

# *USER MANUAL*

*VM10-J*

*Serial Number: 18018003 – 18XXXXX*

*Rev. No: 02*

# *ELS LIFT*

**CE**

**OUTPOWER  
THE GRAVITY.**

**Important**

Firstly, operators should read, understand and abide by rules before operating the machine.

This manual introduces the information about how to use this machine safely.

You should contact ELS Lift when you come across a situation other than described in this service manual.

**Intended Use**

This machine is intended to be used only to lift personnel, along with their tools and materials to an aerial work site.

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[aftersales@elslift.com](mailto:aftersales@elslift.com)

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## INTRODUCTION



### **Owners, Users and Operators:**

You have purchased an Access Lift. Thank you for preferring our machines.

If you exactly observe the maintenance and use instructions, you will definitely get the best performance.

The purpose of the guide is to help you achieve this.

Please note the following critical points:

- You must comply with the safety instructions relating to the machine itself, its operation and the surrounding area.
- You must use the machine within prescribed performance limits.
- Proper periodic maintenance is essential for maximum lifetime.

During and after the warranty period, ELS after-sales service is always at your disposal.

In case of an inquiry or claim, please contact our after-sales department and indicate the machine type, serial number and operating time.

When ordering consumables or spare parts, please additionally use the “Spare Parts” catalogue to obtain replacement parts secured by excellent performance guarantee. This guide is delivered with your machine.

## Danger

Failure to observe the instructions and safety rules in this manual will result in death and serious injury.

**Do not operate this machine unless the following conditions are met:**

- ✓ Get familiar with and implement the safe operation principles illustrated in this manual.

**1. Avoid dangerous conditions.**

**Get familiar with and understand the safety rules before proceeding with the next section.**

1. Always perform a pre-operation inspection.
  2. Always perform function tests before operation.
  3. Examine the service area.
  4. Use this machine appropriately and only for its intended purpose.
- ✓ Read and understand the manufacturer's instructions and safety rules, safety and operating manuals, and machine labels.
  - ✓ Read, understand and observe the employer's safety rules and workplace regulations.
  - ✓ Read, understand and comply with all applicable legal regulations.
  - ✓ Make sure that you are appropriately trained to safely operate this machine.

## Classification of Hazards



Personal and machine safety must be first priority therefore any person working on or around must be aware of all safety hazards.

Read each procedure. This manual and the decals on the machine indicate signal words that are identified the following.



Obey all safety messages that follow this symbol to avoid possible injury or death.

### **▲ DANGER**

Indicates an closely hazardous situation which, if not avoided, will result in death or serious injury.

### **▲ WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

### **▲ CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

### **NOTICE**

Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Authorized persons should take the necessary measures to keep these labels in good and legible condition. Upon demand, additional labels should be procured from ELS.

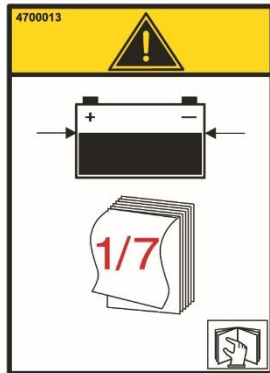
## **Intended Use**

This machine is designed to lift workers together with the accompanying tools and materials to access an aerial area.

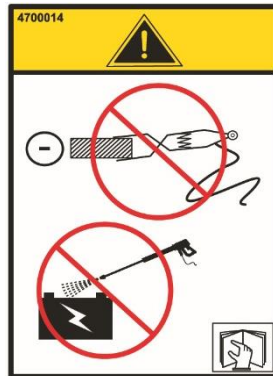
## **Maintenance of Safety Signs**

Replace all defective or damaged safety signs. Always prioritize the operator safety. Use mild soap and water to clean the safety signs. Do not use solvent-based cleaning agents as they may damage the material used to manufacture the safety sign.

## Description of Symbols and Hazard Legends



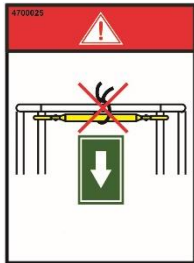
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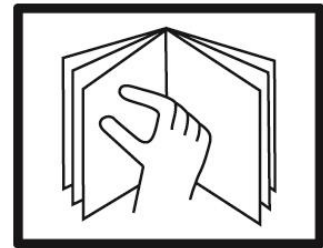
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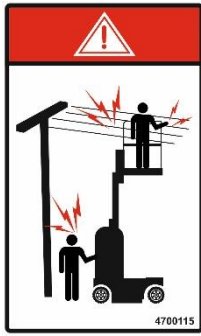
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OUTPOWER THE GRAVITY.

