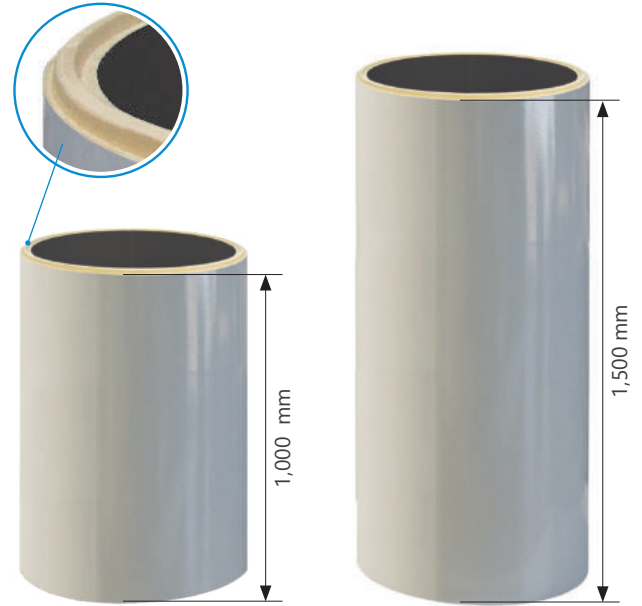
»AGROFLEX«® air ducts, 1,000 mm

External and internal coating with fibreglass reinforced, UV-stabilized polyester. The air ducts are immediately suited for the installation of the fan. For safe and easy installation we recommend a fan fixing ring.

Wall thickness: 30 mm
Element length: 1,000 mm

ø inner (mm)	ø outer (mm)	Article no.
520	580	A4003_
580	640	A4004_
650	710	A4005_
730	790	A4006_
820	880	A4007_
920	980	A4008_
1,090	1,150	A400109_

Colors: brown = Article no. ____00
 light grey = Article no. ____04



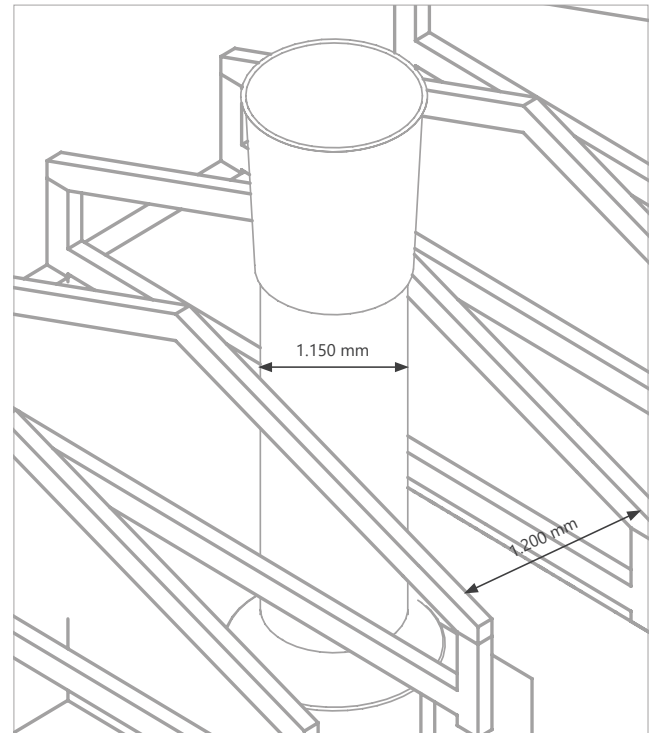
Tongue and groove system for simple installation.

»AGROFLEX«® air ducts, 1,500 mm

Wall thickness: 30 mm
Element length: 1,500 mm

ø inner (mm)	ø outer (mm)	Article no.
520	580	A4023_
580	640	A4024_
650	710	A4025_
730	790	A4026_
820	880	A4027_
920	980	A4028_
1,090	1,150	A402109_

Colors: brown = Article no. ____00
 light grey = Article no. ____04



Pipe diameter 1,090 mm fits perfectly between the binders.

Formed pieces T-pieces / curves

Can be found on pages 1.10 – 1.11



Assembly kits Pro See page 1.19



2-component adhesive REVEPUR 623

REVEPUR 623 Two-component reaction adhesive for the bonding of air ducts and accessories. Please observe the processing notes. Mixing unit: 1,000 g , PU/box: 8 pcs. each

Quantity of glue required for pipe Ø		Article no.
370 - 920 mm	1,090 - 1,270 mm	
1/2 can	1 can	134600



Cartridge adhesive SH 100

SH 100 is a special glue for the bonding of the air ducts and components. Rapid and simple use by means of a cartridge gun; remaining material can be used later. Cartridge content: 310 ml, unit/box: 12 cartridges

Color	Quantity of glue required for pipe Ø		Article no.
	370 - 650 mm	730 - 1,270 mm	
Light grey	1 cartridges	2 cartridges	134210
Brown	1 cartridges	2 cartridges	134200



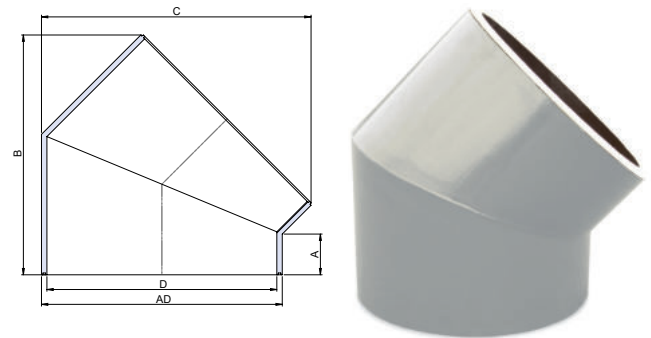


Formed pieces / curves

Curves for air duct system with internal coating consisting of GRP. »AGROFLEX«® and »vario-clip«® with wall thickness 30 mm.

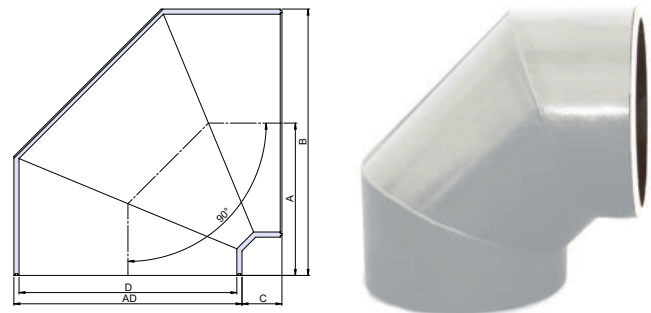
Curves 45°

ø inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
520	A4073_ _
580	A4074_ _
650	A4075_ _
730	A4076_ _
820	A4077_ _
920	A4078_ _
1,090	A407109_ _
1,270	A407127_ _



Curves 90°

ø inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
520	A4093_ _
580	A4094_ _
650	A4095_ _
730	A4096_ _
820	A4097_ _
920	A4098_ _
1,090	A409109_ _
1,270	A409127_ _



Colors: brown = Article no. ____00
 light grey = Article no. ____04

Attention: Order-specific article – returns not permitted!

Dimensions formed pieces

»AGROFLEX«® and »vario-clip«® curves 45° and 90°

D	AD	A		W		C	
		45°	90°	45°	90°	45°	90°
520	580	380	587	1,059	877	849	297
580	640	367	588	1,080	908	900	268
650	710	353	590	1,105	945	960	235
730	790	336	592	1,133	987	1,028	197
820	880	318	594	1,165	1,034	1,105	154
920	980	297	596	1,200	1,086	1,190	106
1,090	1,150	262	883	1,260	1,458	1,335	308
1,270	1,330	225	899	1,324	1,553	1,489	223

All dimensional data in mm.



Reduction (e.g. of duct diameter from 580 to 520 mm) on request.

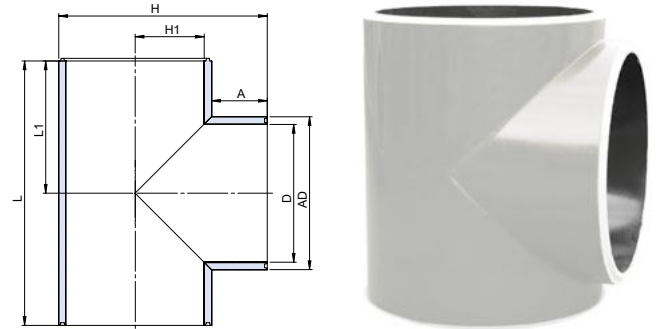
Formed pieces / T-pieces

T-piece for air duct system with internal coating made of GRP. »AGROFLEX«® and »vario-clip«® with wall thickness 30 mm.

ø inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
520	A4113_ _
580	A4114_ _
650	A4115_ _
730	A4116_ _
820	A4117_ _
920	A4118_ _
1,090	A411109_ _
1,270	A411127_ _

Colors: brown = Article no. ____00
 light grey = Article no. ____04

Attention: Order-specific article – returns not permitted!



Dimensions formed pieces

T-pieces »AGROFLEX«® and »vario-clip«®

»AGROFLEX«® and »vario-clip«® special formed pieces on enquiry.

D	AD	A	H	L
520	580	210	790	1,000
580	640	180	820	1,000
650	710	145	855	1,000
730	790	105	895	1,000
820	880	60	940	1,000
920	980	260	1,240	1,200
1,090	1,150	175	1,225	1,500
1,270	1,330	100	1,430	1,500

»vario-clip«® formed pieces are delivered pre-assembled.
 All dimensional data in mm.



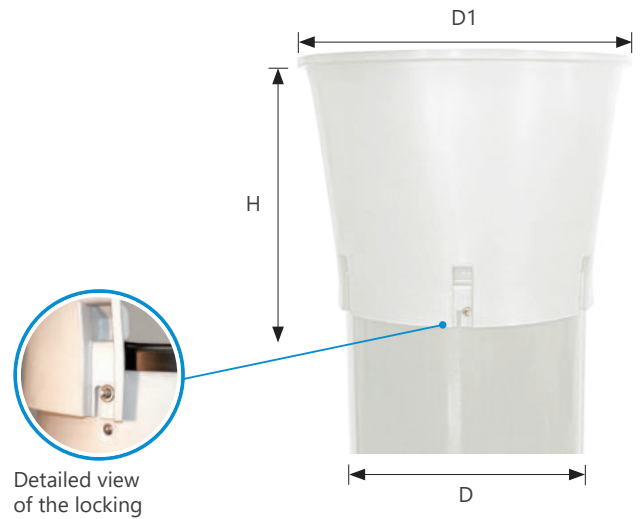
Reduction (e.g. of duct diameter from 580 to 520 mm) on request.

Diffusers for air ducts »AGROFLEX«® and »vario-clip«® incl. fixing set

The air flow is optimally guided by the diffusers. An increase of up to 15% is achieved. This means that a saving in energy of up to 15% can be achieved at the same air flow. Due to the new contour with integrated contact points, the model line is even easier to assemble; the diffusers can be adjusted and locked more easily.

ø inner (mm)	D / D1 x H	Article no.
520	588 / 786 x 570	11852_600
580	646 / 860 x 625	11858_600
650	716 / 944 x 690	11865_600
730	796 / 1043 x 684	11873_600
820	886 / 1152 x 845	11882_600
920	986 / 1276 x 940	11892_600
1,090	1156 / 1500 x 1120	11810_600
1,270	1336 / 1710 x 1290	11812_600

Colors: brown = Article no. _____0___
 light grey = Article no. _____4___

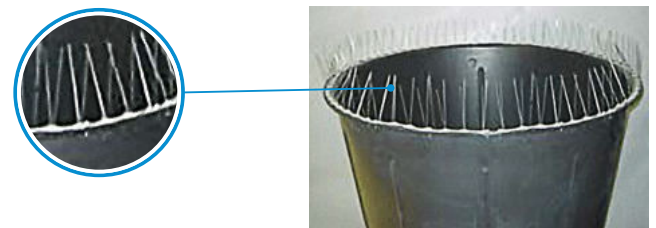


i Cover flaps see page 1.13
 Covering rings see page 1.14

Bird protections for diffusers

The bird protection hinders birds to sit on the diffuser. Consists of spikes and mounting kit, to mount on the diffuser.

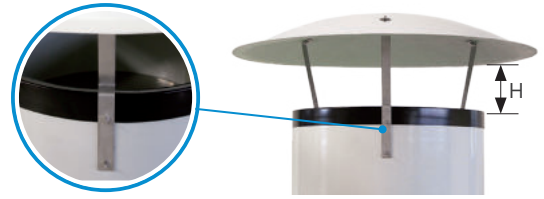
ø inner (mm)	Article no.
Compatible with TU 600	12-52030144
Compatible with TU 800	12-52030145



Rain hoods

Made from UV-stabilized, glass fibre reinforced polyester incl. stainless steel fixing set.
 Spacing heights: Ø 370 - 650mm H = approx. 260mm
 Ø 730 - 920mm H = approx. 350mm

Suitable for wind speeds up to 25m m/s (corresponds to wind zone 2 according to DIN 1055-4).



Ø inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
520	V4163_ _
580	V4164_ _
650	V4165_ _
730	V4166_ _
820	V4167_ _
920	V4168_ _
1,090	V416109_ _
1,270	V416127_ _

Colors: brown = Article no. ____00
 light grey = Article no. ____04

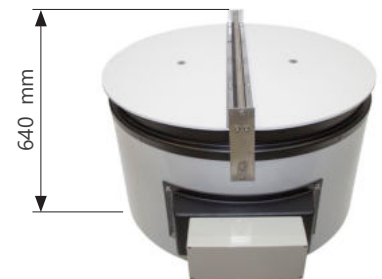
Motor-controlled cover flaps

The cover flaps prevent rainwater penetrating the exhaust air shaft by laying directly on the pipe. Open/close control of the cover flaps takes place via a servomotor (not included). UV-resistant protective housing IP66 included.

The motor-controlled cover flaps are already delivered and mounted in the duct socket.

Ø inner (mm)	Drive torque (Nm)	Article no.
650	20	14465_A00
730	20	14473_A00
820	20	14482_A00
920	20	14492_A00
1,090	40	14410_A00
1,270	40	14412_A00

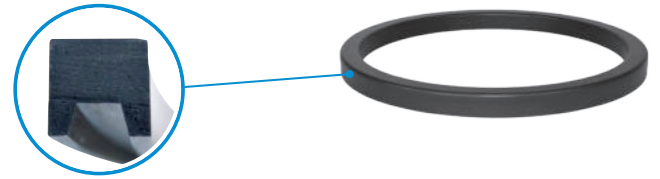
Colors: brown = Article no. ____0____
 light grey = Article no. ____4____



Covering rings PUR/30 for MVSK

For even connection when using a swivel mechanism.
Material: PUR

ø inner (mm)	Article no.
650	9-160650200
730	9-160730200
820	9-160820200
920	9-160920200
1,090	9-160100200
1,270	9-160120200



Covering rings PS/30 for air ducts

»AGROFLEX«® and »vario-clip«®

For the protection of the duct end. Material: PS

ø inner (mm)	Article no.
520	V404300
580	V404400
650	V404500
730	V404600
820	V404700
920	V404800
1,090	V40410900
1,270	V40412700



Selection guide duct end

Duct end	»AGROFLEX«® / »vario-clip«®		Page
	top	bottom	
Covering ring PUR	—	☐	1.14
Covering ring PS	☐	☐	1.14
Intake nozzle PUR	☞ Groove	☞ Spring	1.15
Intake nozzle PUR tongue	☞ Groove	☞ Spring	1.15

Large PUR intake nozzles for air ducts »AGROFLEX«® and »vario-clip«®

The intake nozzle PUR large effectively increases the air flow and reduces the energy costs. The performance increase is dependent on the fan characteristic curve and the type of installation. It must be bonded with the lower duct end by means of the spring and groove. The intake nozzle enables an increase in air flow of up to 10%, depending on the fan.



Material: PUR

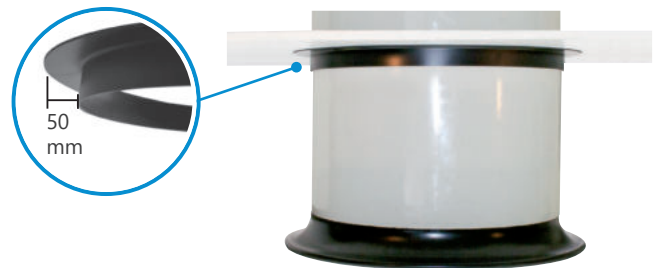
ø inner (mm)	Article no.
520	V4053__
580	V4054__
650	V4055__
730	V4056__
820	V4057__
920	V4058__
1,090	V40510900
1,270	V405127__

Article no.:Spring = Article no. ____00
Groove = Article no. ____10

Angled cover rings PS

The angled covering ring ensures a clean seal between the duct and the ceiling.
(Cover 50 mm)

ø inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
520	V404370
580	V404470
650	V404570
730	V404670
820	V404770
920	V404870
1,090	V40410970
1,270	V40412770



Angled covering ring PS



GRP roofing panels

The flat or waved roofing panels are made of UV-stabilized, glass fibre reinforced polyester. These are produced to order, precisely according to the roofing pitch and roofing profile. The duct is bolted directly together with the roofing panel. Sealing on the upper edge can be implemented by means of all-purpose sealing tape.



Flat / side



Waved / side

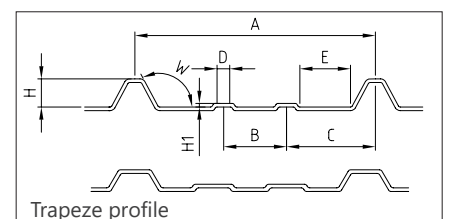
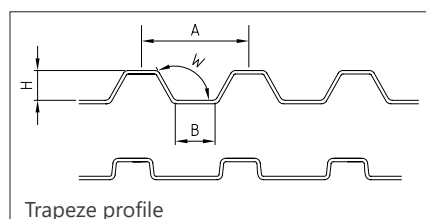
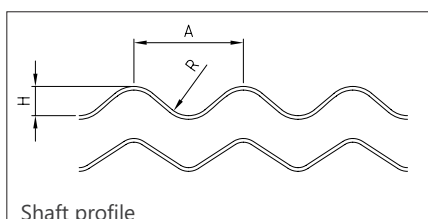
Type	∅ inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
Flat / side	650	V1365__
	730	V1366__
	820	V1367__
	920	V1368__
	1,090	V136109__
	1,270	V136127__
Shaft / side	650	V1355__
	730	V1356__
	820	V1357__
	920	V1358__
	1,090	V135109__
	1,270	V135127__

Colors: brown = Article no. ____00
 light grey = Article no. ____04

Attention: Order-specific article – returns not permitted!
 Per order/article, non-recurring preproduction costs of € 86.60 (net) apply.

Recommendation:

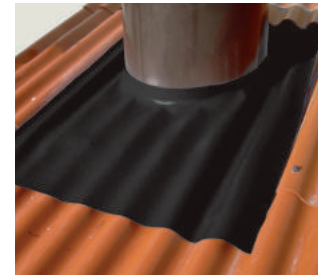
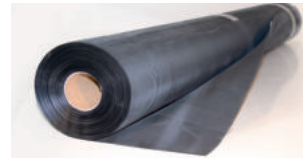
We are also happy to manufacture roofing panels according to roofing profile template. Please state roofing pitch, profile type and desired color when ordering. Special colors are available on request. Required dimension indications must be marked with letters, e.g. A, R, H etc.





Universal roofing panels, foil set /roll

The roofing panel is made from high quality, UV-stabilized roofing foil. The bonding between duct, roofing area and roofing foil is performed with the special adhesive KS-REVE-EP. Approved in accordance with DIN EN 12691 (sealing of building constructions). Suitable for all duct diameters and roofing types. Adhesive included in delivery package in the case of foil set, the roll contains no adhesive.



Color: Black

ø inner (mm)	Dimensions (mm)		Article no.	
	Foil set	Roll	Foil set	Roll
520 – 820	1,400 x 1,800	1,400 x 20,000	134000	134100
920	1,700 x 1,900	1,700 x 20,000	133800	134102
1,090-1,270	2,400 x 2,050	2,050 x 20,000	13312700	134106

We recommend all-purpose sealing tape for sealing the pipe.

Universal adhesive for roofing panels KS-REVE-EP

System adhesive for gluing the universal roofing panel.
KS-REVE-EP: Content 750 g, unit/box: 12 units (can)



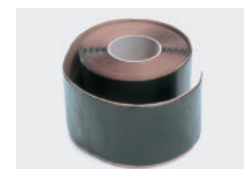
Adhesive	Quantity of glue required for pipe Ø			Article no.
	520 – 820 mm	920 mm	1,090 – 1,270 mm	
KS-REVE-EP	455 g	517 g	650 g	134300

All-purpose sealing tapes

The all-purpose sealing tape with enhanced adhesion properties is composed of self-adhesive and weather-resistant foil. Simple application to almost any surface is possible.
Height: 100 mm, length: depending on diameter

ø inner (mm)	Article no.
520 — 650	1325__
730 — 920	1328__
1,090 — 1,270	132127__

Colors: black = Article no. ____00
 light grey = Article no. ____04



Storm bracing

For the securing of the duct against wind loads.

Scope of delivery:

- Stainless steel clamp with eyelets
- 15 running metres of galvanized wire rope
- Turnbuckles, rope thimbles, rope clamps (galvanized)

Storm bracing in the specified version is structurally designed for wind zone 2 and a duct height of 4 m. The usage of duct clamps is required for the additional stabilisation of the bonded joints.

Material: Stainless steel

ø inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
520	V422300
580	V422400
650	V422500
730	V422600
820	V422700
920	V422800
1,090	V42210900
1,270	V42212700

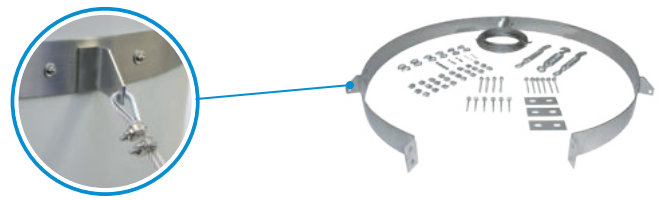
Static analyses

Due to the ever-increasing requirements with regards to approval procedures, we offer static analysis for the bracing of the ducts.

Various dependencies between the horizontally and vertically occurring tracking forces in connection with the wind zone, the duct height and the diameter therefore determine the position of the storm bracing as well as the required bracing.

In general, we recommend bracing with duct heights starting from 3 m above the roof.

We would be happy to draw up a non-binding quotation for your project.



i Duct clamp / assembly kit Pro see page 1.19

Statics overview (duct heights up to 9 m above the roof)

Example	Arrange-ment	Art. no.	Art. no. further ducts
	1x duct without bracing	198999900	198999901
	1x duct with bracing without structural steel	198999910	198999911
	Group configurations up to 12 ducts	198999912	—
	Larger configurations from 12	198999920	—
	Special configurations	198999999	—

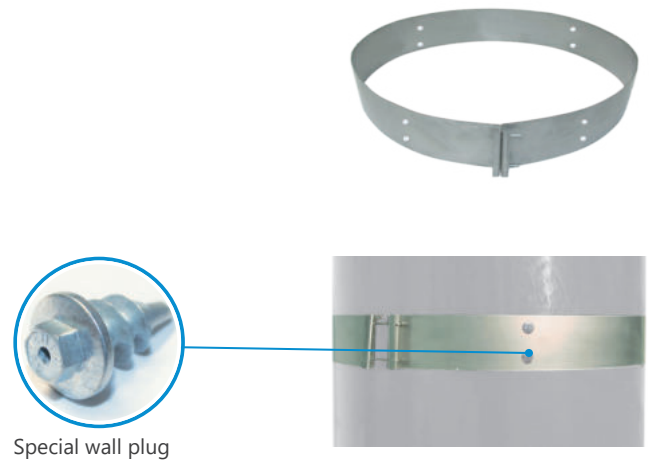
Further statics on enquiry (construction projects including inspection routes, substructures, ladders, etc.)

Duct clamps

For securing the bonded joints between duct segments. Please observe the handling instructions from the static analysis. Incl. special wall plug. Bonding the duct clamp to the external cover of the air duct is necessary to adhere to the static requirements.

Material: Stainless steel

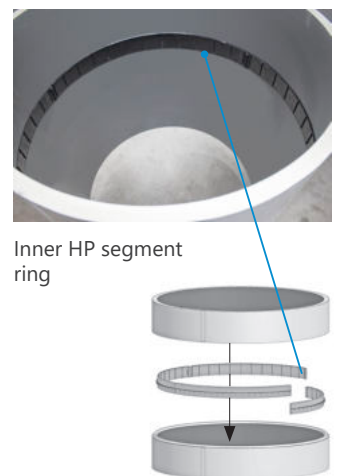
ø inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
520	V424300
580	V424400
650	V424500
730	V424600
820	V424700
920	V424800
1,090	V42410900
1,270	V42412700



Inner HP segment rings

The HP segment ring is installed in the pipe. As such the duct joint connections are also better protected with frequent cleaning. There is no need to seal the duct on the inside.

ø inner (mm)	Article no.
650	424560
730	424660
820	424760
920	424860
1,090	42410960
1,270	42412760

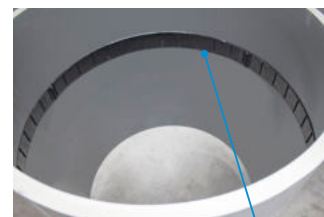


Assembly kit Pro (inner HP segment rings + duct clamps)

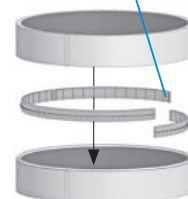
The assembly kit Pro comprises an HP segment ring, which is installed inside the duct and a duct clamp, which is attached from outside via the duct connection. As such the duct joint connections are also better protected with frequent cleaning. There is no need to seal the duct on the inside.

The duct clamps are prepared ready for installation and are pre-drilled.

∅ inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
650	V434500
730	V434600
820	V434700
920	V434800
1,090	V43410900
1,270	V43412700



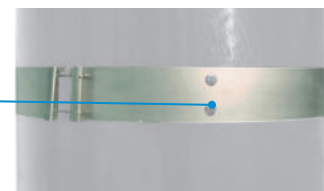
Inner HP segment ring



Duct clamp (outer)



Special wall plug

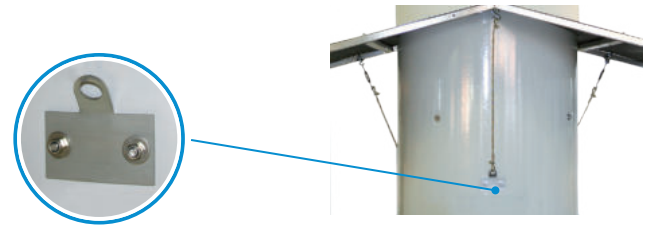


Duct rope suspensions with anchoring strap

For suspending the duct in stables without suspended ceilings or for additional securing of the air duct under the roof. Anchoring straps can only be used in conjunction with a fan fixing ring.

Installation kit comprised of:

- 3 anchoring straps
- 6 m wire rope / rope thimble
- Fixing screws
- Wire rope clips
- Material: Stainless steel



Bracket suspension	Article no.
Single	432900

Anchoring rings

For securing / hanging the exhaust air duct on the roof binder. Including fixing material. The rings must be bolted and bonded to the exhaust air duct as a result of the tracking forces applied.

Material: Stainless steel

∅ inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
520	V420301
580	V420401
650	V420501
730	V420601
820	V420701
920	V420801
1,090	V42010901
1,270	V42012701

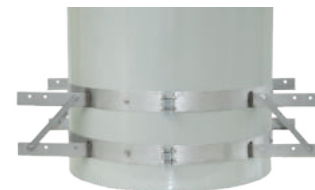


i Further information on statics upon enquiry, see also page 1.18

Anchoring rings DUO

A dual version of the anchoring ring is required for ducts above a particular height, depending on the wind zone. The rings must be bolted and bonded to the exhaust air duct as a result of the tracking forces applied.

Material: Stainless steel



ø inner (mm)	»AGROFLEX«® / »vario-clip«® Article no.
650	V420510
730	V420610
820	V420710
920	V420810
1,090	V42010910
1,270	V42012710



Light trap

The light trap 1,000 mm is made of high quality plastic. It reduces the penetration of daylight. Due to the special geometry, the air flow is reduced by only 10 – 15% depending on the fan. **An optimal light reduction can only be achieved in combination with a rain hood or water collection basin.**

The prices do not include air ducts. Installation in air ducts available at an additional charge.

ø inner (mm)	Article no.	
	assembled	non-assembled
1.090	43810900	138100700
1.270	43812700	138120700

Packaging information:
 43810900 = 2.40 x 1.20 x 2.15m a 4 pieces
 43812700 = 2.40 x 1.40 x 2.20m a 4 pieces
 Attention: Order-specific article – returns not permitted!

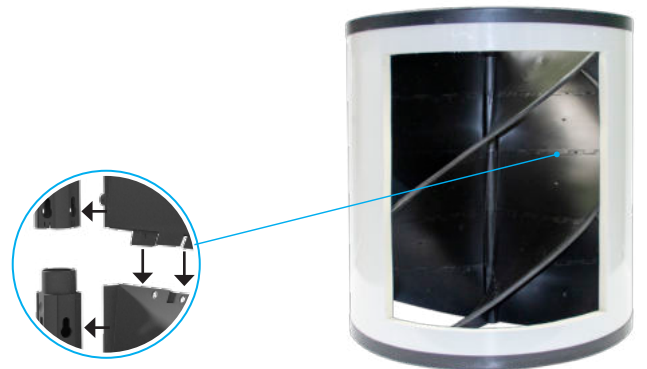


Segment-light trap

This light trap consists of segments and can be extended as desired. It reduces the penetration of daylight. Due to the special geometry, the air flow is reduced by only 10 – 15% depending on the fan. A light reduction can only be achieved in combination with a rain hood or water collection basin.

ø inner (mm)	Article no.
650	138650710
730	138730710
820	138820710
920	138920710

Attention: Order-specific article – returns not permitted!



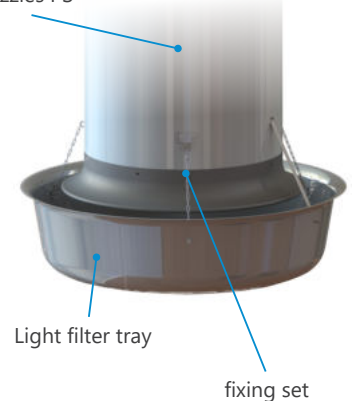
Light filter trays

The light filter trays prevent direct light from entering the barn. Made of glass fibre reinforced polyester. Including fixing set.

ø (mm)	Suitable for air duct ø inner (mm)	Article no.
1,295	650, 730	100000057
1,520	820, 920	100000059

Packaging information:
 1000000057 = 1.40 x 1.40m x 1.20m (30 pieces) + 1 Pal. 1.20 x 0.80 x 1.00 incl. fixing set
 1000000059 = 1.55 x 1.55 x 1.20 (30 pieces) + 1 Pal. 1.20 x 0.80 x 1.00 incl. fixing set

Exhaust air duct with Intake nozzles PS




»Fan Module« 400 V three-phase

The fan module with its integrated fan offers the following advantages:

- Space saving transportation, Easy to assemble, System integration with duct systems »Agroflex«[®] and »vario-clip«[®]

All components are coordinated and a characteristic curve is created for each exhaust air unit. This means that there are individual measurements for each exhaust air duct diameter. Fully preassembled module with pre-assembled built-in fan that is ready for connection. For a reduction in costs during planning and assembly. Compatible with »AGROFLEX«[®] and »vario-clip«[®].

We use the brand **ZIEHL-ABEGG**  for our fans - these are characterized by a high level of quality, durability and energy efficiency.



»Fan Module«



Optional: »Fan Module« incl. PUR intake nozzle

ø inner (mm)	400V three-phase	Article no.
520	M500-ST-D4-A7	A455310
580	M560-ST-D6-A7	A455410
650	M630-FF-D6-A5	155654000
730	M710-ST-D6-A7	A455610
820	M800-ST-D6-A7	A455711
920	M910-FF-D6-A3	155924000
920	M910-FN-D6-A5	155924002
1,090	M1070-ST-D6-A3	A45510912
1,090	M1070-ST-D8-A3	A45510911
1,090	M1070-ST-D10-A5	A45510910
1,270	M1250-ST-D10-A7	A45512710

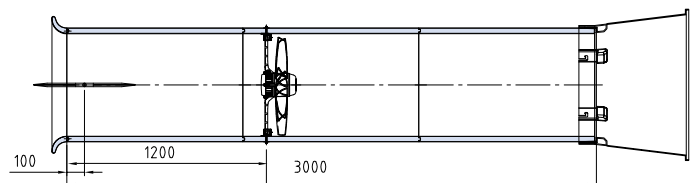
Intake nozzles are available separately. CSA-UL fans available on request.



»Fan Module« 400V technical data

Type	ø inner (mm)	Speed (rpm)	* Current (A)	** Capacity (W)	*** Sound power level suction side LwA5 dB(A)	*** Sound pressure level in 7m distance 45° dB(A)	Air flow (m³/h) Pressure (Pa)										Capacity (V) at 0 Pa [W/(1,000 m³/h)]	
							0	0	30	30	50	50	80	max.	Fan	Chimney		
							R	AGRO-FLEX	R	AGRO-FLEX	R	AGRO-FLEX	R	R	R	AGROFLEX		
M500-ST-D4-A7	520	1,360	1.10	530	78	53	8,300	9,100	7,800	8,300	7,500	7,600	6,800	4,900	(130 Pa)	53.4	49.0	
M560-ST-D6-A7	580	890	0.74	360	71	46	9,000	10,000	8,000	8,800	7,100	7,600	—	5,700	(70 Pa)	40.0	38.6	
M630-FF-D6-A5	650	930	1.25	540	72	47	12,300	14,200	11,100	12,500	10,200	10,600	—	7,400	(78 Pa)	39.3	34.9	
M710-ST-D6-A7	730	890	1.80	890	81	56	17,000	19,500	15,800	17,600	14,800	16,000	13,100	11,000	(110 Pa)	40.9	35.7	
M800-ST-D6-A7	820	900	2.70	1,350	80	55	22,900	26,000	21,400	23,900	20,300	22,000	18,700	14,300	(125 Pa)	45.0	39.7	
M910-FF-D6-A3	920	880	1.90	920	75	50	23,500	26,100	20,900	23,100	19,100	20,700	15,600	12,500	(95 Pa)	35.5	30.8	
M910-FN-D6-A5	920	880	4.00	1,950	78	53	27,300	31,100	25,500	29,000	24,600	27,400	22,400	11,500	(139 Pa)	42.3	36.9	
M1070-ST-D6-A3	1,090	870	6.20	3,400	93	68	—	48,100	—	45,100	—	43,100	—	—	—	—	64.7	
M1070-ST-D8-A3	1,090	700	3.60	1,600	87	62	—	39,900	—	35,500	—	32,700	—	—	—	—	40.8	
M1070-ST-D10-A5	1,090	540	3.20	1,300	82	57	—	34,500	—	30,400	—	27,300	—	—	—	—	35.4	
M1250-ST-D10-A7	1,270	500	4.50	2,200	83	58	46,100	52,300	41,700	46,200	38,900	42,500	33,100	29,600	(90 Pa)	42.1	37.1	

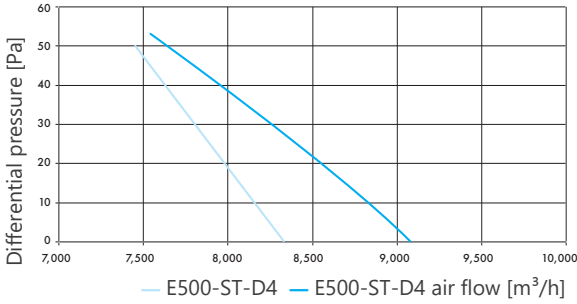
* Rated current at the separation point of the fan characteristic curve / ** Rated power consumption
 *** Measured in full duct without contact protection, version A per ISO 5801 at 30 Pa
 R = Framed fan measured in full duct without contact protection, version A per ISO 5801
 »AGROFLEX«® duct (3m) with PUR intake nozzle, diffuser and shutter (measured per the adjacent drawing)
 FF = owlet pinions FN= owlet sickle impeller ST = standard impeller
 W= 230V/50Hz D= 400V/50Hz 4/6/8/10 = number of pole pairs



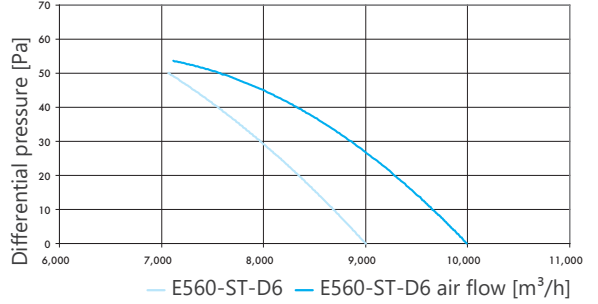


ZIEHL-ABEGG Fans

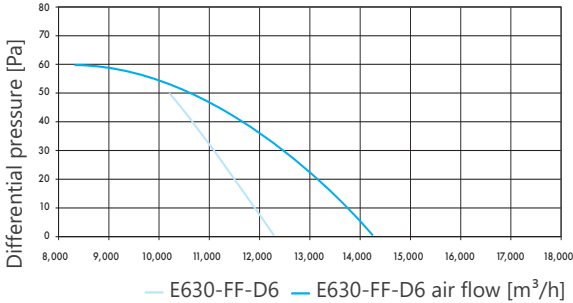
»AGROFLEX«® - exhaust air duct Ø 520/E 500-ST-D4



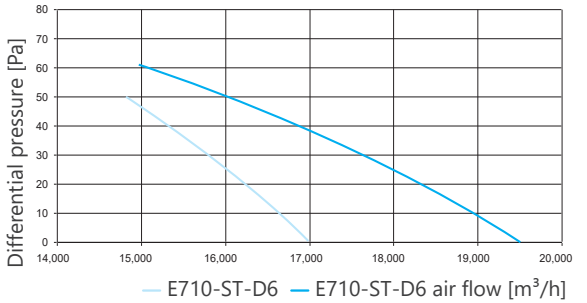
»AGROFLEX«® - exhaust air duct Ø 580/E 560-ST-D6



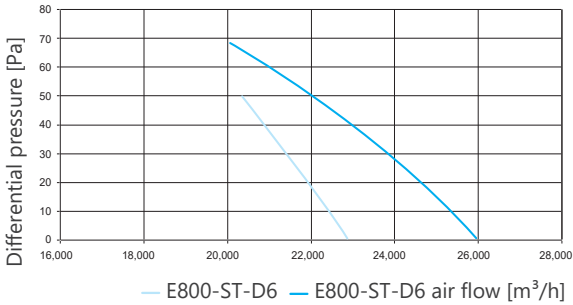
»AGROFLEX«® - exhaust air duct Ø 650/E 630-FF-D6



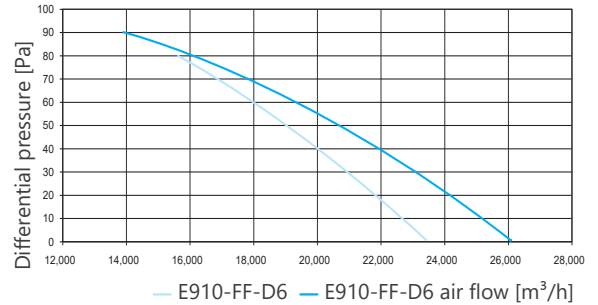
»AGROFLEX«® - exhaust air duct Ø 730/E 710-ST-D6



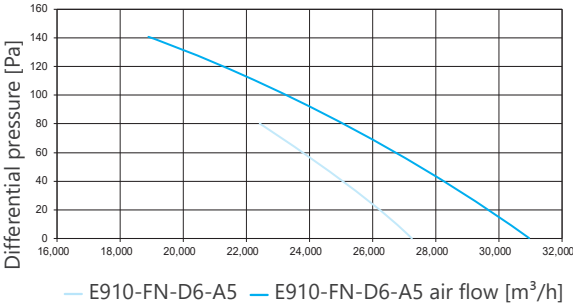
»AGROFLEX«® - exhaust air duct Ø 820/E 800-ST-D6



»AGROFLEX«® - exhaust air duct Ø 920/E 910-FF-D6



»AGROFLEX«® - exhaust air duct Ø 920/E 910-FN-D6-A5



i Tested on a certified test bench

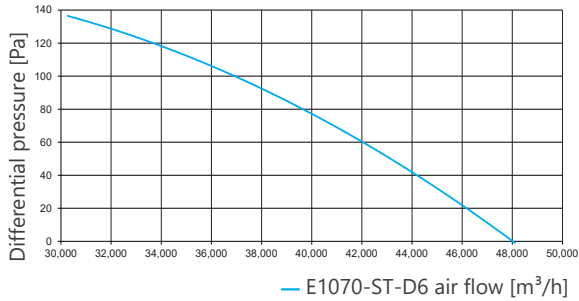
Measured:

- In the »AGROFLEX«® - duct (3 m) with PUR intake nozzle, diffuser and shutter
- in full duct without grid, version A per ISO 5801

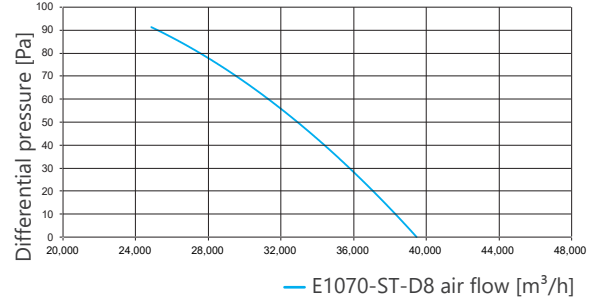


ZIEHL-ABEGG Fans

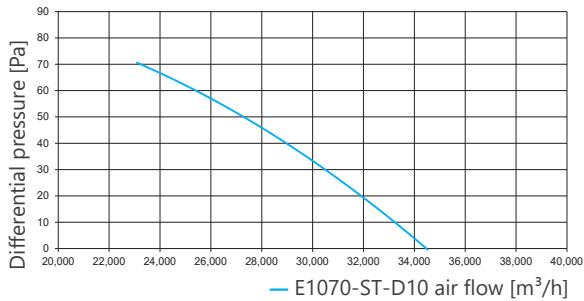
»AGROFLEX«® - exhaust air duct Ø 1.090/E 1.070-ST-D6



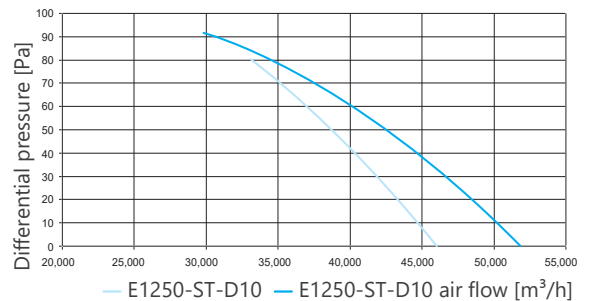
»AGROFLEX«® - exhaust air duct Ø 1.090/E 1.070-ST-D8



»AGROFLEX«® - exhaust air duct Ø 1.090/E 1.070-ST-D10



»AGROFLEX«® - exhaust air duct Ø 1.270/E 1.250-ST-D10



Measured:

- In the »AGROFLEX«® - duct (3 m) with PUR intake nozzle, diffuser and shutter
- in full duct without grid, version A per ISO 5801

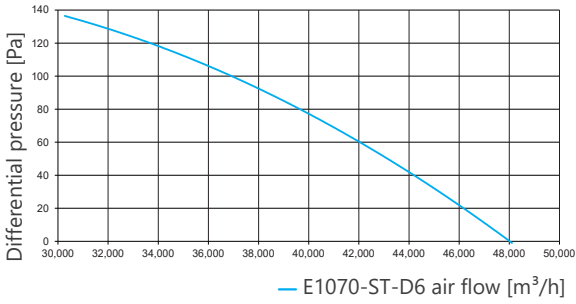


Tested on a certified test bench

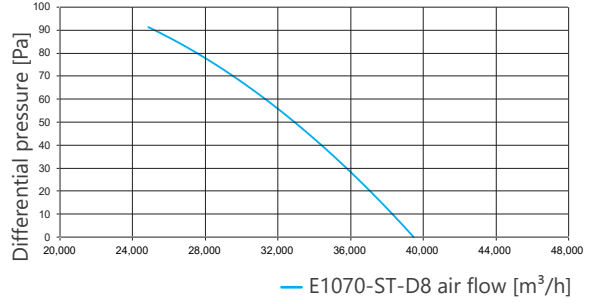


ZIEHL-ABEGG  Fans

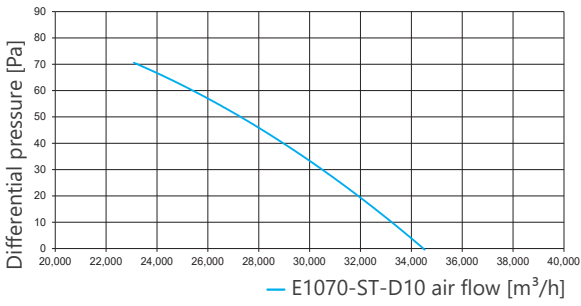
»AGROFLEX«® - exhaust air duct Ø 1.090/E 1.070-ST-D6



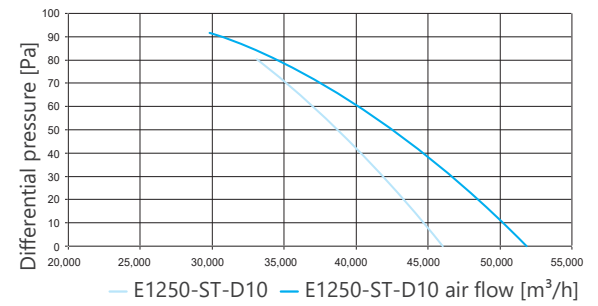
»AGROFLEX«® - exhaust air duct Ø 1.090/E 1.070-ST-D8





»AGROFLEX«® - exhaust air duct Ø 1.090/E 1.070-ST-D10



»AGROFLEX«® - exhaust air duct Ø 1.270/E 1.250-ST-D10



Measured:

-  In the »AGROFLEX«® - duct (3 m) with PUR intake nozzle, diffuser and shutter
-  in full duct without grid, version A per ISO 5801



Tested on a certified test bench

»Fan Module« 230 V single-phase

The fan module with its integrated fan offers the following advantages:

- Space saving transportation
- Easy to assemble
- System integration with duct systems »Agroflex«[®] and »vario-clip«

All components are coordinated and a characteristic curve is created for each exhaust air unit. This means that there are individual measurements for each exhaust air duct diameter.

Fully preassembled module with pre-assembled built-in fan that is ready for connection. For a reduction in costs during planning and assembly. Compatible with »AGROFLEX«[®] and »vario-clip«[®].

We use the brand **ZIEHL-ABEGG**  for our fans - these are characterized by a high level of quality, durability and energy efficiency.



»Modul-Fan«



Cross section »Fan Module«

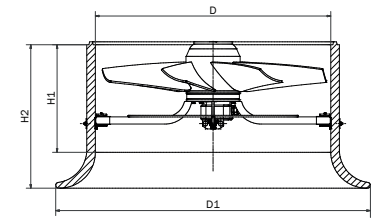
ø inner (mm)	230V single-phase	Article no.
*650	M630-FF-W6-A5	155652300
*730	M710-ST-W6-A7	A455600
*820	M800-FF-W6-A3	155822300
*920	M910-FF-W6-A3	155922300

*Please note our EC-blue. Intake nozzles are available separately. CSA-UL fans available on request.

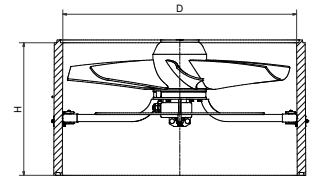


Dimensioning of »Fan Module«

ø (mm)	Dimensions (mm)				
	D	H	H1	H2	D1
520	320	320	400	704	
580	315	315	400	776	
650	305	305	400	861	
730	390	390	500	971	
820	465	375	500	1,091	
920	490	360	500	1,201	
1,090	510	510	685	1,464	
1,270	600	600	795	1,658	



»Fan Module« incl. PUR intake nozzle

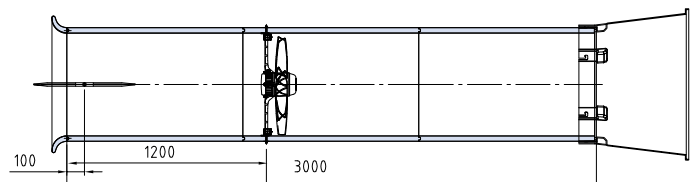


»Fan Module« without intake nozzle

»Fan Module« 230 V technical data

Type	ø inner (mm)	Speed (rpm)	* Current (A)	** Capacity (W)	***Sound power level suction side LwA5 dB(A)	***Sound pressure level in 7m distance 45° dB(A)	Air flow (m ³ /h) Pressure (Pa)									Capacity (V) at 0 Pa [W/(1,000 m ³ /h)]	
							0	0	30	30	50	50	80	max.	Fan	Chimney	
							R	AGRO-FLEX	R	AGRO-FLEX	R	AGRO-FLEX	R	R	R	AGRO-FLEX	
M500-ST-W4	520	1,310	2.30	510	76	51	8,000	8,700	7,400	7,900	7,000	7,300	6,500	5,000	(115 Pa)	52.4	48.2
M560-FF-W6	580	920	1.90	400	74	49	8,900	9,900	8,000	8,600	7,100	7,200	—	5,800	(70 Pa)	48.3	46.6
M630-FF-W6	650	890	2.50	520	71	46	12,200	13,900	10,700	12,400	9,700	10,500	—	6,000	(74 Pa)	40.2	35.8
M710-ST-W6	730	850	4.10	890	79	54	16,100	18,500	15,000	16,600	14,000	14,800	12,000	10,900	(95 Pa)	44.7	38.8
M800-FF-W6	820	880	3.40	760	75	50	18,600	20,900	16,300	18,100	14,700	15,000	11,800	10,000	(90 Pa)	36.9	32.3
M910-FF-W6	920	840	4.20	940	75	50	22,800	25,300	19,700	22,000	17,500	18,600	13,400	11,900	(88 Pa)	38.4	33.5

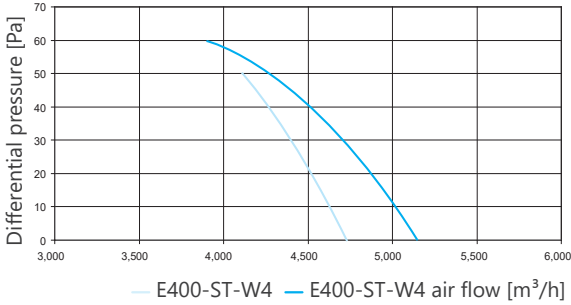
* Rated current at the separation point of the fan characteristic curve /
 ** Rated power consumption
 *** Measured in full duct without contact protection, version A per ISO 5801
 at 30 Pa R = Framed fan measured in full duct without contact protection, version A per ISO 5801
 »AGROFLEX«® duct (3m) with PUR intake nozzle, diffuser and shutter (measured per the adjacent drawing)
 FF = owl pinions SI = sickle impeller ST = standard impeller
 W = 230V/50Hz D = 400V/50Hz 4/6/8/10 = number of pole pairs



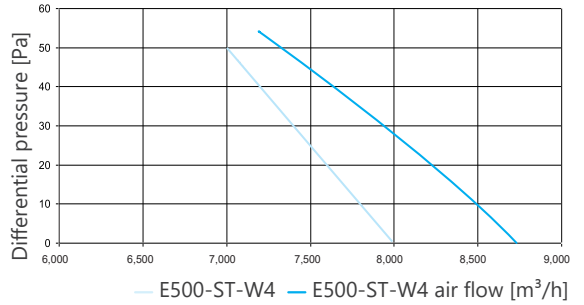


ZIEHL-ABEGG Fans

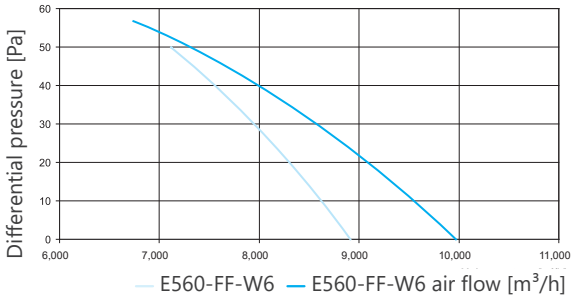
»AGROFLEX«® - exhaust air duct Ø 420/E 400-ST-W4



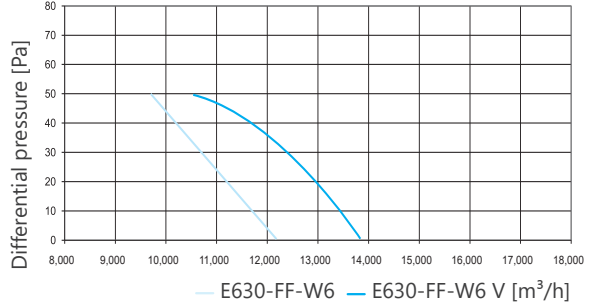
»AGROFLEX«® - exhaust air duct Ø 520/E 500-ST-W4



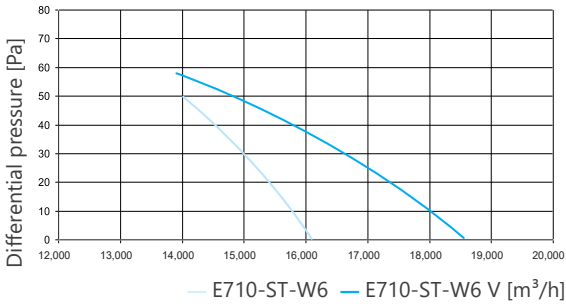
»AGROFLEX«® - exhaust air duct Ø 580/E 560-FF-W6



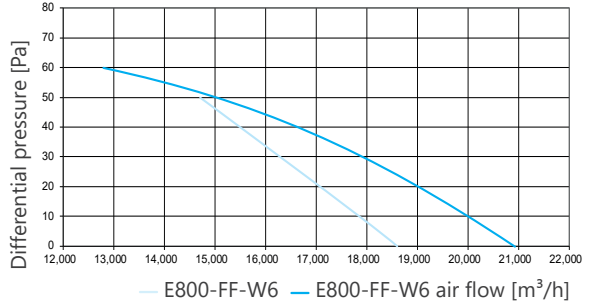
»AGROFLEX«® - exhaust air duct Ø 650/E 630-FF-W6



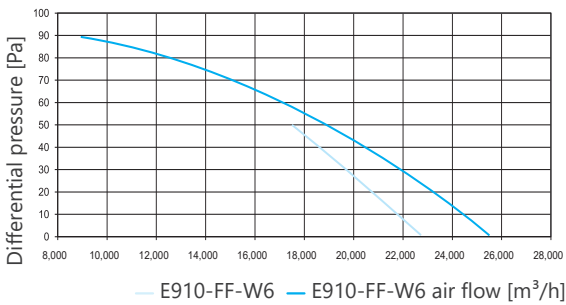
»AGROFLEX«® - exhaust air duct Ø 730/E 710-ST-W6



»AGROFLEX«® - exhaust air duct Ø 820/E 800-FF-W6



»AGROFLEX«® - exhaust air duct Ø 920/E 910-FF-W6



i Tested on a certifie test bench

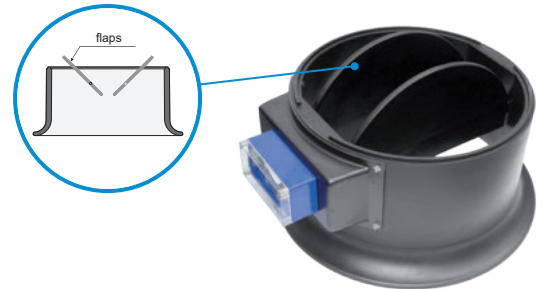
Measured:

- In the »AGROFLEX«® - duct (3 m) with PUR intake nozzle, diffuser and shutter
- in full duct without grid, version A per ISO 5801

Shutter module with servomotor 230 volts / 0...10 V signal (constant) and open/close (2/3 point)

Made of insulating PUR reinforced integral foam with integrated intake nozzle, which results in an air flow increase of up to 10%. Flow optimized, this offers an even and linear air flowperformance. Suitable for the air duct system »AGROFLEX«® and »vario-clip«®. The shutter module can be directly combined with the fan module.

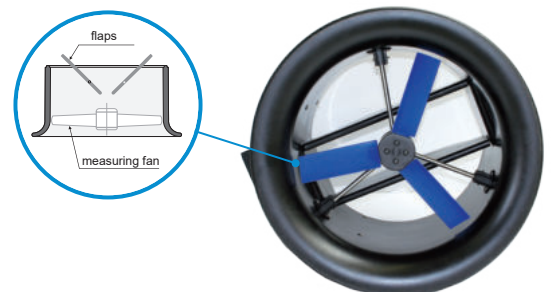
ø inner (mm)	Drive torque (Nm)	0... 10V signal Article no.	Open/close (2/3 point) Article no.
520	5	B461300	B461310
580	10	B461401	B461411
650	10	B461501	B461511
730	10	B461601	B461611
820	10	B461701	B461711
920	10	B461801	B461811
1,090	20	B46110901	B46110911
1,270	20	B46112701	B46112711



Shutter module with measuring fan and servomotor, 230 volts / 0...10 V signal (constant)

Shutter module as described above, but with a smooth-running measuring fan for the exact determination of the actual exhaust air amount. Servomotor: 0...10 V signal (constant)

ø inner (mm)	Drive torque (Nm)	Article no.
520	5	B463300
580	10	B463401
650	10	B463501
730	10	B463601
820	10	B463701
920	10	B463801
1,090	20	B46310901
1,270	20	B46312701



For cleaning/maintenance, we recommend the combination with a swivel mechanism see page 1.33

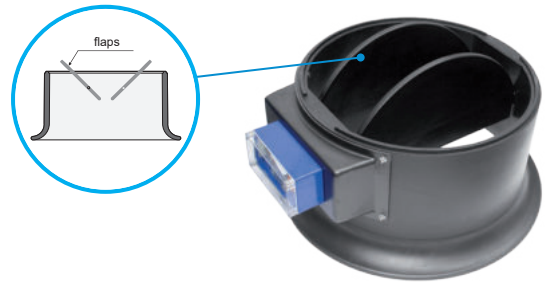


Dimensions of shutter module

ø (mm) D	Dimensions (mm)		
	H1	H	D1
520	400	470	704
580	400	500	776
650	400	513	861
730	500	620	971
820	500	658	1,091
920	500	708	1,201
1,090	685	857	1,464
1,270	795	968	1,658

Shutter module with servomotor
 24 volts / 0...10 V signal (constant) and
 open/close (2/3 point)

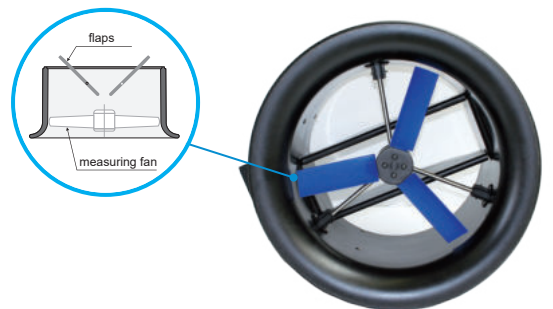
Made of insulating PUR reinforced integral foam with integrated intake nozzle, which results in an air flow increase of up to 10%. Flow optimized, this offers an even and linear air flow performance. Suitable for the air duct system »AGROFLEX«® and »vario-clip«®. The shutter module can be directly combined with the fan module.



ø inner (mm)	Drive torque (Nm)	0... 10V signal Article no.	Open/close (2/3 point) Article no.
520	5	B460300	B460310
580	10	B460401	B460411
650	10	B460501	B460511
730	10	B460601	B460611
820	10	B460701	B460711
920	10	B460801	B460811
1,090	20	B46010901	B46010911
1,270	20	B46012701	B46012711

Shutter module with measuring fan and servomotor, 24 volts / 0...10 V signal (constant)

Shutter module as described above, but with a smooth-running measuring fan for the exact determination of the actual exhaust air amount. Servomotor: 0...10 V signal (constant)



ø inner (mm)	Drive torque (Nm)	Article no.
520	5	B462300
580	10	B462401
650	10	B462501
730	10	B462601
820	10	B462701
920	10	B462801
1,090	20	B46210901
1,270	20	B46212701

Protective grid

Protective grid for the shutter module incl. fixing bracket. Prevents contact with the rotating measuring fan. The protective grid decreases the air flow. Material: Steel wire Ø 3 mm

ø inner (mm)	Article no.
520	V466300
580	V466400
650	V466500
730	V466600
820	V466700
920	V466800
1,090	V46610900
1,270	V46612700



Shutters for servomotors, shaft Ø 20 mm

The shutter is comprised of insulating, smooth PUR reinforced integral foam. The shutter drive is performed as selected either by means of a servomotor or with a manual adjustment device. The devices are simply positioned on the shaft. A conversion or retrofit is possible at any time.

ø inner (mm)	Drive torque (Nm)	Article no.
520	5	427300
580	5	427400
650	10	427500
730	10	427600
820	10	427700
920	10	427800
Manual shutter conversion kit		9-426029



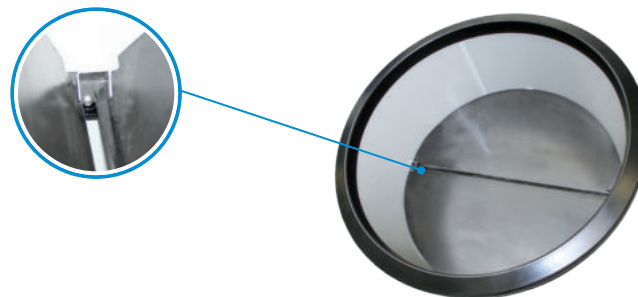
Servomotors with 230V / 24V / brackets see page 1.43 – 1.44



Butterfly chimney shutters

The shuttle valves are comprised of insulated, smooth PUR reinforced integral foam and open under pressure. The shutters have been designed for uncontrolled fans. When using controlled fans, we recommend the use of a shutter driven by a servomotor.

ø inner (mm)	Article no.
520	426350
580	426450
650	426550
730	426650
820	426750
920	426850
1,090	42610950
1,270	42612750



Shutter 2-part shutters

The 2-part shutters for servomotors are supplied already mounted on the module. Protective housing included. Prices exclude servomotor.

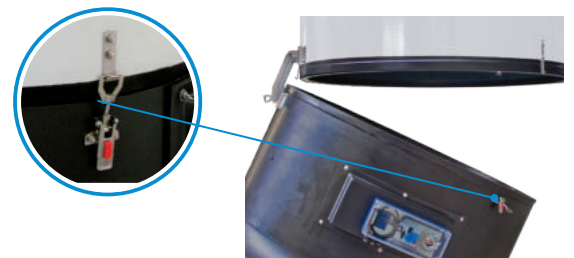


ø inner (mm)	Drive torque (Nm)	Article no.
1,090	20	V46010910
1,270	20	V46012710

Other diameters as a 2-part shutter module on request

Swivel mechanisms

The swivel mechanisms made of stainless steel, comprised of three tensioners and one or two joints, are used for the easy swivelling of the shutter module, e.g. for cleaning and maintenance work. When used with an MVSK, the covering ring kit is required for the protection of the duct end.



Installation of fans in the lower section is not recommended.

ø inner (mm)	Article no.
520 – 920	464000
1,090	46410900
1,270	46412700



The joints of the swivel mechanism 1,090/1,270

Covering ring kit PUR/30, covering rings PS/30, adhesive (SH100)

For swivel mechanisms for protection of the duct end. Consisting of a covering ring PUR/30 groove or PS/30 groove and 1 x cartridge adhesive Revepur SH 100. Material: PUR/PS

ø inner (mm)	Article no.
650	160650200
730	160730200
820	160820200
920	160920200
1,090	160100200
1,270	160120200



Water collecting basins, round

Made of UV-stabilized, glass fibre reinforced polyester, for suspension below the air duct.
Delivery without fixing set and drain.

ø (mm)	Suitable for air duct ø inner (mm)	Article no.
1,100	520, 580, 650	163110200
1,290	730	163120200
1,400	820, 920	163140200
1,700	1,090	163170200
1,900	1,270	163190200

Color tone: Black



Fixing sets for water collecting basin, 4-fold

The fixing set (4-fold set) is comprised of 4 steel chains of 1.00 m, 4 fixing attachments and fixing material.

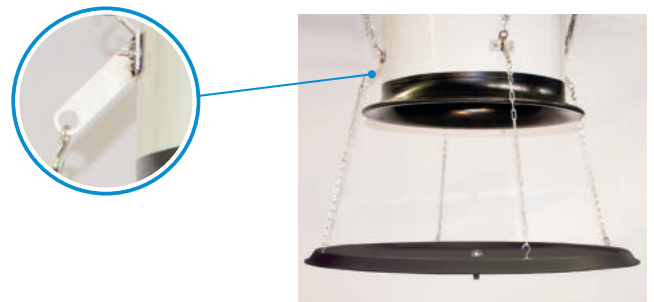
ø inner (mm)	Article no.
520 – 1,270	131360



PUR fixing sets / shutter modules for water collecting basins, 4-fold

The fixing set (4-fold set), comprises 4 steel chains of 1.00 m (also for water collecting basin 1,090 and 1,270 mm), 4 distance angles and fixing material.

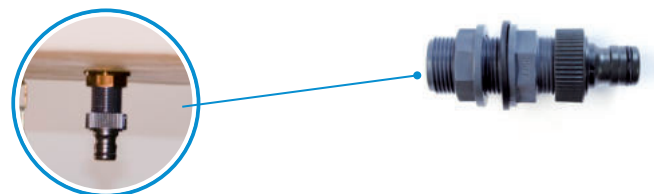
ø inner (mm)	Article no.
520 – 650	131352
730 – 920	131354



Drains for water collecting basins

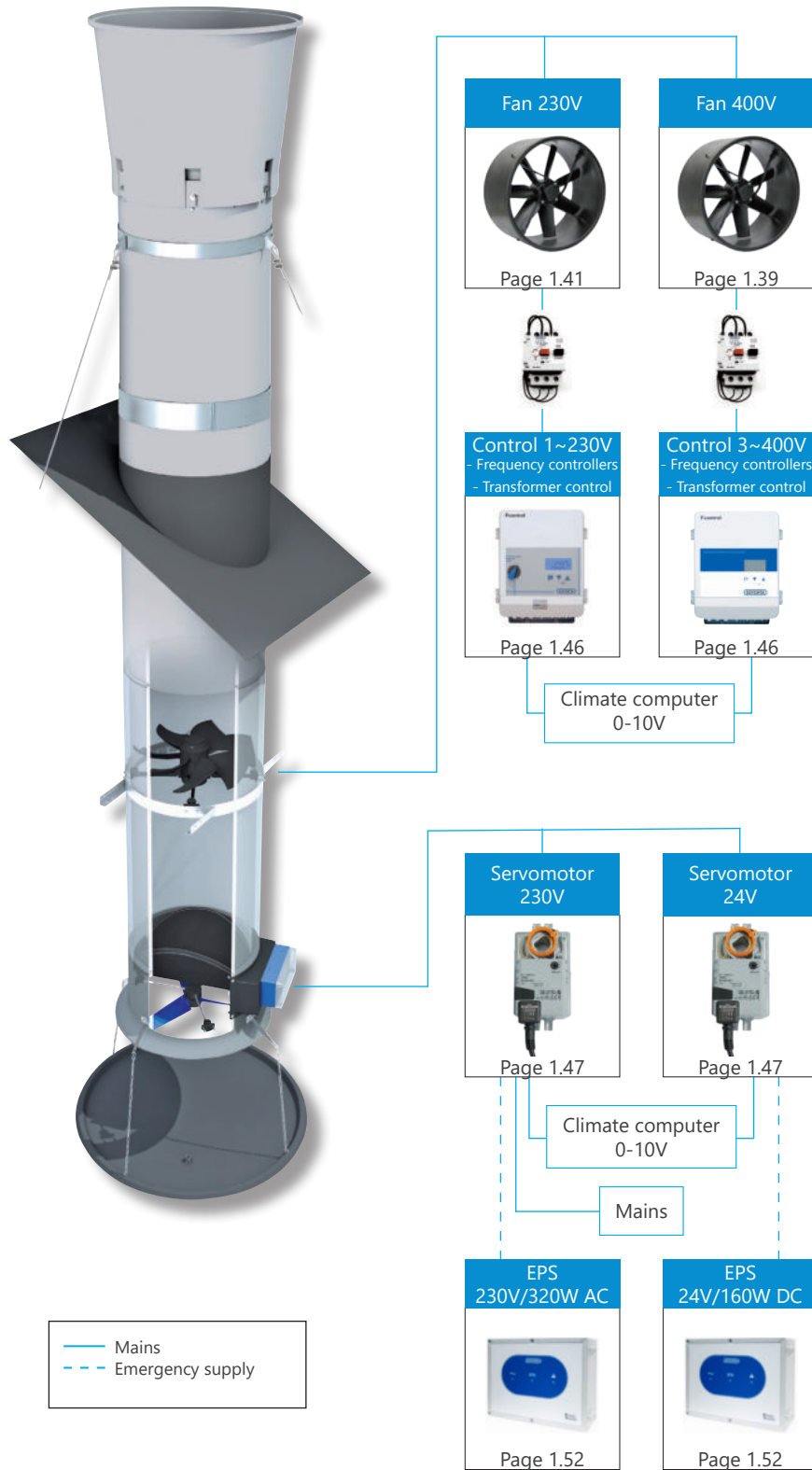
For the easy draining of water from the water collecting basin. The water collecting basin is supplied without drill holes. Drill hole: Ø 33 mm

Article no.
131390



Electronic technology for Exhaust air systems

Exhaust air duct



Built-in fan 400V

Built-in fans 400V

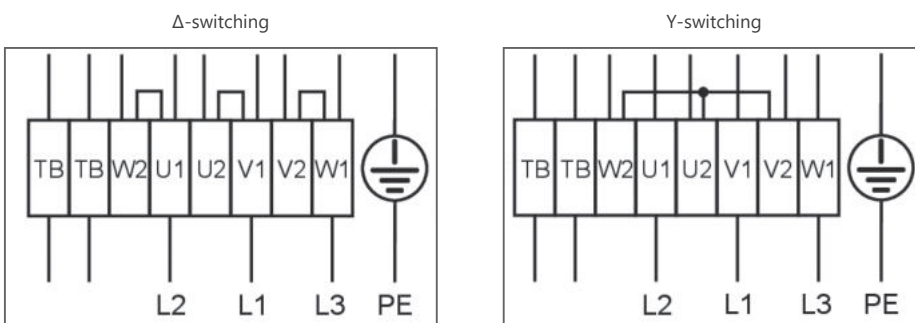
We use the brand **ZIEHL-ABEGG** for our fans these are characterized by a high level of quality, durability and energy efficiency.



ø inner (mm)	Type	Current max. (A)	rpm	Article no.
520	E500-ST-D4-A7	1.10	1,360	720310
580	E560-ST-D6-A7	0.74	890	720410
650	E630-FF-D6-A5	1.25	930	725510
730	E710-ST-D6-A7	1.80	890	720610
820	E800-ST-D6-A7	2.70	900	720711
920	E910-FF-D6-A3	1.90	880	725810
920	E910-FN-D6-A5	4.00	880	725812
1,090	E1070-ST-D6-A3	6.20	870/670	72010912
1,090	E1070-ST-D8-A3	3.60	700/600	72010911
1,090	E1070-ST-D10-A5	3.20	540/425	72010910
1,270	E1250-ST-D10-A7	4.50	500/330	72012710

FF = owlet pinions FN = owlet sickle impeller ST = standard impeller
 D = 400V/50Hz 4/6/8/10 = number of pole pairs

Connection diagram 400V



We recommend the use of fixing rings for fans.

3~ Motor with a speed and thermostatic switch (if installed).
 U1 = brown; V1 = blue; W1 = black; U2 = red; V2 = grey; W2 = orange;
 TB = white

Built-in fans for ZLV Vario/
Neo fresh air distributors

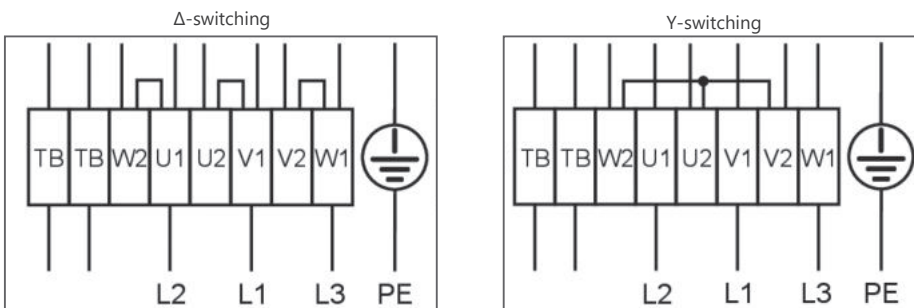
We use the brand **ZIEHL-ABEGG** for our fans - these are characterized by a high level of quality, durability and energy efficiency.



ø inner (mm)	Type	Current max. (A)	rpm	Article no.
650	E630-FF-D6-V5	1.25	930	725510V
730	E710-ST-D6-V7	1.80	890	720610V
820	E800-ST-D6-V7	2.70	900	720711V
920	E910-FF-D6-V3	1.90	880	725810V

FF = owl pinions ST = standard impeller
D = 400V/50Hz 4/6/8/10 = number of pole pairs

Connection diagram 400V




3~ Motor with a speed and thermostatic switch (if installed).
U1 = brown; V1 = blue; W1 = black; U2 = red; V2 = grey; W2 = orange; TB = white



We recommend the use of fixing rings for fans.

Built-in fans 230V / EC-blue built-in fans

We use the brand **ZIEHL-ABEGG**  for our fans these are characterized by a high level of quality, durability and energy efficiency.

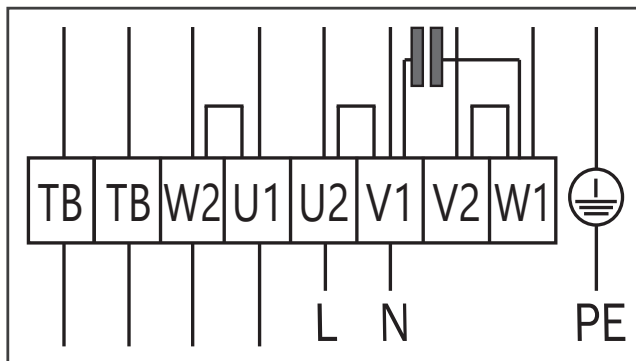


∅ inner (mm)	Type	Current max. (A)	rpm	Article no.
420	E400-ST-W4-A7	1.20	1,370	720100
520	E500-ST-W4-A7	2.30	1,310	720300
580	E560-FF-W6-A5	1.90	920	725400
650	E630-FF-W6-A5	2.50	890	725500
730	E710-ST-W6-A7	4.10	850	720600
820	E800-FF-W6-A3	3.40	880	725700
920	E910-FF-W6-A3	4.20	840	725800

FF = owlet pinions FN = owlet sickle impeller ST = standard impeller
 W = 230V/50Hz 4/6/8/10 = number of pole pairs

Connection diagram 230V

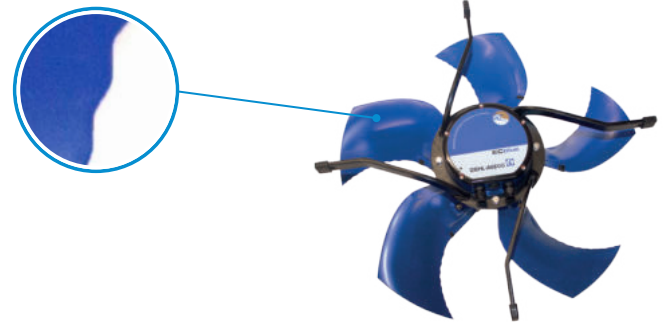
1~ Motor with capacitor and thermostatic switch (if installed)
 U1 = brown; V1 = blue; W1 = black; U2 = red; V2 = grey; W2 = orange;
 TB = white



We recommend the use of fixing rings for fans.

