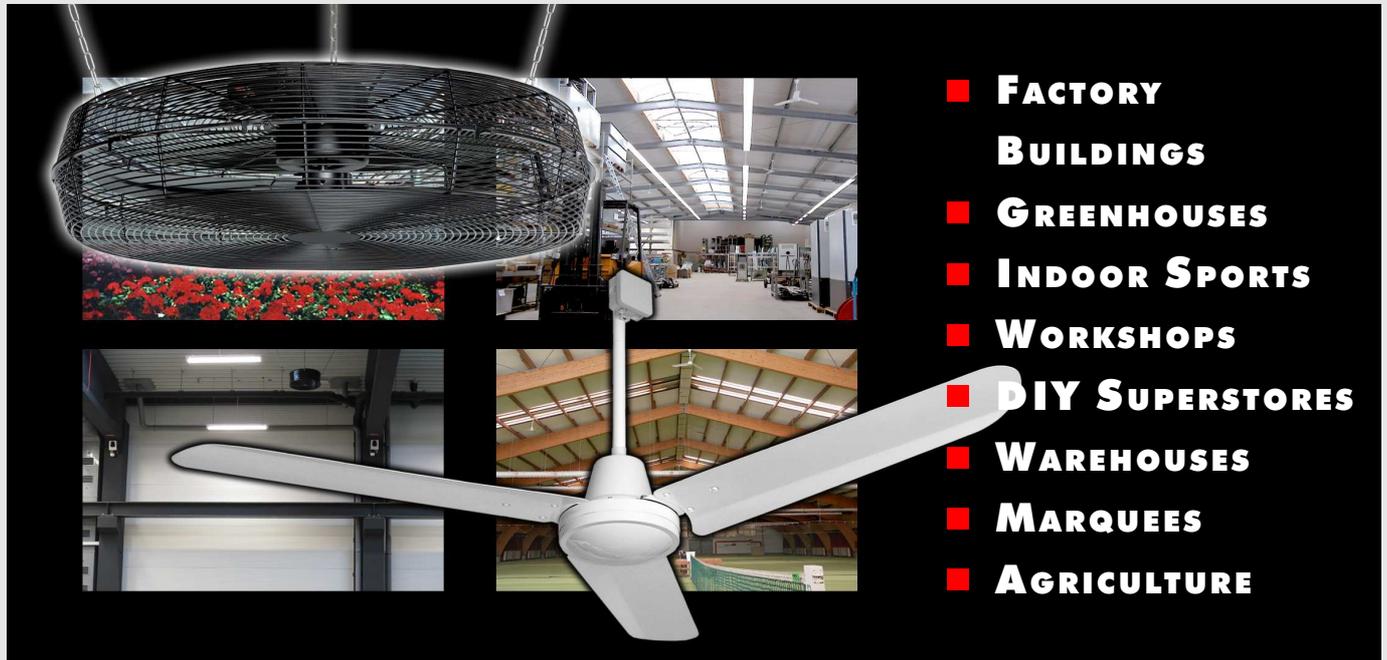
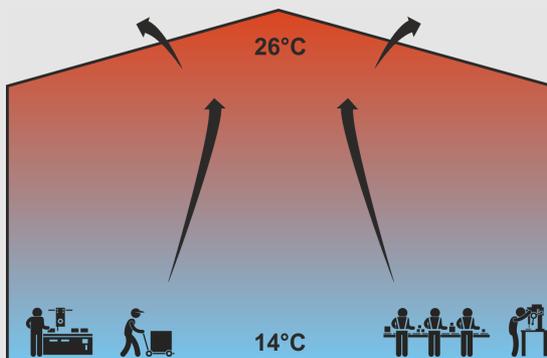


# Industrial ceiling fans

Push down the heat from the ceiling and get significant energy savings !



**BEFORE**



## Ceiling hot - floor cold

Warm air rises to the ceiling. To get the requested temperature at the floor, you have to heat again and again, even though the ceiling already has 26°C.

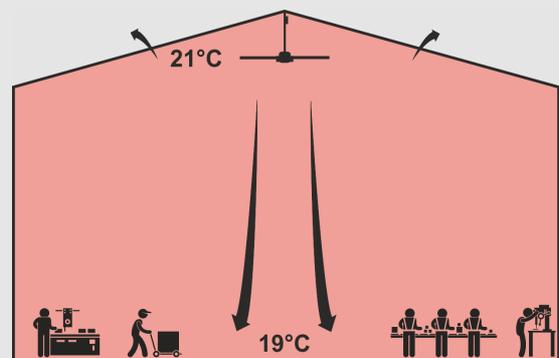
## Energy loss

The high temperature at the ceiling causes a corresponding high energy loss at the ceiling (transmission).

## Cold remote corners

Often some areas of the room stay cold after a long time heating.

**AFTER**



## Equalized temperature

Our industrial ceiling fans equalize the room temperature by pushing down and mixing the warm air. As the example above: For 5° higher temperature at the floor without additional heating we have 30% lower fuel costs.

## Energy savings

If we have an outer temperature of 0°C and a reduced temperature from 31°C to 21°C at the ceiling, the transmission is reduced by 32%.

## Allwhere steady warm

The complete room is comfortable warm now - fast and equal. The pre-heat time can be reduced.

