MODELS
TOUCAN 1100

ISO 9001 BSI REGISTERED
Cert. N° FM 40826

OPERATOR'S AND SAFETY MANUAL

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Updated : 04.2006

MA0138-03
English

CE MODELS

TECHNICAL SPECIFICATIONS			
Serial number	**T 1100 A :**	**T 1100 B :**	**T 1100 C :**
Made in	**JLG France, Z.I. de Fauillet, B.P. 20 47400 Tonneins, France**		
Weight	3500 kg	3540 kg	3500 kg
Maximal load	200 kg (2 persons + 40 kg materiel)	230 kg (2 persons + 70 kg materiel)	200 kg (2 persons + 40 kg materiel)
Maximal load on one wheel	2600 daN		
Manual force	40 daN		
Height	2,19 m		
Working height	11 m		
Vibration levels	- The weighed root mean square acceleration value to which the arms are subjected (control levers) is inferior to 2,5 m/s/s.		
	- The weighed root mean square acceleration value to which the feet are subjected (platform floor) is inferior to 0,5 m/s/s.		
Acoustic pressure	- The equivelent continuous 'A' weighed sound pressure level at the work station is inferior to 70 dB(A).		
	- The measure has been made by placing the sonometer at 1,60 m avobe the platform floor.		
	- The indicated value does not include the motion alarm.		
Maximum hydraulic pressure	23 Mpa		
Voltage	24 V		
Gradeability	10%		
Maximum wind speed	30 km/h	0 km/h	30 km/h
Maximum tilt	2°		

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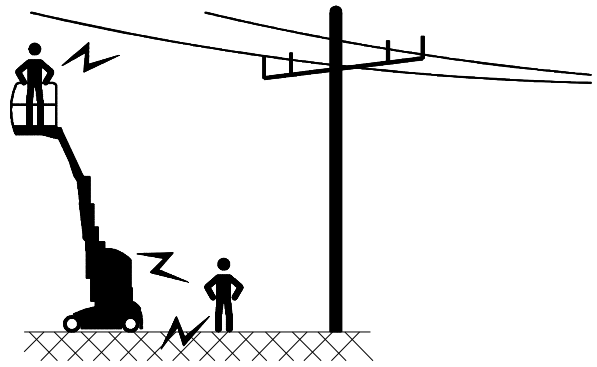
DANGER



ELECTRICAL HAZARD

THIS MACHINE IS NOT INSULATED

- DEATH OR SERIOUS INJURY COULD RESULT FROM CONTACT WITH OR INADEQUATE CLEARANCE FROM ELECTRICAL POWER LINES OR EQUIPMENT.
- DO NOT OPERATE ANY PART OF THIS MACHINE IN PROXIMITY TO ELECTRICAL POWER LINES OR EQUIPMENT.
- MAINTAIN A MINIMUM CLEARANCE OF 6 METRES FROM ALL ELECTRICAL POWER LINES OR EQUIPMENT.
- KEEP AWAY FROM MACHINE IF BEING OPERATED NEAR ELECTRICAL POWER LINES OR EQUIPMENT.

DANGER

DO NOT OPERATE THIS MACHINE UNLESS YOU ARE QUALIFIED BY TRAINING EXPERIENCE IN THE SAFE OPERATION OF THIS MACHINE

TRAINING INCLUDES COMPLETE KNOWLEDGE OF YOUR EMPLOYER'S WORK RULES, THE OPERATOR'S AND SAFETY HANDBOOK AND ALL GOVERNMENT REGULATIONS RELATIVE TO THIS MACHINE.

AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO DEATH OR SERIOUS INJURY.

NOTICE TO OWNER / USER

Should this work platform become involved in an accident, please contact your local JLG distributor immediately and relate details of the incident so that he can notify JLG. If the distributor is unknown and/or cannot be reached, please contact :

USA :

JLG Industries, Inc.
Product Safety & Reliability Department,
1 JLG Drive
McConnellsburg, PA
USA 17233-9533
Toll Free: (877) 554-7233
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DISTRIBUTOR'S STAMP

FOREWORD

This handbook has been compiled to assist you in properly operating and maintaining your Self Propelled Work Platform.

Before placing the work platform in service, take time to thoroughly familiarize yourself with the content of this manual. After all sections have been read and understood, retain this manual in the manual box provided to this effect for future reference.

The work platform has been designed for maximum performance with minimum maintenance. With proper care, years of trouble-free service can be expected.

Constant improvement and engineering progress make it necessary that we reserve the right to make specification and equipment changes without notice.

Routine maintenance procedures are supplied at the end of this handbook and can be consulted for more detailed information.

Information in this manual does not replace Community, state or local regulations, safety codes, or insurance requirements.

The definitions of DANGER, CAUTION, and NOTE as used in this manual apply as follows /

DANGER

A DANGER IS USED TO EMPHASIZE THAT IF AN OPERATION, PROCEDURE, OR PRACTICE IS NOT FOLLOWED EXACTLY, DEATH OR SERIOUS INJURY TO PERSONNEL MAY RESULT.

CAUTION

A CAUTION IS USED TO EMPHASIZE THAT IF AN OPERATION, PROCEDURE, OR PRACTICE IS NOT FOLLOWED EXACTLY, EQUIPMENT DAMAGE MAY RESULT.

NOTE

A note is used to emphasize an important procedure or condition.

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This handbook provides important information for the operation and maintenance of JLG work platform Model

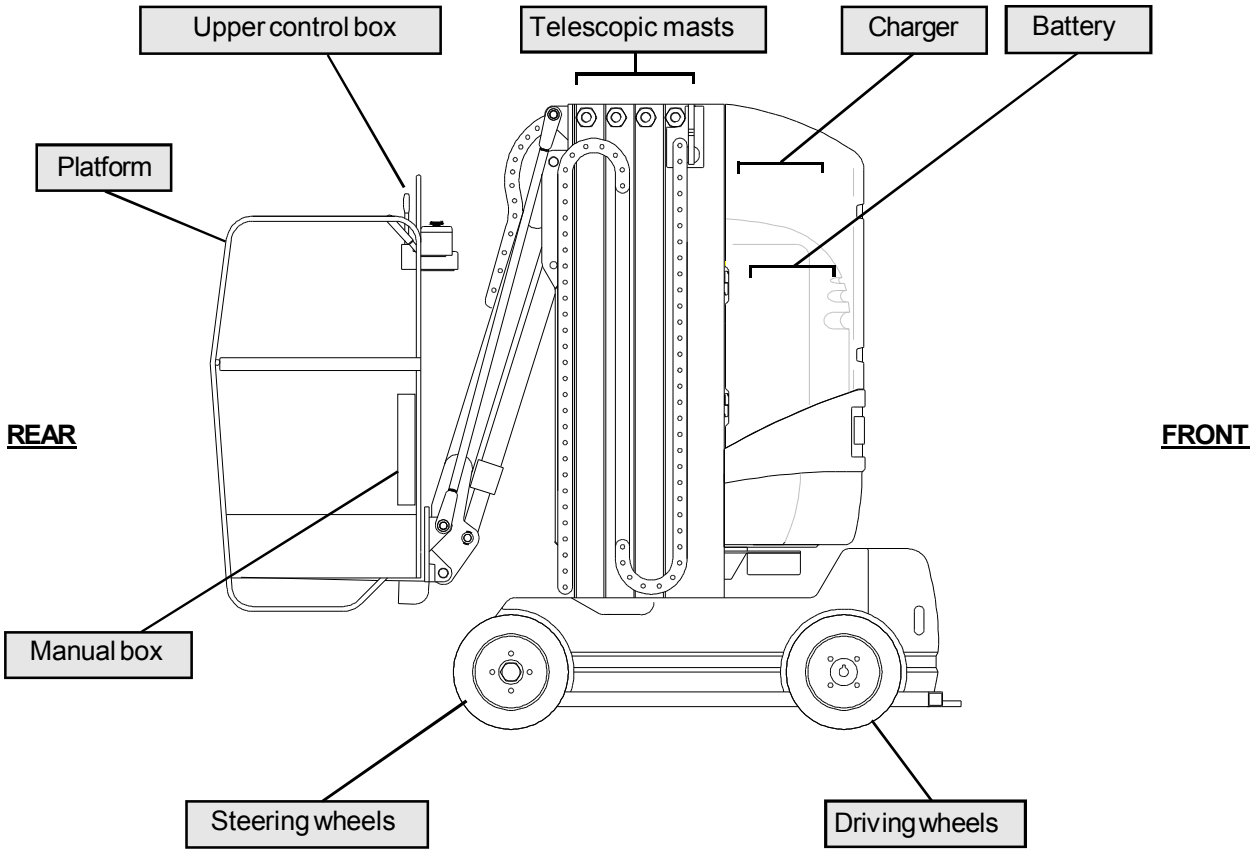
Toucan 1100 A, Toucan 1100 B and Toucan 1100 C.

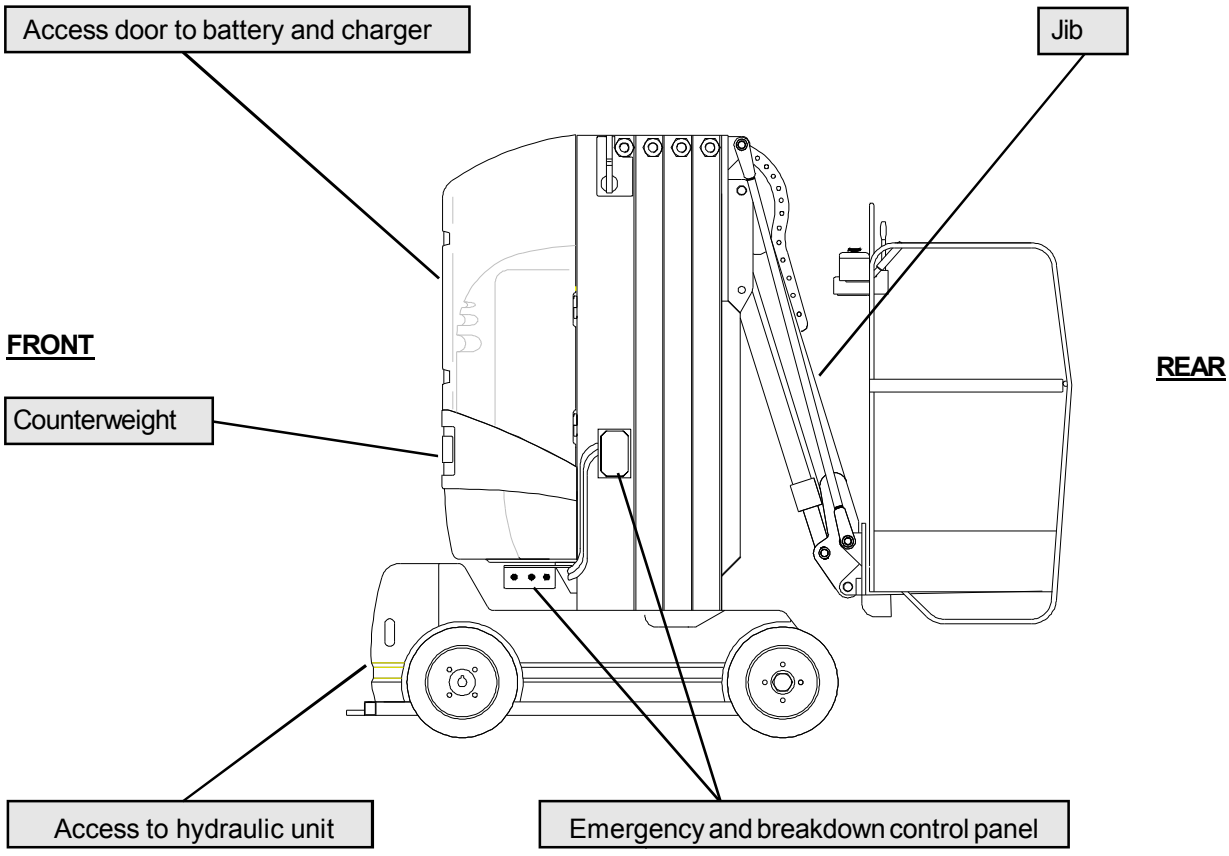
The JLG (aerial) Elevating Work Platform is a self-propelled type with an all welded steel frame. The drive is accomplished by two hydraulic motors. The steering is accomplished by an hydraulic cylinder. The hydraulic power unit is located on the front of the chassis and provides hydraulic energy for the work platform operation. The electrical power is provided by a 24 VDC battery.

In working mode, the work platform may be safely driven only on firm and level surfaces. All four wheels must be in permanent contact with the ground. The load must be distributed in the platform and must not exceed the manufacturer's rated load with the mast and jib in any position. The maximum rated load is indicated on the machine's nameplate.

The work platform operations are primarily controlled from the upper control box mounted on the platform. The emergency and breakdown panel is located on the left hand side of the machine.

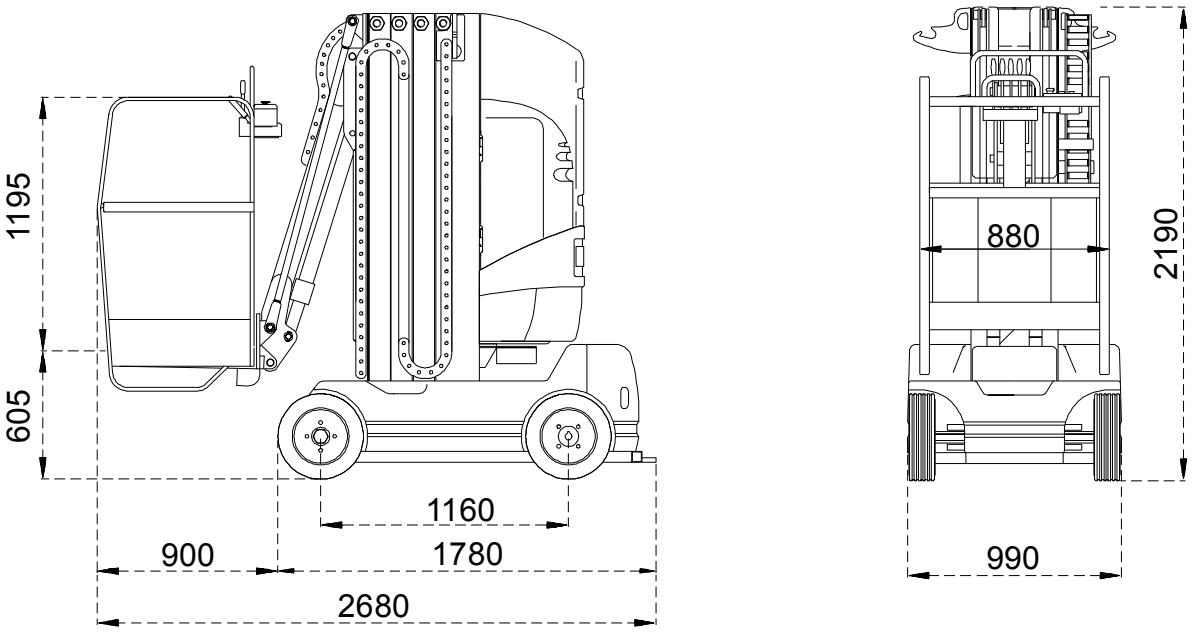
2.1. General description.

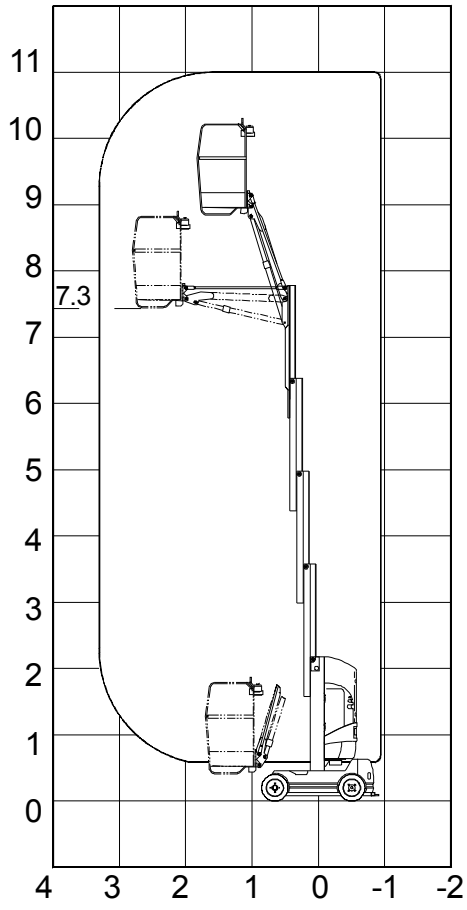


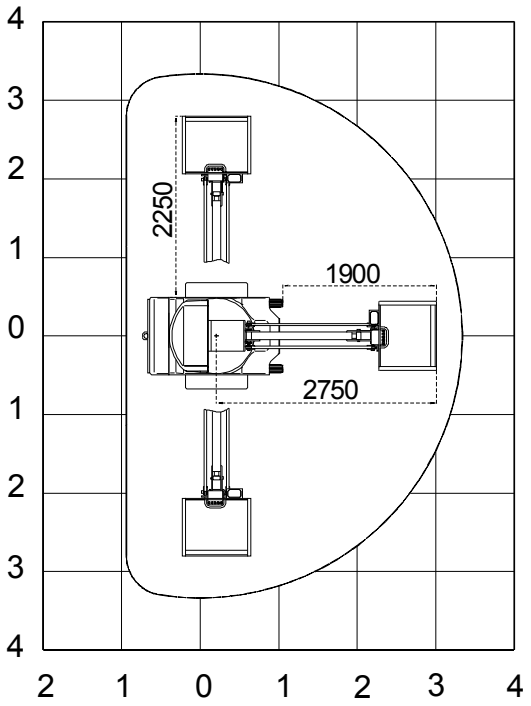


2.2. Dimensions and range diagrammes.

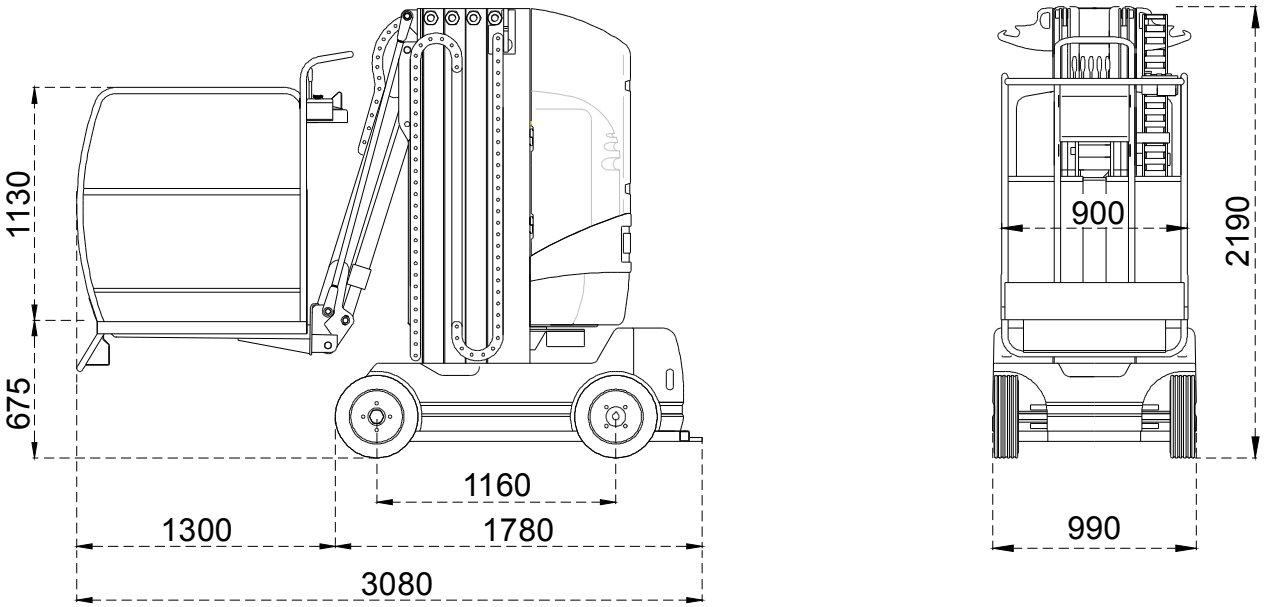
2.2.1. Toucan 1100 A.

