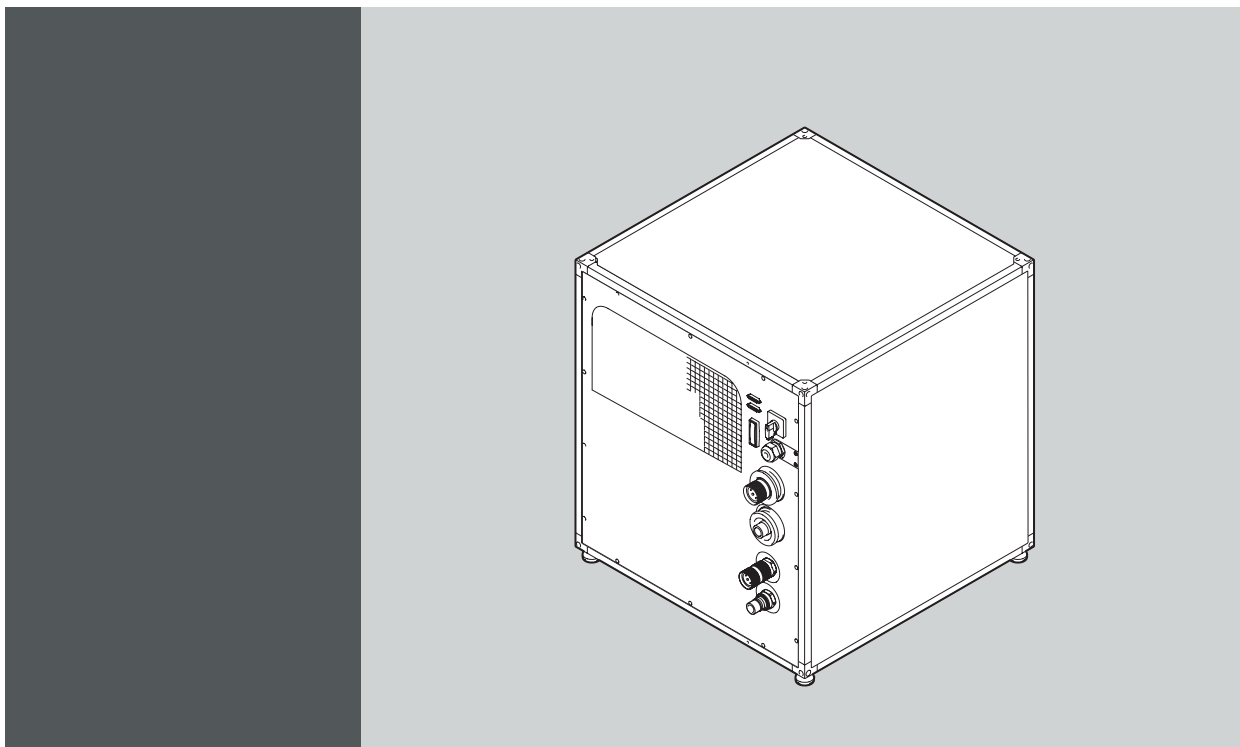


ULC-30A



Installation and user manual

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Federal Communications Commission (FCC Statement)

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

EMC statements

EN55032/CISPR32 Class A MME (MultiMedia Equipment)

Warning : This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

Class A ITE (Information Technology Equipment)

Warning : This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Guarantee and Compensation

Barco provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transport, as well as for material and manufacturing faults. Barco must be informed immediately in writing of any complaints.

The period of guarantee begins on the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of complaint, Barco can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other services provided by Barco, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of Barco.

If the purchaser or a third party carries out modifications or repairs on goods delivered by Barco, or if the goods are handled incorrectly, in particular if the systems are operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by Barco either.

The environmental conditions as well as the servicing and maintenance regulations specified in this manual must be complied with by the customer.

Trademarks

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1. INTRODUCTION

Overview

- General information
- Identification details
- Notices

1.1 General information

User recommendations

The instructions contained in this manual are intended for both trained personnel and expert operators who are authorized to handle, install and dismantle the machine. Information intended for expert operators is provided in the attached documents.

Users are not allowed to perform the operations specified in the attached documents, whereas expert operators are authorized to perform all operations described in the manual.

Aim of the manual

This manual, written by the manufacturer, provides operating instructions and criteria for proper installation, operation and maintenance of the machine (trade name specified on the cover).

This manual is an integral part of the equipment and must be kept for future reference and made available to expert operators, for the entire working life of the machine.

The information contained herein is originally supplied by the manufacturer in English but may be translated into other languages to meet legal and or trade requirements. If the manual is lost or damaged or if it becomes unreadable, a copy may be obtained from the manufacturer, by specifying the model and serial number of the equipment. If the machine is sold, the seller is required to pass on this manual to the new owner.

1.2 Identification details

Overview


A				N	O	P	Q
MADE IN ITALY							
MODEL B COOLTECH ART. BARCO PART NUMBER SERIAL NUMBER MANUFACT. DATE REFRIGERANT TYPE H , COOLING LIQUID		VER C D E F G QUANTITY [kg] I J K L		VOLTAGE (±10%) [V] PHASE NO. OF WIRES R CURRENT [A] FREQUENCY [Hz] MAX CURR. RATING OF OVERCURR. PROTECT. [A] MIN. CIRCUIT AMPACITY [A] COMPRESSOR		S T U V W	
UNIT WEIGHT [kg] DESIGN PRESS. [Bar] MAX INLET WATER PRESS. [Bar] MAX PRIMARY OUTLET WATER PRESS. [Bar] MAX SEC. OUTLET WATER PRESS. [Bar] INLET PRIMARY WATER TEMP. [°C] INLET SEC. WATER TEMP. [°C]		M					

Image 1-1

- | | |
|------------------------------------|---|
| A Manufacturer's details | M Pressures [bar] and temperatures [°C] of each circuit |
| B Machine model | N RCM mark Australia |
| C Machine version | O WEEE marking concerning disposal of electronic equipment |
| D Article code Manufacturer | P CE marking of conformity |
| E Article number Barco | Q UL marking |
| F Serial number | R Mains voltage and electrical data |
| G manufacturing date | S Electrical protection data |

H	Type of refrigerant	T	Compressor data
I	Quantity of refrigerant	U	Motor fan data
J	Coolant Product number + type	V	Main pump motor data
K	Unit weight [kg]	W	DMD pump motor data
L	Working pressure of refrigerant circuit [bar]		

1.3 Notices

Technical assistance

Requests for technical assistance (for faults or failures) must be addressed directly to a Barco service center via www.barco.com/es-support.

When requesting technical assistance the data shown on the identification plate and the type of failure must be reported.

Disclaimer notice

The manufacturer cannot be held responsible for the following:

- machine misuse;
- unauthorized modifications and/or repairs;
- missing or inadequate maintenance;
- use of non-original spare parts or parts not designed specifically for the model concerned.

Annexed documentation

The listed documentation is given to the owner together with this manual.

- EC declaration of conformity.

Warranty

The warranty clauses are specified in the sales contract valid at the time of purchase of the machine.

Terminology

Owner: legal person who purchases the machine or the machines and intends to use it for the foreseen purposes.

User: person with the ability to operate the machine.

Expert operator: authorized person who possesses the qualifications, the skills and the knowledge required for operating, installing and maintaining the machine.

2. SAFETY

About this chapter

Read this chapter attentively. It contains important information to prevent personal injury while installing and using your chiller. Furthermore, it includes several cautions to prevent damage to your chiller. Ensure that you understand and follow all safety guidelines, safety instructions and warnings mentioned in this chapter before installing and using the chiller. After this chapter, additional “warnings” and “cautions” are given depending on the procedure. Read and follow these “warnings” and “cautions” as well.

Clarification of the term “chiller” used in this document

When referring in this document to the term “chiller” means that the content is applicable for following Barco products:

- ULC-30A



Barco provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. Observing the specification mentioned in this chapter is critical for chiller performance. Neglecting this can result in loss of warranty.

Overview

- General considerations
- Important safety instructions
- Product safety labels

2.1 General considerations

General safety instructions

- Before operating this equipment please read this manual thoroughly and retain it for future reference.
- Installation and preliminary adjustments should be performed by qualified Barco personnel or by authorized Barco service dealers.
- All warnings on the projector and in the documentation manuals should be adhered to.
- All instructions for operating and use of this equipment must be followed precisely.
- All local installation codes should be adhered to.
- Never push objects of any kind into the machine through cabinet slots as they may touch dangerous voltage points or short circuit parts that could result in a risk of fire or electrical shock.
- Do not allow anything to rest on the power cord. Do not locate this machine where persons will walk on the cord.
- Do not operate the ULC-30A with a damaged cord or if it has been dropped or damaged - until it has been examined and approved for operation by a qualified service technician.
- If an extension cord is necessary, a cord with a current rating at least equal to that of the ULC-30A should be used. A cord rated for less amperage than the ULC-30A may overheat.
- Maintenance schedule operations must be carried out at the set intervals and in the manner foreseen by the manufacturer. All maintenance interventions and replacements that require specific technical skills and abilities must be carried out only by qualified and authorized personnel.
- Dispose of all packing materials according to their composition in compliance with the local laws in force.

Permitted use

The ULC-30A is designed and manufactured for the purpose of cooling video projectors with a laser light source.

The ULC-30A must be used in conformity with its technical specifications and must not be tampered with or used for purposes other than its intended use.

Any other use than that specified, or not included or inferable from this manual, should be considered mishandling and therefore not permitted.

Improper and unauthorized uses

It is forbidden to use coolants with characteristics different from those specified by the manufacturer.

It is forbidden to operate the ULC-30A without the fixed covers properly in place.

It is forbidden to use the ULC-30A in a potentially flammable or explosive atmosphere.

Residual risks

Risk of crushing: when moving the ULC-30A, incorrect manoeuvres or improper handling of the load may pose a risk of injury to the operators involved.

Risk of electric shock: maintenance operations or replacement of components may involve a risk of electric shock due to accidental contact with live electrical components.

Users definition

Throughout this manual, the terms SERVICE PERSONNEL and TRAINED PROJECTIONIST refers to persons having appropriate technical training and experience necessary to be knowledgeable of potential hazards to which they are exposed (including, but not limited to HIGH VOLTAGE ELECTRIC and ELECTRONIC CIRCUITRY and HIGH BRIGHTNESS PROJECTORS) in performing a task, and of measures to minimize the potential risk to themselves or other persons. The term USER and OPERATOR refers to any person other than SERVICE PERSONNEL or TRAINED PROJECTIONISTS, AUTHORIZED to operate professional projection systems.

The TRAINED PROJECTIONISTS may only perform the maintenance task described in the User & Installation manual. All other maintenance tasks and service tasks must be performed by qualified SERVICE PERSONNEL.

The DLP Cinema Systems are intended "FOR PROFESSIONAL USE ONLY" by AUTHORIZED PERSONNEL familiar with potential hazards associated with high voltage, high intensity light beams generated by lasers. Only qualified SERVICE PERSONNEL and TRAINED PROJECTIONISTS, knowledgeable of such risks, are allowed to perform service functions inside the product enclosure.

Owner's record

The part number and serial number are printed on a label which is stuck on the respective part. Record these numbers in the spaces provided below. Refer to them whenever you call upon your Barco dealer regarding this product.

Product article number	
Product serial number	
Dealer	

2.2 Important safety instructions

To prevent fire hazard

- Do not place flammable or combustible materials near the chiller!
- Slots and openings in this equipment are provided for ventilation. To ensure reliable operation of both the chiller and the projector it is connected to; as well as to protect both from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the chiller too close to walls, or other similar surface. This chiller should never be placed near or over a radiator or heat register. This chiller should not be placed in a built-in installation or enclosure unless proper ventilation is provided.
- Projection rooms must be well ventilated or cooled in order to avoid build up of heat. It is necessary to vent hot exhaust air from this chiller and the projector it is connected to the outside of the building.
- Let the chiller cool completely before storing. Remove the power cord from the chiller when storing.

