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# ***Operation and Safety Manual***

## ***TOUCAN DUO TOUCAN JUNIOR B***





## FOREWORD

This manual is a very important tool! Keep it with the machine at all times.

The purpose of this manual is to provide owners, users, operators, lessors, and lessees with the precautions and operating procedures essential for the safe and proper machine operation for its intended purpose.

Due to continuous product improvements, JLG Industries, Inc. reserves the right to make specification changes without prior notification. Contact JLG Industries, Inc. for updated information.

### Other Publications Available :

|                                      | DUO      | JUNIOR 6 | JUNIOR 8 |
|--------------------------------------|----------|----------|----------|
| Service and maintenance manual ..... | MA0323   | MA0256   | MA0256   |
| Illustrated parts.....               | 31210004 | 31210045 | 31210045 |
| Hydraulic schematic.....             | FL0148   | FL0128   | FL0136   |
| Electrical schematic .....           | ELE246   | ELE245   | ELE245   |

## SAFETY ALERT SYMBOLS AND SAFETY SIGNAL WORDS



This is the Safety Alert Symbol. It is used to alert you to the potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### **DANGER**

INDICATES AN IMMINENTLY HAZARDOUS SITUATION. IF NOT AVOIDED, WILL RESULT IN SERIOUS INJURY OR DEATH. THIS DECAL WILL HAVE A RED BACKGROUND.

### **WARNING**

INDICATES A POTENTIALITY HAZARDOUS SITUATION. IF NOT AVOIDED, COULD RESULT IN SERIOUS INJURY OR DEATH. THIS DECAL WILL HAVE AN ORANGE BACKGROUND.

### **CAUTION**

INDICATES A POTENTIALITY HAZARDOUS SITUATION. IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO ALERT AGAINST UNSAFE PRACTICES.

INDICATES PROCEDURES ESSENTIAL FOR SAFE OPERATION. THIS DECAL WILL HAVE A YELLOW BACKGROUND.

#### **For:**

- Accident Reporting
- Product Safety Publications
- Current Owner Updates
- Questions Regarding Product Safety

#### **CONTACT:**

##### **In USA :**

JLG Industries, Inc.  
Product Safety & Reliability Department,  
13224 Fountain Head Plaza  
Hagerstown, MD  
USA 21742  
Toll Free : +1 (877) 554-7233  
Tel. : +1 (240) 420-2661  
Fax : +1 (301) 745-3713  
Email : [ProductSafety@JLG.com](mailto:ProductSafety@JLG.com)

### **WARNING**

THIS PRODUCT MUST COMPLY WITH ALL SAFETY RELATED BULLETINS, CONTACT JLG INDUSTRIES, INC. OR THE LOCAL AUTHORIZED JLG REPRESENTATIVE FOR INFORMATION REGARDING SAFETY-RELATED BULLETINS WHICH MAY HAVE BEEN ISSUED FOR THIS PRODUCT.

### **IMPORTANT**

JLG INDUSTRIES, INC. SENDS SAFETY RELATED BULLETINS TO THE OWNER OF RECORDS OF THIS MACHINE. CONTACT JLG INDUSTRIES, INC. TO ENSURE THAT THE CURRENT OWNER RECORDS ARE UPDATED AND ACCURATE.

### **IMPORTANT**

JLG INDUSTRIES, INC. MUST BE NOTIFIED IMMEDIATELY IN ALL INSTANCES WHERE JLG PRODUCTS HAVE BEEN INVOLVED IN AN ACCIDENT INVOLVING BODILY INJURY OR DEATH OF PERSONNEL OR WHEN SUBSTANTIAL DAMAGE HAS OCCURRED TO PERSONAL PROPERTY OR THE JLG PRODUCT.

##### **Outside USA :**

JLG Industries,  
Wright Business Centre,  
1 Lonmay Road  
Queenslie  
Glasgow,  
Scotland G33 4EL  
Tel : +44(0)141 781 6700  
Fax : +44(0)141 773 1907  
Email : [ProductSafety@JLG.com](mailto:ProductSafety@JLG.com)

or Your Local JLG Office  
(see addresses on manual rear cover)

## **REVISION LOG**

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## SECTION 1. SAFETY PRECAUTIONS

### 1.1 GENERAL

This section outlines the necessary precautions for proper and safe machine operation and maintenance. For proper machine use, it is mandatory that a daily routine is established based on the content of this manual. A maintenance program, using the information provided in this manual and the Service Manual, must also be established by a qualified person and followed to ensure the machine is safe to operate.

If there are any questions with regard to safety, training, inspection, maintenance, application, and operation, please contact JLG Industries, Inc. ("JLG").

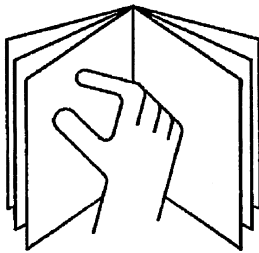
#### **⚠ WARNING**

**FAILURE TO COMPLY WITH THE SAFETY PRECAUTIONS LISTED IN THIS MANUAL COULD RESULT IN MACHINE DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**

### 1.2 PRE-OPERATION

#### Operator Training and Knowledge

- Read and understand this manual before operating the machine.



- Do not operate this machine until complete training is performed by authorized persons.
- Only authorized and qualified personnel can operate the machine.
- Read, understand, and obey all DANGERS, WARNINGS, CAUTIONS, and operating instructions on the machine and in this manual.
- Use the machine in a manner which is within the scope of its intended application set by JLG.
- All operating personnel must be familiar with the emergency controls and emergency operation of the machine as specified in this manual.
- Read, understand, and obey all applicable employer, local, and governmental regulations as they pertain to operation of the machine.

#### Workplace Inspection

- The operator is to take safety measures to avoid all hazards in the work area prior to machine operation.

- Do not operate or raise the platform while on trucks, trailers, railway cars, floating vessels, scaffolds or other equipment unless approved in writing by JLG.
- Do not operate the machine in hazardous environments unless approved for that purpose by JLG.
- Be sure that the ground conditions are able to support the maximum load of the machine.
- This machine can be operated in temperatures of -20°C to 40°C. Consult JLG for operation outside this range.
- This machine must be used in a sufficient ambient light.

#### Machine Inspection

- Before machine operation, perform inspections and functional checks. Refer to Section 2 of this manual for detailed instructions.
- Do not operate this machine until it has been serviced and maintained according to requirements specified in the Service and Maintenance Manual.
- Be sure the trigger on the function enable switch and all other safety devices are operating properly. Modification of these devices is a safety violation.

#### **⚠ DANGER**

**MODIFICATION OR ALTERATION OF AN AERIAL WORK PLATFORM SHALL BE MADE ONLY WITH WRITTEN PERMISSION FROM THE MANUFACTURER**

- Do not operate any machine on which safety or instruction placards or decals are missing or illegible.
- Avoid any buildup of debris on the platform floor. Keep mud, oil, grease, and other slippery substances from footwear and platform floor.
- Do not clean electrical components with a high pressure cleaner.

### 1.3 OPERATION

#### General

- Do not use the machine for any purpose other than positioning personnel, their tools, and equipment.
- Never operate a machine that is not working properly. If a malfunction occurs, shut down the machine.
- Never slam a control switch or lever through neutral to an opposite direction. Always return switch to neutral and stop before moving the switch to the next function. Operate controls with slow and even pressure.
- Park the machine in stowed position when not in service.

## SECTION 1 - SAFETY PRECAUTIONS

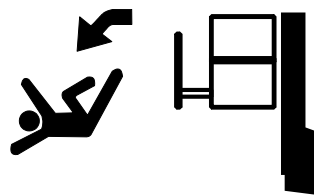
- Do not allow personnel to tamper with or operate the machine from the ground with personnel in the platform, except in an emergency.
- Do not carry materials directly on platform railing unless approved by JLG.
- When two persons are in the platform, the operator shall be responsible for all machine operations.
- Always ensure that power tools are properly stowed and never left hanging by their cord from the platform work area.
- Supplies or tools which extend outside the platform are prohibited unless approved by JLG.
- Do not assist a stuck or disabled machine by pushing, pulling, or by using extending structure functions. Only pull the unit from the towing points on the chassis.
- Do not place extending structure or platform against any structure to steady the platform or to support the structure.
- Stow extending structure and shut off all power before leaving machine.

### Trip and Fall Hazards

- JLG recommends that occupants of the platform wear a full body harness with a lanyard attached to an authorized lanyard anchorage point (Max. lanyard length : 76 cm). For further information regarding fall arrest protection requirements on JLG products, contact JLG Industries, Inc.



- Before operating the machine, make sure all gates are closed and fastened in their proper position.



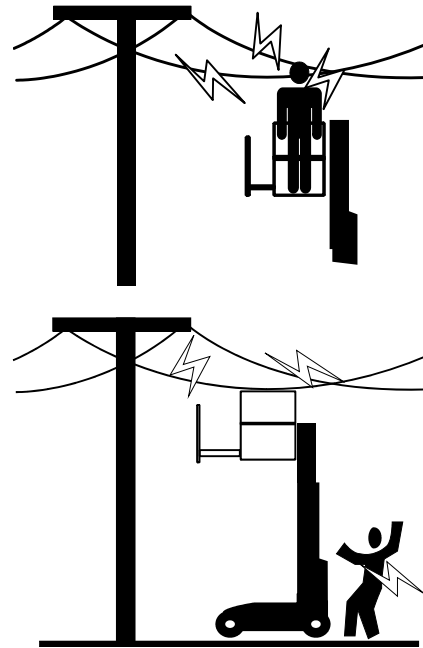
- Keep both feet firmly positioned on the platform floor at all times. Never use ladders, boxes, steps, planks, or similar items on platform to provide additional reach.
- Always enter or leave the platform using the access gate.
- Use extreme caution when entering or leaving platform. Be sure that the mast assembly is fully lowered. Face the machine, maintain “three point contact” with the machine, using two hands and one foot or two feet and one hand during entry and exit.
- For TOUCAN DUO models only : when driving, always ensure all equipment, parcels and materials

on the shelf are tied down. Use the removable tube and the reel strap to restrain parcels and bulky materials positioned on the shelf.

- Ensure the platform is less than 10 cm away from the racking before opening the side doors.
- Do not sit or climb on the shelf.

### Electrocution Hazards

- This machine is not insulated and does not provide protection from contact or proximity to electrical current.



- Maintain distance from electrical lines, apparatus, or any energized (exposed or insulated) parts according to the Minimum Approach Distance (MAD) as shown in Table 1-1.
- Allow for machine movement and electrical line swaying.

**Table 1-1. Minimum Approach Distances (M.A.D.)**

| Voltage Range<br>(Phase to Phase)  | MINIMUM APPROACH DISTANCE<br>in meters |
|--|--|
| 0 to 50 kV   | 3                                      |
| Over 50 kV to 200 kV   | 5                                      |
| Over 200 kV to 350 kV  | 6                                      |
| Over 350 kV to 500 kV  | 8                                      |
| Over 500 kV to 750 kV  | 11                                     |
| Over 750 kV to 1000 kV   | 14                                     |
| <b>NOTE: This requirement shall apply except where employer, local or governmental regulations are more stringent.</b> |  |

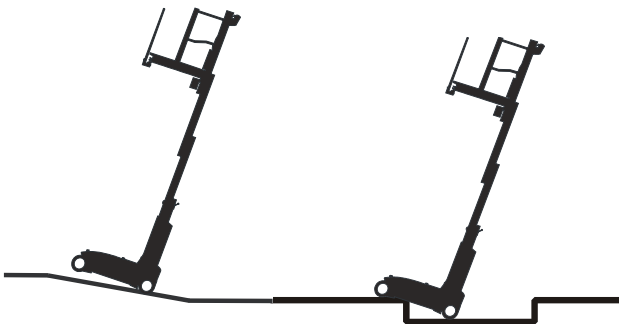
### **⚠ DANGER**

**DO NOT MANEUVER MACHINE OR PERSONNEL INSIDE PROHIBITED ZONE (MAD). ASSUME ALL ELECTRICAL PARTS AND WIRING ARE ENERGIZED UNLESS KNOWN OTHERWISE.**

- Maintain a clearance of at least 3m between any part of the machine and its occupants, their tools and their equipment from any electrical line or apparatus carrying up to 50 000 volts. An additional clearance of 0.3m is required for every additional 30 000 volts or less.
- The minimum approach distance may be reduced if insulating barriers are installed to prevent contact and the barriers are rated for the voltage of the line being guarded. These barriers shall not be part of (or attached to) the machine. The minimum approach distance shall be reduced to a distance within the designed working dimensions or the insulating barrier. This determination shall be made by a qualified person in accordance with employer, local or governmental requirements for work practices near energized equipment.

### **Tipping Hazards**

- The user should be familiar with the surface before driving. Do not exceed the allowable sideslope and grade while driving.



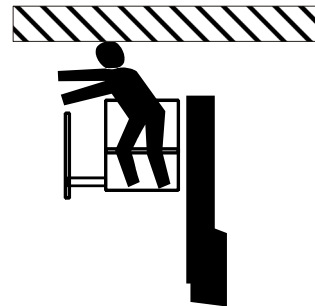
- Never exceed the maximum platform capacity. Distribute loads evenly on platform floor.
- For TOUCAN DUO models only : never exceed the maximum shelf capacity. Distribute loads evenly on shelf floor.
- Before driving on floors, bridges, trucks, and other surfaces, check allowable capacity of the surfaces. Check the ramp or slope for good adhesion of the wheels. Ensure that the driving surfaces are free of moisture, ice, grease or from any other substance that could affect traction.
- Do not elevate platform or drive with platform elevated while on a sloping, uneven, or soft surface.
- Do not raise the platform or drive from an elevated position unless the machine is on firm, level surfaces and evenly supported.
- When travelling on slopes (20% max), the platform MUST be fully lowered. It is recommended to drive

up the slope in FORWARD gear and to REVERSE down the slope as the machine will perform better.

- Keep the chassis of the machine at least 0.6m from holes, bumps, drop-offs, obstructions, debris, concealed holes, and other potential hazards on the floor/surface.
- Do not push or pull any object with the extending structure.
- Never attempt to use the machine as a crane. Do not tie-off machine to any adjacent structure.
- Do not operate the machine with wind.
- Do not increase the surface area of the platform or the load. Increase of the area exposed to the wind will decrease stability.
- Do not increase the platform size or the shelf size (TOUCAN DUO models), with unauthorized deck extensions or attachments.
- If extending structure assembly or platform is in a position that one or more wheels are off the ground, all persons must be removed before attempting to stabilize the machine. Use appropriate equipment to stabilize machine and remove personnel.

### **Crushing and Collision Hazards**

- Approved head gear must be worn by all operating and ground personnel.
- Check work area for clearances overhead, on sides, and bottom of platform when lifting or lowering platform, and driving.



- During operation, keep all body parts inside platform railing.
- Always post a lookout when driving in areas where vision is obstructed.
- Keep non-operating personnel at least 1.8m away from machine during all driving operations.
- Limit travel speed according to conditions of ground surface, congestion, visibility, slope, location of personnel, and other factors which may cause collision or injury to personnel.
- Be aware of stopping distances in all drive speeds. When driving in high speed, reduce to low speed before stopping.

- Do not use high speed drive in restricted or close quarters or when driving in reverse.
- Exercise extreme caution at all times to prevent obstacles from striking or interfering with operating controls, persons in the platform or with operating parcels on the shelf (TOUCAN DUO models only).
- Be sure that operators of other overhead and floor level machines are aware of the aerial work platform's presence. Disconnect power to overhead cranes.
- Warn personnel not to work, stand, or walk under a raised extending structure or platform. Position barricades on floor if necessary.

### 1.4 TOWING, LIFTING, AND HAULING

- Never allow personnel in platform while towing, lifting, or hauling.
- This machine should not be towed, except in the event of emergency, malfunction, power failure, or loading/unloading. Refer to the Emergency Procedures section of this manual for emergency towing procedures.
- Ensure extending structure is in the stowed position prior to towing, lifting or hauling. The platform must be completely empty of tools. For TOUCAN DUO models only, the shelf must be completely empty and the removable tube must be stored under the platform.
- When lifting machine, lift only at designated areas of the machine. Lift the unit with equipment of adequate capacity.
- Refer to the Machine Operation section of this manual for lifting information.

### 1.5 ADDITIONAL HAZARDS / SAFETY

- Do not use machine as a ground for welding.
- When performing welding or metal cutting operations, precautions must be taken to protect the chassis from direct exposure to weld and metal cutting spatter.
- Battery fluid is highly corrosive. Avoid contact with skin and clothing at all times.
- Charge batteries only in a well ventilated area.

## **SECTION 2. USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION**

### **2.1 PERSONNEL TRAINING**

The aerial platform is a personnel handling device; so it is necessary that it be operated and maintained only by trained personnel.

Persons under the influence of drugs or alcohol or who are subject to seizures, dizziness or loss of physical control must not operate this machine.

#### **Operator Training**

Operator training must cover:

1. Use and limitations of the controls in the platform and at the ground, emergency controls and safety systems.
2. Control labels, instructions, and warnings on the machine.
3. Rules of the employer and government regulations.
4. Use of approved fall protection device.
5. Enough knowledge of the mechanical operation of the machine to recognize a malfunction or potential malfunction.
6. The safest means to operate the machine where overhead obstructions, other moving equipment, and obstacles, depressions, holes, drop-offs.
7. Means to avoid the hazards of unprotected electrical conductors.
8. Specific job requirements or machine application.

#### **Training Supervision**

Training must be done under the supervision of a qualified person in an open area free of obstructions until the trainee has developed the ability to safely control and operate the machine.

#### **Operator Responsibility**

The operator must be instructed that he/she has the responsibility and authority to shut down the machine in case of a malfunction or other unsafe condition of either the machine or the job site.

### **2.2 PREPARATION, INSPECTION, AND MAINTENANCE**

The following table covers the periodic machine inspections and maintenance required by JLG Industries, Inc. Consult local regulations for further requirements for aerial work platforms. The frequency of inspections and maintenance must be increased as necessary when the machine is used in a harsh or hostile environment, if the machine is used with increased frequency, or if the machine is used in a severe manner.

