

Documentation
product/s delivered



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USE AND MAINTENANCE MANUAL

EVAPORATORS Ref: E591-750120

Ref Client: 750120

The refrigeration equipment that you have just acquired is the product of the technical development achieved by our firm thanks to the support and trust given by customers like you. With these words, we would like to thank you for your confidence in our brand and we hope and wish that the cooling system will fully satisfy you, and that it will do so for many years.

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1. INTRODUCTION

First of all, bear in mind that everything in the following pages is advice aimed at achieving the primary objective which is safety in the use of cooling equipment for users and their surroundings. Maintenance instructions are also given to achieve a longer duration of the machine's reliability as well as doing a more efficient and comfortable job.

That is why we urge you to read this manual that will provide useful tips for use and maintenance. Keep in mind that it is a must read for the person who is going to use the cooling equipment.



READING THE MANUAL IS ABSOLUTELY COMPULSORY BEFORE USING THE COOLING SYSTEM.

If you have any questions during the reading of the manual or during the use of the machine, do not hesitate to contact SEREVA S.A. or its distributors.

This instruction manual must be considered an integral part of the machine and must accompany it if it is sold. Therefore, it is advisable to look after it carefully.

This machine should only be handled, maintained or repaired by specialist persons, with the necessary training, who are aware of the peculiarities and risks involved and who are familiar with the safety regulations in this regard (accident prevention). **The manufacturer is not responsible for the consequences arising from modifications carried out on the machine without its prior authorization and expressed in writing.**

Any safety risk arising from the equipment must be re-evaluated once installed on the final equipment. Keep in mind the following when working on the equipment: Do not carry out any modification, extension or transformation on the equipment without the authorization of SEREVA.



SEREVA, S.A. is not responsible for the consequences arising from improper use. In these cases, users do so at their own risk. The correct use according to the characteristics of the machine implies, also, the strict observation of all the manufacturer's instructions in terms of handling, maintenance and repair.

2. MACHINE FEATURES

2.1. GENERAL DESCRIPTION

The static heat exchangers, object of the present study, are quasi machines that have been designed for refrigeration and to be assembled together with other components and machines to make up a complete cooling system.

The components of the static evaporators and / or condensers are made of copper in the case of tubes and aluminum in the case of fins. The rest of the elements, such as the housing and the support elements can be made of steel, stainless steel or aluminum.

The evaporators and the static condensers are designed to facilitate the exchange of temperature between the coolant circulating inside their pipes (when assembled to a complete cooling system) and the environment. As a result of the temperature exchange, the coolant evaporates or condenses.

3. MACHINE SAFETY

3.1. GENERAL SAFETY NORMS

When using machinery, always be aware that they have moving parts and high-pressure circuits or parts with electrical current that can cause very serious physical and material damage. Every user who makes use of the cooling equipment must take into account the following general safety rules:

- Before starting the machine, carefully read this Use and Maintenance Manual. Make sure that it has been read by those who use or interact with the machine.
- Pay close attention to all sections of the manual, especially those where emphasis is given by warning pictograms. Lack of attention is a frequent cause of accidents.
- This machine is designed to facilitate the exchange of temperature between the coolant and the surroundings. Any other use other than that purpose or a non-conforming use, is a serious breach of security laws, and as such the manufacturer will not be responsible for any damages or losses arising from it.
- The refrigeration equipment should only be handled by trained personnel who have also read this manual; prevent other people from operating the machine.
- Before using the machine, you should familiarize yourself with all the controls of the cooling system to which it has been attached. While you are using it, is too late.
- Make sure that there are no people nearby during the unloading, assembly and installation of the machine who are not aware of the possible risks that may be caused.
- Wear clothing which is not too loose fitting, proper shoes and gloves when interacting with the machine.
- Never perform, for any reason, repair or maintenance operations when the cooling system is working, the power supply system must be disconnected.
- Carefully read the rules and regulations indicated in the pictograms of the machine. Make sure that these pictograms are in good condition and legible.
- Do not force the controls of the refrigeration system or the working capacity of the evaporator.
- Carry out the assembly and maintenance of the evaporator according to this Use and Maintenance Manual.
- Do not wait for the breakage of any part of the evaporator-condenser or cooling system to proceed with its repair / replacement. If you have questions about any type of repair, contact SEREVA, S.A.
- Clean the machine periodically as indicated to prevent the parts from deteriorating more than expected and put pressure on the working capacity of the machine.
- Under no circumstances exceed the maximum loads defined in section 3.2. *Limit of use*, depending on the Category of the equipment and the refrigerant used. The installer must verify the installation according to European harmonized standards.



