



LGMG North America Inc.

## Operation and safety manual

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SR3369E/SR4069E

Mobile Elevating Work Platform  
ANSI

 **WARNING**

Before operation and maintenance, the drivers and service personnel shall always read and thoroughly understand all information in this manual. Failure to do so may result in, fatal accidents or personal injury.

This manual must be kept with this machine at all times.



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# Contents

Foreword.....	IV
Safety Precautions .....	V
Chapter 1 Safety .....	1
1.1 Danger.....	3
1.2 Do not operate unless:.....	3
1.3 Dangers Classification .....	3
1.4 Design Intent .....	3
1.5 Maintenance of Safety Mark .....	3
1.6 Danger of Electric Shock .....	3
1.7 Danger of Tip-Over .....	4
1.8 Safety of Work Area .....	4
1.9 Smashing and Pinching Hazards .....	5
1.10 Hazards of Operating on Slopes .....	6
1.11 Falling Hazards .....	6
1.12 Collision Hazards.....	6
1.13 Hazard of Component Damage .....	7
1.14 Hazard of Explosion and Fire.....	7
1.15 Hazards of Damaged Machine.....	7
1.16 Hazard of Bodily Injuries .....	7
1.17 Battery Safety .....	7
Chapter 2 Legend .....	9
Chapter 3 Label.....	13
Chapter 4 Specification .....	19
Chapter 5 Control Unit.....	27
5.1 Ground Control Unit (GCU).....	29
5.2 Platform Control Unit (PCU).....	30
5.3 Basic operations .....	31
Chapter 6 Pre-operation Inspection.....	35
6.1 No operation will be allowed before: .....	37
6.2 Basic principles.....	37
6.3 Pre-operation inspection .....	37
Chapter 7 Workplace Inspection .....	39
7.1 Do not operate unless.....	41
7.2 Basic Principles .....	41
7.3 Workplace inspection.....	41
Chapter 8 Functional Test.....	43
8.1 No operation will be allowed before .....	45

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8.2 Basic principles.....	45
8.3 Functional test.....	45
8.4 On the ground control unit.....	45
8.5 Test on the platform control unit.....	46
8.6 Test the tilt sensor operation.....	47
Chapter 9 Operation Instruction.....	49
9.1 Do not operate unless.....	51
9.2 Basic principles.....	51
9.3 Emergency stop.....	51
9.4 Emergency lowering.....	51
9.5 Operation on the ground.....	51
9.6 Operation on the platform.....	51
9.7 Driving on a slope.....	52
9.8 Operation on the ground using the control unit.....	52
9.9 Extending and retracting of the platform.....	53
9.10 How to operate the safety arm.....	53
9.11 Auxiliary Descent.....	53
9.12 Fall protection.....	53
9.13 Instructions for battery and charger.....	53
9.14 After each use.....	54
Chapter 10 Instructions for Transportation and Lifting.....	55
10.1 Compliance.....	57
10.2 Fixed to a truck or trailer during transportation.....	57
10.3 Ensure the transportation safety.....	57
10.4 Guidance for lifting.....	58

## Foreword

Thank you for choosing to use this Mobile Elevating Work Platform from LGMG North America. This machine is designed according to A92.20-2018. The information specified in this manual is intended for the safe and proper operation of this machine for its' intended purpose.

For maximum performance and utilization of this machine, thoroughly read and understand all the information in this manual before starting, operating, or performing maintenance on this machine.

Due to continuous product improvements, LGMG North America reserves the right to make specification changes without any prior notifications. For any updated information, contact LGMG North America.

Ensure all preventive maintenance to the machine is performed according to the interval specified in the maintenance schedule.

Keep this manual with this machine for reference at all times. When the ownership of this machine is transferred, this manual shall be transferred with this machine. This manual must be replaced immediately if it is lost, damaged, or becomes illegible.

This manual is copyrighted material. The reproduction or copy of this manual is not allowed without the written approval of LGMG North America.

The information, technical specifications and drawings in this manual are the latest available when this manual is issued. Due to continuous improvement, LGMG North America reserves the right to change the technical specifications and machine design without notice. If any specifications and information in the manual are not consistent with your machine, please contact the service department of LGMG North America.



**Only personnel who have been properly trained and qualified to operate or maintain this machine can operate, repair and maintain this machine.**

**Improper operation, maintenance, and repair are dangerous and can cause personal injury and death.**

**Before any operation or maintenance, the operator shall thoroughly read this manual. Do not operate, perform any maintenance or make any repairs on this machine before reading and understanding this manual.**

**The user shall load the platform strictly according to the load rating of the platform. Do not overload the platform or make any modifications to the platform without permission from LGMG North America.**

**The operation regulations and preventions in this manual are only applicable for the specified use of this machine.**

## Safety Precautions

The operator of this machine shall understand and follow the existing safety regulations of state and local governments. If these are unavailable, the safety instructions in this manual shall be followed.

To help prevent accidents, read and understand all warnings and precautions in this manual before operation or performing maintenance.

The safety measures are specified in Chapter 1 Safety.

It is impossible to foresee every possible hazard and the safety instructions in this manual may not cover all safety prevention measures. Always ensure the safety of all personnel and protect the machine against any damage. If unable to confirm the safety of some operations, contact LGMG North America.

The operation & maintenance prevention measures listed in this manual are only applicable to the specified uses of this machine. LGMG North America assumes no responsibility if this machine is used beyond the range of this manual. The user and the operator shall be responsible for the safety of such operations.

Do not perform any operation forbidden in this manual in any situation.

The following signal words are applicable for identifying the level of safety information in this manual.

 **Danger:**

**An imminent situation, that if not avoided, will result in severe injuries or death. This is also applicable to situations that will cause serious machine damage, if not avoided.**

 **Warning:**

**A potentially dangerous situation, that if not avoided, may result in severe injuries or death. This is also applicable to situations that may cause serious machine damage, if not avoided.**

 **Notice:**

**A situation, that if not avoided, may result in minor or intermediate injury. This is also applicable to situations that may cause machine damage or shorten machine service life.**

## Chapter 1 Safety

## 1.1 Danger

Failure to disobey the instructions and safety rules in this manual may cause death or serious injuries.

## 1.2 Do not operate unless:

You have known and practiced the rules for safe operation of machine in the Operation Manual.

- 1) Avoid dangerous situations.
- 2) Always perform a pre-operation inspection.
- 3) Always perform the function test before operation.
- 4) Inspect workplace..
- 5) Use the machine only as per the design intent of the machine.
- 6) Read, understand and obey the instructions and safety rules of manufacturer-safe operation manual and machine label.
- 7) Read, understand and obey the safety rules for users and regulations of work site.
- 8) Read, understand and obey all applicable government laws and regulations.
- 9) You are properly trained to safely operator the machine.

## 1.3 Dangers Classification



### Classification of hazards

The meanings of symbols, color codes and characters of LGMG North America's products are as follows:

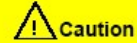
**Security warning symbol: are used for warning of potential personal injuries. Observe all safety instructions below these signs, to avoid situations causing potential personal injury and death.**



**Red: Signifies dangerous situations. If not avoided, will result in personal death or severe injury.**



**Orange: Signifies dangerous situations. If not avoided, may result in personal death or severe injury.**




**Yellow: Signifies dangerous situations. If not avoided, may result in minor or intermediate personal injury.**

Notice

**Blue: Signifies dangerous situations. If not avoided, property loss or damage can occur.**

## 1.4 Design Intent

The use of the machine is only limited to lift staff, tools and materials to the high work place.

 **Notice: It is forbidden to carry cargo.**

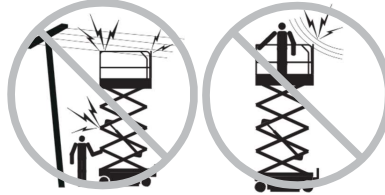
## 1.5 Maintenance of Safety Mark

- 1) Replace any lost or damaged safety mark to make the operator remember the safety at any time.
- 2) Wash the safety mark by mild soap and clean water.
- 3) Do not use solvent cleaner since it may damage the materials of the safety mark.

## 1.6 Danger of Electric Shock

- 1) The machine is not insulated, and does not provide the electrical shock protection when contacting or being closed to the wire.





Keep enough safety distance from the machine to the power supply line and electric machine according to the applicable government laws and regulations, and instructions of the following table.

