

## OPERATING AND MAINTENANCE INSTRUCTIONS



## SELF-PROPELLED SCISSOR PLATFORM OPTIMUM 6 and 8

242 031 7020 - E 04.02 GB



ISO 9001  
GROUPE  
PINGUELY  
HAULOTTE



ARTICULEES



MATS



TELESCOPIQUES



CISEAUX



TRACTEES

**Haulotte** 

L'ACCES A L'ESPACE

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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.



**Caution !**

***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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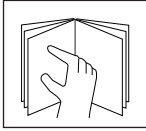
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# 1 - GENERAL RECOMMENDATIONS - SAFETY

## 1.1 - GENERAL WARNING

### 1.1.1 - Manual



The purpose of this manual is to help the operator to get to know HAULOTTE self-propelled lifts so as to use them efficiently and SAFELY. It cannot, however, replace the basic training necessary for any user of site plant.

The head of establishment has an obligation to ensure that operators know the instructions in the instruction manual. The head of establishment is also responsible for the implementation of the "user regulations" in force in the country of use.

Before using the machine, it is essential for safe use of the platform and its efficiency to familiarise yourself with all these instructions.

This instruction manual must be kept available to any operator. Additional copies can be supplied by the manufacturer on request.

### 1.1.2 - Labels



The potential dangers and instructions concerning the machine are indicated by labels and plates. It is necessary to read the instructions appearing on them.

All of the labels comply with the following colour code:

- The colour red indicates a potentially mortal danger.
- The colour orange indicates a danger which may cause serious injury.
- The colour yellow indicates a danger which may cause material damage or slight injury.

The head of the establishment must make sure that these labels are in good condition, and must take the necessary steps to keep them legible. Additional labels can be supplied on request by the manufacturer.

### 1.1.3 - Safety

Ensure that any person to whom you entrust the machine is capable of assuming the safety requirements of its use.

Avoid any working mode liable to jeopardise safety. Any use not compliant with the instructions could lead to risks and injury to people and damage to property.



**Caution !**

**In order to attract the reader's attention, the instructions will be preceded by this standardized sign.**

*The operating manual must be kept by the user throughout the machine's life including in the event of loan, hiring-out or re-sale.*

*Make sure that all the plates or labels relating to safety and danger are complete and legible.*

## 1.2 - GENERAL SAFETY INSTRUCTIONS

### 1.2.1 - Operators

The operators must be over 18 and must hold an operating permit issued by the employer after he has checked their medical fitness and after they have passed a practical lift driving/operating test.



**Caution !**  
Only trained operators can use Haulotte self-propelled lifts.

There must be at least two operators so that one of them can:

- Intervene quickly if necessary.
- Take the controls in the event of an accident or breakdown.
- Monitor and prevent machines and pedestrians going round the lift.
- Guide the lift's operator if required.

### 1.2.2 - Environment

Never use the machine:

- On soft, unstable, cluttered ground.
- On ground with a bank greater than the permissible limit.
- With exposure to a wind greater than the permissible threshold. If used outside, make sure, using an anemometer, that the wind speed is less than or equal to the permissible threshold.
- Near power lines (find out the minimum distances depending on the voltage). In temperatures below  $-15^{\circ}\text{C}$  (particularly in cold stores). Consult us if it is necessary to work below  $-15^{\circ}\text{C}$ .
- In explosive areas.
- In an area not properly ventilated, since the exhaust gases are toxic.
- During storms (risk of lightning).
- At night if it is not equipped with the optional light.
- When there are very strong electromagnetic fields (radar, mobiles and high currents).

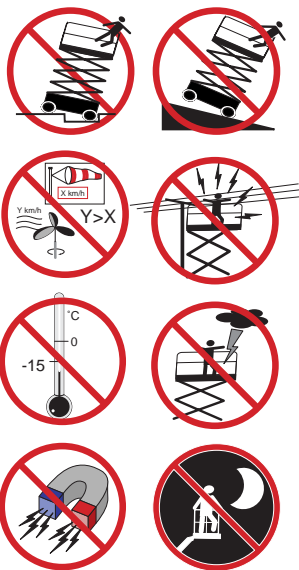
**DO NOT TRAVEL ON PUBLIC HIGHWAYS.**

### 1.2.3 - Using the machine

It is important to ensure that in normal use, that is lift operation, the lift post selection key remains in the lift position so as to be able to control the lift from the platform. In the event of a problem on the platform, a person present and trained in emergency/standby manoeuvres can assist by putting the key in the ground control position.

Do not use the machine with:

- A load greater than the nominal load.
- More people than the authorized number.
- A lift lateral force greater than the permissible value.
- A wind greater than the permissible speed.



**Caution !**

**Never use the platform as a crane, goods lift or lift. Never use the platform to pull or tow.**

In order to avoid any risk of a serious fall, it is essential for operators to comply with the following instructions:

- Hold on to the guard rails firmly when the lift is being raised or driven.
- Wipe any traces of oil or grease off the steps, floor and hand rails.
- Wear individual protective equipment suited to the working conditions and local regulations in force, particularly when working in a dangerous area.
- Do not neutralise the limit switches on the safety devices.
- Avoid hitting fixed or moving obstacles.
- Do not increase the working height by using ladders or other accessories.
- Do not use the guard rails as a means of access for getting onto and off the platform (use the steps provided for this purpose on the machine).
- Do not climb onto the guard rails when the platform is in the raised position.
- Do not drive the lift at high speed in areas which are narrow or not cleared.
- Do not use the machine without fitting the lift's protective bar or without closing the safety gate.
- Do not climb onto the covers.

In order to avoid risks of overturning, it is essential for operators to comply with the following instructions:

- Do not neutralise the limit switches on the safety devices.
- Avoid operating the control levers for one direction in the opposite direction without stopping in the " 0 " position (in order to stop during travelling, move the manipulator's lever gradually).
- Comply with the maximum load as well as the number of people authorized on the lift.
- Distribute the loads and place them if possible in the centre of the lift.
- Verify that the ground can take the pressure and load per wheel.
- Avoid hitting fixed or moving obstacles.
- Do not drive the lift at high speed in areas which are narrow or not cleared.
- Do not drive the lift in reverse (lack of visibility).
- Do not use the machine with a cluttered lift.
- Do not use the machine with equipment or objects suspended from the guard rails.
- Do not use the machine with elements which could increase the wind load (e.g.: panels).
- Do not carry out machine maintenance operations when it is raised without having put in place the necessary safety devices (travelling crane, crane).
- Carry out the daily checks and monitor proper operation during periods of use.
- Protect the machine from any unsupervised intervention when it is not in service.

**NOTE :** *Do not tow the lift (it has not been designed for that and must be transported on a trailer).*

## 1.3 - RESIDUAL RISKS

### 1.3.1 - Risks of jolting - Overturning

The risks of jolting or overturning are considerable in the following situations:

- sudden operation of the control levers,
- overload of the lift,
- ground weakness (Beware of thawing in winter),
- gusting wind,
- hitting an obstacle on the ground or high up,
- working on quays, bays, pavements, etc...

Allow a sufficient stopping distance:

- 3 metres at high speed,
- 1 metre at low speed.

### 1.3.2 - Electrical risks

The electrical risks are considerable in the following situations:

- hitting a power line,
- use in stormy weather.

### 1.3.3 - Risks of explosion or burning

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

- work in an explosive or flammable atmosphere,
- filling the fuel tank near to flames,
- contact with the hot parts of the engine,
- using a machine with hydraulic leaks.

### 1.3.4 - Risks of collision

- Risks of crushing people present in the area in which the machine is operating (during travelling or operation of the equipment).
- Evaluation by the operator, before any use, of the risks above him.

### 1.3.5 - Abnormal noise

When the platform is started, the user must listen for abnormal noise :

- seizure,
- discharge of an equilibrium valve,
- discharge of a pressure limiter, etc.

If abnormal noise is detected, the user must stop using the equipment immediately and contact the PINGUELY HAULOTTE After-Sales department to detect the source of the problem.

## 1.4 - VERIFICATIONS

Comply with the national regulations in force in the country of use.

For FRANCE: Order of June 9th 1993 + circular DRT 93-22 September 1993 specifying:


### 1.4.1 - Routine verifications

The machine must be the subject of routine inspections every 6 months so that any defect liable to cause an accident is detected.

These inspections must be carried out by an organisation or personnel specially designated by the head of establishment and under the latter's responsibility (company's personnel or not) (Articles R 233-5 and R 233-11 of the Code du Travail).

The result of these inspections must be entered in a safety register opened by the head of establishment and kept constantly available to the works inspector and

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 **Caution !**  
***If the machine has a 220 V power point, max. 16 A, it is essential for the extension lead to be connected to a mains outlet protected by a 30 mA quick-trip circuit-breaker.***

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safety committee of the establishment, if there is one, as well as a list of the specially designated personnel (Article R 233-5 of the Code du Travail).

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*NOTE :* Such register can be obtained from the trade organisations and some of them can be obtained from the OPPBTP or private prevention organisations.

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The people designated must be experienced in the field of risk prevention (Articles R 233-11 of Decree n° 93-41).

It is forbidden to allow any worker to proceed, during the operation of the machine, with any verification whatsoever (Article R 233-11 of the Code du Travail).

### **1.4.2 - Examination of suitability of a machine**

The head of the establishment in which this equipment is put into service must make sure of the suitability of the machine, that is, that it is appropriate for the works to be carried out safely and that it is used in accordance with the instruction manual. In addition, in the above-mentioned French order of June 9th 1993, problems associated with hiring, the examination of the state of conservation, verification at the time of putting back into service after repair, as well as coefficient 1.25 static test and coefficient 1.1 dynamic test conditions are mentioned. Each person responsible using the machine must acquaint himself and follow the requirements of this decree.

### **1.4.3 - State of conservation**

Detect any damage liable to be the cause of dangerous situations (safety devices, load limiters, tilt monitor, leaks from cylinders, deformation, condition of welds, tightness of bolts, hoses, electrical connections, condition of tyres, excessive mechanical play).

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*NOTE :* In the case of hiring, the person responsible using the hired machine has the responsibility of examining the state of conservation and for examining suitability. He must check with the hirer that the routine general verifications and verifications before putting into service have indeed been carried out.

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## **1.5 - REPAIRS AND ADJUSTMENTS**

Major repairs, maintenance work or adjustments on the safety elements or systems (concerns mechanics, hydraulics and electricity).

They must be carried out by PINGUELY-HAULOTTE personnel or personnel working on behalf of PINGUELY-HAULOTTE who must use original parts only.

Any modification outside PINGUELY-HAULOTTE's control is not authorised.

The manufacturer is not liable if original parts are not used or if the work specified above is not carried out by PINGUELY-HAULOTTE approved personnel.

## **1.6 - VERIFICATIONS AT THE TIME OF PUTTING BACK INTO SERVICE**

To be carried out after:

- major removal/refitting,
- a repair involving the machine's essential parts,
- any accident caused by the failure of an essential part.

It is necessary to proceed with an examination of suitability, an examination of the state of conservation, a static test, a dynamic test (see coefficients, § 1.4.2, page 5).



## 2 - PRESENTATION


Self-propelled platforms, models Optimum 6 and 8, are designed for all overhead work within the limits of their characteristics (section § 2.5.1, page 11) and in conformity with the safety recommendations specific to the equipment and the area of use.

The main operating station is on the platform.

The operating station from the chassis is a backup or emergency station.

### 2.1 - IDENTIFICATION

A plate on the front of the chassis bears all the indications (engraved) for machine identification.

