

## OPERATING AND MAINTENANCE INSTRUCTIONS



## SELF-PROPELLED LIFT HA15IP

242 032 8470 - E 12.05 GB



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## GENERAL

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You have just taken delivery of your mobile elevating work platform

It will give you complete satisfaction if you follow the operating and maintenance instructions exactly.

The purpose of this instruction manual is to help you in this.

We stress the importance:

- of complying with the safety instructions relating to the machine itself, its use and its environment,
- of using it within the limits of its performances,
- of proper maintenance upon which its service life depends.

During and beyond the warranty period, our After-Sales Department is at your disposal for any service you might need.

Contact in this case our Local Agent or our Factory After-Sales Department, specifying the exact type of machine and its serial number.

When ordering consumables or spares, use this documentation, together with the «Spares» catalogue so as to receive original parts, the only guarantee of interchangeability and perfect operation.

This manual is supplied with the machine and is included on the delivery note.

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REMINDER: You are reminded that our machines comply with the provisions of the «Machines Directive» 89/392/EEC of June 14th 1989 as amended by the directives 91/368/EEC of June 21st 1991, 93/44/EEC of June 14th 1993, 93/68/EEC of July 22nd 1993 and 89/336/EEC of May 3rd 1989, directive 2000/14/CE and directive EMC/89/336/CE.

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### **Caution!**

***The technical data contained in this manual cannot involve our responsibility and we reserve the right to proceed with improvements or modifications without amending this manual.***

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## *Why use only Haulotte original spare-parts ?*

### 1. RECALLING THE EEC DECLARATION OF CONFORMITY IN QUESTION

Components, substitutions, or modifications other than the ones recommended by **Haulotte** may recall in question the initial security conditions of our **Haulotte** equipment. The person who would have intervened for any operation of this kind will take responsibility and recall in question the EEC marking validity granted by **Haulotte**. The EEC declaration will become null and void and **Haulotte** will disclaim regulation responsibility.

### 2. END OF THE WARRANTY

The contractual warranty offered by **Haulotte** for its equipment will no longer be applied after spare-parts other than original ones are used.

### 3. PUBLIC AND PENAL LIABILITY

The manufacture and unfair competition of fake spare-parts will be sentenced by public and penal law. The usage of fake spare-parts will invoke the civil and penal liability of the manufacturer, of the retailer, and, in some cases, of the person who used the fake spare-parts.

Unfair competition invokes the civil liability of the manufacturer and the retailer of a “slavish copy” which, taking unjustified advantage of this operation, distorts the normal rules of competition and creates a “parasitism” act by diverting efforts of design, perfection, research of best suitability, and the know-how of **Haulotte**.

**FOR YOUR SECURITY, REQUIRE HAULOTTE ORIGINAL SPARE-PARTS**





## 4. QUALITY

Using **Haulotte** original spare-parts means guarantee of :

- € High quality parts
- € The latest technological evolution
- € Perfect security
- € Peak performance
- € The best service life of your **Haulotte** equipment
- € The **Haulotte** warranty
- € **Haulotte** technicians' and repair agents' technical support

## 5. AVAILABILITY

Using Haulotte original spare-parts allows you to take advantage of 40 000 references available in our permanent stock and a 98% service rate.

WHY NOT TAKE ADVANTAGE ?





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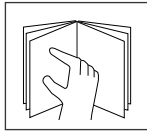


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# 1 - GENERAL RECOMMENDATIONS - SAFETY

## 1.1 - GENERAL WARNING



### 1.1.1 - Manual

This manual is designed to familiarise the operator with HAULOTTE self-propelled platforms in order to ensure efficient and safe use. However, it cannot replace the basic training required by any user of site equipment.

The site manager is bound to inform the operators of the instructions contained in the manual. He is also responsible for applying the «user regulations» in force in the country of use.

Before using the machine, it is essential to understand all these instructions in order to ensure safe and efficient operation.

This manual must be kept available for all operators. Additional copies can be supplied by the manufacturer on request

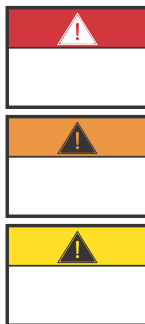
### 1.1.2 - Labels

Potential dangers and machine instructions are indicated on labels and plates. All instructions on such plates must be read.

All labels conform to the following colour code:

- Red indicates a potentially fatal danger.
- Orange indicates a danger of causing serious injury.
- Yellow indicates a danger that may cause material damage or slight injury.

The site manager must ensure that these labels are in good condition and remain legible. Additional copies can be supplied by the manufacturer on request.



### 1.1.3 - Safety

Ensure that any persons entrusted with the machine are fit to meet the safety requirements that its use imposes.

Avoid any working method that may jeopardise safety. Any use not compliant with the instructions may cause risk and damage to persons and property.



**Caution !**

**To attract the reader's attention instructions are signalled by this sign.**

*This manual must be kept by the user throughout the machine's service life, including in the case of loan, lease and resale.*

*Ensure that all plates or labels relative to safety and hazards are complete and legible.*



## 1.2 - GENERAL SAFETY INSTRUCTIONS



**Caution !**

**Only trained operators can use Haulotte self-propelled platforms.**

### 1.2.1 - Operators

Operators must be aged over 18, and hold an operating license in the country of use issued by their appropriate authority to prove that they are apt to operate the machine.

There must always be one person at ground level who is familiar with the emergency control to:

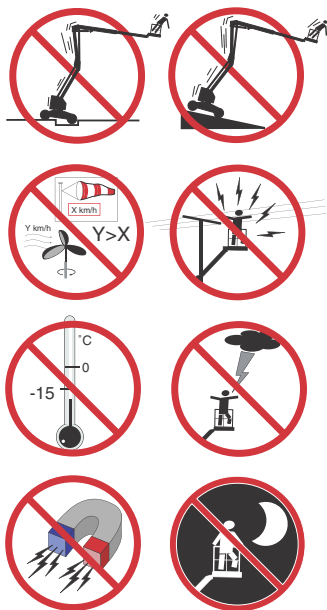
- Take fast action if necessary.
- Take over the controls in case of accident or malfunction.
- Monitor and prevent movement of vehicles and people near the platform.
- Guide the platform operator if required.

### 1.2.2 - Work environment

Never use the machine:

- On ground that is soft, unstable, congested.
- On ground that has a slope greater than permissible limit.
- In winds greater than the permissible limit. If used outside, use an anemometer to ensure that the wind speed does not exceed the permissible limit (see Chap 1.7, page 6).
- Near power lines (check minimum safe approach distances according to voltage carried) (see Chap 1.8, page 7).
- In temperatures less than -15°C (especially in refrigerated chambers). Consult us if it is necessary to work below -15°C.
- In explosive atmospheres.
- In poorly-ventilated areas, since the exhaust fumes are toxic.
- During storms (risk of lightning).
- In the dark, unless the optional floodlight is fitted.
- In the presence of intense electromagnetic fields (radar, moving and high currents).

**DRIVING ON PUBLIC ROADS IS PROHIBITED.**



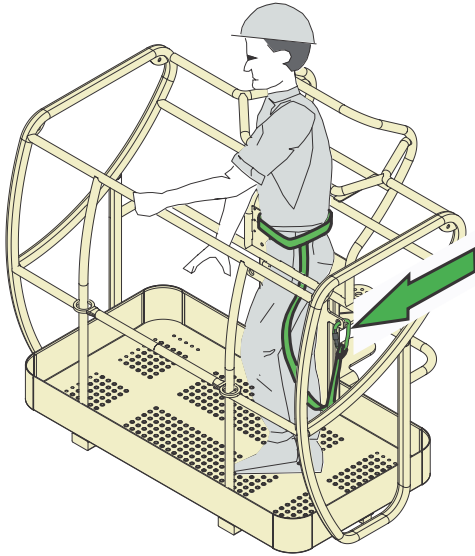
### 1.2.3 - Using the machine

In normal service (i.e. operating from the platform), the platform/turntable control select key must be removed and kept at ground level by a person who is present and trained in rescue/emergency assistance manoeuvres.

Do not use the machine:

- with a load greater than allowed load,
- if wind speed exceeds the maximum
- with more than maximum authorised number of occupants in platform,
- with a side load in the platform greater than permissible limit.



**Caution !**

**Never use the platform as a crane, hoist or lift.**

**Never use the machine to pull or tow.**

**Never use the boom as a ram or thruster or to lift the wheels.**



To reduce the risks of **serious falls**, operators **must respect the following instructions**:

- Hold the guardrail firmly when lifting or driving the platform.
- Remove any traces of oil or grease from the platform steps, floor or guardrails.
- Wear personal protective equipment suited to working conditions and conform to local regulations, particularly when working in hazardous areas.
- Anyone working onboard the platform must wear a safety harness which should be attached to the usual fixing point with a strap. Attach one strap only per fixing point.
- Never disable the limit switches of the safety devices.
- The contact with fixed or mobile obstacles can cause the premature deterioration of the structure, and involve the rupture of certain safety members of the machine
- Do not increase the platform operating height by means of ladders or other accessories.
- Never use the guardrails to climb into or out of the platform (use the steps provided).
- Never climb on the guardrails when the platform is up.
- Avoid driving the machine at high speed in narrow or congested areas.
- Never use the machine without putting in place the platform safety bar or closing the safety gate.
- Never climb on the covers.

To reduce the risks of tipping over, operators **must follow these instructions**:

- Never disable the limit switches of the safety devices.
- Never move the control handles from one direction to the other without stopping in the «O» position. (To stop when travelling, gradually move the handle to «O», keeping your foot down on the pedal.).
- Do not exceed the maximum load or the number of occupants allowed in the platform.
- Spread the load and if possible place in the centre of the platform.
- Check that the ground resists the pressure and load per wheel.
- The contact with fixed or mobile obstacles can cause the premature deterioration of the structure, and involve the rupture of certain safety members of the machine
- Do not drive the platform at high speed in narrow or congested areas.
- Do not drive the platform in reverse gear (poor visibility).
- Do not use the machine with a congested platform.
- Do not use the machine with equipment or objects hanging from the guardrails or boom.
- Do not use the machine with items liable to increase the wind load (e.g. panels).
- Never carry out maintenance on the machine with the platform raised, without first installing the required safety provisions (overhead crane, crane).
- Perform the daily checks and monitor the machine's good working order during periods of use.
- Protect the machine from any uncontrolled intervention when it is not in operation.

**NOTE :** *Do not tow the unit. (The equipment is not designed for towing. Transport of the unit should be carried out using a vehicle built for this purpose).*



## 1.3 - RESIDUAL RISKS



### Caution !

*The direction of travel can be reversed after a 180° turntable rotation. Take account of the colour of the arrows on the chassis compared with the direction of travel (green = forward, red = reverse)*

*Thus, moving the manipulator in the direction of the green arrow on the control panel will move the machine according to the direction indicated by the green arrow on the chassis. Similarly, moving a manipulator in the direction of the red arrow on the control panel, will move the machine in the direction of the red arrow on the chassis*



### Caution !

*If the machine has a 220 V 16A max. plug, the extension must be connected to a mains socket protected by a 30 mA differential circuit breaker.*

### 1.3.1 - Risks of jerky movements and tipping over

Risks of jerky movement and tipping over are high in the following situations:

- Sudden action on the controls.
- Overloading of the platform.
- Uneven ground (Be careful during thaw periods in winter).
- Gusts of wind.
- Contact with an obstacle on the ground or at a height.
- Working on platforms, pavements, etc.

Allow sufficient stopping distances:

- 3 meters at high speed,
- 1 meter at low speed.

Allow sufficient stopping distances: 3 metres at high speed and 1 metre at low speed.

Do not alter or override any components connected in any way to the machine's safety or stability.

Do not place or fasten a load so that it overhangs the machine's parts.

Do not touch adjacent structures with the elevator arm.

### 1.3.2 - Electrical risk

Electrical risks are high in the following situations:

- Contact with a live line (check safety distances before operation near electricity lines) (see Chap 1.8, page 7).
- Use during storms.

### 1.3.3 - Risk of explosion or burning

The risks of explosion or burning are high in the following situations:

- Working in explosive or inflammable atmosphere.
- Filling the fuel tank near naked flames.
- Contact with the hot parts of the motor.
- Use of a machine causes hydraulic leakage.

### 1.3.4 - Risks of collision

- Risk of crushing people in the machine operation zone (when travelling or manoeuvring equipment).
- The operator must assess the risks above him before using the machine.
- Pay attention to the position of the arms during turntable rotation.
- Adapt movement speed to conditions related to the ground, traffic, slope and movement of people, or any other factor that may cause a collision.
- When driving down the ramp of a truck, ensure sufficient space is available for safe unloading.
- Check brake pad wear regularly to avoid all risk of collision.
- Always use a winch line connected to the unit when loading and unloading off tilt tray vehicles.



## 1.4 - INSPECTIONS

Comply with the national regulations in force in the country of machine use.  
For AUSTRALIA: ie.AS2550.10.

For FRANCE: Order dated 1st March 2004 + circular DRT 93 dated 22 September 1993 which specify:

### 1.4.1 - Periodic inspections

The machine must be inspected every 6 months in order to detect any defects liable to cause an accident.

These inspections are performed by an organisation or personnel specially designated by the site manager and under his responsibility (whether or not they belong to the company) Articles R 233-5 and R 233-11 of the French Labour Code.

The results of these inspections are recorded in a safety register kept by the site manager and constantly available to the labour inspector and the site safety committee (if one exists) and the list of specially designated personnel (Article R 233-5 of the French Labour Code).

Moreover, before each use, check the following:

- the operator's manual is in the storage compartment on the platform,
- the stickers are placed according to the section concerning «Labels and their positions»,
- oil level and any elements in the maintenance operation table
- look out for any damaged, incorrectly installed, modified or missing parts.

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**NOTE :** *This register can be obtained from trade organisations, and in some cases from the OPPBTP or private prevention agencies.*

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The designated persons must be experienced in risk prevention (Articles R 233-11 or order n° 93-41).

No member of personnel is allowed to perform any check whatsoever during machine operation (Article R 233-11 of the French Labour Code).

### 1.4.2 - Examination of machine suitability

The manager of the site where the machine is operated must ensure the machine is suitable, i.e. capable of performing the work in complete safety, and in compliance with the operating manual. Furthermore, the French order of 1st March 2004 addresses problems relative to leasing, examination of the state of conservation, checking upon operation after repairs, and test conditions (static test coefficient 1.25; dynamic test coefficient 1.1). All users must consult this order's requirements and comply with them.

### 1.4.3 - State of conservation

Detect any deterioration liable to cause hazardous situations (concerning safety devices, load limiters, tilt sensor, cylinder leaks, deformation, welds, bolt tightness, hoses, electrical connections, tyre state, excessive mechanical gaps).

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**NOTE :** *If the machine is rented/leased, the user responsible for the machine must examine its state of conservation and suitability. He must obtain assurance from the leaser that general periodic inspections and pre-operation inspections have been performed.*

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## 1.5 - REPAIRS AND ADJUSTMENTS

These cover major repairs, and work on or adjustments to safety systems or devices (of a mechanical, hydraulic or electrical nature).

These must be performed by personnel from or working for PINGUELY-HAULOTTE who will use only original parts.

Any modification not controlled by PINGUELY-HAULOTTE is unauthorised.

The manufacturer cannot be held responsible if non-original parts are used or if the work specified above is not performed by PINGUELY-HAULOTTE-approved personnel.

## 1.6 - VERIFICATIONS WHEN RETURNING TO SERVICE

To be performed after:

- extensive disassembly-reassembly operation,
- repair affecting the essential components of the machine,
- any accident caused by the failure of an essential component.

It is necessary to perform a suitability examination, a state of conservation examination, a static test, a dynamic test (see coefficient in paragraph (see Chap 1.4.2, page 5).



