

SIGMA 16 - SIGMA 46 - SIGMA 16 PRO - SIGMA 46 PRO

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**Operator's manual****SIGMA 16 - SIGMA 46
SIGMA 16 PRO - SIGMA 46 PRO**

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USA / GB



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A- Foreword

You have just purchased a HAULOTTE® product and we would like to thank you for your business.

The aerial work platform is a device for lifting people designed and manufactured with the intent to enable users to access overhead elevated temporary workplaces with the necessary tools and equipment. All other uses or alterations/modifications to the aerial work platform must be approved by HAULOTTE®.

This manual shall be considered a permanent component of the machine and shall be kept with the aerial work platform in the designated Manual Holder, at all times.

Safe operation of this product can only be assured if you follow the operating instructions contained in this manual. To ensure the safe and appropriate use of this equipment, only trained personnel are authorised to use and carry out maintenance on the aerial work platform.

We would particularly like to draw your attention to 2 essential points :

- Comply with safety instructions.
- use this equipment within the performance limits specified by this user manual.

With regard to the designation of our equipment, we stress that this is purely for commercial purposes and not to be confused with the technical specifications. Only the specifications in this manual should be used to study the suitability of the equipment for the intended use.

This operator's manual is specific to the HAULOTTE® products listed on the cover page of this manual.



Original language and version :

Manuals in English and French are the original instructions. Manuals in other languages are translations of the original instructions.

The user manual does not replace the necessary training that is required for all of this machine's operators. HAULOTTE® has compiled this manual to assist in safe and efficient operation of the products covered in the manual. The manual must be available to all operators and must be kept in a legible condition. Additional copies can be ordered from HAULOTTE Services®.

Stay Safe and keep working with HAULOTTE® !

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A - Foreword

1 - User responsibility

1.1 - OWNER'S RESPONSIBILITY

The owner (or hirer) has the obligation to :

- To inform operators of the instructions contained in the Operator's Manual.
- Follow local regulations regarding operation of the machine.
- Replace all manuals or labels that are missing or in poor condition. Additional copies can be ordered from HAULOTTE Services®.
- To establish a preventive maintenance program in accordance with the manufacturer's recommendations, taking into account the environment and severity of use of the machine.
- To perform periodic inspections in accordance with HAULOTTE® recommendations and local regulations.

All malfunctions and problems identified during the inspection shall be corrected before the aerial work platform is returned to service.

1.2 - EMPLOYER'S RESPONSIBILITY

The employer (or plant superintendent) is required :

- To train and check the training of users.
- To authorise the trained user(s) to use the machine.
- To inform and familiarize the operator with the local regulations.
- Forbid anyone from operating the machine if :
 - Under the influence of drugs, alcohol, etc.
 - Subject to fits, convulsions, dizziness, etc.

1.3 - TRAINER'S RESPONSIBILITY

- The trainer must be qualified to provide training to operators in accordance with applicable local regulations.
- The training must include all of the instructions in this manual.
- The training must be given in an obstacle-free area until the trainee is considered competent as defined by the training program undertaken.

A - Foreword

1.4 - OPERATOR'S RESPONSIBILITY

The operator has the obligation to :

- Read and understand the contents of this manual and familiarize himself/herself with the decals affixed on the machine.
- To inspect the machine before use according to HAULOTTE®'s recommendations..
- Inform the owner (or hirer) if the manual or any decals are missing or are not legible.
- Inform the owner (or hirer) of any machine malfunction.

Operators must ensure that the inspections have been carried out by the owner and that they can use the machine for the purpose intended by the manufacturer.



All users (driver, passenger, maintainer, transporter, etc.) must familiarise themselves with the emergency controls and machine operation in case of an emergency.

The operator has the obligation to stop using the machine in the event of malfunction or safety problems on the machine or in the work area and report the problem immediately to his/her supervisor.

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A- Foreword

2 - Safety

2.1 - SAFETY INSTRUCTIONS

2.1.1 - Incorrect use

- Do not use the machine outside of the conditions specified in this manual.
- Do not use the machine as a crane, material lift or elevator.
- Do not use the work platform as a hoisting machine (crane) by suspending a load outside of the platform.
- Do not tie the boom or platform to an adjacent fixed or mobile structure.
- Do not use/operate the machine when alone. A survey person or immediate Supervisor must be present on the ground in case of emergency.
- Do not use a faulty or poorly maintained machine. Remove defective/damaged machine from service.
- Do not climb onto the compartment covers of the machine.
- Do not replace items critical to machine stability with items of different weight or specification.
- Do not replace the wheels installed in the factory with wheels with different characteristics.
- Do not alter or disable machine components that in any way affect safety and stability.
- Do not disable the safety devices.
- Do not use the machine if a label is missing or illegible.
- Do not damage, modify or hide machine labels or inscriptions.



A- Foreword

2.1.2 - Falling Hazards

N.B.: -THE GUARDRAIL IS THE MAIN PROTECTION SYSTEM AGAINST FALLS FROM THE MOBILE LIFTING PLATFORM (PEMP).

Before commencing operation :

- Ensure that guard rails are correctly installed and secured.
- Ensure that gate or sliding bar is in its securely locked position.
- If using a machine that has a swing gate, check that the entry gate closes by itself and gate latches and locks.
- Remove oil or grease from the steps, floor, handrail and the guardrails.
- Clean the floor of the platform (no debris).



To enter or exit from the platform :

- The machine must be completely stowed (Access configuration).
- Face the machine to access the opening to the platform.
- Keep 3 points of contact (both hands and a foot) on the steps and the guardrail.
- Keep fingers away from moving parts near entry gate.



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When in the platform :

- Where personal fall protection equipment (FPE) is required by the employer, a competent authority or local regulations, we recommend using a full harness with a safety line.
- Personal fall protection equipment must only be fastened to approved fall protection anchoring points on the platform provided for this purpose.
- Refer to this decal located on the platform.
- Safety lines must never be attached to an object or structure outside of the work platform.
- Hold on securely to the guardrails.
- Always keep your feet firmly on the floor of the platform.
- Do not sit, stand, or climb on the platform guard rails.
- Do not lean on the gate or sliding bar.
- Do not lean over the guard rails or climb over them. Only work in the platform area within the guard rails.
- Do not exit the platform until it is in the completely stowed position.
- Do not use the guardrail as a means of access to climb in or out of the platform.



A- Foreword

2.1.3 - Overturning / Tip-over Hazards

Before positioning and operating the machine :

- Ensure that the surface is capable of supporting the machine weight including the rated capacity. Check the load bearing capacity of the supporting ground.
- Remain vigilant of driving direction reversal at the platform. Check the driving direction with the help of the red or green arrow on the chassis relative to the red and green arrows on the platform control box.
- Do not exceed the maximum rated capacity that includes the weight of both material and allowed number of occupants. Do not exceed the allowable number of occupants.
- Do not increase the working height (using extensions, ladder, etc.).
- Do not place ladders or scaffolds in the platform or against any part of this machine.
- Position loads uniformly in the centre of the work platform.
- Do not use the machine at wind speeds that are above the permissible threshold. Refer to the display on the work platform to view the permissible wind speed.
- Do not increase the surface area of the platform exposed to wind. This includes adding panels, mesh, banners. Failure to follow this instruction may lead to a loss of stability and as a result, the machine could tip over.
- Do not raise the platform or move the machine with the platform raised on a slope with a gradient greater than the machine's permissible limit.
- Do not drive the machine on slopes or grades exceeding the specified limits.
- Do not replace components critical to stability with components of different weight or specification.
- Do not use the machine with material or objects hanging from the guardrail or the boom.
- Do not pull or push towards any object outside of the platform. Do not exceed the maximum allowable side force stated in the performance specifications.
- Do not use the machine to support any external structure.
- Do not use the machine to tow other machines or to drag materials.



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Using the machine on a slope



Do not drive the machine on slopes with gradients exceeding the authorised transversal and lateral limits for the machine.  **Section B 4.1 - Technical characteristics.**

WIND: the aerial work platform can be used up to the maximum wind speed indicated in the specifications in this manual. To identify the local wind speed, use the Beaufort scale below, a wind gauge or an anemometer.

N.B.-:-THE BEAUFORT SCALE OF WIND FORCE IS ACCEPTED INTERNATIONALLY AND IS USED WHEN COMMUNICATING WEATHER CONDITIONS. A WIND SPEED RANGE AT 10 M (32 FT 9 IN) ABOVE FLAT, CLEAR LAND IS ASSOCIATED WITH EACH DEGREE.

Beaufort scale

Force	Meteorological description	Observed effects	m/s	km/h	mph
0	Calm	Smoke rises vertically.	0 - 0,2	0 - 1	0 - 0,62
1	Very light breeze	Smoke indicates the wind direction.	0,3 - 1,5	1 - 5	0,62 - 3,11
2	Light breeze	Wind felt on the face. Leaves rustle. Weather vanes turn.	1,6 - 3,3	6 - 11	3,72 - 6,84
3	Slight breeze	Leaves and small twigs in constant motion. Flags move slightly.	3,4 - 5,4	12 - 19	7,46 - 11,8
4	Nice breeze	Raised dust and loose papers. Small branches are moved.	5,5 - 7,9	20 - 28	12,43 - 17,4
5	Nice breeze	Small trees in leaf to sway. Crested wavelets form on inland waterways.	8,0 - 10,7	29 - 38	18,02 - 23,6
6	Cool wind	Large branches in motion. Power lines and chimneys 'sing'. Umbrellas used with difficulty.	10,8 - 13,8	39 - 49	24,23 - 30,45
7	Near gale	Whole trees in motion. Inconvenience felt when walking against wind.	13,9 - 17,1	50 - 61	31 - 37,9
8	Gale	Some branches break. Generally we cannot walk against the wind.	17,2 - 20,7	62 - 74	38,53 - 45,98
9	Strong gale	The wind causes slight damage to buildings. Tiles and chimney stacks are blown off.	20,8 - 24,4	75 - 88	46,60 - 54,68

A- Foreword

2.1.4 - Risk of electric shock (electrocution)



Risk of death or serious injuries

The machine is not electrically insulated and does not provide protection from contact or proximity to electrically charged conductors.

Always position all parts of the aerial work platform, the occupants, accessories and tools at a reasonable distance from power lines to ensure that no part of the work platform accidentally comes into contact with a power line.

Apply local regulations pertaining to safety distances. If this is not possible, follow the distances in the table below at a minimum :

Minimum safe approach distances

Electric voltage	Minimum safety distance	
	Mètre	Feet
0 - 300 V	Avoid contact	
300 V - 50 kV	3	10
50 - 200 kV	5	15
200 - 350 kV	6	20
350 - 500 kV	8	25
500 - 750 kV	11	35
750 - 1000 kV	14	45

- Do not operate the machine when close to live power lines, consider the movement of the machine and the sway of the electric power lines particularly in windy conditions.
- Do not operate the machine during lightning, thunderstorms, snow/ice or any weather condition that could compromise operator safety.
- Do not use the machine as a ground for welding.
- Do not weld on the machine without first disconnecting the battery terminals.
- Always disconnect ground cable first.
- The machine must not be used while charging the batteries.
- When using the AC power supply, ensure it is protected with a circuit breaker and residual current device.

Keep away from the machine if it contacts energized power lines. Personnel on the ground or in the platform must not touch or operate the machine until energized power lines are shut off.



A- Foreword

2.1.5 - Explosion / Fire Hazards

- Always wear protective clothing and eye wear when working with batteries and power sources/systems.

N.B.:-ACID IS NEUTRALIZED WITH SODIUM BICARBONATE AND WATER.



Do not work on or operate a machine in an explosive or flammable atmosphere / environment.

- Do not touch hot components.
- Do not bridge the battery terminals with metallic objects.
- Do not service the battery in proximity of spark, open flame, lit cigarettes.
- Do not fill up the fuel tank, when the engine is running and/or near a flame.



A- Foreword

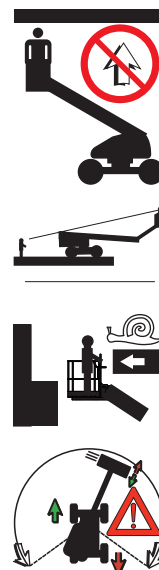
2.1.6 - Crushing / Collision Hazards



Before using the machine, mark out the machine's work and circulation area using a marking system appropriate to the task at hand and the work environment.

When in the platform :

- Check the work area for overhead clearance, for any obstacles besides and below the platform when raising/lowering the platform and or before driving.
- During movement, keep all the parts of the body inside the platform. Hold onto the guardrails on the opposite side to any surrounding structures. Take care to avoid trapping hands whilst holding the guardrails.
- To position machine close to a building/structure, it is recommended using the upper boom and or arms movement control functions to position, rather than driving machine closer to structure.
- Warn personnel not to work, stand, or walk under a raised boom/platform.
- Be aware of the boom position and tail swing when rotating the turret (turntable).
- Always ensure that the chassis is never kept any closer than 1 m (3 ft 3 in) to holes, bumps, slopes, obstructions, debris and ground coverings that may hide holes and other dangers.
- Keep non-operating personnel at least 5 m (16 ft 5 in) away from the machine when driving and slewing.
- Be aware of driving direction.
 - When turret is slewed/rotated 180°, the platform is now facing the rear of the machine.
 - Check the driving direction with the help of the red or white arrows on the chassis and the platform control box.
 - Also note that when changing the driving direction (Forward <> Reverse) the joysticks or switches must return to the neutral position before reversing the drive direction and for movement to occur.
- When driving, position the platform so as to provide the best possible visibility and to avoid any blind spots.
- Hold on securely to the guardrails.



A- Foreword

- **Personal Protection Equipment (EPI) :**
 - The occupants of the aerial work platform must wear personal protection equipment and comply with local regulations in force.
 - Operators must comply with the safety standards of the job site and the employer, as well as the applicable state regulations relating to the use of personal protective equipment.
 - All personal fall protection equipment (PFPE) must comply with current regulations, must be inspected and used in accordance with the manufacturer's instructions.
- Avoid contact with fixed or mobile obstacles (other machines).
- Other machines (crane, aerial work platform, etc.) operating in the work area increase the risk of crushing or collision. Restrict the operation of machines moving within the aerial work platform work area.
- Take into consideration the stopping distance, reduced visibility and blind spots of the machine.
- Limit travel speed to suit the ground surface condition, slope (incline), and people in the vicinity.

2.1.7 - Risk of involuntary movements

Never use a damaged or malfunctioning machine.

Always respect the following rules :

- Maintain clearance from high voltage lines.
- Maintain clearance from generators, radar, electromagnetic fields.
- Never expose the batteries or electrical components to water (high pressure washer, rain).

A- Foreword

3 - Safety inquiries

Inquiries relating to design criteria/specifications of a product, standards compliance, or overall machine safety should be sent to the HAULOTTE® PRODUCT SAFETY department.

Each inquiry or request should include all relevant information; including contact name, telephone number, mailing address, email address, plus the machine model and serial number.

The HAULOTTE® Product Safety department will evaluate each request/inquiry and will provide a written response.

4 - Incident notification

Notify HAULOTTE® immediately when a HAULOTTE® product has been involved in an incident/accident leading to personal injury or death, or when there is a major property damage.

HAULOTTE Group - EUROPE Product Safety Department	HAULOTTE Group - Australia, India and Asia Product Safety Department	HAULOTTE Group - North & South America Product Safety Department
Address : Rue Emile Zola - 42420 Lorette - France	Address : No.26 Changi North Way - Singapore 498812 - Singapore	Address : 3409 Chandler Creek Rd. - Virginia Beach, VA 23453 - United States
Tel : +33 (0)4 77 29 24 24	Tel : +65 6546 0123	Tel : +1 757 689 2146
Email : productsafety.europe@haulotte.com	Email : productysafety.apac@haulotte.com	Email : productsafety.americas@haulotte.com

Connect to our website : www.haulotte.com



A- Foreword

5 - Compliance

5.1 - PRODUCT MODIFICATION

It is strictly forbidden to modify a HAULOTTE® product. Any modification may violate Haulotte design parameters, local regulations and industry standards.

Any requests for modification must be formulated in writing (form) and be approved by the manufacturer.

Do not hesitate to contact HAULOTTE Services®, should you have any questions relating to the issued bulletin(s) or with questions on the policy itself.

5.1.1 - Implementing manufacturer safety campaigns

It is essential to implement the safety campaigns issued by the manufacturer. All of these campaigns are accessible on our website.

Connect to our website : www.haulotte.com



Never market (or sell) a machine without first having carried out all of the safety campaigns.

A- Foreword

5.2 - PRODUCT SPECIFICATIONS

HAULOTTE® cannot be held liable for any changes to the technical characteristics/specifications contained in this manual. HAULOTTE® has a continuous improvement policy in place for its product range. Given this policy, the Company reserves the right to modify products technical characteristics / specifications without notice.

5.3 - CHANGE OF OWNERSHIP NOTIFICATION

It is important and necessary to keep HAULOTTE Services® updated with current ownership of the machine. This way, HAULOTTE® will be able to provide the necessary support for the product. If you have sold or transferred this machine(s); it is your responsibility to notify HAULOTTE Services®. It is not required to include Lessees/Renters of Leased/Rented machines on this form.

Connect to our website : www.haulotte.com



A- Foreword

5.4 - DECLARATION OF CONFORMITY



The CE declarations of conformity only apply to machines that have been approved and commissioned within the European Community (EC).

Declaration of conformity - Electric platforms

DECLARATION CE DE CONFORMITE
(EC DECLARATION OF CONFORMITY)

Fabricant et personne autorisée à constituer le dossier technique : <i>(Manufacturer and the person authorised to compile the technical file:)</i> HAULOTTE GROUP Adresse du site de production <i>(Address of the Division)</i>	Compliance & Regulation Director HAULOTTE GROUP S.A. RUE EMILE ZOLA 42420 LORETTE FRANCE
Nacelle élévatrice de personnel <i>(Mobile Elevating Work Platform)</i>	
en conformité avec le modèle type <i>(In compliance with the Model Type)</i> Nom commercial <i>(Commercial name)</i> Numéro de série <i>(Serial number)</i> Organisme notifié <i>(Notified body)</i> Numéro de certificat <i>(Certificate number)</i> Charge maximale d'utilisation <i>(Rated capacity)</i>	Modèle type de la machine concernée <i>(Type model of the concerned machine)</i> Nom commercial de la machine concernée <i>(Commercial name of the concerned machine)</i> Numéro de série de la machine <i>(Serial number of the machine)</i> Nom et adresse de l'organisme notifié <i>(Name and address of the notified body)</i> Numéro de certificat du type de machine <i>(Certificate number of the type of machine)</i> Charge maximale d'utilisation de la machine concernée <i>(Rated capacity of the concerned machine)</i>
Nous déclarons que cette machine est conforme aux dispositions des Directives suivantes <i>(We hereby declare that this machine conforms with all the relevant provisions of the Directives listed below)</i>	
Directive CE Machine <i>(EC Machinery Directive)</i>	2006/42/CE
Se conforme aux principales exigences de la norme harmonisée <i>(This machine also fulfils the principles of the harmonised standard)</i>	
Directive CE concernant la compatibilité électromagnétique <i>(EC Directive on electromagnetic compatibility)</i>	2014/30/EU
Directive CE RED concernant les équipements radioélectriques (si machine équipée) <i>(RED EC Directive on radio electrical equipment (if machine equipped))</i>	2014/53/UE
Cette déclaration porte exclusivement sur la machine dans l'état où elle a été placée sur le marché <i>(This declaration relates exclusively to the machinery in the state in which it was placed on the market)</i>	
Toute modification de la machine décrite ci-dessus a pour effet d'invalider cette déclaration <i>(Any modification to the above described machine violates the validity of this declaration)</i>	
Nom et signature du Directeur du site de production <i>(Name and signature of the Division Director)</i>	Lieu <i>(Place)</i> Date <i>(Date)</i>

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UKCA Declarations of Conformity only apply to machines that are certified for England, Wales and Scotland.

Declaration of conformity - Electric platforms



UKCA DECLARATION OF CONFORMITY

Manufacturer and the person authorised to compile the technical file:

HAULOTTE GROUP

France



Nathalie Reynolds
General Manager UK and Ireland
Haulotte UK Ltd

Unit 1 Gravelly Way, Four Ashes
Wolverhampton, West Midlands WV10 7GW
ENGLAND

Mobile Elevating Work Platform

In compliance with the Model Type

Commercial name

Serial number

Approved body

Certificate number

Rated Capacity

Model Type of the concerned machine

Commercial name of the concerned machine

Serial number of the machine

Rated capacity of the concerned machine

We hereby declare that this machine conforms with all the relevant provisions of the Regulations listed below

Supply of Machinery (safety)

This machine also fulfils the principles of the designed standards

Electromagnetic compatibility

Radio equipment (if machinery equipped)

2008

BS EN280 : 2013 + A1 : 2015

2016

2017

This declaration relates exclusively to the machinery in the state in which it was placed on the market

Any modification to the above described machine violates the validity of this declaration

Name and signature division director

Date and place

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Notes

[illegible]

B- Familiarization

1 - General safety

1.1 - INTENDED USE

Do not operate the product in the following situations :

- On soft, unstable or cluttered ground.
- With wind blowing faster than the permissible limit :
 - Check the allowable wind speed specified in the performance specifications tabulation.
 - Consult the Beaufort scale.
- Close to power lines. Keep a safe distance.
- If the machine is stored at a temperature out of range - 20°C / + 50°C (- 4°F / + 122°F).
- In an explosive atmosphere / environment.
- During storms.
- In the presence of strong electromagnetic fields.

N.B.-:USE THE MACHINE UNDER "NORMAL" CLIMATIC CONDITIONS. IF YOU NEED TO USE THE MACHINE IN CLIMATIC CONDITIONS LIKELY TO CAUSE DETERIORATION (EXTREME : HUMIDITY, TEMPERATURES, SALINITY, CORROSIVENESS, ATMOSPHERIC PRESSURE), CONTACT HAULOTTE SERVICES®. REDUCE INTERVALS BETWEEN SERVICING.

N.B.-:WHILE THE MACHINE IS NOT IN USE, CARE MUST BE TAKEN TO BRING THE MACHINE TO THE FULLY STOWED POSITION. ENSURE THAT THE MACHINE IS LOCKED IN A SECURE LOCATION, AND THE CONTROL KEY IS REMOVED TO PREVENT UNAUTHORISED USE OF THE MACHINE.

B- Familiarization

1.2 - DECAL CONTENT

The purpose of the labels on the machine is to alert the user to the conditions of use and risks related to aerial work platforms.

Decals provide the following information :

- The level of severity.
- The specific hazard.
- A method to avoid, suppress or reduce the hazard.
- Descriptive text (where required).

Familiarize yourself with the decals and the hazard severity levels.

The labels must be kept in good condition, otherwise they must be replaced.

Familiarize yourself with the decals and their respective color codes.

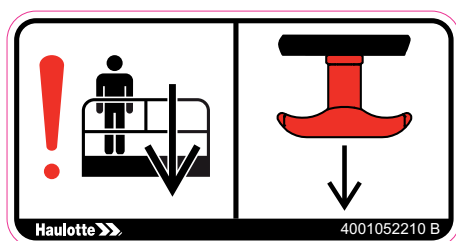
Additional decals can be ordered from HAULOTTE Services®.

CE, UKCA, AS and EAC standards - Label warning risk



Marking	Description
1	Risk identification symbol
2	Avoidance symbol pictorial

CE, UKCA, AS and EAC standards - Label informing about an important function of the machine



B- Familiarization

ANSI and CSA standards



Marking	Description
1	Risk identification symbol
2	Level of severity
3	Avoidance symbol pictorial
4	Avoidance text

B- Familiarization

1.3 - SYMBOLS AND COLORS

Symbols and colors are used to alert the operator of safety precautions and/or to highlight important safety information.

The following safety symbols are used throughout this manual to indicate specific hazards and the hazard severity level when operating or maintaining the Aerial Work Platform.

Symbol	Description
	Danger : Risk of injury or death
	Caution : Risk of material damage
	Prohibited action
	Reminder to use good practice or follow pre-operation checks
	Cross-reference to another part of the manual
	Cross-reference to another manual
	Cross-reference to repair (contact HAULOTTE Services®)
N.B. :	Additional technical information

1.4 - LEVEL OF SEVERITY

Color	Title	Description
	 DANGER	Danger : Indicates a hazardous situation which if not avoided, WILL result in death or serious injury.
	 WARNING	Warning : Indicates a hazardous situation which if not avoided, COULD result in death or serious injury.
	 CAUTION	Caution : Failure to comply could result in minor or moderate injury.
	 NOTICE	Notice : Indicates recommended practices if not followed, may result in a malfunction or damage the machine or its components.
	 PROCEDURE	Procedure : Indicates a maintenance operation.

B- Familiarization

1.5 - SYMBOLS LEGEND AND DEFINITIONS

Symbols are used throughout this manual to depict hazards, avoidance measures and indicate when information is required.

Refer to the following table to familiarize yourself with these symbols.

