ZOOMLION

ZS0508C Series
ZS0610C Series
ZS1216C Series
Operation and Safety Manual

May 2023 Version C

Foreword

Zoomlion appreciates your choice of our machine for your application. The Operation and Safety Manual must be read and understood in its entirety before operating the machine.

This manual introduces you safety information, significant technical specs, safety operation in detail for working efficiency improving. Keep this manual properly at all times for looking up.

Do not operate the machine if there is any doubt in operation, please consult local service team for troubleshooting. Zoomlion Intelligent Access Machinery Co.Ltd. does not take the consequence of wrong operation.

This manual should be considered a permanent part of your machine and should remain with the machine at all times.

There might be some tiny differences in details between your machine and the upgraded one due to the continuous improving. For clarification, questions, or additional information regarding any portions of this manual, contact local service team.

Our company reserves the right to modify this manual as technical improvement without notice.

Thank you for your trust and support for Zoomlion products!

Zoomlion Intelligent Access Machinery Co.Ltd.

Safety Precaution Icons

This manual has the following safety precaution icons:

DANGER **Failure to comply with the safety precautions listed in this manual could result in personal injury or death.**

WARNING **Failure to comply with the safety precautions listed in this manual could result in potential personal injury or death.**

CAUTION **Failure to comply with the safety precautions listed in this manual could result in potential mild personal injury.**

NOTICE **Indicates risks unrelated with personal injury (such as property damage).**

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ZOOMLION

Operation and Safety Manual

Section 1 Safety Precautions

SECTION 1 SAFETY PRECAUTIONS

1.1 General

To Owners/Users/Operators:

Zoomlion appreciates your choice of our machine for your application. We put user's safety at the first place, which is best achieved by our joint efforts. The following requirements need to be adhere to for the purpose of safety operating:

a) Obey all user rules, job site regulations and governmental regulations.

b) Read, understand and obey all operating instructions on the machine and in this manual.

c) Keep good safety operating convention.

d) Allow only those authorized and qualified personnel to operate the machine under the supervision of an experienced and qualified operator.

e) An operator must not operate the machine if he has any doubts.

Zoomlion appreciates your choice of our machine for your application.

1.2 Pre-operation

⚠DANGER

Failure to comply with the safety precautions listed in this manual could result in personal injury or death.

An operator must not operate the machine, only if:

a) He has learned and practiced the principles of safe machine operation contained in this operational manual.

1) Use the machine as it was intended - This machine is intended to be used only to lift personnel, along with their tools, and materials to an aerial work site;

2) Indoor series do not use outdoors or indoors with strong winds;

3) Understand and obey safety rules before operation. Do not make dangerous operations;

4) Perform a pre-operation inspection at all times.

5) Implement functional test before operating the machine at all times.

6) Inspect job site that the machine must work at flat grounds, see SECTION THREE 3.3 Worksite Inspection;

7) Stop operation immediately when encountering obnormality or danger;

8) If you feel that the machine is abnormal during operation, please stop the operation immediately

and continue operation only after the abnormality is repaired;

9) According to the operating conditions, the operator should wear effective safety protection equipment for safety, such as: safety helmet, seat belt, protective gloves, protective glasses, dust mask, sound insulation tools, etc.;

10) It is forbidden to operate in the state of excessive fatigue, after drinking or while taking hypnotic drugs.

b) Read, understand and obey the manufacturer's instructions and safety rules—safety and operator's manuals and machine decals.

c) Read, understand and obey employer's safety rules and worksite regulations.

d) Read, understand and obey all applicable governmental regulations.

e) The operator is properly trained to safely operate the machine.

1.3 Hazard Classification

Decals on this machine use symbols, color coding, and signal words to identify the following:

Safety alert symbol—used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

Indicates a hazardous situation which, if not avoided, will result in death or serious injury. This decal will have a red background.

Indicates a hazardous situation which, if not avoided, could result in death or serious injury. This decal will have an orange background.

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. This decal will have a yellow background.

Indicates a property damage message. This decal will have a blue background.

1.4 Intended Use

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

b) Indoor series do not use outdoors or indoors with strong winds.

1.5 Safety Alert Symbols and Maintenance

Replace any missing or damaged safety signs. Keep operator safety in mind at all times. Use mild soap and water to clean safety signs. Do not use solvent-based cleaners because they may damage the safety sign material.

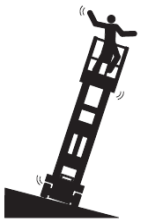
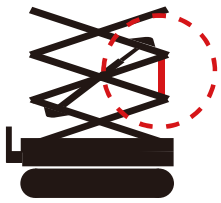
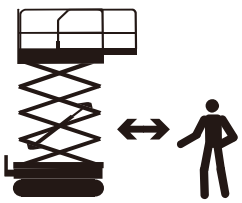
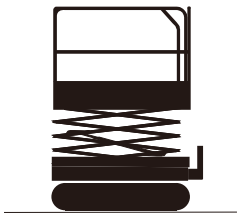
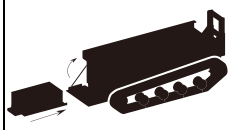
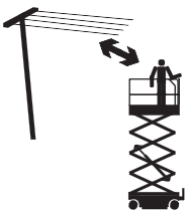
				
Read operational manual	Read service manual	Crushing hazard	Crushing hazard	Collision hazard
				
Tip-over hazard	Smashing hazard	Tip-over hazard	Tip-over hazard	Electrocution hazard
				
Electrocution hazard	Explosion hazard	Fire hazard	Burn hazard	Dermohemia hazard
				
Engage safety arm	Keep away from moving parts	Keep clear of outriggers and tires	Move machine to level ground	Close chassis tray
				
Lower the platform	Do not install on an uneven surface	Maintain required clearance	Compartment maintenance implement by trained and authorized personnel only	Use a piece of cardboard or paper to search for leaks

Figure 1-1 Symbol and hazard pictorials definitions

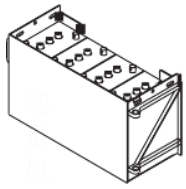
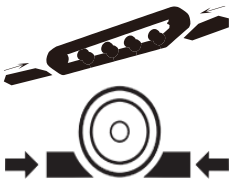
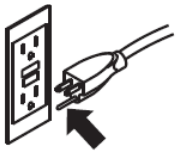
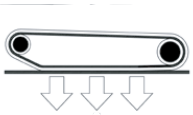
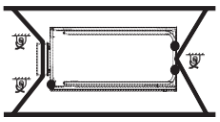
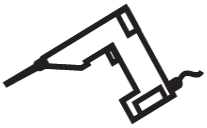
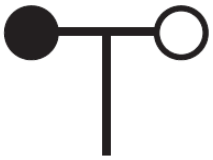
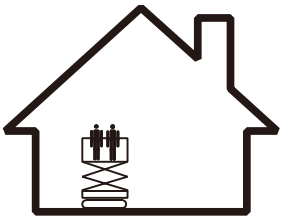
				
Batteries used as counterweights	Chock the crawler	Release brakes	3-wire grounded AC power supply only	Replace damaged wire and cable
				
Ground load	Transporting diagram	Tie-down points	Lanyard anchorage points	No smoking
				
Voltage rating for power to platform	Pressure rating for air line to platform	Manual force	Wind speed	
				
Maximum capacity	Outdoor		Indoor	
				
Smashing hazard	Hold the rail when lowering		Outrigger load	

Figure 1-1 Symbol and hazard pictorials definitions

1.6 Safety Operation

1.6.1 Operator safety

Personal fall protection equipment (PFPE) is required when operating this machine. If PFPE is required in job site or in operator's manual, following rules should be complied with:

All PFPE must comply with applicable governmental regulations, and must be inspected and used in accordance with the PFPE manufacturer's instructions.

1.6.2 Workplace safety

1.6.2.1 Electric shock hazard

DANGER

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

a) Obey all local and governmental regulations regarding required clearance from electrical power lines. Keep required clearance listed in Table 1-1.

Table 1-1 Required clearance

No.	Voltage	Required clearance
1	0 to 50KV	3.05 m/10ft
2	50 to 200KV	4.60 m/15ft
3	200 to 350KV	6.10 m/20ft
4	350 to 500KV	7.62 m/25ft
5	500 to 750KV	10.67m/35ft
6	750 to 1000KV	13.72m/45ft

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

c) 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.

d) Do not touch the internal electric components when the machine is working;

e) Wear protective gloves and turn off the power when maintaining;

f) Do not operate the machine during lightning or storms.

g) Do not use the machine as a ground for welding.

1.6.2.2 Tip-over hazard

⚠DANGER

a) Occupants, equipment and materials shall not exceed the maximum platform capacity. Place the loads in the center of the platform.

Table 1-2 Rated load

Model	Maximum Capacity	Capacity on Extension Deck
ZS0508C Series	240kg/530 lbs	100kg /220 lbs
ZS0610C Series	250kg/550 lbs	113kg /250 lbs
ZS1216C Series	350kg/770 lbs	113kg /250 lbs

b) Do not elevate the platform unless the machine is on firm level ground.

1) Make sure that the machine is placed at a flat ground as the machine might not stable when lifting;

2) Do not use the machine on slopes or uneven, tilted or soft grounds to avoid overturning;

3) Do not use the machine at a freezing ground;

4) Do not use the machine near the steps, tilted ground or openings. It may cause the machine to tip over by accidentally falling into the steps, inclined surfaces, or openings. If it must be used on the above occasions, monitoring personnel is needed.

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

If the tilt alarm sounds: use extreme caution to lower the platform with the emergency lowering pull rod. Move the machine to a firm, level surface before lifting.

d) To prevent overturning when traveling:

1) Lower the platform to the lowest height, one operator only;

2) Do not drive the machine on roads;

3) Do not drive the machine on slopes or at tilted, uneven and freezing grounds;

4) Make sure that the parking and braking functions are working and drive at low speed when the machine drives on a slope under 7°. Overturning might occur at any time when the slope angle exceeds 7°;

5) Remove the platform console and remotely operate the machine through the controlling wires when the machine drives on a slope above 7°;

6) No loads on platform when driving on slope as the movement of loads may cause overturning;

7) Drive forward and do not extend the extension deck when driving on slope;

8) When crossing steps, build a slope and control the slope angle within 7°;

9) When the sloping ground is V-groove or bumpy, the crawler will float, and there is a risk of braking halved, please do not drive;

10) Please do not drive directly from the uphill to the downhill, you must first drive into the flat ground, and then drive downhill after the machine is stable. Please make sure that the flat ground exceeds the length of the machine.

e) Outdoor use: do not raise the platform when wind speeds may exceed 12.5 m/s (28 mph). Lower the platform and stop operating the machine if the wind speed exceeds 12.5 m/s (28 mph).

Indoor use: do not exceed the rated values of allowable manual force and maximum occupants listed in Table 1-3.

Table 1-3 Maximum allowable manual force

Model	Manual force	Maximum occupants
ZS0508C Series	200N/45 lbs force	1 (Indoor use only)
ZS0610C Series (Indoor)	400N/90 lbs force	2 (Indoor use only)
ZS0610C Series (Outdoor)	400N/200N 90 lbs force /45 lbs force	2 (Indoor)/ 1 (Outdoor)
ZS1216C Series	400N/90 lbs force	2 (Indoor)/ 2 (Outdoor)

f) Do not operate the machine outdoors or indoors with 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.

g) Do not drive the machine with the platform raised or extended.

h) The following operations are prohibited at any circumstances:

1) Push the machine or other objects with the platform.

2) Hang objects on the platform.

3) Contact adjacent structures with the platform.

4) Tie the platform to adjacent structures.

5) Place loads outside the platform perimeter.

6) Replace the platform with other objects, loads apply to the handrail, or extend the body out of the platform.

7) Operate the machine with the chassis trays open.

8) Push off or pull toward any object outside of the platform.

i) Do not modify or alter an aerial work platform without prior written permission from the manufacture.

1) Do not alter or disable the limit switches.

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

3) Do not replace Names critical to machine stability with Names of different weight or specification.

4) 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.

j) Do not use lead acid or lithium-ion batteries that weigh less than the original equipment. Batteries are used as counterweight and are critical to machine stability.

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

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

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

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

o) Be sure the crawlers are in good condition and confirm the crawler tension.

1.6.2.3 Crush hazard

⚠DANGER

a) Keep hands and limbs out of scissors.

b) Do not work under the platform or in the scissor links without the safety arm in place.

c) No personnel stands under the platform and no objects should be placed under scissor arm when raising the platform;

d) Make sure that there is no personnel under platform when lowering;

e) Please don't let the tools and materials on the work platform fall during the operation. Please use hanging nets or hanging bags for storage when moving objects;

f) Be careful not to get caught in when working near rotary parts, and do not let the objects near the rotating part;

g) Please keep your body away from the gaps and moving parts of the machine;

h) Use common sense and planning when operating the machine with the controller from the ground. Maintain safe distances between the operator, the machine and fixed objects.

1.6.2.4 Danger of operation on the slope

⚠DANGER

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

a) Titled angle should not exceed 7°, Otherwise, the machine may overturn;

b) Remove the platform console and remotely operate the machine through the controlling wires when the machine drives on a slope above 7°;

c) Drive forward and do not extend the extension deck when driving on slope;

d) Make sure that the parking and braking functions are working and drive at low speed when the machine drives on a slope (downhill);

e) Use a wheel stopper when parking on a slope;

f) When crossing steps, build a slope and control the slope angle within 7°;

g) When the sloping ground is V-groove or bumpy, the crawler will float, and there is a risk of braking halved, please do not drive;

h) Please do not drive directly from the uphill to the downhill, you must first drive into the flat ground, and then drive downhill after the machine is stable. Please make sure that the flat ground exceeds the length of the machine.

Table 1-4 Rated slope in stowed position

Model	Maximum Slope Rating in Stowed Position	Maximum Side Slope Rating in Stowed Position
ZS0508C	25% (14°)	25% (14°)
ZS0610C	30% (17°)	30% (17°)
ZS1216C	30% (17°)	30% (17°)

1.6.2.5 Fall off hazard

DANGER

The guard rails system provides fall protection. If occupant(s) of the platform are required to wear personal fall protection equipment (PFPE) due to job site or employer rules, PFPE and its use shall be in accordance with the PFPE manufacturer's instructions and applicable governmental requirements. Use approved lanyard attachment point provided.

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

b) Face the machine and use the handrail and foot board to climb down. Support the body in three places (two hands and one foot or one hand and two feet);

c) Do not hold objects or jump when climb up or down;

d) Do not operate a machine with platform hand rail removed;

e) Do not climb down from the platform when raised;

f) Do not step on parts other than the platform when operating;

g) Do not step on platform hand rail or stretch out the body to the platform when working;

h) Keep the platform floor clear of debris.

i) Do not enter or exit the platform unless the machine is in the stowed position.

j) Attach the platform entry chain or close the entry gate before operating.

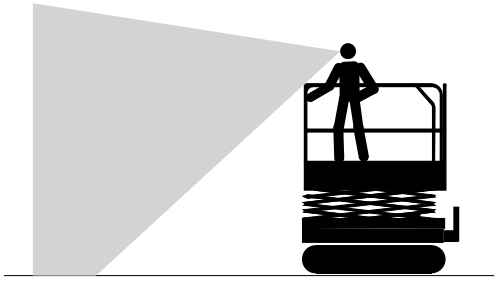
k) Do not operate the machine unless the guard rails are properly installed and the entry is secured for operation.

1.6.2.6 Collision hazard

⚠DANGER

No stunt driving or horseplay while operating a machine.

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



b) Be aware of extended platform position when moving the machine.

c) Be sure the machine is on a level surface or secured before releasing the brake.

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

e) This machine is not allowed to drive on roads according to regulations;

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

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

h) Observe and use the color-coded direction arrows on the platform controls and the platform decal plate for drive and steer functions.

i) Do not lower the platform unless the area below is clear of personnel and obstructions.

j) Limit travel speed according to the condition of the ground surface, congestion, slope, location of personnel, and any other factors which may cause collision.

k) Do not operate a machine in the path of any crane or moving overhead machinery unless the controls of the crane have been locked out and/or precautions have been taken to prevent any potential collision.

1.6.2.7 Burn hazard

⚠DANGER

a) Liquid or gas burn hazard.

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

2) Make sure that the hydraulic oil has been sufficiently cooled before maintaining the oil pressure parts, pipes or filters;

3) Always wear protective eye wear and gloves when checking the oil leak of hydraulic parts or pipes. Check the leak with a thick cardboard.

4) Release the pressure before removing the oil pressure parts, pipes or filters;

5) Batteries contains acidic substances. Wear protective clothing and protective glasses when using batteries;

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

7) Do not expose the battery or charger in water or rain while charging.

⚠DANGER

b) Electric shock or burn hazard.

1) Conduct daily check with wires and cables.

2) Change damaged Names prior to operation. Avoid contact with battery terminals. Remove all rings, watches and jewelry.

3) Connect the battery charger and platform AC power plug (if equipped) to a grounded, AC 3-wire electrical outlet only.

1.6.2.8 Explosion and fire hazard

⚠DANGER

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

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



c) Swing out the charger tray when charging indoor for cooling.

d) Do not use tools which could produce flames to contact battery terminals or cable clamp.

1.6.2.9 Machine damage hazard

DANGER

a) 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.

b) Immediately tag and remove from service a damaged or malfunctioning machine.

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

d) Be sure all decals are in place and legible.

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

1.6.2.10 Component damage hazard

DANGER

a) Do not use a charger other than the ZOOMLION charger.

b) Do not use the machine as a ground wire during welding;

c) Do not use the machine where there may be a strong magnetic field.

