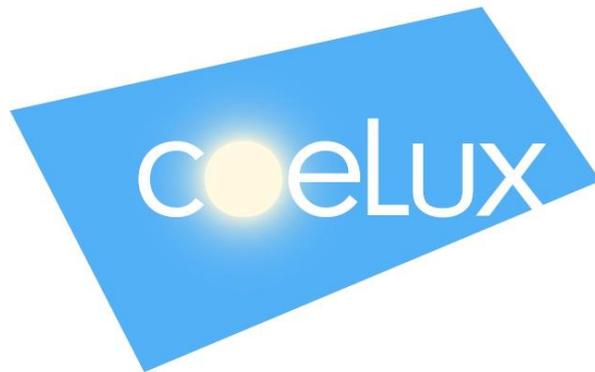


CoeLux S.r.l.

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Experience the Sky

Lighting unit

CoeLux[®] 45 LC
CoeLux[®] 45 LC_P
CoeLux[®] 45 LC_P_M



Assembling and
installation instructions

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1 INTRODUCTION



NOTE:

This manual is expressly intended for installation technicians.

Operators appointed to assembly and installation of CoeLux products must carefully read this entire manual before installing, assembling and starting the unit, as well as before all maintenance operations.

This manual must always be used and maintained in good conditions.

Do not remove, tear or arbitrarily change any of part of it.

Illustrations and drawings should only be considered as general references and are not necessarily precise.

The images and technical specifications that appear in the manual are not binding and may be changed without prior notice.

This manual consists of a total of 59 pages + annexes.

1.1 CONVENTIONAL SYMBOLS USED IN THE MANUAL



WARNING!

This symbol means that the operator must pay great attention in order to avoid wounds and damages to the personnel, breaks or fire to the unit.



CAUTION!

This symbol means that the operator must pay attention in order to avoid inconveniences to the personnel and / or possible damages to or bad running of the unit.



NOTE:

This symbol means specific technical indications or it emphasises important information.



This symbol shows the connection to parts or annexes of the manual, or the need to consult other different documents.

If necessary, other auxiliary symbols can be employed.

1.2 ABBREVIATIONS

Sec. = section

Chap. = chapter

Par. = paragraph

Fig. = figure

Tab. = table

1.3 COMMERCIAL NAMES

CoeLux HE: this refers to the *High End* product family.

45 HC Systems: this refers to the CoeLux HE product sub-family, consisting of CoeLux® 45 HC, CoeLux 45 HC_P and CoeLux 45 HC_P_M.

1.4 UNITS OF MEASUREMENT

Unless stated otherwise, the units of measurement are those set by the International System (SI).

1.5 OPERATORS' QUALIFICATIONS

| Logo | Meaning | Function |
|---|--|---|
|  | General operator | Operator without specific skills, capable of carrying out only simple tasks under the instructions of qualified technicians. |
|  | Driver of lifting and transport vehicles | Operator qualified to use vehicles to lift and handle materials (scrupulously following the manufacturer's instructions), in compliance with the laws in force in the country of the user of the unit. |
|  | Mechanic | Qualified technician, capable of assembling and operating the unit, and adjusting, servicing and repairing the mechanical parts as required. He is not qualified to work on live electrical systems. |
|  | Electrician | Qualified technician, capable of operating the unit, prepared to carry out all electrical interventions to adjust, maintain and repair. Capable of operating on live parts inside electrical cabinets and junction boxes. |
|  | Qualified Technician or Operator | Technician qualified by CoeLux s.r.l. to carry out operations of extraordinary maintenance, even under special conditions. He possesses mechanical and/or electrical and/or electronic skills, depending on the case. |

Tab. 1 Operators' qualifications



N.B.:

One person may be able to cover more than one role given in the table, subject to adequate training.

It should be noted that the term "OPERATOR" refers generically to the personnel appointed to assemble, install and clean the unit.

The term "QUALIFIED PERSONNEL" or "QUALIFIED OPERATOR" refers to those persons, who have attended specialisation courses, training, etc. and have experience of installing, starting up and servicing, repairing and transporting the unit.

The term "EXPOSED PERSON" refers to a person whose presence in any area inside and/or near a machine constitutes a risk for his security, health or safety.

2 PRODUCT SPECIFICATIONS

CoeLux HE systems are built-in lighting equipment: partially hidden by the false ceiling, it is capable of artificially simulating natural light from the sky, sun and the moon (not all products), even in a completely closed space.

They consist of a LED light source, glass optical components and a CoeLux® plastic plate, all housed in a single, metal structure.



CAUTION!

CoeLux® 45 LC installation and use is limited to indoor environments that comply with essential requirements reported in the table below. It is forbidden any uneven use of the product, respect to restriction report in this guide, which may cause hazards to health and safety of people, animals and goods, and product malfunctioning. CoeLux s.r.l. is not liable for any injury to people, animals or goods derived from an incorrect installation and/or improper use of the product (or different from directives reported in the present guide).

For particularly severe environmental conditions (daily temperature range excide 15°C and maximum relative humidity higher than 60%) support machines for active air treatment are needed: please contact us for the scope.

2.1 PRODUCT TECHNICAL DATA, SPECIFICATIONS AND IDENTIFICATION

| Specifications | Unit of measurement | Value | |
|--|------------------------|---|---|
| MECHANICAL | | CoeLux® 45 LC | CoeLux 45 LC_P CoeLux 45 LC_P_M |
| Product dimensions | mm in | 2376 x 1675 x 689 93.6 x 65.9 x 27.1 | 2318 x 1675 x 665 91.3 x 65.9 x 26.2 |
| Dimensions of the artificial window | mm in | 973 x 474 38.3 x 18.7 | |
| Product weight | kg lb | 300 660 | |
| ELECTRICAL | | | |
| Supply voltage (frequency) | V (Hz) | 100 - 240 (50/60) | |
| Connections | - | Phase + Neutral + Earth | |
| Maximum (typical) absorbed power | W | 300 (270) | |
| Insulation class | <i>IEC Definitions</i> | Class I | |
| Mark | | CE, UL, FCC, CB | |
| ENVIRONMENTAL (<u>equipment intended for indoor use</u>) | | | |
| Operating temperature | °C | 25°C | |
| Maximum operating relative humidity | % | 95 (non-condensative) | |

Tab. 2 Data and features of the product

The 45 LC systems have an external METALstructure. Different versions are available according to the projector specifications and whether the moon module is or is not present (Tab. 3). They can also be installed on surfaces which are normally inflammable. ▽



For all technical lighting data, please refer to the product technical sheet. Contact CoeLux S.r.l to receive it directly or to receive further product details and clarifications.

| System Code: | 74-00015-01 | 74-00074-01 | 74-00075-01 | 74-00076-01 | 74-00077-01 |
|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|
| Product Name | CoeLux® 45 LC | CoeLux 45 LC_P CE | CoeLux 45 LC_P_M CE | CoeLux 45 LC_P UL | CoeLux 45 LC_P_M UL |
| Marks | CE, UL, CB, KC, FCC | CE, CB | CE, CB | UL, FCC | UL, FCC |
| LED projector | 74-00013-01 | 74-00062-01 | 74-00062-01 | 74-00063-01 | 74-00063-01 |
| Projector cooling | Active | Passive | Passive | Passive | Passive |
| Metal BOX | 74-00008-01 | 74-00008-01 | 74-00008-01 | 74-00008-01 | 74-00008-01 |
| Panel | 03-00006-01 | 03-00006-01 | 03-00006-01 | 03-00006-01 | 03-00006-01 |
| Large Mirror | 03-00008-01 | 03-00008-01 | 03-00008-01 | 03-00008-01 | 03-00008-01 |
| Small Mirror | 03-00007-01 | 03-00007-01 | 03-00007-01 | 03-00007-01 | 03-00007-01 |
| Moon Module | / | / | 74-00064-01 | / | 74-00064-01 |

Tab. 3 Versions of 45 LC systems

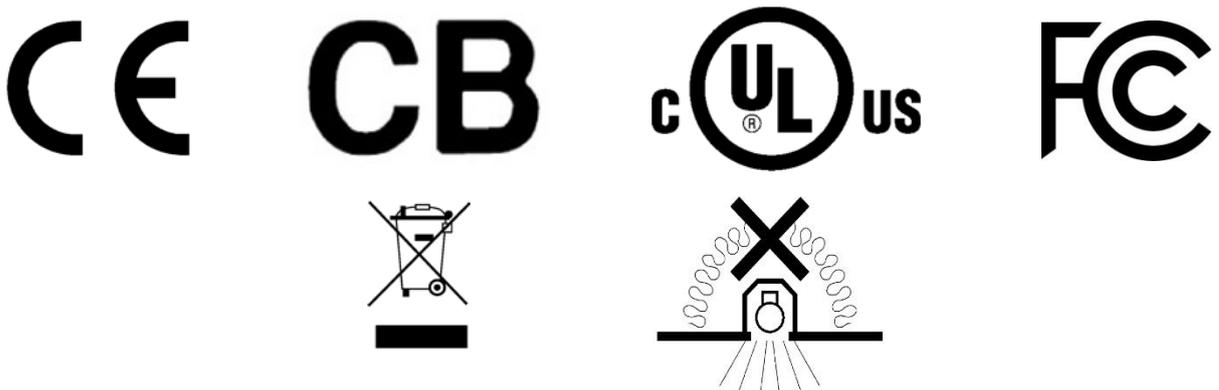
The LED projector has a label with the Serial Number (SN) and Part Number (PN); please give CoeLux S.r.l. these numbers for any query.



Fig. 1 Label with Part Number and Serial Number

The relevant standards have been applied to ensure the 45 LC systems comply with the essential requisites of the Directives 2014/35/EU, 2014/30/EU, 2011/65/EC and 2012/19/EU.

The 45 LC systems also hold UL certification for Canada and the U.S.A. (File E476417) and are FCC certified (in accordance with CFR 47 part 15 – Subpart B- 15.107 and 15.109).



2.2 GENERAL SAFETY WARNINGS

WARNING!



Read the entire manual, as it contains important information to install and operate the unit correctly.

To avoid accidents or injuries, follow the procedures described in this manual to install and use the unit. If you do not follow the instructions and warnings given in this manual, the guarantee will no longer be valid.

Furthermore, CoeLux S.r.l. will not accept any liability for any damages to objects, people and animals, which may arise from the failure to comply with the instructions and warnings given in this manual. CoeLux S.r.l. will not be held liable for the incorrect installation and/or assembly or which does not comply with what is described in the installation manual.

WARNING!



All assembly, installation and testing operations must be carried out only by CoeLux qualified personnel. The operations to fasten the product to the existing structure must be carried out by qualified personnel (CoeLux does not deal with this qualification).

N.B.:



Some details regarding how to switch on the product or how to operate it in general may depend on the choices made during assembly and/or installation.

- The product is not a toy and must be kept out of children's reach! Install the product where children are unable to reach it.
- Take care not to leave the packaging material unguarded, as it could be dangerous for children to play with it.
- The product can be installed and used only in closed, dry, internal rooms, which are not exposed to condensation and wet.

CAUTION:



- Do not install the equipment in dirty (dusty) rooms, where gas, steam or dust is, or may be present! Risk of explosion!



- Do not cover the system with thermal insulation materials: More specifically, in order to maintain the UL certification, the distance between each surface of the product and any insulating material present in the ceiling must exceed 76 mm (3 in).
- The product must not be subjected to extreme temperatures, strong vibrations or mechanical stress.
- If you think it is unsafe to operate the product, you must switch it off at the mains and prevent any incorrect actions. Ask expert personnel to supervise. You should consider it is impossible to operate when:
 - the product is visibly damaged;
 - the product does not work or does not work correctly (flickering light, release of smoke or bad smell, audible crackle, discolouring of the product or the surrounding surfaces);

- the product has been stored in unsuitable conditions;
 - the product appears worn or damaged after transport.
- If you have any further questions, please do not hesitate to contact CoeLux S.r.l (see last page in this manual).

2.2.1 OPERATIONS TO AVOID

- Carry out even partial modifications to the unit or its parts, unless expressly agreed with and authorised in writing by the manufacturer. Any unauthorised modifications made by the purchaser and/or installer and/or assembler and/or any other third parties to the unit will entail the loss of the CE mark and any other certifications. In this event, the guarantee and liabilities of CoeLux are no longer valid.
- Open the case before disconnecting from the mains supply.
- Carry out any improper, hazardous operations.
- Obstruct the vents or heat dissipation outlets.
- Use inflammable liquids near the equipment.
- Install or repair without using qualified personnel.
- Walk on the system, lean on it or hang on to it throughout the unit's working life.
- Repeatedly switch the unit on and off over a period of 30 seconds.

2.3 PACKAGING AND TRANSPORT

The unit is shipped adequately protected and packaged in a wooden crate.

Some of the accessories parts can be placed in carton boxes in order to be protected, to facilitate the transport and to avoid their dispersal.

Due to the particular fragility of some parts, handle packages with care when loading/unloading from the transport vehicle and during handling.



For this reason the performance of these operations must only be entrusted to trained and competent staff, such as crane and fork-lift truck operators.



NOTE:

Drawings and instructions that accompany the unit are and remain the exclusive intellectual property of CoeLux s.r.l., who maintains all rights, prohibits reproduction and the simple disclosure to third parties, even if only partial.

2.3.1 UNPACKING



NOTE:



Only start unpacking after having completed the cleaning procedure (see paragraph 5.2.1 CLEANING PROCEDURE).

Given the fragility of the content, always work with the utmost care.

- 1 Make sure the delivered material corresponds to that indicated in the shipping documents. Immediately contact CoeLux S.r.l. in the event of missing parts or irregularities.
- 2 For every box, free the various parts from the packaging.
- 3 Make a careful and scrupulous general inspection to identify any damages suffered by unit parts during transport. For damages, immediately notify the shipping agent and manufacturer in writing; do not continue unpacking until authorised by CoeLux s.r.l.
- 4 Proceed with the mounting phase as indicated in Chapter 7.
- 5 Recover all packaging material and dispose according to current regulations.

2.4 MOVEMENT OF THE PARTS



Some product parts weigh more than 25 kg and may require the use of lifting devices for them lift and movement.

Given the fragility of some parts, always work with the utmost care.

The operator should use adequate personal protection equipment (P.P.E.) such as gloves, protective shoes, etc.

2.5 STORAGE

Store the product in a closed room, protected from the weather, with the following environmental characteristics:

- Temperature between -20 °C and +50 °C.
- Relative humidity less than 30% at 40 °C and 90% at 20 °C and, in any case, non-condensing.
- Atmosphere with clean air, without acids, corrosive gases, salts, etc.

The unit must be carefully protected against dust and direct sunlight using an adequate protective cover and protected against potential accidental collisions.

3 PRE-INSTALLATION



WARNING!

All assembly, installation and fastening operations for the 45 LC systems and structural elements must be carried out according to the laws, regulations, technical standards and codes in force in the country in which the product is installed.

The guarantee is not valid and CoeLux declines any liability for any damage which may arise, if this instruction is breached.

The 45 LC systems must be fastened to the existing structure by qualified personnel, selected by and under the responsibility of the installer or user.

3.1 PERMITTED APPLICATIONS

The 45 LC systems were designed to be installed in internal rooms with a minimum floor thickness of 2,900 mm (126 in). Subject to any different, specific legislation, the recommended end height of the false ceiling is between 2,200 (86.6 in) and 2,900 mm (126 in).

You must check the minimum permitted height of the false ceiling in every room.



WARNING!

The 45 LC systems are not suitable for installation in open areas exposed to bad weather and in places, which do not comply with the environmental requisites given in Table No.1.

If the 45 LC systems are used in environments subject to specific legislation (undergrounds, tunnels, etc.), an assessment must be made by competent personnel. Contact CoeLux S.r.l. to receive guidelines for any specific project.

3.2 DESIGNING THE SPACE

The 45 LC systems light space very differently compared to traditional lighting and imitate a permanently sunny window. Prior to installation, you need to calculate where the main beam will be directed, as it will not be possible to subsequently modify the direction of the light.

To use the product correctly, we advise you to ensure the artificial lighting is compatible with the natural light, to which the space in question is exposed (from any windows, skylights, etc.)

When you are preparing to install the 45 LC systems, you must envisage an access trapdoor in the false ceiling (closed by a locked door) and the relevant space above it to permit maintenance operations (see Paragraph 5 LIFTING, FASTENING, CONNECTIONS AND CHECKS).



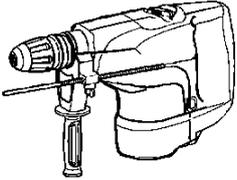
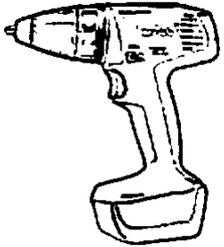
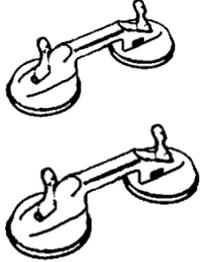
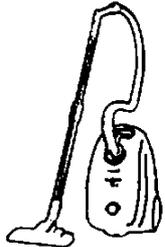
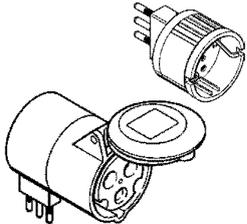
3.3 GENERAL INSTRUCTIONS FOR FASTENING

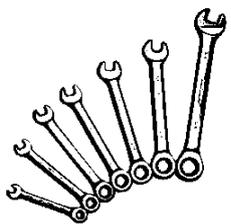
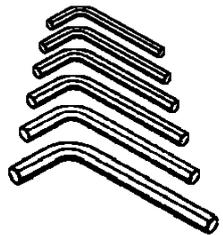
The 45 LC systems must be fastened to the ceiling via a system consisting of a sub-structure hanging from the aforementioned ceiling, on which you will place the 45 LC systems.

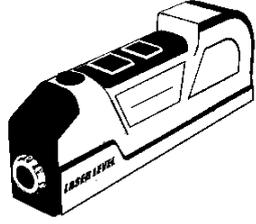
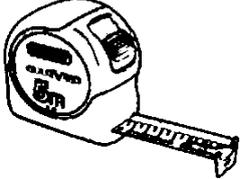
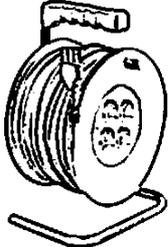
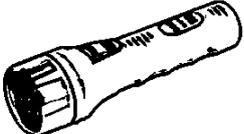
Procedures to assemble, lift, fasten and start up the 45 LC systems must comply with the instructions in this manual. They must also comply with the relevant, applicable legislation in force on installation and on health and safety in the work place.

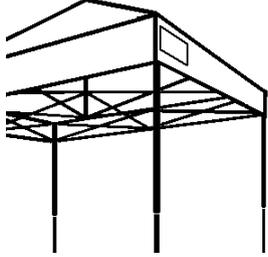
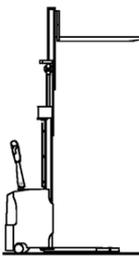
3.4 TOOLS REQUIRED, BUT NOT SUPPLIED FOR INSTALLATION

The table below gives a list of tools required to install the 45 LC systems, but which are not supplied in the assembly kit.

| Equipment | Quantity | Note | Figure |
|--------------------------------|--------------------------|--|---|
| Percussion drill. | 1 | With bits for cement, reinforced cement and metal. |  |
| Power screwdriver. | At least 1 per operator. | With inserts for 8 mm nuts and bolts (star screw head also). |  |
| Suction cups to handle mirrors | 2 | |  |
| Vacuum cleaner. | 1 | |  |
| Electrical socket adapters. | | |  |

| | | | |
|--|-------------------|--|---|
| PPE (Personal protection equipment) | One per operator. | Helmet, sling, goggles, shoes, gloves, etc. Always follow the regulations in force in the country of installation. |  |
| Ladders meeting current standards. | At least 2. | Height > 3.5 m |  |
| Screwdrivers, scissors, knives, wrenches, hammers | | |  |
| Phillips screwdriver with handle at least 20 cm long | 1 | |  |
| Open-ended, ring, ratchet and socket spanners. | 1 set. | Specifically 8 mm. |  |
| Allen keys. | 1 set. | Specifically 4 and 5 mm. |  |

| | | | |
|----------------------------|-------------|------------------------|---|
| Livella, laser. | 1 | |  |
| Measuring tape. | 1 | |  |
| Electrical extension cord. | At least 1. | Tripolar, length 25 m. |  |
| Electrical tape. | At least 1. | Black. |  |
| Spray paint. | 1 | Matt black. |  |
| Flashlight. | 1 | |  |

| | | | |
|--|-------------|-------------------------------|---|
| Sunglasses, category 3 or 4. | 1 | |  |
| Folding gazebo(if necessary: refer to Chapter 5). | 1 | Minimum dimensions 5 x 4 m |  |
| Dark Box support. | At least 6. | See chapter 7 ASSEMBLY. |  |
| Lifting device, suitable for the work load (300 kg). | 4 | Lift trolley |  |
| | 4 | Hoist |  |

Tab. 4 Necessary tools but not supplied

4 FASTENING SYSTEM

WARNING!



