

Filter Fan (24...700)m³/h and Exhaust Filter

7F
SERIES



Drying kilns



Textile machines



Machines
for paper
processing



Machines
for ceramics



Wood-
processing
machines



Panels for
electrical
distribution



Control panels



Forced-air
ventilators



Filter Fan for electrical cabinets and enclosures 120 V or 230 V AC versions

- Very low acoustic noise
- Minimal depth within enclosure
- Nominal voltage: 120 or 230 V AC (50/60 Hz)
- Time-saving installation and maintenance
- Easily replaceable filter mat
- Filter Fan supplied in Reverse flow mode (7F.21)
- Black colour RAL 9004 Available

7F.20.8.xxx.1020



- Nominal voltage 120 or 230 V AC
- Air volume 50/60 Hz: 24/29 m³/h
- Size 1

7F.20.8.xxx.2055



- Nominal voltage 120 or 230 V AC
- Air volume 50/60 Hz: 55/63 m³/h
- Size 2

7F.20.8.xxx.3100



- Nominal voltage 120 or 230 V AC
- Air volume 50/60 Hz: 100/115 m³/h
- Size 3

For outline drawing see page 14

Fan data

Air volume (free flow): 50/60 Hz	m ³ /h	24/29	55/63	100/115
Air volume (with exhaust filter installed): 50/60 Hz	m ³ /h	14/16.5	40/45.5	75/85.5
Noise level	dB (A)	27	42	42
Life time at 40 °C	h	50 000	50 000	50 000

Electrical data

Nominal voltage (U _N)	V AC (50/60 Hz)	120	230	120	230	120	230
Operating range	AC	(0...1.1)U _N		(0.8...1.1)U _N		(0.8...1.1)U _N	
Current consumption: 50/60 Hz	A	0.23/0.18	0.1/0.08	0.25/0.21	0.13/0.11	0.25/0.21	0.13/0.11
Rated power: 50/60 Hz	W	27/21	23/18	30/25	29/25	30/25	29/25

Other data

Housing, cover	Plastics according to UL94 V-0						
Filter mat (included)	G3 according to EN 779, filtering degree (80...90)%						
Filter material	Synthetic fibre with progressive construction, temperature resistant to +100 °C, self extinguishing, Class F1 (DIN 53438)						
Electrical connections	Push-in terminals						
Wire size (mm ²)	min/max	0.7/2.5					
Wire size (AWG)	min/max	18/14					
Ambient temperature range	°C	-15...+55					
Protection category according to EN 60529	IP 54						
Protection category according to NEMA	Type 12						

Approvals (according to type)



Filter Fan for electrical cabinets and enclosures 120 V or 230 V AC versions

- Very low acoustic noise
- Minimal depth within enclosure
- Nominal voltage: 120 or 230 V AC (50/60 Hz)
- Time-saving installation and maintenance
- Easily replaceable filter mat
- Filter Fan supplied in Reverse flow mode (7F.21)
- Black colour RAL 9004 Available

7F.20.8.xxx.4250



- Nominal voltage
120 or 230 V AC
- Air volume 50/60 Hz:
250/295 m³/h
- Size 4

7F.20.8.xxx.4400



- Nominal voltage
120 or 230 V AC
- Air volume 50/60 Hz:
400/445 m³/h
- Size 4

G

For outline drawing see page 15

Fan data

Air volume (free flow): 50/60 Hz	m ³ /h	250/295	400/445
Air volume (with exhaust filter installed): 50/60 Hz	m ³ /h	195/228	270/300
Noise level	dB (A)	56	72
Life time at 40 °C	h	50 000	50 000

Electrical data

Nominal voltage (U _N)	V AC (50/60 Hz)	120	230	120	230
Operating range	AC	(0.8...1.1)U _N		(0.8...1.1)U _N	
Current consumption: 50/60 Hz	A	0.35/0.40	0.2/0.22	0.6/1	0.3/0.49
Rated power: 50/60 Hz	W	42/48	46/50	72/120	69/112

Other data

Housing, cover	Plastics according to UL94 V-0			
Filter mat (included)	G3 according to EN 779, filtering degree (80...90)%	G4 according to EN 779, filtering degree (80...90)%		
Filter material	Synthetic fibre with progressive construction, temperature resistant to +100 °C, self extinguishing, Class F1 (DIN 53438)			
Electrical connections	Push-in terminals			
Wire size (mm ²)	min/max	0.7/2.5		
Wire size (AWG)	min/max	18/14		
Ambient temperature range	°C	-15...+55		
Protection category according to EN 60529	IP 54			
Protection category according to NEMA	Type 12			

Approvals (according to type)



Filter Fan for electrical cabinets and enclosures 120 V or 230 V AC versions

- Very low acoustic noise
- Minimal depth within enclosure
- Nominal voltage: 120 or 230 V AC (50/60 Hz)
- Time-saving installation and maintenance
- Easily replaceable filter mat
- Filter Fan supplied in Reverse flow mode (7F.21)
- Black colour RAL 9004 Available

7F.20.8.xxx.5550



- Nominal voltage 120 or 230 V AC
- Air Volume 50/60 Hz: 550/605 m³/h
- Size 5

NEW 7F.20.8.xxx.5700



- Nominal voltage 120 or 230 V AC
- Air Volume 50/60 Hz: 660/700 m³/h
- Size 5

For outline drawing see page 15

Fan data

Air volume (free flow): 50/60 Hz	m ³ /h	550/605		660/700	
Air volume (with exhaust filter installed): 50/60 Hz	m ³ /h	400/440		430/470	
Noise level	dB (A)	75		72	
Life time at 40 °C	h	50 000		50 000	