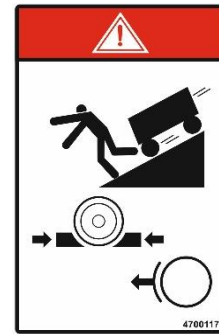
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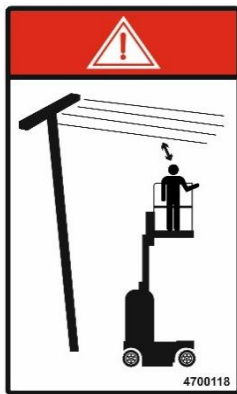
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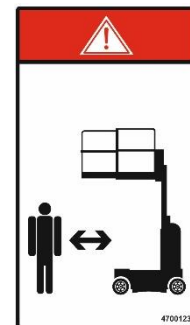
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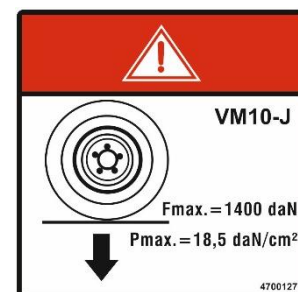
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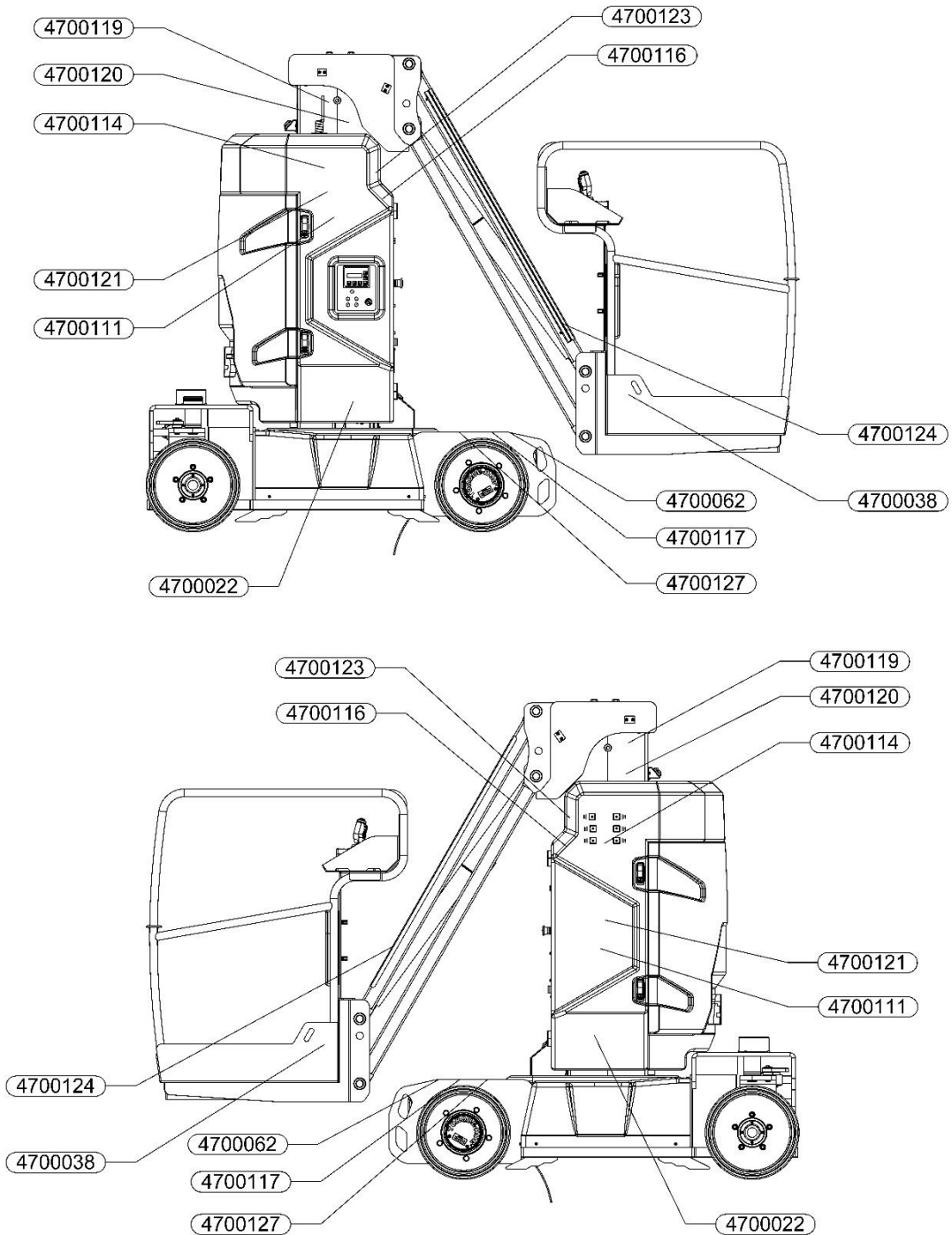
## List of Symbols and Hazard Legends

- 4700013 → Period of Battery Charge
- 4700014 → Wrong Using
- 4700022 → Crush Hazard
- 4700025 → Do not tie or disable gate
- 4700038 → Lanyard Attachment Point
- 4700053 → Read the operator's manual
- 4700063 → Fall Hazard
- 4700064 → No smoking
- 4700111 → These Sections are Accessible Only to Trained Personnel
- 4700112 → Stay Away from This Surface
- 4700113 → Collision Hazard
- 4700114 → Tip-over Hazard
- 4700115 → Electrocutation Hazard
- 4700116 → Crush Hazard
- 4700117 → Chock Wheels Before Releasing Brakes
- 4700118 → Maintain Required Clearance
- 4700119 → Keep Away from Moving Parts
- 4700120 → Forbidden to Hook
- 4700121 → Keep Away from Elevated Components While Servicing Machine
- 4700122 → Electrocutation/Burn Hazard
- 4700123 → Do not Stand Under Raised Platform
- 4700124 → Fall Hazard
- 4700125 → Electrocutation/Fire Hazard
- 4700126 → No Open Flames



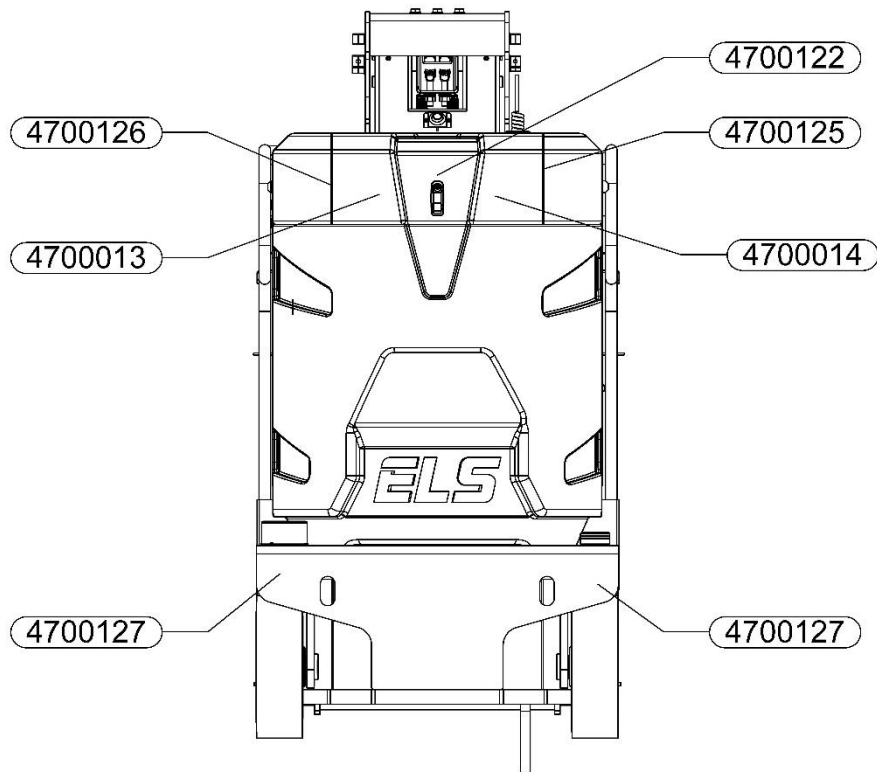
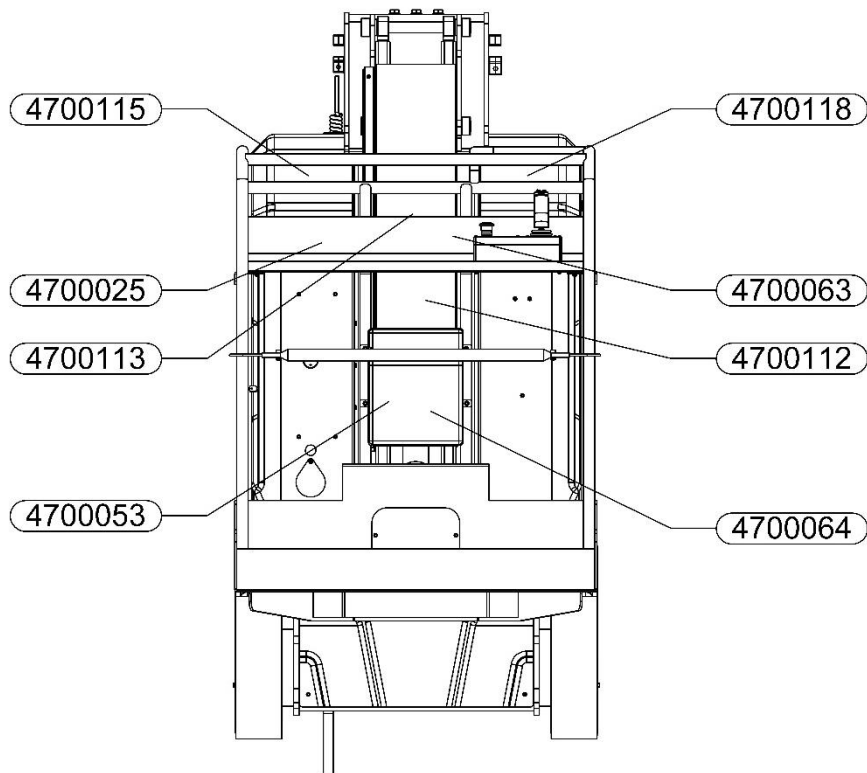
# General Safety

