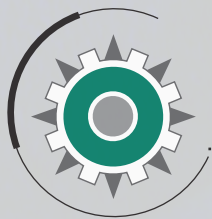


MANUAL ELEKTRO



Prins Maasdijk



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1. INTRODUCTION

As manufacturer, we thank you for purchasing this Prins Elektro truck.

For your safety, please obey all safety guidelines as set out in this manual. To obtain a long and trouble free operation from your forklift keep up regular servicing and read this manual thoroughly before you start to work with it. Make sure other users of the truck read the manual as well.

Keep this manual, after poring it over, on a place where you can find it easily back, so that you always have the information at one's disposal concerning maintenance, defects and the like.

When you want to order some parts, or you have questions/remarks about your forklift truck, please contact Prins Maasdijk. Please: always be sure you know your **Service number** and **Serial number**, mentioned on the tag plates in the right upper corner of the dashboard. Keep it always nearby when you call us.

We wish you much success with your new forklift truck.

Prins Maasdijk

2. SAFETY FIRST

This user manual contains important facts about right and safe use of your forklift truck. Always follow the instructions that are mentioned in this manual.

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury.



Caution!: Important information

Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.



3. GENERAL SAFETY REGULATIONS



Accidents can occur if the safety regulations are disregarded, insufficient care is taken during maintenance or when operating the machine. You must be aware of the risks entailed in certain actions.

This manual describes potentially hazardous situations and the measures to be taken during operation and maintenance.

It is impossible for the manufacturer to foresee every potentially hazardous situation, which may lead to injuries or damage. The user must ensure the safety of all actions, procedures or the use of any tools that are not recommended by the manufacturer.

For your and other people's safety:

- Never load the forklift truck above the maximum stipulated weight.
- Always check the loading diagram on the dashboard.
- The lifting capacity is halved when the load rests on only one fork. Avoid this as much as possible.
- Ensure that the load is well balanced so that nothing can fall off.
- Keep the load as close to the ground as possible when driving with a loaded machine. Never drive at top speed in this situation. Keep the forks approximately 20 cm above the ground.
- Keep the speed as low as possible when driving with an elevated load and keep track of the maximum clearance height.
- ALWAYS carry out the necessary preventive inspections and regular maintenance. Never start working with the machine unless it has been thoroughly checked. Pay particular attention to the tires, battery, brakes, steering gear, fuel system and electrical components.
- Do not refuel while the engine is running. No smoking is allowed during refueling and fire and sparks must be prevented. Explosive gases are released during refueling. Carefully remove any spilt fuel.
- Before changing or adding oil, the machine must be checked for oil stains. Avoid any fire when oil is being added or when working with the forklift truck. Remove any spilt oil after refilling.
- When leaving the machine, ensure that the handbrake is engaged and that the gears are in neutral.