**Caution !**

**These test must be performed by a competent person.**

## 1.7 - BEAUFORT SCALE

The Beaufort Scale of wind force is accepted internationally and is used when communicating weather conditions. It consists of number 0 - 17, each representing a certain strength or velocity of wind at 10m (33 ft) above ground level in the open.

Description of Wind		Specifications for use on land	MPH	m/s
0	Calm	Calm; smoke rises vertically	0-1	0-0.2
1	Light Air	Direction of wind shown by smoke	1-5	0.3-1.5
2	Light Breeze	Wind felt on face; leaves rustle; ordinary vanes moved by wind	6-11	1.6-3.3
3	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag	12-19	3.4-5.4
4	Moderate Breeze	Raises dust and loose paper; small Branches are moved	20-28	5.5-7.9
5	Fresh Breeze	Small trees in leaf begin to sway; crested wavelets form on inland waterways	29-38	8.0-10.7
6	Strong Breeze	Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty	39-49	10.8-13.8
7	Near Gale	Whole trees in motion; inconvenience felt when walking against wind	50-61	13.9-17.1
8	Gale	Breaks twigs off trees; generally impedes progress	62-74	17.2-20.7
9	Strong Gale	Slight structural damage occurs (chimney pots and slates removed)	75-88	20.8-24.4



**1.8 - MINIMAL DISTANCES OF SAFETY**

- It is important to hold the machine far away from the lines and equipment of electrical current according to the applicable governmental réglements and the following diagram

Voltage	distance minimum safety in meters
from 0 to 300 V	Avoid contact
from 300 V to 50 kV	3.05
from 50 kV to 200 kV	4.60
from 200 kV to 350 kV	6.10
from 350 kV to 500 kV	7.62
from 500 kV to 750 kV	10.67
from 750 kV to 1000 kV	13.72







## 2 - PRESENTATION

The mobile elevating work platform, model HA15IP, is designed for carrying out many kinds of work at a height within the limitations imposed by its characteristics (Chap 2.4.1 -, page: 4) and provided that all safety instructions relating to the equipment and environment in which it is used are respected.



The main control panel is situated in the platform.

The control panel situated on the turret is to be used in emergencies or cases of machine failure.

### 2.1 - IDENTIFICATION

A plate Fig. 1 -, page: 1, attached to the rear, right-hand side of the chassis, is engraved with all the necessary information for identification of the machine.

Fig. 1 - Manufacturer's plate

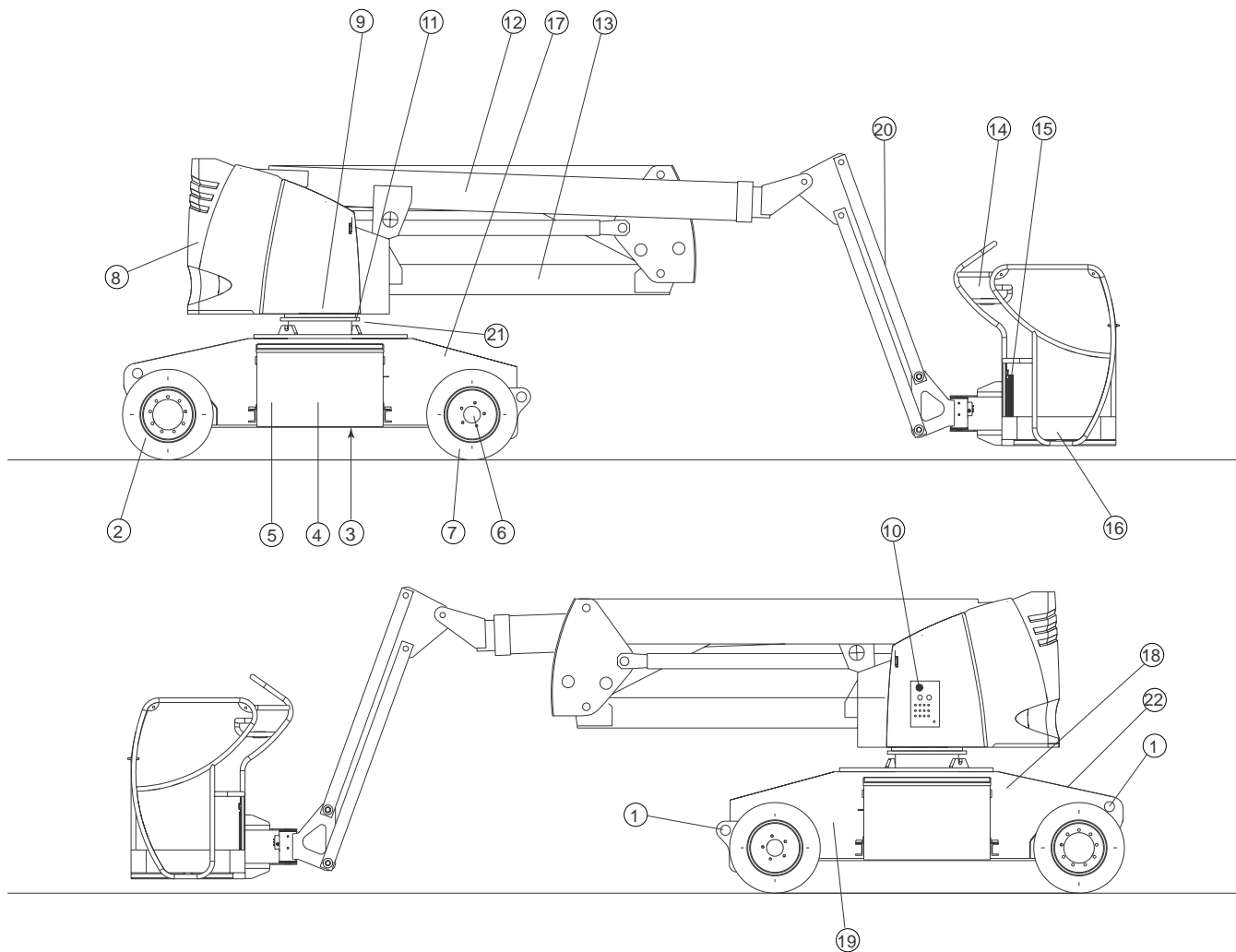
 PINGUELY HAULOTTE, La Péronnière, BP9 42152 L'Horme - France		
EQUIPMENT	<input type="text"/>	
TYPE	<input type="text"/>	
SERIAL N°	<input type="text"/>	
TOTAL WEIGHT	<input type="text"/>	kg
YEAR OF MANUFACTURE	<input type="text"/>	
NOMINAL POWER	<input type="text"/>	kW
MAXIMUM LOAD	<input type="text"/>	kg
NUMBER OF PERSONS + LOAD	<input type="text" value="P +"/>	kg
LATERAL FORCE MAX.	<input type="text"/>	N
WINDSPEED MAX.	<input type="text"/>	m/s
SLOPE OPERATION MAX.	<input type="text"/>	degrees
GRADEABILITY	<input type="text"/>	%
		307P218080 b

REMINDER: To request information, an intervention or a replacement part, you will need to specify the machine type and serial number.



## 2.2 - MAIN COMPONENTS

Fig. 2 - Mainn components



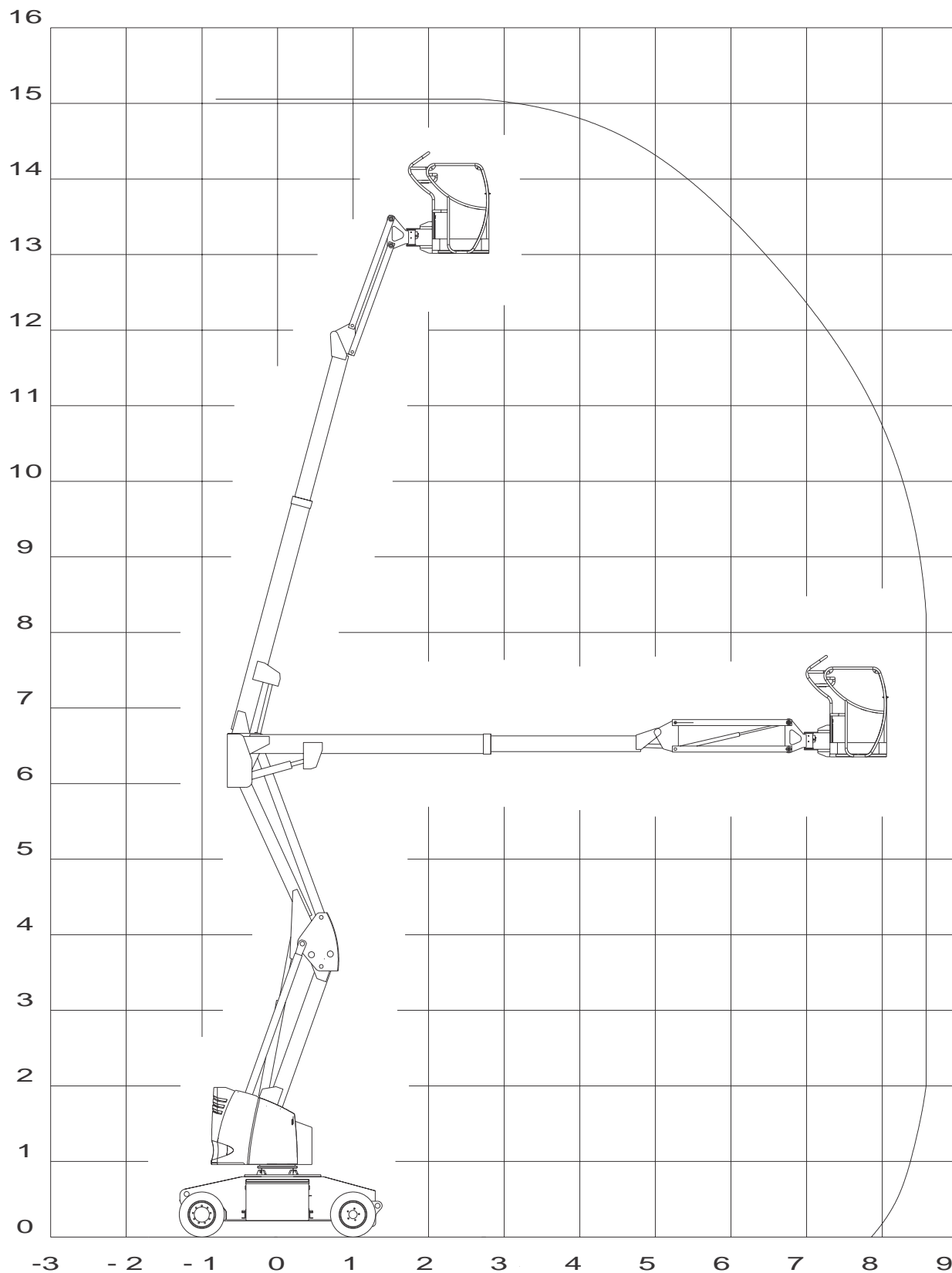
1-Lifting lugs	12-Boom
2-Steering wheels	13-Arms
3-Chassis	14-«Platform» control panel
4-Drive batteries	15-Document holder
5-Battery charger	16-Platform
6-Electric drive motor	17-Hydraulic filter
7-Drive wheels (drive the machine at two speeds)	18-Battery master switch
8-Counterweight	19-Electrical pump unit
9-Orientation reduction gear	20-Pendular
10-«Turret» control panel	21-Turntable rotate pin
11-Slew ring	22-Electronic variator



## 2.3 - WORKING AREA

### 2.3.1 - Working area of the HA15IP

Fig. 3 - Working area - HA15IP





## 2.4 - TECHNICAL CHARACTERISTICS

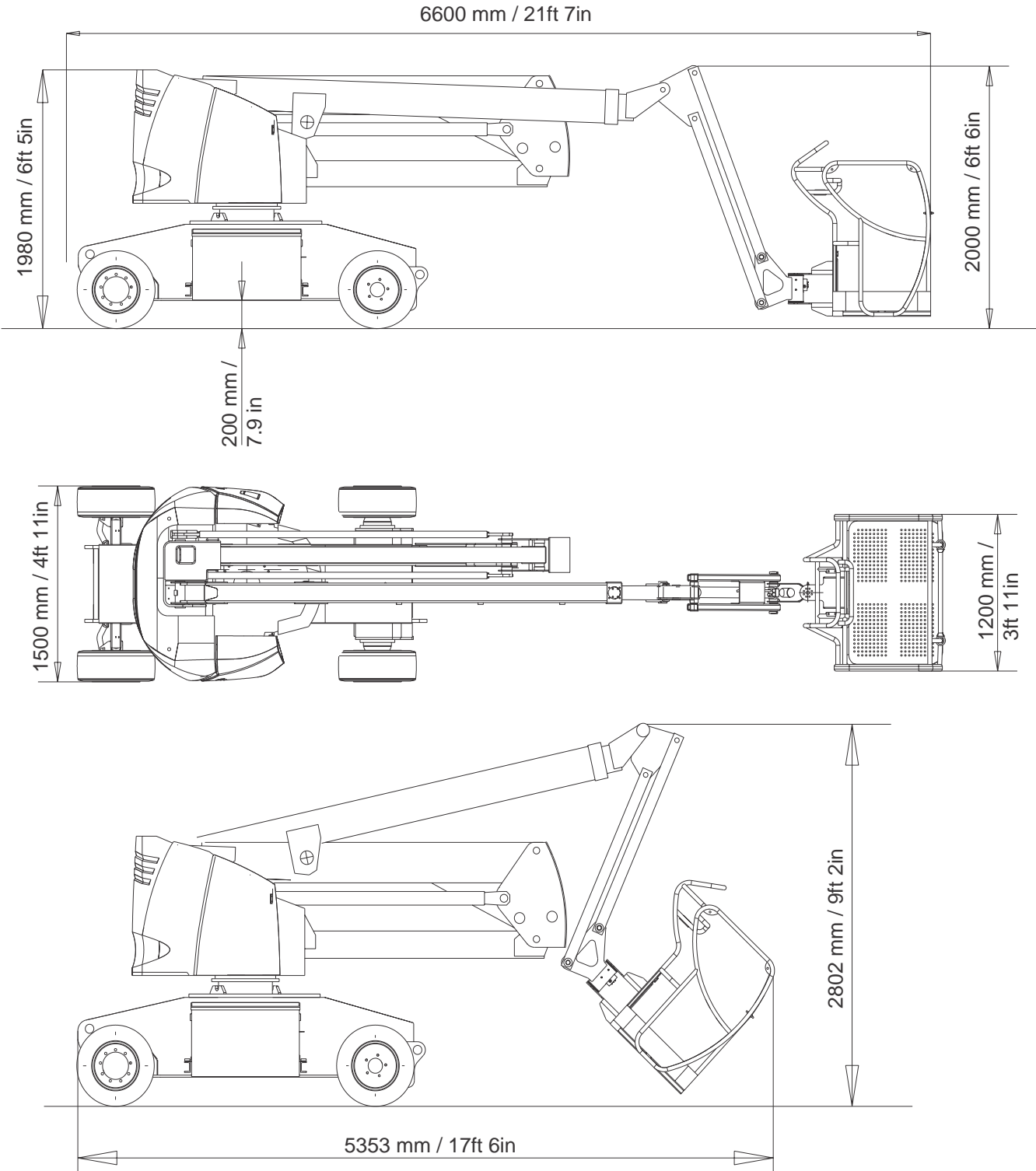
### 2.4.1 - Technical characteristics of the HA15IP

