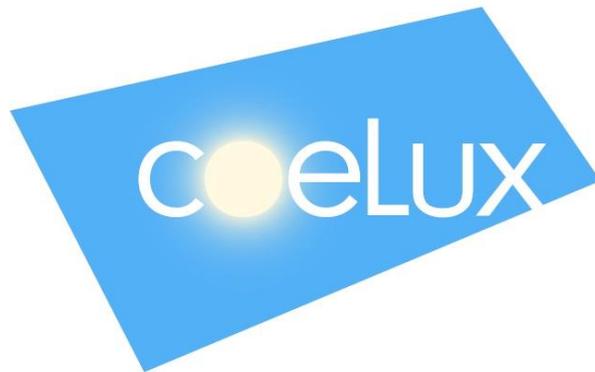


**CoeLux S.r.l.**

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Experience the Sky

Lighting unit

# CoeLux<sup>®</sup> 45 SQUARE



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 56 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 SQUARE is a recessed lighting unit: partially hidden by the false wall and the false ceiling, it artificially simulates natural light of sky and sun, even in a fully closed space. CoeLux® 45 SQUARE must be installed on the wall.

CoeLux® 45 SQUARE includes a LED light source, glass optical components, a CoeLux® plastic panel, all housed in a single metallic structure in the false wall, plus a mirror recessed in the false ceiling.



#### WARNING:

CoeLux® 45 SQUARE 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
<b>MECHANICAL</b>		
Dark-box encumbrance on the wall	mm	1675 x 691 x 2375
	in	65.9 x 27.2 x 93.5
Overall dimensions	mm	1685 x 1541 x 2375
	in	66.3 x 60.7 x 93.5
Percived skylight dimensions	mm	980 x 980
	in	36.8 x 36.8
Weight	Kg (lb)	300 (660)
<b>ELECTRICAL (Projector)</b>		
Voltage (frequency) of supply	V (Hz)	100 – 240 (50/60)
Connection	-	Phase + Neutral + PE
Maximum (typical) power consumption	W	300 (270)
Insulation class	<i>IEC standards</i>	Class I
Marking		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 SQUARE appears as a steel external case.

It may also be mounted on normally inflammable surfaces 



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.

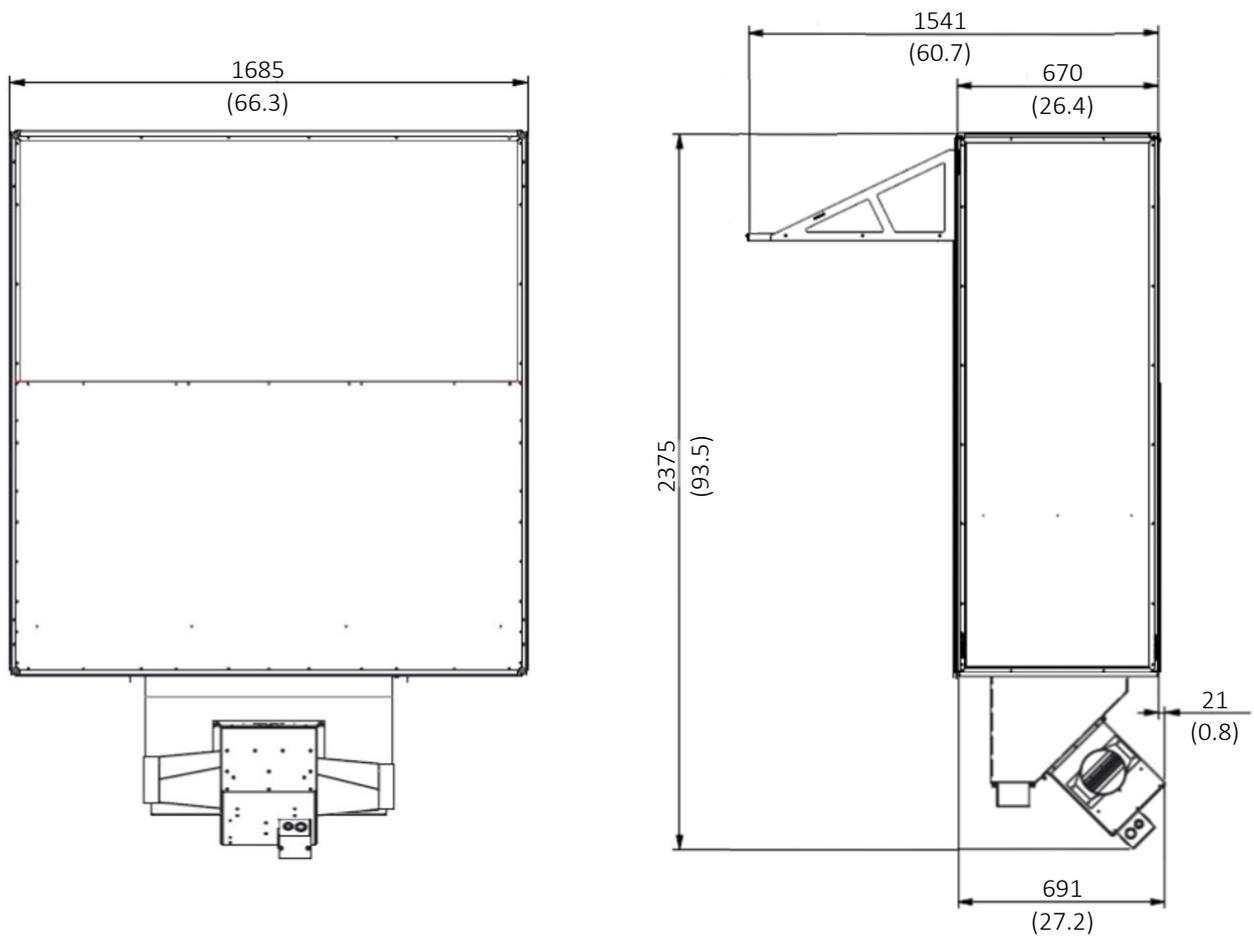


Fig. 1 Dimensions in mm (inch)

## 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.

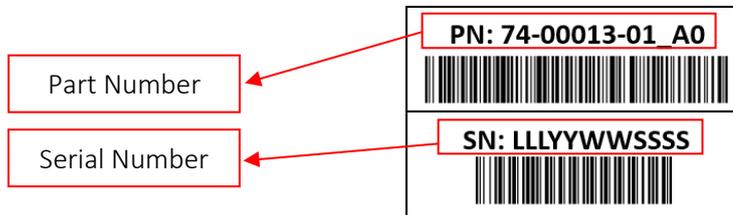
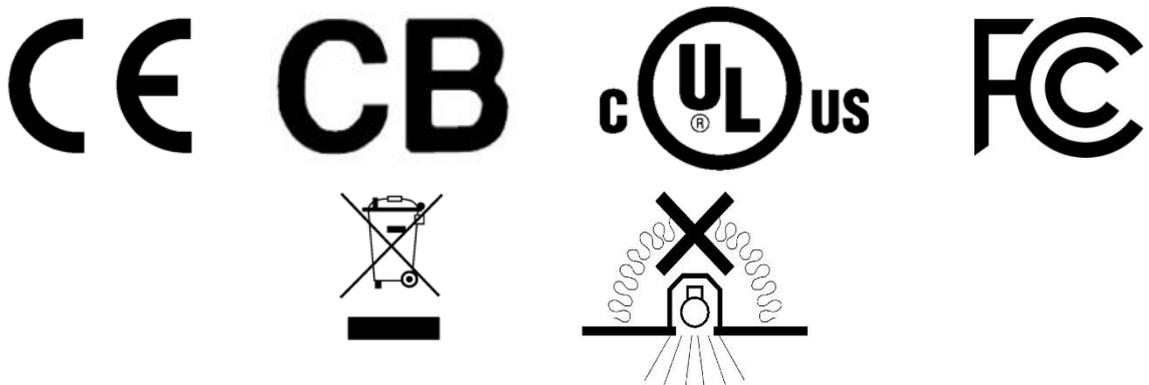


Fig. 2 Label with Part Number e Serial Number

## 2.4 STANDARDS

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



## 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 customer 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. 2 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

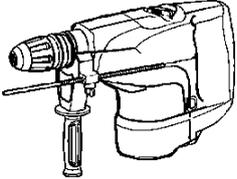
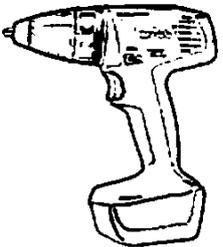
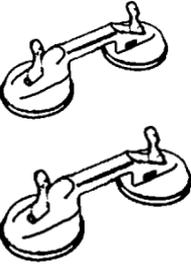
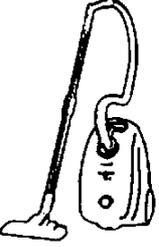


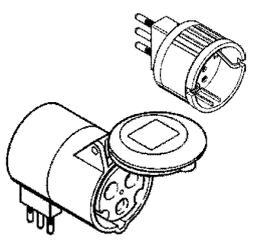
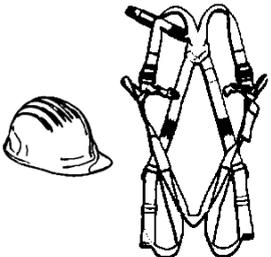
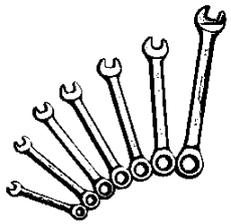
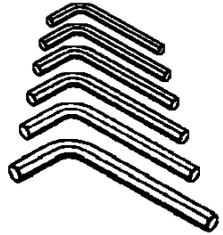
### CAUTION !

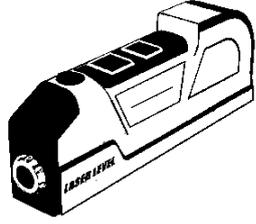
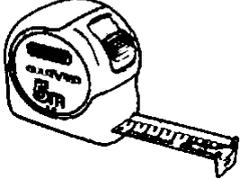
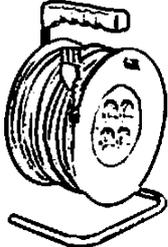
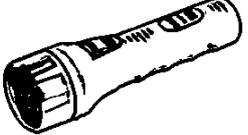
All activities tied to assembly, installation and mounting the CoeLux® 45 SQUARE and structural elements must be performed referring to current pertinent regulations and standards. Fixing the CoeLux® 45 SQUARE to the existing structure is responsibility of the installer.

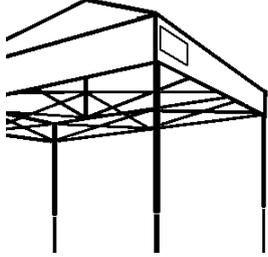
### 5.1 TOOLS NOT SUPPLIED BUT NECESSARY FOR INSTALLATION

The following table provides a list of the tools required for CoeLux® 45 SQUARE 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		

<p>Electrical socket adapters.</p>			
<p>PPE (Personal protection equipment)</p>	<p>One per operator.</p>	<p>Helmet, sling, goggles, shoes, gloves, etc. Always follow the regulations in force in the country of installation.</p>	
<p>Ladders meeting current standards.</p>	<p>At least 2.</p>	<p>Height &gt; 3.5 m</p>	
<p>Screwdrivers, scissors, knives, wrenches, hammers</p>			
<p>Open-ended, ring, ratchet and socket spanners.</p>	<p>1 set.</p>	<p>Specifically 8 mm.</p>	
<p>Allen keys.</p>	<p>1 set.</p>	<p>Specifically 4 and 5 mm.</p>	

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.	

*Tab. 3 Necessary tools but not supplied*

## 5.2 INITIAL CLEANING

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



### WARNING:

Avoid installing CoeLux® 45 SQUARE 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 11.3.

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).

