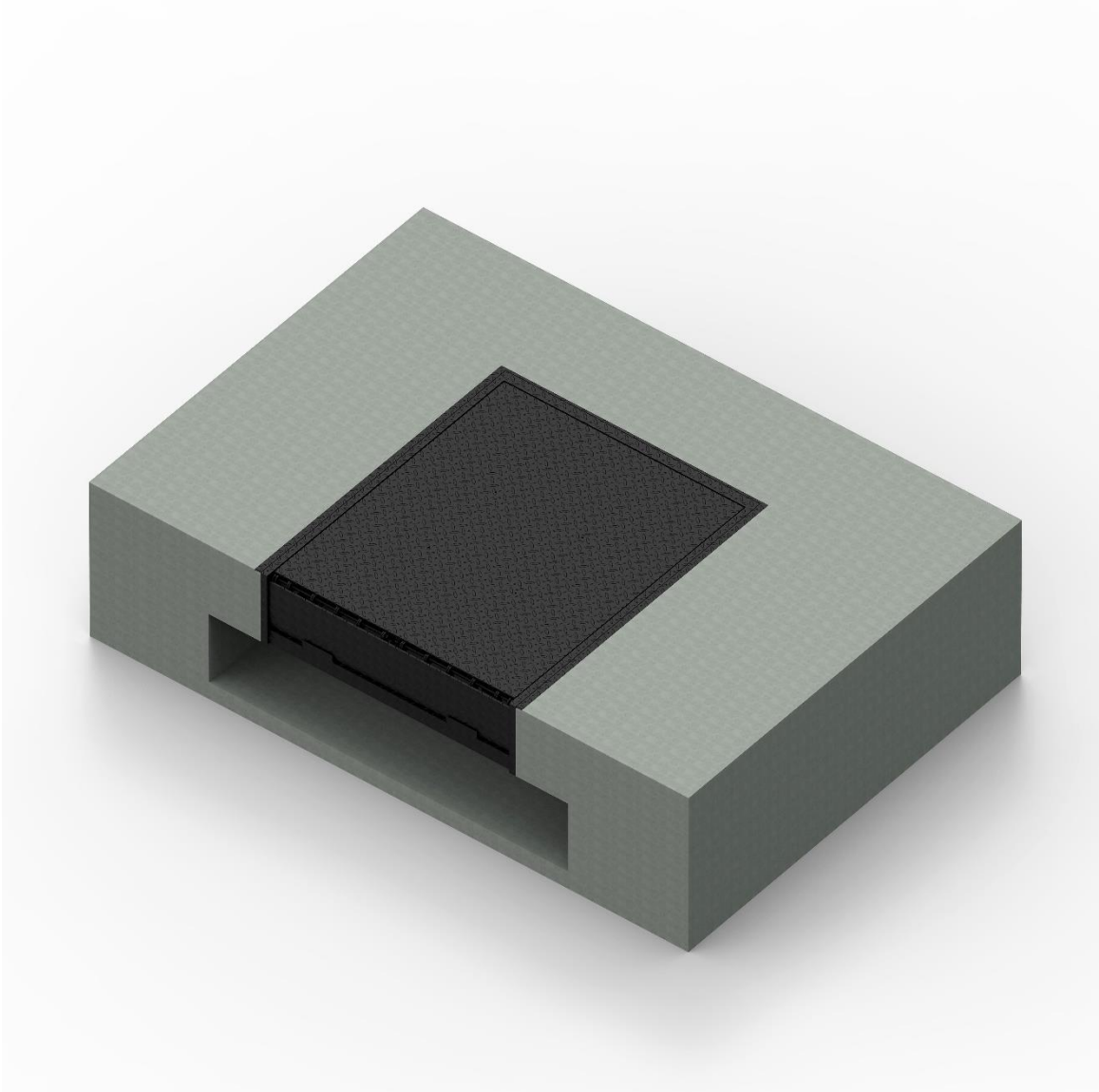
Inkema

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
Models: **RH12B**

SUSPENDED TYPE



Contents

01 – Introduction

This manual is a guide for the correct, safe installation, use and maintenance of the **RH12B** 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 people 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.

The manual is an inseparable part of the machine and must be kept with it in the event of sale.

