

EN7533431 - 06

03 - 2024

HELIOATHERME® 4000 ATEX

Instruction manual



CONTENTS

1 - UNPACKING, CHECKING AND STORING THE UNIT	4
2 - HANDLING	4
3 - DESCRIPTION OF THE UNIT	5
4 - INSTALLATION & CONNECTION.....	6
5 - COMMISSIONING	10
6 - MAINTENANCE & SERVICING	11
7 - SPECIAL INFORMATION FOR ATEX AREAS	12
7.1 - General information.....	12
7.2 - Periodic inspections/checks	13
7.3 - Using tools in an explosive atmosphere.....	14
7.4 - Appendix.....	14
8 - FREQUENTLY ASKED QUESTIONS.....	15
9 - TESTING & WARRANTY	15
10 - SAFETY CONSIDERATIONS RELATING TO FINAL SHUT-DOWN	15

1 - UNPACKING, CHECKING AND STORING THE UNIT

Thank you for purchasing a CIAT HELIOTHERME ATEX unit. We trust that you will be completely satisfied with this air heater. To ensure correct operation, all connections (electrical, hydraulic, etc.) must be made in accordance with industry practice and the regulations in force in the country of use.

Your unit must be maintained as recommended in this manual.

The unit is delivered in packages which are labelled for easy identification (type, model, etc.).

Each unit bears a data plate. Include the reference number shown on the data plate in all correspondence.

It is the recipient's duty to inspect the contents of the packages upon receipt :

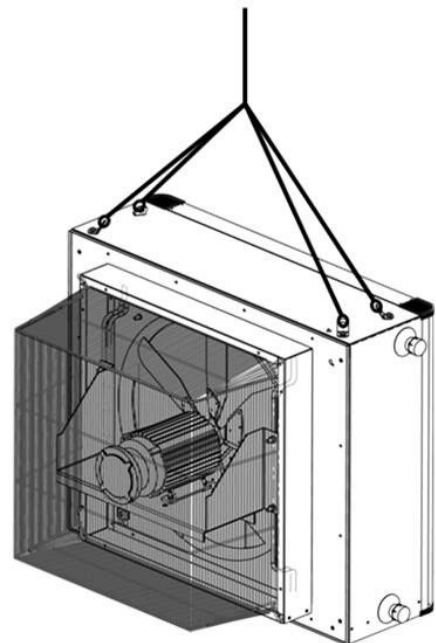
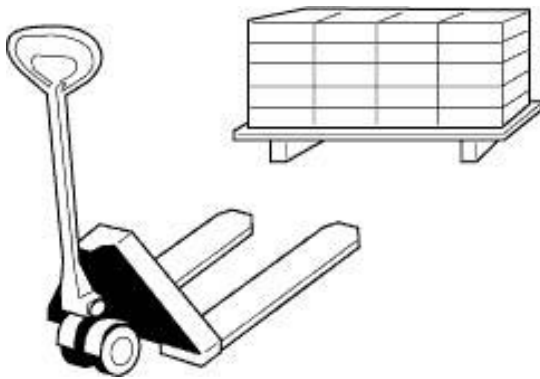
- If any items are missing, report the exact number of packages delivered.
- All damaged or missing items must be reported on the delivery note in the presence of the driver before the delivery note is signed.



In accordance with Article 133 of the French Code of Commerce, these claims must be reported to the carrier by registered letter within three business days of receipt. The terms "conditional" and "pending unwrapping" shall have no value. The client must unwrap the goods in the presence of the driver. Claims must be made at the time of delivery and be described in detail.

