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

# INDEX

# 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 65 pages + annexes.

## 1.1 CONVENTIONAL SYMBOLS USED IN THE MANUAL

CAUTION !

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.

WARNING:

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 UNITS OF MEASUREMENT

Except where indicated otherwise, the used measurement units are those required by the International System (SI).

# 2 CHARACTERISTICS

## 2.1 DESCRIPTION OF THE PRODUCT

CoeLux® 45 LC is a recessed lighting unit: partially hidden by the false ceiling, it artificially simulates natural light of sky and sun, even in a fully closed space. CoeLux® 45 LC must be installed on the ceiling.
CoeLux® 45 LC includes a LED light source, glass optical components and a plastic CoeLux® panel, all housed in a single metallic structure.

**WARNING:**

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.

## 2.2 TECHNICAL DATA AND CHARACTERISTICS

| Features | Measure unit | Value | |
|---|---|---|---|
| MECHANICAL | | | |
| Overall dimensions | mm | 2.375 x 1.675 x 691 | |
| | in | 93.5 x 65.9 x 27.2 | |
| Skylight dimensions | mm | 974 x 476 | |
| | in | 38.3 x 18.7 | |
| Weight | kg | 300 | |
| | lb | 660 | |
| ELECTRICAL | | 74-00009-01 | 74-00013-01 |
| Voltage (frequency) of supply | V (Hz) | 230 (50/60) | 100 - 240 (50/60) |
| Connection | - | Phase + Neutral + PE | |
| Maximum (typical) power consuption | W | 350 (300) | 300 (270) |
| Insulation class | *IEC standards* | Class I | |
| Marking | | CE | CE, UL, FCC |
| ENVIRONMENTAL (Equipment intended for internal use) | | | |
| Minimum / maximum operating temperature | °C | 10 / 40 | |
| Maximum operating relative humidity | % | 95 (non-condensing) | |

*Tab. 1 Data and features of the product*

CoeLux® 45 LC appears as a steel external case. There are two different versions available: the first one (74-00007-01) only carries the CE marking, the second one (74-00014-01) carries the CE, UL and FCC markings. The only difference lies in the light engine used (see table in the next page for the scope).
It may also be mounted on normally inflammable surfaces (F)

For all lighting data, please see the product technical sheet. Contact CoeLux S.r.l. to receive them or to receive further information and clarifications.

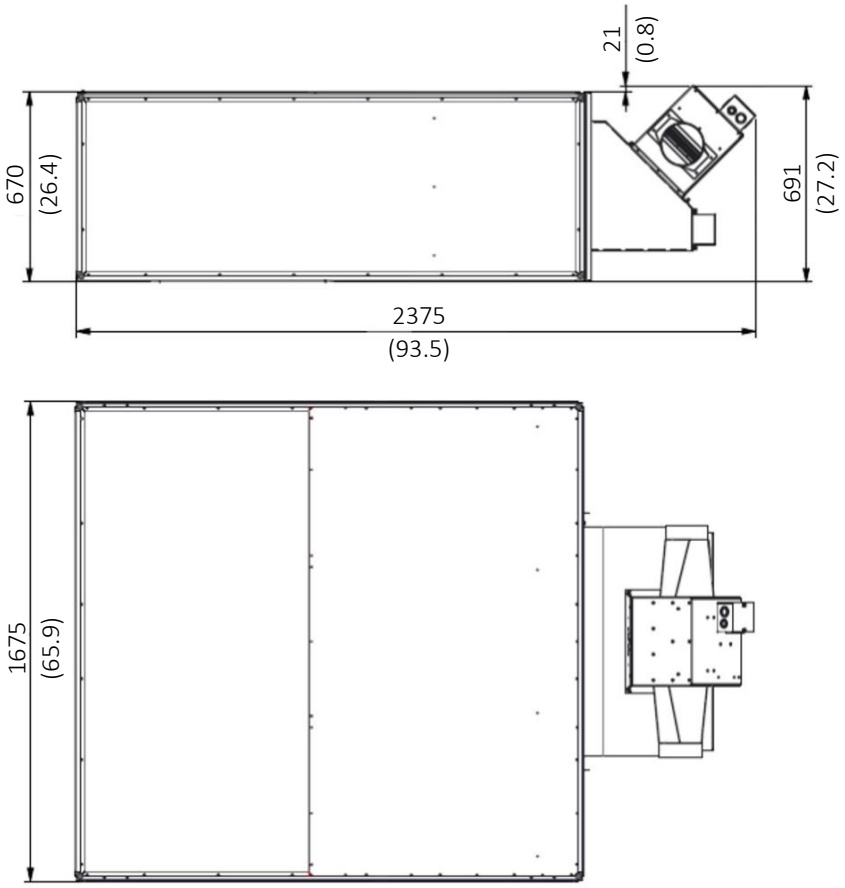



Fig. 1 *Dimensions in mm (inch)*

## 2.3 PRODUCT IDENTIFICATION

On the LED projector is located a label indicating the Serial Number and the Part Number; communicate these numbers to CoeLux S.r.l. for any request.

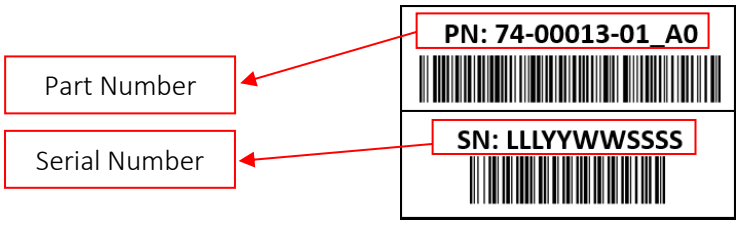


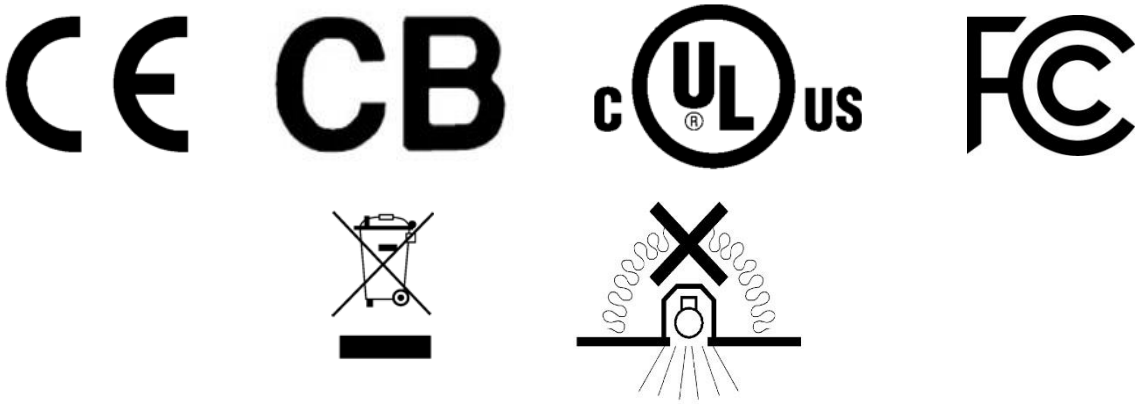

Fig. 2 *Label with Part Number and Serial Number*

| | Sistema 74-00007-01 (CE) | Sistema 74-00014-01 (CE, UL, FCC) |
|---|---|---|
| LED projector | 74-00009-01 | 74-00013-01 |
| Metallic Box | 74-00008-01 | 74-00008-01 |
| Panel | 03-00006-01 | 03-00006-01 |
| Large Mirror | 03-00008-01 | 03-00008-01 |
| Small Mirror | 03-00007-01 | 03-00007-01 |

*Tab. 2 CoeLux® 45 LC versions*

## 2.4 STANDARDS

CoeLux® 45 LC meets the essential requirements of 2014/35/UE, 2014/30/UE, 2011/65/UE, 2012/19/EU directives for which the necessary harmonised standards were applied.
Moreover, CoeLux® 45 LC holds the UL certification for Canada and the U.S.A. (File E476417) and FCC certification (in accordance with Cfr 47 part 15 – Subpart B- 15.107 e 15.109) on system 74-00014-01.



## 2.5 GENERAL SAFETY WARNINGS

**CAUTION !**

Read the entire user manual since it contains important information on correct installation and operation. Follow indications reported in the present guide to avoid fire and accidents during product installation and use.
The warranty is null and void in case of damages due to the inobservance of instructions and warnings reported in the present guide. CoeLux s.r.l. is not liable for any injury to people, animals or goods derived from inobservance of instruction and warnings reported in the present guide. Moreover CoeLux s.r.l. does not assume any responsibility derived from an incorrect installation and/or assembly (or different from directives reported in the present guide).

**CAUTION !**

Only personnel qualified by CoeLux s.r.l. can perform assembly, installation and inspection operations. Fixing operations of the product to the existing structure are demanded to qualified personnel (this qualification does not concerned CoeLux s.r.l.).

NOTE:

Some details concerning turning on the product or its operations in general may depend on choice made during assembly and /or installation.

- The product is not a toy and should be kept out of the reach of children! Install the product out of reach of children.
- Be careful not to leave packaging material unattended since it may be a hazardous toy for children.
- The product must be installed and used only in indoors and dry rooms, not exposed to humidity and damp.

WARNING:

- Do not install the unit in dirty (dusty) rooms where gas, vapours or dust are or may be found. Explosion risk!
- Do not cover the system with thermal insulation materials:  In particular, the distance between each product surface and any insulating material present in the ceiling must exceed 76 mm (3 in) to maintain UL certification.
- The product must not be exposed to extreme temperatures, high vibrations or strong mechanical stress.
- If safe operations are not deemed possible, the product may be put out of service and any incorrect handling should be prevented. Expert supervisor should be requested. The correct working of the system is no longer considered possible when:
  - the product is visibly damaged;
  - the product does not operate or operate incorrectly (blinking light, smoke or odour exhaust, audible crackling, product or surrounding surface decolouration);
  - the product was stored in unfavourable conditions;
  - the product is worn or has been damaged by transport.
- For further questions, please contact CoeLux S.r.l. (see the last page of this manual).

### 2.5.1 OPERATIONS TO BE AVOIDED

- Altering the unit or its parts, even partially, if not first expressly agreed (writing authorization) with the manufacturer; the manufacturer is not liable for any consequences derived from unauthorized changes of the product operated by costumer and/or installer and/or other subjects. Moreover product alterations also null and void warranty and certifications;
- Opening the case before cutting off power.
- Performing improper or hazardous operations.
- Obstructing ventilation or heat dissipation slots.
- Using flammable liquids near the unit.

- Installation or repairs done by unqualified personnel.
- Walking over, hanging on or leaning on the system during all phases of installation.
- Turning on and off repeatedly the system into a period of time of 30 seconds.

# 3 QUALIFICATIONS OF THE OPERATORS

| Logo | Meaning | Function |
|---|---|---|
|  | Generic worker. | Operator without specific skills, only able to perform simple tasks following instructions provided by qualified technicians. |
|  | Lifting and handling vehicle driver. | Operator qualified to use vehicles for lifting and handling material (strictly following the manufacturer's instructions), according to current laws in the user's country of the unit. |
|  | Mechanical technician. | Qualified technician, able to assemble and operate the unit, to work on mechanical parts for adjustments, maintenance and necessary repairs. Not authorised to work on live electrical systems. |
|  | Electrical technician. | Qualified technician able to operate the unit, assigned to perform all electrical adjustments, maintenance and repairs. This person is qualified to work on live cabinets and shunt boxes. |
|  | Qualified technician or operator. | Technician qualified by CoeLux s.r.l. to perform complex operations, in special situations or, in any case, those agreed with the user. According to the situation, this individual has mechanical and / or electrical and / or electronic skills. |

*Tab. 3 Qualifications of the operators*

NOTE:

Several positions indicated in the table can be held by a single person following adequate training.

Please note that “OPERATOR” means the individual assigned to assembly, install and clean the unit.

“QUALIFIED PERSONNEL" or "QUALIFIED OPERATOR” mean those individuals who have attended specialised courses, training, etc. and have experience with unit installation, operations, maintenance, repairs and transport.

“EXPOSED PERSON” means a person whose presence in any area inside and/or near the unit constitutes a risk to his safety, health or security.

# 4 TRANSPORTATION, MOVEMENT AND STORAGE

## 4.1 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.

### 4.1.1 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.

## 4.2 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.

## 4.3 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.

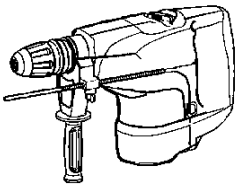
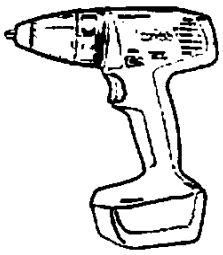
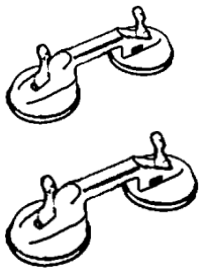
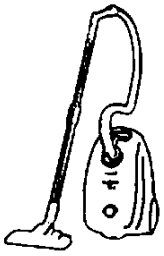
# 5 PRE-INSTALLATION

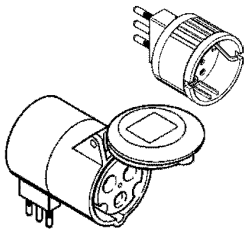
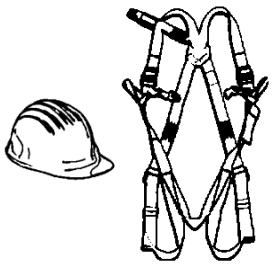
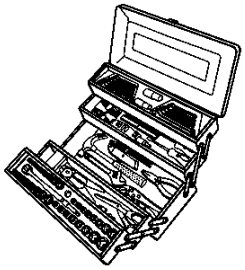
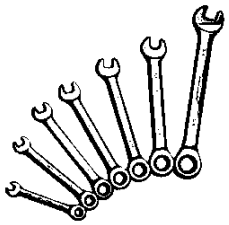
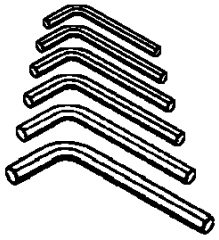
**CAUTION !**

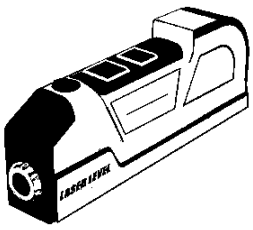
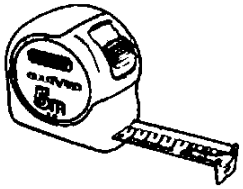
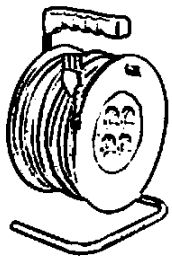
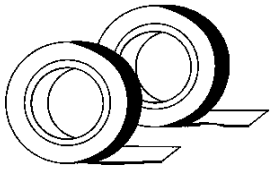
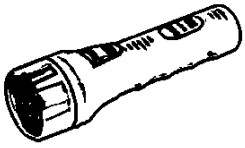
All activities tied to assembly, installation and mounting the CoeLux® 45 LC and structural elements must be performed referring to current pertinent regulations and standards. Fixing the CoeLux® 45 LC to the existing structure is responsibility of the installer.

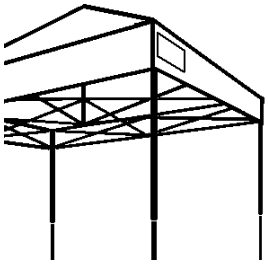
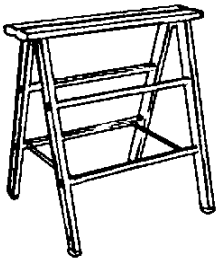
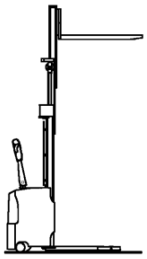
## 5.1 TOOLS NOT SUPPLIED BUT NECESSARY FOR INSTALLATION

The following table provides a list of the tools required for CoeLux® 45 LC installation but 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 | | |  |
| 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 suited to work load (300 kg). | A number that guarantees device planarity during lifting. | See paragraph 8.2.2 LIFTING. |  |

*Tab. 4 Necessary tools but not supplied*

## 5.2 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.

**WARNING:**

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).

### 5.2.1 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.

#### 5.2.1.1 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.

WARNING:

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.

#### 5.2.1.2 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.

WARNING:

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).

