

MENEGOTTI TECHNICAL MANUAL

ELECTRIC FORKLIFT V2

MEE 1.5 TON X 5000

MEE 1.5 TON X 5600 W/ PLATFORM

40810143 - Electric Forklift MEE 1.5 Ton x 5000 V2

40810144 - Electric Forklift MEE 1.5 Ton x 5600 W/Platform V2

QR-Code:



Point your mobile phone camera to access the updated online version of **Technical Manuals** and **Parts Catalogs**, or click on the link below to access the website.

www.sites.google.com/view/menegotti-engenharia-docs

Attention:

Before operate **Menegotti**, read this **technical manual**, itself will inform and instruct the operator about the operation.

By the way, you avoid possible working accidents and early maintenance on at the equipment.



Illustrative image.

MENEGOTTI[®]

HANDLING

Congratulations, you have just purchased a MGT product!

With the highest quality, projected and built especially to serve your needs.

This manual was elaborated to provide the information and key instructions to use and maintain our product, in addition presents their technical characteristics.

Before use the product for the first time, read and pay attention to the information in this manual.

The product durability, only depends the way you treat it in service (operation), and the satisfactory working, is consequence of your regular and carefull work, done regularly.

Menegotti is prepared to offer you all technical assistance, and attend all your needs about replacement parts.

Welcome, you are part of the huge MGT “customers family”.

After sales Departament
and Technical Assistance MGT.

Attention: For better comodity, store and keep this manual in a properly spot so it can be easily checked.

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Menegotti Group

Menegotti is reference in the development of solutions in machines and tools for the Construction machinery, Handling and Lawn | Garden Segments.

A Brazilian company, present in more than 40 countries, has its headquarters in Jaraguá do Sul, Santa Catarina, units in Brazil and in the United States.

With more than 80th years of history, it is in the fourth generation of consistent and successful family management.

National leader in sales of concrete and cement mixers, it stands out in the resale and rental market.

Through its Innovation Program, it fosters creativity and competitiveness, with disruptive actions and partnerships, aimed at continuous professional and business growth.

With an organizational culture that values and encourages its constant professional and personal development, Menegotti is active in sustainable projects, which make its purpose of contribute “to build a better and more sustainable world”, a reality.



The Product

Menegotti Electric Forklifts use a traction battery as a power source and an AC motor to drive the wheels via gears. The fork is moved by a hydraulic system driven by a DC motor. The fork is raised and lowered by a hydraulic cylinder. The forklift's movement system is fully electrically controlled, providing energy savings, high efficiency, stable and easy operation, safety and reliability, low noise and no pollution.

This machine's battery is rechargeable and has a voltage of 24V, which extends its use time after recharging.

Operators of this product must have specific training for operating industrial machinery and handling loads, in accordance with NR11.

People who are not trained and qualified are not allowed to handle this product.

Environments permitted for use:

- Height above sea level must not exceed 1000m;
- Ambient temperature must not be higher than +40°C and lower than -25°C;
- When the ambient temperature reaches +40°C, the relative humidity must not reach 50% (at low temperatures, higher relative humidity is permitted);
- Flat, solid ground.
- It is forbidden to use this forklift in flammable, corrosive or explosive environments.

• **Menegotti reserves the right to make changes to the product without prior notice.**

If any information in this manual is not consistent with the physical product, consider the actual product and the manual as a reference only.



MEE 1.5TON x 5000



**MEE 1.5TON x 5600
WITH PLATFORM**

Use and Safety Information

If the safety recommendations are not observed, this machine presents a risk of crushing, electric shock, tipping over, explosion and burns due to battery gases and acid. This manual contains notes, cautions and warnings that must be followed to avoid the possibility of improper use, damage to the machine or personal injury.



NOTES: Contains additional informations of important procedures.

CARES: Offers important information to avoid mistakes that might damage the machine or its components.

WARNINGS: Alerts about conditions or practices that outcomes in personal damages or even death!

Operational Safety

The workers involved in operation, maintenance, inspection and other machine intervention, must receive capitation provided by the employer and in accordance with his functions, of which shows the risks they are exposed to, the existent and necessary protective measures, in order to avoid accidents and sicknesses. The machine, if misused or used by no authorized persons, offers risks to the operator's physical integrity.

- **NEVER** allow untrained persons to operate the machine.
- **ALWAYS** read, understand and follow the procedures in the instruction manual before attempting to operate the machine.
- **ALWAYS** ensure that the operator is familiar with the appropriate safety precautions and operating techniques before using the machine.
- **ALWAYS** prepare the workplace in such a way as to prevent accidents at work, following the guidelines in this manual and the specifications of current safety regulations.
- **NEVER** alter or disable the operating and safety functions.
- **ALWAYS** use caution and common sense when operating the machine.
- **ALWAYS** avoid contact with the rotating parts of the machine.
- **ALWAYS** switch off the machine when it is not being operated.
- **ALWAYS** keep the machine out of the reach of children.

- **NEVER** operate the machine unless the protective devices are fitted, such as: mast guard, etc.
- **NEVER** use accessories that are not recommended by Menegotti for the machine. This could result in damage to the machine and/or injury to the user.
- **We will NOT** take responsibility for any accident due to modifications to the machine. Such modifications will result in loss of warranty.
- **ALWAYS** in the event of damaged or missing parts, contact Menegotti immediately on 770 9107450 for replacement.
- **ALWAYS** carry out a daily inspection of machine parts when the machine is switched off. The machine cannot be used if there are any signs of damage. In the event of problems, contact Menegotti Authorized Service immediately.
- **ALWAYS** ensure that all persons are at a safe distance from the machine. Stop the machine if people enter its working area.
- **NEVER** leave the machine running unattended.
- **NEVER** operate the machine when you are tired, unseparated or under the influence of alcohol or drugs.
- **ALWAYS** wear the appropriate Personal Protective Equipment for operating the machine.
- **ALWAYS** keep hands, feet and loose clothing away from moving parts of the machine.
- **NEVER** operate the machine in flammable, explosive or corrosive environments.
- **NEVER** exceed the machine's maximum load capacity.
- **ALWAYS** operate the machine in an environment with good lighting and the presence of fire extinguishing devices recommended for combustible materials and electrical appliances.
- **ALWAYS** lower the forks to the lowest position when the machine is not in use.

- **NEVER** operate the machine in poor visibility; if necessary, another person should be helping the operator to guide the machine's path.
- **NEVER** press the fork lift/lower buttons while the machine is in motion and do not press the same buttons at the same time; doing so could damage the machine.
- **ALWAYS** move and lift palletized loads evenly distributed on the pallet, with the forks centered, otherwise the forks will be damaged and the load could fall during the operation process.
- **ALWAYS** use pallets with suitable dimensions, not too wide and not too long.
- **NEVER** lift loads with the ends of the forks alone.
- **NEVER** transport people on the forks.
- **NEVER** transport loose and unstable loads.
- **NEVER** use the machine as a towing vehicle.
- **NEVER** leave the load on the forks for a long period of time.
- **NEVER** make sudden maneuvers with the machine or at high speed.
- **ALWAYS** regulate the speed of the machine when cornering, in narrow places, doorways or on uneven ground.
- **ALWAYS** drive on flat, level surfaces free of potholes.
- **NEVER** move the machine more than 2m when the forks are more than 50cm high.

