INSTALLATION – USE
MAINTENANCE

Monitoring of updates	
Date	Description
03/11/2016	Creation

SUMMARY / PLAN

The original of this document is in French. No translation can replace the original.

Thank you for purchasing a FIXATOR product. In the following pages we give you details of instructions allowing you to safely use and maintain your equipment in good working condition. Please read these instructions prior to commissioning the equipment: no installation operation, use and maintenance should be performed until this document has been fully understood. These operations must also be carried out by clearly designated personnel suitably trained.

The following symbol will alert you to hazards to watch out for:  .

1 Generalities

This notice covers the use of winches LM type 461.

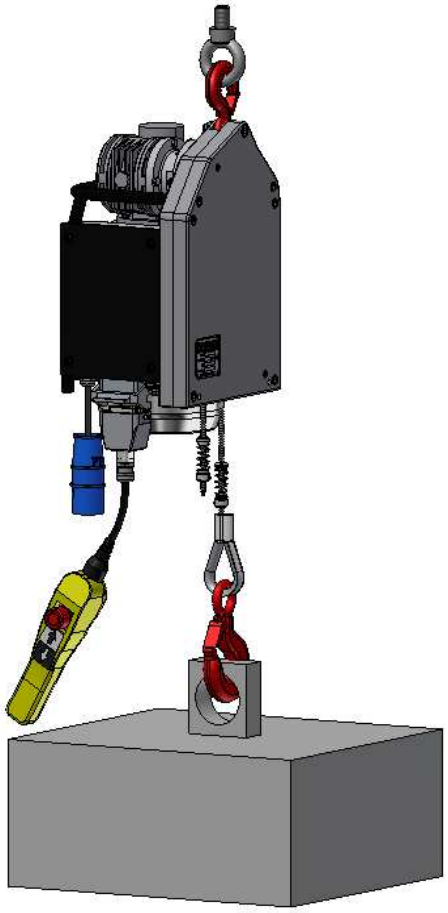
1.1 Description of the machine

The LM is a portable electric reeving hoist for unlimited hoisting cable movement (check instructions on the hoist plate: "Type 461").
The standard equipment includes:
- the unit with its carrying handle and the safety hook; engine with main brake and protected by thermal probe
- 2 travel end stopper
- 1 pendant control station (2,5 m) double insulation IP 65 3 buttons: ascent, descent and emergency stop (extension: 200 m maximum)
- male/female plug and cable power (0.50m)
- 1 manual

The LM winch cannot be used to lift or move people.

1.2 General description.

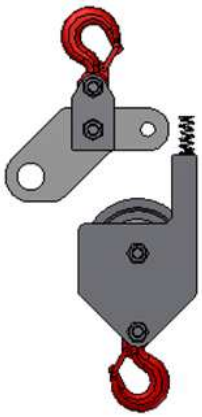
Diagram of typical installation:



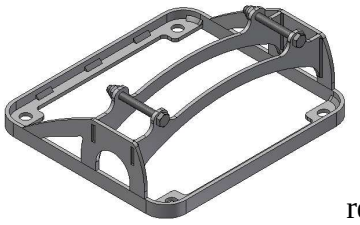
This winch is designed for the lifting and traction of loads. It is intended for professionals involved for work, such as in an elevator shaft or on building facades. The winch uses one steel cable (hoisting cable).

The drive system consists of a pulley whose throat has a special profile, and in which the cable is tight under the effect of the load by two articulated rollers. This allows an unlimited run of the hoisting cable.
This technical design ensures a great security provided you follow the instructions given in this manual.
Each device carries labels information and instructions. Constantly make sure that all these labels are in place and legible.
The LM winch must be used exclusively with special lifting cable, to fully ensure the safety and efficiency.
Before its expedition by Fixator, each hoist is tested to 110% of its capacity.

Additional kits exist:



ref : 540155



ref : 461021

Extensions to the pendant control station (5G1) :
- 15m : ref 540134
- 30m : ref 540136

1.3 Compliance with guidelines and standards; commissioning

This machine complies with the European Machinery Directive 2006/42/EC.
It is manufactured under a quality process according to EN-ISO 9001: 2015.
A test prior to initial commissioning and after each maintenance or dismantle must be performed with a

static test coefficient of 1.25xWLL and a dynamic test coefficient of 1.1xWLL.

1.4 Specifications

The LM500 winch has a working load limit of 500kg (WLL). It is displayed on the winch plate.

Type	070781		
CMU / WLL (kg)	500 (1100lbs)		
Motor P (kW)	1.1		
Voltage (V)	230V-50/60Hz		
I Nominal / start (A) @50Hz	7/21A		
I Nominal / start (A) @60Hz	9/21A		
Weight (kg)	32 (70lbs)		
Dimensions (mm)	255x240x809		
T° for use (° C)	-10°C / +55°C *		
Operating Speed (m/s) @50Hz	0.12 (7m/mn)		
Operating Speed (m/s) @60Hz	0.14 (8m/mn)		
Wire rope Ø and type	Ø6.5 à 6.8 - 6x19 synthetic core		
Minimum breaking load (kg)	2500 (5500lbs)		
Upper limit switch	Yes		
Lower limit switch	Yes		
Service factor	S3 60% 30cy/h		

* Use between -20° and -10°C is possible providing a gradual and uniform preheating unloaded operation is carried out, then the load can be applied as soon as the hoist reaches a T ° - 10°C.