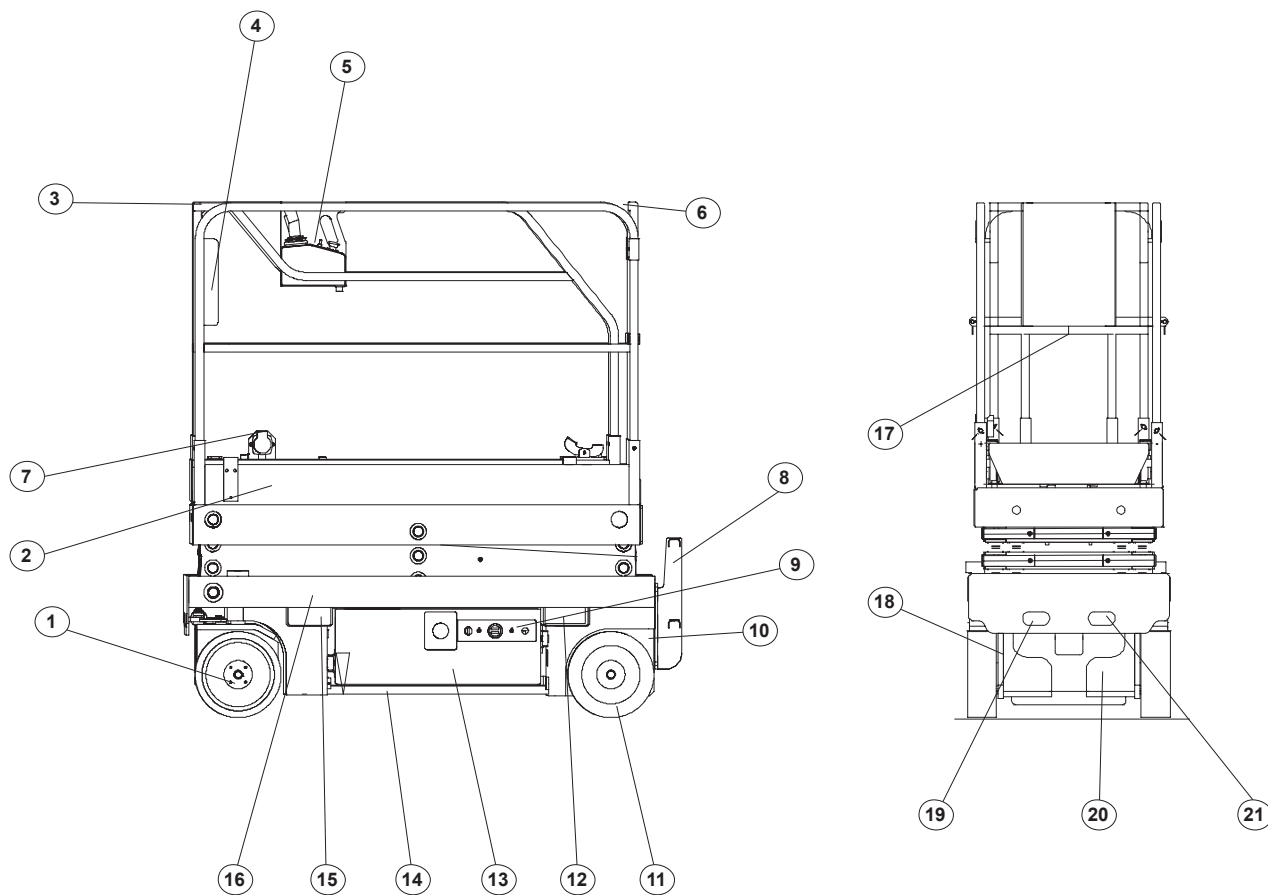
○	<b>Pinguely - Haulotte</b> 	○
La Péronnière, BP9, 42152 L'Horme - France		
EQUIPMENT	<input style="width: 80%;" type="text"/>	
TYPE	<input style="width: 80%;" type="text"/>	
SERIAL N°	<input style="width: 80%;" type="text"/>	
TOTAL WEIGHT	<input style="width: 80%;" type="text"/>	kg
YEAR OF MANUFACTURE	<input style="width: 80%;" type="text"/>	
NOMINAL POWER	<input style="width: 80%;" type="text"/>	kW
GRADEABILITY	<input style="width: 80%;" type="text"/>	%
MAXIMUM LOAD	<i>INSIDE USE</i>	<i>OUTSIDE USE</i>
	<input style="width: 40%;" type="text"/> kg	<input style="width: 40%;" type="text"/> kg
NUMBER OF PERSONS + LOAD	P + <input style="width: 20%;" type="text"/> kg	P + <input style="width: 20%;" type="text"/> kg
LATERAL FORCE MAX.	<input style="width: 40%;" type="text"/> N	<input style="width: 40%;" type="text"/> N
WINDSPEED MAX.	<input style="width: 40%;" type="text"/> m/s	<input style="width: 40%;" type="text"/> m/s
SLOPE OPERATION MAX.	<input style="width: 40%;" type="text"/> degrees	<input style="width: 40%;" type="text"/> degrees
○	7814 621 ○	

REMINDER: For all information, intervention or spare parts requests, please specify the machine type and serial number.

### 2.2 - GENERAL OPERATION

The batteries supply an electropump set controlling all movements. Oil is directed to the different parts by on/off electrovalves.

**2.3 - MAIN COMPONENTS**



01 - Front motor-drive wheel

02 - Platform

03 - Extensions

04 - Document case

05 - Platform control desk

06 - Protective bar

07 - Socket 220V

08 - Access ladder

09 - Chassis control desk

10 - Anchoring point

11 - Rear wheel

12 - Position of lift truck forks

13 - Box

14 - Pothole (retracted)

