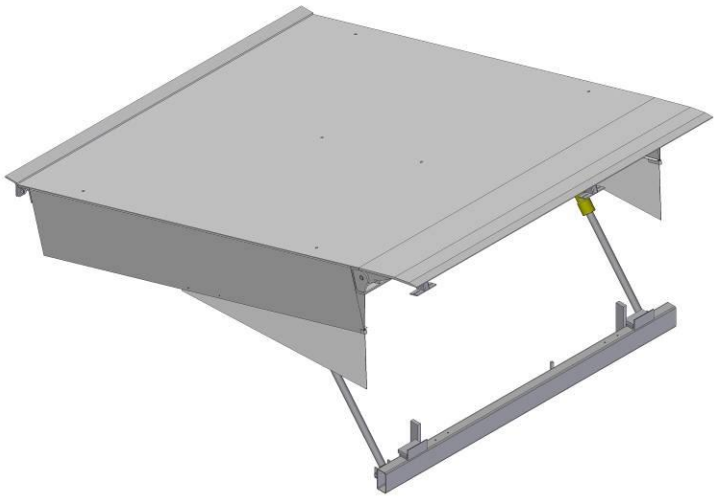
Inkema

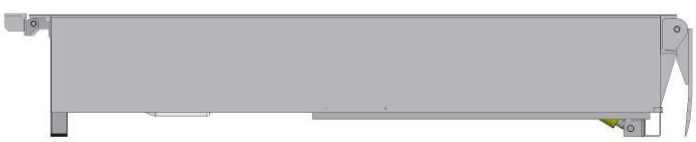
Loading Bays • Dock Shelters • High-Speed Doors
Fire Doors • Free Standing Frames and Dock Houses • Scissor Lifts
Loading Bridges • Industrial Doors

Instructions manual

Hydraulic dock leveller
Model: **RH14**

SUSPENDED





Contents

01 – Introduction

This manual is a guide for the correct, safe installation, use and maintenance of the **RH14** dock leveller.

Compliance with the instruction set forth herein ensures the long life of the machine and respect for the safety guidelines prevents the most common work or maintenance-related accidents.

The instructions in this manual do not, in themselves, guarantee safe working and do not release operators from their obligation to observe the safety code, legislation or local or national regulations.

The service rule set out in this manual is only valid for mobile ramps and for loading and unloading trucks.

In the event of mislaying the instructions and maintenance manual, another copy that is specific for the machine should be requested. It is essential and absolutely necessary to keep this manual with the machine, in order to consult it at any time, or settle any doubts regarding its use.

The manufacturer has no direct control over the operations, locations or maintenance of the machine. Operators are responsible for using best safety and maintenance practices.

Operators have the obligation to read and make sure they understand this manual before they use the machine.

Using the machine with caution and adequate training not only protects the operator but also the persons who depend on his work.

The information set out in the manual is valid at the time of publication.

The photographs and drawings are generic; as a result, this information may be changed, due to the constant development and research carried out by ***INKEMA.***

In the event of discrepancy, please consult the technical department.

This manual is an inseparable part of the machine and must be provided toether with it in the event of sale.

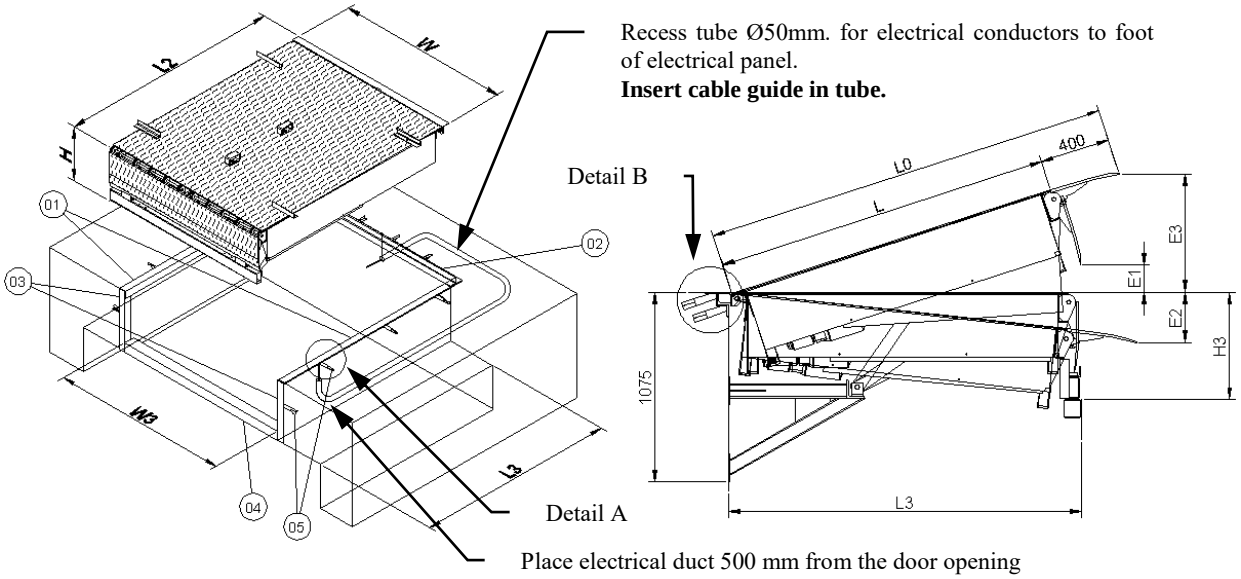
02 – Technical specifications

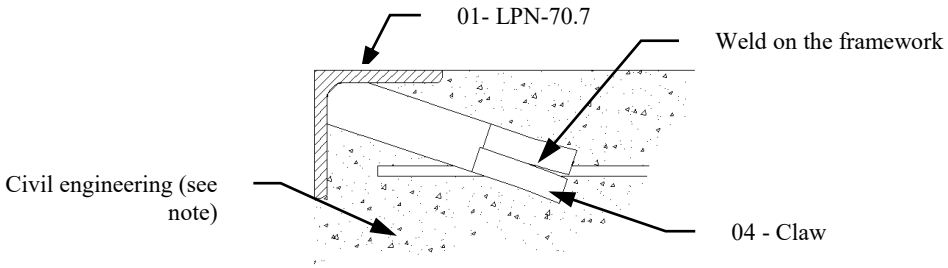
Leveller designed pursuant to the **UNE-EN 1398** standard
Calculated for a maximum nominal load of: (See its plate characteristics).

02.01 – Usage conditions and limits

- Nominal load capacity 6t
- Motor electrical voltage 230/400 volt. 3F 50Hz
- Motor electrical power 0.75 Kw.
- Electrical output voltage to emergency electro valve 24 volt. AC.
- Max. operating pressure of the hydraulic circuit 140 kg/cm² (Bar)
- Operating temperature range (-10ºC +40ºC)
- Noise level generated <70db
- Max. transit speed 10Km/h
- Max. operating gradient 12.5% (7º)
- Do not work with the machine while the emergency stop is activated or if the power supply has been cut off.

02.02 – Installation in pit with rear elevation cylinder





Detail A of subframe

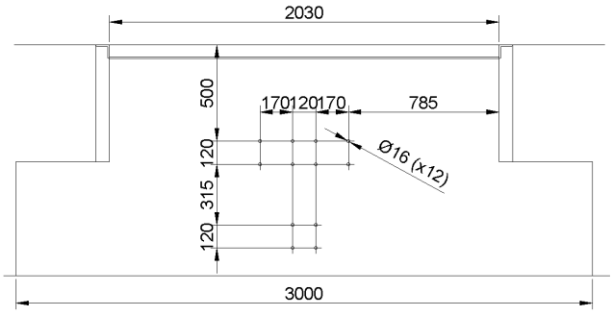
Note: Metal profile joints with continuous cord and a neck of 6mm
Floor of at least H250 concrete with a thickness greater than or equal to 200mm.