Designations	HA15IP	
	Basket 1200x800	Basket 1500x800
Load	230 Kg	230 Kg
Max. wind speed	45 Km/h	
Maximum working height	15 m	
Maximum height of the platform	13m	
Maximum reach	8.45 m	
Height under the boom	6.60 m	
Pendular length	1.50 m	
Pendular amplitude	140°	
Pendular position	-70°+70°	
Turret rotation	350 NC	
Platform rotation	+90°/-90°	
Inclination	3°	
Platform dimensions	1200x800 mm	1500x800 mm
Width	1.50 m	
Height when fully retracted	2 m	
Width when fully retracted	6.60 m	
Rear overhang	0.12 mm	
Ground clearance	0.15 mm	
Weight	7300 Kg	
Proportional movements	OUI	
High translation speed	5 Km/h	
Maximum ramp	25%	
Voltage	48 V	
Batteries	360 Ah	
Battery charger	50 A	
Internal deflection radius	1.70 m	
External deflection radius	3.70 m	
Hydraulic reservoir	30 L	
Tyres	23.10"x12"	
Max. force on one wheel	3100 daN	
Max pressure on the floor		
- hard floor (concrete)	8.6 daN/cm²	
- soft floor (beaten earth)	6.3 daN/cm²	



**2.4.2 - Dimensions of the HA15IP**

Fig. 4 - Dimensions of the HA15IP





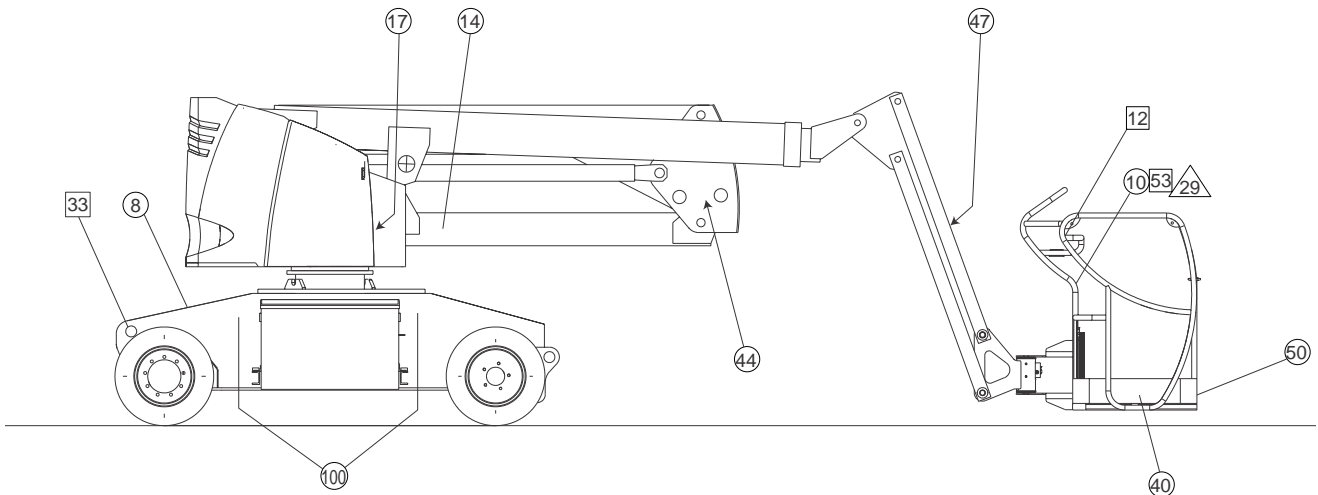
## 2.5 - LABELLING

### 2.5.1 - Position of the labels

Ref	Code	Qty	Explanation
8	307P218070	1	Manufacturer's plate (French)
	307P218110		Manufacturer's plate (Spanish)
	307P218090		Manufacturer's plate (German)
	307P218080		Manufacturer's plate (English)
	307P218100		Manufacturer's plate (Italian)
	307P218120		Manufacturer's plate (Dutch)
	307P218130		Manufacturer's plate (Danish)
	307P218160		Manufacturer's plate (Finnish)
	307P218150		Manufacturer's plate (Swedish)
	307P218140		Manufacturer's plate (Portuguese)
7	3078143420	1	Instructions (French)
	3078143430		Instructions (Spanish)
	3078143440		Instructions (German)
	3078143450		Instructions (English)
	3078143460		Instructions (Italian)
	3078143470		Instructions (Dutch)
	3078144940		Instructions (Danish)
	3078143540		Instructions (Finnish)
	3078145830		Instructions (Portuguese)
	3078145940		Instructions (Swedish)
26	3078143560	1	The machine must not be used while the batteries are charging
16	3078143610	1	Protective clothing must be worn
17	3078143640	2	Do not stand on the hood
41	3078143570	1	Ring lubrication
10	3078143490	1	The machine is not isolated
5	3078152960	2	Floor height + load
15	3078143510	1	Battery check plate
11	3078143520	1	«Hydraulic oil» plate
11	3078148890	1	«Organic hydraulic oil» label optional
14	3078143620	2	Risk of injury to the hands
44	3078143630	2	Risk of being crushed
21	3078143680	1	Read the operating and maintenance manual
19	3078143600	1	Caution: do not use as a ground for welding
42	3078143530	1	Remove the rotate pin
46	3078146280	1	Use the manual pump
32	3078143970	1	Do not take downward slopes at high speed
20	3078143540	1	The socket must be connected
9	3078173550	1	Do not park in the work space
13	3078143590	1	Upper and lower hydraulic oil
2	307P218250	1	Horizontal HA15IP logo
50	307P217770	1	«HAULOTTE» logo
49	3078137430	1	Red arrow
48	3078137440	1	Green arrow
47	3078148310	1	Vertical HA15IP logo
31	3078145180	1	Interchangeable
23	3078152760	1	Chassis control panel
24	307P218040	1	Platform control panel
30	2420505950	1	Warranty activation
29	3078145730	1	240V socket (Hollande)
33	3078144490	4	Hoist load (Australie)
35	3078144390	2	Battery charger connection label (Australie)
59	3078145200	1	Fluid under pressure (Australie)
53	3078144520	1	Safety harness required (Australie)



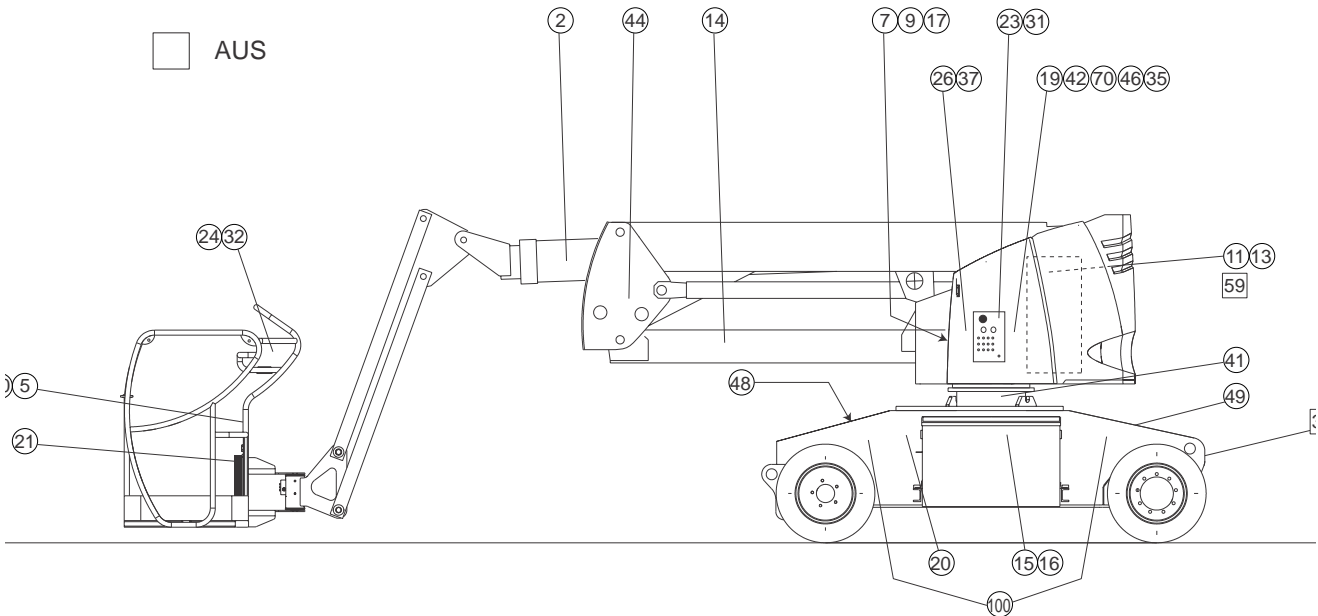
Ref	Code	Qty	Explanation
12	3078144360	1	Do not take downward slopes at high speed (Australie)
54	307P216290	1	Fixing point of harness
60	3078153510	1	Safety
100	3078151550	4	Load for wheel



NL

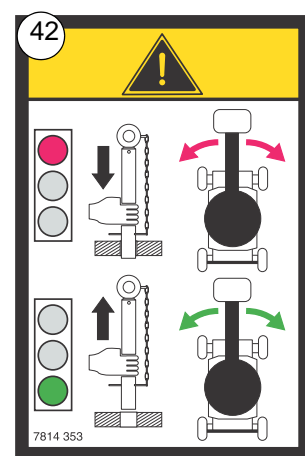
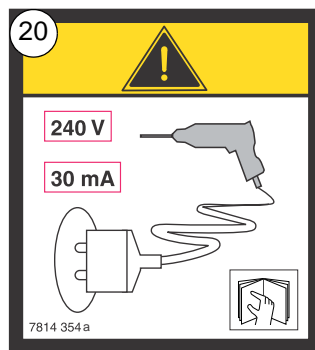
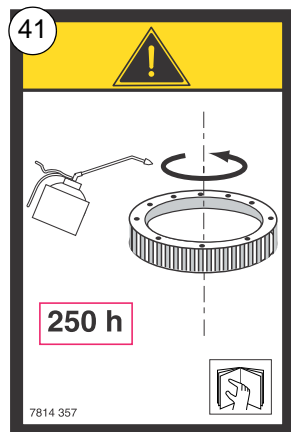
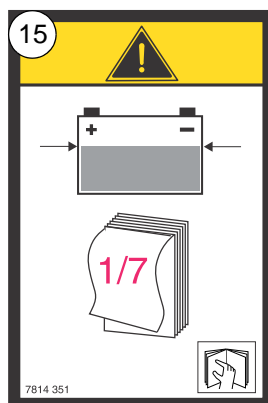
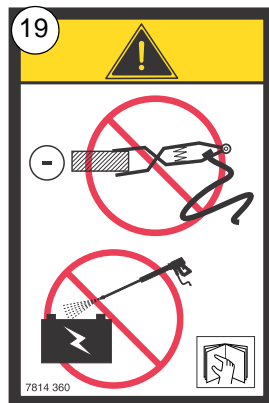


AUS



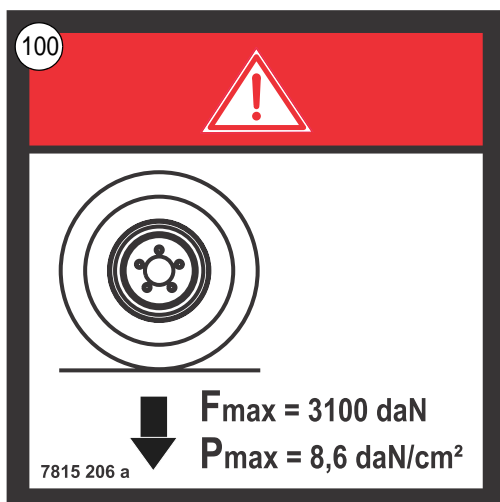
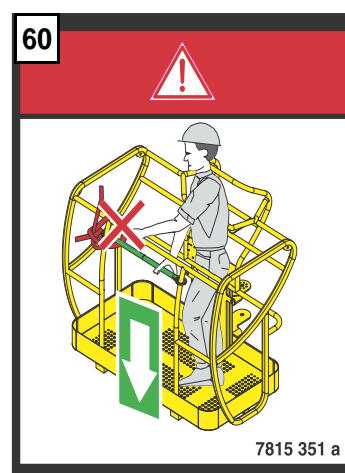
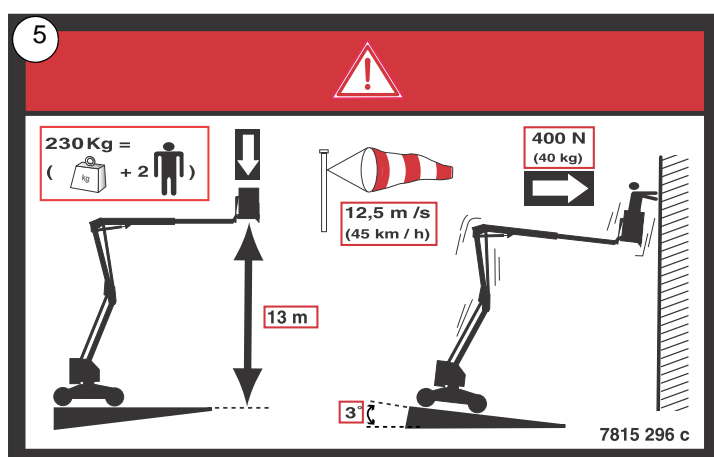
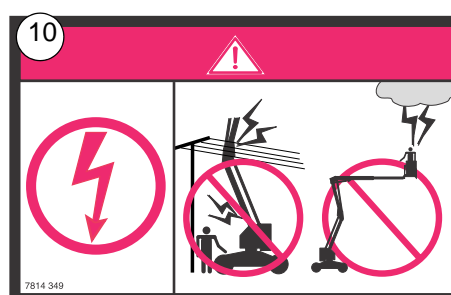
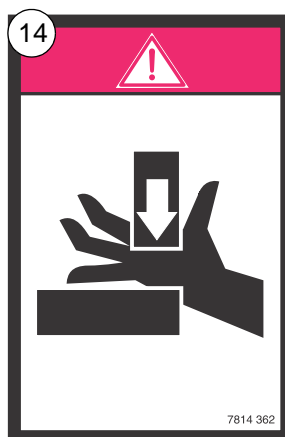
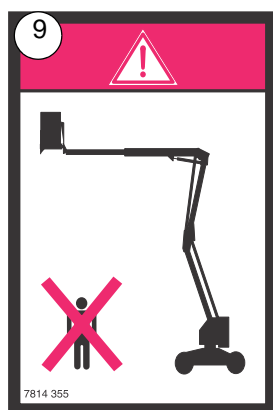


