

Blast Freezer Unit Coolers



BLAST FREEZER UNIT COOLERS



Thermokey presents the Blast Freezer Unit Coolers. This floor unit coolers series is ideal for all sectors where fast freezing of food is necessary, for example industries preparing meat, poultry, fish, bakery, dairy, ice cream, ready-to-serve meals, etc.

Blast freezer unit coolers are designed for applications with R404A, R507, NH₃ and CO₂.

The application range is:

- FLT series with R404A, from 14 to 71 kW (Te=-40°C ΔT₁=5K)
- FLA series with NH₃, from 16 to 99 kW (Te=-40°C ΔT₁=5K)
- FLC series with CO₂, from 18 to 107 kW (Te=-40°C ΔT₁=5K)

The refrigerant charge is lower than comparable products on the market, which will have a positive effect both on your budget and the environment. To further support your budget targets, Blast Freezer Unit Coolers offer low electricity consumption and smart solutions for easy installation and maintenance.

The standard configuration has:

- aluminium casing painted RAL 9010
- piping in copper for FLT series
- piping in stainless steel for FLA and FLC series
- 12 mm fin spacing
- 630 mm fan diameter
- motor fan type: 3 phase 400V 50/60 Hz
- external static pressure of 100 Pa

The following customizations are available upon request:

- casing in stainless steel or galvanized steel
- special fans for high static pressure
- different defrost systems (electric, hot gas, etc.)
- different fin spacing
- different coil protection

Thermokey presenta i Blast Freezer Unit Coolers.

Questa serie di aeroevaporatori a pavimento è l'ideale per tutte le applicazioni che richiedono un congelamento rapido degli alimenti, come ad esempio le industrie del settore della carne, del pollame, del pesce, dei prodotti da forno, dei prodotti lattiero-caseari, dei gelati, dei pasti pronti, ecc.

Blast Freezer Unit Coolers è una serie progettata per applicazioni con R404A, R507, NH₃ e CO₂.

Il campo di applicazione è:

- Serie FLT con R404A da 14 a 71 kW (Te=-40°C ΔT₁=5K)
- Serie FLA con NH₃, da 16 a 99 kW (Te=-40°C ΔT₁=5K)
- Serie FLC con CO₂, da 18 a 107 kW (Te=-40°C ΔT₁=5K)

La carica di refrigerante è inferiore rispetto ai comparabili prodotti sul mercato; ciò ha un effetto positivo sia sul piano economico che ambientale. Per contenere ulteriormente i costi, i Blast Freezer Unit Coolers garantiscono un basso consumo di energia elettrica e soluzioni intelligenti per una facile installazione e manutenzione.

La costruzione standard prevede:

- telaio in alluminio verniciato RAL 9010
- tubi in rame per la serie FLT
- tubi in acciaio inox per le serie FLA e FLC
- passo alette 12 mm
- ventilatori da 630 mm di diametro
- motori trifase 400V 50/60 Hz
- pressione statica residua di 100 Pa

A richiesta sono disponibili le seguenti personalizzazioni:

- telaio in acciaio inox o FeZn
- ventilatori speciali per elevate pressioni statiche residue
- diverse tipologie di sbrinamento (elettrico, gas caldo, ecc.)
- diverse tipologie di passi alette
- diverse tipologie di protezione delle alette

FLT

1

3

63

12

6

D6

E

-

FLT

Product series - Serie prodotto:
 FLT = Dx Blast Freezer
 FLA = Ammonia Blast Freezer
 FLC = CO₂ Blast Freezer

6

Rows number
 Numero ranghi

1

Number of fan rows
 Numero di file di ventilatori

D6

Operation systems - Sistemi di funzionamento:
 D = Direct expansion - Espansione diretta
 P = Pump - a pompa
 N = Flooded - Allagamento

3

Number of fans for row
 Numero di ventilatori per fila

Refrigerant connections - Attacchi frigoriferi:
 5 = Right - destro
 6 = Left - sinistro

63

Diameter of fans
 Diametro ventilatori
 63 = 630 mm

E

Defrost systems - Sistemi di sbrinamento:

A = Air - ad aria T₁ > +2°C
 E = Electric - Elettrico T₁ > -35°C
 W = Water - ad acqua T₁ > -5°C
 F = Water with heater elements -
 Ad acqua con resistenze elettriche T₁ > -30°C
 H = Hot gas - A gas caldo T₁ > -35°C
 G = Hot gas with heater elements -
 Gas caldo con resistenze elettriche T₁ > -35°C

12

Fin-spacing
 Passo alette
 12 = 12 mm

-

Heater element on drain line
 Resistenza elettrica di scarico
 R = 100 W

T₁ < -5°C

SELECTION PROCEDURE

METODO DI SELEZIONE

The nominal capacities Q_n (kW) referring to the following conditions:

- ΔT₁ = 5 K;
- Incoming air temperature T₁ = -35 °C (RH = 90%)
- Evaporating temperature T_e = -40 °C
- Refrigerants: R404A for FLT, R717 for FLA and R744 for FLC series

Le potenze nominali Q_n (kW) si riferiscono alle seguenti condizioni:

- ΔT₁ = 5 K;
- Temperatura di ingresso aria T₁ = -35 °C (UR = 90%)
- Temperatura di evaporazione T_e = -40 °C
- Refrigeranti: R404A for FLT, R717 for FLA and R744 for FLC

For different ΔT₁, it's possible to choose the correct model in the catalogue using the following formula and the factors in the table below:

Per diversi ΔT₁ è possibile scegliere il modello corretto a catalogo utilizzando la seguente formula e la tabella sottostante:

$$Q = Q_n \times F_c$$

| ΔT ₁ (K) | 5 | 6 | 7 |
|---------------------|---|-----|-----|
| F _c | 1 | 1,2 | 1,4 |

