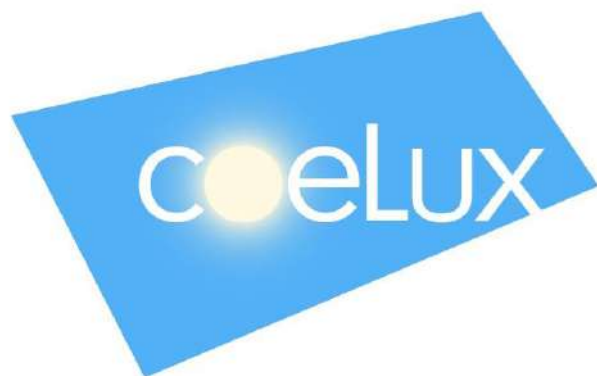


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Experience the Sky

Lighting equipment

CoeLux[®] 45 HC

CoeLux 45 HC_P

CoeLux 45 HC_P_M

Instructions and warnings
for assembly
and installation



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1 INTRODUCTION



N.B.:

This manual is intended specifically for the technicians in charge of installation.

The operators appointed to assemble and install CoeLux products must read the entire contents of this manual carefully not only before assembling, installing and starting the unit, but also before carrying out any maintenance. This manual must always be used and kept safely for any future eventuality. It is forbidden to remove, tear or arbitrarily modify its parts. The illustrations and drawings are to be used only for general reference and do not necessarily provide every precise detail.

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

This manual consists of a total of 69 pages + annexes.

1.1 CONVENTIONAL SYMBOLS USED IN THE MANUAL



WARNING!

This indicates that the operator must pay maximum attention to avoid causing injuries to the personnel and/or any damage, breaks or fires to the unit.



CAUTION:

This indicates the operator must act cautiously to avoid disturbing personnel and/or possible damage or malfunctioning of the unit.



N.B.:

This indicates special, technical guidelines or highlights important information.



This indicates a link to parts of the manual or its annexes, or the need to read other separate documentation.

Other additional symbols may also be used as required.

1.2 ABBREVIATIONS

Sect. = section

Chap. = chapter

Para. = paragraph

Pag. = page

Fig. = figure

Tab. = table

1.3 COMMERCIAL NAMES






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

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

1.4 UNITS OF MEASUREMENT

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

1.5 OPERATORS' QUALIFICATIONS

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

Tab. 1 Operators' qualifications



N.B.:

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

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

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

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

2 PRODUCT SPECIFICATIONS

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

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



CAUTION:


The 45 HC systems are designed exclusively for installation and use in internal rooms, which comply with the requisites listed in the table below. The use of the unit in any way other than what is described in this manual is prohibited and may cause not only risks to the health and safety of people, pets and/or goods, but also product malfunction. CoeLux cannot be held liable for damages to people, goods and animals arising from the incorrect installation and/or use or which differs from what is described in this manual.

If the rooms are subject to particularly difficult environmental conditions (a daily rise in temperature of over 15°C and with a maximum relative humidity of over 60%), additional support equipment will be required for internal air conditioning: in this case, please contact us.

2.1 PRODUCT TECHNICAL DATA, SPECIFICATIONS AND IDENTIFICATION

Specifications	Unit of measurement	Value	
MECHANICAL		CoeLux® 45 HC	CoeLux 45 HC_P CoeLux 45 HC_P_M
Product dimensions	mm in	3,761 x 2,274 x 968 148.1 x 89.5 x 38.1	3,698 x 2,274 x 949 145.6 x 89.5 x 37.4
Dimensions of the artificial window	mm in	1,724 x 870 67.9 x 34.3	
Product weight	kg lb	300 660	
ELECTRICAL			
Supply voltage (frequency)	V (Hz)	100 - 240 (50/60)	
Connections	-	Phase + Neutral + Earth	
Maximum (typical) absorbed power	W	300 (270)	
Insulation class	<i>IEC Definitions</i>	Class I	
Mark		CE, UL, FCC, CB	
ENVIRONMENTAL (<u>equipment intended for indoor use</u>)			
Operating temperature	°C	25°C	
Maximum operating relative humidity	%	95 (non-condensative)	

Tab. 2 Product data and specifications

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



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

System Code:	74-00015-01	74-00074-01	74-00075-01	74-00076-01	74-00077-01
Product Name	CoeLux [®] 45 HC	CoeLux 45 HC_P CE	CoeLux 45 HC_P_M CE	CoeLux 45 HC_P UL	CoeLux 45 HC_P_M UL
Marks	CE, UL, CB, KC, FCC	CE, CB	CE, CB	UL, FCC	UL, FCC
LED projector	74-00013-01	74-00062-01	74-00062-01	74-00063-01	74-00063-01
Projector cooling	Active	Passive	Passive	Passive	Passive
Metal BOX	74-00004-01	74-00004-01	74-00004-01	74-00004-01	74-00004-01
Panel	03-00001-01	03-00001-01	03-00001-01	03-00001-01	03-00001-01
Large Mirror	03-00003-01	03-00003-01	03-00003-01	03-00003-01	03-00003-01
Small Mirror	03-00002-01	03-00002-01	03-00002-01	03-00002-01	03-00002-01
Moon Module	/	/	74-00064-01	/	74-00064-01

Tab. 3 Versions of 45 HC systems

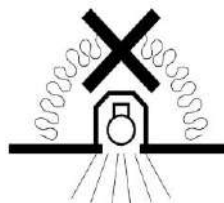
The LED projector has a label with the Serial Number (SN) and Part Number (PN); please give Coelux S.r.l. these numbers for any query.



Fig. 1 Label with Part Number and Serial Number

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

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



2.2 GENERAL SAFETY WARNINGS

WARNING!

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

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

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

WARNING!

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

N.B.:

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

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

CAUTION:

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



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

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

2.2.1 OPERATIONS TO AVOID

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

2.3 PACKAGING, HANDLING AND STORAGE

The unit is shipped in separate parts, adequately protected and packed in wooden boxes.

Some accessories may be placed in protective cardboard containers to avoid them being lost and to facilitate transport.

As some of the parts are particularly delicate, you must take great care when loading/unloading the packages from the transport vehicle and subsequently during handling.



Therefore, these operations must be carried out only by trained and/or qualified personnel, e.g. crane and fork lift truck drivers.



N.B.:

The drawings and instructions, which accompany the unit, are and remain the exclusive, intellectual property of CoeLux S.r.l., which keeps all the rights, prohibits their reproduction and also prohibits simple, even partial sharing with third parties.

2.3.1 UNPACKING



N.B.:



You can start to unpack only after you have carried out the cleaning guidelines (see paragraph 3.5).

As the contents are fragile, we recommend you take maximum care.

- 1 Check the material delivered corresponds with the contents of the shipping documents. If anything is missing or incorrect, contact CoeLux S.r.l. immediately.
- 2 Once you have opened the box, remove the various system parts from the internal packaging.
- 3 Proceed to carry out a careful, scrupulous, general check to identify any damage to the unit during transport. All damage must be immediately notified in writing to the haulier and the manufacturer. Do not continue to unpack until you are authorised to do so by CoeLux S.r.l.
- 4 Proceed to assemble as indicated in Chapter 4.
- 5 Save and dispose of all the packaging material in compliance with the measures of the laws in force.

2.3.2 HANDLING THE PARTS

All the component parts weigh less than 25 kg and can, therefore, be lifted and handled individually without using lifting devices.

As the contents are fragile, we recommend you take maximum care.

We advise all operators involved in the operations described in this manual to use adequate personal protective equipment (PPE), e.g. gloves, safety shoes, etc.

2.3.3 STORAGE

Store the unassembled unit in a closed room, protected from bad weather and under the following environmental conditions:

- Temperature between -20°C and +50°C.
- Relative humidity below 30% at 40°C and 90% at 20°C and, in any event, non-condensative.
- Atmosphere with clean air, with no acids, corrosive gases, salts, etc.

The unit must be accurately protected from dust and sunlight using protective covers and stored away from any possible accidental impacts.

3 PRE-INSTALLATION



WARNING!

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

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

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

3.1 PERMITTED APPLICATIONS

The 45 HC systems were designed to be installed in internal rooms with a minimum floor thickness of 3,200 mm (126 in). Subject to any different, specific legislation, the recommended end height of the false ceiling is between 2,200 (86.6 in) and 3,200 mm (126 in).

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



WARNING!

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

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

3.2 DESIGNING THE SPACE

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

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

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



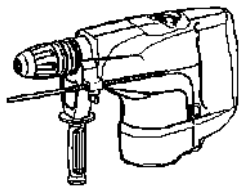
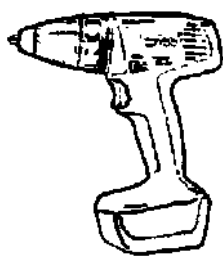
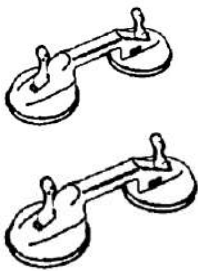

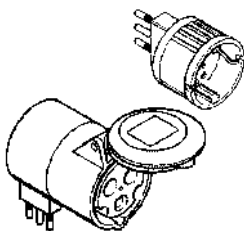
3.3 GENERAL INSTRUCTIONS FOR FASTENING



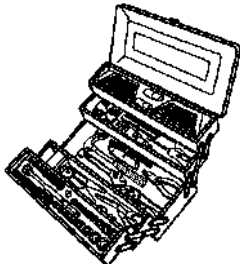

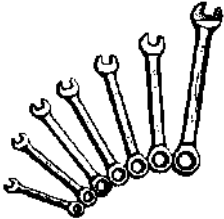
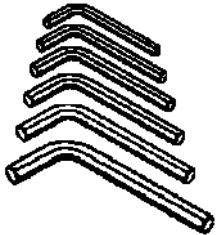
The 45 HC systems must be fastened to the ceiling via a system consisting of a sub-structure hanging from the aforementioned ceiling, on which you will place the 45 HC systems.

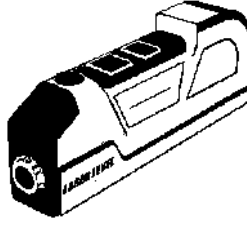
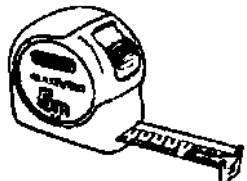

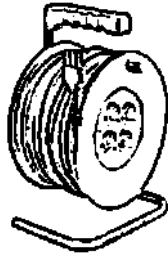

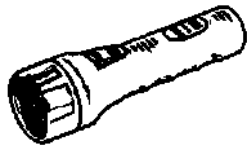
Procedures to assemble, lift, fasten and start up the 45 HC systems must comply with the instructions in this manual. They must also comply with the relevant, applicable legislation in force on installation and on health and safety in the work place.


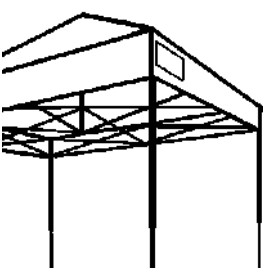
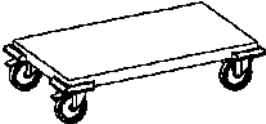

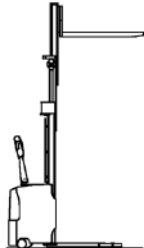

3.4 TOOLS REQUIRED, BUT NOT SUPPLIED FOR INSTALLATION

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

Tool	Quantity	Notes	Image
Impact drill	1	With bits to drill concrete, reinforced concrete and metal.	
Screwdriver with clutch	At least 1 for each worker.	With bits for 13 mm nuts and 10 mm screws (Phillips).	
Suction cups to handle the mirrors.	2		
Vacuum cleaner	1		
Electrical plug and socket adapters			

PPE (Personal Protective Equipment)	One for each worker.	Helmet, goggles, shoes, gloves, etc. Always follow the legislation in force in the country of installation.	
Ladder, compliant with the legislation in force	At least 2	Height >3.5 m	
Screwdrivers, scissors, cutters, pliers, hammers			
Phillips screwdriver with handle at least 20 cm long	1		
Fixed, tube, scaffolders spanner	1 set.	Specifically 10 and 13 mm.	
Allen keys.	1 set.	Specifically 4 and 5 mm.	

Laser level	1		
Tape measure	1		
Silicone gun, with transparent silicone cartridge	1	Anti-mould acrylic silicone	
Electric extension cable	At least 1	Triple-pole, 25 m-long	
Insulation tape	At least 1	Black	
Battery torch	1		

Sunglasses category 3 or 4	1		
Foldable gazebo (as required: see Chapter 5).	1	Minimum dimensions 5 x 4 m	
Platform trolley to move the assembled equipment	At least 4		
Dark-Box Support	At least 6	Please read Chapter 7 ASSEMBLY.	
Lifting device, suitable for the work load (300 kg).	4	Lift trolley	
	4	Hoist	

Tab. 4 Tools required, but not supplied

4 FASTENING SYSTEM



WARNING!

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

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



CAUTION:

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

4.1 SAFETY DISTANCES AND VOLUME

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



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

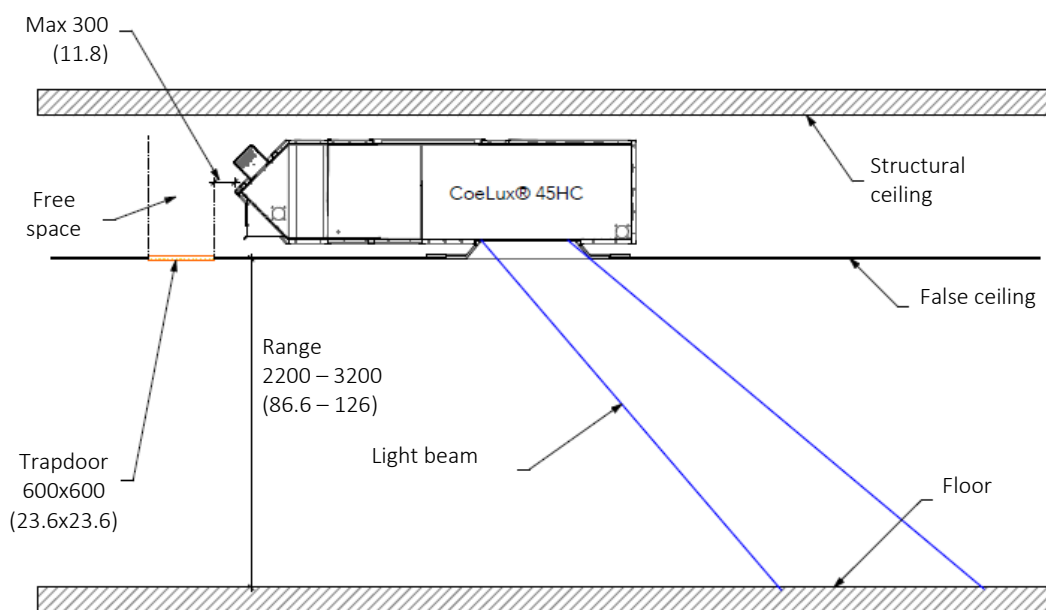


Fig. 2 Installation diagram for 45 HC systems. Dimensions in millimetres (inches)

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

WARNING!

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

WARNING!

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

4.2 INSTALLATION KIT

WARNING!

The 45 HC systems must be fastened to the existing structure by qualified personnel, selected by and under the responsibility of the installer or user, according to the safety measures in force in the place of installation.

Coelux declines any responsibility for any breach of the instructions and warnings listed here.

The installation kit supplied by CoeLux S.r.l. consists of:

- 4 L-plates to fasten to the ceiling via 2 anchor points (PN 73-00153-01)
- 4 M12 1500 mm threaded bars. A 140x60x5 plate with an 11 mm fastening hole (PN 73-00156-01) is welded at each end.
- 4 120x120x5 flat fastening plates (PN 73-00152-01)
- 2 50x2270x5 horizontal tie rods (PN 73-00155-01)
- 4 M8 bolts, 4 M10 bolts, 8 M12 nuts and washers

4.3 FASTENING PLUGS

First, make the holes to anchor the fastening plates to the ceiling (Figure 3).

WARNING!

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

Next, fasten the L plates to the ceiling and connect them to the M12 threaded bars, as shown in Figure 4.

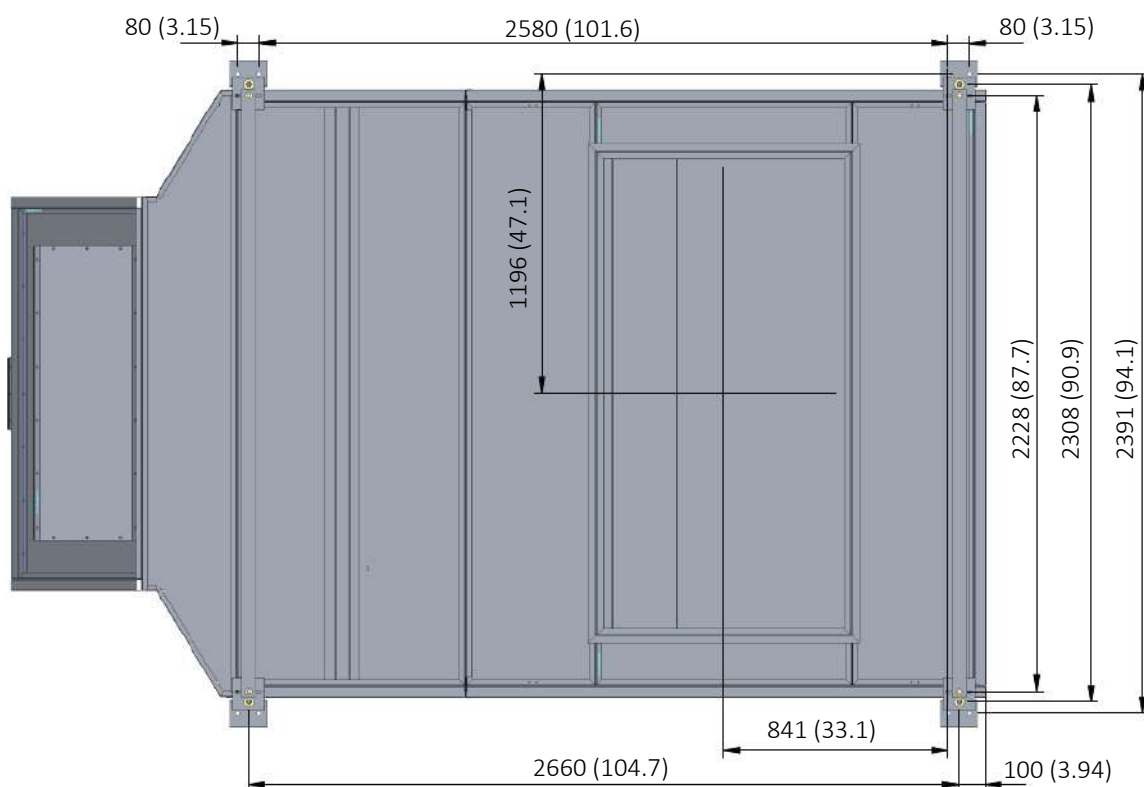


Fig. 3 Anchor system - View from below

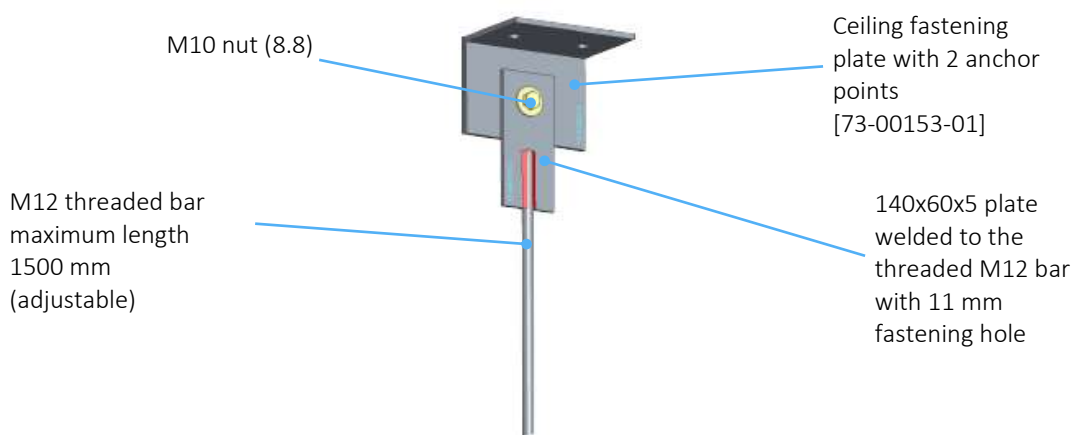


Fig. 4 Recommended anchor system - Fastening of L-shaped profiles and threaded bars

5 INITIAL CLEANING

All product components must be carefully cleaned to achieve the best performance from the 45 HC systems.

The 45 HC systems must be assembled indoors, out of bad weather, in a clean, dry environment.



CAUTION:

Avoid installing 45 HC systems in a dirty environment, as this could compromise operations. If the environment is dirty or dusty, you must follow the specific cleaning instructions given below. You do not need to follow these instructions for a clean environment without any dust, although you should use polyethylene sheets to cover the floor in the assembly area.

It is of fundamental importance during the assembly phase to take great care to avoid contaminating each component. Dust deposits on internal surfaces, dirt on the CoeLux® panel or on the optical parts, for example, could prevent the product from performing at its best. Regular cleaning is essential to maintain the performance of the equipment (please read paragraph 7 MAINTENANCE).

CLEANING INSTRUCTIONS

We have prepared specific cleaning instructions to enable you to assemble even in very dusty environments. These instructions envisage the use of a specific kit, supplied together with the product (cleaning kit No. 38-00002-01). The kit consists of the following materials:

- N° 6 polyethylene sheets (5x4 m) to create a clean chamber, in which to assemble.
- N° 1 spray bottle containing a specific dust collector
- N° 2 pairs of cotton gloves and
- N°15 cotton cloths to handle and clean the optical parts.

The instructions are as follows:

- 1 Use the polyethylene sheets to create a clean chamber (preferably beneath the fastening area) with minimum dimensions 5x4 m.
- 2 Then, run the vacuum cleaner and wash the clean chamber floor;
- 3 Carry out cycles of dust collection and floor cleaning: spray the special dust collector liquid inside the clean chamber, wait for approximately 10 minutes, run the vacuum cleaner over the floor and repeat this procedure 2 - 3 times (depending on the existing level of cleanliness);
- 4 Lay two 5x4 m polyethylene sheets (one on top of the other) on the floor of the clean chamber (place any covers or filling to protect the floor UNDER the aforementioned polyethylene sheets) and join them to the sheets used for the walls of the chamber.
- 6 Spray the dust collector inside the clean chamber once again.
- 7 Assemble the *dark-box* inside the clean chamber.