Built-in fans 230V/EC-blue built-in fans

The **ZIEHL-ABEGG** fan with IP55 motor in a fully-cast design has been specially developed for use in agriculture. The energy efficient, extremely quiet-running fan with bionic blade profile saves 15% energy and therefore reduces operating costs significantly. Due to the modern EC technology with direct control signal processing, additional external control equipment is no longer required. The thermal motor protection and the power limitation are already integrated into the motor electronics.



Bionic blade profile

Technical data: 1~ 200 - 277V, 50/60Hz

Type	ø inner (mm)	Current A	rpm	Control type (V)	Article no.
E630-FF-W10	650	4.6–3.3	1,200	0... 10	727500
E710-FF-W10	730	6.2–4.4	1,230	0... 10	727600
E800-FF-W10	820	5.8–4,2	1,090	0... 10	727700
E910-FF-W10	920	5.0–3.6	950	0... 10	727800

FF = owlet pinions W= 230V/50Hz 4/6/8/10 = number of pole pairs
Other diameters on request

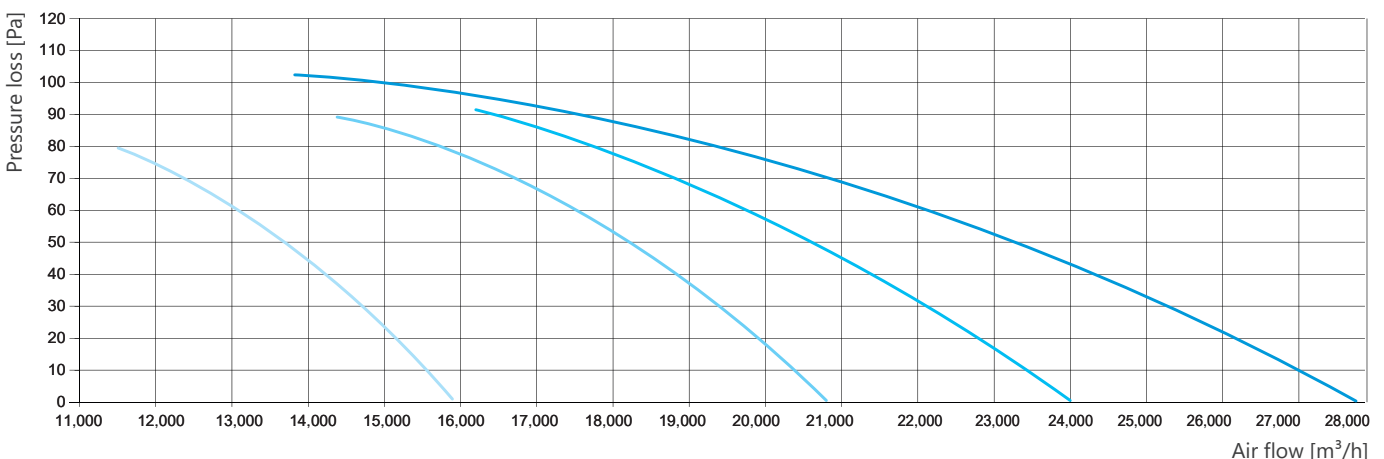
EC-blue main switch

Incl. housing, IP 65. Switch with 3 switch positions for connecting a 1~ or 3~(phase) EC-blue fan, with bypass operation (100% closed position).



Current max. (A)	Article no.
20	730010

EC-blue air flow diagram



— E630-FF-W10, — E710-FF-W10, — E800-FF-W10,
— E910-FF-W10 in the »AGROFLEX«[®] -in the »AGROFLEX«[®] duct (3 m)
with PUR intake nozzle, diffuser and shutter


Fixing rings for fans

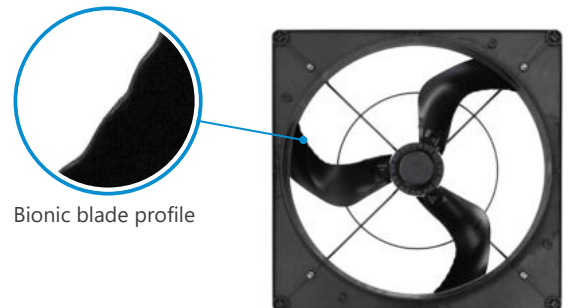
Mountings and fasteners made of high quality plastic. The fan type does not have to be specified: Each fixing ring can be modified individually on site for three or four-arm fans. Replacement and installation of the fans by simple fastener opening – for service and maintenance. Including rubber bearings for the prevention of noise transmission. Material: Stainless steel



ø inner (mm)	Article no. »AGROFLEX«® / »vario-clip«
520	V432310
580	V432410
650	V432510
730	V432610
820	V432710
920	V432810
1,090	V43210910
1,270	V43212710

Frame fans

We use the brand **ZIEHL-ABEGG**  for our fans - these are characterized by a high level of quality, durability and energy efficiency. The frame fans consist of axial fans with pressure die-cast blades and quadratic wall mounting plate.



Bionic blade profile

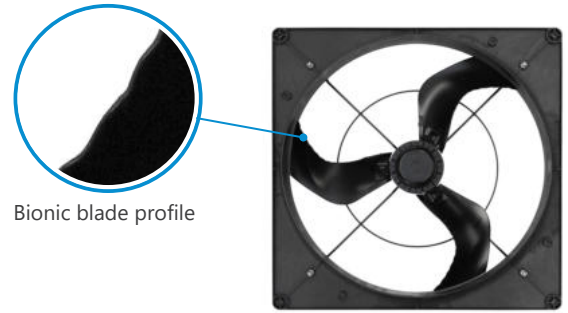
Frame fans 400V

ø inner (mm)	Type	Current max. (A)	Speed (rpm)	Article no.
520	R500-ST-D4-A7	1,10	1.360	721310
650	R630-FF-D6-A5	1,25	930	726510
730	R710-ST-D6-A7	1,80	890	721610
820	R800-ST-D6-A7	2,70	900	721711
920	R910-FF-D6-A3	1,90	880	726810

FF = owlet pinions FN = owlet sickle impeller ST = standard impeller D = 400V/50Hz 4/6/8/10 = number of pole pairs
Please append an "SG" to the order number for frame fans including protective grid (000000SG).

Frame fans 230V

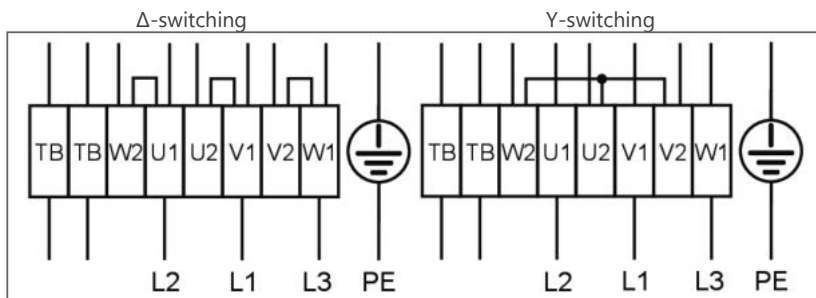
∅ inner (mm)	Type	Current max. (A)	Speed (rpm)	Article no.
370	R350-ST-W4-A7	0.75	1,370	721000
420	R400-ST-W4-A7	1.20	1,370	721100
520	R500-ST-W4-A7	2.30	1,310	721300
580	R560-FF-W6-A5	1.90	920	726400
650	R630-FF-W6-A5	2.50	890	726500
730	R710-ST-W6-A7	4.10	850	721600
920	R910-FF-W6-A3	4.20	840	726800



Bionic blade profile

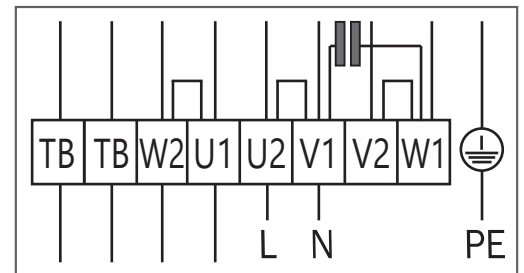
FF = owlet pinions FN = owlet sickle impeller ST = standard impeller W = 230V/50Hz 4/6/8/10 = number of pole pairs
 Please append an "SG" to the order number for frame fans including protective grid (000000SG).

Connection diagram 400V



3~ Motor with a speed and thermostatic switch (if installed).
 U1 = brown; V1 = blue; W1 = black; U2 = red; V2 = grey; W2 = orange; TB = white

Connection diagram 230V



1~ Motor with capacitor and thermostatic switch (if installed)



Selection assistance fans and controls

400V fans, three-phase / 230V fans, single-phase

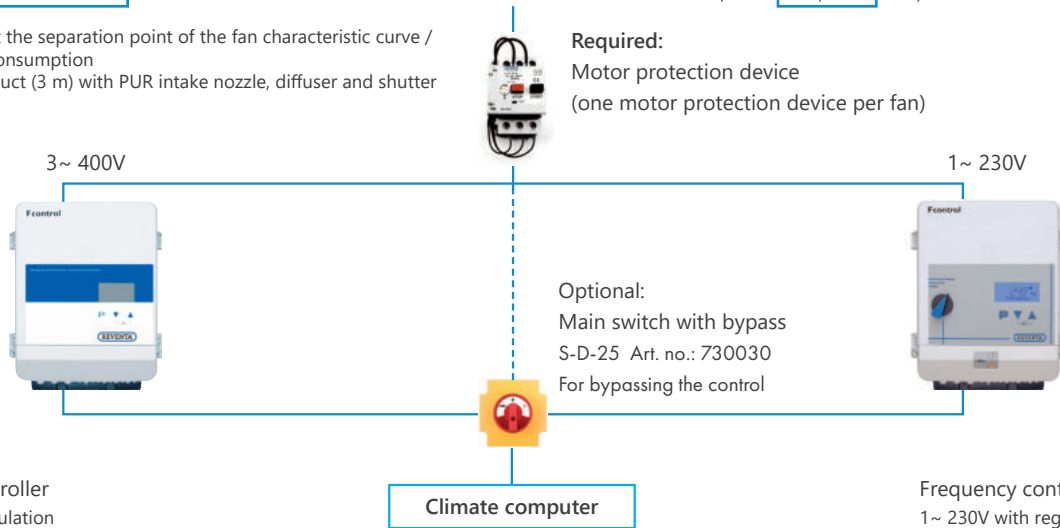
With the selection assistance you can calculate the number of fans and controls required for your desired air flow.



ø Inner (mm)	Type	Speed (rpm)	Voltage (V)	* Current (A)	** Capacity (W)	Air flow (m³/h)			Capacity (V) at 0 Pa [W/(1,000m³/h)]
						0	30	50	
520	M500-ST-D4	1,360	400	1,10	530	9,100	8,300	7,600	49.0
580	M560-ST-D6	890	400	0,74	360	10,000	8,800	7,600	38.6
650	M630-FF-D6	930	400	1,25	540	14,200	12,500	10,600	34.9
730	M710-ST-D6	890	400	1,80	890	19,500	17,600	16,000	35.7
820	M800-ST-D6	900	400	2,70	1,350	26,000	23,900	22,000	39.7
920	M910-FF-D6	880	400	1,90	920	26,100	23,100	20,700	30.8
920	M910-FN-D6	880	400	4,00	1,950	31,100	29,000	27,400	36.9
1,090	M1070-ST-D6	870	400	6,20	3,400	48,100	45,100	43,100	64.7
1,090	M1070-ST-D8	700	400	3,60	1,600	39,900	35,500	32,700	40.8
1,090	M1070-ST-D10	540	400	3,20	1,300	34,500	30,400	27,300	35.4
1,270	M1250-ST-D10	500	400	4,50	2,200	52,300	46,200	42,500	37.1
520	M500-ST-W4	1,310	230	2,70	510	8,700	7,900	7,300	48.2
580	M560-FF-W6	920	230	1,90	400	9,900	8,600	7,200	46.6
650	M630-FF-W6	890	230	2,50	520	13,900	12,400	10,500	35.8
730	M710-ST-W6	850	230	4,10	890	18,500	16,600	14,800	38.8
820	M800-FF-W6	880	230	3.40	760	21,900	18,900	16,300	32.3
920	M910-FF-W6	840	230	4.20	940	25,300	22,000	18,600	33.5

* Rated current at the separation point of the fan characteristic curve /
 ** Rated power consumption
 »AGROFLEX«® - duct (3 m) with PUR intake nozzle, diffuser and shutter

Required:
 Motor protection device
 (one motor protection device per fan)



Frequency controller
 3~ 400V with regulation

Frequency controller
 1~ 230V with regulation

Type	Art. no.	A
FSDM2,5AM	373004000	2.5
FSDM5AM	373004001	5
FSDM8AM	373004002	8
FSDM10AM	373004003	10
FSDM16AM	373004004	16
FSDM22AM	373004005	22
FSDM32AM	373004006	32

Type	Art. no.	A
FXET4MQ	730220	2.5
FXET6MQ	730230	6
FXET10MQ	730240	10

Example	400V	230V
Air flow required m3/h	90.000 (90.000 : 30.400)	40.000 (40.000 : 22.000)
Fan	M1070-ST-D10 = 3 units	M910-FF-W6 = 2 units
Total current*	3 fans x 3.2 A = 9.6 A	2 fans x 4.2 A = 8.4 A
required controller	1x 10A	1x 10A
frequency controller type (most energy efficient solution)	1 x FXDM10AM	1 x FXET10MQ

*Select the size of controller required based on the calculated current.



Frequency controllers Basic controls
3~ 400V with regulation function
and multi-function display

LC multifunction display with plain text display. Motor protection through TK contact connection options. With integrated sinusoidal filter on all poles. Parallel operation of fans possible. Good efficiency, also in partial load range with integrated mains filter. Insensitive to mains fluctuations and therefore mains interference.

- Continuously adjustable
- Protective class IP 54



Current max. (A)	Type	Article no.
2,5	FSDM2,5AM	373004000
5	FSDM5AM	373004001
8	FSDM8AM	373004002
10	FSDM10AM	373004003
16	FSDM16AM	373004004
22	FSDM22AM	373004005
32	FSDM32AM	373004006

Frequency controllers 1 ~ 230V with
regulation function and multifunction
display

Incl. main switch and LC multifunction display with plain text display. Motor protection through TK contact connection options. **With integrated sinusoidal filter on all poles.** Parallel operation of fans possible. Good efficiency, also in partial load range with integrated mains filter. Insensitive to mains fluctuations and therefore mains interference.

- Continuously adjustable
- Protective class IP 54



Current max. (A)	Type	Article no.
4	FXET4MQ	730220
6	FXET6MQ	730230
10	FXET10MQ	730240

Servomotors

Servomotors

The servomotor stands out due to its long lifetime and is maintenance-free. Mounting is implemented by clipping on. All motors in 24V/230V versions with 4, 5, 10, or 20Nm and as standard variant also with 40Nm available:

- Brushless DC motor for the maximum lifetime
- Low noise generation
- Open/close (2/3 point) or 0...10V control possible
- Direction of rotation can be selected with switch
- Control input 0...10V, working range 2...10V
- P54 protective class (IP66 protection to be achieved through housing)
- Load-dependent runtime of 150s with 230V mains voltage controller = as many servomotors as desired can be controlled in parallel



Shutters for servomotors, shaft Ø 20 mm



Shutter 2-part shutters



i Shutter module MVSK with measuring fan from page 1.32

Standard 230 V servomotors

Turning moment	Voltage	Control type	Power consumption	Module Ø	Shutters	Article no.
5 Nm	230V AC	Open/close (2/3 point)	3.5 VA	370-520	520-580	B466410
5 Nm	230V AC	0... 10V constant	4 VA	370-520	520-580	B466510
10 Nm	230V AC	Open/close (2/3 point)	6 VA	650-920	650-920	B466710
10 Nm	230V AC	0... 10V constant	6.5 VA	650-920	650-920	B466810
20 Nm	230V AC	Open/close (2/3 point)	6 VA	1,090-1,270	1,090-1,270	B469010
20 Nm	230V AC	0... 10V constant	6.5 VA	1,090-1,270	1,090-1,270	B469110
40 Nm	230V AC	Open/close (2/3 point)	9 VA	1,090-1,270	–	B469210

If desired: Drives with emergency return, automatic return by means of spring tension (mech.) in the event of power outage



Standard 24V servomotors

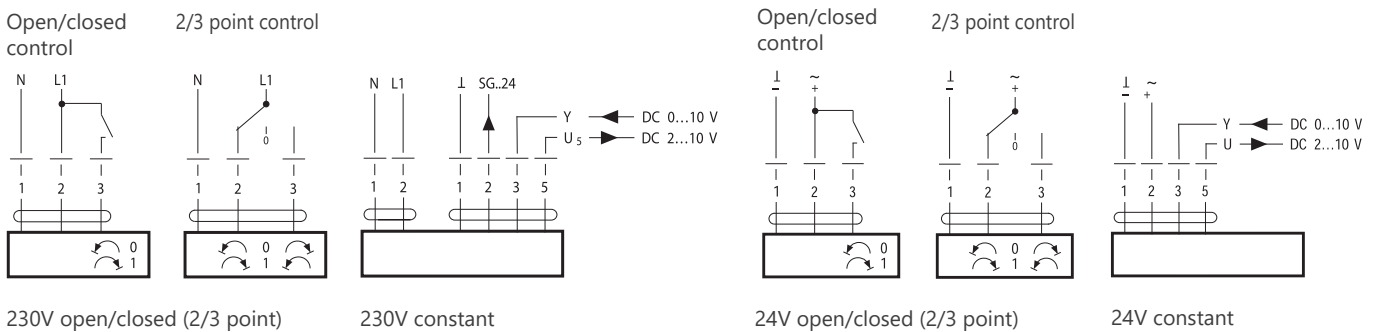
Turning moment	Voltage	Control type	Power consumption	Module Ø	Shutters	Article no.
5 Nm	24V AC/DC	Open/close (2/3 point)	1.5 VA	370-520	520-580	B466400
5 Nm	24V AC/DC	0... 10V constant	2 VA	370-520	520-580	B466500
10 Nm	24V AC/DC	Open/close (2/3 point)	4 VA	650-920	650-920	B466700
10 Nm	24V AC/DC	0... 10V constant	4 VA	650-920	650-920	B466800
20 Nm	24V AC/DC	Open/close (2/3 point)	4 VA	1,090-1,270	1,090-1,270	B469000
20 Nm	24V AC/DC	0... 10V constant	4 VA	1,090-1,270	1,090-1,270	B469100
40 Nm	24V AC/DC	Open/close (2/3 point)	6 VA	1,090-1,270	-	B469200

With emergency return through spring tension 24V

Turning moment	Voltage	Control type	Power consumption	Module Ø	Shutters	Article no.
4 Nm	24V AC/DC	0... 10V constant F	5 VA	370-520	-	B466010
20 Nm	24V AC/DC	0... 10V constant F	7 VA	1,090-1,270	1,090-1,270	B466300

If desired: Drives with emergency return, automatic return by means of spring tension (mech.) in the event of power outage

Circuit diagram 230V / 24V



Motor consoles for servomotors

Stainless steel, to bolt onto the air duct.
W/H/D 177 / 150 / 53 mm

Article no.

466975

Servomotor with motor console
(display adapter available as accessory)



Protective housing for servomotors

To achieve protective class IP66 for 20 mm shafts.
To clamp all servomotor variants as well as additional clamping options for measuring fans. Incl. connection clamps, protective class: IP 66, only for use indoors

Small protective housing is suitable for use with servomotors with turning moments of 4 Nm (spring return) as well as 5 Nm, 10 Nm, 20 Nm.

Large protective housing is suitable for use with servomotors with turning moments of 10 - 20 Nm (spring return) as well as 40 Nm.



Type	Size	Article no.
Small protective housing	240 x 120 x 100 mm	B469900
Large protective housing	340 x 150 x 120 mm	B469920

Motor consoles for IP66 protective housing

Motor consoles for IP66 protective housing. Stainless steel, to bolt onto the air duct.

Suitable for protective housing	Article no.
B469900	B469905
B469920	B469925





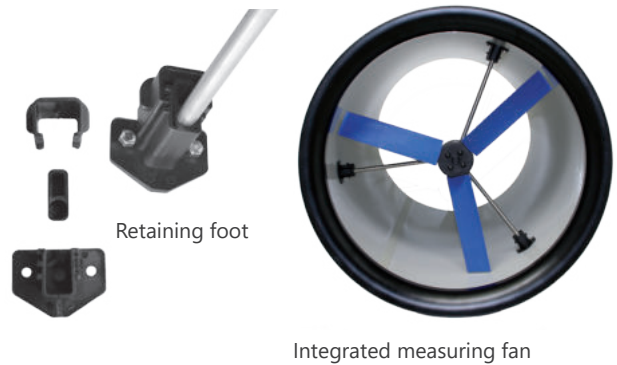
ProVent measuring fans

For the integration into exhaust air ducts. The smooth-running measuring fan serves to precisely determine the actual air flow being supplied. The air flow can be determined from a minimum speed of 0.3 m/s by means of the measuring fan. In this way it is also possible to measure the exhaust air flow for example, which exists as a result of the difference in temperature between the stable air and the outside air (thermals).

Product advantages:

- Optimisation of the heating control and the exhaust air rate according to the actual output
- supplies signals only in the case of the correct direction of rotation
- 2-way bearing shaft (stainless steel bearings easily accessible)
- option of PNP or NPN connection possible, the electronics are completely moulded
- simple replacement of bearing possible by loosening a single screw

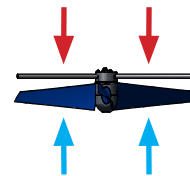
ø inner ()	Article no.
520	305522400
580	305582400
650	305652400
730	305732400
820	305822400
920	305922400
1,090	305102400
1,270	305122400



Mounting position and air conveyance direction Fans

Main installation position

Shaft vertical/
rotor bottom

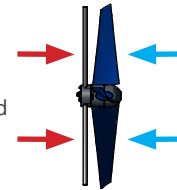


Flow direction:
Pulses are not issued

Flow direction:
Pulses are issued

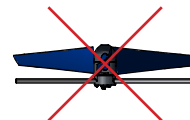
Horizontal shaft

Flow direction:
Pulses are not issued



Flow direction:
Pulses are issued

Shaft vertical/
rotor top



Not permissible

Measuring fan connection

Sensor/ measure- ment fan	Supply voltage + 10 to 30V DC	BN brown
	Supply voltage (GND) -	BU blue
	NPN impulse (sensor) \neg	BK black
	PNP impulse (sensor) \neg	WH white

Cable assignment

Shutter module measurement range type

Measurement range type	Minimum (m ³ /h)	Maximum (m ³ /h)
Shutter module Ø 520	300	9,200
Shutter module Ø 580	400	11,500
Shutter module Ø 650	500	14,500
Shutter module Ø 730	800	18,500
Shutter module Ø 820	1,000	23,300
Shutter module Ø 920	1,500	29,000
Shutter module Ø 1,090	2,100	40,700
Shutter module Ø 1,270	3,000	55,600

The measurements were performed in a shutter module with fully opened shutter segments.

Measuring fan connection data:

Pulse/revolution:	4
Operating voltage:	10–30V DC
Max. current capacity:	200 mA
Current consumption:	<15 mA (24V)
Housing:	Plastic
Connection:	PVC cable/2 m/4-core
Protective class:	IP54
Switch outputs:	NPN, PNP



ProVent measuring fan measurement data

Speed (rpm)	Impulses (U/max)	Ø 520 (m ³ /h)	Ø 580 (m ³ /h)	Ø 650 (m ³ /h)	Ø 730 (m ³ /h)	Ø 820 (m ³ /h)	Ø 920 (m ³ /h)	Ø 1090 (m ³ /h)	Ø 1270 (m ³ /h)
40	160	359	443	624	852	1,104	1,408	1,972	2,684
50	200	448	553	780	1,065	1,380	1,760	2,465	3,355
75	300	673	830	1,170	1,598	2,070	2,640	3,698	5,033
100	400	897	1,107	1,560	2,130	2,760	3,520	4,930	6,710
125	500	1,121	1,383	1,950	2,663	3,450	4,400	6,163	8,388
150	600	1,345	1,660	2,340	3,195	4,140	5,280	7,395	10,065
175	700	1,569	1,937	2,730	3,728	4,830	6,160	8,628	11,743
200	800	1,794	2,213	3,120	4,260	5,520	7,040	9,860	13,420
225	900	2,018	2,490	3,510	4,793	6,210	7,920	11,093	15,098
250	1,000	2,242	2,767	3,900	5,325	6,900	8,800	12,325	16,775
275	1,100	2,466	3,043	4,290	5,858	7,590	9,680	13,558	18,453
300	1,200	2,690	3,320	4,680	6,390	8,280	10,560	14,790	20,130
325	1,300	2,915	3,597	5,070	6,923	8,970	11,440	16,023	21,808
350	1,400	3,139	3,873	5,460	7,455	9,660	12,320	17,255	23,485
375	1,500	3,363	4,150	5,850	7,988	10,350	13,200	18,488	25,163
400	1,600	3,587	4,427	6,240	8,520	11,040	14,080	19,720	26,840
425	1,700	3,811	4,703	6,630	9,053	11,730	14,960	20,953	28,518
450	1,800	4,036	4,980	7,020	9,585	12,420	15,840	22,185	30,195
475	1,900	4,260	5,257	7,410	10,118	13,110	16,720	23,418	31,873
500	2,000	4,484	5,533	7,800	10,650	13,800	17,600	24,650	33,550
525	2,100	4,708	5,810	8,190	11,183	14,490	18,480	25,883	35,228
550	2,200	4,932	6,087	8,580	11,715	15,180	19,360	27,115	36,905
575	2,300	5,157	6,363	8,970	12,248	15,870	20,240	28,348	38,583
600	2,400	5,381	6,640	9,360	12,780	16,560	21,120	29,580	40,260
625	2,500	5,605	6,917	9,750	13,313	17,250	22,000	30,813	41,938
650	2,600	5,829	7,193	10,140	13,845	17,940	22,880	32,045	43,615
675	2,700	6,053	7,470	10,530	14,378	18,630	23,760	33,278	45,293
700	2,800	6,278	7,747	10,920	14,910	19,320	24,640	34,510	46,970
725	2,900	6,502	8,023	11,310	15,443	20,010	25,520	35,743	48,648
750	3,000	6,726	8,300	11,700	15,975	20,700	26,400	36,975	50,325
775	3,100	6,950	8,577	12,090	16,508	21,390	27,280	38,208	52,003
800	3,200	7,174	8,853	12,480	17,040	22,080	28,160	39,440	53,680
825	3,300	7,399	9,130	12,870	17,573	22,770	29,040	40,673	55,358
850	3,400	7,623	9,407	13,260	18,105	23,460			
875	3,500	7,847	9,683	13,650	18,638				
900	3,600	8,071	9,960	14,040					
925	3,700	8,295	10,237	14,430					
950	3,800	8,520	10,513						
975	3,900	8,744	10,790						
1,000	4,000	8,968							
1,025	4,100	9,192							
1,050	4,200								
1,075	4,300								
1,100	4,400								
1,125	4,500								
1,150	4,600								
1,175	4,700								
1,200	4,800								
1,225	4,900								
1,250	5,000								
1,275	5,100								
1,300	5,200								
1,325	5,300								
1,350	5,400								
1,375	5,500								
*		9.1	11	15.6	21.3	27.6	35.2	49.3	67.1

Emergency Power Supply EPS

The emergency power supply EPS serves to buffer the 230 V or 24V supply of electro cylinders or servo-motors for opening flaps. With this, in the event of a power failure these drives can be switched to an emergency position once, in order to ensure the greatest possible air circulation when the power supply has failed. One EPS can control up to two electro cylinders. We recommend additional overvoltage protection.



Protective class: IP54

Emergency Power Supply EPS	Article no.
230V/320W AC	320012300
24V/160W DC	320012400

Technical data EPS

	230V/320W AC	24V/160W DC
Capacity:	230V/320W AC	24V/160W DC
Input voltage:	100V–240V AC 50–60Hz	100V–240V AC 50–60Hz
Output voltage / battery operation:	230V (50/60 Hz) pseudo-sinus	24 VDC
Max. current with battery operation:	1.4 A	6.6 A
Battery capacity:	3.0 Ah	
Operating temperature:	0-35 °C	
Moisture:	0-85%	
Alarm:	Acoustic and visual signal with battery operation	

TU exhaust air chimneys

TU exhaust air chimneys are designed to perform reliably under strenuous conditions associated with the ventilation of closed livestock structures. All components are made of high quality and UV-resistant polyethylene. Designed for moderate climate and to withstand solar radiation. The “click system” allows compact transport volumes and quick on-site assembly.

The system offers the following advantages:

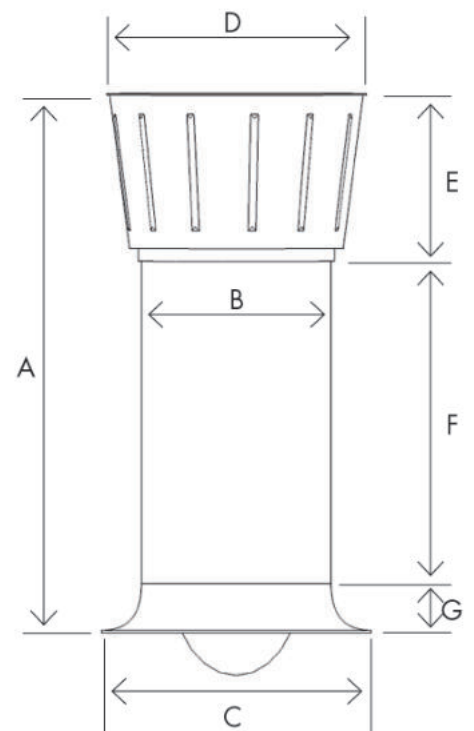
- Two duct diameters available
- Shutter can be adjusted manually or with servomotor
- Intake nozzle/cone diffuser ensures efficient ventilation
- Chimneys made of high quality polyethylene
- Compact design
- Wide range of fans with different motor sizes
- Upon request CSA/UL, 220V single-phase and three-phase.



Dimensions

Type	Dimensions (mm)						
	A*	B	C	D	E	F*	G
TU 600	1,830	633	900	900	660	1,000	170
TU 800	1,830	837	1,100	1,100	660	1,000	170

* please note that the height of the chimney could be increased by adding some chimney duct sections

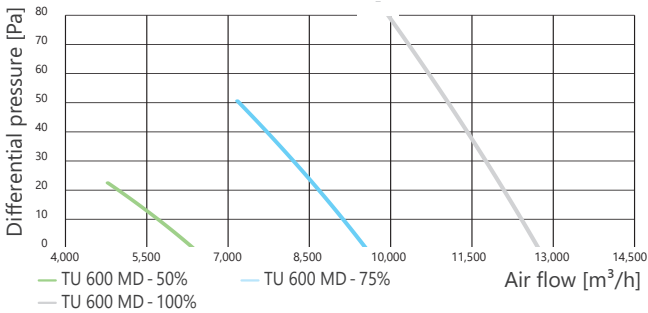




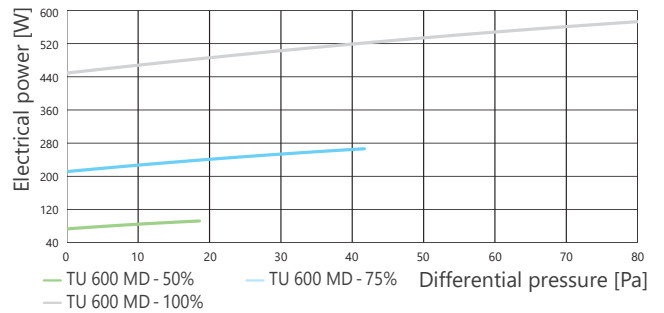
Technical data TU 600 Munters drive

		TU 600 Munters drive		
Power HP		Munters drive		
Propeller speed	500 U/min	750 U/min	1,000 U/min	
Number of blades	10			
Weight	25 kg			
Air flow at 0 Pa	6,152 m ³ /h	9,500 m ³ /h	12,729 m ³ /h	
Air flow at 20 Pa	4,553 m ³ /h	8,664 m ³ /h	12,090 m ³ /h	
Air flow at 50 Pa	—	7,172 m ³ /h	11,414 m ³ /h	
Specific performance at 0 Pa	91,4 m ³ /h/W	44,6 m ³ /h/W	28,4 m ³ /h/W	
Specific performance at 20 Pa	57,2 m ³ /h/W	36,0 m ³ /h/W	24,9 m ³ /h/W	
Specific performance at 50 Pa	—	26,1 m ³ /h/W	20,5 m ³ /h/W	
Electrical power at 20 Pa	80 W	241 W	486 W	
Electrical power at 50 Pa	—	275 W	557 W	
Permissible per ERP2015		✓		

Differential pressure vs. Flowrate



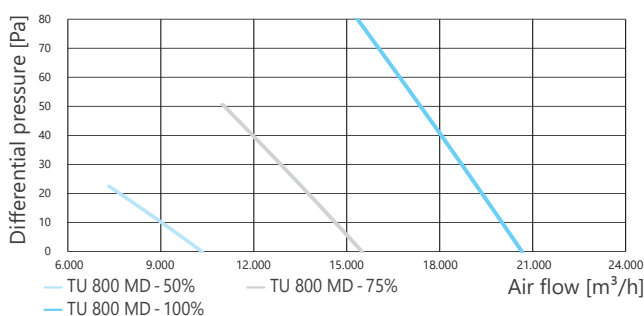
Electrical power vs. Differential pressure



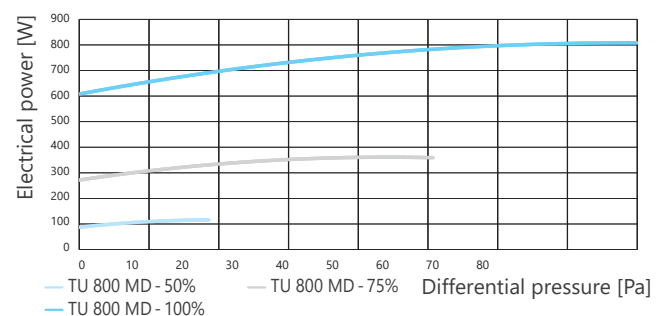
Technical data TU 800 Munters Drive

		TU 800 Munters Drive		
Power HP		Munters Drive		
Propeller speed	500 rpm	750 rpm	1,000 rpm	
Number of blades	5			
Weight	37 kg			
Air flow at 0 Pa	11,042 m ³ /h	15,394 m ³ /h	20,653 m ³ /h	
Air flow at 20 Pa	8,741 m ³ /h	13,736 m ³ /h	19,364 m ³ /h	
Air flow at 50 Pa	—	11,000 m ³ /h	17,250 m ³ /h	
Specific performance at 0 Pa	116.0 m ³ /h/Wv	55.6 m ³ /h/W	34.0 m ³ /h/W	
Specific performance at 20 Pa	66.5 m ³ /h/W	41.0 m ³ /h/W	27.8 m ³ /h/W	
Specific performance at 50 Pa	—	30.6 m ³ /h/W	22.0 m ³ /h/W	
Electrical power at 20 Pa	131 W	335 W	697 W	
Electrical power at 50 Pa	—	359 W	784 W	
Permissible per ERP2015		✓		

Differential pressure vs. Flowrate



Electrical power vs. Differential pressure



How to build up a TU exhaust duct unit?

TU extraction fans are get-up with several components allowing to make them suitable for every situation.

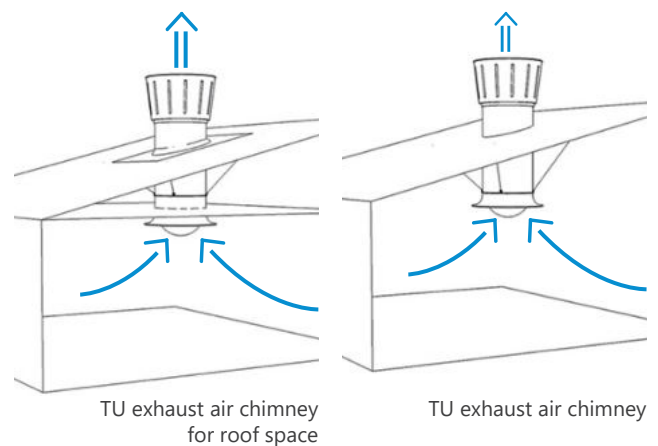
- 1 The diffuser that allows to exhaust the air with a higher efficiency
- 2 Accessories to adjust the chimney to the roof
- 3 Ducts HDPE with the fan (motor + propeller) and the joints
- 4 The actuator and controls



TU exhaust air chimneys

Exhaust air chimneys TU 600/800 are delivered with 1 m of pipe, diffuser, intake nozzle, shutter, connecting shaft for actuator/decentralized adjustment (Linak actuator not included), duct rope suspension with anchoring straps made of stainless steel.

Exhaust air chimneys TU 600/800 for the roof space are delivered with 1 m of pipe, diffuser, intake nozzle, shutter, connecting shaft for Linak actuator/decentralized adjustment (Linak actuator not included), duct rope suspension with anchoring straps made of galvanised steel.



Type	Pulling force (N)	Stroke (mm)	Article no.
TU 600	34	300	12-52030529
TU 800	41	300	12-52030533
TU 600 for roof space	34	300	12-52030531
TU 800 for roof space	41	300	12-52030535

Regulator arms

Controls shutter via a rope drive.

Type	Article no.
Compatible with TU 600/800	12-522946



Flexible flashings

Required for a tight connection between roof and chimney. Including silicone, adhesive for roofing panels and self-drilling screws.

Dimensions: 1,400 x 1 x 2,000 mm.

Material: PVC.

Type	Article no.
Compatible with IS and TU 600	12-52030479
Compatible with IS and TU 800	12-52030480



Flexible flashing

Multiflex

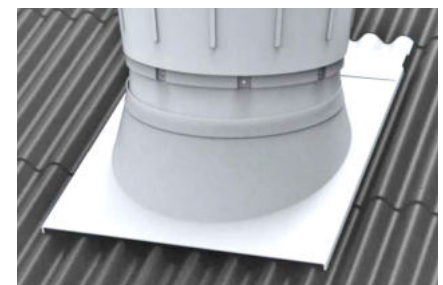
Multiflex roofing panels are both rigid flashing for ridge or for the side of a roof.

Material: PE.

Type	Article no.
Multiflex /ridge = compatible with IS and TU 600	12-52030064
Multiflex /ridge = compatible with IS/TU 800	12-52030078
Multiflex /side = compatible with IS/TU 600	12-52030703
Multiflex /side = compatible with IS/TU 800	12-52030045



Multiflex/First



Multiflex/Seite

Sealing sets

For sealing the joints between Multiflex roofing panel and roof. Including upper and lower sealing film and adhesive. Only needed if building has a long metal sheet cover or multiflex roofing panel can not be pulled under the prior lying roofing panel.

Type	Article no.
Roof tilt 0–10° = compatible with IS/TU 600, IS/TU 800	12-52030149
Roof tilt >10° = compatible with IS/TU 600, IS/TU 800	12-52030147



Frequency controllers 1 ~ 230V with regulation function and multifunction display

Incl. main switch and LC multifunction display with plain text display. Motor protection through TK contact connection options. **With integrated sinusoidal filter on all poles.** Parallel operation of fans possible. Good efficiency, also in partial load range with integrated mains filter. Insensitive to mains fluctuations and therefore mains interference.

- Continuously adjustable
- Protective class IP 54



Current max. (A)	Type	Article no.
4	FXET4MQ	730220
6	FXET6MQ	730230
10	FXET10MQ	730240

Fans

Motor with propeller (other fans available on request).



Type	Air flow (m³/h)			Number of blades	Compatible with	Article no.
	0 Pa	10 Pa	20 Pa			
Munters drive/ 660 W/230 V/2,5 A	12.729	12.413	12.090	10	TU 600	12-52030989
Munters drive/ 660 W/230 V/3,5 A	20.653	20.019	19.634	5	TU 800	12-52030988

Regulation of shutters

Two different criteria of damper regulation:

1. ON-OFF: This control criterion can control five separate groups with each four motors.
2. Variable: this regulation criteria can control max four Linak motors per TSN2i.

On-Off

Type	Article no.
Linak LA12 on/off — compatible with TU 600	12-52030706
Linak LA12 on/off — compatible with TU 800	12-52030528

Electro cylinders LA12P

For opening fresh air inlets and IS/TU air inlet chimneys.

Speed (mm/s)	Voltage (V)	Traction (N)	Stroke way (mm)	Article no.
40	24	750	19—130	12-52030750



Intelligent emergency openings TSN2i

Controls up to four 4 electric motors LA35, LA12. Control input 0—10 V; digital.

Article no.
12-524027



Linak power supplies

Controls up to 20 LA12 motors(24V). Consisting of Stepbox and Accubox.

Artikel-Nr.
12-52030526



Emergency thermostats

The emergency thermostat opens the shutter when the set temperature is exceeded.

Type	Max. temperature	Article no.
Thermostat T4 1	41 °C	12-522111



T41

Fixing sets with rope deflection

For single-row or double-row installations with IS and TU chimneys. Excluding weight 35 kg.

Type	Article no.
Fixing sets with rope deflection - 1 row	12-522950
Fixing sets with rope deflection - 2 rows	12-523090



Wire ropes

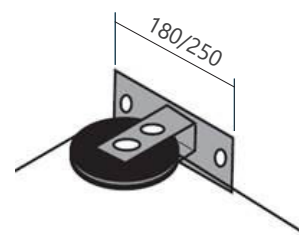
Stainless steel, very sturdy, robust and durable.

Type	Article no.
Piano wire rope Ø 3.0 mm	12-520921
Wire rope Ø 4.0 mm	12-520022



Corner fitting sets

Type	Length	Article no.
Corner fitting sets, short braket	180 mm	12-52030553
Corner fitting sets, long braket	250 mm	12-52030554



Weights 35 kg

Keeps wires under tension.

Article no.
12-521693



Springs

Keeps wires under tension (load = 525 N).

Type	Article no.
Stainless steel; Fmax 525 N	12-520920



Winch drives with hand cranks incl. brackets

Using a hand winch to open and close the system.
The winch has a pulling force of 550 kg.

Type	Article no.
Manual winch	336210
Manual winch with bracket	336250
Hand winch with bracket	12-52030182



Winch drive with hand crank incl. bracket

Motor control sets

For opening fresh air inlets and IS and TU chimneys.
Comprised of: Electro cylinder LA35 and intelligent emergency opening TSN2i. Including wall fittings.

Electro cylinder	Motor controller	Traction (N)	Stroke way (mm)	Article no.
Linak LA35	TSN2i	4,000	450	12-52030918



Ducts HDPE

Additional duct section to increase chimney height.
Made of durable HDPE.

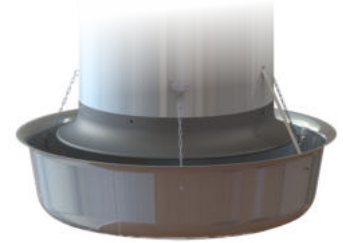
Type	Article no.
Height 500 mm — compatible with TU 600	12-52030066
Height 500 mm — compatible with TU 800	12-52030080
Height 1000 mm — compatible with TU 600	12-52030070
Height 1000 mm — compatible with TU 800	12-52030084



Light filter trays/Light filters

Reduce the incoming light.

Type	Article no.
Light filter tray Ø1,295 mm — compatible with TU 600	100000057
Light filter tray Ø1,520 mm — compatible with TU 800	100000059



Light filter tray

Water collecting basins, round

Made of UV-stabilized, glass fibre reinforced polyester, for suspension below the air duct.
Delivery without fixing set and drain.

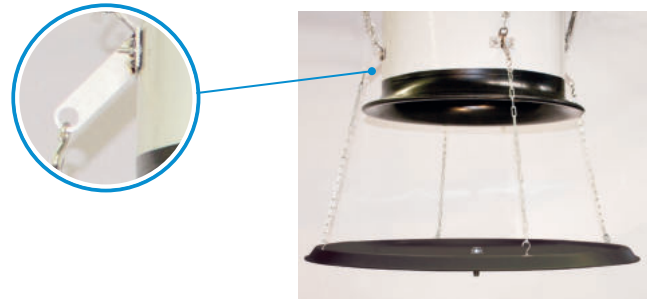
ø (mm)	Suitable for air duct ø inner (mm)	Article no.
1,100	520, 580, 650	163110200
1,290	730	163120200



PUR fixing sets / shutter modules for water collecting basins, 4-fold

The fixing set (4-fold set), comprises 4 steel chains of 1.00 m (also for water collecting basin 1,090 and 1,270 mm), 4 distance angles and fixing material.

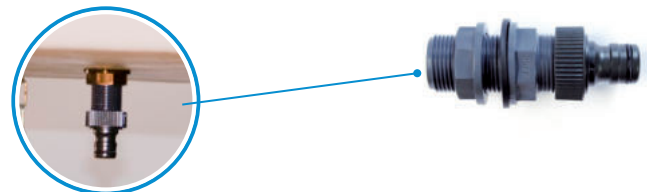
ø inner (mm)	Article no.
520 – 650	131352
730 – 920	131354



Drains for water collecting basins

For the easy draining of water from the water collecting basin. The water collecting basin is supplied without drill holes. Drill hole: Ø 33 mm

Article no.
131390



Rain hoods

Protects against precipitation. Brackets included.

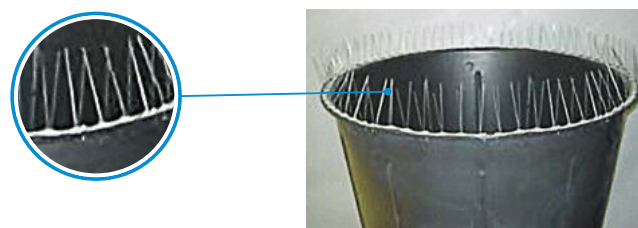
Type	Article no.
Compatible with TU 600	12-52030588
Compatible with TU 800	12-52030590



Bird protections for diffusers

The bird protection hinders birds to sit on the diffuser. Consists of spikes and mounting kit, to mount on the diffuser.

∅ inner (mm)	Article no.
Compatible with TU 600	12-52030144
Compatible with TU 800	12-52030145



Shutters type SMT

Durable and reliable

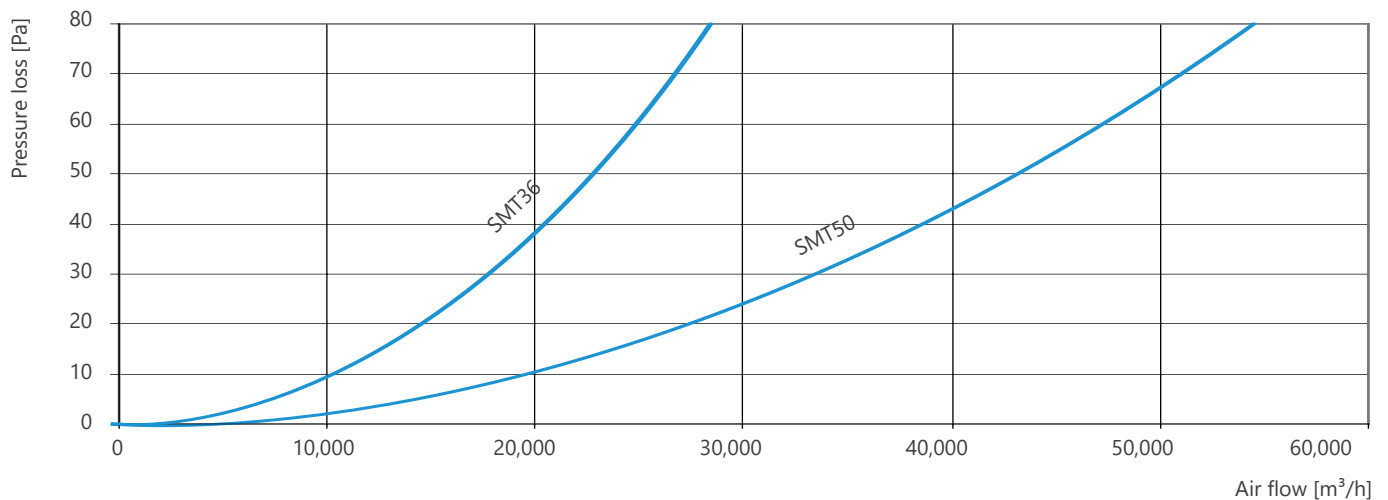
SMT shutters can be used to achieve fast-reacting control of the fresh air in a building. With fans in the external walls or a jet fan, air is drawn in through an open SMT shutter, in order to mix the fresh air with the indoor air.

Air is drawn through an open SMT shutter into a building, for example through a blower integrated in the external wall of the building.

The shutters are available in both stainless steel and in the extremely corrosion-resistant Munters Protect. Munters Protect also offers the advantage of a significantly longer product service life.



Air capacities Shutters type SMT



Technical data shutter servomotor

	230	24	24SR
Energy supply	AC 230V, 50/60 Hz, single-phase	AC 24V, 50/60 Hz, or DC 24 V	AC 24 V, 50/60 Hz
Controller signal	–	–	DC 0 - 10 V
Power consumption	1,5 W	0,5W	1W
For cable dimensioning	3,5VA	1VA	2VA

Shutters type SMT SLIM with inner motor

Including inner servomotor. Multi-leaf damper for direct wall mounting or in combination with a light filter or extraction fan. Frame and lamella with tried and tested Munters Protect coating. UV-stabilized plastic parts.



Type	Drive torque (Nm)	Dimensions (mm)	Motor	Article no.
SMT 36" SLIM	2	1,090 x 1,085 x 115	230V Open/closed (2/3Pt.)	1-2657210
SMT 36" SLIM with protective grid	2	1,090 x 1,085 x 115	230V Open/closed (2/3Pt.)	1-2657200
SMT 36" SLIM	2	1,090 x 1,085 x 115	24V 0... 10V signal	1-2657206
SMT 36" SLIM with protective grid	2	1,090 x 1,085 x 115	24V 0... 10V signal	1-2657205
SMT 50" SLIM	2	1,380 x 1,380 x 115	230V Open/closed (2/3Pt.)	1-2656210
SMT 50" SLIM with protective grid	2	1,380 x 1,380 x 115	230V Open/closed (2/3Pt.)	1-2656200
SMT 50" SLIM	2	1,380 x 1,380 x 115	24V 0... 10V signal	1-2656280
SMT 50" SLIM with protective grid	2	1,380 x 1,380 x 115	24V 0... 10V signal	1-2656270

Shutters type SMT for external motor

Without protective grid, with servomotor, IP54, motor installation on the frame. Multi-leaf damper for direct wall mounting or in combination with a light filter or extraction fan. Frame and lamella with tried and tested Munters Protect coating. UV-stabilized plastic parts.



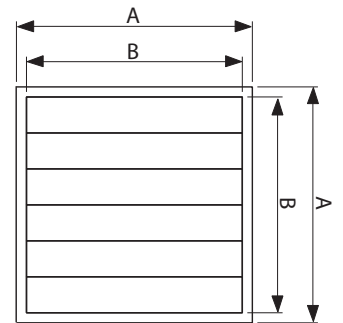
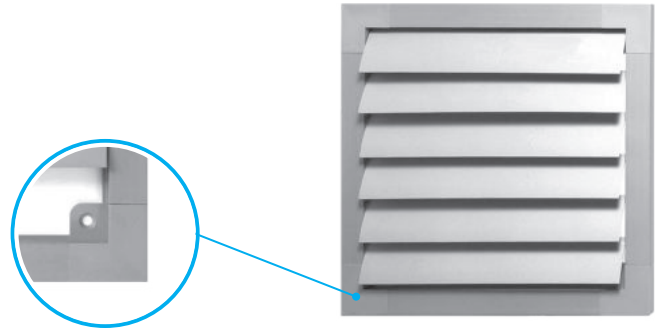
Type	Drive torque (Nm)	Dimensions (mm)	Motor	Article no.
SMT 36" SLIM	5	1,090 x 1,090 x 130	230V Open/closed (2/3Pt.)	1-2656500
SMT 36" SLIM	5	1,090 x 1,090 x 130	24V Open/closed (2/3Pt.)	1-2656501
SMT 50" SLIM	5	1,380 x 1,380 x 130	230V Open/closed (2/3Pt.)	1-2656900
SMT 50" SLIM	5	1,380 x 1,380 x 130	24V 0... 10V signal	1-2656902

Shutters type VSK

Fan shutters type VSK

Made from UV-stabilized hard PVC with closed, torsion-resistant frame. Lamella mounted with stainless steel wire running all the way through.

The fan shutters have been designed for use on unregulated (on/off) fans and a max. flow rate of 10m/s.

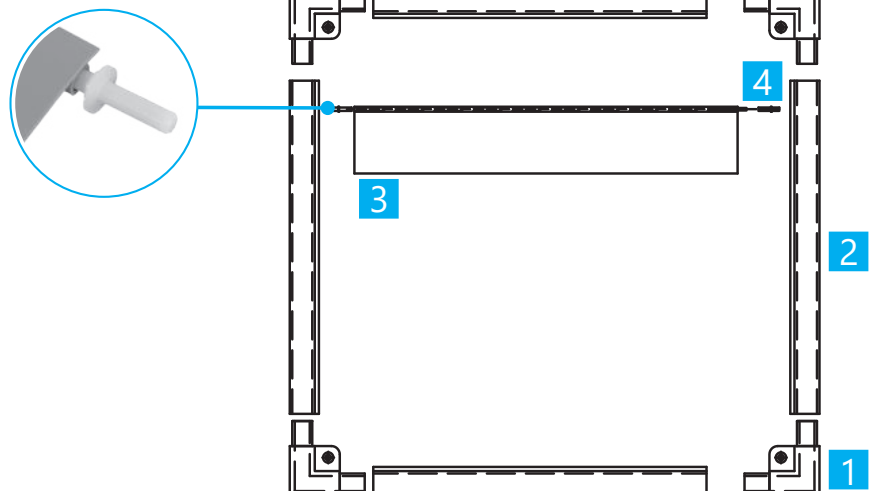


Type	Fan	Lamella width	A Outer dimension	B Inner dimension	Number of lamella	Article no.
VSK 40	400	60	486	416	8	166400
VSK 50	500	60	590	520	10	166600
VSK 56	560	60	642	572	11	166700

Dimensions in mm
Intermediate sizes and custom sizes on enquiry.
Packaging unit 30 units / pallet

Fan shutters type VSK

- 1** Corner connectors
- 2** External frame profile
- 3** Lamella profile 60 mm
- 4** Bearing pin
(from VSK 40 see VSK/2)

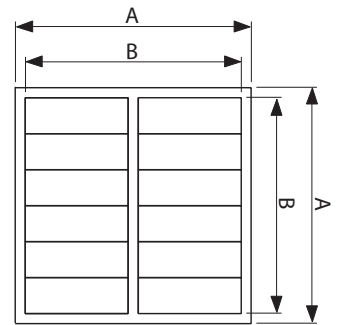
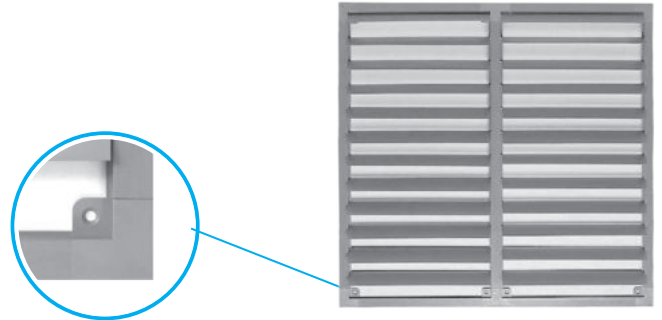




Fan shutters type VSK/2

Made from UV-stabilized hard PVC with closed, torsion-resistant frame and middle frame. Lamella mounted with stainless steel wire running all the way through.

The fan shutters have been designed for use on unregulated (on/off) fans and a max. flow rate of 10m/s.

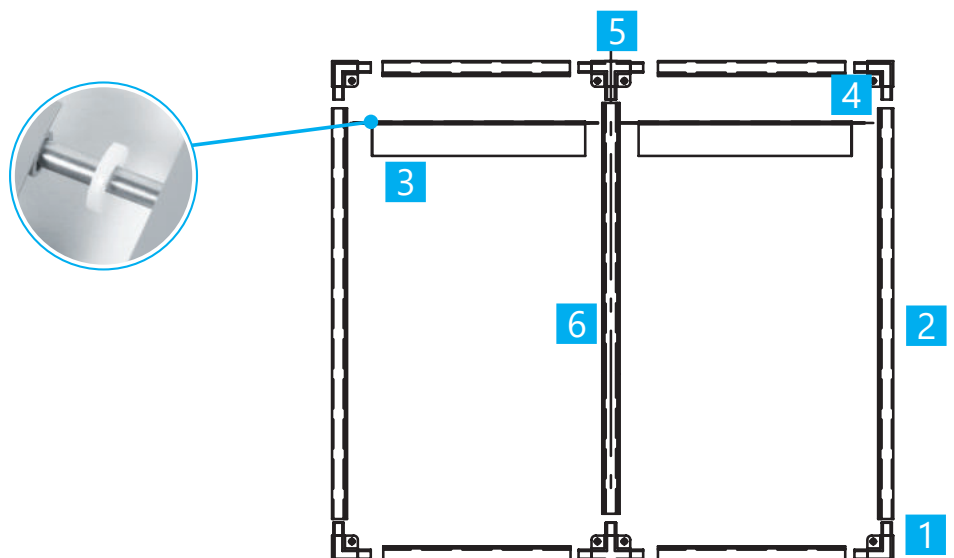


Type	Fan	Lamella width	A Outer dimension	B Inner dimension	Number of lamella	Article no.
VSK 63/2	630	80	720	650	18	166800
VSK 71/2	710	80	792	722	20	166900
VSK 80/2	800	80	936	866	24	167000
VSK 90/2	900	80	1,008	938	26	167100
VSK 100/2	1,000	80	1,076	1,016	28	167300
VSK 110/2	1,100	80	1,118	1,058	30	167500

Dimensions in mm
Intermediate sizes and custom sizes on enquiry.
Packaging unit 30 units / pallet

Fan shutters type VSK/2

- 1 Corner connectors
- 2 External frame profile
- 3 Lamella profile 80 mm
- 4 Bearing wire
- 5 T-connector
- 6 Inner frame profile



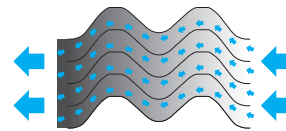
Fan accessories

Light filter LFd double shaft

Light filter LFd with double shaft, which prevents the penetration of light by >99.9999%. Non-assembled. Especially suitable for farms with layers or parents. Incl. fixing set.

Material: Frame from galvanized steel lamella from PP.

Installation of the light filter only possible on the suction side.



Type	Article no.
LFd 24	1-2653014
LFd 30	1-2653013
LFd 36	1-2653012
LFd 50	1-2653006
LFd 52	1-2653011
LFd 54*	1-2653015
LFd 55	1-2653024

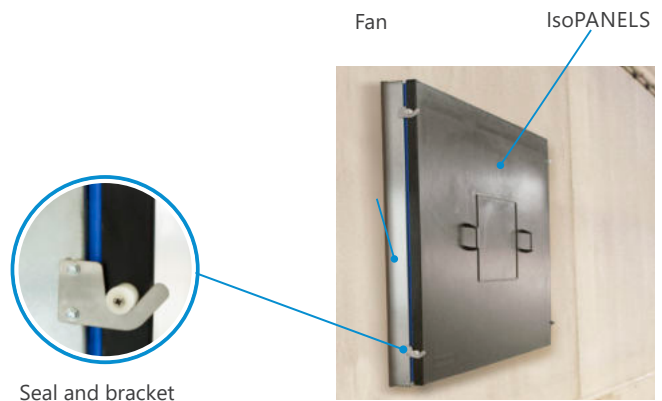
*Mounting kit not included. For mounting to housing fans an optionally available spacer light filter (article no. 1-2520650) is required

IsoPANEL for extraction fans

PUR covers for internal installation offer airtight and insulated closing of the fan on the stable side and thereby prevent cold bridges and false air. The IsoPANEL fits with all conventional 50" extraction fans.

Material: PUR

Dimensions (mm)	suitable for	Article no.
1,380 x 1,380 x 40	50"-extraction fans	144500200



IsoPanel fixing sets

Type	Article no.
for wall-mounting the IsoPANEL	144999900
for fastening the IsoPANEL directly to the fan	144999901

*For fastening, an additional fixing frame Art. No. LF137012 is required for the light filters (suction side). Alternatively, the light filters can be removed and the IsoPanel can be fastened directly to the fan.

Air extraction fans

The fans for high air capacity

The Munters extraction fans are ideally suited when high air flow is required. The unique propeller design is characterized by its maximum efficiency and has already proven itself over many years in use in agricultural applications in the toughest operating conditions.

High manufacturing competences e.g. during the balancing of the impellers, safeguard low vibration operation. In order to protect the fan against water and contamination, it is embedded in a double ball bearing. Low speeds can be realized without difficulty by means of the belt drive. As a result, high air flow is ensured with simultaneous low power consumption.

The multi-leaf damper is closed tightly when the fan is not in operation. This prevents air leakage and as a result unwanted heat loss.

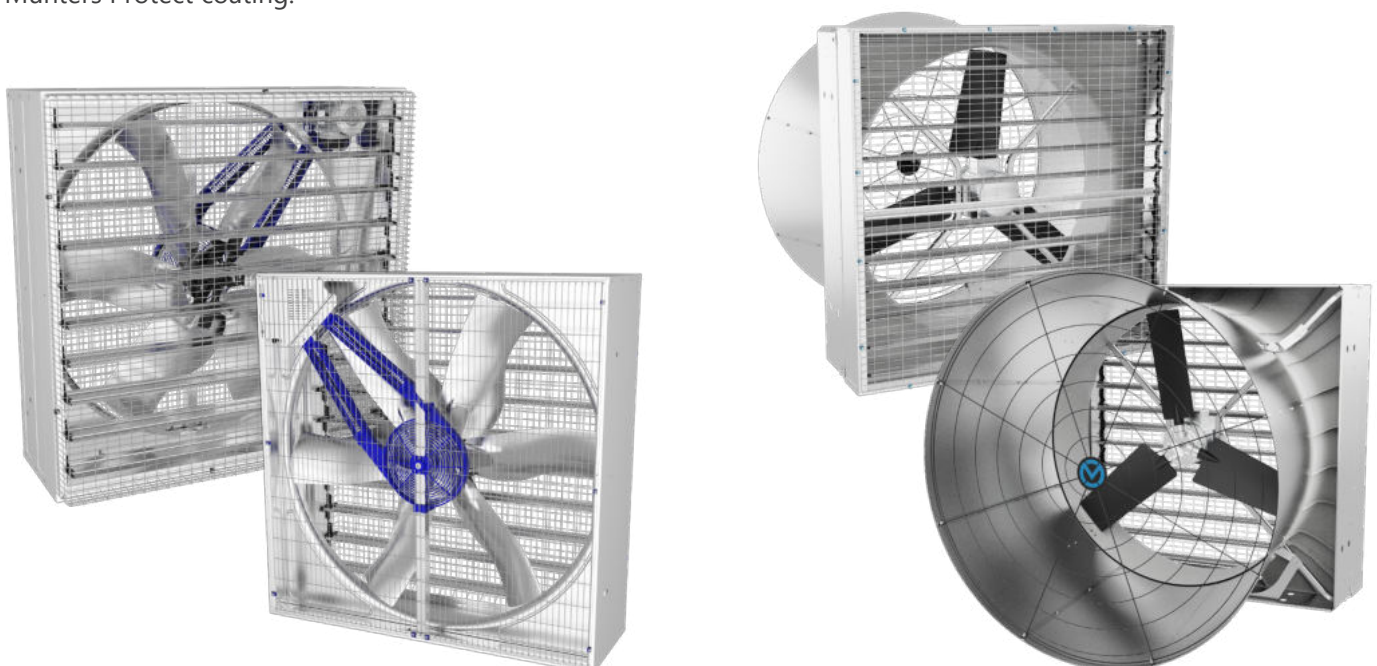
Furthermore, the patented centrifugal system enables the secure and lossless opening of the damper, as the lamella do not have to be adjusted by the air flow. As a result, the opening and closing movement is also not affected by dust. Additionally, any rattling of the multi-leaf damper is prevented in controlled partial load operation.

All plastic parts are UV-stabilized. The housing, inlet nozzle and the lamella of the multi-leaf damper consist of Munters Protect. The fan propellers are optionally made of stainless steel or are available with the Munters Protect coating.

Munters Protect

In agriculture, corrosion is usually caused by a combination of many factors such as pH, high humidity levels, frequent contact with water, aggressive chemicals as found in manure or disinfectants, bacterial growth; and the list goes on. The industry is also continuously evolving and that might have surprising side effects: New agricultural chemicals or feed additives might do wonders for animal or plant health, but also enhance corrosion on metal products.

For offering a consistent remedy to corrosion troubles Munters switched to a new material, called Munters Protect, which offers extremely high protection against corrosion. It consists of a coating made of Zinc, Aluminum and Magnesium and it delivers the best corrosion resistance performance, up to 10 times better than galvanised steel.



Air extraction fans

Saturn FIVE

- Flexible configuration to meet the needs of any farm
- Increased airflow while reducing operating costs, maintenance and energy consumption
- Long service life and corrosion resistance features with Munters Protect, stainless steel and composite materials
- Innovative butterfly damper to guarantee animal welfare and reduce energy waste



Saturn FIVE Direct Drive

Type	Blades material	Power (HP)	Voltage (V)	IE	Article no.	
					unassembled	assembled
Belt drive 1.5	MP	1.5	3~400V 50Hz	3	1-2712100EU	1-2612100EU
Belt drive 2.0	MP	2.0	3~400V 50Hz	3	1-2712107EU	1-2612107EU
Direct drive 2.0	Composite	2.0	3~400V 50Hz	3	1-2712300EU*	1-2612114EU
					1-2712320EU**	
Light filter LFd 55						1-2653024

Propeller material: MP = Munters Protect
 * for use from 0 - 70PA
 ** for use from 70 - 150PA

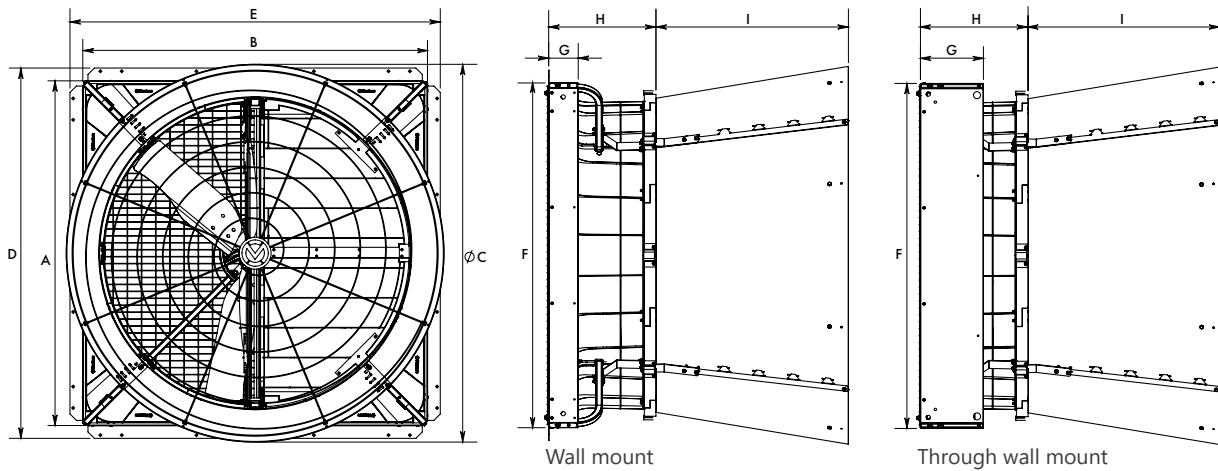
Technical data

Saturn FIVE		Belt drive 1.5	Belt drive 2.0	Direct drive 2.0
Power	Hp	1.5	2.0	2.0
Fan speed	rpm	573	542	692
Propeller diameter	mm [inch]	1400 [55]		
Number of blades/ material		3/Munters Protect	6/Munters Protect	3/Composite
Transmission		Belt drive	Belt drive	Direct drive
Weight of fully equipped fan	kg [lbs]	100 [220]	120 [264]	107 [235]
Nominal values	V/A/W/Hz	400/3.4/1743/50	400/4.3/2442/50	400/3.8/2361/50
Max power consumption/ max current ¹	W/A	1,850/3.3	2,485/4.3	2,445/4.6
Motor insulation grade/ protective class		F/IP55	F/IP55	F/IP55
Noise level ²	Db(a)	75.6	76.9	77.7
Permissible per ERP2015			✓	

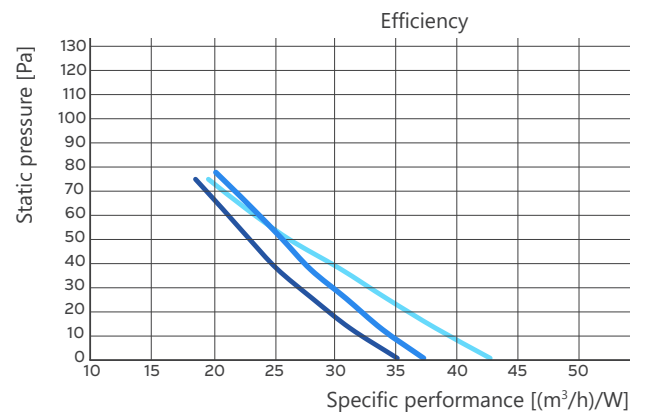
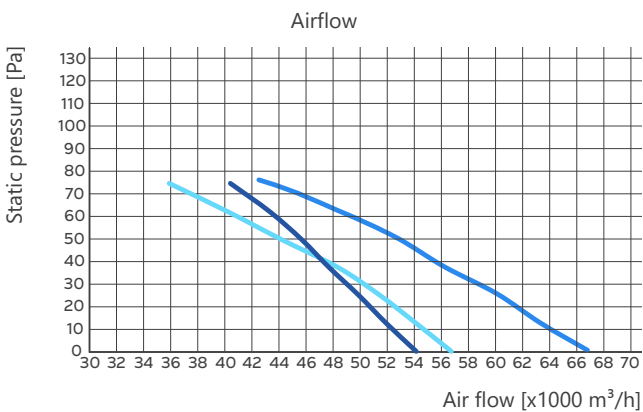
¹50 Hz specification, 60 Hz available upon request;
²Noise measure made according to ISO 3744



Dimensions



	A	B	C	D	E	F	G	H	I
Wall mount	1.615 mm	1.615 mm	1.770 mm	1.735 mm	1.735 mm	1.615 mm	139 mm	504 mm	900 mm
Through wall mount	1.615 mm	1.615 mm	1.770 mm	-	-	1.615 mm	139 mm	504 mm	900 mm



Saturn FIVE Belt 1.5		Saturn FIVE Belt 2.0		Saturn FIVE Direct 2.0	
Motor	BESS Lab	Motor	BESS Lab	Motor	BESS Lab
— Hp 1.5 IE3	#22093	— Hp 2 IE3	#22106	— Hp 2 IE3	#22110

Load capacity

	Saturn FIVE Belt drive 1.5		Saturn FIVE Belt drive 2.0		Saturn FIVE Direct drive 2.0	
	unassembled	assembled ¹	unassembled	assembled ¹	unassembled	assembled ¹
40'HC Container	102	36	86	36	66	30
Truck	-	42	-	42	-	35

¹Wall mount not available



Air extraction fans ED24/30/36HE

- 36-30-24" propeller diameters
- Shutter centrifugal opening system
- Housing in Munters Protect
- Fan with 3 blades



Spacer kit light filter for extraction fans



ED36HE

Type	Blades material	Power (HP)	Voltage (V)	IE	Article no.
ED24HE	PMP	0.5	3~400V/50Hz	3	1-2604013EU
ED30HE	PMP	0.5	3~400V/50Hz	3	1-2604014EU
ED36HE	PMP	0.75	1~230V/50Hz	1	1-2790141
ED36HE	PMP	0.75	3~400V/50Hz	3	1-2604016EU
ED24HE	MP	0.5	3~400V/50Hz	3	1-2608600EU
ED30HE	MP	0.5	3~400V/60Hz	1	1-2608291
ED36HE	MP	0.75	1~230V/50Hz	1	1-2790150
ED36HE	MP	0.75	3~400V/50Hz	3	1-2790200EU
Light filter LFd 24					1-2653014
Light filter LFd 30					1-2653013
Light filter LFd 36					1-2653012
Spacer kits light filter ED30HE					1-2520640
Safety package with pyra. Protective grid ED24HE					1-2658100
Safety package with pyra. Protective grid ED30HE					1-2658000

Propeller material: PMP = Power Munters Protect, MP = Munters Protect,

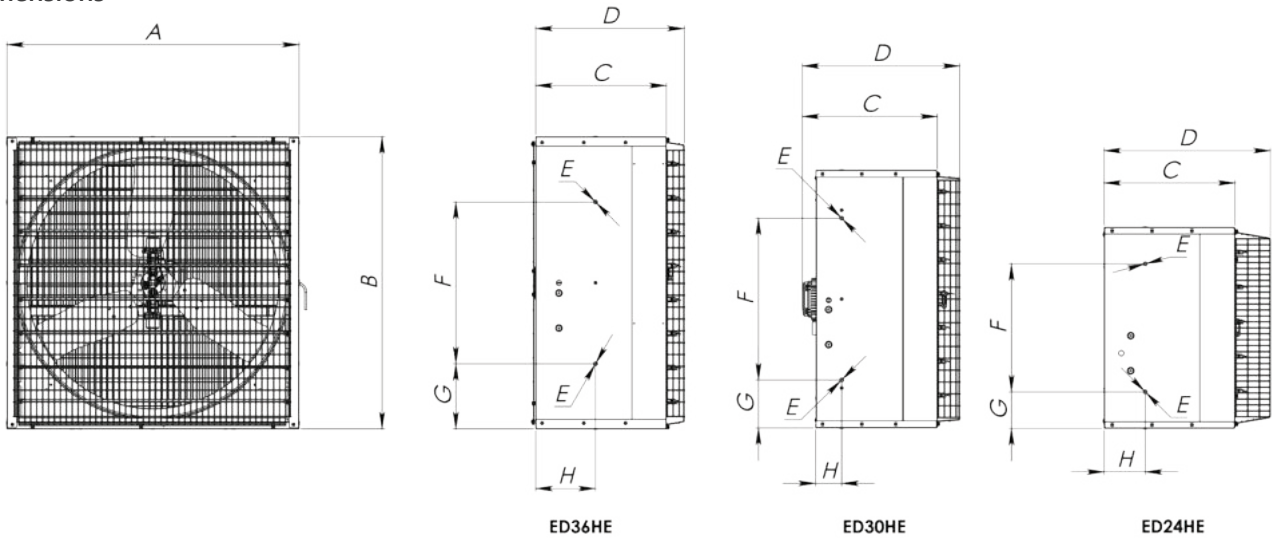
Technical data

		ED24HE 400V	ED30HE 400V	ED36HE	
				230V	400V
Power	Hp	0.5	0.5	0.75	
Fan speed	rpm	1,400	900;1,100	900	
Propeller diameter	mm [inch]	610 [24]	770 [30]	915 [36]	
Number of blades/material		3/Munters Protect	3/Munters Protect	3/Munters Protect	
Number of shutter blades		5	7	8	
Transmission		Direct drive	Direct drive	Direct drive	
Weight of fully equipped fan	kg	49	60	70	
Nominal values	V/A/W/Hz	400/1.3/ 370/50	400/1.2/ 370/50;60	230/4.7/ 550/50	400/1.6/ 550/50
Max power consumption/max current ¹	W/A	610/1.2	720/690/1.3	850/4.5	800/1.6
Max operating temperature	°C [°F]	50 [122]	50 [122]	50 [122]	
Max operating pressure	Pa	50	50	50	
Motor insulation grade/protective class		F/IP55	F/IP55	F/IP55	
Noise level ²	Db(a)	72.5	69.8	71.2	
Permissible per ERP2015			✓		

¹150 Hz specification, 60 Hz available upon request; ²Noise measure made according to ISO 3744

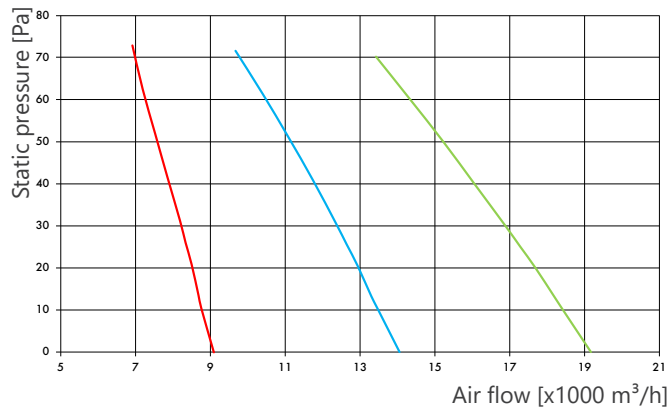


Dimensions

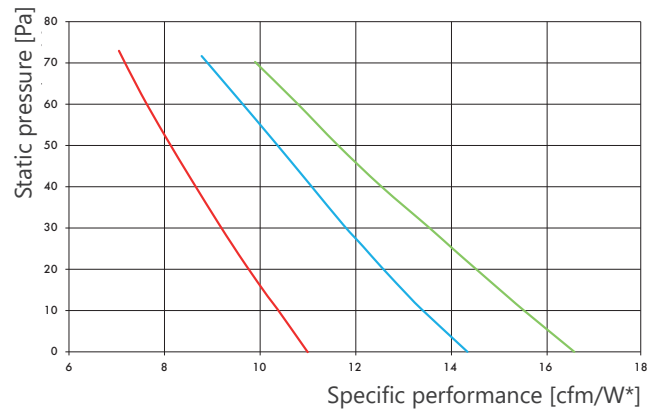


Type	A	B	C	D	E	F	G	H
ED36HE	1085 mm	1085 mm	485 mm	555 mm	M8	600 mm	242 mm	222 mm
ED30HE	950 mm	950 mm	500 mm	585 mm	M8	600 mm	175 mm	95 mm
ED24HE	750 mm	750 mm	485 mm	620 mm	M8	475 mm	137 mm	150 mm

Airflow



Efficiency



ED24HE	ED30HE	ED36HE
—	—	—

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa). *1 cfm/W = 1.7 m3/hW

Load capacity

	ED36HE		ED30HE	ED24HE
	unassembled	assembled	assembled	assembled
20' Container	130	40	48	66
40' Container	-	82	96	138
40' HC Container	340	82	96	138
Truck	406	96	112	204

Pyra. Protective grid for installation below 2.7 m available upon request.