## SECTION 2 - USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION

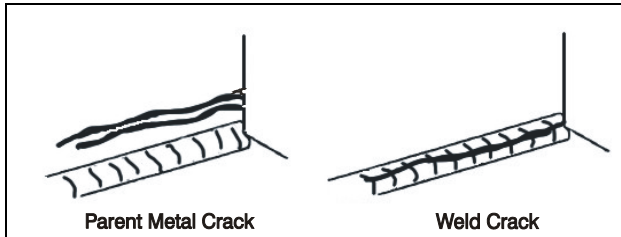
Table 2-1. Inspection and Maintenance Table

| Type   | Frequency   | Primary Responsibility | Service Qualification |     | Reference   |
|--|---|------------------------|-----------------------|-----|---|
| Pre-Start Inspection   | Before using each day; or whenever there's an Operator change.  | User or Operator       | User or Operator      |     | Operator and Safety Manual  |
| Pre-Delivery Inspection (See Note)   | Before each sale, lease, or rental delivery.  | Owner, Dealer, or User | Qualified Mechanic    | JLG | Service and Maintenance Manual and applicable JLG inspection form |
| Frequent Inspection (See Note)   | In service for 3 months or 150 hours, whichever comes first; or<br>Out of service for a period of more than 3 months; or<br>Purchased used. | Owner, Dealer, or User | Qualified Mechanic    | JLG | Service and Maintenance Manual and applicable JLG inspection form |
| Annual Machine Inspection (See Note)   | Annually, no later than 13 months from the date of prior inspection.  | Owner, Dealer, or User | Qualified Mechanic    | JLG | Service and Maintenance Manual and applicable JLG inspection form |
| Preventative Maintenance   | At intervals as specified in the Service and Maintenance Manual.  | Owner, Dealer, or User | Qualified Mechanic    | JLG | Service and Maintenance Manual                                    |
| <b>NOTE:</b> Inspection forms are available from JLG. Use the Service and Maintenance Manual to perform inspections. |   |                        |                       |     |   |

## **2.3 PRE-START INSPECTION**

The Pre-Start Inspection should include each of the following:

1. **Cleanliness** – Check all surfaces for leakage (oil, or battery fluid) or foreign objects. Report any leakage to the proper maintenance personnel.
2. **Structure** – Inspect the machine structure for dents, damage, weld or parent metal cracks or other discrepancies.



3. **Decals and Placards** – Check all for cleanliness and legibility. Make sure none of the decals and placards are missing. Make sure all illegible decals and placards are cleaned or replaced.
4. **Operation and Safety Manuals** – Make sure a copy of the Operator and Safety Manual is enclosed in the weather resistant storage container.
5. **“Walk-Around” Inspection** – Refer to § 2.3.1.
6. **Battery** – Charge as required.
7. **Hydraulic Oil** – Check the hydraulic oil levels. Ensure hydraulic oil is added as required.
8. **Accessories/Attachments** - Reference the Operator and Safety Manual of each attachment or accessory installed upon the machine for specific inspection, operation, and maintenance instructions.
9. **Function Check** – Once the “Walk-Around” Inspection is complete, perform a function check (section 2-3-2) of all systems in an area free of overhead and ground level obstructions. Refer to Section 4 for more specific operating instructions.

### **⚠ WARNING**

**IF THE MACHINE DOES NOT OPERATE PROPERLY, TURN OFF THE MACHINE IMMEDIATELY! REPORT THE PROBLEM TO THE PROPER MAINTENANCE PERSONNEL. DO NOT OPERATE THE MACHINE UNTIL IT IS DECLARED SAFE FOR OPERATION.**

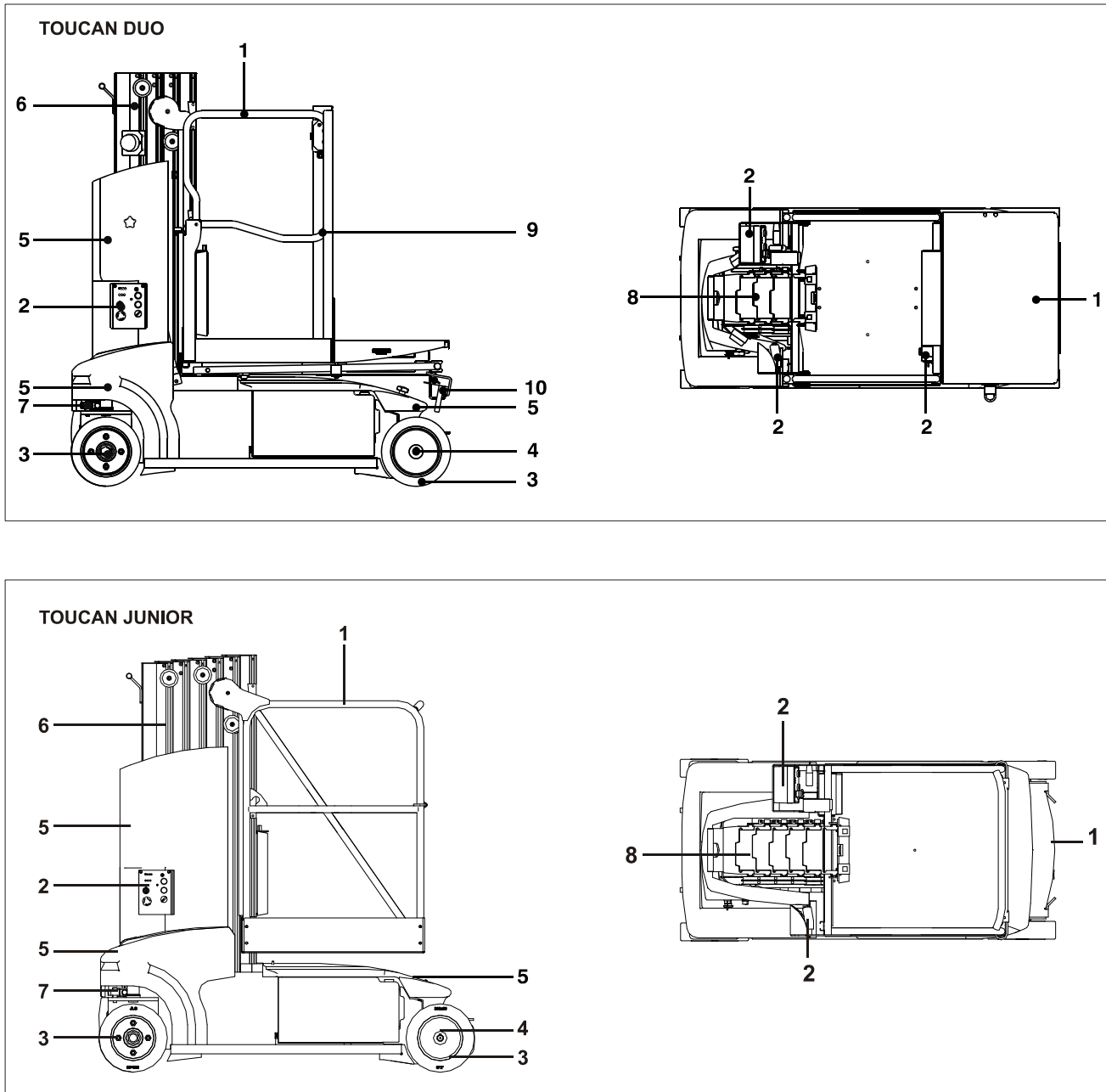


Figure 2-1. Daily Walk-Around Inspection

### 2.3.1 Walk-Around Inspection

Begin the "Walk-Around Inspection" at Item 1, as noted on the diagram. Continue checking each item in sequence for the conditions listed in the following checklist.

#### **⚠ WARNING**

TO AVOID POSSIBLE INJURY, BE SURE MACHINE POWER IS OFF.

**DO NOT OPERATE MACHINE UNTIL ALL MALFUNCTIONS HAVE BEEN CORRECTED.**

**INSPECTION NOTE:** On all components, make sure there are no loose or missing parts, that they are securely fastened, and no visible damage, leaks or excessive wear exists in addition to any other criteria mentioned.



1. **Platform Guardrails and Gates, Shelf for TOUCAN DUOs** - No visible damage. The gates open and close properly.
2. **Platform & Ground Control Consoles** - Switches and levers return to neutral, decals/placards secure and legible, control markings legible. Trigger works properly, not modified, disabled or blocked.
3. **Wheel/Tire Assemblies** - Properly secured, no missing lug nuts, screws and washers.
4. **Drive Motor, Brake** - No visible damage.
5. **Hood Assemblies** - See Inspection Note.
6. **Mast Assembly** - No visible damage; all pins and hydraulic hoses undamaged, no leaks.
7. **Steering Assembly** - No visible damage. Steering spindles : see inspection note.
8. **Lifting Chains, Chain Yokes and Clevis Pins** - Must be installed and in good condition. Chains must be correctly tensioned and lubricated.
9. **Shelf Assembly** - No visible damage; all pins and hydraulic hoses undamaged, no leaks. Good condition of the lifting cables.
10. **Removable Tube Assembly** - Must be installed and in good condition.

### 2.3.2 Function Check

Refer to section 3 & 4 for description and operation.

#### **⚠ WARNING**

**DO NOT OPERATE MACHINE UNTIL ALL MALFUNCTIONS HAVE BEEN CORRECTED.**

Perform the Function Check as follows with the machine on a firm level surface in an area free from obstructions :

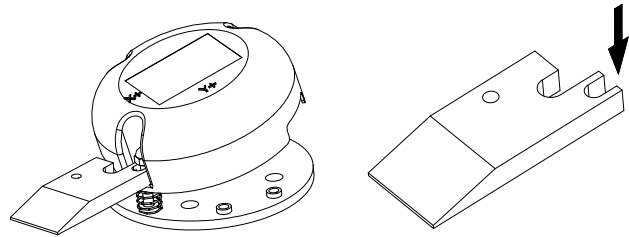
#### Control Consoles

1. From the Ground Control Console :
  - Operate all functions;
  - Ensure that all machine functions are disabled when the Emergency Stop Button is pushed in;
  - Raise the mast by approximately 1m. Simultaneously operate a mast lowering and raising movement :
    - Only the mast lowering movement shall occur.
  - Position the brake release selector to "Brakes unlocked". Try to use the Ground Control Console and ensure that no movement occurs.
  - Position the selector switch to Platform Control Console. Try to use the Ground Control Console and ensure that no movement occurs.
  - Position the Brake Release Selector to "Wheel Motor Brakes Locked".
2. From the Platform Control Consoles (Platform and Auxiliary Console for TOUCAN DUO models) :
  - Ensure that the platform control consoles are firmly secured;
  - Ensure proper operation of horn;
  - Ensure proper operation of all functions;
  - Ensure that all machine functions are disabled when the Emergency Stop Button is pushed in;
  - Ensure that no functions can be operated unless the trigger on the function enable switch is pressed, except the shelf functions (for TOUCAN DUO models).
  - Simultaneously operate a drive movement and mast movement. Only the mast movement shall occur;
  - Drive the machine on a grade, not to exceed the rated gradeability and stop to ensure the brakes hold.

#### **⚠ DANGER**

**IF THE MACHINE IS NOT MAINTAINED IN POSITION, CHANGE THE BRAKES.**

### Tilt Sensor Check



Check the tilt sensor, located at the center of the machine under chassis cover, to ensure proper operation. Wedge a block (P/N : ST2741 located in the manual storage container) as illustrated above to activate the tilt sensor and keep it tilted. Raise the mast by approximately 0.5m. The system is functioning properly if :

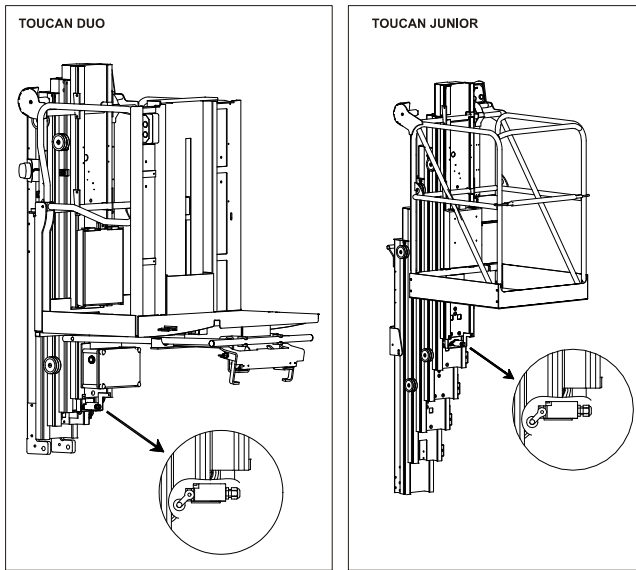
1. From the Platform Control Console :
  - An acoustic alarm sounds.
  - The corresponding red warning indicator (tilt) lights up on the Platform Control Console.
  - The drive function is disabled.
  - The mast raising function is disabled.
  - All other functions are working normally.
2. From the Ground Control Console :
  - All functions work normally.

#### **IMPORTANT**

**THIS FEATURE IS OPERATIONAL WHEN THE MACHINE IS CONTROLLED FROM THE PLATFORM CONTROL CONSOLE AND WHEN THE PLATFORM HAS LEFT ITS STOWED POSITION.**

**NOTE:** See section 8 for verification of the system settings.

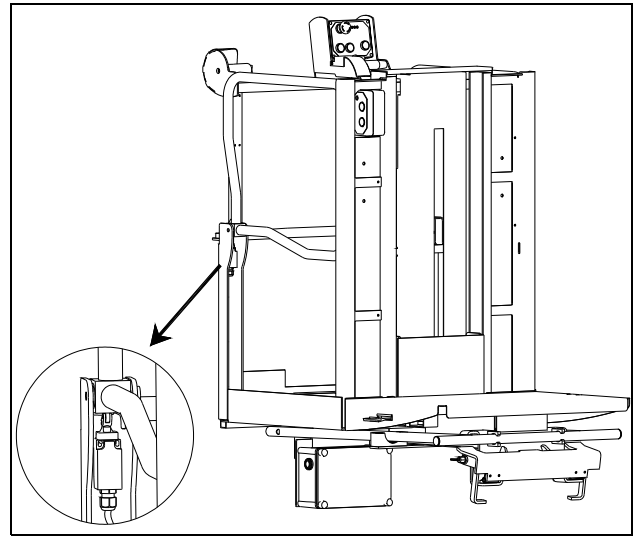
### Mast Sensor Check



Check the mast sensor located under the last mast section to ensure proper operation. Raise the mast by approximately 0.5 m. The system is functioning properly if :

1. From the Platform Control Consoles :
  - Every drive movement of the machine is performed at slow speed.
2. From the Ground Control Console :
  - All functions work normally.

### Gate Sensors Check (TOUCAN DUO models only; TOUCAN JUNIOR 6 if equipped)



Check the gate sensors to ensure proper operation. Open the right platform gate. The system is functioning properly if :

1. From the Platform Control Console :
  - The driving function is disabled.
  - The steering function is disabled.
  - The mast function is disabled.
  - The shelf function works normally (TOUCAN DUO models only).
2. From the Ground Control Console :
  - All functions work normally.
3. Repeat steps 1 to 2 for the left platform gate sensor.



## SECTION 3. MACHINE CONTROLS AND INDICATORS

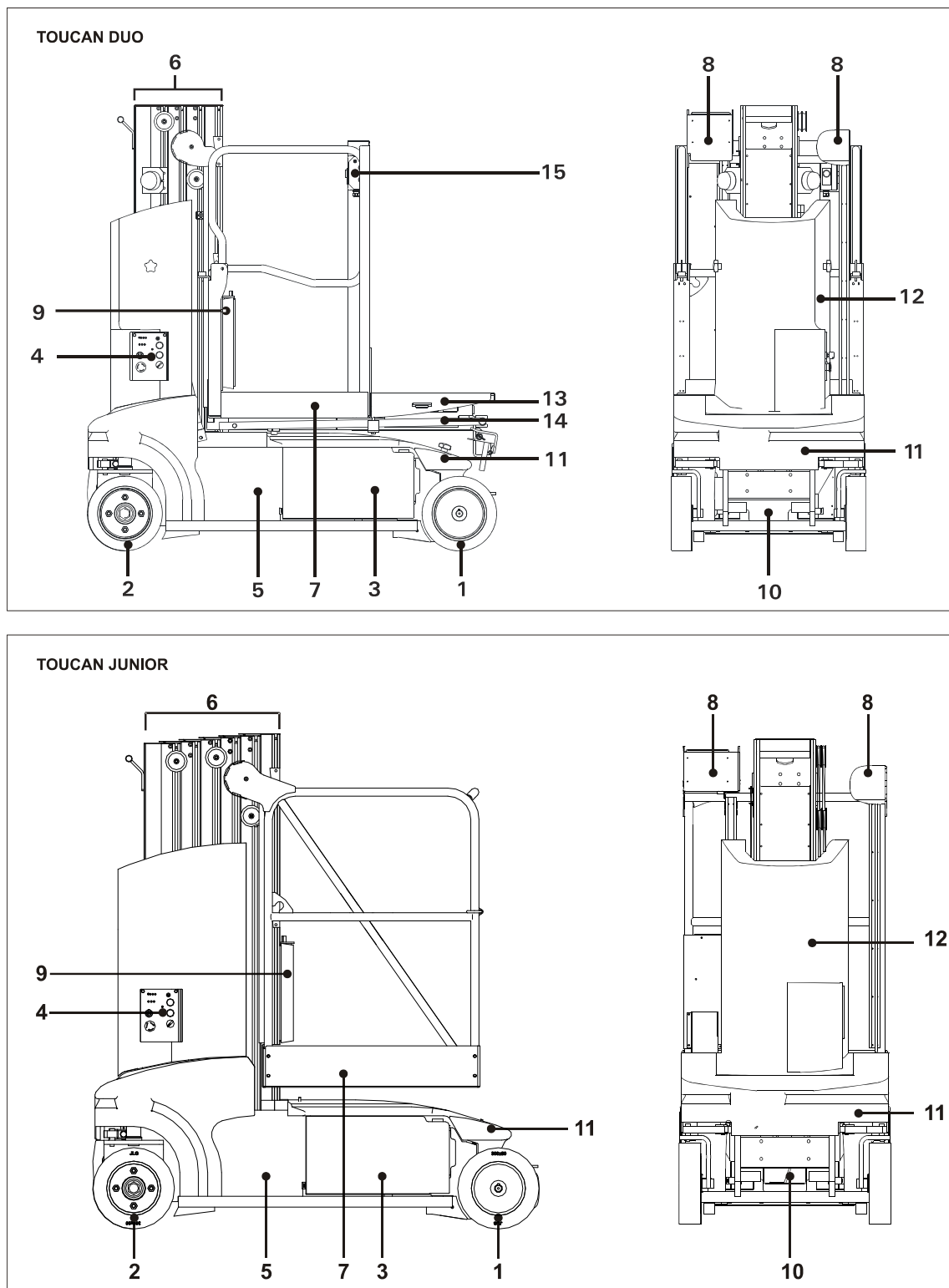


Figure 3-1. Basic Nomenclature

### 3.1 GENERAL

#### **IMPORTANT**

THE MANUFACTURER HAS NO DIRECT CONTROL OVER MACHINE APPLICATION AND OPERATION. THE USER AND OPERATOR ARE RESPONSIBLE FOR CONFORMING WITH GOOD SAFETY PRACTICES.