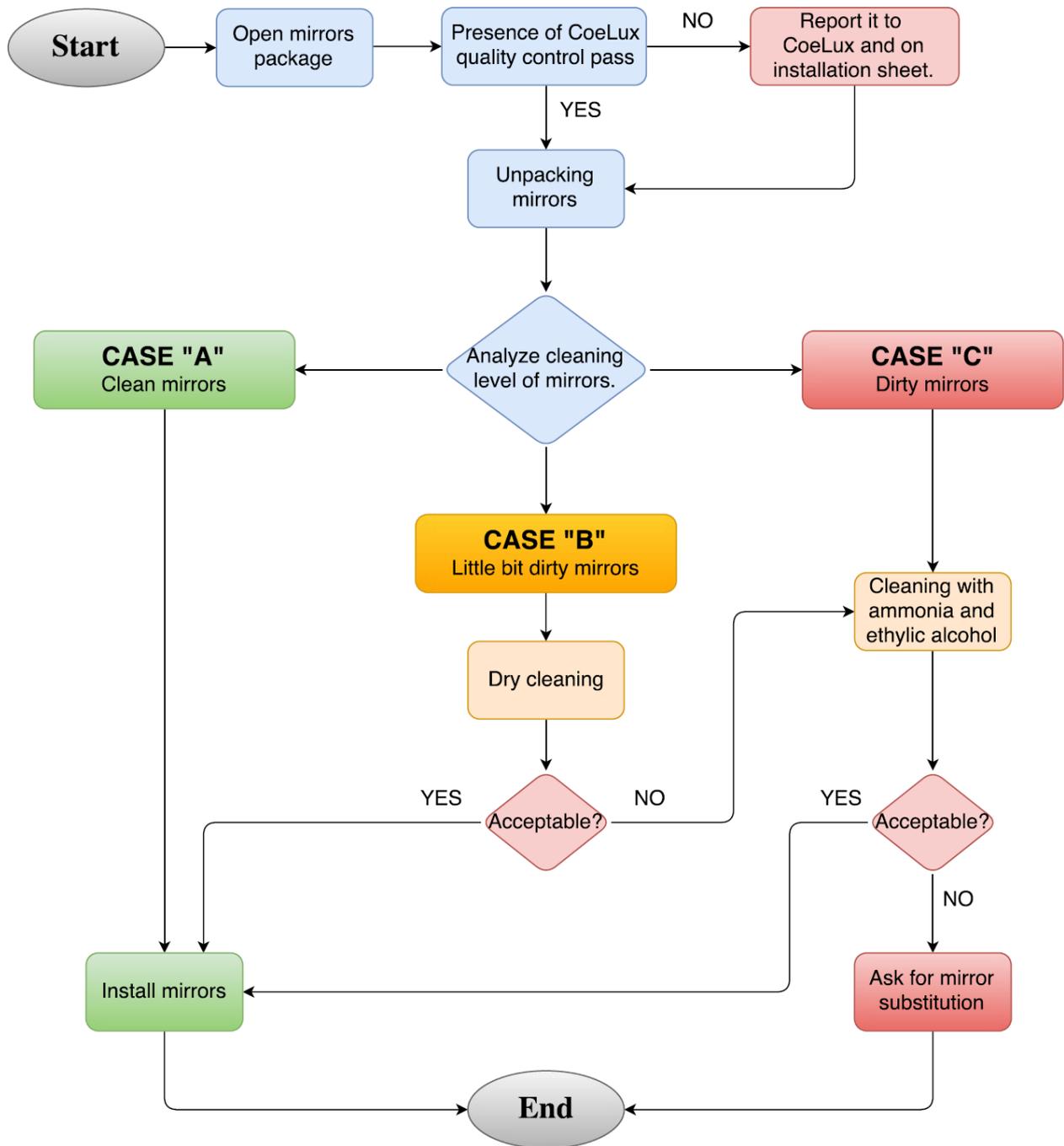


Fig. 3 Flow chart analysis and extraordinary cleaning procedure of mirrors

## 6 INSTALLATION

### 6.1 PERMITTED APPLICATIONS

CoeLux® 45 SQUARE is a furnishing accessory to be recessed in the false wall and was designed for indoor installation, where the minimum ceiling height is 2.700 mm (106.3 inches). Unless otherwise the recommended final height of the mirror in the false ceiling is at least 2.290 (90.2 inches).



#### CAUTION !

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



#### WARNING:

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

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

### 6.2 SPACE PLANNING

CoeLux® 45 SQUARE 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 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 SQUARE installation, a false wall trap door is required (with lock) and relevant crawl space to permit maintenance (see paragraph 8 ENCUMBRANCE, CONNECTIONS AND CHECKS).



### 6.3 GENERAL MOUNTING INSTRUCTIONS

CoeLux® 45 SQUARE is made up of a box element (called box and made up of flat steel panels hardened at the edges) about 2.5 m<sup>3</sup>, three mirrors (two into the *box* and one outside), a LED light source and a CoeLux® panel. The structure must be secured to the wall by a system made up of a sub-structure, on which the CoeLux® 45 SQUARE will rest.

CoeLux® 45 SQUARE 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 SQUARE 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 SQUARE assembly.

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

- A crate containing the semi-mounted box made up of opaque black painted metallic panels,
- A crate containing the pair of mirrors for the box,
- A box containing the CoeLux® panel,
- A bag containing 6 silica-gel bags for internal air passive conditioning,
- A box containing the LED projector.
- A box containing the laminated mirror for the false-ceiling, the system to fix this mirror to the dark box and the fixing system of the dark box to the wall.

Into *ventilation kit* (provided by CoeLux s.r.l. for UL certified products) there are projector air collectors with insulated pipes.

### 7.1 ASSEMBLY PROCEDURE

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

- Before to start with assembly, make the holes in the wall (figure 4) and insert the M12 dowels (not provided by CoeLux s.r.l. but under installed responsibility).
- Assemble the box lifted off the ground by at least 60 cm, placing it horizontally on supports suited to device weight (about 300 kg) and with base of at least 60 cm.
- Make the assembly near installation wall, placing dark-box prism towards the same wall (Fig. 5).
- 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.



**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.

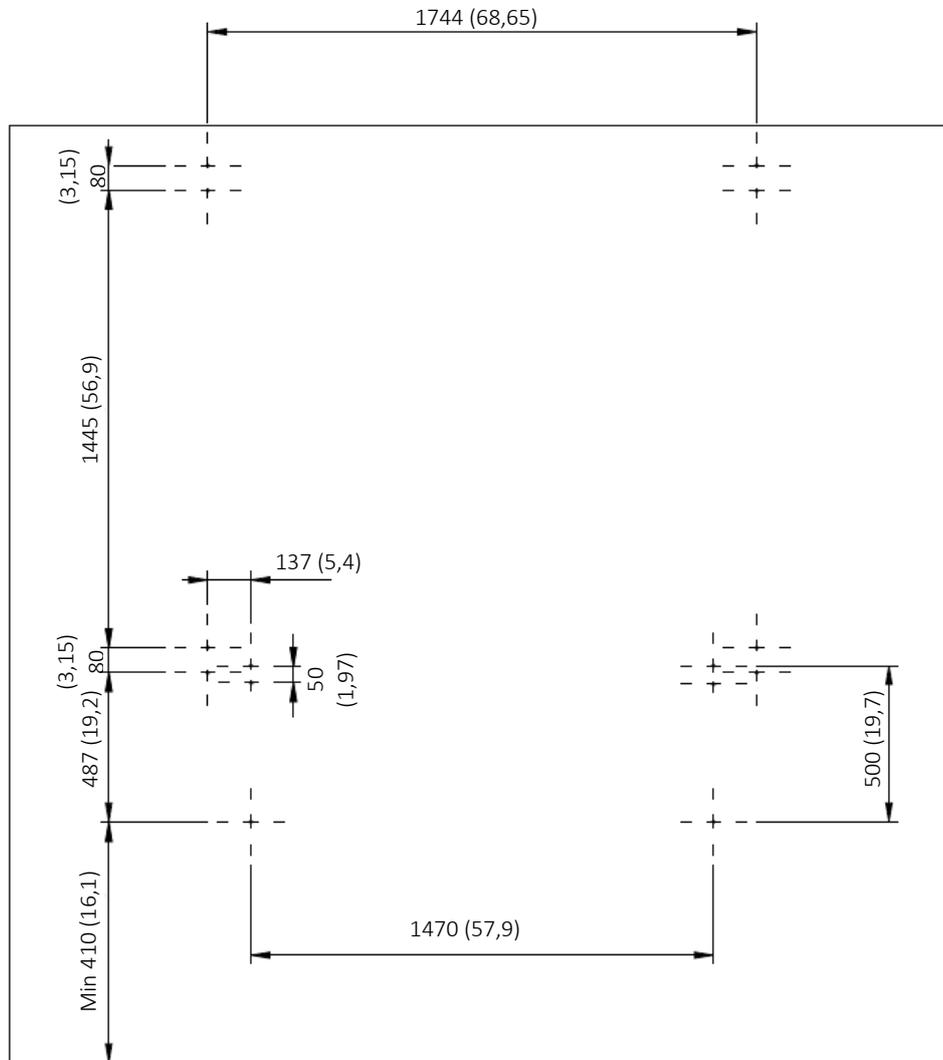


Fig. 4 *Dimensions to create halls for wall fixing of the dark-box. Dimensions mm (inch).*

## 7.2 ASSEMBLY SEQUENCE

### 7.2.1 SMALL MIRROR INSTALLATION

- 1 Remove the large mirror upper lid [1] made up of three components: lid [2], large frame with spring pins [3] and small frame [4], in which the large mirror will be mounted [5].

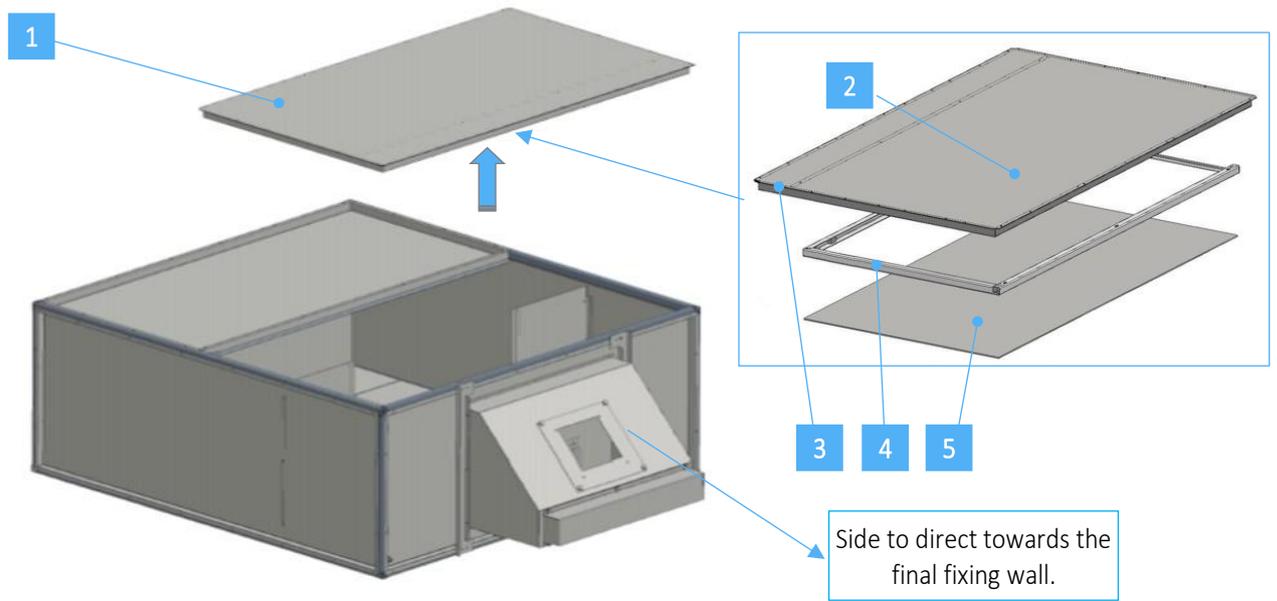


Fig. 5 Upper lid removal

- 2 Remove the vertical divider [6] that is simply secured to the rest of the structure by magnets.