Air extraction fans EM50

- 50" propeller diameter
- Shutter centrifugal opening system
- Housing in Munters Protect

Exhaust air systems



EM50

Blades material	Power (HP)	Voltage (V)	IE	Article no.
PMP	1.5	3~400V/50Hz	1	1-2601442
MP	1.0	1~230V/50Hz	1	1-2600885
MP	1.5	1~230V/50Hz	1	1-2601305
MP	1.0	3~400V/50Hz	3	1-2601065EU
MP	1.0	3~400V/60Hz	1	1-2601125
MP	1.5	3~400V/50Hz	3	1-2601425EU
MP	1.5	3~400V/60Hz	1	1-2601545
Safety package with pyra. Protective grid				1-2657700

Propeller material: PMP = Power Munters Protect, MP = Munters Protect,

Technical data

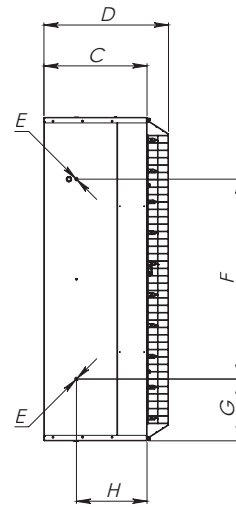
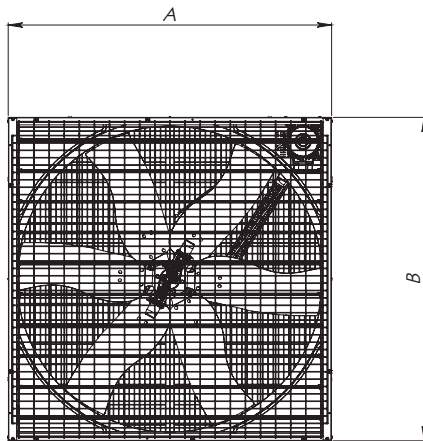
		EM50			
		230V	400V	230V	400V
Power	Hp	1.0		1.5	
Fan speed	rpm	380		440	
Propeller diameter	mm [inch]	1270 [50]			
Number of blades/material		6/Munters Protect			
Number of shutter blades		10			
Transmission		Belt drive			
Weight of fully equipped fan	kg	84		86	
Nominal values	V/A/W/Hz	230/5/750/50	400/1.8/750/50	230/7.3/1,100/50	400/3/1,100/50
Max power consumption/max current ¹	W/A	1,050/4.4	1,150/2.1	1,600/7.4	1,830/3.3
Max operating temperature	°C [°F]	50 [122]			
Max operating pressure	Pa	50			
Motor insulation grade/protective class		F/IP55			
Noise level ²	Db(a)	67.6		70.4	
Permissible per ERP2015		✓			

¹50 Hz specification, 60 Hz available upon request;

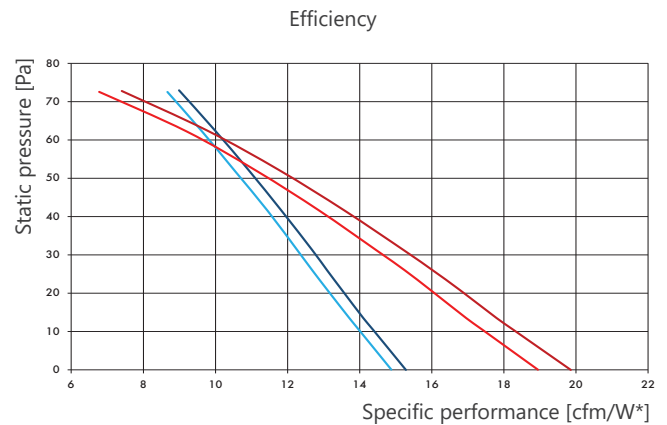
²Noise measure made according to ISO 3744



Dimension



A	B	C	D	E	F	G	H
1.380 mm	1.380 mm	450 mm	540 mm	M8	830 mm	275 mm	308 mm



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 m³/hW

Load capacity

	EM50	
	unassembled	assembled
20' Container	170 (1201)	24
40' Container	-	49
40' HC Container	300	57
Truck	328	65

Pyra. Protective grid for installation below 2.7 m available upon request. ¹ With CE plastic protection

Air extraction fans EC52

- 52" propeller diameter
- Shutter centrifugal opening system
- Cone fan for high efficiency
- Housing in Munters Protect
- Fan with 4 blades
- Patented centrifugal system
- Opening and closing via servomotor



Spacer kit light filter for extraction fans



EC52

Blades material	Power (HP)	Voltage (V)	IE	Article no.
MP	1.0	3~400V/50Hz	3	1-2607986TEU
MP	2.0	3~400V/50Hz	1	1-2607989T
Light filter LFd 52				1-2653011
Spacer kits light filter EC52				1-2520620
Safety package with pyra. Protective grid				1-2657730

Propeller material: MP = Munters Protect

Technical data

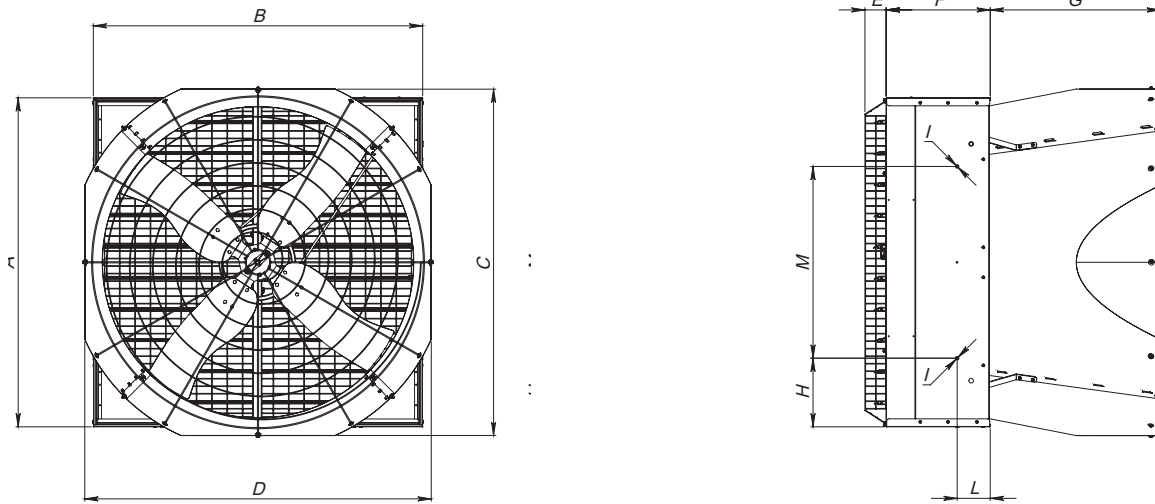
EC52			
Power	Hp	1.0	2.0
Fan speed	rpm	390	460
Propeller diameter	mm [inch]	1,335 [52]	
Number of blades/material		4/Munters Protect	
Number of shutter blades		10	
Transmission		Belt drive	
Weight of fully equipped fan	kg	108	112
Nominal values	V/A/W/Hz	400/1.8/750/50	400/3.6/1,500/50
Max power consumption/max current ¹	W/A	1,180/2.2	1,800/3.4
Max operating temperature	°C [°F]	50 [122]	
Max operating pressure	Pa	50	
Motor insulation grade/protective class		F/IP55	
Noise level ²	Db(a)	67.2	71.1
Permissible per ERP2015		✓	

¹50 Hz specification, 60 Hz available upon request;

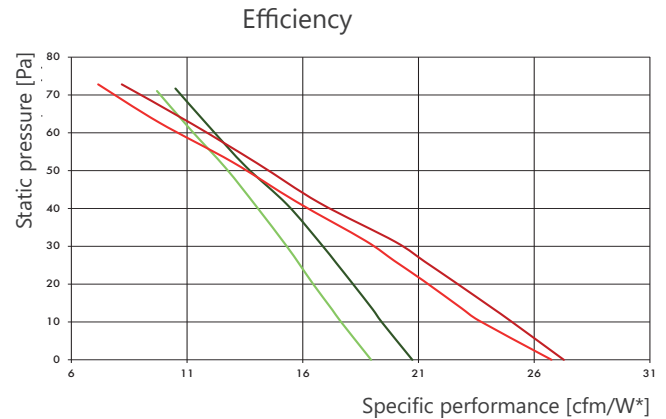
²Noise measure made according to ISO 3744



Dimensions



A	B	C	D	E	F	G	H	I	L	M
1.425 mm	1.425 mm	1.500mm	1.500mm	95 mm	450 mm	740 mm	298 mm	M8	143 mm	830 mm



Motor 1.0 Hp		Motor 2.0 Hp	
IE3	IE1	IE3	IE1
—	—	—	—

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa).
 *1 cfm/W = 1.7 m3/hW

Load capacity

	EC52	
	unassembled	assembled
20' Container	100	15
40' Container	-	39
40' HC Container	200	39
Truck	237	41

Pyra. Protective grid for installation below 2.7 m available upon request.

LAVAMATIC® drum washer

Future-oriented exhaust air treatment

The LAVAMATIC® drum washer for example facilitates the exhaust air treatment of poultry and pig stables, and is supplied as a complete, prefabricated module.

The LAVAMATIC® system can simply be placed on the gable wall or long side of the stable. The drum washer with an air flow of 50,000 m³/h or 100,000 m³/h consists of a unique drum washer without the use of cost-intensive circulation pumps. Furthermore, an optional biological stage is available for odor reduction for the LAVAMATIC® 50,000 m³/h.

The drum washer is characterized by its very low electricity consumption due to its ability to operate without pump equipment.

Ammonia drum washer for ammonia reduction

The exhaust air is now guided over the unique, patent-registered drum washer. The continual rotation of the washer drum takes the wash water, which is acidified to pH3, out of the water basin and the filling material in the wash drum is moistened. Additionally, the filling material is constantly cleansed when the wash drum is immersed in the water basin.

A wiper mounted at the top of the wash drum ensures that the coarser particles are removed from the drum's exterior. Simultaneously, the wiper is used for sealing the drum. The LAVAMATIC® does not require separate washing water treatment,



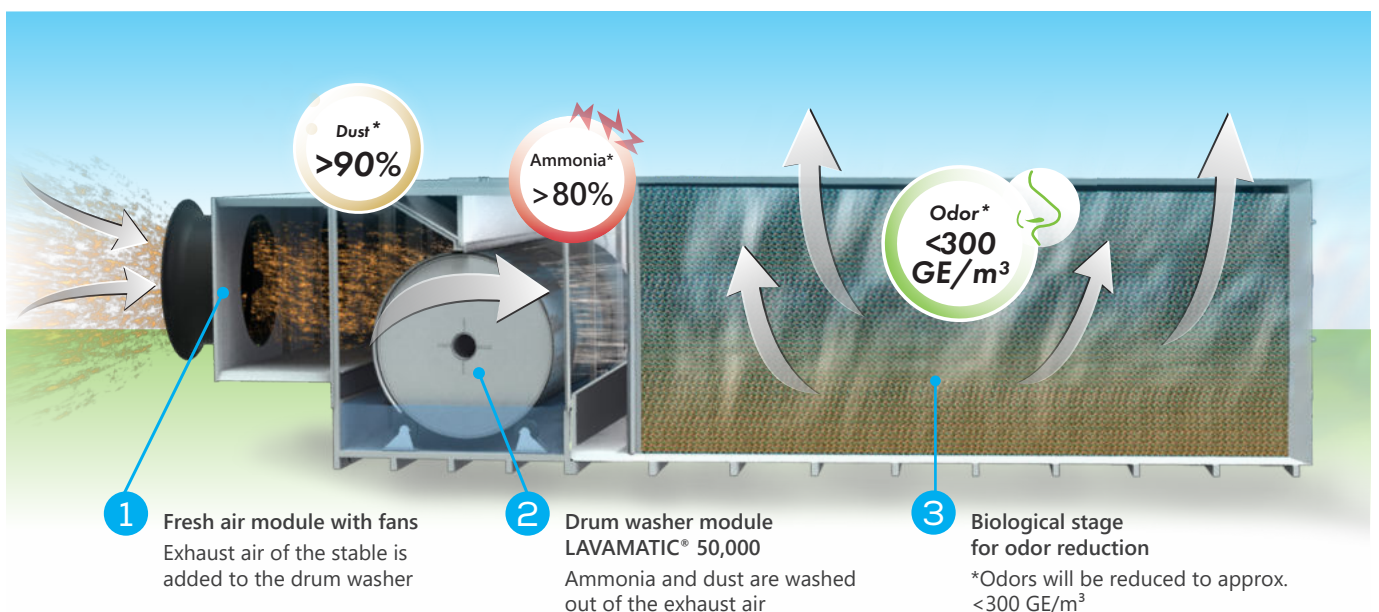
LAVAMATIC® –System

and this constitutes a further advantage of the technology. Elutriation takes place directly from the water basin into a separate elutriation tank.

Odor reduction with biological stage in pig fattening

The exhaust air, now free of ammonia, is then guided over the last cleaning stage at the LAVAMATIC 50,000 m³/h. Here, the final stable odor is eliminated by the bio filter consisting of cellulose pads.

Munters cellulose pads are available on short call worldwide. The replacement is very easy due to the low weight.



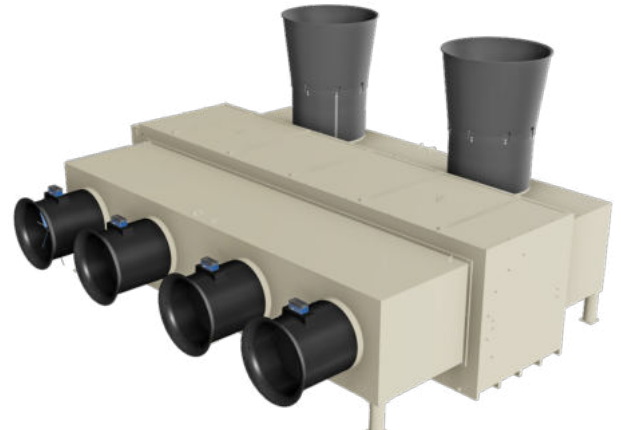
Functional principle of LAVAMATIC®–System with biological stage (*Separation depends on the polluted concentration of the raw gas)



LAVAMATIC®-System

The single components of the LAVAMATIC® drum washer system are individually assembled. Optionally the system is completed by the biological stage for odor elimination in pig fattening or by the exhaust air module.

Since every building project is specific, you shall receive an individual quotation after technical clarification.



LAVAMATIC® 100.000 with exhaust air module

LAVAMATIC® 100,000	Article no.
Fresh air module, 7,440 x 1,880 mm	604100011
Drum washer module, 50Hz, 8,276 x 2,200 mm, including measurement and control system,	604100500
Exhaust air module, 7,430 x 1,470 mm	604100036

Freight volume:
Lavamatic® 100,000 with exhaust air module = 26 running meters



LAVAMATIC® 50.000 with exhaust air module

LAVAMATIC® 50,000	Article no.
Fresh air module, 4,514 x 1,780 mm, for exhaust air module	604500011
Fresh air module, 4,514 x 1,780 mm, for biological stage	604500012
Drum washer module, 50Hz, 5,224 x 2,270 mm, including measurement and control system, for exhaust air module	604500501
Drum washer module, 50Hz, 5,224 x 2,270 mm, including measurement and control system, for biological stage	604500502
Biological stage, CELdek, 50Hz	604500140
Exhaust air module, 4,394 x 1,400 mm	604500036

Freight volume:
Lavamatic® 50,000 with exhaust air module = 15 running meters
Lavamatic® 50,000 with Biological stage = 20 running meters



LAVAMATIC® 50.000 with biological stage



CELdek® 7060-15 – Paper pads see chapter 6 Cooling

LAVAMATIC® Zubehör	Article no.
Duct unit Ø920/30 for fresh air module LAVAMATIC® 100.000 incl. fan 50/60Hz, for exhaust air module	604104021
Duct unit Ø920/30 for fresh air module LAVAMATIC® 50.000 incl. fan 50/60Hz, for exhaust air module	604504021
Duct unit Ø920/30 for fresh air module LAVAMATIC® 50.000 incl. fan 50/60Hz, for biological stage	604504011
Central control unit, suitable for up to 6 LAVAMATIC®	604004081



LAVAMATIC®100.000 Duct unit



LAVAMATIC®50.000 Duct unit



Example calculation based on a stable 100,000 m³/h

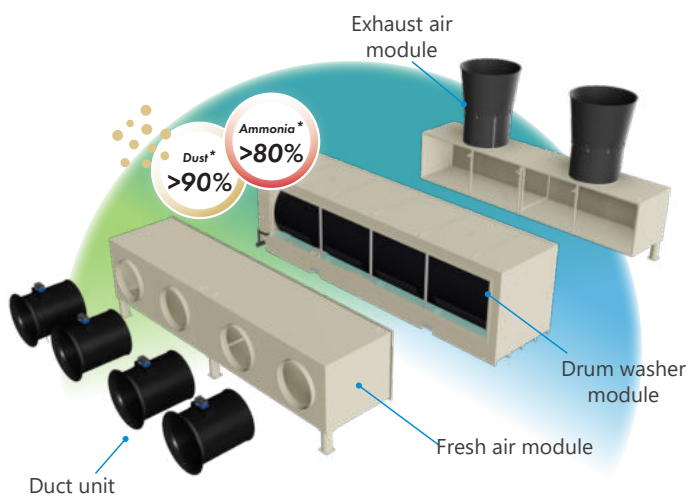
LAVAMATIC 100,000 [®] with exhaust air module	Quantity	Article no.
Fresh air module, 7,440 x 1,880 mm	1 x	604100011
Duct unit Ø920/30 for fresh air module incl. fan 50Hz, for exhaust air module	2 x	604504021
Drum washer module, 50Hz, 8,276 x 2,200 mm, including measurement and control system	1 x	604100500
Exhaust air module, 7,430 x 14,70 mm	1 x	604100036
Central control unit, suitable for up to 6 LAVAMATIC [®]	1 x	604004081

LAVAMATIC 50,000 [®] with exhaust air module	Quantity	Article no.
Fresh air module, 4,514 x 1,780 mm, for exhaust air module	2 x	604500011
Duct unit Ø920/30 for fresh air module incl. fan 50Hz, for exhaust air module	2 x	604504011
Drum washer module, 50Hz, 5,224 x 2,270 mm, including measurement and control system, for exhaust air module	2 x	604500501
Exhaust air module, 4,394 x 1,00 mm	2 x	604500036
Central control unit, suitable for up to 6 LAVAMATIC [®]	1 x	604004081

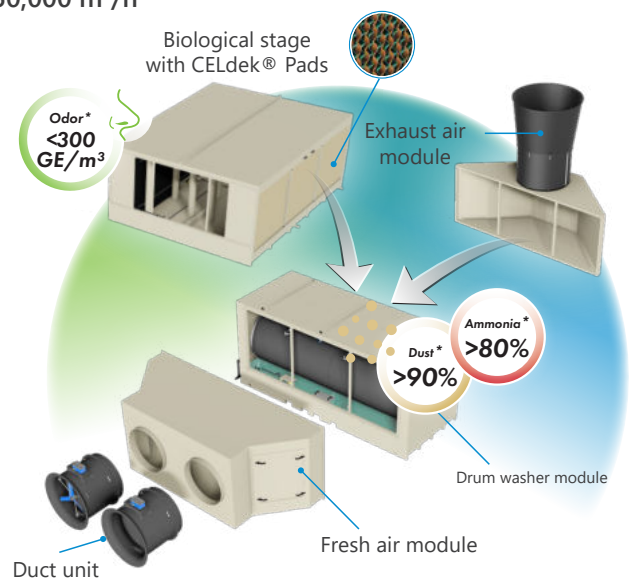
LAVAMATIC 50,000 [®] with biological stage	Quantity	Article no.
Fresh air module, 4,514 x 1,780 mm, for biological stage	2 x	604500012
Duct unit Ø920/30 for fresh air module incl. fan 50Hz, for biological stage	2 x	604504011
Drum washer module, 50Hz, 5,224 x 2,270 mm, including measurement and control system, for biological stage	2 x	604500502
Biological stage, CELdek, 50Hz	2 x	604500140
Central control unit, suitable for up to 6 LAVAMATIC [®]	1 x	604004081

Components of the LAVAMATIC[®]-Systems

100,000 m³/h



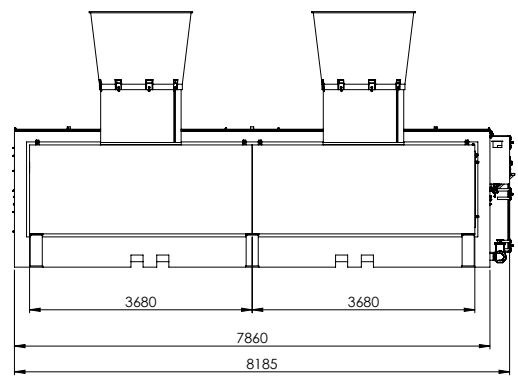
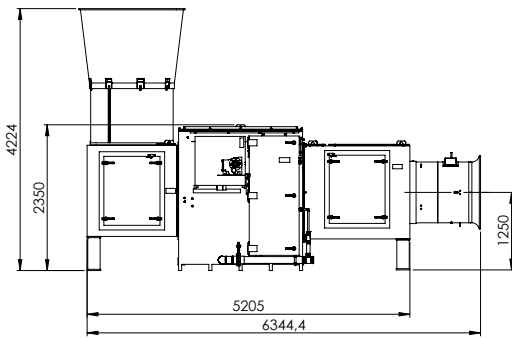
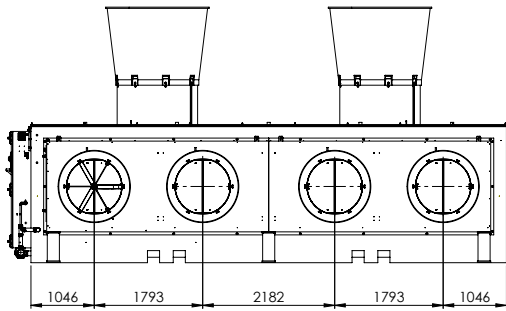
50,000 m³/h



*Separation depends on the polluted concentration of the raw gas

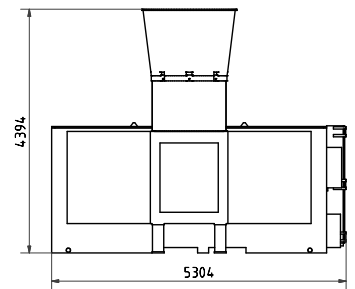
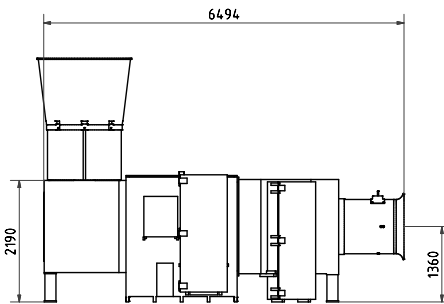
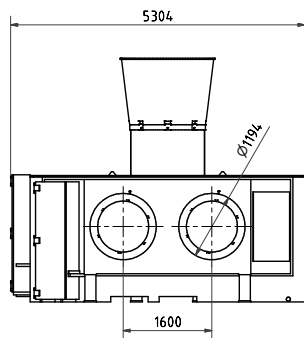
Dimensions

LAVAMATIC® 100,000 with Exhaust air module

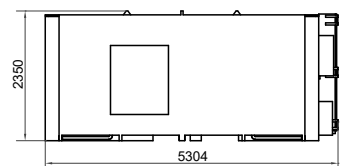
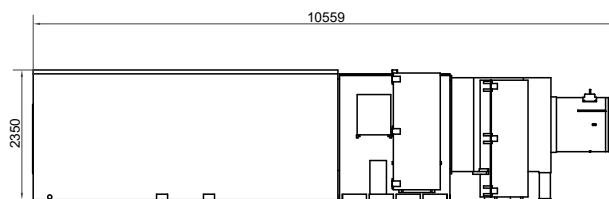
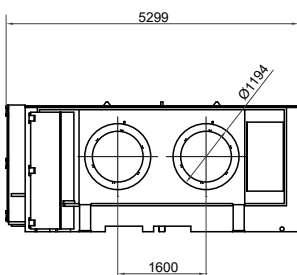


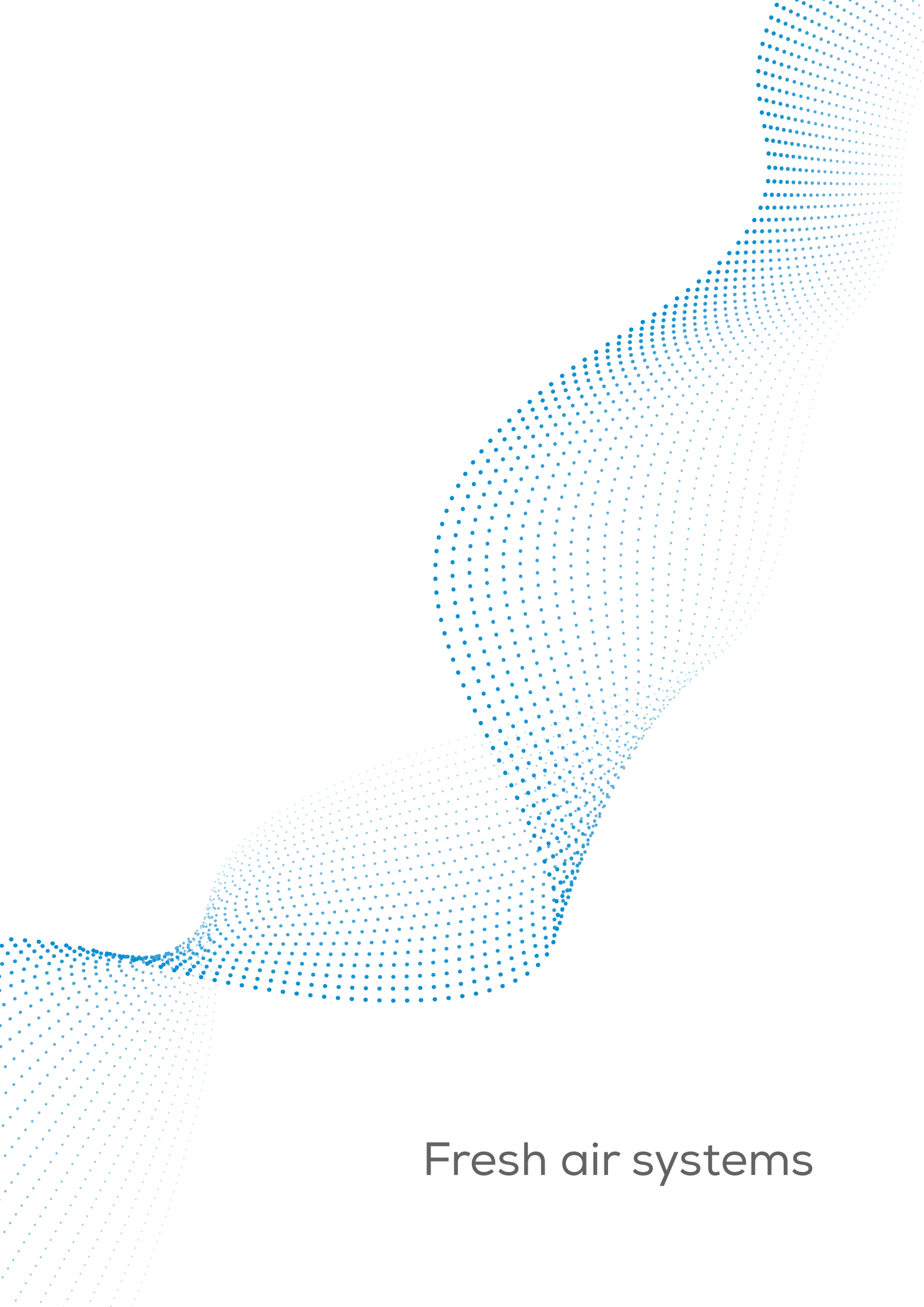
i Dimensions are for guidance only. STP or DWG drawings can be requested for precise dimensions.

LAVAMATIC® 50,000 with Exhaust air module



LAVAMATIC® 50,000 with Biological stage





Fresh air systems

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Fresh air inlets

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Fresh air distributor ZLV

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Fresh air systems

Well-proven in practice

In order to ensure an optimized fresh air supply in the stable we offer a comprehensive product range of fresh air systems for walls and ceilings.

In poultry stables, fresh air inlets and chimneys are primarily used to feed fresh air into the stable without the animals being exposed to drafts.

Ventilation ceilings, fresh air inlets and duct solutions (fresh air distributors) are suitable for use in pig stables in order to supply the individual bays with fresh air.

Effective fresh air filtration is growing in importance when it comes to livestock farming. For your pig-house, AirProTec® for example offers reliable protection against PRRS virus and can be used in both existing as well as new ventilation concepts.



AirProTec®



»ZEW« Professional












ZLV Vario

Overview of fresh air inlets for walls and ceilings

Single wall air inlets

Type	Air flow* (m ³ /h)	Mounting dimension (mm) W x H	Traction (N)				Stroke way (mm)				Page
			Pulley		Wall guide		Pulley		Wall guide		
			a.o.	a.c.	a.o.	a.c.	a.o.	a.c.	a.o.	a.c.	
»ZEW« Professional											
1300	2.000	555 x 295	35	65	35	55	390	230	390	460	2.8
2100	3.000	655 x 395	35	65	35	55	535	240	535	480	
2900	4.000	725 x 480	25	85	25	60	635	240	635	480	
»ZEW«											
5000	5.400	1.186 x 357	35	55	35	30	400	280	400	560	2.9
»ZEW« basic 1600											
1600	2.300	650 x 270	15	35	15	15	425	220	425	420	2.10
»ZEW« Flatwave 2600											
2600	3.800	655 x 440	-	-	40	-	-	-	430	-	2.12
»safe-let«											
600	4.200	650 x 480	35	80	35	45	630	280	630	560	2.14
800	5.500	850 x 480	40	75	40	40	630	280	630	560	
1000	6.700	1.050 x 480	45	70	45	38	630	280	630	560	
1200	7.900	1.250 x 480	50	65	50	35	630	280	630	560	
MWI											
3408	2.500	864 x 210			20				290		2.16
3413	3.800	864 x 330			20				470		
4108	3.084	1.040 x 210			20				290		
4113	4.716	1.040 x 330			30				470		
4408	3.200	1.118 x 210			20				290		
4413	5.000	1.118 x 330			40				470		

Multi wall air inlets

Type	Air flow* (m ³ /h)	Mounting dimension (mm) W x H	Traction (N)		Stroke way (mm)		Page
			a.o.	a.c.	a.o.	a.c.	
»AIRSTEP«®							
	9.100	1.186 x 714	80	60	400	400	2.13
	13.900	1.186 x 1.071	120	90	400	400	
	18.800	1.186 x 1.428	160	120	400	400	
	23.800	1.186 x 1.785	200	150	400	400	
»safe-let«							
	14.700	1.250 x 964	100	130	630	280	2.15
	21.300	1.250 x 1.446	150	185	630	280	
	27.800	1.250 x 1.928	200	240	630	280	
	28.800	2.504 x 964	200	260	630	280	
	44.100	2.504 x 1.446	300	370	630	280	

Ceiling air inlets »ZED«

Type	Air flow* (m ³ /h)	Mounting dimension (mm) W x H	Traction (N)		Stroke way (mm)		Page
			a.o.	a.c.	a.o.	a.c.	
1000	1.300	540 x 240	15	-	220	-	2.17
1500	1.800	780 x 240	20	-	220	-	
1500 doppel	3.800	790 x 590	2 x 20	-	220	-	
Profi 1800	2.300	574 x 427	25	65	330	230	2.18
Profi 1800 doppel	5.600	574 x 900	2 x 25	-	330	-	
5000	5.500	1.126 x 352	40	80	170	140	2.19
5000 Verl.	5.900	1.126 x 352	40	80	170	140	2.20

*Air flow measured with a differential pressure of 20 Pa in m³/h. (sizes in mm); Definition of mounting dimension: The mounting dimension is the external size of the inlet, the opening must be at least 10 mm larger depending on instablation conditions. Definition of traction: The specification of the traction is in N and already includes one redirection.
a.o. = automatic opening; a.c. = automatically closing

Connection examples

(Exemplary calculation of the required traction)

»ZEW« Professional 2100
with automatic opening – opens by release and
spring reinforced

Type	Required quantity / units	Traction (N)	Total traction (N)
Fresh air inlets	48	35	1.680
Pulleys Ø 88 mm	3	100	300
Weight	1	130	130
Minimum required pulling force (N):			2.110

»ZEW« Professional 2100 a.o. = 35 N (incl. first deflector)

»ZEW« Professional 2100
with automatic closing – opens by means of traction

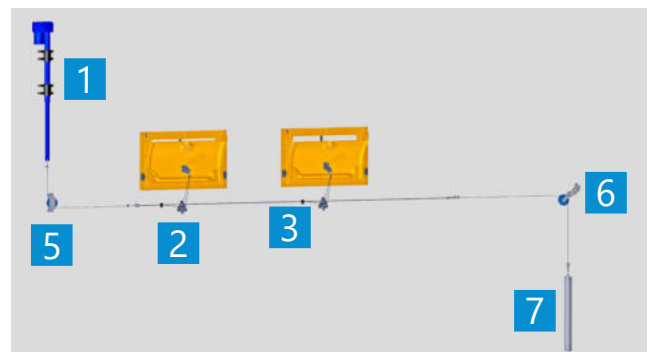
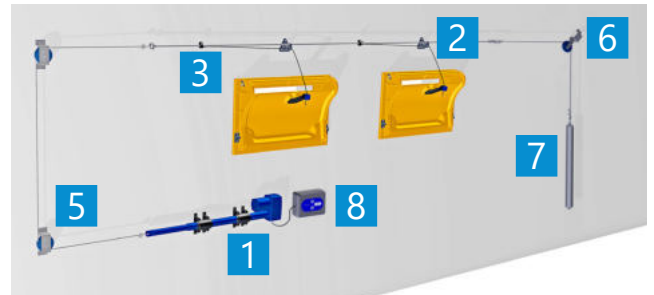
Type	Required quantity / units	Traction (N)	Total traction (N)
Fresh air inlets	40	65	2.600
Pulleys Ø 88 mm	2	100	200
Weight	1	130	130
Minimum required pulling force (N):			2.930

»ZEW« Professional 2100 a.c. = 65 N (incl. first deflector)
In the case of tractions over 3,000 N, the breakdown of fresh air inlets into 2 electro cylinders is necessary.

»ZED« Professional 1800
with automatic closing – opens by means of traction

Type	Required quantity / units	Traction (N)	Total traction (N)
Fresh air inlets	12	25	300
Pulleys Ø 88 mm	1	100	100
Weight	1	130	130
Minimum required pulling force (N):			530

»ZED« 1800 = 25 N (incl. first deflector)



- 1** Electro cylinder (see page 2.44)
- 2** Wall guides (art. no.: 9-201990800)
- 3** Pull rod clamps (art. no.: 332030)
- 4** Vertical pulley (art. no.: 333201)
- 5** Horizontal pulley (art. no.: 333211)
- 6** Universal pulley (art. no.: 333811)
- 7** Weights (art. no.: 280994201)
- 8** Motor control

Connection examples

(Exemplary calculation of the required traction)

»ZEW« Professional 2100
with automatic opening – opens by release and
spring reinforced

Type	Required quantity / units	Traction (N)	Total traction (N)
Fresh air inlets	48	35	1.680
Pulleys Ø 88 mm	3	100	300
Weight	1	130	130
Minimum required pulling force (N):			2.110

»ZEW« Professional 2100 a.o. = 35 N (incl. first deflector)

»ZEW« Professional 2100
with automatic closing – opens by means of traction

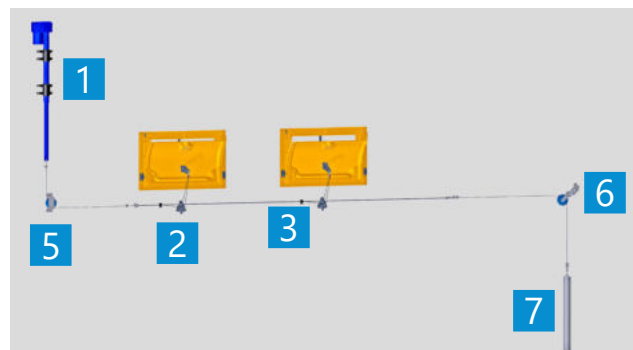
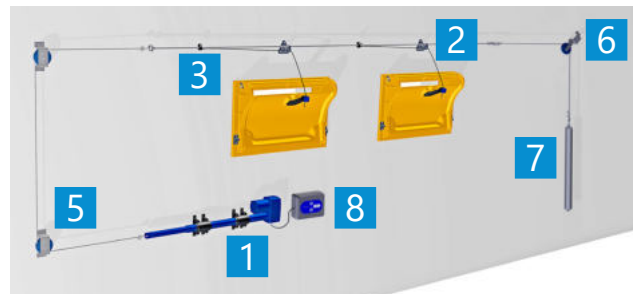
Type	Required quantity / units	Traction (N)	Total traction (N)
Fresh air inlets	40	65	2.600
Pulleys Ø 88 mm	2	100	200
Weight	1	130	130
Minimum required pulling force (N):			2.930

»ZEW« Professional 2100 a.c. = 65 N (incl. first deflector)
In the case of tractions over 3,000 N, the breakdown of fresh air inlets into 2 electro cylinders is necessary.

»ZED« Professional 1800
with automatic closing – opens by means of traction

Type	Required quantity / units	Traction (N)	Total traction (N)
Fresh air inlets	12	25	300
Pulleys Ø 88 mm	1	100	100
Weight	1	130	130
Minimum required pulling force (N):			530

»ZED« 1800 = 25 N (incl. first deflector)



- 1** Electro cylinder (see page 2.44)
- 2** Wall guides (art. no.: 9-201990800)
- 3** Pull rod clamps (art. no.: 332030)
- 4** Vertical pulley (art. no.: 333201)
- 5** Horizontal pulley (art. no.: 333211)
- 6** Universal pulley (art. no.: 333811)
- 7** Weights (art. no.: 280994201)
- 8** Motor control

»ZEW« Professional wall air inlets

The professional wall air inlet for all climate zones

The »ZEW« Professional features a unique geometrical shape. This is because this displaces the coming together of cold fresh air and moist warm stable air to areas in which no negative effects on functionality will occur. With the new »ZEW« Professional fresh air inlets, the minimum fresh air rates can be orientated entirely towards the needs of the animals.

Especially at outside temperatures below -10°C ice can form at the air intake of the inlet. The fresh air inlet »ZEW« Professional is designed such that freezing of the inlet is prevented. Thereby, no forced ventilation is needed, whereby massive costs can be saved on energy and heat. The fresh air inlet is made of resistant and well insulating polyurethane rigid foam.

Complete assembly range

A comprehensive accessory range including (bird) protective grids, light filters, wind deflection hoods or wind deflection hood including a light filter in addition to a special wall guide for pull rods round off the wall air inlet.

Product advantages

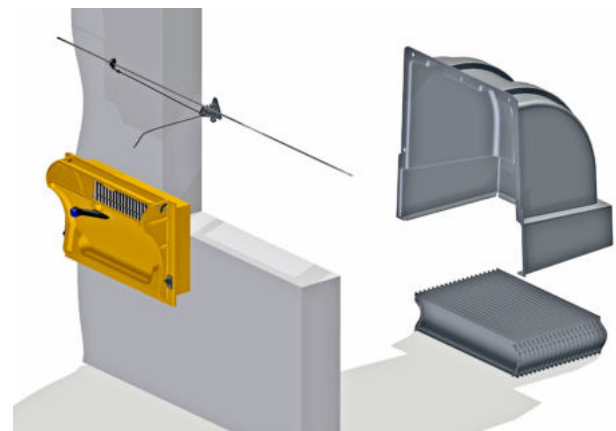
- The air conduction sheet can be adjusted to every position due to a special latching guide.
- Transport and installation safeguard for the shutters integrated into the air conduction sheet
- Winter and summer position easy to set due to corresponding symbols on the inlet
- To avoid condensation/icing, two sealing lips are mounted on the shutter base



Product video

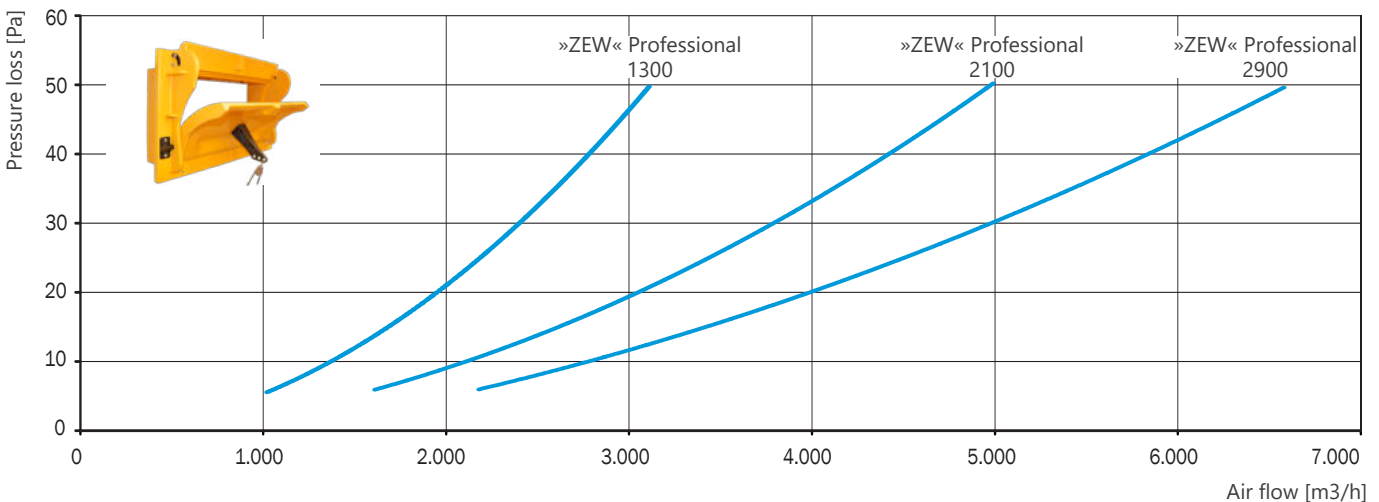


»ZEW« Professional in a sectional view with a light filter including wind deflection hood



»ZEW« Professional accessory variant in sandwich wall

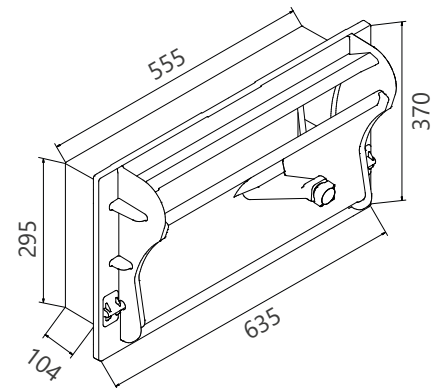
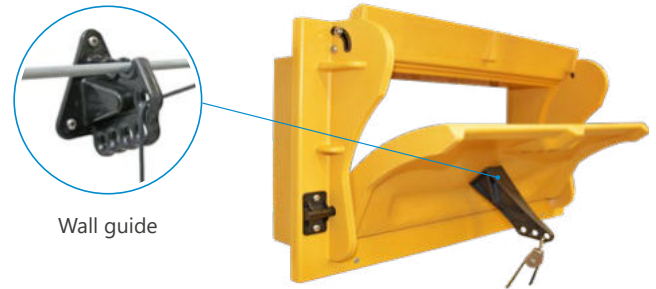
»ZEW« Professional wall air inlet air capacities



»ZEW« Professional 1300 wall air inlet

The »ZEW« Professional 1300 wall air inlets are the smallest of the »ZEW« Professional series and differ from the other two variants in terms of air capacity and installation size.

The wall air inlets in this range comprise insulated polyurethane rigid foam. Cleaning is easy due to the smooth, hard surfaces. Due to the geometry of the valves, the coming together of cold fresh air and moist warm barn air is displaced to areas in which no negative effects on functionality will occur. This ensures a significant reduction in the formation of ice, in particular at low temperatures.



Type	Air flow (m ³ /h)			Traction (N)		Stroke way (mm)		Article no.	
	10 Pa	20 Pa	30 Pa	a.o.	a.c.	a.o.	a.c.	a.o.	a.c.
1300	1,300	1,900	2,400	35 N	55 N	390	460	328300	328310
Wind deflection hoods								209139910	
Wind deflection hoods incl. light filter								209139912	
Light filter wall mounting								LF04270660	
Bird protective grid								328390	
Wall guides ZEW Profi a.o./a.c. (set of 10)								9-201990800	

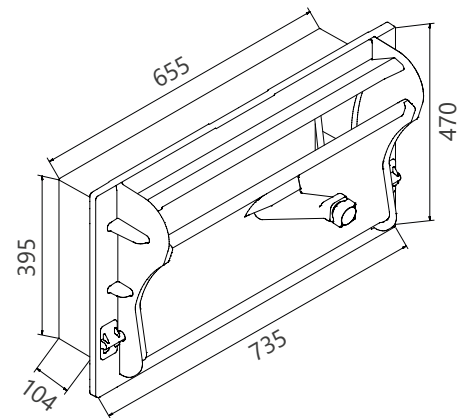
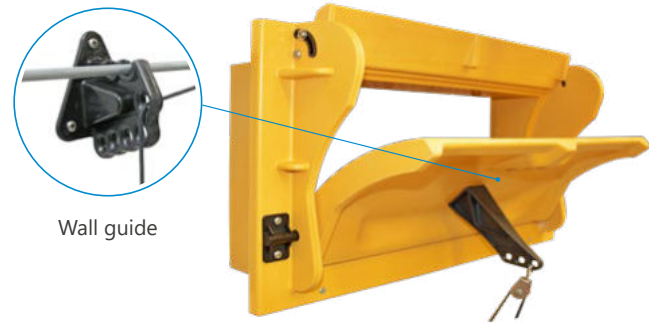
The inlet is suitable for electro cylinders: V4, V6. For optimum use of the delay setting, we strongly recommend the wall guide. We also recommend the 8mm pull rod for opening and closing the inlets. a.o. = automatic opening; a.c. = automatically closing; the traction already includes a deflector. Please append a "V" to the order number for inlets including (bird) protective grids (000000V).

Packaging information:
 »ZEW« Professional 1300 = 60 units. / pal. (W x L x H/0.66 x 2.32 x 2.2m).

»ZEW« Professional 2100 wall air inlet

The »ZEW« Professional 2100 wall air inlets are in the middle range of the »ZEW« Professional series and differ from the other two variants in terms of air capacity and installation size.

The wall air inlets in this range comprise insulated polyurethane rigid foam. Cleaning is easy due to the smooth, hard surfaces. Due to the geometry of the valves, the coming together of cold fresh air and moist warm barn air is displaced to areas in which no negative effects on functionality will occur. This ensures a significant reduction in the formation of ice, in particular at low temperatures.



Type	Air flow (m ³ /h)			Traction (N)		Stroke way (mm)		Article no.	
	10 Pa	20 Pa	30 Pa	a.o.	a.c.	a.o.	a.c.	a.o.	a.c.
2100	2,100	3,000	3,800	35 N	55 N	535	480	328400	328410
Wind deflection hoods								209219910	
Wind deflection hoods incl. light filter								209219912	
Light filter wall mounting								LF05190760	
Bird protective grid								328490	
Wall guides ZEW Profi a.o./a.c. (set of 10)								9-201990800	

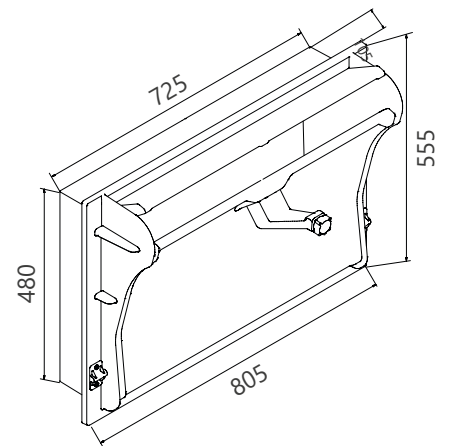
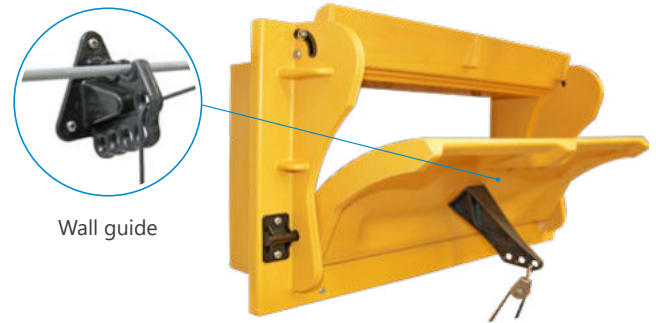
The inlet is suitable for electro cylinders: V5, V7. For optimum use of the delay setting, we strongly recommend the wall guide. We also recommend the 8mm pull rod for opening and closing the inlets. a.o. = automatic opening; a.c. = automatically closing; the traction already includes a deflector. Please append a "V" to the order number for inlets including (bird) protective grids (000000V).

Packaging information: »ZEW« Professional 2100 = 24 units. / pal. (W x L x H/0,5 x 2.25 x 2.0 m).

»ZEW« Professional 2900 wall air inlets

The »ZEW« Professional 2900 wall air inlets are the largest of the »ZEW« Professional series and differ from the other two variants in terms of air capacity and installation size.

The wall air inlets in this range comprise insulated polyurethane rigid foam. Cleaning is easy due to the smooth, hard surfaces. Due to the geometry of the valves, the coming together of cold fresh air and moist warm barn air is displaced to areas in which no negative effects on functionality will occur. This ensures a significant reduction in the formation of ice, in particular at low temperatures.



Type	Air flow (m ³ /h)			Traction (N)		Stroke way (mm)		Article no.	
	10 Pa	20 Pa	30 Pa	a.o.	a.c.	a.o.	a.c.	a.o.	a.c.
2900	2.800	4.000	5.000	25 N	60 N	635	480	201290010	201291010
Wind deflection hoods								209299910	
Wind deflection hoods incl. light filter								209299912	
Light Filter								LF06110830	
Bird protective grid								201290790	
Wall guides ZEW Profi a.o./a.c. (set of 10)								9-201990800	

The inlet is suitable for electro cylinders: V5, V7. For optimum use of the delay setting, we strongly recommend the wall guide. We also recommend the 8mm pull rod for opening and closing the inlets. a.o. = automatic opening; a.c. = automatically closing; the traction already includes a deflector. Please place a »V« instead of »0« at the third last digit in the order number when it comes to inlets including bird protective grids (000000V).

Packaging information: »ZEW« Professional 2900 = 32 units. / pal. (W x L x H/0.83 x 2.3 x approx. 2.0 m). *LLB 180 = air conduction sheet, depth: 180 mm.

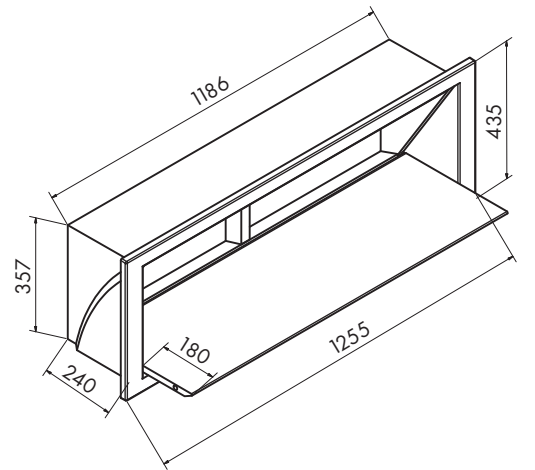
»ZEW« 5000 wall air inlets

The »ZEW« fresh air inlets can be used in many applications with straight flaps for integration into walls. The design facilitates fine dosing and an almost waste-free supply of fresh air. There is an approx. 50 mm wide flange around the frame to facilitate integration into the wall. The mount for the flap is low-wear and functionally reliable. The stepless control takes place via a central servomotor.

Material: Resistant and well-insulated polyurethane rigid foam (CFC-free).



»ZEW« 5000 a.o.

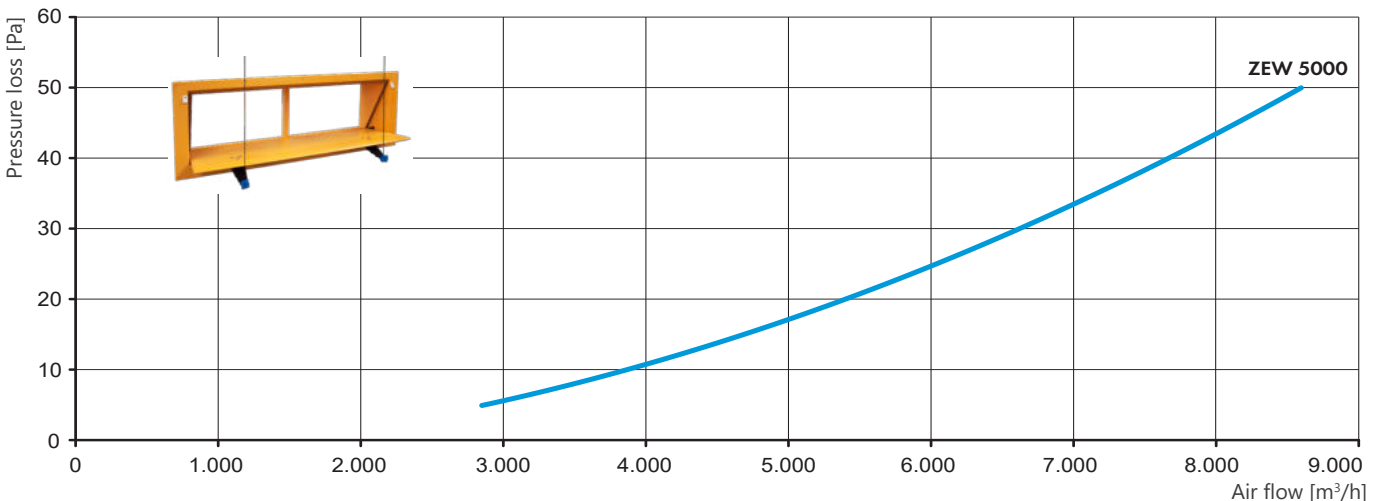


Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.
	10 Pa	20 Pa	30 Pa			
»ZEW« 5000 a.o.	3,900	5,400	6,600	35	400	326000
»ZEW« 5000 a.c.	3,900	5,400	6,600	60	280	326100
Bird protective grid						335400

The inlet is suitable for electro cylinders: V4, V6. For optimum use of the delay setting, we strongly recommend the wall guide. We also recommend the 8mm pull rod for opening and closing the inlets. a.o. = automatic opening; a.c. = automatically closing; the traction already includes a deflector. Please append a »V« to the order number for inlets including (bird) protective grids (00000V).

Packaging information: »ZEW« 5000 = 21 units / pal. (W x L x H / 1.3 x 1.3 x approx. 2.2 m). From a 1,000 mm shutter width, two shutter levers will be supplied and so two wall guides will be correspondingly required.

»ZEW« 5000 wall air inlet air capacities





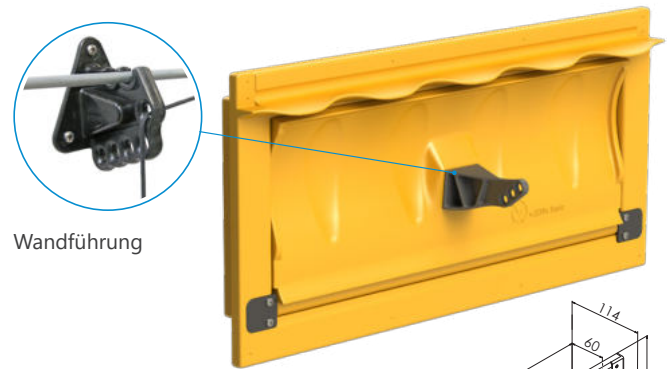
»ZEW« basic 1600 wall air inlets

Developed according to the latest technology, the wall inlet »ZEW« basic 1600 offers decisive advantages compared to standard inlets available on the market. »ZEW« basic 1600's special wavy shape optimizes the airflow as well as the throwing range with minimum ventilation.

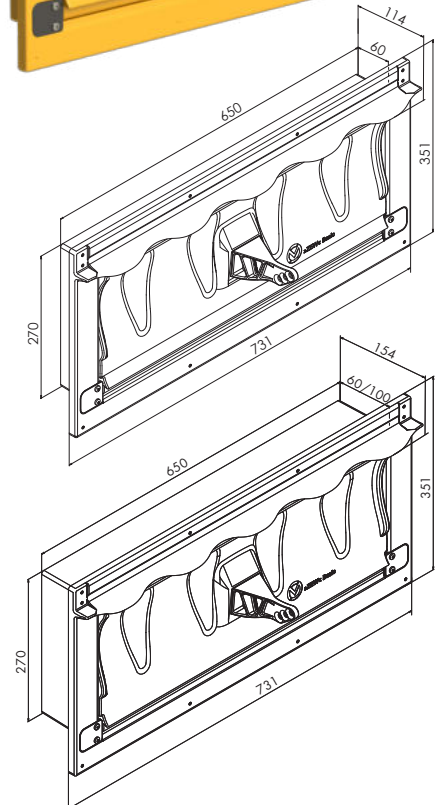
Additionally to the wave contour, the air entrance is improved by an integrated air inlet nozzle. This nozzle increases the volume flow and thus contributes to a reduction in energy costs.

Another feature is the special drip edge in combination with a seal at the flap's lower end. This secures that even at temperatures below freezing point the flap does not freeze due to condensate.

Material: Resistant and well-insulated polyurethane rigid foam (CFC-free).



Wandführung



»ZEW« basic 1600 s.s. (60 mm)

»ZEW« basic 1600 s.s. (100 mm)



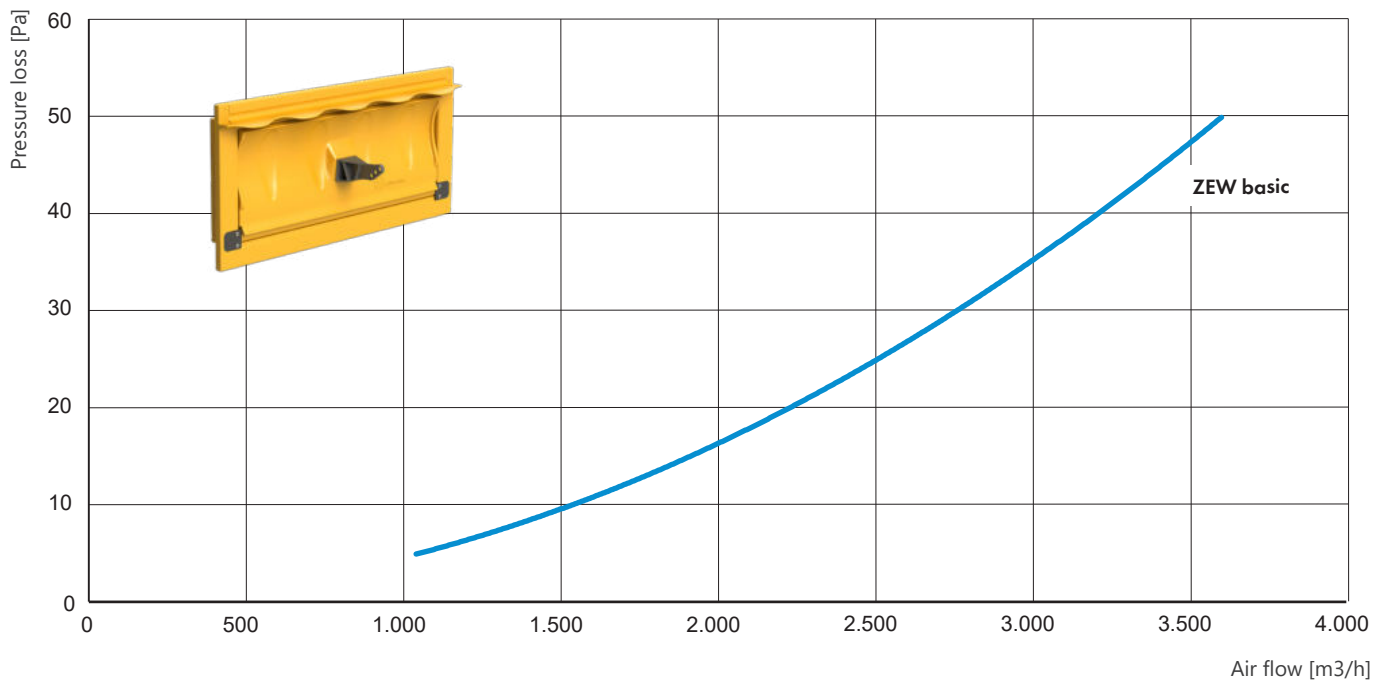
Product video

Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.	
	10 Pa	20 Pa	30 Pa			standard	with bird protective grid
a.c. (60 mm)	1.600	2.300	2.800	15	425 mm	202160010	202160110
a.o. (60 mm)	1.600	2.300	2.800	15	420 mm	202160000	202160100
a.c. (100 mm)	1.600	2.300	2.800	15	425 mm	202161010	202161110
a.o. (100 mm)	1.600	2.300	2.800	15	420 mm	202161000	202161100
Wind deflection hoods						209219910	
Wind deflection hoods incl. light filter						209219912	
Bird protective grid incl. fixing set						202160790	
Air conduction sheets incl. fixing set						202160008	
Wall guides						9-201990800	

The inlet is suitable for electro cylinders: V4, V6. For optimum use of the delay setting, we strongly recommend the wall guide. We also recommend the 8mm pull rod for opening and closing the inlets. a.o. = automatic opening; a.c. = automatically closing; the traction already includes a deflector.

Packaging information:
 »ZEW« basic 1600 (60 mm) = 120 units / pal. (0.78 x 2.3 x approx. 2.25 m)
 »ZEW« basic 1600 (100 mm) = 84 units / pal. (0.78 x 2.3 x approx. 2.25 m)

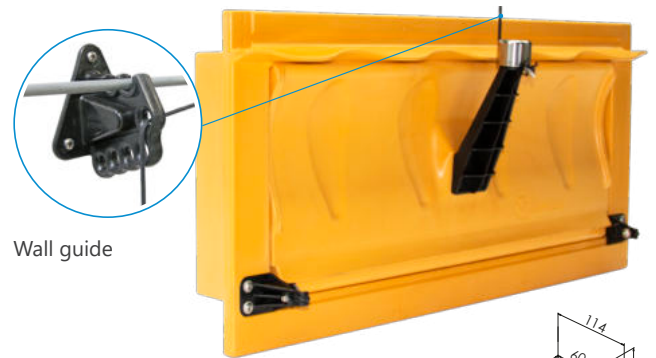
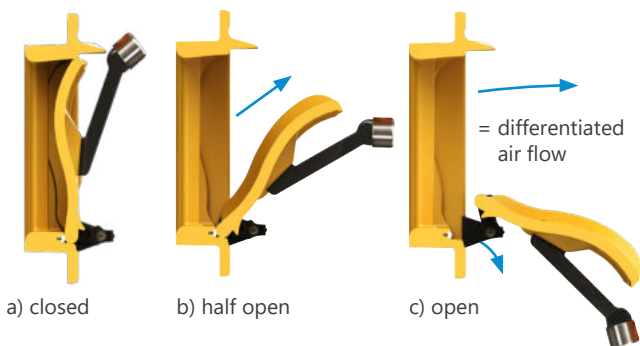
Air capacities of »ZEW« basic 1600 wall air inlets



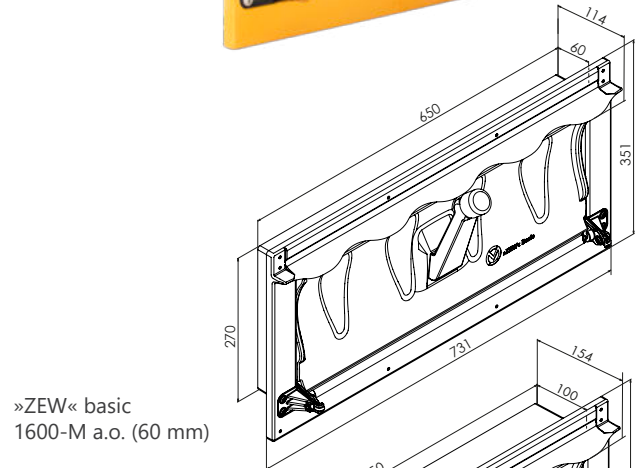
»ZEW« basic 1600-M wall air inlets

The wall inlet ZEW Basic 1600-M offers a differentiated airflow versus the ZEW Basic 1600. Due to the special position of the flap, it is possible to divert part of the air flow directly downwards. The air is fed directly into the animal area above and below the flap, through the two-part guide. This is particularly advantageous in summer. The flap opening can be infinitely adjusted via the pull rope.

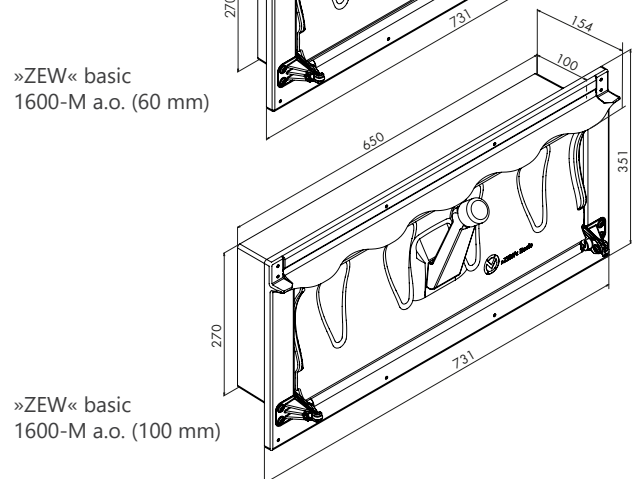
Material: Resistant and well-insulated polyurethane rigid foam (CFC-free).



Wall guide



»ZEW« basic 1600-M a.o. (60 mm)



»ZEW« basic 1600-M a.o. (100 mm)

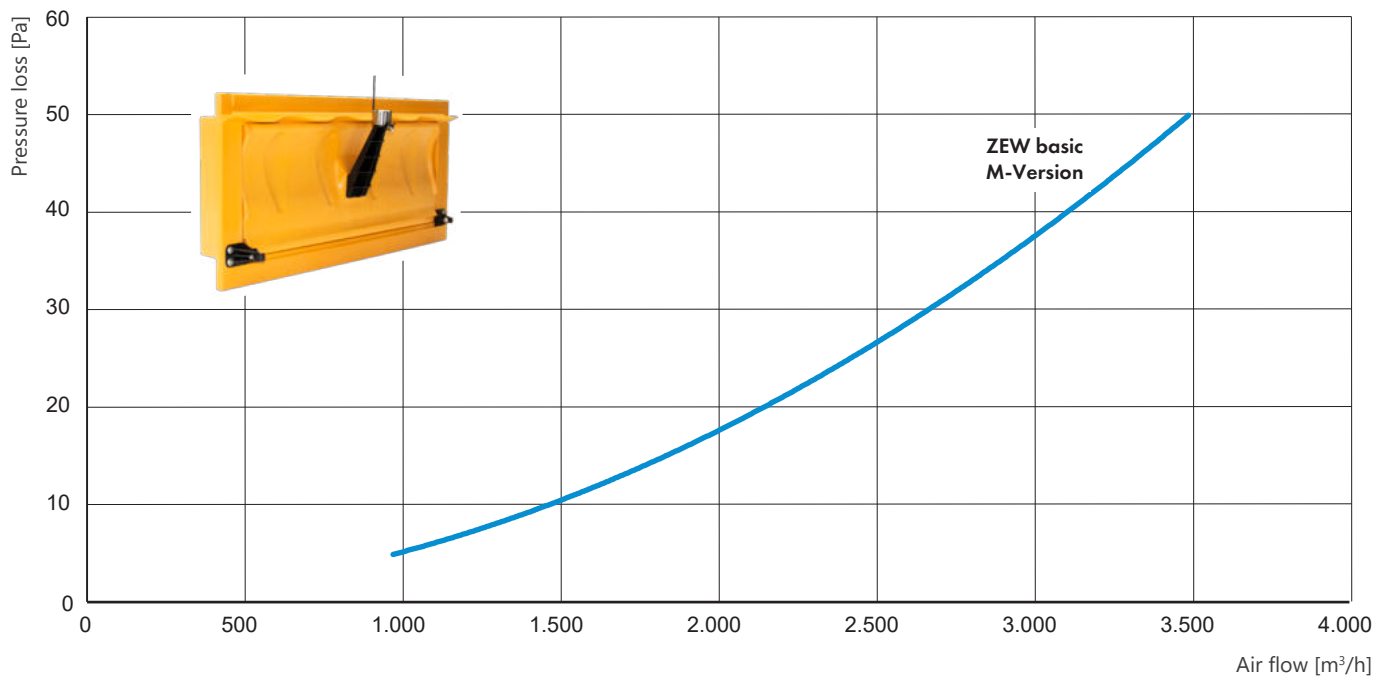
Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.	
	10 Pa	20 Pa	30 Pa			standard	with bird protective grid
a.o. M-Version (60 mm)	1.500	2.200	2.700	15	440 mm	202160020	202160120
a.o. M-Version (100 mm)	1.500	2.200	2.700	15	440 mm	202161020	202161120
Wind deflection hoods							209219910
Wind deflection hoods incl. light filter							209219912
Bird protective grid incl. fixing set							202160790
Wall guides							9-201990800

The inlet is suitable for electro cylinders: V4, V6. For optimum use of the delay setting, we strongly recommend the wall guide. We also recommend the 8mm pull rod for opening and closing the inlets. a.o. = automatic opening; a.c. = automatically closing; the traction already includes a deflector.

Packaging information:

»ZEW« basic 1600-M (60 mm) = 120 units / pal. (W x L x H/0.78 x 2.3 x approx. 2.25 m)
 »ZEW« basic 1600-M (100 mm) = 84 units / pal. (W x L x H/0.78 x 2.3 x approx. 2.25 m)

Air capacities of »ZEW« basic 1600-M wall air inlets



Wall inlets »ZEW« Flatwave 2600

The »ZEW« Flatwave 2600 compact wall inlet convinces due to its flat, compact construction. The flap can be opened and closed variably in vertical direction. This offers a benefit if the projection of a pivoting fresh air inlet into the room is not wanted.

The frame and the flap consist of heat-insulated polyurethane — the adjustable air conduction lamellas of UV-stabilized PVC.

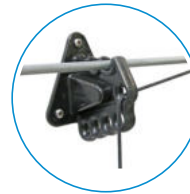
With this wall inlet the volume flow and air guidance are decoupled. Four individually adjustable air conduction lamellas provide an ideal air guidance. Depending on the opening of the flap, the volume flow is dosed. Thanks to its wavy structure, a high throwing range of the „heavy“ fresh air is also guaranteed during cold outdoor temperatures (winter position). Furthermore, the air flow is already directed slightly upwards when the flap is opened just a little. During summer, the flap allows an intake of warm fresh air along the wall downwards when open 75% or more. Thanks to the intake nozzle, integrated in the frame, a nearly loss-free intake of air into the inlet is possible.

The integrated seal in combination with the lateral flap guidance embedded in the frame guarantee high tightness.

Material

Frame/flap: Polyurethane rigid foam, Air conduction lamellas: UV-stabilized PVC

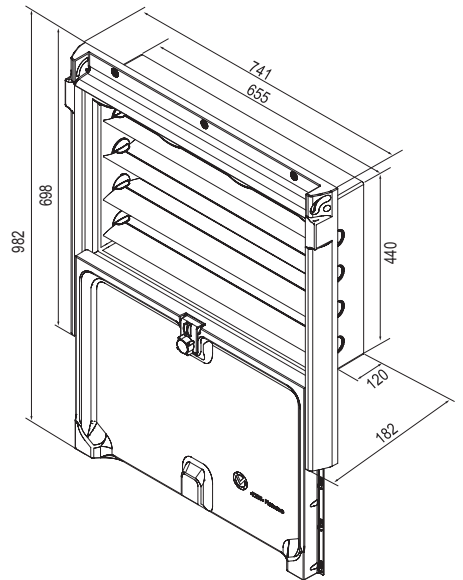
Wall guide



Compact design



Product video



Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.	
	10 Pa	20 Pa	30 Pa			standard	with bird protective grid
a.o.	2.600	3.800	4.600	40	430	202260000	202260100
Wind deflection hoods							209219910
Wind deflection hoods incl. light filter							209219912
Light filter wall mounting							LF05190760
Air conduction sheets 180 mm							202260008
Bird protective grid							202260790
Wall guides							9-201990800

The inlet is suitable for electro cylinders: V4, V6.