15 - Position of lift truck forks

16 - Chassis

17 - Platform access bar

18 - Battery drawer lock

19 - Anchoring points

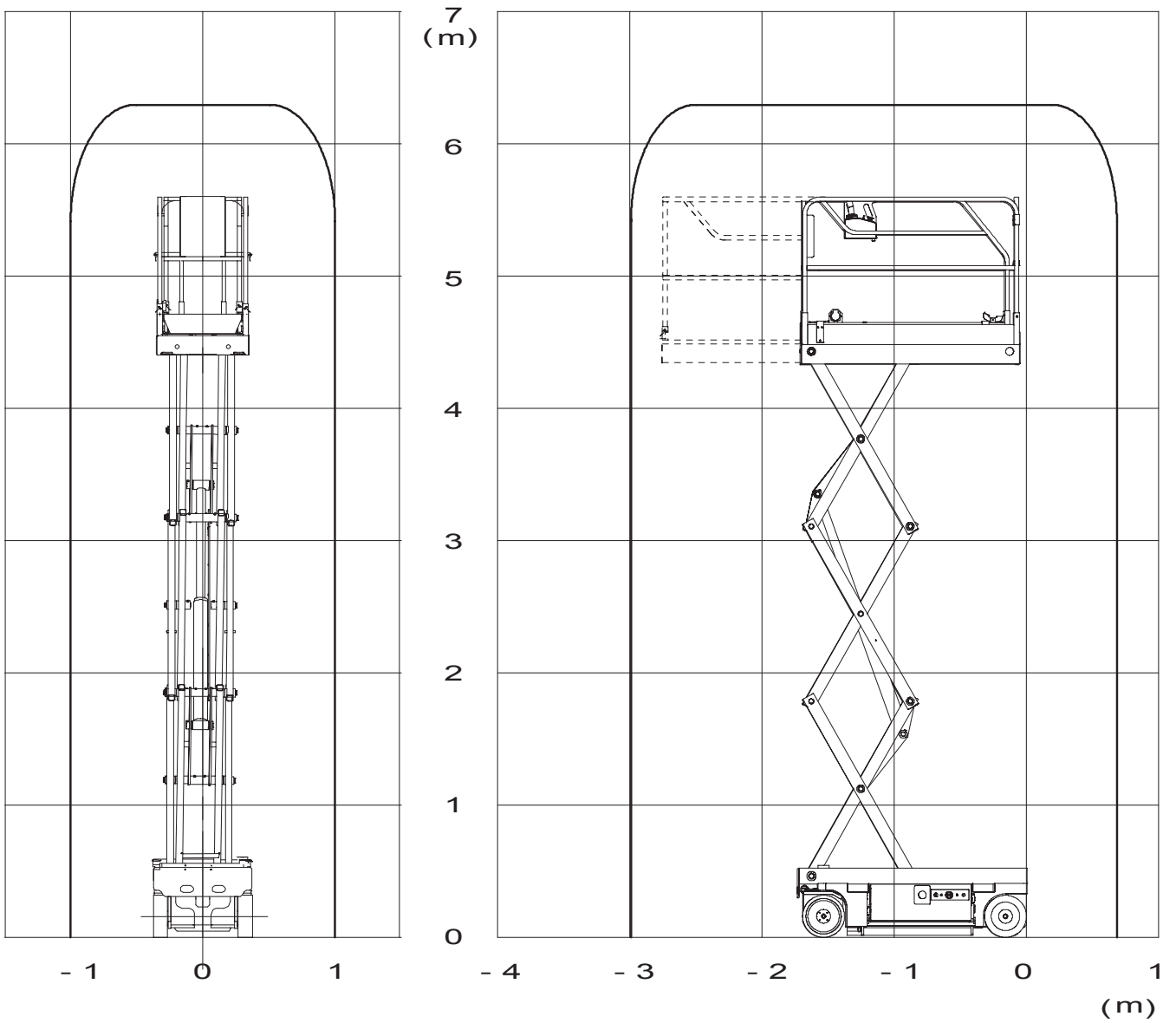
20 - Battery drawer

21 - Anchoring points

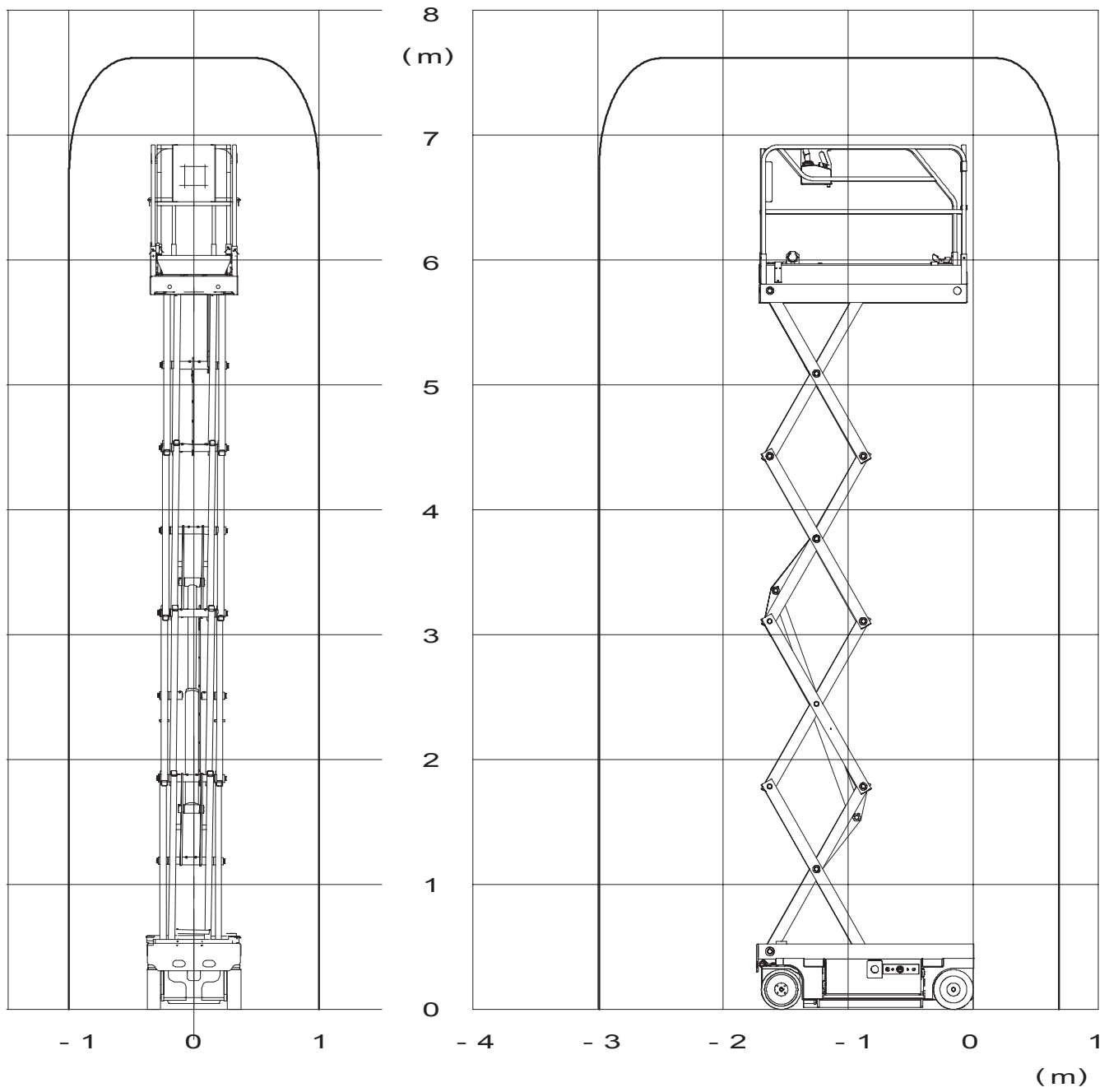


**2.4 - WORKING AREA**

**2.4.1 - Optimum 6**



2.4.2 - Optimum 8

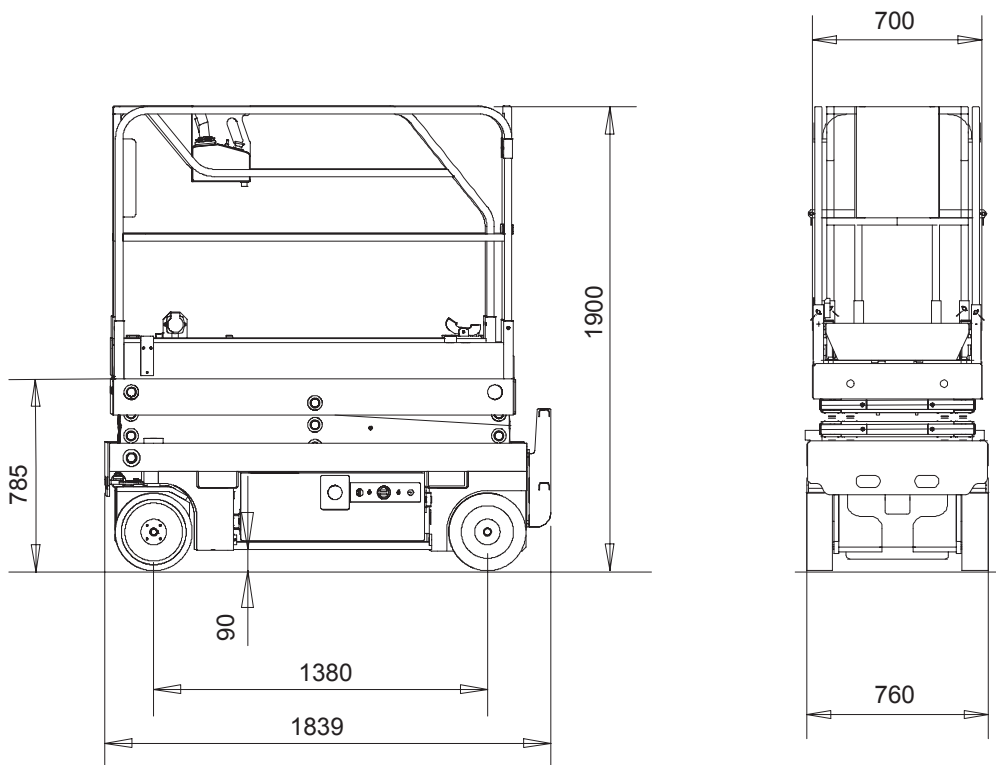


**2.5 - TECHNICAL DATA****2.5.1 - Optimum 6 and 8 technical data**

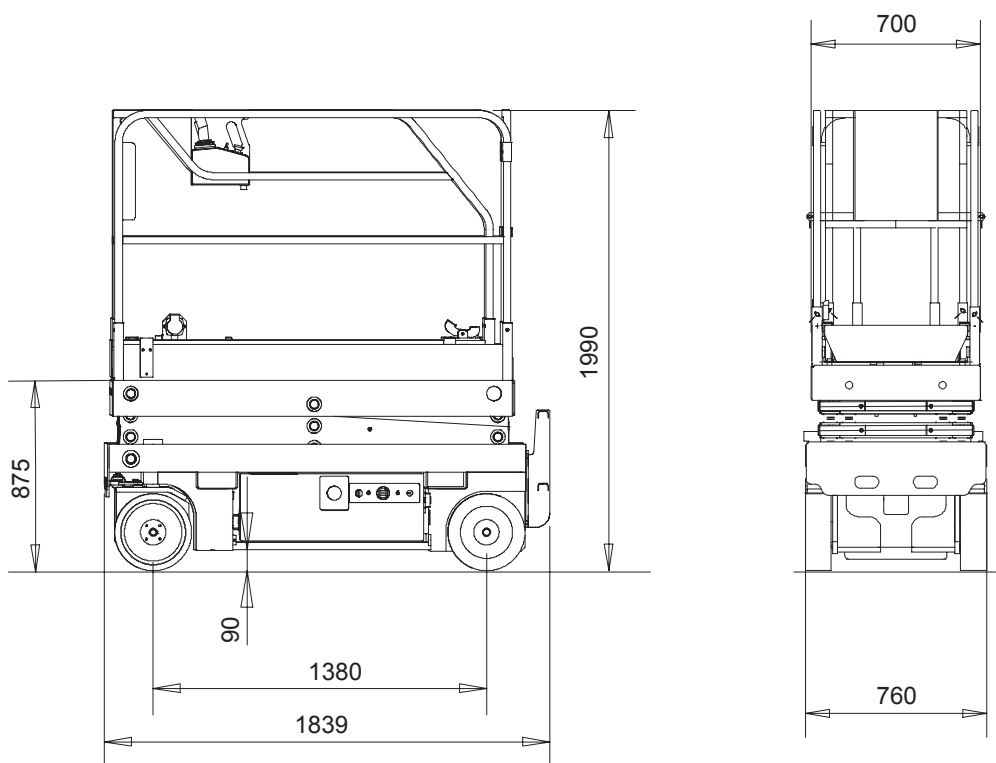
<b>Description</b>	<b>Optimum 6</b>		<b>Optimum 8</b>
Load (indoor use)	270 kg including 2 people	115 kg including 1 people	230 kg including 2 people
Manual lateral force	40 daN	20 daN	40 daN
Maximum wind speed	0 Km/h	45 Km/h	0 Km/h
Floor height	4.5 m		5.8 m
Working height	6.3 m		7.6 m
Folded length with steps	1.88 m		
Overall width	0.76 m		
Folded height (safety barrier)	1.90 m		1.99 m
Folded height (platform)	0.79 m		0.87 m
Wheelbase	1.38 m		
Floor clearance	80 mm		
Floor clearance with Pot Hole in use	14 mm		
Platform dimension	1.73 m x 0.68 m		
Extension dimension	0.92 m		
Extension capacity	115 Kg		
Travel speed with machine folded	0/4.5 km/h		
Travel speed with machine lifted	0/0.6 km/h		
Internal turning radius	0,4 m		0,4 m
External turning radius	1,8 m		
Maximum slope in travel	25%		
Maximum tilt allowed	2°		
Hydraulic tank	20 l		
Total mass	1335 Kg		1420 Kg
Maximum load on one wheel	698 daN		872 daN
Maximum floor pressure	8,54 daN/cm <sup>2</sup>		10,56 daN/cm <sup>2</sup>
Number of drive wheels	2		2
Number of steering wheels	2		2
Tyres	Non-marking - Solid rubber		
Wheel diameter	317 mm		
Free wheel	YES		
Movements	proportional control		
Batteries	24 V - 180 Amp/h C5		
General hydraulic pressure	230 bars		
Travel	230 bars		
Steering	100 bars		
Lifting	110 bars		130 bars
Lifting time	20 s		23 s
Lowering time	35 s		32 s
CE standards	YES		

**2.6 - SIZE**

**2.6.1 - Optimum 6**

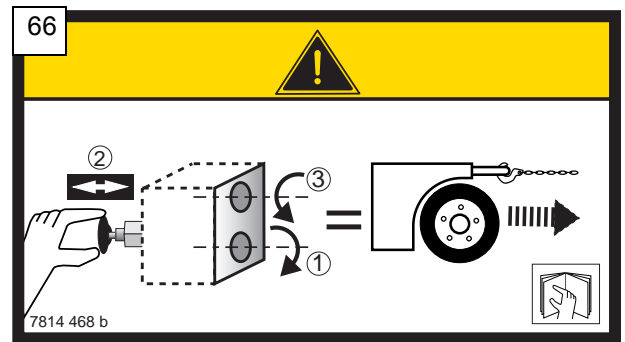
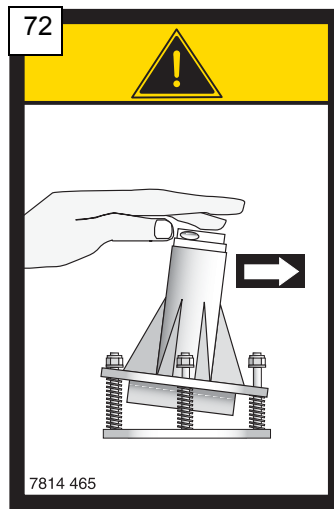
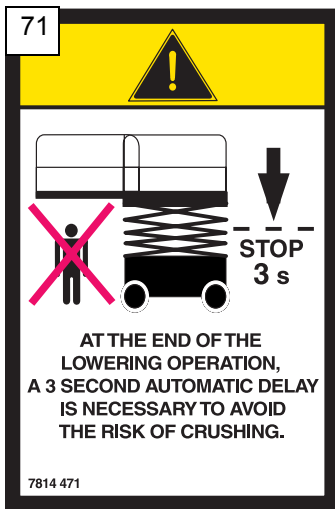
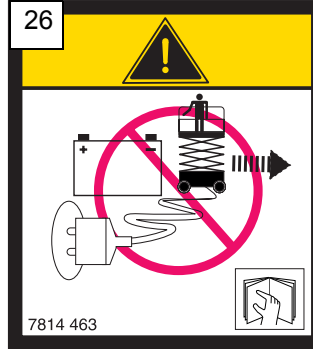
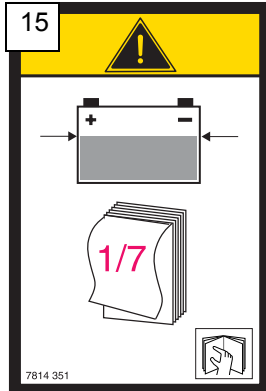


**2.6.2 - Optimum 8**



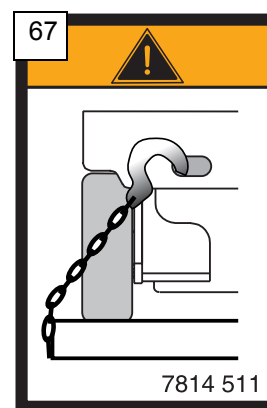
2.7 - LABELS

2.7.1 - Common "yellow" labels

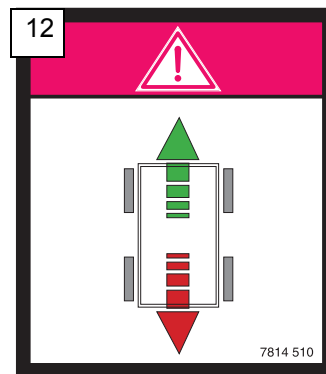
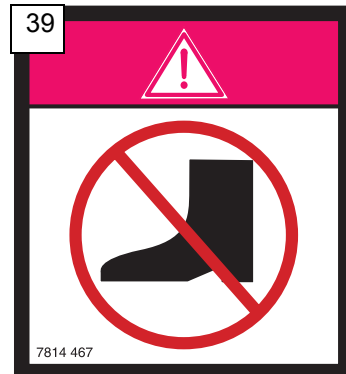
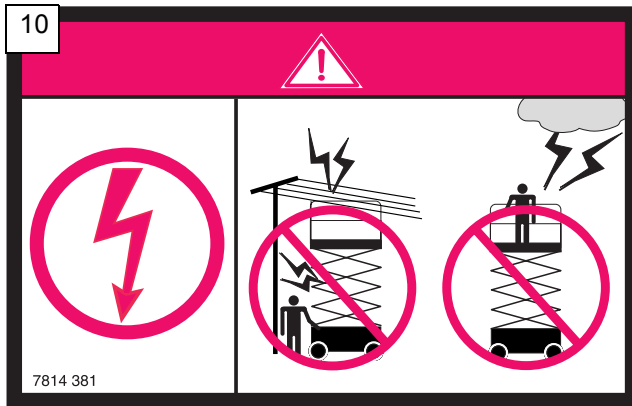
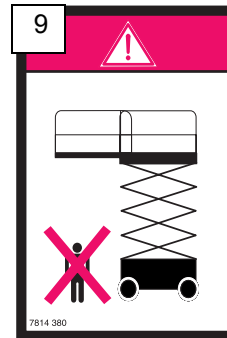


2.7.2 - Common "orange" labels

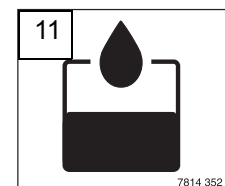
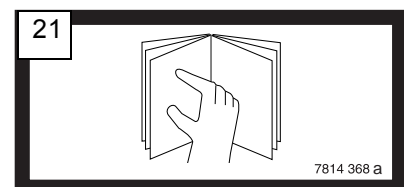
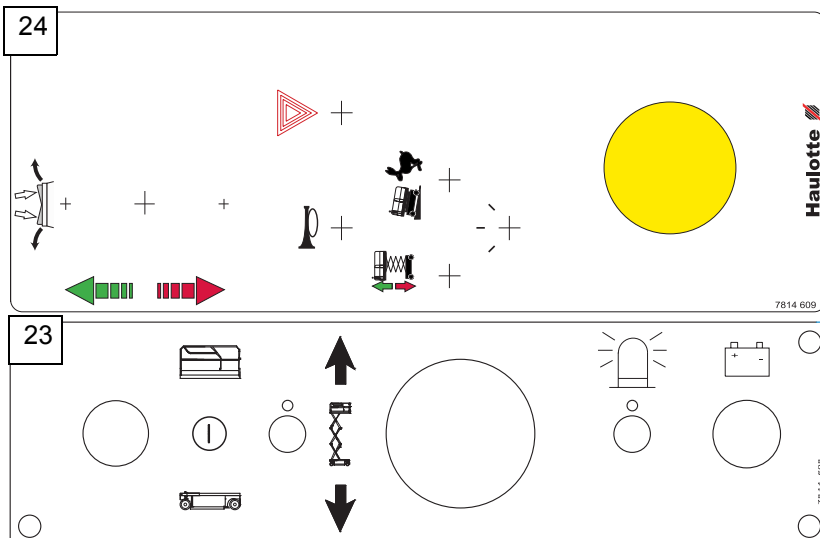
<b>7</b>	
<b>RECOMMENDATIONS FOR USE</b>	
BEFORE USING THIS MACHINE THE OPERATOR MUST	
<ol style="list-style-type: none"> <li>1 - Read and understand the information in the operator's manual and the information marked on the machine, and become familiar with the controls.</li> <li>2 - Receive training and practical experience in operating the machine, under the employer's supervision.</li> <li>3 - Ensure that maintenance is performed according to the manufacturer's instructions.</li> <li>4 - Refrain from using the machine in the event of any malfunction.</li> <li>5 - Not wash the electrical components with a washer pressure.</li> <li>6 - Not remove any parts which might affect the stability.</li> <li>7 - Not modify the machine without the manufacturer's approval.</li> <li>8 - Not use the machine as a welding earth.</li> <li>9 - Not weld on the machine without first disconnecting the battery terminals. See the instructions in the maintenance manual.</li> </ol>	
<b>DAILY INSPECTION</b>	
<ol style="list-style-type: none"> <li>1 - Check the level of diesel fuel (for diesel engine platforms).</li> <li>2 - Check that there are no apparent defects (hydraulic leaks, loose bolts, loose electric connections)</li> <li>3 - Check that the lift indicator operates correctly by sounding the buzzer.</li> </ol>	
<b>INSTRUCTIONS BEFORE USE</b>	
<ol style="list-style-type: none"> <li>1 - Remove the rotation locking pin (if there is a turntable).</li> <li>2 - <b>IMPORTANT</b> when using the AC power line to the work platform, the power plug must be connected to an electrical installation protected by a 30 mA circuit breaker (C15 100 standard).</li> </ol>	
<b>START-UP</b>	
<ol style="list-style-type: none"> <li>1 - Turn the battery isolator switch to the "on" position.</li> <li>2 - Unlock the emergency stop button then press the starter button.</li> <li>3 - If the machine does not start, wait 10 seconds then repeat the operation.</li> </ol>	
THE MACHINE <b>MUST NOT BE USED</b> WHILE CHARGING THE BATTERIES	
7814 345	



