ThermoKey
Heat Exchange Solutions
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TECHNICAL DATA

DRY COOLER (5) JGH2590CD/02Q

Number of circuits **176**

PERFORMANCE (SINGLE UNIT)

Capacity	**957,50** kW

TUBE SIDE

Fluid (10)	**ETHYLENE GLYCOL 35%**		
Inlet Fluid Temp.	**40,0** °C	Outlet Fluid Temp.	**35,0** °C
Fluid flow rate	**180,23** m³/h	Fluid Velocity	**1,4** m/s
Massic Fluid Flow	**186887** kg/h	Pressure drops	**27** kPa

AIR SIDE

Inlet Air Temp [MAX]	**25,0** °C	Outlet Air Temp.	**35,8** °C
Inlet relative hum.	**50,0** %	Outlet relative hum.	**27,0** %
		Altitude	**0** m
		ESP	**0,0** Pa
		Flow Direction	**N/A**
Air Flow	**266245** m³/h	Air Velocity	**3,20** m/s

FANS TECHNICAL DATA

		Fan operative temp. (27)	**-40,0 / 60,0** °C
ERP	**Yes**	UL	**No**
Fan Number	**10** N°	Fan Diameter	**900** mm
Phases-Voltage-Frequency	**3-400-50** N°/Volt/Hz	Fan type	**34050H91ACB2**
Rpm [Nominal data]	**890** Rpm	Link	**Delta**
Power x 1 [Nominal data]	**3600,00** Watt	Current x 1 [Nominal data] (1)	**7,20** A
Rpm [Working point] (26)	**890** Rpm	Rpm rate [working point / nominal]	**100** %
Power x 1 [Working point]	**3600,00** Watt	Current x 1 [Working point] (1)	**7,20** A
Total Power x n° [Working point]/ [Nominal data]	**36000,00/36000,00** Watt	Total Current x n° [Working point]/ [Nominal data]	**72,00/72,00** A
Efficiency Energy Class:nominal calculation Water 40-35°C/Air 25°	**E**	Efficiency Energy Class:calculation on the working point	**E**

FANS NOISE DATA (7)

Sound Pressure Level (4) [Working point]	**70** dB(A)	Sound Power Level (4) [Working point]	**103** dB(A)
At the distance of	**10** m	in accordance with EN 13487/EN ISO 3744 (7)	

HEAT EXCHANGER DATA (3)

Fin Material (2)	**Aluminium Turbo**	Tubes Material	**Copper**
Fin Spacing	**2,1** mm	Internal Volume	**483** dm³
Fin Thickness	**0,1** mm	Casing material	**Galvanized steel painted**
Surface	**2864,0** m²	Number of passes	**2**
Inlet Connection	**4x4"**		
Outlet Connection	**4x4"**	Connections	**Same side**
Max Pressure Design	**10bar G**	Fluid Category	**Group 2**

DIMENSIONS AND WEIGHT (3)

Length	**6740** mm	Weight (3)	**3417** kg
Width (24)	**2400** mm	Number of fixing point	**12**
Height (24)	**2262** mm	LDM (Approximate data)	**6,74** m

SOUND POWER LEVEL

	Tot.	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Δ [dB(A)]	87	54	66	72	81	83	82	79	69

Data refers to one fan. IMPORTANT: the tolerance in any single octave band is +/-5dB. The tolerance in the overall dB(A) level is +/- 2dB.

In case of AC fans working point is defined by fan supplier in nominal curve (delta or star). In case of EC fans is simulated on working point of unit.

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(1) The voltage is referred to the supplier's nominal data: fans consumption may vary with the air temperature and voltage system.

(2) The unit may not be suitable for very corrosive atmosphere. For special applications contact Thermokey. If a special fin material is selected(copper,coating),all the other materials of the unit remain standard(for detailed information please check the Technical description of the unit).

(3) Dimensions and weight are not valid for all possible options! The overall dimensions on the data sheet relate to the units without controls /electrical panels (For more detailed information please refer to the Electrical Box Manual). In the case of horizontal air flow units the standard position of the connections is on the left looking at the finned pack.

(4) Any noise caused by control systems, adiabatic system and so on, is not considered in the fan noise declaration. Actual values can also be subject to changes depending on the conditions of the installation.

