



# Maintenance Manual

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SS0407E/AS0607E/AS0812E/AS1012E/  
AS1212E/AS1413E

Mobile Elevating Work Platform

 **Warning**

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

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

# Mobile Elevating Work Platform Maintenance Manual

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## Forewords

Thanks for purchasing and using the elevating work platform of Lingong Group Jinan Heavy Machinery Co., Ltd. The mechanism, drive, operation, maintenance, adjustment, technical parameter, repair adjustment data of elevating work platform are specified in this manual for safety guidance and correct use & maintenance of this machine.

How to achieve the best benefit with this machine is our common pursue, which is greatly depending on the acknowledge and maintenance of your machine. We sincerely wish you can go through this manual before the first start, operation, repair and maintenance of this machine and wish you are familiar with the operation and maintenance specified.

The correct illustration and instructions are provided in this manual at the moment of publication. However, the structure and performance of our products are continuously improved and completed. Changes of related design, operation and maintenance instruction will be made without notice. Thanks for understanding. For any doubts of the latest machine information and the manual, please consult us.

This manual is applicable to the elevating work platform. The user shall make the maintenance to the machine strictly according to the interval specified in the maintenance schedule.

Please keep the manual at the specified location for convenience of reference at any time. This manual is one part of this machine. When the ownership or use right of this machine is transferred, this manual shall be transferred with this machine. For any loss, damage or identification problem, please replace the manual in time.

Lingong Group Jinan Heavy Machinery Co., Ltd refers the copyright of this manual. The reproduction or copy of this manual is not allowed without the written approval of the company.

### **Warning**

- **Only the staff receiving the professional training and having corresponding qualifications are allowed to operate, repair and maintain this machine.**
- **The incorrect operation, maintenance and repair are very dangerous and can cause the personal injury and death.**
- **Before the operation or maintenance, the operator shall carefully go through this manual. Do not make any operation, maintenance and repair on this machine before going through and comprehending this manual.**
- **The user shall load the platform strictly according to the rated one and shall be responsible for consequences caused due to overload or any modification without permission.**
- **The operation regulations and preventions in this manual are only applicable for the specified use of this machine. For any un-forbidden operation beyond the regulation, be sure to ensure such operation will not cause any personal injury.**

## Safety precaution

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

Most accidents are caused due to the violation to the operation and maintenance regulations of the machine. To avoid accidents, please go through, comprehend and follow all warnings and precautions in this manual before the operation and maintenance.

As it is impossible to foresee every possible hazard, the safety instructions in this manual may not cover all safety prevention measures. Be sure to ensure the safety of yourself and others and protect the machine against any damage, if the steps and operation beyond this manual are adopted. If you are unable to confirm the safety of some operations, please feel free to consult us or the distributor.

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

Do not carry on any operation forbidden in this manual in any cases.

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

 **Hazard:**

**If not avoided, the dangerous results as severe injuries or death can be caused. This word is also applicable to the situation that serious machine damage can be caused, if not avoided.**

 **Warning:**

**If not avoided, the potential dangerous results as severe injuries or death can be caused. This word is also applicable to situation that the serious machine damage may be caused, if not avoided.**

 **Notice:**

**If not avoided, the minor or intermediate injury may be caused. This word is also applicable to situation that the machine damage may be caused or the machine service life may be shortened, if not avoided.**

# Chapter 1 Maintenance



**Warning: Compliance and****obedience**

- The operator shall only carry on the routine maintenance items specified in this manual.
- The regular maintenance and inspection shall be made by the trained maintenance technician as per the requirements of the manufacturer

## 1.1 Battery inspection

The good condition of battery is essential to performance and safe operation. The unsuitable electrolyte liquid level or damaged cable and wiring may cause the component damage and even the hazard

**Notice: This inspection is not****required for the machine with the sealed battery or maintenance-free battery.****Other positions shall be checked.****Hazard****Electrocution hazard:****The live operation may cause severe personal injury or death. Take off all****rings, watches and other jewelry in the operation process.****Personal injury hazard:**

The battery electrolyte is corrosive. Do not expose the hands or any body parts to the overflowed electrolyte, for fear of injury. Please neutralize the overflowed electrolyte with the sodium bicarbonate solution

**Notice: the following inspections****shall be made when the battery level is sufficient:**

- Put on the protective clothing and the safety goggles.
- Ensure that the wiring of battery cable is firm and free of erosion.
- Ensure that the battery locking rod is stable and firm.
- Remove the battery ventilation cover.
- Check the battery electrolyte fluid level. If necessary, add distilled water from the bottom of battery fluid add pipe. Do not add excessive distilled water.
- Install the ventilation cover.





**Notice: the wiring-end protector**

and the anti-corrosion sealant will protect the battery wiring end and the cable against corrosion.

## 1.2 Battery Maintenance Schedule

See the appendix for the maintenance plan of battery.

## 1.3 Hydraulic oil level inspection

The suitable hydraulic oil level is essential to the machine operation. If the hydraulic oil level is unsuitable, the hydraulic component may be damaged. The hydraulic oil level change can be determined by the inspector via the daily inspection. This change mainly indicates the problem of the hydraulic system



**Notice: this process shall be done**

**when the platform is folded.**

**Visually inspect the fluid level of the hydraulic oil tank.**

**Result: the hydraulic oil shall be located at the oil tank mark.**

**Please add the hydraulic oil based on**

**the demand and do not add excessive hydraulic oil.**



**Notice: To fill the hydraulic oil, it is required to use the applicable hydraulic oil in accordance with the use environment and temperature with reference to the followings:**

- L-HM 46 antiwear hydraulic oil: minimum air temperature  $> -9^{\circ}\text{C}$ ;
- L-HV 46 low temperature hydraulic oil:  $-33^{\circ}\text{C} < \text{minimum air temperature} \leq -9^{\circ}\text{C}$ ;
- L-HS 46 Ultralow temperature hydraulic oil:  $-39^{\circ}\text{C} < \text{minimum air temperature} \leq -33^{\circ}\text{C}$ ;
- 10# aviation hydraulic oil: minimum air temperature  $\leq -39^{\circ}\text{C}$ ;

## 1.4 Pre-delivery preparation report

- 1) The pre-delivery preparation report shall cover the inspection items of each type..
- 2) The pre-delivery preparation report shall be prepared for each inspection. Such report shall be saved as required after being completed.

Legend description			
Y= Accepted			
N=Rejected			
R=Repaired			
Check list A	Y	N	R
A-1 Inspection of manual and label			
A-2 Pre-operation inspection			
A-3 Function test			
25 hours later			
A-4 30-day maintenance			
Check list B	Y	N	R
B-1 Battery			
B-2 Wire			
B-3 Tyre and rim			
B-4 Emergency stop			
B-5 Key switch			
B-6 Horn			
B-7 Drive brake			
B-8 Driving speed in the folding status			
B-9 Driving speed in the lifting status			
B-10 Slow-speed driving			
B-11 Hydraulic oil analysis			
B-12 Exhaust System			
B-13 Chassis tray component			
B-14 Test of lower limit and hollow protector switch			
B-15 Test of upper limit switch			
Check list C	Y	N	R
C-1 Platform overload system			
C-2 Replacement of ventilation pipe of hydraulic oil tank			
Check list D	Y	N	R
D-1 Inspection for wear-resistance slide block of scissor			
D-2 Replacement of hydraulic oil filter core			
Checklist E	Y	N	R
E-1 Hydraulic oil			

## 1.5 Maintenance schedule

The daily, quarterly, semi-annual, annual and once-per-two-year maintenance must be done as per the schedule. The product maintenance program and the pre-delivery preparation report can be divided into A, B, C, D E and F sub items. The steps of each inspection are as shown in the table below.



- **The working hours are based on the meter.**
- **Lubricate the steering knuckles every month to ensure that the equipment meets the requirements.**

## 1.6 Maintenance and inspection report

- 1) The maintenance and inspection report shall cover the inspection items of each type.
- 2) The maintenance and inspection report shall be prepared for each inspection. Please
- 3) Keep the report for at least 4 years after the inspection or keep it as specified by the owner and laws and regulations of the workstation and government.

	Inspection item
Every day or every 2 hours	A
Every month or every 25 hours	A+B
Every season or every 50 hours	A+B+C
Each half a year or every 100 hours	A+B+C+D
Each year or every 200 hours	A+B+C+D+E
Every two years or every 400 hours	A+B+C+D+E+F

Legend description			
Y=Yes, completed			
N=No, un-completed			
R=Repaired			
Evaluation			
Pre-delivery preparation	Y	N	R
Operation inspection completed			
Maintenance item completed			
Function test completed			
Model			
Serial number			
Date			
Owner			
Inspector (printed)			
Signature of inspector			
Title of inspector			
Inspection company			

## 1.7 Pre-delivery preparation report

### 1.7.1 Basic principle

- 1) The distributor shall be responsible for the pre-delivery preparation.
- 2) The priority shall be given to the pre-delivery preparation for each product delivery. This inspection is aimed to find the significant problem of equipment before use.
- 3) The damaged and modified equipment are forbidden to use. Once any damage or inconformity is found during the equipment delivery, please mark the machine at once and stop the work.
- 4) The equipment must be repaired by the authorized technical as per the specification of manufacturer and the requirements of this manual.