2.7.3 - Common "red" labels




2.7.4 - Other common labels




### 2.7.5 - Model-specific labels



#### 2.7.5.1 - Optimum 6


5






Optimum 6





INSIDE USE


115 Kg =  
( + )




155 Kg =  
( + )

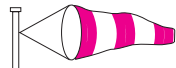


270 Kg =  
( +  + )

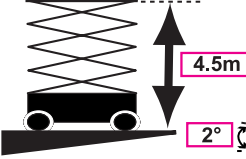


400 N  
(40 kg)







0 m/s  
(0 km/h)






4.5m  
2°




OUTSIDE USE




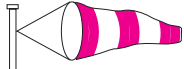
GB


115 Kg =  
( + )

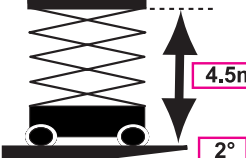


200 N  
(20 kg)






12,5 m/s  
(45 km/h)






4.5m  
2°

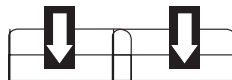




7814 899


#### 2.7.5.2 - Optimum 8







115 Kg =  
( + )




115 Kg =  
( + )




230 Kg =  
( +  + )

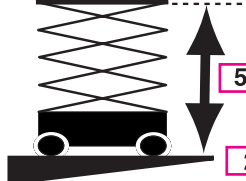


400 N  
(40 kg)






0 m/s  
(0 Km/h)

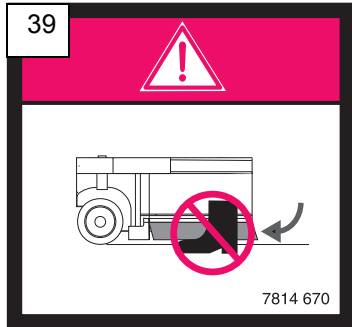
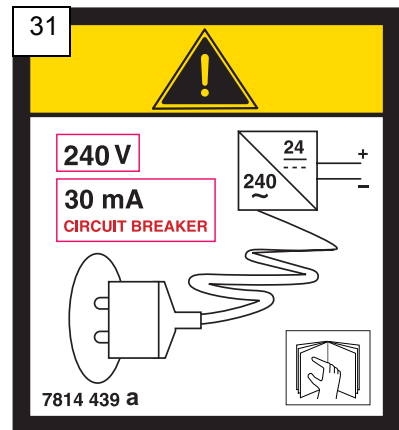
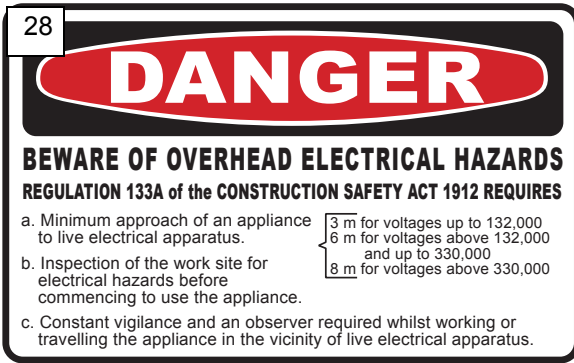


5.8 m  
2°



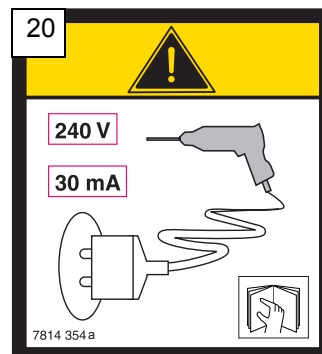
7814 674 a

2.7.6 - Specific labels : Australia

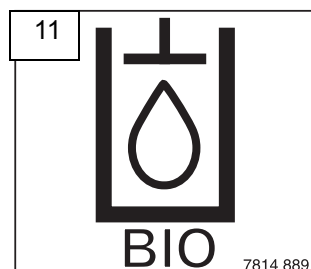


2.7.7 - Specific labels : Option

2.7.7.1 -220V Plug



2.7.7.2 -Organic hydraulic oil



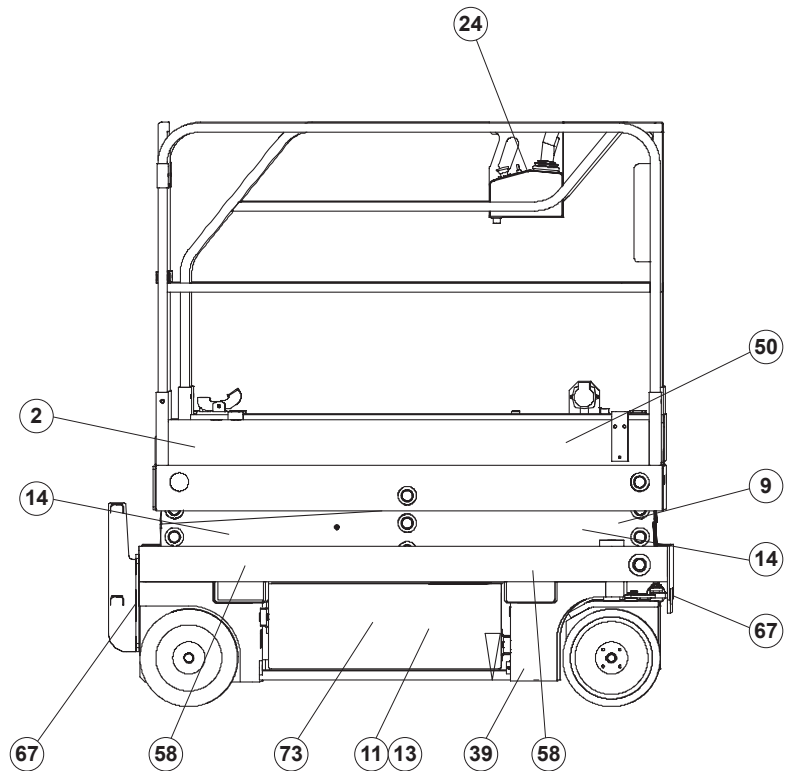
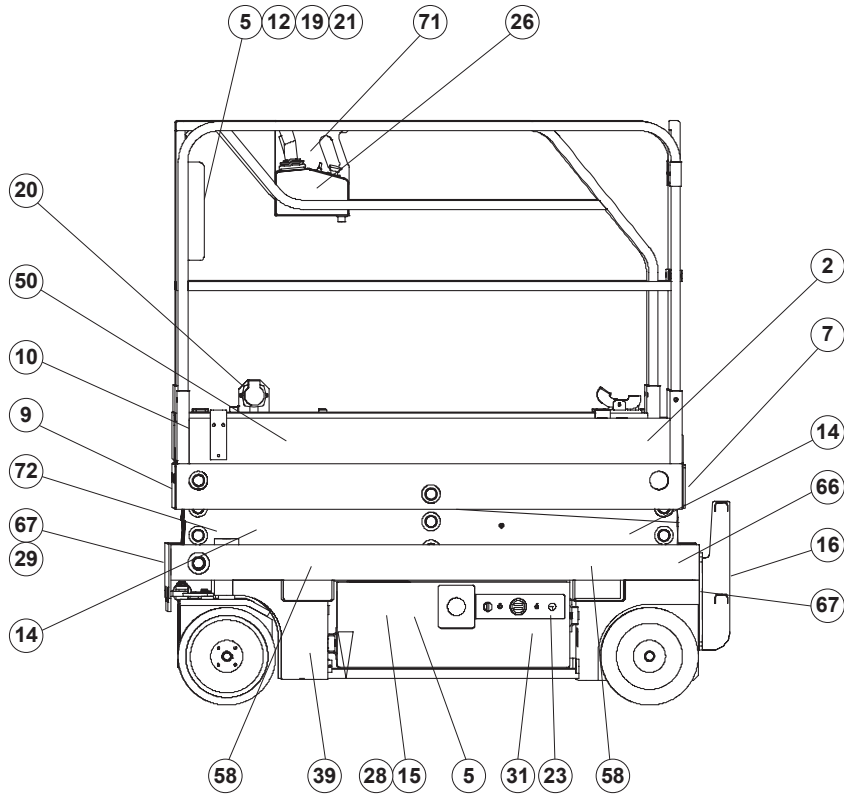


**2.7.8 - Machine label references**

<b>Ref</b>	<b>Code</b>	<b>Qty</b>	<b>Description</b>
2	3078146720	2	"Optimum 6" sticker
2	3078146730	2	"Optimum 8" sticker
5	3078148990	1	Floor height + load capacity 6 (English)
5	3078146740	1	Floor height + load capacity 8
7	3078143420	1	Information: Operating instructions (French)
7	3078143430	1	Information: Operating instructions (Spanish)
7	3078143440	1	Information: Operating instructions (German)
7	3078143450	1	Information: Operating instructions (English)
7	3078143460	1	Information: Operating instructions (Italian)
7	3078143470	1	Information: Operating instructions (Dutch)
7	3078144580	1	Information: Operating instructions (Australian)
7	3078144940	1	Information: Operating instructions (Danish)
9	3078143800	2	Crush risk: Do not stop in the machine's working area
10	3078143810	1	Electrocution risk: This machine is not insulated.
11	3078143520	1	Information: Hydraulic oil
11	3078148890	1	Information: Organic hydraulic oil (Option)
12	3078145100	1	DANGER: Travel direction
14	3078149010	4	Crush risk of upper limbs (hands / fingers)
15	3078143510	1	Risk of deterioration: Battery servicing
16	3078143610	1	Risk of injury: Wear protective clothing
19	3078143600	1	Risk of electrocution: Do not use as a welding earth. Do not wash...
20	3078143540	1	Information: 220V socket (Option)
20	3078144570	1	Information: 220V socket (Option) (Australian)
21	3078143680	1	See operating manual
23	3078146090	1	Information: Bottom control desk label
24	3078146080	1	Information: Platform control desk label
26	3078144630	1	Risk of deterioration: Do not use the machine while batteries are being charged
28	3078144430	1	Danger : Electrocution (Australian)
29	3078144370	4	Sling characteristics (Australian)
31	3078144390	1	Protection of the charger with differential grip of 30mA (Australian)
39	3078144670	2	Crush risk: Crushed feet (Pothole)
39	3078146700	2	Crush risk: Crushed feet (Pothole) (Australian)
50	1250127590	2	"HAULOTTE" design
58	3078143830	4	Information: Lift truck fork position
66	3078144680	1	Operating instructions: Freewheel - Brake release
67	3078145110	4	Information: Anchoring hook position
71	3078144640	1	Stop time during lowering (French)
71	3078144720	1	Stop time during lowering (Spanish)
71	3078144700	1	Stop time during lowering (German)
71	3078144710	1	Stop time during lowering (English)
71	3078144730	1	Stop time during lowering (Italian)
71	3078144740	1	Stop time during lowering (Dutch)

<i>Ref</i>	<i>Code</i>	<i>Qty</i>	<i>Description</i>
72	3078144650	1	Risk of overturning: Tilt check
73	3078148240	1	Risk of overturning: Battery drawer locking

**2.7.9 - Label positions on the machine**



## 3 - OPERATING PRINCIPLE

### 3.1 - HYDRAULIC CIRCUIT

All machine movements are controlled by hydraulic power supplied by a gear pump driven by a variable speed electric motor.

In the event of breakdown, manual emergency action enables lowering of the scissors.

#### 3.1.1 - Lifting the platform

The cylinder is controlled by an on/off distributing valve via a variable speed drive which enables gradual movement.

Only one movement is possible at a time.



**Caution!**

**Do not modify the settings, if a problem arises, contact PINGUELY-HAULOTTE**

#### 3.1.2 - Travel movement (machine movement)

Two travel speeds (high-low) are controlled by a switch.

**High travel speed:** the 2 motors are supplied in series, receiving full pump output, which passes in one motor first and then in the other.

**Low travel speed:** the 2 hydraulic motors are supplied in parallel, each receiving half of the pump output.

Supply of pressure to these motors eliminates brake action. As soon as movement stops, the brake is returned to its position under the action of the springs.

#### 3.1.3 - Steering movement

Steering is impossible in the lifting position.

Steering is controlled using the button below the manipulator.

### 3.2 - ELECTRIC CIRCUIT

The electric power used for the controls and ignition is supplied by four 6 volt batteries in series.

An on-board charger enables re-charging of these batteries overnight by connecting to a 16A domestic socket.

#### 3.2.1 - Electronic variable speed drive

This is the device at the centre of the machine's operation. Its role is to control movement speed, adapting the motor-pump unit's rotation speed to a given command. The variable speed drive receives the signal from the control manipulator as well as information on the type of movement to be made and the state of the safety systems. If a problem or breakdown occurs, consult the various tables concerning operating incidents (section § 6, page 41).

#### 3.2.2 - Battery charge state / timer controller

(MDI)

This device combines the following functions in a single device:

- Battery charge state.
- Timer.
- Reset.

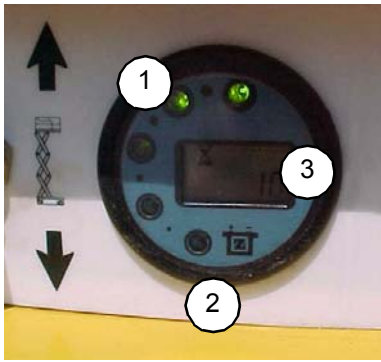


Photo 1

**3.2.2.1 - Battery charge state.**

The state of battery charge is indicated by 5 diodes:

- When the batteries are correctly charged, four green diodes are on. (ref. 1, Photo 1, page 20)
- As the batteries discharge, the diodes go out one after another.
- When the batteries are discharged, the red diode (ref 2, Photo 1, page 20) comes on; lifting is disabled, but travel remains possible.
- Batteries must be re-charged to avoid serious discharge and damage to the batteries.

**3.2.2.2 - Timer.**

Hours are counted on screen (ref. 3, Photo 1, page 20) during electropump operation. During this time, the "hourglass" flashes.