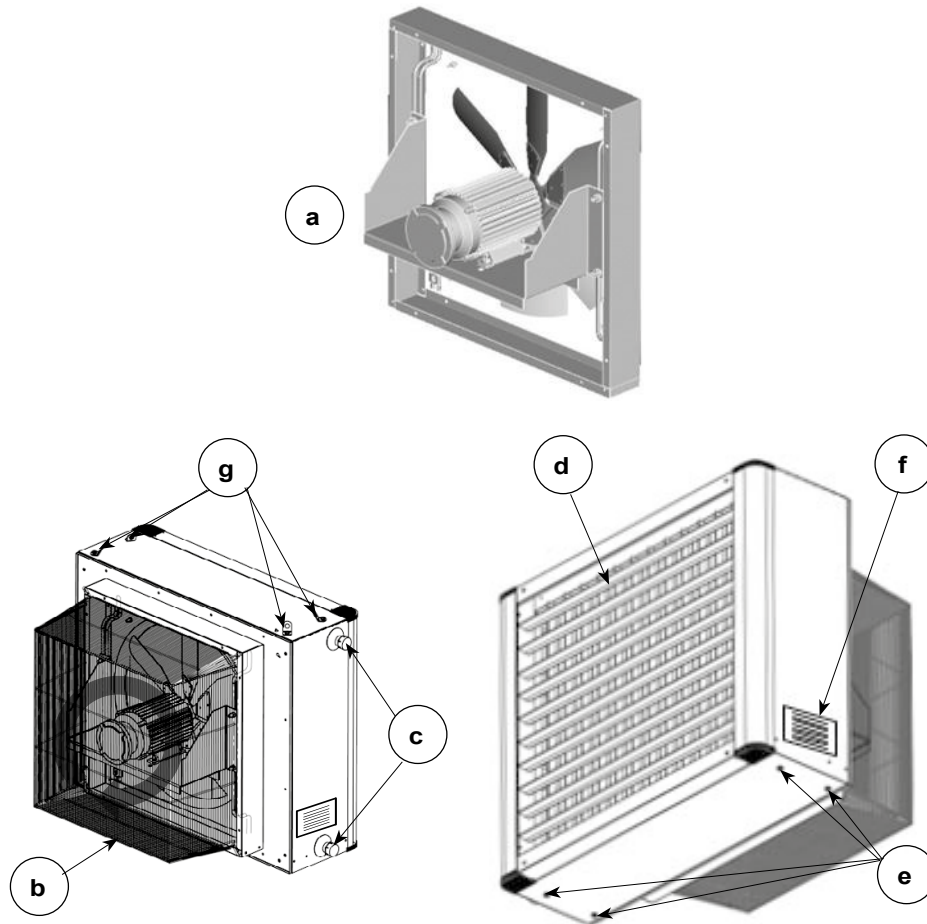
2 - HANDLING

ATEX HELIOTHERMES® are delivered on a film-wrapped pallet. This plastic film must be removed outside of any area subject to ATEX directives in order to eliminate the risk of explosion which could be caused by static electricity generated during unpacking.



3 - DESCRIPTION OF THE UNIT

Other than electrical connection, any operation or modification whatsoever carried out on this assembly will render the ATEX certification null and void.



- a Fan motor assembly
- b Protection cage
- c Hydraulic coil connection
- d JET+ air diffuser
- e Mounting points
- f Data plate
- g Lifting ring

①	Ref. produit/Item Ref.	7219643.114	Designation/Description	HELIO 4500 1R ICT4 2TI ES
②	An\Year N. Serie/Serial Nbr	2012 00089441001	Certification	Repère/Part
③	Moteur/Motor (Ph/Hz/V)	3 50Hz 400V+T	Batterie/Hydro. coil	Fluide
④	P. moteur/Motor P. (W)	180	T. ambiante	-20°C A +40°C
⑤	I. moteur/Motor I. (A)	0.9	T entrée fluide max	180°C
⑥	tr.mn -1/r.p.m.	925	Marquage ATEX 1	II 2G Ex h IICT4 Gb
⑦				EAU SURCHAUFFEE
⑧				Maxi pressure (bar)
⑨				16
⑩				IP
⑪				IP 55
				Marquage ATEX 2

- ① Document reference
- ② Serial number
- ③ Description
- ④ Operating limit
- ⑤ Fluid type
- ⑥ Maximum allowable pressure
- ⑦ Motor rotation speed
- ⑧ Rated motor output
- ⑨ Motor IP
- ⑩ ATEX marking 1
- ⑪ ATEX marking 2

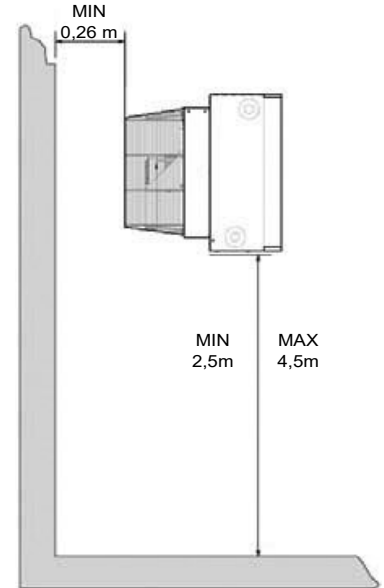
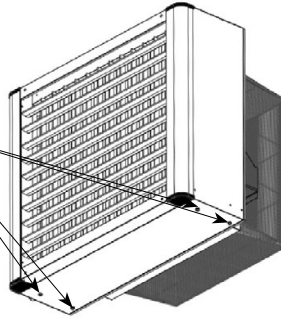
4 - INSTALLATION & CONNECTION