ZOOMLION

Operation and Safety Manual

Section 2 Machine Components and Controls

SECTION 2 MACHINE COMPONENTS AND CONTROLS

2.1 Machine Components

a) ZS0508C Series

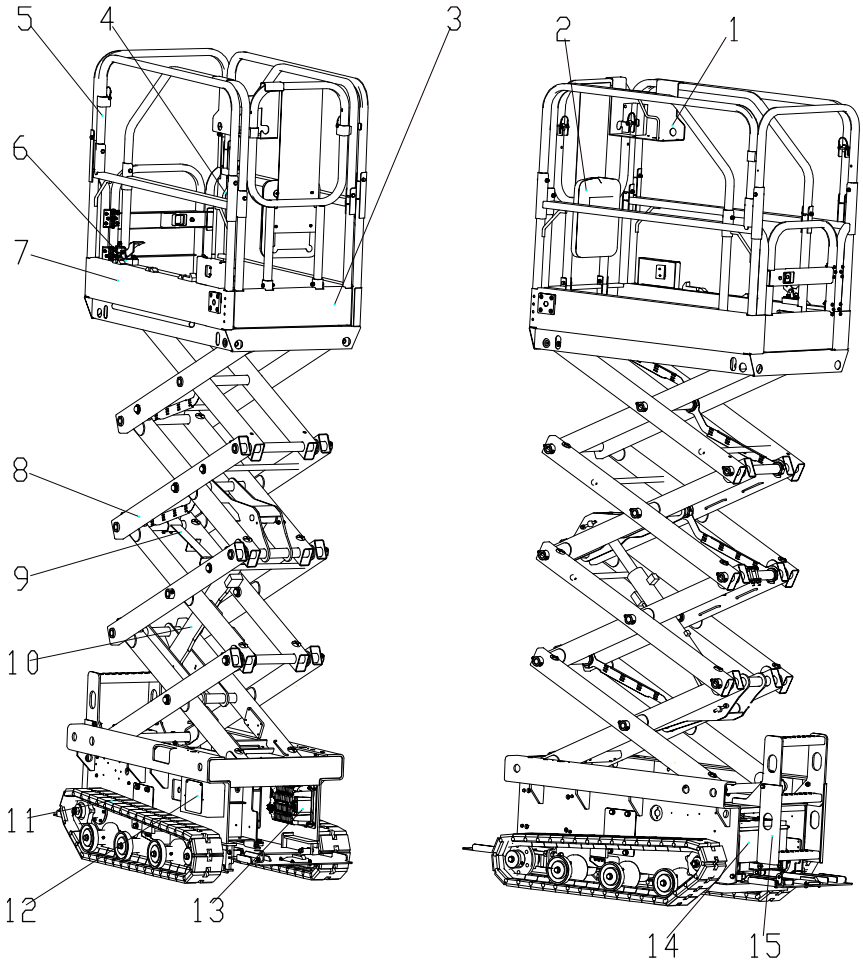


Figure 2-1 Components

Table 2-1 Component Instruction

No.	Name	No.	Name	No.	Name
1	Platform Console	7	Fixed platform	13	Batteries
2	Manual Storage Container	8	Scissor arm	14	Charger
3	Platform extension	9	Safety arm	15	Entry ladder
4	Lanyard anchorage points	10	Lifting cylinder		
5	Platform guard rails	11	Drive device		
6	Foot switch	12	Ground control		

b) ZS0610C Series

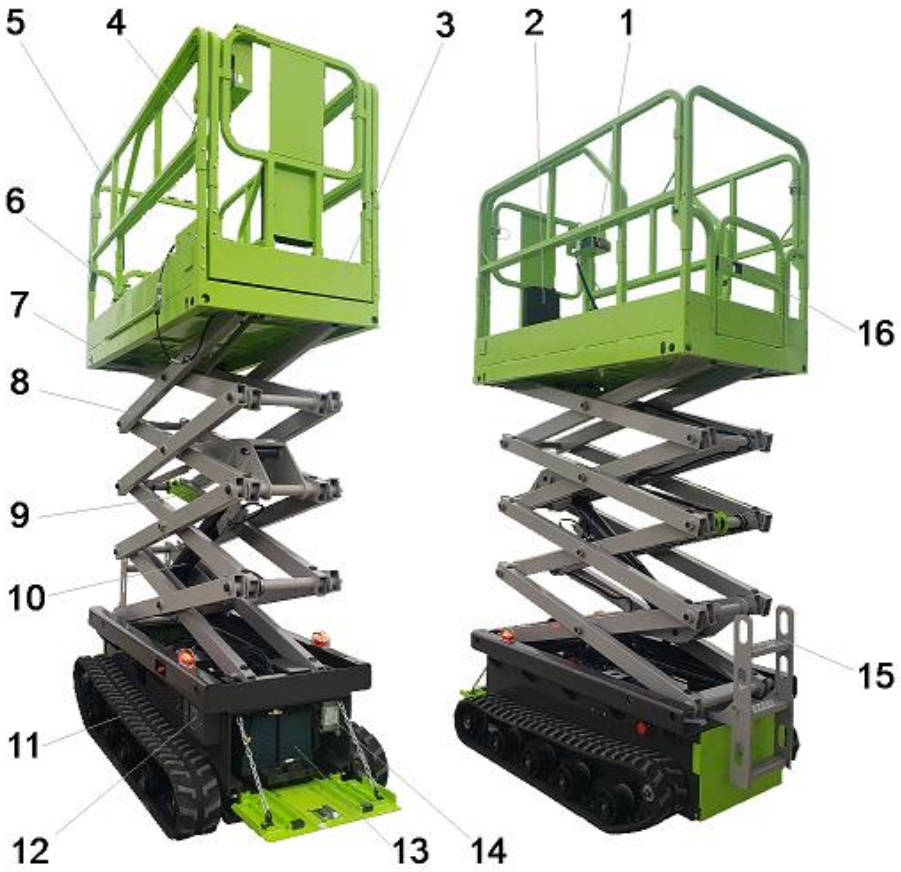


Figure 2-2 Components

Table 2-2 Component Instruction

No.	Name	No.	Name	No.	Name
1	Platform Console	7	Fixed platform	13	Batteries
2	Manual Storage Container	8	Scissor arm	14	Charger
3	Platform extension	9	Safety arm	15	Entry ladder
4	Lanyard anchorage points	10	Lifting cylinder	16	Platform gate
5	Platform guard rails	11	Drive device		
6	Foot switch	12	Ground control		

c) ZS1216C Series

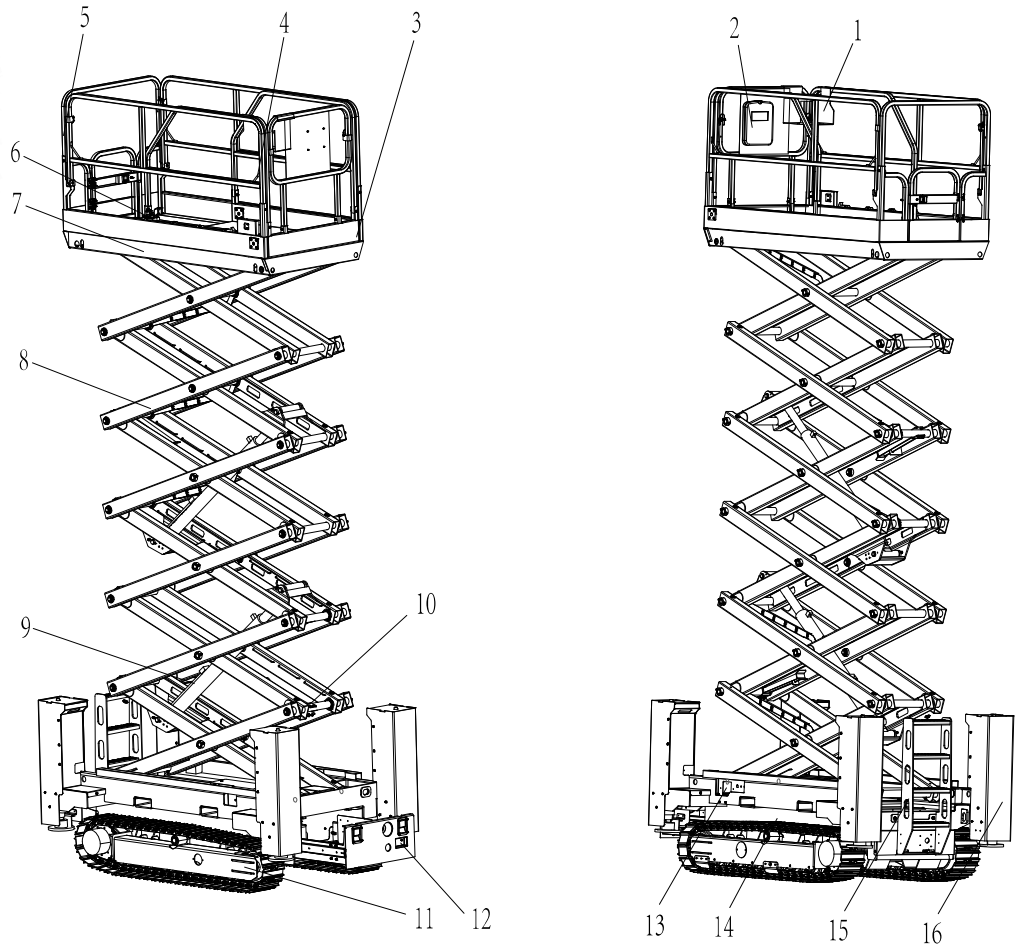


Figure 2-3 Components

Table 2-3 Component Instruction

No.	Name	No.	Name	No.	Name
1	Platform Console	7	Fixed platform	13	Ground control
2	Manual Storage Container	8	Scissor arm	14	Batteries
3	Platform extension	9	Safety arm	15	Entry ladder
4	Lanyard anchorage points	10	Lifting cylinder	16	Outrigger cylinder
5	Platform guard rails	11	Drive device		
6	Foot switch	12	Charger		

2.2 Machine Controller

⚠CAUTION

The manufacturer has no direct control over machine application and operation. The user and operator are responsible for conforming with good safety practices.

2.2.1 Ground control

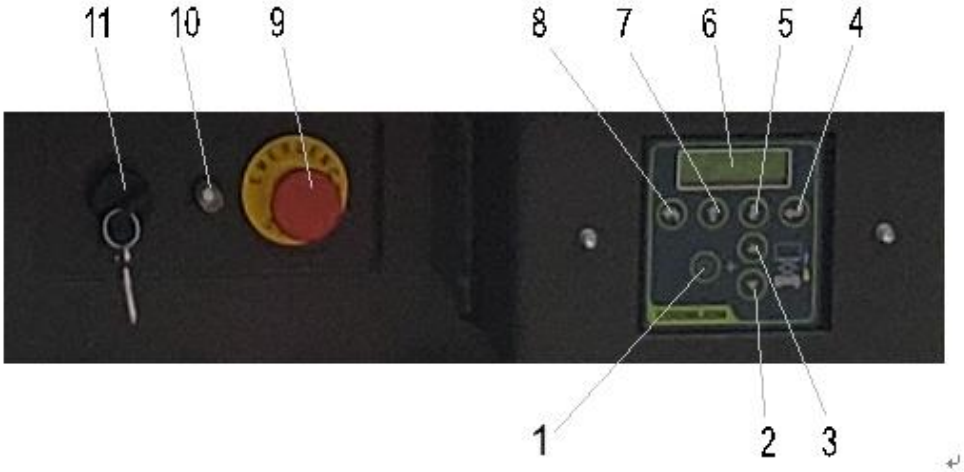


Figure 2-4 Ground control Panel

Table 2-4 Ground control panel instruction

No.	Name	No.	Name
1	Lifting enable button	7	Menu up button
2	Platform down button	8	Menu escape button
3	Platform up button	9	10A breaker
4	Menu enter button	10	Emergency stop switch
5	Menu down button	11	Key switch
6	LCD diagnostic readout		

a) lifting enable button.

Press this button to activate lifting function.

b) Key switch.

Turn the switch to the platform position and the platform controls will operate. Turn the key switch to the off position and the machine will be off. Turn the key switch to the ground position and the ground controls will operate.

c) Emergency stop switch.Push in the Red Emergency Button to the off position to stop all functions. Pull out the Red Emergency Button to the on position to operate the machine.

2.2.2 Platform control unit (PCU)

Figure 2-5 ZS0508C/ZS0610C Series Platform control panel

Table 2-5 ZS0508C/ZS0610C Series Platform control panel instruction

No.	Name	No.	Name
1	Emergency stop switch	5	Steering thumb button
2	Horn button	6	LED Readout
3	Lift function button	7	Drive function button
4	Control handle	8	Drive speed button

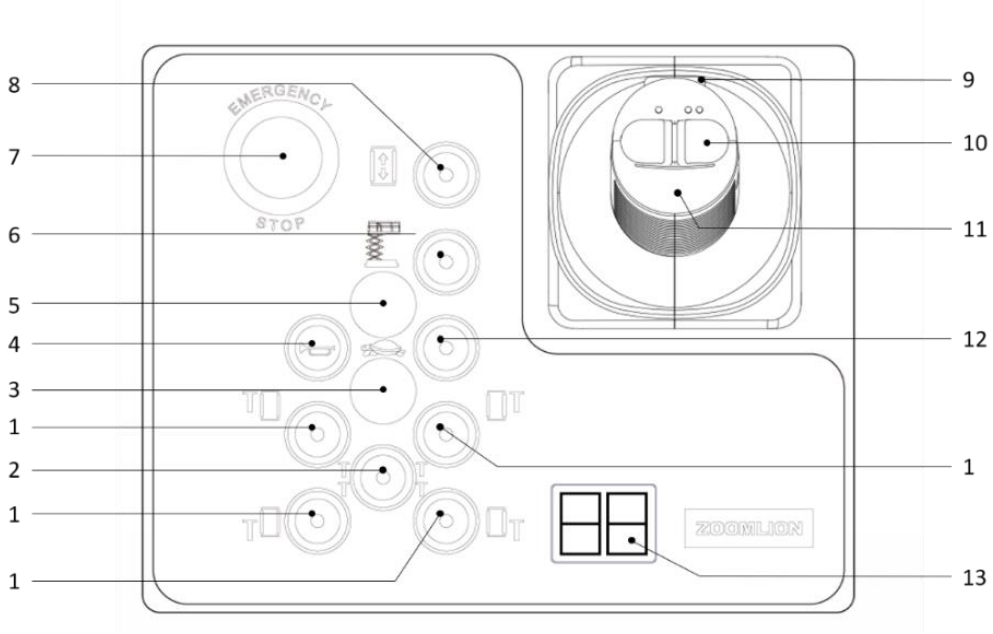


Figure 2-6 ZS1216C Platform control panel

Table 2-6 ZS1216C Platform control panel instruction

No.	Name	No.	Name
1	Outrigger enable button with indicator	8	Drive function switch
2	Outrigger auto-leveling button	9	Function enable switch
3	Light	10	Thumb rocker switch
4	Horn	11	Proportional control joystick
5	Turtle speed select button	12	Machine tilting button with indicator
6	Lifting function enable button with indicator	13	LED display
7	Red Emergency Stop button		

a) Emergency stop switch.

Push in the Red Emergency Button to the off position to stop all functions. Pull out the Red Emergency Button to the on position to operate the machine.

b) Horn button.Press the horn button and the horn will sound. Release the horn button and the horn will not sound.

c) Enable button for leg function with indicator light.

Press this button to activate the single leg rise/fall function.

d) Automatic leg leveling button

Press this button to automatically level

e) Lift function button.

Push this button to activate the lift function. If the control handle is not moved within seven seconds, press the lift function button again.

f) Proportional control handle and function enable switch for drive, steer and lift functions.

Lift function: press and hold the function enable switch to enable the lift function on the platform control handle. Move the control handle in the direction indicated by the blue arrow and the platform will raise. Move the control handle in the direction indicated by the yellow arrow and the platform will lower. The descent alarm should sound while the platform is lowering.

Drive function: press and hold the function enable switch to enable the drive function on the platform control handle. Move the control handle in the direction indicated by the blue arrow on the control panel and the machine will move in the direction that the blue arrow points. Move the control handle in the direction indicated by the yellow arrow on the control panel and the machine will move in the direction that the yellow arrow points.

Thumb switch for steer function.

Steering when driving: Press the drive function button, then press the function enable button on joystick. Move the joystick to drive the machine. Press the left side of the thumb switch and the machine will turn in the direction the blue triangle points on the platform control panel. Press the right side of the thumb switch and the machine will turn in the direction the yellow triangle points on the platform control panel.

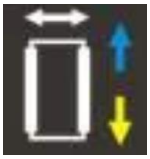
Pivot steering: Press the drive function button, then press the function enable button on joystick. Press the left side of the thumb button, and the machine will turn in place. The machine will rotate in the direction indicated by the blue triangle on the platform control panel. Press the right side of

the thumb button and the machine will rotate in the direction indicated by the yellow triangle on the platform control panel. During the in-situ steering, the mobile control handle cannot be used for walking steering.

g) LED readout for electric quantity indication and indicative operation code display.

h) Drive function button.

Push this button to activate the drive function. If the control handle is not moved within seven seconds, press the lift function button again.



i) Drive speed button.

Press this button to activate the slow drive mode. The indicator light will illuminate when the slow drive mode is activated. Select this function in drive mode.

ZOOMLION

Operation and Safety Manual

Section 3 Machine Inspection

SECTION 3 MACHINE INSPECTION

3.1 General

DANGER

An operator must not operate the machine, only if he has learned and practiced the principled of safe machine operation contained in this operational manual.

a) Avoid hazardous situation.

b) Perform a pre-operation inspection at all times.

Know and understand the pre-operation inspection before going on to the next section.

c) Conduct functional test before usage.

d) Inspect job site.

e) Only use the machine as it was intended.

3.1.1 Pre-operation inspection fundamentals

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

b) 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.

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

d) Refer to the list on the next page and check each of the Names.

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

f) 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 going on to the function tests.

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

3.1.2 Pre-operation inspection

a) Be sure operation, safety, and responsibilities manuals are complete, legible, and in the storage container located on the machine.

b) Be sure all decals are in place and legible. See Inspection section.

c) Check for hydraulic oil leaks and proper oil level. Add oil if needed. See Maintenance section.

d) Check the following components or areas for damage, improperly installed, or missing parts and unauthorized modification:

1) Electrical components, wiring, and electrical cables.
2) Hydraulic hoses, fittings, cylinders, manifolds.
3) Drive motors.
4) Wearing pads.
5) Alarm and indicator (if equipped).
6) Nuts, bolts and other fasteners.
7) Safety arm.
8) Platform extension.
9) Scissor pin and retaining fasteners.
10) Platform joystick.
11) Outrigger hosing and foot pad (if equipped).
12) Battery pack and connections.
13) Ground strap.
14) Platform entry chain or gate.
15) Platform overload components.
16) Lanyard anchorage points.
17) Check the machine for:

① Cracks in welds or structural components
② Dents or damage.
③ Rust, corrosion, or oxidation.

e) Be sure that all structural and other critical components are present and all associated fasteners and pins are in place and properly tightened.

f) Ensure that the left and right drive chains are not damaged and the chains are properly tensioned (please refer to the "Maintenance" section for tightness and adjustment methods);

g) Ensure that the left and right tracks are not damaged and that the tracks are properly tensioned (please refer to the "Maintenance" section for tightness and adjustment methods);

h) Ensure that the batteries are connected correctly;

i) Be sure that the hood is in place and locked after inspection.

⚠CAUTION

If the platform must be raised to inspect the machine, make sure the safety arm is in place. See Operating Instruction section.

3.2 Function Test

3.2.1 Function test fundamentals

a) The function tests are designed to discover any malfunctions before the machine is put into service. The operator must follow the step-by-step instructions to test all machine functions.

b) A malfunctioning machine must never be used. If malfunctions are discovered, the machine must be tagged and removed from service. Repair to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

c) After repairs are completed, the operator must perform a pre-operation inspection again before putting the machine into service.

⚠DANGER

An operator must not operate the machine, only if he has learned and practiced the principles of safe machine operation contained in this operational manual.

a) Avoid hazardous situations.

b) Perform a pre-operation inspection at all times.

c) Conduct functional test before usage.

Know and understand the pre-operation inspection before going on to the next section.

d) Inspect job site.

e) Only use the machine as it was intended.

3.2.2 Turn on the Power Switch

Pull out the red main power switch to on position which located on the side of battery container.

3.2.3 At the electronic controls

a) Test emergency stop.

1) Select a test area that is firm, level and free of obstruction.

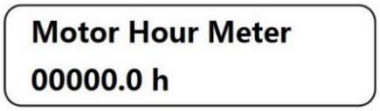
2) Be sure the batteries are connected.

3) Pull out the platform and ground red Emergency Stop Button to the on position.

4) Turn the key switch to electronic control.

5) Observe the diagnostic LED readout on the platform controls. The LED should look like the picture below:

6) Observe the diagnostic LCD readout on the electronic controls. The LCD should display the model and hour meter:



7) Push in the ground red Emergency Stop Button to off position.

Result: No function should operate.