This section provides the necessary information needed to understand control functions.

### 3.2 CONTROLS AND INDICATORS

#### **⚠ WARNING**

TO AVOID SERIOUS INJURY, DO NOT OPERATE MACHINE IF ANY CONTROL LEVERS OR TOGGLE SWITCHES CONTROLLING PLATFORM MOVEMENT DO NOT RETURN TO THE OFF POSITION WHEN RELEASED.

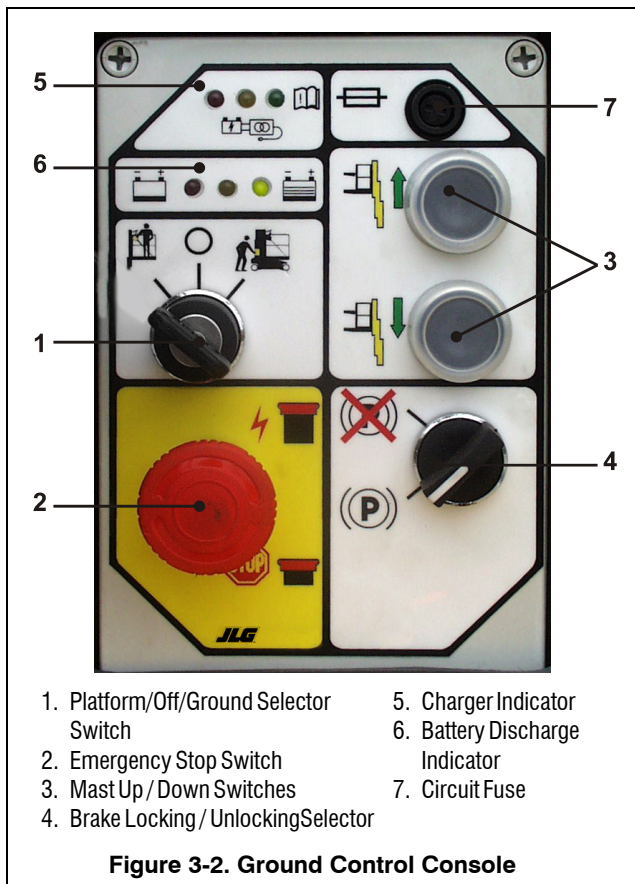
#### Ground Control Console

#### **NOTICE**

DO NOT OPERATE FROM GROUND CONTROL STATION WITH PERSONNEL IN THE PLATFORM EXCEPT IN AN EMERGENCY.

#### **NOTICE**

WHEN THE MACHINE IS SHUT DOWN FOR OVERNIGHT PARKING OR BATTERY CHARGING, THE PLATFORM/OFF/GROUND SELECTOR AND THE EMERGENCY STOP SWITCHES MUST BE POSITIONED TO OFF TO PREVENT DRAINING THE BATTERIES.



**Figure 3-2. Ground Control Console**

**1. Platform/Off/Ground Selector Switch**



Movement Control From The Platform Controls



Control Circuit Off Position



Movement Control From The Ground Controls

**2. Emergency Stop Switch**

Depress the switch to stop all functions. The switch must be turned clockwise to restore the machine's functions.

**3. Mast Up / Down Switches**

Depress the switch UP to RAISE the mast.  
Depress the switch DOWN to LOWER the mast.

**4. Brake Locking / Unlocking Selector**



Wheel motor brakes released.



Wheel motor brakes engaged.

**NOTE:** The function for locking/unlocking the wheel motor brakes is available only if the selector switch is positioned to Ground control console (👤).

When the selector for locking/unlocking the wheel motor brakes is positioned on Brakes released (👤), all the movements of the machine are

disabled (drive, mast elevation and lowering) whatever the selector switch position.

**5. Charger Indicator**

See § 4.6.

**6. Battery Discharge Indicator**

During machine use, check the battery discharge indicator regularly.

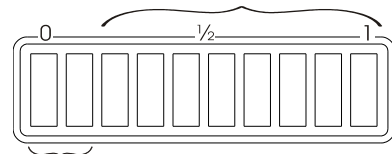
- GREEN indicator light : The battery is between full charge and 70% discharge.

- YELLOW indicator light : The battery is between 70% and 80% discharged. It must be charged.

- RED indicator light : The battery is over 80% discharged. It must be imperatively recharged. Do not operate the machine as the battery could get damaged.

**6. Hourmeter/Battery Discharge Indicator (Optional)**

As the battery discharges, the bar lit in (1) moves from the right to the left (5 green bars followed by 3 orange bars).

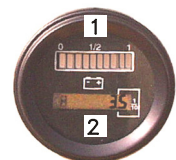


At this point, the LED flashes indicating "energy reserve" (70% discharged).

The 2 red LEDs most to the left flash indicating "empty" (80% discharged). At this point, power is cut-off. The battery must be recharged.

1 - Discharge Indicator

2 - Hourmeter



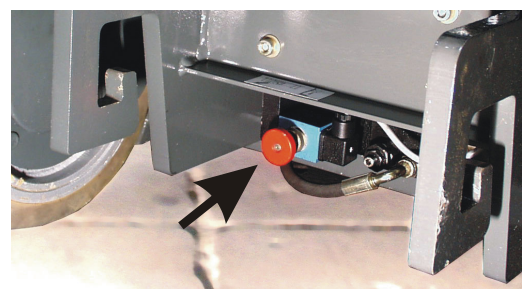
### IMPORTANT

**A TOTAL DISCHARGE WILL RESULT IN IRREVERSIBLE DAMAGE TO THE BATTERY.**

**7. Circuit Fuse**

Protection of the control circuit.

### Manual Lowering Control

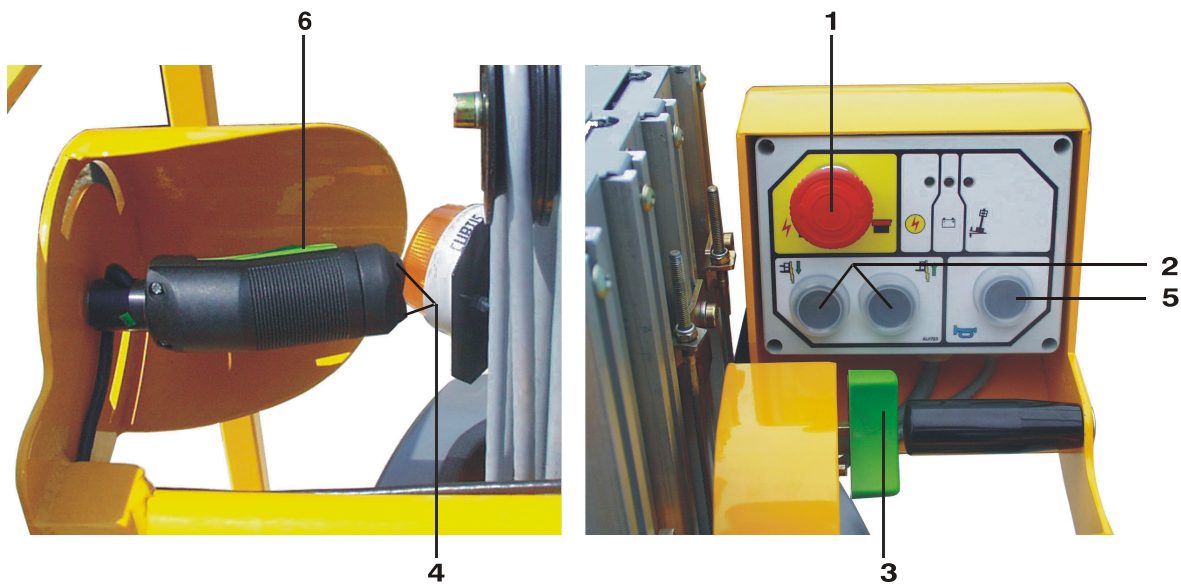


#### Manual Lowering Valve

Lowering Control Valve :

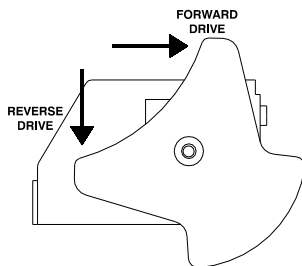
Pull and hold the red button to lower the mast.

### Platform Control Console



1. Emergency Stop Switch
2. Mast Function Control Switches
3. Drive Control Handle
4. Steering Controls
5. Horn
6. Function Enable Switch

1. Emergency Stop Switch.  
Depress the switch to stop all the functions of the machine. The switch must be turned clockwise to restore the machine functions.
2. Mast Function Control Switches.  
Depress the right switch to raise the mast.  
Depress the left switch to lower the mast.
3. Drive Control Handle  
Push forward on the top of the green handle to drive forward.  
Press down on the bottom of the green handle to reverse.



4. Steering control.  
Push the top side of the thumb switch to steer the wheels to the left. Push the bottom side of the thumb switch to steer the wheels to the right.
5. Horn.  
Sounds when the button is depressed.

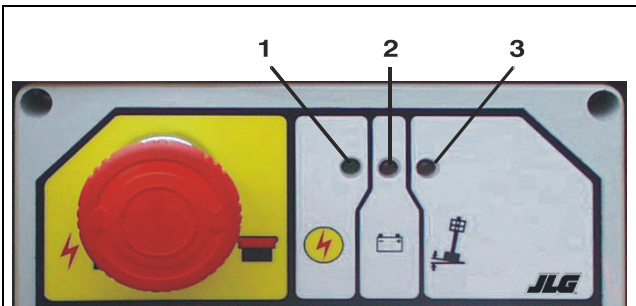
6. Function Enable Switch



Depress trigger enable switch prior to activating a function. Releasing the switch will stop function operation.



### Platform Control Indicator Panel

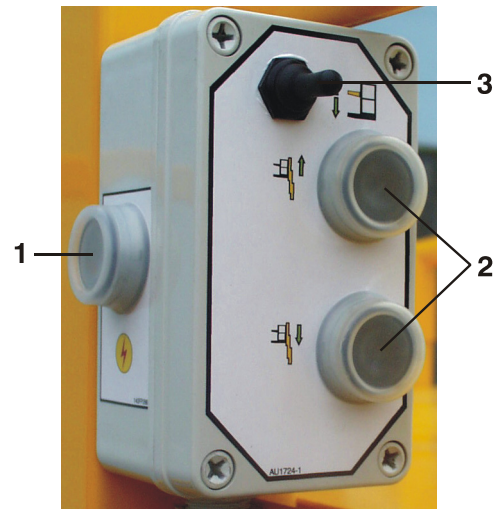


1. Power Enable Indicator
2. Battery Discharged Light And Alarm
3. Tilt Indicator Light And Alarm

**Figure 3-4. Platform Control Indicator Panel**

1. Power Enable Indicator.  
Green light indicates that the controls are ready.
2. Battery Discharge Light And Alarm.  
Red light indicates the battery is 80% discharged.
3. Tilt Indicator Light And Alarm.  
Excessive tilt. Red light and audible alarm indicates the rated slope has been exceeded.

### Auxiliary Control Console (TOUCAN DUO models only)



1. Function Enable Switch
2. Mast Up / Down Switches
3. Shelf Up / Down Switch

**Figure 3-5. Auxiliary Control Console**

1. Function Enable Switch.  
Must be pushed and held to operate Mast Lift / Lower function.
2. Mast Up / Down Switches.  
Depress the switch UP to RAISE the mast.  
Depress the switch DOWN to LOWER the mast.
3. Shelf Up / Down Switch.  
Move the switch UP to RAISE the shelf.  
Move the switch DOWN to LOWER the shelf.



## SECTION 4. MACHINE OPERATION

### 4.1 EMERGENCY CONTROL OPERATION


**NOTE:** A delay-timer, integrated to the electrical system, disconnects 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 ground control console must be depressed then turned clockwise to restore the functions of the machine.

The machine has a Ground Control Console which will override the Platform Control Consoles. Ground Controls operate lift up and down and are to be used in an emergency to lower the platform to the ground should the operator in the platform be unable to do so.

#### Platform/Off/Ground Select Switch

Power is supplied to the ground control Console. With the switch in the ground position, power is supplied to the ground control Console. When the switch is in the platform position, power is supplied to the Platform Control Consoles.

Operate the ground controls as follow :



1. Position Platform/Off/Ground selector switch to Ground Controls .
2. Activate mast function switch.

#### Emergency Stop Switch

This switch, when in the on (out) position, provides electrical power to the ground controls or platform controls, as applicable. In addition, the switch can be used to turn off power (push the switch IN) to the function controls in the event of an emergency.

#### Brake Locking / Unlocking Selector

The function for locking / unlocking the wheel motor brakes is only available if the platform ground selector switch is positioned to Ground Controls.

1. Position Platform/Off/Ground selector switch to Ground Controls .
2. Position the selector on  to release the motor brakes for the machine to be towed.  
(See § 4-7 for further information).

### WARNING

**THE MACHINE MUST BE IN A FIRM AND LEVEL SURFACE AND IN AN AREA FREE FROM OBSTRUCTIONS.**

### 4.2 PLATFORM CONTROLS

### WARNING

**TO AVOID SERIOUS INJURY, DO NOT OPERATE MACHINE IF ANY CONTROL LEVERS OR SWITCHES CONTROLLING THE PLATFORM MOVEMENT DOES NOT RETURN TO THE OFF OR NEUTRAL POSITION WHEN RELEASED.**

**IF THE PLATFORM DOES NOT STOP WHEN CONTROL LEVER OR THE ENABLE SWITCH/TRIGGER IS RELEASED, USE THE EMERGENCY STOP SWITCH TO STOP THE MACHINE.**

### DANGER

**DO NOT OPERATE THE MACHINE UNLESS BOTH BATTERY DOORS ARE CLOSED.**

#### Traveling (Driving)

See Figure 4-1., Grade and Side Slope

**NOTE:** Refer to the General Specifications (Section 8) for Gradeability and Side slope ratings.

All ratings for Gradeability and Side slope are based upon the machine in transport mode with the mast and shelf (for TOUCAN DUO models) being in the stowed position, fully lowered.

### WARNING

**DO NOT DRIVE WITH MAST AND SHELF (for TOUCAN DUO models) OUT OF TRANSPORT MODE EXCEPT ON A SMOOTH, FIRM AND LEVEL SURFACE.**

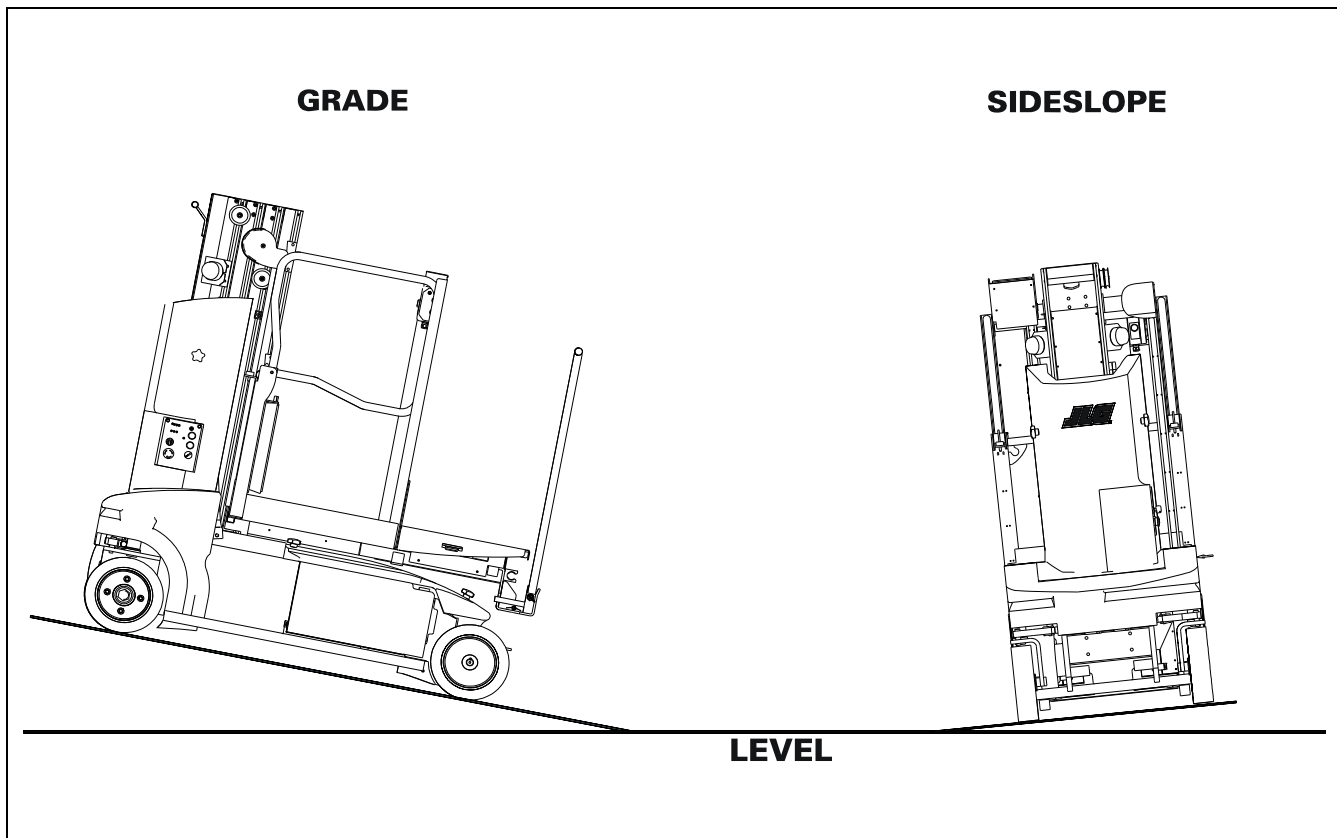
**TO AVOID LOSS OF TRAVEL CONTROL OR "TIP OVER", DO NOT DRIVE MACHINE ON GRADES EXCEEDING THOSE SPECIFIED IN SECTION 8 OF THIS MANUAL.**

**USE EXTREME CAUTION WHEN DRIVING IN REVERSE AND AT ALL TIMES WHEN THE PLATFORM IS ELEVATED.**

With the machine in transport mode, traveling is limited by two factors, gradeability and side slope. Gradeability is the percent of grade of the incline the machine can climb. Sideslope, is the angle of the slope the machine can be driven across. Reference section 8 for gradeability and side slope ratings.

When the mast is extended, the machine must not be operated on grades or side slopes that are greater than that specified in Section 8. The tilt alarm will sound and tilt indicator will light to alert the operator when the machine has exceeded the rated slope. The drive and mast raising movements are cut.

Figure 4-1. Grade and Side Slope



### Forward

1. Squeeze and hold the function enable switch.
2. Press on the top of the drive handle within 5 seconds after the function enable switch has been actuated.