Electrical data

Nominal voltage (U _N)	V AC (50/60 Hz)	120	230	120	230
Operating range	AC	(0.8...1.1)U _N		(0.8...1.1)U _N	
Current consumption: 50/60 Hz	A	0.66/0.85	0.34/0.49	0.92/1.14	0.46/0.53
Rated Power: 50/60 Hz	W	75/102	76/116	110/140	106/120

Other data

Housing, cover	Plastics according to UL94 V-0, light grey (RAL 7035)			
Filter mat (included)	G4 according to EN 779, filtering degree (80...90)%		G3 according to EN 779, filtering degree (80...90)%	
Filter material	Synthetic fibre with progressive construction, temperature resistant to +100 °C, self extinguishing, Class F1 (DIN 53438)			
Electrical connections	Push-in terminals		Screw Terminal	
Wire size (mm ²)	min/max	0.7/2.5		
Wire size (AWG)	min/max	18/14		
Ambient temperature range	°C	-15...+55		
Protection category according to EN 60529	IP 54			
Protection category according to NEMA	Type 12		Type 12	

Approvals (according to type)



Filter Fan for electrical cabinets and enclosures 24 V DC versions

- Very low acoustic noise
- Minimal depth within enclosure
- Nominal voltage: 24 V DC
- Time-saving installation and maintenance
- Easily replaceable filter mat
- Filter Fan supplied in Reverse flow mode (7F.21)
- Black colour RAL 9004 Available

7F.20.9.024.1020



- Nominal voltage 24 V DC
- Air volume 24 m³/h
- Rated power 3.6 W
- Size 1

7F.20.9.024.2055



- Nominal voltage 24 V DC
- Air volume 55 m³/h
- Rated power 7 W
- Size 2

7F.20.9.024.3100



- Nominal voltage 24 V DC
- Air volume 100 m³/h
- Rated power 7 W
- Size 3

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For outline drawing see page 14

Fan data				
Air volume (free flow)	m ³ /h	24	55	100
Air volume (with exhaust filter installed)	m ³ /h	14	40	75
Noise level	dB (A)	37.5	46	45
Life time at 40 °C	h	50 000	50 000	50 000
Electrical data				
Nominal voltage (U _N)	V DC	24	24	24
Operating range	DC	(0.8...1.1)U _N	(0.8...1.1)U _N	(0.8...1.1)U _N
Current consumption	A	0.15	0.32	0.32
Rated power	W	3.6	7	7
Other data				
Housing, cover		Plastics according to UL94 V-0		
Filter mat (included)		G3 according to EN 779, filtering degree (80...90)%		
Filter material		Synthetic fibre with progressive construction, temperature resistant to 100 °C, self extinguishing, Class F1 (DIN 53438)		
Electrical connections		Push-in terminals		
Wire size (mm ²)	min/max	0.7/2.5		
Wire size (AWG)	min/max	18/14		
Ambient temperature range	°C	-15...+55		
Protection category according to EN 60529		IP 54		
Protection category according to NEMA		Type 12		
Approvals (according to type)				

Filter Fan for electrical cabinets and enclosures 24 V DC versions

- Very low acoustic noise
- Minimal depth within enclosure
- Nominal voltage: 24 V DC
- Time-saving installation and maintenance
- Easily replaceable filter mat
- Filter Fan supplied in Reverse flow mode (7F.21)
- Black colour RAL 9004 Available

7F.20.9.024.4250



- Nominal voltage 24 V DC
- Air volume 250 m³/h
- Rated power 43 W
- Size 4

For outline drawing see page 15

Fan data

Air volume (free flow)	m ³ /h	250
Air volume (with exhaust filter installed)	m ³ /h	195
Noise level	dB (A)	64
Life time at 40 °C	h	50 000

Electrical data

Nominal voltage (U _N)	V DC	24
Operating range	DC	(0.8...1.1)U _N
Current consumption	A	1.8
Rated power	W	43

Other data

Housing, cover	Plastics according to UL94 V-0	
Filter mat (included)	G3 according to EN 779, filtering degree (80...90)%	
Filter material	Synthetic fibre with progressive construction, temperature resistant to 100 °C, self extinguishing, Class F1 (DIN 53438)	
Electrical connections	Push-in terminals	
Wire size (mm ²)	min/max	0.7/2.5
Wire size (AWG)	min/max	18/14
Ambient temperature range	°C	-15...+55
Protection category according to EN 60529	IP 54	
Protection category according to NEMA	Type 12	

Approvals (according to type)



Ordering information

Example: Series 7F, Filter Fan for mounting in sidewalls, nominal voltage 230 V AC, size 1, air volume 24 m³/h.