3.2. LIMITS OF USE

Sereva has a wide product range that is divided into three Categories depending on the refrigerant and its maximum refrigerant charge:

	Charge less than m_I	Charge Greater than m_I And less than m_{II}	Charge greater than m_{II}
Category I	X		
Category II	X	X	
Category III	X	X	X

The categories and limits of their use are described below.

Category I

For the Sereva equipment Category I, the refrigerant charge must be less than ml.

You can find below the ml values based on refrigerant classification:

- A1: ml = 2,5 kg
- A2L: ml = LFL x 6 kg
- A2, B2, B2L, B1: ml = 0,5 kg
- A3, B3: ml = 0,15 kg

The charge limits for Category I equipment for different A2L refrigerants are shown in the table:

Refrigerant	LFL Kg/m3	Maximum refrigerant charge (kg)
R-32	0,307	1,842
R-1234ze	0,303	1,818
R-452B	0,31	1,86
R-454A	0,278	1,668
R-454B	0,301	1,806
R-454C	0,291	1,746
R-455A	0,423	2,538

En el caso que se superen las cargas definidas en el presente apartado, la carga máxima se deberá calcular según lo establecido en la norma UNE-EN 378, en función la inflamabilidad y toxicidad del refrigerante y se deberá utilizar un equipo de Sereva de Categoría II.

When the loads indicated in the previous table are not exceeded, the equipment is considered to have a very low risk of flammability, so no preventive measure is required.

The exclusion of the equipment does not mean that the installation as a whole is excluded from the application of the regulations in terms of design conditions, safety and communication with the administration.

In the event that the loads defined in this section are exceeded, the maximum load must be calculated in accordance with the provisions of the EN 378 standard, depending on the flammability and the toxicity of the refrigerant. Sereva Category II equipment must be used.

Category II

For the Sereva equipment Category II, the maximum load (mII) will be defined according to Annex C of the EN 378-1 standard and taking into account the type of refrigeration system, the accessibility category and the class of refrigerant used. The maximum load (mII) calculated as specified in the standard must not be exceeded.

In the case of exceeding the load specified according to flammability, without exceeding the load based on toxicity, a risk analysis must be carried out in accordance with the ISO 60079-10-1 standard to determine the classification of the area. In the event that the zone classification turns out to be a negligible zone (ZD), Sereva Category II equipment may be used. If, on the other hand, the area is classified as zone 0, 1 or 2, Sereva Category III equipment must be used.

In the event that the installation is not ATEX and the maximum load specified above must be exceeded, there is the possibility of using a Sereva Category Equipment applying the additional provisions specified by the standard, such as cutting off the power supply of all the equipment in the enclosure when the refrigerant concentration reaches 25% of the Lower Flammable Limit. Application of these provisions is the responsibility of the final installer.

The exclusion of the equipment does not mean that the installation as a whole is excluded from the application of the regulations in terms of design conditions, safety and communication with the administration.

Bear in mind that the Category II equipment provided by SEREVA is not suitable for use in explosive atmospheres (ATEX).

Category II equipment with resistances must have a clixon (temperature sensor) in the circuit to prevent the surfaces of the equipment from exceeding the maximum self-ignition temperature of

the refrigerant, reduced by 100 K. In this way, it will cut off the flow of current at the moment in which this temperature is reached. It is the responsibility of the installer to ensure the correct work of this device.

Category III




In the event that the refrigerant charge exceeds the maximum charge (mll) calculated as established in Annex C of the EN 378-1 standard, a risk analysis must be carried out in accordance with the UNE 60079-10 standard. 1 to determine the zone classification.

In the event that the result of the analysis concludes that it is a zone 1 or 2, a SEREVA Category III exchanger may be used.

3.3. DEFINITION OF INSTRUCTIONS AND WARNING SIGNALS


Users are warned, through the use of pictograms, about each of the risks in the equipment. These pictograms provide information of vital importance and provide us with indications of mandatory compliance during its use.

To advise about the various hazards, the following warning pictograms are placed on the machine:

P1		<p>Note that the instruction manual must be read before using the machine</p>	P2		<p>Warning of electrical risk due to the electrical components of the machine</p>
P3*		<p>Risk of Fire/Flamability. *See Note P3.</p>			

*P3 The pictogram must be added by the manufacturer or the installer of the equipment in the case of the use of refrigerants of the class A2L, A2, A3, B2L, B2 y B3.