# Industrial ceiling fans for destratification

## Quality and reliability

Fans from Fenne KG are developed and produced especially for recirculation of hot air since over 25 years. Find out the outstanding characteristics for the example 03.210 to 03.260):

Facts	Advantages
Solid massive metal design	Wear-free as possible
Continuous operation is possible	Up to 24/7
Individually balanced	Wobble free running and optimized air flow
Safety wire	Highest safety...
Overtemperature protection	...in any circumstances
Completely assembled (except blades)	No delays/problems on building site
Energy-saving motor with high percentage of copper	Performance max. 10m with low energy consumption
Special blades for a tight cone of air	Recirculation of hot air without wide air draft

## Models

03.210



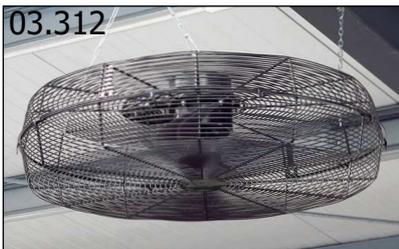
03.222



03.291



03.312



## Accessories

**Controller recirculation hot air:** Automatic switch allways at the right time: The fans are controlled with two temperatur sensors for the ceiling and the floor. The controller is equipped with an integrated display.

**Speed controller:** Regulates the speed for ceiling fans. You can control up to 20 fans, same type, with one controller so that the hot air gets to the floor, draught-free and energy saving.

## Installation

Depending on the local conditions and the model, you should install 1 fan per 125 to 300 m<sup>2</sup>. Ask for the full planning instructions or our free planning service.

## Specifications

Model	03.210/211/214	03.222/224	03.291	03.312
Color	white/black/white	white	black	black
Voltage	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
Power	75 W	75 W	260 W	280 W
Max. Current	0,35 A	0,35 A	1,1 A	1,3 A
Speed	300 rpm	300 rpm	1260 rpm	1350 rpm
Air Volume	15.000 m <sup>3</sup> /h	15.000 m <sup>3</sup> /h	18.000 m <sup>3</sup> /h	21.300 m <sup>3</sup> /h
Energy efficiency	5W/1000m <sup>3</sup> /h	5W/1000m <sup>3</sup> /h	14,4W/1000m <sup>3</sup> /h	13,1W/1000m <sup>3</sup> /h
Performance max.	10 m	10 m	16 m	20 m
Sound level at 1m	52 dB(A)	52 dB(A)	65 dB(A)	64 dB(A)
Weight	9,5 kg	9,5 kg	12 kg	17,9 kg
Diameter	142cm	142cm	81cm	83,5cm
Height	69cm/69cm/44cm	69cm/44cm	34cm	25.5 cm
IP protection	-	IP54	-	IP54
Test mark	CE	CE	CE	CE
Subject to alteration.				

35  
YEARS



Fenne KG

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info@fenne-kg.de

# Industrial Circulation Fans

Destratification / drying / cooling / fresh breeze



**Fans from Fenne for hall heating and cooling destratification and other applications:**

Constructed for optimum performance, reliability, efficiency, sound level and safety.

The flexible chain suspension and the smooth running enables the operation in every desired position.



## Technical data

Product no.	03.291 / 03.293*	03.310	03.312
Voltage	230 V / 50 Hz	230 V / 50 Hz	230 V / 50 Hz
Input Power	260 W	250 W	280 W
Current	1,1 A	1,1 A	1,3 A
Speed	1.260 rpm	1.350 rpm	1.350 rpm
Air volume	18.000 m <sup>3</sup> /h	15.600 m <sup>3</sup> /h	21.300 m <sup>3</sup> /h
Energy efficiency	14,4 W/1000m <sup>3</sup> /h	16 W/1000m <sup>3</sup> /h	13,1 W/1000m <sup>3</sup> /h
Performance max	16 m	14 m	20 m
Switch on device	3 steps	2 steps	2 steps
Thermal fuse	included	included	included
Diameter	81 cm	69 cm	83,5 cm
Height	34 cm	20 cm	25,5 cm
Sound level at 1m	65 dB(A)	71 dB(A)	64 dB(A)
Mounting	ceiling hooks and chains included		
Color	black	black	black
Packaging	83x83x40cm	76x70x23 cm	88x85x26 cm
Weight	12 kg	10,2 kg	17,9 kg
Marks	CE	CE	CE
IP protection	IP20	IP54	IP54

\* Bulk packed for export      Subject to alterations

Guard and chains provide a perfect safety even for ball sports or an unexpected contact of a forklift.

The fans are widely used in several industrial applications like drying, cooling, temperature equalization and fresh breeze at the workplace.

Perfect for double use: Recirculation of warm air in winter (destratification) and fresh breeze in summer.



## Accessories

5-step speed regulator 2.2A till 7.5A for wall mount. You can control up to 6 fans with one regulator.

Controller recirculation warm air: The fans are controlled with two temperature sensors for the ceiling and the floor.

Interval switch for easy adjust automatic on/off (time) interval.

35  
YEARS

**FENNE**

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# Industrial Ceiling Fans

Recirculation warm air / drying / cooling / fresh breeze



Industrial ceiling fans from FENNE are particularly constructed and manufactured regarding performance, material loading and safety for the continuous operation industrial use, since 1985.



The additional safety wire, triple motor shaft bolts and overtemperature protection are examples of our strict safety requirements.

The high content of copper results in an energy saving performance motor. Selected components are good for reliable destratification up to 10m hall height.

The fans are completely assembled (except blades), which means: No delays and no safety risks on building site.

