

snorkel

PAM26



CE

OPERATORS MANUAL

Part Number 511146-000-EN

December 2008

Serial Number 000001 and after

EC DECLARATION OF CONFORMITY FOR MACHINERY

MACHINERY:

Powered Aerial Platform known as:

Type: SNORKEL PAM26 / PAM21

E. C. Type Examination Certificate No:



Note: Modification of the specified unit renders this declaration invalid

OPERATION MANUAL

WARNING

All personnel shall carefully read, understand and follow all safety rules and operating instructions before operating or performing maintenance on any Snorkel aerial work platform.

Safety Rules

Electrocution Hazard



THIS MACHINE IS NOT INSULATED!

Tip Over Hazard



NEVER elevate the platform or drive the machine while elevated unless the machine is on a firm, level surface.

Collision Hazard



NEVER position the platform without first checking for overhead obstructions or other hazards.

Fall Hazard



NEVER climb, stand, or sit on platform guardrails or midrail.

USE OF THE AERIAL WORK PLATFORM: This aerial work platform is intended to lift persons and his tools as well as the material used for the job. It is designed for repair and assembly jobs and assignments at overhead workplaces (ceilings, cranes, roof structures, buildings etc.). All other uses of the aerial work platform are prohibited!

THIS AERIAL WORK PLATFORM IS NOT INSULATED! For this reason it is imperative to keep a safe distance from live parts of electrical equipment!

Exceeding the specified permissible maximum load **is prohibited!** See "Special Limitations" on page 4 for details.

The use and operation of the aerial work platform as a lifting tool or a crane (lifting of loads from below upwards or from up high on down) **is prohibited!**

NEVER exceed the manual force allowed for this machine. See "Special Limitations" on page 4 for details.

DISTRIBUTE all platform loads evenly on the platform.

NEVER operate the machine without first surveying the work area for surface hazards such as holes, drop-offs, bumps, curbs, or debris; and avoiding them.

OPERATE machine only on surfaces capable of supporting wheel loads.

NEVER operate the machine when wind speeds exceed this machine's wind rating. See "Beaufort Scale" on page 4 for details.

IN CASE OF EMERGENCY push EMERGENCY STOP switch to deactivate all powered functions.

IF ALARM SOUNDS while platform is elevated, STOP, carefully lower platform. Move machine to a firm, level surface.

Climbing up the railing of the platform, standing on or stepping from the platform onto buildings, steel or prefab concrete structures, etc., **is prohibited!**

Dismantling the swing gate or other railing components **is prohibited!** Always make certain that the swing gate is closed and securely locked!

It is prohibited to keep the swing gate in an open position (held open with tie-straps) when the platform is raised!

To extend the height or the range by placing of ladders, scaffolds or similar devices on the platform **is prohibited!**

NEVER perform service on machine while platform is elevated without blocking elevating assembly.

INSPECT the machine thoroughly for cracked welds, loose or missing hardware, hydraulic leaks, loose wire connections, and damaged cables or hoses before using.

VERIFY that all labels are in place and legible before using.

NEVER use a machine that is damaged, not functioning properly, or has damaged or missing labels.

To bypass any safety equipment **is prohibited** and presents a danger for the persons on the aerial work platform and in its working range.

NEVER charge batteries near sparks or open flame. Charging batteries emit explosive hydrogen gas.

Modifications to the aerial work platform **are prohibited** or permissible only at the approval by **Snorkel**.

AFTER USE, secure the work platform from unauthorized use by turning both keyswitches off and removing key.

The driving of MEWPs on the public highways is subject to regulations made under the Road Traffic Acts.

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Chapter 1 Preface

Read this manual carefully before the machine is taken into use to avoid errors. Correct operations and regular inspections are factors of vital importance for the operating economy and lifetime of the machine.

These important parts are described in the following related sections.

Alloy aluminum mast mobile elevating work platform is the most ideal equipment for aerial work. Single mast mobile elevating work platform is intended to move one person along with the necessary tools and materials to working position where he will carry out work on the work platform.

They are generally intended for use on plane and level floors. They are mainly used for business decoration, industrial facilities maintenance, lamps and lanterns replacement in halls, maintenance of street lamps, aerial photography and wall cleaning etc.

The single mast mobile elevating work platform has the following characteristics:

1.1 Lift or fall steadily: The seamless transmission is used between the lifting masts, thus minimizing the amount of sway after lifting.

1.2 Safe and reliable: The four turning stabilizers of the unit connected to the four corners of the chassis support the MEWP during work. They are designed for leveling regulation and preventing inclination. They are composed of stand bars and turning legs. The stand bars are installed in the turning legs. Extending out the turning legs before operating the unit enlarges the area of supporting. Therefore, the steadiness of the whole platform is guaranteed.

1.3 Convenient: The whole work platform is light because the lifting masts are made of alloy aluminum. The structure is compact and the volume is small, so only one person can move the equipment and carry it through a very narrow passage.

All the information contained in this booklet is based on the data available at the time of printing; the manufacturer reserves the right to modify its products at any time, without notice and without liability. It is therefore advisable to regularly check for any changes.

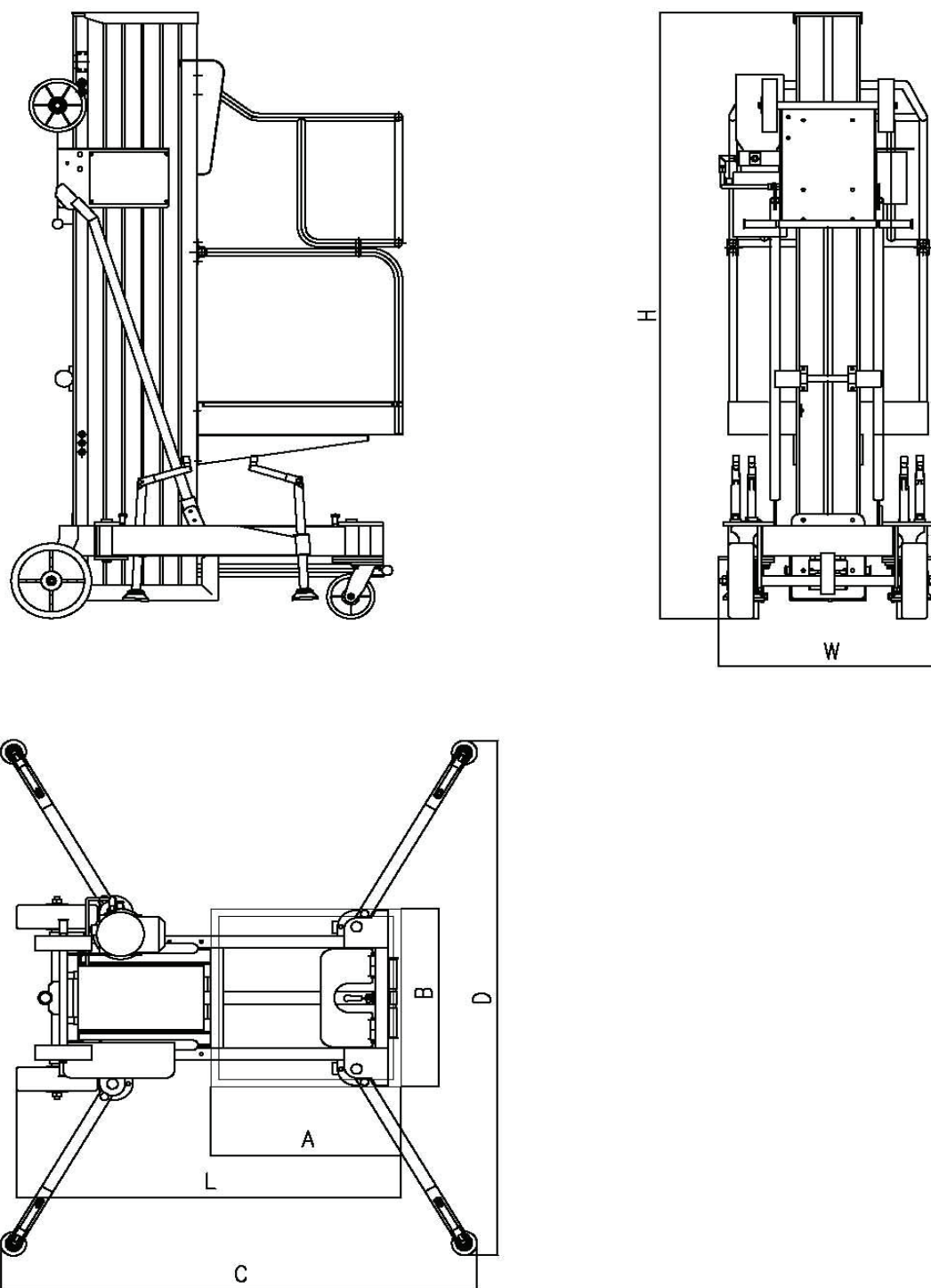
Chapter 2 Specifications

Technical specifications and major dimensions are shown in Table 1 and Figure 1, respectively.

