

# Scambiatori Aria-olio Serie HPA

*Air-oil heat-exchangers  
HPA Series*



**EMMEGI**





Gli scambiatori di calore aria-olio **EMMEGI**, sono impiegati per il raffreddamento di circuiti oleodinamici usando, come fluido raffreddante, l'aria ambiente convogliata sulla radiante da una ventola azionata da un motore elettrico o idraulico. La massa radiante, in lega d'alluminio ad alta resistenza, è ottenuta mediante un processo costruttivo di saldobrasatura sottovuoto. La particolare configurazione dei condotti aumenta la turbolenza del fluido e di conseguenza la capacità di scambio; inoltre, la presenza di speciali turbolatori sull'alettatura del pacco radiante, migliora ulteriormente il coefficiente di trasmissione totale. Il risultato è un prodotto tecnologicamente avanzato di dimensioni contenute, leggero e robusto.

## Fluidi compatibili

- . OIL MINERALI, HL, HLP.
- . EMULSIONI ACQUA-OLIO
- . ACQUA-GLICOLE
- . Per altri fluidi consultare EMMEGI.

## Specifiche tecniche Masse Radianti

- . Materiale: alluminio "long life".
- . Pressione d'esercizio: 20 bar.
- . Pressione di collaudo: 35 bar.
- . Temperatura max d'esercizio: 120°C
- . Per particolari atmosfere aggressive consultare l'EMMEGI.

## Installazione

Lo scambiatore può essere montato in posizione orizzontale o verticale, rispettando la distanza minima dalla parete ( vedi fig. 1 ), in modo da assicurare un naturale afflusso e deflusso dell'aria di raffreddamento.

Lo scambiatore è installato, di norma, sulle tubazioni di ritorno dell'olio del serbatoio; deve, inoltre essere protetto da urti e vibrazioni meccaniche mediante supporti e collegato all'impianto con tubazioni flessibili. È necessario evitare che sia sottoposto a brusche variazioni di portata, colpi d'ariete e pulsazioni continue che danneggiano in modo irreversibile la radiante.

Per preservare lo scambiatore dalla sovrappressione che si genera all'avviamento dell'impianto, per elevata viscosità dell'olio, si suggerisce l'inserimento di una valvola di by-pass ( vedi fig.2 ).

**EMMEGI** air-oil heat exchangers are used for cooling oil hydraulic systems using as the coolant ambient air that passes over the radiant by means of a fan operated by an electric or hydraulic motor.

The cooler element, in high resistance aluminium alloy, is obtained by means of a braze-welding process carried out under vacuum.

The particular configuration of the cooling pipes increase the turbulence of the fluid consequently of the exchange capacity; moreover, the presence of special jets on the cooler finning further improves the total transmission coefficient.

The result is a very small, light and robust technologically advanced product.

## Compatible fluids

- . MINERAL OILS; HL; HLP.
- . WATER-OIL EMULSION.
- . WATER-GLYCOL.
- . Consults EMMEGI for other fluids.

## Technical specification of Cooler Element

- . Material: "long life" aluminium.
- . Operating pressure: 20 bar
- . Test pressure: 35 bar.
- . Max operating temperature: 120°C.
- . For specially "aggressive" atmospheres contact EMMEGI.

## Installation

The exchangers can be fitted in a horizontal position, respecting the minimum distance from the wall ( see fig.1 ) so as to ensure a natural flow of cooling air.

The exchangers is usually installed on oil tank return piping; it must also be protected from impacts and mechanical vibrations by supports and must be connected to the plant with flexible pipes.

Avoid subjecting the exchanger to sudden changes in flow, hammering and pulsations that can cause irreversible damage to the element.

We recommend installing a by-pass valve ( see fig.2 ) to protect the exchanger from over-pressure generated when the plants is started up due to high oil viscosity.

## Manutenzione

È buona norma prestare particolare attenzione alla pulizia della massa radiante per garantire un naturale ricambio d'aria, ed evitare una diminuzione dell'efficienza termica.

### Pulizia lato olio

Per eseguire la pulizia lato olio, lo scambiatore dovrà essere smontato. Lo sporco può essere rimosso flussando in controcorrente un prodotto sgrassante, compatibile con alluminio. Effettuare un lavaggio con olio idraulico prima di ricollegare il prodotto all'impianto.

### Pulizia lato aria

La pulizia lato aria può essere effettuata con aria compressa o acqua, con direzione del getto parallelo alle alette per non danneggiarle. Lo sporco oleoso o grasso può essere rimosso con getto di vapore o acqua calda. Durante questa operazione, il motore elettrico non deve essere collegato alla tensione, e dovrà essere adeguatamente protetto.

## Esempio di scelta dello scambiatore

Per effettuare la scelta dello scambiatore si procede come segue:

Potenza da dissipare : 19,5 [KW]  
Portata olio ISO VG 32 : 90 [lpm]  
Temperatura ingresso olio : 60 [°C]  
Temperatura ambiente : 30 [°C]  
Ventola azionata da motore elettrico 230/400V-50Hz.

Si calcola la potenza specifica di scambio espressa in KW/°C, conoscendo la potenza da dissipare e il  $\Delta T$  (differenza tra la temperatura olio ingresso e la temperatura ambiente).

$$P = \frac{19,5 \text{ KW}}{60^\circ - 30^\circ} = 0.65 \text{ KW/}^\circ\text{C}$$

Nota la portata olio (90 lpm) e la potenza specifica di scambio (0.65 KW/°C) si procede alla ricerca del prodotto avvalendosi dei grafici riportati a catalogo, relativi ai singoli modelli.

## Maintenance

You should be particularly carefully in cleaning the cooler element to guarantee a natural exchange of air, in order to prevent a reduction in thermal efficiency

### Cleaning oil side

The exchanger should be dismantled to clean on the oil side. The dirt can be removed by flushing, in counter-current, de-greasing substance, compatible with aluminium. Wash with hydraulic oil before re-connecting the product to the plant.

### Cleaning air side

Cleaning on the air side can be done using compressed air or water, directing the jet parallel to the fins so as not to damage them.

Oily dirt or grease can be removed with a jet of steam or hot water. During this operation, the electric motor must be disconnected from the voltage supply, and must be adequately protected.

## Example of how to choose a heat exchanger

Proceed with sizing the exchanger, with a knowledge of the data as the example below shows:

Power to dissipate : 19,5 [KW]  
ISO VG 32 oil flow : 90 [lpm]  
Oil input temperature : 60 [°C]  
Ambient temperature : 30 [°C]  
Fan operating with an electric motor 230/400V-50Hz.

You can then calculate the specific heat exchange power KW/°C if you know the power to dissipate and the  $\Delta T$  (the difference between the oil input temperature and the ambient temperature).

$$P = \frac{19,5 \text{ KW}}{60^\circ - 30^\circ} = 0.65 \text{ KW/}^\circ\text{C}$$

Note the oil flow (90 lpm) and specific exchange power (0.65 KW/°C), product research is made by referring to the graph in the catalogue which is relevant to each model.



# Dati tecnici Technical Data

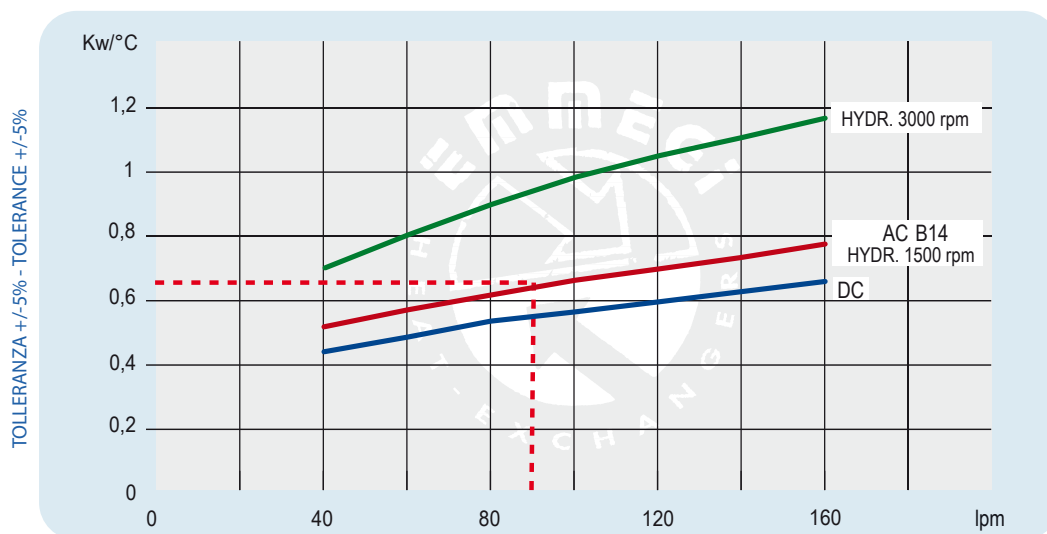


P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
243003 ###	230-400 B14 AC	50	0,75	3 - 1,7	1440	450	82	4000	55		37
	265-460 B14 AC	60	0,86	3 - 1,7	1750		☑	☑			
243012 ###	12 DC	/	0,115	9,58	2530	280	74	1550	65	6,8	32
243024 ###	24 DC	/	0,125	5,20	2900	280	78	1700	65		32
243056 ###	Prepared for Gr.2 hydraulic motor				☑	450	☑	☑	/		35

Per il 12-24V i dati sono riferiti al singolo ventilatore For 12-24V the data refers to each ventilator

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## Diagramma rendimento Performance diagram



Lo scambiatore selezionato risulta il modello:  
HPA 30 - 230/400 - 50Hz  
cod. 243003###.

The exchanger selected is the following model:  
HPA 30 - 230/400 - 50Hz  
cod. 243003###.

Per la completa identificazione dello scambiatore consultare la pagina "DENOMINAZIONE CODICE PRODOTTO". Nel caso non siano conosciuti tutti i dati, per la scelta prendere contatto **EMMEGI**.

For a complete description of the exchanger consult the "PRODUCT ORDERING CODE" page. If you do not know all the data required for selecting the model, contact **EMMEGI**.

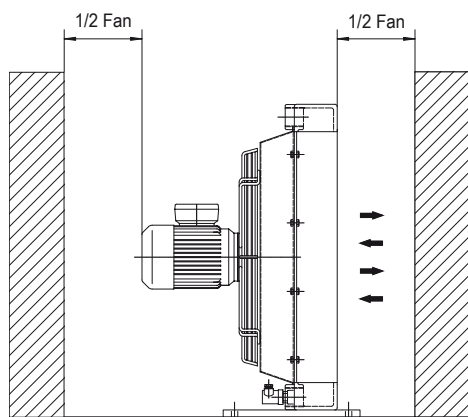


Fig.1

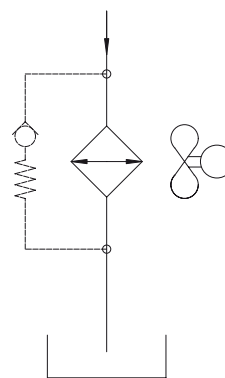
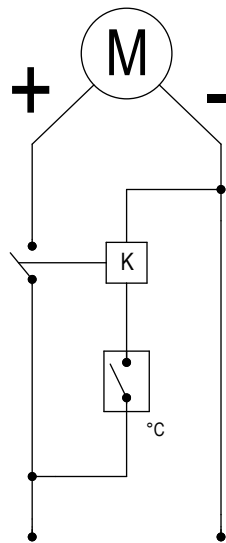


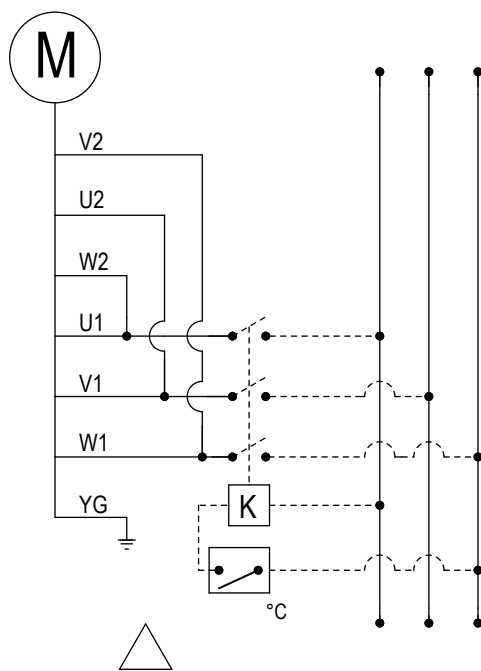
Fig.2

# Collegamenti elettrici

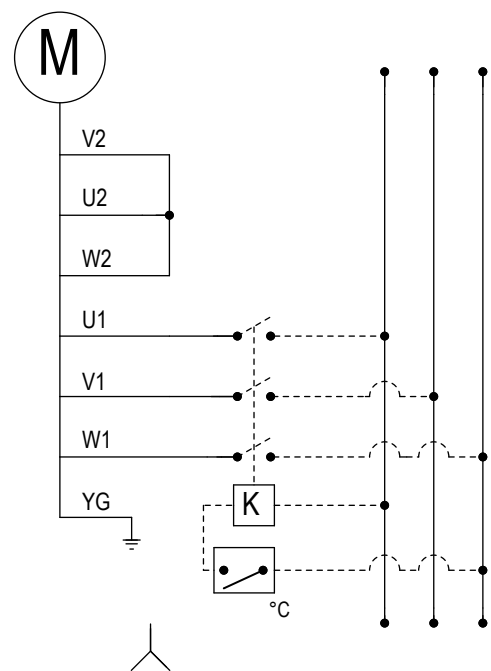
## Electric Wiring



12-24V DC



230V-265V AC 3 PHASE



400V-460V AC 3 PHASE

°C = Termostato NA./Thermostat No.  
K = Relè/Relay

# Modulo richiesta dati

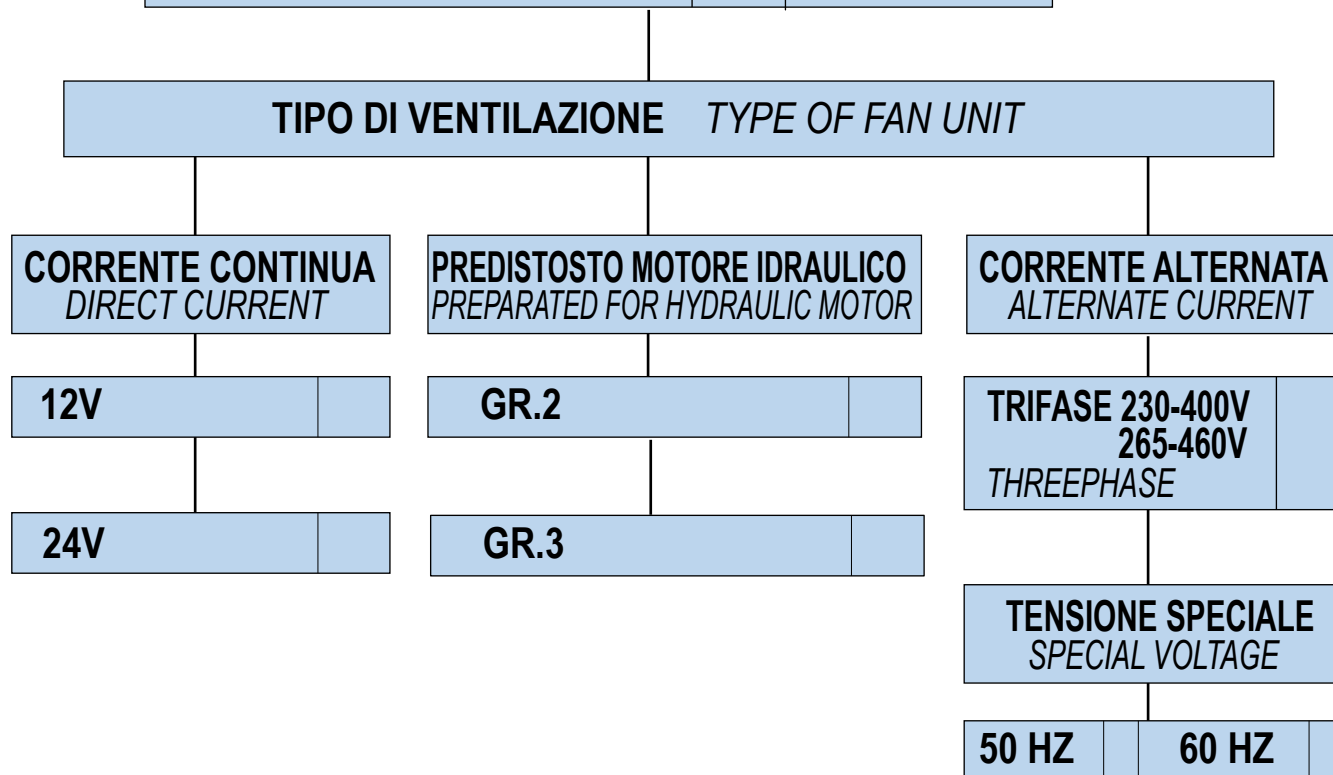
## Sheet for cooler selection



<b>CLIENTE COMPANY</b>	
<b>RICHIEDENTE NAME</b>	

### ARIA-OLIO AIR-OIL

<b>PORTATA OLIO</b> OIL FLOW RATE	lpm	
<b>POTENZA INSTALLATA</b> TOTAL POWER	KW	
<b>POTENZA DA DISSIPARE</b> POWE TO BE DISSIPATED	KW	
<b>TEMPERATURA INGRESSO OLIO</b> OIL TEMPERATURE INLET	°C	
<b>TEMPERATURA ARIA MAX</b> MAX AMBIENT TEMPERATURE	°C	
<b>VISCOSITÀ OLIO</b> OIL VISCOSITY	cst	
<b>PRESSIONE DI LAVORO</b> WORKING PRESSURE	bar	



## Ordering code

Air-oil HPA eries

2

424

03

2

01

### TIPO DI SISTEMA COOLER SERIES

424 (HPA 24)

### TIPO DI MOTORIZZAZIONE FAN MOTOR TYPE

03 AC 230V-400V 50Hz / AC 265-460 60Hz (B14)  
 12 DC 12V  
 24 DC 24V  
 56 Pred. per mot. idr. gr.2 Pred. for hydr. mot. gr.2  
 58 Pred. per mot. idr. gr.3 Prep. for hydr. mot. gr.3

### TERMOSTATI THERMOSTATS

1	Termostato fisso	Fixed thermostat	40-28°
2	Termostato fisso	Fixed thermostat	50-38°
3	Termostato fisso	Fixed thermostat	60-48°
4	Termostato fisso	Fixed thermostat	70-58°
5	Termostato fisso	Fixed thermostat	80-68°
6	Termostato fisso	Fixed thermostat	90-78°
8	Termostato regolabile	Adjustable thermostat	0-90° (TC2)
9	Termostato regolabile collegato	Connected adjustable thermostat	0-120°(TC2)

### TIPO DI VENTILAZIONE VENTILATING TYPE

01 Aspirante Suction air flow  
 02 Soffiante Blowing air flow



## Serie HPA - HPA Series

HPA 12	pag. 8 - 9
HPA 18	pag. 10 -11
HPA 24	pag. 12 -13
HPA 30	pag. 14 -15
HPA 36	pag. 16 -17
HPA 42	pag. 18 -19
HPA 50	pag. 20 -21
HPA 52	pag. 22 -23



## Serie HPA 2 Pass - HPA 2pass Series

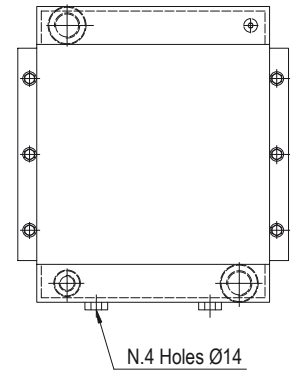
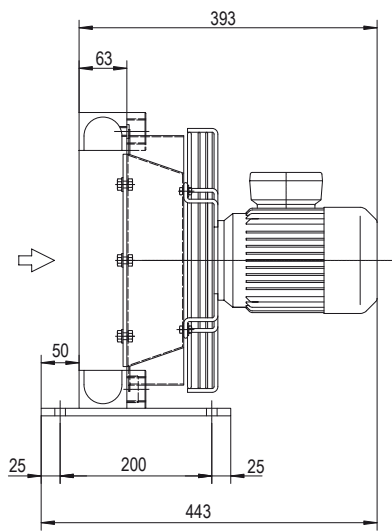
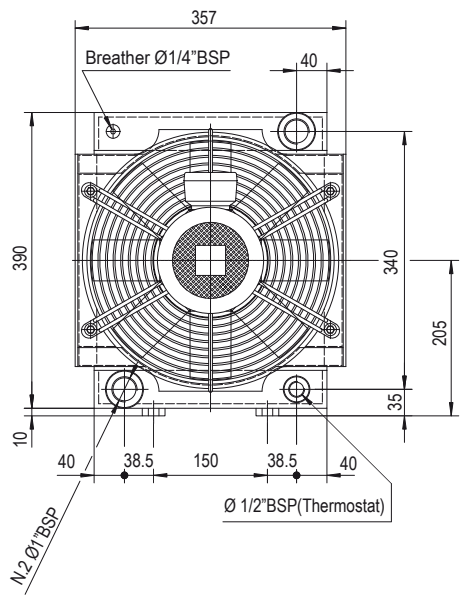
HPA 24 2 PASS	pag. 24-25
HPA 30 2 PASS	pag. 26-27
HPA 36 2 PASS	pag. 28-29
HPA42 2 PASS	pag. 30-31
HPA50 2 PASS	pag. 32-33
HPA52 2 PASS	pag. 34-35

## Serie HPA/2 - HPA/2 Series

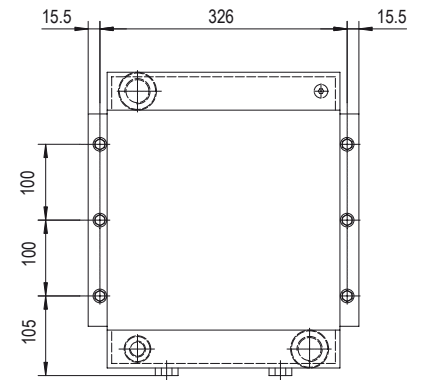
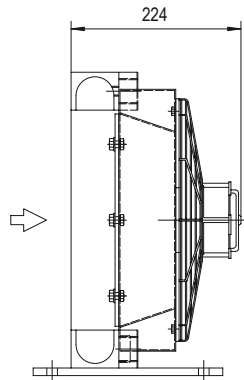
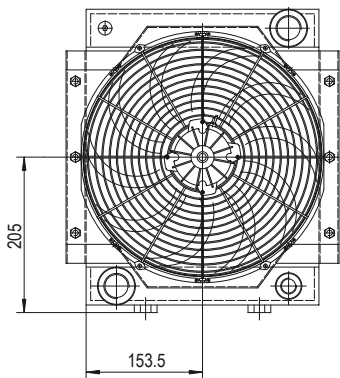
HPA 30/2	pag. 36-37
HPA 36/2	pag. 38-39
HPA 42/2	pag. 40-41
HPA 50/2	pag. 42-43
HPA 52/2	pag. 44-45
HPA 44/2	pag. 46-47
HPA 44/3	pag. 48-49
HPA 46/2	pag. 50-51
HPA 46/3	pag. 52-53



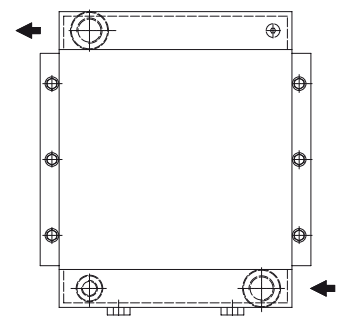
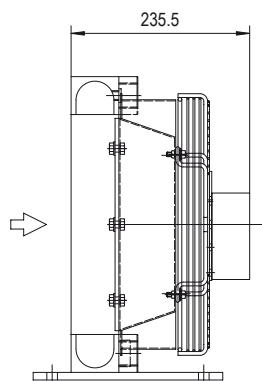
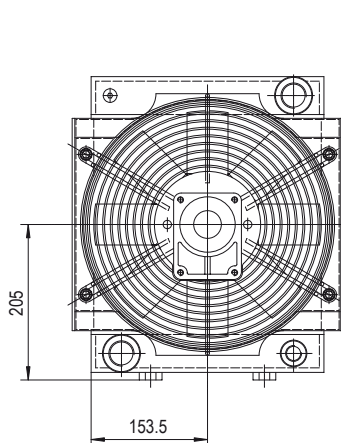
# Dimensioni Dimensions



**P/N 241203###**



**P/N 241212###  
P/N 241224###**



**P/N 241256###**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

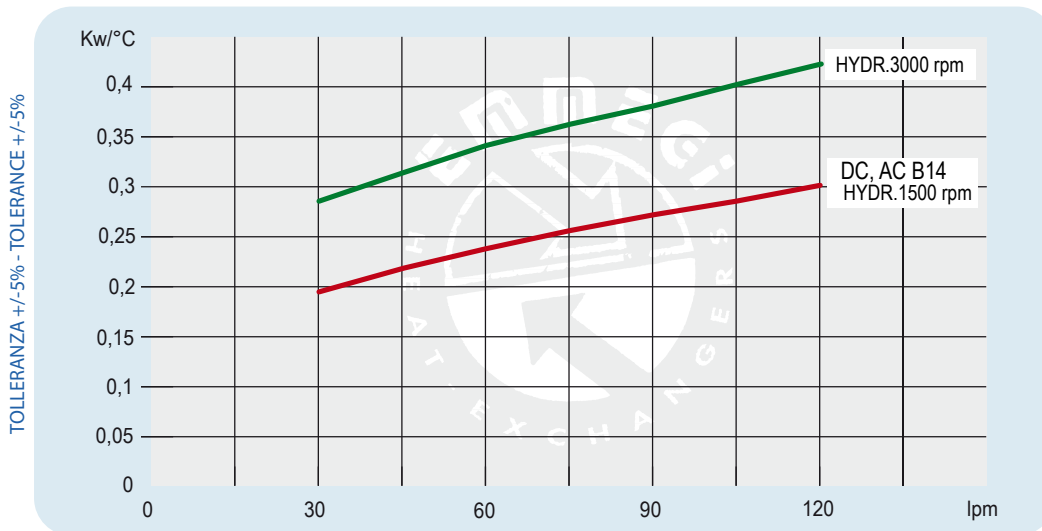
# Dati tecnici Technical Data



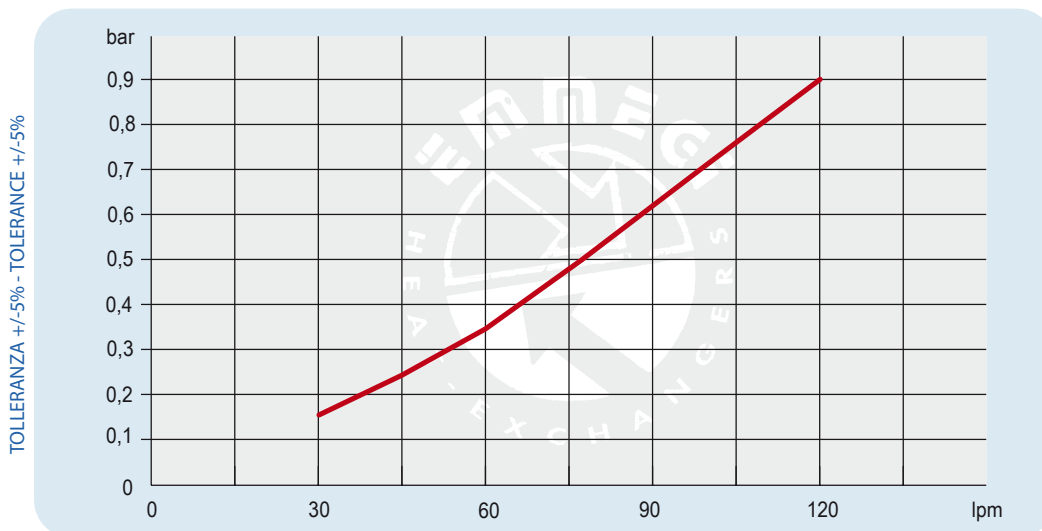
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
241203 ###	230-400 B14 AC	50	0,25	1,7- 1	1350	315	72	1670	55		17
	265-460 B14 AC	60	0,29	1,7- 1	1620						
241212 ###	12 DC	/	0,111	9,30	2600	305	77	1590	65	1,9	15
241224 ###	24 DC	/	0,148	6,15	3100	305	80	1700	65		15
241256 ###	Prepared for Gr.2 hydraulic motor					315			/		16

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## Diagramma rendimento Performance diagram



