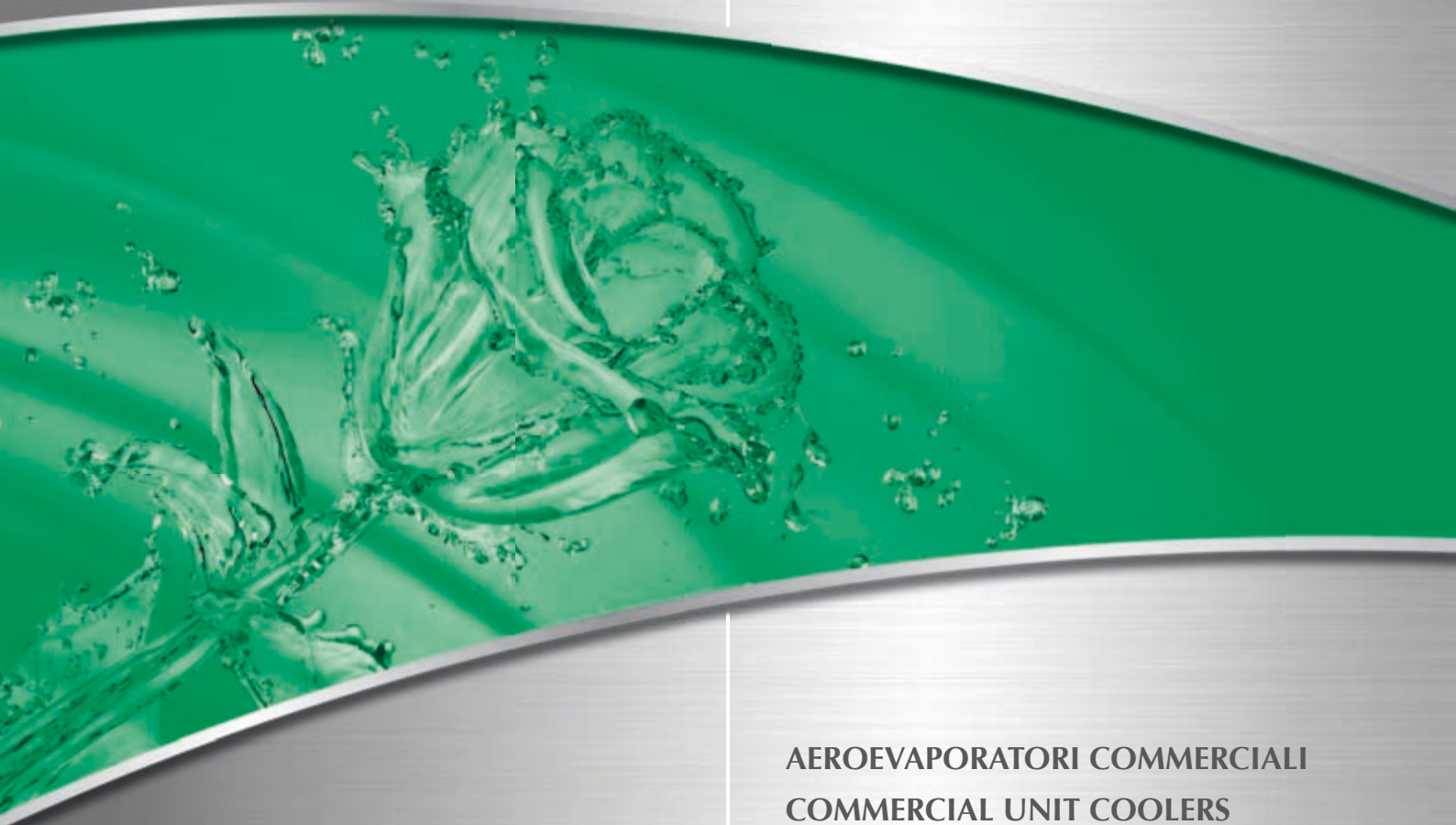




AEROEVAPORATORI COMMERCIALI  
COMMERCIAL UNIT COOLERS  
EVAPORATEURS COMMERCIAUX  
HOCHLEISTUNGSLUFTKÜHLER  
EVAPORADORES COMERCIALES  
КОММЕРЧЕСКИЙ  
ВОЗДУХООХЛАДИТЕЛИ  
KOMERCYJNE CHŁODNICE POWIETRZA

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Heat exchangers  
for industrial and commercial refrigeration,  
air conditioning  
and industrial applications.



**LU-VE** S.p.A. is the holding company of **LU-VE** Group. In 1985 **LU-VE** S.p.A. acquired Contardo S.p.A., established in 1928. Production began in 1986.

**LU-VE** quickly made its mark thanks to high standards of quality, new solutions designed in its own laboratories and to the care taken with the appearance of its products. (Beautiful outside - Revolutionary inside).

**LU-VE WAS THE FIRST COMPANY IN THE WORLD TO APPLY AVANT-GARDE SOLUTIONS TO COMMERCIAL AND INDUSTRIAL REFRIGERATION:**

- GROOVED TUBE TECHNOLOGY
- SPECIALIZED HEAT EXCHANGE SURFACES
- CERTIFIED PERFORMANCE LEVELS
- INNOVATIVE MATERIALS AND COLOURS
- ADVANCED DESIGN.

The success of **LU-VE** in the international market stems from its research and development policy, its great respect for the environment and its rigorous ethical and commercial principles.

In 2000, **LU-VE** was the first company in Europe to attain the prestigious **Eurovent "Certify-All"** certification for the entire range of its products: unit coolers, condensers and dry coolers.

**LU-VE** and the Group have introduced new ways of conceiving and constructing products for refrigeration, air conditioning and industrial applications, creating new technologies which have then gone on to become the benchmark for the entire industry.



## COMMERCIAL UNIT COOLERS

LU-VE commercial unit coolers are designed for the conservation of fresh and frozen goods.

All ranges are super compact:

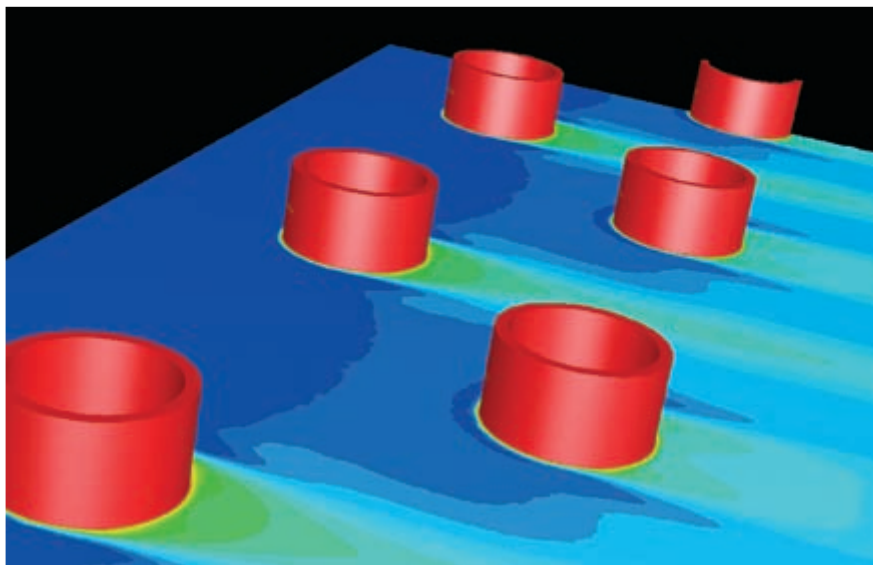
- Cubic unit coolers for cold rooms (FHC)
- Angled unit coolers for cold rooms (FHA and BMA-SMA)
- Dual discharge unit coolers with normal ventilation for cold rooms (FHD)
- Dual discharge unit coolers with low ventilation and low noise for laboratories, work rooms and packing areas (FHD).

- Extremely quiet dual discharge unit coolers with normal and low ventilation for cold rooms and work rooms (FHD).

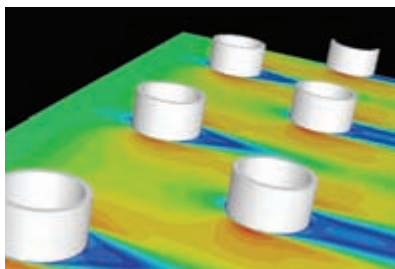
All the ranges have these special characteristics of size and function:

- **extremely high efficiency of heat transfer.**
- **reduced dehumidification of the cold room.**
- **reduced frost formation.**
- **long air throw.**
- **extremely low internal volume of the circuit.**
- **low noise level.**
- **low energy consumption.**
- **greatly reduced footprint.**

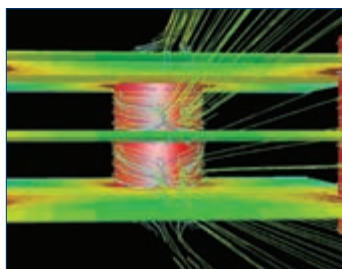
## RESEARCH AND DEVELOPMENT



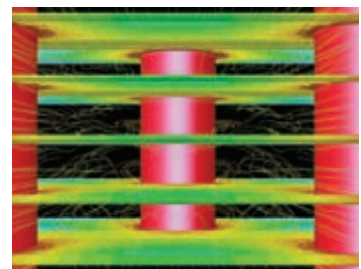
Temperature field - CFD output



Velocities - CFD output



Path lines - CFD output



Path lines - CFD output

### CFD (Computational Fluid Dynamics)

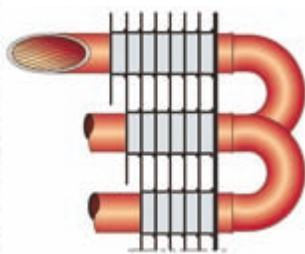
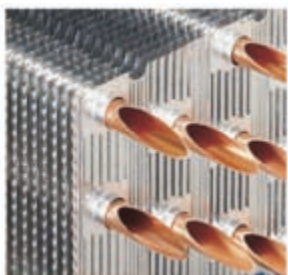
CFD codes have been used in the study of thermo fluid dynamic processes in heat exchangers.

When applied to finned heat exchangers, this permits better understanding of the fluid dynamic phenomena and the heat transfer processes.

As a result of this, the heat transfer characteristics of the geometries used (already of a very high standard),

have been steadily improved by constantly renewing the layers of air in contact with the fins and generating greater turbulence from the louvers. The more uniform air flow also prevents the deposition of humidity on the fins and consequently stops frost formation.

Results of CFD analyses are regularly confirmed by experimental tests carried out in the LU-VE laboratory.



### HEAT EXCHANGERS TURBOCOIL®

The very high-efficiency **TURBOCOIL®** heat exchangers have the best power/cost ratio obtainable and are constructed with:

- high-efficiency **TURBOFIN®** aluminum fins with special configuration of the louvre profile to reduce dehumidification and frost formation;
- high-efficiency small-diameter copper tubes with internal helical grooving, designed for optimum evaporation of the new refrigerant fluids.

### JET-O-MATIC® (Optional)

The **JET-O-MATIC®** distributor is specially designed to guarantee maximum efficiency of the heat exchanger in different operating conditions.

Its advantages are:

- **greater operating stability** – the even distribution of refrigerant fluids (through the different circuits) ensures stable, reliable performance from the unit cooler;
- **better frost formation** – the uniform distribution of the fluid guarantees homogeneous deposition of frost on all the finned surfaces, allowing less frequent defrosting operations;
- **maximum capacity** – in all operating conditions, especially with the new HCFC refrigerants characterized by a mixture with a high gas/liquid ratio.



### JET STREAMER®

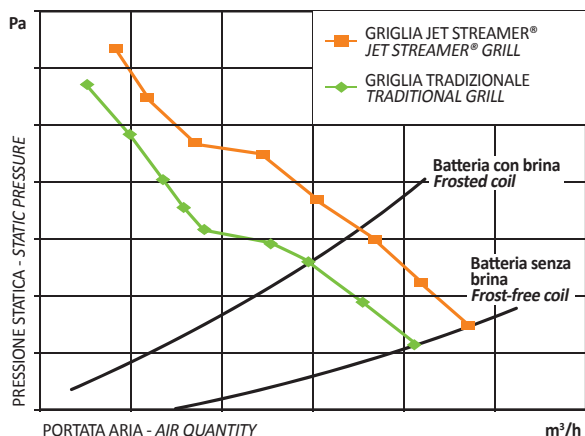
The design process of the FHC range centred on research into new operating efficiency limit, using in-depth study of fluid dynamics. Lengthy experimentation in the wind tunnel of the LU-VE laboratory enabled the development and patenting of the **JETSTREAMER®** directional grill.

The innovative design of its profile provides special advantages:

- **uniform distribution** of airflow through the heat exchanger;
- **significant increase** in air quantity, with both frost-free coil (from +4 to +9%) and, above all, also with frost on the coil fins (from +7 to +15%).



The improvement in air quantity during the frosting stage has a special significance; it guarantees notably superior capacity and a 25% longer air throw.



### FIN PITCH

Specific fin pitches are provided to satisfy the requirements for refrigeration at high, medium and low temperatures in different humidity conditions, by type of application:

- processing: 3.0 mm
- conservation at positive temperatures: 4.5 and 6.0 mm
- conservation at negative temperatures and freezing: 7.0, 7.5 and 10.0 mm.

### DEFROST

Various types are available to ensure efficient and effective defrost depending on operating conditions (TC= Room Temperature):

- TC > 2°C air defrost (N)
- TC > -35°C electric defrost (E)
- TC > -35°C hot gas defrost for coil and electric in the drain tray (G).

The stainless steel electric heaters, connected to the junction box, provide efficient and rapid defrost of the coil. For especially severe working conditions more powerful electric defrost is available, as is an electric heater for the fan shroud.

### FAN MOTORS

All models use the new high-efficiency low-consumption fan motors with incorporated thermal protection.

The fans are statically and dynamically balanced, and the fan motors are connected to the junction box (optional for F45HC and F50HC).

### ELECTRONIC MOTORS

The new FHD unit coolers are fitted – as standard equipment - with electronic fans developed using EC technology, dramatically reducing energy consumption.



## COMMERCIAL UNIT COOLERS

### CASING

FHC, BMA-SMA: specially designed corrosion-resistant galvanized steel casings with epoxy-polyester powder coating.  
FHA: casings are constructed from "Safeshell" impact-resistant safety material.

FHD: strengthened "Safeshell" casing.

### FAN SHROUD AND FAN GUARD

The guards conform to the most stringent safety standards to guarantee maximum protection.

The optimized matching of fan shrouds, guards and casings permits:

- homogeneous unidirectional outlet airflow
- air throw increased by 25% compared with other commonly used solutions.

(Versions with JETSTREAMER®).

### DISTRIBUTOR AND REFRIGERANT CIRCUIT

The distributors and the refrigerant circuits have been designed to ensure maximum efficiency of the heat exchanger in the different operating conditions of the unit cooler.

**SUPER HITEC:** Venturi distributor.

**BENEFIT (B):** JET-O-MATIC® distributor (except for F45HC and F50HC).

### PRESSURE GAUGE VALVE

This measures evaporation pressure at the outlet of the unit cooler and checks that the machine is functioning correctly.

### JUNCTION BOX

IP 55 protection.

### MAINTENANCE AND CLEANING

Only one tool required to access all internal parts.

The fan guards, side panels and drain tray are easy to remove to reach the electric motors, heaters and thermostatic valve.

### TESTING

The coil is tested at appropriate pressure, carefully degreased and dried with dry air.

### CONSTRUCTION VARIANTS

Versions are also available for: Glycol-NH3-CO2.

- Stainless steel tubes.
- Alupaint fins and copper fins for fin pitch 3.0-4.5-6.0-7.5 mm.
- Insulated drain tray (recommended for TC < -20 °C) (only for FHC).
- Device for reducing defrost time and energy consumption (only for FHC).
- Electric heaters for the mouth of the fan shrouds, (only for FHC).
- Wired fans (standard for all units, optional for F45HC and F50HC).
- Electronic motors to reduce energy consumption.