### 1.7.2 Description

- 1) Please follow the operation manual on the equipment.
- 2) The pre-delivery preparation composed of the operation check, maintenance item and function test.
- 3) Record the result with a table. Complete each completed item in corresponding table

according to the description in the operation manual.

- 4) If any inspection result “N” appears, stop the equipment work, repair and check the equipment again. Make a mark on the position R after the inspection.

## 1.8 Maintenance and inspection report



### Description:

- **One report is applicable for each inspection.**
- **Choose the appropriate check list according to the check items.**

Every day or every 2 hours	A
Every month or every 25 hours	A+B
Every season or every 50 hours	A+B+C
Each half a year or every 100 hours	A+B+C+D
Each year or every 200 hours	A+B+C+D+E
Every two years or every 400 hours	A+B+C+D+E+F

- **Tick on the corresponding position after each inspection.**
- **Learn how to make the inspection step by step.**

If the inspection result “N” is made, mark and stop the machine work until it is repaired and checked again. Tick on the position “R” after the repair.①Before delivery②Completion of

operation check ③ Project maintenance completion④Functional test completion

## 1.9 Steps of checklist A

### A-1

#### Inspection of manual and label

The completeness of operation and maintenance manual is the key of safe operation. Each equipment is supplied with a manual which is kept in a box on the platform. The illegible or incomplete manual is unable to provide sufficient safe operation information.

Besides, be sure to keep all safety labels in good conditions. The label can provide the potential operation hazards of the machine to the operator. Meanwhile, it also provides the operation and maintenance information to the user. The illegible labels cannot play the role of warning, but may cause the dangerous operation environment.

- 1) Check and ensure that the operation and maintenance manual is kept in the manual box.
- 2) Check the manual for its clear writing and completeness

Result: the manual is matched with the model and all writings on the manual are clear and complete.

Result: the manual is not matched with the model and all writings on the manual are illegible and incomplete. Stop the work of

machine before replacing the manual.

- 3) Open the label check diagram and carefully check if the label is illegible or complete.

Result: All labels are complete, clear and intact.

Result: The labels are missing, illegible or incomplete. Stop the work of machine before replacing the label.

- 4) Return the manual to its original position after the use. Notice: please contact LGMG for manual or label replacement, if necessary.

## A-2

### Pre-operation inspection

The pre-operation inspection is essential to the safe operation of machine. The pre-operation inspection is made in the form of visual inspection before the machine operation. This inspection is used for discovering the significant problems of machine before the function test and for determining if the routine maintenance procedures are necessary.

For all inspection procedures, please refer to "Pre-operation inspection" in this manual.

## A-3

### Function test

The function test is essential to the safe operation of machine. The function test is aimed to discovering the functional defects of the machine before the operation. The defected machine cannot be put into service. Once any functional defects are found, please mark the machine immediately and discontinue the use.

For all inspection procedures, please refer to "Function test" in this manual.

## A-4

### 30-day maintenance

The 30-day maintenance is made on the first 30 day or the first 25h after the machine operation.

After this step, Please continue to check the maintenance items on the check list.

The maintenance shall be made according to the steps below:

- 1) B-3 Tyre and rim

## 1.10 Steps of checklist B

### B-1

#### Battery inspection

This check item shall be made once per 25h or per month, whichever is shorter.

The well battery status is essential to machine performance and operation safety. The incorrect electrolyte fluid level and the damaged cable or connector may cause the machine part damage and hazard.

 **Warning: Electrocutation hazard**

**The live operation may cause severe personal injury or death. Take off the ring, watch and other jewelry in the operation process.**

 **Warning: Personal injury hazard**

**The battery electrolyte is corrosive. Do not expose the hands or any body parts to the overflowed electrolyte, for fear of injury. Please neutralize the overflowed electrolyte with the sodium bicarbonate solution.**

- 1) Put on the protective clothing and the safety goggles.
- 2) Release the battery tray lock on the chassis side and rotate the chassis battery tray outward.
- 3) Protect the battery cable connector against erosion.



**Notice: add a wiring end protector and coat the anti-corrosion glue to protect the battery connector cable against erosion.**

- 4) Firmly fix the battery and the cable.
- 5) Fully charge the battery and stay it for at least 24h



**Notice: Steps 6 thru 12 do not apply to sealed or maintenance free batteries.**

- 6) Open the battery cover, check the specific weight with a specific gravity hydrometer and make the record.
- 7) Check the ambient temperature and adjust the specific liquid gravity of each battery

according to the instructions below:

Increase the specific liquid gravity by 0.004 per 5°C, if the temperature is higher than 27°C.

Decrease the specific liquid gravity by 0.004 per 5°C, if the temperature is lower than 27°C.

Result: the specific liquid gravity of each battery is greater than 1.277 after the adjustment. Fully charge the battery and turn to Step 12.

Result: if the specific liquid gravity of each battery is lower than 1.250, turn to Step 8

- 8) Charge the battery in a balanced way or fully charge the battery and stay the battery still for at least 6h (preferably 24h).
- 9) Open the battery cover, check the specific weight with a specific gravity hydrometer and make the record.
- 10) Check the ambient temperature and adjust the specific liquid gravity of each battery according to the instructions below:

Increase the specific liquid gravity by 0.004 per 5°C, if the temperature is higher than 27°C.


Decrease the specific liquid gravity by 0.004 per 5°C, if the temperature is lower than 27°C.

Result: the specific liquid gravity of each battery is greater than 1.277 after the

adjustment. Fully charge the battery and turn to Step 12.

Result: the specific liquid gravity difference between the battery cells is greater than 0.1 or the specific liquid gravity of more than one battery cell is less than 1.217. In such case, please replace the battery.

- 11) Check the battery electrolyte height. If necessary, add the distilled water to the highest liquid level indicator and do not add the excessive distilled water.
- 12) Close the battery cover and neutralize the spilled electrolyte with the sodium bicarbonate solvent.

 **Notice: The following checks are suitable for batteries of any type:**


- 13) Check if the battery cells in each battery pack are correctly connected..
- 14) Check the excessive abrasion and damage of the battery charger plug and the wire insulation. Replace the worn and damaged one in time, in any.
- 15) Correctly connect the battery charge to the 100-240V, 50/60HZ AC power supply.


Result: The charger is running and charging the battery.

Result: The charger alarm rings and the indicator flashes. Please check and correct the connection of fuse and charger.

Guarantee the normal operation of charger

and charge the battery.

 **Notice: to achieve good effect, please make use of the wire with appropriate length. Keep the total length below 15m.**

 **Notice: for more information of charger operation, please contact the after-sales service department of LGMG.**

## B-2

### Wire inspection

This check item shall be made once per 25h or per month, whichever is shorter.

Keeping the wire in good conditions is essential to safe operation and good machine performance. If the burn, scratched, eroded or bent wire is not discovered and replaced and is used in the unsafe operation environment, the machine element may be damaged

 **Danger: Electrocuttion/explosion danger**

The thermal contact or the conductor may cause the serious injury and death. Do not put on the ring, watch and other jewelry.

- 1) Check if the ground wire below the chassis is lost or damaged.
- 2) Check if there is any burn, scratched, eroded, bent or loosened wire in the areas below:  
Internal of ground controller box  
Wire of hydraulic block

Wire in battery area of the battery tray  
Internal of platform controller box

- 3) Switch the key switch to the platform controller and draw out the red emergency stop buttons from the ground and platform controller.
- 4) Lift the platform for a given height above the ground. The lifting height of every model is given in the following table.

Model	Height (m)
SS0407E	1.8
AS0607E	2.5
AS0812E	3.2
AS1012E	3.73
AS1212E	4
AS1413E	

- 5) Lift the safety prop, move it to the center of the scissor sleeve center and rotate it upward until it is vertical
- 6) Lower the platform height until the safety prop completely contacts the shaft sleeve

 **Hazard: Crush hazard**

**Be sure to put your hand on correct position of the safety prop when lowering the platform**

- 7) Check if there is any burn, scratched, eroded, bent and loosened wire in chassis and the scissor area..
- 8) Check if there is any burn, scratched, eroded, bent and loosened wire in the areas below:  
  
Wire of scissor arm  
ECU to the platform

Harness connector connected on the platform

- 9) Check the free coating of the insulating oil on the positions below:  
  
Harness connector connected between ECU and platform controller  
  
All harness connectors connected the level sensor
- 10) Raise the platform and recover the safety prop to the installation position.
- 11) Lower the platform to the folding position and then shut down the machine

**B-3**

**Inspection of tyre and rim**

This check shall be made once per 25h or per month, whichever is shorter.