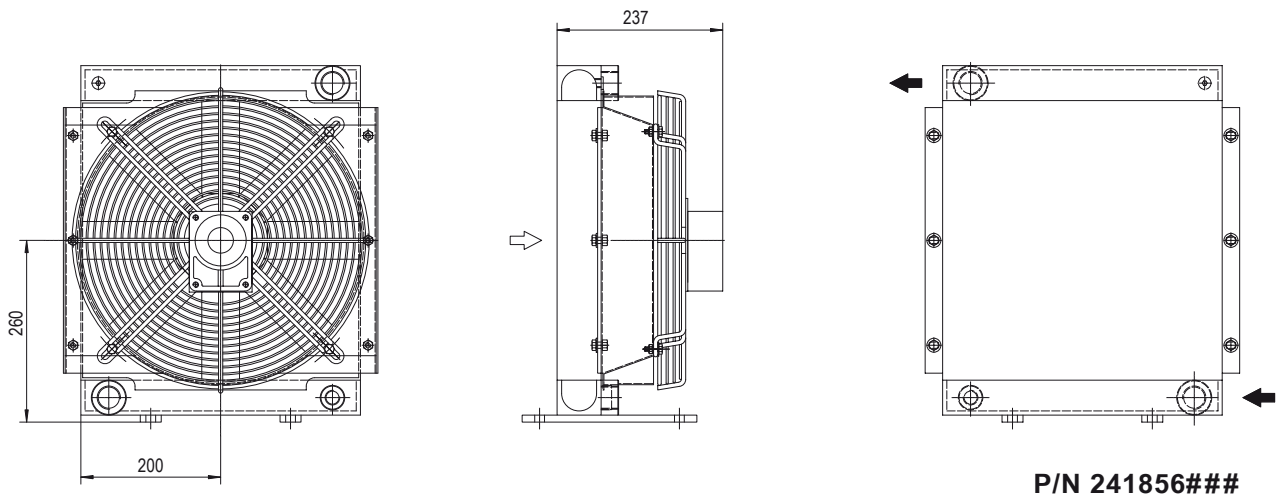
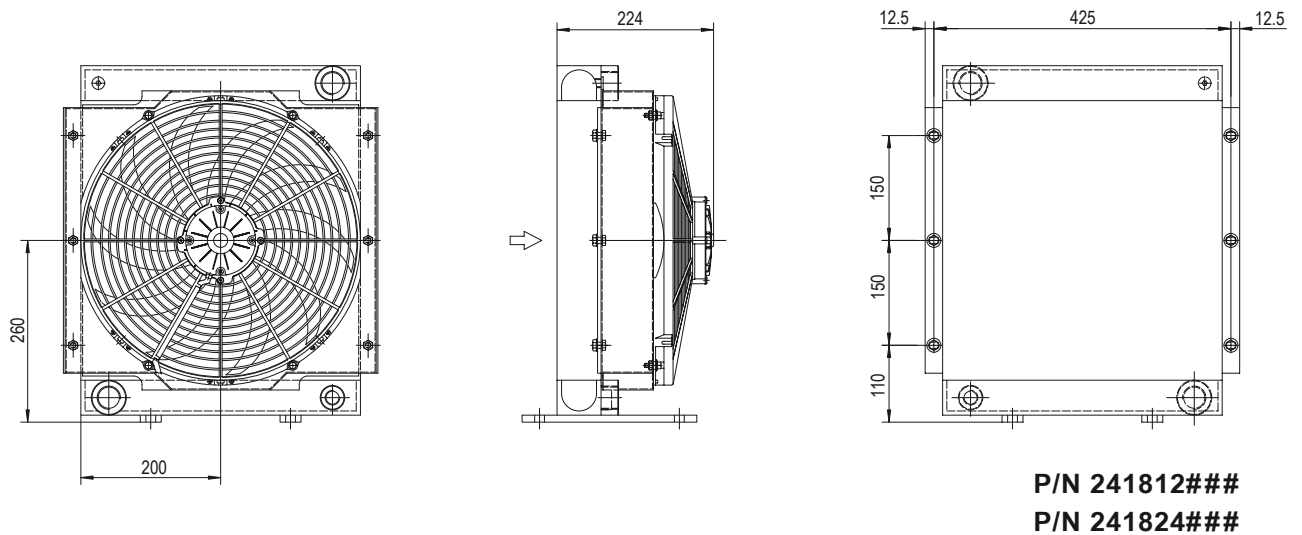
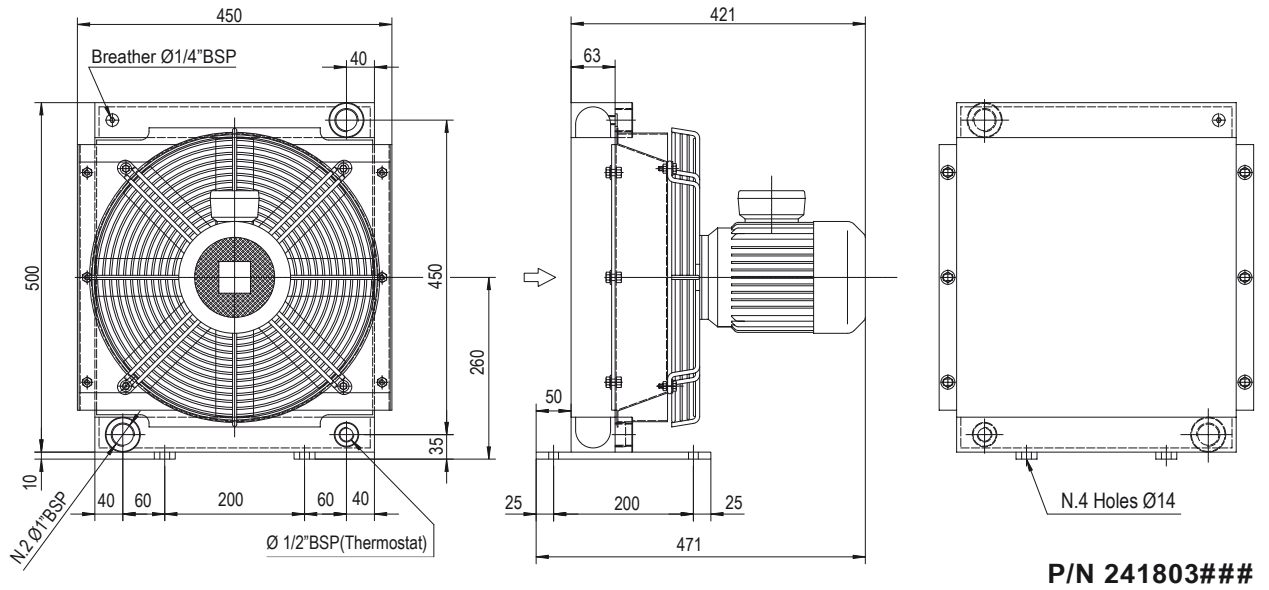
## Perdite di carico Pressure drop ( ISO VG 32)



**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



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# Dati tecnici Technical Data

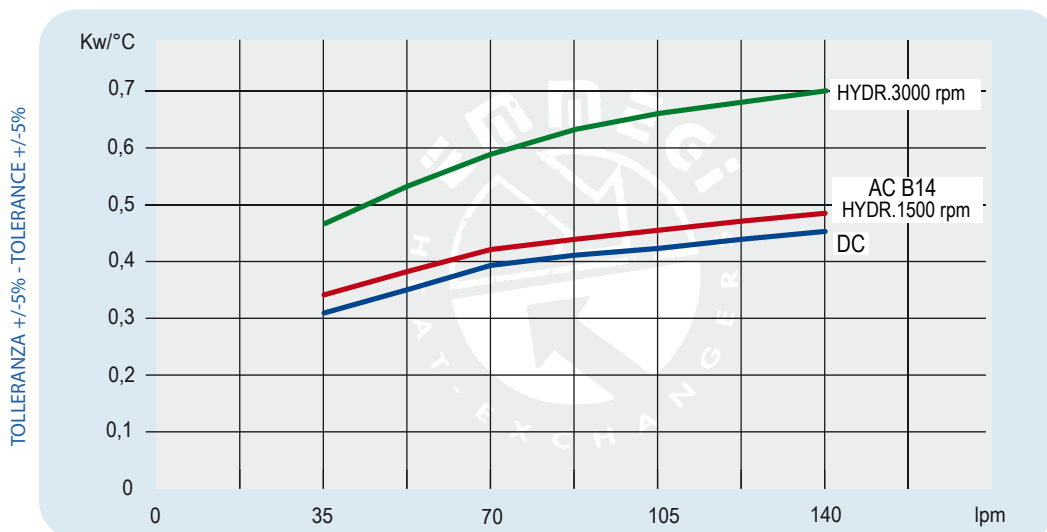


# HPA 18

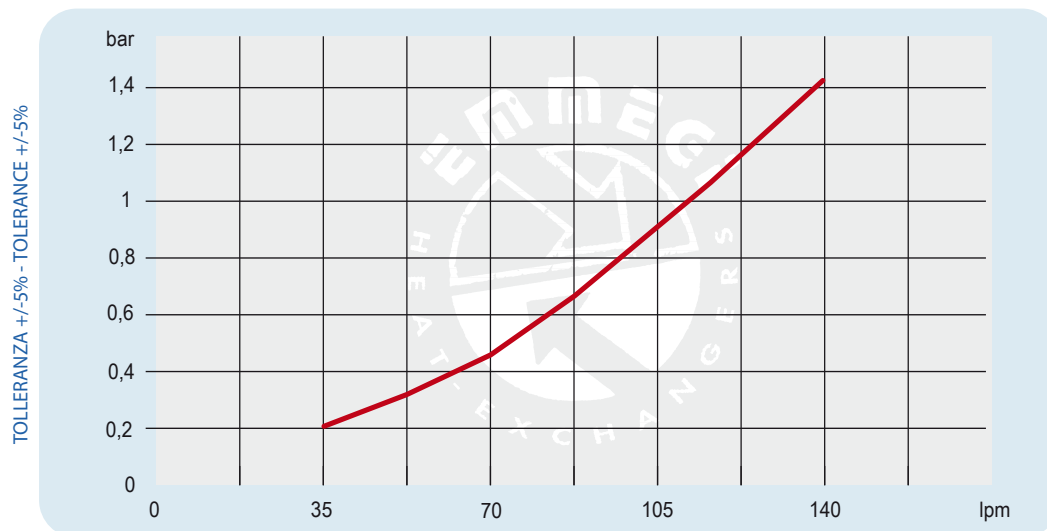
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
241803 ###	230- 400 B14 AC	50	0,37	1,9 - 1,1	1370	400	77	3350	55	2,9	20
	265- 460 B14 AC	60	0,43	1,9 - 1,1	1650						
241812 ###	12 DC	/	0,187	15,6	2350	385	77	2950	65		
241824 ###	24 DC	/	0,170	7,1	2580	385	81	3100	65		
241856 ###	Prepared for Gr.2 hydraulic motor				☑	400	☑	☑	/		19

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## Diagramma rendimento Performance diagram



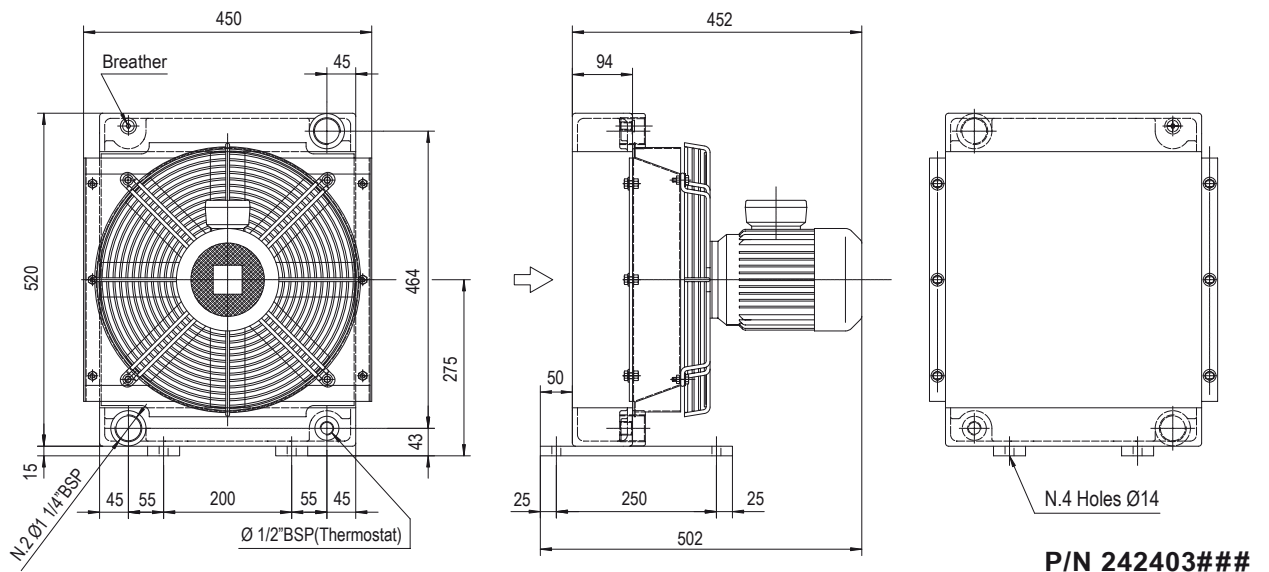
## Perdite di carico Pressure drop ( ISO VG 32)



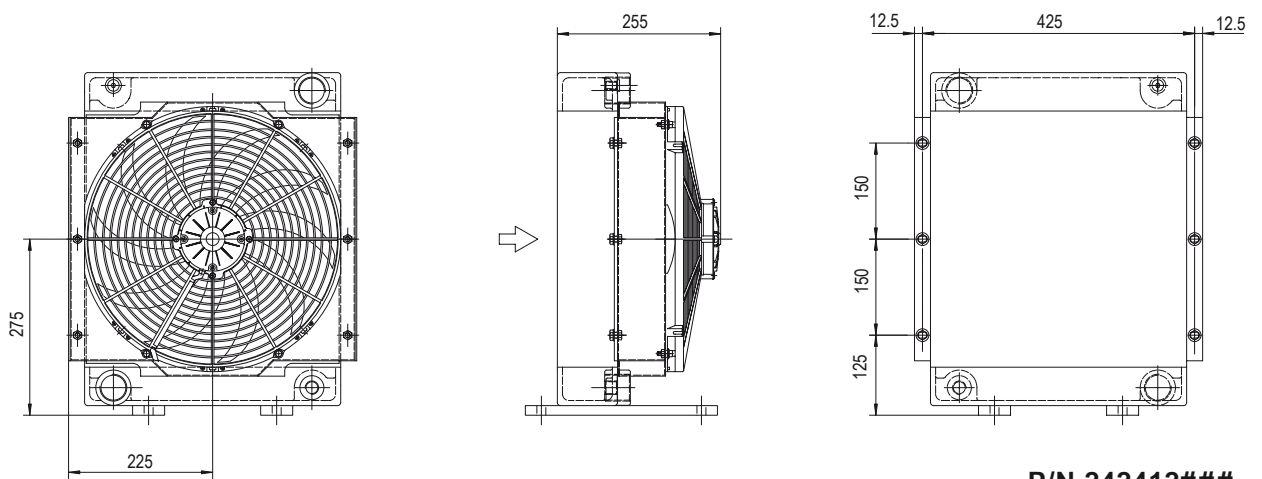
Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions

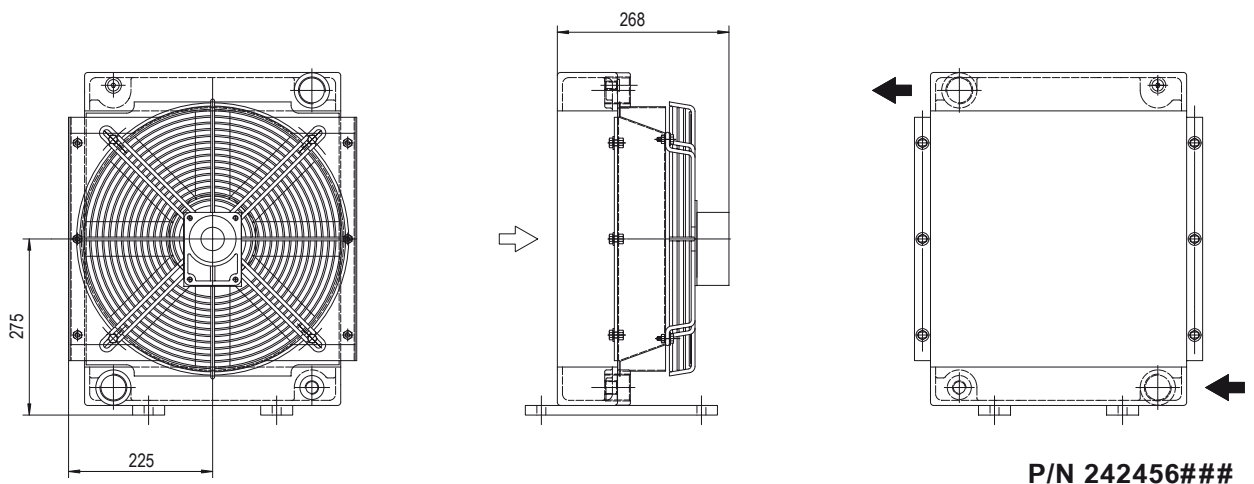


**P/N 242403###**



**P/N 242412###**

**P/N 242424###**



**P/N 242456###**

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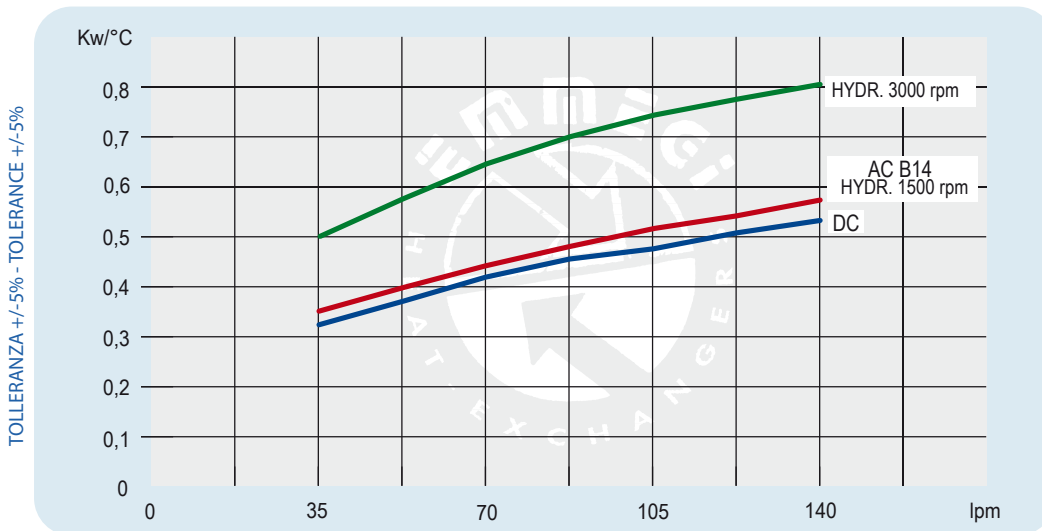
# Dati tecnici Technical Data



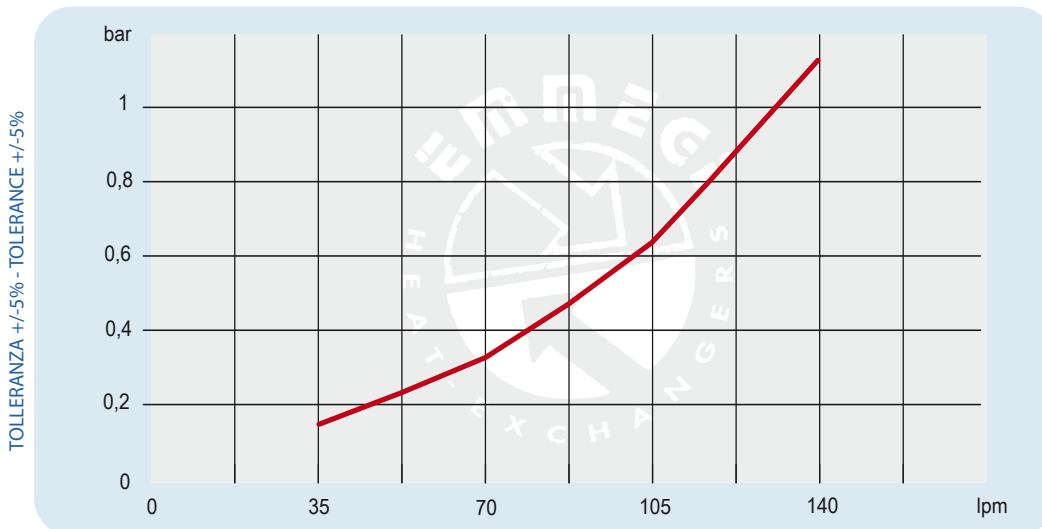
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
242403 ###	230-400 B14 AC	50	0,55	2,9-1,7	1380	400	79	2800	55	2,9	28
	265-460 B14 AC	60	0,63	2,9-1,7	1690						28
242412 ###	12 DC	/	0,187	15,6	2350	385	77	2100	65		22
242424 ###	24 DC	/	0,170	7,1	2580	305	80	2250	65		22
242456 ###	Prepared for Gr.2 hydraulic motor					400			/		23

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## Diagramma rendimento Performance diagram



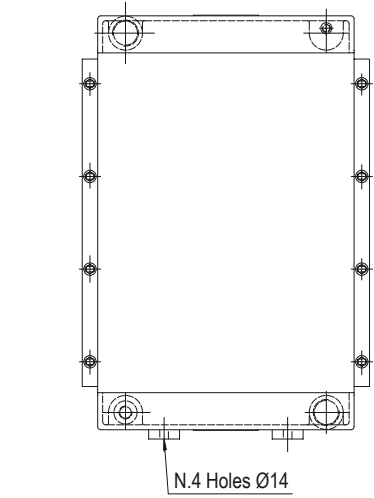
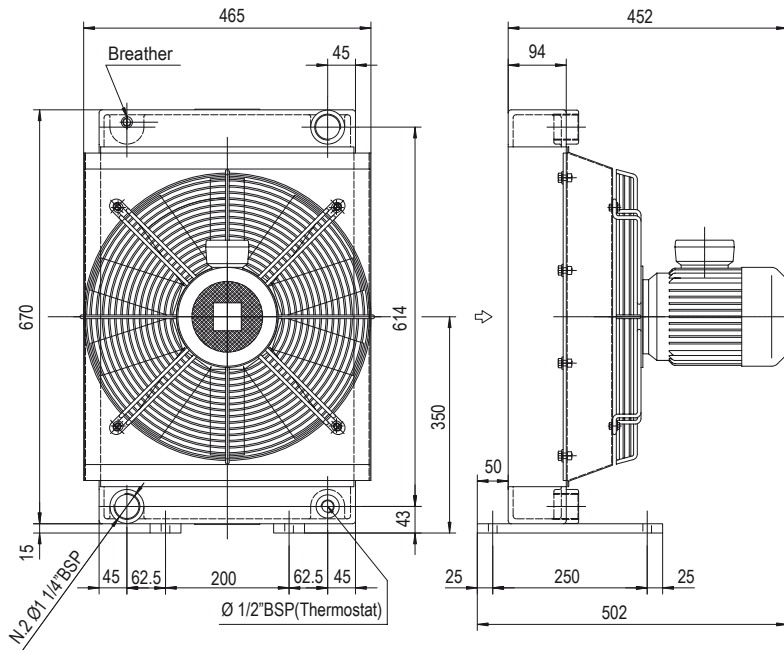
## Perdite di carico Pressure drop ( ISO VG 32)



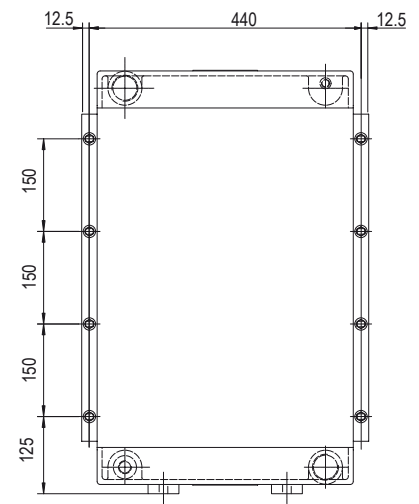
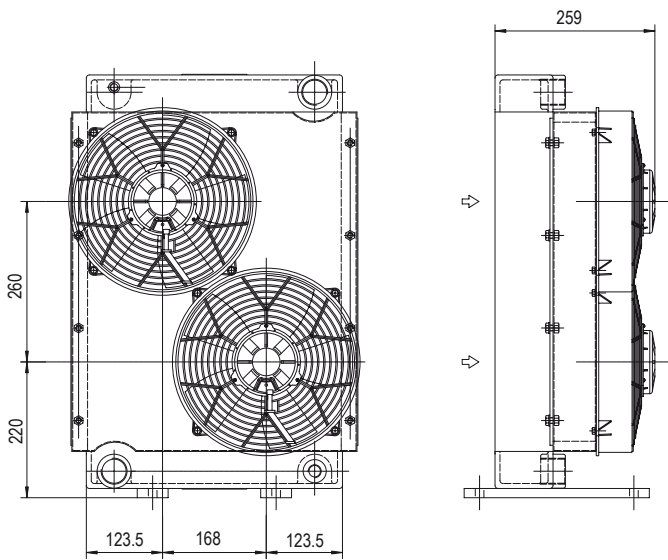
Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

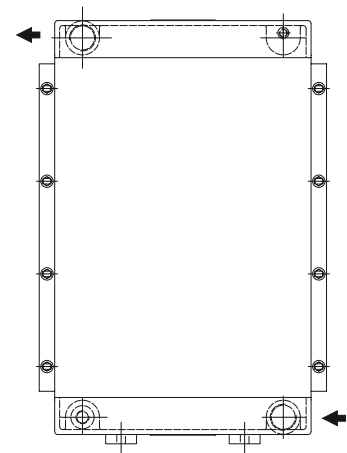
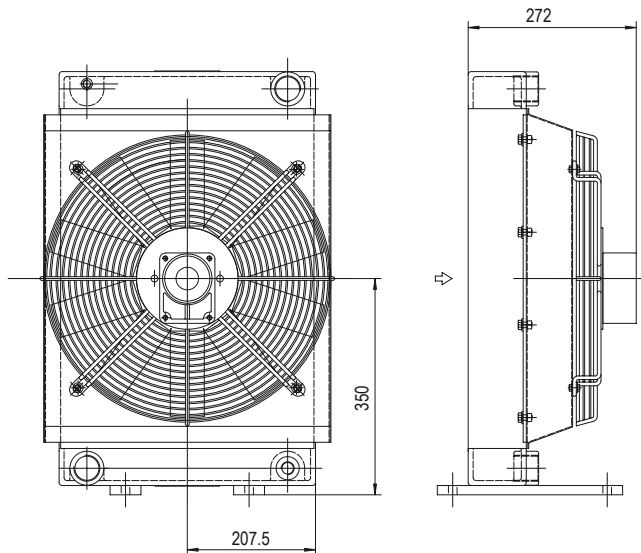
# Dimensioni Dimensions



**P/N 243003###**



**P/N 243012###**  
**P/N 243024###**



**P/N 243056###**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding



# Dati tecnici Technical Data

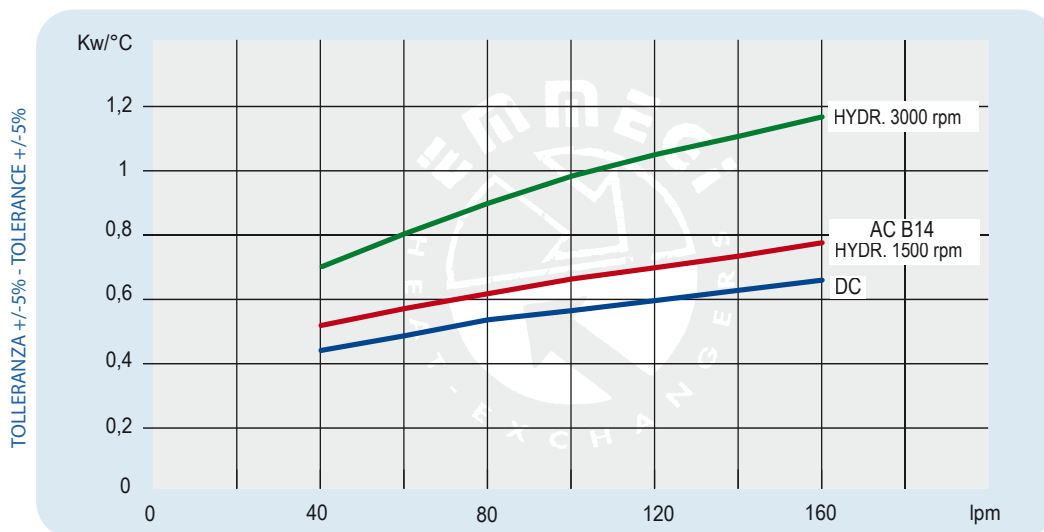


P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lit	Kg
243003 ###	230-400 B14 AC	50	0,75	3 -1,7	1440	450	82	4000	55		37
	265-460 B14 AC	60	0,86	3 -1,7	1750		☑				
243012 ###	12 DC	/	0,115	9,58	2530	280	74	1550	65	6,8	32
243024 ###	24 DC	/	0,125	5,20	2900	280	78	1700	65		32
243056 ###	Prepared for Gr.2 hydraulic motor				☑	450	☑	☑	/		35

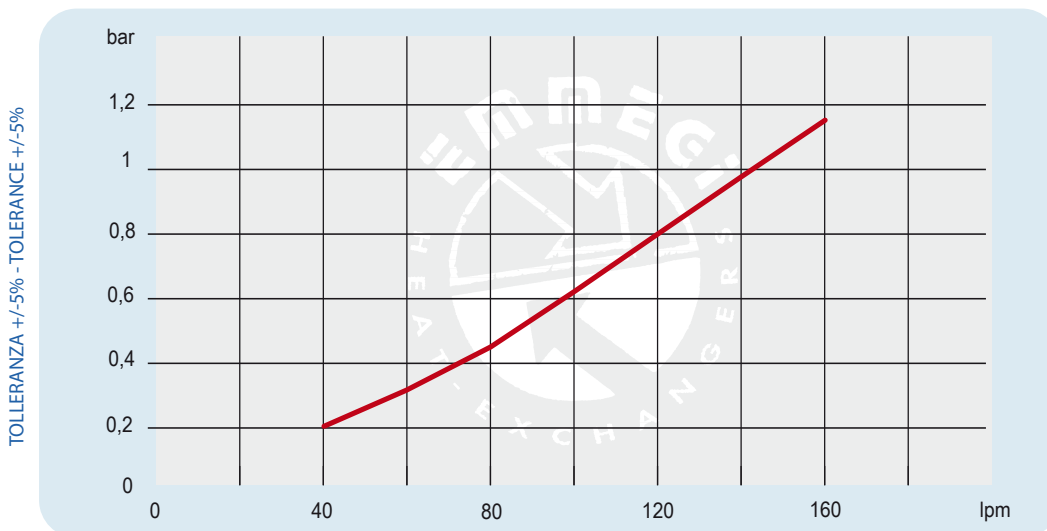
Per il 12-24V i dati sono riferiti al singolo ventilatore For 12-24V the data refers to each ventilator

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## Diagramma rendimento Performance diagram



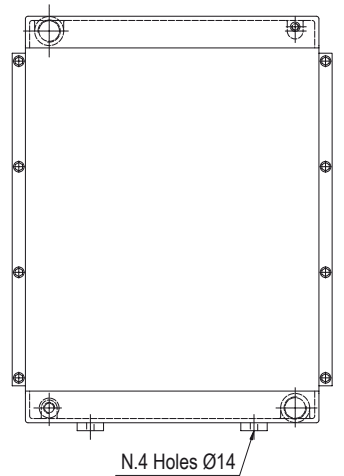
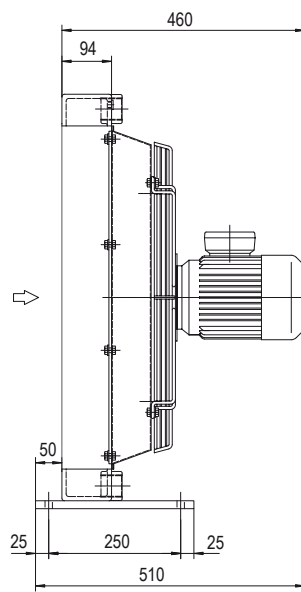
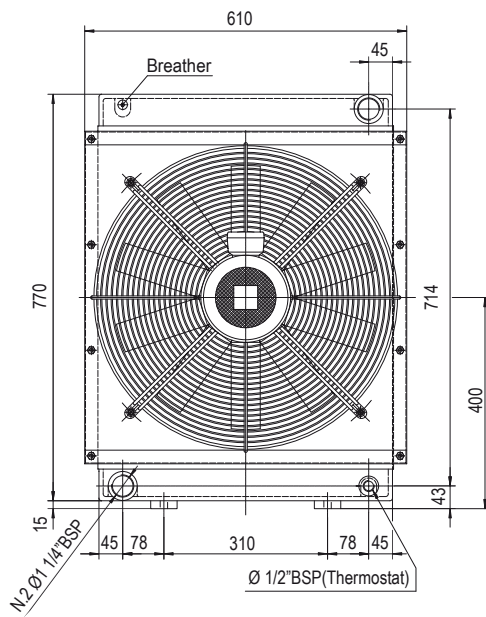
## Perdite di carico Pressure drop ( ISO VG 32)