Table 1

Model	Max. platform height	Max. working height	Rated load	The number of persons allowed on platform	Platform size A×B	Outrigger footprint C×D	Power rating		Stored dimension L×W×H	Machine weight	
							AC	DC		AC	DC
	mm	mm	kg	Person(s)	mm	mm	kw		mm	kg	
PAM21	6500	8500	125	1	600×600	1660×1590	0.75	1.5	1200×690×1980	310	345
PAM26	8000	10000	125	1	600×600	1660×1590	0.75	1.5	1200×690×1980	365	395

Figure 1



Chapter 3 Safety information

Even if you are familiar with other types of mobile elevating work platforms, read the following matters needing attention for safe and effective operation:

3.1 Only the trained and qualified are permitted to operate this machine. Always use safety belt and helmet when aerially working.



3.2 If you are subject to dizziness or seizures, or are bothered by heights, you must not operate this type of machinery.

- 3.3 An operator must not use drugs or alcohol that can change his/her alertness or coordination. An operator on prescription or over-the-counter drugs needs medical advice on whether or not he/she can safely operate machines.
- 3.4 Make sure understand all the safety rules and instructions on plates and warning labels before operating the machine.
- 3.5 This machine is designed to use on flat and hard ground only. If the ground is uneven, you must adjust supporting bolts to make sure the chassis is on level. Don't work with force if the conditions for using the equipment are not met.
- 3.6 Forbid to park the mobile elevating work platform (MEWP) on a slope. When traveling on slope, make sure there are no personnel or obstructions in front of the moving direction. Move at a safe speed. Don't turn quick on a slope.
- 3.7 Ensure all stabilizers are engaged properly before elevating the platform.
- 3.8 In the course of lifting and falling or in lift situation, masts and platform must not collide with any obstacles or moving objects and you must not move it.
- 3.9 Do not move the whole unit with electricity.
- 3.10 It is prohibited of getting on and off the work platform when elevated.
- 3.11 Keep clear of live electric conductors.
- 3.12 Don't lift if it is overload. The machine can't be used as a crane.
- 3.13 The manual force on the work platform should not exceed 200N.
- 3.14 Operating this machine should conformance with local national regulations.
- 3.15 Any unsafe operation patterns on the platform are strictly forbidden.
- 3.16 Unless in an emergency, the personnel on the ground mustn't operate the lower control device if they do not receive orders from the one are aerially working.
- 3.17 Don't allow people stand or pile up things under the raised platform.
- 3.18 when operating the machine in a dusty environment ,you should take protective measures to prevent the graininess dust stirred into the moving parts, which can causing damage ,thus extend the span of the machine life
- 3.19 Don't change, modify or abandon the safety devices in any way. If there is an uncertain problem, don't dismantle the machine, inform the dealer for help.
- 3.20 Don't set the devices increasing the work height arbitrarily.
- 3.21 Any additions that would increase the wind load on the machine, e.g. notice boards, are strictly forbidden.
- 3.22 Any special working methods or conditions beyond those specified by the manufacturer shall obtain the guidance and written approval of the manufacturer.
- 3.23 The optimal using period is within 5 years, reassess the performance of the machine then and contact the manufacturer for better advice.

Chapter 4 Plates and Warning Labels

Upon unpacking, check the plates and warning labels. Do not operate the machine on which the plates or labels are missing or illegible. Contact the dealer immediately. The following plates are visible on the machine.

• Nameplate and CE mark

		Snorkel, Vigo Centre, Birtley Road, Washington, Tyne & Wear, NE38 9DA, U.K.	
			
MODEL NUMBER	PAM26	SERIAL NUMBER	
MONTH / YEAR OF MANUFACTURE		ASSEMBLED IN	CN
NON-LOADED MACHINE WEIGHT	340	lbs	kg
ENGINE POWERED MODELS	N/A	hp	kW
BATTERY POWERED MODELS			
MAXIMUM OUTRIGGER LOAD	285.4	lbs	kg
MAXIMUM GRADEABILITY	N/A	%	
MAXIMUM ALLOWABLE MANUAL FORCE (SIDE PULL)	Indoors: 200 Outdoors: 200	lbs	N
MAXIMUM PLATFORM HEIGHT	8	ft	m
MAXIMUM ALLOWABLE WIND SPEED	10.7	mph	m/s
RATED NUMBER OF OCCUPANTS	Indoors: 1 Outdoors: 1		
MAXIMUM PLATFORM LOAD	125Kg = 1 Persons + 45Kg Tools		
MAXIMUM DRIVE HEIGHT	N/A	ft	m
SLOPE SENSOR ALARM SETTING	FRONT TO BACK: 0 deg SIDE TO SIDE: 0 deg		
MAXIMUM WHEEL LOAD	N/A	lbs	kg
⚠ CAUTION ⚠ <small>ONLY trained and authorised personnel may operate this machine. Consult the Operation Manual before using this machine. DO NOT make any changes to this machine, any changes made will invalidate the manufacturer's warranty and may contravene legislation.</small>			
Axle weights with machine in the stowed position.			
STEER AXLE		lbs	kg
DRIVE AXLE		lbs	kg
510425-201			

PAM26 Machine plate

• Operating instructions

Brief Operating Instruction

• Leveling the whole equipment

1. Pull up the aligning pin, extend outwards the turning leg, which is connected to one of the four corners of the chassis, until the aligning pin gets into the working aligning hole automatically.
2. Turn the handle clockwise until the supporting foundation contacts the ground for all the four bolts, go on turning to make the road wheel away from the ground.
3. Adjust the leveling by observing the spirit level on the chassis. The bubble should move to the center circle of the gauge when the chassis is set on an even plane.
4. To store the turning stabilizers of the unit, turn the handle counterclockwise until the supporting foundation away from the ground. Pull up the aligning pin, retract inwards the turning leg until the aligning pin gets into the storing aligning hole.

• How to use the control buttons

1. Before operating the machine, all circuit breakers and the leakage breaker must be in "ON" position on the electrical box panel.
2. The mobile elevating work platform uses two sets of upper and lower parallel control devices.
3. On either control panels, press "UP" button for lifting and press "DOWN" button for lowering the platform.
4. The platform rises or falls when the button is pressed. Upon loosening the buttons the platform stops.
5. A big mushroom-shaped button is the stopping button at emergency. Press it only if the platform can't stop effectively in the course of rising. Reset the button by turning the knob in the direction shown by the arrow. Do not pull the knob.

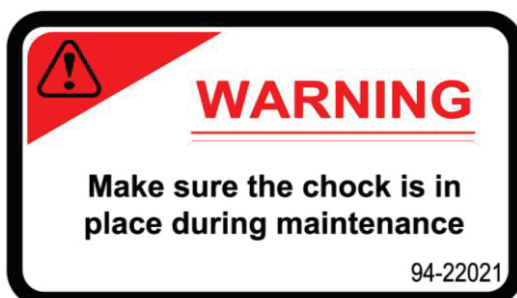
• Emergency Operation

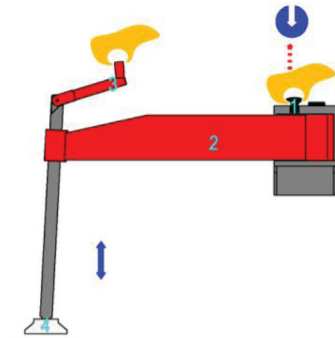
If two sets of the upper and the lower control devices can't make the platform fall because of sudden power failure or other causes, turn the valve counterclockwise and the platform will be lowered slowly. Once the platform falls down to the bottom, the valve for emergency should be closed.

Emergency Operation

If two sets of the upper and the lower control devices can't make the platform fall because of sudden power failure or other causes, turn the valve counterclockwise and the platform will be lowered slowly. Once the platform falls down to the bottom, the valve for emergency should be closed.