**3.2.2.3 - Reset**

This occurs when the batteries have been correctly re-charged.

**3.2.2.4 - Alarm**

When a problem occurs on the machine:

- the operator on the platform is informed by flashes (Photo 2, page 20). The number of flashes corresponds to the type of problem,
- the operator on the ground is informed by numeric indication. The number displayed on the timer screen corresponds to the type of problem.



Photo 2

Numeric indication	Number of flashes	Description
6	6	No reception or incorrect reception with the serial card
13	6	Electronic circuit problem
32	3	Incoherent motor voltage
37	4	General contactor stuck
38	4	Variable speed drive problem
49	5	Variable speed drive problem
53	5	Variable speed drive problem
60	3	Variable speed drive problem
62	9	Variable speed drive temperature over 75°C
66	8	Battery discharged
73	1	Short-circuit on an electrovalve, brake or mains
74	4	Variable speed drive problem
75	4	Line contactor closing problem
78	2	Manipulator 2.5V +/- 1V voltage fault
79	2	Movement produced before energising
94	6	Variable speed drive problem
95	7	Pressureswitch alarm
98	0	MDI and variable speed drive times are different
99	6	Programmed maintenance request

### 3.3 - SAFETY



**Caution!**

**Do not lift the platform unless the machine is on a hard, firm and level surface.**



**Caution!**

**Risk of overturning when the buzzer sounds.**



**Caution!**

**Keep your feet clear of the safety systems (Pothole) to prevent crushing**

#### 3.3.1 - Tilt control

Do not consider the tilt alarm to be a level indicator. In the working position (above 1.50 metres) the tilt sensor emits a signal, audible from the platform, when maximum allowed tilt is reached.

If this situation persists after a time delay of 1 - 2 seconds, the platform's lift and travel controls are disabled (the platform must be lowered to re-enable travel).

**NOTE:** Correct operation of this system should be checked every day as part of the pre-operation check. (Photo 3, page 21).

#### 3.3.2 - Travel speeds

- High travel speed is authorised when the platform is in the low position or below 1.50 metres.
- Low travel speed is possible when the platform is in the low position or below 1.50 metres.
- Micro-speed is activated automatically when the platform is above 1.50 metres.

#### 3.3.3 - Safety system against potholes

When the platform is lifted above 1.50 metres, the pothole protection system is automatically activated. Only micro-speed is possible for travel. The safety system is automatically retracted when the platform is lowered below 1.50 metres and high or low speed operation is initiated. If the pothole system is not extended, the micro-speed and lifting movements are automatically disabled.

**Photo 3**



**Photo 4**



### **3.3.4 - Overload**

When leaving the work position (less than 1.50 metres), a pressure limiter set to de-code the nominal load detects if maximum load is reached. If it is, platform lifting is impossible.

In the work position, hydraulic pressure is limited. A pressure contact detects if maximum load is reached and neutralises the lowering movement.

Load must be removed to re-enable movement.

---

## 4 - USE

---

### 4.1 - GENERAL INSTRUCTIONS

#### 4.1.1 - Machine environment

**Caution!**

**Do not use this machine if  
wind speed exceeds 45 km/h.  
Only one person is allowed**

---

##### 4.1.1.1 - Outside

This machine is not to be used outside.

##### 4.1.1.2 - Inside

For indoor use, operating instructions and recommendations must be followed to avoid all risk of accidents.

**Rules to be respected for indoor use, in particular:**

- Maximum load not to be exceeded (section § 2.5, page 11).
- Manual lateral force (section § 2.5, page 11)
- The floor must be hard and firm.

#### 4.1.2 - Manual extension

The platforms are equipped with a single manual extension with two possible positions.

**Conditions of use:**

- Press the pedal and push to the first or second position, depending on the extension required. (Photo 5, page 23)
- During transport on a trailer or vehicle, the manual extension must be locked in the retracted position. (Photo 6, page 23)

Photo 5



Photo 6



## 4.2 - UNLOADING - LOADING

**IMPORTANT:** Before any operation, check the overall condition of the machine to make sure that it has not been damaged during transport. If necessary, make any reserves in writing to the transport company.

**NOTE:** *Incorrect movement may cause the machine to fall and cause very serious personal injury or material damage.*

 **Caution!**  
 Perform unloading operations on a sufficiently resistant, flat and stable surface with plenty of surrounding space

### 4.2.1 - Unloading by lifting

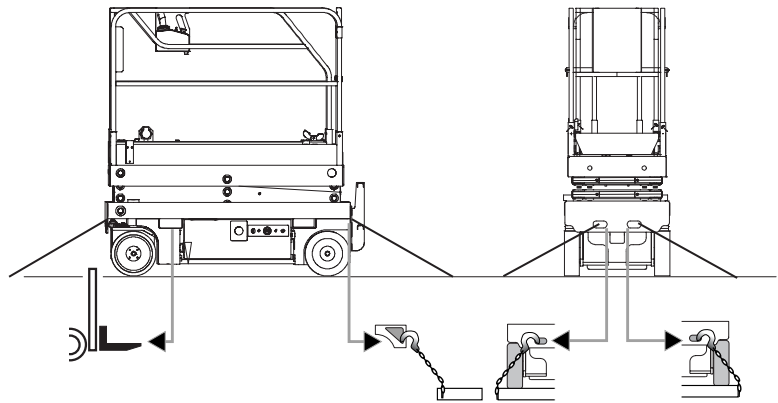
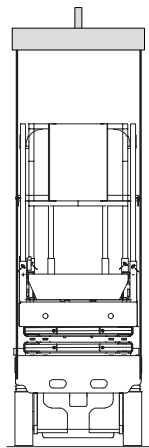
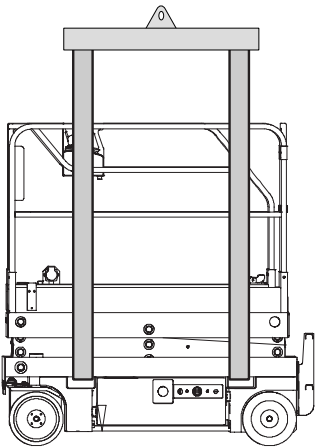
The following precautions should be taken:

- The machine is totally folded.
- The lifting accessories are in good working order and of sufficient capacity.
- Personnel performing the operations are authorised to use lifting equipment.

**Unloading:**

Unloading can be performed with a lift truck or using straps placed in the areas provided (see sketch below).

If a problem occurs, contact PINGUELY-HAULOTTE's After-Sales Department.



 **Caution!**  
 Do not stand under or too close to the machine during manoeuvres.

### 4.2.2 - Unloading with ramps

The following precautions should be taken:

- The machine is totally folded.
- The ramps can withstand the load, adhesion is sufficient to prevent all risks of sliding during the manoeuvre and that the ramps are properly fixed.

**IMPORTANT:** This method requires the machine to be started, see section § 4.3, page 25 to prevent all risk of false movement.

Select low travel speed.

 **Caution!**  
 Do not go down ramps at high speed.

**NOTE:** *On ramps whose slope is greater than 25%, the battery box may touch the ground.*

*If the slope is greater than the maximum slope allowed for travel, use a winch as additional traction or retention means.*



### 4.2.3 - Loading

The precautions are the same as for unloading.

Stowage must be conform to section § 4.2.1, page 24.

To climb the ramps of a truck, use low travel speed.

### 4.2.4 - Transport instructions

- During machine transport, ensure that vehicle capacity, loading surfaces and straps and links are sufficient to bear the machine's weight
- The machine must be on a level surface or fastened before the brakes are released.

## 4.3 - BEFORE THE FIRST OPERATION

Each platform is subjected to permanent quality checks during its manufacture.

Transport may cause damage, which must be reported to the transport company for any claim before the first operation.

---

REMINDER: Before any operation, learn about the machine by reading this manual and the instructions on the various plates.

---

### 4.3.1 - Getting to know the control stations

All movements are controlled from a control desk on the platform extension.

This is the main operating station; it must not be moved to another area on the platform or the "FORWARD" and "REVERSE" controls may be inverted.

The control desk on the chassis is a backup or emergency station only.

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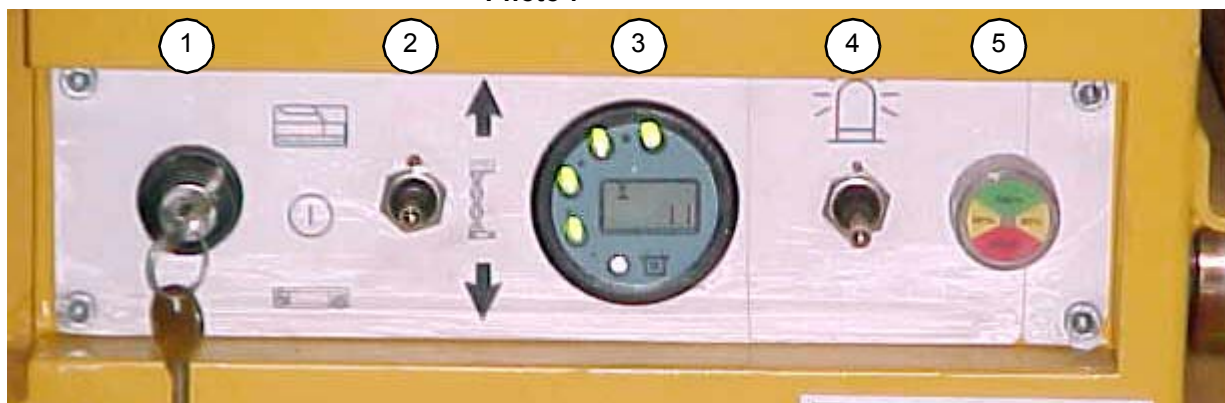
**NOTE:** *Do not perform any movements until you have read the instructions in section § 4.4, page 29*

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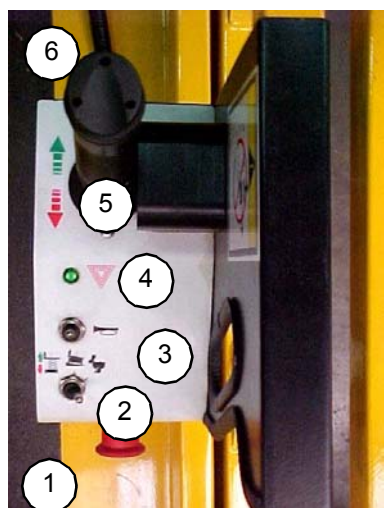
You must be familiar with the machine's characteristics and operation as certain interruptions may cause you think a breakdown has occurred, whereas it is simply the safety systems coming into operation.

### 4.3.1.1 - Chassis control desk

Photo 7



- |                                   |  |
|-----------------------------------|--|
| 1 - Control desk activation key   | 4 - Flashing light (option)              |
| 2 - Control desk selection switch | 5 - Battery charge state light indicator |
| 3 - Timer / battery charge state  |  |



### 4.3.1.2 - Platform control desk

- 1 - Emergency stop button
- 2 - Speed / movement selection (low speed, high speed, lifting, lowering)
- 3 - Buzzer
- 4 - Visual fault indicator
- 5 - Manipulator
- 6 - Steering control switch

Photo 8



Photo 9

## 4.3.2 - Pre-operation check

### 4.3.2.1 - Safety bar

Ensure that the safety bar slides freely enabling access to the platform.

Before operation, the machine must be visually inspected.

### 4.3.2.2 - Overall mechanical appearance of the machine

- Visual inspection of the whole machine: paint chips, missing or slack parts, or battery acid leak should be noted.
- Check that there are no slack bolts, nuts, connections or hoses, no hydraulic leaks, no cut or disconnected electric conductors.
- Check the wheels: no missing or slack nuts.
- Check the tyres: not tears or wear.
- Check the lifting and steering cylinder: no sign of deterioration, oxidation or foreign matter on the rod.
- Inspect the platform and scissor arms: no visible damage, wear or deformation.
- Check the steering axle: no visible excessive wear of the pivot pins, missing or slack parts, deformation or cracks.
- Check the condition of the control box power cable.
- Check the presence of the manufacturer's plate, warning labels and operating manual.
- Check the condition of the safety barrier and sliding access bar.

### 4.3.2.3 - Machine environment

- Check that an extinguisher in working order is available and at hand.
- Always work on a hard floor, able to bear the maximum load per wheel.
- Do not use the machine at temperatures of less than  $-15^{\circ}\text{C}$ , in particular in cold rooms.
- Wipe any traces of oil or grease from the floor, ladder and handrails.
- Ensure that no-one is in the immediate proximity of the machine before lifting or lowering the platform.
- Ensure that there are no obstacles that could affect the following movements:
  - travel (machine movement).
  - platform lifting.

**NOTE:** See "working area" diagram (section § 2.4, page 9)

### 4.3.2.4 - Hydraulic system

- Check the pump and hydraulic unit: no leaks, components properly fixed.
- Check the level of hydraulic oil.

**4.3.2.5 - Batteries**

- Check that the battery terminals are clean and tight (slack or corroded terminals reduce power).
- Check the level of electrolyte: it should be 10 mm above the plates; top up, if necessary, with distilled water.
- Check that the sliding battery tray works properly. (Photo 13, page 32).

**4.3.2.6 - Safety devices**

- Check that the top and bottom emergency stop buttons work properly (Photo 10, page 28 and Photo 12, page 28).
- Check that the tilt detector works properly (Photo 11, page 28): activate it with the platform lifted (red emergency stop button unlocked) the buzzer should sound when the machine reaches its maximum angle.
- Check that the end of stroke contacts are free of all foreign matter.
- Check the visual and audible alarms.