4. SUMMARY OF COMPONENTS

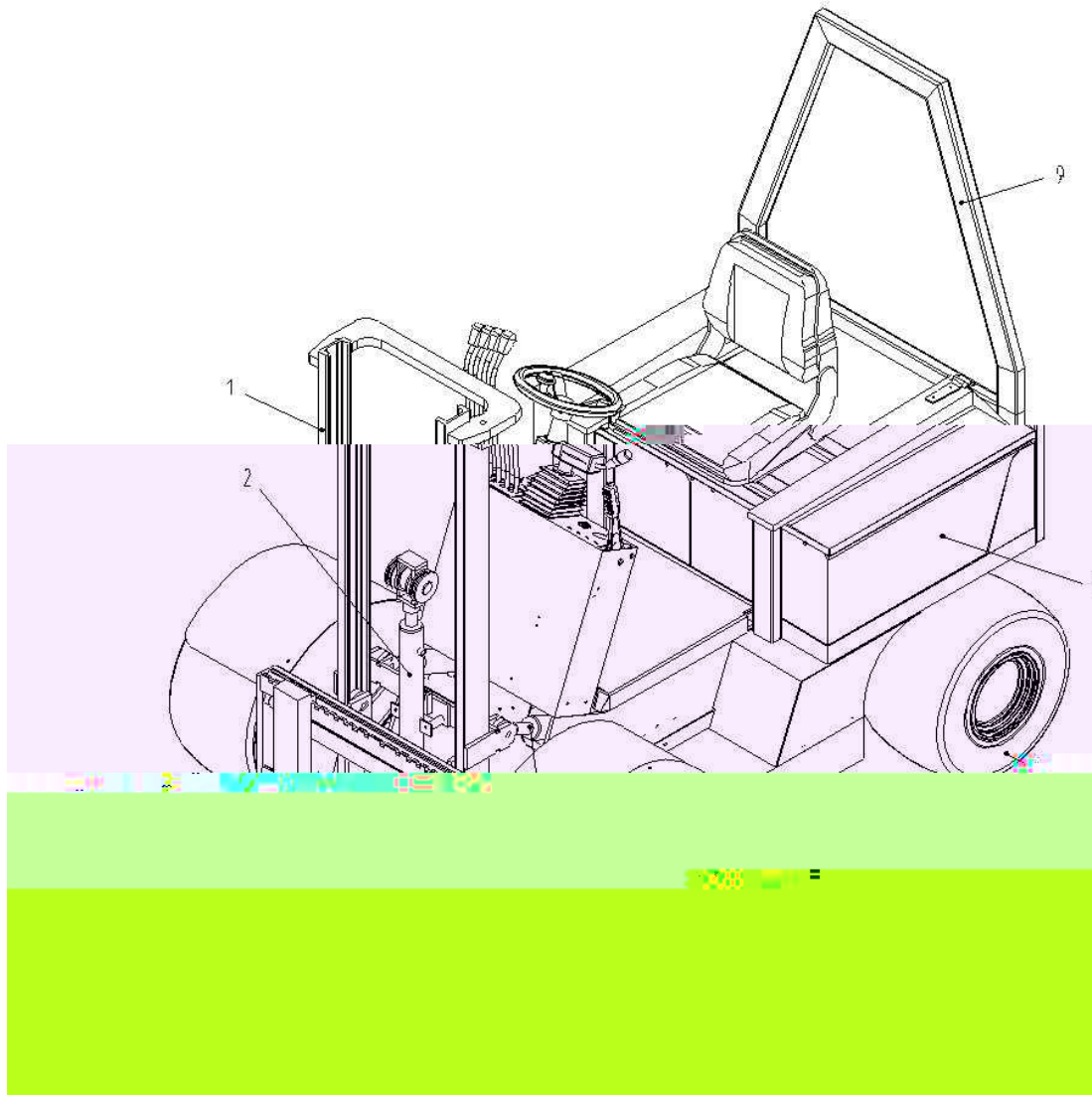


Figure 4.1 | Summary

- 1 – Lifting mast
- 2 – Lifting cylinder
- 3 – Forks
- 4 – Fork mounting
- 5 – Tilting system
- 6 – Front wheel
- 7 – Rear (steering) wheel
- 8 – Battery
- 9 – Roll bar

5. OPERATING THE PRINS ELEKTRO

5.1 How to start and stop the motor

1. Ensure that the ride direction switch on the left side of the steering wheel is in the neutral position (see Figure 5.1)