## Location of Safety Indicators



OUTPOWER THE GRAVITY.





OUTPOWER THE GRAVITY.



## Personal Safety

### **Anti-Fall Protection** **WARNING**

When operating the machine, anti-fall protection must be in place.

Users in the vehicle must wear a safety belt or safety strap in accordance with the legal regulations. Hook the seat belt to the bolt on the platform.

Operators must comply with employer, job site and governmental rules regarding the use of personal protective equipment.

All anti-fall protection equipment must comply with applicable legal regulations and must be inspected and used as per the manufacturer's instructions.

## Safety of the Work Area

### **Electrocution Hazards** **WARNING**

This machine is not electrically insulated and will not provide protection from contact with or proximity to electrical current.

Maintain safe distances from electrical power lines and apparatus in accordance with applicable governmental regulations and the following chart.



Line Voltage	Required	Clearance
0 - 50KV	10 ft	3.0 m
50 - 200KV	15 ft	4.6 m
200 - 350KV	20 ft	6.1 m
350 - 500KV	25 ft	7.6 m
500 - 750KV	30 ft	10.6 m
750 - 1000KV	45 ft	13.7 m

Allow for platform movement, electrical line sway or sag and beware of strong or gusty winds.

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

Do not operate the machine during lightning or storms.

Do not use the machine as a ground for welding.

**⚠ Tip-over Hazards** **⚠ WARNING**

Occupants, equipment and materials shall not exceed the maximum platform capacity.

If using accessories, read, understand and obey the decals and instructions with the accessory.

Do not alter or disable the limit switches.



Do not raise the platform unless the machine is on a firm, level surface.

Do not depend on the tilt alarm as a level indicator. The tilt alarm sounds in the platform only when the machine is on a severe slope.



If the tilt alarm sounds:

Lower the mast, then lower the jib boom. Move the machine to a firm, level surface. Use extreme caution to lower the mast.



When raising the platform, follow ratings for allowable manual force and number of occupants below.



Do not operate the machine in strong or gusty winds.

Do not increase the surface area of the platform or the load. Increasing the area exposed to the wind will decrease machine stability.

Use extreme care and slow speeds while driving the machine in the stowed position across uneven terrain, debris, unstable or slippery surfaces and near holes and drop-offs.

Do not drive the machine on or near uneven terrain, unstable surfaces or other hazardous conditions with the boom raised or extended.

Do not push off or pull toward any object outside of the platform.

Maximum Manual Force	Maximum Number of Persons
400 N indoor use only	2
200 N outdoor use	1

Do not alter or disable machine components that in any way affect safety and stability.



Do not replace items critical to machine stability with items of different weight or specification.

Do not modify or alter an aerial work platform without prior written permission from the manufacturer. Mounting attachments for holding tools or other materials onto the platform, toeboards or guard rail system can increase the weight in the platform and the surface area of the platform or the load.

Do not place or attach overhanging loads to any part of this machine.



Do not place ladders or scaffolds in the platform or against any part of this machine.



Do not transport tools and materials unless they are evenly distributed and can be safely handled by person(s) in the platform.



Do not use the machine on a moving or mobile surface or vehicle.

Be sure all tires are in good condition and lug nuts are properly tightened.

Do not use the platform controls to free a platform that is caught, snagged or otherwise prevented from normal motion by an adjacent structure. All personnel must be removed from the platform before attempting to free the platform using the ground controls.

Do not use batteries that weigh less than the original equipment. Batteries are used as counterweight and are critical to machine stability. Do not replace the battery box without the manufacturer's permission.

Do not use the machine as a crane.

Do not push the machine or other objects with the boom.

Do not contact adjacent structures with the boom.

Do not tie the boom or platform to adjacent structures.

Do not place loads outside the platform perimeter.

### Hazards Associated With Slopes

**WARNING**

Do not drive the machine on a slope that exceeds the maximum slope or side slope rating of the machine. Slope rating applies only to machines in the stowed position.

Maximum slope rating, stowed position	25% (14°)
Maximum side slope rating, stowed position	15% (9°)

Note: Slope rating is subject to ground conditions and adequate traction. See Driving on a Slope in the Operating Instructions section.

### Fall Hazards

**WARNING**

Occupants must wear a safety belt or harness in accordance with governmental regulations.



Attach the lanyard to the anchor provided in the platform.

Do not sit, stand or climb on the platform guard rails. Maintain a firm footing on the platform floor at all times.



Do not climb down from the platform when raised.



Keep the platform floor clear of debris Lower the platform entry midrail or close the entry gate before operating.

Do not enter or exit the platform unless the machine is in the stowed position and the platform is at ground level.

**⚠ Collision Hazards**

Be aware of limited sight distance and blind spots when driving or operating.

Be aware of the platform position and tailswing when rotating the turntable.

Check the work area for overhead obstructions or other possible hazards.

Be aware of crushing hazards when grasping the platform guard rail.

Operators must comply with employer, job site and governmental rules regarding the use of personal protective equipment.

Observe and use the color-coded direction arrows on the platform controls and drive chassis for drive and steer functions.

Do not lower the boom unless the area below is clear of personnel and obstructions. Limit travel speed according to the condition of the ground surface, congestion, slope, location of personnel, and any other factors which may cause collision.