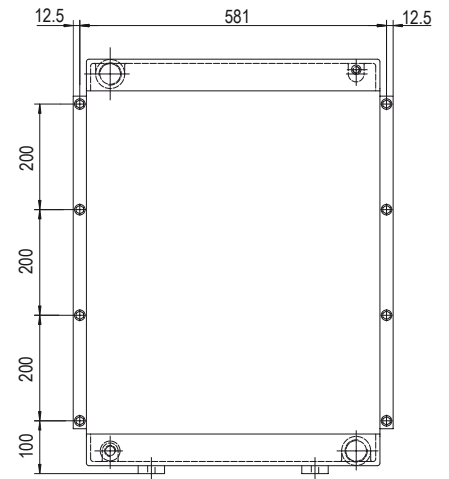
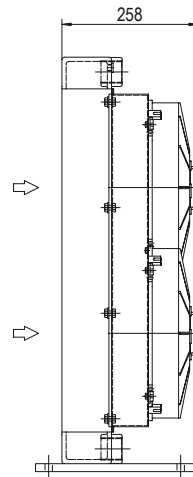
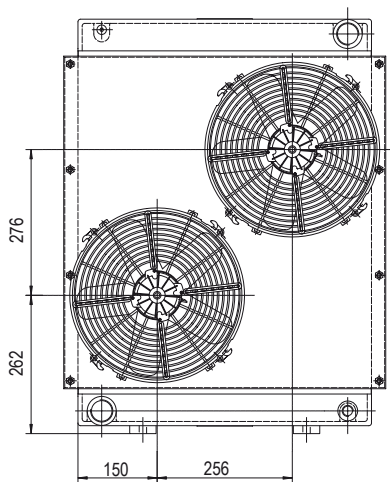
Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

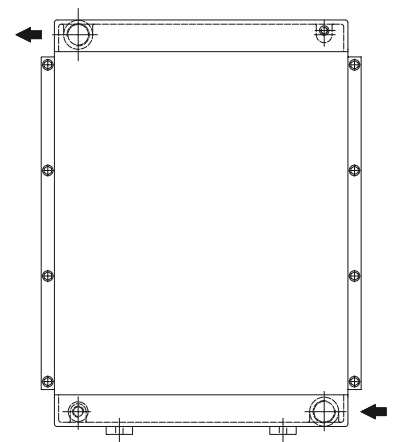
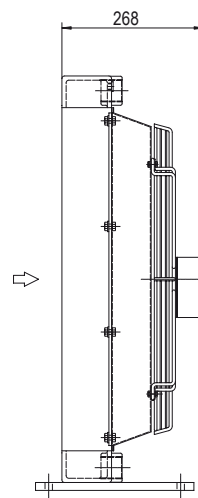
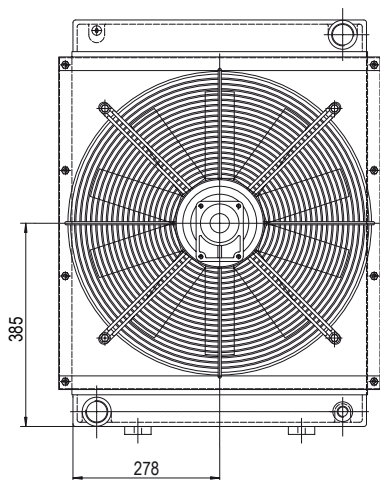
# Dimensioni Dimensions



**P/N 243603###**



**P/N 243612###**  
**P/N 243624###**



**P/N 243656###**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

# Dati tecnici Technical Data

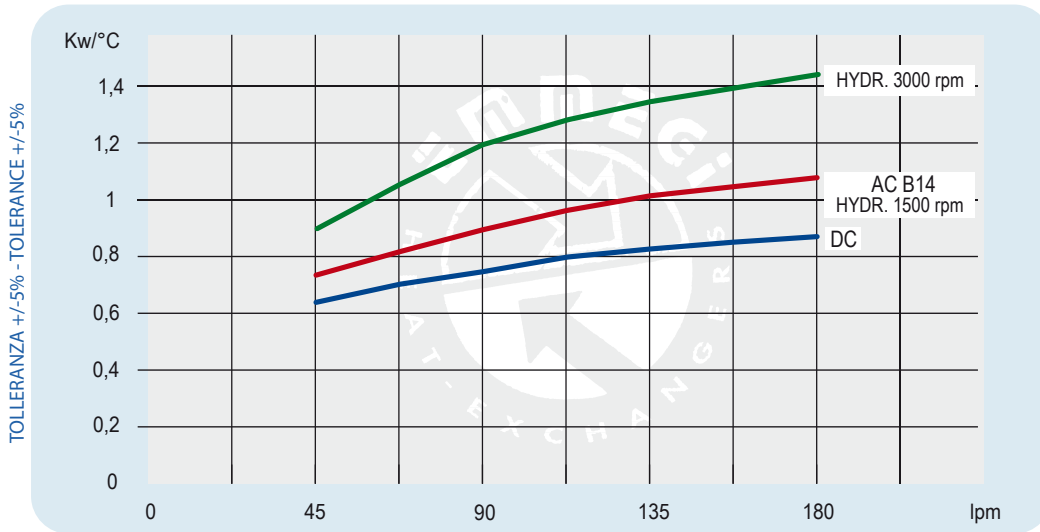


P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m <sup>3</sup> /h)	IP	lt	Kg
243603 ###	230-400 B14 AC	50	1,1	4,5-2,6	1440	500	82	5650	55		60
	265-460 B14 AC	60	1,3	4,5-2,6	1730		☑				
243612 ###	12 DC	/	0,160	13,30	2560	305	83	2100	64	9,4	50
243624 ###	24 DC	/	0,177	7,35	3000	305	84	2400	64		50
243656 ###	Prepared for Gr.2 hydraulic motor				☑	450	☑	☑	/		52

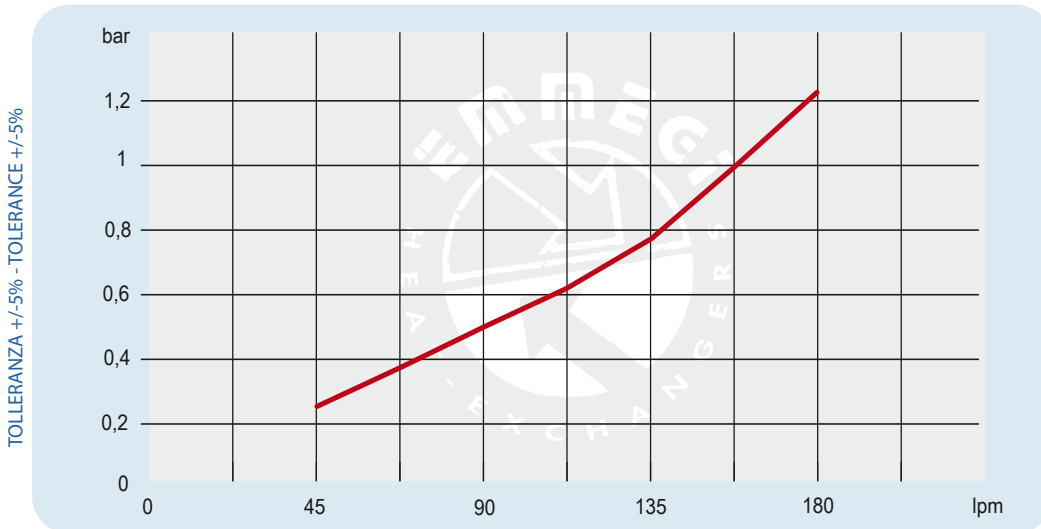
Per il 12-24V i dati sono riferiti al singolo ventilatore For 12-24V the data refers to each ventilator

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## Diagramma rendimento Performance diagram



## Perdite di carico Pressure drop ( ISO VG 32)

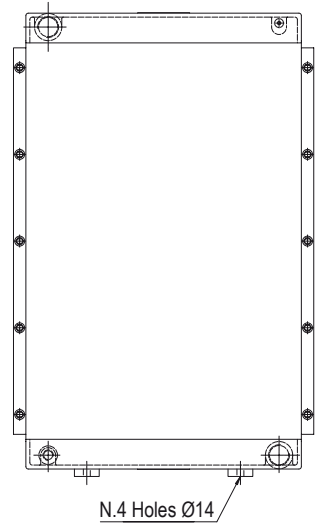
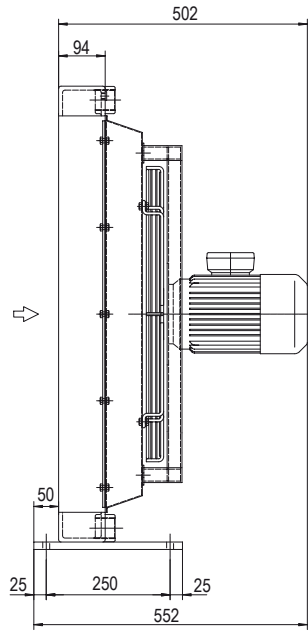
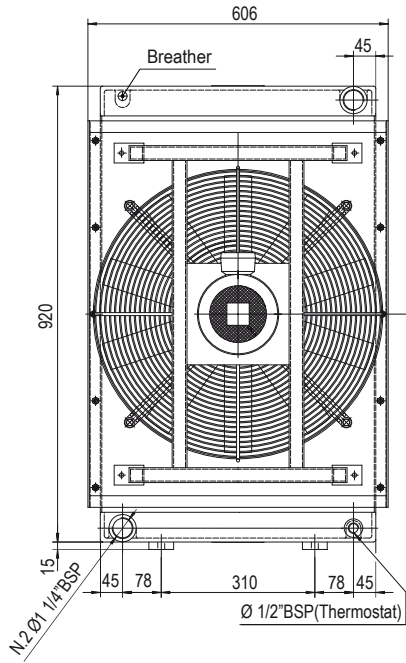


Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

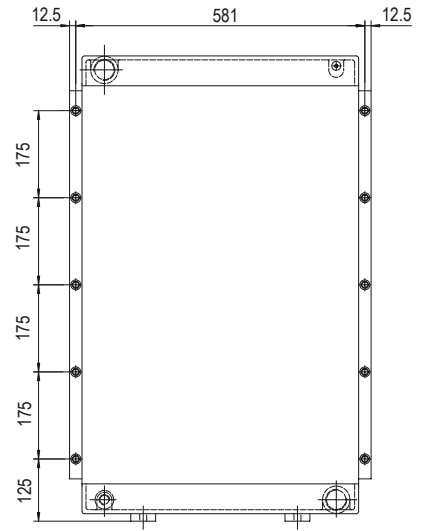
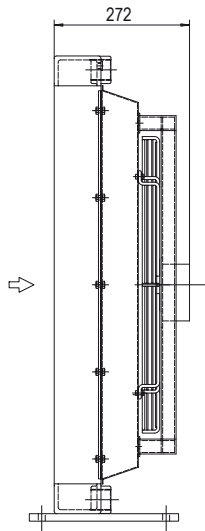
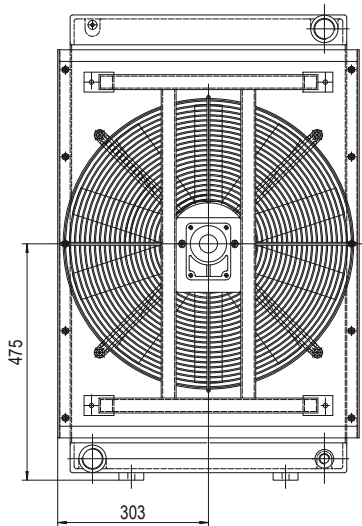
cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

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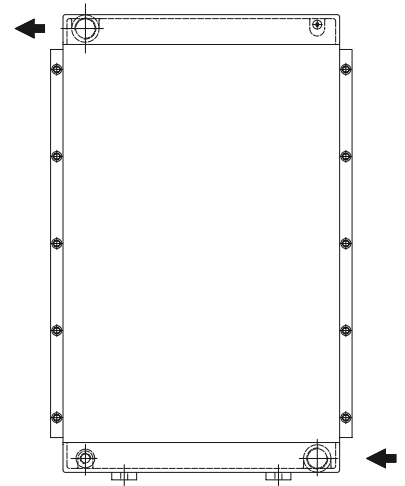
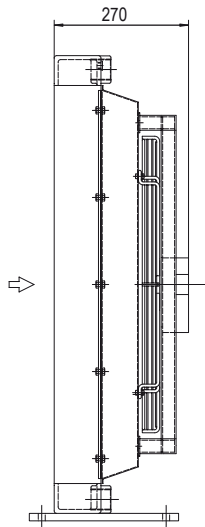
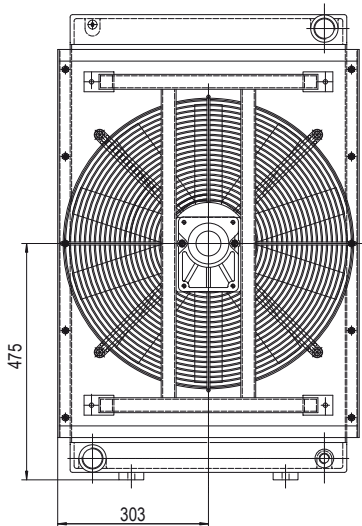
# Dimensioni Dimensions



**P/N 244203###**



**P/N 244256###**



**P/N 244258###**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

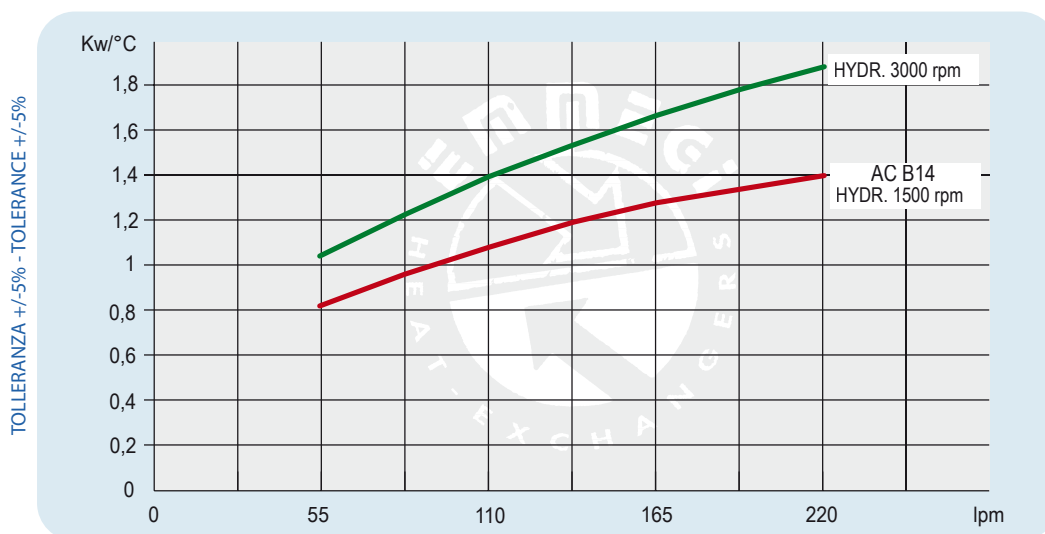


## Dati tecnici Technical Data

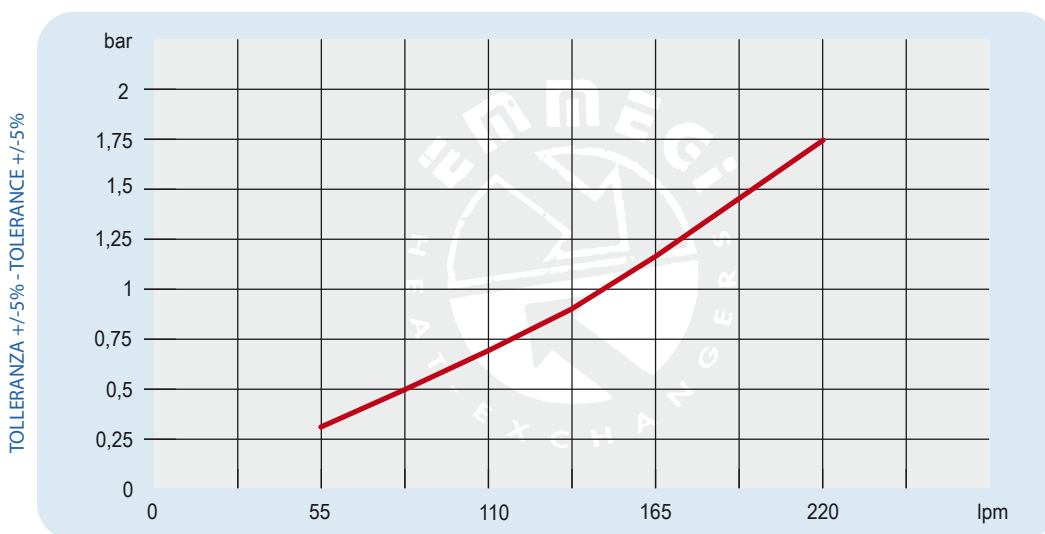
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
244203 ###	230-400 B14 AC	50	1,1	4,5-2,6	1440	560	84	7550	55	10,6	65
	265-460 B14 AC	60	1,3	4,5-2,6	1730						
244256 ###	Prepared for Gr.2 hydraulic motor				☒	560	☒	☒	/		58
244258 ###	Prepared for Gr.3 hydraulic motor				☒	560	☒	☒	/		58

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## Diagramma rendimento Performance diagram



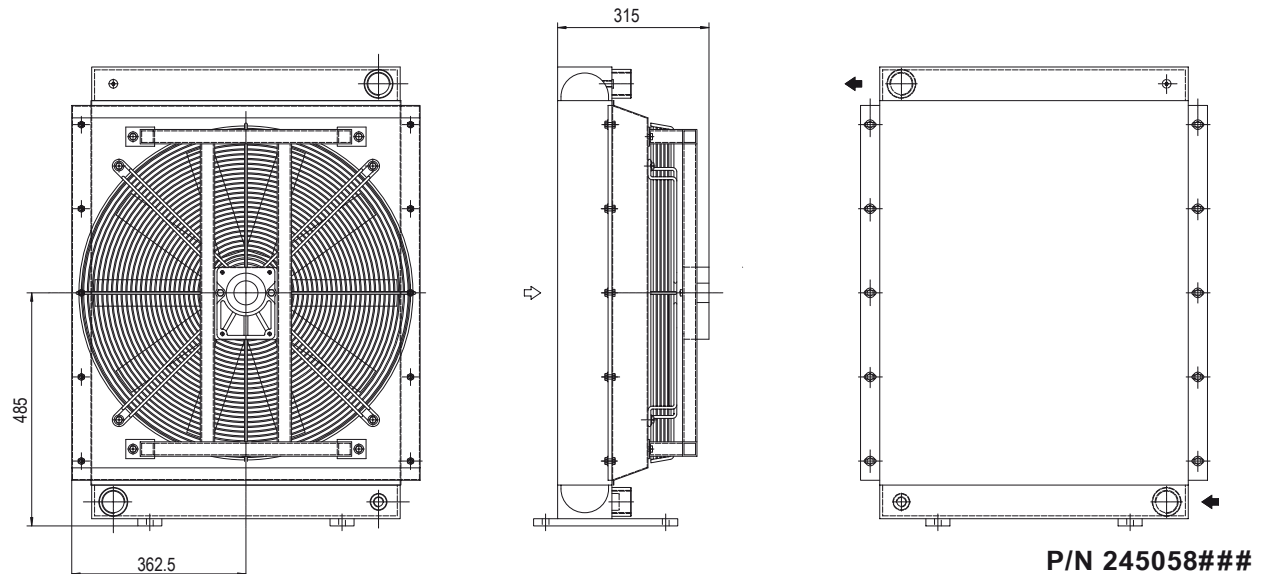
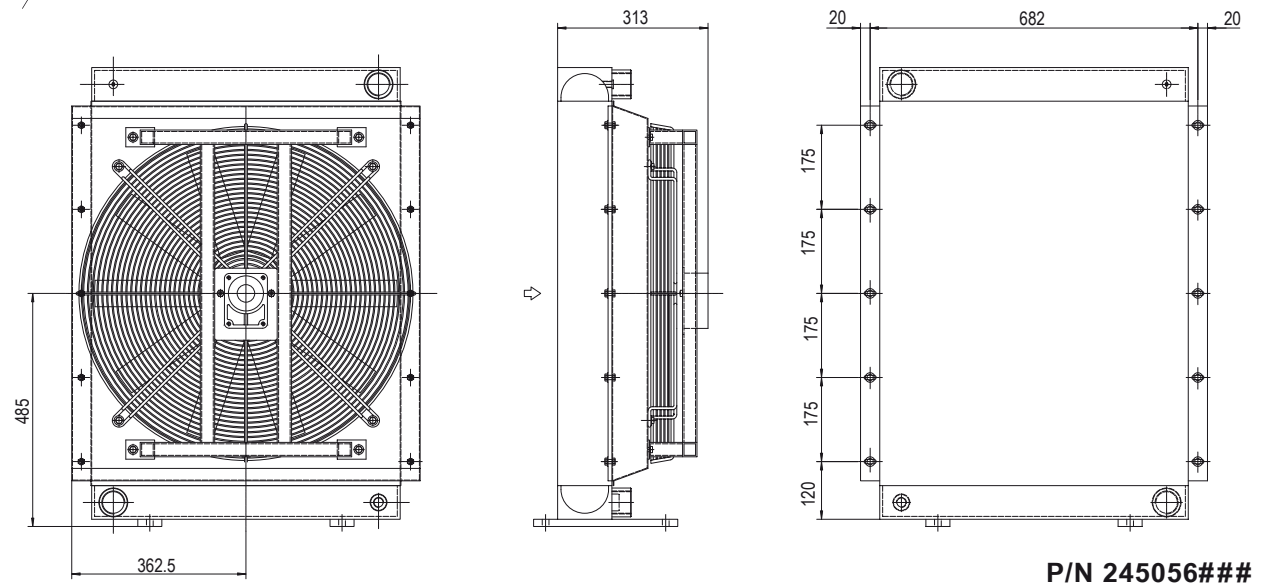
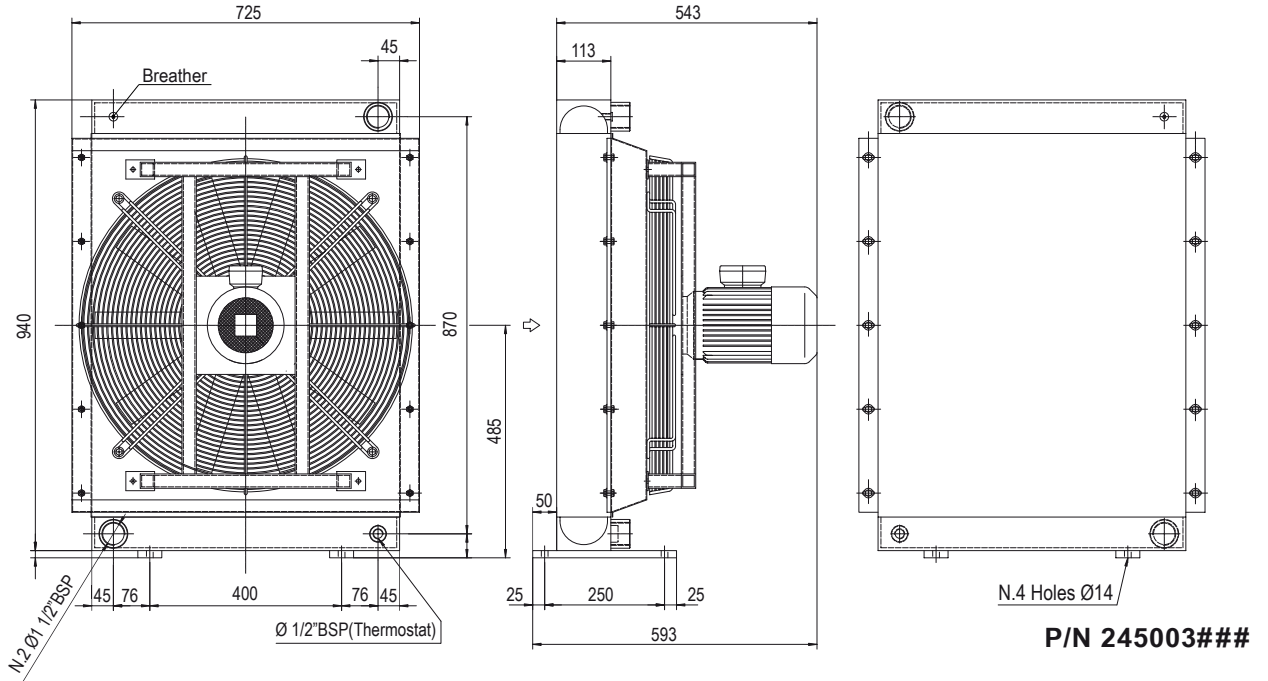
## Perdite di carico Pressure drop ( ISO VG 32)



Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

**HPA 50**

# Dati tecnici Technical Data

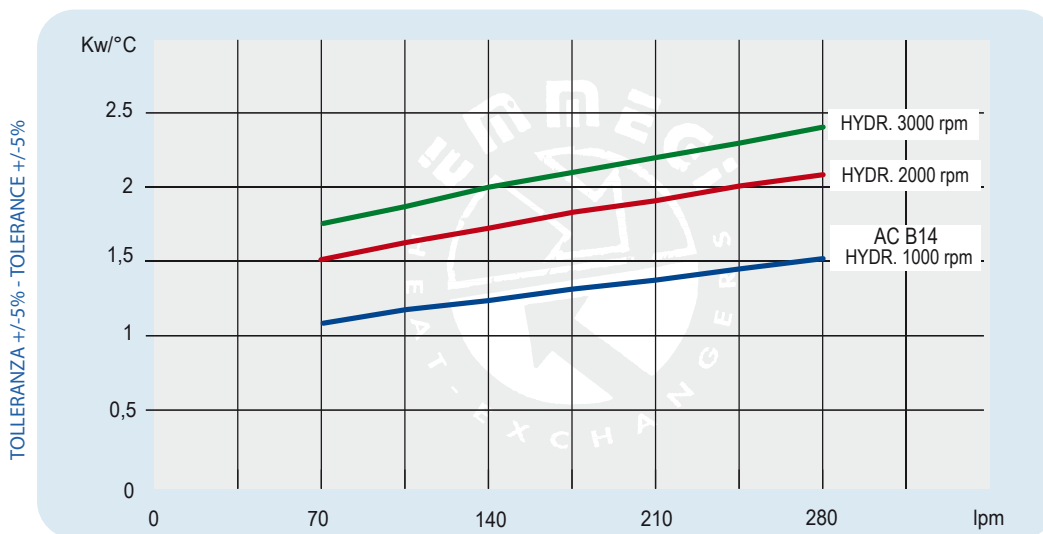


P/N	V	Hz	kW(±10%)	A(±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
245003 ###	230-400 B14 AC	50	1,1	5-2,9	936		80	7550			
	265-460 B14 AC	60	1,3	5-2,9	1123	630	☒	☒	55	14,2	90
245056 ###	Prepared for Gr.2 hydraulic motor				☒	630	☒	☒	/		83
245058 ###	Prepared for Gr.3 hydraulic motor				☒	630	☒	☒	/		83

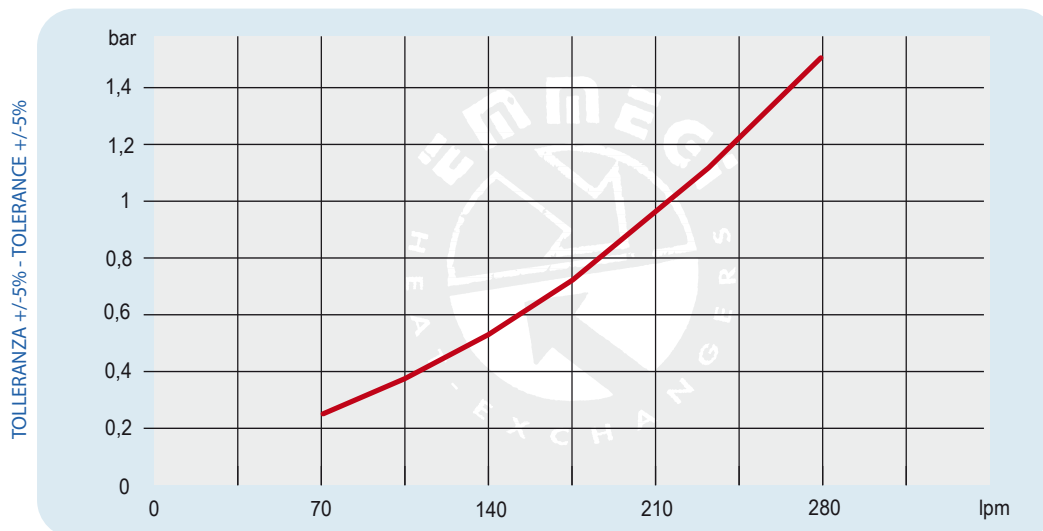
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HPA 50