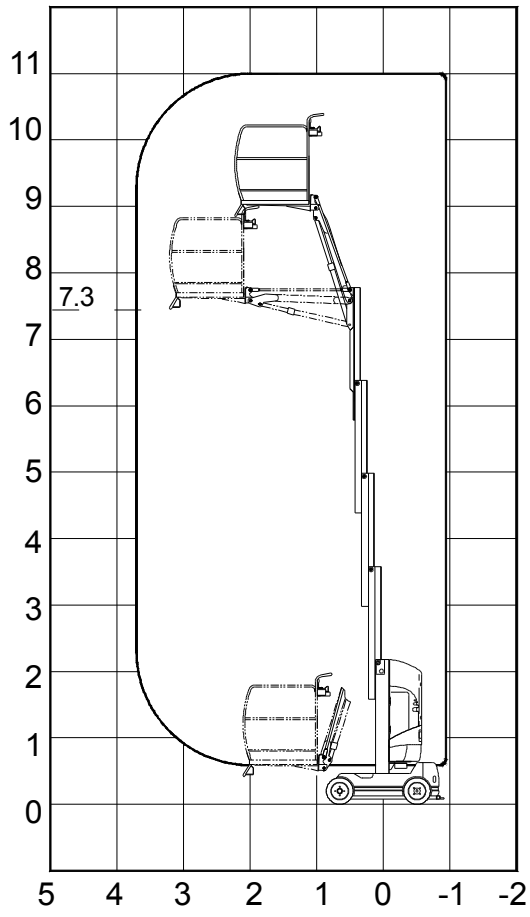


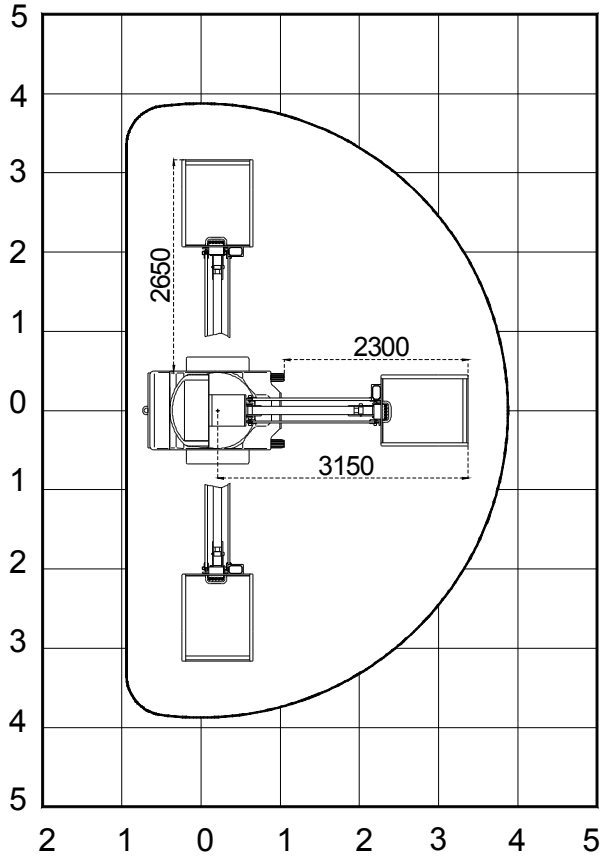




2.2.2 Toucan 1100 B, Toucan 1100 C.







3.1. General.

NOTE

Illustrations have been included in this section to emphasize important points : read and follow printed instruction.

It is impossible to compile a list of safety precautions covering all situations. However, there are basic safety precautions that **MUST** be followed during your daily routine. Safety is **YOUR PRIMARY RESPONSIBILITY**, since any piece of equipment is only as safe **AS THE PERSON AT THE CONTROLS.**

With this thought in mind, this information has been provided to assist you, the operator, in promoting a safe working atmosphere for yourself and those around you. It is not meant to cover every conceivable circumstance which could arise. It is intended to present basic safety precautions that should be followed in daily operation.

If you have any questions on operating procedures, work platform usage, or any other applications, contact your local, authorized JLG distributor.

Definitions

Work platform — (Elevating Work Platform) A self-propelled, integral frame machine with a platform supported by a telescopic mast to position personnel along with their tools and materials at overhead work locations.
Platform — The portion of the work platform intended to be occupied by personnel, tools and materials.
Upper Control Box — A console in the platform containing operating controls for the work platform.
Emergency and Breakdown Panel — A ground level console containing the levers and hand pump enabling the platform manual lowering from the ground in emergency or breakdown cases.

Because you, the operator, are the only part of the work platform that can think and reason, your responsibility is not lessened by the addition of warning devices or operational aids. In fact, you must guard against a false sense of security when using the machine. Warning devices and operational aids are there to assist, **NOT** direct the operation. Warning devices can be mechanical, electrical or electronic or a combination thereof. There are subject to failure or misuse.

You, the operator, are the only one who can be relied upon to assure the safety of yourself and those around you. Be a **PROFESSIONAL** and follow the **RULES** of safety.

⚠ CAUTION

Remember, failure to follow just one safety precaution can cause that accident to people and equipment.
You are responsible for the safety of yourself and those around you.

IMMEDIATELY report all accidents, malfunctions, and equipment damage to your employer and the local authorised JLG distributor. Following any accident or damage to equipment, the JLG distributor must be immediately advised of the incident and consulted on necessary inspections and repairs. Should the distributor not be immediately available, contact should be made directly with JLG Product Support. The work platform must not be returned to service until it is thoroughly inspected for any evidence of damage and all damaged parts are repaired or replaced.

3.1.1. Operator's information.

You must **READ** and **UNDERSTAND** the Operator's and Safety Handbook before operating the work platform. This manual must be readily available at all times and remain with the work platform (in the manual box provided to this effect).

Ensure that all personnel occupying the platform and also ground personnel are thoroughly familiar with safe operating practices.

You must be thoroughly familiar with the location and content of all placards and decals on the work platform. Decals provide important instructions and warnings and must be read prior to any operational or maintenance function.

You must be familiar with the regulations and standards governing work platforms and their operation. Work practice requirements may vary slightly between governement regulations, industry standards, and employer policies so a thorough knowledge of all such relevant work rules is necessary.

⚠ DANGER

The machine must be used with sufficient ambiant light.

3.1.2. Operator's qualification.

Do not attempt to operate the work platform unless you are trained and thoroughly familiar with all operational functions. Controls, features, and operating procedures may vary from work platform to work platform so it is **ESSENTIAL** that you have specific training given by competent, authorized personnel for the particular machine you will be using.

Never jeopardize your well-being or that of others by attempting to operate a work platform on which you have not been trained. Training is **ESSENTIA**L to proper operation and safe work practices depend on proper operation.

You must be mentally and physically fit to operate the work platform and not be under the influence of medication, narcotics or alcohol. **ANY** type of drug could impair physical, visual and mental reactions and capabilities.

DANGER

Do not operate this machine unless you are qualified by training experience in the safe operation of this machine.
Training includes complete knowledge of your employer's work rules, the operator's and safety handbook and all governmental regulations relative to this machine.
An untrained operator subjects himself and others to death or serious injury.

3.1.3. Work practice.

Job preparation

You must inspect the work platform prior to your work shift checking for cracked welds, other damaged components.

You must ensure that the work platform is fully and properly equipped including plaform railing, access steps, covers, gates, guards and controls. You must also check that this manual is in its box and the good condition of the decals on the machine.

Wear proper clothing and personal protective equipment as required by local job regulations. It is recommended to wear a safety harness. Two harness attachment rings are fitted on the work platform.

Before entering the platform, you must be **THOROUGHLY** familiar with the planned route of travel and area of operation, including surface conditions (i.e. debris, drop-offs, holes, etc....) and the presence of overhead obstructions and power lines.

Be familiar with the location and use of the nearest fire extinguisher.

Always keep the platform clean, free of dirt, debris and grease. Anyone entering the platform must first clean his shoes. Do not store flammable materials on the work platform.

Working

Do not use the work platform for any operation it was not designed for by the manufacturer. It is by definition intended to bring personnel, their tools and **NECESSARY** materials at overhead locations, not for handling bulk materials.

Do not use the work platform in dusty conditions unless it has been protected to this effect.

Keep all equipment and materials used on the platform well organized and evenly distributed. Never exceed platform capacity. Do not allow ropes, electrical cables or hoses to become entangled during operation. Never use guardrails to handle materials.

Operate the work platform slowly and cautiously. Always look in the direction of the movement. Avoid any dangerous operation. Never allow anyone to hitch a ride or get on or off the platform while in motion. Never operate the work platform outdoors in bad weather (thunderstorms, violent winds or if wind speeds exceed those recommended in the technical characteristics).

When travelling between work locations on the job site, fully lower the mast so that the platform is as close to the ground as possible while maintaining adequate clearance for the terrain. The jib may be raised to improve visibility.

Avoid whenever possible to travel in areas presenting risks of objects falling on the platform occupants. Should this be impossible, you must wear all individual protections required by the regulations in force and by the employer safety rules.

If the work platform must be towed, plan the route and follow proper towing instructions. Ensure that the platform is fully lowered.

Do not allow personnel on the ground to operate, service or in any other way tamper with the machine when the platform is occupied, except in an emergency situation where platform personnel are unable to fully lower and exit the platform.

If welding is being performed by an occupant of the platform, electrodes and holders must be protected from contact with metal components of the platform. Electronic components can be damaged during welding. To avoid damage, disconnect all electronic components prior to performing welding from the machine.

Use the following steps when shutting down the work platform :

- Fully retract mast and jib and exit the platform.
- Place the controls in neutral position.
- Chock the wheels.
- Remove the ignition key.

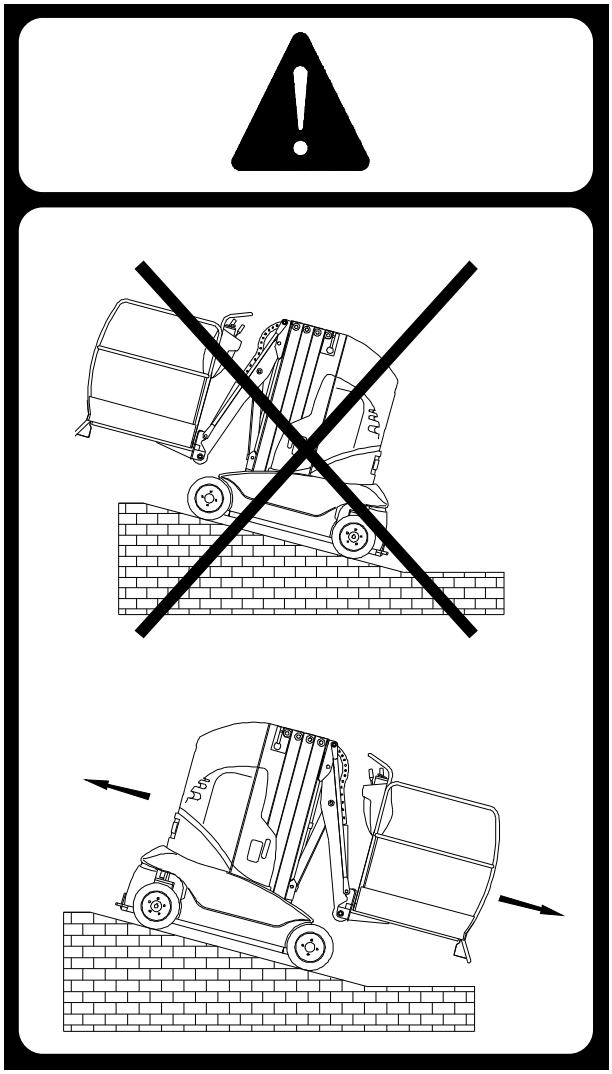
In cold weather, never allow skin to directly contact metal surfaces. Do not park the work platform where the wheels can become frozen to the ground. Cold weather requires special starting procedures and ample time for hydraulic oil to warm up. Keep the platform free of ice and snow.

3.2. Machine stability.

Be aware of all conditions that could adversely affect the stability of the work platform. Death or serious injury could result from the machine tipping over and certain precautions must be taken to avoid such possibilities.

DANGER

The battery is an integral part of the counterweight. Substitute this battery for a lighter or heavier battery will cause the machine to tip over.



To prevent accidents while travelling on slopes, the platform MUST be fully lowered, the drive speed MUST be in second gear and the counterweight MUST always be on the uphill side of the slope.

PRIOR to any operation, you must inspect the **ENTIRE** work site and all ground conditions for bumps, holes, drop-offs, obstructions, and personnel where the work platform will travel during operation. Ensure that the surfaces where the machine will travel in elevated position are horizontal and will support a load greater that the work platform's weight. Check the tilt alarm for proper functioning.

Operate the work platform only on firm level surfaces. Do not position the work platform near holes or drop-offs.

Never drive the machine into holes, curbs or other obstacles on the ground.

Before driving the work platform, the operator must be thoroughly familiar with the machine's driving, steering and stopping characteristics. Avoid sudden starts and stops which can produce motion, swaying and an increased loading effect. Reduce operating speed when in close quarters. Never apply excessive force to the work platform controls.

NEVER EXCEED THE PLATFORM'S RATED CAPACITY (printed on the capacity plate on the machine) and ensure that any load on the platform is secure and evenly distributed.

Never operate the work platform if wind speeds exceed those indicated in the technical characteristics.

3.3. Falling hazard.

You must take every precaution to ensure you do not fall from the platform. Falling from any elevation could result in serious injury or death.

Do not operate the work platform unless the platform railing is in place and secure and all gates or openings are closed.

While occupying the platform, maintain **A FIRM FOOTING** on the floor of the platform at all times. **DO NOT LEAN OVER OR SIT ON THE PLATFORM RAILING, NEVER CLIMB ONTO THE PLATFORM RAILING OR ONTO ANY OBJECTS ON THE PLATFORM FLOOR TO ATTAIN ADDITIONAL WORKING HEIGHT.**

Keep the platform clean and remove debris from shoes before entering the platform. Dirt, debris, liquids and ice on the platform or access steps could cause a slipping accident.

Never exit or enter the platform by any other means than the access system provided and when the platform is fully lowered.

3.4. Crushing hazard.

Always be aware of your working environment during operation of the work platform. Always avoid contacting the work platform and its occupants with external objects during operation. Should contact occur, lower the platform and inspect for damage before continuing operation.

You must always be aware of what is below, above, beside, before and behind the work platform during any elevating, lowering, swinging or driving function. If you are unable to clearly see in the direction of motion, you must post a look-out or signal person before operating the work platform.

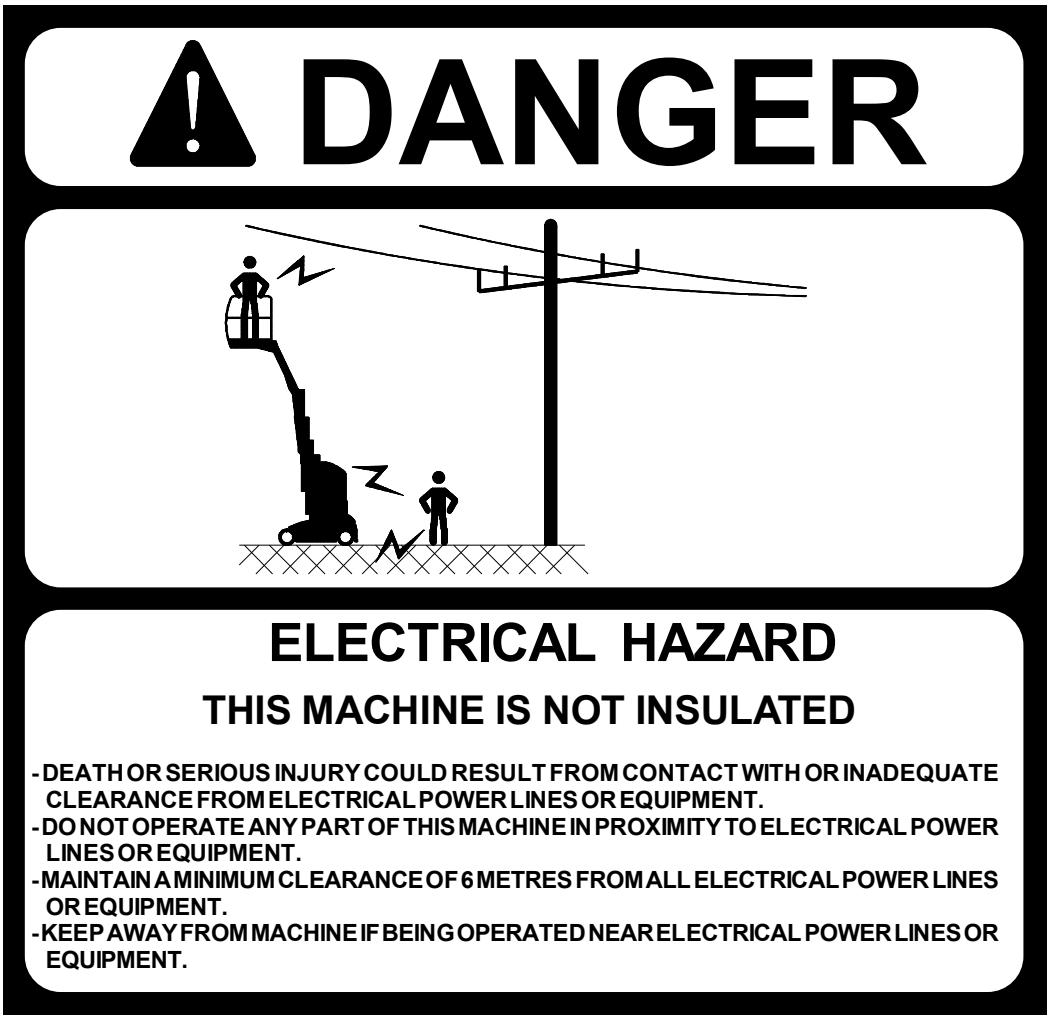
Never position the platform into any obstructions or put yourself in a position of interference between the platform and another object. Take extreme caution to avoid such a situation.

Never drive any part of the work platform into obstructions or personnel. Always look in the direction of travel.

Exercise caution when lowering the platform to avoid descending onto objects or personnel below.

Clear all personnel from the platform before lowering the mast and/or jib or rotating the platform.

3.5. Electrical power sources



Do not operate any parts of this machine in proximity to electrical power lines or equipment.

Maintain a minimum clearance of **6 metres** from all electrical power lines or equipment at all times.

Death or serious injury could result from contact with or inadequate clearance from electrical power lines or equipment.

You must never operate this work platform within any distance of a power source or power line without first notifying the power or utility company. Always obtain positive and absolute assurance that the power has been turned **OFF**.

During work platform use, assume that every line is energized and take the necessary precautions accordingly.

You, the operator, are responsible for alerting all personnel of dangers associated with electrical power lines and equipment. The platform is not insulated. Do not allow unnecessary personnel in the vicinity of the work platform while it is in use.