- Series** —————
- Type** —————
20 = Filter Fan - for indoor use
21 = Reverse flow Filter Fan - for indoor use
- Supply version** —————
8 = AC (50/60 Hz)
9 = DC
- Operating voltage** —————
024 = 24 V DC
120 = 120 V AC
230 = 230 V AC
- Enclosure cut-out** —————
1 = Size 1 (92^{+1.0} x 92^{+1.0}) mm
2 = Size 2 (125^{+1.0} x 125^{+1.0}) mm
3 = Size 3 (177^{+1.0} x 177^{+1.0}) mm
4 = Size 4 (223^{+1.0} x 223^{+1.0}) mm
5 = Size 5 (291^{+1.0} x 291^{+1.0}) mm
- Nominal air volume (free flow)** —————
020 = 24 m³/h
055 = 55 m³/h
100 = 100 m³/h
250 = 250 m³/h
400 = 400 m³/h
550 = 550 m³/h
700 = 700 m³/h
- Colour** —————
Empty = Grey RAL 7035
0 = Black RAL 9004

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Filter Fans - All versions

Standard versions	Reverse flow versions	
7F.20.8.120.1020	7F.21.8.120.1020	Filter Fan, Size 1
7F.20.8.120.2055	7F.21.8.120.2055	Filter Fan, Size 2
7F.20.8.120.3100	7F.21.8.120.3100	Filter Fan, Size 3
7F.20.8.120.4250	7F.21.8.120.4250	Filter Fan, Size 4
7F.20.8.120.4400	7F.21.8.120.4400	Filter Fan, Size 4
7F.20.8.120.5550	7F.21.8.120.5550	Filter Fan, Size 5
7F.20.8.120.5700	7F.21.8.120.5700	Filter Fan, Size 5
7F.20.8.230.1020	7F.21.8.230.1020	Filter Fan, Size 1
7F.20.8.230.2055	7F.21.8.230.2055	Filter Fan, Size 2
7F.20.8.230.3100	7F.21.8.230.3100	Filter Fan, Size 3
7F.20.8.230.4250	7F.21.8.230.4250	Filter Fan, Size 4
7F.20.8.230.4400	7F.21.8.230.4400	Filter Fan, Size 4
7F.20.8.230.5550	7F.21.8.230.5550	Filter Fan, Size 5
7F.20.8.230.5700	7F.21.8.230.5700	Filter Fan, Size 5
7F.20.9.024.1020	7F.21.9.024.1020	Filter Fan, Size 1
7F.20.9.024.2055	7F.21.9.024.2055	Filter Fan, Size 2
7F.20.9.024.3100	7F.21.9.024.3100	Filter Fan, Size 3
7F.20.9.024.4250	7F.21.9.024.4250	Filter Fan, Size 4

Note:
The technical features (air volume, dimensions and electrical parameters) for the Standard Filter Fans (7F.20) and the Reverse flow versions (7F.21) - are exactly the same.

Exhaust Filter

The size of the Exhaust Filter should match the size of the Filter Fan to achieve the best ventilation within the cabinet

- Minimum depth within enclosure
- Time-saving installation and maintenance
- Easily replaceable filter mat
- Black colour RAL 9004 Available

7F.02.0.000.1000



- For Filter Fans 7F.20.x.xxx.1020
- Size 1

7F.02.0.000.2000



- For Filter Fans 7F.20.x.xxx.2055
- Size 2

7F.02.0.000.3000



- For Filter Fans 7F.20.x.xxx.3100
- Size 3

For outline drawing see page 14

Other data

Housing, cover

Plastics according to UL94 V-0

Filter mat (included)

G3 according to EN 779, filtering degree (80...90)%

Filter material

Synthetic fibre with progressive construction, temperature resistant to +100 °C, self extinguishing, Class F1 (DIN 53438)

Protection category according to EN 60529

IP 54

Protection category according to NEMA

Type 12

Approvals (according to type)



Exhaust Filter

The size of the Exhaust Filter should match the size of the Filter Fan to achieve the best ventilation within the cabinet

- Minimum depth within enclosure
- Time-saving installation and maintenance
- Easily replaceable filter mat
- Black colour RAL 9004 Available

7F.02.0.000.4000



- For Filter Fans
7F.20.x.xxx.4250 or
7F.20.8.xxx.4400
- Size 4

7F.02.0.000.5000



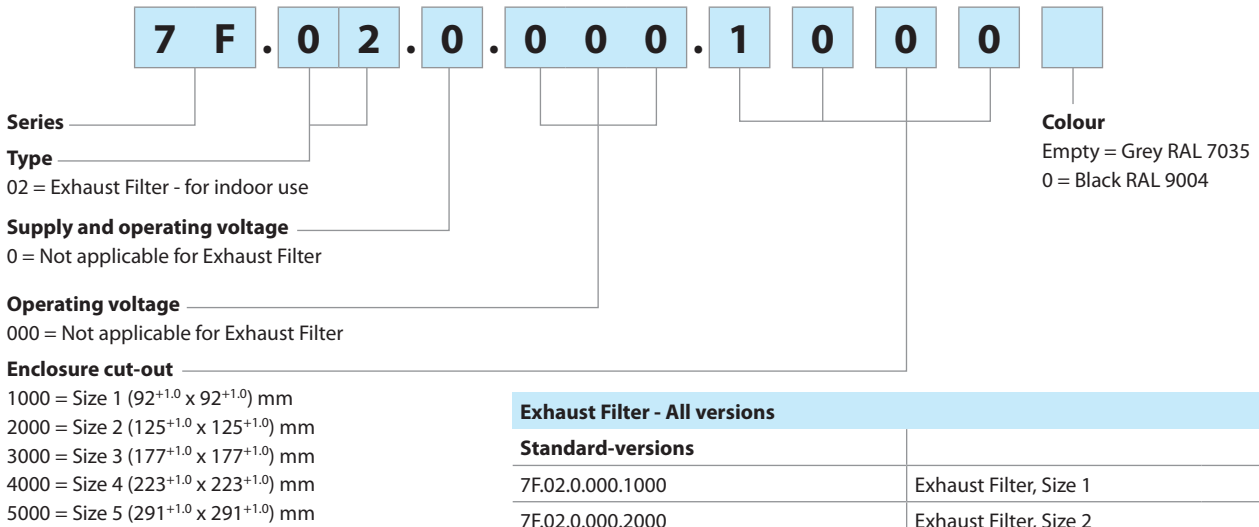
- For Filter Fans
7F.20.8.xxx.5550 or
7F.20.8.xxx.5700
- Size 5