## Diagramma rendimento Performance diagram



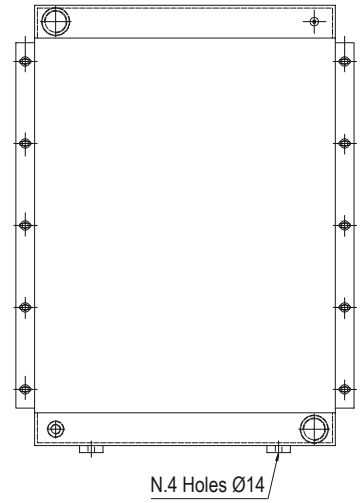
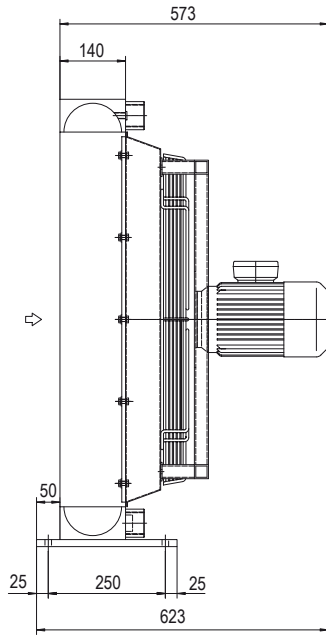
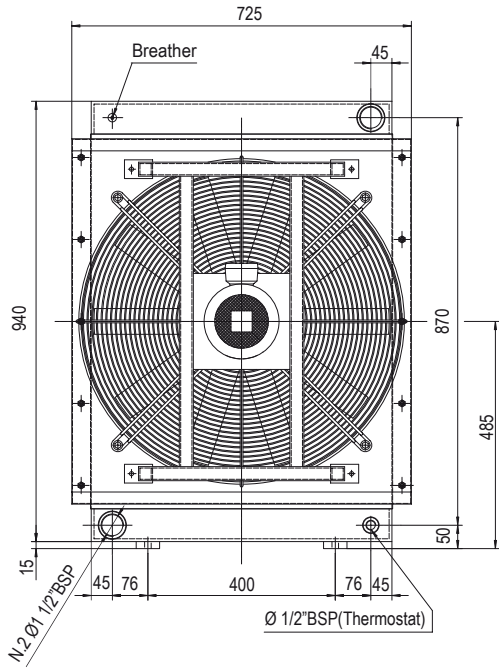
## Perdite di carico Pressure drop ( ISO VG 32)



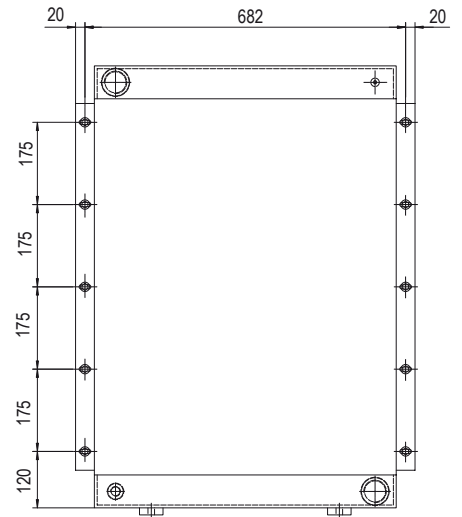
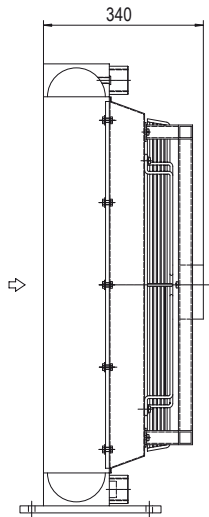
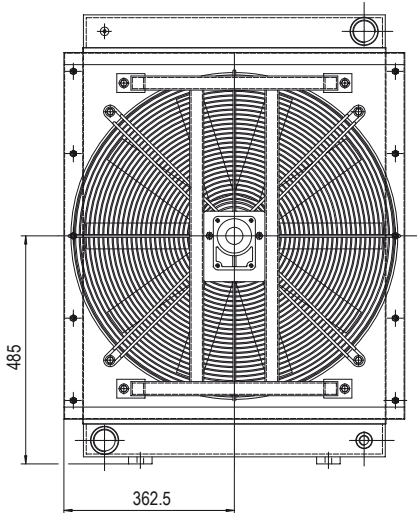
**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

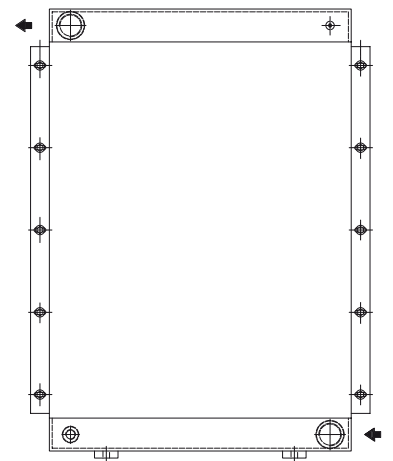
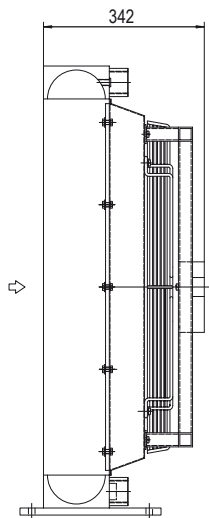
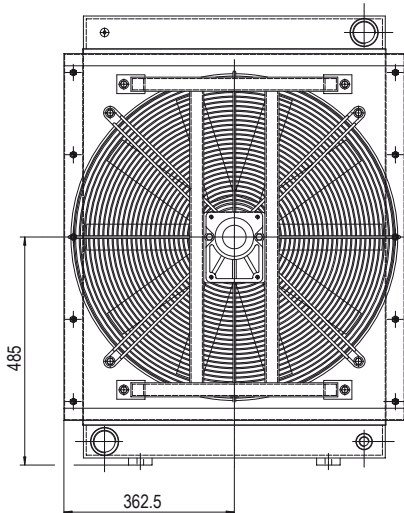
# Dimensioni Dimensions



**P/N 245203###**



**P/N 245256###**



**P/N 245258###**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

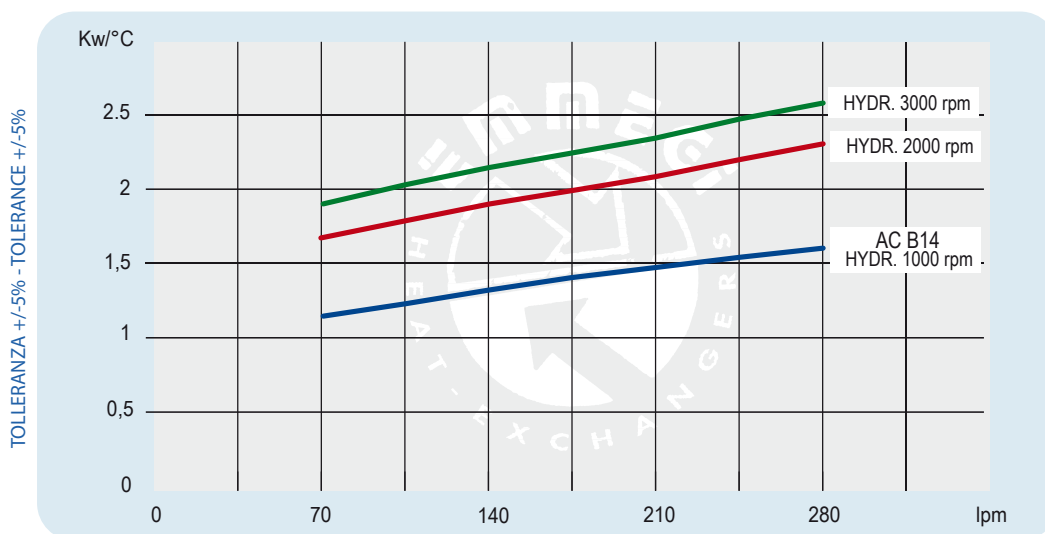
# Dati tecnici Technical Data



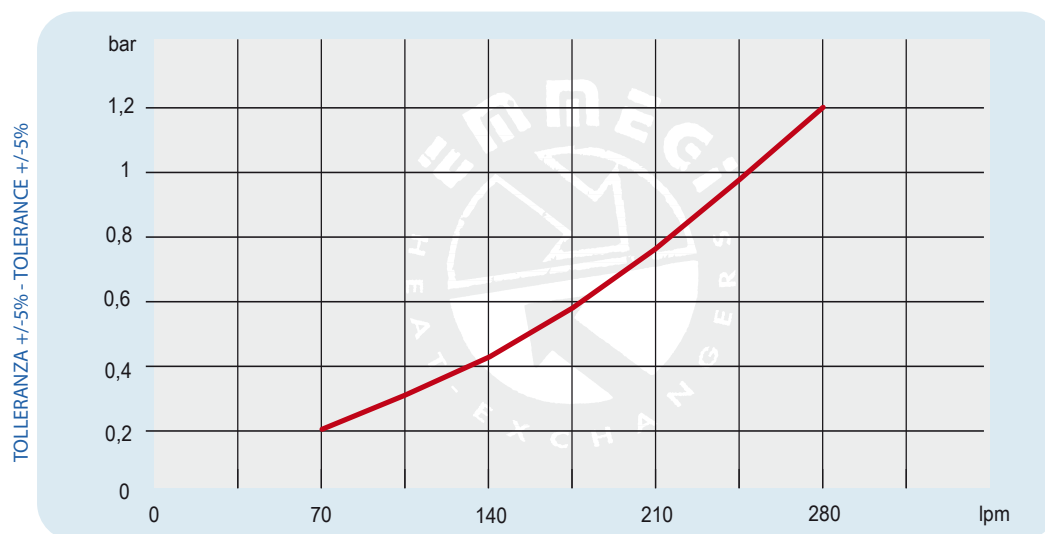
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
245203 ###	230-400 B14 AC	50	1,1	5-2,9	936	630	80	7050	55	17,7	95
	265-460 B14 AC	60	1,3	5-2,9	1123						
245256 ###	Prepared for Gr.2 hydraulic motor				☒	630	☒	☒	/		
245258 ###	Prepared for Gr.3 hydraulic motor				☒	630	☒	☒	/		

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## Diagramma rendimento Performance diagram



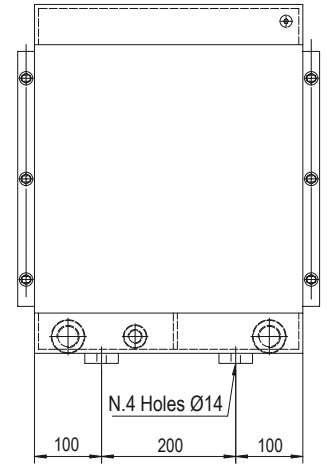
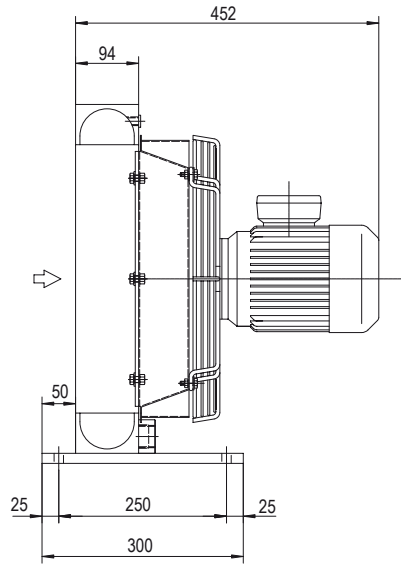
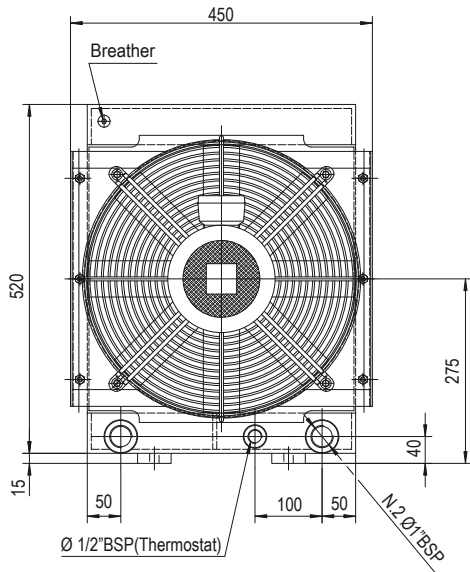
## Perdite di carico Pressure drop ( ISO VG 32)



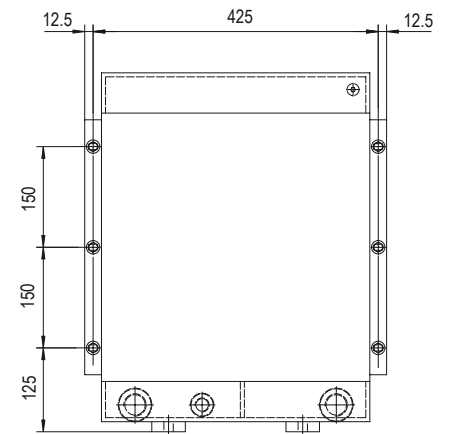
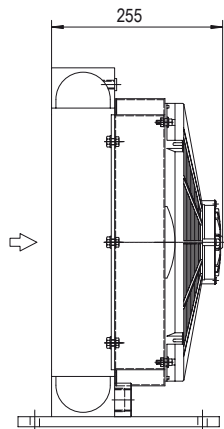
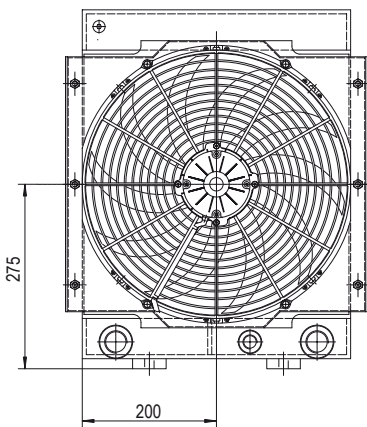
**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

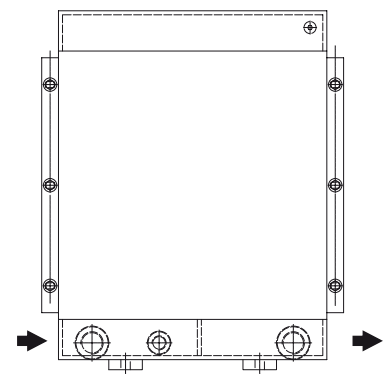
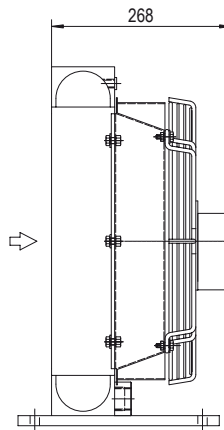
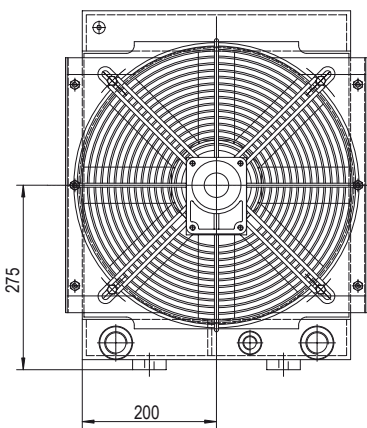
# Dimensioni Dimensions



**P/N 242703###**



**P/N 242712###  
P/N 242724###**



**P/N 242756###**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

**HPA 24 2 PASS**



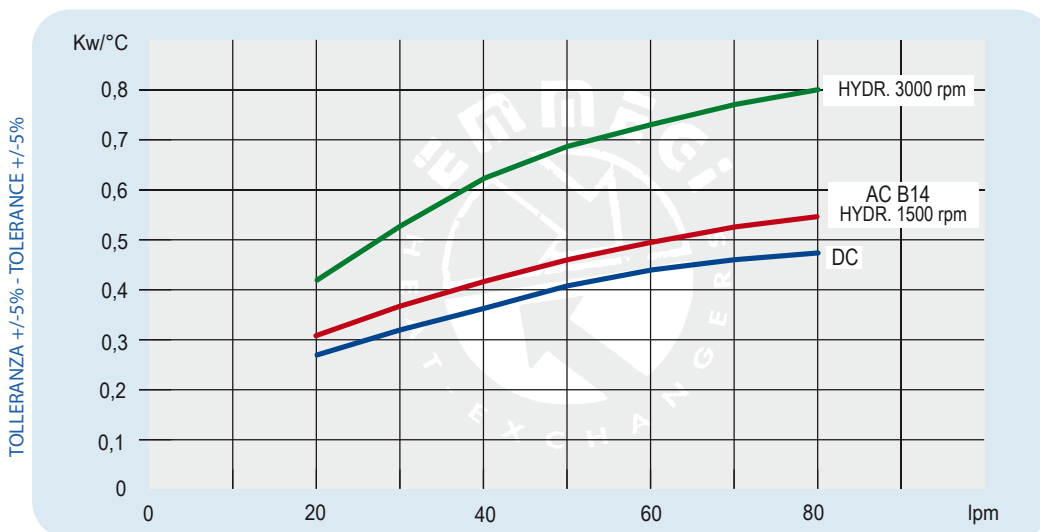
# Dati tecnici Technical Data



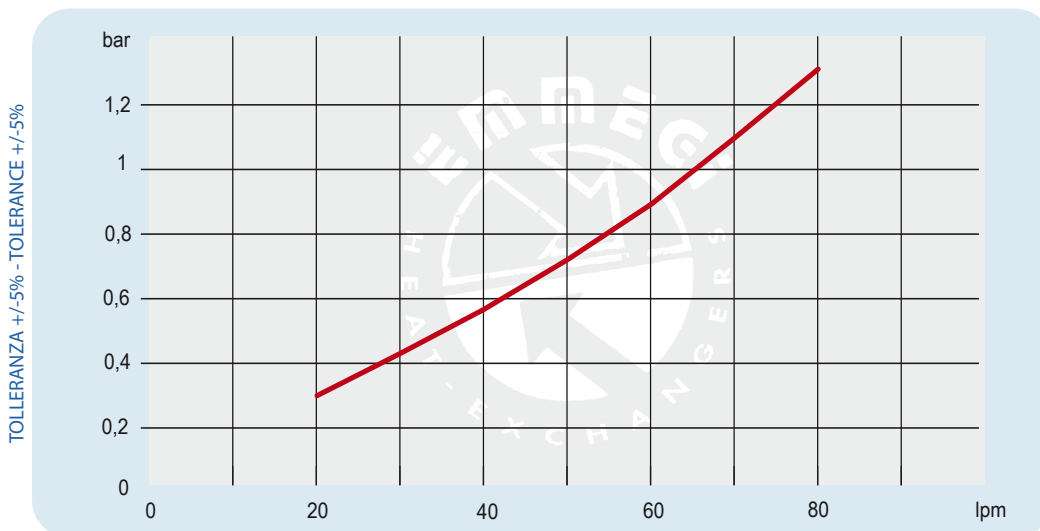
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/ h)	IP	lt	Kg
242703 ###	230-400 B14 AC	50	0,55	2,9-1,7	1380	400	79	2800	55	2,9	28
	265-460 B14 AC	60	0,63	2,9-1,7	1690		☑				☑
242712 ###	12 DC	/	0,187	15,6	2350	385	77	2100	65		22
242724 ###	24 DC	/	0,170	7,1	2580	305	80	2250	65		22
242756 ###	Prepared for Gr.2 hydraulic motor				☑	400	☑	☑	/		23

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## Diagramma rendimento Performance diagram



## Perdite di carico Pressure drop ( ISO VG 32)

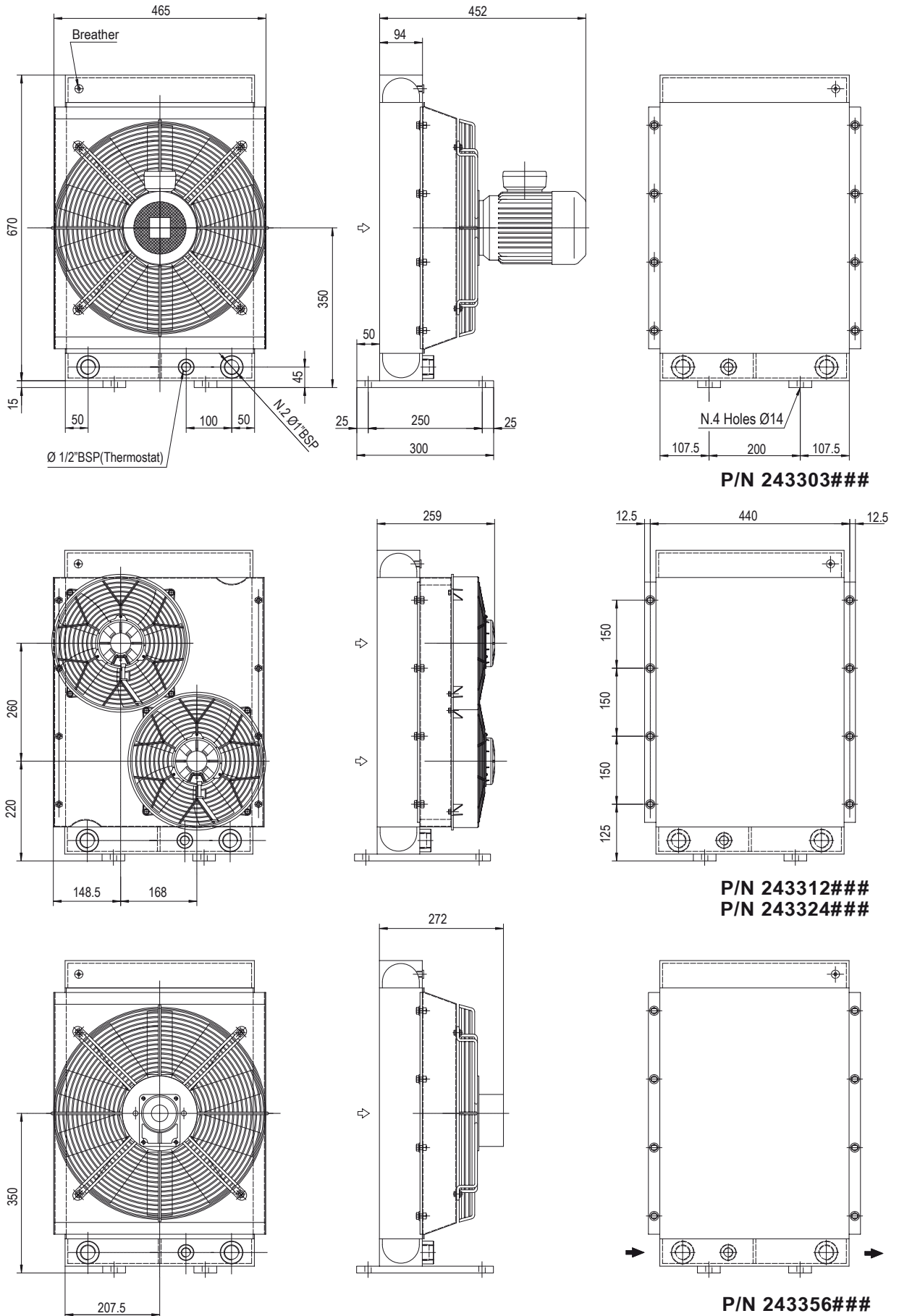


Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

HPA 24 2 PASS

# Dimensioni Dimensions



Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
 Over-all dimensions and technical characteristic are not binding

HPA 30 2 PASS

# Dati tecnici Technical Data



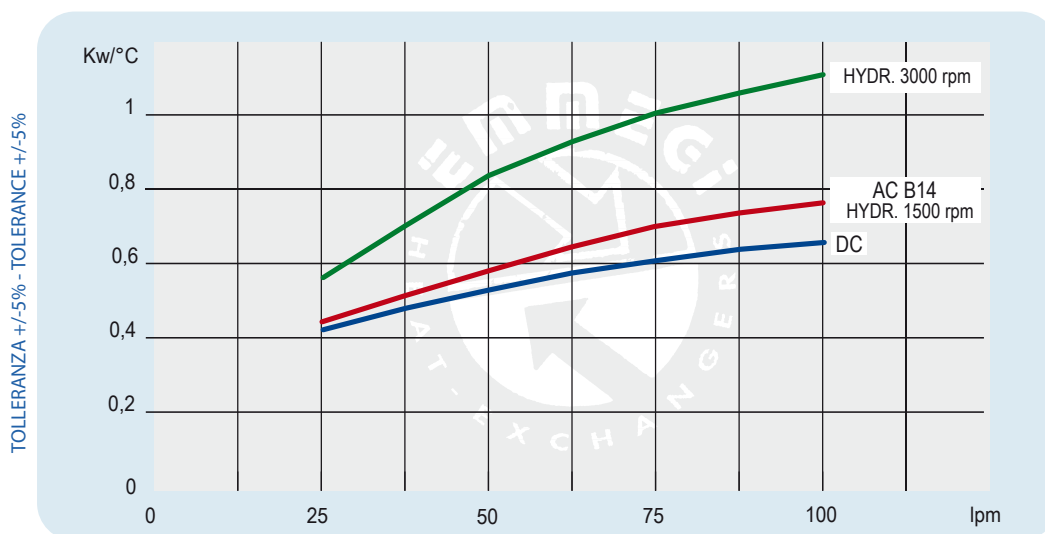
HPA 30 2 PASS

P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
243303 ###	230-400 B14 AC	50	0,75	3 -1,7	1440	450	82	4000	55	6,8	37
	265-460 B14 AC	60	0,86	3 -1,7	1750						
243312 ###	12 DC	/	0,115	9,58	2530	280	74	1550	65		32
243324 ###	24 DC	/	0,125	5,20	2900	280	78	1700	65		32
243356 ###	Prepared for Gr.2 hydraulic motor					450			/		35

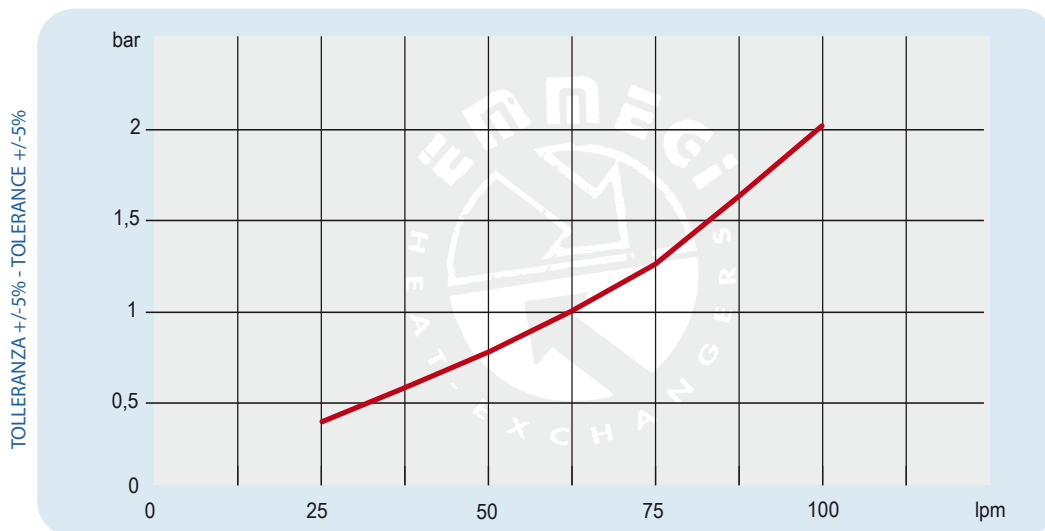
Per il 12-24V i dati sono riferiti al singolo ventilatore For 12-24V the data refers to each ventilator

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## Diagramma rendimento Performance diagram



## Perdite di carico Pressure drop ( ISO VG 32)

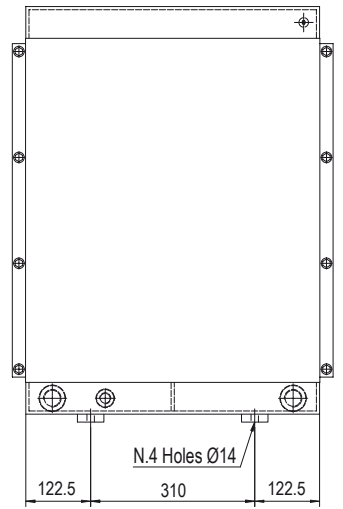
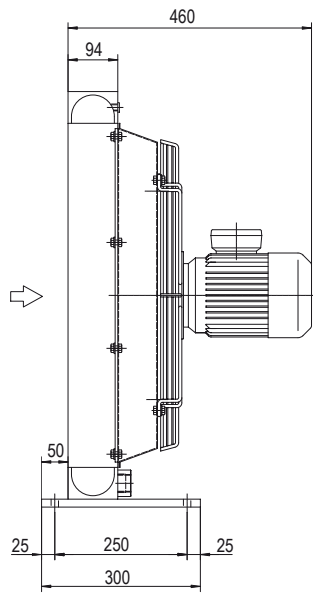
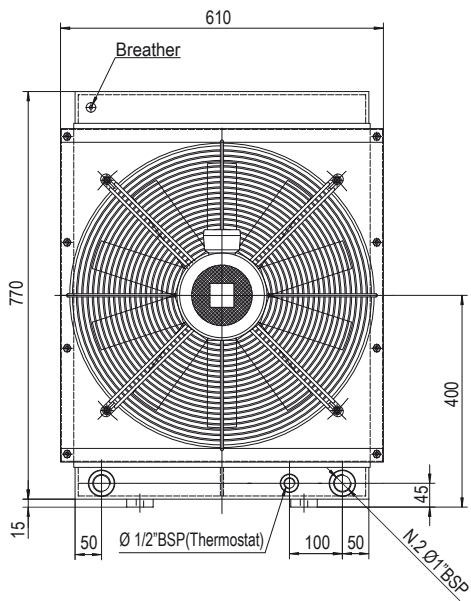


Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

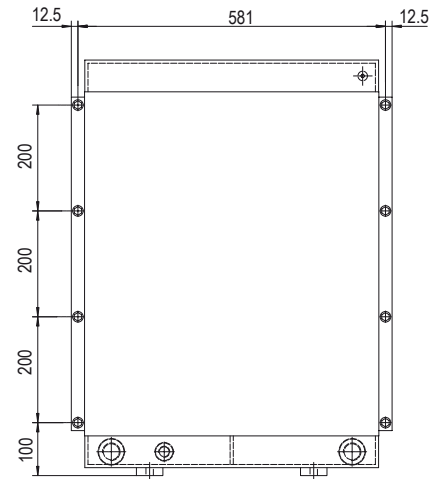
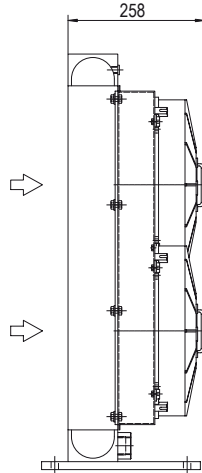
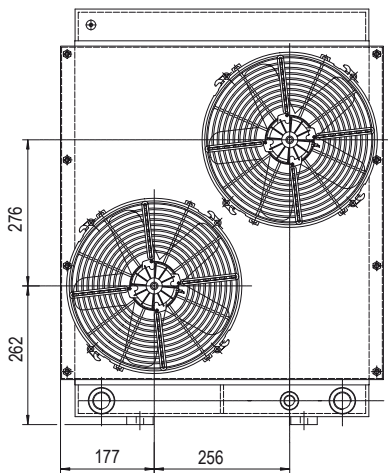
cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions

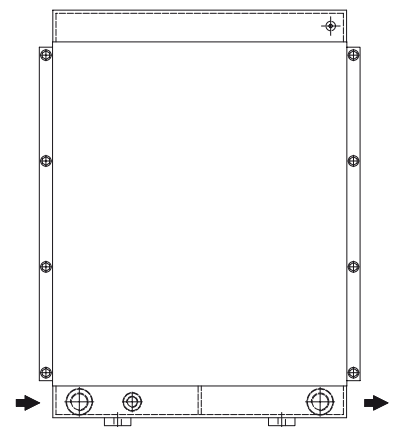
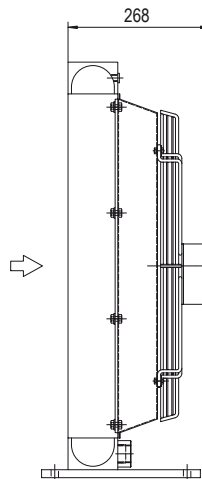
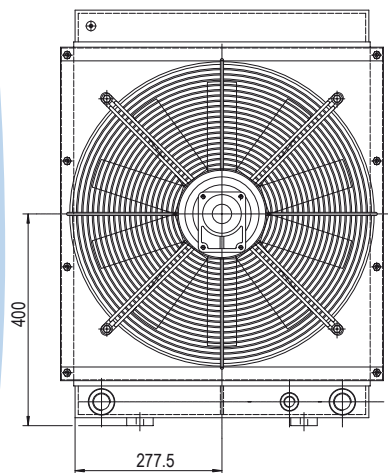
HPA 36 2 PASS



P/N 243803###



P/N 243812###  
P/N 243824###



P/N 243856###

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

# Dati tecnici Technical Data



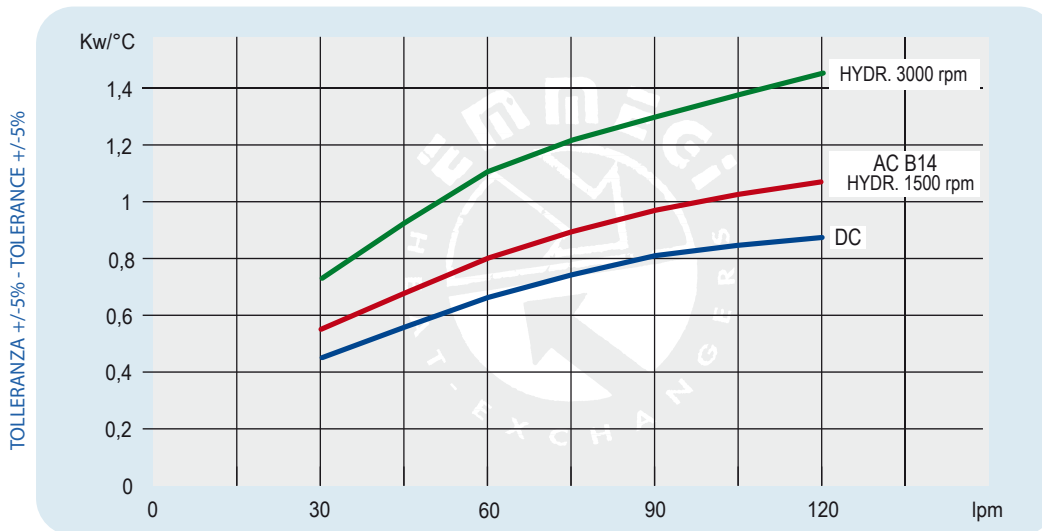
HPA 36 2 PASS

P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/ h)	IP	lt	Kg
243803 ###	230-400 B14 AC	50	1,1	4,5-2,6	1440	450	82	5650	55		60
	265-460 B14 AC	60	1,3	4,5-2,6	1730						
243812 ###	12 DC	/	0,160	13,30	2560	305	83	2100	64	9,4	50
243824 ###	24 DC	/	0,177	7,35	3000	305	84	2400	64		50
243856 ###	Prepared for Gr.2 hydraulic motor					450			/		52

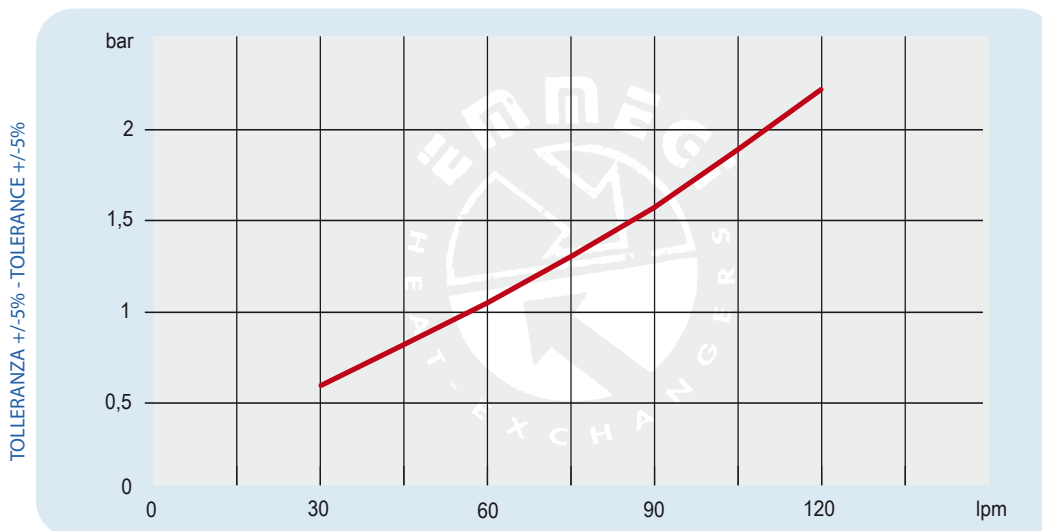
Per il 12-24V i dati sono riferiti al singolo ventilatore For 12-24V the data refers to each ventilator

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## Diagramma rendimento Performance diagram



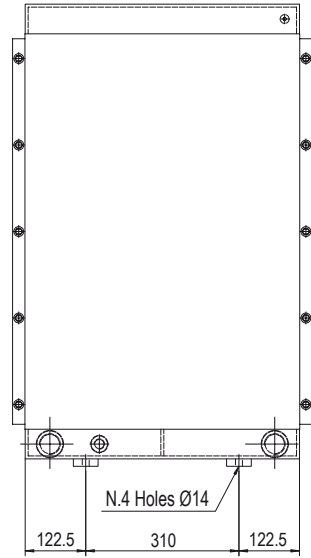
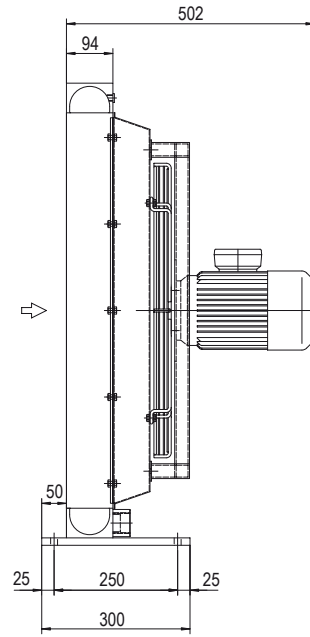
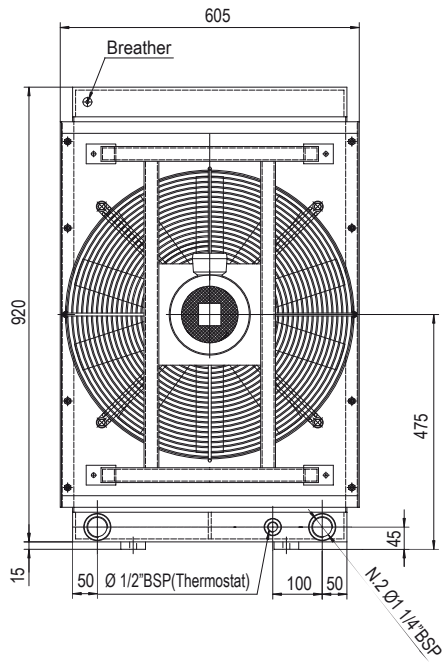
## Perdite di carico Pressure drop ( ISO VG 32)



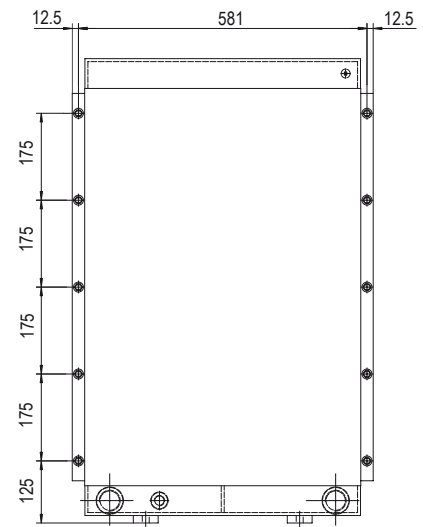
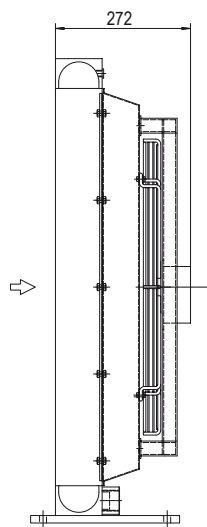
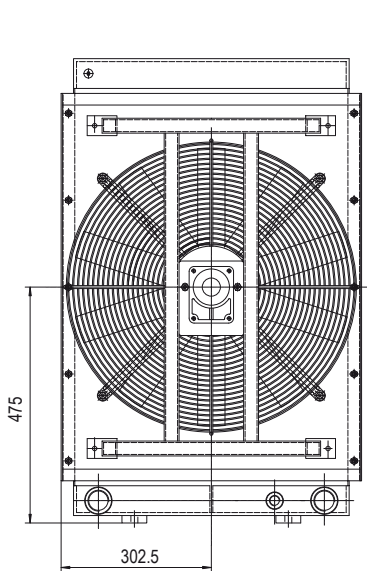
Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

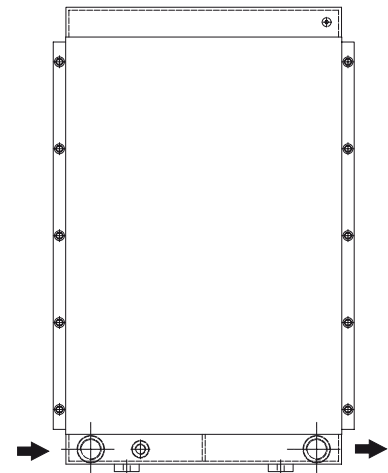
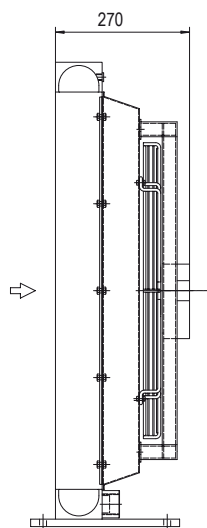
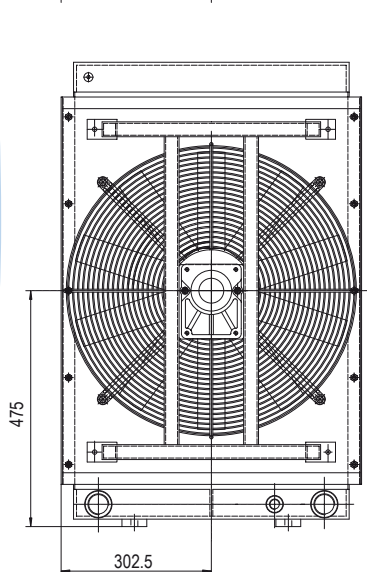
# Dimensioni Dimensions



**P/N 244503###**



**P/N 244556###**



**P/N 244558###**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

**HPA 42 2 PASS**



# Dati tecnici Technical Data

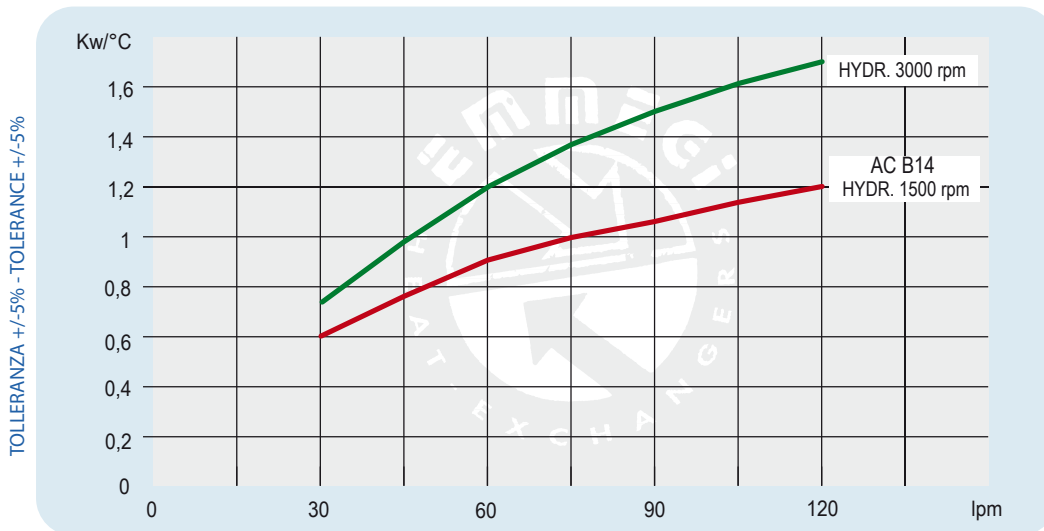


**HPA 42 2 PASS**

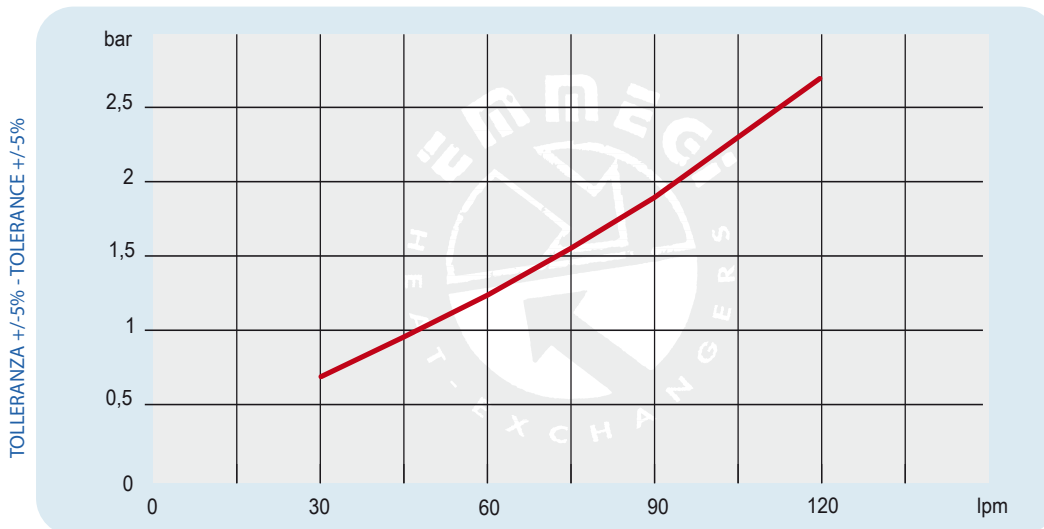
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
244503 ###	230-400 B14 AC	50	1,1	4,5-2,6	1440	560	84	7550	55	10,6	65
	265-460 B14 AC	60	1,3	4,5-2,6	1730						
244556 ###	Prepared for Gr.2 hydraulic motor				☎	560	☎	☎	/		58
244558 ###	Prepared for Gr.3 hydraulic motor				☎	560	☎	☎	/		58

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## Diagramma rendimento Performance diagram



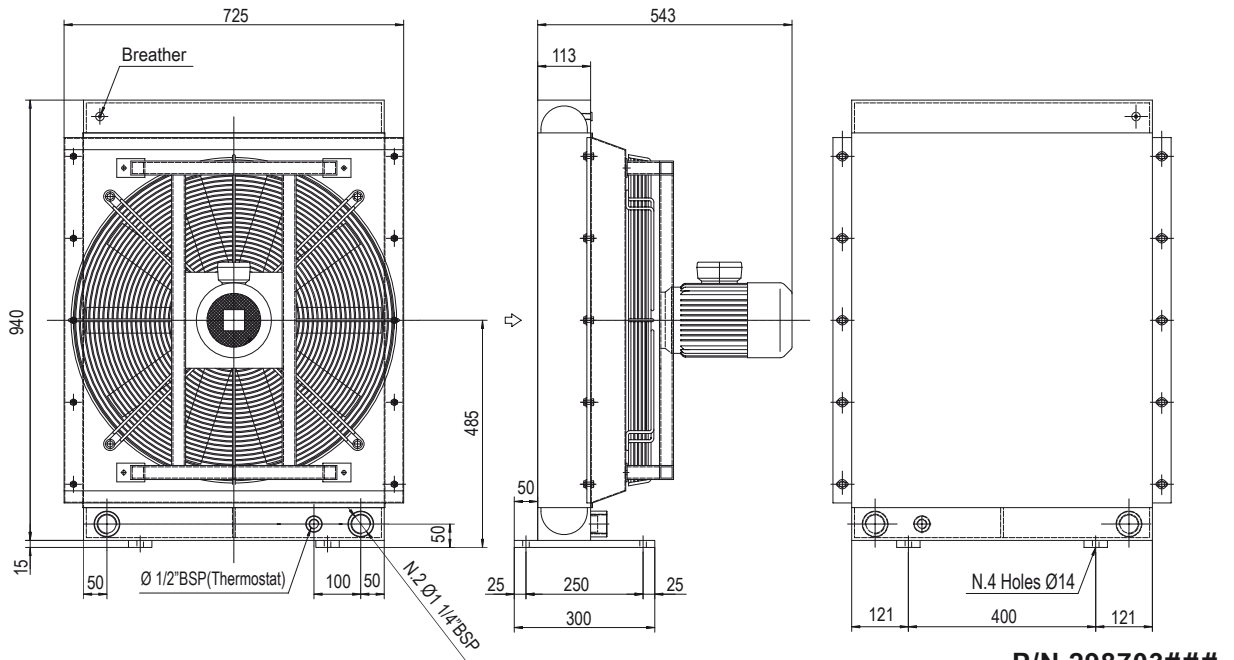
## Perdite di carico Pressure drop ( ISO VG 32)



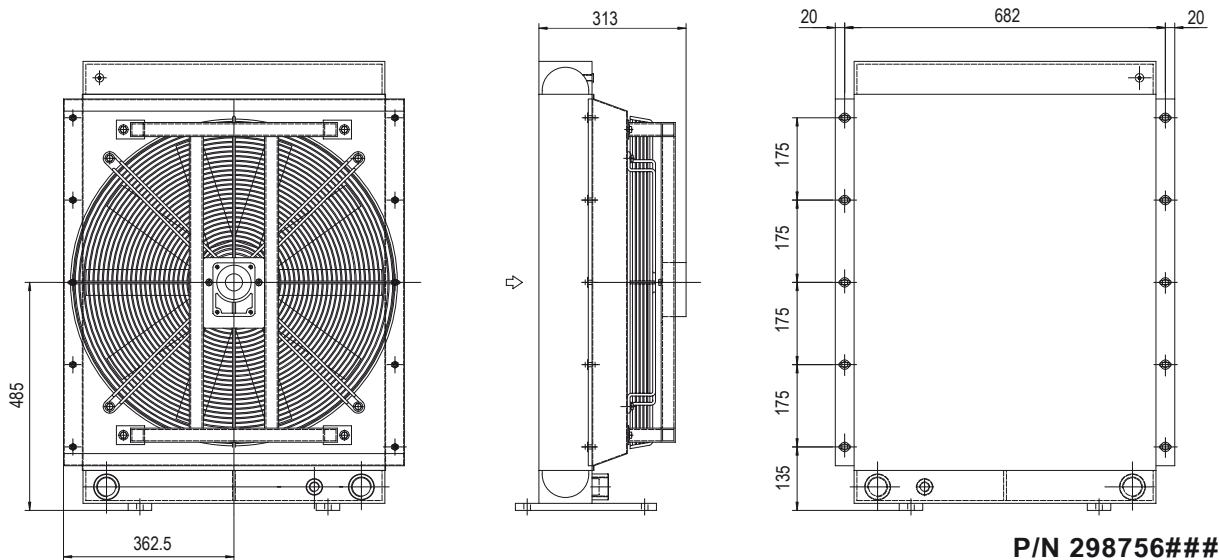
### Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

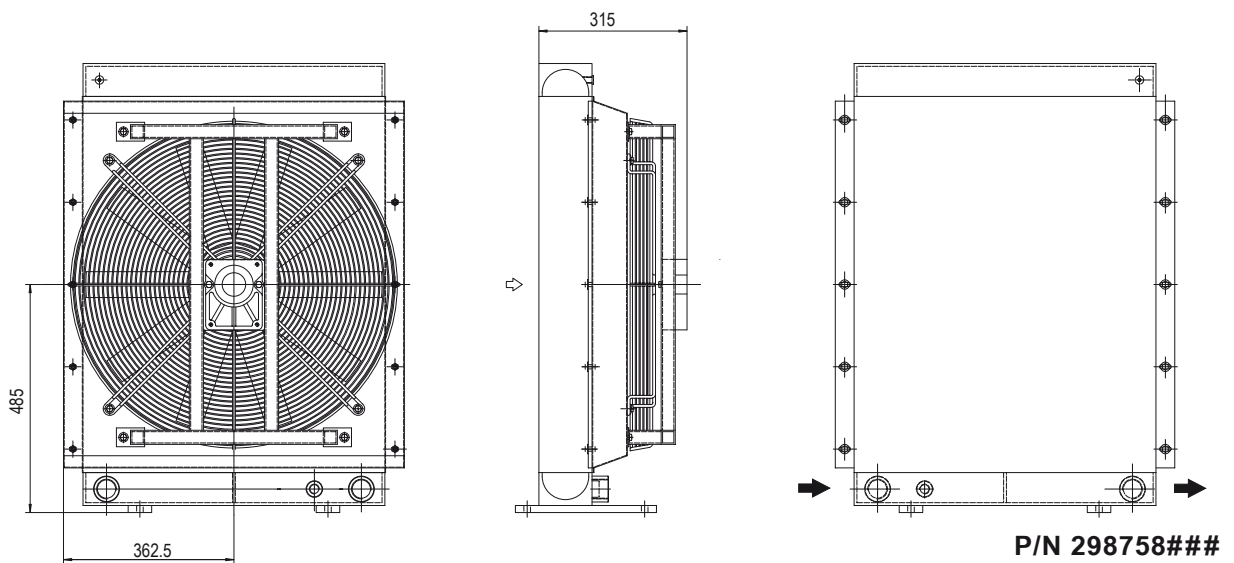
# Dimensioni Dimensions



**P/N 298703###**



**P/N 298756###**



**P/N 298758###**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

**HPA 50 2 PASS**

# Dati tecnici Technical Data

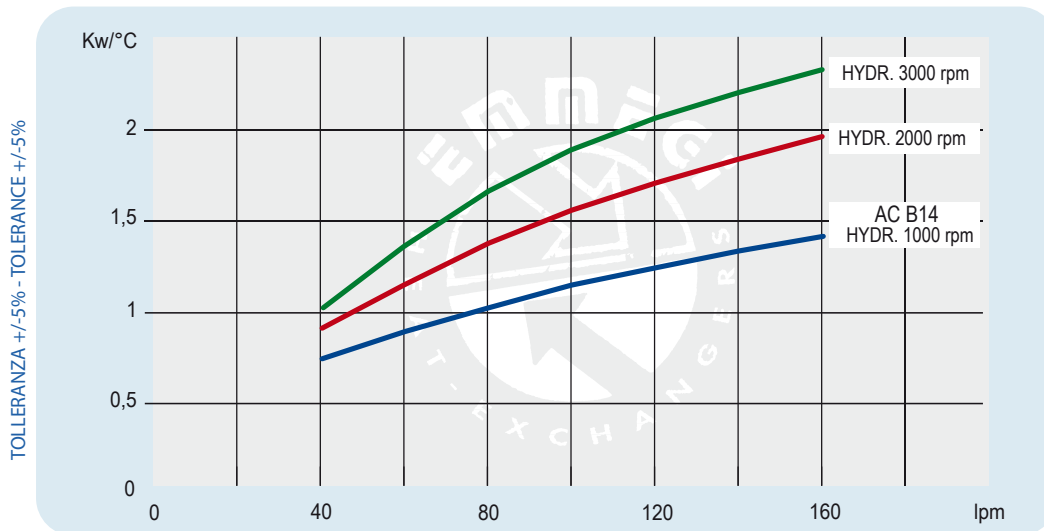


HPA 50 2 PASS

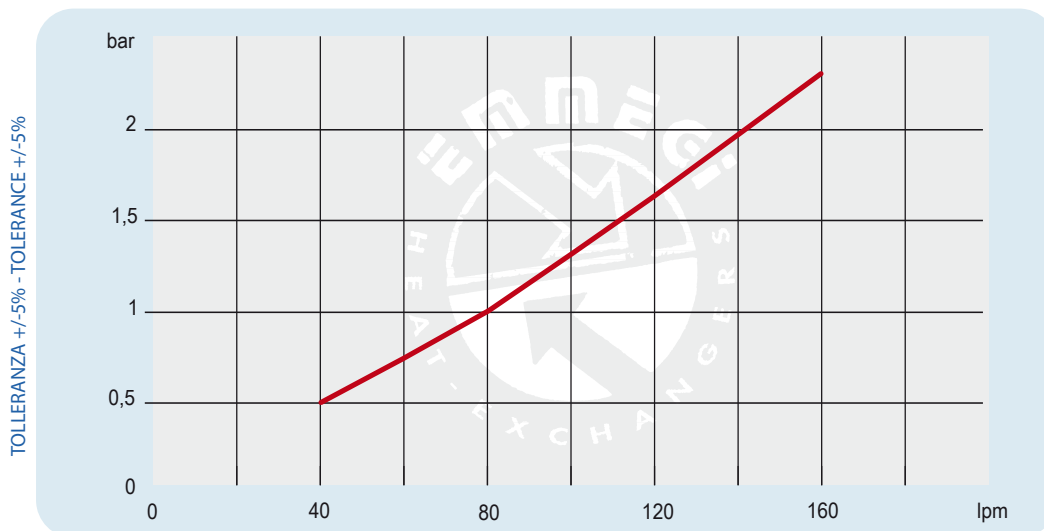
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
298703 ###	230-400 B14 AC	50	1,1	5-2,9	936	630	80	7550	55	14,2	90
	265-460 B14 AC	60	1,3	5-2,9	1123		☑	☑			
298756 ###	Prepared for Gr.2 hydraulic motor				☑	630	☑	☑	/		83
298758 ###	Prepared for Gr.3 hydraulic motor				☑	630	☑	☑	/		83

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## Diagramma rendimento Performance diagram



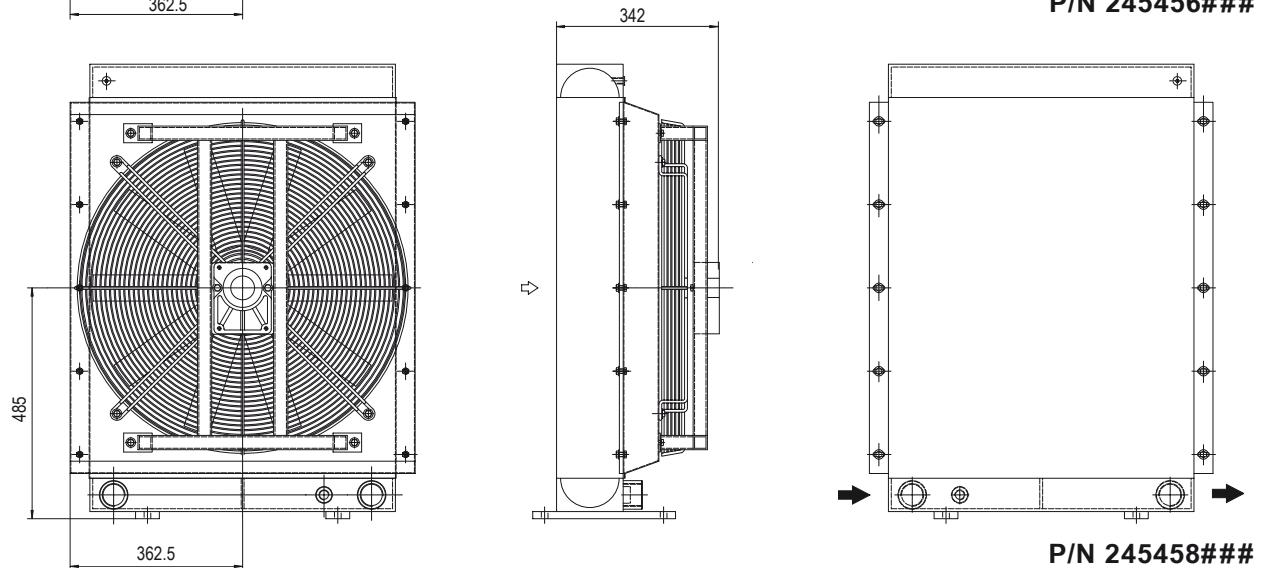
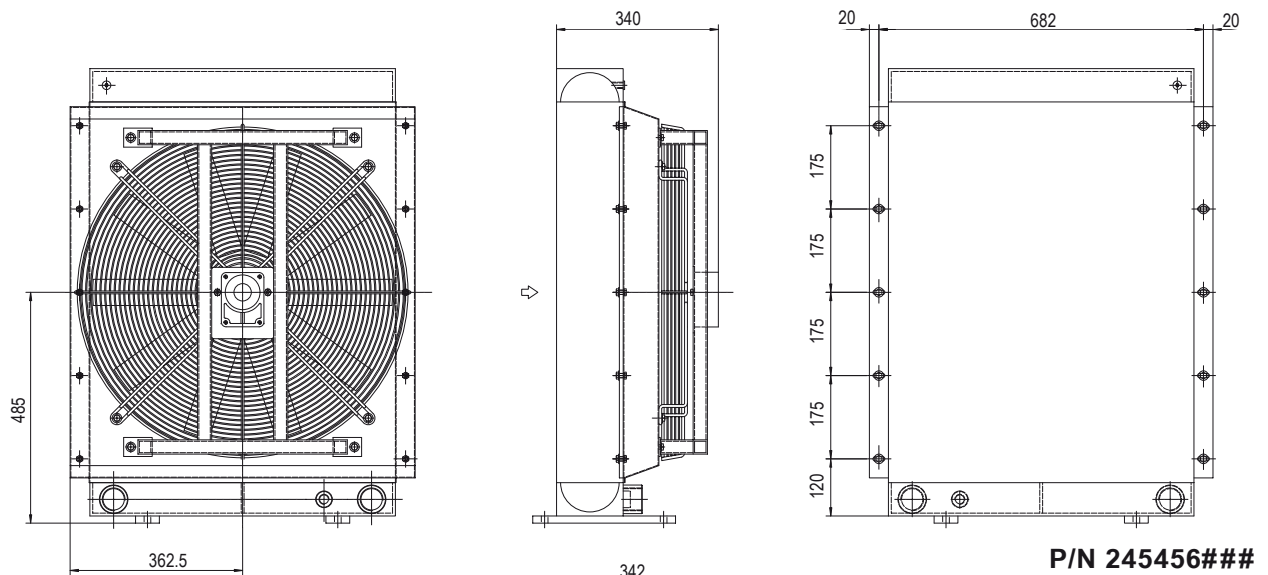
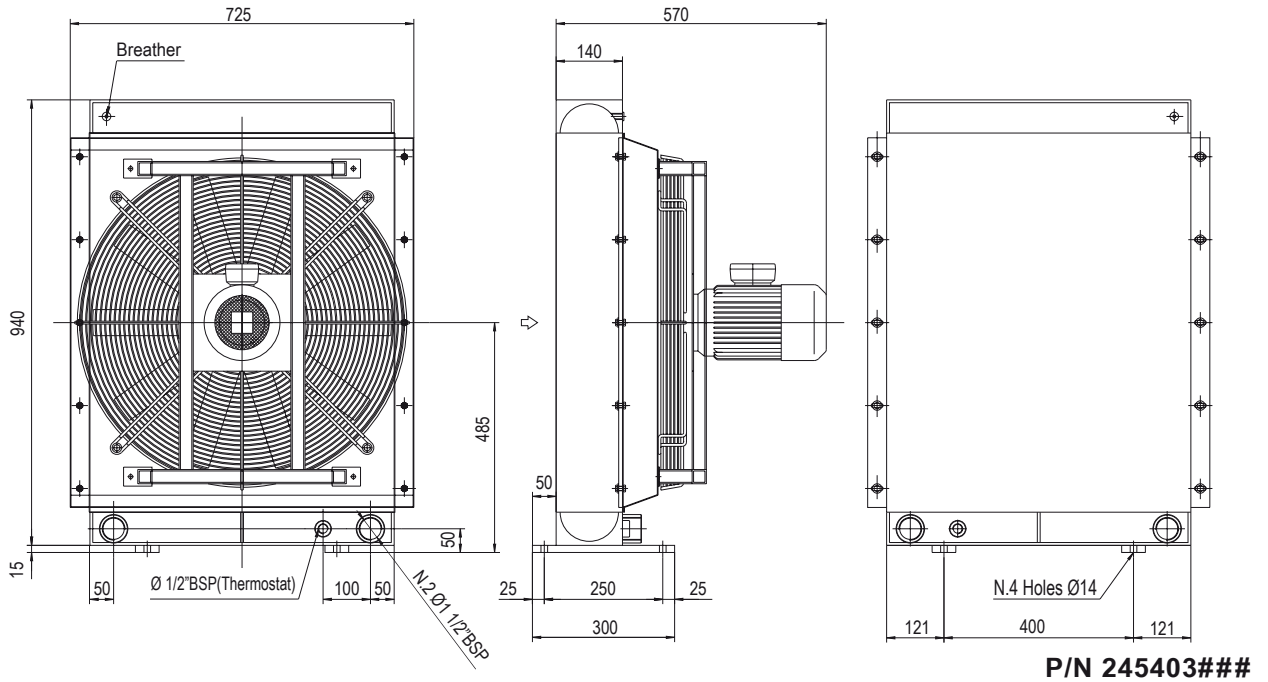
## Perdite di carico Pressure drop ( ISO VG 32)