Do not operate a boom in the path of any crane unless the controls of the Crane have been locked out and/or precautions have been taken to prevent any potential collision.

No stunt driving or horseplay while operating a machine.

The machine must be on a level surface or secured before releasing the brakes.

**⚠ WARNING**



**⚠ Explosion and Fire Hazards** **⚠ WARNING**

Charge the battery only in an open, well-ventilated area away from sparks, flames and lighted tobacco.

Do not operate the machine or charge the batteries in hazardous locations or locations where potentially flammable or explosive gases or particles may be present.

**⚠ Bodily Injury Hazard** **⚠ WARNING**

Do not operate the machine with a hydraulic oil or air leak. An air leak or hydraulic leak can penetrate and/or burn skin.

Improper contact with components under any cover will cause serious injury.

Only trained maintenance personnel should access compartments. Access by the operator is only advised when performing a pre-operation inspection. All compartments must remain closed and secured during operation.

**⚠ Damaged Machine Hazards** **⚠WARNING**

Do not use a damaged or malfunctioning machine.

Conduct a thorough pre-operation inspection of the machine and test all functions before each work shift. Immediately tag and remove from service a damaged or malfunctioning machine.

Be sure all maintenance has been performed as specified in this manual and the appropriate service manual.

Be sure all decals are in place and legible.

Be sure the operator's, safety and responsibilities manuals are complete, legible and in the storage container located on the platform.

**⚠ Component Damage Hazard** **⚠WARNING**

Do not use the machine as a ground for welding.

Failure to charge the batteries when the low battery indicator is on may result in battery damage and may require a complete battery pack replacement.

Only use the charger recommended by ELS LIFT.

**Battery Safety**

**⚠ Burn Hazards**

Batteries contain acid. Always wear protective clothing and eye wear when working with batteries.

Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda and water.

The battery pack must remain in the upright position.

Do not expose the batteries or the charger to water or rain.

**⚠WARNING**



**⚠ Explosion Hazards**

Keep sparks, flames and lighted tobacco away from batteries. Batteries emit an explosive gas.

The battery pack cover must remain off during the entire charging cycle.

Do not contact the battery terminals or the cable clamps with tools that may cause sparks.

**⚠WARNING**



### **⚠ Electrocutation Hazards**

Connect the battery charger to a grounded, AC 3-wire electrical outlet only.

Inspect daily for damaged cord, cables and wires. Replace damaged items before operating.

Avoid electrical shock from contact with battery terminals. Remove all rings, watches and other jewelry.



### **⚠ Tip-over Hazard**

Do not use batteries that weigh less than the original equipment. Batteries are used as counterweight and are critical to machine stability. Do not replace the battery bow without the manufacturer's permission.

### **Lifting Hazard**

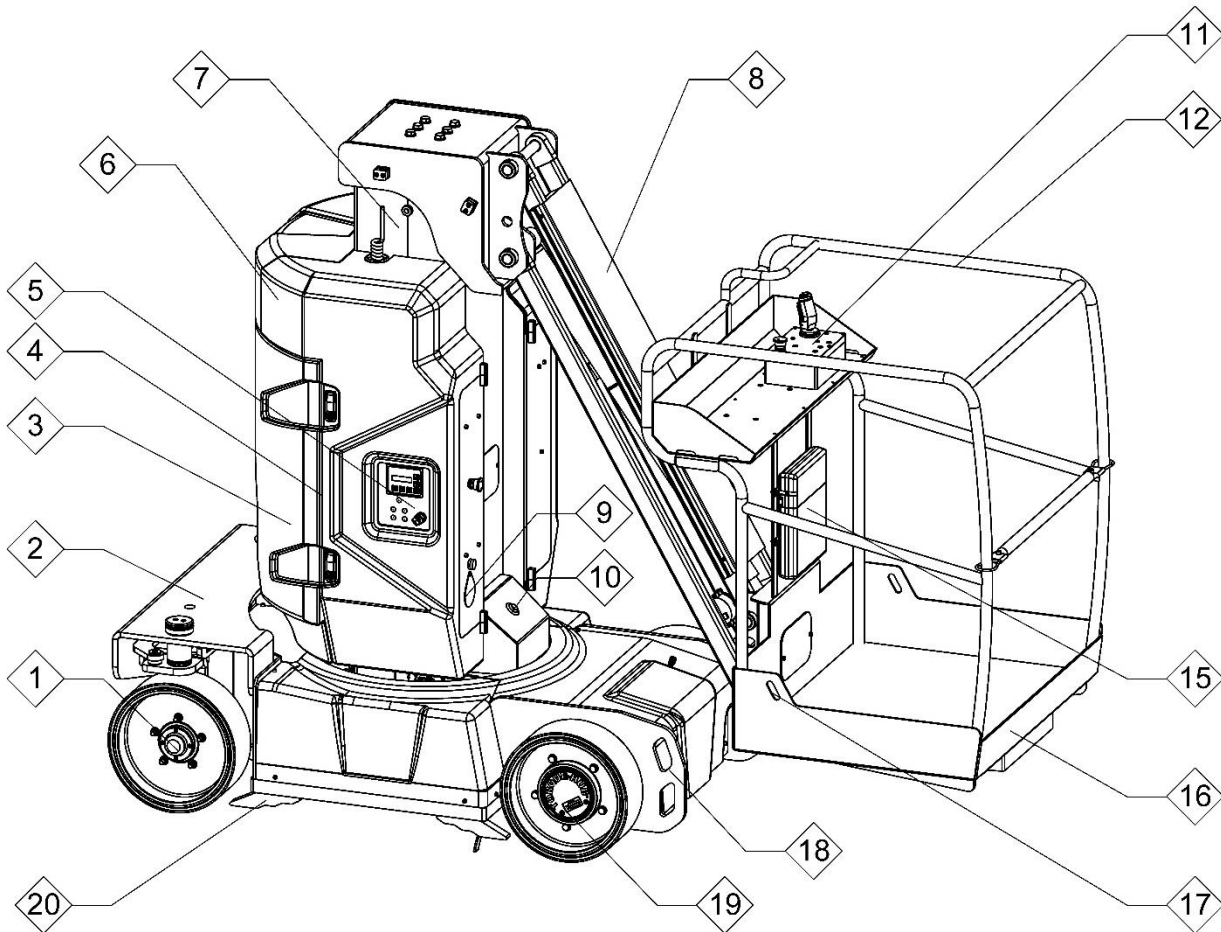
Use a suitable lifting device to remove or install the batteries.

### **Lockout After Each Use**

- ✓ Select a safe parking location—firm level surface, clear of obstruction and traffic.
- ✓ Lower the jib boom and the mast to the stowed position.
- ✓ Rotate the turntable so that the platform is between the non-steer wheels.
- ✓ Turn the key switch to the off position and remove the key to secure from unauthorized use.
- ✓ Chock the wheels.