The 45 LC systems must be fastened to the existing structure by qualified personnel selected by and under the responsibility of the installer or user, according to the instructions in this chapter and to the safety measures in force in the place of installation. If you do not follow the instructions and warnings given in this paragraph, the guarantee will no longer be valid.

CoeLux S.r.l. supplies an installation kit, certified by a structural engineer for the products in its range: to this regard, please read paragraph 4.2.



CAUTION:

If you do not use the CoeLux installation kit, the installer will be responsible for the structural certification of the suspension system. CoeLux S.r.l. declines any liability for the use of any alternative suspension system to the one offered.

4.1 SAFETY DISTANCES AND VOLUME

For the system to operate at its best, the louvre thermally coupled to the LED source needs to exchange air with the surrounding environment. If the air within the false ceiling can be regulated and is not dusty or humid, the free volume of air around the LED projector must be at least 1.5 m³. Conditions are much better if the air can circulate freely around the entire installed product: thus we highly recommend leaving at least 100 mm free space around all the system surfaces. Please refer to Tab. 2 para. 2.1 for the overall dimensions of the system.



You must ensure access to the projector to allow for maintenance. Therefore, you need to make an opportunely positioned trapdoor with adequate dimensions (restrictions shown in Figure 2). Furthermore, you need to ensure there is an opportune work area around the light (the optimum distance of the projector from the walls is at least 50 cm).

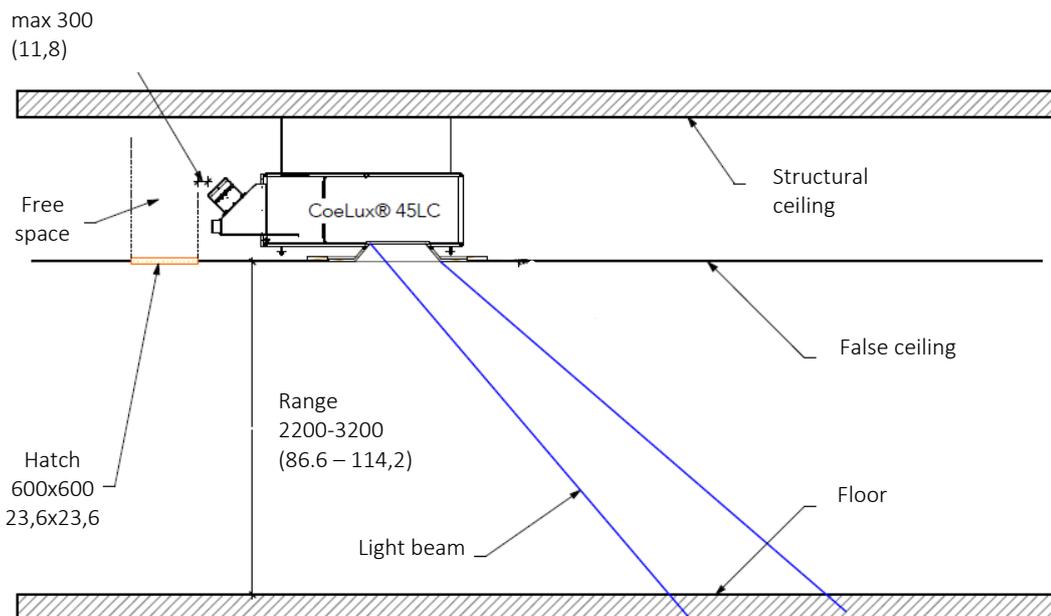


Fig. 2 CoeLux® 45 LC installation diagram Dimensions in mm (inch)

UL certified systems require the distance between each surface of the product and any insulating material present in the false ceiling to exceed 76 mm (3 in).

WARNING!

UL certification will become invalid if this distance is not complied with (NON-IC INSTALLATION TYPE).

WARNING!

If support machines are required for air conditioning, a suitable housing must be prepared for them, which ensures the safety volume around the projector is maintained and access (via the trapdoor) for their maintenance is not blocked. If the housing and the electric socket are over 30 cm (11.8 in) away from the inspection trapdoor, you must create an additional trapdoor to enable any maintenance to be carried out.

4.2 INSTALLATION KIT

WARNING!

Qualified personnel chosen by installer or user and under his responsibility must make fixing of CoeLux® 45 LC to the existing structure, following the safety regulations in force in the country of installation.

This annex provides necessary instructions and warnings to correctly use the installation kit, provided apart from CoeLux s.r.l.

CoeLux s.r.l. is not liable for inobservance of instructions and warnings here reported.

The installation kit, provided apart by CoeLux S.r.l., comprises:

- 4 L plates for fixing to the ceiling (PN 73-00153-01)
- 4 threaded rod M12, length 1500mm. At one end of each bar is welded a plate 140x60x5 with fixing hole of 11mm (PN 73-00156-01)
- 4 fixing plates 120x120x5 (PN 73-00152-01)
- 2 horizontal tie rods 50x1622x5 (PN 73-00154-01)
- 4 bolts M8, 4 bolts M10, 8 nuts and washers M12

4.3 FASTENING PLUGS

Before assembling CoeLux® 45 LC, make the holes for anchoring L plates to the ceiling (figure 3).

WARNING!

Each plug anchored to the load bearing structure of the building must be able to support a traction stress of at least 1.6 kN.

Fix L plates to the ceiling and connect threaded rod M12 as shown in figure 4.

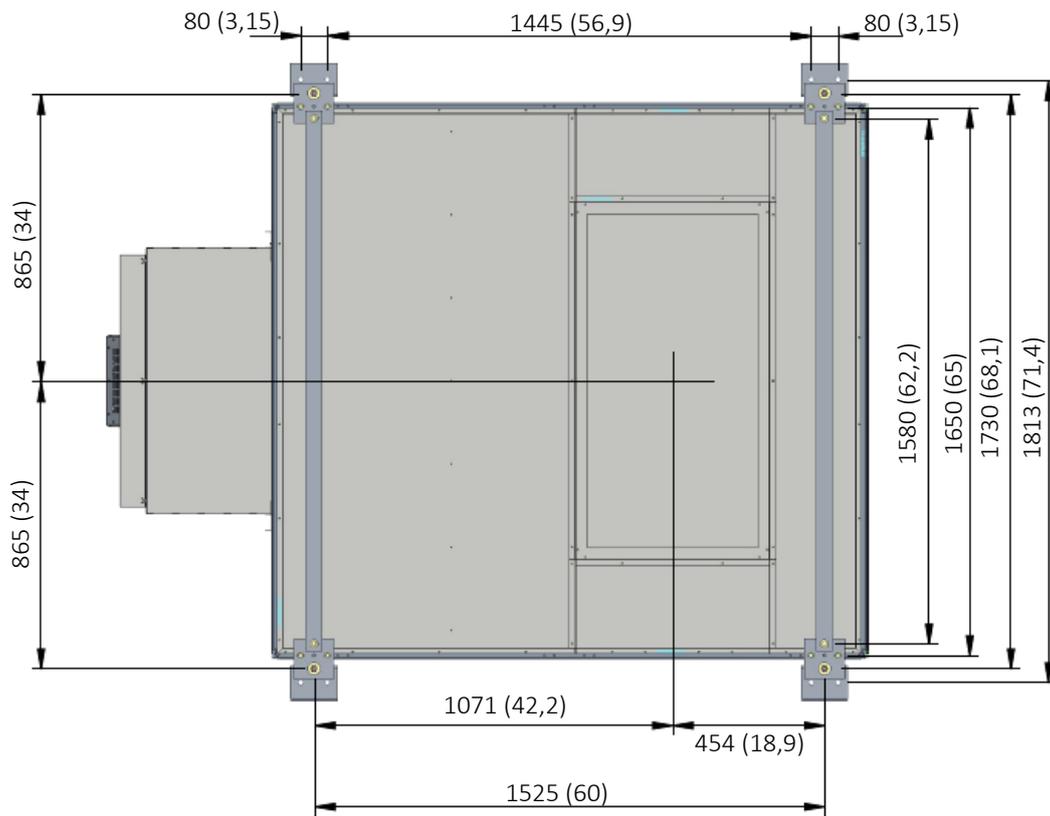


Fig. 3 Suggested anchoring system – Bottom view

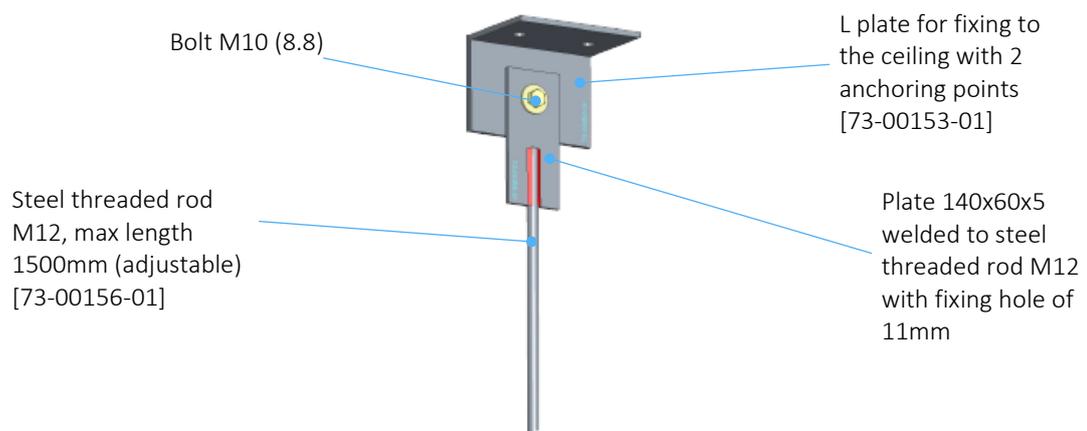


Fig. 4 Suggested anchoring system – Detail A

5 INITIAL CLEANING

For best CoeLux[®] 45 LC results, guarantee a high level of cleanliness for all product parts. CoeLux[®] 45 LC must be assembled in an indoor environment not exposed to weather, clean and dry.



CAUTION!

Avoid installing CoeLux[®] 45 LC in poorly clean rooms because product functionality may be compromise. During assembly and installation follow cleaning procedure exposed below.

Even during assembly, avoiding the contamination of each component is essential since, for example, dust deposits on internal surfaces, dirt on the CoeLux[®] panel or above optical components, may not guarantee maximum product performance. Regular cleaning is essential to maintain device performance (see paragraph 10 MAINTENANCE).

5.1.1 CLEANING PROCEDURE

A cleaning procedure with a specific kit supplied with the product is provided to promote this (cleaning kit no. 38-00002-01). The kit is made up of:

- No. 6 polyethylene cloths (5 x 4) to create a clean room for assembly,
- No. 1 spray bottle containing a specific dust remover,
- No. 2 pairs of cotton gloves and
- No. 15 cotton cloths to handle and clean optical parts,
- No. 1 bottle of Vetril[®] ONLY to be used to clean the CoeLux[®] panel.

The procedure is described below:

- 1 Before assembling, create holes in the ceiling or walls to anchor the support sub-structure (Paragraph 11.1);
- 2 Clean the assembly room floor;
- 3 Remove dust and clean the floor: Spray the specific dust remover in the room to create a clean room, wait about 10 minutes, vacuum the floor and repeat this procedure 2 – 3 times (according to the prior level of cleanliness);
- 4 Lay to 5 x 4 m polyethylene cloths (one above the other) to cover the assembly floor portions (floor coverings or pads should be placed UNDER these polyethylene cloths).
- 5 Hang 4 polyethylene cloths on the room walls or ceiling to create a clean room; join them to the floor cloths leaving one side open to introduce parts;
- 6 Spray dust remover in the clean room.
- 7 Assemble the *dark-box* inside the clean room.

**NOTE:**

Crates should be opened and *dark-box* parts cleaned outside the clean room. If the room ceiling is too high and the walls too wide to secure the 4 sides of the clean room, use, for example, a gazebo as a support frame for the walls.

If several devices are to be mounted, the polyethylene cloths must be removed after one box is fully assembled and the clean room recreated with new cloths, repeating the entire cleaning procedure.

5.1.1.1 COMPONENT CLEANING

All unit components must be cleaned immediately before assembly.

All optical parts must be handled with care. Removing dirt is a delicate operations that must be performed with skill to have positive effects while not ruining optical surfaces.

We recommend starting blandly, proceeding with more decisive and aggressive work until the contamination is removed.

**CAUTION!**

Incorrect cleaning could cause irreparable scratches on optical surfaces.

If the surface is ruined, interrupt assembly and contact CoeLux S.r.l. to request a replacement.

After assembly, remove any visible dirt from all internal metallic parts, LED projector optical output and ventilation slots.

5.1.1.2 CLEANING MIRRORS AND THE COELUX[®] PANEL

Both mirrors and the CoeLux[®] panel are supplied by CoeLux S.r.l. in a specific package.

When cleaning these components, surfaces should not come into contact with fingers or sewn glove edges.

**CAUTION!**

These surfaces should always be handled with the cotton gloves.

Before assembling each mirror: after unpacking, analyse mirror surface and proceed as indicated in figure 3. The detailed procedure is reported in paragraph 11.5.

Before assembling the CoeLux[®] panel and previously mounted frame (paragraph 7 ASSEMBLY), remove the protective film from both sides and clean the surfaces in two phases:

- Phase 1 (wet): Clean with a cotton cloth and Vetril[®] (both provided within the cleaning kit) wetting the entire surface.
- Phase 2 (dry): before the Vetril[®] evaporates, wipe with a dry cotton cloth to remove all liquid and dry the surface. After this operation, wipe with a “dry” cloth before installing the CoeLux[®] panel. Several cotton cloths are required for this phase (provided within the cleaning kit).

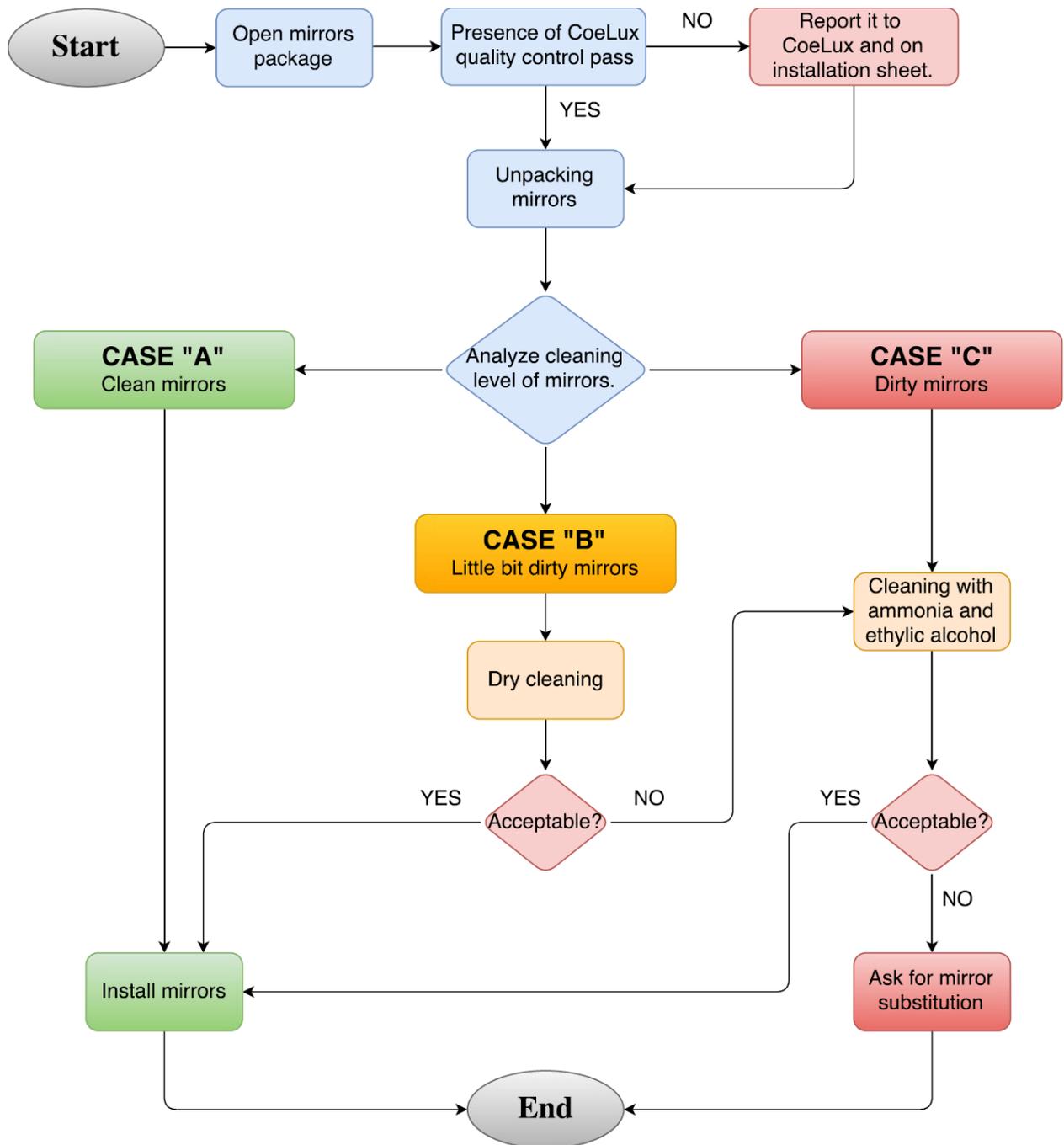


Fig. 5 *Flow chart analysis and extraordinary cleaning procedure of mirrors*

6 ASSEMBLING



WARNING!

Only personnel qualified by CoeLux S.r.l. may assemble the equipment.

All the instructions in paragraph 5.2 INITIAL CLEANING must be taken into account during CoeLux[®] 45 LC assembly.

The assembly kit supplied by CoeLux S.r.l. includes:

- A crate containing black painted metal panels and tubes, a box containing the CoeLux[®] panel, a box containing LED projector, a bag containing 6 silica-gel bags for internal air passive conditioning,
- A crate containing the pair of mirrors,
- A box containing the cleaning kit.

Into *ventilation kit* (provided by CoeLux s.r.l. exclusively with projector 74-00013-01) there are projector air collectors with insulated pipes.

See section *Initial cleaning* for the cleaning of mirrors and CoeLux[®] panel.

6.1 ASSEMBLY PROCEDURE

Follow the various assembly steps in order, paying attention to directions and details indicated below.