Even if a work platform is not affected by an electrical contact, others in the area may become seriously injured or killed.

It is not always necessary to contact a power line or power source to become electrocuted. Electricity, depending on magnitude, can jump or become induced into a work platform. Low voltages can also be dangerous.

Set-up (park) the work platform in a position such that no part of the machine can be moved to within **6 METRES** of power lines and equipment. This consideration should include the extremes of the work platform's attainable configurations (e.g. height) when the base is in a stationary position.

A suitable barricade should be erected to physically restrain the work platform and all attachments from entering into an unsafe distance from power lines and equipment.

Thoroughly **READ** and **UNDERSTAND** all applicable regulations in force and operate the work platform in compliance with these regulations. The use of proximity devices or mechanical limit stops does not assure that electrical contact will not occur. You must follow the rules and precautions outlined in this handbook at all times regardless of the devices which the work platform may be equipped with.

Plan ahead and always plan a safe route before travelling under power lines. Rider poles should be erected on each side of a crossing to ensure sufficient clearance is maintained.

Grounding of a work platform affords little or no protection from electrical hazards. **DO NOT** depend on grounding.

Overhead lines tend to blow in the wind so allow for this when determining safe operating distances.

If the work platform should come in contact with an energized power source, you must immediately warn those in the vicinity to stay away. Allow no one to use the lower controls at ground level in this situation. You, the operator on the platform, should attempt to move the work platform away from the power source. Should the operator become incapacitated or the work platform loose functional capability, the power company should be contacted to de-energize the electrical source. **NO ONE** must attempt to use the lower work platform controls until the power has been turned off.

Following a contact with an energized electrical source, the local JLG distributor must be immediately advised of the incident and consulted on necessary inspections and repairs. Should the distributor not be immediately available, contact should be made directly with JLG Product Support. The work platform must not be returned to service until it is thoroughly inspected for any evidence of damage and until all damaged parts are repaired or replaced.

3.6. Maintenance.

DANGER

Failure to properly maintain and inspect this machine could result in death or serious injury.
This machine must not be used unless it is operating properly.

- **Perform all periodic inspections and maintenance specified by the manufacturer and government agencies.**
- **Allow only authorized service and repairs to be performed on this machine.**
- **Do not modify, substitute parts, or change any hydraulic, electrical or operators aid setting without obtaining written approval from JLG.**
- **Do not remove any decal or the Operator's and Safety Handbook from this machine.**

NEVER operate a damaged or poorly maintained work platform.

Before work platform use :

- Conduct a visual inspection for cracked welds, leaks, damaged controls or cables and loose wire connections. Any item or component that is found to be damaged (broken, leaking, cracked, worn, etc...) must be repaired or replaced.
- Inspect tyres for nicks, cuts, imbedded stones and abnormal wear.
- Ensure all bolts and lug-nuts are properly torqued.

Keep the work platform clean at all times, free from mud, dirt and grease. Dirty equipment wears out faster and makes good maintenance difficult. Cleaning solutions used should be appropriate for the job and non flammable. Avoid spraying cleaning solutions directly onto electrical components.

Do not clean electrical components (boxes, motor, controller, etc...) with a high pressure cleaner. Failure to respect this precaution can result in serious damages to components.

ROUTINE MAINTENANCE and **INSPECTION** of this work platform must be performed by a qualified person(s) and in accordance with the recommendations in this manual. Any question regarding procedures and specifications should be directed to the local authorized JLG distributor or JLG Product Support.

Service and repairs to the work platform must only be performed by a qualified person. All service and repairs must be performed in accordance with manufacturer's recommendations and the handbook for this machine. All replacement part must be JLG approved.

Unless authorized and approved by JLG do not make any modification, alterations or changes to a work platform which in any way affects it original design. Such action invalidates all warranties and makes the owner/user liable for any resultant accident.

Before performing any maintenance, service or repairs on the work platform :

1. The mast and jib must be fully lowered or lowered until resting on suitable blocking or support.
2. Controls should be properly tagged. Never operate the work platform if it is **TAGGED OUT** nor attempt to do so until it is restored to proper operating condition and all tags are removed.
3. The batteries as well as the charger plug should be disconnected and the ignition key removed.
4. Recognize and avoid pinch points while performing maintenance.

After performing maintenance, service or repairs on the work platform :

1. Replace all guards and covers that were removed.
2. Reconnect the batteries and remove tags.
3. Remove blocking and/or supports.
4. Perform a function check of operating controls to ensure proper operation. Load test must be performed when a structural or lifting member is involved in repair.

LUBRICATION

The work platform must be lubricated according to the factory recommendations for lubrication points, time intervals and types.

Exercise care when servicing the hydraulic system of the work platform. Pressurized hydraulic oil can cause serious injury.

The following precautions must be taken when servicing the hydraulic system :

1. Follow the manufacturer's recommendations when adding oil to the system.
2. Be certain all lines, components and fittings are tight before resuming operation.
3. When checking for suspected leaks, place underneath a piece of cardboard or wood.
4. Never modify the setting of a relief valve.

BATTERIES

DANGER

Before performing any maintenance on the machine, the batteries and the charger plug must be disconnected.

Battery electrolyte must not be allowed to contact the skin or eyes. If this does occur, flush the affected area with water and consult a doctor immediately.

When checking and maintaining batteries, follow the following proper procedures and precautions :

- Do not short across the battery posts to check charge. Spark or flame could cause battery explosion.
- Check electrolyte levels in the battery by using the generally yellow floats in the centre of each filler cap.
- Wear safety glasses when servicing batteries.
- Do not disconnect the positive battery clamp first. Disconnect the grounded battery clamp first when removing a battery and connect it last when installing a battery.

Charge batteries only in an open, well ventilated area free of flame, smoking, spark and fire. Ensure you conform to all particular regulations in force.

NOTE

Function on the equipment, a temporization integrated to the electrical system disconnect the control boxes approximately 4 hours after the last operation of the machine. This system preserves the battery should the operator forget to disconnect the machine. After cut out, the emergency stop switch on the emergency control panel must be depressed then turned clockwise to restore the functions of the machine.

4.1. Platform controls

The work platform can be operated from the platform. The upper control box is located on the platform. They ensure hydraulic functions in normal operation.

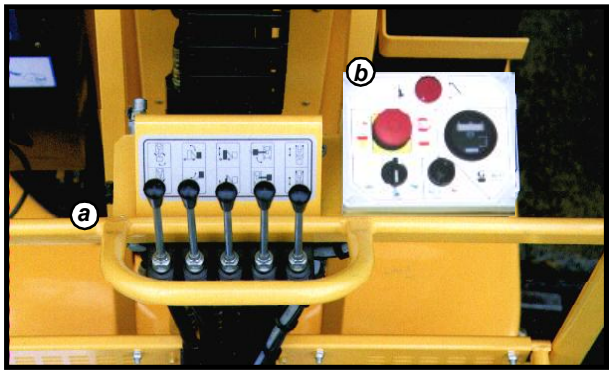


Fig. 4.1- Upper control box controls.

a- Movement control levers.

b- Electrical control box.

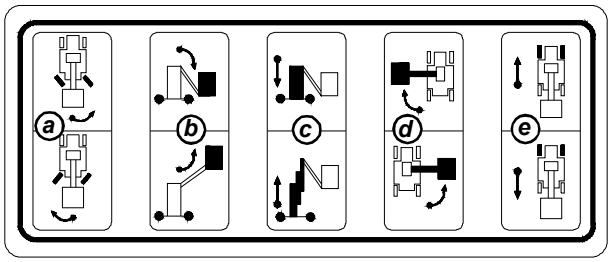


Fig. 4.2- Movement control decal.

a. Steering control lever : Position the control lever in the desired direction : PUSH to steer the work platform to the RIGHT and PULL to steer the work platform to the LEFT.
b. Jib lift/lowering control lever : PULL the lever to RAISE the jib and PUSH the lever to LOWER the jib.
c. Mast lift/lowering control lever : PULL the lever to RAISE the mast and PUSH the lever to LOWER the mast.
d. Swing control lever : PULL the lever to swing the platform to the RIGHT and PUSH the lever to swing the platform to the LEFT.
e. Drive control lever : PUSH the lever to drive the machine FORWARD and PULL the lever to REVERSE the machine.

NOTE

Depress the enable pedal before activating a movement control lever.

DANGER

Injuries to the occupants of the platform and damage to the machine could result from a brusque inversion of the drive direction, when the machine is being driven in retracted position.

a. Emergency stop switch : Push on the switch to cut the electrical supply from the hydraulic unit, stopping all functions from the platform. The switch must be pulled out to restore the functions of the machine.

b. Drive speed selector:


1° : Slow speed


2° : Slope climbing speed

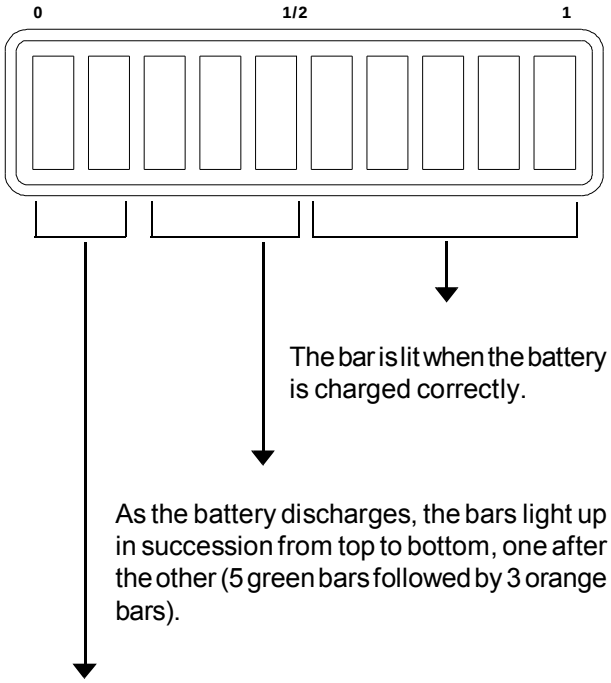

3° : Fast speed

NOTE

As soon as the platform is raised, the machine switches automatically to slow speed.

c. Double function push button :
- Horn
- Reset button used to reach the charging station after the battery discharge indicator has cut the electrical supply.

d. Battery discharge indicator / hour meter:



At this point, the bottom 2 bars (red) flash in alternance (the electrical power is cut off, indicating that the battery is 80% discharged, and that it must be recharged.

e. Indicator showing an excessive tilt or a chain slack (refer to § 4.3.1.2 and 4.3.1.4).

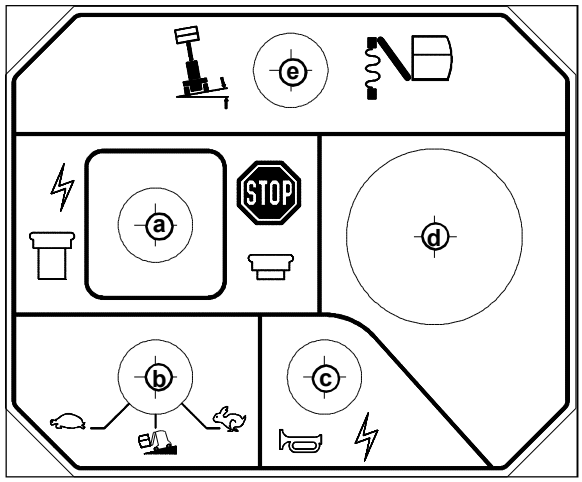


Fig. 4.3- Electrical control box decal.

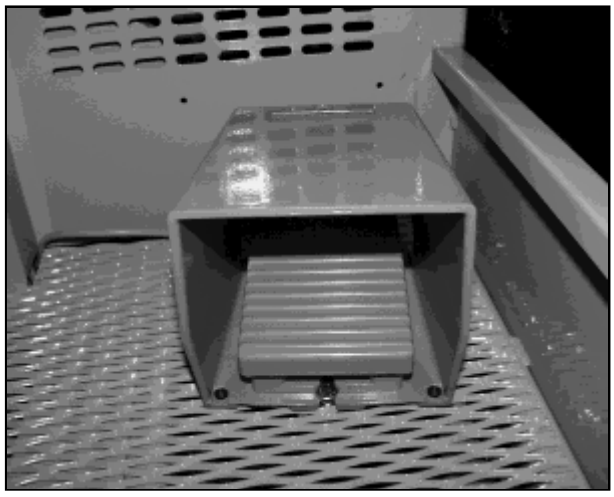


Fig. 4.4- Enable pedal.

4.2. Emergency and breakdown control panel

It is possible to operate the work platform from the ground controls with the exception of the drive and steering functions. The ground controls are located on the left hand side of the machine. They are used to operate the emergency and breakdown functions.

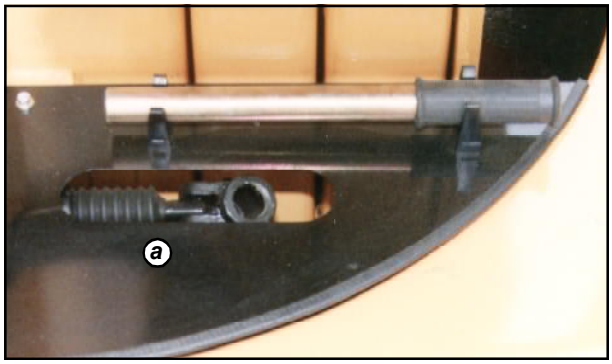


Fig. 4.5 - Hand pump.

a. Hand pump **(Fig. 4.5)** : Insert the pump handle in the hand pump, activate the pump handle to supply the necessary power while activating the control lever corresponding to the desired function.

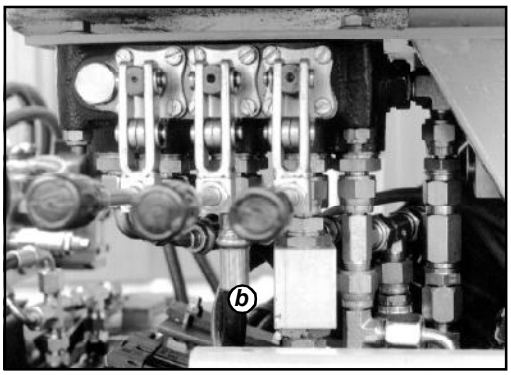


Fig. 4.6 - Control levers.

b. Control levers (from left to right) **(Fig 4.6.):**

1. Swing control lever.
   LEFT : lift and hold the control lever.
   RIGHT : push down and hold the control lever.

2. Jib control lever.
   Jib LOWERING : push down and hold the control lever.
   Jib RAISING : lift and hold the control lever.

3. Mast control lever
   Mast LOWERING : push down and hold the control lever.
   Mast RAISING : lift and hold the control lever.

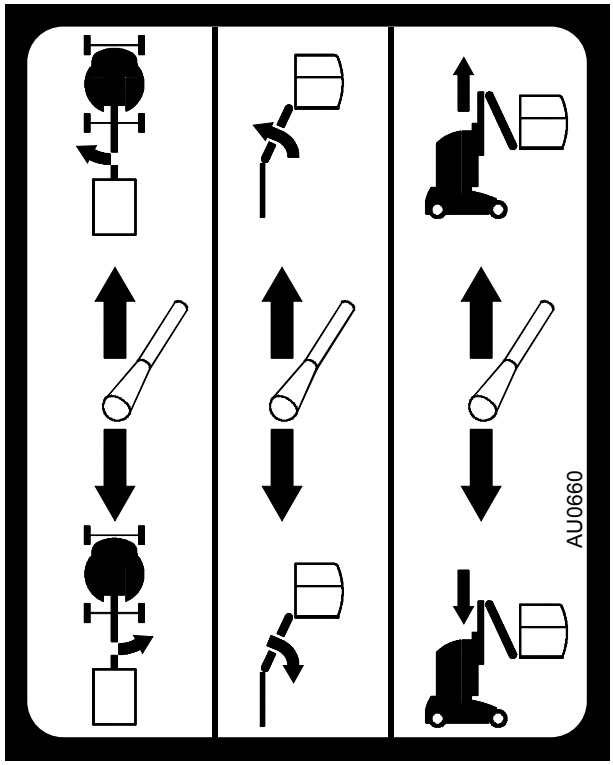


Fig. 4.7 - Emergency panel decal.

c. Emergency stop switch **(Fig 4.8)**: PUSH the switch in to remove the electrical power from the machine, stopping all functions from the platform. The switch must be pulled out to restore the functions of the machine.

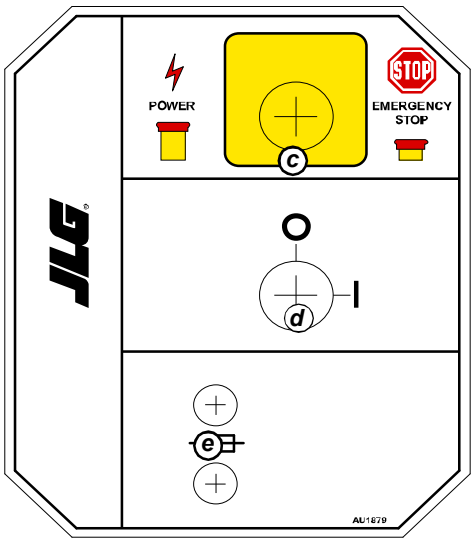


Fig. 4.8 - Lower electrical box.

d. Ignition key : Position the ignition key to **"I"** to start the machine, or to "0" to remove the electrical power and remove the key.

e. Panel mounted fuse holder.

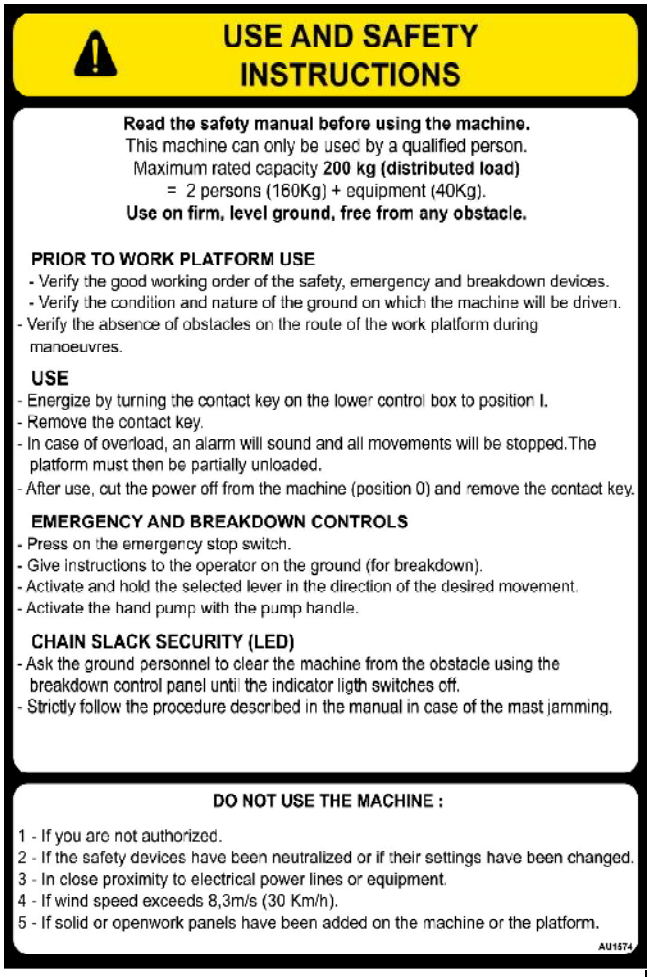


Fig. 4.9 - Use and safety instructions.