BLAST FREEZER - FLT SERIES - R404A / R507

| External static pressure = 100 Pa | | | | | | | Pressione statica residua = 100 Pa | | | | | | | |
|-----------------------------------|-----------------------|--------------------------|-----------------------|--|-----|-----|------------------------------------|-------------------------------|---------|------------------------|------|--------------------------------|--------------------------|----------------------------|
| Fin spacing = 12,0 mm | | | | | | | Passo alette = 12,0 mm | | | | | | | |
| Model Modello | Capacity Potenza | Air flow Portata aria | Surface Superficie | Fan-motors Ventilatori (3~400V-50Hz) | | | Defrost Sbrinamento | Noise level Livello sonoro | | Connectons Attacchi | | Tubes volume Volume interno | Net Weight Peso netto | Gross Weight Peso lordo |
| | $Q_n (\Delta T_1=5K)$ | m^3/h | m^2 | n x Ømm | kW | A | E | $L_p A$ | $L_w A$ | Øe | Øu | | | |
| | kW | | | | | | kW | dB(A) | dB(A) | mm | mm | | | |
| FLT 1263.126 | 14,3 | 28000 | 109 | 2x630 | 1,9 | 3,2 | 23,1 | 66 | 93 | 35 | 54 | 33,0 | 255 | 384 |
| FLT 1263.128 | 17,7 | 27000 | 146 | | | | 27,2 | 66 | 93 | 35 | 54 | 43,0 | 278 | 407 |
| FLT 1263.1210 | 20,3 | 25500 | 182 | | | | 31,3 | 66 | 93 | 35 | 54 | 54,0 | 308 | 436 |
| | | | | | | | | | | | | | | |
| FLT 1363.126 | 21,4 | 42000 | 164 | 3x630 | 1,9 | 3,2 | 35,1 | 68 | 95 | 35 | 54 | 49,0 | 342 | 513 |
| FLT 1363.128 | 26,6 | 40500 | 219 | | | | 41,3 | 68 | 95 | 2x28 | 2x54 | 65,0 | 376 | 547 |
| FLT 1363.1210 | 29,5 | 38250 | 273 | | | | 47,5 | 68 | 95 | 2x28 | 2x54 | 81,0 | 478 | 649 |
| | | | | | | | | | | | | | | |
| FLT 1463.128 | 30,0 | 54000 | 290 | 4x630 | 1,9 | 3,2 | 54,2 | 69 | 96 | 35 | 64 | 152,0 | 590 | 802 |
| FLT 1463.1210 | 34,1 | 52000 | 362 | | | | 62,3 | 69 | 96 | 35 | 64 | 190,0 | 667 | 878 |
| | | | | | | | | | | | | | | |
| FLT 1563.128 | 37,5 | 67500 | 362 | 5x630 | 1,9 | 3,2 | 64,7 | 70 | 97 | 35 | 76 | 190,0 | 709 | 948 |
| FLT 1563.1210 | 43,8 | 65000 | 453 | | | | 74,3 | 70 | 97 | 35 | 76 | 238,0 | 805 | 1044 |
| | | | | | | | | | | | | | | |
| FLT 2163.126 | 11,7 | 26000 | 82 | 2x630 | 1,9 | 3,2 | 17,5 | 66 | 93 | 28 | 54 | 24,0 | 244 | 359 |
| FLT 2163.128 | 14,6 | 25000 | 109 | | | | 21,5 | 66 | 93 | 28 | 54 | 32,0 | 280 | 374 |
| FLT 2163.1210 | 17,0 | 24000 | 137 | | | | 25,5 | 66 | 93 | 35 | 54 | 42,0 | 276 | 391 |
| | | | | | | | | | | | | | | |
| FLT 2263.126 | 23,6 | 52000 | 164 | 4x630 | 1,9 | 3,2 | 35,4 | 69 | 96 | 35 | 64 | 49,0 | 389 | 554 |
| FLT 2263.128 | 29,4 | 50000 | 219 | | | | 43,6 | 69 | 96 | 2x28 | 2x54 | 65,0 | 419 | 584 |
| FLT 2263.1210 | 34,4 | 48000 | 273 | | | | 51,8 | 69 | 96 | 2x35 | 2x54 | 83,0 | 448 | 613 |
| | | | | | | | | | | | | | | |
| FLT 2363.126 | 35,5 | 78000 | 246 | 6x630 | 1,9 | 3,2 | 53,7 | 71 | 98 | 2x35 | 2x54 | 73,0 | 532 | 767 |
| FLT 2363.128 | 43,2 | 75000 | 326 | | | | 66,1 | 71 | 98 | 2x35 | 2x54 | 97,0 | 576 | 811 |
| FLT 2363.1210 | 45,0 | 69000 | 407 | | | | 78,5 | 71 | 98 | 35 | 76 | 214,0 | 687 | 855 |
| | | | | | | | | | | | | | | |
| FLT 2463.128 | 49,0 | 100000 | 434 | 8x630 | 1,9 | 3,2 | 86,6 | 72 | 99 | 2x35 | 2x64 | 229,0 | 843 | 1025 |
| FLT 2463.1210 | 56,7 | 92000 | 543 | | | | 102,8 | 72 | 99 | 2x35 | 2x64 | 286,0 | 920 | 1084 |
| | | | | | | | | | | | | | | |
| FLT 2563.128 | 61,8 | 125000 | 543 | 10x630 | 1,9 | 3,2 | 103,1 | 73 | 100 | 2x35 | 2x76 | 286,0 | 1084 | 1193 |
| FLT 2563.1210 | 70,6 | 113000 | 678 | | | | 122,3 | 73 | 100 | 2x35 | 2x76 | 358,0 | 1180 | 1266 |

With 60 Hz fan motors $Q = Q_n \times 1,1$

Con ventilatori a 60 Hz $Q = Q_n \times 1,1$

$L_p A$ = Sound pressure level dB(A) in free field at 5 m distance from the unit, without reflection, in accordance with EN 13487/EN ISO 3744

$L_p A$ = Livello di pressione sonora dB(A) misurata a 5 m di distanza in campo libero, senza riverbero, in accordo alla norma EN 13487/EN ISO 3744

$L_w A$ = Sound power level dB(A)

$L_w A$ = Livello di potenza sonora dB(A)