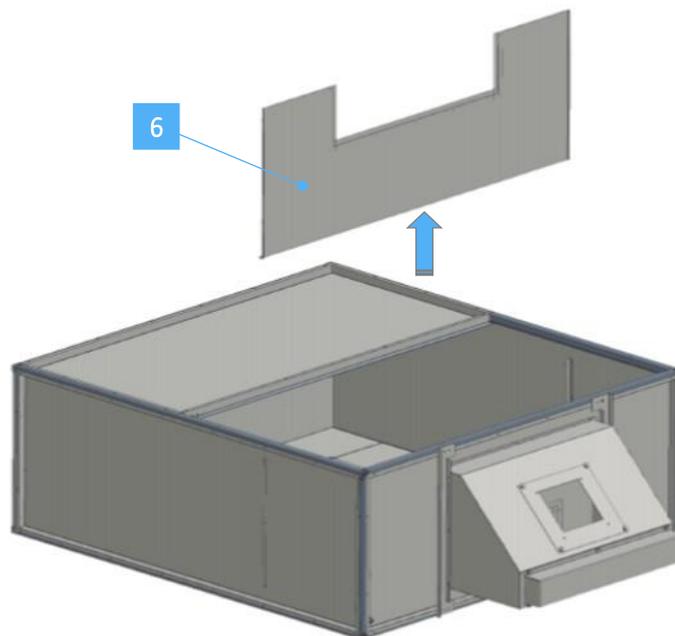


Fig. 6 Vertical divider removal

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. 7 *Side panel not shown*

- 3 Remove the mirror lock profile [7].

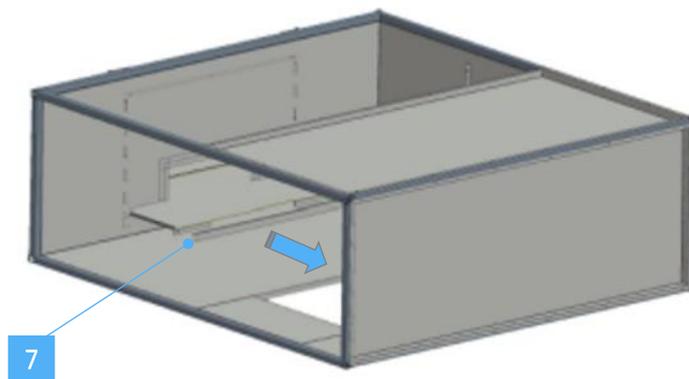


Fig. 8 *Removing the mirror lock profile*

- 4 Open the crate containing the mirrors, take the small one (PN 03-00007-01\_A0) and clean it as indicated in paragraph *Initial Cleaning*. Insert the small mirror [8] in the reference guide (the reflective part should face up).

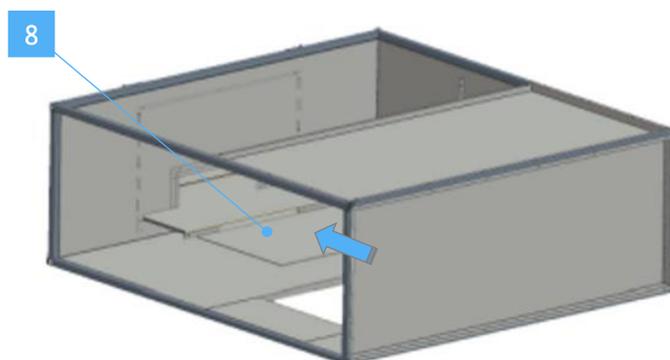


Fig. 9 *Inserting the small mirror*

- 5 Lock the mirror [8] mounting the profile [7] (Step 3). Make sure the latter is inserted in the two side guides (see detail).

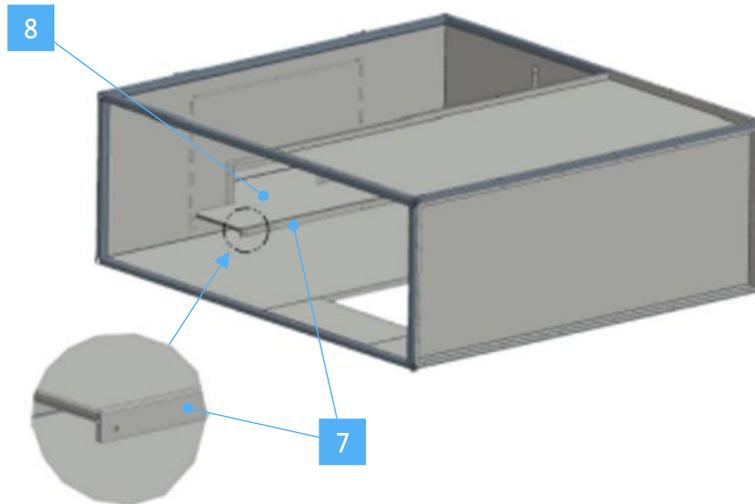


Fig. 10 *Locking the small mirror*

- 6 Mount the large divider [6] (Step 2); its aperture must face up and the part folded on the long side must face the CoeLux® panel.

## 7.2.2 LARGE MIRROR INSTALLATION

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

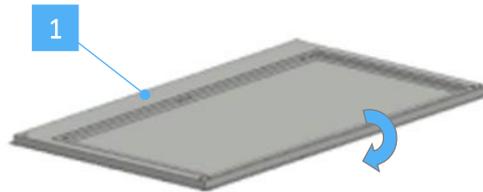


Fig. 11 Upper lid rotation

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

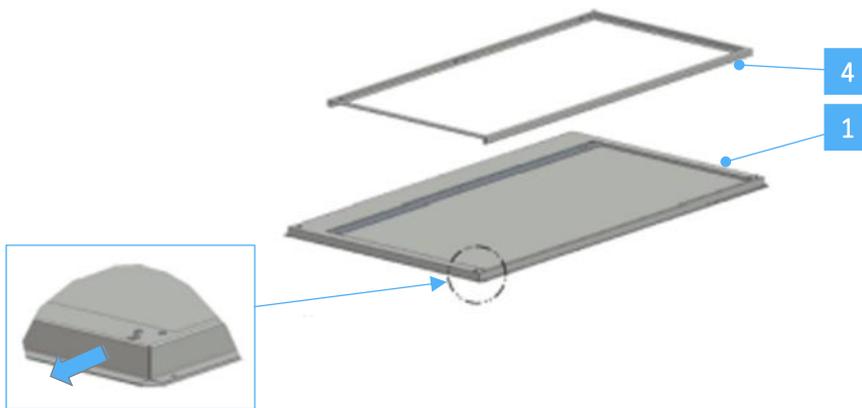


Fig. 12 Frame removal

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

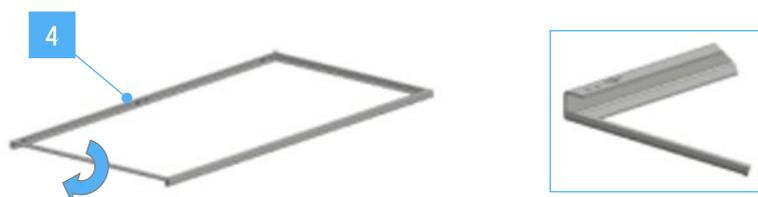


Fig. 13 Frame rotation

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

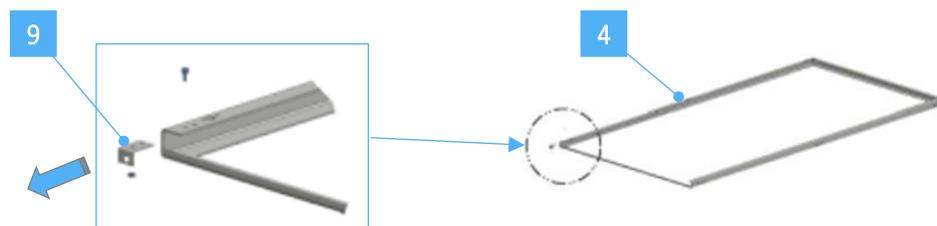


Fig. 14 Bracket removal

- 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.

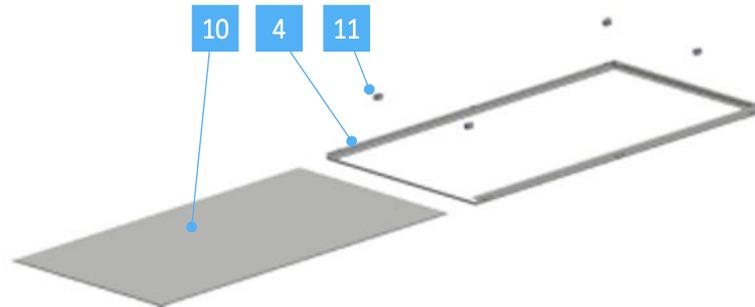


Fig. 15 *Mirror insertion*

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

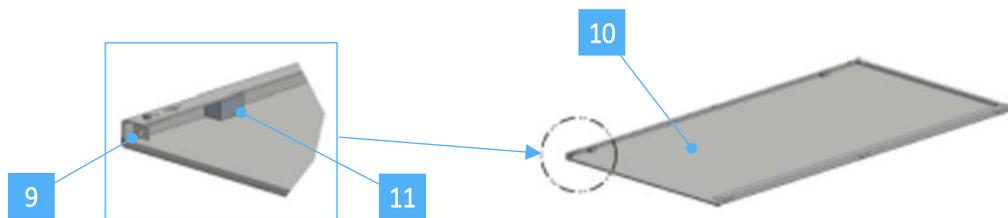


Fig. 16 *Locking the mirror*

- 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.

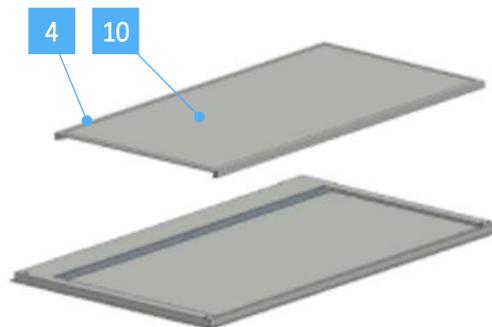


Fig. 17 *Inserting the mirror frame in the lid*

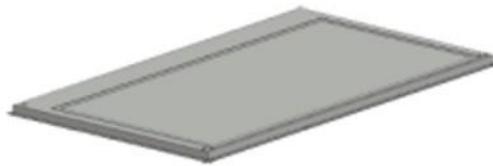


Fig. 18 *Mirror frame inserted in the lid*

- 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).

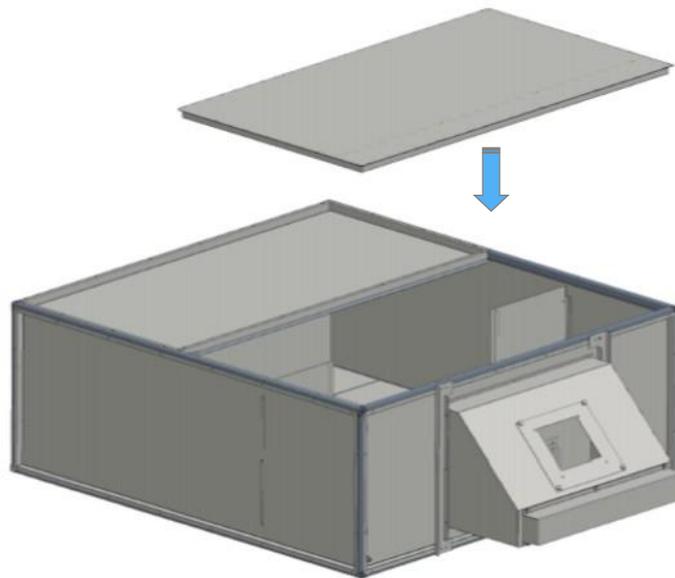


Fig. 19 *Inserting the upper lid on the box*

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!).

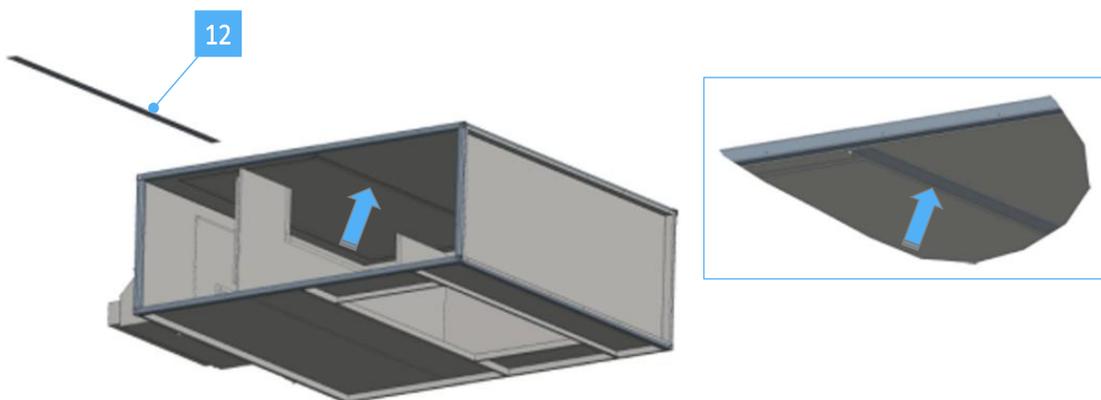


Fig. 20 *Positioning the magnetic strip*

### 7.2.3 COELUX® PANEL INSTALLATION

- 1 Remove the Coelux® panel frame [13] from the lower box side.

