



Prins Maasdijk



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HANDLEIDING

Prins Trike & Sprinter

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1. Foreword

We thank you for purchasing this Prins Sprinter or Prins Trike forklift from Prins. In this manual you will find all the important data you need when operating and maintaining your forklift. Before using the forklift, we recommend that you read this manual very carefully. We advise other users to read this manual carefully as well. After studying this manual, keep it in a logical place so that you always have information about maintenance, defects and the like.

If you would like to order parts for your Prins forklift, or if you have any questions and/or comments about this, please contact Prins. If you contact Prins, always state the service and serial number of the forklift. These are listed on the plates mounted in the



Type of plate (color: black):

1. Brand
2. Type
3. Serial number
4. Capacity
5. Own mass
6. Year of construction

Service plate (color: gray):

1. Service number

Figure 1.1 | Service and serial number

upper left and right corners of the steering column. See Figure 1.1.

We wish you the best of luck with the use of your new forklift.

Prins .

2. IMPORTANT

This manual contains important information regarding the correct and safe use of your forklift. Always follow the instructions given in this manual.

You will find the symbol below in various places in this manual:



Please note!: Important information.

If you see this symbol, always read carefully what is written next to the symbol before you start the action. This concerns information regarding your personal safety and the safety of others. Always be alert and avoid dangerous situations.



3. General Safety Regulations



When working with and performing maintenance on the forklift, you should always be aware of the dangers that can be involved. Pay close attention to the safety rules. Failure to do so may result in serious bodily injury to you or others.

The manufacturer cannot foresee every unsafe situation. As a user, you must therefore also ensure your own and other people's safety while using and maintaining the forklift. Always use the tools and products recommended by the manufacturer. When repairing, use only the original parts.

For your own and others' safety:

- Never overload the forklift above the maximum permissible lifting weight indicated in the load diagram (see also Figure 5.12) on the machine.
- Pay close attention to the load diagram, which can be found on the bonnet of your forklift.
- In the unlikely event that you are forced to take the load on one fork, keep in mind that the maximum load is halved. However, try to avoid this as much as possible.
- When driving with a load, keep your speed low (never top speed!) and keep the load as low as possible above the ground.
- When the load is lifted, keep the speed as low as possible and pay attention to the headroom of the forklift.
- Always carry out the necessary preventive checks on the forklift before working with it. Never start working with the forklift truck until you have fully checked it. Pay particular attention to the tires, battery, brakes, steering, fuel system and electrical components. This prevents accidents.
- Never add fuel while the engine is running. Smoking is not allowed during refuelling or oil changes/refills, and there must be no fire or sparks in the immediate vicinity. Explosive gases are released during refueling.
- After refueling or oil change/topping up, always remove spilled liquid from the forklift.
- Before refueling or changing oils/topping up, check the machine for oil or fuel stains and check where they are coming from. If they are the result of a technical defect, repair them first before working with the forklift.
- When exiting the forklift, always apply the handbrake and put the gearbox in the neutral position.

- An incorrect sitting posture can lead to accidents. Therefore, always adjust the seat first so that you can operate all levers properly and have a good view.
- Never work with a forklift without a safety cage or roll bar (as supplied as standard).
- Always wear a seat belt when using the forklift.
- Always drive at a speed that gives you good control of the forklift. Speeding can be dangerous for you and those around you. Sudden braking, accelerating or turning can also cause a dangerous situation.
- If you are working in places with limited headroom, where you have to drive in and out, keep the following points in mind: Always check that there is enough space next to and above the forklift. o Always keep all parts of the body within the safety cage, hands on the handlebars and your feet on and/or near the pedals.
- Avoid dangerous situations while driving.
- Operate the levers carefully. This significantly extends the life of your forklift and increases safety.
- Never allow people to walk under the forks with load. This is very dangerous.
- Never let anyone ride on the forklift or use the forks to lift anyone.
- Always lower the load slowly and do this with a horizontal fork or with a slightly backward sloping fork. Never do this with a fork that slopes forward.
- The condition of the machine can be checked by numerous factors. Changes in noise, vibration, or reactions to control levers can be indicative of defects or flaws. If you suspect a defect, immediately pull over the forklift and stop the engine. Check the cause and take the necessary measures.

Table 3.1 | Meaning of safety symbols

	Volg de aanwijzingen voor gebruik en veiligheid		Draag veiligheidsbril en beschermende kleding
	Roken en open vuur verboden		Elektrolyt is sterk bijtend
	Verbinders onder spanning, vermijd contact		Ruimten waar batterijen staan of geladen worden, moeten voldoende worden geventileerd
	Explosiegevaar, kortsluiting vermijden		