• Warning labels





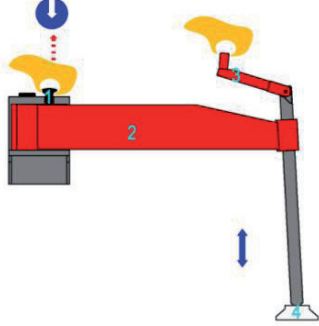
LEVELING AND JUSTMENT

1. Pull up the aligning pin 1 and extend outwards the turning leg 2 until the aligning pin comes into the working aligning hole automatically.
2. Turn the handle 3 clockwise until the supporting foundation 4 contacts the ground for all the four bolts, go on turning to make the road wheel away from the ground.
3. Adjust the leveling by observe the spirit level on the chassis. The bubble should moves to the center circle of the gauge when the chassis is set on an even plane.
4. To store the turning stabilizers of the unit, tum the handle 3 counter-clock wise until the supporting foundation 4 away from the guound. Pull up the aligning pin 1, retract inwards the turning leg until the aligning pin 1 comes into the storing aligning hole.

93-21013

LEVELING AND JUSTMENT

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93-21015



WARNING

Make sure to position the stabilizers before operating

94-21021



MAX.LOAD ON EACH STABILIZER

2800N

94-21023



MAX.ALLOWED MANUAL FORCE

200N

94-23023




MAX.ALLOWED WIND SPEED

10.7m/s

94-23025

CAPACITY:125kg

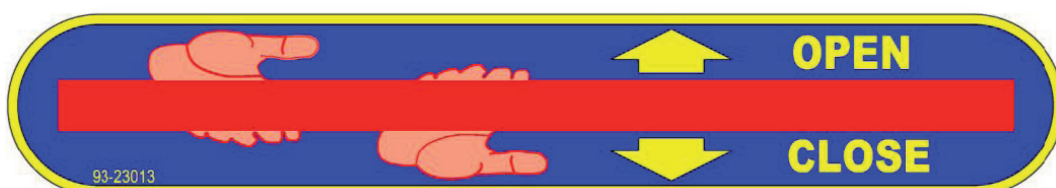
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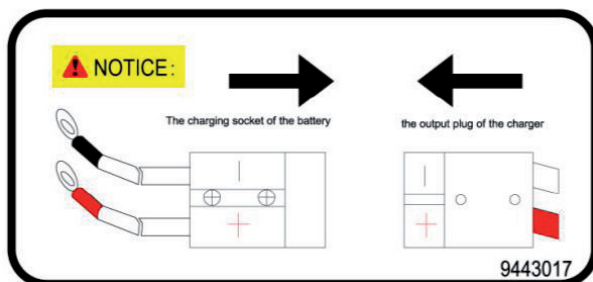
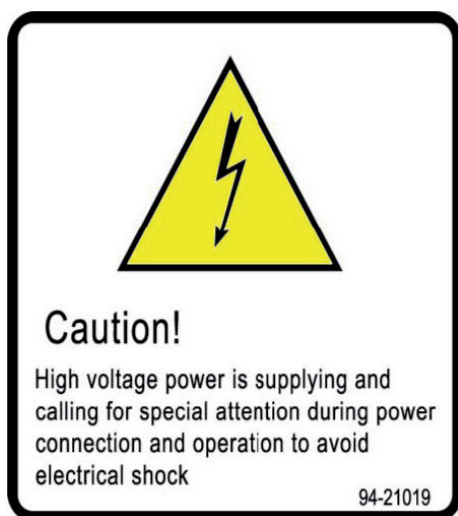


NOTICE:

For the initial use or use after long periods of storage.Please charge the battery before use. Recharging lasts at least 12 hours.

9443019





Brief Operating Instruction

- **Leveling the whole equipment**

1. Pull up the aligning pin, extend outwards the turning leg, which is connected to the four corners of chassis, until the aligning pin comes into the working aligning hole automatically.
2. Turn the handle clockwise until the supporting foundation contacts the ground for all the four bolts, go on turning to make the road wheel away from the ground.
3. Adjust the leveling by observe the spirit level on the chassis. The bubble should moves to the center circle of the gauge when the chassis is set on an even plane.
4. To store the turning stabilizers of the unit, turn the handle counter-clockwise until the supporting foundation away from the ground. Pull up the aligning pin, retract inwards the turning leg until the aligning pin comes into the storing aligning hole.

- **How to use the control buttons**

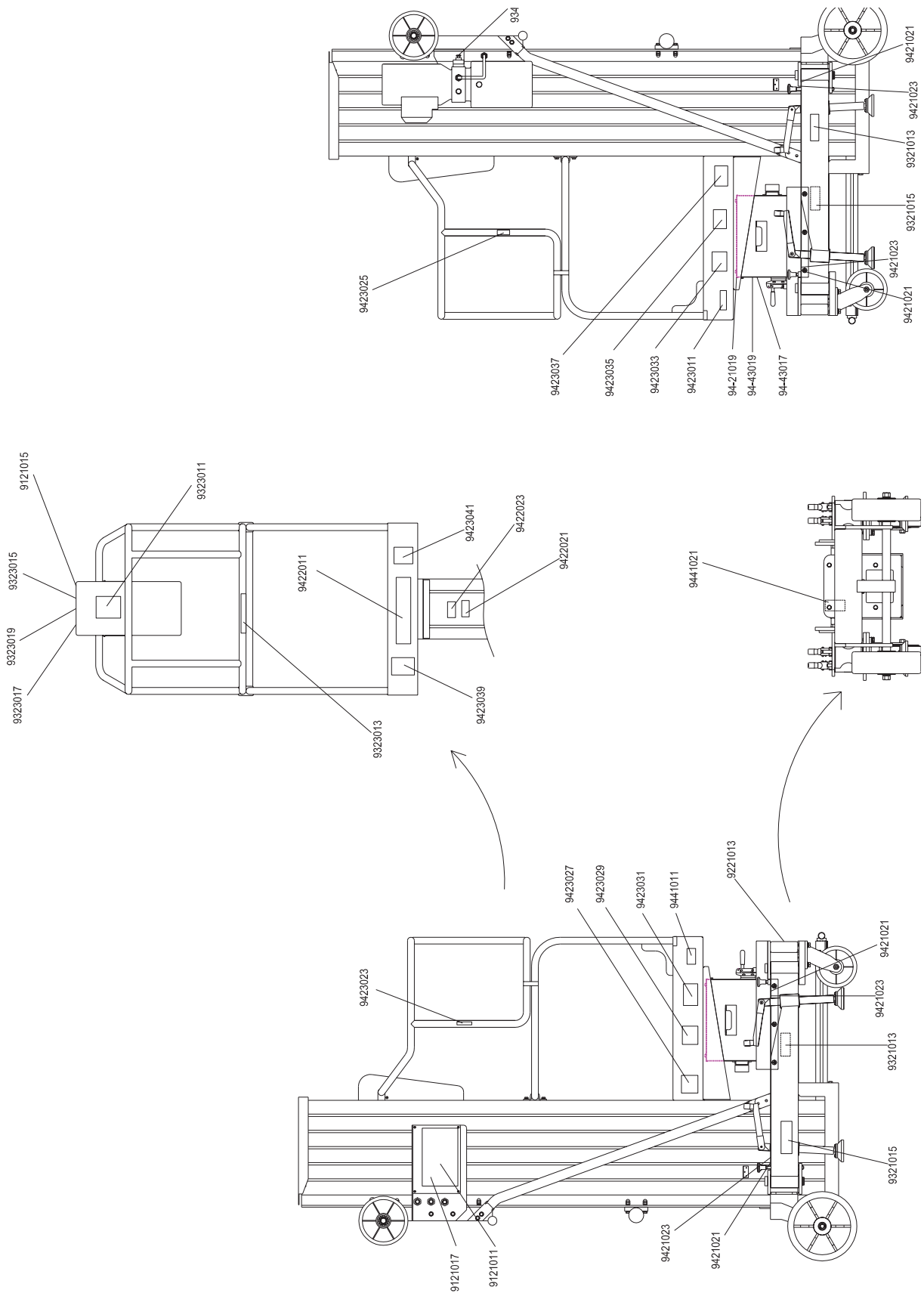
1. Before operate the machine, all circuit breakers and leakage breaker must be in "ON" position on the electrical box panel.
2. The mobile elevating work platform uses two sets of upper and lower parallel control device.
3. On either control panels, press "UP" button for lifting and press "DOWN" button for lowering the platform.
4. The platform rises or falls when the button is pressed. Upon loosening the buttons the platform stops.
5. A big mushroom-shaped button is the stopping button at emergency. Press it only if the platform can't stop effectively in the course of rising. Reset the button by turning the knob in the direction shown by the arrow. Do not pull the knob.

