

**INSTRUCTIONS
MANUAL
FOR
THE
USER**

EQUIPMENT: MIXED SERVICE LIFT [LOADS AND PERSONS]

MODEL: DHX
BUILDER: DIFUSIÓN HIDRÁULICA LLUÍS, S.A.
P.I. VILAMALLA
C/ Garbí, 21/23
17469 Vilamalla (Girona)
Tel. 972 52 50 12
Fax 972 52 54 77





Read this document carefully before using the lifting platform and store it in an accessible and safe place. In case of doubts, check with the installer.



The design of this machine has been made solely and exclusively for the vertical lifting of the load and its passengers.

DECLARATION OF CE CONFORMITY

The company: DIFUSIÓN HIDRÁULICA LLUÍS, S.A.
P.I. Vilamalla - C/. Garbí, 21-23
17469 - Vilamalla (Girona) - SPAIN
Tel. 972 52 50 12 - Fax 972 52 54 77

Declares that, under its sole responsibility, the **Mixed Service Lift Platform for persons and loads:**

Brand / Model	DHLLUIS / DHX
Serial No.	
Year of manufacture	
Capacity (KG)	2500
Speed (m/sec) / Power (CV)	0.15 / 7.5
Route (mm) / Stops	/
Useful surface (m ²)	

Has obtained a "CE" certificate, type **IMQ** with number **IMQ CL 331 DM**

Issued by notified body:

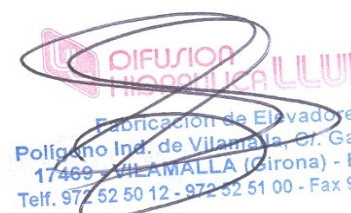
IMQ IBÉRICA
Organisation no. 0051
Consell de Cent, 83, 6º 2ª
08015 – Barcelona (Spain)

Is compliant with the provisions of the CE Machinery Safety Directive 2006/42, as well as the EU Low Voltage Directive 2014/35 and the EU Electromagnetic Compatibility Directive 2014/30.

Reference standards: EN 12100:2010

The signatory of this declaration is the person authorised to prepare the technical file.

Vilamalla on


DIFUSION
HIDRAULICA LLUIS S.A.
Fabricación de Elevadores
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Signed: Jaume Llobet Daunis,
Technical Dept.

1.	INTRODUCTION	5
2.	CHARACTERISTICS OF THE MACHINE	6
3.	USAGE INSTRUCTIONS	6
4.	CONTRAINDICATIONS OF USE	10
5.	SAFETY INSTRUCTIONS	10
6.	DESCRIPTION OF THE SYSTEM AND ASSEMBLY	10
6.1.	WARNING AND RESCUE DEVICES	10
6.2.	ASSEMBLY OF THE GUIDES	11
6.3.	ASSEMBLY OF THE PEDESTAL, HEAD AND CYLINDER	13
6.4.	CHASSIS	14
6.5.	MECHANICAL PARACHUTE AND LOOSENING OF CABLES	19
6.6.	CYLINDER	20
6.7.	HYDRAULIC GROUP	22
6.8.	CONNECTING THE HYDRAULIC GROUP TO THE CYLINDER	24
6.9.	LUBRICANTS	24
6.10.	PARACHUTE VALVE	25
6.11.	ASSEMBLY OF THE CABLES AND TENSORS	25
6.12.	ELECTRICAL INSTALLATION	27
7	ADJUSTING THE VALVE GROUP	35
7.1.	ALIGNING THE ASCENT	35
7.2.	ALIGNING THE DESCENT	36
7.3.	POSITIONING THE ALIGNMENTS	36
8.	SAFETY AND PROTECTIVE MEASURES IN THE SERVICE LIFT	37
9.	RESCUE INSTRUCTIONS IN THE SERVICE LIFT	38
10.	MAINTENANCE	41
11.	RECORDING INCIDENTS AND MAINTENANCE OPERATIONS	47

1. INTRODUCTION

The object of this instructions manual is to provide information for:

- The correct use of the mixed service lift platform with persons by the users of this machinery.
- Carrying out rescue tasks or manoeuvres, in the event that any user becomes trapped inside.
- Carrying out mandatory maintenance tasks to keep the mixed service lift platform with persons in optimum operating conditions. All these tasks must be carried out by qualified staff and by duly registered companies.



DIFUSION HIDRAULICA LLUIS, S.A. is not responsible for installing the machinery, building the shaft, placing the cabinet with the control panel and the hydraulic group, nor for any problem deriving from the improper use of the machinery, or for any problems that may be caused due to a lack of maintenance or use of spare parts not authorised by DIFUSION HIDRAULICA LLUIS, S.A.

2. CHARACTERISTICS OF THE MACHINE

The machinery covered in this manual, the "Mixed Service Lift Platform for loads and persons", DHX model, manufactured by DIFUSIÓN HIDRAULICA LLUIS, S.A., is designed to vertically elevate the load with its passengers, with a maximum travel speed of 0.15m/s and a maximum load of 2,500kg.

TECHNICAL DATA	
Speed	≤0.15 m/s
Nominal load	2,500kg
Standard pit	550mm
Minimum escape, upper part	Exterior height of cabin + 200mm
Voltage	230 / 400 V
Frequency	50 Hz
Power	7.5 CV – Speed 0.13 m/sec

3. USAGE INSTRUCTIONS

Before launching the mixed service lift platform for loads and persons, the installer must carry out the relevant tests and checks and leave the machinery in operation.

No risk or hazard situations will present themselves if the sequence of instructions for launching the machinery is followed, given that, when starting the launch process, all hazard prevention devices will activate.

3.1. NORMAL USAGE INSTRUCTIONS

This manual informs of the correct use of the platforms, in accordance with CE Directive 2006/42.

➤ INTENDED USE OF THE PLATFORM

The mixed service lift platforms for loads and persons, from DIFUSIÓN HIDRÁULICA LLUIS, DHX model, are manufactured for the vertical transportation of loads with their passengers whose weight must not exceed the useful load for which they have been designed. If the platform is overloaded, it will not ascend.

The launch or operation is only possible if the operator voluntarily keeps hold of the button, but the platform automatically stops on the established levels.

If the entrances to the cabin are protected by doors, pressing the buttons cause these to open automatically. However, if they are protected by photoelectric curtains, these remain continuously tightened for safety reasons and loosen as soon as the platform stops.

On each floor there is an external call button and its function is to bring the platform to the floor in question.

If the button for the floor on which the platform is located is pressed, the system will not respond.

The stop command is carried out by releasing the button in the direction of travel (if the button must be held continuously) or automatically by manoeuvre when the stop level has been reached.

To go to an upper floor, press the corresponding button (keep it pressed in the case of photoelectric curtains), the electro-hydraulic driver will launch and the platform will start to rise until reaching the floor in question, when it will automatically stop.

To go to a lower floor, press the corresponding button (keep it pressed in the case of photoelectric curtains) and the platform will start to descend without connecting to the hydraulic group, lowering due to its own weight.

If the lifting platform is above or below the stop level due to load variations, it will automatically re-level to the stop level.

SYMBOLS AND DEFINITIONS

Detailed below are the buttons used on the platforms.



EMERGENCY STOP BUTTON (red)



DOOR REOPEN BUTTON



ALARM BUTTON (yellow)



PILOT WITH EXCESS LOAD BUZZER

DESTINATION CHOICE BUTTON



Press and hold continuously if the platform does not ascend or descend (in the case of curtains)

PLATFORM CALL BUTTON



Press and hold continuously if the platform does not ascend or descend (in the case of curtains)

➤ **INFORMATION ON THE NORMAL USE OF THE MIXED SERVICE LIFT**

The user must know the usage instructions for the mixed service lift. These instructions must be kept close to the hydraulic group and/or electric switchboard so that they can be consulted at any time. They contain the detailed instructions to be followed in the event of an emergency stop, the instructions for the manual assistance manoeuvre or electric assistance manoeuvre, and the key to unlock the floor doors.

- **Events requiring the intervention of competent staff:**

a.- To carry out a rescue manoeuvre

b.- To use the emergency door key

The rescue/disembarkation operations must be carried out in an orderly manner, preventing persons from stopping in the door threshold and hindering the passage, by persons with the proper training.

- **Maintenance:**

The owner of the mixed service lift must contract a qualified company to carry out maintenance tasks. This company will have an incident book where all interventions carried out will be recorded.

When any user detects an anomalous operation of the mixed service lift, they must notify the maintenance company.

4. CONTRAINDICATIONS OF USE

The mixed service lift has been designed to offer certain benefits, therefore the machinery must never be operated above its indicated maximum capacities. This could give rise to deformations and overexertions to the different parts and cause damage to them.

It is recommended to avoid, as far as possible, blows to the hydraulic and electrical components as these are the most sensitive. If any anomaly is noticed, regardless of how small, stop the manoeuvre immediately.



No modifications can be made to the machinery without being reviewed by qualified technicians. Any changes could cause the machinery to malfunction, with the risks that this entails. If carried out by unauthorised staff, the platform's guarantee is immediately lost.

5. SAFETY INSTRUCTIONS

- **Use of the emergency key:** opening the doors when the platform is not on the landing is restricted to competent staff. There is a danger that the doors will not close properly and another person tries to open the door without noticing that the platform is not there, with the risk of them falling down the shaft.
- **Electric switchboard:** it is forbidden for unqualified staff and those without the protective measures required by the regulations on occupational risk prevention to handle or access the electric switchboard.

6. DESCRIPTION OF THE SYSTEM AND ASSEMBLY

6.1. WARNING AND RESCUE DEVICES

The service lift is provided with the following warning and rescue elements:

- Emergency light in the cabin in the event of a power cut
- 1 emergency bidirectional telephone
- Alarm
- Emergency batteries:
 - For the emergency descent
 - For the alarm, photoelectric curtains and emergency light

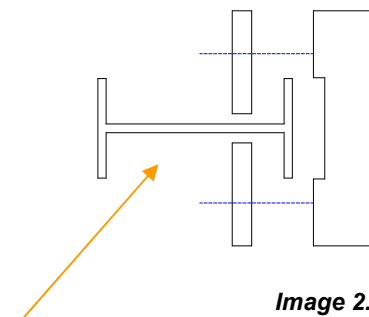
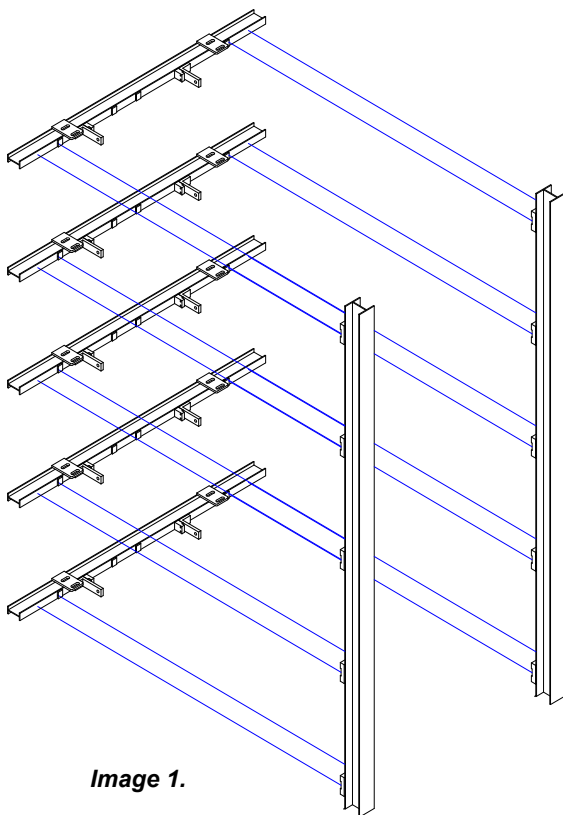
6.2. ASSEMBLY OF THE GUIDES

The service lift is designed to vertically transport loads and persons to different levels.

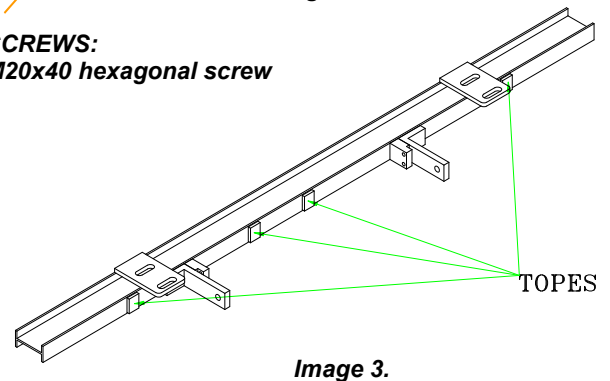
The guides of the service lift are supplied fully disassembled. To assemble them, follow the steps described in this manual.