Voltage	Required safety distance
0-300 V	No touching.
300V-50 KV	10ft
50 KV-200 KV	15ft
200 KV-350 KV	20ft
350 KV-500 KV	25ft
500 KV-750 KV	35ft
750 KV-1,000 KV	45ft

- 2) Beware of strong winds or gusts. Consider the factors such as platform movement, wire swing or droop.
- 3) If the machine contacts the wire with power, please be far away from the machine. Staff on the ground or platform is forbidden to contact or operate the machine before cutting off the power supply.
- 4) Do not operate the machine when there is lightning or storm.
- 5) Do not use the machine as the ground wire during welding.

### 1.7 Danger of Tip-Over

The personnel, equipment and material on the platform shall not exceed the maximum bearing capacity of the platform.

Model	SR3369E	
Maximum capacity	In door: 4people	Outdoor: 2 people
Maximum operating load of platform	454kg/1000bs	454kg/1000lbs
Recommended Load capacity of extension deck	140kg/310lbs	140kg/310lbs

Item	SR4069E	
Maximum capacity	In door: 3people	Outdoor: 2 people
Maximum operating load of platform	365kg/805lbs	365kg/805lbs
Recommended Load capacity of extension deck	140kg/310lbs	140kg/310lbs

### 1.8 Safety of Work Area

- 1) The platform can only be raised on a solid and flat level ground.



- 2) The speed shall not exceed 0.5km/h /0.31mph when the platform is raised.
- 3) The inclination alarm cannot be regarded as level indicator. When the machine is seriously inclined, the inclination alarm of the chassis and platform will ring.
- 4) If inclination alarm rings, lower the platform and move the machine to a solid level ground. If the inclination alarm rings when the platform is raised, the platform shall be lowered very carefully.
- 5) In case the machine is used outdoor, do not lift the platform when the wind speed is above 12.5m/s /28mph if the wind speed exceeds the limit after lifting the platform, please immediately lower the platform and stop the machine operation.
- 6) Do not operate the machine in strong winds or gusts. The surface area of the platform or load cannot be increased. Increase of the area exposed to the wind will reduce the stability of the machine.



- 7) In the raising state of the platform, the machine cannot run on uneven terrain and unstable surface, or in other dangerous situations, or near these areas.
- 8) In the stow state, the machine must run very carefully and reduce its speed when it runs on uneven terrain, unstable or smooth surface with stones, or the place near the tunnel, or the steep slope.
- 9) Do not use the platform control unit (PCU) to release the platform when the platform is tripped, stuck, or its normal operation is obstructed by other nearby matters. Before using the ground control unit (GCU) to release the platform, all staff must leave the platform.
- 10) Don't push or pull anything outside the platform.



- 11) Don't use the machine as a crane.
- 12) Don't place, fasten and fix or suspend loads on any component of the machine.



- 13) Don't place ladders or scaffolds within the platform or against any component of the machine.
- 14) Don't attach platforms to adjacent buildings.
- 15) Don't change or disable limit switch.
- 16) Don't tie platforms to adjacent components.

- 17) Don't place loads outside the platform guardrail.
- 18) Don't change or damage any component that may affect the safety and stability of the machine.
- 19) Don't replace key parts that affect machine stability with parts of different weights or specifications.
- 20) Don't amend or modify the mobile elevated work platform. Install additional equipment for placing tools or other materials on platforms, pedals or guardrails, which will increase platform weight and surface area or load.
- 21) Don't push machines or other objects on the platform.
- 22) Only transport tools and materials that are evenly distributed and can be safely moved by people on the platform.
- 23) Don't use machines on moving surfaces and vehicles.
- 24) Ensure that all tires are in good condition and nuts have been properly tightened.
- 25) Ambient temperature for machine operation is -20°C~40°C.
- 26) The allowable fluctuation of machine power supply voltage is ±10%.

## 1.9 Smashing and Pinching Hazards



- 1) Do not place hands in areas that could smash, pinch or cut them, and keep them out of the scissor arms.
- 2) Don't place your hands in a position where you may get pinched when folding the guardrail.
- 3) Grasp the platform guardrail all the time when removing the pins fixed on the guardrail. Don't let the platform guard railing fall off.
- 4) Please maintain good judgment and planning when operating the machine with controllers on the ground. Maintain a safe

distance among operators, machines and stationary objects.

unless the machine is in a stowed state.

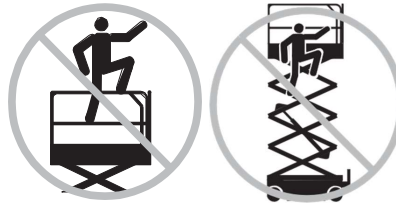
### 1.10 Hazards of Operating on Slopes

Don't drive the machine on slopes that exceed the ratings of machine slopes and side slopes. Slope ratings are applicable to machines in a rising state.

Model	SR3369E
Maximum allowable angle of operation (front and rear)	3°
Maximum allowable angle of operation (left and right)	2°
Model	SR4069E
Maximum allowable angle of operation (front and rear)	3°
Maximum allowable angle of operation (left and right)	2°

### 1.11 Falling Hazards

- 1) During operation, the operator on the platform must wear a full body safety device and be secured on approved rope anchorage points with safety strap hooks. Each rope anchorage point can only be tied with one hook.



- 2) Don't climb or stand on the platform guard railing. Stand firmly on the platform floor at all times.
- 3) Don't climb down from the platform when the platform is lifted.
- 4) Keep the platform floor free from debris.
- 5) Please close the entrance door before operation.
- 6) Don't operate the machine if guard railings are not installed properly or safe operation cannot be guaranteed at the entrance door.
- 7) Don't move in and out of the platform

### 1.12 Collision Hazards



- 1) Pay attention to range of visibility and blind spots when starting or manipulating the machine.
- 2) Pay attention to the position of the extension platform when moving the machine.
- 3) Check the operation areas to avoid obstacles overhead or other possible hazards.
- 4) Be careful of extrusion hazards when grasping the platform guard railing.
- 5) Users must comply with service regulations of personal protection equipment as required by the employer, in workplace and stipulated in government laws and regulations.
- 6) Observe and use the direction arrows of driving and steering functions on the PCU and platform labels when driving and steering.
- 7) Don't operate the machine in the path of an overhead crane or high-altitude machinery unless the crane controller has been locked and/or precautions have been taken to prevent any potential collision.
- 8) Prohibit dangerous driving or play when the machine is operated.
- 9) It is allowed to lower the platform when there are no staff and obstacles in the area under the platform.



- 10) Restrict driving speed according to ground condition, jamming degree, gradient, staff position and any other factors that may cause collision.
- 11) Recommend the operator to wear qualified

safety helmet when the machine is operated.

### 1.13 Hazard of Component Damage

- 1) Do not use the machine as the ground wire during welding.
- 2) Do not use the machine in the place where there may be magnetic field.

### 1.14 Hazard of Explosion and Fire

- 1) Do not use the machine in hazardous place or the place where there may be inflammable or explosive gas or particles.
- 2) It is allowed to refuel the machine or charge the battery only in the open and well-ventilated places far away from sparks, flames, burning cigarettes, etc.
- 3) Do not operate or charge the machine at the location with possible inflammable or explosive gas or particles.

### 1.15 Hazards of Damaged Machine

- 1) Do not use a damaged or faulted machine.
- 2) Be sure to perform a thorough check before operation of machine and test all functions before each shift. The damaged or faulted machine shall be marked immediately, and the operation shall be stopped.
- 3) Ensure that all maintenance operations have been performed as specified in this manual.
- 4) Ensure that all labeling positions are proper and easy to be identified.
- 5) Ensure that this manual is stored in document box on the platform.

### 1.16 Hazard of Bodily Injuries

- 1) Do not operate the machine with hydraulic oil leaks. Leakage of hydraulic oil may penetrate or burn the skin.
- 2) Always operate the machine in a well-ventilated place to avoid poisoning of carbon monoxide.
- 3) During pre-operation inspection contact with any component under the cover, it may cause serious injuries. Qualified are only allowed to overhaul the compartment. Suggestion: Only when the check before

operation is performed, can operator overhaul the compartment. During operation, all compartments must be closed and locked.

### 1.17 Battery Safety

#### Combustion Hazard

- 1) The battery contains acidic substances. Be sure to wear protective clothing and protective glasses when the battery is used.
- 2) Avoid overflow of acidic substance or contact with it in the battery. Use soda and water to neutralize the overflowing acidic substances in the battery
- 3) Do not expose the battery or charger to water during charging.
- 4) When the vehicle stops for a long time, it is necessary to turn off the main power switch.