Keeping the tyre and rim in good conditions is essential to safe operation and good performance.

The failure of tyre and rim is possible to tip over the machine. The machine elements can also be damaged, if the defected tyres and rims are not discovered and repaired.

- 1) Check if the tread and sides of the tyre contain any scratch, crack, hole and other abnormal wear.
- 2) Check if the rim is damaged, bent and cracked
- 3) Remove the cotter pin and check the nut torque



 **Notice: the new cotter pin must be**

**used when installing the tyre and rim again.**

- 4) Install and lock a new cotter pin

Torque of lubrication-free nut	410-540N·m
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 **Notice: Model suitable for electric drive**

- 5) Check torque of each bolt.

Torque of lubrication-free bolt	90N·m
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- 6) Lubricate the steering knuckles.

#### B-4

#### Inspection of emergency stop

This check shall be made once per 25h or per month, whichever is shorter.


- 1) The normal emergency stop function is essential for the proper operation of the machine. If it does not cut off the power supply and stop all functions of the machine a hazardous working condition can be the result.
- 2) As a safe function, besides the red emergency stop button on the platform, the selection and operation of ground controller shall be superior to those of the platform controller.
- 3) Switch the key switch to the ground controller and draw out the red emergency stop buttons from the ground and platform controller.
- 4) Press the red emergency stop button on the

ground controller to the OFF position.

Result: No action is enabled by the machine.

- 5) Press the red emergency stop button on the platform controller to the OFF position.

Result: No action is enabled by the machine

 **Notice: the red emergency stop button of the ground controller can stop all operations of the machine, even if the key switch is switched to the platform controller.**

#### B-5

#### Test of key switch

This check shall be made once per 25h or per month, whichever is shorter.

- 1) The correct action of key switch and essential to the safe operation of equipment. The machine can be operated via the ground controller or the platform controller. The key switch is used for switching the control. The failed switch may cause the dangerous operation.
- 2) As this step is carried out on the ground with a platform controller, no person shall stand on the platform.
- 3) Pull out the emergency stop switches from the ground and platform controllers.
- 4) Turn the key switch to the platform controller position.
- 5) Check the lifting and lowering functions from the ground controller. Result: No action is enabled by the machine.
- 6) Turn the key switch to the ground controller position.

- 7) Check the lifting and lowering functions from the platform controller. Result: No action is enabled by the machine.
- 8) Turn the key switch to the OFF position. Result: No action is enabled by the machine.

## B-6

### Test of horn

This check shall be made once per 25h or per season, whichever is shorter.

- 1) The horn is used for giving the warning to the ground staff by the control staff on the platform. It is unable to remind the hazard and unsafe status to the ground staff with the abnormal horn.
- 2) Switch the key switch to the platform controller and draw out the red emergency stop buttons from the ground and platform controller.
- 3) Press the horn button on the horn controller.  
Result: the horn outputs the sound.

## B-7

### Test of driving and braking function

This check shall be made once per 25h or per month, whichever is shorter.

- 1) The normal braking function is essential to the operation safety. The brake shall be stable and free of delay, vibration and abnormal sound. The hydraulic releasing of braking system shall be normal.
- 2) Be sure to complete the braking function inspection on a solid and level ground without any barrier. Ensure the machine is folded and the extending platform is

completed retracted.

- ① Make a reference test line on the ground.
- ② Switch the key switch to the platform controller and draw out the red emergency stop buttons from the ground and platform controller.
- ③ Lower the platform to the folding position.
- ④ Press the drive function selector button.
- ⑤ Select one point (such as the touchdown point on the wheel) from the machine as the visual inspection reference of the test line.
- ⑥ Drive the machine at the maximum speed and release the handle at the moment when the reference point passes the ground test line.
- ⑦ Measure the distance between the reference point and the survey line.

Result: The machine is stopped within the specified braking distance. No action is required.

Result: The machine is not stopped within the specified braking distance.



**Notice: the brake must be valid within the allowable gradeability range of the machine.**

- ⑧ Replace the brake and repeat the process above from Step 1.

## B-8

### Test of driving speed-folding status

This check shall be made once per 25h or per month, whichever is shorter.

- 1) The normal driving function is essential to the operation safety. With the driving function, a rapid and stable response shall be given to the operator. No delay, vibration and abnormal sound shall be outputted during the normal operation and driving process.
- 2) Be sure to complete the driving test on a firm and level ground without any barrier.
  - ① Draw two lines, spaced by 10m on the ground, as the starting line and the finishing line.
  - ② Switch the key switch to the platform controller and draw out the red emergency stop buttons from the ground and platform controller
  - ③ Lower the platform to the folding position.
  - ④ Press the drive function selector button.
  - ⑤ Select one point from the machine as the visual inspection reference for the starting line and the finishing line.
  - ⑥ Drive the machine at the maximum speed and start to count when the reference point passes the starting line.
  - ⑦ Keep driving at the full speed and record the time when the reference point passes the finishing line. Refer to the specification.

## B-9

### Test of driving speed-lifting status

This check shall be made once per 25h or per month, whichever is shorter.

- 1) The normal driving function is essential to the operation safety. With the driving function, a rapid and stable response shall be given to the operator. No delay, vibration and abnormal sound shall be outputted during the normal operation and driving process.
- 2) Be sure to complete the driving speed test on a solid and level ground without any barrier.
  - ① Draw two lines, spaced by 10m on the ground, as the starting line and the finishing line.
  - ② Switch the key switch to the platform controller and draw out the red emergency stop buttons from the ground and platform controller.
  - ③ Press the lifting function selector button.
  - ④ Press the enable key
  - ⑤ Lift the platform for a given height above the ground. The lifting height of every model is given in the following table.

Model	Height (m)
SS0407E	1.36
AS0607E	1.19
AS0812E	1.71
AS1012E	
AS1212E	1.86
AS1413E	2.52

- ⑥ Press the drive function selector button.
- ⑦ Select one point (such as the touchdown point on the wheel) from the machine as the visual inspection reference for the starting line and the finishing line.
- ⑧ Drive the machine at the maximum speed per hour and start to count when the reference point passes the starting line.
- ⑨ Keep driving at the full speed and record the time when the reference point passes the finishing line. Refer to the specification.

**B-10****Test of driving speed-slow speed**

This check shall be made once per 25h or per month, whichever is shorter.

- 1) The normal driving function is essential to the operation safety. With the driving function, a rapid and stable response shall be given to the operator. No delay, vibration and abnormal sound shall be outputted during the normal operation and driving process.
  - 2) Be sure to complete the driving test on a solid and level ground without any barrier.
- ① Draw two lines, spaced by 10m on the ground, as the starting line and the finishing line.
  - ② Switch the key switch to the platform controller and draw out the red emergency

stop buttons from the ground and platform controller.

- ③ Lower the platform to the folding position.
- ④ Press the driving speed selector button.
- ⑤ Select one point (such as the touchdown point on the wheel) from the machine as the visual inspection reference for the starting line and the finishing line.
- ⑥ Drive the machine at the maximum speed and start to count when the reference point passes the starting line.
- ⑦ Keep driving at the full speed and record the time when the reference point passes the finishing line. The driving time shall not be less than 22.5s.

**B-11****Visual Inspection of the Hydraulic Oil**

This check item shall be made once every 25 hours of operation or every month, whichever interval is shorter.

Collect a sample of hydraulic oil and place in a clear container. Visually inspect the hydraulic oil for the following:

- 1) Color: oil should be a clear, light-honey colored.
- 2) Appearance: oil should be clear and not cloudy or visibly distorts the view through the sight glass or container.
- 3) Contains no particles, foreign objects, or other contamination.
- 4) The hydraulic oil can be inspected by smell

(can smell “hot” but not “burnt”) or rubbing between fingers (should feel viscous and free of any rough feel due to particles) If the hydraulic oil passes all of the above inspections, continue the scheduled maintenance intervals. If the hydraulic oil fails any of the above inspections, the hydraulic oil must be tested by an oil distributor or replaced.

Note: If the hydraulic oil has not been replaced for two years, the oil must be tested every quarter by an oil distributor until the oil fails the test and is replaced. After the oil has been replaced, continue the scheduled monthly maintenance inspection.

Note: When replacing the hydraulic oil, it is recommended that all hydraulic filters be replaced at the same time.

## **B-12**

### **Inspection of ventilation system of hydraulic oil tank cover**

This check shall be made once per 25h or per month, whichever is shorter.

1) The well-ventilated hydraulic oil tank cover is essential to the good mechanical property and service life. The dirty or blocked exhaust cover may degrade the machine performance. The frequent inspection is the must for the poor working environment.

① Remove the exhaust cover from the hydraulic oil tank cover.

② Check ventilation

Result: The air can pass through the exhaust cover.

Result: If the air is unable to pass through the exhaust cover, clean or replace the exhaust cover. Continue Step 3.