**Caution!**

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

**Photo 10**



**Photo 11**



**Photo 12**



**Caution!**

***These machines are not insulated and must not be used near electric lines.***

## 4.4 - OPERATION

**IMPORTANT:** the machine should only be put into operation after all the checks have been completed.

After use, always lock the emergency stop button.

### 4.4.1 - General recommendations

- Before all movement or overhead work, check that the passage is free of persons, obstacles, holes or slopes, that it is horizontal, hard and firm and able to bear the wheel load.
- Always drive well away from unstable edges or banks.
- Ensure that there is no-one in the immediate proximity of the machine before making any movements. Be particularly careful while the extension is out as visibility is reduced.

**REMINDER:** It is prohibited to drive on public highways.

- To move the machine, it must not be overloaded. In the case of overload, the machine is immobilised.
- Travel movement can only be controlled from the platform control station.
- It is impossible to make travel movements and lift the platform at the same time.

### 4.4.2 - Operation from the ground

#### 4.4.2.1 - Recommendations

**Danger of crushing:**

- Keep hands and limbs away from the scissors.
- Use common sense and prepare machine movement when using the ground control station. Keep a safe distance between the machine and fixed obstacles.
- From the chassis control station, only lifting and lowering controls are possible.

#### 4.4.2.2 - Operating instructions

**Lifting:**

- Ensure that the emergency stop buttons (chassis and platform) (Photo 10, page 28 and Photo 12, page 28) are enabled.
- Turn the key (chassis side) (Ref. 1 - Photo 7, page 26) holding it until the light indicators come on according to the level of battery charge. (Ref 3 - Photo 7, page 26)
- Holding the key in position (chassis side) (Ref. 1 - Photo 7, page 26), raise the platform using the switch. (Ref. 2 - Photo 7, page 26)
- To stop the lifting movement, release the key or the switch.

**Lowering:**

- Ensure that the emergency stop buttons (chassis and platform) (Photo 10, page 28 and Photo 12, page 28) are enabled.
- Turn the key (chassis side) (Ref. 1 - Photo 7, page 26) holding it until the light indicators come on according to the level of battery charge. (Ref 3 - Photo 7, page 26).
- Holding the key in position (chassis side) (Ref. 1 - Photo 7, page 26), lower the platform using the switch. (Ref. 2 - Photo 7, page 26)
- To stop the lowering movement, release the key or the switch.

### 4.4.3 - Operation from the platform

**Caution!**

**Before any operation, check that the required movement has been selected.**

#### 4.4.3.1 - Recommendations

- Do not move the machine unless the safety barriers are correctly installed and the sliding access bar is closed in the movement position.
- Pay attention to reduced visibility conditions and blind spots when driving and moving.
- Be careful of the correct positioning of the extended platform when moving the machine.
- We strongly recommend that operators wear approved helmets when moving the machine.
- Inspect the working area to identify overhead obstructions or other possible dangers.
- Do not perform acrobatic movements or ride a horse on the machine.
- Adapt movement speed according to the condition of the floor, traffic, slope, position of people or any other factor that may cause a collision.
- Do not move the machine in the passageway of a crane or any other overhead machine unless the crane's controls have been locked and/or precautions have been taken to avoid collisions.

The platform emergency stop cuts the line contactor.

#### 4.4.3.2 - Operating instructions

**Lifting:**

- Select the "lifting" mode using the switch (Ref.2 Photo 8, page 26).
- Use the manipulator to lift after pressing the "fail-safe". (Ref 5 Photo 8, page 26)

**Lowering:**

- Select the "lifting" mode using the switch (Ref.2 Photo 8, page 26).
- Use the manipulator to lower after pressing the "fail-safe". (Ref 5 Photo 8, page 26)

When lowering, at 1.5 metres from the ground, a time delay of 3-5 seconds is started to avoid all risk of crushing. The alarm sounds.

**Travel**

Travel is controlled by the manipulator (Ref 5 Photo 8, page 26) after pressing the "fail-safe". Two speeds are possible in the bottom position or if the platform is below 1.5 metres (high and low speed). The speed is selected using the switch Ref.2 Photo 8, page 26.

When the platform is raised above 1.5 metres, only micro-speed is available.

Steering is possible at the same time using the contactor on the top of the manipulator.

## 4.5 - USING THE ON-BOARD CHARGER



**Caution!**  
**Do not use the machine  
during charging.**



**Caution!**  
**In cold weather, the charging  
time increases.**

### 4.5.1 - Characteristics

Traction batteries must be charged with the charger provided. DO NOT OVERCHARGE THEM

- Charger: 24V - 30A
- Power supply: 220V single phase - 50 Hz
- Operating voltage: 24V
- Charging time: approximately 11 hours for batteries discharged by 70% to 80%
- Mains connection: standard plug 2 pins + earth 16A - 230V

### 4.5.2 - Starting the charge

Charging is started automatically when the charger is connected to the mains. The charger is equipped with a light indicator:

- the indicator shows the current state of charge.

### 4.5.3 - Maintenance charging

If the charger remains connected to the mains for more than 48 hours, it starts a charge cycle every 48 hours, after the end of the previous charge in order to compensate for self-discharge.

### 4.5.4 - Charge interruption

Charging is stopped by disconnecting the charger from the mains. If the machine has to be moved during a charge cycle, the charger must be disconnected. This may reduce battery life. After movement, reconnect the charger.

### 4.5.5 - Precautions of use

- Avoid recharging batteries if the electrolyte temperature is higher than 40°C. Leave to cool.
- Keep the top of the batteries dry and clean. Incorrect connection or corrosion may lead to serious power loss.
- If new batteries are used, re-charge them 3 to 5 times after 3 or 4 hours' use.
- The charger has been configured in the plant with the cable provided. If the cable needs replacing, contact PINGUELY-HAULOTTE for authorisation.



## 4.6 - USING AND SERVICING THE BATTERIES

### 4.6.1 - Recommendations

#### Danger of burning:

- The batteries contain acid. Always wear protective gear and goggles when working with the batteries.
- Avoid spilling or touching the battery acid. Spilt battery acid can be neutralised with sodium bicarbonate and water.
- Do not expose the battery or the charger to water and/or rain.

#### Danger of explosion:

- Keep the batteries clear of sparks, flames and lighted cigarettes. The batteries emit an explosive gas.
- The battery drawer must remain open throughout the recharging cycle.
- Do not touch the battery poles or cable clamps with tools that may cause sparking.



Photo 13

The batteries provide the power for your platform.

Here is some advice to enable you to use them to their capacity without risking premature deterioration.

### 4.6.2 - Starting up

- Check the correct level of electrolyte.
- Do not over-use the batteries during the first few cycles.
- Make sure that you do not discharge by more than 80% of nominal capacity. The batteries provide full capacity after approximately ten working cycles.
- Do not add electrolyte before these ten cycles have been completed.

### 4.6.3 - Discharge

- Do not discharge batteries by more than 80% of their capacity in 5 hours.
- Do not leave the batteries discharged.
- If the traction batteries are discharged and only one charge check diode is lit, platform lifting is impossible, only lowering remains possible.
- Check that the controller works properly.
- In cold weather, do not postpone battery re-charging as the electrolyte may freeze.

Backup or emergency procedure (section § 4.7, page 34).

### 4.6.4 - Charge



#### Caution!

**All the controls are disabled when the 220V plug is connected for battery charging.**

- When should I re-charge?
  - When the batteries are discharged between 35 and 80% of their nominal capacity.
  - After a long period without being used.
- How do I re-charge?
  - Ensure that the mains supply is suited to charger consumption.
  - Fill to the minimum electrolyte level if an element has a level lower than this minimum.
  - Work in a clean, well-ventilated area away from naked flames.
  - Open the box.
  - Use the machine's on-board charger. It has a charge output suited to the battery capacity.
- During charging:
  - Do not remove or open the element caps.



- Ensure that the element temperature remains below 45°C (be careful in summer or in a room with a high ambient temperature).
- After charging:
  - Top up the electrolyte if necessary.

#### 4.6.5 - Servicing

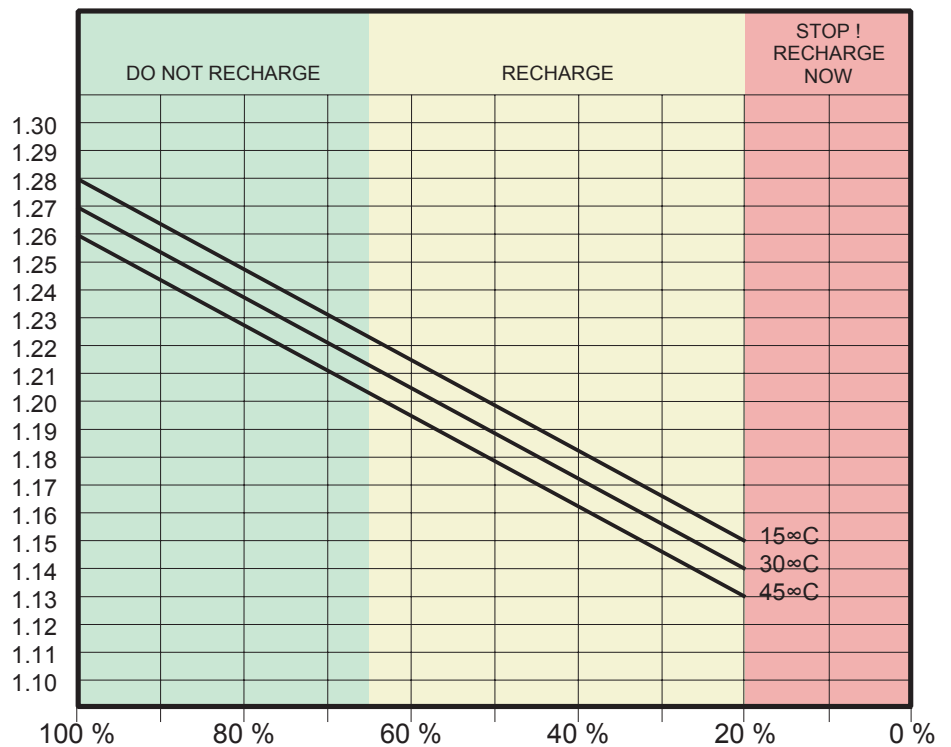


**Caution!**

**Do not electric arc weld on the machine without disconnecting the battery. Do not use the batteries to start the machine.**

- Check the electrolyte levels before charging once a week in normal use.
- If necessary, top up:
  - with distilled or demineralised water,
  - after charging.
- Never add acid (in the event of spillage, contact the PINGUELY-HAULOTTE After-Sales department).
- Never leave batteries discharged.
- Avoid overflow.
- Clean the batteries to avoid salt formation or current drift:
  - wash the top without removing the plugs,
  - dry with compressed air, clean cloths, etc.
  - grease the terminals.
- Battery servicing operations must be carried out with appropriate safety gear (wear protective gloves and goggles).

In order to make a rapid diagnosis of the state of your batteries, note the density of each element as a function of the temperature once a month using a battery hydrometer, referring to the graphs below (do not measure directly after filling).



State of battery charge as a function of density and temperature.

## 4.7 - BACKUP OPERATIONS



Photo 14

### 4.7.1 - Backup lowering

If the electric backup control remains ineffective, the work platform can be lowered manually.

### 4.7.2 - Emergency lowering from the ground

In the event of breakdown, the OPTIMUM 6 and 8 platforms can be lowered using the emergency handle (Photo 14, page 34).

---

 **Caution!**  
**It is forbidden to lower overloads using the emergency lowering operation: risk of overturning.**

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### 4.7.3 - Emergency control

If the operator on the platform becomes unable, the bottom operator can intervene:

- Turn the key (chassis side) (Ref. 1 - Photo 7, page 26) and hold it.
- Holding the key in position, lower the platform using the switch (Ref. 2 - Photo 7, page 26).
- To stop lowering, release the key.

---

**NOTE:** *During backup or emergency operations from the ground with the extension out, it is essential to check that there are no obstacles under the platform (wall, cross rail, electric line, etc.).*

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## 4.8 - BRAKE RELEASE

The brakes are released manually:

Operating instructions:

- Tighten the valve NV1.
- Activate the hand pump until the brakes are fully released.
- Slacken NV2
- Tow the machine at low speed

Once in position:

- tighten NV2,
- slacken NV1.

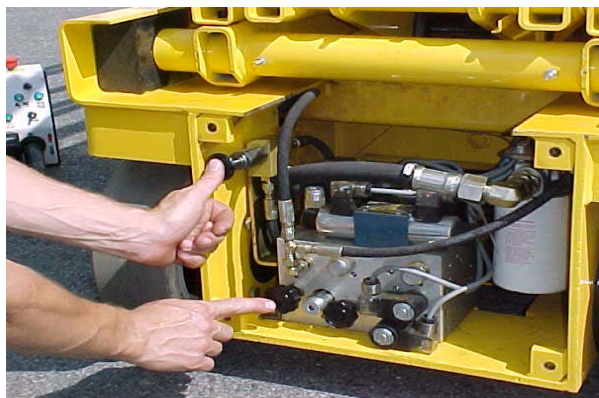


Photo 15

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**NOTE:** *Brake release does not free the steering system. It is therefore advisable to check the position of the steering wheels before towing the machine.*

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## 5 - MAINTENANCE

### 5.1 - GENERAL RECOMMENDATIONS



#### Caution!

**Do not use the machine as a welding earth.**

**Do not weld without disconnecting the (+) and (-) terminals of the batteries.**

**Do not start other vehicles with the batteries connected.**

The servicing operations described in this manual are given for normal operating conditions.

**In difficult conditions:** extreme temperatures, high humidity, polluted atmosphere, high altitude, etc. certain operations should be performed more often and specific precautions taken: consult the PINGUELY HAULOTTE After-Sales department for such cases.