PIT SUBFRAME

01	02	03	04	05
2 un.	2 un.	(1+1) Un. **	1 un.	15 un. **
LPN-70.7 x (L3)	LPN-70.7 x (W3 +30)	LPN-70.7 x H3	100x100x4 x (W3 + 30)	#3x40x200

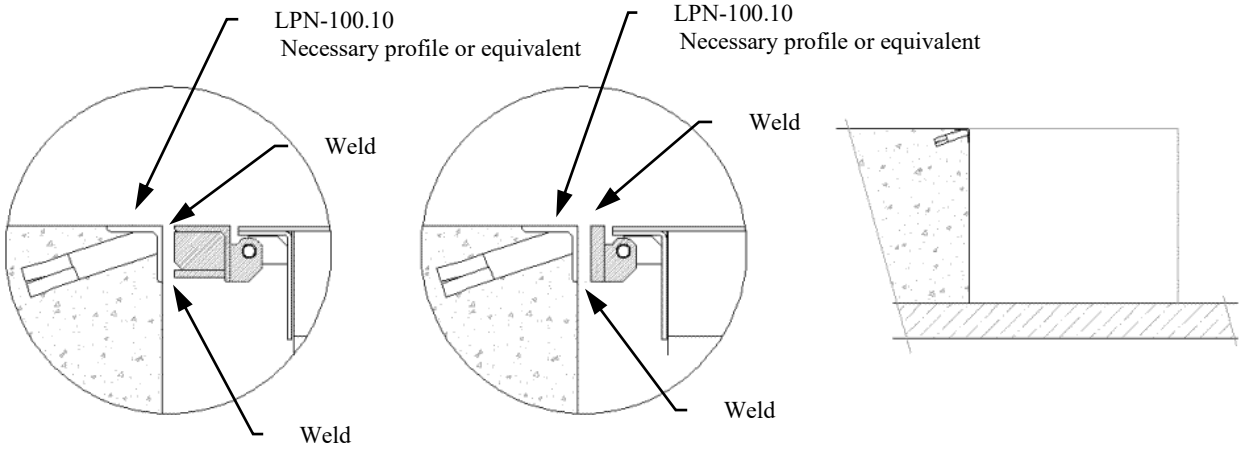
(**) Parts with some type of machining. (Ask the Technical Department for drawings)

The diagonals of the pit must be equal ± 5 mm



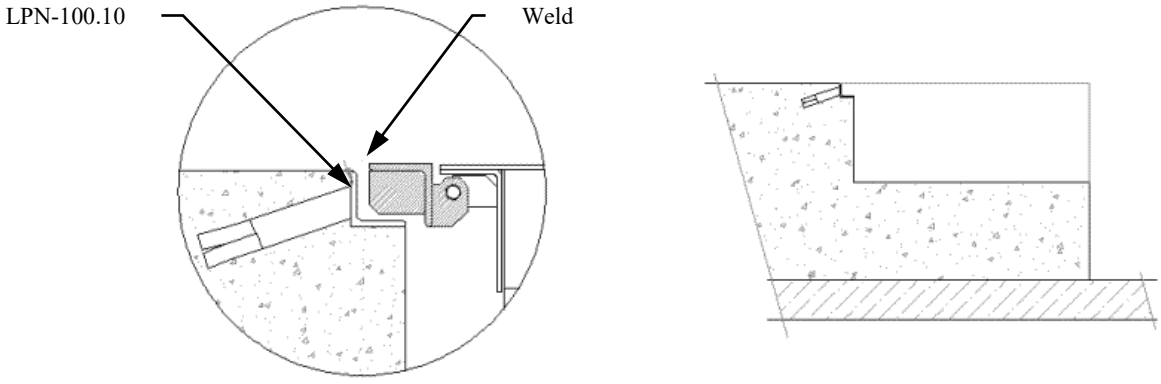
Detail of rear part of pit, front view

- **For open pit (Detail B)**



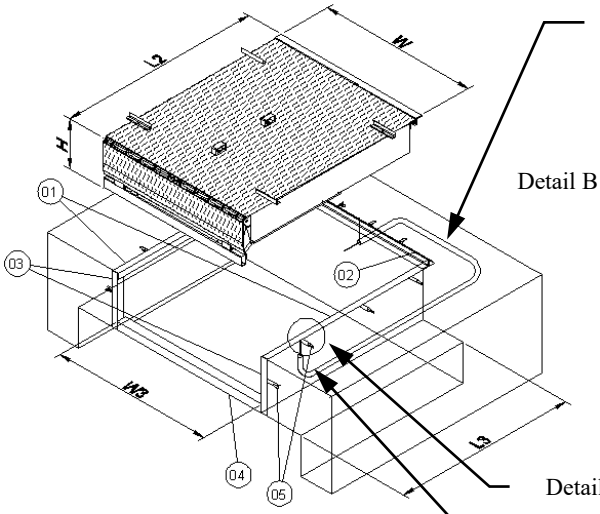
Option A Option B Open pit

- **For closed pit (Detail B)**



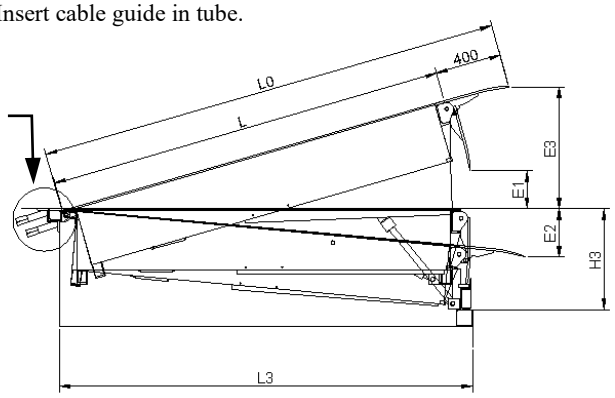
Option C Closed pit

02.03 – Installation in Pit with front Cylinder



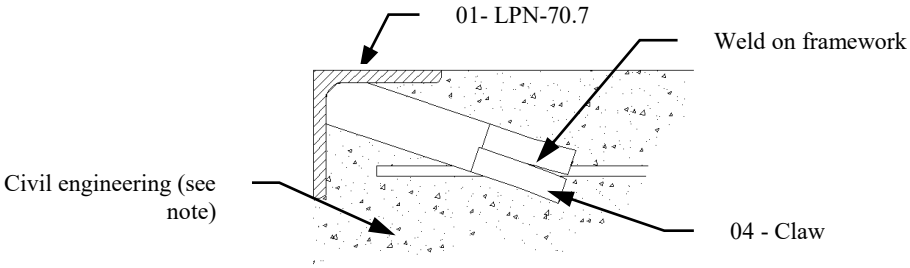
Recess tube Ø50mm. for electrical ducts to the foot of the electrical panel.
Insert cable guide in tube.

Detail B



Detail A

Place electrical duct 500 mm from door opening



Detail A of subframe

Note: Metal profile joints with continuous cord and a neck of 6mm
Floor of at least H250 concrete with a thickness greater than or equal to 200mm.

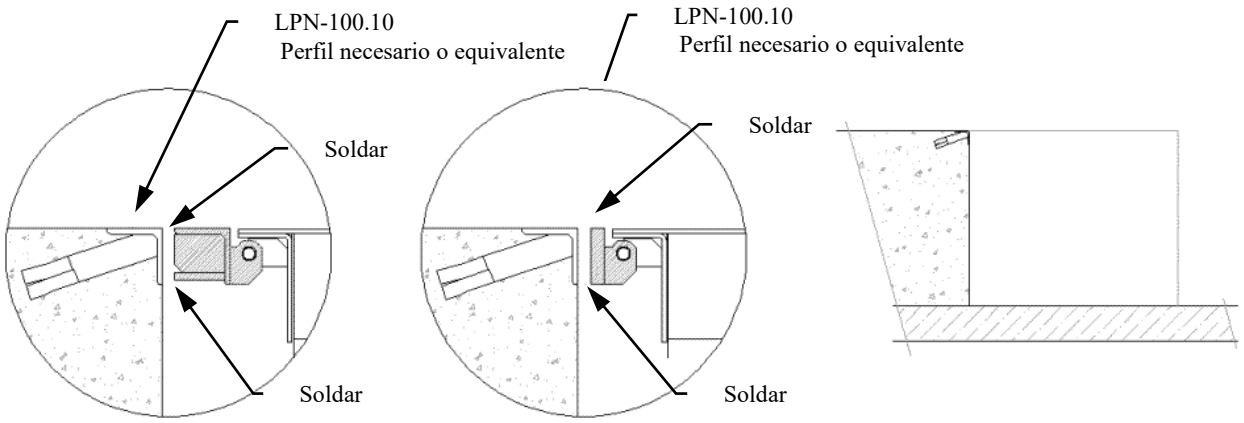
PIT SUBFRAME

01	02	03	04	05
2 un.	2 un.	(1+1) Un. **	1 un.	15 un. **
LPN-70.7 x (L3)	LPN-70.7 x (W3 +30)	LPN-70.7 x H3	100x100x4 x (W3 + 30)	#3x40x200