Service security

Machines poorly maintained might become a danger to security! In order to keep the machine operating in a proper and safe way for a long period, the maintenance and occasional repairs are necessary.

- **DO NOT** try to clean or to fix the machine while it is working;
- **DO NOT** operate the machine without the safety devices, protections or in bad working conditions;
- **ALWAYS** make periodical maintenances according to the Instructions Manual;

- **ALWAYS** replace the worn out or damaged components, with replaceable parts recommended by Menegotti, for maintenance of this machine.

The safety operating procedure must be formulated taking into account practical situations prior to operating the forklift. Safety must be taken into account when preparing this procedure.

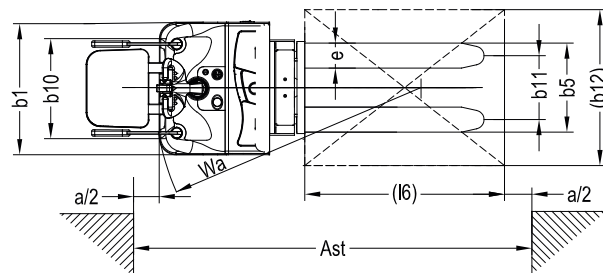
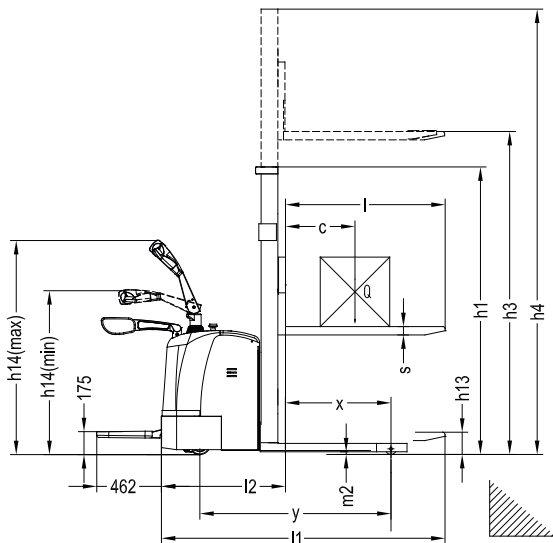
Instructions for using the batteries

- **NEVER** push/pull the machine when the battery is completely discharged, as this could cause the machine to lose its programming.
- **ALWAYS** make the machine available to charge the battery when the charge is at 30% and, if it is below this level, do not raise the fork.
- **NEVER** allow the battery to run down completely - after the charging process it will go into deep discharge and will no longer be able to supply energy to the machine, and the charger will be unable to supply the electric current necessary for it to function correctly.
- **NEVER** leave the machine with the battery connected at the end of the operation.
- **NEVER** disconnect the battery socket while the machine is moving. The electronic components could be severely damaged.
- **NEVER** use the machine with the plug connected directly to the AC supply.
- **NEVER** use the machine while the battery is recharging.
- **NEVER** interrupt the charging of the battery to use the machine, let it charge completely and then operate it.
- **NEVER** operate the machine with the battery at its minimum charge level (20.4V), otherwise the battery could be damaged.
- **NEVER** charge the machine when it is powered by an external battery via an extension cable.
- **ALWAYS** wait at least 01 hour for the battery to cool down before starting it after charging.

Technical Specifications

		MEE 1.5 TON X 5000	MEE 1.5 TON X 5600 W/ PLATFORM
Drive source	-	Electric Engine (Battery)	Electric Engine (Battery)
Operating model	-	Operator on foot	Onboard Operator / Standing
Nominal load	Q (Kg)	1500	1500
Distance from load center	c (mm)	600	600
Noise level at operator's ear according to DIN12053	dB(A)	65	70
Distance from fork face to shaft center	x (mm)	667	667
Distance between axles	Y (mm)	1383	1369
Operating weight (with battery)	Kg	1205	1350
Wheel material	-	Polyurethane	Polyurethane
Wheel dimensions (Front)	-	Ø250×70	Ø250×70
Wheel dimensions (Rear)	-	Ø80×70	Ø80×70
Additional wheel (Dimension)	-	Ø150×60	Ø150×60
Number of wheels, front / rear (x = drive wheel)	-	1x+1/4	1x+2/4
Pitch (Front)	b10(mm)	520	586
Pitch (Rear)	b11(mm)	530	525
Travel speed With / Without load	Km/h	5.8/6	7/7.1
Climbing speed With / Without load	m/s	0.09/0.16	0.09/0.16
Downhill speed With / Without load	m/s	0.15/0.16	0.15/0.16
Maximum inclination With / Without load	%	8/15	6/15
Braking method	-	Electromagnetic brake	Electromagnetic brake
Wheel drive motor power	kW	1.2(CA)	1.2(CA)
Lifting motor power	kW	2. 2	2. 2
Battery voltage / Rated capacity	V/Ah	24/200	24/200
Battery weight	Kg	160	160
Battery dimension (LxWxH)	mm	800×254×320	800×254×320

Mast height (lowered)	h1(mm)	2214	2410
Lifting height	h3(mm)	5000	5600
Maximum mast height (Extended)	h4(mm)	5510	6110
Min. / Max. operating lever height in drive position	h14(mm)	670/1300	1150/1450
Fork height (lowered)	h13(mm)	90	90
Total length	l1(mm)	1975	2130
Length to front of fork	l2(mm)	905	905
Overall width	b1(mm)	820	850
Fork dimensions	s/e/l(mm)	60/180/1150	60/170/1150
Overall fork width	b5(mm)	695	695
Distance from axle base to ground	m2(mm)	21	26
Aisle width for pallets 1000x1200 transversely	Ast(mm)	2450	2550
Aisle width for pallets 800x1200 longitudinally	Ast(mm)	2420	2520
Turning radius	Wa(mm)	1575	1655



Main Components

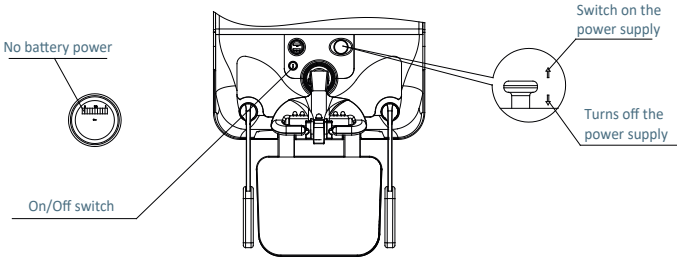


Pre-usage Information

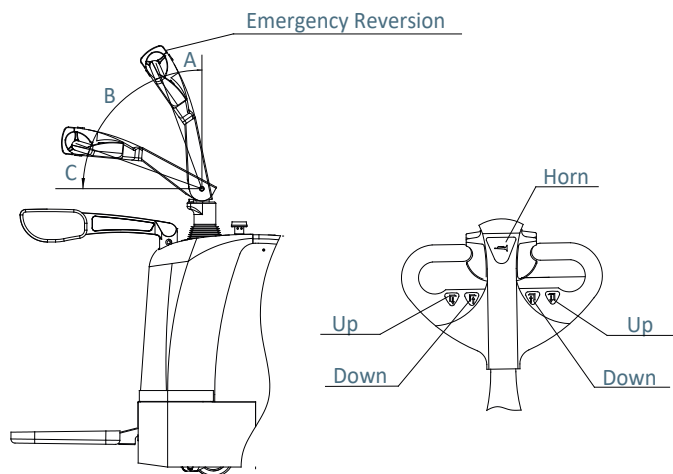
The electric forklift adopts storage batteries as a dynamic source for handling and stacking goods over short distances. Correct use will bring great convenience to your work, but incorrect use and operation will damage the machine or pose a risk to you and your products.