The service lift is designed for a 550mm pit. If this is smaller, a ramp should be made and, if it is larger, it should be supplemented until reaching 550mm.

Mount the horizontal crossbars to the supports that bear the HEB vertical beams, as shown in figure 1, stopping where shown in figure 3 and securing them as shown in figure 2.



SCREWS:
M20x40 hexagonal screw



The guides must then be secured to the wall, as shown in figure 4.

Secure the legs to the crossbars and the legs to the wall using chemical bolts, metal bolts, wall bushings, welded to a structure...

If the installer secures the guides in a different way to those indicated above, there is no problem as long as they are firmly attached to the wall.

WARNING: Before definitively securing the guides to the wall, you must check, with the help of a weight or level, that they are completely vertical in the two possible directions and that the HEB beams stop on all the crossbars.

SCREWS:
M20x50 hexagonal screw
M20 washer (2 units)
M20 nut

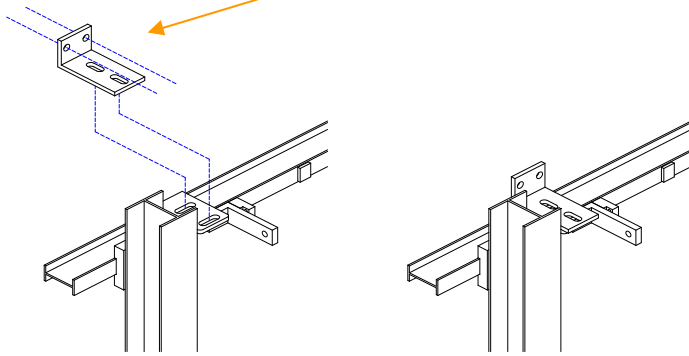


Image 4.

A pictogram must be placed on the bottom of the guides to warn:

- Not to enter under the platform whilst it is not mechanically locked.
- Only qualified staff

To mechanically lock the platform, the lower safety strut must be assembled as shown in the following 2 images.



Image 4A. Strut closed

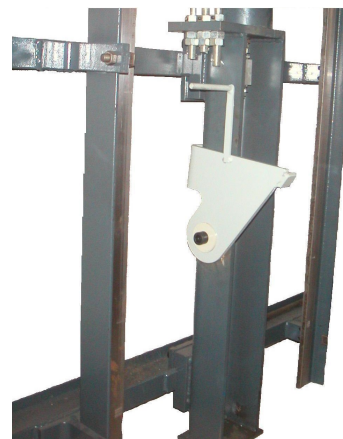


Image 4B. Strut open

6.3. ASSEMBLY OF THE PEDESTAL, HEAD AND CYLINDER

The T guides (T 90x75x16) must be joined so that they are completely aligned, as shown in figure 5.

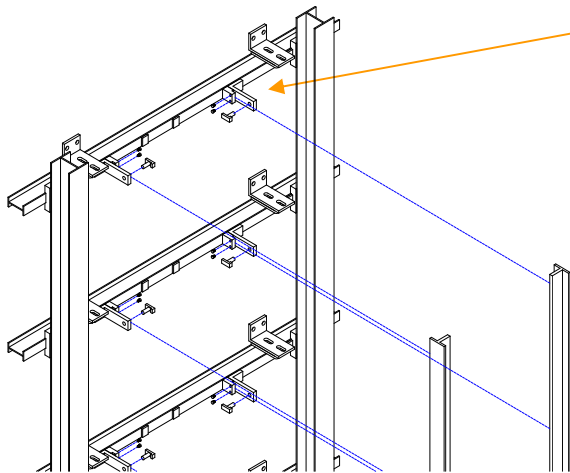


Image 5.

SCREWS:
M10x25 Allen screw
M16 clamp
M16 washer
M16 nut

The pedestal/cylinder support must be mounted, as shown in figure 6, between the central stops in figure 3 and secured as indicated in figure 2.

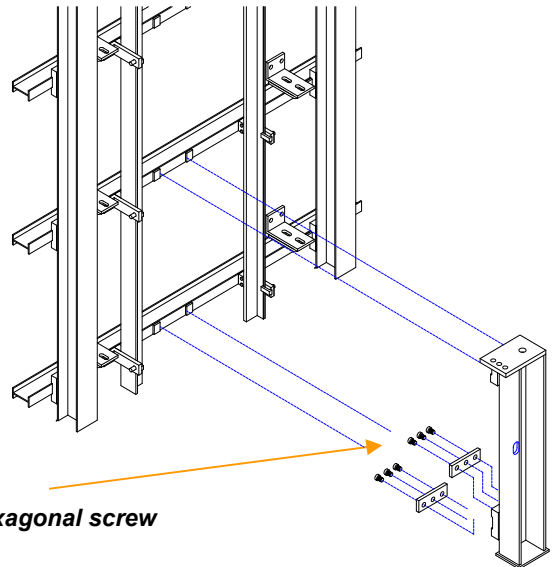


Image 6.

SCREWS:
M20x40 hexagonal screw

The head is supplied fully assembled, however, figure 7 shows its assembly/disassembly for maintenance or repair operations.

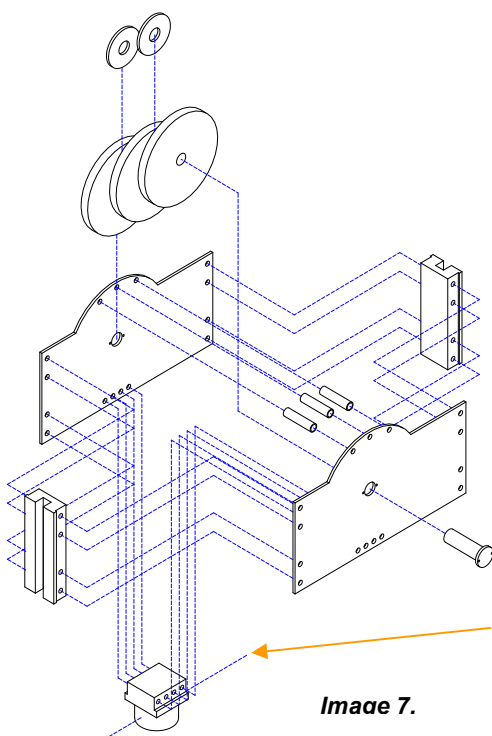
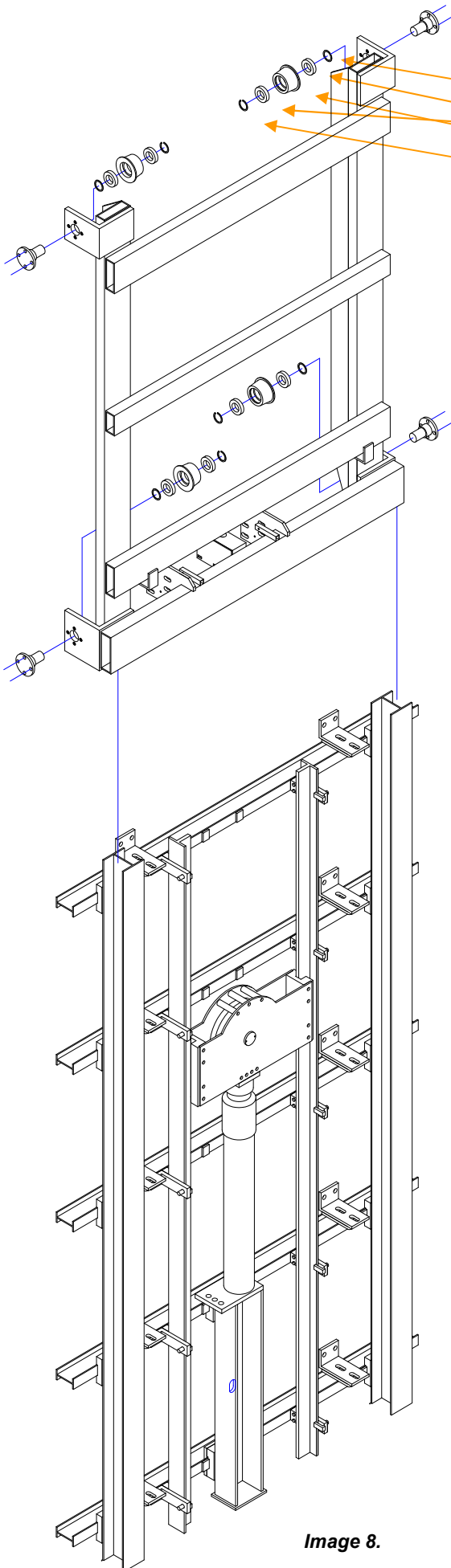


Image 7.

SCREWS:
M14x30 hexagonal screw

Each head incorporates 4 friction clamps (FS-16) and 3 single channel Ø280 pulleys with a bearing on each pulley (Ref. 6408) and 1 washer between each pulley.



SCREWS:
M14x25 Allen screw
Washer/Thickness
adjustment
Bearing Ref. 6008ZZ
Displacement wheel
Closing circlip

6.4. CHASSIS AND CABIN

6.4.1. Chassis

The chassis is delivered fully assembled, you need only attach the wheels and thickness adjustments.

There are two possible assemblies:

- Insert the assembly through the top (**recommended**) as shown in figure 8.
- Disassemble all wheels and their axles from the chassis/carriage, insert them inside the HEB profile and reassemble them (more work and less recommended).

Each wheel (4 in total) incorporates an axle that is screwed to the angles of the chassis with 4 screws, an adjusting washer (*), 2 bearings and a closing circlip.

The recommended system is that shown in figure 8, inserting the fully mounted assembly through the top of the guides, letting it slide smoothly until it reaches the floor.

Once these are inserted inside the guides, the width of this assembly must be adjusted with regard to the HEB profile (greys) (*).

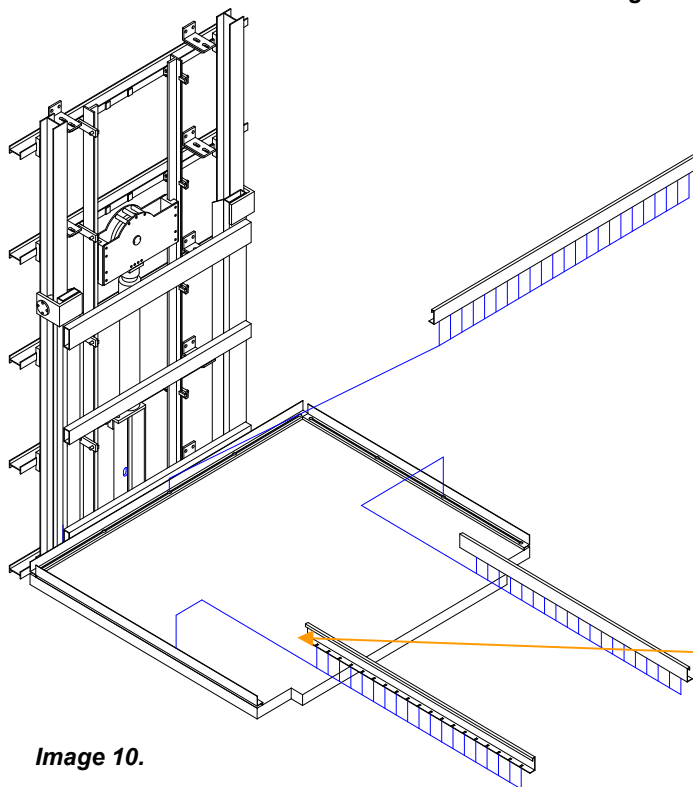
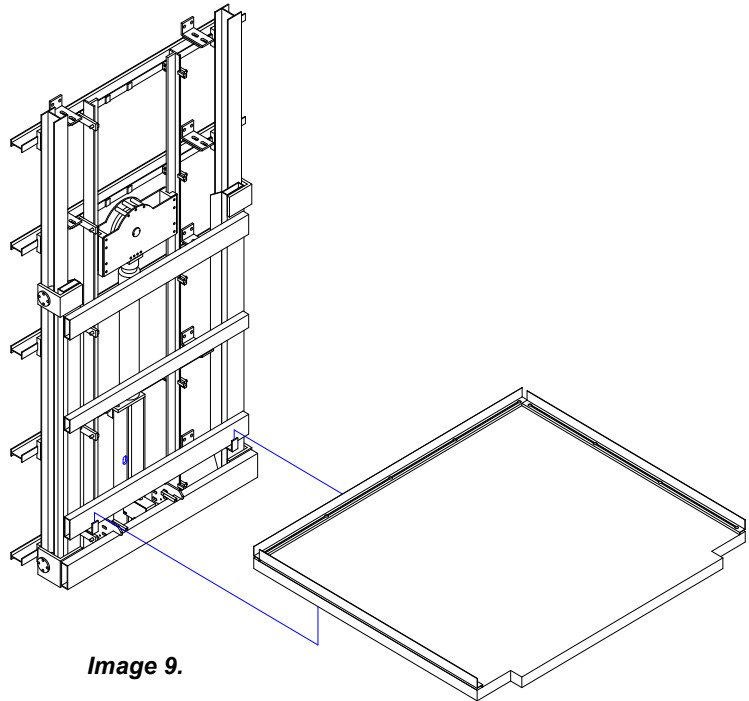
(* **NOTE:** the adjusting washers should only be mounted if there is a lot of width between chassis and inside the guides. On the side where the adjusting washer is placed, they must be secured at both the top and bottom so that the work assembly is balanced.