4. MACHINE AND CONTROLS OVERVIEW

4.1 Machine Overview

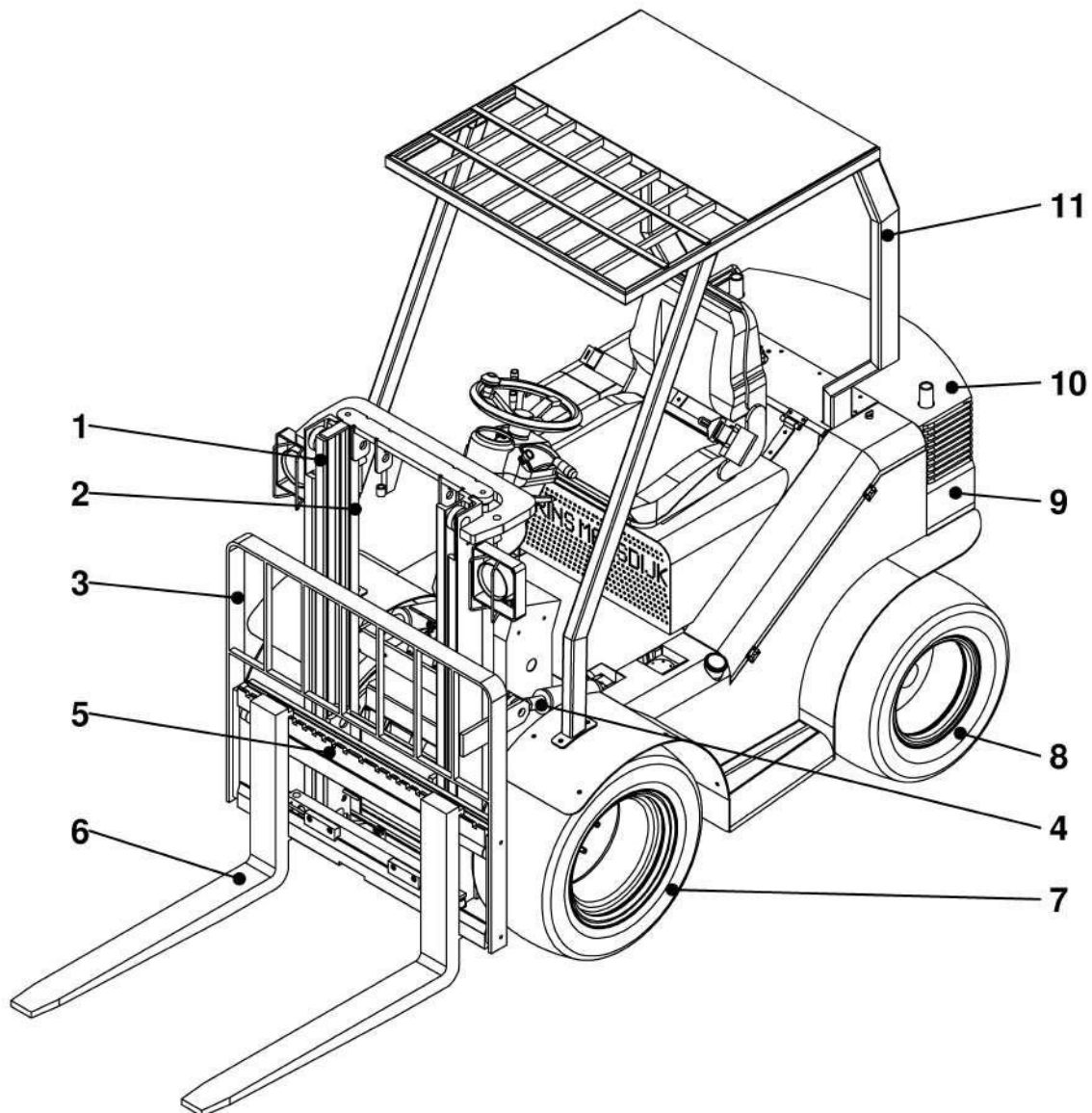


Figure 4.1 | Overview

- 1 – Lifting mast
- 2 – Lifting cylinder
- 3 – Welding Strain
- 4 – Tilt cylinder
- 5 – Fork carriage
- 6 – Forks
- 7 – Front wheel
- 8 – Rear (steering) wheel
- 9 – Counterweight
- 10 – Ballast plates (loose)
- 11 – Safety cage

4.2 Overview of controls



- 1 Combi switch direction of travel, gear, horn
- 2 Switch accumulator (optional)
- 3 Parking brake switch
- 4 Front lighting switch (optional)
- 5 Rear lighting switch (optional)
- 6 Ignition switch

Figure 4.2 | Dashboard operation

4.3 Overview central dashboard

The Prins Sprinter and Prins Trike are equipped with a central dashboard in which various warning signals are included. In the middle is the fuel gauge. For machines with a diesel engine, it displays the contents of the tank. For machines with an LPG engine, this signalling is located on the tank. Below the fuel gauge is the hour meter that displays the number of operating hours of the machine.

The following warning signs are shown in Figure 4.3.



- 1 Parking brake indicator
- 2 Low oil pressure signaling
- 3 Charging current signaling
- 4 Signalling high cooling water temperature
- 5 Preheating Signaling
- 6 High acceleration signalling
- 7 Low acceleration signalling

Figure 4.3 | Signalling

5. OPERATING THE FORKLIFT

5.1 Settings

Before starting the machine, the correct sitting position must first be adopted.

5.1.1 Steering column adjustment



Figure 5.1 | Steering column operation

Loosen the lever as shown in Figure 5.1 and adjust the steering column to a comfortable position. Then tighten the lever again by moving the lever upwards.

5.1.2 Seat Setting

With the standard chair, the adjustment can take place in the longitudinal direction if the angle of the backrest can be adjusted. Figure 5.2 shows the adjustment options. Adjust the chair in such a way that a comfortable and safe sitting position is obtained.



Figure 5.2 | Seat adjustment



Caution!: Always wear the seat belt while operating the forklift.

5.2 Starting and stopping the engine

1. Before starting the engine, make sure that the direction switch on the left side of the steering column is in the neutral position (See Figure 5.3). For machines equipped with an LPG engine, the tap on top of the tank must be opened.



Figure 5.3 | Direction switch

2. Turn the ignition key to position "I".
The oil pressure and charge current control lights will both light up



O	= Off
I	= Ignition on
II	= Preheating
III	= Start

Figure 5.4 | Ignition switch

2.1 Forklift with diesel engine.

When both lights are on, turn the ignition key to "II". The pre-heating light will now come on. Hold the ignition key in this position for about 5 seconds and then turn it to position "III", which starts the engine. When you release the key, it automatically returns to position "I" and the engine continues to run.



Note!: At very low temperatures, it is desirable to pre-heat for more than 5 seconds. Table 5.1 shows how long pre-heating should continue after the lamp has gone out.

Temperature	Extra pre-heating time
Above 10°C	Not necessary
Between -5°C and 10°C	About 5 sec.
Below -5°C	About 10 sec.
Maximum continuous preheating interval	20 sec.

Table 5.1 | Pre-heating times

2.2 Forklift with LPG engine.

When both lights are on, turn the ignition key to "III" and the engine will start. Position "II" does not serve a function in LPG versions.

- Do not start the engine within 10 seconds, then turn the ignition key back to "OFF" and wait 30 seconds before attempting again. Start each new attempt from step 1.



Caution!: Never leave the starter motor in continuous operation for more than 20 seconds.

- After starting the engine, check that the oil pressure and charging light has gone out. If this is not the case, switch off the engine immediately and investigate the following possible causes.

Oil pressure light stays on:

- Is the V-belt broken?
- Is the oil level up to standard?
- Is the crankcase oil contaminated?
- Is there no short circuit and are there no other wiring defects?

Charging current light stays on:

- Is the battery charged?
- Is the battery acid level up to standard?
- Is there no short circuit and are there no other wiring defects?