4.3. Breakdown

In case of a breakdown:

- Ground personnel must obtain authorization from the operator before performing a manœuvre.
- In the case of a slack chain, the emergency control panel should only be used after the specific procedure on this safety feature has been read (refer to § 4.3.1.4)

4.3.1. Safety devices and alarms.

4.3.1.1. Motion alarm.

The motion alarm is located inside the front cover. This alarm is activated whenever one function is selected.

4.3.1.2. Tilt indicator.

When the chassis is 2° off the horizontal, the switch will activate the buzzer and an indicator will light up on the platform upper control box. Activation of the alarm indicates that the work platform is at its maximum out of level limit and is nearing an unstable position. No function should be performed other than those necessary to return the work platform to a more stable position.

It is recommended to place the machine in the following configuration :

- Jib retracted.
- Rotation in the position least unfavourable for stability.

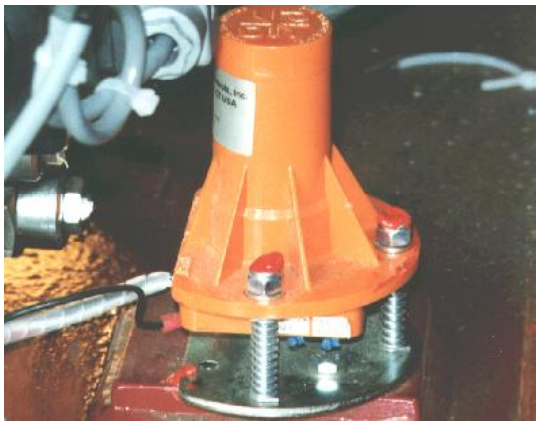


Fig. 4.11 - Tilt sensor.

4.3.1.3. Overload detection.

The machine is fitted with an overload detection system located at the rear of the platform.

The platform is articulated on the platform support. It rests on an assembly of spring washers. A sensor fixed to the platform support detects the overload and stops all movements of the machine (when the overload is detected, a buzzer sounds). To restore the machine's functions, the platform must be unloaded until the buzzer stops.

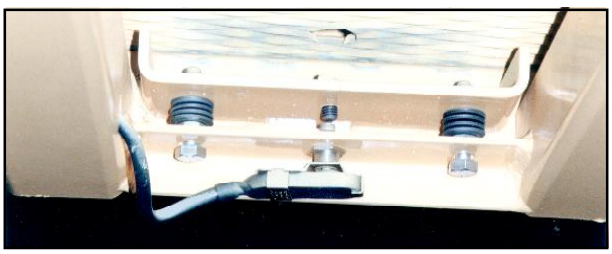


Fig. 4.12 - Overload detection system.

4.3.1.4. Slack chain detection

The detection system for a slack chain prevents dangerous movements in case the work platform or the jib come to rest on an obstacle during a mast or jib lowering movement.
Each chain stage is fitted with a sensor, which, upon detection of a slack chain, actuates an acoustic alarm and a light indicator on the platform control box. All the work platform functions are disabled. In normal operation, the sensors are not actuated.

Procedure to follow in case this safety feature is actuated:

- Identify the cause through an examination of the environment.
- Call competent ground personnel to the rescue
- Inform the person that the problem is a slack chain and that firstly **THE MAST AND/OR THE JIB HAS TO BE RAISED** to release the platform or the jib of the machine.
- As soon as the alarm is no longer actuated, the platform control box is operational again: perform the necessary movement(s) to prevent the platform to rest on the obstacle again.

If the examination of the environment does not reveal any resting possibility, the jamming of the telescopic mast may have actuated the alarm. This can be due to:

- The presence of a foreign body in the guiding system
- A lack of lubrication (refer to §15.21)
- An incorrect adjustment (refer to the Service Manual).

⚠ DANGER

If the mast jamming actuates the slack chain alarm, the procedure below must be respected to prevent any serious injury.

After verification the slack chain is not caused by the platform or the jib resting on an obstacle, proceed in the following manner :

- Call competent ground personnel to the rescue.
- Inform the person that the problem is a slack chain and that firstly, THE MAST HAS TO BE RAISED to deactivate the alarm (and tension the chains) using the emergency controls.
- If the alarm is deactivated: lower the jib as much as possible and swing the superstructure in the best position to be rescued. Try again to lower the mast.
- In case the alarm is reactivated, hold on tightly to the guardrail and swing the platform sideways. When released, the platform will come down suddenly by 10 to 20 cm.
- If the alarm is not activated: fully lower the mast. A qualified person must inspect the machine before it is returned into service.
- If the mast is still not released, or if the alarm is still active, an evacuation must be envisaged.

⚠ DANGER

If the mast is still jammed, the following procedures must be respected to prevent any serious injury.

- Ask the ground personnel to raise the mast again until the alarm stops (chains tensioned).
- Ask the person to lower the jib as much as possible and swing the superstructure in the best position to be rescued.
- The breakdown control using the hand pump must not be used with the mast jammed except by a qualified person with a good knowledge of the operation of the vertical mast.

⚠ DANGER

Any mast lowering movement controlled from the breakdown controls by a person not qualified can induce an unsynchronised movement of the mast sections and cause serious injuries due to the sudden lowering of the platform.

- Wait for rescue personnel
- Qualified personnel must inspect the machine before it is returned into service.

5.1. Pre-starting checks

A complete walk-around visual inspection of the work platform should always be made with special attention to structural damage, loose equipment, leaks or other conditions that would require immediate correction for safety of operation. The following check list items are suggested specially for the operator's benefit to ensure the work platform is prepared for starting the day's work.

5.1.1. Batteries.

DANGER

Battery electrolyte may cause painful burns if allowed to contact the skin. Use extreme caution when filling a battery cell or when checking the charge.

DANGER

Batteries must be charged only in a clean and well ventilated area conform to any particular regulation in force. Do not charge the batteries near fire, flame or other source of heat. During charge, batteries produce highly explosive hydrogen gazes.

DANGER

Before performing any maintenance of the machine, the batteries and the charger plug must be disconnected.

CAUTION

Operating the machine with insufficiently charged batteries can cause damage to both the batteries and the electrical motor.

CAUTION

New batteries do not have the full capacity until approximately 30 cycles have been made. Nevertheless, to obtain maximum battery life, do not discharge the battery below 80% of its capacity.

Check the state of charge of the battery, ensure the cables and clamps are tight and not corroded.

For storage at temperatures below 0°C, check electrolyte density to prevent freezing point (refer to § 15).

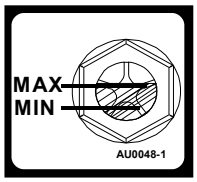
Battery charge

Several types of chargers can be fitted on the machine depending on the capacity of the battery.

For further information, refer to § 15.

5.1.2. Hydraulic reservoir and filter.

Check the level of hydraulic fluid in the reservoir with the machine in retracted position.
Check the clogging indicator with the machine warm. If the needle is in the red zone when the motor pump is functionning, change the filter cartridge (Ref.310013).

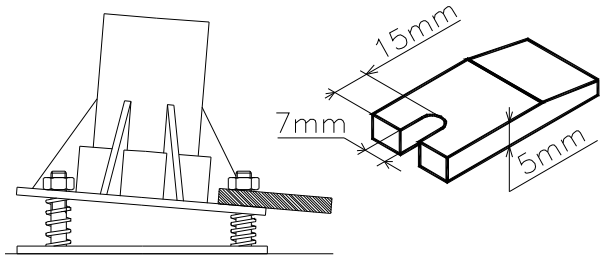


5.1.3. Tilt sensor.

NOTE

This safety device is operational when the work platform is controlled from the upper control panel or from the ground control panel when the platform has left its stowed position.

1. Raise the mast and/or jib in order to activate the mast and/or jib sensors.
2. Press on the edge of the tilt sensor and wedge a block to keep it tilted (wedge supplied, Ref. ST2053).
3. Position the ignition key to "I". Ensure that the emergency stop switches are not activated. On the upper control panel :
   ç An accoustic alarm sounds.
   ç The corresponding red indicator lights up.
   ç All functions are working normally.



5.1.4. Overload detector.

You must test the overload detection system **each day** by activating the sensor with a screwdriver.
Each month you must check the overload detection setting with an overload test. (Refer to § 15).

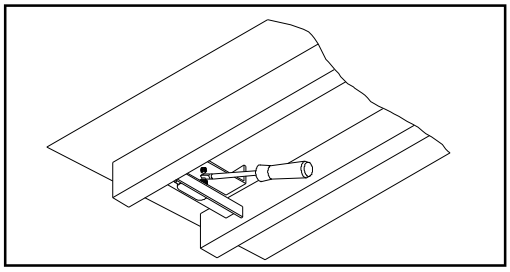
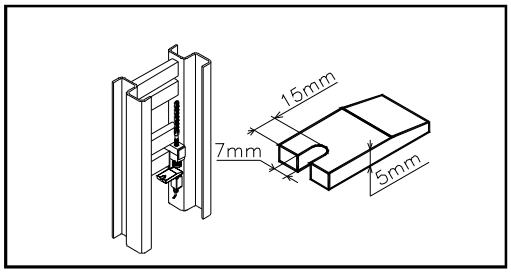


Fig. 5.8 - Overload detection test.

5.1.5. Chain slack detector.

NOTE
This safety device is operational when the work platform is controlled from the upper control panel or from the ground control panel.



1. Position a wedge between the sensor and the actuator to keep the sensor activated (wedge supplied, Ref. ST2053).
2. Position the ignition key to **"I"**. Ensure that the emergency stop switches are not activated. On the upper control panel :
   ç An accoustic alarm sounds.
   ç The red indicator lights up.
   ç All functions are disabled.
3. Repeat stages 1 to 2 for each chain slack sensor.

5.1.6. Mast sensor operation test.

Verification of the mast sensor's good working order is essential to ensure safe operation of the work platform when driving in elevated position. A malfunction of this sensor can lead to a serious or lethal accident.

1. Position the ignition key to **"I"**.
2. Ensure the emergency stop switches are not actuated.
3. Enter the platform and close the gate.
4. Raise the mast by approximately 1.50 m.
5. Perform each movement one by one, in both directions
   ç The work platform travels at slow speed.
6. Return the mast to its retracted position.

5.1.7. Jib sensor operation test.

Verification of the jib sensor's good working order is essential to ensure safe operation of the work platform when driving in elevated position. A malfunction of this sensor can lead to a serious or lethal accident.

1. Position the ignition key to **"I"**.
2. Ensure the emergency stop switches are not actuated.
3. Enter the platform and close the gate.
4. Raise the jib by approximately 1.50 m.
5. Perform each movement one by one, in both directions
   ç The work platform travels at slow speed.
6. Return the jib to its retracted position.

5.1.8. Wheels.

1. Check for severe cuts and foreign objects imbedded in the threads.
2. Ensure the wheels nuts and bolts are tight
3. Ensure the locking pins are in place (driving wheel shaft).

5.1.9. Control operation.

1. Verify the good working order of the upper control box.
2. Verify the good working order of the emergency and breakdown control panel.

5.2. Work platform operating tips.

1. The rated capacity of the machine includes the weight of the work platform occupants and the required tools to perform a desired task. Do not exceed this capacity.
2. When the work platform is in working mode, release the enable pedal.
3. Do not let the work platform remain idle for long periods of time. At least once a week, turn on the ignition and activate all the functions of the work platform.
4. The work platform is only stable on firm and level ground. Ensure the machine is positioned on firm and level ground before raising the mast.
5. In cold climates, a function must be activated to circulate and warm the oil (5 minutes maximum).

5.2.1. Starting procedure.

1. Position the key switch (ground control) to "**I**".
2. Remove the ignition key.
3. Ensure that the lower EMERGENCY STOP switch is pulled out.
4. Enter the platform and close the gate.
5. Ensure that the EMERGENCY STOP switch on the upper control box is pulled out.
6. Activate the desired function (refer to paragraph 5.2.4).

DANGER

Do not use the machine if all railing and necessary protection devices are not in place.

5.2.2. Shut down procedure.

1. Park the machine in a safe and sheltered area.
2. Depress the upper EMERGENCY STOP switch.
3. Exit the platform.
4. Position the key switch (ground controls) to "**0**".
5. Remove the key.

5.2.3. Emergency stop.

NOTE

Emergency stop is accomplished by depressing one of the EMERGENCY STOP switches. The upper EMERGENCY STOP switch cuts the power from the upper control box. The lower EMERGENCY STOP switch cuts all functions from the machine.

1. Push on one of the EMERGENCY STOP switches to cut the electrical power.
2. Eliminate the problem.
3. Pull the EMERGENCY STOP switch to reset.

CAUTION

Before restarting, you must eliminate the problem which caused the emergency stop.

NOTE

To reactivate the dead man device, the enable pedal must be released during re-energizing.

5.2.4. Operation from the platform.

General

DANGER

Beware of all conditions that could affect machine stability. Death or serious injury could result from machine tip over.

DANGER

Ensure that the load on the platform is evenly distributed and secure.

DANGER

Before operating the machine, inspect the entire work site and ground conditions on which the machine will be driven.

DANGER

Operate the work platform only on firm and level ground. Do not drive the machine near holes or other obstacles which could cause abnormal stresses on the work platform and even cause it to tip over.

DANGER

Do not use the work platform if wind speeds exceed those recommended in paragraph 2.3 and during thunderstorms.

DANGER

The work platform must not be operated unless all controls are functioning properly.

DANGER

Death or serious injury could result from falling out of the platform. Do not operate the machine if all railing are not in place and secure. Close all gates and openings. Maintain a firm footing on platform floor at all times.

DANGER

Death or serious injury could result from being crushed or from contact with other external obstacles. Be aware at all times of your surroundings while elevating and clear all personnel and obstacles from the platform while lowering the mast and/or jib. Do not position platform into overhead obstructions and do not lower the platform onto obstructions below.

DANGER

Do not operate the machine in an atmosphere presenting risks of explosion (volatile gazes, fine dust, etc...)

- **To activate a function :**
  - Depress the foot switch to enable controls.
  - Activate slowly the control lever corresponding to the desired function.
- **To stop a function :**
  - Slowly return the control lever to neutral.
  - Release the enable pedal.

5.2.5. Operation from the ground. (emergency and breakdown)

NOTE

When the platform is occupied, use of the lower controls is restricted to emergency cases.

NOTE

The emergency and breakdown controls should be checked every day prior to work platform operation.

DANGER

Operate the ground controls only if the platform is unoccupied or if the occupant is unable to use the upper controls. Failure to do so may result in death or serious injury.

DANGER

Use extreme caution when operating the work platform from the ground controls. If possible, obtain permission from the operator in the platform before using the ground controls.

DANGER

Death or serious injury could result from being crushed or from contact with other external obstacles. Be aware at all times of your surroundings while elevating and clear all personnel and obstacles from the platform be lowering the mast and/or jib. Do not position platform into overhead obstructions and do not lower the platform onto obstructions below.

- **To lower the platform from the ground controls with the hand pump :**
  (refer to paragraph 4.2).
  1. Push on the emergency stop switch.
  2. Insert the pump handle in the hand pump.
  3. Hold the control lever corresponding to the desired function.
  4. Activate the hand pump with the handle.

5.2.6. Operation on non level ground.

The work platforms are designed and manufactured to be operated exclusively on firm and level surfaces. Nevertheless, the work platform can be driven in **stowed position** on a sloped surface not exceeding 10% and following the conditions set out below.

DANGER

Failure to comply with the following recommendations could result in death or serious injury.

DANGER

To prevent accidents while travelling on a slope, the platform MUST be fully lowered, the drive speed must be in second gear, and the counterweight MUST always be on the uphill side of the slope.

NOTE

To drive the work platform on a slope, the battery discharge must not exceed 50%.

NOTE

In cold weathers, the hydraulic fluid is thicker. Warm up the hydraulic fluid before attempting to drive on a slope.

6.1 Towing.

The release valves enable the machine to be towed without damaging the drive train. They are located at the front of the machine.

⚠ WEIGHT	
Toucan 1100 A / C	3500 Kg.
Toucan 1100 B	3540 Kg.

⚠ CAUTION

If the machine gets stuck in mud or otherwise becomes bogged down, use an appropriate tractor to pull it out. Never try to drive the machine out of such a situation under its own power. Such an attempt may result in major damage to the drive axle.

⚠ CAUTION

The machine should only be towed for extremely short distances and at a speed not exceeding 2km/h. Towing at high speeds or over long distances may result in major damage to the drive train.

Use the towing ring on the chassis provided for this purpose.

NOTE

Before towing the machine, the brakes and wheel motors must be released by means of the release valves located at the front of the machine.

⚠ DANGER

Ensure the machine is on firm and level ground before releasing the brakes and wheel motors.

⚠ DANGER

Failure to observe the operating instructions may result in death or serious injury.

⚠ DANGER

Never leave the machine unattended.

⚠ DANGER

The machine must always be in stowed position during towing procedure.

⚠ DANGER

No personnel is allowed on the platform during towing procedure.

Procedure to follow

- **Disengage the parking brake and release the wheel motors.**
  - Bring the valve levers to position "release" (at the front of the machine)
  - Insert the pump handle in the hand pump
  - Activate the hand pump until the brake cylinders are fully disengaged.
  - Replace the handle in its holder.
- Use a winch to pull the machine.
- If a winch is not available, use another **low speed** towing device.
- For towing use the towing ring located at the front of the machine.
- The machine can also be pushed by two persons.

Fig. 6.1 - Towing ring.

Fig. 6.2 - Release valves.

a - Wheel motors release valve.

b - Brake cylinder release valve

• Reset the automatic brake and the wheel motors.

- Return the valve levers to normal use.
- Activate the enable pedal
- The machine is operational

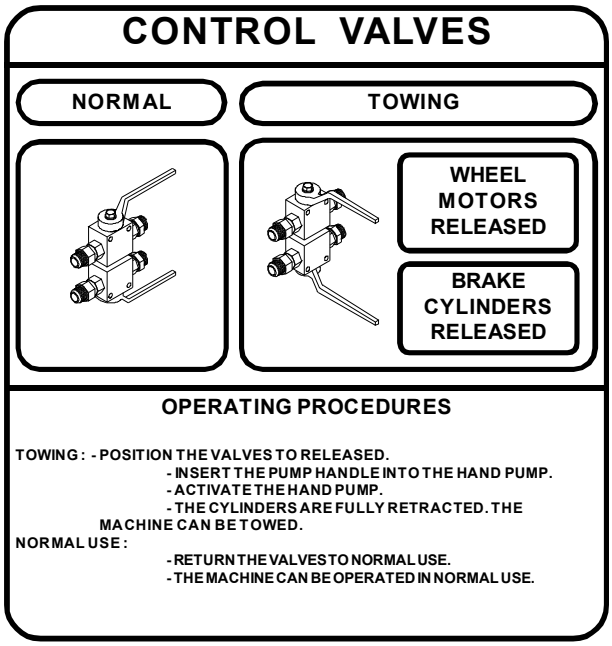


Fig. 6.3 - Release valve decal.