**Notice: when checking the ventilation of the oil tank cover, the air shall freely pass through such cover.**

- 2) Carefully wash the oil tank exhaust cover with mild solvent and dry it with the low-pressure compressed air. Repeat step 2.
- 3) Install the exhaust cover of hydraulic oil tank

## **B-13**

### **Inspection of chassis tray locking component**

This check shall be made once per 25h or per month, whichever is shorter.

1) The good conditions of chassis tray locking component are essential to the equipment performance and service life. The tray may be unexpectedly opened and the safety hazard can be caused by the damaged chassis tray locking component. Check the abrasion and damage of each chassis tray locking component.

## **B-14**

### **Inspection of lower limit and hollow protector switch**

This check shall be made once per 25h or per month, whichever is shorter

- 1) The good condition of limit switch is essential to the machine performance and safe operation. The operation of machine with defected limit switch will degrade the machine performance and cause the potential unsafe working environment.
- 2) Be sure to complete the inspection on a solid and level ground without any barrier.

**Lower limit switch**

- 3) Remove the platform controller
- 4) Lift the platform for a given height above the ground. The lifting height of every model is given in the following table.

Model	Height (m)
SS0407E	1.8
AS0607E	2.5
AS0812E	3.2
AS1012E	3.73
AS1212E	4
AS1413E	

- 5) Lift the safety prop, move it to the center of the scissor sleeve center and rotate it upward until it is vertical.
- 6) Lower the platform height until the safety prop completely contacts the shaft sleeve

**Crush hazard**

- 8) Be sure to put your hand on correct position of the safety prop when lowering the platform
- 9) Turn the key switch to the OFF position.
- 10) Release the lever and do the test.

- 11) Open the lower limit switch base cover and unplug the connector of lower limit switch.
- 12) Switch the key switch to the platform controller.
- 13) Slightly raise the platform and recover the safety prop to the installation position.
- 14) Press the lifting function selector button on the platform controller on the ground and lower the platform until it is folded.

Result: The diagnosis screen displays the code 18, the alarm is sounds and the lifting function response is normal. The function of machine is normal.

Result: the diagnosis screen dose not display the code 18, no alarm is sounds and the lifting function gives no response. In such case, the limit switch shall be replaced.

- 15) Press the drive function selector button and try to run the machine.  
Result: The diagnosis screen displays the code 18, the alarm is sounds, but the turning function and the driving function are disabled. The function of machine is normal.

Result: the diagnosis screen dose not display the code 18, the alarm is sounds and the turning and driving function are enabled. In such case, the limit switch shall be replaced.

- 16) Press the lifting function selector button to

raise the platform by about 0.3m

Result: the diagnosis screen displays the code 18, the alarm is sounds and the lifting function is enabled. The function of machine is normal.

Result: The diagnosis screen is not display the code 18 and the alarm is sounds. In such case, the limit switch shall be replaced.

- 17) Raise the platform until the hollow protector is stretched.

Result: The diagnosis screen is not display the code 18 and the alarm is sounds. The function of machine is normal.

Result: The diagnosis screen displays the code 18 and the alarm is sounds. In such case, the limit switch shall be replaced.

- 18) Lift the platform for a given height above the ground. The lifting height of every model is given in the following table.

Model	Height (m)
SS0407E	1.8
AS0607E	2.5
AS0812E	3.2
AS1012E	3.73
AS1212E	4
AS1413E	

- 19) Lift the safety prop, move it to the center of the scissor sleeve center and rotate it upward until it is vertical.
- 20) Lower the platform height until the safety prop completely contacts the shaft sleeve.

- 21) Warning: crush hazard
- 22) Turn the key switch to the OFF position.
- 23) Remove the platform control line connected to the main chassis harness.
- 24) Resume the connection between the platform controller connector and the main chassis harness.
- 25) Connect the platform control connector.
- 26) Safely and correctly connect the connector of lower limit switch.
- 27) Well install the lower limit switch box.
- 28) Switch the key switch to the platform controller.
- 29) Slightly raise the platform and recover the safety prop to the installation position.
- 30) Lower the platform to the folding position.

#### **Inclination switch**

- 31) Move the machine to the maximum allowable inclination angle of the level sensor. For the maximum allowable inclination angle, please refer to the nameplate.
- 32) Press the lifting button to lift the machine for a given height on a slope.
- Result: The diagnosis screen displays the code LL, the alarm sounds and the machine function is normal.
- Result: The diagnosis screen does not display the code LL, the alarm sounds. In such case, please check or replace inclination

switch.

- 33) Press the drive function selector button and try to drive the machine on a slope.

Result: the diagnosis screen displays the code LL, the alarm sounds, and the turning function and the driving function are disabled. The function of machine is normal.

Result: the diagnosis screen dose not display the code LL, no alarm sounds and the driving and turning function of machine are normal.

Check or replace the inclination switch.

**Hollow protector switch**

- 34) Lower the platform to the folding position and transfer the machine to the firm and flat ground.
- 35) Place a wood block as high as about 5cm below the right hollow protector
- 36) Press the lifting button to try to lift the machine for a given height. The lifting height of every model is given in the following table.

Model	Height (m)
SS0407E	1.36
AS0607E	1.19
AS0812E	1.71
AS1012E	
AS1212E	1.86
AS1413E	2.52

Result: The hollow protector bumps the wood block and fails to be completely stretched. The diagnosis screen does not display the code 18, no alarm is outputted and the machine can still

be lifted. In such case, the hollow protector limit switch shall be adjusted or replaced

- 37) Press the drive function selector button and try to run and turn the machine.

Result: the diagnosis screen displays the code 18, the alarm is outputted, and the turning function and the driving function are normal. The function of machine is normal.

Result: The diagnosis screen dose not display the code 18, no alarm is outputted and the driving and turning function of machine are normal. In such case, the hollow protector limit switch shall be adjusted or replaced

- 38) Lower the platform until it is folded and then remove the wood block below the right hollow protector
- 39) Repeat Step 34-37 below the left hollow protector.
- 40) Lower the platform until it is folded and then remove the wood block below the left hollow protector
- 41) Turn off the machine.

**B-15**

**Inspection of upper limit switch**

This check shall be made once per 25h or per month, whichever is shorter.

- 1) The good conditions of limit switch are essential to performance and safe operation. The operation of machine with defected limit



switch will degrade the machine performance and cause the potential unsafe working environment.

2) Be sure to complete the function inspection on a solid and level ground without any barrier.

① Switch the key switch to the ground controller, and lift the platform for a given height above the ground.

Model	Height (m)
SS0407E	1.8
AS0607E	2.5
AS0812E	3.2
AS1012E	3.73
AS1212E	4
AS1413E	

② Lift the safety prop, move it to the center of the scissor sleeve center and rotate it upward until it is vertical.

③ Lower the platform height until the safety prop completely contacts the shaft sleeve.

 **Warning: crush hazard**

- Be sure to put your hand on correct position of the safety prop when lowering the platform
- Open the limit switch base cover on the chassis.
- Slightly raise the platform and recover the safety prop to the installation

position

- Lift the platform via the ground controller, while pressing the upper limit switch arm to initialize the upper limit switch

Result: The platform stops rising and the function of machine is normal.

Result: The platform continues to rise.

Adjust or replace the upper limit switch

**B-16**

**Inspection of Steering knuckle**

This check item shall be made once per 25h or per month, whichever is shorter.

1) The condition of copper gasket of steering knuckle is vital for the safe operation of the machine. The use of worn copper gasket may result in damage to component and unsafe work risk.

2) Please check the copper gasket when the platform is folded.

3) Measure the thickness of copper gasket.

a) Result:

If the measured result of SS0407E/AS0607E is not greater than 10mm, replace the copper gasket.

If the measured result of AS0812E/AS1012E/AS1212E is not greater than 19mm, replace the copper gasket.

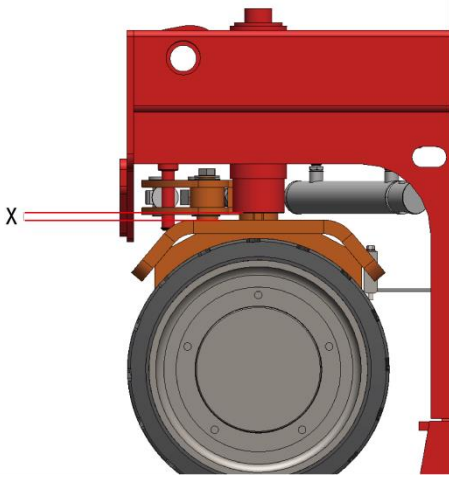
b) Result:

If the measured result of SS0407E/AS0607E is

greater than 10mm, apply lubricant between the steering knuckle and copper gasket.

If the measured result of AS0812E/AS1012E/AS1212E is greater than 19mm, apply lubricant between the steering knuckle and copper gasket.