BLAST FREEZER UNIT COOLERS

BLAST FREEZER - FLA SERIES - NH₃

| External static pressure = 100 Pa | | | | | | | Pressione statica residua = 100 Pa | | | | | | | |
|-----------------------------------|--|--------------------------|-----------------------|--|-----|-----|------------------------------------|-------------------------------|---------|------------------------|-----------------|--------------------------------------|-----------------------------|-------------------------------|
| Fin spacing = 12,0 mm | | | | | | | Passo alette = 12,0 mm | | | | | | | |
| Model Modello | Capacity Potenza $Q_n (\Delta T_1=5K)$ | Air flow Portata aria | Surface Superficie | Fan-motors Ventilatori (3~400V-50Hz) | | | Defrost Sbrinamento | Noise level Livello sonoro | | Connectons Attacchi | | Tubes volume Volume interno | Net Weight Peso netto | Gross Weight Peso lordo |
| | kW | m ³ /h | m ² | n x Ømm | kW | A | E | $L_p A$ | $L_w A$ | $\varnothing e$ | $\varnothing u$ | dm ³ | Kg | Kg |
| | | | | | | | kW | dB(A) | dB(A) | inch | inch | | | |
| FLA 1263.126 | 16,5 | 28000 | 109 | 2x630 | 1,9 | 3,2 | 23,1 | 66 | 93 | 3/4" | 1"1/4 | 55,0 | 276 | 405 |
| FLA 1263.128 | 20,5 | 27000 | 145 | | | | 27,2 | 66 | 93 | 3/4" | 1"1/2 | 74,0 | 306 | 435 |
| FLA 1263.1210 | 23,7 | 25500 | 182 | | | | 31,3 | 66 | 93 | 3/4" | 1"1/2 | 92,0 | 334 | 462 |
| FLA 1363.126 | 26,7 | 42000 | 163 | 3x630 | 1,9 | 3,2 | 35,1 | 68 | 95 | 2x3/4" | 2x1"1/4 | 83,0 | 386 | 557 |
| FLA 1363.128 | 32,7 | 40500 | 217 | | | | 41,3 | 68 | 95 | 2x3/4" | 2x1"1/4 | 110,0 | 430 | 601 |
| FLA 1363.1210 | 37,0 | 38250 | 272 | | | | 47,5 | 68 | 95 | 2x3/4" | 2x1"1/4 | 138,0 | 471 | 642 |
| FLA 1463.128 | 41,3 | 54000 | 290 | 4x630 | 1,9 | 3,2 | 54,2 | 69 | 96 | 2x3/4" | 2x1"1/2 | 147,0 | 589 | 800 |
| FLA 1463.1210 | 47,0 | 50000 | 362 | | | | 62,3 | 69 | 96 | 2x3/4" | 2x1"1/2 | 184,0 | 681 | 892 |
| FLA 1563.128 | 54,0 | 67500 | 362 | 5x630 | 1,9 | 3,2 | 64,7 | 70 | 97 | 3x3/4" | 3x1"1/2 | 184,0 | 819 | 1058 |
| FLA 1563.1210 | 60,9 | 62500 | 453 | | | | 74,3 | 70 | 97 | 3x3/4" | 3x1"1/2 | 230,0 | 934 | 1173 |
| FLA 2163.126 | 14,5 | 26000 | 82 | 2x630 | 1,9 | 3,2 | 17,5 | 66 | 93 | 3/4" | 1"1/4 | 41,0 | 273 | 337 |
| FLA 2163.128 | 17,6 | 25000 | 109 | | | | 21,5 | 66 | 93 | 3/4" | 1"1/4 | 55,0 | 292 | 351 |
| FLA 2163.1210 | 20,0 | 24000 | 136 | | | | 25,5 | 66 | 93 | 3/4" | 1"1/2 | 69,0 | 310 | 362 |
| FLA 2263.126 | 29,4 | 52000 | 164 | 4x630 | 1,9 | 3,2 | 35,4 | 69 | 96 | 2x3/4" | 2x1"1/4 | 83,0 | 434 | 502 |
| FLA 2263.128 | 35,7 | 50000 | 218 | | | | 43,6 | 69 | 96 | 2x3/4" | 2x1"1/4 | 110,0 | 464 | 525 |
| FLA 2263.1210 | 40,6 | 48000 | 272 | | | | 51,8 | 69 | 96 | 2x3/4" | 2x1"1/2 | 138,0 | 506 | 555 |
| FLA 2363.126 | 44,3 | 78000 | 245 | 6x630 | 1,9 | 3,2 | 53,7 | 71 | 98 | 3x3/4" | 3x1"1/4 | 124,0 | 591 | 674 |
| FLA 2363.128 | 54,3 | 75000 | 326 | | | | 66,1 | 71 | 98 | 3x3/4" | 3x1"1/2 | 165,0 | 657 | 718 |
| FLA 2363.1210 | 61,2 | 69000 | 407 | | | | 78,5 | 71 | 98 | 3x3/4" | 3x1"1/2 | 206,0 | 720 | 763 |
| FLA 2463.128 | 67,6 | 100000 | 434 | 8x630 | 1,9 | 3,2 | 86,6 | 72 | 99 | 3x3/4" | 3x1"1/2 | 220,0 | 890 | 966 |
| FLA 2463.1210 | 77,6 | 92000 | 543 | | | | 102,8 | 72 | 99 | 3x3/4" | 3x1"1/2 | 275,0 | 1028 | 1043 |
| FLA 2563.128 | 85,8 | 125000 | 543 | 10x630 | 1,9 | 3,2 | 103,1 | 73 | 100 | 4x3/4" | 4x1"1/2 | 275,0 | 1152 | 1306 |
| FLA 2563.1210 | 98,6 | 113000 | 678 | | | | 122,3 | 73 | 100 | 4x3/4" | 4x1"1/2 | 344,0 | 1251 | 1477 |