(**) Parts with some type of machining. (Ask the Technical Department for drawings)

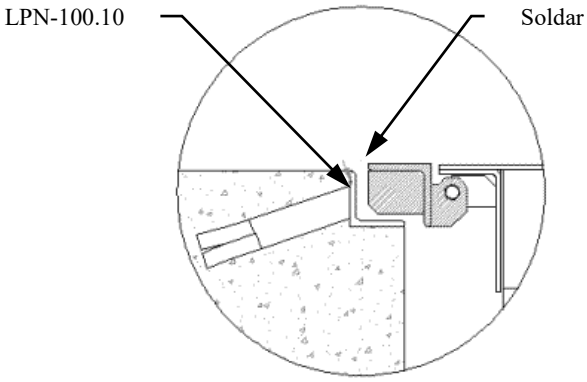
The diagonals of the pit must be equal ± 5 mm

- **For open pit (Detail B)**

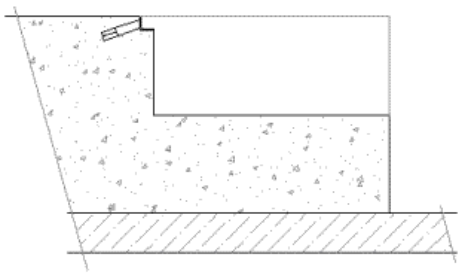


Option A Option B Open pit

- **For closed pit (Detail B)**



Option C



Closed pit

02.04 – Platform

- Superior tear plate (thickness 6/8mm.), quality ST-37.
- 10 cold rolled profiles
- 2 cold rolled lateral profiles (non-shear safety panels).
- Front hinge unit (lip joint).
- Rear hinge unit (platform joint).
- Safety bar for executing maintenance work.

02.05 – Lip

- Tear plate (thickness 13/15mm.), quality ST-37.
- Press stroke 5º 150mm. from the end (for perfect adjustment to the truck).
- Milled at the outer end (to ease the passage of the fork-lift trucks).

02.06 – Inferior structure

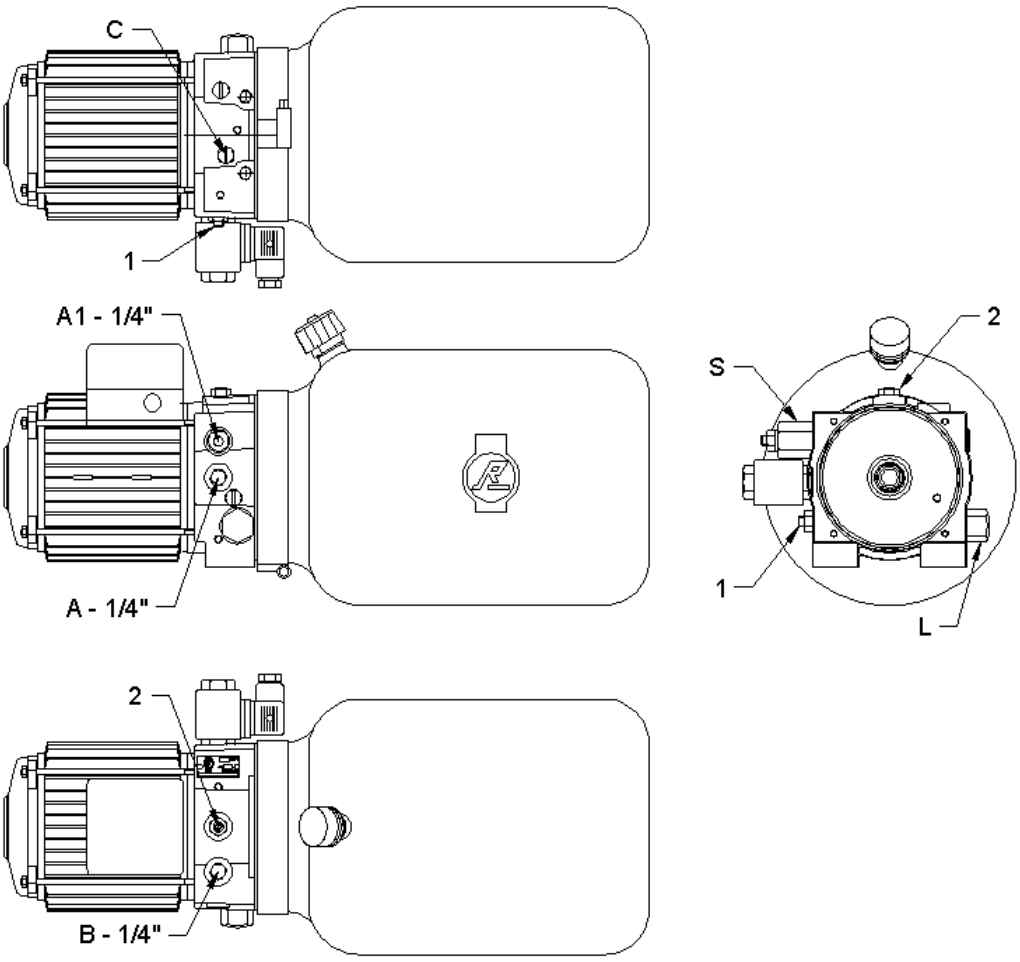
- Rear assembly (head) formed by rolled profiles.
- Front assembly with profiles for supporting the lip.

02.07 – Hydraulic power unit

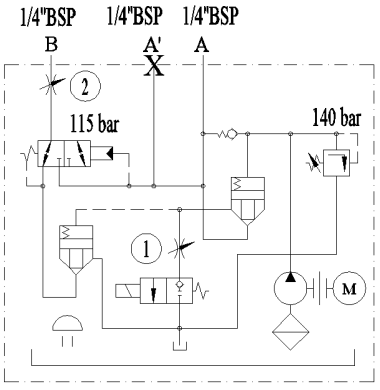
- 1.0CV electric motor. 0’75kw 230/400Volt 3F 50Hz.
- Hydraulic pump with flow rate of 5 litres/minute.
- 7-litre tank with oil level viewer.
- Logicblock in which all the elements are incorporated (including 24V electro valve).
- Ø50mm. cylinder with rod for raising platform, with parachute safety valve.
- 1 Ø30mm. cylinder with rod for raising lip.
- Leads, connection fittings, etc…

The machine may be supplied with any of the following hydraulic unit versions, both are identical and perform the same function.