In addition, each and every one of the people who work with the machine must be protected against unforeseen dangers, which is why they must use the Individual Protection Equipment described below:

EPI1		<p>The use of gloves is mandatory while interacting with the machine.</p>
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4. USING THE EQUIPMENT. WORKINGS

4.1. INSTRUCTIONS ON RECEIPT OF THE MACHINE

The heat exchanger has been built solely and exclusively as an outdoor air / internal coolant heat exchanger. Any use other than that specified, will not be considered an intended use and will be considered improper use of the equipment. Proper use also includes the use of all protection devices (electrical, pressure, temperature, etc.). Use in explosive atmospheres, environments with abrasive particles, highly corrosive air, etc. is prohibited.

Check that the machine has not been damaged in transit or if parts are missing. Claims will only be accepted if they are made immediately upon receipt of the machine and always confirmed by the carrier or transport agency.

In no case should you use the machine if any part is missing or in poor condition.

The evaporator / condenser is charged with dry Nitrogen, a harmless and environmentally friendly gas, at a higher pressure than that of the atmosphere. In case of leakage there is no danger.

The entrance / s and exit / s of the circuit are sealed with rubber plugs, with welding, with valves or with a combination of the above.

When you are ready to assemble the heat exchanger in its refrigerator unit, remove the sealing element. At this precise moment you will see that air is released from the device under pressure.

IMPORTANT: If no pressurized air has come out of the inside of the heat exchanger, DO NOT ASSEMBLE THE APPLIANCE AND INFORM SEREVA. There could be leaks or the plug could have come off and moisture entered the device.

The heat exchangers are designed to work with Group 2 fluids (Directive 2014/68 / EU: non-flammable, non-explosive, etc.) and at pressures of up to **28 bar for the device E591-750120**. In applications other than those indicated, please contact us for advice.

SEREVA is not responsible for any possible incidence occurring from the use of devices without air pressure.

4.1.1. GUARANTEE

The guarantee has a validity period of twelve months from the day of delivery of the machine, with prior recognition of allegedly defective parts..

4.1.2. CANCELLATION OF GUARANTEE

The guarantee will be cancelled when any of the following cases is met:

- When a malfunction or maintenance attributable to the client is demonstrated due to human error, or negligence by the user of the machine.
- When it is shown that the instructions indicated in this manual have not been followed.
- When non-original spare parts are used, or any maintenance or repair operation is performed by a technician not authorized by our company.
- When any of the sections outlined is not complied with.

4.2. ASSEMBLY AND PREPARATION OF THE MACHINE

So that the transport is practical and the start-up of your machine is easy, it has been designed minimizing as much as possible the assembly necessary on receipt of the machine.

The installation of the machine will be carried out by an operator familiar with it and who has previously read this instruction manual.

The static evaporator-condenser must be mounted onto a cooling system, connecting the inlet pipe and the outlet pipe to the circuit of the cooling system to which it is intended to be joined. The electrical connections of the fan or fans of the evaporator-condenser must be connected to the electrical system and the control system of the cooling unit to which it is fixed. The overheat or

overstrain when connecting the pipes might damage the heat exchanger. Please make sure you do such operation carefully.

Before making the connections, make sure that there is no supply voltage and check the correct wiring of all cables.

Sereva is not responsible of any damage caused by the client during either the electric or pipe connection.

It will be installed in a place as inaccessible as possible for the user, so as to avoid possible injury hazards.

The coolants authorized for installation in the apparatus are in general all those HFC, HCFC, HFO and glycols compatible with the material of the pipes (copper) and that work in the range of allowed pressures. It is the responsibility of the customer that the gas used complies with all applicable regulations and directives.

For other coolants, please contact Sereva.

When installing the coolant, special care must be taken not to inhale the gases that may be generated.

The maximum working pressure of the evaporators / condensers will always be lower than **28 bar for the device E591-750120** because of the type of tubes used in their manufacture and the condensing temperature of the type of coolants used. For different uses, please contact Sereva.



It is **COMPULSORY** that the cooling system to which the static evaporator-condenser is fitted has safeguards that avoid risks in the event of overpressure.

4.3. BEFORE STARTING TO USE THE MACHINE

Before starting to use the machine, the following checks must be carried out to check the correct functioning of the machine:

- Read the Use and Maintenance Manual carefully. And in its entirety.
- Check the reliability of the electrical connections. If any component or cable is worn or damaged, it is the user's obligation to inform SEREVA, S.A.
- Check that there is no friction between the various components and that all the elements are perfectly fixed.
- Make sure that there is nobody around the machine during its installation and assembly that does not know the risks that may occur.
- Perform a visual inspection of the entire machine to detect coolant losses, surface damage and breakage of any pieces or parts.
- Any defect found must be corrected before using the machine.
- If there is any danger which means the machine cannot be used, the danger must be removed before the machine is used.