For outline drawing see page 15

Other data	
Housing, cover	Plastics according to UL94 V-0, light grey (RAL 7035)
Filter mat (included)	G3 according to EN 779, filtering degree (80...90)%
Filter material	Synthetic fibre with progressive construction, temperature resistant to +100 °C, self extinguishing, Class F1 (DIN 53438)
Protection category according to EN 60529	IP 54
Protection category according to NEMA	Type 12
Approvals (according to type)	

Ordering information

Example: Series 7F, Exhaust Filter for mounting in sidewalls, size 1.



Exhaust Filter - All versions

Standard-versions	
7F.02.0.000.1000	Exhaust Filter, Size 1
7F.02.0.000.2000	Exhaust Filter, Size 2
7F.02.0.000.3000	Exhaust Filter, Size 3
7F.02.0.000.4000	Exhaust Filter, Size 4
7F.02.0.000.5000	Exhaust Filter, Size 5

Components

Standard-Filter Fan	Standard-Exhaust Filter	Filter mat	Size
7F.20.8.xxx.1020	7F.02.0.000.1000	07F.15	1
7F.20.8.xxx.2055	7F.02.0.000.2000	07F.25	2
7F.20.8.xxx.3100	7F.02.0.000.3000	07F.35	3
7F.20.8.xxx.4250	7F.02.0.000.4000	07F.45	4
7F.20.8.xxx.4400	7F.02.0.000.4000	07F.46 (07F.45 for 7F.02-4000)	4
7F.20.8.xxx.5550	7F.02.0.000.5000	07F.56 (07F.55 for 7F.02-5000)	5
7F.20.8.xxx.5700	7F.02.0.000.5000	07F.55	5
7F.20.9.024.1020	7F.02.0.000.1000	07F.15	1
7F.20.9.024.2055	7F.02.0.000.2000	07F.25	2
7F.20.9.024.3100	7F.02.0.000.3000	07F.35	3
7F.20.9.024.4250	7F.02.0.000.4000	07F.45	4

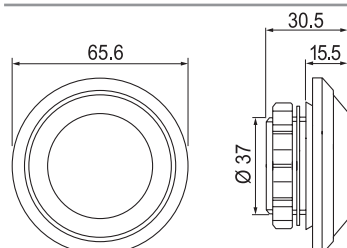
Spare Filter mats	07F.15	07F.25	07F.35	07F.45/46	07F.55/56
Protection category	IP54				

Accessories



07F.80

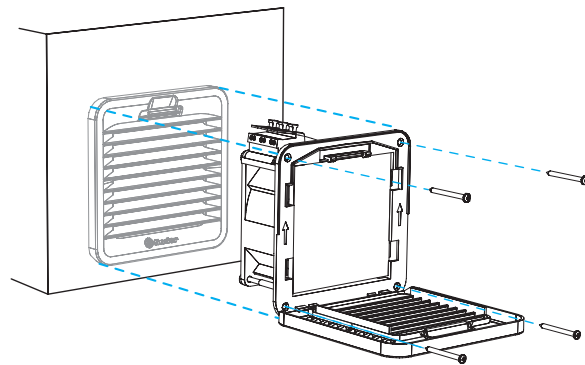
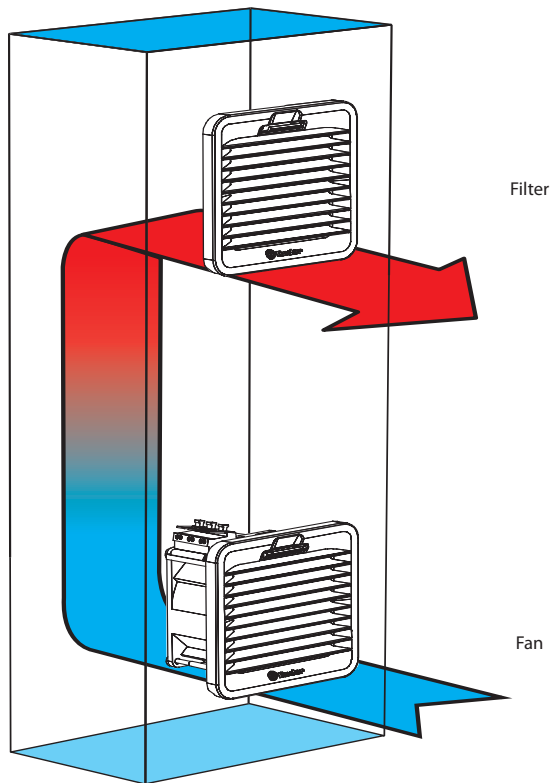
Pressure compensation device, for pressure compensation in closed cabinets or enclosures	07F.80
Air interface area	cm ² 7
Mounting	PG 29 thread with union nut
Torque	Nm 5 (max. 10)
Material	plastic according to UL94-V0
Dimensions (diameter/depth)	mm 65.5/30.5
Mounting position	upper part of cabinet sidewalls
Ambient temperature	°C -45...+70
Protection category	IP 55