- **Emergency Operation**

If two sets of the upper and lower control devices can't make the platform fall because of sudden power failure or other causes, turn the valve counter clockwise and the platform will be lowered slowly. Once the platform falls down to the bottom, the valve for emergency should be closed.

93-23011

EGTWY SERIES DECAL INSPECTION(SINGLE)



PAM SERIES DECAL INSPECTION(SINGLE)

Part No.	Description	QTY.
9121015	Control panel on work platform	1
9121017	AC Control panel	1
9121011	DC control panel	1
9221013	Machinery label	1
9321013	Leveling and justment(lift)	2
9321015	Leveling and justment(right)	2
9323011	Brief operating instruction	1
9323013	Gate of platform	1
9323015	Label--Down	1
9323017	Label--Stop	1
9323019	Label—Up	1
9341011	Label—Back-up	1
9421021	Warning—Make sure to position the stabilizers before operating	4
9421023	Max. Load on each stabilizer—2800N	4
9422011	Capacity:125kg	1
9422021	Warning—Make sure the chock is in place during maintenance	1
9422023	Warning—shearing danger, keep hands away	1
9423011	Notice—Allowed number of persons: ONE	1
9423023	Max. Allowed Manual force—200N	1
9423025	Max. Allowed wind speed—10.7m/s	1
9423027	Warning—Keeping safe clearance with live electric conductors	1
9423029	Caution— The masts or the platform must not bump into any barrier or moving object during lifting	1
9423031	Warning—Ensure all atabilizers are engaged properly before elevating the platform	1
9423033	Warning—The manual forces applied by persons on the work platform should not exceed the permllted limit when it is raised	1
9423035	Danger—Any unsafe operation pattern on the platform is strictly forbidden	1
9423037	Danger—Don't move the whole equipment when in the course of lifting and lifted	1
9423039	Danger— The addition of any device, such as ladder, to increase the working height is strictly not allowed.	1
9423041	Danger-- Don't park at the slope, pay attention to the obstacle when moving at the slope.	1
9441011	CE label	1
9441021	Danger—Please don't stand	1
9421019	Caution—Electrocution hazard	1
9443017	Notice—The charging socket of the battery (For DC)	1
9443019	Notice—Recharging lasts at least 12 hours (For DC)	1

Decal Inspection:

Use the pictures on the next page to verify that all decals are legible and in place.
Below is a numerical list with quantities and descriptions.

Chapter 5 Transport and set up

5.1 Transport and Storage

5.1.1 Moving the equipment

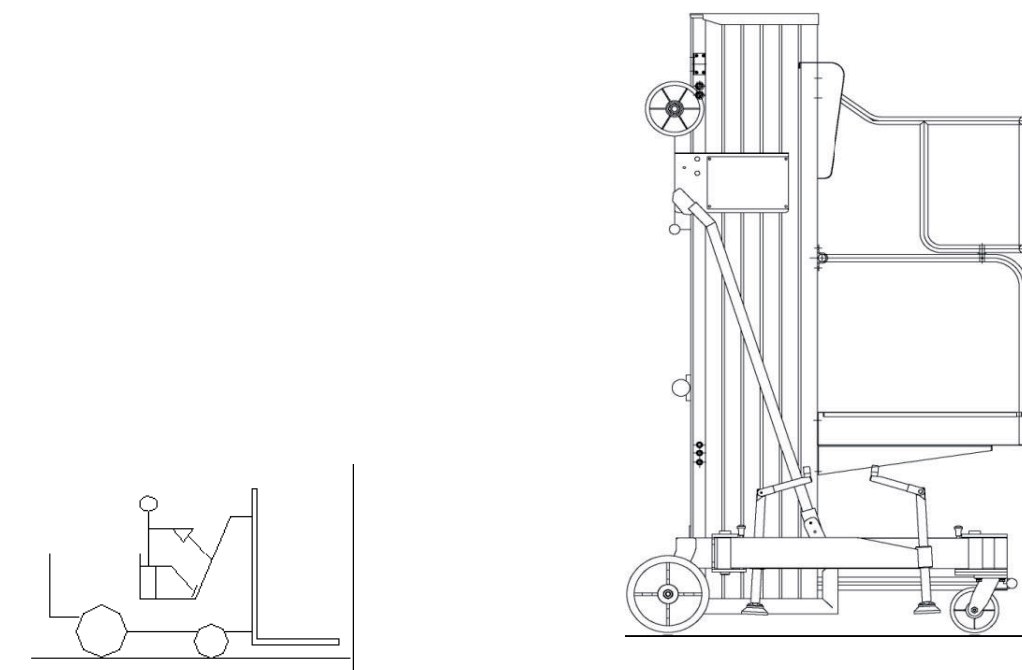
5.1.1.1 The platform should fall down to the bottom when you are moving the equipment to other working places and then retract the turning stabilizers. The supporting foundations should be made away from the ground and then push the whole machine to the destination. If the equipment goes across the uneven ground, the supporting foundations should be away from the ground so far as to prevent the bolt from bending by the obstacles.

5.1.1.2 If the platform is carried in a little distance, using —easy loading in pickup trucks, The sketch below shows the lifting points and method of loading.

Note: 1. If transporting in below way, Platform must be lock in company with chassis. Avoid platform gliding and chain losing.
2. When DC machine be transported in below way, Please draw jack, Pull outside battery box. But raising platform, Battery box must be in this machine, Or reduce machine stability.



5.1.1.3 If the platform is carried in a long distance, other loading tools should be used for transportation. A forklift should be used for loading onto other vehicles. It should be lifted upward from the bottom. The sketch below shows the lifting



Note: Pull the plug of the power supply out of the socket when you move the whole equipment, cut off the power supply to avoid any unnecessary accidents.

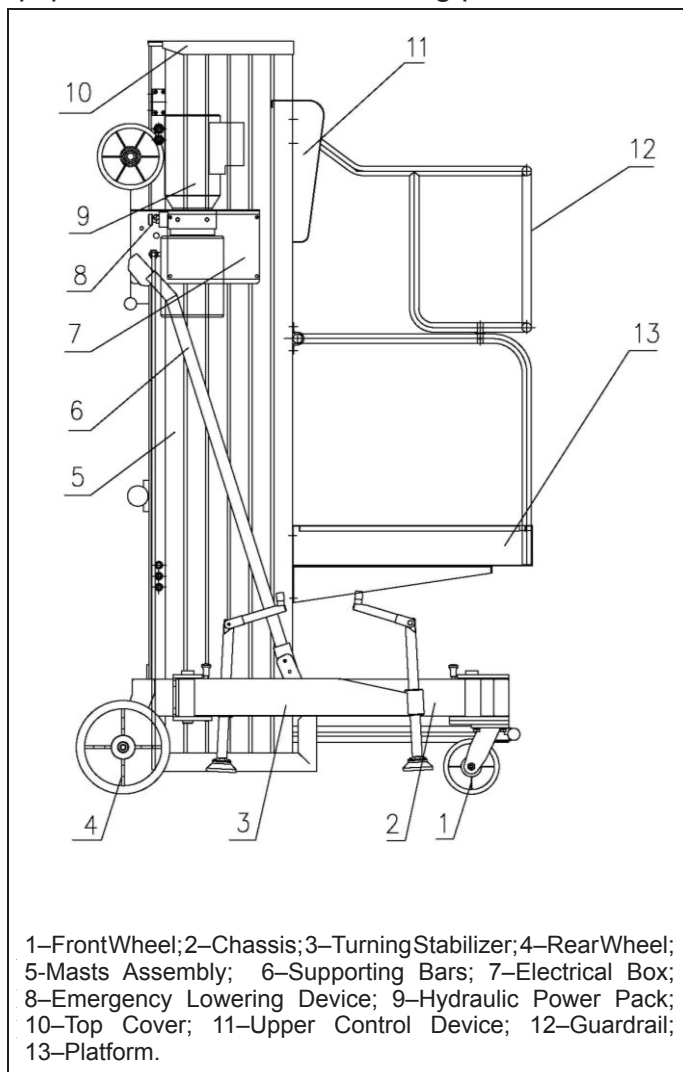
5.1.2 Storage of the equipment

If you plan to stop using the equipment for a long time, the unit should be cleaned and protected by a dustproof cover (supplied).