6.2. Loading and unloading.

6.2.1. Using a fork lift truck.

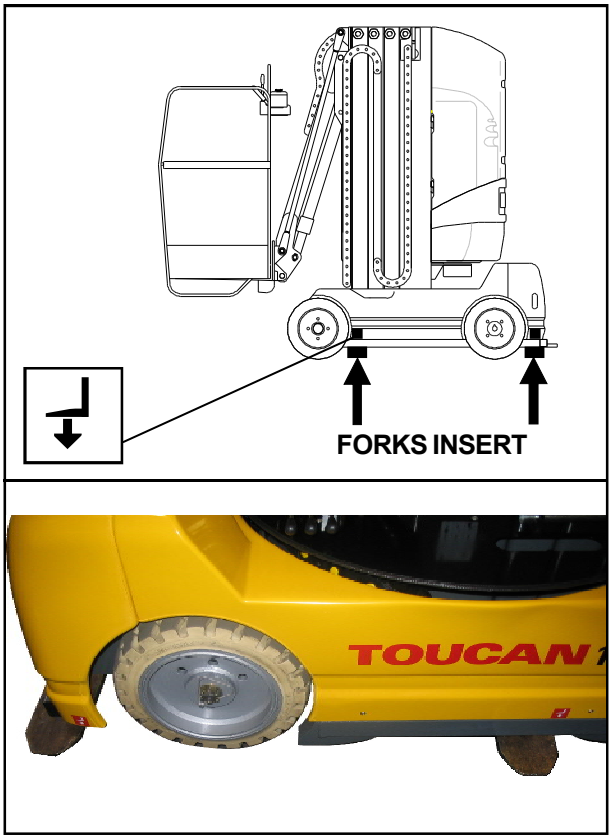


Fig. 6.4 - Positioning of the forks of the fork lift truck.

⚠ CAUTION

Verify the capacity of the fork lift truck and of its equipment.
Any other position of the forks will cause the machine to tip over.
Nobody must be on the platform of the machine during loading and unloading operations.
Do not remain in the evolution zone of the forklift truck during the manoeuvre.

⚠ DANGER

The work platform must be kept as near to the ground as possible during fork lift operation.

Lift the forks at the last minute to prevent the machine from tipping over.

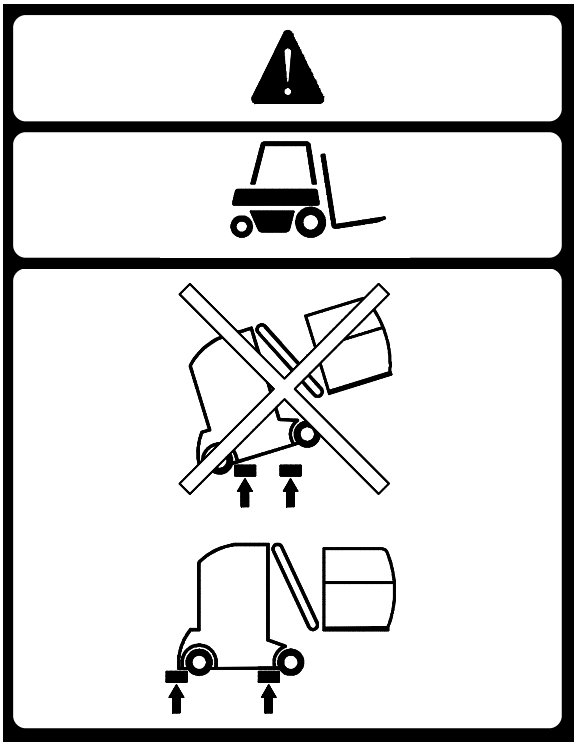


Fig. 6.5 - Fork lift truck use decal.

6.2.2. Using a truck equipped with a tail gate.

⚠ CAUTION

Verify the capacity of the tail gate.

Place the machine at the centre of the tail gate to distribute the load.

Nobody must be on the platform of the machine or on the tail gate during loading, towing or unloading operations.

• Tie the machine down securely on the bed of the truck (See figure 6.6).

6.2.3. Using a winch.

⚠ CAUTION

(Case of roll back truck).
Check the capacity of the equipment used. Place the machine in towing mode (see 6.1) for the loading and unloading procedures. Nobody must be in the platform during this operation.

6.2.4. Fastening on the bed of a truck.

• Chock the wheels in both directions (Figure 6.6).

• Tie down and chain the machine securely (Figure 6.6).

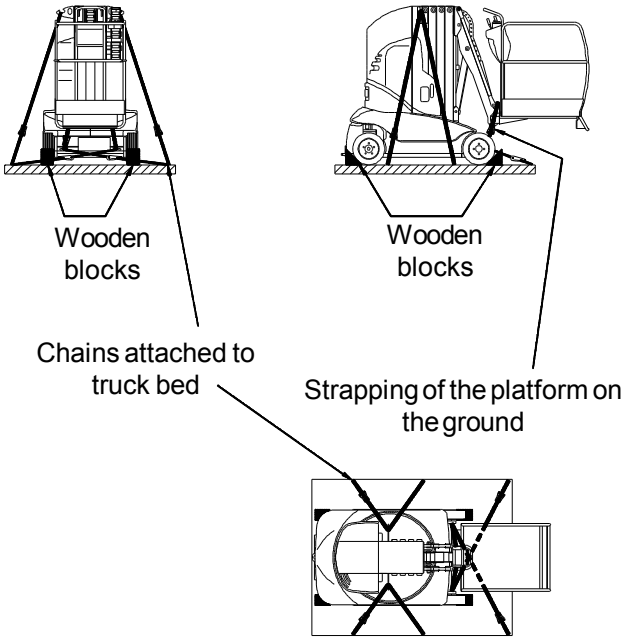


Fig. 6.6 - Transport instructions.

• Check all the fixations.

6.2.5. Lifting the machine.

CAUTION

Verify the capacity of the equipment used to lift the machine.

DANGER

Do not remain near the machine during manoeuvre.

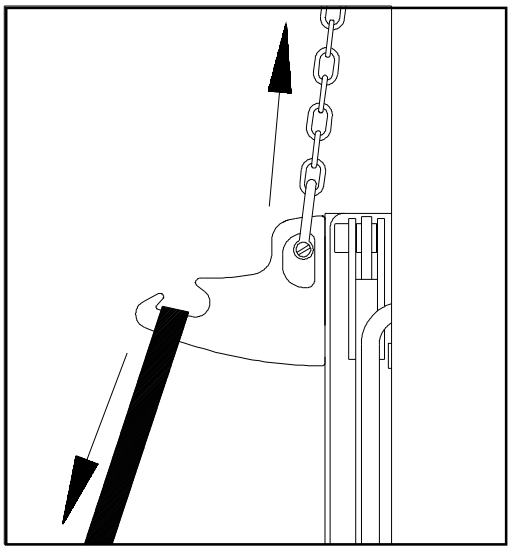
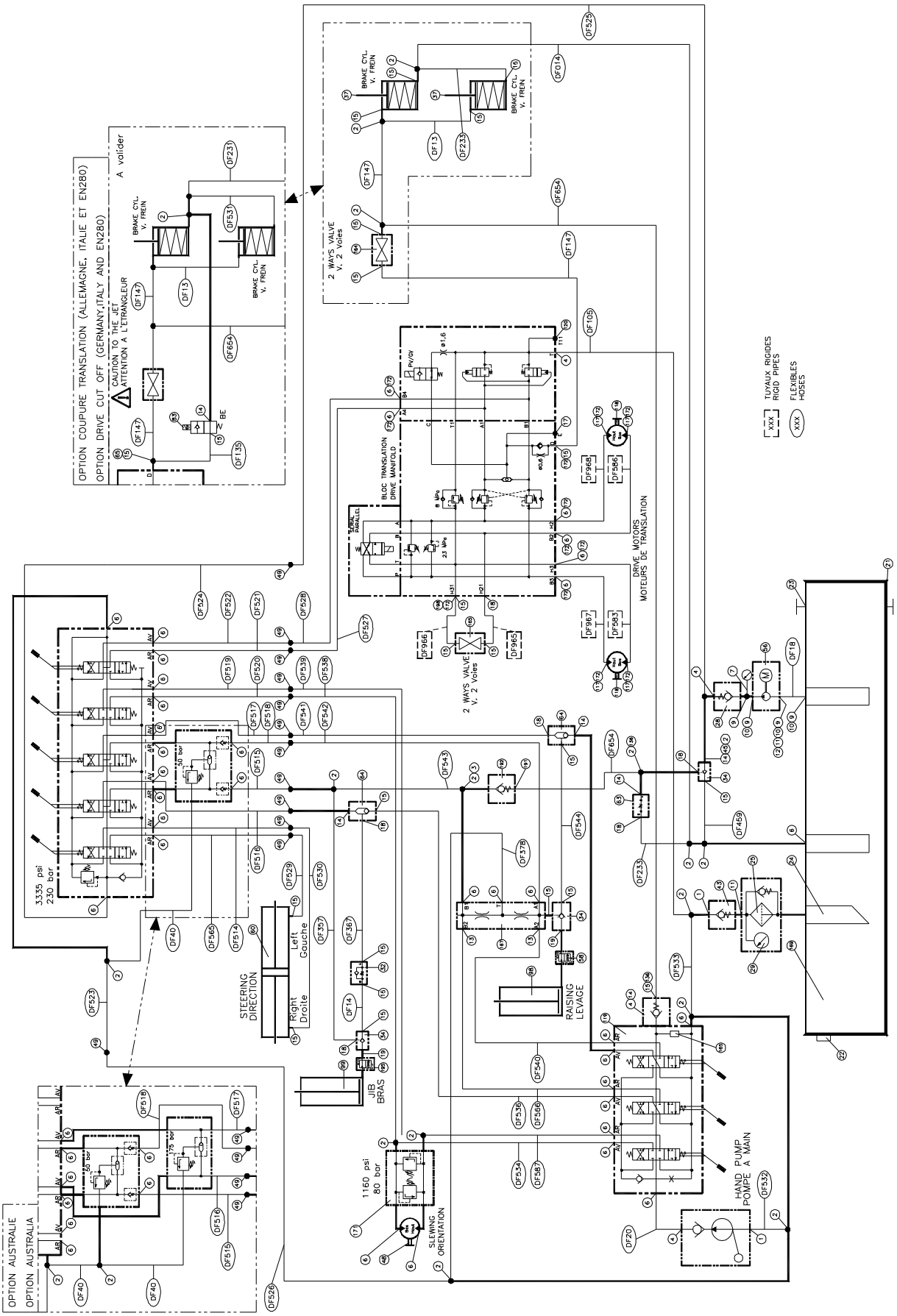


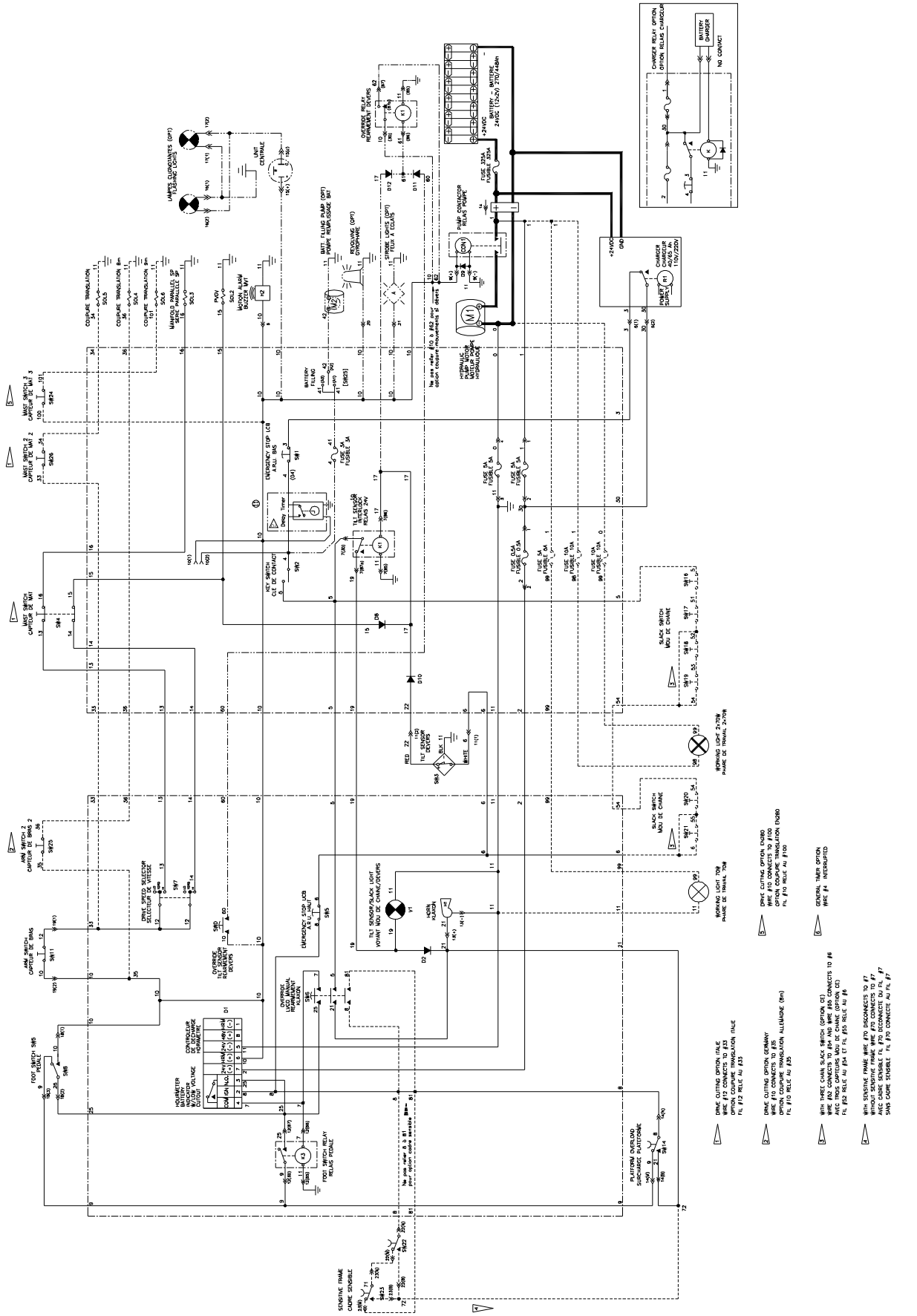
Fig. 6.7 - Lifting rings.

Lifting : Use the rings against the mast
Fastening : Use the hooks.

Ref. : FL 0151-01



Ref. : ELE194-11



8.1. Extinguisher

The platform can be fitted with an extinguisher on the side of the control box.

Fig. 8.1 - Extinguisher location.

8.2. 220 VAC Electrical power supply

The work platform can be fitted with a 220VAC electrical power supply in the platform.
A differential circuit breaker located on the lower part of the machine protects the circuits.

DANGER

If the circuit breaker trips, the reason must be found and the problem corrected before resetting the circuit breaker.

Fig. 8.2 - 220V electrical power socket and circuit breaker.

General

This section contains information on daily checks, weekly maintenance, servicing based on operating time as well as inspection required on JLG aerial work platforms.

NOTE

This material does not replace any pre-operational checks required by the owner or a local or state safety board.

NOTE

Community regulations require that written, dated and signed inspection records are maintained.

NOTE

Perform lubrication as outlined in this Operator's, Safety and Maintenance Handbook or in the machine specific Service Manual.

15.1 System malfunctions

When analyzing a system malfunction, use a systematic procedure to locate and correct problems:

- Determine the problem.
- List the possible causes.
- Devise checks.
- Conduct checks in a logical order to determine the cause.
- Consider remaining service life of components against the cost of parts and labour necessary to replace them.
- Make necessary repairs.
- Recheck to ensure that nothing has been overlooked.
- Functionally test failed part in its system.

NOTE

Your safety and that of others is always the number one consideration when working around machines. Safety is a matter of thoroughly understanding the job to be done and the application of good common sense. It is not just a matter of do's and don'ts. Stay clear of all moving parts.

15.2 Cleanliness

Keep dirt out of working parts to preserve the long life of the machine. Enclosed compartments, seals and filters keep the supply of air, hydraulic oil and lubricants clean. Maintain these enclosures properly. Whenever hydraulic lines are disconnected, clean the adjacent area as well as the point of disconnection. As soon as the disconnection is made, cap, plug or tape each line or opening to prevent entry of foreign material. The same recommendations for cleaning and covering apply when access covers or inspection plates are removed.

Clean and inspect all parts. Make sure :

- All passages and holes are open.
- Parts are covered to keep them clean.
- Parts are clean when they are installed.
- New parts are left in their containers until ready for assembly.
- Rust preventive compound has been removed from all machined surfaces of new parts before they are installed (except leaf chains).

Keep the work platform clean at all times, free from mud, dirt and grease. Dirty equipment wears out faster and makes good maintenance difficult. Cleaning solutions used should be appropriate for the job and non flammable. Avoid spraying cleaning solutions directly onto electrical components.

Do not clean electrical components (boxes, motor, controller, etc...) with a high pressure cleaner. Failure to respect this precaution can result in serious damages to components.

15.3 Chargers

The work platform on-board electronic charger is designed to automatically charge 24 VDC (wet) lead-acid rechargeable batteries.
Several types of chargers can be fitted on the machine depending on the capacity of the battery.
Charge batteries only in an open, well ventilated area free of flame, smoking, spark and fire. Ensure you conform to all particular regulations in force.

⚠ DANGER

Lead-acid batteries may emit highly explosive gases. The emission is greatly increased during charging. Never introduce flames, sparks, or other sources of ignition to battery area. Failure to comply with this warning could result in death or injury to personnel. Always charge batteries in a well-ventilated area.

⚠ DANGER

Do not disconnect battery plug when the charger is ON. The resulting arcing could cause battery to explode and burns to the operator .

NOTE

It is not necessary to charge the battery if the electrolyte specific gravity has not dropped under 1.240 kg/l. Regular charge of a battery when its specific gravity is higher than 1.240 kg/l can greatly reduce the battery life.

NOTE

The charger has an interlock feature which causes the work platform power circuit to open anytime the charger is plugged into a live AC outlet.

NOTE

It is important to perform an equalisation charge regularly to equalise electrolyte specific gravity between all battery cells. The equalisation charge takes place at the end of the charge cycle (Fulmen and SGTE chargers only).

NOTE

If a power cut occurs during the charge cycle, the charger switches to a waiting mode and restarts automatically as soon as the power returns.

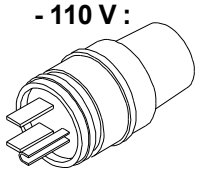
Charger voltage :

- If a charger set on 110V is used with a 220V power supply, the input fuse or the transformer will be damaged.
- If a charger set on 220V is used with a 110V power supply, the charger will indicate a fault during the charge (safety time exeeded).

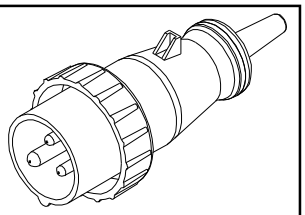
Supply voltage :

Always ensure the voltage selected corresponds to the network voltage, and the socket protection is sufficient to support the charger power.
The chargers are factory preset function of the plug fitted.

- 110 V :

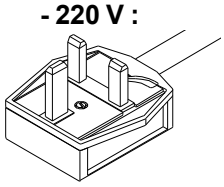


USA Plug

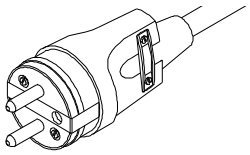


Yellow CEI60309 Plug - IP67

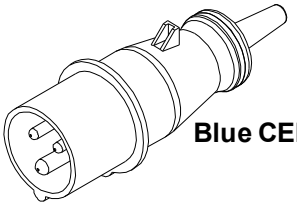
- 220 V :



United Kingdom Plug

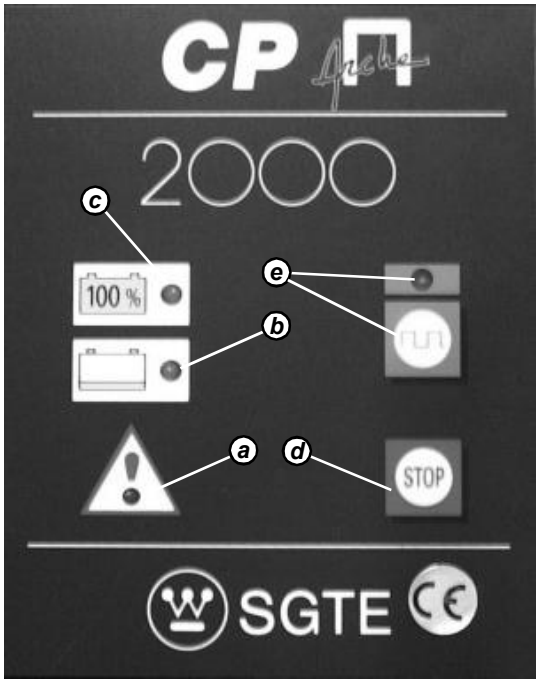


German and French Plug (NF220VN - 16A)



Blue CEI60309 Plug - IP44

15.3.1 "Westinghouse-SGTE" electronic charger.