4.4. WORKING AND INTENDED USE

Before starting work, carefully check the state of the machine, especially the parts mostly subject to wear and tear, and make sure there are no objects, people or animals nearby that may interfere with the proper functioning of the machine.



Before setting the machine in motion it is mandatory to have read and understood all the parts of this manual.

The static evaporators and static condensers have been designed and manufactured to facilitate the exchange of temperature between the refrigerant and the environment once they are coupled to a cooling system that, by means of compression equipment, allows the evaporation or condensation, respectively, of the coolant used in that system.

4.5. SAFETY WHILE USING THE MACHINE

Do not fiddle with any mechanism of the cooling system without having disconnected the machine from the electrical network.

During the maintenance, keep the machine perfectly stable, and with the power supply system disconnected.

If welding is to be carried out, first the area to be welded must be sanded until the paint disappears completely (if it is painted), since the gases that would otherwise come off would be toxic. Masks should be used in this operation and the place where the welding is performed should be well ventilated.

Also be warned that making any modification to the machine is prohibited as it could affect the user's safety. Modifications can only be made with the express written consent of **SEREVA, S.A.**

Any modification made without such consent, will lead to the cancellation of the guarantee and the Declaration of CE Conformity

5. MAINTENANCE

Taking care of the machine can extend its useful life. This chapter explains how to take care of the equipment properly and safely. Maintenance and adjustments must be carried out by qualified and authorized personnel

Do not perform any maintenance or interact directly with the machine while it is in operation.



5.1. SAFE MAINTENANCE PRACTICES

To carry out the maintenance of the machine safely, bear in mind the following aspects:

- Contact authorized personnel at SEREVA, S.A.
- Never carry out maintenance or adjust the machine while it is in operation and with the electrical connections connected to the network.
- Understand the maintenance procedure before starting any work.
- Perform maintenance operations after cleaning all parts of the machine.
- Keep all parts in good condition and properly fitted.
- Repair damage immediately: replace worn or broken parts.
- Remove all waste build up.
- Visually check that there are no coolant leaks or areas with frozen water.
- Repaint areas where, due to their use, the paint wears away or flakes off, so that the external effects do not directly affect the metal
- Check that there are no objects or dirt that could put pressure on the working capacity of the machine.

SEREVA, S.A. is not liable for any damage caused by failure to comply with the installation or operating instructions outlined in this manual.

If you lack the skills necessary to perform a correct assembly or operation of the machine, do not proceed to perform such actions.

6. CLEANING

To be able to enjoy the machine for many years, bear in mind the following cleaning requirements:

- A clean machine is a safe machine.
- A clean machine is ready to work.
- A clean machine is a durable machine.



Always disconnect the power supply if the equipment is to be cleaned

We recommend checking the cleaning of the static evaporator-condenser periodically (for example

every month) since the performance of the cooling system is adversely affected if the condenser or the evaporator is dirty and, in particular, if they become clogged.



Do not use pressurized water to clean the machine, as the fins of the machine could be damaged.

Do not use abrasive products, solvents, metal cleaners or detergents, even diluted, to clean the chamber. You must always use products compatible with the material of the heat exchangers (copper and aluminum).

If a water cleaning system is used, special care should be taken not to use pressurized water that could damage the fins of the condenser and the evaporator, as well as using a cloth or pressurized air for drying the different components and points where stagnant water may remain (pay attention not to damage the fins). Water should also be prevented from reaching electrical components such as fans and junction boxes.

REMEMBER: Keeping the machine in good condition will mean better performance, in addition to gaining greater longevity. Clean in depth, removing the easy assemble / disassemble elements, at least once a year.

7. STORAGE

7.1. STORAGE

Store the equipment somewhere clean and dry, free from vibrations and protected from the effects of weather, in its original packaging. Protect the equipment against environmental effects and dirt until its final assembly.

To ensure trouble-free operation and a longer useful life, we recommend that you store the equipment for a maximum of one year.

Also, equipment that is explicitly suitable for outdoor use or with specific anti-corrosion protection must be stored before being put in motion, as outlined.

If you have used the heat exchanger and want to store it for a long period of time when it will be inactive, without it deteriorating, follow the following steps and tips:

1. Clean the machine perfectly.
 - a) Externally.
 - b) The different components.
2. Clean those areas which, due to their difficult access, are not cleaned frequently.
3. Leave the machine stored in a clean, dry warehouse.