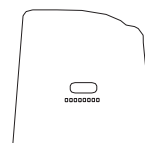
5.2 Set up

5.2.1 Inspection on Opening the Packaging

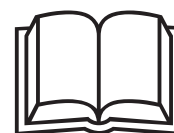
For the initial use, most users should remove the outer packing of wood box for equipment, shockproof and knock-preventing packing before using the equipment, Even if without outer packing, check the whole equipment and its accessories, and the equipment includes the following parts.



Dustproof Cover



User's Manual



Certificate of Quality



Note: 1. If the unit has been damaged during transport, it must not be put into service, and you should immediately contact your dealer.

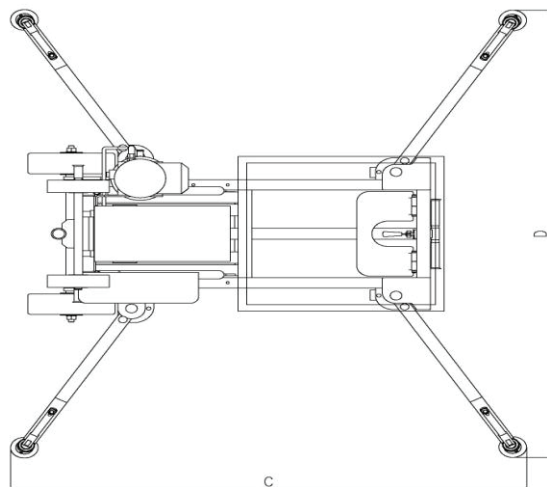
2. The equipment has been lubricated before delivery, and the hydraulic unit has been filled with hydraulic oil.

3. If a battery has been supplied with the machine, the battery is charged.

Check that the acid level is correct in each cell and that the specific gravity is in order.

5.2.2 Area Needed For Set up the Machine

The area for machine stabilizer footprint shown as the sketch below:

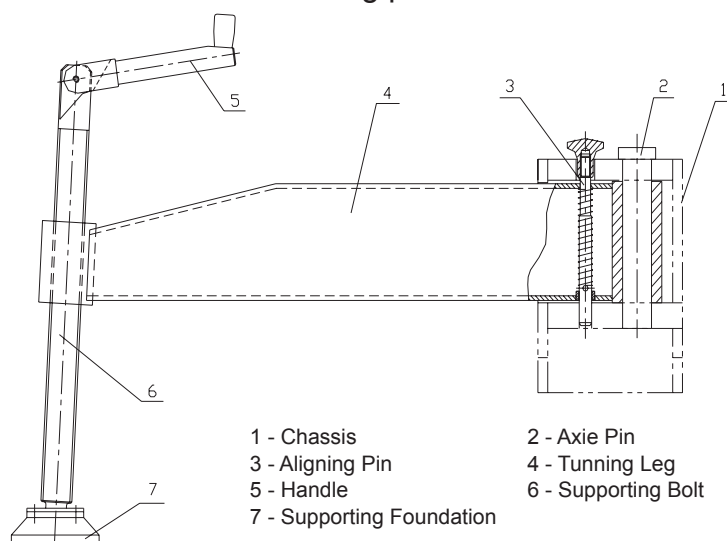


Item	Model	C	D
		mm	mm
1	PAM21	1660	1590
2	PAM26	1660	1590

5.2.3 Supporting and Leveling the Unit

There are horizontal forces including operating force and outer wind force etc. on the platform. If excessive, render the platform unstable. Preventing inclination of the unit is achieved by extending the four turning stabilizers, which are connected to the four corners of the chassis. Supporting and leveling the unit is achieved by adjusting the support bolts of the four turning stabilizers.

The sketch below shows the following parts:



The instructions for operation are as follows:

1. Pull up the aligning pin, extend outwards the turning leg, which is connected to one of the four corners of the chassis, until the aligning pin gets into the working aligning hole automatically.
2. Turn the handle clockwise until the supporting foundation contacts the ground for all the four bolts, go on turning to make the road wheel away from the ground.
3. Adjust the leveling by observing the spirit level on the chassis. The bubble should move to the center circle of the gauge when the chassis is set on an even plane.

4. To store the turning stabilizers of the unit, turn the handle counterclockwise until the supporting foundation gets away from the ground. Pull up the aligning pin, retract inwards the turning leg until the aligning pin gets into the storing aligning hole.

Warning! You must observe the spirit level on the chassis. The bubble should be within the center circle of the gauge.

Warning! Once you doubt leveling is incorrect, just base on mast and use rectangle level gauge to verify it.

Warning! Forbid any operation without extending out all the turning stabilizers.

Chapter 6 Operation Guide

6.1 The relevant conditions of using the equipment

6.1.1 The surface of work ground should be flat and hard with no obstacles in air and the safety distance between the equipment and high-tension line is adequate.

6.1.2 The environment temperature should be within -10~38; Height above sea level ≤ 1000 m.

6.1.3 The environment humidity $\leq 90\%$.

6.1.4 Electrical power: AC 230V $\pm 10\%$, 50Hz.

6.1.5 The wind power is not more than Beaufort Scale 5 (the speed of wind is 10.7 m/s).

6.1.6 The noise grade of this machine is 52~54 dB while operation.

Notes:

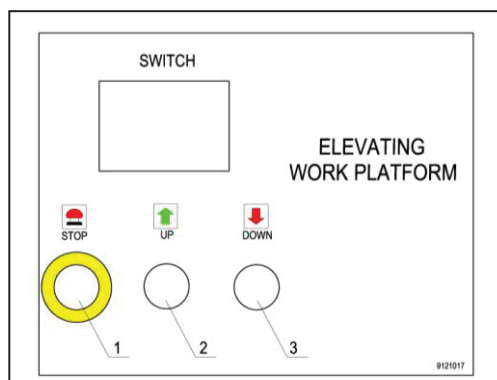
1) Prevent the sunlight from directly shining onto the hydraulic and electrical units of the equipment if the environment temperature is above 32.

2) If the conditions mentioned above are not met, please contact with your supplier and take the relevant guarantee measures for using the equipment.

6.2 Control Panel function and Description

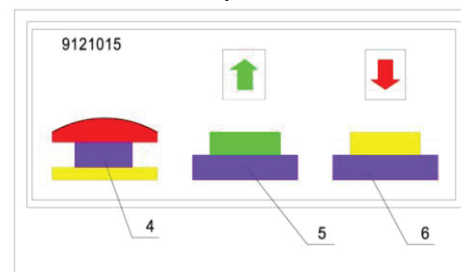
6.2.1 AC Control Panel

Control panel on electric box

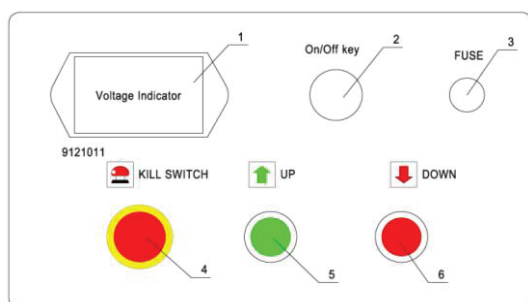


1. Emergency stop switch
2. Up button
3. Down button

Control panel on work



6.2.2 DC Control Panel

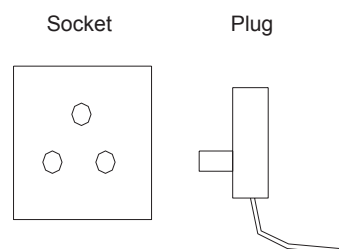


- 1 Voltage indicator
- 2 On/Off key
- 3 Fuse
- 4 Emergency stop switch
- 5 Up button
- 6 Down button

6.3 Installation of Power Plug

Put the power plug into the power socket at the job site in accordance with the rated requirement.

Note: Prior to installation, the rating of the power source must be confirmed.



6.4 How to use the control buttons

6.4.1 Before operating the machine, all circuit breakers and leakage breaker must be in —ON” position on the electrical box panel

6.4.2 The mobile elevating work platform has two sets of controls; one at the base of the unit and the other on the work platform itself

6.4.3 On either control panels, press —Up” button for lifting and press —Down” button for lowering the platform.

6.4.4 The platform will be raised or lowered so long as the appropriate button is depressed. The platform will stop in position as soon as the button is released.

