



**F400 (400°C/2H)**

**y**  
**F400 + ATEX**  
**CATEGORY 3**



## INSTALLATION AND MAINTENANCE INSTRUCTION MANUAL

- **DIRECT MOTOR AXIAL FANS:** “VHD”...GROUPS HMF-HMFX, HBF-HBFX, and BOX HBF-BOX HBFX (immersed duty)
- **LOW PRESSURE CENTRIFUGAL TRANSMISSION FANS:** “VCBPT”...GROUPS BVF-BVFC (external duty)
- **DIRECT MOTOR MIDDLE AND HIGH PRESSURE CENTRIFUGAL fans:** “VCMAPD”...GROUPS: MBRF and BOXRLF-BOX RLF (immersed); MBC/FA, MBRC/FA, and MRL (exterior)
- **AXIAL OR CENTRIFUGAL ROOF fans:** “VHCDTE”

**DO NOT INSTALL THE fan BEFORE HAVING READ THESE INSTRUCTIONS. SAVE THEM FOR CONSULTATION IN CASE OF FUTURE APPARATUS MAINTENANCE OR MANIPULATION.**

**IMPORTANT F400:**

All F400 fans (400°C/2h) manufactured by CASALS VENTILACIÓN described in this manual are homologated according to norm UNE EN 12101-3/2002 in order to comply with the directive CTE.2006.D.C.B97106CEE (FORMER CPI196), and therefore being especially indicated for emergency services of smoke extraction in case of fire.

The chosen model **can be apt to be installed inside the risk zone (IMMERSED DUTY MODELS with F400 motors).** Or **can be apt just to carry the high temperature gases (EXTERIOR DUTY MODELS) and in this case they must be installed out of the risk zone.** The exterior models are equipped with normal-serial motors and other elements which are not prepared to be immersed in the fire zone.

**THE TYPE OF F400 SERVICE MUST ALWAYS BE VERIFIED IN THE FAN LABEL  
F400- IMMERSED // F400 EXTERIOR DUTY.**

**ALL THE F400 CASALS FANS ARE APT FOR DUAL SERVICE.**

**IMPORTANT F400 + ATEX CATEGORY 3**

The ATEX fans manufactured by CASALS VENTILATION are designed for their use in potentially explosive atmospheres and according to the pertinent official norms. Such fans must be always requested and manufactured specifically for each specific demand. CASALS VENTILATION can supply the most suitable fan model for each risk zone, for gases group function or dust: **GROUP II G CATEGORY 3, and GROUP II D CATEGORY 3. In no case should these fans be neither manufactured nor used in applications for GROUP I category. In no case should these fans be used in atmospheres with presence of gases from GROUP II C (for example Hydrogen).**

**GROUP, CATEGORY, AND TEMPERATURE MUST ALWAYS BE VERIFIED  
SPECIFIED IN THE FAN LABEL.**

**NOTE: THIS FAN IS MANUFACTURED EXPLICITLY TO COMPLY WITH THE F400 or F400 ATEX CATEGORY 3 SECURITY DEMANDS. DO NOT SUBSTITUTE NEITHER MODIFY ANY OF ITS COMPONENTS WITHOUT CASALS VENTILACIÓN PREVIOUS AUTHORIZATION .**

**EC APPROVAL AND ADEQUATE USE OF THE FAN**

All fans manufactured and supplied by CASALS VENTILACIÓN S.L. have been made in accordance with the safety norm (MAQUINAS-MACHINES) 98/37/CE and also according to the safety norm for low voltage materials 73/23/CE, and is extended for each particular range in compliance with other more specifically required norms.