**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

**HPA 52 2 PASS**

# Dati tecnici Technical Data

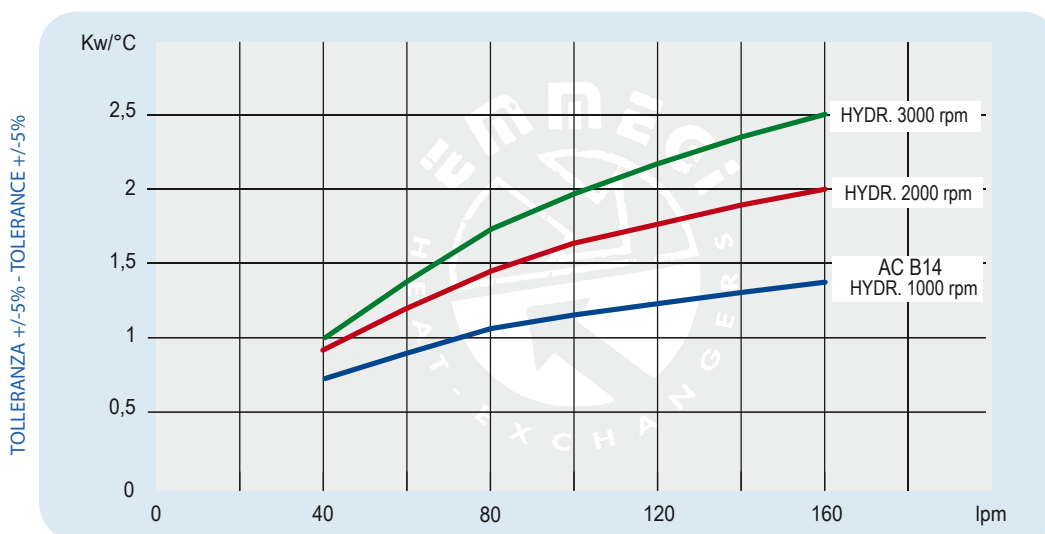


**HPA 52 2 PASS**

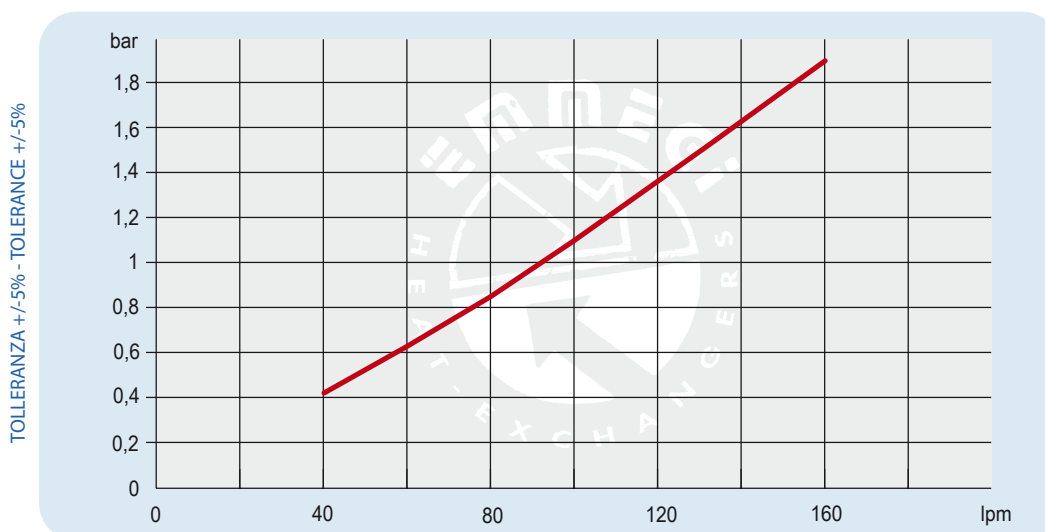
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
245403 ###	230-400 B14 AC	50	1,1	5-2,9	936	630	80	7050	55	17,7	95
	265-460 B14 AC	60	1,3	5-2,9	1123		☒				
245456 ###	Prepared for Gr.2 hydraulic motor				☒	630	☒	☒	/		89
245458 ###	Prepared for Gr.3 hydraulic motor				☒	630	☒	☒	/		89

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## Diagramma rendimento Performance diagram



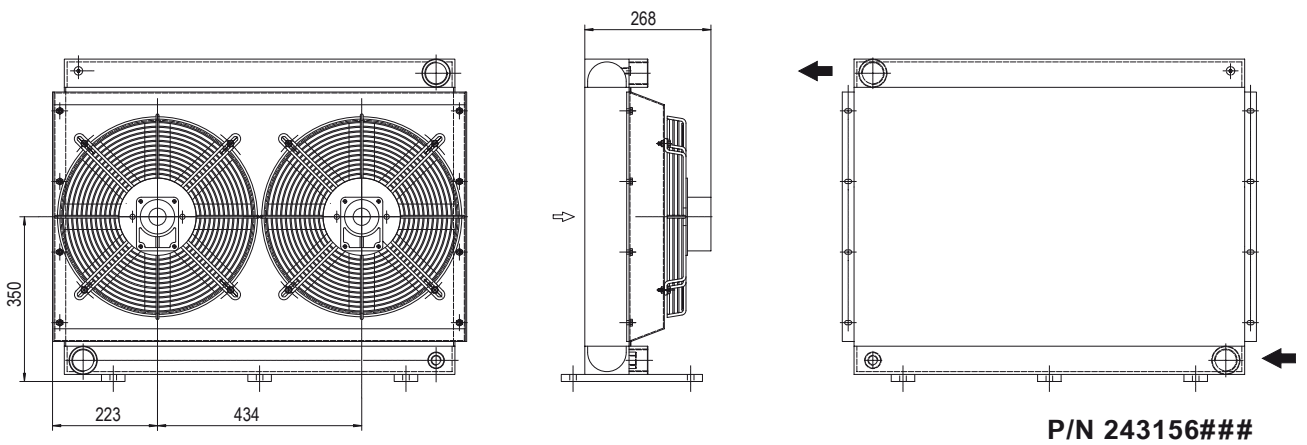
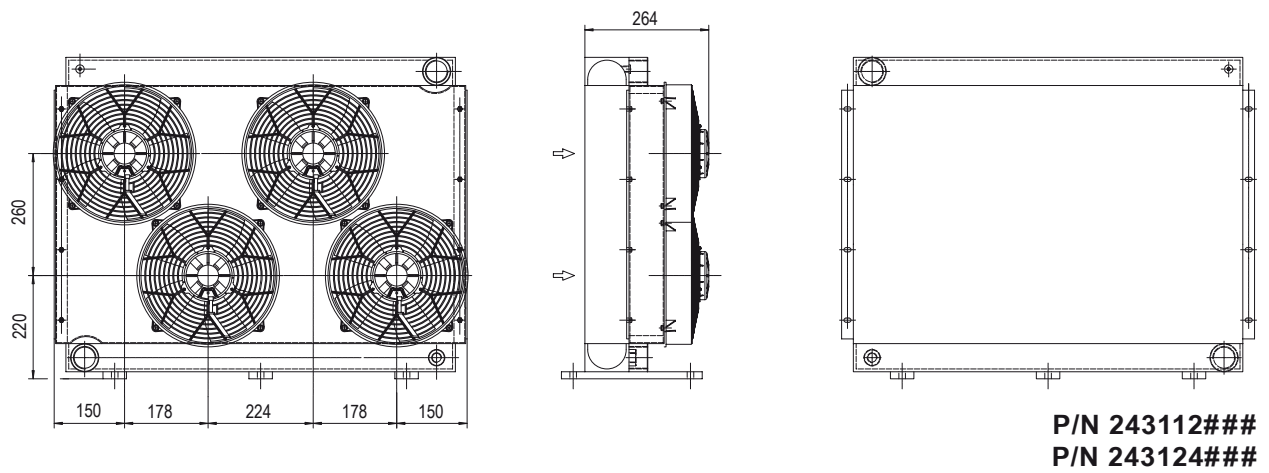
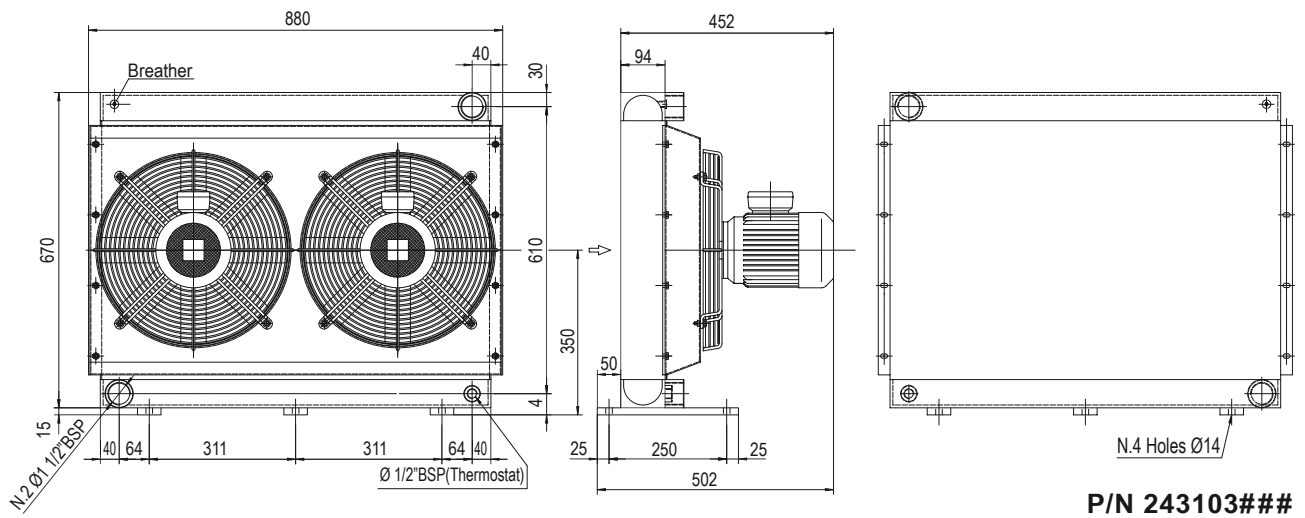
## Perdite di carico Pressure drop ( ISO VG 32)



**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding



# Dati tecnici Technical Data



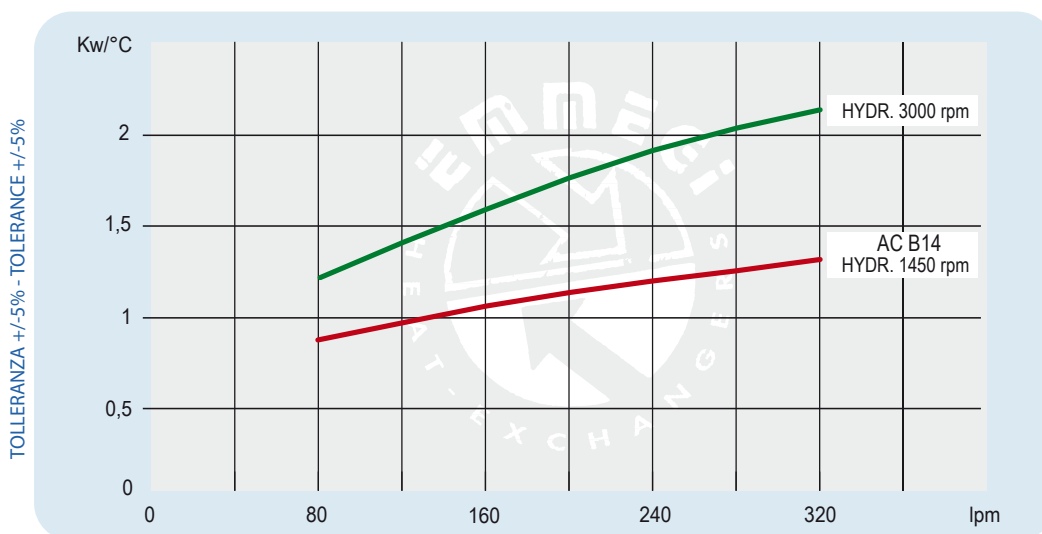
HPA 30 / 2

P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
243103 ###	230-400 B14 AC	50	0,55	2,9 - 1,7	1380	400	79	3300	55		74
	265-460 B14 AC	60	0,63	2,9 - 1,7	1690		☒				
243112 ###	12 DC	/	0,115	9,58	2530	280	77	1550	65	13,6	64
243124 ###	24 DC	/	0,125	5,20	2900	280	81	1700	65		64
243156 ###	Prepared for Gr.2 hydraulic motor					☒	400	☒	☒	/	70

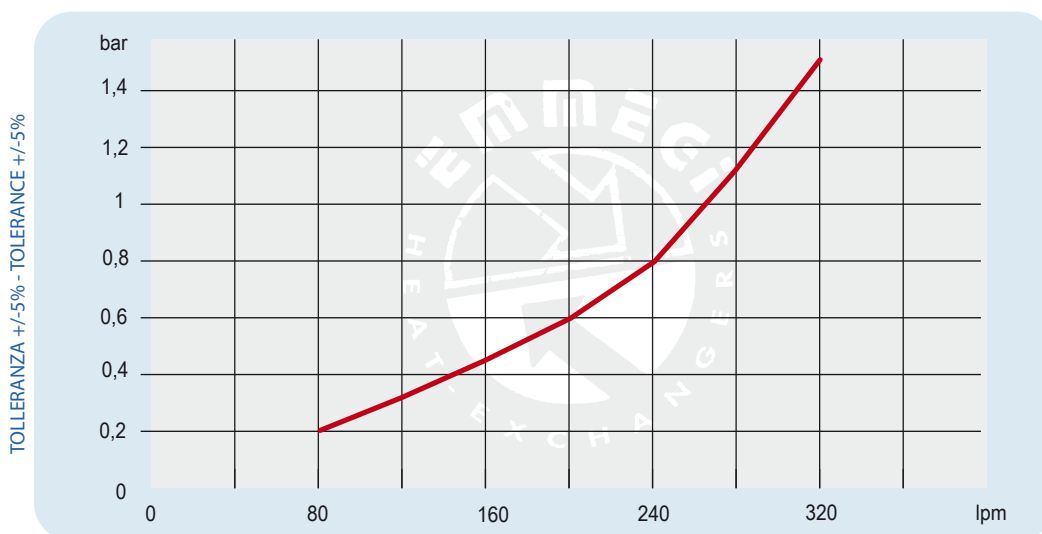
I dati sopri riportati sono riferiti al singolo ventilatore *The data refers to each ventilator*

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## Diagramma rendimento Performance diagram



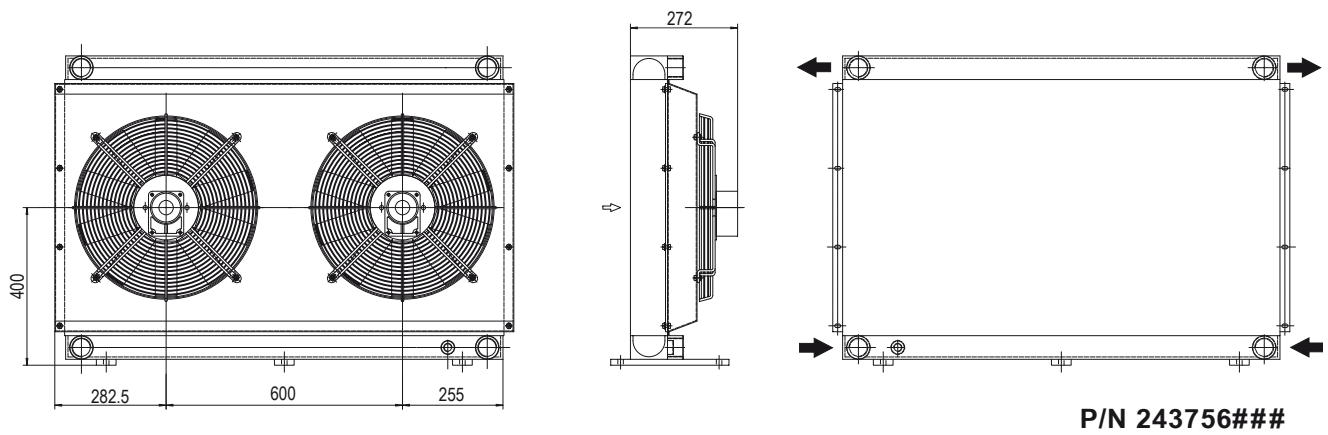
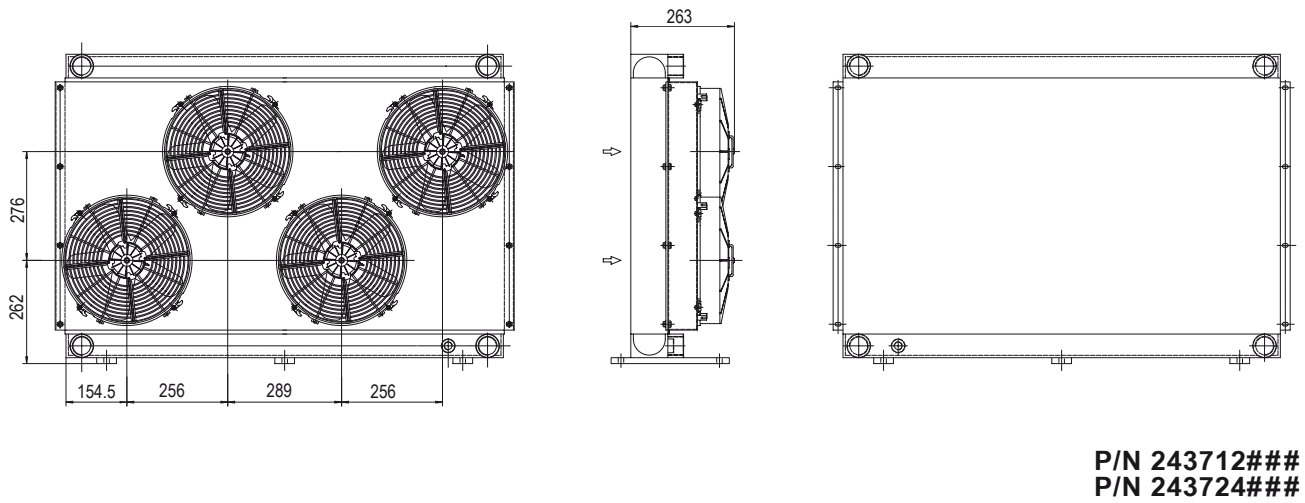
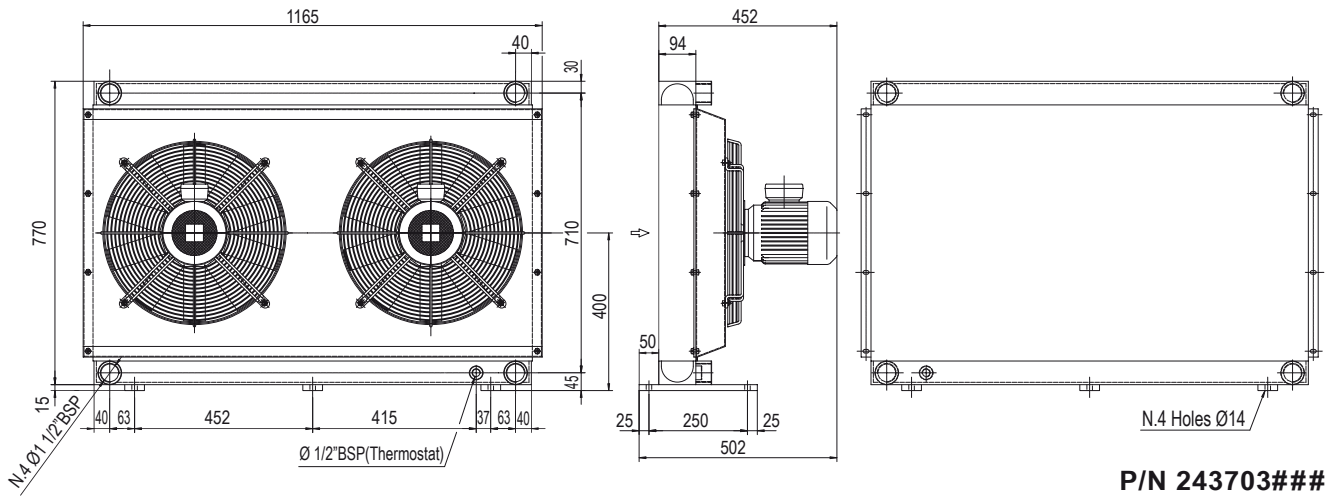
## Perdite di carico Pressure drop ( ISO VG 32)



**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

# Dati tecnici Technical Data



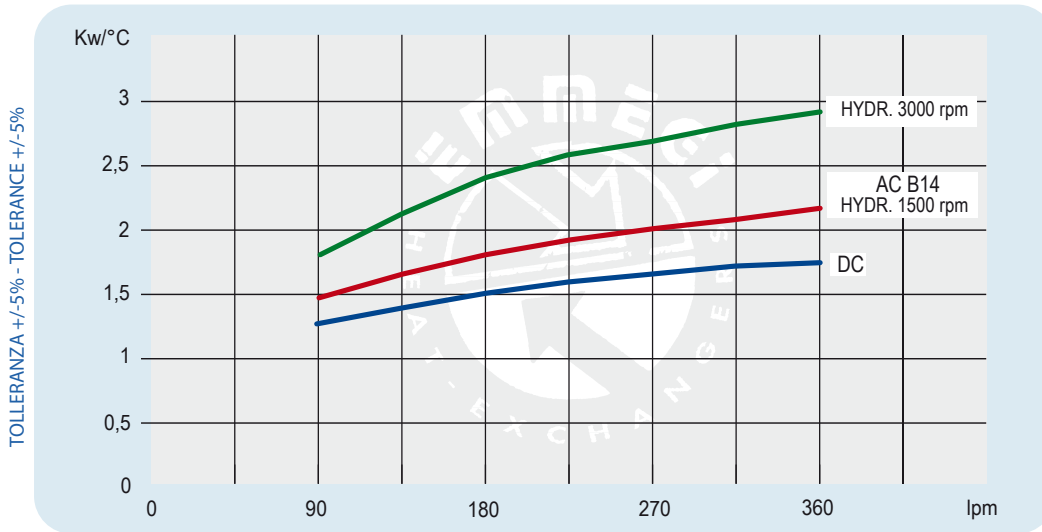
HPA 36 / 2

P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
243703 ###	230-400 B14 AC	50	0,75	3,2 - 1,9	1440	450	85	4000	55		120
	265-460 B14 AC	60	0,86	3,2 - 1,9	1750		☑				
243712 ###	12 DC	/	0,160	13,30	2560	305	86	2100	64	18,8	100
243724 ###	24 DC	/	0,177	7,35	3000	305	87	2400	64		100
243756 ###	Prepared for Gr.2 hydraulic motor				☑	450	☑	☑	/		102

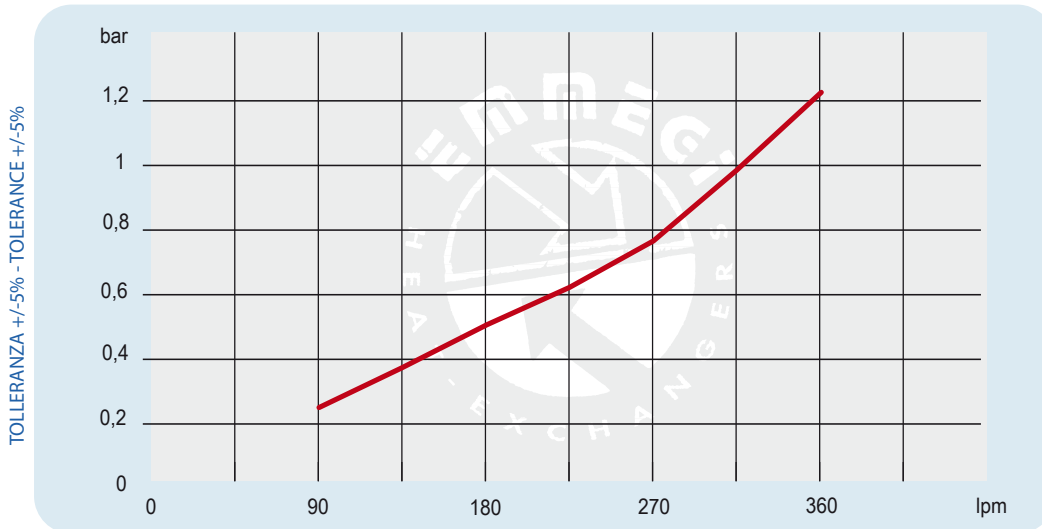
I dati sopri riportati sono riferiti al singolo ventilatore *The data refers to each ventilator*

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## Diagramma rendimento Performance diagram