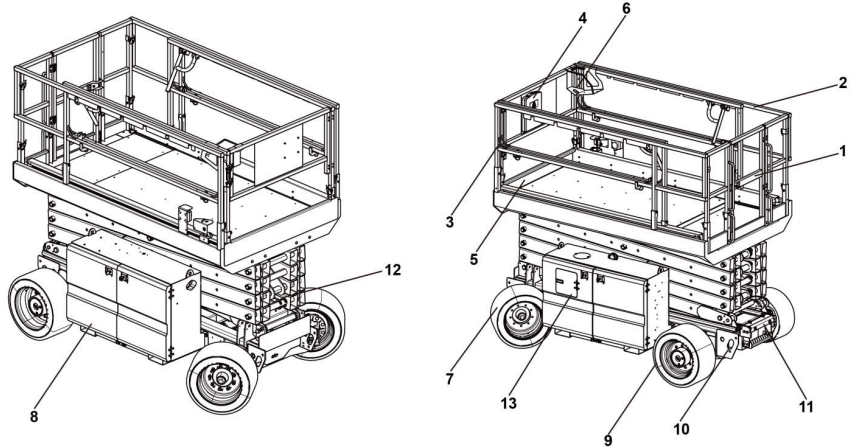
#### Explosion Hazard

- 1) Prohibit sparks, flames, and lighted cigarettes to be near the battery, because the battery can release explosive gas.
- 2) Do not use tools that may cause sparks to contact battery terminal or cable clamp.

#### Component damage hazard

Do not charge the battery system above 48 vdc.

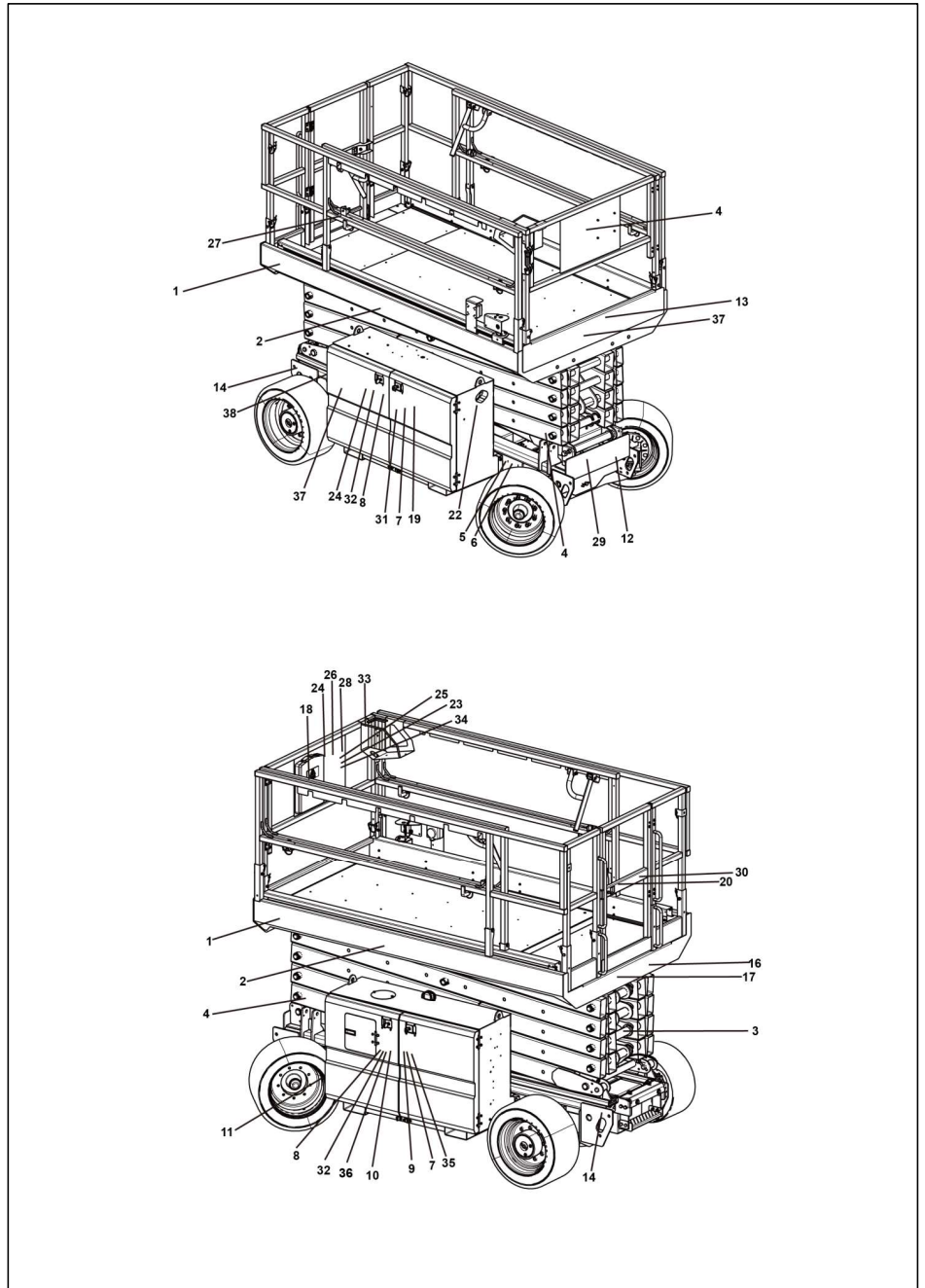
## Chapter 2 Legend



No.	Name	No.	Name
1	Platform entrance door	8	Battery side
2	Platform guide rail	9	Fixed axle
3	Lanyard anchorage point	10	Transport tie point
4	File box	11	Entrance ladder
5	Extension platform	12	Scissor Stack Arm
6	Platform control unit	13	Lower control box
7	Steering axle		

## Chapter 3 Label


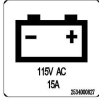
Decal





Decal

1-2534000218	2-2534001902/869	3-2534000992	4-2534000973	5-2534000102	6-2534001892
	<b>SR3369E</b> <b>SR4069E</b>	Safety Arm	<b>DANGER</b> Crushing hazard Caution: Do not touch or interfere with safety devices. Please refer to the manual.		<b>Wheel load</b> 3850lbs/1750kg
7-2534000982	8-2534000977	9-2534000167	10-2534000787	11-2534001126	12-2534001173
		<b>WARNING</b> Hot surface. Discharge prior to assembly. Use only nitrogen or other inert gases per charge protocol. Do not touch, lift and seal the accumulator. Keep it away from the hot source or sparks.	<b>Emergency Lowering</b>		
13-2534000024	14-2831990027	15-2534001377	16-2534001107	17-2534001905/889	18-2534000986
			<b>INSTRUCTIONS</b> Maximum allowable side force on platform: 95 lbf/420 N Maximum allowable wind speed: 0 m/sec (0 mph) Maximum number of occupants: 2		
19-2534001546	20-2534001762	21-2534001904/890	22-2534001742	23-2534001016	24-2534000984
	<b>NON-INSULATED</b>	<b>INSTRUCTIONS</b> Maximum allowable side force on platform: 90 lbf/ 400 N (Outdoor) 90 lbf/ 400 N (Indoor) Maximum allowable wind speed: 0.5 m/sec (2 mph) Maximum number of occupants: 2 (Outdoor) 4 (Indoor)	<b>Battery disconnect switch</b>	<b>INSTRUCTIONS</b> Annual inspection required. See maintenance manual for inspection report.	
25-2534000033	26-2534000983	27-2534000017	28-2534000985	29-2534000987	30-2534000997
31-2534000998	32-2534000974	33-2534000975	34-2534000976	35-2534000978	36-2534000980
		<b>Platform Controls Location</b>	<b>If Operator's Manual is missing contact local LGM distributor or LGM Chile/Peru</b>		

37-2534001525	38-2534000827				
					

**Decal List**

Code	Name	Code	Name
1	Company Logo	20	No-insulated sign
2	Model identification	21	Maximum manual power
3	Forklift safety arm sign	22	Side door identification
4	Stay away from machine sign	23	Annual inspection instruction
5	Direction indicator sign	24	Safety rules description sign
6	Wheel load capacity sign	25	Arrow indication sign
7	Electric shock hazard	26	Notices indication
8	Pressure hazard identification	27	Lanyard Anchorage Point
9	Accumulator signs	28	Reduce platform warning sign
10	Emergency lowering mark	29	Tilting hazard sign
11	Whole machine nameplate	30	Operation sign
12	Identification of transport securing parts	31	Prohibition of sparks sign
13	Warning line	32	Attention in overhaul
14	Hanger sign	33	Suspension position sign
15	Oil position sign	34	Description of file loss
16	Maximum manual force sign	35	Danger description
17	Platform safety warning sign	36	Attention mark of skin infraction
18	Instructions sign	37	Company Logo
19	Explosion burn warning sign	38	Battery charging signs