NOTE: Carry out a pre-use inspection of the machine at every shift start, change of operator and after maintenance. Always follow the Safety Information in this Manual.

- 1) Check that the machine is in normal working condition. Make sure that there are no oil leaks, that there are no blockages and that the support wheels are in normal working order. Machines with problems should not be put into operation.
- 2) Check that the batteries are charged. To do this, pull the safety switch, turn on the On/Off switch and then check the battery level indicator on the machine's panel. If the led at the zero end is glowing, this indicates that there is no electricity in the batteries and that charging should be carried out immediately. It is not recommended to operate the machine with low battery power, as this will greatly reduce battery life.



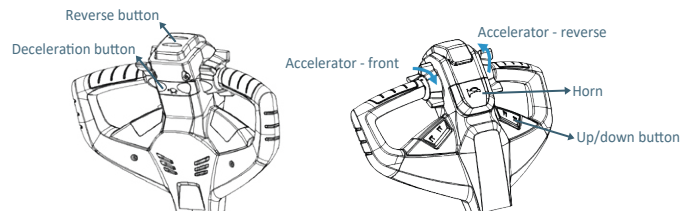
3) Check that the forklift's brake is working normally. Check that the up, down, forward and reverse movements are in normal condition, as well as the reverse action of the forklift's emergency system.



4) Move the operating lever to position A or C and press the up/down button to check that the fork raises and lowers normally. Then move the operating lever to position B, start the machine slowly and press the lever to the horizontal position to check that the forklift can move and brake normally.

Move the operating lever to position B and press the emergency reverse button at the top of the lever to check that the machine will move in the opposite direction.

Operating lever



Up and down operation: Press the fork lowering button, and the forks will lower. When the lift button is pressed, the fork will rise.

Throttle: Used to control the speed of the forklift. Before the handling operation, place the control lever in position B and then turn the throttle in the desired direction (forwards/backwards). When the lever is placed in position A or C, the machine will be switched off and the brake will be activated.

Horn: When pressed, the horn is activated.

Emergency reversion button: When the control lever is placed in position B and the emergency reversion button is pressed, the machine will move in the opposite direction. This is a safety switch that can prevent the operator from being crushed under unexpected conditions.

Deceleration button: When this button is pressed, the machine will move at an extremely slow speed. This button is applicable for operation in an especially narrow field or when the machine needs to be allocated precisely, such as when it is stacking, moving in and out of the rack while transporting goods. When this button is released and the acceleration knob is turned, the forklift will move at a normal speed.

Carry out the inspection according to the following table:

INSPECTION		
Brake System	1 - Operating lever	1 - When the control lever is turned between position A and B, there will be a noise from the brake.
	2 - Brake backlash	2 - The clearance between the brakes must be kept between 0.2mm and 0.8mm.
Direction System	3 - Operating lever	3 - Check for tightness and rotational flexibility.
	4 - Oil pipe	4 - Check for leaks.
	5 - Hydraulic oil	5 - Check that the amount of oil is adequate.
	6 - Lifting Oil Cylinder	6 - Check for any oil leaks.
Wheels	7 - Pins, bolts and other fasteners	7 - Check for loose pins or screws.
	8 - Wear status	8 - Compare the list of parameters, replace the wheel when its diameter is reduced by 5%.
Batteries	9 - Charge	9 - Confirm the battery capacity display status.
	10 - Electrolyte	10 - The solution level and density of the electrolyte.
	11 - Connection line	11 - The connection line and socket must be firm.
Horn	12 - Horn	12 - Press the horn button to check that the horn sounds.
Battery level indicator and hour meter	13 - Battery/Hygrometer indicator	13 - Turn on the On/Off switch to check that it is working normally.
Others	14 - Chassis, etc...	14 - Check for damage.
	15 - Machine function	14 - Check that the up, down, forward, reverse and emergency reverse movements are normal and that there is no abnormal noise.

After the checks, if there is no fault, the machine can be put into operation. If not, repair the fault immediately.
It is strictly forbidden to use the machine with any irregularities.

Operating the Machine

NOTE: A lateral electromagnetic brake is installed on the end of the drive wheel motor shaft. There is also a cam and a feed switch installed on the rotating shaft of the operating lever. When the operating lever is in position B, the machine is able to move, raise or lower the fork. When the control lever is in position A or C, it is only possible to raise or lower the fork, without moving, as the brake is then activated.

Handling operation:

- 1) Hold the control lever in the center position (position B).
- 2) Pull the safety switch and turn on the On/Off switch.
- 3) Gently turn the throttle in the direction you wish to move (forwards or backwards).
- 4) Move the machine close to the load (fork tip 30 cm from the load).
- 5) Press the lowering button, adjust the height of the fork to a suitable position and insert it slowly and as close to the pallet as possible.
- 6) Press the lift button until the forks are 20-30cm off the ground;
- 7) Move the forklift to the desired location, adjust the position of the machine by placing it in front of the shelf, with the tip of the forks 30cm from the shelf, press the lift button until the forks reach the appropriate height.
- 8) Press the button to lower the forks to place the goods carefully on the shelf.
- 9) Move the forklift until the forks come completely off the pallet (tip of the forks 30 cm from the rack);
- 10) Lower the forks until they are 30cm off the ground and move the machine away from the rack.

Removing merchandise from the shelves:

- 1) Switch on and drive the forklift to the goods shelf;
- 2) Adjust the position of the machine by placing it in front of the shelf, with the tip of the fork at a distance of 30cm from it;
- 3) Press the lift button, adjust the fork to a suitable height and position and insert it into the bottom of the pallet;
- 4) Press the lift button to raise the goods until the bottom of the pallet is 10cm from the rack, and drive the forklift slowly until the tip of the forks is 30cm from the rack;
- 5) Press the lowering button until the forks are 20-30cm from the floor;
- 6) Move the forklift to the desired location and press the lowering button until the pallet touches the ground;
- 7) Slowly move the machine away until the forks are completely off the pallet (tip of the forks 30cm from the pallet).