- Assemble the box lifted off the ground by at least 40 cm, placing it horizontally on supports suited to device weight (about 300 kg).
- Mount screws and bolts in the same direction in each sector, making sure they are always well-tightened.
- Before assembling the mirrors and panel, make sure there is no dust or dirt in the box: in case remove it.
- Always use cotton gloves provided within the cleaning kit to handle the mirrors. Before assembling the mirrors, clean them as indicated in paragraph *Initial Cleaning*.
- Before assembling the CoeLux[®] panel, clean as indicated in paragraph *Initial Cleaning*. This component should always be handled with cotton gloves provided within the cleaning kit.



NOTE:

During assembly, fill out the installation sheet (document 65-00071-01) provided in two copies with this manual. Then send one compiled copy to CoeLux S.r.l.

6.2 ASSEMBLY SEQUENCE

- 1 Take the 4 tubes inside the case: separate those with the threaded inserts [2] from those without [3]. Then take the two pre-assembled panels to the tubes [1] and connect them to the tubes by inserting them into the tenons (figure 4). All the holes on the tubes must be on the outer faces of the box. The tubulars with inserts must be mounted on the short side closer to the metal projections preassembled to the panels [1] (red detail in figure 4). If necessary, use a plastic hammer to completely insert the tenon inside the tube

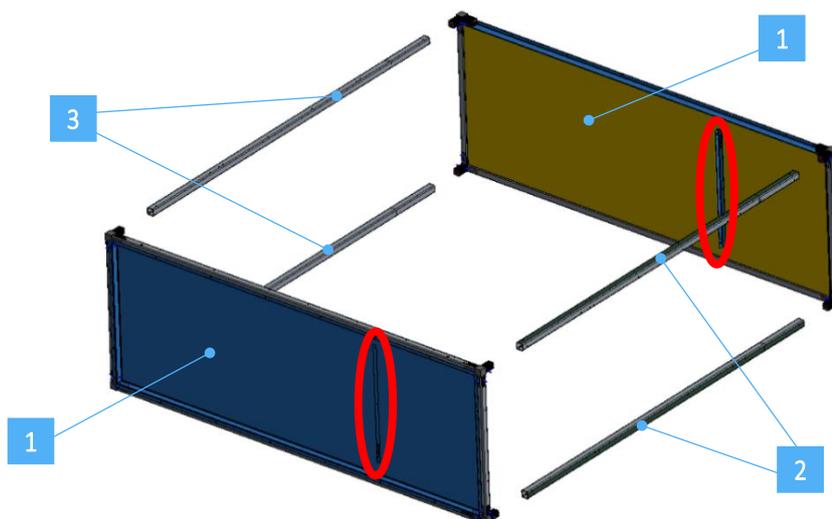


Fig. 6 *Tubes assembly.*

- 2 Insert the bottom panels [4] and [5] (listed PN 73-00055-01 and 73-00053-01) everything inside the tubes is shown in figure 5 and fix them to the tubes connected to the M4 self-threading screws supplied. The horizontal profile of the panel [5] (red detail in figure 5) must be in line with the horizontal ones of the side panels (red detail in figure 5).

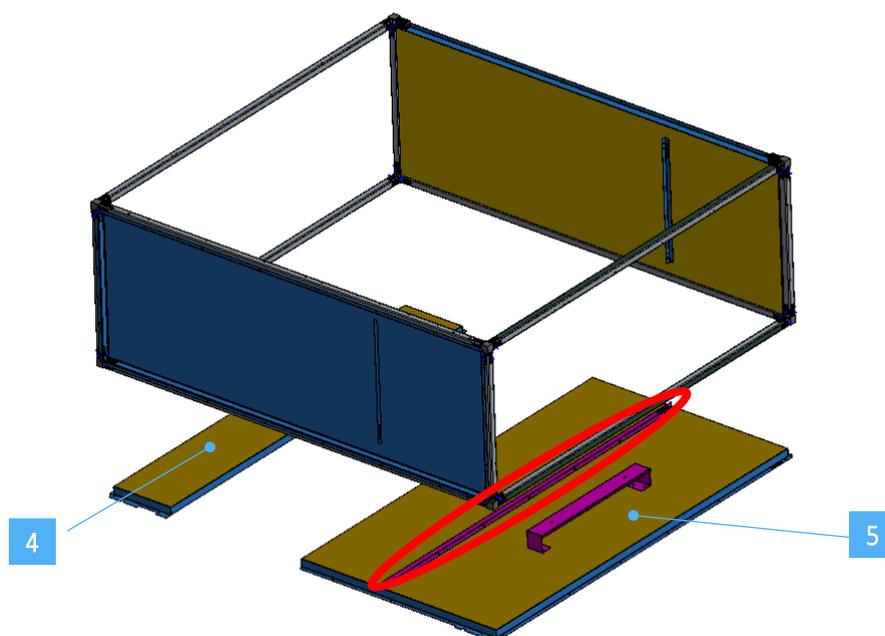


Fig. 7 *Bottom panels assembly.*

- 3 Insert the two bottom side panels [6] (PN 73-00054-01) inside the tubes and fix them using the M4 self-tapping screws and M5 screws supplied, as shown in figure 6.

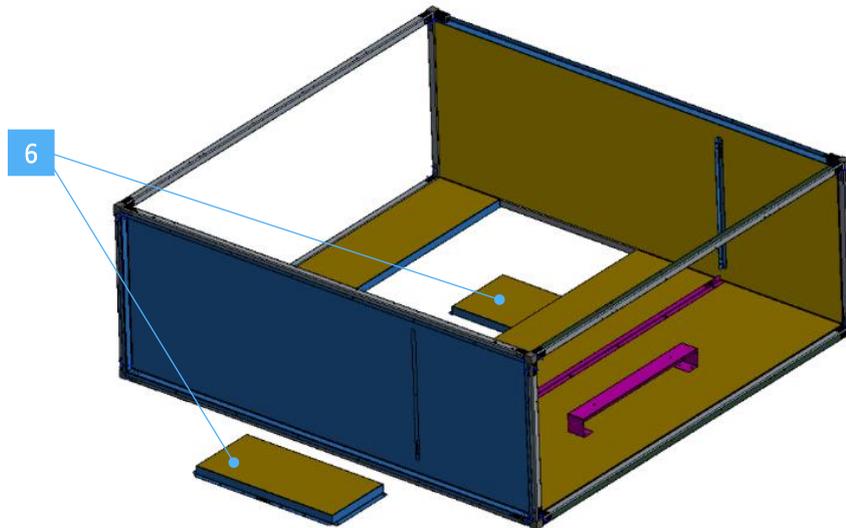


Fig. 8 *Bottom lateral panels assembly.*

- 4 Insert the rear panel [7] (PN 73-00056-01) and the front panel [8] (PN 73-00065-01) inside the tubes as shown in figure 7 and fix them using the supplied M4 self-tapping screws.

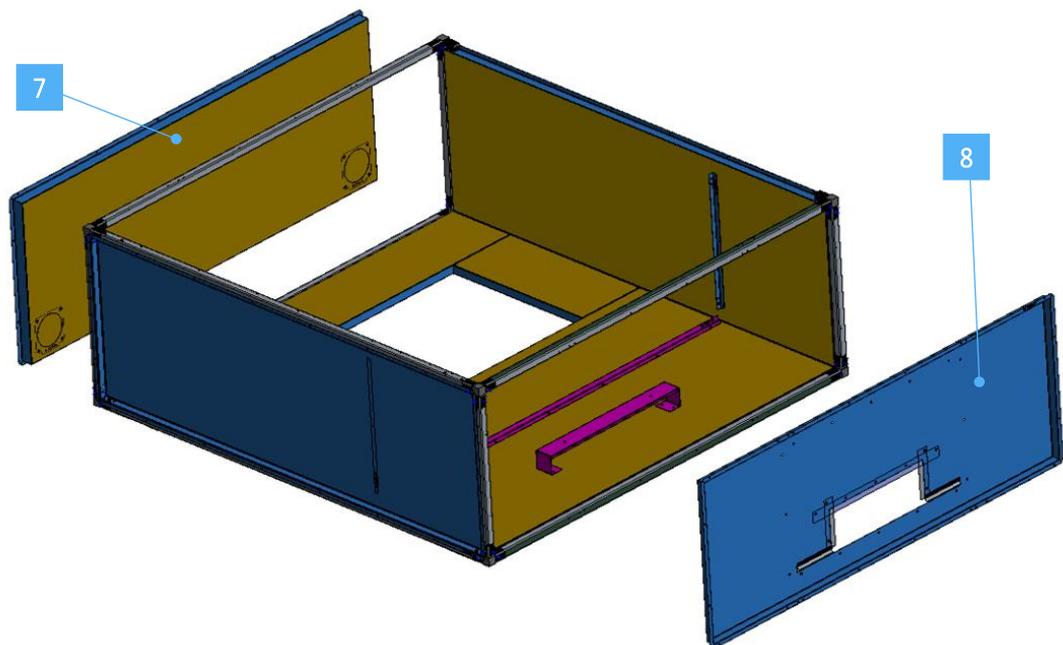


Fig. 9 *Rear and front panels assembly.*

- 5 Insert the protruding part of the headlight assembly [9] into the appropriate opening in the front panel [8] (red arrows in figure 8) and fix them using the supplied M5 screws.

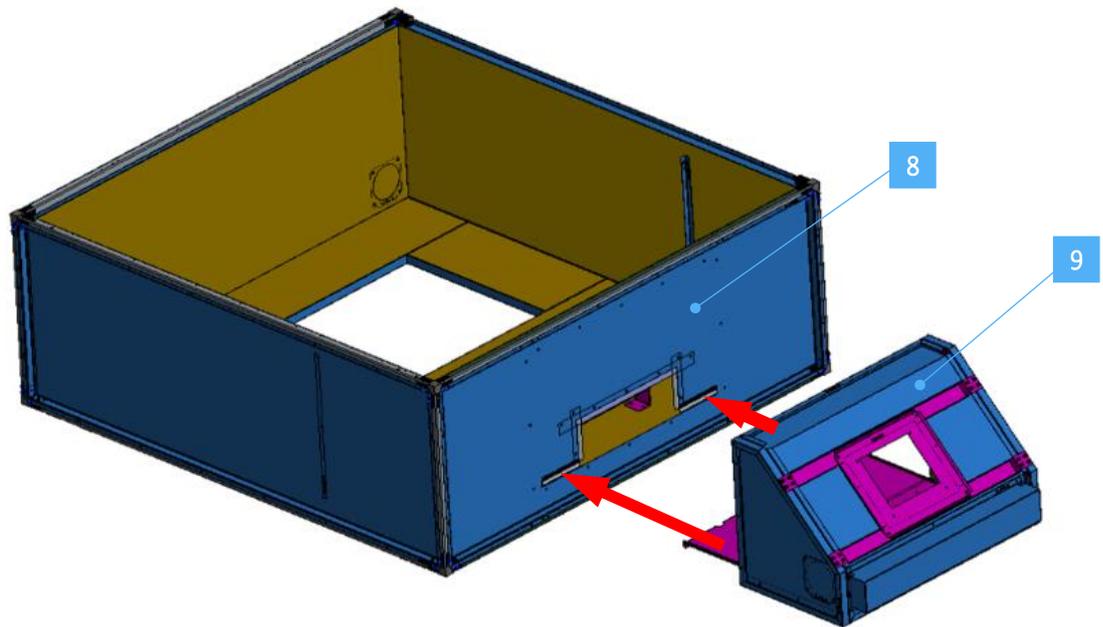


Fig. 10 Ensemble assembly.

- 6 Fix the support bars [10] (PN 73-00081-01) to the tubes [3] and to the light assembly [9] using the supplied M5 screws (figure 9), inside the lower face of the skeleton formed by the tubulars [1] and [2]. Fix it to the side tubes [2] and to the tubular [1] from the side of the panel [5] using the supplied screws.

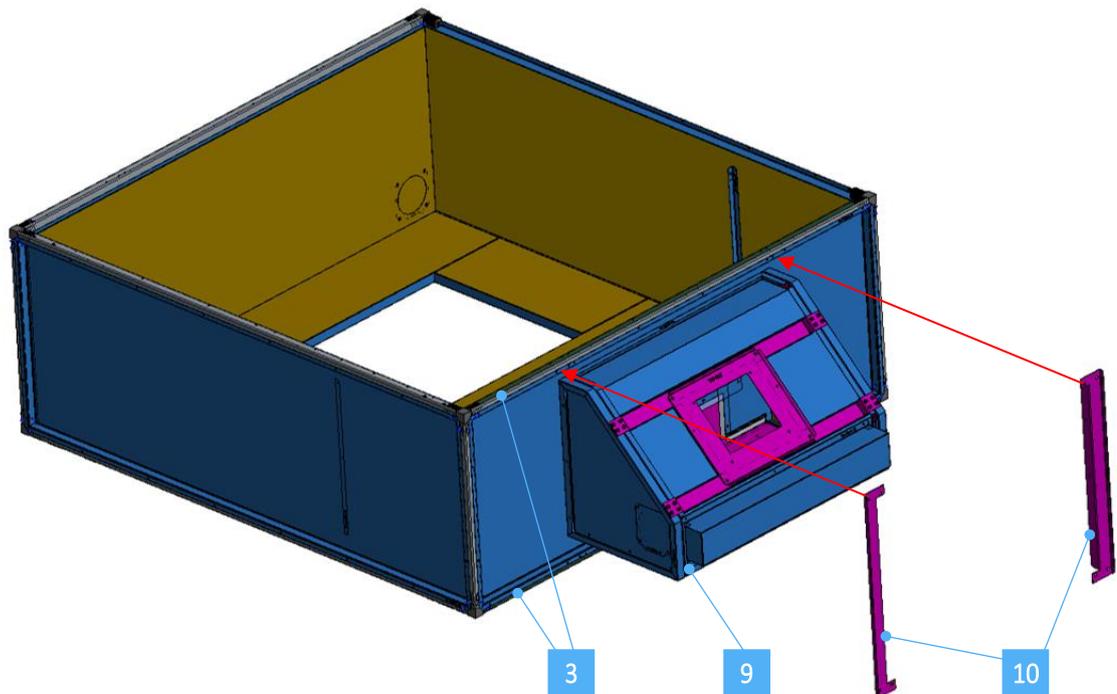


Fig. 11 Support bars assembly

6.2.1 SMALL MIRROR INSTALLATION

The side panel is no longer shown to provide visibility to internal installation. For the following operations, access from the lower side through the CoeLux® panel aperture.



Fig. 12 *Side panel not shown*

- 7 Open the wooden box containing the mirrors: take the small one and carry out the specific cleaning as indicated in the Initial Cleaning paragraph. Then insert the small mirror [11] (PN 03-00007-01) in the reference guide in the sheet metal of the headlight assembly [9] (the reflecting part must face upwards).

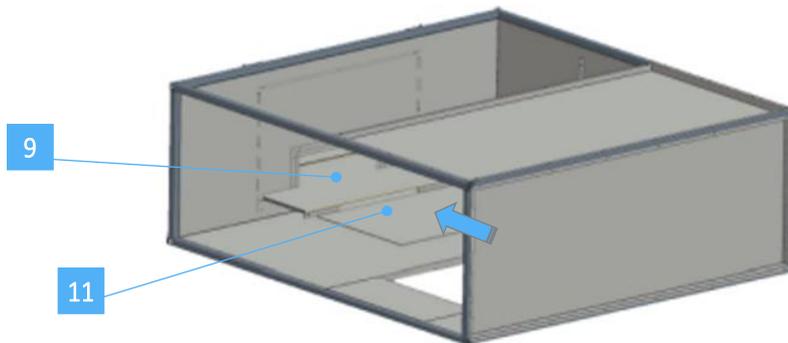


Fig. 13 *Inserting the small mirror*

- 8 Fit the locking profile [12] (PN 73-00082-01) using the M4 screws and nuts supplied. Make sure that the latter is inserted into the two side guides (see detail in figure 12).

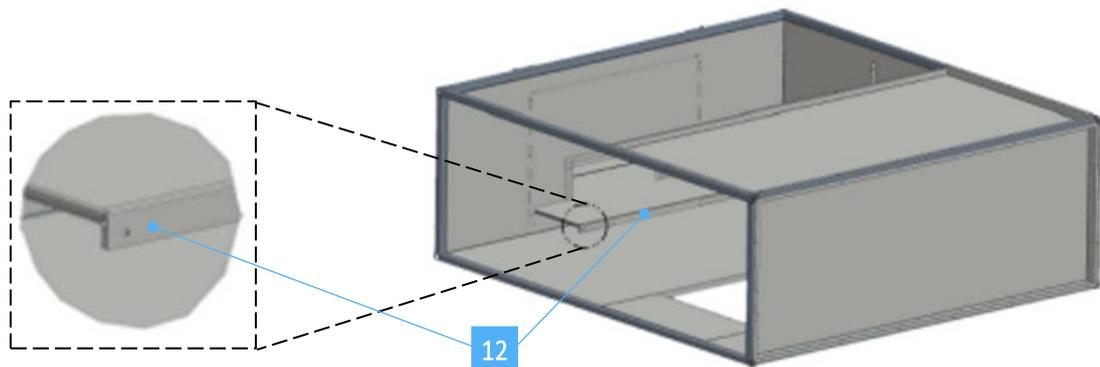


Fig. 14 *Locking the small mirror*

- 9 Insert the dividing panel [13] (PN 73-00062-01) with the opening facing upwards, the fold of the longer side facing the back panel [7], in the position indicated by the red arrows in figure 13 and fixing it to the magnets on the profiles of the two side panels [1] (red detail in figure 4).

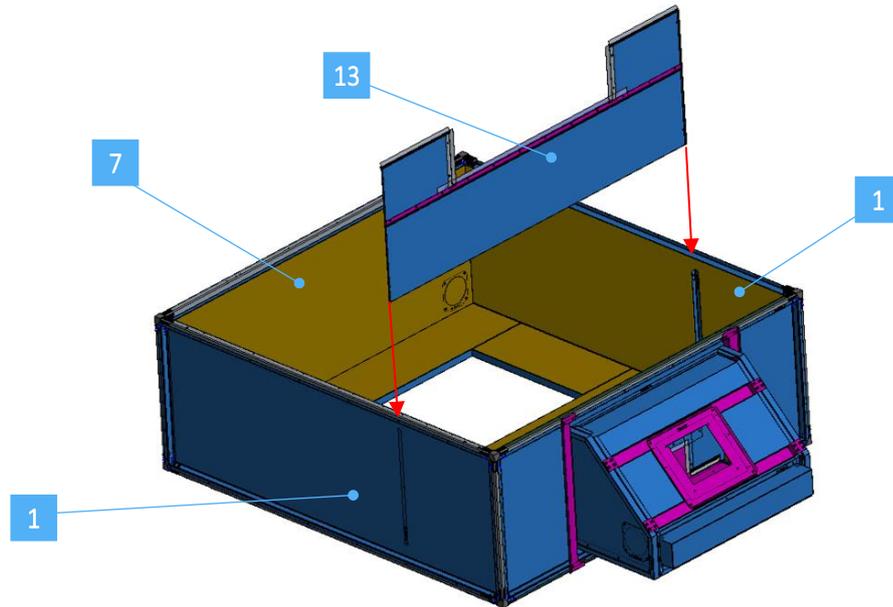


Fig. 15 *Divider panel assembly*

- 10 Insert the top panel [14] (PN 73-00057-01) inside the tubes and fix it using the supplied M4 self-tapping screws (figure 14).