## Chapter 4 Specification

**Specification**
**SR3369E machine parameters**
**Machine performance parameters**

Item	Parameter	Item	Parameter
Rated load (kg/lbs)	454/1000	Lifting speed (S)	39±4
Recommended Load capacity of extension deck(kg/lbs)	140/310	Lowering speed (S)	46±4
Total Weight(kg/lbs)	4350/9570	Maximum manual force	indoor (N) 400 outdoor (N) 400
		Maximum number of people (in door)	Maximum theoretical gradeability (no-load & retracted) 35%
Maximum number of people (out door)	2		
Maximum working height (m/ft)	11.7/38.4	Maximum allowable working angle (front and rear)	3°
Maximum platform height (m/ft)	9.7/31.8	Maximum allowable working angle (left and right)	2°
Minimum turning radius (m/ft)	4.75/15.58	Braking distance (no-load & retracted) (m/ft)	1.5/4.9
Machine travel speed (retracted) (km/h/mpH)	6.1/3.78	Maximum allowable wind speed (m/s/mpH)	12.5/28
Machine travel speed (lifted) (km/h/mpH)	0.5/0.31	Drive model	Rear-wheel drive
			Front wheel steering

**Main dimensions**

Item	Parameter	Item	Parameter
Machine length (m/ft)	3.76/12.33	Extended platform size (m/ft)	1.52/4.99
Machine width (m/ft)	1.79/5.87	Wheelbase (front/rear) (mm/in)	2290/75.1
Machine height - platform guide rail unfolded (m/ft)	2.55/8.37	Tread(mm/in)	1507/49.4
Machine height - platform guide rail folded (m/ft)	1.89/6.2	Ground clearance (lifted) (mm/in)	230/9.06
Main platform size (length × width) (m/ft)	2.79×1.60	Tire size (diameter × width) (mm/in)	Φ663×283
	9.15×5.25		Φ26.1×12

**Drive system**

Item		Specification/Content
Traveling reducer	Rated output torque (N*m)	3500
	Speed ratio	57.49:1

**Hydraulic system**

Item		Specification/Content
	Model	Open system

Function system	Pump displacement (ml/r)		4.5
	Lifting system	Max working pressure (Mpa/psi)	19.7/2857
	Steering system	Max working pressure (Mpa/psi)	10.3/1494

**Electrical System**

Item		Specification/Content
Drive motor	Rated Voltage (V)	29
	Rated current (A)	125
	Rated power (kW)	3.56
	Rated speed (r/min)	3400
Lifting motor	Rated Voltage (V)	48
	Rated current (A)	330
	Rated power (kW)	8.9
	Rated speed (r/min)	3290
Battery	Output voltage (V)	6
	Capacity (Ah)	315 (20 hours)
Charger	Nominal AC input voltage (V)	85-265 AC
	Maximum AC input current (A)	15
	Nominal DC output voltage (V)	48
	Maximum DC output current (A)	35
Control system	Voltage (V)	24

**Oil capacity**

Item	Parameter
Hydraulic oil (L)	70
Traveling reducer gear oil(L)	0.68*2

**Note: The corresponding hydraulic oil should be selected according to the environment and temperature when adding hydraulic oil. Refer to the following:**

Item	Condition	Oil viscosity brand	Remarks
Hydraulic oil	The lowest temperature >-9℃	L-HM 46 antiwear hydraulic oil	Recommend ed chevron brand
	-33℃ < The lowest temperature ≤ -9℃	L-HV 46 low temperature hydraulic oil	
	-39℃ < The lowest temperature ≤ -33℃	L-HS 46 Ultralow temperature	

		hydraulic oil	
	The lowest temperature $\leq -39^{\circ}\text{C}$	10# Aviation hydraulic oil	
Driving Reducer oil	$30^{\circ}\text{C} < \text{The lowest temperature}$	85W/140	API GL-5
	$-10^{\circ}\text{C} < \text{The lowest temperature} < 30^{\circ}\text{C}$	85W/90	
	$-30^{\circ}\text{C} < \text{The lowest temperature} < -10^{\circ}\text{C}$	80W/90	
	The lowest temperature $< -30^{\circ}\text{C}$	75W	

**Specification**

**SR4069E machine parameters**

**Machine performance parameters**

Item	Parameter	Item	Parameter	
Rated load (kg/lbs)	365/805	Lifting speed (S)	61±4	
Recommended Load capacity of extension deck(kg/lbs)	140/310	Lowering speed (S)	55±4	
Total weight (kg/lbs)	5100/11245	Maximum manual force	indoor (N)	400
			outdoor (N)	400
Maximum number of people (in door)	3	Maximum theoretical gradeability (no-load & retracted)	35%	
Maximum number of people (out door)	2			
Maximum working height (m/ft)	13.9/45.6	Maximum allowable working angle (front and rear)	3°	
Maximum platform height (m/ft)	11.9/39	Maximum allowable working angle (left and right)	2°	
Minimum turning radius (m/ft)	4.75/15.58	Braking distance (no-load & retracted) (m/ft)	1.5/4.9	
Machine travel speed (retracted) (km/h/mpH)	6.1/3.78	Maximum allowable wind speed (m/s/mpH)	12.5/28	
Machine travel speed (lifted) (km/h/mpH)	0.5/0.31	Drive model	Rear-wheel drive	
			Front wheel steering	

**Main dimensions**

Item	Parameter	Item	Parameter
Machine length (m/ft)	3.76/12.33	Extended platform size (m/ft)	1.52/4.99
Machine width (m/ft)	1.79/5.87	Wheelbase (front/rear) (mm/in)	2290/75.1
Machine height - platform guide rail unfolded (m/ft)	2.7/8.86	Tread(mm/in)	1507/49.4
Machine height - platform guide rail folded (m/ft)	2.04/6.69	Ground clearance (lifted) (mm/in)	230/9.06
Main platform size (length × width) (m/ft)	2.79×1.60	Tire size (diameter × width) (mm/in)	Φ 663×283
	9.15×5.25		Φ 26.1×12

**Drive system**

Item		Specification/Content
Traveling reducer	Rated output torque (N*m)	3500
	Speed ratio	57.49:1

**Hydraulic system**

Item	Specification/Content



Function system	Model		Open system
	Pump displacement (ml/r)		4.5
	Lifting system	Max working pressure (Mpa/psi)	19.7/2857
	Steering system	Max working pressure (Mpa/psi)	10.3/1494

**Electrical System**

	Item	Specification/Content
Drive motor	Rated Voltage (V)	29
	Rated current (A)	125
	Rated power (kW)	3.56
	Rated speed (r/min)	3400
Lifting motor	Rated Voltage (V)	48
	Rated current (A)	330
	Rated power (kW)	8.9
	Rated speed (r/min)	3290
Battery	Output voltage (V)	6
	Capacity (Ah)	315 (20 hours)
Charger	Nominal AC input voltage (V)	85-265 AC
	Maximum AC input current (A)	15
	Nominal DC output voltage (V)	48
	Maximum DC output current (A)	35
Control system	Voltage (V)	24

**Oil capacity**

Item	Parameter
Hydraulic oil (L)	70
Traveling reducer gear oil(L)	0.68*2

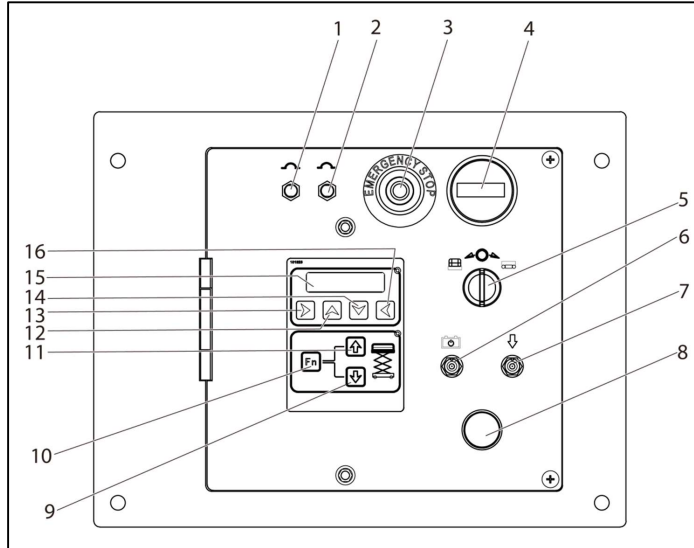
**Note: The corresponding hydraulic oil should be selected according to the environment and temperature when adding hydraulic oil. Refer to the following:**