1.5 Machine logbook,

The contents of the logbook of this machine are not provided; it is up to the owner to create or acquire one in which the following is noted:

- the name of the person in charge of equipment
- operator names and dates / periods of use
- serial numbers of components
- the number of hours of use,
- the characteristics of the cables used
- the number of hours the cables are used,
- a record of incidents and actions taken to remedy them
- forecast dates of periodic inspections and record of actual dates of inspections

1.6 Recommendations for use and general safety

Before using this equipment, ensure:

- that you read and understand this entire manual
- that no obstacles will obstruct the required motion
- that the periodic inspection has been performed and recorded,
- that the electrical installation is designed and protected according to current regulations
- that your material is stable and aligned, freely with the load
- the load or machine movements will not trap or crush you or other people; signal and block access to the area under the load
- you can communicate with help in case of need,
- that you have adequate lighting

ensure :

- every day the correct operation of the mechanisms, brakes, and emergency stop
- periodically the electrical cables, limit switches, structural elements and wire ropes
- regularly the presence of travel end stopper, the presence of plates and safety instructions (and their readability),
- safety of the suspension structure
- there is no accumulation of snow, ice, debris or materials on the winch,
- that there are no obstructions on the façade or in the shaft
- at the end of work, that the deactivation is complete.
- If a charge is to be raised by multiple devices, the installation of these must be preceded by a

technical review by a competent technician and then conducted according to this study, including to ensure the constant distribution of the load in suitable conditions.

During the operations of lifting, up and down, the user must constantly observe the load and the free end of the cable to prevent any risk of collision. The load must be constantly guided (EN14492-2) ; otherwise the use of rotation-resistant wire rope is necessary.

Check and apply local regulations concerning the installation, use, maintenance and control of lifting devices.

See also contraindications §2.6

1.7 Anchoring

Verify that the anchoring point is strong enough for the effort to apply.
If the anchoring is not provided by FIXATOR each anchor must withstand, without any deformation, up to 2.5 times the WLL of the winch, that is 1250 kg, and remain stable when subjected to this load.
(special case of reeving 2:1, the resistance must be of 5 times the WLL, that is 2500kg ; see §2.1.4)
If the fixing of the unit must be in a dangerous place for the operator, the safety precautions provided for by the work's regulation must be taken to exclude any risk uncontrolled in this operation. It is perhaps better in this case to implement the hoisting cable into the device before the anchoring operation.

2 Installation and Use

2.1 Instructions for installation, assembly, commissioning and use - training

Installation and use operations must be performed by personnel specially trained by the manufacturer or its dealers, duly authorized by their employer.
Depending on your country, regulatory inspections may be necessary.
Make sure you have:

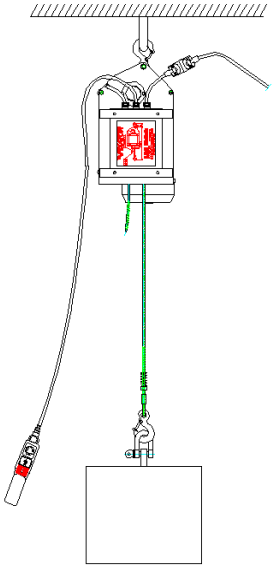
- a sufficient length of special cable Ø6.5-6.8 mm
- an adequate length of supply cable and suitable number of wires with suitable cable section,
- Accessories you may wish to use

2.1.1 Suspended installation

It's the simplest mounting and the most common. Device in suspension and direct traction or lifting. The anchoring of the device must be done exclusively by its hook and never by its handle.

There is no way to anchor the hook of the cable to the fixed point to get the device moving on the cable.

The hook of the machine must be placed in the body of the attachment point, so that this body is at bottom of hook. The pawl of safety of the hook must close completely.

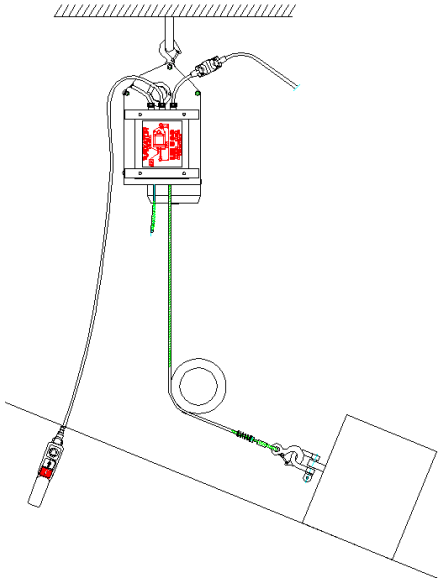


If a gene appears in the articulation of the apparatus with the body of fixing hook, it is necessary to interpose a sling of appropriate capacity.

Check each element of connection capabilities to ensure your safety.

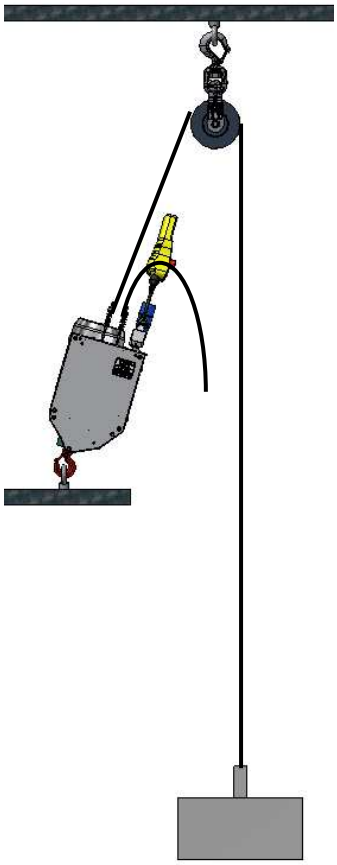
2.1.2 Installation with deflection

- Device suspended ; indirect traction or lifting.



This case requires a deflection pulley anchored to a fixed point.