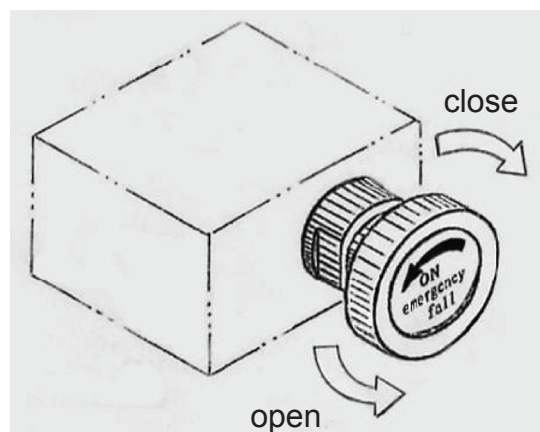
6.4.5 Emergency stop: A big mushroom-shaped button is provided at each control panel for emergency stop. This should be used only when other means to stop the platform moving fails. Reset the button by turning the knob in the direction shown by the arrow. Do not pull the knob

Note: The lower controls is installed on the electrical box, control its key. The key should be taken away if it is not in use so as to prevent the unauthorized personnel from using it.

6.5 Emergency Operation

In the event of power cut-off or other reasons and the platform fails to descend using both the upper and lower controls, an emergency device consisting of a release valve located at the side of the chassis is used to lower the platform. Turn the valve counterclockwise and the platform will be lowered slowly. Once the platform has descended to its lowest position, the valve should then be closed securely.

Note: The above shows the diagram of the emergency release valve.



Chapter 7 Maintenance Guide

7.1 Control check

For the initial use or use after long periods of storage or changes in environmental conditions. Check should be made on power supply; hydraulic oils and lubricants to confirm that are all in well condition.

Caution! Special attention should be paid to check all safety devices of this machine before using it:

1. Emergency stop switches

There are two emergency stop switches on the machine. Please check the function of these two emergency stop switches. Stop to use this machine and inform the manufacturer/agent immediately if they cannot work normally.

2. Emergency release valve

There is an emergency release valve on this machine to lower the platform in the event of power cut-off or other reasons and the platform fails to descend using both the upper and lower controls.

Please check the function of the emergency release valve. Stop to use this machine and inform the manufacturer/agent immediately if it cannot work normally.

7.2 Check before operation

Before you begin your workday, you must inspect your machine and report all deficiencies. Do not operate the machine until deficiencies are corrected and all systems are in good operational condition.

1. Check for missing, damaged or unreadable safety signs.
2. Check for broken, missing, damaged or loose parts, especially the screws and nuts on both sides of the masts.
3. Check pivot pins for damaged or missing retaining devices.
4. Check oil level in the tank.
5. Check hydraulic system for leakage and damage.
6. Check for cracked welds and other evidence of structural damage.
7. Check if the supporting foundations rotate freely around the supporting bolts, lubricate if necessary.
8. Lubricate positions as mentioned in 7.5 if necessary.
9. Check if there is an abnormal noise or tremble when starting the machine.
10. Secure connection of power or battery plug.

Perform necessary maintenance procedure outlined by the manufacture.

7.3 Periodical examinations and tests

This MEWP should be examined and tested according to the following items every 3 months.

1. Lubricate the lifting chain. Check the chain for wear.
2. Check and tighten possible loose screws and nuts.
3. Check brush wear in the pump motor, and replace those worn so that a good contact is maintained.
4. Visual examination of the structure with special attention to corrosion and other damage of load-bearing parts and welds.
5. Examination of the mechanical, hydraulic, and electrical systems with special attention to safety devices as mentioned in clause 7.1.

Note: The frequency and extent of periodical examinations and tests may also depend on national regulations.

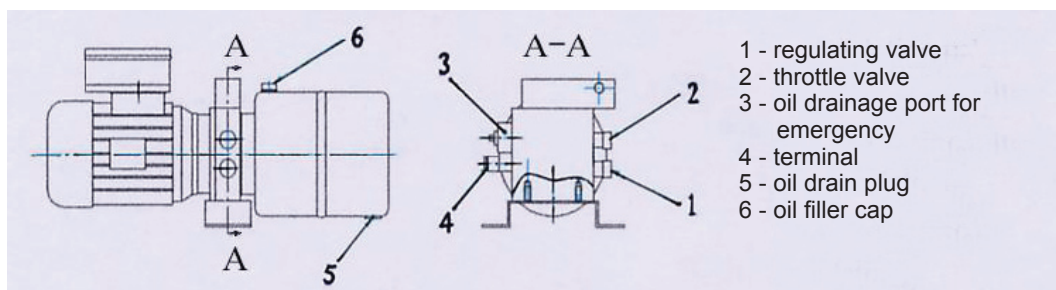
7.4 Maintenance

7.4.1 Adjusting the maximum rising force

The proper pressure of hydraulic system has been preset at the factory, however, the regulating value has been changed because of using the product for a long term.

Notes:

1) When you find the rising force not reach the rated value, open the hydraulic unit



cover. Please refer to the above sketch, turn the regulating valve 1 of the hydraulic control device clockwise till the rising rated value.

2) If necessary, a pressure gauge (supplied as an optional attachment) could be connected to the emergency lowering valve block for hydraulic system pressure checking.

7.4.2 Adjusting the speed of falling

The speed of falling of the platform can also be adjusted.

Note: Please refer to above sketch. The speed is reduced when you turn the adjusting screw 2 of —throttle valve ”clockwise, otherwise, the speed is increased.

7.4.3 Fluid level checking A separate fluid level indicator is provided as an attachment (optional) for both the permissible maximum fluid level and the necessary minimum level when the machine is in transports.

7.4.4 Replacing the hydraulic oil The hydraulic oil of the equipment should be replaced once after the equipment has been used for half a year to clear off the pollution caused by wearing of the system in the first term. Determine the term of the replacement according to the polluted circumstances of the hydraulic oil later (suggest replacing the hydraulic oil once every one and half one years).

Note:

1) Selecting of the hydraulic oil depends directly on influence of the temperature for using. For non-paramo region, the common hydraulic oil of kinematic viscosity (40) 46mm²/s (the nominal value) is recommended for use.

2) When replacing the hydraulic oil, first place a basin for containing waste oil under the oil box. Open the oil filler cap 6 at the top of the oil box and then remove the oil drain plug 5 at the bottom. After draining off the waste oil, fill a little clean hydraulic oil into the oil box through the oil filler hole and wash it. Tighten the drain plug 5 after all the oil has been drained. Then fill up with clean hydraulic oil and allow for a slight overflow to displace any air.

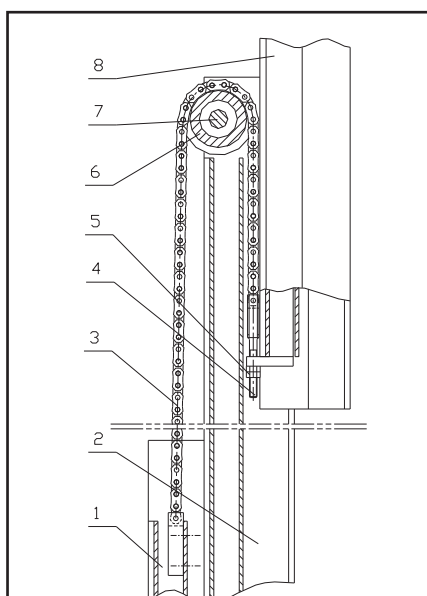
7.4.5 Regulating the transmission chain The direct result of wearing the transmission

chain is to stretch the total length of the chain. Measure the stretching rate of the used transmission chain by eye every three months. The mast connected to the elongated chain would be lower in position so that the top of each mast is obviously uneven in stored position. It may lead to damage on guide roller if the problem is serious.

Note: Every link of the transmission chain is associated with three links of the masts. The following sketch shows the connection of the masts and the transmission chain.

1) When regulating the length of the chain, please select the mast that needs increasing its height. As shown in the sketch, regulating the nut 5 tightly makes the last link of the mast 8 move upwards. The dual nuts 5 should be connected with each other tightly after regulating the length of the chain.