**LEGEND**



- 1. Steering Wheels
- 2. Chassis
- 3. Counter Weight
- 4. Turret
- 5. Ground Control Panel
- 6. Battery Pack
- 7. Mast
- 8. Jib
- 9. Battery Charger Plug

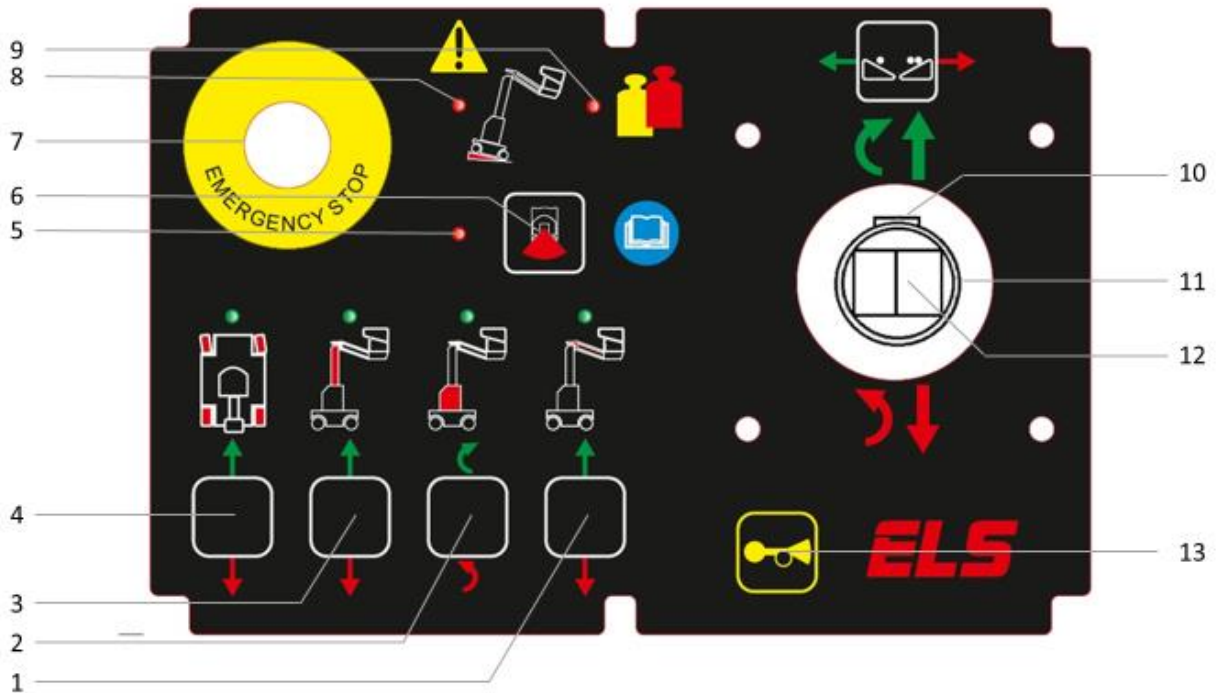
- 10. Flasher
- 11. Platform Control Panel
- 12. Platform Guide Rails
- 13. Working Light
- 14. Platform Entry Gate
- 15. Guide Storage Container
- 16. Platform
- 17. Lanyard Attachment Point
- 18. Tie Down
- 19. Drive Wheels

OUTPOWER THE GRAVITY.



## Control Panels

### Platform Control Panel



- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Jib boom function button with indicator light</li> <li>2. Turret function button with indicator light</li> <li>3. Mast function button with indicator light</li> <li>4. Drive function button with indicator light</li> <li>5. Drive enable indicator light</li> <li>6. Drive enable button</li> <li>7. Emergency stop</li> </ol> | <ol style="list-style-type: none"> <li>8. Overload indicator light</li> <li>9. Machine not level indicator light</li> <li>10. Function enable switch for drive and boom function</li> <li>11. Proportional control joystick for drive and boom functions</li> <li>12. Thumb rocker switch for steer functions</li> <li>13. Horn button</li> </ol> |
|---|---|

1. Jib boom function button with indicator light
  - Push the jib function button to select jib function. The indicator will be on.
2. Turret function button with indicator light
  - Push the turret function button to select turret function. The indicator will be on.
3. Mast function button with indicator light
  - Push the mast function to select the mast function. The indicator light will be on.
4. Drive function button with indicator light
  - Push the drive button to select drive and steer function. The indicator light will be on.
5. Drive enable indicator light
  - Light on indicates that the boom has moved just past either non-steer Wheel and drive function has been interrupted.
6. Drive enable button
  - To drive when the drive enable light is on, push and hold the drive enable button, push the drive function button and slowly move the drive control handle off center. Be aware that the machine may move in the opposite direction that the drive and steer controls are moved.
7. Red Emergency Stop button
  - Push in the red Emergency Stop button to the off position to stop all functions. Twist the red Emergency Stop button to the on position to operate the machine.
8. Overload indicator light
  - Overload indicator light will be on when machine loaded more than permitted weight.
9. Machine not level indicator light
  - The machine not level indicator light will be on when machine tilted more than 2 degree.
10. Function enable switch for drive and boom function
  - Press and hold the function enable switch on the joystick to enable the function.
11. Proportional joystick for drive and boom function
  - Move the joystick in the direction indicated by the red and white arrows and the machine function will operate in the direction indicated by the red white arrows. If selected the mast and turntable rotate function button and move the joystick to the left turntable will rotate to the left. If move the joystick to the right turntable will rotate to the right.
12. Thumb rocker switch for steer functions
  - Press the left side of the thumb rocker and the steer Wheel will turn to the left. Press the right side of the thumb rocker and the steer Wheel will turn to the right.
13. Horn Button
  - Push the horn button and the horn will sound. Release the horn button and horn will stop.

**Ground Control Panel**



- |  |  |
|--|--|
| 1. Turntable rotate enable function button                     | 8. Menu right button                   |
| 2. Turntable right rotate, mast down, jib down function button | 9. Menu up button                      |
| 3. Mast up/down enable function button                         | 10. Menu down button                   |
| 4. Turntable left rotate, mast up and jib up function button   | 11. Menu enter button                  |
| 5. Jib up/down enable function button                          | 12. Overload indicator light           |
| 6. Menu escape button  | 13. Machine not level indicator light  |
| 7. Menu left button  | 14. Platform/ground control key switch |

1. Turntable rotate enable function button
  - Push the turntable rotate enable function button to select turntable rotate function.
2. Turntable right rotate, mast down, jib down function button
  - Press the button to activate these functions.
3. Mast up/down enable function button
  - Push the mast up/down enable function button to select mast up/down function.
4. Turntable left rotate, mast up and jib up function button
  - Press the button to activate these functions.
5. Jib up/down enable function button
  - Press the button to activate jib up/down function.
6. Menu escape button
  - Press the button to escape the menu.
7. Menu left button
  - Press the button to move left in the menü.
8. Menu right button
  - Press the button to move right in the menü.
9. Menu up button
  - Press the button to move up in the menü.
10. Menu down button
  - Press the button to move down in the menü.
11. Menu enter button
  - Press the button for entry in the menü
12. Overload indicator light
  - Overload indicator light will be on when machine loaded more than permitted weight.
13. Machine not level indicator light.
  - The machine not level indicator light will be on when machine tilted more than 2 degree.
14. Platform/ground control key switch
  - Turning the key switch to the platform position allows the platform controls to operate. Turning the key switch middle position to turning off the machine. Turning the key switch to the ground position allows the ground control to operate.