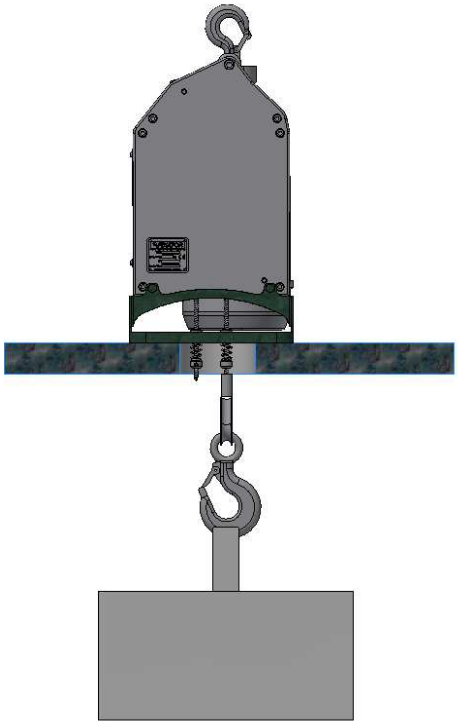
- Device on ground and lifting through a deflection pulley.



The resistance of the pulley and its anchorage must be calculated for a double effort of the load.

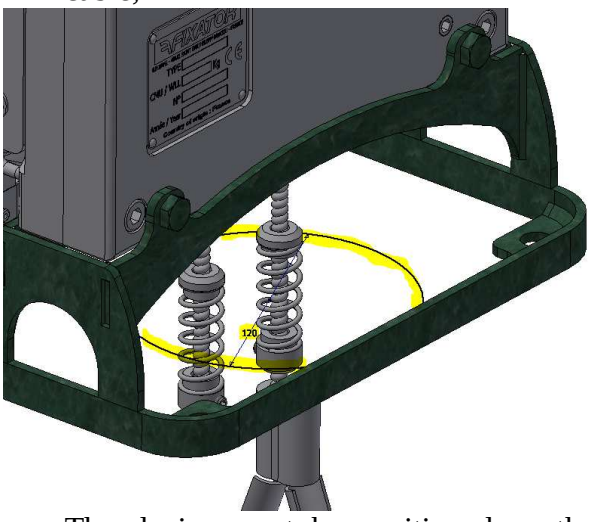
2.1.3 Installation support on a basis

Use the optional ref 461021.



This type of installation requires special precautions:

- The bearing surface on which the unit is placed must be flat and horizontal.
- This surface must have a minimum Ø120mm orifice for the passage of the two strands of cable,



- The device must be positioned so that the lifting wire rope, under load, does not rub against the walls of the hole, and so that the travel end stoppers on the wire rope can come in contact with the switch levers.
- The device must be propped so that it will not move on the support. (4 drillings Ø13 available)

- The surface on which the unit is placed in support must have the necessary stability and strength in regard of the safety of the operation.
- The load must be in free suspension.

With this arrangement, never lift the load without having placed it beforehand at the vertical of the hoist.

2.1.4 Reeving for lifting of load

Use the reeving kit ref 540155.
This assembly allows you to double the capacity (working load 990 Kg) of the device. In return, the speed is decreased by half.

The LM must not be otherwise than with this reeving kit assembled. Additional system must not be added.
The reeving kit consists of an anchor carrier strand and a reeving block with a hook and a spring.

The user should note that when reeving, the required length of wire rope is at least twice the lift height, plus at least 1 meter of apparent slack strand.

The limit spring mounted on the lower pulley is intended to replace the high limit stop.
A stop may still be placed on the loose strand to serve as low end stopper.

In case of reeving, double the maximum load to be taken into account for the calculations of security.

NOTA : take care to mount the pulley block so that its limit spring is located on the cable between the pulley and the entry in the hoist (see figure).

Check the triggering of your travel limit switch before use; a repositioning of the stoppers may be necessary depending on the configuration of job.

Check the capacity of the anchoring points.

When operating with the reeving system, especially the operator will ensure that the load is not turning on itself, to avoid tangling the three strands of the cable (two strands loaded and the slack side).
Stop immediately if the loose strand comes to tangle with the other strands.

2.1.5 Power

The installer must ensure that the power supply is compatible with the specification of the winch.

The power supply must be protected upstream by a 30 mA differential switch. The installation must be in accordance with EN 60204-1. Power outlets must be calibrated to 16A.

The power cable to the Liftho control box must be flexible cable (Class 5). Beyond 30m, it must be held in place by a suitable anchorage clamp.
EXTENSION SECTION (mm²) at **230V**

Type :	0-50m	50-80m	80-140m	140-200m
3 wires P+N+T	2.5² 13AWG	4.0² 11AWG	6.0² 9AWG	10.0² 7AWG

If the LM winch is powered by a generator, check that it delivers at least the voltage and power required at the start of the winch (min 6kVA).

2.1.5.1 Hoist connection

- Connect the button box to the socket on the winch.
- Connect the main power plug.

2.1.5.2 Commissioning

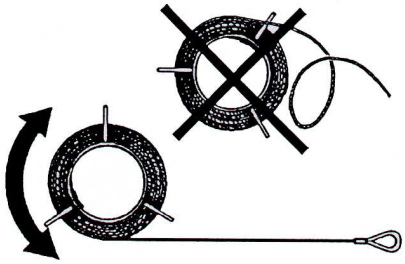
- Unlock the emergency stop if necessary
- Press the UP button to lift or pull the load
- Press the DOWN button to lower the load

At any time, in case of imminent danger or need, press the Punch red button to stop any movement of your hoist.