Charger panel

- Display panel :

a. Default LED indicator (red).
b. Charger ON LED indicator (orange).
c. End of charge LED indicator (orange).
d. Stop switch.
e. Equalisation function button (green).

- Battery charge :

- Power supply : 220 or 110VAC 2 poles + earth (monophase).

- Connect the charger's plug to the power supply.

- The charger stops automatically at the end of the charge cycle. The "Normal charge" indicator ***Rep b*** goes off, the "charge completed" indicator ***Rep c*** lights up.

NOTE

No indicator lights are on as long as the battery is not connected to the charger even if the charger is connected to the power supply.

- Equalisation charge :

The equalisation charge, to be performed periodically, enables the electrolyte specific gravity between the battery cells to be equalised. It follows the normal charge if it has been programmed during the charge by pressing the equalisation charge preselection button " ⎍⎍ " The corresponding indicator lights up. When the charger switches to equalisation charge, the normal charge indicator light goes off. To cancel the preselection "equalisation", press at the same time on the "STOP" and " ⎍⎍ " . The equalisation charge preselection light goes off.

After 12 hours, the charger stops and the equalisation charge light stays on.

NOTE

The equalisation charge can also follow a normal charge after the charger has stopped. Press on the equalisation charge selection switch " ⎍⎍ " : the charger starts again.

- Compensation charge :

If the charger remains connected to the battery for more than 9 hours after the charge is completed, the charger will charge automatically for 15 mn. The compensation charge will be renewed automatically every 9 hours.

- Interruption of the charge cycle :

A charge cycle should not be interrupted. However should it be necessary to stop the charge cycle at any time, the "STOP" switch must be depressed. The charge starts where it had stopped if the "STOP" switch is pressed again.

- Fault indicator :

The fault indicator lights up when a fault in the charger has been detected.

⚠ CAUTION

If a fault occurs during charge, switch off the charger and disconnect it from AC outlet.

- Protections :

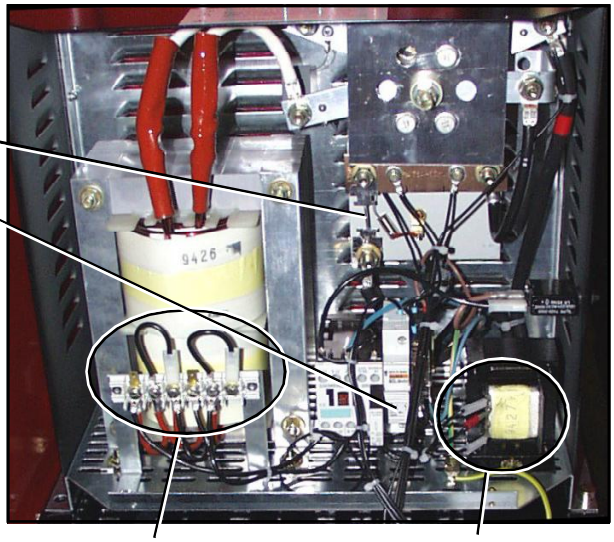
Single pole thermal circuit breaker 20 A.

Output fuse :	100 A	P/N : 950105
AC auxiliaries :	2 A	P/N : 950150

- Adaptation to network voltage :

DANGER

Prior to any operation requiring charger cover removal, the battery must be disconnected and the charger must be unplugged from the AC outlet. Failure to do so could result in death or serious injury to personnel.

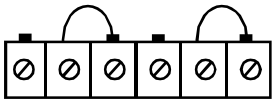


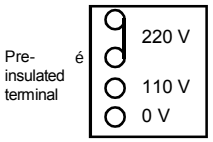
Transformer terminal block Auto-transformer

Connections on auto-transformer and transformer inlet terminals block :

220 VAC - 50 Hz :

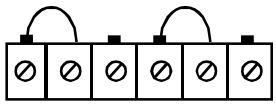
Transformer terminal block Auto-transformer

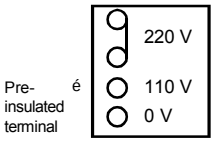




110 VAC - 60 Hz :

Transformer terminal block Auto-transformer





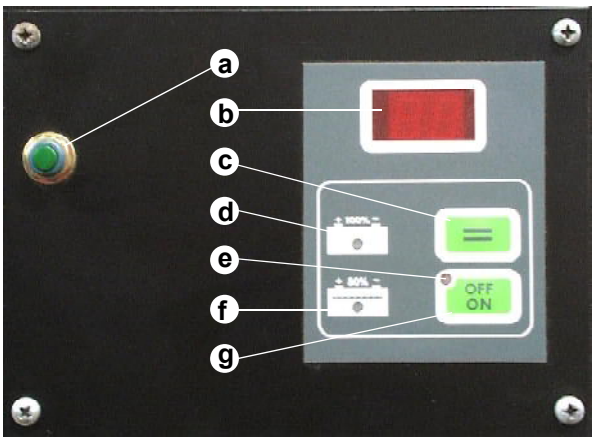
Troubleshooting

The default LED indicator lights up :

Display	PROBABLE CAUSE	SOLUTION
Red led lit	Voltage above 3V per cell = 36V for batteries (corroded plates)	Depress the equalising function button to resume charge. (The default LED indicator flashes).
	Voltage below 1,8V per cell = 21.6V for batteries after 5 minutes of charge. Note : If the voltage is below 1,5V per cell = 18V for batteries, the charger will not detect the battery.	Depress the equalizing function button to resume charge. (The default LED indicator flashes).
	Voltage does not reach 2,4V = 28.8V for batteries per cell after 11 hours of charge (Soft timer #1).	Check condition of battery - connections and charger. Disconnect the charger from the battery and reconnect it . If the problem persists, contact JLG Product Support.
	Charging time exceeds 15 hours (Voltage above 2,4V per cell) (Soft timer #2).	
	Charging time exceeds 16 hours (Hard timer).	

15.3.2 "Fulmen" electronic charger.

- Display panel :



a. Circuit breaker.
b. Display.
c. Equalisation function button.
d. 100% charged LED indicator.
e. Charger ON LED indicator.
f. 80% charged LED indicator.
g. ON/OFF button.

- Battery charge :

- Power supply : 220 or 110VAC 2 poles + earth (monophase).

- Connect the charger's plug to the power supply. After a few seconds, the electronic card verifies the system.

- The red LED on the "ON / OFF" switch lights up to indicate the charger is working. Charge intensity is displayed in "b" during the charge.

- After reaching 2.4 volts per cell, the "80%" LED lights up to indicate the start of the end of charge sequence. the green LED lights up when the batteries are 100 % charged.

- Equalisation charge :

The equalisation charge, to be performed periodically, enables the electrolyte specific gravity to be equalised between the battery cells. It follows the normal charge if it has been programmed during the charge by pressing the equalisation charge preselection button " = " (a point appears on the right of the number on the display screen). When the charger switches to equalisation charge, the "100%" charge indicator comes off and the "80%" charge indicator flashes. To cancel the preselection "equalisation", press the "STOP" and " = " (the point on the display screen disappears).

- Interruption of the charge cycle :

A charge cycle should not be interrupted. However should it be necessary to stop the charge cycle at any time, the "ON / OFF" switch must be depressed (the screen indicates "- -". The charge starts where it stopped if the "ON / OFF" switch is pressed again.

- Power cut :

If a power cut occurs during the charge, the charger switches to waiting mode and starts again automatically as soon as the power returns.

- Fault indicator :

If a problem occurs, the charger stops, the LEDs switch themselves off and the screen displays an error code "Exx" (refer to the troubleshooting chart hereafter).

- Protections :

Single pole circuit breaker ("a" on the display panel):

- 15A on 24 MO 40A models p/n : 950172
- 20A on 24 MO 65A models p/n : 950064

Output fuse :

- 40A on 24 MO 40A models p/n : 950029
- 65A on 24 MO 65A models p/n : 950022

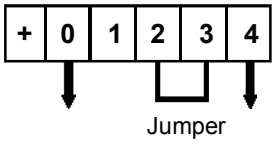
- Adaptation to network voltage :

DANGER

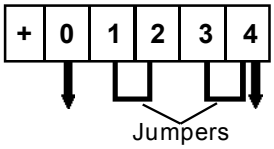
Prior to any operation requiring charger cover removal, the battery must be disconnected and the charger must be unplugged from the AC outlet. Failure to do so could result in death or serious injury to personnel.

Connections on transformer inlet terminals block :

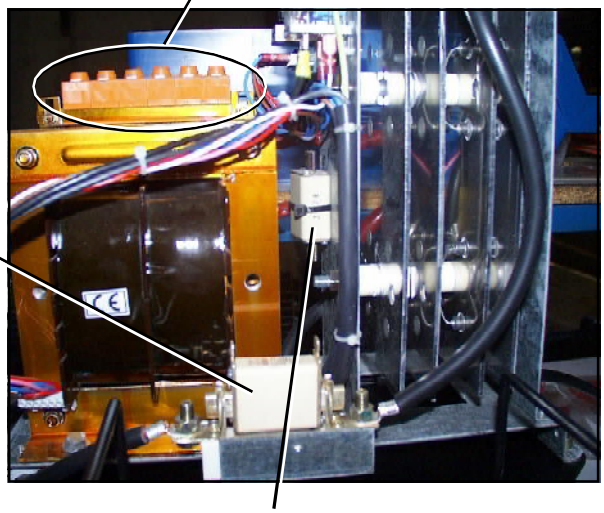
220 VAC



110 VAC



Transformer inlet terminal block



Spare output fuse

Troubleshooting chart :

Display	Probable cause	Solution
EO	Charger in test mode	Move the jumper from "test" position to "propor." position on the electronic card.
E1	Output fuse faulty Low intensity	Replace the fuse. Check voltage at output and input of the transformer.
E2	Fault on electronic card	Contact JLG Product Support.
E3	Electronic card programme erased (configuration lost)	Contact JLG Product Support.
E4	Batteries too discharged	Leave the batteries to stand before resuming charge.
E5	Electronic safety. Safety time switch faulty	Disconnect and reconnect the batteries. Contact JLG Product Support if the fault persists.
E6	Battery incorrect nominal voltage	Connect the battery from the work platform to the charger.
EE	Charger overloaded	Check the charge : If this condition remains for more than 15 mn, let the batteries stand before resuming the charge. If the fault persists, contact the JLG Product Support.

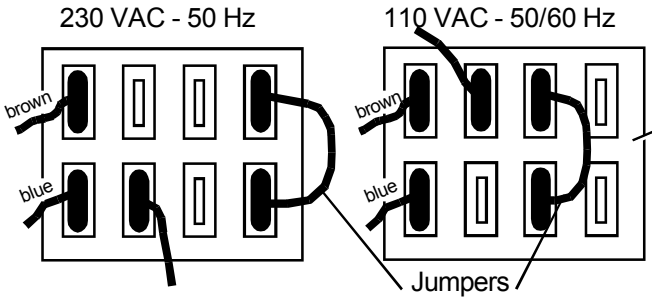
15.3.3 "Oldham-Hawker" electronic charger.

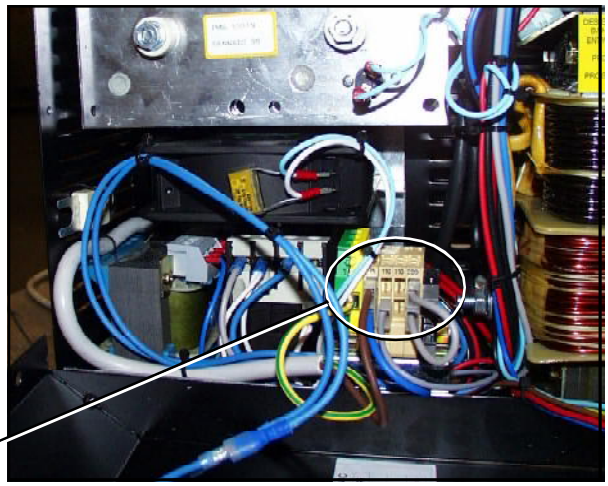
- Adaptation to network voltage :

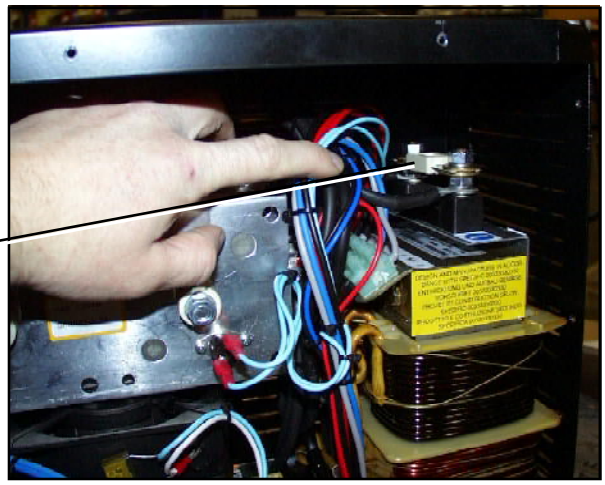
DANGER

Prior to any operation requiring charger cover removal, the battery must be disconnected and the charger must be unplugged from the AC outlet. Failure to do so could result in death or serious injury to personnel.

Connections on transformer inlet terminals block :







- Protections :

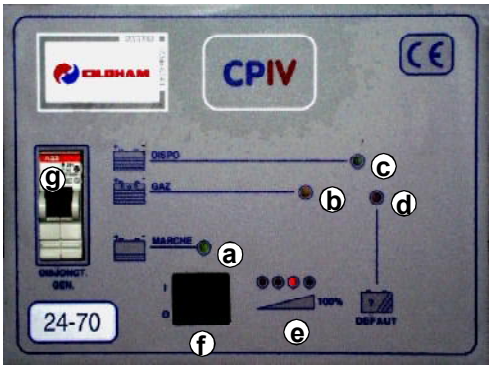
- Single pole circuit breaker : 32 A ("g" on the display panel).
- Output fuse : 100 A (inside the charger)

NOTE

A spare output fuse is strapped inside the charger cover.

A- CP IV models

- Display panel :



a. Charger ON LED indicator (green).
b. Second charging rate LED indicator (yellow).
c. End of charge LED indicator (green).
d. Default led indicator (red).
e. Ah applied to the battery : 4 LEDs (from the right to the left : 100% - 75% - 50% - 25%).
f. ON/OFF switch.
g. Circuit breaker.

- Battery charge :

- Power supply : 220 or 110VAC 2 poles + earth (monophase).

- Connect the charger plug to a AC outlet socket. Each LEDs will light up during a starting up test.

- The green LED " ON " lights up and the charging process starts.

- When the gas emission voltage has been reached :
  . the yellow led " Gaz " lights up.
  . the 2nd charge regime starts. Its duration will be proportional to the time spent to reach the gaz point.

- At the end of the charging process, the green LED " DISPO " will light up.

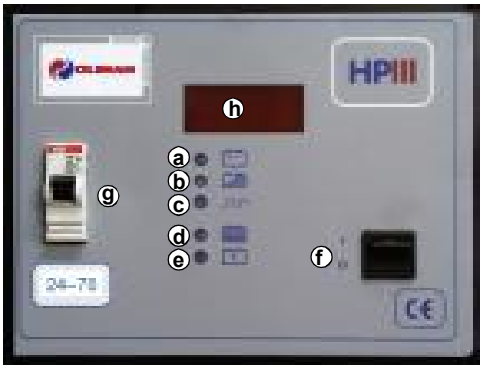
- Interruption of the charge cycle :
A charge cycle should not be interrupted. However should it be necessary to stop the charge cycle at any time, the "ON / OFF" switch must be depressed (the "ON / OFF" LED switches itself off).

- Fault indicator :
If a problem occurs, the charger stops. The LED " " lights up and the leds "e" flash (refer to the Troubleshooting chart hereafter).

- Power cut :
In case of a power cut, the charging process will be temporarily interrupted and the " DEFAUT " LED will flash. The charging process will be resumed as soon as the power returns.

B - HP III model

- Display panel :



- **a-** Charger ON LED indicator (green)
- **b-** Second charging rate LED indicator (yellow)
- **c-** Compensation charge LED indicator (green)
- **d-** End of charge LED indicator (yellow flashing)
- **e-** Fault LED indicator (red)
- **f-** ON/OFF switch
- **g-** Circuit breaker
- **h-** Display screen

- Battery charge :

- Power supply : 220 or 110VAC 2 poles + earth (monophase).

- Connect the charger plug to an electrical power supply. Each led will light up for a lighting test.

- The led " " lights up and the charge begins.

- At the end of the charge :
  - LEDs come off
  - Indication "Lon A" appears during 8 mn.

- The LED " " flashes and the display visualizes the last memorized values.

- Compensation charge :

It takes place at the end of the charge cycle. This compensation charge occurs 5 mn / hour for 48 hours. The led " " lights up. The led " " lights up at the end of the charge.

- Interruption of the charge cycle :

A charge cycle should not be interrupted. However should it be necessary to stop the charge cycle at any time, the "ON / OFF" switch must be depressed.

- Fault signalling :

If a problem occurs, the charger stops. The LED " " lights up and the screen displays an error code. Refer to the trouble shooting chart hereafter).

Display screen :

Axxx
Charging supply
Ux.xx
Voltage per element
cxxx or Cxxx
Ah reinjected into the battery
(cxxx = <999 Ah - Cxxx>999Ah)
Hxx.x Charging time from the begining of the charge (hour and tenth)
L000
O.K
U L0
Voltage below 1.65V/cell
L205
Voltage below 2.05V/cell after 30 mm of charge
L09H
Voltage below 2.4V/cell after 9 H of charge
LIL0
Supply = 0
LUAC
No supply voltage (charging horameter has stopped)
LHHS
Safety time (9 -12 - 14 or 16 hours depending on the charger type)
ForC
Forced cut by the push button

OFFS
Periodic mail of control

Trouble shooting (CPIV models) :

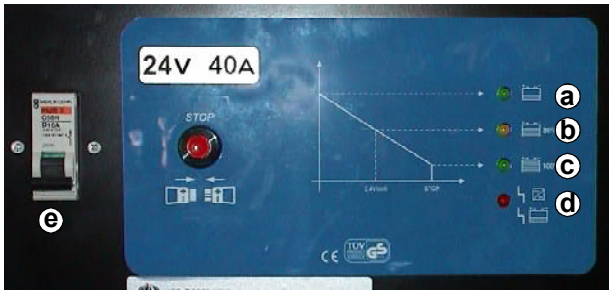
SIGNALLING CURRENT LEDs INDICATOR		CAUSE	SOLUTION
Default LED lights up	 The first LED flashes	Voltage still below 1,7 V per cell = 20.4 V for batteries after 1 minute of charge	Battery too discharged, contact Product Support.
	 The 2nd LED flashes	Voltage still below 2,05 V per cell = 24.6 V for batteries after 1 hour of charge	Problem with the charger , or battery too discharged. Switch the charger off, disconnect the charger from the battery, wait for approx. 15 mn. Reconnect the charger to the battery and switch the charger on. If the problem persists the charger is faulty.
	 The 3rd LED flashes	Voltage per cell still below the required gazing voltage after 10 hours of charge.	Battery too discharged. Switch the charger off, disconnect the charger from the battery, wait for approx. 15 mn. Reconnect the charger to the battery and switch the charger on.
	 The 4th LED flashes	Charging safety time exceeded (16 hours).	
Default LED flashes		Charge interruption due to a power cut. Charge will be resumed as soon as the power returns.	Check power supply.
	 The 4 LEDs flash	Voltage per cell 140% above the nominal values.	Battery already charged.