### PERFORMANCE

The capacities of unit coolers are tested in dry atmosphere (sensible heat) according to ENV 328.

Total capacities (sensible heat plus latent heat) indicated in the catalogue (R404A) for the usual applications in dry atmosphere refer to a room temperature of 2.5°C and evaporating temperature of -7.5 °C (DT1=10K).

They correspond to dry atmosphere capacities multiplied by a factor of 1.25 (latent heat factor) to take into account the increase of capacity (latent heat) caused by the condensation of water vapour on the surfaces of the unit cooler.

This factor depends on the operating conditions of the cold room. It increases for high room temperatures and decreases for low room temperatures as indicated in the table.

| Air inlet temperature | Latent heat factor |
|-----------------------|--------------------|
| 10 °C                 | 1.35               |
| 2.5 °C                | 1.25               |
| 0 °C                  | 1.15               |
| -18 °C                | 1.05               |
| -25 °C                | 1.01               |

### STANDARDS

The products are provided for incorporation in machines as defined in the EC Machine Directive 2006/42/CE and subsequent modifications.



- Directive 2014/29/CE and subsequent modifications, Electromagnetic compatibility.
- Directive 2014/35/CE Low tension.
- PED 2014/68/CE.

### EUROVENT CERTIFICATION

- Capacity (ENV 328).
- Air quantity.
- Fan motor power draw.
- External surfaces.
- Energy class.



### SELECTION

A Windows software programme is available for unit selection (REFRIGER®).



### ENERGY MANAGEMENT

#### SYSTEM

The LU-VE energy management system conforms to UNI CEI EN 50001:2011.



### QUALITY ASSURANCE

LU-VE is a certificated company to UNI EN ISO 9001:2008, which is the most important Quality Assurance qualification, covering Development, Testing, Production method and Inspection procedures.



### 2 YEAR GUARANTEE

All our products are manufactured from high quality materials and undergo severe final tests.

They are therefore guaranteed against any construction defect for a period of two years.



Damage caused by corrosive agents is excluded. Components or units found to be defective must be returned to our factory with prepaid freight where they will be checked and, depending on our judgement, replaced or repaired. We take no responsibility for leaks or damage caused by the use or misuse of our products. No guarantee is granted in the event of misuse or incorrect installation of the products. We reserve the right to make modifications in order to improve the performance or appearance of our products at any time without notice and without any obligation to previous production.

### PACKING

Products are packed in recyclable materials (RESY).





# PLUG&SAVE

This is the integrated solution which combines big energy savings and respect for the environment.

From today the direct expansion unit coolers are also available in the PLUG&SAVE version which includes the electronic valve and electronic control unit already fitted and wired up.

- **Important energy savings**

Tests carried out in supermarkets in standard conditions have registered **energy consumption reductions of up to 25% on the entire refrigeration system.**

- **Absolute protection**

The unit cooler is fitted with an electronic control unit (sealed into a special resin overmoulding) to regulate the valve. This is a construction technique developed for the automotive industry which guarantees performance even in the demanding operating conditions of low temperatures.

- **Saving installation time**

The solution proposed by LU-VE drastically reduces the installation time of the electronic control units, which in traditional systems have to be positioned outside the cold room with a consequent increase of labour time.

## SELECTION

See **REFRIGER®**.

- **Compatible with all systems and easy to programme**

The PLUG&SAVE version of the unit cooler is compatible with any and all other electronic systems commonly used for the management of refrigeration plant. It can be used with 24 different refrigerants, including CO2 and the special working pressures required.

- **Pre-defined working parameters and Modbus connection**

All working parameters are pre-defined and are simple to select on an easy-to-read display.

The only remaining setting actions required at the moment of installation are for:

- Refrigerant
- Superheating
- Function mode, choosing between high and low temperature.

**PLUG&SAVE is equipped with MODBUS serial communications protocol.**

The direct expansion unit coolers are available with electronic valve and electronic control unit already fitted and wired up (see ReFriger®).



## UNIT COOLERS FOR CO<sub>2</sub>

In the refrigeration industry, the utilization of CO<sub>2</sub> fluid is becoming more and more popular as a radical solution to eliminate the greenhouse effect caused by halogenated hydrocarbons in the HFC category.

The GWP (Global Warming Potential) of CO<sub>2</sub> is in fact very low compared to HFCs (1 against several thousands); also, CO<sub>2</sub> does not present any problems of toxicity, flammability nor of impact on the ozone layer.

CO<sub>2</sub> is significantly different from all the traditional HFCs (R404A, R507, ...) and it poses particular problems for heat exchanger designers; in addition, the appropriate choice of heat exchanger technology is fundamentally important in the realization of high efficiency CO<sub>2</sub> plants. For these reasons, a specific project between LU-VE, Politecnico di Milano and some important customers was carried out in order to define the ideal product configuration to get the best out of the specific characteristics of this refrigerant and to obtain interesting benefits from it.

Over time, LU-VE has in fact developed a line of products specifically for CO<sub>2</sub> unit coolers and, in an even more daring project, for sophisticated gas coolers which in transcritical CO<sub>2</sub> plants substitute traditional condensers in HFC installations. Today LU-VE can state that it has the highest technical level and greatest experience in this particular field.

Numerous unit coolers and gas coolers have been installed in different countries in recent years.

# CO<sub>2</sub>

**FHC**



**FHD**



**FHA**



## UNIT COOLERS

A specific configuration with copper tubes of small diameter and specialized fin geometry has been developed.

The use of copper tubes allows high product efficiency and low CO<sub>2</sub> content.

Particular circuiting for CO<sub>2</sub> has been designed for each model, taking into account the thermophysical properties of CO<sub>2</sub>, favourable to obtain elevated heat transfer performance and low internal pressure drop.

The capacity of CO<sub>2</sub> unit cooler is in the region of +8% of the corresponding model working with R404A (Tevap -8 °C) and about +12% of the corresponding model working with R404A (Tevap -30 °C).

The max operating pressure has for the complete range the high value of 45 bar.

### PRODUCT RANGE

- Commercial cubic FHC.
- Commercial dual discharge FHD.
- Commercial angular FHA and SMA.

## GLYCOL - Air coolers for Glycol Water

### HEAT EXCHANGERS

The high-efficiency heat exchangers that characterize the TURBOCOOLER® range of air coolers are manufactured with the copper tubes and with the new aluminium fins.

### COMMON DATA

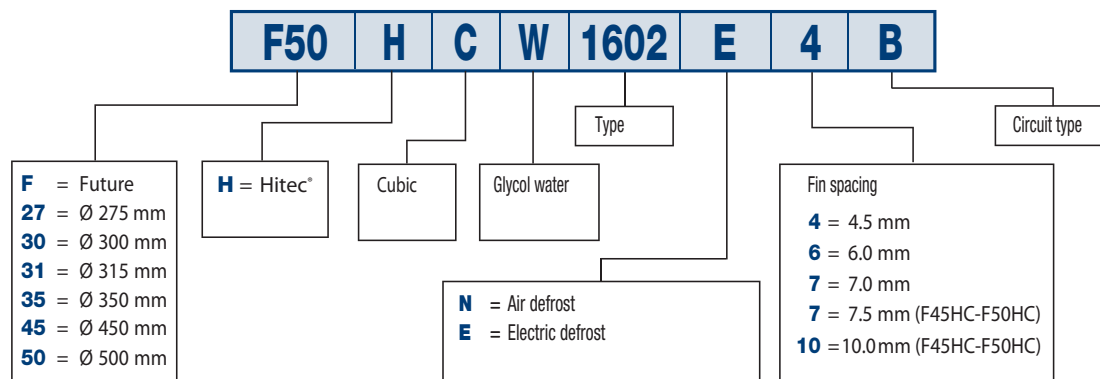
All other construction characteristics and dimensions are the same as stated for standard unit coolers.

# GLYCOL

**TURBOCOOLER®**  
by LU-VE



#### Ordering example



## NH3 - Unit coolers for ammonia

### HEAT EXCHANGERS

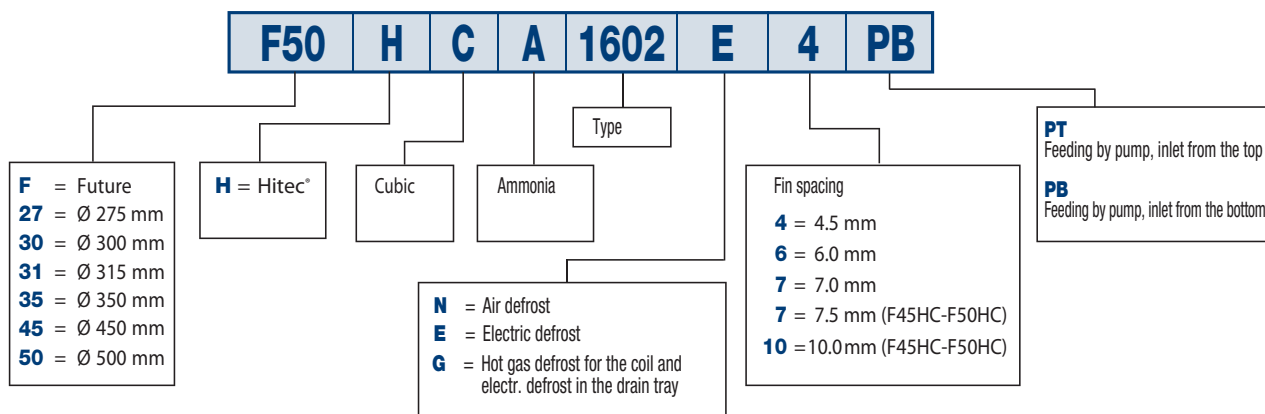
The high efficiency heat exchangers that characterize the ranges are manufactured with stainless steel tubes and with aluminium fins.

### COMMON DATA

All other construction characteristics and dimensions are the same as stated for standard unit coolers.

# NH<sub>3</sub>

#### Ordering example



## HIGH EFFICIENCY CUBIC UNIT COOLERS FOR COLD ROOMS



Jetstreamer® directional grill provides uniform distribution of the air on the exchanger, greater air quantity, greatly extended use of the fan during the defrost stage and a particularly long air throw.





● **FHC**

**1.5 - 81.9 kW - 127 models**

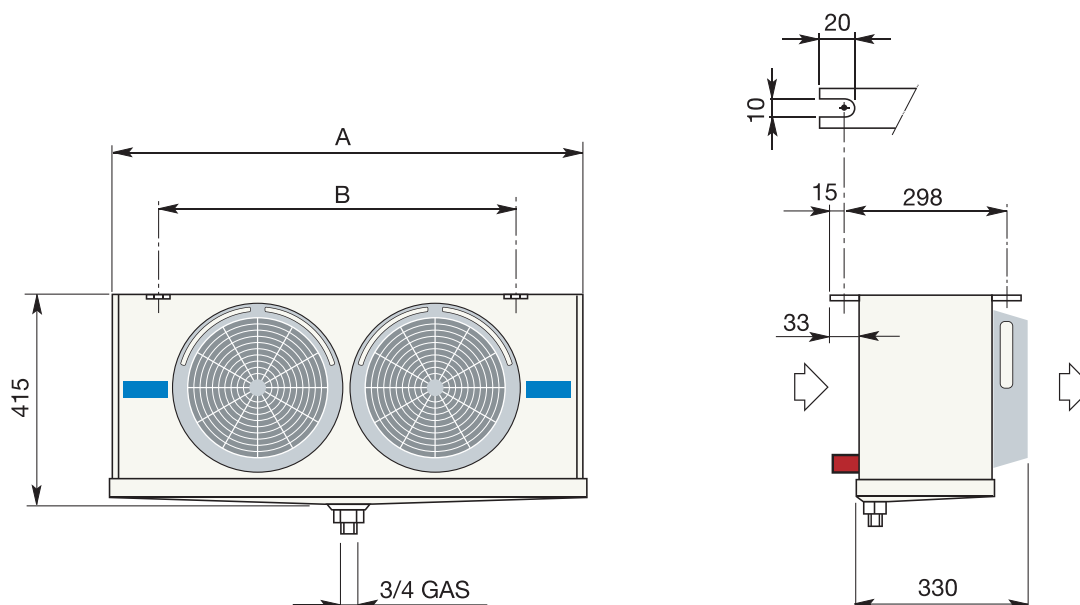
1450 - 9400 W



| 4 = 4.5 mm Passo alette Fin spacing |                         |               |      |      |      |      |       | TC > -25 °C |      |
|-------------------------------------|-------------------------|---------------|------|------|------|------|-------|-------------|------|
| Modello                             | Type                    | F27HC         | 25-4 | 36-4 | 49-4 | 71-4 | 107-4 | 142-4       |      |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |               | 1850 | 2350 | 3850 | 4750 | 7200  | 9400        |      |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |               | 1350 | 1750 | 2850 | 3500 | 5300  | 6900        |      |
| Portata d'aria                      | Air quantity            | m³/h          | 900  | 900  | 1800 | 1800 | 2700  | 3600        |      |
| Freccia d'aria                      | Air throw               | m             | 10,5 | 10,5 | 12,5 | 12,5 | 14,0  | 15,5        |      |
| Superficie esterna                  | External surface        | m²            | 7,3  | 7,3  | 14,6 | 14,6 | 21,9  | 29,2        |      |
| Superficie interna                  | Internal surface        | m²            | 0,5  | 0,7  | 1,0  | 1,4  | 2,1   | 2,8         |      |
| Peso                                | Weight                  | kg            | 12   | 13   | 19   | 21   | 28    | 36          |      |
| 6 = 6.0 mm Passo alette Fin spacing |                         |               |      |      |      |      |       | TC > -25 °C |      |
| Modello                             | Type                    | F27HC         | 19-6 | 28-6 | 38-6 | 55-6 | 85-6  | 110-6       |      |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |               | 1600 | 2050 | 3300 | 4150 | 6300  | 8300        |      |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |               | 1200 | 1500 | 2440 | 3050 | 4650  | 6100        |      |
| Portata d'aria                      | Air quantity            | m³/h          | 950  | 950  | 1900 | 1900 | 2850  | 3800        |      |
| Freccia d'aria                      | Air throw               | m             | 11,0 | 11,0 | 13,0 | 13   | 14,5  | 16,0        |      |
| Superficie esterna                  | External surface        | m²            | 5,6  | 5,6  | 11,2 | 11,2 | 16,8  | 22,4        |      |
| Superficie interna                  | Internal surface        | m²            | 0,5  | 0,7  | 1,0  | 1,4  | 2,1   | 2,8         |      |
| Peso                                | Weight                  | kg            | 11   | 12   | 18   | 20   | 27    | 34          |      |
| 7 = 7.0 mm Passo alette Fin spacing |                         |               |      |      |      |      |       | TC > -25 °C |      |
| Modello                             | Type                    | F27HC         | 16-7 | 23-7 | 31-7 | 46-7 | 70-7  | 92-7        |      |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |               | 1450 | 1850 | 3000 | 3700 | 5700  | 7600        |      |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |               | 1050 | 1350 | 2200 | 2700 | 4200  | 5600        |      |
| Portata d'aria                      | Air quantity            | m³/h          | 1000 | 1000 | 2000 | 2000 | 3000  | 4000        |      |
| Freccia d'aria                      | Air throw               | m             | 11,5 | 11,5 | 13,5 | 13,5 | 15,5  | 17,0        |      |
| Superficie esterna                  | External surface        | m²            | 4,9  | 4,9  | 9,8  | 9,8  | 14,7  | 19,6        |      |
| Superficie interna                  | Internal surface        | m²            | 0,5  | 0,7  | 1,0  | 1,4  | 2,1   | 2,8         |      |
| Peso                                | Weight                  | kg            | 10   | 11   | 17   | 19   | 26    | 32          |      |
| DATI COMUNI / COMMON DATA           |                         |               |      |      |      |      |       |             |      |
| Elettroventilatori                  | Fans                    | Ø 275 mm x n° | 1 o  | 1 o  | 2 oo | 2 oo | 3 ooo | 4 oooo      |      |
| Assorbimento motori                 | 1~230 V 50 Hz           | W             | 85   | 85   | 170  | 170  | 255   | 340         |      |
| Motor power consumption             |                         | A             | 0,6  | 0,6  | 1,2  | 1,2  | 1,8   | 2,4         |      |
| Assorbimento motori                 | EC 1~230 V 50 Hz        | W             | 26   | 26   | 52   | 52   | 78    | 104         |      |
| Motor power consumption             |                         | A             | 0,2  | 0,2  | 0,4  | 0,4  | 0,6   | 0,8         |      |
| Sbrinamento                         | Defrost                 | E 230 V       | W    | 1220 | 1220 | 2160 | 2160  | 3080        | 4000 |
| Volume circuito                     | Circuit volume          | dm³           | 0,8  | 1,3  | 1,6  | 2,3  | 3,3   | 4,3         |      |
| Attacchi entrata                    | Inlet connections       | Ø mm          | 10   | 12   | 12   | 12   | 12    | 12          |      |
| Attacchi uscita                     | Outlet connections      | Ø mm          | 10   | 22   | 22   | 28   | 28    | 28          |      |
| Dimensioni                          | Dimensions              | A mm          | 678  | 678  | 1048 | 1048 | 1418  | 1788        |      |
|                                     |                         | B mm          | 412  | 412  | 782  | 782  | 1152  | 1522        |      |

(•) Per altre condizioni vedere diagrammi. (•) For other conditions see diagrams.