8) Pull out the red Emergency Stop Button to the on position.

b) Test the Up/Down functions.

1) This machine uses flashlights and buzzer warning.

2) Descent alarm: the flashlight illuminates 60 times per minute. The descent alarm sounds at 60 beeps per minute.

3) Descent delay alarm: the flashlight illuminates 120 times per minute. The descent alarm sounds at 120 beeps per minute.

4) When the machine is not level: the flashlight illuminates 120 times per minute. The descent alarm sounds at 120 beeps per minute.

5) Do not press the lift function enable button.

6) Press the platform up or down button.

Result: the lift function should not operate.

7) Do not press the platform up or down button.

8) Press the lift function enable button.

Result: the list function should not operate.

9) Press and hold the lift function enable button and the platform up button.

Result: the platform should raise.

10) Press and hold the lift function enable button and platform down button.

Result: the platform should lower. The alarm should flash and sound when lowering.

The minimum distance between platform and ground should reach 2.3m/7ft 7in. Descent delay light will illuminate and alarm will sound. Be sure there is no personnel or obstructions under the platform when lowering. Release and move the control handle and press lifting enable button and platform down button to continue the lowering operation.

c) Test emergency lowering.

1) Activate the up function by pressing the lift enable button and platform up button, and raise the platform approximately 60cm /2ft.

2) Pull the emergency lowering knob located behind the entry ladder.

3) Result: platform should lower. Descent alarm will not sound.

3.2.4 At the platform controls

a) Test emergency stop.

1) Select a test area that is firm, level and free of obstruction.

2) Turn the key switch to platform control.

3) Push in the platform red Emergency Stop Button to the off position.

Result: no function should operate.

b) Test the horn.

1) Pull out the red Emergency Stop to the on position.

2) Press the horn button.

Result: the horn should sound.

c) Test the Function Enable Switch and Up/Down function.

1) Do not hold the function enable switch on the control handle.

2) Slowly move the control handle in the direction indicated by the blue arrow, then in the direction indicated by the yellow arrow.

Result: no function should operate.

3) Press the lift function enable button.

4) Wait seven seconds for the lift function to time out.

5) Slowly move the control handle in the direction indicated by the blue arrow, then in the direction indicated by the yellow arrow.

   Result: the lift function should not operate.

6) Press the lift function enable button, the indicator lights up.

7) Press and hold the function enable switch on the control handle when indicator lighting, and slowly move the control handle in the direction indicated by the blue arrow.

   Result: the platform should raise. The pothole guards should deploy.

8) Release the control handle

   Result: the platform should stop raising.

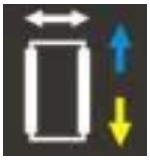
9) Press and hold the function enable switch on the control handle when indicator lighting, and slowly move the control handle in the direction indicated by the yellow arrow.

   Result: the platform should lower.

The minimum distance between platform and ground should reach 2.3m/7ft 7in. Descent delay light will illuminate and alarm will sound. Be sure there is no personnel or obstructions under the platform when lowering. Release and move the control handle to continue the lowering operation.

d) Test drive function button.

1) Press the drive function button, then the indicator lights up.



2) Wait seven seconds for the drive function to time out.

3) Slowly move the control handle in the direction indicated by the blue arrow, then in the direction indicated by the yellow arrow.

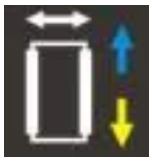
   Result: no function should operate.

e) Test the steering.

⚠CAUTION

When performing the steer and drive function tests, stand in the platform facing the steer end of the machine.

1) Press the drive function button, then the indicator lights up.



2) Press and hold the functional enable switch on the control handle when lighting.

3) Press the thumb rocker switch on top of control handle in the direction indicated by the blue triangle on the control panel.

   Result: the steer wheels should turn in the direction indicated by the blue triangle.

4) Press the thumb rocker switch on top of the control handle in the direction indicated by the yellow triangle on control panel.

   Result: the steer wheels move towards the direction indicated by the yellow triangle.

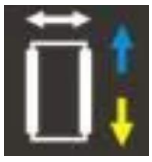
f) Test driving and braking.

⚠CAUTION

The brake must be able to hold the machine on any slope it is able to climb.

This test is performed on the ground with a platform controller. Do not stand in the platform.

1) Press the drive function button, then the indicator lights up.



2) Press the function enable switch on the control handle when lighting.

3) Slowly move the control handle in the direction indicated by the blue arrow on the control panel until the machine begins to move, then return the control handle to the center position.

   Result: the machine should move in the direction that the blue arrow points on the control panel, then come to an abrupt stop when the control handle is returned to the center position.

4) Slowly move the control handle in the direction indicated by the yellow arrow on the control panel until the machine begins to move, then return the control handle to the center position.

   Result: the machine should move in the direction that the yellow arrow points on the control

panel, then come to an abrupt stop when the control handle is returned to the center position.

g) Test the tilt sensor operation.

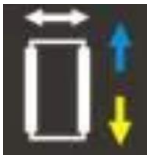
1) Fully lower the platform.

2) Place a 5*10cm/2*4in or similar piece of wood under both wheels on the side and drive the machine up onto them.

3) Raise the platform approximately 2.3m/ 7ft 7in from the ground.

Result: the platform should stop raising. The tilt alarm will sound and the light will illuminate. Platform controller LED readout displays LL, ground controller LCD displays LL: Machine Tilted.

4) Press the drive function button, then the indicator lights up.



5) Press and hold the functional enable switch on the control handle.

6) 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.

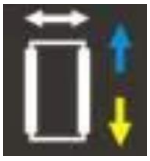
Result: the drive function should not work in either direction.

7) Lower the platform and remove both pieces of wood.

h) Test elevated drive speed.

1) Raise the platform approximately 2.3m/7ft 7in from the ground.

2) Press the drive function button, then the indicator lights up.



3) Press and hold the functional enable switch on the control handle. Slowly move the control handle to full drive position.

Result: The drive function should not work in any direction when platform lifted up.

i) Test upper limit switch and outrigger (ZS1216C Series).

1) Press lifting enable button to lift the platform;

Result: Platform could be lifted up to 5m/16ft 5in. If the outrigger is not leveled, the platform height cannot reach 5m/16ft 5in.

2) Drive forward;

Result: the machine cannot drive.

3) Lower the platform, if the distance between the platform and the ground exceeds 2.6m/8ft 6in,

Result: the outrigger cannot extend (leveling).

4) Lower the platform, if the distance between the platform and the ground exceeds 2.6m/8ft 6in, press the auto-leveling button;

Result: outrigger should extend and level the machine. The machine will sound.

5) Lift the platform.

Result: lift the platform to the limit height.

6) Lower the platform.

Result: the platform should be lowered to the lowest point.

3.2.5 Turn off the main power switch

When the machine has not been used for a long time, press the red Main Power Switch on the side of the battery box to the off position to turn off the main power.

3.3 Workplace Inspection

⚠DANGER

An operator must not operate the machine, only if:he has learned and practiced the principles of safe machine operation contained in this operational manual.

a) Avoid hazardous situations.

b) Perform a pre-operation inspection at all times.

c) Implement functional test before operation the machine at all times.

d) Inspect job site

Know and understand the workplace inspection before going on to the next section.

e) Only use the machine as it was intended.

3.3.1 Workplace inspection fundamentals

Workplace inspection helps the operator determine if the workplace is suitable for safe machine operation. It should be performed by the operator prior to moving the machine to the workplace.
It is operator's responsibility to read and remember the workplace hazards, then watch for and avoid them while moving, setting up, and operating the machine.

3.3.2 Workplace inspection

Be aware of and avoid the following hazards:

a) Drop-offs or holes.

b) Bumps, floor obstructions or debris.

c) Sloped surfaces.

d) Unstable or smooth surfaces.

e) Overhead obstructions and electric lines.

f) Hazardous locations

g) Inadequate surface support to withstand all load forces imposed by the machine.

h) Wind and weather conditions.

i) Unauthorized personnel.

j) Other possible unsafe conditions.

3.4 Decals Inspection

Use the lists (Table 3-1 to Table 3-3) and pictures (Figure 3-1 to Figure 3-11) below to verify that all decals are legible and in place.

Table 3-1 Decal 1 (ZS0508C Series)

NO.	Code	Name	Qty
1	00775307080202090	Safety lanyard points	4
2	00772007000201010	ZS0508C Type of label	2
3	00775307080402180	Tilted ground	1
4	00772007000201020	Load of 240 kg/530 lbs	1
5	00775307080401090	Aerial walking label	1
6	00775307080401030	Danger- Pinching Hazard	2
7	00775307080402100	Crushing hazard	3
8	00775307080402220	Safety arm	2
9	00775307080202010	Tie down and Lifting point	4
10	00775307080402060	Explosion and fire hazard	1
11	00775307080401040	High pressure liquid hazard	1
12	00772007000201040	Weight of 1135 kg/2502 lbs	2
13	00775307080202210	Forklift lift	4
14	00775307080402030	Read Operation and Safety Manual carefully	2
15	00775307080402150	Emergency lowering	1
16	00775307080401060	Label- Platform Power Rated Voltage	1
17	00775307080402040	Keep the manual	1
18	00775307080402020	Overturning hazard	1
19	00775307080402230	Safety rules	1
20	00775207010401050	zoomlion English label	1
21	00775407000201090	Label-IPAF	1
22	00775307080401010	Label-CE	1
23	00775307080401080	Label- non-insulated	1
24	00772007000401030	Max manual force	1
25	00775307080402120	Overturning hazard	1
26	00775307080401050	AC power	1
27	00775307080402130	Pre-start check	1
28	00775307080202140	Charger power	1
29	00775307080402110	Main power switch	1
30	00775307080401020	Electrocution hazard	1
31	00775307080401070	Use safety arm	1

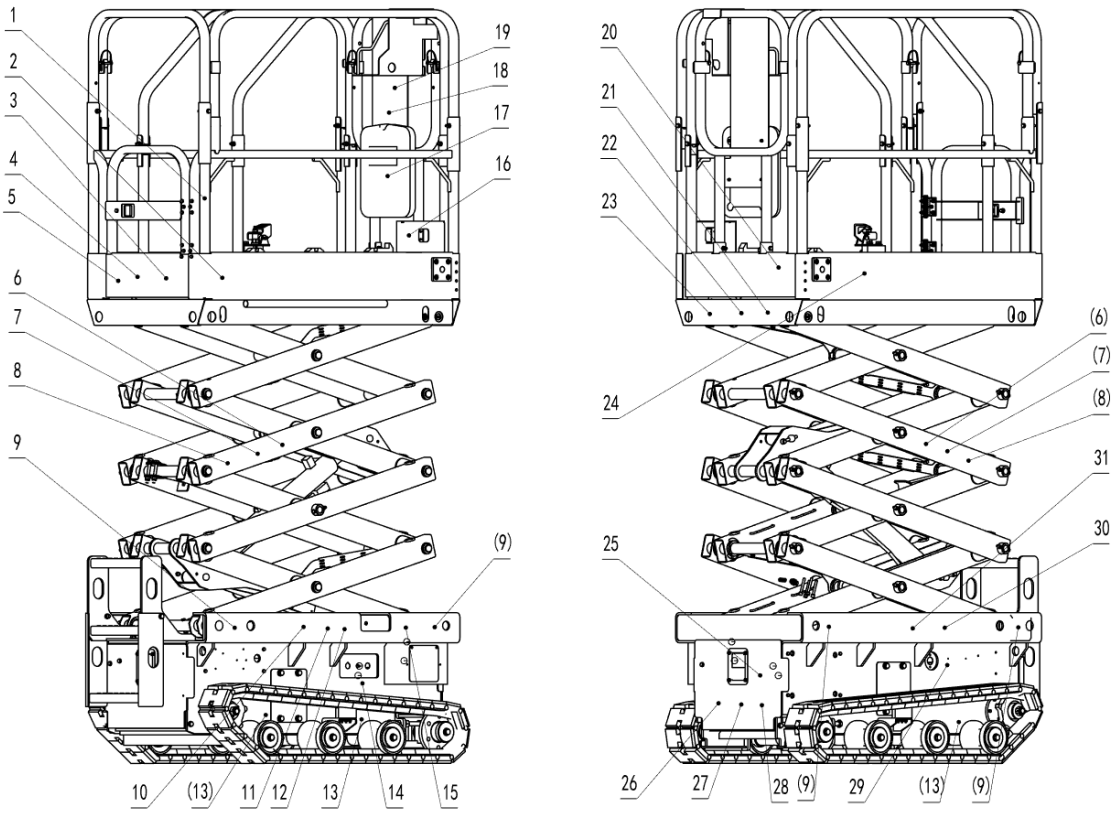


Figure 3-1 Decal position（ZS0508C Series）

Table 3-2 Decal 1 (ZS0610C Series)

NO.	Code	Name	Qty
1	00775307080402170	Max manual force(Indoor Series)	1
	00775307010402030	Max manual force(Outdoor Series)	1
2	00775307080202050	Load of 250 kg/550 lbs (Indoor Series)	1
	007753070H0401030	Load of 250 kg/550 lbs (Outdoor Series)	1
3	00775307080402180	Tilted ground	1
4	00775307080401030	Danger- Pinching Hazard	2
5	00775307080402100	Crushing hazard	3
6	00775307080402220	Safety arm	2
7	00775307080202010	Tie down and Lifting point	4
8	00775307080202210	Forklift lift	4
9	00775307080402060	Explosion and fire hazard	1
10	00775307080401040	High pressure liquid hazard	1
11	00775307080202200	Weight of 1950 kg/4299 lbs	2
12	00775307080402150	Emergency lowering	1
13	00775307080402030	Read Operation and Safety Manual carefully	2
14	00775307080402190	Label- To Lock nuts	1
15	00775307080402040	Keep the manual	1
16	00775307080402020	Overturning hazard	1
17	00775307080202090	Safety lanyard points	4
18	00775307080402230	Safety rules(Indoor Series)	1
	007753070H0401020	Safety rules(Outdoor Series)	1
19	00775307080402120	Overturning hazard	1
20	00775307080401060	Label- Platform Power Rated Voltage	1
21	00775307080401050	AC power	1
22	00775307080402130	Pre-start check	1
23	00775307080202140	Charger power	1
24	00775307080401020	Electrocution hazard	1
25	00775307080401070	Use safety arm	1
26	00775307080402110	Main power switch	1
27	00775307080401080	Label- non-insulated	1
28	00775307080401010	Label-CE	1
29	00775407000201090	Label-IPAF	1

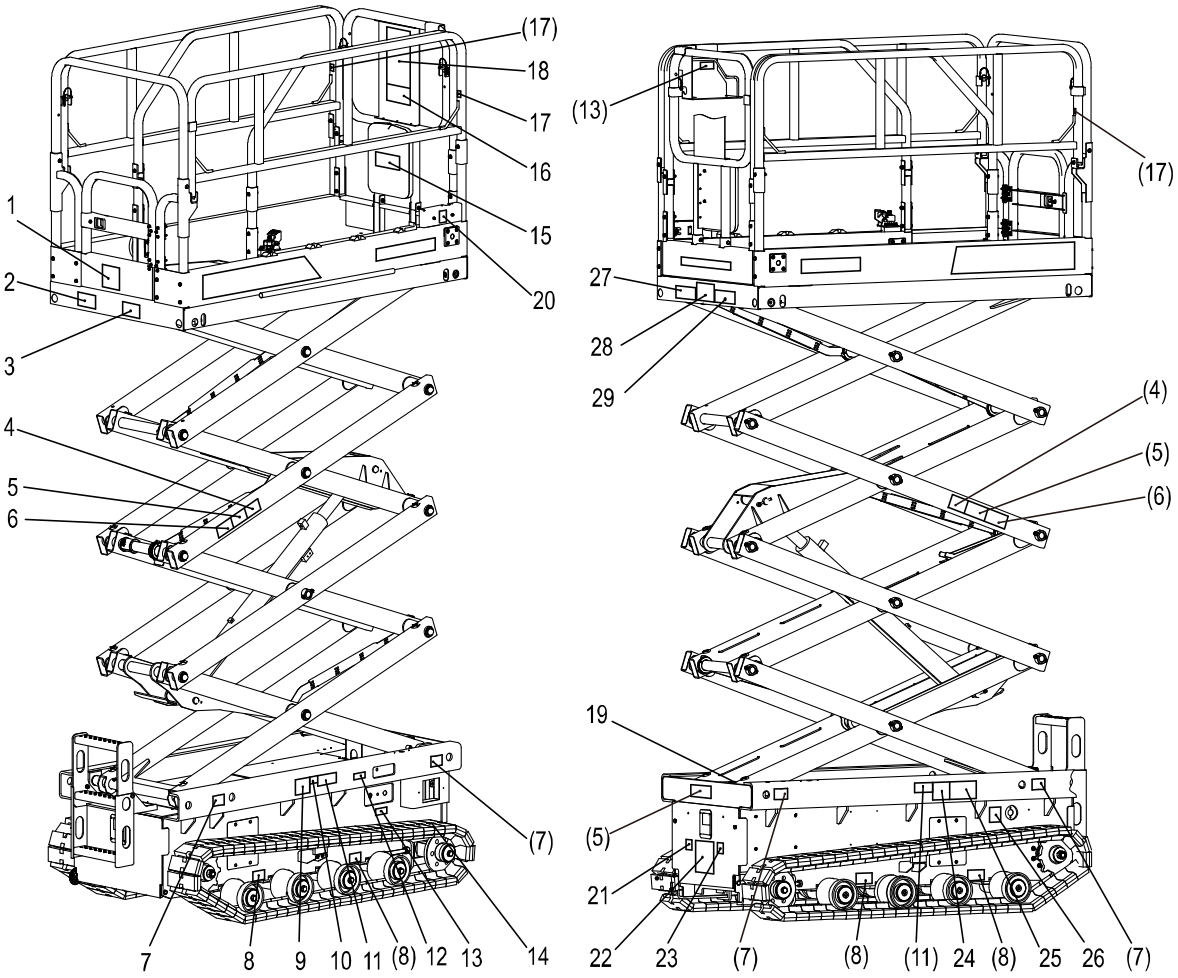


Figure 3-2 Decal position（ZS0610C Series）

Table 3-3 Decal 1 (ZS1216C Series)

NO.	Code	Name	Qty
1	00772407020201030	Leg load and distance	4
2	00775307080402220	Safety arm	4
3	00775307080402100	Crushing hazard	5
4	00775307080202090	Safety lanyard points	4
5	00775307080401060	Label- Platform Power Rated Voltage	1
6	00775307080401080	Label- non-insulated	1
7	00775307080401010	Label-CE	1
8	00775407000201090	Label-IPAF	1
9	00775307080401030	Danger- Pinching Hazard	2
10	00775307080402120	Overturning hazard	1
11	00775307080202010	Tie down and Lifting point	4
12	00775307080402130	Pre-start check	1
13	00775307080402110	Main power switch	1
14	00775307080202140	Charger power	1
15	00775307080402150	Emergency lowering	1
16	00775307080202210	Forklift lift	4
17	00772407020202200	Weight of 4045 kg/8918 lbs	2
18	00775307080401070	Use safety arm	1
19	00775307080402040	Keep the manual	1
20	00775307080402020	Overturning hazard	1
21	007753070H0401020	Safety rules	1
22	00775307080402030	Read Operation and Safety Manual carefully	2
23	00775307080402170	Max manual force	1
24	00775307080402180	Tilted ground	1
25	00775307080401090	High-altitude walking	1
26	00772407020201060	Load of 350 kg/770 lbs	1
27	00775307080401020	Electrocution hazard	1
28	00775307080401050	AC power	1
29	00775307080401040	High pressure liquid hazard	1
30	00775307080402060	Explosion and fire hazard	1