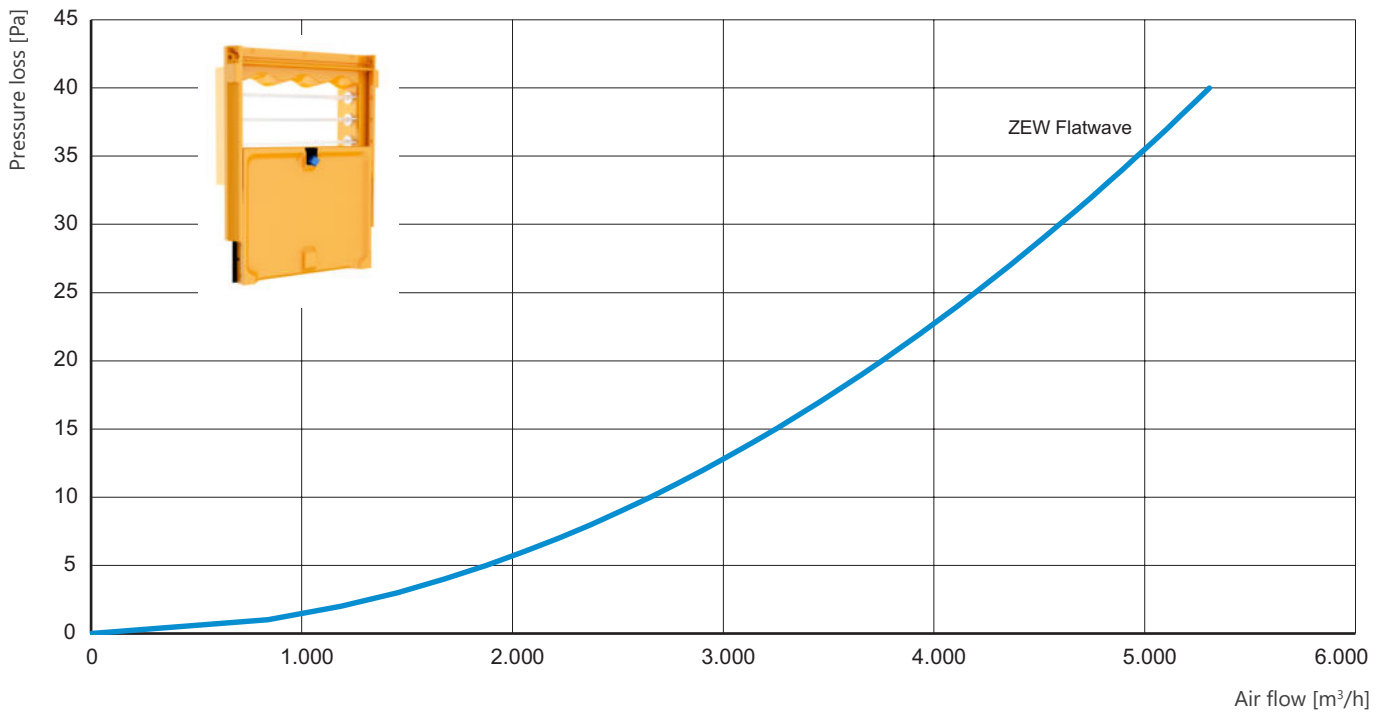
It is recommended to use the 8mm pull rod for opening and closing the inlets.

a.o. = automatic opening; a.c. = automatically closing; the traction already includes a deflector.

Packaging information:

»ZEW« Flatwave 2600 = 30 units / pal. (W x L x H/0.72 x 2.3 x approx. 2.2 m)

Air flow »ZEW« Flatwave 2600 wall air inlet





»AIRSTEP«® 5000 multi wall air inlets

The wall integration inlet for ideal intake of larger air flows. When closed it is airtight. Insulation prevents thermal losses, condensation and, where applicable, icing. In particular in winter, when reduced air flow rates apply over extended periods in conjunction with increased negative pressure.

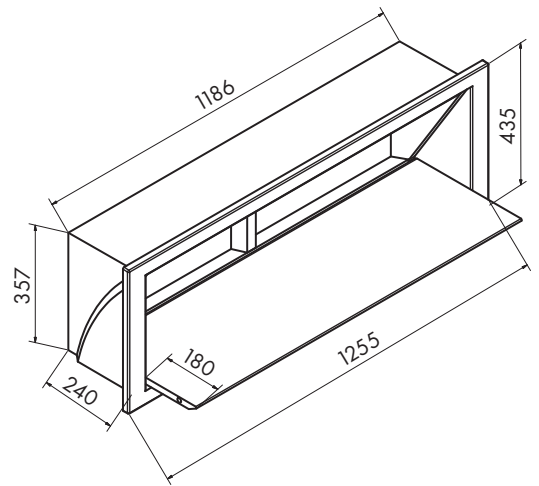
The inlet is available in »2-fold«, »3-fold«, »4-fold« and »5-fold« versions; automatically closing and automatically opening. (approx. 50 mm flange width)

Material: Resistant and well-insulated polyurethane rigid foam (CFC-free).



»AIRSTEP«® 5000/3 s. ö.

»AIRSTEP«® 5000/5 s. ö.



Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.
	10 Pa	20 Pa	30 Pa			
AIRSTEP® 5000/2 a.o.	6,800	9,100	11,200	80	400	340000
AIRSTEP® 5000/3 a.o.	10,100	13,900	17,100	120	400	340010
AIRSTEP® 5000/4 a.o.	13,400	18,800	23,000	160	400	340020
AIRSTEP® 5000/5 a.o.	17,000	23,800	29,000	200	400	340030
AIRSTEP® 5000/2 a.c.	6,800	9,100	11,200	60	400	341000
AIRSTEP® 5000/3 a.c.	10,100	13,900	17,100	90	400	341010
AIRSTEP® 5000/4 a.c.	13,400	18,800	23,000	120	400	341020
AIRSTEP® 5000/5 a.c.	17,000	23,800	29,000	150	400	341030
»AIRSTEP«® 5000/2 bird protective grids						335410
»AIRSTEP«® 5000/3 bird protective grids						335420
»AIRSTEP«® 5000/4 bird protective grids						335430
»AIRSTEP«® 5000/5 bird protective grids						335440

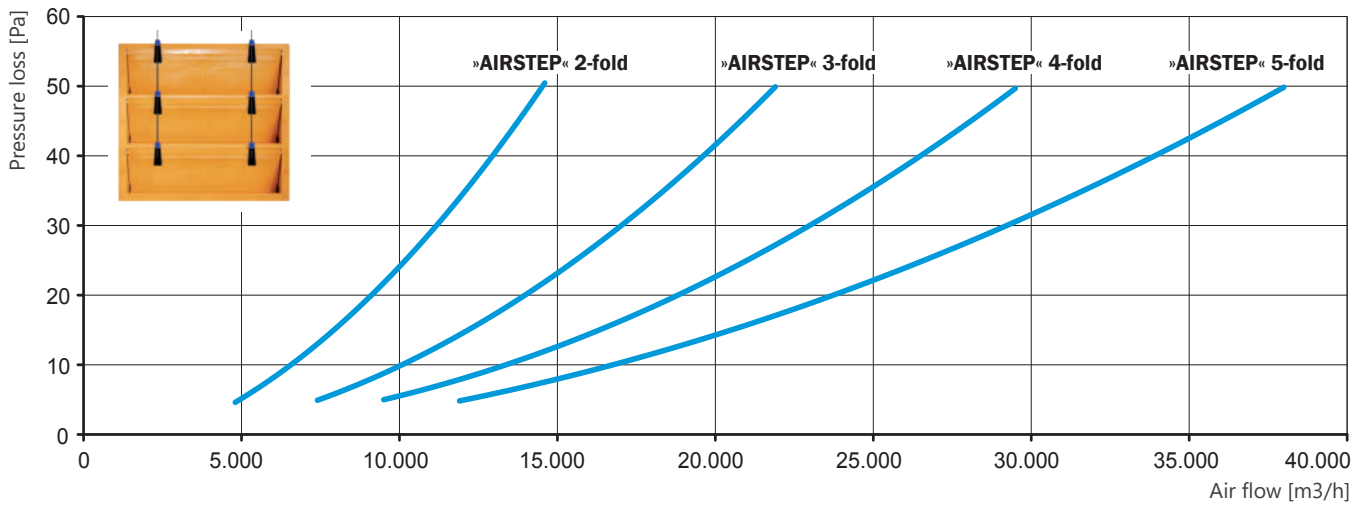
The inlet is suitable for electro cylinders: V4, V6
 a.o. = automatic opening; a.c. = automatically closing; the traction already includes a deflector.
 Please append a "V" to the order number for inlets including (bird) protective grids (000000V)

Packaging information:
 »AIRSTEP«® 5000/2 = 8 units / pal. (W x L x H/0.8 x 1.3 x approx. 2.4 m)
 »AIRSTEP«® 5000/3 = 8 units / pal. (W x L x H/1.3 x 1.3 x approx. 2.4 m)
 »AIRSTEP«® 5000/4 = 8 units / pal. (W x L x H/1.3 x 1.3 x approx. 2.4 m)
 »AIRSTEP«® 5000/5 = 8 units / pal. (W x L x H/1.3 x 1.9 x approx. 2.4 m)

Two wall guides are required.

i Accessories / pulley etc. see page 2.23 – 2.26

Air capacities of »AIRSTEP«[®] multi wall air inlets





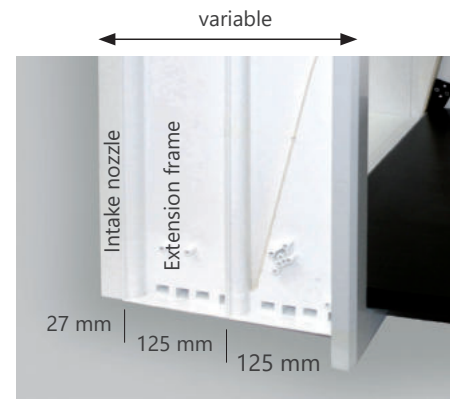
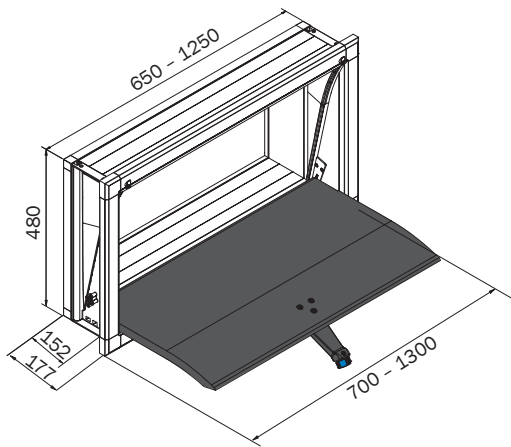
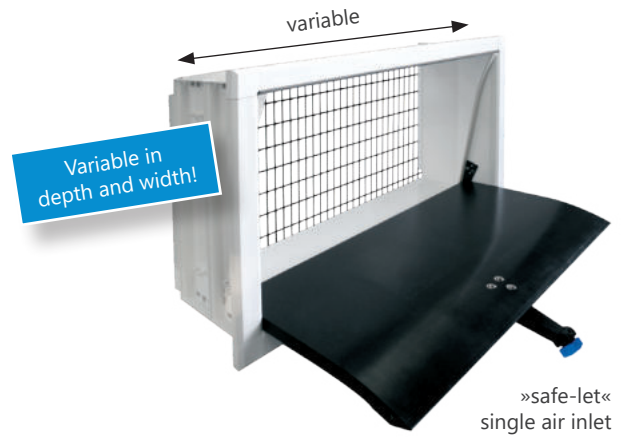
»safe-let« wall air inlets

Wall air inlet for flexible and versatile application. The inlet can be supplied tailored to the building in any desired size due to its variable width dimensions.

Material:

Frame: PVC

Shutter: Resistant and well-insulated polyurethane rigid foam.



Extension frame for all wall thicknesses

Type	Air flow (m ³ /h)			Traction (N)		Stroke way (mm)		Article no.	
	10 Pa	20 Pa	30 Pa	a.o.	a.c.	a.o.	a.c.	a.o.	a.c.
600	2,900	4,200	5,200	35	85	630	280	SF1110600	SF1120600
800	3,800	5,500	6,800	40	80	630	280	SF1110800	SF1120800
1000	4,700	6,700	8,300	45	75	630	280	SF1111000	SF1121000
1200	5,500	7,900	9,700	50	70	630	280	SF1111200	SF1121200
Bird protective grids »safe-let« 600								SF1100690V	
Bird protective grids »safe-let« 800								SF1100890V	
Bird protective grids »safe-let« 1000								SF1101090V	
Bird protective grids »safe-let« 1200								SF1101290V	
Extension frame »safe-let« 600								SF1100600	
Extension frame »safe-let« 800								SF1100800	
Extension frame »safe-let« 1000								SF1101000	
Extension frame »safe-let« 1200								SF1101200	

»safe-let« a.o. (automatically opening):
The inlet is suitable for electro cylinders: V5, V7.

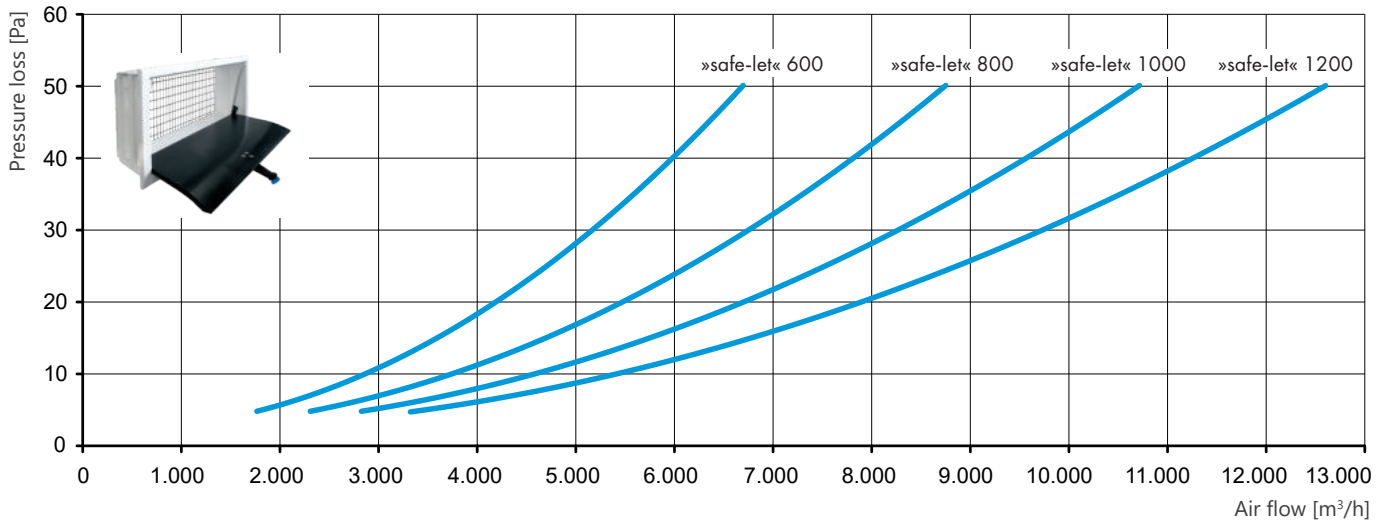
»safe-let« a.c. (automatic closing):
The inlet is suitable for electro cylinders: V4, V6. For optimum use of the delay setting, we strongly recommend the wall guide. We also recommend the 8mm pull rod for opening and closing the inlets.

The traction already includes a deflector.
Please append a »V« to the order number for inlets including (bird) protective grids (000000V)

Packaging information:
 »safe-let« 600 = 18 units / pal. (W x L x H/0.8 x 1.2 x approx. 2.25 m)
 »safe-let« 800 = 18 units / pal. (W x L x H/1.0 x 1.2 x approx. 2.25 m)
 »safe-let« 1000 = 18 units / pal. (W x L x H/1.2 x 1.2 x approx. 2.25 m)
 »safe-let« 1200 = 18 units / pal. (W x L x H/1.2 x 1.3 x approx. 2.25 m)

i Light filter wall mounting see page 2.34

»safe-let« wall air inlet air capacities

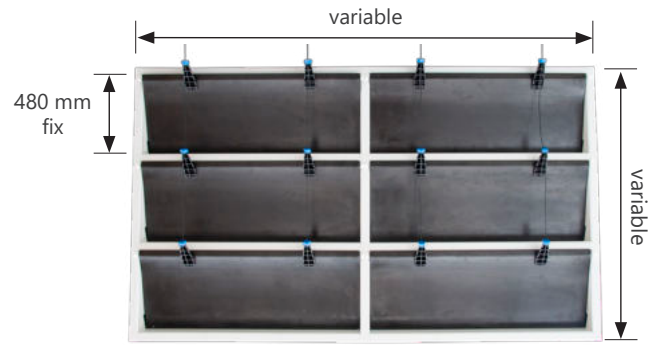




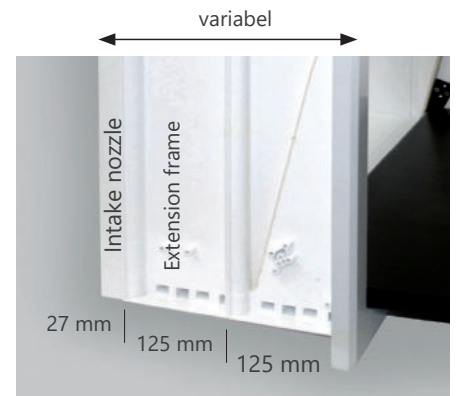
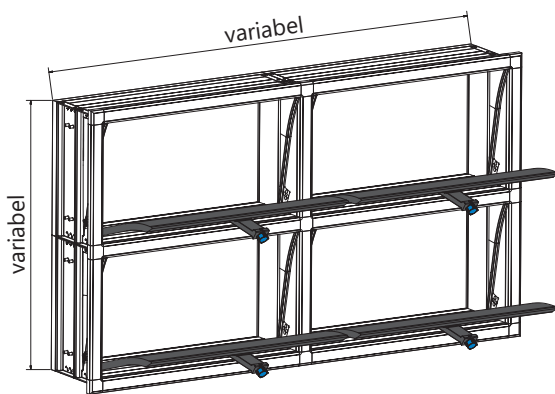
»safe-let« multi wall air inlets

For ideal intake of larger air flows. Wall air inlet for flexible and versatile application. The inlet can be supplied tailored to the building in any desired size due to its variable width dimensions.

Material:
 Frame: PVC
 Shutter: Resistant and well-insulated polyurethane rigid foam.



»safe-let« multi air inlet 1,200/2/3



Extension frame for all wall thicknesses

Type	Elements	Air flow (m ³ /h)			Traction (N)		Stroke way (mm)		Article no.	
		10 Pa	20 Pa	30 Pa	a.o.	a.c.	a.o.	a.c.	a.o.	a.c.
1200/2		10,300	14,700	18,000	100	130	630	280	SF2111200	SF2121200
1200/3		14,900	21,300	26,200	150	185	630	280	SF3111200	SF3121200
1200/4		19,400	27,800	34,200	200	240	630	280	SF4111200	SF4121200
1200/2/2		20,100	28,800	35,400	200	260	630	280	SF2211200	SF2221200
1200/2/3		30,900	44,100	54,300	300	370	630	280	SF3211200	SF3221200
Bird protective grids »safe-let« 1200									SF1101290V	
Extension frame »safe-let« 1200									SF1101200	
Air conduction sheets »safe-let« 1200									SF111200	

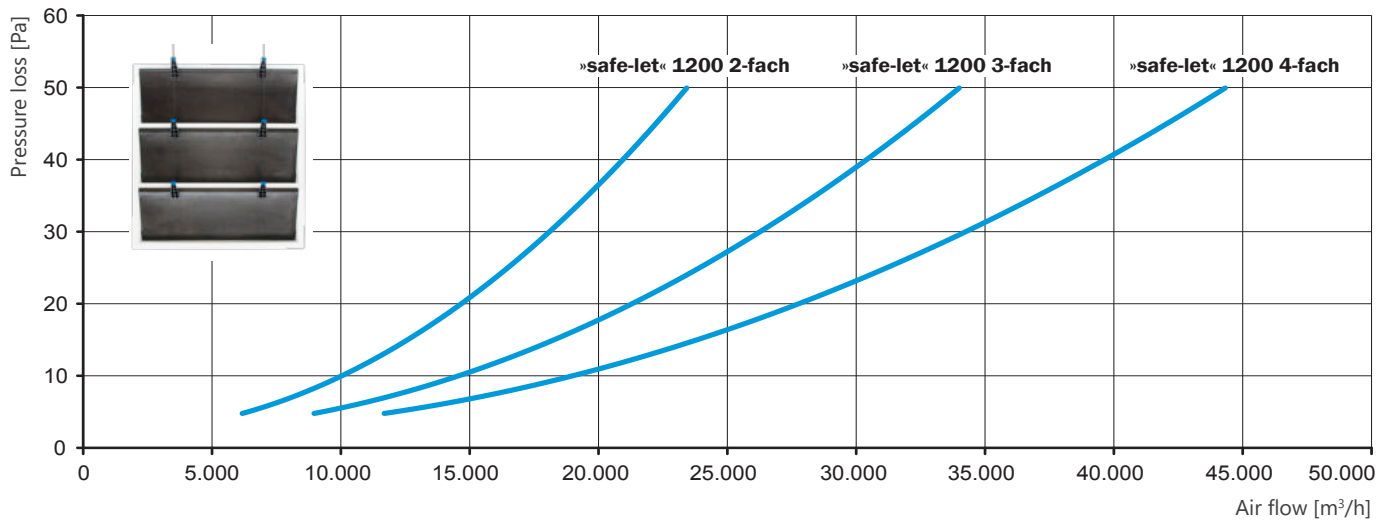
»safe-let« a.o. multi wall air inlets (automatically opening):
 The inlet is suitable for electro cylinders: V5, V7.
 »safe-let« multi wall air inlets a.c. (automatic closing):
 The inlet is suitable for electro cylinders: V4, V6. The traction already includes a deflector

Packaging information:
 »safe-let« 1200/2 = 9 units / pal. (W x L x H/1.2 x 1.3 x approx. 2.25 m)
 »safe-let« 1200/3 = 9 units / pal. (W x L x H/1.3 x 1.9 x approx. 2.25 m)
 »safe-let« 1200/4 = 9 units / pal. (W x L x H/1.3 x 2.4 x approx. 2.25 m)
 »safe-let« 1200/2/2 = 9 units / pal. (W x L x H/1.2 x 2.6 x approx. 2.25 m)
 »safe-let« 1200/2/3 = 9 units / pal. (W x L x H/1.8 x 2.6 x approx. 2.25 m)

From a 1,000 mm shutter width, two shutter levers will be supplied and so two wall guides will be correspondingly required.

Light filter wall mounting see page 2.34

»safe-let« multi wall air inlet air capacities



MWI wall air inlets

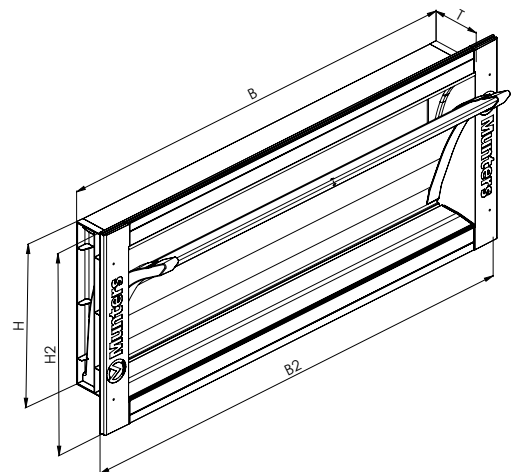
The MWI wall air inlets are designed for warm climates. They are extremely flexible and versatile and available in three different widths and two different heights. The frame and curved flap are made of an UV-resistant combination of PVC and PP materials to ensure a long life. The MWI can be cleaned with a high-pressure cleaner. A galvanized bird grid is already integrated. The upper and lateral sealings reduce leakages to a minimum. The MWI is a well balanced mix between budget, performance and efficiency.

Material: combination of UV-resistant PVC and PP
 Color: white and black



Type	Width (W)	Height (H)
MWI 3408	864	210
MWI 3413	864	330
MWI 4108	1,040	210
MWI 4113	1,040	330
MWI 4408	1,118	210
MWI 4413	1,118	330

Sizes in mm



Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.	
	10 Pa	20 Pa	30 Pa			white	black
MWI 3408	1,770	2,491	3,082	20	290	1-579203341	1-579203342
MWI 3413	2,742	3,830	4,671	20	470	1-579203339	1-579203340
MWI 4108	2,175	3,084	3,724	20	290	1-579203337	1-579203338
MWI 4113	3,316	4,716	5,721	30	470	1-579203335	1-579203336
MWI 4408	2,277	3,158	3,867	20	290	1-579203333	1-579203334
MWI 4413	3,597	5,026	6,155	40	470	1-579203331	1-579203332

Connection sets (6 units)

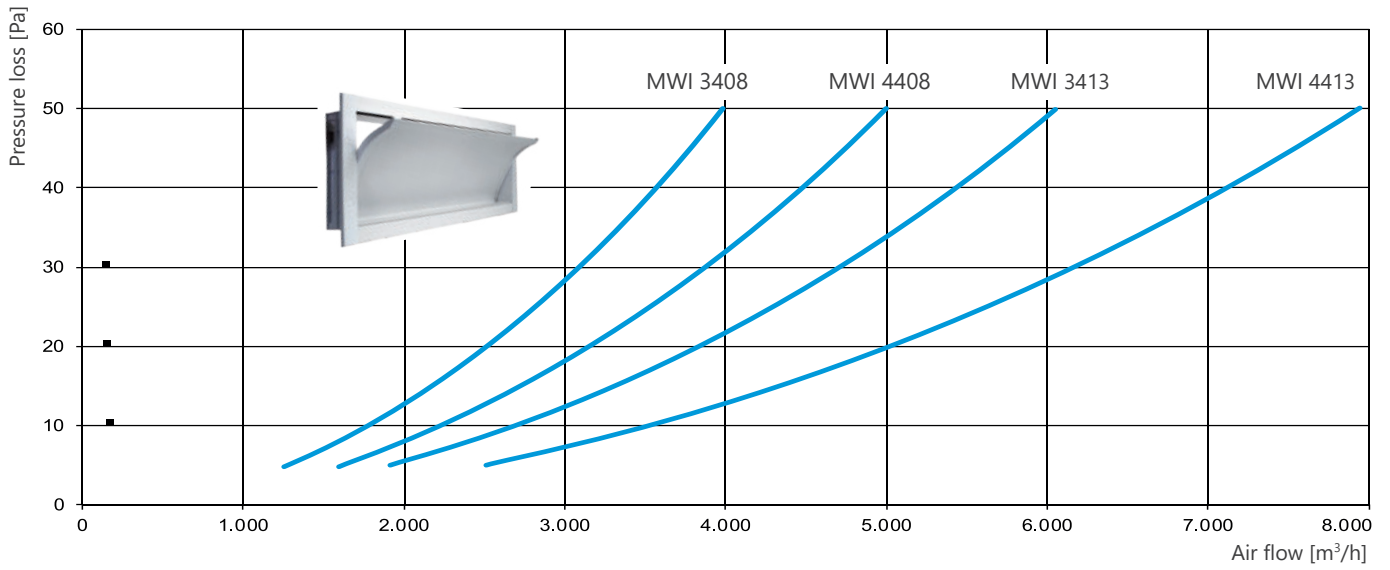
299994200

The MWI 3413 and 4413 in white are in stock as standard.
 All inlets only as pallet purchase.

Packaging information:

- MWI 4413 = 6 units / box (W x L x H/1.12 x 0.38 x approx. 0.38 m)
- MWI 4408 = 6 units / box (W x L x H/1.10 x 0.33 x approx. 0.38 m)
- MWI 4113 = 6 units / box (W x L x H/1.10 x 0.38 x approx. 0.38 m)
- MWI 4108 = 6 units / box (W x L x H/1.10 x 0.33 x approx. 0.38 m)
- MWI 3413 = 6 units / box (W x L x H/1.10 x 0.38 x approx. 0.38 m)
- MWI 3408 = 6 units / box (W x L x H/1.10 x 0.33 x approx. 0.38 m)

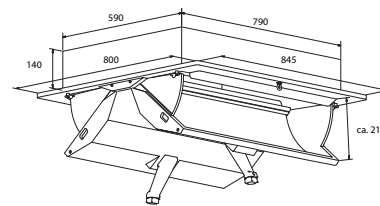
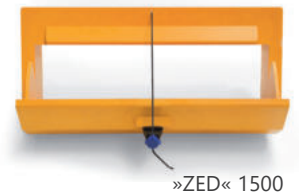
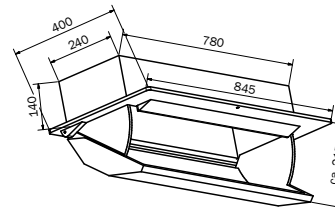
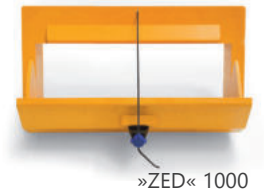
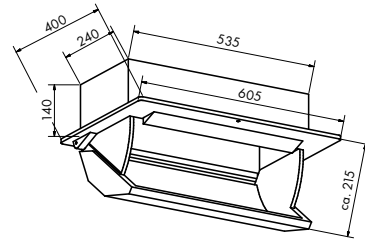
MWI wall air inlet air capacities





»ZED« ceiling air inlets 1000 / 1500 / 1500 double

»ZED« ceiling fresh air inlets for draft-free inflow of fresh air from the roof space to the stable. A flange sits around the inlet and serves as a frame in the suspended ceiling. The mount for the flap is attached at the sides, is low-wear and functionally reliable. It opens downwards, control takes place by means of release.

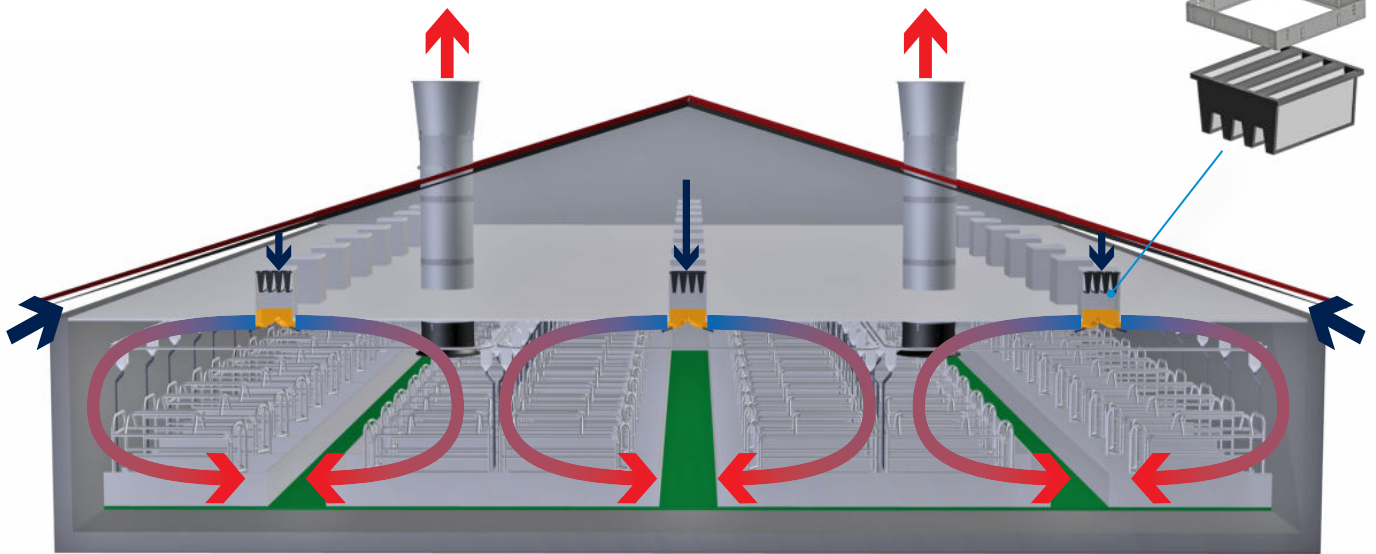
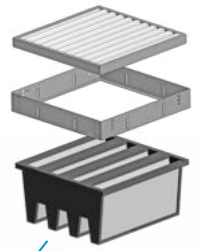


Type	Air flow (m ³ /h)			Pulling forces (N)	Stroke way (mm)	Article no.
	10 Pa	20 Pa	30 Pa			
»ZED« 1000 a.o.	900	1,300	1,600	15	220	300000
»ZED« 1500 a.o.	1,200	1,800	2,200	20	220	301000
»ZED« 1500 double a.o.	2,600	3,800	4,500	2 x 20	220	301100

The inlet is suitable for electro cylinders: V4, V6
a.o. = automatic opening

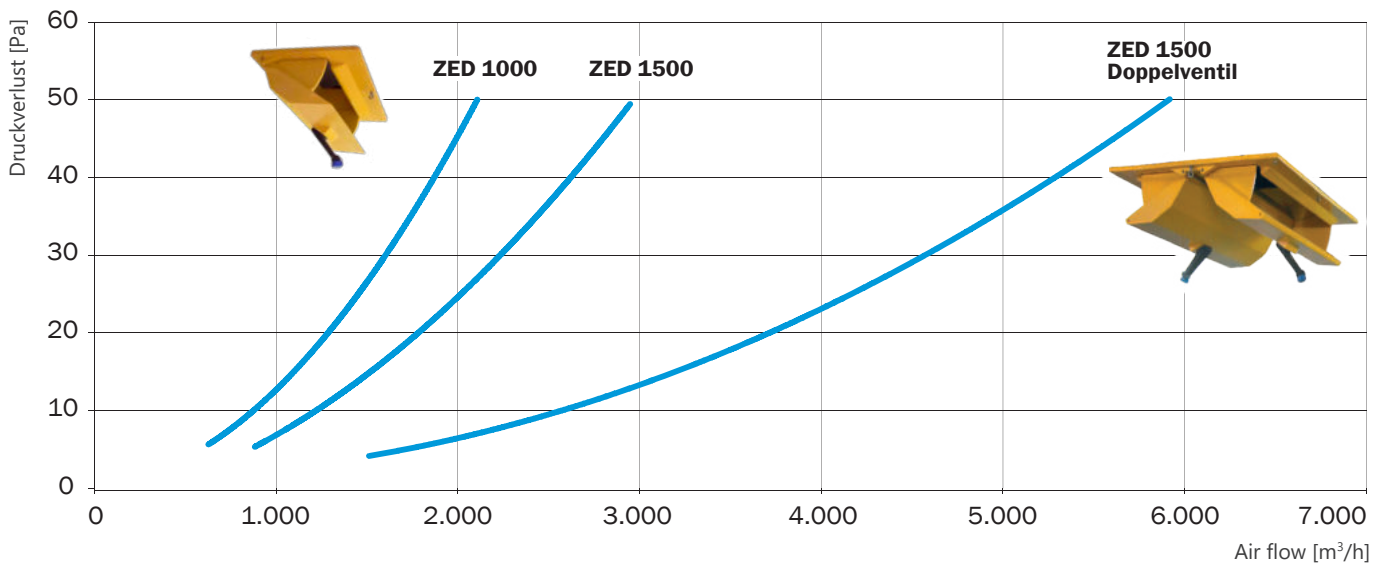
Packaging information:
ZEW 1000 = 42 units / Pal. (W x L x H/1.3 x 1.3 x approx. 2.1 m)
ZED 1500 = 28 units / pal. (W x L x H/1.3 x 1.3 x approx. 2.2 m)
ZED 1500 double inlet = 8 units / pal. (W x L x H/1.0 x 1.0 x approx. 2.20 m)

AirProTec® filter elements
on page 2.58



Air flow »ZED« 1500 double inlet

Ceiling air inlet capacities »ZED« 1000 / 1500 / 1500
double inlet



»ZED« Professional 1800 ceiling air inlets

»ZED« Professional 1800 fresh air ceiling inlets with nozzle structure for high air output velocity. The optimized shutter contour ensures that the air flow is always directed at the ceiling even at full aperture and that the air flow is targeted and assuredly guided. This ensures that no draft is created. With a small aperture during winter the nozzle contour increases the air exhaust speed, so that no cold air enters the animal area. By using »ZED« Professional 1800 ceiling air inlets ice formation can be significantly reduced in extreme cold.

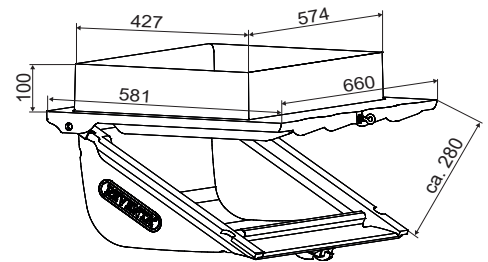
Delivery: non-assembled

Material: resistant polyurethane rigid foam (CFC-free).

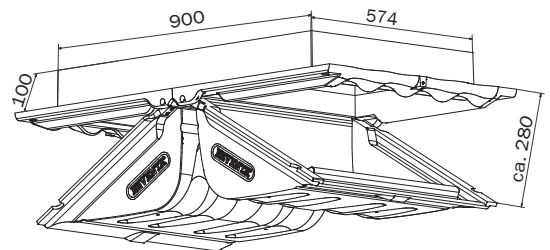


Ceiling guide with pull rod

»ZED« Professional 1800 a.o.



»ZED« Professional 1800 double inlet a.o.

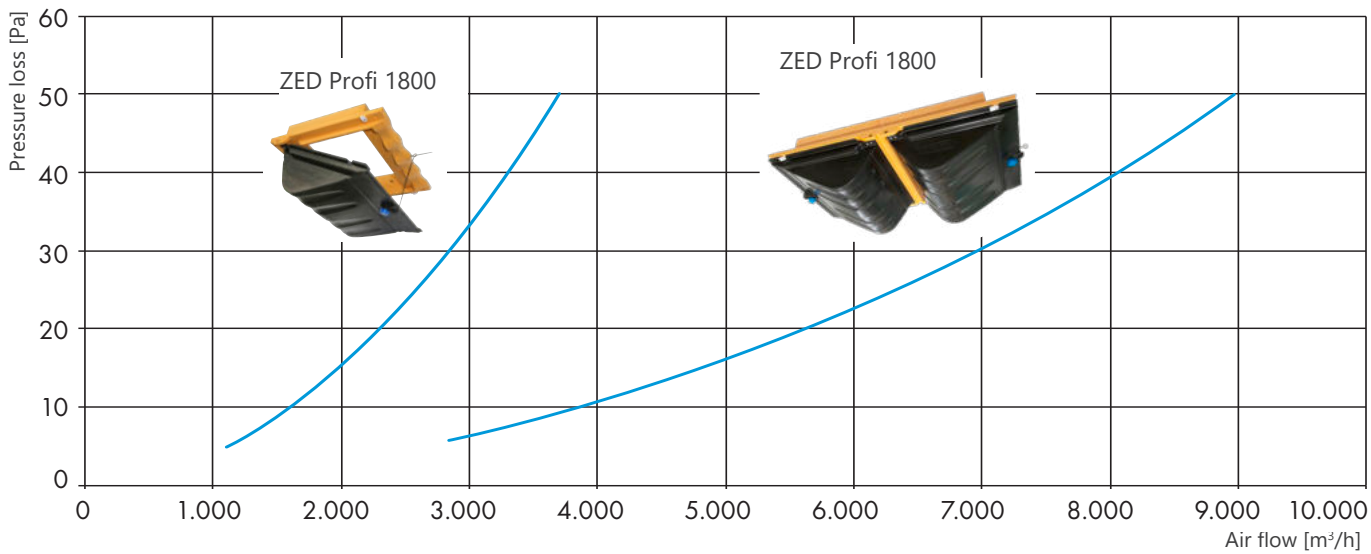


Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.
	10 Pa	20 Pa	30 Pa			
»ZED« Prof. 1800 a.o.	1,600	2,300	2,900	25	330	205180000
»ZED« Prof. 1800 a.c.	1,600	2,300	2,900	65	230	205181000
»ZED« Prof. 1800 double a.o.	3,800	5,600	7,000	2 x 25	330	205180200
Ceiling guides ZED a.o./a.c. (set of 10)						205998011

The inlet is suitable for electro cylinders: V4, V6
 a.o. = automatic opening; a.c. = automatically closing

Packaging information:
 »ZED« Professional 1800 = 30 units / pal. (W x L x H / 2.05 x 0.60 x approx. 2.20 m)
 »ZED« Professional 1800 double = 9 units / pal. (W x L x H / 1.20 x 0.80 x approx. 2.15 m)

Ceiling air inlet capacities »ZED« Professional 1800/1800 double

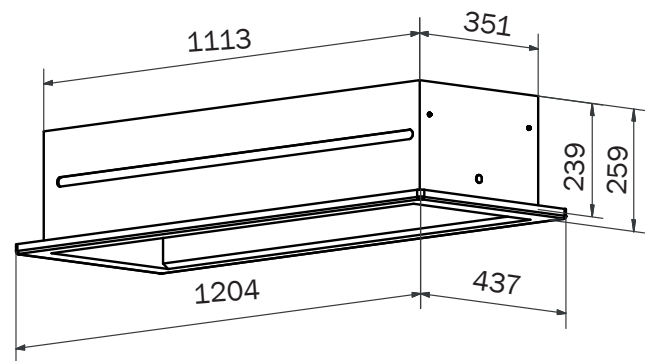


»ZED« 5000 ceiling air inlets

The »ZED« 5000 ceiling air inlet was developed partly as a useful addition to the fresh air systems of trapeze ventilation ceilings among other things. Depending on the system, high air velocity cannot be developed with large air flows with the trapeze ventilation ceiling. With the large ceiling air inlets as extensions this situation can be counterbalanced.

During opening the air velocity increases and the desired cooling effect is achieved. The large inlet »ZED« 5000 can be used in a multitude of applications and enables a low-loss intake of fresh air. There is an approx. 50 mm wide frame around the inlet to facilitate mounting.

Material: Resistant polyurethane rigid foam (CFC-free).



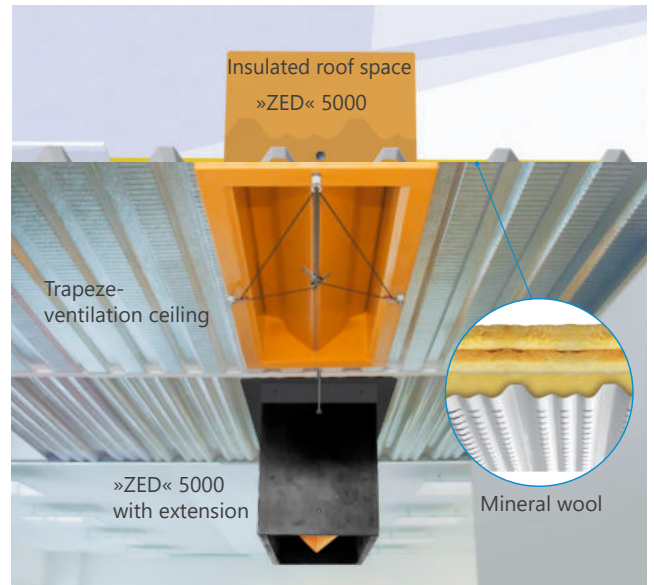
Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.
	10 Pa	20 Pa	30 Pa			
»ZED« 5000 a.o.	3,800	5,500	6,800	40	140	325000
»ZED« 5000 a.c.	3,800	5,500	6,800	80	140	325100

The inlet is suitable for electro cylinders: V4, V6
 a.o. = automatic opening; a.c. = automatically closing
 Packaging information:
 »ZED« 5000 = 21 units / Pal. (W x L x H/1.3 x 1.3 x approx. 2.1 m)

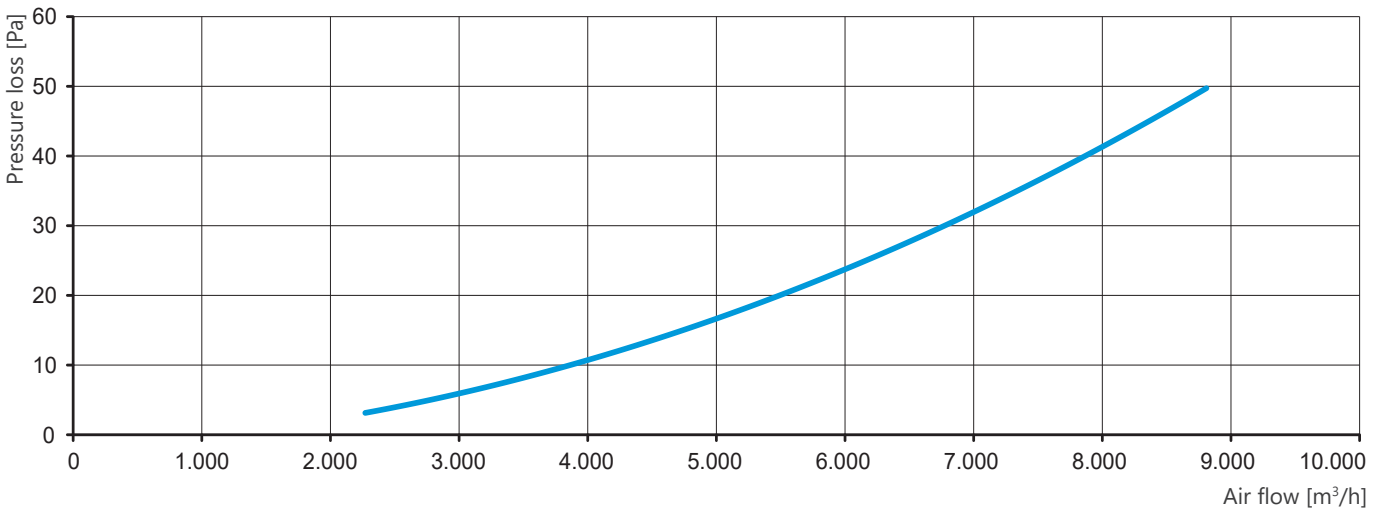
»ZED« 5000« combined diffuse system

Depending on the system, high air velocities cannot be generated with large air flows with the trapeze ventilation ceiling. With the addition of the large ceiling air inlet »ZED« 5000 this situation can be counterbalanced, because the opening increases the air velocity (pulse effect) and thereby also induces the desired cooling effect.

We additionally recommend insulating the ceiling cavity with air cushion foil, in order to prevent the roof space from heating up in the summer.



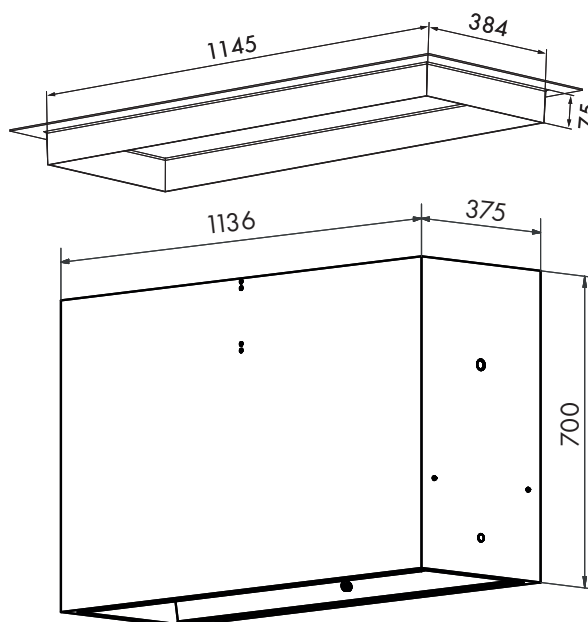
»ZED« 5000 ceiling air inlet air capacities



»ZED« 5000 ceiling air inlets with extension

The »ZED« 5000 ceiling air inlet with an extension has a highly flexible flange and can therefore be variably adjusted to the ceiling height with heights of up to 3.5 m. The »ZED« 5000« is slid into the ceiling in accordance with the ceiling height of your stable, so that the air supply angle can be optimally adjusted. The air is fed precisely into the feeding passage, is warmed here and then delivered draft-free to the animals.

Material: Resistant polyurethane rigid foam (CFC-free).



Type	Air flow (m ³ /h)			Traction (N)	Stroke way (mm)	Article no.
	10 Pa	20 Pa	30 Pa			
»ZED« 5000 extension a.o.	4,000	5,800	7,200	30	180	205500010
Flange frame						325495

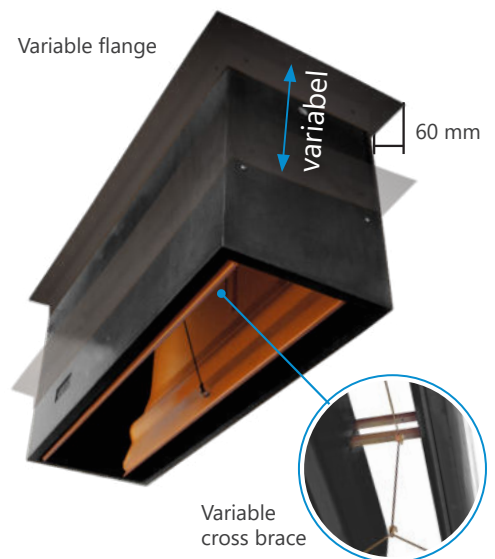
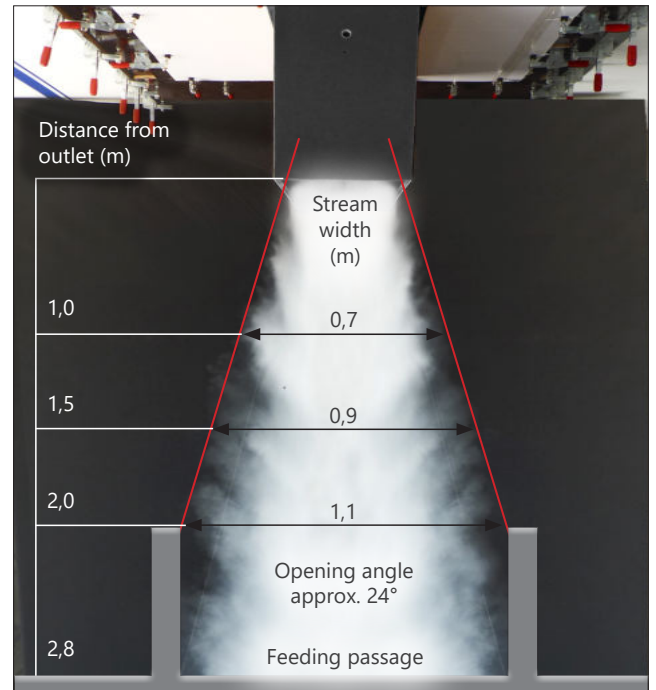
The inlet is suitable for electro cylinders: V4, V6
 a.o. = automatic opening; a.c. = automatically closing

Packaging information: »ZED« 5000 long = 9 units / Pal. (W x L x H/1.2 x 1.2 x approx. 2.3 m)

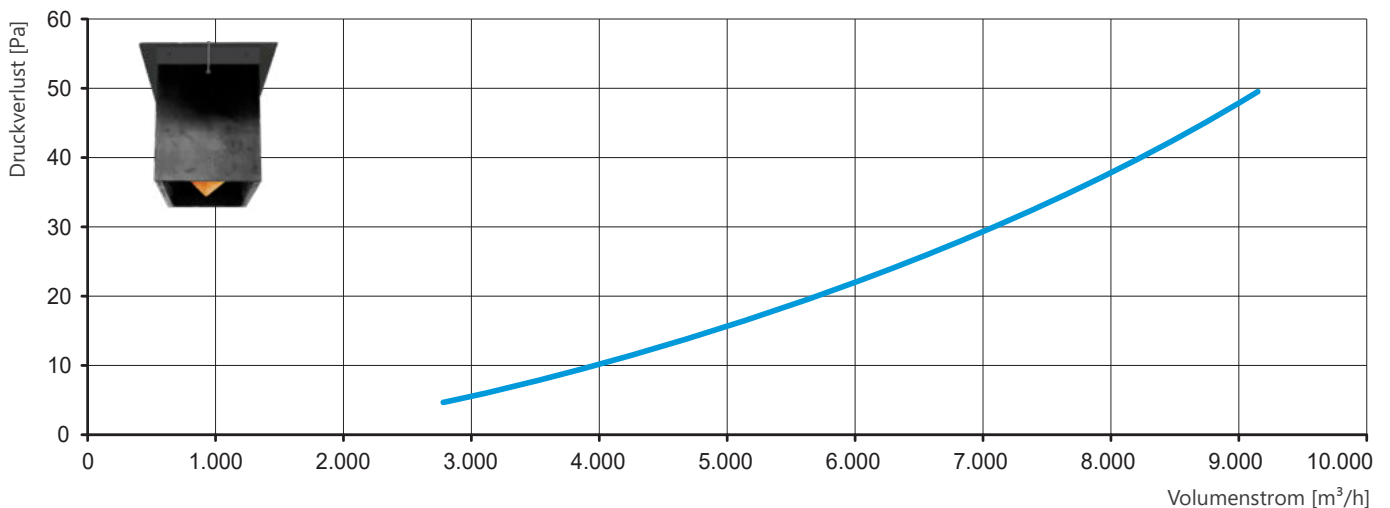
Principal: »ZED« 5000 with extension

The »ZED« 5000 inlet with extension and variable cross brace and optionally with a variable flange frame is particularly recommended for stables with high ceilings. With it the fresh air is fed precisely into the feeding passage and not to the animals. The frame is foamed from a single part for optimum cleaning - no dirty edges arise.

The air flow profile shown applies to differential pressure of the fresh air inlet of at least 10 Pa (approx. 3 m/s). Below this differential pressure, other air flows can result due to the thermal conditions.



Luftleistungen Deckenventile »ZED« 5000



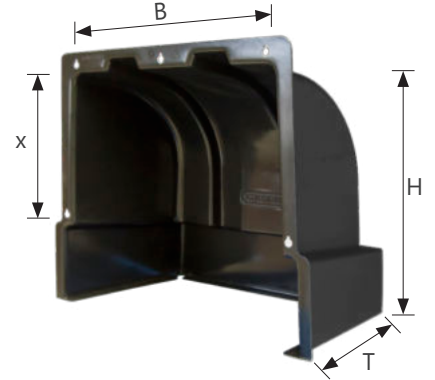
Wind deflection hoods / light filters

ABS wind deflection hoods

Wind deflection hood as wind and light protection for fresh air inlets. In addition, the wind deflection hood is suitable as an air inlet/air outlet for fans or as wind protection for fresh air supply ducts. All wind deflection hoods can be retrofit with a light filter.

Material: high quality and UV-resistant plastic.

Wind deflection hood
»ZEW« Professional
type ABS, black

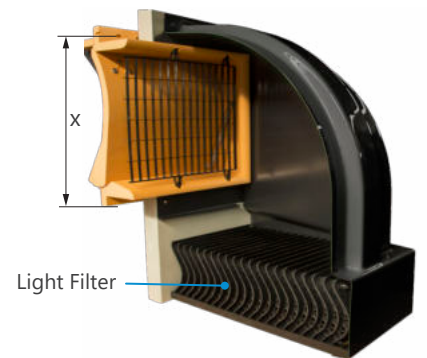


Suitable for fresh air inlet	Material	H	B	T	X	Article no.
»ZEW« Professional 1300	ABS	625	580	325	409	209139910
»ZEW« Professional 2100, »safe-let« 600, »ZEW« Flatwave 2600, »ZEW« basic 1600	ABS	735	680	465	509	209219910
»ZEW« Professional 2900	ABS	835	750	575	596	209299910
	ABS	840	880	605	597	209309910
MWI 3408, MWI 3413	ABS	840	1,080	605	597	209389910

Sizes in mm

Wind deflection hoods incl. light filter

Wind deflection hood including light filter for use as wind and light protection for fresh air inlets. The light filters ensure light reduction of > 99.99%. Furthermore, the wind deflection hood, »ZEW« Professional including a light filter has the support frame for assembly of the light filter already integrated. Only one angled profile and two holding pins are required for mounting. These are not included in the kit. The wind deflection hoods themselves are stackable for transport (low transport costs) and feature a surface that is easy to clean.



Wind deflection hood
»ZEW« Professional including light filter

Suitable for fresh air inlet	Material	X (mm)	Article no.
»ZEW« Professional 1300	ABS	409	209139912
»ZEW« Professional 2100, »safe-let« 600, »ZEW« Flatwave 2600, »ZEW« basic 1600	ABS	509	209219912
»ZEW« Professional 2900	ABS	596	209299912

Sizes in mm. Dimensions see ABS wind deflection hoods.

Packaging information:

Article no.: 209139912 = 64 units Wind deflection hoods max. / 1 pal. (H x W x L/0.95 x 2.3 x approx. 1.6 m) 32 units Light filter / 2 pal. (H x W x L/0.8 x 1.2 x approx. 1.2 m)

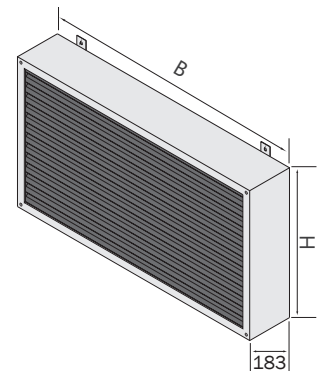
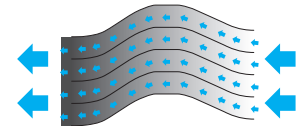
Article no.: 209139912 = 46 units Wind deflection hoods max. / 1 pal. (H x W x L/1.03 x 2.3 x approx. 2.05 m) 32 units Light filter / 2 pal. (H x W x L/0.8 x 1.2 x approx. 1.2 m)

Article no.: 209139912 = 42 units Wind deflection hoods max. / 1 pal. (H x W x L/1.03 x 2.3 x approx. 2.05 m) 21 units Light filter / 2 pal. (H x W x L/1.2 x 1.2 x approx. 1.0 m)

Light filter wall mounting

Light filter for wall mounting. Reduces the penetrating daylight to a minimum. Light reduction of > 99.99% Sizes optimally tailored to fresh air inlets as well as popular gable fans. Improved lamella geometry as well as single-sided intake nozzle for the lowest possible air intake losses.

Material: Frame from galvanized steel, lamella from PP



Montagebeispiel

Suitable for fresh air inlet	Height (H)	Width (W)	Depth (D)	Article no.
»ZEW« Professional 1300	427	660	183	LF04270660
»ZEW« Professional 2100 / »ZEW« Flatwave 2600	519	760	183	LF05190760
»safe-let« 600	542	710	183	LF05420710
»safe-let« 1000	542	1,120	183	LF05421120
»safe-let« 1200	542	1,420	183	LF05421420
»ZEW« Professional 2900	611	830	183	LF06110830
»AIRSTEP«®/2	772	1,190	183	LF07721190
»AIRSTEP«®/3	1,140	1,190	183	LF11401190
»safe-let« 1200/2	1,071	1,420	183	LF10711420
»AIRSTEP«®/4	1,501	1,190	183	LF15011190
»safe-let« 1200/3	1,501	1,420	183	LF15011420
»AIRSTEP«®/5	1,818	1,190	183	LF18181190

Sizes in mm.

Wall air inlet accessories

Pulleys Ø 88 / 66 mm

Ø 88 mm: with strap for ropes up to Ø 5 mm

Ø 66 mm: with ring for ropes up to Ø 4 mm

Material: Plastic / stainless steel

Type	Article no.
Ø 88 mm	333801
Ø 66 mm	333300



Ø 88 mm



Ø 66 mm



Ø 34 mm



Ø 22 mm

Pulleys Ø 34 / 22 mm

Ø 34 mm: with hook for ropes up to Ø 4 mm

Ø 22 mm: with hook for ropes up to Ø 4 mm

Material: Plastic / stainless steel

Type	Article no.
Ø 34 mm	333500
Ø 22 mm	333601

Knurled screws

Plastic knurled screw for fastening ropes.

Red: for ropes up to Ø 3 mm

Black: for ropes up to Ø 5 mm

Blue: for ropes up to Ø 3.5 mm

Type	PU	Article no.
Red	200	332200
Black	200	332210
Blue	200	332220



Guide pulleys pull ropes

Material: Plastic / stainless steel

Article no.
333020



Stroke extension for LR 3000

To double the stroke way via a pulley for ropes up to 5 mm

Article no.
630620



Clamps, pull rods M8

For fastening the shutter of the fresh air inlet to the main pull rod.
Suitable for 8 mm pull rods.



PU	Article no.
10 units	332030

Ring nuts

Stainless steel, very sturdy, robust and durable. For fastening to the end of a pull rod.



Type	Article no.
M8 ring nut	9-206613

Motor fixing set pull rods

For fastening the pull rod on the electro cylinder for LR 3000.



Type	Article no.
Motor fastening kit M8	333030

Wire ropes

Stainless steel, very sturdy, robust and durable.



Type	Article no.
Wire rope Ø 2.5 mm	156900
Wire rope Ø 4.0 mm	9-208702

Rope winches with automatic brake

Winch with automatic brake, including crank up to max. 400 kg.



Article no.
336210

For wall mounting of the rope winch, bracket article no. 336250 required.

Consoles for rope winch

For simple installation of the rope winch on the wall, including fixing materials.

Material: Stainless steel



Article no.
336250

Fresh air inlet accessories

Start set for fresh air inlet motor control

Start set for fresh air inlet motor control comprising: Electro cylinder LR3000 and Motor control SLRK. 24 V DC electro cylinder including fixed voltage supply FSV-1.



Electro cylinder	Motor controller	Power supply	Stroke way (mm)	Article no.
LR 3000-V6, 24 V DC	SLRK 0-10V	FSV-1	450	303002406
LR 3000-V7, 24 V DC	SLRK 0-10V	FSV-1	650	303002407
LR 3000-V4, 230 V AC	SLRK 0-10V	—	450	303002304
LR 3000-V5, 230 V AC	SLRK 0-10V	—	650	303002305

Start / end set for fresh air inlet motor control

A start / end set is required for each motor control, in order to establish the connection to the fresh air inlets. The weight generates pulling force of 130N.

Article no.

280994200

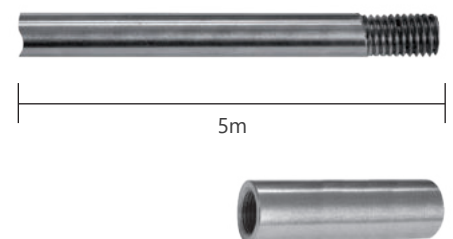


Middle set for fresh air inlet motor control

Depending on the length of the stable, middle sets are required for each motor control, to establish the connection to the fresh air inlets. Comprised of: Galvanized pull rods with M8 threads on both sides and a spacer sleeve produced from stainless steel

Article no.

299994310



Connection kit for fresh air inlet motor control

A connection kit is required for each fresh air inlet, in order to establish the connection between the pull rod and fresh air shutter. Comprised of: Wall guide and pull rod clamp.

Article no.

280990700

Weight with S-hooks

As additional weight (130N) in supplement to the start / end set with long stables.

Article no.

280994201

Wall guides a.o./a.c.

The wall guide is suitable for both automatically closing and automatically opening inlets.

Material: Plastic

Article no.

9-201990800

Ceiling guide sa.o./a.c.

The ceiling guide is suitable for both automatically closing and automatically opening inlets.

Material: Plastic

Article no.

205998010



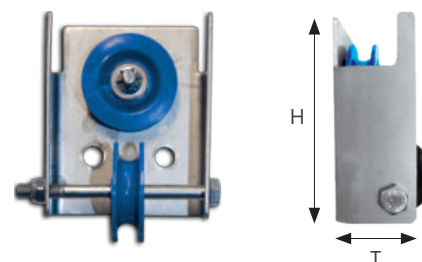
Universal pulley

Suitable for alternative applications.
H 80 x T 32.5 mm, Ø roll 40 mm

Material: Plastic / stainless steel

Article no.

333000



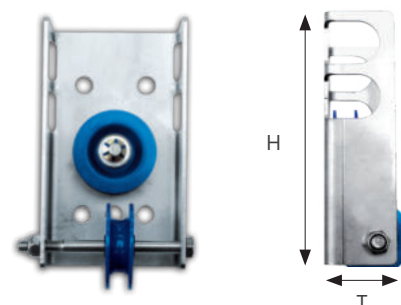
Pulleys universal supplementary guiding

Suitable for alternative applications.
H 115 x T 32.5 mm, Ø roll 40 mm

Material: Plastic / stainless steel

Article no.

333010



Pulleys Ø 88 mm universal stainless steel with wall bracket

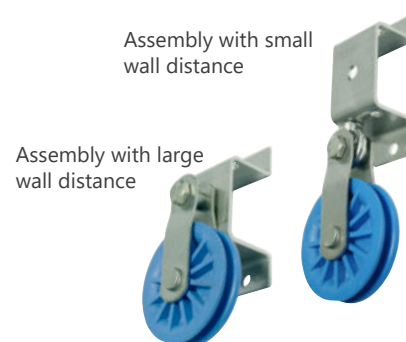
B 130 x H 75 x T 88 mm max.

Material: Plastic / stainless steel

Article no.

333811

For ropes up to Ø 5 mm.



Pulleys Ø 88 m

B 78 x H 124 x T 95 mm (Article no. 333201)

B 150 x H 56 x T 95 mm (Article no. 333211)

Material: Plastic / stainless steel

Type

Article no.

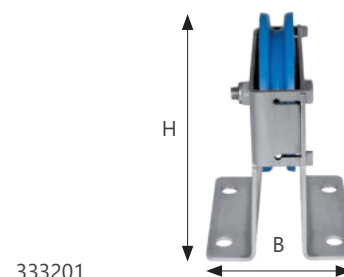
vertical

333201

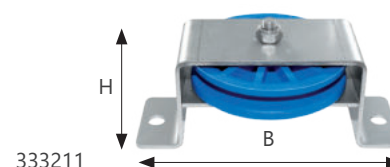
horizontal

333211

For ropes up to Ø 5 mm.



333201



333211

Fresh air chimneys

Neo and Vario fresh air distributors

Fresh air distributor for consistent fresh air supply

Neo fresh air distributor

The Neo fresh air distributor for ultra-fine fresh air distribution across a large distribution radius, even at minimal air flow rate. The Neo fresh air distributor has been developed for equal pressure ventilation and negative pressure ventilation as well as for compact stable buildings (so-called mono-blocks).

The wave-structured nozzle ensures the ideal fresh air control even with a minimal opening. This system can also be employed in equal pressure systems (additional fresh air fan required) where stables with run for animals have large openings and areas where leaks and wind influence come into play. The optionally available air conduction unit for the fresh air distributor partially deflects the incoming fresh air at the distributor plate.

Available in diameters of 650, 730, 820 & 920 mm.

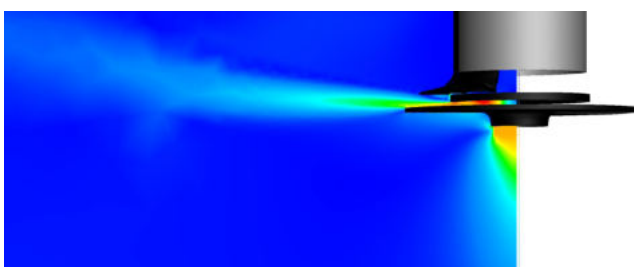
Vario fresh air distributor

Conventional recirculation systems are driven with a fixed area ratio setting between the fresh air and recirculating air. This results in a significant portion of the fan capacity (up to 50%) being guided via the permanently open recirculation gap even with summer ventilation.

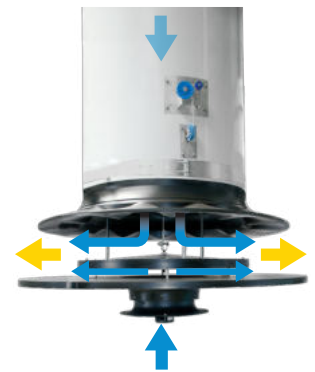
The Vario fresh air distributor's sliding fan module makes it possible to variably adjust the recirculation gap. The advantage of this is that 100% of the fan capacity is available as fresh air capacity during summer operation. This means that the number of fresh air chimneys required can be halved through the use of the Vario fresh air distributors.

Available in diameters of 650, 730, 820 & 920 mm.

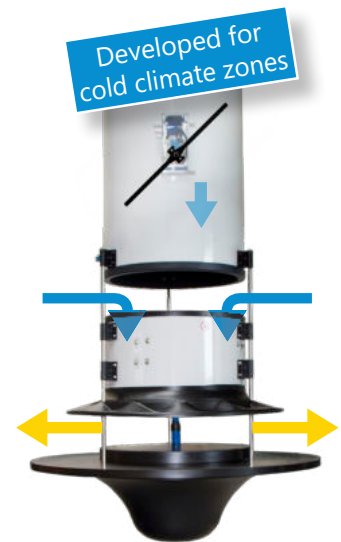
Neo fresh air distributor air flow simulation



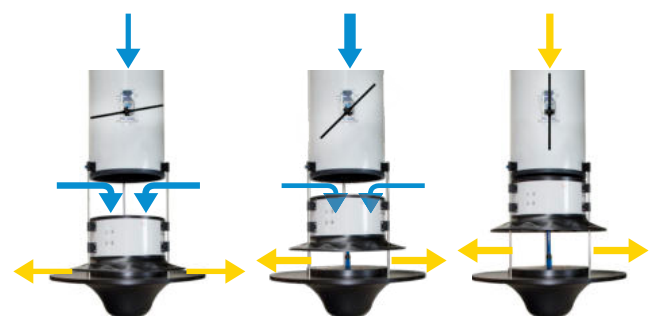
Neo fresh air distributor including recirculation unit ideal for temperatures down to -20°C



Vario fresh air distributor in transitional operation use possible at temperatures down to -50°C



Vario fresh air distributor operating modes



Winter operation Transitional operation Summer operation

Construction of fresh air chimneys

Duct end, top

	Page	Article
1	1.13	Rain hoods
	2.36	Rain hoods incl. bird grid
	1.14	Covering rings
	1.18	Storm bracing

Roof connection

	Page	Article
2	1.16	Roofing panels GRP*
	1.17	Universal roofing panels
	1.17	All-purpose sealing tapes
	1.17	Adhesive for roofing panels

Ducts and installation components

	Page	Article
3	1.7	»vario-clip«® air ducts
	1.8	»AGROFLEX«® air ducts
	1.19	Duct clamps
	1.20	Pro assembly kits
	1.9	Adhesive
	1.23	Light trap
	1.39	Build-in fans

Duct end, bottom

	Page	Article
4	2.47	Neo fresh air distributor
	2.50	Vario fresh air distributor
	2.48	Neo fresh air distributor air conduction units
	2.50	Vario fresh air distributor air conduction units

Fresh air chimney
Neo fresh air distributor

Fresh air chimney
Vario fresh air distributor



Planning and design

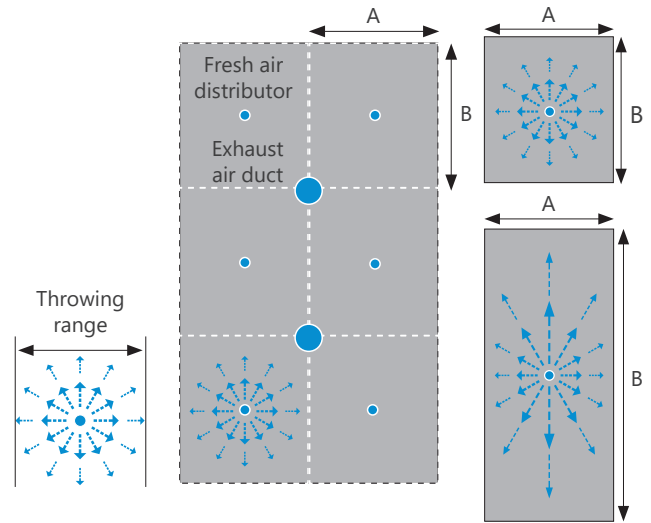
Planning starts with an even distribution of the fresh air distributors. Nearly equal sized rectangles ensure an optimum distribution of fresh air. The Neo fresh air distributor can be employed both in negative pressure systems and in equal pressure systems (integration of additional fan). The Vario fresh air distributor is designed for equal pressure systems.

The side ratio A:B should not exceed 1:1.5; with an air conduction unit a ratio of 1:3 is possible.

Throwing ranges*

- Ø 650 mm up to 13 m
- Ø 730 mm up to 16 m
- Ø 820 mm up to 20 m
- Ø 920 mm up to 22 m

*Dependent on negative pressure, outside temperature and internal stable temperature.