To protect against injury or damage to the unit, work may only be carried out by qualified personnel only

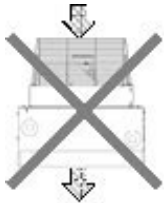
Installation, assembly and mechanical connection

Mounting: M8 screws. Any other mounting method will render the unit's ATEX certification null and void



Pay attention to the support system, in particular sizes 4350 and 4400 --> Risk of tipping backwards caused by the weight of the motor (centre of gravity).

Installation and assembly restrictions for ATEX HELIOTHERMES®



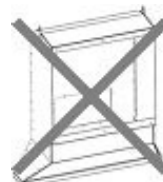
Air blown to ground



Filter box



Outdoor air intake unit



Diffuser on door



Mixing box



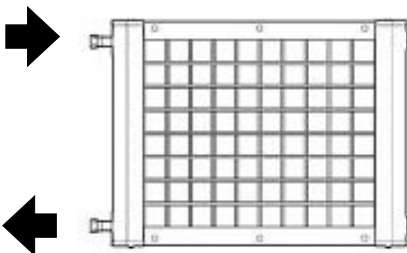
Intake duct



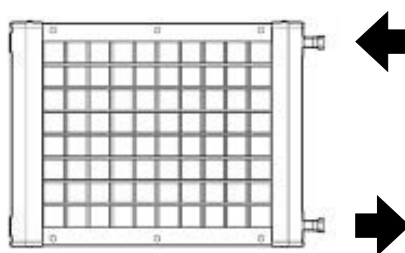
Prohibited on ATEX version. Failure to observe these restrictions will render the unit's ATEX certification null and void

Hydraulic connection (Connection on the left as standard)

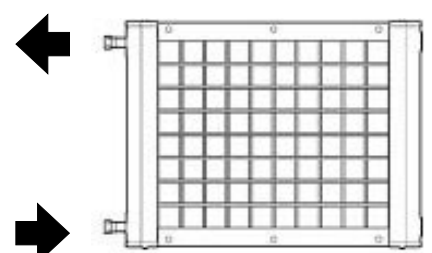
Left-hand connection
heating (GA)



Right-hand connection
heating (DR)

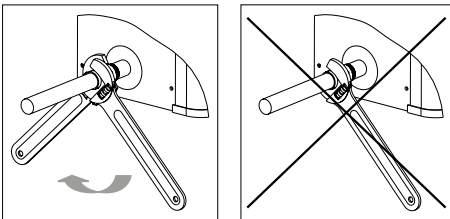
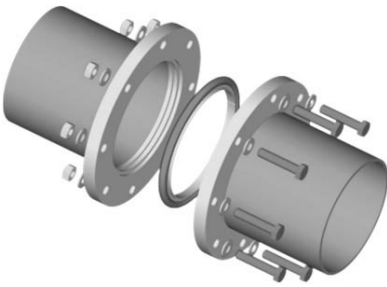
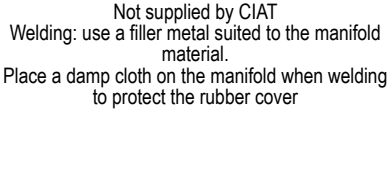


Left-hand connection
cooling (GA)

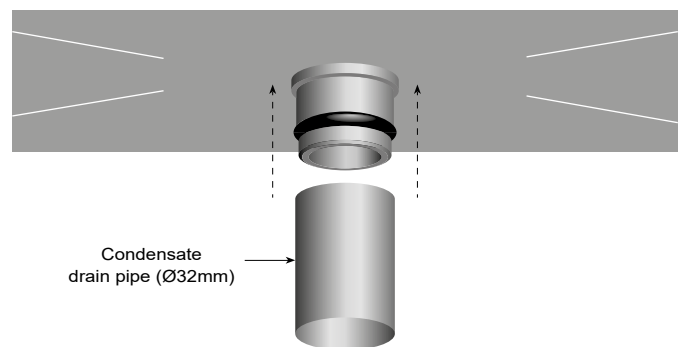
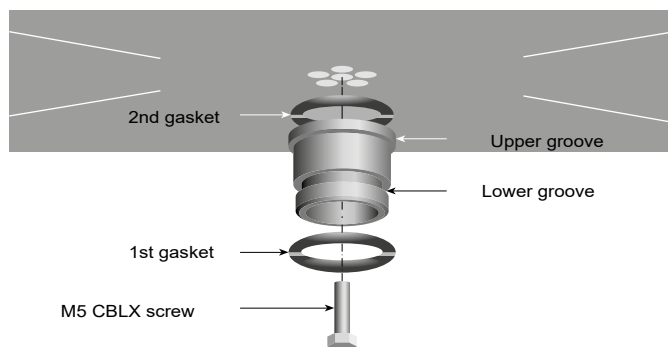