Unit package contains 2 pressure compensation devices

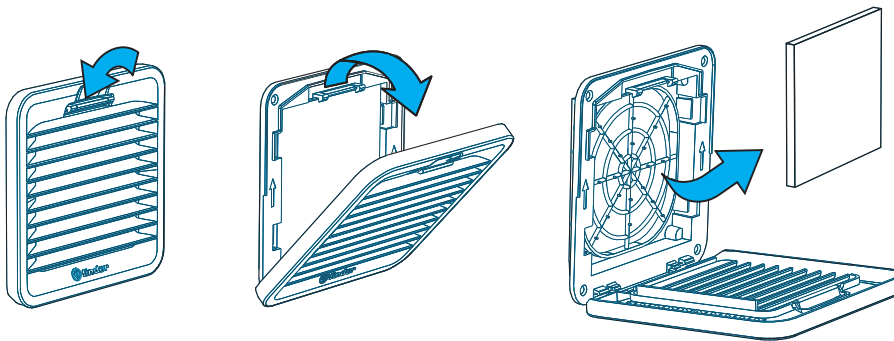
Mounting instructions for Filter Fans

Mounting arrangement of Filter Fans and Exhaust Filter

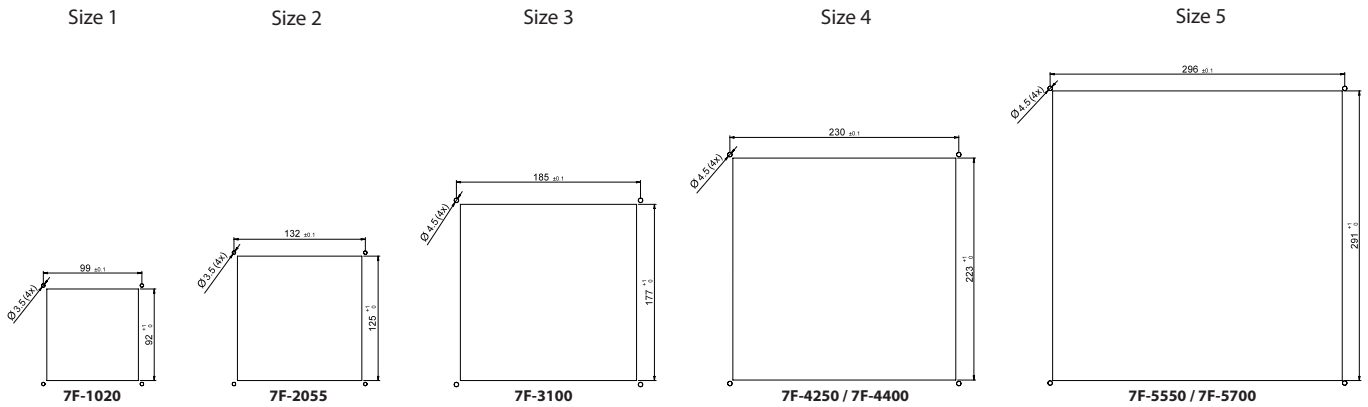


The installation with the only clips is optimized for 1.5 mm thick sheets; it is also possible with thicknesses from 1 to 2.5 mm. Fixing with screws (supplied) is recommended. Tightening torque 0.3 Nm.

G Replacement of Filter mat (Type 7F.20)



Drilling template and mounting cut-outs for Filter Fans and Exhaust Filter



Mounting and maintenance

1. Make the panel cut-out according to the size of the Filter Fan or Exhaust Filter in the sidewall of the cabinet as appropriate.
A template of the panel cut-out is included in the packaging of the Filter Fan or Exhaust Filter.
2. Make the electrical connection.
3. Mount by simply snapping the side-located lugs on the Filter Fan or Exhaust Filter into the panel cut-out (without using screws for sidewall thickness of 1.2...2.4 mm).
At other thickness it is recommended to mount the Filter Fan by the screws supplied (for size 1, the template shows the mounting cut-out only).
4. When screws are needed for the mounting, remove the plastic cover and fix the Filter Fan with the 4 screws supplied.
Then insert the filter mat and snap the plastic cover to the mounting frame.
5. During maintenance or when replacing the filter mat remove the plastic cover, replace the filter mat and snap on the plastic cover.

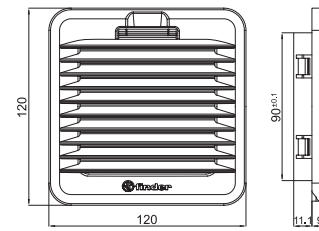
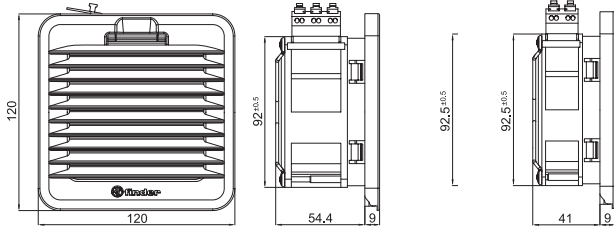
Outline drawings