### Stopping

Stopping is accomplished by slowly returning the drive handle to the neutral position. The brakes will apply automatically.

### Reverse

Traveling in reverse is accomplished the same way as traveling forward except for pressing on the bottom of the drive handle to reverse.

### Steering

Steering is accomplished by pressing the top side of the THUMB switch (on top of the controller) to steer to the left or the bottom side of the THUMB switch (on top of the controller) to steer to the right.

### **⚠ WARNING**

**TO AVOID TIP OVER, LOWER PLATFORM TO GROUND LEVEL. THEN DRIVE MACHINE TO A LEVEL SURFACE BEFORE RAISING MAST.**

**TO AVOID SERIOUS INJURY, DO NOT OPERATE MACHINE IF ANY CONTROL LEVER OR TOGGLE SWITCH CONTROLLING PLATFORM MOVEMENT DOES NOT RETURN TO THE 'OFF' OR NEUTRAL POSITION WHEN RELEASED.**

**IF THE PLATFORM DOES NOT STOP WHEN A CONTROL SWITCH OR LEVER IS RELEASED, REMOVE HAND FROM TRIGGER OR USE EMERGENCY STOP SWITCH TO STOP THE MACHINE.**

**NOTE:** The drive movement speed is proportional to the travel of the drive handle. The more the handle is pushed, the faster is the movement.

**NOTE:** As soon as the mast rises, the machine switches automatically to low speed.

**NOTE:** To avoid sudden stops, let the drive handle return slowly to neutral. Release the enable trigger only when this handle is in neutral and the movement has stopped (except emergency cases).

## Raising And Lowering Mast

### Raising the mast :

1. Squeeze and hold the function enable switch on the platform control or (for TOUCAN DUO models) push and hold the enable switch on the Auxiliary Control Console.
2. Push the mast raising function control switch to raise the mast within 5 seconds after the function enable switch has been actuated.

### Lowering the mast :

1. Squeeze and hold the function enable switch on the platform control or (for TOUCAN DUO models) push and hold the enable switch on the Auxiliary Control Console.
2. Push the mast lowering function control switch to lower the mast within 5 seconds after the function enable switch has been actuated.

## Raising And Lowering Shelf (TOUCAN DUO models only)

### Raising the shelf :

1. Pull up the shelf function control switch to raise the shelf.

### Lowering the shelf :

1. Push down the shelf function control switch to lower the shelf.

## Work Platform Functions Combination

A drive movement cannot be combined with a structure movement.

If a drive movement and a structure movement are controlled simultaneously, only the structure movement shall occur. The drive movement will be accomplished as soon as the structure movement is released.

## 4.3 MANUAL LOWERING CONTROLS

The manual lowering controls should be used in emergency situations or mechanical breakdown. The manual lowering controls provide an auxiliary mean of lowering the platform in the event of primary power loss.

## 4.4 ALARMS

### Horn

Activated when the corresponding push button located on the Platform Control Console is depressed.

### Motion Alarms

The machine is fitted with 2 lights (beacons, which are optional for TOUCAN JUNIOR models) and with an acoustic alarm that come on as soon as a function is controlled (not including shelf) from the platform control consoles.

### Tilt Light And Alarm



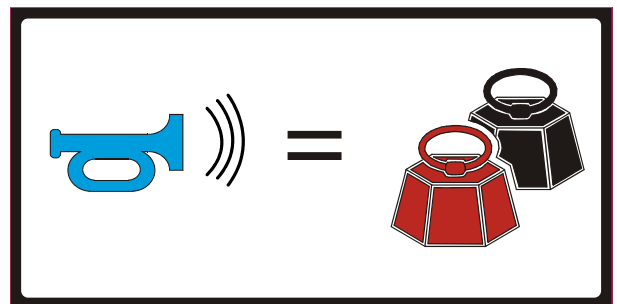
The alarm is triggered by a tilt sensor located on the center of the chassis under the chassis cover. This alarm is active once the mast has left its lowered position, as soon as the machine is over 2 degrees off the horizontal. It consists of a light on the platform control console and an audible alarm. The alarm and light indicate that the work platform is at its maximum out of level limit and is nearing an unstable position. Drive and mast raising function are disabled. Do not activate any function other than those necessary to return the machine in a more stable configuration. It is recommended to lower the platform and reposition the machine on a level surface.

### **⚠ WARNING**

**DO NOT ACTIVATE ANY FUNCTION OTHER THAN THOSE NECESSARY TO RETURN THE MACHINE IN A MORE STABLE CONFIGURATION WHEN THE MACHINE IS OUT OF LEVEL.**

### Shelf Load Alarm (TOUCAN DUO models only)

A pressure switch located on the shelf lifting cylinder is activated when the maximum authorized load is exceeded. In case of overload on the shelf, all movements are disabled from the upper control console and an acoustic alarm located underneath the platform sounds.



The shelf must be unloaded for the upper control console to be operational again.

### 4.5 SHUT DOWN AND PARK

To shut down and park the machine, the procedures are as follow :

1. Drive machine to a reasonably well protected area.
2. Ensure mast is lowered.
3. For TOUCAN DUO models : ensure shelf is lowered and removable tube stored under the platform.
4. Push in the Emergency Stop at Platform Control Console.
5. Push in the Emergency Stop at Ground Control Console. Position Platform/Off/Ground select switch to center OFF and remove key to prevent unauthorized use.
6. If necessary, cover Platform Controls to protect instruction placards, warning decals and operating controls from hostile environment.
7. Charge the battery, if necessary.

### 4.6 CHARGER

#### TECSUP Charger

The on-board electronic charger is designed to automatically charge 24 V DC rechargeable batteries.

The covers of the machine must be open during battery charge.

#### **⚠ WARNING**

**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.**

#### **⚠ WARNING**

**DO NOT DISCONNECT BATTERY PLUG WHEN THE CHARGER IS ON. THE RESULTING ARCING COULD CAUSE BATTERY TO EXPLODE AND BURNS TO THE OPERATOR.**

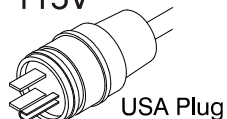
**NOTE:** When the charger is connected to the power supply, all functions are cut out.

**NOTE:** If power supply is stopped during the charge cycle, the charger switches to a waiting mode and restarts automatically as soon as the power returns.

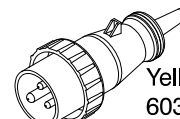
#### Supply voltage :

The charger is designed to work with a network voltage of 115 VAC or 230 VAC. It is fitted with an automatic switching device function of the applied network voltage.

115V

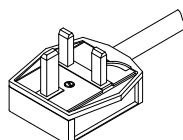


USA Plug

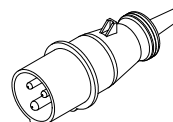


Yellow CEI  
60309 Plug IP67

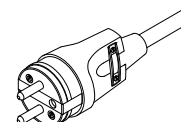
230V



United  
Kindom



Blue CEI  
60309 IP44

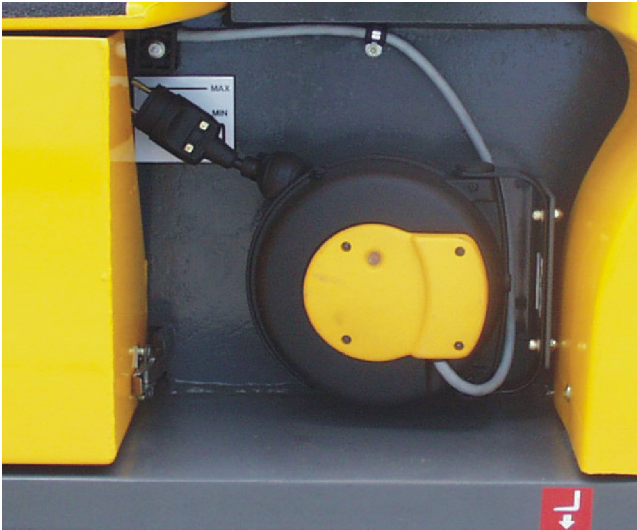


German  
and French

### Charging the battery :

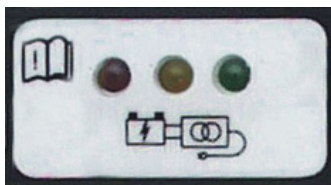
- Plug the charger into a grounded 115/230 V AC electrical outlet.
- The charger starts automatically.

**NOTE:** The charger power plug is fitted at the end of a 5m cable, housed in an automatic reel. This reel is equipped with a circuit breaker that protects the rings and brushes (see photo below).



**NOTE:** If the circuit-breaker trips, depress the reset button to allow battery charge.

### Charging phase indicator on the ground control Console :



#### Red LED (Default):

-LED flashing : charger excessive temperature (the charger will stop if the temperature exceeds 100°C).

-LED fixed : deep battery discharge ( $U_{batt} < 18\text{ V}$ ). If the voltage remains below 18 V for over 5 minutes, the charger switches off automatically. To resume operation, unplug it from the power source and wait for approximately 10 minutes before restarting it.

#### Yellow LED (Charge) :

-This LED is lit as long as the battery is not fully charged.

#### Green LED (100 %) :

-This LED is lit when the battery is fully charged.

### DELTA Q Charger

The on-board electronic charger is designed to automatically charge 24 V DC rechargeable batteries. The covers of the machine must be open during battery charge.

#### **⚠ WARNING**

THE CHARGER MUST ONLY BE CONNECTED TO A GROUNDED OUTLET CORRECTLY INSTALLED. DO NOT USE ADDITIONAL GROUND. DO NOT MODIFY THE CHARGER PLUG. DO NOT TOUCH THE UNINSULATED PARTS OF THE OUTPUT CONNECTOR OR THE UNINSULATED BATTERY TERMINALS. DO NOT USE THE CHARGER IF THE CORD IS DAMAGED OR IF THE CHARGER IS DAMAGED IN ANY WAY. ALWAYS DISCONNECT THE CHARGER PLUG BEFORE DISCONNECTING OR CONNECTING THE BATTERY.

#### **⚠ WARNING**

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.

#### **⚠ WARNING**

DO NOT DISCONNECT BATTERY PLUG WHEN THE CHARGER IS ON. THE RESULTING ARCING COULD CAUSE BATTERY TO EXPLODE AND BURNS TO THE OPERATOR.

#### **⚠ WARNING**

DO NOT OPEN THE CHARGER COVER OR DISASSEMBLE ITS COMPONENTS.

**NOTE:** When the charger is connected to the power supply, all functions are cut out.

**NOTE:** If power supply is stopped during the charge cycle, the charger switches to a waiting mode and restarts automatically as soon as the power returns.

**NOTE:** It is not necessary to charge the battery if the electrolyte specific gravity has not dropped below 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.

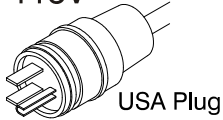


## SECTION 4 - MACHINE OPERATION

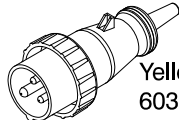
### Supply voltage :

The charger is designed to work with a network voltage of 115 VAC or 230 VAC. It is fitted with an automatic switching device function of the applied network voltage.

#### 115V

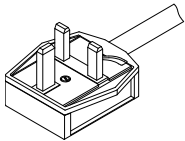


USA Plug

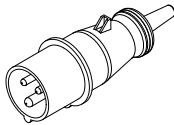


Yellow CEI  
60309 Plug IP67

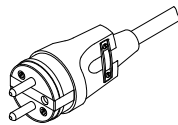
#### 230V



United  
Kindom



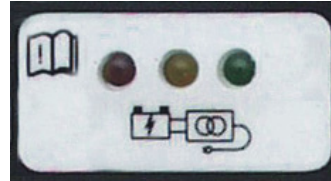
Blue CEI  
60309 IP44



German  
and French

**NOTE:** When the charger remains connected, the charger restarts automatically a complete charge cycle if the battery voltage drops below a certain value or if 30 days elapsed.

### Charging phase indicator on the ground control Console :



#### Red LED :

- The charger is in default. See the fault code description thereafter.

#### Yellow LED :

- This LED is lit as long as the battery is not fully charged.

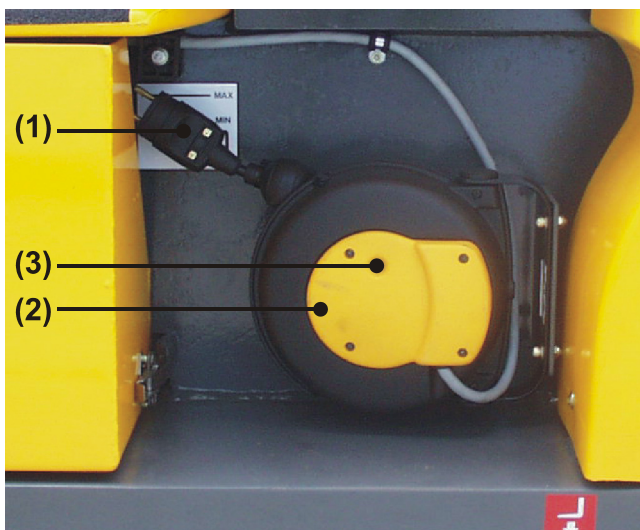
#### Green LED :

- This LED is lit when the battery is fully charged.

### Charging the battery :

- Plug the charger (1) into a grounded 115/230 V AC electrical outlet.
- The charger starts automatically.
- When powering, the charger proceeds to a brief indicators function test. The indicators of the charger status, at the ground control, flash successively for two seconds.
- The batteries are fully charged when the green LED (ground control station) is lit.

**NOTE:** On Toucan Duo models, the charger power plug is fitted at the end of a 5m cable, housed in an automatic reel (2). This reel, equipped with a circuit breaker, depress the reset button (3), in case of tripping, to allow battery charge.





**Battery Charger Fault Code**

| Flash(s) | Fault                  | Remedy   |
|----------|------------------------|--|
| 1        | Battery voltage high   | Auto-recover - Indicates a high battery pack voltage.  |
| 2        | Battery voltage low    | Auto-recover - Indicates either a battery pack failure, battery pack not connected to charger or battery volts per cell is less than 0.5 VDC. Check the battery pack and connections.  |
| 3        | Charge time-out        | Indicates the batteries did not charge in the allowed time. This could occur if the batteries are a larger capacity than the algorithm is intended for or if the batteries are damaged old or in poor condition.   |
| 4        | Check battery          | Indicates the batteries could not be trickle charged up to the minimum voltage per cell level required for the charge to be started.   |
| 5        | Over-temperature       | Auto-recover - Indicates charger has shut down due to high internal temp.  |
| 6        | Charger Internal Fault | Indicates that the battery will not accept charge current, or an internal fault has been detected in the charger. This fault will nearly always be set within the first 30 seconds of operation. Once it has been determined that the batteries and connections are not faulty and fault 6 is again displayed after interrupting AC power for at least 10 seconds, the charger must be brought to a qualified service depot. |

### 4.7 EMERGENCY TOWING

Towing is discouraged and must only be performed as a last option.

#### **IMPORTANT**

VERIFY THE CAPACITY OF THE EQUIPMENT USED TO TOW THE MACHINE.



#### **⚠ WARNING**

ENSURE THE MACHINE IS ON LEVEL GROUND BEFORE RELEASING THE BRAKES.

THE MACHINE MUST ALWAYS BE IN STOWED POSITION DURING TOWING PROCEDURE.


NO PERSONNEL ARE ALLOWED ON THE PLATFORM DURING TOWING PROCEDURE.

To tow, release the brakes and the wheel motors as follow :

1. Fully lower the machine.
2. Position Platform/Off/Ground selector switch to Ground Controls (  ).
3. Position the brake release selector to Brakes Released (  ).
4. Use a winch to tow the machine (if a winch is not available, use another low speed towing device). There are two tie down/emergency tow lugs installed at the front of the chassis of the work platform.

#### **⚠ CAUTION**

WHEN USING THESE LUGS, ALWAYS TOW USING BOTH LUGS.

5. At the end of the procedure, return the release selector to NORMAL USE (  ). The machine and the brakes are operational.

#### **⚠ CAUTION**

IT IS IMPOSSIBLE TO RELEASE THE WHEEL MOTOR BRAKES IF THE MACHINE'S BATTERIES ARE COMPLETELY DISCHARGED.

#### **⚠ WARNING**

MACHINE HAS NO TOWING BRAKES. TOWING VEHICLE MUST BE ABLE TO CONTROL MACHINE AT ALL TIMES, ON-HIGHWAY TOWING NOT PERMITTED, FAILURE TO FOLLOW INSTRUCTIONS COULD CAUSE SERIOUS INJURY OR DEATH. MAXIMUM TOWING GRADE 20%.

#### **⚠ WARNING**

BEFORE TOWING THE MACHINE, THE BRAKES AND THE WHEEL MOTORS MUST BE RELEASED. TOWING IS LIMITED TO EXTREMELY SHORT DISTANCES AT A MAXIMUM SPEED OF 1 KM/H. SEVERE DAMAGE TO THE DRIVE SYSTEM MAY RESULT IF TOWING IS OTHERWISE ACCOMPLISHED.

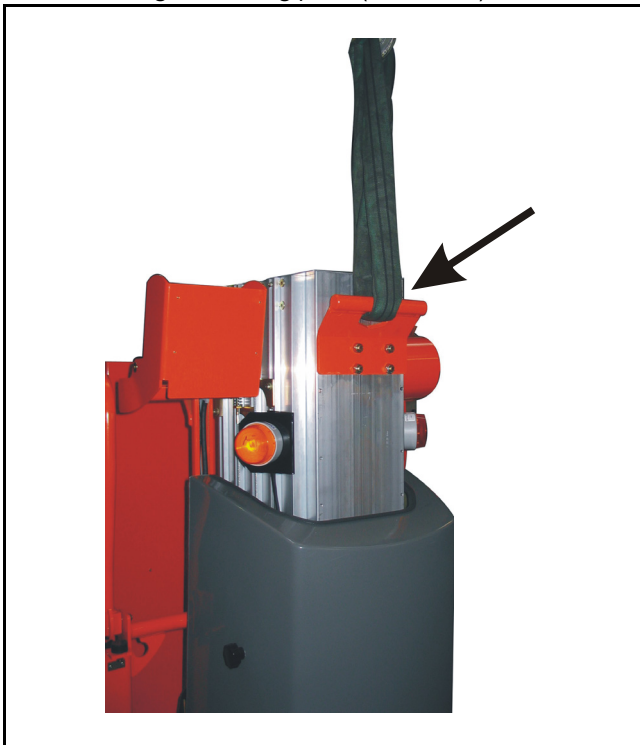
## 4.8 LIFTING AND TIE DOWN

### IMPORTANT

WHEN TRANSPORTING THE MACHINE, THE MACHINE MUST BE STOWED.