EC = Motori con commutazione elettronica (1400 r.p.m.). Risparmio energia = ~ 70%. EC = Motors with electronic commutation (1400 r.p.m.). Energy saving = ~ 70%.



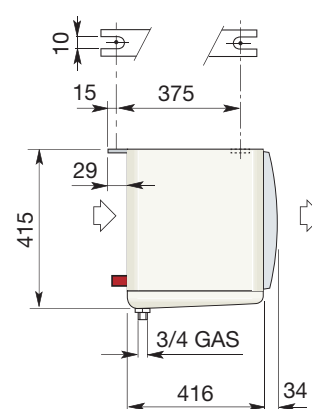
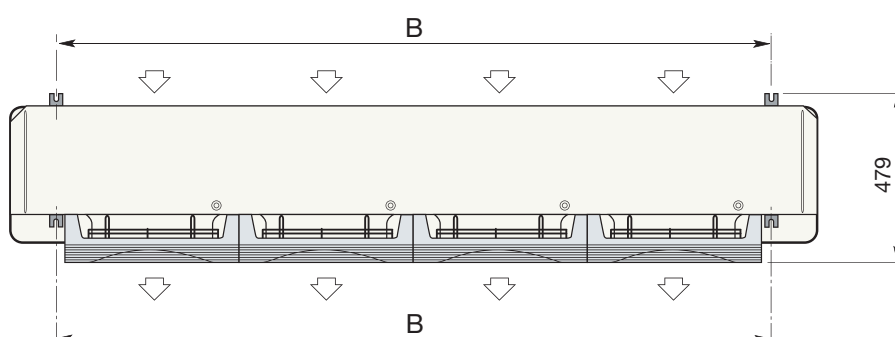
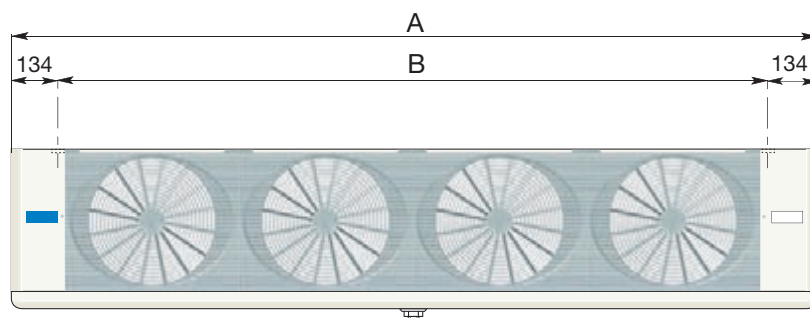
2550 - 16300 W



| 4 = 4.5 mm Passo alette Fin spacing |                         |               |       |       |       |       |       |       | TC > -25 °C |
|-------------------------------------|-------------------------|---------------|-------|-------|-------|-------|-------|-------|-------------|
| Modello                             | Type                    | F30HC         | 411-4 | 412-4 | 421-4 | 422-4 | 431-4 | 432-4 | 442-4       |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |               | 3300  | 4050  | 6700  | 8050  | 9900  | 12350 | 16300       |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |               | 2450  | 2990  | 4950  | 5900  | 7300  | 9100  | 12000       |
| Portata d'aria                      | Air quantity            | m³/h          | 1450  | 1300  | 2900  | 2600  | 4350  | 3900  | 5200        |
| Freccia d'aria                      | Air throw               | m             | 16    | 14    | 19    | 17    | 22    | 20    | 21          |
| Superficie esterna                  | External surface        | m²            | 8,9   | 13,3  | 17,8  | 26,6  | 26,7  | 39,9  | 53,2        |
| Superficie interna                  | Internal surface        | m²            | 0,5   | 0,8   | 1,1   | 1,6   | 1,6   | 2,4   | 3,2         |
| Peso                                | Weight                  | kg            | 23    | 25    | 39    | 44    | 56    | 63    | 82          |
| 6 = 6.0 mm Passo alette Fin spacing |                         |               |       |       |       |       |       |       | TC > -25 °C |
| Modello                             | Type                    | F30HC         | 511-6 | 512-6 | 521-6 | 522-6 | 531-6 | 532-6 | 542-6       |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |               | 2800  | 3600  | 5700  | 7250  | 8550  | 11000 | 14700       |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |               | 2050  | 2650  | 4200  | 5350  | 6300  | 8100  | 10800       |
| Portata d'aria                      | Air quantity            | m³/h          | 1500  | 1400  | 3000  | 2800  | 4500  | 4200  | 5600        |
| Freccia d'aria                      | Air throw               | m             | 17    | 15    | 20    | 18    | 23    | 21    | 22          |
| Superficie esterna                  | External surface        | m²            | 6,8   | 10,2  | 13,6  | 20,4  | 20,4  | 30,6  | 40,8        |
| Superficie interna                  | Internal surface        | m²            | 0,5   | 0,8   | 1,1   | 1,6   | 1,6   | 2,4   | 3,2         |
| Peso                                | Weight                  | kg            | 22    | 24    | 38    | 42    | 54    | 60    | 78          |
| 7 = 7.0 mm Passo alette Fin spacing |                         |               |       |       |       |       |       |       | TC > -25 °C |
| Modello                             | Type                    | F30HC         | 611-7 | 612-7 | 621-7 | 622-7 | 631-7 | 632-7 | 642-7       |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |               | 2550  | 3350  | 5150  | 6700  | 7700  | 10100 | 13500       |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |               | 1900  | 2450  | 3800  | 4950  | 5650  | 7450  | 9950        |
| Portata d'aria                      | Air quantity            | m³/h          | 1550  | 1450  | 3100  | 2900  | 4650  | 4350  | 5800        |
| Freccia d'aria                      | Air throw               | m             | 18    | 16    | 21    | 19    | 24    | 22    | 23          |
| Superficie esterna                  | External surface        | m²            | 5,9   | 8,9   | 11,8  | 17,8  | 17,7  | 26,7  | 35,6        |
| Superficie interna                  | Internal surface        | m²            | 0,5   | 0,8   | 1,1   | 1,6   | 1,6   | 2,4   | 3,2         |
| Peso                                | Weight                  | kg            | 21    | 23    | 37    | 41    | 53    | 58    | 76          |
| DATI COMUNI / COMMON DATA           |                         |               |       |       |       |       |       |       |             |
| Elettroventilatori                  | Fans                    | Ø 300 mm x n° | 1 o   | 1 o   | 2 oo  | 2 oo  | 3 ooo | 3 ooo | 4 oooo      |
| Assorbimento motori                 | 1~230 V 50 Hz           | W             | 80    | 80    | 160   | 160   | 240   | 240   | 320         |
| Motor power consumption             |                         | A             | 0,35  | 0,35  | 0,7   | 0,7   | 1,05  | 1,05  | 1,4         |
| Assorbimento motori                 | EC 1~230 V 50 Hz        | W             | 60    | 60    | 120   | 120   | 180   | 180   | 240         |
| Motor power consumption             |                         | A             | 0,5   | 0,5   | 1,0   | 1,0   | 1,5   | 1,5   | 2,0         |
| Sbrinamento                         | Defrost                 | E 230 V       | W     | 1700  | 2550  | 2900  | 4300  | 4050  | 6050        |
| Volume circuito                     | Circuit volume          | dm³           | 1,5   | 2,3   | 2,8   | 4,2   | 4,1   | 6,3   | 8,1         |
| Attacchi entrata                    | Inlet connections       | Ø mm          | 12    | 12    | 12    | 12    | 12    | 16    | 16          |
| Attacchi uscita                     | Outlet connections      | Ø mm          | 16    | 18    | 18    | 22    | 22    | 35    | 35          |
| Dimensioni                          | Dimensions              | A mm          | 760   | 760   | 1210  | 1210  | 1660  | 1660  | 2110        |
|                                     |                         | B mm          | 492   | 492   | 942   | 942   | 1392  | 1392  | 1842        |

(•) Per altre condizioni vedere diagrammi. (•) For other conditions see diagrams.

EC = Motori con commutazione elettronica (1400 r.p.m.). Risparmio energia = ~ 25%. EC = Motors with electronic commutation (1400 r.p.m.). Energy saving = ~ 25%.



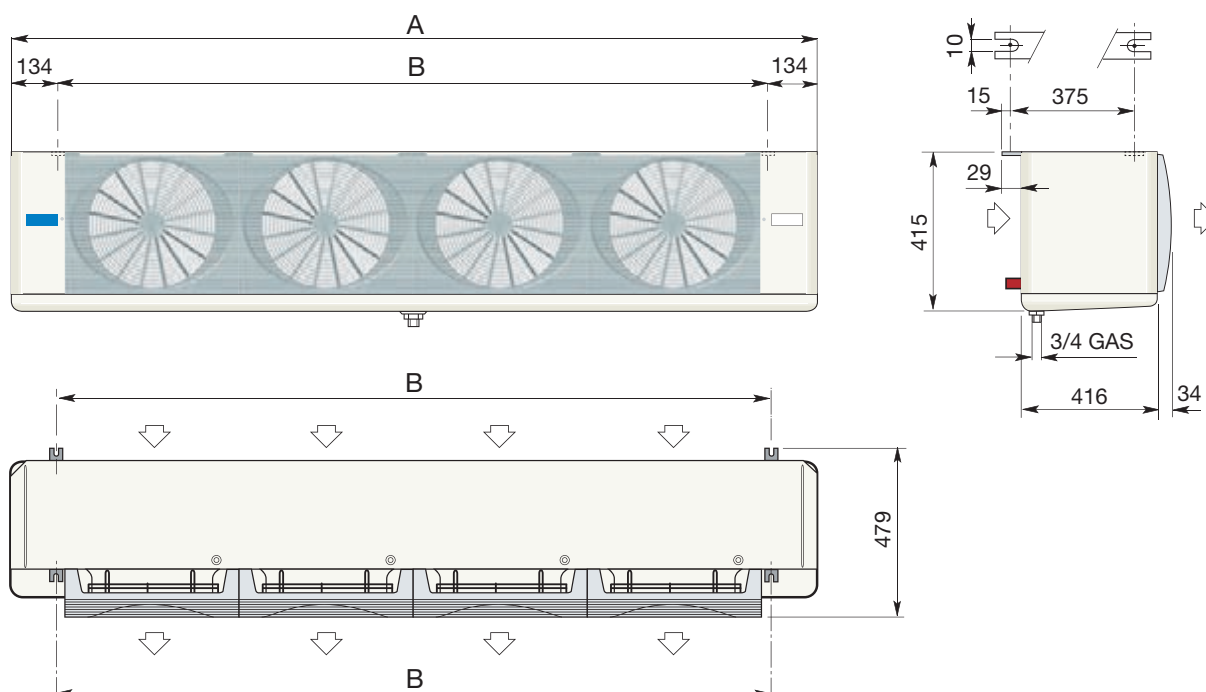
2650 - 17050 W

New



| 4 = 4.5 mm Passo alette Fin spacing |                         | TC > -25 °C      |       |       |       |       |       |       |        |
|-------------------------------------|-------------------------|------------------|-------|-------|-------|-------|-------|-------|--------|
| Modello                             | Type                    | F31HC            | 115-4 | 116-4 | 125-4 | 126-4 | 135-4 | 136-4 | 146-4  |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |                  | 3400  | 4200  | 6950  | 8400  | 10300 | 12900 | 17050  |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |                  | 2530  | 3100  | 5100  | 6200  | 7600  | 9500  | 12550  |
| Portata d'aria                      | Air quantity            | m³/h             | 1.600 | 1.400 | 3.200 | 2.800 | 4.800 | 4.200 | 5.600  |
| Freccia d'aria                      | Air throw               | m                | 17    | 15    | 20    | 18    | 24    | 21    | 22     |
| Superficie esterna                  | External surface        | m²               | 8,9   | 13,3  | 17,8  | 26,6  | 26,7  | 39,9  | 53,2   |
| Superficie interna                  | Internal surface        | m²               | 0,5   | 0,8   | 1,1   | 1,6   | 1,6   | 2,4   | 3,2    |
| Peso                                | Weight                  | kg               | 23    | 25    | 39    | 44    | 56    | 63    | 82     |
| 6 = 6.0 mm Passo alette Fin spacing |                         | TC > -25 °C      |       |       |       |       |       |       |        |
| Modello                             | Type                    | F31HC            | 215-6 | 216-6 | 225-6 | 226-6 | 235-6 | 236-6 | 246-6  |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |                  | 2950  | 3800  | 6000  | 7600  | 8950  | 11500 | 15350  |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |                  | 2180  | 2800  | 4400  | 5600  | 6600  | 8450  | 11300  |
| Portata d'aria                      | Air quantity            | m³/h             | 1700  | 1500  | 3400  | 3000  | 5100  | 4500  | 6000   |
| Freccia d'aria                      | Air throw               | m                | 19    | 16    | 22    | 19    | 25    | 22    | 23     |
| Superficie esterna                  | External surface        | m²               | 6,8   | 10,2  | 13,6  | 20,4  | 20,4  | 30,6  | 40,8   |
| Superficie interna                  | Internal surface        | m²               | 0,5   | 0,8   | 1,1   | 1,6   | 1,6   | 2,4   | 3,2    |
| Peso                                | Weight                  | kg               | 22    | 24    | 38    | 42    | 54    | 60    | 78     |
| 7 = 7.0 mm Passo alette Fin spacing |                         | TC > -25 °C      |       |       |       |       |       |       |        |
| Modello                             | Type                    | F31HC            | 315-7 | 316-7 | 325-7 | 326-7 | 335-7 | 336-7 | 346-7  |
| Potenza (R404A)                     | • TC 2,5 °C (ΔT1 10K) W |                  | 2650  | 3500  | 5400  | 7050  | 8100  | 10550 | 14200  |
| Capacity                            | TC 0 °C (ΔT1 8K) W      |                  | 1970  | 2580  | 3950  | 5150  | 5950  | 7750  | 10450  |
| Portata d'aria                      | Air quantity            | m³/h             | 1750  | 1600  | 3500  | 3200  | 5250  | 4800  | 6400   |
| Freccia d'aria                      | Air throw               | m                | 20    | 17    | 23    | 20    | 26    | 24    | 25     |
| Superficie esterna                  | External surface        | m²               | 5,9   | 8,9   | 11,8  | 17,8  | 17,7  | 26,7  | 35,6   |
| Superficie interna                  | Internal surface        | m²               | 0,5   | 0,8   | 1,1   | 1,6   | 1,6   | 2,4   | 3,2    |
| Peso                                | Weight                  | kg               | 21    | 23    | 37    | 41    | 53    | 58    | 76     |
| DATI COMUNI / COMMON DATA           |                         |                  |       |       |       |       |       |       |        |
| Elettroventilatori                  | Fans                    | Ø 315 mm x n°    | 1 o   | 1 o   | 2 oo  | 2 oo  | 3 ooo | 3 ooo | 4 oooo |
| Assorbimento motori                 | W                       |                  | 66    | 66    | 132   | 132   | 198   | 198   | 264    |
| Motor power consumption             | A                       | EC 1~230 V 50 Hz | 0,6   | 0,6   | 1,2   | 1,2   | 1,8   | 1,8   | 2,4    |
| Sbrinamento                         | Defrost                 | E 230 V          | 1700  | 2550  | 2900  | 4300  | 4050  | 6050  | 7800   |
| Volume circuito                     | Circuit volume          | dm³              | 1,5   | 2,3   | 2,8   | 4,2   | 4,1   | 6,3   | 8,1    |
| Potenza sonora                      | Sound power level       | db (A)           | 69    | 69    | 72    | 72    | 74    | 74    | 75     |

(•) Per altre condizioni vedere diagrammi. (•) For other conditions see diagrams.