Item	Condition	Oil viscosity brand	Remarks
Hydraulic oil(L/gal)	The lowest temperature > -9℃	L-HM 46 antiwear hydraulic oil	Recommended chevron brand
	-33℃ < The lowest temperature ≤ -9℃	L-HV 46 low temperature hydraulic oil	
	-39℃ < The lowest temperature ≤	L-HS 46	

	-33°C	Ultralow temperature hydraulic oil	
	The lowest temperature ≤ -39°C	10# Aviation hydraulic oil	
Driving Reducer oil(L/gal)	30° C < The lowest temperature	85W/140	SAE API 1560 GL-5
	-10° C < The lowest temperature < 30° C	85W/90	
	-30° C < The lowest temperature < -10° C	80W/90	
	The lowest temperature < -30° C	75W	

## Chapter 5 Control Unit

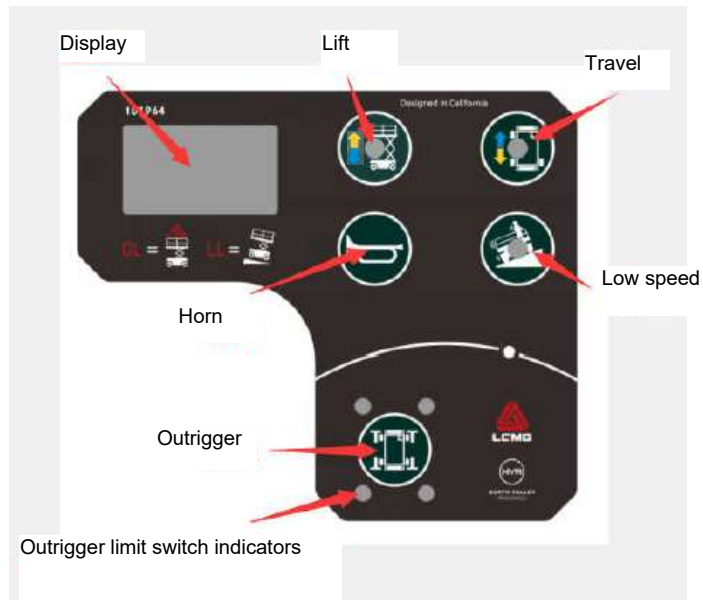
### 5.1 Ground Control Unit (GCU)



No.	Name	Operation function description
1	Fuse	
2	Fuse	
3	Emergency stop switch	Press the emergency stop switch to stop all functions; pull the emergency stop switch to operate the machine.
4	Timer	
5	Key switch	Turn the key switch to the platform position and the platform control unit will operate; turn the key switch to the neutral position and the machine will stop; turn the key switch to the chassis position and the ground control unit will operate.
6	Function enable button switch for emergency lowering	Press this button to activate emergency lowering
7	Emergency lowering button switch	Press this button to activate emergency lowering
8	Buzzer	
9	Platform lowering button	Press this button to lower the platform
10	Lift function enable button	Press and hold this button to activate the lift function
11	Platform lift button	Press this button to lift the platform
12	Menu up button	
13	Menu exit button	

14	Menu down button	
15	Display	
16	Menu entry button	

### 5.2 Platform Control Unit (PCU)



## 5.3 Basic operations

### Main power source and safety

- 1) The key switch supplies power to the emergency stop switch and the selector switch on the chassis or platform. The power will be cut off when the key switch is in the middle position, and the machine remains in the selected operating mode when the key is removed at any of the three positions.
- 2) Both the chassis and the platform control unit are provided with emergency stop switches, which are connected in series and must be pulled out before normal operation. Pressing any of the emergency stop switches on the chassis or the platform will cut off the power. The safety function is based on a complete circuit, which will be disconnected after pressing any emergency stop switch.
- 3) The enable switch on the handle must be pressed before operating the traveling, steering, lifting or lowering function.

### Lifting and safety

- 1) The tilt switch on the chassis indicates if the chassis is level.
- 2) The load may not exceed the rated load of the machine of the model.
- 3) The platform can be lifted or lowered from two positions: on the chassis or on the platform. The key switch is used to select from which position to operate.
- 4) At the chassis position, only the lifting or lowering of the platform can be operated by the ECU button.
- 5) At the platform position, the operator on the platform is allowed to select the lift mode. The lifting/lowering and speed can be controlled by moving the handle. The platform will be lifted when moving the handle backward and will be lowered when moving the handle forward.
- 6) If there is a load sensing option among the function options, the electronic control unit (ECU) on the chassis will sound an alarm and prohibit the operation when the platform is overloaded.
- 7) If there is a fault in the lifting or lowering valve, an error code will be displayed on the

PCU's LED and the ECU's LCD.

### Traveling and safety

- 1) Traveling can only be controlled by the handle on the PCU, and the key switch should be set at the platform position.
- 2) If you want the machine to travel, you must select the travel mode and press the enable switch on the handle.
- 3) Move the handle forward and backward to control the travel direction and speed.
- 4) You can select "High speed" or "Low speed" only when the platform is in the retracted state. However, when the platform is in the lifted state (beyond the lower limit), the machine can only work at the "speed after lifting".
- 5) If the platform is overloaded, no lifting operation will be allowed.

### Steering and safety

- 1) The key switch must be set at the platform position.
- 2) Steering can only be controlled by the left and right buttons on the top of the handle on the PCU.
- 3) If you want to turn the machine, you must select the travel mode and press the enable switch on the handle.

### Other operations

- 1) When lifting or traveling, the timer on the chassis will work.
- 2) The left two-digit LED on the PCU is used to display the battery status and the right two-digit LED is used to display the system status or error code.

### Operation at low battery level

- 1) The battery level status is determined by the operator setting the battery level and the battery level bars are displayed on the PCU.
- 2) Normal traveling will be allowed when there are two or more battery level bars.
- 3) The traveling speed will be decelerated when there is one battery level bar

Display on PCU and ECU

Operation mode	PCU display	ECU display
Powered on but not moved	Battery level	NVR.Inc PCU System Ready
Travel forward or backward	Battery level	NVR.Inc PCU System Ready
Lift the platform	Battery level + machine mode code	Machine mode code
Lower the platform	Battery level + software version	Software version
An error occurred	Battery level + error code	Error code
Chassis control mode	CH	NVR.Inc Chassis System Ready

**System troubleshooting and fault code**

In the error alarm state, the alarm code will flash once per second on the PCU display.

Table: Alarm code

Display	Description	Machine response
01	System initialization error	Stop all actions
02	System communication error	Stop all actions
03	The machine type is not set for the first use	Stop all actions
04	The set code is invalid	Stop all actions
05	Communication interruption error	Stop all actions
12	The chassis up or down button is enabled incorrectly when starting	Stop all chassis controls
13	Limit switch redundancy error	Stop lifting and driving
14	Communication failure with ZAPI controller 1	Stop lifting and driving
15	Communication failure with ZAPI controller 2	Stop lifting and driving
16	Outrigger 1 solenoid coil failure	Stop lifting and driving
17	Outrigger 2 solenoid valve coil failure	Stop lifting and driving
19	Outrigger 3 solenoid valve coil failure	Stop lifting and driving
27	Proportional solenoid valve coil error	Stop lifting and driving
31	Pressure sensor error	Stop all actions
32	Angle sensor error	Stop all actions
33	Outrigger 4 solenoid valve coil failure	Stop lifting and driving
34	Perform emergency drop 1S after overload alarm	Save fault code only
35	No load full load calibration data error	Show alarm only
42	The platform left turn button is pressed incorrectly when starting.	Show alarm only
43	The platform right turn button is pressed incorrectly when starting.	Show alarm only
44	ZAPI controller failure	Show fault only

46	The platform handle enable switch button is pressed incorrectly when starting.	Stop platform control
47	The platform handle is not in the neutral position when starting	The speed drops to the speed after lifting
49	Platform leg button pressed incorrectly during startup	Stop platform controls
50	Left bridge floating coil error	Stop lifting and driving
51	Right bridge floating coil error	Stop lifting and driving
52	Forward coil error	Stop lifting and driving
53	Reversing coil error	Stop lifting and driving
□54□	Lifting up coil error	Stop lifting and driving
56	Right turn coil error	Stop lifting and driving
57	Left turn coil error	Stop lifting and driving
58	Accumulator pressure sensor error	Stop lifting and driving
59	Floating enable coil error	Stop lifting and driving
68	Low voltage alarm	Stop all actions
80	Above 80% load alarm	Alarm only
90	Above 90% load alarm	Alarm only
93	Horizontal calibration error	Stop all actions
99	Above 99% load alarm	Alarm only
OL	Platform overload alarm	Stop all actions
LL	The machine is tilted beyond the safety limit	Stop lifting and driving

### Troubleshooting guidance

Display	description
01	System initialization error: ECU may be faulty, replace ECU
02	System communication error: check the connection of communication lines and other cables. If the fault still cannot be solved, please replace PCU or ECU
03	The machine type is not set for the first use: set the appropriate machine type
04	The selected machine type is not in the scope of application, please choose again according to the model
05	Communication interruption error: check ECU and PCU wiring
12	Wrong pressing of chassis up or down button during startup: Check if the up or down button of the ECU mask is damaged
13	Limit switch redundancy error: check 4 outrigger limit switches and lower limit switches, check switch wiring
14	Communication failure with ZAPI controller 1: check the wiring between ZAPI controller 1 and ECU
15	Communication failure with ZAPI controller 2: check the wiring between ZAPI controller 2 and ECU
16	Outrigger 1 solenoid valve coil failure: Check the coil connections to make sure there are no problems. If there is no problem, check the coil itself for short circuit or open circuit.
17	Outrigger 2 solenoid valve coil failure: Check the coil connection to make sure there is no problem. If there is no problem, check the coil itself for short circuit or open circuit.