Symbol	Description	Symbol	Description	Symbol	Description
	Risk of crushing or pinning		Foot crushing hazard		High pressure fluid ejection hazard
			Hand crushing hazard		Crushing hazard
			Health/safety hazards related to chemicals		Burn hazard
	Risk of electrocution		Burns and scalds from contact with flames, explosion or radiation from heat sources		Injury from Electric arcs - Energy supply disconnecting devices - Batteries fire, emissions, etc
	Fall hazard		Tip over due to excessive loading / wind load and excessive ground slope		Relate and coordinate directional arrows on the chassis with those on the control box
	Do not put foot in this area		Do not put your hand in this area		Keep away from product working area
	Use of high-pressure cleaners prohibited		Ensure entry drop rail is down		
	Flames prohibited		Maintain safe clearance from high voltage electrically charged conductors as described in manual - Do not use in thunderstorms		Overload
	Refer to operator manual		Safety belt		Use appropriate lanyard attached to dedicated anchor point.
	Wheel pressure		Enable switch		Use safety prop before attempting any maintenance work
	Tow point		Tie down point		Lift point
	Keep away from hot surfaces		Wear protective equipment		

B- Familiarization

2 - Models description

Models	Regulations						
	CE	UKCA	ANSI	CSA	EAC	AS	JIS
SIGMA 16	✓	✓	✗	✗	✓	✓	✓
SIGMA 16 PRO	✓	✓	✗	✗	✓	✓	✓
SIGMA 46	✗	✗	✓	✓	✗	✗	✗
SIGMA 46 PRO	✗	✗	✓	✓	✗	✗	✗

Legend

✓	Available
✗	Not available

B- Familiarization



Notes

Notes section with horizontal lines for writing.

A

B

C

D

E

F

G

H

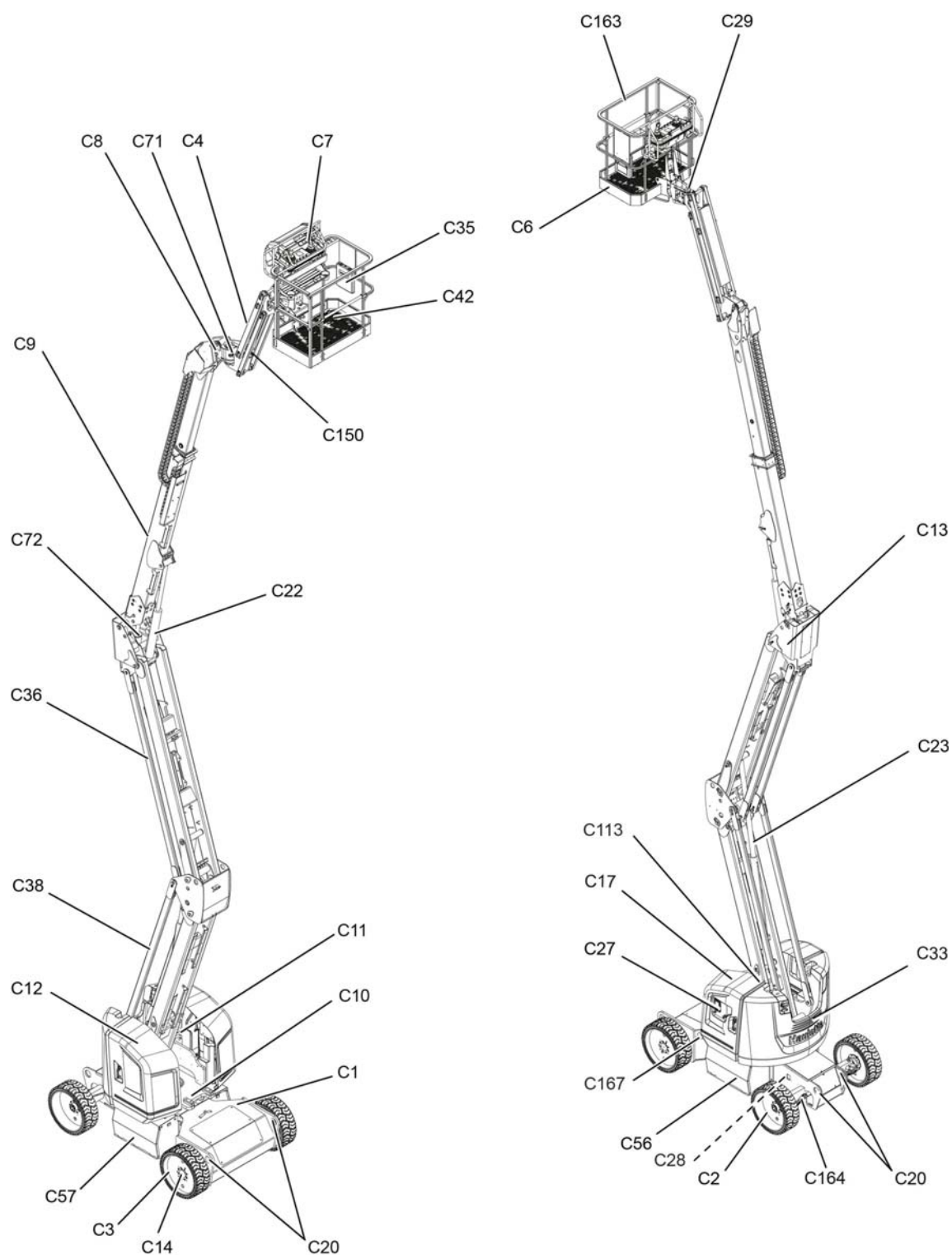
I

B- Familiarization

3 - Primary machine components

3.1 - LAYOUT

SIGMA 16 - SIGMA 46 - SIGMA 16 PRO - SIGMA 46 PRO



B- Familiarization

Marking	Description	Marking	Description
C1	Chassis	C27	Ground control box + Universal plug
C2	Steering wheel	C28	Tilt sensor
C3	Drive wheel	C29	Platform rotation cylinder
C4	Jib	C33	Counterweight
C6	Platform	C35	Document holder
C7	Platform control box	C36	Top arm
C8	Input jib leveling cylinder	C38	Bottom arm
C9	Upper boom	C42	Foot Switch
C10	Slew ring	C56	Battery box - Right (4 6 V batteries)
C11	Turntable assembly	C57	Battery box - Left (4 6 V batteries)
C12	Hydraulic block - Emergency manual lowering	C71	Jib rotation cylinder (If equipped)
C13	Arm/Boom link piece	C72	Output jib compensation cylinder
C14	Electric drive motor and reducer	C113	Beacon light (Optional)
C17	Right side compartment	C150	Jib lifting cylinder
C20	Tie-down (and/or lifting) points	C163	Hand (grab) rail
C22	Boom lift cylinder	C164	Front steering axle
C23	Arm lifting cylinder	C167	Battery charger socket

Universal plug

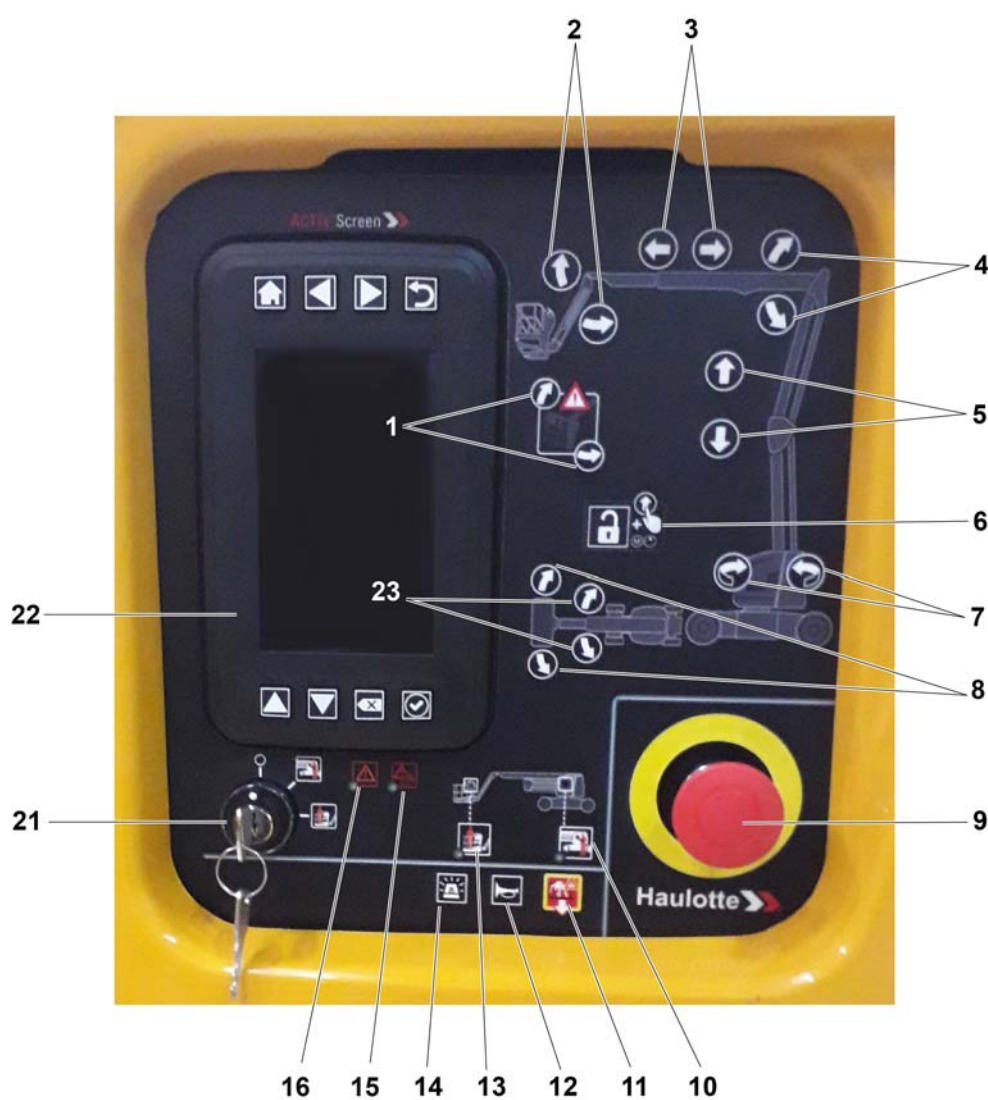


B- Familiarization

3.2 - GROUND CONTROL BOX

3.2.1 - Layout

General view



B- Familiarization

Controls and indicators

Marking	Name	Description	Function
1	SA720U	Platform tilt control	By pressing on  : Tilt the platform towards the front of the machine.
	SA720D		By pressing on  : Tilt the platform towards the back of the machine.
2	SA620U	Jib raising / lowering control	By pressing on  : Jib raising.
	SA620D		By pressing on  : Jib lowering.
3	SA530O	Boom telescoping switch	By pressing on  : Boom extending.
	SA530I		By pressing on  : Boom retracting.
4	SA520U	Boom raising / lowering control	By pressing on  : Boom raising.
	SA520D		By pressing on  : Boom lowering.
5	SA420U	Arm raising / lowering control	By pressing on  : Arm raising.
	SA420D		By pressing on  : Arm lowering.
6	SA905EN	Enable Switch	By pressing on Enable Switch  and simultaneously a desired function will activate a movement.
7	SA250L	Turntable rotation switch	By pressing on  : Counter clockwise (CCW) rotation.
	SA250R		By pressing on  : Clockwise (CW) rotation.
8	SA750L	Platform rotation switch	By pressing on  : Clockwise (CW) rotation.
	SA750R		By pressing on  : Counter clockwise (CCW) rotation.
9	SB801	E-stop button	Pulled out : Ground control box energized. Pushed in (activated) : De-energizes control system.
10	HL905	Indicator, ground control box selected	LED lights up - ground control box icon.

B- Familiarization

Marking	Name	Description	Function
11	SA801	"Overriding system" control	By pressing on  : Authorize movements from the ground control box in case of overload - Use ONLY in case of emergency.
12	SB907	Horn button	By pressing on  : Horn activation.
13	HL906	Indicator of the platform control box selection	LED lights up - platform control box icon.
14	SA903	Beacon light on/off (Optional)	By pressing on  : Beacon light ON / OFF.
15	HL909	Overload indicator - Alarm	Alarm icon  : - The icon lights up for 1 s when switched on. - The icon flashes slowly if the machine is not configured (country, model or component not set). - The icon flashes quickly if the "Overriding system" is in use. - The icon lights up and remains on if there is an overload or a fault in the weighing system; the 'machine overloaded' status is displayed on the Activ' Screen.
16	HL908	Fault indicator	Warning icon  : - The icon lights up for 1 s when switched on. - The icon flashes slowly if the machine is not configured (country, model or component not set). - The icon flashes quickly if the "Overriding system" is in use. - The icon lights up and remains on if a fault is detected and an error code is displayed on the Activ' Screen.
21	SA901	Control box activation key switch	 : De-energizes control system.  : Platform control box energized.  : Ground control box energized.
22	U101	Activ'Screen 2	
23	SA650L	Jib rotation selector ¹	By pressing on  : Clockwise (CW) rotation.
	SA650R		By pressing on  : Counter clockwise (CCW) rotation.

1. For machines fitted with

B- Familiarization

3.2.2 - HAULOTTE Activ'Screen 2

Upon starting and during operation of the machine, the LCD screen "Activ'Screen" located on the ground control box displays in real time the machine operating status.

HAULOTTE Activ'Screen 2

Icon	Description	Function	Icon	Description	Function
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HAULOTTE Activ'Screen 2

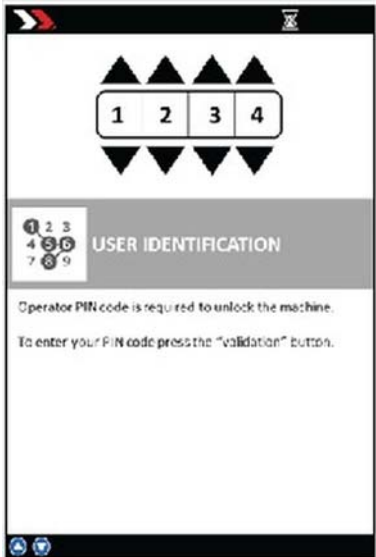


Navigation buttons - Above Activ'Screen display

	Home Button	Allows return to the home screen at any time		Up Navigation	Permits scrolling up through the screen (if present)
	Left navigation	Permits navigation to screens to the left (if present)		Down Navigation	Permits allows scrolling down through the screen and onto the following screen (if present)
	Right Navigation	Permits navigation to screens to the right of the current screen (if present)		Cancel Button	Used to refuse or cancel a selection within the menu
	Back button	Returns the user to the previous screen		Validation Button	Used to confirm selection within the menus

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
		Access code (Will be visible - depending on the machine)		Access code not yet entered	
				Access code entered is correct (Level 1, 2 or 3 depending on authorization of technician)	
				Access code entered is incorrect	

Controls and indicators

Icon	Description	Function	Icon	Description	Function
		Operator PIN code (Will be visible - depending on the machine)	The machine can be personalized with a user identification code. Personalization is only possible with NIV 2 access. Contact HAULOTTE Services®.		
				Operator PIN code not yet entered	
				Operator PIN code entered is correct	
				Operator PIN code entered is incorrect	

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
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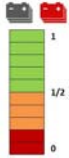
Home screen (dashboard)
(Will be visible - depending on the machine)



	Machine model zone		Machine Model	Machine model display
	Hour meter/next maintenance zone		Hourmeter	The hourglass will flash if there is movement or motion of the machine. .
			Maintenance use	The Maintenance Tool icon and the number of hours remaining until the next maintenance are displayed for 5 seconds when the machine is started up. Maintenance Tool icon blinks; if maintenance is due.
				The maintenance tool icon turns RED when the next scheduled maintenance must be carried out in under 25 hours.

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard) (Will be visible - depending on the machine)					
					
	Functional information zone			Power mode used	• Electrical
				Bargraph	
	Functional information zone			Analog Gauge - Battery charging indicator	The battery discharge indicator turns from GREEN to RED when the battery status is less than 20%
				Analog Gauge - Battery charging indicator (Machine is charging)	 : Charging  : Battery charged

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard) (Will be visible - depending on the machine)					
	Functional information zone			Additional functions	
			Beacon	The icon is ON when the flashing light is switched on	
			Activ' Lighting System	The icon is ON when the Activ' Lighting System is switched on in auto or manual mode	

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard) (Will be visible - depending on the machine)					
	Machine status zone		Pictogram and title	Displays the pictogram and machine status	
			Ready	Machine ready, displayed when no failures and no other machine state icons is active	
			Alarm	The alarm icon blinks in case of : • Machine failure • Failure detected • Machine overloaded • Machine on excessive slope Another icon will be displayed to show the machine's status, the failure or the malfunction	

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard)					
					
	Machine status zone		Platform control selected	Selector switch is in platform control box position	
			Ground control selected	Selector switch is in ground control box position	
			Tilt	The machine is elevated, and is on a slope greater than the permitted slope. Depending on the machine configuration, machine raise and extend functions may be slowed or prevented.	
			Overload	The platform is overloaded. Remove the excessive load to or below the rated capacity, to restore functions. In case of an emergency, to rescue the operator in platform, use the Overriding system.	

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard) (Will be visible - depending on the machine)					
					
	Machine status zone		Activ' Shield Bar disable	The secondary safety system is switched off	
			Activ' Shield Bar triggered	 The secondary safety system is triggered. An operator may be trapped on the platform : • In this situation, supervisor(s) at ground level must turn the control box key selector (21) to the ground control box  position to take control. • The platform box controls are now de-energized. • Check that the E-Stop button (9) at ground is not pressed in. • To safely activate movements from the ground control box, the Enable Switch (6)  must be pressed and held.	

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard) (Will be visible - depending on the machine)					
	Machine status zone		Movement restricted due to critical battery level	The battery level is critical. Battery recharge is mandatory.	
			Battery level low	Recharge batteries.	
			Battery charge complete		

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
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Home screen (dashboard)
(Will be visible - depending on the machine)



	Machine status zone		F12.01 bus CAN fault	CAN network fault between the screen and the rest of the machine
			Screen software obsolete	Screen software update essential Contact HAULOTTE Services®
			Diagnostic in progress	The HaulotteDiag console is connected to the machine

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard) (Will be visible - depending on the machine)					
	Machine status zone		Platform control box E-stop button	E-Stop at platform control box has been pushed in (de-energized). The machine will switch off after several seconds. In an emergency, use this mode.	
			Emergency mode valid	Emergency Mode, use only to rescue trapped or incapacitated operator. Press and hold this Emergency Button AND the movement button required.	
			Emergency mode not active	This is for emergency use. Only active when the load detection system is on.	

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard) (Will be visible - depending on the machine)					
	Machine status zone			Auto beacon	Flashing light control is in automatic mode.
				Activ' Lighting System	The function is off. To switch it on, go to the 'Settings' menu

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Home screen (dashboard) (Will be visible - depending on the machine)					
		General information zone		Machine software version and code	Displays the reference and version of the software installed on the machine
				Machine date and time	Displays the date and time of the machine ECU

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
------	-------------	----------	------	-------------	----------

Machine fault
(Will be visible - depending on the machine)



Machine fault icons

	Failure code F01.xx	Fault-Inverter		Failure code F10.xx	Fault - Functions
	Failure code F02.xx	Fault - power contactor		Failure code F11.xx	Fault - machine safety
	Failure code F03.xx	Fault - command relay		Failure code F12.xx	Fault - electronic control unit ECU - CAN
	Failure code F04.xx	Fault - electro-valve			

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
------	-------------	----------	------	-------------	----------

Machine fault
(Will be visible - depending on the machine)



Machine fault icons

	Failure code F05.xx	Fault - joystick		Failure code F13.xx	Fault - Switches
	Failure code F06.xx	Fault - weight management system		Failure code F15.xx	Fault - data communication system CAN
	Failure code F07.xx	Fault - limit switch or sensor		Failure code F16.xx	Fault - Drive motors
	Failure code F08.xx	Fault - electrical circuit		Failure code F17.xx	Fault - Pump motor

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Filling if battery level alarm (Without automatic centralised filling option)					
If "low water level" battery sensor is active				Low battery water level	Low battery water level : • You must first fully recharge the batteries and then refill the batteries with demineralized water • When the water level is low, high risk of batteries damage

Controls and indicators

Icon	Description	Function	Icon	Description	Function
Filling if battery level alarm (With automatic centralized filling option)					
If low water level tank sensor is active				Low Water level tank :	• Refill the water battery tank with demineralized water.
If "low water level" battery sensor is active				Low battery water level	Low battery water level : • You must first refill the tank with demineralized water and then make a full recharge. • If the level of water is not correct, risk of damage the battery.

B- Familiarization

Controls and indicators

Icon	Description	Function	Icon	Description	Function
A full charge every 45 hours					
	35 hours without full recharge				Warning next recharge must be a full recharge by plugging the machine electrical socket to external source of power to prevent damage on the batteries.
	45 hours without full recharge				You must full recharge by plugging the machine electrical socket to external source of power. Risk of damage on the batteries.

Controls and indicators

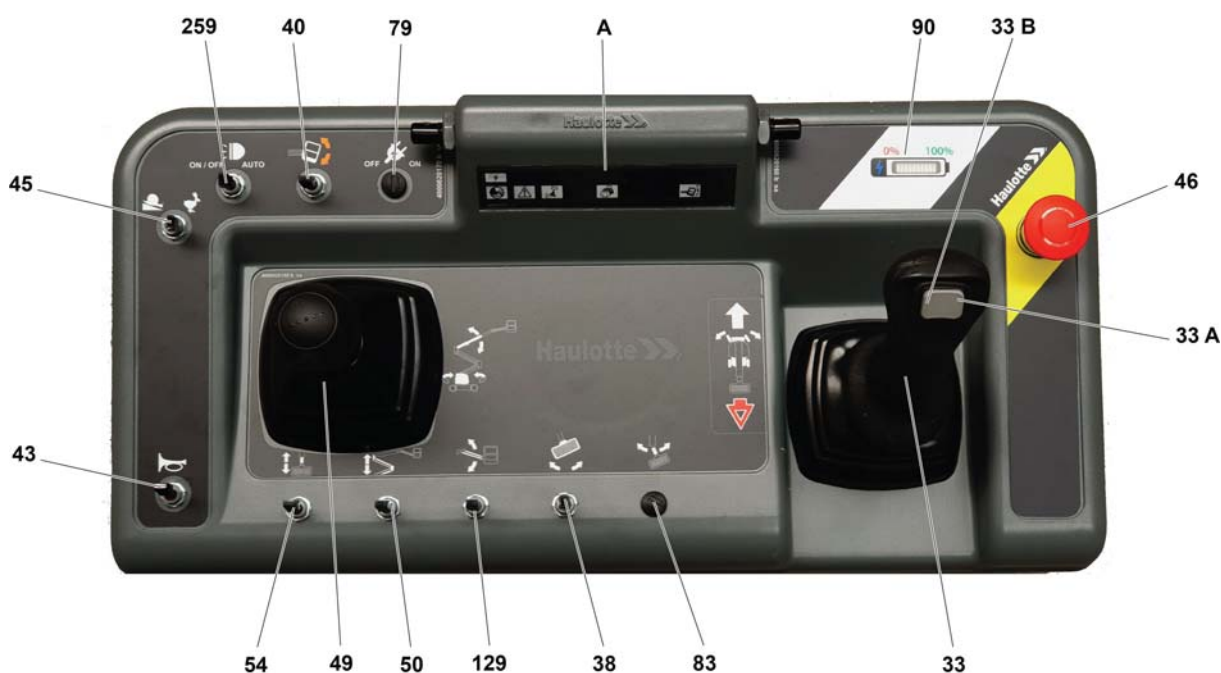
Icon	Description	Function	Icon	Description	Function
Home screen (dashboard)					
					
	Machine status zone		Schedule maintenance	Refer to the Service Manual	
			Too hot to charge	The battery temperature is too high. Charging them now would cause damage.	
			Too cold to charge	The battery temperature is too low. Charging them now would cause damage.	
			High temperature	In order to protect your machine, it is currently on a derating mode.	