Image 8.

6.4.2. Cabin

As illustrated in figure 9, the floor/base of the cabin must fit the angles, be centred with regard to the shaft and the chassis, placed level and at a perfect square, then **welded so that it is sufficiently robust.**

The upper surface of the base has been manufactured with non-slip corrugated sheet.



As indicated in figure 10, the baseboards are mounted inside, leaving sufficient width to fit at the sides.

SCREWS:
 Round head-square neck
 DIN 603 "cart" M10 screw
 M10 washer
 M10 nut

The panels are assembled, all of which are 400mm wide except those at the ends (according to the cabin size), as indicated in figure 11.

There is one with a different width to the others, the one at the bottom right side.

There are two with the same width and different from the others, one of them has a drill hole for the keypad and is placed to the right of the loading point, and the other to the

SCREWS:
M6x10 washer screw
M6 washer nut

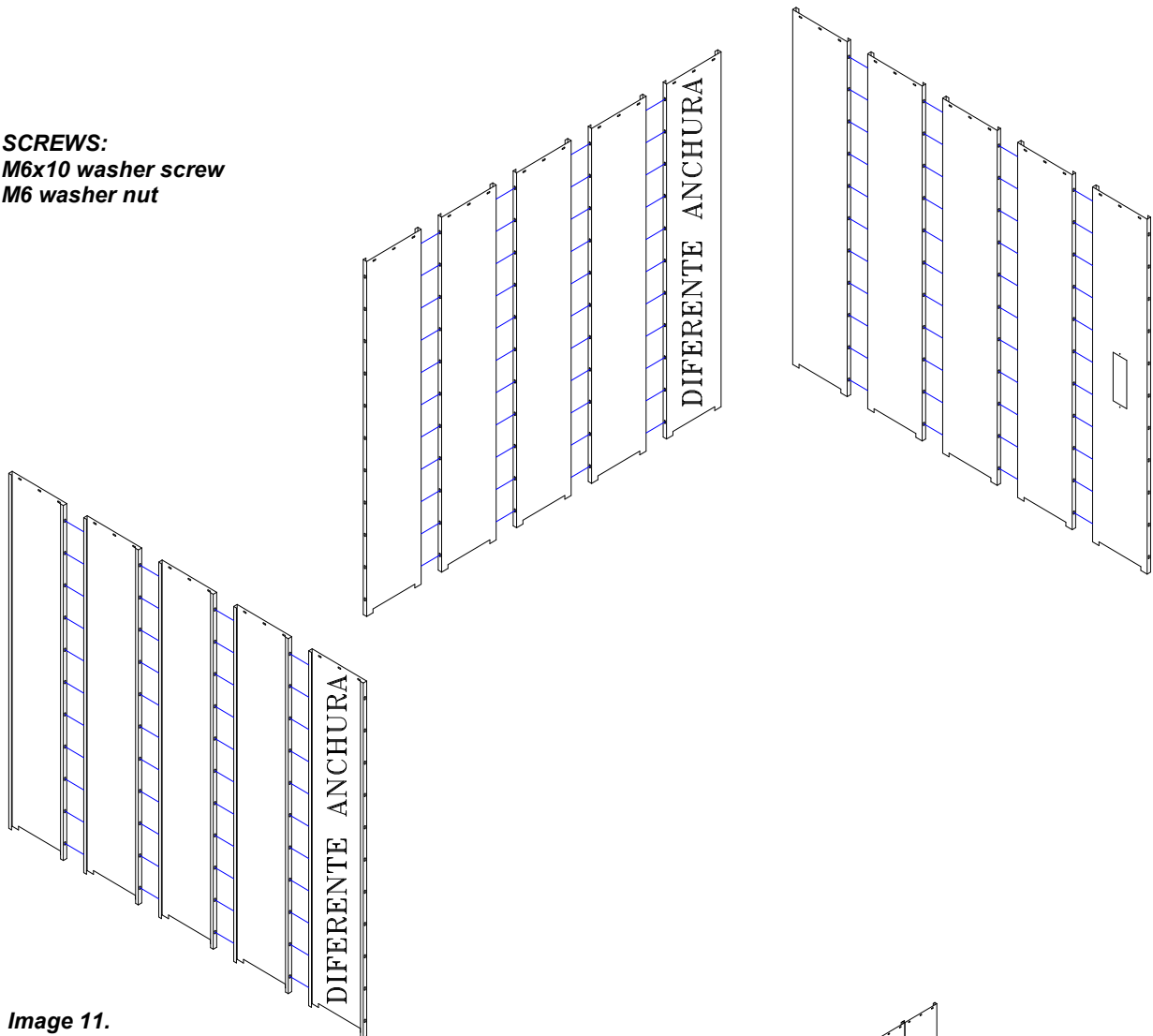


Image 11.

left of the loading point.

It is advised to assemble all panels on each side, then insert them into the space between the baseboards and the guide welded to the base.

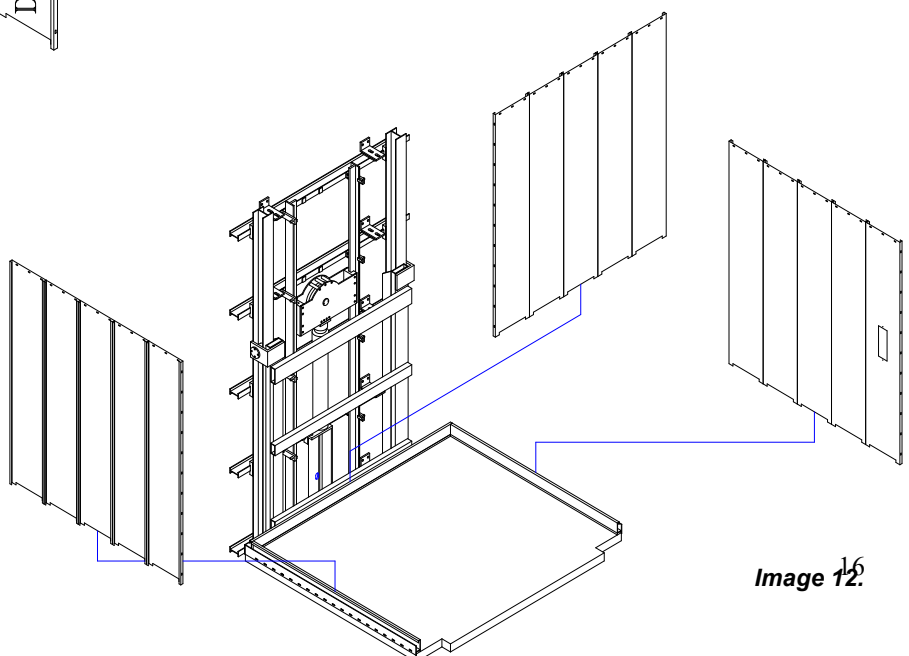
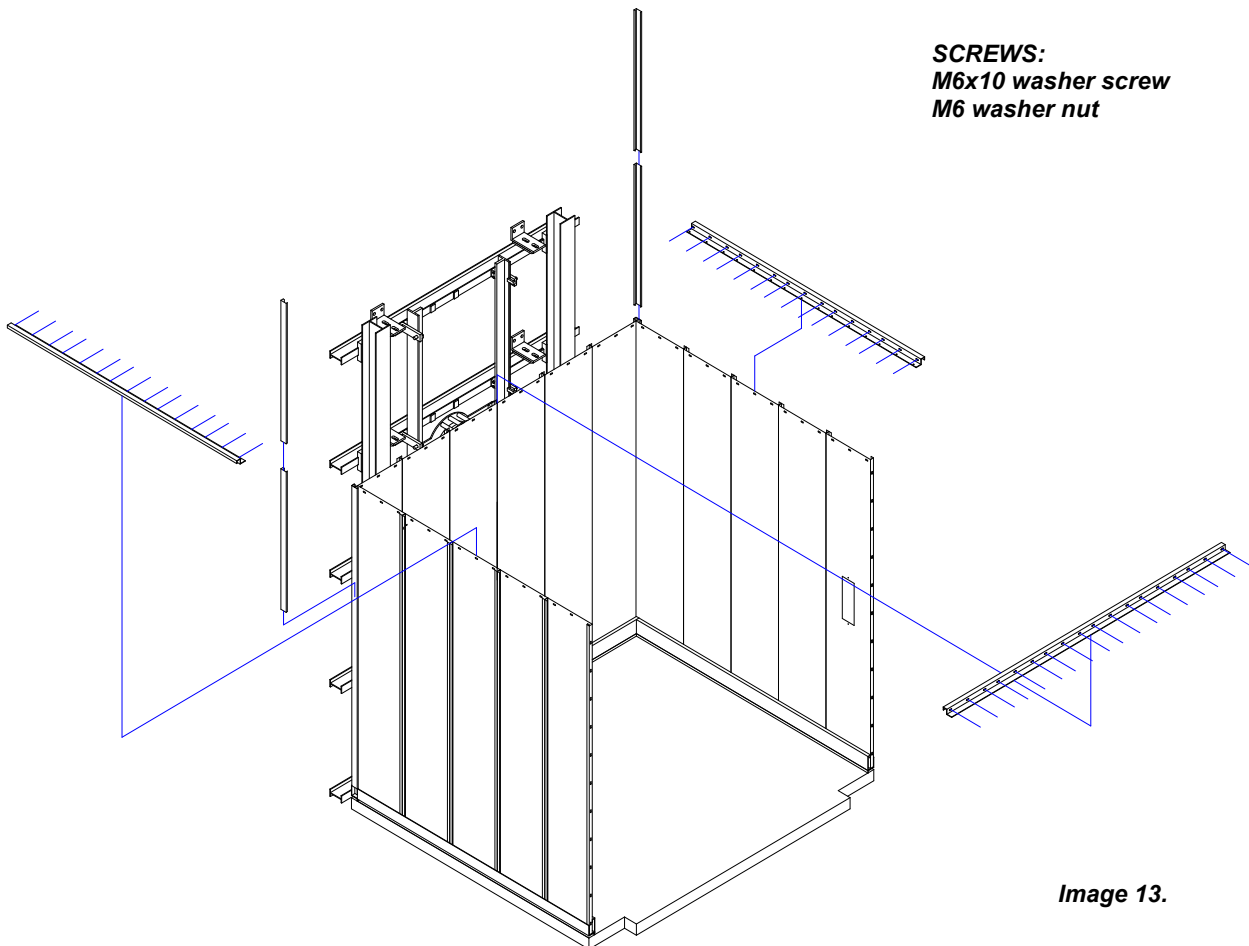


Image 12.

As illustrated in figure 13, once the sides are assembled, they must be joined together at the corners with the lances.



The upper side/ceiling connection supports must then be assembled, as shown in figure 13.

NOTE: in these latter supports, there are two with mounting holes and round holes (mounted on the right and left sides) and 1 only with mounting holes (mounted on the side at the bottom).