Transporting merchandise:

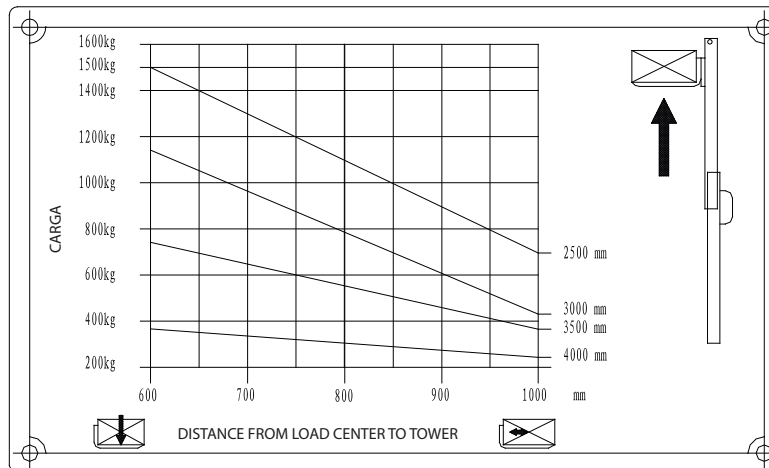
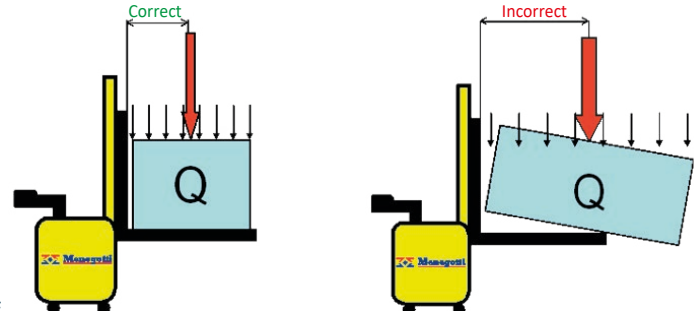
ATTENTION:

- Keep to the load limit and centralize the load while respecting the ideal treatment.
- The safe lifting height for the mast is approximately 1.8 m (depending on the mast mounting). If the mast is raised to a height that exceeds the safety height, the forklift must reduce speed to around 3 km/h.

Load capacity and lifting height:

When the lifting height is less than 2,500mm, it means that the maximum load of up to 1000Kg and 1500Kg can be lifted without any problems, as it will be within the machine's capacity. It is forbidden to overload the machine. Also note the distance between the center of gravity of the weight and the end of the boom according to the graph. The further towards the tip, the lower the weight limit allowed for lifting.

When the lifting height is greater than 2,500mm, the load table below must be taken into account. The limiting load must be less than the load the bearings can support.



Machine in abnormal operating conditions

- When the lift button is pressed, and the fork continues to rise even when the button is not pressed, press the safety switch to immediately cut off the power supply. Maneuver the forklift to a safe position where the fork can be manually lowered and the machine's circuit repaired.
- If the brake is not working while the forklift is in operation, stop operating the machine immediately until it has been repaired.
- When the forklift is moving forward and pushing the operator against a wall or other objects, press the emergency reverse button at the top of the operating lever, and the forklift will automatically move backwards to avoid injuring the operator.

After the operation

After operation, the forklift must be parked in a designated place, never park on a slope.

- 1) Lower the forks to the lowest position;
- 2) Move the lever to the middle position;
- 3) Turn off the on/off switch.
- 4) Carry out routine maintenance in accordance with the stipulations in the Machine Maintenance section, as well as recharging. Always keep all stickers such as warning signs, nameplates, instructions and notice boards visible. Add lubricating oil and grease if necessary and replace defective components.

NOTE: When cleaning the electrical system, use compressed air, not water.

Use, maintenance and charging of batteries

Methods of loading operation

External charger:

- 1) Open the side door to pull out the battery socket connector to insert it into the external charger socket.
- 2) Insert the plug of the external charger into the single-phase AC power. The battery will then start charging after a few seconds.

Integrated charger:

- 1) Open the battery compartment cover to remove the charging plug;
- 2) Insert the charging plug into single-phase AC power, and charging will begin after a few seconds..

ADVERTISEMENT: Hydrogen gas accumulates in the battery case during charging. Therefore, the charging environment requires good ventilation and there must be no flames, otherwise an explosion or fire may occur.

Initial charge

NOTE: Initial charging should be carried out for batteries that have never been used. Before initial charging, the surface of the batteries must be cleaned and the batteries examined for damage. The screws must be tightened to ensure a reliable connection.

- 1) Remove the sealing cap on the battery's water supply inlet and refill using a funnel.

2) When the charger is able to operate normally, pour the electrolytic sulphuric acid solution with a density of 1.260 ± 0.005 (25°C) and a temperature of less than 30°C into the batteries. The liquid surface must be 15-25mm larger than the protection plate. In order to reduce the temperature increase caused by the chemical reaction of the electrolyte solution and to allow the electrolyte solution to completely penetrate the pores of the polar plates and baffles, the batteries should be left for 3-4 hours, not exceeding 8 hours. Initial charging can only be carried out when the temperature of the solution drops below 35°C (if necessary, the batteries can be placed in cold water to reduce the temperature). After charging, if the surface temperature of the solution decreases, the electrolyte solution must be added.

3) The electrolytic sulphuric acid solution is prepared with battery sulphuric acid and distilled water. Never use industrial sulfuric acid and tap water. The standard temperature (25°C) and the density of the electrolyte solution can be converted as follows: $D_{25} = D_t + 0.0007 (t - 25)$
Where: D_{25} : the density of the electrolyte solution at 25°C.

D_t : the actual density of the electrolyte solution at a temperature of t °C.
 t : temperature of the electrolyte solution when testing the density.

4) Remove the electrolyte solution from the surface of the batteries and connect the positive and negative poles of the battery respectively to the positive and negative ends of the DC power supply (charger).

5) Switch on the power supply.

6) The first charge should be at 30A; when the voltage reaches 28.8V ($12 \times 2.4V = 28.8V$), switch to the second phase current of 15A and continue charging. The temperature of the electrolyte solution during the charging process must not exceed 45°C and, when it is close to 45°C, the charging current must be reduced by 50% or charging must stop temporarily.

Wait until the temperature has reduced to 35°C to continue charging. The charging time, however, must be properly extended.

7) Fully charged base: The batteries can be considered fully charged when the voltage during second stage charging reaches 31.2 V ($12 \times 2.6 V = 31.2 V$), the voltage variation is no more than 0.005 (V), the density of the electrolyte solution reaches 1.280 ± 0.005 (25°C), with no obvious variation in 2 hours and no air bubbles appear. The energy charging capacity is 4 to 5 times the nominal capacity and the charging time is around 70 hours.

8) To precisely control the sulfuric acid content of the electrolyte solution, the density of the electrolyte solution in the batteries should be examined during the last charging period. If there is any inconsistency, adjust with distilled water or sulfuric acid with a density of 1.40. The density of the electrolyte solution and the liquid surface must be adjusted to the stipulated value within two hours in the state of charge.

9) After initial charging is complete, the surface of the batteries must be cleaned.

10) Place the sealing cap on the water supply inlet on the battery and use the machine again as normal..



ATTENTION: If the battery is not in use for a long time, charge it every 30 days to avoid deep discharge.

Use e Maintenance

To ensure the life of the batteries, in use must be fully charged. Insufficiently charged batteries should not be used. Charge the spare batteries once a month to prevent premature wear and keep them in working order.