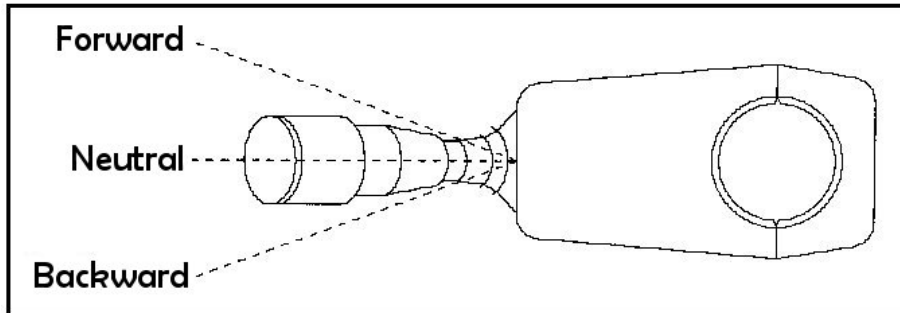


Figure 5.1 | Ride direction switch

2. Turn the ignition key to the "ON" position. If everything is alright the battery lamp will light.

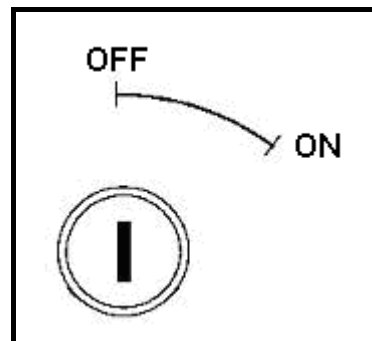


Figure 5.2 | The ignition

3. If the motor does not start, turn the ignition key back to "OFF"
 - check that the main plugs of the battery and the motor are properly connected
 - check that there is no possibility of a short circuit or other defects in the cables and wiring
 - check that the battery is charged
 - check that the battery acid is topped up to the correct levelHaving checked the above, make another attempt. Start each attempt from Step 1. If the motor still fails to start and you have been through this checklist finding no defects then get in contact with your dealer.
4. If you want to stop the motor, ensure that the gear lever on the left of the steering wheel is in the disengaged position. Also ensure that the forklift's forks are resting on the ground (this is to avoid putting unnecessary strain on the lifting cylinders and to prevent accidents) Turn the ignition key to "OFF".



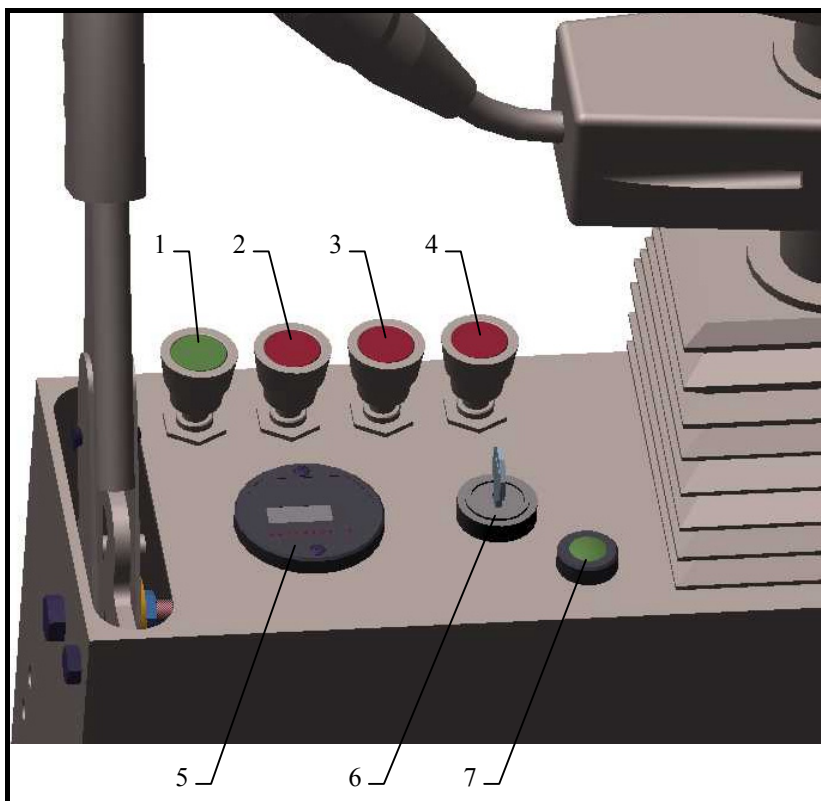
Be careful! Put on the handbrake before stepping off the forklift truck. Only then is it safe to step off the forklift truck.

5.2 Getting the forklift truck to move and stopping

1. To get the forklift truck to move, set the ride direction switch to the desired position. Because the forklift truck is equipped with an electric motor that has 2 positions it has the possibility of driving forwards and backwards at 2 speeds. If you want to drive forwards push the ride direction switch away from you as far as it will go. Then choose the desired speed using the pull switch on the dashboard. To reverse you should pull the ride direction switch toward yourself in the same way, and set the pull switch on the dashboard to the required position.