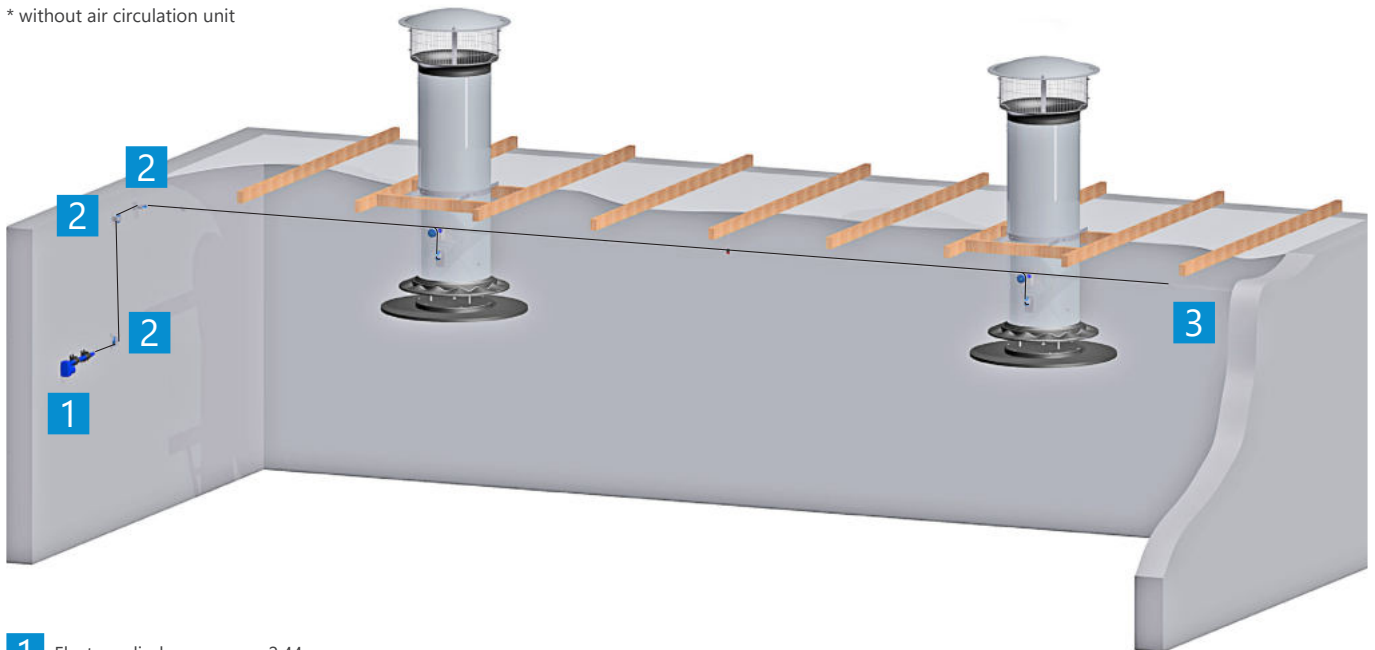


Connection examples Neo fresh air distributor

(Exemplary calculation of the required traction)

Type	Required quantity / units	Traction (N)	Total traction (N)
Neo fresh air distributor* Ø 920 mm	8	300	2,400
Pulleys Ø 88 mm	3	100	300
Pull springs	1	160	160
Minimum required pulling force (N):			2,860

* without air circulation unit



- 1** Electro cylinder, see page 2.44
- 2** Pulley Ø 88 mm (art. no.: 333201/333211)
- 3** Pull springs (art. no.: 333050)

Neo fresh air distributor overview

Ø Inner (mm)	Traction (N)	Stroke way (mm)	Air flow (m ³ /h) negative pressure ventilation				Air flow (m ³ /h) Equal pressure ventilation
			10 Pa	20 Pa	30 Pa	40 Pa	
650	240	400	4,900	6,900	8,500	10,000	10,500
730	260	400	6,100	8,800	10,900	12,700	15,300
820	270	400	7,500	10,900	13,500	15,600	19,300
920	300	400	9,200	13,500	16,900	19,500	20,800

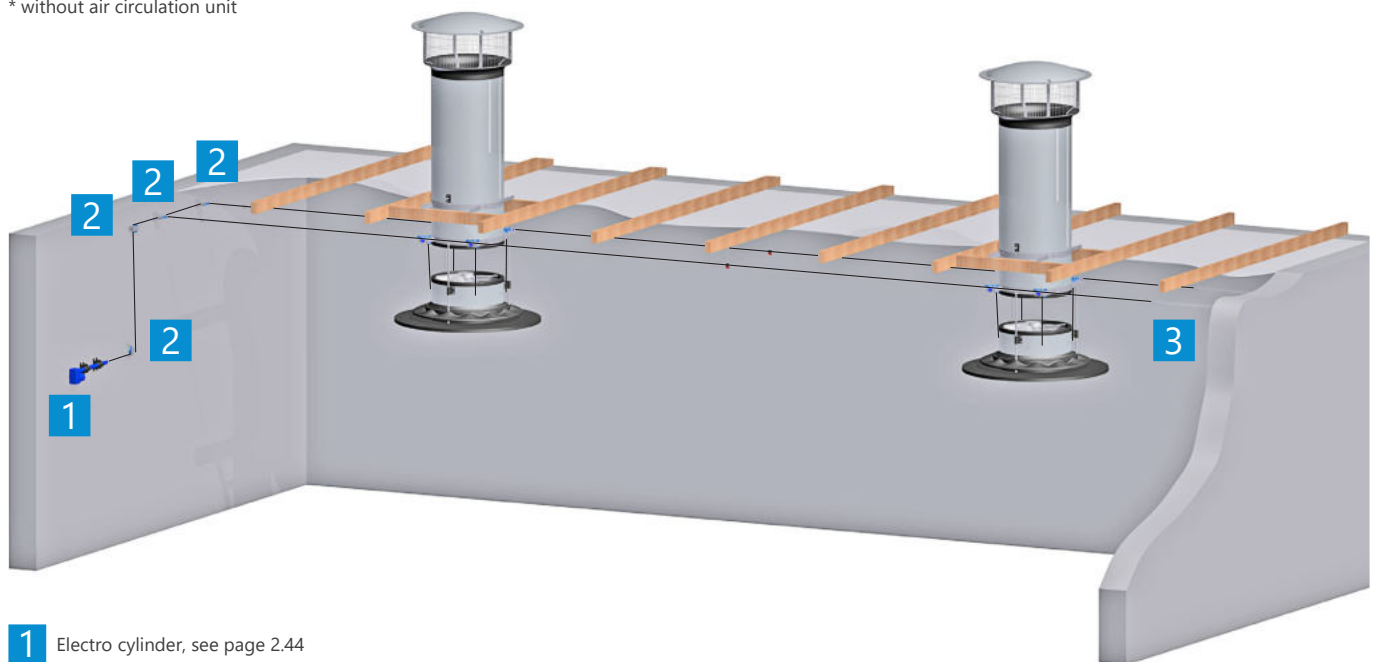
Der ZLV Neo ist geeignet für Elektrozyylinder V4 und V6. Der Volumenstrom bei Gleichdruckbetrieb entspricht dem Volumenstrom beim ZLV Vario.

Connection examples Vario fresh air distributor

(Exemplary calculation of the required traction)

Type	Required quantity / units	Traction (N)	Total traction (N)
Vario fresh air distributor* Ø 920 mm	4	460	1,840
Pulleys Ø 88 mm	4	100	400
Pull springs	2	160	320
Minimum required pulling force (N):			2,560

* without air circulation unit



- 1** Electro cylinder, see page 2.44
- 2** Pulley Ø 88 mm (art. no.: 333201/333211)
- 3** Pull springs (art. no.: 333050)

Overview of Vario fresh air distributor

Ø Inner (mm)	Traction (N)	Stroke way (mm)	Air flow (m ³ /h) Equal pressure ventilation
650	300	350	10,500
730	360	350	15,300
820	410	350	19,300
920	460	350	20,800

The Vario fresh air distributor is suitable for V8 and V9 electro cylinders. Air flow dependant on fan used.

Neo fresh air distributor units, rope drive

Complete fresh air fresh air distributor unit.
Non-assembled. Centralized control.

Comprised of: Fresh air distributor ZLV Neo, universal rope guides, rain hood, protective bird grid, intake nozzle, »vario-clip« 1.5 m air duct.

Recirculation air fan optionally available.

Color: light grey

Neo fresh air distributor units, centralized control

Ø Inner (mm)	Traction (N)	Stroke way (mm)	Article no.
650	240	400	213654440
730	260	400	213734440
820	270	400	213824440
920	300	400	213924440

Neo fresh air distributor units, centralized control incl. recirculation air fan

Ø Inner (mm)	Traction (N)	Stroke way (mm)	Article no.
650	340	400	213654450
730	370	400	213734450
820	390	400	213824450
920	430	400	213924450

Recirculation air fan (Article no. 9-632100); 1~230V; 50/60Hz; 175/210 W; 0.80/1.15 A



Recirculation air fan optionally available

Neo fresh air distributor units, motor drive

Complete fresh air fresh air distributor unit. Non-assembled. Decentralized control.

Comprised of: Fresh air distributor ZLV Neo, rain hood, protective bird grid, intake nozzle, »vario-clip« 1.5 m air duct, Electric motor 24 V or 230 V.

Electric motor 24V = LR 3000 V6

Electric motor 230V = LR 3000 V4

Recirculation air fan optionally available.

Color: light grey

Neo fresh air distributor units, decentralized control

Ø Inner (mm)	Traction (N)	Stroke way (mm)	Article no.	
			24 V	230 V
650	240	400	214654440	214654450
730	260	400	214734440	214734450
820	270	400	214824440	214824450
920	300	400	214924440	214924450



Recirculation air fan optionally available



Neo fresh air distributor units, decentralized control incl. recirculation air fan

Ø Inner (mm)	Traction (N)	Stroke way (mm)	Article no.	
			24 V	230 V
650	340	400	214654460	214654470
730	370	400	214734460	214734470
820	390	400	214824460	214824470
920	430	400	214924460	214924470

Recirculation air fan (Article no. 9-632100); 1~230V; 50/60Hz; 175/210 W; 0.80/1.15 A



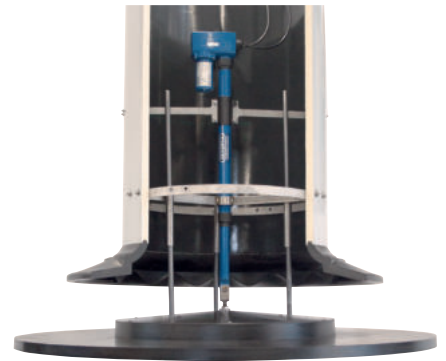
Fresh air distributor Neo for motor drive

For fresh air intake via the roof. For centralized (rope version) or decentralized regulation (motor version). Regulation of the quantity of fresh air via adjustment of the distributor plate. An air flow increase of over 20% is achieved through the outflow nozzle. Each fresh air distributor is controlled with a motor. Excl. electric motor. Decentralized control.

Material: PUR, PS, stainless steel

Ø Inner (mm)	Traction (N)	Stroke way (mm)	Article no.
650	240	400	607500
730	260	400	607600
820	270	400	607700
920	300	400	607800

The Neo fresh air distributor is suitable for V4 and V6 electric motors.



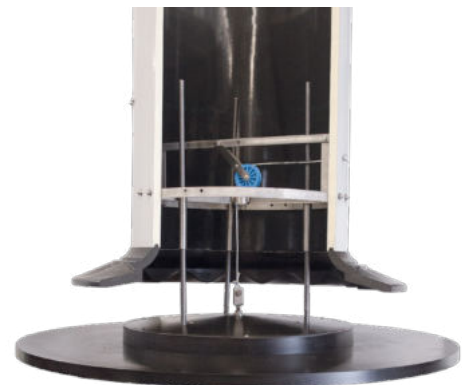
Fresh air distributor Neo for rope drive

See above for description. Several fresh air distributors are controlled via a central drive unit. Central control.

Material: PUR, PS, stainless steel

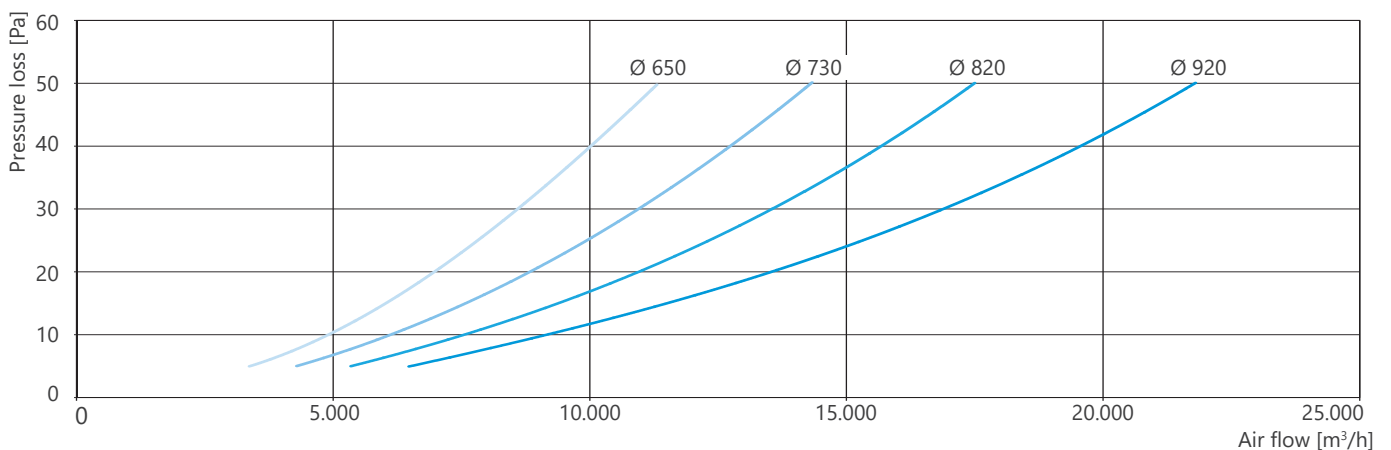
Ø Inner (mm)	Traction (N)	Stroke way (mm)	Article no.
650	240	400	608500
730	260	400	608600
820	270	400	608700
920	300	400	608800

The Neo fresh air distributor is suitable for V4 and V6 electric motors.



i Electro cylinder see page 2.63

Neo fresh air distributor air capacities by diameter



Design of the fresh air chimney: Rain hood with protective bird grid and top PUR nozzle, 3m air duct. Values with single covering ring may vary.



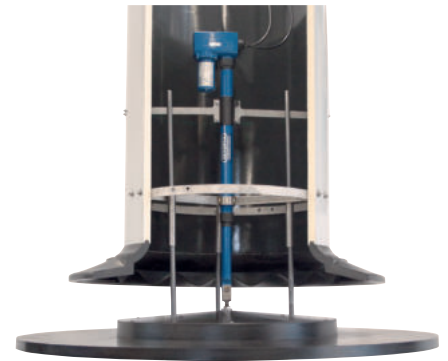
Fresh air distributor Neo for motor drive

For fresh air intake via the roof. For centralized (rope version) or decentralized regulation (motor version). Regulation of the quantity of fresh air via adjustment of the distributor plate. An air flow increase of over 20% is achieved through the outflow nozzle. Each fresh air distributor is controlled with a motor. Excl. electric motor. Decentralized control.

Material: PUR, PS, stainless steel

Ø Inner (mm)	Traction (N)	Stroke way (mm)	Article no.
650	240	400	607500
730	260	400	607600
820	270	400	607700
920	300	400	607800

The Neo fresh air distributor is suitable for V4 and V6 electric motors.



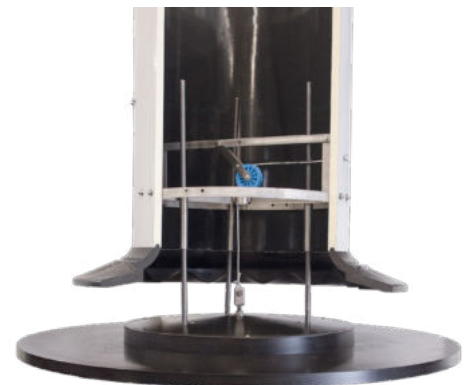
Fresh air distributor Neo for rope drive

See above for description. Several fresh air distributors are controlled via a central drive unit. Central control.

Material: PUR, PS, stainless steel

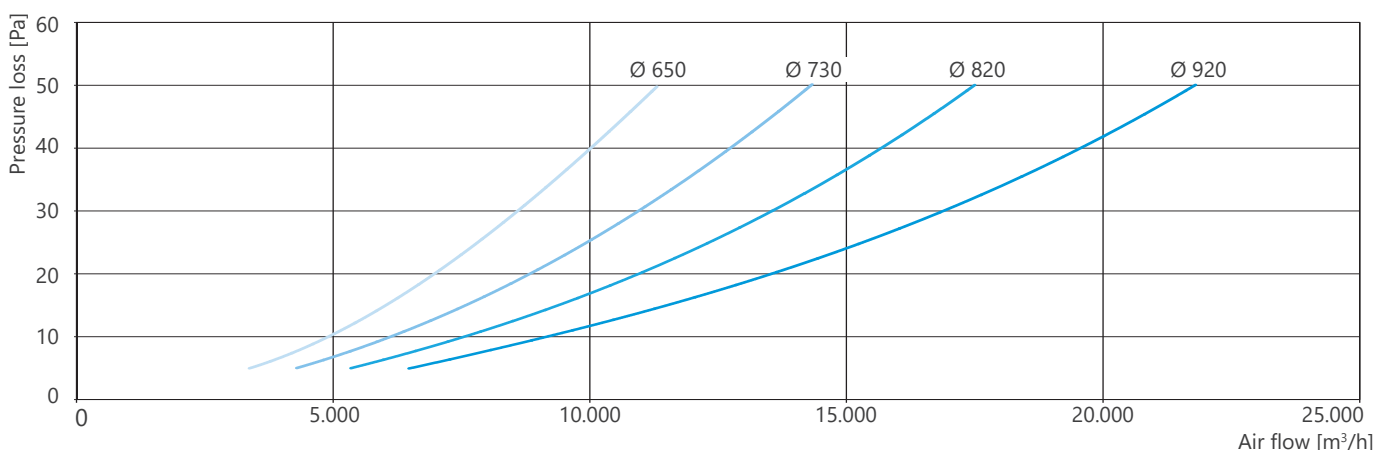
Ø Inner (mm)	Traction (N)	Stroke way (mm)	Article no.
650	240	400	608500
730	260	400	608600
820	270	400	608700
920	300	400	608800

The Neo fresh air distributor is suitable for V4 and V6 electric motors.



i Electro cylinder see page 2.63

Neo fresh air distributor air capacities by diameter



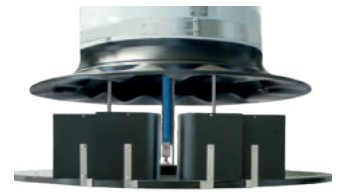
Design of the fresh air chimney: Rain hood with protective bird grid and top PUR nozzle, 3m air duct. Values with single covering ring may vary.

Neo fresh air distributor air conduction units

For partial diversion of the incoming fresh air at the distributor plate. This can be required under various construction conditions, for example when using the fresh air distributor close to a wall or with the instableation of two fresh air distributors close to each other.

Cannot be used in combination with protective grid ZLV Neo/ Vario.

Furthermore this allows improved adjustment of the air movement to comply with the rectangular stable geometry. This allows flows in the stable with a length and width ratio of 1:3 per fresh air distributor. A quadratic configuration of the air distribution is no longer essential.

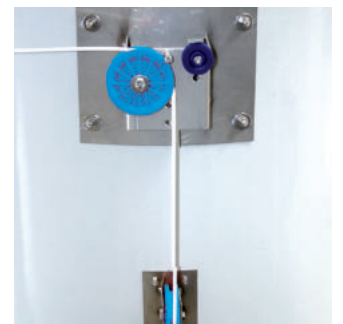


Ø Inner (mm)	Article no.
650-920	616820

Universal rope guides for fresh air distributor

For fresh air distributors with rope control. The rope guide can be swivelled from the duct through-pass upwards or downwards and left or right depending on the instableation situation, by means of the universally applicable pulleys. The rope deflector is simple to instable or retrofit. Incl. EPDM seal to protect against condensation.

Material: Clasps made of stainless steel. Pulleys made of high-quality plastic.



Example of rope guide at upper left


Ø Inner (mm)	Article no.
650 – 730	615200
820 – 920	615210

i Technical drawing of fresh air distributor rope guide, see page 2.27



Vario fresh air distributor units, decentralized control

Complete fresh air inlets (overall height approx. 3.5 m)

Comprised of: Vario fresh air distributor unit including built-in fan in **ZIEHL-ABEGG**  sliding fan module, rain hood, protective bird grid, intake nozzle, »vario-clip« 1.5 m air duct, shutter with actuator and electric motor.

Color: light grey

Stroke way: 350 mm



Ø Inner (mm)	integrated built-in fan	Traction (N)	Air flow* (m3/h)	Article no.	
				24 V	230 V
650	E630-FF-D6-V5	300	10,500	212654A50	212654A40
730	E710-ST-D6-V7	360	15,300	212734A50	212734A40
820	E800-ST-D6-V7	410	19,300	212824A50	212824A40
920	E910-FF-D6-V3	460	20,800	212924A50	212924A40

* in equal pressure

Vario fresh air distributor units, centralized control

Complete fresh air inlets (overall height approx. 3 m)

Comprised of: Vario fresh air distributor unit

ZIEHL-ABEGG including built-in fan in sliding fan module, rain hood, protective bird grid, intake nozzle, »vario-clip« 1.5 m air duct, shutter with 24V actuator and rope deflector (as in the illustration). Excluding electric motor.

Color: light grey
Stroke way: 350 mm



Ø Inner (mm)	integrated built-in fan	Manufacturer	Traction (N)	Air flow* (m3/h)	Article no.	
					24 V	230 V
650	E630-FF-D6-V5	ZIEHL-ABEGG	300	10,500	211654A50	211654A40
730	E710-ST-D6-V7	ZIEHL-ABEGG	360	15,300	211734A50	211734A40
820	E800-ST-D6-V7	ZIEHL-ABEGG	410	19,300	211824A50	211824A40
920	E910-FF-D6-V3	ZIEHL-ABEGG	460	20,800	211924A50	211924A40

* in equal pressure

The Vario fresh air distributor is suitable for V8 and V9 electric motors.

Vario fresh air distributor air conduction units

For partial diversion of the incoming fresh air at the distributor plate. This can be required under various construction conditions, for example when using the fresh air distributor close to a wall or with the installation of two fresh air distributors close to each other.

Furthermore this allows improved adjustment of the air movement to comply with the rectangular stable geometry. This allows flows in the stable with a length and width ratio of 1:3 per fresh air distributor. A quadratic configuration of the air distribution is no longer essential.



Ø Inner (mm)	Article no.
650-920	616820

Vario fresh air distributor for motor drive (decentralized)


For centralized (rope version) or decentralized regulation (motor version). Vario fresh air distributor automatically switches to winter, transition and summer mode by means of fan module movement. This makes 100% of fan output available as fresh air capacity during summer operation. Thus, the number of fresh air chimneys required can be halved in comparison to standard recirculation systems. The Vario fresh air distributor delivers fresh air over the roof, with each fresh air distributor activated by a motor. (Excluding fresh air fan, air duct and electric motor).


Material: PUR, PS, stainless steel



Ø Inner (mm)	suitable for built-in fans	Traction (N)	Stroke way (mm)	Air flow (m3/h)	Article no.
650	E630-FF-D6-V5	300	350	10,500	21265_ _ _ _
730	E710-ST-D6-V7	360	350	15,300	21273_ _ _ _
820	E800-ST-D6-V7	410	350	19,300	21282_ _ _ _
920	E910-FF-D6-V3	460	350	20,800	21292_ _ _ _

* in equal pressure

Colors:  brown = Article no. _ _ _ _ _ 0A00

 light grey = Article no. _ _ _ _ _ 4A00

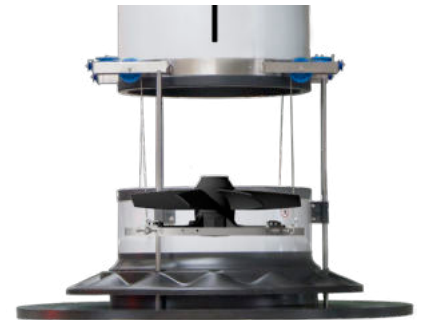
The Vario fresh air distributor is suitable for V8 and V9 electro cylinders.



Vario fresh air distributor for rope drive (centralized)

See above for description. Several fresh air distributors are controlled via a central drive unit.

Material: PUR, PS, stainless steel



Ø Inner (mm)	suitable for built-in fans	Manufacturer	Traction (N)	Stroke way (mm)	Air flow (m ³ /h)	Article no.
650	E630-FF-D6-V5	ZIEHL-ABEGG	300	350	10,500	21165_---
730	E710-ST-D6-V7	ZIEHL-ABEGG	360	350	15,300	21173_---
820	E800-ST-D6-V7	ZIEHL-ABEGG	410	350	19,300	21182_---
920	E910-FF-D6-V3	ZIEHL-ABEGG	460	350	20,800	21192_---

* in equal pressure

Colors: brown = Article no. _____0A00
 light grey = Article no. _____4A00

The Vario fresh air distributor is suitable for V8 and V9 electro cylinders.

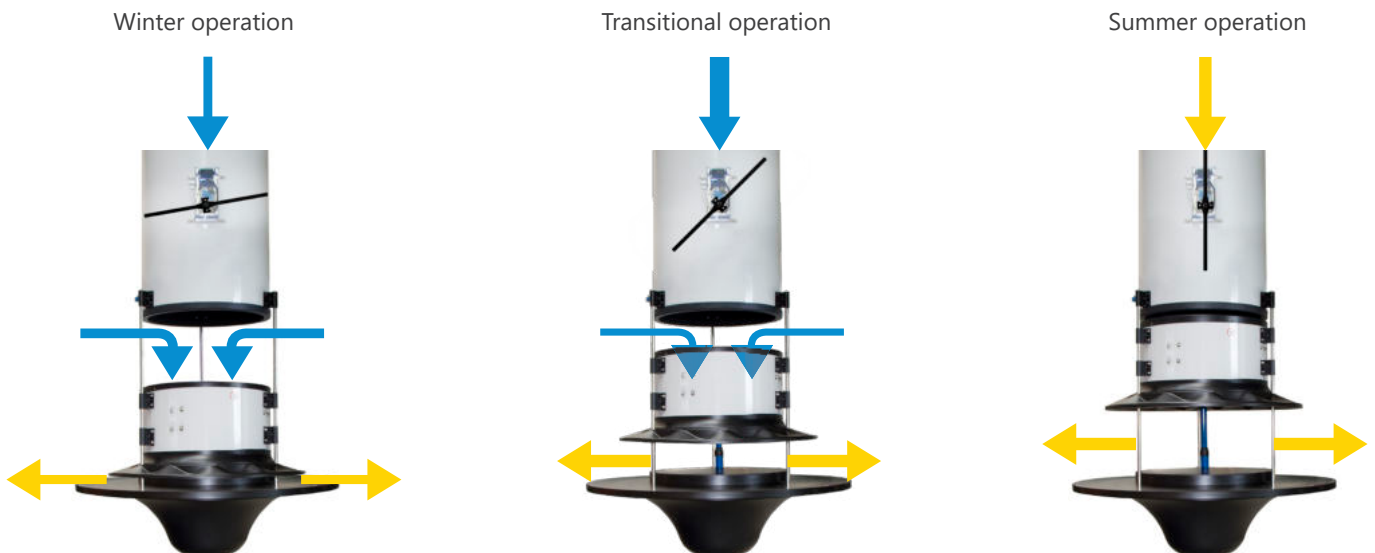
Vario fresh air distributor operating modes

The sliding fan module on the Vario fresh air distributor makes it possible to variably modify the recirculation gap and to close it completely, which increases the max. fresh air capacity per unit and reduces the fresh air inlets needed by 50% (compared to conventional recirculation systems).



Product video

i Built-in fans see page 1.36
 Electro cylinders see page 2.36 - 2.64



Rain hoods / Protective grids

Rain hoods PRO incl. protective bird grid

Added protection against penetrating rainwater through large rain hood with low contour. Comprised of: Rain hood (GRP), intake nozzle (PUR) groove, protective bird grid, stainless steel fixing material (with 6 brackets 650-920 mm)

Ø Inner (mm)	Spacer height H (mm)	Article no.	
		Brown	Light grey
650	400	116650010	116654010
730	400	116730010	116734010
820	400	116820010	116824010
920	400	116920010	116924010



Rain hoods incl. protective bird grid and intake nozzle for fresh air distributors

Specially designed rain hood for use with fresh air distributors and the air duct systems »AGROFLEX«® and »vario-clip«®. Dimensions in mm Also possible for wall thickness of 45/50 mm with an adaptor ring for the »Air Duct«. Comprised of: Rain hood (GRP), intake nozzle (PUR) groove, protective bird grid, stainless steel fixing material (with 4 brackets 650-820 mm, with 6 brackets 920 mm)

Ø Inner (mm)	Spacer height H (mm)	»AGROFLEX«® / »vario-clip«® Article no.
650	approx. 364	V4405_ _
730	approx. 356	V4406_ _
820	approx. 352	V4407_ _
920	approx. 307	V4408_ _

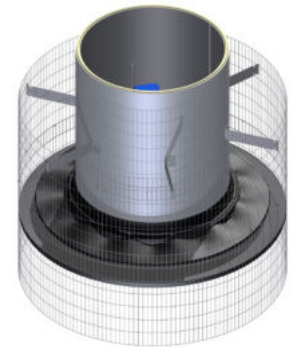


Colors: brown = Article no. _ _ _ _ 00
 light grey = Article no. _ _ _ _ 04

Protective grids ZLV Neo/Vario

Protective grid prevents bird nesting on the fresh air distributors. Cannot be used in combination with ZLV Neo/ Vario air conduction units.

Material: galvanized steel



Ø Inner (mm)	Article no.
650	211659900
730	211739900
820	211829900
920	211929900

Built-in fans for ZLV Vario/ Neo fresh air distributors

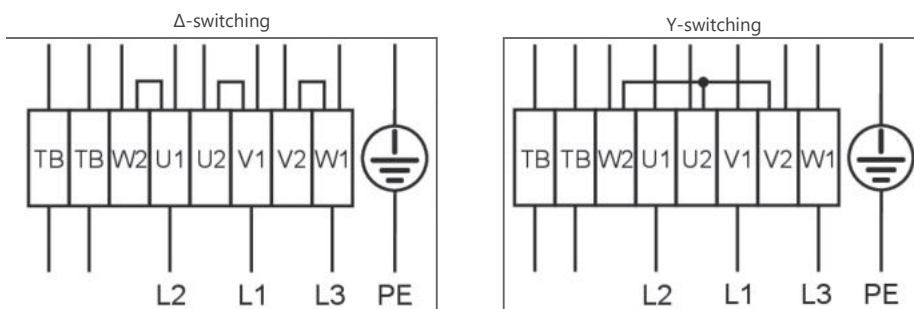
We use the brand **ZIEHL-ABEGG** for our fans - these are characterized by a high level of quality, durability and energy efficiency.



Ø inner (mm)	Type	Current max. (A)	rpm	Article no.
650	E630-FF-D6-V5	1.25	930	725510V
730	E710-ST-D6-V7	1.80	890	720610V
820	E800-ST-D6-V7	2.70	900	720711V
920	E910-FF-D6-V3	1.90	880	725810V

FF = outlet pinions ST = standard impeller
 D = 400V/50Hz 4/6/8/10 = number of pole pairs

Connection diagram 400V



3~ Motor with a speed and thermostatic switch (if installed).
 U1 = brown; V1 = blue; W1 = black; U2 = red; V2 = grey; W2 = orange; TB = white



We recommend the use of fixing rings for fans.

Fresh air distributor accessories

(see chapter 1 – exhaust air)



»vario-clip« air ducts



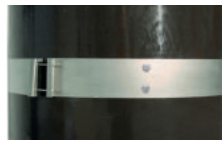
»AGROFLEX« air ducts



Adhesive for air ducts



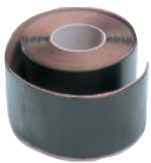
Intake nozzles



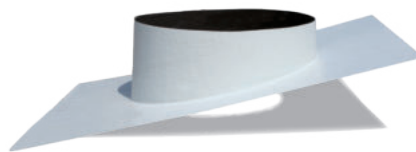
Duct clamps



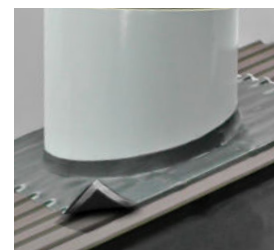
Anchoring rings DUO



Roofing panel accessories



GRP roofing panels



Universal roofing panels



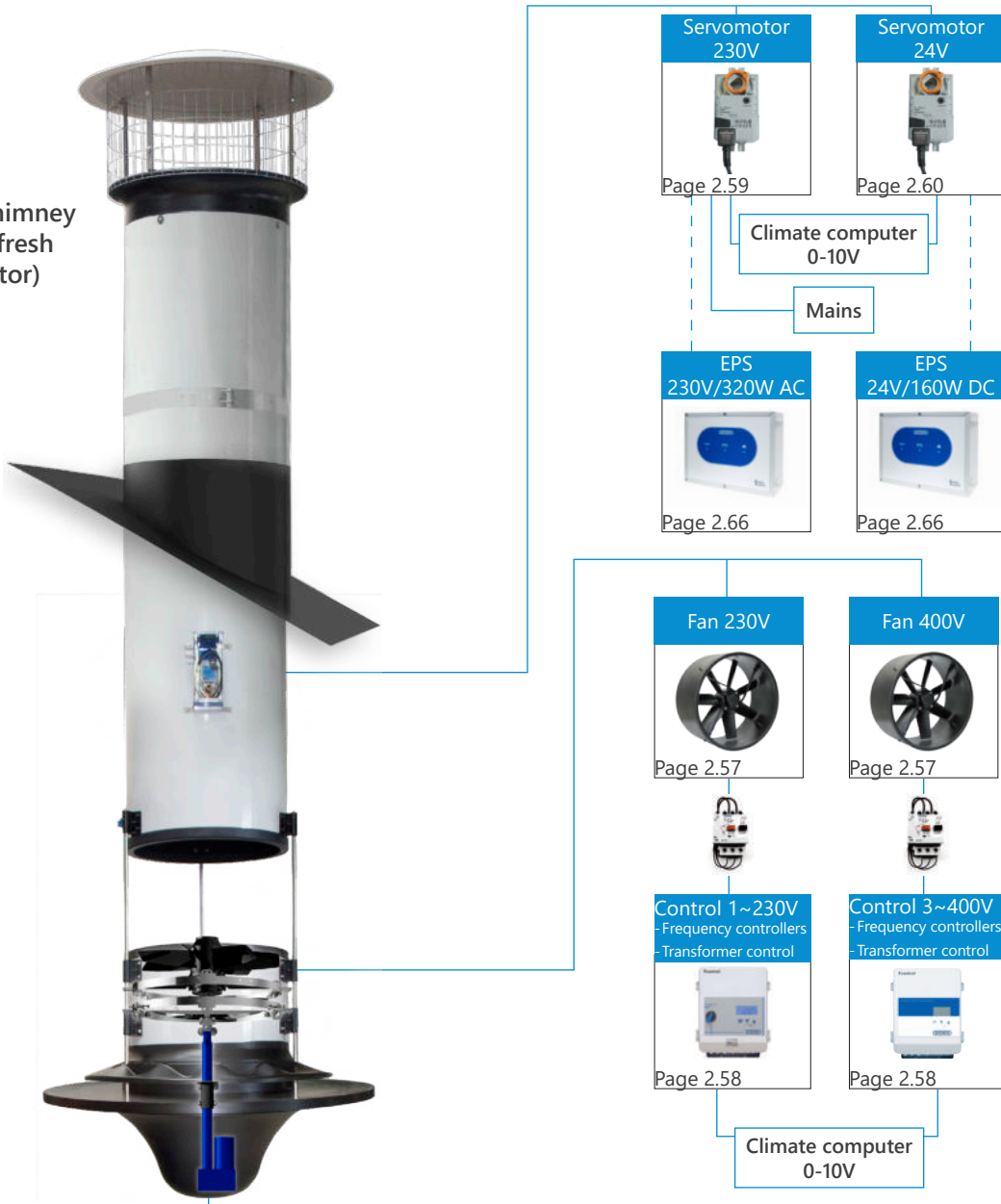
Pro assembly kits



Light trap

Overview of electronic technology for fresh air systems

Fresh air chimney (e.g. Vario fresh air distributor)



— Mains
 - - - Emergency supply

LR 3000 V4, V5 + V8

V4: 24V DC / 450 mm stroke
 V5: 24V DC / 650 mm stroke
 V8: 24V DC / 350 mm stroke

Page 2.37

LR 3000 V6, V7 + V9

V6: 24V DC / 450 mm stroke
 V7: 24V DC / 650 mm stroke
 V9: 24V DC / 350 mm stroke

Page 2.37

EPS 230V/320W AC

Page 2.66

SLRK 0-10V 24V / 230 V

Page 2.65

Mains

Climate computer 0-10V

SLRK 0-10V 24V / 230 V

Page 2.65

EPS 24V/160W DC

Page 2.66



Selection assistance fans and controls

400V fans, three-phase / 230V fans, single-phase

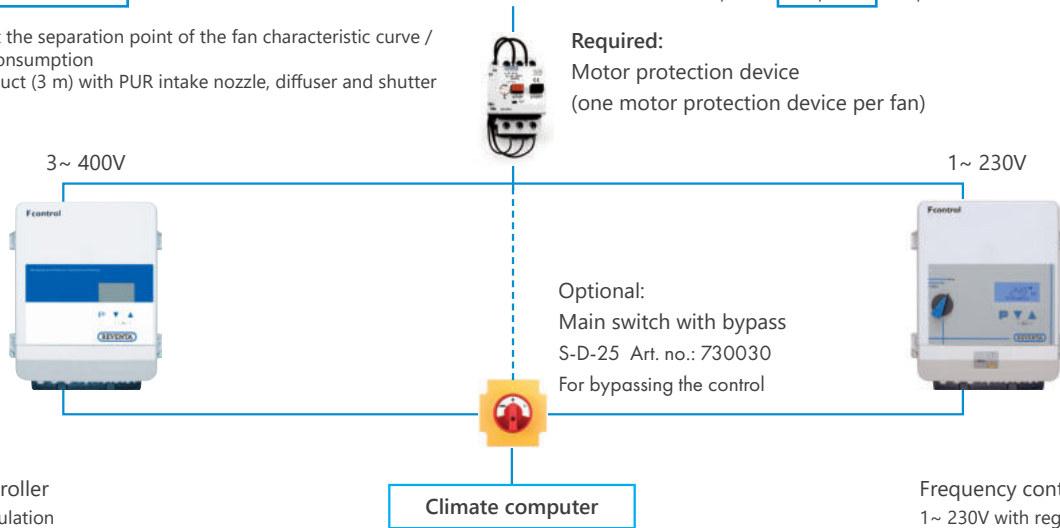
With the selection assistance you can calculate the number of fans and controls required for your desired air flow.



ø Inner (mm)	Type	Speed (rpm)	Voltage (V)	* Current (A)	** Capacity (W)	Air flow (m³/h)			Capacity (V) at 0 Pa [W/(1,000m³/h)]
						0	30	50	
520	M500-ST-D4	1,360	400	1,10	530	9,100	8,300	7,600	49.0
580	M560-ST-D6	890	400	0,74	360	10,000	8,800	7,600	38.6
650	M630-FF-D6	930	400	1,25	540	14,200	12,500	10,600	34.9
730	M710-ST-D6	890	400	1,80	890	19,500	17,600	16,000	35.7
820	M800-ST-D6	900	400	2,70	1,350	26,000	23,900	22,000	39.7
920	M910-FF-D6	880	400	1,90	920	26,100	23,100	20,700	30.8
920	M910-FN-D6	880	400	4,00	1,950	31,100	29,000	27,400	36.9
1,090	M1070-ST-D6	870	400	6,20	3,400	48,100	45,100	43,100	64.7
1,090	M1070-ST-D8	700	400	3,60	1,600	39,900	35,500	32,700	40.8
1,090	M1070-ST-D10	540	400	3,20	1,300	34,500	30,400	27,300	35.4
1,270	M1250-ST-D10	500	400	4,50	2,200	52,300	46,200	42,500	37.1
520	M500-ST-W4	1,310	230	2,70	510	8,700	7,900	7,300	48.2
580	M560-FF-W6	920	230	1,90	400	9,900	8,600	7,200	46.6
650	M630-FF-W6	890	230	2,50	520	13,900	12,400	10,500	35.8
730	M710-ST-W6	850	230	4,10	890	18,500	16,600	14,800	38.8
820	M800-FF-W6	880	230	3.40	760	21,900	18,900	16,300	32.3
920	M910-FF-W6	840	230	4.20	940	25,300	22,000	18,600	33.5

* Rated current at the separation point of the fan characteristic curve /
 ** Rated power consumption
 »AGROFLEX«® - duct (3 m) with PUR intake nozzle, diffuser and shutter

Required:
 Motor protection device
 (one motor protection device per fan)



Frequency controller
 3~ 400V with regulation

Frequency controller
 1~ 230V with regulation

Type	Art. no.	A
FSDM2,5AM	373004000	2.5
FSDM5AM	373004001	5
FSDM8AM	373004002	8
FSDM10AM	373004003	10
FSDM16AM	373004004	16
FSDM22AM	373004005	22
FSDM32AM	373004006	32

Type	Art. no.	A
FXET4MQ	730220	2.5
FXET6MQ	730230	6
FXET10MQ	730240	10

Example	400V	230V
Air flow required m3/h	90.000 (90.000 : 30.400)	40.000 (40.000 : 22.000)
Fan	M1070-ST-D10 = 3 units	M910-FF-W6 = 2 units
Total current*	3 fans x 3.2 A = 9.6 A	2 fans x 4.2 A = 8.4 A
required controller	1x 10A	1x 10A
frequency controller type (most energy efficient solution)	1 x FXDM10AM	1 x FXET10MQ

*Select the size of controller required based on the calculated current.



Frequency controllers Basic controls
3~ 400V with regulation function
and multi-function display

LC multifunction display with plain text display. Motor protection through TK contact connection options. With integrated sinusoidal filter on all poles. Parallel operation of fans possible. Good efficiency, also in partial load range with integrated mains filter. Insensitive to mains fluctuations and therefore mains interference.

- Continuously adjustable
- Protective class IP 54



Current max. (A)	Type	Article no.
2,5	FSDM2,5AM	373004000
5	FSDM5AM	373004001
8	FSDM8AM	373004002
10	FSDM10AM	373004003
16	FSDM16AM	373004004
22	FSDM22AM	373004005
32	FSDM32AM	373004006

Frequency controllers 1 ~ 230V with
regulation function and multifunction
display

Incl. main switch and LC multifunction display with plain text display. Motor protection through TK contact connection options. **With integrated sinusoidal filter on all poles.** Parallel operation of fans possible. Good efficiency, also in partial load range with integrated mains filter. Insensitive to mains fluctuations and therefore mains interference.

- Continuously adjustable
- Protective class IP 54



Current max. (A)	Type	Article no.
4	FXET4MQ	730220
6	FXET6MQ	730230
10	FXET10MQ	730240

Servomotors

Servomotors

The servomotor stands out due to its long lifetime and is maintenance-free. Mounting is implemented by clipping on. All motors in 24V/230V versions with 4, 5, 10, or 20Nm and as standard variant also with 40Nm available:

- Brushless DC motor for the maximum lifetime
- Low noise generation
- Open/close (2/3 point) or 0...10V control possible
- Direction of rotation can be selected with switch
- Control input 0...10V, working range 2...10V
- P54 protective class (IP66 protection to be achieved through housing)
- Load-dependent runtime of 150s with 230V mains voltage controller = as many servomotors as desired can be controlled in parallel



Shutters for servomotors, shaft Ø 20 mm



Shutter 2-part shutters



i Shutter module MVSK with measuring fan from page 1.32

Standard 230 V servomotors

Turning moment	Voltage	Control type	Power consumption	Module Ø	Shutters	Article no.
5 Nm	230V AC	Open/close (2/3 point)	3.5 VA	370-520	520-580	B466410
5 Nm	230V AC	0... 10V constant	4 VA	370-520	520-580	B466510
10 Nm	230V AC	Open/close (2/3 point)	6 VA	650-920	650-920	B466710
10 Nm	230V AC	0... 10V constant	6.5 VA	650-920	650-920	B466810
20 Nm	230V AC	Open/close (2/3 point)	6 VA	1,090-1,270	1,090-1,270	B469010
20 Nm	230V AC	0... 10V constant	6.5 VA	1,090-1,270	1,090-1,270	B469110
40 Nm	230V AC	Open/close (2/3 point)	9 VA	1,090-1,270	–	B469210

If desired: Drives with emergency return, automatic return by means of spring tension (mech.) in the event of power outage



Standard 24V servomotors

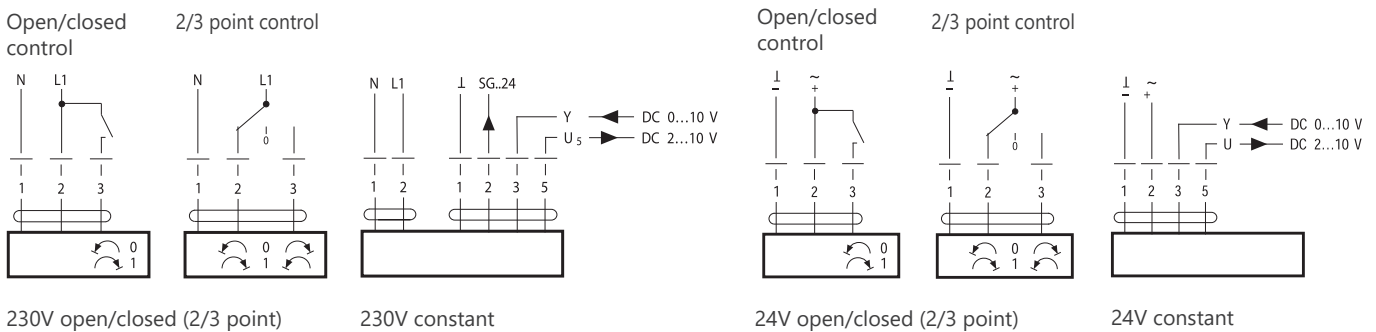
Turning moment	Voltage	Control type	Power consumption	Module Ø	Shutters	Article no.
5 Nm	24V AC/DC	Open/close (2/3 point)	1.5 VA	370-520	520-580	B466400
5 Nm	24V AC/DC	0... 10V constant	2 VA	370-520	520-580	B466500
10 Nm	24V AC/DC	Open/close (2/3 point)	4 VA	650-920	650-920	B466700
10 Nm	24V AC/DC	0... 10V constant	4 VA	650-920	650-920	B466800
20 Nm	24V AC/DC	Open/close (2/3 point)	4 VA	1,090-1,270	1,090-1,270	B469000
20 Nm	24V AC/DC	0... 10V constant	4 VA	1,090-1,270	1,090-1,270	B469100
40 Nm	24V AC/DC	Open/close (2/3 point)	6 VA	1,090-1,270	-	B469200

With emergency return through spring tension 24V

Turning moment	Voltage	Control type	Power consumption	Module Ø	Shutters	Article no.
4 Nm	24V AC/DC	0... 10V constant F	5 VA	370-520	-	B466010
20 Nm	24V AC/DC	0... 10V constant F	7 VA	1,090-1,270	1,090-1,270	B466300

If desired: Drives with emergency return, automatic return by means of spring tension (mech.) in the event of power outage

Circuit diagram 230V / 24V



Motor consoles for servomotors

Stainless steel, to bolt onto the air duct.
W/H/D 177 / 150 / 53 mm

Article no.

466975

Servomotor with motor console
(display adapter available as accessory)



Protective housing for servomotors

To achieve protective class IP66 for 20 mm shafts.
To clamp all servomotor variants as well as additional clamping options for measuring fans. Incl. connection clamps, protective class: IP 66, only for use indoors

Small protective housing is suitable for use with servomotors with turning moments of 4 Nm (spring return) as well as 5 Nm, 10 Nm, 20 Nm.

Large protective housing is suitable for use with servomotors with turning moments of 10 - 20 Nm (spring return) as well as 40 Nm.

Type	Size	Article no.
Small protective housing	240 x 120 x 100 mm	B469900
Large protective housing	340 x 150 x 120 mm	B469920



Motor consoles for IP66 protective housing

Motor consoles for IP66 protective housing. Stainless steel, to bolt onto the air duct.

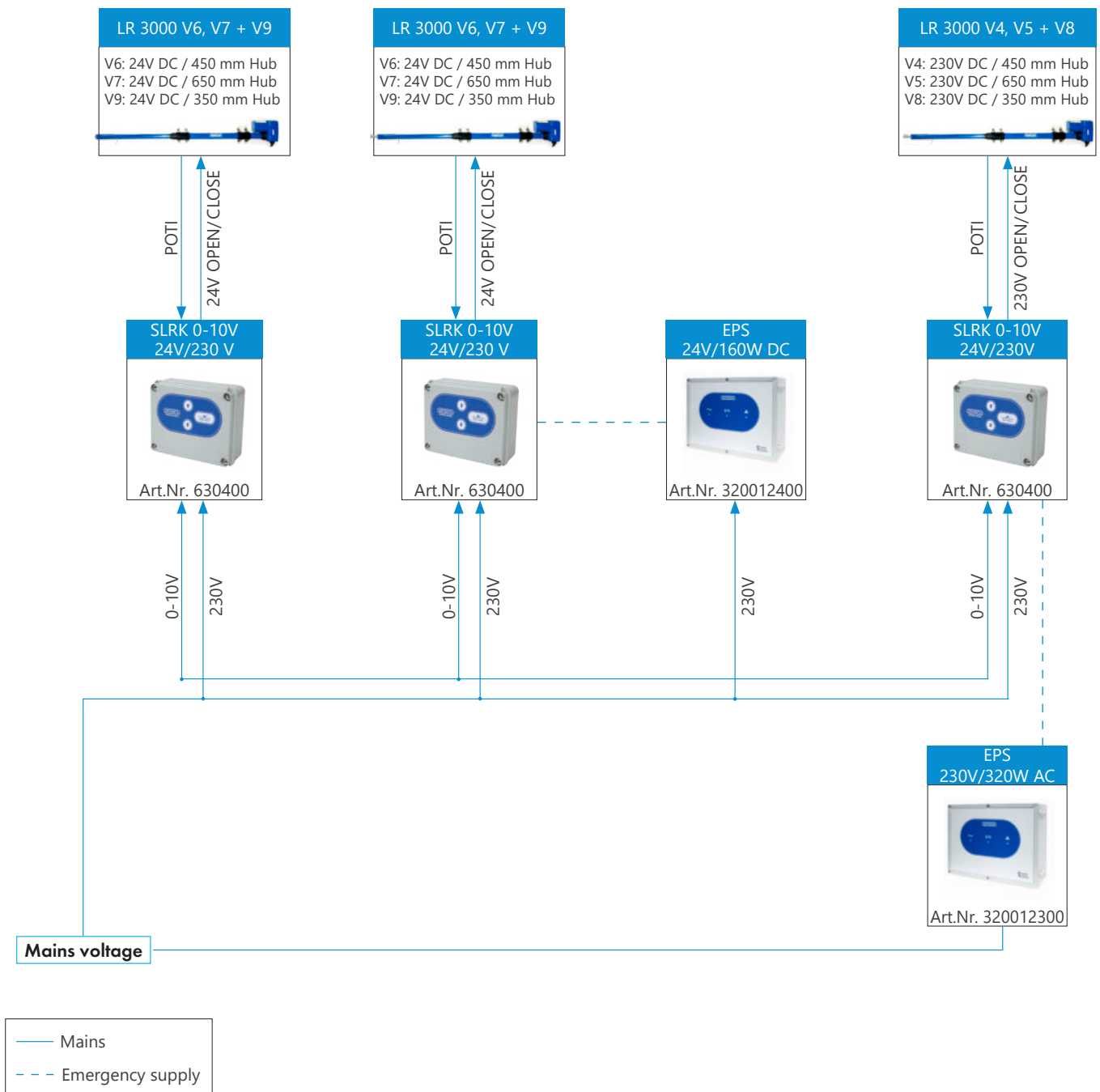
Suitable for protective housing	Article no.
B469900	B469905
B469920	B469925



Selection assistance - electro cylinders and controllers

Electro cylinder LR 3000 V4, V5, V8 (230 - 240 V) or V6, V7, V9 (24V DC)

Using the selection assistance you will find the optimum controls for the various electro cylinders.



Electro cylinders

The electro cylinder can be used for opening and closing wall air inlets as well as fresh air distributors. However, it can also be used in place of a winch. It is characterized by high functionality combined with high capacity values. Particularly well suited for installation in animal stables. A SLRK position transmitter is necessary to operate an electric cylinder. It is not possible to operate several electric cylinders with just one SLRK position transmitter.



Electro cylinder LR 3000 V4, V5 or V8 (230 - 240 V)

With mechanical stroke limitation
 Supply voltage: 230 - 240V, 50/60Hz
 Power consumption: 150/160W IP54, 1450/1700 1/min
 Current consumption: 0.7/0.8A
 Force: Max. 3000N
 Incl. fixing clamps for wall mounting.

Stroke way	Article no.
V4 / 450 mm	630300
V5 / 650 mm	630310
V8 / 350 mm	303992300

Electro cylinder LR 3000 V4, V5, V6, V7, V8 or V9

Ambient temp: -20°C to +50°C
 Lifting force: max. 3000N
 Feedback signal: V4/V6: 0 - 10 kΩ, V5/V7: 0 - 6.5 kΩ, V8/V9: 0 - 7.4 kΩ

Electr. connection:
 V4/V5/V8: Cable 1 m, motor cable (230V AC) 4-core potentiometer cable (max. 24V) 3-core

V6/V7/V9: 1 m 3 x 0.75 mm² potentiometer cable
 1 m 4 x 0.75 mm² mains cable

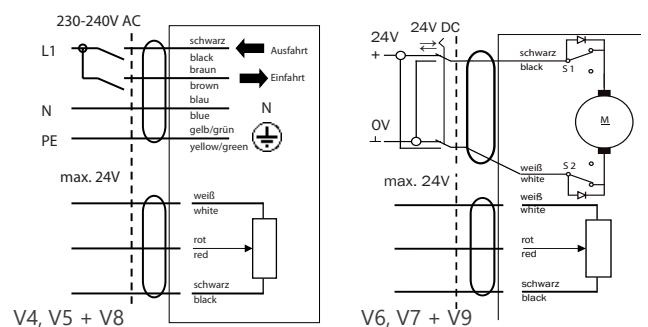
Electro cylinder LR 3000 V6, V7 or V9 (24V DC)

With mechanical stroke limitation
 Supply voltage: 24V DC
 power consumption: 65/75W IP54, 2100/2300 rpm 1/min
 current consumption: 2,8/3.0A
 power: max. 3000N

Incl. fixing clamps for wall mounting.

Stroke way	Article no.
V6 / 450 mm	630305
V7 / 650 mm	630315
V9 / 350 mm	303992400

Electro cylinder connection:



Stroke extension for LR 3000

To double the stroke way via a pulley for ropes up to 5 mm

Article no.

630620





Electro cylinders V26

The electro cylinder can be used for opening and closing wall air inlets as well as fresh air distributors. However, it can also be used in place of a winch. The electro cylinder V26 is characterised by high functionality combined with high capacity values. Particularly well suited for installation in animal stables.

The electro cylinder V26 is directly controlled with a control signal 0 - 10V.



Electro cylinder LP 3000-V26 rev. 2.0 (24V DC)

Supply voltage: 24V DC / AC (min. 22V DC)
 Power consumption: 65-75W, 2100/2300 1/min
 Current consumption: 2,8/3.0A
 power: max. 3000N

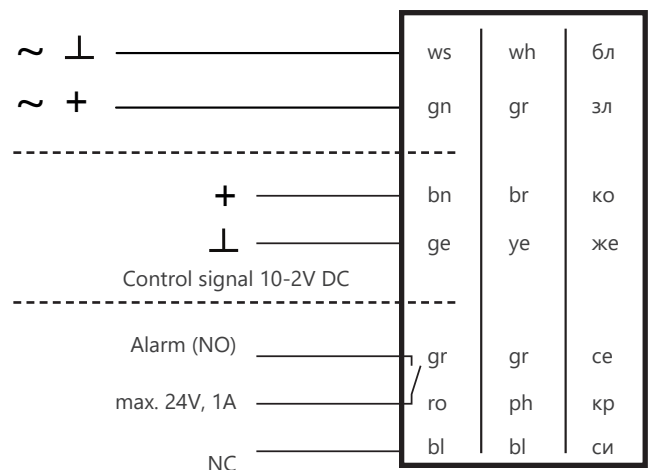
Incl. fixing clamps for wall mounting.

Electro cylinder LP 3000 V26

Voltage: 24V DC / AC (min. 22V DC)
 Power consumption: 65-75W, 2100/2300 1/min
 Current consumption: 2.8/3.0A
 Traction: Max. 3000N
 Lift: 400 mm
 Control signal: 10-2V
 (Dimensioning I_{max} 0.5 mA)
 (10V retracted, 2V extended)
 Alarm contact: potential-free NO
 (max. 24V DC/AC, 1A)
 electrical connection: Cable 1.5 m, 7 x 0.75 mm²
 Protective class: IP54

Stroke way	Article no.
400 mm	630325-1

Supply voltage 24V DC/AC



Motor controls SLRK 0-10V

For the conversion of a 0/2 - 10 V control signal to a drive with feedback potentiometer. The drive is driven between the end stops programmed during commissioning by means of the motor controller evaluating the signals from the feedback potentiometer. In doing so the requirements regarding pulse-pause operation for the electro cylinders are taken into account. By means of manual operation, the drive can also be driven with the direction buttons. Even with this manual operation the end positions programmed during commissioning cannot be exceeded. A SLRK position transmitter is necessary to operate an electric cylinder. It is not possible to operate several electric cylinders with just one SLRK position transmitter.



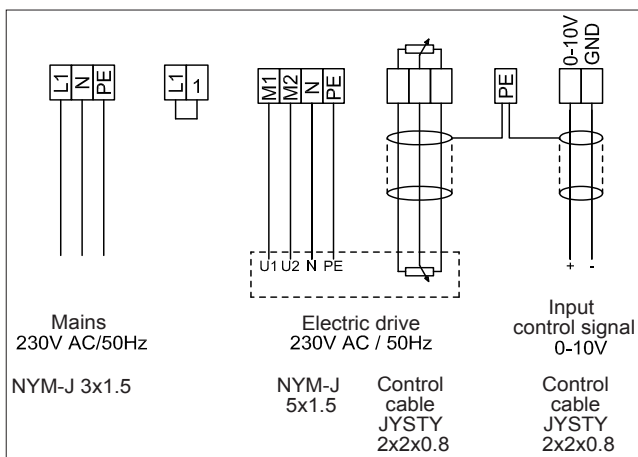
Operating voltage control: 230V/50/60Hz
 Control signal: 0/2 - 10V, 10 - 2/0V
 Potential free switch contacts for motor drive: 24-230V AC/DC max. 200VA

Feedback potentiometer for the drive: min. 2kΩ, max. 10kΩ

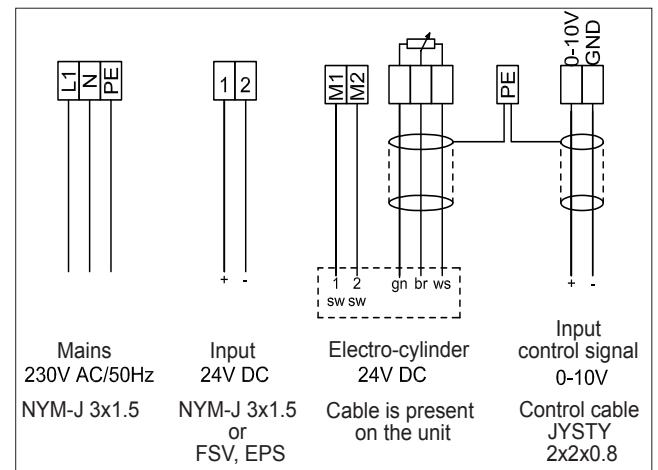
Article no.

630400

Connection example for electric drive
 230V AC / motor control SLRK 0-10V



Connection diagram (example) for electro cylinder
 24V DC / motor controller SLRK 0-10V 24V/160VA and SLRK 0-10V 24V/320VA



Emergency Power Supply EPS

The emergency power supply EPS serves to buffer the 230 V or 24V supply of electro cylinders or servomotors for opening flaps. With this, in the event of a power failure these drives can be switched to an emergency position once, in order to ensure the greatest possible air circulation when the power supply has failed. One EPS can control up to two electro cylinders. We recommend additional overvoltage protection.

Protective class: IP54



Emergency Power Supply EPS	Article no.
230V/320W AC	320012300
24V/160W DC	320012400

Technical data EPS

	230V/320W AC	24V/160W DC
Capacity:	230V/320W AC	24V/160W DC
Input voltage:	100V–240V AC 50–60Hz	100V–240V AC 50–60Hz
Output voltage / battery operation:	230V (50/60 Hz) pseudo-sinus	24 VDC
Max. current with battery operation:	1.4 A	6.6 A
Battery capacity:	3.0 Ah	
Operating temperature:	0-35 °C	
Moisture:	0-85%	
Alarm:	Acoustic and visual signal with battery operation	

IS air inlet chimneys

IS air inlet chimneys are designed to be used as ceiling or roof inlets in livestock structures. The patented star diffuser ensures that the incoming air stream is accurately controlled and radially distributed to create a uniform climate inside the structure.

The system offers the following advantages:

- Finest fresh air distribution over a large distribution range, even at minimum air rate
- Available as negative pressure or equal pressure system
- Patented star diffuser for an optimal air distribution
- Chimneys made of high quality polyethylene
- Adjustment of the star diffuser can be centralized or decentralized

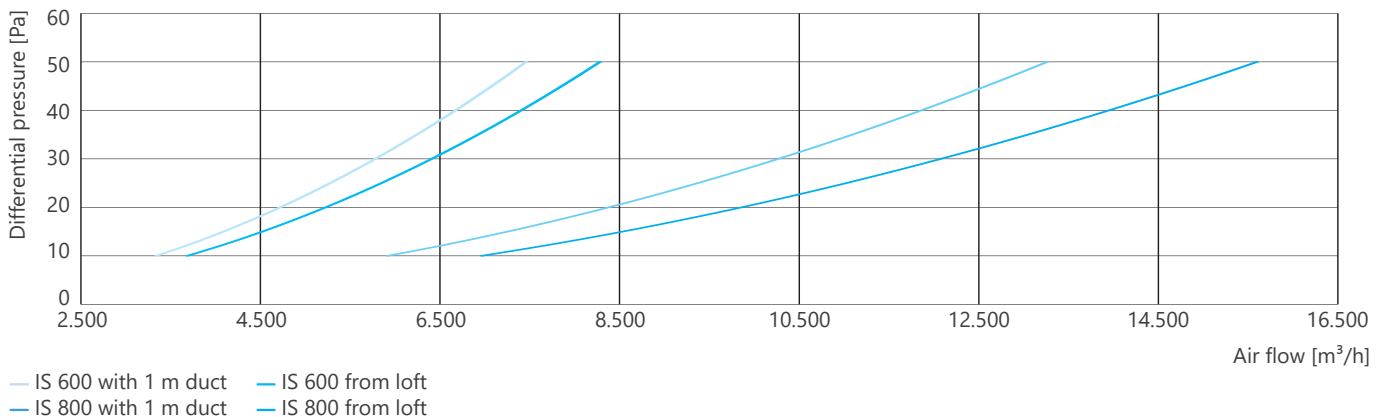
How to build up a IS air inlet chimney?

IS air inlets are get-up with several components allowing to make them suitable for every situation.



- 1 Rain hood and bird protective grid
- 2 HDPE with joints and accessories
- 3 Flexible flashing and Multiflex for adjusting the chimney to the roof
- 4 Patented star diffuser

Differential pressure vs. Flowrate

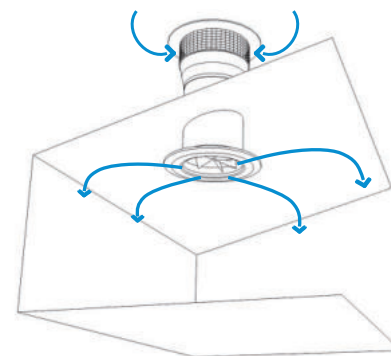


IS air inlet chimneys

IS air inlet chimneys non-assembled. Fan optionally available.

IS chimney inlets for roof inlet Comprised of: 1 m duct, star diffuser, rainhood and bird protective grid.

Type	Pulling force (N)	Strokeway (mm)	Article no.
IS 600	34	300	12-52030497
IS 800	41	300	12-52030503
IS 600 for fan installation	34	300	12-52030499
IS 800 for fan installation	41	300	12-52030505

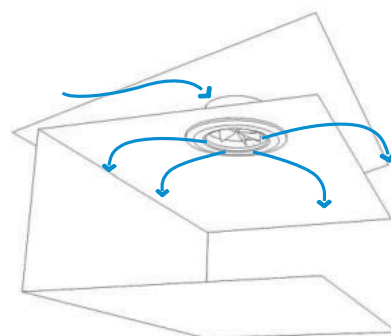


IS chimney inlets for roof inlet

IS chimney inlets for roof space / ceiling inlet

Comprised of: 0.5 m duct and star diffuser.

Type	Pulling force (N)	Strokeway (mm)	Article no.
IS 600	34	300	12-52030501
IS 800	41	300	12-52030507
IS 600 for fan installation	34	300	12-52030644
IS 800 for fan installation	41	300	12-52030509



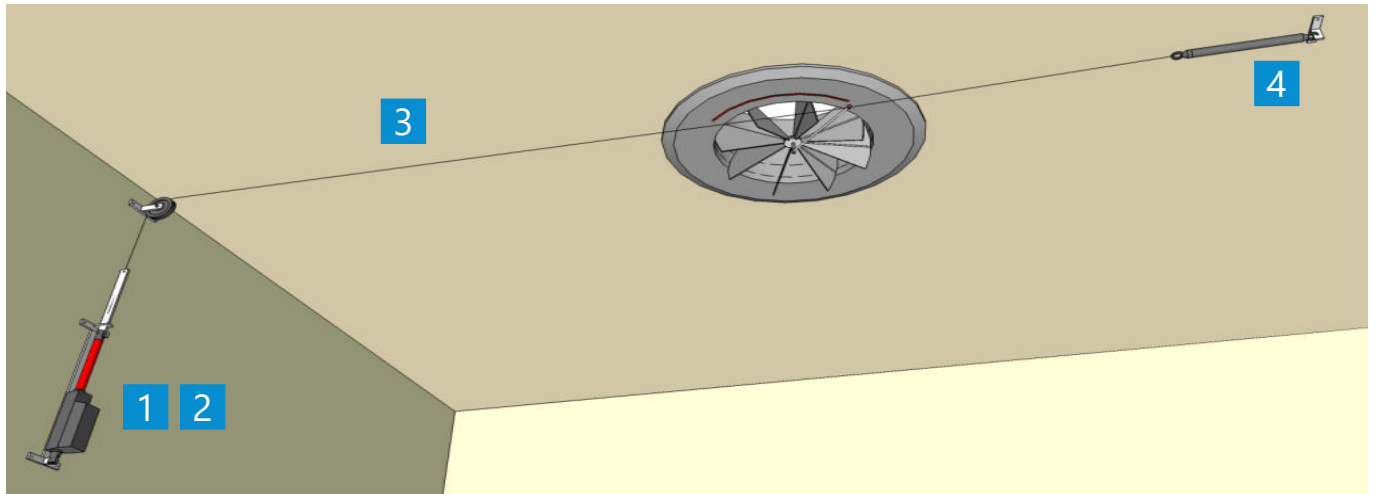
IS chimney inlets for roof space / ceiling inlet

Performances

	IS 600 with 1 m duct	IS 600 for roof space	IS 800 with 1 m duct	IS 800 for roof space
Air flow at 0 Pa	3,357 m ³ /h	3,647 m ³ /h	5,843 m ³ /h	6,946 m ³ /h
Air flow at 20 Pa	4,720 m ³ /h	5,142 m ³ /h	8,414 m ³ /h	9,789 m ³ /h
Air flow at 30 Pa	5,770 m ³ /h	6,500 m ³ /h	10,285 m ³ /h	12,150 m ³ /h
Fan model for active chimney operation	Fan 250/900 / Munters Drive		Fan 370/900 / Munters Drive	
Air flow* at 100% fan speed	9,290 m ³ /h	9,920 m ³ /h	17,140 m ³ /h	18,969 m ³ /h
Permissible per ERP2015	✓			

*Equal pressure ventilation

Pulling system for IS air inlet chimneys



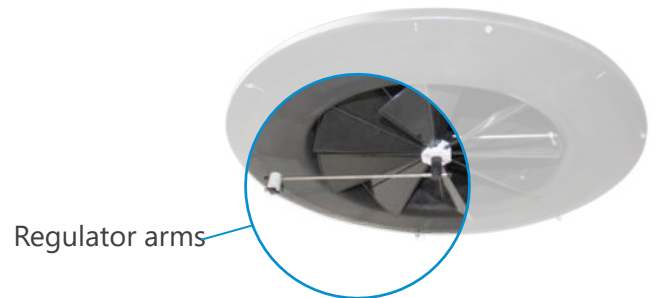
- 1** Electro cylinder
- 2** Motor control
- 3** Wire ropes
- 4** Spring/Weights

Regulator arms

To regulate the opening of the the star diffuser.

Article no.

12-52030521



Flexible flashings

Required for a tight connection between roof and chimney. Including silicone, adhesive for roofing panels and self-drilling screws.
 Dimensions: 1,400 x 1 x 2,000 mm.
 Material: PVC.



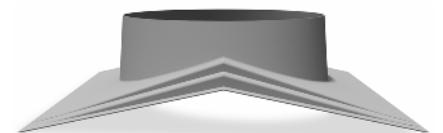
Flexible flashing

Type	Article no.
Compatible with IS and TU 600	12-52030479
Compatible with IS and TU 800	12-52030480

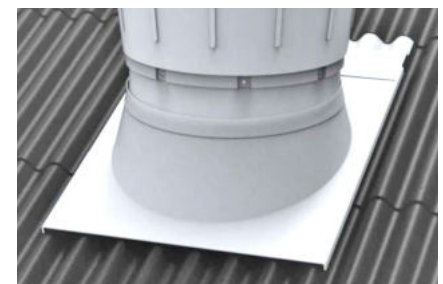
Multiflex

Multiflex roofing panels are both rigid flashing for ridge or for the side of a roof.
 Material: PE.

Type	Article no.
Multiflex /ridge = compatible with IS and TU 600	12-52030064
Multiflex /ridge = compatible with IS/TU 800	12-52030078
Multiflex /side = compatible with IS/TU 600	12-52030703
Multiflex /side = compatible with IS/TU 800	12-52030045



Multiflex/First



Multiflex/Seite



Frequency controllers 1 ~ 230V with regulation function and multifunction display

Incl. main switch and LC multifunction display with plain text display. Motor protection through TK contact connection options. **With integrated sinusoidal filter on all poles.** Parallel operation of fans possible. Good efficiency, also in partial load range with integrated mains filter. Insensitive to mains fluctuations and therefore mains interference.

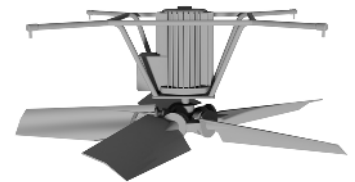
- Continuously adjustable
- Protective class IP 54



Current max. (A)	Type	Article no.
4	FXET4MQ	730220
6	FXET6MQ	730230
10	FXET10MQ	730240

Fans

Motor with propeller (other fans available on request).



Type	Air flow (m ³ /h)			Number of blades	Compatible with	Article no.
	0 Pa	10 Pa	20 Pa			
Munters drive / 660 W / 230 V	20.653	20.019	19.634	5	IS 800	12-52031007

Regulation of shutters

Two different criteria of damper regulation:

1. ON-OFF: This control criterion can control five separate groups with each four motors.
2. Variable: this regulation criteria can control max four Linak motors per TSN2i.

On-Off

Type	Article no.
Linak LA12 on/off — compatible with TU 600	12-52030706
Linak LA12 on/off — compatible with TU 800	12-52030528

Electro cylinders LA12P

For opening fresh air inlets and IS/TU air inlet chimneys.

Speed (mm/s)	Voltage (V)	Traction (N)	Stroke way (mm)	Article no.
40	24	750	19—130	12-52030750



Intelligent emergency openings TSN2i

Controls up to four 4 electric motors LA35, LA12. Control input 0—10 V; digital.

Article no.
12-524027



Linak power supplies

Controls up to 20 LA12 motors(24V). Consisting of Stepbox and Accubox.

Artikel-Nr.
12-52030526



Emergency thermostats

The emergency thermostat opens the shutter when the set temperature is exceeded.

Type	Max. temperature	Article no.
Thermostat T4 1	41 °C	12-522111



T41

Fixing sets with rope deflection

For single-row or double-row installations with IS and TU chimneys. Excluding weight 35 kg.

Type	Article no.
Fixing sets with rope deflection - 1 row	12-522950
Fixing sets with rope deflection - 2 rows	12-523090



Wire ropes

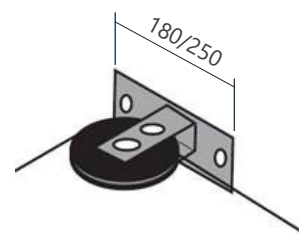
Stainless steel, very sturdy, robust and durable.

Type	Article no.
Piano wire rope Ø 3.0 mm	12-520921
Wire rope Ø 4.0 mm	12-520022



Corner fitting sets

Type	Length	Article no.
Corner fitting sets, short braket	180 mm	12-52030553
Corner fitting sets, long braket	250 mm	12-52030554



Weights 35 kg

Keeps wires under tension.

Article no.
12-521693



Springs

Keeps wires under tension (load = 525 N).

Type	Article no.
Stainless steel; Fmax 525 N	12-520920



Winch drives with hand cranks incl. brackets

Using a hand winch to open and close the system.
The winch has a pulling force of 550 kg.

Type	Article no.
Manual winch	336210
Manual winch with bracket	336250
Hand winch with bracket	12-52030182



Winch drive with hand crank incl. bracket

Motor control sets

For opening fresh air inlets and IS and TU chimneys.
Comprised of: Electro cylinder LA35 and intelligent emergency opening TSN2i. Including wall fittings.

Electro cylinder	Motor controller	Traction (N)	Stroke way (mm)	Article no.
Linak LA35	TSN2i	4,000	450	12-52030918



Ducts HDPE

Additional duct section to increase chimney height.
Made of durable HDPE.

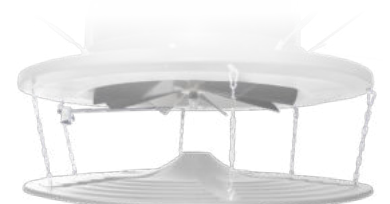
Type	Article no.
Height 500 mm — compatible with IS 600	12-52030066
Height 500 mm — compatible with IS 800	12-52030080
Height 1000 mm — compatible with IS 600	12-52030070
Height 1000 mm — compatible with IS 800	12-52030084



Air distributors

Needed to deflect the air flow. Distributes the air horizontally.

Type	Article no.
Compatible with IS 600, IS 800	12-521825



AirProTec® fresh air filters

Reliable protection against viruses and bacteria for your stable

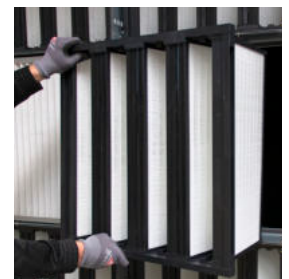
With the fresh air filter system »AirProTec«® a fresh air system has been developed, which filters up to 95% of viruses and bacteria from the fresh air according to investigations carried out by the University of Leipzig.

The fresh air filtering system »AirProTec«® is available in 2 designs:

1 AirProTec® filter module is generally used with overpressure-based fresh air guidance. This system is equipped with an integrated pad cooling system and offers a high degree of operational assurance due to the fully automatic leak-tightness control. It can be used with single and multi-compartment stables. The roof cavity or fresh air ducts are used as a fresh air corridor. As such, the PRRS filter module is suitable for new and retrofit installations. The fresh air supply to the compartment is usually realised via fresh air ceiling inlets.

The special AirProTec® control APT 1.0 monitors the state of the AirProTec® filter, the maintenance door of the AirProTec® module and the fresh air fan and switches this off as required.

2 AirProTec® filter elements are used in negative pressure systems and stand out due to the low investment costs, straightforward installation and ease of adaptability to existing systems. It can be used with single and multi-compartment stables. With fresh air ceiling inlets the fresh air is guided via the roof cavity, and with fresh air wall inlets it is guided via corridors.



Easy replacement of pre- and main-filter





AirProTec® filter module

The AirProTec® filter module is particularly well suited for use in stables in which the entire ventilation concept can be redesigned. The filter module is pre-installed and features the following points:

- High operational assurance due to overpressure ventilation and online leak-tightness testing
- Integrated plastic pad cooling system
- Service access for maintenance and cleaning of the system
- Pre-filter for filtration of large particles
- AirProTec® filter medium for the filtration of large particles

The AirProTec® control APT 1.0 monitors the state of the AirProTec® filter, the maintenance door of the AirProTec® module and the fresh air fan and switches this off as required.