If you have checked all these items and found no defects, please contact your dealer.

5. Let the engine come up to temperature by running the engine at half throttle without load.
6. If you want to stop the engine, make sure that the gear lever on the left side of the handlebar is in neutral position. Also make sure that the forks of the forklift are resting on the ground (this is to avoid unnecessary strain on the lifting cylinders and to prevent accidents). Turn the ignition key to "OFF".



Caution!: Before getting off the forklift, the gear lever must be in neutral and the handbrake must be applied.
Now it is safe to get off the forklift.

7. If the machine is not used for a longer period of time, for example at the end of the working day, the tap on the gas bottle must be turned off for forklifts equipped with an LPG system.



1. Shut-off valve
2. Level meter

Figure 5.5 | LPG tank

5.3 Moving and stopping the forklift

The Prins Sprinter & Prins Trike are equipped with a hydrostatic drive that enables fully automatic driving. The direction of travel can be selected by means of a direction selector switch on the steering column.



Figure 5.6 | Direction selector switch

Lift the direction selector switch slightly and move it forwards or backwards to select the direction of travel forward or backward respectively. By now pressing the accelerator pedal, the machine will move in the desired direction. If you need to change direction, the machine must first be stopped and the switch can be moved in the desired direction.



Figure 5.7 | Gear selector switch

To be able to choose between extra speed and extra pulling power, the machine is equipped with two gears. The choice between the two gears can be made by means of a rotary switch on the steering column. It is not necessary to pull away in first gear. It is recommended to determine which gear is desired and to choose it before starting off. First gear can always be selected as standard. The maximum pulling force is then available. This results in the best driving characteristics and the most consistent driving speed.

If long distances have to be driven and the load will not be maximum, you can opt for second gear. The driving speed will be higher. Make sure that the conditions, such as the condition of the surface, allow this higher speed.

It is possible to choose between the two gears while driving slowly. Always release the accelerator pedal when shifting gears. During gear changes, a shock may occur in the drive. This will not harm the machine, but keep in mind that it may affect the load.

The two gears are indicated on the central dashboard by a symbol of a hare and a turtle respectively.



Figure 5.8 | Pedals

To bring the forklift to a stop, release your accelerator pedal and press the brake pedal in a controlled manner until the forklift has come to a complete stop. When the truck has come to a complete stop, move the gear lever to neutral. The Prins Sprinter and Prins Trike with automatic transmission are equipped with an "inching" pedal as standard.

The machine is equipped with an electrically operated parking brake. The switch on the dashboard switches it on and off. A signal light on the central dashboard indicates when the parking brake is engaged.

When leaving the forklift, the forks must always be fully lowered and the parking brake must be applied. The machine cannot move away with the parking brake engaged.



Figure 5.9 | Parking brake switch

5.4 Optional



Figure 5.10 | Switch accumulator

The machine can optionally be equipped with an accumulator. This is switched on by the switch shown in Figure 5.10.

The accumulator serves as a shock absorber for the load that is transported with the forklift. For correct operation, the accumulator must be adjusted to the weight of the load being transported. Consult Prins' technical service or your dealer for this.

In the event of an overload, the accumulator may suffer irreparable damage. If you drive unloaded or if you are transporting loads that are substantially greater (more than 25%) than the load to which the accumulator is adjusted, always switch off the accumulator. The accumulator must also be switched off for accurate positioning of the load.

In occasional cases, the position of the switch of the accumulator can be taken by that of another optional function. Make sure that the optional equipment of the machine is available before operating and using it.

5.5 Manoeuvring

The Trike is equipped with twin tyres as standard. The twin tyres provide stability in the corners. The Prins Sprinter and the Prins Trike steer with the rear axle to generate the smallest possible turning distance. When steering, make sure that the rear swings out.

When driving, the load that the forklift carries on its forks must always be taken into account. Anticipate unevenness in the road surface in time, potholes and



Caution!: When manoeuvring, the rear will swing out. Therefore, always make sure that there is enough space around the forklift to maneuver safely.

other

obstacles affect the stability of the forklift. When this stability is seriously disturbed, the charge can fall off the spoons.



Caution!: Unevenness in the ground can disrupt the stability of the forklift and creates the danger that the load will fall off the forks.

When driving with or without load, never make a sharp turn at high speed. The forklift can lose its stability and tip over.



Caution!: Making a sharp turn at high speed with or without a load can affect the stability of the forklift. Tipping over the forklift can result in property damage and injury to you or others.

5.6 Mast and fork controls

As standard, the forklift is equipped with two hydraulic functions, the first to raise the load and the second to tilt the mast. In most cases, the machine will also be equipped with a side-shift function. In addition, a 4th or even a 5th hydraulic function may be fitted. The various functions are all operated by means of a valve block located on the right side of the driver.



1. Lifting and lowering
2. Setting the inclination angle
3. Side-shift
4. Optional function

Figure 5.11 | Hydraulic functions

5.7 Loading and unloading of goods



Caution!: Always make sure that the load is properly stacked and balanced. Falling cargo may result in injury to yourself or others.

1. Place the forklift right in front of the goods to be unloaded. Make sure that the load is evenly distributed among the forks.
2. Make sure the mast doesn't lean backwards or forwards, then bring the forks to the correct height.
3. Drive forward slowly until the load meets the welding rack. Then lift the load 5 to 10 cm. It may be that the load is not completely on the edge of the trailer or from the warehouse rack. In this case, insert the forks as far as possible and then lift them up a bit.



Caution!: Make sure to lift the load so that it does not tip forward. Therefore, always make sure that the forks are inserted at least $\frac{2}{3}$ – $\frac{3}{4}$ into the load (depending on the weight of the load).

4. Then drive back a little bit until the load is positioned in such a way that it can be taken entirely on the forks. Put the load down again and then insert the forks all the way into the load until it meets the welding rack and lift the load up 5 to 10 cm.
5. Lower the forks with load to just above the ground (think 10 to 20 cm).
6. Incline the mast backwards to the maximum and drive backwards carefully.
7. Drive the load to the desired location.



Caution!: Brake and steer with extreme caution with load on the forks. Sudden changes in speed and direction can lead to a falling load.