During the use process, close attention must be paid to the extent of the discharge. Excessive discharge is prohibited, as the voltage is reduced to 1.7V per battery (when the total voltage drops to $1.7V \times 12 = 20.4V$).

When the density of the electrolyte solution drops to 1.17, discharging should be stopped and charging should be carried out immediately. Batteries should not be left inactive for a long period of time. The supplementary charging often carried out during the use process is called common charging.

Common charge: The current of the first stage of the common load is 30A and that of the second stage is 15A. The charging method is the same as for the initial charge. The volume charged is 130-140% of the volume discharged and the charging time is around 12-15 hours.

Batteries in normal use should avoid partial charging. However, if necessary, it can be done in situations where it is desired to equalize the load on the battery terminals.

Example: batteries with a lower voltage than the other batteries in the discharge process and batteries that have been repaired due to failure. (When the equalization charge is conducted, the positive and negative poles of the "delayed" battery must be connected respectively to the positive and negative ends of the charger, the DC power supply and the charge must be conducted independently).

CAUTIONS: Equalization charging should be carried out for batteries in normal use every 2-3 months. Equalization charging should also be carried out for batteries that have not been used for a long period of time before use.

Equalizing the battery charge:

- 1) Charge with a current of 4A.
- 2) When the charging voltage reaches 31.2 V ($12 \times 2.6 V = 31.2 V$) and air bubbles occur in the electrolyte solution, the current should be reduced by 50% (2A) and continue charging.
- 3) When the batteries are in a fully charged state, stop for half an hour and charge again with a current of 1A for another hour.
- 4) Stop for another half hour and charge with a current of 1A for another 1 hour.
- 5) Repeat item 4 until enough air bubbles appear, once the charger is connected.

Electrolyte operation:

- 1) Density check: A suction-type densimeter should be used to check the density. During operation, avoid spilling the electrolyte and wear protection.
- 2) Operation beyond check: Consult professionals, especially when topping up the electrolyte (dilute sulphuric acid).
- 3) Electrolyte leakage: When electrolyte leaks as a result of tilting or damaging the battery, emergency treatment must be carried out immediately.

Cautions for the electrolyte:

- 1) Density verification.
A suction-type density meter should be used to check the density. During operation, avoid spilling the electrolyte and wear protective equipment.
- 2) Leaking electrolyte
As for electrolyte leakage resulting from tilting and damage to the storage battery, emergency treatment must be carried out at once.

Operation of batteries during the final phase of their life:

1) When the service life of the storage battery is about to end, the electrolyte in a single battery reduces rapidly. For this reason, distilled water must be topped up every day.

Emergency treatment:

- If the electrolyte comes into contact with your skin, wash it off with plenty of water.
- If the electrolyte comes into contact with your eyes, rinse them out with plenty of water and seek medical advice.
- If electrolyte comes into contact with clothing, take it off immediately and wash it with soap and water.
- If electrolyte leaks, neutralize it with lime or caustic soda, then rinse with plenty of water.

Battery storage:

Batteries should be stored in a clean, dry and well-ventilated warehouse with a temperature of 5 to 40°C. The shelf life is 2 years. Batteries must be kept in accordance with the following requirements during storage:

- No direct sunlight on the batteries and at least 2m away from the heat source.
- Avoid contact with harmful substances. No metallic material may fall into the batteries.
- Batteries must not be placed vertically and must not be mechanically impacted or strongly compressed.
- Batteries should not be stored with electrolyte solution. When it is necessary, in special situations, for the batteries to be stored with electrolyte solution, the batteries must be fully charged, the density of the electrolyte solution must be adjusted to the stipulated value. When the storage period is up to one month, the batteries must be charged using the common charging method.

Charger

If the charger used is fully automatic. It must meet the following requirements:

- The charger's output voltage: 24V
- Charger output current: 30A

Maintenance of the Machine

NOTE: Maintenance must be carried out by trained personnel. Satisfactory machine operation depends on efficient machine maintenance. When maintenance is ignored, the machine can pose a threat to human life and cause damage to property.

To ensure safety and extend the life of the machine, never use it if there are any abnormalities.

The hours listed in the maintenance procedures are based on cases where the forklift works 8 hours a day and 200 hours a month. For safety reasons, maintenance must be carried out in accordance with the maintenance procedure.

ADVERTISEMENT: Before servicing the machine, carefully read all the Safety Information in this Manual..

Maintenance areas must be designated for the activity and can provide other services, such as hoisting facilities and safety guards, etc.

The rooms must have flat floors and good ventilation.
The rooms must be equipped with fire extinguishing devices.

Precautions before repair and maintenance:

- No smoking.
- Before adding lubricating oil, clean dirty oil or dust from the gasket with a brush or cloth.
- Turn off the key and unplug, except in certain situations.
- Lower the forks to their lowest point when carrying out maintenance.
- Make sure there are no goods in the machine when dismantling the high-pressure oil pipe. In addition, the forks must be in the lowest position so that the hydraulic system pressure can be released.
- Because there are capacitors that store a small amount of electrical energy in the circuit, before they come into contact with the main circuit connection terminal, discharge them first.
- Clean the electrical section with compressed air, never with water.

Maintenance before the machine is started operating:

In order to follow industry-related regulations and ensure absolute safety for the machine, it is possible that there is no electrolyte inside the storage battery before first use.

The electrolyte from the storage battery is put into the battery by the professional before first use.

First, place the machine in a well-ventilated area, open the lid of the storage battery case and open all the plastic top covers of the storage battery.

The plastic pot with electrolyte from the internal battery is lifted using a plastic funnel and the electrolyte is poured into the storage battery slowly until the liquid level can be seen.

Once the entire storage battery is full, conduct the initial charge for the storage battery in good time in accordance with the initial charge operating requirements presented in the section on using, maintaining and charging the storage battery.

Daily inspection:

• Check the hydraulic oil level: lower the fork to the lowest position and top up the oil (12L capacity). Pay attention to the recommended brand of oil.

• Check the capacity of the storage battery: see the section on using, maintaining and charging the storage battery.

1) Clean the machine.

2) Inspect and tighten the fastening items.

3) Check the wheels for wear.

Inspection and maintenance after 50 hours (weekly):

Brake System	1 - When the operating lever is turned, being between areas A and B, there is a brake noise.
	2 - Oil dirt and dust on the wheels must be cleaned off.
	3 - The clearance between the brakes should be kept between 0.2 mm and 0.8 mm.
Electrolyte Capacity	4 - Check the electrolyte level, pure water can be used to complement if the liquid level is too low.
Electrolyte Density	5 - The specific density should be 1.28g/ml after charging.
Clean the storage battery	6 - Cover the cap and rinse with tap water.
Clean the Storage Battery	7 - Polish the rough surface of the contacts using sandpaper.

Inspection and maintenance after 200 hours (monthly):

In addition to the weekly maintenance, the following maintenance should be carried out and, when parts need to be adjusted and replaced, contact the Authorized Technical Assistance (keep a monthly maintenance log).