Type 7F.20.x.xxx.1020

AC version

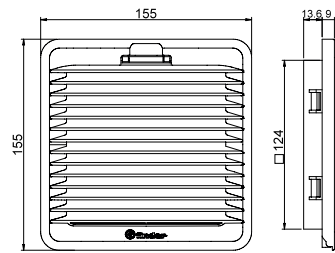
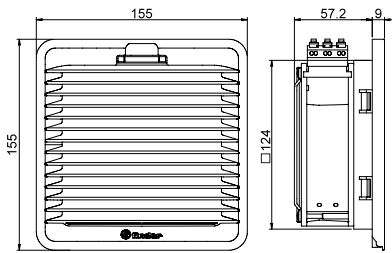
DC version

Type 7F.02.0.000.1000



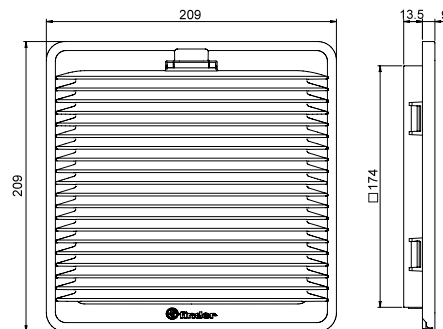
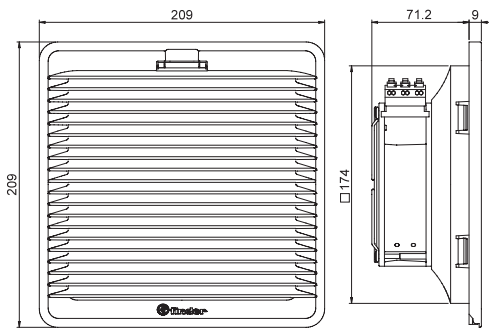
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Type 7F.02.0.000.2000



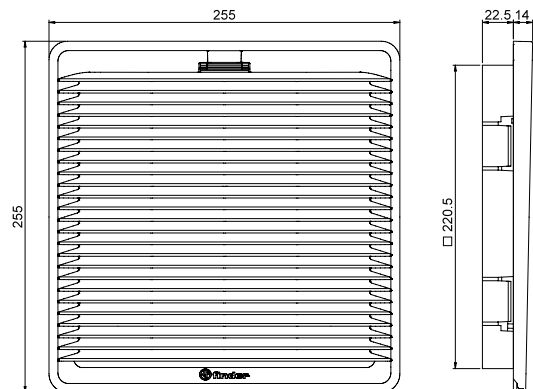
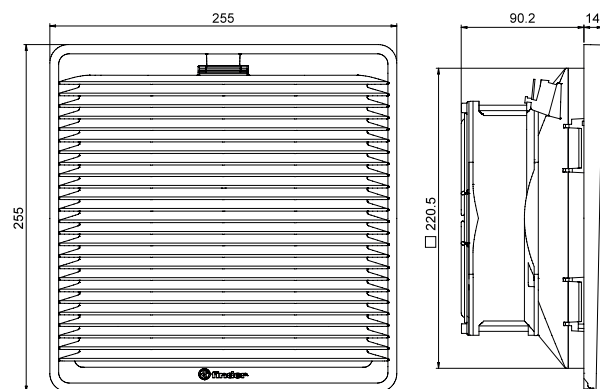
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Type 7F.02.0.000.3000



Type 7F.20.x.xxx.4250

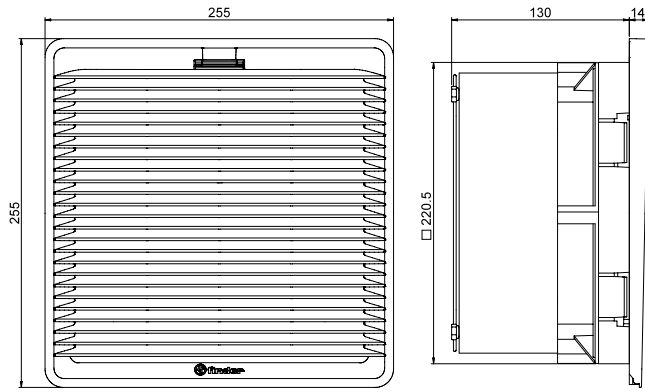
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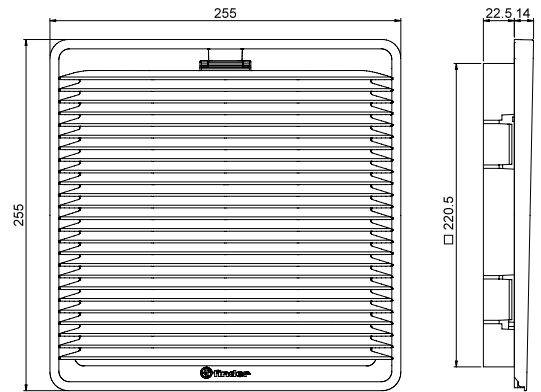
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Outline drawings