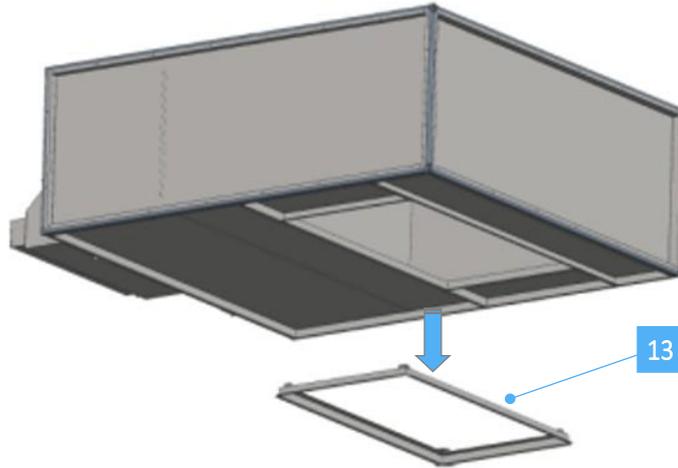


Fig. 21 *Frame removal*

- 2 Remove the panel brackets [14].

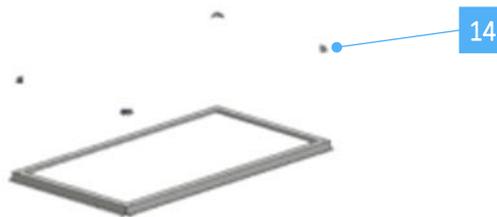


Fig. 22 *Bracket removal*

- 3 Remove several centimetres of protective film from the edges on both Coelux® panel surfaces [15] and position it and secure it with the brackets [14] (secure all four brackets first then tighten them one at a time).

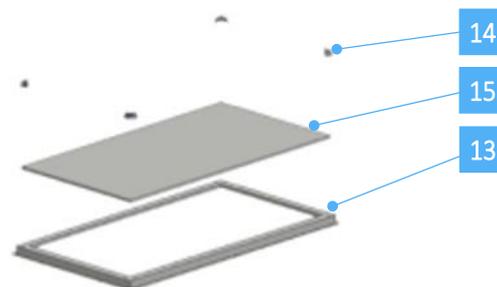


Fig. 23 *Coelux® panel assembly*

- 4 Remove the film on both sides of the Coelux® panel and clean as indicated in chapter Initial Cleaning. Install the Coelux® panel group with the rest of the box.

## 7.2.4 PROJECTOR INSTALLATION

- 1 Remove the projector plate [16] by removing the fastening nuts [17].

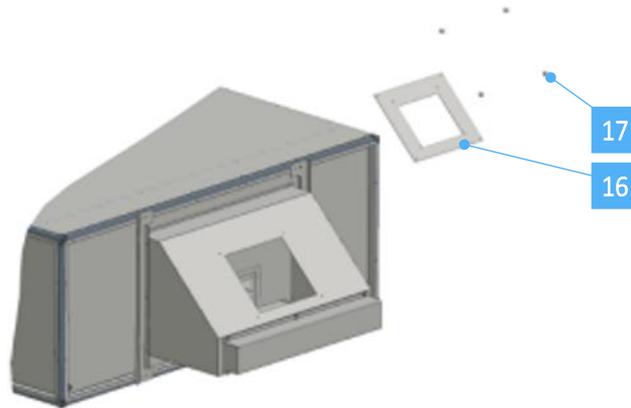


Fig. 24 *Plate removal*

- 2 Secure the projector [18] on the plate [16] using the supplied M6 screws, being careful not to cover the light output window.

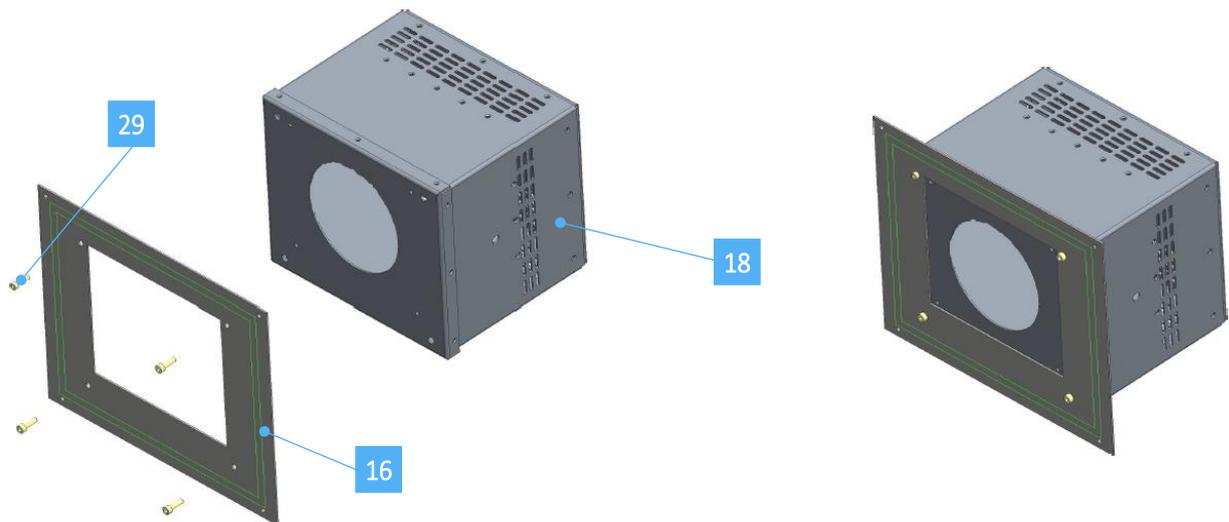


Fig. 25 *Securing the projector on the plate*



### 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 nuts [17].

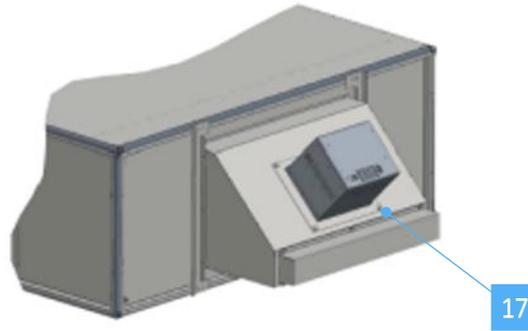


Fig. 26 *Projector unit installation*

### 7.2.5 SILICA-GEL INSTALLATION AND REPLACEMENT

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

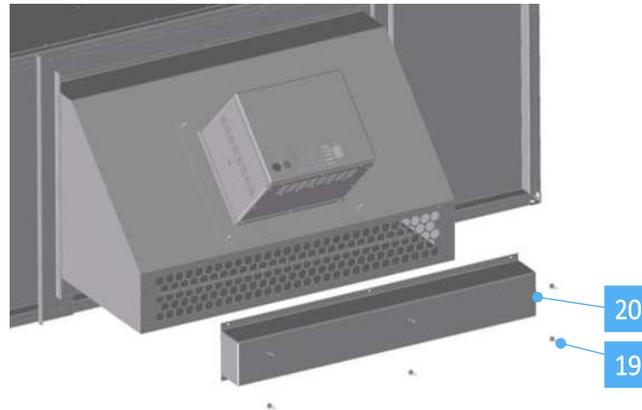


Fig. 27 *Silica-gel box removal*

- 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].

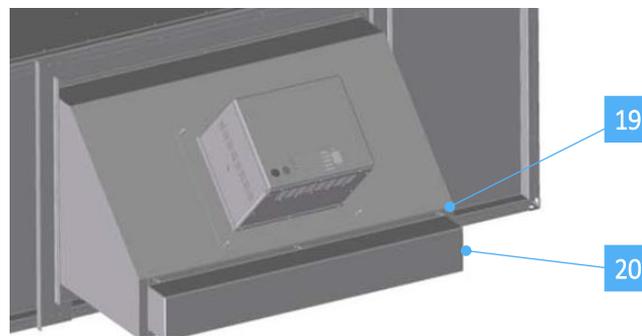


Fig. 28 *Silica-gel box re-assembly*

### 7.2.6 AIR COLLECTORS INSTALLATION (compulsory for UL certified systems)

Air collectors are into the *ventilation kit* provided with the product.

Install air collectors [21] (PN 73-00147-01) using screw M4 [22] (PN 33-00008-01) provided within the *ventilation kit*.

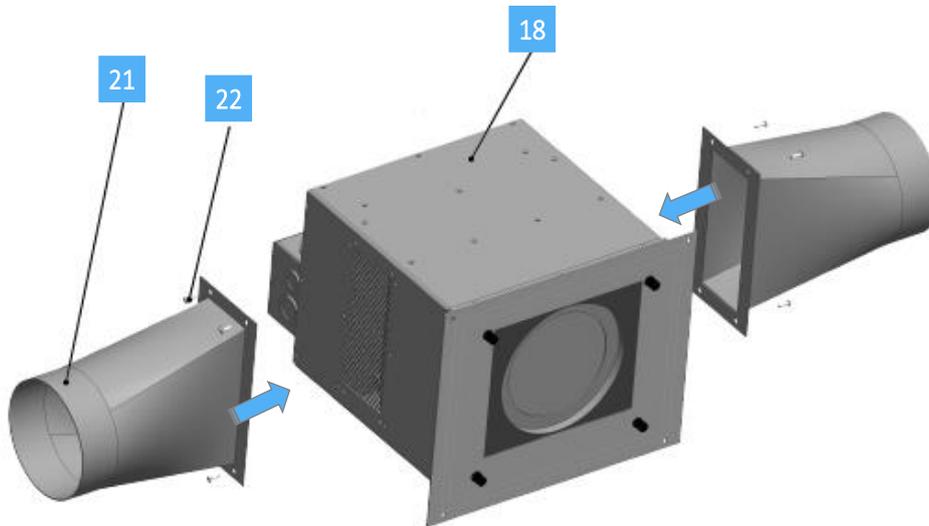


Fig. 29 *Air collectors mounting*

Refer to section 11.1 for the installation of all *ventilation kit* components

## 7.2.7 MOUNTING OF WALL FIXING STIRRUPS AND PLATES



### 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.

1 Assemble to the bearing wall the support stirrups [29] (PN 73-00165-01) using M12 dowels previously installed. In figure 30 is reported the distance between the two stirrups. Refer to Chapter 8 for the minimum height from the ground.

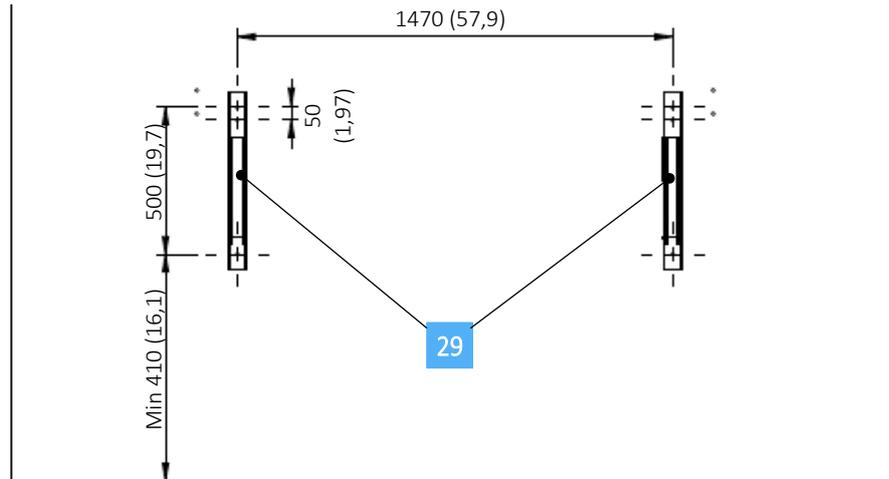


Fig. 30 Placement of support stirrups to the wall. Dimensions mm (inch).