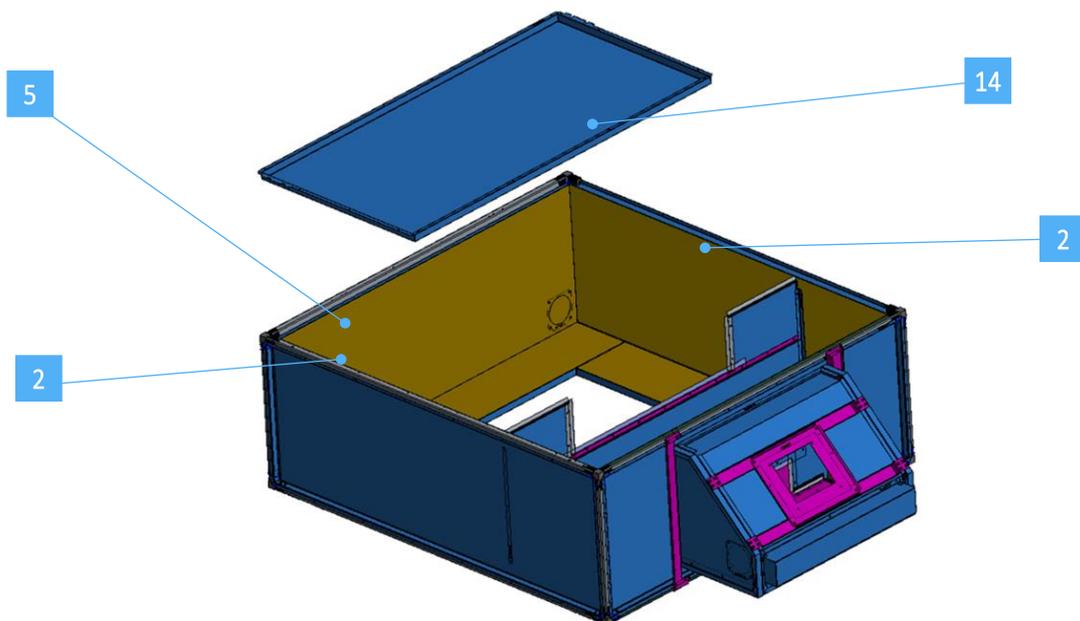


Fig. 16 *Top panel assembly*

6.2.2 LARGE MIRROR INSTALLATION

- 1 Rotate the upper lid group [1] as illustrated.

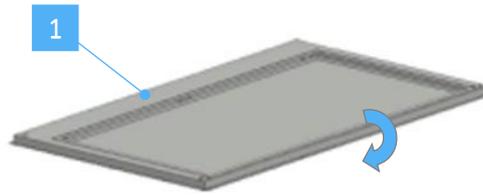


Fig. 17 Upper lid rotation

- 2 Remove the mirror group [1] frame [4] moving the spring pins outward (see detail).

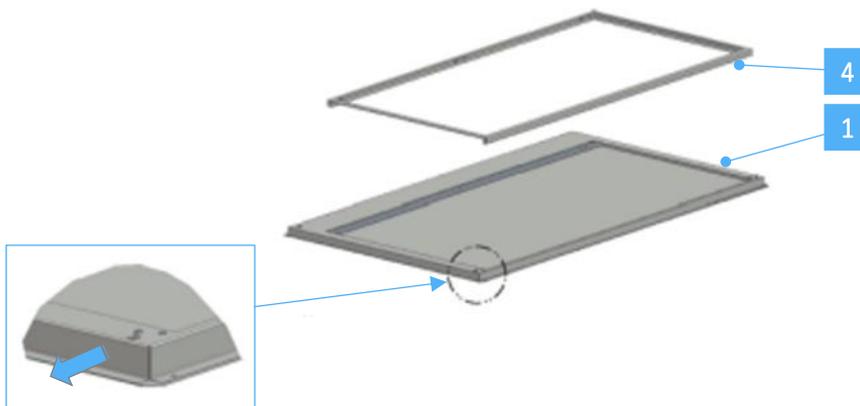


Fig. 18 Frame removal

- 3 Overturn the mirror frame [4] to place it as illustrated.

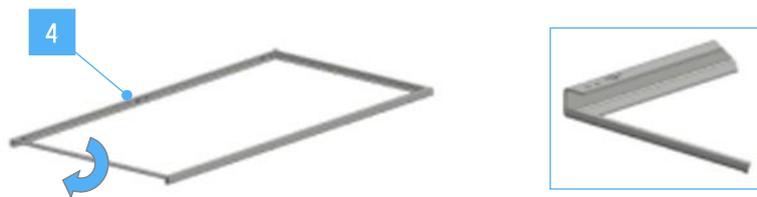


Fig. 19 Frame rotation

- 4 Remove the mirror frame [4] bracket [9] (see illustration).

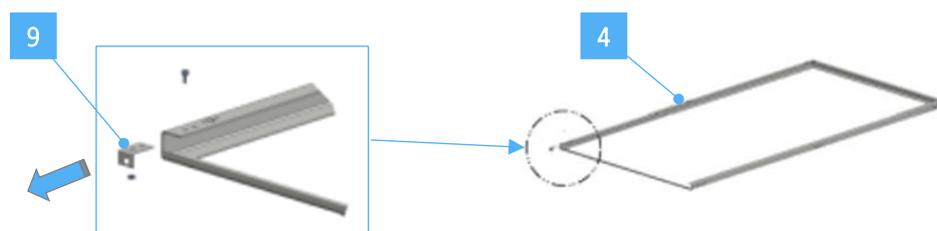


Fig. 20 Bracket removal

- 5 Clean the mirror [10] as indicated in paragraph *Initial Cleaning*.
Insert the mirror in the frame [4] with the reflective part facing down.



CAUTION!

Be careful not to scratch this surface against the entrance edge! Suction cups are recommended for handling mirrors.

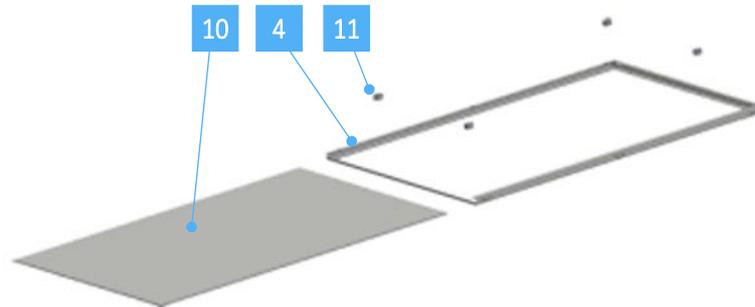


Fig. 21 *Mirror insertion*

- 6 Lock the mirror [10] using the rubber locks [11] and installing the bracket [9] removed in step 5.

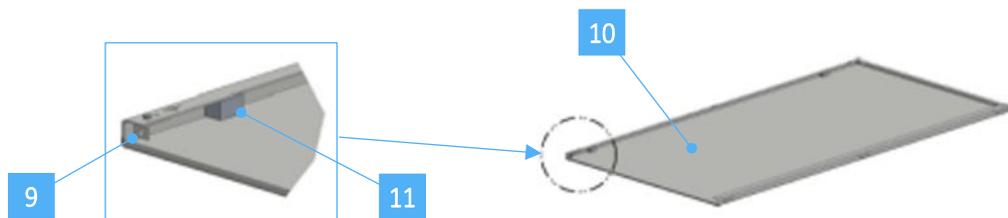


Fig. 22 *Locking the mirror*

- 7 Rotate the mirror [10] frame [4] upside down as shown and install it in the lid group (the reflective part should face up) using the large frame spring pins and inserting the three reference points that protrude from the lid.

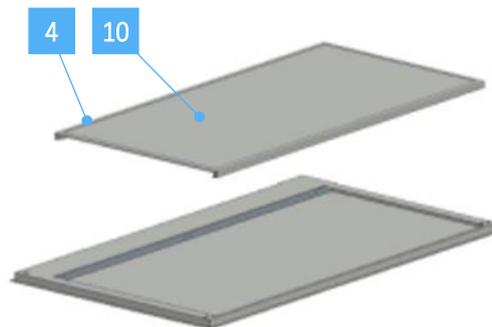


Fig. 23 *Inserting the mirror frame in the lid*

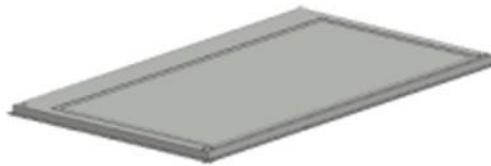


Fig. 24 *Mirror frame inserted in the lid*

- 8 Overturn the upper lid group and install it on the box (the side with the spring pins should be at the centre over the CoeLux[®] panel).

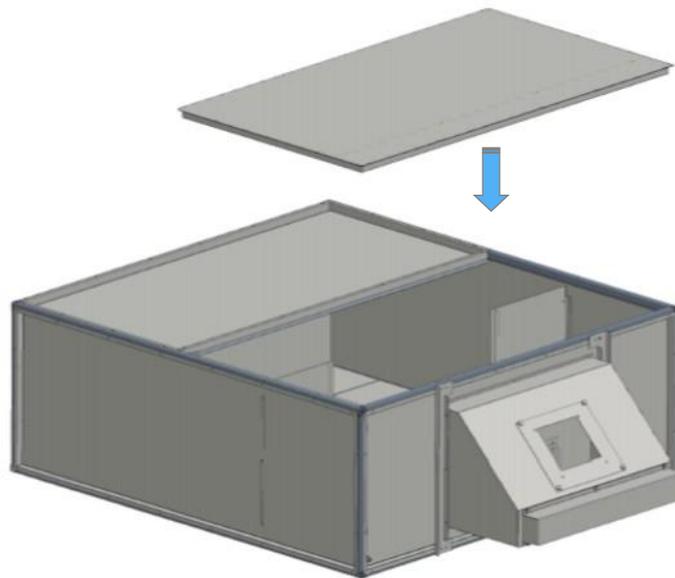


Fig. 25 *Inserting the upper lid on the box*

The side panel is no longer shown to provide visibility to internal installation. Perform this operation accessing from the lower CoeLux[®] panel aperture.

- 9 Position the magnetic strip [12] to hide the joint between the large mirror frame and panel next to it (do not obscure the mirror!).

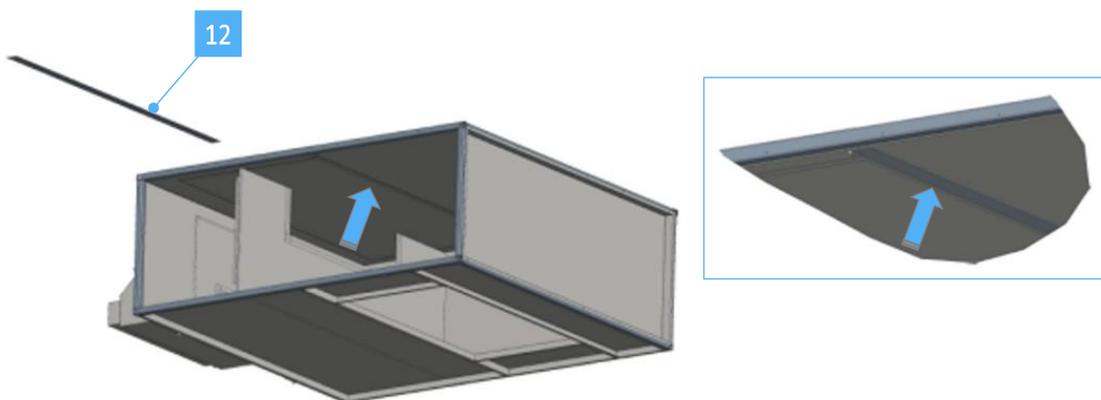


Fig. 26 *Positioning the magnetic strip*

6.2.3 COELUX® PANEL INSTALLATION

- 1 Remove the panel brackets [26].

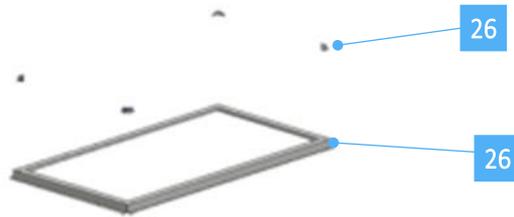


Fig. 27 Bracket removal

- 2 Remove several centimetres of protective film from the edges on both CoeLux® panel surfaces [27] and position it and secure it with the brackets [26] (secure all four brackets first then tighten them one at a time).

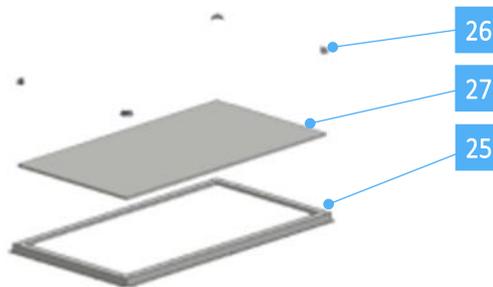


Fig. 28 CoeLux® panel assembly

- 3 Remove the films on the inside face of the CoeLux® panel and clean them as indicated in the specific paragraph in the chapter Initial cleaning, then install the newly assembled assembly with the rest of the box, fixing it to the panels [4], [5] and [6] with the supplied screws. The CoeLux® panel must be inside the box.

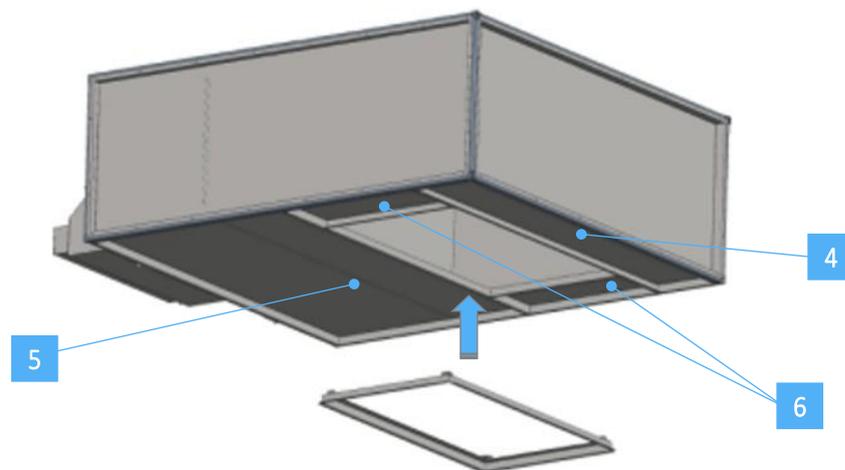


Fig. 29 Panel ensemble assembly

6.2.4 PROJECTOR 74-00013-01 INSTALLATION

- 1 Remove the projector plate [36] by removing the fastening screws [17].

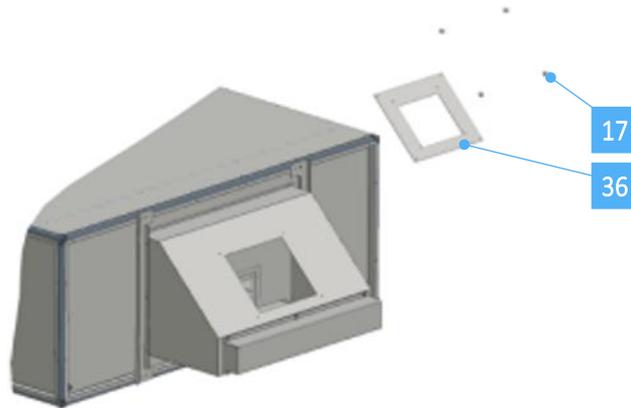


Fig. 30 *Plate removal*

- 2 Secure the projector [36] on the plate [16] using the supplied M6 screws, being careful not to cover the light output window.

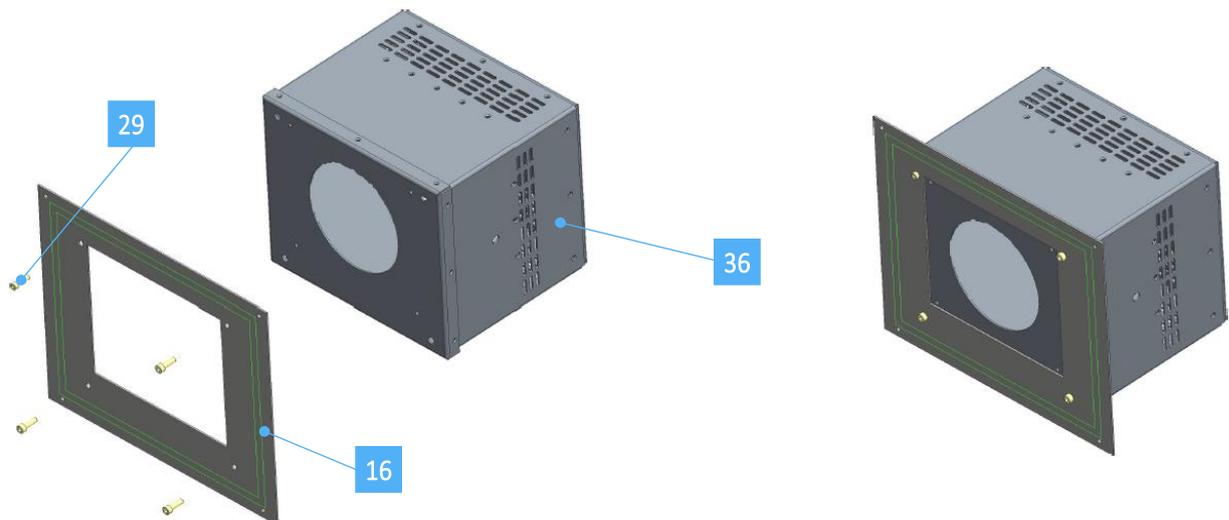


Fig. 31 *Securing the projector on the plate*

WARNING!

The previously described assembly procedure should only occur between compatible parts. Make sure the markings "ASSEMBLE PART 74-00013-01 ONLY WITH PART ..." on the surfaces in contact permit part assembly.

- 3 Install the projector group on the main unit (the light label should be on the side that faces down and the TOP SIDE of the frame should face up). Secure the unit using the fastening screws [17].



Fig. 32 Projector unit installation

6.2.4.1 VENTILATION KIT (available only for projector 74-00013-01)

This kit is supplied with projector 74-00013-01 and its use is mandatory for UL and CB certification. The ventilation kit consists of:

- 4 black metric vibration dampers with M6 threaded screws (PN 36-00024-01)
- 1 black insulating frame (PN 36-00025-01)
- 4 M6 nuts (PN 36-00007-01)
- 4 black nut covers (PN 36-00026-01)
- 2 galvanised iron air manifolds (PN 73-00147-01)
- 8 M4 screws (PN 33-00008-01)
- 1 box containing 4 metres of insulated pipe (PN 36-00022-01)
- 2 hose clips (PN 36-00023-01)



CAUTION:

The exclusive installation of air manifolds and insulated pipes is mandatory in order to maintain UL and CB certification.