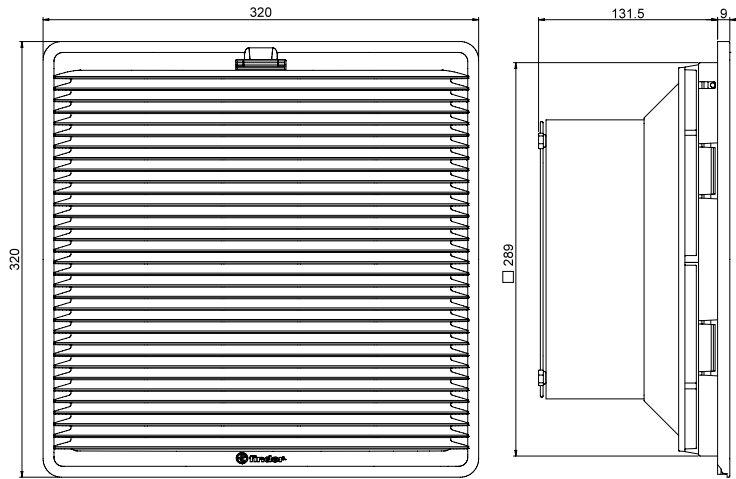
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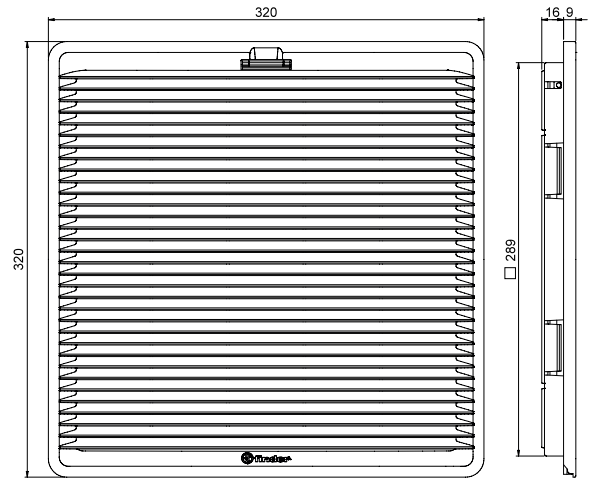
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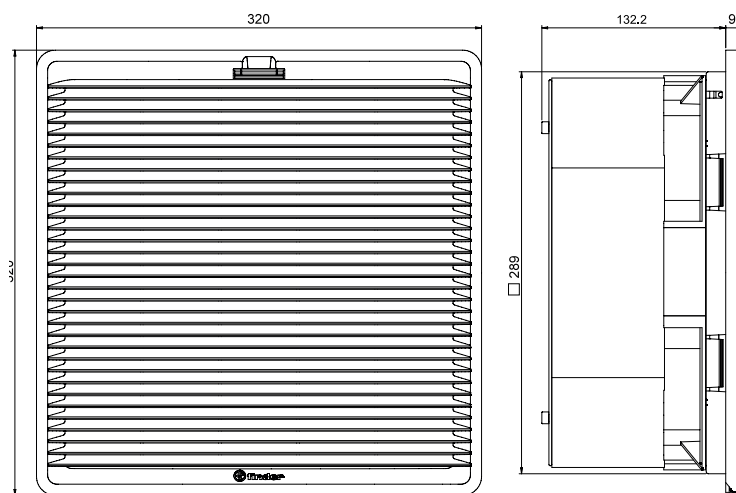
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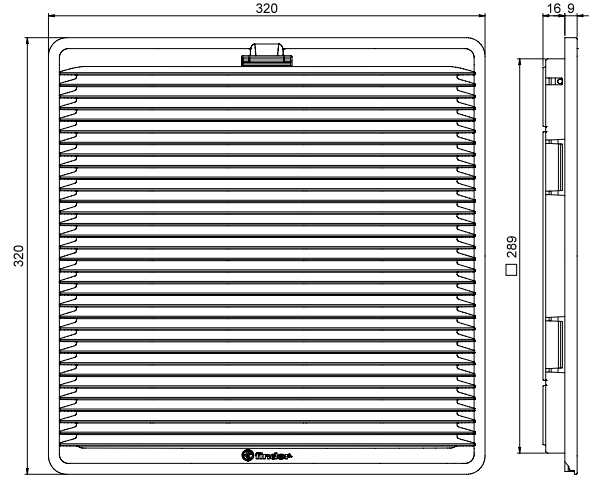
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Type 7F.20.x.xxx.5700