2) The same link of the mast is pulled by two chains and endures the raised weight loads at the same time. If one of the chains loses efficacy, the other will play an important safety role, therefore, try to make both chains as loose or tight as consistent each other when regulating the length of the chain. The methods of judge at site are as follows: Press the two chains by hands to compare their tautness under lifting status.



- 1-next link of the mast;
- 2-the middle link of the mast;
- 3-the transmission chain;
- 4-adjusting bolt;
- 5-adjusting lock nut;
- 6-chainwheel;
- 7-chainwheel shaft;
- 8-the last link of the mast

Warning! Not to enter the space beneath a raised work platform and extending structure during maintenance unless the chock is in place.

Note: When the work platform of a MEWP needs to be raised for routine servicing purposes, a captive chock shall be used to enable the extending structure to be held in the required position to prevent work platform from falling down unexpectedly.



Chapter 8 Battery

8.1 Battery charging

8.1.1 Turn the key and switch on, when the display indicated voltage is below 11 volt, please charge up the battery.

8.1.2 The rated specification of the battery charger supplied:

Input: 220V AC50/60Hz

Output: 12V DC 15A

8.1.3 When start charging, insert the output plug of the charger to the charging socket of the chassis first, then the input plug of the charger to the socket of AC power supply. Turn on the charger switch; battery charging is started with indicator (red lamp) lights up. Normal recharging lasts about 10 hours. When charging is terminated check that all cells have reached a density between 1.260~1.280kg/l at 30°C.

When charge is finished, the AC supply should be cut off.

8.1.4 Battery charging should be done in a well-ventilated place and there are no naked flames, no sparks and no heat radiation sources nearby.

8.1.5 Make sure the level of the electrolyte is above the lower line. If the elements are not covered, top up with distilled water. Under normal conditions topping up can be generally done once a month.

8.2 Battery maintenance

The acid level must be checked at least once a week. Refilling must not take place until charging has been finished, as the acid expands during charging.

Only distilled water can be used for refilling. The battery surface must be kept clean and dry, as dirt and wet will cause leakage of current and consequently reduced battery capacity. Acid spill can be neutralized with soda solution or diluted ammonia, which is to be washed off with water.

The terminal connections must be firmly tightened and greased with acid-free grease, which prevents sulphate formations. Sulphate coating reduces the contact surface, resulting in a considerable voltage

Cautions

- 1) Before charging, don't open plugs
- 2) Charge the battery in a well-ventilated place, lifting off the cover or removing the battery from the machine.
- 3) Never expose the battery to naked flames. Fires may occur from the formation of explosive gas.
- 4) Terminal points must be well tightened and free of scale. Cable insulation must be in good condition
- 5) Keep the battery clean, dry and free dust using an antistatic cloth
- 6) Never place tools or other metal objects on the battery
- 7) During recharging, check the temperature of the electrolyte, which must not exceed 45°C
- 8) Avoid contact between skin and acid. If skin or clothes come into contact with this acid wash with abundant soap and water.

Chapter 9 Trouble shooting

Most of the problems you meet with are easy to solve when you are operating on the mobile elevating work platform. Please find out your problems in this part and solve it according to the recommended steps. If you can't still solve it according to the instructions here, please contact with your suppliers or the experienced service personnel for help.

9.1 Problem 1 – The indicator light of the power supply is off and the platform doesn't rise or fall.

9.1.1 Check whether the electrical wire is connected with the socket of the electricity supply correctly or not.

9.1.2 Check the circuit breaker to make sure it's in 'ON' position.

9.1.3 Check the leakage breaker to make sure it's in 'ON' position.

9.2 Problem 2 – The power indication light is on, but there is a "ticking" sound in the electric box when the 'UP' button is pressed and the platform can't lift or it can only rise up to a limited height.

9.2.1 Check the electrical cable to see if it is too long or too thin. The diameter of cable wire should be minimum 1.0 mm when the wire length is less than 25 meters, and minimum 1.5 mm when the wire length is above 25 meters and less than 50 meters. You can try to plug the equipment cord directly in the fixed socket, instead of to an extension cord.

9.2.2 Check power voltage to make sure it is within allowable limits.

9.3 Problem 3 – Excessive noise from hydraulic power unit during 'lifting' operation.

9.3.1 Check oil box to make sure there is sufficient hydraulic oil in the tank.

9.3.2 Check whether the oil filler cap is excessively sealed to make the oil pump difficult to absorb the oil or not.

9.3.3 Check the mounting screws of the electric motor and cover etc. to see if they have become loose.

9.3.4 Check whether the environment humidity is in accordance with the stipulated conditions or not.

9.4 Problem 4 – Leakage of the hydraulic oil

9.4.1 Check all piping connections for their tightness, and tighten up if necessary.

9.4.2 Check whether the viscosity of the used hydraulic oil is too low or not.

9.5 Problem 5 – All the indicator lights are on, but the platform couldn't rise or fall.

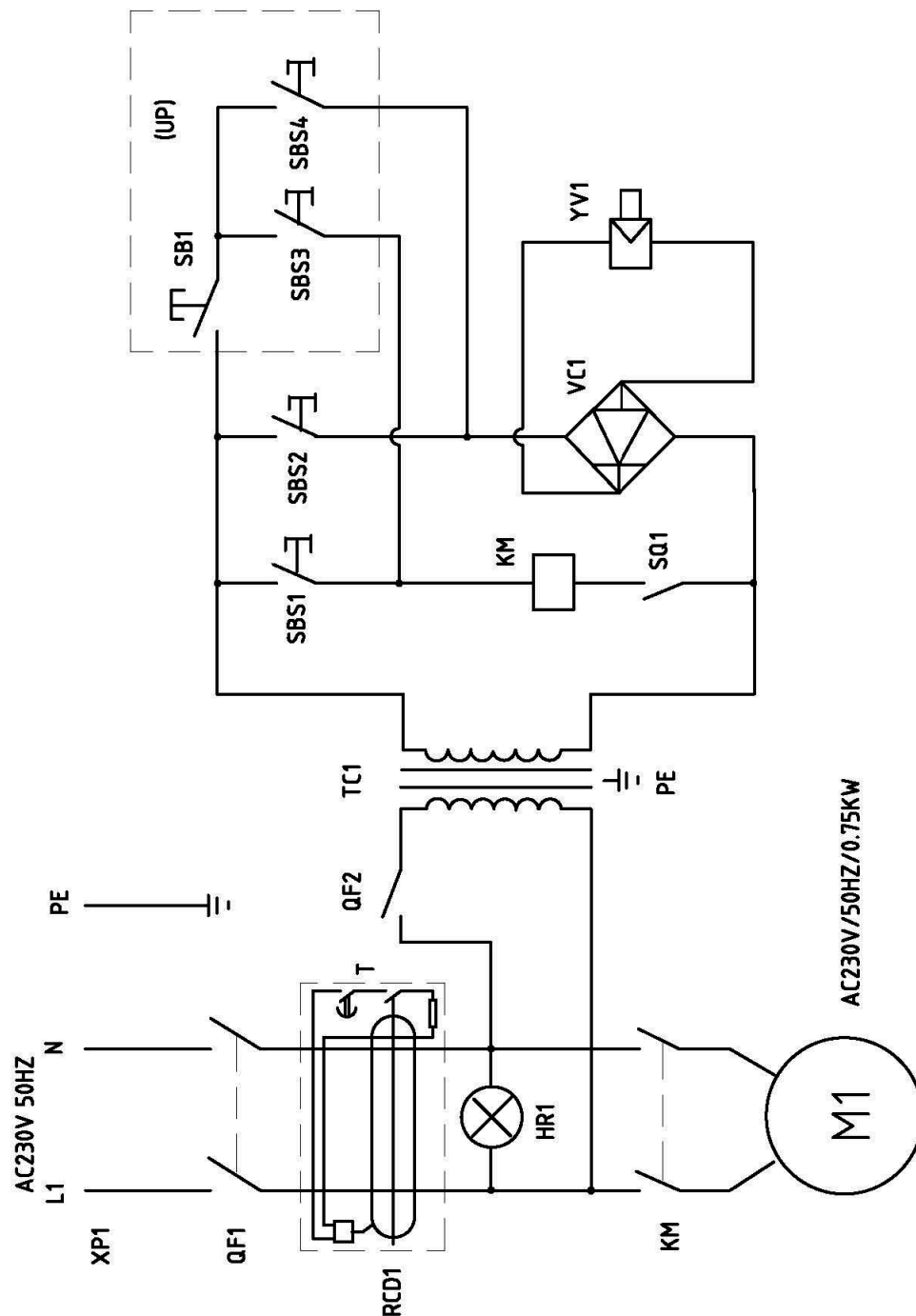
Check the Emergency stop switches on both upper and lower control device.