To prevent personal injury

- To prevent injury and physical damage, always read this manual and all labels on the system before powering the chiller.
- Do not underestimate the weight of the chiller. The chiller weights ± 240 kg (± 529 pounds). To prevent personal injury a hoisting tool should be used to lift the chiller.
- To prevent injury, ensure that the cooling system, hoses and all cover plates are correctly installed. See installation procedures.
- Before attempting to remove any of the covers, disconnect the chiller power cable from the mains electricity for removal of all power from the projector.
- When required to remove all power from the chiller (e.g. during service), always disconnect the power from the chiller mains terminals and UPS INLET connector. Use the disconnect device in the building installation to disconnect the power to the chiller mains terminals, and unplug the power cord at the UPS INLET connector if the UPS INLET is separately powered.
- Do not place this equipment on an unstable cart, stand, or table. The product may fall, causing serious damage to it and possible injury to the user.
- If the unit is shut down, lock the power switch with a padlock to avoid unauthorized startup.
- All operators shall have received adequate training and be aware of the potential hazards.
- Strictly minimize the number of people who have access to the unit.
- Position the hoses of the cooling system so that they will not be tripped over, pulled, or contact hot surfaces.

On servicing

- Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock.
- Refer all servicing to qualified service personnel.
- Attempts to alter the factory-set internal controls or to change other control settings not specially discussed in this manual can lead to permanent damage to the projector and cancellation of the warranty.
- Remove all power from the chiller and refer servicing to qualified service technicians under the following conditions:
 - When the power cord or plug is damaged or frayed.
 - If liquid has been spilled into the equipment.
 - If the product has been exposed to rain, water or other liquids.
 - If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of the other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - If the product has been dropped or the cabinet has been damaged.
 - If the product exhibits a distinct change in performance, indicating a need for service.
- Replacement parts: When replacement parts are required, be sure the service technician has used original Barco replacement parts or authorized replacement parts which have the same characteristics as the Barco original part. Unauthorized substitutions may result in degraded performance and reliability, fire, electric shock or other hazards. Unauthorized substitutions may void warranty.
- Safety check: Upon completion of any service or repairs to this projector, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

To prevent projector damage

- The air filters of the chiller must be cleaned or replaced on a regular basis. Cleaning the booth or installation area would be monthly-minimum. Neglecting this could result in disrupting the air flow inside the projector, causing overheating. Overheating may lead to the projector shutting down during operation.
- The chiller must always be installed in a manner which ensures free flow of air into its air inlets.
- In order to ensure that correct airflow is maintained, and that the chiller complies with Electromagnetic Compatibility (EMC) and safety requirements, it should always be operated with all of its covers in place.
- Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. The device should not be placed in a built-in installation or enclosure unless proper ventilation is provided.
- Ensure that nothing can be spilled on, or dropped inside the chiller. If this does happen, switch off and remove all power from the chiller. Do not operate the chiller again until it has been checked by qualified service personnel.
- Do not block the chiller cooling fan or free air movement around the projector. Loose papers or other objects may not be nearer to the projector than 10 cm (4") on any side.
- Save the original shipping carton and packing material. They will come in handy if you ever have to ship your equipment. For maximum protection, repack your set as it was originally packed at the factory.
- Disconnect the power to the chiller mains terminals before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning. Never use strong solvents, such as thinner or benzine or abrasive cleaners, since these will damage the cabinet. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution.
- Take into account the rated maximum ambient temperature and humidity of both the chiller and the projector it is connected to. Always respect the most strict value of all connected devices.

Handling and transportation





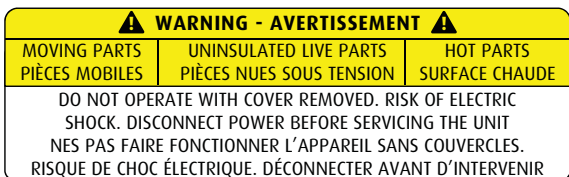
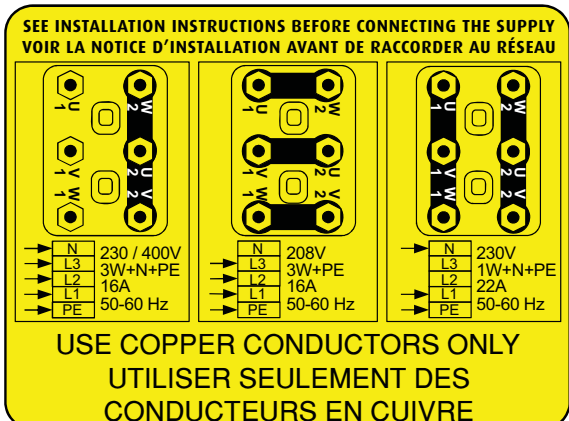
- The staff assigned to handling the load must have the required ability and experience and must be skilled in the use of the lifting means adopted.
- Use lifting equipment of a capacity suitable to lift and move the load.
- The person authorized to handle the appliance will have to take the appropriate measures to guarantee his/her own safety and the safety of those directly involved. Place the package on a steady surface.
- When stacking packages, the specified limits should be observed to avoid sudden movements.
- Upon reception, each package must be inspected to verify the integrity and the exact quantity of its contents; in case of damaged or missing items, contact the importer or the manufacturer directly to discuss the procedure to be adopted.

Safety Data Sheets for Hazardous Chemicals

For safe handling information on chemical products, consult the Safety Data Sheet (SDS). SDSs are available upon request via safetydatasheets@barco.com.

2.3 Product safety labels

Safety labels and icons

Label image	Label description
	ISO W012: International Electric Hazard symbol
	ISO W017: International Hot Surface hazard symbol
	ISO W001: International General Warning hazard symbol
	ISO M002: Read Installation Manual.
	<p>WARNING — AVERTISSEMENT</p> <p>MOVING PARTS — UNINSULATED PARTS — HOT PARTS</p> <p>PIÈCES MOBILES — PIÈCES NUES SOUS TENSION — SURFACE CHAUDE</p> <p>DO NOT OPERATE WITH COVER REMOVED. RISK OF ELECTRIC SHOCK. DISCONNECT POWER BEFORE SERVICING THE UNIT</p> <p>NES PAS FAIRE FONCTIONNER L'APPAREIL SANS COUVERCLES. RISQUE DE CHOC ÉLECTRIQUE. DÉCONNECTER AVANT D'INTERVENIR.</p>
	<p>SEE INSTALLATION INSTRUCTIONS BEFORE CONNECTING THE SUPPLY</p> <p>VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RÉSEAU.</p> <p>USE COPPER CONDUCTORS ONLY.</p> <p>UTILISER SEULEMENT DES CONDUCTEURS EN CUIVRE.</p>

Location of the safety labels

The following safety related symbols can be found on the outer covers:

- General warning label (4 pieces)
- Read manual label
- Electric Hazard label

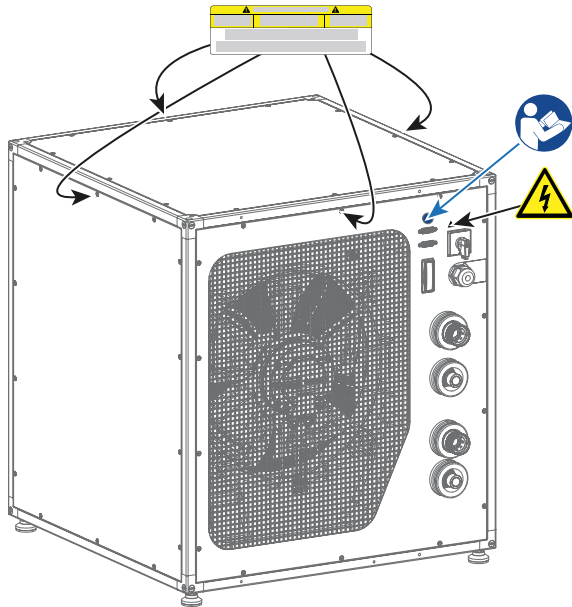


Image 2-1

The following labels can be found once the covers are removed:

- Electric Hazard label (4 pieces)
- Hot Surface label
- General warning label
- Power supply label

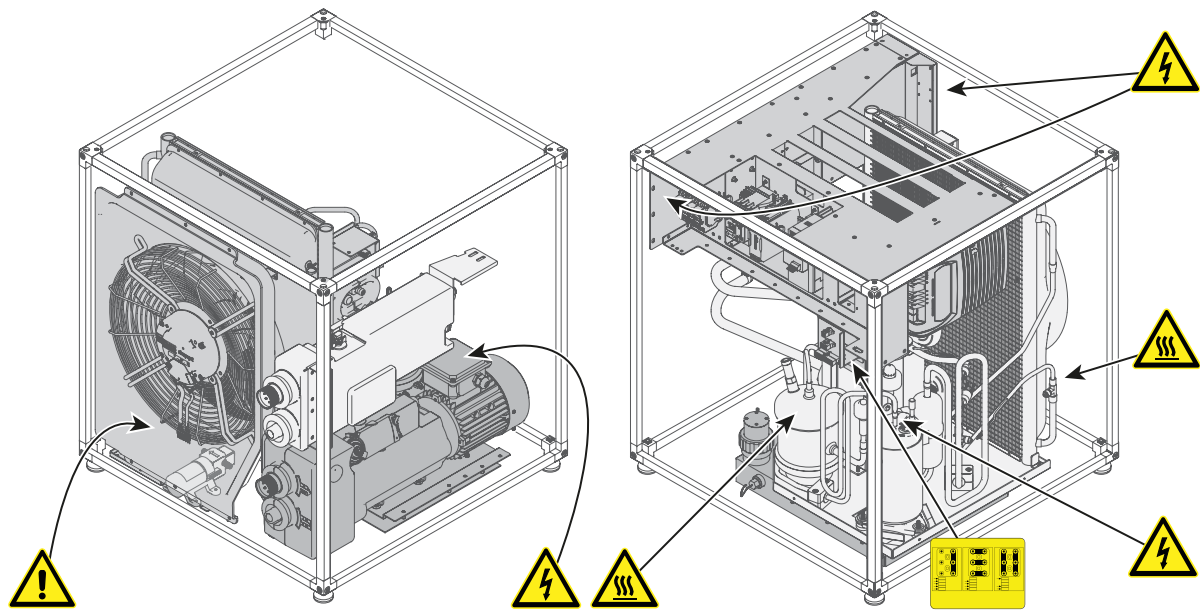


Image 2-2

3. GENERAL

Overview

- General description
- Covers

3.1 General description

Usage

The ULC-30A is designed and manufactured for the purpose of cooling the lasers and DMD of the laser projector. Cooling is established by means of a liquid solution made of glycol and demineralized water.

A circulation pump forces the coolant to circulate inside a closed circuit where it acquires the heat generated by the equipment being cooled. The radiator dissipates the heat acquired by the coolant by means of ambient temperature air generated by a fan.

The ULC-30A can be used either separately or coupled with another chiller of the same type. Two ULC-30A units are connected by means of a serial connection.

The ULC-30A is controlled by the projector by means of a serial connection.