2 Assemble the four S plates [30] (PN 73-00164-01) on the upper side of the dark box (as indicated in figure 31) using the provided M6 screw and the already present halls on the dark box structure.

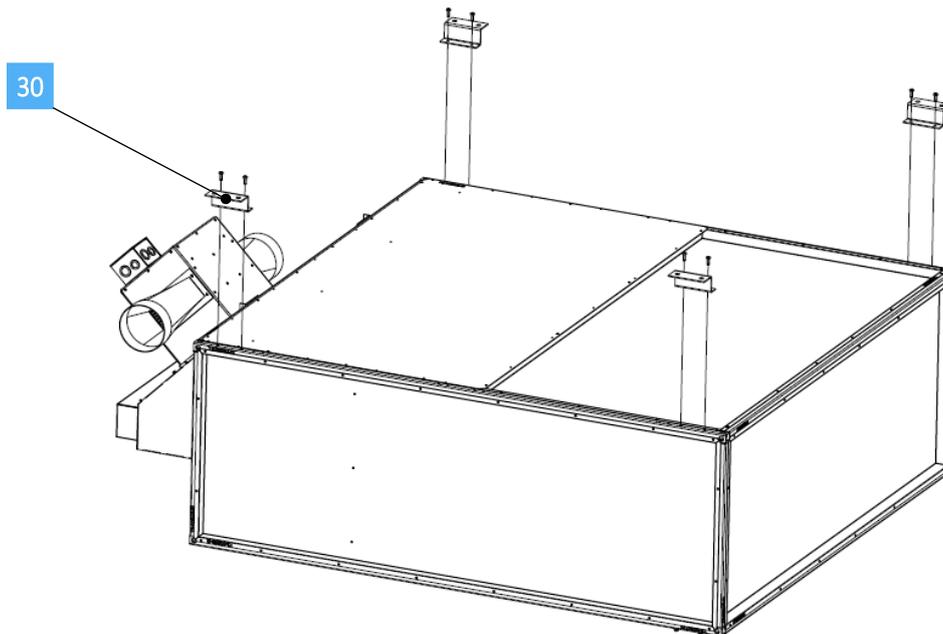


Fig. 31 Plates assembly for wall anchoring of the dark-box.

### 7.2.8 LIFTING AND PLACEMENT OF THE DARK BOX

At least four people are necessary to carry out these.



#### CAUTION !

Pay attention to the support structures on the ground where the dark box was mounted: they shall move or overturn during the lifting of the apparatus.

- 1 Bring the dark box near the support stirrups [29] with the projector side facing them. Avoiding sudden movements lift the dark box terminal far from the stirrups (2 people) pivoting on the support structures where the dark box was mounted (other 2 people) as indicated in figure 32. Pay attention to not bump light engine with the ground. If possible and/or necessary, use further support structures to rest the dark box vertically before the second phase of the lifting.

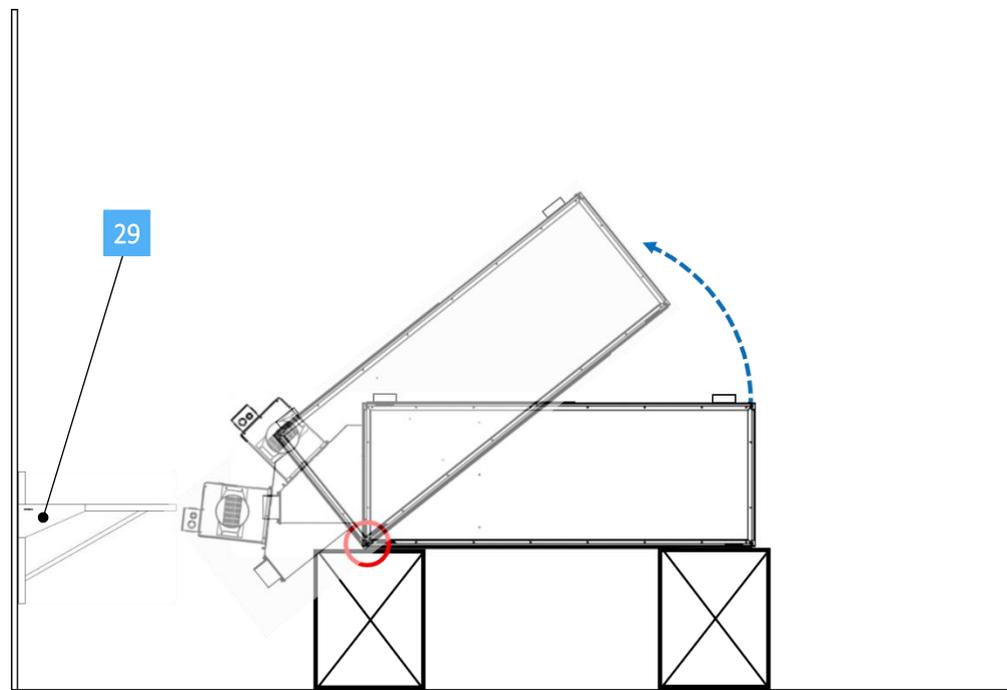


Fig. 32 *Lifting of the dark box: Phase 1. The pivot point is indicated in the red circle.*

- 2 Avoiding sudden movements lift the whole system (4 people), insert the prism with light engine between the two stirrups and rest on them the apparatus finishing the verticalization (figure 33). Secure that tamping walls of the dark box do not rest on support structure, but only the casing.

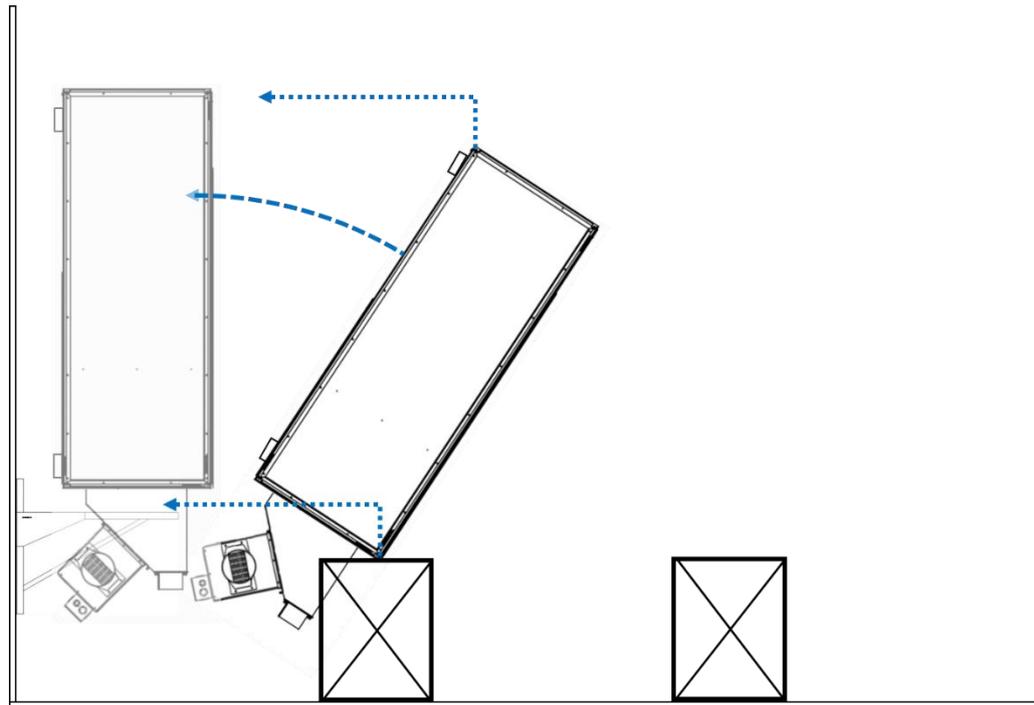


Fig. 33 *Lifting of the dark box: Phase 2*

- 3 Fix to the wall the four plates [30] mounted on the dark-box using M12 dowels previously insert in the wall (figure 34).

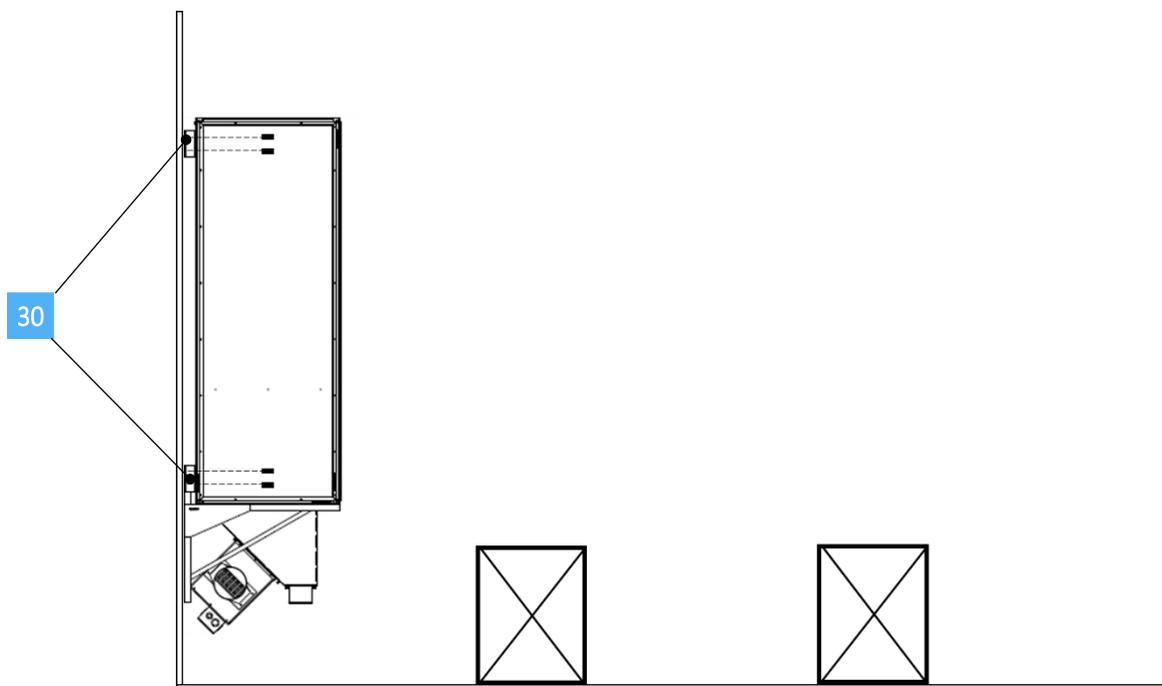


Fig. 34 *Lifting of the dark box: Phase 3*

### 7.2.9 EXTERNAL MIRROR ASSEMBLY

- 1 Rest frame [34] (PN 73-00169-01) on support structures used during dark box assembly and paste the gasket (provided within the kit) on the edge where will placed the (Figure 35). Take frame [35] (PN 73-00170-01) and paste the gasket along the bottom side of the internal edge that will rest on the mirror.

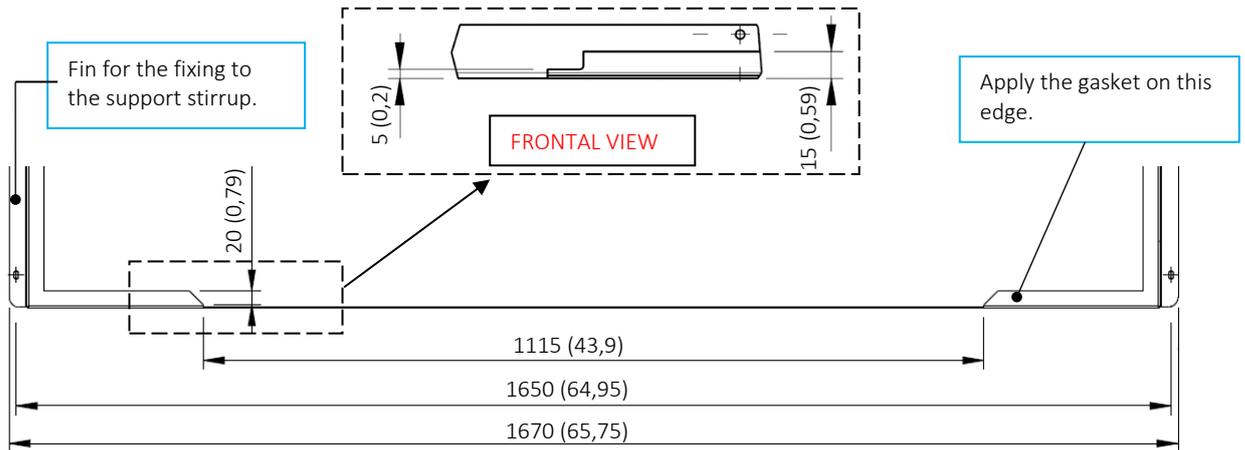


Fig. 35 Particular of frame [34]. Detail: frame cut to insert the protruding part of the mirror. Dimensions mm (in).

