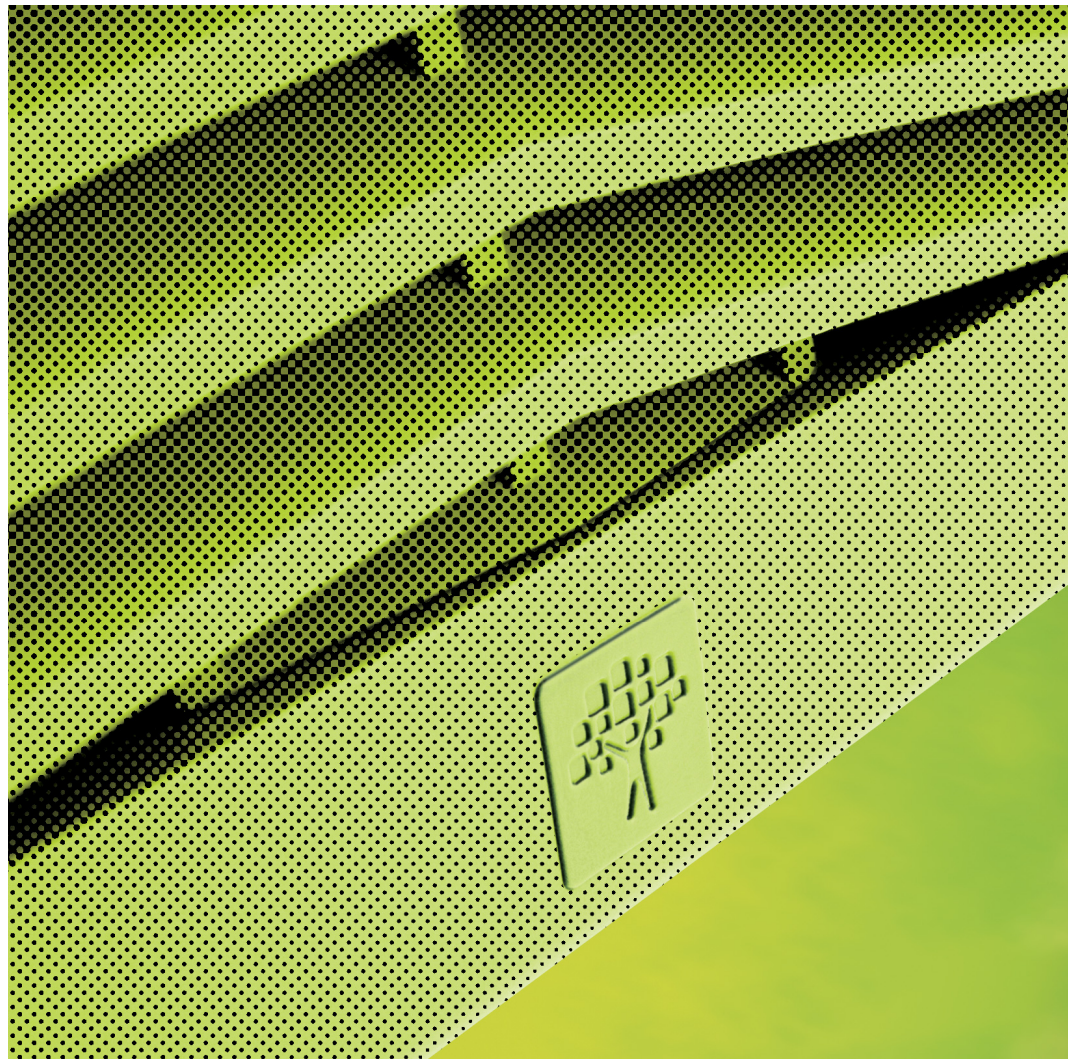


viridis

fan filters

Ventilation solutions
for electrical cabinets

Soluzioni per
la ventilazione
dei quadri elettrici



Fandis
colors of engineering

**Fan filters**

04

"FF" series fan-filters units with and without fan with clip mounting system

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"FPF" series fan-filter units in a wide choice of versions with and without fan

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"GF" series fan-filters with and without fan for thick wall applications

Accessories

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Steel covers for "FF", "FPF" and "GF" series fan filters units

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Plastic adaptors for "FF", "FPF" and "GF" series fan filters units

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Roof exhaust units

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"T" series roof exhaust units with metal structure

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"TP" series roof exhaust units with plastic construction

Fan trays

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"CVS" series fan trays with three or six fans

Technical notes

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Sizing for the choice of fan filter and roof unit

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Safety standards Type 1, 3R and 12

Gruppi filtro

Gruppi filtro serie "FF" con e senza ventilatore con sistema di montaggio a clip

Gruppi filtro serie "FPF" in un'ampia gamma di versioni con e senza ventilatore

Gruppi filtro serie "GF" con e senza ventilatore per quadri elettrici con elevato spessore

Accessori

Coperture metalliche per gruppi filtro serie "FF", "FPF" e "GF"

Adattatori plastici per gruppi filtro serie "FF", "FPF" e "GF"

Tasca portadocumenti

Torri di estrazione

Torri di estrazione serie "T" con struttura metallica

Torri di estrazione serie "TP" in materiale plastico

Cassetti di ventilazione

Cassetti di ventilazione serie "CVS" con tre o sei ventilatori

Note tecniche

Dimensionamento per la scelta del gruppo filtro e torrino

Standard di protezione Type 1, 3R e 12

General description

Descrizione generale

Fan Filters FF series

gruppi Filtro serie FF

The "FF" fan filters are the result of studies and researches aimed at improving the previous "FPF" line and developing a safe and easy-to-use product.

The "FF" series presents an innovative and fast mounting tool-less system with clips, which allows to fix the filter just pushing it onto the enclosure.

The FF fan filters are featured by important technical improvements, like the substitution of the seal between the base and the cover by ribbing that facilitates water runoff to the outside, as well as other structural tricks to reduce the risk of infiltration.

The cover is fixed to and released from base via sliding catches, so the media can be replaced from the outside without the use of tools, in totally safety.

The product is available either with or without fan in standard (B flow) or reverse air flow version (A flow), on request (see ill.1).

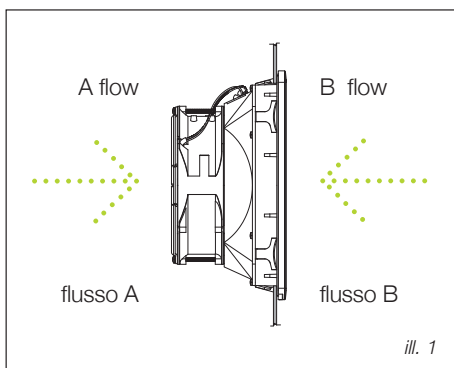
I gruppi filtro "FF" sono il risultato di studi e ricerche per migliorare la precedente linea "FPF" e sviluppare un prodotto sicuro e semplice da utilizzare.

La serie "FF" elimina l'impiego di utensili presentando un innovativo e rapido sistema di montaggio a clip, che consente l'aggancio del filtro con una semplice pressione nella sede del quadro.

I gruppi filtro "FF" sono caratterizzati da significativi miglioramenti tecnici, come la rimozione della guarnizione tra base e coperchio a favore di una serie di nervature che facilitano il deflusso dell'acqua, ed altri accorgimenti strutturali che riducono il rischio di infiltrazioni.

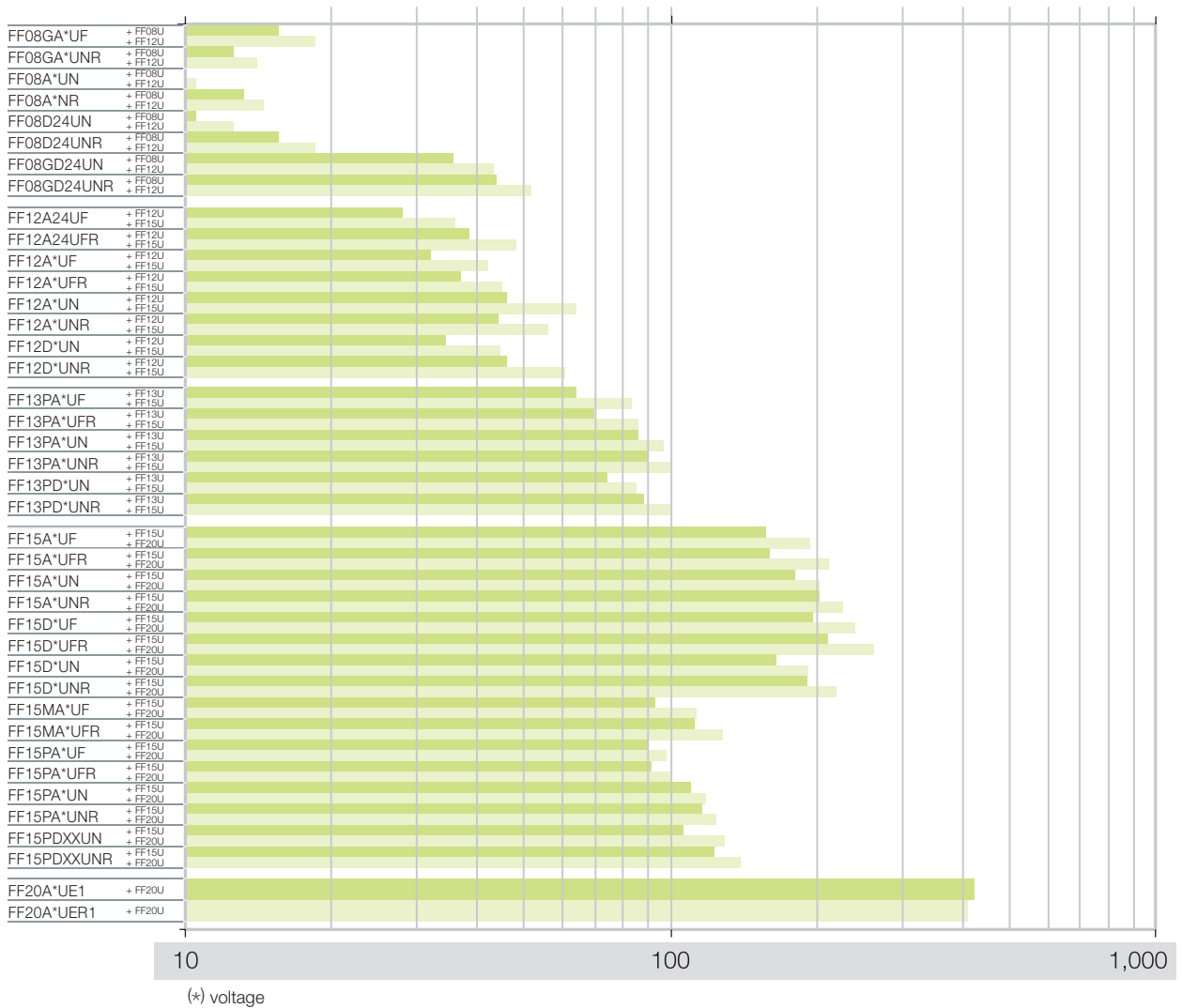
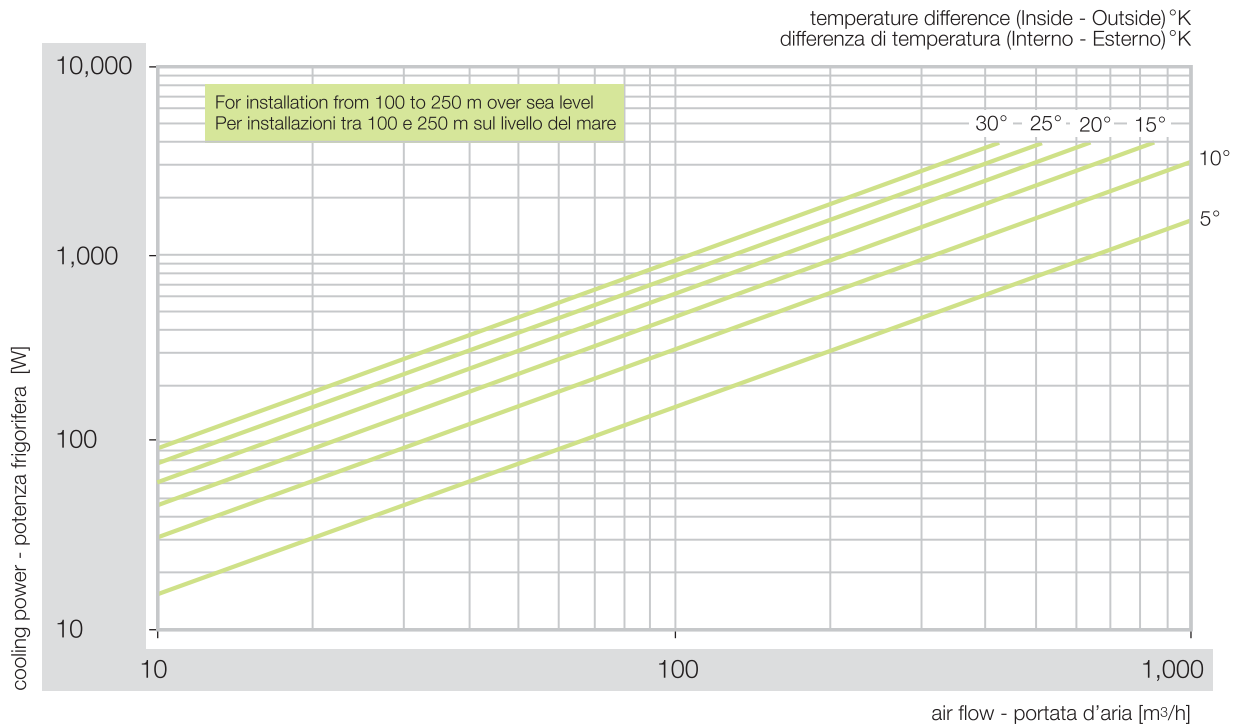
In termini di sicurezza, l'aggancio a scorrimento della base sul coperchio permette la sostituzione del pannello dall'esterno senza l'utilizzo di attrezzature.

Il prodotto è disponibile con o senza ventilatore nella versione con flusso d'aria standard (Flusso B) o inverso (Flusso A), su richiesta (vedi ill.1).



Selection chart (50 Hz)

Diagramma di scelta (50 Hz)



General specifications

Specifiche generali



- Mounting without screws in square openings as indicated in the cut-out diagram
 - plate thickness between 1 and 2,5 mm
 - possible fixing with V-shaped head screws (not supplied)
- Plastic parts in PC/ABS alloy, except elastic clips, made in PA66 GF13HSL
- Standard colour RAL 7035, other colours available on request, subject to quantity
- Permanent sealing gasket in polyurethane foam
- Filter media in thermo-linked progressive structure synthetic fibre
 - filter class G3, according to EN 779
 - filter class G4, according to EN 779 for products with options 5 and N
 - UL 900 Class 2 approved and self-extinguishing in F1 class, according to DIN 53 438
 - filter media can be cleaned, up to 10 times by washing, blowing dry and lightly beating
- Shielded and self-lubricating ball bearing fans
- IP54 standard protection degree, according to EN 60529 and Type 12, according to UL 50
 - IP55 protection degree on request (option 5), according to EN 60529
 - Type 1 on request (option O), according to UL 50
- EMC version available (option C) on request to shield electromagnetic waves
- Standard air flow direction from the outside to the inside of the cabinet (B Flow)
 - flow A (option R) available on request
- UL (Underwriters Laboratories) approval, according to UL 508 and UL 507 (pending).

- Montaggio senza viti in aperture di forma quadrata come da schema di foratura
 - spessore della lamiera compreso tra 1 e 2,5 mm
 - eventuale fissaggio attraverso viti a testa svasata (non fornite)
- Parti plastiche in PC/ABS, ad eccezione delle clip elastiche che sono realizzate con PA66 GF13HSL
- Colore standard grigio RAL 7035, altri colori disponibili su richiesta e per qualità
- Guarnizione di tenuta in schiuma poliuretana posizionata a macchina
- Panno filtro in fibre sintetiche termolegate a struttura progressiva
 - classe di filtrazione G3 secondo EN 779
 - classe di filtrazione G4 secondo EN 779 per prodotti con opzioni 5 e N
 - omologato UL 900 Classe 2 e autoestinguente al grado F1 secondo DIN 53 438
 - i panni filtro possono essere puliti fino a 10 volte mediante lavaggio, soffiatura e battitura
- Ventilatori su cuscinetti a sfera schermati e autolubrificati
- Grado di protezione standard IP54 secondo EN 60529 e Type 12 secondo UL 50
 - disponibile su richiesta il grado di protezione IP55 (opzione 5) secondo EN 60529
 - disponibile su richiesta il grado di protezione Type 1 (opzione O) secondo UL 50
- Disponibile versione EMC (opzione C) per schermare le onde elettromagnetiche
- Flusso d'aria standard dall'esterno verso l'interno dell'involucro (Flusso B)
 - disponibile su richiesta il Flusso A (opzione R)
- Omologazione UL (Underwriters Laboratories) secondo UL 508 e UL 507 (in corso di ottenimento).

description	FF 15 P A 230 U N R 5 C 1 O -SXX	description
FAMILY FF		CUSTOM SERIES
DIMENSION CODE		SXX = custom version
08 - 106.5 x 106.5 12 - 150 x 150		FILTER
13 - 204 x 204 15 - 250 x 250		() = with filter mat O = without filter mat
20 - 325 x 325		VERSION
FAN SIZE		EMC C = EMC shielded
P = small M = medium G = large		IP PROTECTION 5 = IP55
GE = large with plastic adaptor () = standard		AIR FLOW DIRECTION
VOLTAGE A = a.c. voltage D = d.c. voltage		() = standard flow R = reverse flow
RATED VOLTAGE		FAN SUPPLIER
115 = 115 V.a.c. 230 = 230 V.a.c. 400T = 400 3~		N = NMB internal fan F = Fandis internal fan
24 = 24 V.d.c. 48 = 48 V.d.c.		E = Ecofit internal fan
COLOUR		
R = grey RAL 7032 U = grey RAL 7035 N = black RAL 9005		

Technical data

Dati tecnici

Model	Voltage	Frequency	Rated current	Rated Power	Max Air Flow	Static Pressure	Fan Noise	Weight	Rated Temp. Range	Approvals
	(V)	(Hz)	(mA)	(W)	(m³/h)**	(Pa)	[dB(A)]	(Kg)	(°C)	
FF08A115UN	115 V a.c.	50/60	113/92	9.0/7.0	12/15	23/33	31.0/33.0	0.39	-10 ~ +55	CE cURus
FF08A115UNR	115 V a.c.	50/60	111/93	9.0/7.5	16/21	45/64	31.0/33.0	0.39	-10 ~ +55	CE cURus
FF08A230UN	230 V a.c.	50/60	62/50	10/8.0	12/15	23/33	31.0/33.0	0.39	-10 ~ +55	CE cURus
FF08A230UNR	230 V a.c.	50/60	63/52	10/8.0	16/21	45/64	31.0/33.0	0.39	-10 ~ +55	CE cURus
FF08D24UN	24 V d.c.	-	85	2.0	15	25	30.0	0.18	-10 ~ +55	CE cURus
FF08D24UNR	24 V d.c.	-	92	2.2	21	42	30.0	0.18	-10 ~ +55	CE cURus
FF08GA115UF	115 V a.c.	50/60	145/127	12/10	22/26	41/57	37.0/42.0	0.54	-10 ~ +55	CE cURus
FF08GA115UNR	230 V a.c.	50/60	133/113	12/9.0	16/20	40/60	33.5/38.0	0.54	-10 ~ +55	CE cURus
FF08GA230UF	230 V a.c.	50/60	78/68	12/11	22/26	41/57	37.0/42.0	0.39	-10 ~ +55	CE cURus
FF08GA230UNR	230 V a.c.	50/60	65/56	12/10	16/20	40/60	33.5/38.0	0.54	-10 ~ +55	CE cURus
● FF08GD24UN	24 V d.c.	-	610	15	50	160	59.0	0.39	-10 ~ +55	CE cURus
FF08GD24UNR	24 V d.c.	-	710	17	60	200	59.0	0.18	-10 ~ +55	CE cURus
FF08U								0.07	-10 ~ +60	CE cURus
FF12A115UF	115 V a.c.	50/60	200/180	16/15	45/50	55/62	46.0/49.0	0.76	-10 ~ +55	CE cURus
FF12A115UFR	115 V a.c.	50/60	200/180	16/15	47/52	72/82	46.0/49.0	0.76	-10 ~ +55	CE cURus
* FF12A115UN	115 V a.c.	50/60	252/220	19/17	67/79	73/86	40.0/44.0	0.78	-10 ~ +55	CE cURus
* FF12A115UNR	115 V a.c.	50/60	247/220	19/17	60/70	86/115	40.0/44.0	0.78	-10 ~ +55	CE cURus
FF12A230UF	230 V a.c.	50/60	110/100	18/17	45/50	55/62	48.0/54.0	0.76	-10 ~ +55	CE cURus
FF12A230UFR	230 V a.c.	50/60	110/100	18/17	47/52	72/82	48.0/54.0	0.76	-10 ~ +55	CE cURus
FF12A230UN	230 V a.c.	50/60	130/100	18/16	67/79	73/86	40.0/44.0	0.78	-10 ~ +55	CE cURus
FF12A230UNR	230 V a.c.	50/60	130/100	18/16	60/70	86/115	40.0/44.0	0.78	-10 ~ +55	CE cURus
FF12A24UF	24 V a.c.	50/60	77/76	15/15	39/44	43/41	46.0/49.0	0.74	-10 ~ +60	CE
FF12A24UFR	24 V a.c.	50/60	77/76	15/15	50/52	59/40	46.0/49.0	0.74	-10 ~ +60	CE
FF12D24UN	24 V d.c.	-	310	7.4	47	56	42.5	0.45	-10 ~ +55	CE UR
FF12D24UNR	24 V d.c.	-	310	7.4	64	79	42.5	0.45	-10 ~ +55	CE UR
FF12D48UN	48 V d.c.	-	180	8.6	47	56	42.5	0.45	-10 ~ +55	CE UR
FF12D48UNR	48 V d.c.	-	180	8.6	64	79	42.5	0.45	-10 ~ +55	CE UR
FF12U								0.18	-10 ~ +60	CE cURus
FF13PA115UF	115 V a.c.	50/60	213/202	19/18	100/110	55/60	46.0/49.0	0.94	-10 ~ +55	CE cURus
FF13PA115UFR	115 V a.c.	50/60	215/200	18/18	100/110	70/80	46.0/49.0	0.94	-10 ~ +55	CE cURus
FF13PA115UN	115 V a.c.	50/60	200/180	16/15	110/130	80/100	40.0/44.0	0.96	-10 ~ +55	CE cURus
FF13PA115UNR	115 V a.c.	50/60	257/224	20/18	110/135	100/120	40.0/44.0	0.96	-10 ~ +55	CE cURus
FF13PA230UF	230 V a.c.	50/60	106/100	18/18	100/110	55/60	48.0/54.0	0.96	-10 ~ +55	CE cURus
FF13PA230UFR	230 V a.c.	50/60	106/100	18/18	100/110	70/80	48.0/54.0	0.96	-10 ~ +55	CE cURus
FF13PA230UN	230 V a.c.	50/60	126/110	19/17	110/130	80/100	40.0/44.0	0.96	-10 ~ +55	CE cURus
FF13PA230UNR	230 V a.c.	50/60	128/110	19/18	110/135	100/120	40.0/44.0	0.96	-10 ~ +55	CE cURus
FF13PD24UN	24 V d.c.	-	342	8.2	100	60	42.0	0.64	-10 ~ +55	CE UR
FF13PD24UNR	24 V d.c.	-	355	8.5	120	83	42.0	0.64	-10 ~ +55	CE UR
FF13U								0.26	-10 ~ +60	CE cURus
FF15A115UF	115 V a.c.	50/60	280/260	31/31	230/270	115/155	50.0/55.0	1.5	-10 ~ +55	CE cURus
FF15A115UFR	115 V a.c.	50/60	280/230	31/26	245/290	165/210	50.0/55.0	1.5	-10 ~ +55	CE cURus
FF15A115UN	115 V a.c.	50/60	227/266	27/32	225/255	145/150	52.0/56.0	1.4	-10 ~ +50	CE
FF15A115UNR	115 V a.c.	50/60	299/268	27/32	240/275	185/200	52.0/56.0	1.4	-10 ~ +50	CE
* FF15A230UF	230 V a.c.	50/60	134/160	32/36	230/270	115/155	50.0/55.0	1.5	-10 ~ +55	CE cURus
* FF15A230UFR	230 V a.c.	50/60	135/160	32/36	245/290	165/210	50.0/55.0	1.5	-10 ~ +55	CE cURus