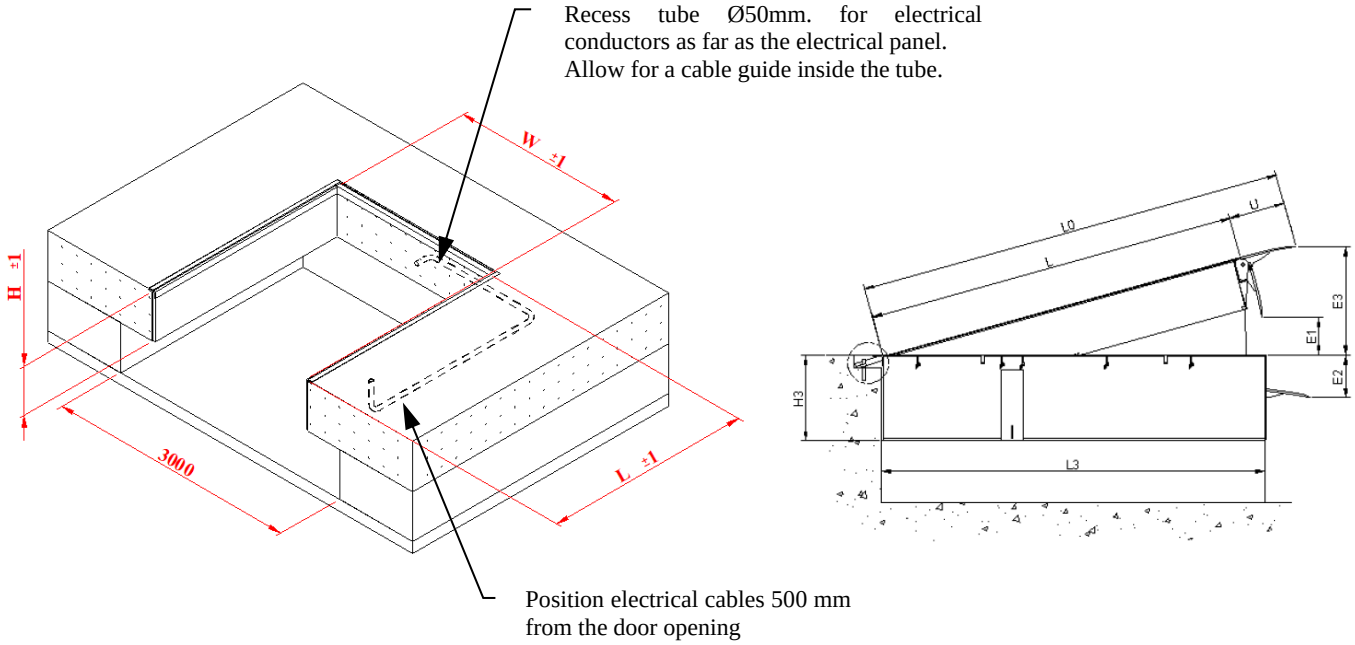
02 – Technical specifications

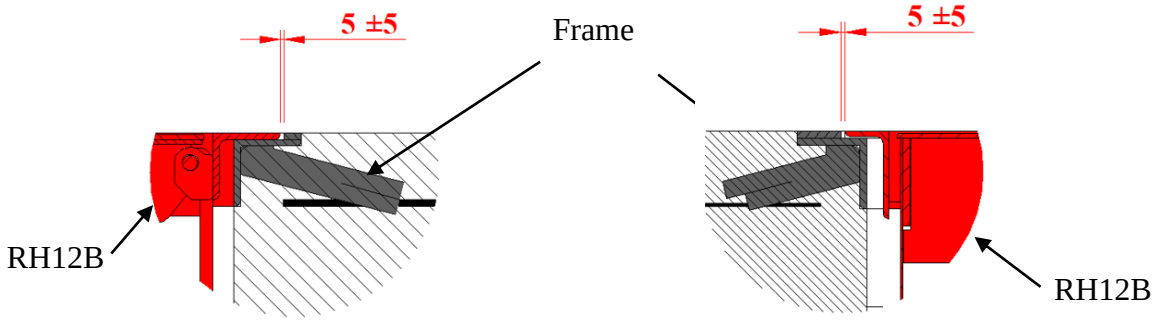
Ramp designed pursuant to the **UNE-EN 1398** standard
Calculated for a maximum nominal load of: (See its plate characteristics)

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 – RH12B suspended pit





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.

02.03 – Platform

- Superior tear plate (thickness 6/8mm.), quality ST-37.
- 12 rectangular 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.

02.04 – 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 end (to ease the passage of the fork-lift trucks).

02.05 – Bedplate

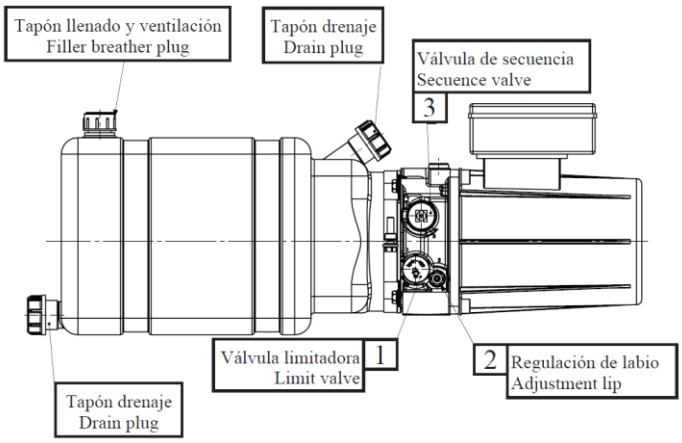
- Rear assembly (head) formed by rolled profiles.
- Front assembly with profiles for supporting the lip.
- Side profiles joining the front assembly with the rear assembly.
- The movements of the platform and lip are executed through an electro hydraulic unit.

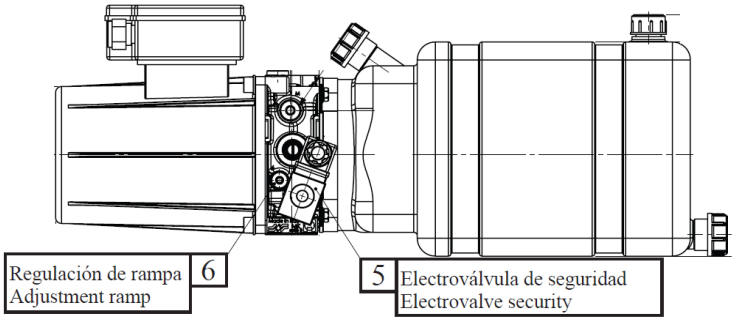
02.06 – Hydraulic power unit

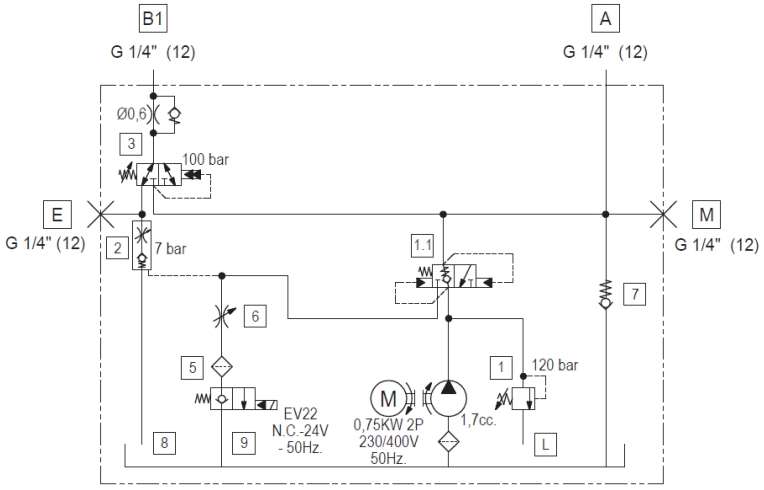
- 1.0CV electric motor. 0'75kw 230/400Volt 3F 50Hz.
- Hydraulic pump with flowrate of 5 litres/minute.
- 7-litre tank with oil level viewer.
- Logicblock where all the elements are incorporated (including 24V electro valve).
- Ø50mm. cylinder with rod for raising platform and parachute safety valve.
- 1 Ø30mm. cylinder with rod for lip raising.
- 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.