## Inspection



**Do not operate this machine unless the following conditions are met:**

- ✓ Get familiar with and implement the safe operation principles illustrated in this manual.
- 1. Avoid dangerous conditions.
- 2. Always perform a pre-operation inspection.

**Get familiar with and understand the pre-operation inspection before proceeding with the next section.**

1. Always perform function tests before operation.
2. Examine the service area.
3. Use this machine appropriately and only for its intended purpose.

### Pre-operation Inspection Fundamentals

It is the responsibility of the operator to perform a pre-operation inspection and routine maintenance.

The pre-operation inspection is a visual inspection performed by the operator prior to each work shift.

The inspection is designed to discover if anything is apparently wrong with a machine before the operator performs the function tests.

The pre-operation inspection also serves to determine if routine maintenance procedures are required. Only the routine maintenance items specified in this manual may be performed by the operator.

Refer to the list on the next page and check each of the items.

If damage or any unauthorized variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications. After repairs are completed, the operator must perform a pre-operation inspection again before proceeding with the function tests.

Scheduled maintenance inspections shall be performed only by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

## Pre-operation Inspection

- ✓ Be sure the operator's, safety, and responsibilities manuals are complete, legible and in the storage container located on the platform.
- ✓ Be sure that all decals are legible and in place. See the Inspections section.
- ✓ Check for hydraulic oil leaks and proper oil level. Add oil if needed. See the Maintenance section.
- ✓ Check for battery fluid leaks and proper fluid level. Add distilled water if needed. See the Maintenance section.

### Check the following components or areas for damage, improperly installed or missing parts and unauthorized modifications:

- ✓ Electrical components, wiring and electrical cables
- ✓ Hydraulic hoses, fittings, cylinders and manifolds
- ✓ Hydraulic tank
- ✓ Motors
- ✓ Wear pads
- ✓ Tires and wheels
- ✓ Limit switches and horn
- ✓ Beacon and alarms (if equipped)
- ✓ Nuts, bolts and other fasteners
- ✓ Platform extension
- ✓ Earth wire
- ✓ Battery pack and connections
- ✓ Platform control joystick
- ✓ Platform entry gate

### Check entire machine for:

- ✓ Cracks in welds or structural components
- ✓ Dents or damage to machine
- ✓ Excessive rust, corrosion or oxidation
- ✓ Be sure that all structural and other critical components are present and all associated fasteners and pins are in place and properly tightened.
- ✓ Make sure that batteries are in place and properly connected.
- ✓ After the inspection is complete, be sure that all component covers are in place and latched.

## Instructions for Use

### Operation from the Ground Control Panel

1. Turn the key switch to ground control.
2. Turn and pull out the red Emergency stop button to the on position.
3. Push and hold appropriate function button.
4. Press and hold the appropriate function enable button (arrow).

Drive and steer functions are not available from the ground controls.

### Operation from Platform the Platform Control Panel

1. Turn the key switch to platform control.
2. Turn and pull out the ground red Emergency Stop button to the on position. Twist to release the platform red Emergency Stop button to the on position.

#### To Position Platform

3. Press a function select button. The indicator light next to the selected function will be on.

If the joystick is not moved within 5 seconds of selecting a function, the function will not operate. The indicator light of the selected function will be off.

Note:

4. Press and hold the function enable switch on the joystick.

Note: Only on first start the machine. Please press and hold the function

enable switch 2 second for active the function

5. Move the joystick in the direction indicated by the markings on the control panel.

#### To Steer

6. Press the drive select function. The indicator light next to the drive function will be on.
7. Press and hold the function enable switch on the joystick
8. Press the thumb rocker switch on the top of the joystick.

#### To Drive

9. Press the drive function select button. The indicator light next to the drive function will be on.
10. Press and hold the function enable switch on joystick.
11. -Increase speed: Slowly move the drive joystick off center.

-Decrease speed: Slowly move the drive joystick toward center.

-Stop: Return the drive joystick to center or release the function enable switch.

Machine travel speed is restricted when the mast or jib boom is raised.



**Drive Enable**



Light on indicates that the boom has moved just past either nonsteer wheel and drive function has been interrupted.



Push and hold the drive enable button and then push the drive select function. The green indicator light should be on.

To drive, slowly move the drive control handle off center.

Be aware that the machine may move in the opposite direction that the drive and steer controls are moved.

Always use the color-coded direction arrows on the platform controls and the drive chassis to identify the direction the machine will move.

If the control handle is not moved within 5 seconds of selecting a function, the function will not operate.

Select the function again.

**Machine Not Level Indicator Light**

Light flashing indicates the machine is not level. The tilt alarm will be sounding when this light is flashing. Move the machine to a firm level surface.



**Driving on a Slope**

Determine the slope and side slope ratings for the machine and determine the slope grade.

Maximum slope rating.....25% (14°)

Maximum side slope rating..... 15% (9°)

Note: Slope rating is subject to ground conditions and adequate traction.

Be sure the platform is lowered and the platform rotate is between the non-steer wheels.

## Battery and Charger Instructions

### Observe and Obey:

- ✓ Do not use an external charger or booster battery.
- ✓ Charge the battery in a well-ventilated area.
- ✓ Use proper AC input voltage for charging as indicated on the charger.
- ✓ Use only ELS Lift authorized battery and charger.
- ✓ Failure to charge the batteries when the low battery indicator is on may result in battery damage and may require a complete battery pack replacement.

### To Charge Battery

1. Open the turntable covers. The covers should remain open for the entire charging cycle.
2. Push in the red Emergency Stop button on the turntable.
3. Remove the battery vent caps and check the battery electrolyte level. If necessary, add distilled water to reach a level of 0.4 in / 1 cm above the plates in each battery cell. Do not overfill.
4. Do not charge the batteries if the battery electrolyte temperature is above 104° F / 40° C. Let the electrolyte temperature cool down first before charging the batteries.
5. Clean and replace the battery vent caps.
6. Connect the battery charger to a grounded AC power supply. Once the charging cycle begins, do not interrupt. A charge cycle of approximately 10

hours will be required for batteries discharged 70% to 80%.