4000 - 27500 W

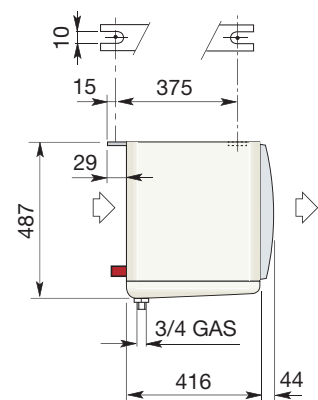
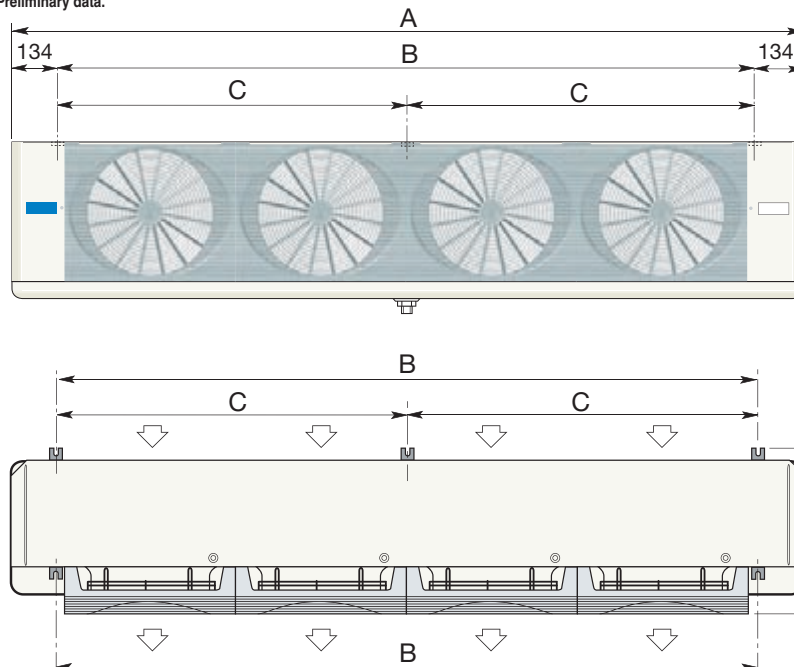


| 4 = 4.5 mm Passo alette Fin spacing |                           |               |      |       |       |       |       |       |        | TC > -25 °C |
|-------------------------------------|---------------------------|---------------|------|-------|-------|-------|-------|-------|--------|-------------|
| Modello                             | Type                      | F35HC         | 73-4 | 106-4 | 145-4 | 215-4 | 272-4 | 323-4 | 362-4  | 430-4       |
| Potenza (R404A)                     | (•) TC 2,5 °C (ΔT1 10K) W |               | 5400 | 6800  | 10900 | 13600 | 18700 | 20400 | 25100  | 27500       |
| Capacity                            | TC 0 °C (ΔT1 8K) W        |               | 4000 | 5000  | 8000  | 10000 | 13750 | 15000 | 18500  | 20250       |
| Portata d'aria                      | Air quantity              | m³/h          | 2600 | 2400  | 5200  | 4800  | 7450  | 7200  | 9950   | 9600        |
| Freccia d'aria                      | Air throw                 | m             | 19,5 | 18,0  | 23,0  | 22,0  | 26,0  | 25,0  | 30,0   | 29,0        |
| Superficie esterna                  | External surface          | m²            | 13,1 | 19,7  | 26,2  | 39,4  | 49,1  | 59,1  | 65,5   | 78,8        |
| Superficie interna                  | Internal surface          | m²            | 1,3  | 1,9   | 2,6   | 3,8   | 4,8   | 5,7   | 6,4    | 7,6         |
| Peso                                | Weight                    | kg            | 27   | 32    | 44    | 51    | 65    | 71    | 86     | 93          |
| 6 = 6.0 mm Passo alette Fin spacing |                           |               |      |       |       |       |       |       |        | TC > -25 °C |
| Modello                             | Type                      | F35HC         | 59-6 | 84-6  | 117-6 | 174-6 | 218-6 | 261-6 | 290-6  | 348-6       |
| Potenza (R404A)                     | (•) TC 2,5 °C (ΔT1 10K) W |               | 4500 | 5900  | 9200  | 12000 | 16100 | 18000 | 21500  | 24000       |
| Capacity                            | TC 0 °C (ΔT1 8K) W        |               | 3320 | 4350  | 6800  | 8850  | 11850 | 13250 | 15850  | 17650       |
| Portata d'aria                      | Air quantity              | m³/h          | 2650 | 2500  | 5300  | 5000  | 7700  | 7500  | 10300  | 10000       |
| Freccia d'aria                      | Air throw                 | m             | 20,0 | 18,5  | 23,5  | 22,5  | 26,5  | 25,5  | 30,5   | 29,5        |
| Superficie esterna                  | External surface          | m²            | 10,1 | 15,1  | 20,2  | 30,2  | 37,9  | 45,3  | 50,5   | 60,4        |
| Superficie interna                  | Internal surface          | m²            | 1,3  | 1,9   | 2,6   | 3,8   | 4,8   | 5,7   | 6,4    | 7,6         |
| Peso                                | Weight                    | kg            | 26   | 31    | 42    | 49    | 62    | 67    | 82     | 88          |
| 7 = 7.0 mm Passo alette Fin spacing |                           |               |      |       |       |       |       |       |        | TC > -25 °C |
| Modello                             | Type                      | F35HC         | 47-7 | 69-7  | 94-7  | 143-7 | 179-7 | 213-7 | 238-7  | 284-7       |
| Potenza (R404A)                     | (•) TC 2,5 °C (ΔT1 10K) W |               | 4000 | 5400  | 8200  | 11000 | 14600 | 16500 | 19400  | 22000       |
| Capacity                            | TC 0 °C (ΔT1 8K) W        |               | 2950 | 4000  | 6050  | 8100  | 10750 | 12150 | 14300  | 16200       |
| Portata d'aria                      | Air quantity              | m³/h          | 2700 | 2600  | 5400  | 5200  | 7950  | 7800  | 10600  | 10400       |
| Freccia d'aria                      | Air throw                 | m             | 20,5 | 19,0  | 24,0  | 23,0  | 27,0  | 26,0  | 31,0   | 30,0        |
| Superficie esterna                  | External surface          | m²            | 8,7  | 13,1  | 17,4  | 26,2  | 32,6  | 39,3  | 43,5   | 52,4        |
| Superficie interna                  | Internal surface          | m²            | 1,3  | 1,9   | 2,6   | 3,8   | 4,8   | 5,7   | 6,4    | 7,6         |
| Peso                                | Weight                    | kg            | 25   | 30    | 41    | 47    | 60    | 65    | 79     | 85          |
| DATI COMUNI / COMMON DATA           |                           |               |      |       |       |       |       |       |        |             |
| Elettroventilatori                  | Fans                      | Ø 350 mm x n° | 1 o  | 1 o   | 2 oo  | 2 oo  | 3 ooo | 3 ooo | 4 oooo | 4 oooo      |
| Assorbimento motori                 | 1~230 V 50 Hz             | W             | 175  | 175   | 350   | 350   | 525   | 525   | 700    | 700         |
| Motor power consumption             |                           | A             | 0,8  | 0,8   | 1,6   | 1,6   | 2,4   | 2,4   | 3,2    | 3,2         |
| Assorbimento motori                 | EC 1~230 V 50 Hz          | W *           | 135  | 135   | 270   | 270   | 405   | 405   | 540    | 540         |
| Motor power consumption             |                           | A *           | 1,1  | 1,1   | 2,2   | 2,2   | 3,3   | 3,3   | 4,4    | 4,4         |
| Sbrinamento                         | Defrost                   | E 230 V       | W    | 2075  | 2975  | 3680  | 5280  | 7620  | 9940   | 9940        |
| Volume circuito                     | Circuit volume            | dm³           | 2,1  | 3,2   | 4,0   | 6,0   | 7,4   | 8,7   | 9,7    | 11,5        |
| Attacchi entrata                    | Inlet connections         | Ø mm          | 12   | 12    | 12    | 16    | 16    | 16    | 16     | 22          |
| Attacchi uscita                     | Outlet connections        | Ø mm          | 28   | 28    | 28    | 28    | 35    | 35    | 42     | 42          |
| Dimensioni                          | Dimensions                | A mm          | 865  | 865   | 1420  | 1420  | 1975  | 1975  | 2530   | 2530        |
|                                     |                           | B mm          | 597  | 597   | 1152  | 1152  | 1707  | 1707  | 2262   | 2262        |
|                                     |                           | C mm          | —    | —     | —     | —     | —     | —     | 1131   | 1131        |

(•) Per altre condizioni vedere diagrammi. (•) For other conditions see diagrams.

EC = Motori con commutazione elettronica (1400 r.p.m.). Risparmio energia = ~ 23%. EC = Motors with electronic commutation (1400 r.p.m.). Energy saving = ~ 23%.

\* Dati preliminari. \* Preliminary data.



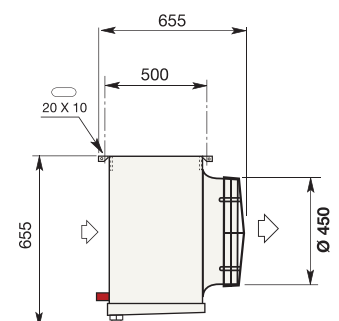
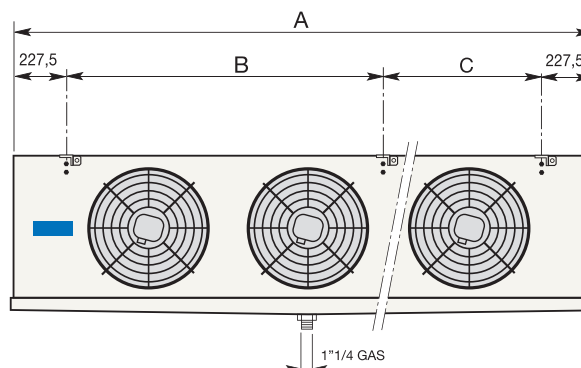
7.6 - 57.6 kW