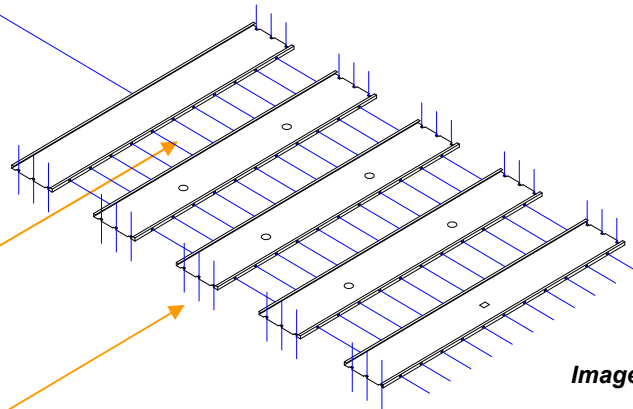
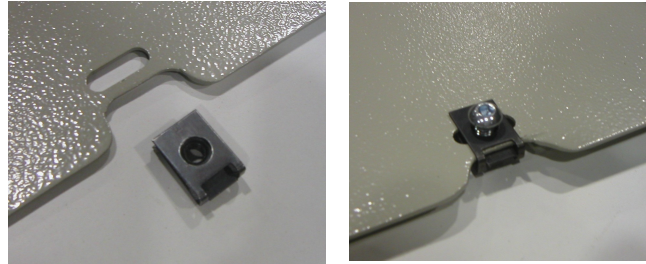
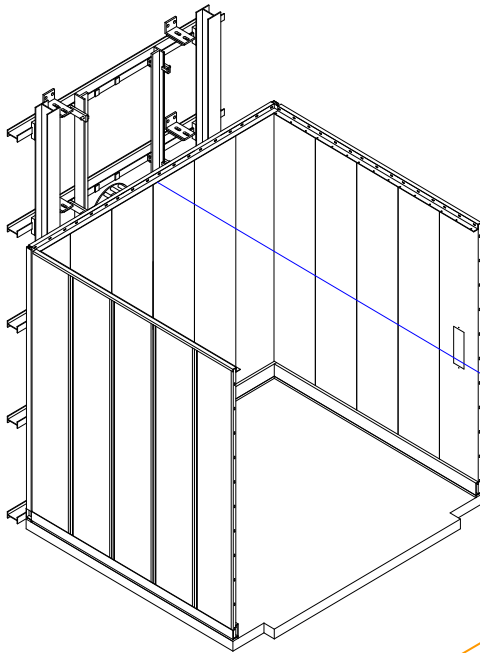


Image 14.

SCREWS:

**M6x10 washer screw
M6 washer nut**

**M6x10 round head Allen screw
M6 staple nut**

As shown in figure 14, the ceiling panels are joined together and with the upper profiles on the sides, leaving the one that is closest to the guides (392mm) unsecured to the other ceiling panels, securing it only with the profiles assembled in the upper part of the sides (for maintenance operations), as this includes the emergency light next to the loading point and rest of the unit.

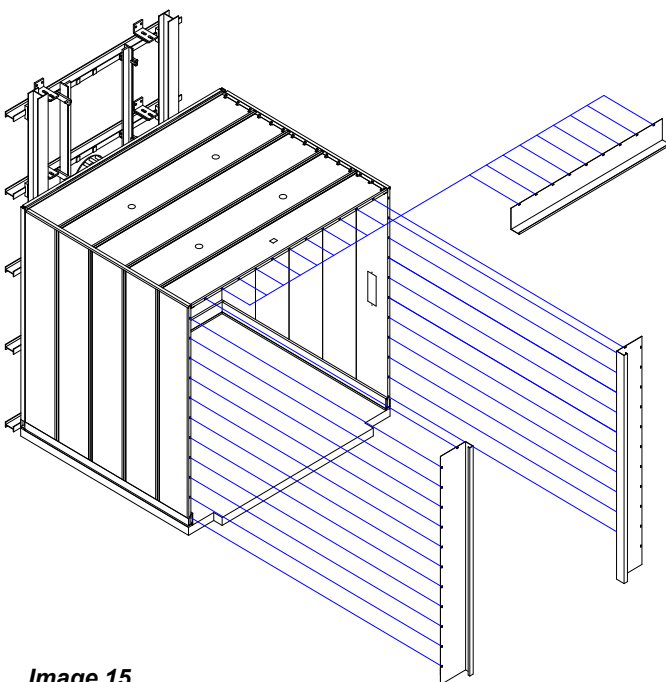


Image 15.

The openings and threshold are assembled as shown in figure 15.

**SCREWS:
M8x16 Allen screw
M8 washer**

6.5. MECHANICAL PARACHUTE AND LOOSENING OF CABLES

The parachute is a safety system against the breakage and/or loosening of the platform's suspension cables.

OPERATION

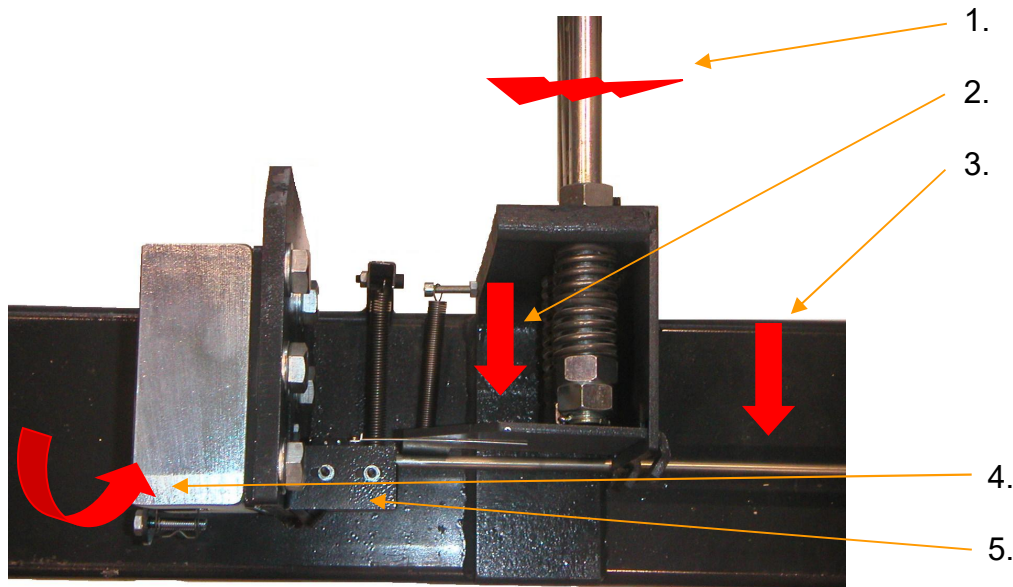


Image 16.

1. Before a breakage or loosening of one of the cables.
2. The spring pulls the tensor down, pushing the trigger lever.
3. Where the trigger lever operates the rod.
4. At the ends of the rod are the connecting rods that rotate the axles driving the rollers of the wedges, and these clamp the platform to the guides.
5. When activating the trigger lever, this activates the cable loosening micro.

NOTE: once the assembly is completed, you must check that the mechanical parachute is operating correctly, firstly that the 2 wedges are clamped, and that the cable loosening micro is active and the electrical series of the manoeuvre is disconnected.

6.6. CYLINDER

The length of the cylinder depends on the requested travel length. The diameter of the axle is always 100mm.

The cylinder is formed by:

- Rectified and chromed steel axle
- Tubular sleeve
- Rear cover provided with oil inlet
- Dolly assembly – dolly holder – sealing kit

SEALING SPARE PARTS

- 1 Metal-rubber scraper: 100x110x7/10
- 2 O-rings: 115x3
- 2 Balsele: 100x113x13 (B-444.393 NI)

To change the sealing kit, this requires an articulated wrench for frontal drills.



The cylinder is guaranteed under a hydraulic test with a maximum pressure of 220 Bar.

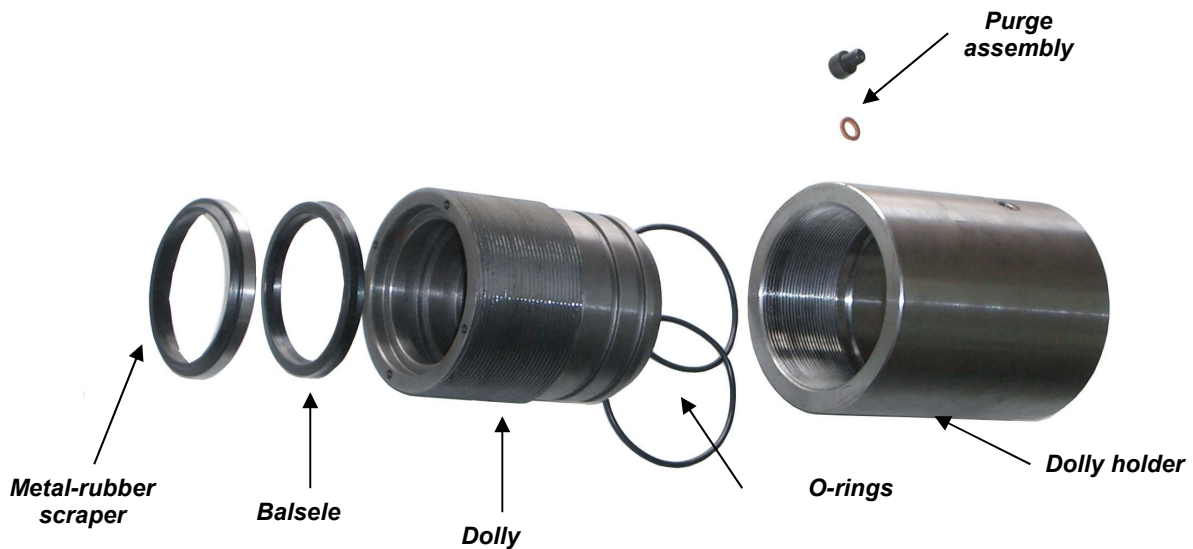


Image 17. Dolly assembly - dolly holder - seals

NOTE: when loading/unloading materials, take special care with the hydraulic cylinder as the "dolly" is made of cast iron and any blow could crack it, making it unpleasant to view. This will also later cause oil to leak through this crack.

6.6.1. OLEODYNAMIC CIRCUIT

- 1 - MOTOR
- 2 - BOMBA
- 3 - VALVULA
- 4 - TAPON LLENADO
- 5 - RETORNO DE ACEITE
- 6 - DEPÓSITO
- 7 - MANOMETRO
- 8 - FILTRO DE ASPIRACIÓN
- 9 - LATIGUILLO
- 10 - VALVULA PARACAIDAS
- 11 - CAMISA
- 12 - EJE
- 13 - RASCADOR
- 14 - BALSELE
- 15 - DOLLA
- 16 - JUNTA TORICA
- 17 - PURGA
- 18 - LLAVE DE CIERRE
- 19 - TAPA POSTERIOR
- 20 - PORTADOLLAS