* cURus approvals only at 60 Hz (***) data with uncertainty of 15%

● IP44

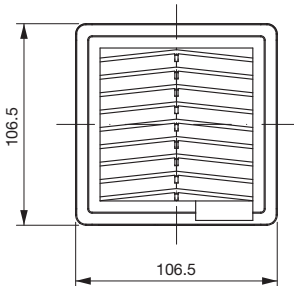
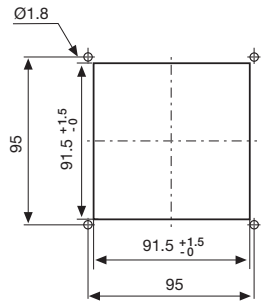
Model	Voltage	Frequency	Rated current	Rated Power	Max Air Flow	Static Pressure	Fan Noise	Weight	Rated Temp. Range	Approvals
	(V)	(Hz)	(mA)	(W)	(m ³ /h)**	(Pa)	[dB(A)]	(Kg)	(°C)	
FF15A230UN	230 V a.c.	50/60	140/170	32/38	225/255	145/150	52.0/56.0	1.4	-10 ~ +50	CE
FF15A230UNR	230 V a.c.	50/60	140/170	32/38	240/275	185/200	52.0/56.0	1.4	-10 ~ +50	CE
FF15D24UF	24 V d.c.	-	1300	31	280	150	60.0	1.4	-10 ~ +55	CE cURus
FF15D24UFR	24 V d.c.	-	1300	31	300	205	60.0	1.4	-10 ~ +55	CE cURus
FF15D24UN	24 V d.c.	-	710	17	225	99	58.0	1.4	-10 ~ +55	CE UR
FF15D24UNR	24 V d.c.	-	710	17	255	140	58.0	1.4	-10 ~ +55	CE UR
FF15D48UF	48 V d.c.	-	1300	62	280	150	68.0	1.4	-10 ~ +70	CE
FF15D48UFR	48 V d.c.	-	1300	62	300	205	68.0	1.4	-10 ~ +70	CE
FF15D48UN	48 V d.c.	-	340	16	225	99	60.0	1.4	-10 ~ +55	CE UR
FF15D48UNR	48 V d.c.	-	340	16	255	140	60.0	1.4	-10 ~ +55	CE UR
FF15MA115UF	115 V a.c.	50/60	230/190	16/15	130/145	63/39	46.0/50.0	1.2	-10 ~ +70	CE
FF15MA115UFR	115 V a.c.	50/60	230/190	16/15	140/155	80/55	46.0/50.0	1.2	-10 ~ +70	CE
FF15MA230UF	230 V a.c.	50/60	140/130	21/20	130/145	63/39	46.0/50.0	1.2	-10 ~ +70	CE
FF15MA230UFR	230 V a.c.	50/60	140/130	21/20	140/155	80/55	46.0/50.0	1.2	-10 ~ +70	CE
FF15PA115UF	115 V a.c.	50/60	210/210	17/16	105/120	54/57	46.0/49.0	1.2	-10 ~ +55	CE cURus
FF15PA115UFR	115 V a.c.	50/60	210/210	17/16	110/120	66/70	46.0/49.0	1.2	-10 ~ +55	CE cURus
FF15PA115UN	115 V a.c.	50/60	253/225	20/19	125/145	80/100	40.0/44.0	1.3	-10 ~ +55	CE cURus
FF15PA115UNR	115 V a.c.	50/60	254/227	20/19	130/150	100/120	40.0/44.0	1.3	-10 ~ +55	CE cURus
FF15PA230UF	230 V a.c.	50/60	110/100	18/17	105/120	54/57	48.0/54.0	1.2	-10 ~ +55	CE cURus
FF15PA230UFR	230 V a.c.	50/60	110/100	18/17	110/120	66/70	48.0/54.0	1.2	-10 ~ +55	CE cURus
FF15PA230UN	230 V a.c.	50/60	126/110	19/17	125/145	80/100	40.0/44.0	1.3	-10 ~ +55	CE cURus
FF15PA230UNR	230 V a.c.	50/60	127/111	19/18	130/150	100/120	40.0/44.0	1.3	-10 ~ +55	CE cURus
FF15PD24UN	24 V d.c.	-	320	7.6	140	63	42.0	0.90	-10 ~ +55	CE cURus
FF15PD24UNR	24 V d.c.	-	320	7.6	150	84	42.0	0.90	-10 ~ +55	CE cURus
FF15PD48UN	48 V d.c.	-	180	8.6	140	63	42.5	0.90	-10 ~ +55	CE UR
FF15PD48UNR	48 V d.c.	-	180	8.6	150	84	42.5	0.90	-10 ~ +55	CE UR
FF15U								0.42	-10 ~ +60	CE cURus
FF20A115UE	115 V a.c.	50/60	530/650	60/74	520/580	160/185	66.0/69.2	3.1	-10 ~ +70	CE
FF20A115UE1	115 V a.c.	50/60	630/730	74/83	520/580	160/190	66.0/69.2	3.1	-10 ~ +55	CE cURus
FF20A115UER	115 V a.c.	50/60	580/640	64/73	550/610	180/195	66.0/69.2	3.1	-10 ~ +70	CE
FF20A115UER1	115 V a.c.	50/60	680/730	74/83	550/610	180/195	66.0/69.2	3.1	-10 ~ +55	CE cURus
FF20A230UE	230 V a.c.	50/60	318/381	73/87	520/580	160/185	65.3/68.1	3.1	-10 ~ +70	CE
FF20A230UE1	230 V a.c.	50/60	310/350	70/85	520/580	160/190	65.3/68.1	3.1	-10 ~ +55	CE cURus
FF20A230UER	230 V a.c.	50/60	322/376	74/86	550/610	180/195	65.3/68.1	3.1	-10 ~ +70	CE
FF20A230UER1	230 V a.c.	50/60	366/407	70/85	550/610	180/195	65.3/68.1	3.1	-10 ~ +55	CE cURus
FF20A400TUE	400 3 ~	50/60	252/n.a.	169/n.a.	540/n.a.	180/n.a.	69.8/72.7	3.1	-10 ~ +70	CE
FF20GEA400TUE	400 3 ~	50/60	237/n.a.	160/n.a.	515/n.a.	190/n.a.	71.0/72.7	3.1	-10 ~ +55	CE
FF20GA115UE	115	50/60	1490/1850	165/215	730/820	210/210	74.7/78.9	4.25	-10 - +60	CE
FF20GA115UE1	115	50/60	1470/1840	165/215	670/760	210/220	74.7/78.9	4.25	-10 - +55	CE cURus
FF20GA115UER	115	50/60	1560/1940	175/225	740/840	305/300	74.7/78.9	4.25	-10 - +60	CE
FF20GA115UER1	115	50/60	1540/1930	175/225	740/840	315/320	74.7/78.9	4.25	-10 - +55	CE cURus
FF20GA230UE	230	50/60	650/820	150/190	710/800	195/205	72.8/75.8	4.25	-10 - +60	CE
FF20GA230UE1	230	50/60	670/850	155/195	670/750	205/210	66.0/69.2	4.25	-10 - +55	CE cURus
FF20GA230UER	230	50/60	720/880	165/205	720/820	290/280	72.8/75.8	4.25	-10 - +60	CE
FF20GA230UER1	230	50/60	720/880	165/205	720/820	290/280	67.6/70.6	4.25	-10 - +55	CE cURus
FF20GA115UEA	115	50/60	1520/1880	170/220	820/930	215/220	74.7/78.9	4.25	-10 - +60	CE
FF20GA230UEA	230	50/60	660/820	155/190	820/930	215/220	72.8/75.8	4.25	-10 - +60	CE
FF20U								0.60	-10 ~ +60	CE cURus

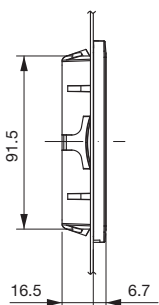
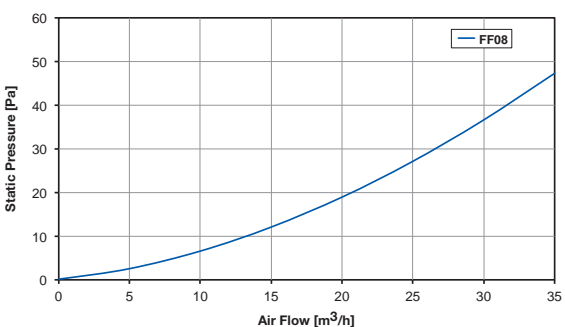
(**) data with uncertainty of 15%

● cURus pending

Technical specifications

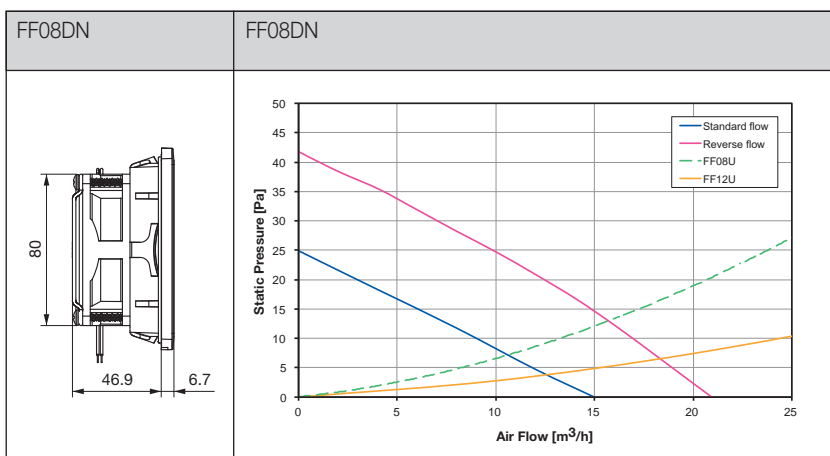
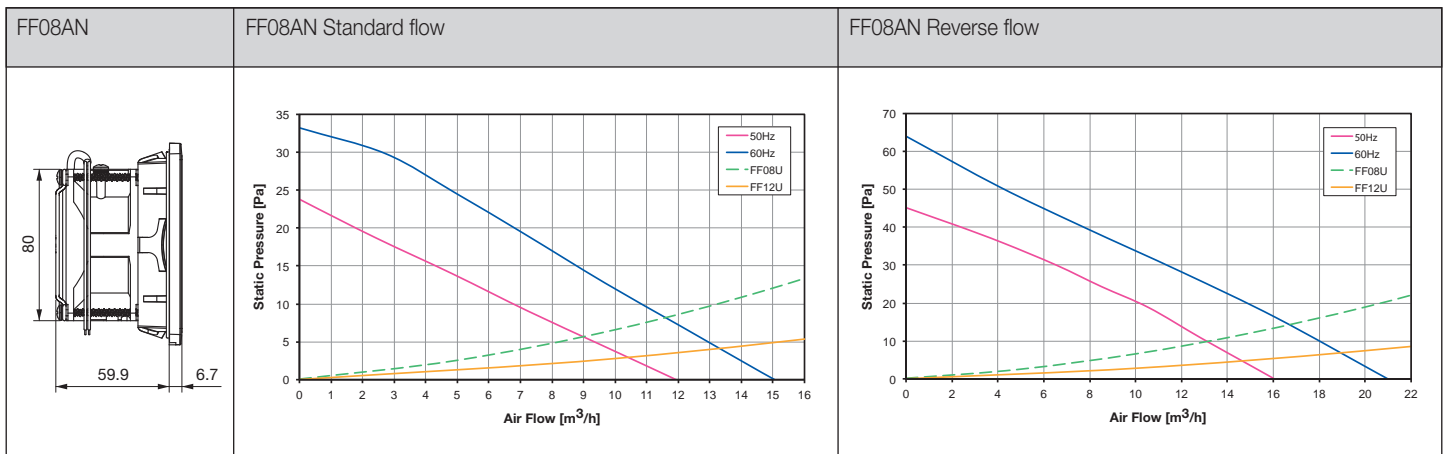
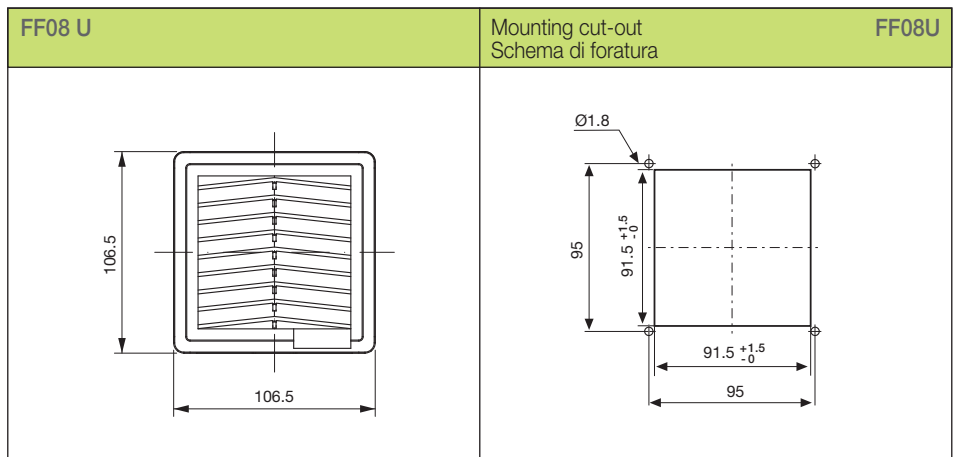
Specifiche tecniche

FF08 SERIES	Mounting cut-out Schema di foratura
	

FF08U Filter - Filtro	FF08U Filter - Filtro																		
	 <table border="1"> <caption>Approximate data points from the FF08U performance graph</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>Static Pressure [Pa]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>5</td><td>2</td></tr> <tr><td>10</td><td>5</td></tr> <tr><td>15</td><td>10</td></tr> <tr><td>20</td><td>18</td></tr> <tr><td>25</td><td>28</td></tr> <tr><td>30</td><td>40</td></tr> <tr><td>35</td><td>50</td></tr> </tbody> </table>	Air Flow [m³/h]	Static Pressure [Pa]	0	0	5	2	10	5	15	10	20	18	25	28	30	40	35	50
Air Flow [m³/h]	Static Pressure [Pa]																		
0	0																		
5	2																		
10	5																		
15	10																		
20	18																		
25	28																		
30	40																		
35	50																		

Dimensions mm
Dimensioni in mm

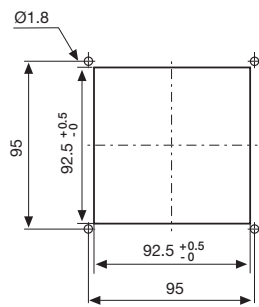
Technical specifications Specifiche tecniche



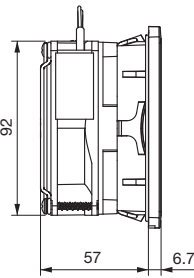
Dimensions mm
Dimensioni in mm

Mounting cut-out
Schema di foratura

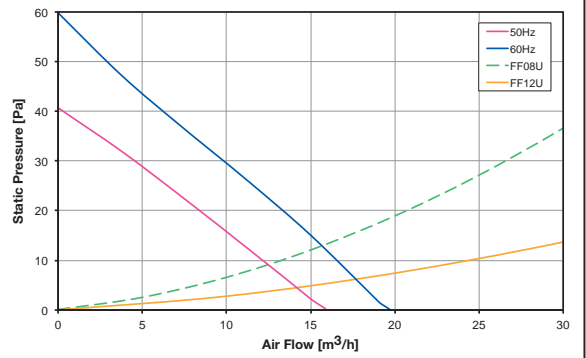
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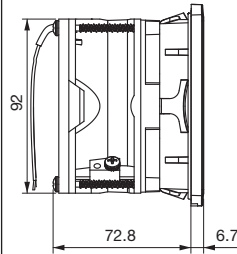
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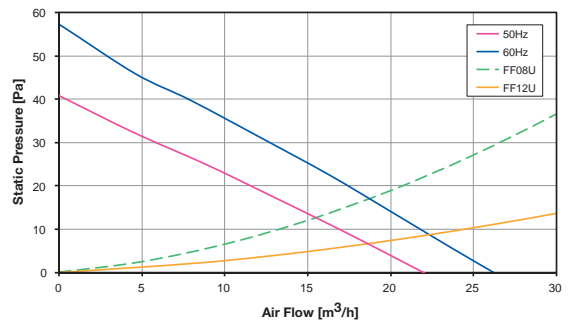
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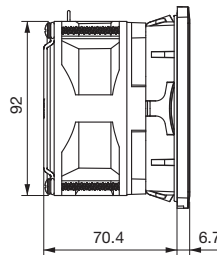
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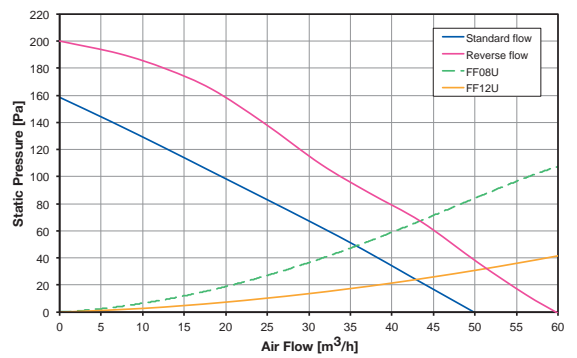
FF08GAF Standard flow



FF08GDN

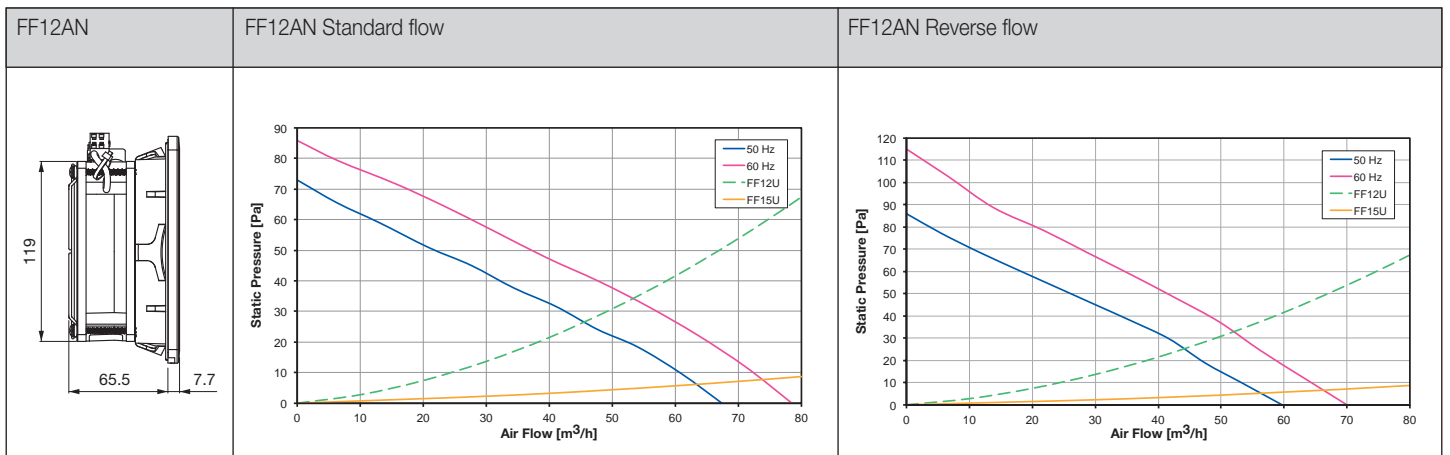
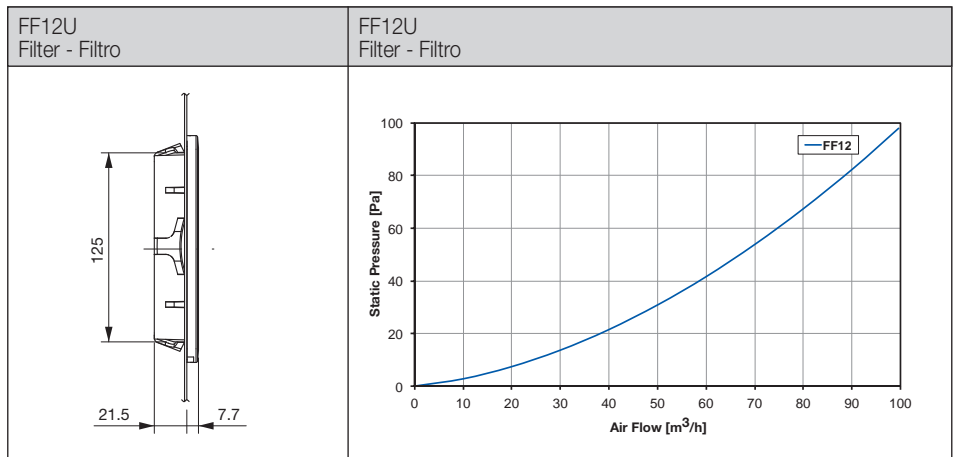
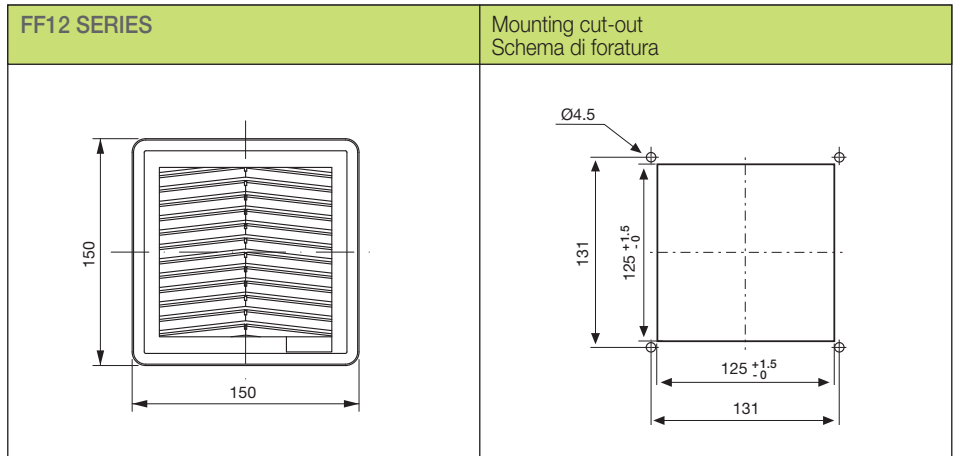


FF08GDN

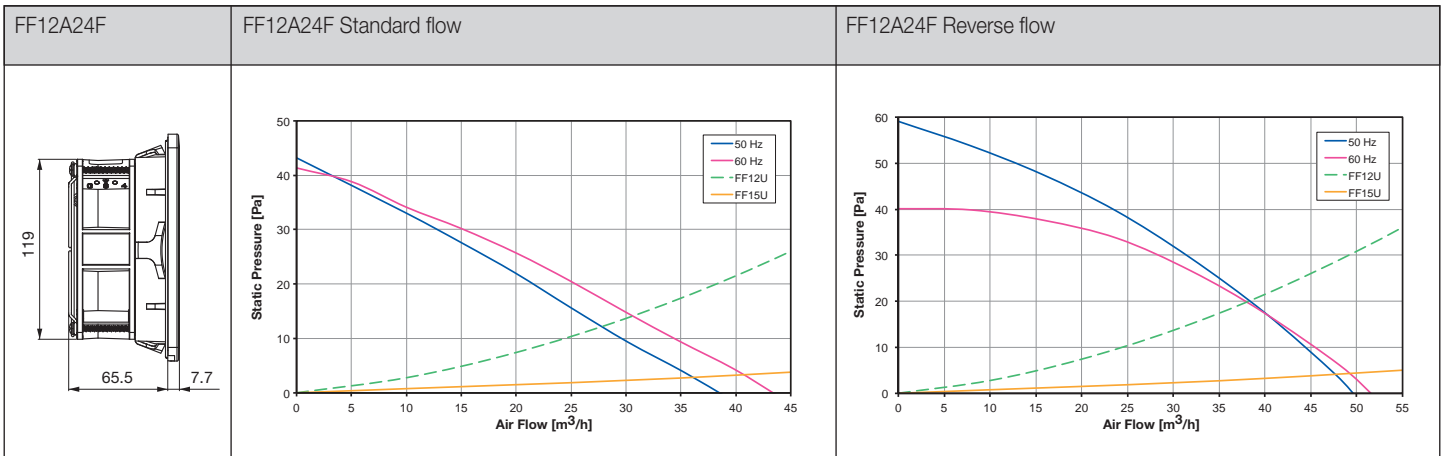
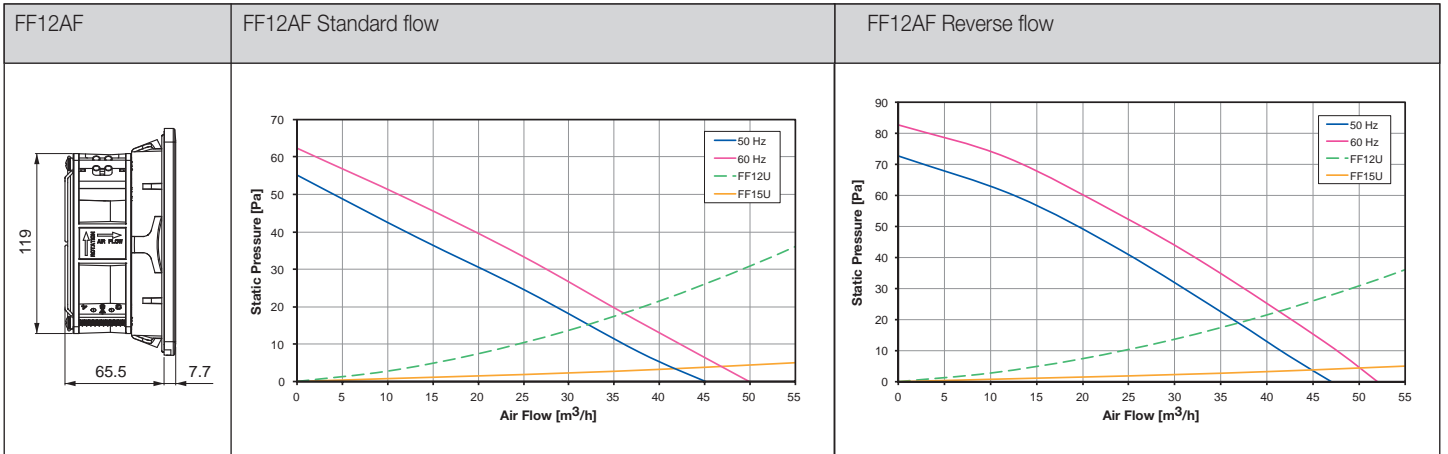
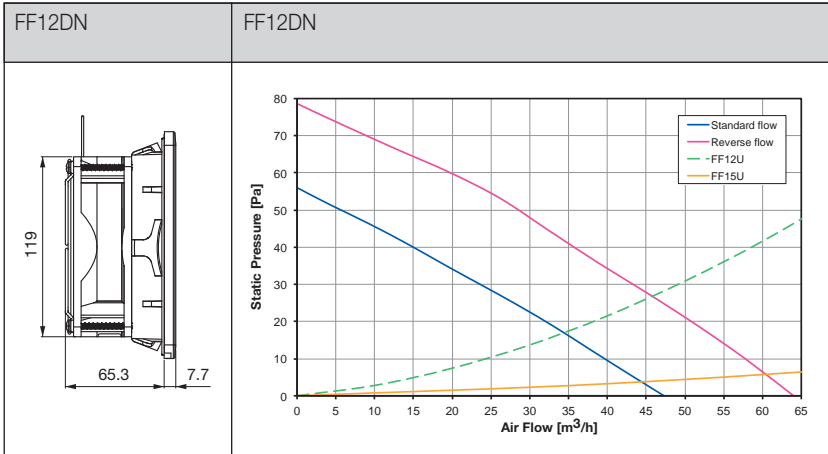


Dimensions mm
Dimensioni in mm

Technical specifications Specifiche tecniche



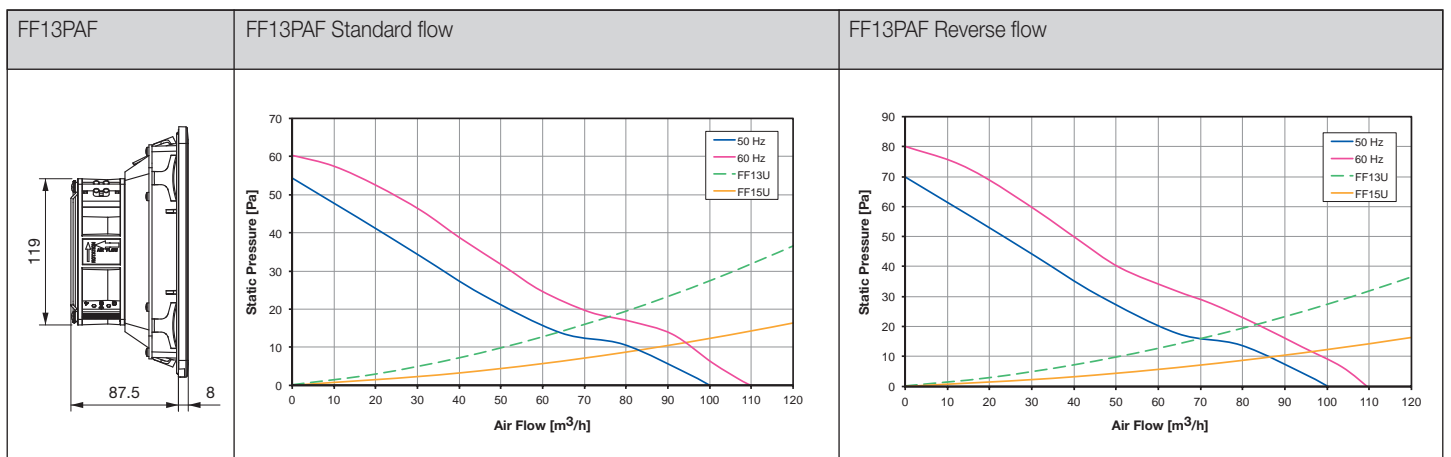
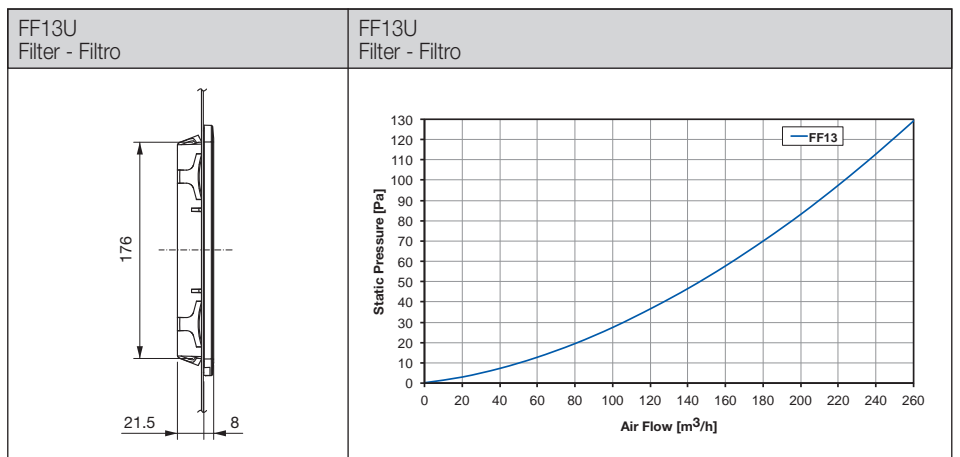
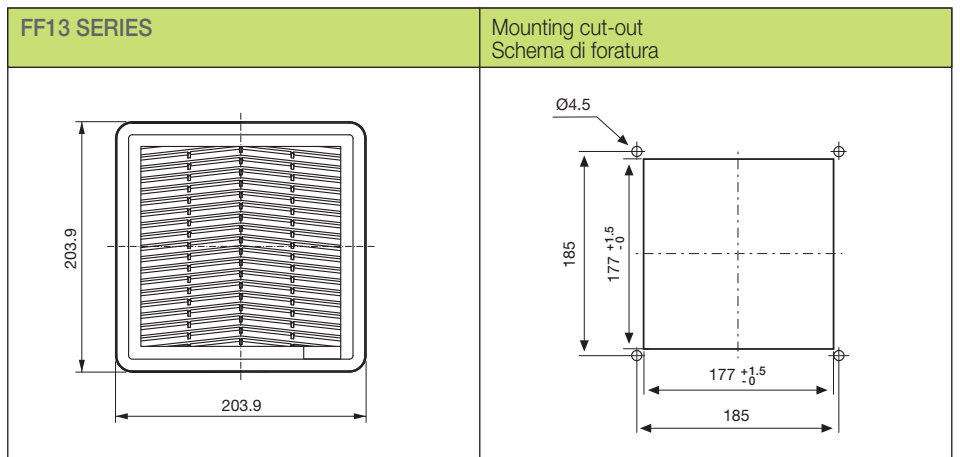
Dimensions mm
Dimensioni in mm