## 2.5.2 - «Yellow» labels



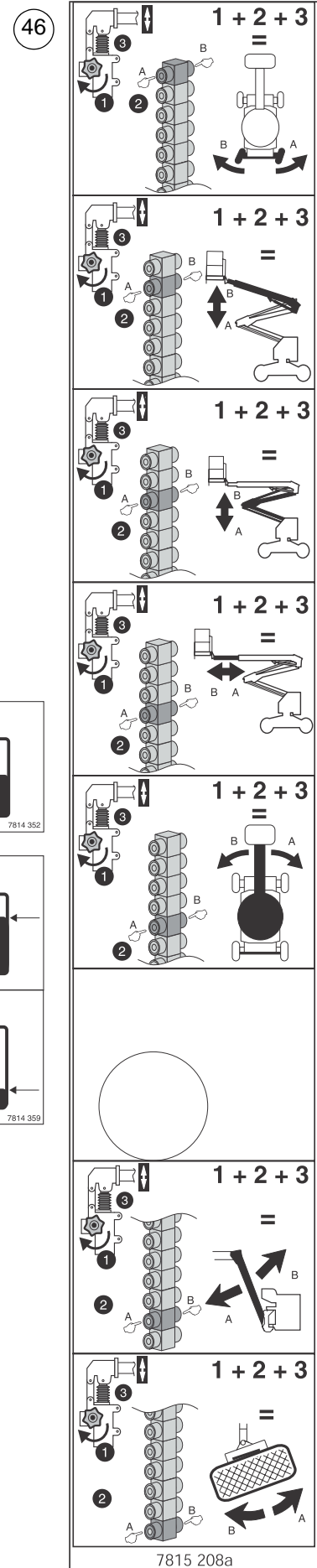
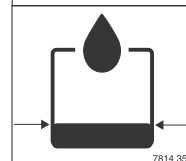
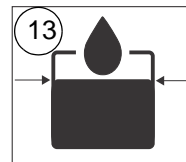
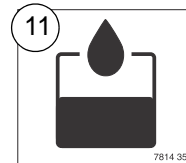
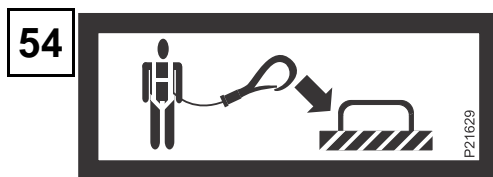
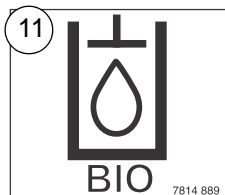
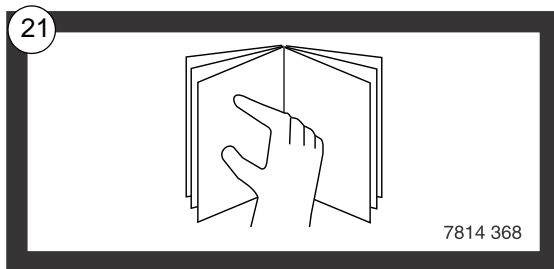
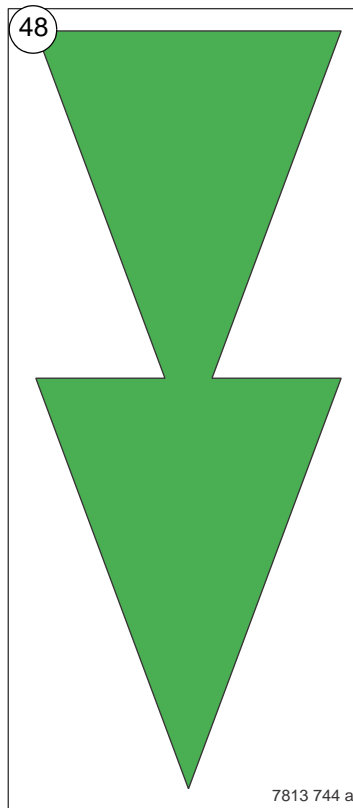
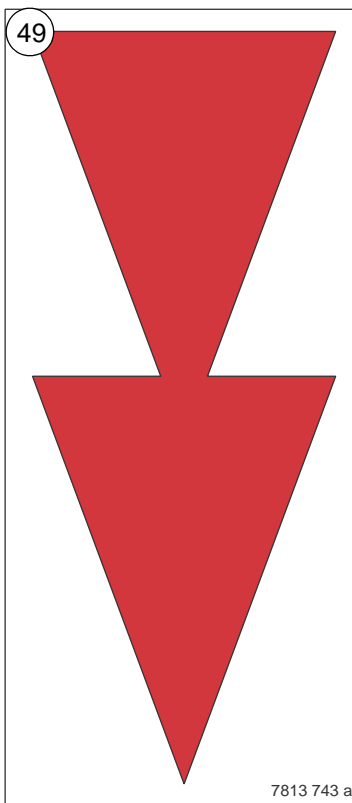


### 2.5.3 - «Red» labels



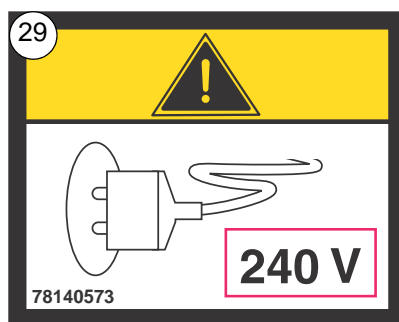


### 2.5.4 - Other labels

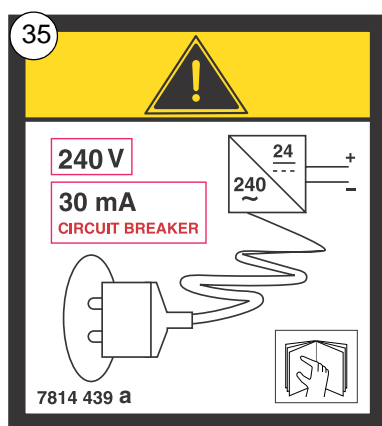




## 2.5.5 - Labels specific to Holland



## 2.5.6 - Labels specific to Australia









## 3 - OPERATING PRINCIPLES

### 3.1 - HYDRAULIC CIRCUIT

All movements of the machine, except drive movement, are powered by hydraulic energy supplied by an electric pump unit. The pump operating speed is controlled by an electronic variator.

In case of failure, an emergency manual pump allows the arms, boom and pendular to be lowered, the telescope to be retracted, and the turret and basket to be rotated.

A high pressure filter mounted on the discharge side of the pump, protects the installation from pollutants.

#### 3.1.1 - Controlling machine movements



**Caution !**

***The speed and the slopes of acceleration and deceleration are regulated in factory and do not have to be modified by personnel not competent.***

All movements are obtained using electro-distributors.

The progression and speed of the movements is obtained by varying the power to the electric pump which affects the output, and is controlled by the electronic speed variator, using electric commands.

Only one movement at a time is possible.

The turret is rotating by a ring and reducing planet gear equipped with a brake with loss of pressure which block orientation as of the shutdown

#### 3.1.2 - Drive movement

Two electric motors installed in the wheels drive the back wheels using epicyclic reduction gears.

When power is supplied the brakes are removed. As soon as movement ceases, springs cause the brakes to be reapplied.

Two speeds are available (high and low). These are selected using two push-buttons and are controlled by the variator.

#### 3.1.3 - Emergency manual operation and rescue



**Caution !**

***Only a qualified operator should carry out the rescue and emergency manual operation manoeuvres.***



**Caution !**

***If a rescue or emergency manual procedure must be carried out, the safety mechanisms are neutralised.***

##### Rescue

This mode should be used if the operator in the platform can no longer control the movements of the machine, but the machine is operating normally. A qualified operator can use the turret control panel from the ground level to lower the operator in the platform. This mode uses the normal power supply. (Chap : Photo 6; page 29).

##### Emergency manual operation

An emergency manual pump is positioned on the turret and should be used if the machine fails. Push the «head» of the relevant solenoid valve to carry out the movement required. (Chap : Photo 6; page 29)



## 3.2 - ELECTRICAL CIRCUIT AND SAFETY MECHANISMS

### 3.2.1 - General points

The electrical power used to drive the motors and power the controls is supplied by a group of two battery packs 48V - 375Ah. An onboard battery charger recharges the batteries overnight when connected to a 16A ordinary mains outlet.

The operating time is recorded by an hour meter.



#### **Caution !**

***Do not carry out any manoeuvres until the instructions in Chapter 4 have been studied.***

To prevent the machine from being used in excess of its capabilities, safety mechanisms have been integrated for the protection of the personnel and the machine. These immobilise the machine or neutralise the movements.

In either case, if knowledge of the characteristics and operation of the machine is insufficient a machine failure may be diagnosed, when in fact the safety mechanisms are operating correctly.

It is therefore necessary to be fully aware of the instructions in the following chapters.



#### **Caution !**

***If a rescue or emergency manual procedure must be carried out, the safety mechanisms are neutralised.***

The electrical circuit is in two parts:

- power circuit, powering the translation motors and the electrical pump unit at 48V;
- control circuit at 48V supplying all the operations of the variator, and at 24V for the controls and safety mechanisms.

### 3.2.2 - Electronic speed variator

The operation of the platform is ensured principally by this device.

It controls the speed of movements and translation, by altering the rotation rate of the various electric motors in accordance with a given command.

The variator receives signals originating from:

- manipulation of the controls,
- information on the type of movement to be carried out,
- the status of the safety mechanisms.

All the electric motors are controlled by the variator and are therefore dependant on its internal safety mechanisms.

### 3.2.3 - Direct electrical drive movement

Two direct current motors power the drive wheels, through the epicyclic reduction gears.

The variator regulates the rotation rate. This device prevents the machine picking up speed in a runaway situation and can initiate counter-current braking, if necessary.

In addition, if the machine is ascending or descending a ramp, the variator is informed of this by the tilt detector, and adapts its parameters consequently.



### 3.2.4 - Control of the load in the platform

Deployed machine, if the load in the platform exceeds the maximum authorised load, no movements are possible from the platform control station. The overload light indicator on the platform panel and the buzzer alert the operator. Load must be removed to reset the assembly.

### 3.2.5 - Control of the tilt of the machine

When the maximum tilt of 3° is reached, the tilt control box emits a warning sound, the platform can not be used under these conditions.

If the situation persists, after a delay of 1 to 2 sec., the controls for lifting the boom, lifting the arms with the telescope out, lifting the pendular, rotating the basket, and drive movement are cut off whilst the machine is deployed.

To recover the use of drive movement, all liftable parts of the machine must be completely lowered.

**NOTE:** *With the machine deployed, the tilt control box emits a warning sound for as long as the tilt is greater than the authorised threshold. This informs the operator that deploying the platform will be impossible.*

### 3.2.6 - High drive speed

On a slope lower than 3°, the high drive speed may only be used when the platform is completely retracted.

If the boom is lifted or the arms are deployed or the pendular is above the horizontal level, only the micro speed is possible.

## 3.3 - BATTERY STATUS/HOUR METER CONTROLLER (BDI)

This single device (mark.7 , Photo 2 : Turret control panel) has the following functions:

### 3.3.1 - BATTERY STATUS

By posting of the percentage of load of the batteries

The hour meter indicates 100%, when the battery is fully charged,

When the hour meter indicates 20% ; The cut-off threshold has been reached and elevation movements cease. The batteries must now be recharged.

### 3.3.2 - HOUR METER

Hours of operation are counted whilst the electrical pump unit or the drive motors are in operation. During this time an 'hourglass' flashes.

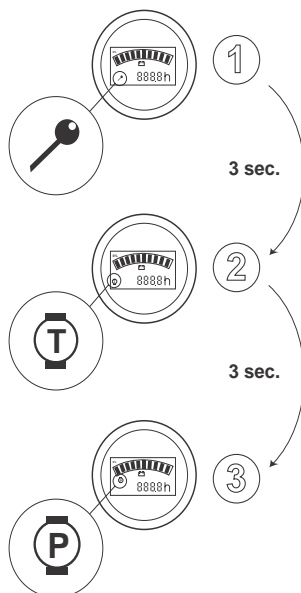
- When the BDI indicator start, he post this following informations:
  - 1- time of powering
  - 2- time of operations in drive
  - 3- time of operation on pump

### 3.3.3 - RESETTING

This takes place when the battery is fully recharged.

The controller is powered by a lithium battery with a life span greater than 15 years.

Fig. 5 - Hour meter









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## 4 - OPERATION

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### 4.1 - UNLOADING - LOADING - MOVING THE MACHINE

**Caution !**

**When the machine is to be transported it is vital to block the turret using the turntable rotation pin situated on the turret. Photo 1, page: 17**

**IMPORTANT:** Before moving or using the machine check it over to make sure it has not been damaged during transport. If any damage is apparent, express your reservations in writing to the transporter.

**NOTA :**

*When starting a machine after having been strapped for transport, our safety system may detect a "false overload", preventing any movements from the upper control station. If this is the case, you must raise the boom by a few centimetres from the bottom control station in order to relaunch the system.*

**Caution !**

**A mistake could lead the machine to fall, potentially causing very serious injuries to bystanders and damage to equipment.**

Unload the machine on a stable, flat and sufficiently resistant surface (Chap : 4.4.1 -, page 26), free from any obstacles.

#### 4.1.1 - Unloading by lifting

Photo 1 : Rotation pin in locked position

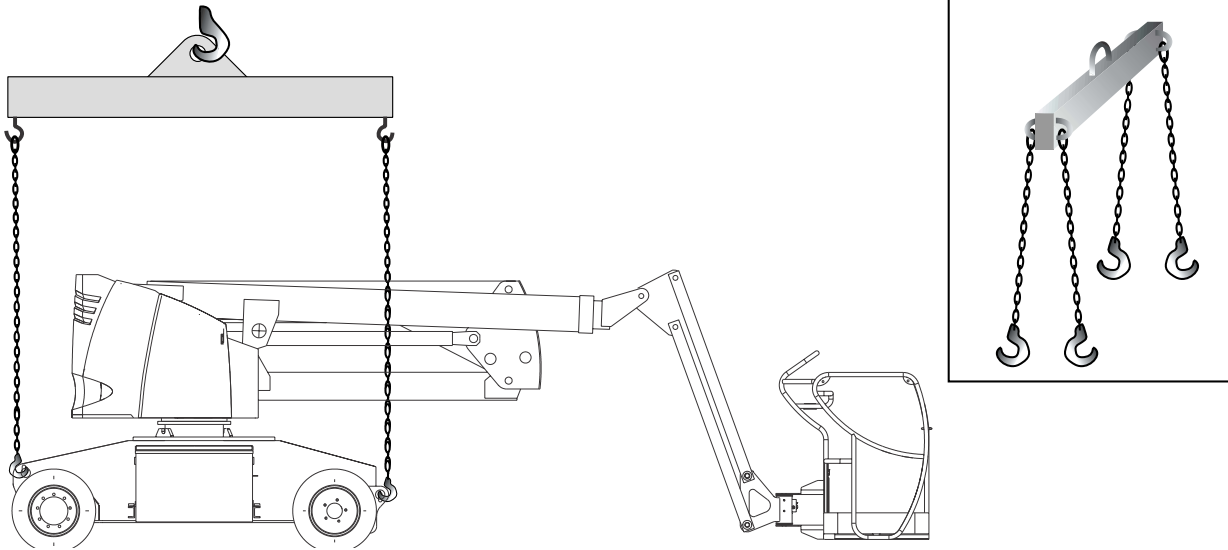


- Use a lifting beam with 4 slings.
- Take the following precautions:
  - the pin situated under the turret has been placed correctly, Photo 1, page: 17
  - the lifting equipment is in good condition and has a sufficient capacity,
  - the slinging accessories can support the load and show no signs of unusual wear and tear,
  - the slinging lugs are clean and in good condition,
  - the personnel carrying out the manoeuvre is qualified to use lifting equipment,
- Unloading:
  - Make sure that the pin under the turret has been placed,
  - hook the 4 slings to the 4 slinging lugs,



- lift slowly, ensuring the load is evenly distributed, slowly lower the machine,
- Make sure that the personnel carrying out the manoeuvre must be qualified to use lifting equipment.

Fig. 6 - Unloading by lifting



#### 4.1.2 - Unloading using a ramp



**Caution !**

**Never stand under or too close to the machine during manoeuvres.**

- Precautions:
  - ensure that the ramps can support the load and that the surface offers sufficient grip to avoid any risk of the machine slipping during the procedure. Make sure the ramps are firmly fixed in position.

**IMPORTANT:** this method requires the machine to be started, to make sure this procedure is carried out correctly.

**NOTE:** *The slope of the ramp is nearly always greater than the maximum authorised working tilt (3°). Therefore, the boom and arms must be lowered or translation will be impossible.*

If the slope is greater than the maximum allowable drive movement tilt (Chap : 2.4.1 -, page 4), use a winch to add traction.