4 - INSTALLATION & CONNECTION

Tightening torque less than 3,5daN.m

		4350		4400		4500		
 <p>Warranty not applicable</p>	LP WATER	Number of heating rows	1	3	1	3	1	3
		Number of cooling rows	3					
		Pipes	Copper Ø 9,52 mm					
		Fins	Embossed aluminium – Pitch 2,1 mm – Thickness 10/100 mm					
		Coil capacity (L)	0,68	1,66	0,96	2,28	2,18	4,55
		Connection diameter	3/4"			1"1/4		
		Connection type	Threaded unions 243 GCU F/M					
		Maximum allowable pressure	13 bars					
		Test pressure	24 bars					
		Max T°	110°C					
 <p>Not supplied by CIAT Welding: use a filler metal suited to the manifold material. Place a damp cloth on the manifold when welding to protect the rubber cover</p>	HP WATER - OIL	Number of heating rows	1	3	1	3	1	3
		Pipes	360L stainless steel Ø 16 mm					
		Fins	Embossed aluminium – Pitch 2,5 mm – Thickness 28,5/100 mm					
		Coil capacity (L)	1,05	3,8	1,56	5,4	4,64	8,7
		connection Ø (mm)	33,7	33,7	42,4	42,4	48,3	42,4
		Connection type	360L stainless steel tube for welding					
		Maximum allowable pressure	16 bars					
		Test pressure	24 bars					
		Max T°	200°C					
			HP VAPOUR	Number of heating rows	1		1	
Pipes	316 L stainless steel Ø 16 mm							
Fins	Embossed aluminium – Pitch 2,5 mm – Thickness 28,5/100 mm							
Coil capacity (L)	1,76			2,02		3,36		
connection Ø (mm)	26,9			33,7		48,3		
Connection type	Smooth 360L stainless steel tube for welding							
Maximum allowable pressure	16 bars							
Test pressure	24 bars							
Max T°	200°C							

Condensate draining connection (only on reversible models)



4 - INSTALLATION & CONNECTION

Hydraulic recommendations

The **design** of a hydraulic network is crucial to the correct operation of the system. Drain valves should therefore be placed at the appropriate points and in sufficient number. In addition, strainers should be fitted, as well as drains at circuit high points, balancing tees on each coil and, if necessary, discharge valves.

Filtration :

An efficient filtration system (recommended efficiency of 0,5 mm) should be fitted on the supply water and return water lines.

Flushing :

The system must be flushed completely and filled with treated water to prevent the build-up of scale or sludge in the circuit. When flushing the system, open the valve on the unit to prevent any sludge or impurities from entering the coil.

Filling

Drain the coils during commissioning.

Electrical connection :

All electrical connections must be performed by qualified, ATEX-approved personnel.

Under no circumstances may the manufacturer be held liable for the performance of these connections, which are outside the scope of its services.

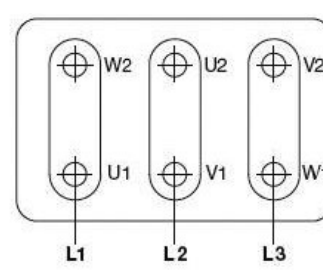
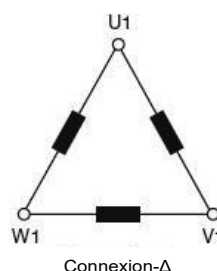
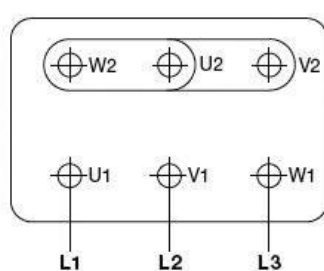
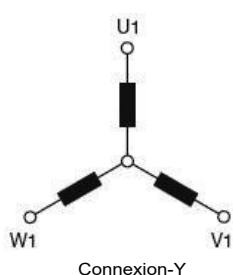
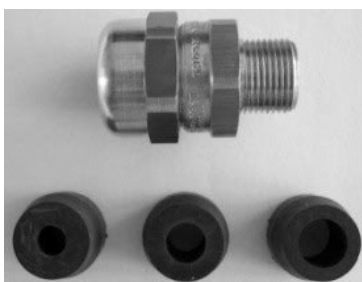
THE UNIT MUST BE CONNECTED TO EARTH.