Main parts

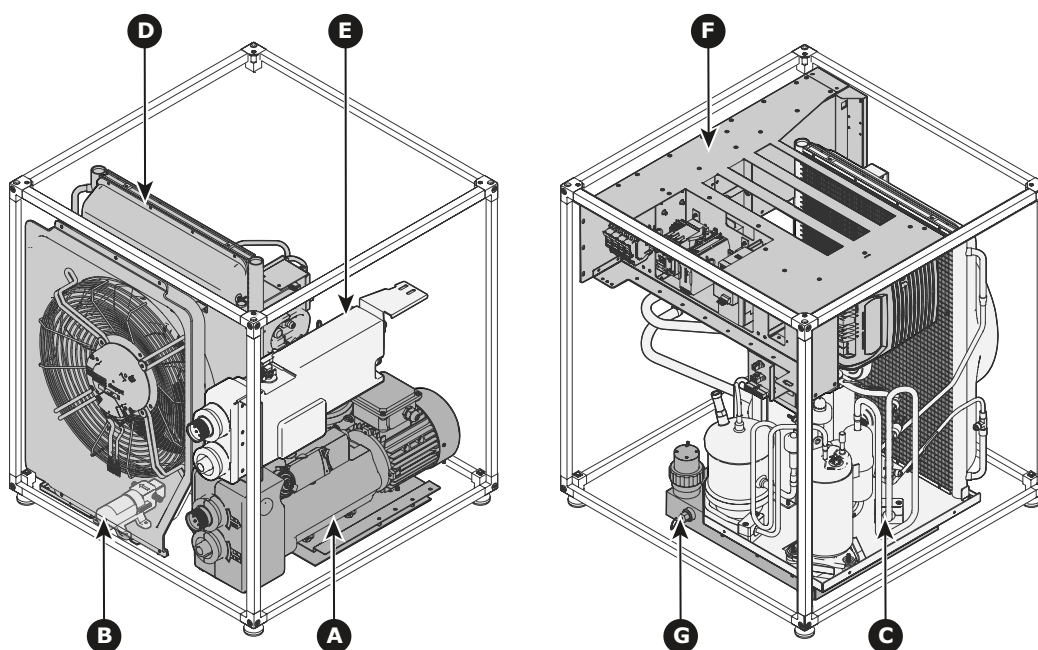


Image 3-1

- | | |
|---|---------------------------|
| A | Main pump unit |
| B | Pressurization unit |
| C | Refrigeration unit |
| D | Cooling fan unit |
| E | Secondary cooling unit |
| F | Electronic equipment unit |
| G | Coolant tank |

3.2 Covers



WARNING: Always install all covers before using the chiller.

About the covers

Safety covers can be removed by a 3 mm hex screwdriver. It is advised to use an electric screwdriver due to the high amount of screws each cover is attached with.

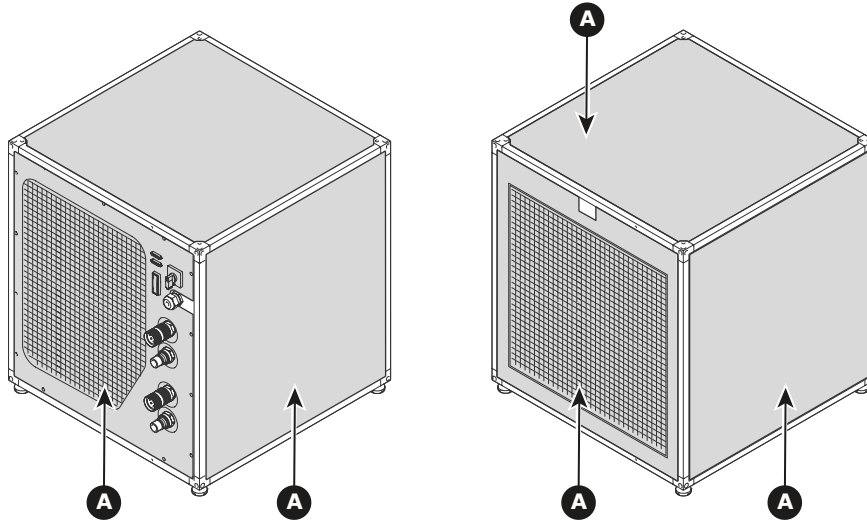


Image 3-2

A Fixed covers to prevent unwanted access to ULC-30A parts and electric components.

4. GETTING STARTED

About this chapter

Read this chapter before installing your ULC-30A chiller. It contains important information concerning installation requirements for the chiller, such as minimum and maximum allowed ambient temperature, humidity conditions, required safety area around the installed projector, required power net, etc.

Furthermore, careful consideration of things such as image size, ambient light level, projector placement and type of screen to use are critical to the optimum use of the projection system.



Barco provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. Observing the specification mentioned in this chapter is critical for projector performance. Neglecting this can result in loss of warranty.

Overview

- Installation requirements
- Installation area
- Unpacking
- Initial inspection

4.1 Installation requirements



CAUTION: The following are the environmental conditions of the ULC-30A chiller as one singular device. While the chiller is connected to a projector with more strict environmental conditions, those conditions will apply to the entire installation setup (projector, hoses and chiller).

Neglecting to do so will cause damage to the projector connected to the chiller.

Environment conditions

Table below summarizes the physical environment in which the ULC-30A chiller (by itself) may be safely operated or stored.

Environment	Operating	Non-Operating
Ambient Temperature	Chiller alone: 5°C to 40°C, or the operating temperature of the projector connected with the Chiller.	-15°C (5°F) to 60°C (140°F)
Air cleanliness	Clean office environment (equivalent with cleanroom standard ISO 14644-1 ISO Class 9)	n.a.
Humidity	5% to 85% RH Non-condensed	5% to 95% RH Non-Condensed
Altitude	-60 (-197Ft) to 3000m (9843Ft) Automatic decrease of brightness possible for altitudes above 1000m.	-60 (-197Ft) to 10000m (32810Ft)



While the operating temperature may go up to 40°C for a chiller by itself; while it is connected to a projector with harsher environmental conditions



Let the chiller acclimatize after unpacking.

4.2 Installation area

Perimeter space

The installation area must be level with an adequate load coefficient and prearranged for the installation of electrical wiring.

4. Getting started

The area must be adequately ventilated and illuminated, in accordance with the relevant workplace health and safety regulations. Make sure to leave enough space around the installation area so that interventions can be carried out under safe conditions. The figure shows the minimum perimeter space for each foreseen configuration.

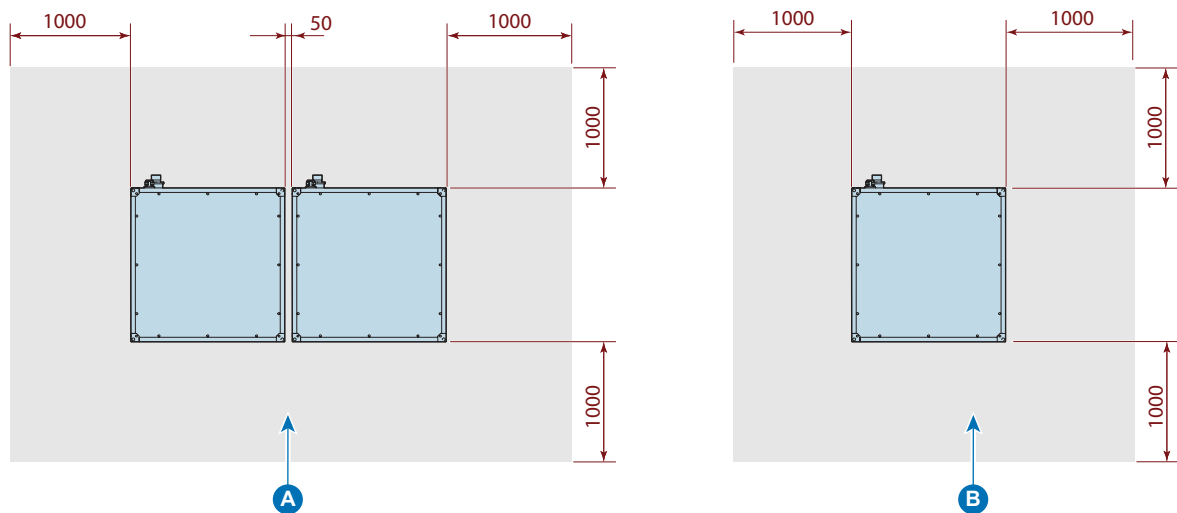


Image 4-1

- A Minimum perimeter space with units placed side by side.
- B Minimum perimeter space for units placed one on top of the other or for single units.

4.3 Unpacking

Packing description

Upon delivery, the chiller is packed into a wooden box inside a cardboard box. The wooden box is placed upon a wooden pallet and secured with banding and fastening clips. Furthermore, to provide protection during transportation, the chiller is surrounded by foam.

Once the chiller has arrived at the installation site, it needs to be removed from its carton box and pallet in a safe manner without damaging the projector.

Components such as the DMD module, flexible hoses, etc., are packed inside apposite cardboard boxes.

The following figure illustrates the most common package type, the maximum dimensions, warning symbols and information affixed to the packages.

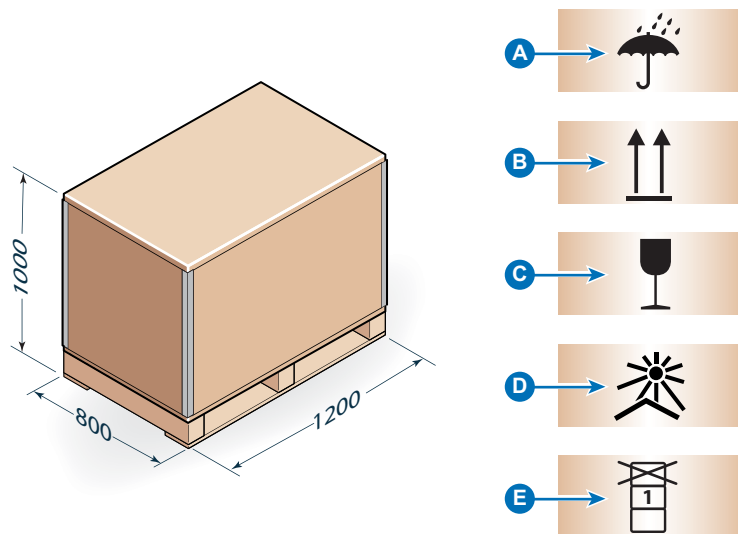


Image 4-2

- A This symbol means the packed machine must be stored in a dry place: its contents may be damaged by dampness.
- B This symbol means the packed machine must be kept upright.
- C This symbol means the packed machine must be handled with care: its contents are fragile.
- D This symbol indicates that the package must be kept away from direct sunlight and heat sources to avoid exposing its content to excessively high temperatures.
- E This symbol indicates the maximum number of packages that can be stacked.

Packing lifting mode

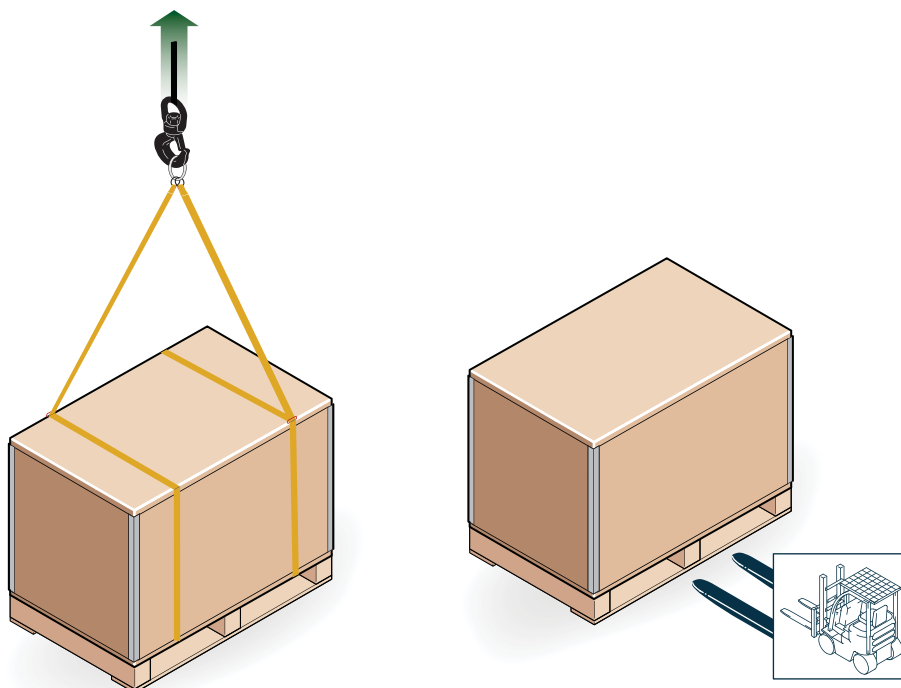


Image 4-3

How to unpack

It is advisable to unpack the machine near the installation area to facilitate assembly. Proceed as follows:

1. Remove the cardboard packaging.
2. Unscrew the screws of the wooden box.
3. Remove the cover.
4. Lift the side walls of the package
5. Remove the ULC-30A from the package.