Trouble shooting (HPIII models) :

ERROR CODES	CAUSE	SOLUTION
U LO	Voltage still below 1,65 V per cell = 19.8 V for batteries after 1 minute of charge	Battery too discharged, contact Product Support.
L205	Voltage still below 2,05 V per cell = 24.6 V for batteries after 1 hour of charge	Problem with the charger, or battery too discharged. Switch the charger off, disconnect the charger from the battery, wait for approx. 15 mn. Reconnect the charger to the battery and switch the charger on. If the problem persists the charger is faulty.
L09H	Voltage still below 2,4 V per cell after 9 hours of charge.	Battery too discharged. Switch the charger off, disconnect the charger from the battery, wait for approx. 15 mn. Reconnect the charger to the battery and switch the charger on.
LHHS	Charging safety time exceeded.	
LUAC	Charge interruption due to a power cut. Charge will be resumed as soon as the power returns.	Check power supply.
LILO	Charge interruption due to a power cut or circuit breaker default. Charge will be resumed as soon as the power returns.	Check the circuit breaker on the display screen is in good working order. Check power supply.

B - EMB-MP HAWKER models

- Display panel :



a. Charge indicator (green)
b. Final charge indicator (yellow)
c. Battery indicator charge completed (green)
d. Fault indicator (rouge)
e. Circuit breaker

- **Battery charge :**
  - Connect the charger plug to the power supply.
  - Once the charger is connected, all the leds begin to flash for a short period of time, indicating the charger is completing a self-test.
  - The leds © and (d) will then flash for a short period of time, indicating the charger is in «automatic starting» mode.
  - The charging phase starts, the green led (a) flashes slowly (Frequency = 1 second) during the duration of the charge.
  - Once the final charging phase has been reached (approximately 80%), led (a) still flashes and led (b) lights up fixed.
  - At the end of the charging process, both leds (a) and (c) are on fixed.

- **Equalization charge :**
  - When the charger is doing an equalization charge:
    ç both leds (a) and (c) flash slowly.
    ç Led (b) is lit fixed.

- **Fault indicator :**
  - Should the transformer overheat, the red led (d) flashes quickly (Fréqency = 0.2 second).
  - If the battery does not reach 2.4V/cell after a 10 hour charge, the charging process stops and the red led (d) lights up.
    It is advised to have either the charger or the battery checked by a technician.

- Leds signal :

Signal	a green	b yellow	c green	d red
Self-test (few seconds)	BL	BL	BL	BL
Automatic starting mode (few seconds)	OFF	OFF	OFF	OFF
Initial charge	BL	OFF	OFF	OFF
Final charge	BL	ON	OFF	OFF
Charge completed or equalization pause	ON	*	ON	OFF
Equalization charge	BL	ON	BL	OFF
Default (safety temporisation)	ON	*	OFF	ON
Default (thermal protection on transformer))	*	*	*	BV

OFF = the led is off
ON = the led is lit fixed
BL = the led flashes (T=1sec)
BV = the led flashes quickly (T=0.2 sec)
* = the led can be on or off, depending on the state of charge of the battery and on the charger's operation at that moment.

15.4 Battery

The electrical energy of the work platform is provided by a 24 VDC battery. The battery is composed of 12 battery cells.

DANGER

The batteries are integral part of the machine's counterweight. Substitute the batteries for lighter or heavier ones will affect work platform stability and will cause the machine to tip over.

CAUTION

New traction batteries do not have their full capacity until they have been cycled several times (somewhere between 5 and 40 cycles). For at least the first five cycles, it is recommended not to discharge the battery above 70% of its capacity. To obtain the maximum battery life, do not discharge the battery above 80% of its capacity.

DANGER

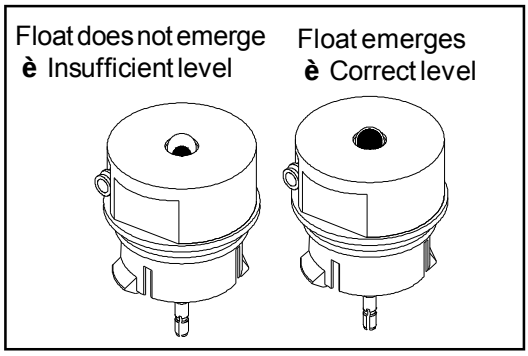
Before performing any maintenance on the machine, the batteries and the charger plug must be disconnected.

- Do not disconnect the positive battery clamp first. Disconnect the grounded battery clamp first when removing a battery and connect it last when installing a battery.
- Do not short across the battery posts to check charge. Spark or flame could cause battery explosion.

15.5 Centralised filling system

15.5.1 Electrolyte level

Verify the electrolyte level after the charge using the floats in the center of each filling cap.



NOTE

Tilt the charger to gain access to the front battery pack.

Fill the battery cells, if necessary, after the charge using the centralised filling system.

CAUTION

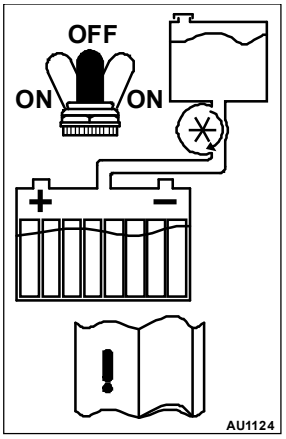
Use only distilled or demineralized water to fill the battery cells.

CAUTION

Battery cells must be filled only after the charge (during the charge, the electrolyte level increases and can overflow).

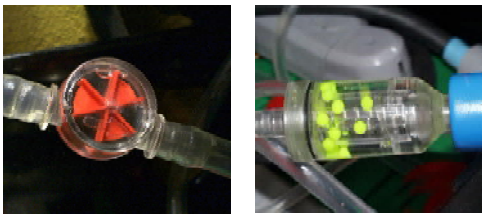
15.5.2 Filling the battery with the water pump

- Fill the can with distilled water.
- Toggle the water-pump switch to fill the battery.



- The filling indicator turns quickly and slows down as the battery is filled.
- When the mechanism inside the filling indicator slows down, release the pump ignition button.

FIAMM / Oldham **Fulmen**



- Check that the level is correct in each battery cells (indicator in the center of each filling cap).

15.6 Centralised filling system maintenance

It is necessary to service the centralised filling system at least once a year. Cleaning frequency must be increased in case of premature clogging of the filter or a reduction in water flow.

- Disconnect and clean the filter by reversing the water flow from the normal direction.
- Check the hoses for flexibility. In case of hardening in the connection areas, replace the hose.

- Check every fitting for tightness and leakage.
- Check the cell caps individually. Ensure the perfect mobility of the floats. In case of excessive clogging, replace the cap. in any case, it is recommended to replace the caps every 2 to 3 years.

15.7 Cleaning - Battery maintenance

It is necessary to clean the battery regularly to prevent salt formation and current arcing which could damage the machine.

- Clean battery top with a damp cloth.
- Allow to dry and wipe the battery top with a dry non-fluffy rag.
- Ensure connections are clean and tight.

NOTE
Coat the terminals and connections with an anti-corrosion compound or grease.

- Keep the metallic containers clean. In case of corrosion, clean, neutralize corrosion and apply anti-acid paint on the affected area.
- Drain the water that can accumulate at the bottom of the container (electrolyte overflow, leak in the centralised filling circuit, battery cleaning…).

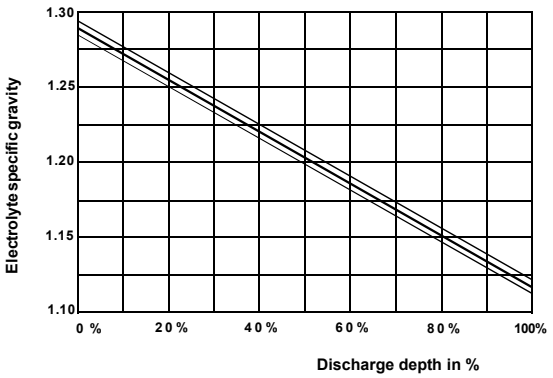
⚠ DANGER

Drained water may have been in contact with acid and may have become corrosive. Do not allow drain water to contact the skin or eyes. If it does occur, flush the contacted area with water and consult a doctor immediately. Appropriate equipement must be worn (gloves, goggles, rubber apron) to prevent the drained water from contacting the skin or any part of the body.

NOTE
The water that contacted a battery is classified as industrial waste, it must be disposed of according to regulations in force.

15.8 Electrolyte specific gravity and battery voltage

Specific gravity and voltage measures are the most important checks to be performed on a battery. A hydrometer is supplied with the work platform.
Specific gravity and voltage readings must be performed at least once a month and recorded in a battery service log.
The state of charge of the battery can be checked by measuring the specific gravity of the electrolyte. This value decreases as the battery discharges.
When the battery is fully charged, the specific gravity is 1.280 kg/l.
When the battery is 80% discharged, the specific gravity is 1.150 kg/l.
The following chart shows the correspondence between specific gravity and battery discharge.



Checking electrolyte specific gravity :

DANGER

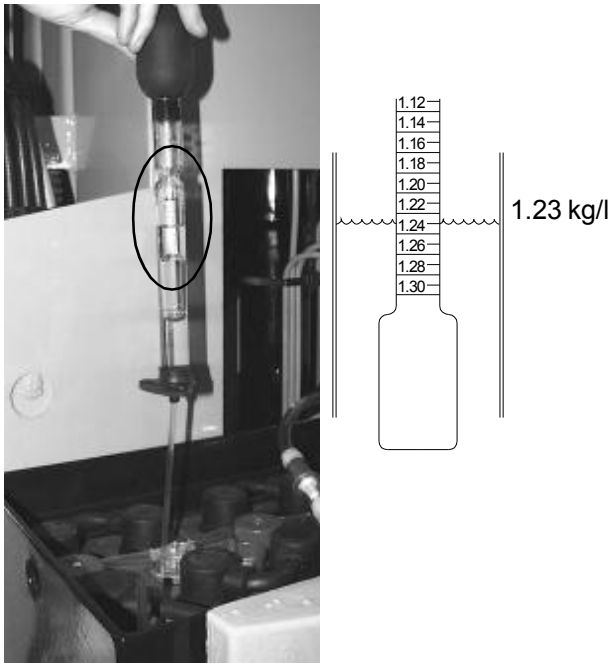
Battery electrolyte must not be allowed to contact the skin or eyes. If it does occur, flush the contacted area with water and consult a doctor immediately. Appropriate equipment must be worn (gloves, goggles, rubber apron) to prevent the electrolyte from contacting the skin or any other part of the body during any servicing operation on the battery.

DANGER

During maintenance or any servicing operation on the battery, rings, watches or any other jewellery must be removed.

NOTE
Specific gravity measure must not be performed after battery cells have been filled.

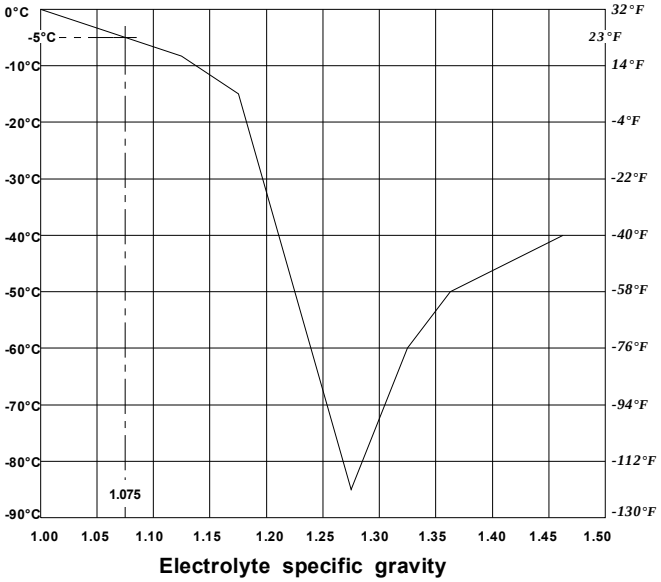
1- Open the battery cell filling cap.
2- Using the hydrometer, take a quantity of electrolyte sufficient so that the float emerges. Ensure the float top does not touch the rubber bulb or that the float does not stick by capillarity to the glass walls.
3- Read the value as indicated on the example below :



4- Return the electrolyte in the cell and record cell electrolyte specific gravity i n the battery service log.
5- Repeat operation for each battery cell.

15.9 Storage of a battery at temperatures below 0°C (32 °F)

Prior to battery storage at temperature below 0°C (32°F), the electrolyte specific gravity must be verified in each cell. Refer to ELECTROLYTE DENSITY AND BATTERY VOLTAGE in this section for the operating mode of electrolyte specific gravity measure.
Measure of the electrolyte specific gravity enables the determination of the electrolyte freezing point using the chart below :



NOTE
When the battery is fully charged (1.280 kg/l), the electrolyte freezing point is –85°C (-121 °F). Freezing point of a battery 80% discharged (1.150 kg/l) is –12°C (10 °F).

15.10 Use of a battery in a cold chamber or in a cold climate

⚠ CAUTION

The battery must be fully charged when the work platform is operated in a cold chamber or in cold weather condition.

Temperature has an effect on battery capacity : the battery looses 1% of its capacity per 1°C (1.8°F) below +25°C (77°F).

C°	20°C	10C°	0C°	-10C°	-20C°	-30C°
F°	68°F	50°F	32°F	14°F	-4°F	-22°F
% Lost	**5%**	**15%**	**25%**	**35%**	**45%**	**55%**

15.11 Battery not working continuously or inactive battery

A battery that is not used or used by intermittence must be stored charged in a dry area away from freezing temperatures. A charge must be performed once a month. (In these conditions battery storage is possible at temperatures of 30°C (86° F) for a 12 month period.

⚠ CAUTION

Storing a discharged battery will result in irreversible damage to the battery.

- Unplug the battery to insulate it electrically.
- Keep the top of the battery clean and dry to prevent self discharge : during inactivity periods, batteries loose their charge progressively (auto-discharge). Auto-discharge causes battery plates corrosion, which increases with time, resulting in battery malfunction.

⚠ CAUTION

If the battery is not used continously, it must be recharged at least once a month, even if the electrolyte specific gravity measures are high.

⚠ CAUTION

Before placing in service a battery which remained inactive for a long period of time, you must recharge the battery and check the electrolyte level in the cells.

15.12 Battery troubleshooting

Serious accidents resulting in complete destruction of a traction battery are relatively rare. If small problems encountered on a battery in use are rapidly and correctly determined, battery life and operation can be improved.

PREVENTION = AUTONOMY AND LONG LIFE

Symptoms	Probable causes	Solutions
Electrolyte overflow.	Filling done before the charge. Cells overfilled. Overcharge.	Fill battery cells after the charge. Never charge battery if electrolyte specific gravity is above 1,240 kg/l.
Inequal electrolyte specific gravity or electrolyte specific gravity too low.	Filling done before the charge. Loss of electrolyte due to overflow. Stratification of the electrolyte.	Fill battery cells after the charge. Perform an equalization charge. Contact your JLG Distributor/Product Support.
Low voltage in the cells in open circuit.	Electrolyte specific gravity too low. Short-circuit.	Refer to "electrolyte specific gravity too low". Clean battery top.
Battery cells temperature too high (over 45°).	Problem with the charger. Bad air circulation during charge. Cell weak or faulty Cells shorted.	Get the charger checked by a technician. Open access doors to batteries during charge. Reduce temperature of the area where the battery is charged (artificial ventilation). Change battery cell.
Battery incapable of supporting regular operation.	Battery under charged. Cell faulty. Faulty cable or connection. Battery at the end of its service life.	Perform an equalization charge. Replace faulty cell. Check wire condition and connection. Replace the battery.

15.13 Oil change replacement an filter

The first oil change and oil filter replacement must be done after the **50 first 50 hours** of operation. Thereafter, service interval is **250 hours.** It is recommended to change the oil the oil filter when the oil is warm. Change the oil filter when the needle of the clogging indicator reaches the red zone.

Hydraulic oil recommendations

Refer to section 15.21 : "*Lubrication*", for hydraulic oil specifications.

⚠ CAUTION

The work platform must be FULLY LOWERED when filling the oil tank or when checking the oil level.

Oil change and flushing

⚠ CAUTION

The filter must be changed at each oil change.

1- Position the ignition key to "**O**".
2- Place rags around the oil filter and place a container of 30 liter minimum capacity under the hydraulic tank.
3- Remove the breather cap and the draining plug located on the side of the reservoir.
4- Remove the oil filter with a filter wrench.

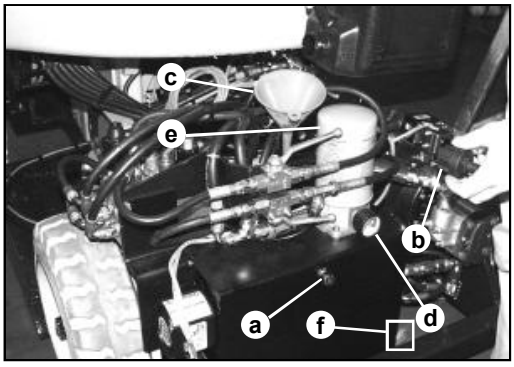
⚠ DANGER

Oil projections can cause injuries and burns.

NOTE

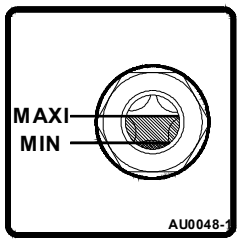
Do not spill oil on the work platform or on the ground.

5- Clean the oil filter base and the reservoir. Avoid fluffy rags. If necessary, blow the reservoir with compressed air.



a. Oil level indicator
b. Breather cap.
c. Funnel.
d. Clogging indicator.
e. Oil filter.
f. Draining plug.

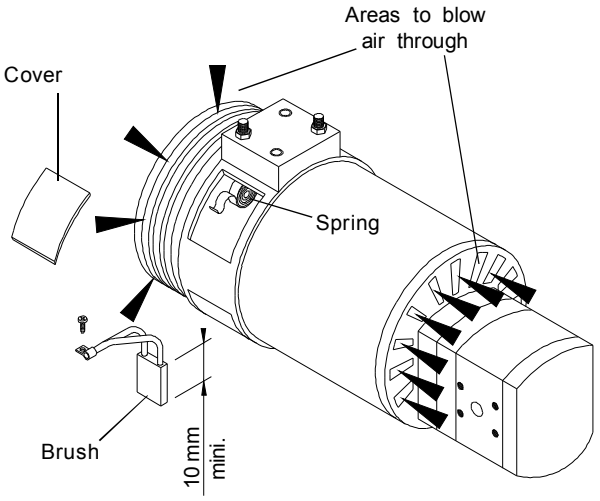
6- Clean and install the draining plug on the reservoir and replace the oil filter.
7- Fill the reservoir with new hydraulic oil to the level shown on the oil level indicator.