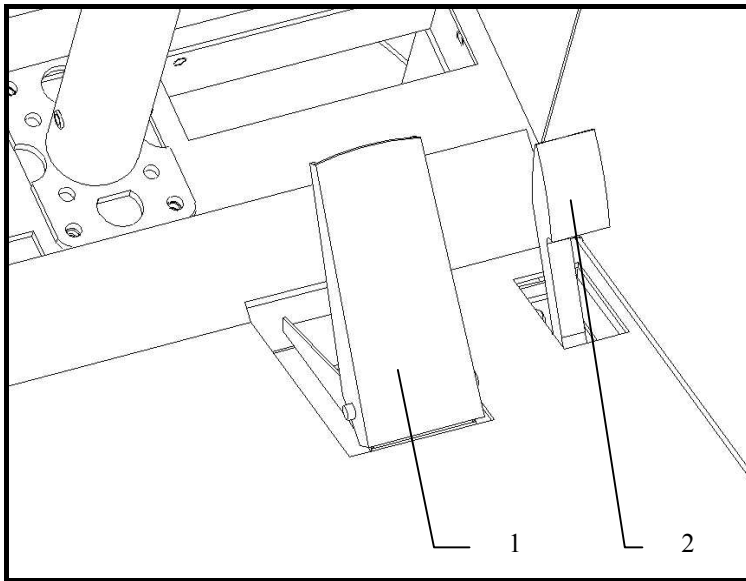
Be careful! You should always check first to see if the handbrake is on.



- 1 – Speed switch
- 2 – Accumulator switch (optional)
- 3 – Front lighting switch (optional)
- 4 – Rear lighting switch (optional)
- 5 – Battery meter
- 6 – Ignition lock
- 7 – Contact lamp

Figure 5.3 | Dashboard

2. Gradually push the accelerator pedal. The forklift truck will begin to move in the required direction at the required speed.



- 1 – Brake pedal
2 – Accelerator pedal

Figure 5.4 | Pedals

3. In order to stop the forklift truck you should release the accelerator pedal and gradually push in the brake pedal until the forklift truck has stopped completely.
4. Once the forklift truck has stopped completely, put the ride direction switch in the neutral position and apply the handbrake if you are going to leave the forklift truck.

5.3 Loading and unloading



Caution! Be sure, that the load is stacked properly. Falling load can cause harm for you and others.

1. Stop the truck in front of the load and lower the mast until it is vertical.
2. Move the fork to the correct height.
3. Drive forward until the load touches the backrest. Lift the load 5 to 10 cm. It is possible that the load is not standing completely at the edge of the trailer or the warehouse rack. In that case, insert the fork as far as possible inside and lift the load a bit.



Caution! When you lift the load, make sure that the load will not tilt forward. The forks must be inserted for two-thirds or three-quarters in the load (this depends on the weight of the load).

4. Slowly reverse until the load is positioned in a way that it can be fully taken on the forks.

5. Slowly lower the load and insert the forks to its full length until it touches the backrest. Then lift the load 5 to 10 cm.
6. Reverse far enough to be able to lower the load completely.
7. Lower the load to 15 or 20 cm above the ground.
8. Tilt the mast backwards completely.
9. Drive the load to the designated site.



Caution! Brake and steer extremely careful with load on the forks. Sudden changes of speed or direction can cause the load to fall.

10. Gradually slow down when you reach the storage site and stop.
11. Tilt the mast forwards until it is vertical.
12. Then raise the load to 5 or 10 cm above the unloading point.
13. Drive forwards slowly and lower the load onto the unloading site.
14. Reverse and pull out the fork two-thirds or three-quarters of the way.
15. Lift the load 5 or 10 cm again.
16. Position the load correctly above the unloading site.
17. Lower the load to the correct unloading position.
18. Pull out the fork completely and reverse slowly.
19. Return the mast to the vertical position.

6. SERVICE AND MAINTENANCE

If you adhere to the instructions pertaining to regular lubrication and maintenance, you will encounter fewer problems and considerably increase your machine's life. Therefore, Prins Maasdijk recommends most strongly that you take the time to carry out the necessary service and maintenance every day, even when you may be tempted to ignore them once in a while.

The time given in this manual is the time indicated by the service meter. However, machines that have to operate under difficult conditions must be inspected more often than stated in this manual.



Caution! Make sure that all maintenance as described in this manual will be done by an experienced person. By any doubt, please ask for a Prins Maasdijk mechanic.