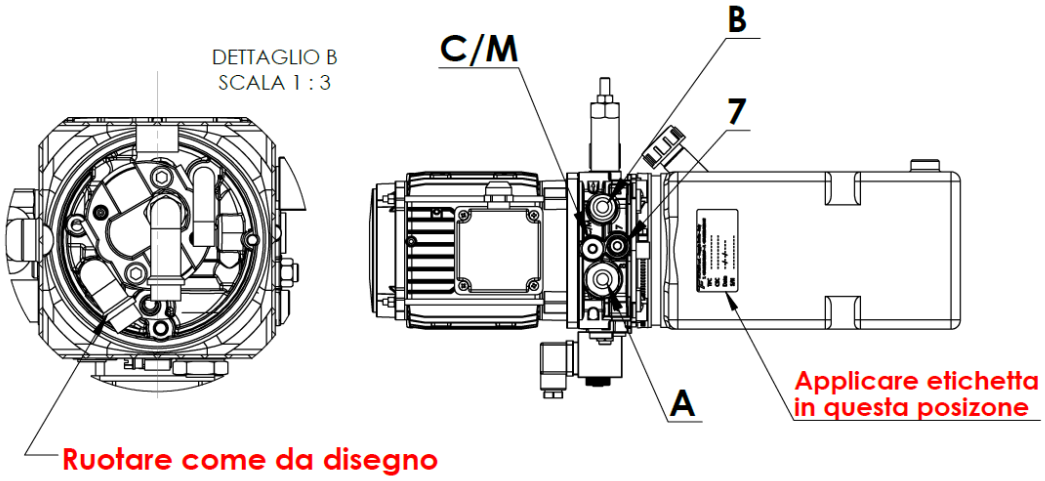
02.06.01 – Hydraulic unit version 01

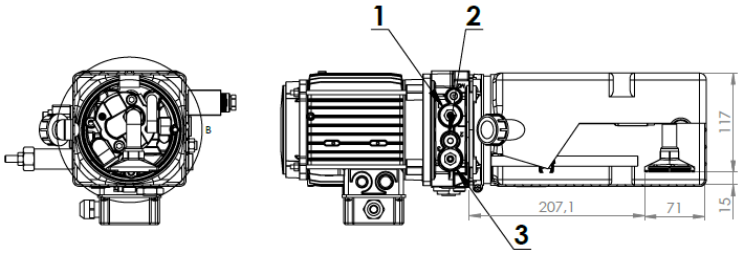






02.06.02 – Hydraulic unit version 03




1
2
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15
207,1
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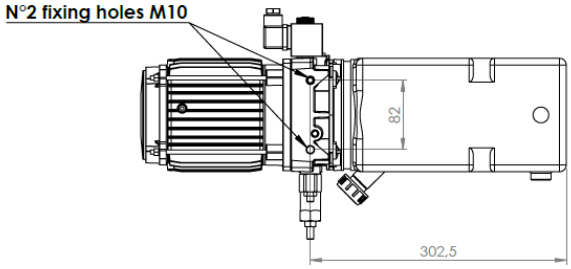
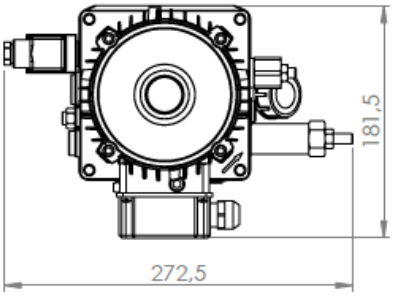

N°2 fixing holes M10
82
302,5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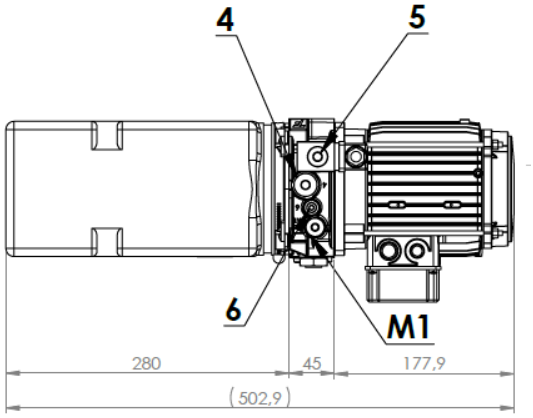
272,5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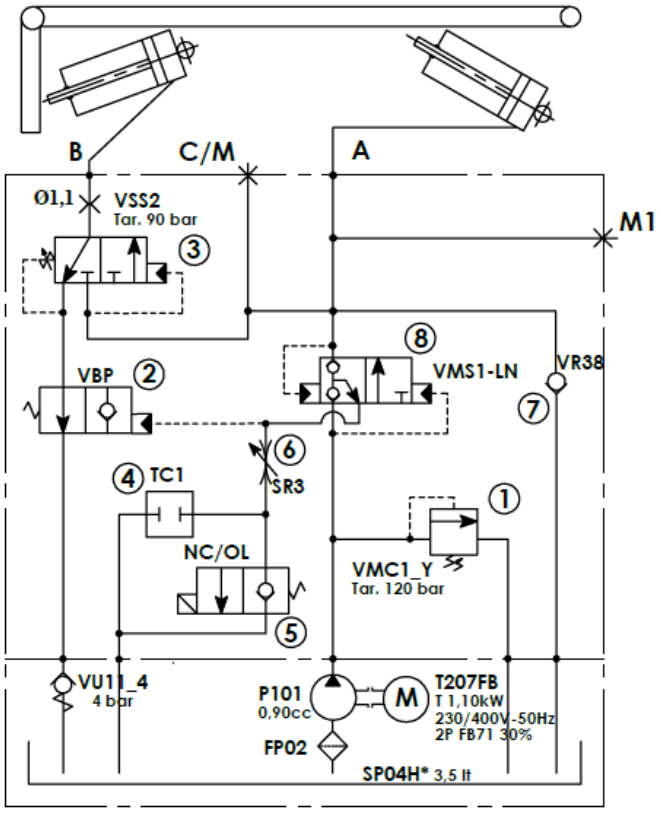
(502,9)