**N.B.:**

Open the boxes and clean the various *dark-box* components outside the clean chamber. If the ceiling of the room is too high and the walls are too wide to fasten all 4 corners of the clean chamber, use a gazebo as a support structure for the chamber walls.

If you have to assemble more than one piece of equipment, the polyethylene sheet structure must be dismantled when you have completed assembling one box and recreated with new sheets following the cleaning instruction procedure.

CLEANING THE COMPONENTS

All the components of the equipment must be cleaned immediately before their assembly.

All the optical parts must be handled with special care. Delicately remove any dirt so as not to damage the optical surface and ensure the best performance.

We recommend you begin by cleaning gently and then proceed with more decisive, aggressive cleaning to remove any contamination, if required.

**CAUTION:**

Incorrect cleaning could cause irreparable scratches on the optical surfaces.

If the surface is damaged, stop installation and contact CoeLux S.r.l. to request a new replacement part.

When assembly is complete, any visible dirt must be removed from all the internal, metal parts, from the optical outlet and from the ventilation holes of the LED projector.

CLEANING THE MIRRORS AND THE COELUX® PANEL

CoeLux S.r.l. supplies the mirrors and the CoeLux® panel inside a specific packaging. When you clean these parts, do not touch the surfaces with your fingers or with the sewn edge of your gloves.

**CAUTION:**

You must always wear the cotton gloves provided in the cleaning kit to handle these surfaces.

6 ASSEMBLY

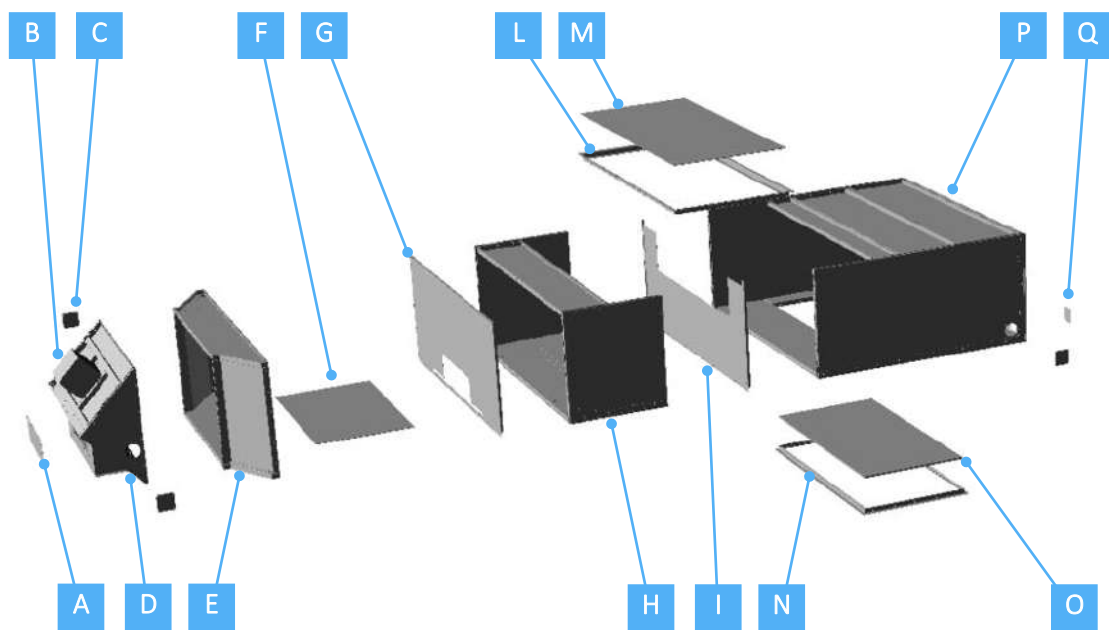


WARNING!

Only CoeLux S.r.l. qualified personnel can assemble the system.

The 45 HC systems must be assembled according to the instructions given in Chapter 5 INITIAL CLEANING.

The following figure shows an exploded diagram of the structure of the 45 HC systems and gives the names of the main parts.



- [A] Silica-gel compartment door
- [B] Lamp
- [C] Caps
- [D] Wedge
- [E] Funnel
- [F] Small mirror
- [G] Small mirror divider
- [H] Central part
- [I] Large mirror divider
- [L] Large mirror frame
- [M] Large mirror
- [N] CoeLux® panel frame
- [O] CoeLux® panel
- [P] Final part - First chamber
- [Q] Caps

Fig. 5 Exploded diagram of 45 HC systems

The installation kit supplied by CoeLux S.r.l. consists of:

- metal panels and frames painted matt black with gaskets and knives installed,
- pair of mirrors,
- CoeLux® panel,
- small box with small items, flanged nuts and screws
- small box containing spare gaskets, lamp plate and caps
- silica-gel for passive internal air conditioning
- LED projector
- box containing the moon module (optional)

The ventilation kit (supplied by CoeLux s.r.l with UL certified products) contains the projector air manifolds and the insulated pipes to connect them.

6.1 ASSEMBLY PROCEDURE

Follow the various assembly procedures in the correct order and always pay close attention to the instructions and details below. All the pieces must be removed from their packaging outside the clean chamber, whereas they have to be assembled inside the latter.

- When you have completed the cleaning instructions, open the wooden box containing the sheets of metal.
- Make sure the pieces are not dusty or damaged and dust them with a damp cloth, if necessary (NOT provided in the cleaning kit). Avoid leaving ring marks or streaks. The box with the mirrors and the box with the CoeLux® panel must be opened only when they have to be assembled: the mirrors in **Step 10** and **11**, and the CoeLux® panel in **Step 3**. The folded part of the metal sheets must always lie outside the box.
- While you assemble the box, check for the presence of any dirt and clean as described above.
- Insert the bolts in the same direction in each section and always make sure they are securely tightened.



N.B.:

During the assembly stage, complete the installation sheet (document 65-00070-01) provided in two copies together with this manual. Then, send one completed copy to CoeLux S.r.l.

6.2 ASSEMBLY SEQUENCE

6.2.1 STEP 1

Prepare some support structures inside the clean chamber (preferably 6) which raise the box above the floor (approximately 45 cm) while it is being assembled to facilitate assembly operations. The picture below shows an example of a support structure which CoeLux S.r.l. can supply on request. It also gives the optimum distances to support the entire assembled equipment, even though during assembly these supports have to be moved gradually beneath the box.

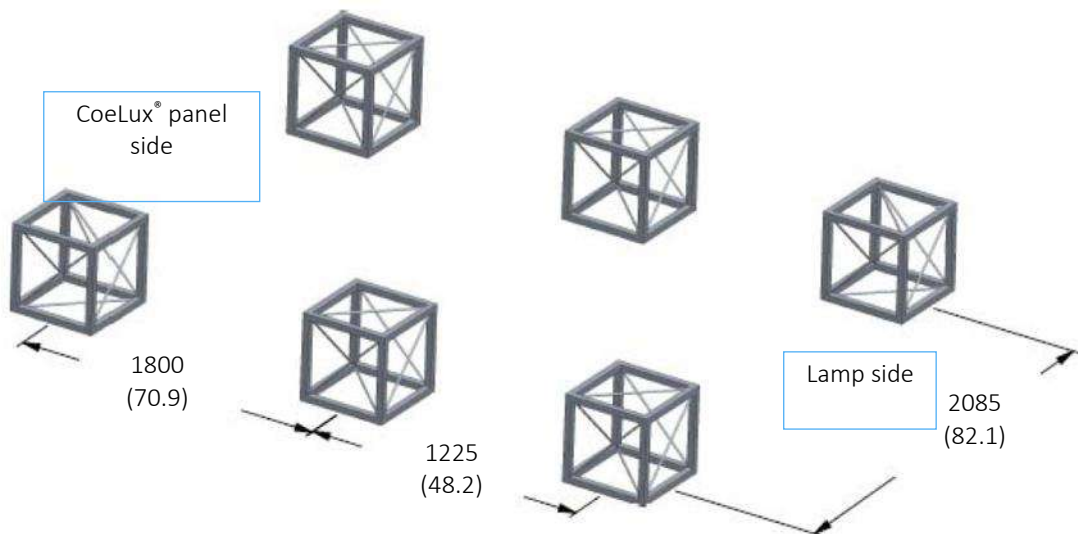


Fig. 6 Installation sequence - Step 1

6.2.2 STEP 2

Use the screws and M8 nuts supplied (for this size of bolts we advise using a 20 Nm tightening torque) to assemble the lower panels [1] (CoeLux® PN 73-00001-01), [2] (PN 73-00002-01), [3] (PN 73-00003-01) and [4] (PN 73-00004-01).

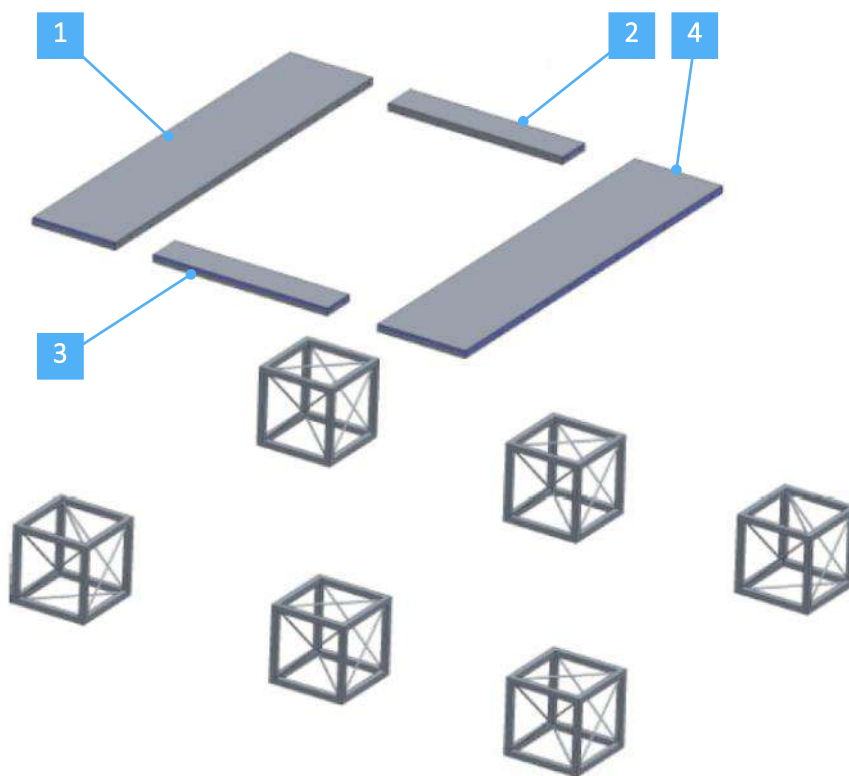


Fig. 7 Installation sequence - Step 2

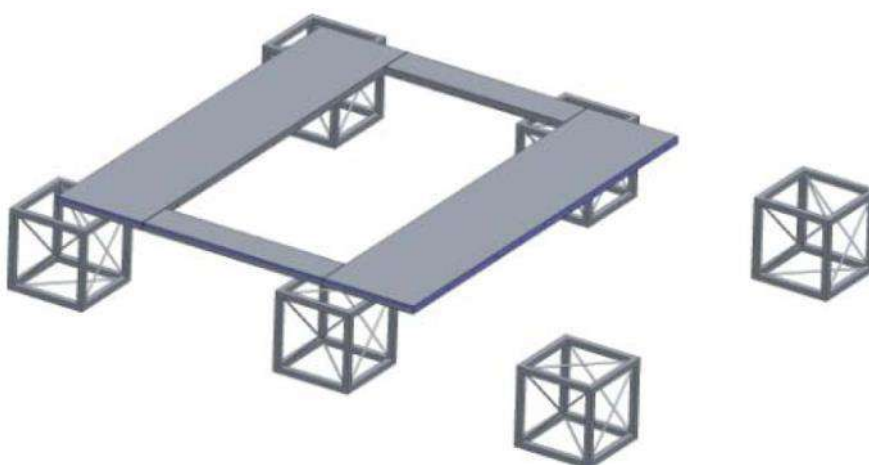


Fig. 8 Installation sequence - Step 2

6.2.3 STEP 3

Insert the frame of the CoeLux® panel [5] (PN 73-00005-01) into its final position between the panels ([1], [2], [3] and [4]) you have just assembled and ensure there are no obstacles for assembly. Once you have checked whether it is inserted correctly, take it out and proceed as follows.

Open the box and take out the CoeLux® panel [6] (PN 03-00001-01). Remove a few centimetres of the protective film along the entire perimeter of one side. Place a thin strip of transparent silicone on the inner edge of the frame [5] (PN 73-00005-01), highlighted in the close-up below and in Figure 6. Take care the transparent strip of silicone on the CoeLux® panel is invisible.

Then, place the CoeLux® panel [6] (PN 03-00001-01) on the edge with the silicone, so it is sealed and place the two pieces assembled in a dust-free area (even outside the clean chamber, but covered with a polyethylene sheet and ensuring it remains untouched) for at least two hours to allow the silicone to dry.

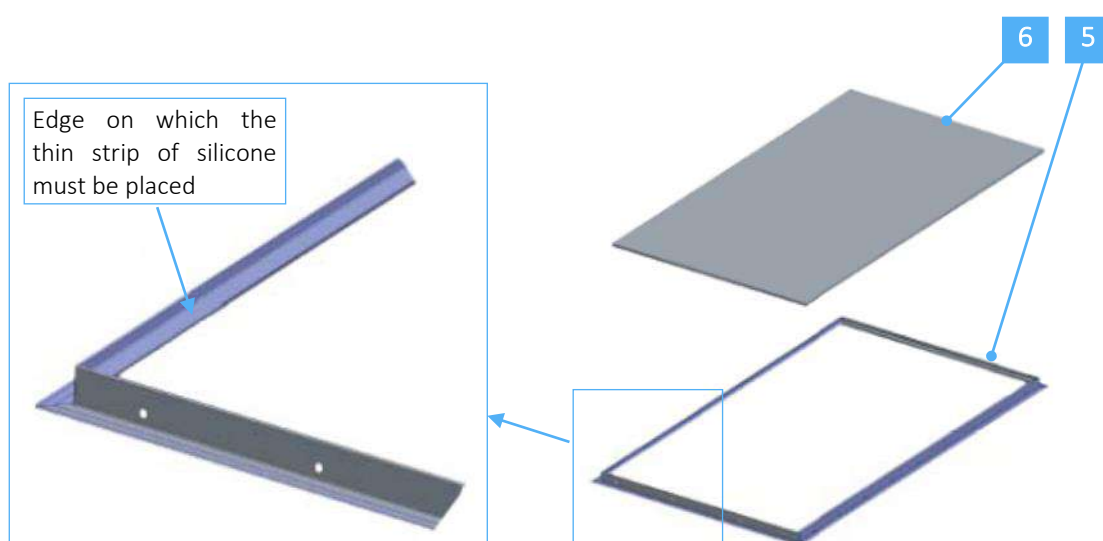


Fig. 9 Installation sequence - Step 3

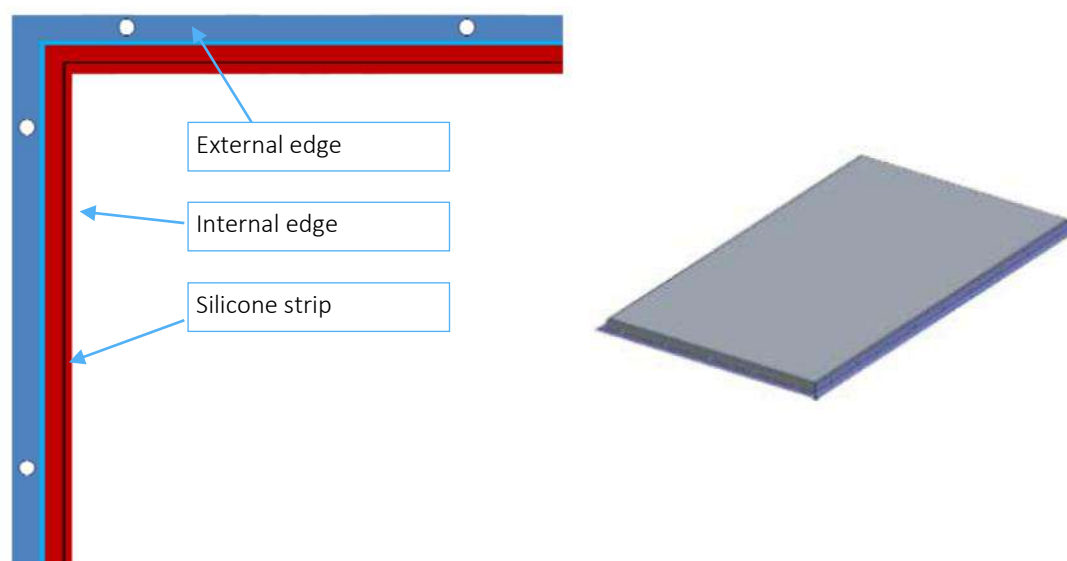


Fig. 10 Installation sequence - Step 3

6.2.4 STEP 4

Use the screws and M8 nuts supplied to assemble the rear vertical panel [7] (PN 73-00007-01) on to the lower panel [1] (PN 73-00001-01).

Use the screws and M8 nuts supplied to assemble the vertical panel [8] (PN 73-00008-01) and fasten it on to the lower panels ([1], [2], [4]) and to the rear panel [7] (PN 73-00007-01).

Use the screws and M8 nuts supplied to assemble the vertical panel [9] (PN 73-00009-01) and fasten it on to the lower panels ([1], [3], [4]) and to the rear panel [7] (PN 73-00007-01).

Use the screws and M6 nuts supplied (for the M6 class of bolts we advise using an 8 Nm tightening torque) to assemble the 4 closing caps [10] (PN 73-00010-01).

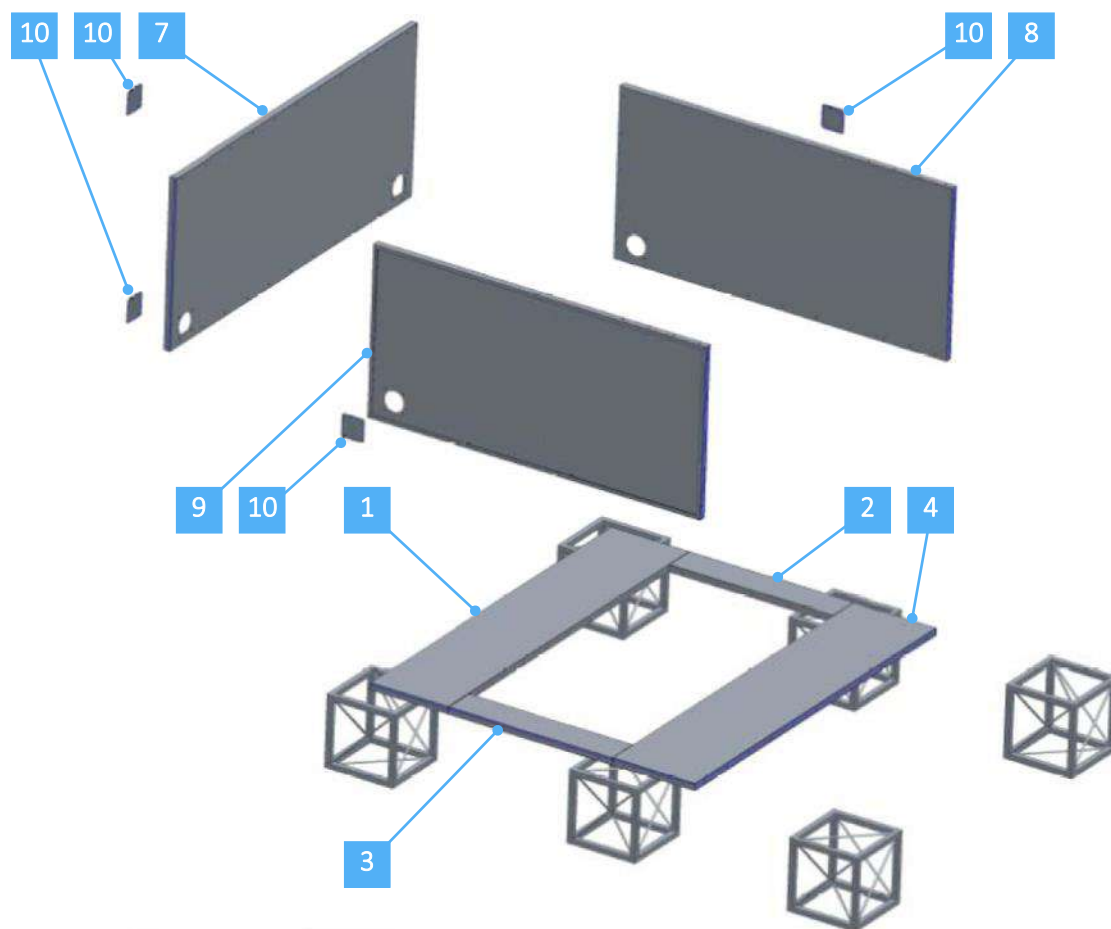


Fig. 11 Installation sequence - Step 4

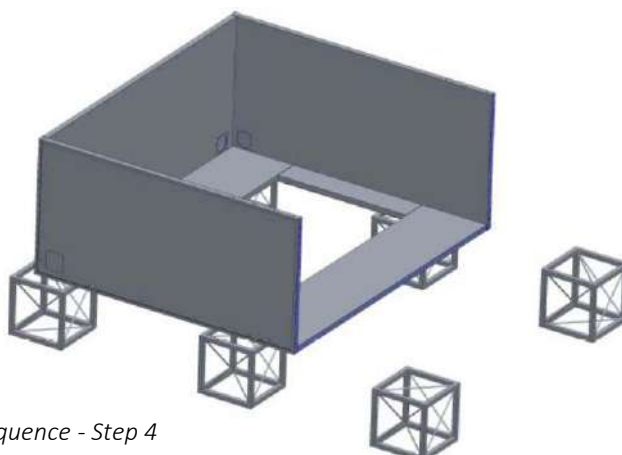


Fig. 12 Installation sequence - Step 4

6.2.5 STEP 5

Use the screws and M8 nuts supplied to assemble the large, upper panel [13] (PN 73-00013-01) on to the vertical panels ([7], [8], [9]). Use the screws and M8 nuts supplied to assemble the small, upper panel [14] (PN 73-00014-01) and fasten it on to the vertical panels ([8], [9]), and to the large, upper panel [13] (PN 73-00013-01).