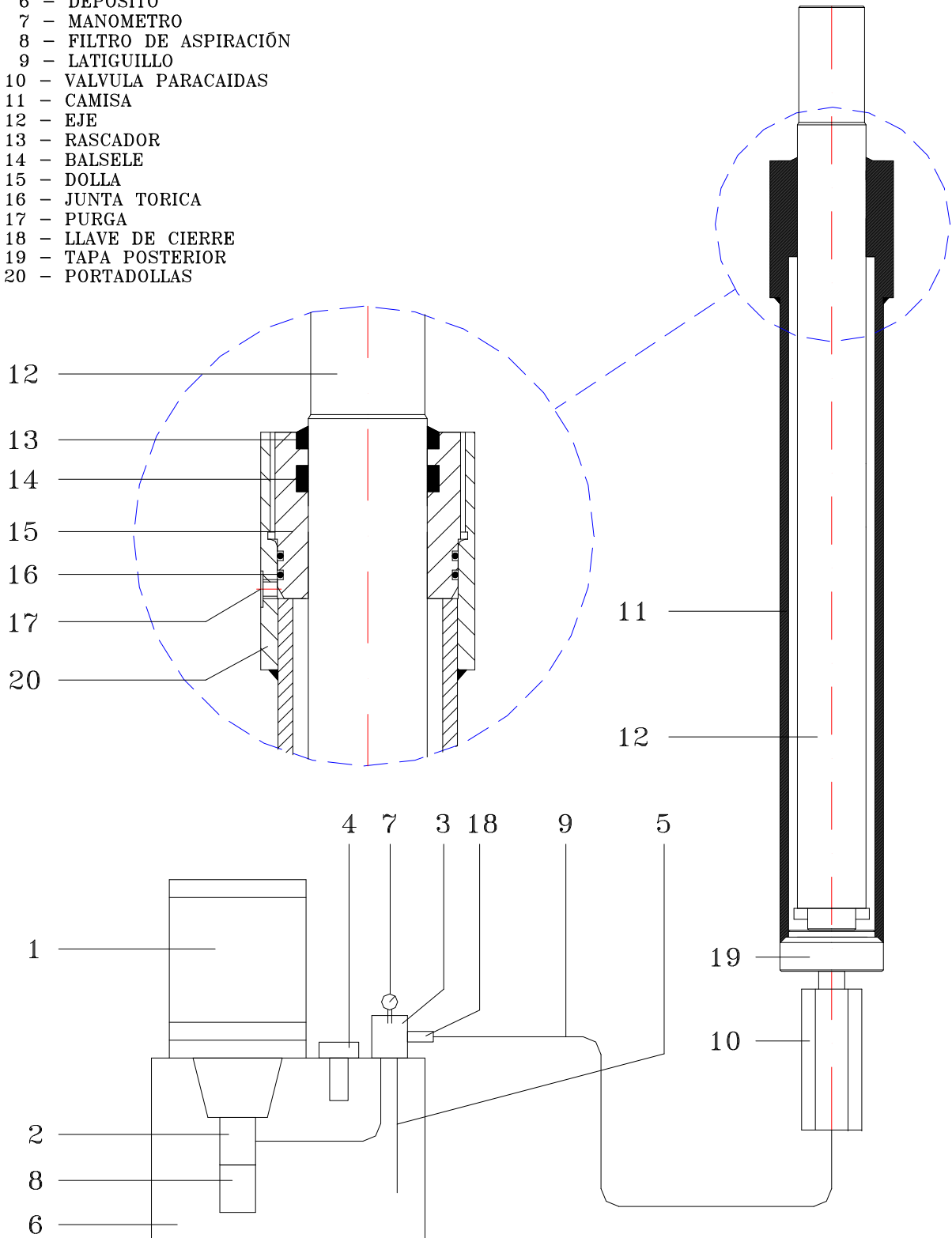


Image 18. Oleodynamic circuit

6.6.2. OLEODYNAMIC SCHEME

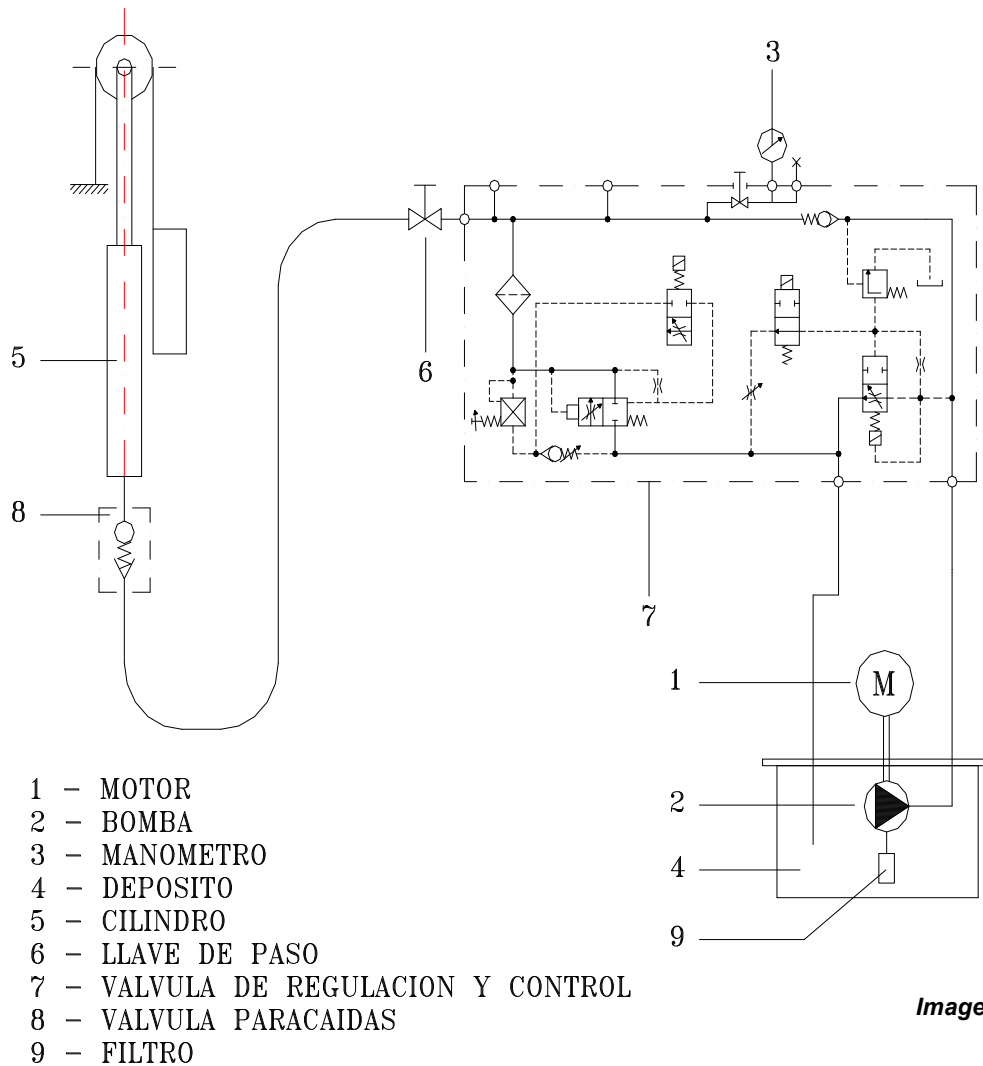


Image 19. Oleodynamic scheme

6.7. HYDRAULIC GROUP

Its main parts are:

- 1 Elastic ring (to reduce noise)
- 2 Vane pump (low sound level)
- 3 Thermal probe
- 4 Motor (7.5 CV III 230/400V 1000 rpm)
- 5 Compensated progressive valve
- 6 Shut-off valve (1/2")
- 7 Fill plug (1")
- 8 Tank
- 9 Drain plug (1/2")
- 10 Level viewer (3/4")

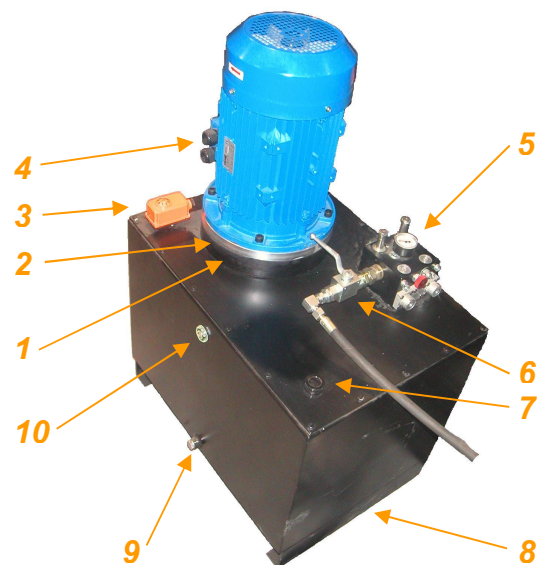


Image 20. Hydraulic group

The hydraulic group is equipped with a compensated progressive valve adjustable according to nominal load, the valve is not regulated at the factory, it must be regulated during installation once the platform is assembled. The regulation process is detailed in point 7.

The hydraulic group is guaranteed under a hydraulic test with a maximum pressure of 150 Bar.

The work pressure of the hydraulic group is between 100 and 120 Bar according to dimensions and adjustments.

The vertical upward travel speed provided by the hydraulic group is less than 0.15m/s, and the downward speed must be adjusted on site once the assembly is completed, as detailed in point 7.

The shut-off valve is at the output of the hydraulic group. It is used to prevent the platform from descending when maintenance actions are taking place underneath it, and to prevent the oil leaking from the cable and cylinder, thus preventing a new filling and purging thereof.

Both the assembly and maintenance of the hydraulic cable must be carried out from inside the shaft, under the platform, activating all security components (pit stop, lowering the strut, disconnecting the manoeuvre...) to avoid crushing hazards.

To avoid the projection of fluid under pressure when the cable breaks, it will be mandatory to secure it with staples on to the wall or with fixed elements that impede their projection or uncontrolled movement.

The hydraulic cable is of the type: MF 203 – 8 (1/2")

Interior synthetic rubber pipe. Double metal reinforcement. Normal synthetic rubber cover. Work temperature from –40°C a +100°C.

- Interior diameter: 12.5mm
- Exterior diameter: 21.4 mm
- Work pressure: 344 Bar
- Breakage pressure: 1360 Bar
- Bend radius: 180 mm
- Weight: 0.643 Kg/m

Approved according to DIN 20022 – 2 ST and UNE EN – 853.

A pictogram must be placed close to the electro-hydraulic driver that warns of:

- Work pressure of the electro-hydraulic driver.
- Manual emergency descent
- Only qualified staff.

NOTE: for a better operation and less noise, we recommend placing the hydraulic group in a room as soundproof as possible and with ventilation.

6.8. CONNECTING THE HYDRAULIC GROUP TO THE CYLINDER

Both the assembly and maintenance of the hydraulic cable must be carried out from inside the shaft, under the platform, activating all security components (pit stop, lowering the strut, disconnecting the manoeuvre...) to avoid crushing hazards.

At the end of the cable or hose to connect the hydraulic unit with the cylinder is the parachute valve, which must be placed just before the inlet/outlet of the cylinder to guarantee its correct operation (see point 6.10 - Image 22).

The hydraulic cable is supplied at 6 metres (other lengths upon request). It is recommended to place the hydraulic group in the lower stop (for speed reasons), if it is placed higher with regard to the lower level, it loses speed on descent.

To avoid the projection of fluid under pressure when the cable breaks, it will be mandatory to secure it with staples on to the wall or with fixed elements that impede their projection or uncontrolled movement.

The hydraulic unit has a compensated progressive valve whose operation and regulation is in point 7.

6.9. LUBRICANTS

Once the installation is completed, it is mandatory to check that the guides and guiding are completely clean and then greased. Grease is not supplied with the lifting platform, We advise to use ARGA type fluid grease - 2 normal from CEPESA, or similar.

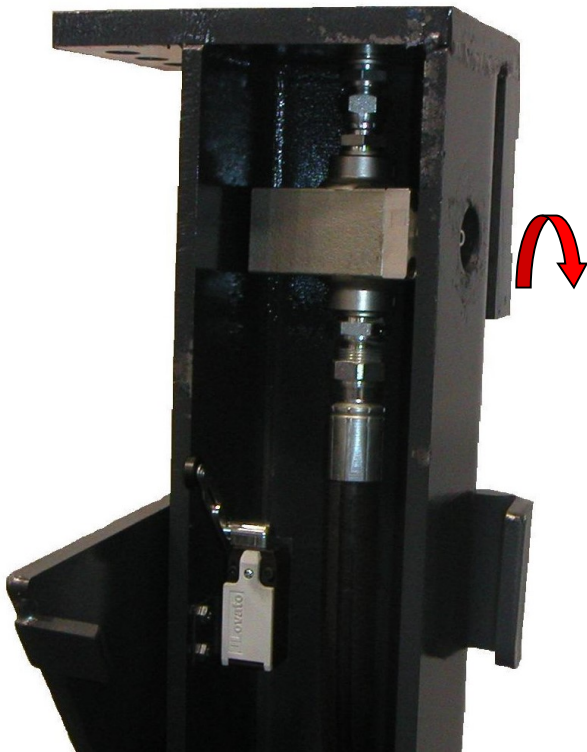
The oil for the hydraulic circuit is not supplied with the lifting platform (unless ordered). We advise to use a hydraulic oil with anti-wear properties, developed for HM-46 industrial type hydraulic sectors or higher.

With characteristics:

- Viscosity:	46.3
- Flash point:	210°C
- Freezing point:	-15°C
- Viscosity index:	97

Hydraulic oil does not produce harmful effects when it is used in the recommended applications and whilst respecting the normal safety and hygiene practices at work.

6.10. PARACHUTE VALVE



This is at the inlet of the cylinder and its function is to detect a fall of the platform if the hydraulic cable breaks.

If the hydraulic cable breaks, the parachute valve acts immediately and stops the platform.

Once assembly is complete, this valve must be adjusted.

Turning the screw to the left makes it act at a lower speed and, to the right, at higher speed.

Image 21.
Parachute valve.

6.11. ASSEMBLY OF THE CABLES AND TENSORS

The cables used directly to lift or support the load do not have any joints and are approved for lifting. A quality certificate is available and its characteristics are:

- Construction: 6x36S+0 W
- Diameter: 14 mm
- Resistance: 1770 N/mm²
- Break load: 123.5 KN
- Winding: sZ
- Surface finish: U
- Length: according to travel length

The cables are fastened using a tensor that allows them to be adjusted and a wedge is inserted to ensure their attachment. For further safety, the cable is secured with a cable tie.