The packaging material (wood, propylene, etc.) can be kept for future use or properly disposed of according to local regulations.

Storage

If the machine is not going to be used for an extended period, it should be stored (possibly without unpacking it, or at least adequately protected) in a sheltered place protected from atmospheric agents at a temperature between - 20 and + 60 °C.

Avoid storing the machine in places where weather conditions could prejudice its good working order.

4.4 Initial inspection

General

Before shipment, the chiller was inspected and found to be free of mechanical and electrical defects. As soon as the chiller is unpacked, inspect for any damage that may have occurred in transit. Save all packing material until the inspection is completed. If damage is found, file claim with carrier immediately. The Barco Sales and Service office should be notified as soon as possible.



The packaging of the chiller is provided with a shock-watch label. If this shock-watch label was triggered (red colored at arrival) during transport may indicate rough handling by the transport company. In this case, the instructions mentioned on the label, should be followed, which are: adding a note on the “bill of lading” and informing the transport company and the Barco sales and service office as soon as possible.



Image 4-4

Box content

- Chiller.
- User and installation manual (this document).
- Safety manual.

Mechanical check

This check should confirm that there are no broken knobs or connectors, that the cabinet and panel surfaces are free of dents and scratches. The Barco Sales and Service office should be notified as soon as possible if this is not the case.

5. PHYSICAL INSTALLATION



This chapter is intended for trained personnel, expert operators only. Do not install the ULC-30A when you are not one trained for it.

Overview

- Positioning the ULC-30A
- Installation of the Secondary cooling unit (the DMD Cooling Expansion Module)
- Electrical connection
- Address setting
- Mounting the fixed covers
- Connection of signal transmission cables
- Stick the hosing connection stickers
- Connecting the hoses with projector and chillers

5.1 Positioning the ULC-30A



CAUTION: The supports (B) and screws (C) are delivered in the Chiller accessory pack. Install these before mounting the top unit onto the bottom unit.

How to position

1. Adjust the feet to level the ULC-30A (A).

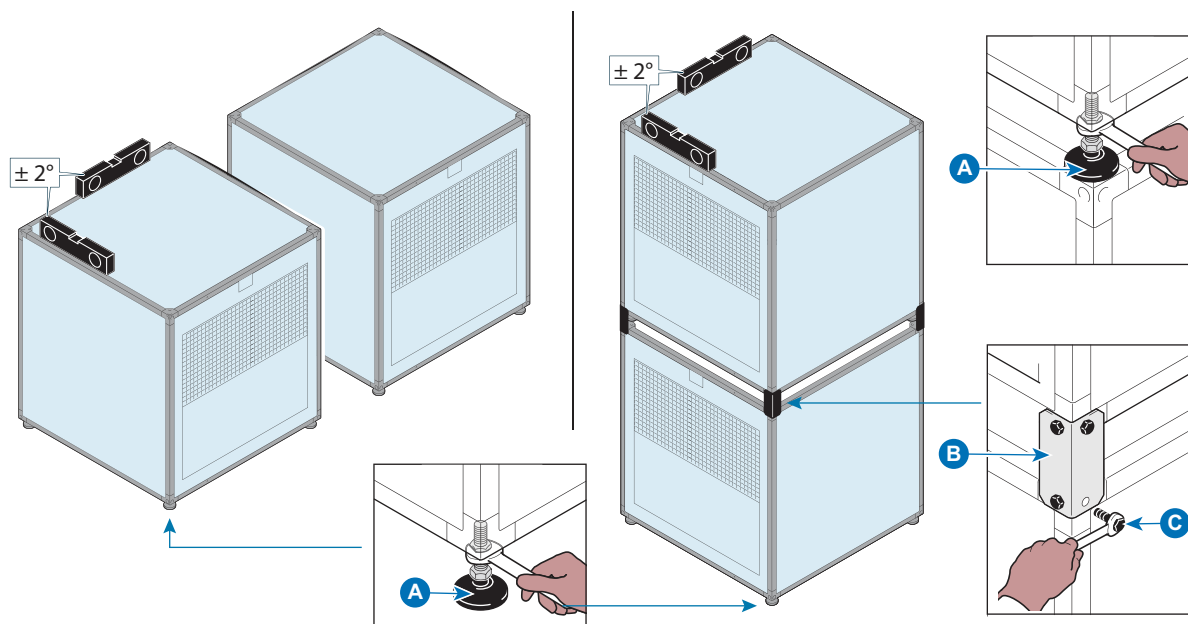


Image 5-1

2. If placed on each other, adjust the feet of the upper ULC-30A to level (A).
3. Put the supports (B) into place and tighten the screws (C) to join the units.

5.2 Installation of the Secondary cooling unit (the DMD Cooling Expansion Module)

Overview

- Installation process of the secondary cooling unit expansion module
- Installation process
- Preparing the installation of the expansion module
- Removal of the fan unit
- Assembly of the secondary cooling unit
- Installation of the fan unit

5.2.1 Installation process of the secondary cooling unit expansion module

When to install the expansion module?

The default cooling circuit of the Chiller only functions to provide cooling for the laser circuits (R/G/B). However, the DMDs in the projector require cooling as well. For this reason, one of the chillers used needs the secondary cooling unit expansion module installed to make this possible. But since all chillers are shipped as identical units, this module **MUST** be installed on-site.

In a projector setup with two chillers, install the expansion module in the Chiller designated to cool the Red & Blue laser cooling circuit.

In a projector setup with one chiller, that one chiller must have the expansion module installed.

About the expansion module

The valve coupling of this expansion unit is of the same type and size as the standard installed coupling on the chiller. However, the hoses of the DMD cooling which have to be connect with the coupling of this expansion module has a smaller diameter than the hoses for the Red, Green and Blue laser cooling.

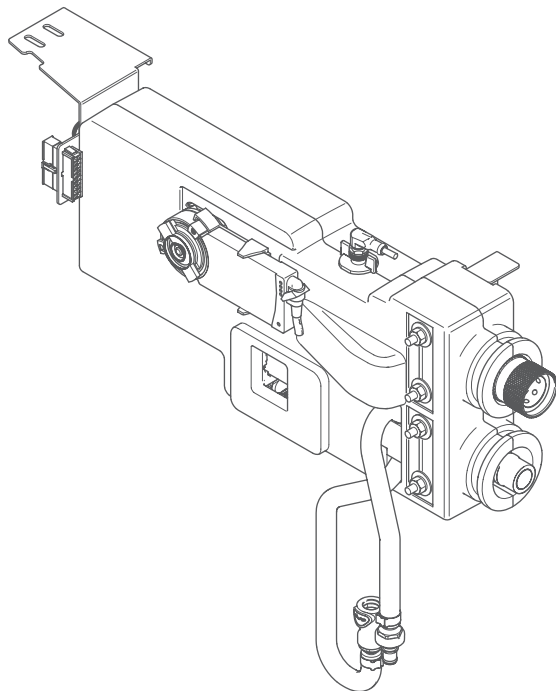


Image 5-2

5.2.2 Installation process

How to install the expansion module

1. Prepare the installation. See "Preparing the installation of the expansion module", page 19.
2. Remove the fan unit. See "Removal of the fan unit", page 19.
3. Mount the secondary cooling unit expansion module. See "Assembly of the secondary cooling unit", page 20.
4. Install the fan unit. See "Installation of the fan unit", page 24.
5. Install the covers again.

5.2.3 Preparing the installation of the expansion module

Necessary tools

- Allen wrench 4 mm
- Electric screwdriver (to remove front and back cover)

How to prepare the Chiller for installation of the expansion module

1. Loosen the screws (A and C) to remove the front and back cover (B and D).

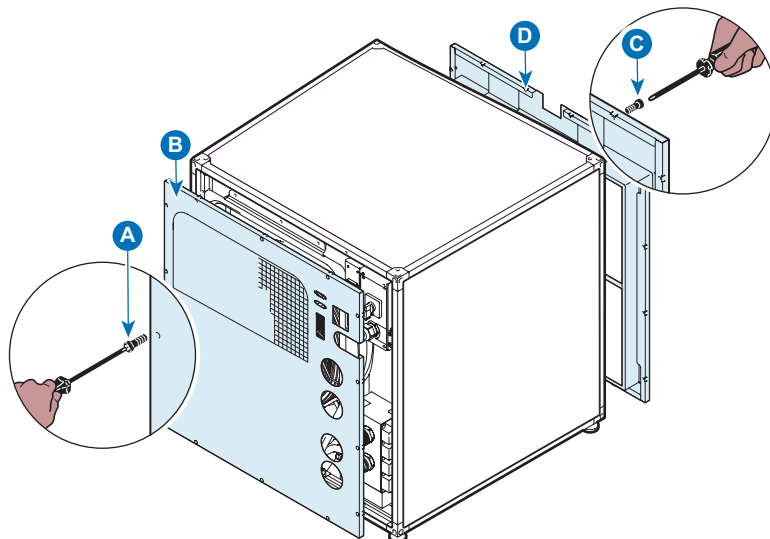


Image 5-3

2. Remove the three hex screws on the chiller frame.

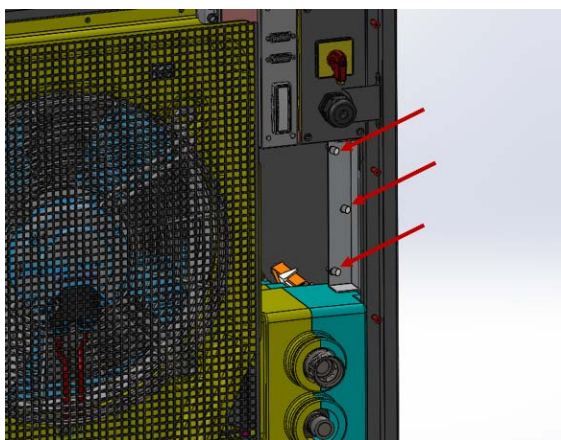


Image 5-4

5.2.4 Removal of the fan unit



This procedure assumes the rear cover has been removed. For more info, see "Covers", page 12.

Necessary tools

Nut spanner 8 mm

How to remove the fan unit?