UNE-EN 1127-1	Explosive atmospheres – Explosion prevention and protection – Part 1: Basic concepts and methodology
UNE-EN13463 -1	Non-electrical equipment for potentially explosive atmospheres. - Part 1: Basic method and requirements.
UNE-EN13463-2	Non-electrical equipment for use in potentially explosive atmospheres. Protection by flow restricting enclosure "fr".
UNE-EN13463-5	Non-electrical equipment intended for use in potentially explosive atmospheres. - Part 5: Protection by constructional safety "c".
UNE-EN13463-6	Non-electrical equipment intended for use in potentially explosive atmospheres. - Part 6: Protection by control of ignition sources "b".
UNE-EN 60079-1	Electrical apparatus for explosive gas atmospheres-. Part 1: Flameproof enclosures "d".
UNE-EN 60079-10	Electrical apparatus for explosive gas atmospheres- Part 10: Classification of Hazardous Areas
UNE-EN 60079-14	Electrical apparatus for explosive gas atmospheres- Part 14: Electrical installations in hazardous areas (other than mines)
UNE-EN 60079-15	Electrical apparatus for explosive gas atmospheres- Part 15: Type of protection "n"
ISO 13852	Machine safety. Safety distances in order to impede reaching dangerous zones with the upper limbs
UNE-EN 61241-10	Electrical apparatus for use in the presence of combustible dust – Part 10: Classification of areas where combustible dusts are or may be present.
UNE 100250 (ISO 12499)	Industrial fans. Fans mechanical safety
UNE-EN ISO 12100-1	Machinery safety- Basic concepts, general principles for design-Part 1:Basic terminology , methodology

UNE-EN ISO 12100-2	Machinery safety- Basic concepts, general principles for design-Part 2: Technical principles.
UNE-EN 294:1993	Machine safety. Safety distances in order to impede reaching dangerous zones with the upper limbs
UNE-EN1050	Machine safety. Principios para la evaluación del riesgo
UNE-EN ISO 3744	Acoustics. Principles for risk assessment
ISO 1940-1	Mechanical vibrations. Balancing quality
ISO 10816-1	Mechanical vibrations. Evaluation of the machine vibrations
prEN 14986	Design of fans working in potentially explosive atmospheres

All electric components and different motors types used in ATEX models comply with the necessary security requirements. Other structural modifications have been added in order to avoid sparks that can be produced by rubbing between static and mobile components or by electrostatic discharges. Do not manipulate or modify none of these elements under no concept.

For all of the applications in general where some type of electronic velocity regulation system is needed by the fan, this should be previously consulted and authorized by CASALS VENTILACIÓN and comply with the electromagnetic compatibility norm 89/336/CEE. **The non authorized use of any type of electronic controller with the FAN can be very dangerous and make all security devices useless, not fulfilling the F400 or F400 ATEX CATEGORY 3 requirements.**

**For major safety upon carrying out the maintenance of the fan, CASALS VENTILACIÓN recommends to instal a SAFETY STOP/START SWITCH, appropriate to work in explosive atmospheres and in agreement to Director ATEX 94/4/CE with manual disconnection. They must be also accredited to F400.**

**IMPORTANT: THIS PARTICULAR fan MAY NOT RESULT ADEQUATE FOR THE SAFETY EXIGENCIES OF YOUR INSTALLATION. THEREFORE, PLEASE TO VERIFY THAT THE CHARACTERISTICS SPECIFIED WITH REGARD TO THE APPARATUS COMPLY WITH ALL OF THE APPLICATION REQUIREMENTS BEFORE INSTALLING IT. VERIFY THAT GROUP, CATEGORY, AND CLASS TEMPERATURE SPECIFIED IN THE CHARACTERIC PLATE AGREES WITH THE REQUIRED ONE FOR THE INSTALLATION.**

#### APPLICATIONS

The requirable requirements and characteristics for each fan model are conditioned, in each case, to the norms and regulations of a general, as well as local character to which each particular application may be subject to. Thus, in some of the cases, the selected units of the series may result in not being apt for certain applications, whereby other special characteristics should be added or incorporated. For example **the units destined to be installed in surroundings with fire or explosion risks, should comply with norm ATEX 94/9/CE** and, therefore, be equipped with some of the established protection systems. **The units destined to ventilation systems for emergency services in case of fire should be homologated according to norm UNE EN 12101-3/2002 and comply with the directive D.C.89/106CEE.** Also other habitual characteristics, such as: elevated work temperature, corrosive surroundings, etc. may also require some special variant so as to be able to guarantee correct service.