## Technical data

	03.210	03.222
Voltage	230 V / 50 Hz	
Input Power	75 W	
Current	0,35 A	
Speed	300 rpm	
Air volume	15.000 m <sup>3</sup> /h	
Energy efficiency	5 W/1000 m <sup>3</sup> /h	
Performance max	10 m	
Thermal fuse	included	
Diameter	142 cm	
Height	69 cm	
Sound level at 1 m	52 dB(A)	
Mounting	vertical, decoupled	
	additional safety wire	
Color	white	
Packaging	Single carton - free of styrofoam	
	690x255x235 mm	
Weight	9,5 kg	
Marks	CE	
IP protection	IP20	IP54
Subject to alterations		

## Model line

03.210	Color white, height 69 cm
03.211	Color black
03.214	Height 44 cm
03.215	Blades curved
03.222-25	IP54 - dust and splash water protection (TÜV Hanover)
03.260	Mounting: Clamp for 2" tube

## Accessories

Stepless and 5-step speed regulator for synchronous regulation up to 4, 8, 12 or 24 fans.

Controller recirculation warm air: The fans are controlled with two temperature sensors for the ceiling and the floor.

Interval switch for easy adjust automatic on/off (time) interval.

35  
YEARS



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# Industrie-Deckenventilator HVLS

39.200 m<sup>3</sup>/h Luftleistung mit nur 100 W Stromverbrauch



- Durchmesser 2,67 Meter
- HVLS-Prinzip: Hohes Volumen bei geringer Drehzahl
- Massive Qualitäts-Bauweise
- Hohlraumprofil-Flügel
- 5-Stufen-Fernbedienung
- Drehzahl 40 bis 88 U/min
- 100W – hoch-energieeffizient
- Luftumwälzung 39.200 m<sup>3</sup>/h
- Vorwärts- und Rückwärtslauf
- Sicherheits-Stahlseil

## Einsatzmöglichkeiten dieses Ventilator-Typs

- Ventilator über dem Arbeitsbereich bei relativ niedriger Drehzahl. Hallenhöhe bis 10m.

- Ventilator zwischen den Arbeitsbereichen bei relativ höheren Drehzahlen für eine angenehme Frische auf bis zu 200m<sup>2</sup>. In Ventilatornähe befindet sich kein fester Arbeitsplatz. Hallenhöhe bis 7m.

- Rückwärtslauf in niedrigeren Hallen bis 5m Höhe mit sanfter, gleichmäßiger Wirkung in der ganzen Halle. Hierfür wird ein Ventilator auf maximal 150m<sup>2</sup> benötigt.

Der Rückwärtslauf ist z.B. oft im Sport- und Fitnessbereich und in Ausstellungshallen die beste Betriebsart.



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# Controller recirculation warm air for destratification fans



## Controller recirculation warm air 03.431

The device records the temperature difference between the floor and the ceiling with two temperature sensors and compares this with user given values.

If the temperature difference between floor and the ceiling goes higher than the user value, the relay switches the ceiling fans on. There is second user value which handles the switch off point. The relay switching contact can handle for example up to 10 fans 03.210 (extendable with a contactor).

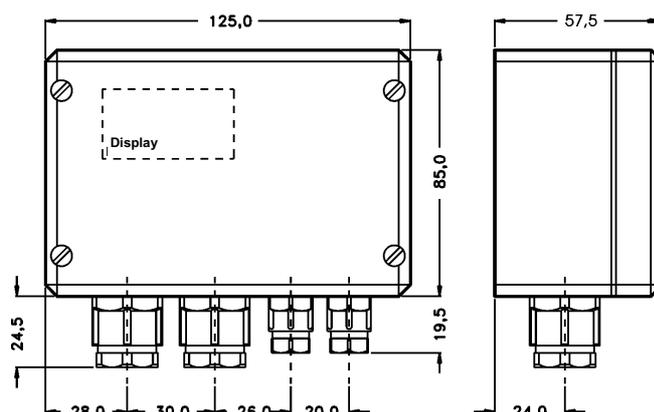
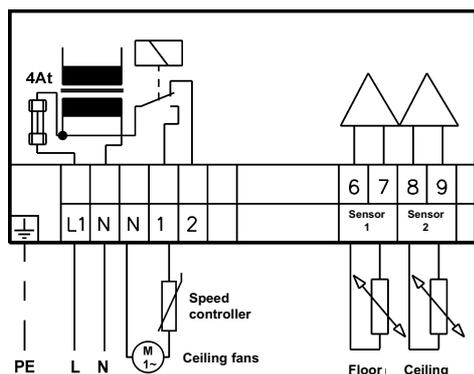
The current temperatures of the ceiling and the floor are constantly shown in an alternating display.

The two sensors are checked and monitored via display for convenient installation and performance check.

## Technical data

Product no.	03.431
Permissible ambient temperature	0° C to +45° C
Switch off temperature difference	liniar 1 K bis 10 K
Switching distance	liniar 1 K bis 10 K
Temperature measurement range	-20° C to +120° C
Operating voltage	230 V / 50 Hz
Contact	1 changer, relay contact, not potential-free
Max. permissible current	4 A motor power, 230 V / 50 Hz
Operating life as VDE 0631	min. $2 \times 10^5$ switching operations
Housing Fastening	Surface mounted
Material	Plastic
IP protection	IP 54 according to DIN 40050
Protection class	Protection class II as VDE 0700 (protective insulation)
Weight	app. 380 g
Sensor Type	KTY 10-5, semiconductor sensor +- 1 %
Design	Plastic housing IP 54, without cable
Cable connection	2-conductor cable 0,5 mm <sup>2</sup> till 30 m; 0,75 mm <sup>2</sup> till 45 m
Subject to alteration	

## Connection diagram / dimensions



# Planning instructions

## Industrial ceiling fans for destratification



### Function

You can equalize the room temperature in high halls and rooms with the help of our ceiling fans by pushing down the warm air from the ceiling. Air stratification with temperature differences 10 degrees and more is completely eliminated and you can reduce heating costs by up to 30%.