#### Lifting

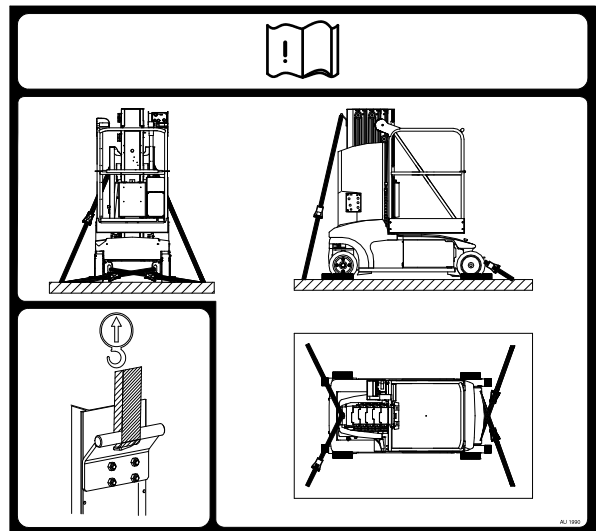
1. The weight of the machine is stamped on the serial number plate (See § 8.2). If the plate is missing or illegible, call JLG or weigh the individual unit to find out the Gross Vehicle Weight.
2. Place the machine in the stowed position.
3. Remove all loose items from the machine.
4. Attach lifting device and equipment only to the designated lifting point (See below).



5. Properly adjust the rigging to prevent damage to the machine.

#### Tie Down

1. Place the machine in the stowed position.
2. Remove all loose items from the machine.
3. Secure the chassis using straps or chains of adequate strength and attached to the designated tie down points.



### 4.9 LOADING AND UNLOADING

#### Using a fork lift truck



Figure 4-2. Position of the forks

#### **⚠ CAUTION**

VERIFY THE CAPACITY OF THE FORKLIFT TRUCK AND OF ITS EQUIPMENT. FORK LIFT ONLY AT THE DESIGNATED POINTS. ANY OTHER POSITION OF THE FORKS WILL CAUSE THE MACHINE TO TIP OVER. NOBODY CAN BE ON THE PLATFORM OF THE MACHINE DURING LOADING AND UNLOADING OPERATIONS.

#### **⚠ WARNING**

THE WORK PLATFORM MUST BE KEPT AS NEAR TO THE GROUND AS POSSIBLE DURING FORK LIFT OPERATION.

#### Using a winch for loading

If the work platform cannot be loaded safely using the work platform controls, a winch may be used. The brakes must be released prior to winching.

#### **⚠ WARNING**

NO PERSONNEL ARE ALLOWED IN THE PLATFORM DURING LOADING OR UNLOADING PROCEDURES.

#### **⚠ CAUTION**

CHECK THE CAPACITY OF THE EQUIPMENT USED.

#### Use a ramp

If the work platform cannot be loaded safely on a ramp using the work platform controls, use a winch (release the brakes prior to the operation).

#### Using a truck equipped with a tail gate

#### **⚠ CAUTION**

VERIFY THE CAPACITY OF THE TAIL GATE. PLACE THE MACHINE AT THE CENTER OF THE TAIL GATE TO DISTRIBUTE THE LOAD.

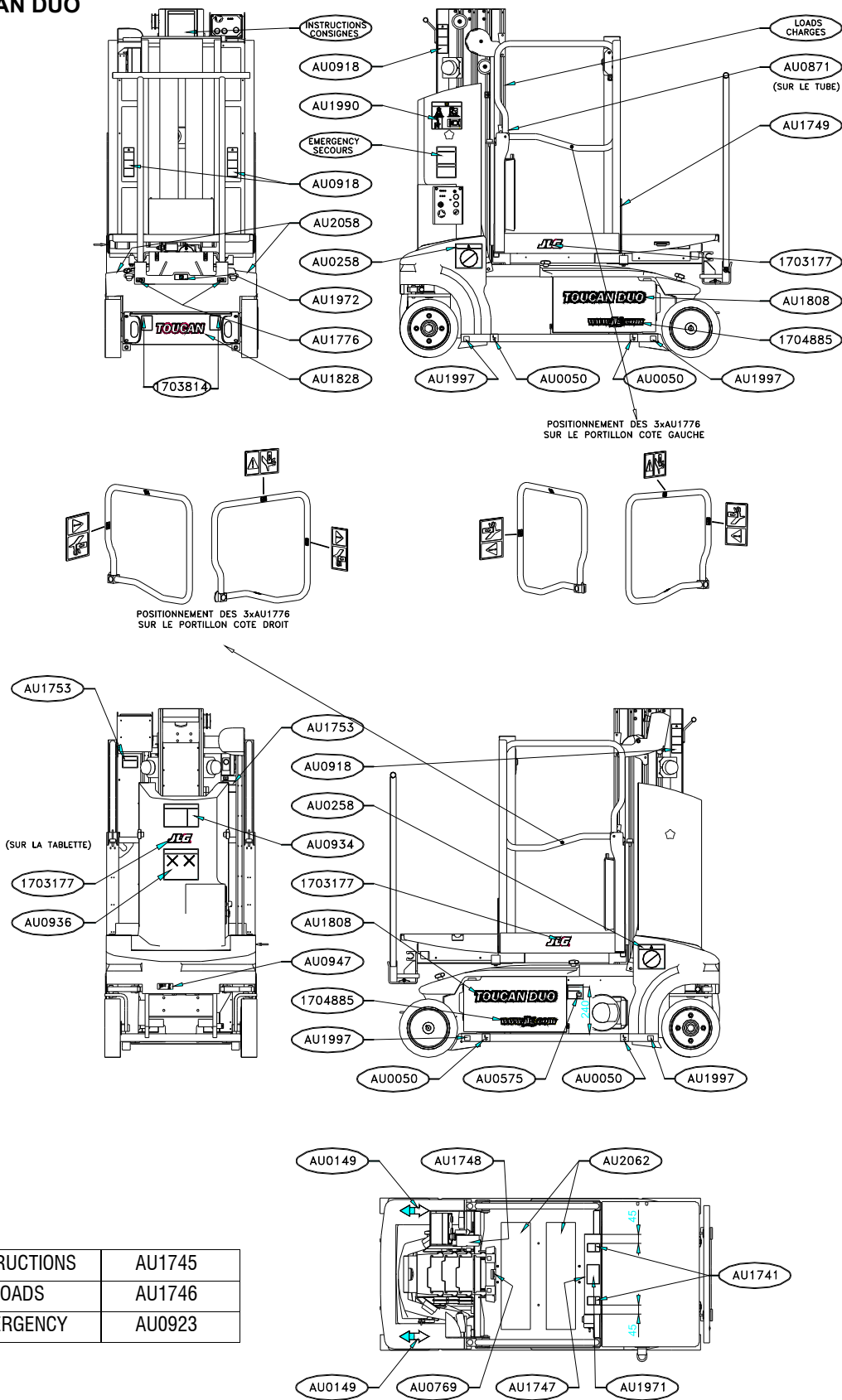
#### **⚠ DANGER**

NOBODY MUST BE ON THE PLATFORM OF THE MACHINE OR ON THE TAIL GATE DURING LOADING, TOWING OR UNLOADING OPERATIONS.

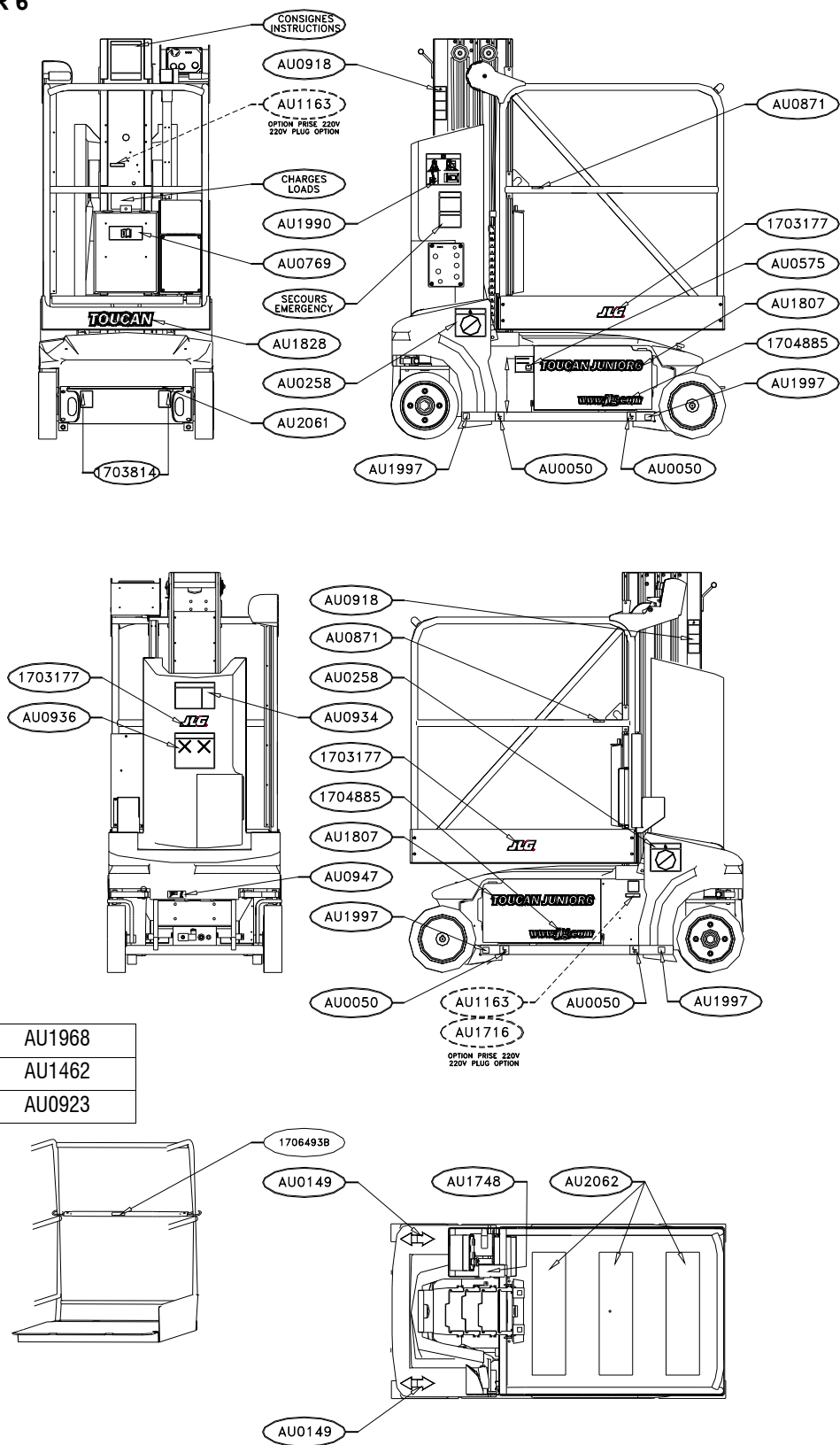
Tie the machine down securely on the bed of the truck.

SECTION 5. DECALS

TOUCAN DUO

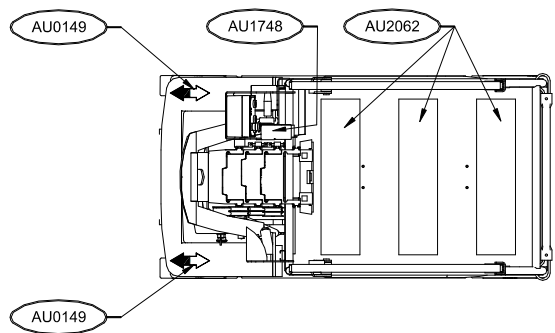
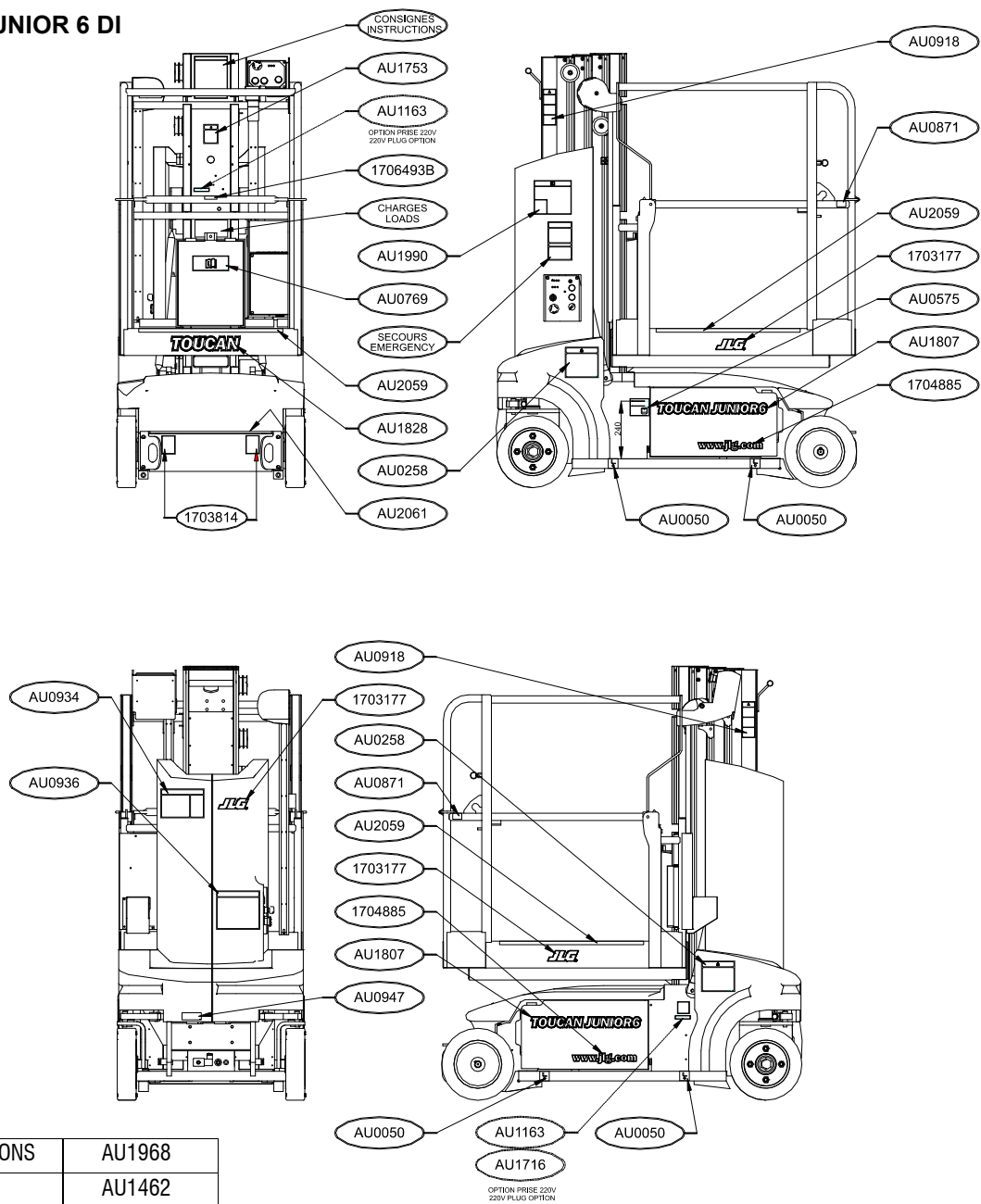


TOUCAN JUNIOR 6

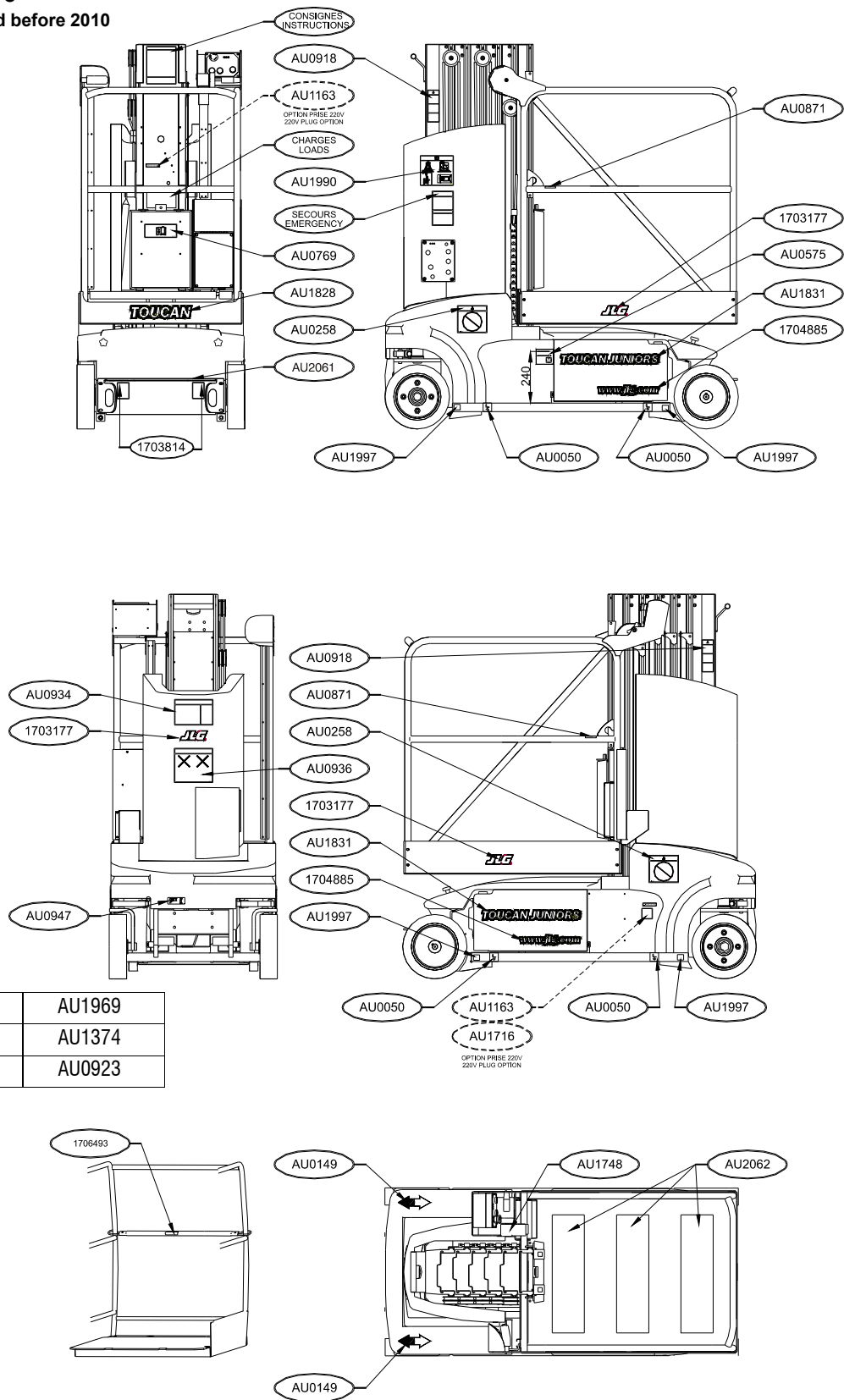


|              |        |
|--------------|--------|
| INSTRUCTIONS | AU1968 |
| LOADS        | AU1462 |
| EMERGENCY    | AU0923 |