| 4 = 4.5 mm                     |                         |                                        | Passo alette |         | Fin spacing |         | TC > -25 °C |         |         |         |  |
|--------------------------------|-------------------------|----------------------------------------|--------------|---------|-------------|---------|-------------|---------|---------|---------|--|
| Modello                        | Type                    | F45HC                                  | 1100-4       | 1102-4  | 1106-4      | 1108-4  | 1112-4      | 1114-4  | 1118-4  | 1120-4  |  |
| Potenza<br>Capacity<br>(R404A) |                         | (●) TC 2,5 °C (ΔT1 10K) kW             | 12,2         | 14,1    | 24,4        | 28,3    | 36,6        | 41,9    | 49,3    | 56,9    |  |
|                                |                         | TC 0 °C (ΔT1 8K) kW                    | 9,0          | 10,4    | 18,0        | 20,8    | 26,9        | 30,8    | 36,3    | 41,9    |  |
| Portata d'aria                 | Air quantity            | m³/h                                   | 4900         | 4600    | 9800        | 9200    | 14700       | 13800   | 19600   | 18400   |  |
| Freccia d'aria                 | Air throw               | m                                      | 24           | 22      | 28          | 26      | 32          | 30      | 35      | 32      |  |
| Assorbimento motori            | Motor power consumption | 1~230 V<br>50 Hz<br>W                  | 430          | 430     | 860         | 860     | 1290        | 1290    | 1720    | 1720    |  |
| Superficie                     | Surface                 | m²                                     | 34           | 45,3    | 68,1        | 90,8    | 102,1       | 136,1   | 136,1   | 181,5   |  |
| Attacchi                       | Connections             | Entrata-uscita<br>Inlet-outlet<br>Ø mm | 16/35        | 16/35   | 16/42       | 16/42   | 28/54       | 28/54   | 28/54   | 28/64   |  |
| Peso                           | Weight                  | kg                                     | 82           | 89      | 134         | 146     | 185         | 203     | 241     | 266     |  |
| 6 = 6.0 mm                     |                         |                                        | Passo alette |         | Fin spacing |         | TC > -25 °C |         |         |         |  |
| Modello                        | Type                    | F45HC                                  | 1200-6       | 1202-6  | 1206-6      | 1208-6  | 1212-6      | 1214-6  | 1218-6  | 1220-6  |  |
| Potenza<br>Capacity<br>(R404A) |                         | (●) TC 2,5 °C (ΔT1 10K) kW             | 11,0         | 13,1    | 22,1        | 26,4    | 33,1        | 39,1    | 44,8    | 53,0    |  |
|                                |                         | TC 0 °C (ΔT1 8K) kW                    | 8,1          | 9,6     | 16,3        | 19,4    | 24,4        | 28,8    | 33,0    | 39,0    |  |
| Portata d'aria                 | Air quantity            | m³/h                                   | 5100         | 4800    | 10200       | 9600    | 15300       | 14400   | 20400   | 19200   |  |
| Freccia d'aria                 | Air throw               | m                                      | 25           | 24      | 29          | 28      | 33          | 32      | 36      | 34      |  |
| Assorbimento motori            | Motor power consumption | 1~230 V<br>50 Hz<br>W                  | 430          | 430     | 860         | 860     | 1290        | 1290    | 1720    | 1720    |  |
| Superficie                     | Surface                 | m²                                     | 26,1         | 34,8    | 52,3        | 69,6    | 78,3        | 104,4   | 104,4   | 139,3   |  |
| Attacchi                       | Connections             | Entrata-uscita<br>Inlet-outlet<br>Ø mm | 16/35        | 16/35   | 16/42       | 16/42   | 28/54       | 28/54   | 28/54   | 28/64   |  |
| Peso                           | Weight                  | kg                                     | 79           | 85      | 128         | 138     | 176         | 191     | 229     | 249     |  |
| 7 = 7.5 mm                     |                         |                                        | Passo alette |         | Fin spacing |         | TC > -25 °C |         |         |         |  |
| Modello                        | Type                    | F45HC                                  | 1300-7       | 1302-7  | 1306-7      | 1308-7  | 1312-7      | 1314-7  | 1318-7  | 1320-7  |  |
| Potenza<br>Capacity<br>(R404A) |                         | (●) TC 2,5 °C (ΔT1 10K) kW             | 9,4          | 11,6    | 18,8        | 23,2    | 28,8        | 34,5    | 38,4    | 46,6    |  |
|                                |                         | TC 0 °C (ΔT1 8K) kW                    | 6,9          | 8,5     | 13,8        | 17,1    | 21,2        | 25,4    | 28,3    | 34,3    |  |
| Portata d'aria                 | Air quantity            | m³/h                                   | 5300         | 5100    | 10600       | 10200   | 15900       | 15300   | 21200   | 20400   |  |
| Freccia d'aria                 | Air throw               | m                                      | 26           | 25      | 31          | 29      | 35          | 33      | 38      | 36      |  |
| Assorbimento motori            | Motor power consumption | 1~230 V<br>50 Hz<br>W                  | 415          | 430     | 830         | 860     | 1245        | 1290    | 1660    | 1720    |  |
| Superficie                     | Surface                 | m²                                     | 21,3         | 28,5    | 42,7        | 57      | 64          | 85,4    | 85,4    | 113,9   |  |
| Attacchi                       | Connections             | Entrata-uscita<br>Inlet-outlet<br>Ø mm | 16/35        | 16/35   | 16/42       | 16/42   | 16/42       | 28/54   | 28/54   | 28/64   |  |
| Peso                           | Weight                  | kg                                     | 77           | 82      | 124         | 133     | 170         | 184     | 221     | 240     |  |
| 10 = 10.0 mm                   |                         |                                        | Passo alette |         | Fin spacing |         | TC > -25 °C |         |         |         |  |
| Modello                        | Type                    | F45HC                                  | 1400-10      | 1402-10 | 1406-10     | 1408-10 | 1412-10     | 1414-10 | 1418-10 | 1420-10 |  |
| Potenza<br>Capacity<br>(R404A) |                         | (●) TC 2,5 °C (ΔT1 10K) kW             | 7,4          | 9,3     | 15,2        | 18,9    | 22,8        | 27,8    | 30,3    | 37,5    |  |
|                                |                         | TC 0 °C (ΔT1 8K) kW                    | 5,4          | 6,8     | 11,2        | 13,9    | 16,8        | 20,5    | 22,3    | 27,6    |  |
| Portata d'aria                 | Air quantity            | m³/h                                   | 5500         | 5300    | 11000       | 10600   | 16500       | 15900   | 22000   | 21200   |  |
| Freccia d'aria                 | Air throw               | m                                      | 27           | 25      | 32          | 30      | 46          | 35      | 40      | 38      |  |
| Assorbimento motori            | Motor power consumption | 1~230 V<br>50 Hz<br>W                  | 415          | 415     | 830         | 830     | 1245        | 1245    | 1660    | 1660    |  |
| Superficie                     | Surface                 | m²                                     | 16,6         | 22,1    | 33,2        | 44,2    | 49,8        | 66,3    | 66,3    | 88,6    |  |
| Attacchi                       | Connections             | Entrata-uscita<br>Inlet-outlet<br>Ø mm | 16/35        | 16/35   | 16/35       | 16/42   | 16/42       | 28/54   | 28/54   | 28/64   |  |
| Peso                           | Weight                  | kg                                     | 75           | 80      | 120         | 128     | 165         | 176     | 214     | 230     |  |
| DATI COMUNI / COMMON DATA      |                         |                                        |              |         |             |         |             |         |         |         |  |
| Elettroventilatori             | Fans                    | Ø 450 mm x n°                          | 1 o          | 1 o     | 2 oo        | 2 oo    | 3 ooo       | 3 ooo   | 4 oooo  | 4 oooo  |  |
| Assorbimento motori            | Motor power consumption | 1~230 V 50 Hz A                        | 2,2          | 2,2     | 4,4         | 4,4     | 6,6         | 6,6     | 8,8     | 8,8     |  |
| Sbrinamento                    | E 230 V                 | kW                                     | 3,39         | 5,08    | 6,27        | 9,40    | 9,15        | 13,72   | 12,03   | 18,04   |  |
| Defrost                        | G 230 V                 | kW                                     | 0,85         | 0,85    | 1,57        | 1,57    | 2,29        | 2,29    | 3,01    | 3,01    |  |
| Livello pressione sonora       | Sound pressure level    | dB(A) Total                            | 53           | 53      | 56          | 56      | 58          | 58      | 59      | 59      |  |
| Volume circuito                | Circuit volume          | dm³                                    | 7,0          | 9,0     | 13,0        | 17,0    | 19,0        | 25,0    | 26,0    | 34,0    |  |
| Dimensioni                     | Dimensions              | A mm                                   | 1285         | 1285    | 2085        | 2085    | 2885        | 2885    | 3685    | 3685    |  |
|                                |                         | B mm                                   | 830          | 830     | 1630        | 1630    | 2430        | 2430    | 1600    | 1600    |  |
|                                |                         | C mm                                   | —            | —       | —           | —       | —           | —       | 1630    | 1630    |  |

(•) Per altre condizioni vedere diagrammi. Disponibili motori EC con commutazione elettronica (vedere Refriger®).

(•) For other conditions see diagrams. EC motors with electronic commutation are available (see Refriger®).





## 10.7 - 81.9 kW

| 4 = 4.5 mm Passo alette Fin spacing |                            | TC > -25 °C                      |        |        |        |        |        |        |        |        |
|-------------------------------------|----------------------------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Modello                             | Type                       | 4P Δ F50HC                       | 1600-4 | 1602-4 | 1606-4 | 1608-4 | 1612-4 | 1614-4 | 1618-4 | 1620-4 |
| Potenza (R404A)                     | (•) TC 2,5 °C (ΔT1 10K) kW |                                  | 17,5   | 20,4   | 35,2   | 40,8   | 52,7   | 59,2   | 70,2   | 81,9   |
| Capacity                            | TC 0 °C (ΔT1 8K) kW        |                                  | 12,9   | 15,1   | 26,0   | 30,1   | 39,0   | 43,8   | 51,9   | 60,6   |
| Portata d'aria                      | Air quantity               | m³/h                             | 7400   | 7000   | 14800  | 14000  | 22200  | 21000  | 29600  | 28000  |
| Freccia d'aria                      | Air throw                  | m                                | 32     | 30     | 39     | 36     | 43     | 41     | 47     | 44     |
| Assorbimento motori                 | 3~400 V 50 Hz              | W                                | 730    | 730    | 1460   | 1460   | 2190   | 2190   | 2920   | 2920   |
| Motor power consumption             |                            | A                                | 1,4    | 1,4    | 2,8    | 2,8    | 4,2    | 4,2    | 5,6    | 5,6    |
| Superficie                          | Surface                    | m²                               | 47,6   | 63,5   | 95,3   | 127,1  | 142,9  | 190,5  | 190,5  | 254,1  |
| Attacchi                            | Connections                | Entrata-uscita Inlet-outlet Ø mm | 16/35  | 16/42  | 28/54  | 28/54  | 28/64  | 28/54  | 28/64  | 35/76  |
| Peso                                | Weight                     | kg                               | 108    | 117    | 175    | 194    | 242    | 269    | 302    | 339    |

| 6 = 6.0 mm Passo alette Fin spacing |                            | TC > -25 °C                      |        |        |        |        |        |        |        |        |
|-------------------------------------|----------------------------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Modello                             | Type                       | 4P Δ F50HC                       | 1700-6 | 1702-6 | 1706-6 | 1708-6 | 1712-6 | 1714-6 | 1718-6 | 1720-6 |
| Potenza (R404A)                     | (•) TC 2,5 °C (ΔT1 10K) kW |                                  | 15,8   | 18,9   | 31,7   | 38,0   | 47,6   | 55,4   | 64,2   | 76,2   |
| Capacity                            | TC 0 °C (ΔT1 8K) kW        |                                  | 11,6   | 13,9   | 23,4   | 28,1   | 35,2   | 41,0   | 47,5   | 56,3   |
| Portata d'aria                      | Air quantity               | m³/h                             | 7600   | 7300   | 15200  | 14600  | 22800  | 21900  | 30400  | 29200  |
| Freccia d'aria                      | Air throw                  | m                                | 33     | 32     | 41     | 38     | 45     | 43     | 49     | 47     |
| Assorbimento motori                 | 3~400 V 50 Hz              | W                                | 700    | 730    | 1400   | 1460   | 2100   | 2190   | 2800   | 2920   |
| Motor power consumption             |                            | A                                | 1,4    | 1,4    | 2,8    | 2,8    | 4,2    | 4,2    | 5,6    | 5,6    |
| Superficie                          | Surface                    | m²                               | 36,5   | 48,7   | 73     | 97,5   | 109,7  | 146,2  | 146,2  | 194,9  |
| Attacchi                            | Connections                | Entrata-uscita Inlet-outlet Ø mm | 16/35  | 16/42  | 28/54  | 28/54  | 28/64  | 28/5   | 28/64  | 35/76  |
| Peso                                | Weight                     | kg                               | 103    | 111    | 166    | 182    | 228    | 250    | 284    | 315    |

| 7 = 7.5 mm Passo alette Fin spacing |                            | TC > -25 °C                      |        |        |        |        |        |        |        |        |
|-------------------------------------|----------------------------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Modello                             | Type                       | 4P Δ F50HC                       | 1800-7 | 1802-7 | 1806-7 | 1808-7 | 1812-7 | 1814-7 | 1818-7 | 1820-7 |
| Potenza (R404A)                     | (•) TC 2,5 °C (ΔT1 10K) kW |                                  | 13,5   | 16,6   | 27,0   | 33,4   | 41,2   | 48,8   | 54,9   | 66,8   |
| Capacity                            | TC 0 °C (ΔT1 8K) kW        |                                  | 9,9    | 12,2   | 19,9   | 24,7   | 30,4   | 36,1   | 40,6   | 49,4   |
| Portata d'aria                      | Air quantity               | m³/h                             | 7800   | 7600   | 15600  | 15200  | 23400  | 22800  | 31200  | 30400  |
| Freccia d'aria                      | Air throw                  | m                                | 35     | 32     | 42     | 39     | 47     | 44     | 51     | 48     |
| Assorbimento motori                 | 3~400 V 50 Hz              | W                                | 700    | 700    | 1400   | 1400   | 2100   | 2100   | 2800   | 2800   |
| Motor power consumption             |                            | A                                | 1,4    | 1,4    | 2,8    | 2,8    | 4,2    | 4,2    | 5,6    | 5,6    |
| Superficie                          | Surface                    | m²                               | 29,9   | 39,8   | 59,7   | 79,8   | 89,7   | 119,6  | 119,6  | 159,4  |
| Attacchi                            | Connections                | Entrata-uscita Inlet-outlet Ø mm | 16/35  | 16/42  | 28/54  | 28/54  | 28/54  | 28/54  | 28/64  | 35/76  |
| Peso                                | Weight                     | kg                               | 100    | 108    | 160    | 174    | 220    | 240    | 273    | 300    |

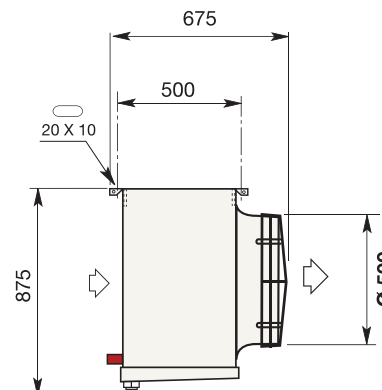
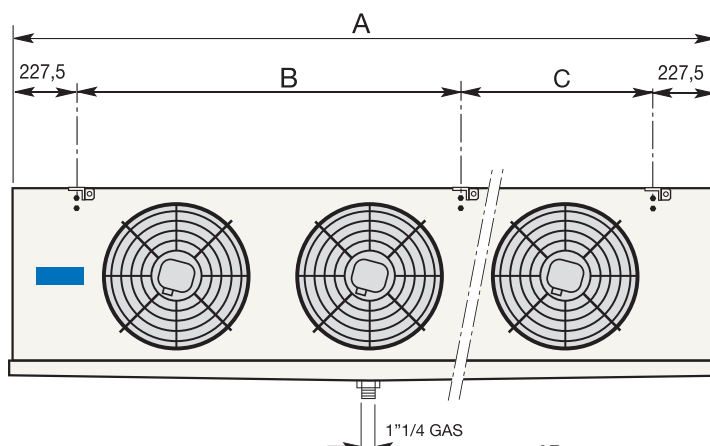
| 10 = 10.0 mm Passo alette Fin spacing |                            | TC > -25 °C                      |         |         |         |         |         |         |         |         |
|---------------------------------------|----------------------------|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Modello                               | Type                       | 4P Δ F50HC                       | 1900-10 | 1902-10 | 1906-10 | 1908-10 | 1912-10 | 1914-10 | 1918-10 | 1920-10 |
| Potenza (R404A)                       | (•) TC 2,5 °C (ΔT1 10K) kW |                                  | 10,7    | 13,4    | 21,3    | 27,0    | 32,9    | 40,3    | 43,7    | 54,1    |
| Capacity                              | TC 0 °C (ΔT1 8K) kW        |                                  | 7,9     | 9,9     | 15,7    | 19,9    | 24,3    | 29,8    | 32,3    | 40,0    |
| Portata d'aria                        | Air quantity               | m³/h                             | 8100    | 7800    | 16200   | 15600   | 24300   | 23400   | 32400   | 31200   |
| Freccia d'aria                        | Air throw                  | m                                | 35      | 34      | 43      | 42      | 48      | 47      | 52      | 51      |
| Assorbimento motori                   | 3~400 V 50 Hz              | W                                | 700     | 700     | 1400    | 1400    | 2100    | 2100    | 2800    | 2800    |
| Motor power consumption               |                            | A                                | 1,4     | 1,4     | 2,8     | 2,8     | 4,2     | 4,2     | 5,6     | 5,6     |
| Superficie                            | Surface                    | m²                               | 23,2    | 31      | 46,4    | 61,9    | 69,7    | 93      | 93      | 123,9   |
| Attacchi                              | Connections                | Entrata-uscita Inlet-outlet Ø mm | 16/35   | 16/42   | 28/54   | 28/54   | 28/54   | 28/54   | 28/64   | 35/76   |
| Peso                                  | Weight                     | kg                               | 98      | 104     | 155     | 167     | 212     | 230     | 262     | 286     |

### DATI COMUNI / COMMON DATA

|                          |                      |               |      |      |       |       |         |         |           |           |
|--------------------------|----------------------|---------------|------|------|-------|-------|---------|---------|-----------|-----------|
| Elettroventilatori       | Fans                 | Ø 500 mm x n° | 1 o  | 1 o  | 2 o o | 2 o o | 3 o o o | 3 o o o | 4 o o o o | 4 o o o o |
| Sbrinamento              | E 230 V              | kW            | 4,24 | 5,93 | 7,84  | 10,97 | 11,44   | 16,01   | 15,04     | 21,05     |
| Defrost                  | G 230 V              | kW            | 0,85 | 0,85 | 1,57  | 1,57  | 2,29    | 2,29    | 3,01      | 3,01      |
| Livello pressione sonora | Sound pressure level | dB(A) Total   | 57   | 57   | 60    | 60    | 62      | 62      | 63        | 63        |
| Volume circuito          | Circuit volume       | dm³           | 10,0 | 13,0 | 19,0  | 25,0  | 28,0    | 36,0    | 36,0      | 49,0      |
| Dimensioni               | Dimensions           | A mm          | 1285 | 1285 | 2085  | 2085  | 2885    | 2885    | 3685      | 3685      |
|                          |                      | B mm          | 830  | 830  | 1630  | 1630  | 2430    | 2430    | 1600      | 1600      |
|                          |                      | C mm          | —    | —    | —     | —     | —       | —       | 1630      | 1630      |

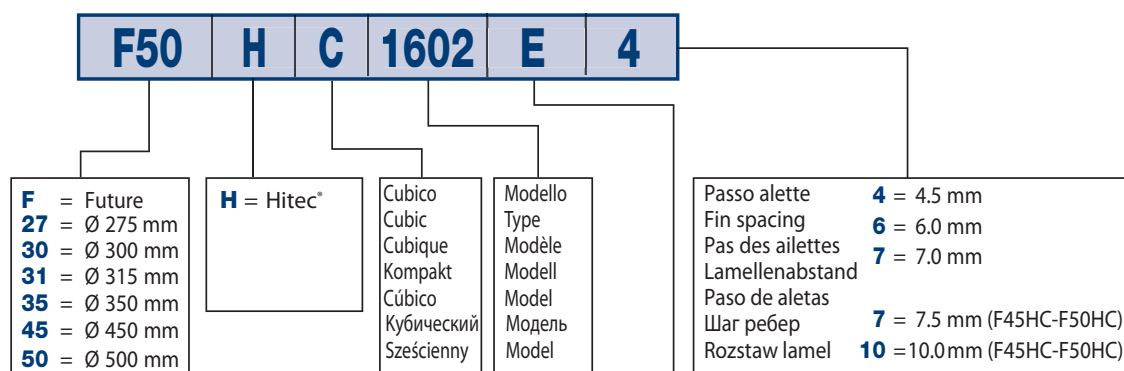
(•) Per altre condizioni vedere diagrammi. Disponibili motori EC con commutazione elettronica (vedere Refriger®).