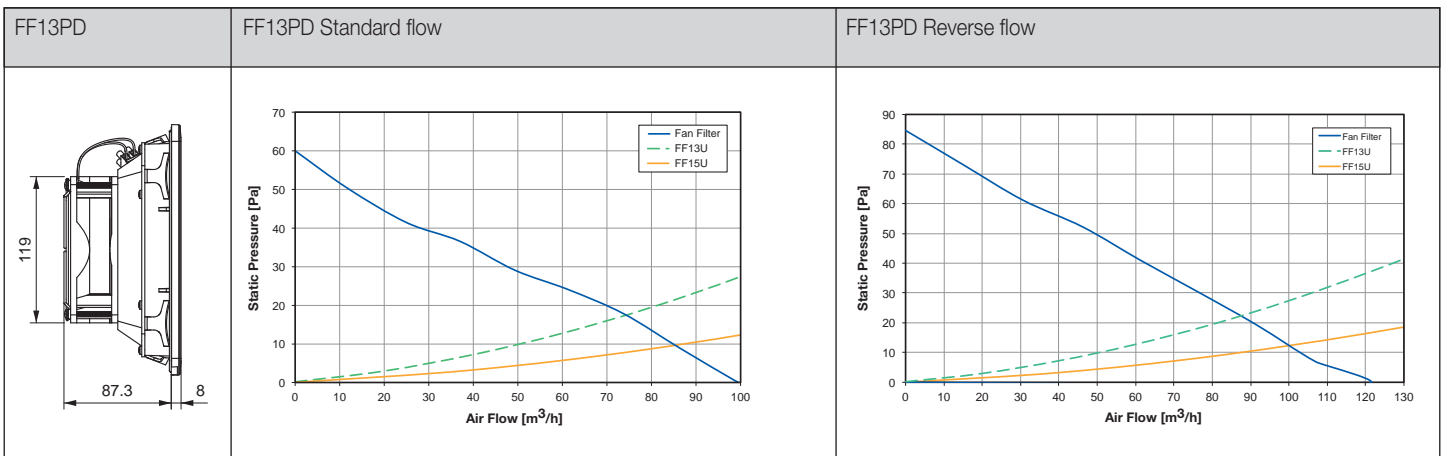
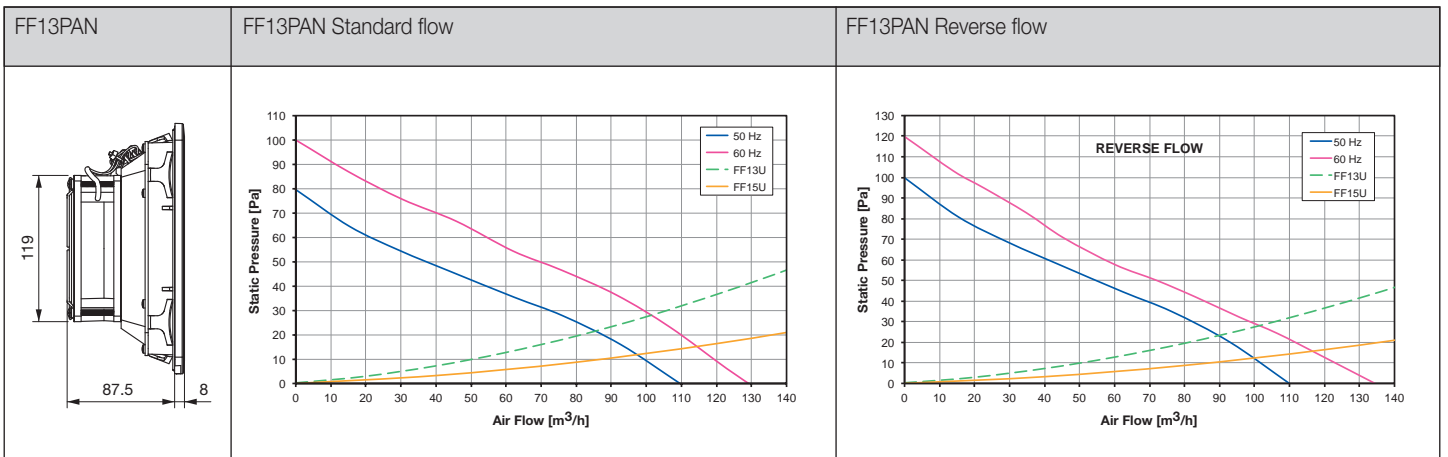
Dimensions mm
Dimensioni in mm

Technical specifications

Specifiche tecniche



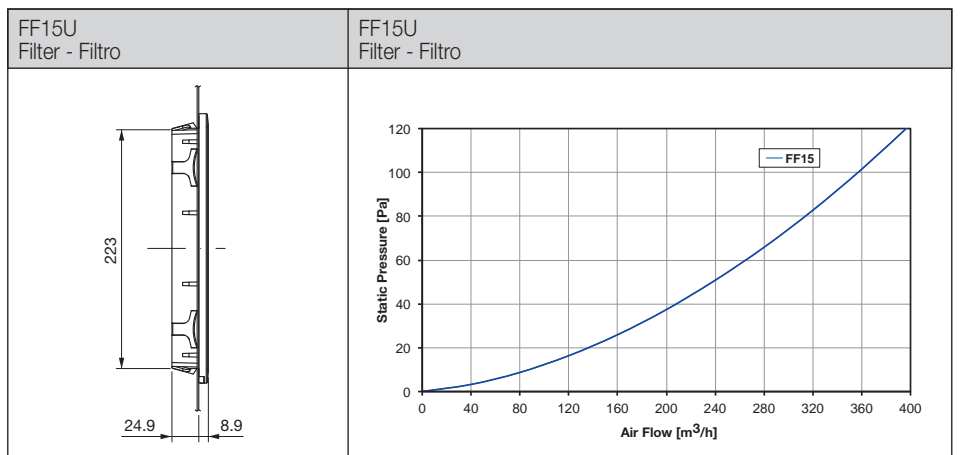
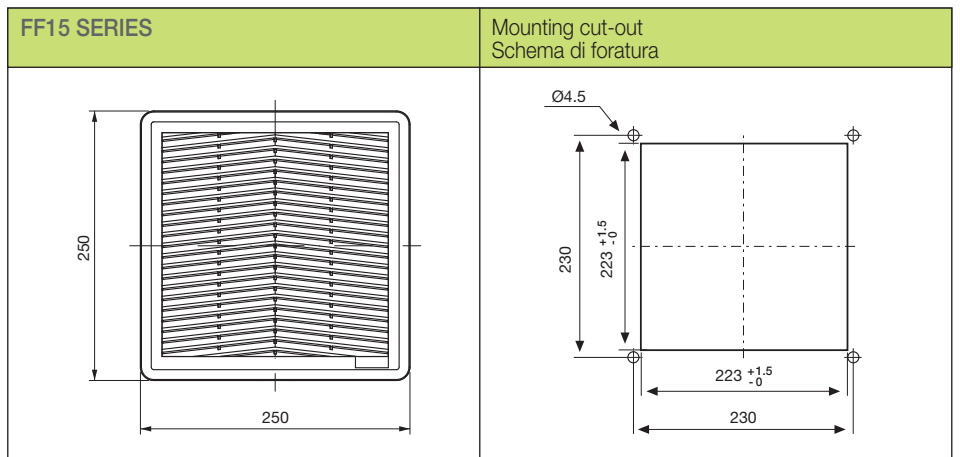
Dimensions mm
Dimensioni in mm



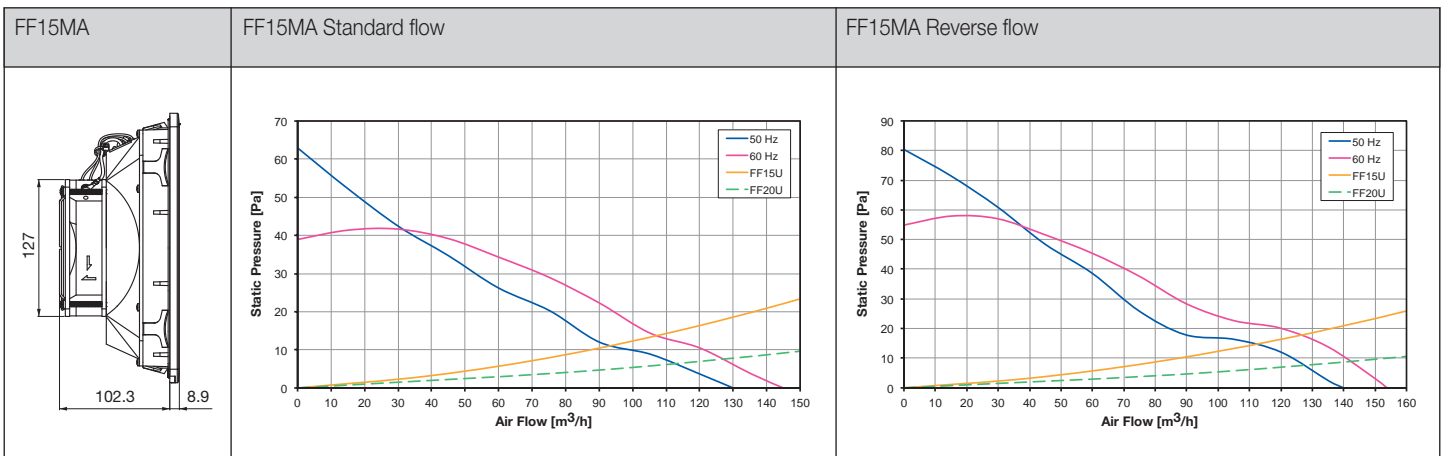
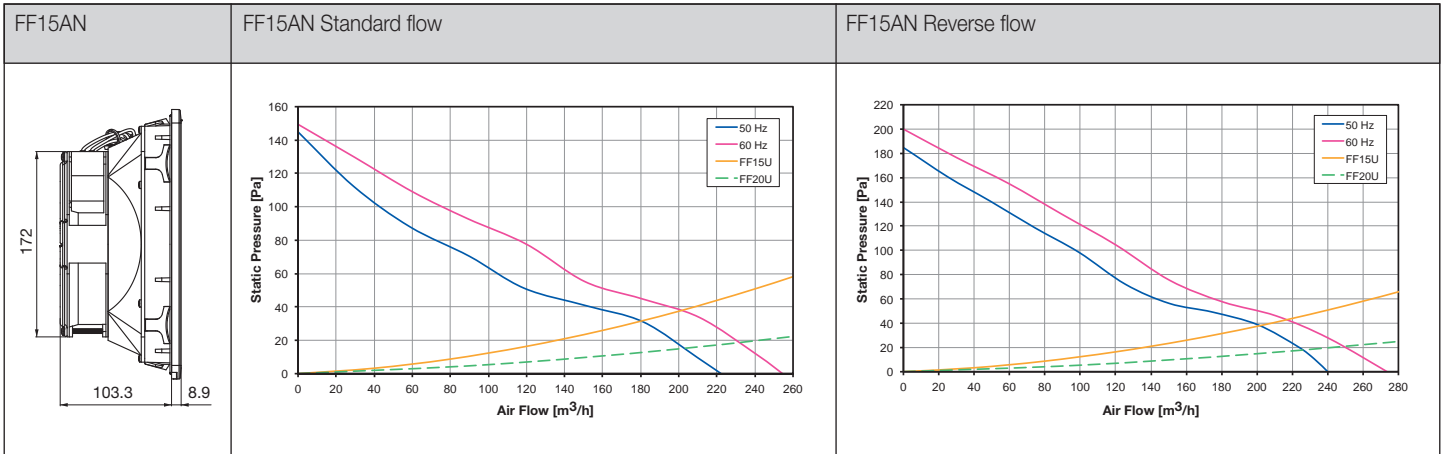
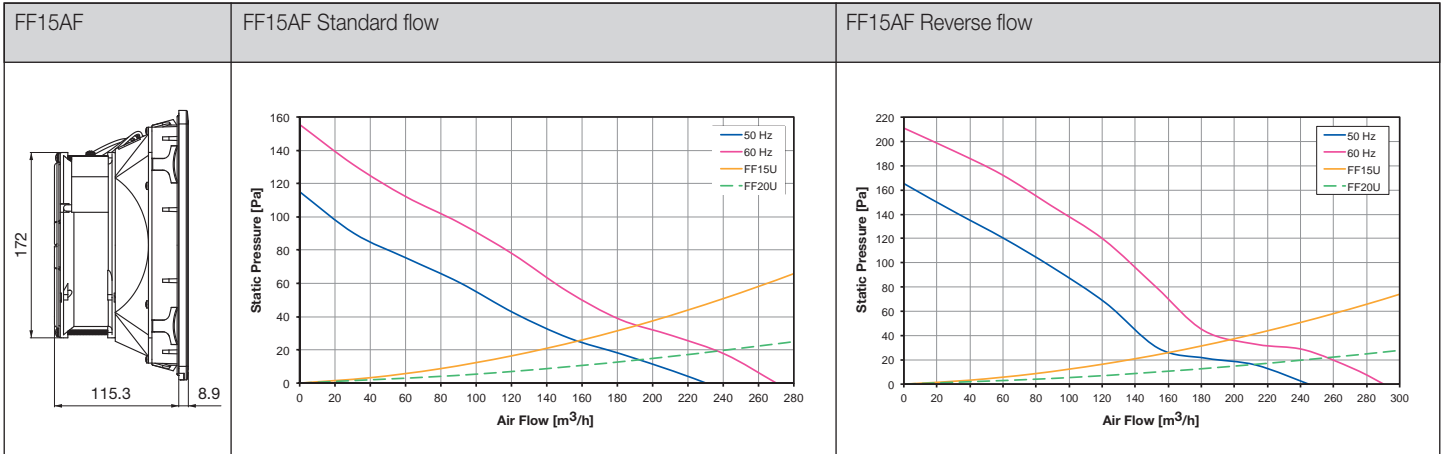
Dimensions mm
Dimensioni in mm

Technical specifications

Specifiche tecniche



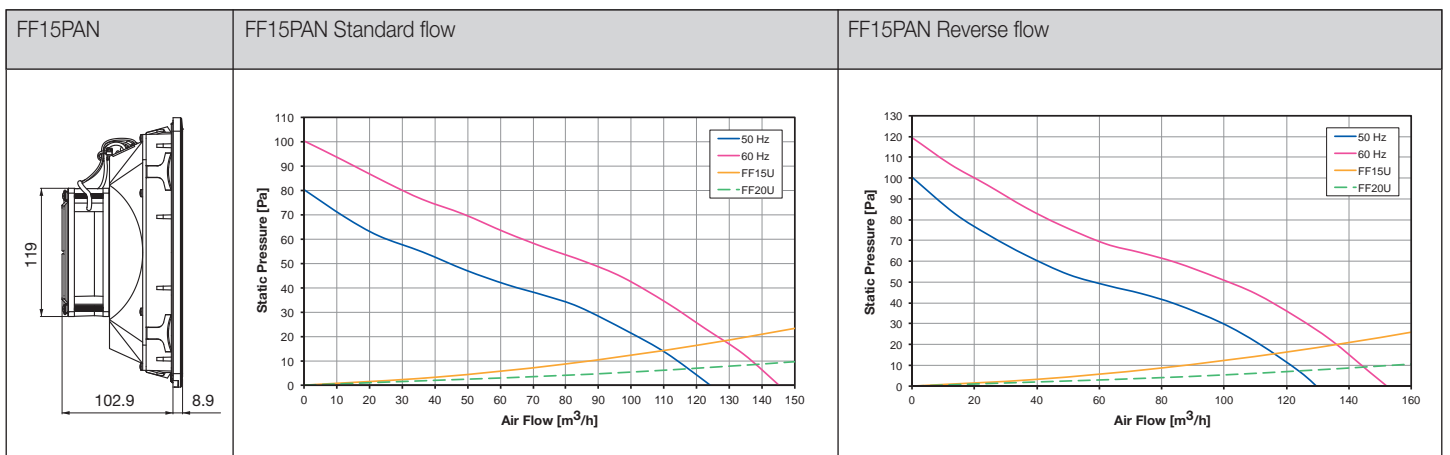
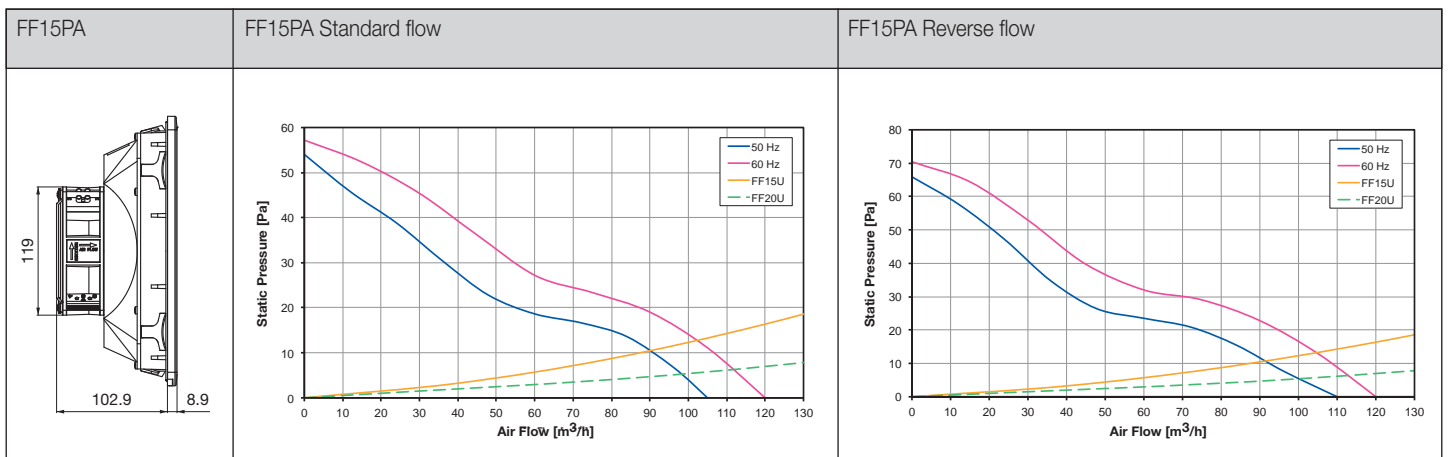
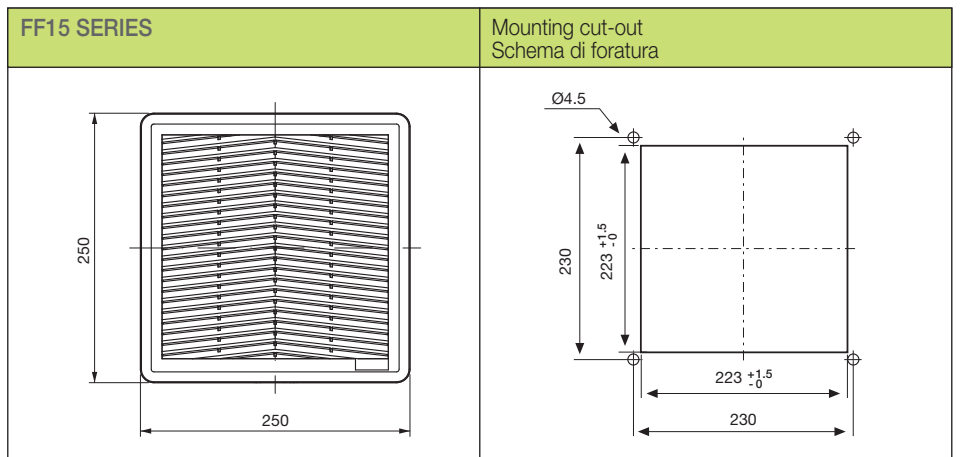
Dimensions mm
Dimensioni in mm



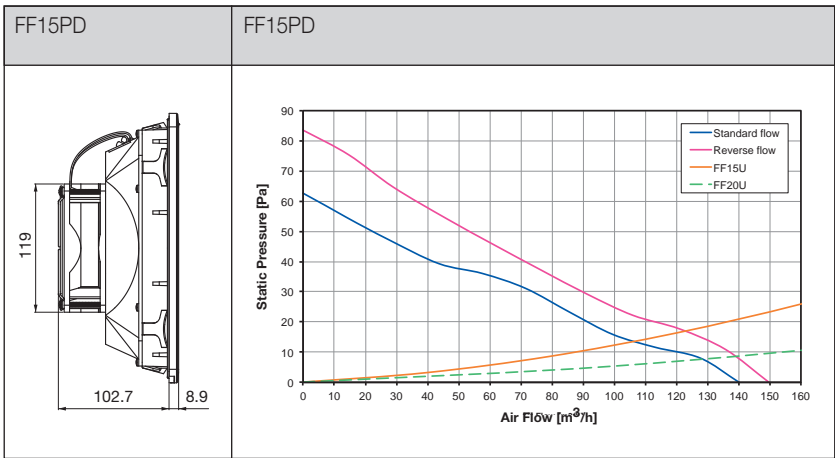
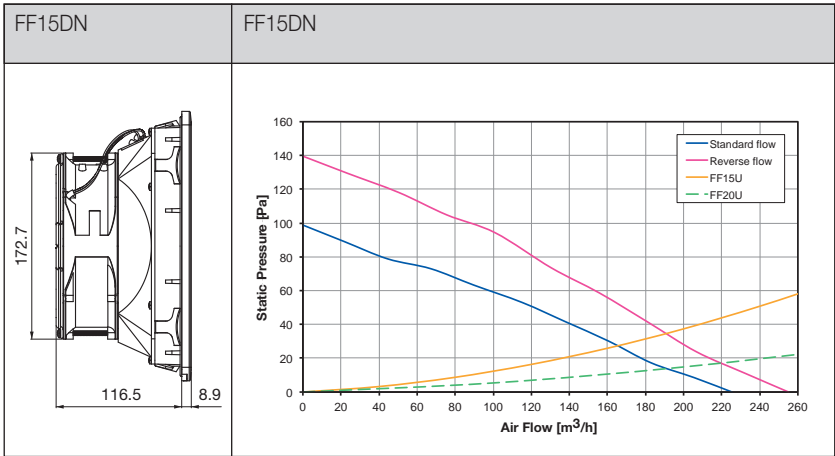
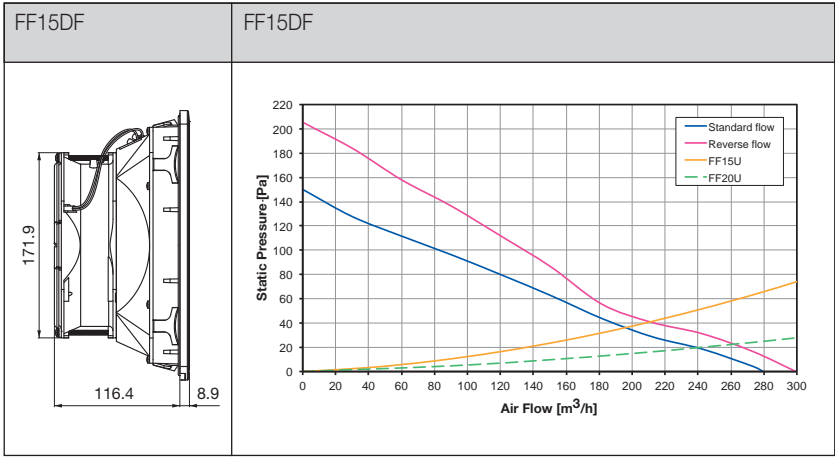
Dimensions mm
Dimensioni in mm

Technical specifications

Specifiche tecniche



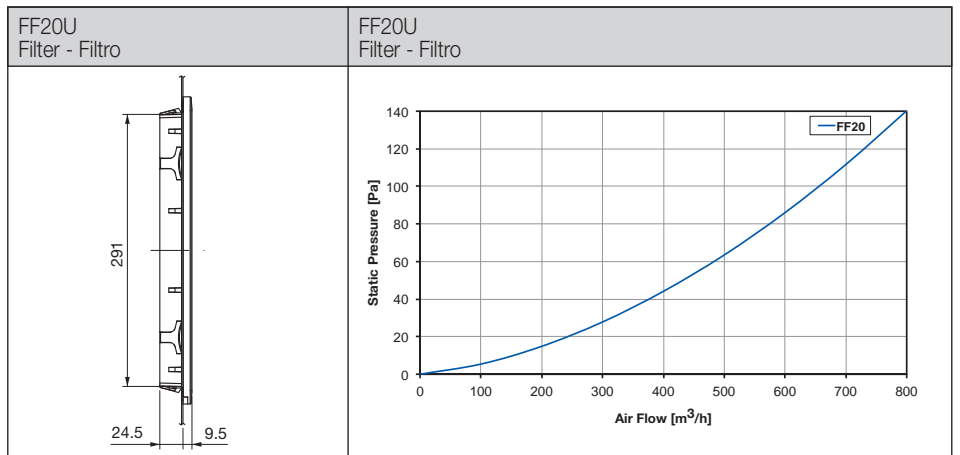
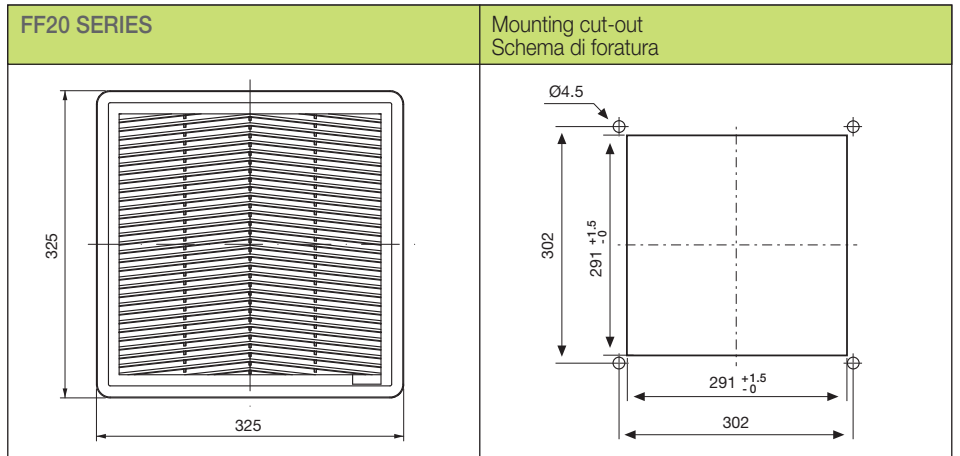
Dimensions mm
Dimensioni in mm