B
C/M
A
Ø1,1
VSS2
Tar. 90 bar
M1
VBP
VMS1-LN
VR38
TC1
SR3
NC/OL
VMC1_Y
Tar. 120 bar
VU11_4
4 bar
P101
0,90cc
T207FB
T 1,10kW
230/400V-50Hz
2P FB71 30%
FP02
SP04H* 3,5 lt

02.07 – Electrical control panel

(See electrical control panel connections, page 16)

- 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)

02.08 – Safety systems

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

02.09 – 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 fail to comply with these regulations will lead to the cancellation of the two-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.

02.09.01 – 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.

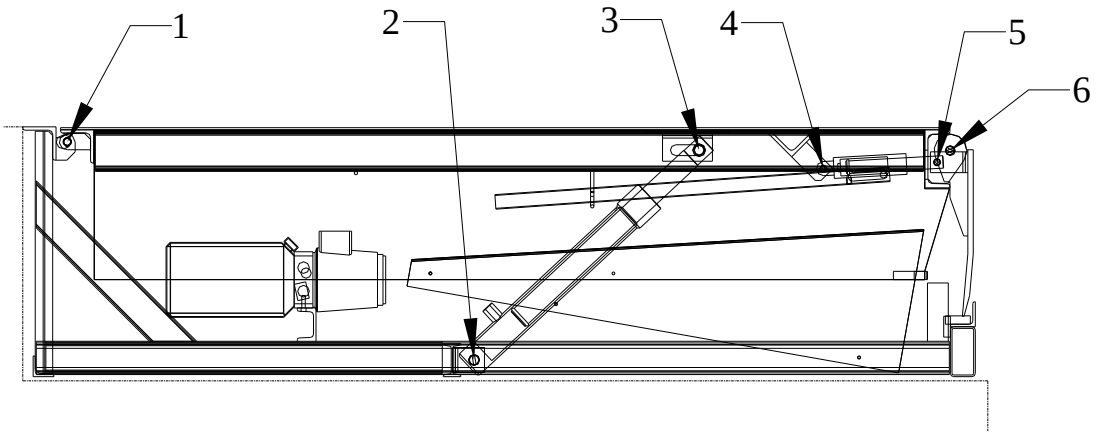
It is important to check the oil level every 6 months. The oil tank must be filled until it almost overflows from the closing cap, in the lowest possible position.

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

Hydraulic oil for ramps 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.

02.09.02 – Grease points.

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



02.09.03 – Dock leveller descent speed regulation

The speed will be regulated using the respective adjuster (1). *(See hydraulic unit, page 5)*

02.09.04 – 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 5)*

02.09.05 – 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					♦

02.10 – Instructions for use

02.10.01 – 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.

02.10.02 – 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.

02.10.03 – 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 bedplate.

02.10.04 – 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 working 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 : **RH12B** with a capacity of **6000 Kg**(*)
Year of manufacture : **2023**

Are compliant with the essential requirements of the following directives:

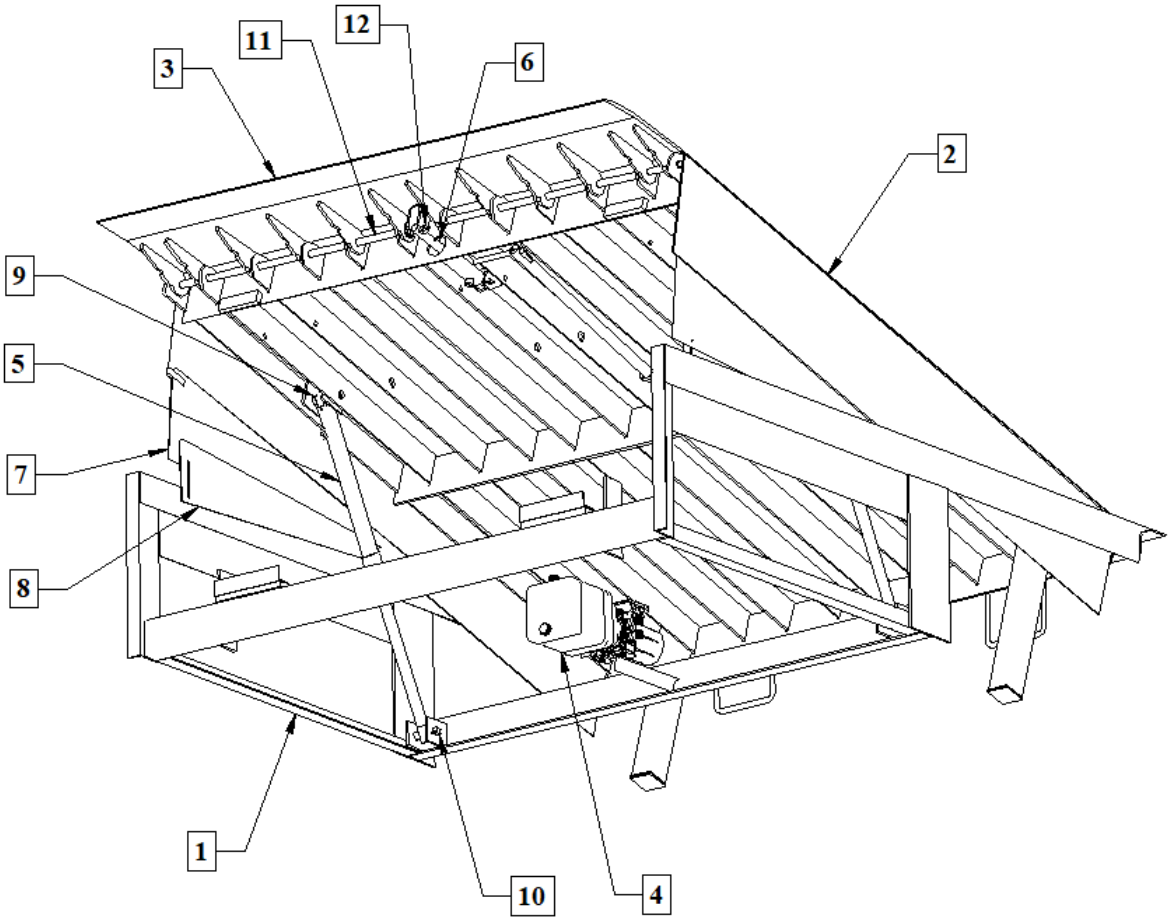
2006 / 42 / EC	Machine safety.
2004 / 108 / EC	Electromagnetic compatibility.
2006 / 95 / EC	Low voltage.