**THE LABEL OF THE FAN WILL ALWAYS INDICATE IF THE APPARATUS COMPLIES WITH ONE OF THESE SPECIFIC NORMS. IN A CONTRARY CASE, PLEASE CONSULT.**

**The chosen fan model should never be used to convey gas of a different composition or temperature than that specified by CASALS VENTILACIÓN, nor is it designated for working in surrounding with conditions different from the ones specified. IN ATEX FANS THE TEMPERATURE REACHED BY ANY OF THE SURFACES HAS BEEN CALCULATED SO THE PRESENCE OF THE SPECIFIED GASES CANNOT REPRESENT A RISK OF IGNITION. ANY UNSUITABLE USE OR OVERLOAD OF THE FAN CAN REPRESENT A SECURITY RISK.**

#### FAN RECEPTION AND VERIFICATION

**The fans are sent duly packed and their delivery is always carried out for the account and risk of the buyer. Therefore, it is or recommended that, upon receiving the merchandise, this be examined very carefully in order to check that it has not suffered any damage or subtraction during transport. Any resulting claim should be made directly by the buyer to the transport company that made the delivery or to the insurance company as soon as possible.**

#### TRANSPORT AND STORING

The transport companies and intermediate suppliers who have participated in the transport, as well as in the storing of the fan until its final delivery, will be responsible for the damage caused to the apparatus during this period for inadequate transport or storing. They should also make themselves responsible for all the necessary steps so as to attend and solve, with the end client, the damage caused that are not covered in this case by the manufacturer's guarantee.

Through blows or jerks damage may be caused to the more sensitive components of the fan, such as roller bearings, motors, transmission components (only groups VHT, VCBPT, VCMAPT, VCBPT and ranges BVF-BVFC), or the rotating parts "turbines or propellers" (Elements that can even become stuck or deformed and, thus, unbalanced).

During the storing of the apparatus until the moment of its installation, its protection against external agents should be guaranteed. These may be: dust, rain, ultraviolet radiation (direct exposure to the sun) high humidity and the brusque changes of temperature. These noxious agents are the principal causes of precipitated deterioration of the fan, whereby it can be seriously damaged through oxidation of the components or deterioration of its paint.



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It is recommended to always manipulate each fan carefully and in an adequate manner in accordance with the detailed graphic orientations. All fans, depending on their weight and constructive characteristics will be delivered in individual cardboard boxes or on pallets. Furthermore, they may be provided with some bracing points situated adequately in order to anchor them and make displacement with a crane or a pulley.

### **QUALITY CONTROL**

**FUNCTIONING:** Before their delivery, absolutely all fans are submitted to electrical safety and functioning tests. Therefore, if the apparatus has not suffered any damage during its transport and is correctly installed by following these instructions, you can be assured of a correct functioning of the apparatus without any problems.

**BALANCING:** The rotating element "propeller or turbine" of the fan has been dynamically balanced with a residual lack of equilibrium, which does not surpass the tolerances according to the norms ISO1940-1 e ISO10816-1, quality Q 2,5 ó Q 6,3 depending on the models.

Anyway, it is recommended make a verification before installing the apparatus, whereby you should make said element rotate with the hand and check that said element does not scrape or present any blow or deformation due to damage suffered during transport. **Do not install nor turn the fan on should you observe any damage. Before, consult our technical service.**

### **GUARANTEE FOR OUR PRODUCTS**

CASALS VENTILACIÓN will always deliver the model of fan solicited by the client and in accordance with the service or installation requirements to be carried out. Therefore, all of the components used in the selected model will only be apt and adequate to the flow to be conveyed and the functioning conditions indicated by the client on the order.

**IMPORTANT: CASALS VENTILACIÓN declines any responsibility with regard to possible accidents caused through incorrect manipulation of the fan and due to omission or non-compliance of any of the recommendations and safety norms exposed in this manual.**

**WARRANTY PERIOD:** The fans are guaranteed during the period of 1 year as of its purchasing date (always conserve the apparatus' invoice). Said warranty period will extinguish although the fan is not installed or used immediately after its purchase from CASALS VENTILACIÓN.

This guarantee excludes any imperfection, damage or breakdown caused to the fan itself or to third parties affected due to the incorrect or undue use of the apparatus, normal wear, overload or its manipulation by persons not pertaining to CASALS VENTILACIÓN or to its technical service. The obligation assumed through this guarantee is limited to replacement of the parts considered defective after their examination through our specialists.