**Caution !**

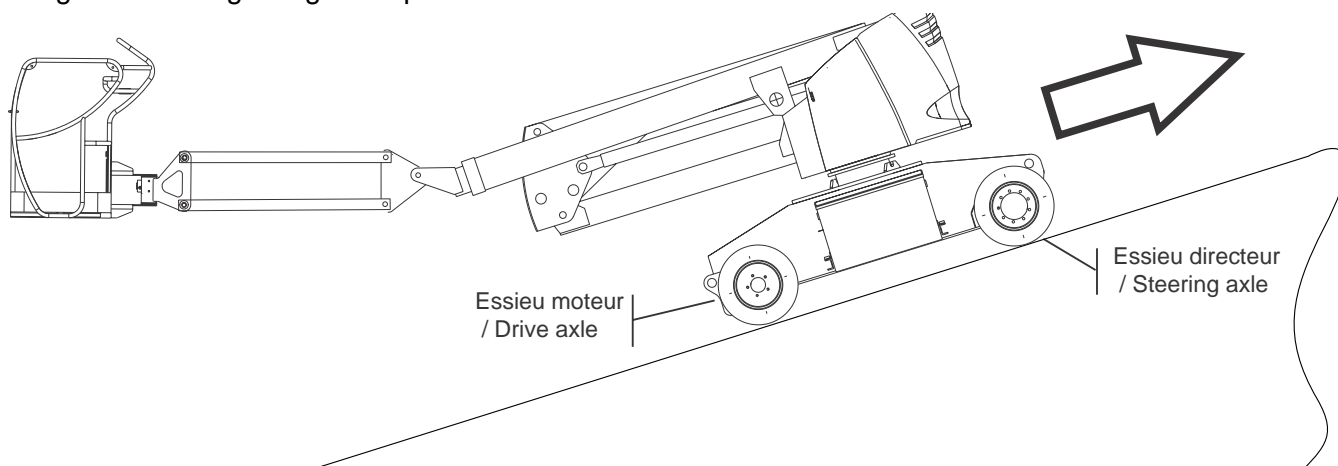
**Select the low speed before descending the slope! Never descenda slope higher than 3° in high speed.**

**4.1.3 - Loading**

The same precautions must be taken as for unloading.

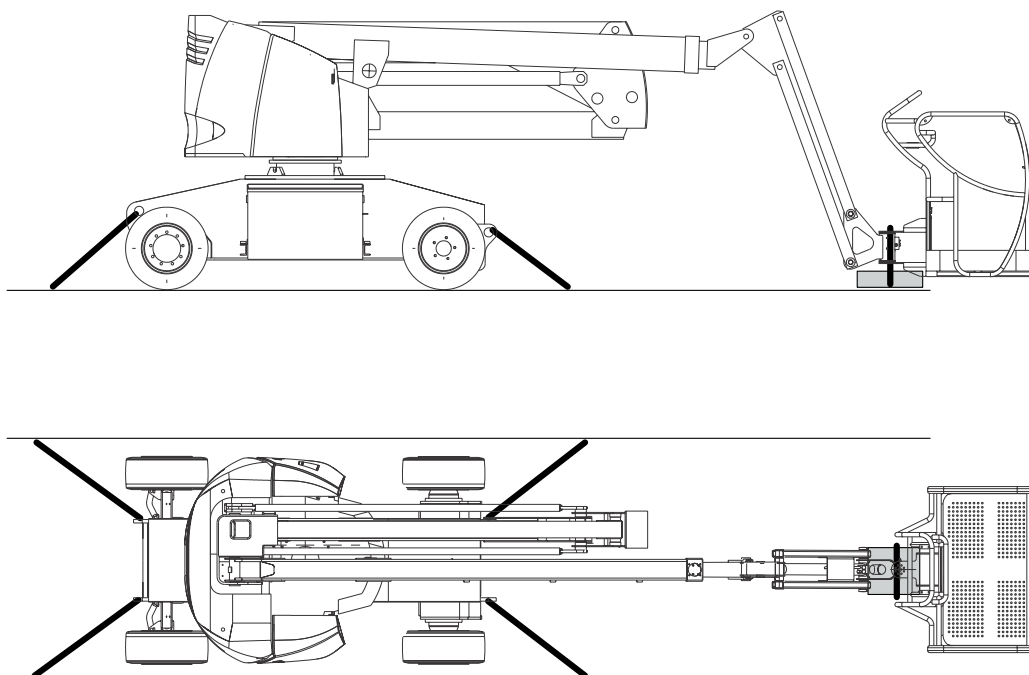
The loading ramps must be crossed moving front. In this situation, the best distribution of the masses will support the adherence of the driving wheels and will facilitate the crossing of the slope .

Fig. 7 - Loading using a ramp

**4.1.4 - Transport**

The machine must be fastened down as shown in the diagram below.

Fig. 8 - Attach for transport

**4.1.5 - Moving the machine**

NOTA :

*If you want to move the machine, it is important that you raise the boom a few dozen centimetres in order to prevent the basket from scraping the ground when moving the machine.*



**NOTA :** *In order to familiarise yourself with the machine, it is necessary that you should perform the first few operations on the ground, keeping the machine in transport position, i.e. the counterweight in front and the boom folded.*

- Carefully respect circulation regulations or instructions for the area in which the machine is to be moved.
- If moving over rough terrain, inspect the trajectory carefully before beginning elevation work.
- When moving the machine, always keep a sufficient distance away from unstable areas or slopes.
- Ensure that nobody is standing too close to the machine before carrying out any movement of the whole machine or the elevating parts.

**RAPPEL :** the machine may not be driven on public highways



## 4.2 - OPERATIONS PRIOR TO FIRST USE OF THE MACHINE

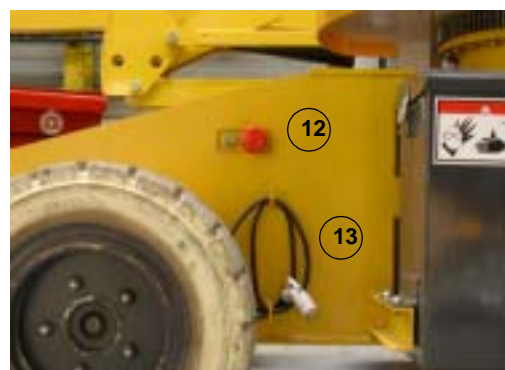
**IMPORTANT:** Before each use of the machine or after a period of storage, consult the start of operation section (Chap 5.3 -, page: 34) to check the different levels and certain machine maintenance points.

**REMINDER:** Before carrying out any operation, get to know the machine fully by referring to this manual and the instructions on the various plates.

### 4.2.1 - Familiarisation with the control panels

#### 4.2.1.1 - "Turret" control panel

Photo 2 : Turret control panel



1- Platform level control	8- Option: Flashing light control
2- Pendular control	9- Hour meter / Battery charge indicator
3- Telescope control	10- Emergency stop button
4- Boom control	11- Tilt
5- Arm control	12- Battery master switch
6- Turret rotation control	13- Charger plug
7- Turret / platform control panel switch	



#### 4.2.1.2 - «Platform» control panel

**NOTA :** When you want to move around, it is important to raise the boom by a few metres to prevent the basket from scraping along the ground during movement.

Photo 3 : Platform control panel



1- Low speed	8- Horn
2- Plateform level control indicator	9- Arm lifting/lowering control indicator
3- Power indicator	10- Boom lifting/lowering control indicator
4- High speed	11- Telescope extension/retraction control indicator
5- Turret rotation control indicator	12- Platform overload indicator
6- Jib control indicator	13- Emergency stop button
7- Platform rotationcontrol indicator	14- Manipulator

Photo 4 : 220V socket



**Caution !**

**Electrical components must not be washed at high pressure.**

#### 4.2.2 - Checks before using the machine

##### Area of operation

- Ensure that the ground under the machine is flat, stable and can support the weight of the machine (Chap : 2.4.1 -, page 4) see the WORKING AREA diagram for maximum allowable tilts.
- Ensure that no obstacle will obstruct the machine movements:
  - movements of the whole machine.
  - orientation of the turret.
- Telescope and lifting: see the WORKING AREA diagram Fig. 3 -, page: 3.

##### Visual inspection

- Carry out a visual inspection of the machine: pay particular attention to flaking paint or acid leaking from the battery.
- Check that all bolts, screws, connections and hoses fit tightly, that there are no oil leaks, and that no electrical connections have become damaged or disconnected.



- Check the arms, boom, pendular and platform: there should be no visible damage, no traces of wear or deformation.
- Check that there are no leaks, traces of wear, blows or scratches, rust or foreign bodies on the cylinder rods.
- Check that there are no leaks from the wheel reduction gears.
- Check that the reduction gears have not become disconnected (wheels are free).
- Check the tightness of the wheel bolts and the extent of wear on the tyres.



**Caution !**

**Follow the safety instructions  
supplied by the battery  
manufacturer**

Electricity

- Check that the battery terminals are clean and tight: if they become loose or corroded a loss of power may result.
- Check the electrolyte level in the batteries: the level should be approximately 10 mm above the plates; add distilled water if necessary.
- Check that the emergency stops work correctly.

Photo 5 : Batterie



**Caution !**

**This type of machine is not isolated  
and must not be used close to  
electricity lines**

Miscellaneous checks

- Pump and hydraulic plant: no leaks, all components are tightly fitted.



**Caution !**

**To top up fluid levels, only use the  
products recommended in the  
Ingredients Chapter**

- Check that the tilt control box ((Photo 3, page 22, rep:11) is working correctly by angling the support plate (arms or boom slightly deployed). Beyond an angle of 3° an alarm should sound after a short time delay.
- Turntable rotation pin:
  - Ensure that the locking pin Photo 1, page: 17 for turret rotation is removed.



## 4.3 - BRINGING INTO SERVICE

### IMPORTANT:

Use of the machine should only begin when all of the instructions given in the previous section have been followed scrupulously.

To become familiar with the machine carry out the first few manoeuvres from ground level, keeping the machine in its transport configuration: counterweight forward, boom lowered.



#### Caution !

**When the counterweight is placed above the steering wheels, controls for moving or directing the machine work in reverse**

REMINDER: The main control panel is in the platform. Under normal conditions of use the «turret» control panel is to be used only in absolute necessity such as an emergency or machine failure.

### 4.3.1 - Operations at ground level

Photo 2, page: 21



#### Caution !

**Always make sure that no obstacle will cause an obstruction before beginning any manoeuvre**

#### 4.3.1.1 - Method of operation

- Unlock the battery switch (Photo 3, page 22, rep:12)
- Maintain the key at the «turret» control panel selection
- Activate the required switch for the movement in question, respecting the direction of the arrows.

NOTA : *If the load out of platform exceeds the authorized maximum loading, The movements from the turret control panel are slowed down and the buzzer alerts the operator.*

#### 4.3.1.2 - Testing the various movements

Test each possible movement:

- Raise / Lower arms,
- Raise / Lower boom,
- Extend / Retract telescope,
- Raise / Lower pendular,
- Rotation of the basket in either direction,
- Rotation of the turret in either direction.
- Raise / Lower platform level.

NOTA : *The control of platform level starting from the ground is not possible that when the machine is repliée. Cependant, to facilitate the operation, it is possible to raise the pendular one to the horizontal and to raise the arms and arrow slightly.*

#### 4.3.1.3 - Using the «platform» control panel

- Move the key to select the «platform» position (icon on the left).
- Check that the tilt control box is working correctly (Photo 3, page 22, rep:11)



### 4.3.2 - Operations from the platform

Photo 3, page: 22

Climb into the basket, respecting the maximum load instructions. If necessary distribute the load evenly over the whole platform.

**MOBILE ELEVATING WORK PLATFORM MODEL HA15IP : 230 KG INCLUDING 2 PERSONS**

*NOTA : If the load in the platform exceeds the maximum authorised load, no movements are possible from the platform control station. The overload light indicator on the platform panel and the buzzer alert the operator. Load must be removed to re-enable the machine. There is no load restriction on the reach.*

#### 4.3.2.1 -Method of operation

- Checks:
  - Make sure that the emergency stop button is unlocked.
  - Before any manoeuvre, check that the green power on light is lit (ref.1 , Photo 3 : Platform control panel), and that the selection switch is in the «platform» position.
  - Check that the klaxon works correctly.
- Movement of the machine:
  - Unlock the emergency stop button.
  - Select the required speed (high or low).
  - Activate the manipulator for the required direction.
- Movements:
  - Unlock the emergency stop button if this has not already been done.
  - Select 'movement' by pressing the appropriate button, an indicator will light up to confirm this selection. If no movement is carried out within 15 seconds the selected movement is no longer active.
  - Activate the manipulator, following the arrows.

#### 4.3.2.2 -Testing the movements

- To carry out a movement, push the button corresponding to the movement you require, then activate the manipulator.

If a movement is not carried out within 15 seconds, the selected movement is no longer active.

- The amount by which the manipulator is moved will control the progression of the movement.
- If the floor is not horizontal, the position of the platform can be corrected using the compensation button.
- Test the movement for the telescope, pendular, and basket rotation using the appropriate buttons.
- Test the directional movement of the machine using the drive movement manipulator.
- Try both speeds of machine movement using the low and high speed buttons.
- The direction of movement is shown by coloured arrows.

If you can not get a movement despite using the appropriate command, push the emergency stop button (ref. 12 , Photo 3 : Platform control panel) then reset it. Try the command again.

Checks:



- If the floor is not horizontal, correct the position of the platform by pushing the 'manual compensation' button (ref. 5, Photo 3 : Platform control panel) and activating the manipulator (ref. 11 , Photo 3 : Platform control panel) forward or backward.
- Test the movements for the telescope, raise the arms, raise the boom and test the orientation using the appropriate buttons.


**Caution !**

*High speed is only possible if the machine is fully retracted. Even if it is only slightly extended, low speed must be used*

**Work can start.**

#### 4.4 - USING THE ONBOARD BATTERY CHARGER


**Caution !**

*Do not use the machine while the batteries are charging*

##### 4.4.1 - Characteristics

The drive batteries must be recharged using the battery charger supplied. IT IS IMPORTANT NOT TO OVERCHARGE THEM.

Type of battery charger:	48V - 50 A
- Power supply:	230 Volts +/- 10% monophasé 50 Hertz
- Maximum power absorbed:	16 Ampères
- Voltage supplied:	48 Volts
- Recharging time:	env. 11h ((Voir Chap 3.2.1, page 14)
- Type of power connection:	regular mains socket

##### 4.4.2 - Starting the recharging process

Recharging starts automatically as soon as the battery charger is connected to the mains. The battery charger has an LED indicator on the side of the chassis:

- The green LED shows that the battery is 100% charged.
- The yellow LED shows that the battery is 80% charged.
- The red LED shows that the battery charger is in the initial charging phase.

If there is a problem, the LED indicator can blink in a variety of colours (see table below)..

STATUS OF THE FLASHING LED	TYPE OF PROBLEM	DESCRIPTION (ACTION)
RED	Battery status	The battery is not connected or is not the standard type (check the connection and the nominal voltage).
YELLOW	Temperature probe	The temperature probe disconnected during recharging or is out of its operating range (check that the probe is connected and measure the temperature of the battery).
GREEN	Timing	Phase 1 or 2 lasted longer than the maximum allowed (check the battery capacity)
RED – YELLOW	Battery power	Loss of control of the output current (logical control error)
RED – GREEN	Battery voltage	Loss of control of the output power (the battery is disconnected or there is a logical control fault)



<b>STATUS OF THE FLASHING LED</b>	<b>TYPE OF PROBLEM</b>	<b>DESCRIPTION (ACTION)</b>
RED – YELLOW - GREEN	Temperature	The semi-conductors have overheated (check that the ventilator is working correctly).

When a problem occurs the battery charger stops supplying current.

## **4.5 - USING AND MAINTAINING THE BATTERIES**

The batteries are the power source for your elevating work platform. Follow the advice below to get the most out of the batteries without risking premature deterioration.

### **4.5.1 - Using the batteries for the first time**

- Check the electrolyte level.
- Treat the batteries gently for the first few cycles. Do not discharge them beyond 70% of the nominal capacity (first red bar on the controller starts to flash).
- The batteries can operate at full capacity after approximately 10 work cycles. Do not add extra electrolyte before the first ten cycles are up.

### **4.5.2 - Discharging**

- Never discharge the batteries beyond 80% of their capacity in 5 hours (2 red bars on the charge controller start to flash).
- Make sure that the controller is working correctly.
- Never leave the batteries in an uncharged state.
- In cold temperatures, do not suspend recharging as the electrolyte could freeze.