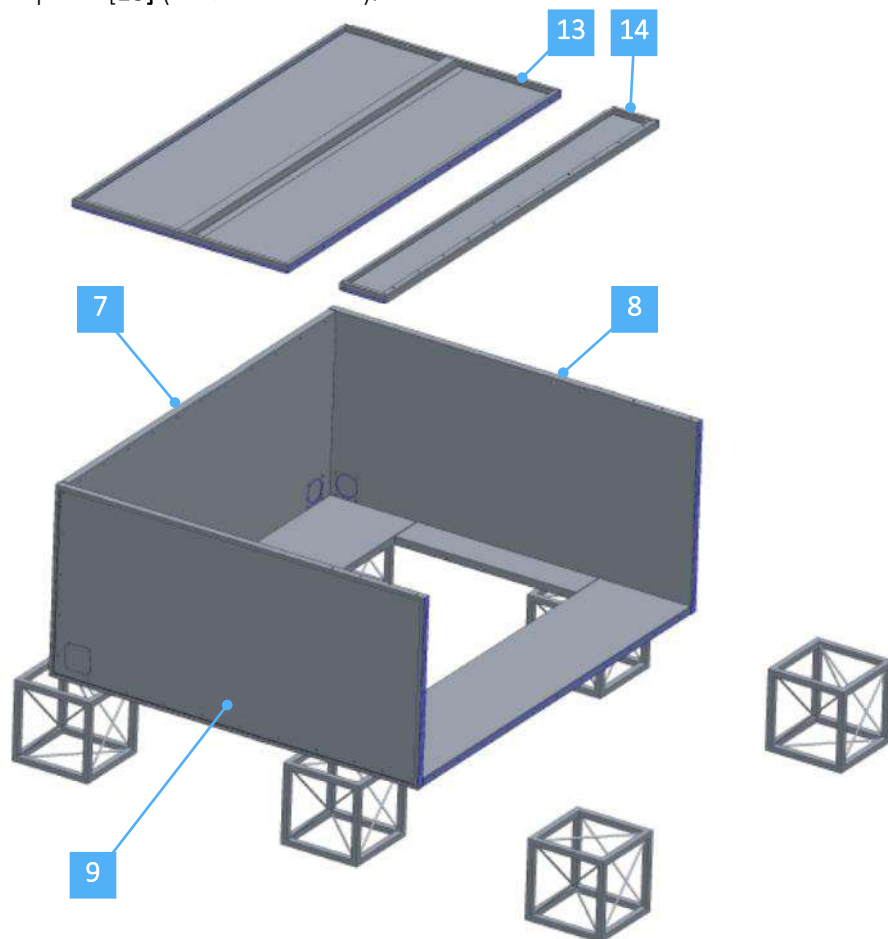


Fig. 13 Installation sequence - Step 5

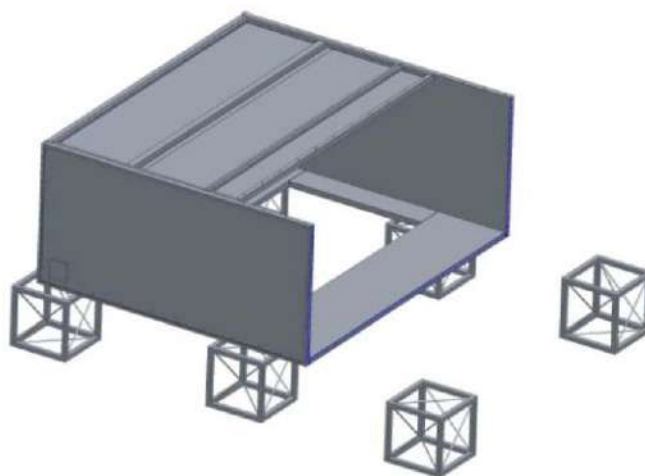


Fig. 14 Installation sequence - Step 5

6.2.6 STEP 6

Align the vertical dividing panel [16] (PN 73-00016-01) with the vertical panel holes ([8], [9]) and with the lower panel [4]. Take great care not to damage the strips of pre-stressed steel wire on the edge of the window. The folded edges [16A] of the vertical divider [16] (PN 73-00016-01) must be inserted inside the already assembled panels, i.e. towards the CoeLux® panel aperture. Check the lip seals [18] (PN 36-00001-01) are present on both sides facing upwards. Use the screws and M8 nuts supplied to assemble the lower panel [17] (PN 73-00017-01) and fasten it on to the other lower panel [4].

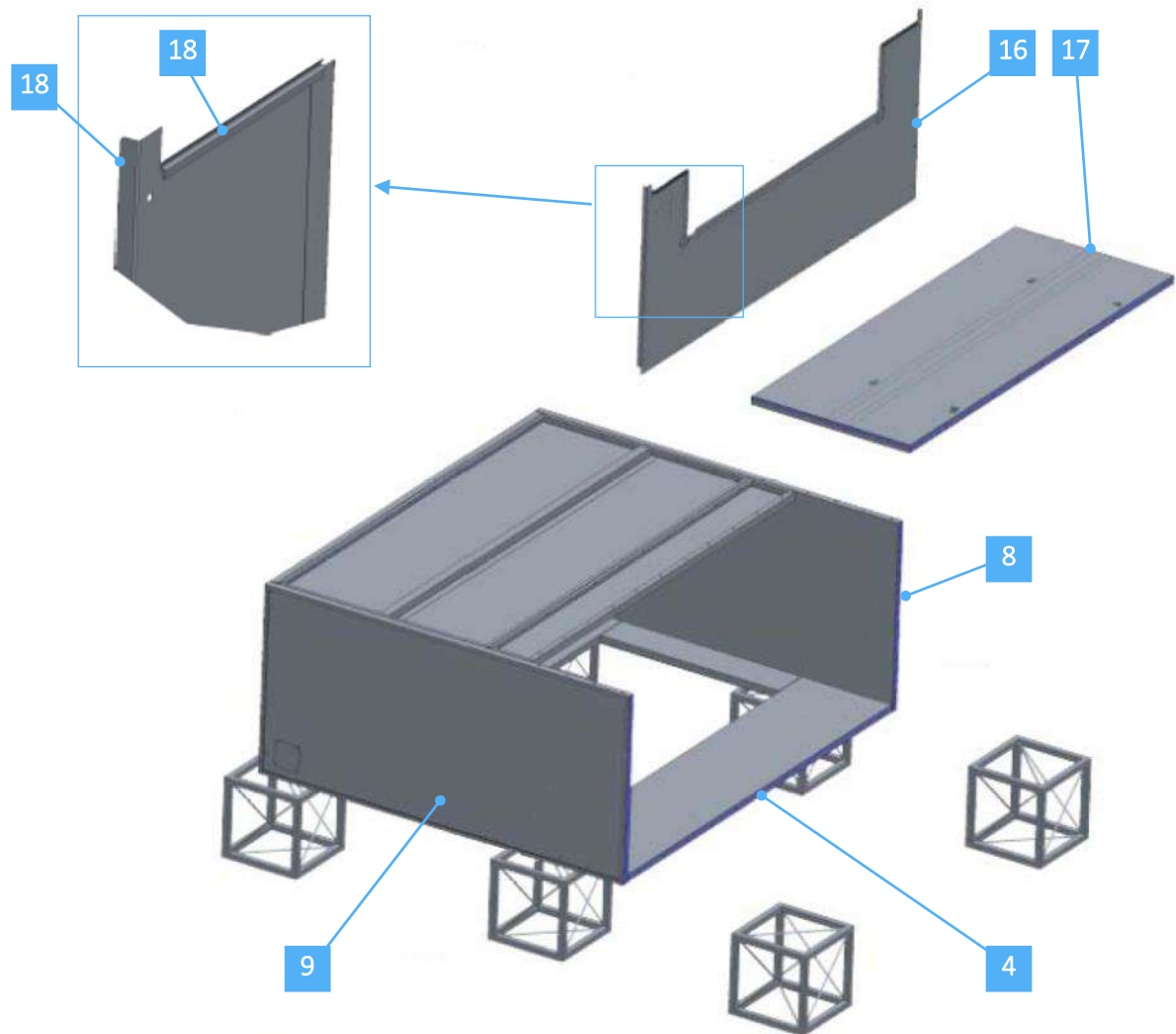


Fig. 15 Installation sequence - Step 6

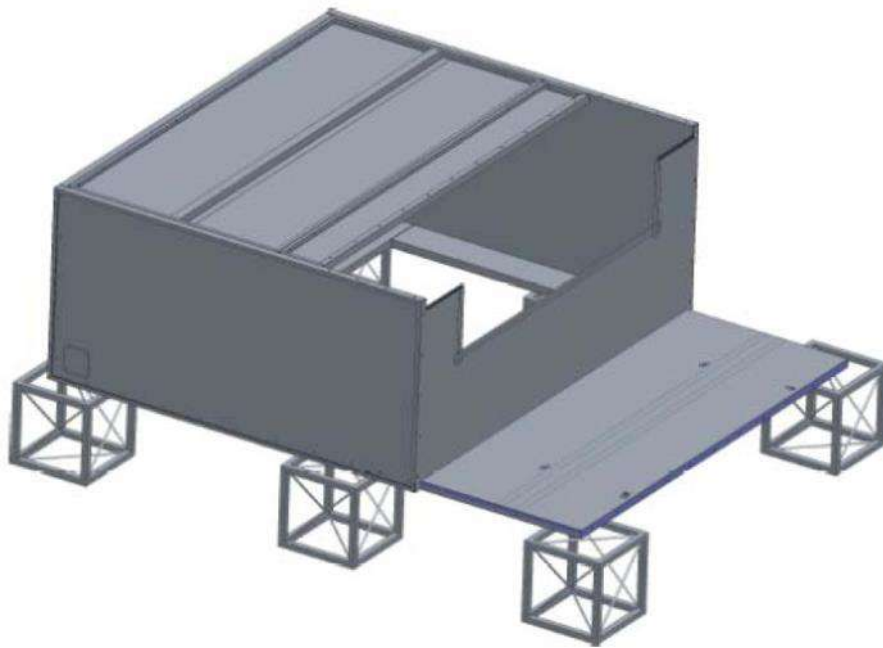


Fig. 16 *Installation sequence - Step 6*

6.2.7 STEP 7

Use the screws and M8 nuts supplied to assemble the vertical panel [19] (PN 73-00019-01) and fasten it on to the lower panel [17] and to the vertical panel [9].

Use the screws and M8 nuts supplied to assemble the vertical panel [21] (PN 73-00021-01) and fasten it on to the lower panel [17] and to the vertical panel [8].

Use the screws and M8 nuts supplied to assemble the upper panel [20] (PN 73-00020-01) and fasten it on to the two vertical panels [19] (PN 73-00019-01) and [21] (PN 73-00021-01).

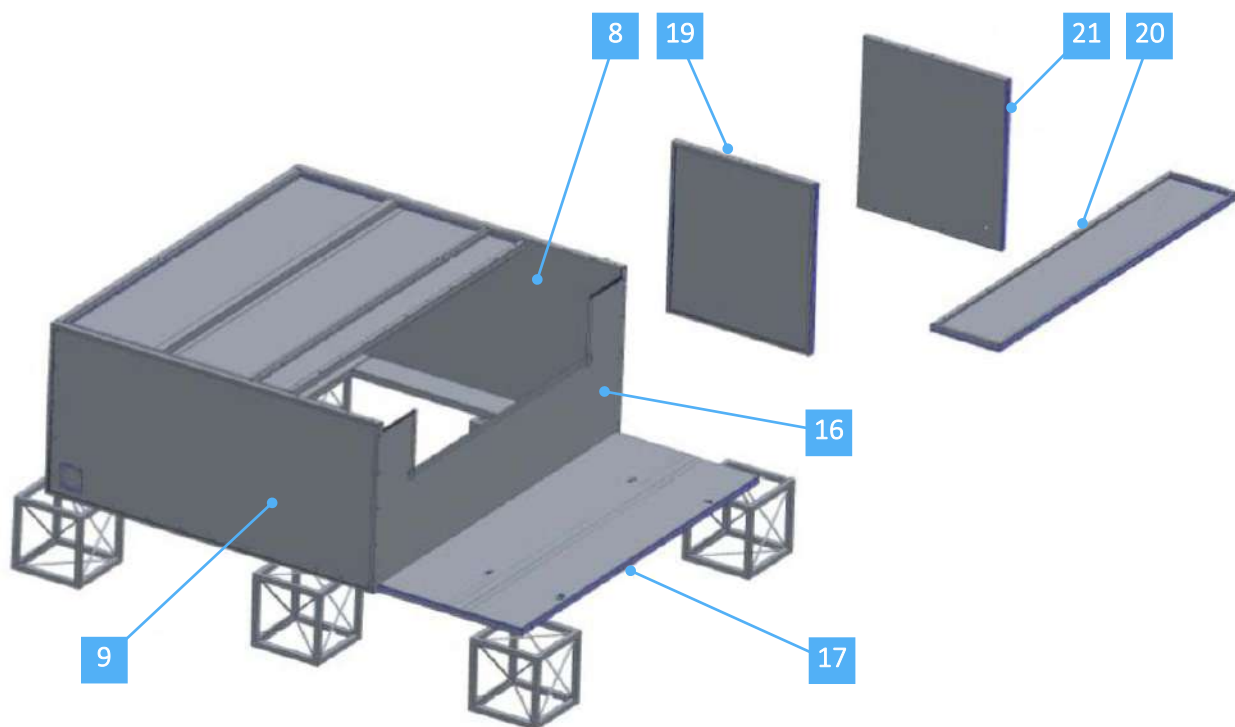


Fig. 17 Installation sequence - Step 7

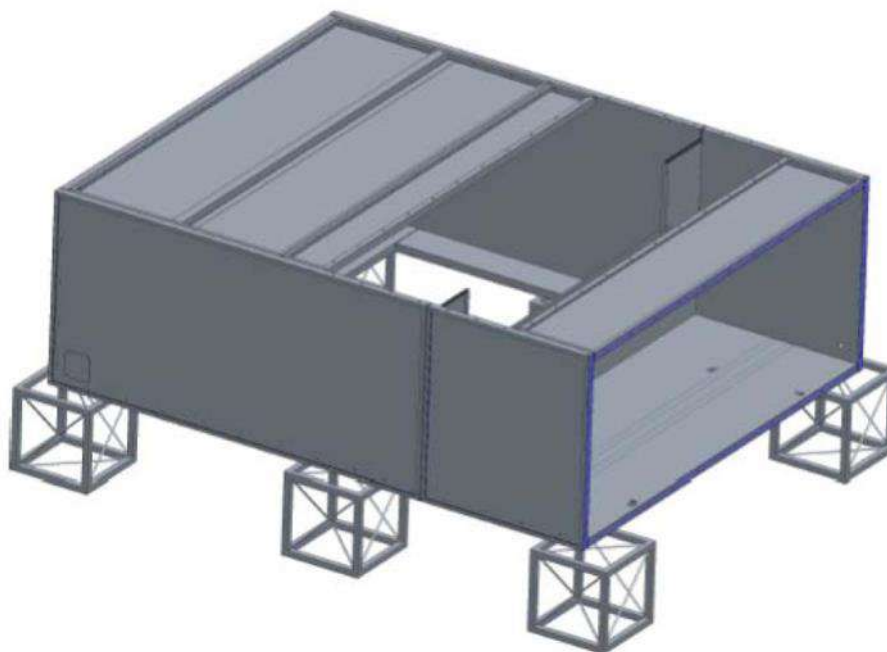


Fig. 18 Installation sequence - Step 7

6.2.8 STEP 8

Align the vertical dividing panel [23] (PN 73-00023-01) with the vertical panel holes ([19], [21]) and with the lower panels ([17], [20]). Take great care not to damage the strips of pre-stressed steel wire on the edge of the window. The folded edges of the vertical divider [23] (PN 73-00023-01) must be inserted inside the already assembled panels, i.e. towards the CoeLux® panel aperture.

Check the lip seals are present on both sides facing downwards.

Use the screws and M8 nuts supplied to assemble one of the two panels [24] (PN 73-00024-01) and fasten it on to the lower horizontal panel [17].

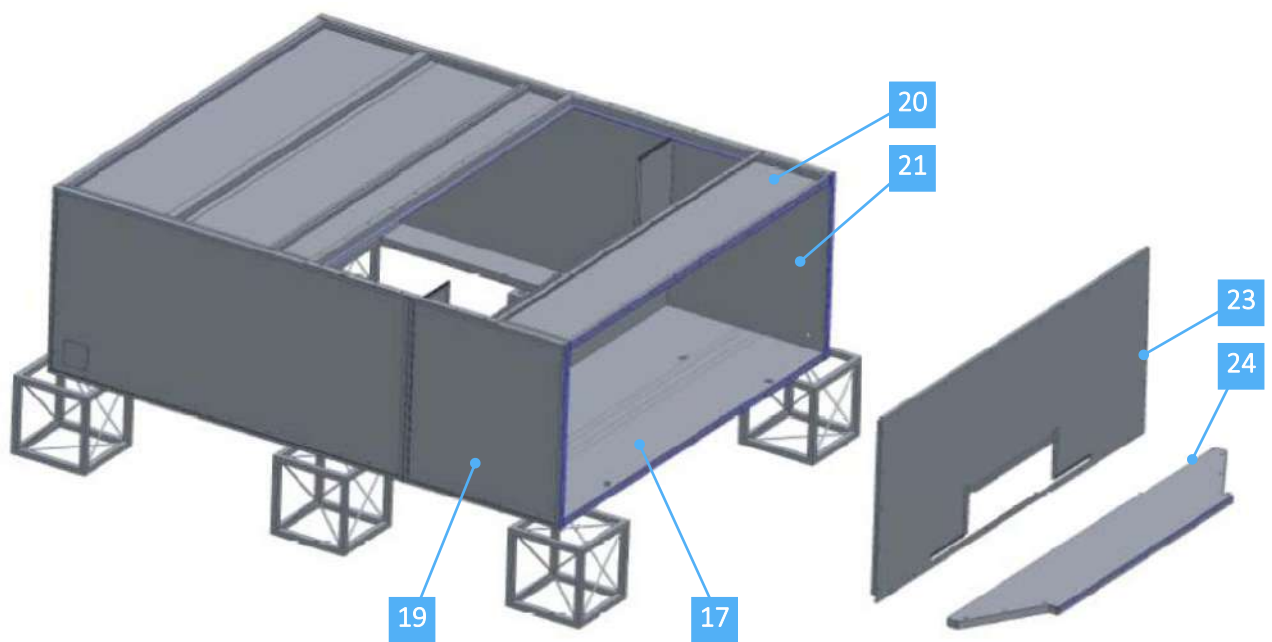


Fig. 19 Installation sequence - Step 8

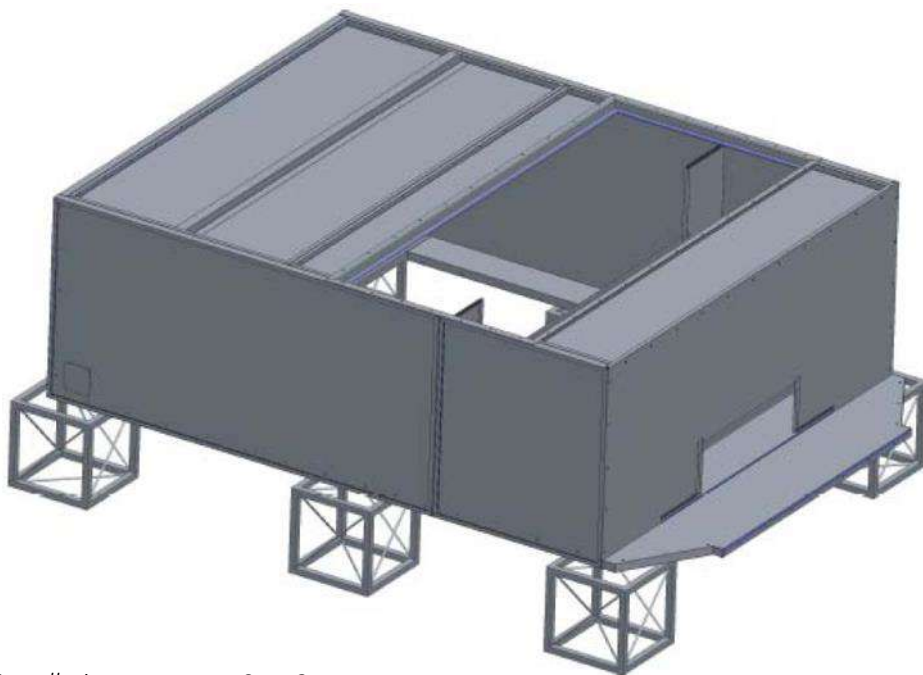


Fig. 20 Installation sequence - Step 8

6.2.9 STEP 9

Use the screws and M8 nuts supplied to assemble one of the two vertical panels [25] (PN 73-00025-01) and fasten it on to the lower horizontal panel [24] (PN 73-00024-01) and to the vertical panel [19]. Use the screws and M8 nuts supplied to assemble the other vertical panel [25] (PN 73-00025-01) and fasten it on to the lower horizontal panel [24] (PN 73-00024-01) and to the vertical panel [21]. Use the screws and M8 nuts supplied to assemble the other panel [24] (PN 73-00024-01) and fasten it on to the two vertical panels [25] (PN 73-00025-01) and to the upper horizontal panel [20].