8. Once you have arrived at the desired location, make sure that the forks are in a vertical position so that the load is parallel to the unloading area.
9. Lower the load to about 5 cm above the unloading area. Drive slowly to the front and put the load down 10 to 20 cm in front of the final location.
10. Then drive the same 10 to 20 cm backwards and lift the load up again about 5 cm and finally put it down in the correct position (the latter is to prevent that, if the forks protrude from the load at the front, the ends of the forks cause damage to obstacles in front of the forklift that cannot be seen by the forklift driver due to the presence of cargo on the forks).

11. The Prins forklift is equipped with detachable counterweight plates. If you drive with low loads, various plates can be removed depending on the size of the load in order to reduce the weight of the machine. This can provide advantages with regard to off-road capability or with regard to rutting on the surface. If this is not important, always make sure that the maximum number of counterweight plates is present.

Procedure:

- 1 Determine the load to be transported
- 2 Refer to the load table in Figure 5.12 for the minimum amount of counterweight plates that must be present.

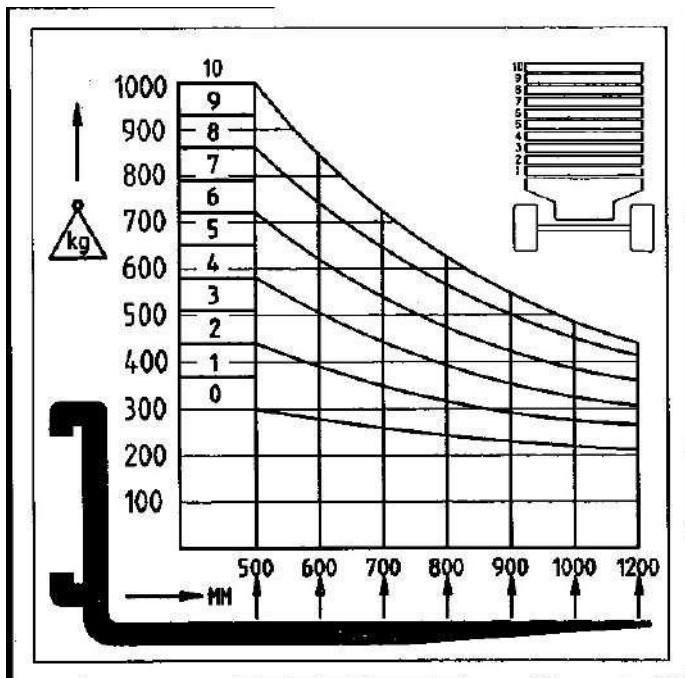


Figure 5.12 | Load table

- 1 Apply this number of plates. Always insert or remove the plates with two people.
- 2 One pair of weights of a Prins Trike is equal to the weight of one ballast plate of a Prins Sprinter, numbers (0 to 10) mentioned in the load table concern the number of ballast plates Prins Sprinter or number of sets of two ballast plates Prins Trike.
- 3 If the correct number of plates has been fitted, the lock, see Figure 5.13 (Sprinter) and/or Figure 5.14 (Trike), must be reattached.



Figure 5.13 | Securing ballast plates – Prins Sprinter



Figure 5.14 | Securing ballast plates – Prins Trike



Caution!: If too few ballast plates are installed, it is extremely dangerous to work with the machine. When in doubt, **ALWAYS** place the full number of ballast plates on the forklift and apply the lock.



Please note!: On the Prins Trike, the counterweights are placed, under the rear bonnet, on both the left and right sides. The counterweights must always be removed or placed in pairs, one left and one right. One pair of weights of a Trike is equal to the weight of one ballast plate of a Sprinter. Table 5.12 should be consulted. When in doubt, **ALWAYS** place the full number of ballast plates on the forklift and apply the lock.

5.8 Use of the towbar (Prins Sprinter only)

As standard, the Sprinter is equipped with a tow bar to tow other vehicles. Always make sure that the vehicle to be towed can be towed safely. Also make sure that the locking pin is always properly attached.



Caution!: Always make sure that the locking pin of the towbar is properly attached! Loosening vehicles can cause injury and/or damage.

The maximum load of the towbar is 500kg. When the towbar is subjected to heavier loads, there is a risk of fractures in the structure that can result in damage to the vehicle.

6. MAINTENANCE OF THE FORKLIFT TRUCK

It is very important for your forklift to be well maintained. A well-maintained forklift will last considerably longer. Therefore, Prins strongly recommends that you carry out the matters that will be covered in this manual strictly and with care.

This manual will give indications when these actions should be performed. The prescribed times, indicated in hours, are the operating hours of the forklift, which can be found on the hour meter on the dashboard. The indications given are the times when used under normal conditions. Under harsh or extreme conditions, it may be necessary to perform certain activities more often.



Caution!: Only carry out the operations covered in this manual if you are aware of the work procedure to be carried out. And are aware of the safety regulations and the dangers that can arise if you ignore them. If you are not or too little aware of the regulations, have your dealer or the Prins technical department carry out the work.

6.1 The drive

The Prins Sprinter & Prins Trike are equipped with a so-called hydrostatic drive. This means that the drive is done by means of hydraulic oil, by means of a pump and a motor. For proper functioning and long life, it is extremely important that the oil is kept in top condition. Please follow the instructions below carefully. Failure to monitor or contaminate the system can lead to serious shortening of the lifespan or expensive repairs.

It is expressly advised to have work on the hydraulic system carried out by Prins alone.

During break-in time (first 50 hours):

1. After every 10 hours of operating time, check the oil level of the transmission with the oil dipstick (see No. 1 in Figure 6.1). Top up with oil if necessary (see No. 2 in Figure 6.1).



1. Oil level stick
2. Oil filler opening
3. Oil filter

Figure 6.1 | Hydraulic oil



Caution!: Perform the check when the engine is idling and the oil is at working temperature.

2. The transmission should be checked regularly for oil leaks.

After entry time (after 50 hours):

- Replace oil filter (see No. 3 in Figure 6.1).

Periodically:

Every 200 hours:

- Check the transmission oil level and top up if necessary.

Every 500 hours:

- Replace oil filter.

Every 1000 hours of runtime:

- Change the oil in the transmission.



Please note! If the duration is less than 1000 hours on an annual basis, the oil change must take place every two years.