	WHAT	INSPECTION
General	1 - Status total	1 - Abnormal or not.
	2 - Horn	2 - Sound.
Steering system, braking system, hydraulic system and lifting system	3 - Operating lever	3 - When the control lever is turned, being between areas A and B, there will be a noise from the brake.
	4 - Brake backlash	4 - The clearance between the brakes must be kept between 0.2 mm and 0.8 mm.
	5 - Operating lever	5 - Check degree of tightness and rotational flexibility.
	6 - Chassis and fasteners	6 - Function and check fasteners for cracks, lubrication and tightness.
	7 - Linkage system and wheels	7 - Function and check for cracks, bending, deformation and lubrication.
	8 - Oil hoses	8 - Check for leaks.
	9 - Hydraulic oil	9 - Check that the amount of oil is adequate.
	10 - Lift oil cylinder	10 - Check for any oil leaks.
Storage, battery, charger and wiring system	11 - Electrolyte	11 - The solution level and electrolyte density.
	12 - Plug	12 - Function, whether it is damaged or not.
	13 - On/Off switch	13 - Function.
	14 - Contactor	14 - Contact performance and function.
	15 - Limit switch	15 - Function.
	16 - Controller	16 - Function.
	17 - Control motor	17 - Check status of carbon brush and rectifier bridge.
	18 - Lifting motor	18 - Check status of carbon brush and rectifier bridge.
	19 - Wheel motor	19 - Check status of carbon brush and rectifier bridge.
	20 - Fuse	20 - Whether it is in normal condition or not.
	21 - Cables and connection terminals	21 - Whether it is flexible, damaged or not.

Maintenance after 600 hours (every 3 months):

During maintenance every 3 months, the monthly maintenance process must be repeated. When parts need to be adjusted and replaced, contact Authorized Technical Assistance.

Contactors	1) Clean contacts using sandpaper.
	2) Replace when no longer working properly.
Motor	3) Check condition of carbon brushes and rectifier bridge.
Brake	4) Clean the friction plates of dirt and dust. Also check the plates for wear.

Maintenance after 1200 hours (every 6 months):

During maintenance every 6 months, the monthly maintenance process must be repeated. When parts need to be adjusted and replaced, contact Authorized Technical Assistance.

Contactors	1 - Sand the coarse surface of the contacts using.
	2 - Replace when they are performing correctly.
Motor	3 - Check the condition of the carbon brushes and rectifier bridge.
Reduction box	4 - Change the oil in the housing.
Oil filter	5 - Clean.
Brake	6 - Clean dirt and dust from the brake friction plates, while checking the state of wear of the friction plates.
Hydraulic system	7 - Change the hydraulic oil. Check whether there are any leaks in the lifting cylinder or not and replace the seals where necessary.
Wheel and bearing fork	8 - Clean the friction plates of dirt and dust. Also check the plates for wear. Replace them if necessary.

Parts maintenance period:

ITEM	ACTION	PERIOD	OBSERVATION
Fork wheel bearings	Substitution	1200 hours	-
Fork wheel	Substitution	1200 hours	-
Retainers	Substitution	1200 hours	Replace when damaged
Reduction gearbox	Lubricating grease replacement	1000 hours	-
Hydraulic oil	Substitution	1000 hours	-
Hydraulic hoses	Substitution	2000 hours	Replace when damaged
Hydraulic reservoir filter	Clean	1000 hours	-
Control motor	Check carbon brushes and bearings	1000 hours	-
Wheel motor	Check carbon brushes and bearings	1000 hours	-
Hydraulic pump motor	Check carbon brushes and bearings	1000 hours	-

Lubrication

Hydraulic oil:

1) For normal loads, we recommend:

Hydraulic oil: LHP ISO VG 46, average sustained temperature between 40 and 60°C.

2) For higher loads, we recommend:

Hydraulic oil: LHP ISO VG 68, the average temperature sustained is above 60°C.

3) For light loads at low temperatures, we recommend:

Hydraulic oil: HLP ISO VG 32, the average sustained temperature is below 60°C.

4) For variable loads, we recommend:

All the working conditions mentioned above can use LHP ISO VG 46 hydraulic oil for replacement. The viscosity of this lubricant is very high.

NOTE: If it is difficult to buy hydraulic oil, SAE20W/20 engine oil can be used to replace HLP 68 hydraulic oil.

Gear oil:

85W-90 (GL-5) gear oil.

Lubricating grease:

Lithium grease type 3.

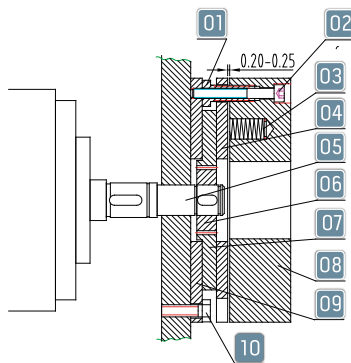
NOTE: All types of hydraulic oil, gear oil and exhausted grease will pollute the environment. Treat these elements in accordance with the relevant local regulations.

Brake backlash adjustment

After the machine has been in use for a while, the brake's performance may decrease, making it necessary to carry out maintenance and adjust its clearance.

The brake backlash needs to be adjusted when the gap between the brake block and the electromagnet is greater than 0.5mm.

- 1 - Hollow screw
- 2 - Adjusting screw
- 3 - Spring
- 4 - Armature
- 5 - Engine shaft
- 6 - Plate housing
- 7 - Friction plate
- 8 - Electromagnetic coil
- 9 - Mounting cover plate
- 10 - Mounting screw



To adjust the brake backlash, carry out the following operations:

- 1) Clean dirt and dust from the friction plate (7).
- 2) Loosen the bolt (2) and adjust the length of the bolt (1).
- 3) Tighten the retaining screws (1)(2)(10);
- 4) Make sure that the new backlash between the brake block and the electromagnet is 0.2 to 0.3mm;
- 5) Connect the brake with 24v DC power.

NOTE: The uniform adjustment for the three retaining screws (1)(2)(10) will result in a uniform adjustment of the clearance between the brake friction discs, but if the adjustment is not uniform there may be larger clearances than recommended along the perimeter of the discs. Always check the entire perimeter of the discs with a feeler gauge to make sure that the clearances have been respected. After adjustment, drive the wheel motor (with it off the ground to prevent movement). If the adjustment is correct, the brake should make a clear sound.

Replacement of the storage battery

The procedure for replacing the storage battery is as follows:

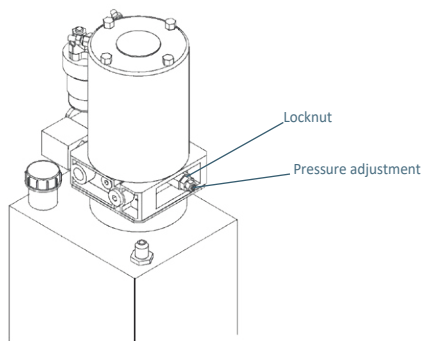
- 1) Open the side door of the battery and remove it.
- 2) Pull the socket connector from the forklift's storage battery.
- 3) Remove the pin from the battery case to release the battery.
- 4) Remove the storage battery from the side with a special trolley or using the lifting method.
- 5) The mounting method for reinserting the storage battery is the opposite of the above procedures.