19	Outrigger 3 solenoid valve coil failure: Check the coil connection to make sure there is no problem. If there is no problem, check the coil itself for short circuit or open circuit.
27	Check that the proportional valve is wired correctly.
31	Pressure sensor error: Check the sensor wiring and the sensor itself. You can also check to make sure that the correct machine option with overload detection is selected.
32	Angle sensor error: Check the sensor wiring and the sensor itself. You can also check to make sure that the correct machine option with overload detection is selected.
33	Outrigger 4 solenoid valve coil failure: Check the coil connection to make sure there is no problem. If there is no problem, check the coil itself for short circuit or open circuit.
34	Perform emergency descending 1S after overload alarm: only record emergency descending action
35	Check the calibration process
42	When starting, the platform left turn button was pressed incorrectly: make sure nothing is holding down the button on the handle. If not, consider replacing the handle or PCU.
43	When starting, the platform turn right button was pressed incorrectly: make sure that nothing is holding down the button on the handle. If not, consider replacing the handle or PCU.
44	ZAPI controller failure: check ZAPI controller and its wiring
46	When starting, the platform handle enable switch was pressed incorrectly: Make sure that nothing is holding down the enable switch on the handle. If not, consider replacing the handle or PCU.
47	When starting, the platform handle is not in the center position error: Make sure the handle is in the center position. Check the median parameter setting. If there is no problem, consider replacing the handle or PCU.
49	Platform leg button pressed incorrectly during startup: Make sure that nothing is pressing the button on the handle. If not, consider replacing the handle or PCU.
50	Left bridge floating coil error: Check the connection of the coil to make sure there is no problem. If there is no problem, whether the scissor coil itself is short-circuited or open-circuited.
51	Right bridge floating coil error: Check the coil connection to make sure there is no problem. If there is no problem, check the coil itself for short circuit or open circuit.
□54□	Lifting coil error: Check the connection of the coil to make sure there is no problem. If there is no problem, check the coil itself for short circuit or open circuit.
56	Right turn coil error: Check the connection of the coil to make sure there is no problem. If there is no problem, check the coil itself for short circuit or open circuit.
57	Left turn coil error: Check the connection of the coil to make sure there is no problem. If there is no problem, check the coil itself for short circuit or open circuit.
58	Accumulator pressure sensor error: Check the sensor wiring and the sensor itself.
59	Floating enable coil error: Confirm that there is no problem. If there is no problem, check the coil itself for short circuit or open circuit.
68	Low voltage alarm: check whether the vehicle voltage is too low and whether it needs to be charged
80	More than 80% load alarm: The load limit is approaching on the platform. Consider not increasing the load.
90	Over 90% load alarm: The load limit is approaching on the platform. Consider not increasing the load.
93	Horizontal calibration error: horizontal calibration by key
99	Over 99% load alarm: The load limit has been reached on the platform. Do not increase the load.
OL	Platform overload error: Remove excessive load immediately.
LL	Machine tilt exceeds safety limit error: If the machine is tilted, find a way to bring it back to level. If the machine is level, check the wiring of the level sensor or the sensor itself.

## Chapter 6 Pre-operation Inspection

## 6.1 No operation will be allowed before:

You have understood and practiced the principles of safe operation of the machine in this manual.

- 1) Avoid dangerous situations.
- 2) Always perform a pre-operation inspection.
- 3) You should understand pre-operation inspection before proceeding with the next step.
- 4) Inspect the workplace.
- 5) Always perform pre-operation functional tests.
- 6) Use the machine only for the design purpose.


## 6.2 Basic principles

- 1) It is the operator's responsibility to perform pre-operation inspection and routine maintenance.
- 2) Pre-operation inspection is a very intuitive process that is performed by the operator before each shift. The purpose of the inspection is to determine if there is a significant problem with the machine before the operator performs a functional test.
- 3) Pre-operation inspection can also be used to determine if a routine maintenance procedure is necessary. The operator can only perform the routine maintenance items specified in this manual.
- 4) See the checklist on the next page and check each item and position for any parts change, damage, looseness or missing.
- 5) Machines that have been damaged or modified may not be used. In the event of any damage or any unauthorized changes different from the normal status, the machine should be marked and prohibited from putting into operation.
- 6) Only qualified/authorized technicians are allowed to maintain the machine according to the manufacturer's instructions. After the maintenance is completed, the operator must perform a pre-operation inspection again before continuing the functional test.
- 7) Regular maintenance inspections should be performed by qualified/authorized technicians according to the manufacturer's

specifications and the requirements listed in the responsibilities manual.

## 6.3 Pre-operation inspection

- 1) Make sure the manual is complete, easy to read, and stored in a file box on the platform.
- 2) Make sure all labels are clear, legible, and in the right place. See the label section.
- 3) Check hydraulic oil for leakage and appropriate oil level. Please fill the oil as needed. See the "Maintenance" section.
- 4) Check the battery fluid for leakage and appropriate liquid level. Add the distilled water as needed. See the "Maintenance" section
- 5) Check the following parts or areas for damage, improper installation, parts missing or unauthorized changes:
  - Electrical components, wires and cables
  - Hydraulic hoses, joints, valve blocks, hydraulic cylinders
  - Wear pad
  - Tire and wheel
  - Limit switch, alarm and horn
  - Nuts, bolts and other fasteners
  - Platform extension
  - Platform entry port
  - Indicators and alarms
  - Safety arm
  - Pins and fasteners
  - Platform control handle
- 6) Check the entire machine for:
  - Crack in the weld or structural member
  - Dent or damage to the machine
  - Make sure all structural members and other critical components are complete, and all associated fasteners and pins are in the right position and tightened
  - The platform guide rail has been installed, the platform guide rail bolts are in place and the bolts are properly tightened.

 **Caution: If the platform must be lifted to check the machine, make sure the safety arm is in the right position. See the "Operating Instruction" section.**

## **Chapter 7 Workplace Inspection**

## 7.1 Do not operate unless

You have known and practiced the rules for safe operation of machine in the Operation Manual.

- 1) Avoid the dangers.
- 2) Always check before operation.
- 3) Inspect the work place.
- 4) Know and understand the workplace inspection and then perform the next operation.
- 5) Always perform the function test before operation.
- 6) Use the machine only as per the design intent of the machine.

## 7.2 Basic Principles

- 1) The workplace inspection helps operators determine whether the workplace ensures safe operation of machine. The operator shall carry out the work before moving the machine to the workplace.
- 2) Knowing and remembering the hazards in the workplace is the responsibility of the operator, who can be aware of and avoid them when moving, installing, and operating machines.

## 7.3 Workplace inspection

Beware and avoid the following dangerous situations

- 1) Steep slopes or caves
- 2) Protrusions, ground obstacles or debris
- 3) Declining surface
- 4) Unstable or smooth surface
- 5) Aerial obstacles and high voltage lines
- 6) Hazardous area
- 7) Surface support insufficient to withstand the full load applied by the machine
- 8) Wind and weather conditions
- 9) There are unauthorized personnel
- 10) Other possible unsafe conditions

## Chapter 8 Functional Test

## 8.1 No operation will be allowed before

You have understood and practiced the principles of safe operation of the machine in this manual.

- 1) Avoid dangerous situations.
- 2) Always perform pre-operation checks
- 3) Inspect the workplace.
- 4) Always perform pre-operation functional tests.

You should understand the functional test and inspection before proceeding with the next step.

- 5) Use the machine only for the design purpose.