With 60 Hz fan motors $Q = Q_n \times 1,1$

Con ventilatori a 60 Hz $Q = Q_n \times 1,1$

$L_p A$ = Sound pressure level dB(A) in free field at 5 m distance from the unit, without reflection, in accordance with EN 13487/EN ISO 3744

$L_p A$ = Livello di pressione sonora dB(A) misurata a 5 m di distanza in campo libero, senza riverbero, in accordo alla norma EN 13487/EN ISO 3744

$L_w A$ = Sound power level dB(A)

$L_w A$ = Livello di potenza sonora dB(A)

BLAST FREEZER UNIT COOLERS

BLAST FREEZER - FLC SERIES - CO₂

| External static pressure = 100 Pa | | | | | | | Pressione statica residua = 100 Pa | | | | | | | |
|-----------------------------------|--|--------------------------|-----------------------|--|-----|-----|------------------------------------|-------------------------------|---------|------------------------|-----------------|--------------------------------------|-----------------------------|-------------------------------|
| Fin spacing = 12,0 mm | | | | | | | Passo alette = 12,0 mm | | | | | | | |
| Model Modello | Capacity Potenza $Q_n (\Delta T_1=5K)$ | Air flow Portata aria | Surface Superficie | Fan-motors Ventilatori (3~400V-50Hz) | | | Defrost Sbrinamento | Noise level Livello sonoro | | Connectons Attacchi | | Tubes volume Volume interno | Net Weight Peso netto | Gross Weight Peso lordo |
| | kW | m ³ /h | m ² | n x Ømm | kW | A | E | $L_p A$ | $L_w A$ | $\varnothing e$ | $\varnothing u$ | dm ³ | Kg | Kg |
| | | | | | | | kW | dB(A) | dB(A) | inch | inch | | | |
| FLC 1263.126 | 18,6 | 28000 | 109 | 2x630 | 1,9 | 3,2 | 23,1 | 66 | 93 | 3/4" | 1"1/4 | 55,0 | 276 | 405 |
| FLC 1263.128 | 22,7 | 27000 | 145 | | | | 27,2 | 66 | 93 | 3/4" | 1"1/4 | 74,0 | 306 | 435 |
| FLC 1263.1210 | 26,0 | 25500 | 182 | | | | 31,3 | 66 | 93 | 3/4" | 1"1/4 | 92,0 | 334 | 462 |
| FLC 1363.126 | 27,4 | 42000 | 163 | 3x630 | 1,9 | 3,2 | 35,1 | 68 | 95 | 3/4" | 1"1/4 | 83,0 | 386 | 557 |