1. Unplug the cable connector.

5. Physical installation

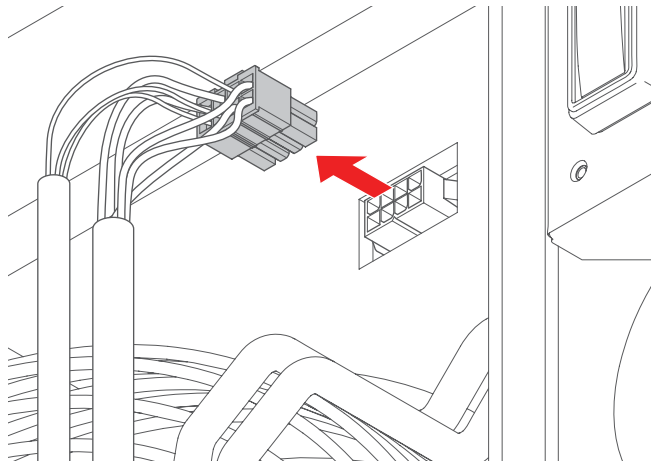


Image 5-5
Unplugging the cable connector

2. Remove the 6 screws (reference 1 image 5-6) using the nut spanner 8 mm.

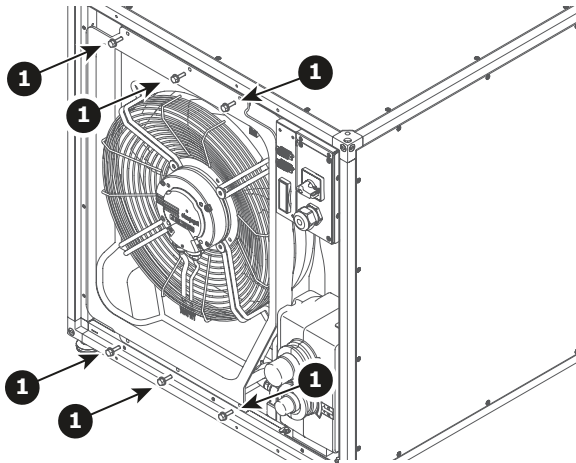


Image 5-6
Removing the 6 screws

3. Remove the fan unit.

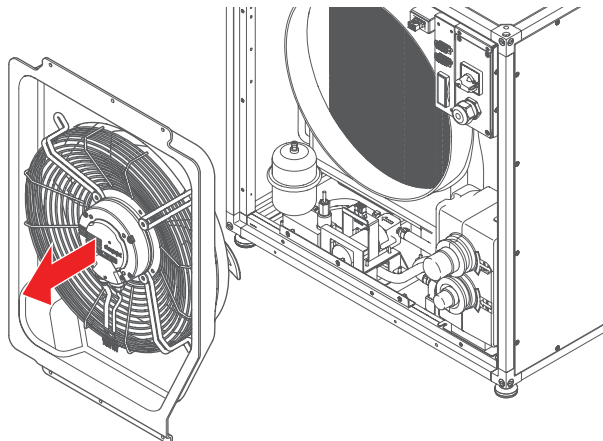


Image 5-7
Removing the fan unit

5.2.5 Assembly of the secondary cooling unit

Necessary tools

- Allen wrench 4 mm
- Cutting pliers

Necessary parts

- Secondary cooling unit expansion unit
- Cable ties

How to mount the expansion module

1. Completely remove the packing material around the tubes of the expansion module.
2. Slide in the expansion module into the Chiller frame as illustrated.

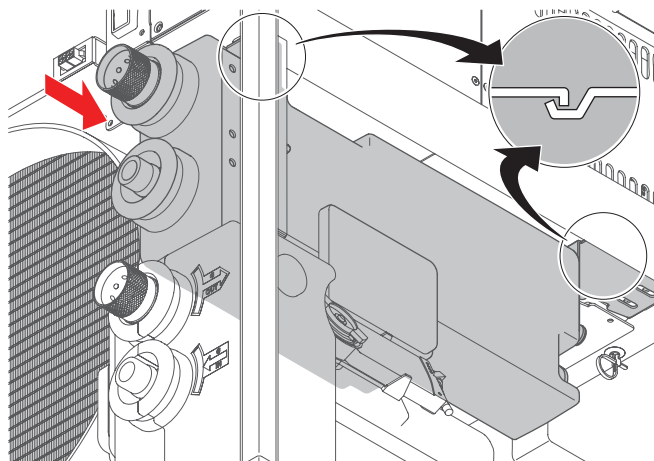


Image 5-8
Installing expansion module

Note: Make sure the rear support of the expansion module is sliding in the dedicated groove of the chiller frame.

3. Install the three screws on the front side of the expansion module (reference 1 image 5-9).

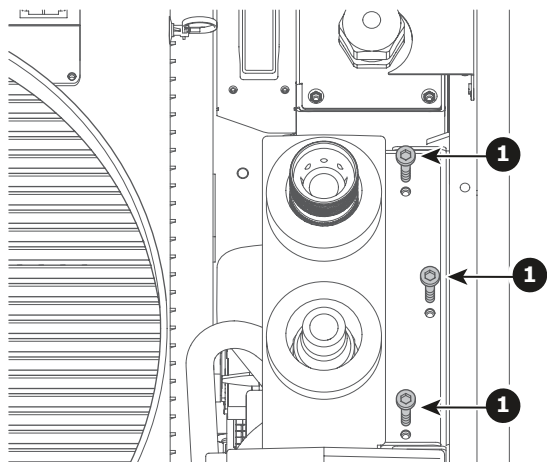


Image 5-9
Installing three screws

4. Install the two screws (reference 1 image 5-10) and washers (reference 2) on the backside of the expansion module.

5. Physical installation

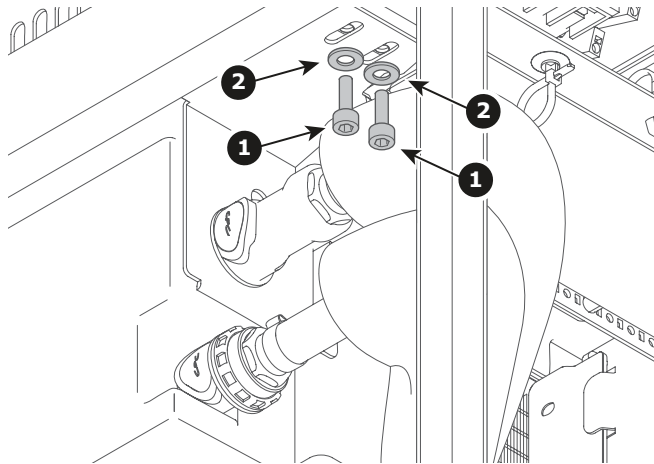


Image 5-10
Installing two screws

5. Connect the two hoses onto the expansion module.

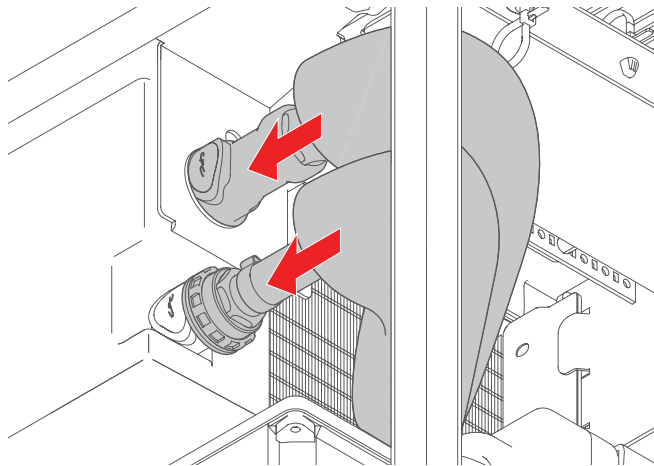


Image 5-11
Connecting two hoses

6. Install the two insulation shells onto the expansion module hose couplers.

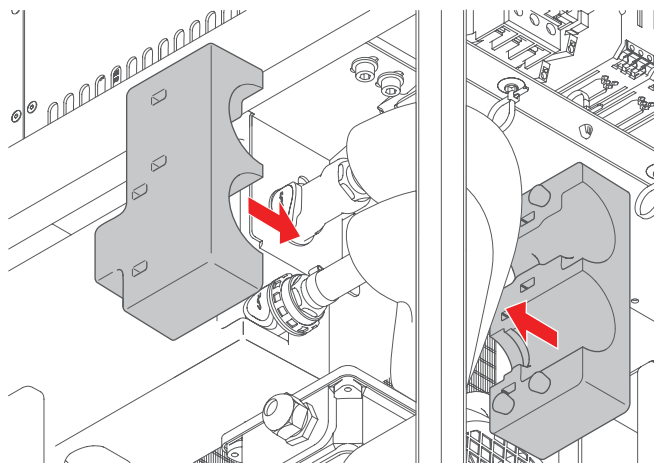


Image 5-12
Installing insulation shells

7. Install new cable ties.

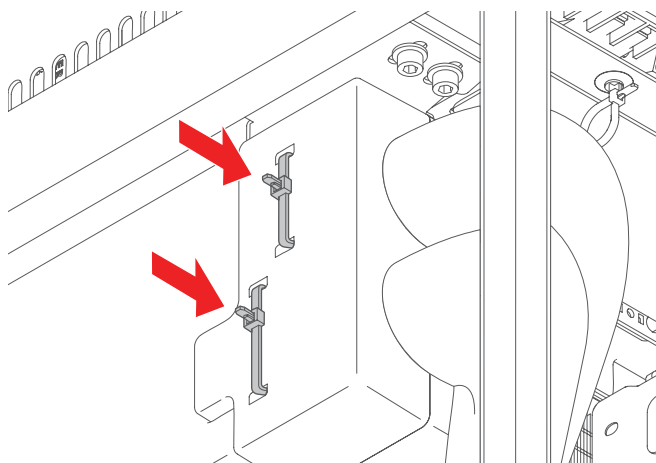


Image 5-13
Installing cable ties

8. Plug in the cable connector of the expansion module.

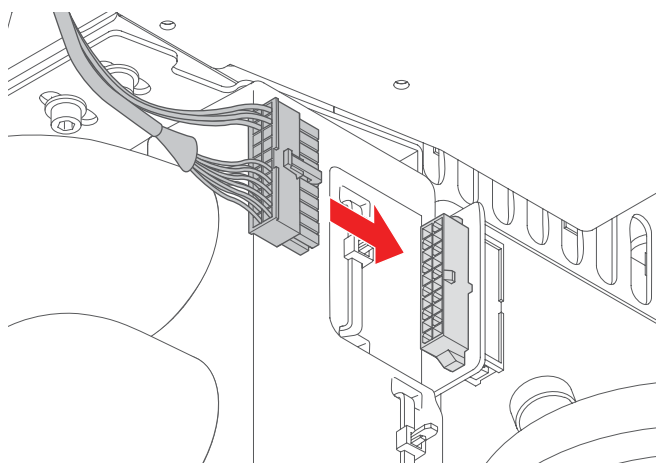


Image 5-14
Plugging in the cable connector

9. Connect the hose of the DMD send line onto the upper coupler of the pump.

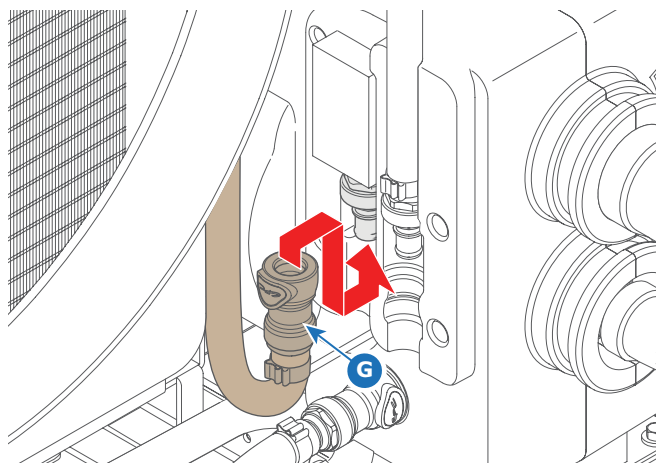


Image 5-15
Connecting DMD send line

10. Connect hose "F" (chiller tank return line) onto the DMD return line.

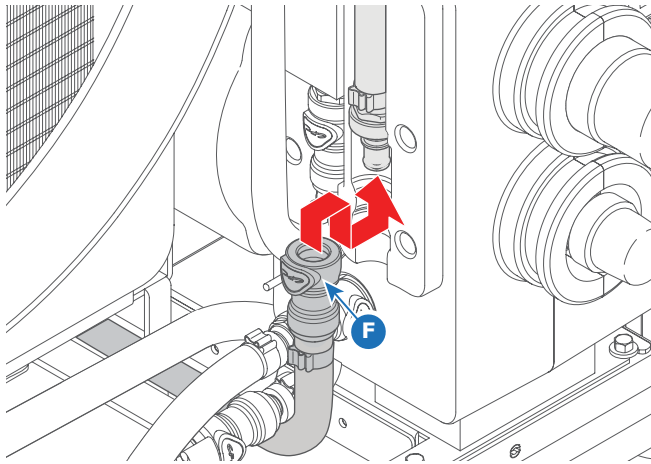


Image 5-16
Connecting hose "F"