7. The charger will indicate when the battery is fully charged.
8. Remove the battery vent caps and check the battery electrolyte level when the charging cycle is complete. Replenish with distilled water to reach a level of 0.4 in / 1 cm above the Plates in each cell. Do not overfill.
9. Replace the battery vent caps.
10. Disconnect the charger from the AC power supply.
11. Close the battery covers and latch.
12. Turn and pull out red Emergency Stop button to the on position.

### Dry Battery Filling and Charging Instructions

1. Open the turntable covers. The covers should remain open for the entire charging cycle.
2. Remove the battery vent caps and permanently remove the plastic seal from the battery vent openings.
3. Fill each cell with battery electrolyte until the level is sufficient to cover the plates.
4. Do not fill to maximum level until the battery charge cycle is complete. Overfilling can cause the battery electrolyte to overflow during harging. Neutralize battery electrolyte spills with baking soda and water.
5. Install the battery vent caps.
6. Push in the red Emergency Stop button.

7. Connect the battery charger to a grounded AC power supply. Once the charging cycle begins, do not interrupt.
8. The charger will indicate when the battery is fully charged.
9. Remove the battery vent caps and check the battery electrolyte level when the charging cycle is complete. Replenish with distilled water to reach a level of 1 cm above the plates in each cell. Do not overfill.

## Transport and Lifting Instructions



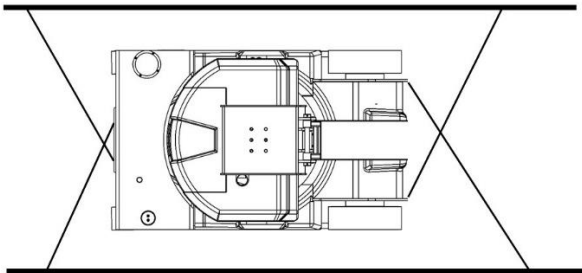
- ✓ Only qualified aerial lift operators should move the machine on or off the truck
- ✓ The transport vehicle must be parked on a level surface
- ✓ The transport vehicle must be secured to prevent Rolling while the machine is being loaded.
- ✓ Be sure the vehicle capacity, loading surfaces and chains or straps are sufficient to withstand the machine weight. See the serial label for the machine weight.
- ✓ Do not drive the machine on a slope that exceeds the slope or side slope rating. See Driving on a Slope in the Operating Instructions section.
- ✓ If the slope of the transport vehicle bed exceeds the maximum slope rating, the machine must be loaded and unloaded using a winch as described. See the Specifications section for the slope ratings.

## Securing to Truck or Trailer for Transit

- ✓ Turn the key switch to the off position and remove the key before transporting.
- ✓ Inspect the entire machine for loose or unsecured items.

### Securing the Chassis

- ✓ Use chains of ample load capacity.
- ✓ Use a minimum of 4 chains.
- ✓ Adjust the rigging to prevent damage to the chains.



## Observe and Obey:

- ✓ Only qualified riggers should rig and lift the machine.
- ✓ Be sure the crane capacity, loading surfaces and straps or lines are sufficient to withstand the machine weight. See the serial label for the machine weight.

## Lifting Instructions

- ✓ Fully lower the mast and jib boom. Remove all loose items on the machine.
- ✓ Attach the rigging only to the designated lifting points on the machine.
- ✓ Adjust the rigging to prevent damage to the machine and to keep the machine level.

## Maintenance

### Periodic Maintenance Schedule

Periodic Maintenance and Control	Daily	Each 50 hours	Each 250 hours	Each 1000 hours	Each 2000 hours	Each 3000 hours
Hydraulic Oil	•					
Batteries	•					
Battery Charge Level	•					
Leak tightness of the connectors and pipes	•					
Mast Boom Chock	•					
Hydraulic oil filter	•					
No cracked or broken chains, links and fittings	•					
Pulleys and clamps are not worn, rusted or damaged	•					
Cartridge Obstruction of Hydraulic Oil Filter		•				
Battery Cable Condition		•				
Screw and Bolts		•				
Motor Lock Screw		•				
Wheel Nuts		•				

Cartridge of Hydraulic Oil			•			
Greasing the surface of the Mast Booms			•			
Connection of the Battery Charger			•			
Level of the Batteries' Water			•			
Emptying the Hydraulic Oil Tank				•		
Cleaning Carbon Brush of the Hydraulic Pump Unit				•		
Changing the Hydraulic Oil					•	
Changing the Mast Boom Chocks						•
Electric Cables and Hydraulic Hoses						•

## Controller Help Messages

The controller provides a help message on the display screen.

Diagnostic Codes	Conditions	Possible Solutions
0/0	Everything OK	
0/0	Ground Mode Active!	
0/0	Startup!	
0/0	Extending Deck!	
0/0	Retracting Deck!	
0/0	Extending Outriggers!	
0/0	Retracting Outriggers!	
0/0	Driving!	
0/0	Lifting!	
0/0	Lowering!	
0/0	Steering!	
0/0	Close Trigger	
0/0	Vehicle Tilted	
0/0	Select Drive/Lift Mode!	
2/3	Function Locked-No Valve Supply	Check Pin3-2, which carries power to energize the valve outputs.
2/2	Function Locked-Outriggers	
2/2	Release Outrigger Switches!	

<p><b>3/2</b></p>	<p>Energized Valve- Valve Feedback High</p> <p>There is a voltage on one or more valve outputs, when all outputs should be off.</p>	<p>Check Pin5 wiring to each valve coil.</p>
<p><b>3/3</b></p>	<p>B+ Stud Voltage too High</p> <p>The voltage on the B+ stud of the controller is close to B+ when the line contactor is off.</p>	<p>Check the line contactor tips are not welded; check the power wiring for errors.</p>
<p><b>3/4</b></p>	<p>Energized Line Contactor</p> <p>There is a voltage on the line contactor coil output, when it should be off.</p>	<p>Check Pin5 wiring to line contactor coil.</p>
<p><b>3/5</b></p>	<p>Motor Overload!</p> <p>The controller power protection circuits have activated to protect from extreme overload.</p>	<p>Check for short-circuit power wiring; check for a seized motor.</p>
<p><b>2/2</b></p>	<p>Release Joystick- Release Trigger</p> <p>Platform joystick was selected at power-on.</p> <p>Platform joystick selected for too long without trigger switch.</p>	<p>Check the wiring errors.</p> <p>Setup the trigger wait options. This procedure should perform with the firm.</p>
<p><b>1/1</b></p>	<p>Fault Customer!</p>	
<p><b>2/2</b></p>	<p>Check Joystick Switches</p> <p>Both directions are selected together.</p>	
<p><b>4/2</b></p>	<p>Function Locked-Too Hot</p> <p>The controller heatsink temperature exceeds 75°C, preventing all functions except lowering.</p>	<p>Check for excessive motor current draw; check for good heatsinking to machine chassis. This procedure should perform with the firm.</p>
<p><b>2/2</b></p>	<p>Check Ground Input Switches</p> <p>More than one is active at the same time.</p>	
<p><b>2/2</b></p>	<p>Release Ground Switches</p> <p>Ground function switches were closed at power-on.</p>	<p>Check the wiring errors.</p>