TOUCAN JUNIOR 6 DI

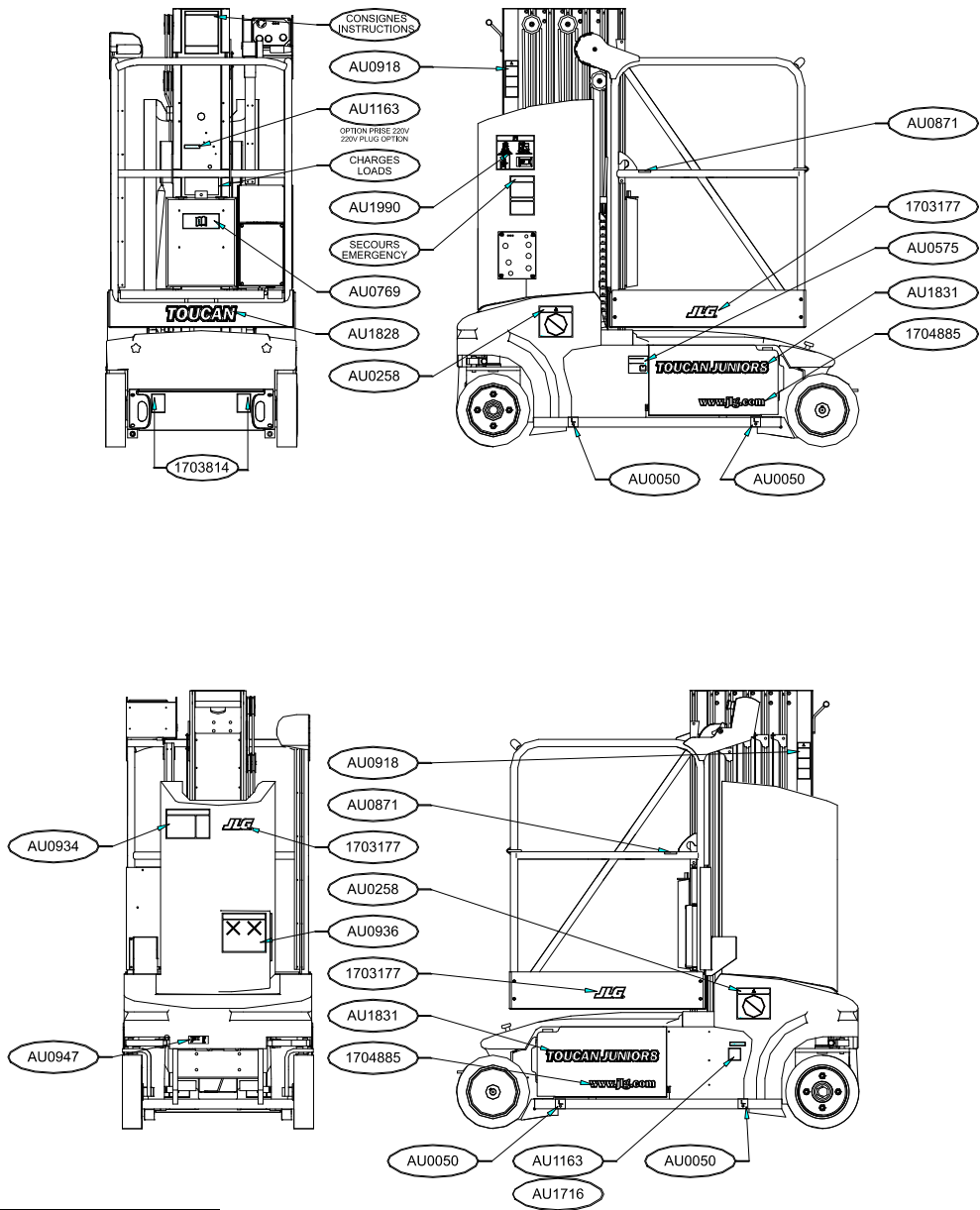


TOUCAN JUNIOR 8  
Machine manufactured before 2010

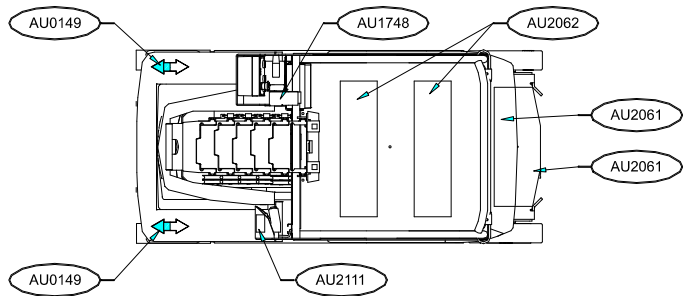




**TOUCAN JUNIOR 8**  
Machine manufactured after 2010



|              |        |
|--------------|--------|
| INSTRUCTIONS | AU1969 |
| LOADS        | AU1374 |
| EMERGENCY    | AU0923 |





## SECTION 6. EMERGENCY PROCEDURES

### 6.1 GENERAL

This section explains the steps to be taken in case of an emergency situation while operating.

### 6.2 INCIDENT NOTIFICATION

JLG Industries, Inc. must be notified immediately of any incident involving a JLG product. Even if no injury or property damage is evident, the factory should be contacted by telephone and provided with all necessary details.

In USA : 877-JLG-SAFE (Toll free)

Outside USA: + 44(0)141 781 6700

E-mail:ProductSafety@JLG.com

Failure to notify the manufacturer of an incident involving a JLG Industries product within 48 hours of such an occurrence may void any warranty consideration on that particular machine.

### **IMPORTANT**

**FOLLOWING ANY ACCIDENT, THOROUGHLY INSPECT THE MACHINE AND TEST ALL FUNCTIONS FIRST FROM THE GROUND CONTROLS, THEN FROM THE PLATFORM CONTROLS. DO NOT CONTINUE TO OPERATE MACHINE UNTIL YOU ARE SURE THAT ALL DAMAGE HAS BEEN REPAIRED, IF REQUIRED, AND THAT ALL CONTROLS ARE OPERATING CORRECTLY.**

### 6.3 EMERGENCY OPERATION

#### Operator Unable to Control Machine

IF THE PLATFORM OPERATOR IS PINNED, TRAPPED OR UNABLE TO OPERATE OR CONTROL MACHINE:

1. Other personnel should operate the machine from ground controls only as required.
2. Other qualified personnel on the platform may use the platform controls. DO NOT CONTINUE OPERATION IF CONTROLS DO NOT FUNCTION PROPERLY.
3. Appropriate equipment can be used to remove platform occupants and stabilize motion of the machine.

#### Platform or Mast Caught Overhead

If the platform or mast becomes jammed or snagged in overhead structures or equipment, rescue platform occupants prior to freeing the machine.

### 6.4 EMERGENCY LOWERING

If primary power is lost, the platform may be lowered manually. Reference section 3 for Manual Lowering Control procedure.

### 6.5 EMERGENCY TOWING PROCEDURES

Towing this machine is discouraged. However, provisions for towing the machine in emergency situations have been incorporated. For specific procedures, refer to Section 4.



## SECTION 7. INSPECTION AND REPAIR LOG

Type of machine : \_\_\_\_\_

Machine Serial Number : \_\_\_\_\_

### Table 7-1. Inspection and Repair Log

[illegible]

Name: \_\_\_\_\_

Signature : \_\_\_\_\_

## **SECTION 7 - INSPECTION AND REPAIR LOG**

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## **SECTION 8. GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE**

### **8.1 INTRODUCTION**

This section of the manual provides additional necessary information to the operator for proper operation and maintenance of this machine.

The maintenance portion of this section is intended as information to assist the machine operator to perform daily maintenance tasks only, and does not replace the more thorough Preventive Maintenance and Inspection Schedule included in the Service and Maintenance Manual.

Other Publications Available :

|                                      | <b>TOUCAN DUO</b> | <b>TOUCAN JUNIOR 6</b> | <b>TOUCAN JUNIOR 8</b> |
|--------------------------------------|-------------------|------------------------|------------------------|
| Service and Maintenance Manual ..... | MA0323 .....      | MA0256 .....           | MA0256                 |
| Illustrated parts .....              | 31210004 .....    | 31210045 .....         | 31210045               |
| Hydraulic Schematic.....             | FL0148 .....      | FL0128 .....           | FL0136                 |
| Electrical Schematic .....           | ELE246 .....      | ELE245 .....           | ELE245                 |

## 8.2 OPERATING SPECIFICATIONS

**Table 8-1. Operating Specifications And Dimensions**

|   | TOUCAN DUO   | TOUCAN JUNIOR 6 | TOUCAN JUNIOR 8 |
|---|--|-----------------|-----------------|
| Maximum Work Load On The Platform                   | 130 kg   | 200 kg          | 120 kg          |
| Maximum Work Load On The Shelf                      | 70 kg  | N/A             | N/A             |
| Maximum Number of Occupants for Machine             | 1  | 2               | 1               |
| Max. Platform Height                                | 4 m  | 4 m             | 6 m             |
| Max. Hydraulic System Pressure                      | 15 MPa   |                 |                 |
| Maximum Horizontal Manual Side Force                | 200 N  | 400 N           | 200 N           |
| Maximum Operating Wind Speed                        | 0 km/h (inside use)  |                 |                 |
| Electrical System Voltage                           | 24 V   |                 |                 |
| Gross Machine Weight (Platform Empty)               | 1030 kg  | 860 kg          | 960 kg          |
| Overall Length                                      | 1.65 m   | 1.50 m          | 1.65 m          |
| Overall Height                                      | 1.79 m   |                 |                 |
| Overall Width                                       | 0.78 m   |                 |                 |
| Maximum Wheel Load                                  | 550 kg   | 600 kg          | 500 kg          |
| Maximum Travel Grade (Gradeability) Machine Lowered | 20% (11°)  |                 |                 |
| Maximum Travel Grade (Side Slope) Machine Lowered   | 5°   |                 |                 |
| Tilt Sensor Setting                                 | 2°   |                 |                 |
| Turning Radius<br>Inside :<br>Outside :             | 0<br>1.64 m  | 0<br>1.51 m     | 0<br>1.64 m     |
| Vibration levels                                    | The weighed root mean square acceleration value to which the arms are subjected (control levers) is inferior to 2.5m/s/s.  |                 |                 |
|   | The weighed root mean square acceleration value to which the feet are subjected (platform floor) is inferior to 0.5m/s/s/. |                 |                 |
| Acoustic pressure                                   | The equivalent continuous 'A' weighed sound pressure level at the work station is <to 70 dB(A).                            |                 |                 |
|   | The measure has been taken by placing the sonometer at 1.60m above the platform floor.                                     |                 |                 |

### Fluid Capacities

**Table 8-2. Capacities**

|                     |            |                     |
|---------------------|------------|---------------------|
| Main Hydraulic Tank | 5 l        |                     |
| Shelf Unit          | SPX<br>1 l | OIL SYSTEM<br>0.5 l |

### Batteries

**Table 8-4. Battery Specifications**

|                 |                 |
|-----------------|-----------------|
| Voltage         | 24 Volt         |
| Amp Hour Rating | 180Ah (5h rate) |

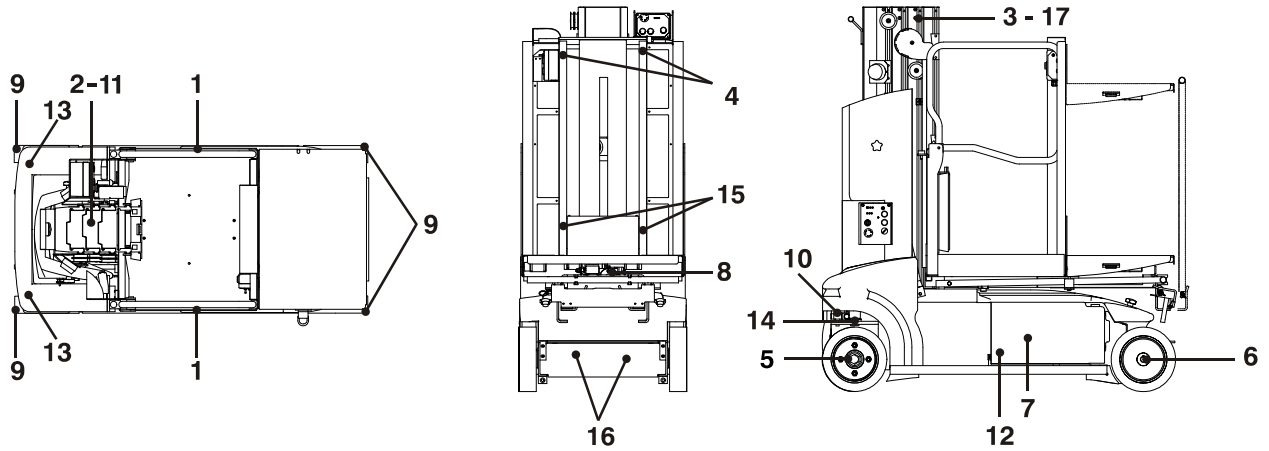
### Electric Power Units

**Table 8-3. Electric Power Units Specifications**

|                 |       |              |               |                      |
|-----------------|-------|--------------|---------------|----------------------|
| Main Power Unit | Motor | Power        | 1 kW          |                      |
|                 |       | Voltage      | 24 VDC        |                      |
|                 | Pump  | Flow rate    | 4.8 l/mn      |                      |
|                 |       | Displacement | 1.25 cm³/rev  |                      |
| Shelf Unit      | Motor | Power        | SPX<br>0.8 kW | OIL SYSTEM<br>0.5 kW |
|                 |       | Voltage      | 24 VDC        |                      |
|                 | Pump  | Displacement | 0.5 cm³/rev   |                      |
|                 |       |              |               |                      |



TOUCAN DUO



TOUCAN JUNIOR

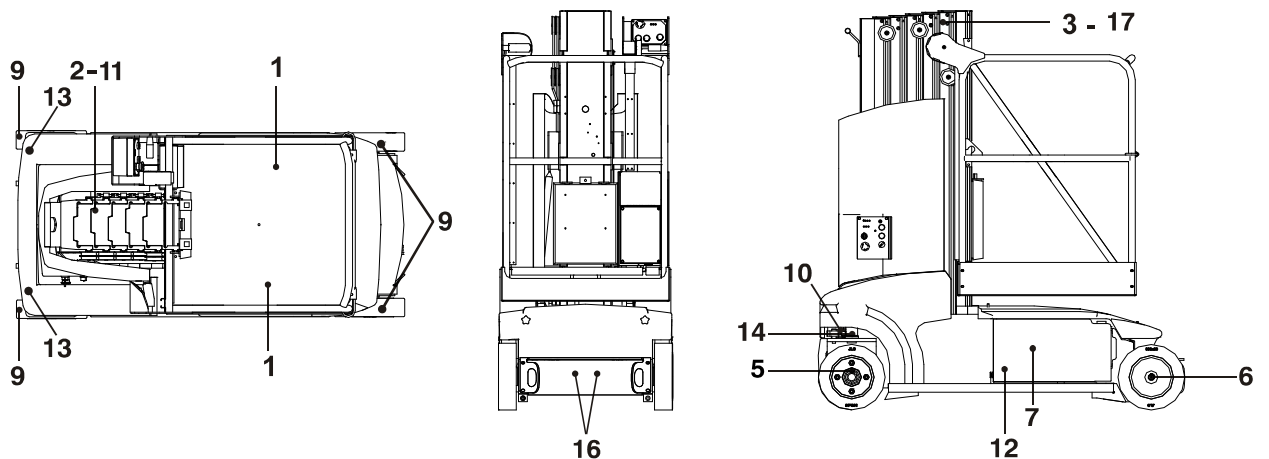


Table 8-5. Operator Maintenance & Lubrication Diagram

|                                   |  |
|-----------------------------------|--|
| 1- Batteries                      | 10- Steering Rod                                       |
| 2- Lifting Chains Lubrication     | 11- Chains Adjustment Check                            |
| 3- Mast Sections Lubrication      | 12- Verification of the Tilt Alarm Setting             |
| 4- Shelf Section Lubrication      | 13- Steering Sensors Operation Test                    |
| 5- Wheel Bearing Lubrication      | 14- Wear Check of the Steering Brackets Thrust Washers |
| 6- Wheel Reducer Lubrication      | 15- Wear Check of the Shelf Sliding Blocks             |
| 7- Hydraulic Oil Reservoir        | 16- Wear Check of the Wheel Motors Brakes              |
| 8- Shelf Hydraulic Unit Reservoir | 17- Verification of the Lifting Chains                 |
| 9- Tires & Wheels                 |  |

### 8.3 OPERATOR MAINTENANCE

#### 1. Batteries

##### Cleaning - Battery maintenance

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

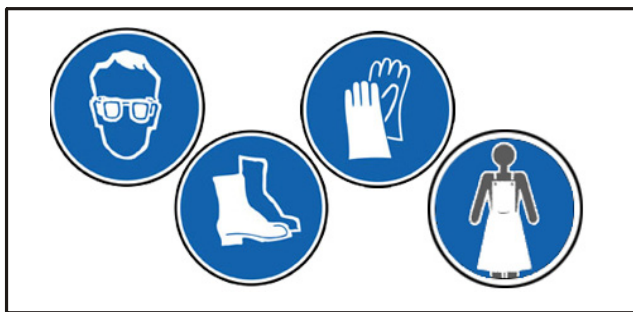
- Clean the battery top with a damp cloth.
- Allow to dry and wipe the battery top with a dry non-fluffy rag.
- Ensure connections are clean and tight.

**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 (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 OCCURS, FLUSH THE CONTACTED AREA WITH WATER AND CONSULT A DOCTOR IMMEDIATELY. APPROPRIATE EQUIPMENT MUST BE WORN (GLOVES, GOGGLES, RUBBER APRON) TO PREVENT THE DRAINED WATER FROM CONTACTING THE SKIN OR ANY PART OF THE BODY.