Product liability can not be held liable for accidents as a connection to incorrect or nonexistent land.

Before connecting the unit to the network, ensure that the voltage matches that indicated on the motor's data plate

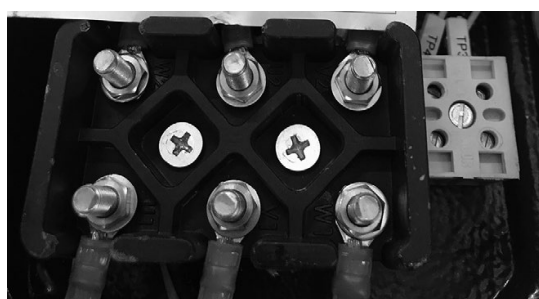
A bag containing an ATEX-certified cable gland is supplied with the unit. Please install this cable gland in accordance with the manual contained in this bag.

The use of any other cable gland will render the HELIOTHERME's® ATEX certification null and void, as will its incorrect installation.



Power supply 3-Ph 400V / 50Hz

Power supply 3-Ph 230V / 50Hz



4 - INSTALLATION & CONNECTION

THREE-PHASE voltage 230/400V – 50Hz		GAS ONLY ENVIRONMENT Z1 & Z2	
		IIC T4	
Heating, cooling or reversible	Motor designation	AC70r 71A 6	
	Rated speed (rpm)	907	
	Rated current (A) (400V)	0,59	
	Id/In	3,45	
	Abs. P (W) (400V)	180	
Shared	IP	55	
	Operating T°C	-20°C / +40°C	
	Class	F	
	Heat Protection Sensor	With Heat Protection sensor (PTC) – See Note) TP3&TP4	

Note : The installer must connect the motor to a correctly sized thermal-magnetic motor circuit breaker (not supplied by the manufacturer).

The motors are equipped as standard with PTC type heat protection. The installer is responsible for connecting this up (TP3 & TP4) correctly for servo-control by a frequency inverter (recommended operating range: 35 to 50 Hz).

5 - COMMISSIONING

Mechanical check

Before switching on the unit:

- Check that the impeller rotates freely by spinning it manually. It must not under any circumstances rub against the casing.
- Check the tightness of the screws mounting the HELIOTHERME on its support.
- Check the general cleanliness of the unit.

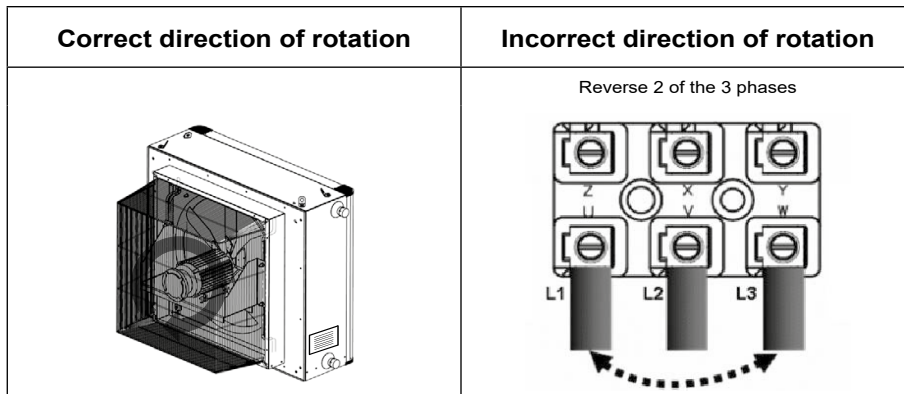
Electrical check

Before switching on the unit:

- Check the calibration of the electrical protection devices
- Check that the network voltage matches that indicated on the motor's data plate.
- Check that the cross section of the power supply cables is compatible with the power indicated on the motor's data plate
- Check that the cross section of the power supply cables is compatible with the cross section of the cable gland
- Check the electrical connection of the unit (Live + Earth) and its servo-control connection to a thermal-magnetic motor circuit breaker.
- Check the motor heat protection connection if there is a servo-control connection to a frequency inverter.
- Check that the terminal box is properly closed.