B- Familiarization

3.3 - PLATFORM CONTROL BOX

3.3.1 - Layout

General view



Controls and indicators

Marking	Name	Description	Function
33	SM902	Drive joystick	Move forward : Forward drive Move backwards : Reverse drive
33A		Steering button (Steering thumb / rocker switch)	Press right side of button : Steer right
33B			Press left side of button : Steer left
38	SA751	Platform rotation switch	Move to the right : Counter clockwise (CCW) rotation Move to the left : Clockwise (CW) rotation
40	SA721	Platform leveling switch	Move forward : Platform tilt up Move backwards : Platform tilt down
43	SA907	Horn button	Horn
45	SA110	Drive speed selector	 High-speed drive  Low-speed drive - Ramps
46	SB802	E-stop button	Pulled out : Platform control box energized Pressed in : De-energizes control system

B- Familiarization

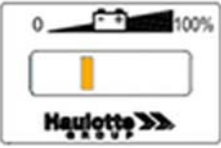
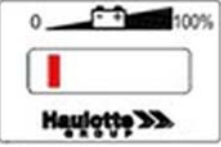
Marking	Name	Description	Function
49	SM900	Turntable rotation joystick	Move to the right : Counter clockwise (CCW) rotation
			Move to the left : Clockwise (CW) rotation
		Boom raise / lower joystick	Move forward : Raise boom
			Move backwards : Lower boom
50	SA421	Arm lifting selector	Move forward : Arm raises
			Move backwards : Arm lowers
54	SA531	Boom telescoping switch	Move forward : Boom retracts
			Move backwards : Boom extends
79	SA906	Power converter control ¹	Move to the left : Control deactivated
			Move to the right : Control activated
83	SA651	Jib rotation selector ²	Move to the right : Counter clockwise (CCW) rotation
			Move to the left : Clockwise (CW) rotation
90	LBB02	Battery charging indicator	Battery charge status. After 45 hours of use without recharging, the last digit of the bargraph will flash red whatever the charge status of the battery On the screen Activ'Screen of the ground control box, the current charge status of the battery will be displayed as well as the message that recharging is complete after 45 hours
129	SA621	Jib raising / lowering control	Move forward : Jib raising
			Move backwards : Jib lowering
259	SA910	Activ' Lighting System selector ³	Move to the left :  ON / OFF
			Move to the right :  Automatic lighting
A	LBB01	Upper control box display (LED 101 - 116)	

1. For machines fitted with
2. For machines fitted with
3. For machines fitted with

B- Familiarization

3.3.2 - Battery charging indicator (90)

Battery charge status

Icon	Function
	From 100% to 50%, the LED is green with the battery charge level displayed
	From 50% to 20%, the LED is orange with the battery charge level displayed
	From 10% to 20%, the second LED is red with the battery charge level displayed
	From 0% to 10%, the first 2 LEDs are alternately red with the battery charge level displayed



After 45 hours of machine movement without fully recharging the batteries and whatever the battery charge status, the first 2 LEDs are alternately red with the battery charge level displayed.

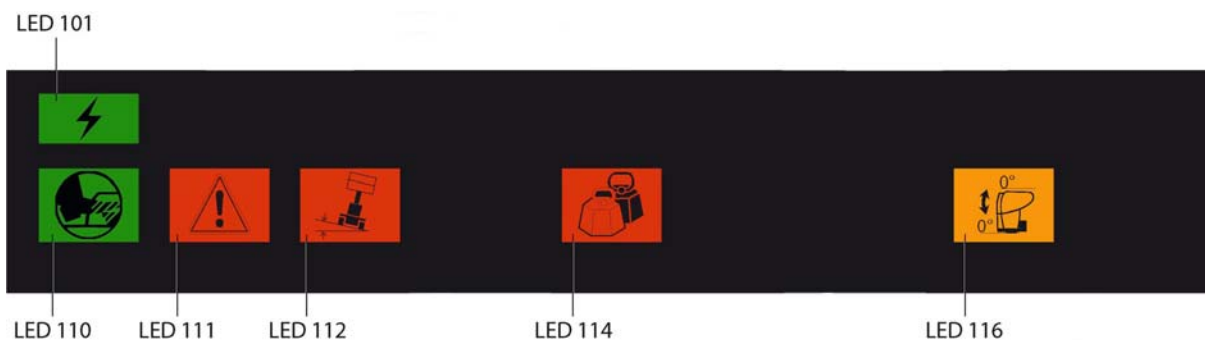


On the screen Activ'Screen of the ground control box, the current charge status of the battery will be displayed as well as the message that recharging is complete after 45 hours.

B- Familiarization

3.3.3 - Display Panel (LED'S 101 - 116)

Upper control box display



Marking	Name	Symbol	Function
LED 101	HL900		Power ON
LED 110	HL807		Foot Switch
LED 111	HL801		Fault
LED 112	HL800		Tilt
LED 114	HL802		Overload
LED 116	HL720		Platform leveling

B- Familiarization

Symbol	Description
	Machine switched on : • Rapid flashing : Machine is ON, but platform control box is not active but the ground control box is ON • Illuminated : Machine is turned on and platform control panel is active
	Foot Switch : • Illuminated when Foot Switch activated
	Faults : • Rapid flashing : If a fault is active (current fault)
	Tilt sensor : • Illuminated when in tilt, machine stowed or unfolded
	Overload : • Rapid flashing : Faulty weighing / overload system • Illuminated when overloaded
	Platform leveling +/- 10° : • Illuminated if the angle of the platform reaches +/- 10° in relation to the horizontal and movement control

B- Familiarization

4 - Performance Specifications

4.1 - TECHNICAL CHARACTERISTICS

Use the table to select the right Haulotte machine for the job.



Do not replace parts that are essential to the stability of the machine, such as batteries or tyres, with parts that have a different weight or different specifications. The stability of the machine could be affected.

CE, UKCA, AS, EAC, CSA and ANSI A92.20 standards

Machine	SIGMA 16		SIGMA 46	
Characteristics - Dimensions	SI	Imp.	SI	Imp.
Maximum working height	16,10 m	52 ft 10 in	16,10 m	52 ft 10 in
Maximum platform height	14,10 m	46 ft 3 in	14,10 m	46 ft 3 in
Maximum horizontal reach	8,35 m	27 ft 5 in	8,35 m	27 ft 5 in
Maximum outreach above the ground	7,85 m	25 ft 9 in	7,85 m	25 ft 9 in
Maximum boom articulation point height	7,40 m	24 ft 3 in	7,40 m	24 ft 3 in
Maximum load capacity	230 kg	500 lbs	230 kg	500 lbs
Jib working range	- 65° / + 65°			
Basket rotation angle	- 82,5° / + 82,5°			
Boom rotation angle	75°			
Turntable rotation	355°			
Maximum number of occupants	2			
Maximum wind speed	45 km/h (12,5 m/s)	28 mph (41 ft/s)	45 km/h (12,5 m/s)	28 mph (41 ft/s)
Gradeability	25 %			
Sideslope	25 %			
Maximum rated slope allowed	4°			
Manual lateral force at platform	400 N - 90 lbf			
Maximum load on wheel	3 670 kg	8,092 lbs	3 670kg	8,092 lbs
Outside turning radius	3,90 m	12 ft 10 in	3,90 m	12 ft 10 in
Inside turning radius	2,52 m	8 ft 3 in	2,52 m	8 ft 3 in
Maximum ground pressure of wheel on paved ground ¹	13,7 daN/cm ²	28 613 lb/ft ²	13,7 daN/cm ²	28 613 lb/ft ²
Total weight	6 900 kg	15,215 lbs	6 900 kg	15,215 lbs
Drive speed :				
• Micro speed (Machine elevated)	0,5 km/h	0.30 mph	0,5 km/h	0.30 mph
• Slow speed (Machine elevated)	2 km/h	1.2 mph	2 km/h	1.2 mph
• High speed (Machine folded/stowed)	5 km/h	3.10 mph	5 km/h	3.10 mph
Maximum freewheel speed during towed operation	5 km/h	3.10 mph	5 km/h	3.10 mph
Power source - Electric				
Type of battery		Battery weight	System voltage	Capacity
Semi-traction battery	Standard	57 kg(125 lb) per block	48V(6V x 8 blocks)	357 Ah (C5)
Battery AGM	Option	54,2 kg(120 lb) per block	48V(6V x 8 blocks)	331 Ah (C5)
Traction battery	Option	22,5 kg(50 lb) per item	48V(6V x 24 items)	360 Ah (C5)
Hydraulic tank capacity	21 L	6 gal US	21 L	6 gal US

1. The pressure values are given for standard machines without Option

B- Familiarization

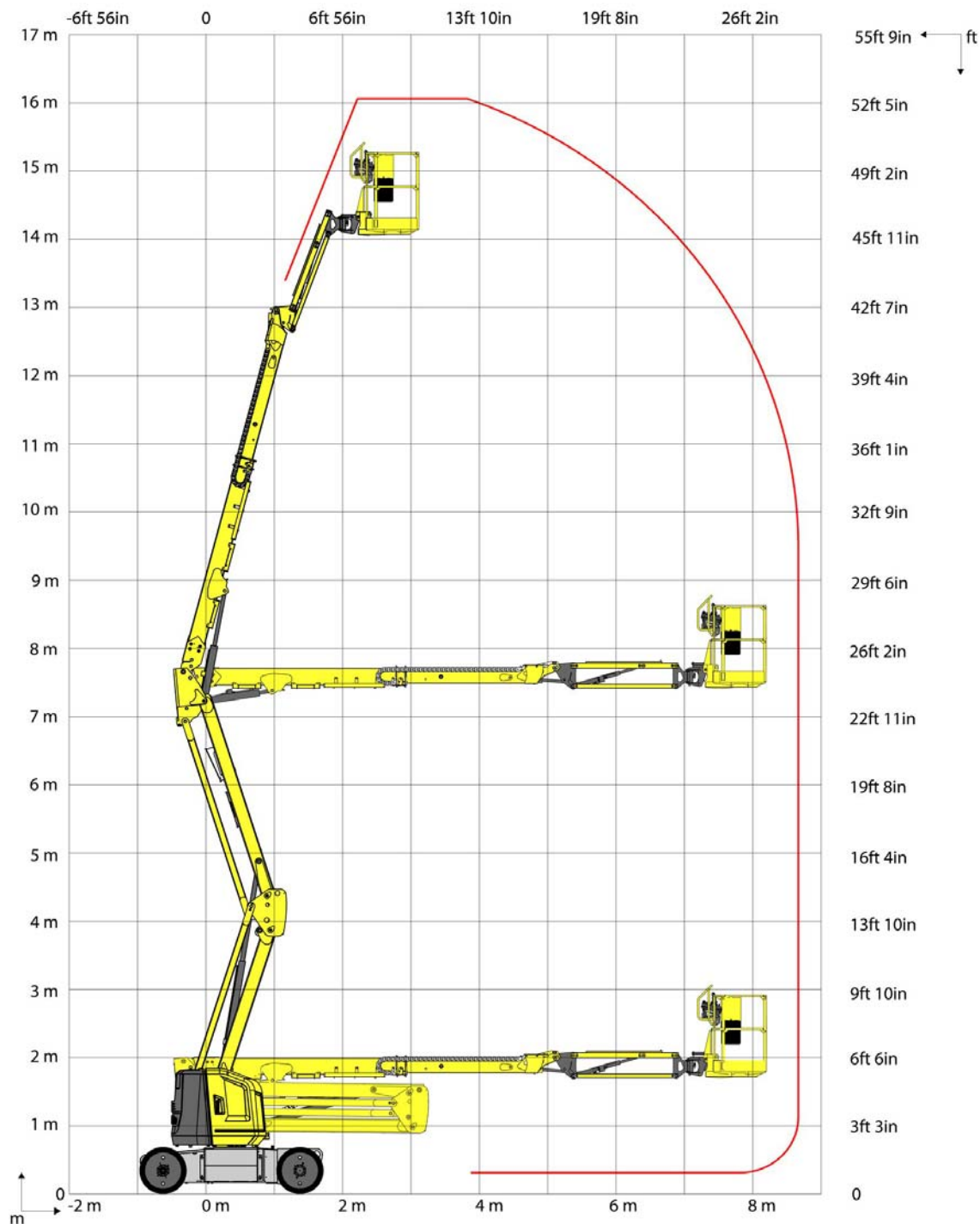
Machine	SIGMA 16 PRO		SIGMA 46 PRO	
Characteristics - Dimensions	SI	Imp.	SI	Imp.
Maximum working height	15,70 m	41 ft 6 in	15,70 m	41 ft 6 in
Maximum platform height	13,70 m	44 ft 11 in	13,70 m	44 ft 11 in
Maximum horizontal reach	8,05 m	27 ft 5 in	8,05 m	27 ft 5 in
Maximum outreach above the ground	7,55 m	24 ft 9 in	7,55 m	24 ft 9 in
Maximum boom articulation point height	7,40 m	24 ft 3 in	7,40 m	24 ft 3 in
Maximum load capacity	230 kg	500 lbs	230 kg	500 lbs
Jib working range	- 65° / + 65°			
Horizontal jib rotation	- 55° / + 55°			
Basket rotation angle	- 82,5° / + 82,5°			
Boom rotation angle	75°			
Turntable rotation	355°			
Maximum number of occupants	2			
Maximum wind speed	45 km/h (12,5 m/s)	28 mph (41 ft/s)	45 km/h (12,5 m/s)	28 mph (41 ft/s)
Gradeability	25 %			
Sideslope	25 %			
Maximum rated slope allowed	4°			
Manual force	400 N - 90 lbf			
Maximum load on wheel	3 670 kg	8,092 lbs	3 670 kg	8,092 lbs
Outside turning radius	3,90 m	12 ft 10 in	3,90 m	12 ft 10 in
Inside turning radius	2,52 m	8 ft 3 in	2,52 m	8 ft 3 in
Maximum ground pressure of wheel on paved ground ¹	13,7 daN/cm ²	28 613 lb/ft ²	13,7 daN/cm ²	28 613 lb/ft ²
Total weight	6 950 kg	15,325 lbs	6 950 kg	15,325 lbs
Drive speed :				
• Micro speed (Machine elevated)	0,5 km/h	0.30 mph	0,5 km/h	0.30 mph
• Slow speed (Machine elevated)	2 km/h	1.2 mph	2 km/h	1.2 mph
• High speed (Machine folded/stowed)	5 km/h	3.10 mph	5 km/h	3.10 mph
Maximum freewheel speed during towed operation	5 km/h	3.10 mph	5 km/h	3.10 mph
Power source - Electric				
Type of battery		Battery weight	System voltage	Capacity
Semi-traction battery	Standard	57 kg(125 lb) per block	48V(6V x 8 blocks)	357 Ah (C5)
Battery AGM	Option	54,2 kg(120 lb) per block	48V(6V x 8 blocks)	331 Ah (C5)
Traction battery	Option	22,5 kg(50 lb) per item	48V(6V x 24 items)	360 Ah (C5)
Hydraulic tank capacity	21 L	6 gal US	21 L	6 gal US

1. The pressure values are given for standard machines without Option

B- Familiarization

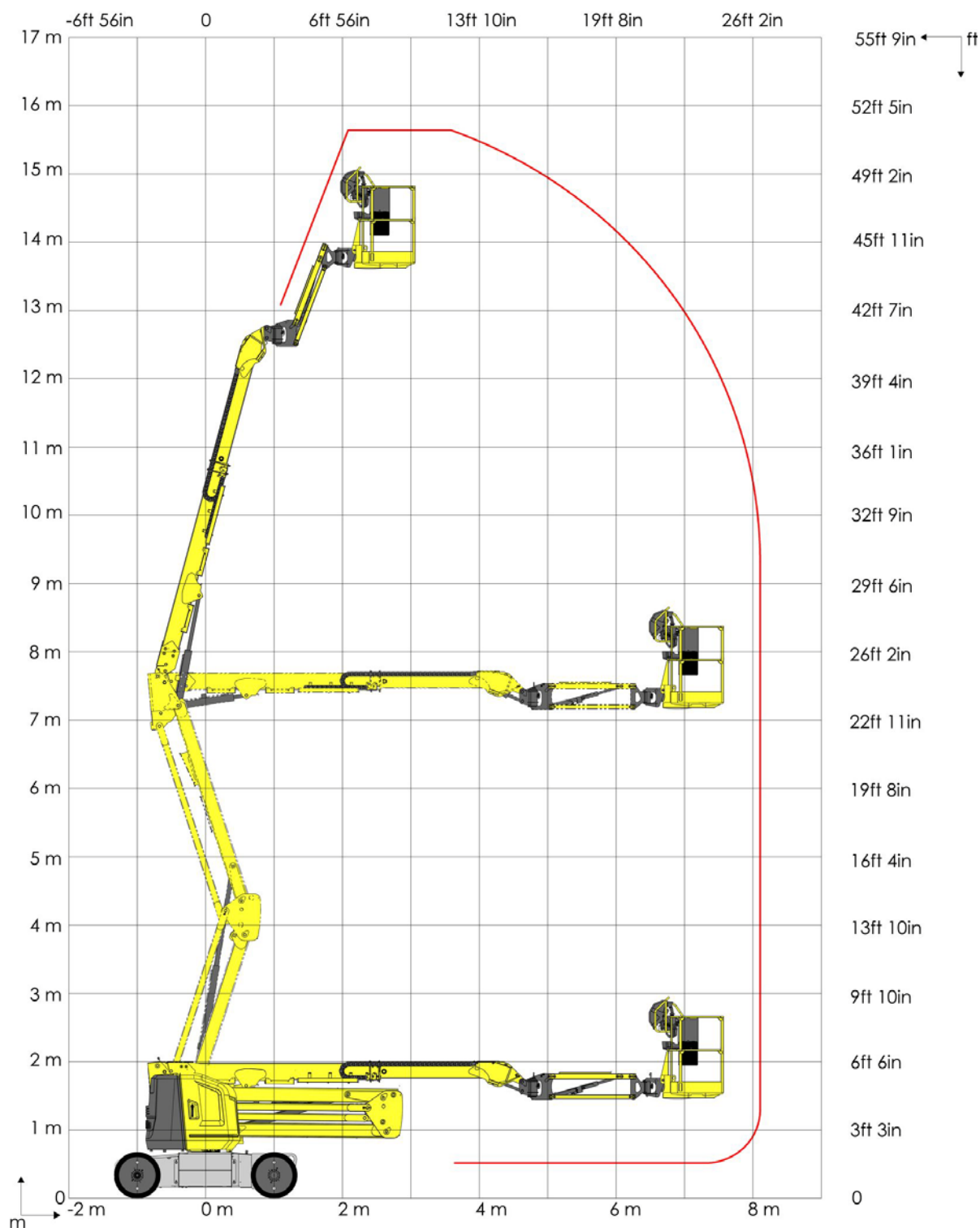
4.2 - WORKING AREA / RANGE OF MOTION

SIGMA 16 - SIGMA 46



B- Familiarization

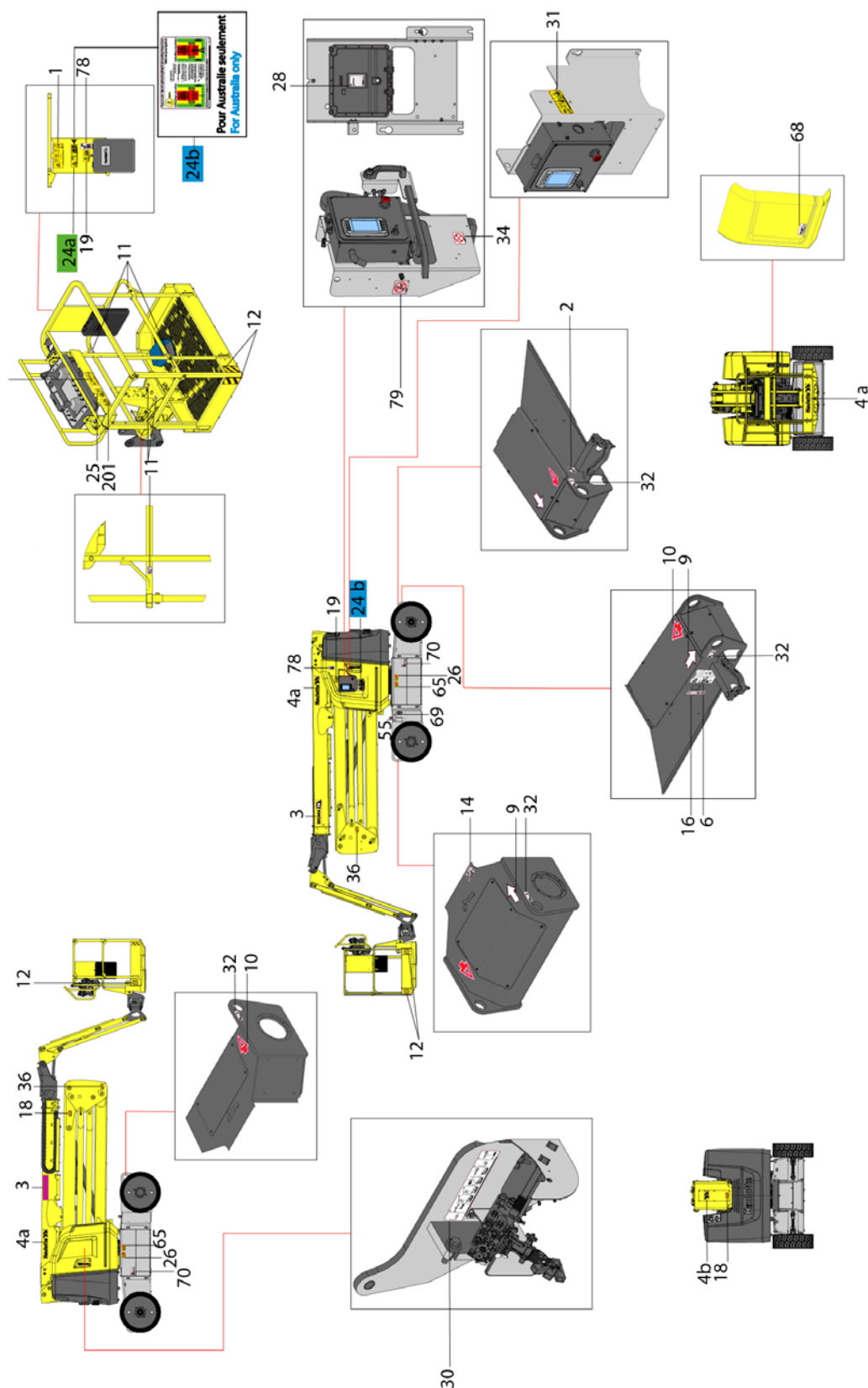
SIGMA 16 PRO - SIGMA 46 PRO



B- Familiarization

5 - Decals and markings locations

CE, UKCA, AS and EAC standards - 4001102610 F - SIGMA 16



**CE, UKCA, AS and EAC standards -
4001102620 F - SIGMA 16 PRO**



B- Familiarization

CE, UKCA, AS and EAC standards

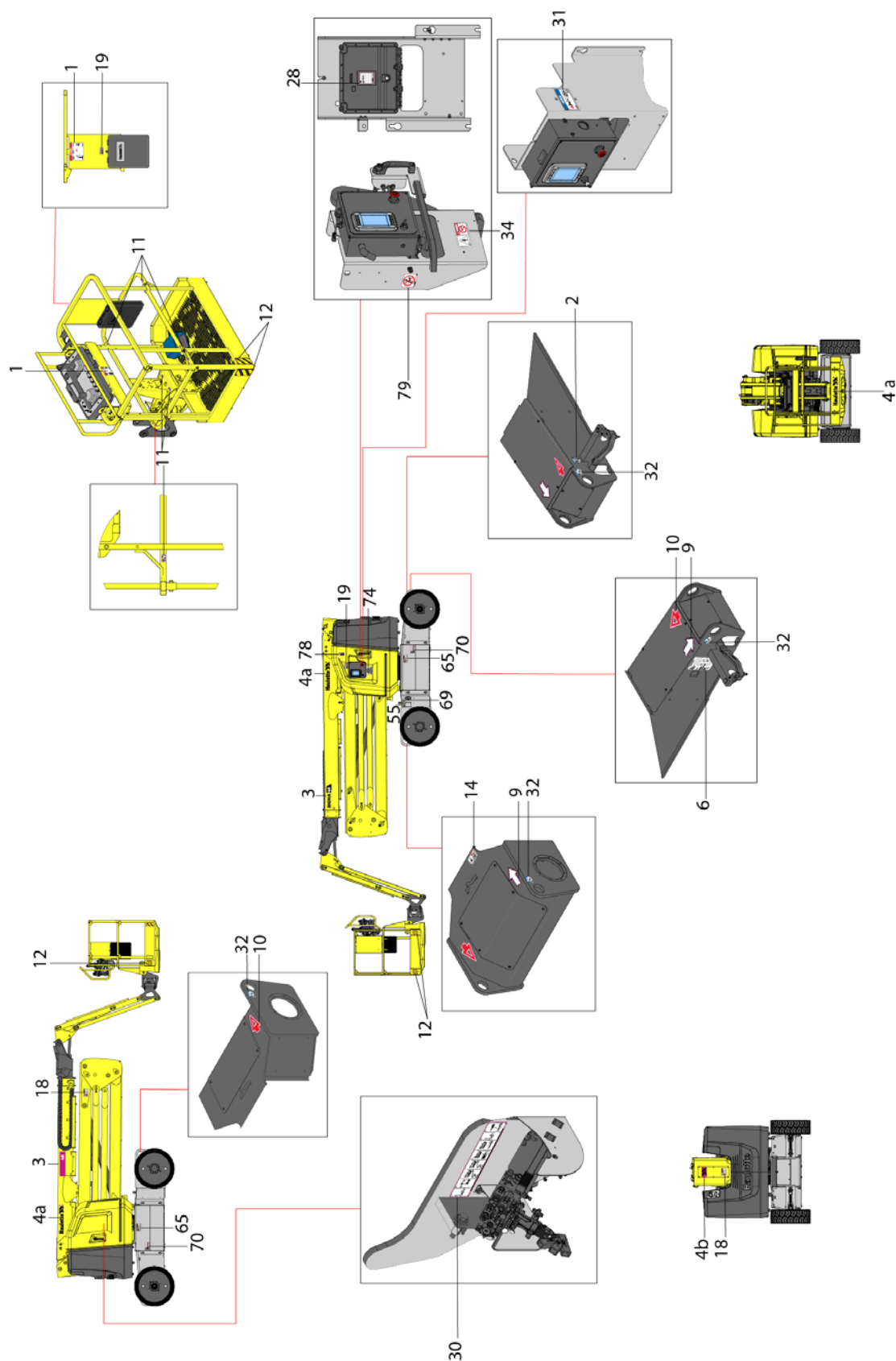
Marking	Description	Quantity	SIGMA 16	SIGMA 16 PRO
1	Height of the floor and load	2	4001082720	4001082760
2	Maximum Pressure per Tire - Floor Loading	4		4001083100
3	Commercial name - Bright machine	2	4001082410	4001082390
3	Commercial name - Dark machine	2	4001122420	4001122430
4a	Decal HAULOTTE® - Bright machine	3		4001072210
4a	Decal HAULOTTE® - Dark machine	3		4001072220
4b	Decal HAULOTTE® - Bright machine	1		4001072250
4b	Decal HAULOTTE® - Dark machine	1		4001072260
6	Identification plate	1	For CE, AS and EAC standards only : 4000700160 UKCA standard only : 4001188820	
9	Control of movements - WHITE directional arrow	2		4001083270
10	Control of movements - RED directional arrow	2		4001083390
11	Lanyard attachment points	6		4001052020
12	Material risk - Yellow and black adhesive tape	3		4001083240
12	Material risk - Yellow and black adhesive tape	2		4001083250
14	Collision hazard - Turntable rotation locking pin	1		4001081530
16	Max and min oil level	1		4001052060
18	Hand crushing hazard - Risk of crushed hands	2		4001052080
19	Operation instructions	2		4001052090
24a	Danger of electrocution	1	For CE, UKCA and EAC standards only : 4001052120	
24b	Danger of electrocution	2	For AS standard only : 4001052140	
25	Risk of crushing - Closing drop rail	1		4001052150
26	Danger of electrocution - Ground for welding	2		4001052160
28	Software version	1		4000504670
30	Hand pump	1		4001083080
31	Brake release	1		4001083070
32	Anchorage point - Traction	4		4001052180
34	Risk of electrocution - Water projection	1		4001052200
36	Risk of crushing - Emergency lowering	2		4001081590
55	Risk of electrocution - Charger - 240 V	1		4001074270
65	Fire Hazard	2		4001052270
68	Transport height	1		4001081770
69	Battery isolation switch	1		4001040220
70	Information - AC MAINTENANCE-FREE MOTORS - Bright machine	2		4001053450
70	Information - AC MAINTENANCE-FREE MOTORS - Dark machine	2		4001053500
75	Information - ACTIV' ENERGY MANAGEMENT - Bright machine	2		4001053460
75	Information - ACTIV' ENERGY MANAGEMENT - Dark machine	2		4001053510
78	QR Code ( https://www.e.technical-information.com)	2		4001089310
79	Electrical connection	1		4001101260
201	Wearing of a safety harness is essential	1		4001052300
303	Option - Activ' Shield Bar	1		4001081630
304	Option - Activ' Shield Bar	1		4001069620
305	Option - Activ' Shield Bar - Do not lean on the bar	1		4001069640
	Option - Demineralized Water	1		4001052340