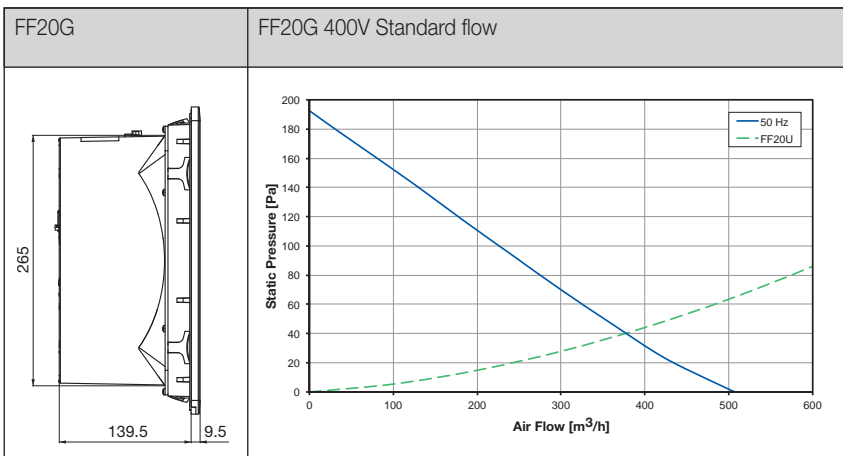
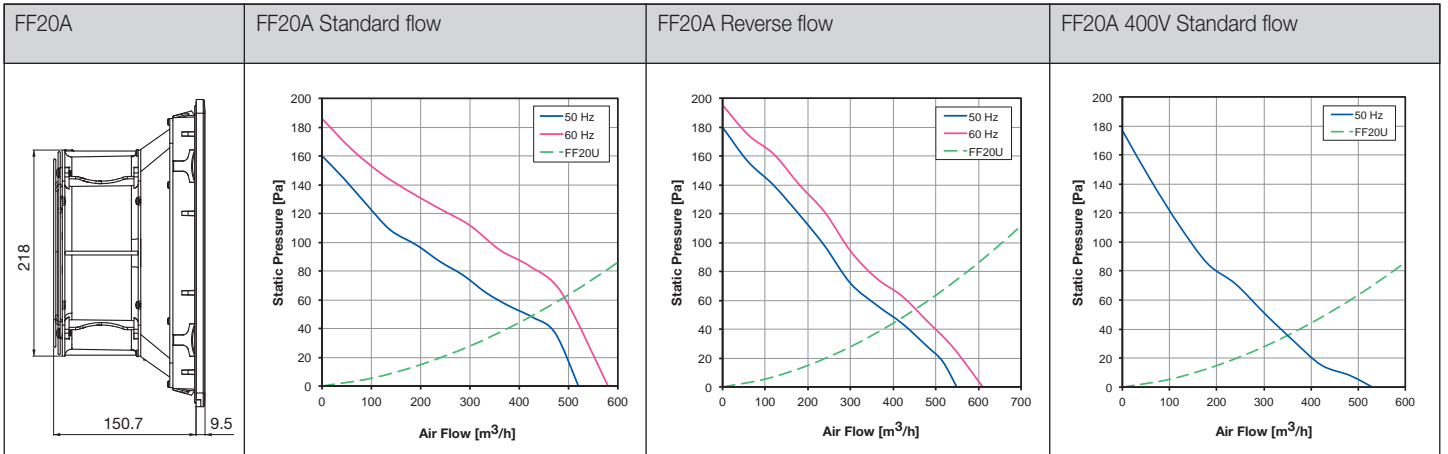
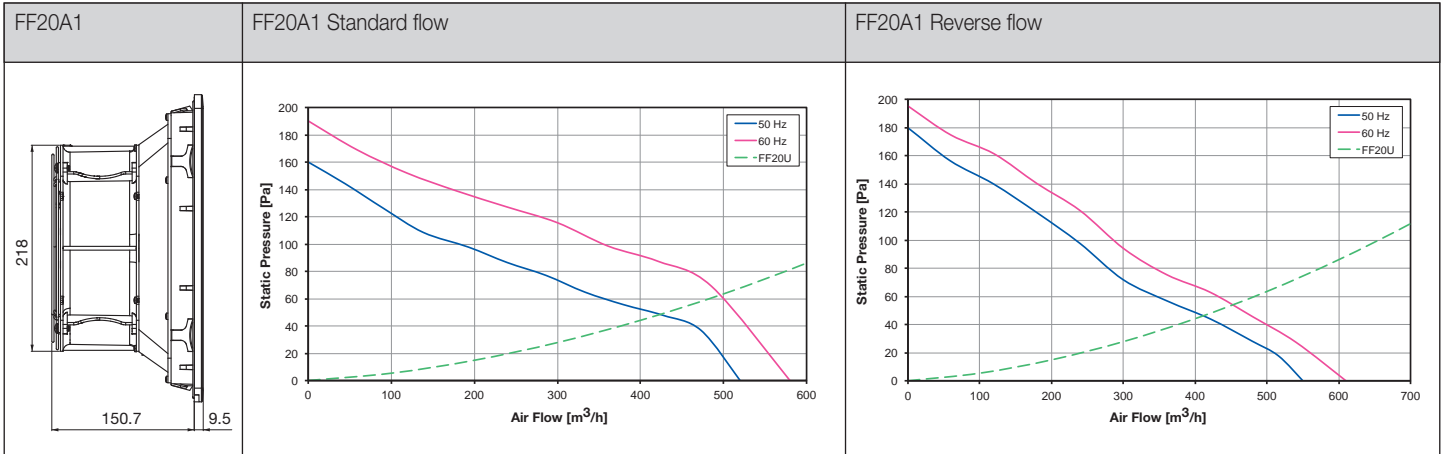
Dimensions mm
Dimensioni in mm

Technical specifications

Specifiche tecniche



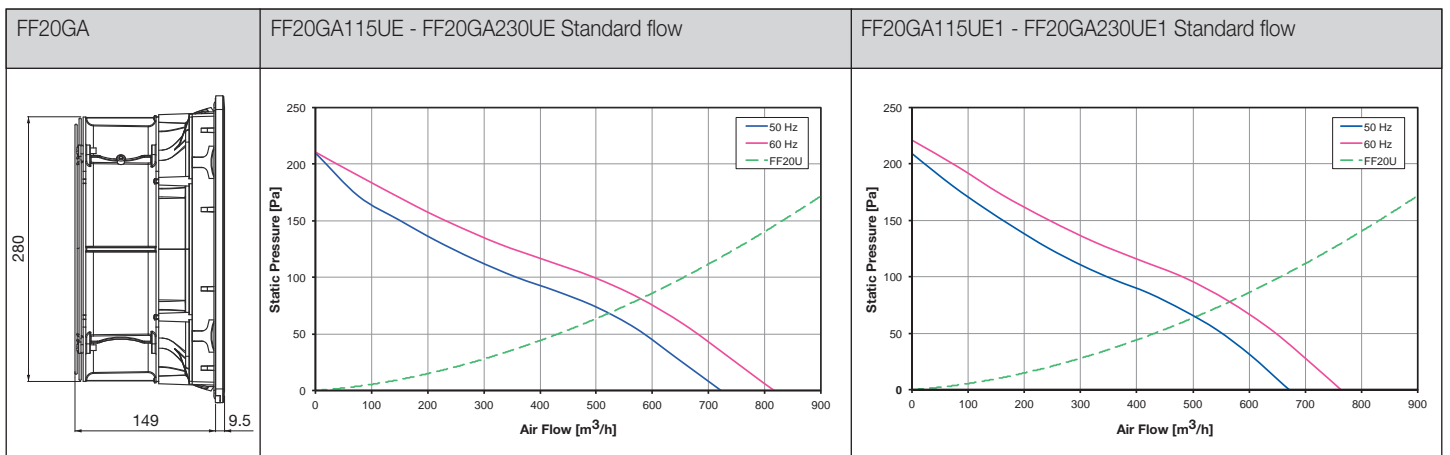
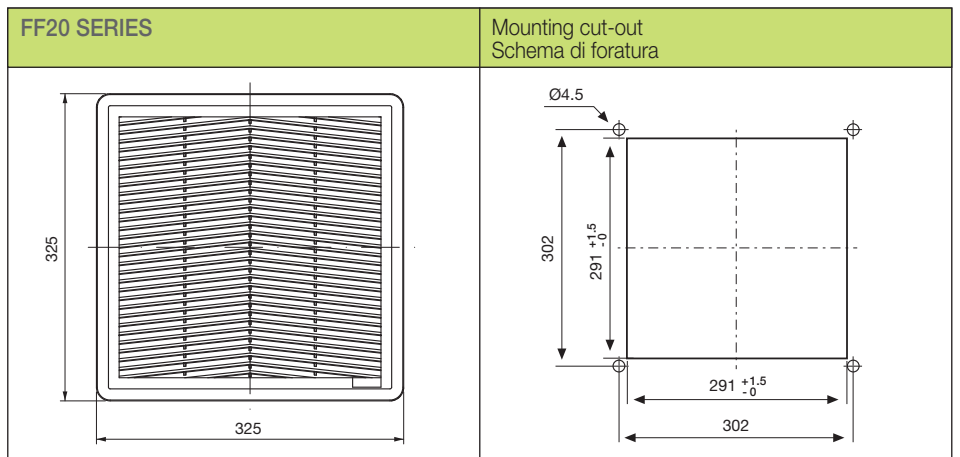
Dimensions mm
Dimensioni in mm



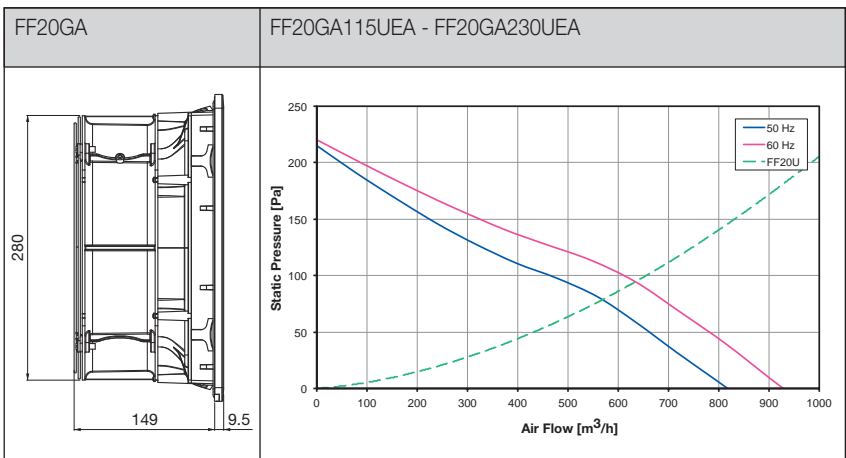
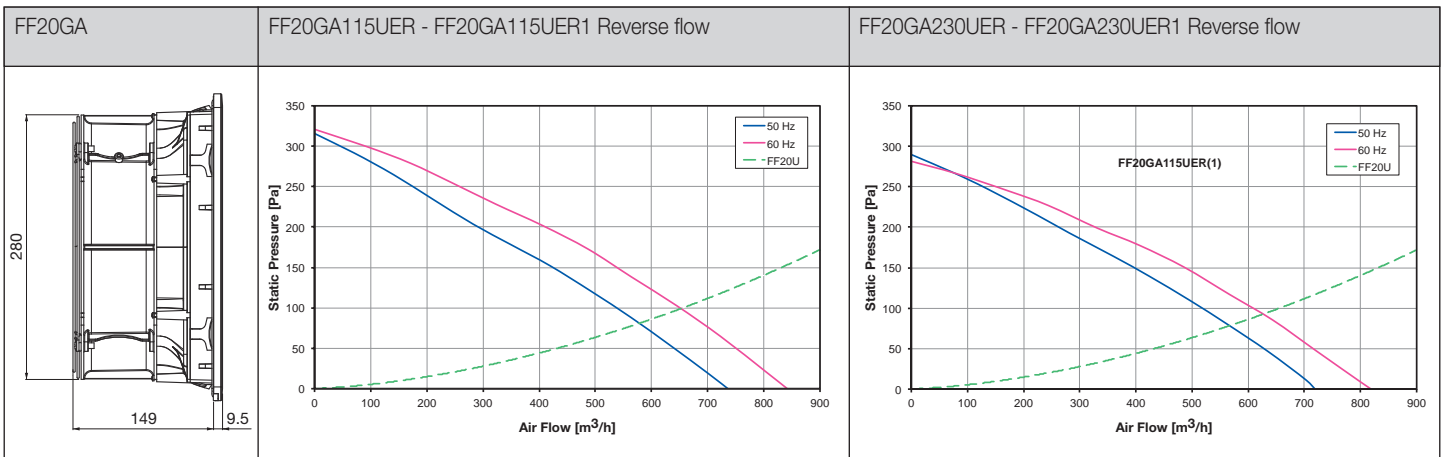
Dimensions mm
Dimensioni in mm

Technical specifications

Specifiche tecniche



Dimensions mm
Dimensioni in mm



Dimensions mm
Dimensioni in mm

General description

Descrizione generale

Fan Filters FPF series

gruppi Filtra serie FPF

The "FPF" fan-filter units are the outcome of our accumulated experience gained in the field of control cabinet ventilation. Thanks to their particular design they meet the needs of being compact and fast mounting - as typically requested of modern equipment.

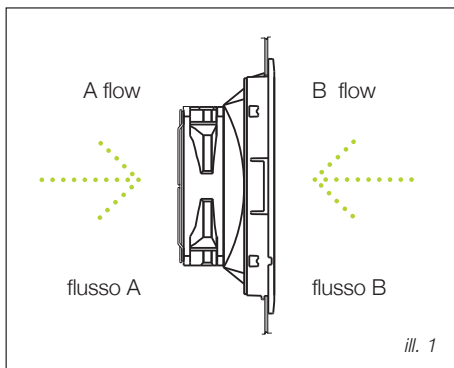
The "FPF" series is featured by a low external profile, a snap-mounting with elastic hooks and by an integrated sealing gasket, which allows dust and water protection.

The product is available either with or without fan in standard (B Flow) or reverse air flow version (A Flow), on request (see ill. 1).

La serie di gruppi filtro "FPF" nasce dall'esperienza maturata nel campo della ventilazione dei quadri elettrici. Grazie al loro particolare design rispondono alle esigenze di compattezza e rapidità di installazione tipiche delle moderne apparecchiature.

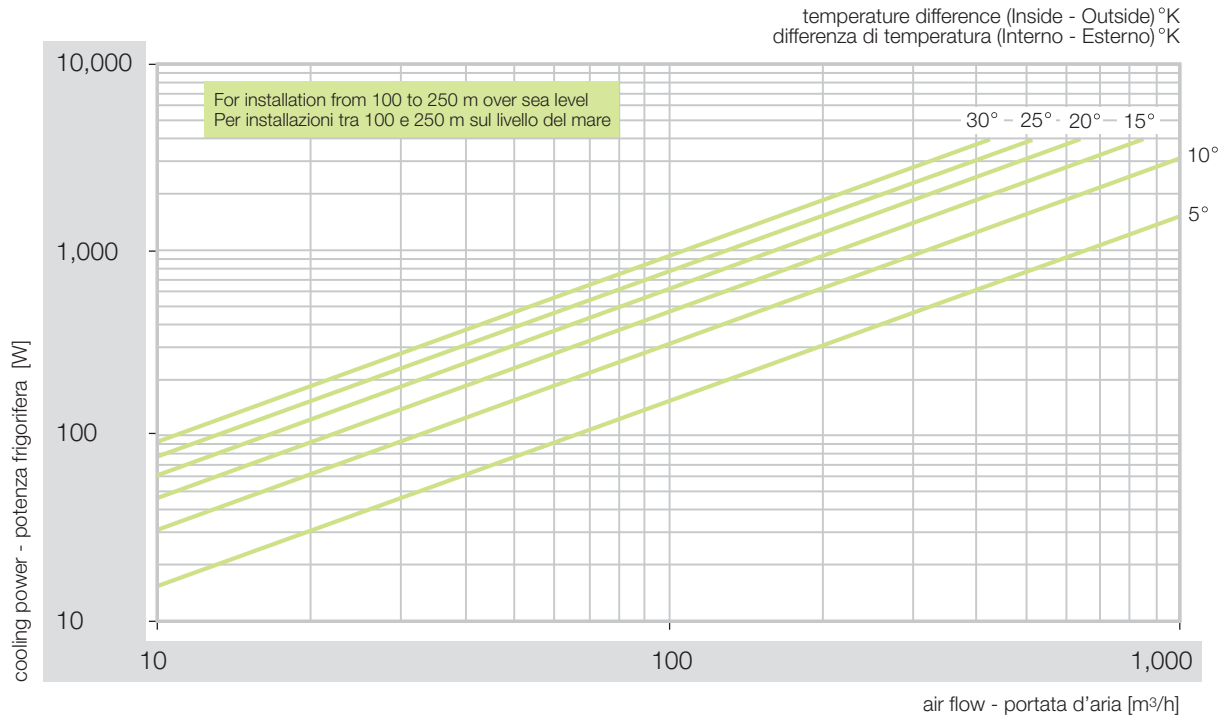
La serie "FPF" è caratterizzata da un basso profilo esterno, da un sistema di montaggio a scatto con ganci elastici e da una guarnizione di tenuta premontata che consente di ottenere una protezione alla polvere e all'acqua.

Il prodotto è disponibile con o senza ventilatore nella versione con flusso d'aria standard (Flusso B) o inverso (Flusso A), su richiesta (vedi ill. 1).



Selection chart (50 Hz)

Diagramma di scelta (50 Hz)



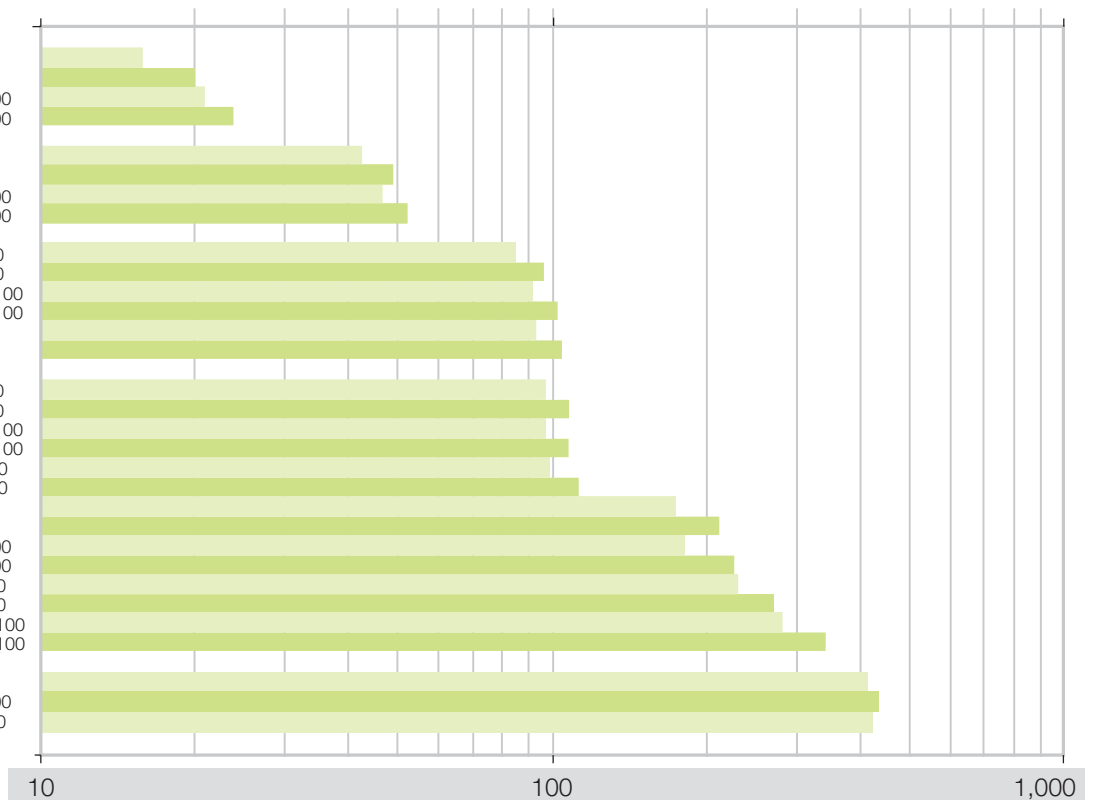
FPF08K + FPF08K*G-100
FPF08K + FPF12K*G-100
FPF08K*D + FPF08K*G-100
FPF08K*D + FPF12K*G-100

FPF12K + FPF12K*G-100
FPF12K + FPF13K*G-100
FPF12K*D + FPF12K*G-100
FPF12K*D + FPF13K*G-100

FPF13KP + FPF13K*G-100
FPF13KP + FPF15K*G-100
FPF13KP*D + FPF13K*G-100
FPF13KP*D + FPF15K*G-100
FPF13K + FPF13K*G-100
FPF13K + FPF15K*G-100

FPF15KP + FPF15K*G-100
FPF15KP + FPF20K*G-100
FPF15KP*D + FPF15K*G-100
FPF15KP*D + FPF20K*G-100
FPF15KM + FPF15K*G-100
FPF15KM + FPF20K*G-100
FPF15K + FPF15K*G-100
FPF15K + FPF20K*G-100
FPF15K*D + FPF15K*G-100
FPF15K*D + FPF20K*G-100
FPF15KG + FPF15K*G-100
FPF15KG + FPF20K*G-100
FPF15KG*D + FPF15K*G-100
FPF15KG*D + FPF20K*G-100

FPF20K + FPF20K*G-100
FPF20K*D + FPF20K*G-100
FPF20KG + FPF20K*G-100



General specifications

Specifiche generali

- Mounting without screws in square openings, as indicated in the cut-out diagram
 - plate thickness between 1.5 and 2.2mm
 - possible fixing with V-shaped head screws (not supplied)
- Plastic parts in PC/ABS alloy, except product with N option (Type 3R) in PPE+PS (Noryl). All parts self-extinguishing, according to UL 94V-0
- Standard colour RAL 7035 and RAL 7032 grey, other colours available on request, subject to quantity
- Permanent sealing gasket in polyurethane foam
- Filter media in thermo-linked progressive structure synthetic fibre
 - filter class G3, according to EN 779
 - filter class G4, according to EN 779 for products with options 5 and N
 - UL 900 Class 2 approved and self-extinguishing in F1 class, according to DIN 53 438
 - filter media can be cleaned, up to 10 times by washing, blowing dry and lightly beating
- Shielded and self-lubricating ball bearing fans
- IP54 standard protection degree, according to EN 60529 and Type 12, according to UL 50
 - IP55 protection degree on request (option 5), according to EN 60529
 - Type 1 on request (option O), according to UL 50
 - Type 3R on request (option N), according to UL 50
- EMC version available (option C) on request to shield electromagnetic waves
- Standard air flow direction from the outside to the inside of the cabinet (B Flow). Flow A (option R) available on request
- UL (Underwriters Laboratories) approved, according to UL 508 and UL 507. For products indicated with ► UL approval is on request. For products indicated with ■ UL approval is not available.

- Montaggio senza viti in aperture di forma quadrata, come da schema di foratura
 - spessore della lamiera compreso tra 1,5 e 2,2mm
 - eventuale fissaggio attraverso viti a testa svasata (non fornite)
- Parti plastiche in PC/ABS, ad eccezione dei prodotti con opzione N (Type 3R), realizzati in PPE+PS (Noryl). Tutti autoestinguenti secondo UL 94V-0
- Colori standard grigio RAL 7035 e RAL 7032, altri colori disponibili su richiesta e per quantità
- Guarnizione di tenuta in schiuma poliuretanicca posizionata a macchina
- Panno filtro in fibre sintetiche termolegate a struttura progressiva
 - classe di filtrazione G3 secondo EN 779
 - classe di filtrazione G4 secondo EN 779 per prodotti con opzioni 5 e N
 - omologato UL 900 Classe 2 e autoestinguente al grado F1 secondo DIN 53 438
 - i panni filtro possono essere puliti fino a 10 volte mediante lavaggio, soffiatura e battitura
- Ventilatori su cuscinetti a sfera schermati e autolubrificati
- Grado di protezione standard IP54 secondo EN 60529 e Type 12 secondo UL 50
 - disponibile su richiesta il grado di protezione IP55 (opzione 5) secondo EN 60529
 - disponibile su richiesta il grado di protezione Type 1 (opzione O) secondo UL 50
 - disponibile su richiesta il grado di protezione Type 3R (opzione N) secondo UL 50
- Disponibile versione EMC (opzione C) per schermare le onde elettromagnetiche
- Flusso d'aria standard dall'esterno verso l'interno dell'involucro (Flusso B). Disponibile su richiesta il Flusso A (opzione R)
- Omologati da UL (Underwriters Laboratories) secondo UL 508 e UL 507. Per i prodotti indicati con ► l'omologazione UL è a richiesta. Per i prodotti indicati con ■ l'omologazione UL non è disponibile.

description	FPF	15K	P	R	230	BE	(R)	-110	description
FAMILY FPF									SERIES 100... = standard S** = custom
DIMENSION CODE Standard version	08K	12K	13K	15K	20K				OPTIONS () = Type 12 and IP54 protected R = A flow Type 12 C = EMC shielded 5 = IP55 protected O = Type 1 protected N = Type 3R protected
FAN SIZE P = small () = standard M = medium G = large									VERSION B BE
COLOUR R = grey RAL 7032 U = grey RAL 7035 N = black RAL 9005									VOLTAGE G = no voltage 24 = 24 Va.c. 115 = 115 Va.c. 230 = 230 Va.c. 400T = 400 3~ D12 = 12 Vd.c. D24 = 24 Vd.c. D48 = 48 Vd.c.