(5) The manual consists of 4 parts; IG = General instructions for safe use, IM = Instructions for handling and unpacking, TC = Instructions and technical specifications , IS = Specific use and maintenance instructions. If not expressly requested at the pre-Purchase Order stage, the TC and IS instructions must be downloaded by the user from www.thermokey.com as they will not be provided in paper format.
The installer is required to follow the instructions of the above manuals and of all the main electrical components' manuals (e.g. fans, pumps, regulators).The Ventilated Units produced by ThermoKey S.p.A. are partly completed machinery in compliance with Directive 2006/42/EC

(6) The unit is equipped with fans that follow the efficiency requirements of ERP directive 2009/125/EC

(7) In accordance with EN 13487 the declared sound pressure level for this unit has been calculated in free-field conditions over a reflecting plane with a parallelepiped surface. With reference to ISO 3744, when the difference of measurement of the unit in on and off stage is < = 6 dB (A) , the the sound measurement does not reach the accuracy as required by the Directive. Background noise values lower than 30dB (A) are typical of indoor and silent environments. The declaration of the sound pressure of the unit, stated on the Thermokey data sheets, considers the background noise negligible.

(8) S x x x x : id serial number of the combination of the standand options available on Archimede (listed and described in the ACCESSORIES section) and special on request. The code appears on the order confirmation (as a part of the model code description) and on the data plate of the unit . Note : For each range the available options are listed in the catalogue on the Table Options and Accessories . The register of combinations of options associated with the code S x x x x is available on request .

(9) Delivery time for standard unit is considered ex works. For any special terms and conditions (ex. Large quantities,special items..) please contact Sales dept.

(10) The standard unit is not self-draining: the choice of fluid (water / glycol) is closely related to the freezing point of the same and to the actual operating period of the unit. For a self-draining construction, please contact Thermokey for a special offer.

(12) The dimensioning is made through a simulation of the selection program which does not take into account the influence of the installation conditions.

(13) For the selection of the maximum operating pressure, the pressure related to the condensation temperature (i.e. middle point) is taken into account

(14) For fan units with microchannel cores, it is mandatory to respect the procedures available on ThermoKey website (Indications for the use of Tk micro cores)

(15) Fluid Group related to Directive 2014/68 / CE.

(16) The data on the fan label do not represent the worst absorption conditions.

(17) The declared performances are suitable for HVAC applications with air flow in a free field on both coil and fan sides (e.g. avoid recirculation or any element that reduces airflow) and with uniform inlet temperatures to the coil (e.g. avoid conditions on which adjacent elements cause temperature variations at the unit inlet). For other critical applications (e.g. industrial, power) please contact Thermokey.

(18) Thermokey reserves the right to change the technical data, drawings and prices of the Archimede software at any time and without prior notice. Please refer to the software release and EULA of the software in Section "?".

(19) The Archimede software is based on latest libraries of oils, refrigerants and mixtures of VDI-Wärmeatlas,Refprop and IIR.Data updates may result in different performances of the units than those of previous releases of Archimede.

(20) Pay attention that the overall dimensions and weight of the unit equipped with EPS system, indicated in the technical sheet, refer to the model without electrical part and mounted evaporative panels, for variation of the possible option combinations please refer back to the following indications!
Take into consideration that the evaporative modules mounted on the side of the model protrude of 440mm all together on the width of the model footprint, whereas they do not affect the length and height dimensions of the model, moreover the discharging tubes mounted on the models protrude of extra 320mm all together on the width of the model. Take into consideration that the control panels and connection piping protrude depending on the selected and requested combinations of 400mm from the extremities of the model.
Consider as 60 kilos each module (per fan) the operative weight of the evaporative modules mounted with wet panels. Pay attention that in the case of non optimal maintenance of the discharging drip-trays or of the discharging line, you should consider a possible store of water in the tray and of the sole discharging pipes of EPS system of about 30 kilos per module (per fan). Consider the pre-mounted connection piping of EPS system to water supply network on the model of about 25 kilos per unit. Consider weight of the possible pre-mounted control electrical panel of the EPS system on the model of about 35 kilos per unit.

(21)In case of electric defrosting the external surfaces of the heating elements can exceed 600 °C (with static air of 20 °C). The compliance with EN378 is the responsibility of the designer/ installer, depending on the type of refrigerant.
In case the difference between the refrigerant self-ignition temperature and Hot surface temperature is <100 K, it is mandatory to install devices that allow the unit cooler to work in any condition of use of the installed units.

(22) System design and installation should also, where applicable, follow information presented in accepted industry guides such as the ASHRAE Handbooks. The manufacturer assumes no responsibility for equipment installed in violation of any code or regulation.