Notes

[illegible]

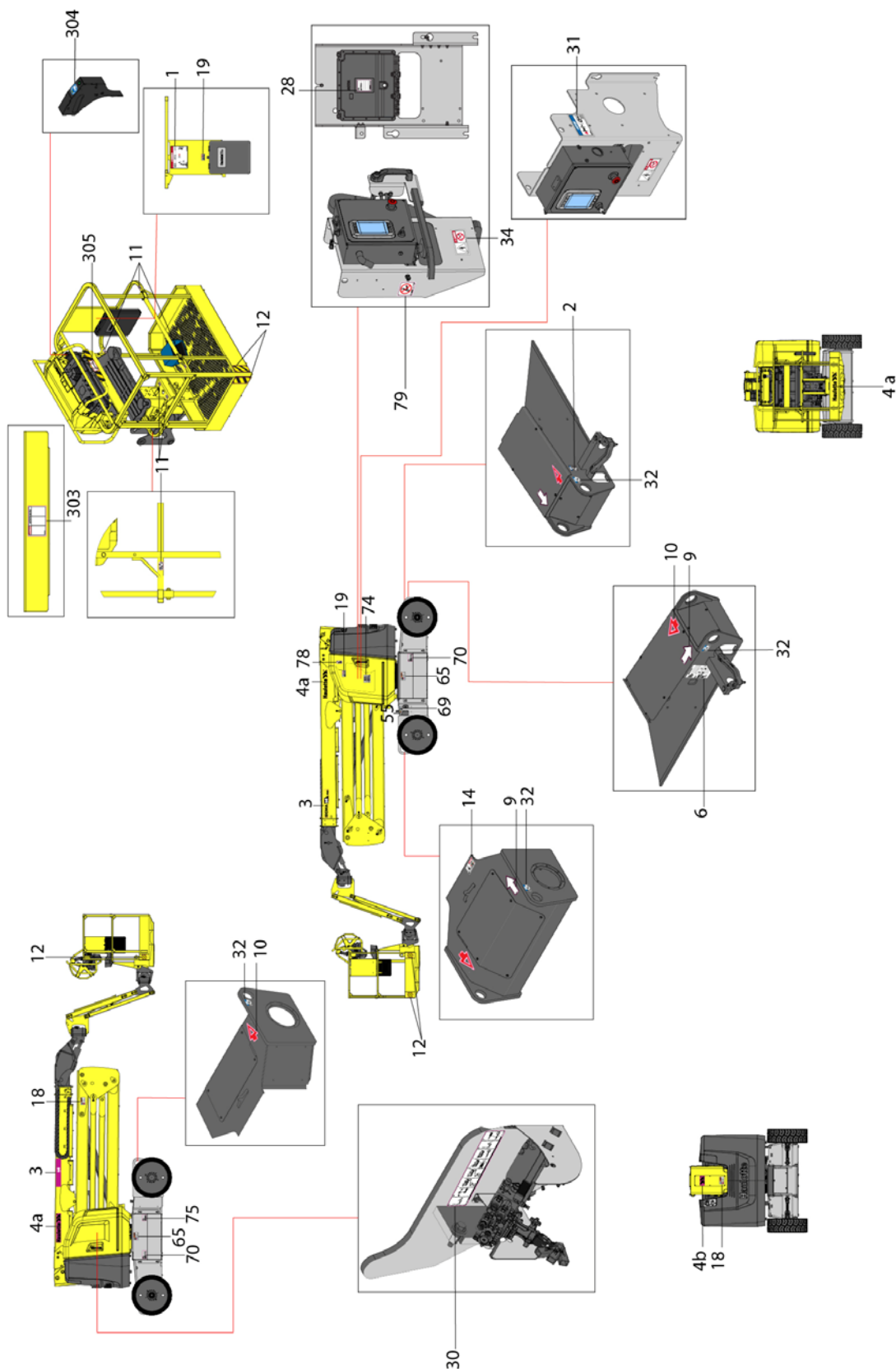
B- Familiarization

ANSI and CSA standards - 4001102950 F - SIGMA 46



B- Familiarization

ANSI and CSA standards - 4001102960 F - SIGMA 46 PRO



B- Familiarization

ANSI and CSA standards

Marking	Description	Quantity	SIGMA 46	SIGMA 46 PRO
1	Height of the floor and load	2	4001083740	4001083780
2	Maximum Pressure per Tire - Floor Loading	4	4001083100	
3	Commercial name - Bright machine	2	4001082520	4001082460
3	Commercial name - Dark machine	2	4001082480	4001082440
4a	Decal HAULOTTE® - Bright machine	3	4001072210	
4a	Decal HAULOTTE® - Dark machine	3	4001072220	
4b	Decal HAULOTTE® - Bright machine	3	4001072250	
4b	Decal HAULOTTE® - Dark machine	1	4001072260	
6	Identification plate	1	4000700170	
9	Control of movements - WHITE directional arrow	2	4001083270	
10	Control of movements - RED directional arrow	2	4001083390	
11	Lanyard attachment points	6	4001052020	
12	Material risk - Yellow and black adhesive tape	3	4001083240	
12	Material risk - Yellow and black adhesive tape	2	4001083250	
14	Collision hazard - Turntable rotation locking pin	1	4000027080	
18	Hand crushing hazard - Risk of crushed hands	2	In english : 4000024770 In french : 4000067710 In spanish : 4000086490	
19	Operation instructions	2	4000025140	
28	Software version	1	4000504670	
30	Hand pump	1	4001083080	
31	Brake release	1	4000361570	
32	Anchorage point - Traction	4	4000027310	
34	Risk of electrocution - Water projection	3	4000025130	
55	Risk of electrocution - Charger - 240 V	1	4000419150	
65	Fire Hazard	2	In english : 4000025030 In french : 4000068120 In spanish : 4000086550	
69	Battery isolation switch	1	4000420650	
70	Information - AC MAINTENANCE-FREE MOTORS - Bright machine	2	4001053450	
70	Information - AC MAINTENANCE-FREE MOTORS - Dark machine	2	4001053500	
74	California warning - P65	1	4001026850	
75	Information - ACTIV' ENERGY MANAGEMENT - Bright machine	2	4001053460	
75	Information - ACTIV' ENERGY MANAGEMENT - Dark machine	2	4001053510	
78	QR Code ( https://www.e.technical-information.com)	2	4001089310	
79	Electrical connection	1	4001101260	
303	Option - Activ' Shield Bar	1	4000609540	
304	Option - Activ' Shield Bar	1	4000596720	
305	Option - Activ' Shield Bar - Do not lean on the bar	1	4000206690	
	Option - Demineralized Water	1	4000668080	

Notes

[illegible]

C - Pre-operation inspection

1 - Recommendations

The owner, the site manager, the supervisor and the operator are all responsible to ensure the machine is fit for the work it is to perform; i.e. that the machine is suitable to carry out the work in complete safety and in compliance with this Operator's Manual. All managers who are responsible for persons operating the machine must be familiar with the local regulations currently applicable in the country of use and ensure that they are adhered to.

Before using the machine, read the previous chapters in this manual. Ensure that you have understood the following points :

- Safety precautions.
- Operator's responsibilities.
- Conditions and the operating principles of the machine.

2 - Working area assessment

Before any operation :

- Carry out a thorough inspection of the site to identify any potential risks within the work zone.
- Take the necessary precautions to avoid collisions with other machinery within the work zone.

Ensure that :

- The weather conditions (wind, rain, etc.) allowing the machine to be used.
- The ground withstands the weight of the machine and has not been affected by the poor weather conditions.
- Check that the authorisations to work with the machine on the site in question have been obtained (.g. chemical product factories).
- Define a rescue plan for all the risks, including the risk of falls and crushing.

C- Pre-operation inspection

3 - Inspection and Functional test

3.1 - DAILY INSPECTION

Each day before the beginning of a new work session and with each change of operator, the machine must be subjected to a visual inspection and a complete functional test.



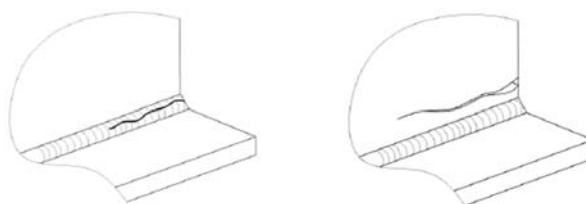
- **Never use a defective or a malfunctioning aerial work platform.**
- **If any item on the check list is marked "No" during the inspection; machine must be tagged and placed out of service.**
- **Do not operate the machine until all identified items are corrected and it has been declared safe for operation.**

In case of loose fasteners, refer to torque table value in maintenance book.

In case of leaks, replace the damaged part before use.

In case of structural part deformation (cracks, broken weld, paint chips) replace the part before use.

Sample of broken welds



We recommend these forms to be completed daily and stored to assist with your maintenance schedule.

Each action is depicted in the daily inspection sheet using the following symbols.

Use the detailed program below.

	Oil change		Lubrication-Lubrication		Tightening
	Levelling		Systematic replacement		Functional adjustments / Checks / Cleaning
	Visual inspection		To check by test		

Serial number :

Hours of operation :

HAULOTTE Services® contract reference :

Intervention record number :

Date :

Name :

Model :

Signature :

C- Pre-operation inspection

Electric articulated platforms

Haulotte	Page or associated procedure	Daily	OK	NOK	Corrected	Comments
Chassis assembly : Wheel, reducer, steering, wheel pivot						
Check state of tires/tyres and inflations						
Check that the ground strap is present and in good condition						
Batteries						
Check the condition of the battery						
Turntable						
Test the operation of the turntable locking system						
Hydraulic : oils, filters and hoses						
Check the hydraulic oil level (Top up the oil if necessary ; Machine stowed)						
Check the hoses, blocks and pumps, fittings, cylinders and the tank for the absence of leaks, deformations and damage						
Platform						
Ensure that the gate or sliding bar shall be designed to either return automatically to the closed and latched position						
Check that the harness anchor points are not cracked or damaged						

C- Pre-operation inspection

Electric articulated platforms

Haulotte	Page or associated procedure	Daily	OK	NOK	Corrected	Comments
General						
Check for the presence, cleanliness and readability of the manufacturer's plates, security labels, user manual and maintenance manual						
Check the cleanliness and readability of the control box						
Test the opening and closure of covers (chassis, turntable, upper control box)						
Check the condition of electrical harnesses, cables and connectors						
Check for the absence of abnormal noise and jerky movements						
Check for the absence of visible deterioration and damage						
Check for the absence of cracks, broken welds and chipped paintwork on the structure						
Check for the absence of missing or loose screws and bolts						
Check for the absence of deformation, cracking and breakage of axis stops, bushing and axes						
Check for the absence of foreign bodies in joints and sliding parts						
Safety devices						
Test the operation of the upper and lower control boxes: manipulators, switches, buttons, horn, emergency stops, screens and lights						
Test the operation of visual and audible alarms						
Check the absence of visual and audible alarms						
Test the operation of the Emergency manual lowering system						
Test the operation of the loading control system (visual alarm on the control box)						
Test the operation of the Activ Shield Bar (If equipped)						

C- Pre-operation inspection

4 - Safety functional checks

To protect the user and the machine, safety systems prevent the movement of the machine beyond its operating limits. These safety systems when activated immobilize the machine and prevent further movement.

The operator must be familiar with this technology and understand that is not a malfunction but an indication that the machine has reached an operation limit.

Aerial Work platforms are equipped with two control boxes which allow operators to safely use the machine. An auxiliary system (Overriding system) is available on the ground control box in order to rescue anyone trapped on the platform.

The following checks describe the operation of the machine and the specific controls required.

For the location and description of these controls :  refer to section B 3.2 and D 2 - Ground control box and B 3.3 and D 3 - Platform control box.

4.1 - E-STOP BUTTON CHECK

Ground control box E-stop button

Step	Action
1	Pull the E-Stop button (9) at the ground control box.
2	Set the key switch (21) at ground box to the  position.
3	The indicator (10) lights up on ground control box.
5	Push the E-stop button (9).
6	Check that the Activ'Screen and the LED 10 go out.
7	Check no movements are functional.

Platform control box E-stop button

Step	Action
1	Pull both E-Stop buttons (9) at ground box and (46) at platform box.
2	Set the key switch (21) at ground box to the  position.
3	The indicator (13) lights up on ground control box.
4	Push in E-Stop button (46) at platform.
5	Check that the indicators go out.
6	Check no movements are functional.

4.2 - ACTIVATION OF CONTROLS

The enable foot pedal (enable switch) must be activated to allow any movement.

The "Enable Switch" system depends on the machine configuration and will consist of one of the following :

- Foot pedal (enable switch) in the platform.
- Enable switch at ground box.

C- Pre-operation inspection

4.3 - FAULT DETECTOR

The machine is equipped with an on-board fault detection system, which indicates the type of fault to the operator.

The fault is identified by a default code.

The default code is displayed at the ground control box.

According to the type of fault, the machine MAY switch into DOWNGRADEMODE mode and certain movements are prevented to maintain Operator's safety.

Do not use the machine until the fault has been corrected.

4.3.1 - Indicators/LED's test

From the ground control box

Step	Action
1	Pull the E-Stop button (9) at the ground control box.
2	Set the key switch (21) at ground box to the  position
3	Check that the indicators (10, 13, 15, 16) and the ACTIV'SCREEN (22) light up.
4	Check that the LED's (13, 15, 16) on the display are all turned off after 1 sec.

From the platform control box

Step	Action
1	Pull the E-Stop button (9) at the ground control box.
2	Pull the E-Stop button (46) at the platform control box
3	Set the key switch (21) at ground box to the  position
4	Check that the indicators (10, 13, 15, 16) and the ACTIV'SCREEN (22) light up.
5	First push in the E-Stop button (46) at platform box, then pull out.
6	Check that the LED's (110, 111, 112, 114, 116) light up on the platform display panel.
7	Check that the LED's (110, 111, 112, 114, 116) on the display are all turned off after 1 sec.

4.3.2 - Buzzers test

From the ground control box

Step	Action
1	Pull the E-Stop button (9) at the ground control box.
2	Set the key switch (21) at ground box to the  position.
3	Verify that the buzzers at the ground and platform beep.

C- Pre-operation inspection

4.4 - OVERLOAD SENSING SYSTEM

If the platform load exceeds the maximum allowed load, no movement is possible from the 2 control boxes.

At ground and platform control boxes a buzzer sounds and an indicator light warns the operator.

To return the machine to normal operation remove weight from the platform until the load is below the maximum allowed load.

Daily check that the LED's illuminate when the machine is switched on :

- Verify that the Overload system is active : Refer to Indicator (15) at ground control box and LED (114) at platform control box display.
- Verify that the buzzers are functioning : Refer to Buzzers test.

A periodic inspection of this device must be performed according to the recommendation in Maintenance Schedule.

4.5 - SLOPE WARNING DEVICE

From each control box, a buzzer alerts the operator that the machine is not folded/stowed and is positioned on a slope exceeding the slope allowed.

N.B.-:-THE SLOPE SENSOR IS ONLY ACTIVE WHEN THE PLATFORM IS NOT IN THE STOWED POSITION.

When machine is on a slope greater than the rated slope, with extending structure out of the stowed position :

- The DRIVE and LIFTING (RAISING) commands are deactivated.

The lowering speeds are reduced.

In this case, fully lower the platform and reposition the machine on level ground before raising the platform again.



Do not rotate the turret while on a slope greater than 10%. Ensure boom is positioned between the wheels.

To check the tilt sensor at ground level, perform the following steps :

To check the tilt sensor at ground level

Step	Action
1	Put the machine in stowed position.
2	Position the machine on an incline that is greater than the maximum permitted incline ( Section B 4.1 - Technical specifications).
3	Check that the "tilt" LED 112 indicator is lit up.
4	Lift the platform. Ensure the movement is stopped.
5	Buzzers at ground and platform will beep.

C- Pre-operation inspection

4.6 - TRAVEL SPEED LIMITATION

Drive Speed Selector switch (45) at the platform control provides a 2 speed selection (high or low).

All driving speeds are authorised when extending structure of the machine is in stowed position (transport configuration). Drive speed is proportional to the movement of the drive joystick (33). Adjust position of Jib to enhance field of vision during driving.

Whatever the position of the drive speed selector switch (45) on the platform control box, the drive speed is limited when the machine is unfolded.

Daily check that the speed is limited to less than 0,5 km/h (0.3 mph) when :

- The boom is raised by more than 10° above horizontal.
- The boom is telescoped/extended more than 400 mm (16 in).
- The arm is raised by more than 2 m (6 ft 7 in) above horizontal.

The electronic variable speed unit controls movement and driving speed.

It receives information from the control joystick concerning the movements to be performed.

It also manages the safety systems status.

Poor knowledge of the characteristics and operation of the machine can lead the operator to think that a normal safety operation is a malfunction.

N.B.-:IF HIGH-SPEED DRIVE IS SELECTED AND THE MACHINE IS MOVING ON A SLOPE GREATER THAN 12,5°, THE DRIVE SPEED IS AUTOMATICALLY REDUCED.

4.7 - ON-BOARD ELECTRONICS

The machine is equipped with a specific calculator configured for this machine's functionalities.

Do not interchange the Calculator (calibration restoration) between machines..

D - Operation instructions

1 - Operation

1.1 - INTRODUCTION

Only trained and authorized personnel shall be permitted to operate this aerial work platform.

Prior to operation :

- Read, understand and obey all instructions and safety precautions in this manual and attached to the aerial work platform.
- Read, understand and obey all local regulations.
- Become familiar with the proper use of all controls and emergency systems.

1.2 - MAJOR DESCRIPTION

All the machines are equipped with :

- Platform control box.
- Ground control box (Overriding system).

A

B

C

D

E

F

G

H

I

D- Operation instructions

1.3 - OPERATION FROM THE GROUND CONTROL BOX

- Turning "ON" and "OFF" of the machine is performed with the Control box activation key switch (21).
- Activation of a desired control box is achieved by turning the Control box activation key switch (21) to the desired position .

- The ground control box is energized and is active ONLY when :
 - The emergency stop on the ground control box is not pushed in.
 - Ground control box is selected.
- An E-stop button at each control box stops all movements when pressed in (deactivated).

N.B.-:-DO NOT TURN OFF THE POWER SUPPLY OF THE MACHINE USING THE E-STOP BUTTON (USE ONLY IN CASE OF EMERGENCY). TURN OFF THE POWER SUPPLY OF THE MACHINE USING THE

CONTROL BOX ACTIVATION KEY SWITCH (21) TO  POSITION.

- An Enable Switch (6) provided must be activated and maintained to authorize one or more function movements. If Enable Switch (6) is kept engaged without selecting a function movement for more than 8 s; Enable Switch is automatically de-activated.
- Only movements to lift, lower and rotate the platform are possible from the ground control box.
- All switches and joystick operating a movement, return automatically to neutral when released.
- Overriding system : The ground control box is an auxiliary control box to use in emergencies only. Refer to  Section D 4.2 - To rescue operator in platform.
- The status of the switches is tested automatically when the machine is switched on. A switch will be active only after it has been detected to be in neutral position. The following switches are not controlled :
 - Beacon light (if fitted)
- A buzzer beeps in the following conditions :
 - When power is switched on.
 - Overload.
 - Slope if machine is out of stowed position.
 - Movement buzzer option.
 - Drive buzzer option.
- Indicators : Indicators (10), (13), (15) and (16) are checked when the machine is powered on

D- Operation instructions

1.4 - OPERATION FROM THE PLATFORM CONTROL BOX

- The platform control box is energized only when :
 - The E-stop buttons on both ground and platform control boxes are not pressed in.
 - The platform control box is selected.
- A faulty joystick is not taken into account to control a movement. If this fault disappears, the movement is authorised again.
- An E-stop button at each control box stops all movements when pressed in (deactivated).

N.B.-:DO NOT TURN OFF THE POWER SUPPLY OF THE MACHINE USING THE E-STOP BUTTON (USE ONLY IN CASE OF EMERGENCY). TURN OFF THE POWER SUPPLY OF THE MACHINE USING THE

CONTROL BOX ACTIVATION KEY SWITCH (21) TO



POSITION.

- A Foot Switch (C42) is present and should be activated and maintained to authorize one or more movements. If Foot Switch is kept engaged without selecting a function movement for more than 8 s seconds ; Enable switch is automatically de-activated.

N.B.-:IT IS RECOMMENDED THAT OPERATOR REMOVES THE FOOT FROM THE FOOT SWITCH WHENEVER A MOVEMENT HAS CEASED.

- The release of control box enable switch while performing a movement stops all the movements. The stop of movements is progressive.
 - If the Foot Switch is pressed again quickly within 0,5 s the movement restarts.
 - If the Foot Switch and / or Enable Switch is not pressed again quickly enough within + 0,5 s the movement will not restart. It could restart only when the selected function switch/joystick is released to neutral position.
- All switches and joystick operating a movement, return automatically to neutral when released.
- At power up, all switches and joysticks must be in their neutral position.
- The status of the switches is tested automatically when the machine is switched on and checked at every starting. A switch will be activated only after it has been detected in neutral position.
- A manual emergency pump is available in case the machine's main energy source fails ( Section D 4.1 - Main power supply failure).
- Indicators - All indicators (LEDs 110, 111, 112, 114, 116) are checked when the machine is powered on.

D - Operation instructions

- A buzzer beeps in the following conditions :
 - When power is switched on.
 - Overload.
 - Machine elevated on a slope greater than the rated slope.