- 5) Measure the distance between the chassis bushing and the upper cover plate of steering knuckle.




a) Result:

If the measured result of AS1413E is not greater than 9mm, replace the nylon gasket.

b) Result:

If the measured result of AS1413E is greater than 9mm, not replace the nylon gasket.

 **Notice: please contact LGMG for copper gasket, if necessary.**

**B-17**

**Check and Replacement of Electric Brush**

 **Warning: Charged motor power**

**system: Be careful when checking brushes; first disconnect battery.**

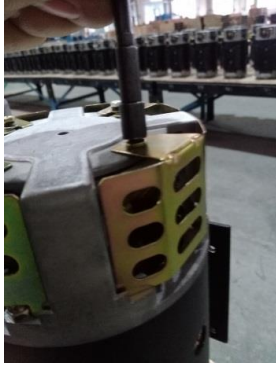
**Periodic Check**

Check the motor at least once semiannually in the following method:

- 1) Conduct external check, keep the outer surface of the motor clean.
- 2) Open the protective cover and clean carbon deposit.
- 3) Check or replace the bearing, and during running, carefully listen whether or not there is any abnormal noise in the bearing.
- 4) Check the wear of the electric brush, and where appropriate, replace the electric brush

Fault	Cause	Troubleshooting
Blackening of commutator, excessive wear of electric brush or large spark	Overload	Reduce loads and operating frequency
	Reduction in pressure caused by seize of electric brush or annealing of spring	Clean carbon deposit, check the cause and replace the spring.
	Inappropriate to electric brush	Replace as per the designation and size of the original electric brush for the motor.
	Serious carbon deposit in the motor	Clean carbon deposit

**Replacement of Electric Brush**



1. Remove the window cover plate
  - 1) Unscrew the cover plate screw with the T-wrench, and take the cover plate down.



2. Remove the old electric brush.
  - 1) Unscrew the fastening screw from the tail of the electric brush with the Phillips screwdriver or the socket wrench.
  - 2) Pull the spring, take the old electric brush out of the brush box, and clean carbon dust accumulated on the brush box and the surface of the electric brush.



3. Install the new electric brush

- 1) Put the new electric brush into the brush box, and hold down the electric brush with the spring.
- 2) Fix the tail to the wiring board of the brush box with the Phillips screwdriver or the T-wrench, and screw with the torque wrench.



4. Install the window cover plate
  - 1) Insert the cover plate into the card fastener of the window, screw the fastening screw (trimming washer and spring washer), and screw with the torque wrench.

**⚠ Notice: Upon the installation of the electric brush, the motor should idle, for the purpose of the wear-in of the arc surface of the electric brush and increase in contact surface between the electric brush and the commutator**

**⚠ Notice: Do not run the motor under overload and undervoltage, or else, heavy current is easy to cause due to underrun, resulting in wear of electric**

brush.

## 1.11 Steps of checklist C

### C-1

#### Test of platform overload system

- 1) This step shall be made once per 50h or per season, whichever is shorter. Or the check and re calibrate shall be made immediately when the overload failure appears.
- 2) The frequent test of platform overload mechanism is essential to the safe operation of machine. The continuous wrong operation of platform can cause the reaction failure to overload information of the system. The stability of machine will be affected and even the equipment may be tipped over.
- 3) The platform overload system is used for preventing the operation of machine in case of overload. Such system is composed of two electric elements, an overload pressure switch and an angle sensor.
- 4) The angle sensor in the scissor arm 1 is used for measuring the inclination angle of the scissor and further determining the platform height.
  - ① Switch the key switch to the ground controller, and lift the platform for a given

height above the ground. The lifting height of every model is given in the following table.

Model	Height (m)
SS0407E	1.8
AS0607E	2.5
AS0812E	3.2
AS1012E	3.73
AS1212E	4
AS1413E	

- ② Lift the safety prop, move it to the center of the scissor sleeve center and rotate it upward until it is vertical.
- ③ Lower the platform height until the safety prop completely contacts the shaft sleeve.

#### **Warning: crush hazard**

Be sure to put your hand on correct position of the safety prop when lowering the platform.

- ④ Open the limit switch base cover on the chassis.
- ⑤ Remove the limit switch cover.
- ⑥ Mark and remove two lines of the upper limit switch.
- ⑦ Make the short connection between the two removed lines.
- ⑧ Switch the key switch to the two ground controller and draw out the red emergency stop buttons from the ground and platform controller.
- ⑨ Slightly raise the platform and recover the safety prop to the installation position.

⑩ Raise the platform to the highest location and continue to press the lifting function selector button.

Result: The alarm is outputted.

Result: No alarm is outputted. Calibrate the platform overload system

- 5) Lower the platform via the manual lowering function until the platform is folded
- 6) Carefully remove the short circuit lines of the upper limit switch
- 7) Raise the platform to the highest location and continue to press the lifting function selector button.  
Result: No alarm is outputted. The system function is normal.  
Result: The alarm is outputted and the platform overload system is abnormal.  
Eliminate the failures of limit switch, its wire, installation bracket and the like or calibrate the overload system.

8) Lower the platform to a given height above the ground. The height of every model is given in the following table

Model	Height (m)
SS0407E	1.8
AS0607E	2.5
AS0812E	3.2
AS1012E	3.73
AS1212E	4
AS1413E	

9) Lift the safety prop, move it to the center of the scissor sleeve center and rotate it upward until it is vertical.

10) Lower the platform height until the safety prop completely contacts the shaft sleeve



**Be sure to put your hand on correct position of the safety prop when lowering the platform.**

- 11) Connect the wire of limit switch to its original status and install the limit switch cover
- 12) Install the limit switch base cover.
- 13) Install the platform limit switch base cover.
- 14) Slightly raise the platform and recover the safety prop to the installation position.
- 15) Lower the platform to the folding position

## C-2

### Replacement of exhaust cover of hydraulic oil tank

This step shall be made once per 50h or per season, whichever is shorter.

- 1) The hydraulic oil tank is a ventilated oil tank. An air filter is provided inside the exhaust cover, which can be blocked as time goes on. In case the exhaust cover fails or is inappropriate installed, once any impurities invade into the hydraulic system, the component may be damaged. The frequent inspection is the must for the poor working

environment.

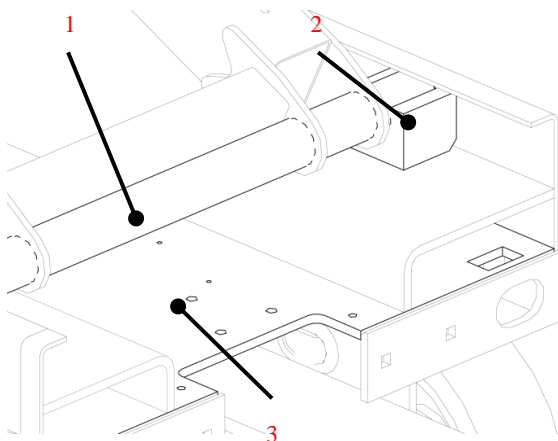
- ① Take off the exhaust cover of hydraulic oil tank.
- ② Replace a new exhaust cover of hydraulic oil tank.

## 1.12 Steps of checklist D

### D-1

#### Inspection for wear-resistance slide block of scissor arm

- 1) This step shall be made once per 100h or per six months, whichever is shorter.  
The condition of antiwear block of fork arm is vital for the safe operation of the machine. The use of worn anti-wear block may result in damage to component and unsafe work risk
- 2) Please check the wear-resistant cushion when the platform is folded.



1. Steel pipe of inner connecting rod

2. Anti-wear block

3. Base plate

- 3) Measure the distance between the inner connecting rod and the steer plate on the side of the battery box side without turning ends.

Result:

- a) If the measured result of SS0407E/AS0607E AS0812E/AS1012E/AS1212E/AS1413E is not less than 24mm, do Step 4.

Result:

- b) If the measured result of SS0407E/AS0607E AS0812E/AS1012E/AS1212E/AS1413E is less than 24mm, replace the anti-wear block.
- 4) Apply lubricant between the chassis sliding rail and the wear-resistance slide block.

### D-2

#### Replacement of oil return filter core on hydraulic oil tank

This step shall be made once per 100h or per six months, whichever is shorter.



**Notice: The replacement of oil return filter core is essential to the good performance and service life of equipment. The polluted or blocked filter may affect the machine performance and then continue use of such filter may cause the part damage.**

**The filter core shall be frequently replaced in the poor working environment.**

 **Warning: scald hazard**

**Watch out the hot oil. The exposure to the hot oil may cause the severe burn.**

 **Notice: the oil return filter of**

**hydraulic oil tank is installed at the center between the functional valve block and the hydraulic power unit.**

- ① Clean the hydraulic oil overflowed from the filter and then remove the filter with a spanner.
- ② Remove the filter and replace a new filter core.
- ③ Apply the hydraulic oil coating on the filter seal ring and tighten the seal ring with hands.
- ④ Mark the time and date of replacement with a marking pen on the filter core replacement table.
- ⑤ Switch the key switch to the ground controller and draw out the red emergency stop buttons from the ground and platform controller.
- ⑥ Press and press the lifting function selector button.
- ⑦ Check the filter component for oil leakage.
- ⑧ Clean the overflowed hydraulic oil.