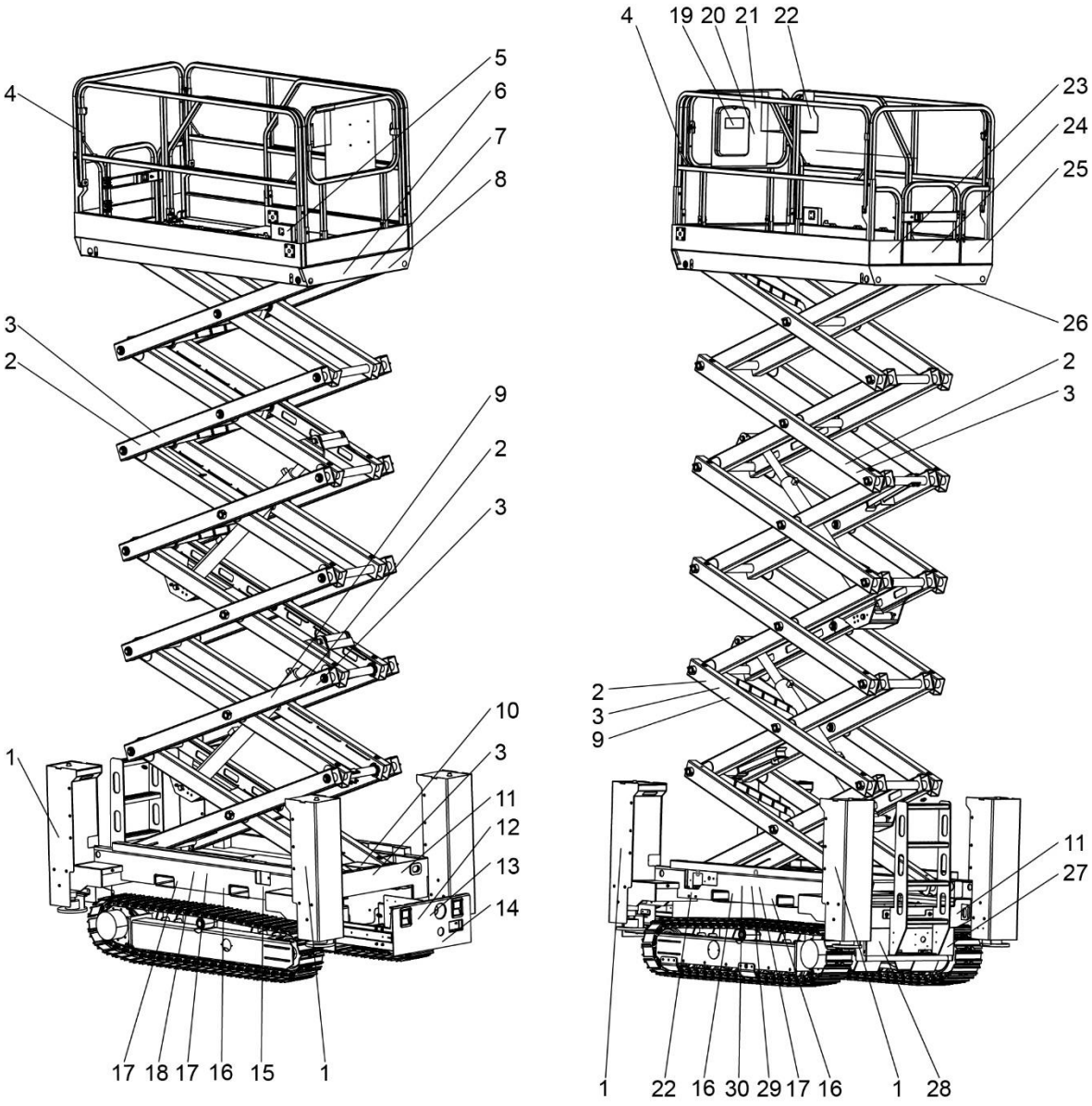


Figure 3-3 Decal postion（ZS1216C Series）

ZS0508C Series

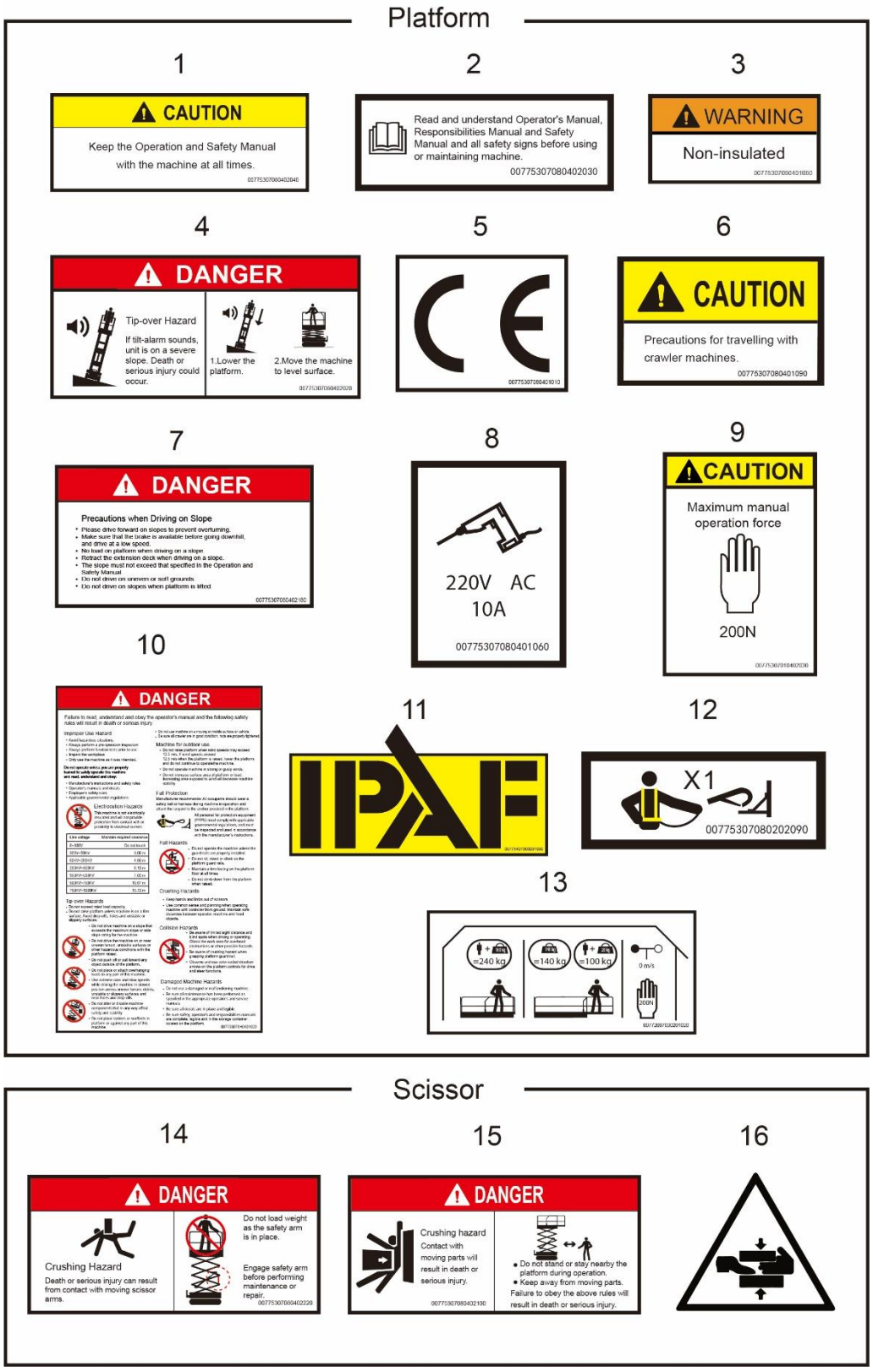


Figure 3-4 Decal

ZS0508C Series

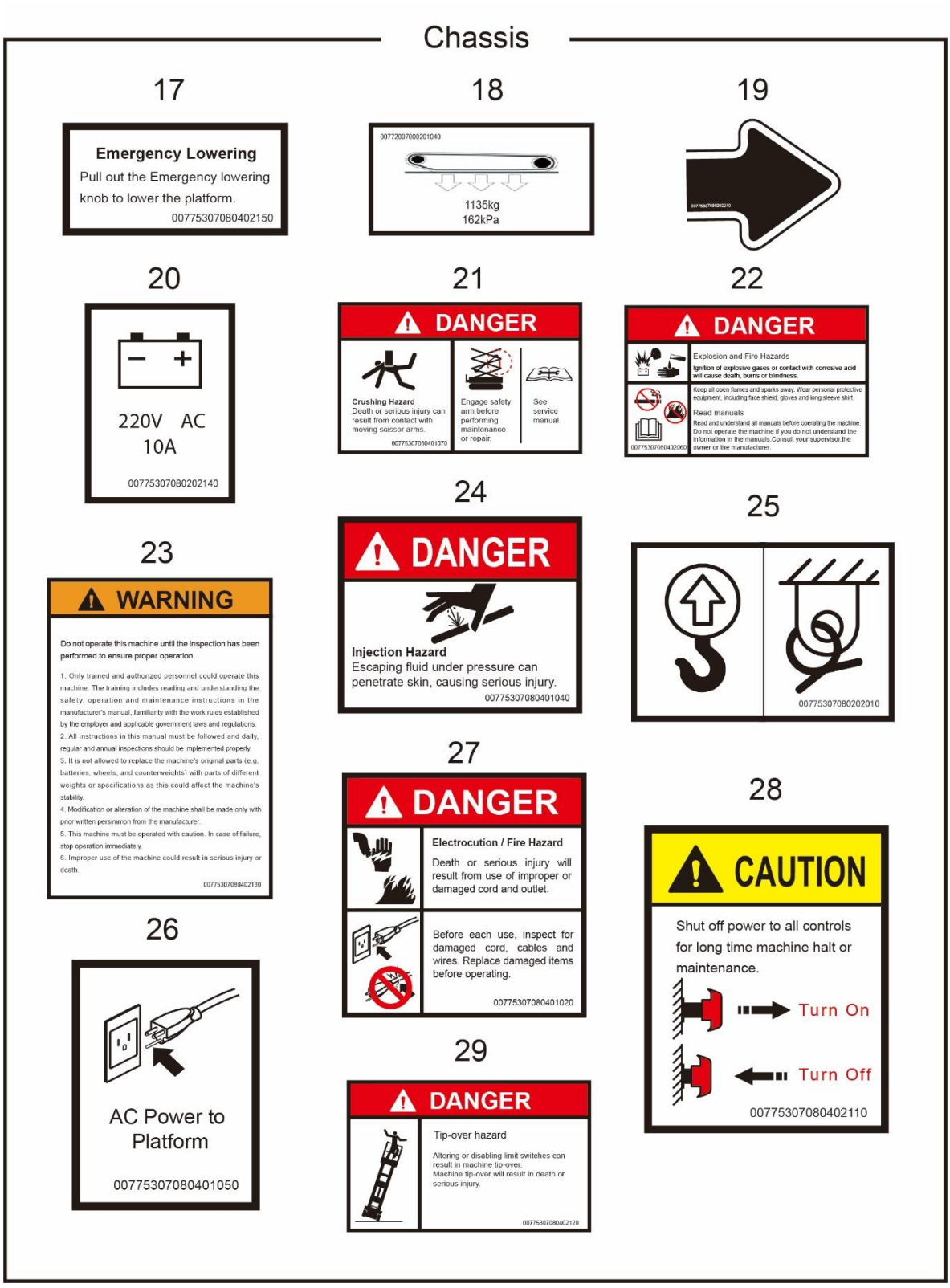


Figure 3-5 Decal

ZS0610C Series (Indoor Series)

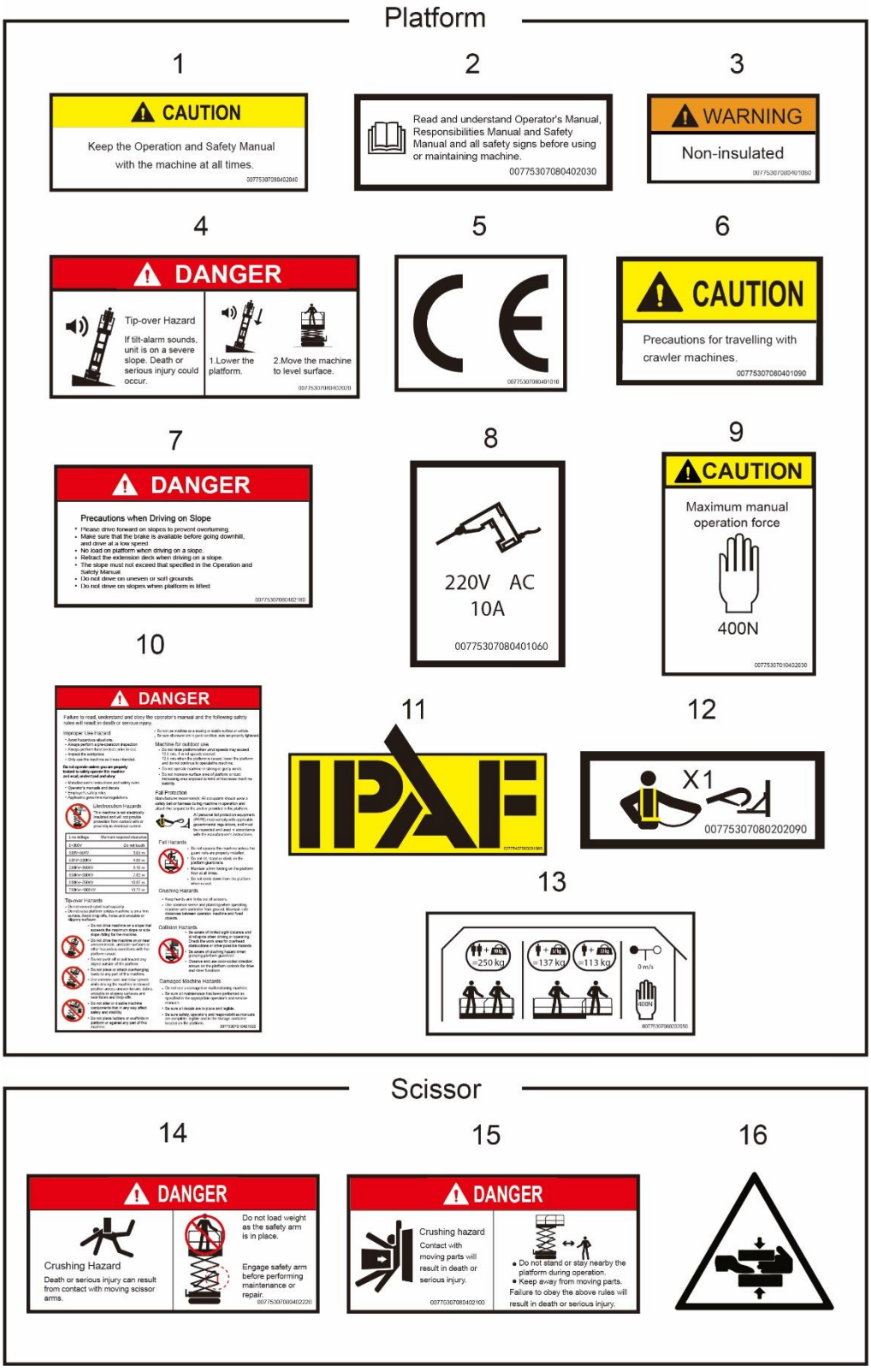


Figure 3-6 Decal

ZS0610C Series (Indoor Series)

Figure 3-7 Decal

ZS0610C Series (Outdoor Series)

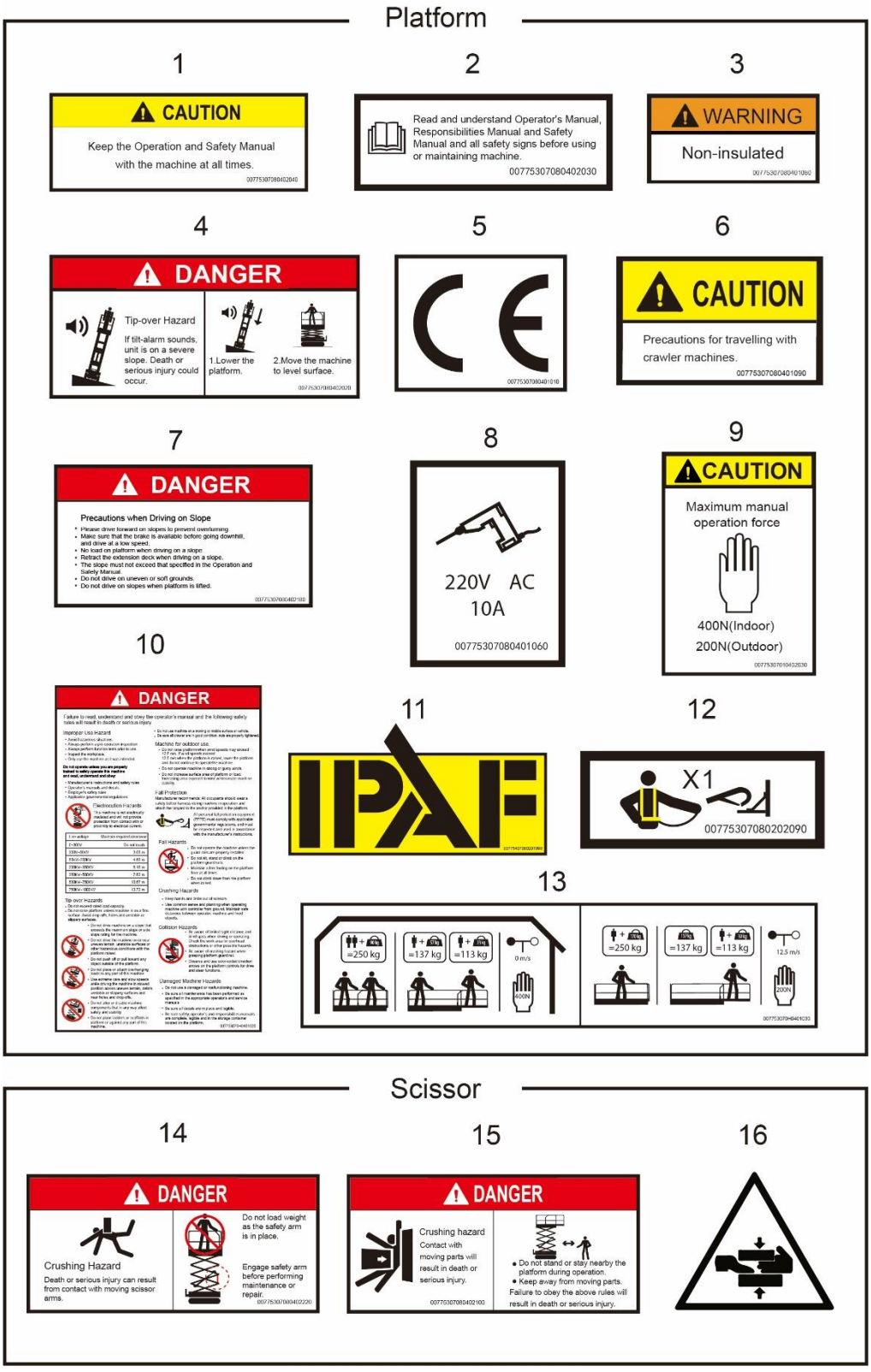


Figure 3-8 Decal

ZS0610C Series (Outdoor Series)