6.1 The differential

The type of differential that is in the Elektro is an EMMEQUATTRO M4M-A40 with a 5000W direct current electric motor mounted on it.

6.2 The drive unit

Each Prins Elektro has a drive unit made by Amre. This electric motor is a direct current 48V motor with a 5kW (5000W) capacity. This motor also has 2 revolution rates which makes two different driving speeds achievable namely: - 1360 rpm
- 1850 rpm

Changing or checking the carbon brushes:

- Disconnect the main plugs from each other.
- Remove the black plastic cover on the back of the drive unit.
- Screw the carbon brushes loose.
- Remove the carbon brushes from the holders.
- Check and/or change the carbon brushes.
- Check the drive unit for any other defects.
- Put the carbon brushes back in the holders.
- Screw the carbon brushes back in the drive unit.
- Remount the black plastic cover on the drive unit.
- Reconnect the main plugs.

6.3 The battery

Electricity is needed to make the forklift truck move. This is supplied by 48V battery with the choice of 390Ah or 590Ah which in turn is charged by the battery charger. The battery may not work properly for a number of reasons.

One reason could be that the connections of the wiring to the battery are not good. This could be caused by rust for example. To prevent rust from forming, the poles should always be greased, for example with Vaseline. Another cause could be that the battery charger is defective. It is also possible that the battery acid level in the battery is too low (see Figure 6.1). In order to remedy this the battery should be topped up with distilled water.

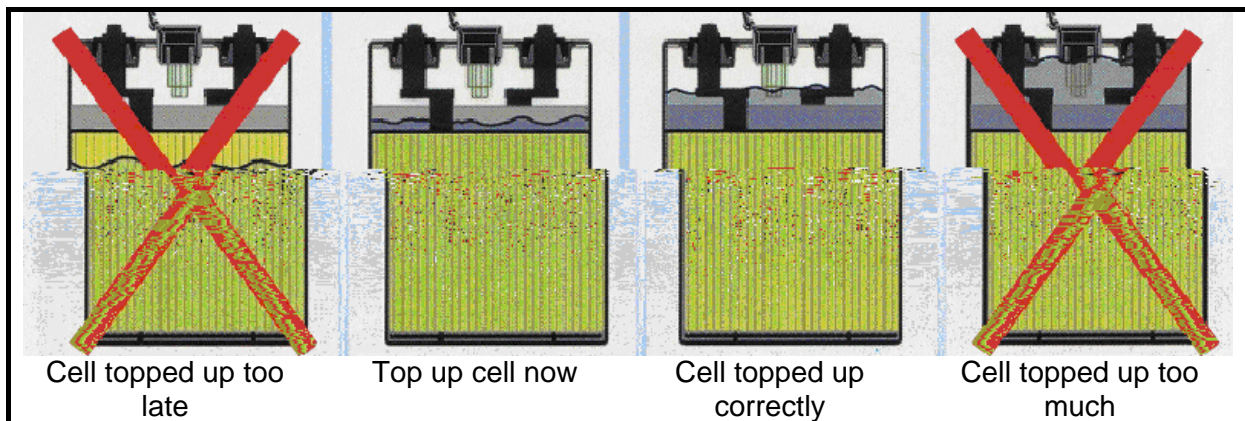


Figure 6.1 | The battery acid level



Be careful! Avoid contact with the electrolyte in the battery. The diluted sulphuric acid solution burns the skin and dissolves clothing. In case of accidents rinse immediately with running water.

To top up the battery:

1. Completely lift up the battery lid
2. Disconnect the main plug
3. Open the wire cages and check the liquid level; top up if necessary
4. Close the wire cages securely
5. Reconnect the main plugs again



Be careful! Always use gloves when topping up the battery. Topping up should be done after charging when the battery is still at charging temperature.