Technical data

Dati tecnici

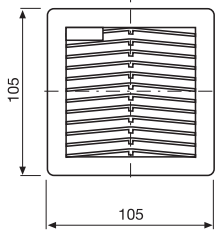
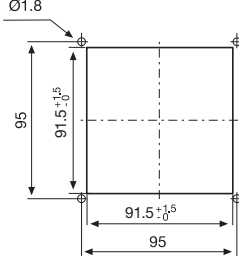
Model	Voltage	Frequency	Rated current	Rated Power	Max Air Flow	Static Pressure	Fan Noise	Weight	Rated Temp. Range	Approvals
	(V)	(Hz)	(mA)	(W)	(m³/h)**	(Pa)	[dB(A)]	(Kg)	(°C)	
FPF08K*G-101	-	-	-	-	-	-	-	0.09	-10 ~ +60	CE cURus
FPF08K*115B(R)-110	115 a.c.	50/60	115/92	9/7	23/30	42/62	33.0/38.0	0.50	-10 ~ +50	CE cURus
FPF08K*230B(R)-110	230 a.c.	50/60	70/55	10/8	23/30	42/62	33.0/38.0	0.50	-10 ~ +50	CE cURus
FPF08K*D24B(R)-110	24 d.c.	-	150	3.6	28	46	32.5	0.30	-10 ~ +50	CE cURus
FPF12K*G-100	-	-	-	-	-	-	-	0.18	-10 ~ +60	CE cURus
FPF12K*24BE(R)-110	24 a.c.	50/60	810/850	15/16	57/61	66/73	46.0/49.0	0.80	-10 ~ +50	CE ■
FPF12K*115BE(R)-110	115 a.c.	50/60	210/180	20/18	57/61	66/73	46.0/49.0	0.80	-10 ~ +50	CE cURus
FPF12K*230BE(R)-110	230 a.c.	50/60	125/110	20/19	57/61	66/73	46.0/49.0	0.80	-10 ~ +50	CE cURus
FPF12K*D24B(R)-110	24 d.c.	-	400	9.6	60	66	42.5	0.50	-10 ~ +50	CE cURus
FPF12K*D48B(R)-110	48 d.c.	-	160	7.7	60	66	42.5	0.50	-10 ~ +55	CE ■
FPF13K*G-100	-	-	-	-	-	-	-	0.35	-10 ~ +60	CE cURus
FPF13K*115BE(R)-110	115 a.c.	50/60	210/180	20/18	110/120	68/82	46.0/49.0	1.00	-10 ~ +50	CE cURus
FPF13K*230BE(R)-110	230 a.c.	50/60	125/110	20/19	110/120	68/82	46.0/49.0	1.00	-10 ~ +50	CE cURus
FPF13K*D24B(R)-110	24 d.c.	-	400	9.6	120	63	42.5	0.77	-10 ~ +50	CE cURus
FPF13K*115BE(R)-110	115 a.c.	50/60	200/160	17/15	120/135	84/100	46.0/50.0	1.11	-10 ~ +50	CE cURus
FPF13K*230BE(R)-110	230 a.c.	50/60	100/90	17/15	120/135	84/100	46.0/50.0	1.11	-10 ~ +50	CE cURus
FPF15K*G-100	-	-	-	-	-	-	-	0.54	-10 ~ +60	CE cURus
FPF15K*115BE(R)-110	115 a.c.	50/60	210/180	20/18	115/125	51/59	46.0/49.0	1.39	-10 ~ +50	CE cURus
FPF15K*230BE(R)-110	230 a.c.	50/60	125/110	20/19	115/125	51/59	46.0/49.0	1.39	-10 ~ +50	CE cURus
FPF15K*D12B(R)-110	12 d.c.	-	550	6.6	120	63	46.5	1.09	-10 ~ +50	CE ■
FPF15K*D24B(R)-110	24 d.c.	-	400	9.6	145	76	42.5	1.09	-10 ~ +50	CE cURus
FPF15K*D48B(R)-110	48 d.c.	-	160	7.7	145	76	42.5	1.09	-10 ~ +55	CE ■
FPF15K*115BE(R)-110	115 a.c.	50/60	200/160	17/15	130/150	75/92	46.0/50.0	1.43	-10 ~ +50	CE cURus
FPF15K*230BE(R)-110	230 a.c.	50/60	100/90	17/15	130/150	75/92	46.0/50.0	1.43	-10 ~ +50	CE cURus
FPF15K*115BE(R)-110	115 a.c.	50/60	265/274	30/30	240/270	111/134	50.0/55.0	1.69	-10 ~ +50	CE cURus
FPF15K*230BE(R)-110	230 a.c.	50/60	132/130	29/29	240/270	111/134	50.0/55.0	1.69	-10 ~ +50	CE cURus
FPF15K*D24B(R)-110	24 d.c.	-	950	22.8	250	64	64.0	1.59	-10 ~ +50	CE cURus
FPF15K*D48B(R)-110	48 d.c.	-	370	17.8	250	64	64.0	1.59	-10 ~ +55	CE ■
FPF15KG*115BE(R)-120	115 a.c.	50/60	540/650	50/64	360/400	160/180	66.0/69.2	3.05	-10 ~ +55	CE ►
FPF15KG*230BE(R)-120	230 a.c.	50/60	300/382	67/87	360/400	160/180	65.3/68.1	3.05	-10 ~ +50	CE ►
FPF15KG*400TBE(R)-120	400 3~	50/60	140/130	71/93	360/400	160/180	69.8/72.7	3.05	-10 ~ +55	CE ►
FPF15KG*D24BE(R)-120	24 d.c.	-	2,440	59	470	160	65.0	3.00	-10 ~ +55	CE ►
FPF15KG*D48BE(R)-120	48 d.c.	-	1,220	59	470	160	65.0	3.00	-10 ~ +55	CE ►
FPF20K*G-100	-	-	-	-	-	-	-	1.01	-10 ~ +60	CE cURus
FPF20K*115BE(R)-120	115 a.c.	50/60	540/650	50/64	520/580	160/186	66.0/69.2	3.62	-10 ~ +55	CE ►
FPF20K*230BE(R)-120	230 a.c.	50/60	300/382	67/87	520/580	160/186	65.3/68.1	3.62	-10 ~ +50	CE ►
FPF20K*400TBE(R)-120	400 3~	50/60	140/130	71/93	520/580	160/186	69.8/72.7	3.62	-10 ~ +55	CE ■
FPF20K*D24BE(R)-120	24 d.c.	-	2,440	59	610	160	64.0	3.57	-10 ~ +55	CE ■
FPF20K*D48BE(R)-120	48 d.c.	-	1,220	59	610	160	64.0	3.57	-10 ~ +55	CE ■
FPF20KG*115BE(R)-120	115 a.c.	50/60	960/1,250	107/143	660/745	220/222	74.7/78.9	4.00	-10 ~ +55	CE ►
FPF20KG*230BE(R)-120	230 a.c.	50/60	500/720	114/158	660/745	220/222	72.8/75.8	4.00	-10 ~ +55	CE ►
FPF20KG*400TBE(R)-120	400 3~	50/60	180/200	105/105	650/730	185/215	76.0/79.0	4.00	-10 ~ +55	CE ■
FPF20KG*115B(R)-110	115 a.c.	50/60	1,200/1,200	120/135	650/730	185/215	74.7/78.9	3.70	-10 ~ +55	CE ►
FPF20KG*230B(R)-110	230 a.c.	50/60	620/810	140/185	650/730	185/215	67.6/70.6	3.70	-10 ~ +55	CE ►
FPF20KG*400TB(R)-110	400 3~	50/60	180/200	93/123	650/730	185/215	76.0/79.0	3.70	-10 ~ +55	CE ■

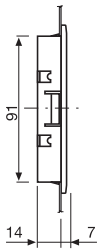
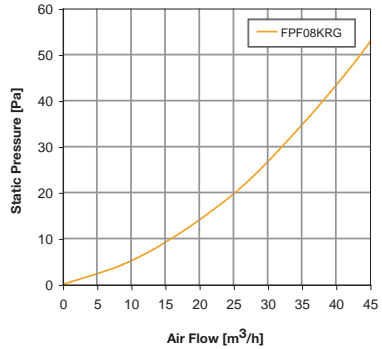
(*) may be R for color RAL 7032 or U for color RAL 7035

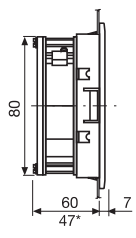
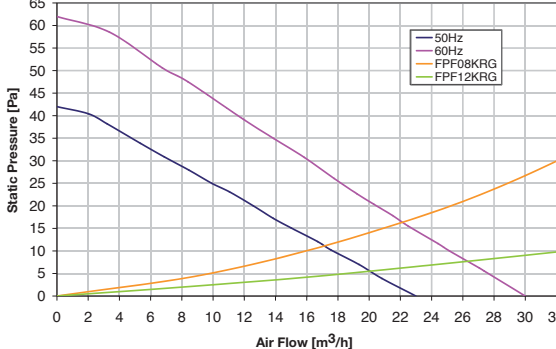
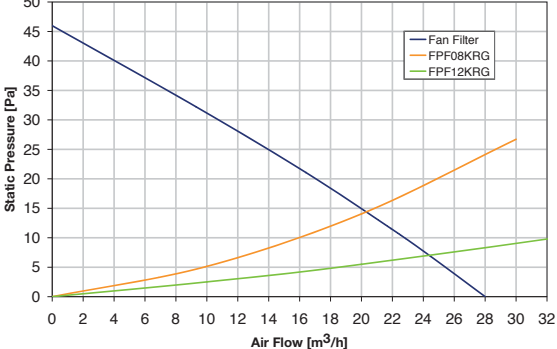
(**) data with uncertainty of 15%

Technical specifications

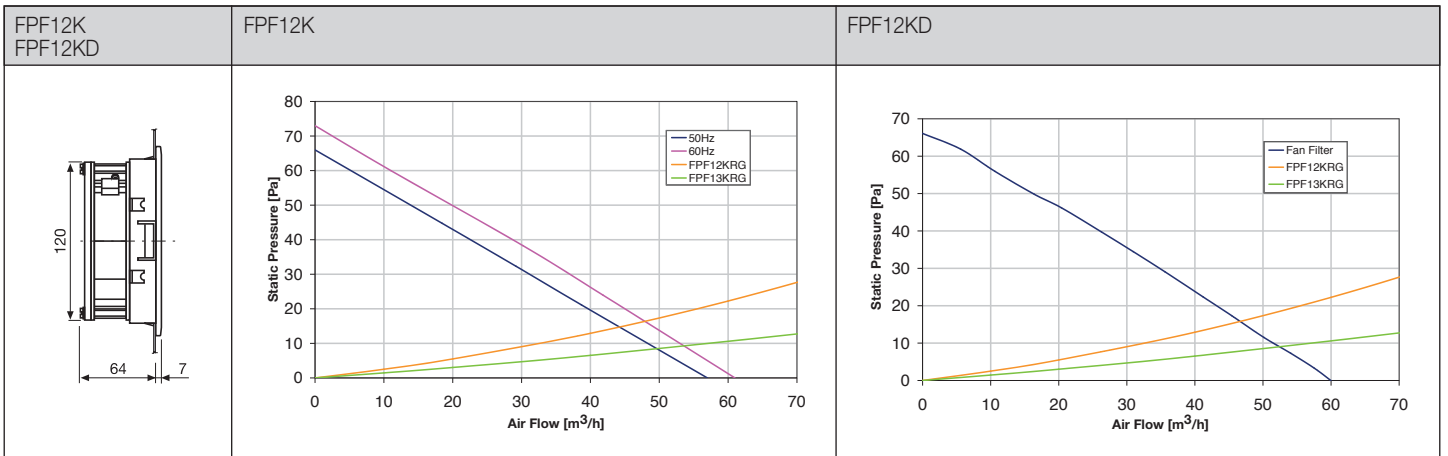
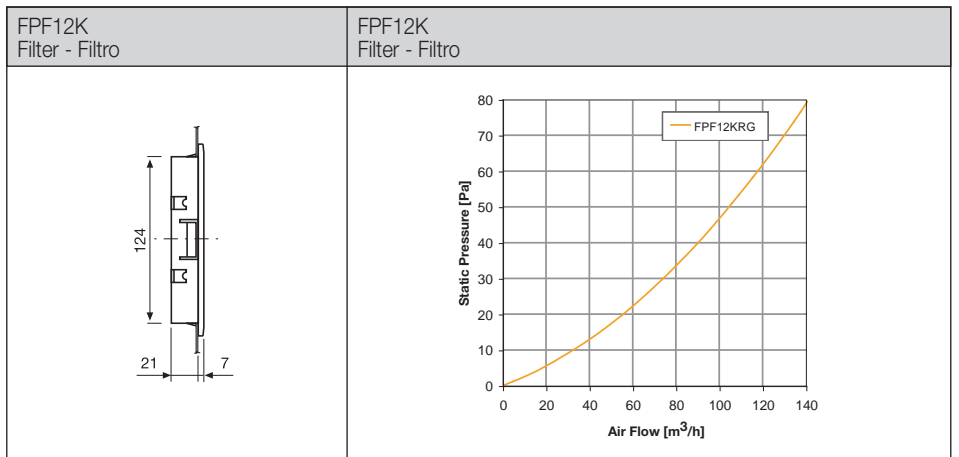
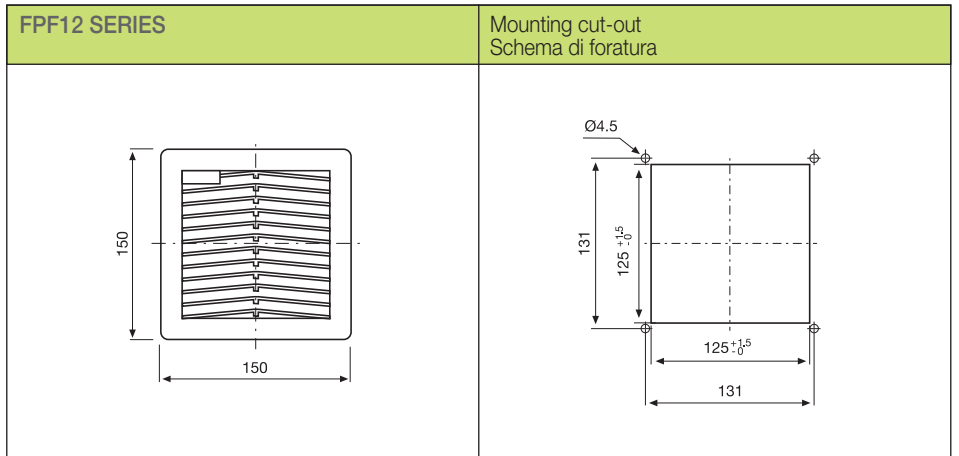
Specifiche tecniche

FPF08 SERIES	Mounting cut-out Schema di foratura
	

FPF08K Filter - Filtro	FPF08K Filter - Filtro														
	 <table border="1"> <caption>Approximate data for FPF08KRG graph</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>Static Pressure [Pa]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>10</td><td>5</td></tr> <tr><td>20</td><td>15</td></tr> <tr><td>30</td><td>30</td></tr> <tr><td>40</td><td>45</td></tr> <tr><td>45</td><td>55</td></tr> </tbody> </table>	Air Flow [m³/h]	Static Pressure [Pa]	0	0	10	5	20	15	30	30	40	45	45	55
Air Flow [m³/h]	Static Pressure [Pa]														
0	0														
10	5														
20	15														
30	30														
40	45														
45	55														

FPF08K FPF08KD	FPF08K	FPF08KD																																													
 <p>* version with d.c fan * versione con ventilatore in c.c.</p>	 <table border="1"> <caption>Approximate data for FPF08K graph</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>50Hz Fan</th> <th>60Hz Fan</th> <th>FPF08KRG</th> <th>FPF12KRG</th> </tr> </thead> <tbody> <tr><td>0</td><td>40</td><td>60</td><td>0</td><td>0</td></tr> <tr><td>10</td><td>25</td><td>50</td><td>5</td><td>3</td></tr> <tr><td>20</td><td>10</td><td>35</td><td>15</td><td>6</td></tr> <tr><td>30</td><td>-</td><td>20</td><td>25</td><td>9</td></tr> </tbody> </table>	Air Flow [m³/h]	50Hz Fan	60Hz Fan	FPF08KRG	FPF12KRG	0	40	60	0	0	10	25	50	5	3	20	10	35	15	6	30	-	20	25	9	 <table border="1"> <caption>Approximate data for FPF08KD graph</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>Fan Filter</th> <th>FPF08KRG</th> <th>FPF12KRG</th> </tr> </thead> <tbody> <tr><td>0</td><td>45</td><td>0</td><td>0</td></tr> <tr><td>10</td><td>30</td><td>5</td><td>3</td></tr> <tr><td>20</td><td>15</td><td>15</td><td>6</td></tr> <tr><td>30</td><td>-</td><td>25</td><td>9</td></tr> </tbody> </table>	Air Flow [m³/h]	Fan Filter	FPF08KRG	FPF12KRG	0	45	0	0	10	30	5	3	20	15	15	6	30	-	25	9
Air Flow [m³/h]	50Hz Fan	60Hz Fan	FPF08KRG	FPF12KRG																																											
0	40	60	0	0																																											
10	25	50	5	3																																											
20	10	35	15	6																																											
30	-	20	25	9																																											
Air Flow [m³/h]	Fan Filter	FPF08KRG	FPF12KRG																																												
0	45	0	0																																												
10	30	5	3																																												
20	15	15	6																																												
30	-	25	9																																												

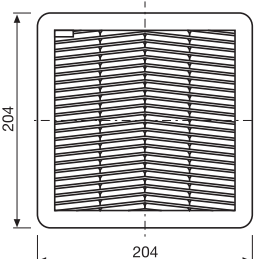
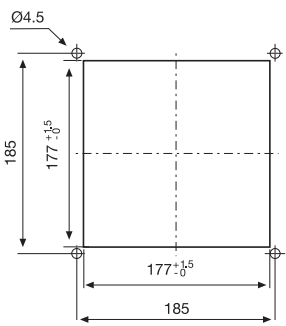
Dimensions mm
Dimensioni in mm

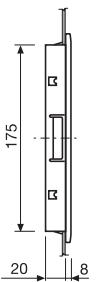
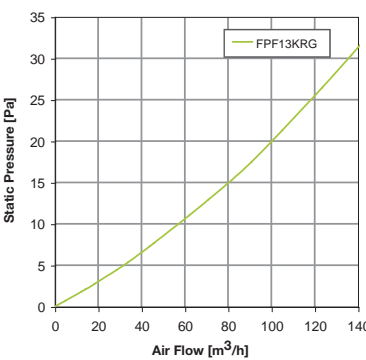


Dimensions mm
Dimensioni in mm

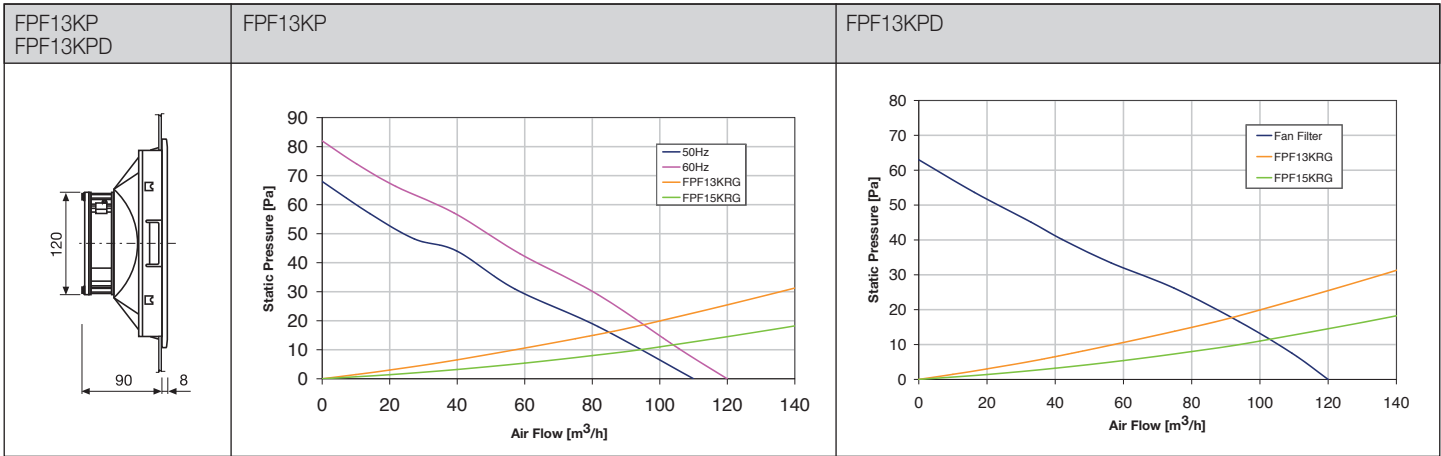
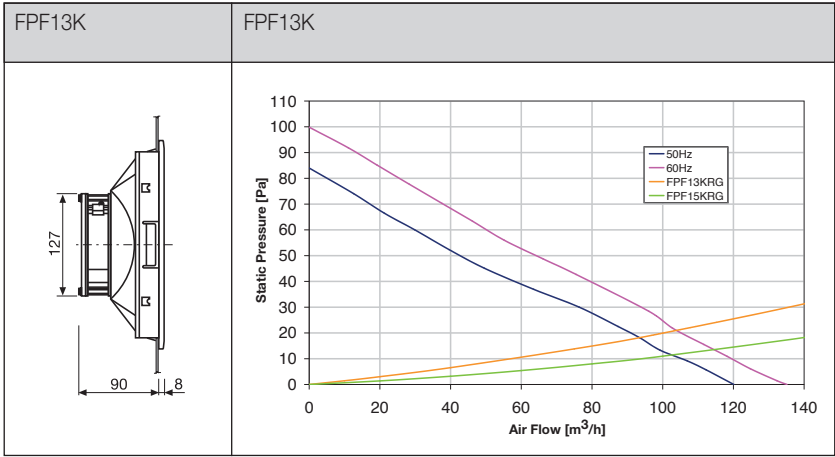
Technical specifications

Specifiche tecniche

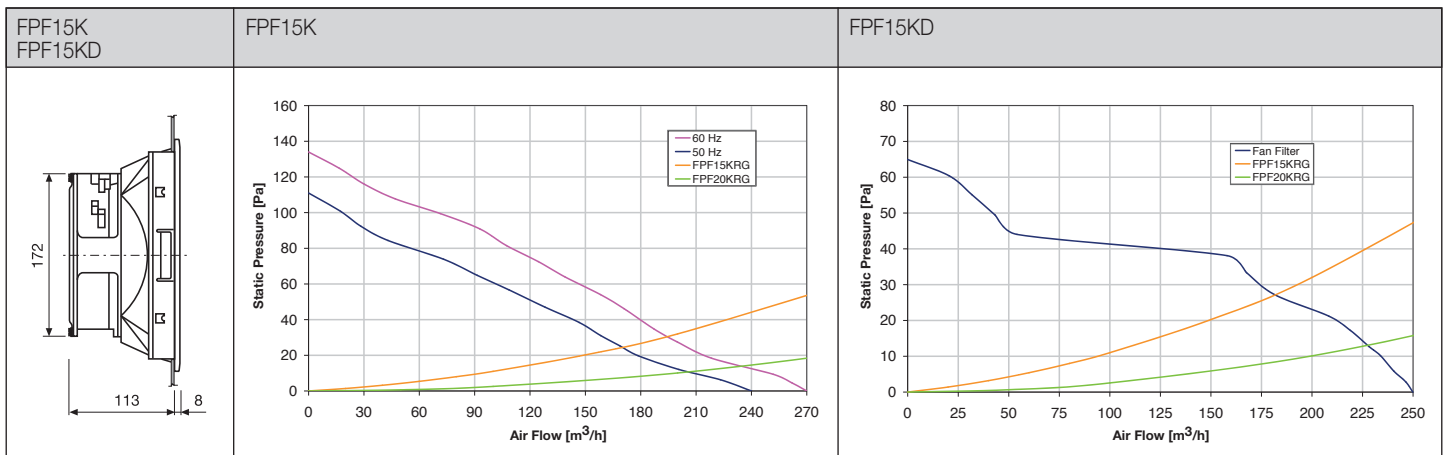
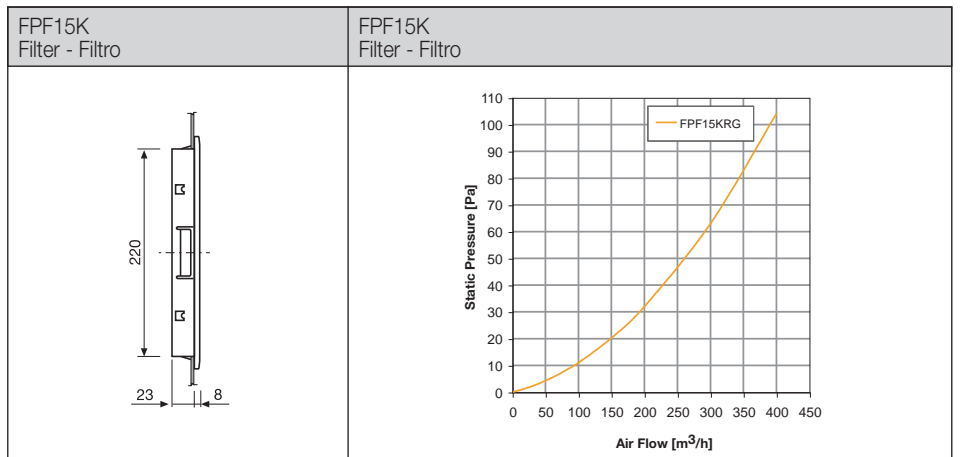
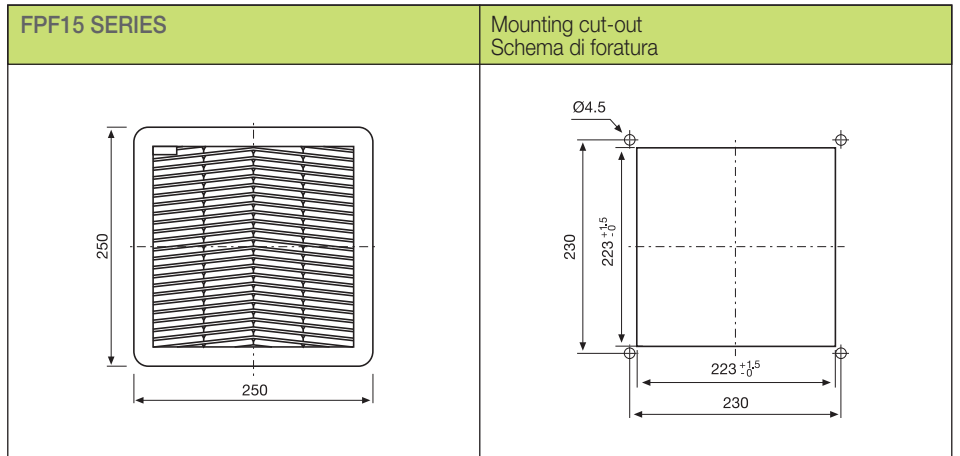
FPF13 SERIES	Mounting cut-out Schema di foratura
	

FPF13K Filter - Filtro	FPF13K Filter - Filtro																		
	 <table border="1"> <caption>Approximate data points from the FPF13KRG performance graph</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>Static Pressure [Pa]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>20</td><td>2</td></tr> <tr><td>40</td><td>5</td></tr> <tr><td>60</td><td>10</td></tr> <tr><td>80</td><td>15</td></tr> <tr><td>100</td><td>22</td></tr> <tr><td>120</td><td>28</td></tr> <tr><td>140</td><td>32</td></tr> </tbody> </table>	Air Flow [m³/h]	Static Pressure [Pa]	0	0	20	2	40	5	60	10	80	15	100	22	120	28	140	32
Air Flow [m³/h]	Static Pressure [Pa]																		
0	0																		
20	2																		
40	5																		
60	10																		
80	15																		
100	22																		
120	28																		
140	32																		