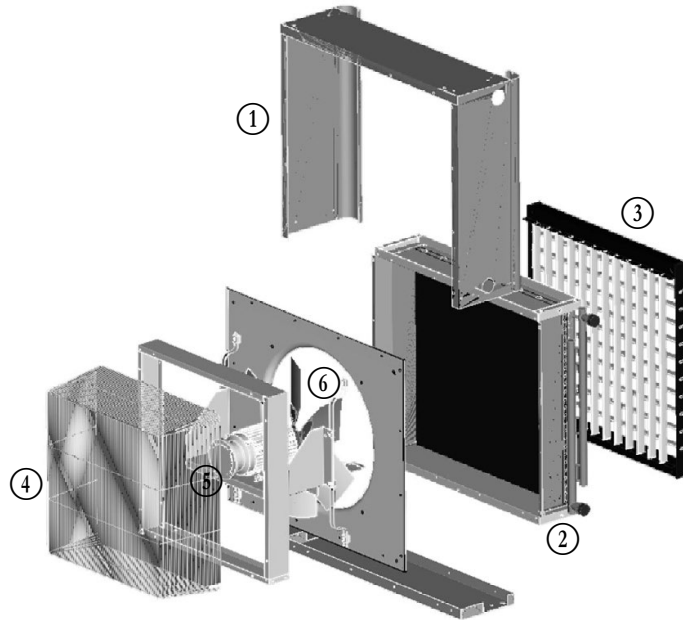
After switching on the unit

- Check the unit's direction of rotation in accordance with the diagram below..
- Check the current absorbed by the motor and compare it with that indicated on its data plate :
 - If this is equal to or less than the current indicated on the unit's data plate, the installation is in good working order.
 - If it is greater than the current indicated on the data plate, stop the motor immediately and check the installation and the connections.
- Check the motor rotation speed. If a variable speed control is installed, this must stay within the range of 70 % -100 % of the motor's rated speed, at all times.



6 - MAINTENANCE & SERVICING

- 1 **Casing**: annual cleaning with a soft, slightly damp cloth + retightening the screws.
- 2 **Hydraulic coil**: annual blasting with compressed air + sealing check + retightening the hydraulic connections.
- 3 **JET+ air diffuser +**: annual cleaning with a soft, slightly damp cloth.
- 4 **Protection cage**: annual cleaning with a brush + retightening the screws.
- 5 **ATEX motor**: annual cleaning of dust deposits with a brush + retightening the electrical connections + check the tightness of the motor mounting bolts on the support bracket.
- 6 **Impeller**: annual cleaning with a soft, slightly damp cloth + check that the impeller rotates freely by spinning it manually. It must not under any circumstances rub against the casing + check the tightness of the impeller mounting bolts on the motor shaft.



Noted: The layer of dust must be no thicker than 5 mm on any section of the device

To be carried out :

- Switched off
- By qualified personnel
- In accordance with applicable ATEX recommendations and those at the installation site.

* or as soon as necessary, particularly in the event of a prolonged period without use of the device so that the layer of dust is no thicker than 5 mm.

Faulty motors must only be replaced by CIAT in the factory on a certified ATEX production line or by ATEX qualified personnel whose qualifications can be proven.

Failure to observe these instructions will render the unit's ATEX certification null and void

7 - SPECIAL INFORMATION FOR ATEX AREAS

In accordance with directive 2014/34/EU (explosive atmospheres)

7.1 - General information

Evaluation of the level of danger of explosion established in accordance with standards EN 13463-1 and EN 1127-1.

The user must classify the various potentially explosive areas in accordance with directive 1999/92/EC.

The units are selected and manufactured according to the type of area defined by the user.

A unit must never be operated under conditions other than those for which it was designed.

Labelling


Each unit is supplied with an ATEX certificate of conformity. The

ATEX labelling is affixed to the data plate as shown below :

E.g. :  II 2/3G Ex h IIB / IIC (or IIB + H₂) T... °C
or TX Gb/Gc (*)

The labelling and the equipment integrated into the unit are adapted according to the conditions defined by the customer in the sheet completed prior to ordering:

Explanation of the labelling :

-  : Standardised ATEX logo
- Group II devices: For surface industries.
- Category of equipment (2 or 3 depending on zone 1 or 2).
- Ex h: Regulatory markings according to standard NF EN ISO 80079-36:2016
- Subdivision of gas group IIA, IIB or IIC.

The IIC labelling is suitable for subdivisions of gas groups I, IIA, IIB and IIC.

For group IIC, in the presence of hydrogen, depending on the labelling of the integrated components, the device labelling may be IIB + H₂.