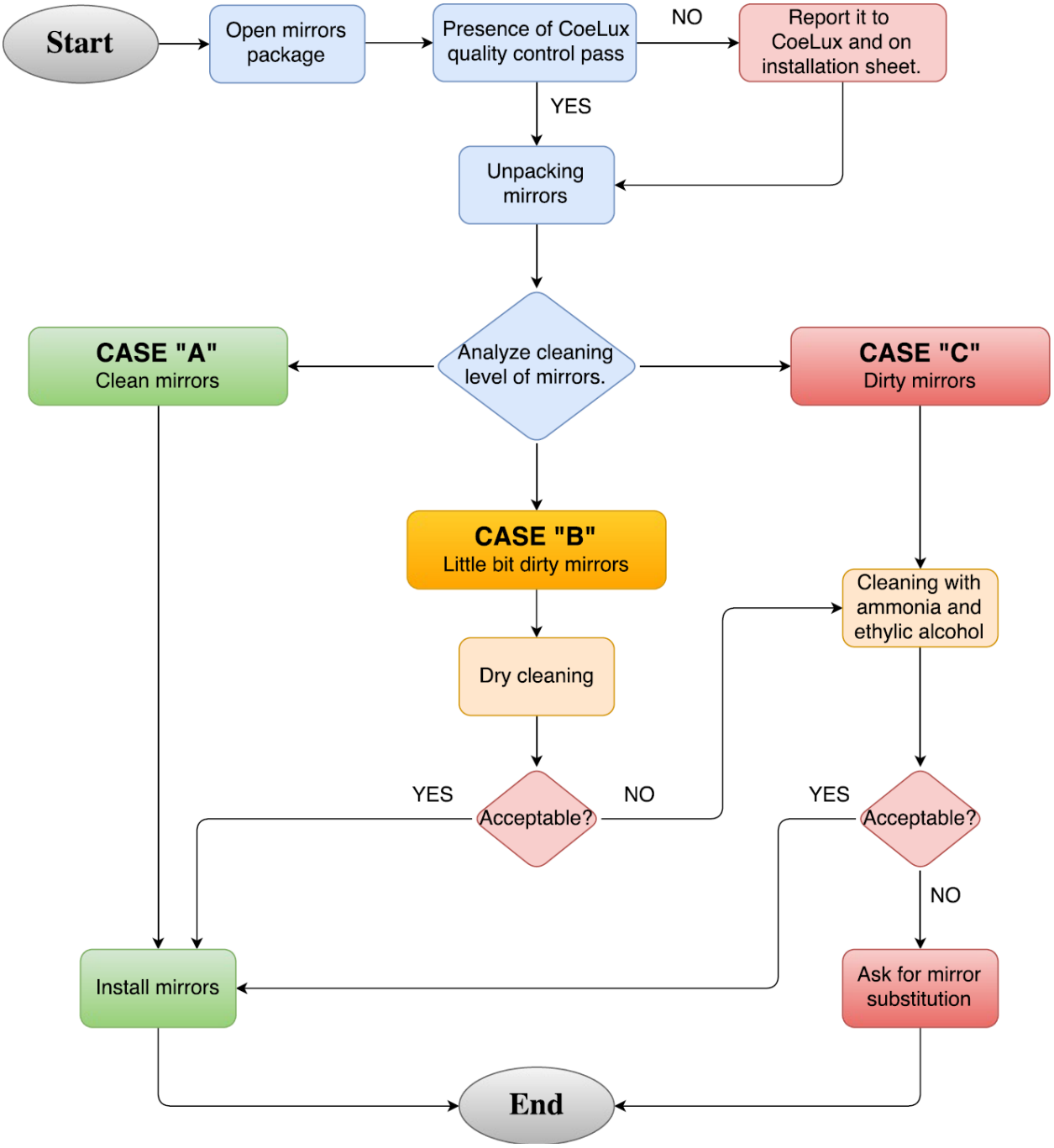



Fig. 3 *Flow chart analysis and extraordinary cleaning procedure of mirrors*

# 6 INSTALLATION

## 6.1 PERMITTED APPLICATIONS

CoeLux® 45 LC is a furnishing accessory to be recessed in the false ceiling and was designed for indoor installation, where the minimum ceiling height is 2,900 mm (114.2 inches). Unless otherwise the recommended final false ceiling height is between 2,200 (86.6 inches) and 2,600 mm (102.4 inches).

**CAUTION !**

CoeLux® 45 LC is not suited for outdoor installation exposed to the wheatear or in places that not comply requirements reported in *table 1*.

**WARNING:**

The minimum permitted false ceiling height must be verified foe each country of installation.

Qualified personnel must assess the use of CoeLux® 45 LC in environments subject to special regulations (subways, tunnels, etc.). Contact CoeLux S.r.l. for information on each specific project.

## 6.2 SPACE PLANNING

CoeLux® 45 LC lights space much differently than traditional lighting, imitating an always sunny window. Before installation, identify the place where the main light beam is directed since the light direction cannot be changed afterward.
For a correct product use, pay attention on artificial lighting compatibility with natural lighting in the room (due to any windows, skylights, etc.).
When planning CoeLux® 45 LC installation, a false ceiling trap door is required (with lock) and relevant crawl space to permit maintenance (see paragraph 8 LIFTING, FASTENING, CONNECTIONS AND CHECKS).

## 6.3 GENERAL MOUNTING INSTRUCTIONS

CoeLux® 45 LC is made up of a box element (called box and made up of flat steel panels hardened at the edges) about 2.5 $m^3$, two mirrors, a LED light source and a CoeLux® panel. The structure must be secured to the ceiling by a system made up of a sub-structure hung from the ceiling, on which the CoeLux® 45 LC will rest.
CoeLux® 45 LC assembly, lifting, mounting and operating procedures must follow the instructions in the present guide. Those procedures must comply relevant installations regulations and current safety and health regulations in the country of installation.

**CAUTION !**

Only qualified personnel by CoeLux S.r.l. may assemble, handle and operate the equipment. The warranty is null and void and CoeLux s.r.l. is not liable in case of damages due to the inobservance of the previous prescription. Qualified personnel chosen by installer and under his responsibility must make fixing of CoeLux® 45 LC to the existing structure.

# 7 ASSEMBLING

**CAUTION !**

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 vontaining the CoeLux® panel, a box containing LED projector, a bag containig 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.

## 7.1 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.

## 7.2 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

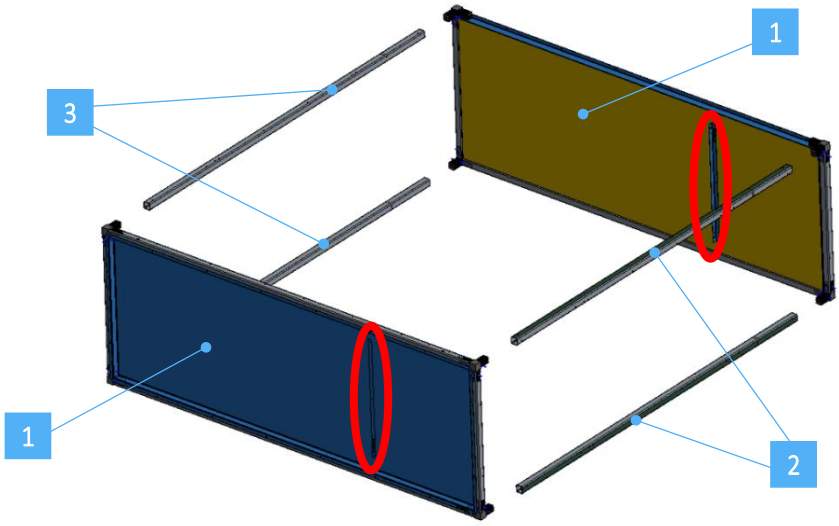



Fig. 4 *Tubes assembly.*

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).

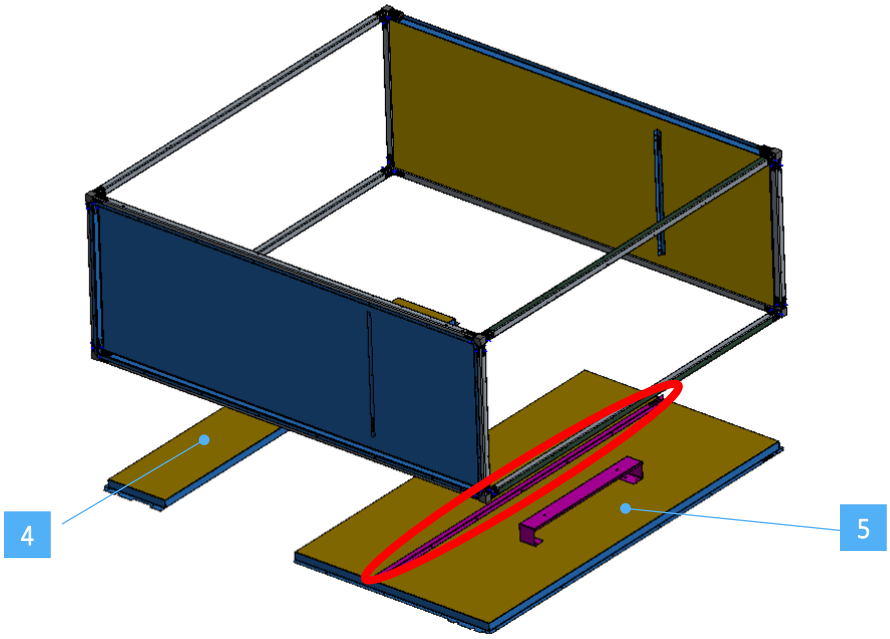



Fig. 5 *Bottom panels assembly.*

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.

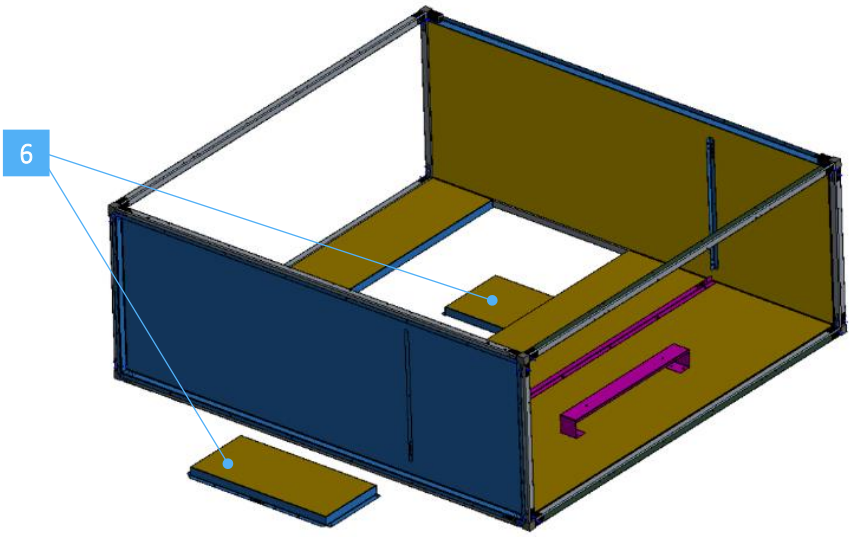



Fig. 6 *Bottom lateral panels assembly.*

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.

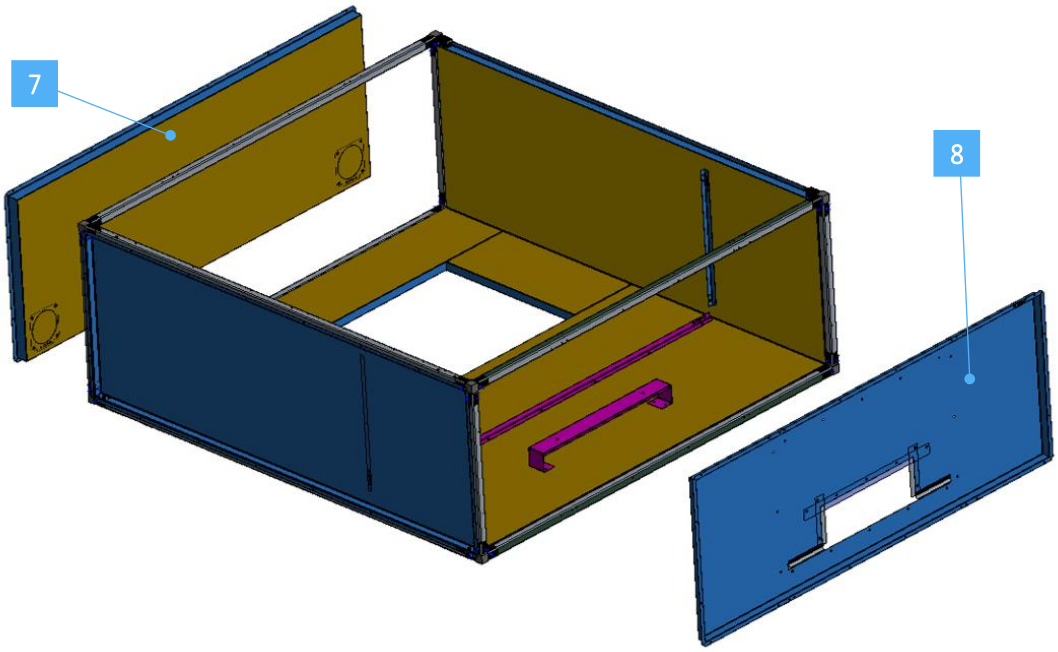



Fig. 7 *Rear and front panels assembly.*

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.

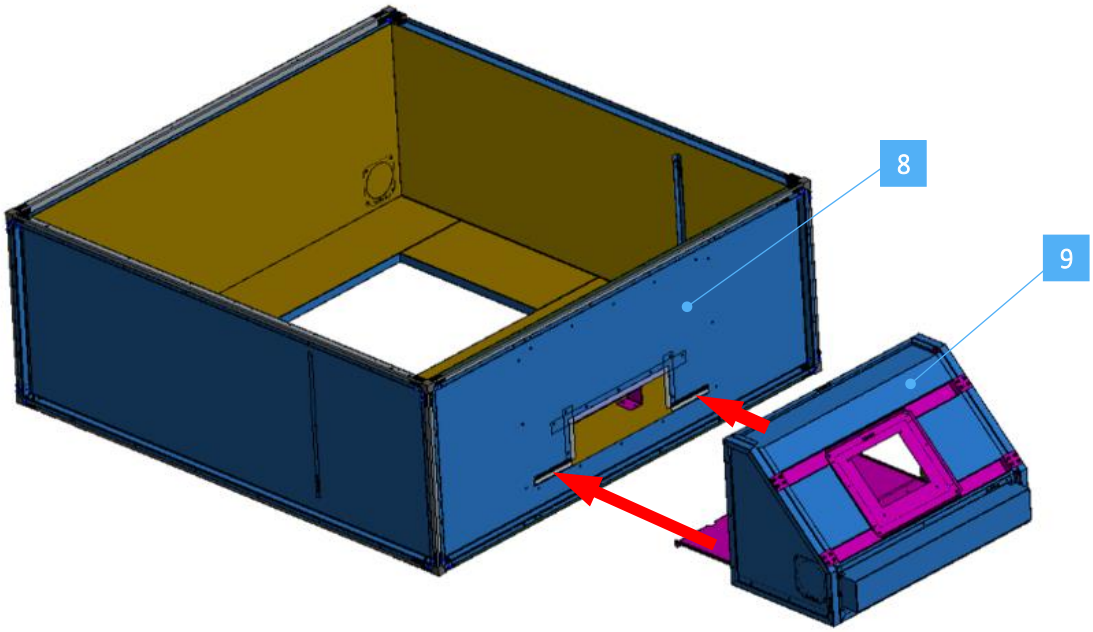



Fig. 8 *Ensemble assembly.*

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.

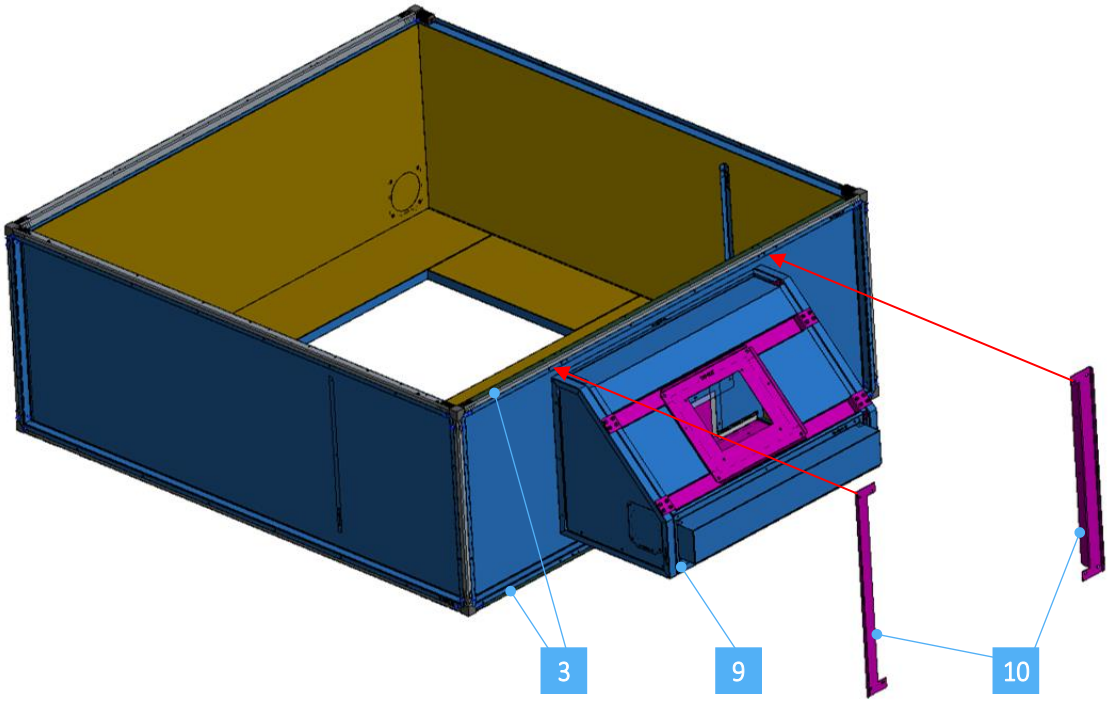



Fig. 9 *Support bars assembly*

### 7.2.1 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. 10 *Side panel not shown*

7 Open the case 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).

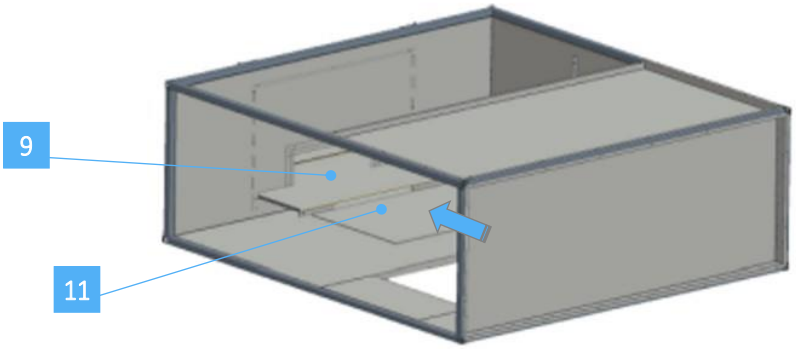



Fig. 11 *Inserting the small mirror*

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).