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.	Description
1	6t RH12 Standing frame
2	6t RH12 Structure
3	6t RH12 welded lip
4	RH Power pack
5	Cyl.Single effect Ø35 e/c.625 car.470
6	Cyl.Single.effect Ø30 e/c.260 car.105
7	Upper Mobile toe guard.
8	Lower Mobile toe guard
9	RH12 Cylinder axles Ø28x110
10	RH12 Cylinder axles Ø23x110
11	Lip axle Ø22.
12	Zinc coated cylinder axle Ø16x70

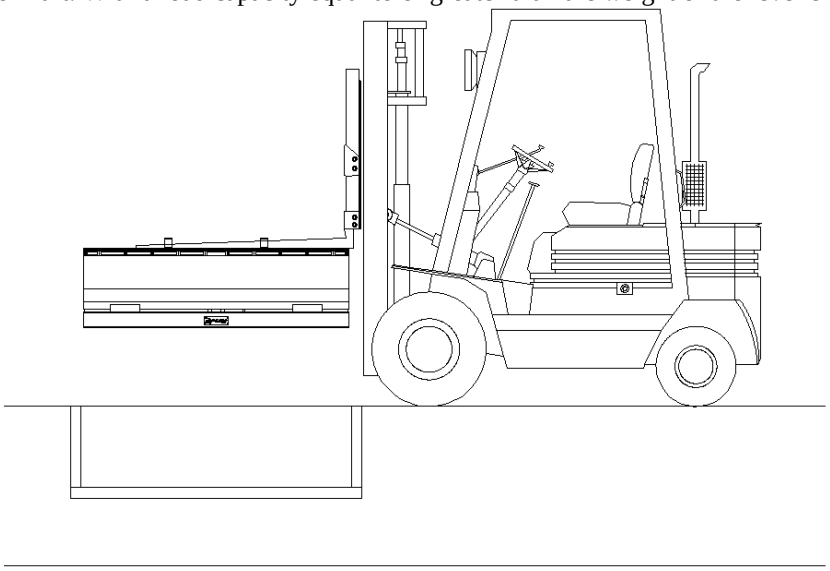
(*) Specify the part code and description, and the machine model, dimensions and load.
(**) Specify the part code and the machine model, dimensions and cylinder dimension.

05 – Installation

05.01 – 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

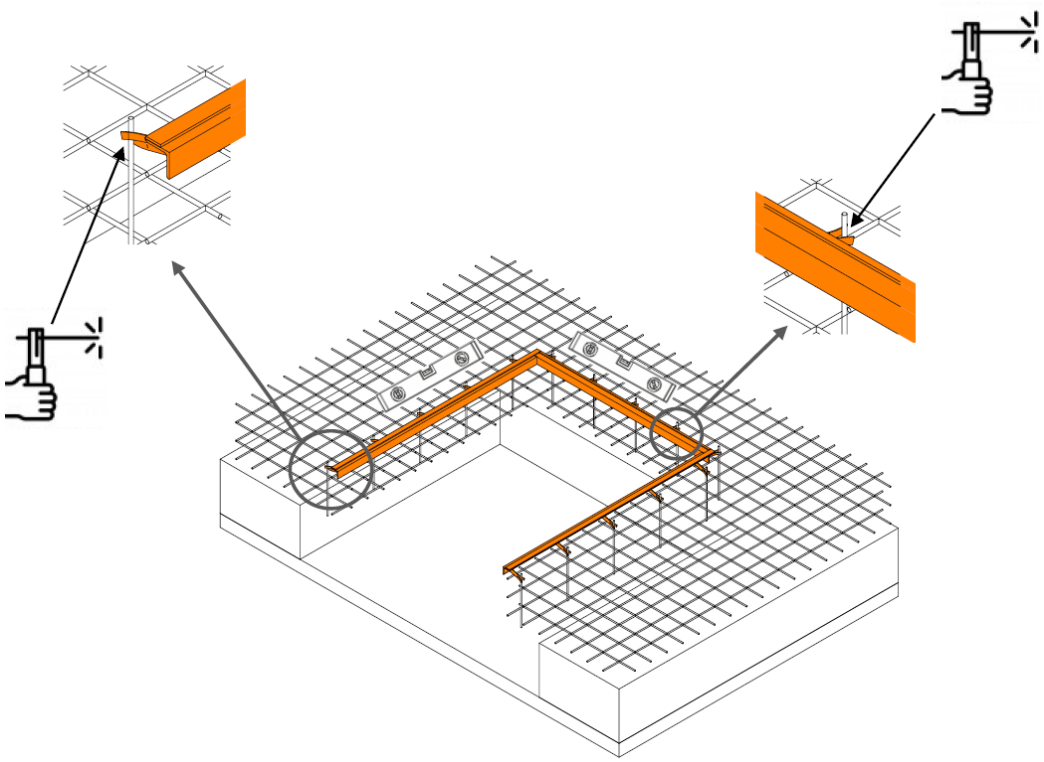


Then unwind the electrical cable and pass it through the tube that is centred at the back the pit. Once the cable has emerged at the other end of the tube, position the leveller correctly in the pit.