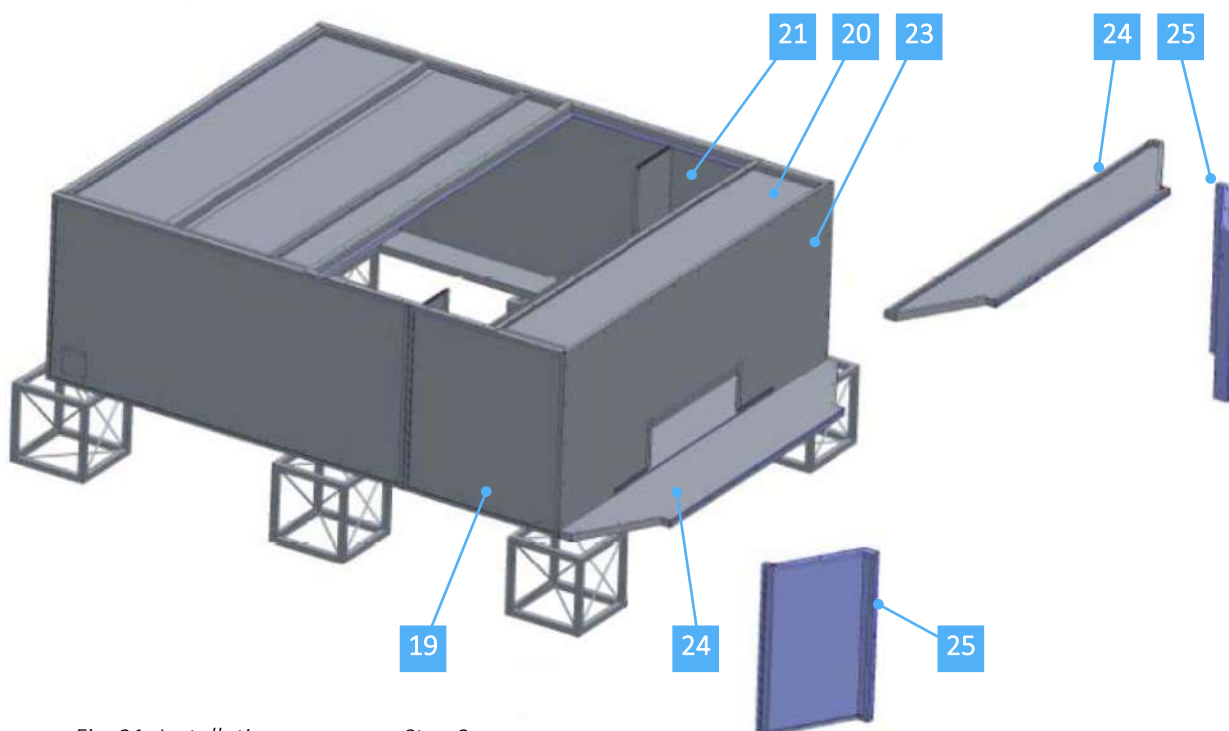


Fig. 21 Installation sequence - Step 9

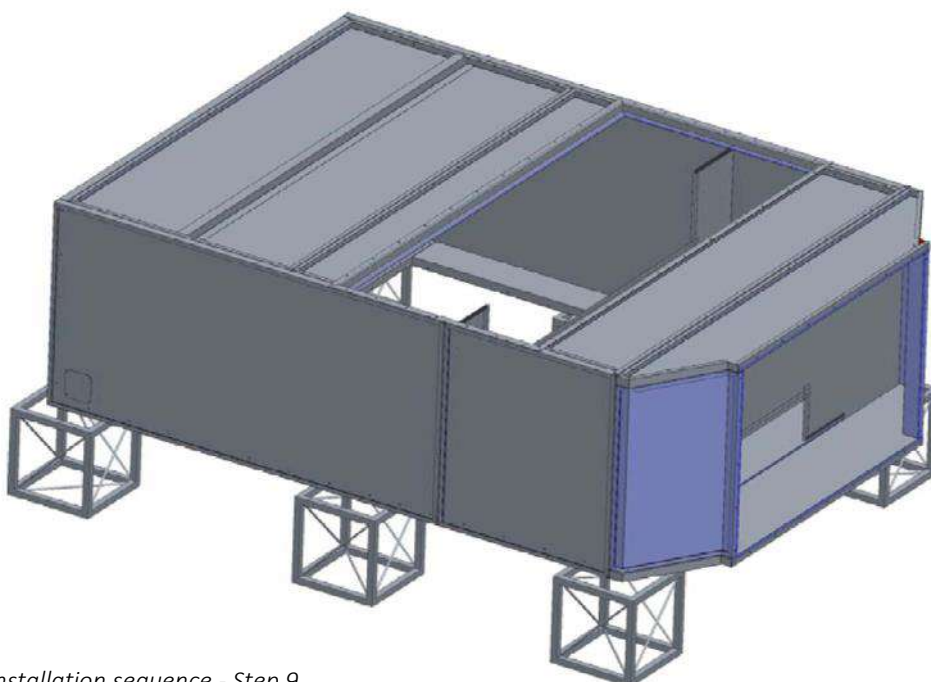


Fig. 22 Installation sequence - Step 9

6.2.10 STEP 10: assembly of small mirror

Open the wooden box containing the mirrors: always wear the cotton gloves provided in the cleaning kit to handle the mirrors.

Then, mask the entire perimeter of the small mirror [28] (PN 03-00002-01) by gluing the black insulation tape over the bevelled edge as shown in Figure 24.

Analyse the surface and proceed as shown in Figure 23. The detailed procedure is described in paragraph 10.2.

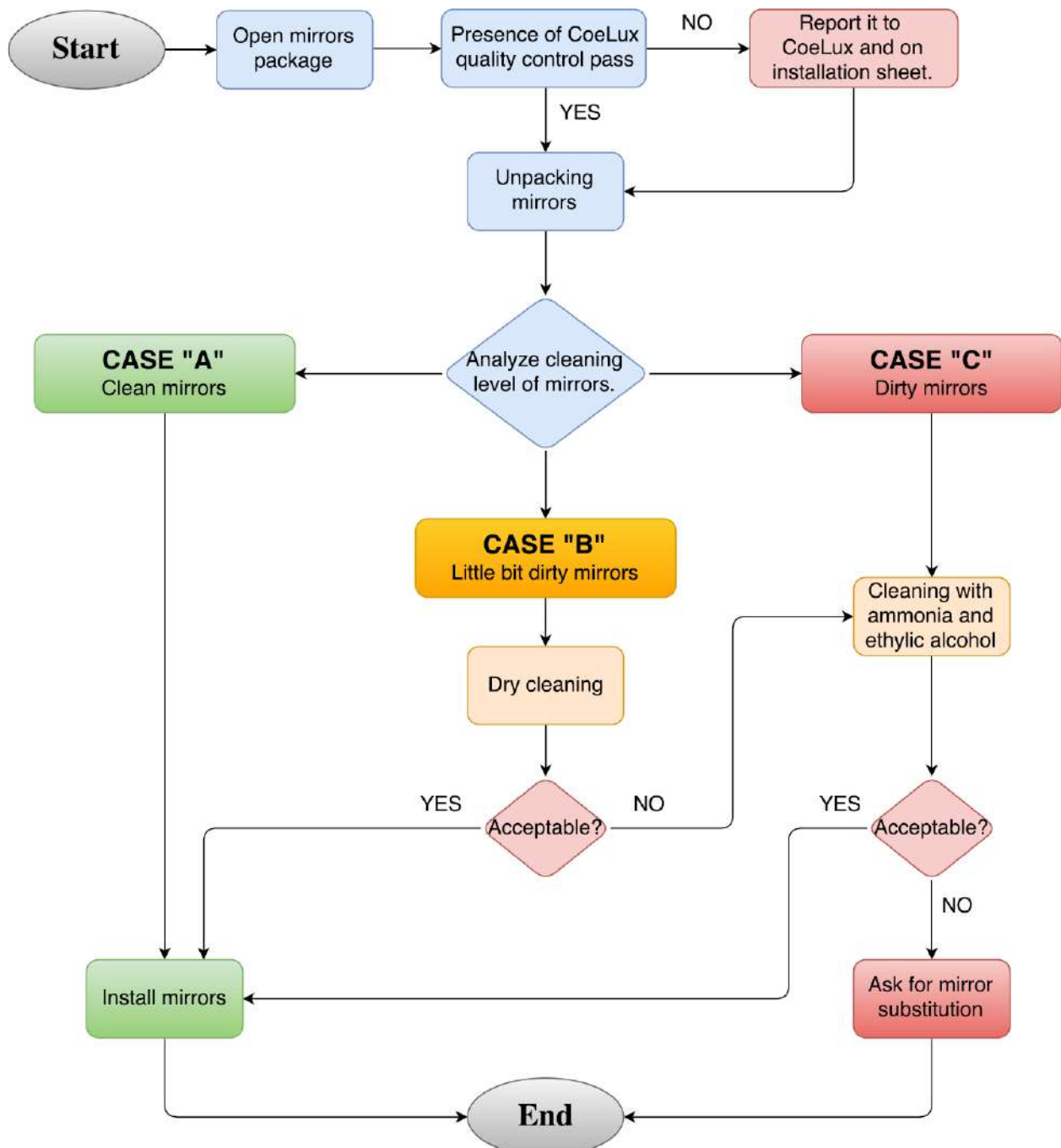


Fig. 23 Flow chart procedure, analysis and extraordinary cleaning of the mirrors



Fig. 24 Application of black insulation tape along the edge of the small mirror

When you have finished cleaning, slot the small mirror [28] (PN 03-00002-01) in the opening prepared on the vertical dividing panel [23] with the reflecting part facing upwards, until it clicks into place.

Check the mirror is stable and does not rotate vertically.

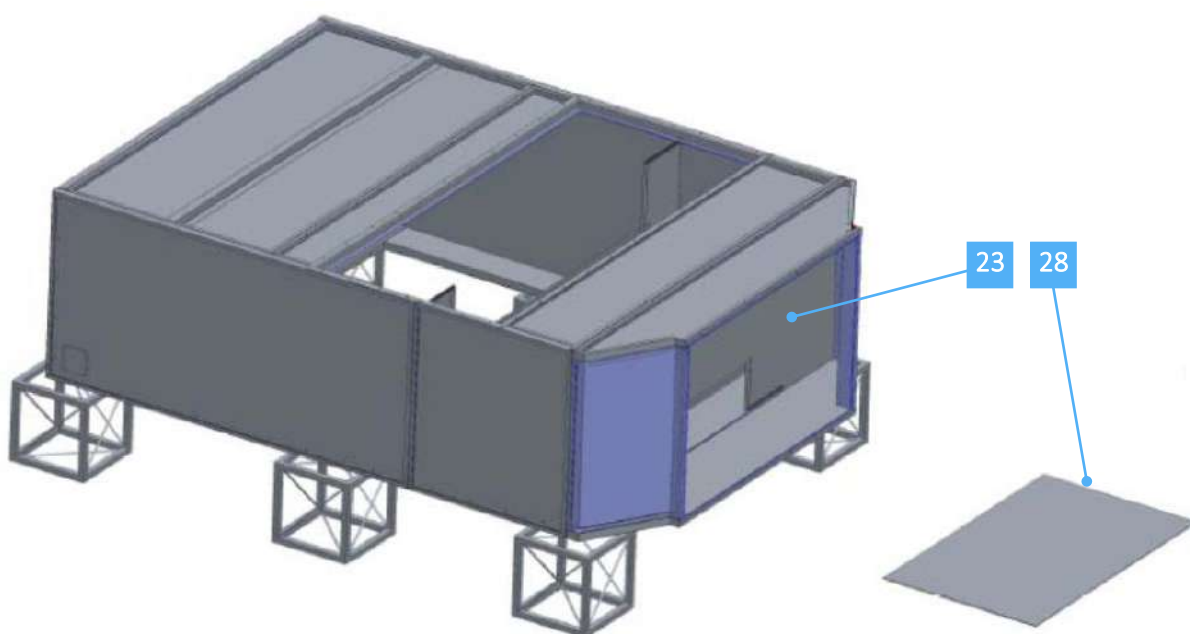


Fig. 25 Installation sequence - Step 10

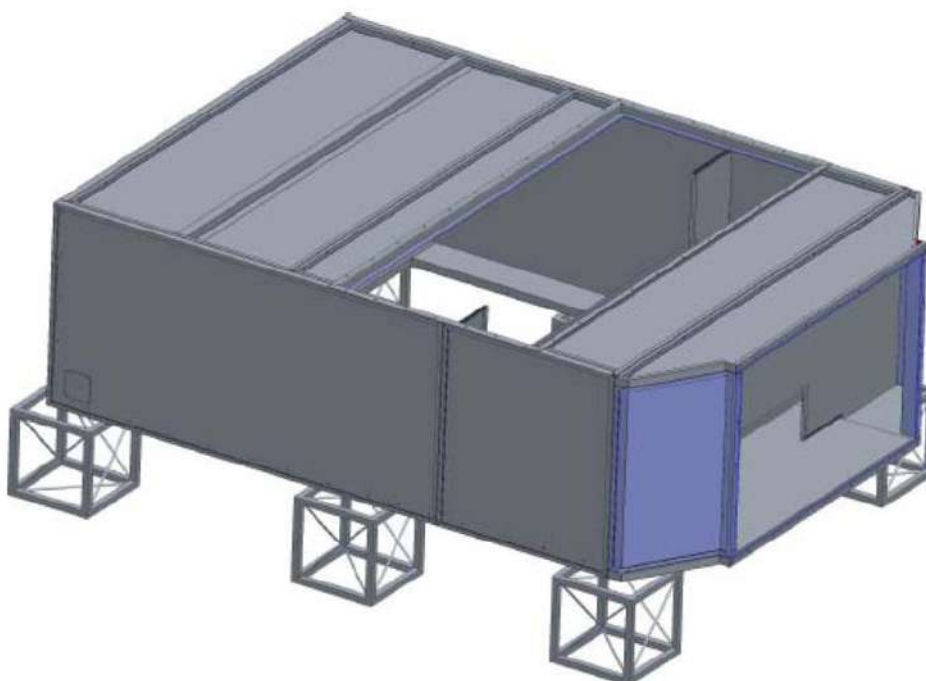


Fig. 26 Installation sequence - Step 10

6.2.11 STEP 11: assembly of large mirror

Now, clean the large upper mirror [32] (PN 03-00003-01), as shown in Figure 23: always wear the cotton gloves provided in the cleaning kit to handle the mirror.

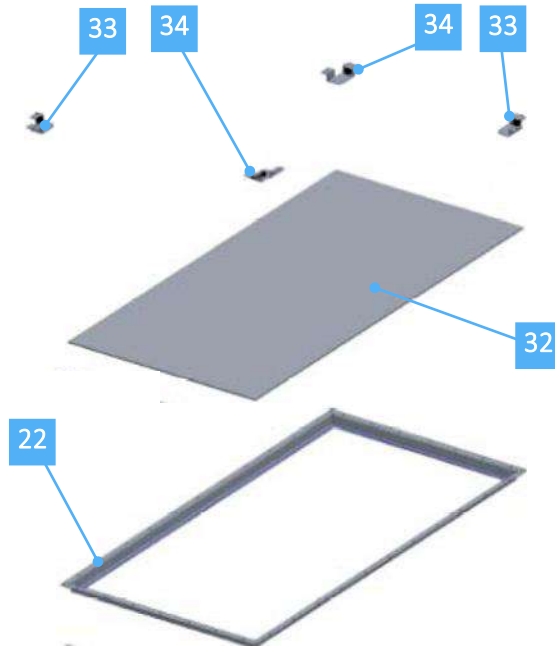


Fig. 27 Installation sequence - Step 11

Then, use the suction cups to place the large upper mirror [32] (PN 03-00003-01) inside the frame [22] (the reflecting part must face towards the inside of the box) and use the M8 screws and nuts supplied to fasten it with the 4 brackets ([33] (PN 73-00033-01), [34] (PN 73-00034-01)) (Figure 27).

Use the screws and M8 nuts supplied to assemble the frame with the mirror [22 bis] and fasten it on to the vertical panels ([8], [9], [19], [21]) and to the upper panels ([14], [20]) (Figure 28).

Once you have assembled the mirror, place the foam mat supplied to protect the mirror into position and take care not to drop anything on top of it.

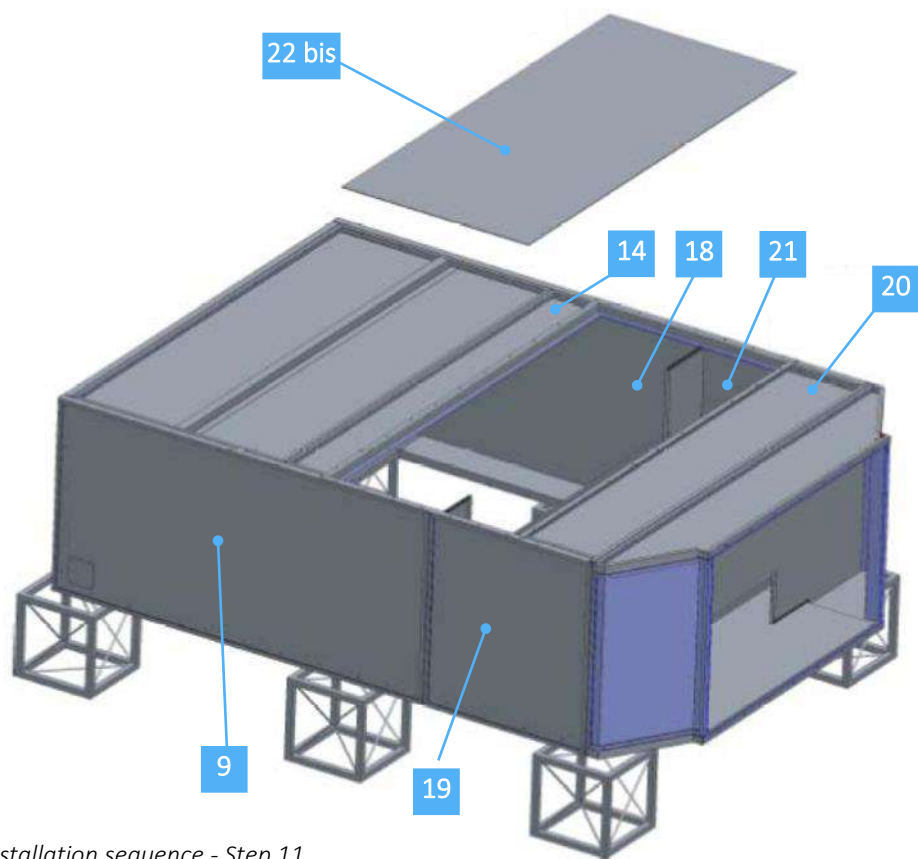


Fig. 28 Installation sequence - Step 11

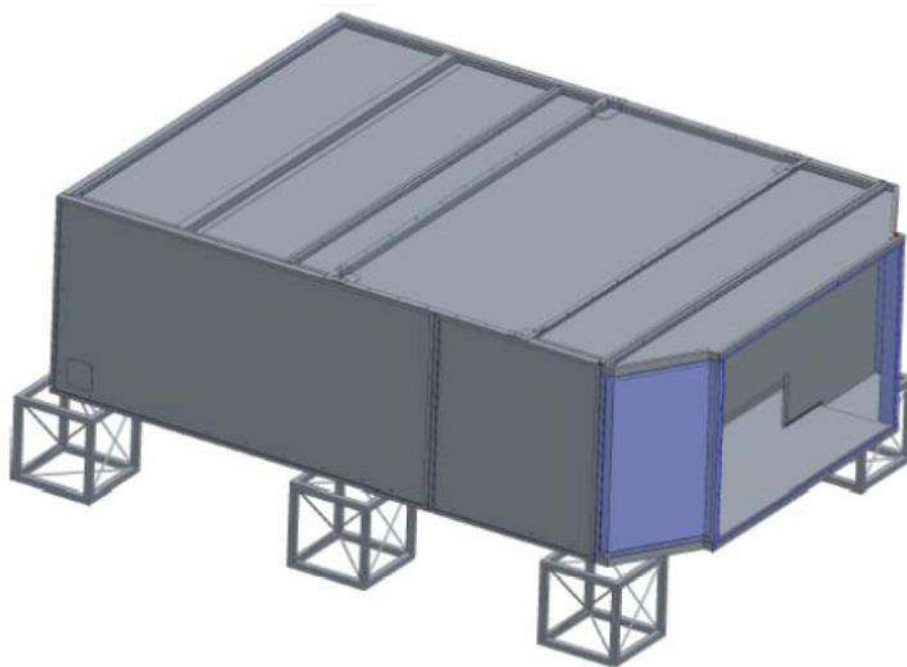


Fig. 29 Installation sequence - Step 11

6.2.12 STEP 12: assembly of projector sub-group

Use the screws and M8 nuts supplied to assemble the vertical, triangular panels [30] and [31] and fasten them to the upper panel [29] (PN 73-00029-01).

Use the screws and M8 nuts supplied to assemble the lower panel [37] (PN 73-00037-01) and fasten it on to the two vertical, triangular panels [30] and [31] and to the upper panel [29] (PN 73-00029-01).

Use the M6 screws supplied to assemble the closing caps [10] (PN 73-00010-01).

Use the M6 screws supplied to assemble the pieces of the compartment, which will contain the silica-gel ([38] (PN 73-00038-01), [39] (PN 73-00039-01), [40] (PN 73-00040-01)). Then, join it with the lower panel of the prism [37] (PN 73-00037-01). Wait for *step 15* before assembling the lid [41] (PN 73-00041-01).

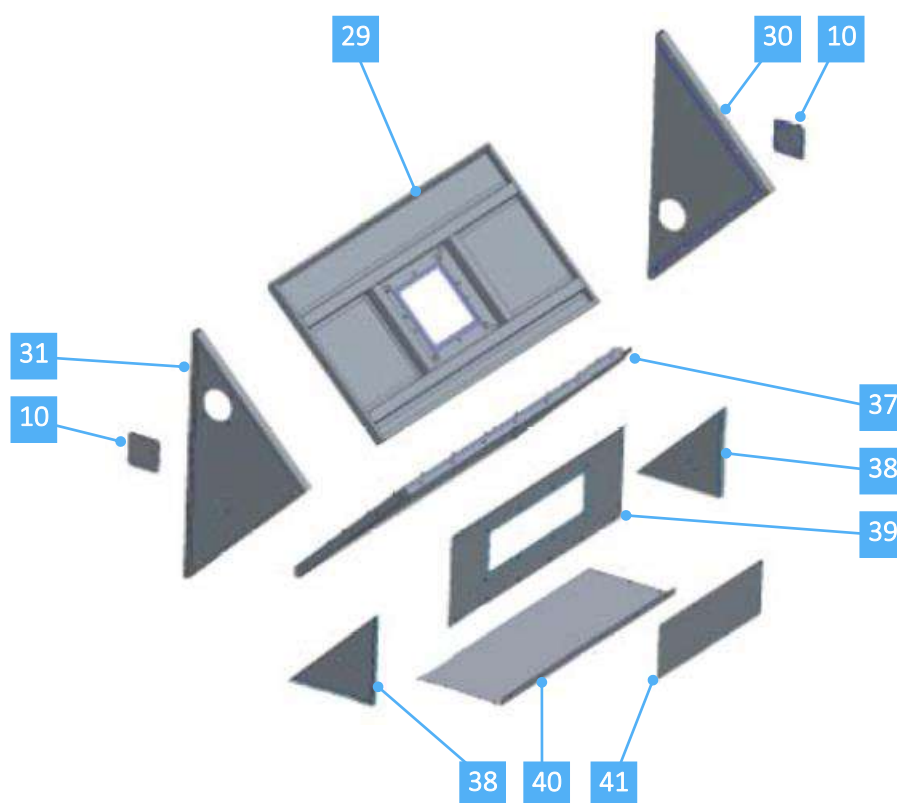


Fig. 30 Installation sequence - Step 12

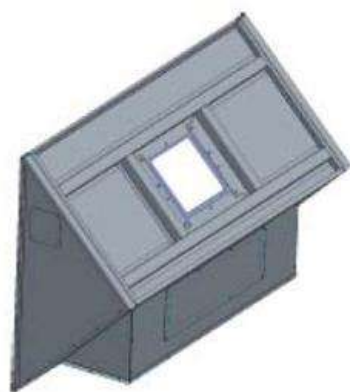


Fig. 31 Installation sequence - Step 12

6.2.13 STEP 13

Use the screws and M8 nuts supplied to fasten the sub-group assembled in **Step 12** to the main body.