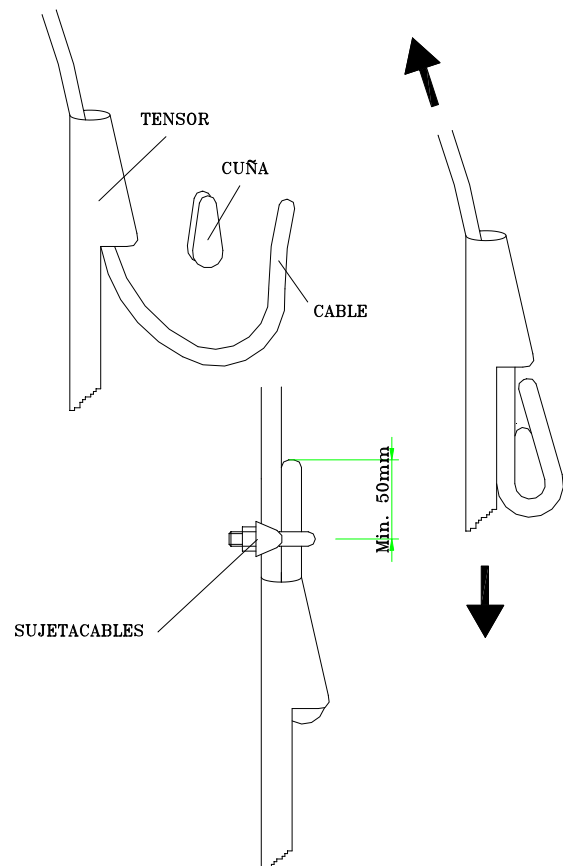


Image 23. Assembly of tensors.

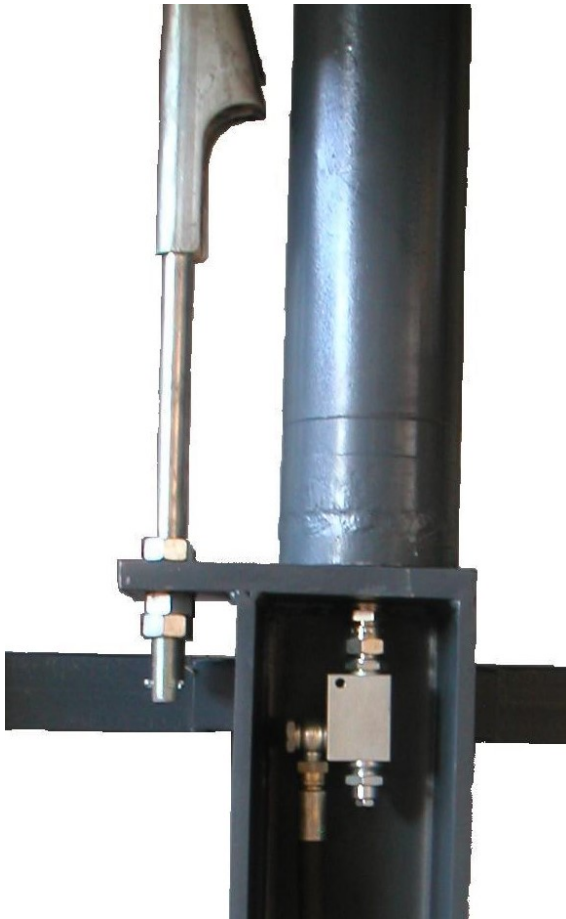


Image 24. Securing of tensors.

In the upper part of the pedestal are three holes to house the tensors.

These tensors have a fixed position and are mounted without springs and using a nut, one at the top and two at the bottom.

In the chassis are the other three tensors, their assembly is reflected in point 6.5 - image 16.

Both the assembly and maintenance of the cables must be carried out from inside the shaft, under the platform, activating all security components (pit stop, lowering the strut, disconnecting the manoeuvre...) to avoid crushing hazards.

6.12. ELECTRICAL INSTALLATION

The electric power lines to the panel must be protected, as set forth in the Low Voltage Electrotechnical Regulations, with Magnetothermal and Differential.

The entire installation (electric switchboard, guides, platform and hydraulic group) must also be connected to a ground cable lower than 20 Ohm, thus avoiding any risk of electrostatic discharge from the machinery's charged parts.

There is no risk of contact with voltage live parts, as there is no live part accessible.

The electrical installation is comprised of:

- 6.12.1. Electrical installation pre-assembled with shaft
- 6.12.2. Control panel
- 6.12.3. Inspection box
- 6.12.4. Stop detector (CRD)
- 6.12.5. Reset detector (RST)
- 6.12.6. Detector of the unlocking area (ZD)
- 6.12.7. Cable loosening microswitch (AFC)
- 6.12.8. Limit switch (FC)
- 6.12.9. Buttons and control elements
- 6.12.10. Lighting
- 6.12.11. Telephone
- 6.12.12. Doors
- 6.12.13. Pit stop
- 6.12.14. Strut detector

6.12.1. Electrical installation pre-assembled with shaft

It complies with all specifications of the current regulations.

Upon request, the entire pre-installation/wiring of the shaft can be supplied.

All electrical hoses come with quick connectors that are identified and different to avoid any possible connection errors.

All wireways, bolts and mounting flanges are also supplied.

The connection schemes are supplied with the pre-assembly and are inside it.

6.12.2. Control panel

In the control panel, there is a manual for operating and installing the electrical system.

It complies with all provisions that dictate the regulations on protections.

It is recommended to install it in a ventilated room and with enough space for its handling.

It can only be handled by qualified staff.

It has a safety system that prevents it from being opened unless a tool is used only by the user.

The automatic control system of the lifting platform is carried out through a non-reprogrammable electronic plate.

It is equipped with a general blocking switch at point 0 to handle the installation.

Equipped with a timer that disconnects the manoeuvre due to a fault in the stop detector, having actioned the mechanical stop by over-travelling and the electronic limit switch.

Equipped with an emergency battery that acts in the event of a power cut to descend to lower floors without the need for an electricity supply. When the power is restored, if the platform is not at a lower level, it automatically descends to the lower floor to position itself.

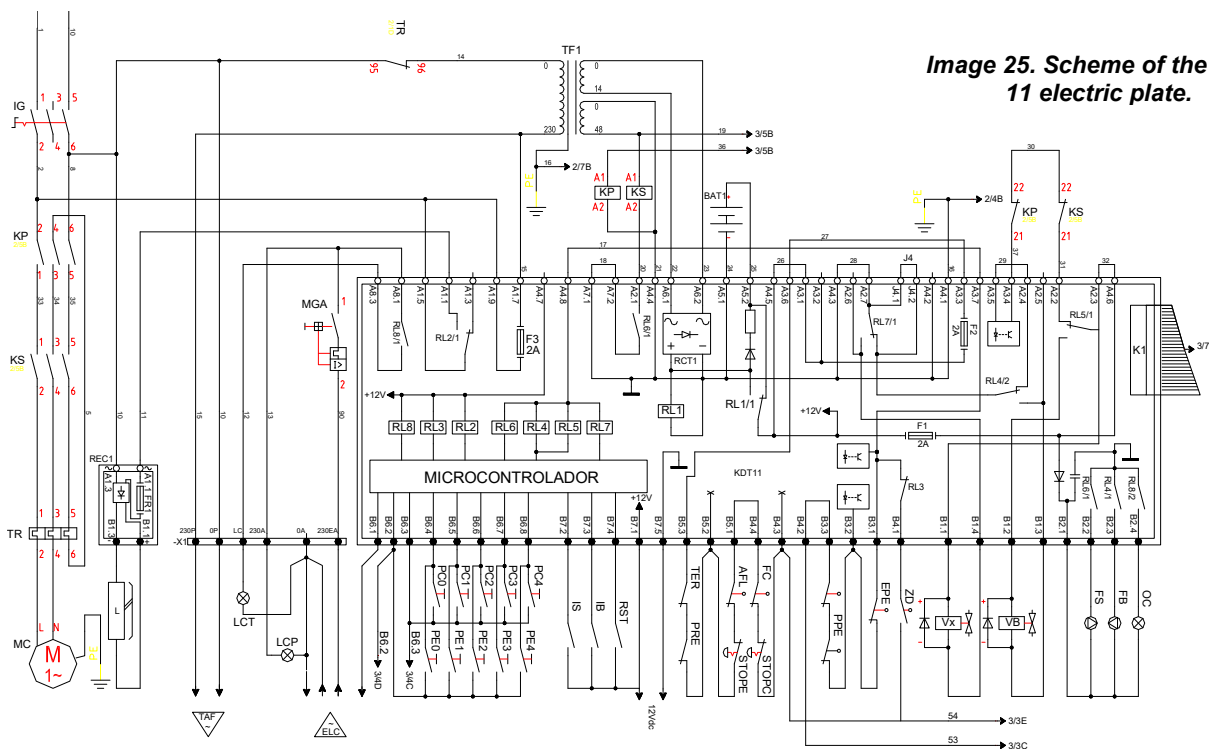


Image 25. Scheme of the KDT-11 electric plate.

Attention: before handling the manoeuvre or platform, disconnect the general switch and remove the F1 fuse by turning the lid ¼ anticlockwise.

6.12.3. Inspection box

A support is supplied along with the platform to house the inspection box and power/control sources of the photoelectric curtains (if it has them), as shown in figure 26. This support must be screwed under the platform with the 4 self-tapping screws supplied for this purpose.

The inspection box is supplied with the platform and deriving from it are all electronic components that travel with the platform.

All hoses are perfectly identified to avoid any possible errors.

The inspection box has an acoustic siren to request help in case of an emergency and a battery to power this siren, the emergency light and photoelectric curtain(s) (if it has them) should there be a power cut.



Image 26. Inspection box.



6.12.4. Stop detector (CRD)

Its function is to detect the desired stop level.

The stopper complies with all provisions that dictate the regulations on the machinery directive and on protections and security.

This detector detects the stop level on the ground and performs the re-levelling.

Two magnets are required per stop (see image 27), one detects the stop on ascent (IS) and the other on descent (IB).

Positioning the magnets on ascent: it firstly enters IB (right) and nothing happens, it then enters IS (left), and the descent coil disconnects automatically, with the motor continuing for a further 0.3 seconds (stop ramp - see section 7).

Positioning the magnets on descent: it firstly enters IS (left) and nothing happens, when entering IB (right), the descent coil disconnects (stop ramp - see section 7).

The more adjusted the magnets are (see electrical switchboard manual), the more precise the stop will be. On the contrary, the less adjusted the magnets are, the less precise the stop will be.

6.12.5. Reset detector (RST)

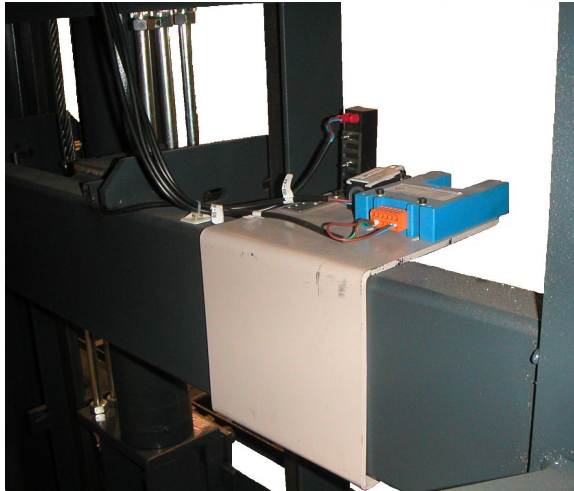
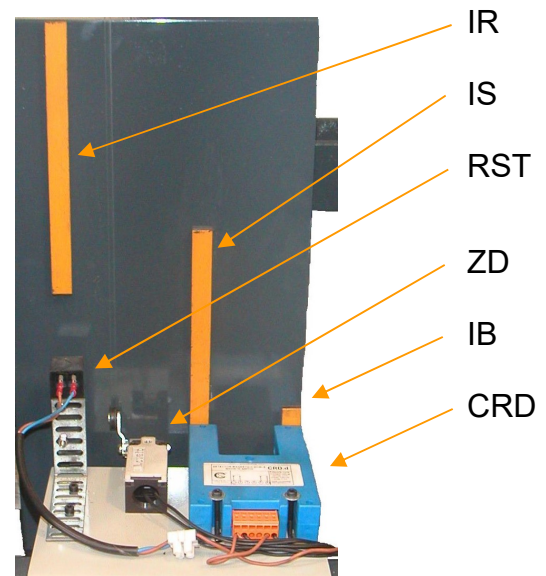


Image 27. Position of detectors.