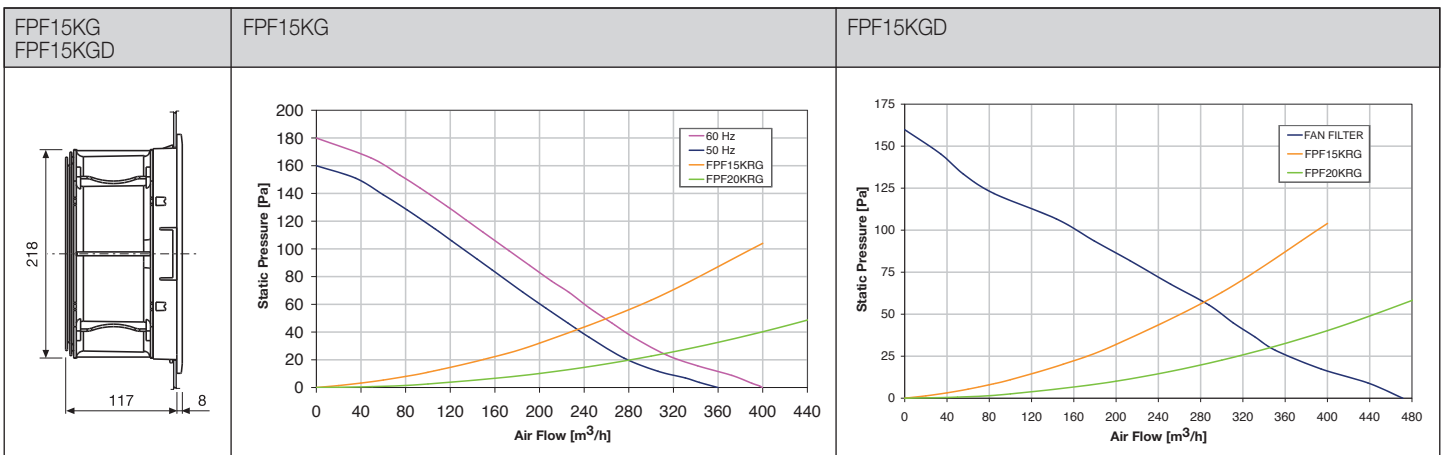
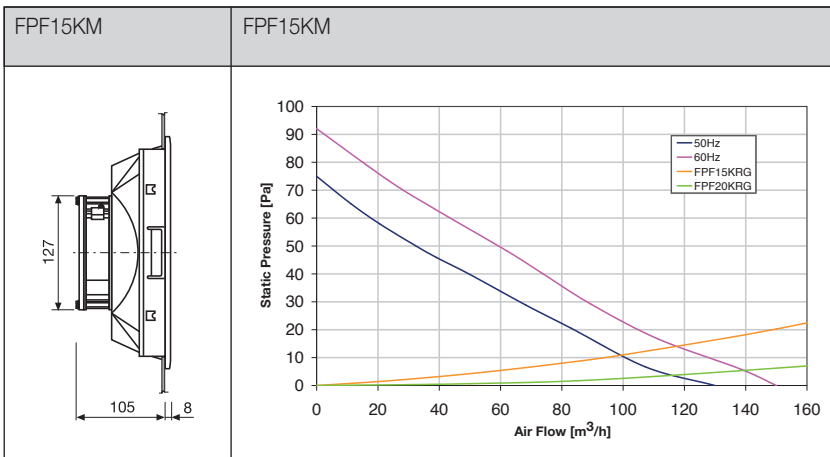
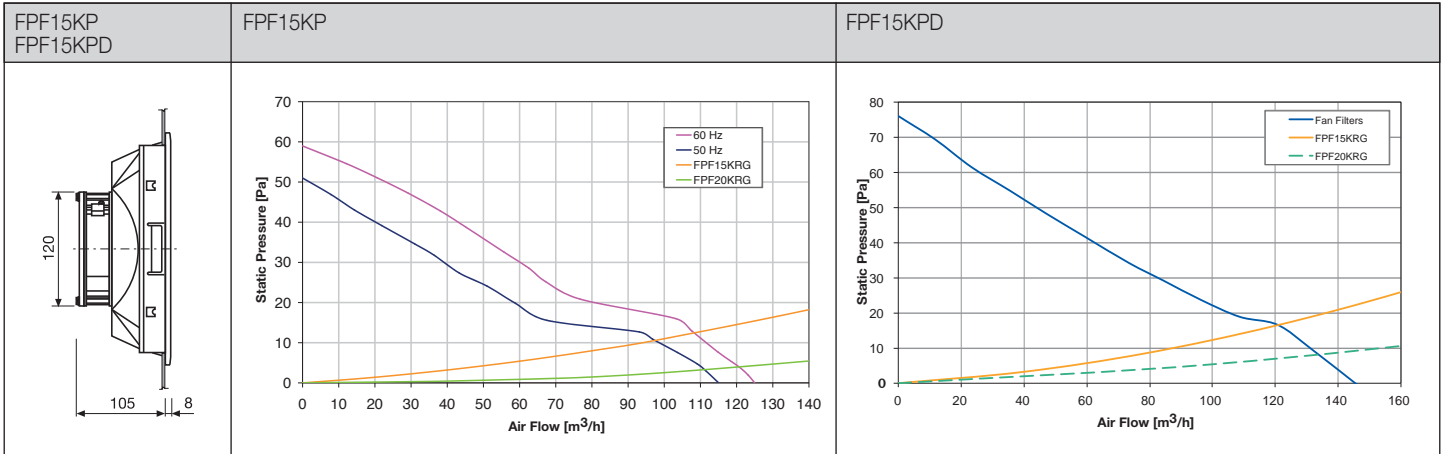
Dimensions mm
Dimensioni in mm



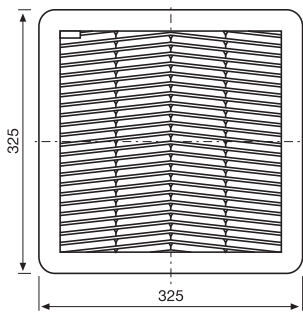
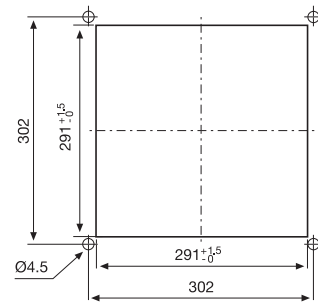
Dimensions mm
Dimensioni in mm

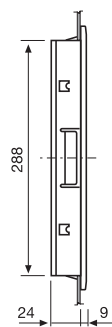
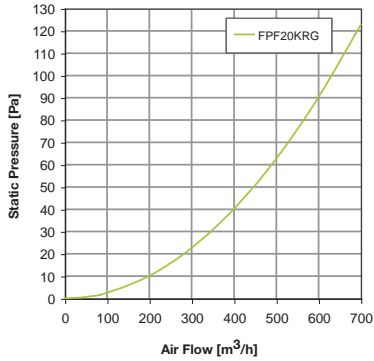


Dimensions mm
Dimensioni in mm

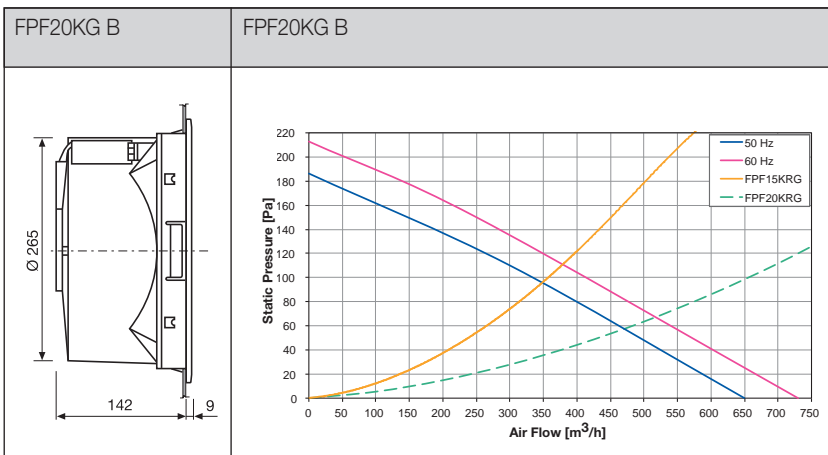
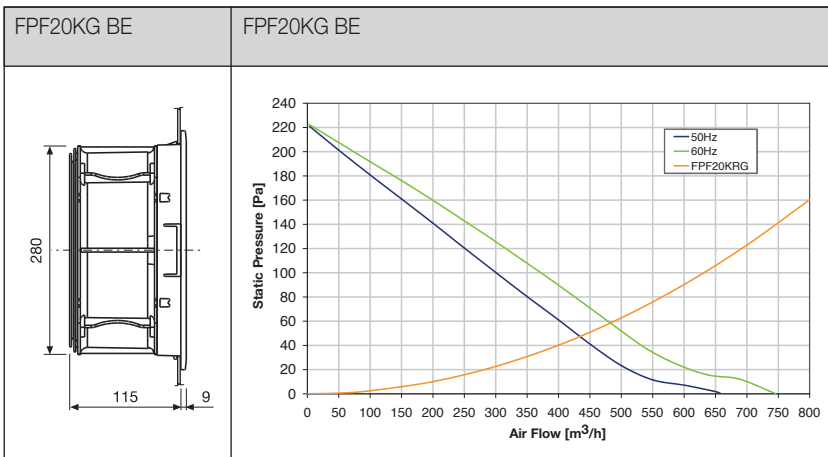
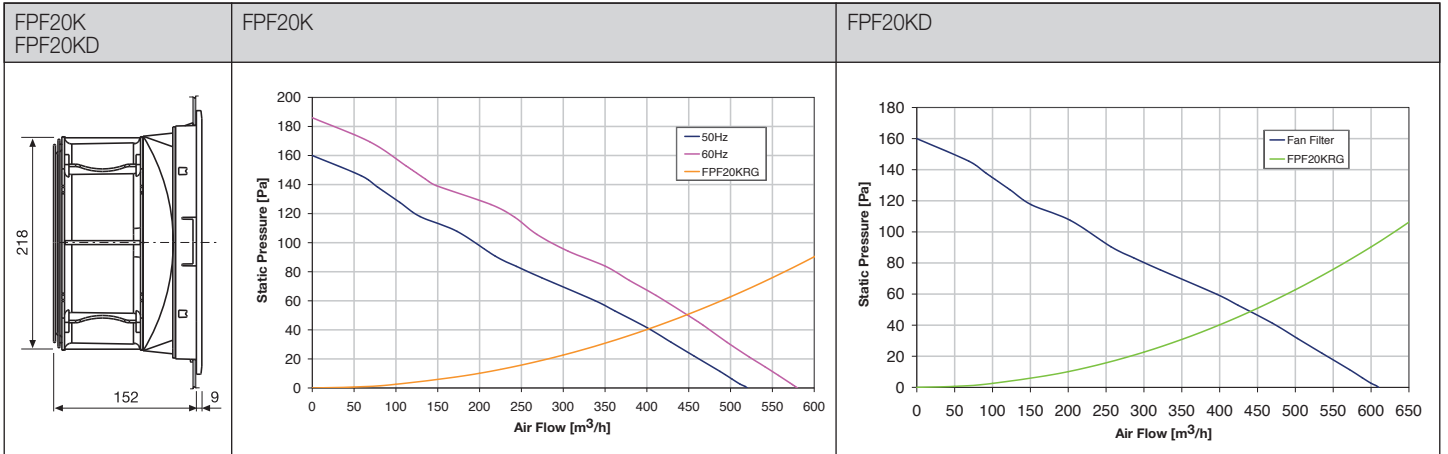


Dimensions mm
 Dimensioni in mm

FPF20 SERIES	Mounting cut-out Schema di foratura
	

FPF20K Filter - Filtro	FPF20K Filter - Filtro																		
	 <table border="1"> <caption>Approximate data points from the FPF20KRG performance graph</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>Static Pressure [Pa]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>100</td><td>5</td></tr> <tr><td>200</td><td>10</td></tr> <tr><td>300</td><td>20</td></tr> <tr><td>400</td><td>40</td></tr> <tr><td>500</td><td>70</td></tr> <tr><td>600</td><td>100</td></tr> <tr><td>700</td><td>120</td></tr> </tbody> </table>	Air Flow [m³/h]	Static Pressure [Pa]	0	0	100	5	200	10	300	20	400	40	500	70	600	100	700	120
Air Flow [m³/h]	Static Pressure [Pa]																		
0	0																		
100	5																		
200	10																		
300	20																		
400	40																		
500	70																		
600	100																		
700	120																		

Dimensions mm
Dimensioni in mm



Dimensions mm
 Dimensioni in mm

General description

Descrizione generale

Fan Filters GF series

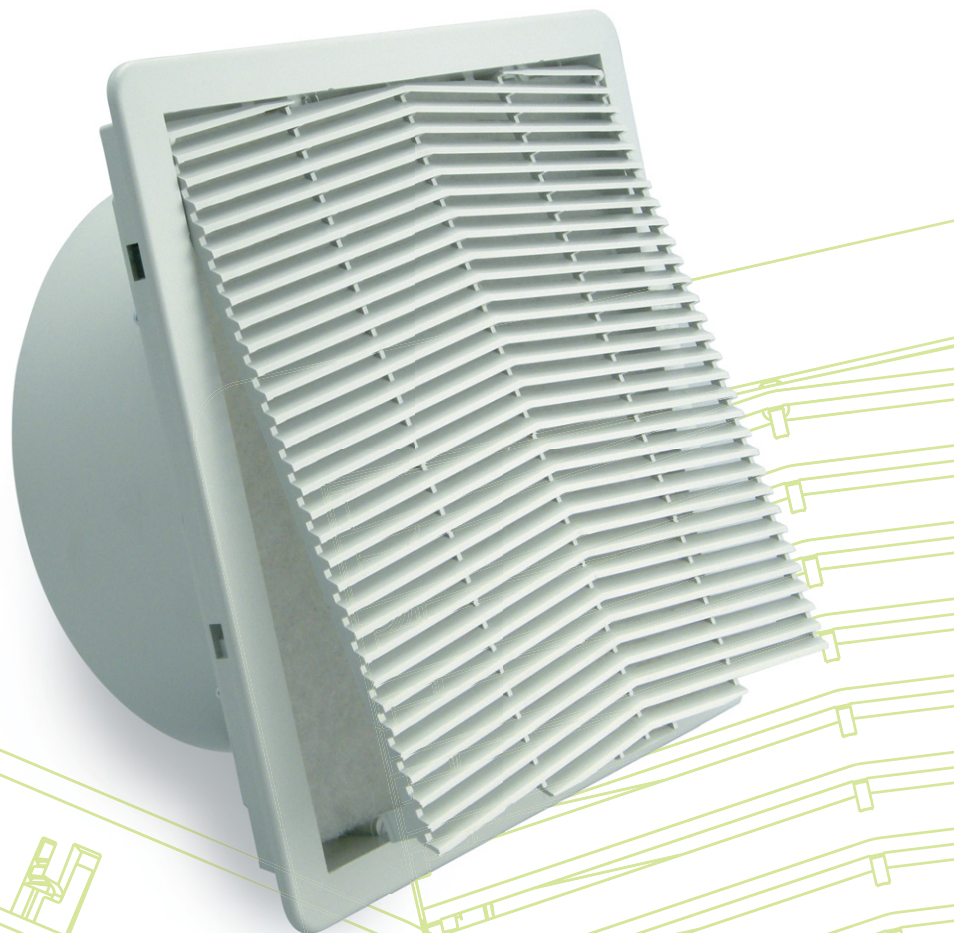
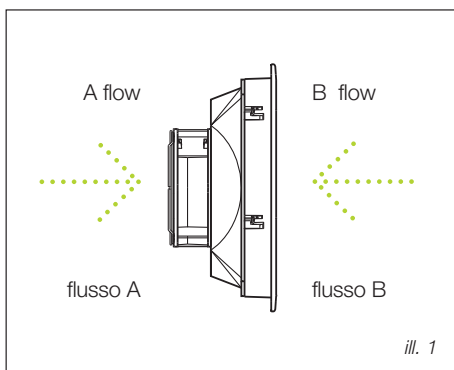
gruppi Filtro serie GF

The "GF" series fan filters satisfies thick wall applications in both plastic and plate enclosures, thanks to its revolutionary mounting system with jacks.

The "GF" series boasts valuable technical and aesthetical improvements, offering the advantages of a fast installation, an easy filter replacement through the original hinged protection guard, as well as an hermetic base without slits on the base.

The product is available either with or without fan in standard (B Flow) or reverse air flow version (A Flow), on request (see ill. 1).

La serie di gruppi filtro "GF" soddisfa le esigenze applicative su quadri elettrici in plastica o in lamiera con pareti di spessore elevato, grazie all'esclusivo sistema di fissaggio a martinetti. La serie "GF" vanta significativi miglioramenti tecnici ed estetici, ed è progettata per offrire vantaggi funzionali in termini di rapida installazione, sostituzione semplificata del pannello filtro grazie alla struttura basculante della griglia di protezione, ed ermeticità della base per l'assenza di feritoie sul bordo. Il prodotto è disponibile con o senza ventilatore nella versione con flusso d'aria standard (Flusso B) o inverso (Flusso A), su richiesta (vedi ill. 1).





Inside view - Vista interna



Section view - Vista di sezione

Fixing system with jacks (international patent)

The exclusive system developed by Fandis is suited to fix enclosures with thick walls.

Up to 8mm extensible up to 16mm, by cutting the jacks.

This system consists of a set of screws and jacks. Simply turning the screw 1/4, the jack is released from its seat to constrain successively the filter to the enclosure.

The required torque wrench setting to assure an optimal fixing is 0.5Nm.

Sistema di fissaggio a martinetti (sistema brevettato)

L'esclusivo sistema sviluppato da Fandis è adatto per il fissaggio a quadri elettrici con pareti in lamiera o plastica di spessore elevato, fino agli 8mm estendibili ai 16mm (tagliando il martinetto).

Questo sistema consiste in una serie di viti e martinetti. Con 1/4 di giro della vite il martinetto viene disimpegnato dalla sua sede e successivamente va a vincolare il filtro al quadro.

La coppia di serraggio utile a garantire il fissaggio ottimale è di 0.5Nm.

General specifications

Specifiche generali

- Fixing system with jacks in square openings as indicated in the cut-out diagram
- Plate thickness up to 8mm and by cutting the jacks up to 16mm
- Plastic parts in PC/ABS alloy. All parts self-extinguishing, according to UL 94V-0
- Standard colour RAL 7035, other colours available on request, subject to quantity
- Permanent sealing gasket in polyurethane foam
- Filter media in thermo-linked progressive structure synthetic fibre
- Filter class G3, according to EN 779
- UL 900 Class 2 approved and self-extinguishing in F1 class, according to DIN 53 438
- Filter media can be cleaned, up to 10 times by washing, blowing dry and lightly beating
- Shielded and self-lubricating ball bearing fans
- IP54 standard protection degree, according to EN 60529
- Standard air flow direction from the outside to the inside of the cabinet (B Flow)
- Flow A (option R) available on request

- Sistema di fissaggio a martinetto in aperture di forma quadrata come da schema di foratura
- Spessore della lamiera fino a 8mm ed estensibile fino a 16mm tagliando i martinetti
- Parti plastiche in PC/ABS. Tutti autoestinguenti secondo UL 94V-0
- Colori standard grigio RAL 7035, altri colori disponibili su richiesta e per quantità
- Guarnizione di tenuta in schiuma poliuretana posizionata a macchina
- Panno filtro in fibre sintetiche termolegate a struttura progressiva
- Classe di filtrazione G3 secondo EN 779
- Omologato UL 900 Classe 2 e autoestinguente al grado F1 secondo DIN 53 438
- I panni filtro possono essere puliti fino a 10 volte mediante lavaggio, soffiatura e battitura
- Ventilatori su cuscinetti a sfera schermati e autolubrificati
- Grado di protezione standard IP54 secondo EN 60529
- Flusso d'aria standard dall'esterno verso l'interno dell'involucro (Flusso B)
- disponibile su richiesta il Flusso A (opzione R)

description	GF 15K P U 230 BE (R) -110	description
FAMILY GF		SERIES 100... = standard S** = custom
DIMENSION CODE Standard version 12K 15K 20K		OPTIONS () = Standard R = A flow
FAN SIZE P = small () = standard G = large		VERSION B BE
COLOUR U = grey RAL 7035 other colours on request		VOLTAGE G = no voltage 24 = 24 V.a.c. 115 = 115 V.a.c. 230 = 230 V.a.c. 400T = 400 3~ D12 = 12 V.d.c. D24 = 24 V.d.c. D48 = 48 V.d.c.

Technical data

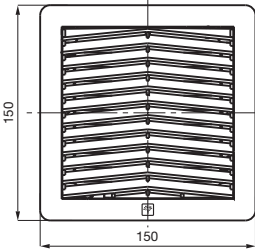
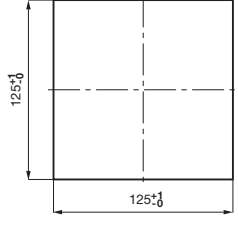
Dati tecnici

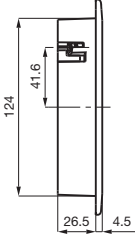
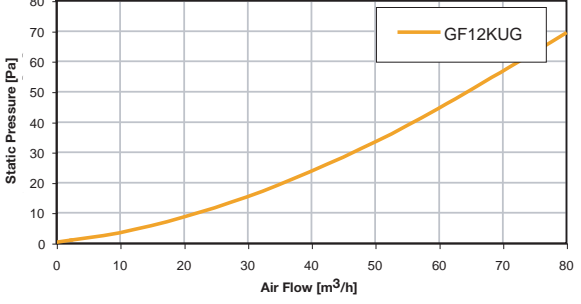
Model	Voltage	Frequency	Rated current	Rated Power	Max Air Flow	Static Pressure	Fan Noise	Weight	Rated Temp. Range	Approvals
	(V)	(Hz)	(mA)	(W)	(m ³ /h)*	(Pa)	[dB(A)]	(Kg)	(°C)	
GF12KUG	-	-	-	-	-	-	-	0.18	-10 ~ +60	CE
GF12KU115BE (R)	115 a.c.	50/60	205/180	17/15	45/50	53/62	48.0/54.0	0.80	-10 ~ +55	CE
GF12KU230BE (R)	230 a.c.	50/60	94/86	17/15	45/50	53/62	48.0/54.0	0.80	-10 ~ +55	CE
GF12KU115B (R)	115 a.c.	50/60	200/190	17/15	57/61	66/73	43.0/48.0	0.80	-10 ~ +50	CE
GF12KU230B (R)	230 a.c.	50/60	105/91	17/15	57/61	66/73	43.0/48.0	0.80	-10 ~ +55	CE
GF12KUD24B (R)	24 d.c.	-	310	7.4	55	61	42.5	0.50	-10 ~ +55	CE
GF12KUD48B (R)	48 d.c.	-	160	7.7	55	61	42.5	0.50	-10 ~ +55	CE
GF15KUG	-	-	-	-	-	-	-	0.37	-10 ~ +60	CE
GF15KPU115BE (R)	115 a.c.	50/60	205/180	17/15	115/127	59/58	46.0/49.0	1.39	-10 ~ +55	CE
GF15KPU230BE (R)	230 a.c.	50/60	94/86	17/15	115/127	59/58	46.0/49.0	1.39	-10 ~ +55	CE
GF15KPUD24B (R)	24 d.c.	-	310	7.4	150	66	43.0	1.09	-10 ~ +55	CE
GF15KPUD48B (R)	48 d.c.	-	160	7.7	150	66	43.0	1.09	-10 ~ +55	CE
GF15KU115BE (R)	115 a.c.	50/60	250/260	30/30	240/275	118/158	50.0/55.0	1.69	-10 ~ +55	CE
GF15KU230BE (R)	230 a.c.	50/60	132/137	30/31	240/275	118/158	50.0/55.0	1.69	-10 ~ +50	CE
GF20KUG	-	-	-	-	-	-	-	0.86	-10 ~ +60	CE
GF20KU115BE (R)	115 a.c.	50/60	540/650	50/64	515/550	134/148	65.3/68.1	3.62	-10 ~ +55	CE
GF20KU230BE (R)	230 a.c.	50/60	300/360	70/85	515/550	135/150	65.3/68.1	3.62	-10 ~ +50	CE
GF20KU400TBE (R)	400 3~	50/60	140/130	71/93	515/550	134/148	64.0/68.0	3.62	-10 ~ +55	CE
GF20KGU115B (R)	115 a.c.	50/60	1,071/1,290	112/148	590/670	186/213	72.8/75.8	3.70	-10 ~ +55	CE
GF20KGU230B (R)	230 a.c.	50/60	600/680	138/164	590/670	185/215	72.8/75.8	3.70	-10 ~ +55	CE
GF20KGU400TB (R)	400 3~	50/60	180/200	93/123	590/670	186/213	72.8/75.8	3.70	-10 ~ +55	CE

(*) Data with uncertainty of 15%

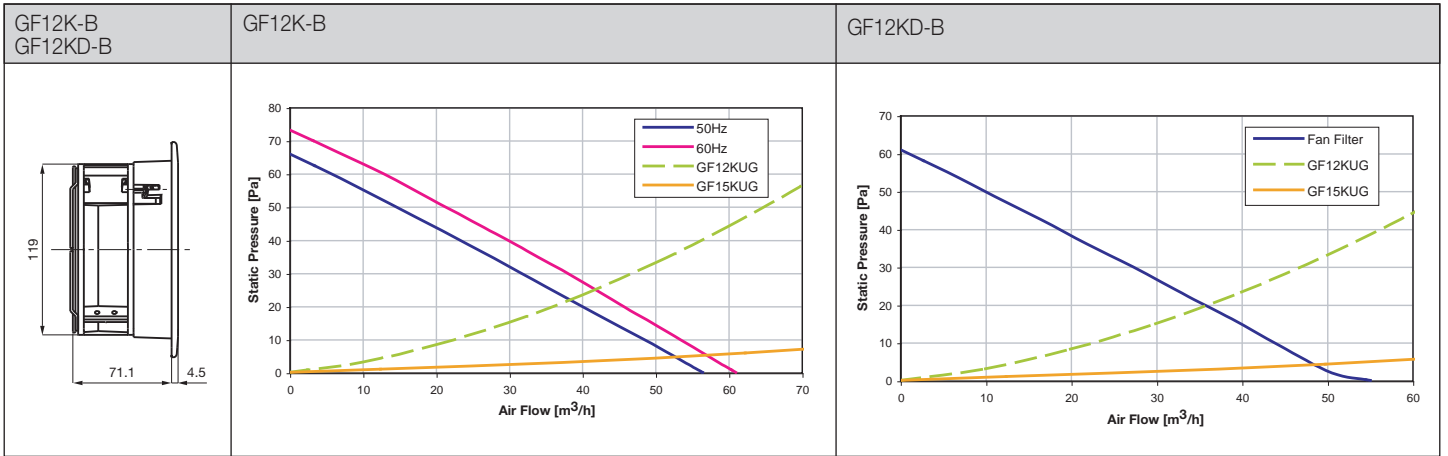
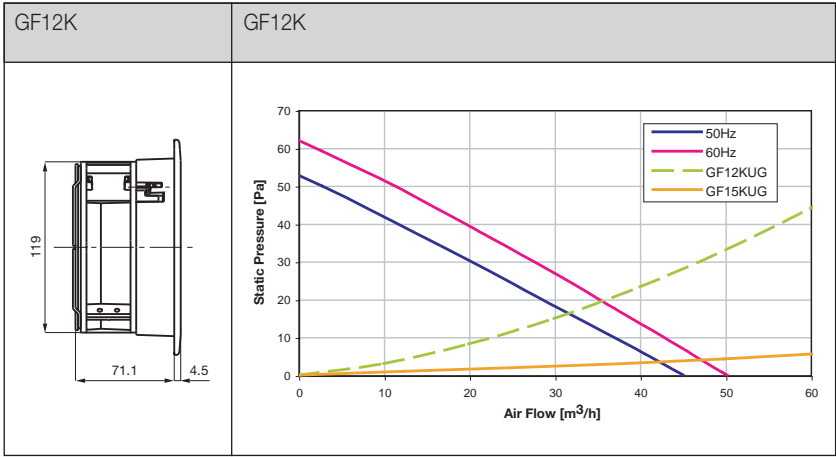
Technical specifications

Specifiche tecniche

GF12 SERIES	Mounting cut-out Schema di foratura
	

GF12K Filter - Filtro	GF12K Filter - Filtro																				
	 <table border="1"> <caption>GF12KUG Performance Data</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>Static Pressure [Pa]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>10</td><td>~4</td></tr> <tr><td>20</td><td>~8</td></tr> <tr><td>30</td><td>~14</td></tr> <tr><td>40</td><td>~21</td></tr> <tr><td>50</td><td>~29</td></tr> <tr><td>60</td><td>~38</td></tr> <tr><td>70</td><td>~48</td></tr> <tr><td>80</td><td>~59</td></tr> </tbody> </table>	Air Flow [m³/h]	Static Pressure [Pa]	0	0	10	~4	20	~8	30	~14	40	~21	50	~29	60	~38	70	~48	80	~59
Air Flow [m³/h]	Static Pressure [Pa]																				
0	0																				
10	~4																				
20	~8																				
30	~14																				
40	~21																				
50	~29																				
60	~38																				
70	~48																				
80	~59																				