Reset the switch by turning the knob in the direction shown by the arrow.

Chapter 10 Electric Schematic and Hydraulic Diagram**10.1 Electrical Schematic (next page)**

10.1.1 Electrical Schematic of AC power supply

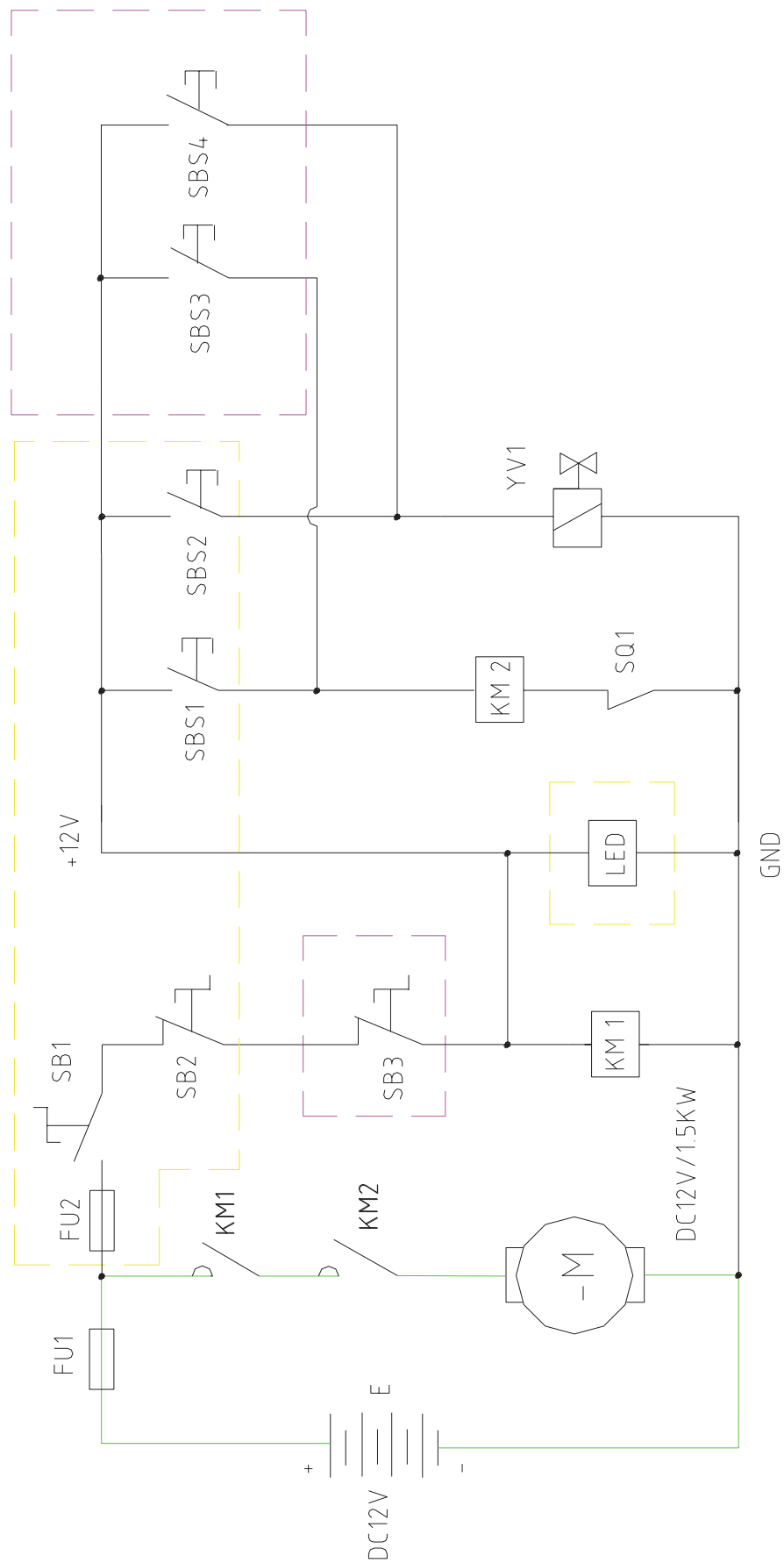
Electrical Schematic of AC power



AC ELECTRICAL COMPONENTS

No	SIGN	DESCRIPTION	PN	REMARK
1	XP1	Battery Pin	YDP3	
2	QF1	Breaker	DZ47LE-32 C16 16A(RCD1)	
3	QF2	Breaker	DZ47-60 C10 10A	
4	RCD1	Creepage Switch	DZ47LE-32 C16 16A(RCD1)	
5	TC1	Transformer	BK-50 AC220V/24V 50~60HZ	
6	HR1	Electrical Source Indicator	XB2-BVM4LC AC220V	
7	SB1	Emergency Stop Switch	ZB2BS54C/ZB2BZ102C-6A	
8	SBS1	Raise Button	ZB2BA3C/ZB2BZ101C-6A	
9	SBS2	Lower Button	ZB2BA5C/ZB2BZ101C-6A	
10	SBS3	Raise Button	ZB2BA3C/ZB2BZ101C-6A	
11	SBS4	Lower Button	ZB2BA5C/ZB2BZ101C-6A	
12	KM	AC Contactor	CJK2 0910 AC24C 10A	
13	VC1	Rectifier	QSZL-B 6A/1200V	
14	Yv1	Lowering Relief Valve	DC12V	
15	SQ1	Limit Switch	AZ8 104 5A250VAC	
16	M1	Motor(ac)	MFWC07—(0.75)1.5KW AC110V/220V	

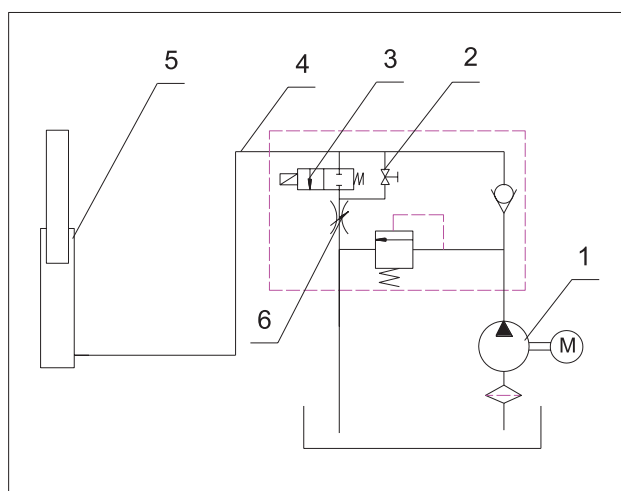
10.1.2 Electrical Schematic of DC power supply



DC electrical components

No	SIGN	DESCRIPTION	PN	REMARK
1	E	Battery	80D26/20HR12V-80A/H	
2	M1	Motor(DC)	W800663 DC12V-1.5KW	
3	FU1	Fuse	100A	
4	KM1	DC Contactor(Electrical Source)	MZJ-200S/1201B DC12V/100A	
5	KM2	DC Contactor (pump)	W800801-1 DC 12V 80%	
6	YV1	Lowering Relief Valve	DC12V	
7	SQ1	Limit Switch	AZ8 104 5A250VAC	
8	FU2	Fuse	10A	
9	SB1	Key Switch	ZB2BG2C/ZB2BZ101C-6A	
10	SB2	Emergency Stop Button	ZB2BS54C/ZB2BZ102C-6A	
11	SBS1	Raise Button	ZB2BA3C/ZB2BZ101C-6A	
12	SBS2	Lower Button	ZB2BA5C/ZB2BZ101C-6A	
13	LED	Display	DC 0~12V	
14	SB3	Emergency Stop Button	ZB2BS54C/ZB2BZ102C-6A	
15	SBS3	Raise Button	ZB2BA3C/ZB2BZ101C-6A	
16	SBS4	Lower Button	ZB2BA5C/ZB2BZ101C-6A	

10.2 Hydraulic Diagram



1—Hydraulic Power Pack
3—Solenoid Valve
5—Hydraulic Cylinder

2—Emergency Lowering Valve
4—Piping
6—Throttle Valve

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