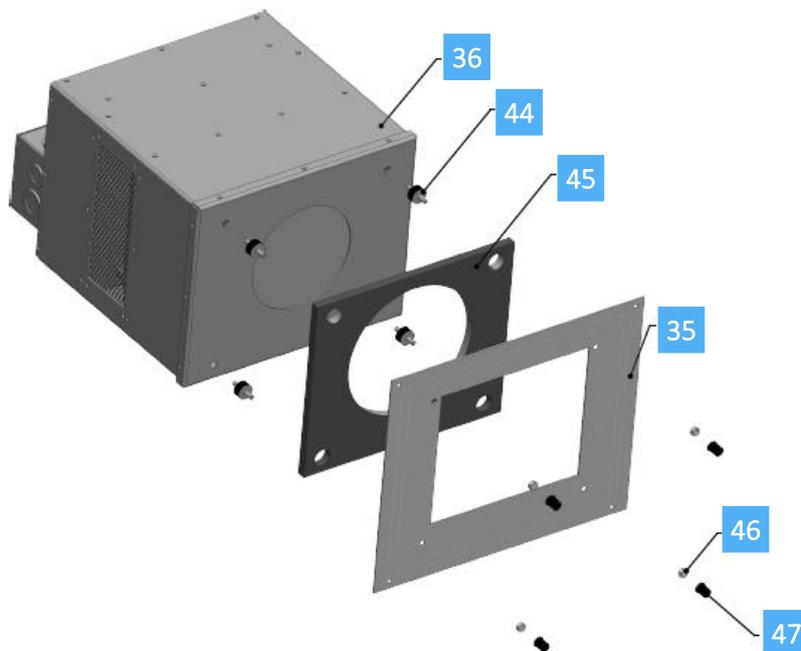


Fig. 33 Installation of the ventilation kit

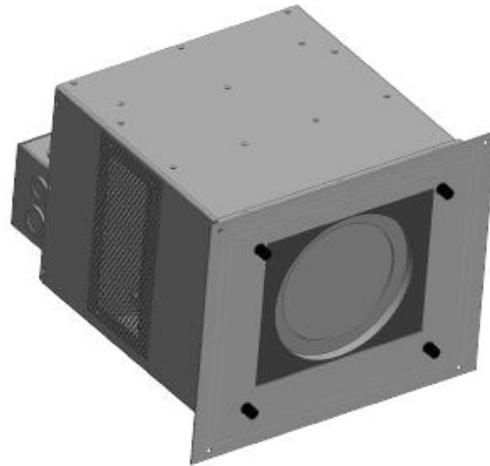


Fig. 34 *Installation of the ventilation kit*

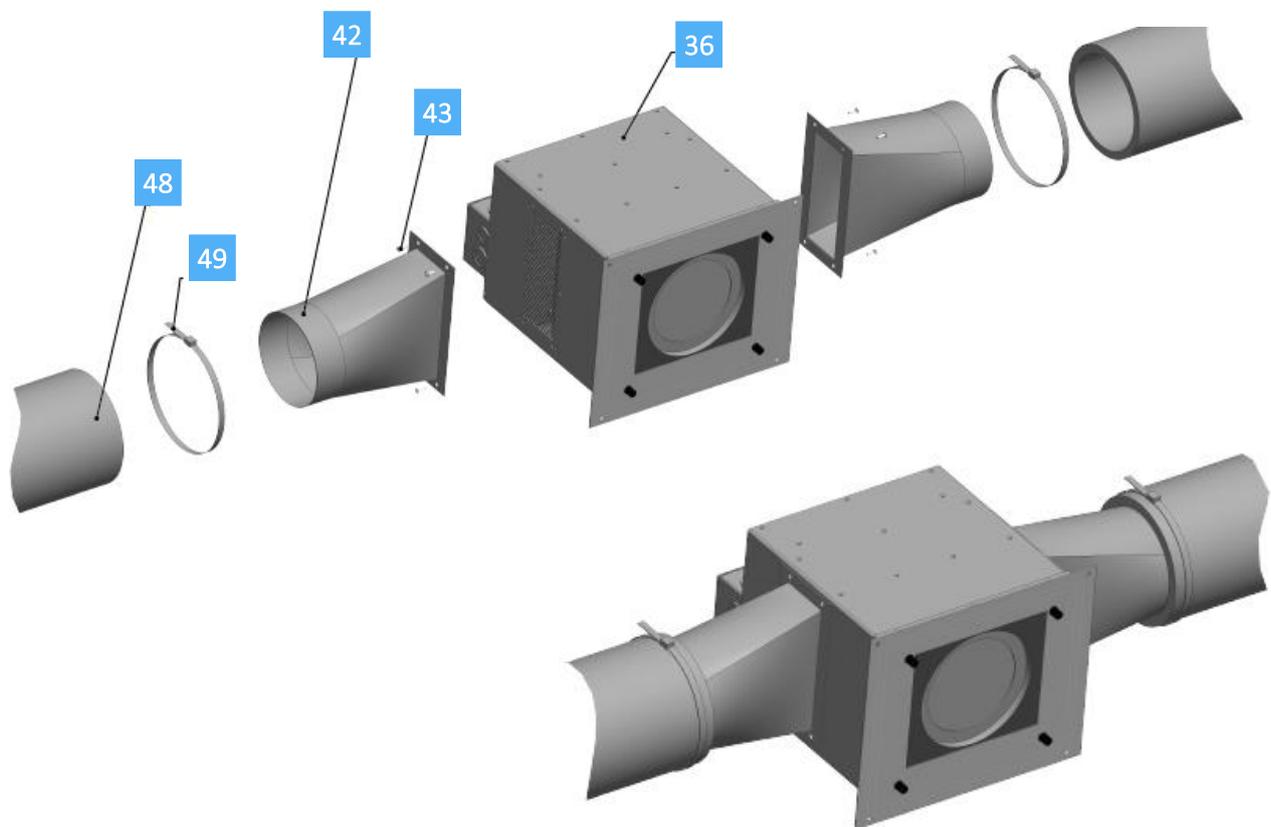


Fig. 35 *Installation of the ventilation kit*

Use the four threaded holes present to assemble the 4 metric vibration dampers [44] (PN 36-00024-01) on the front face of the projector [36] (PN 74-00013-01). Use the metric vibration dampers and the projector beam aperture as a reference to position the insulating frame [45] (PN 36-00024-01) and the fastening frame [35] (PN 73-00035-01). Then, insert the 4 M6 nuts [46] (PN 34-00007-01) on the protruding threads and block the fastening frame. Place the 4 black nut covers [47] (PN 36-00026-01) on the 4 threads with nuts. Install this sub-group on to the rest of the apparatus.

Once you have mounted the entire piece of equipment, use the M4 screws [43] (PN 33-00008-01) supplied and proceed to install the manifolds. Now, cut the insulated pipe (PN 36-00022-01) into 2 equal parts, each measuring 2 metres [48], and use the hose clips [49] (PN 36-00023-01) to connect them to the round manifold terminals. Once you have installed the entire equipment and created the false ceiling, connect the two free ends of the insulated pipes to the latter (using outlet valves) in order to enable the air to circulate with the room.

6.2.4.2 Mains supply connections



The user is responsible for preparing the mains power supply cable between the distribution network and the unit, and only CoeLux S.r.l. qualified technicians can connect them.



WARNING!

Before you commence the electrical connections, you must check that the supply cables and any other cable intended to be connected to the unit terminals are not live.

Inside the box containing the main case 74-00013-01 is a bag with:

- N° 1 M16 cable gland
- N° 2 M16 galvanised washers
- N° 1 M16 nylon nut
- N° 1 branching terminal board to connect the mains supply cables

- A. Open the lid of the junction box (Figure 34).
- B. Open only one of the breakable apertures (of those with the smallest diameter) on the sides of the junction box.
- C. Fasten the cable gland to the junction box as shown in Figure 35.
- D. Insert the external power supply cables into the cable gland.
- E. Take out the rubber cable glands from the branching terminal board (Figure 36): insert the supply cables from the projector into one cable gland and the external supply cables into the other.
- F. Take out the screw terminals from the terminal board and connect the power supply cables (of the projector and the external cables) as shown in Figure 37: earth cable (green) to the top terminal, phase L cable (black) to the central terminal and the neutral N cable (white) to the bottom terminal.
- G. Open the screw cable glands of the terminal board, reinsert the screw terminals and rubber cable glands in their housing and block the two cable terminals with the screw cable glands.
- H. Close the branching terminal board lid.
- I. Slide the cables inside the cable gland and fold them to shorten them inside the junction box. Block them by tightening the cable gland screw cap.
- J. Place the terminal board inside the junction box (Figure 38) and shut it again.

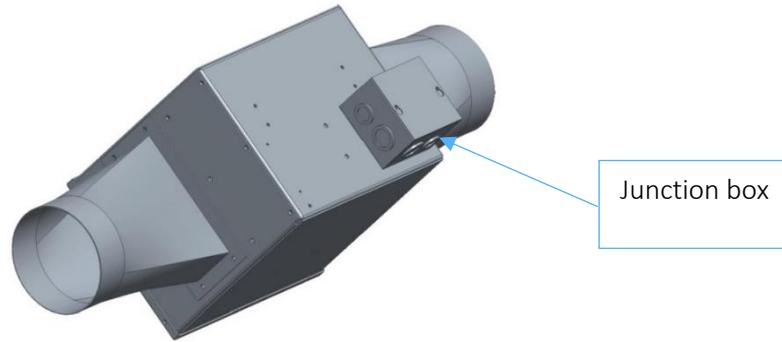


Fig. 36 Rear view of the projector 74-00013-01

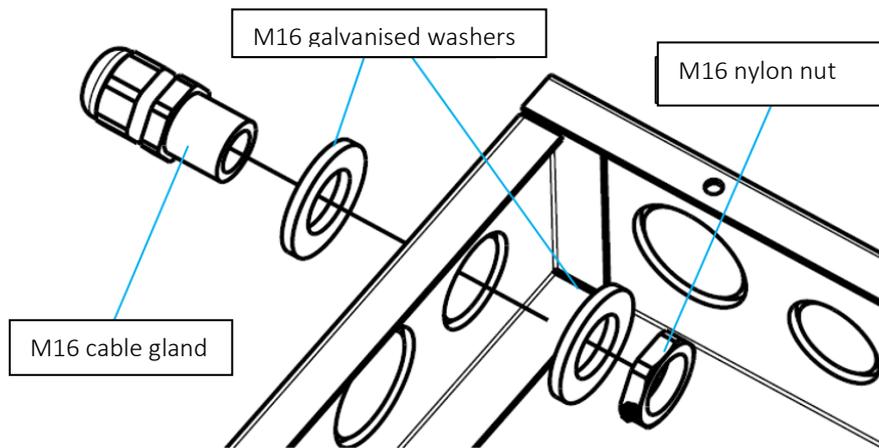


Fig. 37 Cable gland installation diagram

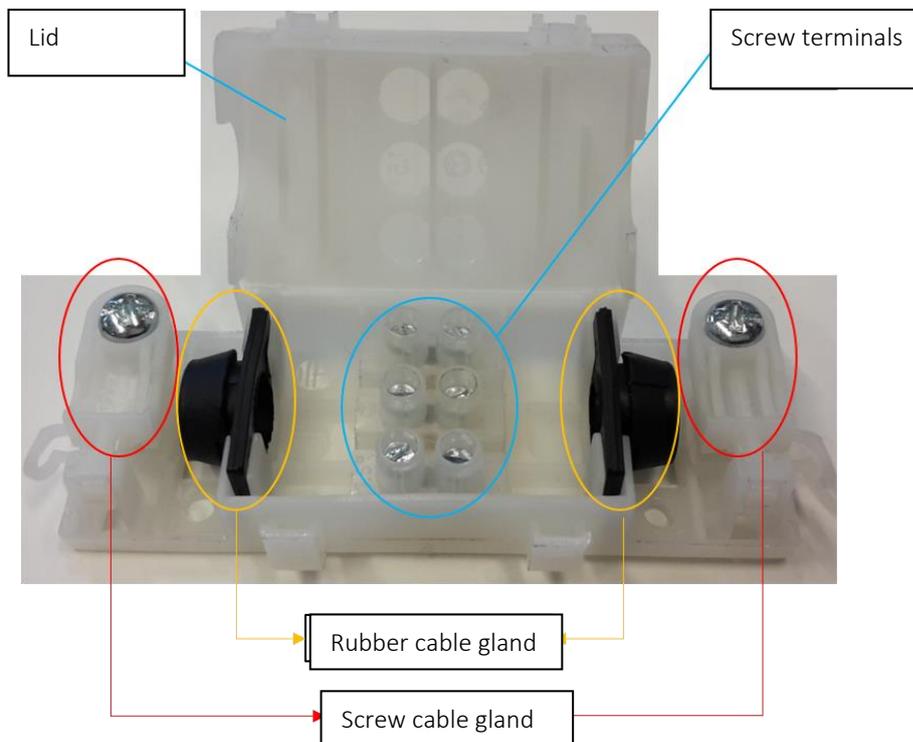


Fig. 38 Branching terminal board to connect the mains supply cables

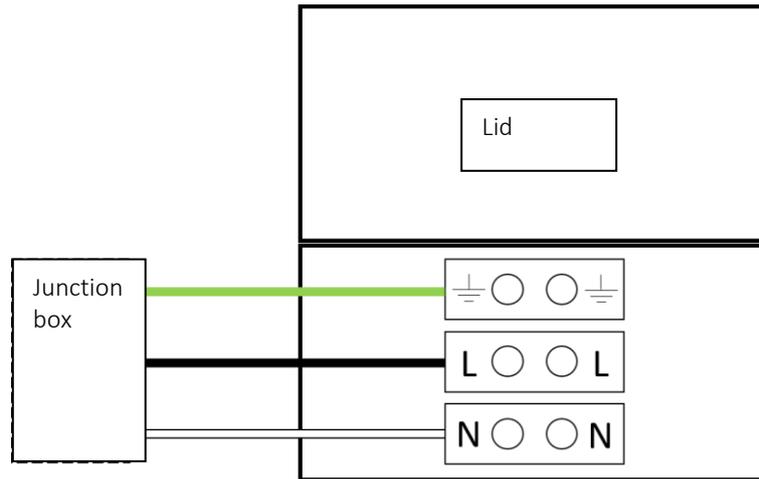


Fig. 39 Sketch to show an example of the terminal board supplied



Fig. 40 Completed electrical connections to the projector 74-00013-01

6.2.5 Installation of projectors 74-00062-01/74-00063-01 and module 74-00064-01

Take the LED projector [36B] (PN 74-00062-01 or 74-00063-01) out of its packaging box.

OPTION 1: if you do NOT intend to use the moon module, use the centring pins [50] (red circle in Figure 41) to install the projector directly on to the tilted panel [29] (Figures 39 and 40). Then, fasten it with the 4 M6 captive screws [51] on to the support plate (Figure 41), which can be reached using the Phillips screwdriver with the 20 cm-long handle via the through holes on the aluminium louvre. N.B.: while you fasten the projector to the rest of the system, the three grey connection boxes remain on your left (Figure 40).

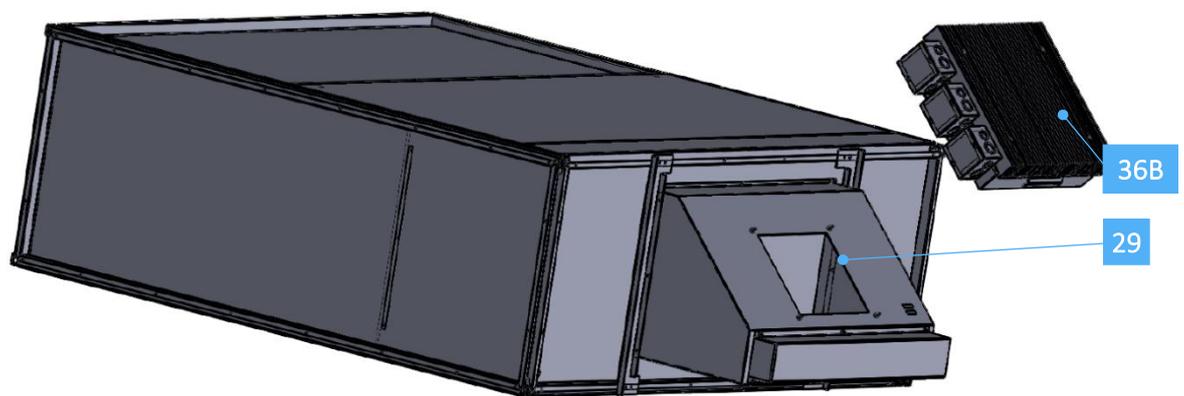


Fig. 41 *Installation sequence - Step 14B*

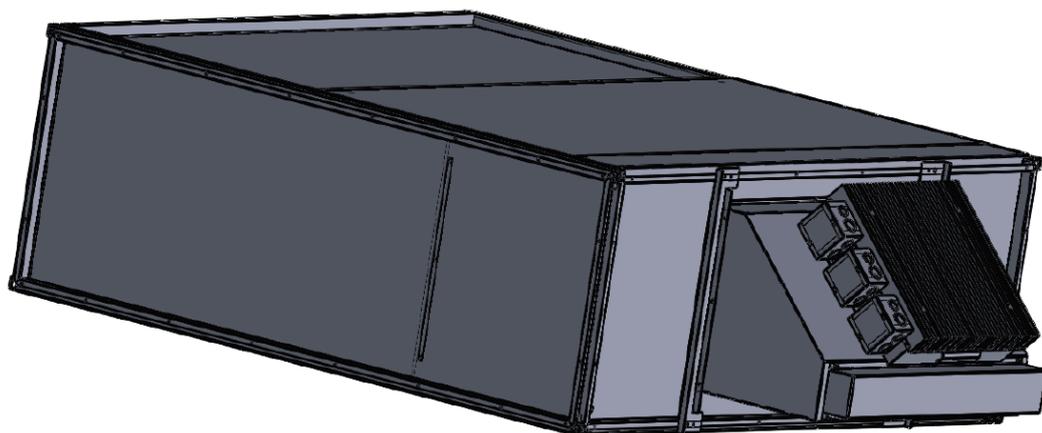


Fig. 42 *Installation sequence - Step 14B*

OPTION 2: if you intend to use the moon module [52] (PN 74-00064-01), unscrew the lid [53] and take out the connector and the connected cables (take out a maximum of 10 cm of the cables). Then, remove the moon module from its packaging, remove the male connector from the lid [53] and use the two special screws to fasten it to the female connector on the moon module (pull them as far as they will go). Now, remove the 4 M6 screws with washers [54] blocking the frame [55] on to the projector [36B]. Place the moon module over the 4 holes [56] and reinsert the entire cable inside the aperture on the projector. Use the 4 M6 screws with washers [54] to fasten everything.

Use the centring pins [50] (red circle in Figure 41) to install the projector group on to the tilted panel [29] (Figures 39 and 40). Fasten it with the 4 M6 captive screws [51] on the support plate (Figure 46), which can be reached using the Phillips screwdriver with the 20 cm-long handle via the through holes on the aluminium louvre.

N.B.: while you fasten the projector to the rest of the system, the three grey connection boxes remain on your left (Figure 40).

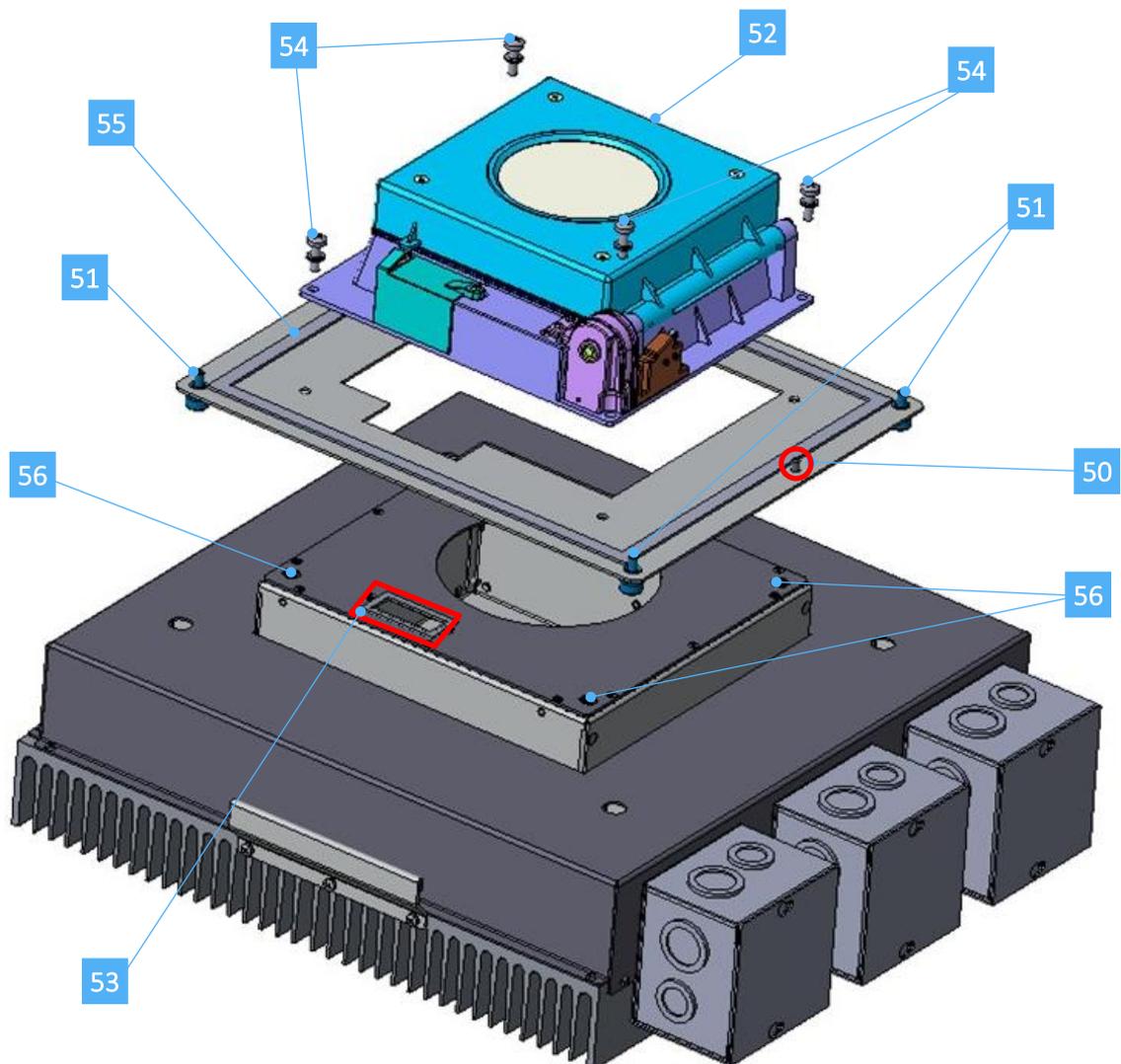


Fig. 43 Installation sequence - Step 14B, OPTION 2

6.2.5.1 Mains supply connections and DALI for the projector 74-00062-01 / 74-00063-01



The user is responsible for preparing the mains power supply cable between the distribution network and the unit, and only CoeLux S.r.l. qualified technicians can connect them.