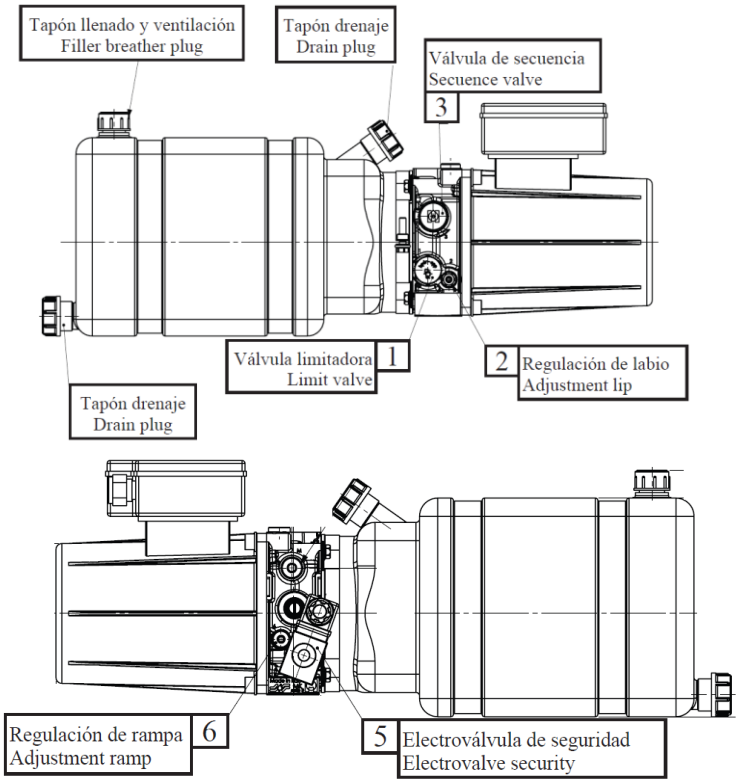
02.07.01 – Hydraulic unit version 03

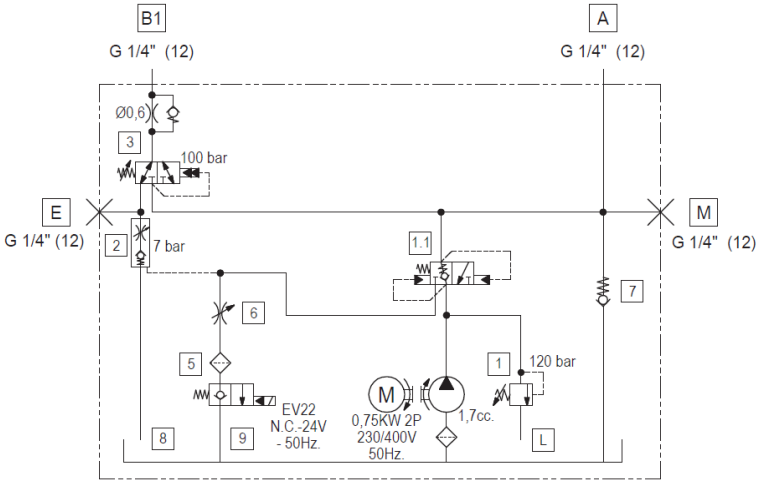


1	Leveller adjustment
2	Lip regulation
A	Leveller elevation cylinder
A1	Leveller elevation cylinder
B	Lip cylinder
C	Screw and spring
L	Limit valve
S	Sequence valve



02.07.02 – Hydraulic unit version 07





02.08 – Electrical control panel

(See electrical control panel connections, page 19)

- Transformer for manoeuvring circuit at 24Volt. AC.
- Green light indicating on.
- Emergency stop/section switch.
- Thermal switch.
- Fuses.
- Terminal block.
- Box 190X*240Y*105Z (IP-55)

02.09 – Safety systems

- Emergency and/or power failure electro valve
- Emergency stop/section switch.
- Elevation cylinder safety valve
- Toe guards
- Non-slip surface

02.10 – Maintenance

The correct operation and long life of the ramp depend largely on the preventive maintenance work carried out.

Advanced maintenance may only be carried out by the ***INKEMA*** technical service or staff authorised by the latter.

This maintenance is carried out to ensure that the product conserves the safety and usage characteristics it had when it was first installed.

All changes, repairs or manipulation of the product that do not comply with these regulations will lead to the cancellation of the one-year warranty term and the liability of ***INKEMA*** for the product will automatically end.

Continuous greasing, painting and vigilance is the best way to guarantee its performance for many years.

02.10.01 – Hydraulic oil

The hydraulic oil must be replaced every two years.

The oil must contain agents that prevent the formation of foam, oxidation and water absorption. If the winter temperatures are very low, the oil must not be too thick and its viscosity index must remain stable at low temperatures.

Never mix different oils, as the new oil may have a different resistance to oxidation and affect the life of the original oil.

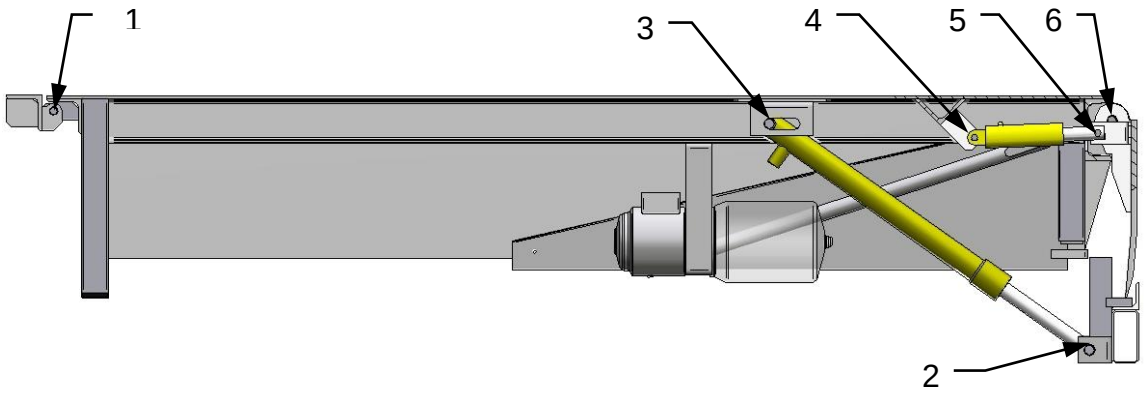
It is important to check the oil level every 6 months. The oil tank must be filled until it almost overflows from the closing cap, in the lowest possible position.

The machine is supplied already containing **T-15 oil**

Hydraulic oil for levellers in refrigerated storerooms must have specific properties of use, in accordance with the temperatures to which it is exposed. For this reason, if the need arises, the manufacturer must be informed about the conditions in which the machine will be operating to ensure it contains the special oil.

02.10.02 – Grease points.

Every six months, check the grease points shown in the diagram



02.10.03 – Dock leveller descent speed regulation

The speed will be regulated using the respective adjuster (1). *(See hydraulic unit, page 7)*

02.10.04 – Lip opening speed

The lip opening/closing speed is determined in the factory, but can be regulated using the respective adjuster (2). *(See hydraulic unit, page 7)*

02.10.05 – Maintenance plan

Maintenance job	Daily	Every month	6 months	1 year	2 years
General state of the machine	♦	♦	♦	♦	♦
Greasing			♦	♦	♦
Hydraulic oil level			♦	♦	♦
Oil leak inspection			♦	♦	♦
Weld inspection				♦	♦
Axle inspection				♦	♦
Inspection of lateral adhesive bands				♦	♦
Paint inspection				♦	♦
Flexible conduits and connection fittings				♦	♦
Manoeuvring speed				♦	♦
Check parachute valve					♦
Change hydraulic oil					♦

02.11 – Instructions for use

02.11.01 – Before use

Make a visual check to ensure the leveller is in perfect conditions of use.

Centre the vehicle against the rubber stops of the leveller.

Check that the vehicle is completely immobilised and blocked. (Switch off the engine, apply the handbrake and place chocks on the wheels).

To raise the leveller to the load surface level, connect the manoeuvring circuit by turning the red section switch. The green pilot light will come on.

To raise the leveller and open the lip press the elevation button without releasing it.

If you stop pressing the button, the leveller will descend at a controlled speed, due to its own weight.

Raise the leveller until the lip starts to open. Once the lip is open completely, release the elevation button.

Let the leveller descend at a steady speed until it rests on the load surface of the truck.

Check that the whole width of the lip is resting on the load surface of the vehicle in an area NO smaller than 130mm.

02.11.02 – During use

The dock leveller will merely rest on the load surface (truck). The hydraulic cylinders MUST NOT be blocked to allow the leveller to adapt to the height of the load surface (which will vary, depending on the variation in the truck suspension).

Check that the emergency stop is NOT activated and that the leveller is supplied with power.

VERY IMPORTANT:
It is strictly prohibited to perform loading and unloading operations with the emergency stop activated, or while the leveller is not supplied with power.

Never exceed the maximum nominal load. (See its plate characteristics).

Ensure that the leveller continues to rest on the load surface during transit. If this is not the case, press the emergency stop button immediately.

Fork-lift trucks must be driven with caution. The maximum transit speed calculated for the leveller is 10 km/hour.

02.11.03 – After use.

Raise the leveller and close the lip before the truck leaves the loading position. To do this, press the elevation button and raise the leveller just enough for it to clear the truck.

Release the button and wait for the leveller to descend at a steady speed and rest on the closed lip on the front of the inferior structure.

02.11.04 – Precautions during use.

Check that the emergency stop is not activated.

Never exceed the maximum nominal load. (See its plate characteristics).

Before each manoeuvre check that no-one is in the work area.

Check that the leveller is resting properly on the load surface of the truck, with the entire lip coupled to a surface of approximately 130 mm along its whole width.

The hydraulic unit has the sole function of making the necessary movements to manipulate only the dock leveller.
It must never be used to support and/or lift loads.

Before raising the device ensure that its movement is not blocked by other equipment. (Doors, etc...)

After completing the operation check that the lip is properly inserted in the closed leveller position.