When you open the latter, make sure all the elements are correctly aligned and no object or dirt is visible along the optical path.

If necessary, disassemble the problematic part and correct the problem.

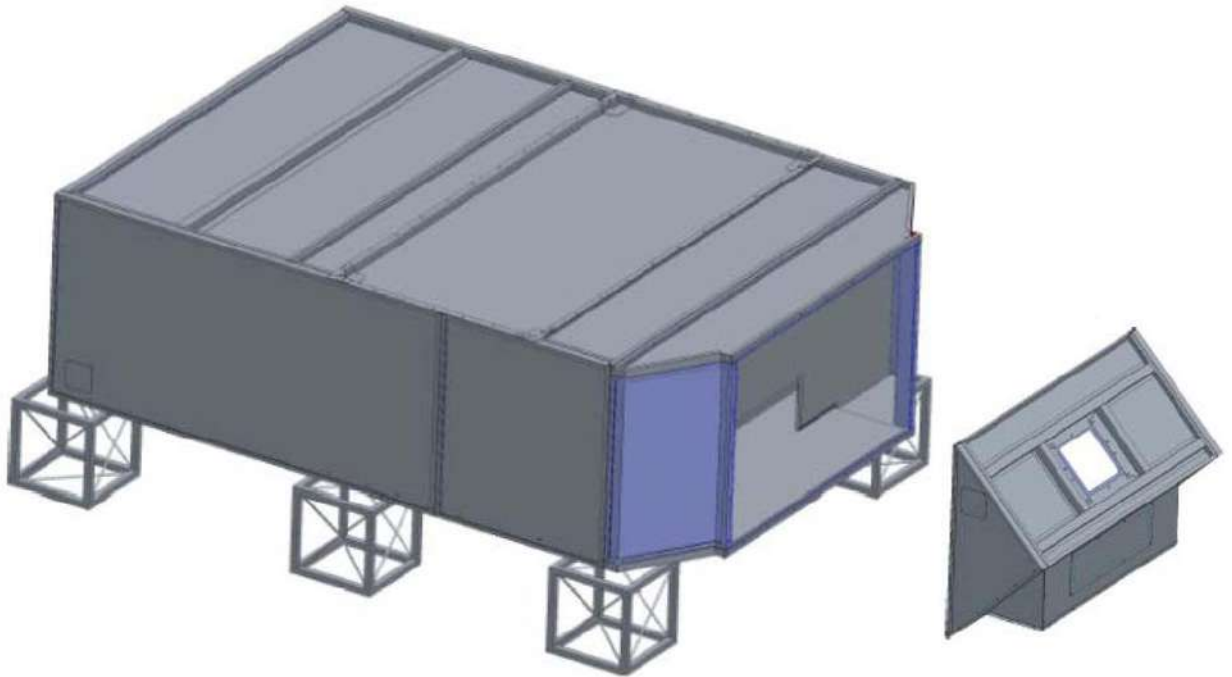


Fig. 32 *Installation sequence - Step 13*

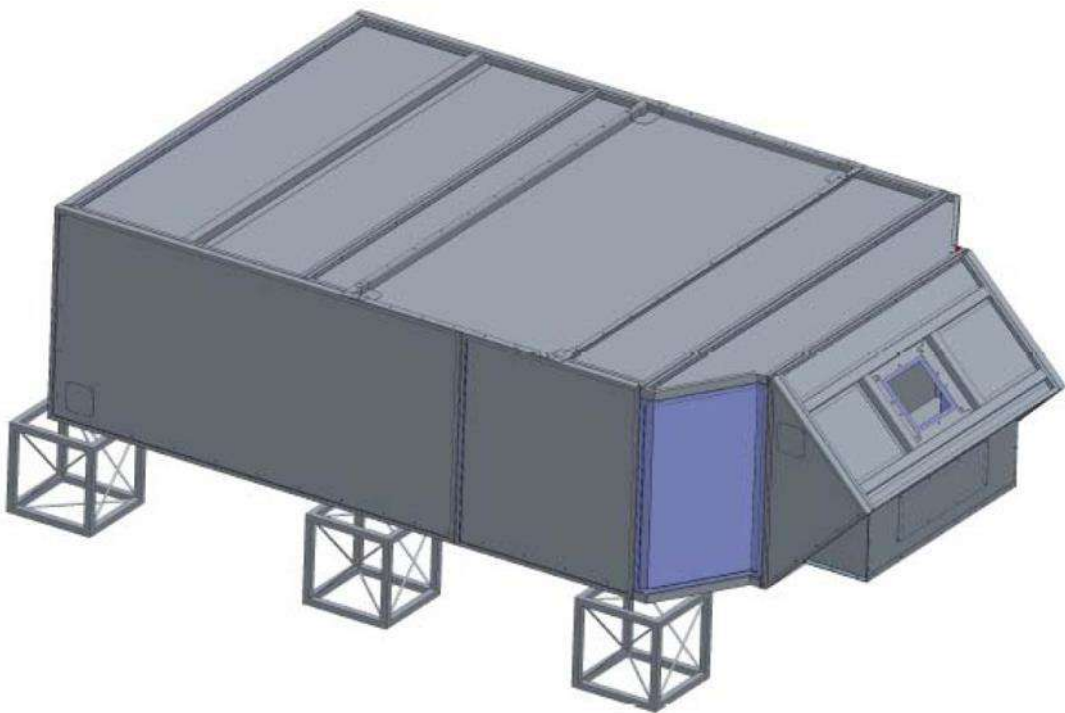


Fig. 33 *Installation sequence - Step 13*

6.2.14 STEP 14A: installation of projector 74-00013-01

Take the LED projector [36A] (PN 74-00013-01) out of its packaging box and use the four M6 screws supplied to fasten it to the fastening frame [35] (PN 73-00035-01).

Use ALL 8 M6 screws supplied to fasten this sub-group to the tilted panel [29] (make sure the power supply inlet on the rear side is at the bottom).

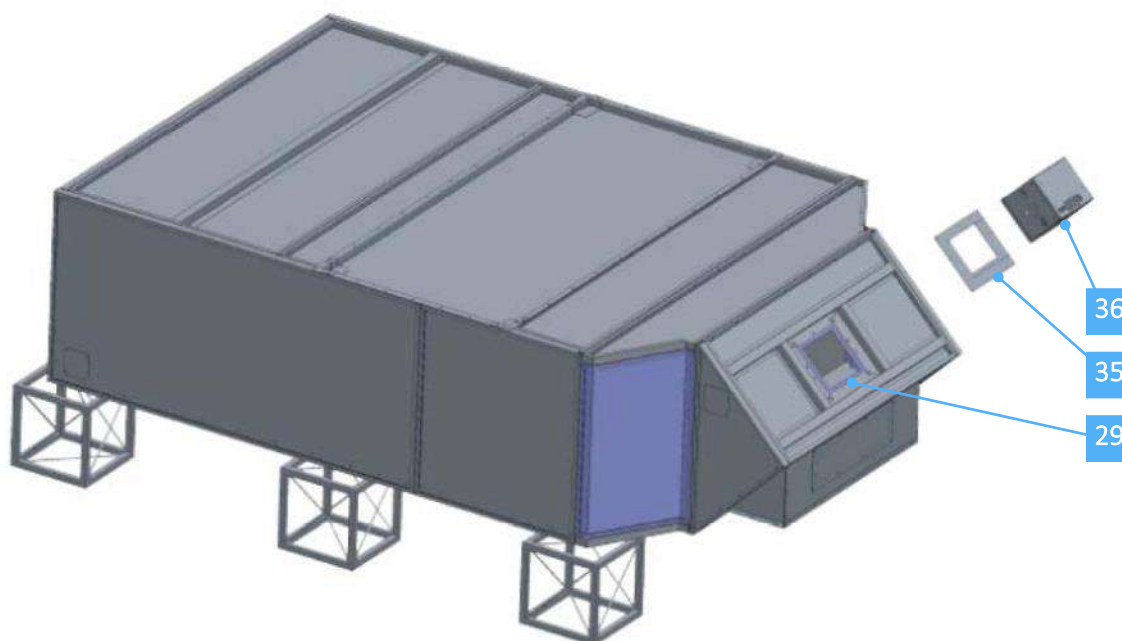


Fig. 34 Installation sequence - Step 14A

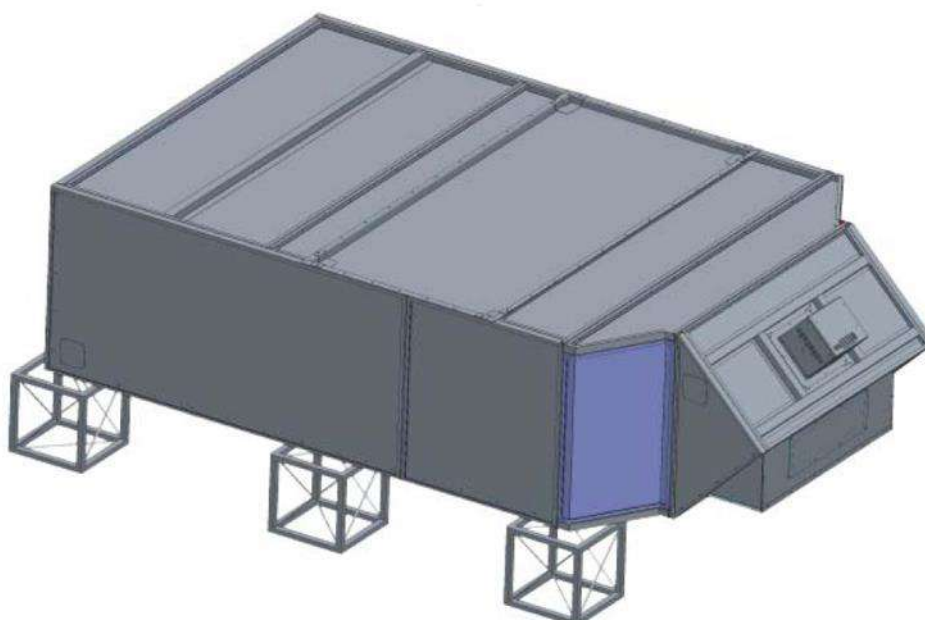


Fig. 35 Installation sequence - Step 14A

6.2.14.1 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.

6.2.14.2 MODIFICATION OF STEP 14A

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.

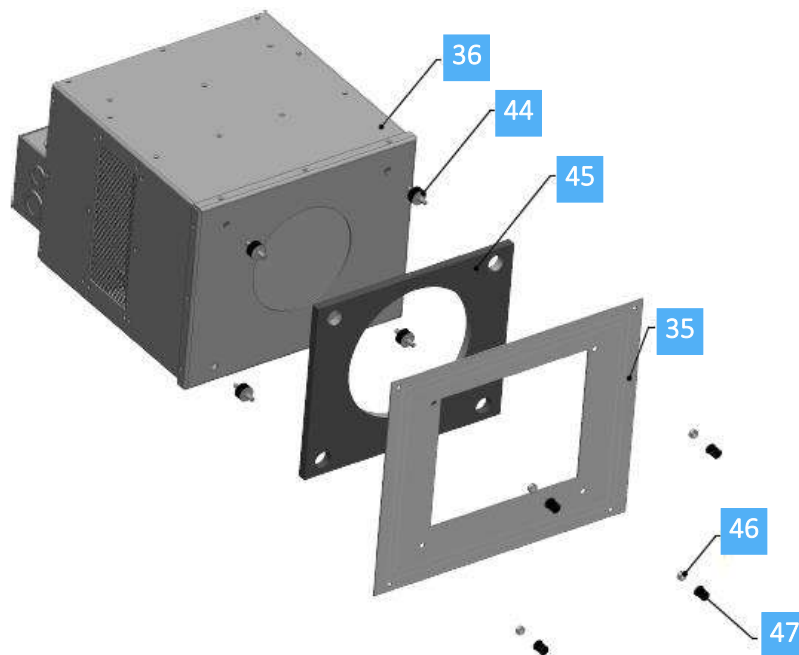


Fig. 36 Installation of the ventilation kit

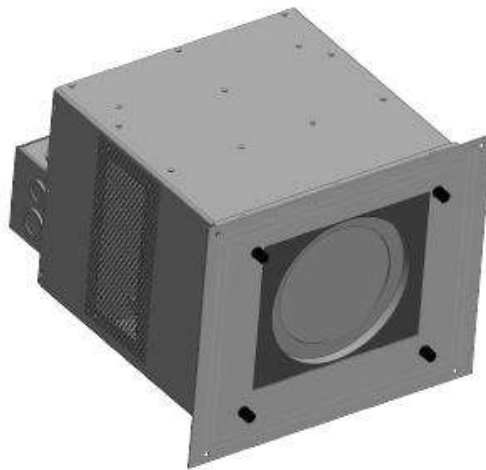


Fig. 37 *Installation of the ventilation kit*

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.

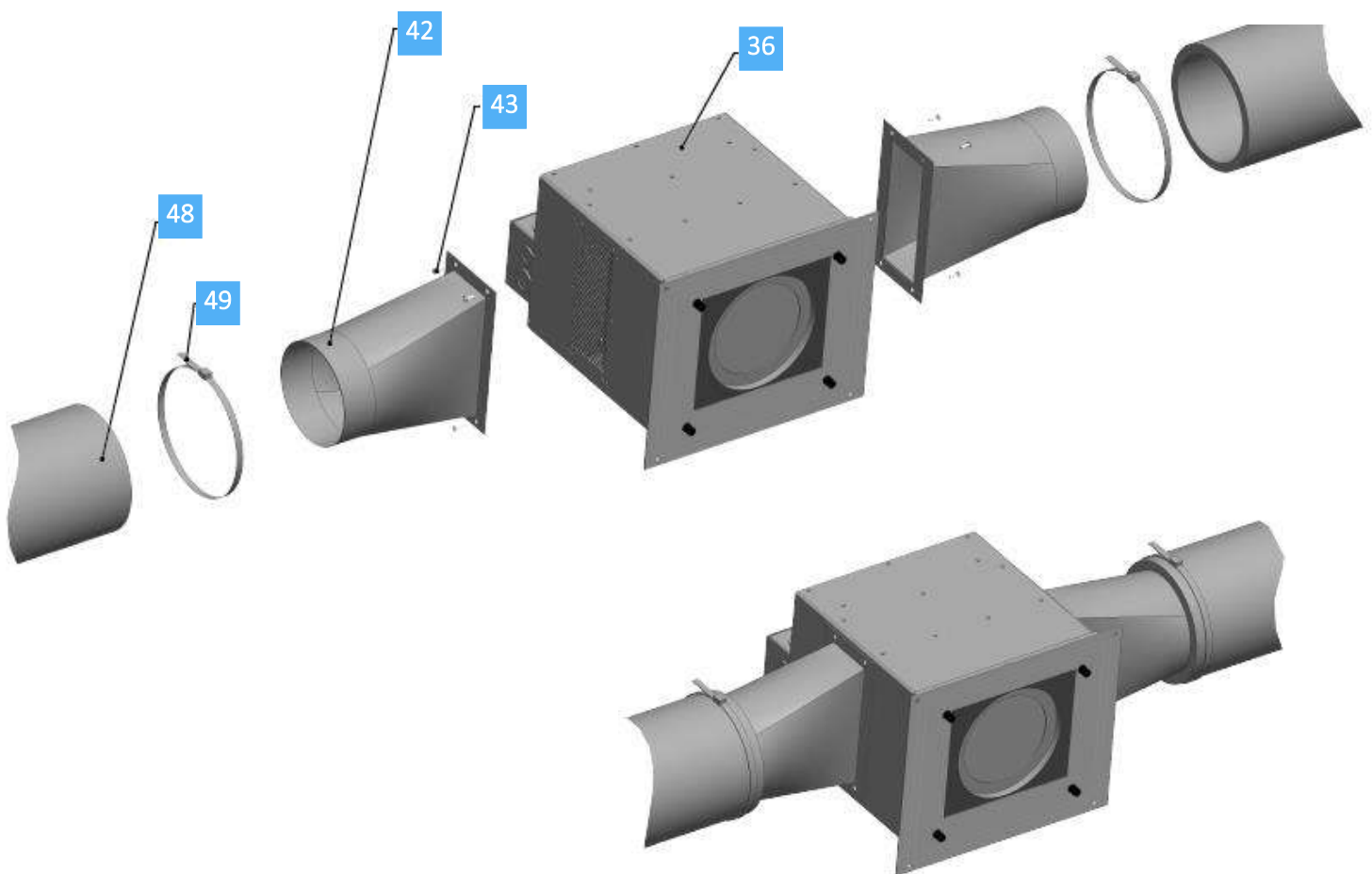


Fig. 38 *Installation of the ventilation kit*

6.2.14.3 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 39).
- 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 40.
- D. Insert the external power supply cables into the cable gland.
- E. Take out the rubber cable glands from the branching terminal board (Figure 41): 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 42: 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 43) and shut it again.

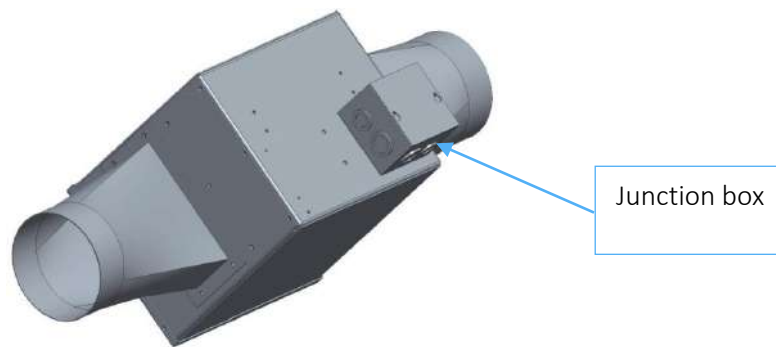


Fig. 39 Rear view of the projector 74-00013-01

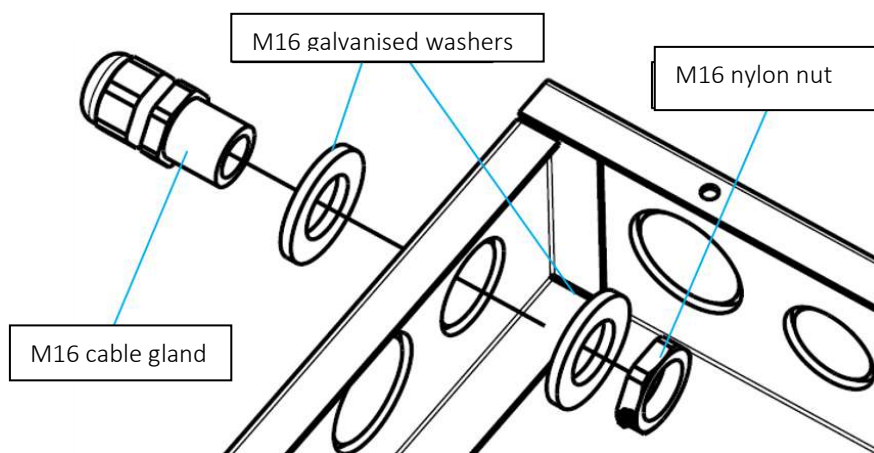


Fig. 40 Cable gland installation diagram

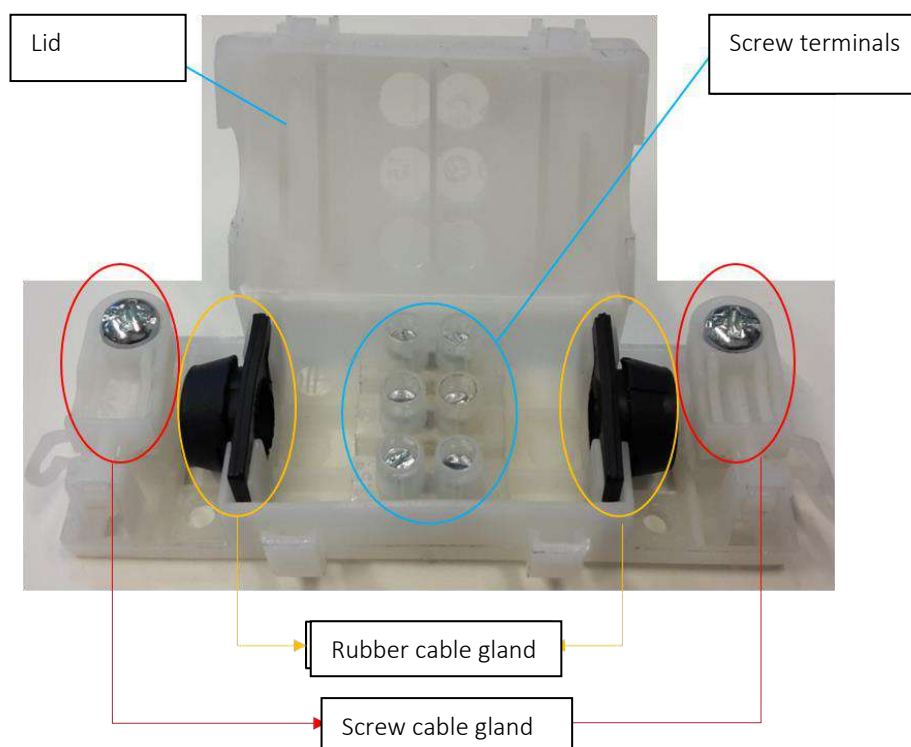


Fig. 41 Branching terminal board to connect the mains supply cables

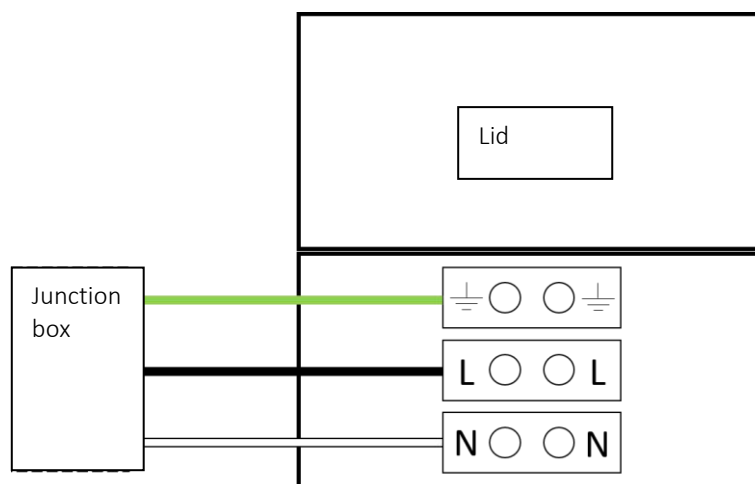


Fig. 42 Sketch to show an example of the terminal board supplied



Fig. 43 Completed electrical connections to the projector 74-00013-01

6.2.15 STEP 14B: 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 46) to install the projector directly on to the tilted panel [29] (Figures 44 and 45). Then, fasten it with the 4 M6 captive screws [51] on to 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 45).