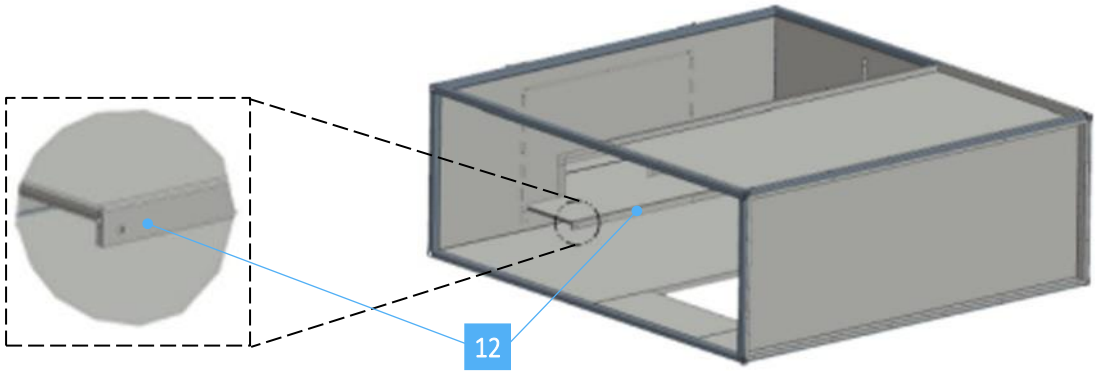



Fig. 12 *Locking the small mirror*

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).

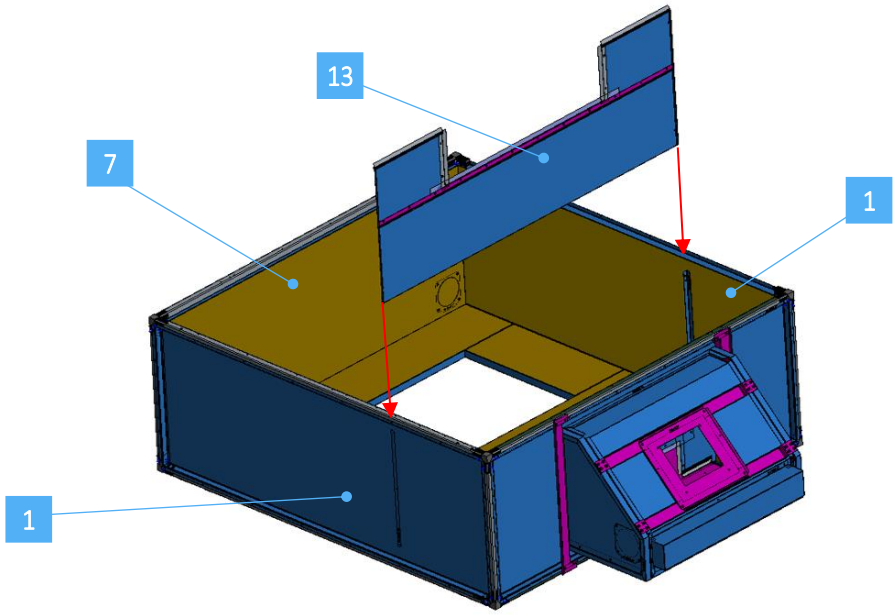



Fig. 13 *Divider panel assembly*

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).

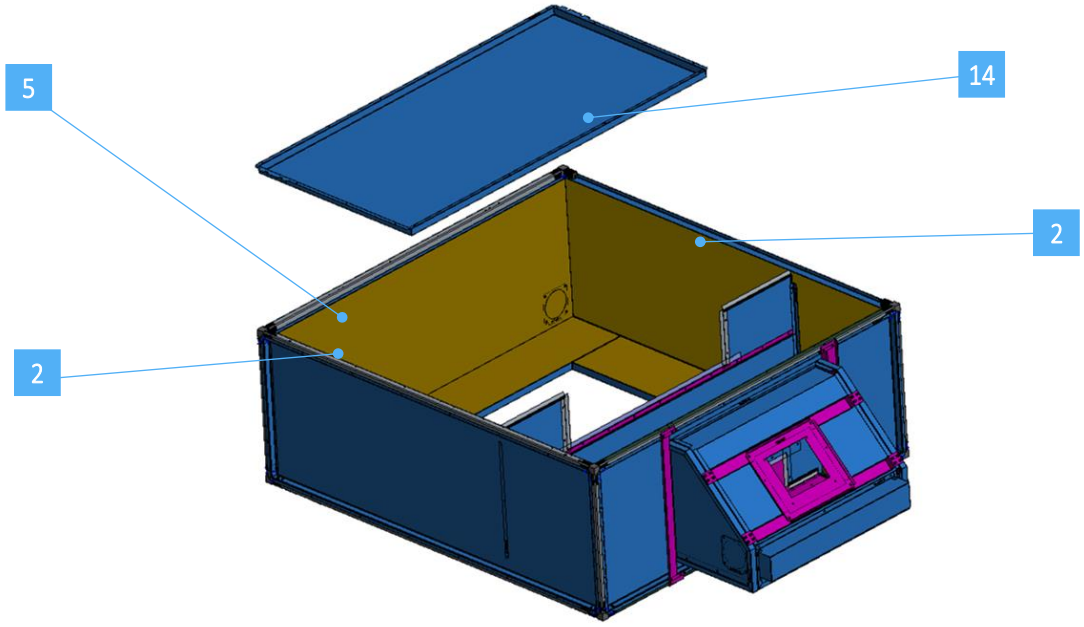



Fig. 14 *Top panel assembly*

### 7.2.2 LARGE MIRROR INSTALLATION

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

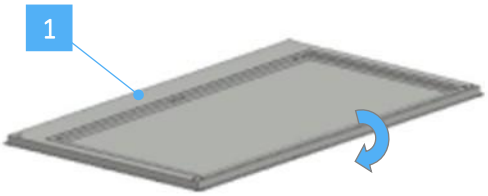



Fig. 15 *Upper lid rotation*

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

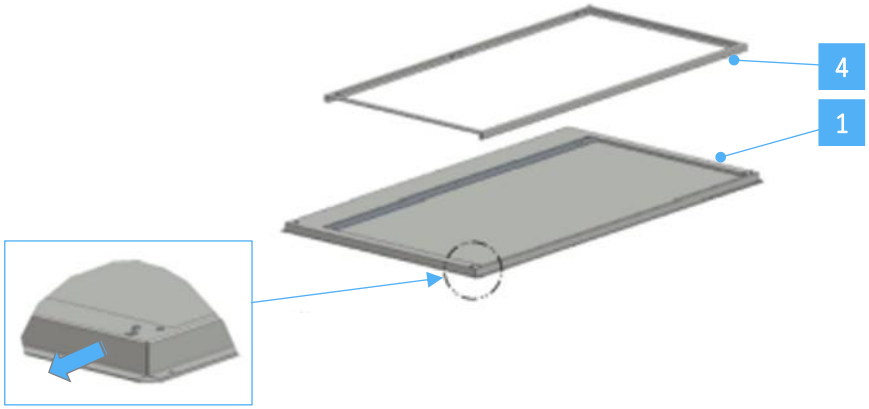



Fig. 16 *Frame removal*

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


Fig. 17 *Frame rotation*

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

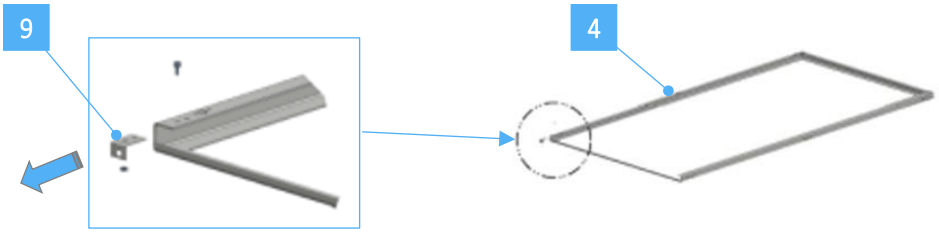



Fig. 18 *Bracket removal*

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

**WARNING:**

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

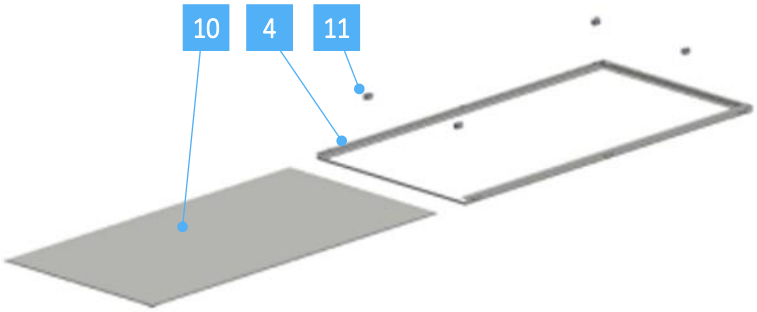



Fig. 19 *Mirror insertion*

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

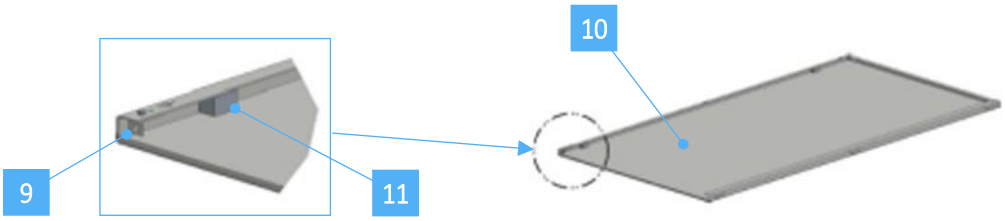



Fig. 20 *Locking the mirror*

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.

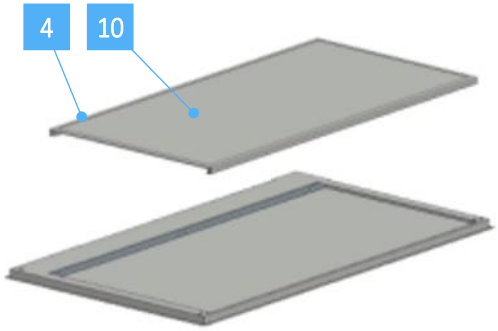



Fig. 21 *Inserting the mirror frame in the lid*

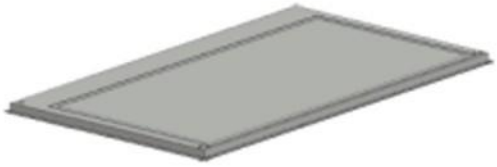


Fig. 22 *Mirror frame inserted in the lid*

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).

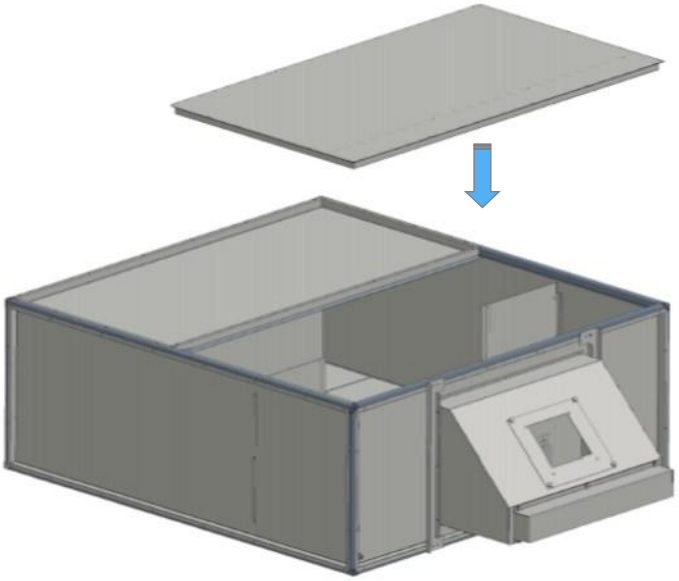


Fig. 23 *Inserting the upper lid on the box*

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!).

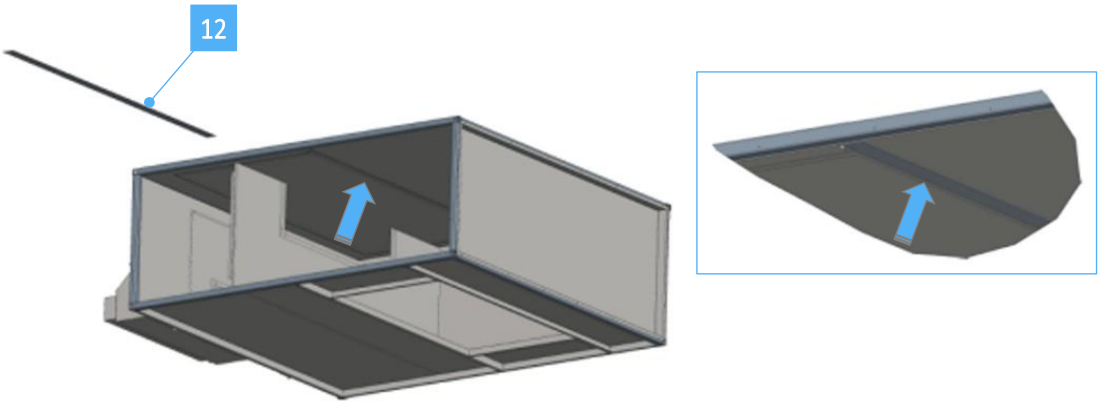



Fig. 24 *Positioning the magnetic strip*

### 7.2.3 COELUX® PANEL INSTALLATION

1 Remove the panel brackets [**26**].

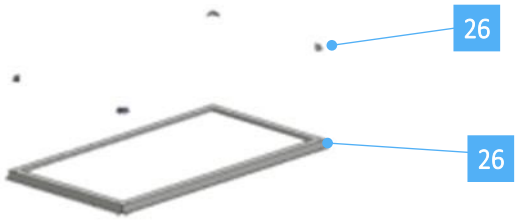



Fig. 25 *Bracket removal*

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).

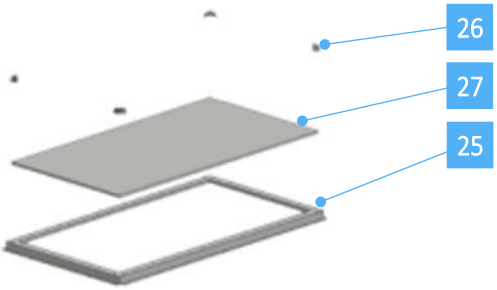



Fig. 26 *CoeLux® panel assembly*

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.