## 8.2 Basic principles

- 1) Functional tests are used to detect faults before operating the machine. The operator must follow the steps to test all the functions of the machine.
- 2) Do not use a malfunctioning machine. If a fault is found, the machine must be marked and stopped.
- 3) Only qualified/authorized technicians are allowed to maintain the machine according to the manufacturer's instructions.
- 4) After the maintenance is completed, the operator must perform the pre-operation inspection and functional test again before operating the machine.

## 8.3 Functional test

- 1) Choose a test place that is solid, level and free of obstacles. Make sure the battery has been connected.

## 8.4 On the ground control unit

- 1) Pull the red emergency stop button on the platform and ground to the "ON" position.
- 2) Turn the key switch to the ground control unit.
- 3) Observe the LCD display window on the ground control unit.

Result: The LCD screen will light up and the operator interface will be displayed.

### Test the emergency stop function

- 1) Push the ground red emergency stop button inward to the "OFF" position.

Result: The machine will be stopped and all functions will not work.

- 2) Pull the red emergency stop button to the "ON" position.

### Test the lifting/lowering function

The audible alarms on the machine and the standard horn are from the same central alarm. The horn will send a continuous sound. The lowering alarm will sound 60 times per minute. The alarm that sounds when the machine is tilted sounds 180 times per minute.

- 1) Do not press the lifting function enable button. Press and hold the platform lifting or lowering button.

Result: The platform should not be lifted or lowered.

- 2) Do not press the platform lifting or lowering button.

- 3) Press the lifting function enable button.

Result: The lifting function should not be operated.

- 4) Press and hold the lifting function enable button and press the platform lifting button.

Result: The platform should be lifted.

- 5) Press and hold the lift function enable button and press the platform lowering button.

Result: The platform should be lowered. The lowering alarm should sound when the platform is lowered.

### Test the emergency lowering function

- 1) Press and hold the lift function enable button while lifting the platform by approximately 0.6m/1.97ft.

- 2) Push the ground red "Emergency Stop" button inward to the "OFF" position.

- 3) Pull the red "Emergency Stop" button to the "ON" position.

- 4) Move and hold the emergency lowering function enable button switch.

- 5) Move and hold the emergency lowering button switch.

Result: The platform should be lowered. The lowering alarm will not sound.



## 8.5 Test on the platform control unit

### Test the emergency stop function

- 1) Push the platform red "Emergency Stop" button to the "OFF" position.

Result: The machine should be stopped and all functions will not work.

- 2) Pull out the red "Emergency Stop" button to the "ON" position.

Result: The platform control unit should display the operator interface and can work normally.

### Test the horn

- 1) Press the horn button.
- 2) Result: The horn will sound.

### Test the traveling function enable button

- 1) Do not press the traveling function enable button on the control handle.
- 2) Slowly move the control handle in the direction indicated by the blue arrow and slowly move the control handle in the direction indicated by the yellow arrow.

Result: All functions will not work.

### Test the lifting/lowering function and enable the function

- 1) Start the machine.
- 2) In the direction indicated by the blue and yellow arrows, activate the up/down control handle.

Result: The platform should not be lifted or lowered.


- 3) Press the lifting function enable button.
- 4) Move the lifting/lowering control handle in the downward direction.

Result: The platform should be lifted and the lifting alarm should sound.

- 5) Press the lifting function enable button.
- 6) Move the lifting/lowering control handle in the upward direction.

Result: The platform should be lowered. When the platform is lowered, the lowering alarm should sound.

### Test the steering function

 **Caution: When performing the steering and drive function tests, stand in the middle of the platform and face the steering end of the machine.**

- 1) Press and hold the enable switch on the control handle.
- 2) Press the thumb rocker switch on the top of the control handle in the direction indicated by the blue triangle on the control panel.

Result: The steering wheel should be turned in the direction indicated by the blue triangle on the control panel.

- 3) Press the thumb rocker switch in the direction indicated by the yellow triangle on the control panel.

Result: The steering wheel should be rotated in the direction indicated by the yellow triangle on the control panel.


### Test the drive and brake functions

- 1) Press and hold the enable switch on the control handle.
- 2) Slowly move the control handle in the direction indicated by the blue arrow on the control panel until the machine begins to move, and then reset the handle to the center position.

Result: The machine should move in the direction indicated by the blue arrow on the control panel and then stop suddenly.

- 3) Press and hold the enable switch on the control handle.
- 4) Slowly move the control handle in the direction indicated by the yellow arrow on the control panel until the machine begins to move, and then reset the handle to the center position.

Result: The machine should move in the direction indicated by the yellow arrow on the control panel and then stop suddenly.

 **Caution: The brake must be able to stop the machine stably at any slope the machine can climb.**

### Test the lifting drive speed

- 1) Press and hold the lifting function enable button and press the platform lowering

- button to lift the platform to a height of approximately 2.4 m/7.9ft from the ground.
- 2) Press and hold the enable switch on the control handle.
  - 3) Slowly move the control handle to the fully driven position.

Result: The maximum drive speed that can be achieved when the platform is lifted should not exceed 0.5Km/h/0.31mph.

If the maximum drive speed exceeds 0.5Km/h/0.31mph when the platform is lifted, mark the machine immediately and stop it.

## 8.6 Test the Tilt Sensor Operation



**Notice: Perform this test from the ground with the platform controller. Do not stand in the platform.**

- 1) Fully lower the platform.
- 2) Place a 2x4(in) or similar piece of wood under both wheels on one side and drive the machine up onto them.
- 3) Raise the platform to a certain height.
- 4) The platform should stop and the tilt alarm will sound at 180 beeps per minute. The platform controls LED readout should display LL and the ground controls LCD should display LL. (Machine Tilted)
- 5) Press the drive function button.
- 6) Press and hold the function enable switch on the control handle.
- 7) Move the control handle in the direction indicated by the blue arrow, then move the control handle in the direction indicated by the yellow arrow.
- 8) Result: The drive function should not work in either direction.
- 9) Lower the platform and remove both pieces of wood.

## Chapter 9 Operation Instruction

## 9.1 Do not operate unless

You have understood and practiced the principles of safe operation of the machine in this manual.

- 1) Avoid dangerous situations.
- 2) Always perform pre-operation checks
- 3) Inspect the workplace.
- 4) Always perform pre-operation functional tests.
- 5) Use the machine only for the design purpose.

## 9.2 Basic principles

- 1) This machine is an electric drive lifting device that is equipped with a working platform on the scissor mechanism. The vibration generated when the machine is working will not be dangerous to the operator who is standing on the work platform. This machine can be used to load workers and their portable tools to a certain height from the ground, or to reach a certain working area above the machine or equipment.
- 2) The "Operating Instruction" section provides specific instructions for all aspects of machine operation. It is the operator's responsibility to follow all safety rules and instructions in the Operation and Maintenance Manual.
- 3) In addition to lifting personnel and tools to the overhead workplace, it is unsafe or even dangerous to use this machine for other purposes.



**Caution: This machine is strictly prohibited from carrying goods.**

- 4) Only trained and qualified/authorized personnel can operate the machine. If more than one operators use the same machine at different times during the same work shift, they must be qualified/authorized operators and follow all safety rules and instructions in the Operation and Maintenance Manual. This means that every new operator should

perform pre-operation inspections, functional tests and workplace inspections before operating the machine.

## 9.3 Emergency stop

- 1) On the ground control unit or platform control unit, push the red emergency stop button to the "OFF" position to stop all functions.
- 2) The function should be fixed if it is still working when any of the red emergency stop buttons is pressed.

## 9.4 Emergency lowering

- 1) On the ground control unit, turn the key switch to the platform control unit.
- 2) Make sure the ground and platform red "Emergency Stop" buttons are pulled out to the "ON" position.
- 3) Move and hold the emergency lowering function enable button switch.
- 4) Move and hold the emergency lowering button switch.

## 9.5 Operation on the ground

- 1) Make sure the battery is connected before operating the machine.
- 2) Turn the key switch to the ground control unit.
- 3) Pull the red "Emergency Stop" buttons on the ground and platform to the "OFF" position.

### Adjust the platform position

- 4) Press and hold the lifting function enable button.
- 5) Press the platform up or down button.

The drive and steering functions are not available through the ground control unit.

## 9.6 Operation on the platform

- 1) Make sure the battery is connected before operating the machine and turn the key switch to the platform control unit.
- 2) Pull out the red "Emergency Stop" buttons on the floor and platform to the "ON" position.

### Adjust the platform position

- 1) Press and hold the lift function enable button.
- 2) Start the lifting/lowering button in the desired direction.