**While driving on a slope :**

- While driving, always place the boom above the rear axle, in the direction of movement.
- Always orientate the machine in the direction of the slope.
- Always place the boom in fully retracted and in stowed position.
- Always place the basket down.
- Do not travel down slopes in high speed.
- Do not drive fast in narrow or cluttered areas. Keep the speed under control.

D- Operation instructions

2 - Ground control box

2.1 - TO START AND STOP THE MACHINE

- Check that the E-stop buttons (9) at ground control box and (46) at platform control box are not pressed in.

- Turn the control box selector (21) to position  to energize the ground control box.

To shut-down the machine from the ground control box :

- Turn the activation selector key switch (21) to off position .

- Power supply is now switched off.

N.B.-:THIS OPERATION TURNS OFF THE POWER SUPPLY TO MACHINE AND IT IS REQUIRED TO PREVENT BATTERY DISCHARGE.

N.B.-:THE ACTIV'SCREEN AUTOMATICALLY GOES INTO STANDBY IF IT IS NOT USED FOR AN EXTENDED PERIOD. TO SWITCH THE ACTIV'SCREEN BACK ON, TURN THE KEY SELECTOR TO POSITION OFF THEN FOLLOW THE START-UP PROCEDURE.

N.B.-:THE ACTIV'SCREEN STOPS AFTER A FEW SECONDS WHEN THE POWER IS SWITCHED OFF.

D- Operation instructions

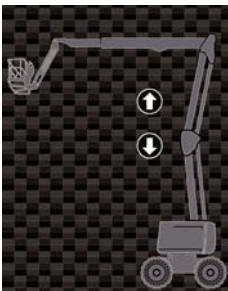
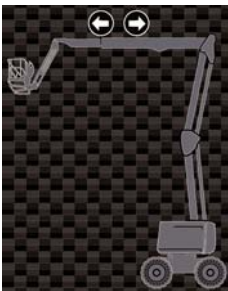
2.2 - MOVEMENT CONTROL

Even at low movement speeds, use the controls with caution.

N.B.-:RELEASING THE ENABLE SWITCH (6) WILL STOP ALL MOVEMENTS.

Activate the desired control and the 'Enable switch' (6) simultaneously to perform that selected function.

Ground box controls (emergency station)

Command	Action
 Raising / lowering of boom	Press the boom raising control (4)  to raise the boom.
	Press the boom lowering control (4)  to lower the boom.
 Raising / lowering of arm	Press the arm raising control (5)  to raise the arm.
	Press the arm lowering control (5)  to lower the arm.
 Boom telescoping extend / retract	Press the boom telescoping control (3)  to extend the boom.
	Press the boom retracting control (3)  to retract the boom.
 Jib raising / lowering	Press the jib raising control (2)  to raise the jib.
	Press the jib lowering control (2)  to lower the jib.

D- Operation instructions

Command	Action
Turntable rotation	Press the turntable rotation control (7)  for a clockwise (CW) rotation. Press the jib rotation control *1 *2 for an anti-clockwise rotation Press the turntable rotation control (7)  for a counter-clockwise (CCW) rotation.
Platform rotation	Press the platform rotation control (8)  for a clockwise (CW) rotation. Press the platform rotation control (8)  for a counter-clockwise (CCW) rotation.
Jib rotation (If equipped)	Press the jib rotation control (23)  for a clockwise rotation Press the jib rotation control (23)  for an anti-clockwise rotation
Platform leveling	Press the platform levelling control (1)  to tilt the platform upwards Press the platform levelling control (1)  to tilt the platform downwards

2.3 - ADDITIONAL CONTROLS

For the machines equipped with beacon light :

- Press the beacon light selector switch (14) to turn ON the beacon light.
- Press the beacon light selector switch (14) to turn OFF the beacon light.
- Push the horn selector (12) to the right to sound the horn. The horn stops when the selector switch is released.

D- Operation instructions

3 - Platform control box

3.1 - TO START AND STOP THE MACHINE

3.1.1 - To start the machine

At the ground control box :

- Check that the E-stop button (9) is not pressed in.

- Turn the control box activation key selector (21) to platform control box position  to switch on the platform control box.

At the platform control box :

- Check that the E-stop button (46) is not pressed in.
- The power on LED (101) at the platform display lights up.

3.1.2 - To stop the machine

- Push in the E-stop button (46).

- Turn the activation selector key switch (21) to off position .

The machine's power supply can only be turned OFF from the ground control box by turning the control box activation key selector (21) to the OFF  position.



The ActivScreen automatically goes into standby if it is not used for an extended period. To switch the ActivScreen back on, press the emergency stop button then follow the start-up procedure.

D- Operation instructions

3.2 - DRIVE AND STEER CONTROL

To activate drive and steer function, press the Foot Switch and simultaneously operate the joystick (33) for the desired function.

Before moving, locate the white and red directional arrows on the chassis and the platform control box.

Move the drive control joystick (33) in the direction matching the directional arrows.

N.B.:-ON UNEVEN TERRAIN, LOWER THE BOOM TO IMPROVE THE DRIVE PERFORMANCE.

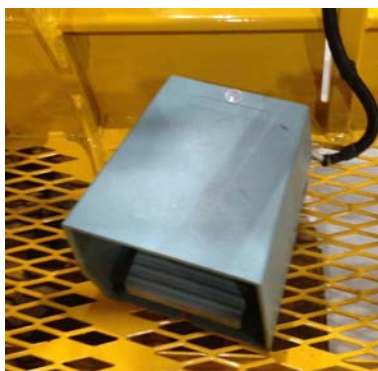
Command		Action
Steering		Press thumb/rocker switch on joystick (33 A) to the right to steer right.
		Press thumb/rocker switch on joystick (33 B) to the left to steer left.
Driving		Move joystick (33) forwards for the machine to travel in the forward direction (WHITE directional arrow).
		Pull joystick (33) backwards for the machine to travel in the reverse direction (RED directional arrow).
Drive speed		Position the drive speed selector switch (45) on  for high-speed driving.
		Position the driving speed selector (45) on  for low-speed driving (short distance, final approach, unloading from lorries/trucks).

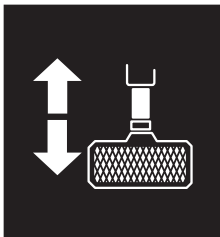
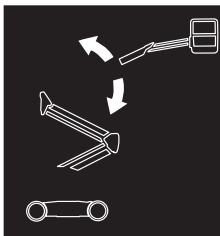
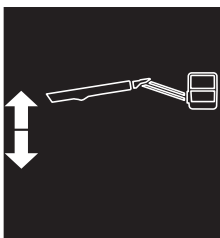
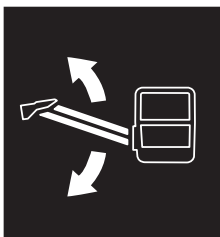
D- Operation instructions

3.3 - MOVEMENT CONTROL

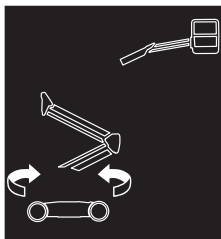
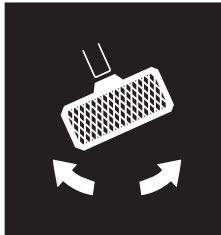
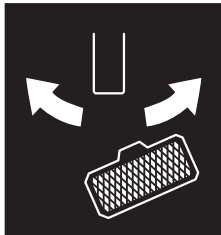
N.B.-:RELEASING THE ENABLE SWITCH (C42) WILL STOP ALL MOVEMENTS.

Foot Switch



Command		Action
Boom telescoping extend / retract		Push the boom telescoping switch (54) upwards to retract the boom.
		Push the boom telescoping switch (54) downwards to extend the boom.
Boom raising / lowering		Move the boom/turntable joystick (49) forward to raise the boom.
		Move the boom/turntable joystick (49) backwards to lower the boom.
Arm raising / lowering		Push the arm raise / lower selector (50) upwards to raise the arm.
		Push the arm lift/lower selector (50) downwards to lower the arm.
Jib raising / lowering		Push the jib switch (129) upwards to raise the jib.
		Push the jib switch (129) downwards to lower the jib.

D - Operation instructions

Command		Action
Turntable rotation		Move the boom/turntable joystick (49) to the left for a clockwise (CW) rotation.
		Move the boom/turntable joystick (49) to the right for a counter clockwise (CCW) rotation.
Platform rotation		Move the platform rotation switch (38) to the left for a clockwise (CW) rotation.
		Move the platform rotation switch (38) to the right for a counter clockwise (CCW) rotation.
Jib rotation (If equipped)		Push the jib rotation selector switch (83) to the left for a counter clockwise (CCW) rotation
		Push the jib rotation selector switch (83) to the right for a clockwise (CW) rotation
Platform leveling		Move the platform levelling switch (40) upwards to raise the platform to the front of the machine.
		Move the platform levelling switch (40) downwards to tilt the platform to the rear of the machine.

3.4 - ADDITIONAL CONTROLS

- Horn : Push the horn selector (43) to the right to sound the horn. The horn stops when the switch is released.

3.4.1 - Activ' Lighting System

Refer to  Section B 3.3 - Platform control box.

This option means that the operator will be able to safely load (or unload) the machine onto the truck.

Located on the turntable, boom and platform, the Activ' Lighting System system lights up the controls and surrounding areas of the machine. Users can then safely move the machine.

D- Operation instructions

4 - Rescue and emergency procedures

4.1 - MAIN POWER SUPPLY FAILURE

If the main energy source (electricity) fails, a hand pump located next to the hydraulic distributors on the turntable is used to perform a manual descent.

This pump can be used in combination with manual control of the solenoid valve block assembly to perform the following movements :

- Arm lift down.
- Boom descent.
- Turntable rotation.
- Jib raising / lowering.



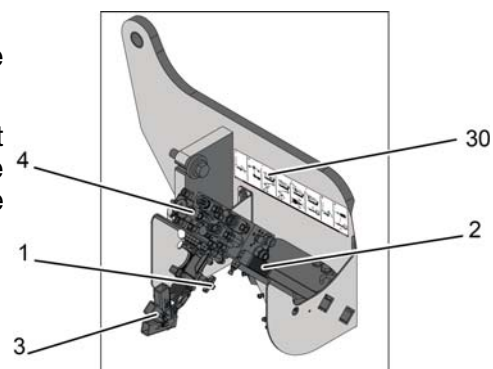
This procedure is exclusively reserved for lowering in emergency situations only.



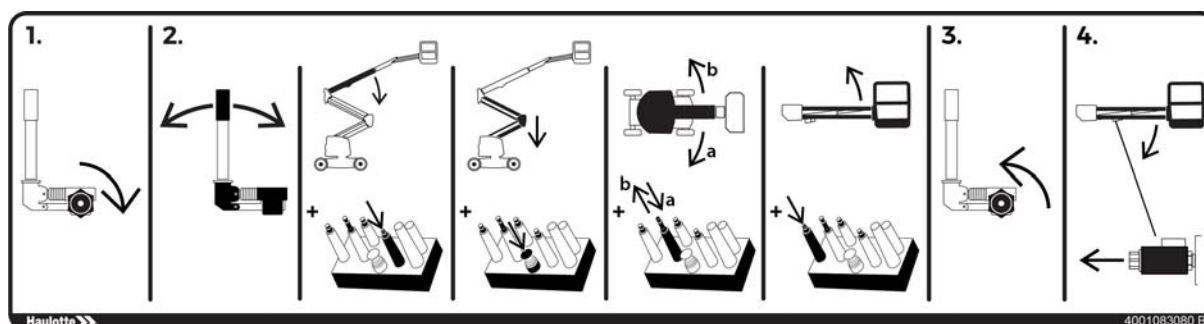
All safety functions are inoperative and hazardous situations may occur. Improper use of equipment will result in death or serious injuries.

4.1.1 - Procedure

- Make sure the tap (1) is closed.
- Insert the lever (2) in the return bend of the pump (3).
- Push the lever from top to bottom several times whilst holding down the manual control of the solenoid valve block (4) for the required movement as shown on the label (30) (Please refer to paragraph B.5 - Decals and markings locations).



Manual repair – Marking (30)



D - Operation instructions



In an emergency, if the operator has to exit the platform while it is elevated, the transfer of the platform occupant(s) must respect the following recommendations :

- Exit onto a sturdy and safe structure.
- Allowance must be made for the possibility of boom deflection when egressing from the platform.
- The occupant(s) must ensure that 2 lanyards are used for security/safety. One must be attached to the designated anchorage point on platform the occupant(s) is in and the other attached to the structure intended to get on.
- Do not leave the platform without having taken into account the possibility that it may move during transfer of the occupants.
- Occupant(s) must exit the current platform through the normal access.



Do not detach the lanyard from the current platform if the transfer to the new structure poses any danger or until the transfer is safely completed. Do not attempt to climb down from the platform. Wait for assistance to leave the cradle safely.



If the operator cannot be lowered by any of the above mentioned methods, contact HAULOTTE Services® immediately.

4.2 - TO RESCUE OPERATOR IN PLATFORM

In a situation where an operator located in the platform needs to be rescued (for example in case of illness, injury or trapped against a structure making the control box inaccessible), the rescue personnel at ground level needs to obtain rapid and direct access to operating functions.

4.2.1 - Operation of overriding system from ground control box

N.B.:-A SAFETY DEVICE DOES NOT ALLOW NORMAL MOVEMENT FROM THE GROUND CONTROL BOX, USE THE OVERRIDING SYSTEM.



Operation of the "overriding system" switch must be an exception. The system is only active in case of overload.

Procedure :

- Press and hold the "overriding" system control (11) .
- Press simultaneously the telescoping boom control (3)  to retract the boom.
- Press the boom raising control (4)  to raise or  lower the boom.
- Press the arm raising control (5)  to raise or  lower the arm.

N.B.:-ONCE RESCUE OPERATIONS ARE COMPLETE, WRITE AN INCIDENT REPORT.

D- Operation instructions

5 - Transportation

5.1 - TRANSPORT CONFIGURATION



During loading, ensure that :

- The loading ramp can support the machine weight.
- The loading ramp is correctly attached to transport vehicle.
- The loading ramp has sufficient grip surface.
- The transport vehicle must be parked on a level surface and must be secured to prevent rolling away while machine is being loaded or unloaded.

Do not place yourself below or too close to the machine during loading.

The machine must be completely in the stowed configuration :

- Check the platform is completely empty.

To climb the slope, select low driving speed.

If the slope is too steep, use a winch in addition to the low speed drive.

- Ensure that the jib is raised as necessary to give ground clearance when driving the machine onto the loading ramp.
- Drive onto the truck bed slowly.
- Secure the machine to the tie down points provided (Section D-Machine layout).
- Lock the turntable with the rotation stop pin located under the turntable before transporting (Section D-Machine layout).
- The platform/basket must be chocked and the boom strapped to prevent bouncing up and down, thus preventing possible material damage during transporting.
- Do not use excessive downward force when securing boom section.



A wrong move can lead to machine tipping over and may cause serious injuries and material damage.



Always align the boom in the axis of the machine and climb slopes with the platform lowered and on the downhill side of the machine.



To enter or exit from the platform : Falling Hazards ( Section A 2.1.2).

D - Operation instructions

5.2 - MACHINE STOWAGE FOR TRANSPORT - SIGMA 16 - SIGMA 46 - SIGMA 16 PRO - SIGMA 46 PRO

Turntable rotation pin - Locked

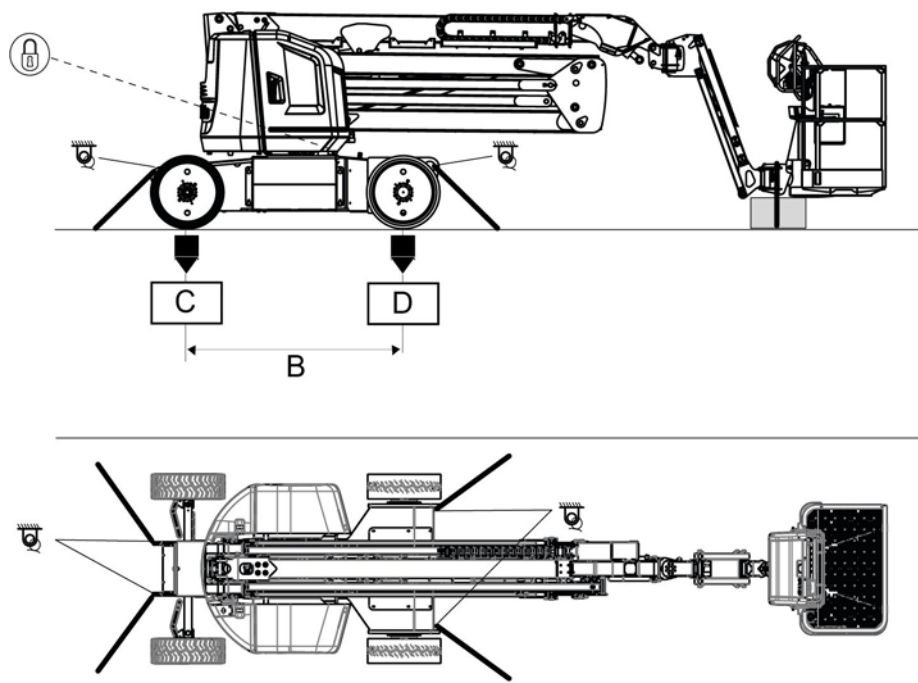


Turntable rotation pin - Unlocked



D- Operation instructions

Machine stowing



N.B.:-SECURE THE TURNABLE WITH THE TURNABLE LOCKING PIN BEFORE HAULING THE MACHINE ON A TRUCK.

N.B.:-THE JIB CYLINDER LOWERS BY GRAVITY AND DOES NOT ALLOW THE PLATFORM TO BE FOLDED UNDER THE BOOM. THE ONLY TRANSPORT POSITION IS ACHIEVED WITH THE PLATFORM IN ACCESS POSITION.

Loading characteristics

Marking	Description	SIGMA 16 - SIGMA 46	SIGMA 16 PRO - SIGMA 46 PRO
B	Lateral distance between the wheels		2 m(6 ft7 in)
C	Front wheel ground pressure		13,7 daN/cm ²
D	Rear wheel ground pressure		13,7 daN/cm ²



Anchorage point

D- Operation instructions

5.3 - UNLOADING

Before unloading, check that the machine is in good condition.

- Remove the turntable rotation locking pin (Section D-Machine layout).
- Remove the tie downs.
- Select low drive speed at the platform control box.
- Start the machine from platform control box.



Warning : Upon starting a machine that has been secured and transported, the safety system may detect a false overload preventing all movement from the platform control box.

To reinstate the system, lift the jib a few centimetres (inches) using the ground control box.

5.4 - TOWING



In the event of a machine breakdown, the machine can be towed a short distance to load it onto a transport vehicle :

- Ensure that no one is in the platform during towing.
- Ensure boom is in the stowed position and the turntable is locked, prior to towing.
- The platform must be empty.

To tow a broken-down machine, release brake (Refer to  Section D 5.4.1 - Brake release). Perform this operation on flat ground with wheels chocked.

In the towing configuration, the machine braking system is inactive. Use a drawbar to avoid any risk of accident :

- Do not exceed the maximum freewheel speed (Refer to  Section B 4.1 - Technical specifications).
- To go up or down a slope, use the appropriate winch.

D- Operation instructions

5.4.1 - Electric brake release

To tow a broken-down machine, the brakes can be released using the electric system.

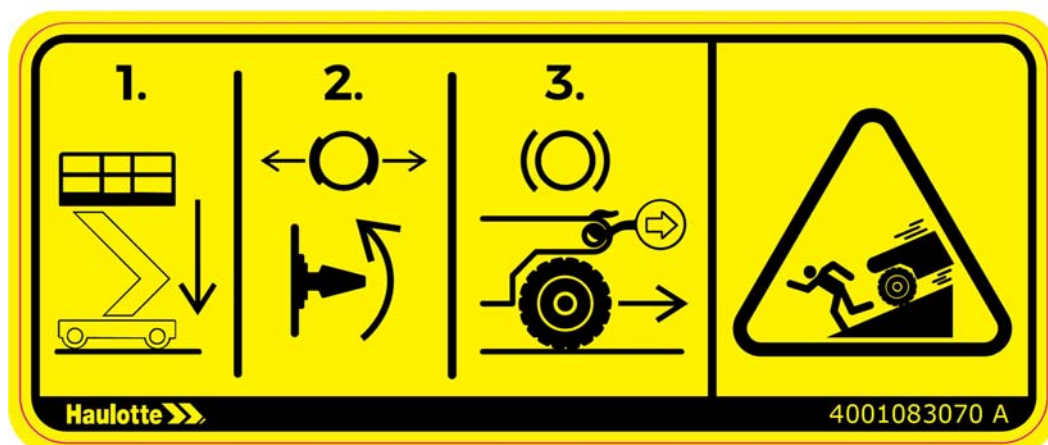
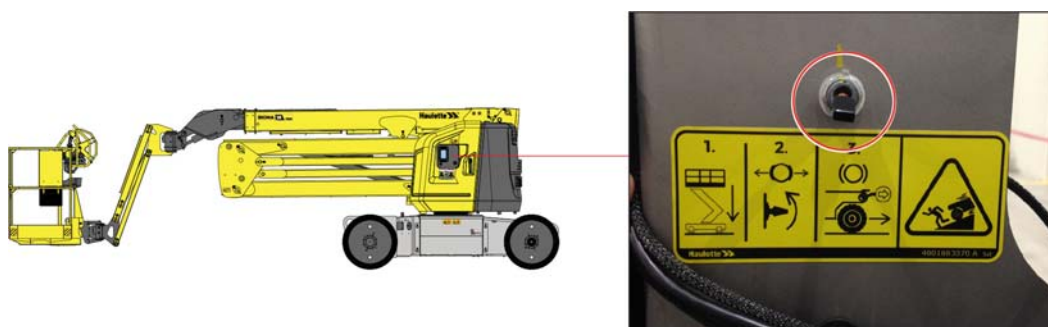


Perform these operations on flat, horizontal ground. Failing that, block the wheels to immobilize the machine. During brake release operation, the machine is in free wheel mode and the brake system no longer functions.



When travelling over obstacles or a ramp, the use of an adapted winch is obligatory.

If the machine needs to be towed, the drive wheels brake release is located inside the right-hand compartment (ground control box side).



To release the machine's brakes, the following conditions must be met :

- The platform control box or the ground control box must be selected.
- The machine must be completely stowed.
- No movement selected.
- The machine must not be tilted.

D- Operation instructions

Procedure :

- Open the turntable cover. The brake release switch SA103 is located on the right of the ground control box.
- Hold brake switch upwards to activate the brake release.
- Hold down the brake release switch for more than 3 s. An audible signal (beep) sounds.
- Releasing the switch releases the brakes.

Brakes are applied automatically :

- when the brake release switch is pressed again,
- when a command is sent from the lower or platform control box,
- the machine is turned off,
- or the control box in use is changed.

N.B.-:IF THE USER IDENTIFICATION OPTION IS ACTIVE, THE IDENTIFICATION CODE MUST BE ENTERED TO ACTIVATE THE BRAKE RELEASE.

D- Operation instructions

5.5 - STORAGE



The machine can be stored in a designated area when not in use. If it is stored for more than 3 months without being used, an inspection must be carried out before it is put back into service.



Keep the batteries charged  Section D 7.4 Optimise battery life.

Machine must be parked in a protected/designated area with the boom in a stowed configuration, however the boom can be raised but must not be extended. Make sure there is no load in the platform.

Do not store or immobilise the machine when it is unfolded.

Ensure all access panels, doors and side compartment covers are shut and secured.

Turn the control box activation key switch (21) at the ground control box to the extreme left  to shut OFF the power.

Ensure that the turntable rotation locking pin is shifted to the disabled position (Refer to  Section D 5.2 - Machine layout).

Remove the ignition key to prevent unauthorized operation of the machine.

Turn off the circuit breaker (Opened position).



Storing of the machine with an obstacle under the boom structure is forbidden.



To avoid any risk of corrosion on rods of cylinders during a storage period of more than 1 month :

- In a normal atmospheric environment : perform a complete cycle for the cylinders every 2 months while they are in storage.
- In harsh environments (high levels of salinity in the atmosphere: close to the sea, industrial environment with chloride emissions and/or humidity >70%), we recommend applying the following protection process :
 - Wash and rinse the entire machine with plenty of clean water.
 - Dry all the cylinder rods using an air gun.
 - Apply a solvent-based oil leaving an oily film after evaporation of the solvent directly to all rods left exposed when the machine is in storage position.
 - Re-apply the product every month.



After washing the machine, make sure it is fully air-dry and does not contain moisture on corrosive parts (cylinders rods for example).

Do not wash any electrical components, particularly with high pressure washer. Wipe away dirt from around electrical components with a dry cloth.