### **4.5.3 - Recharging**

- When should the batteries be recharged?
  - When they have become discharged to between 35 and 80% of their nominal capacity.
  - After a long period of disuse.
- How should the batteries be recharged?
  - Check that the mains power is suitable for the battery charger.
  - Bring the electrolyte up to the minimum level if one of the elements has fallen below the minimum.
  - Recharge the batteries in a clean, well-ventilated space, away from open flames.
  - Open the cover of the battery housing.
  - Use the machine's onboard battery charger. It's output is adapted to the battery capacity.
- During recharging:
  - Do not remove or open the element caps.
  - Make sure that the temperature of the battery elements does not exceed 45°C (take extra care in summer or in a building where the ambient temperature is high).
- After recharging:
  - top up the electrolyte level if necessary.

### **4.5.4 - Maintenance**

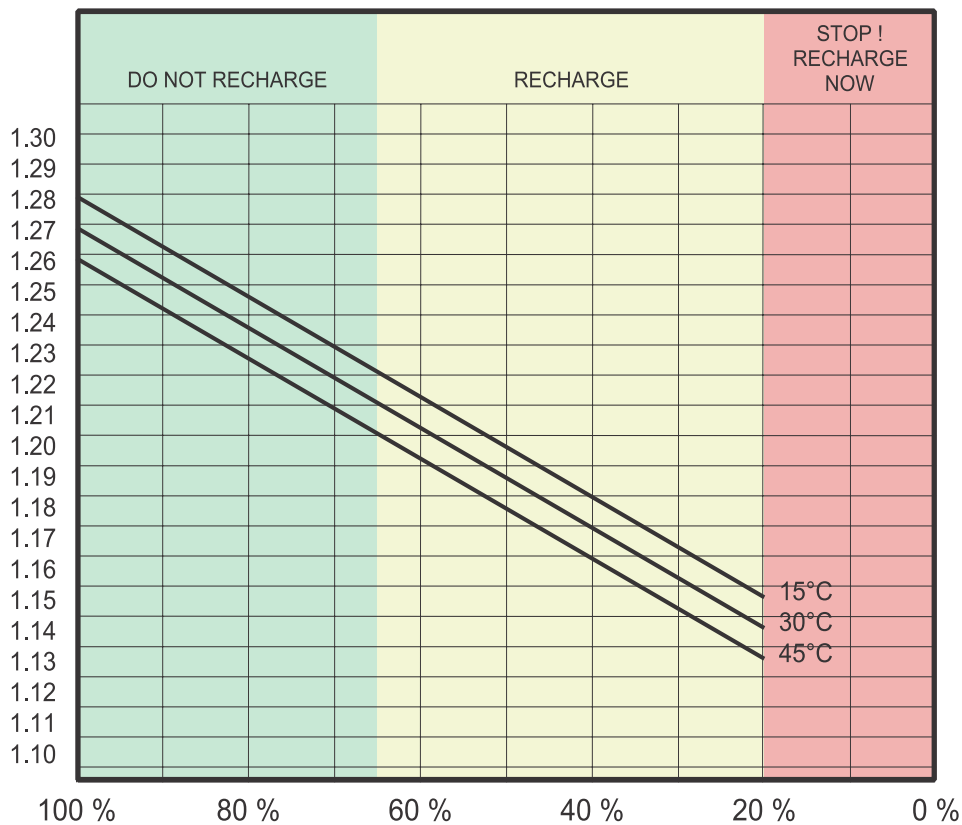
- Check the electrolyte levels once a week during normal usage.
- If necessary adjust the level:
  - using distilled or demineralised water,
  - after recharging.



- Never add acid (in case of spillage, contact PINGUELY-HAULOTTE's After Sales Service).
- Batteries that are not to be used for a while should never be in a discharged state.
- Avoid over-filling.
- Keep the batteries clean to avoid deposit of salts or deflections of current:
  - wash the top of the battery without removing the caps,
  - dry using compressed air and clean cloths...
  - lubricate the terminals.
- Battery maintenance should be carried out safely (gloves and safety goggles must be worn).

To quickly check the condition of your batteries, the density of each element can be measured once a month using an acid hydrometer, the measurement should be correlated with temperature using the graph below (do not take a measurement immediately after filling).

Fig. 9 - CHARGE STATUS OF A BATTERY BASED ON DENSITY AND TEMPERATURE



**Caution !**

**Do not carry out any electric arc welding on the machine without first disconnecting the batteries.**



**Caution !**

**Never use the batteries to jumpstart another vehicle.**



#### 4.6 - OPERATING THE MACHINE USING THE EMERGENCY MANUAL PUMP

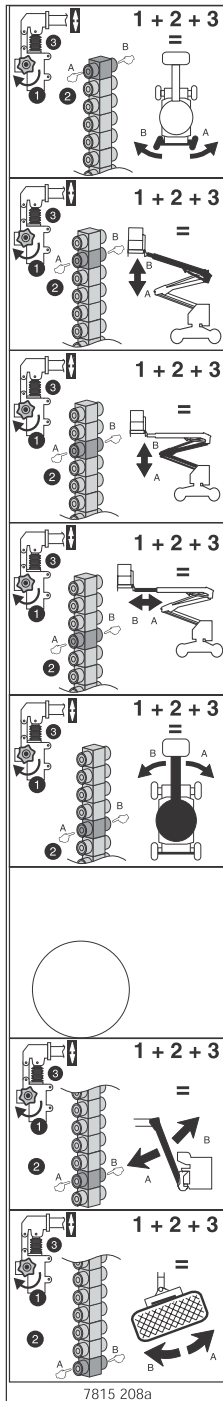
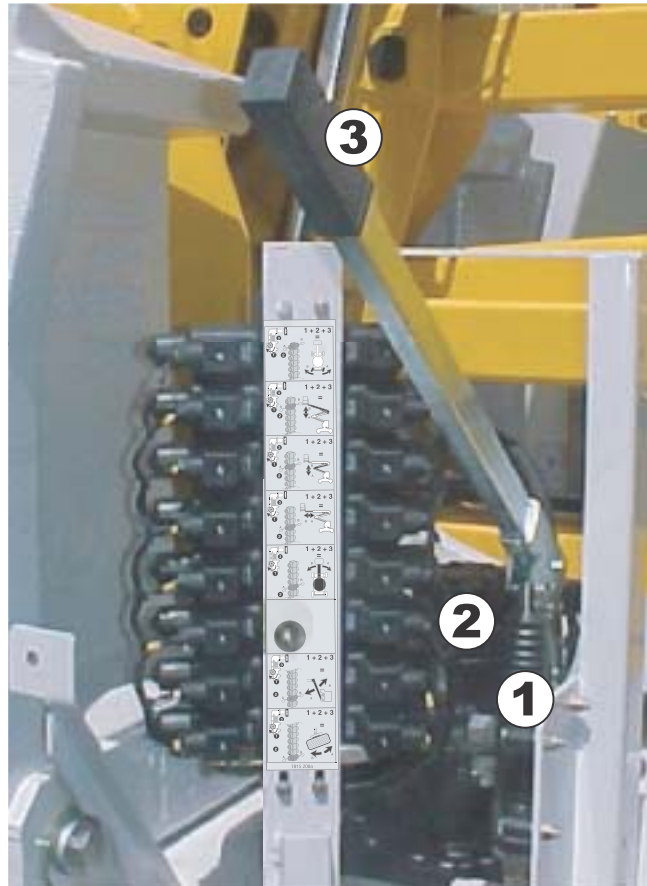


Photo 6: Manual pump



It is possible to operate machine movements from ground level if the main power supply fails. This method uses the emergency manual pump (Photo 6, page 29, rep:1) located next to the hydraulic distributors on the turret.

When this pump is used with manual control of the electro-distributors, the various arm movements are possible, the boom may be lowered, the telescope retracted, the turret Rotated.

- Insert the lever (Photo 6, page 29, rep: 1) in the pump housing.
- Check that the pump's relief valve (Photo 6, page 29, rep: 3) is in the closed position.
- Work the lever up and down keeping the electro-distributor manual control for the required movement shown on the plate pressed (Photo 6, page 29, rep: 4).

#### 4.7 - RESCUE OPERATIONS

If the machine is working normally, but the operator in the platform is unable to return the platform to the ground, an operator at ground level may do so:

- Hold the selection button in the 'turret' position (Photo 2, page 21, rep:6).
- Obtain the required movements using the corresponding buttons.

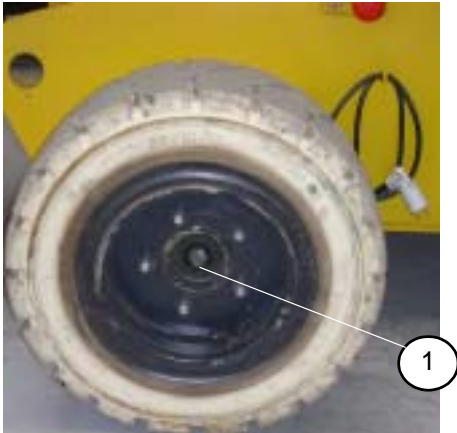


## 4.8 - DECRABOTAGE

**Caution !*****Never uncouple on a slope !***

It is possible to uncouple the drive wheel reducing gears to enable the machine to be towed in the event of a breakdown. The platform may only be towed in freewheel using a rigid bar.

Photo 7

**Caution !*****Under these circumstances the machine brakes are off***

Uncoupling procedure :

- use a tube wrench 24,
- unscrew the central nut (ref. 1 Photo 7, page: 30) of the reducing gear by approximately 25mm until the stop, but without forcing.

Re-coupling procedure :

- put the platform on a jack stand (the wheel of the reducing gear to be re-coupled must not touch the ground),
- re-couple without forcing to enable the jaw clutch to re-engage when the wheel is turned,
- Then screw the central nut back into place (ref. 1 Photo 7, page: 30) .

To tow the machine, it is vital to use a rigid drawbar and not to attempt a speed greater than 5 km/h.



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## 5 - MAINTENANCE

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### 5.1 - GENERAL RECOMMENDATIONS

The maintenance operations given in this manual apply when the machine is used in ordinary conditions.

Under difficult conditions: extremes of temperature, high humidity, a polluted atmosphere, high altitude, etc.... some of these operations should be carried out more frequently and special precautions should be taken: for more details check the motor manufacturer's notice and consult the local PINGUELY-HAULOTTE agent.

Only qualified and competent personnel may carry out interventions on the machine and they must respect the safety instructions relating to the protection of Personnel and the Environment.



#### **Caution !**

- **Do not use the machine as a ground for welding.**
  - **Do not weld without disconnecting the (+) and (-) terminals of the batteries.**
  - **Do not use to jumpstart other vehicles.**
- 

Check regularly that the safety devices are working correctly:

- Tilt: buzzer and movements disabled (the machine can not be moved, the boom and arms can not be raised and the telescope can not be extended).
- Platform overload: The overload system is set so that it trips before 120% permitted load.
- High speed is impossible and the machine automatically runs at low speed when the arms and boom are raised and the pendular is raised above a horizontal level.










## 5.2 - MAINTENANCE PLAN

The plan (following page) shows the frequency of maintenance, the area to be worked on, and the ingredients to use.

- The reference shown in the symbol shows the area maintained based on the frequency.
- The symbol represents the consumable to use (or the operation to carry out).

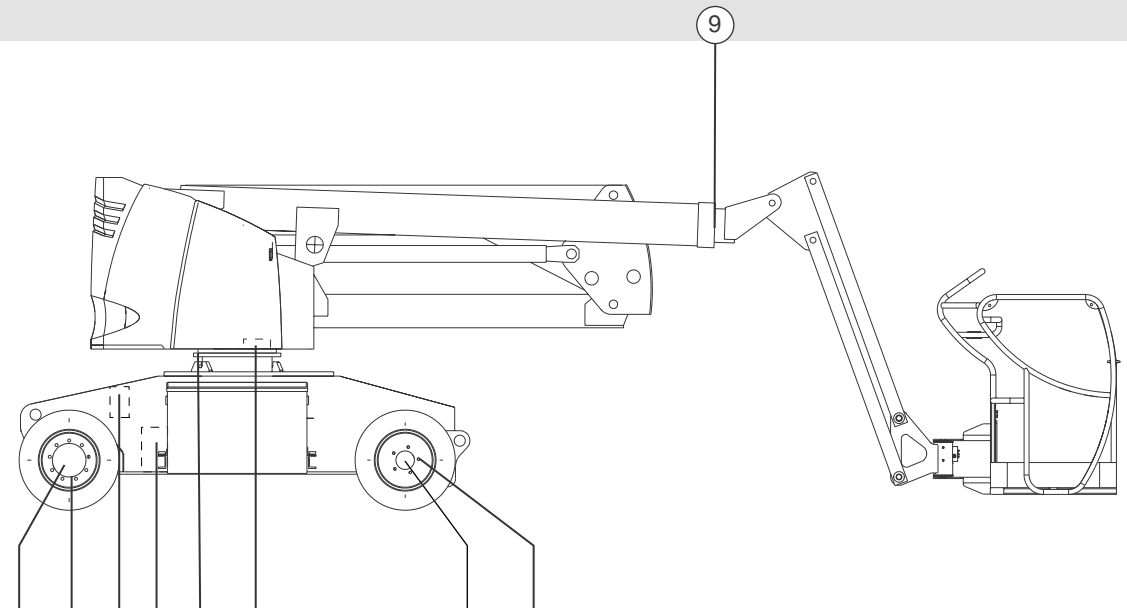
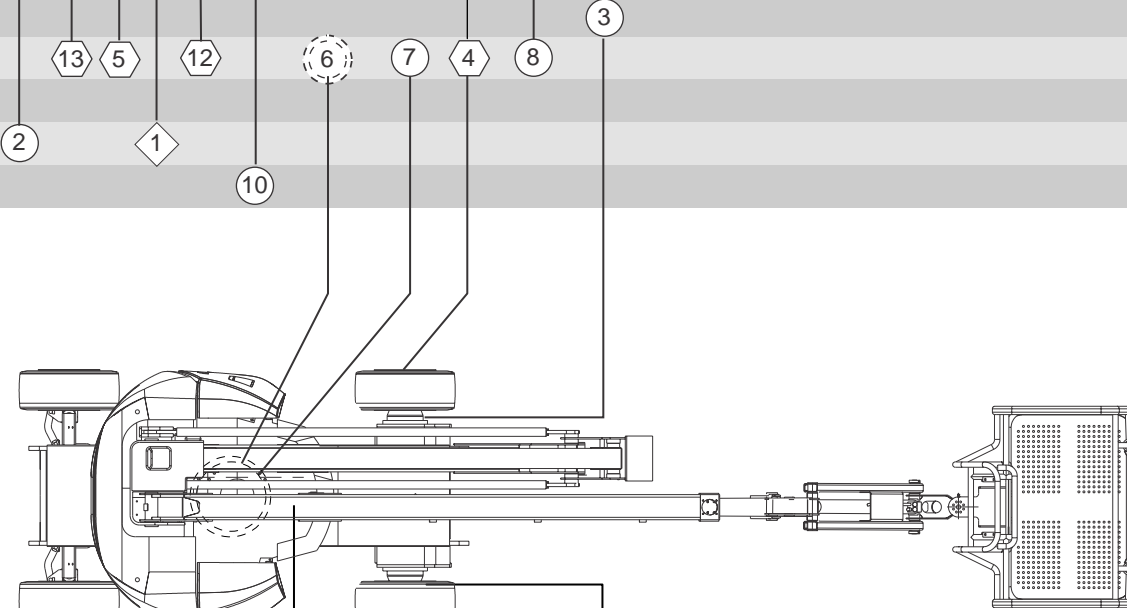
### 5.2.1 - Consumable fluids