8- Actuate the enable pedal for a few minutes to bleed the air from the hydraulic circuit.
9- Add hydraulic oil if necessary, without exceeding the maximum level on the oil level indicator. Reservoir capacity is 14 liters (Circuit capacity is 30 liters).
10- Install the breather cap.
11- Check the machine for proper functioning and any leakage.

15.14 Main hydraulic group motor

Main hydraulic group motor brushes (Qty = 4) have to be regularily checked. Motor ventilation holes have to be regularly cleaned by blowing compressed air through the holes as indicated below :



Brushes removal :

1- Disconnect the battery plug.
2- Remove the covers from the motor.
3- Remove brushes connection screws.
4- Lift the spiral springs and remove the brushes from their housing.

⚠ CAUTION

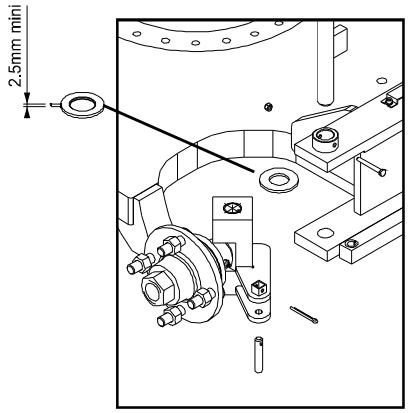
If the length of one of the brushes is below 10 mm, all 4 brushes must be replaced. During removal/installation, do not interchange or reverse the brushes.

Brushes installation :

1- Lift the spiral spring and install the brushes.
2- Install the brushes connection screws.
3- Install the protection covers.

15.15 Steering bracket thrust washers

Check thickness of thrust washers on both steering brackets.
Replace the washers if their thickness is below 2,5 mm. Refer to Service Manual for further information.



15.16 Chain control and lubrication

The service life of a lifting chain depends on the work platform operating conditions and on the environment in which the machine is used or stored. Service life is reduced if the chains are exposed to significant temperature fluctuations, acid or corrosive products or vapours, or abrasive dust.

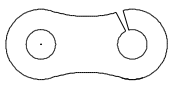
⚠ CAUTION

Due to the high resistance level of their components, chains can be weakened through contact with a corrosive product.

15.16.1 Control of chain wear.

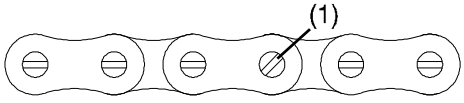
Inspect thorougly each chain in turn over its entire length :

ç Chains, chain yokes, clevis pins and split pins must not be corroded.
ç Plate must not be cracked.

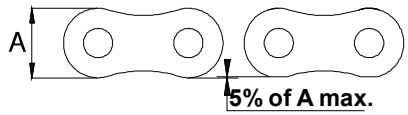


cracked plate

ç The plate clevis pins must not present excessive play. The pins must not be turned in their housing.**(1)** :

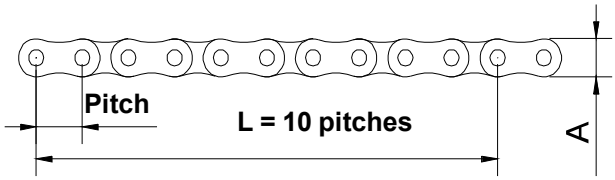


ç Plates must not present a wear above 5% of the total height (refer to chart below).



Pitch	5/8" (15,875 mm)	3/4" (19,05 mm)
A min.	11,5 mm	13,6 mm

ç Chain stretching cannot be superior to the values indicated in the chart below :



Pitch	5/8" (15,875 mm)	3/4" (19,05 mm)
L max.	163,5 mm	196 mm

If a chain appears to be faulty or worn, both chains of the same stage must be replaced together ; the condition of the pulleys and the telescopic mast alignment must be checked.

15.16.2 Chains lubrication.

⚠ CAUTION

Do not use grease to lubricate the lifting chains.

⚠ CAUTION

Do not remove lubricant applied at the factory from the chains. Do not use acid or detergent to clean the lifting chains. Do not pressure wash them.

Lubrication of the lifting chains can be performed manually with a brush, or by spraying.
Chain lubrication intervals must be established with care, depending on the environment in which the work platform is operated or stored (dusty or agressive environment).
The lubricant must be adapted to the machine's operating conditions.
Generally, a non detergent mineral oil is sufficient.
Its viscosity must be adapted to temperatures according to the chart hereafter :

Temperature		Recommended viscosity grades ISO - VG
C°	F°	
-15 < T £ 0	5 < T £ 32	15 to 32
0 < T £ 50	32 < T £ 122	46 to 150
50 < T < 80	122 < T < 176	220 to 320

⚠ CAUTION

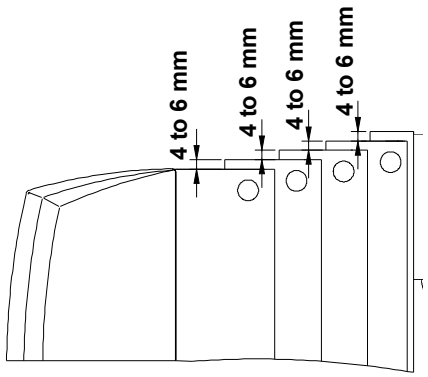
A viscosity too low facilitates draining of the lubricant by gravity. A viscosity too high prevents the lubricant from reaching the friction surfaces.

Lubricant must be applied :

- Longitudinally : in areas where joints are under small load to facilitate penetration of the lubricant.
- Transversally : between the plates to enable the lubricant to reach the joint and between the internal plates and the rollers (refer to § lubrication).

15.17 Lifting chains adjustment

The lifting chains of a same stage must have an identical tension.
The chains must always be tensioned so that the mast sections are slightly offset towards the top :



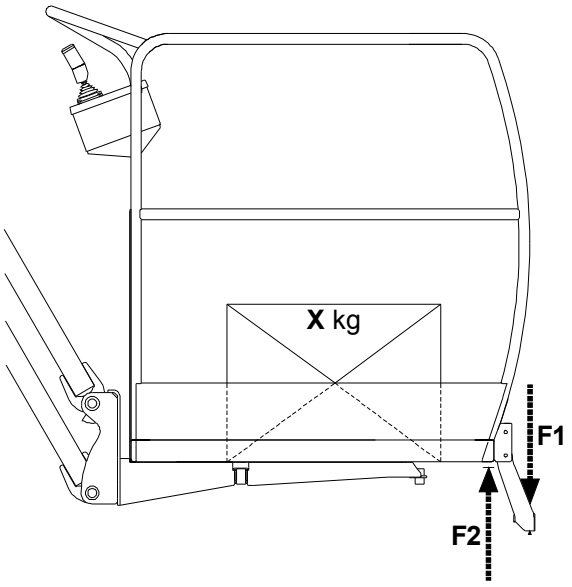
15.18 Verification of the overload detection setting

1- Place a **X** kg load evenly distributed on the platform floor.
2- Position the Ground controls/Platform controls selector switch to "Platform controls". Ensure the lower emergency stop is not activated.
3- Apply a slight pressure F1 on the platform.
   ç An acoustic alarm sounds.
   ç The corresponding LED lights up.
   ç Every function is disabled from the platform controls.
4- Position the "Ground controls"/"Platform controls" selector switch to "Ground controls".

   ç An acoustic alarm sounds.
   ç Every function is disabled from the ground controls.

5- Apply a slight traction force F2 on the platform.

   ç The acoustic alarm stops.



Model	X
T1100A	200 kg
T1100B	230 kg
T1100C	200 kg

15.19 Verification of the tilt alarm setting

1- Position the selector switch to "Ground controls" or "Platform controls"
2- Chock both rear wheels.
3- Place a spirit level (digital display) on the chassis positioned lengthways.
4- With a jack of appropriate capacity, lift the front of the chassis.
   - An acoustic alarm sounds when the chassis is tilted at its max value (2°).
   - The corresponding LED lights up on the platform controls.
5- Chock both front wheels.
6- With a jack of appropriate capacity, lift the rear of the chassis.
   - An acoustic alarm sounds when the chassis is tilted at its max value (2°).
   - The corresponding LED lights up on the platform controls.
7- Place a spirit level (digital display) across the chassis.
8- With a jack of appropriate capacity, lift the right hand side of the chassis.
   - An acoustic alarm sounds when the chassis is tilted at its max value (2°).
   - The corresponding LED lights up on the platform controls.
9- With a jack of appropriate capacity, lift the left hand side of the chassis.
   - An acoustic alarm sounds when the chassis is tilted at its max value (2°).
   - The corresponding LED lights up on the platform controls.
10- Remove the blocks.

15.20 Preventive maintenance and inspection

15.20.1 Daily preventive maintenance and inspection

Daily preventive maintenance/inspections should include checking the following items :

- Presence and legibility of the Operator's, Safety and Maintenance Handbook
- Presence and legibility of the decals-warning and instructural
- Good working order of the work platform
- Good working order of the controls/indicators
- Good working order of the tilt alarm (refer to §5.1.3)
- Good working order of the motion alarm
- Battery state of charge on the battery discharge indicator (refer to §4.1)
- Condition of heavy duty solid tyres
- Hydraulic oil level (refer to §5.1.2)
- Condition of jib and attachments
- Presence of screws and pins
- Condition of power bridges
- Mast sensors (refer to §5.1.6)
- Jib sensor (refer to §5.1.7)
- Overload detection (refer to §5.1.4)
- Chain slack and breaking detection (refer to §5.1.5)

15.20.2 Weekly preventive maintenance and inspection

Weekly preventive maintenance/inspections should include checking the following items :

- Presence of wheels nuts
- Hydraulic hoses and fittings (leakage)
- Battery electrolyte level (refer to §15-5-1)
- Mast/jib cylinders (leakage, rod, lock valve)
- Lubrication (refer to §15-21)

15.20.3 Monthly preventive maintenance and inspection

Monthly preventive maintenance/inspections should include checking the following items :

- Mast lifting chains lubrication (refer to §15-21)
- Batteries electrolyte specific gravity (refer to §15-8)
- Lubrication (refer to §15-21)

15.20.4 Preventive maintenance and inspection every 125 hours of operation

Preventive maintenance/inspections should include checking the following items :

- Cylinders (leakage, rod, holding valve)
- Condition of lifting chains (refer to §15-16)
- Condition of the batteries (refer to §15-6 to 15-8)
- Check the wheel nut torque (refer to the Service manual)
- Overload sensor setting (refer to § 15-18)
- Tilt indicator setting (refer to §15-19)
- Motor brushes of main hydraulic group (refer to §15-14)
- Motor ventilation holes cleaning (refer to §15-14)
- Steering brakets thrust washers (refer to §15-15)
- Condition of bushes on jib and steering system
- Lubrication (refer to §15-21)

15.20.5 Preventive maintenance and inspection every 250 hours of operation

Preventive maintenance/inspections should include checking the following items :

- Hydraulic filter replacement (refer to §15-13)
- Motor brushes of main hydraulic group (refer to §15-14)
- Turntable bearing (greasing)
- Lubrication (refer to §15-21)

15.20.6 Preventive maintenance and inspection every 500 hours of operation

Preventive maintenance/inspection should include checking the following items and must be performed by a technician approved by JLG :

- Turntable bolts torque (refer to Service manual)
- Lifting chains wear (refer to §15-16-1)
- Telescopic mast alignment/bronze spacers on roller pins (refer to Service manual)
- Relief valve settings (refer to Service manual)
- Lubrication (refer to §15-21)

NOTE

Fire extinguisher (optional equipment) must be checked according to regulations in force.

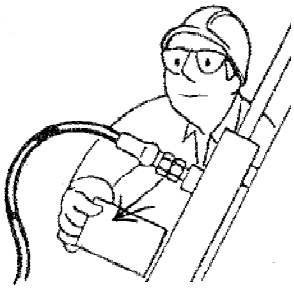
NOTE

Turntable attachment bolts have to be retorqued after the first 100 hours operation.

15.21 Lubrication

General

Follow designated lubrication procedures to ensure maximum work platform lifetime and use. The procedures and lubrication chart in this section provide information on the types of lubricants used, the location of lubrication points, the frequency intervals for lubrication and other important material.
When checking for suspected leaks, place underneath a piece of cardboard or wood.



Never modify the setting of a relief valve.

Lubrication points

Regular lubrication must be performed on all lubrication points. Normally, the frequency for lubrication is based on component operating time. The most efficient method for keeping track of lube intervals in to maintain a job log indicating machine usage. The log sould include hourmeter readings which can be used to determine which lube points will require attention based on their readings.

Lubricants or grease types as well as lubrication intervals must be adapted to the conditions and operating and storage environments of the work platform (temperature, dusty atmosphere, corrosive atmosphere, humidity...)

Check oil levels and perform lubrication only when the work platform is parked on a level surface in the transport position - and while the oil is at ambient temperature (unless otherwise specified).

All grease fittings are SAE STANDARD unless otherwise indicated. Grease non-sealed fittings until grease extrudes from the fitting. Excessive lubrication on non-sealed fittings will not harm the fittings or components, but too little lubrication can lead to shorter component life.

Grease fittings that are worn and will not hold the grease gun (or those that have a stuck check ball) must be replaced.

The following chart titled ***Lubrication Chart*** describes lubrication points and gives the lube type, lube interval, lube amount and application of each.

⚠ CAUTION

Use the following lubrication intervals as a guideline only. Formulate actual lubrication intervals to correspond to conditions such as continuous operating cycles and/or hazardous environments.

Unless otherwise indicated, items not described (such as linkages, pins, levers, etc...) should be lubricated. Motor or hydraulic oil applied sparingly will provide the necessary lubrication and help prevent the formation of rust. An anti-seize compound may be used if rust has not formed.

If rust or corrosion is present, the component must be thoroughly cleaned before applying lubricant.

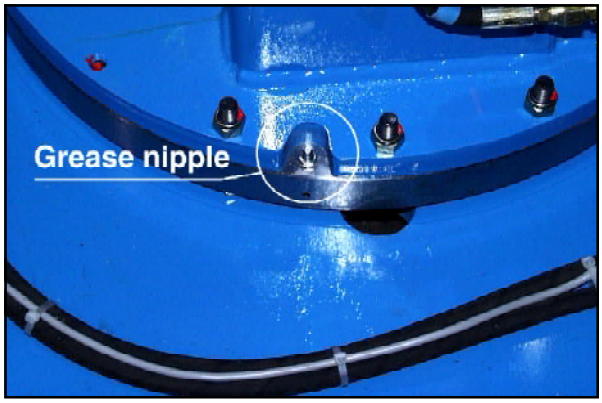
Turntable greasing

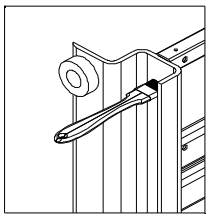
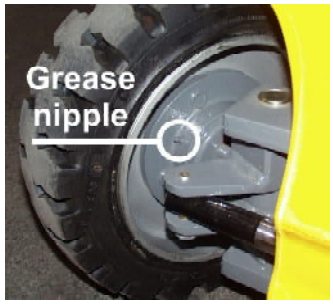
1- Grease the bearing track using a grease pump.
2- Remove the swing reducer (b)

⚠ CAUTION

Handling must be imperatively performed on flat and horizontal ground, in an area large enough to allow complete rotation of the superstructure.

3- Using a brush, apply new grease on all the turntable teeth through the reducer centering hole. Rotate the superstructure manually to access all the teeth.



LUBRICATION CHART				
LOCATION	**LUBE TYPE**	**LUBE INTERNAL**	**LUBE AMOUNT**	**APPLICATION**
1. Mast profiles	**B**	Every 125 hours of operation or after each cleaning or more often if the work platform is used or stored in a very dusty or corrosive environment.	N/A	1. Clean the inside wall of mast to remove the old grease 2. Lubricate the mast inside wall using a brush  3. Cycle the mast and relubricate.
2. Lifting chains	**D**	Every 125 hours or once every 30 days of operation or more often if the platform is used or stored in a very dusty or corrosive environment.	N/A	Lubricant can be applied manually with a brush or by spraying. Apply lubricant : - Longitudinally = in areas where joints are under small load to facilitate penetration of the lubricant -transversally = between the plates to enable the lubricant to reach the joints
3. Wheel bearings	**E**	Every 250 hours of operation.	N/A	1 Grease nipple on each hub  (Remove the wheel to gain access to the grease nipple)
4. Swing bearing race	**E**	Every 250 hours of operation.	N/A	Grease nipple(s) on turntable base plate.
5. Main hydraulic reservoir	**A**	- Check daily - Drain after 1000 hours of operation or at least every 2 years. - Biodegradable : For the machine's life	about 22 l	Fill through top in-tank return filter.Check level through the sight gauge on the reservoir. 
6. Return filter	Filter change interval : After first 50 hours of operation and every 250 hours thereafter.			
7. Swing bearing internal gear	**C**	Every 1000 hours of operation	Coat each tooth	**Internal gear bearing** 1- Remove swing gear box. 2- Apply a thick coat of grease with a brush through the gear box centering hole. Manually rotate the turntable to reach every teeth.

NOTES

TYPE OF LUBRICANT

	STANDARD	LOW TEMPERATURE TILL -35°C	FOOD COMPATIBLE	FOOD COMPATIBLE LOW TEMPERATURE	BIO-DEGRADABLE OIL
A	NERVOFLUID VG 32	NERVOL - EQUIVIS XV 32	NERVOL - AGROFLUID DVG 32	NERVOL - AGROFLUID	PANOLIN - 3504 HLP SYNTHESE 32
	NERVOFLUID DVG 32	NERVOL - HYDRELF XV 32	MOBIL - DTE FM 32		
	MOBIL DTE 13M	MOBIL - DTE 13M			

	STANDARD	BASSE TEMPERATURE JUSQU'A -35°C	ALIMENTAIRE	ALIMENTAIRE BASSE TEMPERATURE	
B	COMPLEX EP2	NERVOL - CRYOGREASE			
	MOBILUX EP2	MOBILITH SHC 220			

	STANDARD
C	MOBILTAC 81

	STANDARD	BASSE TEMPERATURE JUSQU'A -35°C
D	MOBIL DTE 16M	HYDRELF XV 32
	CHAÏNE FILANTE	

	STANDARD
E	MOBILUX EP2
	COMPLEX EP2

A Reservoir
B Masts / Wheel hub / Telescope
C Tunrtable
D Lifting chains
E Swing bearing race

Example of a log book

	Verification interval WEEKLY																							
OPERATIONS TO BE DONE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date																								
Hydraulic oil level check																								
Battery water level check																								
VISA																								

	Verification interval MONTHLY					
OPERATIONS TO BE DONE	1	2	3	4	5	6
Date						
Absence of hydraulic leaks check						
Mechanical check						
Electrolyte density measure per battery cell						
Electrical motor cleaning						
Battery tray cleaning						
VISA						

	Verification interval BI-YEARLY					
OPERATIONS TO BE DONE	1	2	3	4	5	6
Date						
Swing ring lubrication						
Safety mechanisms check						
Check of motor brushes						
Lift cylinder check						
Hydraulic circuit general pressure check						
Check of electrical safety devices						
VISA						

	Verification intervals 18 MONTHS											
OPERATIONS TO BE DONE	1	2	3	4	5	6	7	8	9	10	11	
Date												
Hydraulic circuit oil change												
Oil filter cartridge change												
VISA												

Example of a log book (Cont'd)

Verification interval WEEKLY																									
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52

Verification interval MONTHLY						
7	8	9	10	11	12	

Verification interval BI-YEARLY						
7	8	9	10	11	12	

Verification interval 18 MONTHS													
12	13	14	15	16	17	18	19	20	21	22	23	24	

NOTES