D - Operation instructions

5.6 - LIFTING OPERATION

During loading / unloading operation with an overhead crane, it is important to respect the following :

- Put the machine in stowed position, boom and arm fully retracted and lowered.
- Platform must be empty.
- Align the turntable with the chassis, jib in lowered position and boom horizontal.
- Lock the turntable with the rotation stop pin located under the turntable.
- Verify that lifting attachments are in good operating condition and match the technical specifications. Lifting devices must be attached only to the designated lifting eyes.
- Each of the slings used for lifting the machine must be adjusted to keep the machine level and to minimize the risk of damage to the machine.

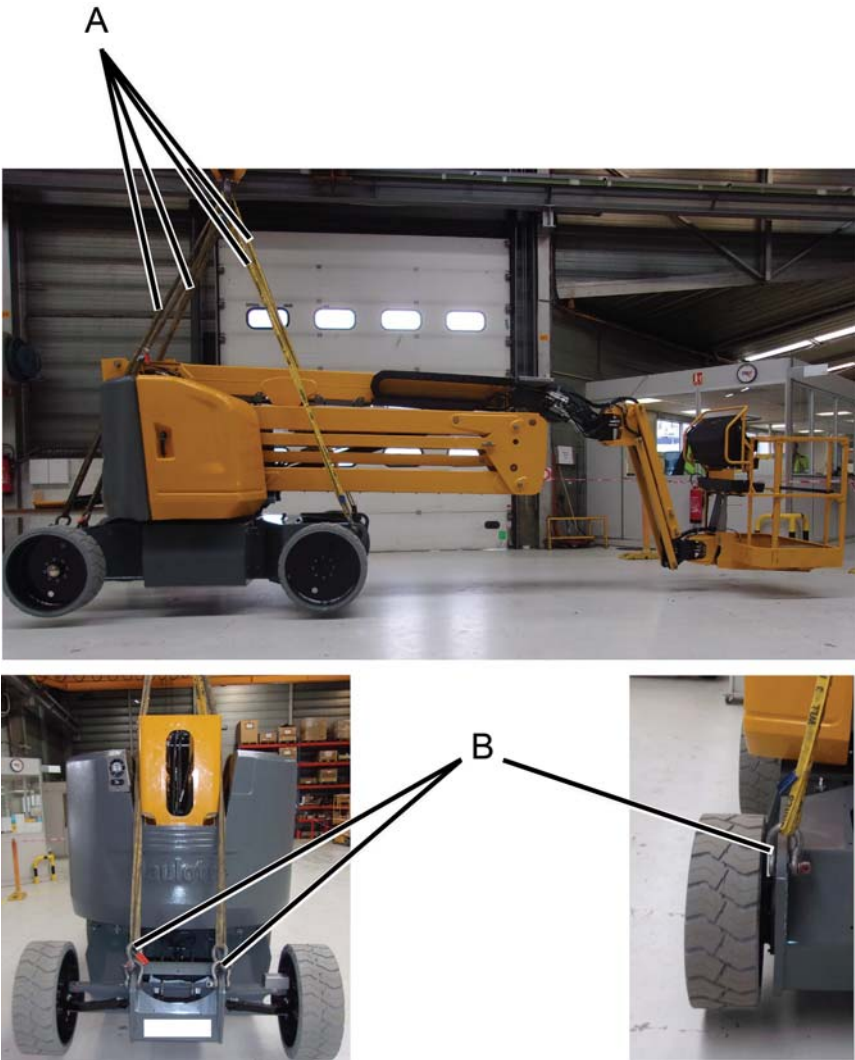
- Anchorage point for lifting are identified / labeled by the following symbol .
- ONLY trained and authorized personnel should attempt to lift the machine.



Never lift the machine with slings attached to counterweight.

D- Operation instructions

Procedure for the use of slings



	Strap			Shackle	
	Number of slings	Minimum length	Minimum capacity	Number of shackles	Minimum capacity
A	4	3 m (9 ft 10 in)	3 T (6614 lbf)		
B				4	3 T (6614 lbf)



The 4 slings must be the same length.

D- Operation instructions

6 - Cold Weather Recommendations

In extreme cold conditions, machines should be equipped with optional cold start kits.



In cold weather, do not store the machine with discharged batteries. It is recommended that, at a temperature below 0 °C(32 °F) , the machine not be stored with a battery charge of below 75 %.

6.1 - HYDRAULIC OIL

External environmental conditions can reduce performance of the machine if the hydraulic oil temperature does not reach its optimum range.

It is recommended to use the hydraulic oil according to weather condition. Refer to the table below.

Environmental conditions	SAE Viscosity grade
Ambient temperature between - 15°C (5°F) and + 40°C (+ 104°F)	HV 32
Ambient temperature between - 35°C (- 31°F) and + 35°C (+ 95°F)	HV 32 Arctic

N.B.-:IT IS RECOMMENDED TO REPLACE LOW TEMPERATURE OIL AS THE AMBIENT TEMPERATURE REACHES + 15°C (59°F). IT IS NOT ADVISABLE TO MIX OILS OF DIFFERENT BRANDS OR TYPES.

D- Operation instructions

7 - Battery care and maintenance

7.1 - BATTERY RECHARGE

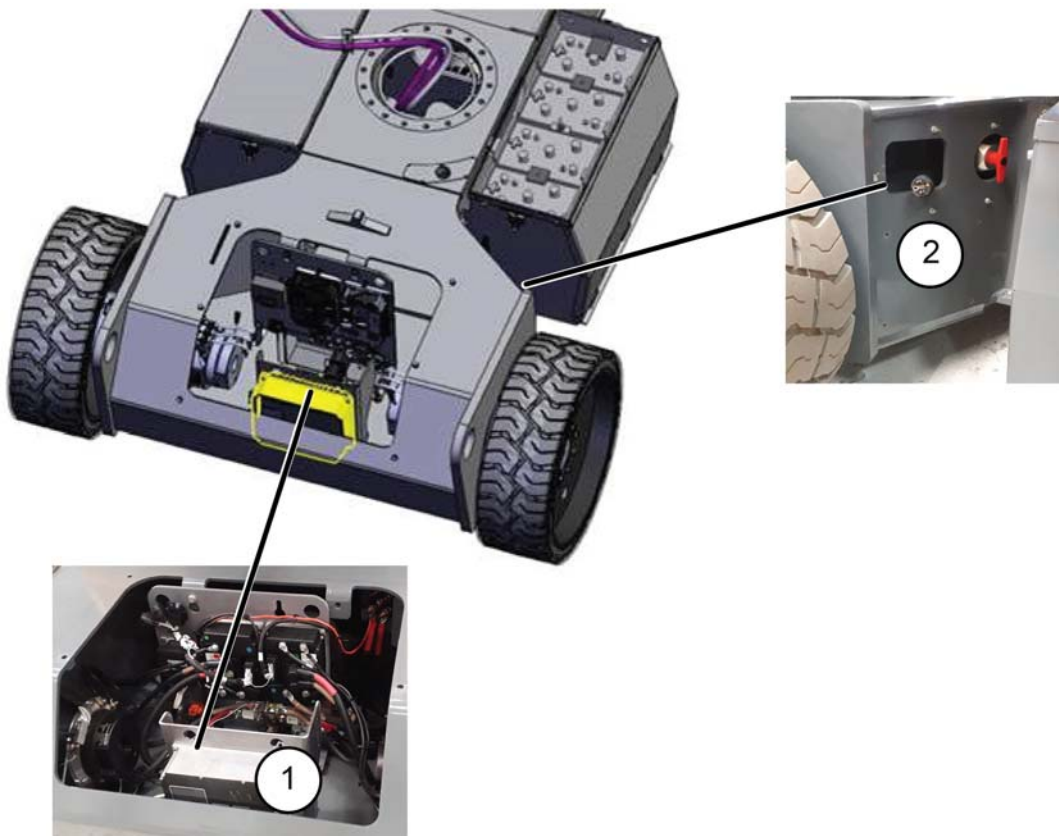
7.1.1 - On-board charger

The on-board charger is used to charge the semi-drive batteries. The charger's power is 3000W and the maximum intensity is 14A for 220V / 240V and 110V / 120V networks. Battery charging starts as soon as it is connected via the mains supply.

N.B.:-NO MOVEMENTS ARE ALLOWED DURING BATTERIES CHARGING CYCLE AND WHILE CONNECTED TO AN EXTERNAL POWER OUTLET.

Battery charger	69 V / 50 A or 60 A
Electric power supply	85 - 265 V AC / 50-60 Hz / 16 A
Battery voltage	48 V
Charging time	Between 10 h and 20 h

Locations



Marking	Description
1	On-board charger
2	Battery charger mains cable



Never replace the charging cable without written permission from HAULOTTE®.

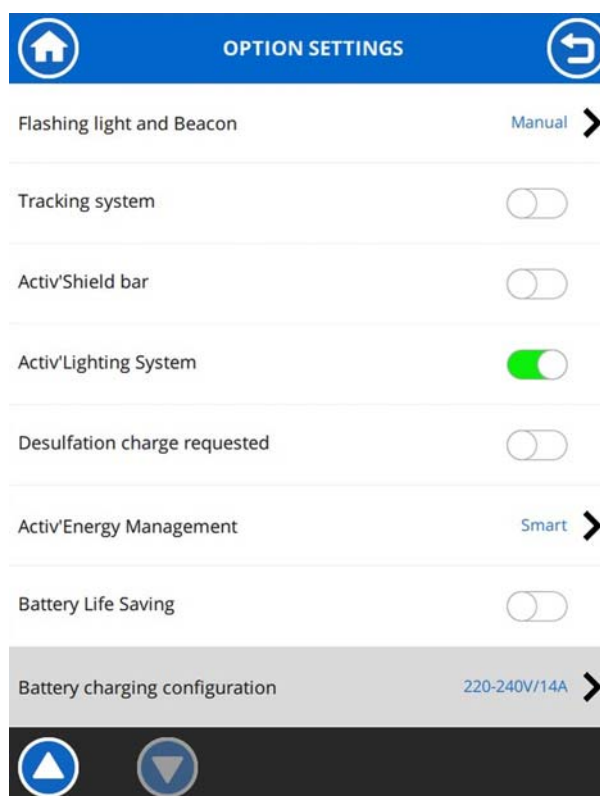
D- Operation instructions

7.1.2 - Battery charging



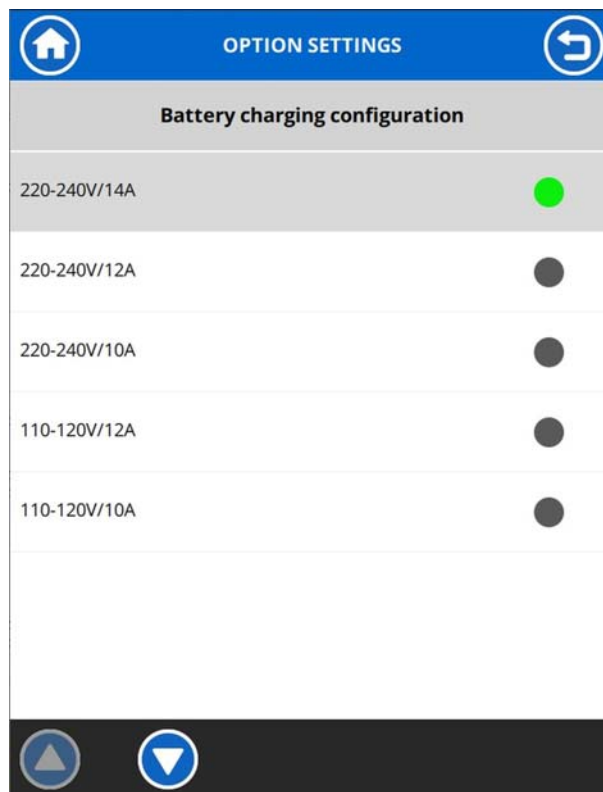
- Do not use an external charger or jump the batteries.
- Ensure that the mains power supply is adapted and equipped with circuit breakers ensuring it is safe :
- If a "cable reel" type extension is used, the cable must be completely unwound before recharging.
- The cable cross-section must be at least 2,5 mm² or more, depending on the length of the cable.
- The socket must be able to deliver a current of 16 A.
- If power of the supply is not great enough, a limited charge power can be selected from the Activ'Screen screen (Accessible with level 1 code).

Machine settings / Machine configuration / Option setting / Battery charge configuration



D- Operation instructions

Machine settings / Machine configuration / Option setting / Battery charge configuration



- Do not charge the battery when the outside temperature is -20°C .
- **ALWAYS** charge batteries in open, well-ventilated areas.
- You are advised to fully charge the battery at least 1 time every 7 days. If this is not done, a reminder will appear on the Activ'Screen screen of the ground control box.

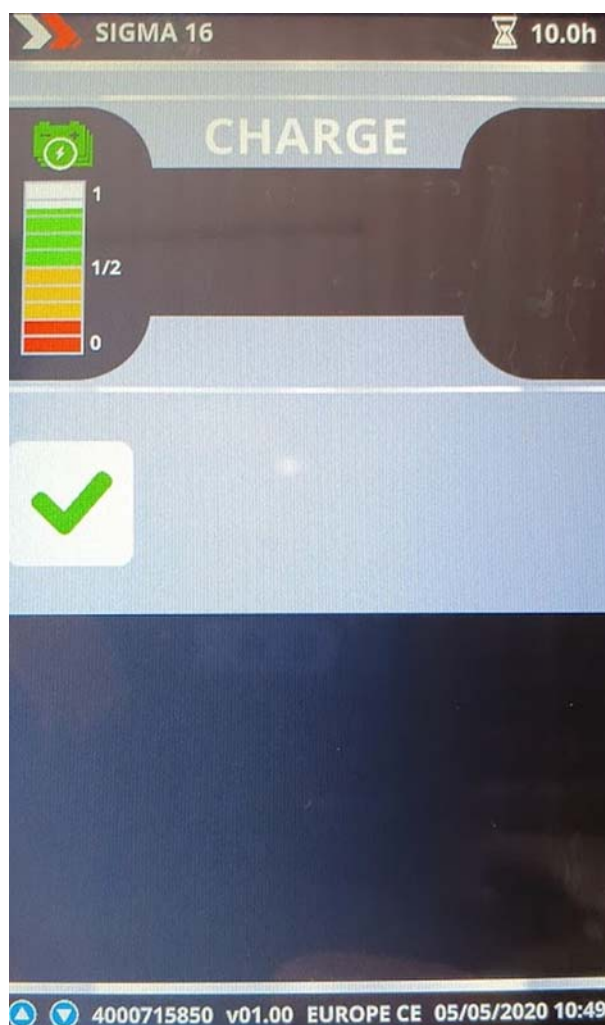
D- Operation instructions

Duration of charge cycle :

- 10 hours approximately, on 220 - 240 V AC / 14A network.
- 20 hours approximately, on 110 V AC / 12A network.

The charge cycle stops automatically when charging is complete.

It can take up to 24 hours for a full charge if the battery levels are very low (Charge status less than 5 %).

Charge screen

D- Operation instructions

7.2 - BATTERY CARE AND MAINTENANCE

7.2.1 - Filling batteries

The procedure described below only applies to open lead acid batteries. 6 V open lead-acid battery blocks are composed of 3 2 V single cells connected together in series. The cells are immersed in an electrolyte composed of 1/3 sulfuric acid and 2/3 deionized water.



The batteries must **ONLY** be filled after charging them fully. Failure to comply with these instructions may lead to the electrolyte overflowing, etc...



The batteries **MUST** be filled when necessary or the batteries may be irreparably damaged. The lead plates oxidize in the air. They must always be covered with electrolyte.



If the lead plates are no longer submerged, top up with de-ionized water and cover the plates to the top. Then charge the batteries completely and top up the level with de-ionized water if necessary..



The water level in the batteries cannot be topped up if the temperature is lower than 0° as the distilled or deionized water freezes in the centralized filling system.

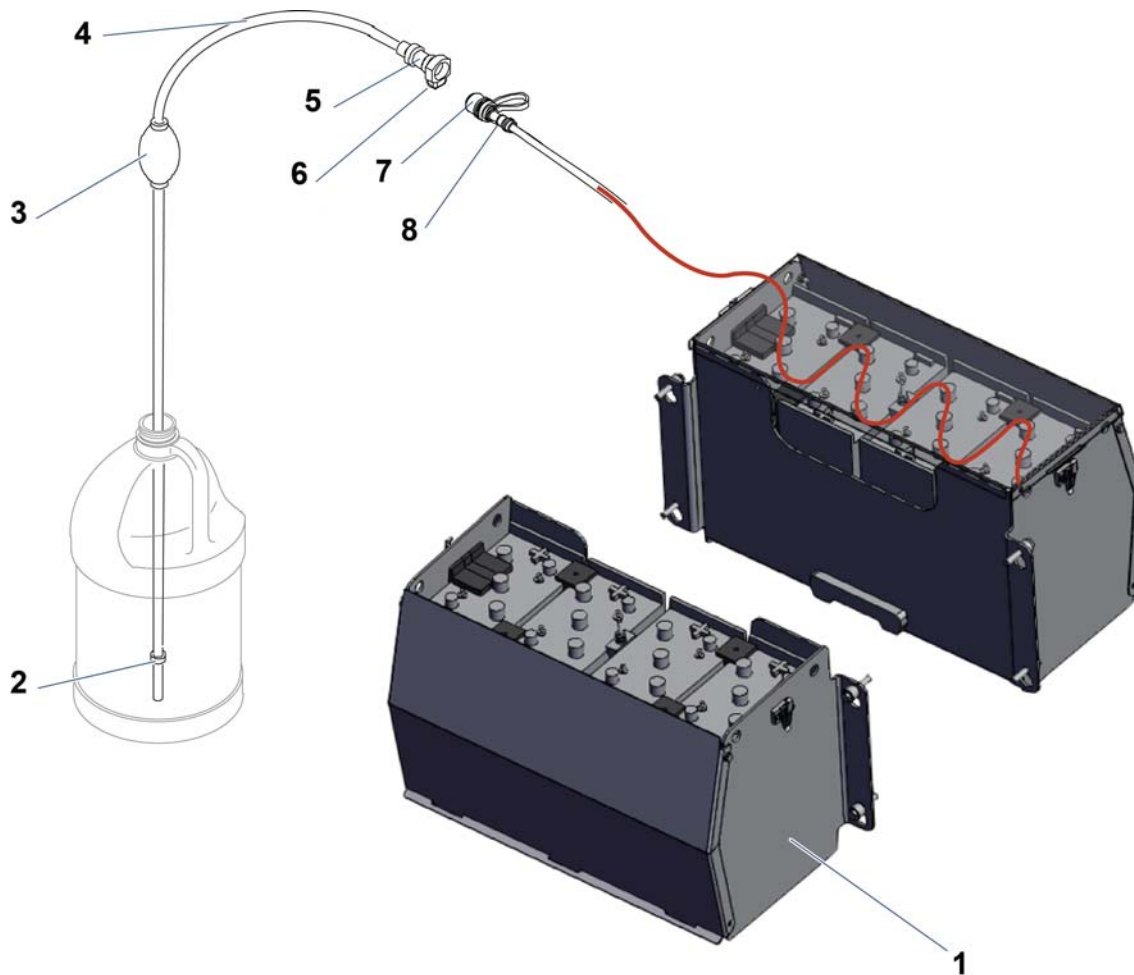


For machines equipped with the traction battery option : Refilling the batteries is not permitted until they have reached 10 complete charging cycles..

D- Operation instructions

7.2.1.1 - Procedure to fill the batteries manually - Option

Single-Point Watering System



Marking	Description
1	Battery
2	Filtered intake
3	Hand pump
4	Hose
5	Female adapter
6	Push-button
7	Dust cover
8	Male adapter

D- Operation instructions

Completely charge the batteries before connecting the distilled-water-filling unit.

Procedure :

1. Launch a full charge of the battery and check the charge indicator.
2. Disconnect the batteries charger and put back the plug in its housing.



Levelling of the elements should always be done after charging the batteries. Watering a battery before charge (or with a low charge level) can lead to boil-over, resulting in potential bodily injury and potential damage to the watering system and the battery.

3. Unlock both locks.
4. Remove the covers.
5. Immerse the filtered inlet (2) of the transparent hose (4) fitted with a hand pump (3) in a demineralized water canister(Supplied with the machine).
6. Press the hand pump (3) to prime it until the water rises in the hose (4)
7. Once the hand pump (3) is primed, remove the male connector (8) cap (7) from the black supply tube assembly
8. Connect the female connector (5) quick-hitch from the centralized filling system, including the hand-pump, to the male connector (8).
9. Press firmly on the hand pump to bring the distilled water to the batteries (1).
10. When the bulb (3) becomes resistant, this means that all the battery cells are filled appropriately.
11. Then uncouple the female connector (5) from the male connector (8) filling tube by pressing on the yellow button (6), then replace the cap (7) on the machine hose.
12. Close the machine covers.
13. Do not let the can to connect after filling is finished because this could cause the batteries to overflow.
14. Place the cover in the correct position on the batteries.
15. Unlock both locks on each side of the battery container.

D- Operation instructions

7.2.1.2 - Procedure to fill the batteries automatically - Option

1. Open the cap.
2. Fill the can with demineralized water.
3. Close the cap properly.
4. Fully recharge the batteries in order to restart an automatic filling or activate the automatic filling from the Activ'Screen of the ground control box.



Navigation in the menus :



D- Operation instructions

7.2.2 - Desulfation charge

Normal battery use leads to sulfatation of the lead plates during discharge (Formation of lead sulfate). Recharging the battery dissolves the lead sulfate. The plates are desulfated.

Moreover, sulfatation also appears if the battery self-discharges during storage in a low state-of-charge (< 70%).

As the battery ages, the lead sulfate may become harder and harder and increasingly difficult to eliminate by normal charging. This leads to a loss of autonomy. The desulfation charge is a way of regenerating the battery.



To improve the efficiency of the desulfation charge, you are advised to launch it for a battery discharged to a state-of-charge less than 30%.

Procedure :

- Go to the machine set-up menu → Option → Desulfation request (Code HAULOTTE DIAG level 2) ;
- The option is active and will be implemented during the next mains charge ;
- Charging time is increased up to 30 h ;

D- Operation instructions

7.3 - OPTIMISE BATTERY LIFE

To optimize battery performance and life-time, you are advised to follow the recommendations below :

- Carry out regular battery maintenance as described.
- Do not store the machine discharged (Duration greater than 72 hours).
- Carry out full charges regularly.
- Do not keep a machine in a state-of-charge less than 70% for no useful purpose
- **A full battery recharge is OBLIGATORY every 35 hours of use of the machine.**
- **After 45 hours of use without a full recharge, there is a risk of damaging the batteries.**



Keep the top of the batteries clean and dry. Incorrect connection or corrosion may cause a high loss of power.

	Full charge	Filling control	Desulfation charge
In use			
If state-of-charge < 50% at the end of a working day	X		
Every 35 hours of use	X		
Before placing in storage	X		
1 time a week	X	X	
1 time every 2 weeks		O	
1 time a month		O	
1 time every 6 months			X
In storage			
1 time a month	X		



In case of extended storage, you are advised to fully charge the battery then disconnect the power circuit  Section D 5.5 Storage. Charging the battery monthly is still recommended.



The battery's water consumption depends on its use. You are advised to check the water level 1 time a week.