**Maintenance, possible adjustment modifications and repairs of the fan should always be carried out by duly trained specialists. During the warranty period of the apparatus, the repairs may only be carried out prior to previous authorization on behalf of CASALS VENTILACIÓN and by authorized workshops and personnel. CASALS VENTILACIÓN WILL ALWAYS DECIDE WHERE THE REPAIRS OF THE APPARATUS UNDER WARRANTY WILL BE CARRIED OUT AND THE TRANSPORT COMPANIES TO BE USED FOR THEIR DISPLACEMENT, SHOULD THIS BE NECESSARY. THIS GUARANTEE DOES NOT COVER THE TRANSPORT COST OF SMALL APPARATUS UNTIL THE TECHNICAL SERVICE RECOMMENDS IT.**

**DEVOLUTION OF NON CONFORMITY MATERIAL:** only devolutions of non conformity articles will be accepted with the client's solicitude, due to any type of delivery confusion, change or error, if these are previously accorded with our COMMERCIAL DEPARTMENT or our SALES DELEGATIONS and are accompanied by the duly filled out devolution blank. The transport used should be concerted and agreed upon with CASALS VENTILACIÓN. No devolution will be accepted in our installations without the before mentioned devolution permission.

**DEVOLUTIONS OF NEW MATERIAL:** there will be a charge of 25% for new material devolutions due to an error on behalf of the client in concept of reception and adjusting. The transport costs will be for the charge of the client.

### **INSTALLATION AND FUNCTIONING OF THE fan**

**VERIFY:** In the case of fans to be directly installed on a wall or on a roof, although some support system or additional structure is being used, correct horizontal and vertical leveling of the apparatus should take place. On horizontal bases, said bases will have to be perfectly plain and leveled and must be perfectly set in the case of a concrete base. It should also be verified that all supports are adequate and of a sufficient resistance and rigidity in order to support the weight of the fan, as well as its inertia during the starting phase. In the case of VHCDTE group roof fans, special attention should be paid to conveniently reinforcing the loading point of the fan and care should be given that the roof water tightness is not affected by possible vibrations of the apparatus.

The normal vibrations that the apparatus may cause during its functioning depend in a great measure on the rigidity grade of the structural element where the fan has to be installed.

It is **recommended not to use rubber dampers in the IMMersed fans. In case of dampers being** indispensable to avoid the vibrations and noise propagation, only metal springs should be used. F400 - F400 ATEX Category 3 homologated elastic joints should be used both at inlet and outlet in order to effectively isolate the fan from the ducting. With this system, an effective isolation can be achieved. Special attention must be paid so these isolation elements do not alter the correct fulfillment of the security demands of the installation.

For rigid installations on cement bases or walls that are not correctly aligned, never force the fan structure upon tightening the screws. Before installation, lacking spaces should be completed by using small strips of plates or washers, or filling these with quick drying cement so that a correct support of the fan is guaranteed.

**ONLY FOR TRANSMISSION FANS GROUPS VHT, VCBPT, VCMAPT y VCBPT ranges BVF y BVFC:** The respective motor and transmission axles of the rotating propeller or turbine element should always be completely parallel. Also, the pulleys should be aligned in such a manner so that one does not stand out more than the other obliging the belts to work in a forced manner. This verification may be made by simply using a metal ruler for measuring the minimum length of the center of the axles and by resting one end of the front part of one of the pulleys and at the same time comparing said position with the other pulley. Various apparatus are available on the market so as to carry out said alignment. The voltage of the pulleys should be correct, but never excessive; otherwise the rolling



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bearings may be harmed due to a load excess. **NOTE:** pay special attention to the non sparking parts used on the fan and the accomplishment of the ATEX characteristics.

**ELECTRICAL CONNECTION AND INSTALLATION:** For each fan the wiring diagrams can be found inside the connection box of the motor. **IN ALL ATEX CATEGORY 3 MODELS THE CONNECTION SCHEME HAS TO BE DONE ONLY INSIDE THE MOTOR'S TERMINAL BOX. IN CASE OF INTERMEDIATE CONNECTIONS, APPROPRIATE CONNECTION BOXES THAT COMPLY THE ATEX CATEGORY 3 REQUIREMENTS OF THE RISK ZONES MUST BE USED. PLEASE READ CAREFULLY THE INSTRUCTION MANUAL FOR F400 OR F400 ATEX CATEGORY 3. IT IS IMPORTANT THAT POWER SUPPLY LINES AND OTHER COMPONENTS USED IN THE INSTALLATION COMPLY WITH THE DIRECTIVE ATEX CATEGORY 3 AS WELL AS WITH REGULATIONS IN FORCE ON INDUSTRIAL INSTALLATIONS ("Low voltage electrical regulation") and therefore protection systems that are adequate to the voltage of the apparatus will be used (motor protection system, differential protection, line limitator and grounding).** For motors superior to 7,5 CV (5,5 Kw) it is recommended to carry out timed or electrically controlled start-ups in order to avoid excessive consumption points and to obtain more gentle start-ups. Some of the fan models equipped with very heavy turbines (groups VCMAPD), and more concretely, the largest models of MBRF and BOX RLF groups, require quite prolonged start-up times. For example, groups VCMSPD and VCMAPT, and more concretely, for its ranges AA y MB P/R require quite prolonged start-up times. In these cases, the use of a controlled start-up is obligatory. In the case of other models pertaining to the same groups of middle and high voltage centrifugal fans, it will be sufficient to use a regulation shutter or valve, which should be completely closed during the fan's start-up to reduce consumption.