- 2 Take laminated mirror [33] (PN 03-00012-01) (2 people are necessary for its moving) and clean it as indicated in Paragraph 5.2. Put mirror [33] into frame [34] (with the reflective face facing the ground) inserting the mirror protruding part in the cut edge of the frame (detail in Figure 34). Then insert frame [35] into frame [34], block the mirror using provided M4 bolts, and place protective mat [36] (PN 73-00171-01) over it.

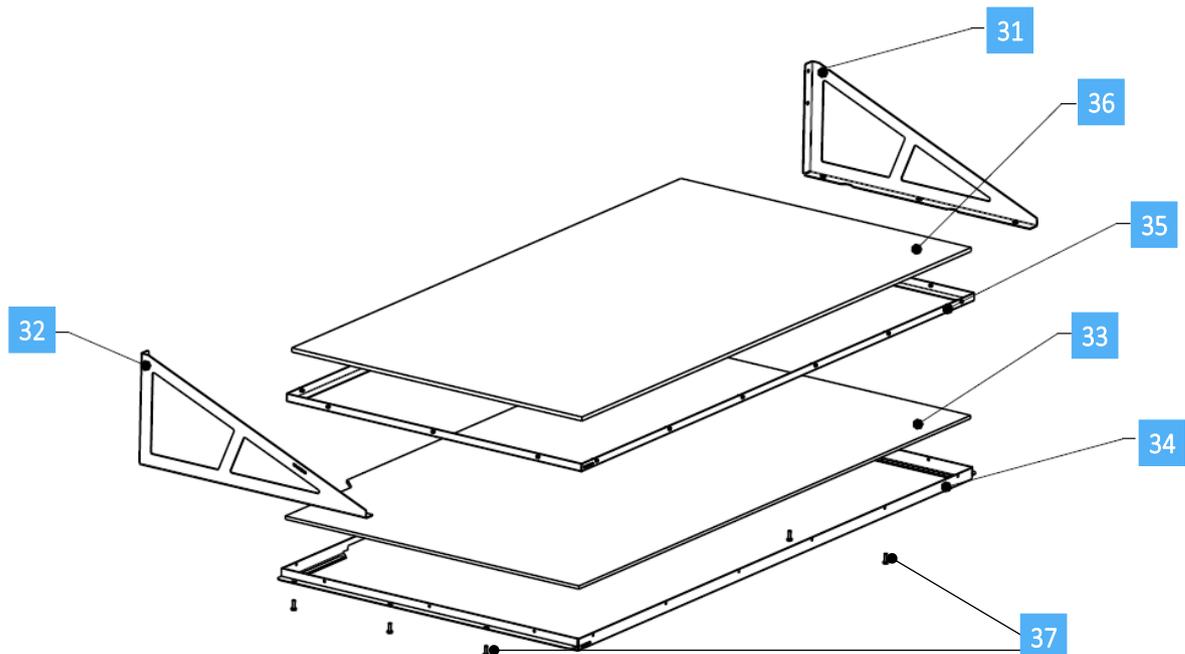


Fig. 36 Montaggio struttura portante dello specchio esterno

- 3 Using provided M6 screw [37], fix the fins of frame [34] (figure 35) with the bottom part of stirrups [31] and [32], as reported in figure 36 (place fins under stirrups). Start to insert provided M6 screw in the preformed halls of the dark box (figure 37). Than lift mirror ensemble [38] (at least 2 people), insert the screw just mounted into the halls on the side of the stirrups [31] and [32] (figure 37) and tighten them. The protruding part of the mirror [33] must be in contact with the Coelux® plastic panel [15]: pay graet attention to not scratch it.

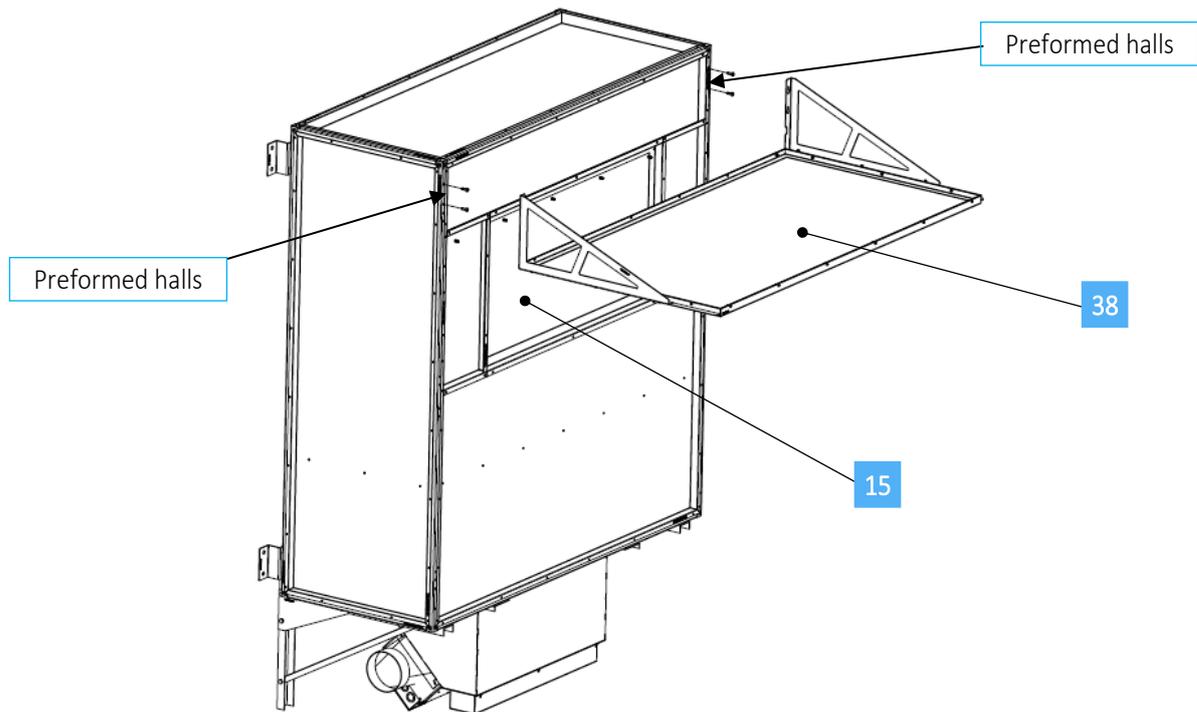


Fig. 37 *Mounting of mirror ensemble to the dark.*

## 8 ENCUMBRANCE, CONNECTIONS AND CHECKS



### CAUTION !

Qualified personnel, chosen by installer or user and under his responsibility, must make fixing of CoeLux® 45 SQUARE 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 warranty is null and void in case of inobservance of provisions reported in this section.

Wall fixing system is provided within the mounting kit and it is validated by a structural engineer.



### WARNING:

If not being use the fixing system provided by CoeLux s.r.l., structural validation of used 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.

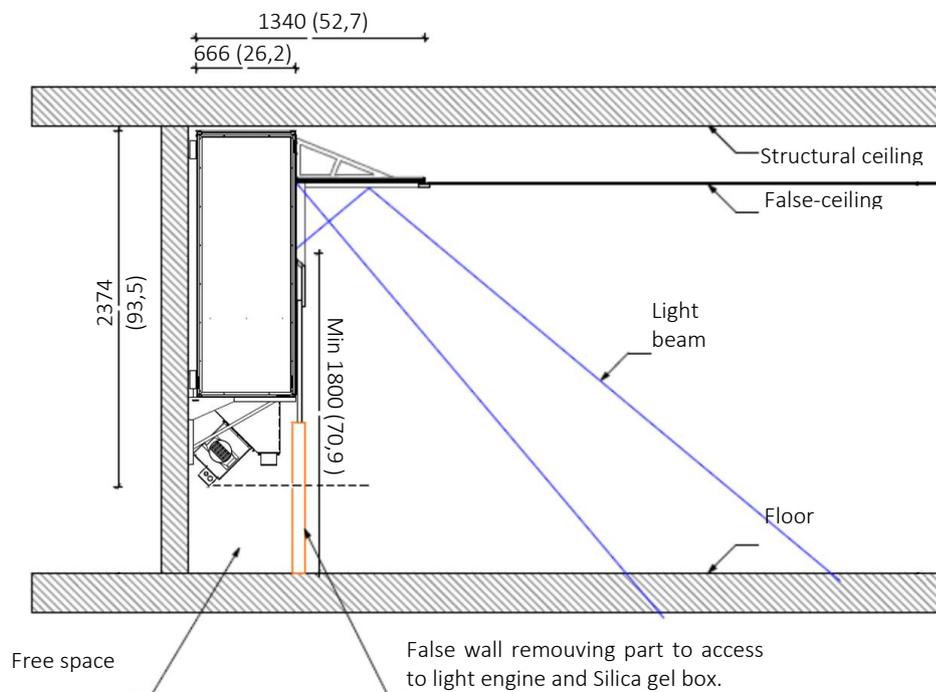


Fig. 38 CoeLux® 45 SQUARE installation diagram Dimensions mm (inch)

### 8.1 SAFETY DISTANCES AND VOLUME

The measurements necessary for false wall insertion are indicated in Figure 38.

For best operations, the LED projector requires air exchange with the environment. If air exchange is possible in the false wall and this is not dusty or humid, the free air volume around the LED projector must be at least 1.5 m<sup>3</sup>. 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, it is necessary that the bottom zone of the false wall (prism with projector area) will be completely removable. Furthermore, it is necessary to ensure a suitable work area around the projector. For UL certified systems the distance between each surface of the product and any insulating material present in the false wall 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 CONNECTIONS

### 8.2.1 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 wall area around the projector. In case of UL certified systems, this condition is mandatory.