Figure 3-9 Decal

ZS1216C Series

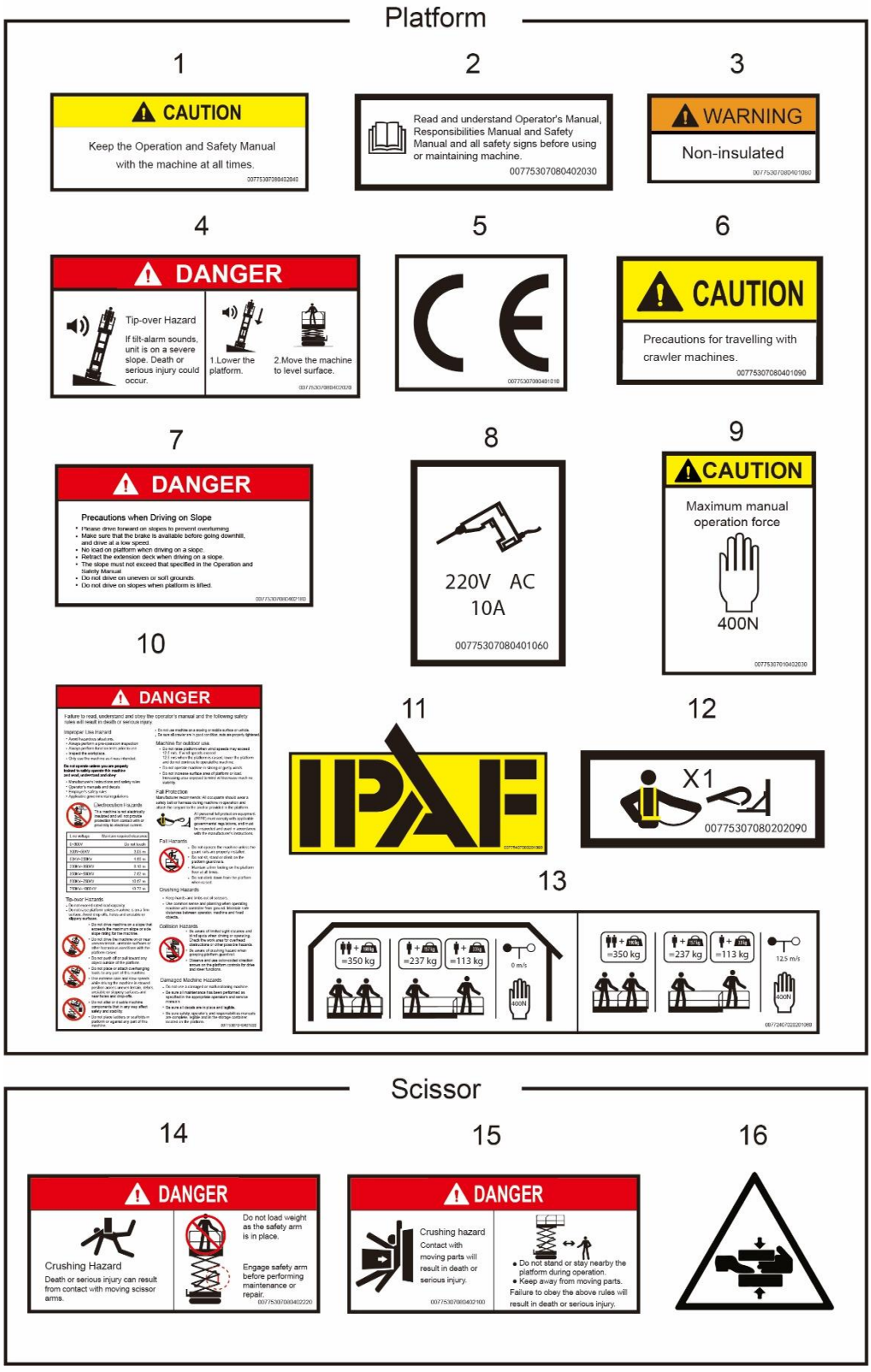


Figure 3-10 Decal

ZS1216C Series

Figure 3-11 Decal

ZOOMLION

Operation and Safety Manual

Section 4 Operation Instruction

SECTION 4 OPERATION INSTRUCTION

4.1 General

DANGER

An operator must not operate the machine, only if he has learned and practiced the principles of safe machine operation contained in this operational manual.

a) Avoid hazardous situations.

b) Perform a pre-operation inspection at all times.

c) Implement functional test before operating the machine at all times.

d) Inspect job site.

e) Only use the machine as it was intended.

Fundamentals:

The Operating Instructions section provides instructions for each aspect of machine operation. It is the operator's responsibility to follow all the safety rules and instructions in the operator's safety and responsibilities manuals.

Using the machine for anything other than lifting personnel, along with their tools and materials, to an aerial work site is unsafe and dangerous.

Only trained and authorized personnel should be permitted to operate a machine. If more than one operator is expected to use a machine at different times in the same work shift, they must all be qualified operators and are all expected to follow all safety rules and instructions in the operator's, safety and responsibilities manuals. That means every new operator should perform a pre-operation inspection, function tests, and a workplace inspection before using the machine.

4.2 Machine Operation

4.2.1 Turn on/off main power switch

a) Push in the red Power Switch to the off position at the battery box side to shut off machine power.

b) Pull out the red Power Switch to on position to operate the machine.

c) If the machine is out of service for a long time or in maintenance, turn off the Power Switch.

4.2.2 Emergency stop

a) Push in the red Emergency Stop button to the off position at the electronic controls or the platform controls to stop all functions.

b) Repair any function that operates when Power Switch and red Emergency Stop button are pushed in.

4.2.3 Emergency lowering

Pull the emergency lowering knob to lower the platform.

4.2.4 Operation after usage

a) Select a safe parking location-firm level surface, clear of obstruction and traffic.

b) Lower the platform.

c) Turn the key switch to the off position and remove the key to secure from unauthorized use.

d) Charger the batteries.

4.3 Operation from Ground

⚠CAUTION

Maintain safe distances between the operator, the machine and fixed objects.

Notice the drive direction when using the controller.

4.3.1 Start electronic operation function

a) Be sure the battery pack is connected before operating the machine.

b) Turn the key switch to electronic control.

c) Pull out both ground and platform red Emergency Stop buttons to the on position.

4.3.2 Adjust platform position

Press and hold both lifting enable button and platform up/down button on control panel to adjust platform position.

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

4.4 Operation from Platform

4.4.1 Start platform operation function

a) Be sure the battery pack is connected before operating the machine.

b) Turn the key switch to platform control.

c) Pull out both ground and platform red Emergency Stop buttons to the on position.

4.4.2 Adjust platform position

a) Press the lift function enable button.

On the LCD screen, a circle below the lift function symbol will turn on.

If the control handle is not moved within seven seconds of pushing the lift button, the circle below the lift function symbol will turn off and lift function will not operate. Press the lift function button again.

b) Press and hold function enable switch on handle while the lifting function indicator is on.

c) Move the control handle according to markings on the control panel.

4.4.3 Steering

a) Press the drive function button.

On the LCD screen, a circle below the drive function symbol will turn on.

If the control handle is not moved within seven seconds of pushing the drive function button, the circle below the drive function symbol will turn off and drive function will not operate.

b) Press and hold function enable switch on handle while the drive function indicator is on.

c) Pivot steering: The control handle is at the center position. According to the mark on the control panel, press and hold the steering thumb button on the top of the control handle to turn in place.

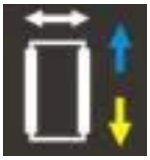
Steering when driving: When driving the machine by using the control handle, press the steering thumb button on the top of the control handle according to the mark on the control panel to realize the on-going steering.

d) When pivot steering, release the handle and operate again to realize the on-the-go turning. In the same way, release the handle and operate again to realize the in-situ steering.

4.4.4 Drive

a) Press the drive function button. On the LCD screen, a circle below the drive function symbol will turn on.

If the control handle is not moved within seven seconds of pushing the drive function button, the circle below the drive function symbol will turn off and drive function will not operate.



b) Press and hold function enable switch on handle while the drive function indicator is on.

c) Increase speed: slowly move the control handle off center.

d) Decrease speed: slowly move the control handle toward center.

e) Stop: return the control handle to center or release the function enable switch.

f) Use the color-coded direction arrows on the platform controls and on the platform to identify the direction the machine will travel.

g) Machine travel speed is restricted when the platform is raised.

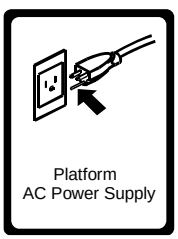
h) Battery condition will affect machine performance. Machine drive speed and function speed will drop when the battery level indicator is flashing.

4.4.5 Drive speed selection

Select the desired drive speed by control handle, usually, the machine is in the normal drive speed. Press the slow drive speed mode button, the circle below the button will turn on, slow drive speed mode is activated, the drive speed will restricted even if the control handle moves to the max speed position.

4.4.6 Platform AC power

Pull out the power plug on the left side of climbing ladder when using the platform AC power (if equipped), connect it to ground power socket. AC power socket on platform could provide AC power.



4.4.7 Indoor and outdoor working mode selection

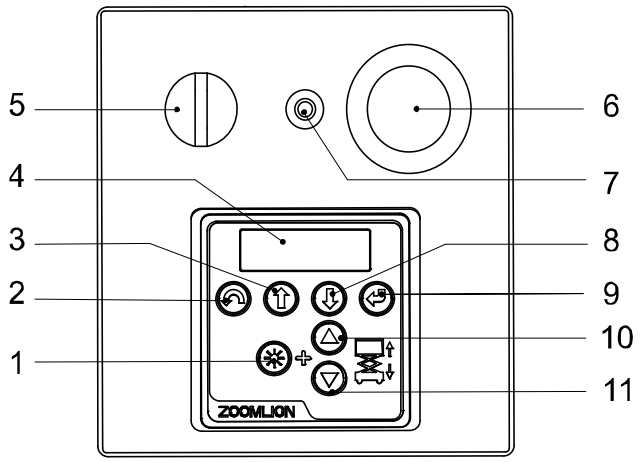


Figure 4-1 Electronic control Panel

Table 4-1 Electronic control panel instruction

No.	Name	No.	Name
1	Lifting enable button	7	10A breaker
2	Menu escape button	8	Menu down button
3	Menu up button	9	Menu enter button
4	LCD diagnostic readout	10	Platform up button
5	Key switch	11	Platform down button
6	Emergency stop switch		

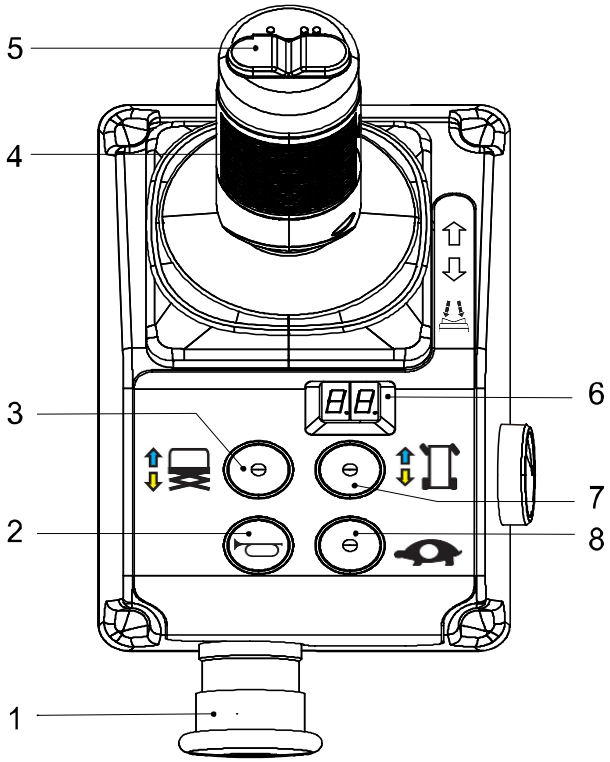


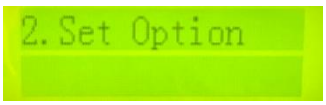
Figure 4-2 Platform control panel

Table 4-2 Platform control panel instruction

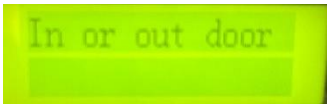
No.	Name	No.	Name
1	Emergency stop switch	5	Steering thumb button
2	Horn button	6	LED Readout
3	Lift function button	7	Drive function button
4	Control handle	8	Drive speed button

a) Push the emergency stop switch to OFF position, and turn the key switch to Ground position. Press the Input button on menu and pull out emergency stop button to ON position to enter the Menu interface.

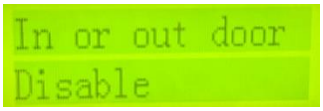
b) Press Down button, then press Enter button when the display shows as below.



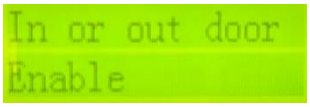
c) Continuously press Down button until the below interface shows up, then press the Enter button.



d) If the display shows as below, indicating indoor and outdoor functions disabled, only indoor working mode is allowed at this time, as shown in(h).



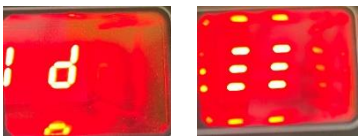
e) If the display shows as below, indicating indoor and outdoor functions enabled, then press Enter button, at this time, the default is outdoor working mode, as shown in(g).



f) Restart the machine, turn the key switch to Platform position, operate the machine through the platform control panel.

g) If the below two interfaces automatically switch back and forth, the machine is in outdoor working mode at this time.

h) Press Lifting function button and Driving speed button at the same time, when the below two interfaces switch back and forth, release the buttons, at this time, the machine is in indoor working mode.



4.5 Operation on Slope

4.5.1 Driving on a slope

⚠DANGER

a) Determine the slope and side slope ratings and slope grade for the machine when stowed.

Table 4-3 Slope rating

Maximum side slope rating, stowed position			
	ZS0508C	25%	14°
	ZS0610C	30%	17°
	ZS1216C	30%	17°

Table 4-4 Side slope rating

Maximum side slope rating, stowed position			
	ZS0508C	25%	14°
	ZS0610C	30%	17°
	ZS1216C	30%	17°

Slope rating is limited by ground conditions and traction. Press the drive speed button to the fast drive speed mode.

b) Measure the slope with a digital inclinometer OR use the following procedure.You will need: carpenters rule, straight block (minimum length 1m/ 3ft 3in), tape measure.

1) Lay the piece of wood on the slope.

2) At the downhill end, lay the level on the top of edge of the piece of wood and lift the end until the piece of wood is level.

3) While holding the piece of wood level, measure the vertical distance from the bottom of the piece of wood to the ground. Divide the tape measure distance (rise) by the length of the piece of wood (run) and multiply by 100.

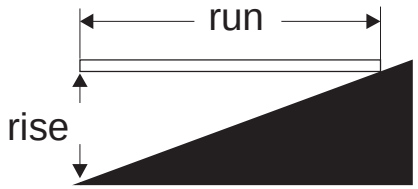
Example:

Block = 3.6m /12ft (144in),

Stroke=3.6m /12ft,

Rise = 0.3m /12in,

Grade 0.3m /12in÷3.6m /144in =0.083×100=8.3%.



If the slope exceeds the maximum slope or side slope rating, then the machine must be winched or transported up or down the slope. See Transport and Lifting section.

4.5.2 Operating on a slope

⚠DANGER

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

Table 4-5 Rating slope

Model	Max slope rated rating	Max side slope rated rating
ZS0508C	1.7°	1.7°
ZS0610C	2°	2°
ZS1216C	3°	2°

If the slope exceeds the maximum slope or side slope rating, tilt alarm will sound, then the platform must be lowered carefully. Move the machine to a firm, level surface before lifting.

4.6 Traction

It is not recommended that this machine be towed, except in the event of an emergency such as a machine malfunction or a total machine power failure.

a) Warning:

1) If the machine has any inclination, the wheel must be fully blocked before manually releasing the brake, otherwise it may cause injury or even death.

2) Runaway Hazard. The equipment does not have traction brakes and the towing vehicle must be able to control the equipment at all times. Do not conduct traction on the highway. Failure to do so could result in serious injury.

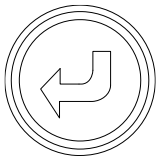
3) Maximum traction speed should not exceed 1.6km/h (1 mile/h), and the traction spacing should not exceed 18m /60 ft. Maximum traction slope should not exceed 30%.

b) The device provides two ways to release the brakes: the electronically released brake and the mechanical way:

1) Electronically released brake:

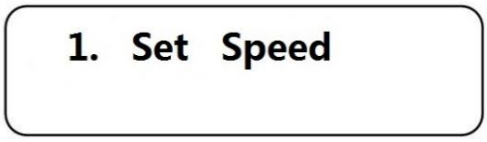
① Pull out device main power switch, platform emergency stop button and ground emergency stop button.

② Press and hold ECU Menu Entry Button.

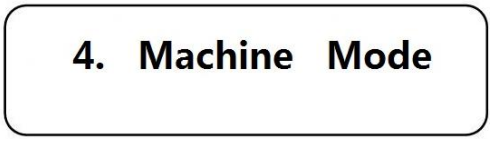


③ Turn the key switch to electronic control.

④ Until the following interface appears on the LCD reading device:



⑤ Scroll to the following screen by pressing the Menu Down Button:



⑥ Press Menu Entry Button to display following interface:

⑦ Long press Menu Entry Button to display the following interface, and the buzzer will alarm, indicating that the brake has been released.

⑧ After the equipment is towed, the key switch is turned off and the brake is restored.

4.7 Outrigger operation

a) Place the machine in the working area;

b) Press the autp-leveling button;

c) Enable up/down joystick. Outrigger extends and levels the machine automatically, the machine will sound when it is leveled.

When only one outrigger lowering, the indicator of Lifting Enable button will turn into red. All driving and lifting functions will be disabled.

When all outriggers land on the ground steadily, the indicators of Lifting Enable button and single Outrigger button will turn into green.

Driving function will be disabled when outrigger lowering.

4.7.1 Control single outrigger

a) Press one or more than one outriggers button;

b) Enable outrigger up/down joystick to level the machine as needed.

4.7.2 After use

a) Park the machine on a safe place where is solid level, and free of obstacles.

b) Lower the platform.

c) Turn the keyswitch to OFF position and take the key away to avoid unauthorized use.

4.8 Operation Code

4.8.1 Operation indicator code

If the platform controls LED or electronic controls LCD diagnostic readout displays an operational indicator code such as LL, the fault condition must repaired or removed before resuming machine operation. Push in and pull out the red Emergency Stop button to reset the system.

a) LED Readout.

b) LCD Readout.

c) Operation Indicator Code:

1) LL Off-Level.

2) OL Overload.

3) CH Chassis Mode Operation.