03 – CE Declaration

DECLARATION OF CONFORMITY

INKEMA SISTEMAS, S.L. declares, under its own responsibility, that the electro hydraulic dock levellers:

Make : **INKEMA**
Model : **RH14** with a capacity of **6000 Kg** *(*)*
Year of manufacture : **2016**

Are compliant with the essential requirements of the following directives:

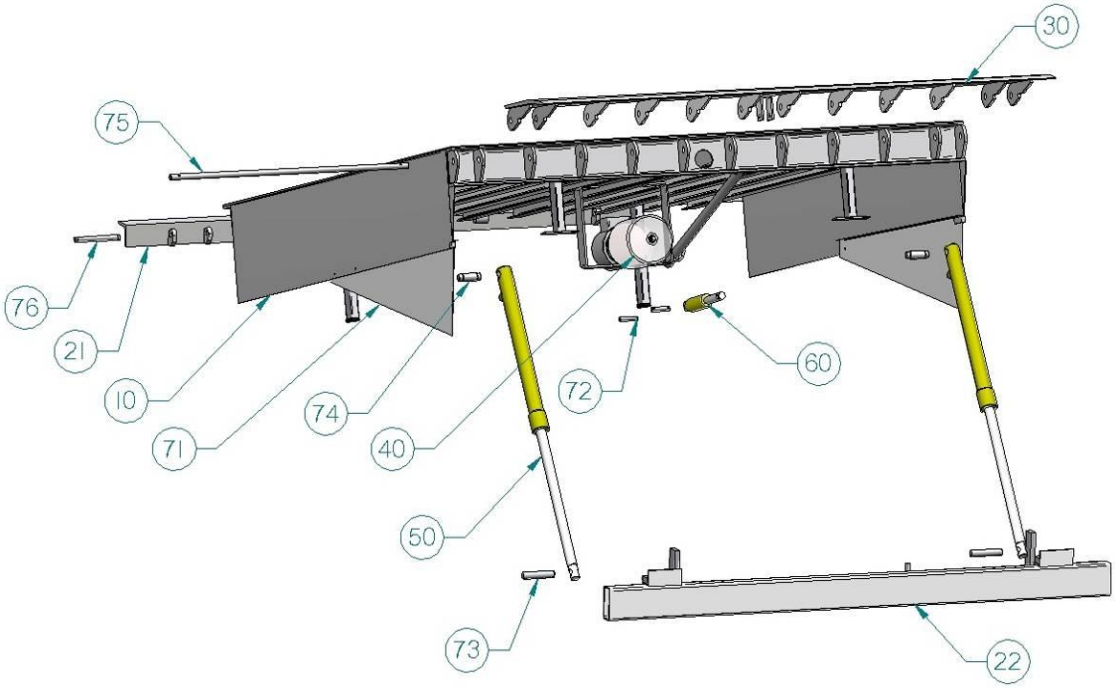
2006 / 42 / EC	Machine safety.
2004 / 108 / EC	Electromagnetic compatibility.
2006 / 95 / EC	Low voltage.

And have been calculated and designed pursuant to the following European standards:

EN 1398:2010	Dock levellers
EN ISO 12100-1:2010	Machine safety. Basic concepts. General design principles.
EN 61000-6-2:2006	Electromagnetic compatibility. Basic immunity concepts for industrial environments.
EN 61000-6-4:2011	Electromagnetic compatibility. Basic emissions concepts in industrial environments.
EN 60204-1:2010	Machine safety – Electrical equipment – General provisions.

(*) In the event that the capacity is other than 6000kg, the respective EC certificate will be attached to this manual.

04 – Machine units and parts



Pos.	Part code	Description	Quant.
10	20.0001 … (*)	p/ RH structure (*)	1
21	20.0002 … (*)	RH14 inferior structure unit (*)	1
22	20.0022 … (*)	RH14 inferior structure front (*)	1
30	20.0003 … (*)	6t RH swing lip (*)	1
40	20.0017.0001	p/RH hydraulic power unit (Complete)	1
40	30.0011.0008	7 Lit. plastic container p/ hydraulic power unit	1
40	30.0011.0007	p/RH1 1.8 cc/v hydraulic pump body	1
40	30.0015.0005	400/230v 3F 1.1cv 3000rpm power unit motor	1
40	30.0011.0009	RH1 power unit sliding door safety electro valve	1
40	30.0011.0010	Safety electro valve coil for RH1 power unit	1
40	30.0011.0011	Electro valve coil electrical connector	1
45	30.0011.0001	Bonded washer 3/8"	3
45	30.0011.0002	M/M connection fitting thread 3/8" Zinced gas	3
45	30.0011.0014	M/M reducer connection fitting 3/8" to 1/4"	3
45	30.0011.0003	Hydr. flexible conduit 2 straight outputs 3/8" Gas L=700	2
45	30.0011.0004	Hydr. flexible conduit 1 straight output + 1 90º output 1/4" Gas L=1700	1
45	30.0011.0005	Solid Renolit-type grease (50kg)	0.2
45	30.0011.0006	Hydraulic oil	7
45	30.0012.0009	Grower zinced M10 DIN-7980 safety washer	2
45	30.0012.0010	Zinced M10x20 DIN-933 screw	2
50	30.0010.0006	Ø35 e/c=693 carr=538 hydraulic cylinder	2
60	30.0010.0002	Single effect cylinder Ø30 e/c =260 run=105	1
71	30.0008.0007	1250x365x1.5 galv. mobile toe guard	1+1
71	30.0012.0002	M6x16 ISO-7380 zinced Allen truss head cap screw	2

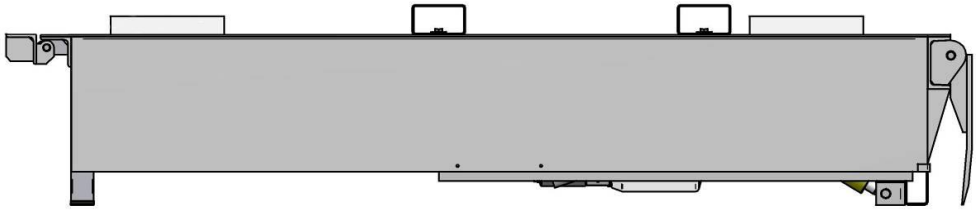
71	30.0012.0003	M6 DIN-985 zinced self-locking nut	2
72	30.0006.0008	Zinqued axle Ø16 x 70	2
72	30.0012.0039	Ø5x28 DIN-94 Cotter Pin	4
73	30.0006.0011	Zinqued axle for cylinder Ø25x120	2
73	30.0012.0040	Ø5x40 DIN-94 Cotter Pin	4
74	30.0006.0059	Zinqued axle for mounting hole Ø30x103	2
75	30.0006 … (*)	Lip axle Ø22 (*)	2
75	30.0012.0040	Ø5x40 DIN-94 Cotter Pin	4
76	30.0006.0007	Zinqued rear hinge axle Ø19 x 175	3
76	30.0012.0034	DIN-471 Seeger ring for axle with Ø19 / Ø17.5	6
77	20.0018.0001	p/RH1 electrical panel (standard)	1
77	30.0015.0001	Black/Brown/Grey class 5 or 6 4x1.5 electrical hose	10
77	30.0015.0002	Black 2x1 Aceflex AG electrical cable	10
77	30.0015.0003	BGR M25 PG-9 tube with two sleeves.	1.5
77	30.0015.0004	VA105 cabling terminal	4

(*) Specify the part code and description, and the machine model and dimension.

05 – Installation

05.01 – Transportation

The machine is completely folded during transportation. In order to load more units of the transport space.



05.02 – Positioning in the pit

VERY IMPORTANT: When handling the leveller, always respect the occupation risk prevention legislation and the regulations regarding safety, hygiene and health at work.