11. Install the insulation cover as illustrated.

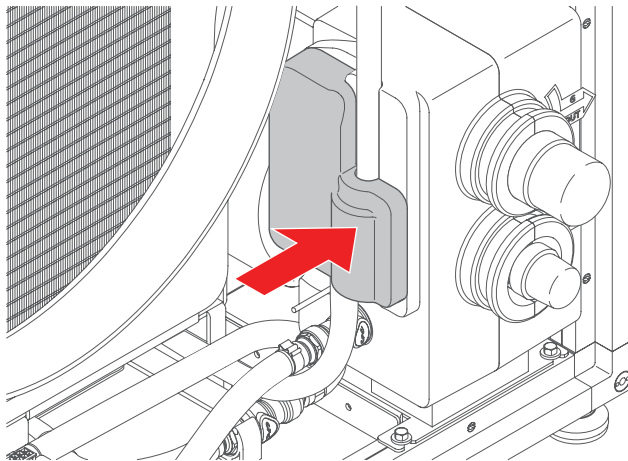


Image 5-17
Installing the insulation cover

5.2.6 Installation of the fan unit

Necessary tools

Nut spanner 8 mm

How to install the fan unit?

1. Install the fan unit.

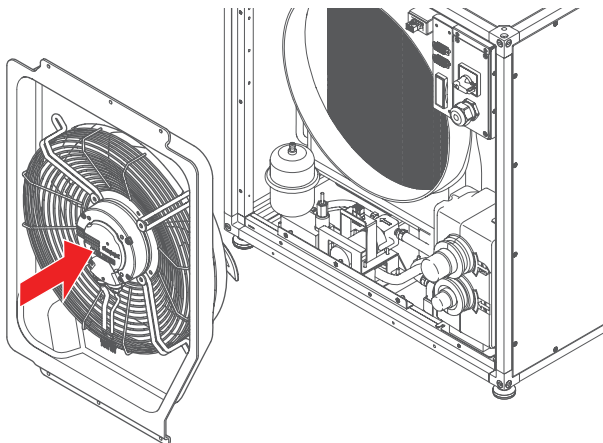


Image 5-18
Installing the fan unit

2. Install the 6 screws (reference 1 image 5-19) using the nut spanner 8 mm.

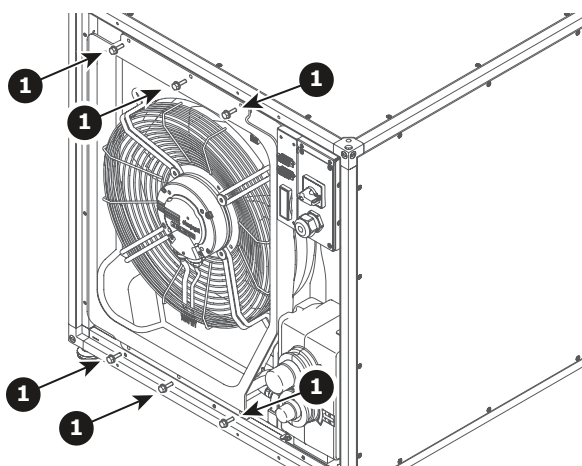


Image 5-19
Installing the 6 screws

3. Plug in the cable connector.

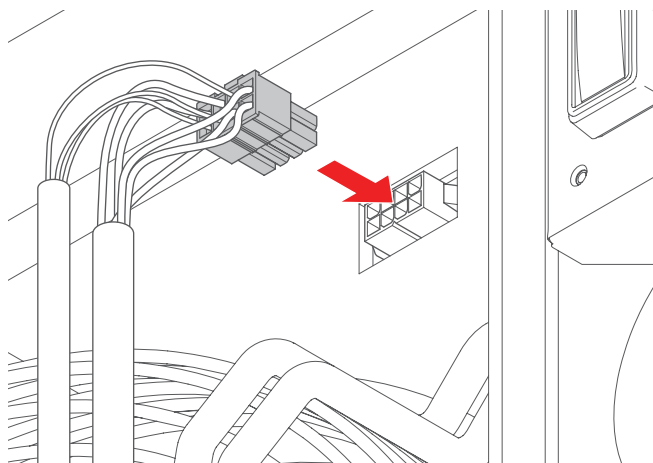


Image 5-20
Plugging in the cable connector

5.3 Electrical connection



Use the feed cables recommended by the manufacturer, making sure they are suitable for the maximum power absorption of the machine.

How to connect

1. Unscrew the screws (E).

5. Physical installation

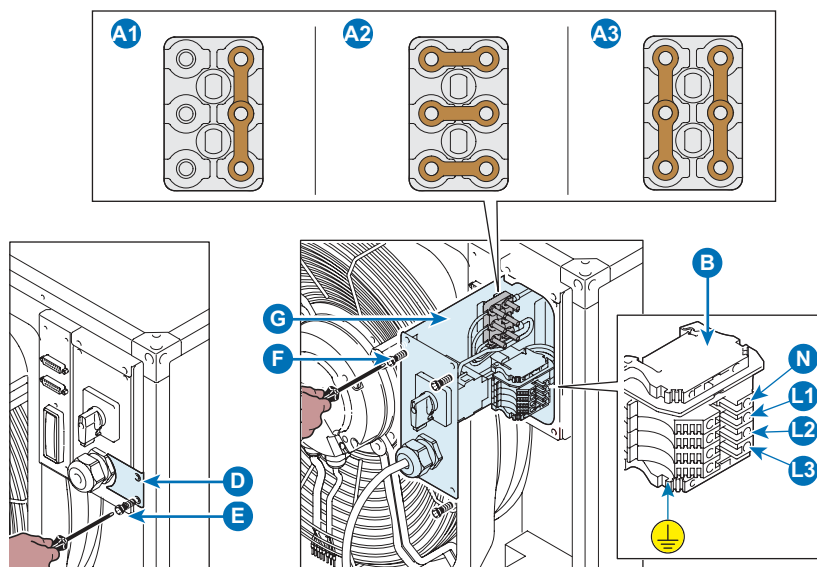


Image 5-21

2. Remove the small plate (D).
3. Unscrew the screws (F).
4. Slide out the support (G).
5. Set up the terminal box according to voltage and power frequency (see wiring diagrams A1, A2, A3).
6. Connect the power feed cable to the terminal box (B) as indicated in the table "Terminal box and cable connection layout diagram".
7. Insert the support (G).
8. Tighten the screws (F).
9. Put the small plate (D) in place.
10. Tighten the screws (E).

Terminal box and cable connection layout diagram

A1	350 - 400 V 3~	L1 - L2 - L3 - N - PE	Star connection - 4 pole cable + ground
A2	200 - 240 V 3~	L1 - L2 - L3 - PE	Delta connection - 3 pole cable + ground
CAUTION! Do not connect the neutral pole			
A3	200 - 240 V 1~	L1 - N - PE	Single-phase connection - 2 pole cable + ground

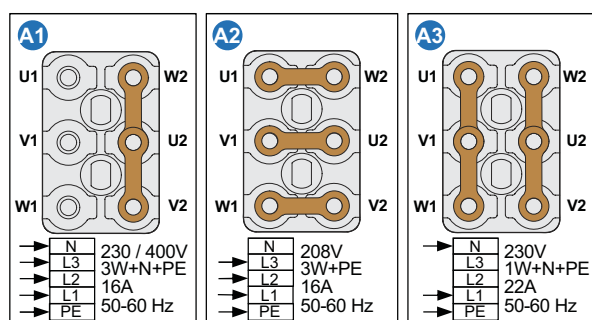


Image 5-22



CAUTION: L1, L2, L3 and the N wire are all black wires. Be careful when connecting the wiring that you do not switch the N wire with any of the L wires.

5.4 Address setting



WARNING: Switch off the power to the ULC-30A before opening the covers.

What should be done?

Depending the use of the ULC-30A, different straps should be mounted in order to have the projector communicate with the correct chiller.

In a setup with **two** chillers:

- Chiller for Green lasers: Mount the **green** strap
- Chiller for Red & Blue lasers + DMD cooling channels: Mount the **purple** strap.

In a setup with **one** chiller: Mount the **purple** strap.



The yellow strap is not used for the moment and is reserved for future usage.

How to set the address

1. With the cover plate removed, turn out the 4 screws of the drawer.



Image 5-23
Loosen drawer screws

2. Slide out the drawer.

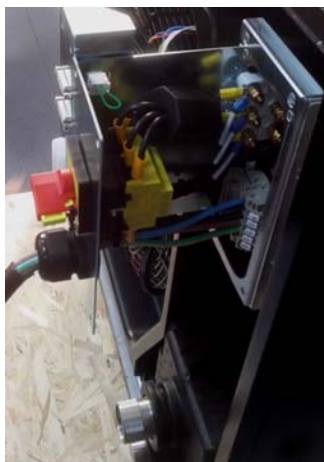


Image 5-24
Slide drawer

3. Mount the correct strap.



Image 5-25
Green strap



Image 5-26
Purple strap



Image 5-27
Yellow strap



Image 5-28
No strap

- Green strap: only for ULC-30A cooling the green lasers (chiller address: 1).
- Purple strap: only for ULC-30A cooling the red, blue lasers and the DMD cooling channels (chiller address: 2).
- Yellow strap: Reserved for future use (chiller address: 3).
- No strap used: reserved for future use (chiller address: 0).

5.5 Mounting the fixed covers

How to mount

1. Put the fixed cover (D) back in place.

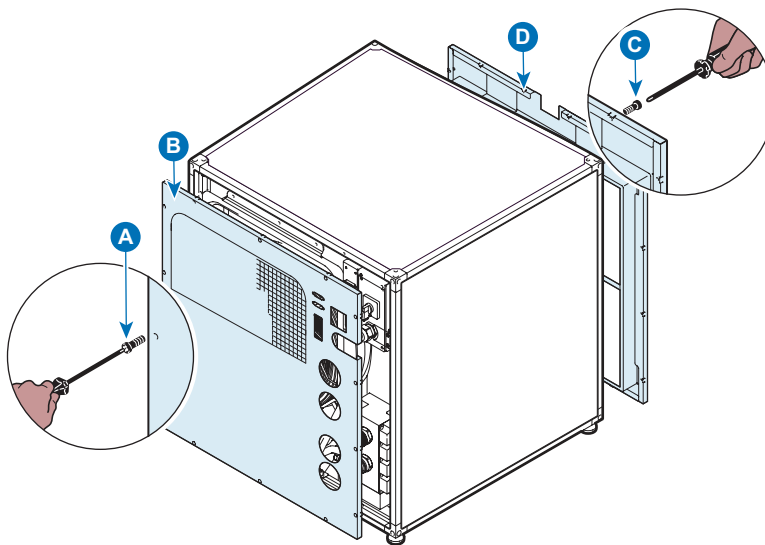


Image 5-29

2. Drive in the screws (C).
3. Put the fixed cover (B) back in place.
4. Drive in the screws (A).

5.6 Connection of signal transmission cables



CAUTION: Only use the RS485 cables provided by Barco. Do not use any other types of cables.

What has to be done?

Next to connecting the hoses, the communication port of the chillers must be connected with each other and with the connected projector.