In addition, this also counteracts heat loss at the ceiling (transmission). The smaller temperature difference between the inside temperature at the ceiling and the outside temperature has a directly proportional effect on the transmission. Example: If you have an outside temperature of 0°C and a reduced temperature of 34°C to 22°C at the ceiling, the transmission is reduced by 35 %.

The third advantage of de-stratification is the rapid and even heating of the entire hall. Previously cold areas are immediately flooded with warm air. People appreciate the constant and comfortable temperature throughout the hall. If the hall is only used temporarily, the preheating time can be greatly reduced, which brings further energy savings.

Other advantages are the prevention of mold and rust and a dry floor.

Please note the following instructions to ensure optimal operation:

### Choice of fan type

#### Recirculation of warm air - hall height up to 10m

Industrial ceiling fans 03.210 to 03.224



- **03.210** – Industrial-Ceiling-Fan, white
- **03.211** – Industrial-Ceiling-Fan, black

In case of barriers concerning the height (e.g. overhead crane runway):

- **03.214** – height 44cm
- Heights under 44cm and over 69cm on demand.

Hanging the fans 03.210-03.260 with a chain is technical not possible and not permitted!

The following fans with IP protection IP54 are special splash-water proof and dust proof (certificated by the German certification authority TÜV). IPx4 = splash-water proof, IP5x = dust proof



- **03.222** – protection IP54, height 69 cm
- **03.224** – protection IP54, height 44 cm

# Planning instructions

## Industrial ceiling fans for destratification

### Recirculation of warm air - hall height higher than 10m



- **03.310** – Ceiling Fan with safety guard, IP protection IP54, up to 14m hall height, completely assembled



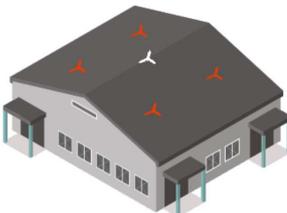
- **03.291** – Ceiling Fan with safety guard, up to 16m hall height, completely assembled
- **03.293** – as 03.291, flat packed for minimum shipping volume



- **03.312** – Ceiling Fan with safety guard, IP protection IP54, up to 20m hall height, completely assembled

### Number of ceiling fans

**ONLINE-AUSLEGUNGSTOOL**



Ihr individueller Gerätevorschlag zur Warmluftrückführung

Direkt und ohne Registrierung:

- individueller Gerätevorschlag
- Stromverbrauch hierzu
- Platzierungsbeispiele hierzu

**Start →**

Depending on the circumstances, install one fan for 125 m<sup>2</sup> to 250 m<sup>2</sup> for the destratification.

To determine the number of fans, use our planning tool which you can find on our website:

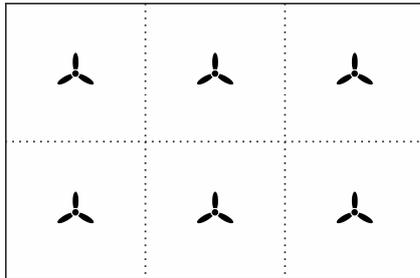
<https://fenne-kg.de/auslegung/>

Enter ground space (Grundfläche) and hall height (Hallenhöhe) and you'll get a recommendation.

# Planning instructions

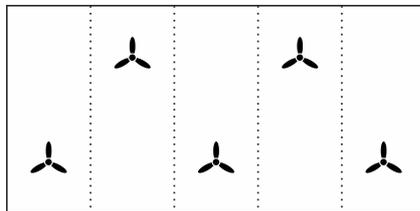
## Industrial ceiling fans for destratification

### Positions of the ceiling fans - generell

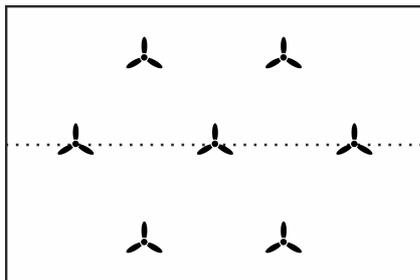


The fans are distributed equally on the surface.

Ideally divide the room into rectangles, as equally sized as possible, for the number of fans to be installed. In the middle of each zone you can place one fan.



If it is not possible to create equilateral rectangles, you can take another shape.



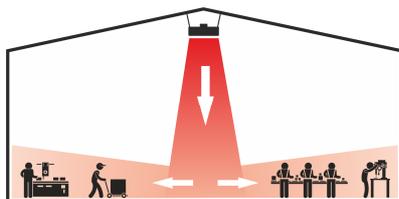
Important: You should always install some ceiling fans at the highest position of the room, to be sure no warmer air remains under the ceiling.

### Positions of the ceiling fans - practical considerations

The way the hall is set up will usually result in an uneven fan positions. This is not a problem to a large extent. It will usually just take a little longer until the temperature differences are balanced out everywhere.

### Do not install above fixed workplaces

Especially in winter, the temperature compensation should be as unnoticed as possible. Our fans are designed for a narrow air cone. Choose corridors and open spaces for placing the fans.