WARNING!

Before you commence the electrical connections, you must check the supply cables and any other cable intended to be connected to the unit terminals are not live.

Inside the packaging for the projector 74-00062-01 / 74-00063-01 is a bag with:

- N° 2 M16 cable glands
- N° 4 M16 galvanised washers
- N° 2 M16 nylon nut

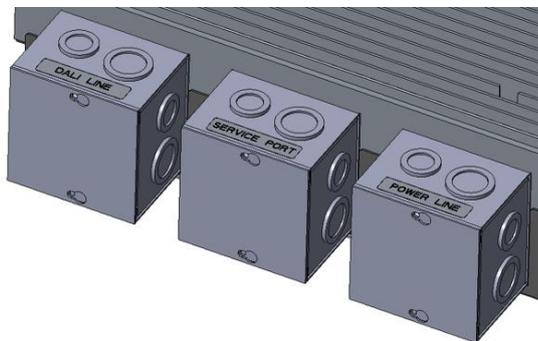


Fig. 44 Rear of the projector 74-00062-01/74-00063-01

- A. Open the lid of the junction box with the “POWER LINE” label (Figure 42).
- B. Open only one of the breakable apertures (of those with the smallest diameter) on the sides of the junction box.
- C. Fasten the cable gland to the junction box, as shown in Figure 35.
- D. Insert the external power supply cables into the cable gland and fasten them to the terminal board inside the junction box (Figure 43).
- E. Block the cable in the cable gland and re-close the junction box.
- F. Repeat these operations on the junction box with the “DALI LINE” label for the DALI connections (Figure 42).

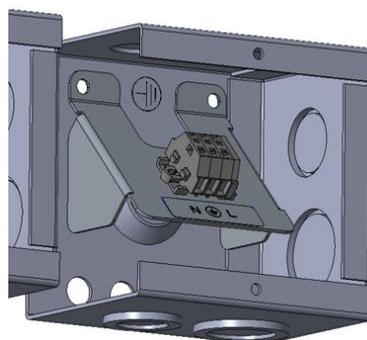


Fig. 45 Power supply terminal board inside the junction box

6.2.6 SILICA-GEL INSTALLATION AND REPLACEMENT

- 1 Remove nuts [19] of the silica-gel box [20].
- 2 Remove the silica-gel box [20].

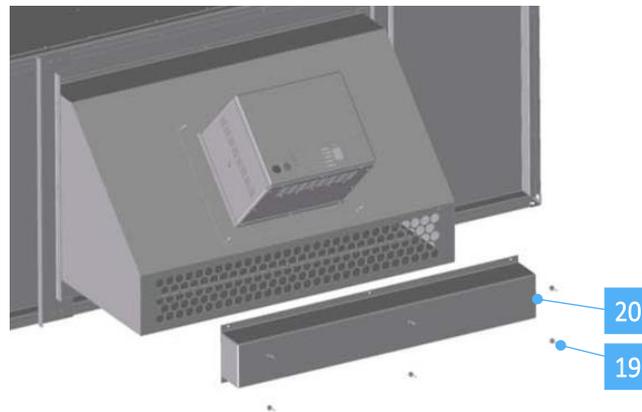


Fig. 46 *Silica-gel box removal*

- 3 Open the package containing the the six 0,5 kg bags of silica-gel and insert them in the box [20] without overlapping them. Than install the box on the main unit using the fastening nuts [19].

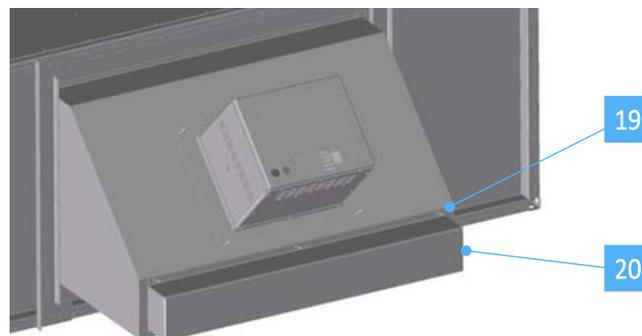


Fig. 47 *Silica-gel box re-assembly*

6.2.7 PRELIMINARY STEPS

After assembling the system, fix plates and tie rods to the dark-box using bolts M10 as show in figure 48. Than lift the system and insert steel bars in holes $\phi 13$ of the plates than adjust the height using provided nuts M12 (figure 48) and cut spare part of the bar.

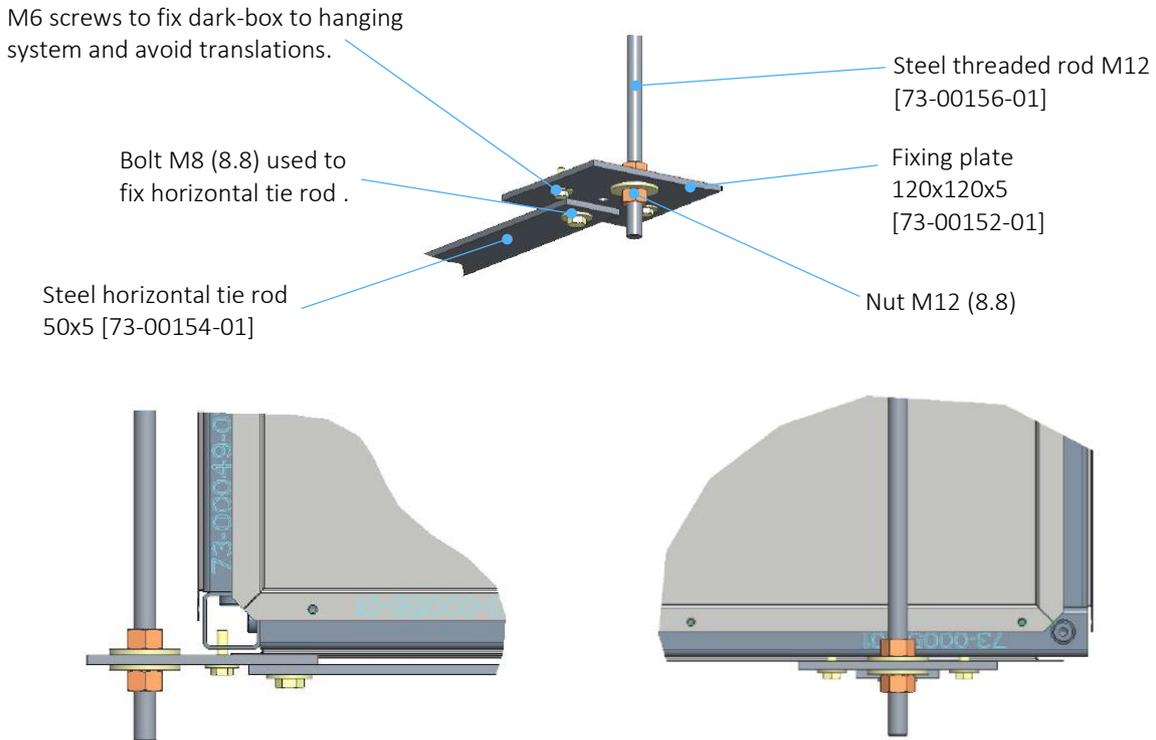


Fig. 48 Suggested anchoring system – Detail B

6.2.8 LIFTING



WARNING !

Grasping or hanging the box by the sheet fold is strictly prohibited! Pay special attention to avoid scratching the CoeLux® panel or breaking the mirrors when lifting and positioning.

CoeLux® 45 LC must be lifted with systems suited to the work load (about 300 kg). During lifting, the box must rest on at least three different points, always making sure it as horizontal as possible and does not suffer sudden movements.

When lifting from above using cords or chains, these must be slung in the 4 upper lifting rings (Figure 52), indicated by the following icon in Figure 51, or by cloth belts wrapped under the bottom.



Fig. 49 Mandatory lifting points

In case of lifting from the bottom, the support points are to be those indicated by the icon below in Figure 51.



Fig. 50 *Mandatory lifting points*

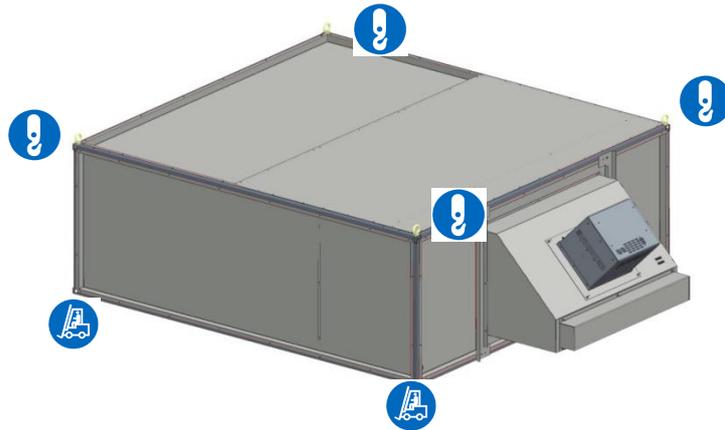


Fig. 51 *Hooking system for lifting*

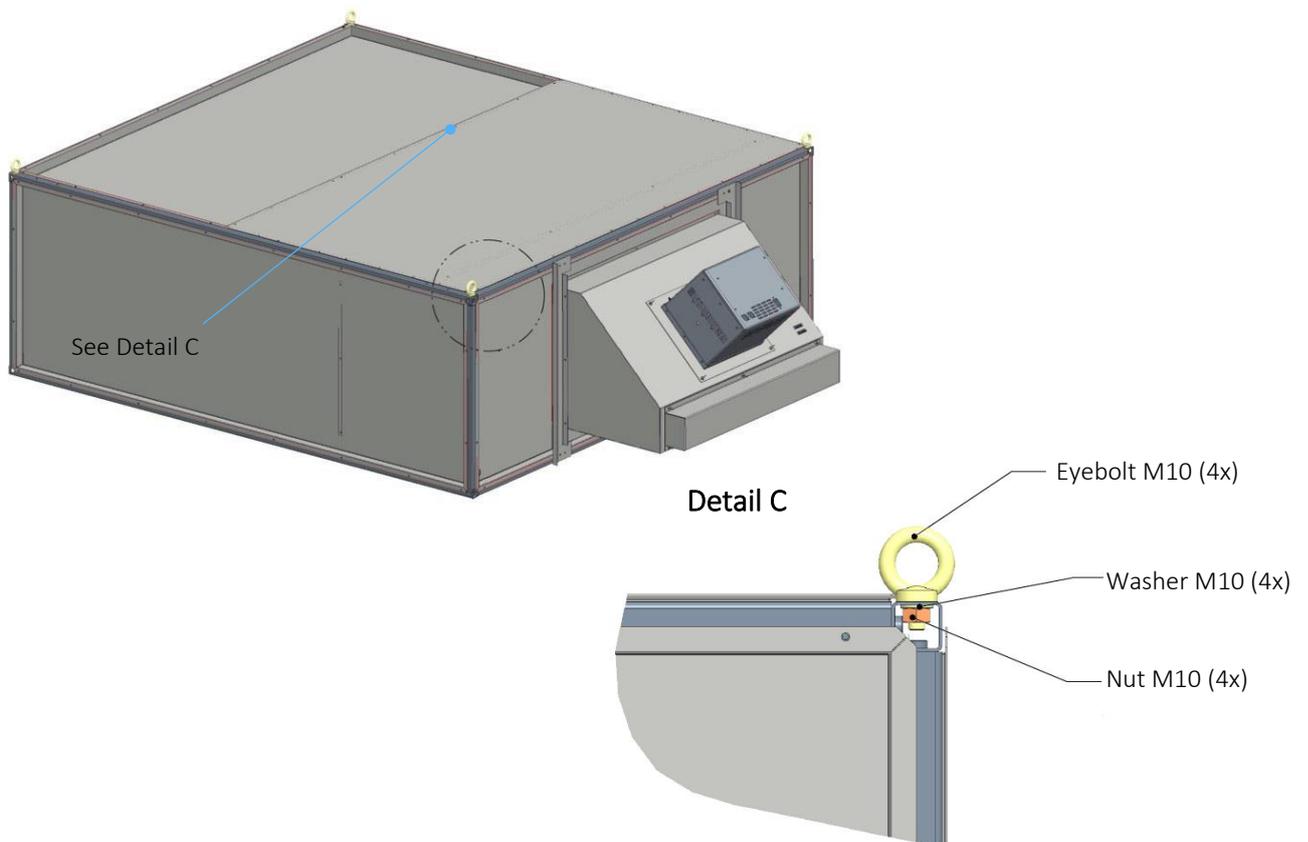


Fig. 52 *Recommended anchoring system – Option 2*

6.3 VENTILATION CONNECTIONS (ONLY POSSIBLE ON PROJECTOR 74-00013-01)



CAUTION!

Air collectors and pipes connections must be made if natural air circulation is impeded in the false ceiling area around the projector. In case of UL certified systems, this condition is mandatory.

Use the air collectors supplied within *installation kit*. In order to allow the cooling system to exchange air with the room interior, connect to these collectors the sound insulating pipes. CoeLux s.r.l. provide 4 meter of insulated pipe within installation kit.

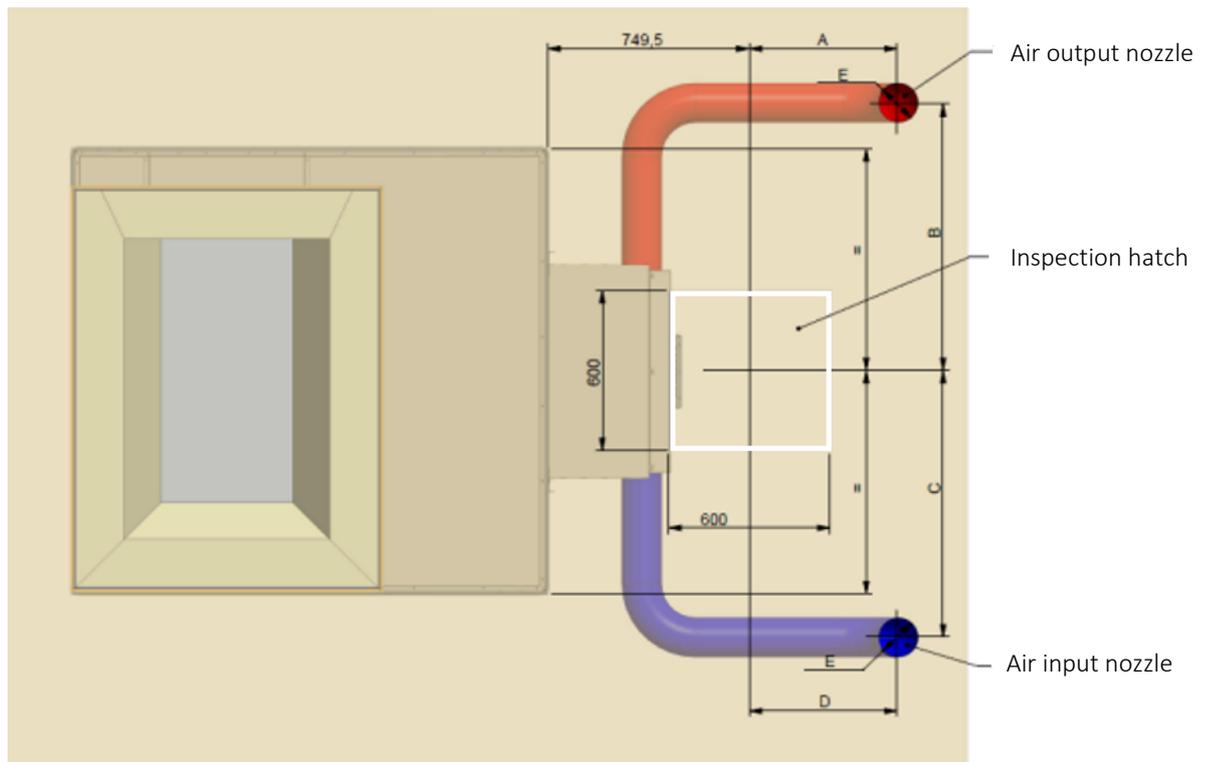


Fig. 53 *Inspection hatch and ventilation nozzle layout*

Figures 53 and 54 show a solution for ventilation pipes disposition in the false ceiling.



CAUTION!

Dimensions A, B, C and D are functional to the room design and may be defined according to architectural needs. To guarantee the air flow necessary with correct product operations (75 m³/h air flow), apertures E in the false ceiling must guarantee the minimum air flow required for projector cooling and must be at least 150 mm in diameter (the ceiling vents are NOT supplied by CoeLux S.r.l.).

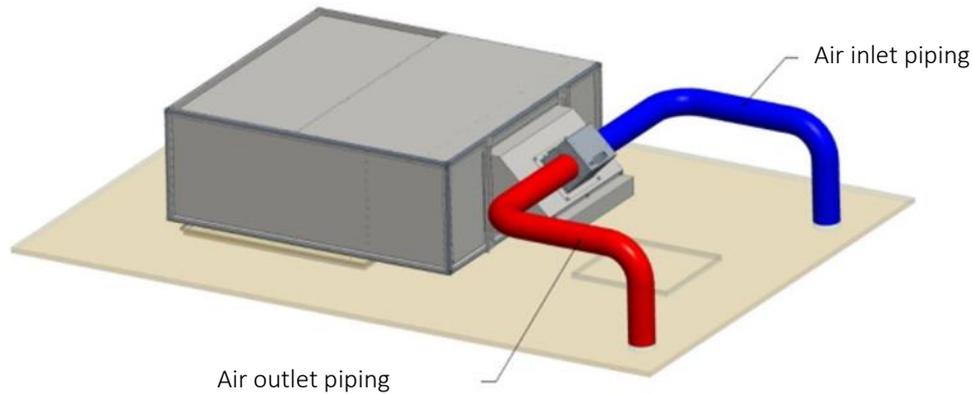


Fig. 54 *Ventilation nozzle connection diagram*

6.4 CHECKS

Once installation is complete, perform some checks to ensure unit operations and correct any faults.