Data transmission between multiple units and towards the unit to be cooled is accomplished through a RS485 serial line. The following RS485 cables are provided by Barco:

- One communication cable of 10 meter with SUBD Male/Female 15 pins plugs.
- One communication cable of 5 meter with SUBD Male/Female 15 pins plugs (only if two chillers are required).



Guide the long communication cable together with the hoses.

About the connection

Make the connections as indicated in the figure.

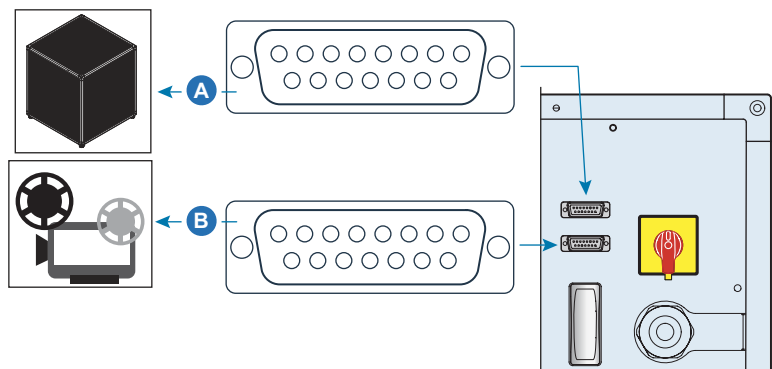


Image 5-30

5.7 Stick the hosing connection stickers

About the stickers

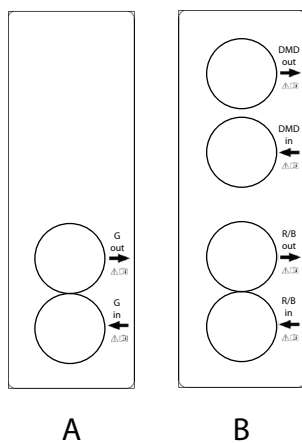


Image 5-31

A: sticker to be stuck on the ULC-30A without DMD module.

B: sticker to be stuck on the ULC-30A with DMD module.

Where to stick

1. On the ULC-30A without DMD module (2), stick sticker A.
On the ULC-30A with DMD module (1), stick sticker B.

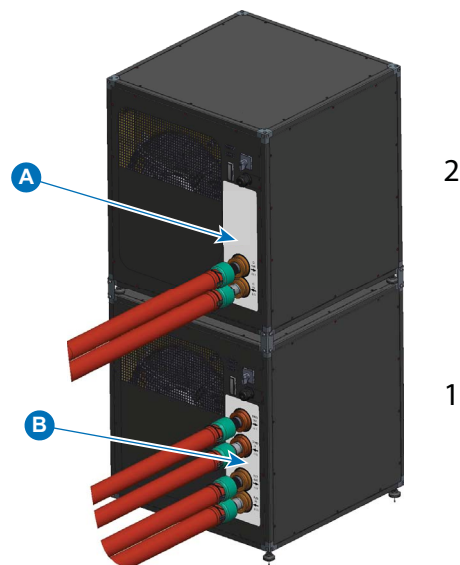


Image 5-32

5.8 Connecting the hoses with projector and chillers

What has to be done?

The cooling circuit of the chiller(s) has to be connected with the cooling circuit of the projector. For that hoses are needed. The length of the hoses depend on the position of the chillers in relation to the projector. The maximum length is 10 meter!

The method of connecting the projector with the chillers depends on the type of projector the chiller will be connected to. For proper connection instructions with your projector, refer to the projector installation manual.



It is also advised to use the correct accessory kit to install the support frames before you connect the hoses and use the hose shells after connecting the hoses. See the Accessory kit installation manual for more details.

General hoses IN/OUT connection scheme

The labels on the projector and on the chillers indicate the three possible cooling circuits: (R/B, G and DMD) and the direction of the liquid flow: **OUT** and **IN**. 'OUT' means liquid flows out of the chiller or projector, 'IN' means liquid flows into the chiller or projector. Both sides of all hoses are also labeled.

Chiller without DMD cooling unit	Chiller with DMD cooling unit	Connected projector
	DMD OUT	DMD IN
	DMD IN	DMD OUT
	R/B OUT	R/B IN
G OUT G IN		G IN G OUT
	R/B IN	R/B OUT



CAUTION: Do not interchange the different cooling circuits with each other! Otherwise the system will fail.

6. STARTING UP



This chapter is intended for operators of the ULC-30A.

Overview

- Controls and signal lights
- Starting up
- End of work stop

6.1 Controls and signal lights

Description

ULC-30A functions must be operated from the control unit, except for electrical starting, and are the responsibility of the owner.

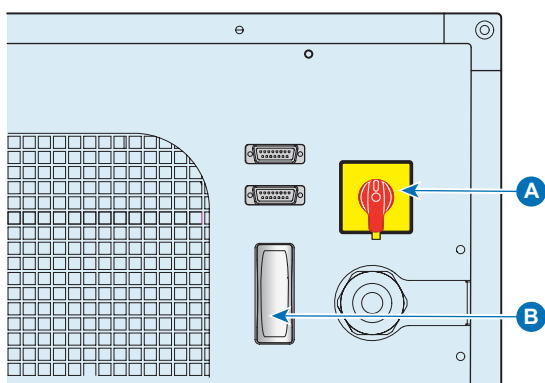


Image 6-1

A) Main disconnect switch: it is used for connecting and disconnecting the power supply to the ULC-30A.

B) Indicator lamp (white light): indicates that the power supply to the ULC-30A is enabled.

6.2 Starting up

How to start up

1. Turn the main disconnect switch to the "I" position to activate the main power supply.
2. The indicator lamp (B) lights up.
3. To start up the machine, act on the control unit and follow the recommended procedure.

6.3 End of work stop

How to proceed

1. To stop the ULC-30A, act on the control unit and follow the recommended procedure.
2. Once the stopping procedure is completed, turn the main disconnect switch to the "OFF" position.
3. The indicator lamp (B) will switch off.



WARNING: Stopping in emergency conditions

To stop the appliance in the event of imminent danger (emergency stop), turn the main disconnect switch (A) to the "OFF" position.

7. PREVENTIVE MAINTENANCE



This chapter is intended for trained personnel or expert operators.

Overview

- Monthly maintenance
- Yearly maintenance
- 3 yearly maintenance
- 30000 hours maintenance

7.1 Monthly maintenance

Overview

Description	Comments	Required parts
Check/clean/replace air filter	Check the air filter for dust and grease. Clean if necessary. If not possible due to damage, replace with a new one.	Spare Chiller filter

7.2 Yearly maintenance

Overview

Description	Comments	Required parts
Check air extraction system	Check booth air extraction system for adequate extraction	
Check for InfoT's	Check if any Info-T have been released that need an intervention on the ULC-30A.	
Check runtime	Check runtime to verify if any runtime-driven interventions are required.	
Check for leaks	Check for liquid leaks in the ULC-30A	
Check insulation	Check status of insulation	

7.3 3 yearly maintenance

Overview

Description	Comments	Required parts
Flush cooling liquid	Replace the cooling liquid of the system (\pm 30l) ULC-30A draining and refill tool needed. Includes refill tool, Service SW, cable to connect laptop to chiller.	Cooling liquid 5l Tooling

7.4 30000 hours maintenance

Overview

Description	Comments	Required parts
Replace Secondary cooling unit	Replace together with Main Pump	DCM-60A secondary cooling unit

7. Preventive maintenance

Description	Comments	Required parts
Replace Main Pump	ULC-30A draining and refill tool needed. Includes refill tool, Service SW, cable to connect laptop to chiller. Replace together with Secondary cooling unit	Draining and refill tool kit
Replace filter cap	Replace together with main pump	Chiller filter cap
Refrigeration unit		Chiller refrigeration unit

8. MAINTENANCE



This chapter is intended for trained personnel or expert operators.

Safety advice for maintenance

For personal safety reasons, before conducting maintenance interventions, check that all safety devices are activated and warn the people present in the workplace that such intervention is underway.

In particular, disconnect the power supply to the machine.

Allow the machine to cool down before carrying out any intervention to prevent scalds or burns.

Overview

- Cleaning the air filter
- Cleaning the ULC-30A

8.1 Cleaning the air filter



CAUTION: Do not wash the filter.



CAUTION: Only use non lubricated and dehumidified compressed air, free from pollutants.



CAUTION: Replace the filter, if damaged.

How to replace

1. Unscrew the screws (A).

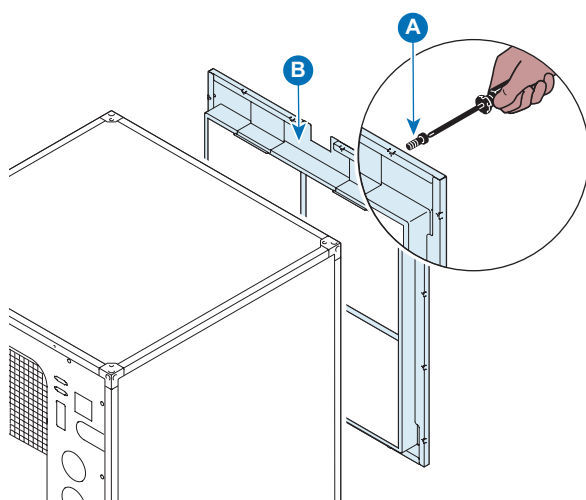


Image 8-1

2. Remove the fixed cover (B).
3. Lift the fasteners (C).

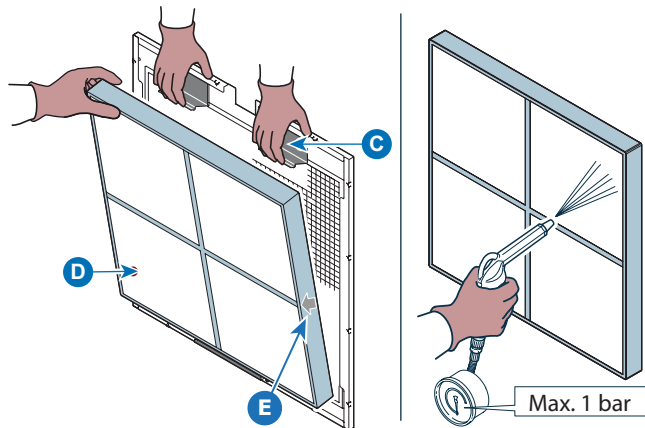


Image 8-2

4. Remove the filter (D).
5. Blow the air in at the specified pressure (max 1 bar).
6. Place the filter back on the inside of the cover. Lift the fasteners to insert the filter.
Caution: Pay attention to the airflow direction of the filter (E)
7. Mount the fixed cover and drive in the screws.

8.2 Cleaning the ULC-30A

Overview

Clean external ULC-30A parts with neutral detergents and non - abrasive materials.

Do not use aggressive, flammable or toxic detergents.

9. BASIC REPLACEMENTS



This chapter is intended for trained personnel or expert operators.

Safety advice in case of replacements

For personal safety reasons, before conducting maintenance interventions, check that all safety devices are activated and warn the people present in the workplace that such intervention is underway.

In particular, disconnect the power supply to the machine.

Allow the machine to cool down before carrying out any intervention to prevent scalds or burns.

Replace worn or damaged parts with original spare parts.