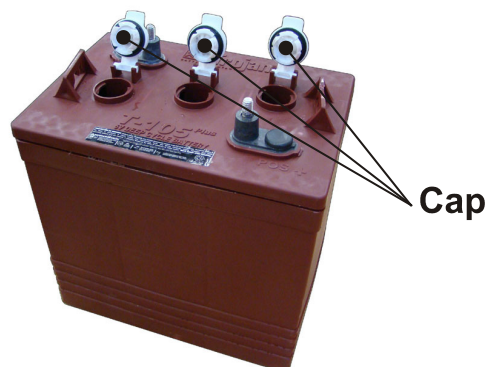


##### Battery cell filling

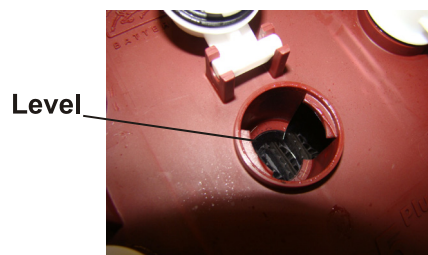
#### **⚠ DANGER**

BATTERY ELECTROLYTE MAY CAUSE SERIOUS BURNS IF ALLOWED TO CONTACT THE HAND OR ANY PART OF THE BODY. EXERCISE EXTREME CARE WHEN MOVING THE BATTERY OR CHECKING THE CHARGE.

1. Open the caps from the cells :



2. Fill the battery cells with distilled water to the level indicated on the figure below :



3. Close the caps on the battery cells.
4. Clean the battery.

**NOTE:** After the charge, check the electrolyte level and fill to their correct level if necessary.

**NOTE:** It is recommended to fill the battery with distilled water at ambient temperatures between 10 and 40°C.

##### Battery voltage and electrolyte specific gravity

Electrolyte density measure is the most important check to be performed on a battery.

Specific gravity and voltage readings must be performed at least once a month and recorded in a battery service log.

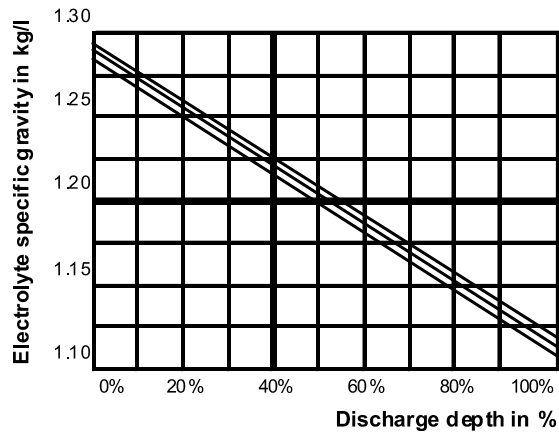
The state of charge of the battery can be checked by measuring the specific gravity of the electrolyte. This value decreases as the battery discharges.

When the battery is fully charged, the specific gravity is 1.280 kg/l.

When the battery is 80% discharged, the specific grav-

ity is 1.150 kg/l.

The following graphic shows the correspondence between specific gravity and battery discharge.



### Checking electrolyte specific gravity

#### **⚠ DANGER**

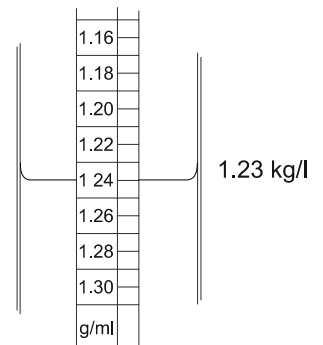
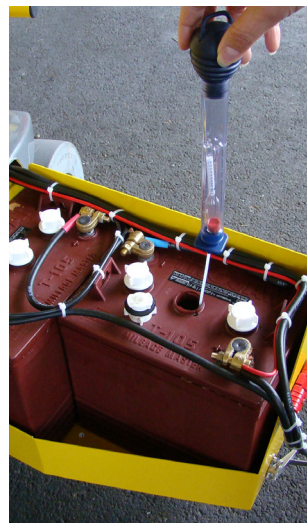
BATTERY ELECTROLYTE MUST NOT BE ALLOWED TO CONTACT THE SKIN OR EYES. IF IT DOES OCCUR, FLUSH THE CONTACTED AREA WITH WATER AND CONSULT A DOCTOR IMMEDIATELY. APPROPRIATE EQUIPMENT MUST BE WORN (GLOVES, GOGGLES, RUBBER APRON) TO PREVENT THE ELECTROLYTE FROM CONTACTING THE SKIN OR ANY OTHER PART OF THE 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 :



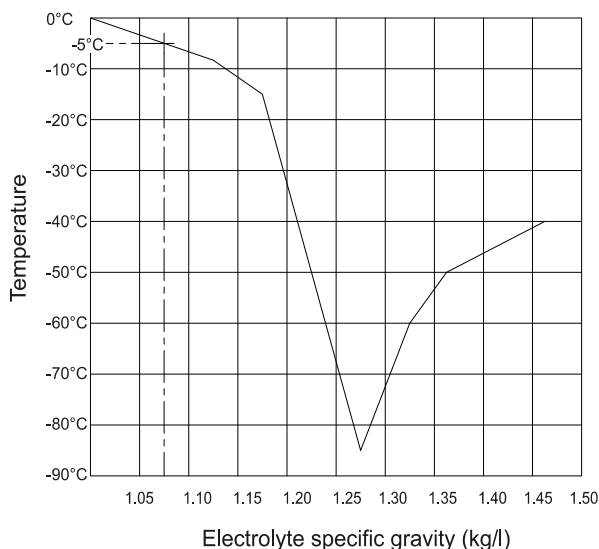
4. Return the electrolyte in the cell and record cell electrolyte specific gravity in the battery service log.
5. Repeat operation for each battery cell.

## SECTION 8 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

### Storage of a battery at temperatures below 0°C

Prior to battery storage at temperature below 0°C, 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 graphic below :



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

### 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 loses 1% of its capacity per 1°C below +25°C.

| C°     | 20°C | 10°C | 0°C | -10°C | -20°C | -30°C |
|--------|------|------|-----|-------|-------|-------|
| % lost | 5%   | 15%  | 25% | 35%   | 45%   | 55%   |

### Battery not working continuously or inactive battery

A battery that is not used or used intermittently 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 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, battery 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 CONTINUOUSLY, IT MUST BE RECHARGED BEFORE USE AND 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.

### Battery Troubleshooting

Serious accidents resulting in incomplete destruction of the battery are fairly rare.

When small problems encountered on a battery in use are rapidly and correctly determined, the battery life is improved.

| Symptoms  | Probable causes  | Solutions   |
|---|--|---|
| Electrolyte overflow.   | Filling done before the charge.<br>Cells overfilled.<br>Overcharge.  | Fill battery cells after the charge.<br>Never fill above maximum level indicated.<br>Never charge battery if electrolyte specific gravity is above 1,230 kg/l.  |
| Inequal electrolyte specific gravity or electrolyte specific gravity too low. | Filling done before the charge.<br>Loss of electrolyte due to overflow.<br>Stratification of the electrolyte.    | Fill battery cells after the charge.<br>Check the levels, charge the battery and fill after the charge.<br>If after the charge density is still too low, contact your JLG distributor Product Support.                          |
| Low voltage in the cells in open circuit.                                     | Electrolyte specific gravity too low.<br>Short-circuit.  | See above.<br>Clean battery top.  |
| Battery cells temperature too high (over 45°C).                               | Problem with the charger.<br>Bad air circulation during charge.<br>Cell weak or faulty.<br>Cells shorted.        | Get the charger checked by a technician.<br>Open the battery doors or remove the rear cover during the charge.<br>Reduce temperature of the area where the battery is charged (artificial ventilation).<br>Change battery cell. |
| Battery incapable of supporting regular operation.                            | Battery under charged.<br>Cell faulty.<br>Faulty cable or connection.<br>Battery at the end of its service life. | Perform complete charge cycles (without interruption).<br>Get the charger checked by a technician.<br>Replace faulty cell.<br>Check wire condition and connection.<br>Replace the battery.                                      |

### Non maintenance battery (optional)

Battery voltage measure is the most important check to be performed on a non maintenance battery. Specific gravity and voltage readings must be performed at least once a month and recorded in a battery service log.

### **DANGER**

**DURING MAINTENANCE OR ANY SERVICING OPERATION ON THE BATTERY, RINGS, WATCHES OR ANY OTHER JEWELLERY MUST BE REMOVED.**

## SECTION 8 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

### Lubrication Specification

|          |                                    |
|----------|------------------------------------|
| <b>A</b> | MOBIL DTE 16M                      |
|          | CHAINE FILANTE                     |
| <b>B</b> | COMPLEX EP2                        |
|          | MOBILIX EP2                        |
|          | MOBILITH SHC 220 (Low temperature) |
| <b>C</b> | MOBILUX EP2                        |
|          | COMPLEX EP2                        |
| <b>D</b> | SHELL ALVANIA RA                   |
| <b>E</b> | NERVOL - AGROFLUID DVG 32          |
|          | MOBIL DTE - FM32                   |

**NOTE:** Aside from JLG recommendations, it is not advisable to mix oils of different brands or types, as they may not contain the same required additives or be of comparable viscosities. If use of hydraulic oil or grease other than recommended in the previous chart, contact JLG Industries for proper recommendations.

### IMPORTANT

LUBRICATION INTERVALS ARE BASED ON MACHINE OPERATION UNDER NORMAL CONDITIONS. FOR MACHINES USED IN MULTI-SHIFT OPERATIONS AND/OR SEVERE ENVIRONMENTS, LUBRICATION FREQUENCY MUST BE INCREASED ACCORDINGLY.

### 2. Lifting Chains Lubrication

#### Lube - TYPE A

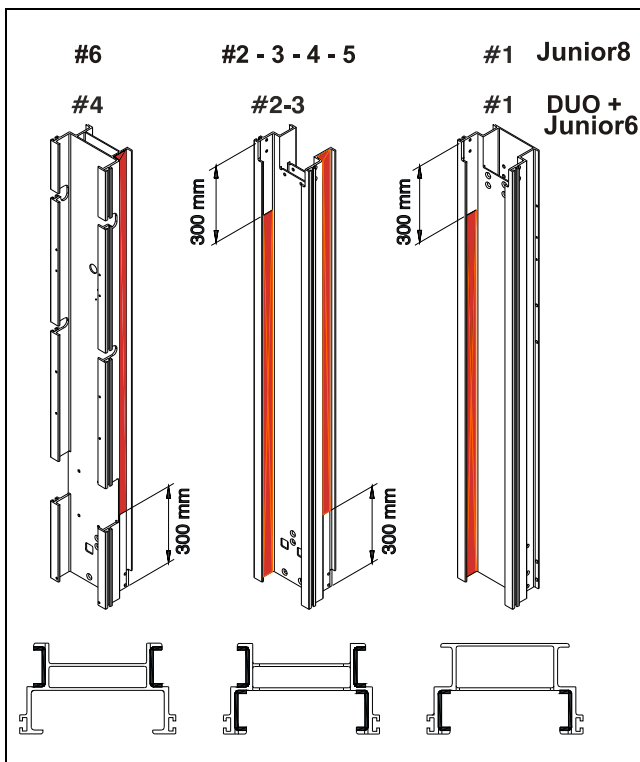
Interval - every 125 hours or once every 30 days of operation.

Comments - 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.
- Transversely : between the plates to enable the lubricant to reach the joint and between the internal plates and the rollers.

| Temperature (°C) | Recommended viscosity grades ISO - VG |
|------------------|---------------------------------------|
| $-15 < T \leq 0$ | 15 to 32                              |
| $0 < T \leq 50$  | 46 to 150                             |
| $50 < T \leq 80$ | 220 to 320                            |

### 3. Mast Sections Lubrication

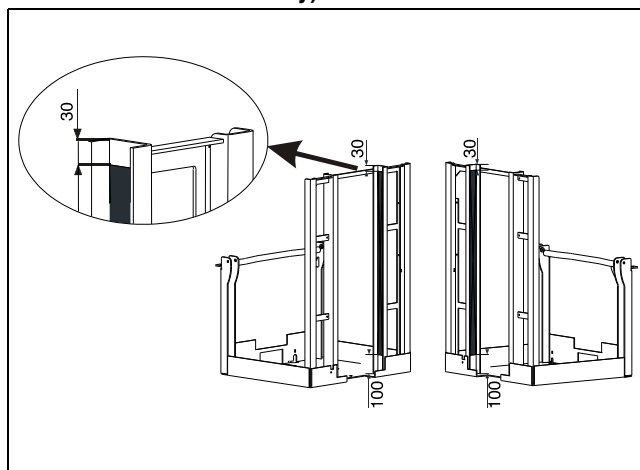


#### Lube - TYPE C

Interval - every 125 hours of operation or after each cleaning.

Comments - Clean the inside wall of mast to remove the old grease. Lubricate the mast inside wall using a brush.

### 4. Shelf Section Lubrication (TOUCAN DUO models only)

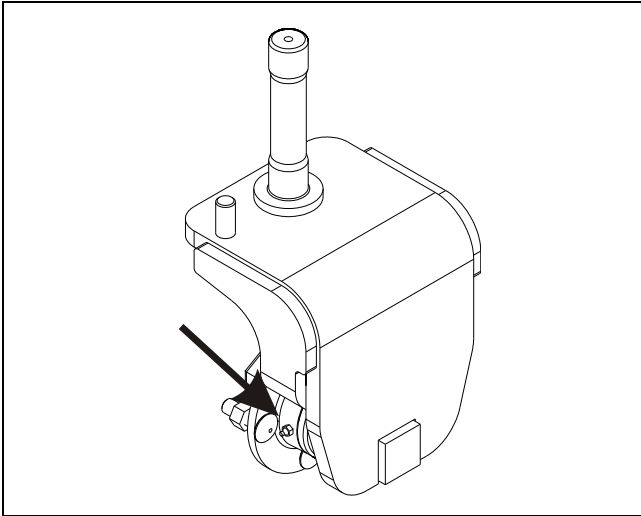


#### Lube - TYPE C

Interval - every 125 hours of operation or after each cleaning.

Comments - Clean the inside wall of shelf to remove the old grease. Lubricate the shelf inside wall using a brush.

## 5. Wheel Bearing Lubrication



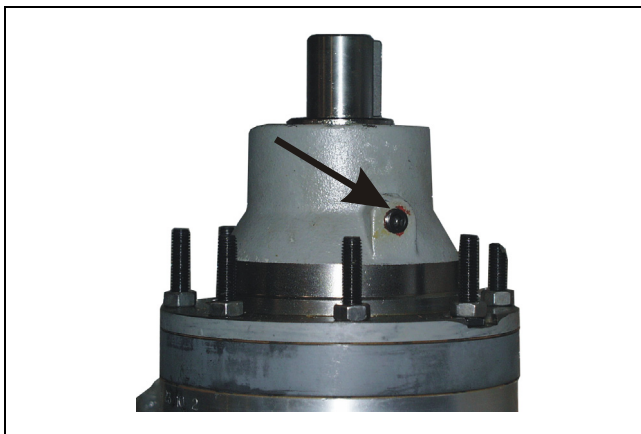
Lube point(s) - 1 Grease Fitting

Lube - TYPE C

Interval - every 250 hours of operation.

Comments - One fitting on each hub. Remove the wheel to gain access to the grease fitting.

## 6. Wheel Reducer Lubrication



Lube point(s) - 1 Reducer Cap

Capacity - 125 g

Lube - TYPE D

Interval - The reducers are greased for life. If the reducers are not be used for over a year, refer to the Service Manual for lubrication procedure.

## 7. Hydraulic Oil Reservoir



Lube Point(s) - Breather cap

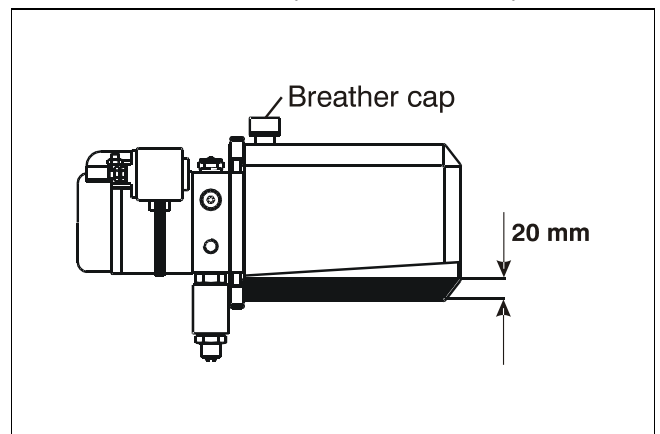
Capacity - 5 litres

Lube - TYPE E

Interval - Check oil daily, change after every 1000 hours of operation or at least every 2 years.

### Reservoir Draining :

- a. Remove the rear cover.
- b. Remove the quick pressure plug from the hydraulic power unit and install a hose in its place.
- c. Position the free end of the hose in a container of 6 litres minimum capacity.
- d. Position the Platform/Off/Ground selector switch to Ground Control Console. Depress the mast elevation switch until the oil in the reservoir reaches the level indicated below.



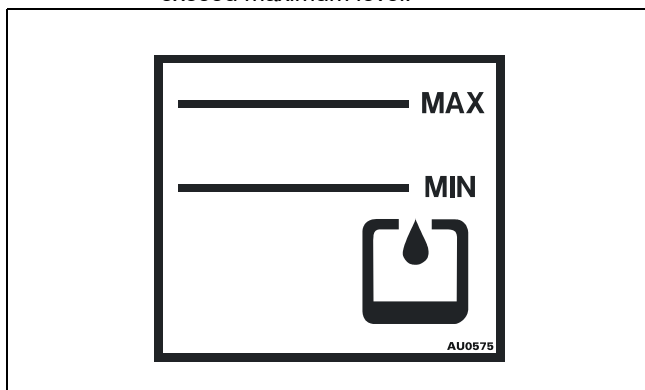
**NOTE:** Do not let the oil spill on the work platform or on the ground.

- e. Replace the hose by the original quick pressure plug.



### Reservoir Filling :

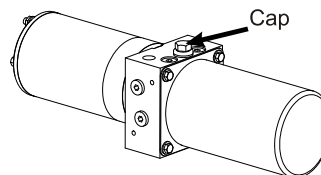
- f. Remove the rear cover, if necessary and remove the breather cap from the reservoir.
- g. Fill the reservoir with new hydraulic oil up to the appropriate level (see below). Do not exceed maximum level.



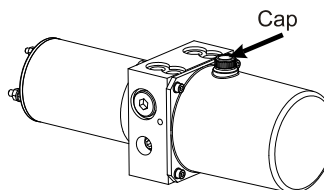
- h. Install the breather cap and the rear cover.
- i. Bleed the mast cylinder. Lift the mast several times up to 2 m to check the machine's good working order and absence of leaks.
- j. If necessary, add hydraulic oil without exceeding the maximum level indicated.