Caution!: When working on the hydraulic system or checking the oil level, absolutely no dirt must enter the tank or oil. The smallest dirt particle can cause damage.

Oil change data

Contents

Tank : 70 litres

6.2 The engine

6.2.1 Engine

The engine of your new Prins forklift truck also needs a break-in time. This takes about 50 hours. Here are the actions necessary to keep your forklift's engine in optimal condition and prevent problems. On page 32 you will find a table that lists all actions related to the maintenance of the forklift.

During break-in time (first 50 hours):

1. Regularly check the oil level in the crankcase of the engine with the oil dipstick. If necessary, top up with oil (even after the break-in time).



Caution!: Carry out the check before starting the engine or at least 5 minutes after switching off the engine.

2. The engine should be checked regularly for oil leaks.

After entry time (after 50 hours):

1. Replace the oil filter.
2. Replace the engine oil.

Replacing the oil filter:

- Remove the old filter (see Figure 6.2) using a filter wrench. o Apply a film of oil to the gasket of the new filter. o Tighten the filter manually.
- After the filter is installed, the oil level generally drops a little. First, check that the filter is not leaking, then check the oil level and top up with oil if necessary.

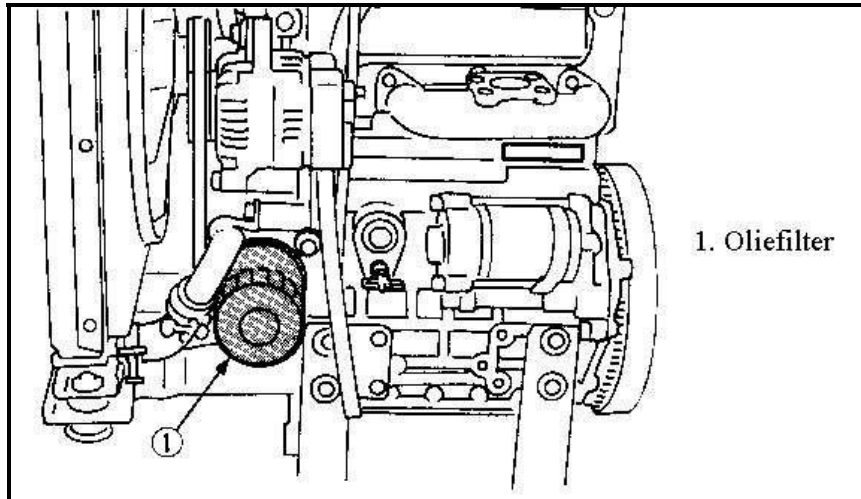


Figure 6.2 | Oil filter, Sprinter & Trike with diesel engine

3. Change the oil. First drain the old oil from the crankcase through the drain at the bottom of the engine.

Periodically:

Every 200 hours of runtime:

1. Replace the oil filter.
2. Change the oil.

Oil change dataContents

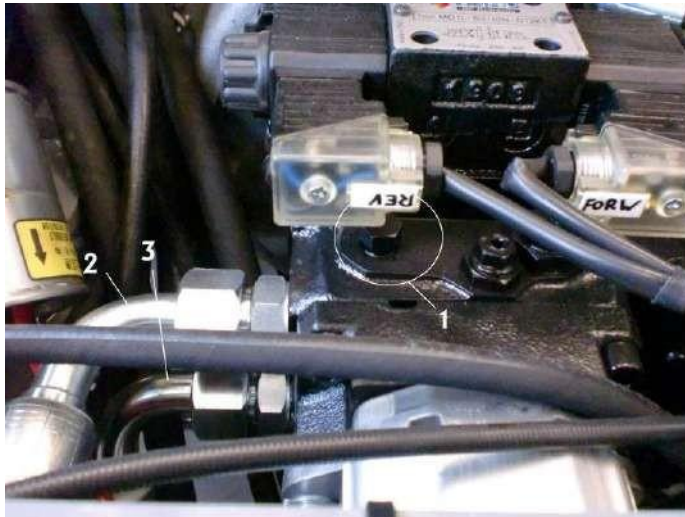
Crankcase: 4 litres

Oil

ELF Multi-performance 3C 15W40 or
Corresponding to specifications MIL-L-2104C or
API rating, CD level, or higher.

6.2.2 Sleep mode

If you want to use the tow position function, loosen the bolt on top of the hydraulic pump a few turns so that lines 2 and 3 are connected to each other and the wheels are free. The above operation must be carried out with the engine running.



1. Bolt for function drag position
2. Leadership

3. Leaders hip

Figure 6.3 | Bolt for drag position

6.2.3 Cooling water system

It is important that the coolant level is at the right level. If this is not the case, the motor will overheat, leading to damage. Therefore, check the coolant level every day. To do this, perform the following operations.



Caution!: Always wait until the engine has cooled down before opening the coolant reservoir.

1. Carefully open the filling opening of the cooling water system slightly and first let air escape from any overpressure.'

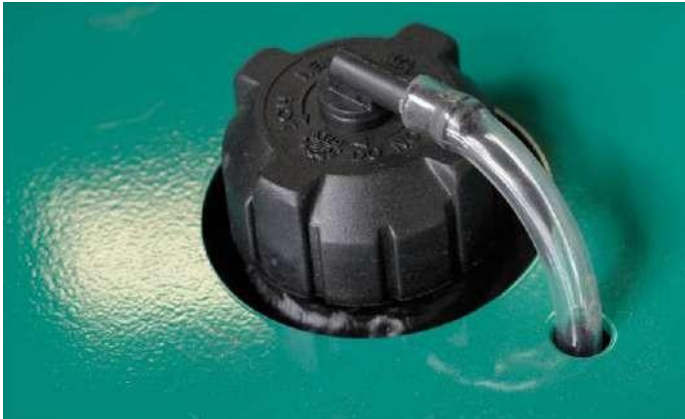


Figure 6.4 | cooling water filling opening

2. Then remove the filler cap completely and check whether the coolant comes up to the indicated level, this is about halfway through the tank.
3. If necessary, top up coolant.
4. Tighten the filler cap properly after refilling coolant.

Coolant

Prins advises, ELF COOLELF.

The cooling water is cooled by the air flowing through the radiator. Check regularly, at least once a week, whether the air passage of the radiator is sufficient. Especially when working in an environment with a lot of dirt and dust, the radiator can become clogged and the cooling capacity will seriously decrease. The radiator can be blown out with a compressed air.