(23) When personnel external to Thermokey is lifting units during loading, unloading and installation phases, it is necessary to refer back to the criteria present in the norm UNI EN 13001.

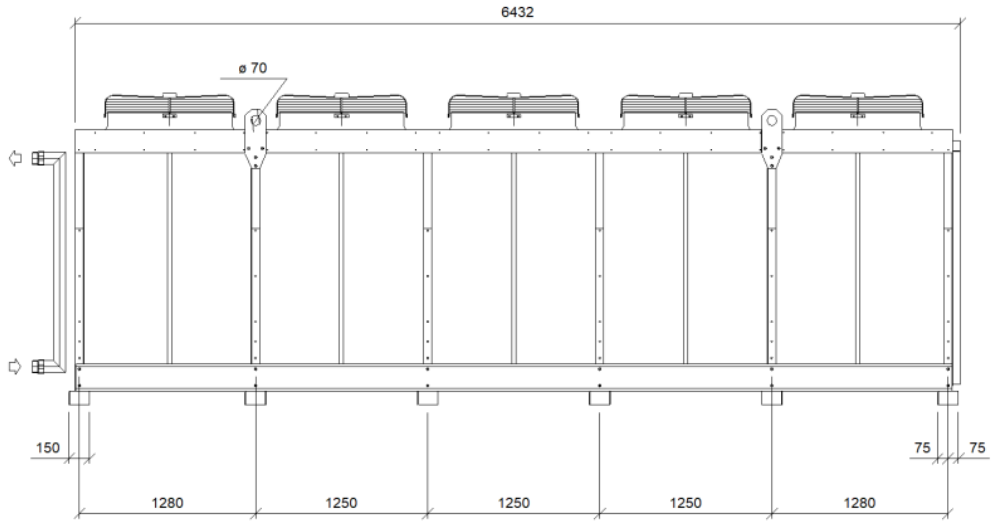
(24) The width of the unit in case of horizontal flow and the height of unit in case of Vertical flow can be influenced by height of fan plate and height of fan motor.The Overall width in Horizontal flow and height in vertical flow are the indicative quote of fan-fanplate in worst condition. Take care that in case of special fans as IEC,Atex,ZAPLUS,Axitop..etc the overall dimensions can be higher.The final unit-drawing of the order can modify indicative values of the selection software.

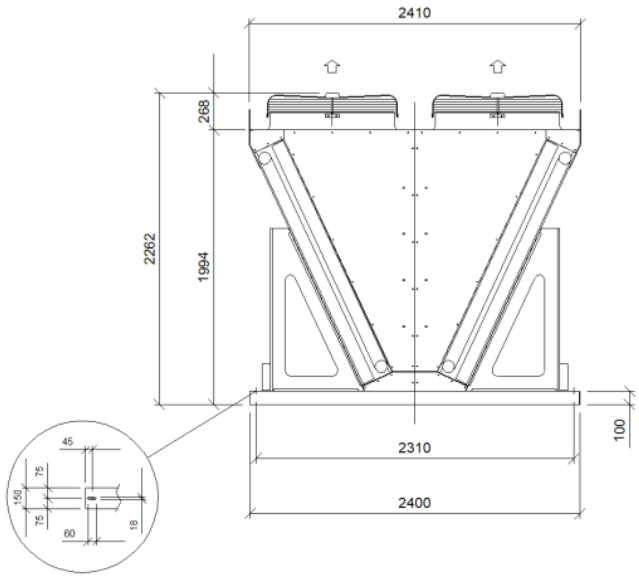
(25) For units equipped with evaporative panels EPS : do not expose the evaporative cooling panel to high temperature or sparks or other sources which may ignite the paper.
Do not grind or weld arround the unit.

(26) - Working points data are theorectical rpm/kW/ampere of fans associated to airflow considered in desing conditions. All absorptions data are referred to supplier nominal conditions of density (typical data are 1,2/1,15 kg/m3 density).

(27) - These are operative air temperatures declared in fan's datasheet: for detailed information please consult operative instruction, manual and datasheets of fan's suppliers.
In order to protect fans for unproper performances and temperature outside the range is obligatory to connect and monitor PTC or PTO or alarms.
Occasional start-up between -40°C and -25°C is permissible.For continuous operation at ambient temperatures below -25°C (e.g. refrigeration applications) we recommend fan version with special low temperature bearings.
To avoid condensation the drive must be continuously energized due to the application of heat, with interruptions such that cooling to the point of condensation does not occur.
If a fan / motor is stationary for long periods in a humid atmosphere, it should be switched ON for minimum of two hours every month to remove any moisture that may have condensed within the motor.