**The electric junction in IMMersed FANS should be performed directly to the motor's terminal box avoiding interruptions which they cannot guarantee their resistance and reliability during a service to 400°C for 2 hours. The cable or cables utilized should be protected properly avoiding that they can result damaged by the remainder fan's structural components or their backups, and they should comply with the pertinent homologation to F400. IN CASE OF INTERMEDIATE CONNECTIONS, BOXES THAT COMPLY WITH F400 OR F400 ATEX CATEGORY 3 DEMANDS MUST BE USED (READ THOROUGHLY THE F400 OR F400 ATEX CATEGORY 3 MOTOR MANUAL INSTRUCTIONS). THEY ARE NOT APT FOR THIS FUNCTION THE CATALOGUED CABLES AS "RESISTANCE TO THE FLAME" WHICH DON'T GUARANTEE A F400 SERVICE. CASALS VENTILACIÓN RECOMMENDS OMERIN MAKE VS CABLES WHICH HAVE BEEN PROPERLY TESTED WITH OUR FANS.**

**ALL FANS WIRING ELEMENTS AND COMPONENTS, SHOULD BE SELECTED AND INSTALLED CORRECTLY IN ORDER TO COMPLY THE F400 AND F400 ATEX CATEGORY 3 NORMS. SPECIAL ATTENTION MUST BE PAID SO ALL METALLIC STRUCTURAL PARTS REMAIN CORRECTLY CONNECTED TO GROUND. THUS AVOIDING THAT ANY ELEMENT REMAINS ELECTRICALLY LOADED AND AVOIDING THE RISK OF ELECTROSTATIC DISCHARGES.**

*In all indicated models, the connection should always be done using thermal protection that incorporates the motor (SEE THE SECTION ABOUT MAINTENANCE OF THE FAN)*

**VOLTAGE AND FREQUENCY:** Read thoroughly the **F400 OR F400 ATEX CATEGORY 3 motor manual instructions.** The motor power supply should be made in accordance with the voltage and frequency indicated on the plaque of the fan. Variations of  $\pm 5\%$  in the electrical network with regard to the nominal voltage indicated are permitted. If the connection used cannot maintain this level, there is danger of burning out the motor. Therefore, assure yourself that the selected Y- $\Delta$  disposition in the motor corresponds to the network voltage and frequency through a tester.

**CONSUMPTION:** Once the fan is installed in the foreseen working conditions that do not surpass those indicated on the plaque, control the consumption in (A). The fan's capacity and the installation load should be correctly adjusted (SEE THE SECTION FUNCTIONING). In case of non compliance, consult the manufacturer.

**GROUNDING:** Since the fan is a **Class I** machine according to the norm in force, it is obligatory to correctly carry out the connection of the grounding through the thus foreseen socket, which can be found inside the motor or fan terminals casing. Once said connection has been carried out, it is recommended that the resistance between the exterior conductor and the fan casing should not be superior to 0,1 $\Omega$ .