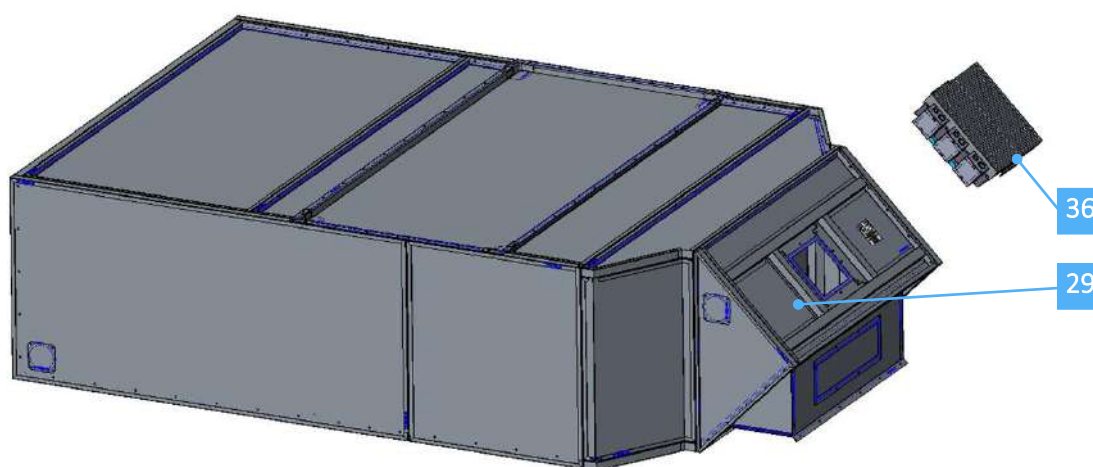


Fig. 44 Installation sequence - Step 14B

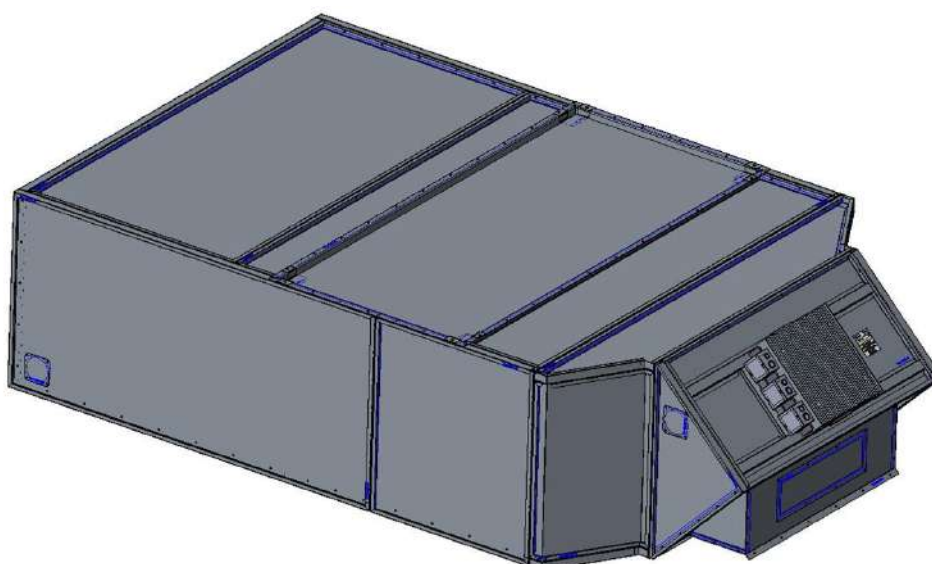


Fig. 45 Installation sequence - Step 14B

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 46) to install the projector group on to the tilted panel [29] (Figures 44 and 45). 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 45).

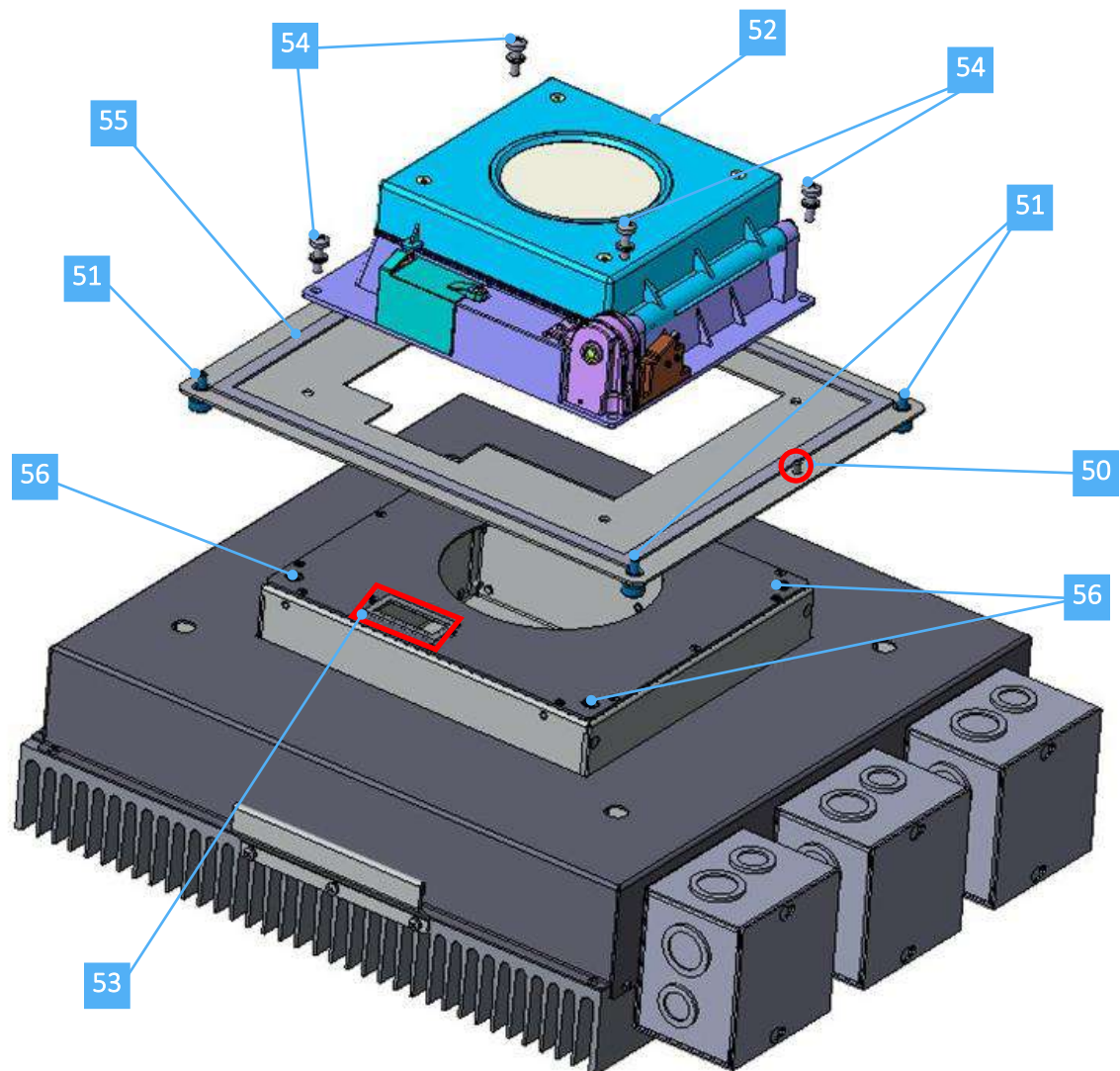


Fig. 46 Installation sequence - Step 14B, OPTION 2

6.2.15.1 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

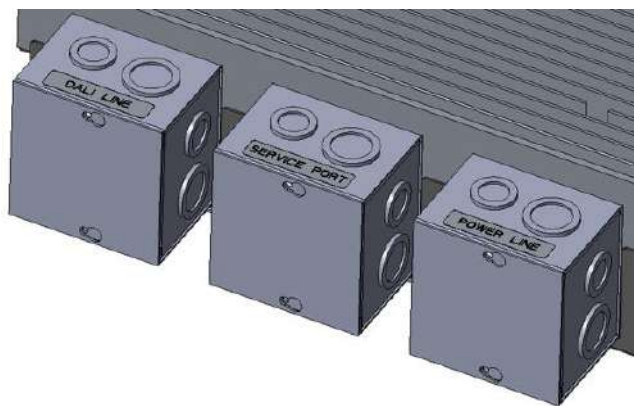


Fig. 47 Rear of the projector 74-00062-01/74-00063-01

- A. Open the lid of the junction box with the “POWER LINE” label (Figure 47).
- 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 40.
- D. Insert the external power supply cables into the cable gland and fasten them to the terminal board inside the junction box (Figure 48).
- 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 47).

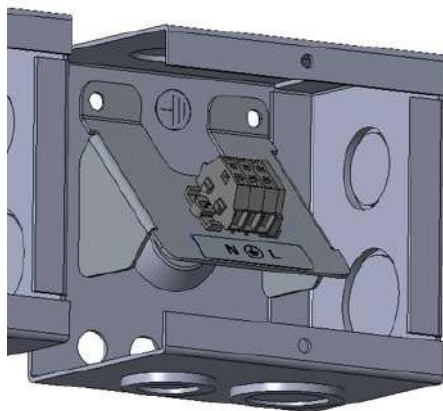


Fig. 48 Power supply terminal board inside the junction box

6.2.16 STEP 15

Then, take the bag containing the silica-gel, open it and insert the 18 little bags inside the compartment below the projector (assembled in *step 12*). Now, close the door [41].

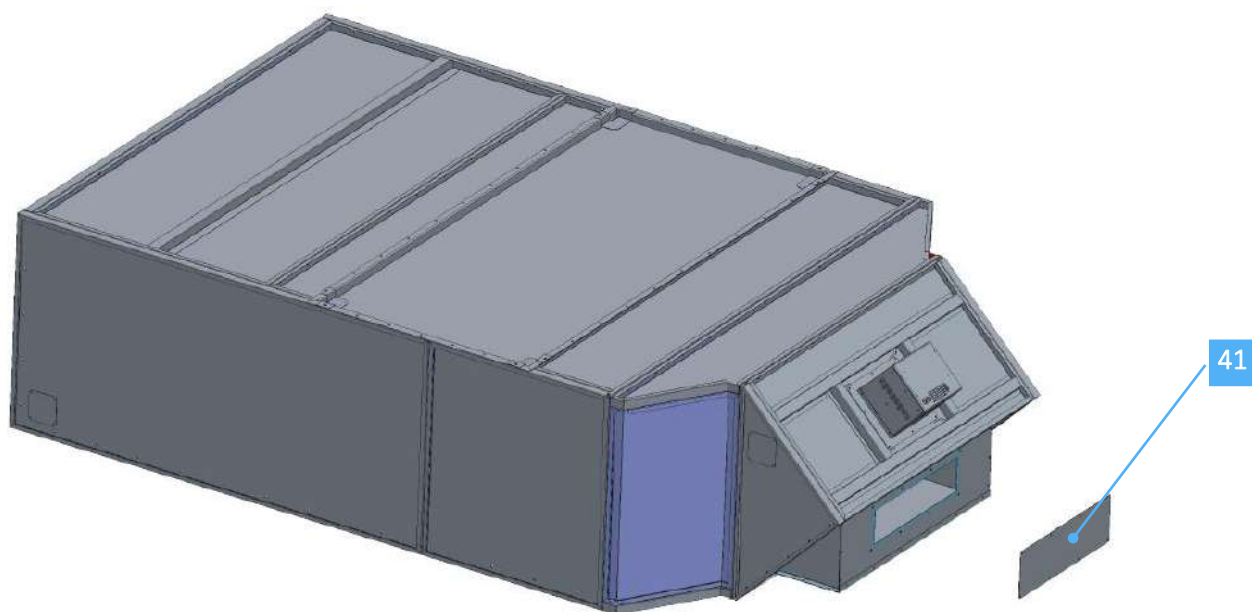


Fig. 49 Insertion and replacement of silica gel - Step 15

6.2.17 STEP 16: assembly of fixing kit

Use the M8 bolts supplied in the kit to fasten the 4 plates 73-00152-01 and the 2 horizontal tie rods 73-00155-01 (Figure 50).

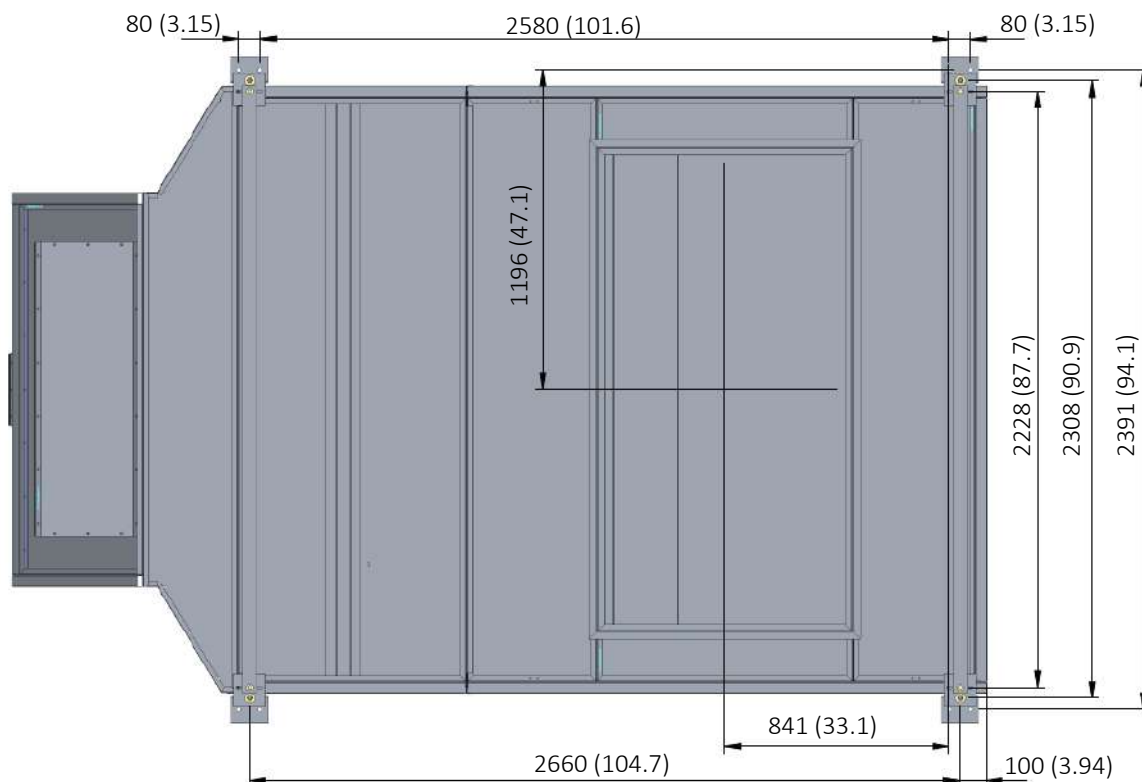


Fig. 50 Anchor system - View from below

6.2.18 STEP 17



WARNING!

You must never take or hang the box through the fold in the sheet metal! Take special care not to scratch the CoeLux® panel or break the mirrors when lifting and positioning.

Use adequate lifting systems for the work load (approximately 300 kg) to lift the 45 HC products. While it is being lifted, the box must rest on at least three different points. Make sure it is as horizontal as possible and is not subjected to sudden movements.

The resting points for lifting must be those marked with a blue icon with white writing ("Compliance with the lifting points is mandatory") in Figure 51.

Raise the equipment approximately 180 cm from the ground. Take the sub-group assembled in Step 3, remove the film from the top of the CoeLux® panel [6] and clean the surface in two stages: Stage 1 (wet): wet the entire surface thoroughly with a cotton cloth and the dust collector (both supplied in the cleaning kit).

Stage 2 (dry): use a dry cotton cloth to remove all the liquid and dry the surface. When you have completed these operations, pass another “dry” cloth before installing the CoeLux® panel. You may need to use more than one cotton cloth for this stage (all supplied in the cleaning kit).



Fig. 51 Lifting points for CoeLux® 45 HC

Use the screws and M8 nuts supplied to assemble the sub-group on to the lower panels ([1], ([2], [3], [4]) with the frame [5]. You must assemble from underneath. Therefore, remove the protective film from the bottom part of the CoeLux® panel [6] and clean it as shown in the appropriate section of the Chapter *Initial Cleaning*.

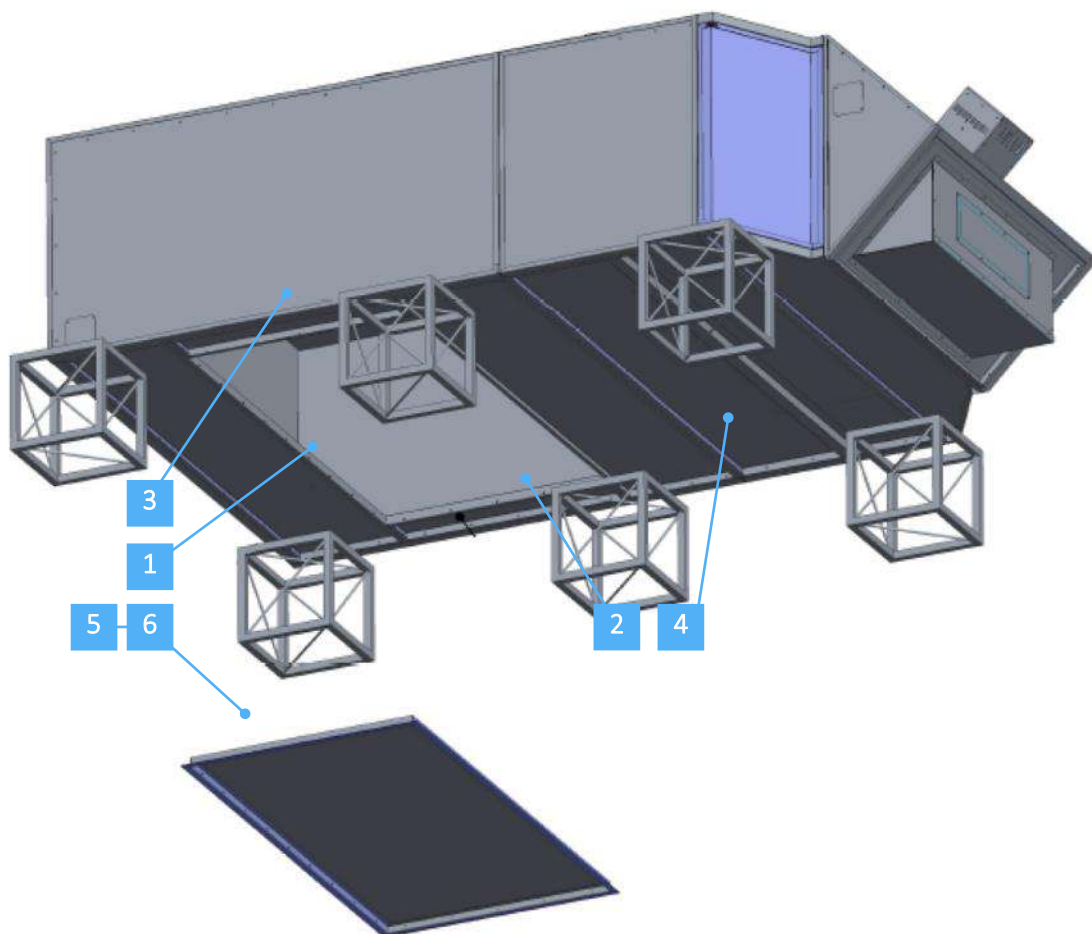


Fig. 52 Installation sequence - Step 17

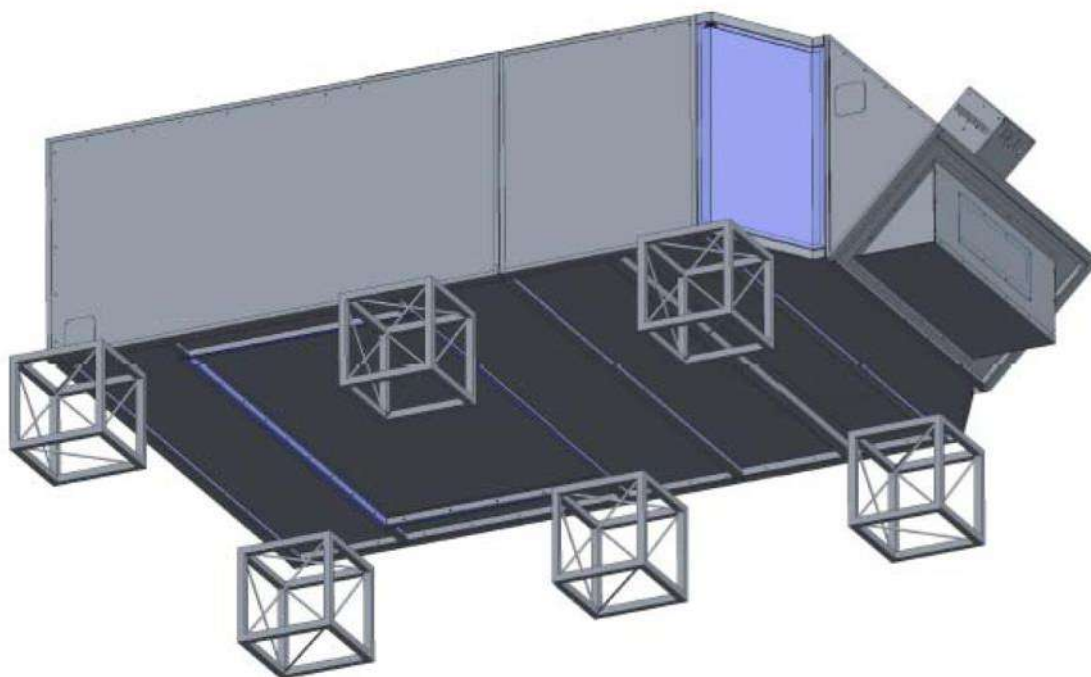


Fig. 53 Installation sequence - Step 17

6.2.19 STEP 18

Then, raise the entire apparatus so as to insert the threaded bars mounted on the ceiling (Paragraph 4.3) inside the special holes on the plates 73-00152-01 mounted on the dark-box (Fig. 54 and Fig. 55).