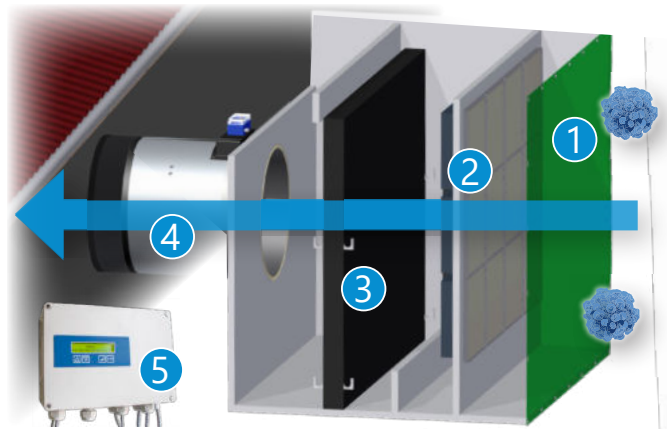
Filter classes:

Pre-filter: Standard EN779: G4 / US.MERV: MERV7
 Main filter: Standard EN779: F9 / US.MERV: MERV16

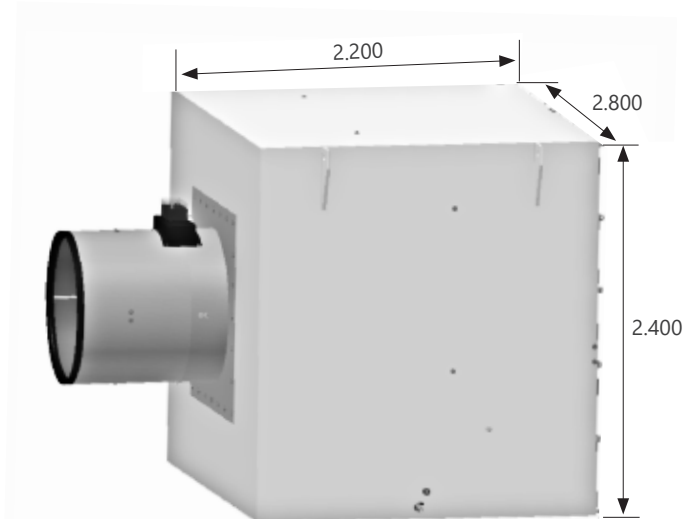
Type	Air flow (m3/h)	Article no.
AirProTec® filter modules 20,000	20,000	650200
Fan E910-FN-D6-A5	20,000	725812

Since every building project is specific, you shall receive an individual quotation within 48 hours following technical clarification.
 Attention: Order-specific article – returns not permitted!
 *The price quoted includes the components 1-5 listed above!
 Servomotor, fan and frequency controller are not included.
 Packaging information:
 AirProTec® Filtermodul 20.000 = 1 unit/pal.
 3.20 x 2.20 x 2.60m + 1 unit/pal. 1.40 x 1.40 x 1.20m

1 AirProTec® filter modules



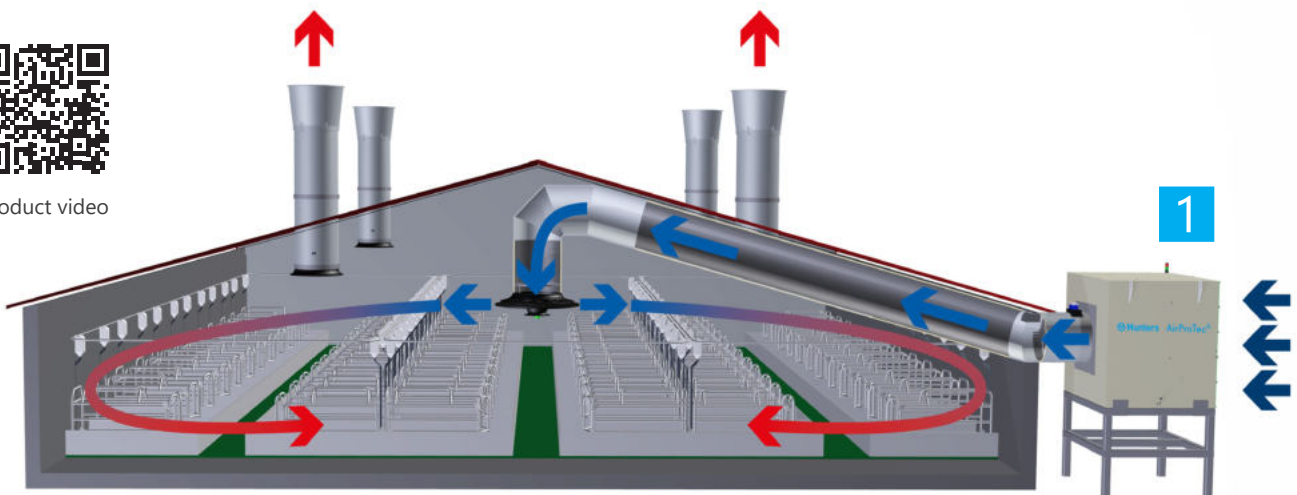
- 1 Preliminary filtration through wind protection nets
- 2 AirProTec® filter medium
- 3 Integrated cooling
- 4 Air duct with shutter
- 5 AirProTec® control APT 1.0



Installation example



Product video



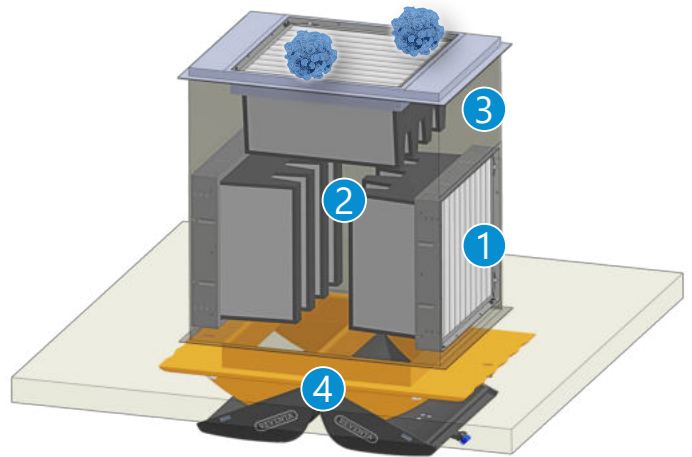


AirProTec® filter elements

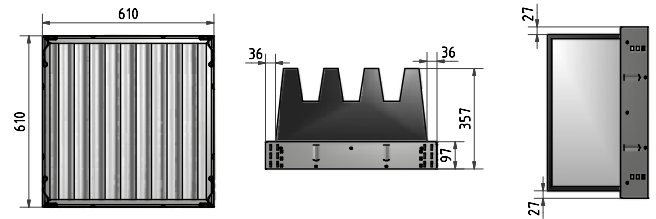
The AirProTec® filter elements, which are used for example in the APT filter modules and APT filter housings for ceiling air inlets, are exceptionally well suited for reducing pathogen contamination. This has been proven e.g. with the PRRS virus, staphylococcus and APP bacteria, in comprehensive lab tests conducted by the faculty for veterinary medicine of the University of Leipzig. The filter element features characteristics including the following:

- High dust retention capacity and therefore long service life
- Easy to install through the use of stable filter frame
- Quick filter change with the help of just four wire clips

2 AirProTec® filter elements



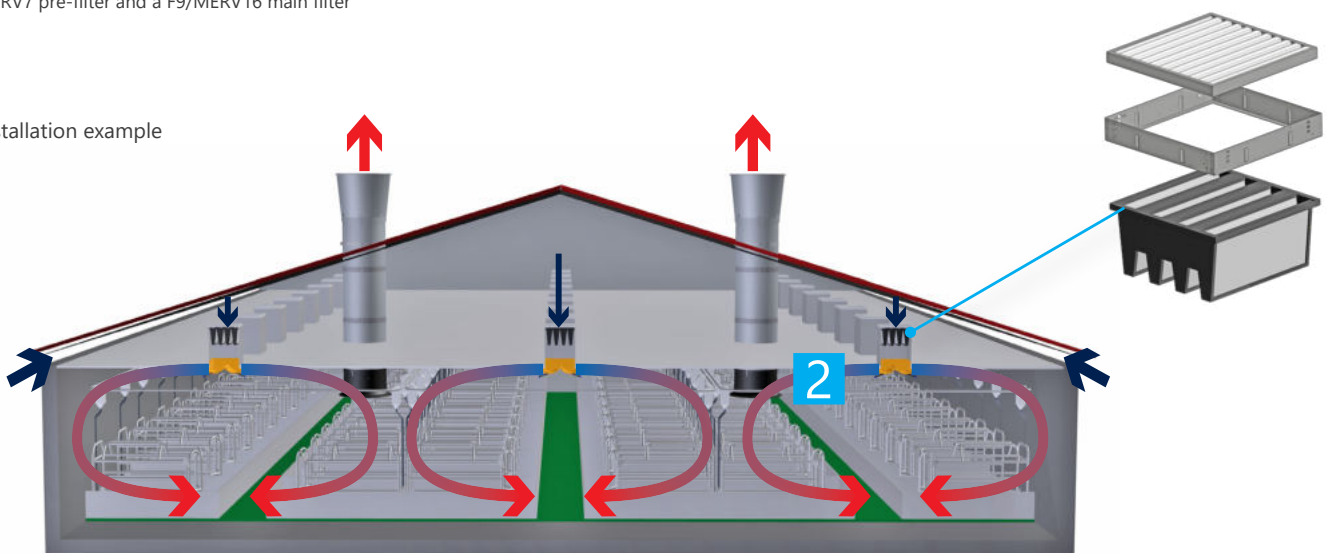
- 1 AirProTec® pre-filter
- 2 AirProTec® main filter
- 3 Filter insert frame
- 4 Fresh air inlet »ZED« Professional 1800 double

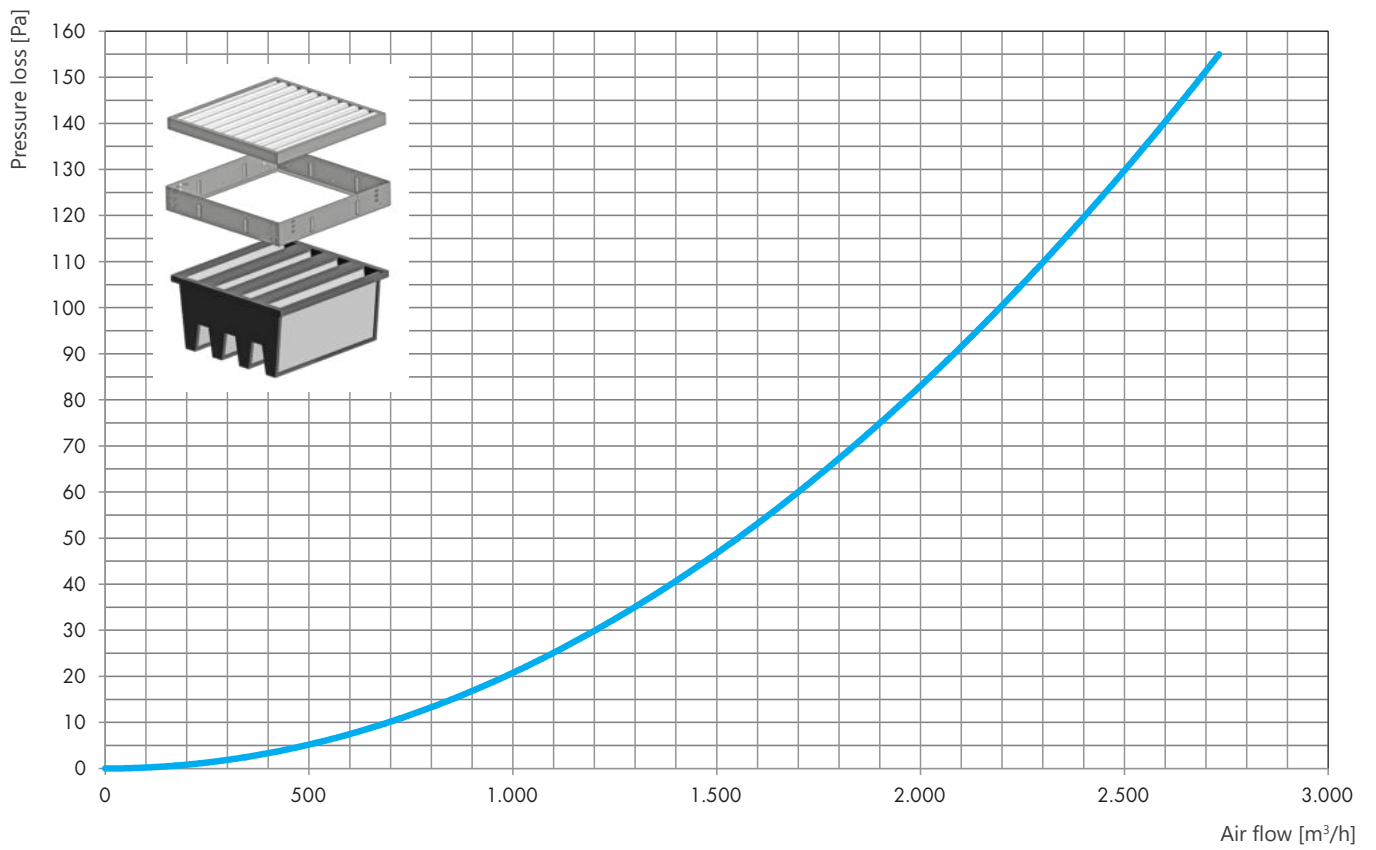


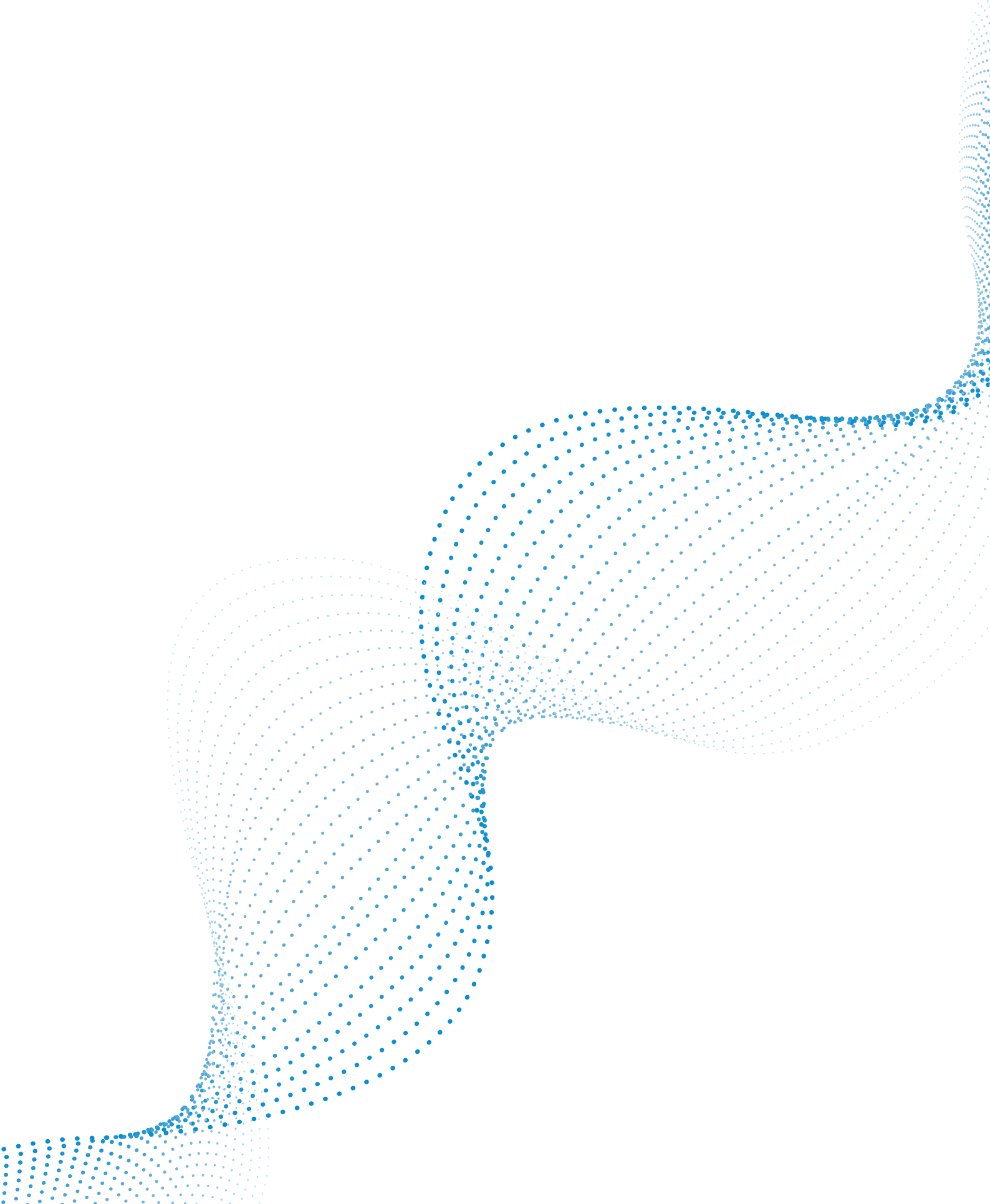
Type	Air flow (m³/h)	Dimensions (mm)	Article no.
AirProTec® filter element	1.700 [60Pa]	ca. 610 x 610 x 97	615969901
Pre-filter (standard EN779: G4 / US.MERV: MERV7)			9-615969902
Main filter (standard EN779: F9 / US.MERV: MERV16)			9-615969905
Galvanized filter insert frame			9-615969906

AirProTec® filter element consisting of: different filter insert frames, a G4/MERV7 pre-filter and a F9/MERV16 main filter

Installation example







Trapeze ventilation ceilings

Information/overview

Trapeze ceilings	3.1
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Trapeze ceilings/trapeze ventilation ceilings

GRP trapeze ceilings	3.2
Trapeze ventilation ceiling GRP	3.2
Aluminium trapeze ceilings	3.3
Aluminium trapeze ventilation ceilings	3.3
Accessories	3.4

Trapeze ceilings

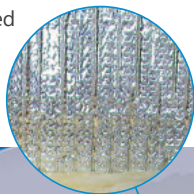
Made of GRP or aluminium

The trapeze ventilation ceiling is the optimum fresh air system in large-scale stable buildings without a suspended ceiling. The perforated trapeze ceiling is covered with 2-layer mineral wool. This wool has been specially developed for this field of application and serves to evenly distribute the inflowing air within the stable. A fleece layer laminated on the underside of the mineral wool, which is laid on the trapeze ceiling, has a water-repellent effect. At the same time the system acts as economical ceiling insulation.

This system is well suited for year-round ventilation, when combined with ceiling fresh air inlets (ZED 1000, ZED 1500, ZED 1800 Professional or ZED 5000) for a summer air flow (combined diffuse ventilation). We additionally recommend insulating the ceiling cavity with air cushion foil, in order to prevent the roof space from heating up in the summer.

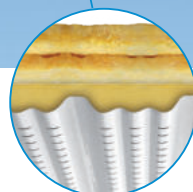


Air cushion foil, aluminium-coated



Trapeze ventilation ceiling with insulated roof space and fresh air ceiling inlet

Fresh air ceiling inlet
»ZED« Professional 1800 double
See chapter 2



GRP / aluminium trapeze ceiling (approx. 3 mm wide slots), with fleece and 2-layer mineral wool

A trapeze ventilation ceiling is ideal where no suspended ceiling has been installed or planned.

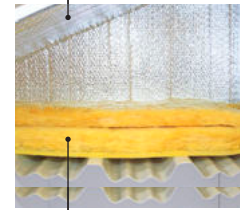


GRP trapeze ceilings

Non-perforated, made of profiled, glass fibre reinforced polyester panels. The material is ideally suited for usage in stable buildings, as it has a very smooth surface. With the correct usage, cleaning with high-pressure equipment is possible. With the separately available mineral wool base, the GRP trapeze ceiling is both an ideal as well as economical ceiling and wall covering in stable buildings.

Material: Glass fibre reinforced polyester (GRP)
 Color: light grey
 Dimensions: approx. 1,050 x 5,100 mm

Air cushion foil aluminium-coated



Hydrophobic mineral wool mat DUAL 2-layer with glass fleeces on a GRP trapeze ceiling, non-perforated

Type	max. available wingspan*	Article no.
1250	1,250 mm	442100
2500	2,500 mm	442200

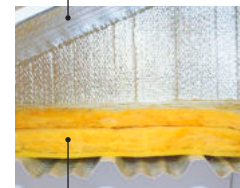
PU/pallet: 1,250 mm = 140 pieces, 2,500 mm = 100 pieces
 *Dependent on the number of fixing points and the material thickness of the insulation layer.

GRP trapeze ventilation ceilings

Slot width: approx. 3 mm, available area: approx. 5 %
 The GRP trapeze ventilation ceiling is perforated with approx. 3 mm wide slots. Even, excellent air distribution, also in large area compartments. The corresponding mineral wool is available separately.

Material: Glass fibre reinforced polyester (GRP)
 Color: light grey
 Dimensions: approx. 1,050 x 5,100 mm

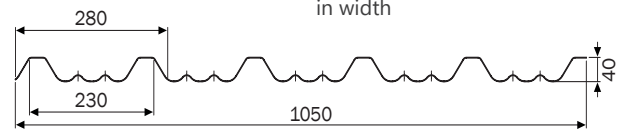
Air cushion foil aluminium-coated



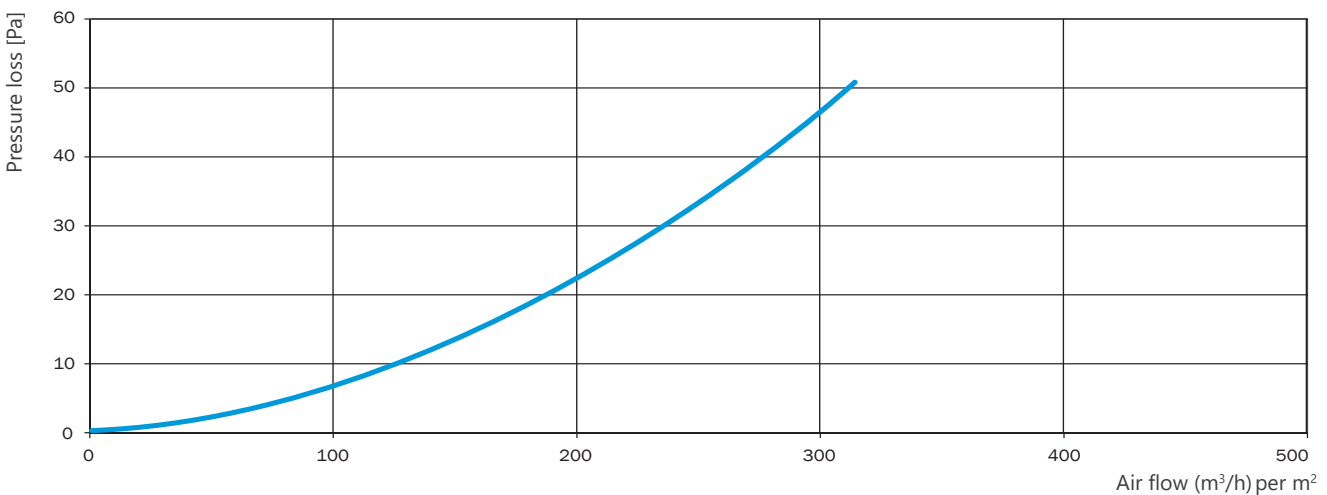
Hydrophobic mineral wool mat DUAL 2-layer with glass fleeces on trapeze ventilation ceiling GRP with slots approx. 3 mm in width

Type	max. available wingspan*	Article no.
1250	1,250 mm	441100
2500	2,500 mm	441200

Special lengths and partial perforation along the entire width on request!
 *Dependent on the number of fixing points and the material thickness of the insulation layer.



Air capacity of GRP trapeze ventilation ceiling with insulation



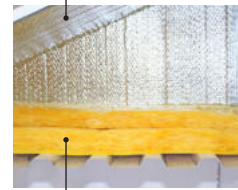
Aluminium trapeze ceilings

Non-perforated, made of profiled aluminium, **for increased fire protection requirements.**

The material can be utilised in the stable building. With the correct usage, cleaning with high-pressure equipment is possible. With the separately available mineral wool base, the aluminium trapeze ceiling is both an ideal as well as economical ceiling and wall covering in stable buildings. It has a high-quality appearance **and is flame retardant.**

Material: Aluminium
 Color: aluminium colors
 Dimensions: approx. 1,040 x 5,100 mm

Air cushion foil aluminium-coated



Hydrophobic mineral wool mat DUAL 2-layer with glass fleece on aluminium trapeze ceiling GRP, non-perforated

Type	max. available wingspan*	Article no.
1,250	1,250 mm	442300

PU/pallet: 1,250 mm = 140 pieces

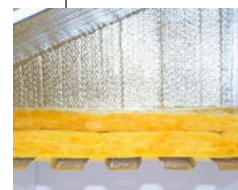
Aluminium trapeze ventilation ceilings

Slot width: approx. 3 mm, available area: approx. 5 %

The aluminium trapeze ventilation ceiling is perforated with approx. 3 mm wide slots. Even, excellent air distribution, also in large area compartments. The corresponding mineral wool is available separately.

Material: Aluminium
 Color: aluminium colors
 Dimensions: approx. 1,040 x 5,100 mm

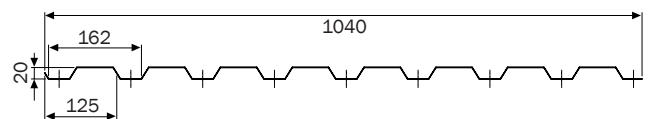
Air cushion foil aluminium-coated



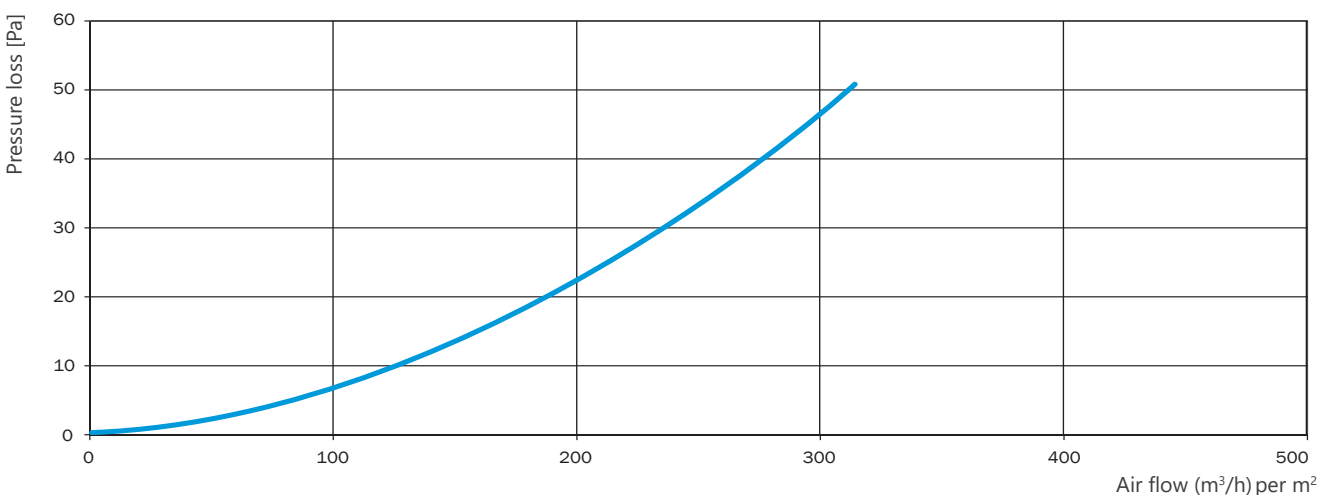
Hydrophobic mineral wool mat DUAL 2-layer with glass fleece on aluminium trapeze ventilation ceiling with approx. 3 mm wide slots

Type	max. available wingspan*	Article no.
1,250	1,250 mm	441300

Special lengths and partial perforation along the entire width on request!



Air capacity of GRP trapeze ventilation ceiling with insulation



Accessories trapeze ceiling/ trapeze ventilation ceilings

Air cushion foils, aluminium-coated

Air cushion foil, 2-layer, coated with aluminium. Economical solution for the insulation of the remaining exterior of the building. In this manner, the roof space – where the stable air is sucked in – does not become too cold in the winter and does not become too hot during the summer due to solar radiation.



Width (mm)	Article no.
1250	154001

Roll lengths of 50 m (Available only as a complete roll)

Mineral wool DUAL / thickness of 80 mm

Specially developed, hydrophobic (water-repellent) mineral wool with glass fiber fleece on the downstream side. The two wool layers are delivered already wrapped on a single roll. The quick installation is an advantage of this product. 2-layer with fleece, 80 mm



Width (mm)	Article no.
1,200	441008

Roll width 1,200 mm, roll length 11,5 m (only available as a complete roll)

Fasteners for trapeze ceilings

Screw stainless steel 4.5 x 25 mm with gasket ring. At least 6 units are recommended per m² of ceiling.

PU	Article no.
200 pcs.	441010



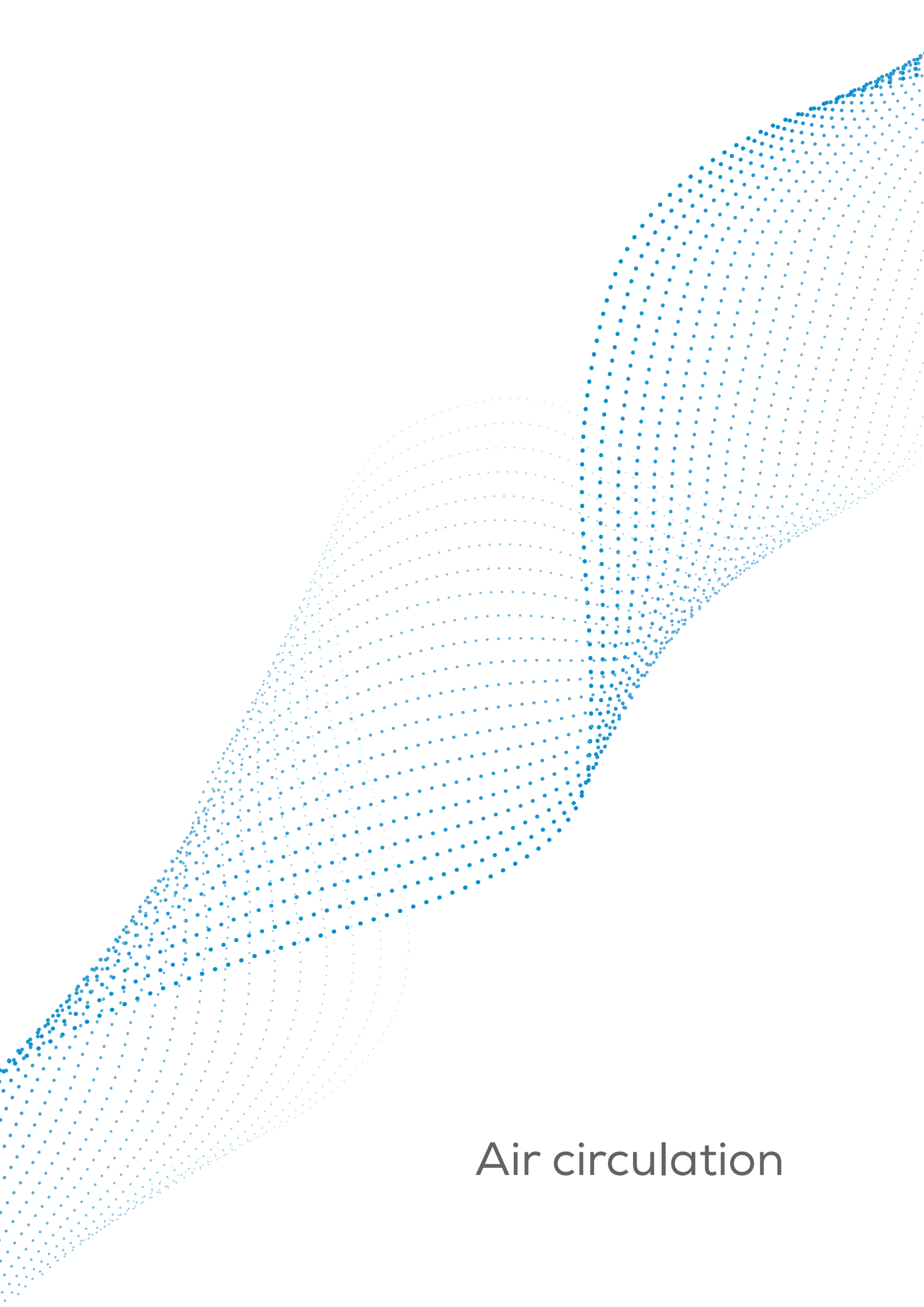
Corrugation filler

Sealing profile made of foam for the sealing of the beads between the compartments and if necessary at the ducts, in order to ensure the correct air flow and avoid leakage (see technical details of the trapeze ventilation ceilings).

Trapeze ceiling	Article no.
GRP	441030
Aluminium	441032



Dimensions approx.: Thickness 30 mm, Height 45 mm, Length 1,000 mm
Corrugation filler comprised of »top side« and »underside«.



Air circulation



Information/overview

Air circulation systems	4.1
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Air circulation fans

Air circulation fans Vario Air-Mix	4.2 – 4.3
Air circulation fans EDC18GHP / EDC24GHP	4.4 – 4.5

Air circulation systems

Create the optimal indoor climate

During the winter period when the ventilation is running in minimum capacity the producers can have problems with temperature stratification in the barns/houses. The warm air is in the top of the building, as warm air is less heavy than cold air. Circulation fans are the solution to guide the warm air down to the animal zone.

Which results in a reduction of heating power and thus energy costs.

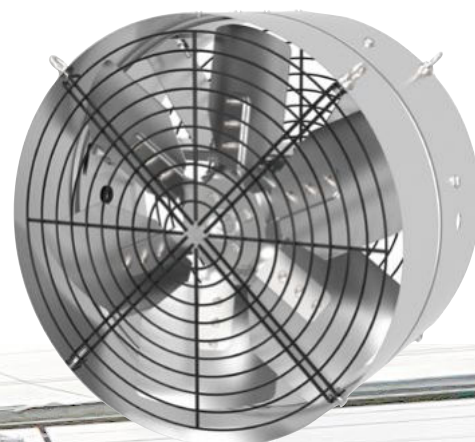
In the summer months, recirculating fans generate a cooling air flow, which in turn quickly leads away the heat.

The air circulation reduces the humidity in the stable and ensures dryer bedding, which provides a considerable reduction of the formation of ammonia. Humidity-related diseases such as ulcerative pododermatitis as well as avian diseases and fatalities are rarer.

In connection with the wall and ceiling air inlets, the desired amount of fresh air is supplied into the stable, mixed with the warm stable air, thus enabling a constant climate inside of the stable.



Air circulation fans Vario Air-Mix



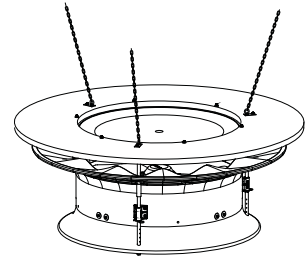
EDC18GHp





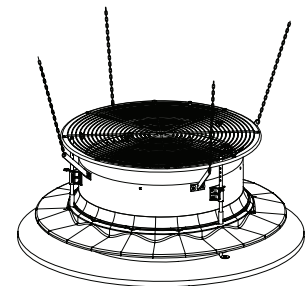
Air circulation fans Vario Air-Mix

- Constructed of corrosion resistant materials
- Maintenance free direct drive motor
- Adjustable air distribution across a large distribution diameter
- Mounts to ceiling using chain links
- Variable speed option available on request
- Available with intake on top or at bottom for different applications



Vario Air-Mix with intake at bottom

Intake	integrated built-in fan	Article no.
bottom	E910-FF-D6-A3 SG-EU	272924000
top	E910-FF-D6-V3 SG-EU	272924010
bottom	E910-FF-D6-A3-UL SG-US	272924021
top	E910-FF-D6-V3-UL SG-US	272924031



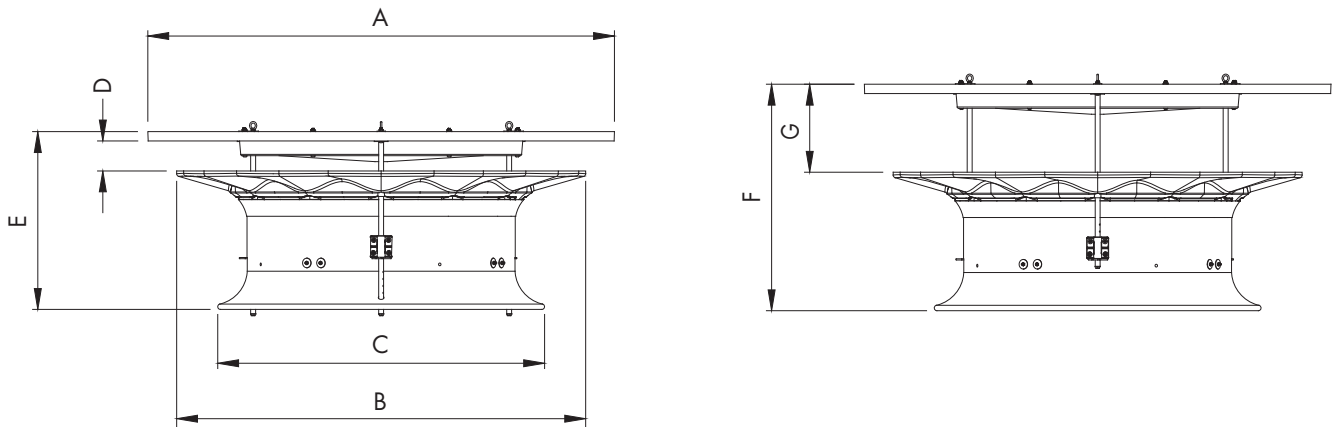
Vario Air-Mix with intake on top

Technical data

		Vario Air-Mix
Propeller diameter	mm [inch]	920 [36]
Transmission		Direct drive
Recirculating air flow rate ¹	m ³ /h	21,125
Throwing Range ²	[m]	22
Weight of fully equipped fan	kg	83
Nominal values	V/A/kW/Hz	230 - 400/3.3 - 1.3/0.92/50
Max power consumption/max current	kW/A	0.92/1.9 - 3.3
Motor insulation grade/protective class		F/IP54
Noise level ³	Db(a)	88

¹Max. airflow at 0 Pa; ²Dependant on pressure, outside temperature and internal stable temperature; ³Noise measure made according to ISO 3744

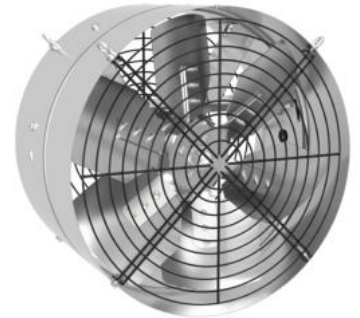
Dimensions



A	B	C	D	E	F	G
1,704 mm	1,494 mm	1,206 mm	110 mm	649 mm	827 mm	321 mm

Air circulation fans EDC18 GHP / EDC 24 GHP

- 18-24" propeller diameter
- Reduced length for lower shading
- Reduced length for higher loading capacity
- Reduced power consumptions



EDC18 GHP / EDC 24 GHP

Type	Propeller material	Power (HP)	Voltage (V)	IE	Article no.
EDC18 GHP	MP	0.5	3~400V/50Hz	3	1-2606501EU
EDC18 GHP	MP	0.5	3~400V/60Hz	1	1-2606502
EDC18 GHP	MP	0.5	1~220V/50Hz	1	1-2606503
EDC18 GHP	MP	0.5	1~220V/60Hz	1	1-2606504
EDC24 GHP	MP	0.5	3~400V/50Hz	3	1-2609105EU
EDC24 GHP	MP	0.5	3~400V/60Hz	1	1-2609106
EDC24 GHP	MP	0.5	1~220V/60Hz	1	1-2609111

Propeller material: MP = Munters Protect

Technical data

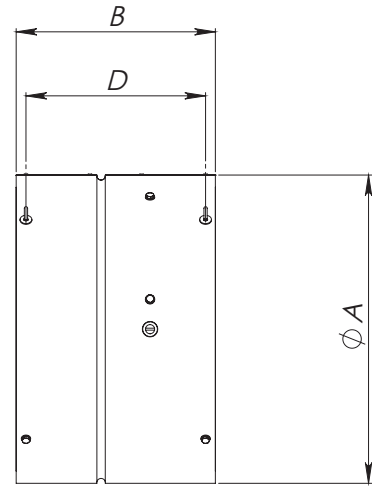
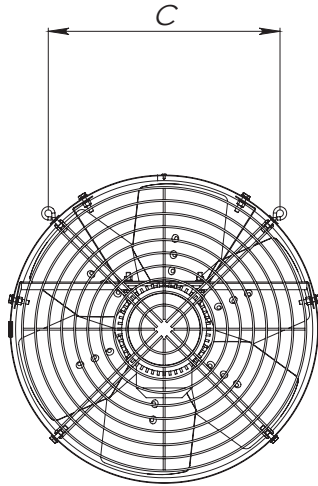
		EDC18Ghp		EDC24Ghp	
		220V	400V	220V	400V
Power	Hp	0.5		0.5	
Fan speed	rpm	1,400; 1,650		900	
Propeller diameter	mm [inch]	450 [18]		600 [24]	
Number of blades/material		6/Munters Protect			
Transmission		Direct drive			
Weight of fully equipped fan	kg	14		20	
Nominal values	V/A/W/Hz	220/2.5/ 370/50-60	400/1.1/ 370/50-60	220/2.9/ 370/60	400/1.2/ 370/50-60
Max power consumption/max current ¹	W/A	600-680/2.8-3	630-670/1.3-1.2	780/3.5	500-510/1-1.2
Motor insulation grade/protective class		F/IP55			
Noise level ²	Db(a)	69.2		65.7	
Permissible per ERP2015		—			

¹50 Hz specification, 60 Hz available upon request; ²Noise measure made according to ISO 3744

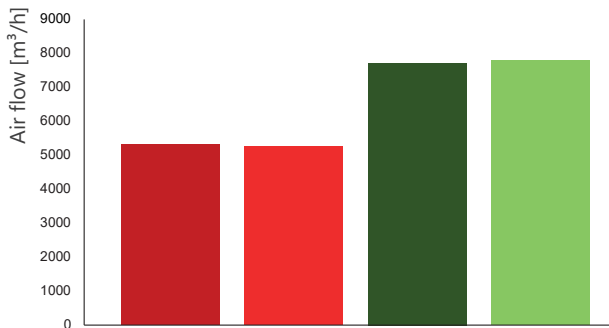


Dimensions

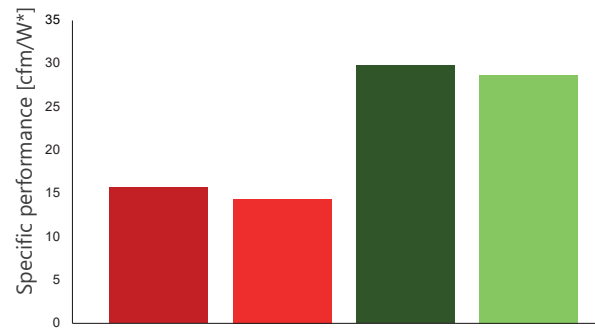
Type	A	B	C	D
EDC18GHp	472 mm	305 mm	355 mm	275 mm
EDC24GHp	623 mm	305 mm	458 mm	275 mm



Airflow



Efficiency

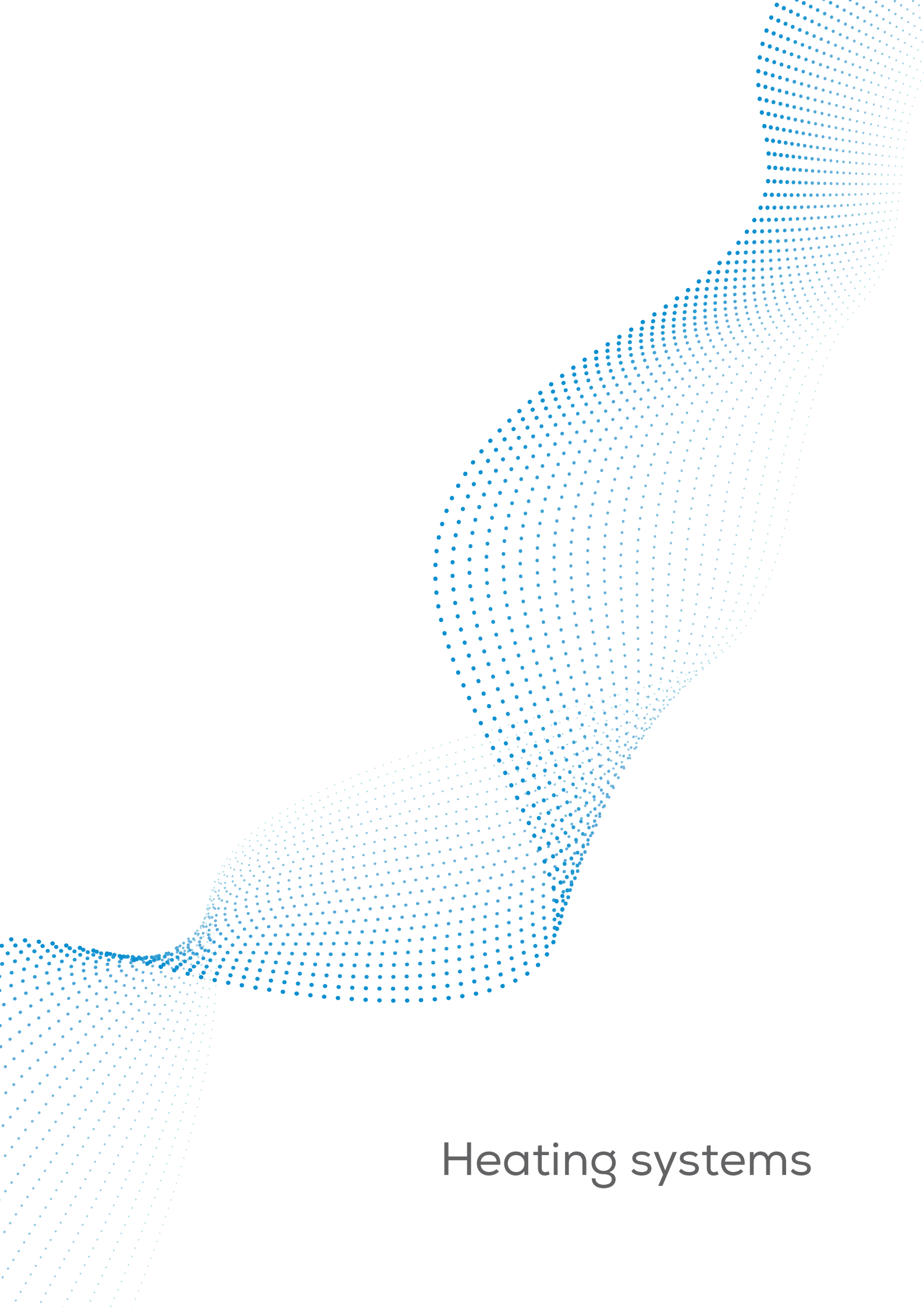


EDC18GHp		EDC24GHp	
■ IE2	■ IE1	■ IE2	■ IE1

Airflow and efficiency data measured at standard conditions (20°; 1013 hPa).
 *1 cfm/W = 1.7 m³/hW

Load capacity

	EDC18GHp		EDC24GHp	
	Unit/pallet	Unit/container	Unit/pallet	Unit/container
20' Container	56	336	42	168
40' Container	56	672	42	336
40' HC Container	64	768	48	384



Heating systems

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Heating systems

Long-lasting and efficient

If you wish to improve the capacity and operating profits in agricultural production then certain framework conditions must be achieved, as constantly as possible and impervious to the passage of time.

Ideal stable temperatures have a large influence on the health and efficiency of the animals. As a result, in many climatic regions the use of a heater is essential.

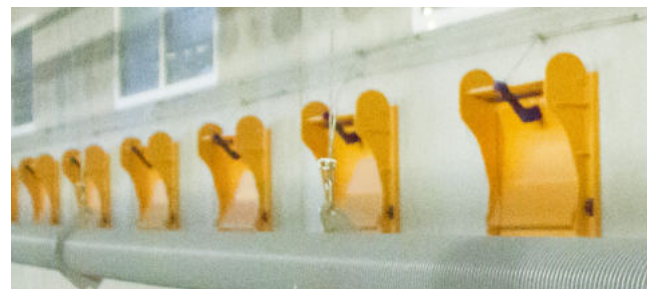
Increasing energy costs require tailored products that are energy-saving, durable and efficient. This is guaranteed by our heating systems.

Heat recovery in particular is becoming more and more relevant.

The air-air heat exchanger »Heat-X« Rotate is used for heat recovery from the exhaust air of poultry and pig stables. The core of the system is formed by a rotary heat exchanger, which with its fully automatic rotor cleaning safeguards optimal efficiency even in the event of a high degree of dust generation.



Heat-X Typ H

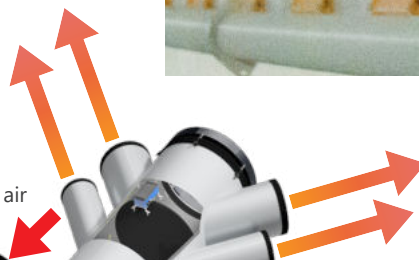


»REV-AL« finned tubes in combination with »ZEW« Profi

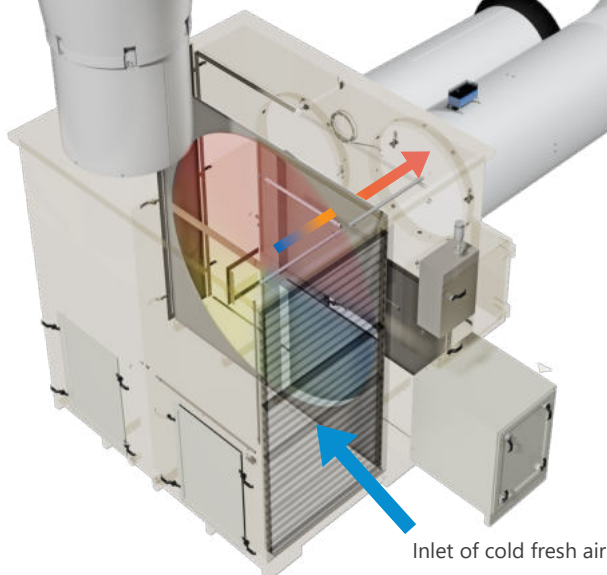
Exit of cooled stable air



Inlet of warm stable air



Exit of heated fresh air



Inlet of cold fresh air

Air flow of the heat exchanger from approx. 30% (shutter open)

»Heat-X« Rotate air-air heat exchanger

Effective heat recovery with rotary heat exchanger

The air-air heat exchanger »Heat-X« Rotate is used for the heat recovery of the exhaust air of poultry and pig stables. The design is very compact due to the straightforward construction with direct air flow and without preliminary filtration and generally differentiates itself from the solutions of our competitors.

The core of the system is formed by a rotary heat exchanger, which with its fully automatic rotor cleaning safeguards optimal efficiency even in the event of a high degree of dust generation. Thanks to the easy access via service shutters, hygienic and quick cleaning is possible at the end of the fattening period. The suction of fresh air is performed via a generously dimensioned weather protection grid with streamline designed lamellas, which prevents the penetration of rain as well as leaves and birds.

»Heat-X« Rotate is available with a supply and exhaust air flow of 20,000 m³/h and is suitable for standard truck transportation.

As standard, each system is delivered with a specifically developed control, which completely assumes control of the drive or the monitoring of the rotating storage mass and the control of the fresh air. The exhaust air flow of the »Heat-X« Rotate is controlled by the stable climate computer via a 0-10 V signal.

The controller included in the delivery assumes control of the corresponding fresh air flow. This guarantees the optimum operating point for the heat exchanger.



Product video



the location, temperature conditions and operating conditions.

Additionally, the control unit controls the cleaning, monitoring of the door switching contacts, the manual operation as well as the fresh air temperature at the outlet of the heat exchanger and provides an alarm signal in the event of malfunctions.

»Heat-X« Rotate boasts outstanding self-cleaning characteristics due to the smooth surfaces and counterflow principle. The self-cleaning characteristics are supported by a cleaning carriage, which is fitted with pneumatic nozzles. This cleaning carriage is activated in the event of exceeding an adjustable differential pressure.

Example calculation for cost savings in poultry farming (42 days)

avg. heating capacity*: e.g. 250,000 kWh
 avg. gas price: € 0.060/kWh to € 0.085/kWh
 higher electricity consumption*: e.g. 8,100 kWh
 avg. price of electricity: € 0.24/kWh to € 0.29/kWh
 *per fattening period

Annual cost savings through heat recovery with 7.4 fattening periods:

Gas / Electricity price	€ 0.060 / kWh	€ 0.065 / kWh	€ 0.070 / kWh	€ 0.075 / kWh	€ 0.080 / kWh	€ 0.085 / kWh
€ 0.24 / kWh	€ 8,724	€ 9,599	€ 10,474	€ 11,349	€ 12,224	€ 13,099
€ 0.25 / kWh	€ 8,650	€ 9,525	€ 10,400	€ 11,275	€ 12,150	€ 13,025
€ 0.26 / kWh	€ 8,576	€ 9,451	€ 10,326	€ 11,201	€ 12,076	€ 12,877
€ 0.27 / kWh	€ 8,502	€ 9,377	€ 10,252	€ 11,127	€ 12,002	€ 12,803
€ 0.28 / kWh	€ 8,428	€ 9,303	€ 10,178	€ 11,053	€ 11,928	€ 12,803
€ 0.29 / kWh	€ 8,354	€ 9,229	€ 10,104	€ 10,979	€ 11,854	€ 12,729

In total, up to 45 tons of CO₂ are saved. These values may vary depending on



»Heat-X« Rotate rotary heat exchanger

The following is included in the delivery in addition to the system housing with complete internal wiring:

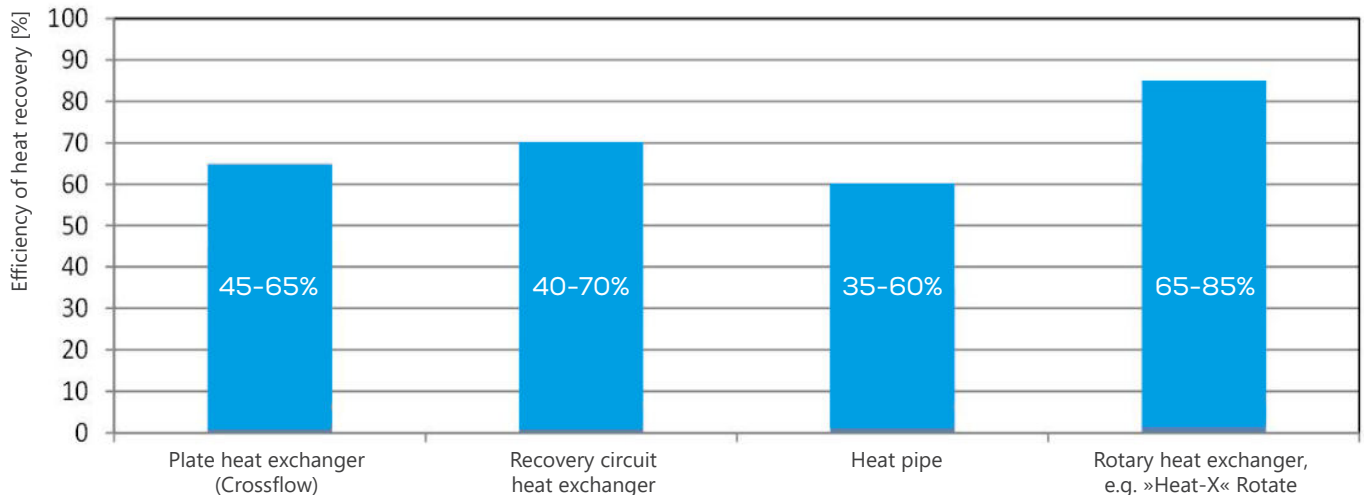
- **Exhaust air stable** (light grey / not installed):
AGROFLEX® air duct 1,500mm, PUR intake nozzle, adhesive for PUR intake nozzle, protective housing for actuator, shutter without servomotor, built-in fan
- **Exhaust air chimney »Heat-X« Rotate** (light grey / not installed):
AGROFLEX® air duct 1,000mm, diffuser incl. fixing set
- **Fresh air inlet** (installed):
Weather protection grating
- **Fresh air stable** (light grey / not installed):
AGROFLEX® air duct 1,000mm, shutter without servomotor, protective housing for actuator, built-in fan
- **Control for:**
Rotor drive, monitoring of the rotating storage mass, pneumatic cleaning, output signal (0 - 10 V) for fresh air fan.
- **Optional:**
Compressor incl. compressor housing (not installed), moisture sensor



Type	Air flow (m3/h) [0Pa]	Fan, fresh air	Article no.
20,000 with EC-fan	20,000	E910-FN-D10-A5	411922503
20,000 incl. compressor with EC-fan	20,000	E910-FN-D10-A5	411922502

*Available on request with AC-fan.

Efficiency comparison with a number of other heat exchange systems



»Heat-X« Rotate inlet nozzles

In a poultry stable, the installation of the »Heat-X« Rotate is generally performed laterally to the building. The supply can take place e.g. via an inlet nozzle specially developed for this application. In this manner, sufficient throwing ranges and the avoidance of drafts is ensured in the animal area.

Inlet nozzle with 4 outlets, fully mounted in the AGROFLEX® air duct with removable end cap including shutter and protective housing, without servomotor.

Type	Article no.
10,000	411654612
20,000	411924A10



Inlet nozzle 20.000



Inlet nozzle 10.000

»Heat-X« Rotate curves 12-20°

Curves (min. 12°, max. 20°) for »Heat-X« Rotate with internal coating consisting of GRP.

Type	Article no.
10.000	9-411654A20
20.000 curves 20°	411924600
20.000 curves 15°	411924601



Moisture/temperature sensor

Operating voltage 11 – 30 VDC, analogue outputs:
Temperature 0 - 10 V, moisture 0 - 10 V

Article no.
306012420



Dimensions

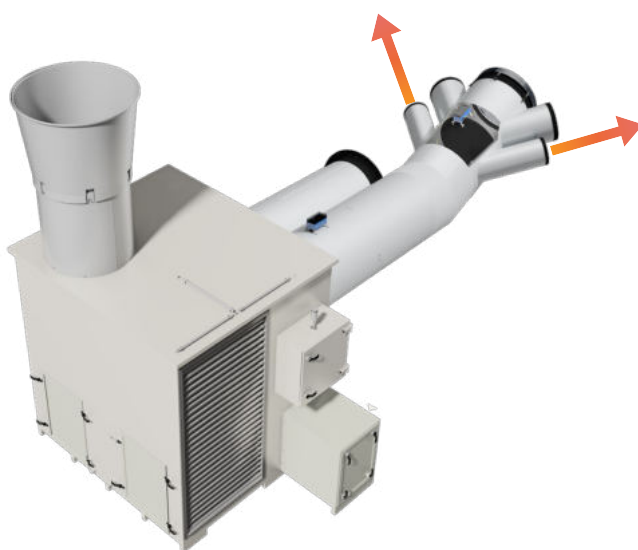
Typ	Dimensions (mm)		
	H	W	D
20,000	2,730	2,300	2,600

Exemplary calculation on the heat power

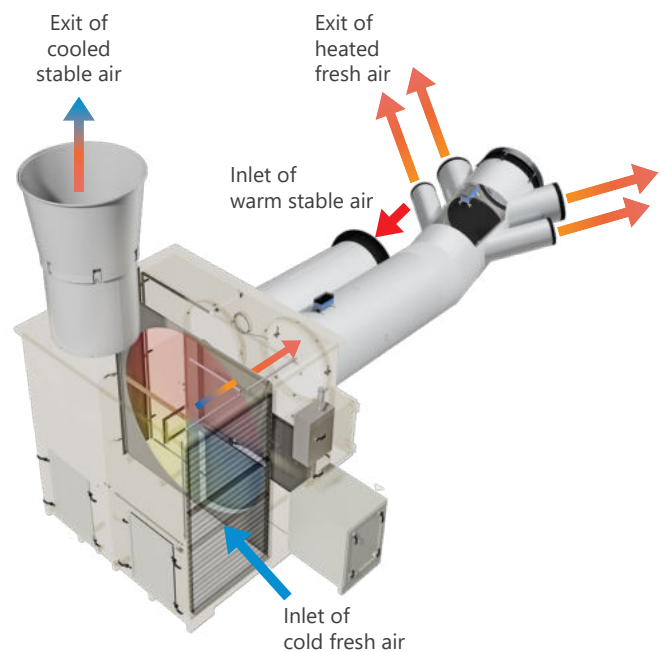
»Heat-X« Rotate 20,000		
Fresh air inlet	Air flow	20,000 m ³ /h
	Air temperature	0 °C
	Relative humidity	90%
Fresh air outlet	Air temperature	14.8 °C
	Relative humidity	79 %
Exhaust air inlet	Air flow	20,000 m ³ /h
	Air temperature	25.1 °C
	Relative humidity	67 %
Heat recovery factor		59 %
Rotor speed		10 U/min
Heat power		175 kW



Functional principle of »Heat-X« Rotate inlet nozzles



Air flow of the heat exchanger up to approx. 30% (shutter closed)



Air flow of the heat exchanger from approx. 30% (shutter open)

»exchange«[®] air-air heat exchanger

From 40 to 120 kW – easy to integrate

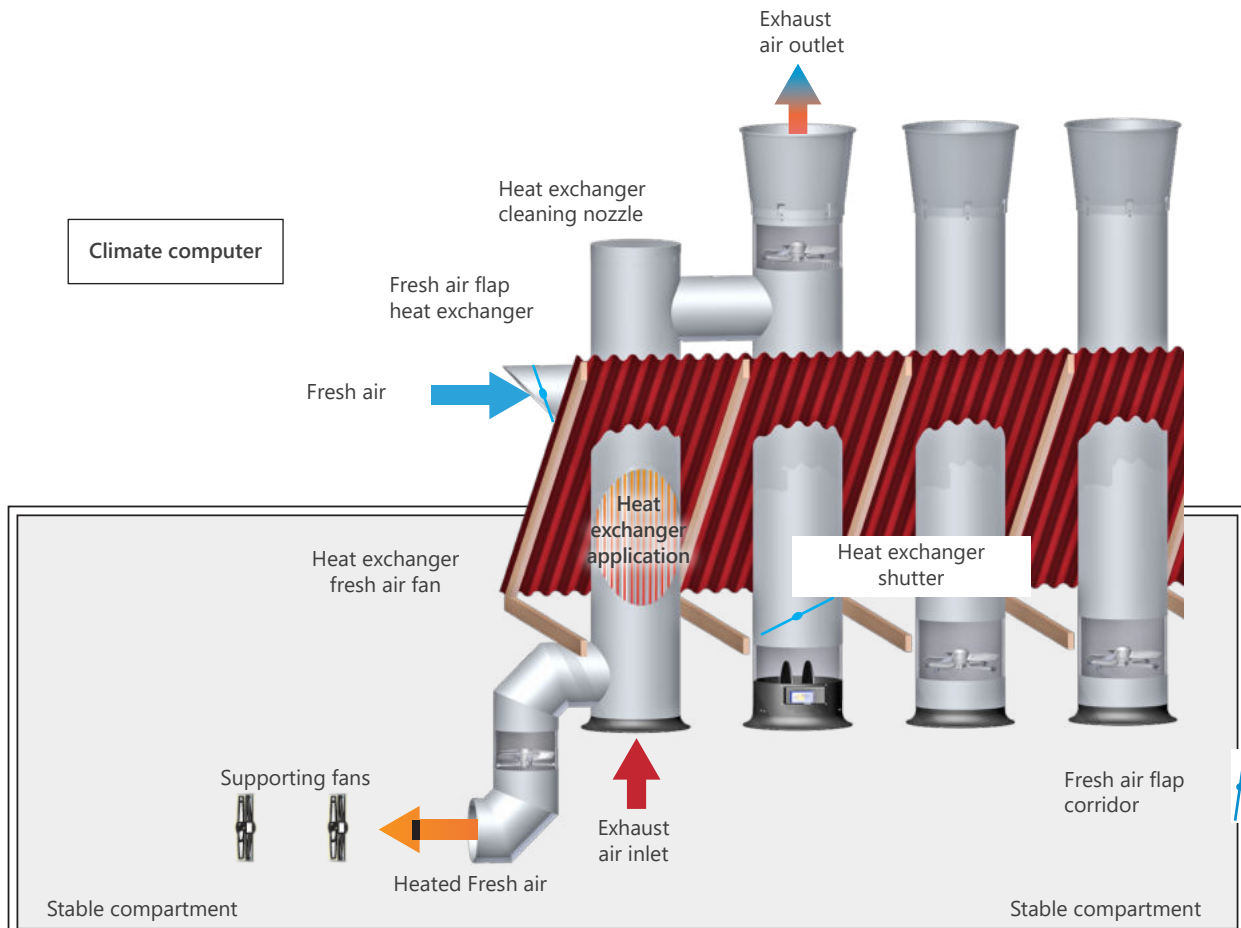
The distinctive feature of the »exchange« heat exchanger is its simple design and its efficient operating method. Through the use of the heat exchanger, incoming fresh air is heated by the outgoing exhaust air. This helps to save energy and simultaneously protects the environment. The »exchange« air-air heat exchanger can be used both, in new systems and also in existing ventilation systems, as a retrofit. It is possible to use the existing pipes. As such it is not necessary to completely modify the ventilation system.

The core component of the »exchange« air-air heat exchanger is a bundle of durable PVC tubes - modular and precisely fitted to the »AGROFLEX« ventilation system.

The heat exchanger has been subjected to testing including in practical use in the poultry sector. During this practical application, a chicken fattening stable was monitored over a number of years and the measured values were taken continuously. Using these values, it was possible to generate a feasibility study for the profitability assessment.

If you are interested, please request this feasibility study from us.

Functional principle of »exchange« air-air heat exchangers



»exchange«[®] air-air heat exchanger

Delivery as pre-assembled unit comprising:
Heat exchanger insert, intake nozzle PS, 2 supports for gluing and cartridge adhesive (2 pcs.). The supports are delivered un-mounted in order to facilitate simple installation through the roof space. We recommend using a washer nozzle.



ø inner (mm)	Length (m)	Air flow (m ³ /h) [0Pa]	Power (kW)*	Article no.
1,090	3	7,500	36	A2821090_
1,270	3	10,180	48	A2821270_

*Data on output in kW pertain to an assumed temperature difference between the fresh air and stable air at 30 Kelvin.

Colours: brown = Article no. ____ 0

light grey = Article no. ____ 4

»exchange« washer nozzle

For cleaning the exhaust air side heat exchanger pipes including retainer arm from stainless steel with 3/4" hose connector and nozzle.



ø inner (mm)	Article no.
1,090	28291090
1,270	28291270

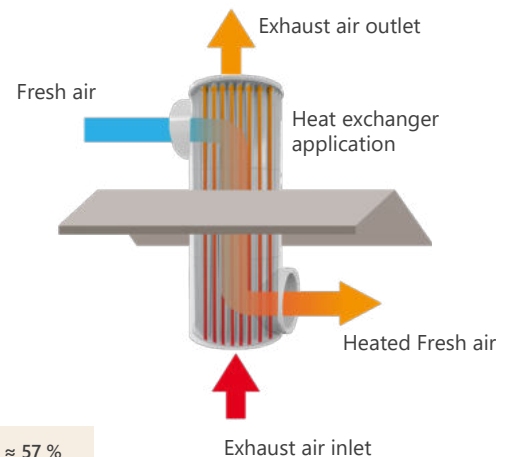
Analysis aid

Number and size of the air-air heat exchangers with 10%, 15% or 20% of the summer air flow rate

Summer air flow rate (m ³ /h)	Percentage of summer air flow rate		
	10% (Ø mm)	15% (Ø mm)	20% (Ø mm)
160,000 bis 200,000	2 x 1,270	3 x 1,270	4 x 1,270
110,000 bis 150,000	2 x 1,090	2 x 1,270	3 x 1,270
60,000 bis 100,000	1 x 1,270	2 x 1,090	2 x 1,270
bis 50,000	1 x 1,090	1 x 1,090	1 x 1,270

The air-air heat exchangers are available in lengths of 3 or 4 m.

»exchange« operating principle



i Efficiency ≈ 57 %



Technical data

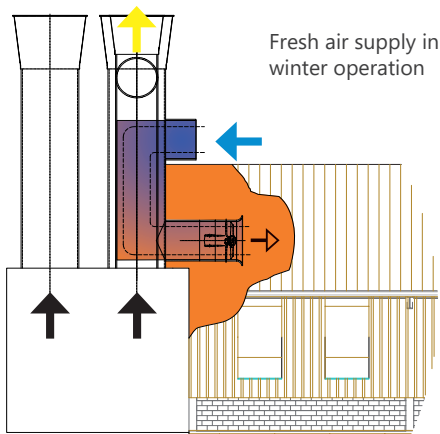
Ø inner (mm)	Length (m)	Air flow (m³/h)	Efficiency at 30K (%)	Fresh air and exhaust air fan	Fresh air warming (°C)	Capacity (kW)*	Weight (kg)
1,090	≈ 3	7,500	50	E800-ST-D6-A7	15	36	164
1,090	≈ 4	7,500	54	E800-ST-D6-A7	16	41	209
1,090 DUO	≈ 3	15,000	50	E800-ST-D6-A7	15	72	328
1,270	≈ 3	10,180	52	E910-FF-D6-A3	15	48	185
1,270	≈ 4	10,180	57	E910-FF-D6-A3	17	60	244
1,270 DUO	≈ 3	20,360	52	E910-FF-D6-A3	15	96	369

All values taking into account the condensation of the exhaust air in the heat exchanger.

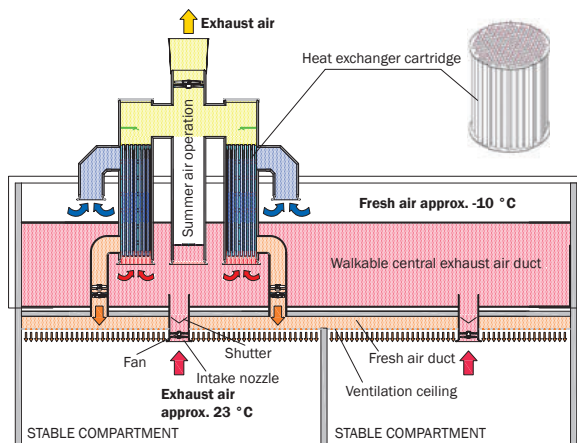
Air flow measured at 0 PA.

*Data on output in kW pertain to an assumed temperature difference between the fresh air and stable air of 30 Kelvin.

Example of use in a poultry stable



Example of use in a pig stable



»Heat-X«[®] air-water heat exchanger type H

Type H – horizontal air flow

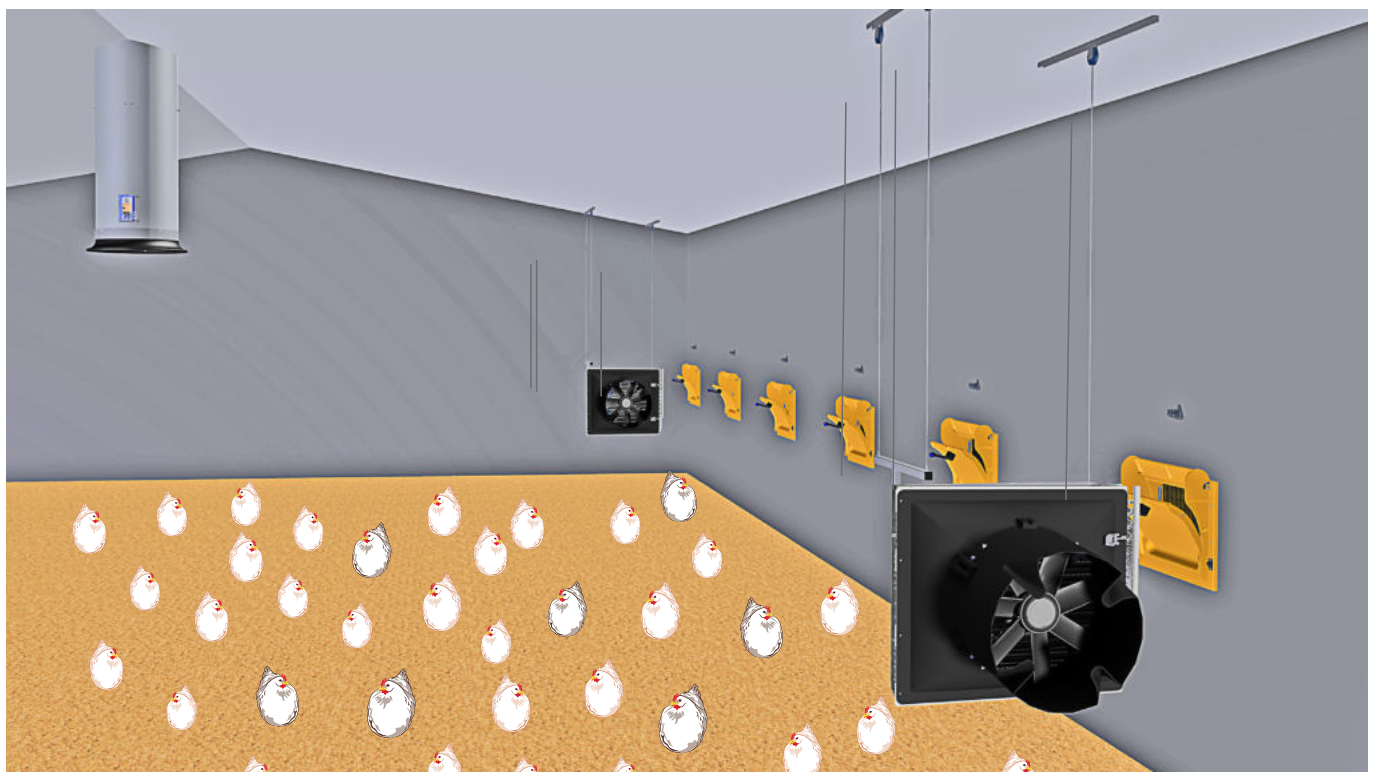
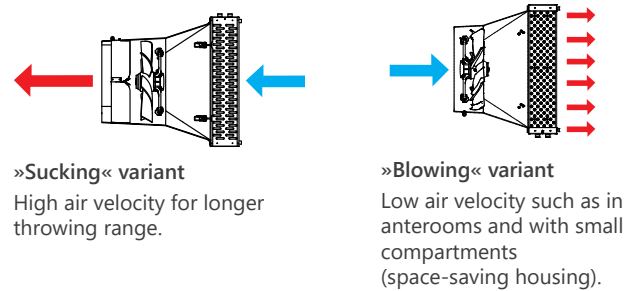
The »Heat-X«[®] air-water heat exchangers type H circulate the air horizontally while aspirating the air from the side. Type H has been designed for use in very long stables, where the fresh air is drawn in along the longitudinal stable sides.

The heat exchangers are available in many different configurations, vertical/horizontal/sucking and blowing. Flexible fastening options facilitate variable application within the stable. A connection set for the heat exchanger completes the product range.

In general, the »Heat-X«[®] air-water-heat exchangers are the most powerful ones on the market. When compared with similar devices we have succeeded in halving the power consumption with the same heating capacity. Thus the »Heat-X«[®] heat exchangers are the perfect choice for using the exhaust heat from biogas plants or CHP plants.

Hot-water driven heat exchangers are always advantageous compared to gas canons because they do not burn oxygen and do not produce CO₂ or water vapour in the stable during heat generation.

i CSA-UL fans available on request.
For notes on the built-in fans see chapter 1 / Exhaust air systems



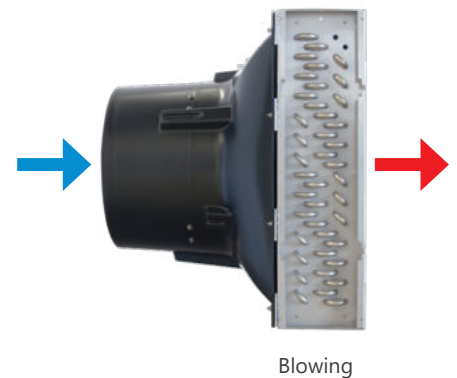
»Heat-X«® air-water heat exchanger, horizontal air flow

With air flow optimized shape and large lamellae spacing. When comparing the heat exchanger with standard market heat exchangers, the exchanger stands out due to its high energy efficiency. This energy efficiency results in savings of approximately 40% of electrical energy compared to the competitor. The clip for opening the heat exchanger is on the right as standard, although it can also be mounted on the left side if required. With an installation height of < 2.50 m it is necessary to use a protective grid (see page 5.16).