Only approved and skilled personnel may intervene on the machine and must respect the safety instructions concerning Personnel and Environment protection.

**Regularly check that safety systems work properly:**

- 1°) Tilt detector: buzzer + stop (travel and lifting disabled).
- 2°) Platform overload - load.

### 5.2 - MAINTENANCE SYSTEM

The maintenance stand enables the operator to work safely under the machine.

Photo 16



**Operating instructions: (Photo 16, page 35)**

These operations are to be carried out on both sides of the platform.

**Positioning of the maintenance stands:**

- Park the lifting platform on a firm, horizontal floor.
- Ensure that the two emergency stop buttons are "ON".
- Turn the ignition key (chassis side).
- Move the chassis lifting switch upwards to lift the platform.
- Unscrew, turn the 2 maintenance stands and allow to hang vertically.
- Push the lifting switch down to gradually lower the platform until the maintenance stands are in contact with the two fixing points (top and bottom).

**Removing the maintenance stands:**







- Push the chassis lifting switch upwards and gradually lift the platform until the maintenance stands are free.
- Turn the maintenance stands until they return to their storage position and screw back into place.
- Push the chassis lifting switch down and lower the platform completely.

**5.3 - MAINTENANCE PLAN**

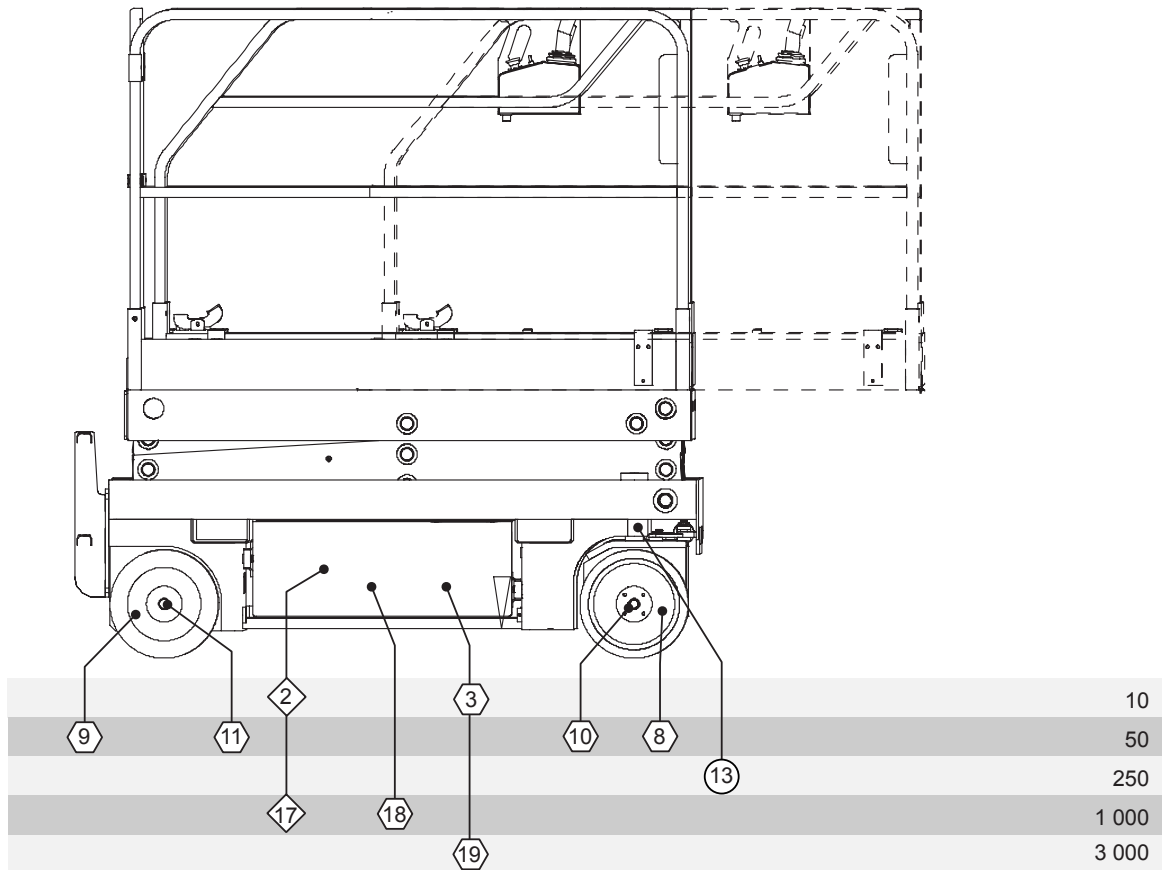
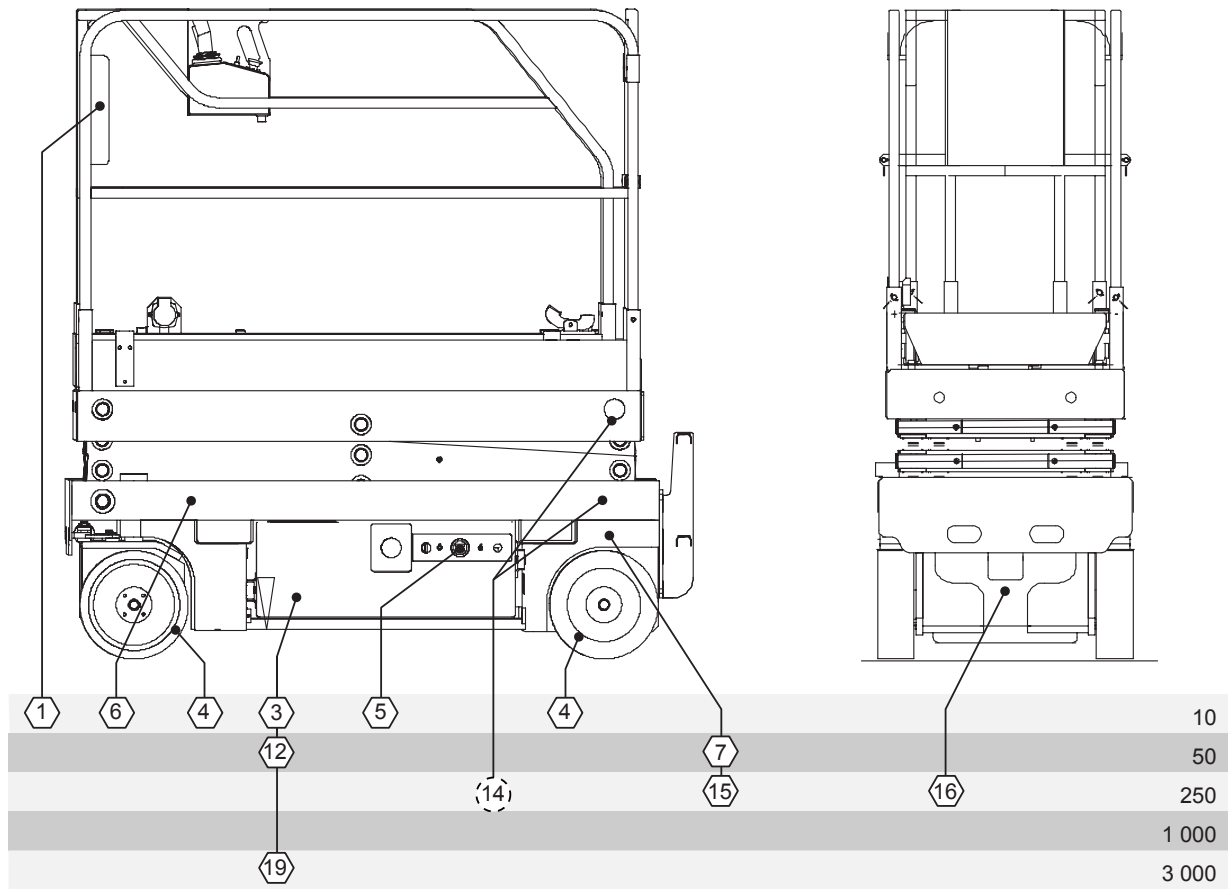
The maintenance plan (see next page) shows the frequency, maintenance points (device) and ingredients to be used.

- The reference shown in the symbol shows the maintenance point according to the frequency.
- The symbol represents the consumable to be used (or the operation to be carried out).

**5.3.1 - Consumables**

Consumable	Specification	Symbol	Lubrificiers used by Pinguely-Haulotte	ELF	TOTAL
Gearbox oil	SAE 15W40		SCHELL RIMULA - X		
Hydraulic oil	AFNOR 48602 ISO VG 46		BP SHF ZS 46	HYDRELF DS 46	EQUIVIS ZS 46
Organic hydraulic oil (option)	BIO ISO 46				
Lithium grease	ISO-XM-2			CARDREXA DC1	
Lithium grease	ENS / EP 700			EPEXA 2	
Lead-free grease	Grade 2 ou 3		ESSO GP GREASE	Multimotive2	Multis EP 2
Exchange or specific operation					

### 5.3.2 - Maintenance diagram



**5.4 - OPERATIONS**

**5.4.1 - Summary table**

FREQUENCY	OPERATIONS	REF
Every day or before each start of operation	<ul style="list-style-type: none"> <li>• Check presence and legibility:                             <ul style="list-style-type: none"> <li>- of CE manual,</li> <li>- of danger warning stickers,</li> <li>- of instruction stickers.</li> </ul> </li> </ul>	1
	<ul style="list-style-type: none"> <li>• Check presence of screws etc.</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Check levels of:                             <ul style="list-style-type: none"> <li>- hydraulic oil</li> <li>- battery electrolyte.</li> </ul> </li> </ul>	3
	<ul style="list-style-type: none"> <li>• Check the condition of:                             <ul style="list-style-type: none"> <li>- wheel solid tyres,</li> <li>- battery charge on the discharge indicator,</li> <li>- wear of the hydraulic hoses,</li> <li>- hydraulic connections (no leaks),</li> <li>- electric cables and wiring harnesses (no corrosion or stripped areas),</li> <li>- wear of scissor arm slides and pads.</li> </ul> </li> </ul>	4
	<ul style="list-style-type: none"> <li>• Check proper operation of the tilt detector.</li> </ul>	5
	<ul style="list-style-type: none"> <li>• Check proper operation of the tilt detector.</li> </ul>	6
Every 50 hours	<ul style="list-style-type: none"> <li>• Only the first 50 hours                             <ul style="list-style-type: none"> <li>- change the hydraulic filter.</li> </ul> </li> </ul>	7
	<ul style="list-style-type: none"> <li>• Check the tightness:                             <ul style="list-style-type: none"> <li>- of screws etc. in general,</li> <li>- front motor fixing screws (9 daNm),</li> <li>- rear brake fixing screws (9 daNm),</li> <li>- front wheel nuts (25 daNm),</li> <li>- rear wheel nuts (25 daNm).</li> </ul> </li> </ul>	8
	<ul style="list-style-type: none"> <li>• Check:                             <ul style="list-style-type: none"> <li>- the condition of electric cables (change if corroded),</li> <li>- density of battery electrolyte,</li> <li>- no battery electrolyte leaks.</li> </ul> </li> </ul>	9
	<ul style="list-style-type: none"> <li>• Check:                             <ul style="list-style-type: none"> <li>- the condition of electric cables (change if corroded),</li> <li>- density of battery electrolyte,</li> <li>- no battery electrolyte leaks.</li> </ul> </li> </ul>	10
	<ul style="list-style-type: none"> <li>• Check:                             <ul style="list-style-type: none"> <li>- the condition of electric cables (change if corroded),</li> <li>- density of battery electrolyte,</li> <li>- no battery electrolyte leaks.</li> </ul> </li> </ul>	11
Every 250 hours	<ul style="list-style-type: none"> <li>• Check:                             <ul style="list-style-type: none"> <li>- the connection of the battery charger,</li> <li>- no cylinder leaks.</li> </ul> </li> </ul>	12
	<ul style="list-style-type: none"> <li>• Grease:                             <ul style="list-style-type: none"> <li>- wheel pivot pins,</li> <li>- friction parts of the scissor arm slides.</li> </ul> </li> </ul>	13
	<ul style="list-style-type: none"> <li>• Change the hydraulic oil filter.</li> </ul>	14
	<ul style="list-style-type: none"> <li>• Clean the motor-pump unit ventilation hole.</li> </ul>	15
Every 500 hours	<ul style="list-style-type: none"> <li>• Oil change: organic hydraulic oil tank (option)</li> </ul>	16
Every 1000 hours or every year	<ul style="list-style-type: none"> <li>• Empty:                             <ul style="list-style-type: none"> <li>- the hydraulic oil tank,</li> <li>- the hydraulic circuit.</li> </ul> </li> </ul>	17
	<ul style="list-style-type: none"> <li>• Clean the motor-pump unit carbon.</li> </ul>	18
	<ul style="list-style-type: none"> <li>• Adjust the pressure limiters.</li> </ul>	18
	<ul style="list-style-type: none"> <li>• Check ring wear.</li> </ul>	18
Every 3000 hours or every 4 years	<ul style="list-style-type: none"> <li>• Replace:                             <ul style="list-style-type: none"> <li>- hydraulic circuit hoses,</li> <li>- batteries.</li> </ul> </li> </ul>	19

REMINDER: All these frequencies must be reduced in the case of work in difficult conditions (consult the After-Sales department if necessary).

### 5.4.2 - Operating instructions

**IMPORTANT:**

- Only use the lubricifiers recommended by PINGUELY-HAULOTTE for filling up and greasing operations. If a problem arises, contact the After-Sales department.
- Collect emptied oil to avoid environment contamination.

#### 5.4.2.1 - Hydraulic oil filter

- Change the cartridge.
- Unscrew the body and remove the cartridge, replace with a new cartridge.