A support and magnet (IR) is delivered with it. This magnet must be placed on the lower screen above those for the stops. In such a way that, in descent, it detects the RST before the CRD (see image 27).

Its function is to inform the manoeuvre if the platform is above or below the magnet.

The detector complies with all provisions that dictate the regulations on the machinery directive and on protections and security.

WARNING: this detector is bistable and only detects the NORTH of the magnet, that is, the magnet must be placed so that the marked side can be seen once in place.

The platform is considered to be inside the reset zone (LED no. 7 switched on) when it is on the lower floor. If there is a power cut, when the supply is restored:

- If the platform is inside the reset zone (LED no. 7 switched on), the platform ascends until leaving the reset zone and then descends to the stop level and into position.
- If the platform is outside the reset zone (LED no. 7 switched off), the platform descends automatically towards the reset zone until it finds the floor level.

6.12.6. Detector of the unlocking area (ZD)

The detector complies with all provisions that dictate the regulations on the machinery directive and on protections and security.

This detector consists of two open contacts to perform the following 3 functions.

The unlocking area has 3 functions:

1.- It is the area that, when this detector is activated, allows a re-levelling with the open doors.

The screen/magnet support must be placed in such a way that when the platform is at ground level, this detector is approximately in the centre of said screen.

2.- When the doors are manual and run with an electro-cam, if a power cut occurs the electro-cam disconnects (unfolds) and the lift descends using the rescue battery. Before reaching the stop, if the electro-cam mechanically enters into contact with the door lock (opening the series), the manoeuvre disconnects and the platform has not reached its level, this detector marks out this series, allowing the lift to reach floor level.

On descent, the ZD detector must enter the unlocking area before the cam comes into contact with the locks.

3.- In the event that the installation is equipped with automatic doors on the landing, if the signal to open the doors passes through this detector, the doors will only open when the platform is inside the unlocking area.

6.12.7. Cable loosening microswitch (AFC)

A cover is delivered with it to protect the connections, two screws, nuts and washers for its attachment. Its function is to deactivate the electric manoeuvre if one of the cables breaks or loosens.

The microswitch complies with all provisions that dictate the regulations on the machinery directive and on protections and security.

The detector is assembled on the back of the chassis of the platform, as shown in figure 28.

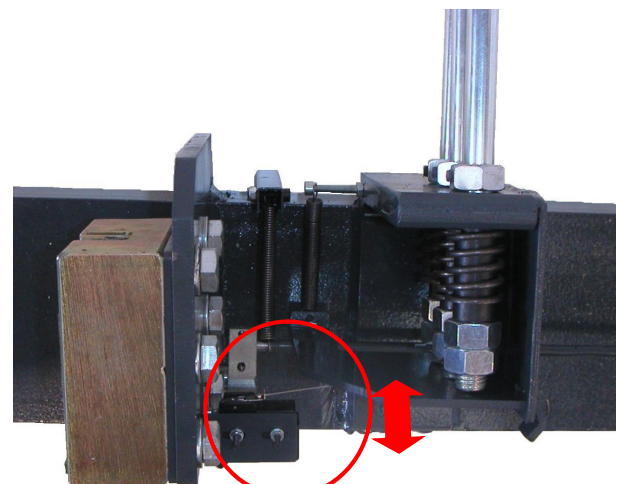


Image 28. AFC micro.

6.12.8. Limit switch (FC)

Its function is to deactivate the electric manoeuvre if the lifting platform exceeds the upper stop level due to a possible failure of the stop detector (CRD).

The microswitch complies with all provisions that dictate the regulations on the machinery directive and on protections and security.

The detector must be installed in the upper part of the shaft so that it detects when the platform is above the stop level.

6.12.9. Buttons and control elements

Control orders are made electrically through buttons placed in boxes, so that no part under tension is accessible to the user.

The control systems are reliable and secure, given that all their components are guaranteed by the quality certificates from the corresponding manufacturer.

Their design and size mean that they resist the normal established service conditions any any external influences. The control systems have been designed and manufactured so that no hazardous situations occur if there is error in the logic used during manoeuvres.

Provided that the cabin is completely closed with the doors inside, the control devices can be pressed automatically, whereas if the entrances are protected by curtains, they must be pressed and held.

The control devices:

- Are clearly visible and identifiable, and will be marked appropriately with regard to each floor.
- Are placed in such a way that they can be handled safely, without hesitation, loss of time or wrongly.
- Are placed outside of the hazardous areas.
- Their manoeuvre does not cause additional hazards.
- Are designed so that a hazardous situation can only arise through an intentional manoeuvre.
- They are designed to withstand the foreseen efforts.

The call buttons placed on the landings are comprised of a continuous call push button and a pilot (**ESTA**) in the case of doors without a peephole.

The interior buttons are formed by buttons to select the destination, pilot/buzzer to warn of an excess load, a stop interlock button and an alarm button that activates the acoustic siren.

Both the interior button and those to call for each floor are situated at a suitable height for easy handling.

Upon request, a position display in the cabin and/or on the landings can be supplied.
 Upon request, the installation can be supplied with remote controls.

6.12.10. Lighting

It is recommended to install lighting in the entrances to the platform.

The roof of the cabin is supplied with different halogens (according to measurements) for the interior lighting.

There is an emergency light on each embarking platform placed on the cabin roof, which turns on automatically when there is a power cut.

6.12.11. Telephone

A bidirectional communication telephone is supplied and forms part of the installation's telephone line.

Upon request, an emergency **SAR** type telephone with automatic calling to memorised telephone numbers can be supplied/installed.

The manufacturer declines all liability if the telephone is not installed on the platform.

6.12.12. Doors

The manufacturer declines all liability if doors are not installed to the platform or on the landings.

6.12.12.1. In the cabin

Photoelectric curtains

Upon request, photoelectric curtains can be supplied to protect the entrances to the cabin. They must be assembled to the exterior part of the openings, with the screws already prepared for their placement.

The control box for each curtain (power supply) is placed on the support at the bottom of the platform, as shown in image 26.

The curtains comply with all provisions dictated in the regulations on the machinery directive and on protections and safety.

If doors are not installed to the entrances of the cabin, it is mandatory to install protective curtains.

If protective curtains are installed to the entrances of the cabin, the control devices inside the cabin must be pressed and held.

The manufacturer declines all liability if curtains are not installed to the platform.

Automatic doors

Upon request, automatic doors can be supplied to install to the entrances to the cabin.

If doors are installed to the entrances of the cabin, the control devices will press automatically.

The doors comply with all provisions dictated in the regulations on the machinery directive and on protections and safety.

The manufacturer declines all liability if doors are not installed to the platform.

6.12.12.2. On the landing

Upon request, both manual and automatic doors can be supplied for the landings.

The doors supplied by DIFUSIÓN HIDRÁULICA LLUÍS, S.A. have a CE marking and comply with all provisions dictated in the regulations on the machinery directive and on protections and safety.

The manufacturer declines all liability if doors are not installed to entrances.

6.12.13. Pit stop

A small junction box is supplied along with the platform, containing a stop button and a 220V plug.

This must be placed along side the embarking platform on the ground floor so that it can be accessed if someone enters underneath the platform to place the platform out of service.

If the electrical pre-installation is supplied, this junction box comes pre-wired. Otherwise, it must be wired on site.

6.12.14. Strut detector (PNT)

Its function is to deactivate the electric manoeuvre in the event that the strut is lowered for installation, maintenance and/or repair operations.

The detector complies with all devices dictated by the regulations on the machinery directive and on protections and safety.

The detector must be installed in the upper part of the shaft so that it detects when the platform is above the stop level.



Image 28A.
Strut detector (PNT)

7. ADJUSTING THE VALVE GROUP

Ascent: start with built-in shock absorber. Stop with adjustable shock absorber, with the motor running 1/2 seconds during this interval.

Descent: start with adjustable shock absorber. Adjustable descent speed. Stop with built-in shock absorber

7.1. ALIGNING THE ASCENT

7.1.1. Deflection valve: if the pump starts with the platform empty and the “A” coil is activated, the platform must remain still for a period of 1 second before the first movement. Turning regulation screw **1** to the right achieves a shorter period, and turning it to the left makes it longer.

7.1.2. Upward start: with the pump in operation and the “A” coil activated, the platform accelerates according to the regulation of adjustment **2**. Turning this to the right achieves a smoother start, and turning it to the left makes it more abrupt.

7.1.3. Stop at the end of the ascent: upon stopping, coil “A” disconnects. The platform will stop according to the regulation of adjustment **5**, turning this to the right achieves a smoother stop, turning it to the left makes it more abrupt.

7.1.4. Alternative with over-travelling: at a relatively high speed, the platform will exceed the stop by a few centimetres. This over-travel will activate the “D” idle coil in a downward direction (re-levelling) and the cabin will descend to its stop position.

7.1.4. Safety valve "S": turning it to the right increases the maximum pressure. Turning it to the left reduces it.

7.2. ALIGNING THE DESCENT

7.2.1. Downward start: if the “D” coil is activated, the descent accelerates according to the alignment of regulating screw **6**. Turning it to the right obtains a smooth downward start, and turning it to the left makes this abrupt.

7.2.2. Descent speed: the descent speed will go in accordance with the alignment of screw **7**. Turning it to the right obtains a slower descent speed, and turning it to the left makes this quicker.

7.2.3. Stop at the end of the descent: if the “D” coil has no current, the platform will brake according to the regulation of adjustment **8**. Turning it to the right achieves a smoother breaking, and turning it to the left makes it more abrupt.

7.3. POSITIONING THE ALIGNMENTS

- A – ascent coil (VX)
- D – descent coil (VB)
- M – pressure gauge protection valve (*)
- S – pressure regulation
- P – manual descent

(*) – situated on the back of the valve

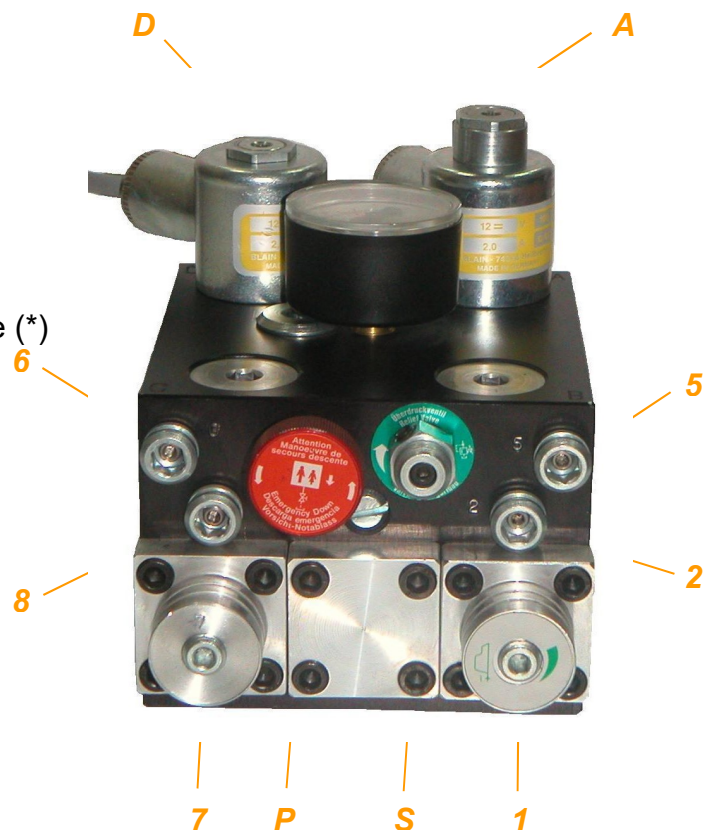


Image 29.

8. SAFETY AND PROTECTIVE MEASURES IN THE SERVICE LIFT

8.1. General protection requirements

- They are manufactured in a solid, resistant and non-slip material.
- They do not cause additional hazards.
- They do not break easily or become out of service easily.
- The travel speed both in ascent and descent will not exceed 0.15 m/s.

8.2. Fixed guards

These are built into the service lift so that the protective sides are firmly secured. They are screwed together and to the ceiling so that there is no access to the part of the guides.

If there is not a completely smooth hole in the entrances of the platform along its entire length, this may cause entrapments between the user and platform. In this case, we advise to remove them.

8.3. Protective devices in the service lift

The service lift is delivered equipped as standard with the following devices:

- Mechanical parachute (double wedge)
- Alarm siren
- Emergency bidirectional telephone
- Stop with a button-type interlock (1 inside the cabin, 1 in the inspection box under the service lift and 1 in the pit of each embarking platform)
- Pressure switch (acoustic and visible)
- Parachute valve connected to the base of the piston
- Photoelectric curtains or automatic doors

8.4. Protective devices on the entrances

No types of doors, whether manual or automatic, for the landings are supplied with the service lift, unless they are previously ordered.