05.02 – Securing the leveller in the pit

05.02.01 – Securing in the case of a suspended type.

First, we should place the subframe onto the mesh structure, then weld it to the mesh before covering the area with concrete.



Having completed the previous step, you may proceed to fit the leveller into the subframe.

Once we have the leveller in the pit, we should verify the following points:

The separation between the sides of the leveller and the pit must be exactly the same at the front of the leveller as at the rear.

If there is any gap in the pit, it should be at the rear and never at the sides.

Check that the welds made between the external profiles of the machine and the previously installed sub-frame meet the welding requirements specified in the installation manual (TC Code: 000731).

Note: Floor of at least H250 concrete with a thickness greater than or equal to 200mm. Filling of perimeter with at least H250 concrete.

05.03 – Installing the electrical control panel

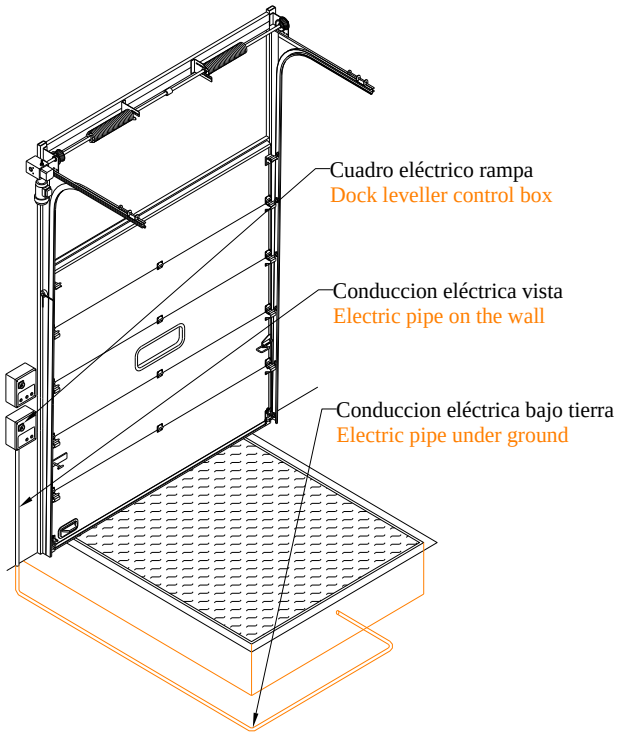
The electrical panel must be installed in the wall on the truck driver side, to allow the dock leveller operator to see and talk to the driver if necessary. *(See electrical control panel connections, page 166)*

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 bedplate.



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 16)*

05.04 – Completed installation

Eliminate the front strips joining the lip to the bedplate.

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).

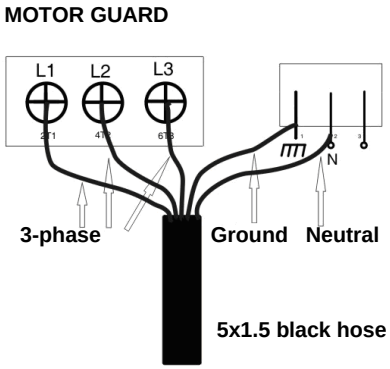
The installation is considered completed when the installer authorised by ***INKEMA*** has filled in the respective installation control sheet.

05.05 – Electrical control panel connection

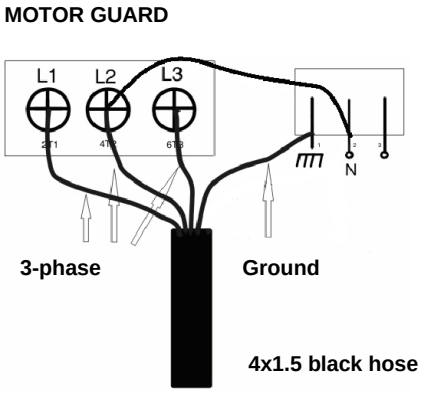
Before installing the automatisms, check that the power supply is disconnected