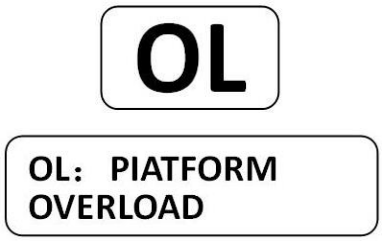
4) 18 Pothole Guard Fault.

5) 37 Battery Exhausted.

Refer to Zoomlion Maintenance manual for further information. A code and a description of a code can also be viewed at the electronic controls LCD display.

4.8.2 Platform overload

If the platform controller LED diagnostic readout displays OL, and the electronic controller LCD diagnostic readout displays OL as well, it indicates platform overloaded, all functions will stop. Alarm will sound.



a) Press the red Emergency Stop button to off position.

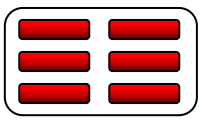
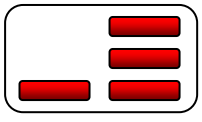
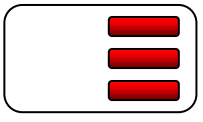
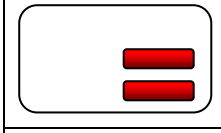
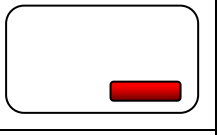
b) Remove load from platform.

c) Pull out the Red Emergency Button to the on position to operate the machine.

d) The reading device shows normal.

4.8.3 Battery level indicator

Use the LED diagnostic readout to determine the lead acid or lithium-ion battery level. When Low Charge appears on the platform controls LED display, the machine must be taken out of service and charged, otherwise all machine functions will be disabled.

	
Battery Level:90-100%	Battery Level:70%
	
Battery Level:50%	Battery Level:30%
	
Battery Level:20%	Battery Level:10%

4.9 Safety Arm and Guard Operation

4.9.1 How to use the safety arm

a) Attempt to raise the platform to approximately 2.4m/7ft 10in .

b) Rotate the safety arm away from the machine and let it hang down.

c) Lower the platform until the safety arm rests securely on the link. Keep clear of the safety arm when lowering the platform.

4.9.2 How to fold guard

The platform railing system consists of three fold down rail sections for the extension deck and three sections for the main deck. All six sections are held in place by four wire lock pins.

a) Fully lower the platform and retract the platform extension.

b) Remove the platform controls.

c) From inside the platform, remove the two extension deck lock pins.

d) Fold the front rail components. Keep hands free of pinch points.

e) Replace the two moved pins back into each side rail bracket.

f) Fold the rail components of each side. Keep hands free of pinch points.

g) At the rear of the main deck, remove the two main deck lock pins.

h) Carefully open the gate and exit the platform.

i) Fold down the rear gate and entry side rails as one unit. Keep hands free of pinch points.

j) Fold down the left and right side rails. Keep hands free of pinch points.

k) Replace the two moved pins back into each side rail bracket.

4.9.3 How to raise guard

Follow the fold down instructions but in reverse order, ensuring all lock pins are in place and installed properly.

4.9.4 Operation after usage

a) Select a safe parking location-firm level surface, clear of obstruction and traffic.

b) Lower the platform.

c) Turn the key switch to the off position and remove the key to secure from unauthorized use.

d) Charge the batteries.

4.10 Battery and Charger Operation

⚠CAUTION

Battery and Charger Instruction.

4.10.1 Observe and obey

a) Do not use an external charger or booster battery.

b) Charge the battery in a well-ventilated area.

c) Use proper AC input voltage for charging as indicated on the charger.

d) Use only a ZOOMLION authorized battery and charger.

4.10.2 Charging the battery

a) Be sure the batteries are connected before charging the batteries.

b) Open the battery compartment. The compartment should remain open for the entire charging cycle.

4.10.3 Maintenance free battery

a) Connect the battery charger to a grounded AC circuit.

b) The charger will indicate when the battery is fully charged.

4.10.4 Standard battery

a) Remove the battery vent caps and check the battery acid level. If necessary, add only enough distilled water to cover the plates. Do not add excessive distilled water before the charging process.

b) Replace the battery vent caps.

c) Connect the battery charger to a grounded AC circuit.

d) The charger will indicate when the battery is fully charged.

e) Check the battery acid level when the charging cycle is complete. Replenish with distilled water to he bottom of the fill tube.Do nor overfill.

4.10.5 Dry battery filling and charging instructions

a) Remove the battery vent caps and permanently remove the plastic seal from the battery vent openings.

b) Fill each cell with battery acid (electrolyte) until the level is sufficient to cover the plates.

c) Do not fill to maximum level until the battery charge cycle is complete. Overfilling can cause the battery acid to overflow during charging.Neutralize battery acid spills with baking soda and water.

d) Install the battery vent caps.

e) To Charge Battery.

f) Check the battery acid level when the charging cycle is complete. Replenish with distilled water to the bottom of the fill tube. Do nor overfill.

4.11 Transport and Lift

4.11.1 Observe and obey

a) ZOOMLION provides this securement information as a recommendation. The driver is solely responsible for ensuring that the machine is properly secured and the correct trailer is selected pursuant to CHINA Department of Transportation regulations, other localized regulations, and their company policy.

b) ZOOMLION customers needing to containerize any lift or ZOOMLION product should source a qualified freight forwarder with expertise in preparing, loading and securing construction and lifting equipment for international shipment.

c) Only qualified aerial lift operators should move the machine on or off the truck.

d) The transport vehicle must be parked on a level surface.

e) The transport vehicle must be secured to prevent rolling while the machine is being loaded.

f) Be sure the vehicle capacity, loading surfaces and chains or straps are sufficient to withstand the machine weight. ZOOMLION lifts are very heavy relative to their size. See the serial label for the machine weight.

g) Be sure the machine is on a level surface or secured before releasing the brake.

h) Do not allow the rails to fall when the snap pins are removed. Maintain a firm grasp on the rails when the rails are lowered.

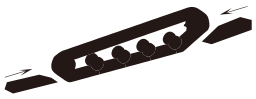
i) Do not drive the machine on a slope that exceeds the uphill, downhill or side slope rating. See Driving on a Slope in the Operating Instructions section.

j) 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 in the brake release operation.

4.11.2 Transport

a) Brake Release Operation:

1) Chock the crawlers to prevent the machine from rolling.



2) Be sure the winch line is properly secured to the drive chassis tie points and the path is clear of all obstructions.

3) For the brake release of, please refer to 4.6.

b) After loaded:

1) Chock the crawlers to prevent the machine from rolling.

2) Pull out the red Emergency Button at both the ground and platform controls to the off position.

c) Towing the machine is not recommended. If the machine must be towed, do not exceed 1.6 km/h (1mile/h).

d) Securing to Truck or Trailer for Transit:

1) Always use the extension deck lock when the machine is transported. Turn the key switch to the off position and remove the key before transporting.

2) Inspect the entire machine for loose or unsecured Names. Use chains or straps of ample load capacity. Use a minimum of 2 chains or straps. Adjust the rigging to prevent damage to the chains.

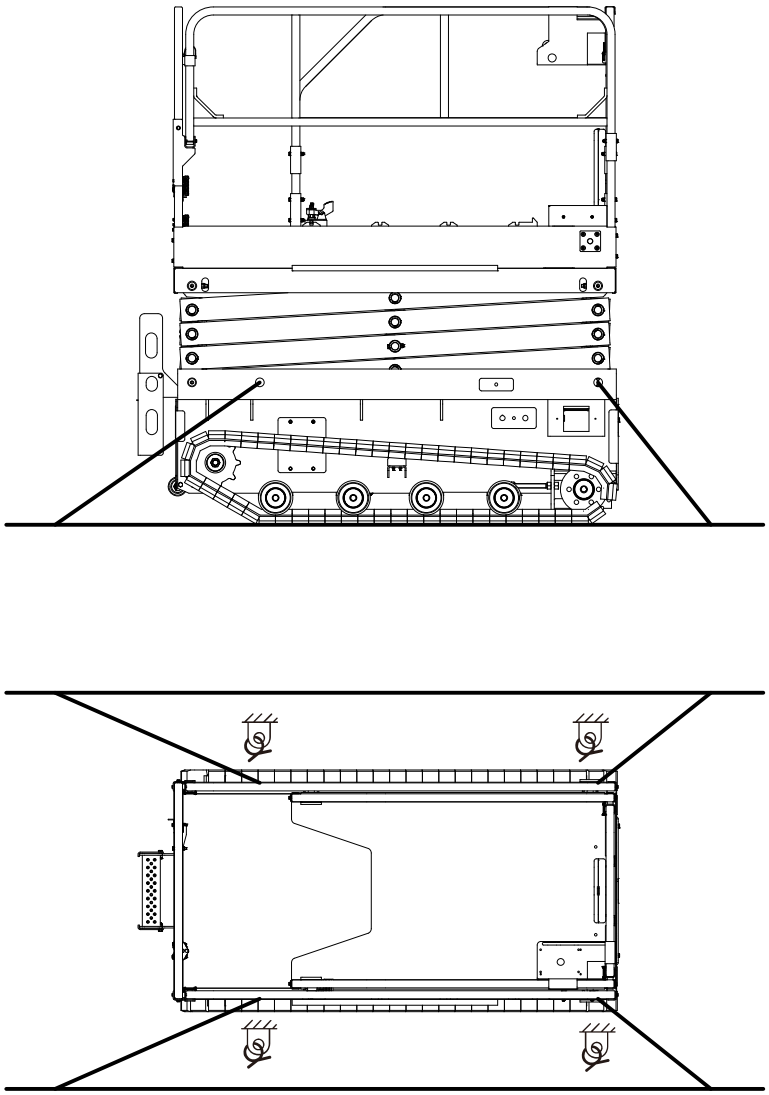


Figure 4-3 ZS0508C/ZS0610C Series tie down points

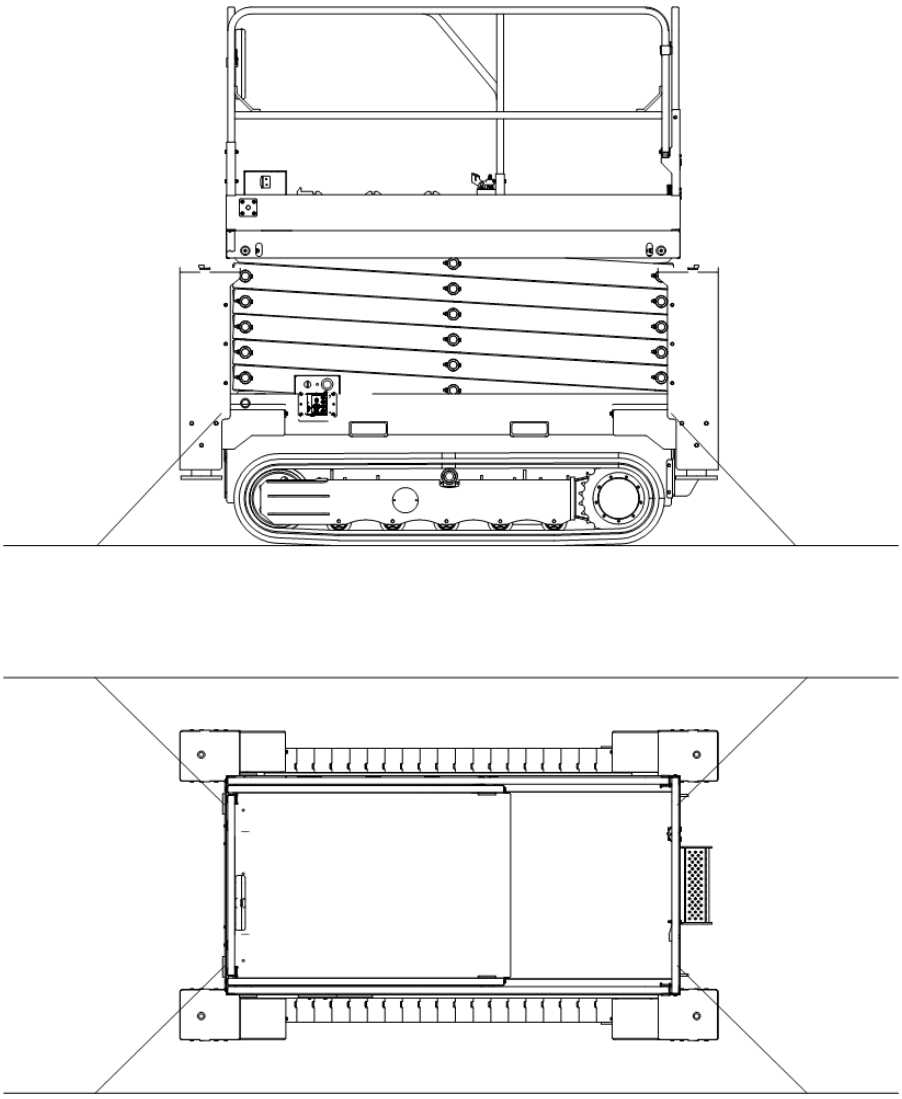


Figure 4-4 ZS1216C Series tie down points

4.11.3 Lifting operation

⚠WARNING

a) Observe and Obey:

1) Only qualified riggers should rig and lift the machine.

2) Only qualified forklift operators should lift the machine with a forklift.

3) 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.

b) Lifting the machine with a Forklift:

1) Be sure the extension deck, controls and component trays are secured. Remove all loosen parts.

2) The platform must remain lowered during all loading and transport procedures.

3) Use the forklift pockets located on both sides of the ladder. See Figure 4-5 to Figure 4-6.

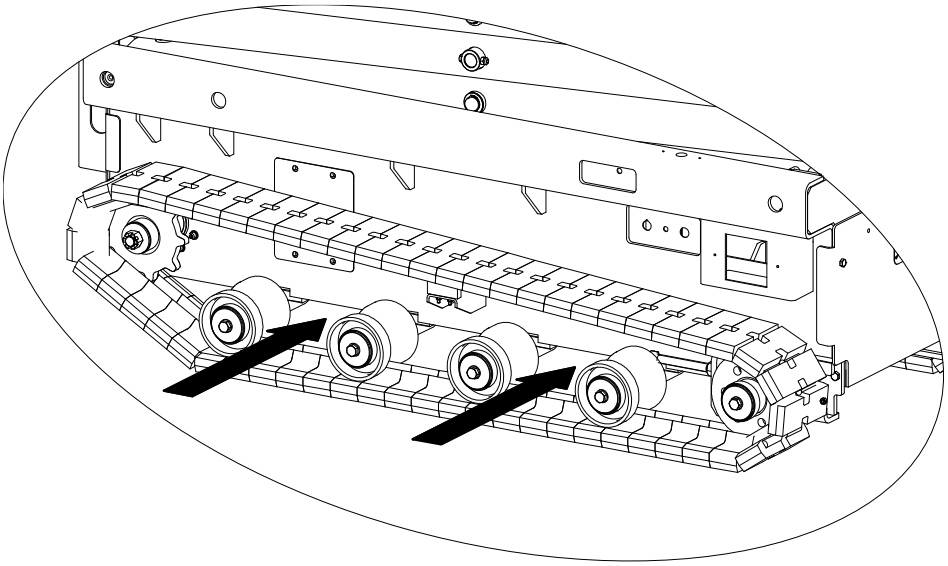


Figure 4-5 ZS0508C/ZS0610C Series forklift pockets

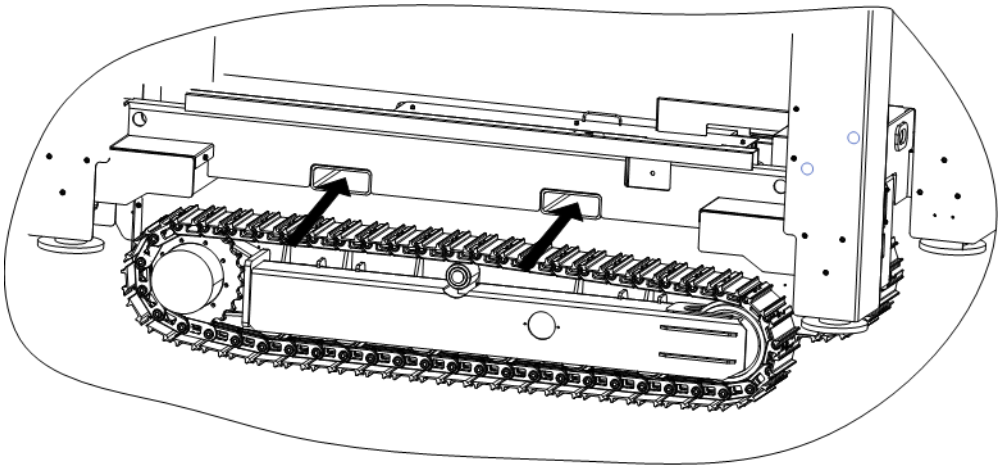


Figure 4-6 ZS1216C Series forklift pockets

4) Align the forklift fork with the position of the forklift pockets and drive forward until the fork is fully inserted.

5) Raise the machine 0.4m /1ft 4in and then tilt the forks back slightly to keep the machine secure.

6) Be sure the machine is level when lowering the forks.

c) Lifting Instruction:

1) Fully lowering the platform. Be sure the extension deck, controls and component trays are secured. Remove all loose Names on the machine.

2) Use Table 4-6 and Figure 4-7 or Figure 4-8 to determine the center of gravity of the machine.

3) Attach the rigging only to the designated lifting points on the machine. There are two 2.5cm/1 in holes on the front of the machine, and two holes on the rear of the machine for lifting.

4) Adjust the rigging to prevent damage to the machine and to keep the machine level.