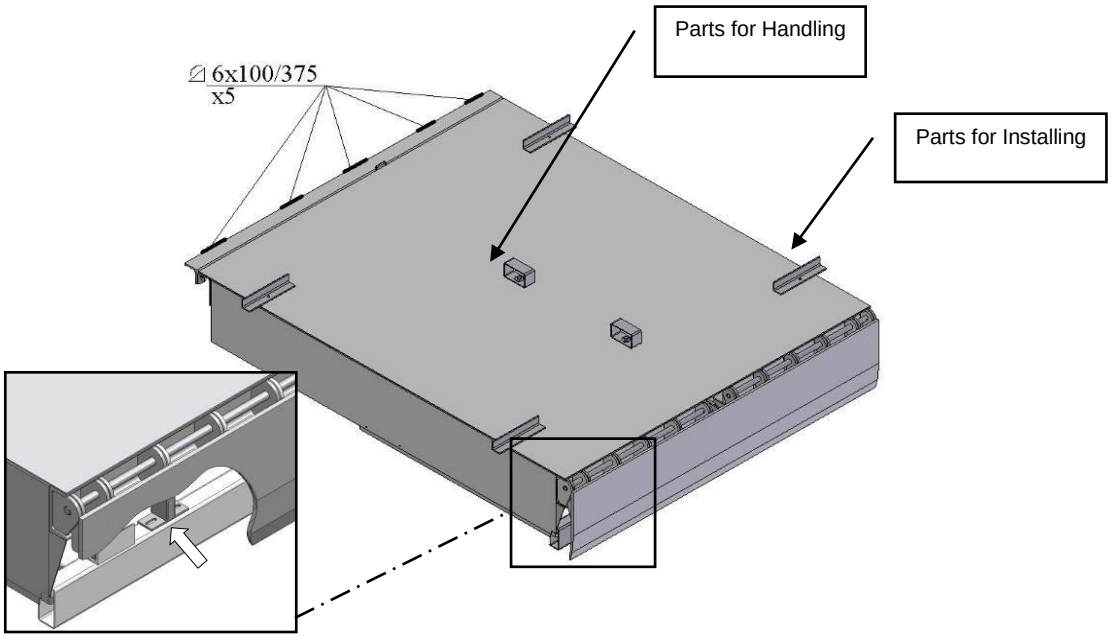
Place it in the pit with the help of a crane, fork lift truck or similar element, using the worm screws, and chains, slings and similar items to lift it. With a load capacity equal to or greater than the weight of the leveller.

To position it, the anchoring parts will be screwed to enable the leveller to be held and supported in the pit.

Then unwind the electrical cable and pass it through the tube that is centred at the back of the pit. Once the cable has emerged at the other end of the tube, position the leveller correctly in the pit.

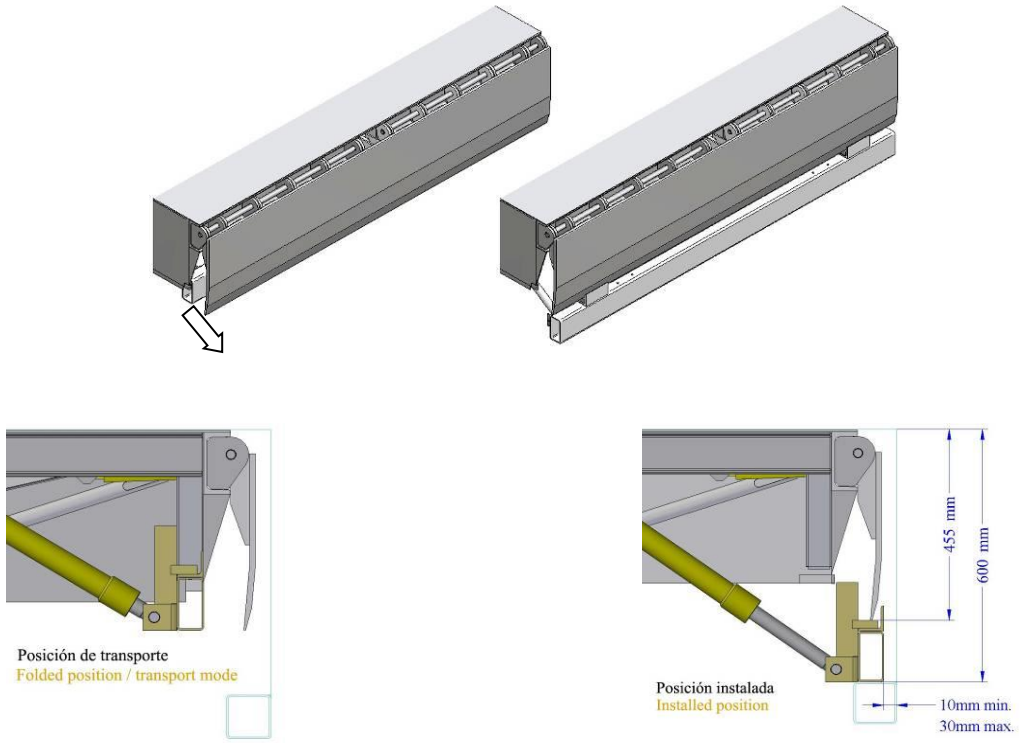
Then centre and position the rear hinged unit of the machine, supporting it on the inverted "L" profile at the back of the pit.

Weld the rear part of the machine to the pit using 5 weld cords with a throat of 6mm and length of 100mm with a distribution and separation between them of 375mm.
The weld areas are indicated in the following diagram:



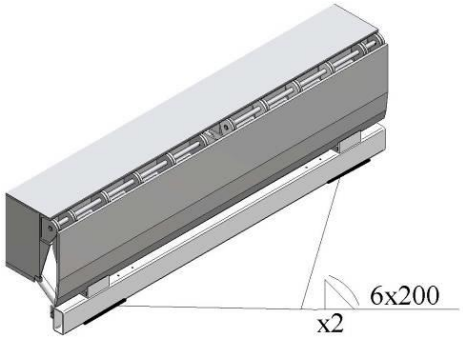
Unscrew the front support and position it on the inferior structure (see the previous figure).

Pull the front with the cylinders until it is in the correct position, so that when the lip is resting on the supports the machine is completely horizontal and the front does not protrude from the pit. Normally there must be a margin of between 10mm and 30mm between the front and the pit. (See the following diagrams).



Weld the front part of the machine to the inferior structure using 2 weld cords with a throat of 6mm and length of 200mm centred with respect to the front supports of the lip.

Once all the welding has been done remove the rear anchoring parts.



05.03 – Installing the electrical control panel

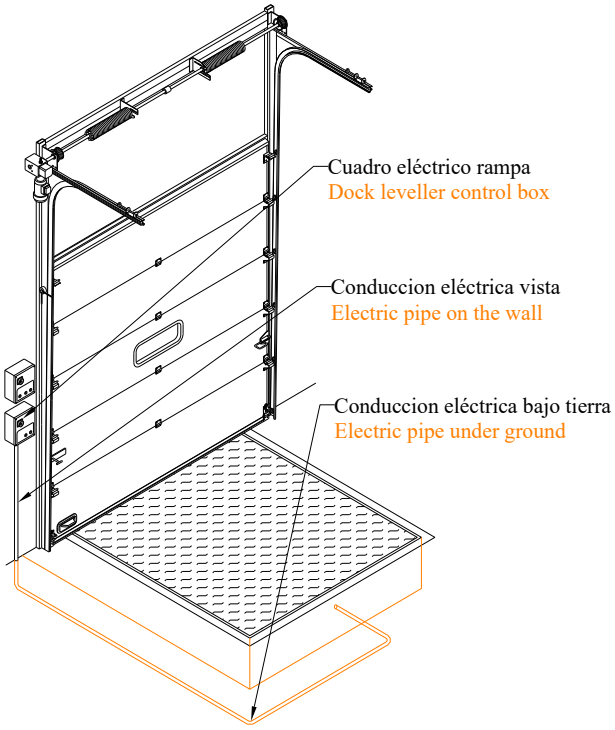
The electrical panel must be installed in the wall on the truck driver side, to allow the dock leveller operator to see and talk to the driver if necessary. *(See electrical control panel connections, page 19)*

Secure the electrical panel box to the wall at the desired height and perfectly aligned with the output of the leveller cables, approximately 1300mm from the floor.

Adjust the tube for the electrical cables to pass through at the existing distance between the panel and floor.

Secure the tube to the wall (using at least 3 brackets); it must be perpendicular to the loading bay floor and aligned with the leveller output cables.

The plastic tube is delivered sealed to one of the two sides of the leveller inferior structure.



Once everything is secured, pass the cables through and connect, pursuant to the attached electrical diagram which is inside the electrical control panel. *(See electrical control panel connections, page 19)*

05.04 – Completed installation

Eliminate the front flanges joining the lip to the inferior structure.

VERY IMPORTANT: Weld the lateral panels, removing the rivet that holds them in place and check their movement and functionality.

Lastly, check the condition of the leveller paint, correcting any flaws (including the levelling plates).

The installation is considered completed when the installer authorised by ***INKEMA*** has filled in the respective installation control sheet.