INGREDIENT	SPECIFICATION	SYMBOL	Lubricant used by HAULOTTE	ELF	TOTAL
Box oil	SAE 15W40		SHELL RIMULA		
Hydraulic oil	AFNOR 48 602 ISO V G 46		BP SHF ZS 46	HYDRELF DS 46	EQUIVIS ZS 46
Organic hydraulic oil optional	Bio ISO 46				
Extreme pressure lithium grease	ISO - XM - 2			CARDREXA DC 1	
Wildfire grease	Grade 2 / 3		ESSO GP GREASE	MULTIMO- TIVE 2	MULTIS EP 2
Replacement or specific operation					
Lithium grease	ENS / EP 700			EPEXA 2	



5.2.2 - Maintenance plan

HOURS

		50
		250
		
		10
		50
		250
		500
		1 000
		2 000
		
		10
		50
		250



### 5.3 - OPERATIONS

FREQUENCY time of operation on pump (Voir Chap 3.3.2, page 15)	OPERATION	REFERENCE
Every day or before first use	<b>Check:</b> <ul style="list-style-type: none"> <li>the hydraulic reservoir level</li> <li>the level of electrolyte in the batteries</li> <li>that the batteries are charged as shown by the indicator</li> </ul>	Chap 5.3.2 -, page: 36 Chap 5.3.2 -, page: 36 Chap 4.5.3 -, page: 27
Every 50 h	<b>Lubricate:</b> <ul style="list-style-type: none"> <li>the wheel pivot axles: 2 x 2 points</li> <li>Turntable rotation pin</li> </ul> <b>CAUTION:</b> after the first 50 hours: <ul style="list-style-type: none"> <li>Replace the hydraulic filter cartridge (see 100 h frequency)</li> <li>Drain the drive wheel reduction gears (see 500 h frequency)</li> <li>Check the tightness of the following:               <ul style="list-style-type: none"> <li>the slewing ring bolts (see 100 h frequency)</li> <li>the slewing ring screws (see 100 h frequency)</li> <li>the wheel bolts (see 100 h frequency)</li> <li>tightness of the motor-variator electrical connections</li> </ul> </li> </ul>	<b>draw. ref.3</b> <b>draw. ref.14</b>  Chap 5.3.3 -, page: 36 Chap 5.3.3 -, page: 36
Every 100 h	<ul style="list-style-type: none"> <li>Replace the hydraulic filter cartridge</li> <li>Lubricate:               <ul style="list-style-type: none"> <li>the steering wheel bearings (remove the cap)</li> <li>the raceway of the slewing ring (change the orientation during the operation) 2 points</li> <li>the wearing parts of the telescope (teflon)</li> <li>the teeth of the slewing ring using a brush</li> <li>the battery terminals</li> <li>Check the level in the drive wheel reduction gears (ch. 5.3.2)</li> </ul> </li> <li>Check:               <ul style="list-style-type: none"> <li>the battery charger connection</li> <li>the tightness of the screws in the slewing ring (torque 8,7 daNm)</li> <li>the tightness of the steering wheel screws (torque 19 daNm)</li> <li>the tightness of the drive wheel screws (torque 19 daNm)</li> <li>the tightness of the motor and variator electrical connections.</li> <li>the tightness of the battery terminals</li> <li>Empty the hydraulic oil tank completely if you have the «organic hydraulic oil» option</li> </ul> </li> </ul>	<b>draw. ref. 5</b>  <b>draw. ref. 8</b> <b>draw. ref. 6</b> <b>draw. ref. 9</b> <b>draw. ref. 7</b> Chap 4.5 -, page: 27 <b>draw. ref. 2</b>  Chap 4.5 -, page: 27 <b>draw. ref.12</b>  <b>draw. ref. 4</b> <b>draw. ref. 13</b>
Every 250 h	<ul style="list-style-type: none"> <li>Check condition of rings (condition and positioning) and exchange them if damaged or broken</li> <li>Check 'wear and tear' indicator of the telescope feet; to be replaced if indicator not visible</li> </ul>	
Every 500 h	<b>Draining</b> <ul style="list-style-type: none"> <li>the hydraulic oil reservoir (capacity 30 l) ch. 5.3.3</li> <li>the drive wheel reduction gears (capacity 0.2 l) ch. 5.3.2</li> </ul>	<b>draw. ref.1</b> <b>draw. ref.2</b>
Every 1000 h	<b>Draining</b> <ul style="list-style-type: none"> <li>the reservoir and the whole hydraulic oil circuit (5.3.3)</li> <li>lubricate the rotation reduction gear - replace the lubricant</li> </ul>	<b>draw. ref.1</b>  <b>draw. ref.10</b>

#### IMPORTANT:

- Only use the lubricants recommended in the table (Chap : 5.2.1 -, page 32) for replacing oil or lubricating



- Collect the waste oil after draining to ensure it doesn't pollute the environment.



Photo 8 : Oil filter



### 5.3.1 - Hydraulic oil filter

- Filter without clogging indicator (see 50 h and 100 h frequency)
- Unscrew the collar screw and remove the cartridge
- Screw in the new cartridge.

### 5.3.2 - Hydraulic oil system

- Drainage:
  - a drainage cap allows the hydraulic circuit to be drained after it is unscrewed.
  - only use the lubricants recommended in table 5.2.1.
  - Collect the used oils and dispose of them carefully to protect the environment.

### 5.3.3 - Drive wheel reduction gears

The wheel must be dismantled for checks and drainage, to do so immobilise the machine and lift using a jack or a hoist.

Photo 9 : Reduction gear



Check that the machine is correctly locked in position and that the equipment used for lifting is of sufficient capacity and in good condition.

- Fluid level check:
  - turn the wheel so that the cap is on a horizontal line.
  - unscrew the cap and check the fluid level which should reach the hole, add more if necessary.
- Draining:
  - turn the wheel so that the cap in the low vertical position.
  - let the oil drain out
  - return the wheel to the 'level check' position and fill up as indicated below.



## 6 - INCIDENTS DURING OPERATION

REMINDER: following the safety and maintenance instructions should enable you to avoid most of these incidents.

Nevertheless, if an incident does occur, it is vital to check if it is listed in table 6.1 before carrying out any intervention. If so, simply follow the instructions.

If it is not listed, contact the PINGUELY-HAULOTTE agent or the PINGUELY-HAULOTTE After Sales Service.

Before assuming a breakdown, it is important to check that:

- the battery master switch is off,
- the emergency stop buttons on both the turret and the platform are unlocked.

The speed variator includes a breakdown indication device consisting of a flashing green LED. The platform voltage indicator reproduces this information. The frequency at which the LED flashes can be used to diagnose the breakdown, based on the number of flashes in a series. Each series is separated by a period in which the LED is off. There can be 1 to 12 flashes in a series. However, if the LED stays constantly lit, this indicates that the variator is functioning correctly. If the LED is completely off, check the power supply to the platform, then call the PINGUELY-HAULOTTE After Sales Service.

NOTA : *the protective cover must be removed to carry out this check.*

### 6.1 - VARIATOR DISPLAY

	Likely cause
<b>Diode permanently lit</b>	No problem
<b>Diode off</b>	The variator is not working, check the power supply to the variator
<b>1 flash</b>	The parameters have been corrupted, refer the machine to PINGUELY -HAULOTTE After Sales Service
<b>2 flashes</b>	The correct sequence was not respected. Repeat the manipulations in the correct order
<b>3 flashes</b>	Variator power fault, refer the machine to PINGUELY -HAULOTTE After Sales Service
<b>4 flashes</b>	Contacteur fault, refer the machine to PINGUELY -HAULOTTE After Sales Service
<b>6 flashes</b>	The manipulator is not wired correctly, refer the machine to PINGUELY -HAULOTTE After Sales Service
<b>7 flashes</b>	The batteries have discharged enough to reach the lowest allowable charge limit
<b>8 flashes</b>	The variator exceeded the allowable temperature threshold, refer the machine to PINGUELY -HAULOTTE After Sales Service
<b>9 flashes</b>	There was an anomaly in part of the command, check the contactor
<b>12 flashes</b>	Fault in CANbus, return the machine to PINGUELY - HAULOTTE After-Sales service.

After each test, push in the emergency stop button, then reset it and check the status of the variator as shown by the LED.

In general: after checking the variator diagnosis and carrying out the checks indicated above, PINGUELY-HAULOTTE After Sales Service should be contacted if the problem persists.



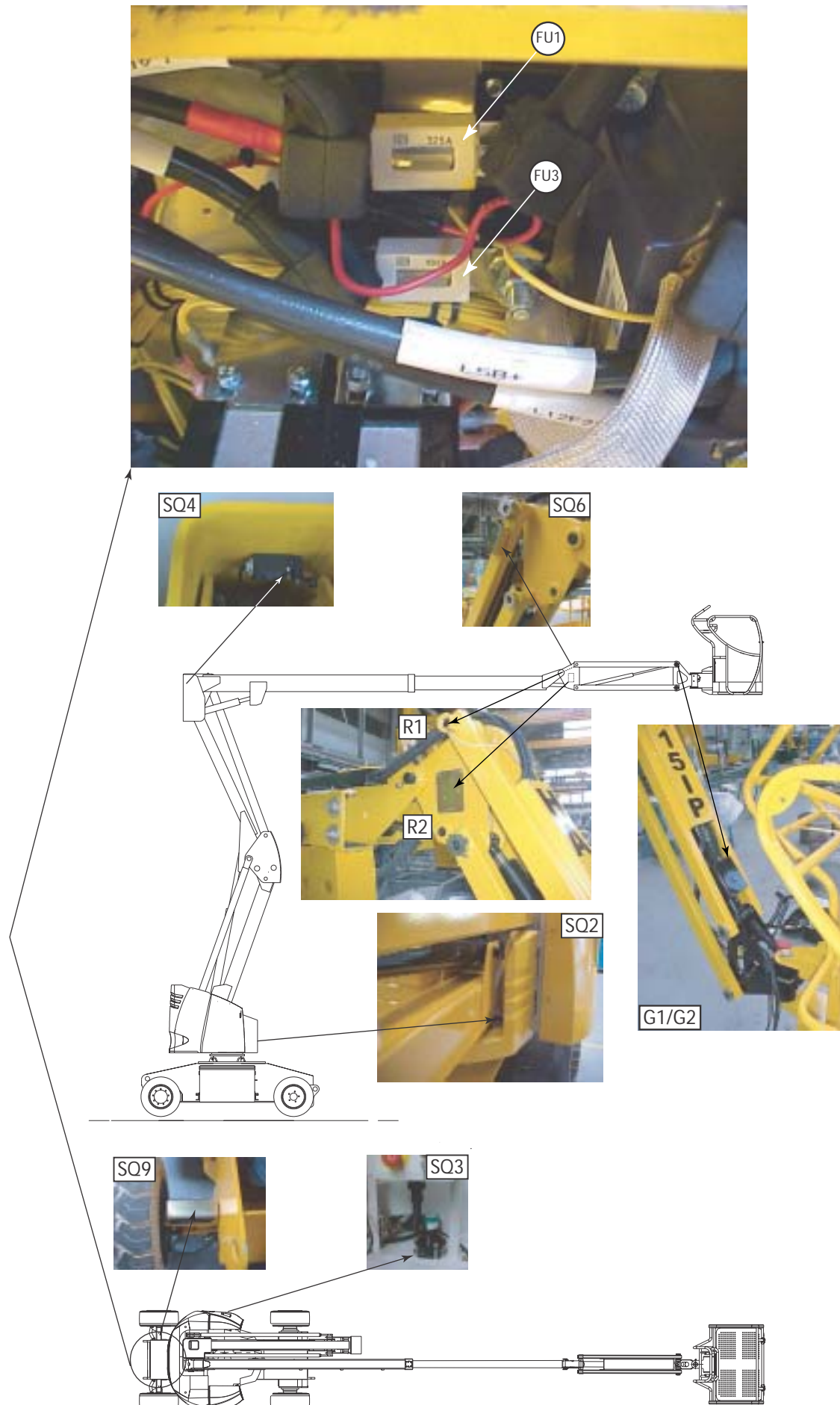
## 6.2 - INCIDENT REFERENCE CHART

INCIDENTS	LIKELY CAUSE	SOLUTION
The machine can not be moved	<ul style="list-style-type: none"> <li>The turret selector key in the wrong position</li> <li>The platform is overloaded</li> <li>The deadman is not activated</li> <li>The movement was not carried out</li> <li>The manipulator is broken</li> <li>The power supply cable to the panel is damaged</li> <li>Tilt or slope &gt; 3°</li> <li>Variator fault</li> </ul>	<ul style="list-style-type: none"> <li>Switch to platform position</li> <li>Remove some of the load</li> <li>Activate the deadman</li> <li>Activate low or high speed</li> <li>Replace the manipulator</li> <li>Repair or replace the cable#</li> <li>Lower the arms and boom to reset</li> <li>Check the status of the LED</li> </ul>
There is no power in drive movement mode	<ul style="list-style-type: none"> <li>Low speed has been selected (LS)</li> </ul>	<ul style="list-style-type: none"> <li>Check the unbraking solenoid</li> <li>Switch to high speed (HS)</li> </ul>
The high speed mode doesn't work	<ul style="list-style-type: none"> <li>The platform is slightly deployed</li> <li>Variator fault</li> <li>Command fault</li> </ul>	<ul style="list-style-type: none"> <li>Completely lower the arms, boom and jib under horizontal.</li> <li>Check the connections</li> <li>Check the LS / HS selection</li> </ul>
The low speed mode doesn't work	<ul style="list-style-type: none"> <li>Variator fault</li> <li>Command fault</li> </ul>	<ul style="list-style-type: none"> <li>Check the connections</li> <li>Check the LS / HS selector</li> </ul>
No movement can be obtained from the platform	<ul style="list-style-type: none"> <li>The turret selector key is in the wrong position</li> <li>The platform is overloaded</li> <li>The deadman is not activated</li> <li>Movement / Drive movement selection was not made</li> <li>The manipulator is broken</li> <li>The power supply cable to the panel is damaged</li> <li>The batteries are discharged to more than 80 %, raising action cut-off</li> <li>The solenoid valve for the movement selected is faulty</li> <li>Inclination or slope &gt; 3° raising action cut-off</li> <li>Variator fault</li> </ul>	<ul style="list-style-type: none"> <li>Switch to platform position</li> <li>Remove some of the load</li> <li>Activate the deadman</li> <li>Select movement</li> <li>Replace the manipulator</li> <li>Repair or replace the cable</li> <li>Recharge the batteries</li> <li>Check the battery controller</li> <li>Replace the solenoid valve or its coil</li> <li>Completely lower the arms , boom and jib under</li> <li>Check the status of the diagnostic LED</li> </ul>
The arms or boom lower by themselves	<ul style="list-style-type: none"> <li>The cylinder seals are worn</li> <li>The shut-off valve is polluted</li> </ul>	<ul style="list-style-type: none"> <li>Replace the seals</li> <li>Replace the valve and the oil filter</li> </ul>
The turret will not turn	<ul style="list-style-type: none"> <li>The rotation pin is engaged in the chassis</li> </ul>	<ul style="list-style-type: none"> <li>Remove the pin</li> </ul>
There is no steering movement	<ul style="list-style-type: none"> <li>Drive movement was not activated</li> <li>The direction cylinders are broken or the shaft is bent</li> <li>The power supply cable to the panel is damaged</li> <li>There is insufficient hydraulic oil</li> <li>The deadman is not activated</li> <li>Command fault on the manipulator</li> </ul>	<ul style="list-style-type: none"> <li>Select HS or LS</li> <li>Repair or replace the cylinder#</li> <li>Repair or replace the cylinder</li> <li>Top up the level</li> <li>Press the deadman</li> <li>Check the manipulator is connected</li> </ul>
The arms and boom will not raise	<ul style="list-style-type: none"> <li>The battery is more than 80 % discharged</li> <li>The battery charge controller is broken</li> </ul>	<ul style="list-style-type: none"> <li>Recharge the batteries#</li> <li>Replace the battery charge controller</li> </ul>