## 1.13 Steps of checklist E


**E-1**

**Test and replacement of hydraulic oil**

This procedure is made once per 200h or per year, whichever is shorter.

- 1) The replacement or test of hydraulic oil is essential to the good equipment performance and service life. The polluted hydraulic oil and the filter can affect the machine performance, which can damage the parts, if being used still. The frequent operation is especially required in the poor operation situations.
- 2) Check if it is necessary to replace the hydraulic oil with an oil separator in advance.
- 3) If the hydraulic oil has not been replaced for two years, check it once per quarter. Replace the hydraulic oil, if the inspection fails.


 **Notice: this operation shall be made when the machine is folded.**

 **Warning: The operation of live circuit may cause the severe injury or even the death. Take off rings, watches and other jewelry in the operation process.**

- ① Open the installation try of hydraulic power unit.
- ② Mark and disconnect the oil return pipe

from the hydraulic filter to the hydraulic oil tank. Remove the pipeline from the oil tank. Cover the pipe joint to keep away the dust.

- ③ Make and disconnected the hydraulic pump and the oil suction pipe of oil tank and take out the oil pipe. Cover the pipe joint to keep away the dust.
- ④ Release the hydraulic oil tank fastener and take out the hydraulic oil tank.
- ⑤ Unscrew the hydraulic oil fueling cover and pour the oil in a proper container.

 **Warning: The ejected hydraulic oil may inject the skin. Please slowly unscrew the hydraulic joint to gradually reduce the oil pressure. Do not eject the oil.**

① Clean the overflowed hydraulic oil and correctly use the discharge hydraulic oil.

② Clean the hydraulic oil tank with mild solvent and absolutely dry it with air.

- 1) Install the hydraulic oil tank and screw the hydraulic oil tank fastener. The torque shall follow the requirements below:

Torque specification	
Lubrication-free hydraulic oil tank fastener	25±2N·m

- 2) Connect the oil inlet of hydraulic pump to the oil tank.

- 3) Connect the oil return pipe of the oil return filter to the hydraulic oil tank.
- 4) Fill the oil tank with hydraulic oil. Do not overflow the oil and screw the tank filler cap.
- 5) Start the oil pump to fill the entire hydraulic system with hydraulic oil and eliminate the air.

 **Warning: Component damage hazard**

**The operation without any fuel may damage the hydraulic pump. Carefully pump the oil tank when fueling the hydraulic system. Take measures to prevent the hydraulic pump from erosion.**


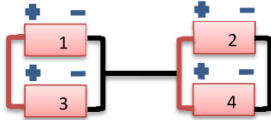




## **Chapter 2 Appendix**



## 2.1 Battery Maintenance Schedule

电瓶互换维护方案 Battery Interchange Maintenance Schedule									
1	电瓶位置 正极1-2-3-4负极 串联 Battery Position Anode 1-2-3-4 Cathode Series								
2	电瓶位置 正极1=3负极2=4 串并联 Battery Position Anode 1=3 Cathode 2=4 Serial-parallel								
目的-Purpose	解决市场上电瓶出现的4号和1号电瓶容量降低比较快，连带3和2整体电瓶性能下降的问题。 For solving the problem that when the No. 1 and No.4 battery capacity reduce quickly, causing the No.3 and No.2 battery performance reduce.					匹配原则 matching principle	备注 Note		
电瓶更换作业指导书 Battery Change Operation Instruction	1	0-25周 (0-25 week)	26-50周 (26-50 week)	51-75周 (51-75 week)	75-100周 (75-100 week)	101-50周 (0-25 week)	计算每种电瓶搭配方式下电瓶性能，较差的放入2, 3位置，较好的放入1, 4位置 Calculate the battery performance in the condition of every connection mode, The worse should be put in No.2 and 3 position, The better should be put in No.1 and 4	其它电瓶串并联方式的维护互换原则相似 The interchange principle of the other battery Serial-parallel mode is similar	
		1-2-3-4	3-4-1-2	4-2-3-1	2-1-4-3	3-4-2-1			
		性能趋势 (好->坏) Performance Trend (Good->Bad)							
	2	0-25周	26-50周	51-75周	75-100周	101-50周			
		1-2-3-4	4-1-2-3	1-2-3-4	4-1-2-3	1-2-3-4			
		性能趋势 (好->坏) Performance Trend (Good->Bad)							

## 2.2 Maintenance

### 2.2.1 Routine inspection and maintenance interval table

Maintenance level	Routine inspection	Level I	Level II	Level III	Level IV	Level V
Maintenance period	Every day	25h/1m	50h/3m	100h/6m	200h/12m	400h/24m

 **Notice:** The working hours are based on the meter

### 2.2.2 Maintenance items of every level are given in the following table

Maintenance item	Description	Maintenance level					
		Routine inspection	Level I	Level II	Level III	Level IV	Level V
Electric system	Check the battery capacity	•	•	•	•	•	•
	Check if all the buttons on the PCU panel function normally	•	•	•	•	•	•
	Check if the PCU emergency stop switch is secure	•	•	•	•	•	•
	Check if the switch is sensitive	•	•	•	•	•	•
	Check if the spring wiring harness is broken	•	•	•	•	•	•
	Check if the PCU wiring harness connector is secure	•	•	•	•	•	•
	Check if the PCU wiring harness connector is stained	•	•	•	•	•	•
	Check if the PCU wiring harness is squeezed or broken	•	•	•	•	•	•
	Check if the pressure switch wiring is secure	•	•	•	•	•	•
	Check if the lowering solenoid valve is secure	•	•	•	•	•	•
	Check if the wirings of horizon sensor and inclination sensor are secure	•	•	•	•	•	•

Maintenance item	Description	Maintenance level					
		Routine inspection	Level I	Level II	Level III	Level IV	Level V
Electric system	Check the position and wiring of every limit switch rocker arm	•	•	•	•	•	•
	Check if the angle sensor wiring harness and connector are secure	•	•	•	•	•	•
	Check if the emergency stop switch, key switch and plug switch on the lowering control panel and their wirings are loose	•	•	•	•	•	•
	Check if the warning lamp and horn function normally	•	•	•	•	•	•
	Check if the motor, motor controller, relay and ECU wirings are loose	•	•	•	•	•	•
	Check if the wiring of every solenoid valve winding of main valve block is normal or loose	•	•	•	•	•	•
	Check if the charger wiring is loose or rusty	•	•	•	•	•	•
	Check if the battery poles are loose or rusty	•	•	•	•	•	•
	Check the battery	•					
	Machine performance and various limit switches	•					
	Check if any connector is loose, interfered or rusty	•	•	•	•	•	•
Hydraulic System	Check if the pressure of monitoring system is normal	•	•	•	•	•	•
	Check if the lifting pressure system is normal	•	•	•	•	•	•
	Check if the pressure of steering system is normal	•	•	•	•	•	•
	Check if the pressure of driving system is normal	•	•	•	•	•	•
	Check if any oil pipe or joint is loose	•	•	•	•	•	•
	Check the oil cylinder for oil leaking	•	•	•	•	•	•

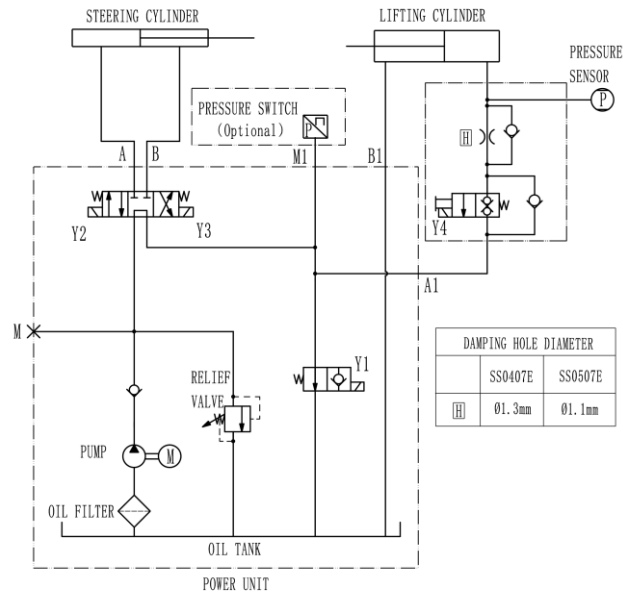
Maintenance item	Description	Maintenance level					
		Routine inspection	Level I	Level II	Level III	Level IV	Level V
Hydraulic System	Check every valve element for oil leaking	•	•	•	•	•	•
	Check if the yoke oil pipe is fastened securely	•	•	•	•	•	•
	Check if the driving oil pipe clip is loose	•	•	•	•	•	•
	Check the oil level in the hydraulic oil tank	•	•	•	•	•	•
	Replace the hydraulic oil	Once a year					
	Hydraulic oil return filter element	Once half a year					
	Check if the hydraulic oil tank vent cap leaks	•	•	•	•	•	•
	Replace the hydraulic oil tank vent cap			•	•	•	
	Replace the reducer lubricating oil	First 50 hours, once a year					
Whole machine	Check the fork sliding block for abnormal noise					•	•
	Check and replace the sliding block					•	•
	Check if any bolt of whole machine is loose or has abnormal noise	•					
	Check if any circlip or washer of fork arm fails	•					
	Check if the emergency lowering device is normal	•					
	Check if the platform, yoke and chassis are deformed or unwelded	•					
	Check if the paint of whole machine peels off	•					
	Check if the safety sign is correct or stained	•					
	Check if any manual or sticker is missing, blurred or broken	•					
	Machine performance and various limit switches	•					
Lubrication	Lubrication of steering knuckle	Once a month					

