

**FRIGA-BOHN**

# V-KING

V-shaped coil axial fan dry cooler  
Industrial range



|||| 50 - 2200 kW



# V-KING | V-shaped coil axial fan dry cooler

- # To best meet the needs of your application, two versions of V-KING are available:
  - **V-KING VC**: combines **compactness** and **high efficiency!**
  - **V-KING VI**: guarantees **low pressure drop** and **high power!**
- # **Adaptability**: more than 4600 possible models to suit your project.
- # Reduced footprint to **save space**.
- # **Optimization of noise levels** depending on the fan chosen.

## CASING

- # Epoxy painted metal structure (RAL 9003) for maximum corrosion resistance.

### OPTIONS

<b>PAV</b>	Anti-vibration pads.
<b>RAL</b>	RAL other than 9003 for the structure.
<b>CC4</b>	Corrosion-protected casing (C4).
<b>CC5</b>	Corrosion-protected casing (C5).

Select your coil treatment to extend your unit cooler's lifespan!  
Contact us.



## COILS

- # Aluminium fins with 1.9 mm (VC) or 2.12 mm (VI) spacing.
- # Combined with staggered copper tubes, the coils are very efficient and compact.
- # High-performance and long-lasting:
  - Non-louvred fins.
  - Superimposed HV/LV circuit (can be selected on request).

### OPTIONS

<b>MCI</b>	Multi-circuits (to be defined according to the project).
<b>VID</b>	Special circuit with gravity drain. <a href="#">CONTACT US</a>
<b>BCB</b>	Flange to flange
<b>VEX</b>	Expansion tank.
<b>AAS</b>	Advanced Adiabatic System: adiabatic spray system. <a href="#">CONTACT US</a>



## VENTILATION

### OPTIONS

<b>IRP</b>	Rotary proximity switch by motor.
<b>ATT</b>	Noise level attenuator.
<b>CLV</b>	Longitudinal partitioning (only on Parallel models).
<b>CTV</b>	Transverse partitioning.
<b>CUV</b>	Unitary partitioning: a partition separating all the modules.
<b>AC MOTORS</b>	
<b>M60</b>	Motor fan 400V/3/60Hz.
<b>MTH</b>	Thermal protection wiring.
<b>C2V</b>	Factory wiring 2 speeds in one electrical box.

### ATT

Noise level attenuator!



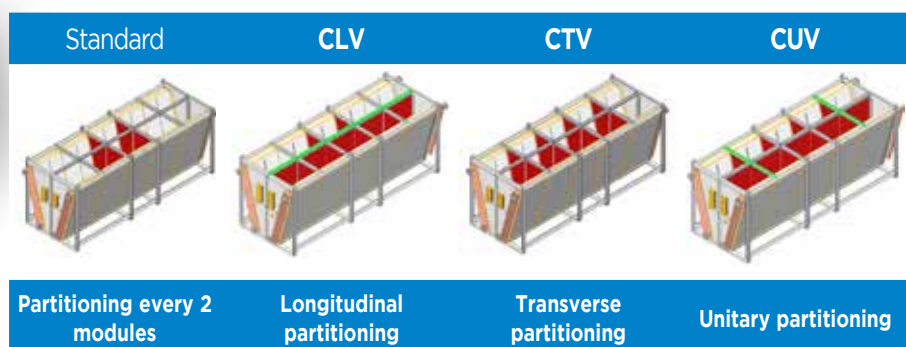
<< as an accessory or integral part of the motor >>



### CLV | CTV | CUV

Fan separations

Option to avoid air intakes when a fan is stopped, in case of multi-circuits and depending on the regulation chosen:



- CTV option recommended with RT1 regulation.
- CLV option recommended with CE2 regulation.

## PRODUCT ADVANTAGES

- # Long-lasting power and easy and efficient maintenance, thanks to a non-louvred fin profile limiting clogging.
- # Wide range of products and combinations (5,500 models):
  - 2 different fin geometries,
  - 2 designs: In-Line or Parallel.
  - 2 module sizes: 1,200 mm or 1,500 mm,
  - numerous ventilation options,
  - devices up to 12 m long,
- # High power for a small footprint.
- # Noise level reduction (EC motors, attenuator, etc.).
- # Reduced electricity consumption (low speed motors or EC motors).
- # Possibility of combined HV/LV circuits:
  - a single product for 2 applications (one low temperature water circuit and one high temperature),
  - a single coil pack to avoid intermediate clogging.
- # Non-louvred fins for easy maintenance (limited clogging).



In-Line V-KING

Parallel V-KING

## TECHNICAL DETAILS OF OPTIONS ON AC MOTORS

AC MOTOR possible options			
WIRING AND BOX	Power	<b>Standard:</b>	<b>Power wiring on terminals</b> (no protection option integrated into this option).
		SCU	<b>Without motor wiring</b> (note that no regulation is possible with this option).
	Protection	CMP	<b>Motor protection box IP54</b> , including one circuit breaker per motor, a fault summary and a main switch. Possibility of floor mounting support kit (MSK).
MSK		Floor support for cabinets above H = 800 x W = 1,000	
REGULATION	Simple cascade on/off	RT1 (including CMP)	<b>Thermostatic regulation</b> in cascade in an IP54 enclosure allowing different regulation stages to be managed: <b>From 1 to 4 regulation stages</b> > possibility of managing 2 circuits. <b>From 4 to 10 regulation stages</b> <ul style="list-style-type: none"> <li>• Configuration of day/night operation possible.</li> <li>• Integrated clock.</li> </ul> 1 or 2 temperature sensors depending on the number of separate circuits present.
	Advanced control by variation	RT3 (including CMP) Variable frequency drive	<b>An IP54 ventilated control cabinet</b> with a variable frequency drive including its fuse protection. A temperature sensor to manage a circuit.