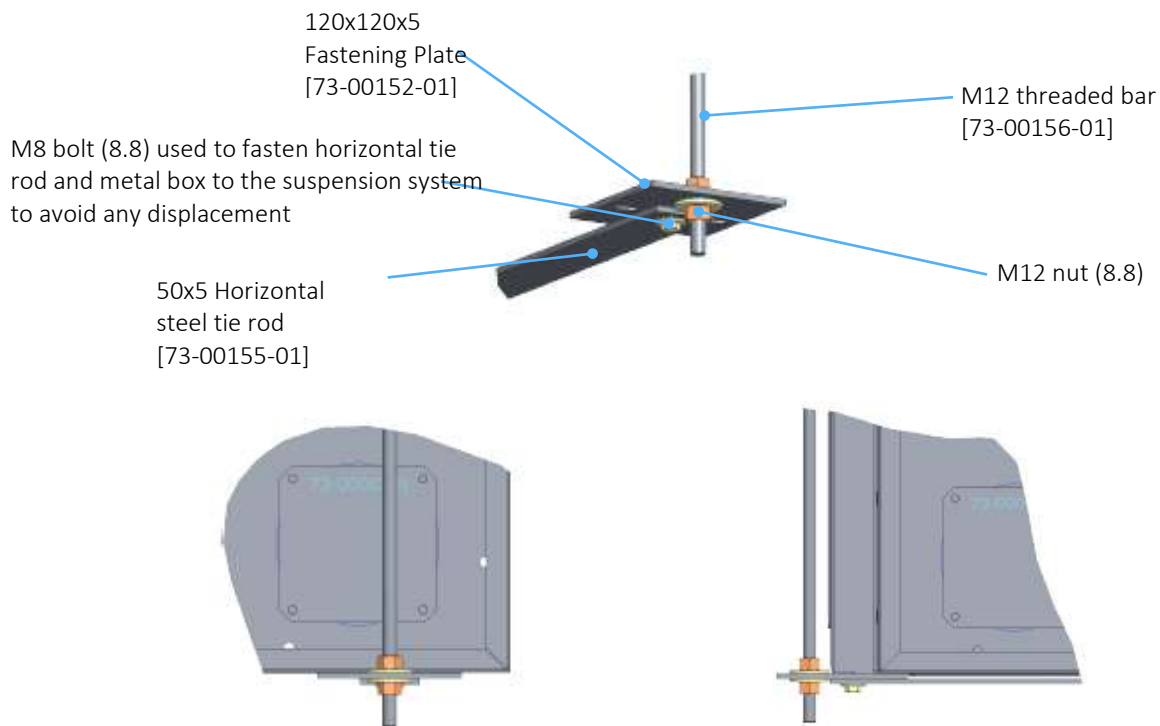


Fig. 54 Anchor system: fastening plates on the dark-box

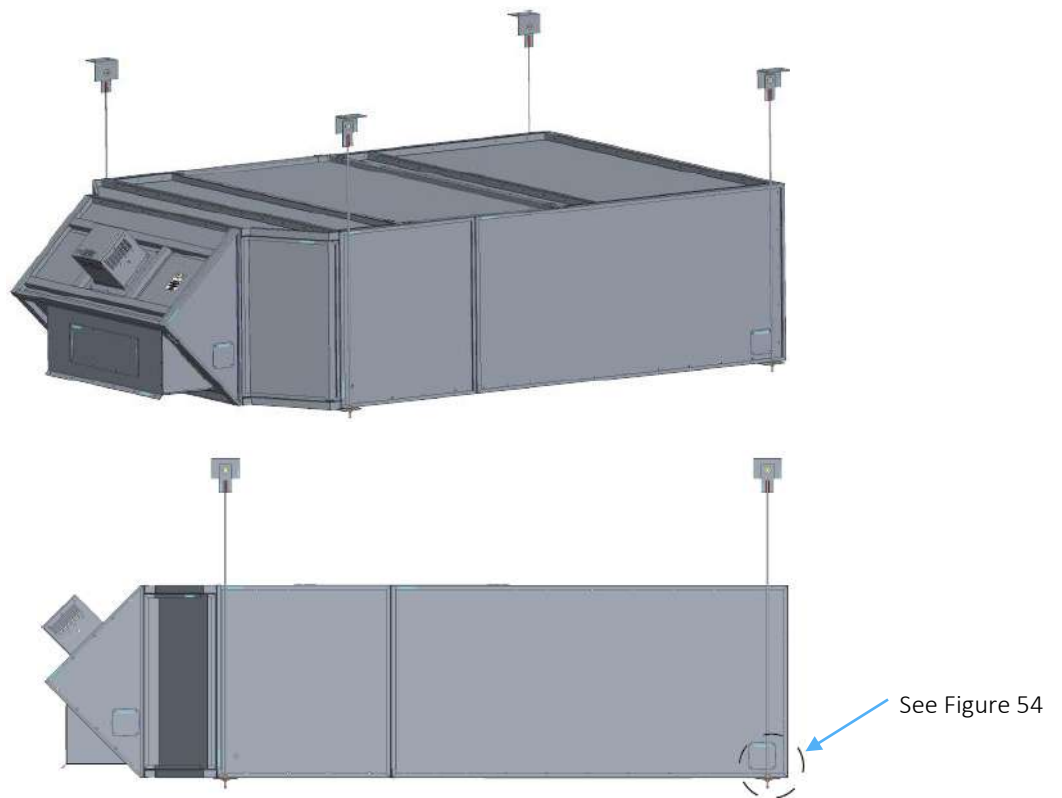


Fig. 55 *Recommended anchor system*

6.3 VENTILATION CONNECTIONS (ONLY FOR PROJECTOR 74-00013-01)



CAUTION:

You must connect the air manifolds and ventilation pipes if natural air recirculation in the false ceiling area around the projector is obstructed. This is mandatory for UL certified systems.

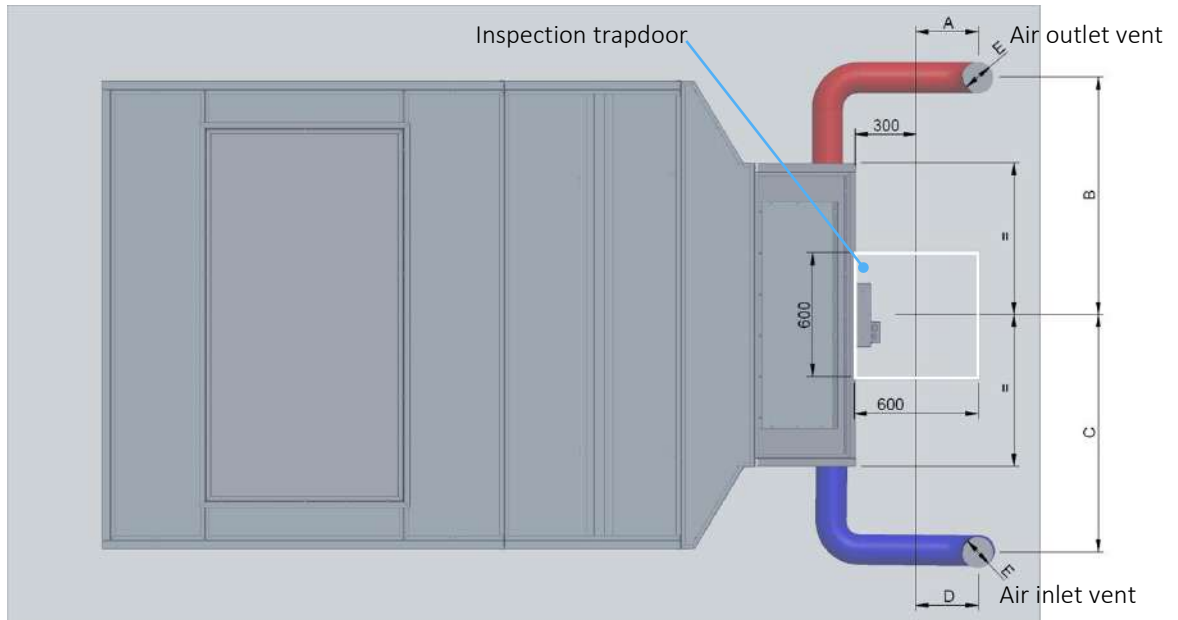


Fig. 56 Layout of the inspection trapdoor and ventilation system: view from below

Figures 56 and 57 show a solution for the layout of the ventilation pipes inside the false ceiling.



CAUTION:

The dimensions A, B, C and D are functional to the design of the room and can be calculated according to the architectural requirements. To guarantee the air flow required to operate the product correctly (air flow equal to 75 m³/h), the apertures E in the false ceiling must guarantee the minimum air flow required to cool the projector and must have a minimum diameter of 150 mm (the false ceiling vents are NOT supplied by CoeLux S.r.l.).

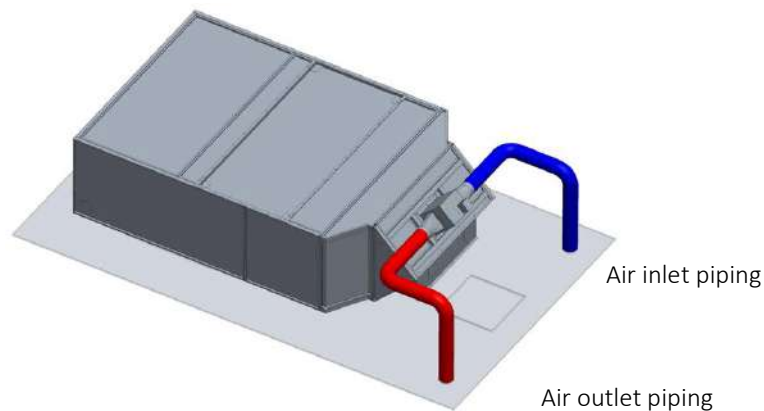


Fig. 57 Diagram of ventilation system connections: view from above.

6.4 SUPPORT MACHINES FOR INTERNAL AIR CONDITIONING

Under particularly difficult environmental conditions the 45 HC systems may be equipped with support machines for active, internal air conditioning of the dark-box, to ensure it operates perfectly.

The 45 HC systems were designed to be connected to a dehumidifier and to a pressurisation machine. CoeLux S.r.l. can supply this machinery and the parts required to connect them at the installer's request.

6.5 CHECKS

Once installation is complete, you must carry out some checks to ensure the equipment is working and enable any anomalies to be corrected.



WARNING!

To avoid being dazzled, do NOT look inside the window when the unit is being switched on.

Switch on the unit and visually check:

- the CoeLux® panel is in the correct horizontal position;
- for any objects, scratches, ring marks or dirt on the CoeLux® panel both inside and outside the box;
- for any scratches, ring marks, spots on the internal walls of the box and on the mirrors.

Also check:

- the mirror / divider seals adhere perfectly to the mirrors and no light trickles through the internal box walls.
- the strips of pre-stressed steel wire are taut and in the correct position;
- there are no dark areas on the CoeLux® panel;
- there is no light spill-over around the mirrors.

If necessary, take the box down and resolve the problem as described in the preceding paragraphs.

7 HOW TO OPERATE AND USE

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

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

WARNING!

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

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

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

CAUTION:

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

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

Once connected and switched on, the projectors 74-00062-01 and 74-00063-01 are preset to emit 100% of the permitted light intensity. It is, however, possible to control the light intensity (permitted range 50% - 100%) of the 45 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 6.2.15.1).

Some DALI parameters have been preset on the projectors:

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

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

7.1.1 THE MOON SCENARIO



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

The table below shows the preset scenarios:

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

Tab. 5 Versions of 45 HC systems

7.1.2 CONTROLLER


 A DALI controller is supplied with the moon module (74-00064-01) which, when connected to the system, allows you to control light intensity and the first four preset scenarios (scenes 1, 2, 3, 4 in the preceding table). To connect to the projector, follow the instructions given inside the controller packaging and those regarding the DALI connection in paragraph 6.2.15.1 in this manual.

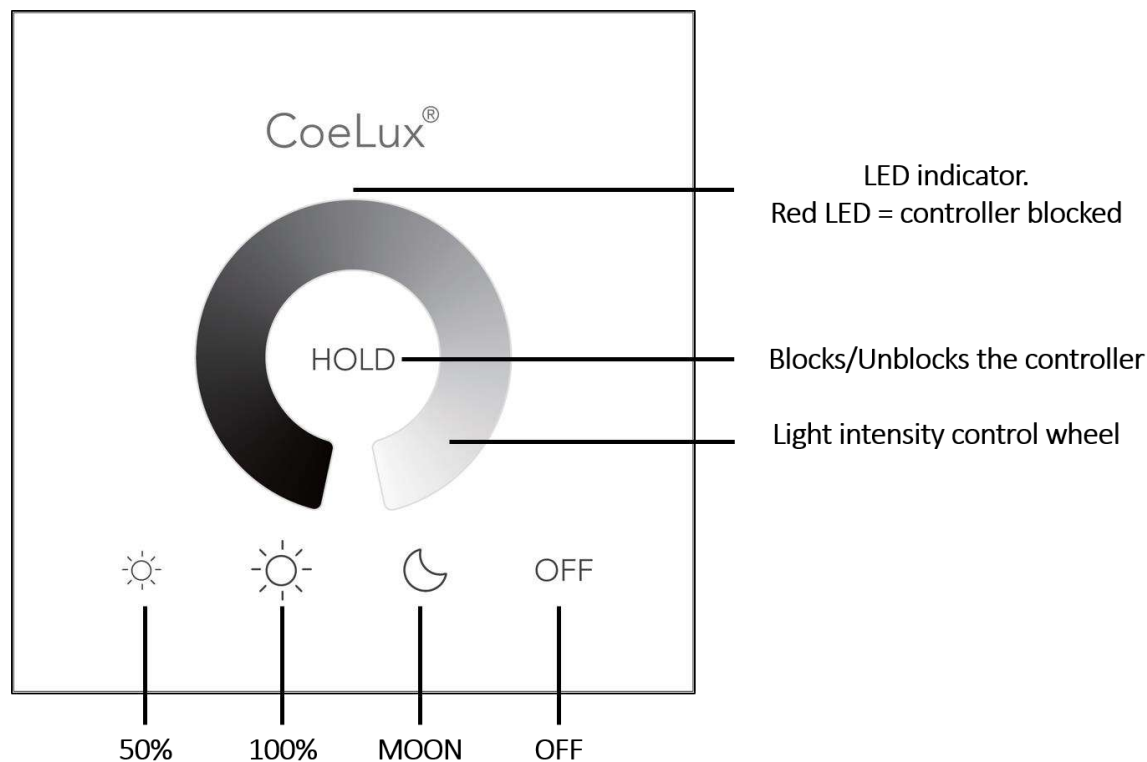


Fig. 58 Controller supplied with the product: front part

8 MAINTENANCE



WARNING!

- Before carrying out any regular servicing or extraordinary maintenance, you must switch off the unit from the mains power supply.
- Operators are reminded they must use all their personal protective equipment and comply with the safety measures.
- To access the top parts of the device, use suitable equipment for the operations to be carried out. Do not climb on the parts of the unit, as they are delicate and are not designed to support a person's weight.
- Each regular or extraordinary maintenance intervention must be carried out by specialised personnel and can only be conducted at ambient temperature.
- If you need to remove parts of the unit for maintenance, restrict these to the essential minimum. Reassemble the parts immediately after the intervention.
- Never leave tools, equipment or other improper material on or inside the unit.
- Each time a maintenance operator is required to work in areas which are not visible from the ON/OFF switch, you are warmly advised to have a second person to check carefully that the switch is not used. If this proves impossible, a warning sign must be placed very clearly on the control device.

CoeLux declines any responsibility for any breach of the instructions and warnings listed here.

8.1 DISMANTLING THE SYSTEM

If you dismantle the system, you must follow all the instructions and warnings given for the installation phase.

8.2 DEMOLITION AND DISPOSAL

At the end of its life cycle, dispose of the product in compliance with the legislation in force on the subject.

9 ANNEXES

9.1 ALTERNATIVE INSTALLATIONS: FASTENING OF COELUX® 45 HC AT AN ANGLE

At the customer's request and subject to the approval of a specialised operator, the 45 HC systems can be installed at an angle (only from 0 to 45° as shown in Figure 59).

This paragraph proposes a fastening solution, which enables the equipment to be fastened at an angle with a flat ceiling and with a ceiling which is also at an angle.



WARNING!

The installer is always responsible for fastening the 45 HC systems to the existing structure. It must be carried out by specialised personnel, who comply with the safety measures in force in the place of installation.

Figure 59 shows some possible configurations to install CoeLux® 45 HC at an angle. The side of the projector is on the left in each picture.

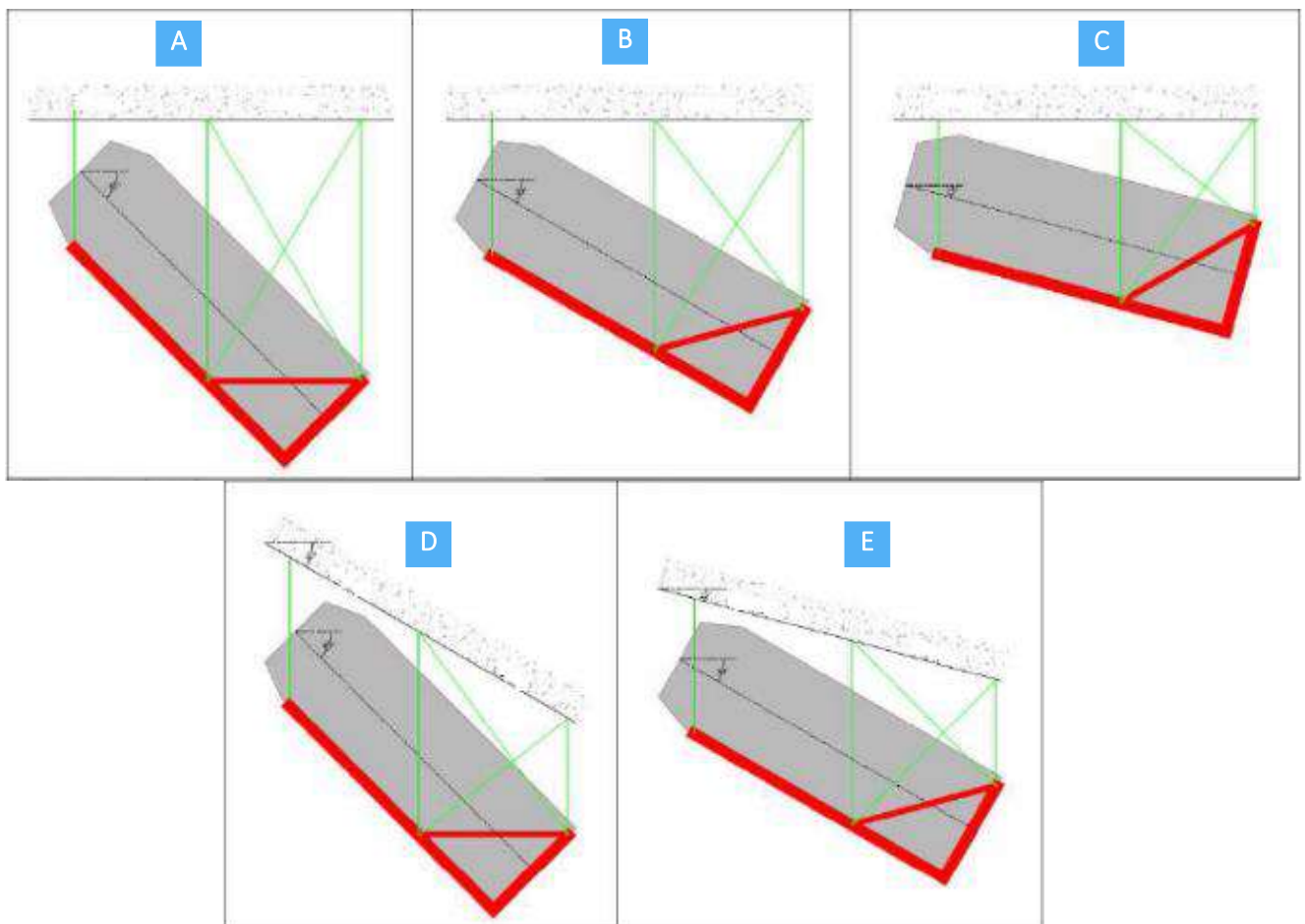


Fig. 59 Some possible configurations at an angle: A) 45° relative angle, B) 30° relative angle, C) 15° relative angle, D) 45° absolute angle, E) 30° absolute angle. The first three configurations refer to a horizontal ceiling, whereas configurations D) and E) refer to a ceiling tilted at an angle of 30° and 15° respectively.



WARNING!

The installer is always responsible for fastening the 45 HC systems to the existing structure. It must be carried out by specialised personnel, who comply with the safety measures in force in the place of installation.