2.1.6 Installation of cables for lifting

Use protective gloves when handling wire rope.
Check the condition of the cable and its length (working height + 2m).
Check the condition of the hook and safety latch.

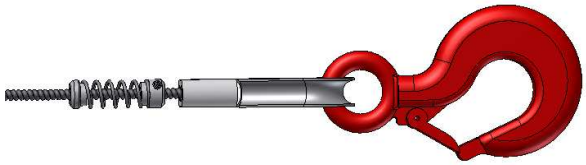
Avoid the formation of loops when unwinding..



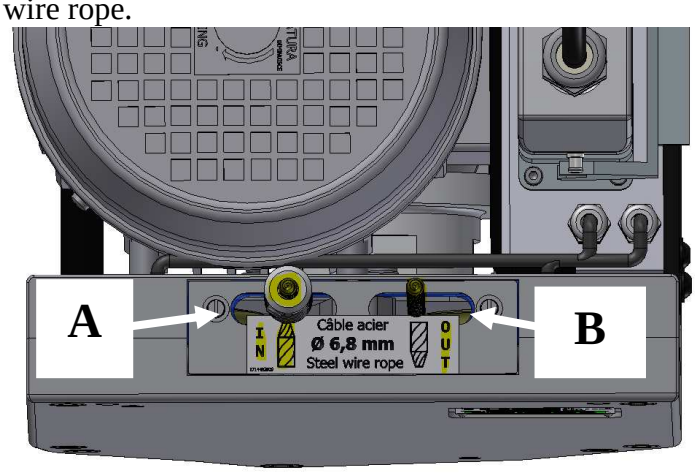
The end of the cable should be clean and sharp.

pour votre sécurité, n'utiliser que des câbles FIXATOR

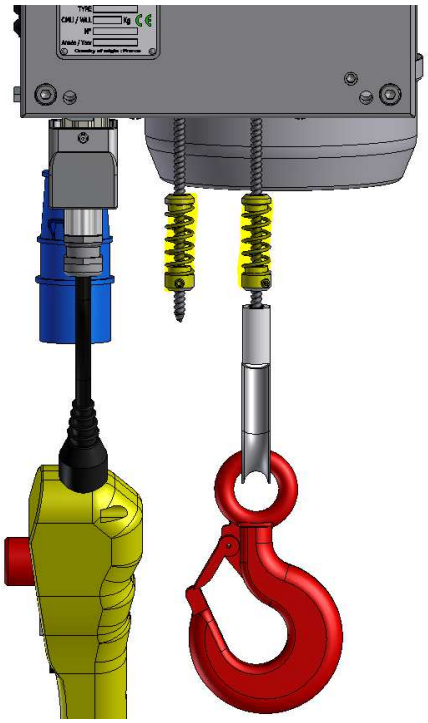
Put the end stopper on the wire rope (the spring being directed to the winch). Block with an Allen key.



Insert the end of the wire rope through the bottom opening A. press the UP button on the pendant control while pushing the wire rope so that it engages in the throat of the pulley.
When the rope come out through hole B, continue the movement so as to obtain a sufficient length of wire rope.



PS : a second stopper is provided to stop the descent; position the spring on the side of the winch:

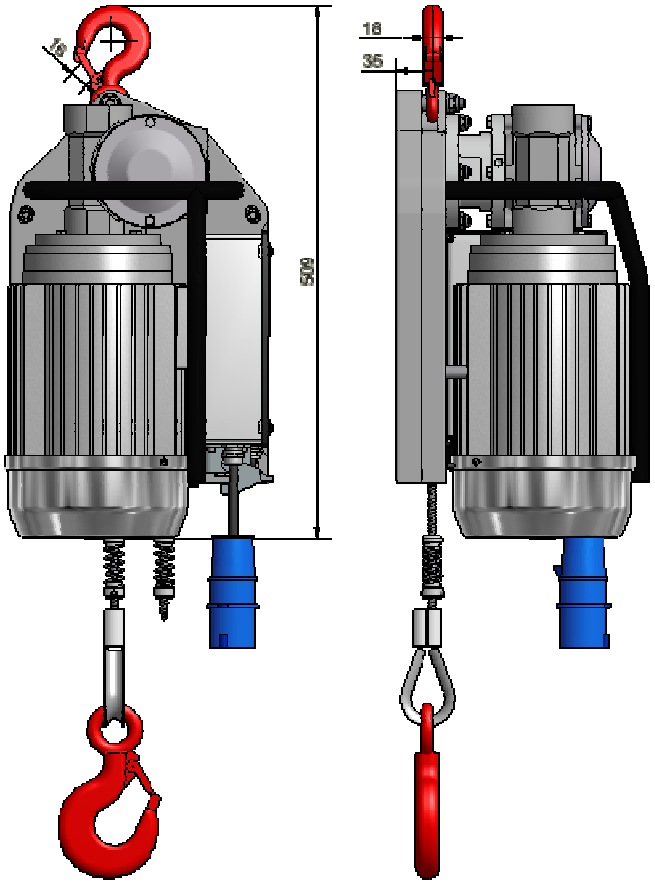


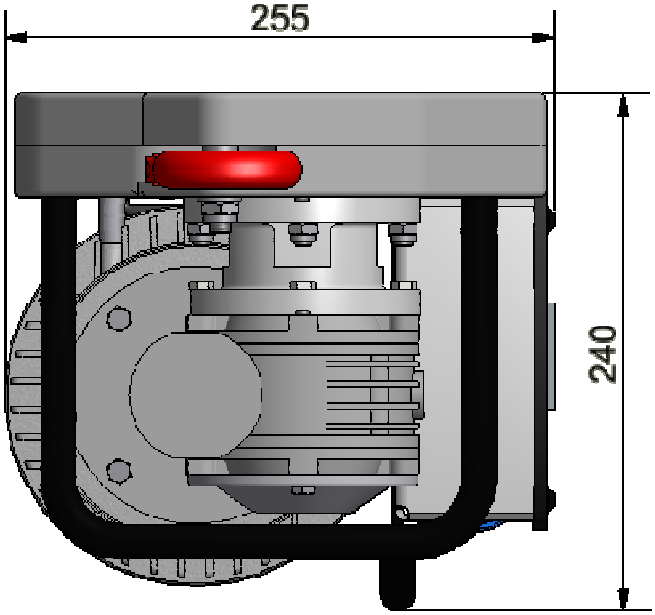
Check the operation of the limit switches of the winch.
For your safety, use only FIXATOR cables.
Ensure that the cable above the hoist (taut) does not touch surfaces or angles.
Ensure that the outgoing winch cable (slack) is free.
Do not let the loaded rope become slack if the load is not stable, resting on a strong enough support.

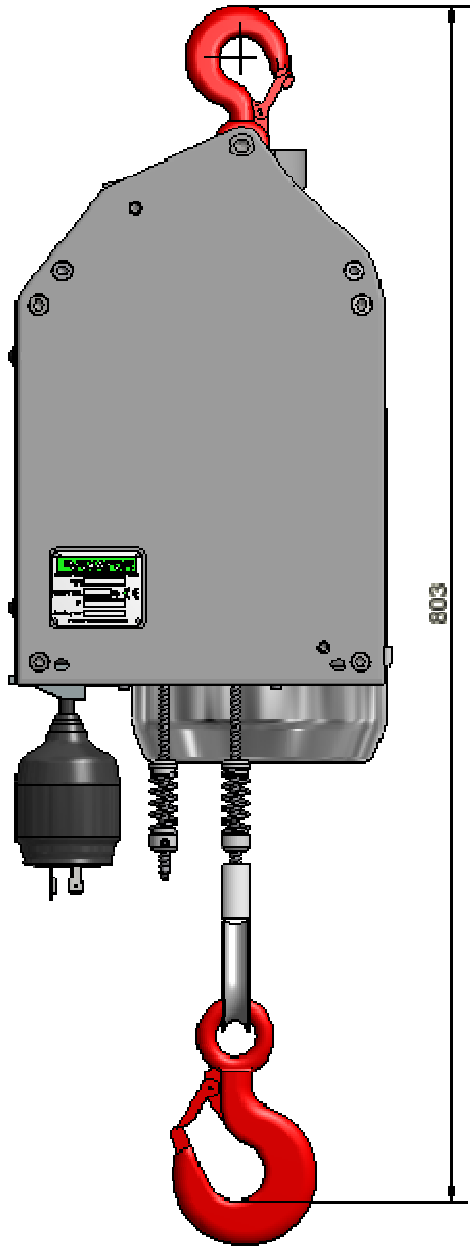
2.2 Diagrams and safety explanations

Installation and use operations must be performed by personnel specially trained by the manufacturer or its dealers, duly authorised by their employer.
The maximum capacity of the hoist (WLL) should be the basis for calculations of anchor strength.

2.2.1 Main dimensions







2.2.2 Safety devices

- A main brake acts on the engine in case of power supply failure
- An upper limit switch sensor stops lifting when the spring touches the plate.
- A lower limit switch sensor stops lowering when the spring touches the plate.
- An electrical emergency stop placed on pendant control acts immediately and stops the winch to the ascent and the descent.
- Mechanical locking prohibiting the simultaneous action of the up and down commands.
- Electrical protection of the pendant control : class 2.
- Fuse protecting the command, in the electrical box.
- Hooks with safety latch.

The 230V single-phase motor is protected against excessive warm-ups by a probe inserted into the coil. This probe prohibits operation by interrupting the control circuit as long as the temperature of the coil is not back to an acceptable value. In case of intensive work or high duty, we suggest to allow a 15 minutes break every 45 minutes of work to avoid overheating.

2.3 Description of the work or control station

"Up" and "down" hoist movements are controlled from the pendant control.

Never stand under the load.
In case of a command error, wait for a complete stop of motion before performing another command. The control buttons are held type buttons.
Limit stops are not operating devices but safety devices. They should therefore not be used voluntarily but only serve as shutoff devices in case of involuntary exceedance of the expected travel.
Never stay or work under load. If necessary, have a barrier of security on the floor around the area at the vertical of the load.

Avoid heavy slipping: Wait for a complete stop of your installation before resuming movement.
Check regularly that no obstacle is located along the path of movement (above and below the load).

2.4 Normal use

This hoist is designed for lifting loads.

It is designed for professionals involved, for example, in work in elevator shafts or on façades.

Press on «↑» to lift and on «↓» to lower. Release the buttons to stop the movement. If it is not stopped, press the Emergency Stop. If it is not working, remove the main plug and have your hoist maintained.

2.5 Decommissioning

After work, or during an prolonged shutdown, or if preventive maintenance tests (see §3) are not satisfactory, put your load on the floor or a secure access level. Disconnect the hook from the load when it is resting stable on a fixed and solid support.
The device can remain attached provided that it is protected from the weather and in a dry place.
Snap your emergency stop.
Unplug and store your pendant control box.
Store your power supply cable.