Model: JGH2590CD/02Q





Power supply on the outlet manifold side
El. Panel/box on the outlet manifold side

Attention: Drawing and dimensions not valid for all accessory options!

The overall dimensions on the datasheet refer only to the unit without regulation(For more detailed information refer to Electrical box Manual). In the units with horizontal air flow the standard position of the connections is left looking at the finned pack (right looking at the fans).

CONNECTIONS	
Inlet Connections	4x4"
Outlet Connections	4x4"

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LIQUID COOLERS:

Quality standard ISO 9001
Applied Directives:
2014/68/EU Pressure Equipment Directive (PED)
2014/35/EU Low Voltage Directive (LVD)
2014/30/EU Electromagnetic Compatibility Directive (EMC)
2006/42/EC Machinery Directive (MD)
2011/65/UE Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipments (RoHS)

FINNED PACK HEAT EXCHANGER

Optimised geometries for use with mixtures of water or water-glycol and pure, made with tube and fin materials designed to achieve the best performances. The coil is tested at a pressure of 17 bar. For test purposes all circuits are supplied with vent valves and drain valves.Coverplates and side plates made with customised material and painting depending on heat exchanger application. Fin spacing from 1.8 to 4 mm based on materials/applications (2.1 mm by default). Upon request, the whole finned pack can undergo different types of treatments/coatings depending on the application.

Triangular geometry (42 x 36.4 mm) with backflow air-refrigerant circuits in order to optimise the thermodynamic capacity. Heat exchange tubes in smooth copper (Ø 16 mm - 5/8").

Aluminium louvered fins

CASING

The casing is made of hot-dip galvanised steel elements painted with a RAL 7035 powder coating to ensure excellent resistance to corrosion in the main applications.The units have been designed to be highly modular.The internal construction allows great air distribution using any type of controller thanks to inner partition walls which make each single fan air flow independent.The bends are protected by suitable panels.Components painting is done after any production operation so that protection against corrosion is guaranteed on all parts.All unpainted exposed components are made with materials having a level of resistance to corrosion either equal or superior to that of the painted casing.The casing is in compliance with corrosivity category C4-L (pursuant to standard UNI EN ISO 12944).Upon request, the casing can be manufactured following special painting, RAL and stainless steel specifications depending on the required application.

PACKAGING

Protective film packaging. Upon request, the units can be provided with dedicated packaging for special shipments (e.g. container with dedicated slides, barrier bags, etc.).

FANS

All fan units manufactured by Thermokey are fit with axial type fans featuring a motor with an external rotor directly built-in the axial propeller to create a compact, maintenance-free fan.Optimised efficiency and minimised noise level thanks to the fan blades aerodynamic design.Protective grids in compliance with EN 294.All the fans have to meet the requirements of balance quality grade Q 6.3 as prescribed in DIN ISO 1940.Motor protection class IP54.Windings in thermodynamic capacity class F, pursuant to DIN EN 60 034-1. The noise levels in use are those declared by the fan manufacturer according to DIN24166, precision grade 3, measured according to DIN 45635.The sound pressure level declared for this unit has been calculated in free field conditions on a parallelepiped reflecting reference surface in compliance with standard EN 13487.Upon request, fans with special features can be supplied (voltage, frequency, corrosion category, etc.).

Two-speed AC fans (delta-star), ideal for ongoing control of the speed rotation with the help of a cut phase, step or inverter speed controller. Three-phase motor(s) 400V-3ph+PE-50 Hz. Temperature range between -40.0 °C and 60.0 °C (average value depending on the type of fan and on the fan power supply).Thermal contacts are built in the winding.

HYDRAULIC CONNECTIONS

Copper headers.Male GAS type threaded bevel connections

ACCESSORIES

Q - THREE-PHASE ELECTRICAL PANEL FOR 400V-3-50HZ AC FANS

Description: plastic UV-resistant box, protection class IP55.Electrical cables suitable for outdoor installation (connection of phases and thermal contacts from fans).Working temperatures : -25°C/40 °C.Power supply: 3~ 400V / 50Hz + PE.Main switch.Green warning light to signal system is powered.Transformer 400V/24V for auxiliary contacts.Fuse protector for main power line.Terminal block for connection of controllers R + P + Z + G.Contacts for remote ON/OFF control.Contacts for additional thermostat.Free contacts for fan alarm warning devices.Execution in compliance with CE regulations.Panel mounted and wired.