- TX (indicates the maximum permitted surface temperature) may either:
 - Be replaced in the labelling by the temperature class given in the operating conditions defined by the customer - T1 (450 °C) to T4(135°C).
 - Or state the actual temperature (Preceded by the letter T and followed by the unit °C).
- EPL: ("Explosion Protection Level") G for gas, followed by the level b or c depending on the category of equipment.

System start-up, maintenance

The units must be installed and commissioned by a qualified professional.

All the provisions set out by the current directives and standards must be respected during installation, for example, automatically linking the unit's supply to the presence of a flow rate detected by a sensor.

In all cases, refer to the specific manuals for the ATEX components built into the unit and the specific precautions below:

- Install units so that the room temperature is between -20 and +40 °C.
- Select and install all the electrical connection and control components according to the risk zone in which they will be installed.
- All remote metal components (pipes, etc.) must be grounded, if necessary by grounding cables.
- Heat protection is compulsory for the motor (not supplied). This must be connected by the installer (away from the ATEX area). See Note in the section on electrical connection.
- The installer must use all available devices to ensure that the temperature of the various elements of the installation remains below the autoignition temperature of the gas in question.

Any modification to the unit is prohibited.

Ensure that, during assembly or maintenance operations, no element (tools, screws, components, etc.) are left in the unit, as this could cause a dangerous situation to arise (see section 7.3).

Prior to any maintenance operation, ensure that the unit is powered off.

After each maintenance operation, check that all the removed components have been refitted and secured in their original position.

Ensure that the ground straps are in good condition and reconnected.

Regularly check that the removable parts (e.g. fan motor assembly, impeller) are securely fastened.

Exchanger coils :

The temperature of the fluids circulating in the coils must not exceed the value given on the unit's name plate.

It must be below the surface temperature limit (or temperature class) corresponding to the ATEX atmosphere for which the unit is certified (see labelling)

Electrical connections:

All electrical connections must be performed by qualified, ATEX-approved personnel. Under no circumstances may the manufacturer be held liable for the performance of these connections, which are outside the scope of its services.

Prevention of corrosion :

If any rust appears, sand the corroded surface with an emery cloth, clean, then protect with rustproof, anti-electrostatic paint.

7 - SPECIAL INFORMATION FOR ATEX AREAS

7.2 - Periodic inspections/checks

Unit vibration

DANGERS

- The vibration check detects :
 - Any wear to rotating parts. Any significant discrepancy in the vibration speeds may cause parts to come into contact with each other, which may spark an explosion; it may even cause certain parts to break with the same result.
 - An increase in the vibration speeds may also indicate that there is an accumulation of dust and an imbalance has been created. An accumulation of dust can spark an explosion, by creating areas of contact or by reducing the ignition temperature of the gas.

CHECK

Users must ensure that the vibration levels of the fan remain below the standardised levels, and that there are no deviations in the vibration speed values.

Application category BV3 according to standard ISO 14694.

FREQUENCY OF CHECK

Depending on the use (room temperature, and hourly rate of rotation of the device) and the fluid circulated (from highly charged with particles, to very clean), users must check the vibration speeds so that any discrepancy in the speed levels can be detected.

- The frequency of checks must be as follows:
 - Every 150 hours, or weekly, during the first month of installation.
 - Every 2000 hours, or every 3 months thereafter.

CORRECTIVE ACTIONS

If a deviation in the vibration speed values is noted, the fan must be stopped and the impeller inspected. If dust is found, all the areas affected must be thoroughly cleaned. If the vibration speed level is still compliant with the standardised thresholds, the fan may return to normal operation.

If the alarm level is reached, schedule a 2nd inspection and return to checking every 150 hours, or weekly.

If the maximum standardised vibration thresholds are exceeded, the fan must be stopped, a record must be made, and a 2nd inspection must be performed.

In all cases, a vibration check must be performed after the fan is returned to normal operation.

Checking the ground continuity

DANGERS

- There is a risk of electrostatic discharge.

CHECK

Measure the resistance of the earth continuity when installing the unit, before system start-up. The value of this resistance, which should be less than 2 Ohms, will serve as the reference value for future checks.

7 - SPECIAL INFORMATION FOR ATEX AREAS

7.3 - Using tools in an explosive atmosphere

The operating managers for the installations and processes which include explosive atmospheres must provide all persons working on a site with information relating to using manual tools in complete safety. There are two different types to be taken into consideration:

- Type A: Tools liable to only produce single sparks when used, such as screwdrivers, spanners or impacts wrenches, for example;
- Type B: Tools that generate a plume of sparks, which may be used during grinding or sawing operations.