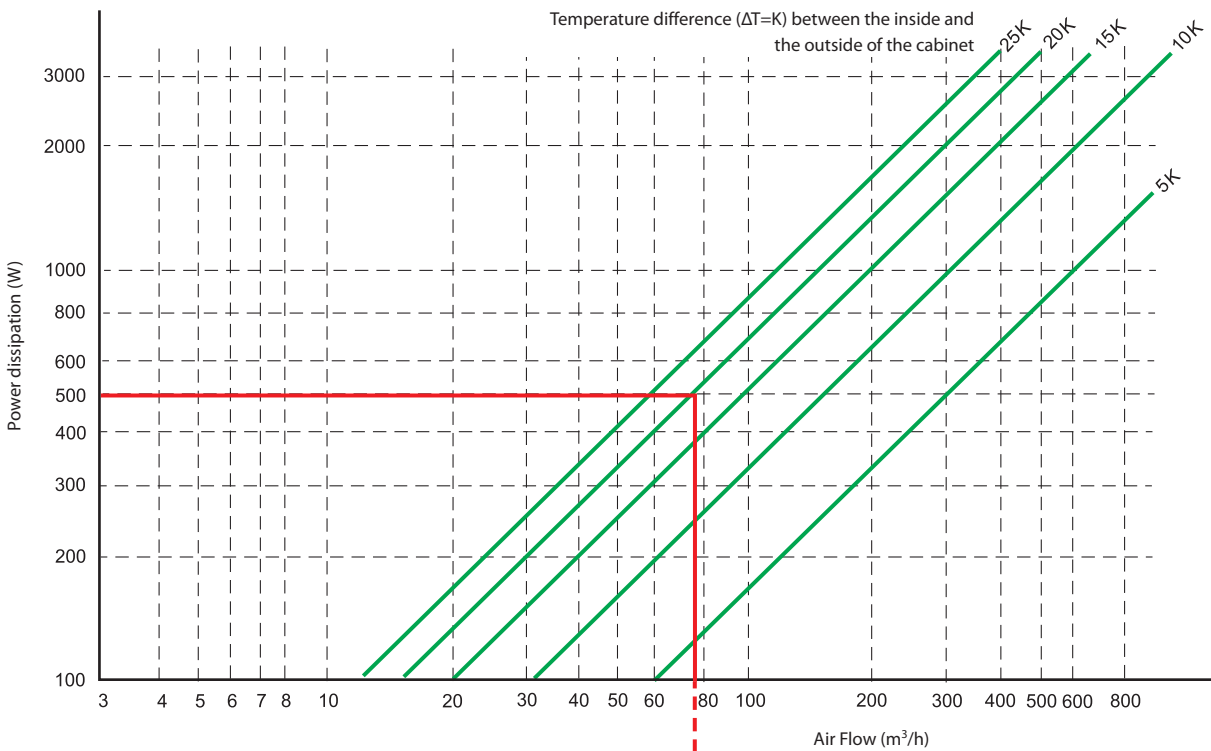


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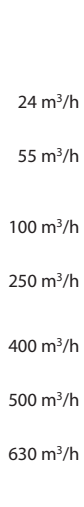


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Fan selection



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Example

First, estimate the power dissipated within the cabinet. Then calculate the maximum difference between the internal and external temperature (green lines) by considering the difference between the maximum permitted internal temperature (as dictated by the temperature rating of the enclosed components, or specification) and the maximum temperature expected outside the cabinet.

The projection onto the X axis, of the intersection between the power (watts) and the appropriate green line, corresponds to the air flow rate in m³/h required to meet the maximum internal temperature limit. Extending this line vertically to intersect with the blue horizontal lines, indicates the most appropriate model of 7F fan to be fitted to the cabinet to provide the requisite air flow.

The example above considers a cabinet with an internal thermal power dissipation of 500 W, and assumes the maximum temperature difference between the inside and the outside of the cabinet to be 20K. The required air flow can be seen to be a little less than 80 m³/h.

It is suggested that this is increased by 10% to allow for the affects of a dirty filter.

And so, it can be seen that models of the 7F with 100 m³/h flow rate will provide the proper dissipation of heat under these circumstances.

Application notes

Filter Fan

The ball-bearing axial fan housing is made of aluminium and the rotor is made of plastic or metal (depending on the type).

Filter classes

Within EN 779 are specified 9 filter classes, categorised into 4 coarse dust filters and 5 fine dust filters.

The coarse dust filters G1 - G4 are able to filter particles > 10 µm and the fine dust filters G5 - G9 are able to filter particles from (1...10)µm.

Filter classes	Example of particle	Particle size
G1 - G4 (EU1 - EU4)	Textile fibers, hair, sand, pollen, spores, insects, cement dust	> 10 µm
G5 - G9 (EU5 - EU9)	Pollen, spores, cement dust, tobacco smoke, oil smoke, soot	(1...10)µm

Filtering degree (Am)

The degree of filtering (Am) is the percentages of dust, by weight, that is caught and retained by the filter.

Filter mats

The quality of these filter mats has been independently tested, according to EN 779 and branded after passing the test.

The filter mats are to filter class G3 and have an average filtering degree of (80...90)%.

Filter material

The filter material consists of a synthetic fiber with progressive construction which is moisture-resistant to 100% RH and temperature resistant to +100 °C.

According to the strict requirements of fire class F1, DIN 53438, these filter mats are self-extinguishing.

Progressive construction at filter mats

The individual fibers of these filter mats are bonded by a special process to provide a progressive construction where the fiber size and spacing varies through the thickness of the filter mat.

This means that coarse dust particles are caught early and fine dust later through the thickness of the mat. In this way the entire depth of the filter mat is used.

Flammability class of the housing and the cover

The plastic materials used comply with flammability class V-0, according to UL94.

Filter Fan in "reverse flow" version

As supplied, the standard Filter Fan is in "Draw-In"- mode, which means that cool air is filtered and drawn into the cabinet. In some cases it may be required that the warm air is blown out of the cabinet.

In which case it is possible to get Filter Fans in "Exhaust Filter" mode version (7F.21).

Mounting of the pressure compensation device

In sealed cabinets and enclosures the internal pressure can vary due to changes in temperature. The pressure compensation device (07F.80) will relieve this internal/external pressure differential whilst maintaining a high level of protection - preventing the ingress of dust and moisture into the cabinet or the enclosure. The pressure compensation device is approved for use in cabinets and enclosures according to DIN EN 62208.

Drill a hole Ø 37^{+1.0} mm in the housing wall and fix the pressure compensation device with the accompanying nut. It is important to ensure that the sealing ring is located on the outside. To ensure optimum pressure balance, it is recommended to fit 2 pressure compensation devices at the upper sides of the cabinet or enclosure.