**ENVIRONMENTAL CONDITIONS:** Very important: for normal service (not emergency), never exceed the specified maximum gases continuous temperature specified in all models. This is specially important in ATEX CATEGORY 3 MODELS. Temperature of the fluid itself should never exceed 60°C. In case of high pressure fans, heating of the gas inside the fan due to compression shall also be considered and verified by calculation. Verify first that the fan is labeled with the correct temperature class "T1 to T6". Verify in the motor plate that the same temperature class or higher is specified. All motors for external F400 fans supplied by Casals are normally CLASS F. For IMMersed F400 the motor is normally CLASS H. However, there may be exceptions. In the EXTERNAL models and also in the IMMersed (during normal service of DUAL application), but independently of the motor's thermal class, it is recommended not to surpass an air temperature of 40°C and to keep the humidity inferior to 60% in the cooling surroundings of the motor so as to guarantee a correct refrigeration of the motor and, at the same time, prolong its duration. The maximum air temperature to be conveyed working on a continuous service basis is from 40°C a 55°C for the models that have the motor inside the air flow and about 110°C for the models with the motor outside the air flow (some models equipped with refrigeration head runners in the motor axes may also work at more elevated temperatures). In ATEX applications, consult the carried gases temperature's limit in order to avoid ignition risk. In each case it is recommended to consult the information in the technical catalog where the particular characteristics of each fan range and model in a detailed manner. For other more severe applications, some special characteristics may be applied. Always consult the technical sheet for each particular fan and for more information directly contact the manufacturer.

**ROTATION DIRECTION:** The same as the one indicated by the arrow situated on the fan's casing. To invert the three-phase rotation of a one or two velocity motor, interchange the two phases among themselves. In the case of mono-phase motors, this can be changed only by some of the models. Consult the diagrams in each case.



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**SOUND LEVEL:** Depending on the model of the fan, its voltage, size and revolutions, this may oscillate between 37 and 100 dB (A). The sound level corresponding to each concrete model is specified in its technical sheet. If the fan needed does not comply with the limitations of the maximum noise level allowed where it has to be installed, other alternative solutions should be searched for in order to reduce this sound level through the application of silencers, barriers or soundproofing cases.

**CONNECTION TO DUCT INSTALLATIONS:** In the cases where the fan is connected to a duct network for air distribution, the aspiration and impulsion ducts should be correspondingly connected to the corresponding fan nozzle using the adaptation flanges foreseen by the manufacturer. It is recommended that together with said flanges elastic gaskets should be used whenever possible (both accessories should be solicited separately from the fan, also should be F400 homologated and comply with ATEX specifications). Furthermore, in the case of centrifugal fans, groups VCMAPD and VCMAPT, it is recommended to also use the adequate elastic dampers SEE THE SECTION "INSTALLATION AND FUNCTIONING OF THE FAN". Should they be connected directly, they should always be situated correctly so that no harmful forcing or tension appears for the fan. In no case should the duct network lean its weight on the fan. These should dispose of their own means of support. It is also recommended to leave a duct element that can be dismantled on both sides in order to make an access available to the fan's nozzles and in such a manner so that there is enough space once the adaptation flanges are taken off this permits a worker to accede to the inside part of the apparatus without any problem. In the case of axial fans VHD and VHT, reductions in the conducts should not be applied, whereby at least the nominal diameter of the fan should be maintained.

**PROTECTION AGAINST INVOLUNTARY ACCIDENTS:** *For all of the fan models, CASALS VENTILACIÓN disposes of protection for the rotating body (propeller or turbine) according to UNE EN 294. The installer or final user should solicit and install the necessary protection elements in order to protect the accesses to the interior part of the fans that remain open and accessible due to not being within a duct. IMPORTANT: The turbine or propeller may not be visible when it is rotating in deficient illuminative conditions.*

**IP20 PROTECTION FOR AIR INLETS AND OULETS OF THE FAN:** In ATEX applications it is requested an IP20 protection. In case of a ducted installation, the installer is responsible of assuring such protection. In case of a free inlet or outlet installation, the final user has to assure that the suitable protection guard (accessory) for the fan is mounted.

**START UP:** Once all of the previous verifications have been carried out, the starting up of the fan can be carried out. But before proceeding to the first starting-ups, it is recommended to again verify, either directly or through inspection registrations of the apparatus, that there is no friction of any of the rotating elements, because some installation element might have forced or deformed the fan. Also inspect to see that neither foreign bodies nor material proceeding from the installation of the fan in the ducts are present. The first start-up should be of a short duration and only to verify that the rotating direction is correct according to the indications and in order to listen if any strange or friction noises are present in the inside part. In the case of presenting an incorrect rotation, you should proceed to carry out the connection changes according to what is previously indicated. During the second start-up, the fan should be allowed to completely reach its nominal velocity once the controlled start-up maneuver, should this exist, has finalized. If regulation shutters are used, these should be opened so that the fan adapts itself to the required installation conditions.