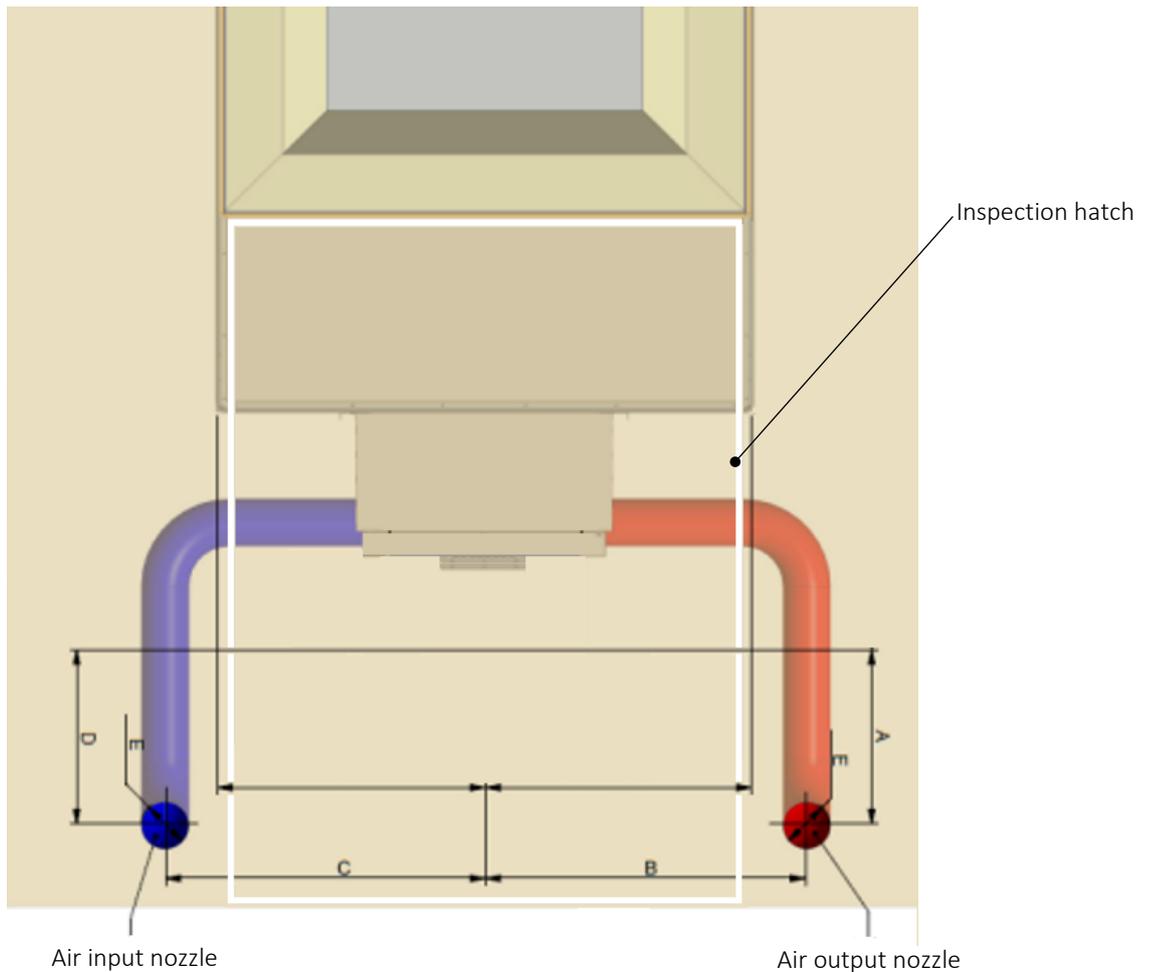


Fig. 39 *Inspection hatch and ventilation nozzle layout*

Use the air collectors supplied within *installation kit*, as previously indicated in section 7.2.6. 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 (refer to section 11.2 for this scope).

A solution for ventilation pipes disposition in the false wall is show in figure 39.



**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<sup>3</sup>/h air flow), apertures E in the false wall must guarantee the minimum air flow required for projector cooling and must be at least 150 mm in diameter (the vents for the false wall are NOT supplied by Coelux S.r.l.).

### 8.2.2 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; instead, a terminal is provided to connect power cables contained in the metal box on the back of the projector . For the purpose, see appendices at the end of this manual (Section 11.2).



**WARNING:**

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

## 8.3 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 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, it's possible to access to the dark box by removing CoeLux® panel to solve problem near it. Otherwise, disassemble external mirror, place the box horizontally, proceed reverse respect mounting sequence and solve the problem as indicated in previous paragraphs.

## 9 OPERATIONS AND USE

CoeLux® 45 SQUARE 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 SQUARE 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 cause 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 SQUARE 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.

## 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 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 VENTILATION KIT

This kit is provided within projector 74-00013-01 and the use is mandatory both for UL and CB certification.

Ventilation kit includes:

- 4 metric antivibration with screws M6 (PN 36-00024-01)
- 1 rubber black frame (PN 36-00025-01)
- 4 nuts M6 (PN 36-00007-01)
- 4 black cover-nuts (PN 36-00026-01)
- 2 galvanized steel air collectors (PN 73-00147-01)
- 8 screws M4 (PN 33-00008-01)
- 1 box containing 4 meter of insulated pipe (PN 36-00022-01)
- 2 hose clamps (PN 36-00023-01)



#### WARNING:

To maintain UL and CB marking only air collectors and tubes assembly is mandatory.

#### 11.1.1 CHANGING OF STEP "PROJECTOR INSTALLATION"

Assemble four metric antivibration [23] (PN 36-00024-01) on projector frontal face [18] (PN 74-00013-01) using the four holes. Place rubber frame [24] (PN 36-00024-01) and fixing frame [16] using antivibration and beam opening as references. Then assemble four nuts M6 [25] (PN 34-00007-01) on outstanding screws and lock the fixing frame. Use four black covernuts [26] (PN 36-00026-01) on four outstanding fillets.

Assemble this sub-ensemble with the rest of the system, as show in paragraph 7.2.4.

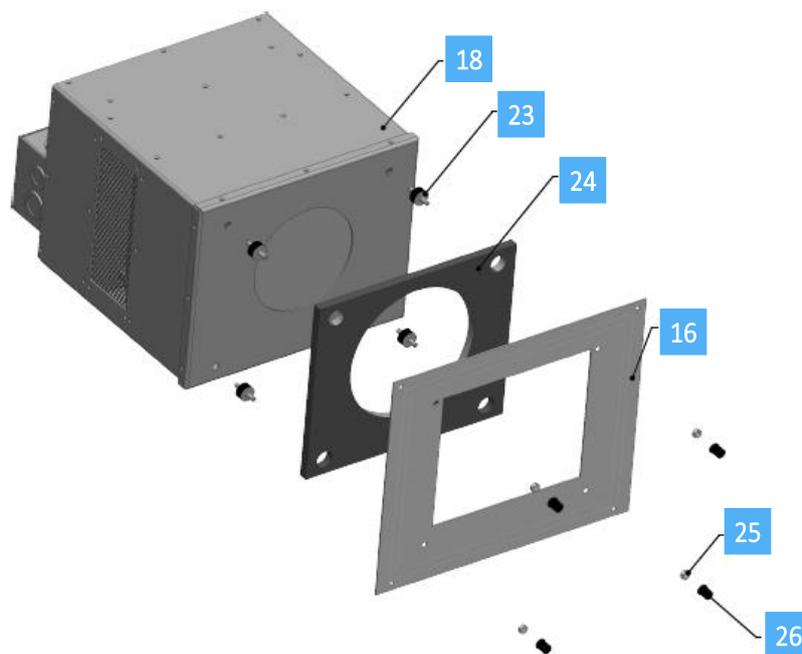


Fig. 40 Ventilation kit installation

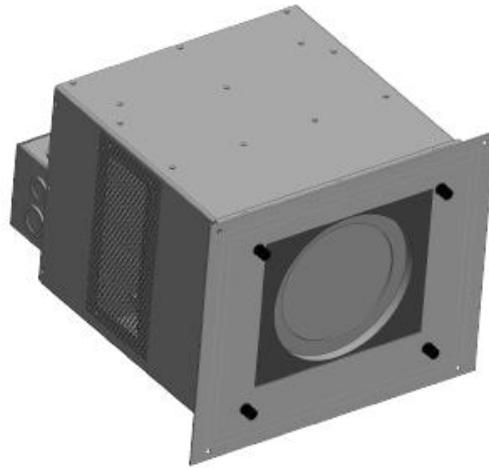


Fig. 41 Ventilation kit installation

After system assembling, proceed with the connection of air collectors [21] (PN 73-00147-01) as show in paragraph 7.2.6. Cut insulated pipe (PN 36-00022-01) in two part of about 2 meter [27]. Use hose clamps [28] (PN 36-00023-01) to connect pipes to round terminals of air collectors. Once the system is installed and the false wall is created, connect free pipes terminals with the vents in the ceiling (previously mounted) to enable air exchange with the room.

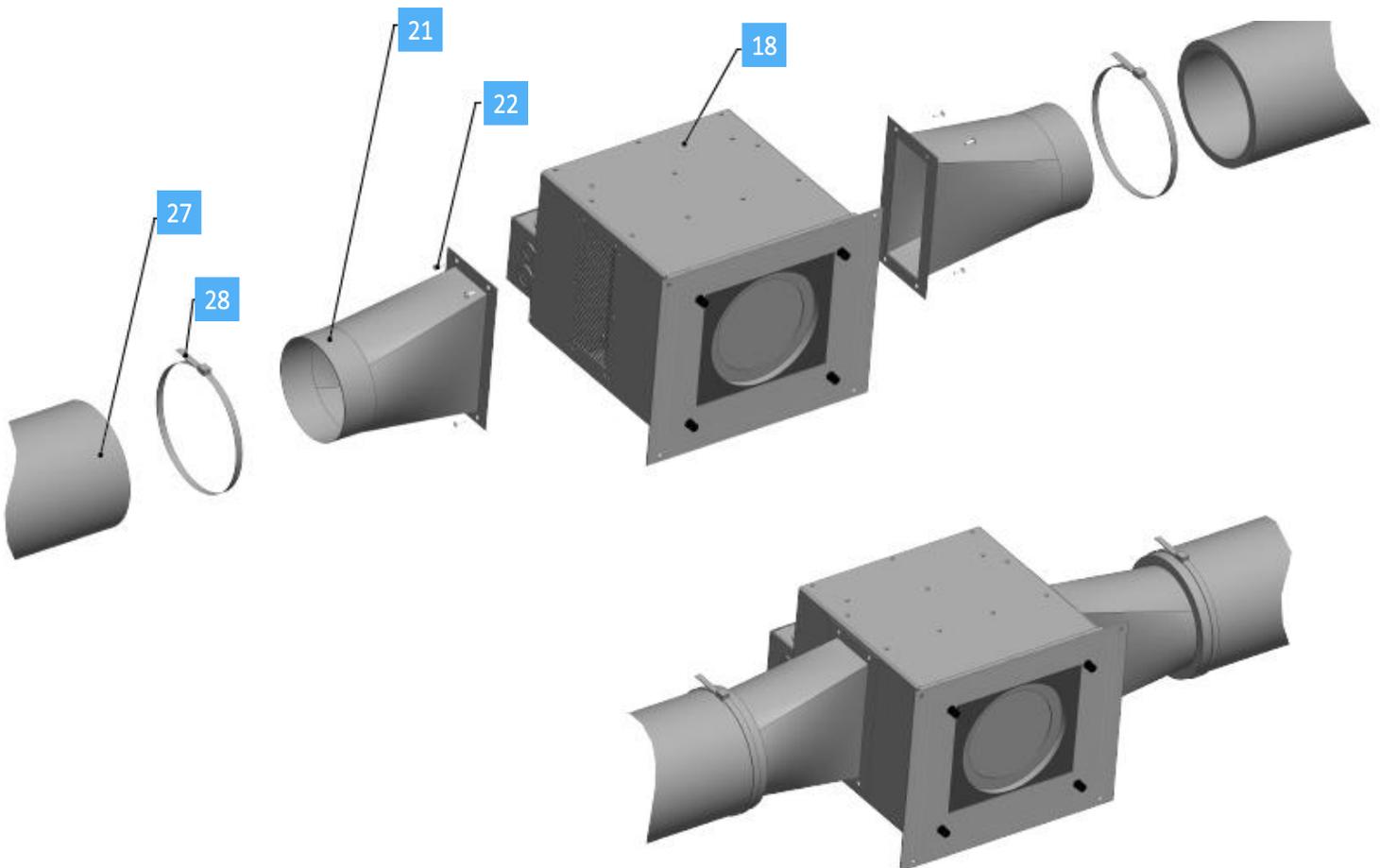


Fig. 42 Ventilation kit installation

## 11.2 POWER CONNECTIONS FOR CB CERTIFICATION

### 11.2.1 ASSEMBLY OF CABLE GLAND

Inside the box containing the main case (74-00030-01) is provided a bag with:

- N° 1 M16 cable gland
- N° 2 M16 galvanised washers
- N° 1 M16 nylon nuts

- A. Open the lid of the junction box (Figure 44).
- B. Open only one of the press openings (with lower diameter).
- C. Fasten the cable gland to the junction box as shown in Figure 43.