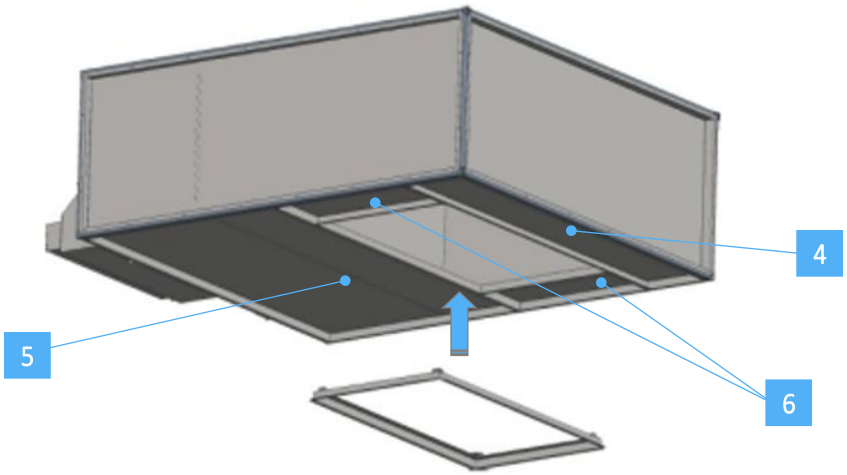



Fig. 27 *Panel ensamble assembly*

### 7.2.4 PROJECTOR 74-00013-01 INSTALLATION

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

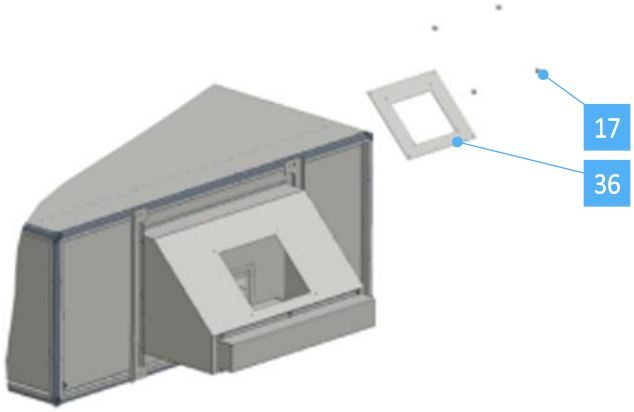



Fig. 28 *Plate removal*

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

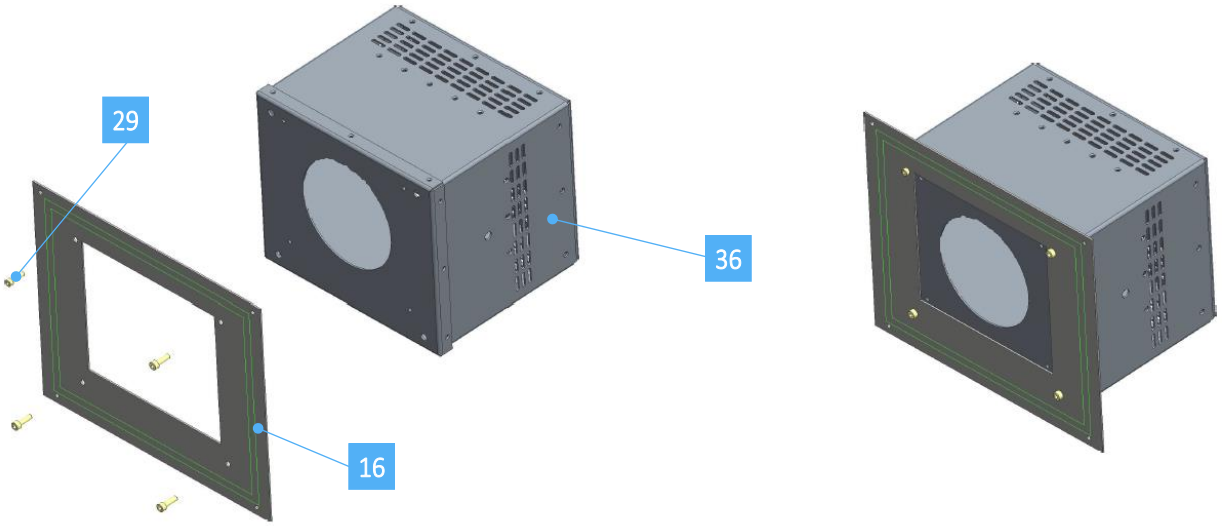



Fig. 29 *Securing the projector on the plate*

**CAUTION !**

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**].

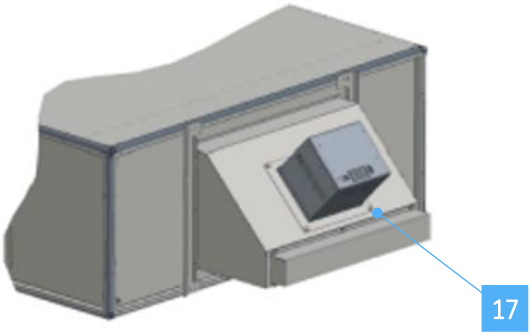



Fig. 30 *Projector unit installation*

7.2.4.1 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.

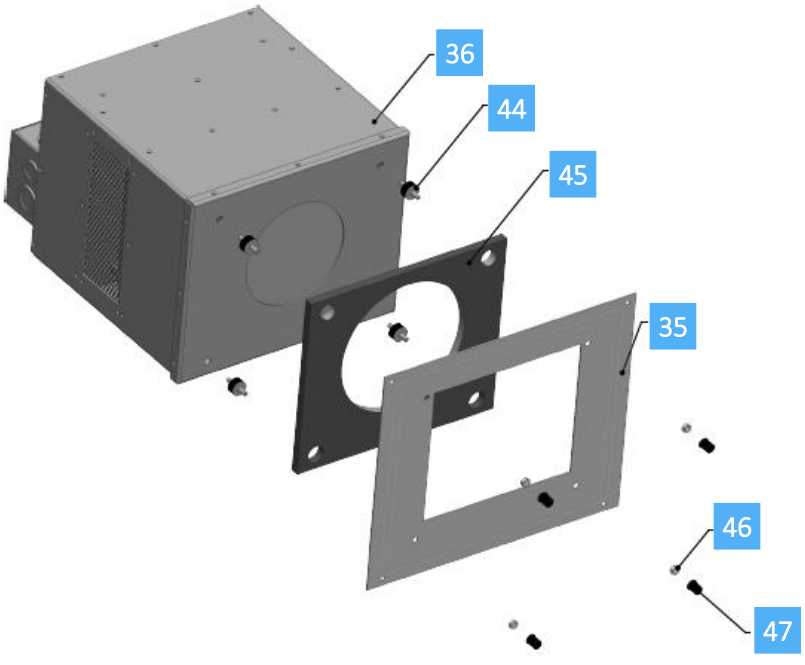



Fig. 31 *Installation of the ventilation kit*

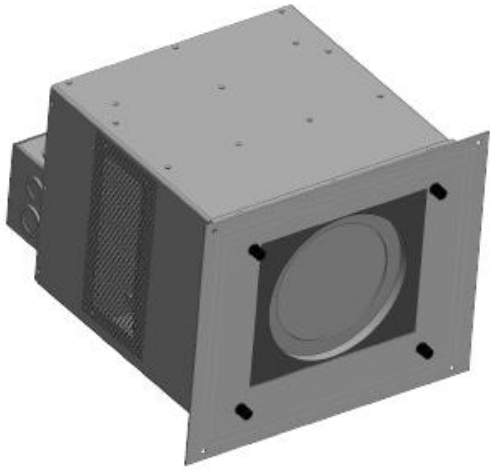


Fig. 32 *Installation of the ventilation kit*

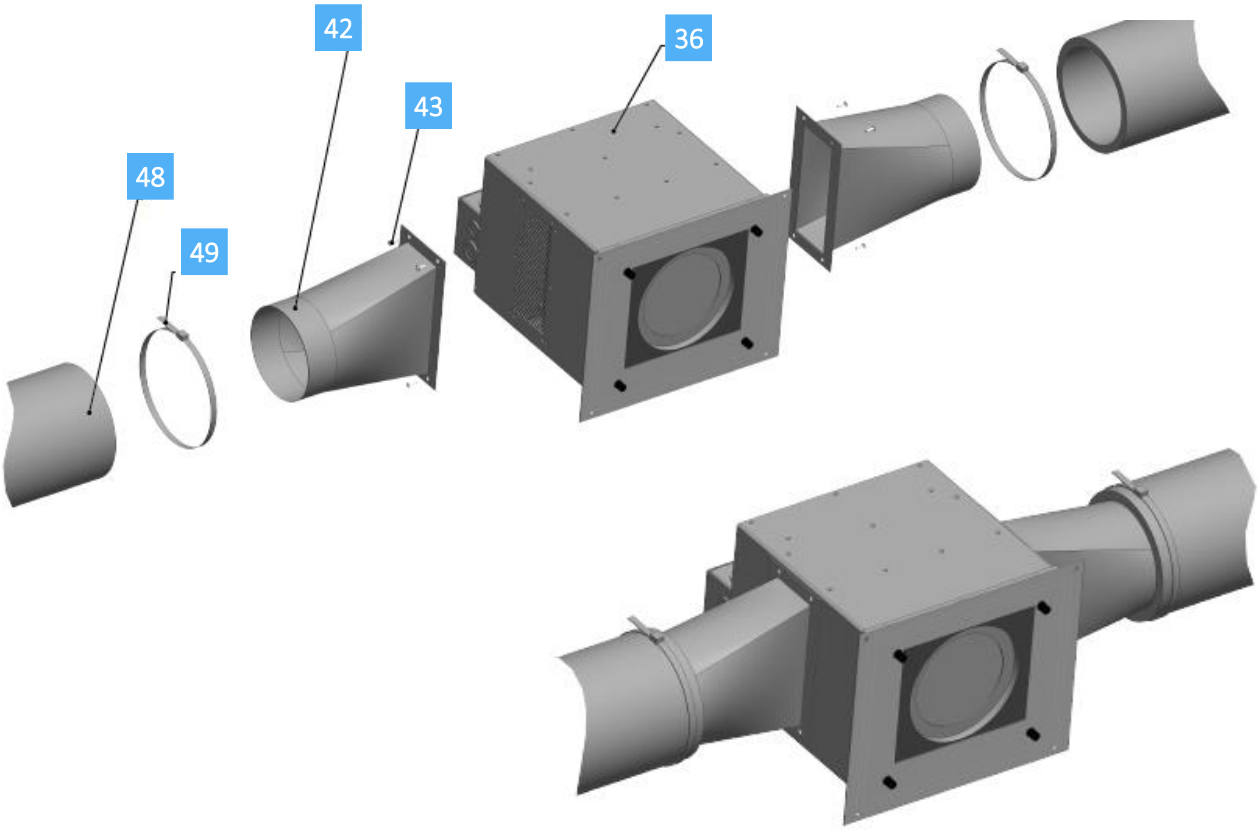



Fig. 33 *Installation of the ventilation kit*

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.

#### 7.2.4.2 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.

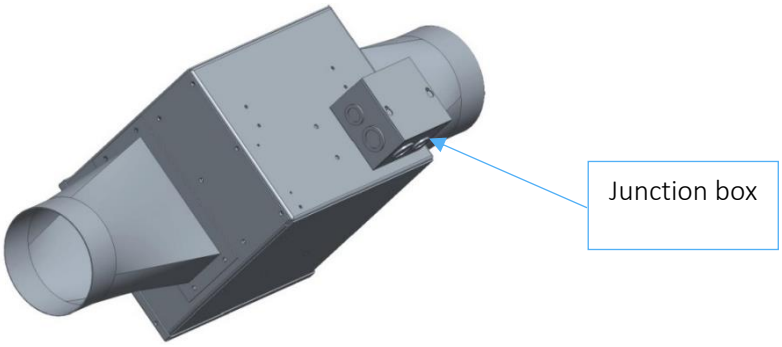



Fig. 34 *Rear view of the projector 74-00013-01*

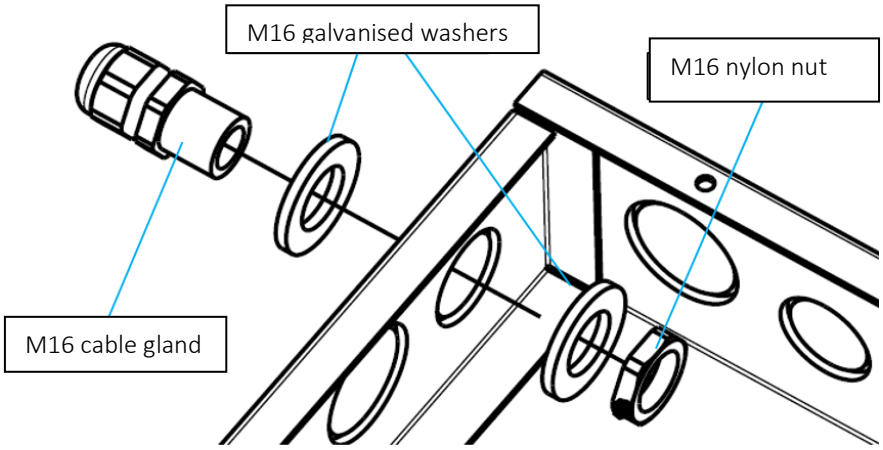



Fig. 35 *Cable gland installation diagram*

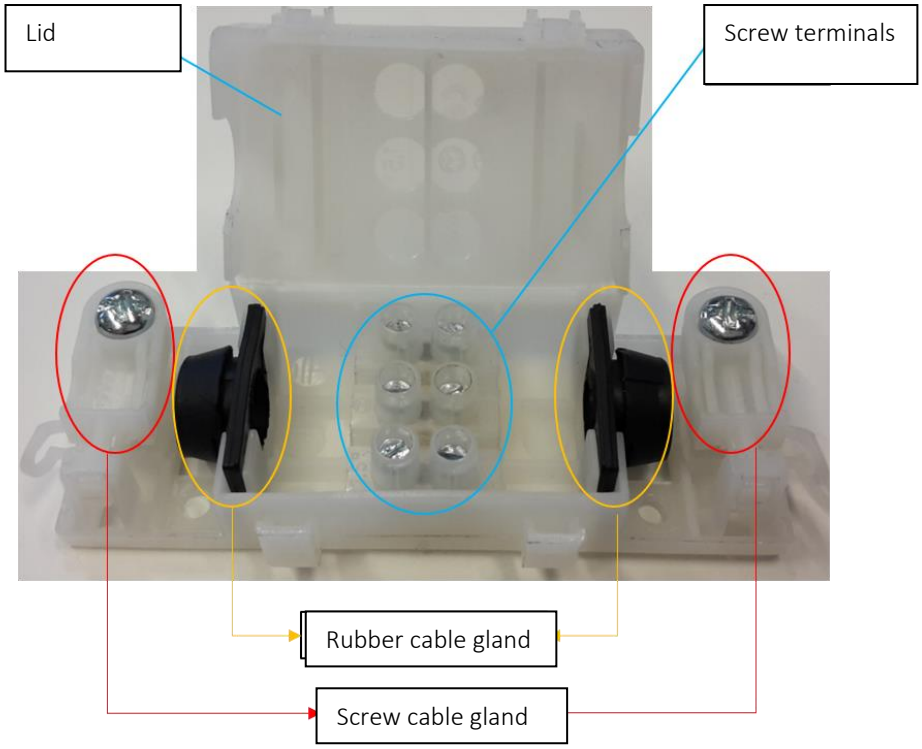



Fig. 36 *Branching terminal board to connect the mains supply cables*

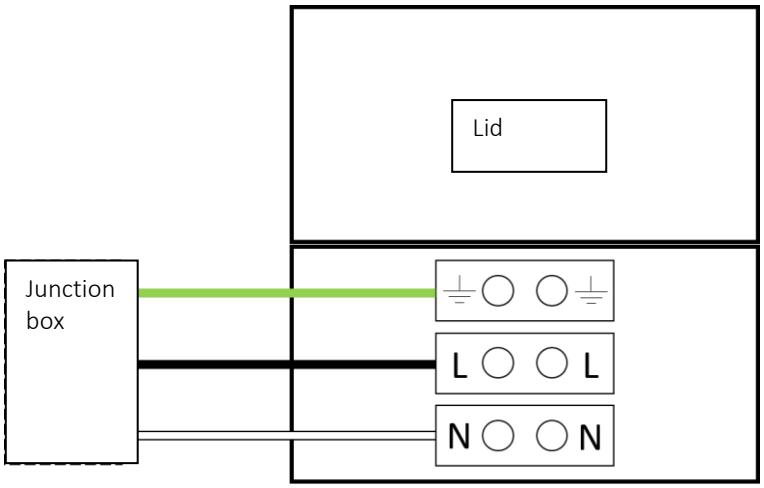



Fig. 37 *Sketch to show an example of the terminal board supplied*

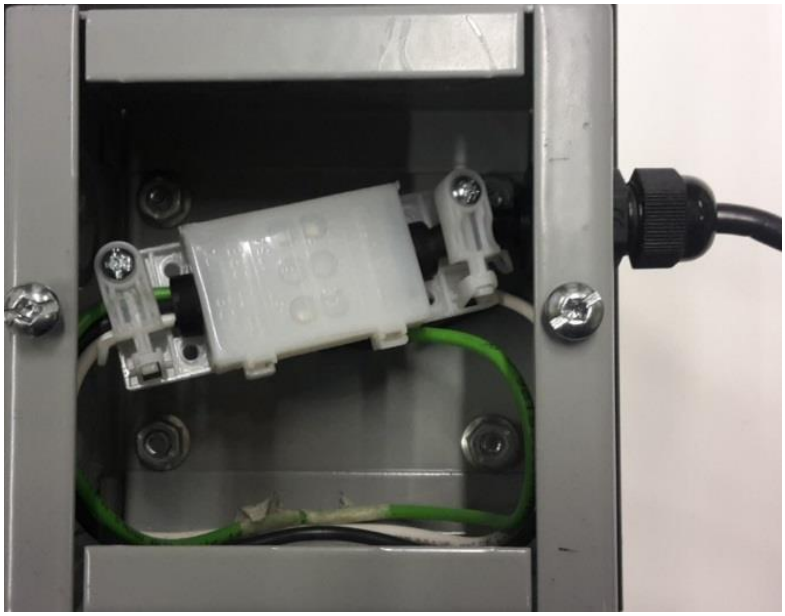


Fig. 38 *Completed electrical connections to the projector 74-00013-01*

### 7.2.5 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).

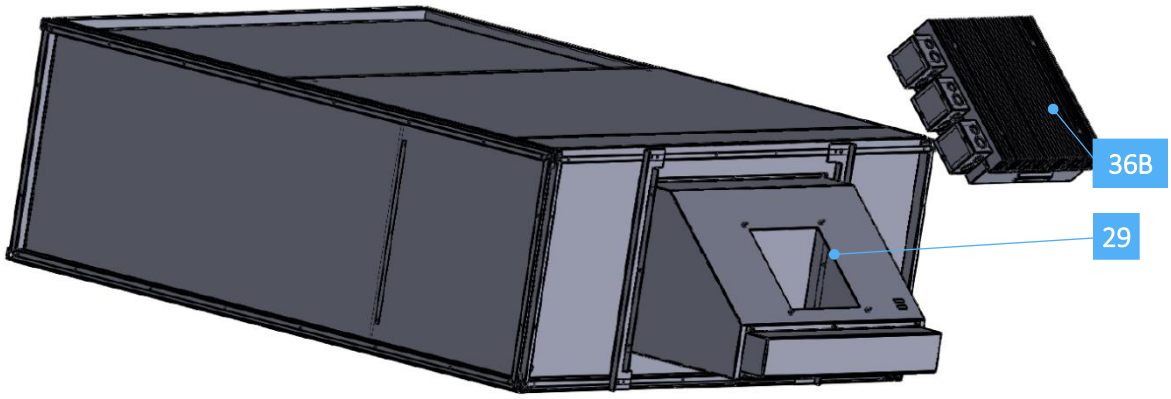



Fig. 39 *Installation sequence - Step 14B*

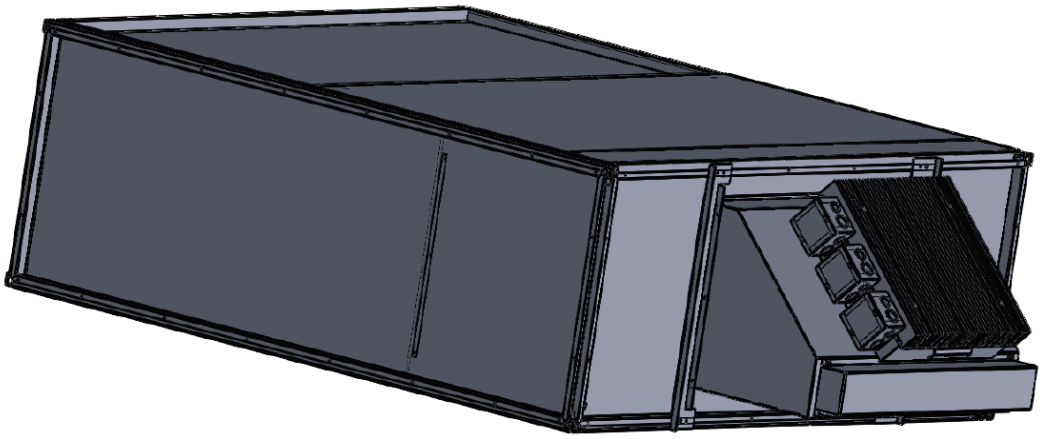


Fig. 40 *Installation sequence - Step 14B*

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).