WARNING!

To not be dazzled, do not look into the window during ignition.

Power on unit and visually check:

- correct CoeLux[®] panel positioning and levelling;
- any objects, scratches, streaks, dirt on the CoeLux[®] panel both inside and outside the box;
- any scratches, streaks, stains on internal box walls and mirrors.

Also check:

- that the magnetic strip covers the joints;
- that the divider is stretched, straight and well fits to the magnets;
- that the mirror/divider gaskets are well-adhered to mirrors and light beams are not seen on internal box walls;
- that the harmonic steel strips are taut and in the correct position;
- that there are no dark areas on the CoeLux[®] panel;
- that there are no light leaks around the mirrors.

If necessary, place the box on the ground and solve the problem as indicated in previous paragraphs.

7 HOW TO OPERATE AND USE

The 45 LC systems are innovative lighting equipment. They use a LED source, an optical system and the CoeLux® panel to produce an artificial window to light the room naturally, as though it were a real sunlit window.

Read the technical sheet and information provided by CoeLux S.r.l. to exploit the product potential to its best.

WARNING!

You must not install light controlling equipment (dimmers, colour control, etc.).

If you look directly at the LED light source, you may be dazzled. To avoid being dazzled, take special care NOT to look inside the window when the unit is being switched on.

If installed correctly, 45 LC systems are not hazardous for the human eye and sight.

CAUTION:

The LED light source is classified as RG1 according to the EN 62471 standard due to the blue light it emits. However, no hazard signs are required according to the IEC/TR 62471-2 standard. To prevent any irritating reactions (dazzling, after image, etc.) which are, nevertheless, temporary and normal, we recommend you do not stare at the light source for a long time, and do not allow people with limited cognitive ability or mobility (children, elderly, disabled, bedridden, etc.) to do the same.

7.1 LIGHT INTENSITY CONTROL (ONLY PROJECTORS 74-00062-01/74-00063-01)

Once connected and switched on, the projectors 74-00062-01 and 74-00063-01 are preset to emit 100% of the permitted light intensity. It is, however, possible to control the light intensity (permitted range 50% - 100%) of the 45 LC systems with these projectors using the DALI standard.

N.B.:

Only the intensity and not colour of the light can be changed in any way.

 Two cables for the DALI signal can be connected via the terminals inside the special junction box (paragraph 6.2.5.1).

Some DALI parameters have been preset on the projectors:

To avoid any discomfort, CoeLux recommends setting the fade-time for the change in intensity to over 2 sec.

In the event of installations of HC and LC systems side by side in the same room, in order to obtain a similar light from the sky and beam projected to the ground we recommend you configure the intensity of switch on and/or of the same DALI scenario as follows: LC systems 70%, HC systems 85%.

7.1.1 THE MOON SCENARIO

 If you have purchased and correctly installed module 74-00064-01 (paragraph 6.2.15 OPTION 2), you can obtain the moon scenario using the DALI standard. This scenario is preset inside the projector as the third scene (if the scenario numbering begins from 0, it can be found as scene 2) and it cannot be modified or reset to other scenes.

The table below shows the preset scenarios:

| Scene | Level | Modifiable | Fading |
|-------|-------|------------|--------|
| 1 | 50% | Yes | Yes |
| 2 | 100% | Yes | Yes |
| 3 | MOON | No | No |
| 4 | Off | Yes | No |
| 5 | 55% | Yes | Yes |
| 6 | 70% | Yes | Yes |
| 7 | 85% | Yes | Yes |
| 8 | 100% | Yes | Yes |

Tab. 5 Versions of 45 HC systems

7.1.2 CONTROLLER

A DALI controller is supplied with the moon module (74-00064-01) which, when connected to the system, allows you to control light intensity and the first four preset scenarios (scenes 1, 2, 3, 4 in the preceding table). To connect to the projector, follow the instructions given inside the controller packaging and those regarding the DALI connection in paragraph 6.2.5.1 in this manual.

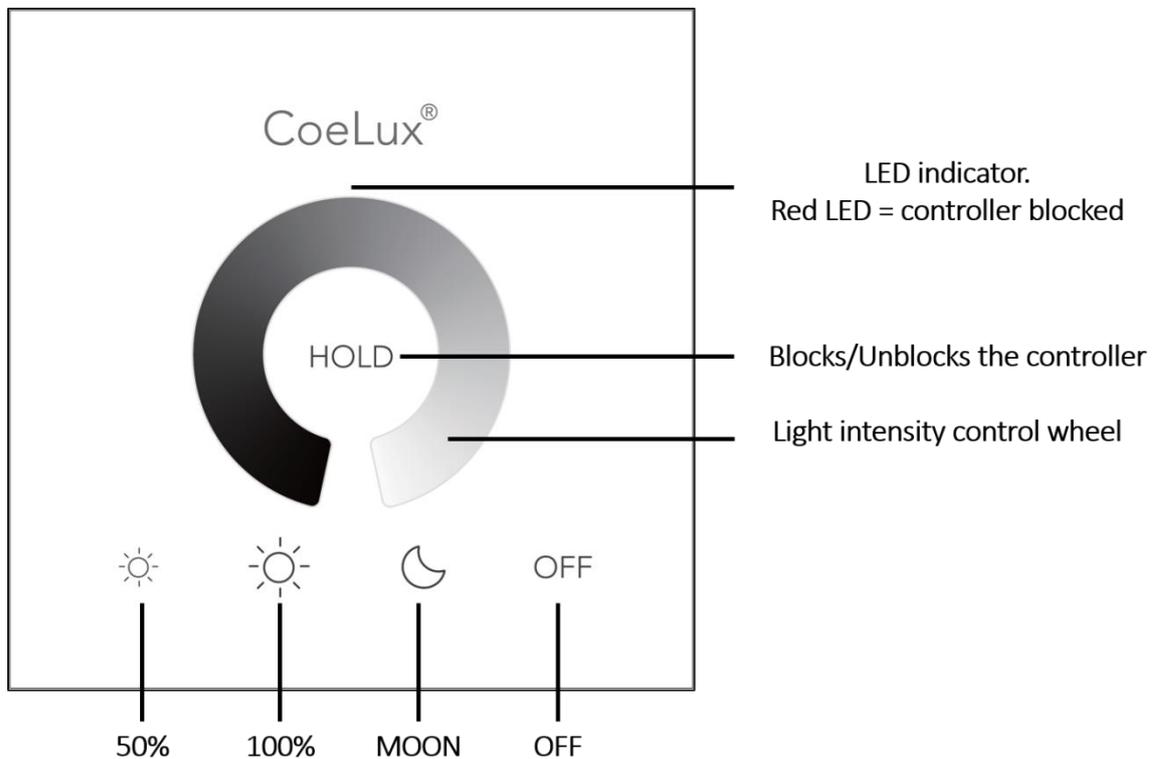


Fig. 55 Controller supplied with the product: front part

8 MAINTENANCE



WARNING!

- Before beginning any routine or extraordinary work on the unit, cut off the unit from the electric power mains.
- Operators must use all the individual safety devices and also observe the safety instructions.
- To access the highest parts of the unit, use appropriate means to perform the work. Do not climb on unit's parts since delicate and not designed to support people.
- All maintenance, both ordinary and extraordinary, must only be performed by specialised personnel and can only be performed at room temperature.
- Should unit parts need to be removed for maintenance, limit these conditions to the bare minimum; immediately reassemble parts at the end of work.
- Never leave tools, equipment or other improper material on or inside the unit.
- Whenever work requires the maintenance operator to work in areas hidden from the main switch view, we highly recommend a second person carefully ensures that control is not used.
If this is not possible, a warning sign must be placed on control device in a highly visible position.

CoeLux s.r.l. is not liable for inobservance of instruction and warnings here reported.

8.1 DISASSEMBLY OF THE UNIT

In case of disassembly of the unit, observe all instructions and warnings defined during installation procedures.

8.2 DEMOLITION AND DISPOSAL

At the end of its life cycle, dispose the product according to pertinent current regulations.

9 ANNEXES

9.1 ALTERNATIVE INSTALLATIONS: ANGLED FIXING OF COELUX® 45 LC

If request by customer and under spezilized operator approval, it is possible the angled installation of CoeLux® 45 LC (only from 0° to 45°). In this paragraph we propose an angled fixing solution that available to anchor the system both with plane ceiling and sloping ceiling.



WARNING!

Attaching the CoeLux® 45 LC to the existing structure is responsibility of the installer and it must be performed by qualified personnel only, following the safety regulations in force in the country of installation.

CoeLux® 45 LC possible angled configurations are show in figure 56. The projector side stays to the left in each image.

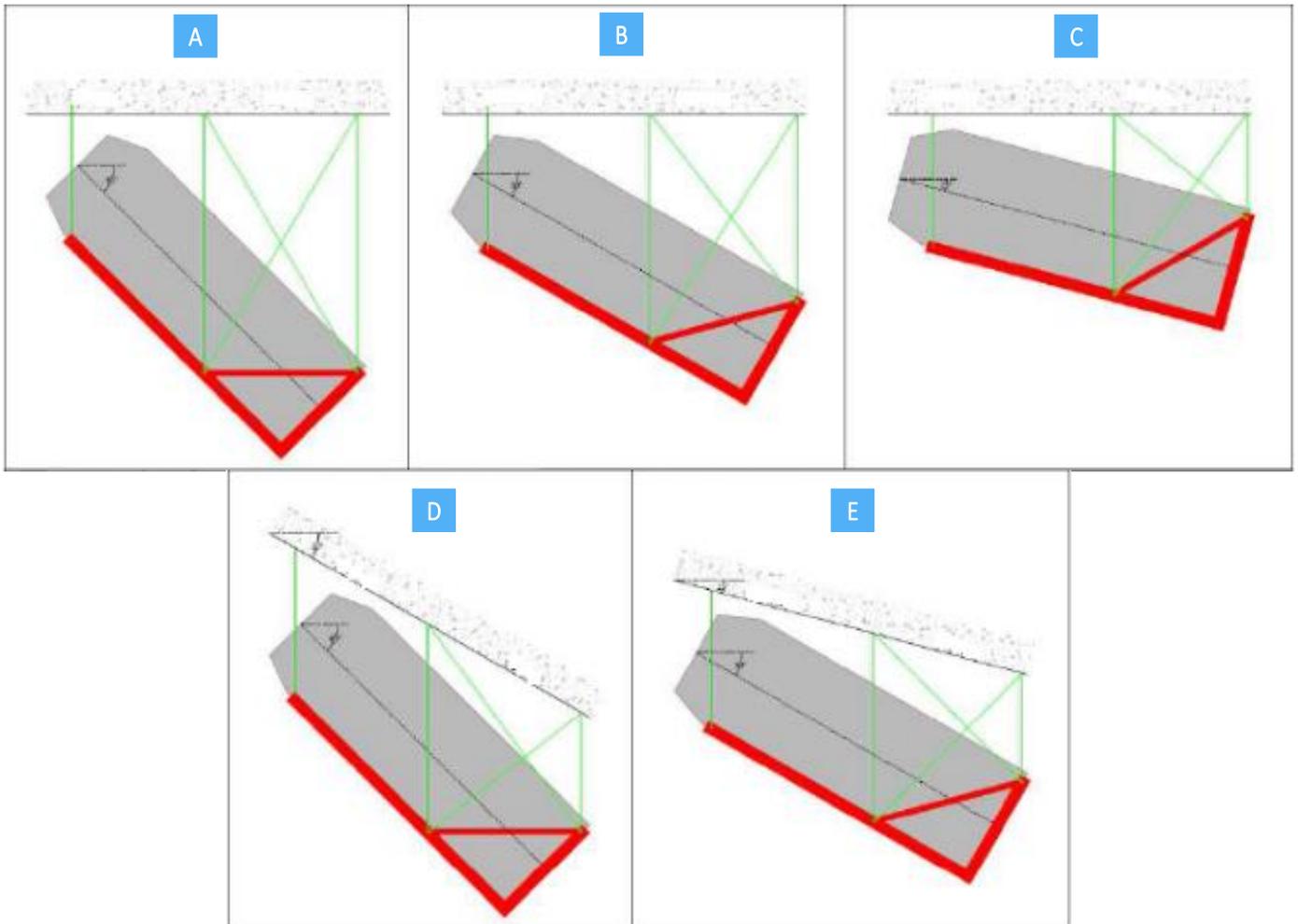


Fig. 56 *Some possible angled configurations: A) relative inclination 45°, B) relative inclination 30°, C) relative inclination 15°, D) absolute inclination 45°, E) absolute inclination 30°*

The first three configurations are refer to an horizontal ceiling, while configurations D) and E) are refer to an inclined ceiling of 30° and 15°.

WARNING!

Attaching the Coelux® 45 LC to the existing structure is responsibility of the installer and it must be performed by qualified personnel only, following the safety regulations in force in the country of installation.

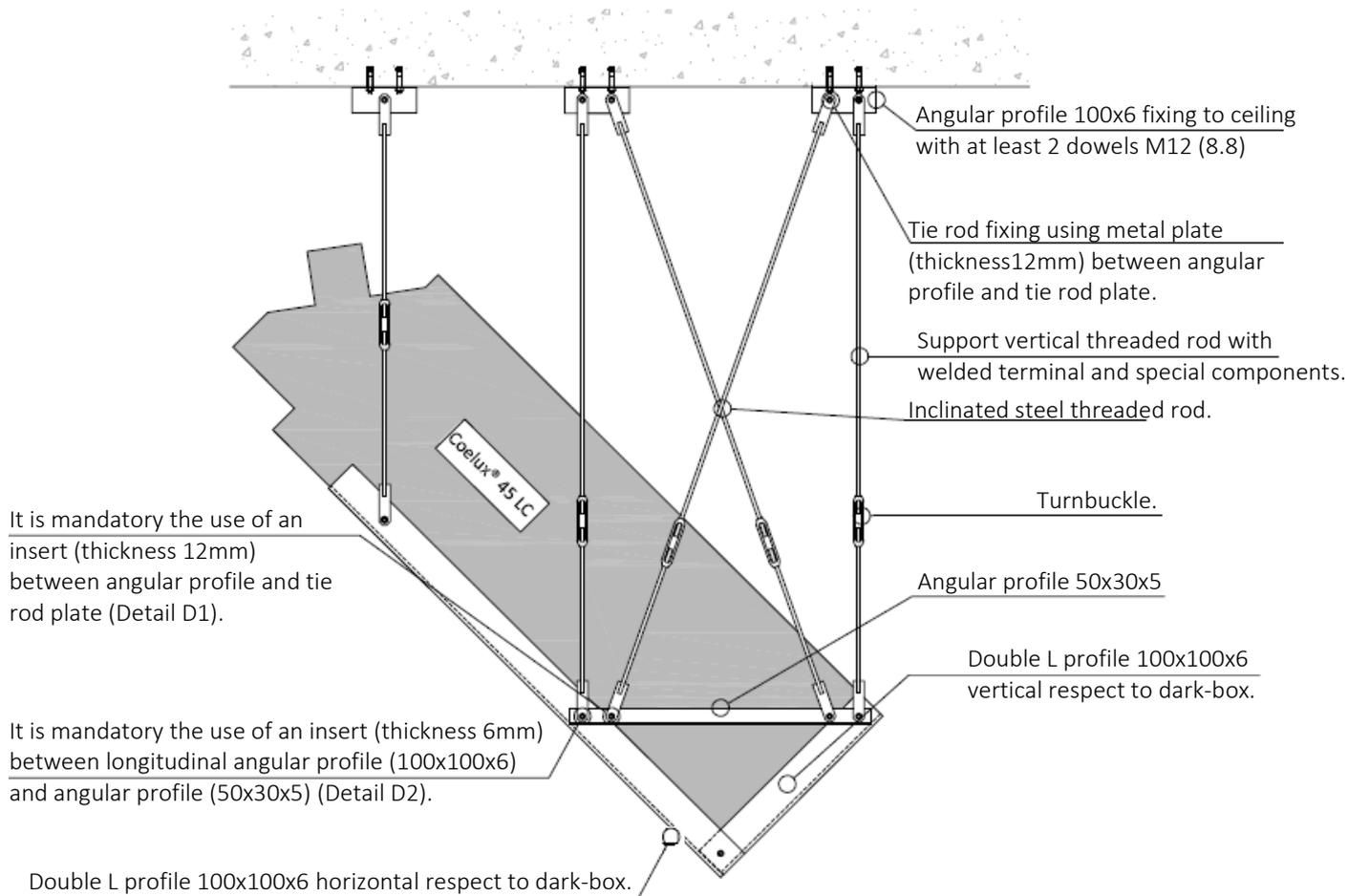


Fig. 57 Hanging system for angled dark-box

Hanging system show in figure 55 has been validated by a structural engineer. This system is responsibility of the installer and it DOES NOT provided by Coelux s.r.l..

CAUTION!

If not being use the installation kit of Coelux, structural validation of hanging system is responsibility of the installer. Coelux S.r.l. decline all liability about the use of any hanging system different from the proposed one.



WARNING!

Each anchor bolt anchored to the bearing structure of the building must be able to withstand a traction force of at least 1.6 kN.