<p><b>2/1</b></p>	<p>Shutdown-Check EMS Switches</p> <p>The platform and ground EMS inputs indicate the mode in which the controller must operate. If neither inputs is active, or if both are active together, the controller does not know how to function.</p>	<p>Check the EMS switch wiring to Pin3-1 and Pin4-1.</p>
<p><b>1/1</b></p>	<p>Function Locked-Not Calibrated</p>	<p>If platform overload function are active then both height and load must be calibrated. If overload function are not active, but height-based decisions are active then height must be calibrated. This procedure should perform with the firm.</p>
<p><b>1/1</b></p>	<p>Height Not Calibrated</p> <p>Height based functions are required, but height has not been calibrated.</p>	<p>Calibrate the height. This procedure should perform with the firm.</p>
<p><b>2/2</b></p>	<p>Function Locked-Test Mode Selected</p> <p>When the controller test mode has been activated, no function are allowed.</p>	<p>Switch power off/on to reset to normal operation.</p>
<p><b>4/5</b></p>	<p>Bad 5V Sensor Supply</p> <p>The 5V sensor supply feeds P1-1(joystick) and P2-1(height/pressure sensor).</p>	<p>Check wiring for short-circuit or misconnection to other wiring.</p>
<p><b>6/3</b></p>	<p>Check Elevation Switch</p>	
<p><b>6/2</b></p>	<p>The pressure sensor is giving an out-of-range voltage (below 0.5V or above 4.5V).</p>	<p>Check for open-or-short-circuit wiring; replace pressure sensor and re-calibrate load if necessary.</p>
<p><b>6/1</b></p>	<p>When two height sensors are fitted. Both should read the same height at all times; this message indicates that the sensor are reading different heights.</p>	<p>Check for loose sensors; re-calibrate load if necessary.</p>

<p><b>2/2</b></p>	<p>Function Locked-Armguard</p> <p>During descent, the controller can stop movement for a configurable time, to allow a safety check that no -one is close to the machine.</p>	<p>The operator must release and then re-select DOWN to continue lowering (after the delay timeout). If armguard feature is not wanted, set the armguard height %101. This procedure should perform with the firm.</p>
<p><b>1/1</b></p>	<p>Not Calibrated</p> <p>Height and load based functions are required, but height and/or load has not been calibrated.</p>	<p>Calibrate load which includes height calibration. This procedure should perform with the firm.</p>
<p><b>2/2</b></p>	<p>Function Locked- External Shutdown</p> <p>An external shutdown is preventing functions.</p>	<p>Check the SYSTEM/MODE/INTERLOCK to see which external interlock is active. This procedure should perform with the firm.</p>
<p><b>2/2</b></p>	<p>Function Locked-Overloaded</p> <p>The platform is loaded too high to allow operation.</p>	<p>The platform load must be reduced.</p>
<p><b>2/2</b></p>	<p>Funtion Locked-Underloaded</p> <p>Platform overload features are active, and the platform load is too low to be valid.</p>	<p>This could be caused by erroneous calibration, a sensor fault, or a change in the machine mechanics/hydraulics. This procedure should perform with the firm.</p>
<p><b>2/2</b></p>	<p>Function Locked-Too High</p> <p>The platform is raised too high to allow some functions.</p>	<p>This procedure should perform with the firm.</p>
<p><b>2/2</b></p>	<p>Function Locked-Tilted</p> <p>The machine is tilted too much to allow some function.</p>	<p>This procedure should perform with the firm.</p>
<p><b>7/7</b></p>	<p>B+ Stud Voltage too Low</p> <p>The voltage on the B+ stud of the controller is too far from B+ when the line contactor is off.</p>	<p>Check the power wiring for errors.</p>

<b>F/F</b>	Factory Override	
<b>4/4</b>	Function Locked-Battery Battery voltage is too low or too high to allow movement.	Check the wiring.
<b>4/4</b>	The battery supply is too low.	The battery must be re-charged.
<b>4/4</b>	The battery supply is too high.	Check that the correct battery and charger are installed.
<b>6/6</b>	CAN BUS CANbus messages expected from one or more module are not being received, or messages intended to one or more module cannot be transmitted.	Check for open- and short-circuit problems with CANbus wiring; ensure that the CANbus is wired correctly pin-to-pin; ensure that the machine chassis is not erroneously shorted to the motor wiring. This procedure should perform with the firm.
<b>4/1</b>	Bad Internal Temperature Sensor The heatsink temperature is out of range.	The power controller may have to be replaced.
<b>4/2</b>	Bad Internal 5V The internal 5V slave supply is out of range.	The controller may have to be replaced.
<b>4/2</b>	Bad Internal slave The internal slave is not operating correctly.	The controller may have to be replaced.
<b>4/3</b>	Bad Internal 12V The internal 12V supply is out of range.	The controller may have to be replaced.
<b>9/9</b>	Some Big Bad Problem!	

## Technical Data

<b>Model</b>	<b>VM10-J</b>
Work Height	10.0 m
Platform Height	8.0 m
Height, Stowed max.	1.99 m
Horizontal reach max.	3.25 m
Width	1 m
Lenght, Stowed	2.67 m
Maximum Load Capacity	200 kg
Maximum Wind Speed	45km/h
Wheelbase	1.2 m
Turning Radius(inside)	0.5 m
Turning Radius(outside)	1.5 m
Turntable Rotation	340°
Turntable Tailswing	0
Power Source	12x2V 250AH
Drive Speed, Stowed	4.5km/h
Drive Speed, Boom Raised	0.65km/h
Vibration Value Does not exceed	2.5m/s <sup>2</sup>
Ground Clearence	10 cm
Weight	2800 kg
Sound pressure level at ground Workstation	<70 dBA
Sound pressure level at platform Workstation	<70 dBA

Platform Dimension	0.99x0.73 m
Platform Leveling	Self-Leveling
Controls	24V DC Proportional
Hydraulic Pressure(max)	130 bar
System Voltage	24V
Tire Size (Non-Marking)	406x127
Maximum Slope Rating (Stowed)	25% (14°)
Maximum Side Ratin(Stowed)	15%(9°)
(Slope rating is subject to ground conditions and adequate traction)	
Tire Load(max)	773 kg