Daily maintenance:

- Do not allow the battery to discharge more than 80% (\pm SG 1.13).
- Prior to charging, disconnect the battery from the forklift truck and open the battery lid
- Connect the battery to the charger and turn the charger on (many chargers will do this automatically)
- When the charger indicates that charging is complete, turn the charger off and disconnect the battery from the charger
- Connect the battery to the forklift truck again

Weekly maintenance:

- Check the level of electrolyte in the battery. If necessary top up with distilled water
- Keep the battery clean and dry
- Corrosion on the battery container and/or the poles should be removed

Table 6.1 | Safety symbols

	Follow the instructions for use and safety		Wear safety glasses and protective clothing
	Smoking and open flames prohibited		Electrolyte is very corrosive
	Connectors are live, avoid contact		Areas where batteries are stored or charged must be sufficiently ventilated
	Danger of explosions, avoid short circuits		

6.4 Hydraulic system

Every Prins Elektro has a hydro drive unit made by Amre. This electric motor is a 48V direct current motor with a 2kW (2000W) capacity with a 17cc Casappa pump on it. This motor revolves at 1160 rpm.

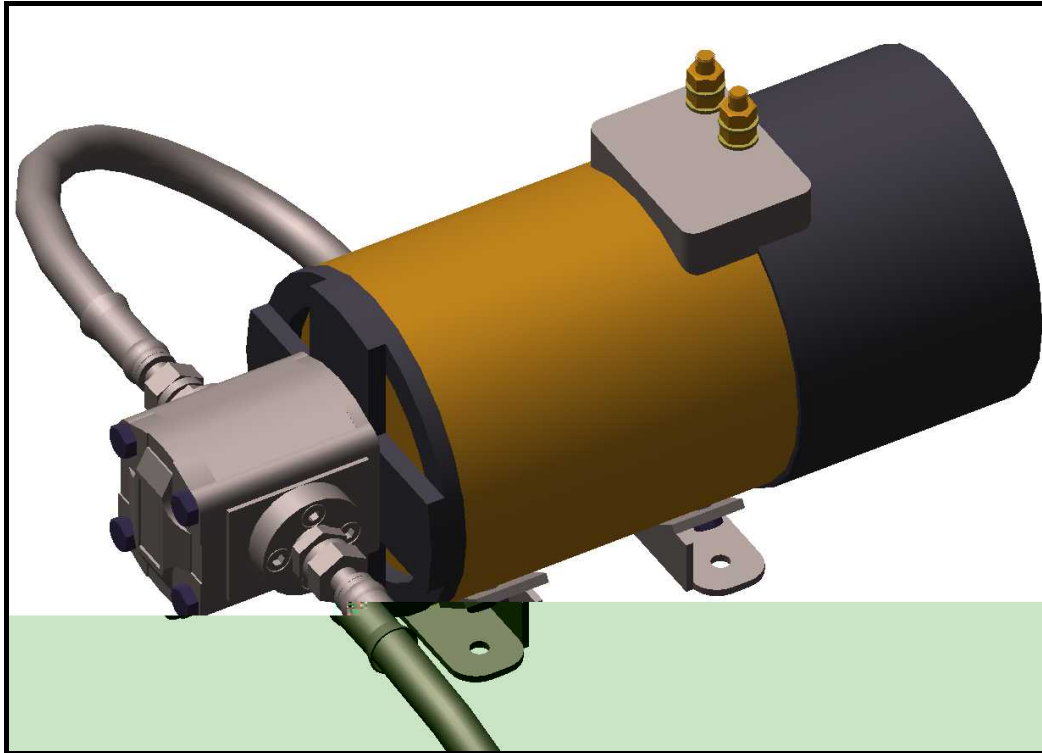


Figure 6.2 | Drive unit with hydro pump

Bleeding the hydraulic system

Sometimes it may be necessary to bleed the hydraulic system.

When is bleeding necessary?

- If problems arise with steering and lifting.

The bleeding process proceeds as follows:

1. Loosen the hydraulic hose on the suction side 1 or 2 turns.
2. Turn the forklift truck on.
3. Move the lifting handle once. If everything is alright you will now hear the hydro pump start.
4. Wait until oil comes out of the opening.
5. Tighten the hose again.

Which type oil is used in the hydro tank?

The type of oil in the tank is: ESSO H46 / OLNA H 46

6.5 Other maintenance

Greasing

The following components must be greased at least once per month:

- Side-shift cylinder
- Steering cylinder
- Axle tilting piece
- Tilting cylinders
- Mast

Tyres

Tyre pressure should be checked every week. The correct tyre pressure is:

- Driven (front) wheels : 1.5 bar
- Steering (rear) wheels : 1.2 bar