| FLC 1363.128 | 33,7 | 40500 | 217 | | | | 41,3 | 68 | 95 | 3/4" | 1"1/2 | 110,0 | 430 | 601 |
| FLC 1363.1210 | 39,0 | 38250 | 272 | | | | 47,5 | 68 | 95 | 3/4" | 1"1/2 | 138,0 | 471 | 642 |
| FLC 1463.128 | 45,5 | 54000 | 290 | 4x630 | 1,9 | 3,2 | 54,2 | 69 | 96 | 2x3/4" | 2x1"1/4 | 147,0 | 589 | 800 |
| FLC 1463.1210 | 50,9 | 50000 | 362 | | | | 62,3 | 69 | 96 | 2x3/4" | 2x1"1/4 | 184,0 | 681 | 892 |
| FLC 1563.128 | 57,0 | 67500 | 362 | 5x630 | 1,9 | 3,2 | 64,7 | 70 | 97 | 2x3/4" | 2x1"1/4 | 184,0 | 819 | 1058 |
| FLC 1563.1210 | 64,0 | 62500 | 453 | | | | 74,3 | 70 | 97 | 2x3/4" | 2x1"1/2 | 230,0 | 934 | 1173 |
| FLC 2163.126 | 15,2 | 26000 | 82 | 2x630 | 1,9 | 3,2 | 17,5 | 66 | 93 | 3/4" | 1"1/4 | 41,0 | 273 | 337 |
| FLC 2163.128 | 18,2 | 25000 | 109 | | | | 21,5 | 66 | 93 | 3/4" | 1"1/4 | 55,0 | 292 | 351 |
| FLC 2163.1210 | 20,5 | 24000 | 136 | | | | 25,5 | 66 | 93 | 3/4" | 1"1/4 | 69,0 | 310 | 362 |
| FLC 2263.126 | 30,0 | 52000 | 164 | 4x630 | 1,9 | 3,2 | 35,4 | 69 | 96 | 3/4" | 1"1/2 | 83,0 | 434 | 502 |
| FLC 2263.128 | 36,8 | 50000 | 218 | | | | 43,6 | 69 | 96 | 3/4" | 1"1/2 | 110,0 | 464 | 525 |
| FLC 2263.1210 | 42,8 | 48000 | 272 | | | | 51,8 | 69 | 96 | 3/4" | 1"1/2 | 138,0 | 506 | 555 |
| FLC 2363.126 | 47,7 | 78000 | 245 | 6x630 | 1,9 | 3,2 | 53,7 | 71 | 98 | 2x3/4" | 2x1"1/4 | 124,0 | 591 | 674 |
| FLC 2363.128 | 57,0 | 75000 | 326 | | | | 66,1 | 71 | 98 | 2x3/4" | 2x1"1/4 | 165,0 | 657 | 718 |
| FLC 2363.1210 | 64,0 | 69000 | 407 | | | | 78,5 | 71 | 98 | 2x3/4" | 2x1"1/2 | 206,0 | 720 | 763 |
| FLC 2463.128 | 74,4 | 100000 | 434 | 8x630 | 1,9 | 3,2 | 86,6 | 72 | 99 | 2x3/4" | 2x1"1/2 | 220,0 | 890 | 966 |
| FLC 2463.1210 | 84,6 | 92000 | 543 | | | | 102,8 | 72 | 99 | 2x3/4" | 2x1"1/2 | 275,0 | 1028 | 1043 |
| FLC 2563.128 | 93,8 | 125000 | 543 | 10x630 | 1,9 | 3,2 | 103,1 | 73 | 100 | 3x3/4" | 3x1"1/2 | 275,0 | 1152 | 1306 |
| FLC 2563.1210 | 107,0 | 113000 | 678 | | | | 122,3 | 73 | 100 | 3x3/4" | 3x1"1/2 | 344,0 | 1251 | 1477 |