Overview

- Replacing the filter
- Replacing the fuse

9.1 Replacing the filter

How to replace

1. Unscrew the screws (A).

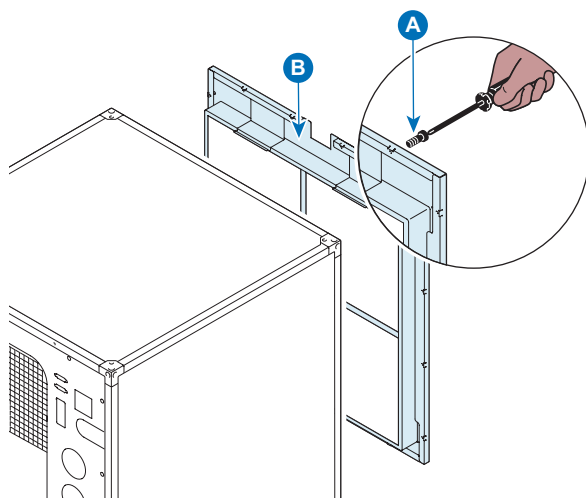


Image 9-1

2. Remove the front cover (B).
3. Lift the fasteners (C).

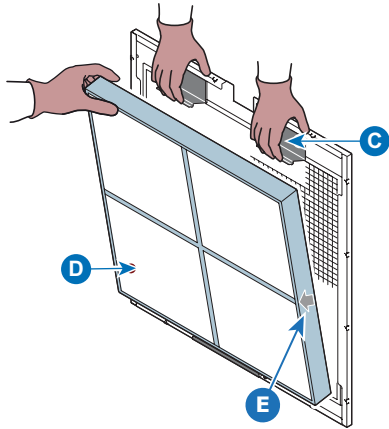


Image 9-2

4. Remove the filter (D).
5. Take a new filter and insert it at the back of the cover. Lift up the fasteners to mount the filter correctly.
Caution: Pay attention to the airflow direction of the filter (E)
6. Mount the cover and fix the screws.

9.2 Replacing the fuse



CAUTION: Before replacing the fuse, remove the cause of the problem.



WARNING: Replace the fuse only with a fuse with the same characteristics.

How to replace

1. Disconnect the ULC-30A from the power supply source.
2. Remove the front cover (B) by removing all the screws (A).

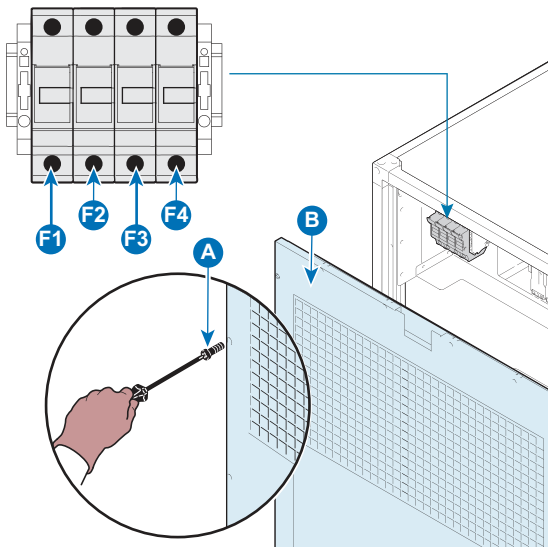


Image 9-3

3. Replace the interrupted fuse.
4. Put the fixed cover back in place (B).
5. Drive in all the screws (A).

Fuse technical data

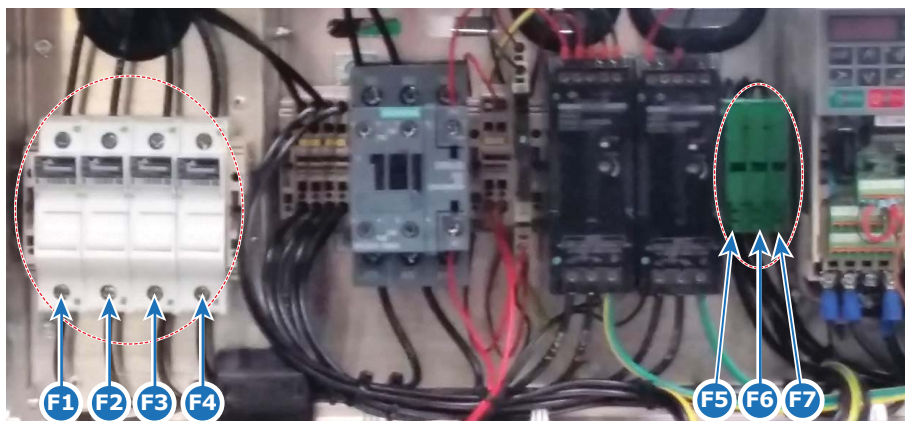


Image 9-4

Number	Description	Fuse type	Current rating
F1	Bussmann LP-CC-15	Class CC fuse (low peak)	15 A
F2	Bussmann LP-CC-15	Class CC fuse (low peak)	15 A
F3	Bussmann LP-CC-8	Class CC fuse (low peak)	8 A
F4	Bussmann LP-CC-8	Class CC fuse (low peak)	8 A
F5	Bussmann S506-6.3-R	Glass fuse 5x20	6.3 A
F6	Bussmann S506-6.3-R	Glass fuse 5x20	6.3 A
F7	Bussmann S506-6.3-R	Glass fuse 5x20	6.3 A

10. SPECIFICATIONS

10.1 Specifications

Overview

Power voltage and electric current	V ac	1~ 200 - 240V (±10%) 22A max
	V ac	3~Y 346 - 415V 3W+N+PE (±10%) 15A max
	V ac	3~Δ 200 - 240V 3W+PE (±10%) 16A max
Network frequency	Hz	50 - 60
Refrigerant type		R-410A
Coolant (solution made from ethylene glycol and demineralized water)		Antifreeze blue/demi (S1191) 30% glycol, 70% demineralized water
Coolant and refrigerant quantity	l	30
Maximum output pressure	bar	5
Maximum output flow rate	l/min	20
Maximum cooling power	W	5000
Maximum thermal power dissipated into the ambient	W	1000
Maximum water temperature (primary circuit)	°C	35
Maximum water temperature (secondary circuit)	°C	40
Minimum water temperature (primary circuit)	°C	5
Minimum water temperature (secondary circuit)	°C	10
Power cable	mm ²	4 mm ² or AWG11
Weight	kg	118

10.2 Dimensions

Overview

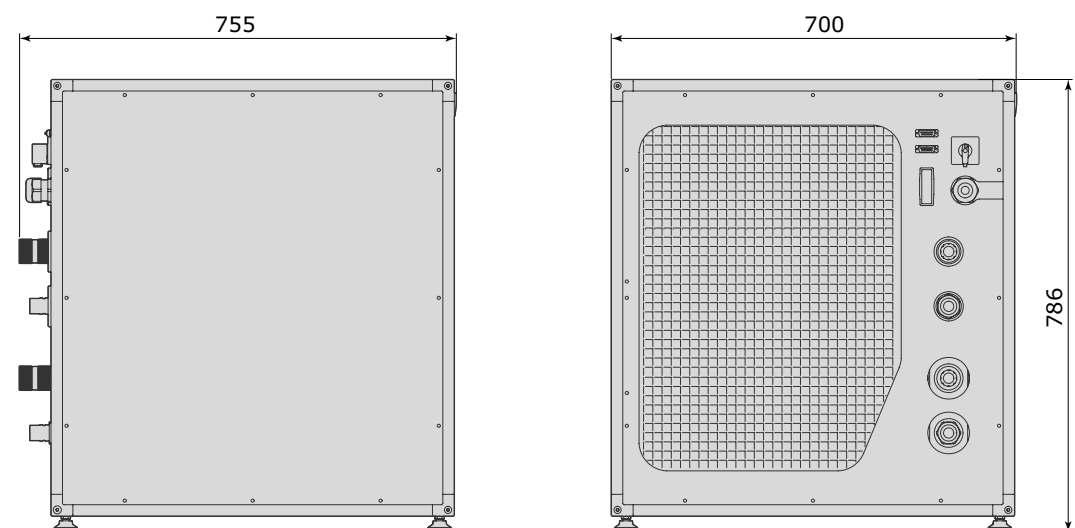


Image 10-1

10.3 Technical Regulations

Certificates



Image 10-2
CE mark



Image 10-3
RCM mark



Image 10-4

11. ENVIRONMENTAL INFORMATION

Overview

- Disposal information
- China RoHS compliance
- Turkey RoHS compliance
- Hazards
- Production address
- Contact information

11.1 Disposal information

Disposal Information

Waste Electrical and Electronic Equipment



■ This symbol on the product indicates that, under the European Directive 2012/19/EU governing waste from electrical and electronic equipment, this product must not be disposed of with other municipal waste. Please dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

For more information about recycling of this product, please contact your local city office or your municipal waste disposal service.

For details, please visit the Barco website at: <http://www.barco.com/en/AboutBarco/weee>

11.2 China RoHS compliance

中国大陆 RoHS (Chinese Mainland RoHS)

根据中国大陆《电器电子产品有害物质限制使用管理办法》(也称为中国大陆RoHS), 以下部分列出了Barco产品中可能包含的有毒和/或有害物质的名称和含量。中国大陆RoHS指令包含在中国信息产业部MCV标准:“电子信息产品中有毒物质的限量要求”中。

According to the “Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products” (Also called RoHS of Chinese Mainland), the table below lists the names and contents of toxic and/or hazardous substances that Barco's product may contain. The RoHS of Chinese Mainland is included in the MCV standard of the Ministry of Information Industry of China, in the section “Limit Requirements of toxic substances in Electronic Information Products”.

零件项目(名称) Component Name	有毒有害物质或元素 Hazardous Substances or Elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
印制电路配件 Printed Circuit Assemblies	X	O	X	O	O	O
外接电(线)缆 External Cables	X	O	O	O	O	O
内部线路 Internal wiring	X	O	O	O	O	O
螺帽,螺钉(栓),螺旋(钉),垫圈,紧固件 Nuts, bolts, screws, washers, Fasteners	X	O	O	O	O	O
电源供应器 Power Supply Unit	X	O	O	O	O	O
风扇 Fan	X	O	O	O	O	O

零件项目(名称) Component Name	有毒有害物质或元素 Hazardous Substances or Elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
塑胶外壳 Plastic Enclosure	O	O	O	O	O	O
<p>本表格依据SJ/T 11364的规定编制 This table is prepared in accordance with the provisions of SJ/T 11364.</p> <p>O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下。 O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572.</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 标准规定的限量要求。 X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572.</p>						



在中国大陆销售的相应电子信息产品(EIP)都必须遵照中国大陆《电子电气产品有害物质限制使用标识要求》标准贴上环保使用期限(EFUP)标签。Barco产品所采用的EFUP标签(请参阅实例, 徽标内部的编号用于指定产品)基于中国大陆的《电子信息产品环保使用期限通则》标准。
All Electronic Information Products (EIP) that are sold within Chinese Mainland must comply with the "Marking for the restriction of the use of hazardous substances in electrical and electronic product" of Chinese Mainland, marked with the Environmental Friendly Use Period (EFUP) logo. The number inside the EFUP logo that Barco uses (please refer to the photo) is based on the "General guidelines of environment-friendly use period of electronic information products" of Chinese Mainland.

11.3 Turkey RoHS compliance

Turkey RoHS compliance



■ Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur.

[Republic of Turkey: In conformity with the WEEE Regulation]

11.4 Hazards

Safety notice Sodium Carbonate (Na₂CO₃)

According to the Material Safety Data Sheet (MSDS), Sodium Carbonate could cause the following hazards:

- Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation (lung irritant).
- Potential Chronic Health Effects: Slightly hazardous in case of skin contact (sensitizer). The substance may be toxic to upper respiratory tract, skin, eyes. Repeated or prolonged exposure to the substance can produce target organ damage.

11.5 Production address

Factory

COOLTECH Srl

Via Prampolini 30, 41043 Formigine (MO) Italy

11.6 Contact information

Barco contact information

Registered office address: President Kennedypark 35, 8500 Kortrijk, Belgium

Contact address: Beneluxpark 21, 8500 Kortrijk, Belgium

Importers contact information

To find your local importer, contact Barco directly or one of Barco's regional offices via the contact information given on Barco's web site, www.barco.com.

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