7.2. PREPARING THE MACHINE FOR USE AFTER STORAGE

Before using the machine after a long storage period, you should follow the following steps and tips:

1. Perform a general, visual examination of all parts of the machine.
2. Check the workings of the machine, testing the different mechanisms that make up the machine, as explained above.
3. Carry out a test of the seals and / or vacuum test to check for leaks.

GUARANTEE

Guarantee for any manufacturing defect of the cooling system referred to below for a period of 12 months in accordance with the following clauses:

1. The guarantee is valid only if both copies of the guarantee are signed by the buyer.
2. The guarantee requires the use of the machine in accordance with the Use and Maintenance Manual.
3. Parts that are not original will not be used in the machine.
4. Revision and repair of the machine will be carried out in own workshops or in those authorized by SEREVA, S.A.
5. The guarantee covers the replacement of parts which are worn or broken due to manufacturing defects and workmanship of Sereva. Displacements and freight, if any, are excluded, as well as any material or consumables other than the heat exchanger itself (for example, safety glasses, valves, refrigerant gases, etc.).
6. Parts that suffer deterioration due to their function, which is considered normal by the manufacturer, are not subject to this guarantee.
7. It is necessary to present this guarantee in order for the repair to be covered by it.

Mr./Ms.....with ID nº.....

Residing in.....

As buyer of the machine:

Brand: SEREVA, S.A.

Type: Static evaporator

Model: E591-750120; ELT 0,455 24T 3/8 P4/7.6 A:90x150 T/AC

Ref Client: 750120

I declare to be in full knowledge of the conditions of the guarantee, I accept and acknowledge that my rights to this guarantee will be null and void in case of not respecting the established clauses or not following the instructions of the use and maintenance manual provided by SEREVA, S.A

in on of

Company stamp:



Client signature:

Copia para el comprador

GARANTÍA

Garantía por todo defecto de fabricación del sistema de refrigeración abajo referido por un periodo de 12 meses con arreglo a las siguientes cláusulas:

1. La garantía es válida solo si ambas copias de la garantía son firmadas por el comprador.
2. La garantía obliga a la utilización de la máquina con arreglo al Manual de uso y Mantenimiento.
3. No se emplearán en la máquina piezas que no sean de origen.
4. La revisión y reparación de la máquina se realizará en los propios talleres o en los autorizados por SEREVA, S.A.
5. La garantía cubre la reposición de las piezas gastadas o rotas por defecto de fabricación y la mano de obra de Sereva. Quedan excluidos los desplazamientos i los portes si los hubiera, así como cualquier material o consumible diferente del propio intercambiador de calor (por ejemplo visores, válvulas, gases refrigerantes, etc.).
6. Las piezas que por su funcionamiento sufren un desgaste considerado normal por el fabricante, no están sujetas a esta garantía.
7. Es preciso la presentación de la presente garantía para poder estar amparada la reparación por ella.

D./Dña..... con DNI nº.....

Con domicilio en.....

Como comprador de la máquina:

Marca: SEREVA, S.A.

Tipo: Static evaporator

Modelo: E591-750120; ELT 0,455 24T 3/8 P4/7.6 A:90x150 T/AC

Ref Client: 750120

Declaro estar en pleno conocimiento de las condiciones de la garantía, que yo acepto y reconozco que mis derechos a esta garantía serán nulos en caso de no respetar las cláusulas establecidas o de no seguir las instrucciones del manual de uso y mantenimiento entregado por SEREVA, S.A

a de de

Sello de la empresa:



Firma del cliente:

Copia para el comprador

DECLARATION OF CONFORMITY CE

The manufacturer: SEREVA, S.A.
With address: Carretera del Rellou, s/n
25334 Castellserà (LLEIDA)

Declares under its sole responsibility that the machine,

Product denomination: Static evaporator

Model: E591-750120; ELT 0,455 24T 3/8 P4/7.6 A:90x150 T/AC; Ref Client:
750120

SEREVA Category: II

Maximum working pressure of 28 bar

Is in compliance with all the applicable provisions of the Machinery Directive 2006/42/EC
(DOUE L157 09.06.2006).

Harmonised technical standards:

- UNE-EN ISO 12100-1
- UNE-EN ISO 12100-2
- UNE-EN 378
- UNE-EN ISO 14121-1
- UNE-EN 842
- UNE-EN 60335-2-89

International Norms:

- IEC 60335-2-89

Identification of the person authorized to write the declaration on behalf of the
manufacturer:

Name: Àngel Cercós Villanueva
Position: Technical Manager
Place and date of issue: Castellserà, 5 de agosto de 2022

Firma y sello