### 8. Shelf Hydraulic Unit Reservoir (TOU-CAN DUO models only)

SPX



OIL SISTEM



Lube Point(s) - Breather Cap

Capacity - 1 litre (SPX) - 0.5 litre (OIL SISTEM)

Lube - TYPE E

Interval - Check after every 125 hours of operation.

Drain after 1000 hours of operation or at least every 2 years.

### Reservoir Draining :

- a. Remove the rear cover.
- b. Raise the shelf and place a wooden block in the shelf guide rails.
- c. Lower the shelf until it rests on the block.
- d. Tag, disconnect and cap the hydraulic hoses (or rigid pipe, depending on the hydraulic unit installed) from the hydraulic unit output. Also cap the unit port holes.

### **⚠ WARNING**

**HIGH PRESSURE OIL COULD PENETRATE SKIN AND CAUSE INJURIES OR BURNS. LOOSEN THE HYDRAULIC CONNECTIONS VERY SLOWLY TO ALLOW THE PRESSURE TO DROP GRADUALLY.**

**NOTE:** Use a container to collect the oil from the hydraulic lines or from the hydraulic assembly and prevent it from spilling on the work platform or on the ground.

- e. Remove the hydraulic unit.
- f. Place the hydraulic unit above a container, open the filling hole and turn the assembly upside down to drain the oil from the reservoir.
- g. Wipe the outside of the assembly with a lint-free rag.



- h. Install the hydraulic unit, reconnect the hydraulic hoses (or rigid pipe, depending on the hydraulic unit installed) and the electrical cables.
- i. Used oils must be disposed of according to regulations in force.
- j. Remove the wooden block located under the shelf. Raise the shelf by approximately 10 cm, to gain access to the filling cap.

### **Reservoir Filling :**

- k. Unscrew the filling cap and fill the tank with new oil until the level (visible through the filling hole or through the tank, depending on the hydraulic unit installed) is 2 cm off the filling hole.
- l. Install the cap and perform a few shelf movements (raising/lowering) to bleed the air from the hydraulic circuit.
- m. If the shelf can not reach its highest position, add oil to the tank.

## **9. Tires and Wheels**

### **Tire wear and damage :**

Inspect tires periodically for wear or damage. Tires with worn edges or distorted profiles require replacement. Tires with significant damage in the tread area or side wall, require immediate evaluation before placing the machine into service.

### **Wheel installation :**

It is extremely important to apply and maintain proper wheel mounting torque.

### **⚠ WARNING**

**WHEEL NUTS AND SCREWS MUST BE INSTALLED AND MAINTAINED AT THE PROPER TORQUE TO PREVENT LOOSE WHEELS, BROKEN STUDS AND POSSIBLE SEPARATION OF WHEEL FROM THE AXLE. BE SURE THAT THE LUG NUTS AND SCREWS ARE SEATED PROPERLY TO THE WHEEL.**

### **IMPORTANT**

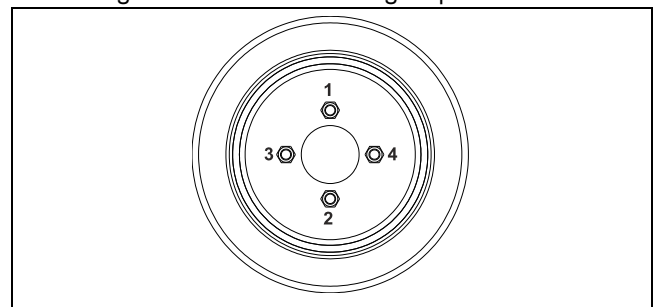
**TIGHTEN THE NUTS AND BOLTS USING A TORQUE WRENCH.**

Tighten the lug nuts and bolts to the proper torque to prevent wheels from coming loose. If you do not have a torque wrench, tighten the fasteners with a lug wrench, then immediately have a service garage or dealer tighten the lug nuts to the proper torque. Over-tightening will result in breaking the studs or permanently deforming the mounting stud holes in the wheels. The proper procedure for attaching wheels is as follows :

- Start all nuts and bolts by hand to prevent cross threading. DO NOT use a lubricant on threads or nuts.

Front wheels :

- Tighten nuts in the following sequence :



Torque value : 119 N.m

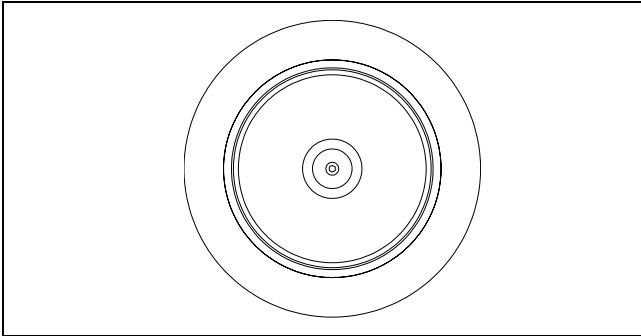
- Tightening of the nuts should be done in stages. Following the recommended sequence, tighten nuts as follow :

| Torque Stages |           |           |
|---------------|-----------|-----------|
| 1st stage     | 2nd stage | 3rd stage |
| 40 N.m        | 80 N.m    | 119 N.m   |

- Wheel nuts should be torqued after first 50 hours or after each wheel removal. Check and torque every 3 months or 150 hours of operation.

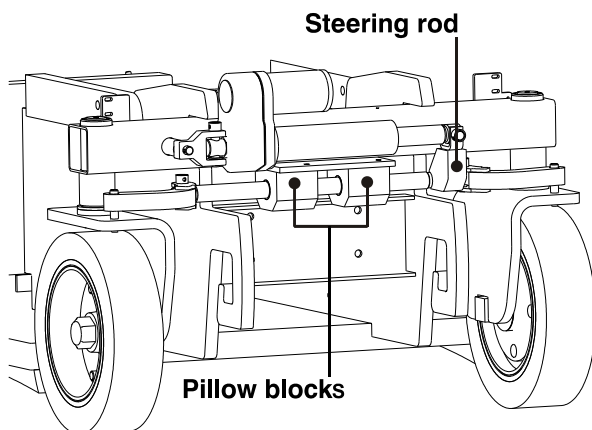
Rear Wheels :

- Coat the bolt with Loctite 222 over the whole thread.
- Tighten the bolt. Torque value : 21 N.m



- Wheel bolt should be torqued after first 50 hours or after each wheel removal. Check and torque every 3 months or 150 hours of operation.

### 10. Pillow Blocks / Steering Rod

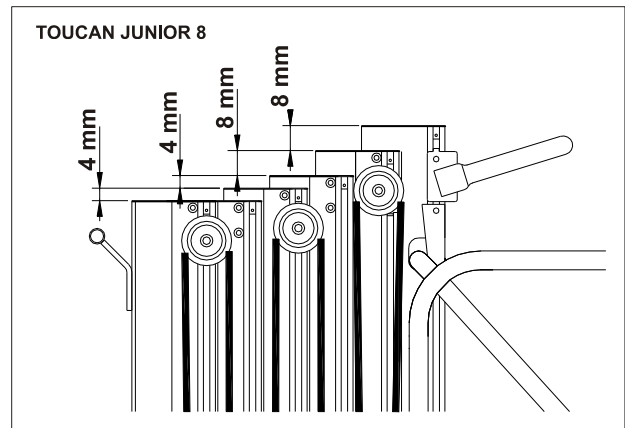
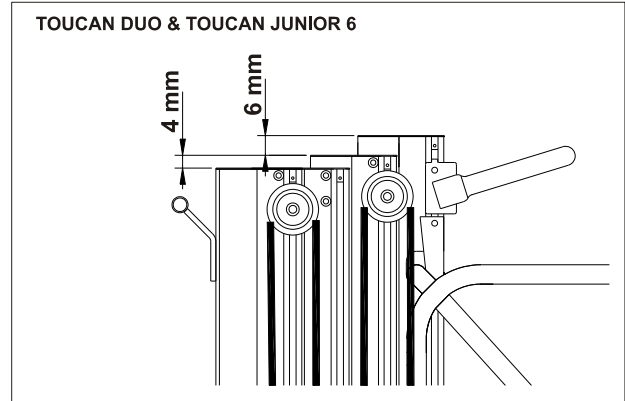


The pillow blocks on the steering rod are made with a self-lubricant material. However their service life can be increased if the transmission bar is greased. The transmission bar must be greased after one month of operation, every 6 months thereafter.

Lube - TYPE C

### 11. Chains Adjustment Check

The lifting chains adjustment must be performed so that the mast sections are slightly offset towards the top as indicated on the drawing below.



**NOTE:** Inspect the lifting chains for cleanliness during tension control.

**NOTE:** Both lifting chains of each assembly have an equal tension because of the chain equalizer.

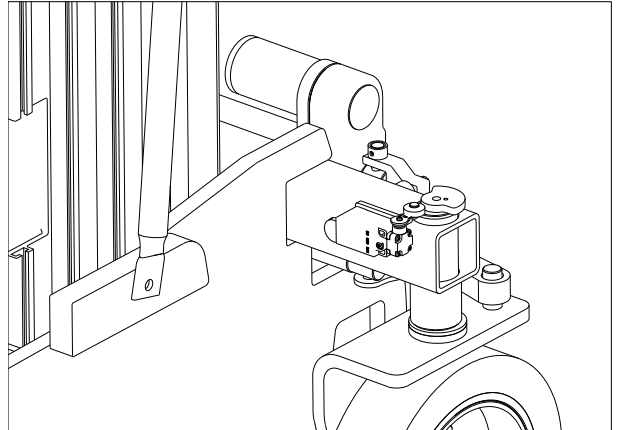
**NOTE:** Backup cables located on the side of the mast prevent the lifting chains from slackening.

## 12. Verification of the Tilt Alarm Setting

Interval - Check after every 6 months of operation.

- a. Place machine on a known level surface.
- b. Position the selector switch to "Ground controls" and raise the mast by approximately 15 cm.
- c. Chock both rear wheels.
- d. Position the selector switch to "Platform Controls".
- e. Place a spirit level (digital display) on the chassis positioned lengthways.
- f. With a jack of appropriate capacity, lift the front of the chassis and ensure :
  - An acoustic alarm sounds when the chassis is tilted at its max value (See Operation Specifications).
  - The corresponding LED lights up on the platform controls.
- g. Repeat steps (d) to (e) with the front wheels chocked and lift at the rear.
- h. Place a spirit level (digital display) across the chassis.
- i. With a jack of appropriate capacity, lift the right hand side of the chassis and ensure :
  - An acoustic alarm sounds when the chassis is tilted at its max value (see Operation Specifications).
  - The corresponding LED lights up on the platform controls.
- j. Repeat steps (h) and (i) with the left hand side of the chassis lifted.
- k. Remove the blocks.

## 13. Steering Sensor Operation test



The sensors cut the supply to the steering cylinder when the steering wheels are steered at  $\pm 90^\circ$ .

The right sensor disables the steering control to the left when the steering angle of the left steering wheel reaches  $90^\circ$ .

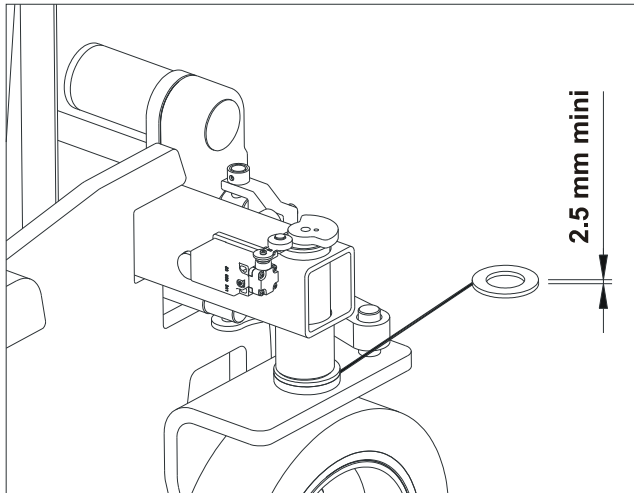
The left sensor disables the steering control to the right when the steering angle of the right steering wheel reaches  $90^\circ$ .

- a. Position Platform/Off/Ground selector switch to "Platform Control Console".
- b. Ensure the emergency stop switches are not actuated.
- c. Steer the wheels to the right.
  - The steering wheels turn to the right.
  - The movement stops as soon as the steering angle of the right steering wheel reaches  $90^\circ$ .
- d. Steer the wheels to the left.
  - The steering wheels turn to the left.
  - The movement stops as soon as the steering angle of the left steering wheel reaches  $90^\circ$ .

### 14. Wear Check of the Steering Brackets Thrust Washers

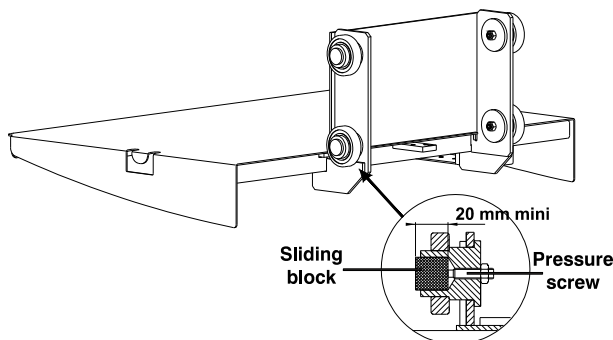
Check thickness of thrust washers on both steering brackets.

Replace the washers if their thickness is below 2.5 mm.



### 15. Wear Check of the Shelf Sliding Blocks (TOUCAN DUO models only)

The sliding blocks (Qty 4), must be replaced if their height is below 20 mm.



Check the condition of the pressure screw and of the bearing before installation. Replace the used parts by genuine parts.

After installation of the sliding blocks, perform a setting (alignment) of the shelf (refer to the Service manual).

### **⚠ CAUTION**

THE PROFILED SECTIONS OF THE SHELF MUST BE CLEANED BEFORE BLOCKS REPLACEMENT. THE PROFILED SECTIONS OF THE SHELF MUST BE GREASED AFTER BLOCKS REPLACEMENT.

### 16. Wear Check of the Wheel Motor Brakes

**NOTE:** Before performing any maintenance on the brake, ensure the motor is not running and the brake is not powered. Disconnect the battery.

- The air gap (distance between the armature plate and the brake body) is 0.2 mm.
- The gap cannot be adjusted. It is therefore necessary to periodically control the air gap and to replace the brake when it reaches 0.4 mm.

### **⚠ DANGER**

A BRAKE INCORRECTLY ADJUSTED CAN BE NOTICED BY A LONGER DISTANCE OR AN INCOMPLETE BRAKING FORCE.

## 17. Verification of the Lifting Chains

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.

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

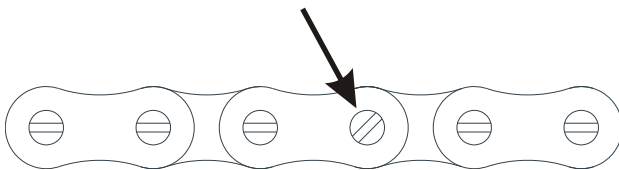
### Control of chain wear

Inspect thoroughly each chain in turn over its entire length :

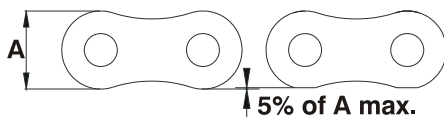
- Chains, chain yokes, clevis pins and split pins must not be corroded.
- Plates must not be cracked.



- The plate clevis pins must not present excessive play. The pins must not be turned in their housing :

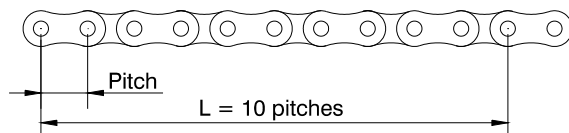


- Plates must not present a wear above 5% of the total height (refer to chart below) :



|        |           |
|--------|-----------|
| Pitch  | 15,875 mm |
| A min. | 11,5 mm   |

- Chains stretching cannot be superior to the values indicated in the chart below :



|        |           |
|--------|-----------|
| Pitch  | 15,875 mm |
| L max. | 163,5 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.







Corporate Office  
JLG Industries, Inc.  
1 JLG Drive  
McConnellsburg PA. 17233-9533  
USA  
Phone: (717) 485-5161  
Fax: (717) 485-6417

## **JLG Worldwide Locations**

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JLG Industries (Australia)  
P.O. Box 5119  
11 Bolwarra Road  
Port Macquarie  
N.S.W. 2444  
Australia  
Phone: (61) 2 65 811111  
Fax: (61) 2 65 810122

JLG Latino Americana Ltda.  
Rua Eng. Carlos Stevenson,  
80-Suite 71  
13092-310 Campinas-SP  
Brazil  
Phone: (55) 19 3295 0407  
Fax: (55) 19 3295 1025

JLG Industries (UK) Ltd  
Bentley House  
Bentley Avenue  
Middleton  
Greater Manchester  
M24 2GP  
England  
Phone: (44) 161 654 1000  
Fax: (44) 161 654 1003

JLG France SAS  
Z.I. Guillaume mon Amy  
BP 20  
47400 Fauillet  
France  
Phone: (33) 553 883 170  
Fax: (33) 553 883 179

JLG Deutschland GmbH  
Max Planck Strasse 21  
D-27721 Ritterhude/Ihlpohl  
Germany  
Phone: (49) 421 69 350 - 20  
Fax: (49) 421 69 350 - 45

JLG Equipment Services Ltd  
Rm 1107 Landmark North  
39 Lung Sum Avenue  
Sheung Shui N.T.  
Hong Kong  
Phone: (852) 2639 5783  
Fax: (852) 2639 5797

JLG Industries (Italia)  
Via Po. 22  
20010 Pregnana Milanese - MI  
Italy  
Phone: (39) 02 9359 5210  
Fax: (39) 02 9359 5845

JLG Europe B.V.  
Polaris Avenue 63  
2132 HJ Foofddorp  
The Netherlands  
Phone: (31) 23 565 5665  
Fax: (31) 23 557 2493

JLG Polska  
Ul. Krolewska  
00-060 Warszawa  
Poland  
Phone: (48) 91 4320 245  
Fax: (48) 91 4358 200

JLG Industries (Scotland)  
Wright Business Centre,  
1 Lonmay Road  
Queenslie  
Glasgow G33 4EL  
Scotland  
Phone: (44) 141 781 6700  
Fax: (44) 141 773 1907

Plataformas Elevadoras  
JLG Iberica, S.L.  
Trapadella, 2  
P.I. Castellbisbal Sur  
08755Castellbisbal  
Spain  
Phone: (34) 93 77 24700  
Fax: (34) 93 77 11762

JLG Sverige AB  
Enkopingsvagen 150  
Box 704  
SE - 176 27 Jarfalla  
Sweden  
Phone: (46) 8 506 59500  
Fax: (46) 8 506 59534

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**[www.jlg.com](http://www.jlg.com)**