**IMPORTANT: AT THIS VERY MOMENT IS WHEN A STRICT REAL CONSUMPTION CONTROL OF THE APPARATUS SHOULD BE CARRIED OUT THROUGH THE AMPEROMETRIC CLIP AND TAKING CARE NOT TO SURPASS THE NOMINAL CONSUMPTION "In" INDICATED ON THE WORK VOLTAGE PLAQUE THAT IS BEING USED. IN CASE OF SURPASSING SAID CONSUMPTION, STOP THE APPARATUS IMMEDIATELY.**

An excessive consumption may be due to a possible failure of the motor, friction of some element or an error committed in the electrical connection, **but in the majority of cases, this will be due to a deficient adaptation of the installation because of an excessive or defective load.** If it is a matter of an axial fan, groups VHD and VHT, it is more than likely that some element that excessively closes the air pass has been installed. On the contrary, if the problem appears in a centrifugal fan, groups VCBPD, VCBPT, VCMAPD and VCMAPT, the air pass should be closed more through the regulation shutter, if this exists, or by adding some kind of metal strip that closes part of the discharge or aspiration duct of the fan. **IMPORTANT: do not mount any part directly on the fan, since it could alter the fan's non sparking characteristics.** In this latter case, you should above all assure yourself of not using badly anchored elements, which could be sucked into the fan once it is turned on. Once the installation has been readjusted, again verify that the consumption is the adequate one. After having achieved this adjustment, the fan can then function without any problems.

### **FAN MAINTENANCE GENERAL CARE**

It is recommended to carry out a complete revision of the fan and its installation once 24 hours of functioning have passed,, **disconnecting it from the electrical network in order to avoid possible accidents. WE RECOMMEND TO USE F400 HOMOLOGATED/ F400 + ATEX CATEGORY 3 SAFETY SWITCHES for this service.** Make sure that no element has come loose, and especially in the case of the transmission groups VHT and VCBPT completely retightening all of the elements: pulleys, belt tensors, motor supports and axles, etc. Also verify the condition of the motor or transmission bearings by turning the propeller or turbine by hand. Should any anomaly or noise be noticed, consult with the manufacturer.

- **In the case of installations where the fan is normally switched off, make periodic inspections at least every 6 months.** Verifying that the condition of all of the fan's components maintain the correct initial state and not noticing, in any case, signs of bearings sticking or making noise. It is also recommended to carry out a complete start-up, leaving the fan functioning during one hour.
- In dual and only emergency applications: In **BVF and BVFC fans** group bearings should **be replaced each 16.000 h in operation.** **For other EXTERNAL models with direct motor it is advised to replace the motor every 16.000h** of operation.
- In dual and only emergency applications where **IMMERSED models equipped with F400 motors are used, the bearings should be replaced at most every 8.500 h** of operation. However, it is advised to replace the motor completely (READ



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THOROUGHLY THE MOTOR MANUFACTURER INSTRUCTIONS). Never use radial tolerance bearings or conventional greases that are not specified by the motor manufacturer.

- **THE F400 OR F400 ATEX CATEGORY 3 MOTORS USED FOR REPLACEMENT IN HOMOLOGATED FANS MUST BE AUTHORIZED BY CASALS VENTILATION. EVEN IF THE REPLACED MOTOR HAS ITS OWN HOMOLOGATION, IT MIGHT HAVE NO VALIDITY WITH THIS PARTICULAR FAN HOMOLOGATION.**
- **THE FAN THAT HAVE BEEN SUBMITTED TO A EMERGENCY SERVICE IN CASE OF FIRE CANNOT BE REPAIRED. IT MUST BE SUBSTITUTED BY ANOTHER COMPLETELY NEW UNIT WITH THE SAME CHARACTERISTICS AND HOMOLOGATED TO F400 OR F400 ATEX CATEGORY 3.**

**IMPORTANT: Some models have a thermal protector incorporated, which can temporarily detain the functioning of the motor. Therefore, never manipulate the apparatus before disconnecting it from the electrical network In the case of three-phase models, said protection activates the maneuver circuit on an electrical installation contactor.**

**CONSIDERATIONS DURING THE REVISION:** Points to be taken into account during the revision so as to guarantee a correct functioning of the fan:

- 1.- The functioning of the fan has to be gentle and free of vibrations.
- 2.- The consumption in amperes "Ia(A)" measured through an ammeter or multimeter should never surpass the nominal consumption "In(A)" specified on the motor plaque.
- 3.- it has to be verified that all of the elements joined through screws have not come untightened. In the case of transmission fans, groups VHT, VCBPT and VCMAPT, revise the pulleys, tensioning and condition of the belts. The belts should function with regularity and without jolts, they usually dilate as time goes by and especially during the first weeks of functioning, due to which it is of absolute necessity to readjust them taking care that the gear shifts maintain their alignment once the operation has finalized. In the case of transmission with more than one belt, the entire set will always be replaced. Never mix new belts with already used belts. **USE ALWAYS ANTISTATIC BELTS IN ATEX MODELS.**
- 4.- In the case of applications where fans convey gases with a high content of dust or grease, these may become adhered to the propellers in an unequal manner, due to which this may result in a lack of equilibrium of the turbine or propeller with the consequent deterioration of the bearings. **IN ORDER TO PRESERVE THE GOOD REFRIGERATION AND OPERATION OF THE MOTOR, ALWAYS PREVENT THE ACCUMULATION OF DUST ON ITS SURFACE.** Therefore, periodical cleaning of the rotating body should take place, whereby the installation pauses should be taken advantage of, and every time the fan presents light vibration signs and incorrect functioning. Never leave the loose dust inside the fan.
- 5.- In the case of other applications where abrasive dust accumulations exist, the result may be wear of the propeller, as well as in the case of centrifugal fans used in material transport, groups VCMAPD or VCMAPT (turbines with straight blades. These should be replaced in case of lack of equilibrium due to wear.
- 6.- In the case of fans that have been switched off or stored during a period of two or more years, it is recommended to carry out a complete revision of the ball bearings. Before starting up the fan, the replacement of the ball bearings should take place if you notice that they have been affected by oxidation or by dried out grease in bad condition.

**CLEANING: Attention, maintenance and correct cleaning of all the installation's components will be carried out periodically by the persons responsible for the installation. Whenever possible, the accumulation of dirt, dust, grease, etc. should be avoided, since this is the principal cause of fire and its propagations.**

**GREASING:** The greasing instructions for different elements of the fan should be clearly distinguished:

- 1.- Generally, the electric motor bearing do not need maintenance; notwithstanding, it is recommended not to surpass the limit of hours established and indicated in the manufacturer's manual of the motor (15.000 a 20.000h according to the brand and the case given replace them).
- 2.- The transmission groups of the axial ranges HH and HHp and the bearings used in the centrifugal range BV also do not need greasing, but should be replaced every 10.000 a 15.000h in function of the temperate and humidity conditions of the air to be conveyed.
- 3.-The self-aligning bearing supports type used in the groups VCBPT and VCMAPT and especially in the case of the more reinforced models, dispose of external greasers, or, should these not be present, are prepared for their installation. In these cases said bearings also do not need maintenance since it is matter of sealed bearings, but if the work conditions are very extreme, their duration can be prolonged by greasing them every 500 to 1000 hours of functioning. It is very important not to ever mix grease of different viscosity and chemical composition.

# CE DECLARACIÓN DE CONFORMIDAD

Declaramos bajo nuestra única responsabilidad que los productos marca CASALS descritos en este manual están en conformidad con las normas o documentos normalizados siguientes: 2006/42/CE, 2006/95/CE y 94/9/CE. Esta declaración se ajusta también a la disposición del anexo ZA de la norma europea EN 12101-3 y también con todas las normas citadas en este manual.

# CE DECLARATION OF CONFORMITY

We hereby declare, under our only responsibility, that the CASALS brand products described in this manual comply with the directives 2006/42/CE, 2006/95/CE and 94/9/CE. This declaration is also in line with the provision Annex ZA of European Standard EN 12101-3 and also with all the standards mentioned in this manual.

*Descripción del producto: esta declaración de conformidad es específica para ventiladores extractores de humos y calor mecánicos para obras. Ventiladores con resistencia al fuego clase F400 (400°C/2h)*

*Product description: this declaration of conformity is specific for powered smoke and heat exhaust fans for use in construction Works. Fans with resistance to Fire Class F400 (400°C/ 2h)*



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Pegar la etiqueta  
del ventilador aquí

St. Joan de les Abadesses, 19/09/08



Sr. Rafael Calvo  
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