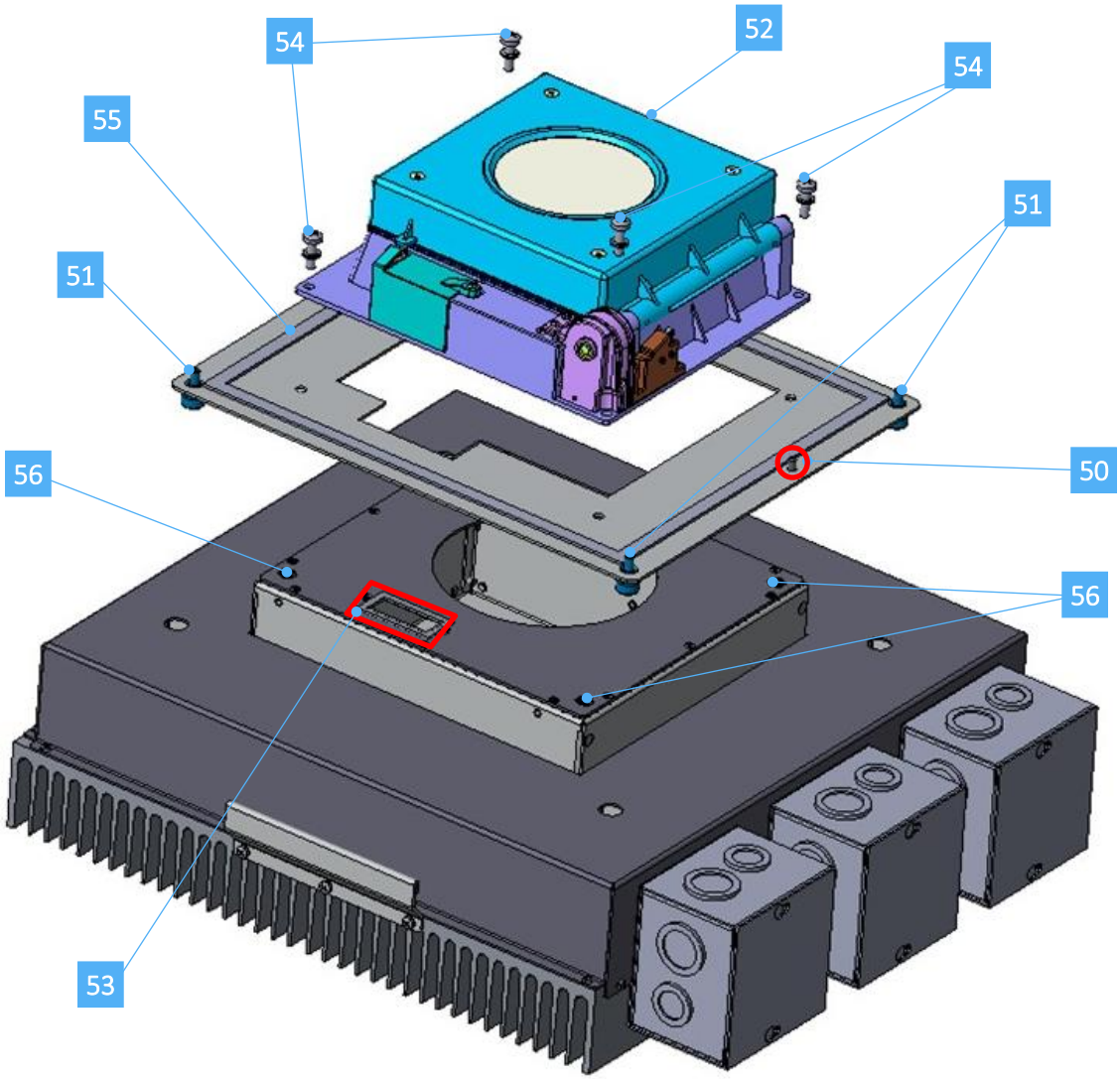



Fig. 41 *Installation sequence - Step 14B, OPTION 2*

### 7.2.5.1 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

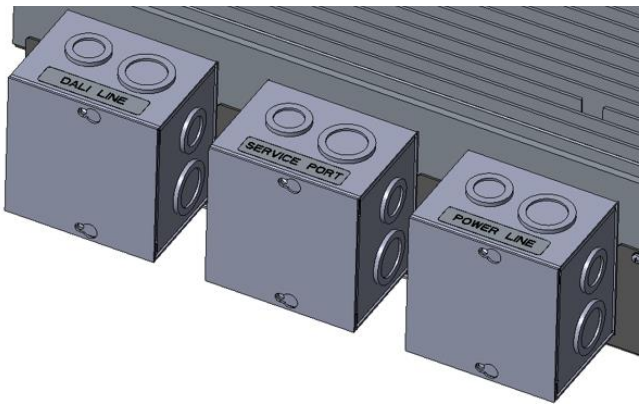



Fig. 42 *Rear of the projector 74-00062-01/74-00063-01*

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).

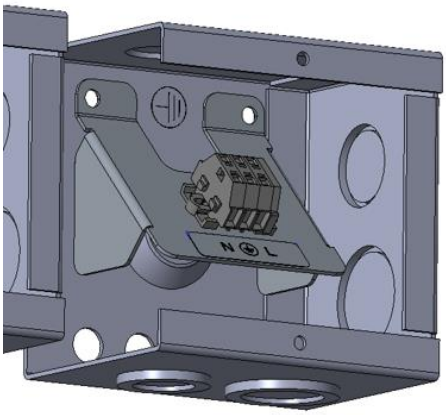



Fig. 43 *Power supply terminal board inside the junction box*

### 7.2.6 SILICA-GEL INSTALLATION AND REPLACEMENT

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

2 Remove the silica-gel box [20].

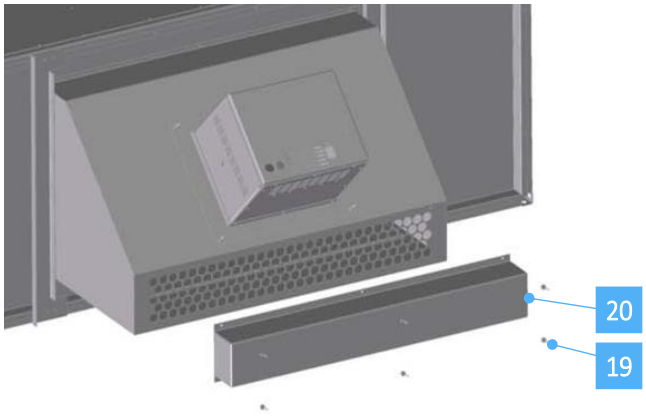



Fig. 44 *Silica-gel box removal*

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].

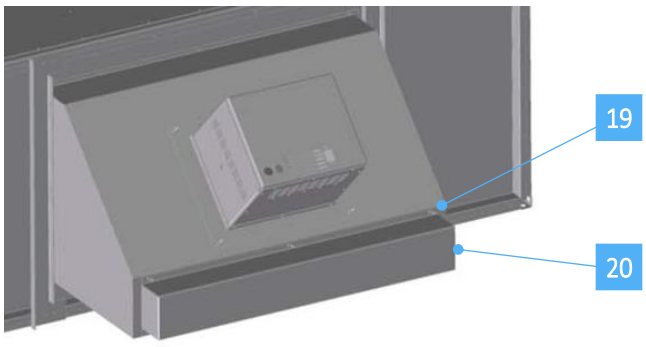



Fig. 45 *Silica-gel box re-assembly*

# 8 LIFTING, FASTENING, CONNECTIONS AND CHECKS

**CAUTION !**

Qualified personnel, chosen by installer or user and under his responsibility, must make fixing of CoeLux® 45 LC to the existing structure. Ever follow the instructions in this paragraph and the safety regulations in force in the country of installation during fixing operations. The warrenty is null and void in case of inobservance of provisions reported in this section.

For its products, CoeLux. S.r.l provides apart an installation kit approved by a structural engineer: see section 11.1 for the scope.

**WARNING:**

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.

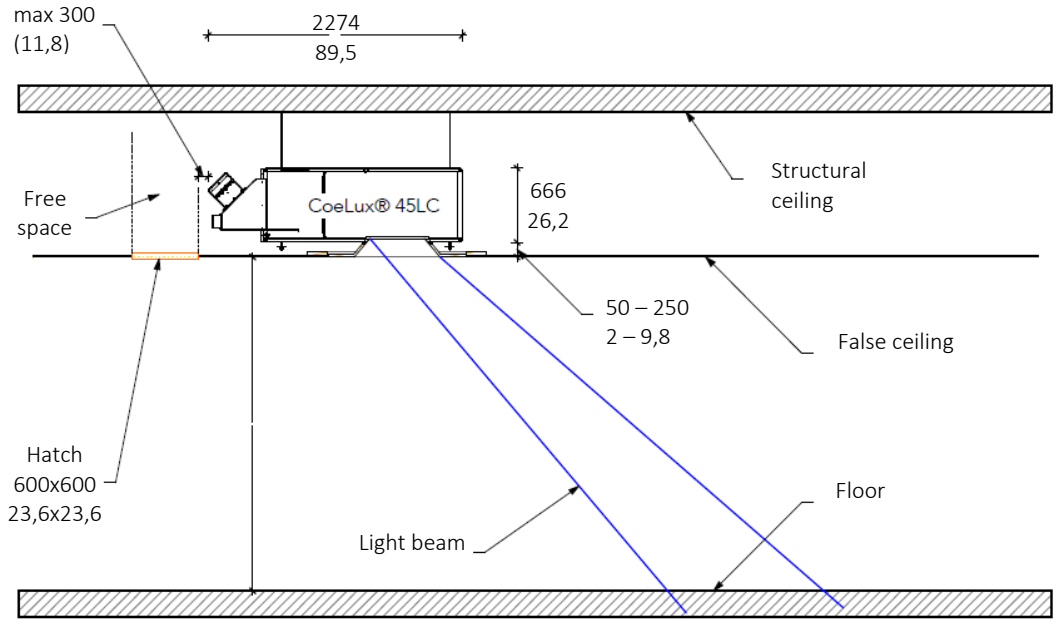



Fig. 46 *CoeLux® 45 LC installation diagram Dimensions in mm (inch)*

## 8.1 SAFETY DISTANCES AND VOLUME

The measurements necessary for false ceiling insertion are indicated in Figure 46.
For best operations, the LED projector requires air exchange with the environment. If air exchange is possible in the false ceiling, and this is not dusty or humid, the free air volume around the LED projector must be at least 1.5 $m^3$. The conditions are definitely better if air freely circulates around the entire installed product.

The access to the projector must be ensured to allow the maintenance.
Therefore, the implementation of a hatch placed appropriately and adequately sized is requested (data shown in Figure 46).

Furthermore, it is necessary to ensured a suitable work area around the projector (the optimal distance from the walls of the projector is at least 50 cm).
For UL certified systems the distance between each surface of the product and any insulating material present in the suspended ceiling must be at least 76 mm (3 in).

**CAUTION !**

UL certification is null and void should this distance not be met (TYPE NON-IC INSTALLATION).

## 8.2 LIFTING AND HANGING SYSTEM

### 8.2.1 PRELIMINARY STEPS

For CoeLux installation kit, before lifting the unit, connect the parts required to hang the system. See Chapter 11 for the scope.

**CAUTION !**

To fix the plates under the box, use only the holes indicated in Figure 47.

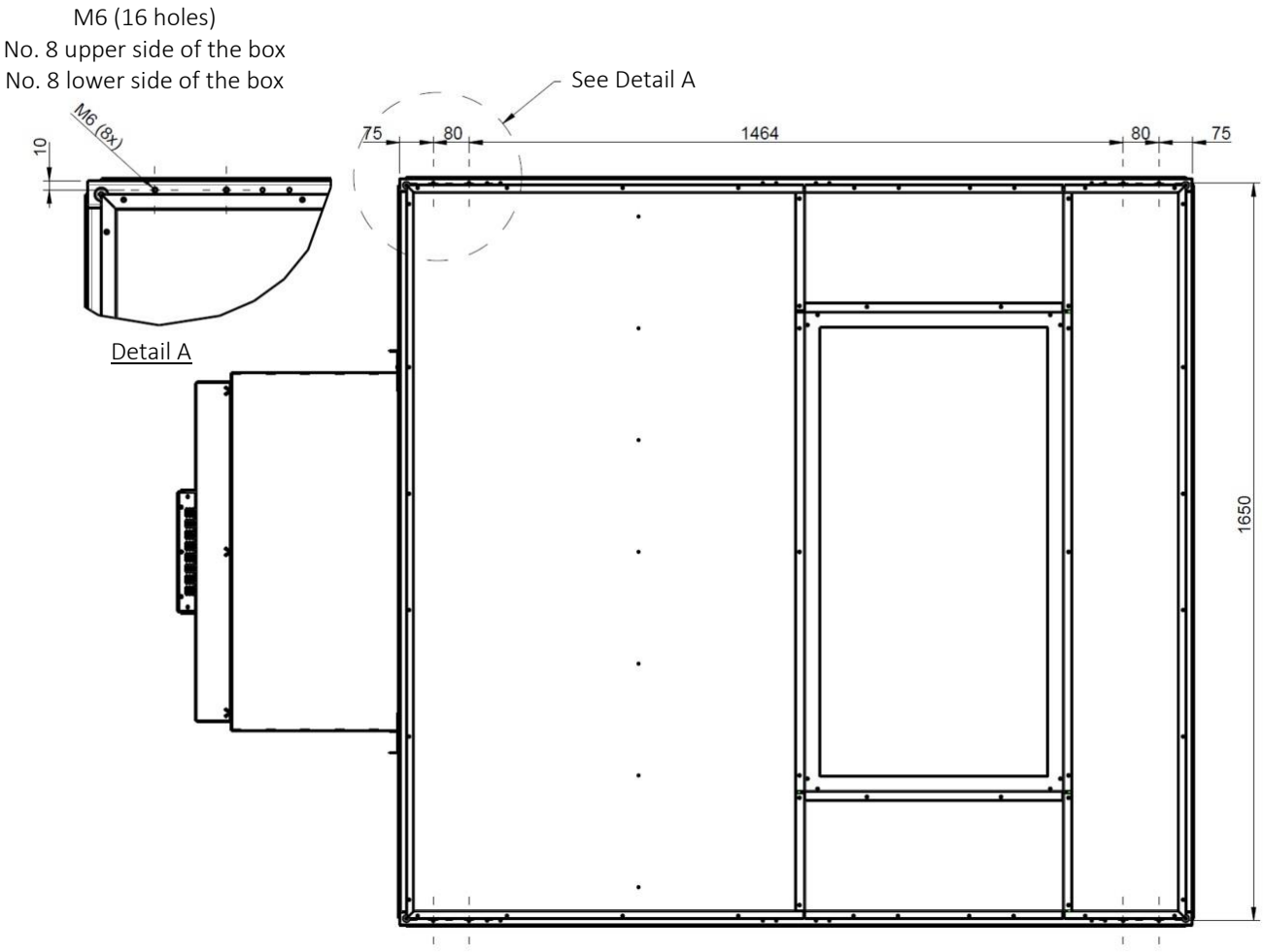



Fig. 47 *Profile or plate fastening holes*

### 8.2.2 LIFTING

**CAUTION !**

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, indicated by the following icon in Figure 48, or by cloth belts wrapped under the bottom.

Fig. 48 *Mandatory lifting points*

In case of lifting from the bottom, the support points are to be those indicated by the icon below in Figure 49.