For the fans, we use the brand **ZIEHL-ABEGG**

- Stainless steel pipe system
- Stainless steel heat exchanger frame

Type H	Article no.	
	»blowing«	»sucking«
2	281130	281100
3	281230	281200
4	—	281300



Technical data

Type H		Type 2 H		Type 3 H		Type 4 H	
Fan performance	m³/h	3,000		5,000		7,500	
Fan connected load		400V; 0.75A; 350W		400V; 1.1A; 530W		400V; 1.25A; 630W	
Duct thread connection		3/4"		3/4"		1"	
Total weight incl. water	kg	approx. 56		approx. 74		approx. 118	
Built-in fan type/ø		E450-ST-D4 / 450		E500-ST-D4 / 500		E630-FN-D6 / 630	
Throwing ranges*	m	approx. 30		approx. 45		approx. 55	
Art. no. »blowing« / »sucking« 20°C		281130 / 281100		281230 / 281200		— / 281300	
Air intake	°C	20		20		20	
Heating medium supply / return temperature	°C	80/60	90/70	80/60	90/70	80/60	90/70
Capacity	kW	≈ 30	≈ 35	≈ 50	≈ 60	≈ 95	≈ 105
Water pressure drop	bar)	0.34	0.39	0.49	0.57	0.36	0.38
Water flow	m³/h	1.34	1.61	2.15	2.61	4.11	4.75
Dimensions H x W x D	mm	700 x 760 x 576/746		800 x 960 x 636/905		1,000 x 1,196 x 1,043	
Art. no. »blowing« / »sucking« 30°C		281130 / 281100		281230 / 281200		— / 281300	
Air intake	°C	30		30		30	
Heating medium supply / return temperature	°C	80/60	90/70	80/60	90/70	80/60	90/70
Capacity	kW	≈ 25	≈ 30	≈ 40	≈ 50	≈ 75	≈ 90
Water pressure drop	bar)	0.24	0.28	0.34	0.41	0.25	0.27
Water flow	m³/h	1.10	1.34	1.76	2.17	3.36	3.97
Dimensions H x W x D	mm	700 x 760 x 576/746		800 x 960 x 691/976		1,000 x 1,196 x 1,076	

*Throwing ranges are approximate figures depending on the ambient temperature and do not take the structure into account.

»Heat-X«[®] air-water heat exchanger, horizontal air flow Slimline

With air flow optimized shape and large lamellae spacing. When comparing the heat exchanger with standard market heat exchangers, the Munters »Heat-X«[®] Type H Slimline stands out due to its high energy efficiency. This energy efficiency results in savings of approximately 40% of electrical energy compared to the competitor.

The clip for opening the heat exchanger is on the right as standard, although it can also be mounted on the left side if required. With an installation height of < 2.50 m it is necessary to use a protective grid (see page 5.16).

For the fans, we use the brand **ZIEHL-ABEGG**

- Tube system made of copper
- Heat exchanger frame made of painted steel



Heat-X type H Slimline suitable for the poultry sector

Type H	Article no.»sucking«
2	100000464
3	100000465
4	100000466

Technical data

Type H		Type 2 H Slimline	Type 3 H Slimline	Type 4 H Slimline
Fan performance	m ³ /h	3,000	5,000	7,500
Fan connected load		400V; 0.75A; 350W	400V; 1.1A; 530W	400V; 1.25A; 630W
Duct thread connection		3/4"	3/4"	1"
Total weight incl. water	kg	approx. 56	approx. 74	approx. 118
Built-in fan type/ø		E450-ST-D4 / 450	E500-ST-D4 / 500	E630-FN-D6 / 630
Throwing ranges*	m	approx. 30	approx. 45	approx. 55
Air intake / Capacity	°C)	30 °C / ~ 25 kW	30 °C / ~ 40 kW	30 °C / ~ 75 kW
Heating medium supply / return temperature	°C)	80/60	80/60	80/60
Water pressure drop	bar)	0.24	0.34	0.25
Water flow	m ³ /h	1.10	1.76	3.36
Dimensions »Heat-X« horizontal	H x W x D/ mm	700 x 760 x 576/746	800 x 960 x 946	1,000 x 1,196 x 995

*Throwing ranges are approximate figures depending on the ambient temperature and do not take the structure into account.

»Heat-X«[®] air-water heat exchangers type V

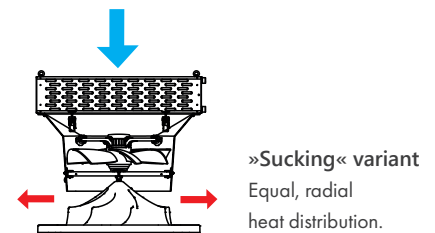
Type V - vertical air flow

In the case of the »Heat-X«[®] variant type V the heat is drawn in from above and is evenly and radially distributed. As such it is possible to control the climate of a stable with various zones. This means that it is possible to heat the stable in the area at which the temperature is at its lowest, without this resulting in the overall temperature throughout the stables rising. This results in a better and more even distribution of heat. The special geometry of the distribution cone serves to minimise the air velocity. In this configuration it is an ideal heating system for any length and width of a stable.

Flexible fastening options facilitate variable application within the stable. A connection set for the heat exchanger completes the product range.

In general, the »Heat-X«[®] air-water-heat exchangers are the most powerful ones on the market. When compared with similar devices we have succeeded in halving the power consumption with the same heating capacity. Thus the »Heat-X«[®] heat exchangers are the perfect choice for using the exhaust heat from biogas plants or CHP plants.

i CSA-UL fans available on request. For notes on the built-in fans see chapter 1 / Exhaust air systems



»Heat-X«[®] air-water heat exchanger, vertical air flow

With air flow optimized shape and large lamellae spacing. When comparing our heat exchangers with standard market heat exchangers our stands out due to its high energy efficiency. This energy efficiency results in savings of approximately 40% of electrical energy compared to the competitor. For the fans, we use the brand **ZIEHL-ABEGG** . Incl. protective grid

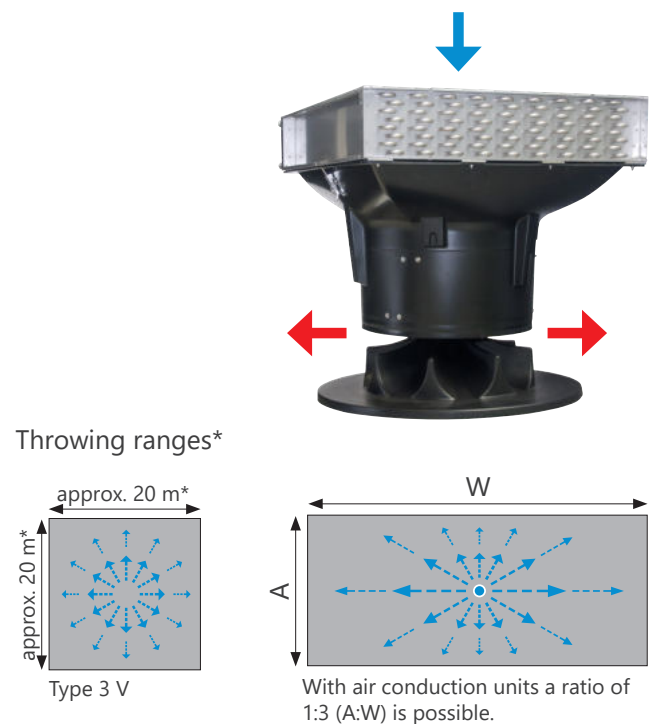
- Stainless steel pipe system
- Stainless steel heat exchanger frame

Type V	Article no.
3 V	281250
4 A V	281650
4 V	281350

Technical data

Type V	Type 3 V		Type 4 A V		Type 4 V		
Fan performance	m3/h	5,000	7,500		7,500		
Fan connected load		400V; 1.45A; 840W	400V; 2.2A; 1050W		400V; 2.2A; 1050W		
Dimensions H x W x D	mm	969 x 852 x 966	971 x 1,052 x 1,196		972 x 1,052 x 1,203		
Duct thread connection		3/4"	3/4"		1"		
Total weight incl. water	kg	approx. 84	approx. 119		approx. 128		
Built-in fan type/ø		E500-FN-D4/500	E560-FN-D4/560		E560-FN-D4/560		
Throwing ranges*	m	approx. 20	approx. 25		approx. 25		
Art. no. «sucking» 20°C	281250		281650		281350		
Air intake	°C	20	20		20		
Heating medium supply/ return temperature	°C	80/60	90/70	80/60	90/70	80/60	90/70
Capacity	kW	≈ 50	≈ 60	≈ 75	≈ 105	≈ 95	≈ 105
Water pressure drop	bar	0.49	0.57	0.47	0.38	0.36	0.38
Water flow	m3/h	2.15	2.61	3.30	4.75	4.11	4.75
Air intake	°C	30	30		30		
Heating medium supply/ return temperature	°C	80/60	90/70	80/60	90/70	80/60	90/70
Capacity	kW	≈ 40	≈ 50	≈ 60	≈ 90	≈ 75	≈ 90
Water pressure drop	bar	0.34	0.41	0.31	0.27	0.25	0.27
Water flow	m3/h	1.76	2.17	2.63	3.97	3.36	3.97

*Throwing ranges are approximate figures depending on the ambient temperature and do not take the structure into account.



»Heat-X«® type 4 with ceiling suction

With a streamlined design, large lamella spacing and additional extension of the suction range. Through the extension of the suction range upwards, it is possible to ensure suction of the warm air from the ceiling area. With this, even temperature distribution is achieved in the entire stable, and the ammonia emissions are reduced through the drying and heating of the litter.

The Dutch and Belgian RAV list requirements are met. RAV registration no.: BWL 2009.14. For the fans, we use the brand **ZIEHL-ABEGG** . Incl. protective grid

- Stainless steel pipe system
- Stainless steel heat exchanger frame

Type V	Article no.
4 V DA	281360



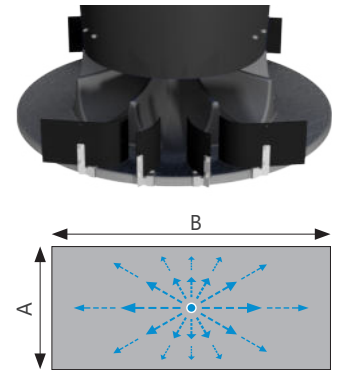
Technical data

Type V ceiling suction		Type 4 V DA (RAV)	
Fan performance	m³/h	7,500	
Fan connected load		400V; 2.2A; 1050W	
Dimensions H x W x D	mm	2,607 x 1,118 x 1,203	
Duct thread connection		1"	
Total weight incl. water	kg	approx. 160	
Built-in fan type / ø		E560-FN-D4 / 560	
Throwing ranges*	m	approx. 25	
Art. no. «sucking» 20°C		281360	
Air intake	°C	35	
Heating medium supply / return temperature	°C	80/60	90/70
Capacity	kW	≈ 65	≈ 80
Water pressure drop	bar	0.14	0.23
Water flow	m³/h	2.94	3.59

*Throwing ranges are approximate figures depending on the ambient temperature and do not take the structure into account.

»Heat-X«[®] air conduction units

For partial deflection of the incoming fresh air at the distributor plate. This can be required under various construction conditions, for example when using the »Heat-X«[®] close to a wall. Furthermore this allows improved adjustment of the air movement to comply with the rectangular stable geometry. This allows flows in the stable with a length and width ratio of 1:3 per fresh »Heat-X«[®] heat exchanger. A quadratic configuration of the air distribution is no longer essential.



With air conduction units a ratio of 1:3 (A:W) is possible.

Type V	Article no.
3 – 4	616810

»Heat-X«[®] connection kits

The set is composed of 2 standard flexible metal hoses 2,000 or 4,000 mm in length. 1 ball valve and 1 circuit control value for pipe thread connections 3/4" and 1".

Type H + V	Duct thread	Length	Article no.
2 – 3	3/4"	2,000 mm	284000
4	1"	2,000 mm	284100
2 – 3	3/4"	4,000 mm	284020
4	1"	4,000 mm	284120



»Heat-X«[®] protective grid

Protective grids for heat exchangers prevent access to the rotating fan (per DIN EN ISO 13857).

Type H	Article no.
2	281180
3	281280
4	281380



Flexible metall hose »Heat-X«[®]

Flexible metal hose for connecting the »Heat-X«[®] to the heating circuit. Sheathed in stainless steel braid. Connection: 3/4" and 1" internal/external thread

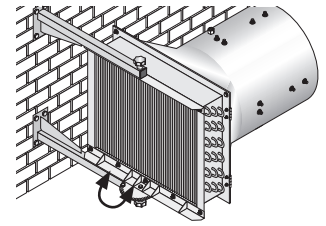
Duct thread	Length (mm)	Article no.	
		Standard	Diffusion-tight
3/4"	2,000	281802	480970W06
3/4"	4,000	281803	480970W07
1"	1,000	—	480970W09
1"	2,000	281812	480970W10
1"	4,000	281813	480970W11



»Heat-X«® wall mounting brackets

For wall mounting (side air intake) the heat exchanger type H. With centring device for various different positions.

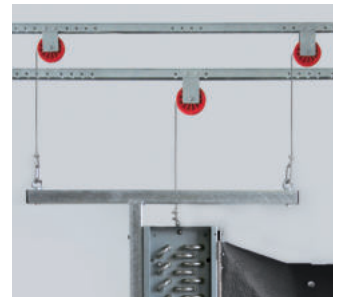
Material: Stainless steel



Type H	Article no.
2	281915
3	281925
4	281935

»Heat-X«® rope deflectors

For the height adjustable suspension of all »Heat-X«® heat exchangers through rope deflection. Comprising 2 stainless steel rails and 4 pulleys. Additional suspension is required for type H heat exchangers (see article no. 2819_2 «suspension«).



Type	Article no.
V + H	402800000

»Heat-X«® suspensions for type H

For suspension of »Heat-X«® air-water heat exchangers, type H (side air intake). In addition the rope deflector article no. 402800000 is required for height adjustment of the heat exchanger.

Material: Stainless steel

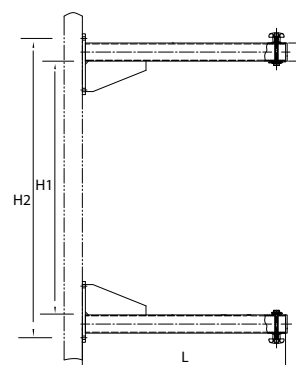


Type H	Article no.
2	281912
3	281922
4	281932

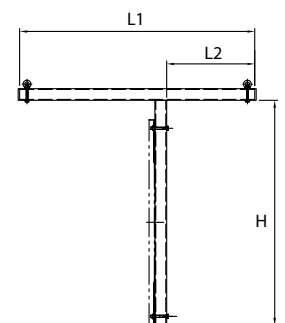
Dimensions:

Bracket with turntable	Type 2	Type 3	Type 4
Length	568	670	800
H1	817	957	1,157
H2	876	1,016	1,216

Horizontal suspension	Type 2	Type 3	Type 4
L1	800	800	800
L2	300	300	300
Height	765	875	1,075



Konsolen Wandmontage



Abhängung Horizontal

»REV-AL« finned tubes

More heating capacity – less weight

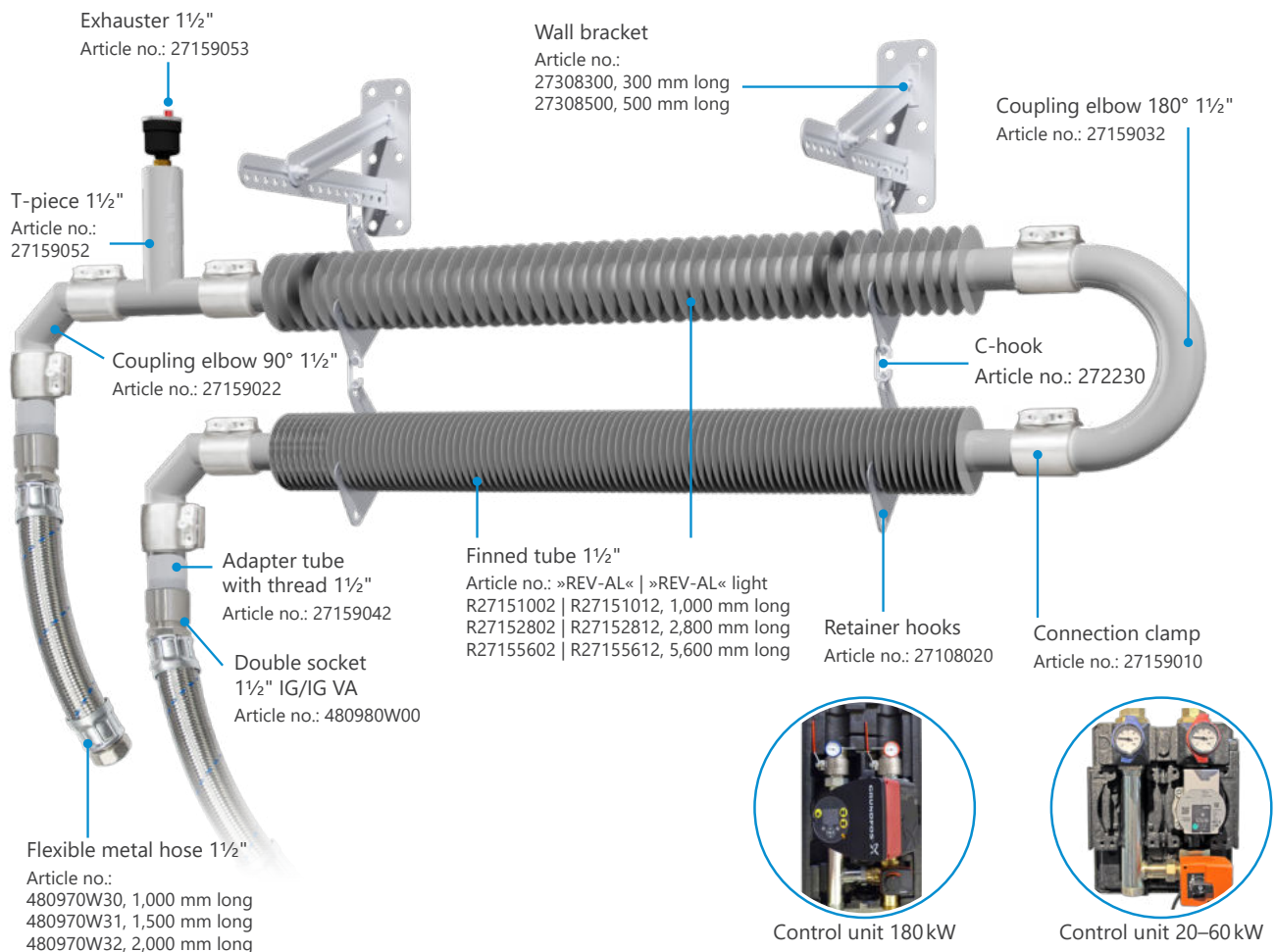
»REV-AL«/»REV-AL« light finned tubes ensure comfortable warmth in the stable without creating their own air circulation. Due to the larger surface in comparison to other tubes, the heating capacity is significantly improved and due to the fin arrangement, the flow between the spaces is ideal (e.g. with jet ventilation).

These systems are the ideal choice in particular for preheating or for use in conjunction with diffusing fresh air systems. The »REV-AL«/»REV-AL« light finned tubes can be installed in the immediate vicinity of fresh air systems for heating the incoming fresh air. A max. heat emission is achieved due to the large surfaces of the »finned tubes«. The pipes are manufactured of epoxy-coated aluminium and in addition to the lower weight, they are an ideal heat conductor. The smooth and epoxy-coated surface enables the easy cleaning of the »aluminium finned tubes« and are considerably more resistant against ammonia in comparison to standard galvanized steel finned tubes.

The finned tubes are available with a length of 1,000/1,800 and 5,600 mm and are therefore suitable for various applications. The individual pipes can be easily installed with connection clamps.

	Steel	»REV-AL«	»REV-AL« light
Heating capacity	100 %	130 %	100 %
Weight	100 %	20 %	15 %
Easy to assemble	—	✓	✓
Cleaning	👎	👉	👍

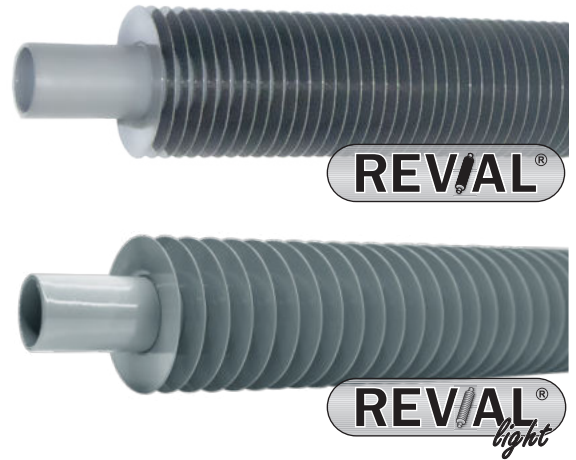
i Control units and accessories from page 5.23





»REV - AL« / »REV - AL«light
Finned tubes 1½"

Finned tubes made of epoxy coated aluminium.
Available in lengths of 1,000/1,800 und 5,600 mm.
Connection clamps for easy installation of the individual ducts. Connection with standard 1.5" fittings.
DLG test confirms ammonia resistance.



Length (mm)	Article no.	
	»REV-AL«	»REV-AL« light
1,000	R27151002	R27151012
1,800	R27151802	R27151812
5,600	R27155602	R27155612

Connection pipes 1½"

For connecting »REV-AL« finned tubes, 1½".

Material: anodised aluminium, grey



Length (mm)	Article no.
5,600	27155602

Connection clamps 1½"

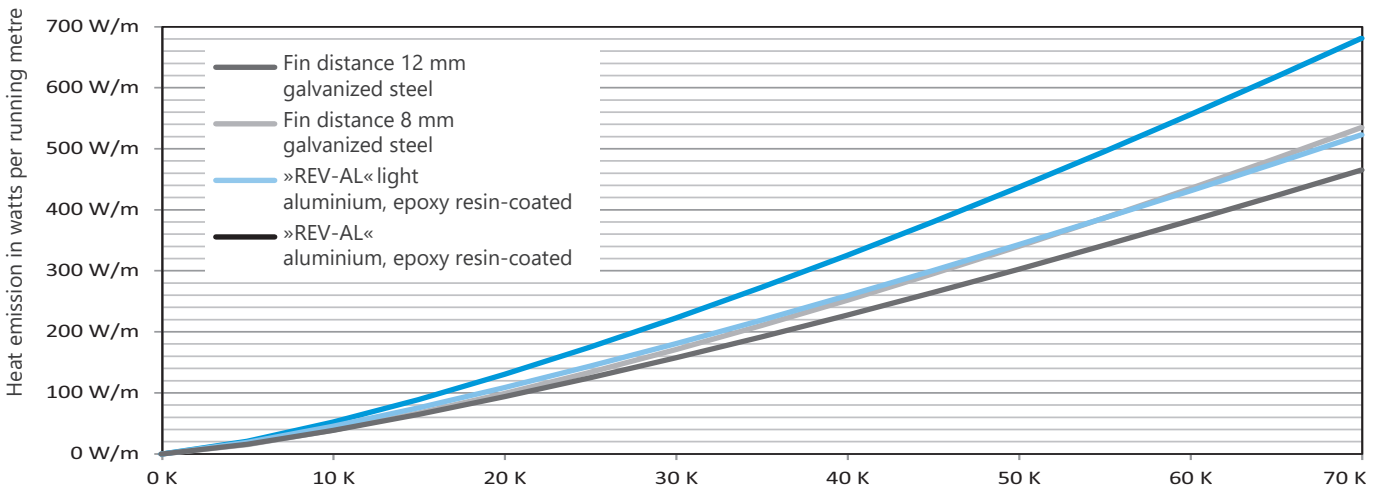
Connection clamps for the easy installation of individual finned tubes. Connection clamps on both sides with stainless steel claw ring. Temperature resistance +95°C

Material: Stainless steel



Article no.
27159010

Heat emission of finned tubes



Temperature difference = Average water temperature of flow and return to room temperature.
The heat emission of the finned tubes has been measured in accordance with EN 442.

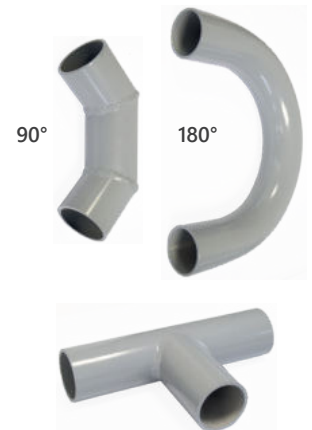
Temperature difference*

Coupling elbows / T-piece 1½"

Coupling elbows for connecting two rows one on top of the other and the T-piece, 1½" to connect and branch out »REV-AL« finned tubes, 1½".

Material: anodised aluminium, grey

Type	Article no.
Coupling elbow 90°	27159022
Coupling elbow 180°	27159032
T-piece	27159052



Exhauster incl. adapter, 1½"

For the connection to the pipe systems using a connection clamp incl. adapter for easy installation.

Material: anodised aluminium, grey

Article no.
27159053



Wall bracket for finned tubes

Wall bracket for hanging the retainer hooks for finned tubes with C-hooks.

Material: Galvanised steel

Length (mm)	Article no.
300	27308300
500	27308500



Mount for finned tubes

Hanging finned tubes onto the holder attached to the suspension.

Material: Galvanised steel

Article no.
27108010



Retainer hook for finned tubes

For hanging finned tubes. Different hanging variants possible.

Material: Galvanised steel

Article no.
27108020



C-hook

For hanging and connecting retainer hooks.

Article no.

272230



Adapter pipes with thread 1½"

Adapter for the connection of flexible metal hoses for example.

Material: anodised aluminium, grey

Article no.

27159042



Double socket 1½" internal/internal thread VA

Adapter for the connection of flexible metal hoses to 1½" internal thread for example.

Material: Stainless steel

Article no.

480980W00



Flexible metal hoses for finned tubes

For connecting the finned tubes to the heating circuit. Sheathed in stainless steel braid, diffusion tight. Incl. special connection with O-ring.

Connection: 1½"

Length (mm)	Article no.
1,000	480970W30
1,500	480970W31
2,000	480970W32



»Twinpipes« Plus

Cosy warmth via the wall

»Twinpipes« Plus ensure comfortable warmth in the stable without creating their own air circulation. As such, this system is the ideal choice in particular for preheating or for use in conjunction with diffusing fresh air systems.

Twinpipes can be mounted in the immediate vicinity of the animals' laying area and thus provide a comfortable micro-climate. The large surfaces, particularly in the case of »Twinpipe« Plus, allow a max. heat emission of up to 300 Watt/running metre to be attained. This means the same heating capacity with less installation outlay.

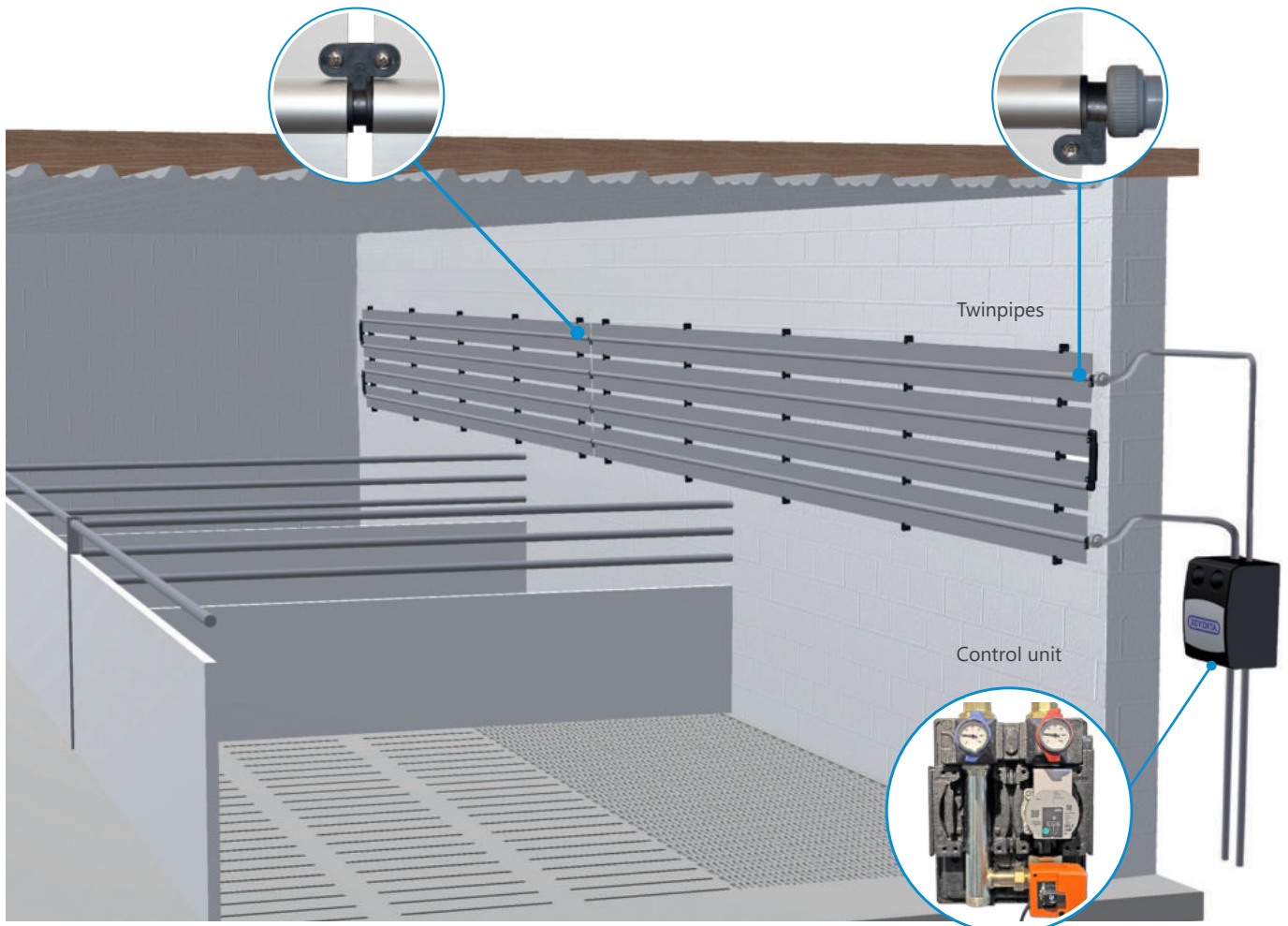
The pipes are manufactured from anodised aluminium, and in addition to the lower weight they are an ideal heat conductor. The pipes are available in lengths of 4, 5 or 6 metres and have a connection for 3/4". Intermediate sizes are available on enquiry.

The plug-in fittings (one or both sides and 180° bend) are particularly well suited for simple connection of the pipes. The fittings mean that sealing is no longer necessary and rapid installation is guaranteed.

i Control units and accessories from page 5.23



Practical plug-in fittings
For connecting the pipes that can be easily mounted without sealing, see page 5.23.



»Twinpipes« Plus 3/4"

Pipe made from anodised aluminium. Connection: 3/4". Available in 4, 5 and 6 m lengths. Heat emission up to 300 Watt / per running metre. (with a supply temperature of 90°C, return temperature of 70°C and ambient temperature of 20°C).



Type	Article no.
4,000	2714000
5,000	2715000
6,000	2716000

Single- and double-sided plug-in fittings

Single-sided as a transition from Twinpipes, 3/4", on one side with sealing and a blade to the screw joint. Double sided for connecting Twinpipes 3/4". For fixing to Twinpipes, additional drilling screws are required (article no.: 9-200050/PU 100 pcs).

Material: Plastic, black



single-sided



two-sided

Type	ø / mm x inch	Article no.
single-sided	22 x 3/4"	270520
two-sided	22 x 3/4"	270530

Plug-in fittings 180° curve with extension for 90° curve

For connecting two rows of 3/4" Twinpipes above one another, both sides with seal and blade to the screw joint. For fixing to Twinpipes, additional drilling screws are required (article no.: 9-200050/PU 100 pcs).

Material: Plastic, black



Inch	Article no.
3/4" x 3/4"	270560

Twinpipe fixing block

Bolt-on installation block for fixing »Twinpipes« to the wall.

Material: Plastic

Article no.
270310



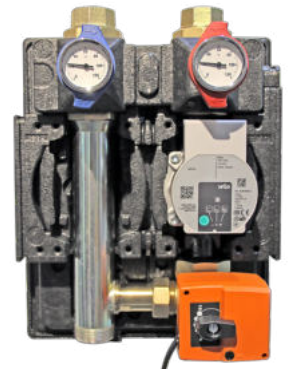
Control units 3-way mixer groups 20 – 60kW

The control unit can be used to distribute hot water from the heat generator (e.g. boiler, heat pump, combined heat and power unit, etc.) to the consumer circuits (e.g. Twinpipes or finned tubes). The supply temperature is thereby regulated by a 3-way mixer (Kvs. max. 18 m³/h) with servomotor 0–10V (24V).

The highly efficient pump fulfils the requirements of the ErP Directive. Patented heat insulation jacket made of EPP meets the requirements according to the Energy Saving Ordinance (EnEV) and ensures an optimum level of ventilation to the pump electronics. Supply and return connections 1¼" IG.



View with cover



View without cover

Pump technical data:

Voltage: 230V, 50/60Hz
 Max. discharge height: 6,2 m
 Max. flow rate: 3.3 m³/h
 Max. system pressure: 6 bar
 Power consumption: 3 – 45 Watt

Article no.
473990W00

Electrical data	Circulating pump with mixer	Actuator
Power supply/frequency	230V/50/60 Hz	AC 24V 50/60 Hz
Rated current	0.028...0.44 A	0 - 10V
Power consumption	3...45 W	2.5W
Protective class	IP x4D	IP 40

Transition from 1 1/4" to 1 1/2" external/ internal thread for control unit 20 – 60kW

Consisting of 2 double nipple reduction pieces 1 1/2" x 1 1/4" external/external thread VA and 2 double sleeves 1 1/2" internal/internal thread VA.

Article no.
480980W10



Transition from 1 1/4" to 3/4" external/ internal thread for control unit 20 – 60kW

Consisting of 2 reduction pieces 1 1/4" x 3/4" external/internal thread, e.g. connecting control unit to »Twinrohr« Plus

Article no.
480980W12



Overview of heating systems and accessory material

Article	Control units 3-way mixer group 20–60kW	Control unit 180kW	2-way zone valve (max. 20 kW)	»Heat-X« connection kit
»Heat-X«	—	•	—	•
»REV-AL« finned tube	•	•	—	—
»Twinpipes« Plus	•	—	•	—

Control units 3-way mixer groups 180kW

The control unit can be used to distribute hot water from the heat generator (e.g. boiler, heat pump, combined heat and power unit, etc.) to the consumer circuits (e.g. »Heat-X« or finned tubes). The supply temperature is thereby regulated by a 3-way mixer (Kvs. max. 25 m³/h) with servomotor 0–10V (24V).

Pump technical data:

Voltage: 230V, 50/60Hz
 Max. discharge height: 6,0 m
 Max. flow rate: 4.0 m³/h
 Max. system pressure: 6 bar
 Power consumption: 18 - 348 Watt



View with cover



View without cover

Article no.
473990W01

Electrical data	Circulating pump with mixer	Actuator
Power supply/frequency	230V/50/60 Hz	AC 24V 50/60 Hz
Rated current	0.2... 1.5A	0 - 10V
Power consumption	18...348W	2.5W
Protective class	IP x4D	IP 40

Circulation pump: No external motor protection required.

Transition from 2" to 1 1/2" external/
internal thread for control unit 180 kW

Consisting of 2 reduction pieces 2" x 1 1/2" external/
internal thread VA.



Article no.

480980W11

2-way zone valves with DN20 rotary
drive (max. 20 kW)

Pre-assembled 2-way zone valve of **BELIMO**, nominal
voltage AC 230 V, 7 VA control that is ready for con-
nection: OPEN/CLOSE; power to the inlet has been cut
off (NC)

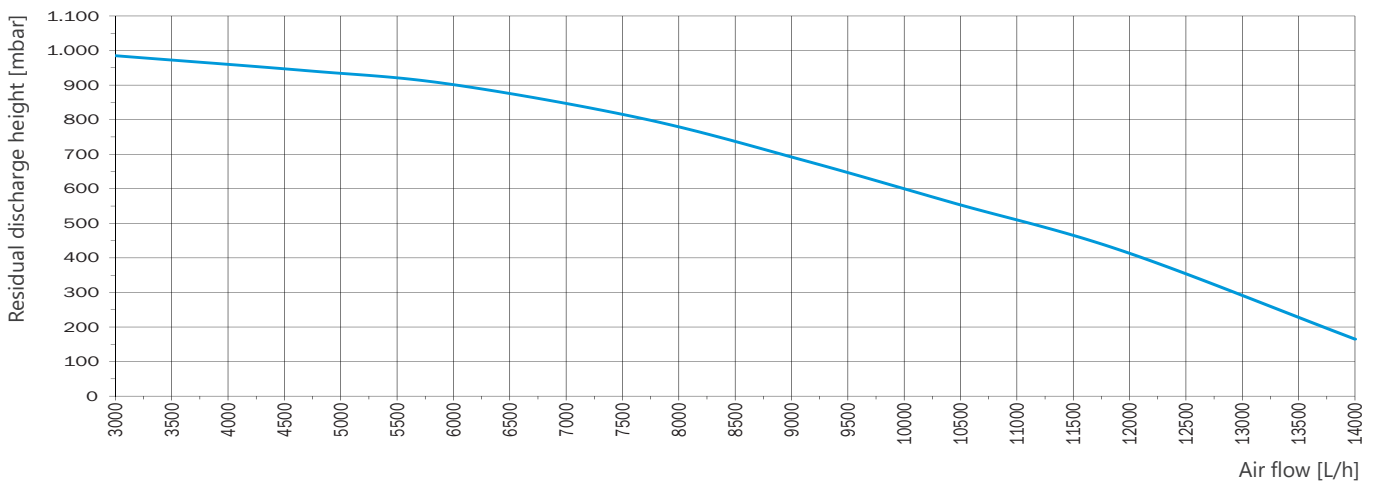


Internal thread 3/4"

Article no.

473980W00

Available discharge height, control units 3-way mixer groups 180kW



»Heat-X«® connection kits

The set is composed of 2 standard flexible metal hoses 2,000 or 4,000 mm in length
 1 ball valve and 1 circuit control valve for pipe thread connections 3/4", 1" and 1 1/4"

Type H + V	Length	Article no.
2 - 3	2,000 mm	284000
4	2,000 mm	284100
2 - 3	4,000 mm	284020
4	4,000 mm	284120



Aluminium ducts

Material: Anodized aluminium

ø (mm)	Length (mm)	Article no.
22	3,000	270210-1
22	6,000	270200-1



Multi-layer plastic pipe

Diffusion-tight plastic pipe made from high quality, temperature resistant and liquid resistant plastic. For simple and rapid installation with the following fittings. Can be installed without tools, no additional sealing material required, repeated assembly and disassembly possible. Not suitable for laying straight pipe sections. We recommend anodized aluminium for straight pipe sections.

Areas of application:

Cold water: 20°C/12 bar, hot water: 65°C/ 6 bar, heating: max. 80°C/ 3 bar



Rolled goods

ø (mm)	Roll length (m)	Article no.
22	50	253011

90° angle

90° angle to connect aluminium pipes and plastic pipes.

Material: Plastic, hot water up to 95°C



ø (mm)	Article no.
22 x 22	253150

T-pieces

T-piece to connect aluminium pipes and plastic pipes.

Material: Plastic, hot water up to 95°C



ø (mm)	Article no.
22 x 22 x 22	270510

Couplings

For connecting aluminium pipes and plastic pipes.

Material: Plastic, hot water up to 95°C



ø (mm)	Article no.
22 x 22	253100

Adapter IG

Adapter IG to connect aluminium pipes.

Material: Nickel-plated brass/plastic, hot water up to 95°C



ø (mm x inch)	Article no.
22 x 3/4"	270700

Adapter AG

Adapter AG to connect aluminium pipes.

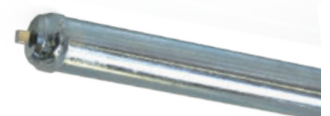
Material: Nickel-plated brass/plastic, hot water up to 95°C



ø (mm x inch)	Article no.
22 x 3/4"	253060

Exhausters

For inserting into T-piece.



ø (mm)	Article no.
22	270400

»Heat-X« type G indirect gas fired heater

Heating without CO₂ production in the poultry stable

The »Heat-X« type G is an indirectly gas fired heater with a closed combustion system, which has been designed specifically for poultry stables.

Rising energy costs and legal regulations make the use of more efficient heating systems with lower energy consumption a necessity. The »Heat-X« type G fulfills these conditions.

A closed combustion system means that the combustion air is fed in from outside the stable and the combustion gases that are produced are subsequently transported back out.

The CO₂ and water produced during combustion of the gas have no adverse effect on the stable air quality. The fresh air supply and therefore also the energy consumption can be reduced in this way.

A further effect is that the closed combustion system keeps the humidity to a low level. This keeps the litter drier and provides preventative protection against typical diseases such as pododermatitis.

The numbers of sick animals and the loss rates sink, which leads to more animals per cycle.

Example calculation for cost savings in poultry farming (42 days):

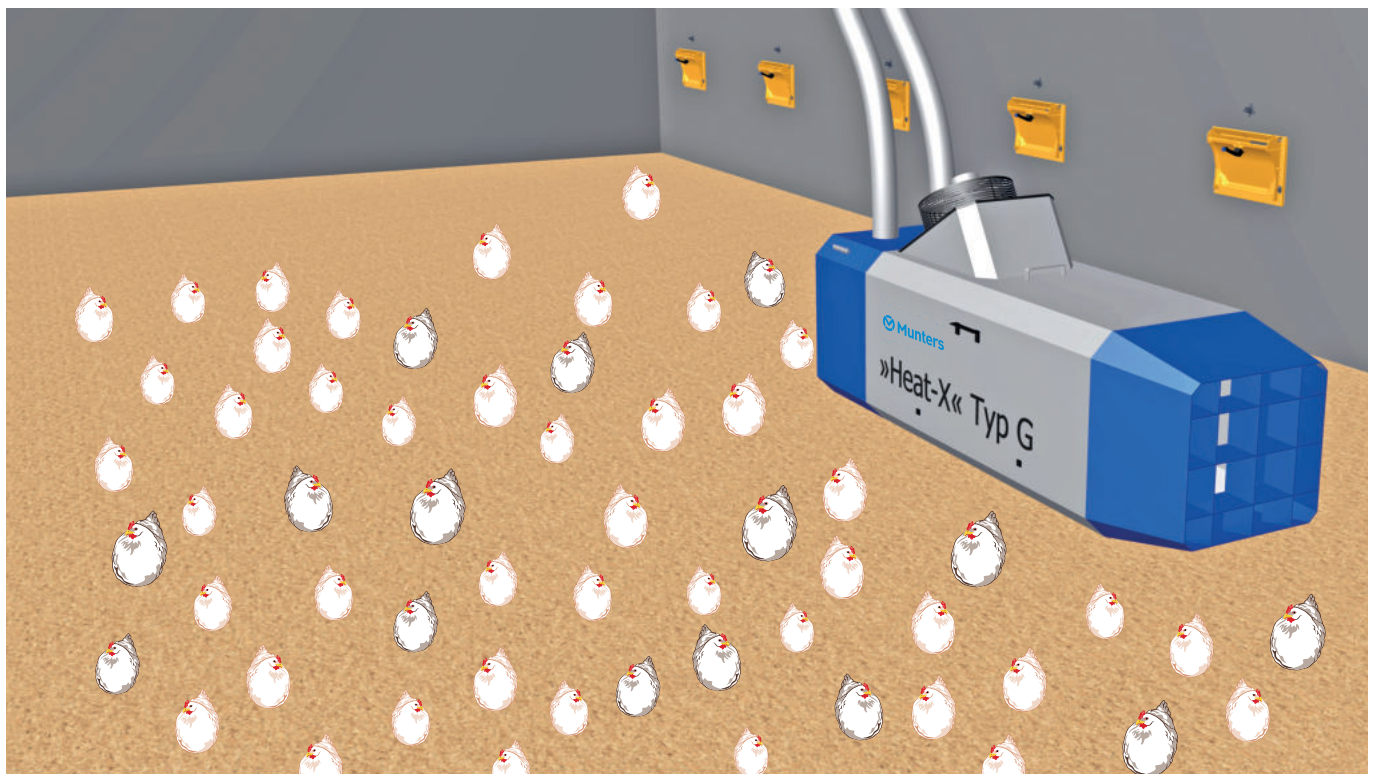
Average heating capacity*: e.g. 35,000 kWh
 gas price: € 0.060/kWh to € 0.085/kWh
*per fattening period

Example of average heating cost savings based on »Heat-X« type 4G.

(Assumption ≈23 % savings per fattening period; Source: German research institute, KTBL)

Gas price €/kWh	Heating costs per fattening period	Saving with the »Heat-X« type 4G per fattening period
0.060	2,100 €	483.00 €
0.065	2,275 €	523.25 €
0.070	2,450 €	563.50 €
0.075	2,625 €	603.75 €
0.080	2,800 €	644.00 €
0.085	2,975 €	684.25 €

Average heating costs per fattening period.



»Heat-X«® type G

The »Heat-X« type G is an indirectly gas fired heater with a closed combustion system, which - due to its atmospheric burner - is also exceptionally well suited for areas with a high degree of dust generation (e.g. poultry stables). The device is easy to install, durable and efficient. Due to the low air rates, energy is saved and the humidity is reduced by approx. 15%, which leads to improved litter. Brackets not included.

Type G	Article no.
4	420040H_ _
5	420050H_ _

Gas type: NG H G20 (natural gas) = Article no. _____ H00
 PG G31 (propane) = Article no. _____ H01
 NG L G25 (natural gas) = Article no. _____ H02
 LPG G30 (butane) = Article no. _____ H03



Technical data

		»Heat-X« type 4G	»Heat-X« type 5G
Power (input)	kW	54 – 83	74 – 108
Power (output)	kW	48 – 76	66 – 99
Efficiency with max. power	%	91.5	91.8
Air volume flow (heating)	m ³ /h	8,000	10,000
Throwing range	m	≈ 45	≈ 50
Noise level	dB(A)	≤ 68	≤ 68
Voltage	V	230	230
Motor power	W	900	1,400
Current consumption	A	3.9	6.1
Thermostatic control		on / off	on / off
Protective class		IPX4D	IPX4D
Gas connection		¾"	¾"
Gas consumption G20 (natural gas)	m ³ /h	8.8	11.4
Minimal gas connection pressure G20	mbar	17–60	17–60
Gas consumption G25 (natural gas)	m ³ /h	9.9	12.8
Minimal gas connection pressure G25	mbar	20–60	20–60
Gas consumption G30 (butane)	kg/h	5.0	6.5
Minimal gas connection pressure G30	mbar	25–60	25–60
Gas consumption G31 (propane)	kg/h	6.6	8.6
Minimal gas connection pressure G31	mbar	25–60	25–60
Fresh air / exhaust air duct	mm	130	130
Dimensions H x W x L	mm	1,080 x 650 x 2,100	1,080 x 815 x 2,100
Weight	kg	150	175

Brackets on rollers

Brackets on rollers for »Heat-X« type G, VA.

Article no.

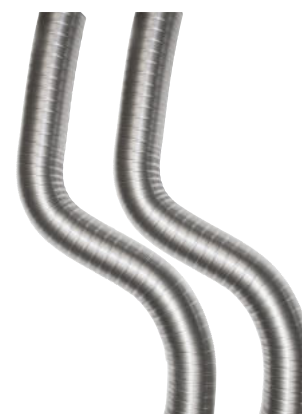
420990H00



Flexible duct system VA

2 flexible VA ducts with \varnothing 130 mm. From a length of 2 m, including corresponding spacers.

Length (m)	Spacer (pcs.)	Article no.
1	–	480970H10
2	1	480970H11
3	2	480970H12
4	3	480970H13
5	4	480970H14



Roof penetration DDV \varnothing 130/200 mm

Concentric roof chimney with T-connection port for fresh air and flue gas extraction.

Article no.

480970H01



Conical roofing panel CL \varnothing 130/210 mm

\varnothing 210 mm (zinc/lead), adjustable for roofing pitch 25 to 45°, including storm collar.

Article no.

480970H04



Gas connection kit 3/4"

Gas connection kit 3/4" in 2.0 m length including connection materials.

Inch	Article no.
3/4"	420980H04



Gas pressure controller including connection materials

Gas pressure controller for natural gas or propane including connection materials.

Natural gas: Inlet pressure max 2.00 bar, output pressure 27mbar

Propane: Inlet pressure max 1.75 bar, output pressure 50mbar

Gas type	Article no.
Natural gas	420980H07
Propane	420980H01



Natural gas pressure controller



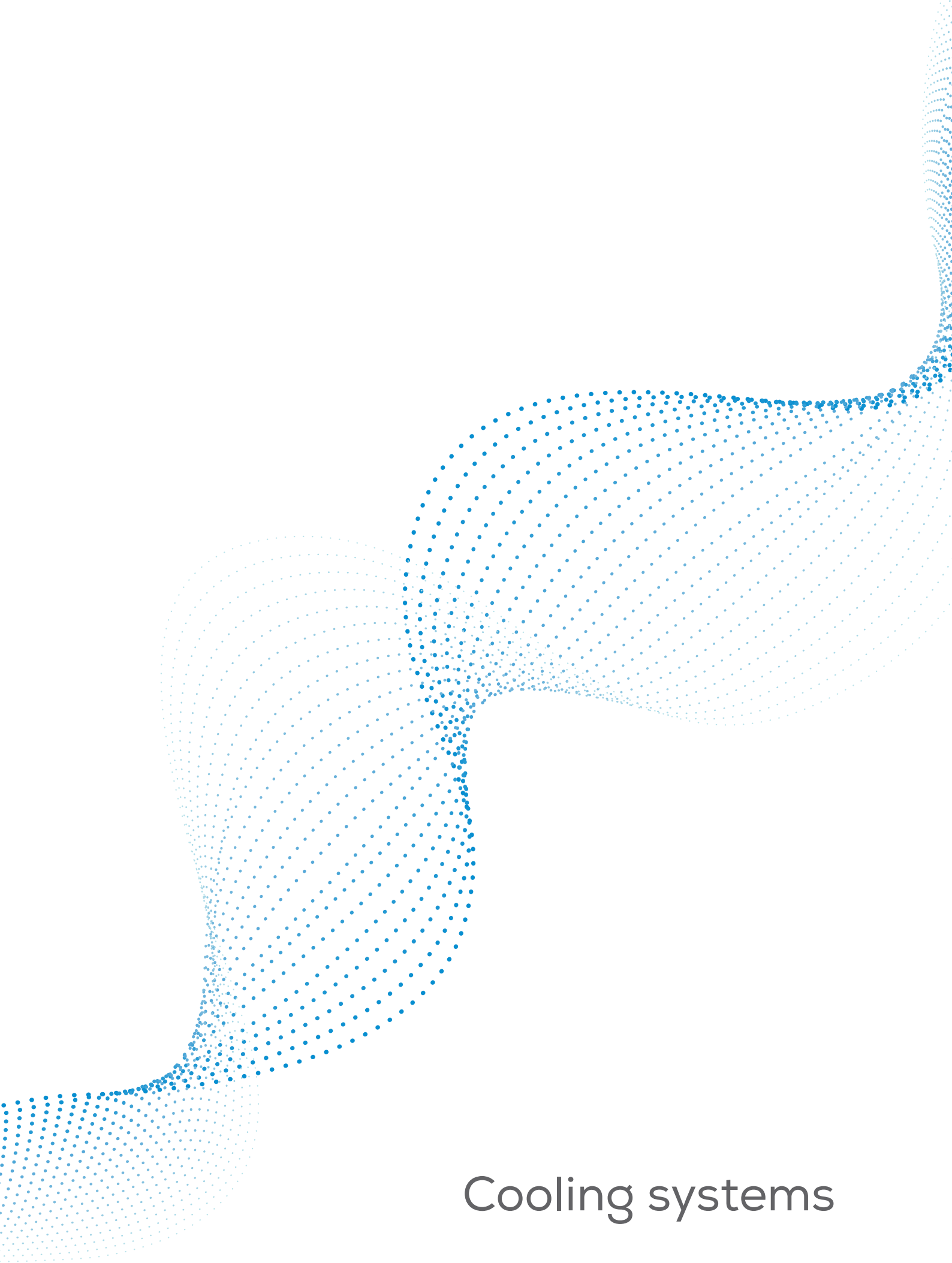
Propane gas pressure controller

Thermostat -20°C – +40°C

Thermostat -20°C – +40°C, splash-proof.

Article no.
480002300





Cooling systems

Information / overview

Cooling systems	6.1
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CoolPad systems

Munters Plastic Gutter (MPG)	6.2 – 6.4
Munters Plastic Gutter (MPG) accessories	6.5
CoolPads RCP 150	6.6 – 6.7
Munters CELdek® paper pads	6.8 – 6.13

High pressure cooling systems

Overview of high pressure cooling systems	6.14
High pressure cooling	6.15 – 6.16
High pressure cooling accessories	6.17 – 6.19

Compact air coolers

Overview of compact air coolers	6.20
Air cooler compact	6.21 – 6.22

DCP30 / DCP30 TOP4

Overview of DCP30/DCP30 TOP4	6.23
DCP30/DCP30 TOP4	6.24 – 6.25

Cooling systems

Economical, efficient and easy to assemble

An optimum stable climate is one of the fundamental factors for success in livestock farming. So in summertime, an effective cooling system is of particular importance. Our cooling systems provide better temperatures in a pen by means of adiabatic cooling and therefore promotes the health of animals.

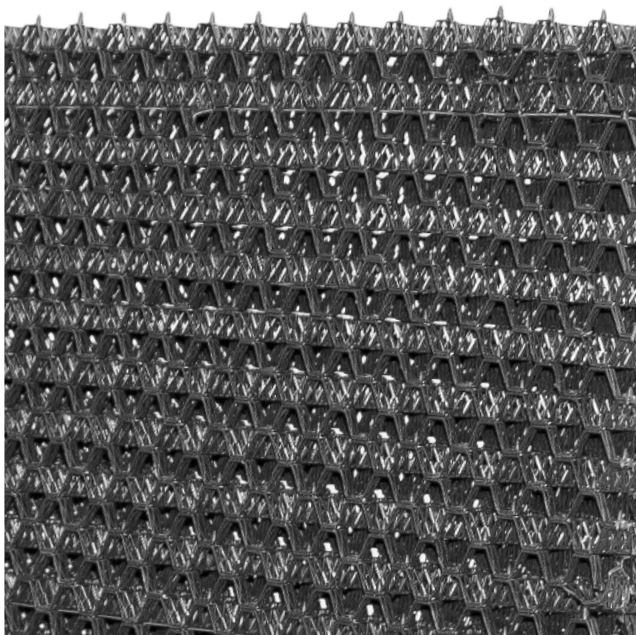
Munters CoolPad systems are used in systems that require a high degree of cooling efficiency. They can be used for a multitude of cooling applications. However, they are especially suited for the cooling of stables in which a higher air velocity is required.

The CoolPad system RCP 150 is easy to clean, durable and robust. Munters CELdek® is comprised of specially impregnated and corrugated cellulose media with different angles of corrugation. This unique shape provides a cooling pad with a high cooling output, which nevertheless only leads to a low pressure drop. Additionally, the deposits are reduced to a minimum. The CoolPads are optimally suited for combination with the new Munters Plastic Gutter (MPG).

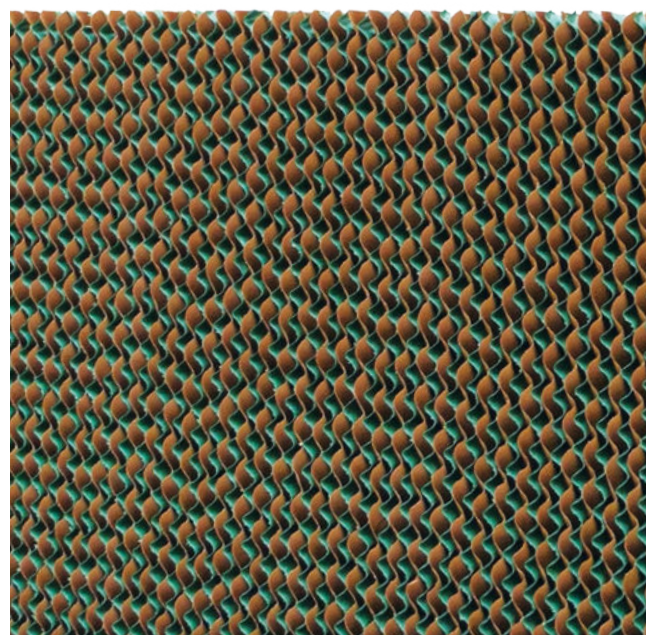
With our high pressure cooling systems, an economical and low-maintenance alternative to conventional medium and high-pressure cooling systems are now available. Besides reducing the temperature, dust is additionally bonded in the compartment.



High pressure cooling nozzle



CoolPads RCP 150



CELdek 7060

Munters Plastic Gutter (MPG)

Innovative development – Easy assembly saves money, time and material

Munters goes one step further when it comes to providing a trouble-free and easy to install pad frame system.

A revolutionary system without gluing the frame system that simplifies the installation process. This new system guarantees a long service life as there are no cracks or water leaks due to thermal expansion or contraction.

The Munters Plastic Gutter (MPG) is a complete water supply and distribution system for evaporative cooling with Pad-frame systems. The package contains the upper and lower frame system, the water supply kit and the end piece.

The Munters Plastic Gutter was developed to ensure optimal wetting of the evaporative cooling pads with water, even in extreme heat, and a continuous water recirculation.

Maintenance and cleaning are simplified by a Clip function in order to quickly access the water pipe or to replace the evaporative cooling pads.

The Munters plastic frame system is suitable for plastic as well as paper pads with a wall thickness of 150 mm.

The MPG System increases efficiency by saving money, time and material: no use of adhesives for the frame system, reduced installation time and no reworking.

Water distribution in the Pad-frame system



Dimensions Munters Plastic Gutter

Length (mm)	Pad depth (mm)	Pump	
		1~230V/50Hz (W) CELdek®	3~400V/50Hz (W) RCP CELdek®
6,000	150	370	750 –
9,000	150	370	750 –
12,000	150	370	750 –
15,000	150	–	750 750
18,000	150	–	1,500 750
21,000	150	–	1,500 750
24,000	150	–	1,500 750

For CELdek® lengths of up to 42 m are feasible with one pump.



Munters Plastic Gutter (MPG), RCP 150
 Consisting of a basic element and a side trim kit for CoolPads RCP 150, distribution kit, supply unit with pump. Suitable for CoolPads RCP 150, Pad-height max. 2.5 m

Power input pump: 3~400V/50Hz/60Hz



System length (mm)	Pump capacity (W)	Current (A)	Article no.	
			50Hz	60Hz
6,000	750	2.0	515060540	515060539
9,000	750	2.0	515090540	515090539
12,000	750	2.0	515120540	515120539
15,000	750	2.00	515150540	515150539
18,000	1,500	3.75	515180540	515180539
21,000	1,500	3.75	515210540	515210539
24,000	1,500	3.75	515240540	515240539

Note: Country specific pumps for various mains voltages available on request.

Munters Plastic Gutter (MPG), CELdek® 150

Consisting of a basic element and side trim kit for CELdek®150, distribution kit, supply unit with pump. Suitable for CELdek®150, pad-height max. 2.0 m

Power input pump: 1~230V/50Hz/60Hz



System length (mm)	Pump capacity (W)	Current (A)	Article no.	
			50Hz	60Hz
6,000	370	3.1	515062223	515062222
9,000	370	3.1	515092223	515092222
12,000	370	3.1	515122223	515122222

Power input pump: 3~400V/50Hz/60Hz

System length (mm)	Pump capacity (W)	Current (A)	Article no.	
			50Hz	60Hz
15,000	750	2.0	515152240	515152239
18,000	750	2.0	515182240	515182239
21,000	750	2.0	515212240	515212239
24,000	750	2.0	515242240	515242239
27,000	750	2.0	515272240	515272239
30,000	1,500	3.75	515302240	515302239
33,000	1,500	3.75	515332240	515332239
36,000	1,500	3.75	515362240	515362239
39,000	1,500	3.75	515392240	515392239
42,000	1,500	3.75	515422240	515422239

Note: Country specific pumps for various mains voltages available on request.

Flushing kits

Flushing kits to flush out the water and dirt from the system.

Article no.

1-579205881



Flushing kits

Inspection kits

Enables inspection and adjustment of the float valve without removing the cooling pads.

Article no.

1-579205880



Inspection kits

Spare part kits

Contains replacement parts for the unlikely event of breakage or maintenance. Recommended quantity depends on the project size. See the following examples:

1–2 walls each 21m long = 1 kit should be sufficient

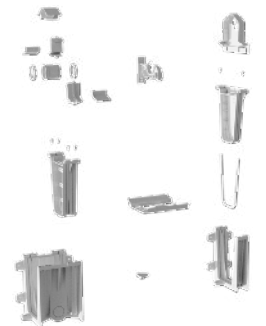
3–8 walls each 21m long = 2–3 kits should be sufficient

10–20 walls each 21m long = 4–6 kits should be sufficient

>20 walls each 21m long = 1 kit for every 4 walls should be sufficient

Article no.

1-579205879



Spare part kits

CoolPad systems

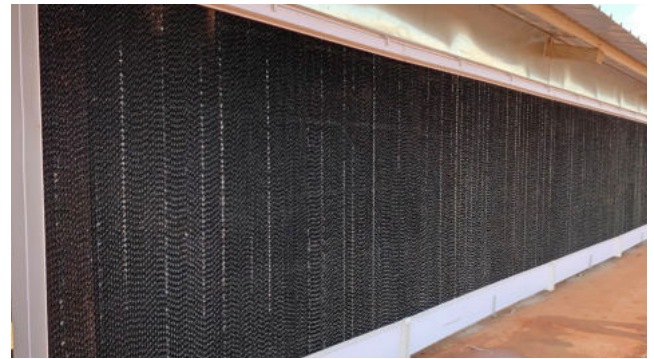
CoolPads RCP 150

Simple cleaning, long-lasting and robust!
 The evaporative cooling pad RCP 150 is used in systems that require a high degree of cooling efficiency. It can be used for a multitude of cooling applications. However, it is especially suited for the cooling of stables in which a higher air velocity is required.

The CoolPads consist of polypropylene and have a large surface area of ~ 270m²/m³, thanks to their fully open mesh structure. In addition, they are very robust, long-lasting and extremely UV-resistant. In comparison with paper pads, there is a lower level of pressure loss.

The CoolPad system RCP 150 is available in the standard cool pad dimensions 1,000/1,200/1,500/1,800/2,000/2,500 x 600 mm (custom sizes available on enquiry), and can therefore replace standard paper pads due to the construction. And not only that, it has the significant advantage of being easy to clean!

The RCP 150 in conjunction with the Munters Plastic Gutter (MPG) delivers effective cooling in poultry and pig stables.



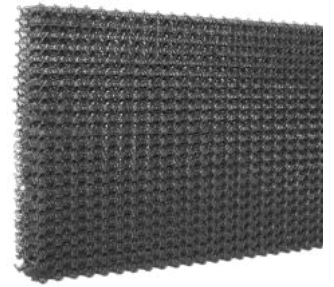
CoolPads RCP 150 can be cleaned easily with a high-pressure cleaner.

	Air conditions behind the pad																
	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	
Air temperature in front of the pad	50 °C	32.2	49														
	48 °C	30.9	49	33.9	59												
	46 °C	29.6	49	32.3	59	34.7	67										
	44 °C	28.2	50	30.9	59	33.1	67										
	42 °C	26.9	50	29.3	60	31.5	67	33.5	74								
	40 °C	25.5	51	27.9	60	29.9	68	31.8	74	33.4	80						
	38 °C	24.1	52	26.3	60	28.3	68	30.0	74	31.6	80	33.1	85				
	36 °C	22.8	52	24.8	61	26.7	68	28.4	74	29.9	80	31.3	85	32.6	89	33.8	93
	34 °C	21.4	53	23.3	61	25.1	68	26.6	75	28.1	80	29.4	85	30.7	89	31.9	93
	32 °C	20.1	53	21.8	61	23.5	68	25.0	75	26.4	80	27.6	85	28.9	89	29.9	93
	30 °C	18.7	53	20.4	61	21.9	68	23.3	75	24.6	80	25.8	85	26.9	89	28.1	93
	28 °C	17.3	54	18.8	62	20.2	69	21.6	75	22.8	80	24.0	85	25.1	89	26.1	93
	26 °C	15.9	54	17.4	62	18.6	69	19.9	75	21.0	80	22.2	85	23.2	89	24.2	93
	24 °C	14.5	55	15.8	63	17.0	69	18.2	75	19.3	80	20.3	85	21.3	89	22.3	93
	22 °C	13.1	55	14.3	63	15.4	69	16.5	75	17.6	80	18.5	85	19.5	89	20.3	93
	20 °C	11.7	56	12.8	63	13.8	70	14.8	75	15.8	80	16.7	85	17.6	89	18.4	93
		10%		20%		30%		40%		50%		60%		70%		80%	

Relative humidity in front of the pad

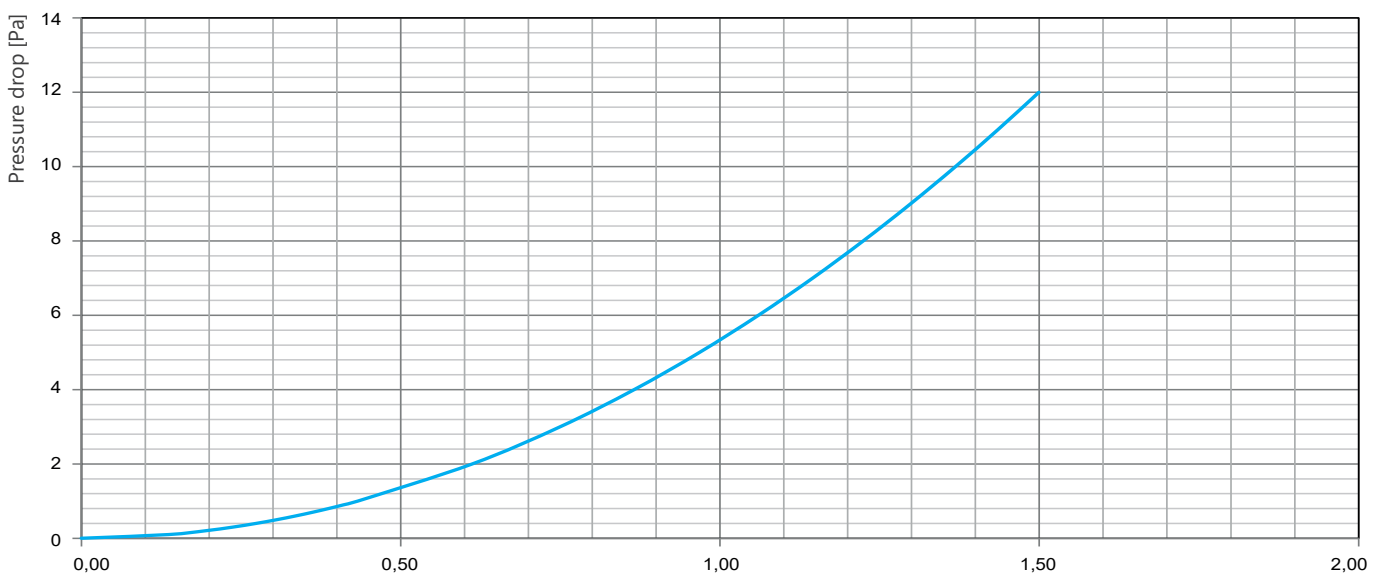
CoolPads RCP 150

Dimensions (mm)	Article no.:
1,000** x 600 x 150	504991510
1,200** x 600 x 150	504991512
1,500** x 600 x 150	504991515
1,800** x 600 x 150	504991518
2,000** x 600 x 150	504991520
2,500** x 600 x 150	504991525



Price upon request, depending on the purchase volume.
Custom heights up to max. 3,000 mm available on enquiry.

Pressure loss diagram RCP 150



The inflow velocity should not exceed a value of 1.5 m/s.

Inflow velocity [m/s]

Overview of container quantities for CoolPads RCP 150

CoolPad RCP 150 dimensions (mm)	20" container		40" container		40"HC container		Truck (13.6 x 2.4 x 2.6h m)	
	Quantity/ unit	Number of paletts	Quantity/ unit	Number of paletts	Quantity/ unit	Number of paletts	Quantity/ unit	Number of paletts
1,500** x 600 x 150	191	7	395	15	460	15	544	17
1,800** x 600 x 150	156	6	326	13	383	13	468	15
2,000** x 600 x 150	138	5	291	11	340	11	416	13
2,500** x 600 x 150	102	4	204	8	240	8	320	10

The pallet-sizes vary to ensure ideal utilization of the container / truck volume.

Munters CELdek[®] paper pads

CELdek[®] 7060-15 / 7090-15

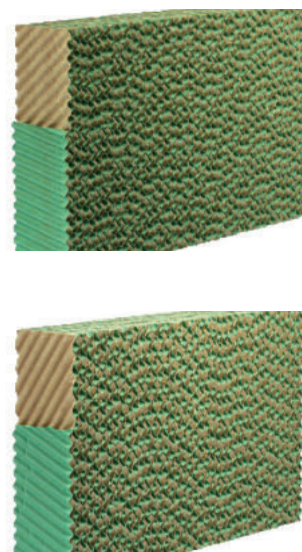
Evaporative cooling pads

The evaporative cooling pads CELdek[®] 7060-15 and CELdek[®] 7090-15 are used in systems that require a high degree of cooling efficiency. It can be used for a multitude of cooling applications. However, it is especially suited for cooling stables in which a higher air velocity is required.

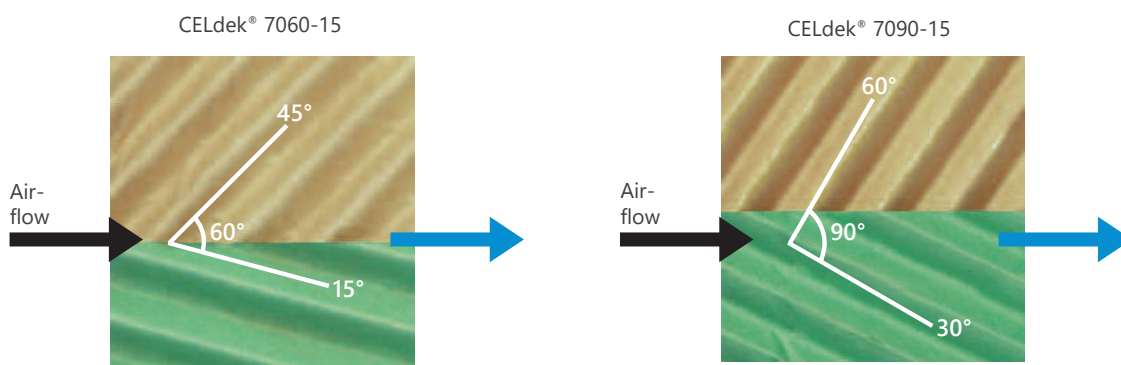
The pad is comprised of specially impregnated and corrugated cellulose media with different angles of corrugation. For example, with the CELdek[®] 7060-15 a steep angle (45 degrees) and a flat angle (15 degrees) are connected to each other.

This unique shape provides a cooling pad with a high cooling output, which nevertheless only leads to a low pressure drop. Additionally, the deposits are reduced to a minimum.

The also available water distribution pad is placed on top of the CELdek[®] pads to ensure an ideal water distribution. It is an essential part of the overall system and should always be ordered in combination with the evaporative cooling pads.



CELdek[®] angles of corrugation



Dependent on the angle, the dwelling time of the air in the pad and thus the moisture absorption respectively the efficiency increases. Take into account that the steeper the angle the higher the pressure loss will be which must be compensated with fan performance.



Evaporative cooling pads CELdek® 7060-15

Ideal for long buildings (100 – 150 m) and applications with high air velocities of more than 1.5 – 2.0 m/s at a low pressure loss.

Wall thickness 100 mm

Type	Dimensions (mm)	PU	Article no.
CELdek® 7060-15	1,000 x 600 x 100	22	1-2961560
CELdek® 7060-15	1,500 x 600 x 100	11	1-2961450
CELdek® 7060-15	1,800 x 600 x 100	11	1-2961385
CELdek® 7060-15	2,000 x 600 x 100	11	1-2961315

Wall thickness 150 mm

Type	Dimensions (mm)	PU	Article no.
CELdek® 7060-15	1,000 x 600 x 150	14	1-2961555
CELdek® 7060-15	1,500 x 600 x 150	7	1-2961445
CELdek® 7060-15	1,800 x 600 x 150	7	1-2961380
CELdek® 7060-15	2,000 x 600 x 150	7	1-2961310

Prices apply with complete container purchase. Individual prices on enquiry.

Water distribution pads CELdek® 70120-0

Water distribution pad from impregnated and corrugated sheets of cellulose paper for optimum distribution of water on the evaporative cooling pads CELdek® 7090-15 / 7060-15.

Type	Dimensions (mm)	PU	Article no.
CELdek® 70120-0	30 x 600 x 150	20/200	1-2961790
CELdek® 70120-0	30 x 600 x 100	30/300	1-2961810

Evaporative cooling pads CELdek® 7090-15

Optimal for short to medium buildings (50 – 100 m) and applications with low air velocities of up to 1.5 m/s with a higher pressure loss.

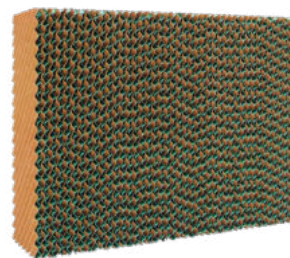
Wall thickness 100 mm

Type	Dimensions (mm)	PU	Article no.
CELdek® 7090-15	1,000 x 600 x 100	22	1-2960825
CELdek® 7090-15	1,500 x 600 x 100	11	1-2960690
CELdek® 7090-15	1,800 x 600 x 100	11	1-2960615
CELdek® 7090-15	2,000 x 600 x 100	11	1-2960555

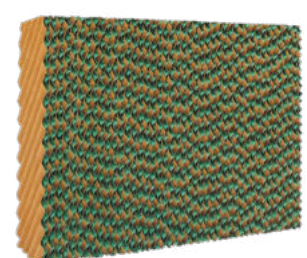
Wall thickness 150 mm

Type	Dimensions (mm)	PU	Article no.
CELdek® 7090-15	1,000 x 600 x 150	14	1-2960820
CELdek® 7090-15	1,500 x 600 x 150	7	1-2960685
CELdek® 7090-15	1,800 x 600 x 150	7	1-2960610
CELdek® 7090-15	2,000 x 600 x 150	7	1-2960550

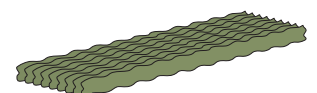
Prices apply with complete container purchase. Individual prices on enquiry.