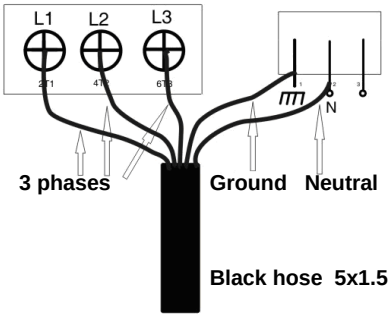
05.05 – Electrical control panel connection

Before installing the automatisms, check that the power supply is disconnected

05.05.01 – Connecting the power input

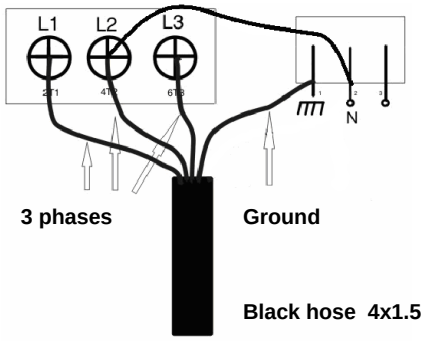
3-phase 380 V connection

MOTOR GUARD



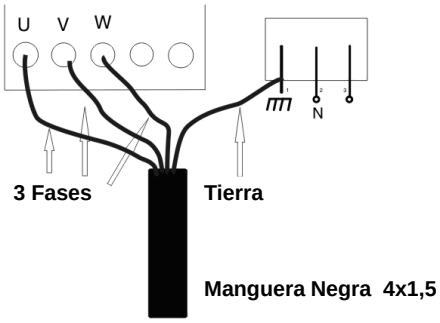
3-phase 220 V connection

MOTOR GUARD



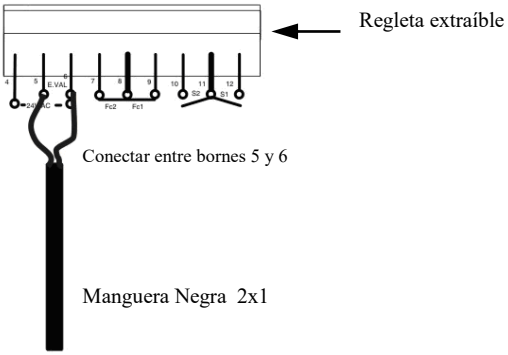
05.05.02 – Motor input connection

CONTACTOR



Note: check the rotation direction and change to the U-V-W motor output (if not correct)

05.05.03 – Electro valves connection



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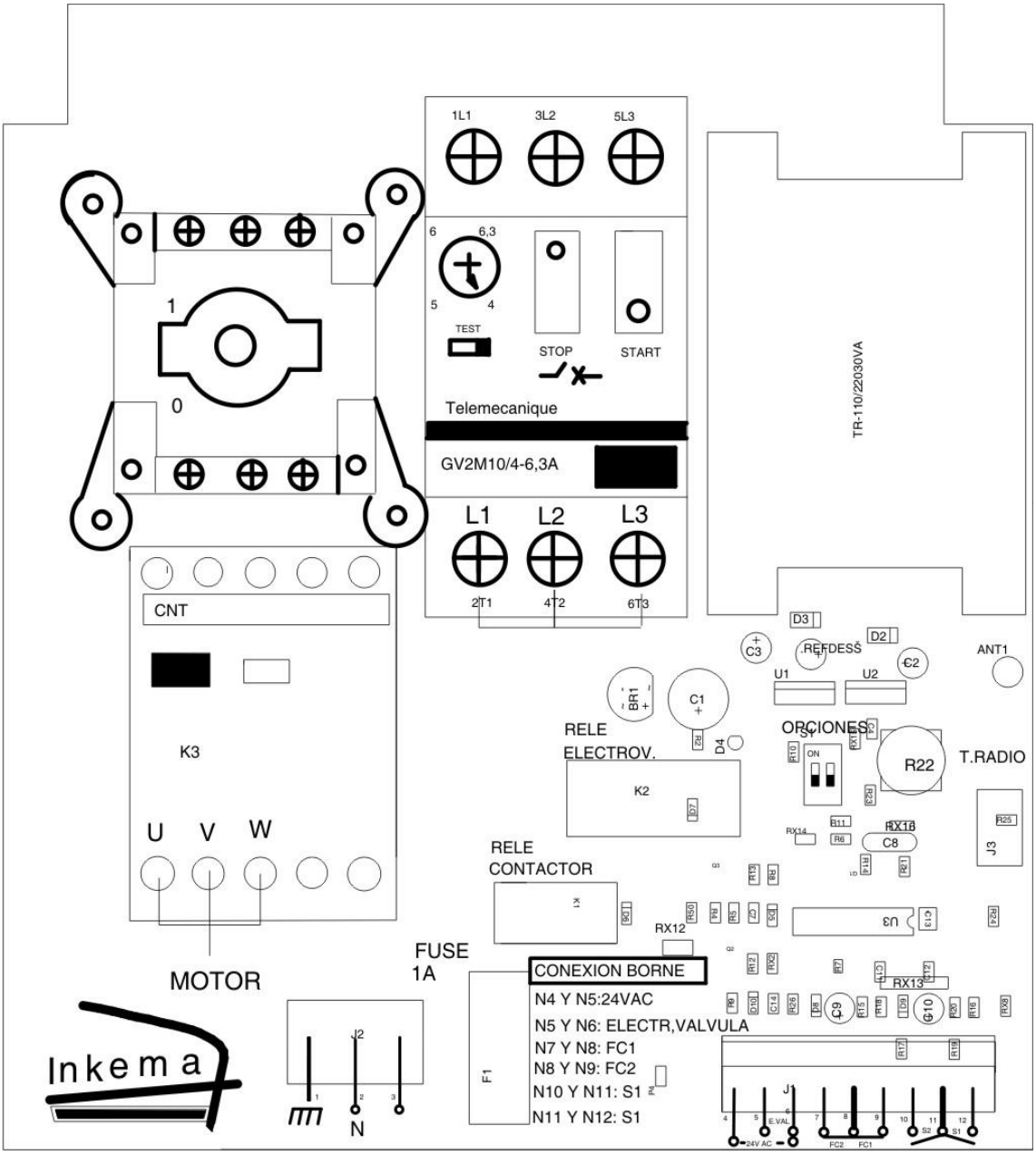


05.05.04 – Description of the connection terminals

1	Ground
2	Power input 220V ac
3	Power input 220V ac
4	Voltage 24V ac
5	Electro valve output 24V ac
6	Electro valve output 24V ac (24V ac power)
7	FC2 N.C. electro valve limit switch
8	Common Limit Switches
9	FC1 N.C. motor limit switch
10	S2 N.O. button (electro valve)
11	Common Push Buttons
12	S1 N.O. button (motor)

Note: N.O., Normally Open
N.C., Normally Closed

05.05.05 – Actions Selection

Select the type of operation using the micro switches.

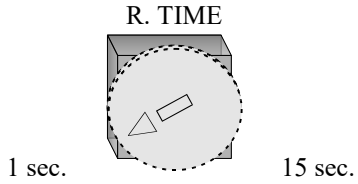
TABLE type Man present manual operation

RH1 LEVELLER type semi-automatic operation

LEVELLER WITH AUTOMATIC RETURN type semi-automatic operation.

05.05.06 – Timers

Leveller raising time. Regulates the automatic raising time when FC2 is activated.



05.05.07 – Operation.

The automatism manoeuvres vary, depending on the type of operation selected.

a) TABLE type Man present manual operation
S1 activates the motor while pressed; electro valve deactivated.
S2 activates the electro valve when pressed; motor stopped.
FC1 deactivates the motor.
FC2 deactivates the electro valve.

b) RH1 LEVELLER type semi-automatic operation
S1 activates the motor while pressed; electro valve deactivated.
S2 deactivates the motor and the electro valve.
FC1 deactivates the motor.
FC2 deactivates the electro valve.

c) LEVELLER WITH TIMED L.S., type semi-automatic operation.
S1 activates the motor while pressed; electro valve deactivated.
S2 deactivates the motor and the electro valve.
FC1 deactivates the motor.
FC2 activates the motor and deactivates the electro valve, when **FC2** is deactivated, the motor continues operating during the time selected in **R. TIME** and the electro valve is activated, which will continue to be activated.

05.05.08 – Accessories.

Radio Card.
Permits the use of a radio card for activating the automatism remotely. This action is equivalent to pressing buttons S1 and S2.
RADIO C. connector

05.05.09 – Characteristics

Power supply	220V ac ±20%
Fuse	1Amp.
Automatic Raising Time	1 sec. to 15 sec.
Radio Card	Optional
Operating Temperature	-20º C to +85º C

06 – Dismantling

VERY IMPORTANT: When handling the leveller, always respect the occupation risk prevention legislation and the regulations regarding safety, hygiene and health at work.