**Turn**

- 1) Press and hold the enable switch on the control handle.
- 2) Turn the steering wheel with the thumb rocker switch located on the top of the control handle.

**Drive mode**

- 1) Press and hold the enable switch on the control handle.
- 2) Increase the speed: Slowly move the control handle away from the center position.

Reduce the speed: Slowly move the control handle to point to the center position.

Stop: Return the control handle to the center position or release the function enable switch.

Determine the direction in which the machine will move using the platform control unit and the directional arrow on the platform.

When the platform is lifted, the speed of the machine will be limited.


The battery condition will affect the machine performance. When the battery indicator flashes, the drive speed and function speed of the machine will decrease.


**Drive selector switch**

Symbol when the machine is on a slope: Operate in a low speed range when tilting.

**9.7 Driving on a slope**

Determine the machine's ratings of the slope and side slope. The slope rating applies to the machine in the retracted state.

 Maximum slope rating in the retracted state	35% (19 °)
--	------------

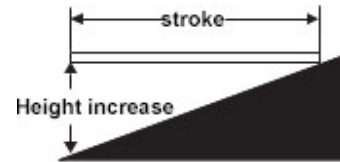
 Maximum side slope rating in the retracted state	35% (19 °)
---	------------

**⚠ Caution: The slope rating is limited by the ground conditions and traction.**

Determine the slope: Measure the slope with a digital inclinometer or follow the steps below.

Required tools: carpentry's ruler, straight block with a length of at least 1m/3.3ft, tape measure

Place the block on the slope and place the carpentry's ruler on the upper edge of the block at the end of the downhill slope and raise the end of the block until it is level. Keep the block level and measure the vertical distance from the bottom of the block to the ground. Divide the tape measure distance (the raised height) by the block length (travel) and multiply by 100 to get the slope value.



If the slope exceeds the maximum uphill, downhill or side slope rating, the machine must be lifted or transported up and down the slope. See the "Transportation and Lifting" section.

**9.8 Operation on the ground using the control unit**

- 1) Maintain a safe distance between the operator, the machine and the stationary object.
- 2) When operating the control unit, pay attention to the travel direction of the machine.

## 9.9 Extending and retracting of the platform

- 1) Lift the platform extension lock handle to the horizontal position.
- 2) Push the platform extension lock handle to extend the platform to the desired position.

Do not stand on the extension platform when trying to extend the platform.

- 3) Press the platform extension lock handle to engage the upper and lower teeth to lock the extension platform.

## 9.10 How to operate the safety arm

- 1) Lift the platform to a height of about 3.2 m/10.5ft from the ground.
- 2) Lift the safety arm and move it to the middle of the scissor shaft bushing and rotate it up to the vertical status.
- 3) Lower the platform until the safety arm is in full contact with the shaft sleeve.

## 9.11 Auxiliary Descent

When unable to lower the platform normally due to a fault, pull the cable assembly that is located at the rear of the machine outward.

Result: The platform will lower.

## 9.12 Fall protection

Personal Fall Protection Equipment (PFPE) is not required to operate this machine. If PFPE is required in the workplace or user rules, the following rules apply:

All PFPEs must comply with the appropriate government regulations and must be inspected and used according to the manufacturer's instructions.

## 9.13 Instructions for battery and charger

Keep in mind the followings:

- 1) Do not use an external charger or a booster

battery.

- 2) Charge the battery in a well-ventilated area.
- 3) Charge the battery using the correct AC input voltage indicated on the charger.

### Charge the battery

- 1) Make sure the battery is connected before charging.
- 2) Open the battery compartment cover. The compartment cover should remain open throughout the charging process.
- 3) Remove the battery vent cap and check the battery acid level. If necessary, only add the distilled water necessary for covering the plate. Do not add excessive distilled water before charging.
- 4) Reset the battery vent cap.
- 5) Connect the battery charger to a grounded AC circuit.
- 6) The charger will give an indication when the battery is fully charged.
- 7) Check the battery acid level at the end of the charge cycle. Add the distilled water to the bottom of the filling pipe. Do not add excessive distilled water.

### Instructions for battery filling and charging

- 1) Remove the battery vent cap and permanently remove the plastic seal from the battery vent.
- 2) Fill the battery acid till the indication level of every unit can be over the plate.

Do not fill to the maximum level until the battery charging process is completed. Excessive filling may cause the battery acid to overflow during charging. Sodium hydrogen carbonate and water can be used to neutralize the overflowed battery acid.

- 3) Install the battery vent cap.
- 4) Charge the battery.
- 5) Check the battery acid level at the end of

the charge cycle. Add the distilled water to the bottom of the filling pipe. Do not add excessive distilled water.

### **9.14 After each use**

- 1) Choose a safe parking position, which can be a solid level surface, without obstacles and heavy traffic.
- 2) Lower the platform.
- 3) Turn the key switch to the "OFF" position and remove the key to avoid unauthorized use.
- 4) Charge the battery.

## **Chapter 10 Instructions for Transportation and Lifting**

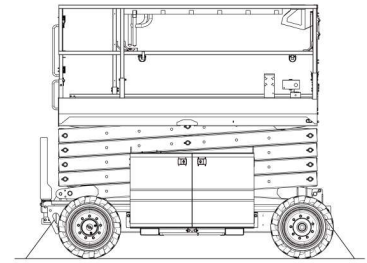
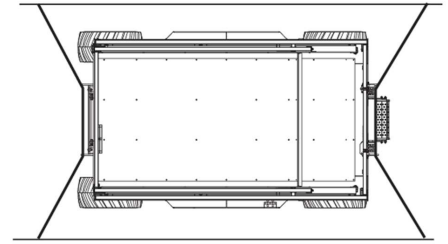


## 10.1 Compliance

- 1) When the machine is lifted by a crane or forklift, maintain normal judgment and planning to control the movement of the machine.
- 2) Only personnel with high-altitude lifting qualifications can load and unload the machine.
- 3) The transport vehicle must be parked on a level surface.
- 4) When loading the machine, the transport vehicle must be fixed to prevent movement.
- 5) Make sure the vehicle's capacity, loading surface, chain or belt is sufficient to withstand the weight of the machine. Please see the "Specification" for the weight of the machine.
- 6) The machine must be parked on a level surface or fixed before releasing the brake.
- 7) Do not drive the machine on slopes where the machine is going uphill, downhill or on the slope rating. See the "Driving on a Slope" in the "Operating Instructions".
- 8) If the slope of the transport vehicle exceeds the maximum slope rating, the winch must be used to load and unload the machine as described in "Brake Release Operation".
- 9) Prevent the guide rail from falling when removing the latch. Always hold the guide rail when folding it.

## 10.2 Fixed to a truck or trailer during transportation

- 1) The machine wheels must always be blocked when preparing for transport.
- 2) Secure the machine to the transport surface with the tie points on the chassis.
- 3) Use at least 4 chains or belts. Make sure the chain or belt used has sufficient load strength.
- 4) Turn the key switch to the "OFF" position and remove the key before transporting.



## 10.3 Ensure the transportation safety

- 1) The machine wheels must always be locked when preparing for transport.
- 2) Retract and fix the extension platform.
- 3) Before transporting, turn the key switch to the "OFF" position and remove the key.
- 4) Thoroughly inspect the machine to prevent loose or unsecured parts.
- 5) Secure the machine to the transport surface with the tie points on the chassis.
- 6) Use at least four chains or belts.
- 7) Make sure the chain or belt used has sufficient load strength.
- 8) If the platform guide rail has been folded, secure it with a belt before transporting.

### Compliance

- 1) Only qualified hook operators can assemble the lock and lift the machine.
- 2) Make sure the crane's lifting capacity, loading surface, belt or rope is sufficient to withstand the weight of the machine. Please see the serial number plate.

## 10.4 Guidance for lifting

- 1) Lower the platform completely. Make sure that the extension platform, control unit and chassis tray are fixed securely. Remove all moving parts from the machine.
- 2) Only connect the lock to the specified lifting point on the machine.
- 3) Adjust the lock to avoid damaging the machine and keeping the machine level.

## California Proposition 65

 **WARNING**

Operating, servicing and maintaining this equipment can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. These chemicals can be emitted from or contained in other various parts and systems, fluids and some component wear by-products. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your equipment and vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your equipment or vehicle and after operation. For more information go to [www.P65Warnings.ca.gov/passenger-vehicle](http://www.P65Warnings.ca.gov/passenger-vehicle).

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to [www.P65warnings.ca.gov/diesel](http://www.P65warnings.ca.gov/diesel).

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**Mobile Elevating Work Platform  
Operation And Safety Manual**

Second edition – March 2021



**LGMG North America Inc.**

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