Photo 17



**Caution!**

*Before dismantling, ensure that the oil circuit is no longer pressurised and that the oil is not too hot.*

#### 5.4.2.2 - Greasing the steering wheel pivot pins

Grease the pivot pins with lead-free gease (Photo 18, page 39)

Photo 18

lubrifier



Photo 19

#### 5.4.2.3 - Greasing the slides (Photo 19, page 39)

Grease the slides with lithium grease applied with a spatula.

### 5.4.3 - List of consumables

- Hydraulic filter cartridge (Photo 17, page 39).





## 6 - OPERATING INCIDENTS

The next few pages will give you a starting point for solving any problems that may occur during scissor platform operation.

If a problem arises that is not mentioned in this section or if it is not solved by the solutions proposed, consult qualified technical personnel before performing any maintenance operations. Most problems encountered on this machine occur mainly in the hydraulic and electric systems.

Before anything else, check that:

- the batteries are charged. The green light-emitting diodes should be on.
- the two emergency stop buttons on the chassis control desk and on the platform control box are unlocked.



**Caution!**

**Bubbles + pressure + heat =  
dangerous situation.  
Risk of explosion**

**NOTE:**

*Cavitation (emulsified oil) may cause malfunction of the hydraulic components. It takes approximately 4 hours for the oil emulsified under the effects of cavitation to return to its normal appearance.*

### 6.1 - PLATFORM LIFTING SYSTEM

ANOMALY	CHECK	PROBABLE CAUSE	SOLUTION
No movement when the lifting switch on the box and the manipulator are activated.	Check that movement occurs when the lifting switch on the chassis control box is activated.	<ul style="list-style-type: none"> <li>• Control switch does not work.</li> <li>• Manipulator does not work.</li> <li>• Insufficient oil in the hydraulic circuit.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the switch (After-Sales)</li> <li>• Replace the manipulator (After-Sales)</li> <li>• Fill up with oil as necessary.</li> </ul>
The platform does not go up.		<ul style="list-style-type: none"> <li>• Load on the platform too heavy (personnel or material)</li> <li>• Insufficient oil in the hydraulic circuit.</li> <li>• Batteries discharged by more than 80%: the controller disables the lifting movement.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce load.</li> <li>• Fill up with oil as necessary.</li> <li>• Re-charge the batteries or switch to the thermal motor mode.</li> </ul>
The platform does not come down.		<ul style="list-style-type: none"> <li>• Load on the platform too heavy (personnel or equipment)</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce load.</li> </ul>
The platform moves up and down with a jolty movement.		<ul style="list-style-type: none"> <li>• Insufficient oil in the hydraulic circuit.</li> </ul>	<ul style="list-style-type: none"> <li>• Fill up with oil as necessary.</li> </ul>

**6.2 - TRAVEL SYSTEM**

ANOMALY	CHECK	PROBABLE CAUSE	SOLUTION
No movement when the switch is in the travel position and the manipulator on the platform control box is activated.		<ul style="list-style-type: none"> <li>Manipulator does not work.</li> <li>Insufficient oil in the hydraulic circuit.</li> </ul>	<ul style="list-style-type: none"> <li>Repair or replace the manipulator (After-Sales).</li> <li>Fill up with oil as necessary.</li> </ul>
The machine goes into runaway during lowering.		<ul style="list-style-type: none"> <li>Balancing valve incorrectly adjusted or not working properly.</li> </ul>	<ul style="list-style-type: none"> <li>Adjust or replace the balancing valve (After-Sales).</li> </ul>

**6.3 - STEERING SYSTEM**

ANOMALY	CHECK	PROBABLE CAUSE	SOLUTION
No movement when the manipulator is activated.		<ul style="list-style-type: none"> <li>Insufficient oil in the hydraulic circuit.</li> <li>The control manipulator does not work.</li> </ul>	<ul style="list-style-type: none"> <li>Fill up with oil as necessary</li> <li>Replace the manipulator (After-Sales).</li> </ul>
Noisy hydraulic pump.		<ul style="list-style-type: none"> <li>Insufficient oil in the tank.</li> </ul>	<ul style="list-style-type: none"> <li>Fill up with oil as necessary.</li> </ul>
Hydraulic pump cavitation. (Vacuum in the pump due to a lack of oil).	Hydraulic oil becomes cloudy, opaque and white (bubbles observed).	<ul style="list-style-type: none"> <li>Oil viscosity too high.</li> </ul>	<ul style="list-style-type: none"> <li>Empty the circuit and replace with the recommended oil.</li> </ul>
Hydraulic circuit overheating.		<ul style="list-style-type: none"> <li>Oil viscosity too high.</li> <li>Insufficient oil in the tank.</li> </ul>	<ul style="list-style-type: none"> <li>Empty the circuit and replace with the recommended oil.</li> <li>Fill up with oil as necessary.</li> </ul>
The system works irregularly.		<ul style="list-style-type: none"> <li>The hydraulic oil is not at optimal operating temperature.</li> </ul>	<ul style="list-style-type: none"> <li>Make a few movements without load to enable the oil to heat up.</li> </ul>
The load controller does not work.		<ul style="list-style-type: none"> <li>The controller does not work properly.</li> </ul>	<ul style="list-style-type: none"> <li>Repair or replace the controller.</li> </ul>

## 7 - SAFETY SYSTEM

### 7.1 - RELAY AND FUSE FUNCTION

<i>Reference</i>	<i>Description</i>
FU1	Motor-pump fuse
FU2	Variable speed drive output protective fuse
FU3	Variable speed drive input protective fuse
FU4	Flashing light and working light (option) protective fuse

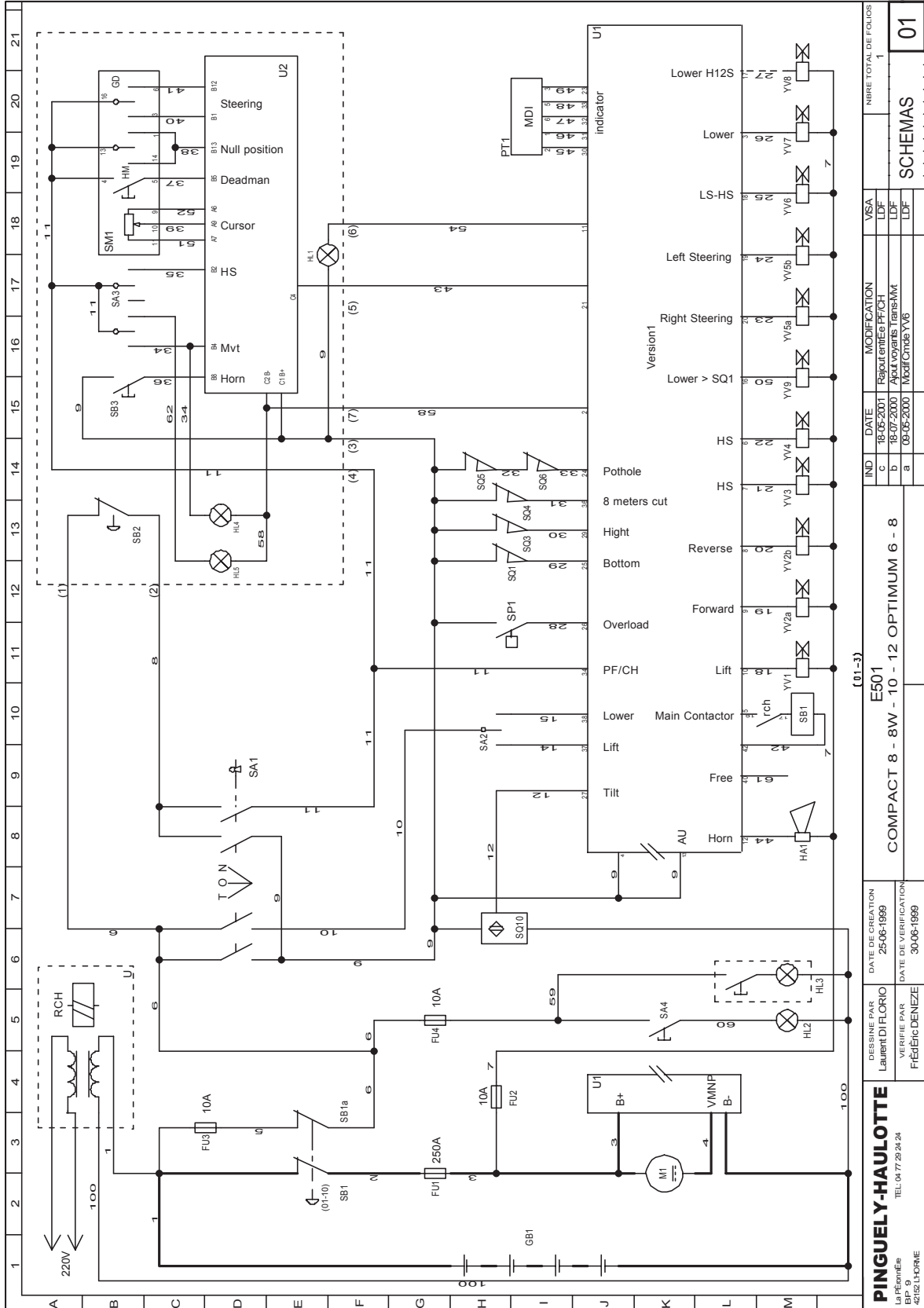
### 7.2 - SAFETY CONTACT FUNCTION

<i>Reference</i>	<i>Description</i>
SB1	Line contactor / Chassis emergency stop button
SB2	Platform emergency stop button
SQ1	Tilt reset position switch
SQ3	Top position switch
SQ5/6	Pothole system out
SQ10	Tilt detector
HL1	Variable speed drive fault light indicator
PT1	Variable speed drive fault numeric indicator



# 8 - WIRING DIAGRAM

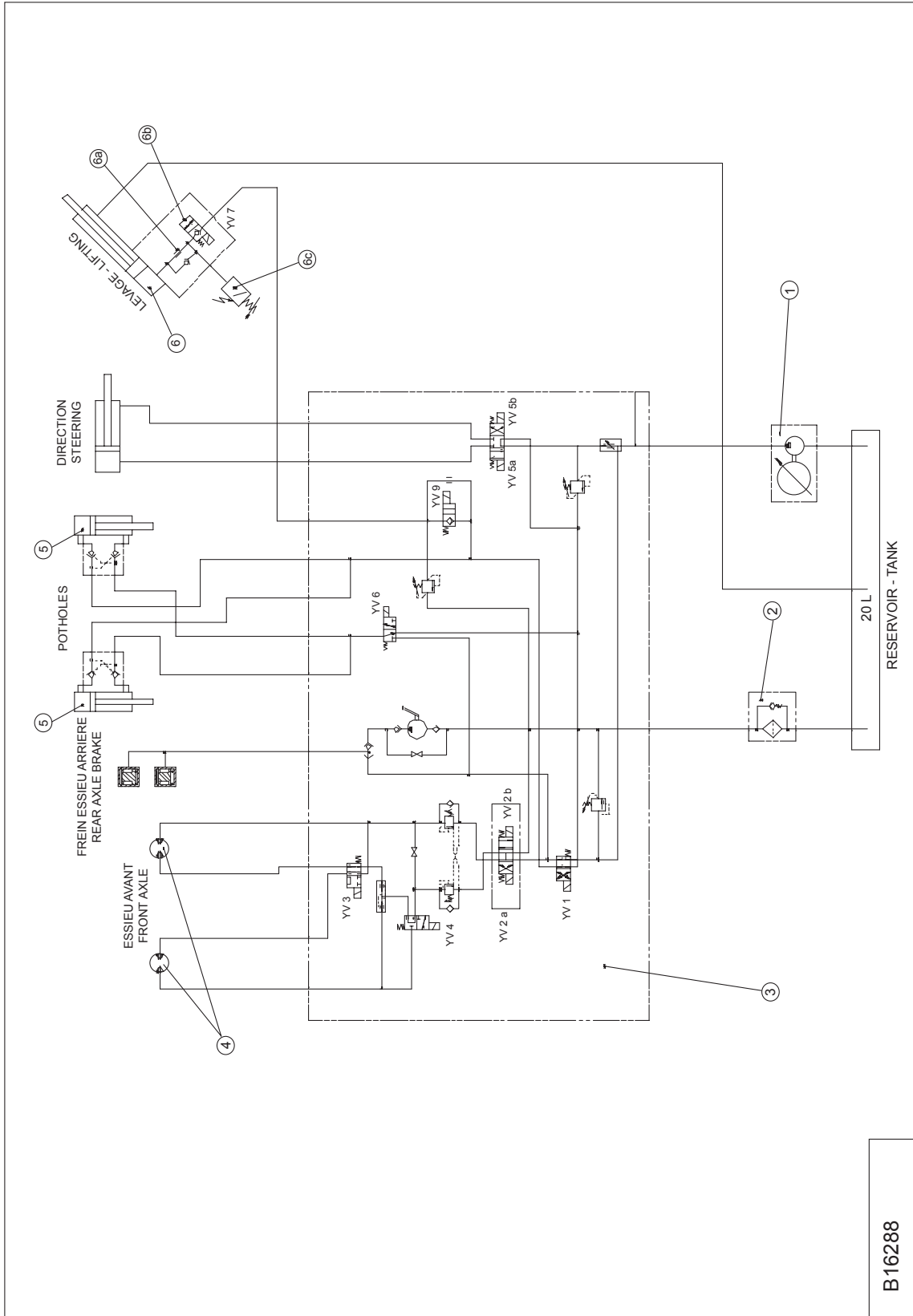
## 8.1 - WIRING DIAGRAM E 501C





# 9 - HYDRAULIC DIAGRAM

## 9.1 - HYDRAULIC DIAGRAM B16288



B16288