NOTE: Handle the storage battery with care when lifting and transporting the battery. Failure to do so could result in damage to the battery or personnel.

Methods of adjusting safety valve pressure

The pressure of the safety valves is already set by the manufacturer. If the oil pressure does not match the specified value, ask your professional to adjust it according to the appropriate test methods, such as the following:

- 1) Loosen the high-pressure oil hose and install the pressure gauge with a capacity above 20Mpa on the high-pressure oil outlet.
- 2) Press the lift operation button to measure the system pressure. The stipulated system pressure is 16Mpa for a forklift with a rated load of 1500KG.
- 3) If the oil pressure does not comply with the specified value, loosen the lock nuts on the discharge valves. Turn the pressure screw left and right until the pressure reaches the specified value. When the screw is turned clockwise, the system pressure increases. When the screw is turned counterclockwise, the system pressure decreases.
- 4) After adjustment, tighten the locknut again.



Lifting, Transport and Storage

Lifting the machine:

Before lifting the machine, check its total weight on the identification plate in order to choose the right lifting equipment. When lifting the machine, it must be kept level and the whole process must be carried out slowly and steadily. Take care to insert the fork arms at the bottom to avoid damaging the drive wheel, the balance wheel and the front wheel.

Transport of the machine:

If the machine needs to be transported over a long distance, support the side near the driver with square timber to lift the drive wheels off the ground. The machine's two front wheels should be stably secured by a block of wood. Secure the machine for transporting the vehicle with ropes.

Transport of the damaged machine

Towing the machine is not permitted. To transport the damaged machine, use the lifting and transportation methods mentioned above.

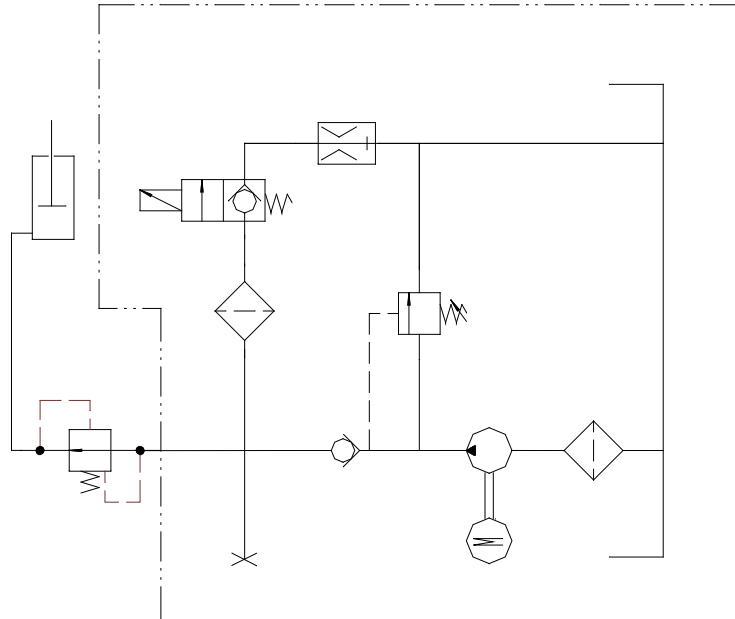
Machine storage:

If the machine is not used for more than two months, it should be stored in a well-ventilated, clean and dry place. In addition, the following measures should be taken:

- Clean the machine thoroughly.
- Fully raise the forks several times in succession to check whether the function is normal or not.
- Lower the forks to their lowest position.
- Support the side near the driver with square timber to lift the drive wheels off the ground.

- Apply a layer of oil or fragile grease to the entire exposed surface of the mechanical parts.
- Lubricate the machine.
- Check the condition of the storage battery and electrolyte and put non-acidic grease on the connection terminals of the storage battery.
- All electrical contacts should be sprayed using an appropriate contact spray.
- Charge the reserve batteries once a month to prevent premature wear and keep them in working order.