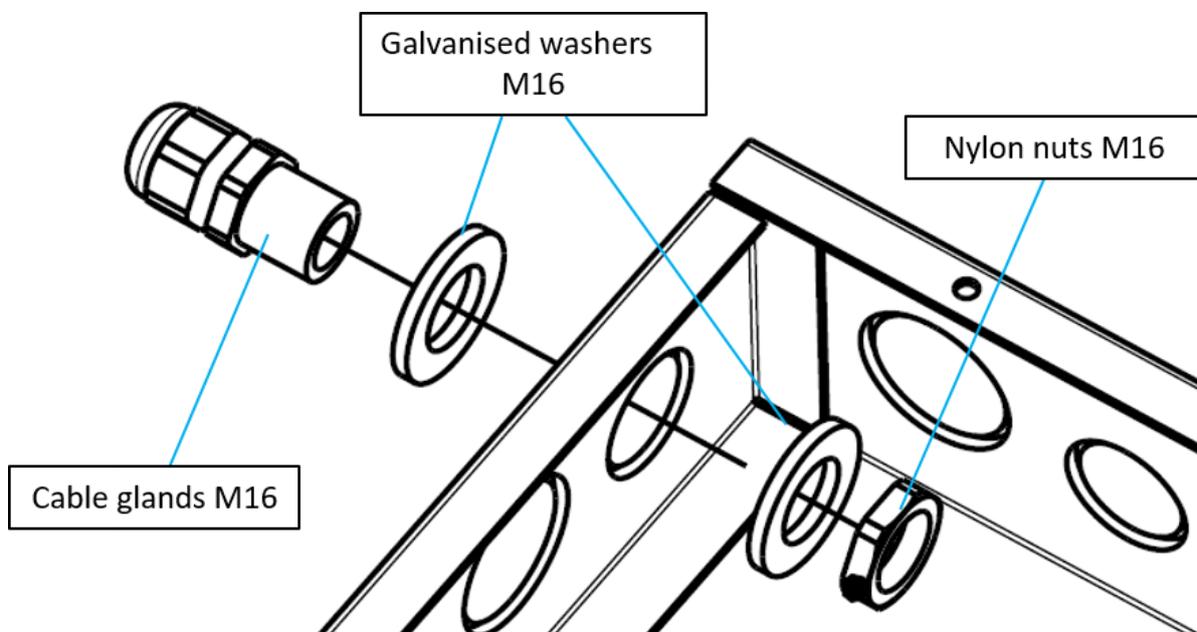


Fig. 43 *Cable gland installation scheme*

- D. Insert the cables inside the cable gland and fasten them to the terminals box as instructed in Paragraph 11.2.2.
- E. 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.
- F. Insert the terminals box into the junction box (Figure 44) and close the junction box.

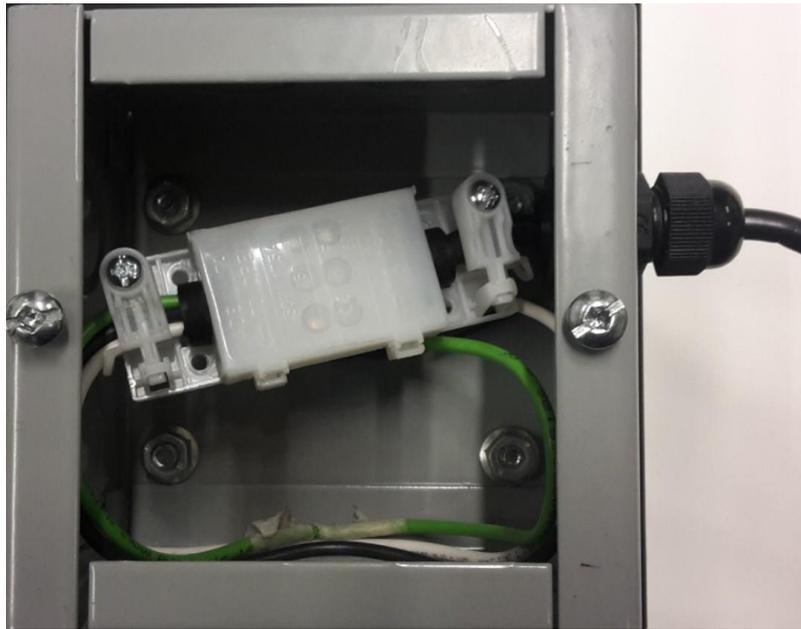


Fig. 44 Cable gland installation scheme

### 11.2.2 USE OF TERMINALS BOX FOR CONNECTION OF POWER SUPPLY CABLES

A terminals box (Figure 45) was provided inside the box containing projector 74-00013-01 to connect its power supply cables.

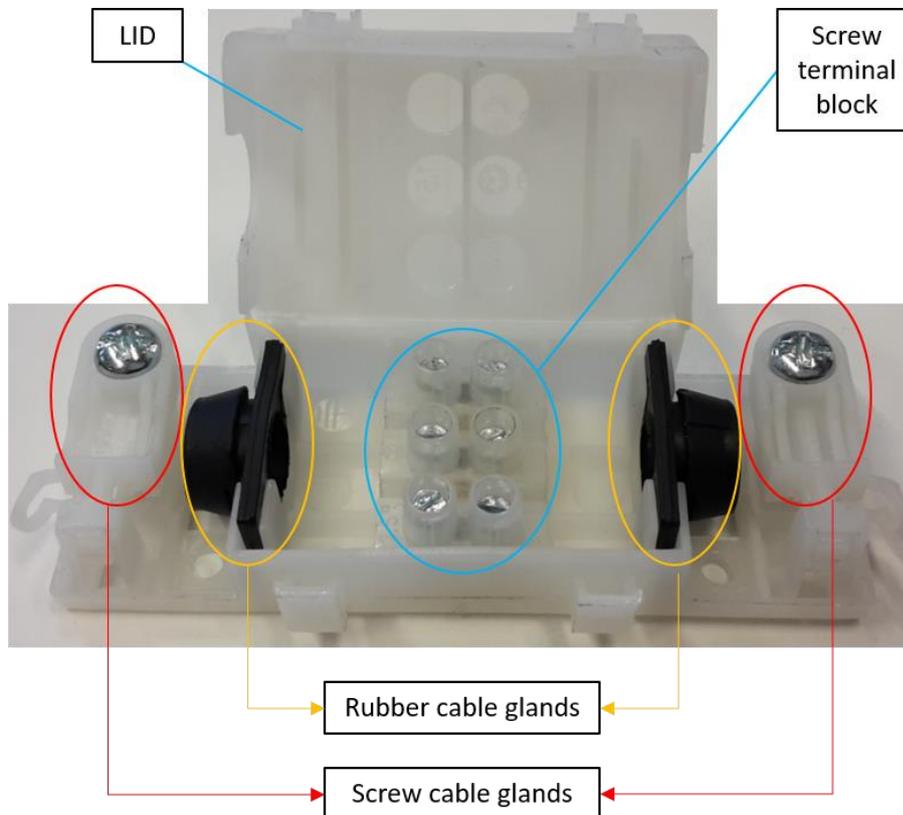


Fig. 45 Cable gland installation scheme

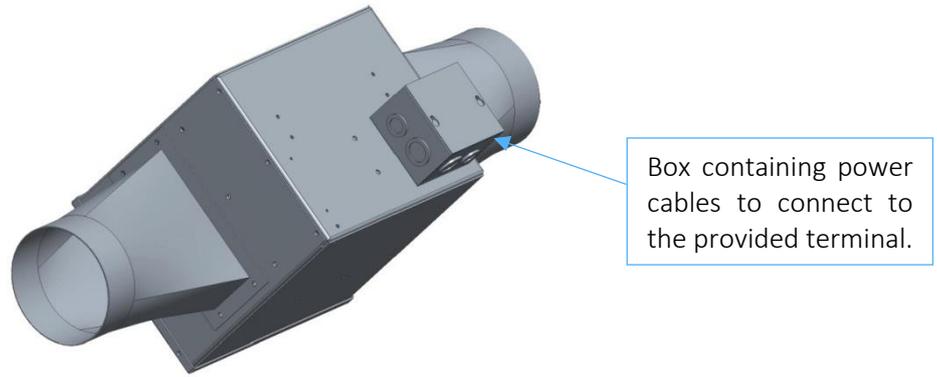


Fig. 46 *Back of projector 74-00013-01*



**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.

- A. After the assembly of the cable gland and after the connection of external supply cables (Par. 11.2.1), extract the rubber cable glands from the terminal box: insert in one the power supply cables coming from the projector, and in the other the external supply cables.
- B. Extract screw terminal blocks from terminal box and connect both power supply cables (projector and external ones) as shown in figure 47: ground protection cable (green) to the top screw terminal, phase cable L (black) to the central screw terminal and neutral cable N (white) to the bottom screw terminal.

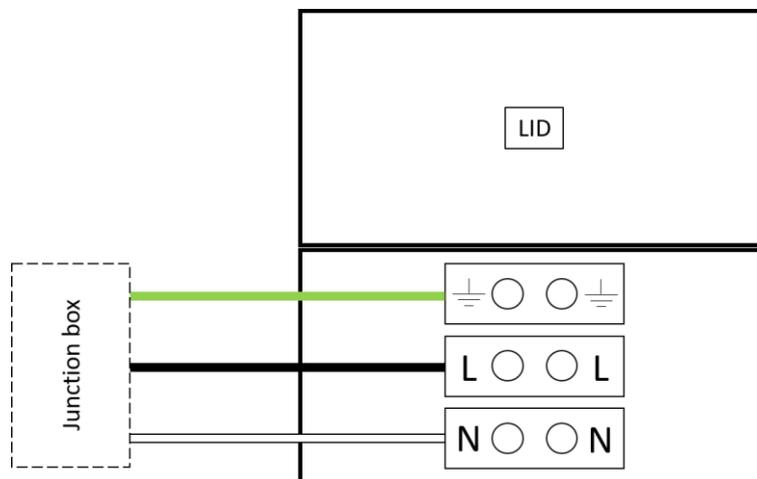


Fig. 47 *Example sketch of the supplied terminal*

- C. After opening the screw cable glands of the terminal box, insert the screw terminal blocks and the rubber cable gland in their lodging and lock the two cable terminals using the screw cable glands.
- D. Close the lid of the terminal box .
- E. Insert the terminal box inside the junction box (Figure 44) and proceed with point E., Paragraph 11.2.1.



## 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 (TRANSPARENT, 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 have already undergone standard cleaning procedure during its production and it must bring Coelux quality control pass stamp on its package (Figure 48).



Fig. 48 *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 11.3.4.2 and 11.3.4.3 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.

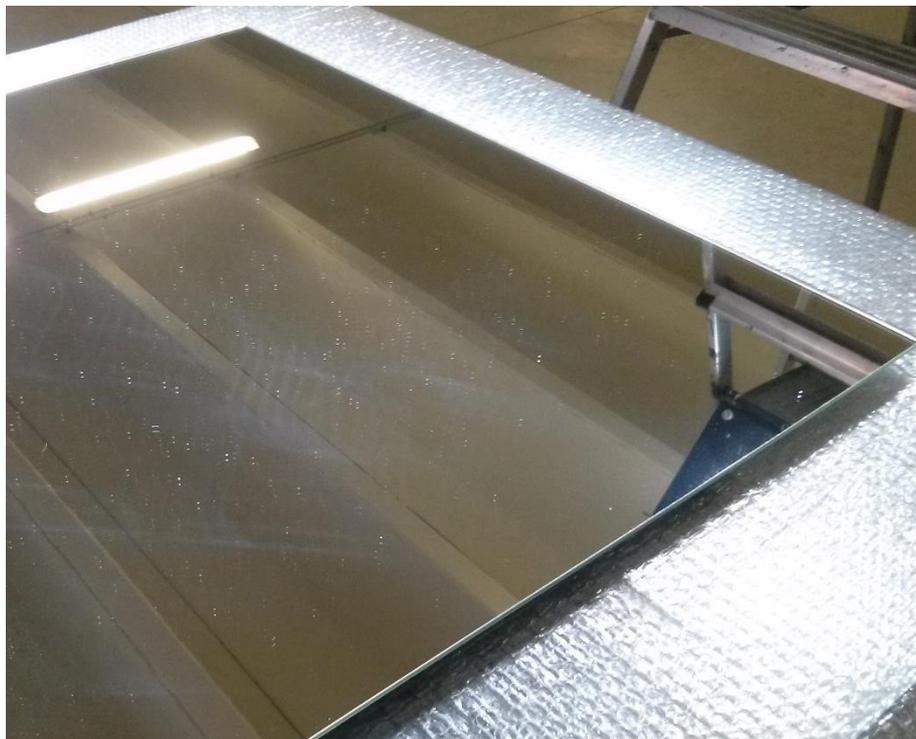


Fig. 49 Case A



Fig. 50 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. 51 Case C

11.3.4.2 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>

11.3.4.3 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>

## 12 CONTACTS

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## 13 COPYRIGHT

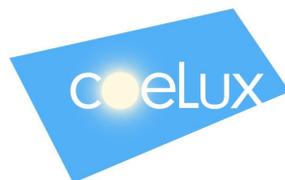
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