Table 4-6 Center of gravity

Model	X Axis	Y Axis
ZS0508C	46 cm/18.1in	34 cm/13.4in
ZS0610C	84 cm/33in	60 cm/23.6in
ZS1216C	85cm/33.5in	54 cm/21.3in

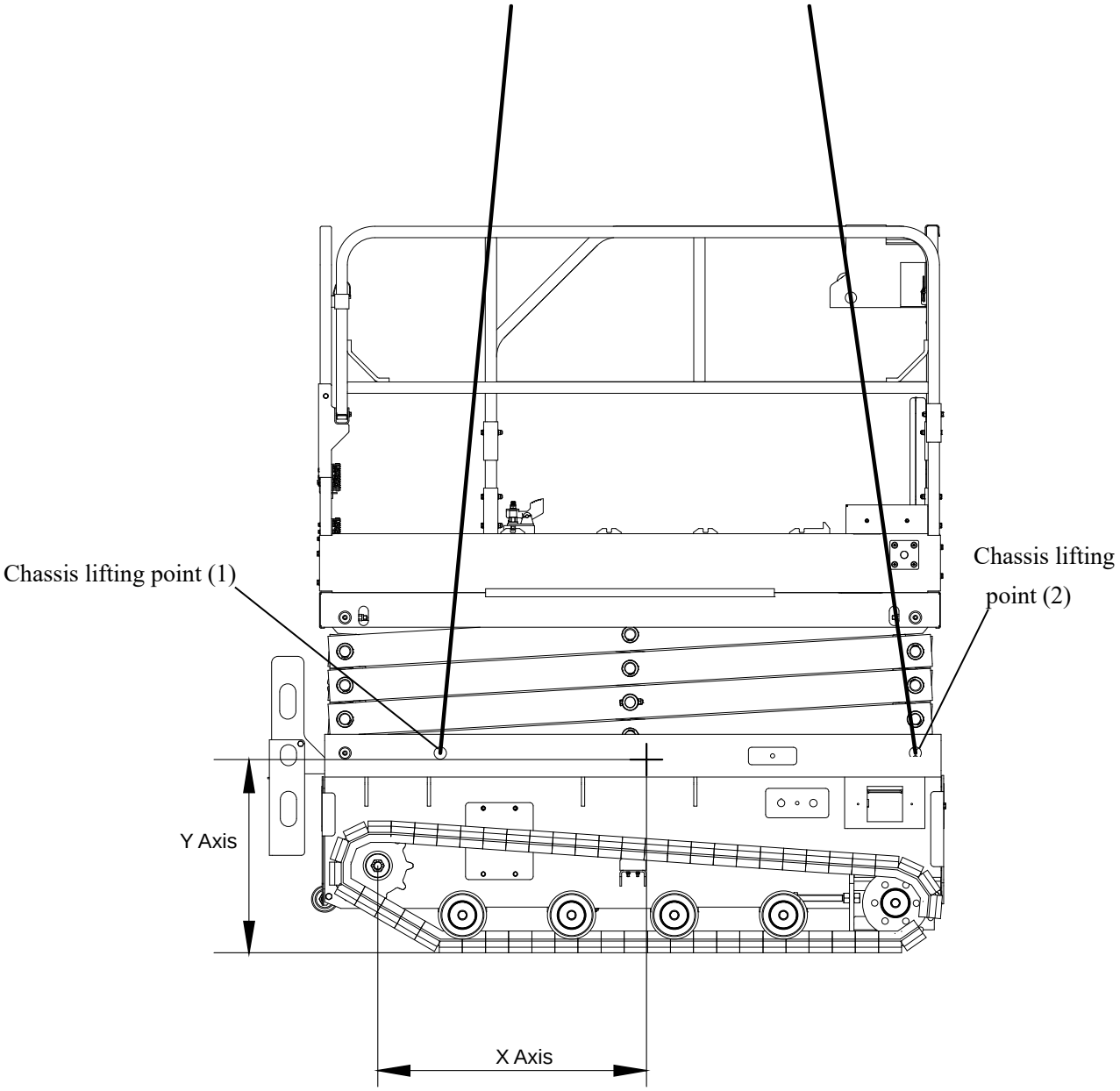


Figure 4-7 ZS0508C/ZS0610C Series Center of gravity

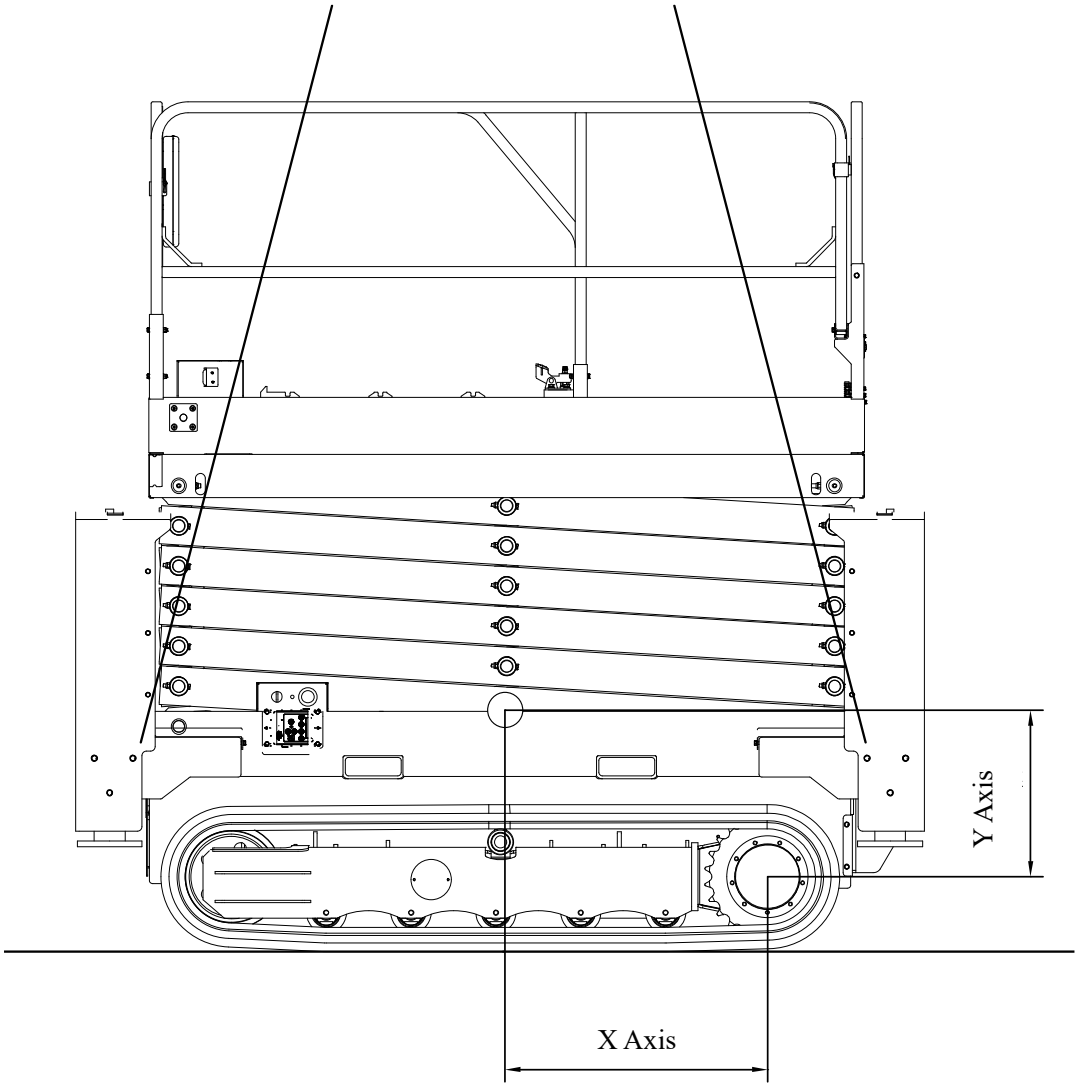


Figure 4-8 ZS1216C Series Center of gravity

ZOOMLION

Operation and Safety Manual

Section 5 Maintenance

SECTION 5 MAINTENANCE

5.1 General

Observe and Obey:

a) Only routine maintenance items specified in this manual shall be performed by the operator.

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

c) Disposal of materials should be according to the regulations of government and relevant environmental protection administration.

d) Use only ZOOMLION approved replacement parts. ZOOMLION assumes no responsibility for hazards occurred to equipment and personnel caused by the use of unauthorized parts.

5.1.1 Maintenance symbols legend

The following symbols have been used in this manual to help communicate the intent of the instructions. When one or more of the symbols appear at the beginning of a maintenance procedure, it conveys the meaning below.

Indicates that tools will be required to perform this procedure.

Indicates that new parts will be required to perform this procedure.

5.1.2 Pre-start inspection

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

b) Be sure all decals are in place and legible.

c) Check for hydraulic oil leaks and proper oil level. Add oil if needed. See Maintenance section.

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

   1) Electrical components, wiring, and electrical cables.

2) Hydraulic hoses, fittings, and cylinders.

3) Drive motor.

4) Wear pads.

5) Alarm and indicator (if equipped).

6) Nuts, bolts and other fasteners.

7) Safety arm.

8) Extension deck.

9) Scissor arm pin and fastener.

10) Platform control joystick.

11) Batteries and other connector.

12) Ground belt.

13) Platform entry chain or door.

14) Platform overloaded components.

15) Lanyard fixing point.

16) Check the whole machine for:

① Welds or structural cracks;

② Dent or damages;

③ Severe rust or corrosion.

e) Make sure that all structural components and other key components are equipped and all related fasteners and pins are in place;

f) Make sure that the drive chain damage and tension are proper (See tension degree and adjustment in Maintenance section);

g) Make sure that the crawler damage and tension are proper (See tension degree and adjustment in Maintenance section);

h) Make sure that all batteries are connected correctly;

i) Make sure that all hood are in place and locked after inspection.

NOTICE

If the platform has to be lifted when maintaining, make sure that the safety are are in place, see Operating Instruction.

5.1.3 Maintenance hazard

a) Shut off power to all controls and ensure that all moving parts are secured from inadvertent motion prior to performing any adjustments or repairs.

b) Never work under an elevated platform until it has been fully lowered to stowed position, if possible, or otherwise supported and restrained from movement with appropriate safety props, blocking, or overhead supports.

c) DO NOT attempt to repair or tighten any hydraulic holes or fittings while the machine is powered on or when the hydraulic system is under pressure.

d) Always relieve hydraulic pressure from all hydraulic circuits before loosening or removing hydraulic components.

e) DO NOT use your hand to check for leaks. Use a piece of card- board or paper to search for leaks. Wear gloves to help protect hands from spraying fluid.

5.1.4 Body injury hazard

Do not operate a machine with a hydraulic oil or air leak. An air leak or hydraulic leak can penetrate and/or burn skin. During or after a period of running of the hydraulic system, the parts may produce high surface temperature, and improper contact will cause burn to skin. Overhauling or adjusting any part of hydraulic system can cause serious injuries. Only trained maintenance personnel are allowed to repair or adjust the hydraulic system.

Access by the operator is only advised when performing a pre-operation inspection. All compartments must remain closed and secured during operation.

5.2 Hydraulic System Maintenance

5.2.1 Hydraulic oil level

Maintaining the hydraulic oil at the proper level is essential to machine operation. Improper hydraulic oil levels can damage hydraulic components. Daily checks allow the inspector to identify changes in oil level that might indicate the presence of hydraulic system problems.

a) Be sure the machine is on a firm and level surface and in stowed position.

b) By observing oil level in hydraulic oil tank, the hydraulic oil level after excluding air in the hydraulic system should reach the maximum scale mark on the hydraulic oil tank, and not be higher than bottom of the oil tank cap (different models have different maximum scale).

c) Add oil as needed. Do not overfill.

5.2.2 Hydraulic oil capacity

Table 5-1 Capacity

Model	Hydraulic tank	Hydraulic system(including tank)
ZS0508C	7L /1.8 US gal	5L /1.3 US gal
ZS0610C	8L /2.1 US gal	6L /1.6 US gal
ZS1216C	25L /6.5 US gal	23L /6.0 US gal

5.2.3 Hydraulic oil specification

Please refer to the Table 5-2 for the recommended type and model of hydraulic oil (Table 5-2 is not used to specify the model and parameters of hydraulic oil). Please select proper hydraulic oil according to the specific application environment of the equipment. For special environment or special requirements of users, please contact ZOOMLION or the hydraulic oil manufacturer.

⚠CAUTION

Do not mix oils of different brands or types, as they contain different additives which may cause negative effects. If mixing of hydraulic oils is unavoidable, permission must be obtained from the hydraulic oil manufacturer. After-sales service of ZOOMLION does not cover machine malfunction caused by hydraulic oil mixing.

Table 5-2 Technical parameters of hydraulic oil

Technical Parameters / Type	ISO Viscosity Grade	Pour Point ℃/°F	Flash Point ℃ /°F	kinematic viscosity cSt(40℃/104 °F)	Viscosity index
Great Wall 4632 grease non-flammable hydraulic oil N32 (Eco-Friendly)	32	-20/-4	270/518	28.8-35.2	180
Great Wall Ground NO.10 aviation hydraulic fluid	—	-55/-67	107/225	10.53(50°C/122°F)	120

Table 5-2 Technical parameters of hydraulic oil (cont.)

Technical Parameters / Type	ISO Viscosity Grade	Pour Point ℃/℉	Flash Point ℃ /℉	kinematic viscosity cSt(40℃/104 ℉)	Viscosity index
Great Wall Zhuoli L-HS 15 Ultralow temperature oil	15	-57/-71	164/327	15.35	172
Great Wall Zhuoli L-HS 32 Ultralow temperature oil	32	-48/-54	224/435	31.35	166
Great Wall Zhuoli L-HS 46 Ultralow temperature oil	46	-43/-45	238/460	45.81	170
Great Wall Zhuoli L-HV 15 Low temperature oil	15	-45/-49	173/343	15.51	140
Great Wall Zhuoli L-HV 32 Low temperature oil	32	-39/-38	231/448	33.4	150
Great Wall Zhuoli L-HV 46 Low temperature oil	46	-37/-35	240/464	48.7	150
Great Wall Zhuoli L-HV 68 Low temperature oil	68	-35/-31	238/460	70.47	150
Great Wall Zhuoli L-HM 46 Antiwear hydraulic oil (High pressure)	46	-15/5	240/464	45.8	97
Great Wall Zhuoli L-HM 68 Antiwear hydraulic oil (High pressure)	68	-13/9	245/473	67.4	98
Mobil SHC Aware H 32（Eco-Friendly)	32	-30/-22	185/365	32	140
Clarity Synthetic EA Hydraulic Oil	46	-44/-47	221/430	46	180
Mobil DTE 10 Ultra 22	22	-54/-65	224/435	22.4	164
Mobil DTE 10 Ultra 32	32	-54/-65	250/482	32.7	164
Mobil DTE 10 Ultra 46	46	-45/-49	232/450	45.6	164
Chevron/CaltexRando Rando HDZ 15	15	-60/-76	150/302	15.7	144

Table 5-2 Technical parameter of hydraulic oil (cont.)

Technical Parameters / Type	ISO Viscosity Grade	Pour Point °C/°F	Flash Point °C /°F	kinematic viscosity cSt(40°C/ 104°F)	Viscosity index
Chevron/CaltexRando Rando HDZ 32	32	-49/-56	204/399	33	150
Chevron/CaltexRando Rando HDZ 46	46	-47/-53	216/421	46.7	153
Chevron/CaltexRando Rando MV 15	15	-42/-44	154/309	15.8	155
Chevron/CaltexRando Rando MV 32	32	-36/-33	210/410	33.5	154
Chevron/CaltexRando Rando MV 46	46	-33/-27	214/417	44	154

5.2.4 Hydraulic oil viscosity and temperature limit

Proper use of hydraulic oil: please note the corresponding oil viscosity and temperature limit. Under normal conditions, the recommended oil temperature should be controlled at 30℃/86℉ to 60℃/140℉, this highest temperature should be no more than 90℃/194℉. The oil temperature affects the oil viscosity and the thickness of the oil film. Excessive oil temperatures can also damage or shorten the life of the oil seal and other rubber components, which can cause oil leakage in the hydraulic system, while high temperatures can exacerbate the evaporation and oxidation of the oil.

Pre-delivery of the machine, specific model of hydraulic oil shall be added as required by customer. If machine operating environment temperature is beyond the temperature limit of the hydraulic oil, different hydraulic oil suited to the actual conditions shall be used in time. On account of the safety of machine components and work efficiency, it is advisable that the starting temperature should be 25℃/77℉ higher than the pour point of hydraulic oil.

If the altitude is higher than 4,000 m/13,100ft, please use a lower viscosity grade hydraulic oil based on the above requirements for the use of hydraulic oil for hydraulic pump normally operation.

5.2.5 Hydraulic oil replacement

We suggest that changing time of the hydraulic oil is as follows:

a) First changing: operating for 500 hrs after commissioning.

b) Second and subsequent changing: every 2,000 hrs of operation or once a year.

The above recommended intervals are suitable for most applications. Higher temperatures and pressures

will shorten the oil's service life, so the hydraulic oil should be changed sooner than the recommended. For small load work, the oil change time can be extended.

Cleanliness of the hydraulic oil upon delivery is NAS9 (ISO4406 18/15), and for normal operation, the cleanliness should not be lower than NAS10 (ISO4406 19/16). We suggest that the hydraulic oil should be checked every 6 months, and the oil should be sampled at least once upon the time for oil changing. The oil sample can be sent to the hydraulic oil manufacturer or qualified third-party testing agency for analysis and to determine whether it is still usable.

5.2.6 Return oil filter element replacement

The oil return filter element is recommended to be changed every 1,000 hrs of operation or every year, whichever comes first. Proper filter element condition is essential to good machine performance and service life. Dirty or clogged filters will affect machine performance and damage components. Under hostile environment and bad operating conditions, the filter should be checked and replaced more frequently.

5.3 Battery Maintenance

Proper battery condition is essential to good machine performance and operational safety. Improper fluid levels or damaged cables and connections can result in component damage and hazardous conditions.

This inspection is not required for machines with sealed or non-maintainable batteries.

Check electrolyte level of the battery every two weeks. Fully change the battery before adding water. If the electrolyte level is much higher than the plate, then no need to add water.

⚠CAUTION

Electric shock hazard:

Contact with hot or live circuits may result in death or serious injury. Remove all rings, watches and jewelry.

Body Injury Hazard:

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

The battery should be fully charged before this inspection.

a) Only qualified riggers should rig the machine.

b) Only certified crane operators should lift the machine and only in accordance with the applicable crane regulations.

c) Be sure that the battery hold-down brackets are in place and secure.

Adding terminal protectors and a corrosion preventative sealant will help eliminate the corrosion on the battery terminals and cables.

5.4 Drive Device Adjustment

5.4.1 Drive chain adjustment(ZS0508C/ZS0610C Series)

When the tension (degree of tightness) of the left and right walking device exceeds the allowable range, adjust it. Release the brake or suspend the driving wheel, loosen the bolts of the walking device, and re-tighten after adjustment. (The bolt torque is 85Nm/63 ft-lbs).