6.2.4 Fuel filter for Sprinter & Trike with diesel engine

The fuel filter should be replaced at least every 200 hours or at least once a year. The fuel filter is located inside the engine compartment.

Replacing the fuel filter:

- Remove the old filter using a filter wrench. o Apply a film of fuel to the gasket of the new filter.
- Fill the filter with clean fuel.
- Tighten the filter manually. o Bleed the system according to the procedure below.

Venting the fuel system

To avoid damage to the engine or its components, it is sometimes necessary to bleed the fuel system.



Caution!: Never bleed the fuel system when the engine is still warm. This may create a risk of explosion or fire. Toxic fumes can also be released by evaporating fuel.

When is (can) venting necessary?

- If one or more fuel system pipes have been loose
- If the fuel tank has been completely empty o If the engine has not been in operation for a long time o If it.
- fuel filter has been replaced.

The venting process goes as follows:

1. Fill the fuel tank with fuel.
2. Loosen the bleed bolt (see Figure 6.5) on the top of the fuel filter.
3. Start the engine and wait for fuel to seep through the vents and retighten the vents.
4. Start the engine again until it starts, in the beginning it may run irregularly but this will disappear after a short time.
5. Never run the starter motor for more than 20 seconds at a time during this bleeding period. If the engine has not yet started, wait half a minute before operating the starter motor again.



Figure 6.5 | Fuel filter

6.2.5 Air filter

The air filter is used to filter the air sucked in for the engine. This is a dry filter that is not suitable for use with oil. The filter should be replaced once a year or every 600 hours. In dirty conditions with a lot of dust, it may be necessary to shorten this period. It is permissible to blow the filter clean if necessary. However, it must always blow from the inside to the outside with a maximum air pressure of 5 bar.



Note!: It is extremely important that when replacing the filter element in the filter housing, the filter element is properly secured. If it vibrates loose while the engine is running, dust will get into the engine. This will result in damage to the engine (see Figure 6.1 and Figure 6.2).

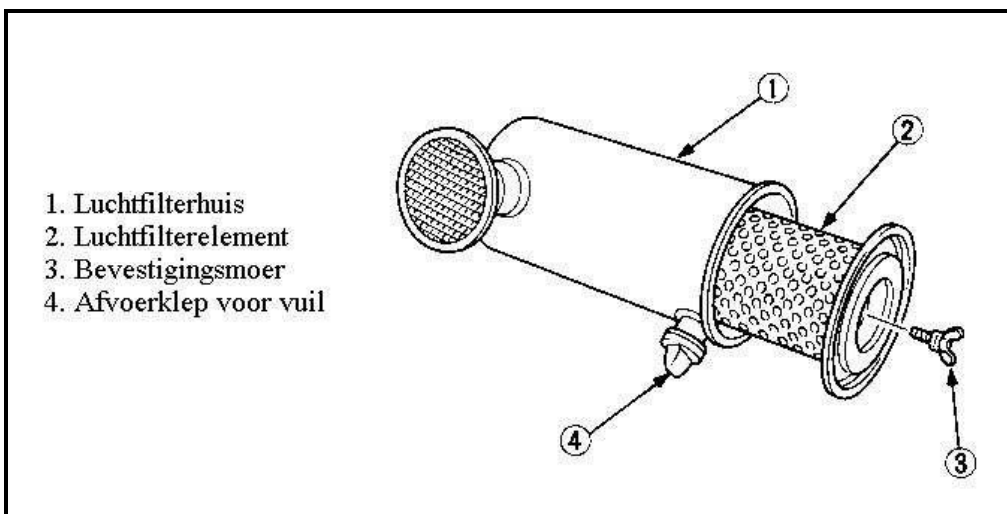


Figure 6.1 | Air filter



Figure 6.2 | Hose down air filter element

6.2.6 Battery

Electrical energy is needed for the starter motor of the forklift, among other things. This is provided by the battery which in turn is charged by the alternator, which is driven via the output shaft of the engine. The battery may not work properly for a variety of reasons. One of the causes may be that the connection of the wiring to the battery is not good. This can be due to rust, for example. Therefore, always grease the piles with, for example, petroleum jelly to prevent rust.

Another cause may be that the level of battery acid in the battery is too low. To remedy this, you need to top up the battery with distilled water. For that the following actions.



Caution!: Do not touch the electrolyte of the battery! The diluted sulfuric acid solution burns the skin and makes holes in clothing. In the event of an accident, rinse immediately with running tap water.

1. Remove the protective cover from the battery.
2. Next, first loosen the MIN pole.
3. Then loosen the PLUS pole.
4. Turn the filler opening and check the liquid level and top it up if necessary (see Figure 6.3 and Figure 6.4).
5. When reconnecting the battery, the PLUS terminal must be fixed first and then the MIN terminal.