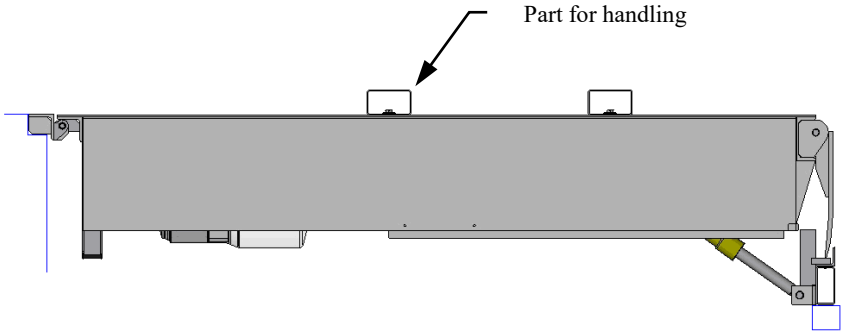
To dismantle the leveller, it must be in the rest position.

Proceed as follows:

With the leveller in the rest position, turn off the **electricity supply before** the electrical panel, in order to completely disconnect the panel and leave all the cables loose and ready to be removed.

Then install the anchoring parts.
Hook the leveller up to the anchoring parts. To do this use chains, slings or similar elements (with a load capacity equal to or greater than the weight of the leveller)

This operation will be done using a crane or similar element, with a load capacity equal to or greater than the weight of the leveller.



Then cut all the welds fastening the leveller to the pit, lift it and manipulate the front of it to fix it under the lip using the M10 screws. The leveller is now in the transportation position.

Release the electric cables from their ducts, remove the leveller from the pit and lay it out ready for transportation.

The electrical panel can be dismantled completely or left in situ for future connection to another leveller.

07 – Incidents

Warning: All checks must be done with the opportune safety measures:

- **Do not perform checks when under voltage.**
- **Ensure which voltage is being measured with the multimeter.**
- **All cable connections and disconnections will be made when not under voltage.**
- **Put the safety bar in place whenever it is necessary to work underneath the machine.**
- **Do not test the machine when the operator is underneath it.**

07.01 – The panel *DOES NOT* light up

No power	• Check the input voltage of the panel **L1, L2, L3 and N** *There must be 400v between **L1 and L2*** *1. There must be 400v between **L1 and L3*** *1. There must be 400v between **L2 and L3*** *There should be 230v between **N** and **L1*** • Check that the motor guard has not fused - *The black button must in pushed in and the red one out* • Check the voltage at the section switch input **L1, L2** and **L3** *There must be 400v between **L1 and L2*** *There must be 400v between **L1 and L3*** *There should be 400v between **L2** and **L3*** • Check the voltage at the section switch output **T1, T2** and **T3** *There should be 400v between **T1** and T2* *There should be 400v between **T1** and **T3*** • Check the voltage in the contactor 1**L1, 3L2 and 5L3** *There should be 400v between **1L1** and **3L2*** - *There should be 400v between **2T1** and **6T3*** - *There should be 400v between **1L1** and **5l3*** - *There should be 400v between **3L2** and **5L3***
The panel does not light up	• The fuse has blown • Check the red cable between contact **1L1** and the connection terminal **3** • Check the voltage between **N** and **F** in the terminal block (terminals **2 and 3**) - *There must be 230v*
Fuse blown	• Crossover or failure in the electro valve *Disconnect the electro valve cables in terminal connections **5 and 6*** • Transformer burnt *(transformer swollen or smell of burning)* *Replace the board* • Fault in board or damaged tracks - » *Replace the board*

07.02 – The leveller DOES NOT rise

Voltage or phase failure	• Check the input voltage of the panel **L1, L2, L3 and L3** *There must be 400v between **L1 and L2*** *There must be 400v between **L1 and L3*** *There must be 400v between **L2 and L3*** • Check the voltage at the section switch input **L1, L2** and **L3** - *There must be 400v between **L1** and **L2*** - *There must be 400v between **L1** and **L3*** - *There must be400v between **L2and L3*** • Check the voltage at the section switch output **T1, T2** and **T3** *There must be 400v between **T1 and T2*** *There should be 400v between **T1** and **T3*** *There must be 400v between **T2** and **T3*** • Check the voltage in contactor **1L1**, **3L2 and 5L3** - *There must be 400v between **1L1** and **3L2*** - *There must be 400v between **1L1** and **5L3*** - *There must be 400v between **3L2** and **5L3*** • Check the voltage at the output of contactor **U**, **V and W** - *There must be 400v between **U** and **V*** - *There must be 400v between **U** and **W*** - *There must be 400v between **V** and **W***
The motor guard jumps	• Motor guard amperage low - *Turn the amp adjuster in a clockwise direction to raise the amps to the nominal motor consumption (220v3R – 3'5A / 380v3R – 2A)* • Faulty cabling - *Disconnect the cables of **U**, **V** and **W** of the contactor and **Motor** and check the continuities of the cables with the multimeter at each end of the cables* - *Check the cables are not crossed, there must be no continuity between them. Place the multimeter between:* ▪ *The brown and the black cable* ▪ *The brown and the grey cables* ▪ *The black and the grey cable* • Shunt to ground - *Check that there is no continuity between the ground and brown, ground and grey and ground and black cables* • *There must be no continuity between the casing of the motor and the motor connections **U**, **V and** W* -
The motor DOES NOT operate	• Check the output voltage of **U**, **V and W** in the panel. - *There should be 400v between **U** and **V*** - *There should be 400v between **U** and **W*** - *There should be 400v between **V** and **W*** • Check the motor cables and motor connections - *There should be 400v between **U** and **V*** - *There should be 400v between **U** and **W*** - *There should be 400v between **V** and **W*** • Check that the motor has not seized up - *Dismantle the fan casing and try turning it manually* • Contactor not operating - *Check whether there is continuity in the button* - *Check the terminal block connection (connection terminals **11** and **12**)* - *Check the safety connection (connection terminals **8** and **9**)* ▪ *If there is **no** safety connection installed there must be a bridge connection between connection terminals **8 and 9*** - *If a safety connection is connected check that it is on **NC** (contact closed)* - *When operating as a table there is a table limit switch for raising the table, check it is on **NC*** • Contactor relay damaged
The motor is operating	• The motor is turning in reverse - *Change 2 motor phases (**U** for **V**)* • The power unit limit valve is not correctly adjusted - *Tighten the vale by quarter turns and check*
No hydraulic oil	• Add hydraulic oil • Hydraulic oil leak (piston or sleeve)

07.03 – The leveller DOES NOT descend

No voltage in the electro valve	• Check that **PIN 1** is **ON** (*When operating as a table **PIN 1** must be **OFF**)* • Check the safety of **FC2** connection terminals **7** and **8** *If **no** safety element is installed there must be a bridge connection between terminals 7 and 8* *If there is a safety connection connected (when operating as a table the foot guard is presents) check that it is on **NC** (contact closed)* • Check the voltage output in terminals **4** and **6** - *There should be 24v between terminals **4** and **6*** • Check the voltage output in terminals **5** and **6** - *There must be 24v between terminals **5 and 6** after pressing once (the clear relay is blocked)*
Electro valve	• Cable cut *Disconnect the cable from terminals 5 and 6 of the electro valve Check the continuity of the cables* • Check the input voltage of the cowl is 24v ~ *Disconnect the cowl from the coil and check that the input voltage is 24v in alternating current and 24v ± in continuous current at the cowl output* • Electro valve coil *Check that the coil is magnetising. Remove the coil from the valve and under voltage, insert a screwdriver for a short period of time, 2 or 3 seconds. **Very important**: If it is in for longer the coil will be burnt.* • Electro valve in sliding door - *Check that when the electro valve cowl is taken off and replaced, the sliding door can be heard activating and deactivating.*
Power unit	• Lowering regulator too tight or too loose *If the valve is too tight turn the screw in an anti-clockwise direction (loosen)* *If the vale is too loose, the piston safety valve could be triggered (tighten)* • Piston safety valve - *Dismantle the piston sleeve and connection fitting and check that the safety valve is not blocked*

07.04 – The lip DOES NOT open or functions very slowly

Power unit	• Sequence valve closed. - *Turn the adjusting screw in an anticlockwise direction (loosen) in quarter turns*
Lip	• Lip too stiff - *Dismantle the piston and check that the lip moves correctly.*

07.05 – The lip opens before the leveller raises

Power unit	• Sleeves assembled in reverse Change the sleeves in the power unit • The sequence valve is too open.

08 – Contact

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