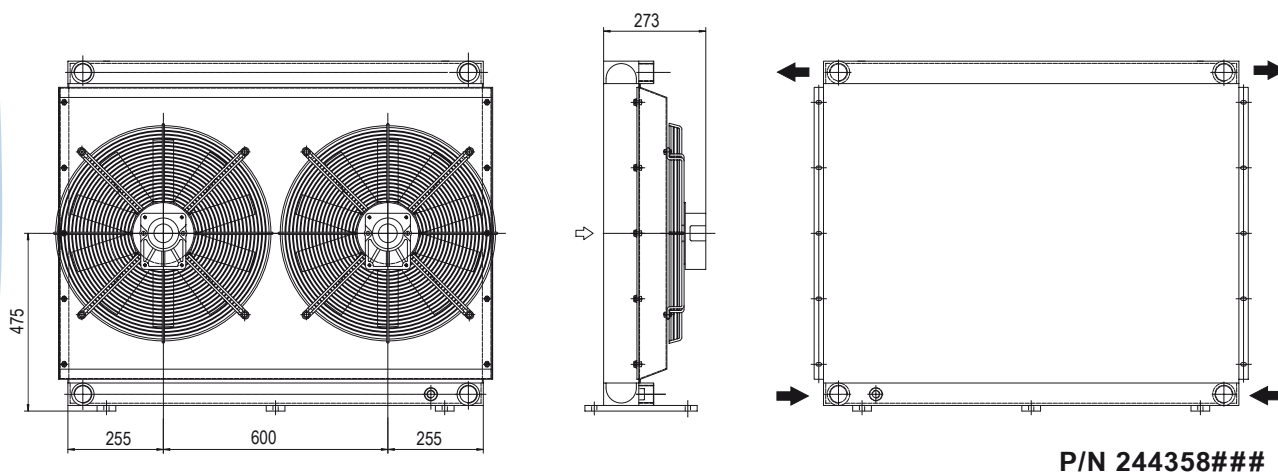
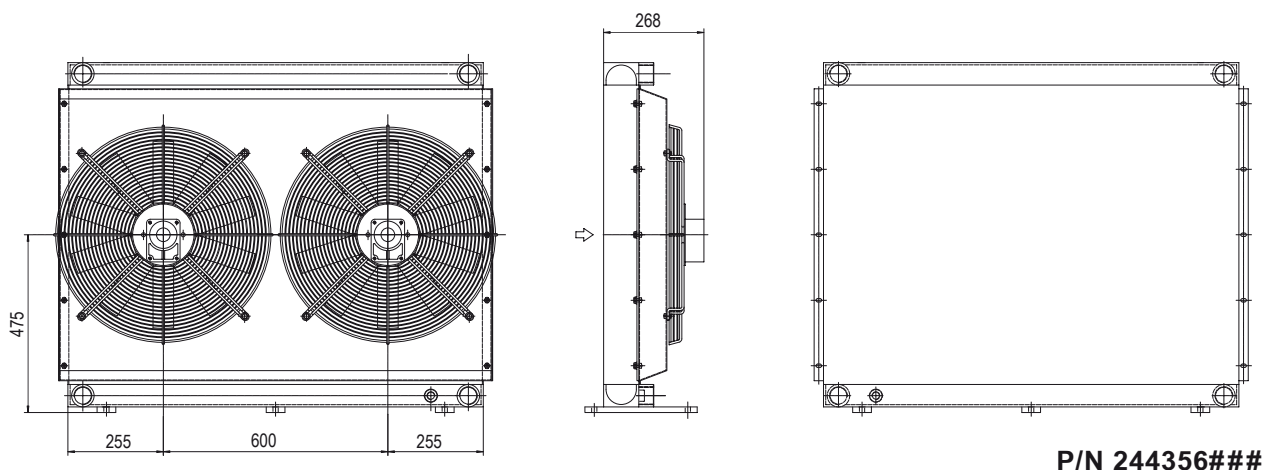
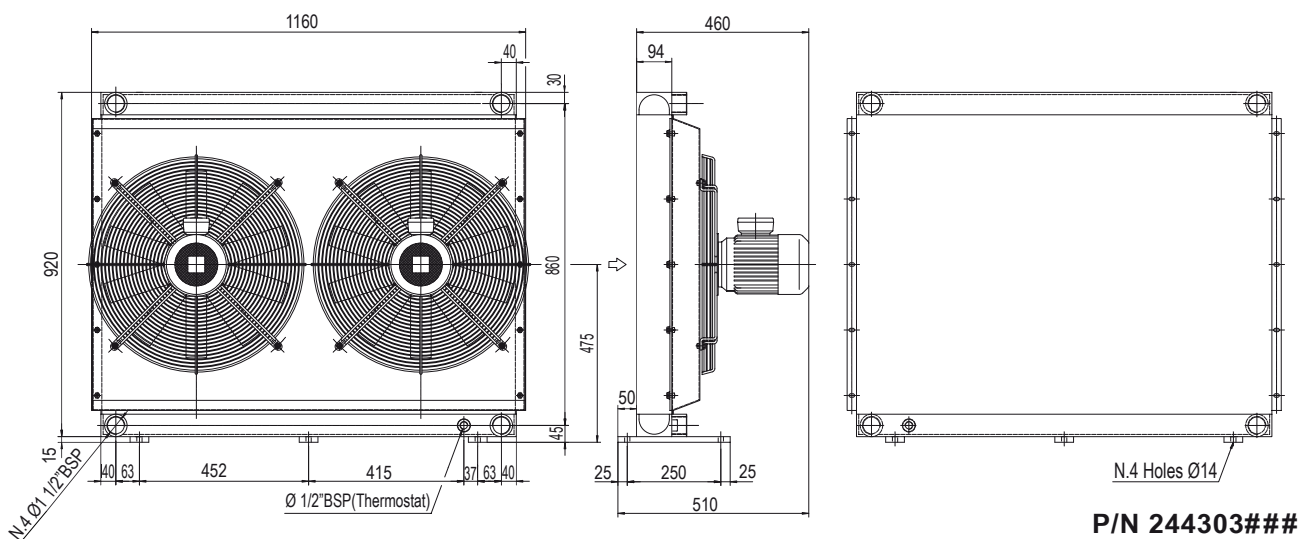
## Perdite di carico Pressure drop ( ISO VG 32)



**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
 Over-all dimensions and technical characteristic are not binding

# Dati tecnici Technical Data



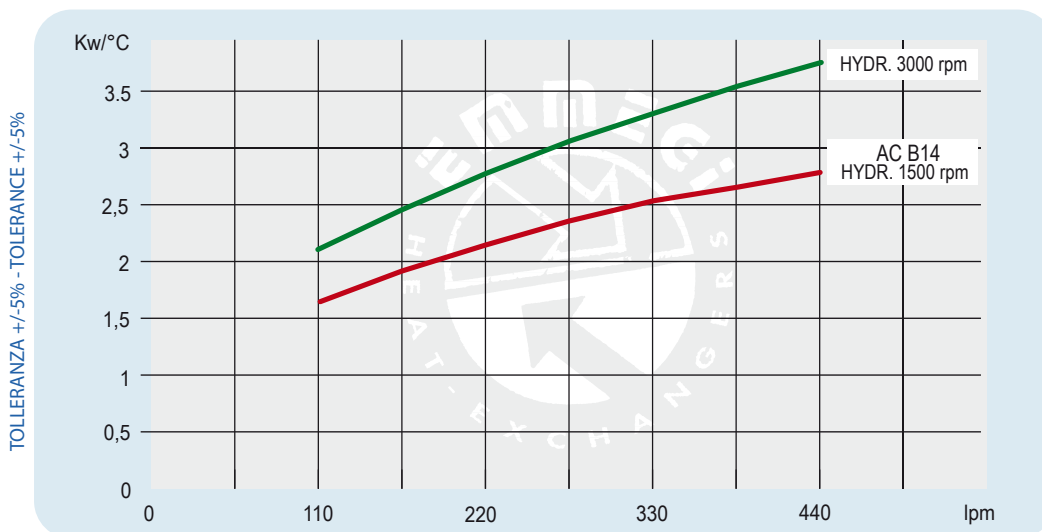
HPA 42 / 2

P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/ h)	IP	lt	Kg
244303 ###	230-400 B14 AC	50	1,1	4,5-2,6	1440	500	87	7550	55	21,2	135
	265-460 B14 AC	60	1,3	4,5-2,6	1730		☒	☒			
244356 ###	Prepared for Gr.2 hydraulic motor				☒	500	☒	☒	/		122
244358 ###	Prepared for Gr.3 hydraulic motor				☒	500	☒	☒	/		122

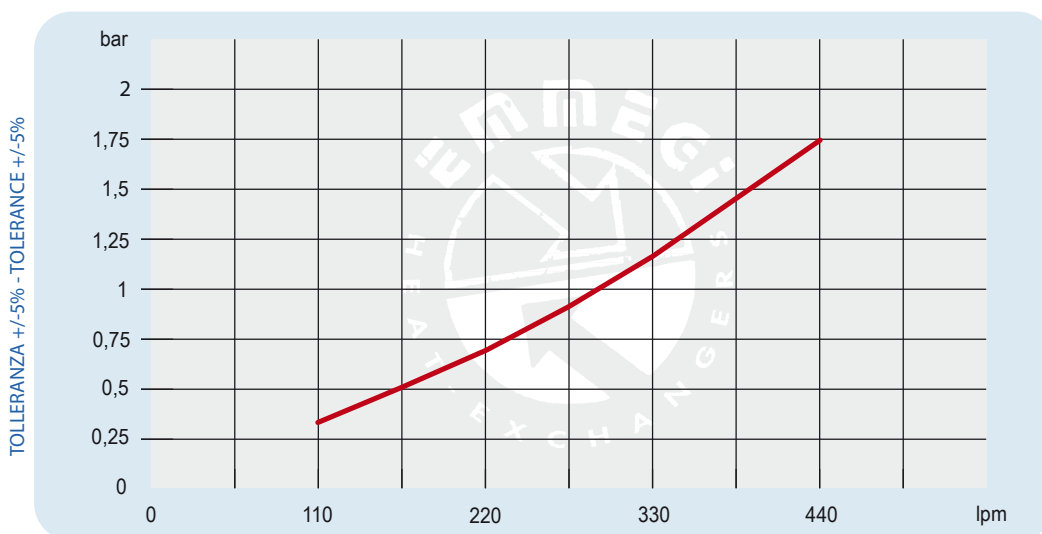
I dati sopri riportati sono riferiti al singolo ventilatore *The data refers to each ventilator*

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## Diagramma rendimento Performance diagram



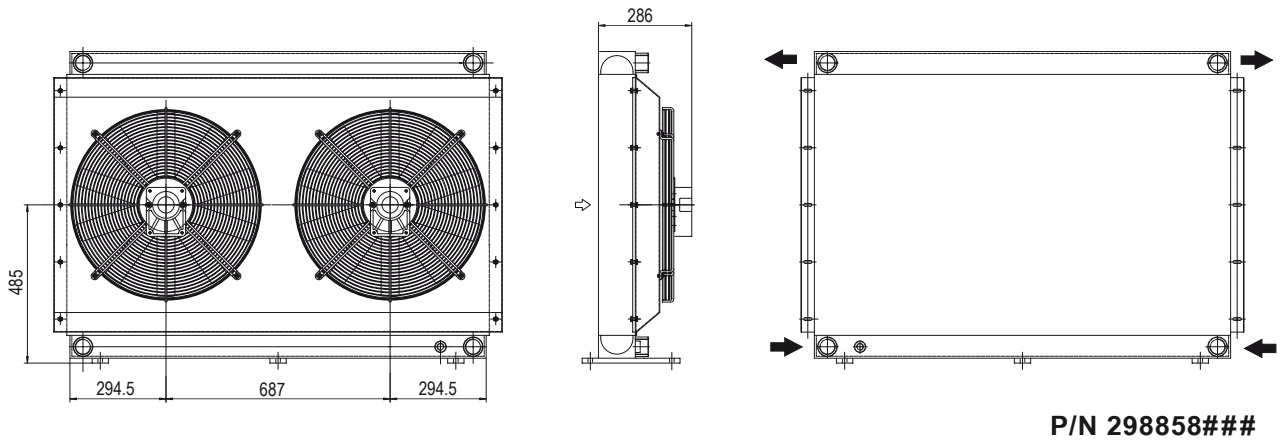
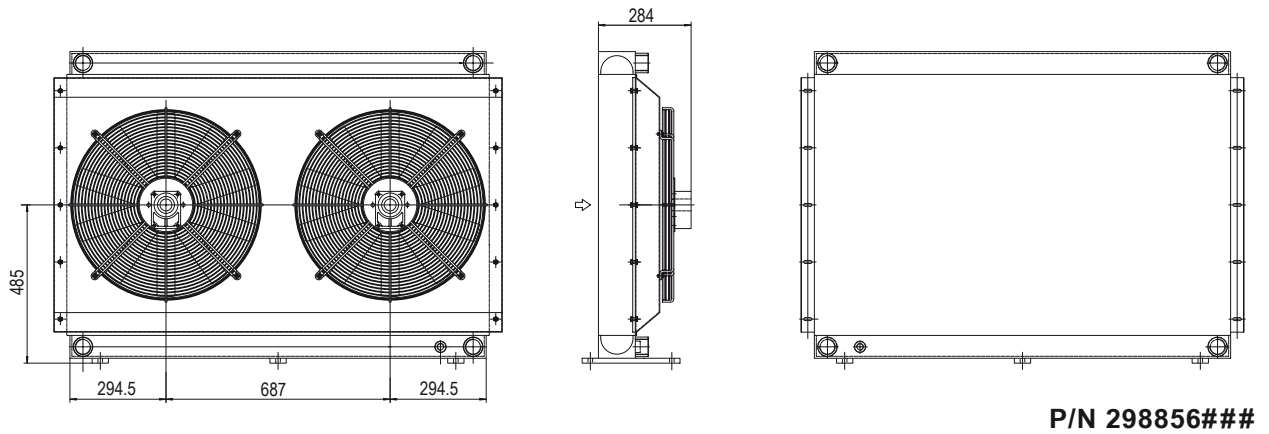
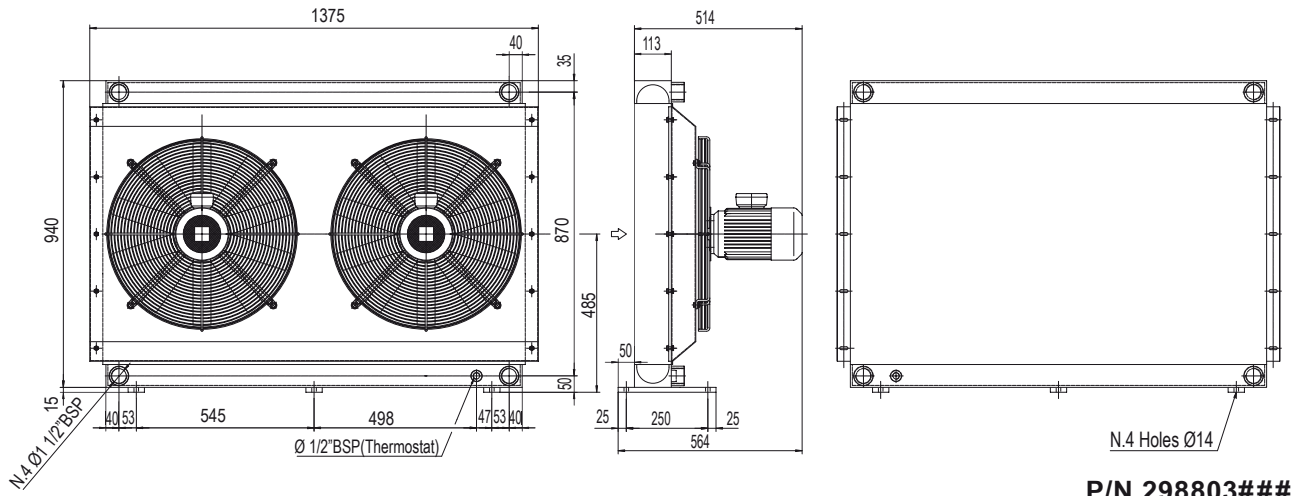
## Perdite di carico Pressure drop ( ISO VG 32)



**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding



# Dati tecnici Technical Data



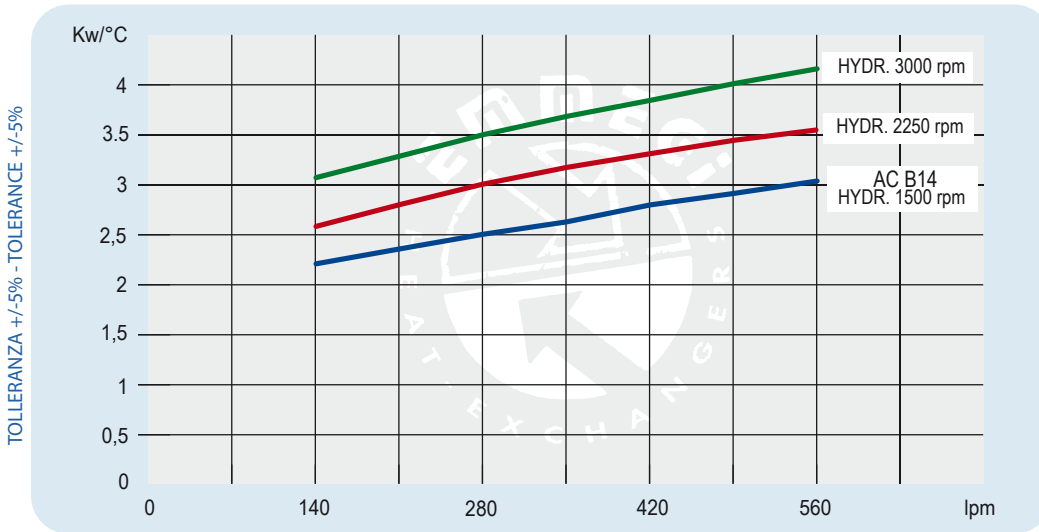
HPA 50 / 2

P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
298803 ###	230-400 B14 AC	50	1,1	4,5 - 2,6	1440	560	87	8500	55	28,4	192
	265-460 B14 AC	60	1,3	4,5 - 2,6	1730		☑	☑			
298856 ###	Prepared for Gr.2 hydraulic motor				☑	560	☑	☑	/		180
298858 ###	Prepared for Gr.3 hydraulic motor				☑	560	☑	☑	/		180

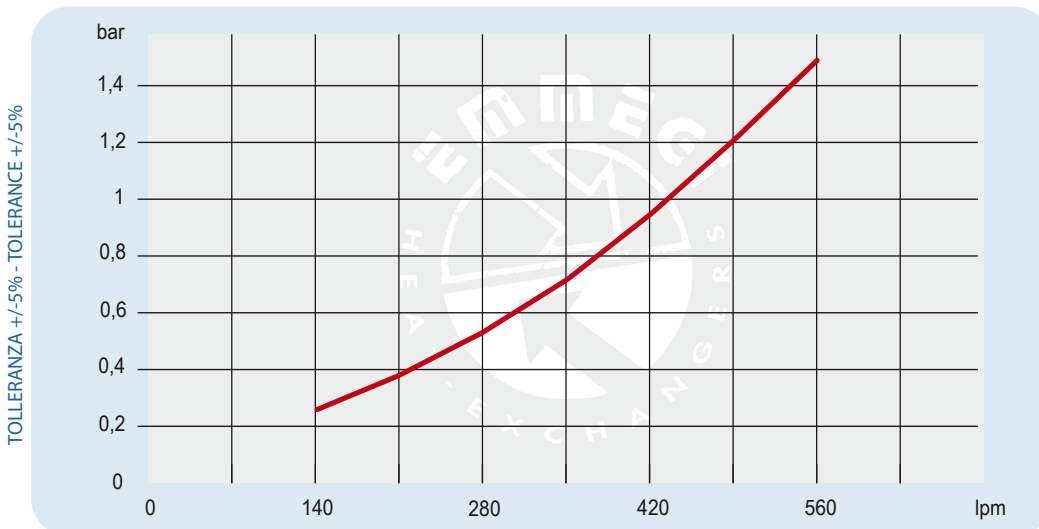
I dati sopri riportati sono riferiti al singolo ventilatore *The data refers to each ventilator*

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## Diagramma rendimento Performance diagram



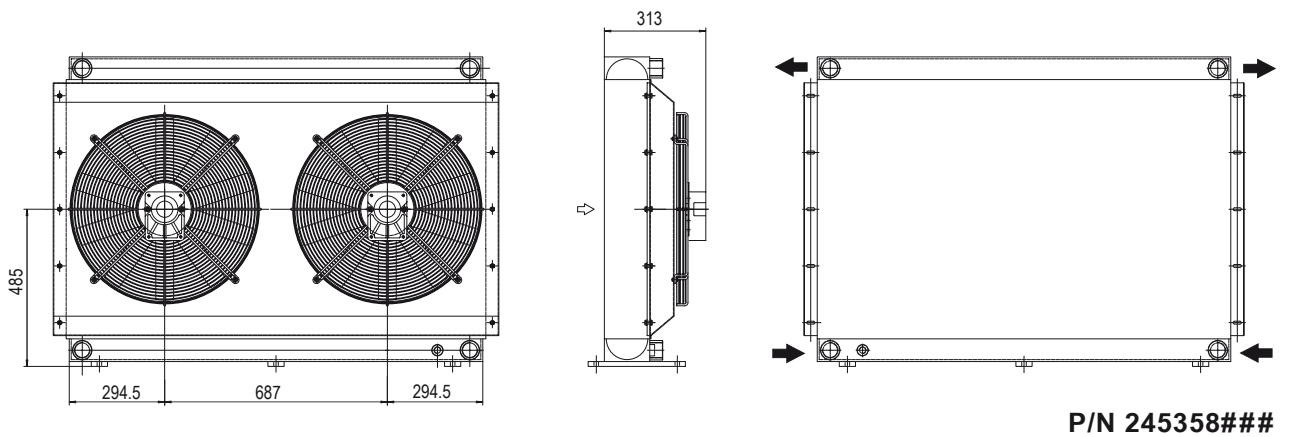
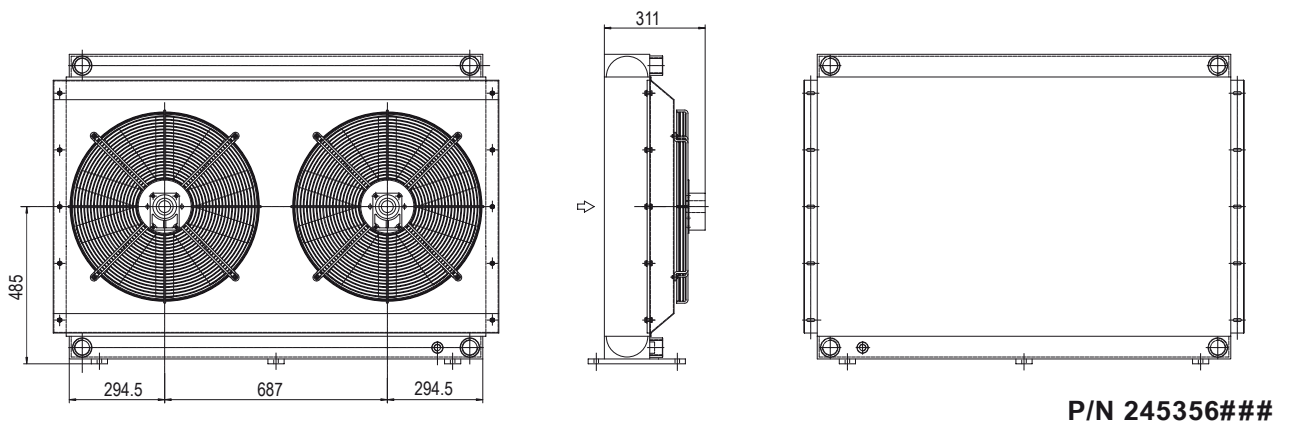
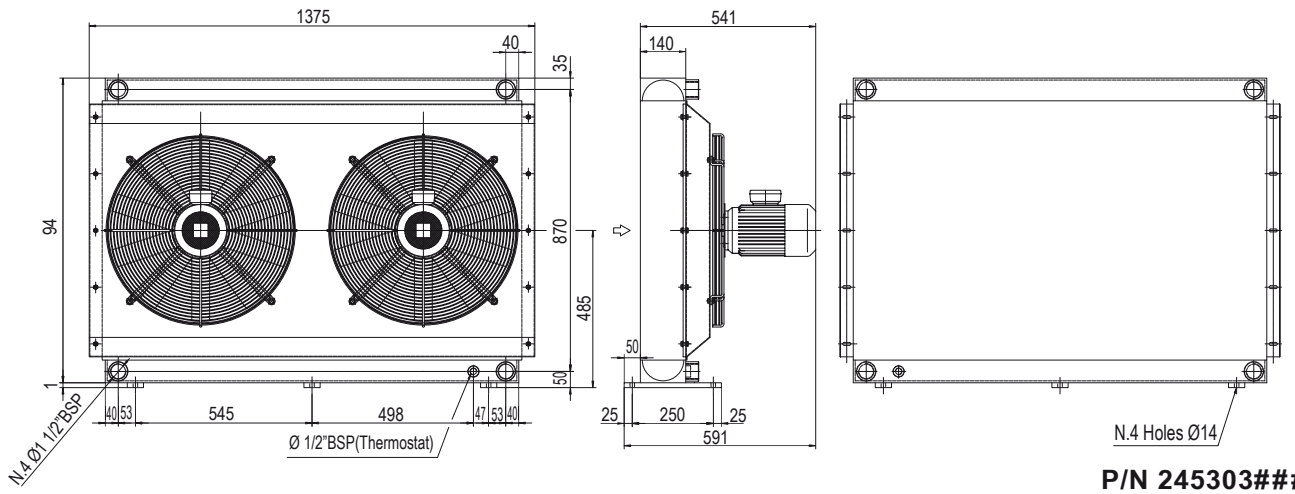
## Perdite di carico Pressure drop ( ISO VG 32)



**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



HPA 52/2

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

# Dati tecnici Technical Data



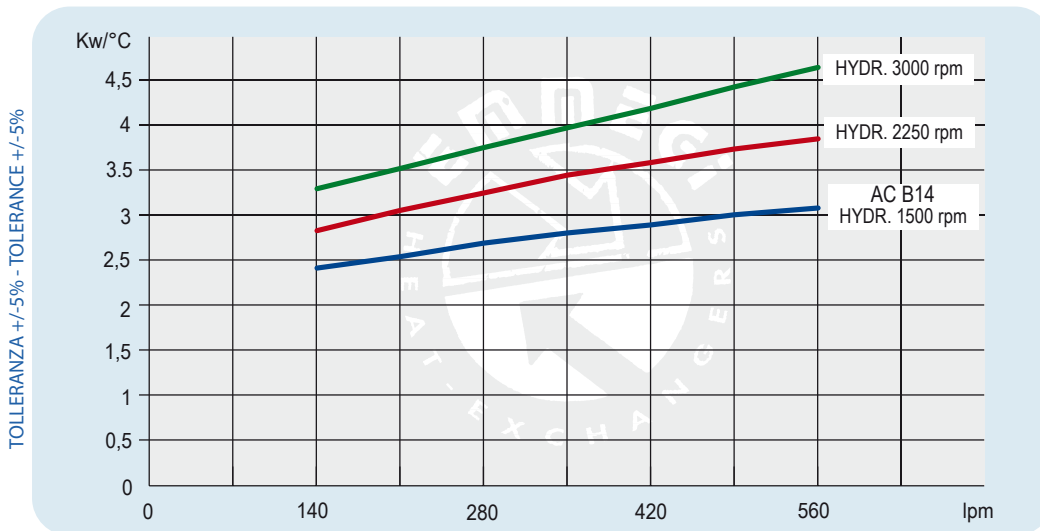
HPA 52 / 2

P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/ h)	IP	lt	Kg
245303 ###	230-400 B14 AC	50	1,1	4,5 - 2,6	1440	560	87	7750	55	28,4	195
	265-460 B14 AC	60	1,3	4,5 - 2,6	1730		☒	☒			
245356 ###	Prepared for Gr.2 hydraulic motor				☒	560	☒	☒	/		180
245358 ###	Prepared for Gr.3 hydraulic motor				☒	560	☒	☒	/		180

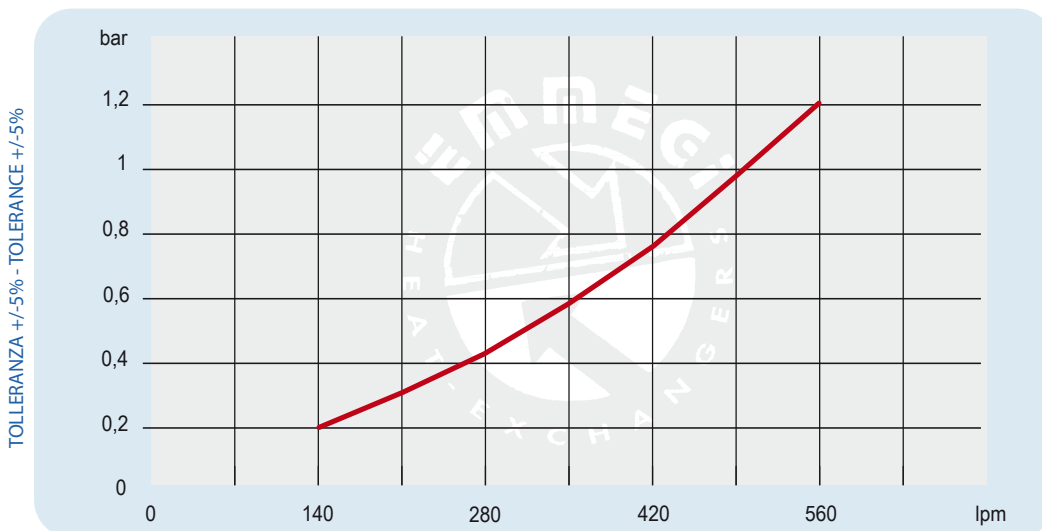
I dati sopri riportati sono riferiti al singolo ventilatore *The data refers to each ventilator*

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## Diagramma rendimento Performance diagram



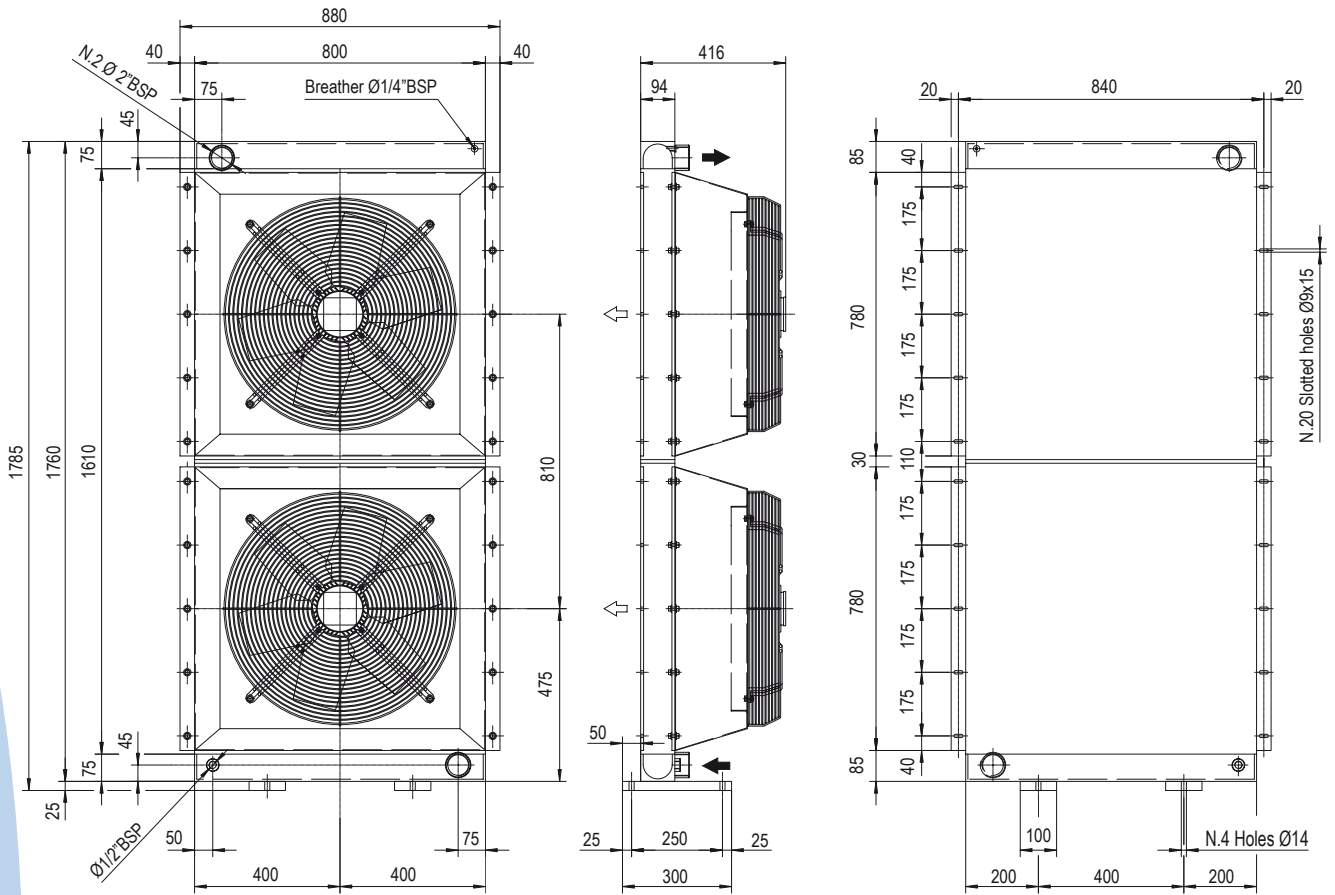
## Perdite di carico Pressure drop ( ISO VG 32)



Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



**HPA 44/2**

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
 Over-all dimensions and technical characteristic are not binding

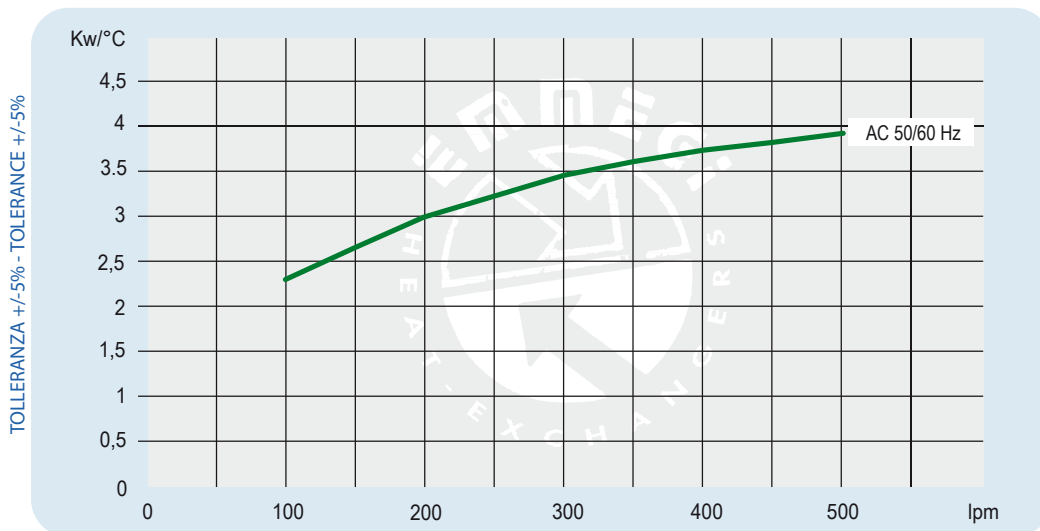
## Dati tecnici Technical Data



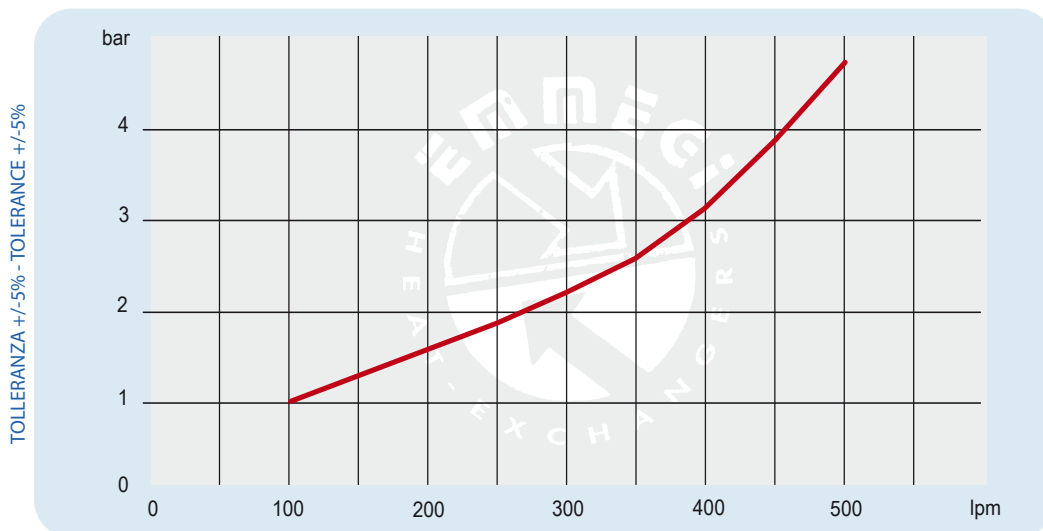
P/N	V	Hz	kW(±10%)	A(±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
041650C40050#	400 AC	50	1,3	2,4	1378	560	78	9500	54	25	140
041650C40060#	400-460 AC	60	1,5	2,5	1600	560	78	9500	54		140

I dati soprariportati sono riferiti al singolo ventilatore *The data refers to each ventilator*

## Diagramma rendimento Performance diagram



## Perdite di carico Pressure drop ( ISO VG 32)

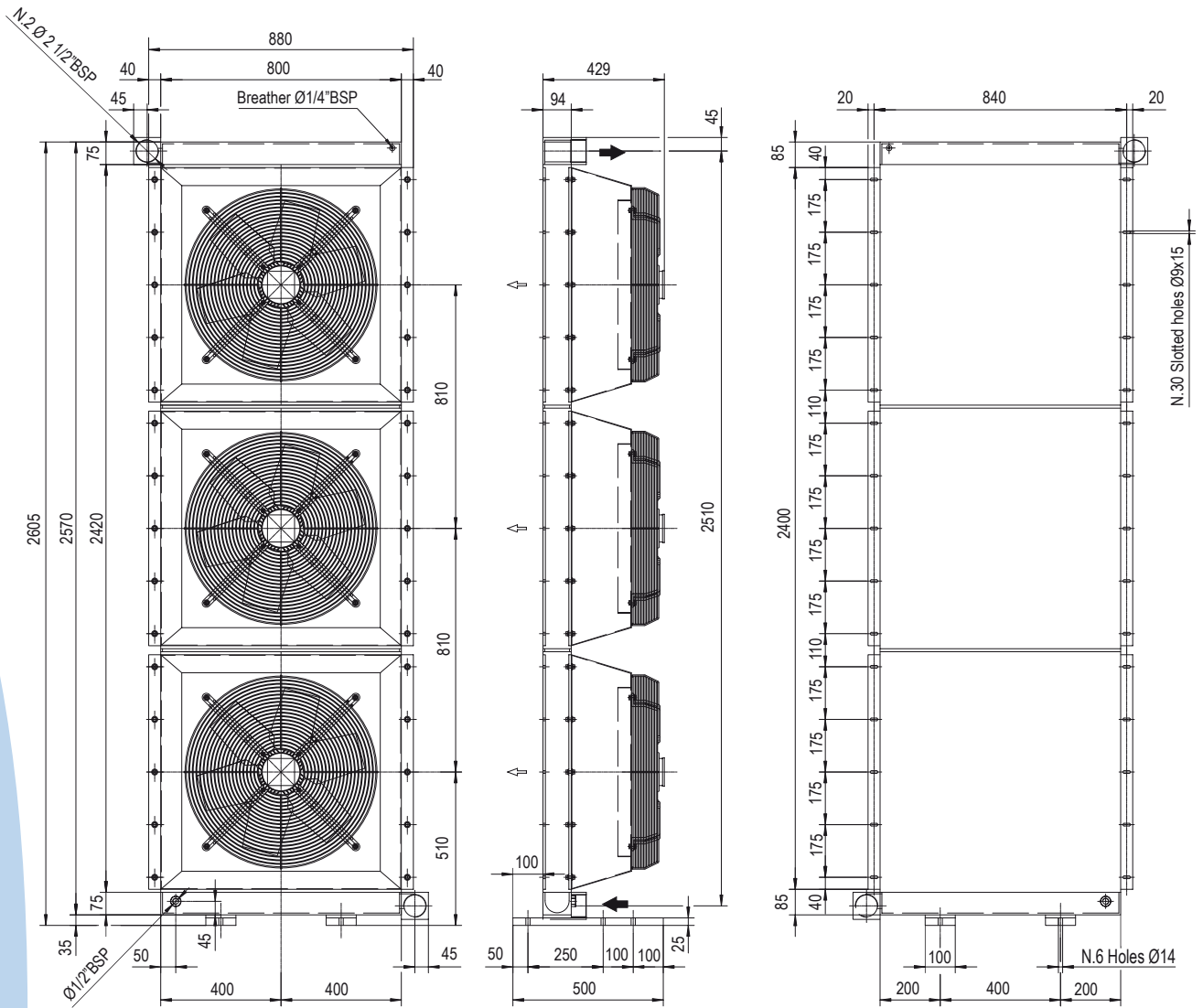


**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions

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Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding



## Dati tecnici Technical Data

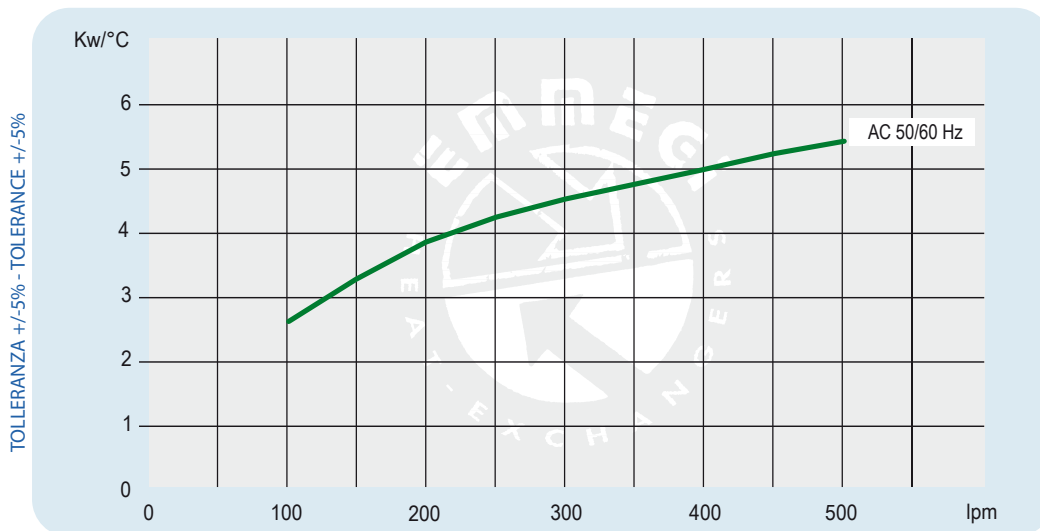


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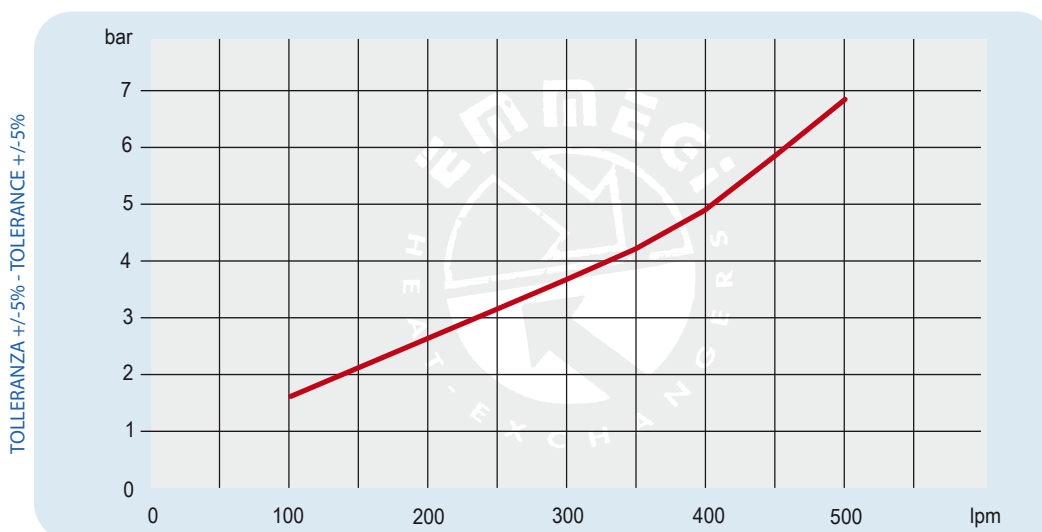
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	∅ Fan	dB(A)	(m³/h)	IP	lt	Kg
041240C40050#	400 AC	50	1,3	2,4	1378	560	81	9500	54	35	210
041240C40060#	400-460 AC	60	1,5	2,5	1600	560	81	9500	54		210

I dati soprariportati sono riferiti al singolo ventilatore *The data refers to each ventilator*

## Diagramma rendimento Performance diagram



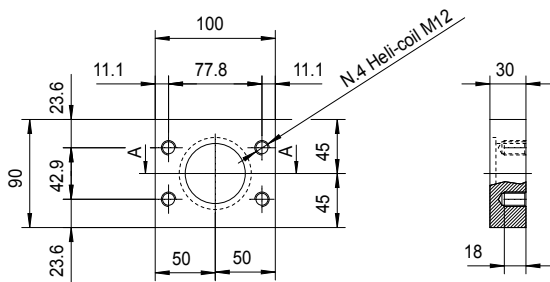
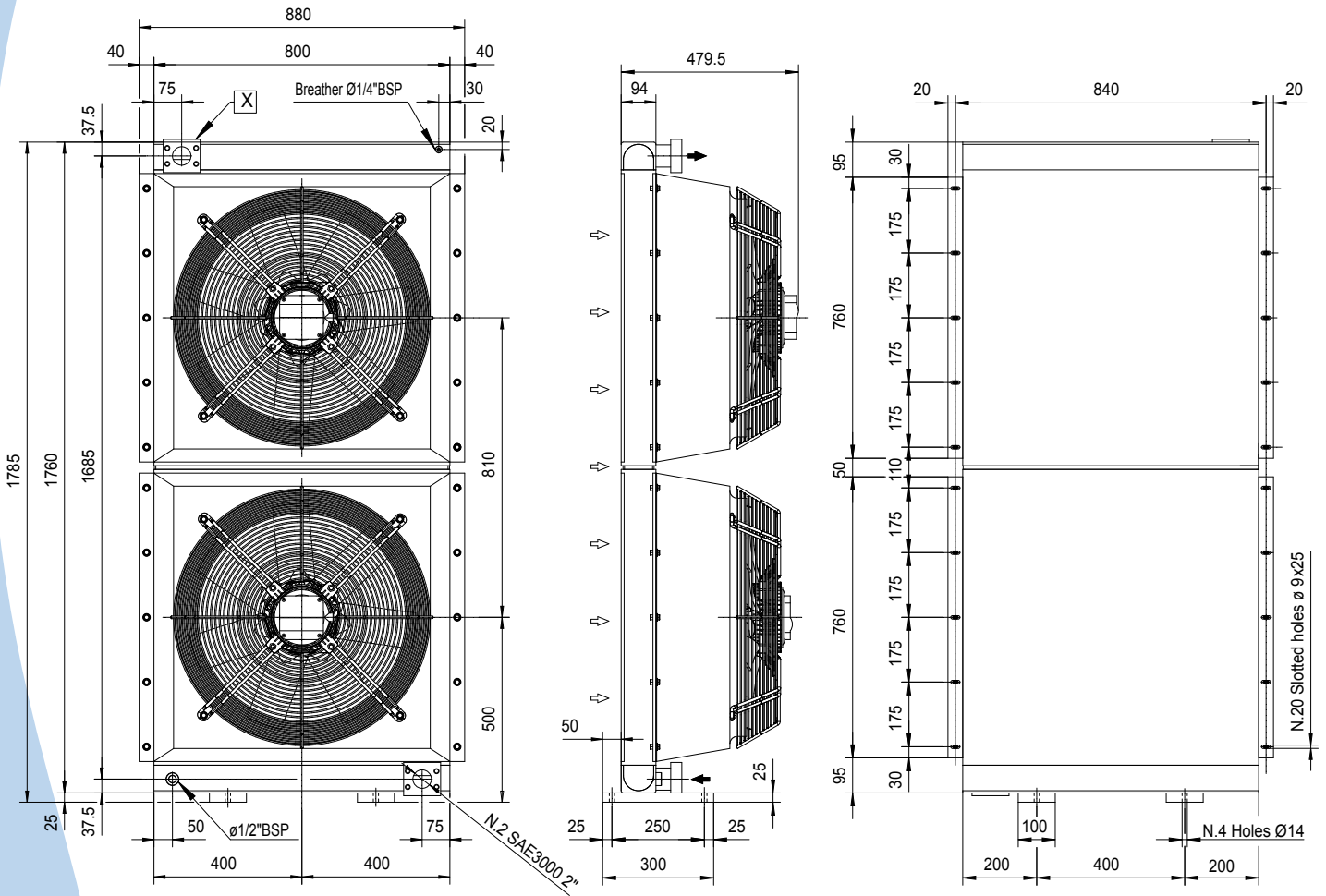
## Perdite di carico Pressure drop ( ISO VG 32)



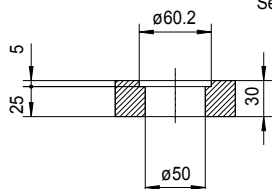
### Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



Sez. A-A



Part. X

Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

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## Dati tecnici Technical Data

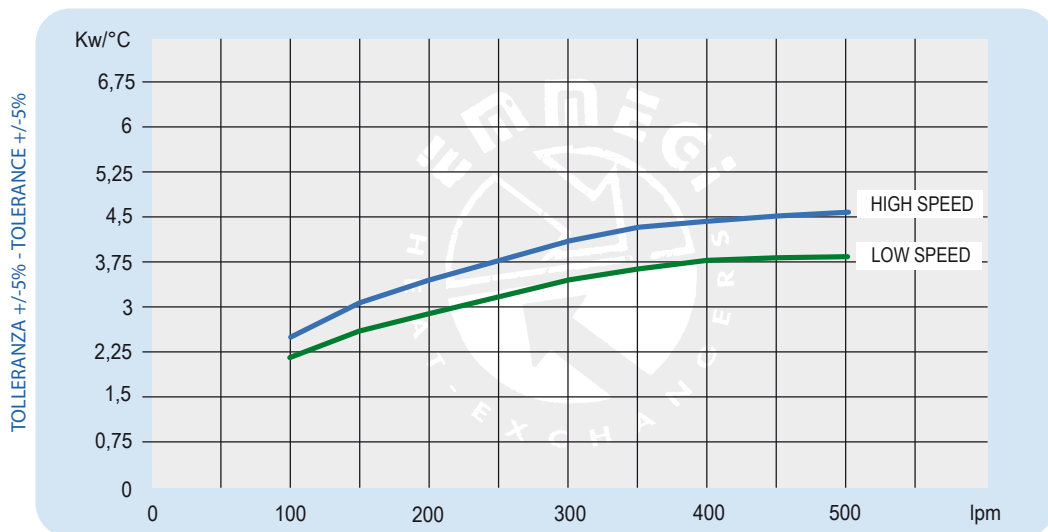


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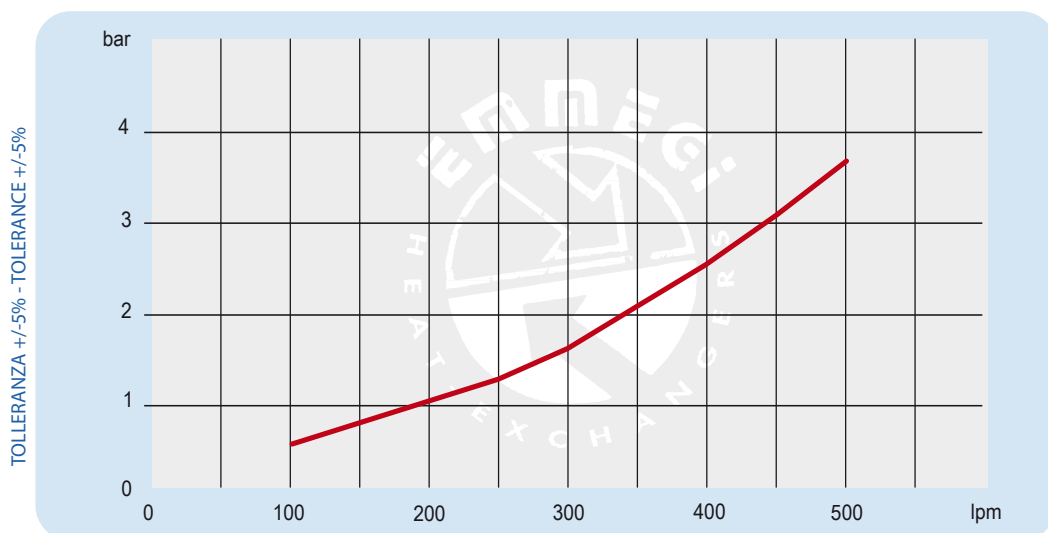
P/N	V	Hz	kW(±10%)	A(±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
A0351004005#1	400 AC (LS) 人	50	1,37	2,3	950	630	80	/	54	25	185
A0351004005#1	400 AC (HS) Δ	50	2,1	3,6	1300	630	86	/	54		185

I dati soprariportati sono riferiti al singolo ventilatore *The data refers to each ventilator*

## Diagramma rendimento Performance diagram



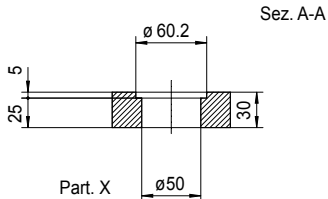
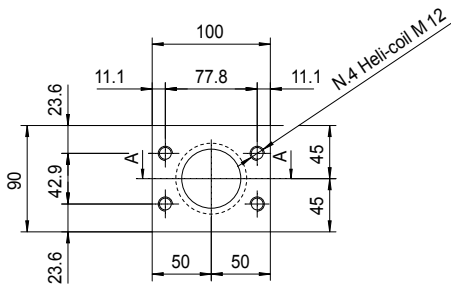
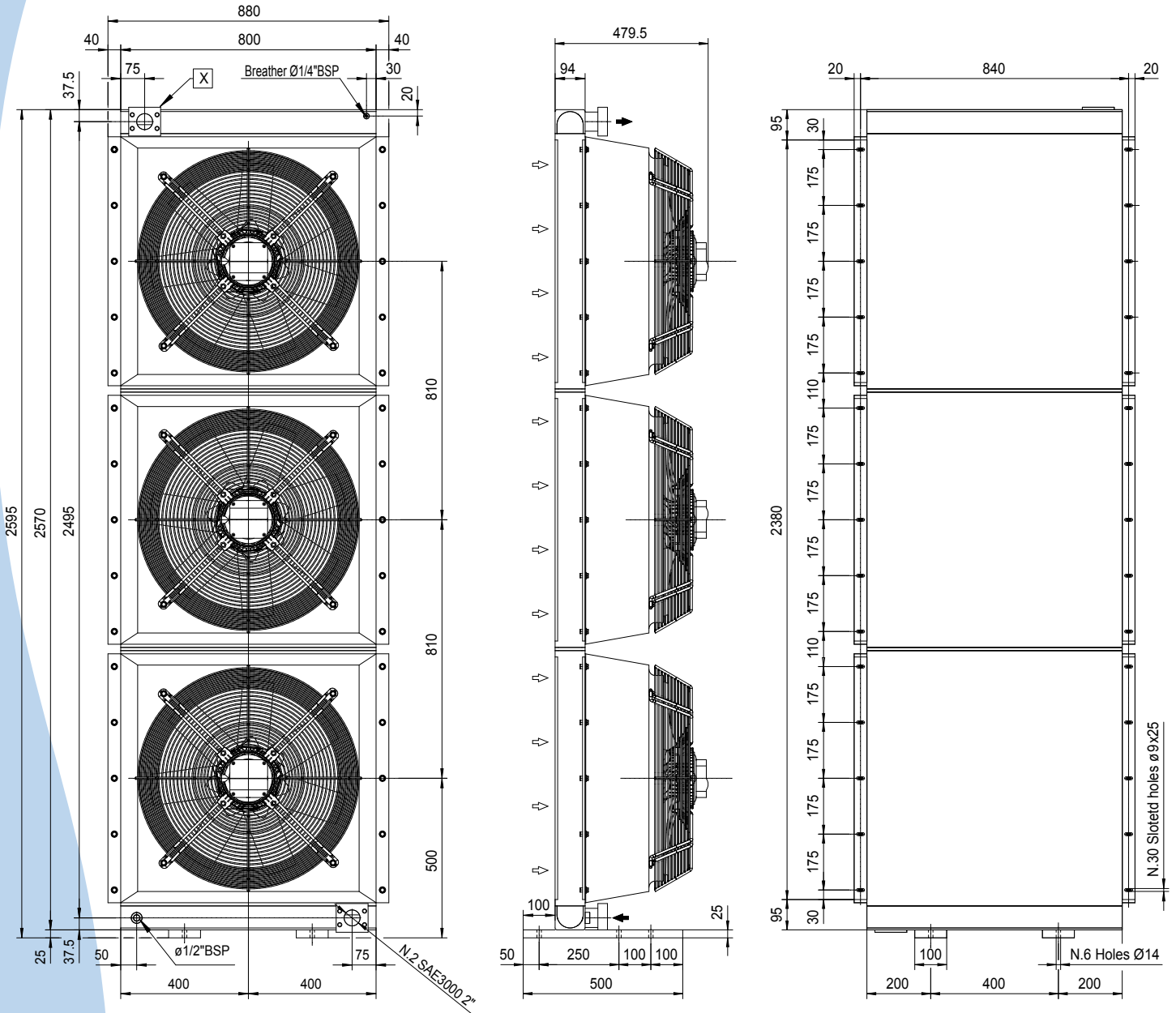
## Perdite di carico Pressure drop ( ISO VG 32)



**Fattore di correzione - F - ( perdite di carico) Correction factor - F - (Pressure drop)**

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

# Dimensioni Dimensions



Le dimensioni di ingombro e le caratteristiche tecniche non sono impegnative  
Over-all dimensions and technical characteristic are not binding

HPA 46 / 3

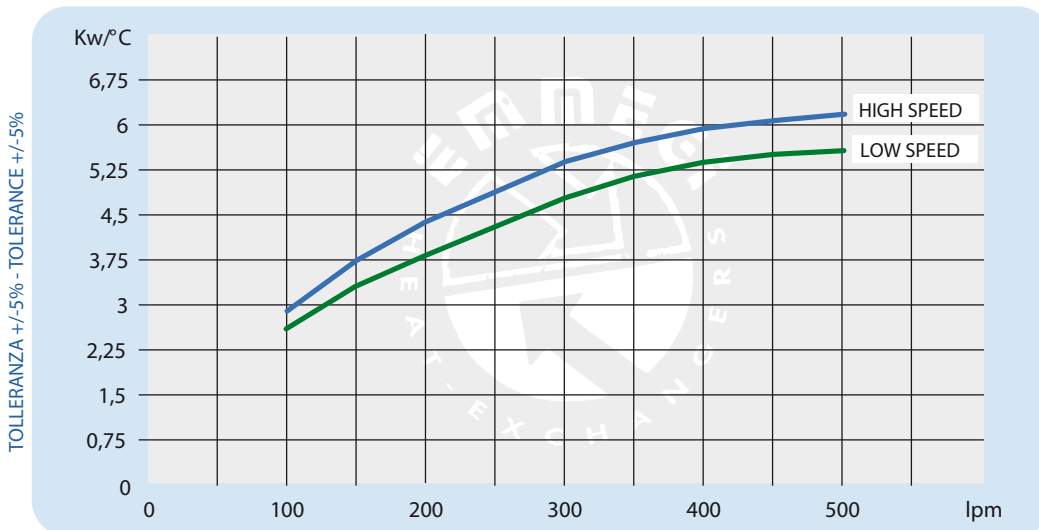
## Dati tecnici *Technical Data*



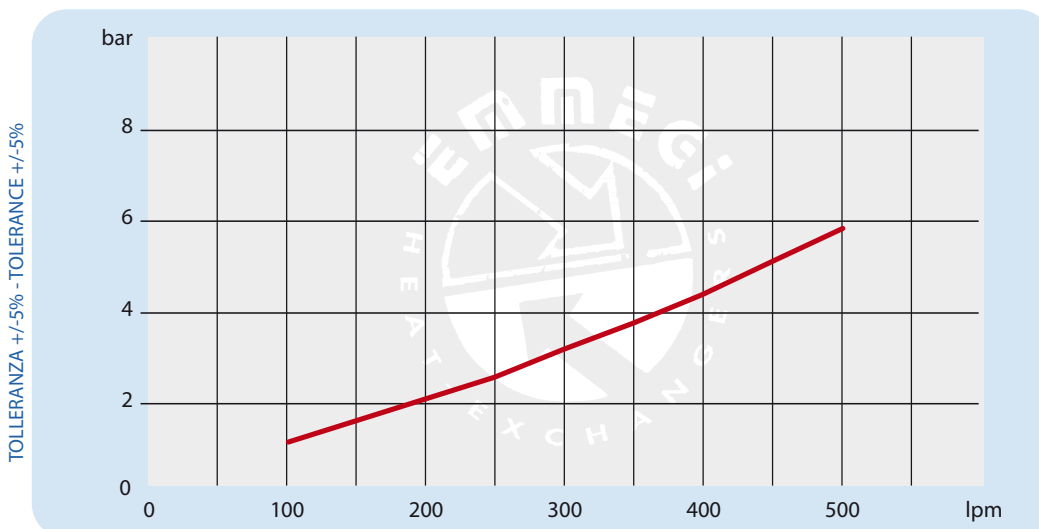
P/N	V	Hz	kW(±10%)	A (±10%)	rpm	ø Fan	dB(A)	(m³/h)	IP	lt	Kg
A0352004005#1	400 AC (LS) $\lambda$	50	1,37	2,3	950	630	80	/	54	35	255
A0352004005#1	400 AC (HS) $\Delta$	50	2,1	3,6	1300	630	86	/	54		185

I dati sopraindicati sono riferiti al singolo ventilatore. The data refers to each ventilator.

## Diagramma rendimento *Performance diagram*



## Perdite di carico *Pressure drop (ISO VG 32)*



### Fattore di correzione - F - (perdite di carico) *Correction factor - F - (Pressure drop)*

cst	10	15	20	30	40	50	60	80	100	200	300
F	0,5	0,65	0,77	1	1,2	1,4	1,6	1,9	2,1	3,3	4,3

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# Note Notes

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A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares. The grid is positioned below the 'Note Notes' header and occupies most of the page's area.



# Note Notes

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A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares. The grid is positioned below the 'Note Notes' header and above the footer. A decorative blue curved shape is visible on the right side of the page, partially overlapping the grid.

# Note Notes

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