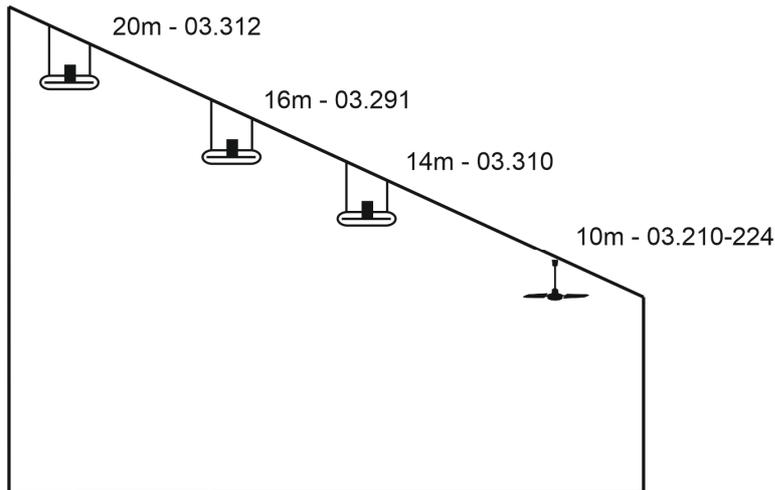
The narrow airflow only hits a smaller area under which there is no permanent workplace. On the ground, the warm air flows indirectly and circularly into the target areas.

# Planning instructions

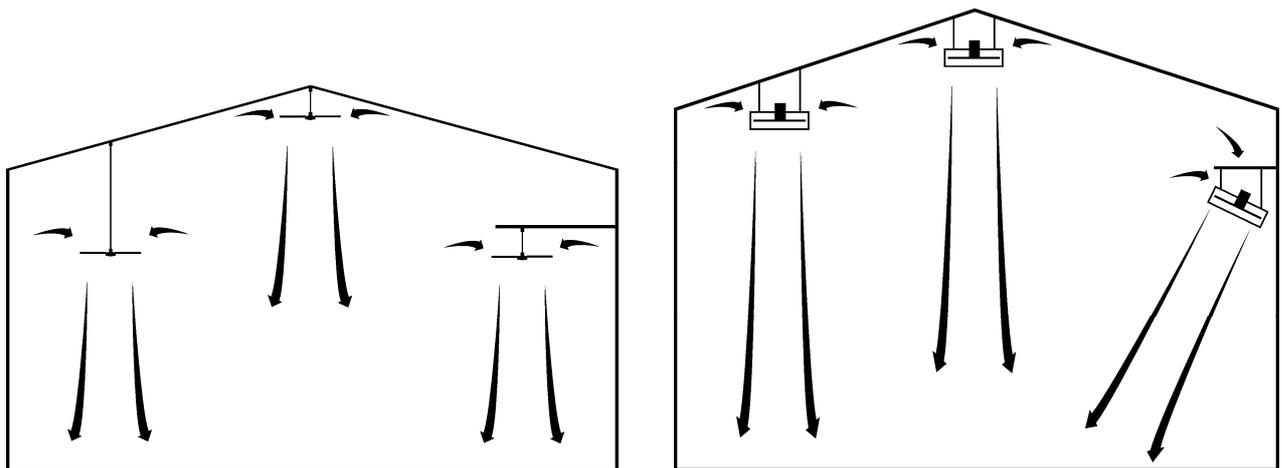
## Industrial ceiling fans for destratification

### Height of the hall

The performance of the ceiling fans is about (without temperature stratification)



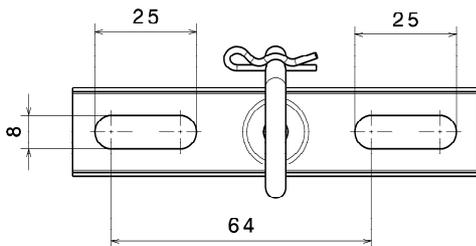
A complete destratification from top to ground is possible in higher halls too: install the fans at two levels. Just use the local conditions. If the installation at different levels is not possible (e.g. because of a high-bay warehouse), you can eventually install the fan 03.291 at the side wall in slant position.



# Planning instructions

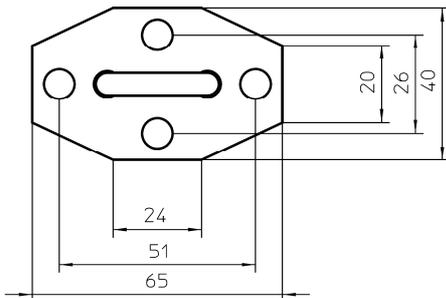
## Industrial ceiling fans for destratification

### Mounting the devices



#### **Fans 03.210 - 03.260**

You'll find enclosed to the fans one ceiling j-hook with safety pin. To mount the safety wire of the fan, you'll need a suitable fixation for the kind of ceiling.



#### **Fans 03.291, 03.293, 03.310 und 03.312**

You'll find enclosed to the fans 3 ceiling j-hooks and 3 chains 0,80 m length.

The ceiling j-hooks are installed preferably at the ceiling in the corners of a triangle whose sides are 120 cm till 150 cm long. Alternatively you can choose the three fastening points at a straight line with a distance of 80-100cm.

### Main switch of the ceiling fan circuit

The activation of the whole fan circuit can be realized via an main switch, via the main switch of the heating system and/or via time switch.

### Control of the fans

The temperature difference will be balanced a short period after switching on the fans. You should therefore switch the fans completely off in order to reduce power wastage and air movement. You can use the following solutions:

- Controller recirculation hot air
- Coupling with the blower of the warm air heater
- Interval switch

# Planning instructions

## Industrial ceiling fans for destratification

### Controller: Controller recirculation warm air



The controller recirculation warm air 03.431 for an appropriate control of the fans. The device measures the temperature near the floor and the ceiling with two temperature sensors. In order to switch on or off the speed controller and fans.