2.6 Warnings about contraindications

 It is forbidden to use this product:

- if you are not a trained professional
- to exert a force or lift a load greater than 500kg if it is not described in this manual,
- to lift people,
- in harsh conditions (extreme or corrosive environment, high magnetic fields, etc.)
- in potentially explosive atmospheres
- to perform work on energized power lines,
- to carry loads themselves dangerous (molten metals, acids, bases, radioactive material, fragile loads etc)
- in combination with other lifting equipment if it is not listed in this instruction manual,
- with loads with a wind surface area >2 m² if it is not listed in this manual,
- with a wireless remote control system not mentioned in this manual
- in the event of specific risks (wind> 14 m / s, T ° <-10 ° C or> 55 ° C, storms etc)
- with worn or deformed cables
- with lubricated cables with products containing bisulphite or MoS2 (Molykote ®, etc)
- To apply a load on the loose strand of the hoist.
- To use the wire rope as a means to sling the load

2.7 Residual risks

The use of cable damaged or not suited to the device is the major risk of accident and failure.

 Check that your equipment has not been subject to vandalism, theft, or damage.

 Never disable the safety features.

 Never swing a load voluntarily.

 Do not block a control.

 In case of continuous operation for more than 30 ', the surface temperature of the motor can begin to rise significantly.

2.8 Transportation, handling, storage

To transport your machine from one site to another, remove the cables from your hoist.
Store the various components of your equipment in a clean and dry place.

3 Maintenance - Settings

 Maintenance operations must be performed by personnel specially trained by the manufacturer or its dealers.

3.1 Maintenance operations

LM hoists must be reviewed at least once a year and every 100h. In harsh environments (sandblasting, marine, back and forth operation at full load, doubts about the proper use etc) a higher frequency of verifications may be required.
Load lifting winches are intended for a limited lifetime; beyond that, a return to factory is imperative.
For the hoist LM type 461, the ranking is A2.

In some countries, periodic audits and reviews of commissioning are mandatory.

3.1.1 Preventive maintenance

 These operations must be performed by a competent person trained by FIXATOR or its dealers. The FIX022 manual details these annual or control operations.

Check:
<u>Daily :</u>
The quality of your anchors and of the 2 hooks (latch).

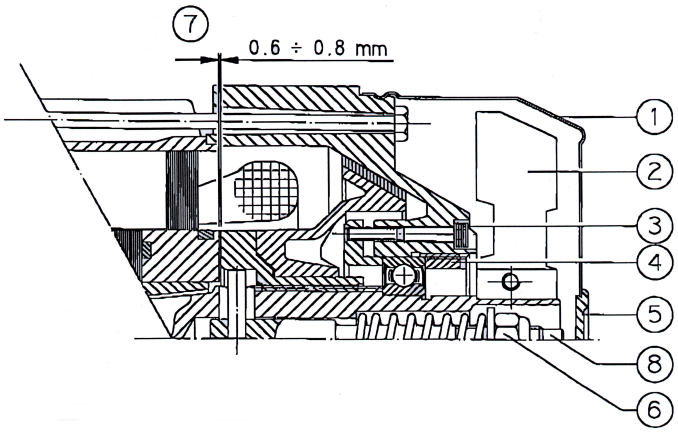
The good clamping of the travel end stoppers on your cable.
The good general condition.

Monthly :
The proper functioning of the safety devices (emergency stop, limit switches, brake).
The overall proper functioning by performing a full movement at the rated load.

Every year and every 100h :
Check the groove pulley.
Check the bearings, rudder, gear...
Check the motor brake.
Control each security (cf §2.2.2) at the rated load.
Clean and grease the gears (e.g. BIMO EP or Kluberplex AG11-462)

3.1.2 Adjusting of the brake

Remove the cap (5) that is on the ventilator lid (1).
→ Increasing the braking: turn the brake screw (6) progressively counter clockwise and check that the brake does not slide during the lowering.
→ Decreasing the braking : turn clockwise.

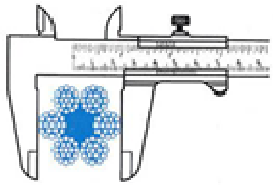


TO RELEASE THE BRAKE SYSTEM:
If necessary, it is possible to unlock the brake manually, by pressing the (8) pivot. After each operation, a load test must be performed.
FIXATOR or its dealers can train your staff for the maintenance of your winches.
For your safety and to benefit from the full guarantee of the manufacturer, use only original FIXATOR parts (ask the complete list of spare parts).

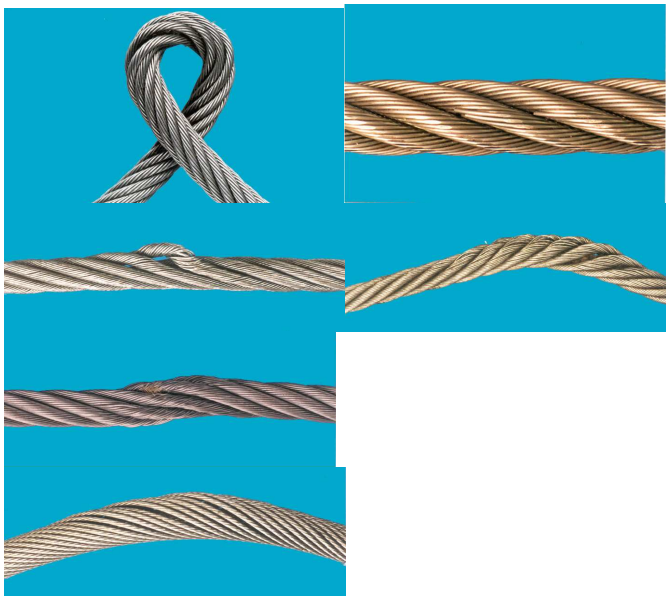
3.1.3 Lubricating a hoist cable

The hoisting cable must be regularly greased or lubricated with Teflon.
For this, use for example:
- IGOL SHP 50 grease
- A lubricant spray PRO-LUBE Teflon.