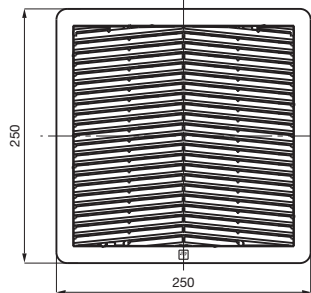
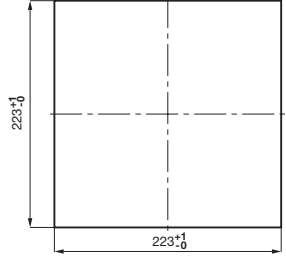
Dimensions mm
Dimensioni in mm

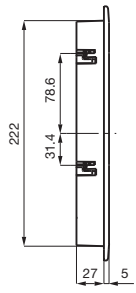
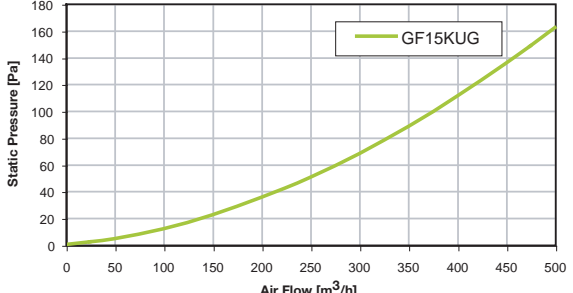


Dimensions mm
Dimensioni in mm

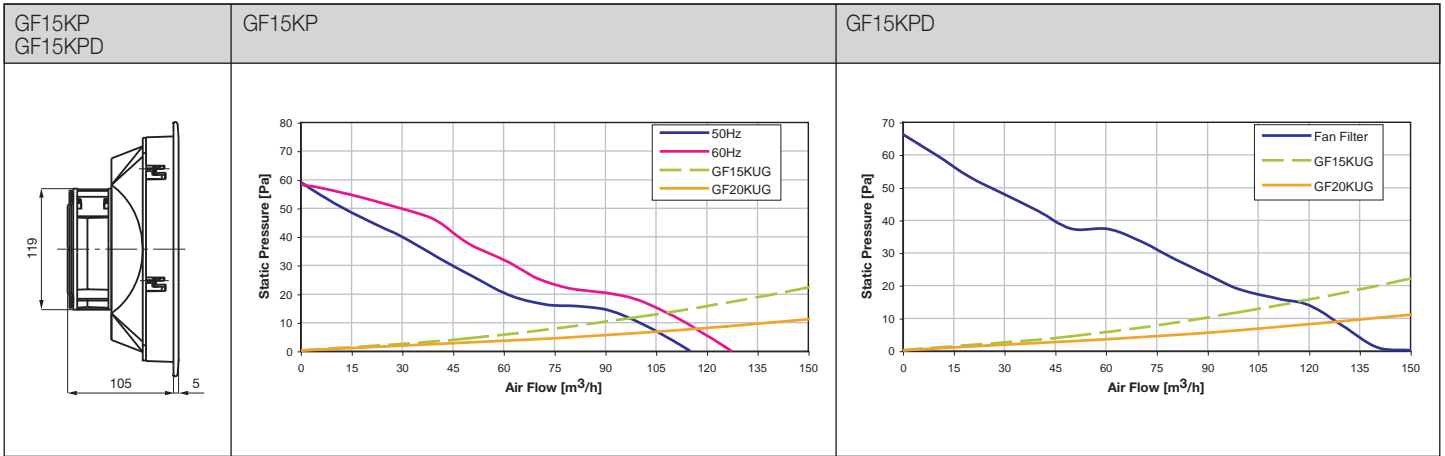
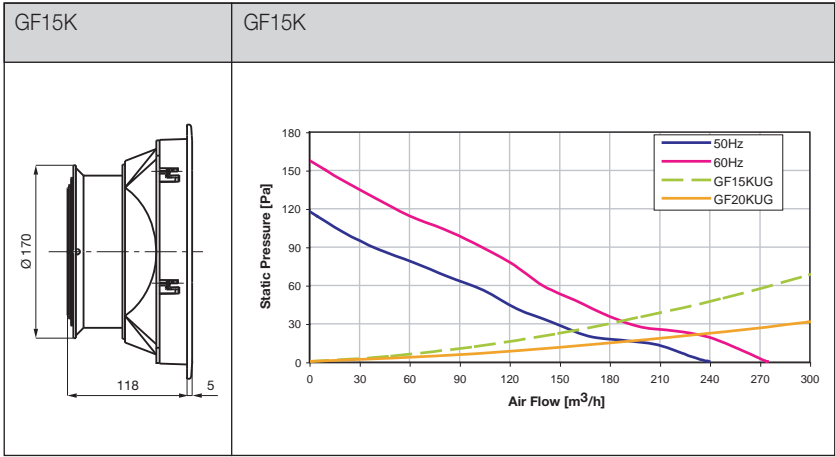
Technical specifications

Specifiche tecniche

GF15 SERIES	Mounting cut-out Schema di foratura
	

GF15K Filter - Filtro	GF15K Filter - Filtro																								
	 <table border="1"> <caption>Approximate data points from the GF15KUG performance graph</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>Static Pressure [Pa]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>50</td><td>5</td></tr> <tr><td>100</td><td>10</td></tr> <tr><td>150</td><td>18</td></tr> <tr><td>200</td><td>30</td></tr> <tr><td>250</td><td>45</td></tr> <tr><td>300</td><td>65</td></tr> <tr><td>350</td><td>90</td></tr> <tr><td>400</td><td>120</td></tr> <tr><td>450</td><td>155</td></tr> <tr><td>500</td><td>195</td></tr> </tbody> </table>	Air Flow [m³/h]	Static Pressure [Pa]	0	0	50	5	100	10	150	18	200	30	250	45	300	65	350	90	400	120	450	155	500	195
Air Flow [m³/h]	Static Pressure [Pa]																								
0	0																								
50	5																								
100	10																								
150	18																								
200	30																								
250	45																								
300	65																								
350	90																								
400	120																								
450	155																								
500	195																								

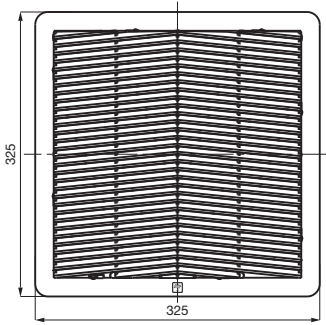
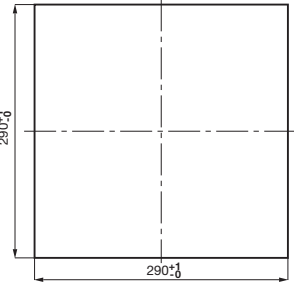
Dimensions mm
Dimensioni in mm

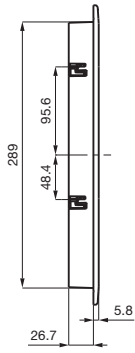
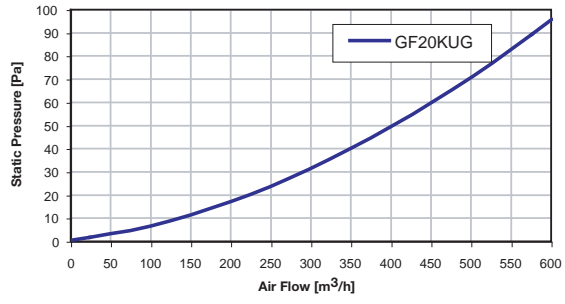


Dimensions mm
Dimensioni in mm

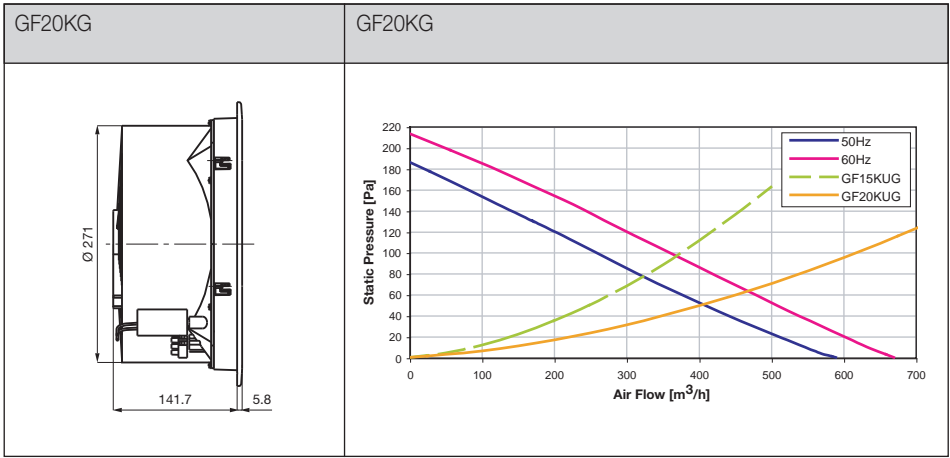
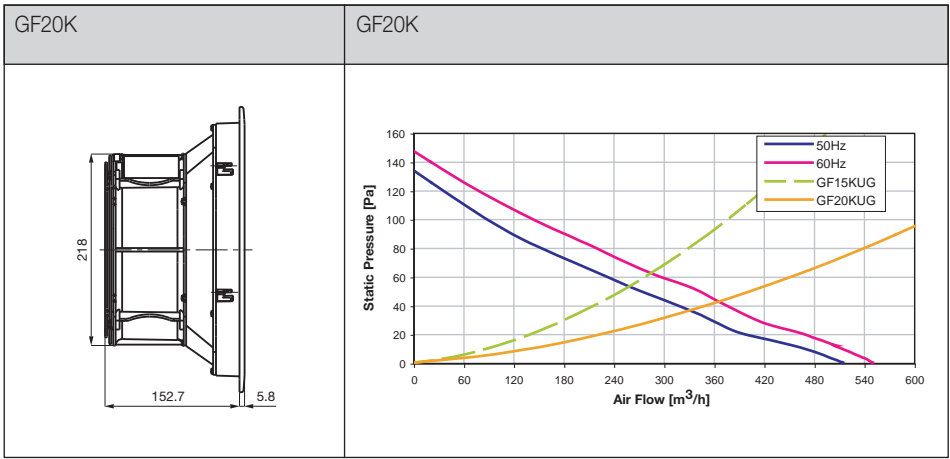
Technical specifications

Specifiche tecniche

GF20 SERIES	Mounting cut-out Schema di foratura
	

GF20K Filter - Filtro	GF20K Filter - Filtro																
	 <table border="1"> <caption>Approximate data points from the GF20KUG performance graph</caption> <thead> <tr> <th>Air Flow [m³/h]</th> <th>Static Pressure [Pa]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>100</td><td>5</td></tr> <tr><td>200</td><td>15</td></tr> <tr><td>300</td><td>30</td></tr> <tr><td>400</td><td>50</td></tr> <tr><td>500</td><td>75</td></tr> <tr><td>600</td><td>100</td></tr> </tbody> </table>	Air Flow [m³/h]	Static Pressure [Pa]	0	0	100	5	200	15	300	30	400	50	500	75	600	100
Air Flow [m³/h]	Static Pressure [Pa]																
0	0																
100	5																
200	15																
300	30																
400	50																
500	75																
600	100																

Dimensions mm
Dimensioni in mm



Dimensions mm
Dimensioni in mm

steel
covers

coperture
metalliche

The stainless steel cover is an accessory to combine to "FF", "FPF" and "GF" series. It is particularly suitable for outdoors applications or in the food industry, this cover protects against splashing water and solid foreign objects and it is easily washable.

- It is available in 08, 12, 13, 15 and 20 sizes.

La copertura metallica in acciaio inox è un accessorio che si abbina ai gruppi filtro serie "FF", "FPF" e "GF".

Particolarmente adatta per applicazioni in ambienti esterni o nel settore alimentare, questa protezione ripara il filtro da spruzzi d'acqua e da corpi solidi estranei, risultando inoltre facilmente lavabile.

- Disponibile nelle taglie 08, 12, 13, 15 e 20.



- AISI 304 stainless steel cover of 1mm with bayonet joint on support
- Stainless steel support of 0.6mm to apply between base and clips
- Permanent sealing gasket in PVC mousse, thickness 4mm
- IP56 protection degree, according to EN 60529, only coupled with standard fan filters
- Copertura in acciaio inox AISI 304 da 1mm con innesto a baionetta su supporto
- Supporto inox da 0,6mm da applicare tra la base e le clip
- Guarnizione di tenuta in mousse di PVC spessore 4mm
- Grado di protezione IP56 secondo EN 60529, in abbinata a gruppi filtro standard

Technical specifications

Specifiche tecniche

Dimensions mm
Dimensioni in mm

SSC-08	SSC-12	SSC-13
SSC-15	SSC-20	

plastic
adaptors

adattatori
plastici

The adaptor is an accessory component to integrate into the "FF", "FPF" and "GF" fan filter units.

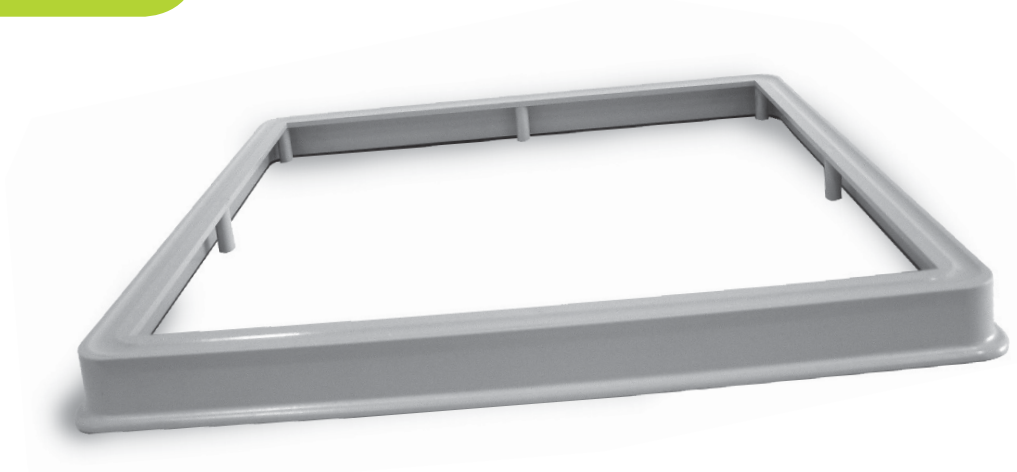
This plastic frame allows the fan filter installation in a semi built-in position in the electric cabinet, reducing the internal dimensions.

- Available in standard colour RAL 7035 and 7032 grey - other colours on request.

L'adattatore è un componente accessorio da integrarsi ai gruppi filtro serie "FF", "FPF" e "GF".

Questa cornice plastica permette l'installazione dei gruppi filtro in una posizione semi-incassata nel quadro elettrico, riducendone l'ingombro interno.

- Disponibili nei colori standard grigio RAL 7035 e 7032 - altri colori su richiesta.



Technical specifications

Specifiche tecniche

FPFA12	FPFA15	FPFA20

Dimensions mm
Dimensioni in mm

document
holder

tasca
portadocumenti

An handy accessory for documents storage, this holder in PC/ABS alloy can be easily fixed on the enclosure door through a pre-arranged double side tape.

- It can hold documents in A4 format and it is available in standard colour RAL 7035.

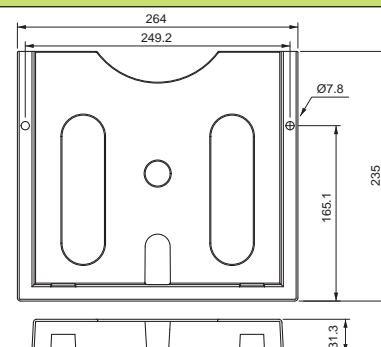
Un pratico accessorio per la gestione di documenti, questa tasca in PC/ABS può essere facilmente applicata alla porta del quadro elettrico tramite del nastro biadesivo già predisposto.

- Può contenere documenti di formato A4 ed è disponibile nel colore RAL 7035.



Technical
specifications

Specifiche
tecniche



Dimensions mm
Dimensioni in mm

General description

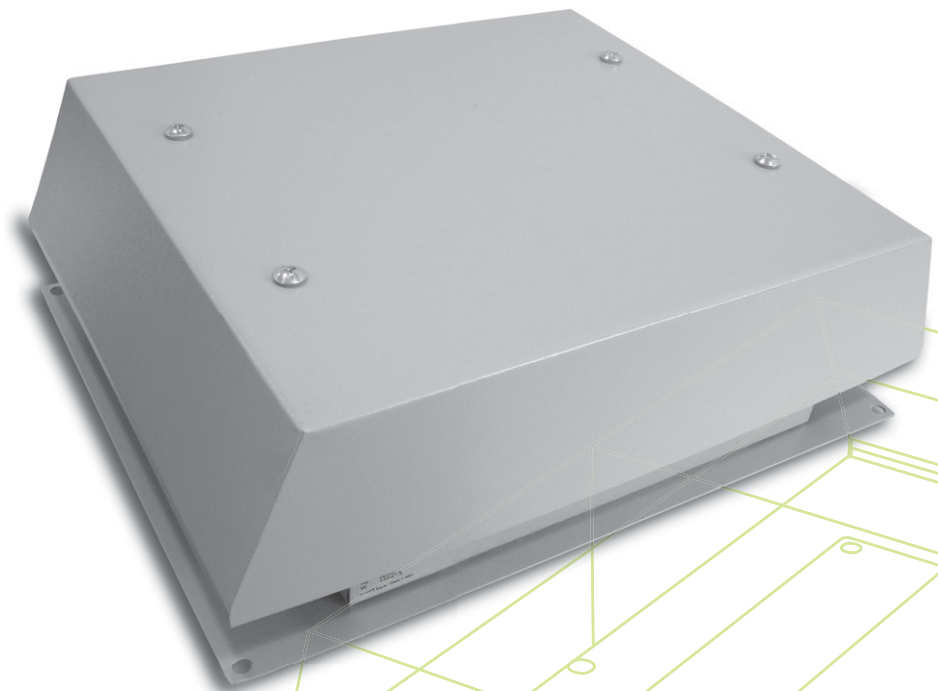
Descrizione generale

roof exhaust units
T series

torrini di estrazione
serie T

The roof exhaust units are used to remove heat from the upper region of the cabinet improving the internal air flow. The exhaust units, equipped with a high-head radial fan, can be paired with an air induction filter to reduce the ingress of dust to a minimum. The "T" series features a full metal casing and a cable connection.

I torrini di estrazione da tetto vengono utilizzati per l'aspirazione diretta del calore dalla zona superiore dell'armadio agevolando il flusso d'aria interno. I torrini, equipaggiati con ventilatori radiali ad alta prevalenza, possono essere accoppiati con filtro di immissione dell'aria per ridurre al minimo l'ingresso della polvere. La serie "T" presenta una struttura interamente metallica e una connessione con cavo di alimentazione.

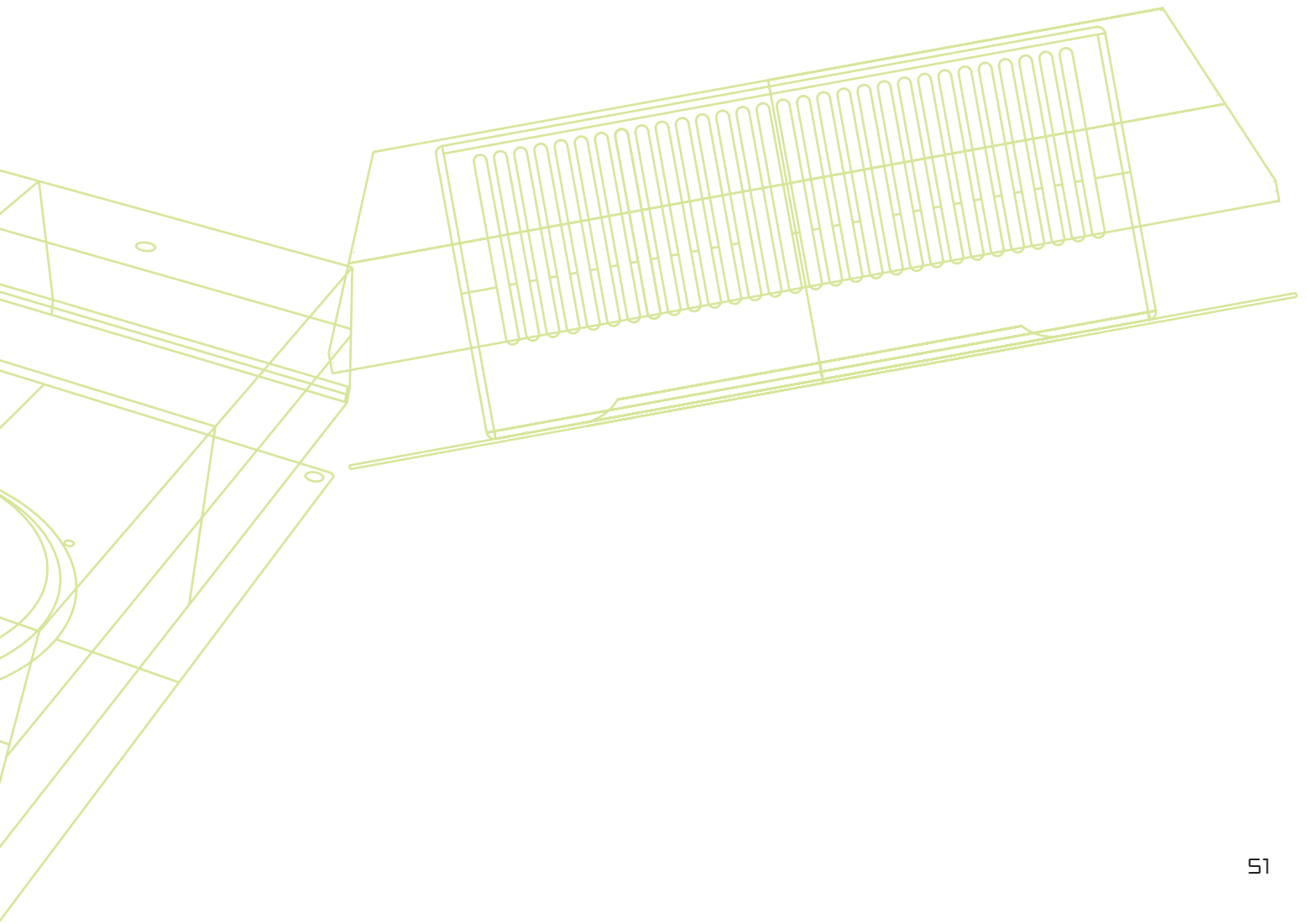


General specifications

Specifiche generali

- Epoxy painted steel casing
 - colour RAL 7032 (T19R and T22R)
 - colour RAL 7035 (T19U and T22U)
- Complete with gasket in polyurethane foam
- IP23 protection degree, according to EN 60529

- Struttura in acciaio verniciato con polvere epossidica
 - colore RAL 7032 (T19R e T22R)
 - colore RAL 7035 (T19U e T22U)
- Completo di guarnizione in schiuma poliuretana
- Grado di protezione IP23 secondo EN 60529



Technical data

Dati tecnici

Model	Voltage	Frequency	Rated Current	Rated Powered	Max Air Flow	Static Pressure	Fan Noise	Weight	Rated Temp. Range	Approvals
	(V)	(Hz)	(mA)	(W)	(m³/h)**	(Pa)	[dB(A)]	(Kg)	(°C)	
T19*115B	115 a.c.	50/60	530/620	58/71	550/590	370/510	67.9/71.0	5.29	-20 ~ +60	CE
T19*230B	230 a.c.	50/60	290/340	62/78	550/590	370/510	67.9/71.0	5.29	-20 ~ +60	CE
T22*115B	115 a.c.	50/60	1,380/1,850	150/210	800/850	520/650	74.0/75.6	6.27	-20 ~ +60	CE
T22*230B	230 a.c.	50/60	690/930	158/213	800/850	520/650	75.2/76.7	6.27	-20 ~ +60	CE

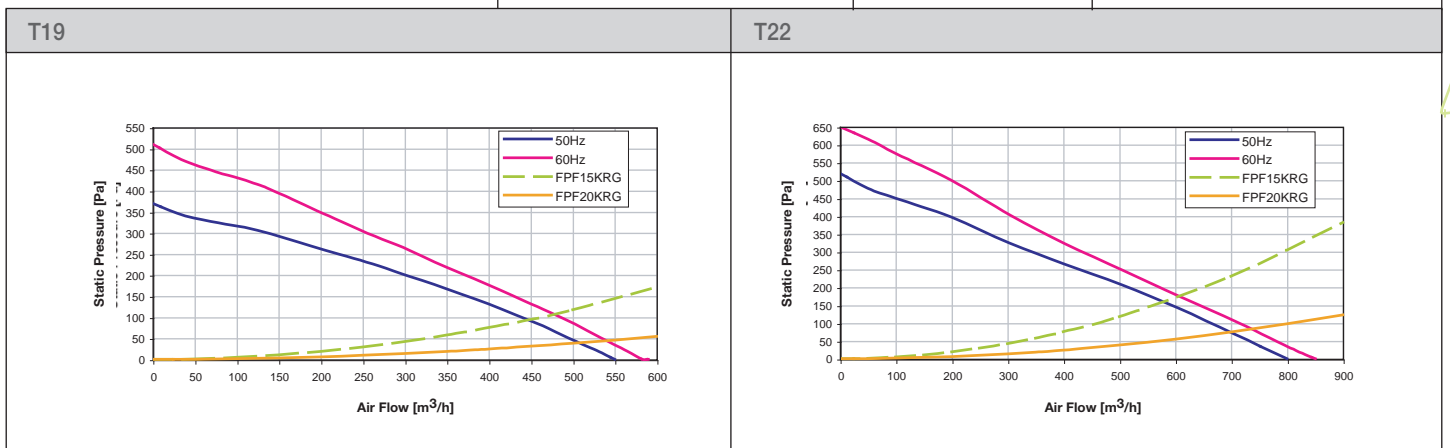
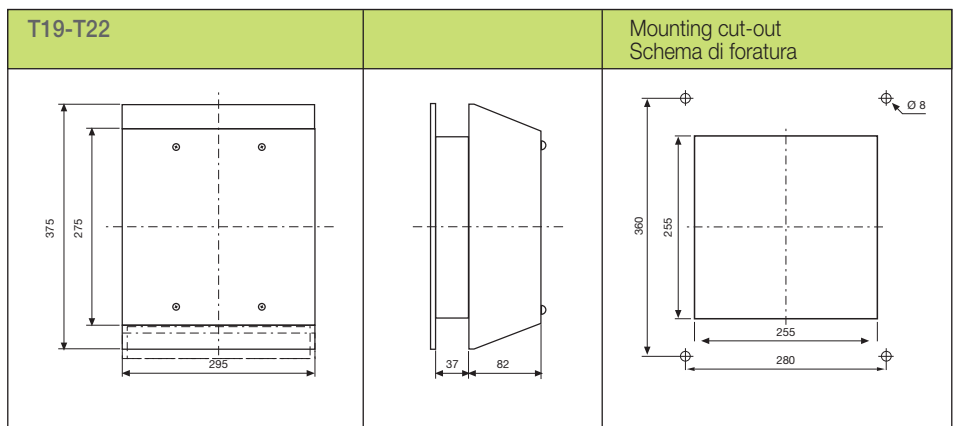
(*) may be R for color RAL 7032 or U for color RAL 7035

(**) data with uncertainty of 15%

Technical specifications

Specifiche tecniche

Dimensions mm
Dimensioni in mm



General description

Descrizione generale

roof
exhaust units
TP series

torrini di
estrazione
serie TP

The roof exhaust units are used to remove heat from the upper region of the cabinet, improving the internal air flow. The exhaust units, equipped with a high-head radial fan, can be paired with a filter media in order to minimize the ingress of dust.