If the temperature difference goes higher the set point, the relay switches the ceiling fans on. The switch off temperature can be defined separately. The performance of the fans is depending to the air stratification. So it is recommend to switch on the fans before the temperature difference is too high. Factory setting temperature difference is 3 degrees for switching on and 2 degrees for switching off.

The positioning of the sensors and the testing of the settings in practice is important for a maximum reduction of the heating costs while having the lowest possible power consumption. The sensors should not be installed near to gates, windows, water lines as well as strong air circulations. It is possible to extend the maximum amperage of 4 A by an electric contactor.

### Control: Run the fans together with the air heater

In this case, the fans will work automatically during the heating cycle. You can use this kind of control only or in combination it with the controller 03.431.

### Controller: Interval switch



The interval switch is a useful and cost-efficient solution for switching automatically the working and break time of the fans. The manually on/off switching by the staff is no more necessary.

The working time and break time can be set between 3 and 60 minutes. The two setting potentiometers can be adjusted comfortably and directly by hand. The housing is a surface mounted DIN rail-box (EN 50022). The enclosure has additional space for e.g. main switch, weekly timer or switch for permanent operation.

The maximum amperage of the interval switch is 8 A and it is extendable by an electric contactor.

# Planning instructions

## Industrial ceiling fans for destratification

### Regulation of the air flow



#### Speed controller, stepless

You can regulate the air flow with the following speed controller. The air flow shall reach the floor area without draft nuisance. Especially next to standing working spaces it is necessary to regulate the speed. The installation of the fans near to sitting working places must be prevented.

You can control the fans in groups, if you have one of the following cases:

- Areas of the room are used differently (construction, storage, customer area...)
- Different heights of mounting for the fans
- Different kind of fans

The speed controller is equipped with an internal trimpot to adjust the minimum speed.

It is recommended to connect the stepless speed controller near the maximum of the allowed amperage (e.g. 4 A fans with a 5 A speed controller). Especially on lower speed, stepless regulators can result (as a matter of principle) a humming sound ("Hertz hum").

#### Number of ceiling fans per speed controller stepless

	03.210-260	03.284-285	03.291-293
03.403 Speed controller, stepless, 0,3 - 1,5A	1-4	1-2	1
03.404 Speed controller, stepless, 0,8 - 3,0A	3-8	2-4	1-2
03.405 Speed controller, stepless, 1,3 - 5,0A	4-12	2-7	2-4
03.406 Speed controller, stepless, 2,6 - 10A	8-24	3-14	3-8



#### Transformer speed controller, 5-steps

Transformer regulate the fans extra silent.

Another advantage is the fact that you do not need to consider a minimum load.

You can e.g. regulate with a 5 A regulator a 0,1 A motor.

#### Number of ceiling fans per transformer speed controller

	03.210-260	03.284-285	03.291-293	03.310	03.312
03.423 Speed controller, 5-steps, 2,2A	1- 5	1-3	1-2	1-2	1
03.425 Speed controller, 5-steps, 5,0A	1-10	1-7	1-4	1-4	1-3
03.426 Speed controller, 5-steps, 7,5A	1-21	1-10	1-6	1-6	1-5

# Planning instructions

## Industrial ceiling fans for destratification

### Interruption per door contactor

You can keep the warm air better inside the building, when you switch off the fans during the short period of open hall doors.

### Summer operation

Our ceiling fans for warm air recirculation (winter operation) can also be used in summer to refresh the air without any changes to the installation.

#### **Direction of rotation of the fans**

In halls and large/high rooms, the direction of air flow downwards is optimal even in summer. A change in the direction of rotation or the blade position is therefore not necessary and would not make sense.

#### **Warm air recirculation control**

The warm air recirculation control 03.431 is only required in winter operation. For summer operation, the warm air recirculation controller is set to "ON" (= relay permanently on) using the mode button in the device. After a power failure, however, the warm air recirculation controller switches back to automatic operation.

So a standard surface-mounted switch on the wall for "summer/winter" can be a practical simplification.

#### **Room height and fan type**

While the warm air recirculation should run unnoticed in winter, a pleasantly noticeable air movement is desired in summer. This means that a higher fan output should be available as a reserve for the summer.

The following device recommendation is for winter and summer use:

03.210 to 03.224	Hall height up to 7 m
03.291	Hall height up to 10 m
03.310	Hall height up to 8 m
03.312	Hall height up to 12 m

#### **Number of fans**

The information on calculating the number of fans given on page 2 applies to warm air recirculation in winter operation while also being able to be used in summer.

If the fans are primarily intended for summer, a higher number of fans is needed. Depending on the use of the hall and the heat load, one fan per 50m<sup>2</sup> to 150m<sup>2</sup> is sensible. For example, more devices in a fitness center and fewer devices in a warehouse.