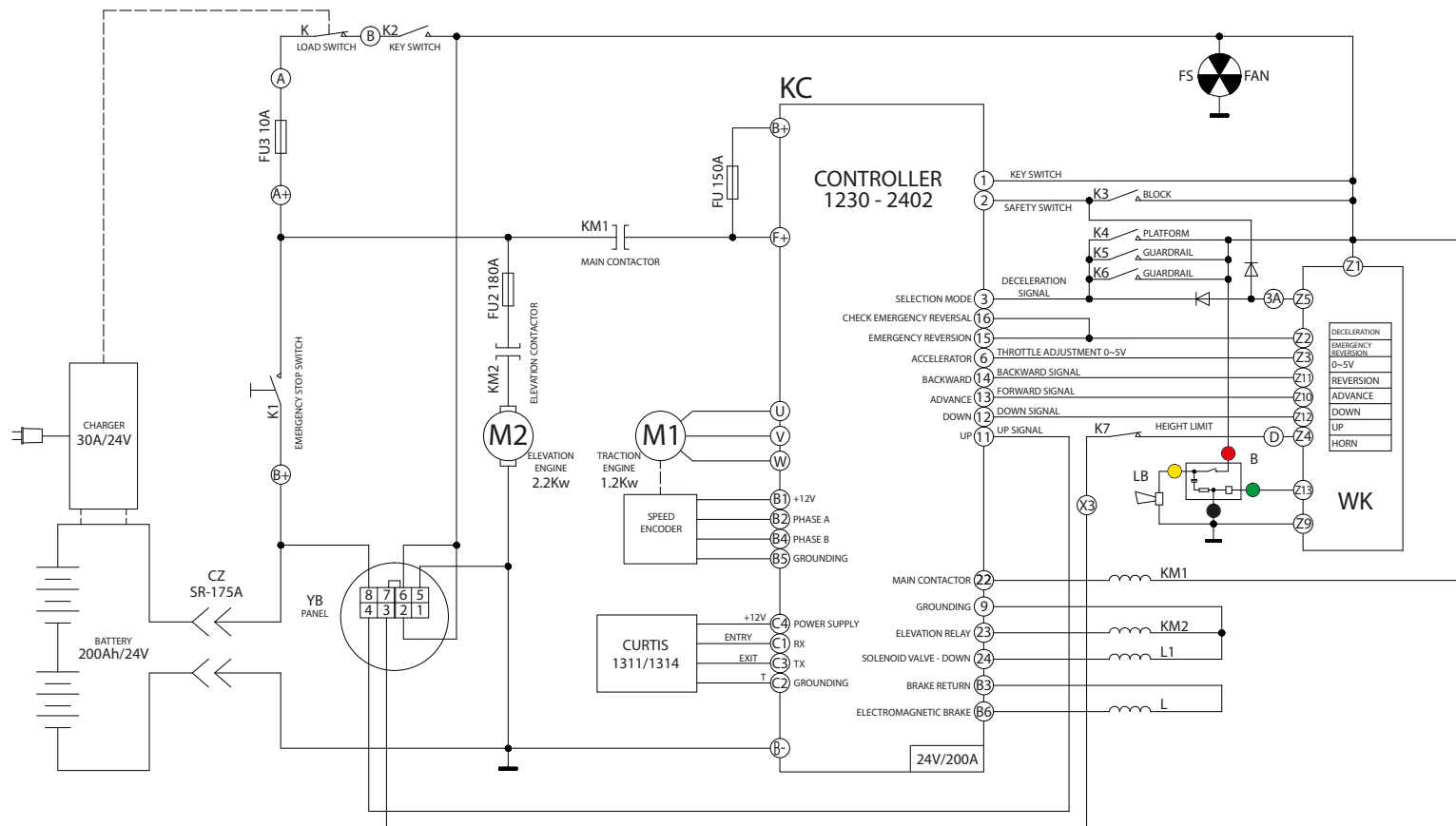
Hydraulic Diagram



Forklift 1,5 Ton x 5000 V2



Forklift 1,5 Ton x 5600 with platform V2



Troubleshooting

Failure	Possible Causes	Action
Forklift not starting (Contacts do not work).	1) The control circuit fuse is blown.	Replace
	2) The power switch is incorrectly connected or damaged.	Repair or replace
	3) The main circuit fuse is blown.	Replace
	4) The electric lock switch is badly connected or damaged.	Repair or replace
	5) The storage battery connection is loose or has fallen off.	Retighten
Forklift not starting (Contacts work).	1) The magnetic brake does not work and the forklift is in a braked condition.	Repair or replace
	2) The carbon brush of the wheel motor is damaged or has bad contact.	Repair or replace
	3) The excitation coil of the stepper engine magnet is broken or there is bad contact at the end of the wire.	Repair or replace
	4) Bad contact.	Repair or replace
	5) There is a problem with the MOSFET circuit board.	Repair or replace
The forklift can only move forwards and backwards.	1) The contactor is badly connected or burnt out.	Repair or replace
	2) Malfunction in the circuit board.	Repair or replace
The forklift does not stop while moving.	1) Contact broken or cannot be restarted.	Disconnect the power supply and replace the Contact
The brake does not work.	1) The mounting screw of the movement control switch is loose or damaged.	Retighten or replace
	2) The brake connection wire is loose or damaged.	Retighten or replace
	3) The brake discs are worn.	Replace the disks
The wheels are stuck.	1) The steering device bearing is damaged.	Replace the bearings
	2) The steering gear bearing has no lubricant or is very dusty.	Clean the bearings
Difficult steering of the drive wheel, noise and the engine is overloaded.	1) The gear or bearing has become stuck due to a strange body.	Clean or replace bearings
	2) The bearings are loose.	Adjust clearances
	3) The front bearing is damaged.	Replace the bearing

Failure	Possible Causes	Action
The fork cannot be lifted.	1) Overload.	Reduce the load
	2) The discharge valve pressure is too low.	Adjust pressure
	3) Abnormal leakage in the hydraulic cylinder.	Replace retainers
	4) Insufficient hydraulic oil.	Add recommended and filtered oil
	5) Insufficient battery voltage.	Recharge the battery
	6) The control lever is not horizontal or vertical, the oil pump motor has not been started.	Incorrect operation
	7) Oil pump motor damaged.	Repair or replace
	8) Oil pump damaged.	Repair or replace
	9) Lifting button damaged.	Repair or replace
	10) The electric lock is not unlocked or is damaged.	Repair or replace
	11) Battery power low.	Recharge
The fork can not be moved.	1) The inner mast is overloaded or warped.	Repair or replace
	2) The outer mast is overloaded or warped.	Repair or replace
	3) Mast bearing damaged.	Repair or replace
	4) The mast guide is warped.	Repair or straighten
	5) The oil return hole is blocked.	Clean
	6) The electromagnetic valve is out of control.	Switch off the machine
Low voltage after recharging	1) Damaged battery.	Repair or replace
	2) Low electrolyte level.	Add
	3) Foreign objects in the electrolyte solution.	Replace the electrolyte
Forklift wobbles while moving	1) Drive wheel nuts loose or falling off.	Retighten the nuts
	2) The drive, balance and front wheels are not in the same plane.	Adjust the balance wheel screws so that the 4 wheels are on the same plane

Environmental Protection

Do not discard the machine in an inappropriate trash, discard it in an appropriate one and contact the responsible body in order to make the correct discard. Preserving the environment is very important.

Product Warranty

The conditions and terms of this warranty are non transferable and go into effect on the date of purchase of this equipment, proven by presentation of the sales invoice issued to the first end user. At the time of delivery of the equipment, the customer must be provided with the information and technical orientations according to the contents of this manual.

Not, however, included in this warranty are defects arising from improper use, negligence, imprudence or malpractice, nor are repairs or alterations to any part and/or component of the equipment. Also not included are: the assembly of any sets of parts by technicians not from the Factory itself or from an Authorized Technical Assistant, application other than which it was specified, mechanical or electrical overloading as well as lack of phase, use in environments for which it was not designed, incorrect voltages and frequencies, incorrect lubrication, damage caused by accidents of any nature, such as floods, gales, fire, landslides or due to transportation.

Removal or any alteration to the series numbers originally placed on the product will render the warranty null, where the Sales invoice and Warranty Certificate must be presented in relation to the equipment in question.

This warranty is limited to the repair, replacement of parts or assembly of parts in which, through examination by a Menegotti Authorized Technical Assistant with prior authorization from the Factory, any manufacturing defect will be verified. This repair or replacement will be performed by the authorized Technical Assistant, where the purchaser will be responsible for risks and expenses arising from transport to and from the authorized Technical Assistant, and where labor and parts will not be charged according to the terms of this warranty.

This warranty replaces any other warranty, implicit or explicit, as well as all any obligation or responsibility on the part of our company in relation to the above mentioned product.

MENEGOTTI Post Sales Department and Technical Assistance.

Term of Warranty

By the present CERTIFICATE provided from original purchaser, Menegotti guarantees this product against manufacturing defects, for a period of 6 (six) months, being: the first 3 (three) months of legal guarantee, and the last 3 (three) months a special warranty guaranteed by Menegotti, counted from the invoice issue date of the first end consumer. Not included in this equipment warranty are components subject to wear through use such as: bearings, steel cable, electrical plugs, gears and engine breaking.

This warranty includes the replacement of parts and repairs due to manufacturing defects duly noted by the factory or Authorized Technical Assistant. This warranty will be rendered null and void in the case of damages arising from accidents, acts of nature, application other than which it was designed, connection to improper electrical supply or subjected to extensive power fluctuations, or, if opened by persons or workshops not authorized by Menegotti.

The equipment that includes an electric motor and this warranty covers internal defects in the motor originating from its manufacture. Defects not covered in this warranty include: overloading due to lack of or excessive phase, use of voltage outside that specified, broken or crushed casing due to negligence during transporting /or storage, coupling or energizing outside specifications and general defects from improper use and/or incorrect installation.

In agreement with these terms,

Customer: _____
Model: _____ **Number of Series:** _____
City: _____ **Date:** _____

Customer *Menegotti Authorized Service*

Menegotti GROUP

Solid values, **sustainable future.**

REV. 00 | DECEMBER/2023

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Unit • Unidad Menfer

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