(•) For other conditions see diagrams. EC motors with electronic commutation are available (see Refriger®).





**Esempio di ordinazione / Exemple de commande / Ordering example / Typenschlüssel / Ejemplo de pedido  
Пример заказа / Nomenklatura**



|                                                                                                                                                                        |                                                                                                                                                           |                                                                                                                                                                    |                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>N</b> = Sbrinamento ad aria<br><b>E</b> = Sbrinamento elettrico<br><b>G</b> = Sbrinamento a gas caldo per batteria ed elettrico nella bacinella (F45HC-F50HC)       | <b>N</b> = Air defrost<br><b>E</b> = Electric defrost<br><b>G</b> = Hot gas defrost for the coil and electr. defrost in the drain tray (F45HC-F50HC)      | <b>N</b> = Dégivrage à air<br><b>E</b> = Dégivrage électrique<br><b>G</b> = Dégivrage à gaz chaud pour la batterie et électrique dans l'égouttoire (F45HC-F50HC)   | <b>N</b> = Luftabtauung<br><b>E</b> = Elektrische Abtauung<br><b>G</b> = Heissgasabtauung für die Batterie und elektrische Abtauung in der Tropfschale (F45HC-F50HC) |
| <b>N</b> = Aire descongelación<br><b>E</b> = Desescarche eléctrico<br><b>G</b> = Descongelación con gas caliente y eléctrica de la batería en la bandeja (F45HC-F50HC) | <b>N</b> = Air размораживание<br><b>E</b> = Электрическая оттайка<br><b>G</b> = Размораживание горячим газом и электрической батареи в трее (F45HC-F50HC) | <b>N</b> = Odszranianie powietrzem<br><b>E</b> = Odszranianie elektryczne<br><b>G</b> = Odszranianie gorącym gazem w wymienniku i elektryczne w tacy (F45HC-F50HC) |                                                                                                                                                                      |

Disponibili anche versioni per:  
 Versions available:  
 Versions disponibles pour:  
 Verfügbare Versionen:  
 Versiones disponibles:  
 Доступные версии:  
 Dostępne wersje na:

**GLYCOL**

**NH<sub>3</sub>**

**CO<sub>2</sub>**



## DUAL DISCHARGE UNIT COOLERS FOR COLD ROOMS

- Highest energy efficiency with EC fans as standard equipment
- Great flexibility thanks to two-speed fan
- Less noise for all applications
- New structure in highly resistant synthetic material





## ● FHD

**2.0 - 19.8 kW - 18 models**



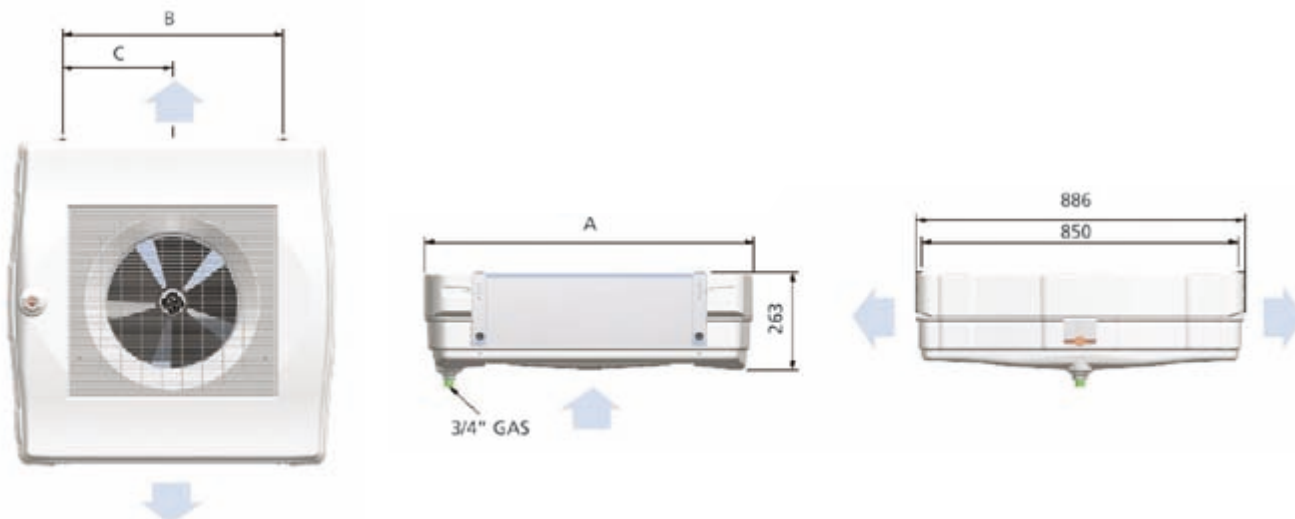
S = high speed 1100 rpm  
L = low speed 870 rpm



| Modello                   | Type                    | FHD (3= 3.0 mm)   |        | S     | L    | 711-3 | 712-3 | 721-3 | 722-3 | 732-3 | 742-3 |
|---------------------------|-------------------------|-------------------|--------|-------|------|-------|-------|-------|-------|-------|-------|
| Potenza                   | (R404A)                 | TC 2.5 °C ΔT1 10K | W      | 3800  | 3350 | 5350  | 4550  | 7650  | 6750  | 10750 | 9150  |
| Capacity                  |                         | TC 0 °C (ΔT1 8 K) | W      | 2800  | 2470 | 3940  | 3350  | 5630  | 4970  | 7910  | 6730  |
| Portata aria              | Air quantity            |                   | m³/h   | 1800  | 1400 | 1800  | 1400  | 3600  | 2800  | 3600  | 2800  |
| Freccia d'aria            | Air throw               |                   | m      | 11    | 8    | 11    | 8     | 12    | 10    | 12    | 10    |
| Superficie esterna        | External surface        |                   | m²     | 19,2  |      | 19,2  |       | 38,4  |       | 38,4  |       |
| Superficie interna        | Internal surface        |                   | m²     | 0,7   |      | 1,3   |       | 1,3   |       | 2,6   |       |
| Peso                      | Weight                  |                   | kg     | 22,8  |      | 24,3  |       | 38,8  |       | 41,5  |       |
| Modello                   | Type                    | FHD (4= 4.5 mm)   |        | S     | L    | 811-4 | 812-4 | 821-4 | 822-4 | 832-4 | 842-4 |
| Potenza                   | (R404A)                 | TC 2.5 °C ΔT1 10K | W      | 3100  | 2750 | 4550  | 4000  | 6200  | 5500  | 9100  | 7950  |
| Capacity                  |                         | TC 0 °C (ΔT1 8 K) | W      | 2280  | 2020 | 3350  | 2940  | 4560  | 4050  | 6700  | 5850  |
| Portata aria              | Air quantity            |                   | m³/h   | 1900  | 1500 | 1900  | 1500  | 3800  | 2900  | 3800  | 2900  |
| Freccia d'aria            | Air throw               |                   | m      | 11    | 9    | 11    | 9     | 13    | 10    | 13    | 10    |
| Superficie esterna        | External surface        |                   | m²     | 13,1  |      | 13,1  |       | 26,2  |       | 26,2  |       |
| Superficie interna        | Internal surface        |                   | m²     | 0,7   |      | 1,3   |       | 1,3   |       | 2,6   |       |
| Peso                      | Weight                  |                   | kg     | 20,8  |      | 22,3  |       | 34,9  |       | 37,6  |       |
| Modello                   | Type                    | FHD (7= 7.0 mm)   |        | S     | L    | 911-7 | 912-7 | 921-7 | 922-7 | 932-7 | 942-7 |
| Potenza                   | (R404A)                 | TC 2.5 °C ΔT1 10K | W      | 2200  | 2000 | 3450  | 3050  | 4400  | 4000  | 6850  | 6100  |
| Capacity                  |                         | TC 0 °C (ΔT1 8 K) | W      | 1620  | 1470 | 2540  | 2240  | 3240  | 2940  | 5040  | 4490  |
| Portata aria              | Air quantity            |                   | m³/h   | 2000  | 1600 | 2000  | 1600  | 4000  | 3100  | 4000  | 3100  |
| Freccia d'aria            | Air throw               |                   | m      | 12    | 9    | 12    | 9     | 14    | 11    | 14    | 11    |
| Superficie esterna        | External surface        |                   | m²     | 8,7   |      | 8,7   |       | 17,5  |       | 17,5  |       |
| Superficie interna        | Internal surface        |                   | m²     | 0,7   |      | 1,3   |       | 1,3   |       | 2,6   |       |
| Peso                      | Weight                  |                   | kg     | 19,3  |      | 20,8  |       | 31,9  |       | 34,6  |       |
| DATI COMUNI / COMMON DATA |                         |                   |        | S     | L    | S     | L     | S     | L     | S     | L     |
| Ventilatori               | Fans                    | Ø 350 mm          | n°     | 1     | 0    | 1     | 0     | 2     | 00    | 2     | 00    |
| Assorbimento motori       | Motor power consumption | EC 1~230 V 50 Hz  | W      | 82    | 40   | 82    | 40    | 164   | 80    | 164   | 80    |
|                           |                         |                   | A      | 0,7   | 0,4  | 0,7   | 0,4   | 1,4   | 0,8   | 1,4   | 0,8   |
| Sbrinamento               | Defrost                 | E 230 V           | W      | 1800  |      | 1800  |       | 3200  |       | 3200  |       |
| Volume circuito           | Circuit volume          |                   | dm³    | 1,1   |      | 2,3   |       | 2,1   |       | 4,2   |       |
| Potenza sonora            | Sound power level       |                   | db (A) | 70    | 63   | 70    | 63    | 73    | 66    | 73    | 66    |
| Attacchi                  | Connections             |                   | mm     | 12/22 |      | 12/28 |       | 12/28 |       | 16/35 |       |
| Dimensioni                | Dimensions              |                   | A mm   | 888   |      | 888   |       | 1443  |       | 1443  |       |
|                           |                         |                   | B mm   | 596   |      | 596   |       | 1151  |       | 1151  |       |
|                           |                         |                   | C mm   | -     |      | -     |       | -     |       | -     |       |

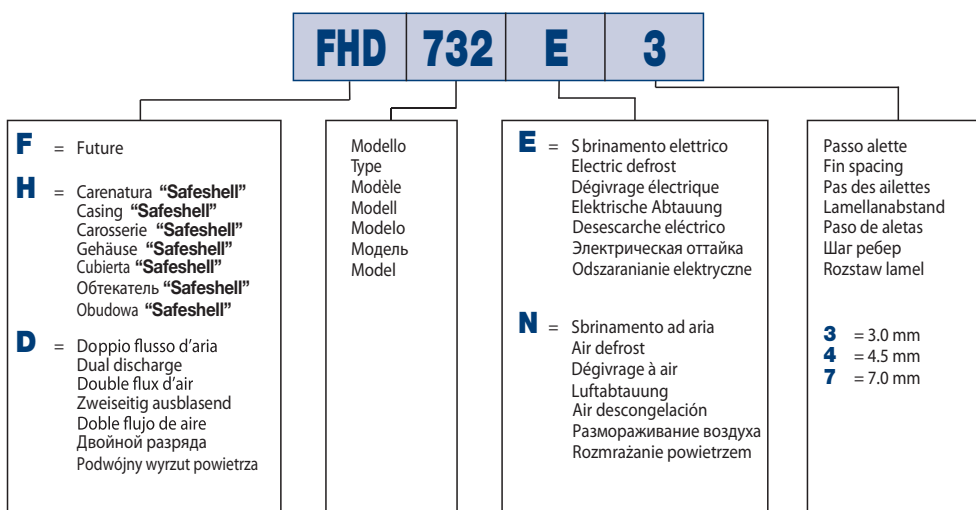
EC = Motori con commutazione elettronica (1400 r.p.m.). EC = Motors with electronic commutation (1400 r.p.m.).

Ventilatore elettronico a 2 velocità (S=1100 rpm, L=870 rpm), per collegamento vedere istruzioni di montaggio.  
2 speed electronic fan (S=1100 rpm, L=870 rpm): see assembly instructions for connections.





**Esempio di ordinazione / Exemple de commande / Ordering example / Typenschlüssel / Ejemplo de pedido**  
**Пример заказа / Nomenclatura**



Disponibili anche versioni per:  
 Versions available:  
 Versions disponibles pour:  
 Verfügbare Versionen:  
 Versiones disponibles:  
 Доступные версии:  
 Dostępne wersje na:

**GLYCOL**

**NH<sub>3</sub>**

**CO<sub>2</sub>**

## ANGLED UNIT COOLERS FOR COLD ROOMS

- Protective steel casing
- High energy efficiency





## ● BMA-SMA

**1.9 - 12.3 kW - 20 models**

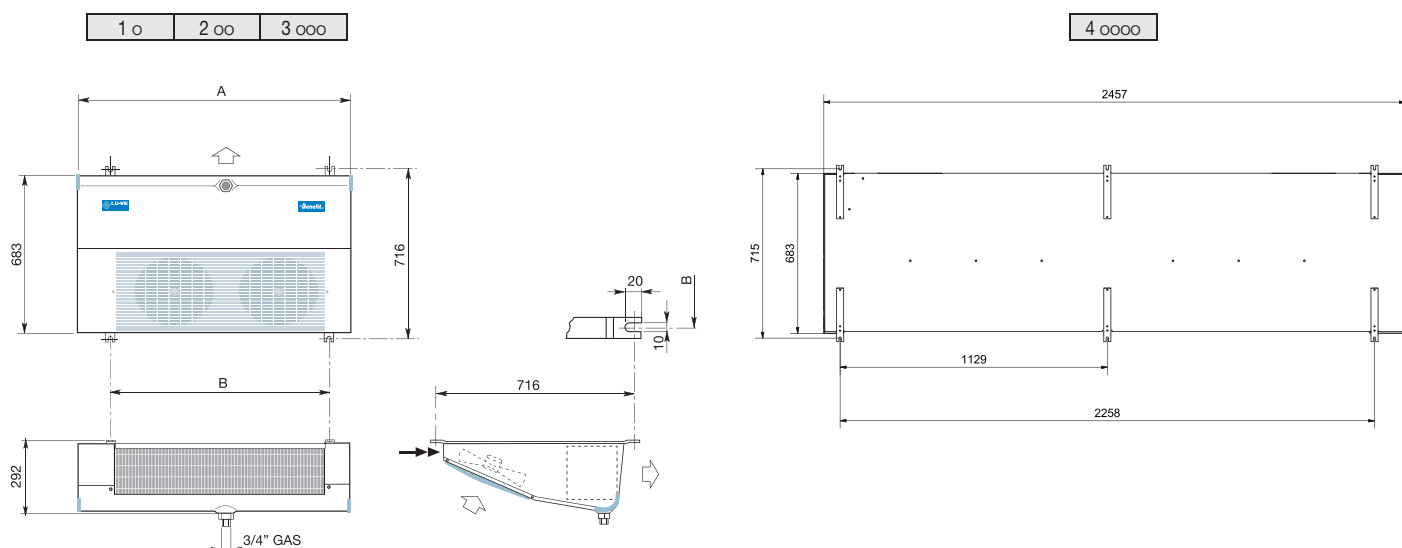
1950 - 12350 W



| 45 = 4.5 mm Passo alette Fin spacing |                         |               |      |      |      |      |      |      |       |       | TC > -18 °C |        |
|--------------------------------------|-------------------------|---------------|------|------|------|------|------|------|-------|-------|-------------|--------|
| Modello                              | Type                    | BMA-SMA       | 211  | 212  | 213  | 214  | 221  | 222  | 231   | 232   | 241         | 242    |
| Potenza (R404A)                      | (•) TC 2,5 °C (ΔT1 10K) | W             | 2600 | 3250 | 3450 | 4200 | 5050 | 6200 | 7650  | 9350  | 10300       | 12350  |
| Capacity                             | TC 0 °C (ΔT1 8K)        | W             | 1900 | 2400 | 2550 | 3100 | 3750 | 4600 | 5650  | 6900  | 7600        | 9150   |
| Portata d'aria                       | Air quantity            | m³/h          | 1200 | 1100 | 1400 | 1300 | 2400 | 2200 | 3600  | 3300  | 4800        | 4400   |
| Freccia d'aria                       | Air throw               | m             | 10   | 9    | 9    | 9    | 12   | 11   | 13    | 12    | 14          | 13     |
| Superficie esterna                   | External surface        | m²            | 6.6  | 9.8  | 10.6 | 15.9 | 13.1 | 19.7 | 19.7  | 29.5  | 26.2        | 39.3   |
| Superficie interna                   | Internal surface        | m²            | 0.39 | 0.59 | 0.64 | 0.96 | 0.79 | 1.18 | 1.18  | 1.77  | 1.57        | 2.36   |
| Peso                                 | Weight                  | kg            | 19.7 | 21.6 | 25.3 | 28.2 | 31.8 | 35.4 | 44.2  | 49.3  | 56.6        | 63.6   |
| 70 = 7.0 mm Passo alette Fin spacing |                         |               |      |      |      |      |      |      |       |       | TC > -18 °C |        |
| Modello                              | Type                    | BMA-SMA       | 311  | 312  | 313  | 314  | 321  | 322  | 331   | 332   | 341         | 342    |
| Potenza (R404A)                      | (•) TC 2,5 °C (ΔT1 10K) | W             | 1950 | 2600 | 2550 | 3450 | 3850 | 5050 | 5800  | 7750  | 7800        | 10100  |
| Capacity                             | TC 0 °C (ΔT1 8K)        | W             | 1450 | 1900 | 1850 | 2550 | 2850 | 3750 | 4300  | 5750  | 5800        | 7450   |
| Portata d'aria                       | Air quantity            | m³/h          | 1300 | 1200 | 1450 | 1400 | 2600 | 2400 | 3900  | 3600  | 5200        | 4800   |
| Freccia d'aria                       | Air throw               | m             | 11   | 10   | 10   | 9    | 13   | 12   | 14    | 13    | 15          | 14     |
| Superficie esterna                   | External surface        | m²            | 4.4  | 6.6  | 7.1  | 10.6 | 8.7  | 13.1 | 13.1  | 19.7  | 17.5        | 26.2   |
| Superficie interna                   | Internal surface        | m²            | 0.39 | 0.59 | 0.64 | 0.96 | 0.79 | 1.18 | 1.18  | 1.77  | 1.57        | 2.36   |
| Peso                                 | Weight                  | kg            | 19.0 | 20.5 | 24.1 | 26.3 | 30.2 | 33.1 | 42.0  | 46.0  | 53.5        | 59.0   |
| DATI COMUNI / COMMON DATA            |                         |               |      |      |      |      |      |      |       |       |             |        |
| Elettroventilatori                   | Fans                    | Ø 300 mm x n° | 1 o  | 1 o  | 1 o  | 1 o  | 2 oo | 2 oo | 3 ooo | 3 ooo | 4 oooo      | 4 oooo |
| Assorbimento motori                  | BMA-SMA                 | W             | 75   | 75   | 75   | 75   | 150  | 150  | 225   | 225   | 300         | 300    |
| Motor power consumption              |                         | A             | 0.34 | 0.34 | 0.34 | 0.34 | 0.68 | 0.68 | 1.02  | 1.02  | 1.36        | 1.36   |
| Assorbimento motori                  | EC 1~230 V 50 Hz        | W             | 60   | 60   | 60   | 60   | 120  | 120  | 180   | 180   | 240         | 240    |
| Motor power consumption              |                         | A             | 0,55 | 0,55 | 0,55 | 0,55 | 1,1  | 1,1  | 1,65  | 1,65  | 2,2         | 2,2    |
| Sbrinamento                          | Defrost                 | E 230 V       | W    | 790  | 1130 | 1200 | 1755 | 1450 | 2130  | 2120  | 3130        | 2790   |
| Volume circuito                      | Circuit volume          | dm³           | 1.1  | 1.6  | 1.7  | 2.5  | 2.0  | 3.1  | 3.0   | 4.5   | 4.0         | 5.9    |
| Attacchi entrata                     | Inlet connections       | BMA Ø mm      | 12   | 12   | 12   | 12   | 12   | 16   | 16    | 16    | 16          | 22     |
|                                      |                         | SMA Ø mm      | 12   | 12   | 12   | 12   | 12   | 12   | 12    | 12    | 12          | 16     |
| Attacchi uscita                      | Outlet connections      | BMA-SMA Ø mm  | 16   | 18   | 18   | 18   | 18   | 28   | 28    | 28    | 28          | 35     |
| Dimensioni                           | Dimensions              | A mm          | 792  | 792  | 1137 | 1137 | 1347 | 1347 | 1902  | 1902  | 2457        | 2457   |
|                                      |                         | B mm          | 593  | 593  | 938  | 938  | 1148 | 1148 | 1703  | 1703  | 2258        | 2258   |

(•) Per altre condizioni vedere diagrammi. (•) For other conditions see diagrams.

EC = Motori con commutazione elettronica (1400 r.p.m.). Risparmio energia = ~ 20%. EC = Motors with electronic commutation (1400 r.p.m.). Energy saving = ~ 20%.





**Esempio di ordinazione / Exemple de commande / Ordering example / Typenschlüssel / Ejemplo de pedido**  
**Пример заказа / Nomenklatura**

**BMA 222 E 45**

|          |   |                                                                                                                |                               |
|----------|---|----------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>B</b> | = | Benefit                                                                                                        |                               |
| <b>S</b> | = | Super                                                                                                          |                               |
| <b>M</b> | = | Carenatura metallica<br>Carosserie metallique<br>Carenado de metal<br>Металлический корпус<br>Metalowa obudowa | Metal casing<br>Metallgehäuse |
| <b>A</b> | = | Angolare<br>Angulaire<br>Angular<br>Kątowy                                                                     | Angled<br>Winkling<br>Угловой |

|         |        |
|---------|--------|
| Modello | Type   |
| Modèle  | Modèle |
| Modell  | Modell |
| Modelo  | Modelo |
| Модель  | Модель |
| Model   | Model  |

|          |   |                                                                                                                                                                       |
|----------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>N</b> | = | Sbrinamento ad aria<br>Air defrost<br>Dégivrage à air<br>Luftabtauung<br>Air descongelación<br>Размораживание воздуха<br>Rozmrażanie powietrzem                       |
| <b>E</b> | = | Sbrinamento elettrico<br>Electric defrost<br>Dégivrage électrique<br>Elektrische Abtauung<br>Desescarche eléctrico<br>Электрическая оттайка<br>Odszaranie elektryczne |

|                                                                     |                                             |
|---------------------------------------------------------------------|---------------------------------------------|
| Passo alette<br>Pas des ailettes<br>Paso de aletas<br>Rozstaw lamel | Fin spacing<br>Lamellenabstand<br>Шар ребер |
| <b>45</b>                                                           | = 4.5 mm                                    |
| <b>70</b>                                                           | = 7.0 mm                                    |

Disponibili anche versioni per:  
 Versions available:  
 Versions disponibles pour:  
 Verfügbare Versionen:  
 Versiones disponibles:  
 Доступные версии:  
 Dostępne wersje na:

**GLYCOL**

**NH<sub>3</sub>**

**CO<sub>2</sub>**

## ANGLED UNIT COOLERS FOR COLD ROOMS



Safeshell casing





## ● FHA

**1.1 - 8.2 kW - 18 models**

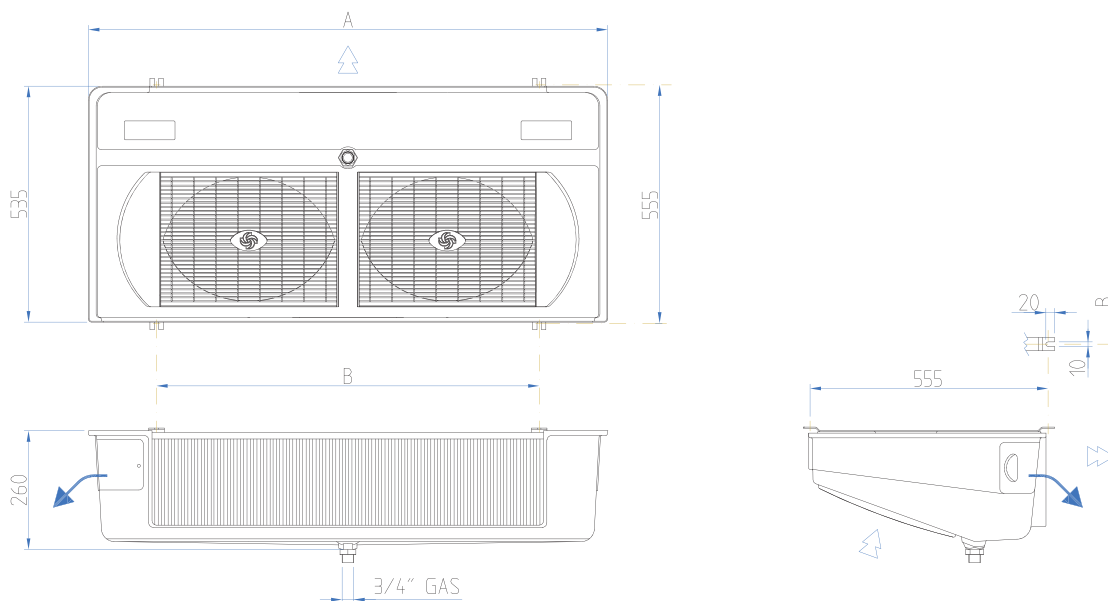
1130 - 8250 W



| 32 = 3.0 mm Passo alette Fin spacing |                       |               | TC > 0 °C   |       |       |       |        |        |
|--------------------------------------|-----------------------|---------------|-------------|-------|-------|-------|--------|--------|
| Modello                              | Type                  | FHA           | 30-32       | 40-32 | 60-32 | 80-32 | 120-32 | 160-32 |
| Potenza (R404A)                      | • TC 2,5 °C (ΔT1 10K) | W             | 1650        | 2050  | 3350  | 4150  | 6300   | 8250   |
| Capacity                             | TC 0 °C (ΔT1 8K)      | W             | 1200        | 1500  | 2470  | 3050  | 4650   | 6100   |
| Portata d'aria                       | Air quantity          | m³/h          | 550         | 650   | 1100  | 1300  | 1950   | 2600   |
| Freccia d'aria                       | Air throw             | m             | 8           | 8     | 9     | 9     | 10     | 11     |
| Superficie esterna                   | External surface      | m²            | 5,6         | 7,8   | 11,2  | 15,6  | 23,4   | 31,2   |
| Superficie interna                   | Internal surface      | m²            | 0,4         | 0,5   | 0,8   | 1,0   | 1,5    | 2,0    |
| Peso                                 | Weight                | kg            | 9,5         | 11,5  | 16,5  | 20,5  | 29,5   | 39,0   |
| 50 = 4.5 mm Passo alette Fin spacing |                       |               | TC > -18 °C |       |       |       |        |        |
| Modello                              | Type                  | FHA           | 21-50       | 27-50 | 41-50 | 53-50 | 79-50  | 106-50 |
| Potenza (R404A)                      | • TC 2,5 °C (ΔT1 10K) | W             | 1450        | 1800  | 2950  | 3600  | 5500   | 7350   |
| Capacity                             | TC 0 °C (ΔT1 8K)      | W             | 1050        | 1350  | 2180  | 2660  | 4050   | 5450   |
| Portata d'aria                       | Air quantity          | m³/h          | 600         | 720   | 1200  | 1440  | 2160   | 2880   |
| Freccia d'aria                       | Air throw             | m             | 9           | 9     | 10    | 10    | 11     | 12     |
| Superficie esterna                   | External surface      | m²            | 3,8         | 5,3   | 7,7   | 10,6  | 15,9   | 21,2   |
| Superficie interna                   | Internal surface      | m²            | 0,4         | 0,5   | 0,8   | 1,0   | 1,5    | 2,0    |
| Peso                                 | Weight                | kg            | 9,0         | 10,5  | 15,5  | 19,0  | 27,5   | 36,0   |
| 80 = 7.0 mm Passo alette Fin spacing |                       |               | TC > -18 °C |       |       |       |        |        |
| Modello                              | Type                  | FHA           | 14-80       | 17-80 | 28-80 | 35-80 | 52-80  | 70-80  |
| Potenza (R404A)                      | • TC 2,5 °C (ΔT1 10K) | W             | 1130        | 1370  | 2270  | 2730  | 4260   | 5730   |
| Capacity                             | TC 0 °C (ΔT1 8K)      | W             | 850         | 1000  | 1680  | 2010  | 3150   | 4250   |
| Portata d'aria                       | Air quantity          | m³/h          | 670         | 750   | 1340  | 1500  | 2250   | 3000   |
| Freccia d'aria                       | Air throw             | m             | 10          | 10    | 11    | 11    | 12     | 13     |
| Superficie esterna                   | External surface      | m²            | 2,6         | 3,5   | 5,1   | 7,1   | 10,6   | 14,2   |
| Superficie interna                   | Internal surface      | m²            | 0,4         | 0,5   | 0,8   | 1,0   | 1,5    | 2,0    |
| Peso                                 | Weight                | kg            | 8,5         | 10,0  | 15,0  | 18,0  | 26,0   | 34,0   |
| DATI COMUNI / COMMON DATA            |                       |               |             |       |       |       |        |        |
| Elettroventilatori                   | Fans                  | Ø 275 mm x n° | 1 o         | 1 o   | 2 oo  | 2 oo  | 3 000  | 4 0000 |
| Assorbimento motori                  | FHA                   | W             | 105         | 105   | 196   | 196   | 315    | 340    |
| Motor power consumption              | A                     | 0,65          | 0,65        | 1,30  | 1,30  | 1,95  | 2,60   |        |
| Assorbimento motori                  | EC 1~230 V 50 Hz      | W             | 24          | 29    | 48    | 48    | 72     | 72     |
| Motor power consumption              | A                     | 0,16          | 0,16        | 0,32  | 0,32  | 0,48  | 0,48   |        |
| Sbrinatorio                          | Defrost               | E 230 V       | 500         | 650   | 900   | 1200  | 1750   | 2300   |
| Volume circuito                      | Circuit volume        | dm³           | 0,6         | 0,9   | 1,2   | 1,7   | 2,5    | 3,2    |
| Attacchi entrata                     | Inlet connections     | Ø mm          | 10          | 12    | 12    | 12    | 12     | 12     |
| Attacchi uscita                      | Outlet connections    | Ø mm          | 10          | 22    | 22    | 28    | 28     | 28     |
| Dimensioni                           | Dimensions            | A mm          | 605         | 730   | 920   | 1170  | 1630   | 2080   |
|                                      |                       | B mm          | 293         | 418   | 618   | 868   | 1318   | 1768   |

(•) Per altre condizioni vedere diagrammi. (•) For other conditions see diagrams.