### 2.2.3 Selection of oil

Use temperature	Oil type
Minimum air temperature $> -9^{\circ}\text{C}$	L-HM 46 antiwear hydraulic oil
$-33^{\circ}\text{C} < \text{minimum air temperature} \leq -9^{\circ}\text{C}$	L-HV 46 low temperature hydraulic oil
$-39^{\circ}\text{C} < \text{minimum air temperature} \leq -33^{\circ}\text{C}$	L-HS 46 ultralow temperature hydraulic oil
Minimum air temperature $\leq -39^{\circ}\text{C}$	10# aviation hydraulic oil

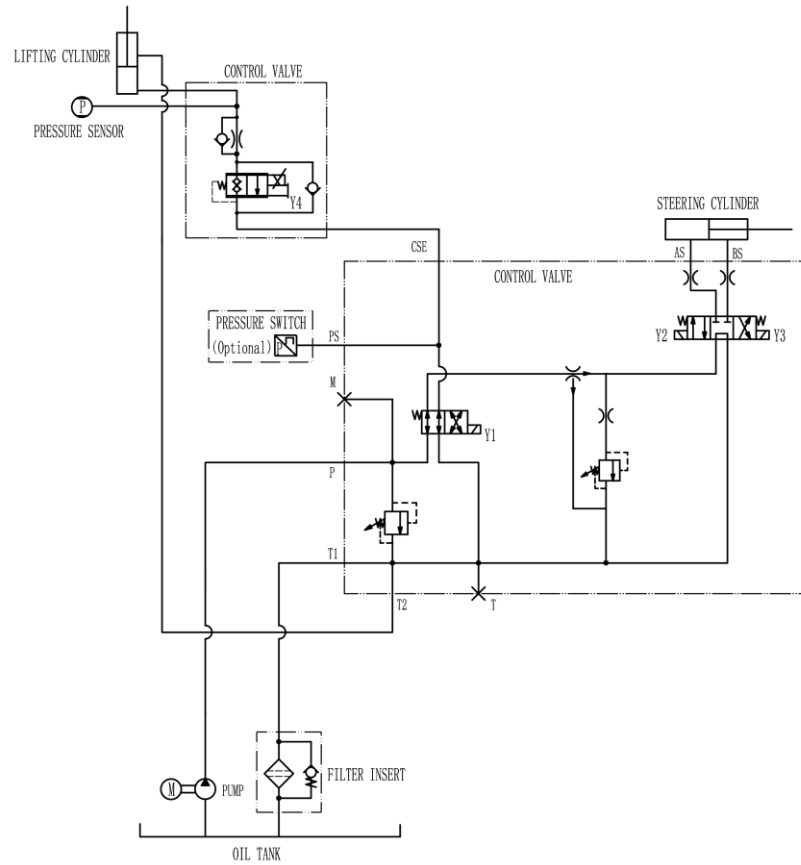


SS0407E、SS0507E HYDRAULIC SCHEMATIC



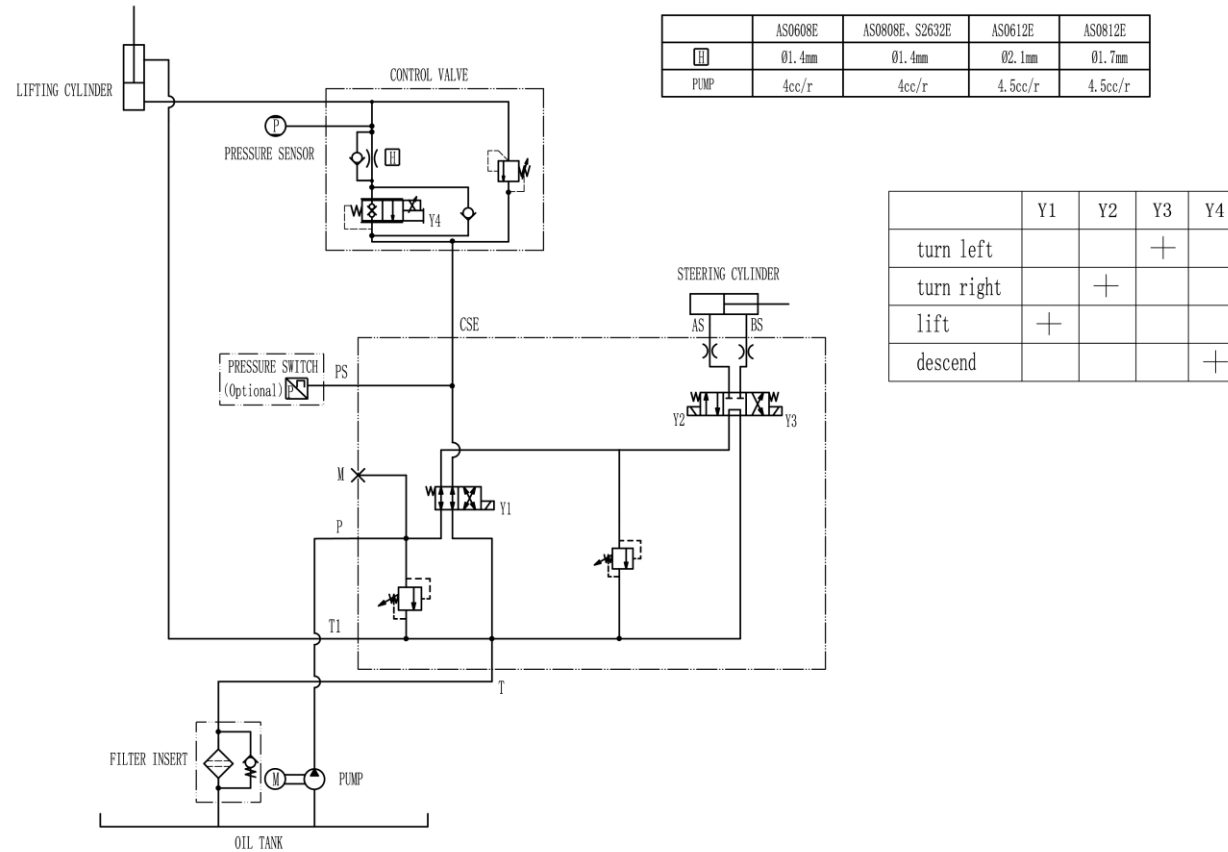
	Y1	Y2	Y3	Y4
turn left			+	
turn right		+		
lift	+			
descend				+