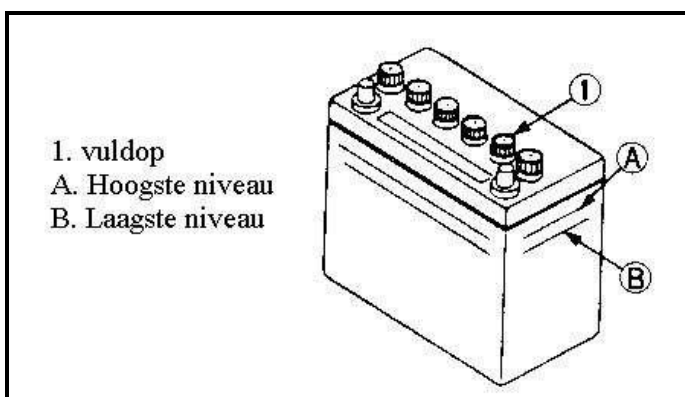


Figure 6.3 | Battery

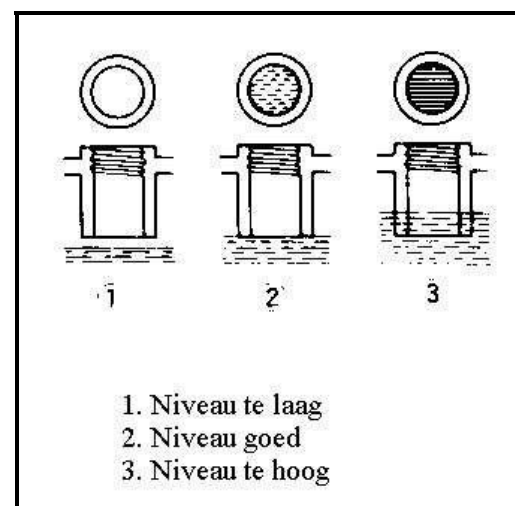


Figure 6.4 | Battery acid level

6.2.7 Fan belt

The fan belt or V-belt takes care of the drive of the fan and the alternator. If it is not sufficiently tense, it will slip. As a result, the fan, which cools the engine block, cannot function properly. This causes the engine to overheat. The same applies to the alternator. This cannot function properly either, so the battery does not get sufficiently charged. This can cause problems when starting, among other things. Therefore, always make sure that the V-belt is properly tensioned. This is pretty easy to check.



Caution!: Make sure the motor is off at all times when checking the Vsbelt.

1. Take the piece of V-belt between the alternator and the crankshaft. Press your finger on the center of the belt. The deviation of the V-belt from the resting position must not be less than 7 mm and not more than 9 mm.
2. If this is the case, unscrew the two mounting bolts of the alternator.
3. Position the alternator so that the V-belt has the correct tension and screw the bolts back on.

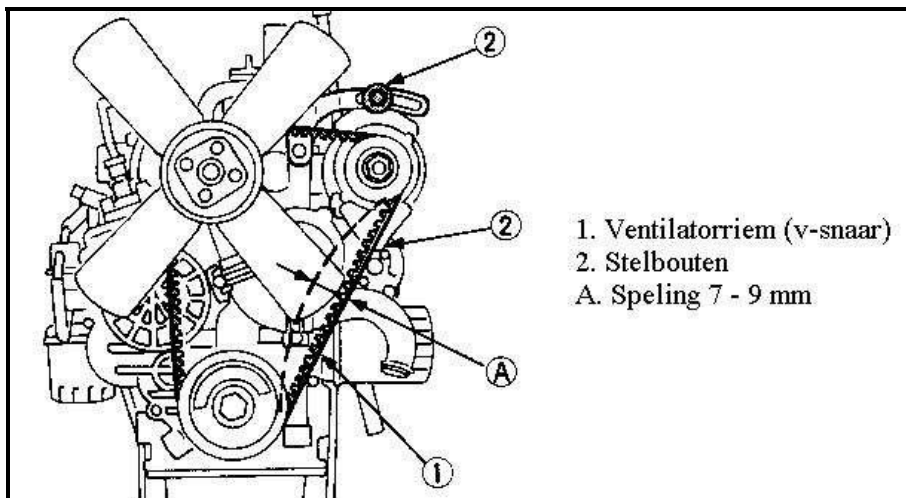


Figure 6.5 | V-belt tensioning

6.3 Other maintenance

Lubrication

The following components should be lubricated at least once a month:

- Side-shift cylinder
- Steering cylinder
- Axle tilter
- Tilt cylinders

Tires

The pressure of the tyres should be checked every week. The pressure in the tires must be:

- Driven (front) wheels : 3.0 bar
- Steering (rear) wheels : 2.5 bar

The valves are located in the rim of the rim. If the machine is equipped with the twin air rims – optional on Prins Sprinter, mandatory on Prins Trike – then the valve of the inner rim is located at the rear (the side of the chassis) in the edge of the rim. Raise the mast to maximum height and check from the front to see if the valve is accessible. If necessary, drive the machine forward or backward a little to gain better access to this valve.



Figure 6.6 | Valve outside rim



Figure 6.7 | Valve inside rim



Note!: The **outer** wheel of twin tires at all times with at least 0.5 bar less pressure difference compared to **the inside** wheel.

6.4 Electrical installation

The machine is equipped with a 12V electrical installation with alternator. Apart from what is described for the battery, the electrical installation is in principle maintenance-free. However, dirt and moisture can affect the functioning of the installation. When cleaning the machine, make sure that a full jet of water is never directed at electrical components. Also, make sure that electrical components come into contact with dirt and moisture as little as possible.

The installation is equipped with a fuse box that is located to the right of the steering column.

If a malfunction occurs, always check first that the fuses are not blown.

Always call in a specialist for repairs to the electrical installation.



1. Connection 15
2. Dashboard + Selector/Parking brake/High and low gear
3. Accumulator
4. Indicators
5. Connection 30
6. Horn
7. Front work light / position light
8. Work light rear / low beam
9. Low beam
10. High beam

Figure 6.8 | Fuses

7. OVERVIEW OF MAINTENANCE INTERVALS

Below, in Table 7.1 and Table 7.2 you will find an overview of the actions to be carried out for maintenance of your forklift truck.

Table 7.1 | The hydraulic drive

Operation	Entry time First 50 hours	Every 500 hours	Every 1000 hours	Every year	Every 2 years
Oil change			X		X
Replacing filters	X	X		X	

Daily oil levels and system check for leaks.

Table 7.2 | The engine

Operation	Entry time First 50 hours	For every use	Every 100 hours	Every 200 hours	Every 600 hours	Every year
Oil change	After 50 hours			X		X
Oil filter replacement	After 50 hours			X		X
Replace air filter 1)					X	X
Check fan tension – belt			X			
Fan belt replacement				X		
Check battery acid level			X			
Check coolant and engine oil levels		X				
Replacing fuel filters 2)				X		X

Daily oil levels

- 1) Earlier, if necessary
- 2) Coarse and fine filter

8. FAILURE ANALYSIS

8.1 Vehicle

	Possible cause	Solution
Front/rear lights fail	. Fuse blown	Check fuse, see Figure 6.8.
Forklift does not drive away after pressing the inching pedal	. Direction selector switch not engaged.	Check that the direction selector switch is switched on.
	. Cable gets stuck	Check that the cable of the inching pedal is coming back properly.
Forklift does not come good up to speed	. Hydraulic oil not up to standard	Check that the hydraulic oil is at the correct level.