EC = Motori con commutazione elettronica (1400 r.p.m.). EC = Motors with electronic commutation (1400 r.p.m.).





**Esempio di ordinazione / Exemple de commande / Ordering example / Typenschlüssel / Ejemplo de pedido**  
**Пример заказа / Nomenklatura**

| FHA                 |  | 79      |  | E                                |  | 50                 |  |
|---------------------|--|---------|--|----------------------------------|--|--------------------|--|
| <b>F</b> = Future   |  | Modello |  | <b>N</b> = Sbrinamento ad aria   |  | Passo alette       |  |
| <b>H</b> = Hitec®   |  | Modèle  |  | Dégivrage à air                  |  | Fin spacing        |  |
| <b>A</b> = Angolare |  | Modelo  |  | Air descongelación               |  | Pas des ailettes   |  |
| Angulaire           |  | Model   |  | Rozmrażanie powietrzem           |  | Paso de aletas     |  |
| Angled              |  |         |  |                                  |  | Rozstaw lamel      |  |
| Winkling            |  |         |  |                                  |  |                    |  |
| Angular             |  |         |  | <b>E</b> = Sbrinamento elettrico |  | <b>32</b> = 3.0 mm |  |
| Угловой             |  |         |  | Dégivrage électrique             |  | <b>50</b> = 4.5 mm |  |
| Kątowy              |  |         |  | Desescarche eléctrico            |  | <b>80</b> = 7.0 mm |  |
|                     |  |         |  | Odszaranie elektryczne           |  |                    |  |
|                     |  |         |  |                                  |  |                    |  |

Disponibili anche versioni per:  
 Versions available:  
 Versions disponibles pour:  
 Verfügbare Versionen:  
 Versiones disponibles:  
 Доступные версии:  
 Dostępne wersje na:

**GLYCOL**

**NH<sub>3</sub>**

**CO<sub>2</sub>**

## LU-VE TECHNOLOGY

|                                                                                    |                                                                                     |                                                                                                                                                                                                                                                        |                                                                                                                                                                                                   |                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <b>Safeshell</b>                                                                    | Carenatura di materiale antiurto e antinfortunistico "Safeshell".                                                                                                                                                                                                                                                                       | Casing in "Safeshell" shock resistant safety material.                                                                                                                                                                                                                               | Carrosserie en matériau antichocs "Safeshell".                                                                                                                                                                                                                                                                        |
|    |    | Il profilo della nuova griglia <b>JETSTREAMER®</b> abbina a un design innovativo un notevole incremento della freccia d'aria e della portata d'aria soprattutto in presenza di brina sulle alette della batteria. (Patented).                                                                                                           | The special profile of <b>JETSTREAMER®</b> combines innovative design with a notable increase in air throw and air quantity, especially with frost on the fins. (Patented).                                                                                                          | Le profilé de la nouvelle grille <b>JETSTREAMER®</b> combine un design innovant et une augmentation considérable de la portée et du débit d'air, surtout en présence de givre sur les ailettes de la batterie.                                                                                                        |
|    | <b>JET-O-MATIC®</b>                                                                 | <b>JET-O-MATIC®</b> : massima potenza dell'evaporatore in ogni condizione di carico termico (CT), temperatura di cella (TC), differenza di temperatura (ΔT) e tipo di refrigerante (R), specialmente con i nuovi refrigeranti caratterizzati da una miscela con elevato rapporto, gas/liquido dopo la valvola di espansione (Patented). | <b>JET-O-MATIC®</b> : maximum unit cooler capacity at every condition of heat load (CT), room temperature (TC), temperature difference (ΔT) and refrigerant type (R), especially with the new refrigerants which have mixtures with high gas/liquid ratio after the expansion valve. | <b>JET-O-MATIC®</b> : performance maximale de l'évaporateur dans toutes les conditions de charge thermique (CT), température de chambre (TC), différence de température (ΔT) et type de réfrigérant (R), spécialement pour les nouveaux réfrigérants lorsque le mélange gaz/liquide est important après le détendeur. |
|  | <i>Steel Protected Best Technology</i>                                              | Carenatura realizzata con acciaio zincato, verniciatura a polvere <b>Epoxy-Polyester</b> e resistente alla corrosione.                                                                                                                                                                                                                  | Galvanized steel casing with corrosion-resistant <b>Epoxy-Polyester</b> powder coating.                                                                                                                                                                                              | Carrosserie en acier zingué, peinte par poudrage <b>époxy-polyester</b> , résistante à la corrosion.                                                                                                                                                                                                                  |
|  | <b>DUAL DISCHARGE</b>                                                               | Aeroevaporatori a <b>doppio flusso</b> d'aria.                                                                                                                                                                                                                                                                                          | <b>Dual discharge</b> unit coolers.                                                                                                                                                                                                                                                  | <b>Evaporateurs ventilés double flux.</b>                                                                                                                                                                                                                                                                             |
|  | <b>GLYCOL</b>                                                                       | Aerorefrigeranti per <b>acqua glicolata</b> .                                                                                                                                                                                                                                                                                           | Industrial air coolers for <b>glycol water</b> .                                                                                                                                                                                                                                     | Aerofrigorifères pour <b>Eau Glycolée</b> .                                                                                                                                                                                                                                                                           |
|  | <b>NH<sub>3</sub></b>                                                               | Aeroevaporatori per ammoniac ( <b>NH<sub>3</sub></b> ).                                                                                                                                                                                                                                                                                 | Industrial unit coolers for ammonia ( <b>NH<sub>3</sub></b> ).                                                                                                                                                                                                                       | Evaporateurs ventilés pour Ammoniac ( <b>NH<sub>3</sub></b> ).                                                                                                                                                                                                                                                        |
|  | <b>CO<sub>2</sub></b>                                                               | Aeroevaporatori e gas coolers per <b>CO<sub>2</sub></b> .                                                                                                                                                                                                                                                                               | Unit coolers and gas coolers for <b>CO<sub>2</sub></b> .                                                                                                                                                                                                                             | Evaporateurs et gaz coolers pour <b>CO<sub>2</sub></b> .                                                                                                                                                                                                                                                              |
|  |  | Gli aeroevaporatori possono essere dotati dei nuovi ventilatori elettronici sviluppati con <b>tecnologia EC</b> , che consente di ridurre drasticamente i consumi energetici.                                                                                                                                                           | Unit coolers can be fitted with the new electronic fans developed using <b>EC technology</b> , dramatically reducing energy consumption.                                                                                                                                             | Les évaporateurs peuvent être équipés de nouveaux ventilateurs électroniques <b>EC</b> , qui permettent de réduire de façon significative les consommations d'énergie.                                                                                                                                                |

**Metodo di scelta dell'aeroevaporatore – Unit cooler model selection**  
**Méthode de sélection de l'évaporateur – Auswahlmethoden für Hochleistungsluftkühler**  
**Método de selección de evaporador – Метод выбора – Dobór chłodnicy powietrza**

| Dati di base | Basic data | Données de base | Basis-Daten | Datos básicos | Основные данные | Dane podstawowe |
|--------------|------------|-----------------|-------------|---------------|-----------------|-----------------|
| TC = 0°C     | UR = 85%   | ΔT1 = 7 K       | CT = 7500 W | R = R404A     |                 |                 |

| Scelta rapida | Quick selection | Sélection rapide | Schnellauswahl | Selección rápida | Мгновенный подбор | Szybki dobór |
|---------------|-----------------|------------------|----------------|------------------|-------------------|--------------|
|---------------|-----------------|------------------|----------------|------------------|-------------------|--------------|

CT x 1/FC = 7500 x 1/0,65 = **11540W**

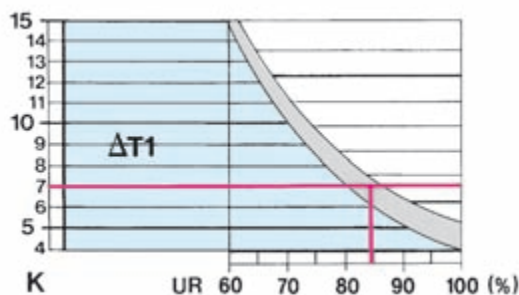
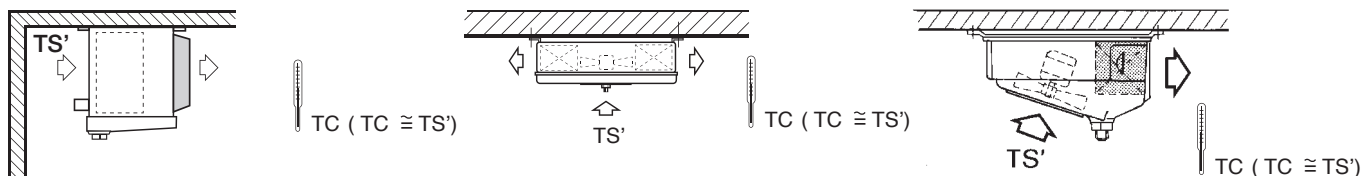
Selezione / Selection / Sélection / Typenauswahl / Selección / Выбор / Wybór = **BHDN 166 E 50**

Potenza / Rating / Puissance / Leistung / Potencia / Власть / Мощность = **ΔT1 10K = 12400 W** (Catalogo / Catalogue / Catalogue / Katalog

**ΔT1 = 11540/12400 x7 = 6,5 K**

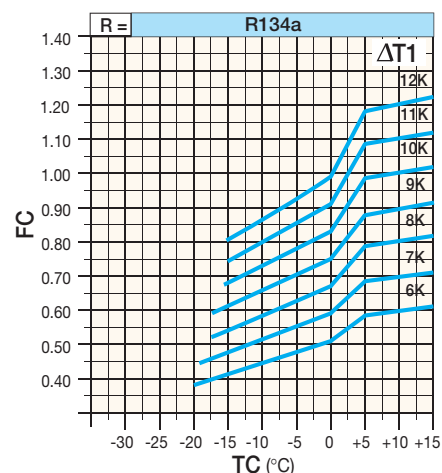
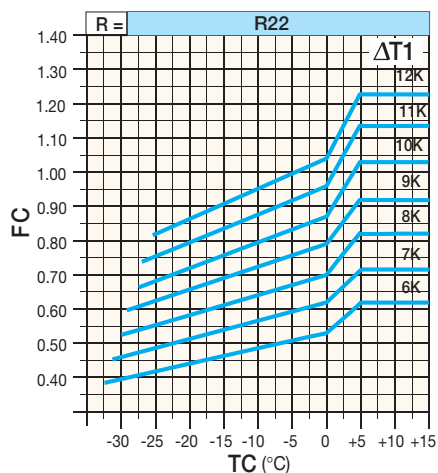
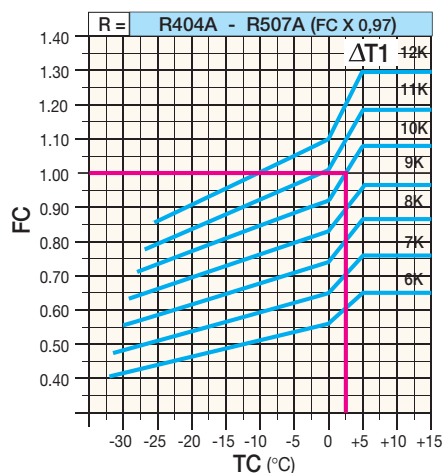
Catálogo / Каталог/ Katalog)

**TE = TC - ΔT1 = 0 - 6,5 = - 6,5 °C**



|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                             |                                                    |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------|
| <b>CT W</b>   | Carico termico<br>Kältebedarf                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Heat load<br>Температурная нагрузка                                                         | Bilan thermique<br>Obciążenie cieplne              |
| <b>TC °C</b>  | Temperatura di cella<br>Raumtemperatur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Room temperature<br>Температура в камере                                                    | Température de la chambre<br>Temperatura komory    |
| <b>TS' °C</b> | Temperatura dell'aria all'ingresso dell'evaporatore<br>Air inlet temperature/Temperature d'entrée de l'air<br>Luft Eintrittstemperatur<br>Temperatura de entrada del aire en el evaporador                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Температура воздуха на входе в воздухоохладитель<br>Temp. powietrza na wejściu do parownika |                                                    |
| <b>TE °C</b>  | Temperatura di evaporazione<br>Verdampfungstemperatur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Evaporating temperature<br>Температура кипения                                              | Température d'évaporation<br>Temperatura parowania |
| <b>UR %</b>   | Umidità relativa<br>Relative Luftfeuchtigkeit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Relative humidity<br>Humedad relativa                                                       | Umidité relative<br>Wilgotność względna            |
| <b>ΔT1 K</b>  | Differenza tra la temperatura dell'aria in entrata e la temperatura d'evaporazione del refrigerante<br>Difference between air inlet temperature and refrigerant temperature<br>Différence entre la température d'entrée de l'air et la température d'évaporation du réfrigérant<br>Differenz zwischen der Eintrittstemperatur der Luft in den Luftkühler und der Verdampfungstemperatur.<br>Diferencia entre la temperatura del aire a la entrada y la temperatura de evaporación del refrigerante<br>Разница между температурой воздуха на входе и температурой кипения хладагента<br>Różnica pomiędzy temp. powietrza na wejściu a temp. parowania czynnika chłodniczego |                                                                                             |                                                    |
| <b>R</b>      | Refrigerante<br>Kältemittel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Refrigerant<br>Хладагент                                                                    | Réfrigérant<br>Chłodziwo                           |
| <b>FC</b>     | Fattore di correzione<br>Facteur de correction<br>Factor de corrección                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Correction factor<br>Korrekturfaktor<br>Коэффициент поправки                                | Współczynnik korekcyjny                            |

FC Fattori di correzione della potenza / FC Capacity correction factors / FC Facteurs de correction de la puissance / FC Leistungs-Korrekturfaktoren  
 FC Factor de corrección de la potencia / FC Коэффициент корректировки производительности / FC Współczynniki korekcyjne wydajności



### Selezione

È disponibile un programma di selezione degli apparecchi operante in ambiente Windows (REFRIGER®).

### Selection

A Windows software programme is available for unit selection (REFRIGER®).

### Sélection

Un programme de calcul pour effectuer la sélection des aéro-réfrigérant sous Windows est disponible (REFRIGER®).

### Auswahl

Für die Auslegung der Leistung ist ein Windows Computerprogramm erhältlich (REFRIGER®).

### Selección

Está disponible un programa de selección de equipos operando bajo entorno Windows (REFRIGER®).

### Подбор

Программное обеспечение Windows для оперативного выбора (REFRIGER®).

### Dobór

Dostępny jest program doborowy pracujący w środowisku Windows służący do doboru urządzeń (REFRIGER®).





## FHC 27

### Cubic unit cooler

Pharmaceutical laboratory,  
Uruguay



## FHC 30

### Cubic unit cooler

Fruit warehouse  
Rongis Covered Market, Paris, France



## FHC 50

### Cubic unit coolers

Mushroom cold room  
Shandong, China



## FHD

### Dual discharge unit coolers

Catering facilities  
Birmingham, England



## FHA

### Angled unit coolers

Cheese warehouse  
Parma, Italy



## BMA

### Angled unit cooler

Small cold room for flowers  
Milan, Italy



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[www.luve.it](http://www.luve.it)