CELdek® 7060-15



CELdek® 7090-15



Water distribution pad



Cooling output of CELdek® 7060-15, 100mm

Air velocity 1.5 m/s. water volume surface 60 l / (min·m²), at 9Pa

Air temperature in front of the pad	Air conditions behind the pad															
	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)
50°C	33.3	44														
48°C	31.9	45	34.7	54												
46°C	30.6	45	33.1	55	35.4	64										
44°C	29.1	46	31.7	55	33.8	64										
42°C	27.8	46	30.1	56	32.2	64	34.0	71								
40°C	26.4	47	28.6	56	30.5	64	32.3	71	33.8	77						
38°C	25.0	47	27.0	56	28.9	64	30.5	71	32.0	77	33.4	82				
36°C	23.6	47	25.5	56	27.2	64	28.8	71	30.3	77	31.6	82	32.8	87	33.9	92
34°C	22.2	48	24.0	57	25.6	64	27.1	71	28.5	77	29.7	83	30.9	87	32.0	92
32°C	20.8	49	22.4	57	24.0	65	25.4	71	26.7	77	27.9	83	29.0	87	30.0	92
30°C	19.4	49	20.9	57	22.4	65	23.7	71	24.9	77	26.0	83	27.1	87	28.2	92
28°C	17.9	50	19.4	58	20.7	65	22.0	71	23.1	77	24.2	83	25.2	87	26.2	92
26°C	16.5	50	17.9	58	19.1	65	20.3	71	21.3	77	22.4	83	23.4	87	24.3	92
24°C	15.1	50	16.3	59	17.4	66	18.6	71	19.6	77	20.5	83	21.5	87	22.4	92
22°C	13.6	51	14.8	59	15.8	66	16.8	72	17.8	78	18.7	83	19.6	87	20.4	92
20°C	12.2	52	13.2	59	14.2	66	15.1	73	16.0	78	16.9	83	17.7	88	18.5	92
	10%		20%		30%		40%		50%		60%		70%		80%	
Relative humidity in front of the pad																

Cooling output of CELdek® 7060-15, 150mm

Air velocity 1.5 m/s. water volume surface 60 l / (min·m²), at 13Pa

Air temperature in front of the pad	Air conditions behind the pad															
	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)
50°C	29.9	60	33.4	69												
48°C	28.6	61	32.0	69	34.9	75										
46°C	27.4	61	30.5	69	33.3	75										
44°C	26.1	61	29.1	69	31.7	75	34.0	81								
42°C	24.8	62	27.7	70	30.1	76	32.3	81	34.4	85						
40°C	23.6	62	26.2	70	28.6	76	30.7	81	32.6	85	34.3	89				
38°C	22.3	63	24.8	70	27.0	76	29.0	81	30.8	85	32.5	89	34.1	92		
36°C	21.0	63	23.3	70	25.4	76	27.3	81	29.1	85	30.7	89	32.2	92	33.5	95
34°C	19.7	64	21.9	71	23.9	76	25.7	81	27.3	85	28.9	89	30.3	92	31.6	95
32°C	18.4	64	20.5	71	22.3	76	24.0	81	25.6	85	27.1	89	28.4	92	29.7	95
30°C	17.1	65	19.0	71	20.8	77	22.4	81	23.9	85	25.3	89	26.5	92	27.8	95
28°C	15.8	65	17.6	71	19.2	77	20.7	81	22.1	85	23.5	89	24.7	92	25.9	95
26°C	14.5	66	16.1	72	17.7	77	19.1	81	20.4	85	21.7	89	22.8	92	23.9	95
24°C	13.2	66	14.7	72	16.1	77	17.4	82	18.7	85	19.9	89	21.0	92	22.0	95
22°C	11.8	67	13.2	72	14.5	77	15.8	82	17.0	85	18.1	89	19.1	92	20.1	95
20°C	10.5	67	11.8	73	13.0	78	14.1	82	15.2	86	16.3	89	17.3	92	18.2	95
	10%		20%		30%		40%		50%		60%		70%		80%	
Relative humidity in front of the pad																



Cooling output of CELdek® 7090-15, 100mm

Air velocity 1.5 m/s. water volume surface 60 l/ (min·m²), at 21Pa

		Air conditions behind the pad															
		T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)
Air temperature in front of the pad	50 °C	30.9	56	34.3	65												
	48 °C	29.6	56	32.8	65												
	46 °C	28.3	56	31.3	65	33.9	72										
	44 °C	27.0	57	29.8	65	32.3	72	34.5	78								
	42 °C	25.7	57	28.4	65	30.7	72	32.8	78	34.7	83						
	40 °C	24.4	58	26.9	66	29.1	72	31.1	78	32.9	83	34.6	87				
	38 °C	23.1	58	25.4	66	27.5	73	29.4	78	31.2	83	32.8	87	34.2	91		
	36 °C	21.8	59	24.0	66	26.0	73	27.8	78	29.4	83	30.9	87	32.3	91	33.7	94
	34 °C	20.4	59	22.5	67	24.4	73	26.1	78	27.7	83	29.1	87	30.5	91	31.7	94
	32 °C	19.1	60	21.0	67	22.8	73	24.4	78	25.9	83	27.3	87	28.6	91	29.8	94
	30 °C	17.8	60	19.6	67	21.2	73	22.8	78	24.2	83	25.5	87	26.7	91	27.9	94
	28 °C	16.4	61	18.1	68	19.7	73	21.1	79	22.4	83	23.7	87	24.9	91	26.0	94
	26 °C	15.1	61	16.6	68	18.1	74	19.4	79	20.7	83	21.9	87	23.0	91	24.0	94
	24 °C	13.7	62	15.2	68	16.5	74	17.8	79	18.9	83	20.1	87	21.1	91	22.1	94
	22 °C	12.3	62	13.7	69	14.9	74	16.1	79	17.2	83	18.3	87	19.3	91	20.2	94
	20 °C	11.0	63	12.2	69	13.3	74	14.4	79	15.5	83	16.5	87	17.4	91	18.3	94
		10%		20%		30%		40%		50%		60%		70%		80%	
		Relative humidity in front of the pad															

Cooling output of CELdek® 7090-15, 150mm

Air velocity 1.5 m/s. water volume surface 60 l/ (min·m²), at 31Pa

		Air conditions behind the pad															
		T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)	T (°C)	rH (%)
Air temperature in front of the pad	50 °C	27.6	73	31.5	79												
	48 °C	26.4	73	30.1	79	33.4	84										
	46 °C	25.2	74	28.8	79	31.8	84	34.6	87								
	44 °C	24.0	74	27.4	80	30.3	84	32.9	87								
	42 °C	22.9	74	26.0	80	28.8	84	31.2	87	33.5	90						
	40 °C	21.7	75	24.6	80	27.3	84	29.6	88	31.7	90	33.7	93				
	38 °C	20.5	75	23.3	80	25.7	84	28.0	88	30.0	90	31.9	93	33.6	95		
	36 °C	19.3	75	21.9	80	24.2	84	26.3	88	28.3	90	30.1	93	31.7	95	33.3	97
	34 °C	18.1	76	20.5	81	22.7	84	24.7	88	26.6	90	28.3	93	29.8	95	31.3	97
	32 °C	16.9	76	19.2	81	21.2	85	23.1	88	24.9	90	26.5	93	28.0	95	29.4	97
	30 °C	15.7	77	17.8	81	19.7	85	21.5	88	23.2	91	24.7	93	26.2	95	27.5	97
	28 °C	14.4	77	16.4	81	18.2	85	19.9	88	21.5	91	22.9	93	24.3	95	25.6	97
	26 °C	13.2	77	15.0	81	16.7	85	18.3	88	19.8	91	21.2	93	22.5	95	23.7	97
	24 °C	11.9	78	13.6	82	15.2	85	16.7	88	18.1	91	19.4	93	20.6	95	21.8	97
	22 °C	10.7	78	12.2	82	13.7	85	15.1	88	16.4	91	17.6	93	18.8	95	19.9	97
	20 °C	9.4	79	10.8	82	12.2	85	13.5	88	14.7	91	15.8	93	17.0	95	18.0	97
		10%		20%		30%		40%		50%		60%		70%		80%	
		Relative humidity in front of the pad															

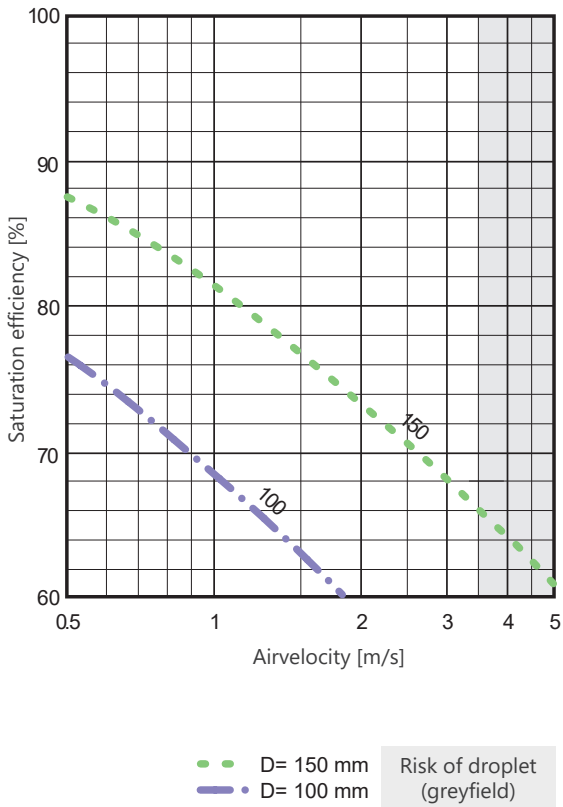


Overview of container quantities for CELdek®

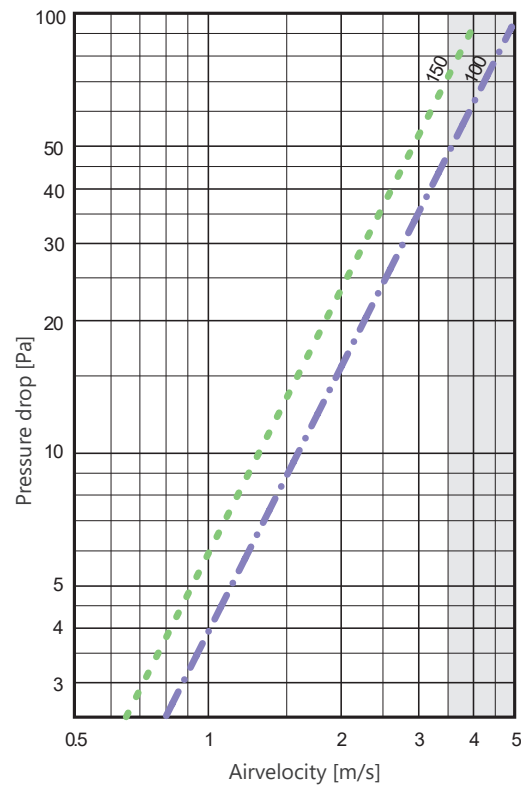
CELdek® dimensions (mm)	20" container		40" container		40"HC container		Truck (13.6 x 2.4 x 2.6h m)	
	Quantity/ unit	Quantity/ PU	Quantity/ unit	Quantity/ PU	Quantity/ unit	Quantity/ PU	Quantity/ unit	Quantity/ PU
1,000 x 600 x 100	330	15	726	33	968	44	1,144	52
1,500 x 600 x 100	231	21	495	45	660	60	748	68
1,800 x 600 x 100	198	18	396	36	528	48	638	58
2,000 x 600 x 100	165	15	363	33	484	44	572	52
1,000 x 600 x 150	210	15	462	33	616	44	728	52
1,500 x 600 x 150	147	21	315	45	420	60	476	68
1,800 x 600 x 150	126	18	252	36	336	48	406	58
2,000 x 600 x 150	105	15	231	33	308	44	364	52



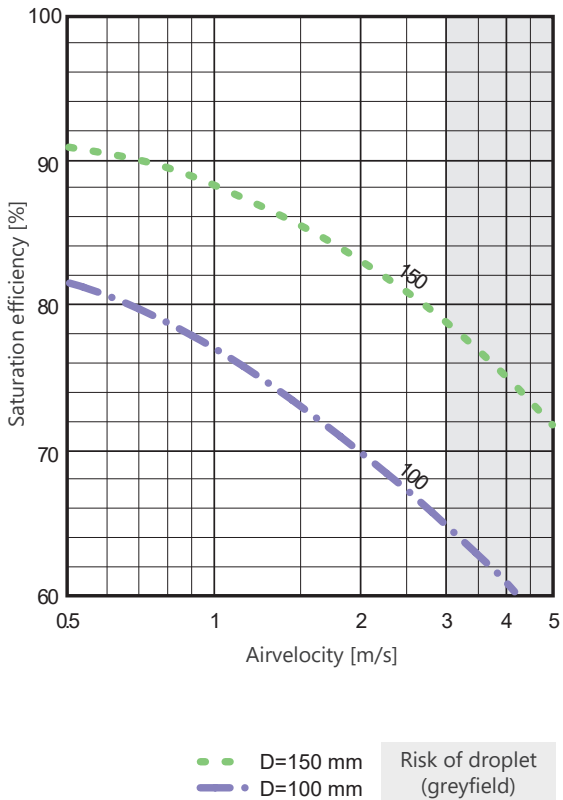
Saturation efficiency CELdek 7060-15



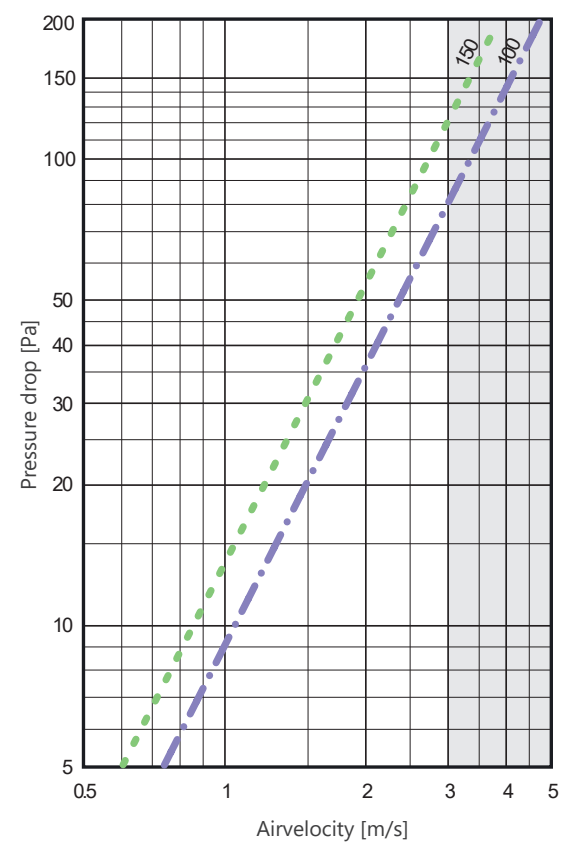
Pressure drop CELdek 7060-15



Saturation efficiency CELdek 7090-15



Pressure drop CELdek 7090-15



High pressure cooling systems

Effective cooling, economical and low-maintenance!

The high pressure cooling system is a spray cooling system, in which water is fed to the stable air as mist at a pressure of max. 70 bar by using of high pressure nozzles. The sprayed water mist is so fine that it evaporates immediately. In the process, heat energy is extracted from the hot air, resulting in the quick cooling of the stable air. Due to this cooling effect, the ventilation rate can be decreased, facilitating the saving of energy. With our high pressure cooling system, an economical and low-maintenance alternative to conventional high-pressure cooling systems is now available. The unique design of the high pressure nozzles not only prevents dripping, but can be additionally mounted in a flexible manner, due to the patented pipe brackets, and requires very little maintenance. Furthermore, the dust is bound in the compartment and temperature reductions of up to 7 Kelvin are possible.

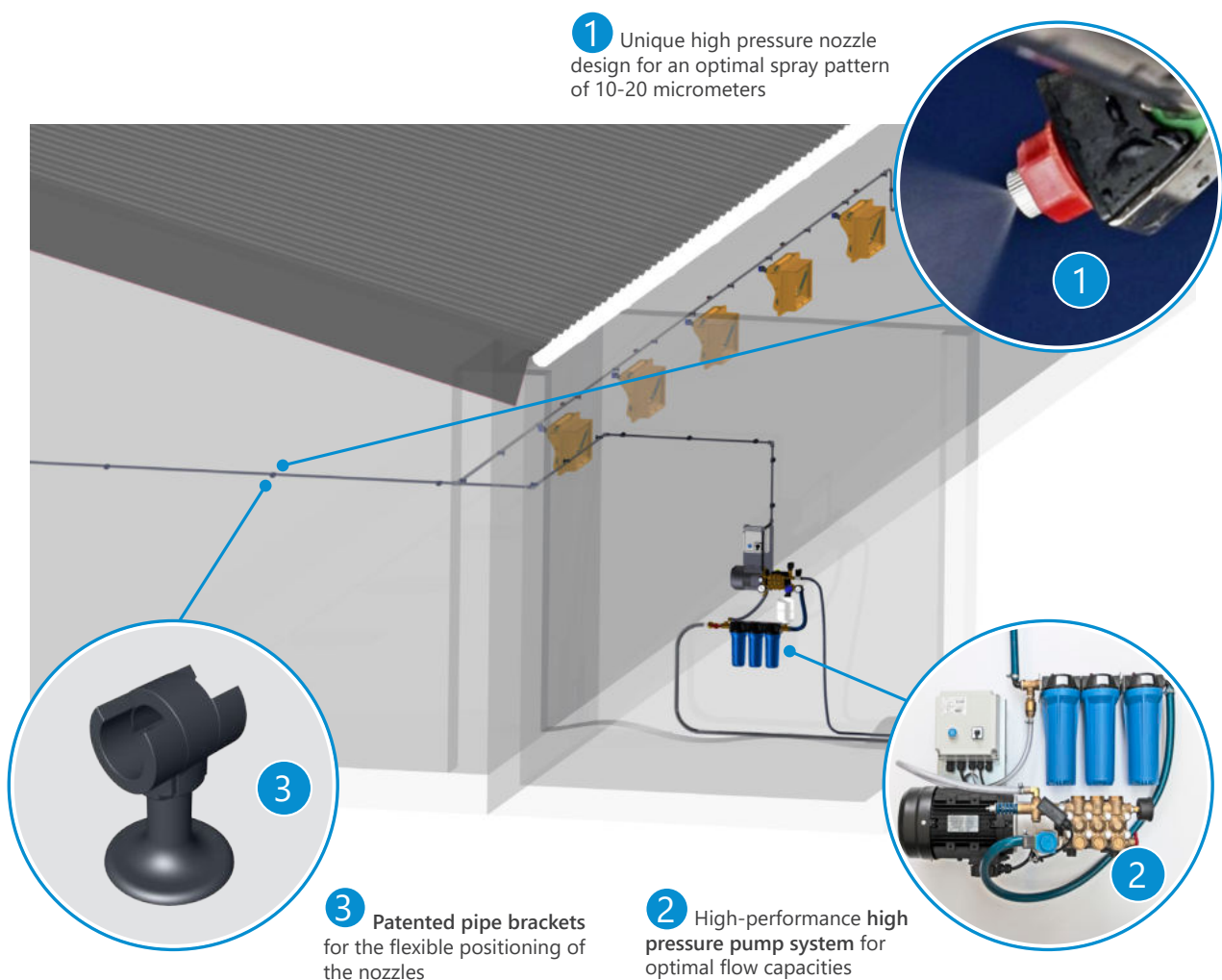
Technical details

Pump units:

Available with flow rates of 5.5l, 12l, 21l and 30l/min;
Including connection material (hoses, hose clamps, etc.),
3 upstream filters (20, 5 and 1 micron) and automatic switch-off

High pressure spray nozzles with anti-drain valve:

0.3 mm nozzle head = 6.5 litres/h and 0.4 mm nozzle head = 10 litres/h at 700 mW (70bar)
Droplet size approx. 10–20 microns (0.01–0.02 mm)



High pressure pump units including 3-fold filter unit

Depending on the number of nozzles (flow volume), a pump unit is required for each cooling system. Including connection material (hoses, hose clamps, etc.), three upstream filters (20, 5 and 1 micron) and automatic switch-off.

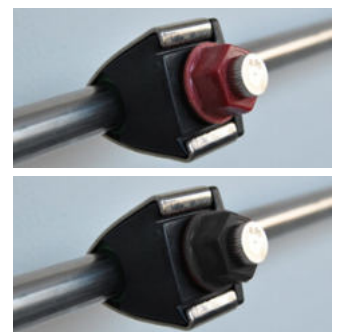


Output (l/h)		Connected loads	Operating pressure (bar)	Article no.
min.	max.			
99 l/h	330 l/h	400V/50Hz; 1.1kW; 3.0A	max. 70	9-503110602
216 l/h	720 l/h	400V/50Hz; 2.2kW; 5.3A	max. 70	9-503221202
378 l/h	1,260 l/h	400V/50Hz; 3.0kW; 6.8A	max. 70	9-503302102
540 l/h	1,800 l/h	400V/50Hz; 4.0kW; 8.2A	max. 70	9-503303002

Nozzle sets

The number of nozzles is determined depending on the total exhaust air or fresh air and the respective climatic region. Nozzles with different flow volumes (l/h) are available.

Type	Color of nozzle head	Article no.
0.3 mm	red	503984204
0.4 mm	black	503984205



Tool sets



The tool set must be included once with the calculation of each cooling system, because it contains the drilling template for example, which is required for precisely drilling the drill holes in the nozzle line.

Comprised of: 1 x drilling template; 1 x special drill; 1 x special tool for nozzle head assembly; 1 x pipe cutter



Article no.
503974239



Max. number of nozzles depending on the flow rate
and operating pressure of the 4 pump types



High pressure pump type	Color of nozzle head	Flow rate per nozzle at operating pressure (l/h)		Number of nozzles (unit)  			
		70 bar	50 bar	70 bar		50 bar	
				min.	max.	min.	max.
Pump 5.5 l/min (330l/h)	Red 0.3 mm	6.5	5.5	15	51	18	60
	Black 0.4 mm	9.5	7.5	10	34	13	44
Pump 12.0 l/min (720l/h)	Red 0.3 mm	6.5	5.5	33	111	39	131
	Black 0.4 mm	9.5	7.5	23	75	28	96
Pump 21.0 l/min (1,260l/h)	Red 0.3 mm	6.5	5.5	58	194	69	229
	Black 0.4 mm	9.5	7.5	40	132	50	168
Pump 30.0 l/min (1,800l/h)	Red 0.3 mm	6.5	5.5	83	277	98	327
	Black 0.4 mm	9.5	7.5	56	189	72	240

Screw connector external thread conical

Type	Article no.  
3/8"	9-503984218
1/2"	9-503984219





Screw connector, socket 12mm, stainless steel

Article no.  
9-503984200





Screw connector, angle 12mm, stainless steel

Article no.  
9-503984201





Screw connector, T-piece 12mm, stainless steel

Article no.  
9-503984202





Ball valve 12mm 1/2" tube connection

Article no.  
9-503124200





Magnet valve 230V, 12mm threaded

Article no.  
9-503992400





Magnetic valve 24V, 2 x screw connector

Article no.  
9-503984221





Press screw connector external thread conical

Type	Article no.  
3/8"	9-503984216
1/2"	9-503984217





Press coupling 12mm A4

Article no.  
9-503984212





Press elbow 90° 12mm A4

Article no.  
9-503984213





Press t-piece 12mm A4

Article no.  
9-503984211





Press ball valve bronze 12mm, 1/2" tube connection

Article no.  
9-503984215





Magnetic valve 24V, 2 x press screw connector

Article no.  
9-503984220



Press fitting pliers 12mm

Article no.  
9-503999910




12mm pipe (AISI 316) 6000mm,
stainless steel

Article no.  

9-503974260



Pipe holder 12mm, H30 black POM

Article no.  

9-503120700



Special tool for mounting nozzle heads

Article no.  

9-503999902



Drill template pipe, stainless steel

Article no.  

9-503999900



Compact air coolers

For perfect climate in the stable

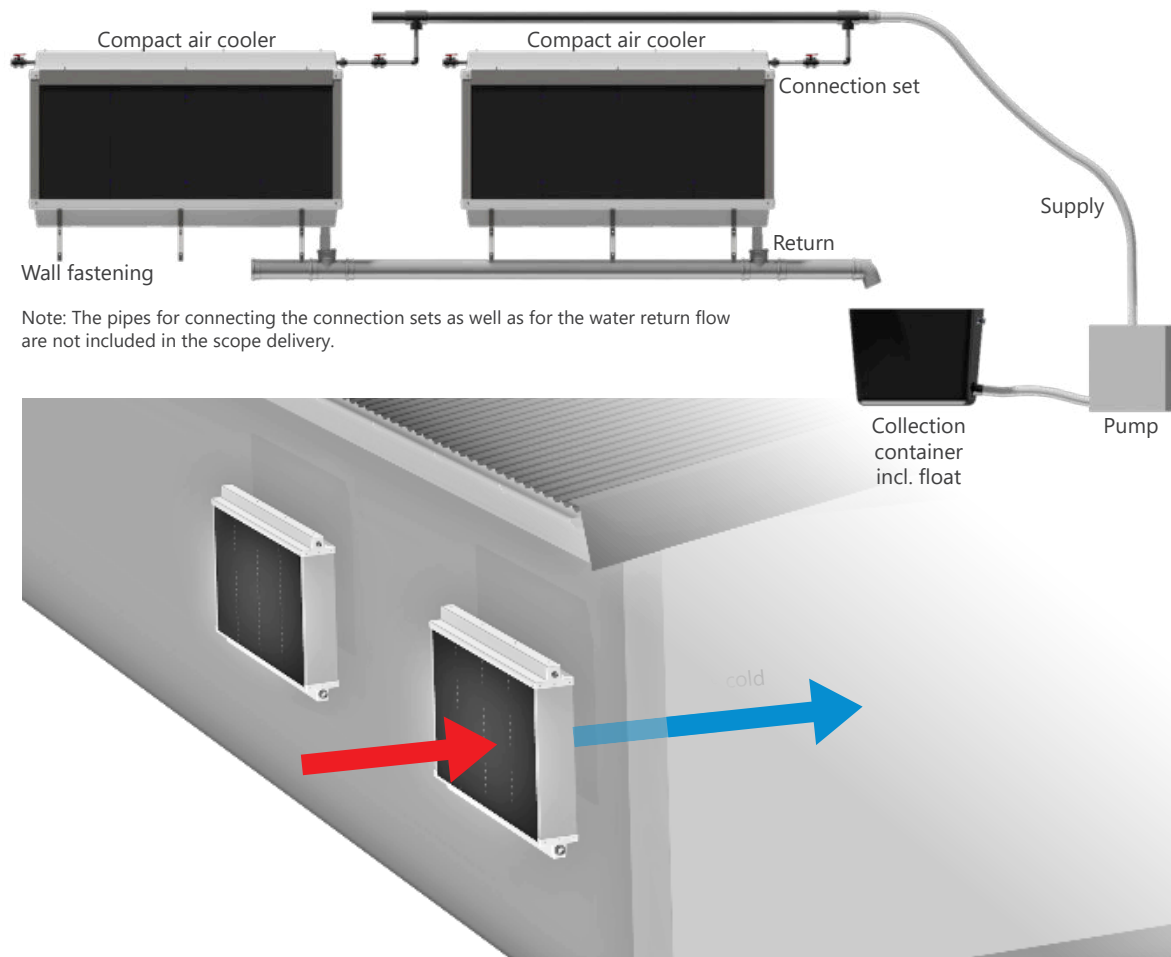
If stables are too warm, this leads to stress for the animals and to the associated depletion in performance. To avoid problems with overly high temperatures, we offer the compact air cooler with different air capacity options (12,500 and 20,000 m³/h).

In summertime, an effective cooling system is of particular importance. With our air cooler, warm dry air is fed into the stable through a special plastic packing. The filling material is sprinkled with water from above, so that the fresh air is moistened and thereby also cooled (evaporative cooling). In this way it is guaranteed that the animals are supplied with cool fresh air even on hot days.

The compact air cooler offers the following advantages:

- Easy installation due to prefabricated parts
- Uncomplicated technology and therefore also simple maintenance
- Low electrical power costs due to low exhaust air flow rates
- Compatible with many ventilation systems
- Even suitable for very poor water qualities
- Higher daily growth through better room climates
- Long service times and small dimensions
- High quality plastic frame is impervious to poor water quality (salt, iron, algae, i.e. hardly any negative effects on efficiency)

Exemplary cooling setup



Compact air coolers

The compact air cooler stands out because it is easy to clean and maintain. The compact air coolers can be retrofitted to existing stables and exhibit low flow resistance. The water supply is implemented via conventional low-pressure centrifugal pumps.

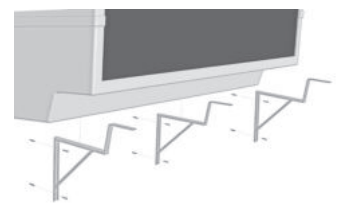
Type	Air capacity (m ³ /h)	Article no.
W 12,500	12,500	501120700
W 20,000	20,000	501200700



Mounting brackets for compact air coolers

Fixing incl. 3 VA brackets for mounting in front of a wall including perforated tape

Article no.
361301



Connection set for 1 compact air cooler

Designed for 1 compact air cooler (W12,500/ W20,000) incl. PVC pipe Ø25x1.5x2,500 mm, PVC angle Ø25 mm, PVC ball valve Ø25 mm, PVC reduction piece 63x25, PVC junction DN110 87°, cleaner and adhesive.

Article no.
501809901



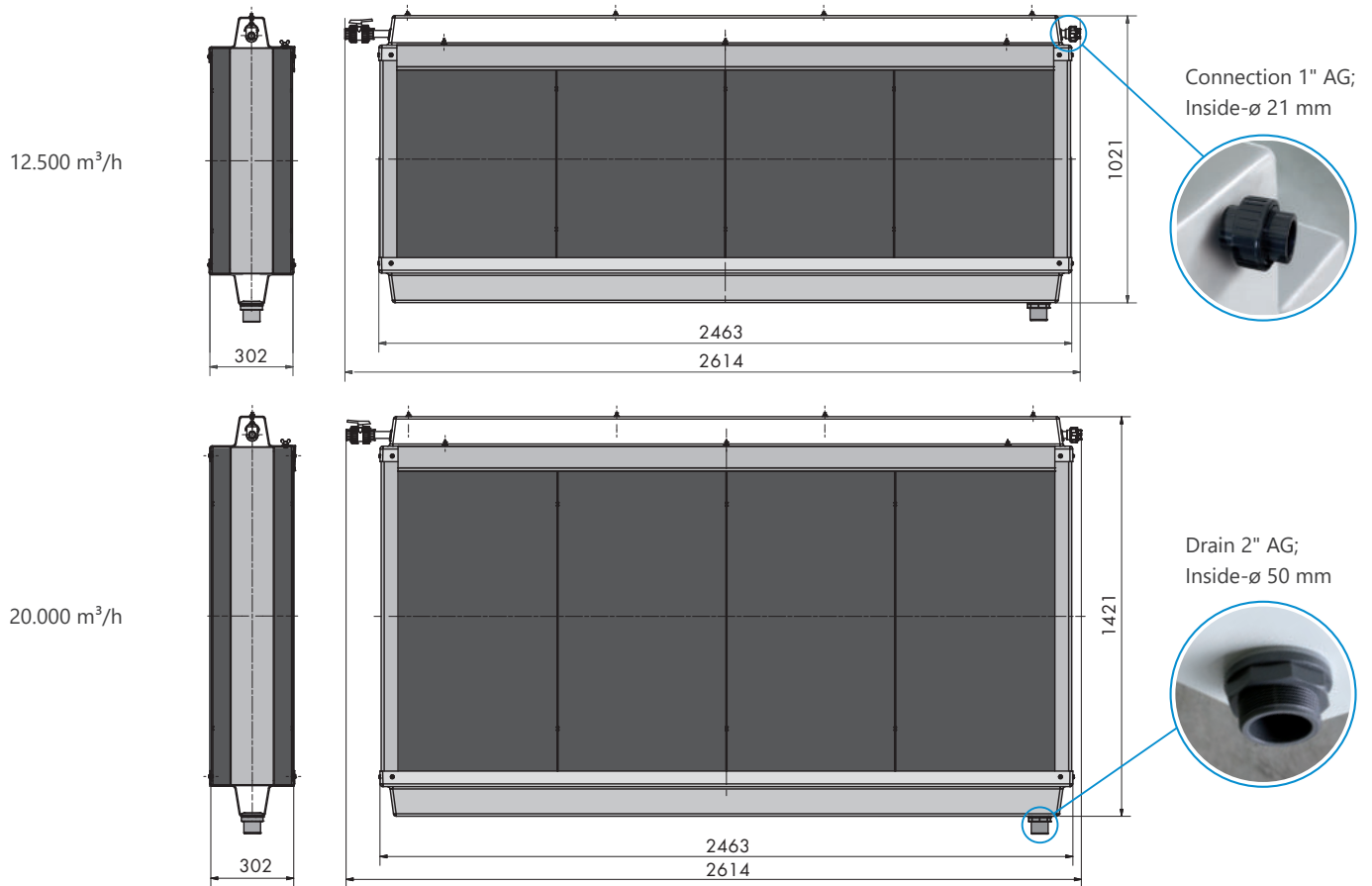
Pump sets

Designed for max. 2 compact air coolers (W12,500/ W20,000) incl. pump, water tank 300 l as well as connection material (incl. 4 m PVC tube) between water tank and compact air cooler. Pump is designed for permanent operation. Also suitable for use with dirty water.

Type	Article no.
Pump set for up to 2 compact air coolers	501802302
Pump set for up to 6 compact air coolers	501802306



Variants and dimensions



Evaporative air coolers DCP

High-performance evaporative air coolers

DCP30 TOP4

The DCP30 TOP4 is a variant of the evaporative air cooler, which is equipped with a tower outlet and adjustable air conduction sheets. It can be installed within or outside of the environment that is to be cooled.

DCP30

In addition to the CELdek® evaporative pads, the unit is delivered with a 300 l polyethylene water tank and a submersible pump with a capacity of 30 l/min.

The low weight, the robustness of the galvanised steel enclosure and the easy installation ensure the quick and simple transportation of the DCP30 from one location to another.

Optionally, a perforated plastic duct can be included in the delivery, which is fitted to the air outlet of the DCP30 and facilitates an optional distribution of the air in the environment that is to be cooled. The unit is also prepared for the connection to a thermostat and hygostat.



DCP30

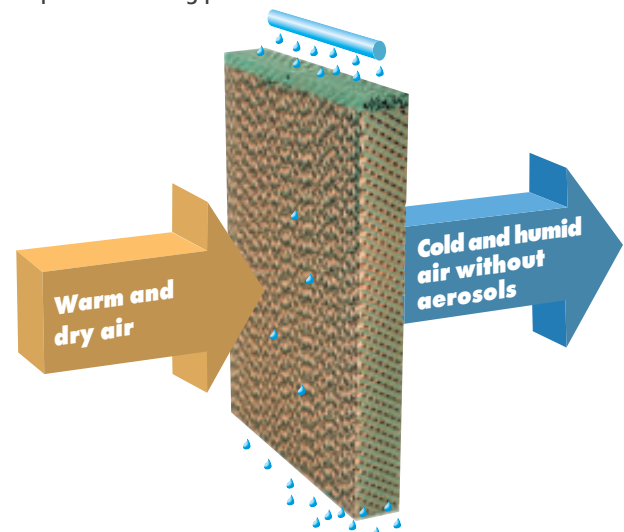
DCP30 TOP4

DCP30/DCP30 TOP4

DCP30/DCP30 TOP4 evaporative air coolers are suitable for various areas of application such as livestock breeding, greenhouses and industrial facilities.

The evaporative air coolers work according to the physical principle of water evaporation. The air is pressed through the CELdek® evaporative cooling pads by a high-performance fan. While the air flows through the moist pad, it releases heat to the water and as a result cools down. The amount of humidity present in the air determines the degree of temperature reduction of the treated air.

Funktionalität CELdek®
Evaporative cooling pads



DCP30

Compact evaporative air cooler for the quick transportation and easy installation. Including 3 CELdek® evaporative cooling pads, 300 l polyethylene water tank and a submersible pump with a capacity of 30 l/min. Optional: Extension with perforated air hose (max. 40 m).

Power (PS)	Voltage (V)	Article no.
1.5 PS	3~400V; 50/60Hz	1-20870049EU
1.5 PS	1~230V; 50/60Hz	1-20870127EU
Perforated air hose Ø 780 mm		1-2658200
Fixing set for air hose Ø 780 mm		1-2654600
Strap mounting		1-2655200
Main cable for air hose		1-22823700



DCP30

DCP30 TOP4

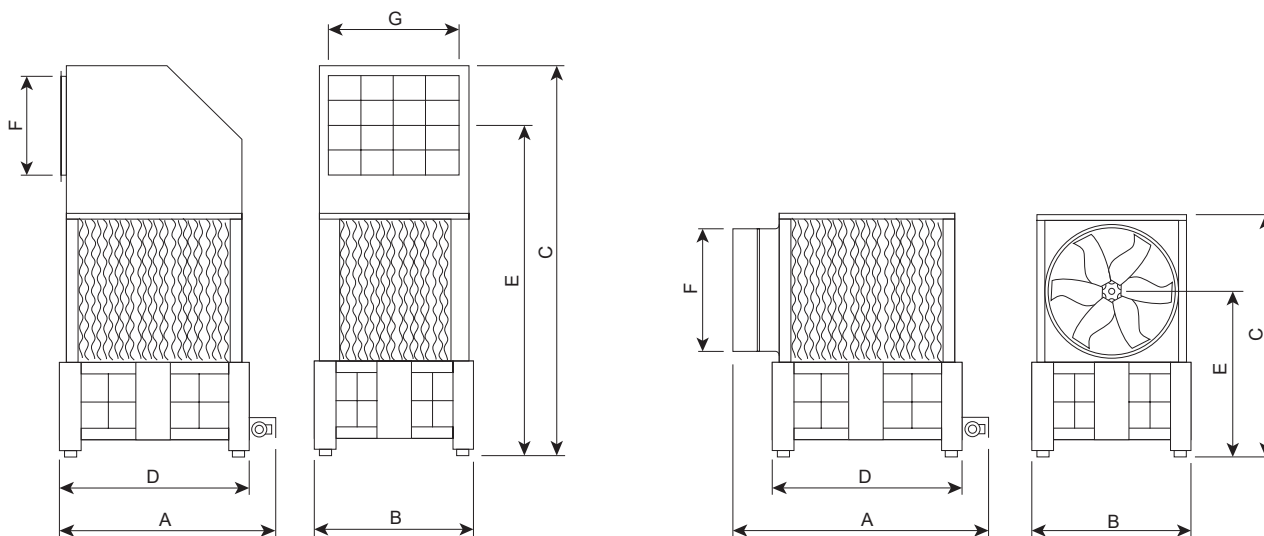
Evaporative air cooler with tower outlet and adjustable air conduction sheets. Can be installed within or outside of the environment that is to be cooled. Including 4 CELdek® evaporative cooling pads, 300 l polyethylene water tank and a submersible pump with a capacity of 30 l/min.

Power (PS)	Voltage (V)	Article no.
1.5 PS	3~400V; 50/60Hz	1-20870068EU



DCP30 TOP4

Dimensions

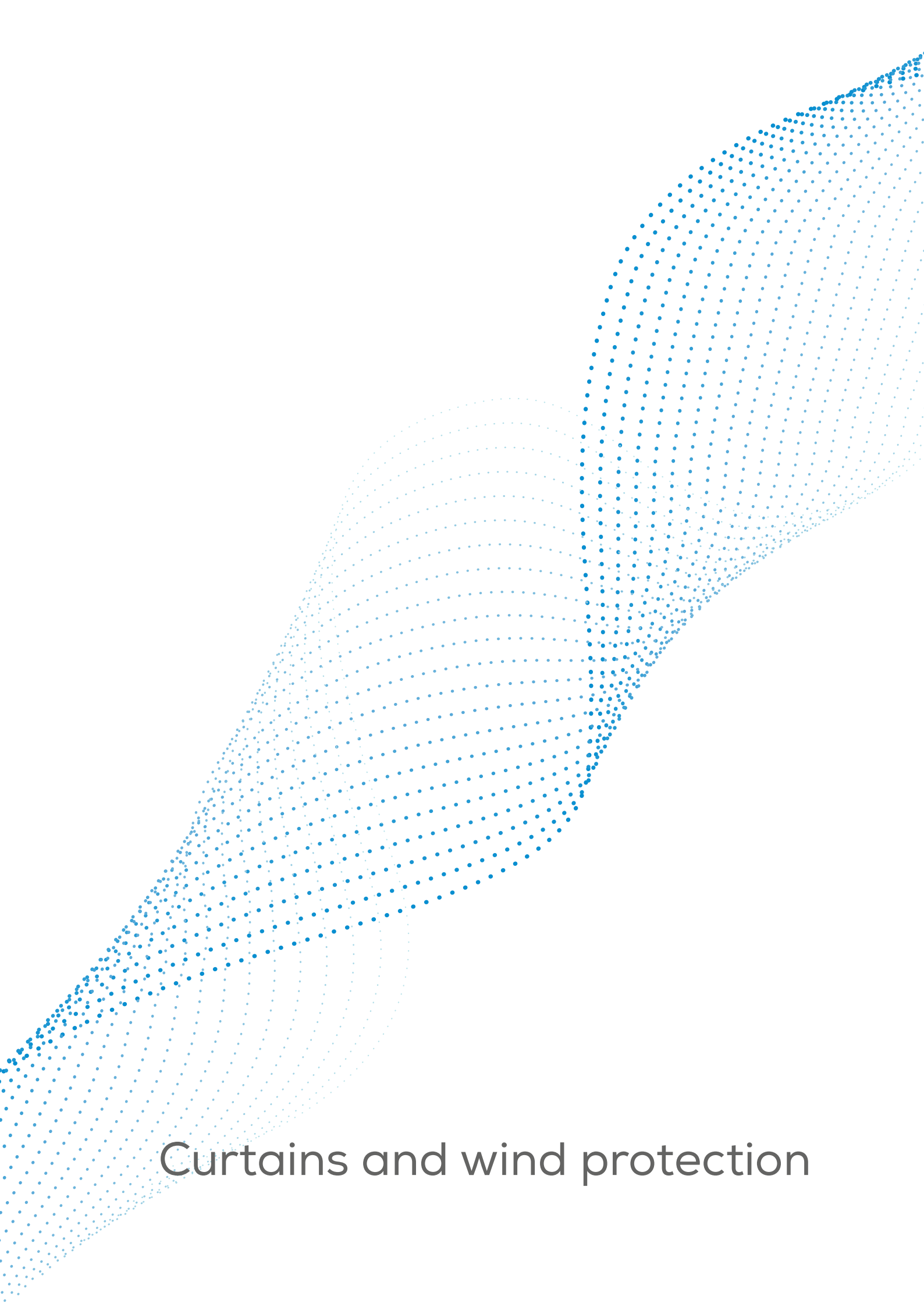


Type	A	B	C	D	E	F	G
DCP30	1,640 mm	1,000 mm	1,520 mm	1,200 mm	1,000	790 mm	—
DCP30 TOP4	1,360 mm	1,000 mm	2,500 mm	1,200 mm	2,150	650 mm	800 mm

Technical Data

		DCP30	DCP30 TOP4
Weight	kg	130	160
Motor power	kW/PS	1.1/1.5	
Airflow	m ³ /h [cfm]	16,000 [9,415]	
Propeller diameter	mm [inch]	780 [30]	
Number of blades		6	
Max operating temperature	°C [°F]	50 [122]	
IEC protective class of electric motor		IP55	
Electric motor winding insulation grade		F	

Note: Airflow data are measured at standard condition (20 °C, 1013 hPa).



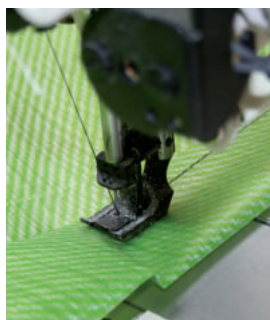
Curtains and wind protection

Information / overview	
Curtains and wind protection	7.1
Curtains / PVC sheets / Cloth nets	
Curtains	7.2
PVC sheets / Cloth nets	7.3
Curtain drives / Accessories	7.4 – 7.6
Packing	7.6
Accessories curtains and wind protection	
Accessories	7.7 – 7.8
Folding curtain systems	
MFP - Munters Folding Curtains	7.9 – 7.11
MFP-S - Munters Folding Curtains with straps	7.12 – 7.14
Rolling curtain systems	
MTC - Munters Top Curtains	7.15 – 7.17
MSC - Munters Simplex Curtains	7.18 – 7.21
Ventilation panels	
MVP - Munters Ventilation Panels	7.22 – 7.24
MVP-S - Munters Ventilation Panels with straps	7.25 – 7.27

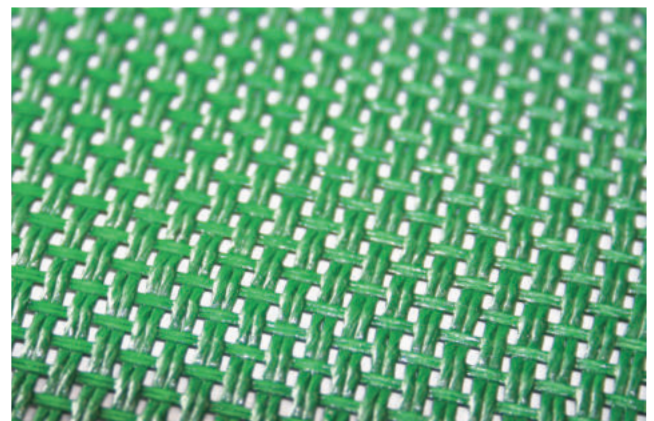
Curtains and wind protection

Naturally ventilated – cost-effective and good


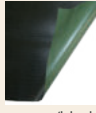
The wind protection nets and curtains made from robust polyester fabric provide up to 90% wind refraction. They present a high performance and cost-effective solution for wind protection, particularly for constant fresh air without drafts in cattle, horse and sheep stables. Natural lighting conditions are also retained within the building. A build-up of gases in the building is reduced and draft-free, natural ventilation of the building is facilitated. The high quality material is UV stabilized and weatherproof. In addition to a range of fabric and foil qualities, we also finish our products on a tailored basis with hemstitch, double seam and eyelets for a range of fixing options and simple self-installation. Rail systems and clamping belt systems complete our product range.



Sturdy, double-seamed



Overview, curtain variants

Model, top		Model, curtain		Model, below	
Double seam with 4 eyelets (brass) per meter		Curtains 1-fold HDPE woven sheet 230 g/m ²	  green green/black	Open	
Welt 7.5 mm		Curtains 3-fold 2-layer HDPE woven sheet 230 g/m ²		Welt 7.5 mm	
Welt 10 mm				Welt 10 mm	
Hemstitch matching curtain tube Ø 50 mm					











Curtains 1-fold

Durable HDPE woven sheet, approx. 230 g/m², UV-stabilized, closed top hemstitched on one side, 4 eyelets per running metre.

Ideal color combination: Inside black / outside green. Provides darkness in the stable; the green outer coating reduces heating from the sun and has a pleasant appearance.

Width: 1,450 - 2,200 mm

Color	Width (mm)	Article no.
Green 	1,450	170000
Green/black 	1,450	170003
Green 	1,800	170100
Green/black 	1,800	170103
Green 	2,000	170200
Green/black 	2,000	170203
Green 	2,200	170300
Green/black 	2,200	170303

Attention: Order-specific article – returns not permitted!



Inside green/outside black






green

Curtains 3-fold

2-layer, durable HDPE woven sheet, approx. 230 g/m², UV-stabilised, central air cushion foil, closed hemstitched on one side, 4 eyelets per running metre.

Width: 1,450 - 2,200 mm

Color	Width (mm)	Article no.
Combination*	1,450	170400
Green/green 	1,800	170500
Green/green 	2,000	170600
Green/green 	2,200	170700

* Combinations (article no.: 170400) in any order green/black. Please provide your color choice.

Attention: Order-specific article – returns not permitted!




3-fold

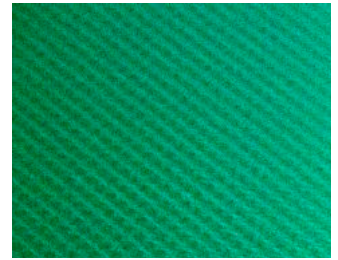
PVC sheets for roller blind

Ideal for laying hen areas, as an outlet roller blind for winter gardens. Durable PET woven sheet with double-sided PVC coating, approx. 670 g/m², UV-stabilised.

Width: 2,500 mm

Color	Width (mm)	Article no.
Green/green 	2,500	9-601000G

Attention: Order-specific article – returns not permitted!



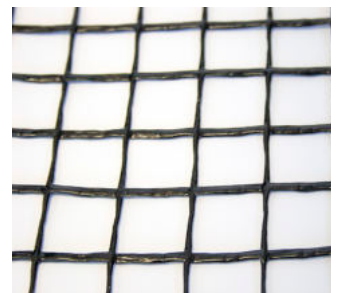
Cloth nets 20/20-20

Large-mesh cloth nets produced from PET + PVC, approx. 225 g/m², UV-stabilised, water-tight.

Width: 3,000 mm

Color	Width (mm)	Article no.
black/black 	3,000	159630

Attention: Order-specific article – returns not permitted!



Cutting:

15% surcharge on price for rolled goods. If hem-stitching or a special geometry is desired then the original surface area will be used as a basis for invoicing purposes.

In case of nets with an order value < €50, a minimum order charge of €10 per net will be charged.

Gearbox motors RW45

The RW45 gearbox motors are maintenance-free, compact drive units for operating the sliding cardan shafts RPT150. The gearboxes are finished with a powder coating and are delivered including mounting screws and spring washers. For operation at an ambient temperature of between 0 and 60°C. Protection class IP55.

Max. system length = 50 m (longer system lengths on request)



Voltage (V)	Traction (N)		Speed (rpm)		Article no.
	50Hz	60Hz	50Hz	60Hz	
3~400V/50Hz	120	-	2	-	318994000
1~230V/50/60Hz	120	100	2	2,4	318992300

Positioning feedback units for gearbox motors RW45

For installation in gearbox motors RW45, RPU version 3.0, 24V/4-20mA.

Article no.

9-318999900

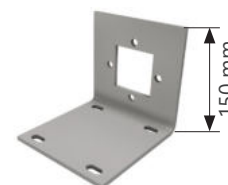


Right angled mounting plate RW45

Right angled mounting plate for gearbox motors RW45.

Article no.

218999902



Slide cardan shafts RPT150

The RPT150 sliding cardan shafts are equipped with reliable cardan joints that allow a large angle of up to 35° to be realised. The RPT150 has a flexible roller system so that it can slide under load. The cardan shafts are lightweight and, in addition to an anodised aluminium outer tube, stainless steel and plastic components are also used. The universal joints are galvanised. This makes the cardan shafts corrosion-resistant and suitable for both indoor and outdoor use in all weather conditions. The RPT150s are practically maintenance-free.



Type	Winding height max. (mm)	Turning moment (Nm)	Article no.
RPT150-H1200	1,200	150	218991200
RPT150-H1800	1,800	150	218991800
RPT150-H2400	2,400	150	218992400
RPT150-H3600	3,600	150	218993600

Reducing couplings RPT D28\D19\L28

Galvanized reducing couplings for installation in the RW45 motor gearboxes for fastening cardan shafts RPT150.



Article no.

218999903

Winding tube coupling A28\WB50DG\L90\AL

For single-groove aluminium curtain tube (Ø 46 mm).

Article no.

218999907



Fixing sets curtains, galvanized

Consists of threaded pipe 3/4" (galvanized) 6m, PVC pipe 6 m, 4 guide brackets

Article no.

218069900



Sew hemstitches / double seams

Sturdy double-seams.

Article no.

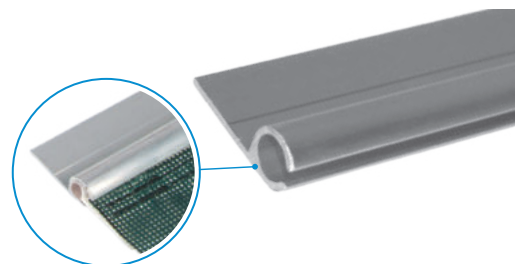
159700



Welt rails

For fastening the curtains or wind protection nets onto the wall. The profile is designed for a 7.5 mm and 10 mm thick welt. Advantage: The curtains are very easy to mount and can be quickly and simply taken down if required (e.g. for cleaning).

Aluminium welt rails: Approx. 40 mm high. Rod length: 6.0 m.



Length (m)	Article no.
6	171100

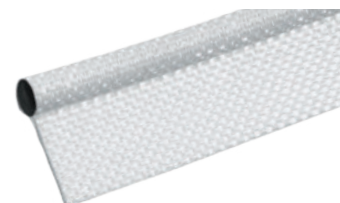
Purchase only possible in complete rods

Welt 7.5 mm

For sewing onto the net or curtain.

Article no.
159901

Price for additional seam on request



Welt 10 mm

For sewing onto the net or curtain.

Article no.
159902

Price for additional seam on request



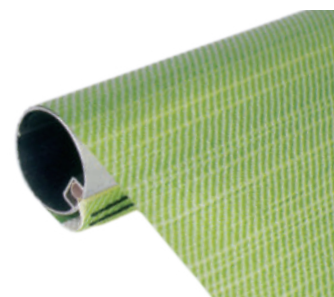
Curtain tubes

The foil is rolled up and down with the curtain tube. It is designed for a 7.5 mm thick welt. (Purchase only possible in complete lengths.)

Aluminium curtain tube: Ø 50 mm
Rod length: 6.0 m

Length (m)	Article no.
6	171000

Purchase only possible in complete rods



End caps for curtain tubes

We recommend an end cap for a clean closure.

Article no.
9-300329

Price for additional seam on request



End cap

Curtain tube extensions

Aluminium curtain tubes extension as coupling between two tubes.

Length: approx. 250 mm

Length (m)	Article no.
approx. 0.25 m	171010



Curtain tube extension

Eyelets, oval / round

Nickel-plated brass eyelets

Dimensions (mm)	Article no.
Ø 10	158300
Ø 18	158310
42 x 22	158320



Screw caps

For oval eyelets, 42 x 22 mm.

Material	Article no.
Made from polyamide	158331



Polyamide

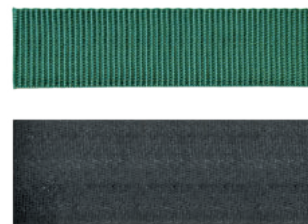
Strengthening belts

The strengthening belt is sewn in to stabilise the wind protection net.

Belt thickness / color	Width (mm)	Article no.
Green / 2.0 mm	35	155900
Black / 2.0 mm*	50	155902

* PVC

Price for additional seam on request



Expander rope for wind protection nets

For fastening wind protection nets. Simple removal and attachment of the net for secure covering of openings. The expander rope with a PE covering serves to fasten wind protection nets with high force peaks; it has a long lifetime and is hard-wearing. The expander rope is weatherproof and resistant to deformation.

Type	Article no.
Expander rope with PE covering	159900



With PE covering

MFP - Munters Folding Curtains

Made of durable, UV-resistant, PVC-coated polyester with optimal light transmission. Surface with antistatic qualities rejects dirt (straw, sand, dust).

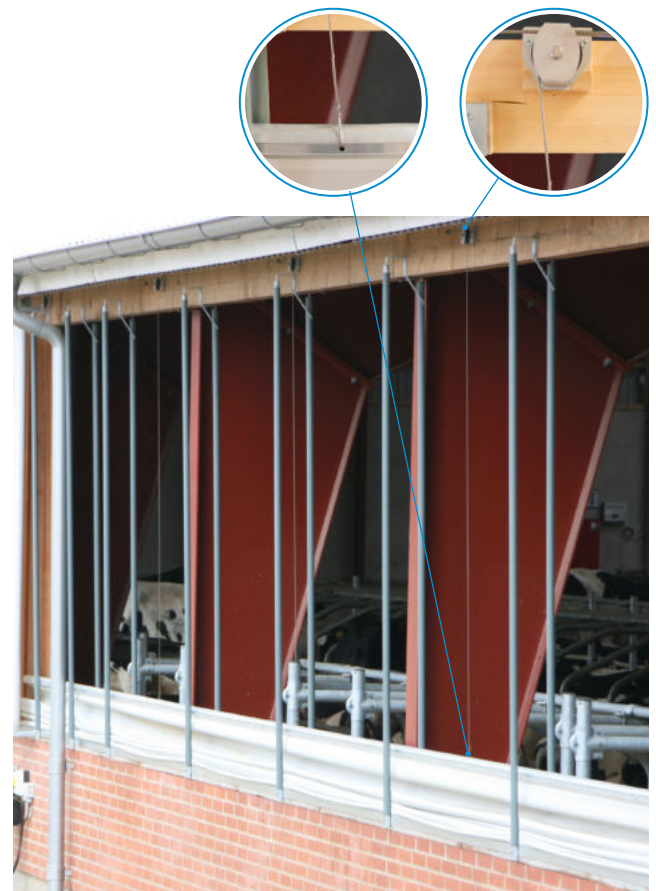
The MFP system is equipped with a stainless steel wire pulling system which operates vertically with a manual hand crank, winch motor or gear motor. The gear motor operates either manually with a manual controller or fully automatically, with an opening degree that can be individually determined by Munters Natural Center/Master climate control and by an optional wind and rain sensor. The curtain opens from top to bottom, folds lengthwise and lays flat at the wall or plinth when fully open.

Max. height: 3,000 mm
 Max. length: 100 m (max. 150 m² per section)
 Voltage: 1~230V
 Color: light gray

Without wind protection pipes:

Height (mm)	Article no.
1,000	12-52030930
1,500	12-52030931
2,000	12-52030932
2,500	12-52030933
3,000	12-52030934

Attention: Order-specific article – returns not permitted!



MFP - Munters Folding Curtain

MFP wind protection pipe sets

For safety during high wind speeds, specially designed wind protection pipes are installed at distances of 2 metres (recommended distance - distance varies depending on opening height). The wind protection pipes are installed on the outside and inside of the curtain and also act as a guide for the curtain.

Material: galvanized steel, plastic-coated

Height (mm)	Article no.
1,000	12-52030940
1,500	12-52030941
2,000	12-52030942
2,500	12-52030943
3,000	12-52030944



MFP wind protection pipe sets

MFP / MFP-S wind protection sets

Flexible wind protection. One set per curtain

Width (mm)	Article no.
1,000	12-52030935
1,500	12-52030936
2,000	12-52030937
2,500	12-52030938
3,000	12-52030939



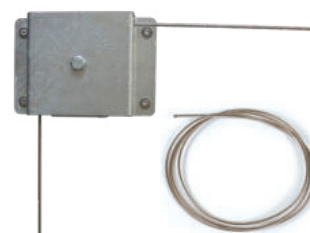
MFP wind protection sets

MFP starter-sets

One starter-set is required per MFP system.

Article no.

12-52030947



MFP starter-sets

MFP / MVP extension-sets wire 6 m

Extension-set to bridge open spaces of up to 6 meters, such as emergency doors, stable doors, etc., without the need of an additional drive (up to the specified maximum length of the drive).

Article no.

12-52031208



MFP / MVP extension-kits wire 6 m

Rope winches with automatic brake

Winch with automatic brake, including crank up to max. 400 kg.

Article no.

336210



For wall mounting of the rope winch, bracket article no. 336250 required.

Consoles for rope winch

For simple installation of the rope winch on the wall, including fixing materials.

Material: Stainless steel

Article no.

336250



Motor drives, manually with manual controller

Motor drive RAL for opening and closing the MFP system and manual controller.

Type	Voltage (V)	Article no.
Motor drive RAL 120	230V/50Hz	12-52030181
Manual controller for RAL 120	–	12-524064



Motor drives, manually with manual controller

MFP-S - Munters Folding Curtains with straps

Made of durable, UV-resistant, PVC-coated polyester with a light transmission of approx. 25%. Surface with antistatic qualities rejects dirt (straw, sand, dust).

The MFP-S system moves through a winding pipe and belt drum, which is operated vertically by a winch or gear motor. The gear motor operates either manually with a manual controller or fully automatically, with an opening degree that can be individually determined by Munters Natural Center/Master climate control and by an optional wind and rain sensor. The curtain opens from top to bottom, folds lengthwise and lays flat at the wall or plinth when fully open.

Max. height: 4,000 mm
 Max. length: 100 m (max. 300 m² per section)
 Voltage: 1~230V
 Color: light gray

Without wind protection pipes:

Height (mm)	Article no.
1,000	12-52031101
1,500	12-52031040
2,000	12-52031041
2,500	12-52031042
3,000	12-52031043
3,500	12-52031044
4,000	12-52031045

Attention: Order-specific article – returns not permitted!



MFP-S - Munters Folding Curtain with straps

MFP-S wind protection pipe sets

For safety during high wind speeds, specially designed wind protection pipes are installed at distances of 2 metres, installed from a height of max. 3.5 metres at distances of max. 1.5 metres (recommended distance - distance varies depending on opening height). The wind protection pipes are installed on the outside and inside of the curtain and also act as a guide for the curtain.

Material: galvanized steel, plastic-coated

Height (mm)	Article no.
1,000	12-52031102
1,500	12-52031048
2,000	12-52031049
2,500	12-52031050
3,000	12-52031051
3,500	12-52031052



MFP wind protection pipe sets

MFP / MFP-S wind protection sets

Flexible wind protection. One set per curtain

Height (mm)	Article no.
1,000	12-52030935
1,500	12-52030936
2,000	12-52030937
2,500	12-52030938
3,000	12-52030939
3,500	12-52031046



MFP-S wind protection set

MFP-S / MVP-S extension-sets straps 6 m

Extension-set to bridge open spaces of up to 6 meters, such as emergency doors, stable doors, etc., without the need of an additional drive (up to the specified maximum length of the drive).

Article no.
12-52031209



MFP-S / MVP-S extension-sets straps 6 m

MFP-S pulling system with manual control

To open and close the MFP-S system, a pulling system with a manual control is required. This system consists of the SRG gear motor, a simple manual control and the required accessories for opening and closing the MFP-S system.

Voltage (V)	Article no.
230V/50Hz	12-52031169



Motor drives with automatic control and emergency stop

Motor drives with automatic control and emergency stop

A pulling system is required to automatically open and close the MFP-S system. This system consists of a SRG gear motor and the required accessories for opening and closing the MFP-S system. In addition an emergency stop switch with wire must be installed, as an alternative to the safety net. A Natural Center and a temperature sensor as well as one Natural Master and a temperature sensor per curtain are required to control. Optionally, a wind and rain sensor can be installed and connected to the Natural Center.



Pulling system with manual control

Type	Voltage (V)	Article no.
Pulling system	1~230V/50Hz	12-52031060
Natural Master excl. indoor temperature sensor		11-903-01-10008
Natural Center excl. outdoor temperature sensor		11-903-04-10010
temperatur sensor for Natural Master/Center		11-918-01-00002
Wind sensor (optional)		12-52030185
Rain sensor (optional)		11-926-01-00002

MTC - Munters Top Curtains

Made of durable, UV-resistant, PVC-coated polyester with optimal light transmission. Surface with antistatic qualities rejects dirt (straw, sand, dust).

The MTC system moves through a winding pipe and belt drum, which is operated vertically by a winch or gear motor. The control is available in a manually operated version. The curtain opens from bottom to top.

Max. height: 3,500 mm
 Max. length: 100 m (max. 300 m² per section)
 Voltage: 1~230V
 Color: light gray

Without wind protection pipes:

Height (mm)	Article no.
1,500	12-52030700
2,000	12-52030823
2,500	12-52030821
3,000	12-52030824
3,500	12-52030859

Attention: Order-specific article – returns not permitted!



MTC - Munters Top Curtain

MTC wind protection pipe sets

For safety during high wind speeds, specially designed wind protection pipes are installed at distances of 2 metres, from a height of max. 3.5 metres at distances of max. 1.5 metres (recommended distance - distance varies depending on the opening height). The wind protection pipes are installed on the outside and inside of the curtain and also act as a guide for the curtain.

Material: galvanized steel, plastic-coated

Height (mm)	Article no.
1,500	12-52031025
2,000	12-52031026
2,500	12-52031027
3,000	12-52031028
3,500	12-52031029



MTC wind protection pipe sets

MTC wind protection pipe sets, removable

For safety during high wind speeds, specially designed wind protection pipes are installed at distances of 2 metres, from a height of max. 3.5 metres at distances of max. 1.5 metres (recommended distance - distance varies depending on the opening height). The wind protection pipes are installed on the outside and inside of the curtain and also act as a guide for the curtain. The wind protection pipes can be easily removed to provide access for vehicles into the stable.

Material: galvanized steel, plastic-coated

Height (mm)	Article no.
2,000	12-52030963
2,500	12-52030964
3,000	12-52030965
3,500	12-52030966



MTC wind protection pipe sets, removable

MTC wind protection sets

Flexible wind protection. One set per curtain.

Width (mm)	Article no.
1,500	12-52031030
2,000	12-52031031
2,500	12-52031032
3,000	12-52031033
3,500	12-52031034

MTC pulling system with manual control

To open and close the MTC system, a pulling system with a manual control is required. This system consists of the SRG gear motor, a simple manual control and the required accessories for opening and closing the MTC system.

Voltage (V)	Article no.
230V/50Hz	12-52030858



MTC wind protection set



MTC pulling system incl. motor and manual switch

MSC - Munters Simplex Curtains

Made of durable, UV-resistant, PVC-coated polyester with optimal light transmission. Surface with antistatic qualities rejects dirt (straw, sand, dust).

The MSC system is equipped with a stainless steel wire pulling system, which operates vertically with a gear motor. This motor operates either manually with a manual controller or fully automatically, with an opening degree that can be individually determined by Munters Natural Center/Master climate control and by an optional wind and rain sensor. The curtain opens from top to bottom.

Optional net/bird protection available.

Max. height: 3,000 mm
 Max. length: 50 m (max. 150 m² per section)
 Voltage: 230/400 V
 Color: light gray

Without wind protection pipes:

Height (mm)	Article no.
1,000	12-52030441
1,500	12-52030442
2,000	12-52030443
2,500	12-52030444
3,000	12-52030445

Attention: Order-specific article – returns not permitted!
 Optional sealing for curtain available (article no.: 100000311; each piece 3m long)



MSC - Munters Simplex Curtain

MSC wind protection pipe sets

For safety during high wind speeds, specially designed wind protection pipes are installed at distances of max. 2 metres (recommended distance - distance varies depending on opening height). The wind protection pipes are installed on the outside and inside of the curtain and also act as a guide for the curtain.

Material: galvanized steel, plastic-coated

Height (mm)	Article no.
1,000	12-52030448
1,500	12-52030449
2,000	12-52030450
2,500	12-52030451
3,000	12-52030452

MSC wind protection sets

Flexible wind protection. One set per curtain.

Height (mm)	Article no.
1,000	12-52030453
1,500	12-52030454
2,000	12-52030455
2,500	12-52030456
3,000	12-52030457



MSC wind protection pipes set

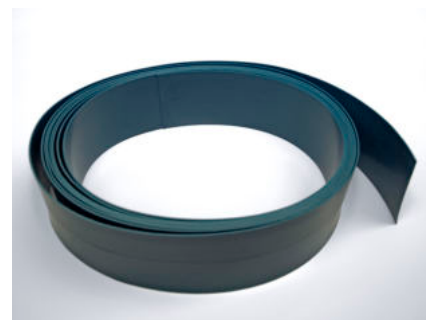


MSC wind protection set

MSC sealings

Sealings for MSC curtain systems.

Article no.
12-52030945



MSC sealings

Pulling systems with manual control

To open and close the MSC system, at least one pulling system with a manual control is required. It consists of the SRG gear motor, a simple manual control unit and the required accessories for opening and closing the MSC system.

Type	Voltage (V)	Article no.
Motor drive manual operation	230V/50Hz	12-52030446



Pulling system with manual control

MSC pulling systems with automatic control and safety net

A pulling system is required to automatically open and close the MSC system. This system consists of a SRG gear motor and the required accessories for opening and closing the MSC system. In addition, a 1m high safety net must be installed at the bottom part of the curtain. A Natural Center and a temperature sensor as well as one Natural Master and a temperature sensor per curtain are required to control. Optionally a wind and rain sensor can be installed and connected to the Natural Center.

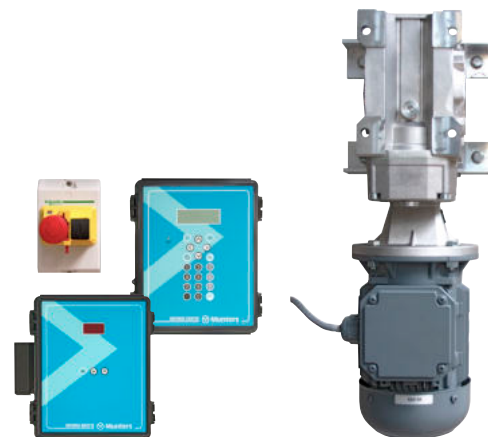


MSC pulling system with automatic control and safety net

Type	Voltage (V)	Article no.
Pulling system	230V/50Hz	12-52030541
Safety net, price per meter		12-52030842
Fixing set safety net		12-52030843
Natural Master excl. indoor temperature sensor		11-903-01-10008
Natural Center excl. outdoor temperature sensor		11-903-04-10010
temperatur sensor for Natural Master/Center		11-918-01-00002
Wind sensor (optional)		12-52030185
Rain sensor (optional)		11-926-01-00002

MSC pulling systems with automatic control and emergency stop

A pulling system is required to automatically open and close the MSC system. This system consists of a SRG gear motor and the required accessories for opening and closing the MSC system. In addition an emergency stop switch with wire must be installed, as an alternative to the safety net. A Natural Center and a temperature sensor as well as one Natural Master and a temperature sensor per curtain are required to control. Optionally, a wind and rain sensor can be installed and connected to the Natural Center.



MSC pulling system with automatic control and emergency stop

Type	Voltage (V)	Article no.
Pulling system	230V/50Hz	12-52030968
Emergency stop with 230V control		12-52030833
Natural Master excl. indoor temperature sensor		11-903-01-10008
Natural Center excl. outdoor temperature sensor		11-903-04-10010
temperatur sensor for Natural Master/Center		11-918-01-00002
Wind sensor (optional)		12-52030185
Rain sensor (optional)		11-926-01-00002

MVP – Munters Ventilation Panels

Made of durable, UV-resistant, 10 mm polycarbonate double-webbed sheets. When closed, the ventilation panels have an insulating effect and are therefore particularly suitable for stables in cold climates, but also for calf stables, milking parlours and collecting areas in moderate climate zones. In order to prevent freezing in high humidity, additional sealing tapes can be mounted. Easy installation thanks to the light-weight construction (few moving parts) directly on the stable walls.

The MVP system is equipped with a stainless steel wire pulling system which operates vertically with a manual hand crank, winch motor or gear motor. The gear motor operates either manually with a manual controller or fully automatically, with an opening degree that can be individually determined by Munters Natural Center/Master climate control and by an optional wind and rain sensor. The panel opens from top to bottom.

Optional net/bird protection available.

- Max. height: 1,400 mm
- Max. length: 50 m
- Voltage: 1~230V
- Color: transparent



MVP - Munters Ventilation Panel

Size (mm)	Article no.
700 x 3,000	12-52030165
1,050 x 3,000	12-52030166
1,400 x 3,000	12-52030167

Optional sealing for ventilation panels available (article no.: 12-52030091).

MVP starter-sets for pulling systems

Depending on the height and length of the MVP system, the suitable starter set must be selected.

Size (mm)	Article no.
700 x 3,000	12-52030168
1,050 x 3,000	12-52030169
1,400 x 3,000	12-52030170



Guide rails for MVP starter-set

MFP / MVP extension-sets wire 6 m

Extension-set to bridge open spaces of up to 6 meters, such as emergency doors, stable doors, etc., without the need of an additional drive (up to the specified maximum length of the drive).

Article no.

12-52031208



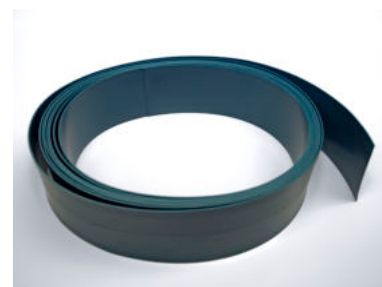
MFP / MVP extension-kits wire 6 m

MVP-S / MVP sealings

Sealing 3 m, for MVP-S and MVP ventilation panel.

Article no.

12-52030091



MVP-S / MVP sealing

Rope winches with automatic brake

Winch with automatic brake, including crank up to max. 400 kg.

Article no.

336210

For wall mounting of the rope winch, bracket article no. 336250 required.



Consoles for rope winch

For simple installation of the rope winch on the wall, including fixing materials.

Material: Stainless steel

Article no.

336250



Motor drives, manually with manual controller

Motor drive RAL for opening and closing the MFP system and manual controller.

Type	Voltage (V)	Article no.
Motor drive RAL 120	230V/50Hz	12-52030181
Manual controller for RAL 120	–	12-524064



Motor drives, manually with manual controller

Motor drives, fully automatic

Automatic motor drive for MFP system. The RAL 120 motor can automatically control the opening and closing of the MFP system via the Natural Master and Natural Center controls. A Natural Center and a temperature sensor as well as one Natural Master and a temperature sensor per curtain are required to control. Optionally, a wind and rain sensor can be installed and connected to the Natural Center.



Motor drives, fully automatic

Type	Voltage (V)	Article no.
Gear motor RAL 120	230V/50Hz	12-52030181
Natural Master excl. indoor temperature sensor		11-903-01-10008
Natural Center excl. outdoor temperature sensor		11-903-04-10010
temperatur sensor for Natural Master/Center		11-918-01-00002
Wind sensor (optional)		12-52030185
Rain sensor (optional)		11-926-01-00002

MVP-S - Munters Ventilation Panels with straps

Made of durable, UV-resistant, 10 mm polycarbonate double-webbed sheets. When closed, the ventilation panels have an insulating effect and are therefore particularly suitable for stables in cold climates, but also for calf stables, milking parlours and collecting areas in moderate climate zones. In order to prevent freezing in high humidity, additional sealing tapes can be mounted. Easy installation thanks to the light-weight construction (few moving parts) directly on the stable walls.

The MVP-system moves through a winding pipe and belt drum, which is operated vertically by a winch or gear motor. The gear motor operates either manually with a manual controller or fully automatically, with an opening degree that can be individually determined by Munters Natural Center/Master climate control and by an optional wind and rain sensor. The panel opens from top to bottom.

Optional net/bird protection available.

Max. height: 1,700 mm
 Max. length: 70 m
 Voltage: 230/400 V
 Color: transparent

Size (mm)	Article no.
700 x 3,000	12-52031063
1,050 x 3,000	12-52031066
1,400 x 3,000	12-52031068
1,700 x 3,000	12-52031070

Optional sealing for ventilation panels available (article no.: 12-52030091).



MVP-S - Munters Ventilation Panel



MVP-S starter-sets for pulling systems

Depending on the height and length of the MVP-S system, the suitable starter set must be selected.

Size (mm)	Article no.
700 x 3,000	12-52031064
1,050 x 3,000	12-52031067
1,400 x 3,000	12-52031069
1,700 x 3,000	12-52031071



Guide rails für MVP-S starter-set

MFP-S / MVP-S extension-sets straps 6 m

Extension-set to bridge open spaces of up to 6 meters, such as emergency doors, stable doors, etc., without the need of an additional drive (up to the specified maximum length of the drive).

Article no.
12-52031209



MFP-S / MVP-S extension-sets straps 6 m

MVP-S / MVP sealings

Sealing 3 m, for MVP-S and MVP ventilation panel.

Article no.
12-52030091



MVP-S / MVP sealing

MVP-S pulling system with manual control

To open and close the MVP-S system, a pulling system with a manual control is required. This system consists of the SRG gear motor, a simple manual control and the required accessories for opening and closing the MVP-S system.

Voltage (V)	Article no.
230V/50Hz	12-52031169



Pulling system with manual control

Motor drives with automatic control and emergency stop

A pulling system is required to automatically open and close the MVP-S system. This system consists of a SRG gear motor and the required accessories for opening and closing the MVP-S system. In addition an emergency stop switch with wire must be installed, as an alternative to the safety net. A Natural Center and a temperature sensor as well as one Natural Master and a temperature sensor per curtain are required to control. Optionally, a wind and rain sensor can be installed and connected to the Natural Center.



Motor drives with automatic control and emergency stop

Type	Voltage (V)	Article no.
Pulling system	1~230V/50Hz	12-52031060
Natural Master excl. indoor temperature sensor		11-903-01-10008
Natural Center excl. outdoor temperature sensor		11-903-04-10010
temperatur sensor for Natural Master/Center		11-918-01-00002
Wind sensor (optional)		12-52030185
Rain sensor (optional)		11-926-01-00002