Fig. 49 *Mandatory lifting points*

### 8.2.3 FIXING

**CAUTION !**

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.

**CAUTION !**

When fixing, make sure the unit or its parts are not moved or tilted.

**CAUTION !**

Hanging the false ceiling to the box or its support sub-structure is strictly prohibited!

**NOTE:**

For details on structural inspection, please refer to the information in appendix 11.1.

## 8.3 CONNECTIONS

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

**WARNING:**

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*, as previously indicated in section 7.2.4 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.

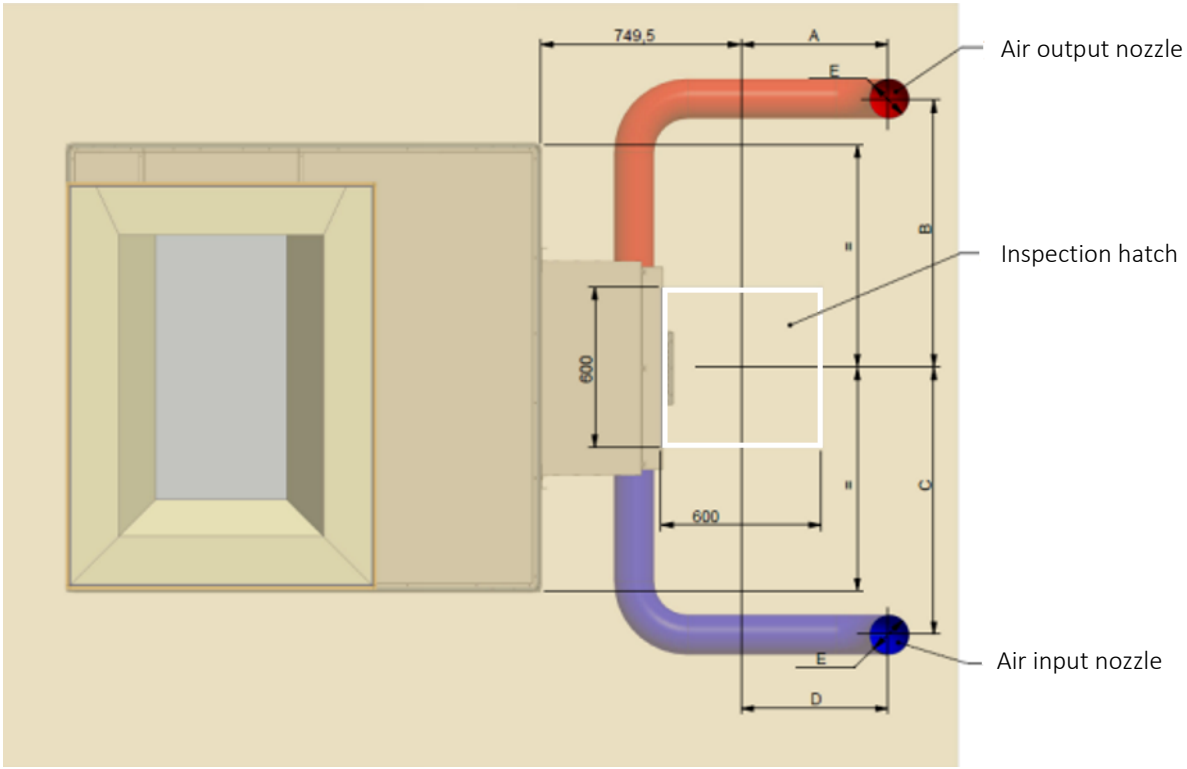



Fig. 50 *Inspection hatch and ventilation nozzle layout*

Figures 50 and 51 show a solution for ventilation pipes disposition in the false ceiling.

**WARNING:**

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 $m^3$/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.).

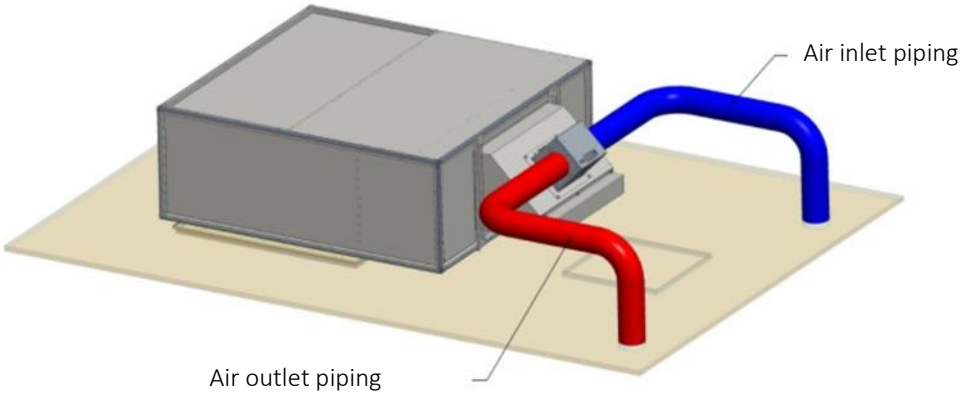



Fig. 51 *Ventilation nozzle connection diagram*

### 8.3.2 ELECTRICAL CONNECTIONS

The power cable between the mains and unit must be provided by the user while only qualified technicians may connect it.

**CAUTION !**

Before starting electrical connection operations ensure that the supply cables and any other cable which will be connected to the terminals on the unit are not live.
Check that the information on the plate of the unit are compatible with the existing power supply.
It is forbidden to install any equipment to control light output.
After completing electrical connections, make sure the connection cord is correctly installed and wired, without being crushed or bent, and positioned so as not to create operator hindrances.

The package containing the projector 74-00013-01 does not include the power cable (while it is included with the projector 74-00009-01); instead, a terminal is provided to connect power cables contained in the metal box on the back of the projector.

**WARNING:**

The use of this terminal is mandatory for CB certification, but not for the UL one.

## 8.4 CHECKS

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

CAUTION !

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 fis 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.

# 9 OPERATIONS AND USE

CoeLux® 45 LC is an innovative lighting device; it uses a LED source, an optical system and the CoeLux® panel to produce an artificial window, naturally lighting the room like a real sunlit window.
CoeLux® 45 LC use is limited to turning on and off the device by the switch mounted during installation.
See the technical sheet and informational material supplied by CoeLux S.r.l. for best product results.

**CAUTION !**

It is forbidden to install any equipment to control light output (dimming, colour control, etc.).
When looked at it directly, the LED light source may causes glaring feelings. In order not to be dazzled, do not look into the window while switching the system on. Pay great attention!
If correctly installed, CoeLux® 45 LC does not cause any hazards to the human eye and vision.

**WARNING:**

The LED light source is RG1 class as per EN 62471 regulations due to the emitted blue light, and hazard signals, as per IEC/TR 62471-2 regulations, are not required. To prevent annoying reactions (glare, *afterimage*, etc.) that are normal and temporary, we recommend not to stare at the light source for long periods of time, and not to allow people with limited abilities or mobility (children, the elderly, handicapped, bedridden patients) to be in this situation.

## 9.1 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 55% - 100%) of the 45 HC 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 7.2.5.1).
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%.

### 9.1.1 THE MOON SCENARIO

If you have purchased and correctly installed module 74-00064-01 (paragraph 7.2.5 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 | 75% | 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*

### 9.1.2 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 7.2.5.1 in this manual.

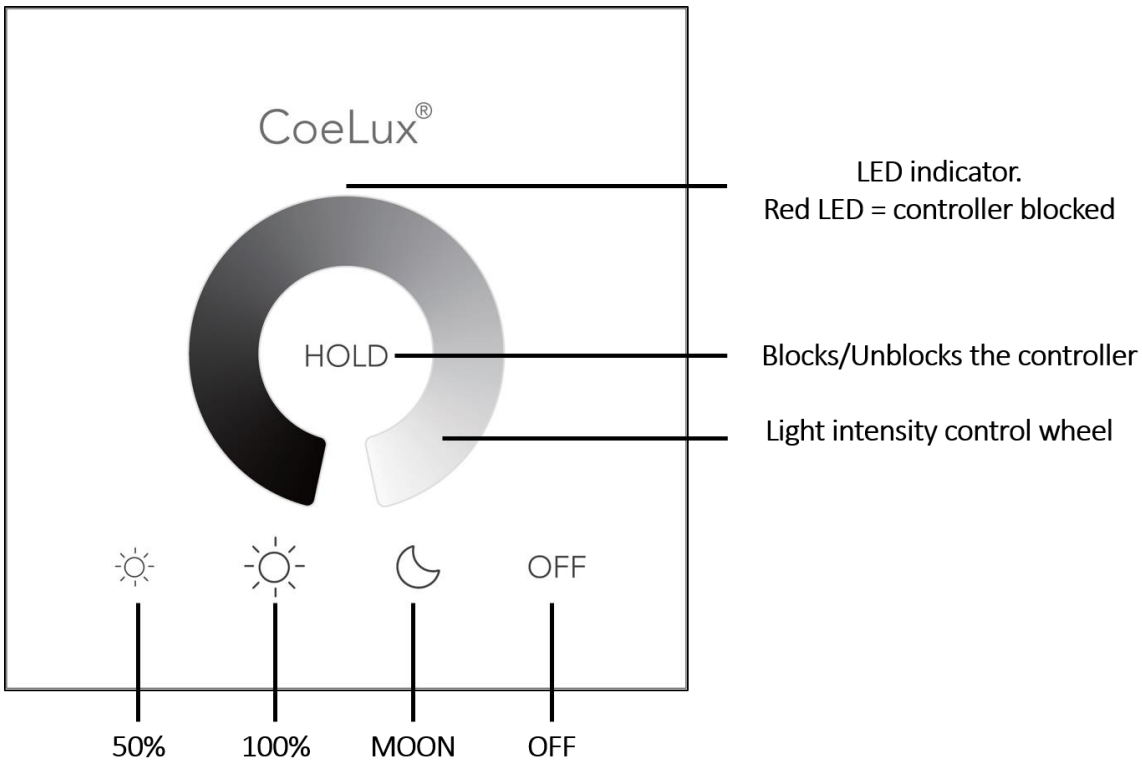



Fig. 52 *Controller supplied with the product: front part*

# 10 MAINTENANCE

CAUTION !

- 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.

## 10.1 DISASSEMBLY OF THE UNIT

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

## 10.2 DEMOLITION AND DISPOSAL

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

# 11 ANNEXES

## 11.1 FIXING AND LIFTING

### 11.1.1 INSTALLATION KIT (PROVIDED APART)

**CAUTION !**

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.
Ths annex provide necessary instructions and warnings to correctly use installation kit, provided apart from CoeLux s.r.l.
CoeLux s.r.l. is not liable for inobservance of instruction and warnings here reported.

The installation kit, provided apart by CoeLux S.r.l., compraises:
- 4 L plates for fixing to the ceiling (PN 73-00153-01)
- 4 threaded rod M12,lenght 1500mm. At one end of each bar is welded a plate 140x60x5 whit 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

Before assembling CoeLux® 45 LC, make the holes for anchoring L plates to the ceiling (figure 54). After assembling the system, fix plates and tie rods to the dark-box using bolts M10 as show in figure 53.

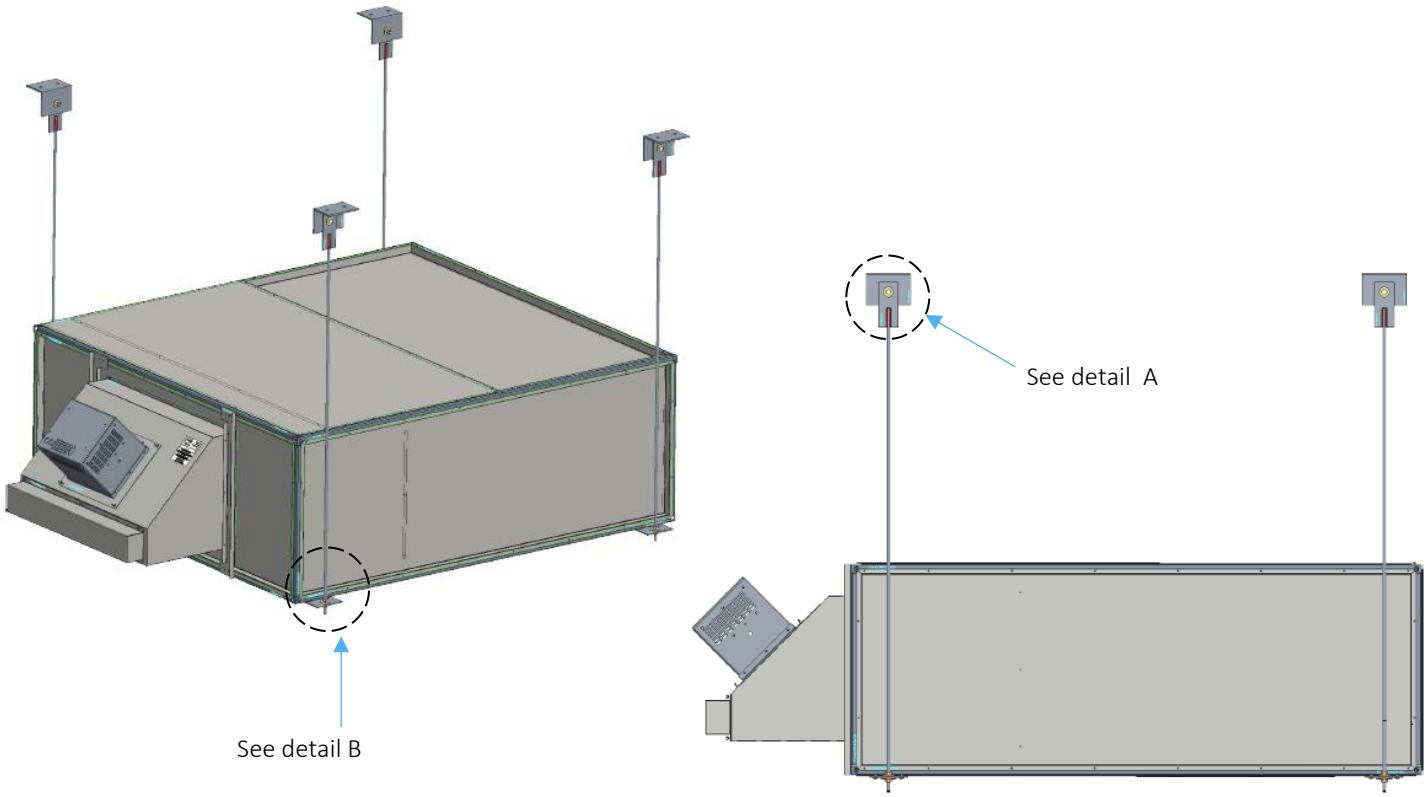



Fig. 53 *Suggested anchoring system*

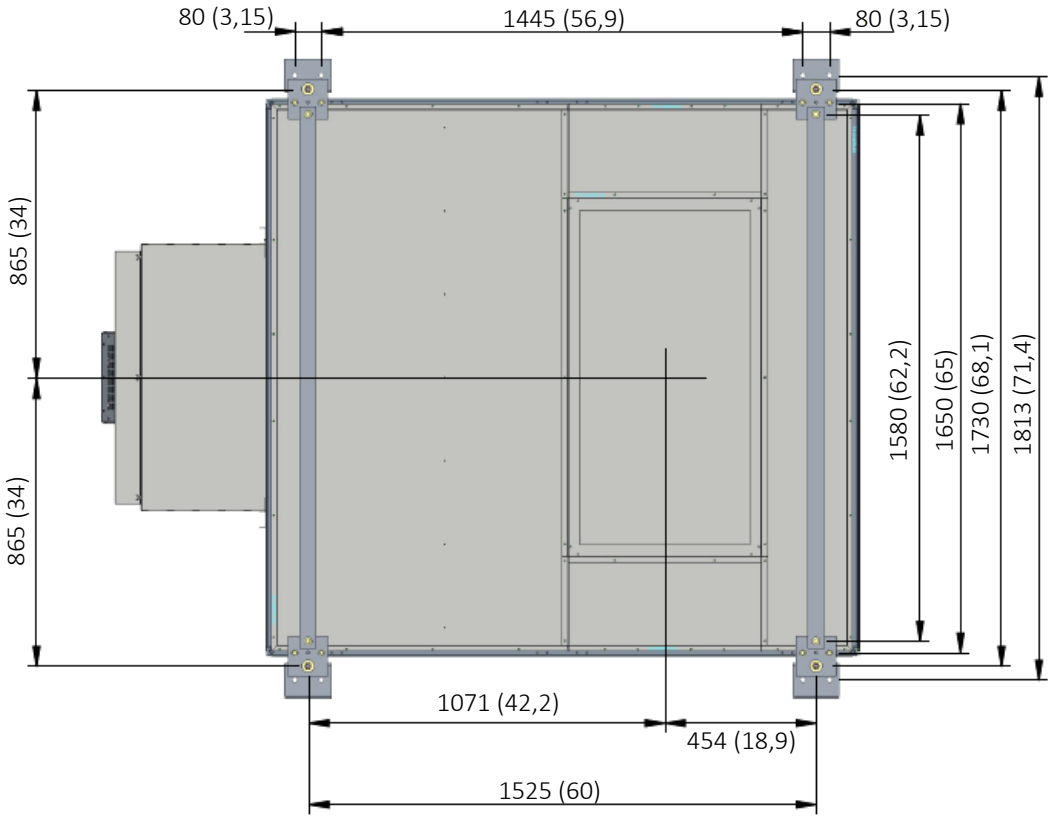



Fig. 54 *Suggested anchoring system – Bottom view*

Fix L plates to the ceiling and connect threaded rod M12as show in figure 55. Than lift the system and insert steel bars in holes ϕ13 of plates previously fix to the *dark-box* (figure 56). Than adjust the height using provided nuts M12 (figure 56) and cut spare part of the bar.