05.05.01 – Connecting the power input

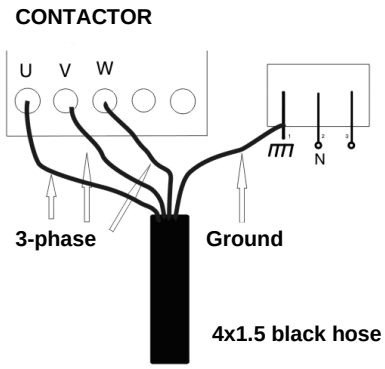
3-phase 380 V connection



3-phase 220 V connection

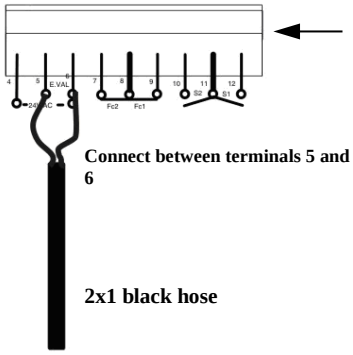


05.05.02 – Motor input connection



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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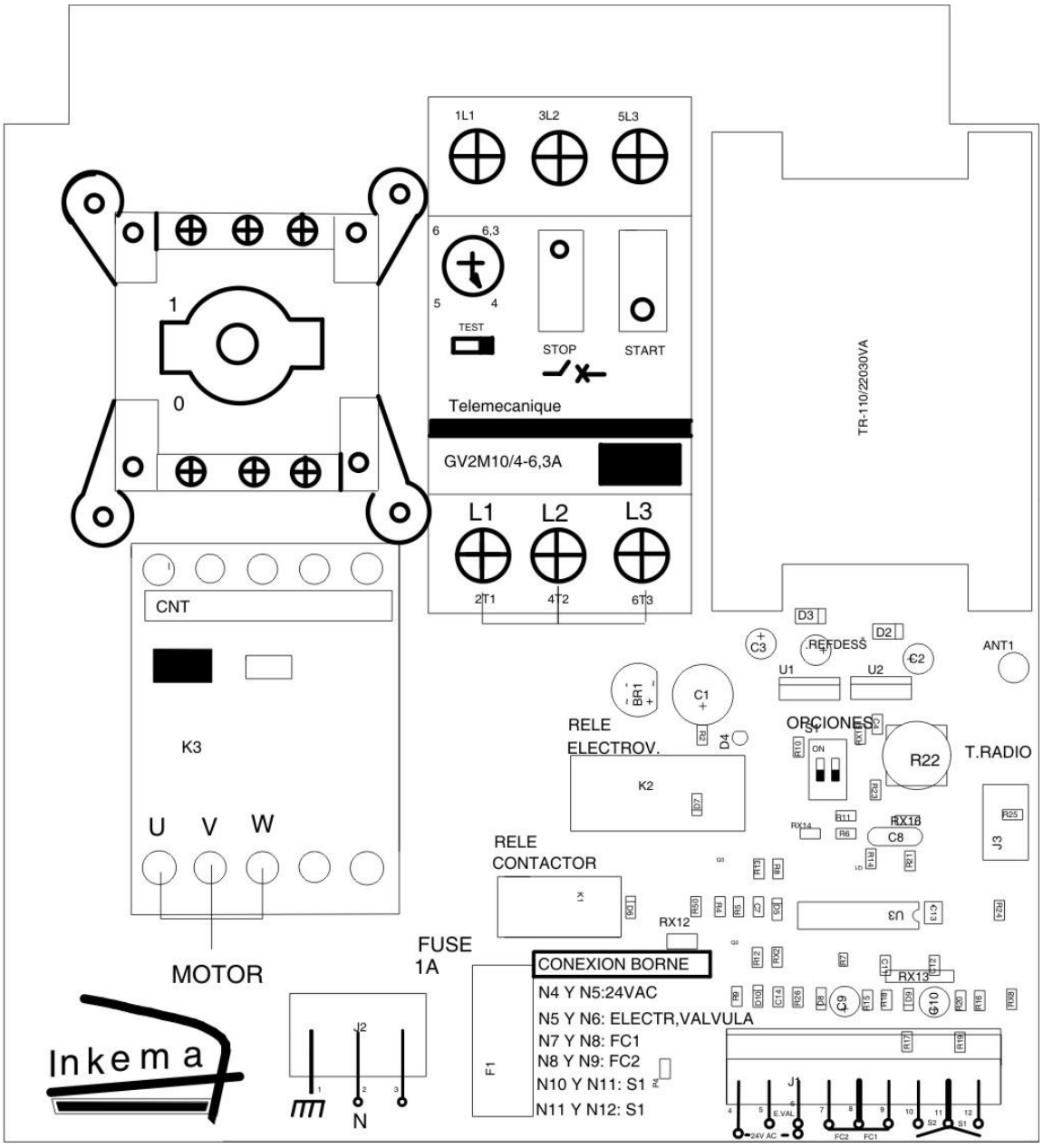


05.05.04 – Description of the connection terminals

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.

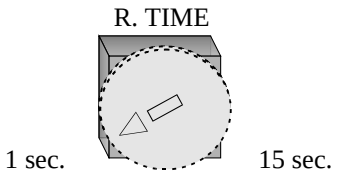
TABLE type Man present manual operation

RH1 LEVELLER type semi-automatic operation

BAY 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) BAY 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 from the distance. 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 Rime	1 sec. to 15 sec.
Radio Card	Optional
Operating Temperature	-20º C to +85ºC

06 – Dismantling

06.01 – Dismantling a suspended leveller

It is important to bear in mind that this type of leveller cannot be dismantled completely, as the bedplate is attached to the loading bay paving using formwork.

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

To proceed with the disassembly of the leveller, it must be on rest position.

Remove the electrical voltage and disconnect the electrical panel, remove the control panel and the electrical conduit tube.

Strapping the front of the leveller, to prevent it from opening when handling; please place a minimum of two 30x1mm steel straps.

Then proceed to cut all the fastening welds of the leveller to the construction subframe, both to the front and to the rear.

Once these works have been carried out, proceed to extract the leveller out of the pit.

This operation must be carried out with the help of a crane or similar, and to hoist it we will use chains, slings or similar, with a load capacity equal to or greater than the weight of the ramp.