With 60 Hz fan motors $Q = Q_n \times 1,1$

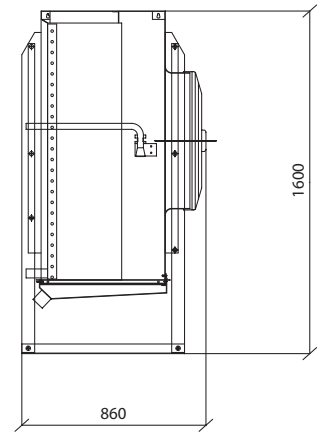
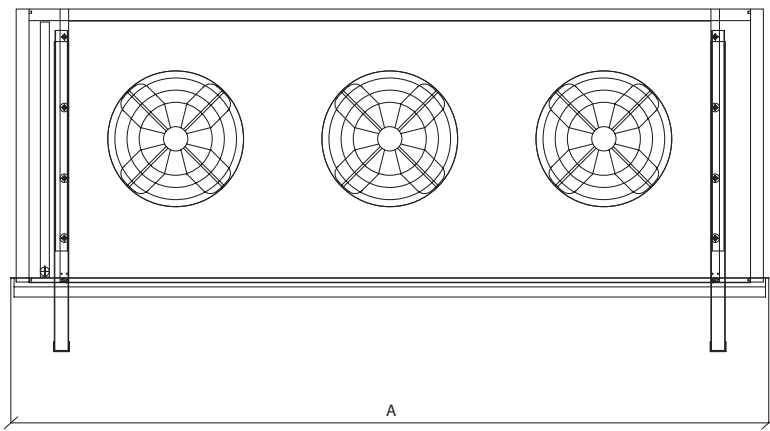
Con ventilatori a 60 Hz $Q = Q_n \times 1,1$

$L_p A$ = Sound pressure level dB(A) in free field at 5 m distance from the unit, without reflection, in accordance with EN 13487/EN ISO 3744

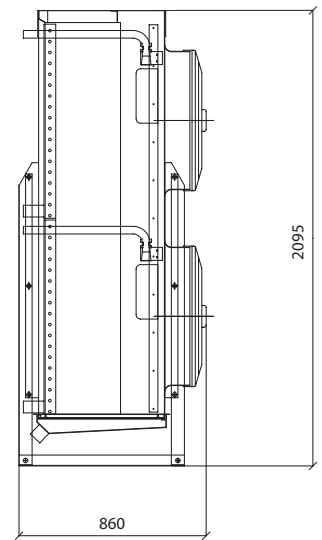
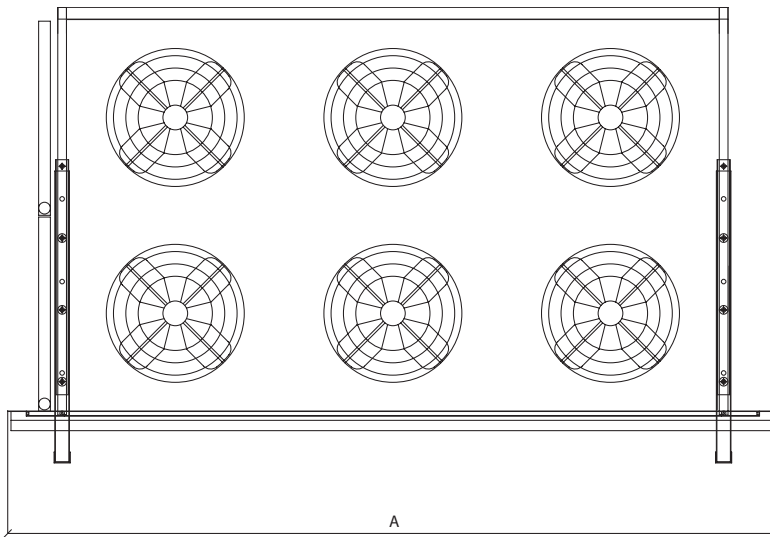
$L_p A$ = Livello di pressione sonora dB(A) misurata a 5 m di distanza in campo libero, senza riverbero, in accordo alla norma EN 13487/EN ISO 3744

$L_w A$ = Sound power level dB(A)

$L_w A$ = Livello di potenza sonora dB(A)



| Model Modello | FL_1263.12_ | FL_1363.12_ | FL_1463.12_ | FL_1563.12_ |
|------------------|-------------|-------------|-------------|-------------|
| A (mm) | 2510 | 3510 | 4510 | 5510 |



| Model Modello | FL_2163.12_ | FL_2263.12_ | FL_2363.12_ | FL_2463.12_ | FL_2563.12_ |
|------------------|-------------|-------------|-------------|-------------|-------------|
| A (mm) | 1510 | 2510 | 3510 | 4510 | 5510 |

ThermoKey®
Heat Exchange Solutions



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