## TECHNICAL DETAILS OF OPTIONS ON EC MOTORS

EC MOTOR possible options			
WIRING AND BOX	Power	<b>Standard:</b>	<b>Power wiring on terminals.</b> The power, fault, bus and control wiring is carried out.
		SCM	<b>Without motor wiring.</b>
		CCE	<b>Power wiring in IP54 box and protection by stage included (in L for each fan and in P for 2 fans).</b> The bus wiring is done.
REGULATION	Simple	SE1 *	<b>Direct control of the motors by customer 0-10 V signal:</b> only one circuit possible (contact us in case of multiple circuits, or 4-20 mA control signal).
		SE3	<b>Automatic speed control by temperature (setpoint can only be changed via a computer):</b> temperature sensor included. Only one circuit possible.
	Advanced control	CE1	<b>Automatic speed control by temperature (setpoint can be changed via the PLC) / 1 circuit:</b> one temperature sensor and only one circuit possible (contact us in case of multiple circuits).
		CE2	<b>Automatic speed control by temperature (setpoint can be changed via the PLC) / 2 circuits:</b> 2 temperature sensors and 2 separate circuits possible (contact us in case of multiple circuits).
		CE3	<b>Automatic speed control by temperature (setpoint can be changed via the PLC) / signal comparison:</b> 2 temperature sensors and signal comparison (contact us in case of multiple circuits).
ADDITIONAL FUNCTIONS	VMA	<b>Maximum speed setting</b> (configuration done on each fan, via a computer). Only with standard or CCE.	
	MJN	<b>Possibility of setting a maximum night speed</b> (clock by signal 0/10). Only with SE1 or CE1.	

\* Default option if no customer choice.



# VC<sup>(A)</sup> H<sup>(B)</sup> PU<sup>(C)</sup> 06<sup>(D)</sup> D<sup>(E)</sup> P<sup>(F)</sup> 10<sup>(G)</sup> A3<sup>(H)</sup>

- (A) **VC** = Fin spacing 1.9 mm - **VI** = Fin spacing 2.12 mm
- (B) **H** = Class H motor (only for version **PU** and **SN**).
- (C) **PN** = Power Normal - **PU** = Power Ultra  
**SN** = Silence Normal - **SE** = Silence Extra - **SU** = Silence Ultra
- (D) Number of poles
- (E) **D** = triangle coupling - **Y** = star coupling
- (F) Fan arrangement: **L** = in-line fans - **P** = parallel fans
- (G) Number of fans
- (H) Type of module

“ Since the performance of V-KING varies considerably depending on the operating conditions, it is therefore not possible for us to present a selection method in this document. For more information, please consult our software. ”

		V-KING - VC / VI				
		POWER				
		PN	PU	PM	H PU	PU motor EC
Maximum air temperature		< 70°C < 75°C < 80°C	< 60°C	< 40°C < 60°C	< 80°C	< 60°C
Diameter		Ø 800	Ø 910	Ø 910	Ø 910	Ø 910
Poles		06P	06P	04P	06P	EC
400V/3/50Hz		✓	✓	✓	✓	✓
Triangle (D)	rpm	880	885	1230	890	250/1195
	dB(A)	82	89	95	85	54/91
Star (Y)	rpm	670	685	900	730	-
	dB(A)	75	81	87	80	-

		V-KING - VC / VI					
		SILENCE					
		SN	H SN	SU	SE	SE motor EC	SU motor EC
Maximum air temperature		< 80°C	< 80°C	< 80°C	< 80°C	< 60°C	< 60°C
Diameter		Ø 800	Ø 910	Ø 800	Ø 800	Ø 800	Ø 800
Poles		08P	08P	12P/16P	12P	EC	EC
400V/3/50Hz		✓	✓	✓	✓	✓	✓
Triangle (D)	rpm	680	650	-	430	250/1020	250/735
	dB(A)	73	75	-	68	49/88	49/78
Star (Y)	rpm	540	480	255/330	-	-	-
	dB(A)	69	68	48/61	-	-	-

## GENERAL

# The freezing point of the refrigerant must always be at least 5K below the minimum winter ambient temperature of the installation site.

## RISK OF FROST

- # A standard dry cooler cannot be completely drained by simply opening the bleed holes.
- # Always perform leak tests with the final refrigerant.
- # For application with water (without antifreeze), and if the ambient temperature can drop below 0 °C, the dry cooler must be properly designed to allow complete draining of the unit (VID option).

## RECOMMENDATIONS

- # Installation according to best industry practice without forgetting:
  - Bleds and drains
  - Expansion tank(s) (VEX option)
  - Flexible sleeves
  - Protection against vibrations
  - Percentage of antifreeze sufficient
  - Electrical protection of motors
- # Connection to a totally closed water loop, eliminating any risk of corrosion by oxygenation.
- # If used with non-ferrous metal water supply lines, protect against corrosion.