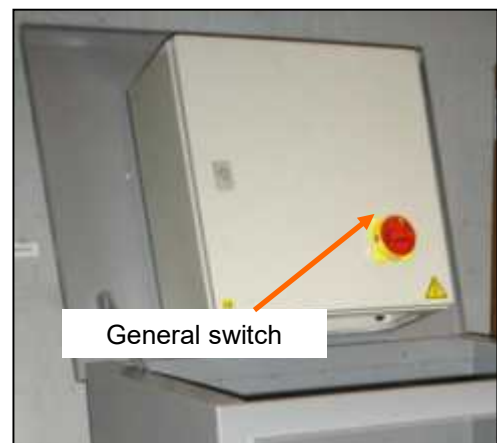
The manufacturer declines all liability if the service lift is used improperly.

9. RESCUE INSTRUCTIONS IN THE SERVICE LIFT

9.1. Rescue from the outside

Both the rescue manoeuvre and opening the door with the emergency key **may only be carried out by competent authorised staff.**

All safety devices must be kept active, then disconnect the main switch. This will be confirmed by using a padlock so that nobody can reconnect it whilst the rescue manoeuvre is being carried out.

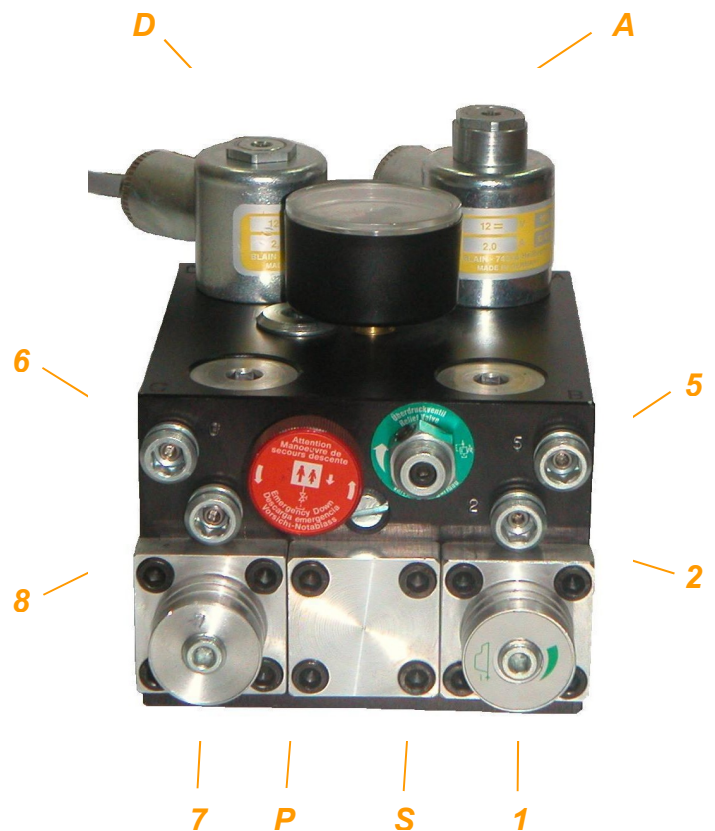


We must ensure that all landing doors are properly closed and then we will place an **OUT OF SERVICE** poster on each door.

In the hydraulic unit we find the **manual emergency descent valve (P)**. To make the platform descend, we must turn it to the left intermittently, checking the position of the service lift in rest intervals until reaching the desired position.

If a wedging has occurred (the service lift becomes blocked), either hydraulic or mechanic (**pressure = 0 on the pressure gauge**), we will proceed to unblock it using the manual emergency pump (B).

We will then proceed to open the floor doors with the emergency key and release the passengers. Do not try to rescue people if the service lift is not at ground level, because there is a risk of falling inside the service lift shaft. Once the passengers have been released, we must ensure that the open doors are closed.



The floor doors will only open in the unlocking area, the area closest to the floor level $\pm 50\text{mm}$ (5cm over the level or 5cm under the level)

Notify the maintenance company of the emergency.

If the service lift cannot be moved as indicated in these instructions, you must notify the maintenance company immediately.

9.2. Rescue from inside the cabin

In the event that a user becomes trapped inside the service lift due to a power cut, the emergency lights installed in the cabin ceiling will switch on automatically.

Users may descend to lower floors by pressing the corresponding button.

The rescue descent is possible thanks to an emergency battery incorporated into the manoeuvre.

During the rescue descent, the photoelectric bands, despite not being lit up, will continue operating.

Once you reach the desired floor, if the doors are manual you can open them, but if they are automatic/motorised, they will only open automatically if they have a rescue battery.

Difusión Hidráulica Lluís, as manufacturer, advises that when the landing doors are motorised and do not have rescue batteries, place the keys necessary to unlock the landing doors inside the service lift so that they can be unlocked, with their corresponding instructions, when there is no power and allow users to exit the service lift once it has reached the stop level.

NOTE: only use the keys to unlock automatic doors when the service lift has reached the desired floor level.

10. MAINTENANCE

The service lifts do not require much attention once installed. If the machinery is used correctly and its work capacities are not exceeded, there is no reason why any problem should arise.

We advise to contract a maintenance service from a qualified company at least once a year. The points to review are:

Cleaning of the pit	Clean the excess grease/oil from the guides Remove fallen debris from the shaft, ensure that there is no infiltrated water
Cleaning and lubrication of guides	Clean the guides to remove dirt or dust, use solvent Grease the guides evenly across their entire length
Tension of suspension cables	Check that the suspension cables have the same tension, activate the terminals if necessary Replace if any fault is observed
Friction clamps	Check the widths; replace if there is any excessive movement in the head
Wheels	Readjust lengths
Cleaning of the parachutes	Remove any existing dirt and grease
Oil leaks in the cylinder head	Check the oil moisture around the cylinder head
Oil leaks in the hydraulic connection to the cylinder	Check that there are no oil leaks in the union of the parachute valve to the cylinder, or in the connection of the piping to the parachute valve
Oil leaks in the hydraulic unit	Check for any possible oil leaks in the valve block, filter and shut-off valve
Oil level	Check the oil level
Oil status	Check the oil status; change if it has any unusual appearance: Opaque yellow-white colour, the oil has water in it Black or very dark colour, the oil is old or has burned
Parachute valve	Check its correct operation
Hydraulic group	Check its correct operation with the nominal load of 2,500kg.
Manual pump	Check its correct operation
Pressure switch	Check its correct operation
Cable loosening safety contact	Check the correct operation of the cable loosening safety system
Control panel	Ensure that the cabinet is dry, clean and free of dirt Check the contactors for signs of oxidation or sparks
Control elements	Check the operation of all interior/exterior buttons
Operation of the rescue, emergency lighting and acoustic siren	Raise the platform to higher levels, disconnect the current and descend to any lower level Check the operation of the emergency light and acoustic siren
Protections on entrances to the platform	Check the operation of the photoelectric curtains and/or automatic doors of the cabin Check the rescue system of the doors, if any.
Protections on entrances to the shaft	Check all series of the landing doors
Telephone	Check its correct operation

A record or control of incidents and maintenance operations must be made. A model sheet is attached as a guide.

The regulation, maintenance, repair, cleaning and conservation operations will be carried out by qualified staff.

The service lift manufacturer declines all liability if it is used differently to the parameters outlined on the name plate, is poorly installed, misused and also if non-original spare parts are used.

10.1. REVIEW POINTS

GENERAL FOR THE OWNER

Obligatory to contract a qualified company for maintenance tasks.

Appointment, by the owner, of a staff member (or members) who is trained in the tasks that may be carried out by staff other than those of the contracted company:

- Cleaning of the immediate parts
- Cleaning of the cabin's interior
- Observe the proper operation of the service lift
- Rescue operations (only trained staff)
- Place the service lift out of service, when permitted

HYDRAULIC PART

1. Oil level in the central hydraulic unit
2. Precision of the stop
3. Observation, level of noise and vibrations
4. Observation of oil leaks in the central unit and pipes

CONTROL PANEL

1. Verification of general cleaning
2. Status verification of contactors, oxidation and sparks

PIT

1. Cleaning and filtrations
2. Operability of the safety system

CABIN

1. Overall status of walls, floors and ceilings
2. Operability of the buttons
3. Verification of the emergency light
4. Verification of the telephone's operation
5. Verification of the photo-electric curtains and/or doors

CHASSIS

1. Status of the parachute
2. Verification of the width of friction clamps and wheels
3. Verification of the cable ties
4. Verification of the voltage of the tension cables
5. Verification of the lubrication of guides and the tank's oil level
6. Verification of the attachments of guides to walls

FLOOR DOORS

1. Verification of widths between landing doors and frames
2. Overall status, frames, sheets and peepholes
3. Verification of mechanical interlocks and door series
4. Operability of the buttons

10.2. SAFETY COMPONENTS

10.2.1. Manual floor doors

Open the landing door when the cabin arrives, close it again and check that all series are closed.

10.2.2. Automatic floor doors

After a proper installation, they do not require much maintenance. The parts to replace depends on the mechanical fatigue (work intensity, cleaning...)

Clean the tracks, if any.

Perform an opening and closing manoeuvre, check that all series are closed and remain locked if the service lift is not present.

10.2.3. Mechanical parachute

The only verification of the mechanical parachute system is to check that when one or both cables break or loosen, both of them activate (right and left).

10.2.4. Parachute valve

It is essential to check, once a year, that the parachute valve is operating correctly.

In the event of a faulty operation, place the platform out of service, replace it for a new one and never the leave the platform in operation without this valve or with a faulty valve.

The assembly cannot be modified with repaired parts or parts that are different to the originals.

10.3. Spare parts

It is very unusual that parts will have to be changed in the lifting platforms due to faults or defects. All spare parts needed to carry out any repair will be supplied by the manufacturer. These spare parts will always be original and will have the same characteristics as the parts to replace.

A part must never be replaced for another that has not been supplied by the manufacturer, as this will never be equal to the original and could cause added problems.



Difusión Hidraulica Lluís, S.A. declines all liability if the service lift is used differently to the parameters outlined on the name plate, is poorly installed, misused and also if non-original spare parts are used.

10.4. Safety instructions during maintenance

Any disturbances should only be eliminated by qualified staff.

This is especially understood when carrying out repairs to electrical, hydraulic and tooling installations.

Before starting any maintenance or repair work, you must ensure that:

- The machinery is out of service and the electro-hydraulic driver is disconnected.
- A warning sign can be found on the control panel of the machinery of distribution control cabinet, with the following text:

ATTENTION, MAINTENANCE WORKS!
Do not connect the machinery
Do not activate any control element
This sign should only be removed by Mr.

- The main switch in the control cabinet must be in a "disconnected" position, so that the machine cannot be switched on.

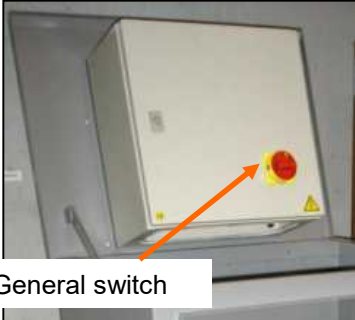
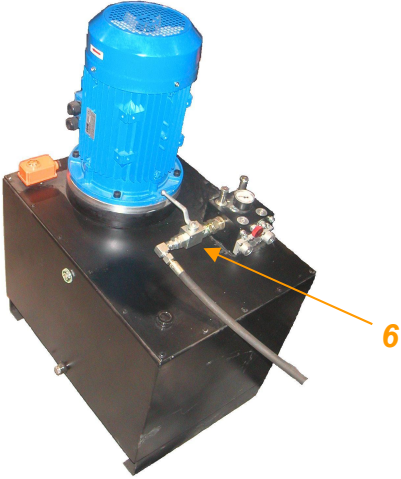
These requirements can only be disregarded when carrying out works that cannot be done without power supply.

Carrying out maintenance tasks with the machine in operation is only when permitted when it is unavoidable and if they are carried out with no risk of accidents to persons, using the protective devices necessary for these works.

The regulation points must be situated outside of the hazardous zones to carry out the maintenance, repair, cleaning and conservation tasks without any risk.

10.5. Maintenance in the lower part, in the pit

Before accessing the pit:

<p>Cut the electricity supply</p>	
<p>Close the hydraulic circuit shut-off valve (No. 6)</p>	

Lower the strut and activate the emergency stop button.