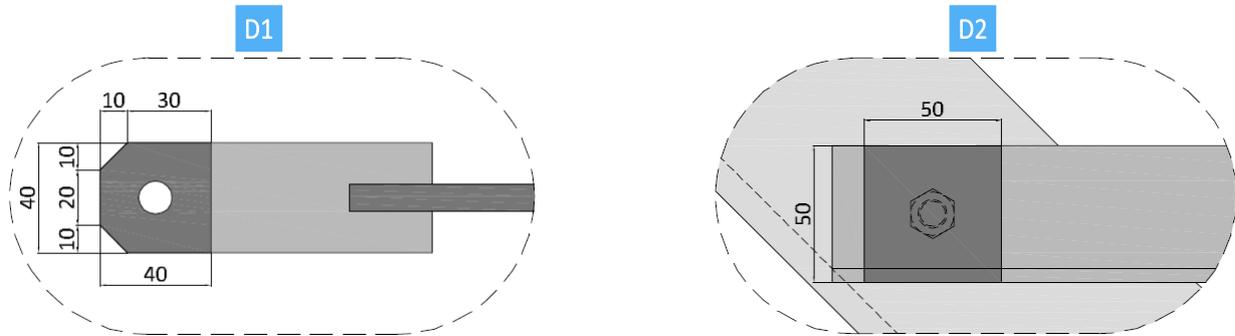


Fig. 58 Details D1 e D2: inserts for hanging system angled dark-box

HANGING COMPONENTS ABACUS (mm measure)

- component T1: insert (x20)
- component T2: galvanized metal threaded rod M12 (VAR.)
- component T3: turnbuckle (x10)
- components T4 e T5: angular profiles 100x100x6 (x4 e x2)

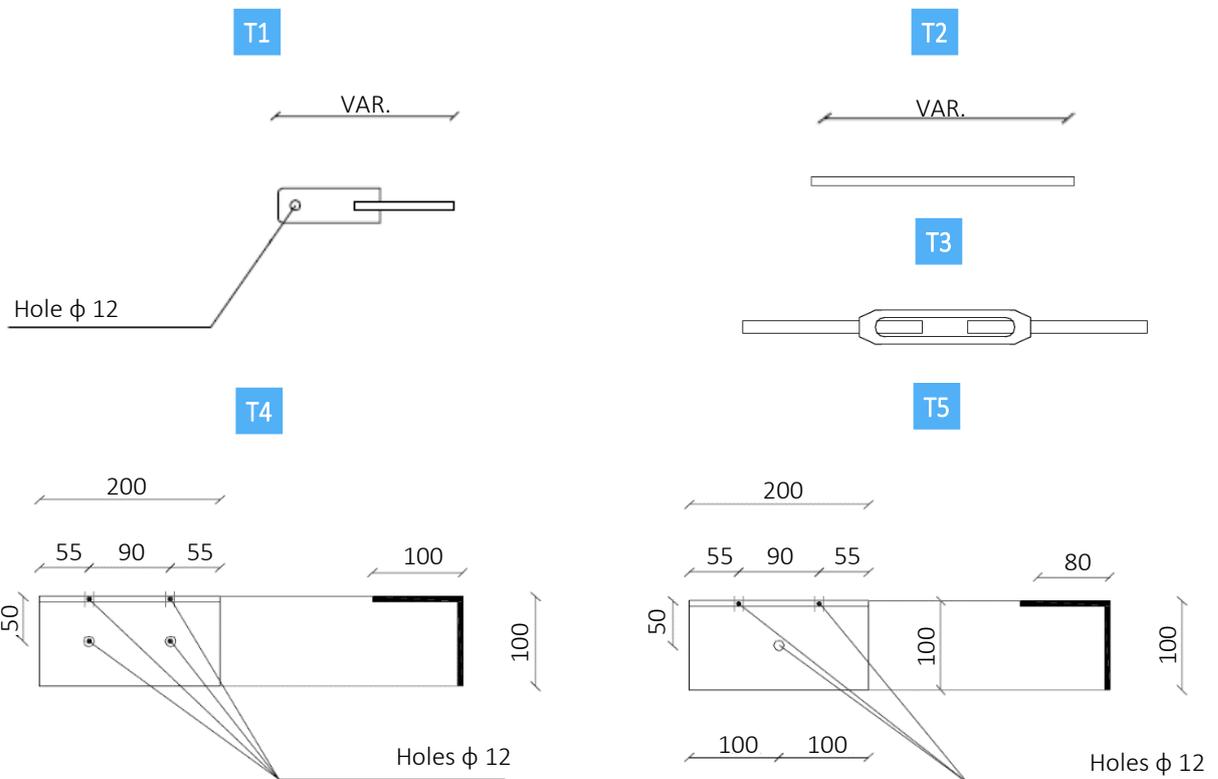


Fig. 59 Components T1, T2, T3, T4 e T5

CHASSIS COMPONENTS ABACUS (mm measures)

- component P1: plate 50x5 (x3)
- components A1a e A1b: angular profiles 100x100x6 (horizontal) (x1 e x1)
- components A2a e A2b: angular profiles 100x100x6 (vertical) (x1 e x1)
- component A3: angular profile 50x30x5 (inclined) (x2)

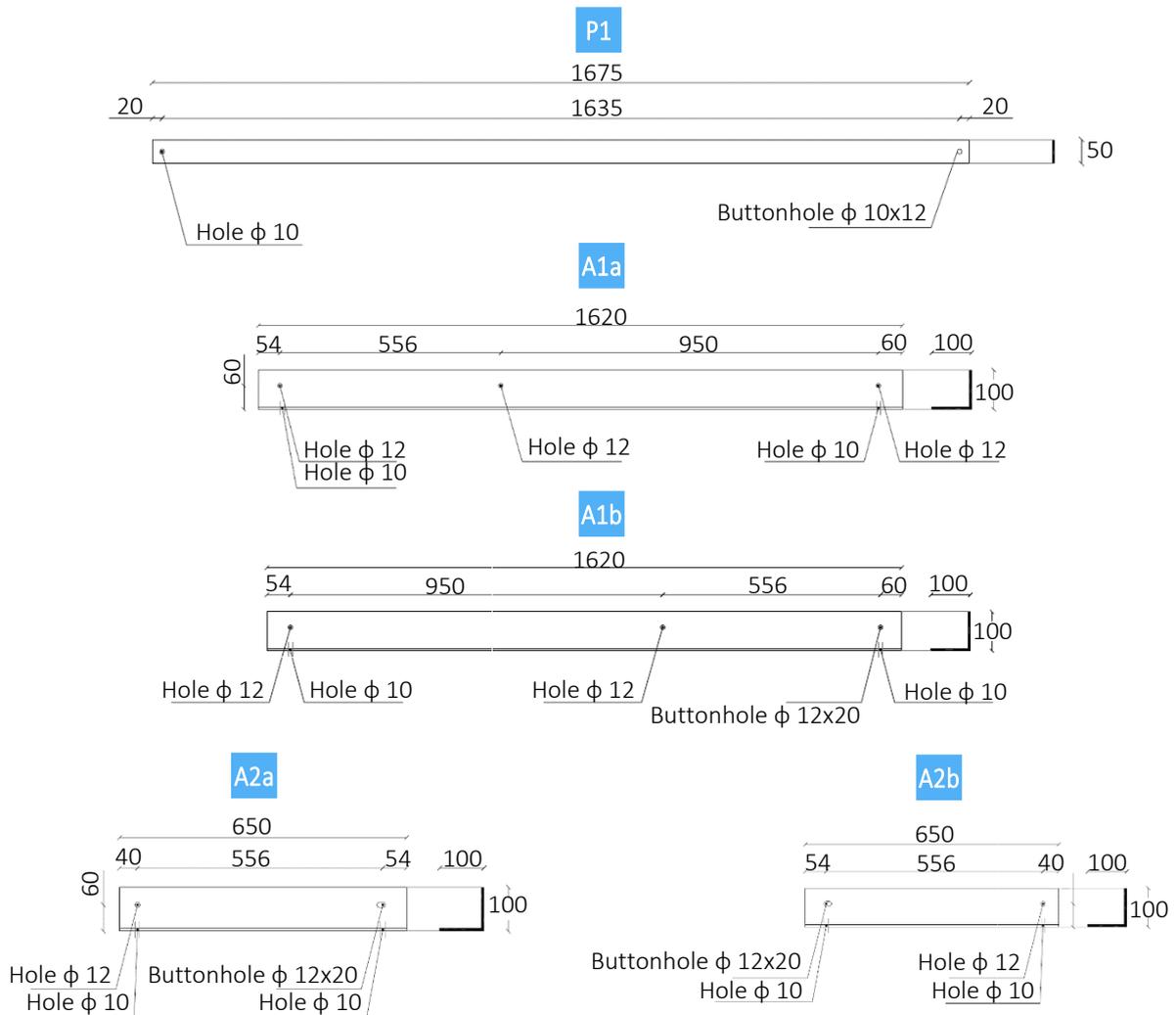


Fig. 60 Components P1, A1a, A1b, A2a e A2b

BOLTS ABACUS

- Bolt M8 (8.8) (x8)
- Bolt M10 (8.8) (x10)

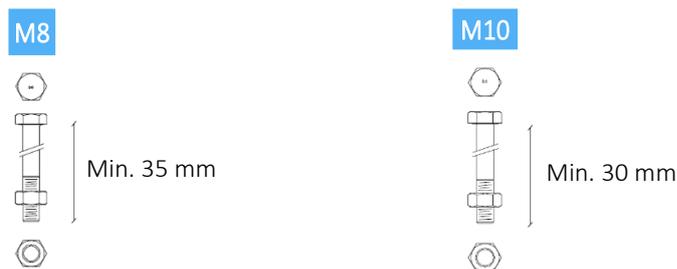


Fig. 61 Bolts M8 and M10

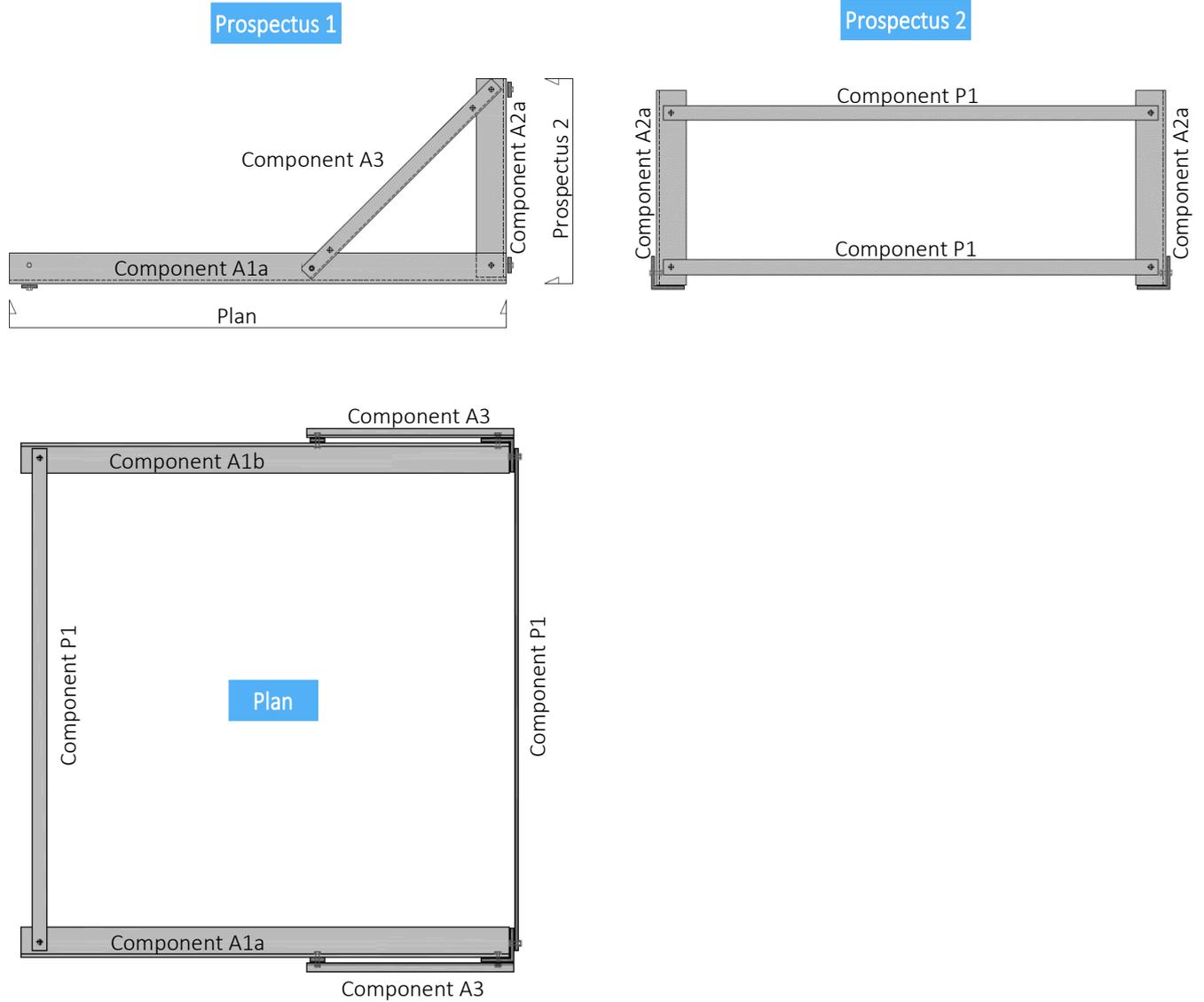


Fig. 62 *Chassis plan and prospectus*

9.2 EXTRAORDINARY CLEANING PROCEDURE

9.2.1 SCOPE

This procedure defines a method for extraordinary cleaning of mirrors during their installation.

- This procedure is based on previous experiences.
- Only CoeLux s.r.l authorized operators can perform this cleaning procedure.
- The efficacy of this procedure requires an adequate training of the operator assigned to this work. The training is necessary to give the operator the required skills to identify defects mentioned in this procedure and to make him able to perform the described process. On the contrary, cleaning procedure described here could not be sufficient to produce an acceptable result.

9.2.2 FIELD OF APPLICATION

This extraordinary cleaning procedure is necessary only if mirror surface is not perfectly clean after the unpacking of the mirrors.

9.2.3 TERMS AND DEFINITIONS

- **Demineralized water (commercial):** means water that has undergone a distilled process to remove most of the mineral salts.
- **Alcohol:** means commercial 95% ethyl alcohol (TRASPARENT, NOT METHYLATED, WITHOUT ADDED COLOURS).
- **Ammonia:** means commercial product constituted by a solution of ammonia and water (typically 5%).
- **Degreasing cloth:** means commercial cloth Sontara, produced by DuPont with a special fiber. It leaves a limited quantity of fibers during any transition and it limits electrostatic charge on glass surface.

9.2.4 PROCESS DEVELOPMENT

Mirror must have already undergone standard cleaning procedure during its production and it must bring CoeLux quality control pass stamp on its package (Figure 61).



Fig. 63 *CoeLux quality control stamp*

Three different cases have been identified depending on halos, impurity and/or particulate type and quantity that will be found on mirrors surface after their unpacking. Any case must be treated in different manner.

At least three operators are necessary for mirrors unpacking and control: during surface analysis, an operator have to unpack LED light engine, switch it on and point it on the mirror with an incident angle of about 45°, from a distance of 1.5 m. The other two operators have to analyze mirror surface for at least 30 seconds (holding it vertical) and evaluate the cleaning level.

CAUTION! POSSIBILITY OF DAZZLING



Operator must not to look directly into the glaring source reflected on the mirror. The operator should at least interpose his hand between his eyes and the light beam. It should be found a position that allows to control surface quality and at the same time avoids dazzling.

9.2.4.1 CASES AND TREATMENT

Two tables in paragraph 11.5.4.2 and 11.5.4.3 report visible defects respectively on glass surface and on silver surface, within the case they belong.

Case A. Mirror with minimal dust traces or completely none: do not touch or treat mirror surface. Install it quickly.

Case B. Mirror with a dust veiling, slight and sporadic halos and/or fingerprint (on mirror margins): pass repeatedly and vigorously a dry degreasing cloth (provided within cleaning kit) on mirror bringing the dirt toward mirror margins. Pay attention not to create new dirty traces. If after repeating this action for 5 minutes you are not deleting fingerprints or if the cleaning of the surface is not acceptable, switch to Case C.

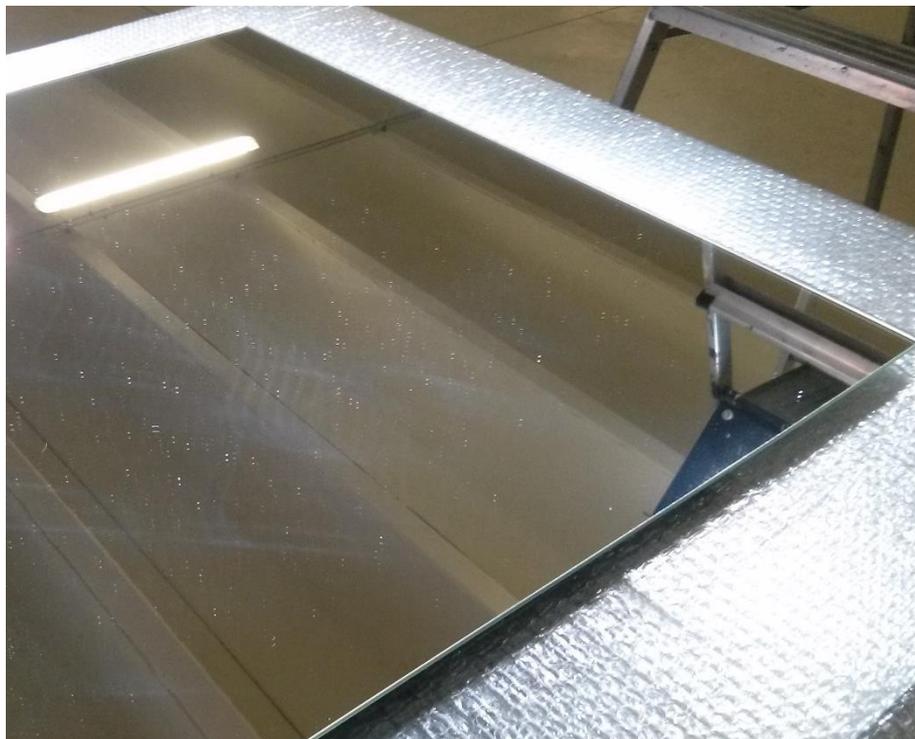


Fig. 64 Case A

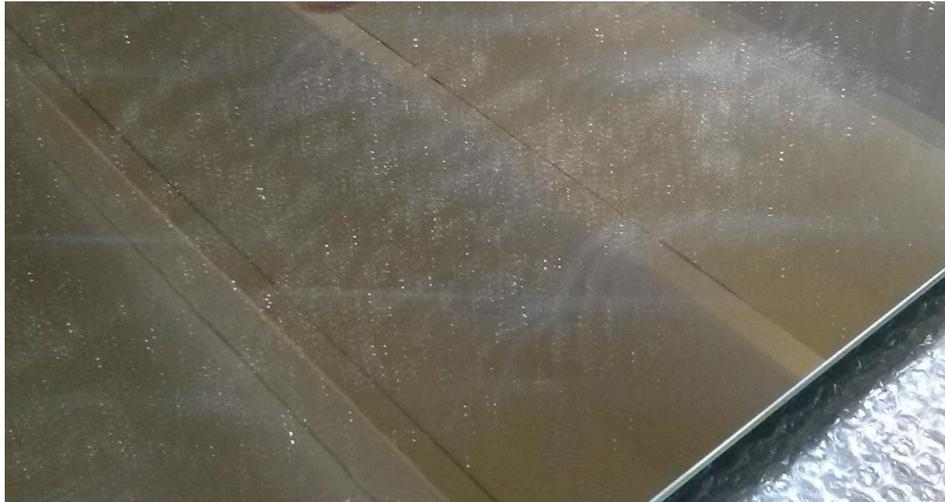


Fig. 65 Case B

Case C. Mirror visibly dirty, halos on entire surface, fingerprints in surface center/extremely-dirty surface. Get the following materials – ethylic 95% alcohol, ammonia, demineralized water – and proceed as listed below:

- Dilute a small quantity of ammonia in demineralized water (dilution 1:50), then pass mirror surface abundantly with this solution, using clean degreasing cloths provided within cleaning kit.
Treat the entire surface meticulously. Replace the degreasing cloth surface often and the cloth itself to remove as much dirt as possible..
- Dry the entire surface and pass it on with a dry degreasing cloth even when completely devoid of liquid.
- Finally pour ethylic alcohol on a clean dry degreasing cloth and pass the entire mirror surface, checking to remove residual dirt (to identify it better, it is possible to switch on the light engine and point it on the mirror). Replace the degreasing cloth surface often and the cloth itself during this step.



Fig. 66 Case C

9.2.4.2 GLASS SURFACE DEFECT

| DEFECT | PICTURE | ACCEPTABILITY |
|--|--|--|
| <p>Heavy dirt: mirror surface extremely matt.</p> |  | <p>Case C</p> |
| <p>Widespread dirt: surface with a matt film on it, visible also without the help of light engine.</p> |  | <p>Case C</p> |
| <p>Halos: little bit matt areas on glass surface, for the presence of various kinds of dirt.</p> |  | <p>Case B (if they don't disappear Case C)</p> |

| DEFECT | PICTURE | ACCEPTABILITY |
|--|---|--|
| <p>Little bit of dirt: dirt only on precise zone on mirror surface. Unlike scratches, they change shape when you pass on them with a clean degreasing cloth.</p> |  | <p>Case B (if they don't disappear Case C)</p> |
| <p>Dust accumulations: areas with a slight amount of dust, visible thanks to light engine help.</p> |  | <p>Case B</p> |

9.2.4.3 SILVER SURFACE DEFECT

| DEFECT | PICTURE | ACCEPTABILITY |
|---|--|-------------------|
| <p>Waves and mutable shapes: visible only by using light engine. Different from glass halos, if you change point of view, they change shape continuously.</p> |  | <p>ACCEPTABLE</p> |
| <p>Bands: darker areas on silver surface, visible only by using light engine.</p> |  | <p>ACCEPTABLE</p> |

10 CONTACTS

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11 COPYRIGHT

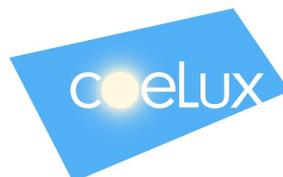
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