Never use products containing bisulphite or MoS2 (Molikote).
Only cables recommended by FIXATOR provide safe hoist operation. The removal's criteria to follow are those of the ISO4309.
The diameter should not be reduced by more than 10% (for wire rope Ø 6.5-6.8 mm) : min 6.1mm



The cables must be replaced in the following cases:
- More than 10 wires broken over a length of 20 cm for wire rope Ø 6.5-6.8 mm.
- "Basket" deformation or rupture of one of the cable strands.
- Cable crushed, unravelling.
- Considerable oxidation



When using a plastic return pulley, they must be replaced once they have been used with cables having at least one broken wire.

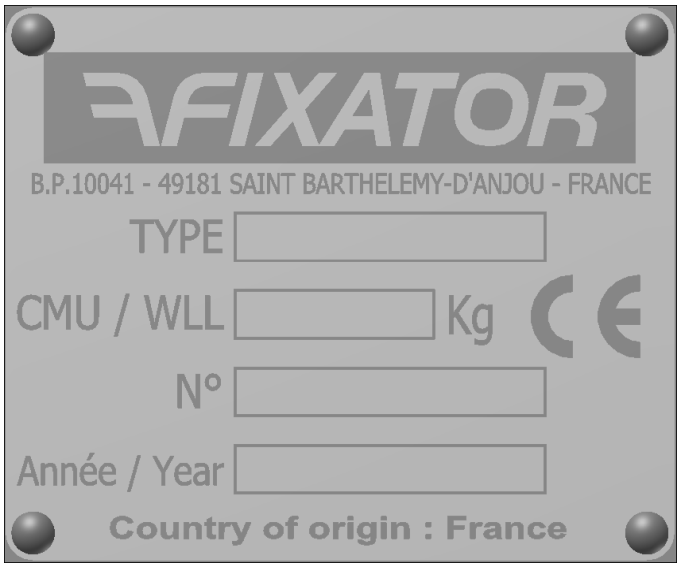
3.2 Troubleshooting

Faults observed	Potential causes of the fault	Remedies
The motor does not rotate	The temperature sensor is activated	Wait for a drop in temperature
	The motor has a mechanical fault	Check the motor
	The contactor in the hoist is out of order or disconnected	Reconnect or replace it
	The limit switch is activated	
	Fault in the control circuit Fault in the power circuit Power supply fault Current escape to earth	To be checked by a competent person
	Batteries of the remote control out-of-order	Check
The hoist does not lift	The grooved pulley is worn or dirty	Verification
	The condenser is disconnected or out of order	Verification
	The temperature sensor is activated	Wait for a drop in temperature
	The motor is blocked	Verification (maintenance)
	The contactor on the hoist is out of order or disconnected	Reconnect or replace it
	The limit switch is activated Fault in the control circuit Fault in the power circuit	To be checked by a competent person
The hoist does not lower	The temperature sensor is activated	Wait until it cools
	The motor is blocked	Check the motor
	The contactors in the hoist are off or disconnected	Reconnect or change
	Error in the control circuit Error in the power circuit	To be checked by a competent person
The motor is powered but stops (snoring sound)	The capacitor is disconnected or out of service (for single phase hoist only)	Verification
	The motor is blocked	Verification (maintenance)
	Power cable section too thin	Replace the power cable
The hoist does not lift the load	The groove pulley is worn or dirty	Verification
	The capacitor is disconnected or out of service (for single phase hoist only)	Verification
	The temperature sensor is activated	Wait until it cools
	Power cable section too thin	Replace the power cable
	The wire rope is inserted in wrong way	Verification
Current too high	The brake is out of service	Verification
	The capacitor is disconnected or out of service (mono phase hoist only)	Reconnect the capacitor or change it
	The motor is blocked	Verification (maintenance)
Slow slide	The groove pulley is worn or dirty	Verification
	The brake is worn	Adjust the brake
	The adhesion system is worn or dirty	Verification

3.3 Spare parts

Note and send the information listed on the plate shown below before requesting parts.

Use only FIXATOR original spare parts.



Main wear parts and estimated replacement frequency (highly dependent on actual usage) :

Grooved pulley	ref 462001	100h
S/A Travel limit	ref 461022	400h
Pinion shaft	ref 461024	/
Pressure system	ref 461023	500h
Travel end stopper	ref 462030	/
Capacitor	ref 540144	/
Pendant control	ref 462020	/
Motor cap	ref 462021	/
Fuse	ref 244612	/