#### **Number of speed controllers**

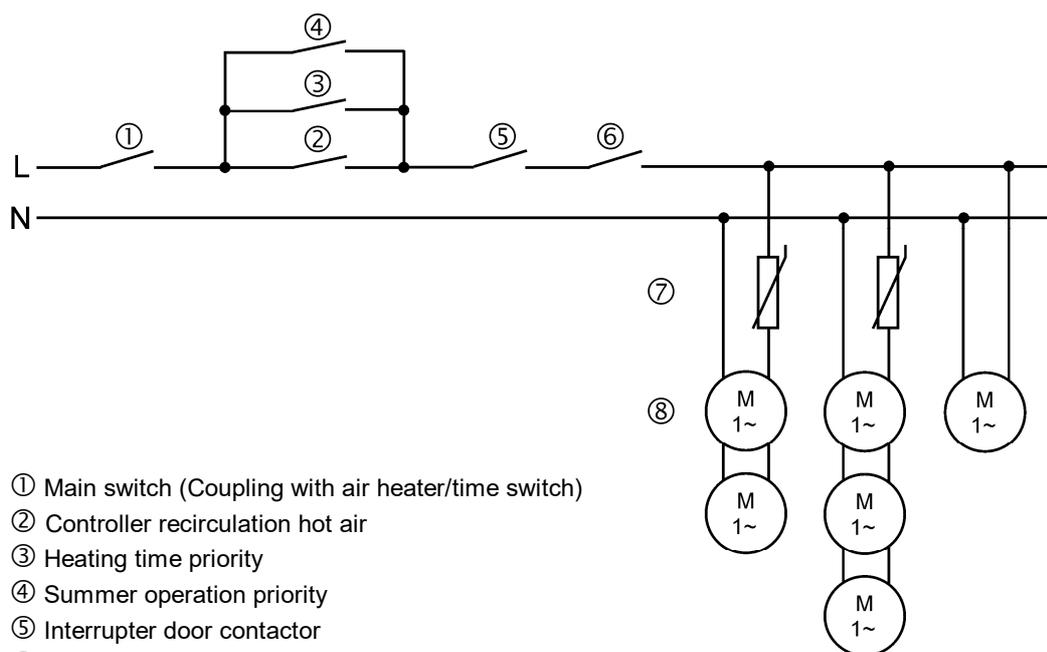
Depending on the use of the hall, smaller control groups should be provided for individual speed control for primarily summer operation. For example, in a fitness center there is one controller for each fan and in a warehouse there is one controller for four fans.

The speed controls should be accessible and allow for an individually comfortable setting.

# Planning instructions

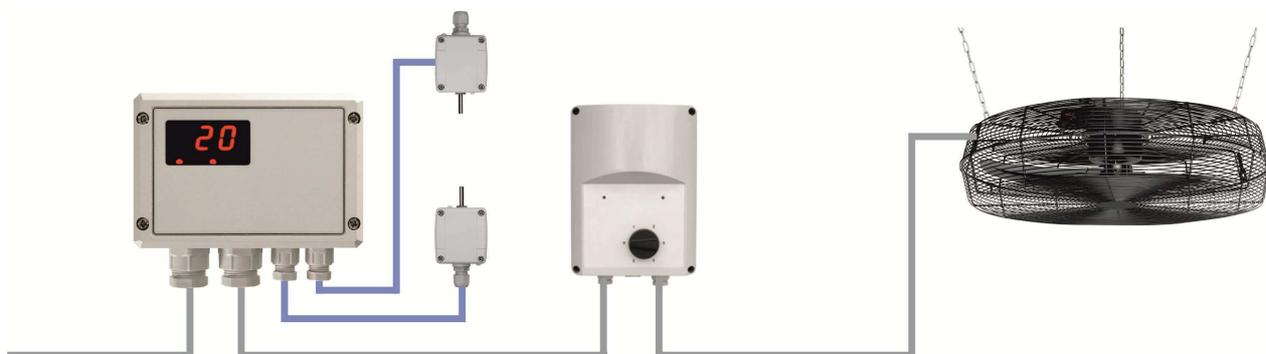
## Industrial ceiling fans for destratification

### Connection scheme



- ① Main switch (Coupling with air heater/time switch)
- ② Controller recirculation hot air
- ③ Heating time priority
- ④ Summer operation priority
- ⑤ Interrupter door contactor
- ⑥ Interval switch
- ⑦ Speed controller
- ⑧ Ceiling fans

### Cabling



# Planning instructions

## Industrial ceiling fans for destratification

Subject to alterations  
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Internet: [fenne-kg.de](http://fenne-kg.de)

Industrial ceiling fans				
	03.210	Industrial ceiling fan - white - height 69cm	Diameter 142cm, height 69cm, metal, 75W, 0,35A, 300rpm, performance max. 10m, safety screw connections, safety steel wire, color white	
	03.211	Industrial ceiling fan - black - height 69cm	Diameter 142cm, height 69cm, metal, 75W, 0,35A, 300rpm, performance max. 10m, safety screw connections, safety steel wire, color black	
	03.214	Industrial ceiling fan - height 44cm	Diameter 142cm, height 44cm, metal, 75W, 0,35A, 300rpm, performance max. 10m, safety screw connections, safety steel wire, color white	
	03.222	Industrial ceiling fan - IP54 - height 69cm	Diameter 142cm, height 69cm, metal, 75W, 0,35A, 300rpm, performance max. 10m, safety screw connections, safety steel wire, color white splash water protection IP54, stainless steel bearing	
	03.224	Industrial ceiling fan - IP54 - height 44cm	Diameter 142cm, height 44cm, metal, 75W, 0,35A, 300rpm, performance max. 10m, safety screw connections, safety steel wire, color white splash water protection IP54, stainless steel bearing	
	03.240	Industrial ceiling fan - HVLS - diameter 273cm	Diameter 273cm, height 70cm, 100W, 40-88rpm, performance max. 10m, massive all-metal construction, 6 cavity profile wing, 5-level remote control, forward and reverse run, safety steel wire, color metallic matte	
	03.260	Industrial ceiling fan - pipe clamp - tilt position	Diameter 95cm, height 42cm, metal, 65W, 0,3A, 340rpm, safety screw connections, safety steel wire, color white, suspension for tube 55-60mm, certificate for tilt position and increased ambient temperatures	