Notes

[illegible]

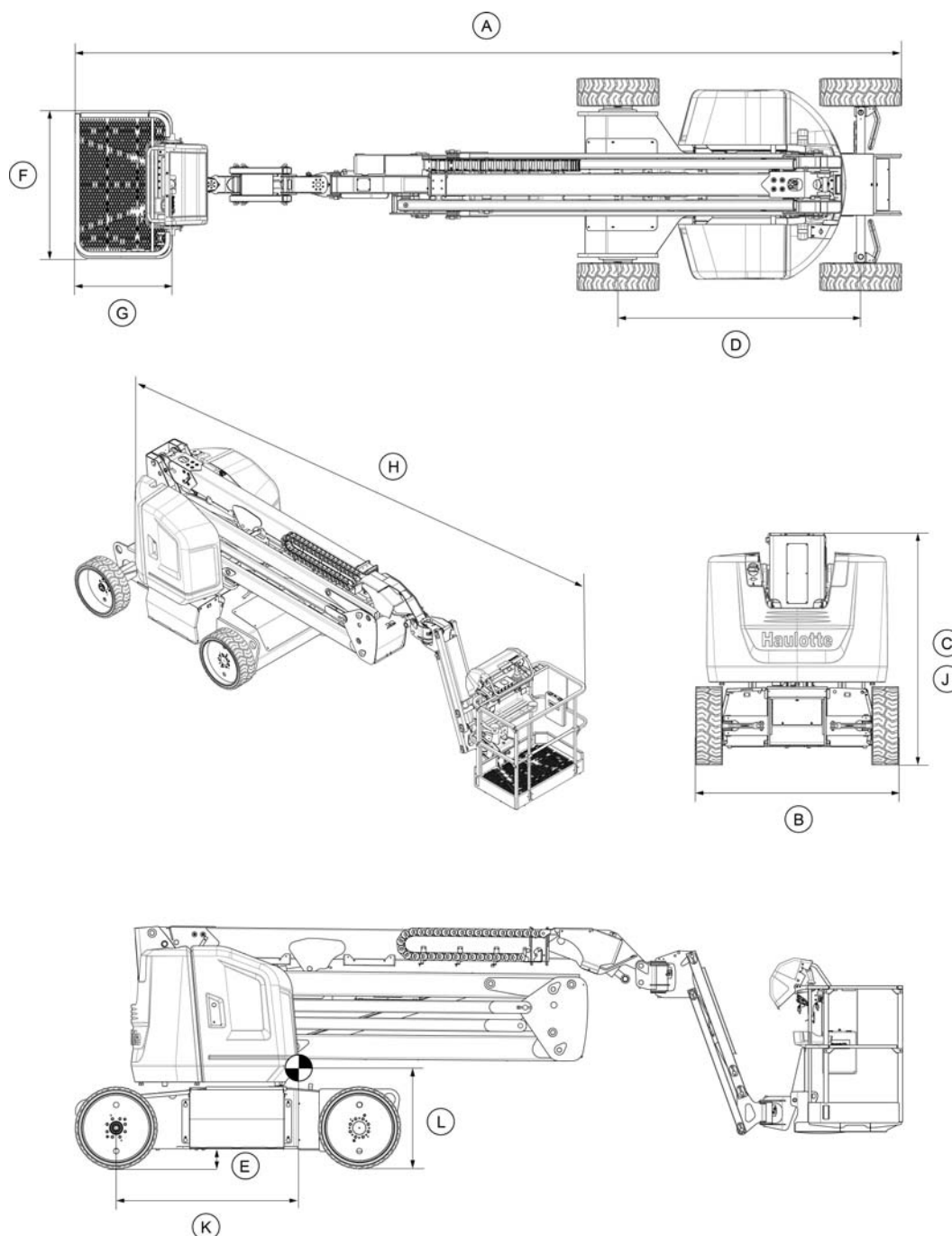
Notes

[illegible]

E- General Specifications

1 - Machine dimensions

Stowed / Transport position : Configuration that takes the minimum floor space necessary for storage and / or delivery of the machine - **Access position - SIGMA 16 - SIGMA 46 - SIGMA 16 PRO - SIGMA 46 PRO.**



E- General Specifications

Machine		SIGMA 16 - SIGMA 46		SIGMA 16 PRO - SIGMA 46 PRO	
Marking	Specifications - Dimensions	SI	Imp.	SI	Imp.
A	Overall length of machine	6,55 m	21 ft 6 in	6,60 m	21 ft 8 in
B	Overall width of machine	1,75 m	5 ft 9 in	1,75 m	5 ft 9 in
C	Overall height of machine	2,00 m	6 ft 60 in	2,00 m	6 ft 60 in
D	Wheel base	2,00 m	6 ft 60 in	2,00 m	6 ft 60 in
E	Ground clearance	17 cm	7 in	17 cm	7 in
F X G	Platform dimensions	1,2 x 0,8 m	3 ft 11 in x 2 ft 7 in	1,2 x 0,8 m	3 ft 11 in x 2 ft 7 in
H	Storage length	6,55 m	21 ft 6 in	6,60 m	21 ft 8 in
J	Storage height	2,00 m	6 ft 60 in	2,00 m	6 ft 60 in
K	Center of gravity - X	1,13 m	3 ft 8 in	1,20 m	3 ft 11 in
L	Center of gravity - Y	0,95 m	3 ft 2 in	0,95 m	3 ft 2 in

E- General Specifications

2 - Major component masses

N.B.: -MASSES MEASURED WITH EMPTY TANKS.

Component	SIGMA 16 - SIGMA 46	SIGMA16 PRO - SIGMA 46 PRO
Wheel mass	85 kg - 187 lbs	
Frame assembly mass	906 kg - 1,998 lbs	
Counterweight mass	3 104 kg - 6,844 lbs	
Turret assembly mass	589 kg - 1,299 lbs	
Engine compartment mass	168 kg - 370 lbs	
Arm assembly mass	753 kg - 1660 lbs	
Boom assembly mass	549 kg - 1,211 lbs	558 kg - 1,230 lbs
Jib assembly mass	113 kg - 249 lbs	148 kg - 326 lbs
Platform assembly mass	131 kg - 289 lbs	

3 - Acoustics and vibrations

The acoustics and vibrations specifications are based upon the following conditions :

- The airborne noise emissions at workstation are determined per European Directive 2006/42/CE.
- The guaranteed sound power level LWA (displayed on the product) is determined per European Directive 2000/14/CE.
- The vibrations transmitted by the machinery to the hand/arm system and to the whole body are determined per European Directive 2006/42/CE.

Specifications	
Sound pressure level at workstation	68 dBA
Vibrations hand/arm	Vibration transmitted by this MEWP to the hand-arm does not exceed 2,5 m/s ² (98,4 in/s ²)
Vibrations whole body	Vibration transmitted by this MEWP to the whole body does not exceed 0,5 m/s ² (19,6 in/s ²)

E- General Specifications

4 - Wheel/Tire assembly

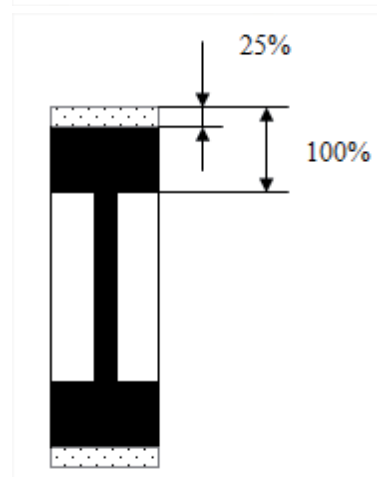
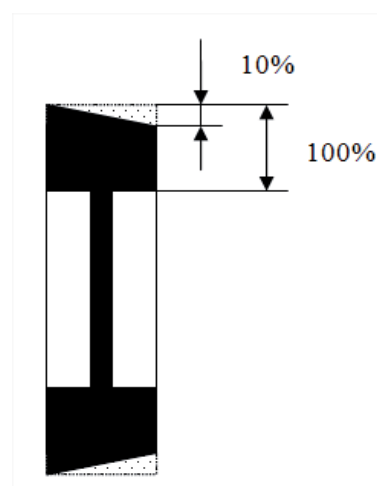
4.1 - TECHNICAL SPECIFICATIONS

Component	Standard wheel
Reference number	Camso 675 x 230
Type	Solid Tire
Wheel mass	85 kg (187 lbs)
Size	675/230 mm (26 in / 9 in)
Torque	170 Nm (125 lbs ft)

4.2 - INSPECTION AND MAINTENANCE

Replace the wheels and the tires if any of the following conditions exist :

- Presence of cracks, damage, deformation or other faults on the hub
- Damage to the tire :
- Cut or hole > 3 cm (2 in) in the rubber side wall.
- Blister or pronounced lump on the external and lateral wall.
- Damaged wheel stud.
- Damage or wear on the side wall to the extent that the reinforcing wire is visible.
- Consistent wear of the ground contact surface greater than 25%



Tires and rims are critical components for the stability of the machine. For safety reasons :

- Use only HAULOTTE® spare parts according to the technical characteristics of the machine. Refer to the spare parts catalog.
- Do not replace factory-installed tires with tires of different specifications or ply rating.
- Never replace solid tire with a pneumatic (air filled) tire.

E- General Specifications

Procedure of replacement :

- Raise the machine using a jack or a hoist.
- Loosen the wheel nuts on the wheel to be removed.
- Remove the wheel nuts.
- Remove the wheel.
- Install the new wheel.
- Tighten the wheel nuts to the recommended torque.
- Lower the machine to the ground.

N.B.-:IF A WHEEL HAS BEEN REPLACED, LOOK AT THE DIRECTION OF THE CLAMPS (WHICH INDICATES ROTATION IN THE AV DIRECTION) TO MAKE SURE IT IS CORRECTLY INSTALLED.

E- General Specifications

5 - Options

5.1 - SWING GATE

5.1.1 - Description

"SWING GATE" consists of a laterally mounted pivoting $\frac{1}{2}$ gate with closing latch, which enables a better access to platform. Spring loaded hinges and a latching mechanism allows the gate to swing inwards only.

Swing gate



5.1.2 - Characteristics

Width of the gate : 500 mm / 19.68 in

5.1.3 - Safety precautions



• The gate is part of the guardrail system and must be securely fastened after entering the platform.



Pay attention to the toeboard when entering or leaving the platform.

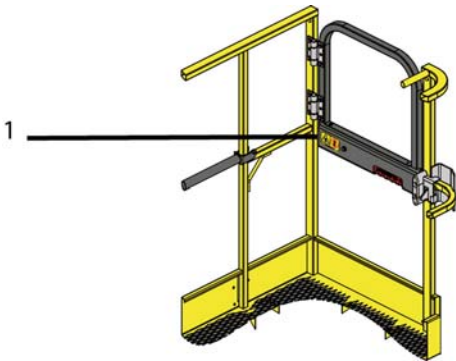
E- General Specifications

5.1.4 - Pre-operation instructions

- Inspect that the latching mechanism is securely fastened.
- Check the hinges and latch operate correctly and are not deformed.
- Ensure that the gate returns automatically to the closed and fastened position after entering or exiting the platform.

5.1.5 - Specific decals, optional

Location of the decals



Marking	Description	Quantity	Part number
1	Hand crushing hazard	1	4001052080

E- General Specifications

5.2 - PLATFORM

Technical specifications

Type	SIGMA 16 - SIGMA 16 PRO - SIGMA 46 - SIGMA 46 PRO		Platform entry
Small/standard platform	Platform length	1,2 m - 3 ft 11 in	Sliding bar (Standard)
	Platform width	0,8 m - 2 ft 7 in	
Large platform (Option)	Platform length	1,5 m - 4 ft 11 in	Sliding bar (Standard)
	Platform width	0,8 m - 2 ft 7 in	Swing gate (Option)

Sliding bar



Swing gate



E- General Specifications

5.3 - PLUMBER'S KIT

5.3.1 - Description

This attachment is an assembly designed to transport pipes and tubes. The assembly comprises of 2 cradles securely attached to the platform. The load (material) should be placed in both the cradles and secured with a strap (not supplied).

5.3.2 - Characteristics

Type Plumber's kit	SIGMA 16 - SIGMA 16 PRO - SIGMA 46 - SIGMA 46 PRO		Platform entry
Small/standard platform	Platform length	1,2 m - 3 ft 11 in	Sliding bar (Standard)
	Platform width	0,8 m - 2 ft 7 in	
Large platform (Option)	Platform length	1,5 m - 4 ft 11 in	Sliding bar (Standard)
 	Platform width	0,8 m - 2 ft 7 in	Swing gate (Option)

Component	Characteristics
Weight of the carrier	8 kg (20 lbs)
Weight of the equipment on the carrier	60 kg (132 lbs)
Maximum load surface	0,3 m ² (Ø 0,06 m x 1,5 m / 0,06 m x 1,2 m) / 3.23 sq.ft (Ø 0.19 ft x 4 ft 11 in / Ø 0.19 ft x 3 ft 9 in)
Maximum wind speed allowed	12,5 m/s - 45 km/h - 28 mph

5.3.3 - Safety precautions



- Please read and assimilate the instructions before using the attachment.
- This accessory is designed to transport pipes and tubes. Do not use this attachment for transporting other types of load. .
- Do not suspend loads.
- Do not overload the attachment and ensure that the equipment is correctly attached by means of a strap (not supplied).
- Do not exceed the maximum allowable platform capacity. The combined weight of the attachment, load, the occupants, the tools and any other equipment must not exceed the maximum allowable platform capacity.
- Do not load tubes whose surface area exceeds the maximum authorized surface area. Exposing an additional surface area to the wind reduces machine stability. Do not install any other attachments that increase the surface area exposed to the wind.
- Do not use the machine if the wind speed exceeds the authorized limit of the attachment.
- The cradles should always be positioned such that they are within the platform. Position the bottom end of the cradles such that they are resting on the platform floor.
- Ensure that the tube does not extend beyond the dimensions of the platform.

E- General Specifications

5.3.4 - Pre-operation inspection



- Check that the cradle has no cracks or other damage.
- Check that the cradle is correctly installed and secured to the platform.
- Check that the information decal is present on the cradle and is legible.
- Check that the strap is not twisted or torn.
- Check that the position of the load and attachment is not obstructing access to the platform or the controls.
- Check that the position of the attachment and the load is not reducing visibility during maneuvers in the work environment.

5.3.5 - Operation

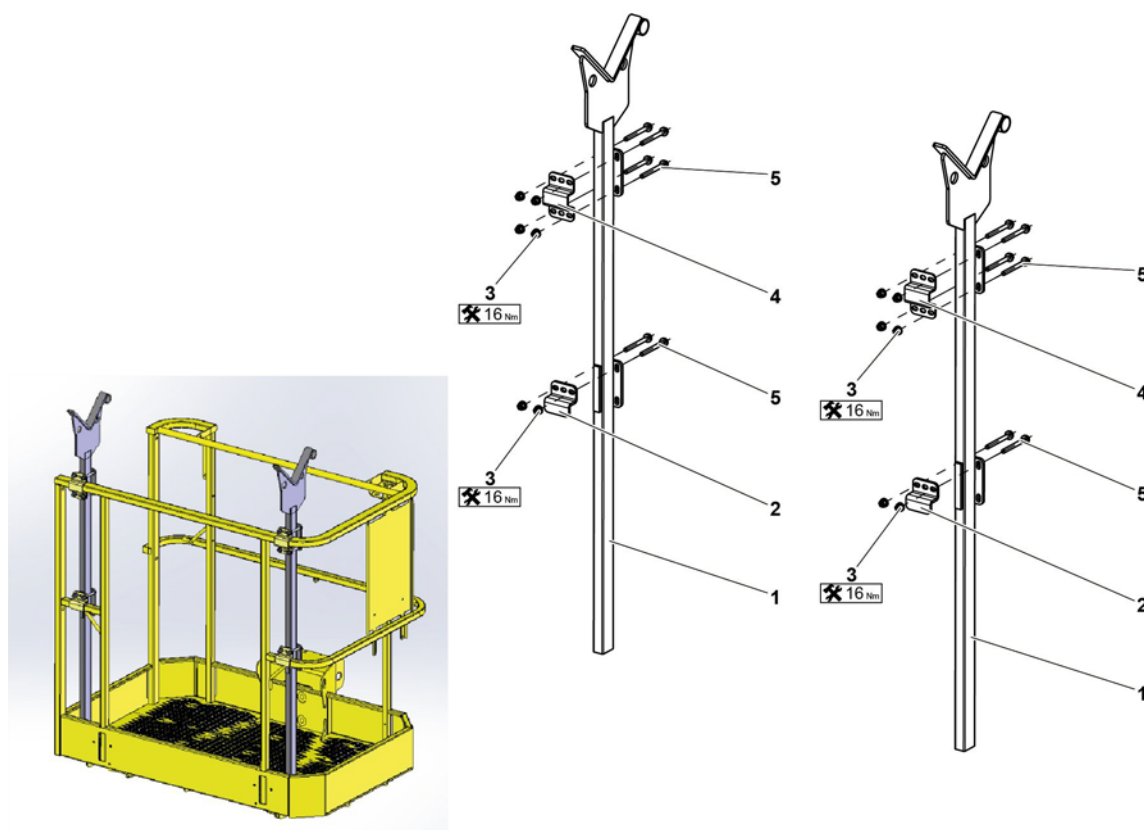
- Position the load to rest on the 2 cradles.
- Center the load on the cradles.
- Securely attach the load to each cradle with strap of adequate strength and dimensions.

Strapping example(s)



E- General Specifications

5.3.6 - Assembly - Dis-assembly



Marking	Description
1	Cradle
2	Flange
3	Nuts
4	Flange
5	Fastening screw

- Locate the cradles such that the load will be parallel to the length of the platform.
- Install cradles (1) to the guard rail using 4 supplied flanges (2) (4).
- Tighten up the flange using 4 supplied screw (5) and 4 nuts (3), wherever a cradle and the horizontal guard rail tubes intersect.

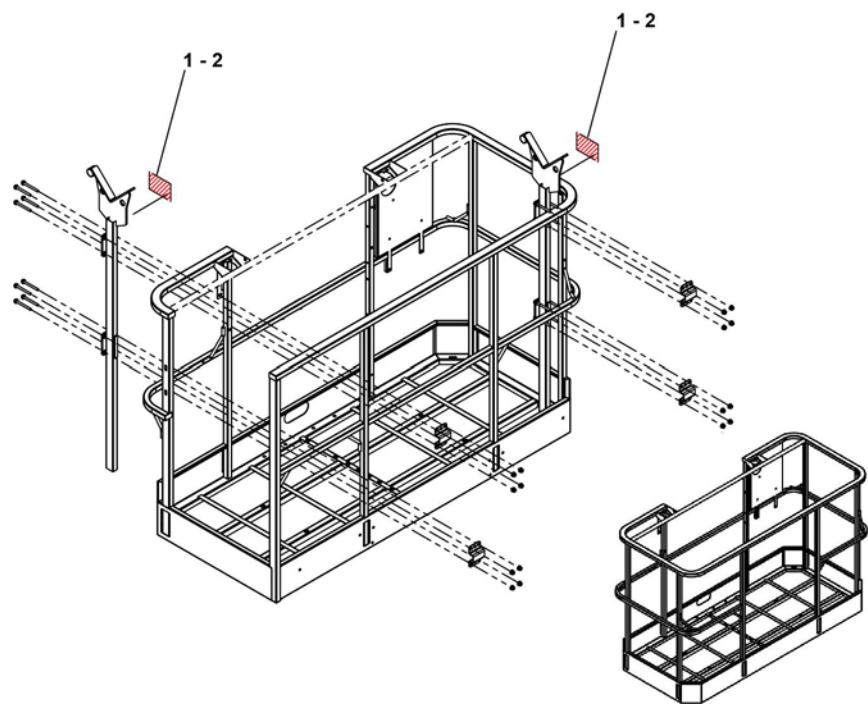
N.B.-:-TORQUE REQUIREMENTS : 16 NM (11.8 FT LBS)

- Ensure that the bottom of cradle is resting on the platform floor.
- Ensure that the distance between the 2 cradles support and center the load.
- Pre-operation test : Place and secure the load of 60 kg (132 lbs) on the cradles. Ensure that the cradles can support the load and that there is no visual structural damage.

E- General Specifications

5.3.7 - Specific decals, optional

Location of the decals



Marking	Description	Quantity	Part number
1	Risk of overturning	2	ANSI and CSA standards : In english 4000131600 In french 4000131610 In spanish 4000131620 In german 4000708570
2	Limit use of the option	2	CE, UKCA, AS and EAC standards : 4001098410

E- General Specifications

5.4 - SIGNALLING CONES HOLDER

5.4.1 - Description

This accessory is a set designed for hanging signalling cones.

5.4.2 - Characteristics

Component	Characteristics
Weight of the carrier	1,5 kg (3 lbs)
Weight of the equipment on the carrier	12 kg (26 lbs)

5.4.3 - Safety precautions



- Please read and assimilate the instructions before using the attachment.
- Do not use this attachment for installing any other type of welder unit. This accessory is designed for hanging signalling cones. .
- Do not overload the carrier (12 kg(26 lb) maximum).

5.4.4 - Pre-operation inspection

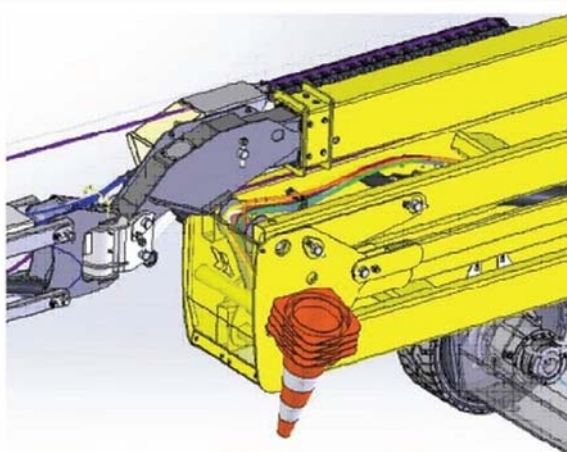


- Check that the cradle has no cracks or other damage.
- Check that the support is correctly secured.

E- General Specifications

5.4.5 - Operation

- Lower the holder.
- Place the cones in the holder.



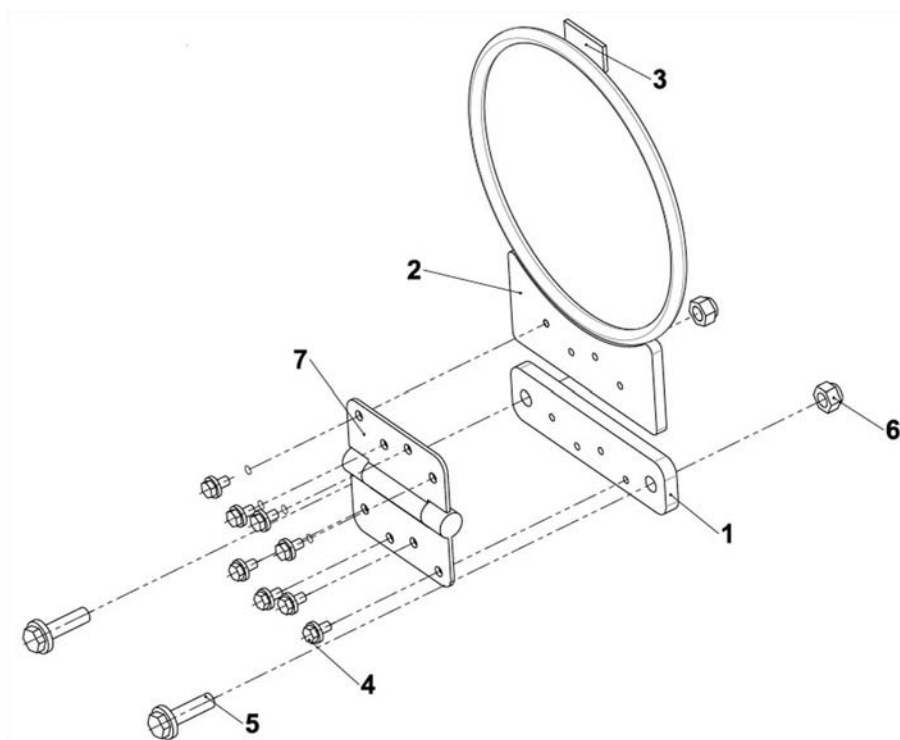
Raised position



Position with traffic cones

E- General Specifications

5.4.6 - Assembly - Dis-assembly



Marking	Description
1	Support plate
2	Carrier
3	Flat seal
4	Fastening screw (Tightening torques : 10 Nm (7,37 ft lbs))
5	Fastening screw (Tightening torques : 44 N.m (32,45 ft lbs))
6	Nut
7	Hinge

N.B.-:-TORQUE REQUIREMENTS : 10 NM (7,37 FT LBS) (4) - 44 N.M (32,45 FT LBS) (5)

E- General Specifications

5.5 - NEON TUBE HOLDER

5.5.1 - Description

This accessory is an assembly designed to store and transport neon lights safely.

5.5.2 - Characteristics

Component	Characteristics
Neon tube holder :	
External height	1,28 m (4 ft 2 in)
External width	0,21 m (9 in)
External length	0,19 m (8 in)
Weight of the carrier	0,8 kg (2 lbs)
Weight of the equipment on the carrier	4,1 kg (9 lbs)

5.5.3 - Safety precautions



- Please read and assimilate the instructions before using the attachment.
- Do not use this attachment for transporting other types of load. This accessory is designed for the safe handling of neon lights.
- Do not overload the carrier :
- Capacity : maximum 47 tubes Ø 26 mm or maximum 125 tubes Ø 16 mm. Length 1200 mm.
- The carrier should always be positioned so that it is within the platform.

5.5.4 - Pre-operation inspection



- Check that the cradle has no cracks or other damage.
- Check that the cradle is correctly installed and secured to the platform.
- Check that the strap is not twisted or torn.