In zones 1 and 2, only type A tools are permitted; use of type B tools can only be authorised if no dangerous explosive atmosphere is present within the working area.

In zone 1, and in the presence of substances belonging to group IIC (acetylene, carbon disulphide, hydrogen) and hydrogen sulphide, ethylene oxide, carbon monoxide, if there is a risk of explosion due to the presence of these substances, the use of steel tools is prohibited unless it can be assured that no dangerous explosive atmosphere remains in the place of work whilst these tools are being used.

The use of tools in zones 1 and 2 must be subject to the "work permit" system.

All other types of tools or equipment required for maintenance operations (vacuum cleaners, etc) must be compatible with use in the ATEX zone in question. Otherwise, it must be ensured that, prior to and for the duration of any maintenance operation, the place of work is sufficiently ventilated to prevent the presence or formation of an explosive atmosphere.

7.4 - Appendix

Control sheet.

Date	Check or Test performed	Initial values	Number of hours of service	Type of operation	Comments	Approved	Failed
	Vibration speed on the motor bearing, impeller side. (According to standard ISO 14694)						
	Equipotential bonding between the motor and the impeller (properly tightened).	-					
	Equipotential bonding between the user ground and the unit.	-					
	Impeller inspection.	-					
	Motor current check.						
	Room temperature.						
	Accumulation of dust on the fan.	-					
	Ground continuity check. Reference resistance in Ohms						

8 - FREQUENTLY ASKED QUESTIONS

Questions/Problems	Possible causes	Remedies
I can't obtain the stated flow rate.	The impeller is not turning in the correct direction.	See "Commissioning" section
	The coil is fouled	See "Maintenance & Servicing" section
The heating capacity is insufficient	The impeller is not turning in the correct direction.	See "Commissioning" section
	The flow rate (or the water temperature) supplied by the HELIOTHERME is not sufficient	Refer to the thermal, aeraulic and acoustic performance selections made by your design office.
My HELIOTHERME unit is making an unusual noise	Dirt has accumulated on the impeller, throwing it off balance and causing it to make an unbalanced noise.	See "Maintenance & Servicing" section"
	The fan motor assembly is not sufficiently secured to the casing and the assembly vibrates.	See "Maintenance & Servicing" section"
The fan motor assembly is consuming more current than the value indicated on the data plate	The impeller is not turning in the correct direction	See "Commissioning" section
The impeller does not turn at all	The coil is fouled, the motor goes into overheated mode and the motor circuit breaker cuts the electrical supply to it.	See "Commissioning" and "Maintenance & Servicing" sections

9 - TESTING & WARRANTY

All our units are tested and proven before leaving the factory.

They are guaranteed against all defects. CIAT shall not be held liable for any type of corrosion.

The motors are not covered by the warranty in cases of incorrect electrical connection or inadequate protection.

Under no circumstances must the fitter carry out work on the motor. This will invalidate any future claims on the warranty.

The device complies with the CE marking, allowing free movement throughout the territory of the European Union. This marking is a guarantee of security and protection of people.

10 - SAFETY CONSIDERATIONS RELATING TO FINAL SHUT-DOWN

Separate the units from their energy sources, allow them to cool down and then drain completely.

DISMANTLING

Never work on a unit that is still energised.

Respect the local environmental laws and regulations..

Presence of waste electrical and electronic equipment (WEEE): At the end of its life, units must be disassembled, with any contaminated fluids removed by professionals, and then processed via approved channels for waste electrical and electronic equipment (WEEE).

Check whether any part of the unit can be recycled for another purpose.

Sort the components according to their material for recycling or disposal, in accordance with regulations in force.

Materials to be recovered for recycling - Steel - Copper - Brass - Aluminium - Plastics

Any contaminated fluids must be disposed of by specialist professionals.

The quality management system of this product's assembly site has been certified in accordance with the requirements of the ISO 9001 standard (latest current version) after an assessment conducted by an authorized independent third party.

The environmental management system of this product's assembly site has been certified in accordance with the requirements of the ISO 14001 standard (latest current version) after an assessment conducted by an authorized independent third party.

The occupational health and safety management system of this product's assembly site has been certified in accordance with the requirements of the ISO 45001 standard (latest current version) after an assessment conducted by an authorized independent third party.

Please contact your sales representative for more information.

Carrier - Rte de Thil - 01120 Montluel, France.

Manufacturer reserves the right to change any product specifications without notice.

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