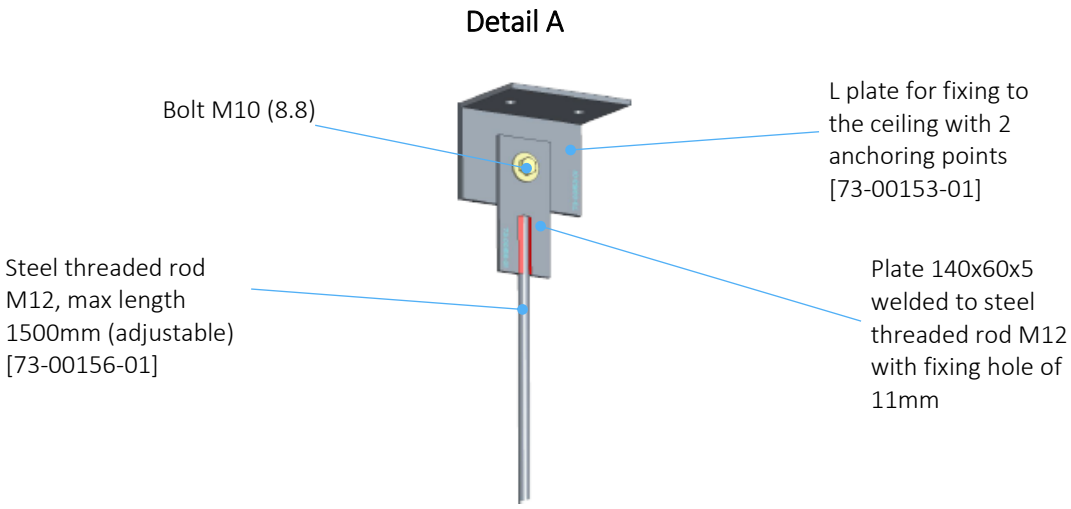



Fig. 55 *Suggested anchoring system – Detail A*

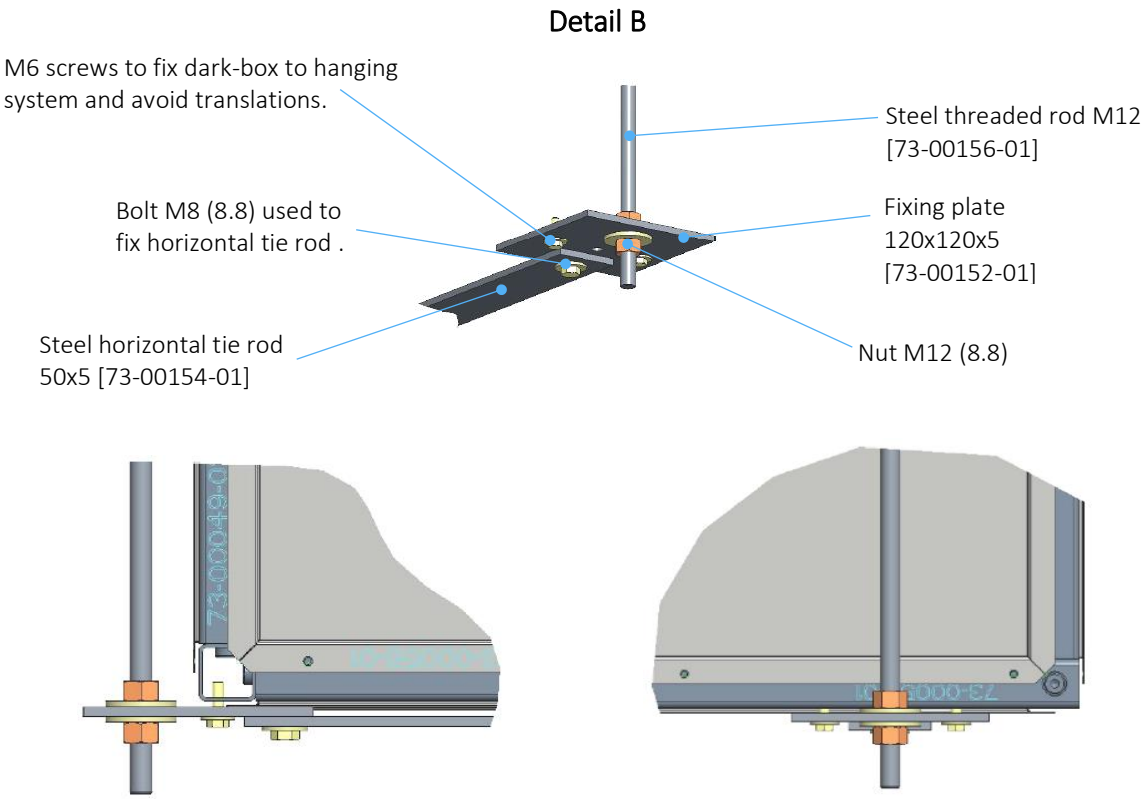



Fig. 56 *Suggested anchoring system – Detail B*

### 11.1.2 HOOKING SYSTEM TO LIFT THE COELUX® 45 LC BOX NOT RECOMMENDED FOR FINAL FIXING

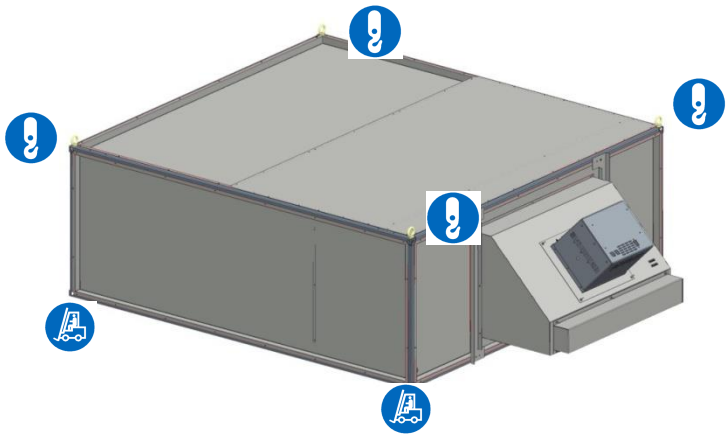


Fig. 57 *Hooking system for lifting*

**CAUTION !**

The four eyebolts must be fixed to the ceiling bearing support according to the type of ceiling using specific chains. The 4 fixing points must guarantee an overall load of at least 500 kg.

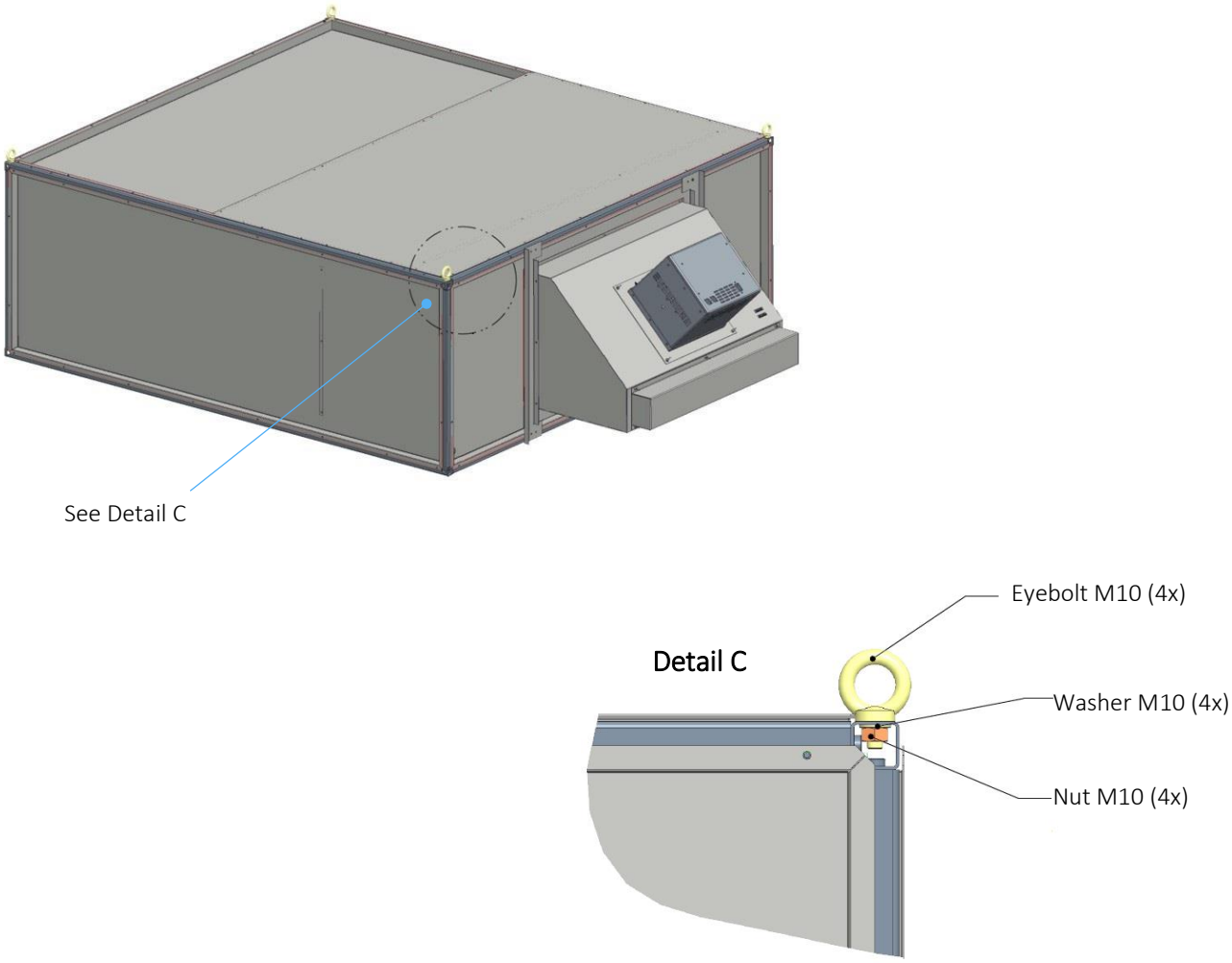



Fig. 58 *Recommended anchoring system – Option 2*

## 11.2 ALTERNATIVE INSTALLATIONS: ANGLED FIXING OF COELUX® 45 LC

If request by custumer and under specilized operator approval, it is possible the angled installation of CoeLux® 45 LC (only from 0° to 45° as reported in figure 49).
In this paragraph we propose an angled fixing solution that available to anchor the system both with plane ceiling and sloping ceiling.

**CAUTION !**

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.

### 11.2.1 POSSIBLE ANGLED CONFIGURATIONS

CoeLux® 45 LC possible angled configurations are show in figure 59. The projector side stays to the left in each image.

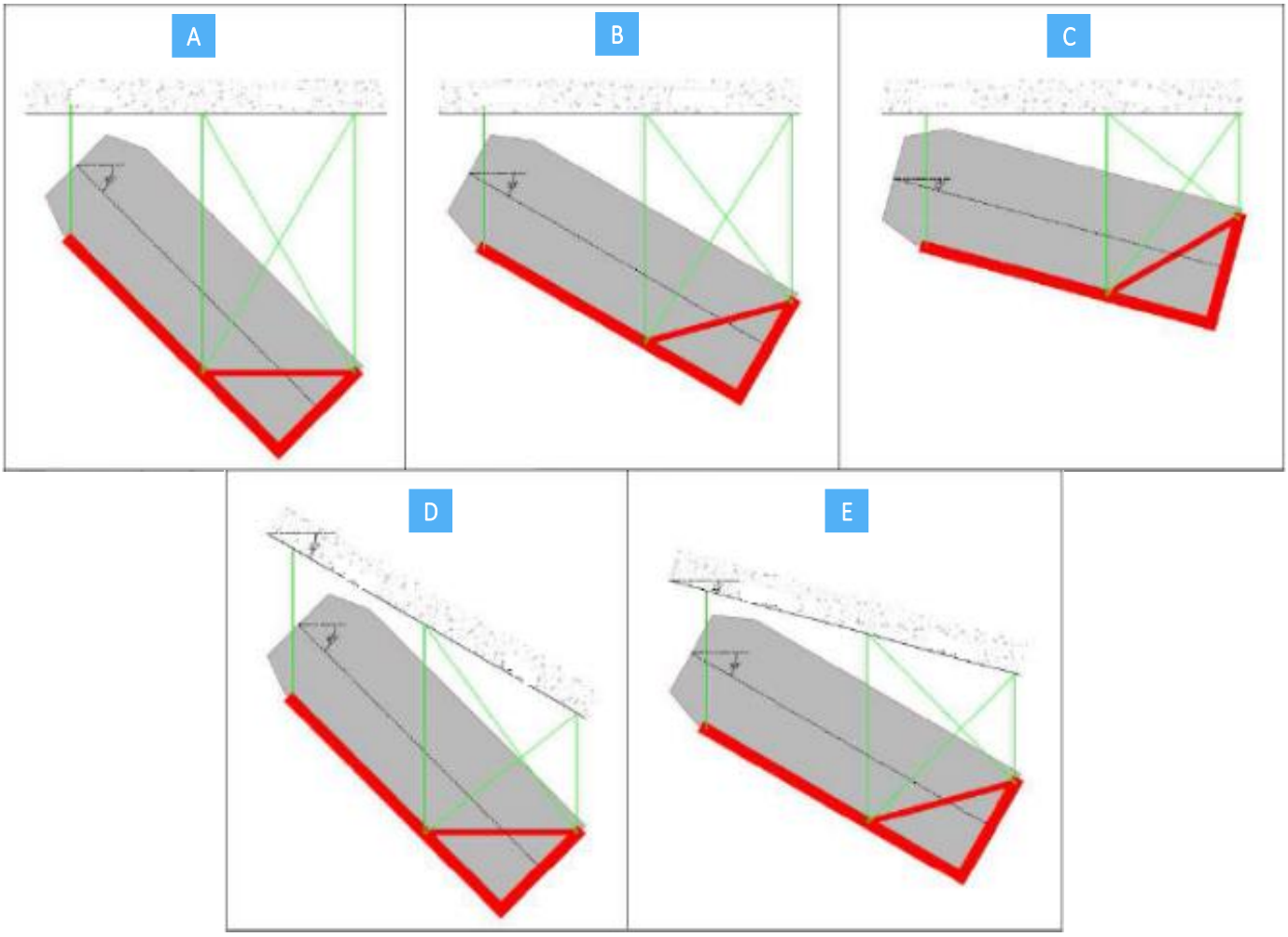



Fig. 59 *Some possible angled configurations: A) relative inclination 45°, B) relative inclination 30°, C) relative inclination 15°, D) absolute inclination 45°, E) absolute inclination 30°*

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

### 11.2.2 HANGING SYSTEM FOR ANGLED DARK-BOX

**CAUTION !**

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.

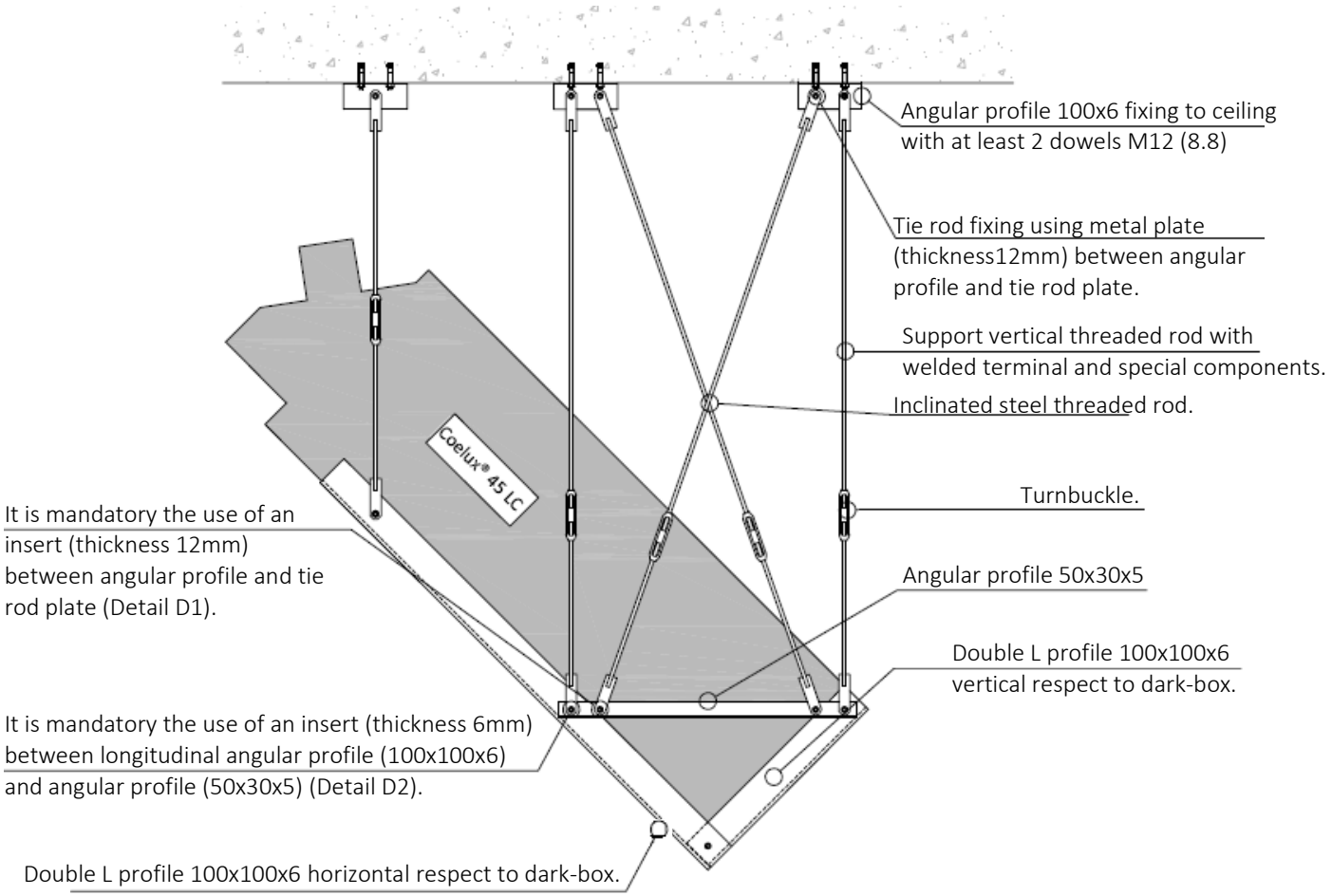



Fig. 60 *Hanging system for angled dark-box*

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

**WARNING:**

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.