E- General Specifications

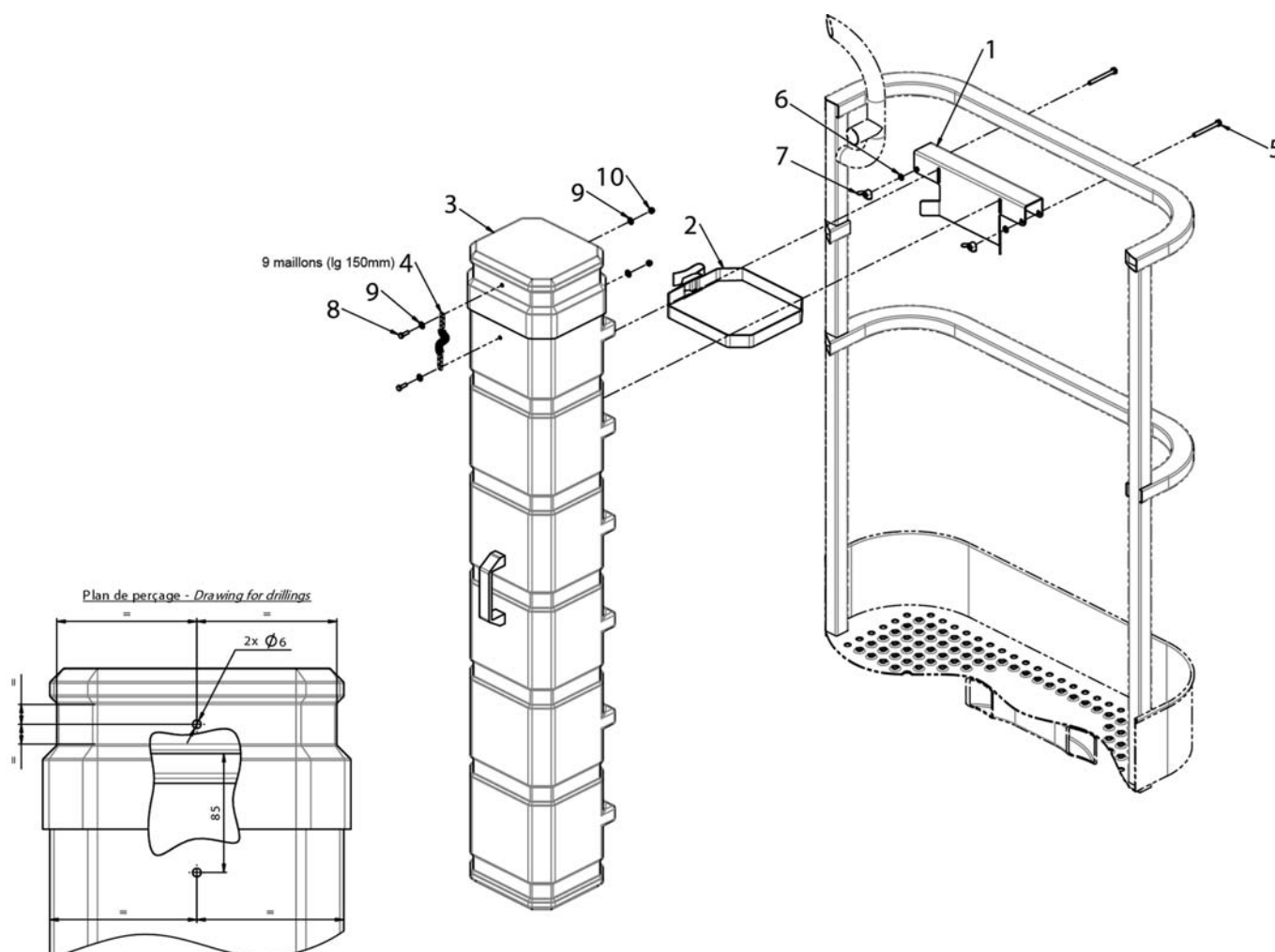
5.5.5 - Operation

- Strap the bracket to the tube holder.
- Position the bracket on the guardrail.
- Attach the bracket.



E- General Specifications

5.5.6 - Assembly - Dis-assembly



Marking	Description
1	Carrier
2	Strap
3	Neon tube holder (Length 1200 mm)
4	Chain (9 links - Length 150 mm)
5	Fastening screw
6	Washer
7	Nut
8	Fastening screw
9	Washer
10	Nut

E- General Specifications

5.6 - ACTIV' SHIELD BAR - SECONDARY GUARDING SYSTEM

5.6.1 - Description



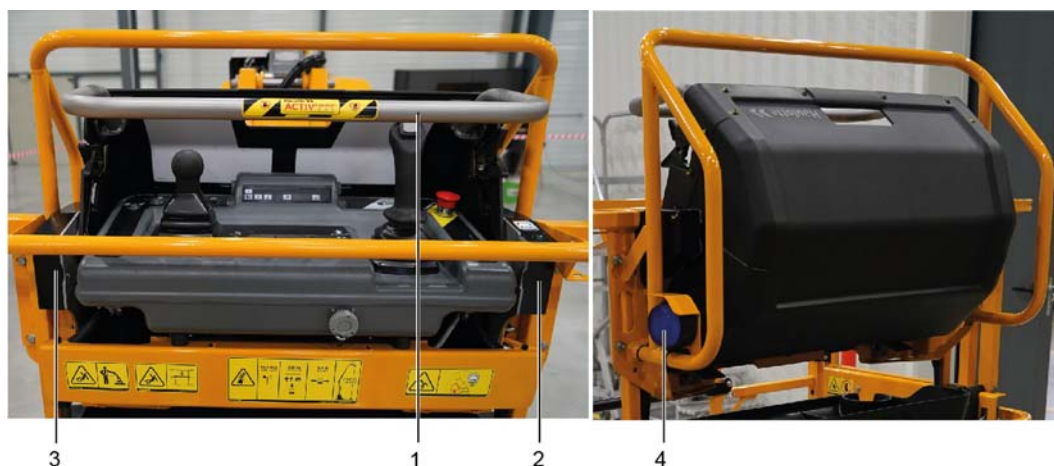
General Specification Activ' Shield Bar :

- The Activ' Shield Bar is a device designed to reduce the risk of entrapment against the control panel when the platform is in confined spaces.
- This device is complementary to the existing operator protection including the switches to activate the platform and ground control boxes.
- The Activ' Shield Bar system is enabled when the machine is unfolded (arm or boom lifted, boom telescoped) and in microdrive speed. The system is not enabled when the machine is in stowed position, and when turntable rotation or jib lifting movements are activated.
- The green indicator light of the Activ' Shield Bar is illuminated indicating the device is active :
- Flashing green indicator : Machine unfolded, Activ' Shield Bar system enabled and activation pedal is pressed.
- Green indicator on : Activ' Shield Bar is active.



This system does not relieve the operator from the responsibilities of learning and practicing the principles of safe use and operation of the machine as provided by the manufacturer's instructions, employer's safety rules and worksite regulations

5.6.2 - Characteristics



Marking	Description
1	Activation bar
2	Green indicator light
3	Sensor
4	Blue flashing light

E- General Specifications

5.6.3 - Safety precautions

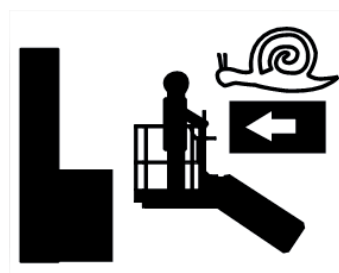
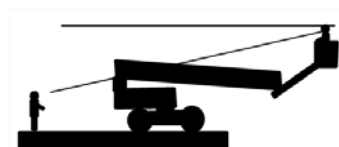


It is mandatory to ensure that the **Activ' Shield Bar** is functional at each start-up of the machine



Do not use the **Activ' Shield Bar as a handhold. This could result in an inadvertent triggering of the **Activ' Shield Bar**.**

- Check the work area for overhead clearances, obstructions or other possible hazards.
- When driving, position the platform so as to provide the best visibility possible and avoid any blind spots.
- Always ensure that the chassis is never driven any closer than 1 m (3 ft3 in) from holes, bumps, tilts, obstructions, debris and ground coverings that may hide dangers.
- During operation, keep all the parts of the body inside the platform.
- To position the machine close to obstacles, it is recommended to use boom movements (arm, boom, etc.) instead of the drive movements.
- Do not drive fast in narrow or cluttered areas. Keep speed under control while making turns or sharp bends.



E- General Specifications

5.6.4 - Pre-operation inspection



- If any item on the checklist is marked NO during the inspection; machine must be tagged and locked out and placed out of service.
- DO NOT operate the machine until all identified items are corrected and it has been declared safe for operation.

Description	Yes	No
Perform all specified machine functional tests		
• All machine functional tests result positive		
Start the machine from platform control box		
Switch off (push in) all the emergency stop buttons		
• Check absence of warning signal		
• Check that the blue indicator (4) is not activated when the machine is in stowed position		
To ensure Activ' Shield Bar device is functioning correctly, perform the following :		
When stowed :		
• Check that the green indicator light (2) is not illuminated		
When the boom, arm or telescope are unfolded and the machine is in microdrive speed :		
• Check that the green indicator light (2) is blinking-With platform stationary.		
• Check that the green indicator light (2) is illuminated-With platform in motion.		
Simultaneously make a movement and push forward the activation bar to trigger the system :		
• Check that all movements stop.		
• Check that the horn and the blue flashing light (4) are activated.		

N.B.-:-PRESS THE ACTIVATION PEDAL TO RESET THE SYSTEM ONCE THE BAR IS RELEASED.

E- General Specifications

5.6.5 - Operation

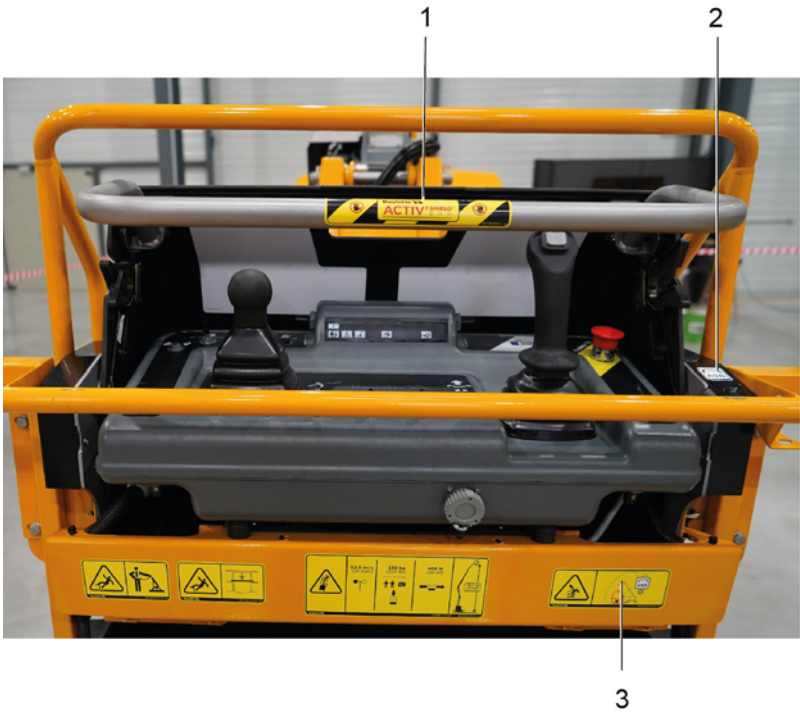
If the Activ' Shield Bar is pushed forward, all movements are stopped. The horn sounds and the warning blue light flashes. Only movements to move away from the entrapment are authorised.

To re-set the Activ' Shield Bar, release the activation bar, the Foot Switch and controls. Then, re-press the Foot Switch.

Care must be taken during all operations to prevent collision and entrapment against structures.

5.6.6 - Specific decals

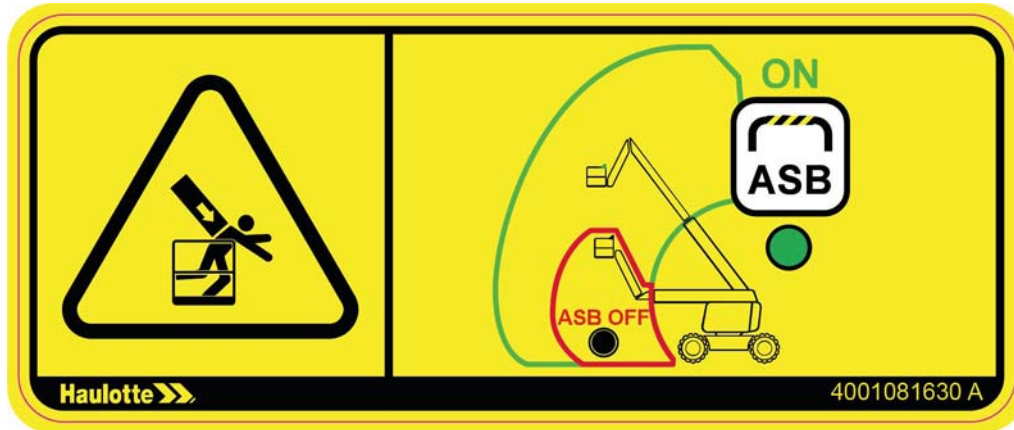
Location of the decals



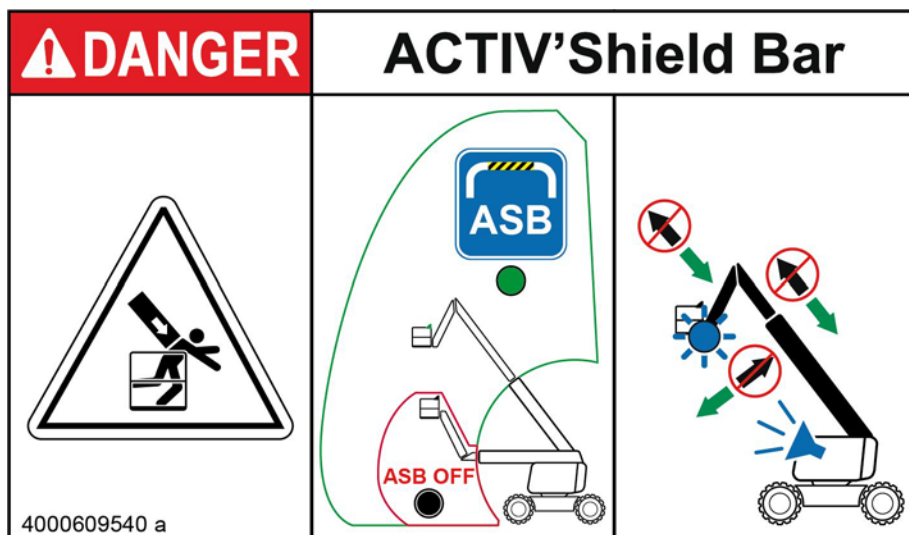
Marking	Description	Quantity	Part number - CE, UKCA, AS and EAC standards	Part number - ANSI and CSA standards
1	Do not lean on the bar	1	4001069640	4000206690
2	Activ' Shield Bar controls	1	4001069620	4000596720
3	Activ' Shield Bar instructions	1	4001081630	4000609540

E- General Specifications

Activ' Shield Bar instructions - CE, UKCA, AS and EAC standards



Activ' Shield Bar instructions - ANSI and CSA standards



F - Maintenance

1 - General

As an owner and/or operator of Haulotte equipment, your Safety is of utmost importance to HAULOTTE®, which is why HAULOTTE® places such a high priority on product safety.

INSPECTIONS are not only required by HAULOTTE®, but may also be required by industry standards and/or local regulations.

To ensure your equipment continues to achieve the level of performance set in the factory, it is important to maintain it regularly. We remind you that it is strictly forbidden to make any modifications. Regular and timely inspections will reduce equipment down time as well as prevent possible injury.

N.B.: -DO NOT OPERATE UNLESS YOU ARE FAMILIAR AND TRAINED IN THE PRINCIPLES OF SAFE MACHINE OPERATION.

Overview :

- Walk-around inspections take only a few minutes at the beginning and end of each shift – one of the best ways to prevent mechanical problems and safety hazards.

What to Do :

- Use your senses: sight, smell, hearing and touch.

Frequency :

- Check your machine periodically during your entire workday.
- Make sure to do your inspection the same way every time.
- Complete one of these inspections at the start and end of each shift.

N.B.: -IF DAMAGE OR UNAUTHORIZED MODIFICATIONS ARE DISCOVERED, THE MACHINE MUST BE REMOVED FROM SERVICE UNTIL REPAIRS ARE MADE BY A QUALIFIED SERVICE TECHNICIAN.

It is the owner's responsibility to ensure the required maintenance as recommended by Haulotte is completed prior to the operation of the machine.

If regular maintenance is not carried out, this may :

- Void the warranty.
- Cause machine malfunction.
- Reduce machine reliability and shorten its service life.
- Jeopardize operator safety.

HAULOTTE Services® technicians are specially trained to carry out extensive repairs, interventions or adjustments on the safety systems or elements of HAULOTTE® machines. They carry genuine HAULOTTE spare parts and tools as required, and also provide fully documented reports on all work completed.

The inspection and maintenance table, identifies the role and the responsibilities of each party in periodical machine maintenance.  Section C 3 - Inspection and Functional test.

F - Maintenance

2 - Maintenance Schedule

This section provides the necessary information needed to place the machine in safe operation. In accordance with the regulations that are currently applicable, this machine is designed to have a 10 year life span in normal usage conditions. The life may be extended or reduced dependent on the severity of operating conditions, the machine condition itself and by conducting effective inspections and maintenance in addition to other external factors. There are a number of factors which can affect the design life including but not limited to, severity of operating conditions/routine maintenance which should be carried out in accordance with this manual.

Severity of operating conditions may require a reduction in time between maintenance periods. Machines that have been out of service or have not been in use for more than 3 months must undergo a periodic inspection before the machine is put back into service.

Maintenance must be carried out by a competent company or person familiar with mechanical procedures.

Maintenance operations performed must be recorded in a register / log book of the machine.

F - Maintenance

3 - Inspection program

3.1 - GENERAL PROGRAM

The machine must be inspected on a regular basis at intervals of no less than once 1 per year. The purpose of the inspection is to detect any defect which could lead to an accident during routine use of the machine. Local standards and regulations may require more frequent inspections.

HAULOTTE® requires Reinforced and Major Inspections to be carried out on the product to extend its service life.

Inspections must be carried out by a competent company or person.

The inspection results must be recorded in the safety register or machine log book controlled and overseen by the company manager. This register or machine log book and the list of competent repair persons must be made available to the government work inspector and HAULOTTE Services®.

When	Responsible	Stakeholder	What
Before sale	Owner (or renter)	Competent technician or qualified technician HAULOTTE Services®	Periodic inspection
Before rent	Owner (or renter)	Competent technician or qualified technician HAULOTTE Services®	Daily inspection
Before use or every change of user	User	User	Daily inspection
Annually (1 year)	Owner (or renter)	Competent technician or qualified technician HAULOTTE Services®	Periodic inspection
5 years	Owner (or renter)	Qualified technician HAULOTTE Services®	Reinforced inspection
10 years	Owner (or renter)	Qualified technician HAULOTTE Services®	Major inspection

3.2 - DAILY INSPECTION

The Daily inspection includes a visual inspection, operational checks and testing of the safety systems. This must be conducted by the operator before using the machine.

This inspection is the responsibility of the user. Refer to  Section C 3.1 - Daily inspection.

F - Maintenance

3.3 - PERIODIC INSPECTION

The Periodic inspection is a thorough evaluation of the operation and safety features of the machine.

It must be conducted before the sale / resale of the machine and/or at least once every year.

Local regulations may have specific requirements on frequency, and content of inspections.

The severity of operating conditions may require frequent inspections.

This inspection is the responsibility of the owner, and inspections must be carried out by a competent company or person.

This inspection is in addition to the daily inspection.

This inspection should also be conducted after :

- Extensive dismantling and reassembly of major components.
- Repairs involving the machine's essential components.
- Any accident causing stress to the machine.

3.4 - REINFORCED INSPECTION

The Reinforced inspection is a thorough evaluation of the machine's structural components, to ensure proper functionality of the machine.

This evaluation must occur at a frequency of 5000 hours or every 5 years.

This inspection is the responsibility of the owner, and it must be conducted by a HAULOTTE Services® technician or by a competent company or person.

This inspection includes :

- Daily inspection
- Periodic inspection

N.B.-:-REFER TO THE MAINTENANCE MANUAL FOR DETAILS.

F - Maintenance

3.5 - MAJOR INSPECTION

The Major inspection is a thorough evaluation of the machine's integrity and proper functioning; after a normal service life of 10 years.

This evaluation must take place after 10 years of operation and then repeated every 5 years thereafter.

The severity of operating conditions may require frequent inspections.

This inspection is the responsibility of the owner, and it must be conducted by a HAULOTTE Services® technician or by a competent company or person.

This inspection includes :

- Daily inspection
- Periodic inspection
- Reinforced inspection

N.B.-:REFER TO THE MAINTENANCE MANUAL FOR DETAILS.

F - Maintenance

4 - Repairs and adjustments

Extensive repairs, interventions or adjustments on the safety systems or components must be performed by a HAULOTTE Services® technician. Use original spare parts and components only.

N.B.: -HAULOTTE SERVICES® TECHNICIANS ARE TRAINED PROFESSIONALS TO PERFORM EXTENSIVE REPAIRS, INTERVENTIONS AND ADJUSTMENTS ON THE SAFETY SYSTEMS OR COMPONENTS OF HAULOTTE® MACHINES. THE TECHNICIAN CARRIES GENUINE HAULOTTE® SPARE PARTS AND TOOLS AS REQUIRED, AND ALSO PROVIDES FULLY DOCUMENTED REPORTS ON ALL WORK COMPLETED.

HAULOTTE Services® will not take responsibility for any outcomes resulting from inferior services or repairs performed by other unauthorised personnel.

HAULOTTE® reminds that NO modifications SHALL be carried out without the written permission of HAULOTTE®.

Any unauthorised repairs/modifications will void HAULOTTE® warranty.

To check for safety campaigns, consult our website : www.haulotte.com



N.B.: -WHEN DISPOSING OR SCRAPPING THIS MACHINE, PLEASE CONSIDER APPROPRIATE METHODS OF RECYCLING. ANY ITEMS THAT REQUIRE SPECIFIC DISPOSAL ARE LISTED WITH INSTRUCTIONS IN THE MAINTENANCE MANUAL.

G- Other information

1 - Conditions of warranty

Our warranty conditions and extension contracts are now available on the websites of our sales network : www.haulotte.com

2 - Subsidiary contact information

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G- Other information

2.1 - CALIFORNIA WARNING

For the US destined machines (ANSI and CSA standards)

CALIFORNIA



Proposition 65 Warning

Operating, servicing and maintaining a passenger vehicle or off-road vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle.

For more information go to  www.P65Warnings.ca.gov/passenger-vehicle

CALIFORNIE



Avertissement de la Proposition 65

L'exploitation, l'entretien et la maintenance d'un véhicule de tourisme ou d'un véhicule tout-terrain peuvent vous exposer à des produits chimiques, y compris les gaz d'échappement, le monoxyde de carbone, les phthalates et le plomb, identifiés par l'État de Californie comme pouvant causer le cancer et des malformations congénitales ou autres effets nocifs sur la reproduction. Pour limiter toute exposition: évitez de respirer les gaz d'échappement, ne laissez pas tourner le moteur au ralenti sauf si nécessaire, faites l'entretien du véhicule dans une zone bien aérée et portez des gants ou lavez vous fréquemment les mains lors de cette opération.

Pour de plus amples informations, consulter  www.P65Warnings.ca.gov/passenger-vehicle

CALIFORNIA



Advertencia de la Proposición 65

Operar, dar servicio y mantenimiento a un vehículo de pasajeros o vehículo todo terreno puede exponerle a químicos incluyendo gases del escape, monóxido de carbono, ftalatos y plomo, los cuales son conocidos por el Estado de California como causantes de cáncer y defectos de nacimiento u otros daños reproductivos. Para minimizar la exposición, evite respirar los gases del escape, no encienda el motor excepto si es necesario, dé servicio a su vehículo en un área bien ventilada y utilice guantes o lave sus manos frecuentemente cuando dé servicio a su vehículo.

Para mayor información visite  www.P65Warnings.ca.gov/passenger-vehicle

G- Other information

For electric (battery operated) machines

CALIFORNIA



Proposition 65 Warning

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer.
WASH HANDS AFTER HANDLING.

For more information go to  www.P65Warnings.ca.gov

CALIFORNIE



Avertissement de la Proposition 65

Les batteries, les bornes et autres accessoires contiennent du plomb et des composés à base de plomb, agents chimiques identifiés par l'État de Californie comme pouvant provoquer le cancer et des effets nocifs sur la reproduction. Les batteries contiennent également d'autres agents chimiques identifiés par l'Etat de Californie comme pouvant provoquer le cancer.
SE LAVER LES MAINS APRES MANIPULATION.

Pour de plus amples informations, consulter  www.P65Warnings.ca.gov

CALIFORNIA



Advertencia de la Proposición 65

Los bornes, los terminales y los accesorios de las baterías contienen plomo y compuestos de plomo, químicos conocidos por el Estado de California como causantes de cáncer y daños reproductivos. Las baterías también contienen otros químicos conocidos por el Estado de California como causantes de cáncer.

LAVESE LAS MANOS DESPUES DE MANIPULARLOS.

Para mayor información visite  www.P65Warnings.ca.gov

G- Other information



Notes

Notes section with horizontal lines for writing.

H- Intervention register

1 - Intervention register

The intervention register keeps a record of maintenance and repair work carried out inside or outside the maintenance programme.

N.B.: -IN THE CASE OF A HAULOTTE SERVICES® INTERVENTION, THE QUALIFIED TECHNICIAN MUST INDICATE THE HAULOTTE SERVICES® INTERVENTION NUMBER.

Date	Type of intervention	Number of hours	Intervenor	HAULOTTE Services® intervention number

A

B

C

D

E

F

G

H

I

H- Intervention register

[illegible]