Industrial circulation fans				
	03.280	Industrial circulation fans - wall / ceiling - IP54 - 69cm	Grid diameter 69cm, 250W, 1,1A, 2-step speed control, installation on wall/ceiling/internals, 3-D-orientation, splash water protection IP54, completely assembled except the hanging parts	
	03.282	Industrial circulation fans - IP54 - oscillation - 81cm	Grid diameter 81cm, 150W, installation on wall/internals, oscillation, highly energy efficient, anti-lock, 4-step wall switch, splash water protection IP54, flat packed in two boxes	
	03.283	Industrial circulation fans - IP54 - oscillation - 71cm	Grid diameter 71cm, 140W, installation on wall/internals, oscillation, highly energy efficient, anti-lock, 4-step wall switch, splash water protection IP54, flat packed in 2 cartons	
	03.284	Industrial circulation fans - 56cm - oscillation - as 03.285 - pre-assembled	Grid diameter 56cm, 150W, 0,7A, installation on wall/tube/internals, 3-step speed control, oscillation, color black, single packed: completely assembled except the hanging parts, accessories: cross connector for tubes	
	03.285	Industrial circulation fans - 56cm - oscillation - as 03.284 - flat packed	Grid diameter 56cm, 150W, 0,7A, installation on wall/tube/internals, 3-step speed control, oscillation, color black, blades, guard and wall mounting packed separately, accessories: cross connector for tubes	
	03.291	Industrial circulation fans - as 03.293 - completely assembled	Grid diameter 81cm, height 34cm, vertical throw 16m, 260W, 1,1A, 1260rpm, 3-step speed control, ceiling mounting material included, operation in any position, color black, single packed and completely assembled	
	03.293	Industrial circulation fans - as 03.291 - flat packed	Grid diameter 81cm, height 34cm, vertical throw 16m, 260W, 1,1A, 1260 rpm, 3-step speed control, ceiling mounting material included, operation in any position, color black, blades, guard and wall mounting packed separately	

### Industrial circulation fans

	<p>03.310</p>	<p>Industrial circulation fans - IP54 - completely assembled</p>	<p>Grid diameter 69cm, height 20cm, vertical throw 14m, 250W, 1,1A, 1350rpm, 2-step speed control, ceiling mounting material included, operation in any position, black, single packed and completely assembled</p>	
	<p>03.312</p>	<p>Industrial circulation fans - IP54 - completely assembled</p>	<p>Grid diameter 84cm, height 26cm, vertical throw 20m, 280W, 1,3A, 1350rpm, 2-step speed control, ceiling mounting material included, operation in any position, black, single packed and completely assembled</p>	

### Speed controller, stepless

	<p>03.403 03.404 03.405 03.406</p>	<p>Speed controller- stepless - manually</p>	<p>Illuminated main switch, minimum speed configurable, motor-friendly start-up phase configurable, surface-mounted, IP54 Suitable for fans 03.210-03.222, 03.260, 03.284-03.293  0,3- 1,5 A 0,8- 3,0 A 1,3- 5,0 A 2,6-10,0 A</p>	
	<p>03.413 03.414 03.415 03.416</p>	<p>Speed controller - stepless - 0-10V-input</p>	<p>As before, but with 0-10V input for remote control. Without manual operation.  0,3- 1,5 A 0,8- 3,0 A 1,5- 6,0 A 2,6-10,0 A</p>	

### Speed controller, transformer regulator, 5-stufig

	<p>03.423 03.425 03.426</p>	<p>Speed controller - transformer regulator - 5-steps - manually</p>	<p>Manual 5-step control as well as ON/OFF switch with indicator light, output voltage and order is configurable, surface-mounted, IP54 Suitable for fans 03.210-03.222, 03.260, 03.280, 03.284-03.312  2,2 A 5,0 A 7,5 A</p>	
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More controls				
	03.431	Controller recirculation hot air - 2 sensors - 4,0 A	Control for industrial ceiling fans for hall heating, display for temperatures and error messages, two temperature sensors included, IP54, 4A, amperage extension with a customary contactor	
	03.434	Temperature control - transformer regulator - 1 sensor - 5,0 A	Temperature control for summer ventilation, 5,0 A, transformer regulator, automatically depending on the temperature or manually in 5 steps, voltage configurable, 5,5kg, surface-mounted, IP54, 1m cable with temperature sensor Pt500	
	03.436	Interval switch - 8,0 A	Interval switch for ventilation and drying applications, the working time and break time can be defined between 3 and 60 minutes, surface-mounted, IP55-rail housing, 8 A	

Accessories				
	03.444	Ceiling hook Special shape	Ceiling hook for ceiling fans 03.210-03.224. Special shape for holding clips sloping straps.	
	03.450 03.451 03.452	Holding clips M6	Holding clips, grub screw M6x10, maximum load 45 kg Clamping range 3- 8 mm Clamping range 8-14 mm Clamping range 14-20 mm	
	03.453 03.454 03.455	Holding clips Eyelet	Holding clips, eyelet 6,5 mm, maximum load 90 kg Clamping range 3- 8 mm Clamping range 8-14 mm Clamping range 14-20 mm	
	03.494	Swivel arm	Swivel arm, arm length 0,75 - 1,10m, red, installation on tube 40-50mm or installation on wall, weight 9,5kg, maximum load 200kg	
	03.495	Cross connector for tubes	Cross connector 2-inch x 3/4-inch, galvanized, M10, with nuts, 360g for 03.284 / 03.285 at a tube 40-55mm	
	03.497	Attachment for motor	Security chain for additional security on the fans 03.280 to 03.285, consisting of chain 0,8m, for 03.285, eye bolt, chain and connector(eyelet), 2 carabiners and wall plate	