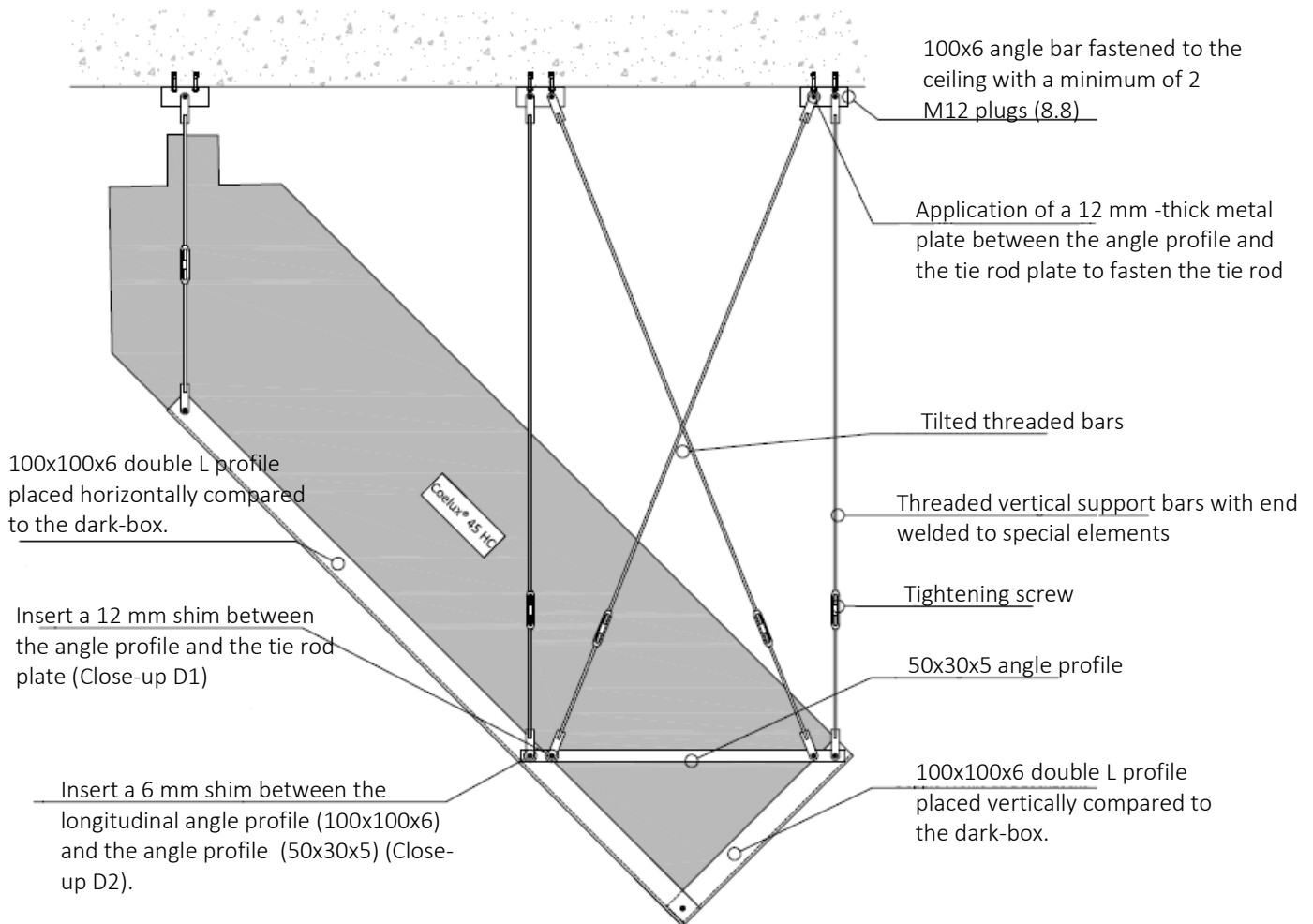


Fig. 60 Suspension system for tilted dark-box

The suspension system shown here (Figure 60) has been certified by a structural engineer and is entirely the installer's responsibility. CoeLux does NOT supply this suspension system.



CAUTION:

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



WARNING!

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

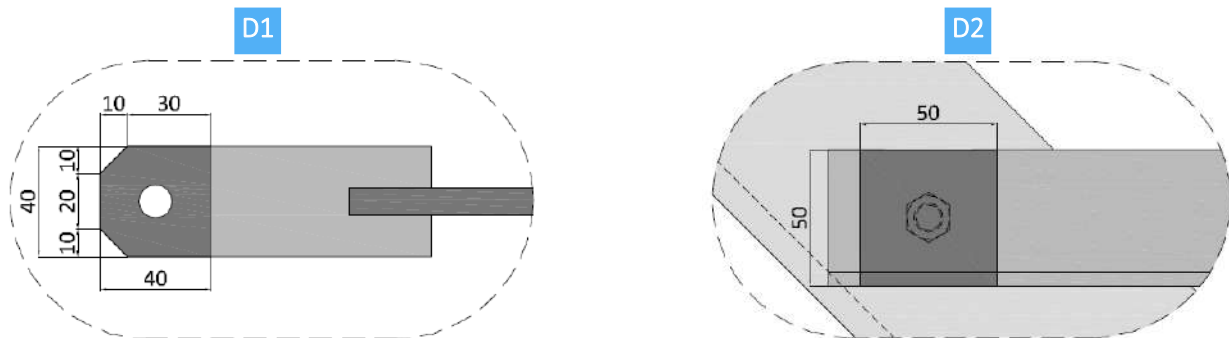


Fig. 61 Close-ups D1 and D2: shims for the tilted dark-box suspension system

LIST OF THE SUSPENSION ELEMENTS (measurements in mm)

- element T1: shim (x20)
- element T2: threaded M12 bar (VAR.)
- element T3: tightening screw (x10)
- elements T4 and T5: 100x100x6 angle profiles (x4 and x2)

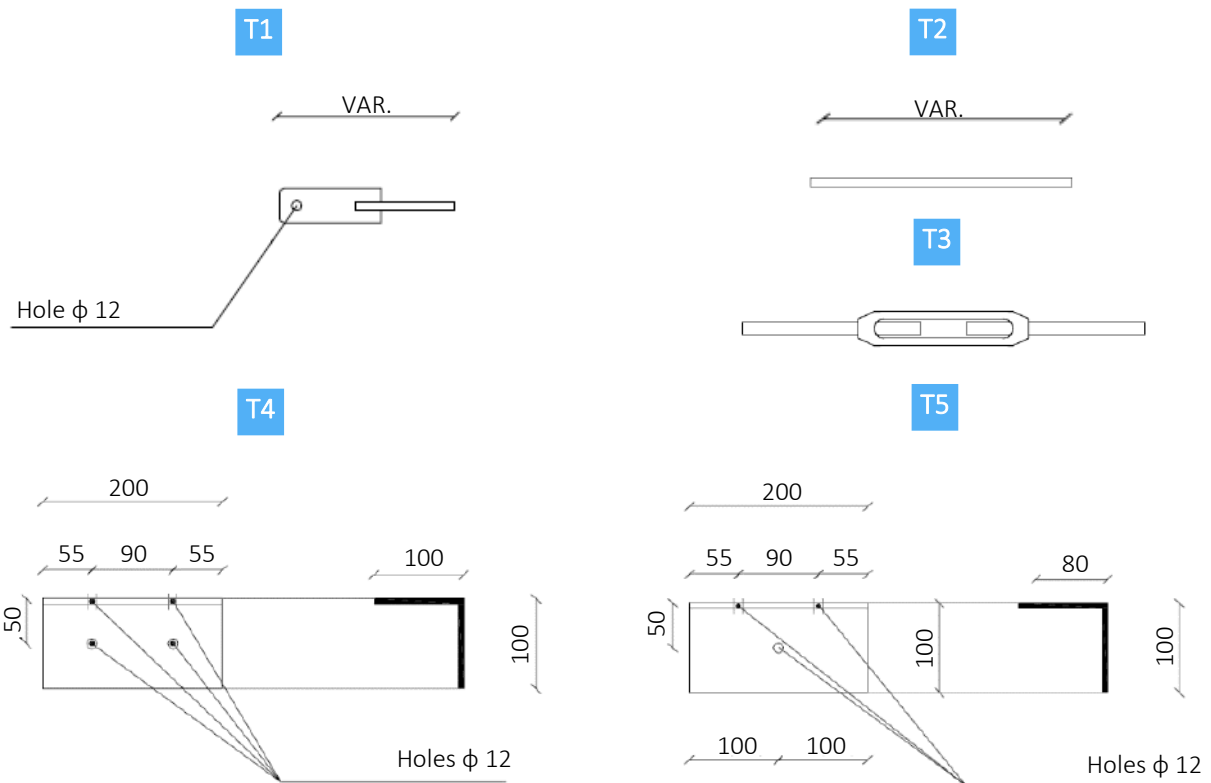


Fig. 62 Elements T1, T2, T3, T4 and T5

LIST OF THE CHASSIS ELEMENTS (measurements in mm)

- element P1: 50x5 plate (x3)
- elements A1a and A1b: 100x100x6 angle profiles (horizontal) (x1 and x1)
- elements A2a and A2b: 100x100x6 angle profiles (vertical) (x1 and x1)
- element A3: 50x30x5 angle profile (tilted) (x2)

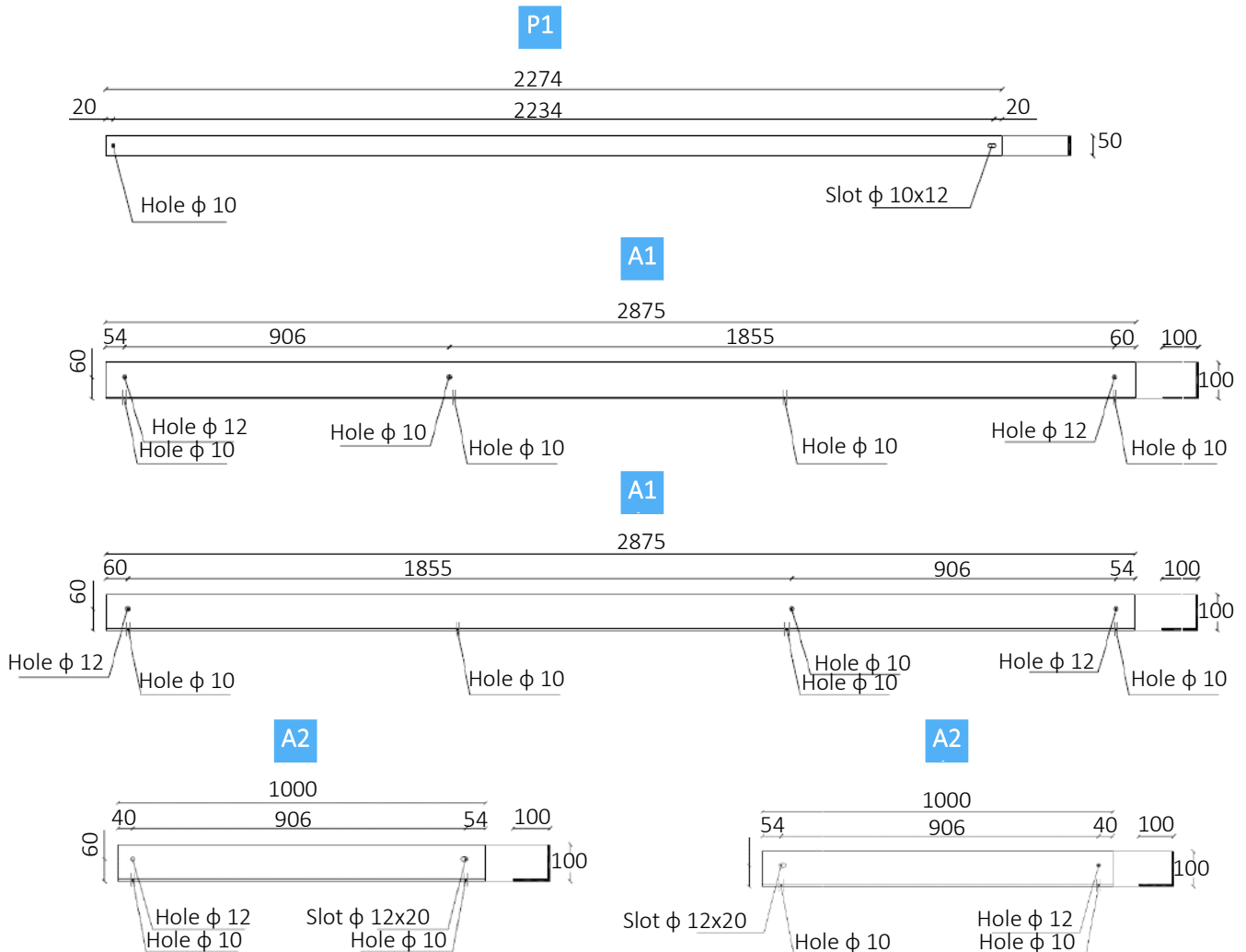


Fig. 63 Elements P1, A1a, A1b, A2a and A2b

LIST OF BOLTS AND PLUGS

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

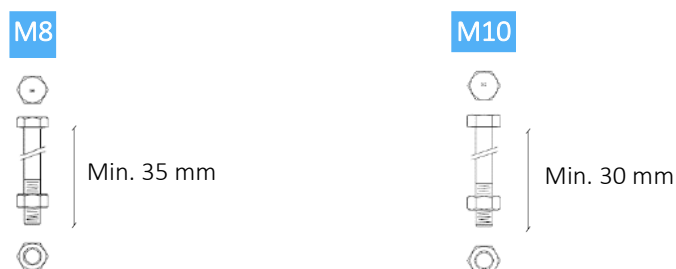


Fig. 64 M8 and M10 Bolts

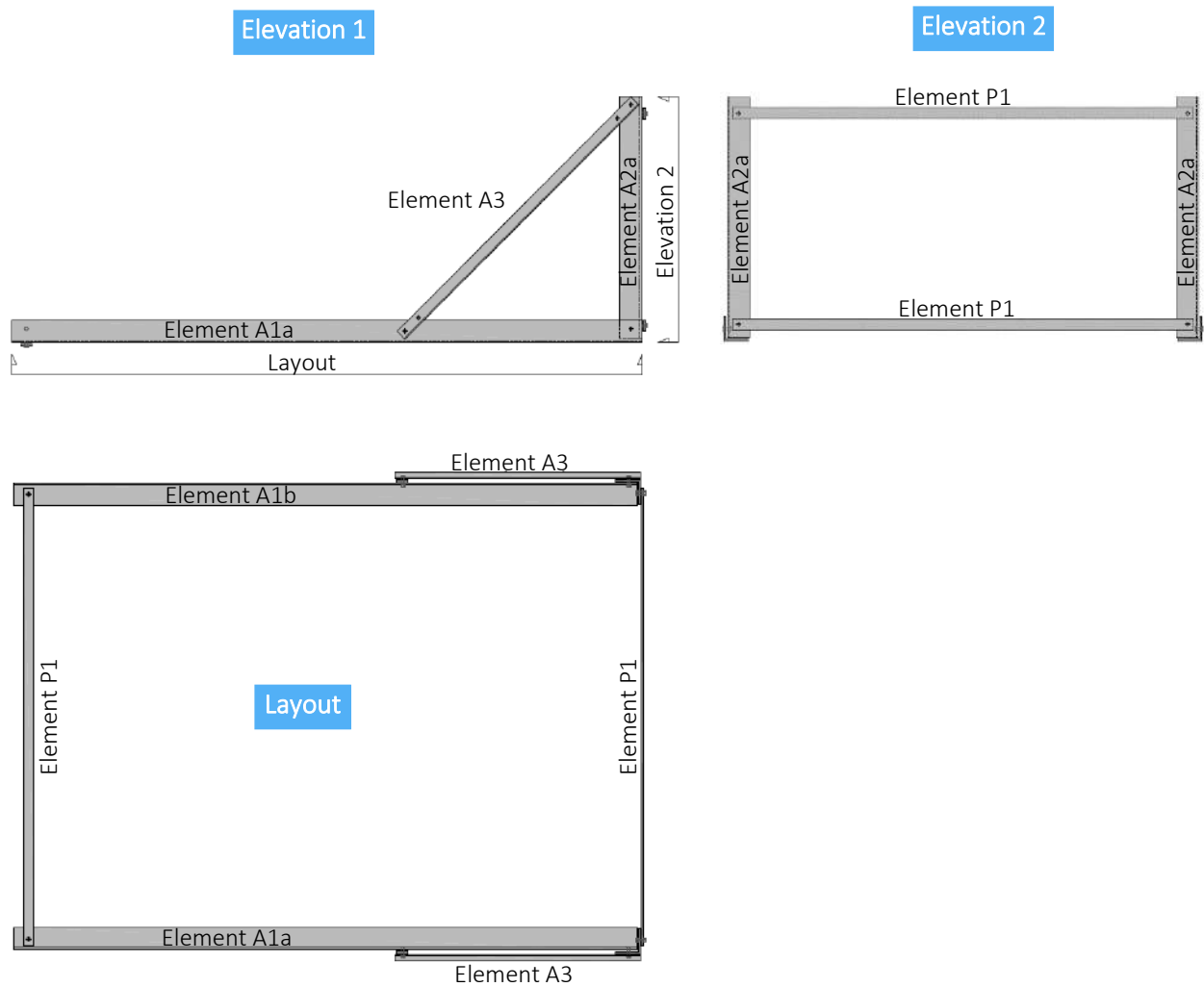


Fig. 65 Chassis layout and elevations

9.2 EXTRAORDINARY PROCEDURE TO CLEAN THE MIRRORS

9.2.1 PURPOSE

This procedure describes the extraordinary cleaning of the mirrors during installation.

- This procedure is based on and supplements the preceding instructions.
- This procedure can be carried out only by CoeLux S.r.l. authorised installers.
- For this procedure to be effective, the operator is required to attend an adequate training course to acquire the skills needed to identify the defects mentioned in the procedure and to implement the work described. Otherwise, the entire procedure described could be insufficient to achieve an acceptable result.

9.2.2 FIELD OF APPLICATION

This cleaning procedure is needed only in extraordinary cases in which, once the mirrors have been removed from their packaging during product installation, the reflecting surface is not perfectly clean.

This extraordinary procedure applies to all the system glass mirrors mentioned in the preceding point. Some of the materials listed here are NOT provided in the cleaning kit.

9.2.3 TERMS AND DEFINITIONS

- **Demineralised water (commercial):** this is distilled water from which the majority of salts have been removed.
- **Alcohol:** this refers to commercial 95% ethyl alcohol (TRANSPARENT, NON-DENATURED, WITH NO COLOUR ADDITIVES).
- **Ammonia:** this refers to a commercial product with an ammonia solution in water (usually 5%).
- **Dust cloth:** this refers to the commercial cloth Sontara, a product with a special fibre by DuPont. Each wipe leaves a very tiny amount (almost none) of fibre and restricts the electrostatic charge on the wiped surface.

9.2.4 CASE STUDIES

The mirror must have already undergone the standard cleaning process during production and must be marked with the CoeLux quality control pass stamp (Figure 66).



Fig. 66 CoeLux Quality Control Stamp

Three different cases have been identified according to the type and quantity of ring marks, impurities and/or particulate matter, which may be found on the surface of the mirrors when the boxes are opened, each of which will be treated differently.

At least three operators are required to remove the packaging and check the mirrors. During the check, one of them must take the projector, switch it on and point it at the mirror at a 45° angle of incidence from a distance of at least 1.5 m. The other two operators must analyse the surface of the mirror for approximately 30 seconds (holding it vertically) and assess the degree of cleanliness.

WARNING! POSSIBILITY OF BEING DAZZLED



As the light may touch his face, the operator must take care to hide the dazzling light source with his hand in front of his eyes in the direction of the light. It is possible to find a position, which will enable him to check the quality of the mirror and not be dazzled at the same time.

9.2.4.1 CASE STUDIES AND TREATMENTS

The two tables in paragraphs 9.2.4.2 and 9.2.4.3 show the defects, which can be found on the glass and silver surfaces, together with the case studies they belong to.

Case A. Mirror with minimum traces of dust or completely clean: the mirror surface must not be treated or touched in any way and must be installed immediately.



Fig. 67 *Case A*



Fig. 68 *Case B*

Case B. Mirror with a film of dust, light, sporadic ring marks and/or fingerprints (on the edges):

repeatedly and vigorously wipe the area with a dry duster (supplied in the cleaning kit) and move the dirt towards the outer edge of the mirror. Take care not to leave new traces of dirt. If you have rubbed the surface for over 5 minutes and the fingerprints have not disappeared or the mirror remains unacceptably dirty, move on to case C.




Case C. Clearly dirty mirror, with fairly light ring marks over the entire surface, fingerprints in the centre of the mirror/ very dirty mirror. Find the following materials - ethyl alcohol 95%, ammonia, demineralised water - and proceed as follows:



- Take a small quantity of ammonia and dilute it in demineralised water (dilution approximately 1:50). Then, use the clean, dry cloth supplied in the cleaning kit to wipe the surface thoroughly with this solution.
Carefully wipe the entire surface and replace the cloths you use to remove as much dirt as possible and not just move it around the surface.
- Dry the entire surface and wipe it with a dry cloth, even when it is no longer wet.
- Lastly, pour the ethyl alcohol on a clean duster and wipe the entire surface, Check you have removed the remaining dirt (you can switch on the projector and point it at the mirror to check it better). Frequently change the cloth during this operation.

Fig. 69 Case C





9.2.4.2 DEFECTS IN THE GLASS SURFACE

DEFECT	PHOTOS	ACCEPTABILITY
Thick dirt: very opaque glass surface		Case C
Widespread dirt: surface with an opaque layer visible without the help of the projector		Case C
Ring marks: more or less opaque areas on the glass surface due to various types of dirt		Case B (if they do not disappear Case C)

DEFECT	PHOTOS	ACCEPTABILITY
<p>A bit dirty: clearly marked surface dirt</p> <p>Unlike scratches, when they are wiped with a clean cloth, they change shape.</p>		<p>Case B (if they do not disappear Case C)</p>
<p>Build-up of dust: area with a light build-up of dust, visible thanks to the use of the projector</p>		<p>Case B</p>

9.2.4.3 DEFECTS IN THE SILVER SURFACE

DEFECT	PHOTOS	ACCEPTABILITY
<p>Changing waves and shapes: visible only with the help of the projector</p> <p>Unlike the ring marks on the glass, if you change your position of observation, they change continually.</p>		<p>ACCEPTABLE</p>
<p>Bands: visible only with the help of the projector</p>		<p>ACCEPTABLE</p>

10 CONTACTS

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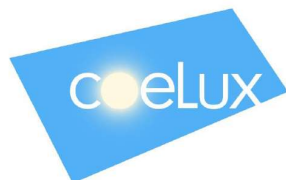
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