07 – Incidents

Warning: All checks must be made taking 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 should be 400v between **L1** and **L2*** *There should be 400v between **L1** and **L3*** *There should 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 is in and the red one out* • Check the voltage in the section switch **L1, L2 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 in the output of the section switch **T1, T2 and T3** - *There must be 400v between **T1 and T2*** - *There must be 400v between **T1** and **T3*** - *There must be 400v between **T2 and T3*** • Check the voltage in the contactor **1L1, 3L2 and 5L3** - *There must be 400v between **1L1** and **3L2*** - There must be 400v between **1L1** an d **5L3** - There must be 400v between **3L2** and **5L3**
The panel does not light up	• A fuse has blown • Check the red cable between contactor **1L1** and the block of connection terminal **3** • Check the voltage between **N** and **F** in the terminal block (terminals **2 and 3**) - *There must be 230v*
A fuse has blown	• Crossover or failure in the electro valve - *Disconnect the electro valve cables terminals **5 and 6*** • Transformer burnt *(transformer swollen or a smell of burning)* - *Replace board* • Fault in the panel or damaged tracks - *Replace board*

07.02 – The ramp DOES NOT rise

Voltage or phase failure	• Check the voltage between panel **L1**, **L2 and L3**
	  - *There should be 400v between **L1** and **L2***
	  - *There should be 400v between **L1** and **L3***
	  - *There should be 400v between **L2** and **L3***
	• Check the voltage at the input of the section switch **L1**, **L2 and L3**
	  - *There should be 400v between **L1** and **L2***
	  - *There should be 400v between **L1 and L3***
	  - *There should be 400v between **L2** and **L3***
	• Check the voltage at the output of the section switch **T1**, **T2 and T3**
	  - *There should be 400v between **T1 and T2***
	  - *There should be 400v between **T1** and **T3***
	  - *There should be 400v between **T2** and **T3***
	• Check voltage in the contactor **1L1**, **3L2 and 5L3**
	  - *There should be 400v between **1L1** and **3L2***
	  - *There should be 400v between **1L1 and 5L3***
	  - *There should be 400v between **3L2 and 5L3***
	• Check voltage at the output of the contactor in **U**, **V and W**
	  - *There should be 400v between **U** and **V***
	  - *There should be 400v between **U** and y **W***
	  - *There should be 400v between **V** and **W***

Guard motor shuts	• Low motor guard amperage
	  - *Turn the amp adjustor in a clockwise direction to raise the amps to the nominal motor consumption (220v3R – 3'5A / 380v3R – 2A)*
	• Faulty cabling
	  - *Disconnect cables of **U**, **V and W** of the contactor and **Motor** and check the cable continuities with the multimeter at each end of the cables*
	  - *Check the cables are not crossed, there must be no continuity between them. Position the multimeter between:*
	  ▪ *The black and brown cables*
	  ▪ *The brown and grey cables*
	  ▪ *The black and grey cables*
	• 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 motor casing and the motor connections **U**, **V and W***

The motor DOES NOT work	• Check the panel **U**, **V** and **W** output voltage.
	  - *There must be 400v between **U** and **V***
	  - *There must be 400v between **U** and **W***
	  - *There must be 400v between **V** and **W***
	• Check the motor cables and motor connections
	  - *There must be 400v between **U** and **V***
	  - *There must be 400v between **U** and **W***
	  - *There must be 400v between **V** and **W***
	• Check that the motor has **not** seized up
	  - *Dismantle the fan housing and try turning it manually*
	• The contactor does not work
	  - *Check whether there is continuity in the push button*
	  - *Check the terminal block connection (terminals **11** and **12**)*
	  - *Check the safety connection (terminals **8** and **9**)*
	  ▪ *If **no** safety device is installed, there must be a bridge connection between terminals **8** and **9***
	  - *If a safety device is connected, check that it is on **NC** (contact closed)*
	  - *When operating as a table the raise table there is a limit switch, check that it is on **NC***
	• Contactor relay damaged

The motor works	• The motor is turning in reverse
	  - *Change 2 motor phases (**U** for **V**)*
	• Limit valve of power unit not correctly regulated
	  - *Tighten the valve in quarter turns and check*

Lack of hydraulic oil	• Replenish hydraulic oil • Hydraulic oil leak (rod or sleeve)

07.03 – The leveller DOES NOT descend

No voltage in the electro valve	• Check that **PIN 1** is at **ON**
	  - (*When functioning as a table **PIN 1** must be at **OFF**)*
	• Check the safety device **FC2** in terminals **7** and **8**
	  - *If there is **no** safety device installed, there must be a bridge connection between terminals **7** and **8***
	  - *If there is a safety device connected (when functioning as a table there is a foot protector device) check that it is on **NC** (contact closed)*
	• Check the output voltage in terminals **4** and **6**
	  - *There must be 24v between terminals **4** and **6***
	• Check the output voltage in terminals **5** and **6**
	  - *There must be 24v between terminals **5** and **6** after pressing once (the clear relay is blocked)*

Electro valve	• Cabling cut
	  - *Disconnect the cable from terminals **5** and **6** and from the electro valve. Check the continuity of the cables*
	• Check the input voltage in cowl 24v ~
	  - *Disconnect the cowl from the coil and check that the input voltage is 24v in alternating current and there is 24v at the output of the cowl in continuous current*
	• Electro valve coil
	  - *Check the coil magnetising. Remove the coil from the sliding door and insert a screwdriver for a short interval of time, 2 or 3 seconds, under voltage. **Very important**: If placed there for longer the coil will be burned.*
	• Sliding door electro valve
	  - *Check that when putting on and removing the electro valve cowl, the sliding door is activated and deactivated*

Power unit	• Lowering adjuster too tight or too loose
	  - *If the vale is too tight turn the screw in an anti-clockwise direction (loosen)*
	  - *If the valve 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 adjuster screw in an anti-clockwise direction (loosen) by quarter turns*
Lip	• Lip too stiff - *Dismantle the piston and check that the lip can move properly*

07.05 – The lip opens before the leveller is raised

Power unit	• Sleeves mounted in reverse. Change the sleeves in the power unit • The sequence valve has opened too much.

08 – Contact

Inkema Sistemas S.L
Carretera de Cardedeu C-251, Km.3
08520 Les Franqueses del Vallés
Barcelona – (Spain)

Branches in Spain:
Tel: +34 93 544 47 08
Fax: +34 93 572 30 11
inkema@inkema.com
serviciotecnico@inkema.com

International distribution:
Tel: +34 93 544 47 08
export@inkema.com

Production centre in Rumania:
Str. Via Brescia esqu. ViaSperanza –307221
Chisoda – Timis – (Romania)
Tel: 0040 256 215 819
Fax: 0040 256 215 818