**CAUTION !**

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.

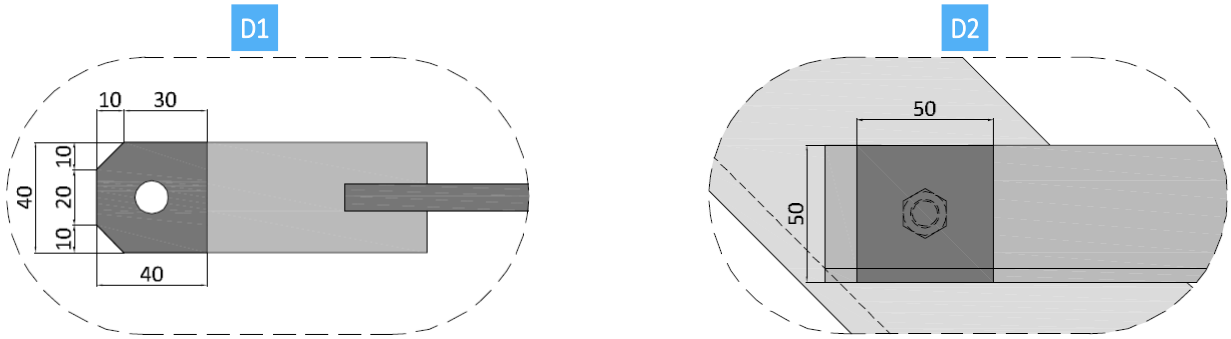



Fig. 61 *Details D1 e D2: inserts for hanging system angled dark-box*

**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)

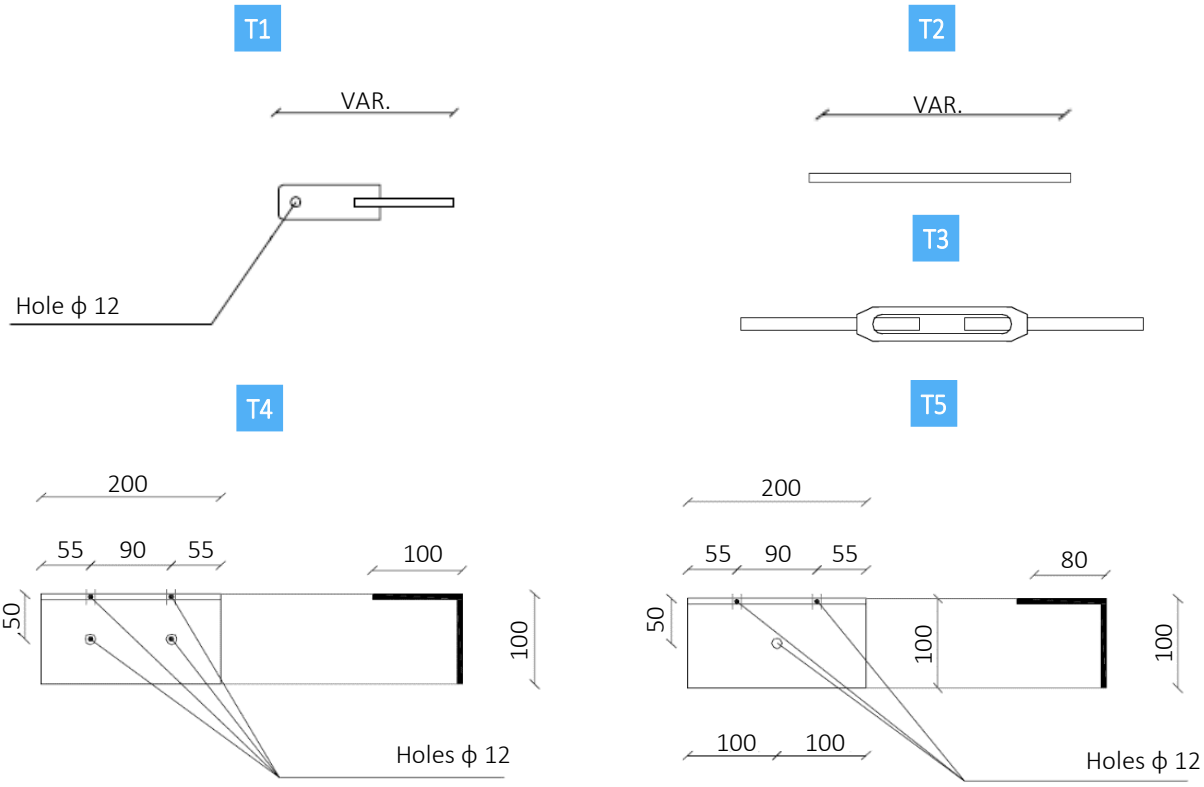



Fig. 62 *Components T1, T2, T3, T4 e T5*

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 (inclinated) (x2)

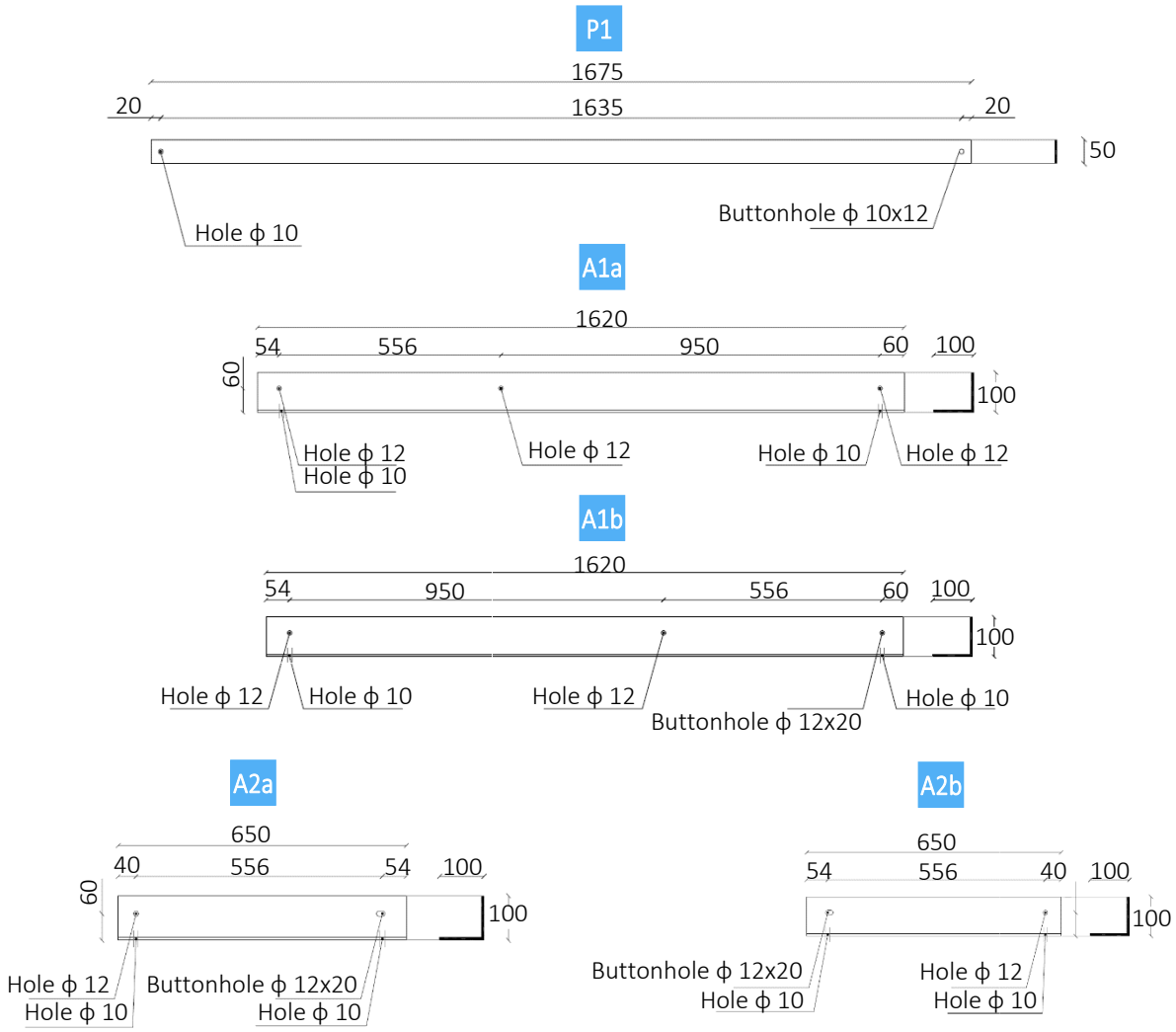



Fig. 63 *Components P1, A1a, A1b, A2a e A2b*

BOLTS ABACUS

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

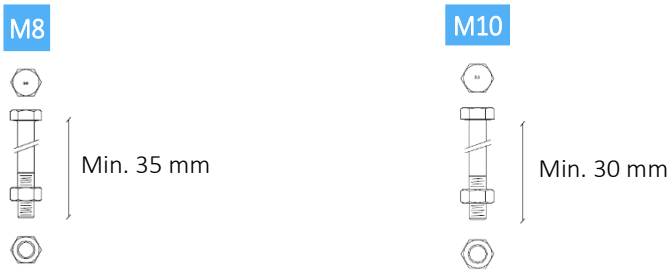



Fig. 64 *Bolts M8 and M10*

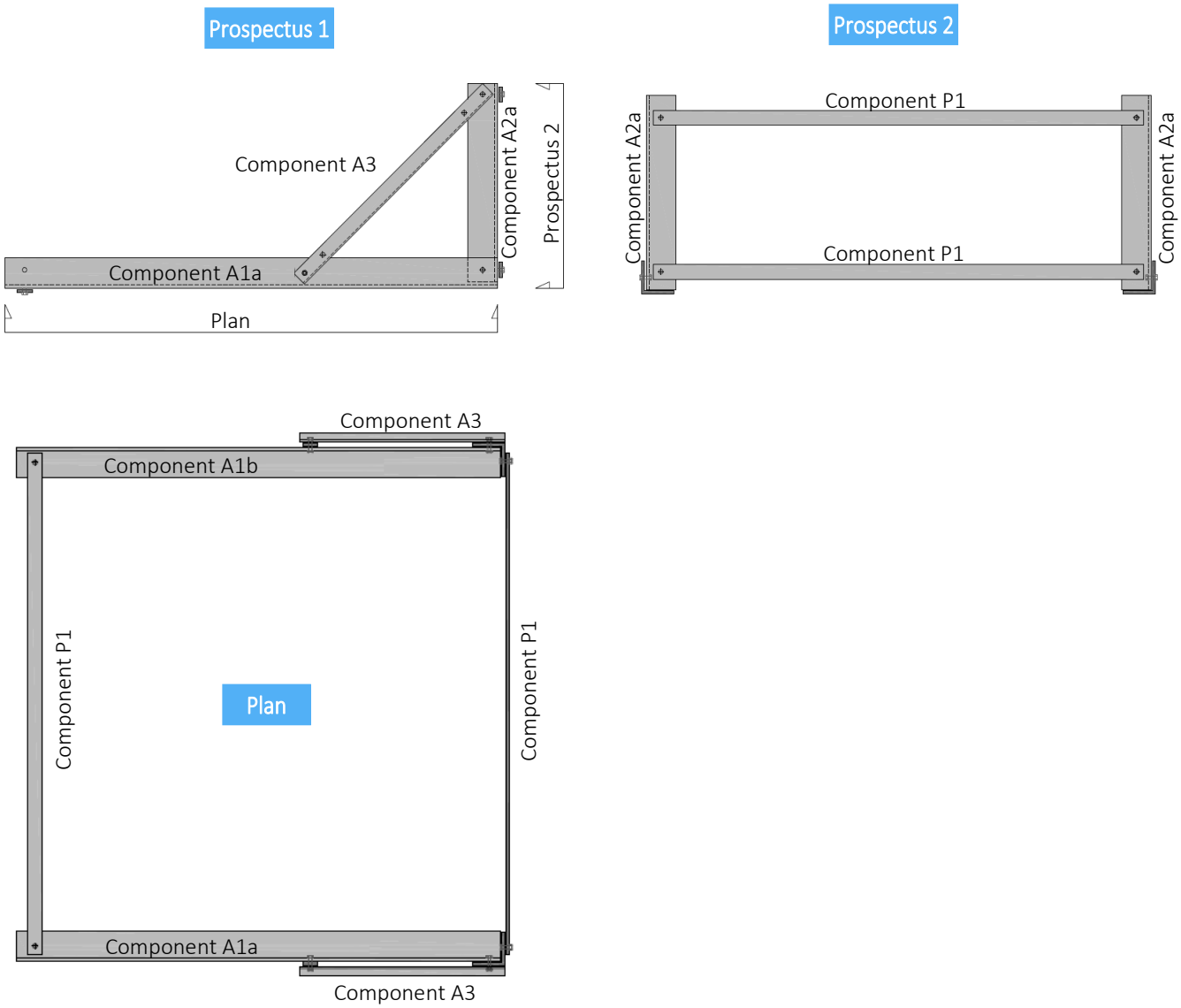



Fig. 65 *Chassis plan and prospectus*

## 11.3 EXTRAORDINARY CLEANING PROCEDURE

### 11.3.1 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.

### 11.3.2 FIELD OF APPLICATION

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

### 11.3.3 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.

### 11.3.4 PROCESS DEVELOPMENT

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


Fig. 66 *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.

#### 11.3.4.1 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.

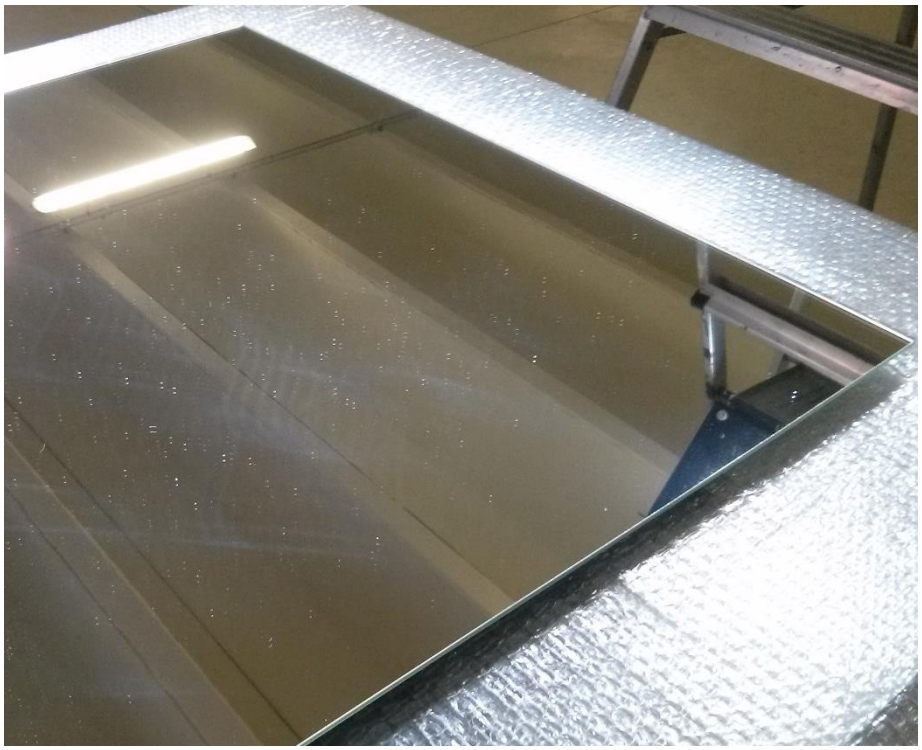


Fig. 67 *Case A*

Fig. 68 *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. 69 *Case C*

11.3.4.2 GLASS SURFACE DEFECT

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

| DEFECT | PICTURE | ACCEPTABILITY |
|---|---|---|
| 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. |  | Case B (if they don't disappear Case C) |
| Dust accumulations: areas with a slight amount of dust, visible thanks to light engine help. |  | Case B |

11.3.4.3 SILVER SURFACE DEFECT

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

# 12 CONTACTS

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