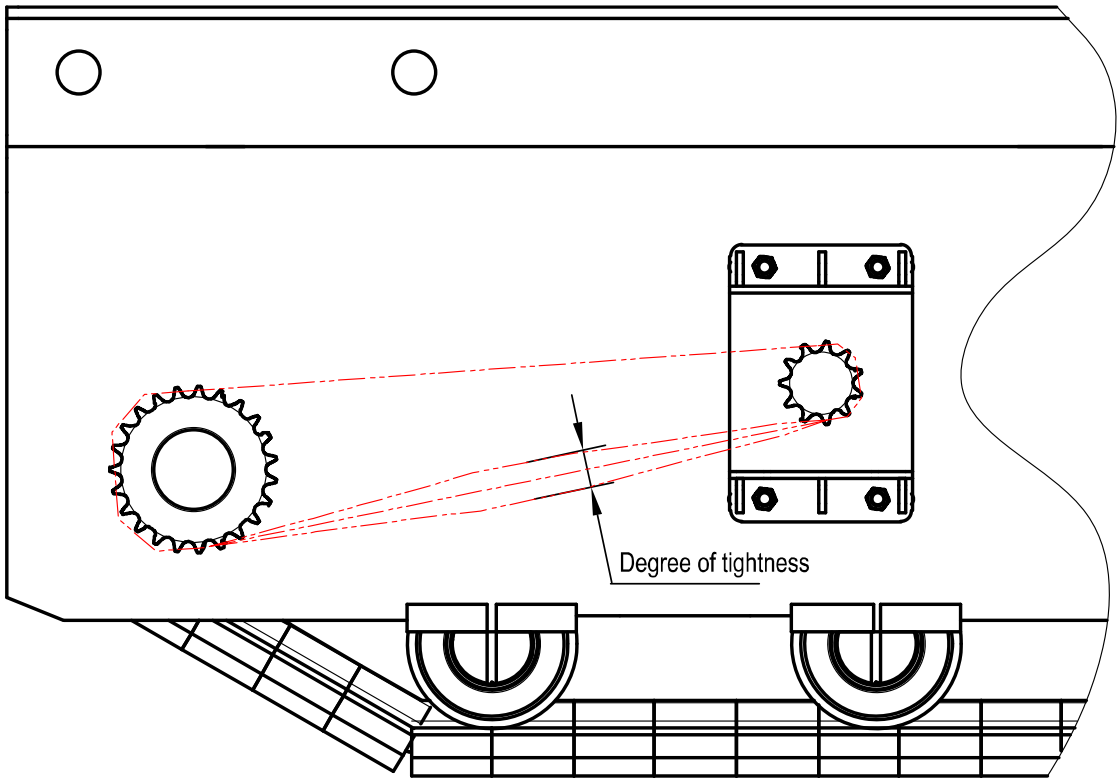


Figure 5-1 Right side walking device

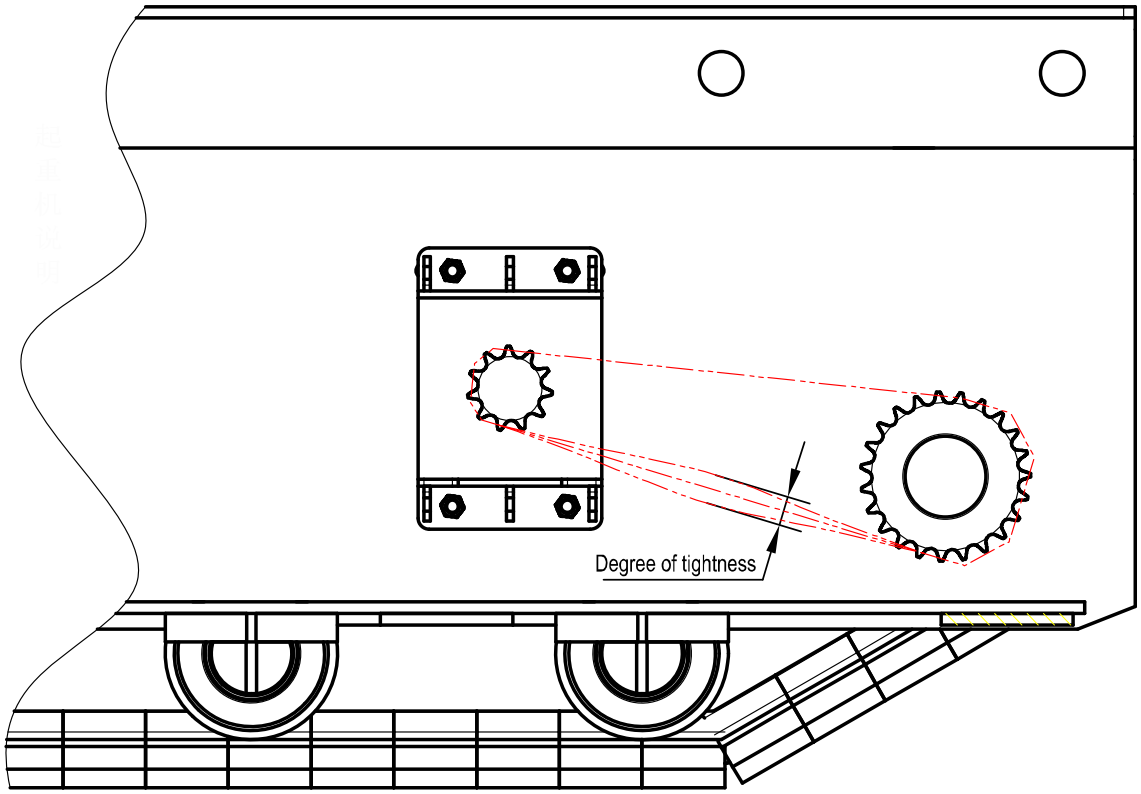


Figure 5-2 Left side walking device

Table 5-3 Allowable tightness range

Walking device chain	Allowable tightness range
Right side	9mm/0.35in~15mm/0.59in
Left side	6mm/0.24in~12mm/0.47in

5.4.2 Crawler tension adjustment

Check the tension of the crawler in the suspended state, if the gap between the crawler and the roller exceeds 15±5 mm/0.59±2 in, please adjust it (ZS0508C/ZS0610C Series).

a) In the suspended state, use the adjusting bolt to adjust the gap between the track and the roller to 15±5 mm/0.59±2 in;

b) Ensure that the left and right crawler belts have the same tension;

c) After adjustment, please travel again to confirm. The crawler belt is easy to fall off in a relaxed state.

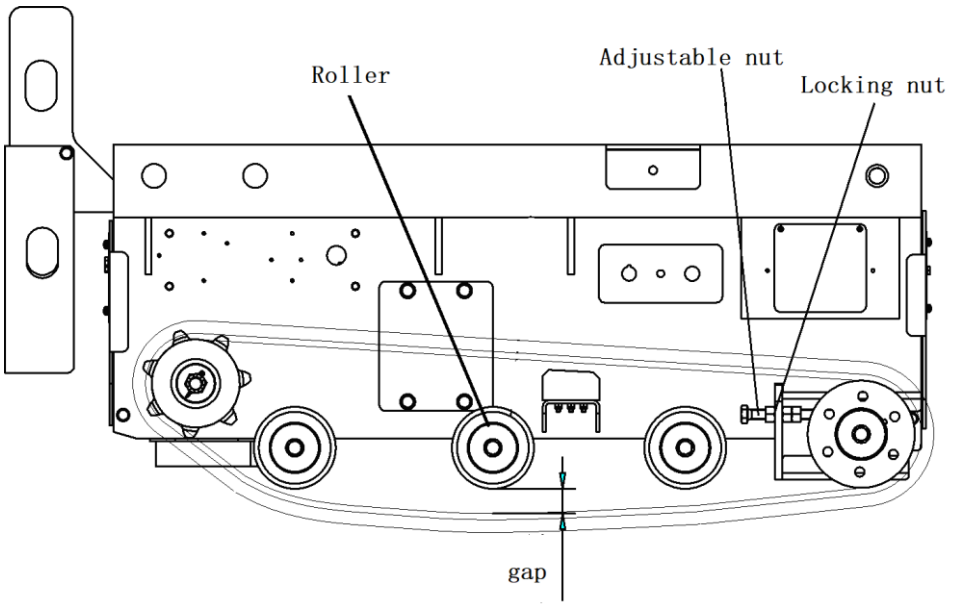


Figure 5-3 ZS0508C Crawler tension diagram

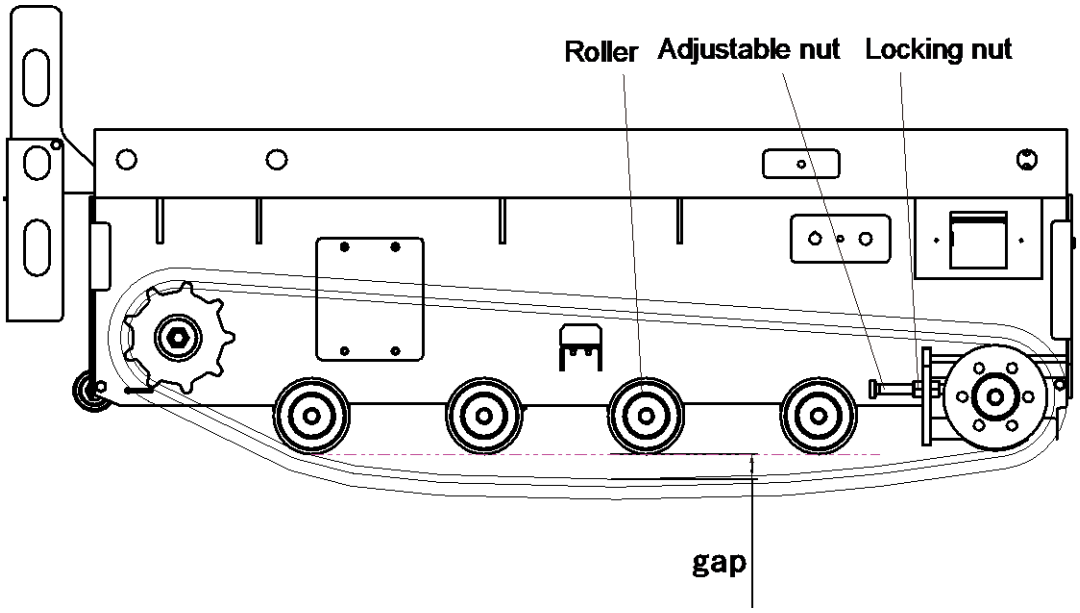


Figure 5-4 ZS0610C Crawler tension diagram

Check the tension of the crawler in the grounded state, if the difference of height between the ends of crawler and the middle exceeds 15±5 mm/0.59±2 in, please adjust it. (ZS1216C Series)

a) Use the injection grease gun to add grease adjusting the crawler tension, and make the difference of height within 15±5 mm/0.59±2 in;

b) Ensure that the left and right crawler belts have the same tension;

c) After adjustment, please drive again for inspection. The crawler belt is easy to fall off in a relaxed state.

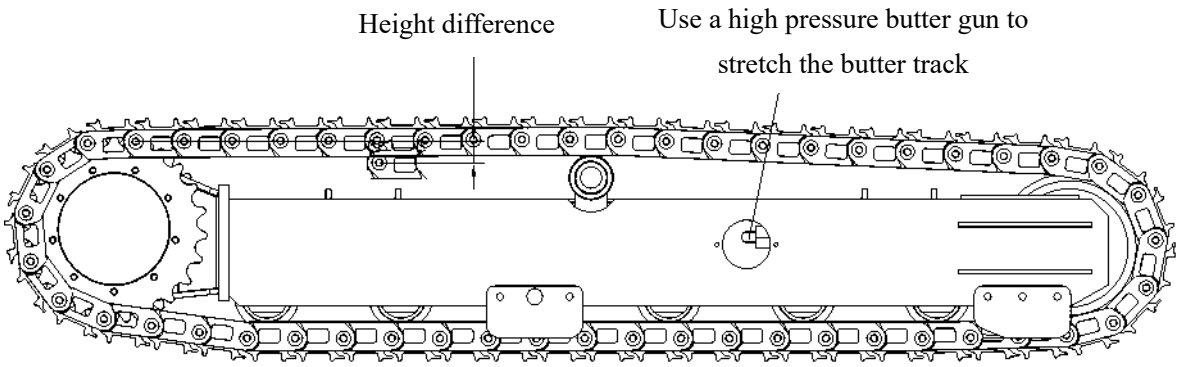


Figure 5-5 ZS1216C Crawler tension diagram

5.5 Regular Maintenance

a) Maintenance performed quarterly, annually and every two years must be completed by a person trained and qualified to perform maintenance on this machine according to the procedures found in the service manual for this machine.

b) Machines that have been out of service for more than three months must receive the quarterly inspection before they are put back into service.

c) By observing oil level in hydraulic oil tank, the hydraulic oil level after excluding air in the hydraulic system should reach the maximum scale mark on the hydraulic oil tank, and not be higher than bottom of the oil tank cap (different models have different maximum scale).

d) Every quarter or 600 hours, add proper amount of grease to the walking drive chain;

e) Every week or every 60 hours, add proper amount of grease to the drive wheel and counterweight axle;

f) Add hydraulic oil as needed. Do not overfill.

g) Inspect the wheel bolts for proper torque quarterly.

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Operation and Safety Manual

Section 6 Storage and Ex-factory Test

SECTION 6 STORAGE AND EX-FACTORY TEST

6.1 Storage Conditions

Ambient temperature for machine storage and transportation should be between -20℃/-4℉ and 40℃/104℉, with relative humidity not greater than 85% and 100% only for short-term.

6.2 Ex-factory Test Items

Machine must complete testing items in the following table before delivery:

Table 6-1 Ex-factory test item (ZS0508C Series)

Tests Items	Load Testing		Testing Movement
Overload Test	125%	300kg/662 lbs	Platform Lifting
Functional Test	110%	264kg/582 lbs	Traveling & Platform Lifting
Braking Test	100%	240kg/530 lbs	Max Speed of Forward & Reverse Traveling

Table 6-2 Ex-factory test item (ZS0610C Series)

Tests Items	Load Testing		Testing Movement
Overload Test	125%	325kg/716 lbs	Platform Lifting
Functional Test	110%	286kg/630 lbs	Traveling & Platform Lifting
Braking Test	100%	250kg/550 lbs	Max Speed of Forward & Reverse Traveling

Table 6-3 Ex-factory test item (ZS1216C Series)

Tests Items	Load Testing		Testing Movement
Overload Test	125%	437kg/963 lbs	Platform Lifting
Functional Test	110%	385kg/848 lbs	Traveling & Platform Lifting
Braking Test	100%	350kg/770 lbs	Max Speed of Forward & Reverse Traveling

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Operation and Safety Manual

Section 7 Technical Parameter

SECTION 7 TECHNICAL PARAMETER

Table 7-1 ZS0508C Series technical parameters

Model	ZS0508C Series	Parameters	
Dimension	Maximum Work Height	6.5 m	21ft 4in
	Maximum Platform Height	4.5 m	14ft 9in
	Minimum Platform Height	0.99 m	3ft 3in
	Platform Length	1.29 m	4ft 3in
	Platform Width	0.7 m	2ft 4in
	Extension Deck Size	0.6 m	2ft
	Overall Height （rails up）	2.1 m	6ft 11in
	Overall Height (rails folded)	1.74 m	5ft 9in
	Overall Length	1.46 m	4ft 9 in
	Overall Width	0.81 m	2ft 8 in
	Minimum ground clearance (stowed)	0.07 m	3in
Working Performance	Max Capacity	240 kg	530 lbs
	Capacity on Extension Deck	100 kg	220 lbs
	Max number of operators	1(Indoor)	
	Drive Speed (Stowed)	2 km/h	1.25 mph
	Drive Speed (Elevated)	0 km/h	0mph
	Turning Radius	0 m/in	
	Drive motor	24V/2×0.77KW	
	Up/Down time	23s/25s	

Table 7-1 ZS0508C Series technical parameters (cont.)

Model	ZS0508C Series	Parameters	
Working Performance	Gradeability	25%（14°）	
	Max work slope (lateral/vertical)	1.7°/1.7°	
	Drive	Rear wheels	
	Multi-plate Brake	Rear wheels	
Power	Battery	2×12V/115Ah	
	Charger	24V/30A	
Weight	Overall Weight	895kg	1975 lbs

Table 7-2 ZS0610C Series Technical parameters (Indoor Series)

Model	ZS0610C Series	Parameters	
Dimension	Maximum Work Height	8.8 m	28ft 10in
	Maximum Platform Height	6.8 m	22ft 4in
	Minimum Platform Height	1.12m	3ft 8in
	Platform Length	1.94m	6ft 4in
	Platform Width	0.95 m	3ft 1in
	Extension Deck Size	0.91 m	3ft
	Overall Height (rails up)	2.26 m	7ft 5in
	Overall Height (rails folded)	1.77m	5ft 10in
	Overall Length	2.1m	6ft 11in
	Overall Width	1.05m	3ft 5in
	Minimum ground clearance (stowed)	0.127 m	4.5in
Working Performance	Max Capacity	250 kg	550 lbs
	Capacity on Extension Deck	113kg	250 lbs
	Max number of operators	2(Indoor)	
	Drive Speed (Stowed)	2 km/h	1.2 mph
	Drive Speed (Elevated)	0 km/h	0mph
	Turning Radius	0 m/in	
	Drive motor	24V/2×1.8KW	
	Up/Down time	34s/30s	
	Gradeability	30%（17°）	

Table 7-2 ZS0610C Series Technical Parameters (cont.) (Indoor Series)

Model	ZS0610C Series	Parameters	
Working Performance	Max work slope (lateral/vertical)	2°/2°	
	Drive	Rear wheels	
	Multi-plate Brake	Rear wheels	
Power	Battery	4×12V/270Ah	
	Charger	24V/30A	
Weight	Overall Weight	1700kg	3750 lbs

Table 7-3 ZS0610C Series Technical parameters (Outdoor Series)

Model	ZS0610C Series	Parameters	
Dimension	Maximum Work Height (Indoor Series)	8.8 m	28ft 10in
	Maximum Work Height (Outdoor Series)	8 m	26ft 3in
	Maximum Platform Height (Indoor Series)	6.8 m	22ft 4in
	Maximum Platform Height (Outdoor Series)	6 m	19ft 8in
	Minimum Platform Height	1.12m	3ft 8in
	Platform Length	1.94m	6ft 4in
	Platform Width	0.95 m	3ft 1in
	Extension Deck Size	0.91 m	3ft
	Overall Height (rails up)	2.26 m	7ft 5in
	Overall Height (rails folded)	1.77m	5ft 10in
	Overall Length	2.1m	6ft 11in
	Overall Width	1.05m	3ft 5in
	Minimum ground clearance (stowed)	0.127 m	4.5in
Working Performance	Max Capacity	250 kg	550 lbs
	Capacity on Extension Deck	113kg	250 lbs
	Max number of operators	2(Indoor)/1(Outdoor)	
	Drive Speed (Stowed)	2 km/h	1.2 mph
	Drive Speed (Elevated)	0 km/h	0mph
	Turning Radius	0 m/in	
	Drive motor	24V/2×1.8KW	

Table 7-3 ZS0610C Series Technical Parameters (cont.) (Outdoor Series)

Model	ZS0610C Series	Parameters	
Working Performance	Up/Down time	34s/30s	
	Gradeability	30%（17°）	
	Max work slope (lateral/vertical)	2°/2°	
	Drive	Rear wheels	
	Multi-plate Brake	Rear wheels	
Power	Battery	4×12V/270Ah	
	Charger	24V/30A	
Weight	Overall Weight	1700kg	3750 lbs

Table 7-4 ZS1216C Series Technical parameters

Model	ZS1216C Series	Parameters	
Dimension	Maximum Work Height	13.8 m	45ft 3in
	Maximum Platform Height	11.8 m	38ft 9in
	Minimum Platform Height	1.62 m	5ft 4in
	Platform Length	2.3 m	7ft 7in
	Platform Width	1.12 m	3ft 8in
	Extension Deck Size	0.91 m	3ft
	Overall Height (rails up)	2.76 m	9ft 1in
	Overall Height (rails folded)	2.23 m	7ft 4in
	Overall Length	2.75 m	9ft
	Overall Width	1.6 m	5ft 3in
	Minimum ground clearance (stowed)	0.15 m	6in
Working Performance	Max Capacity	350 kg	770 lbs
	Capacity on Extension Deck	113 kg	250 lbs
	Max number of operators	2(Indoor)/2(Outdoor)	
	Drive Speed (Stowed)	2 km/h	1.2 mph
	Drive Speed (Elevated)	0 km/h	0mph
	Turning Radius	0 m/in	
	Drive motor	48V/2×4KW	
	Up/Down time	62s/42s	
	Gradeability	30%（17°）	

Table 7-4 ZS1216C Series Technical Parameters (cont.)

Model	ZS1216C Series	Parameters	
Working Performance	Max work slope (lateral/vertical)	2°/3°	
	Drive	Rear wheels	
	Multi-plate Brake	Rear wheels	
Power	Battery	8×6V/200Ah	
	Charger	48V/35A	
Weight	Overall Weight	3750kg	8270 lbs

Appendix:Inspection and Maintenance Records

Date	record

Appendix:Inspection and Maintenance Records

Date	record

EN-OP

Crawler Scissor Lifts
Operation and Safety Manual

ZOOMLION

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