AS0607E HYDRAULIC SCHEMATIC

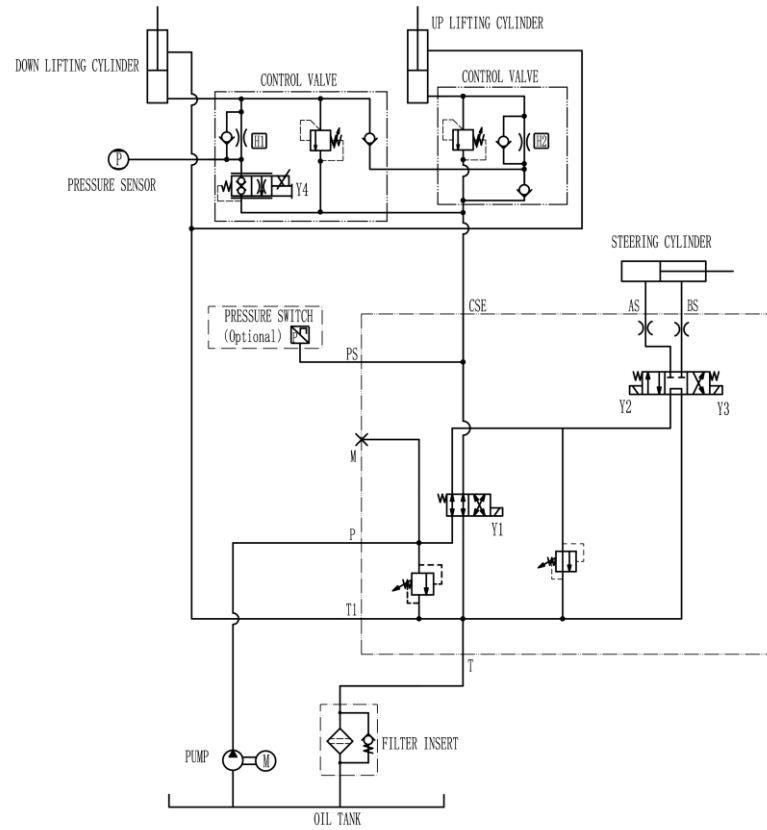




	Y1	Y2	Y3	Y4
turn left			+	
turn right		+		
lift	+			
descend				+

AS0812E HYDRAULIC SCHEMATIC



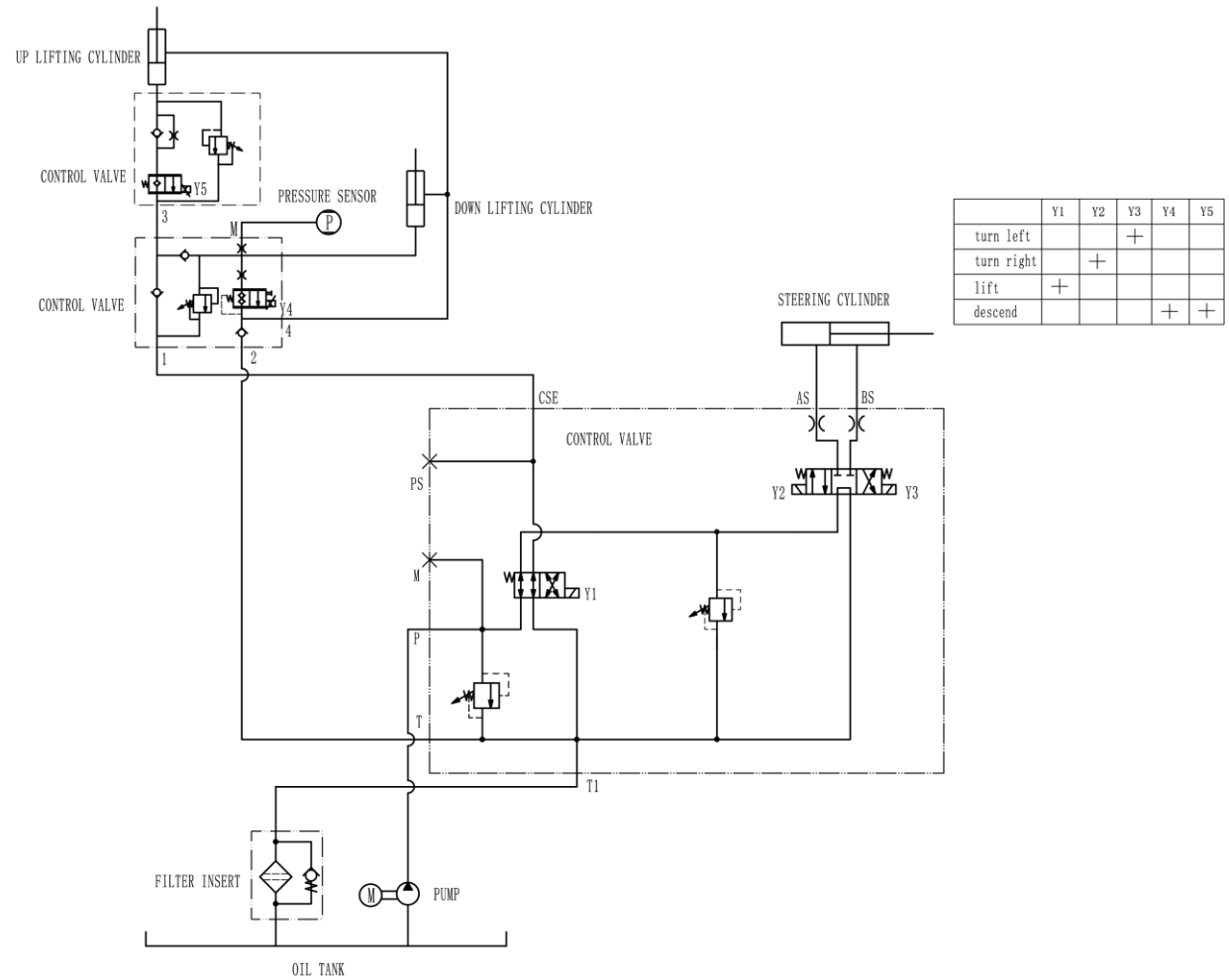
AS1012E/AS1212E HYDRAULIC SCHEMATIC



	AS1012E	AS1212E
	01.7mm	01.1mm
	01.9mm	01.7mm

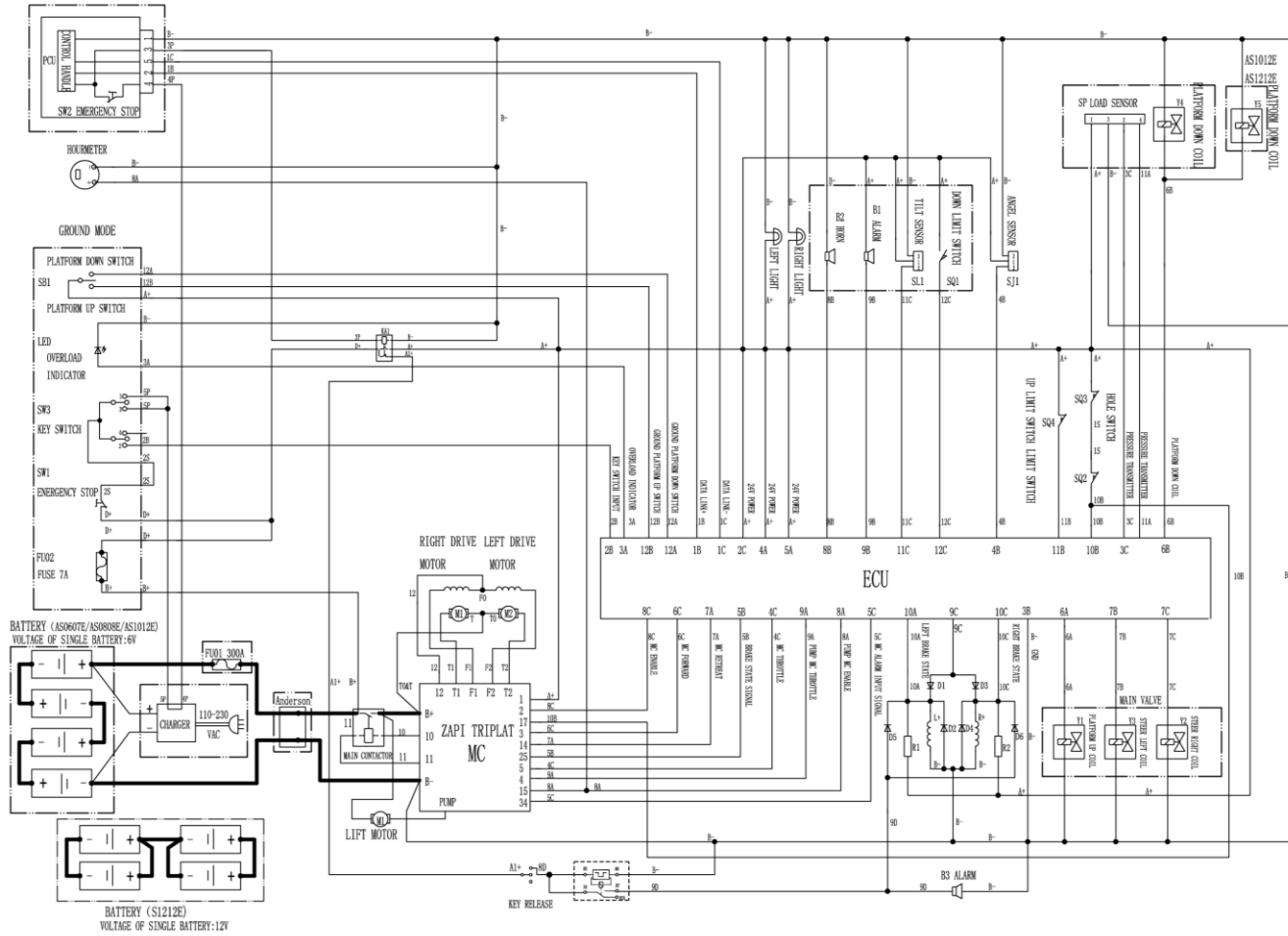
	Y1	Y2	Y3	Y4
turn left			+	
turn right		+		
lift	+			
descend				+

AS1413E HYDRAULIC SCHEMATIC





AS07E、AS08E、AS12E ELECTRIC SCHEMATIC



AS1413E ELECTRIC SCHEMATIC