The "TP" series features reduced dimensions and a connection by terminal block. The casing is in plastic with an aluminium top.

I torrini di estrazione da tetto vengono utilizzati per l'aspirazione diretta del calore dalla zona superiore dell'armadio agevolando il flusso d'aria interno. I torrini, equipaggiati con ventilatori radiali ad alta prevalenza, possono essere accoppiati con filtro di immissione dell'aria per ridurre al minimo l'ingresso della polvere.

La serie "TP" si presenta con dimensioni ridotte e un cablaggio standard tramite morsetti. La struttura principale è in materiale plastico e la parte superiore in alluminio.

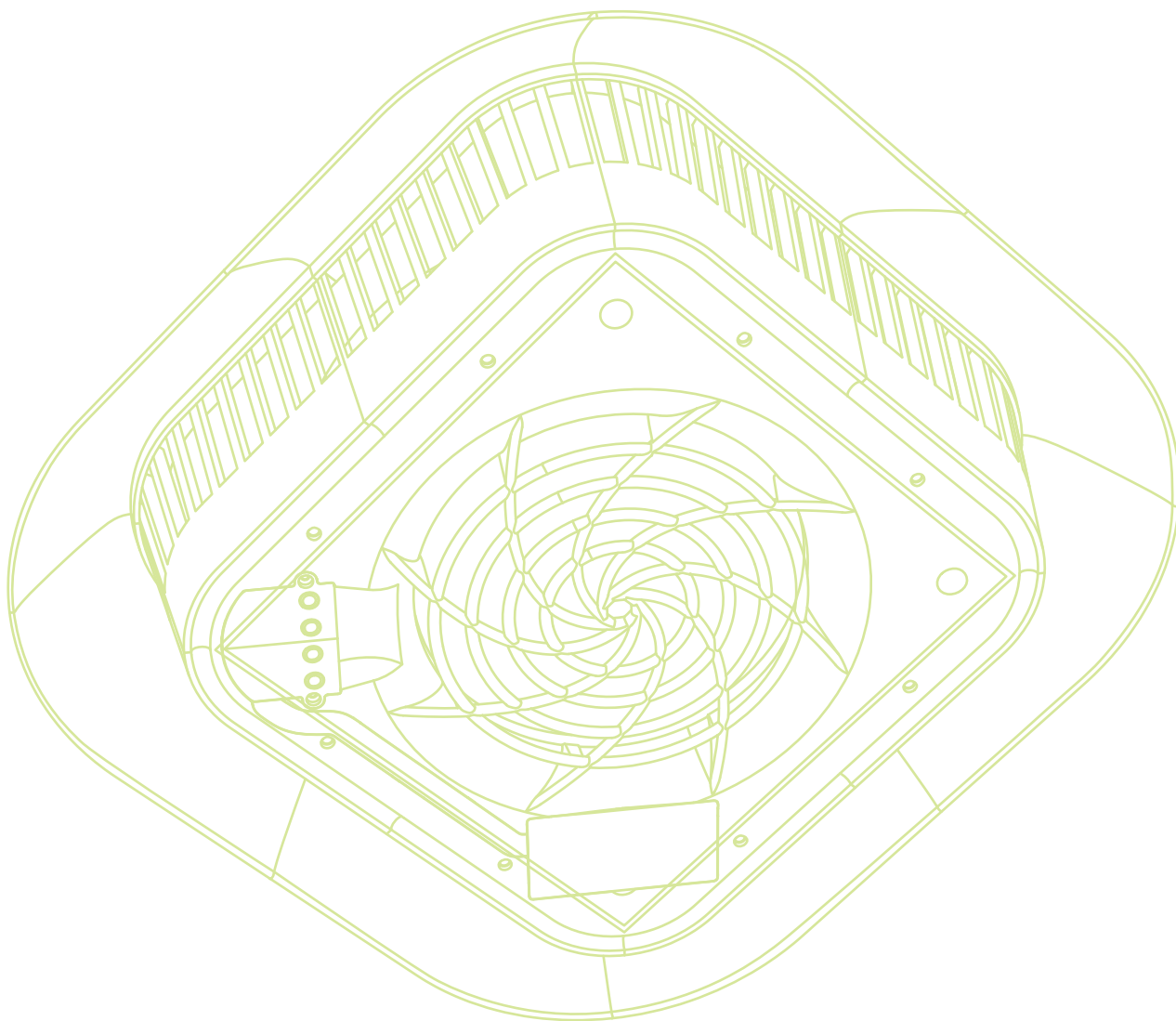


General specifications

Specifiche generali

- Mounting by nr. 8 Ø4x16 mm screws for thermoplastic material in square openings as indicated in the cut-out diagram
- Plate thickness: any
- Plastic parts in PC/ABS alloy and aluminium. All parts self-extinguishing, according to UL 94V-0
- Standard colour RAL 7035, other colours available on request, subject to quantity
- Permanent sealing gasket in polyurethane foam
- IP24, IP54 e IP55 standard protection degree, according to EN 60529

- Montaggio con nr. 8 viti Ø4x16 mm per materiale termoplastico in aperture di forma quadrata come da schema di foratura
- Spessore della lamiera: qualsiasi
- Parti plastiche in PC/ABS e alluminio. Tutti autoestinguenti secondo UL 94V-0
- Colore standard grigio RAL 7035, altri colori disponibili su richiesta e per quantità
- Guarnizione di tenuta in schiuma poliuretana posizionata a macchina
- Grado di protezione standard IP24, IP54 e IP55, secondo EN 60529



Technical data

Dati tecnici

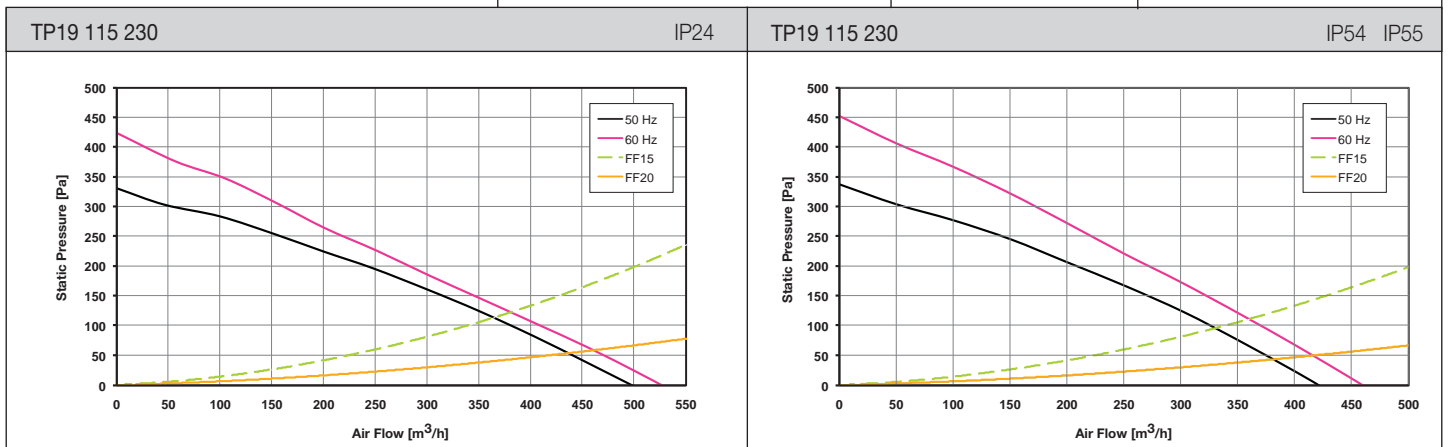
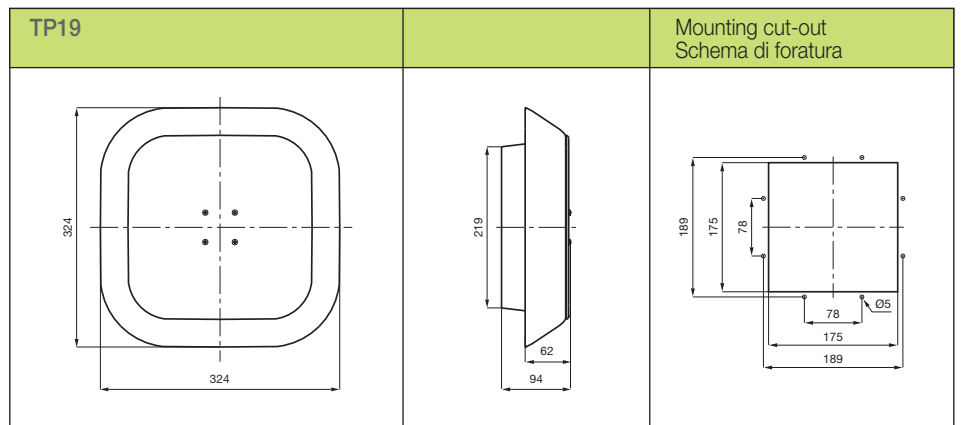
Model	Voltage	Frequency	Rated Current	Rated Power	Max Air Flow	Static Pressure	Fan Noise	Weight	Rated Temp. Range	Protection Degree	Approvals
	(V)	(Hz)	(mA)	(W)	(m³/h) *	(Pa)	[dB(A)]	(Kg)	(°C)	IP	
TP19U115B	115 a.c.	50/60	550/650	62/75	500/530	330/425	67.9/71.0	2.00	-10 ~ +60	24	CE cURus
TP19U115B54	115 a.c.	50/60	620/640	66/74	420/460	340/455	67.9/71.0	2.20	-10 ~ +60	54	CE cURus
TP19U115B55	115 a.c.	50/60	620/640	66/74	420/460	340/455	67.9/71.0	2.20	-10 ~ +60	55	CE cURus
TP19U230B	230 a.c.	50/60	307/361	67/83	500/530	330/425	67.9/71.0	2.00	-10 ~ +60	24	CE cURus
TP19U230B54	230 a.c.	50/60	309/360	70/83	420/460	340/455	67.9/71.0	2.20	-10 ~ +60	54	CE cURus
TP19U230B55	230 a.c.	50/60	309/360	70/83	420/460	340/455	67.9/71.0	2.20	-10 ~ +60	55	CE cURus

(*) Data with uncertainty of 10%

Technical specifications

Specifiche tecniche

Dimensions mm
Dimensioni in mm



General description

Descrizione generale

Fan trays CVS series

cassetti di ventilazione Series CVS

The "CSV" fan tray, fixed within the enclosure or rack 19", guarantees the right cooling, thanks to a continuous air circulation and prevents the formation of hot spots.

It can be equipped with three or six 120x38mm ball bearing compact fans, featured by quiet and high reliability and powered by 230V.

The fan tray, already wired and ready for connection, can be integrated into the enclosure or rack 19" with the minimal assembly effort and positioned at any heights.

Il cassetto di ventilazione serie "CSV", inserito all'interno di un quadro elettrico o rack 19" ne garantisce il giusto raffreddamento, grazie a una continua circolazione dell'aria e l'asportazione del calore dissipato.

Può essere equipaggiato con tre oppure sei ventilatori compatti 120x38mm su cuscinetti a sfera, caratterizzati da un buon grado di silenziosità ed affidabilità con tensione di alimentazione a 230V.

Il cassetto, cablato e pronto per l'allacciamento viene alloggiato a qualsiasi altezza all'interno del quadro elettrico o rack 19" e fissato direttamente ai montanti.



General specifications

Specifiche generali

- Epoxy painted steel casing
 - colour RAL 7035
- Fixing system by nr. 4 M6 screws
- Rated temperature range -40°C... +70°C
- Rated storage range -45°C...+75°C
- Lifetime L 10:
 - 40.000 hours at 40°C temperature
- Electrical connection by cable FROR 3G1.0 (blue, brown and yellow/green)
- Earth connection by yellow/green conductor
- Standard cable lenght 2,600mm
- Impedance motor protection
- Ball bearing
- IP20 protection degree, according to EN 60529

- Struttura in acciaio verniciato con polvere epossidica
 - colore RAL 7035
- Sistema di fissaggio con n. 4 viti M6
- Campo temperatura di funzionamento -40°C... +70°C
- Campo temperatura di stoccaggio -45°C...+75°C
- Vita L 10:
 - 40.000 ore alla temperatura di 40°C
- Connessione elettrica con cavo FROR 3G1.0 (blu, marrone e giallo/verde)
- Connessione a terra con collegamento giallo/verde
- Lunghezza cavo 2.600mm standard
- Motori protetti dalla loro impedenza
- Supporto con cuscinetti
- Grado di protezione IP20 secondo EN 60529

Technical
data

Dati
tecnici

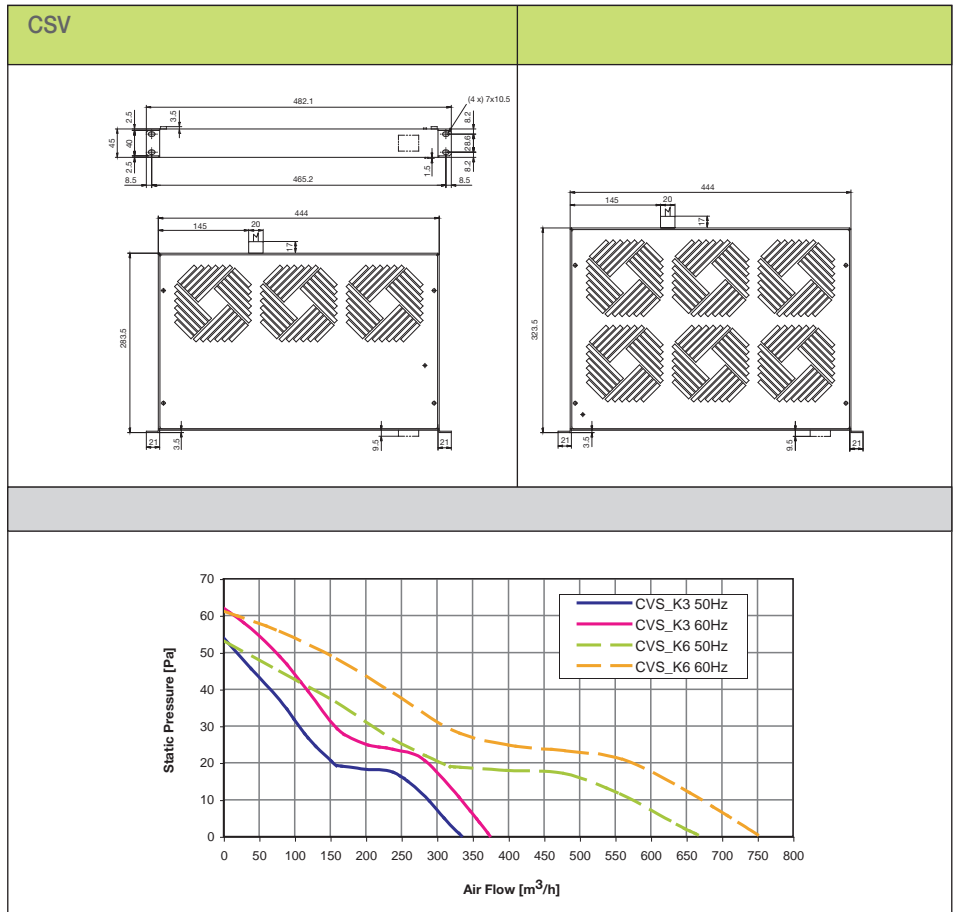
Model	Voltage	Frequency	Rated Current	Rated Power	Max Air Flow	Static Pressure	Weight	Fan Noise	Approvals
	(V)	(Hz)	(mA)	(W)	(m ³ /h) *	(Pa)	(Kg)	[dB(A)]	
CSV230K3-00	230 a.c.	50/60	290/266	53/50	335/375	54/62	5.73	45.3/49.3	CE
CSV230K6-00	230 a.c.	50/60	580/532	106/100	664/754	53/61	7.25	48.3/52.3	CE

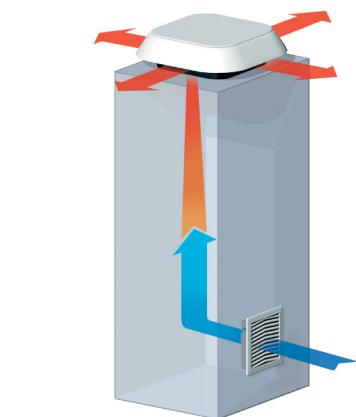
(*) data with uncertainty of 15%

Technical
specifications

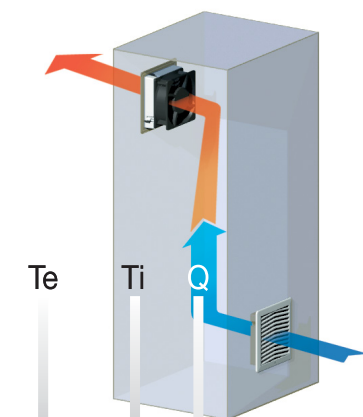
Specifiche
tecniche

Dimensions mm
Dimensioni in mm





Ti > Te



es: 20 °C es: 30 °C

$\Delta T = T_i - T_e$

es: 30-20=10 °C es: 500W

$$\text{AIR FLOW} \text{ portata d'aria} = f \cdot \frac{Q}{\Delta T}$$

es: $3.2 \cdot \frac{500}{10} = 160 \frac{\text{m}^3}{\text{h}}$

es: 3.2

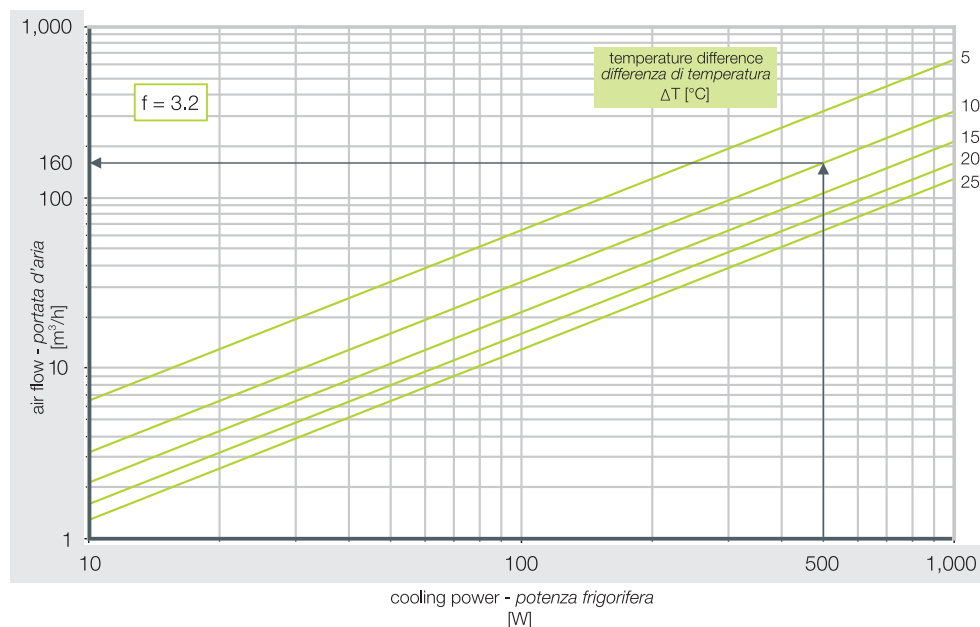
ALTITUDE [m over sea level] QUOTA [metri sul livello del mare]	f [m ³ °C/W/h]
0 ~ 100	3.1
100 ~ 250	3.2
250 ~ 500	3.3
500 ~ 750	3.4
750 ~ 1,000	3.5

Sizing

When we use fan filters, we must accept a target temperature inside the cabinet greater than ambient temperature outside the cabinet. So the difference ΔT between inside and outside temperature is always positive. We can calculate the fan-filter air flow by the ratio between the thermal power Q and the difference of temperature ΔT and multiplying by a coefficient of heat transfer (f) which consider the physical properties of the air such as the specific heat and density which changes with the altitude.

Dimensionamento

Si parte dall'ipotesi che la temperatura dell'aria desiderata all'interno dell'armadio sia maggiore della temperatura ambiente. La differenza tra la temperatura interna e quella esterna viene chiamata ΔT ed è sempre positiva. Il valore della portata d'aria del ventilatore-filtro che si vuole ottenere risulta dal rapporto tra la potenza termica da dissipare e ΔT , il tutto moltiplicato per un coefficiente f di scambio termico che tiene conto del calore specifico e della densità dell'aria, che varia con la quota.



Nomenclature:

Ti = target temperature inside the cabinet
 Te = ambient temperature outside the cabinet
 ΔT = temperature difference between inside and outside the cabinet
 Q = active thermal load inside the cabinet
 f = coefficient of heat transfer

Legenda:

Ti = temperatura desiderata all'interno dell'armadio
 Te = temperatura esterna (ambiente)
 ΔT = differenza di temperatura tra l'interno dell'armadio e l'ambiente esterno
 Q = potenza termica attiva dissipata all'interno dell'armadio
 f = coefficiente di scambio termico

Environmental Type ratings

Some of "FPF" series fan filter units have UL certification, granted by Underwriters Laboratories Inc., in conformance with the UL50E standard, defining the resistance of enclosures for electric devices under particular environmental conditions.

Tipi di protezione

Alcuni dei gruppi filtro serie "FPF" hanno la certificazione UL, rilasciata da Underwriters Laboratories Inc., secondo lo standard UL50E, che definisce la resistenza delle custodie per i dispositivi elettrici a determinate condizioni ambientali.

	Enclosure Types	Classificazione
Type 1	Primarily indoor use to provide protection against contact with the enclosed equipment and against a limited amount of falling dirt	Uso primario interno per proteggere dal contatto con le apparecchiature e contro limitate quantità di sporcizia
Type 3R	Outdoor use to provide a degree of protection against falling rain; undamaged by the formation of ice on the enclosure	Uso esterno per fornire un grado di protezione contro la pioggia e per evitare danni dovuti alla formazione di ghiaccio esterno
Type 12	Indoor use to provide a degree of protection against dust, dirt, fiber flying, dripping water, and external condensation of non-corrosive liquids	Uso interno per offrire un grado di protezione contro la polvere, lo sporco o il gocciolio di liquidi non corrosivi

All specifications, data and drawings are subject to change without notice and are approximate.

Le specifiche, i dati e i disegni riportati nel presente catalogo sono indicativi e possono subire variazioni senza preavviso.

NOTA - Per i dati presenti nei disegni e nelle tabelle la notazione numerica è inglese: il separatore decimale è il punto e il simbolo di separazione delle migliaia è la virgola.

LIMITED LIABILITY AND WARRANTY DISCLAIMER

The Manufacturer makes hereby no representation or warranties expresses or implied, statutory or otherwise. All implied warranties, including those of merchantability or fitness for use are hereby disclaimed.

The product is made in conformity with the cogent standards provided for by European Health and Safety legislation.

Where expressly indicated, the product conforms to the standard of Safety and Performance defined by recognised international bodies and subject to their periodic verification.

Any loss or damage, both incidental and consequential, for any failure to perform or delay to perform due to wrong use or wrong installation of the product, as well as to the non-observance of technical specifications, are not covered by the Manufacturer's warranty.

The buyer alone is responsible to determine the suitability of the product.

The data indicated in the catalogue is purely indicative. The product is subject to wear.

Electrical connections must be carried out in compliance with pertinent national, state or local health and safety laws.

If the apparatus in which the product is incorporated should guarantee continuous use without variation or interruption in performance, the product must be utilised only in the presence of a device which immediately signals any functional anomaly or arrest, allowing immediate intervention or the activation of an auxiliary product.

If installed and/or integrated in other apparatus, the use and maintenance manual of the apparatus must also indicate the correct use of our product and its working characteristics and must prescribe its estimated life, before the product actually reaches the maximum working hours shown in the data sheets, that is to say, taking account of all the specific conditions of use and of the technical specifications supplied and must supply exhaustive information allowing the user to substitute the product (removal & substitution).

Any product found to be defective within the limits of the warranty, will be replaced free of charge. Costs of labour or other extra subsequent costs relative to the removal, restitution or new installation of the fan filter are not covered by the product warranty.

LIMITAZIONE DI RESPONSABILITÀ E GARANZIA

Il produttore non fa qui dichiarazioni o fornisce garanzie espresse od implicite, conformi alla legge od altro. Tutte le garanzie implicite, incluse quelle di adeguatezza ad uno scopo specifico sono qui negate.

Il prodotto è realizzato nel rispetto delle normative di conformità cogenti previste dalla legislazione europea in materia di sicurezza e tutela della salute.

Ove espressamente indicato, il prodotto è conforme agli standard di sicurezza e prestazione definiti da enti internazionalmente riconosciuti e sottoposto alle loro verifiche periodiche.

Qualsiasi danno o perdita tanto accidentale che consequenziale a qualsiasi mancanza di prestazione o ritardo nella prestazione dovute ad uso errato o ad errata installazione del prodotto come pure alla non osservanza delle specifiche tecniche, non è coperta dalla garanzia fornita dal fabbricante.

Spetta unicamente all'acquirente determinare se il prodotto è adatto all'uso.

I dati indicati nel catalogo sono puramente indicativi. Il prodotto è soggetto a usura.

I collegamenti elettrici devono essere eseguiti nel rispetto delle rispettive leggi nazionali, statali e locali sulla sicurezza.

Se l'apparecchiatura in cui il prodotto è integrato deve garantire una continuità di funzionamento senza variazioni od interruzione delle prestazioni, il prodotto deve essere utilizzato unicamente in presenza di un dispositivo che segnali immediatamente ogni anomalia di funzionamento o arresto consentendo un immediato intervento o l'entrata in funzione di un prodotto ausiliario.

Se installato e/o integrato in altre apparecchiature, il manuale di utilizzo e manutenzione dell'apparecchiatura dovrà fornire ogni indicazione anche sul corretto uso del ns. prodotto e sulle sue caratteristiche di funzionamento e dovrà prescrivere la sua sostituzione preventiva, ovvero prima che il ns. prodotto abbia raggiunto il numero massimo di ore di funzionamento riportato nei data sheets, tenuto cioè conto di tutte le specifiche condizioni di esercizio e delle specifiche tecniche fornite e dovrà fornire esaurienti informazioni per consentire all'utilizzatore la sostituzione del prodotto (rimozione + sostituzione).

Ogni prodotto trovato difettoso, entro i limiti della garanzia, sarà sostituito gratuitamente. Il costo della manodopera o di ogni altra spesa conseguente relativa alla rimozione, alla restituzione o alla nuova installazione del gruppo filtro non è coperta dalla garanzia del produttore.

Colors of engineering.

Fandis is an international point of reference for consultation and technological engineering, activities applied to the two Business Units: Screen Solutions, solutions and products for domestic and commercial screen systems; Thermal Solutions, solutions and products for temperature management and control in industrial, professional and domestic applications.

Forever oriented to service excellence, Fandis quality is certified for the entire process of production and research into the design of advanced solutions. Fandis today, thanks to experience accumulated over more than 25 years of activity, provides a valued technological partnership for all its clients.

Fandis è un punto di riferimento internazionale per la consulenza e l'ingegnerizzazione tecnologica, attività applicate alle due business unit: Screen Solutions, soluzioni e prodotti per sistemi di schermatura industriali e civili; Thermal Solutions, soluzioni e prodotti per la gestione e controllo della temperatura in applicazioni industriali, professionali e domestiche.

Da sempre orientata all'eccellenza del servizio, la qualità di Fandis è certificata per l'intero processo produttivo e di ricerca nella progettazione di soluzioni d'avanguardia. Oggi Fandis, grazie all'esperienza accumulata in oltre 25 anni di attività, rappresenta un valido partner tecnologico per tutti i propri clienti.