3.4 Disposal

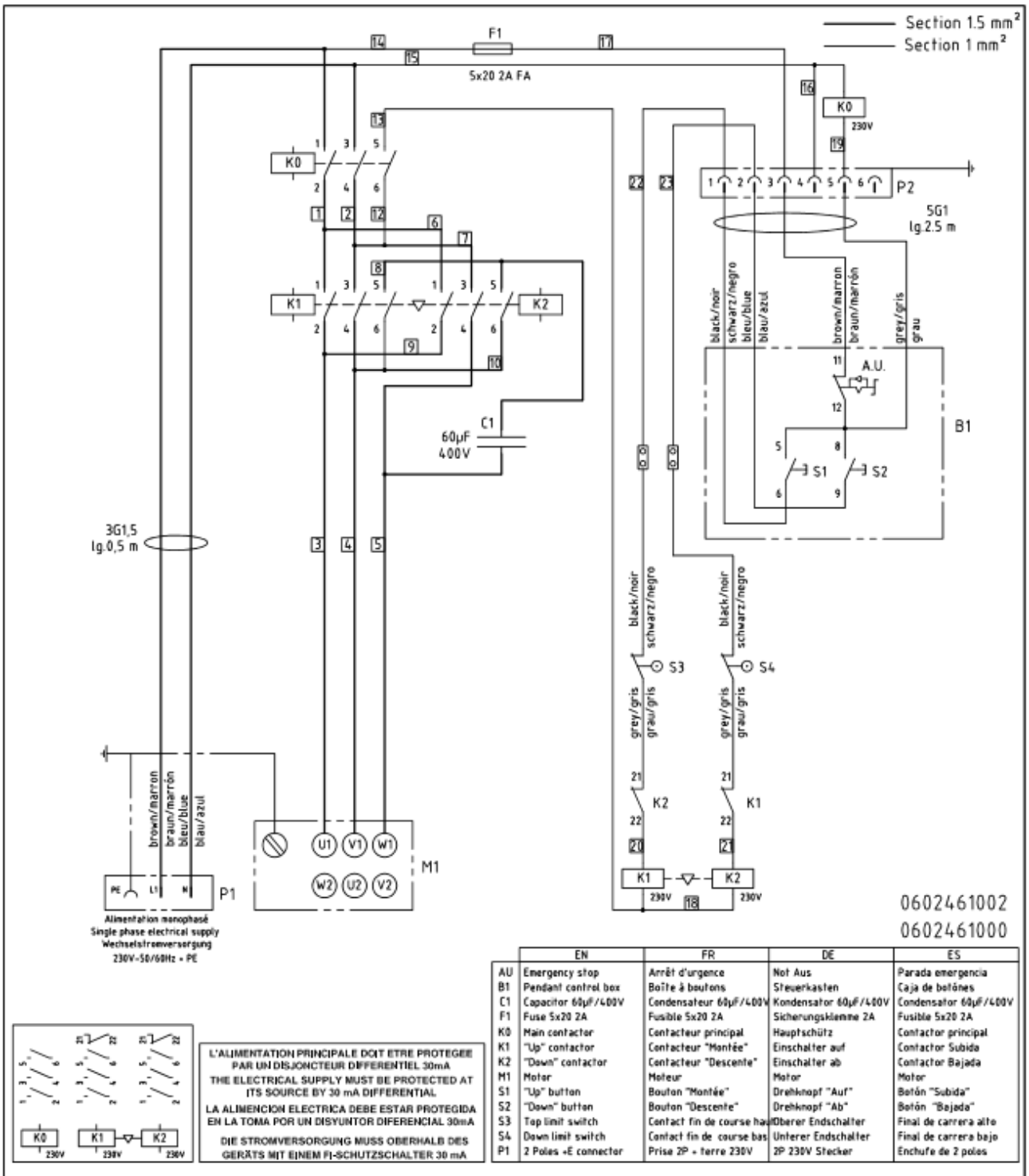
Disassembly and disposal of the hoist must be in accordance with the current regulations in force. Electrical components, gear oils, greases, etc ... should be separated and sent to the appropriate treatment locations.

3.5 Noise emission

The A weighted sound pressure levels at workstations is less than or equal to 70 dB (A)

4 Apendices

Installation examples, wiring diagrams, component instructions …



	EN	FR	DE	ES
AU	Emergency stop	Arrêt d'urgence	Not Aus	Parada emergencia
B1	Pendant control box	Boîte à boutons	Steuerkasten	Caja de botónes
C1	Capacitor 60µF/400V	Condensateur 60µF/400V	Kondensator 60µF/400V	Condensator 60µF/400V
F1	Fuse 5x20 2A	Fusible 5x20 2A	Sicherungsklemme 2A	Fusible 5x20 2A
K0	Main contactor	Contacteur principal	Hauptschütz	Contactor principal
K1	"Up" contactor	Contacteur "Montée"	Einschalter auf	Contactor Subida
K2	"Down" contactor	Contacteur "Descente"	Einschalter ab	Contactor Bajada
M1	Motor	Moteur	Motor	Motor
S1	"Up" button	Bouton "Montée"	Drehknopf "Auf"	Botón "Subida"
S2	"Down" button	Bouton "Descente"	Drehknopf "Ab"	Botón "Bajada"
S3	Top limit switch	Contact fin de course haut	Oberer Endschalter	Final de carrera alto
S4	Down limit switch	Contact fin de course bas	Unterer Endschalter	Final de carrera bajo
P1	2 Poles +E connector	Prise 2P + terre 230V	2P 230V Stecker	Enchufe de 2 polos

L'ALIMENTATION PRINCIPALE DOIT ETRE PROTEGEE PAR UN DISJONCTEUR DIFFERENTIEL 30mA
THE ELECTRICAL SUPPLY MUST BE PROTECTED AT ITS SOURCE BY 30 mA DIFFERENTIAL
LA ALIMENCION ELECTRICA DEBE ESTAR PROTEGIDA EN LA TOMA POR UN DISYUNTOR DIFERENCIAL 30mA
DIE STROMVERSORGUNG MUSS OBERHALB DES GERÄTS MIT EINEM FI-SCHUTZSCHALTER 30 mA

REP.	QTE	DESIGNATION	MATIERE	OBSERVATIONS
	1	Schéma électrique monophasé 230V-50/60Hz		0602461000

TREUILS ELECTRIQUES LM500+ & LM300S+

DATE	VISA	DESCRIPTION MODIFICATION	CONTROLE	IND.
10.05.2016	e.lusseau	Création		

FIXATOR
B.P.10041 – 49181 SAINT BARTHELEMY-D'ANJOU
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ECHELLE : 1:1

Plan N° 461-Elec1 -

The original of this document is in French, no translation can replace it.

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