INCIDENTS	LIKELY CAUSE	SOLUTION
The electrical pump unit does not work	<ul style="list-style-type: none"> <li>• Variator fault#</li> <li>• Battery master switch open</li> <li>• Fuses</li> <li>• The starter contact does not work#</li> <li>• The batteries are defective or un-charged</li> <li>• The battery cables fail to establish contact</li> <li>• No action on the deadman</li> <li>• The movement selector is set to drive movement</li> </ul>	<ul style="list-style-type: none"> <li>• Check the status of the diagnostic LED</li> <li>• Close the battery master switch</li> <li>• Engage the fuses</li> <li>• Check that the power supply cables are not loose</li> <li>• Repair or replace the contact</li> <li>• Replace or recharge the batteries</li> <li>• Clean and tighten the terminals</li> <li>• Activate the deadman</li> <li>• Select a movement</li> </ul>
Lack of pressure or power	<ul style="list-style-type: none"> <li>• The hydraulic pump does not work correctly</li> <li>• The pressure regulating screw for the pack has become unset</li> <li>• Oil has leaked onto a connection, a pipe or a component</li> <li>• Fault on the hydraulic pack.</li> <li>• The oil filter is clogged</li> </ul>	<ul style="list-style-type: none"> <li>• Repair or replace the pump</li> <li>• Reset it (1 turn = 100 bars) - max. pressure 220 bar.</li> <li>• Repair or replace.</li> <li>• Replace the pack.</li> <li>• Replace the oil filter cartridge</li> </ul>
The hydraulic pump is too noisy	<ul style="list-style-type: none"> <li>• There is insufficient oil in the reservoir</li> <li>• A pipe or connection is broken or loose (on the suction side)</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust the level</li> <li>• Repair, tighten or replace</li> </ul>
Cavitation of the hydraulic pump	<ul style="list-style-type: none"> <li>• The snifter valve is blocked (filling cap)</li> <li>• The oil viscosity is too high</li> <li>• A pipe, connection or the reservoir immersion pipe is broken or loose (on the suction side)</li> </ul>	<ul style="list-style-type: none"> <li>• Clean the snifter valve</li> <li>• Drain the circuit and refill with the recommended oil</li> <li>• Repair, tighten or replace</li> </ul>
The battery charge controller no longer works	<ul style="list-style-type: none"> <li>• The electric wiring is faulty or loose</li> <li>• The controller is broken</li> </ul>	<ul style="list-style-type: none"> <li>• Check the connections and tighten</li> <li>• Replace the controller</li> </ul>
The battery charger does not charge the batteries	<ul style="list-style-type: none"> <li>• No power is reaching the selector</li> <li>• The batteries were too discharged#</li> <li>• The battery charger is broken (see chap. 4.7)</li> <li>• The connection to the batteries is faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Make sure power is not cut off at night</li> <li>• Recharge the batteries using another unregulated battery charger</li> <li>• Replace or repair the charger#</li> <li>• Check the connection</li> </ul>







## 7 - SAFETY SYSTEMS

### 7.1 - MACHINE ELEMENTS

#### 7.1.1 - Motors

<b>M1</b>	<b>Left traction motor</b>
<b>M2</b>	<b>Right traction motor</b>
<b>M3</b>	<b>Electropump</b>
<b>Q1</b>	<b>Left electrobrake</b>
<b>Q2</b>	<b>Right electrobrake</b>

#### 7.1.2 - Power supplies and fuses

<b>FU1</b>	<b>325A</b>	<b>Main protection</b>
<b>FU2</b>	<b>15A</b>	<b>Control protection</b>
<b>FU3</b>	<b>100A</b>	<b>Power protection</b>
<b>FU4</b>	<b>10A</b>	<b>Output protection</b>

#### 7.1.3 - Inputs

##### 7.1.3.1 -Control inputs

<b>SB1</b>	<b>Main contactor</b>
<b>SB2</b>	<b>Turntable emergency stop</b>
<b>SB3</b>	<b>Platform emergency stop</b>
<b>SB4</b>	<b>Platform rotation control</b>
<b>SB5</b>	<b>Platform arms lifting control</b>
<b>SB6</b>	<b>Platform boom lifting control</b>
<b>SB7</b>	<b>Platform telescoping control</b>
<b>SB8</b>	<b>Platform jib control</b>
<b>SB9</b>	<b>Platforme platform level control</b>
<b>SB10</b>	<b>Platform basket rotation control</b>
<b>SB11</b>	<b>Platform LS travel control</b>
<b>SB12</b>	<b>Platform HS travel control</b>
<b>SB13</b>	<b>Platform horn</b>
<b>SA1</b>	<b>Turntable/platform panel selector</b>
<b>SA2</b>	<b>Turret rotation control</b>
<b>SA3</b>	<b>Turret arms lifting control</b>
<b>SA4</b>	<b>Turret boom lifting control</b>
<b>SA5</b>	<b>Turret telescoping control</b>
<b>SA6</b>	<b>Turret jib control</b>
<b>SA7</b>	<b>Flashing lights option</b>
<b>SA8</b>	<b>Turret platform level control</b>
<b>SM1</b>	<b>Platform manipulator</b>

#### 7.1.4 - Safety system inputs

<b>SQ2</b>	<b>Arms raised contactor</b>
<b>SQ3</b>	<b>Tilt</b>
<b>SQ4</b>	<b>Boom contactor &gt; 0°</b>
<b>SQ6</b>	<b>Jib contactor &gt; 0°</b>
<b>R1</b>	<b>Angle sensor</b>
<b>R2</b>	<b>Absolute angle sensor</b>



<b>G1</b>	<b>Pressure sensor</b>
<b>G2</b>	<b>Pressure sensor</b>
<b>SQ9</b>	<b>Steering contactor</b>
<b>KA1</b>	<b>Battery charge relay</b>

### 7.1.5 - Outputs

#### 7.1.6 - Relays

<b>KM1</b>	<b>Main contactor relay</b>
<b>KM2</b>	<b>Traction/movement relay</b>
<b>KM3</b>	<b>Steering relay</b>

#### 7.1.7 - On/off electrovalves

<b>YV2a</b>	<b>Left steering</b>
<b>YV2b</b>	<b>Right steering</b>
<b>YV3a</b>	<b>Up platform level</b>
<b>YV3b</b>	<b>Down platform level</b>
<b>YV4a</b>	<b>Left rotation</b>
<b>YV4b</b>	<b>Right rotation</b>
<b>YV5a</b>	<b>Arms lifting</b>
<b>YV5b</b>	<b>Arms lowering</b>
<b>YV6a</b>	<b>Boom lifting</b>
<b>YV6b</b>	<b>Boom lowering</b>
<b>YV7a</b>	<b>Telescope in</b>
<b>YV7b</b>	<b>Telescope out</b>
<b>YV8a</b>	<b>Jib lifting</b>
<b>YV8b</b>	<b>Jib lowering</b>
<b>YV9a</b>	<b>Left basket rotation</b>
<b>YV9b</b>	<b>Right basket rotation</b>

#### 7.1.8 - Alarms

<b>HA1</b>	<b>Horn</b>
<b>HA2</b>	<b>Buzzer</b>
<b>HA3</b>	<b>Overload buzzer</b>

#### 7.1.9 - Lights indicator

<b>PV</b>	<b>Hour counter, battery indicator</b>
<b>HL1</b>	<b>fault light indicator</b>
<b>HL2</b>	<b>Rotation</b>
<b>HL3</b>	<b>Arms lifting</b>
<b>HL4</b>	<b>Boom lifting</b>
<b>HL5</b>	<b>Telescoping</b>
<b>HL6</b>	<b>Jib</b>
<b>HL7</b>	<b>LS travel</b>
<b>HL8</b>	<b>HS travel</b>
<b>HL9</b>	<b>Platform level</b>
<b>HL10</b>	<b>Basket rotation</b>
<b>HL11</b>	<b>Flashing light</b>
<b>HL13</b>	<b>Overload</b>







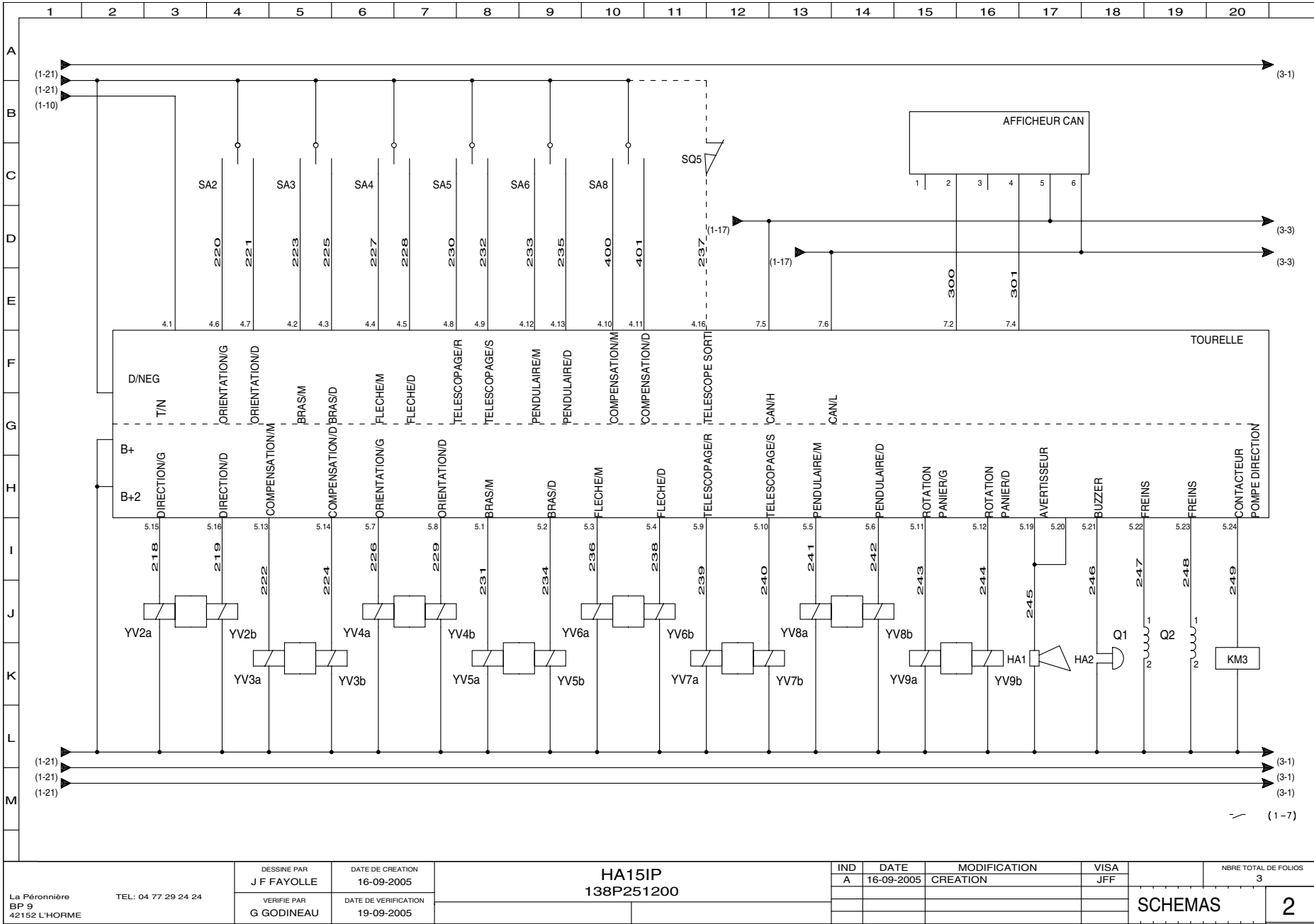






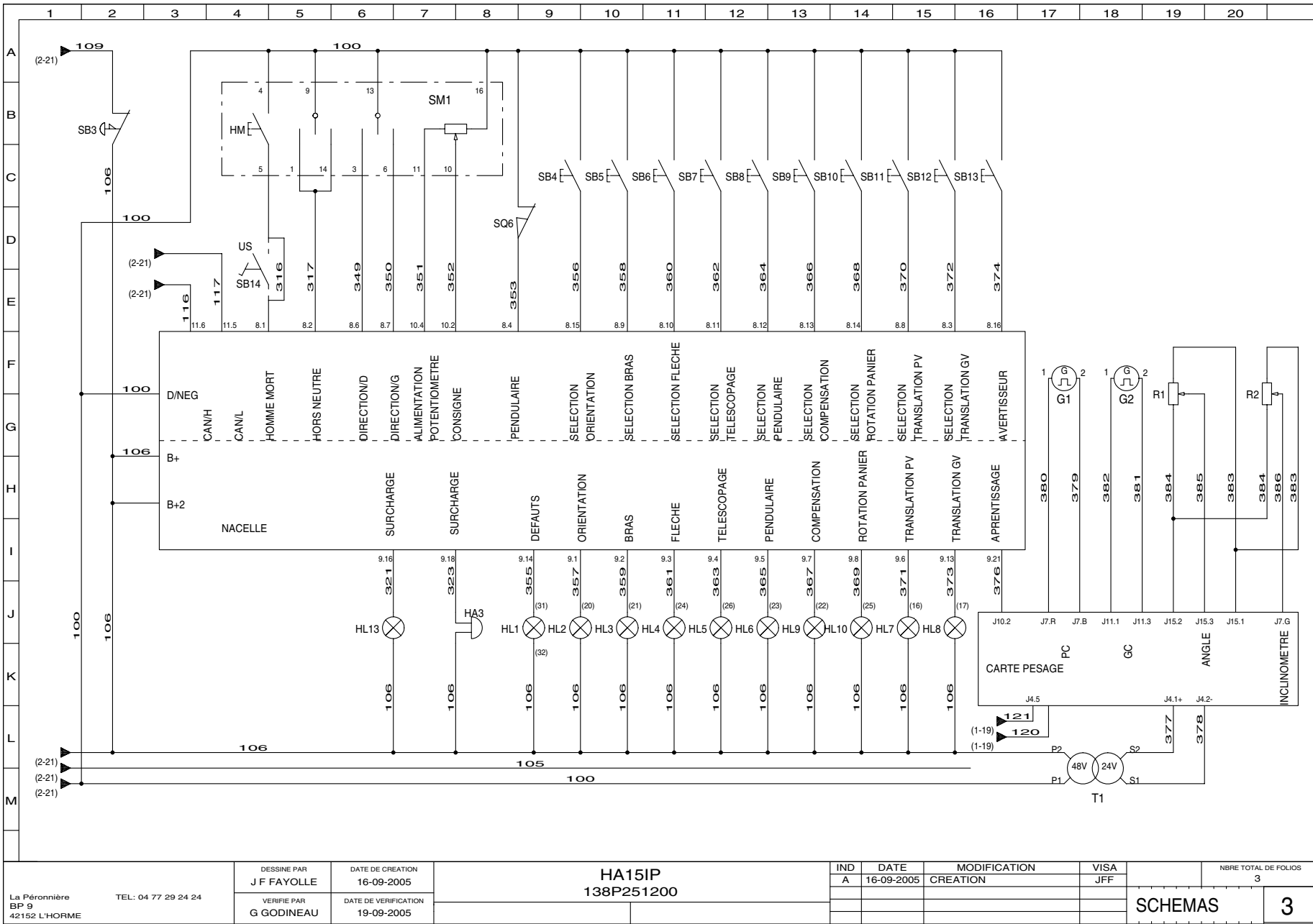


**9.2 - SHEET 2**





**9.3 - SHEET 3**



La Péronnière BP 9 42152 L'HORME TEL: 04 77 29 24 24	D'ESSINE PAR J F FAYOLLE	DATE DE CREATION 16-09-2005	<b>HA15IP</b> 138P251200	IND A	DATE 16-09-2005	MODIFICATION CREATION	VISA JFF	SCHEMAS	3
	VERIFIE PAR G GODINEAU	DATE DE VERIFICATION 19-09-2005							