8.2 Engine

	Possible cause	Solution
The engine does not want to start		
	. No fuel	Replenish the fuel tank
	. Air in the fuel system	Venting
	. Water in the fuel system	Replace fuel and repair or replace the fuel system
	. Fuel line clogged	Clean fuel line
	. Fuel filter clogged	Clean or replace filter
	. Excessive viscosity of the fuel or engine oil at low temperature	Use prescription fuel or engine oil
	. Fuel with too low a cetane content.	Use prescribed fuel
	. Fuel leak due to loose Nut tightening injection lines	
	. Wrong injection timing	Adjust
	. Fuel camshaft worn	Replace
	. Atomizer clogged	Atomizer cleaning
	. Injection pump not working properly	Repair or replace injection pump
	. Compression leak in the cylinder	Head gasket replacement, tightening Cylinder head bolt, glow plug and injector holder

	· Wrong valve timing	Improve or replace timing gear
	· Piston rings and liner worn	Replace
	· Too much valve clearance	Adjust
Starter not working	· Battery is empty	Charges the battery
	· Starter not functioning	Repair or replace
	· Switch does not work	Repair or replace
	· Wiring is not connected properly	Connecting Wiring
Engine does not run regularly	· Fuel filter clogged or dirty	Clean or replace
	· Air filter clogged	Clean or replace

	· Fuel leak due to loose injection lines	Tighten nut
	· Injection pump does not function properly	Repair or replace
	· Wrong nozzle opening pressure	Adjust
	· Atomizer defective or clogged	Repair or replace
	· Regulator does not work properly	Repair
White or blue exhaust fumes	· Surplus of engine oil	Reduce to prescribed level
	· Piston rings and liner worn or defective	Repair or replace
Gray or black exhaust fumes	· Wrong injection timing	Adjust
	· Too much load	Reduce the load
	· Too low fuel level	Fill up to the prescribed level
	· Fuel filter clogged	Clean or replace
	· Air filter clogged	Clean or replace
Too low output power	· Wrong injection timing	Adjust
	· Uneven fuel injection	Repair or replace the injection pump
	· Too low atomizer pressure	Repair or replace the atomizer
	· Compression leak	Replacing head gasket, tightening cylinder head bolt, glow plug or injector holder
Excessive lubricating oil consumption	· Piston ring openings are facing the same direction	Change the direction
	· Oil circuit worn or defective	Replace
	· Piston ring groove worn	Replace the piston
	· Valve stem and valve guide worn	Replace

Fuel mixed with lubricating oil	· Injection pump piston worn	Replace the pump element or the entire pump
	· The injection pump is defective	Replace
Water mixed with lubricating oil	· Head gasket is defective	Replace
	· Cylinder block or cylinder head broken	Replace
Low oil pressure	· Too little engine oil	Refill
	· Clogged oil filter	Filter cleaning
	· Too much crankshaft bearing bearing play	Replace
	· Too much bearing clearance of the connecting rod bearing	Replace
	· Too much bearing clearance of the rocker arm shaft bearing	Replace
	· Oil passage clogged	Cleaning
	· Wrong type of oil	Use of prescription oil
	· Oil pump defective	Repair or replace
High oil pressure	· Wrong type of oil	Use of prescription oil
Engine overheating	· Too little engine oil	Topping up engine oil
	· V-belt broken or incorrectly tensioned	Replace or tension properly
	· Too little cooling water	Refill cooling water
	· Radiator and radiator rib guard clogged	Cleaning
	· Radiator rusted inside	Clean or replace
	· Cooling water supply rusted	Clean or replace
	· Radiator cover defective	Replace
	· Too much load	Reduce Load
	· Head gasket defective	Replace
	· Wrong injection timing	Adjust
	· Unsuitable fuel used (mixed with petrol)	Use prescribed fuel
Fast discharge of the battery		
	· Too little battery acid	Refilling distilled water and recharging the battery
	· Slipping V-belt	V-belt tensioning or replacing
	· Wiring is not connected properly	Connecting Wiring
	· Voltage regulator defective	Replace
	· Alternator defective	Replace

	Battery faulty	Replace
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9. TECHNICAL SPECIFICATIONS SPRINTER & TRIKE

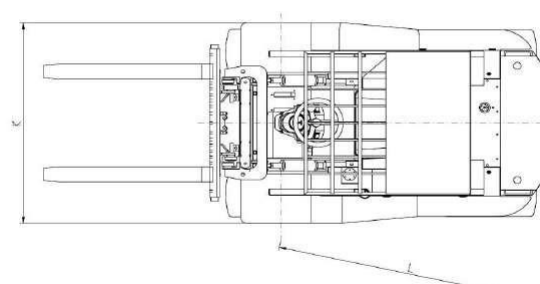
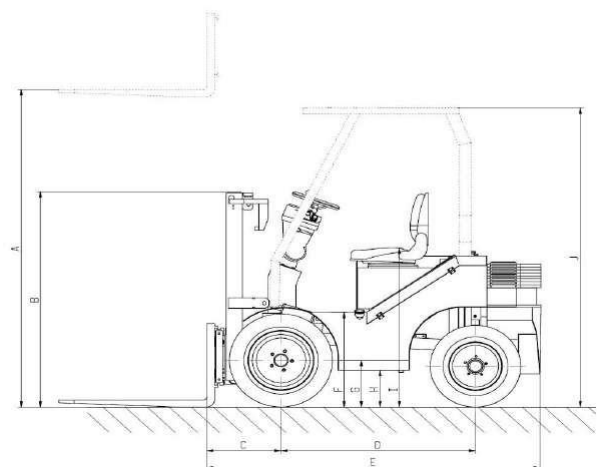
Table 9.1 | Technical specifications

Model		Sprinter		Trike	
Type		Diesel	LPG	Diesel	LPG
Lifting capacity	kg	1000	1000	1000	1000
Weight (unladen) without ballast plates	kg	2080	2080	1940	1940
Weight (unladen) with ballast plates	kg	1480	1480	1660	1660
Load center of gravity	mm	500		500	
Mast inclination front/rear		7°/7°		7°/7°	
Carriage type		FEM 2b		FEM 2b	
Transmission		Hydrostatic		Hydrostatic	
Fuel		Diesel	Gas	Diesel	Gas
Engine brand		Kubota	Kubota	Kubota	Kubota
Engine model		D1105E	DF972ES	D1105E	DF972ES
Engine power	kW	19	22	19	22
Driving speed	km/h	26	26	26	26

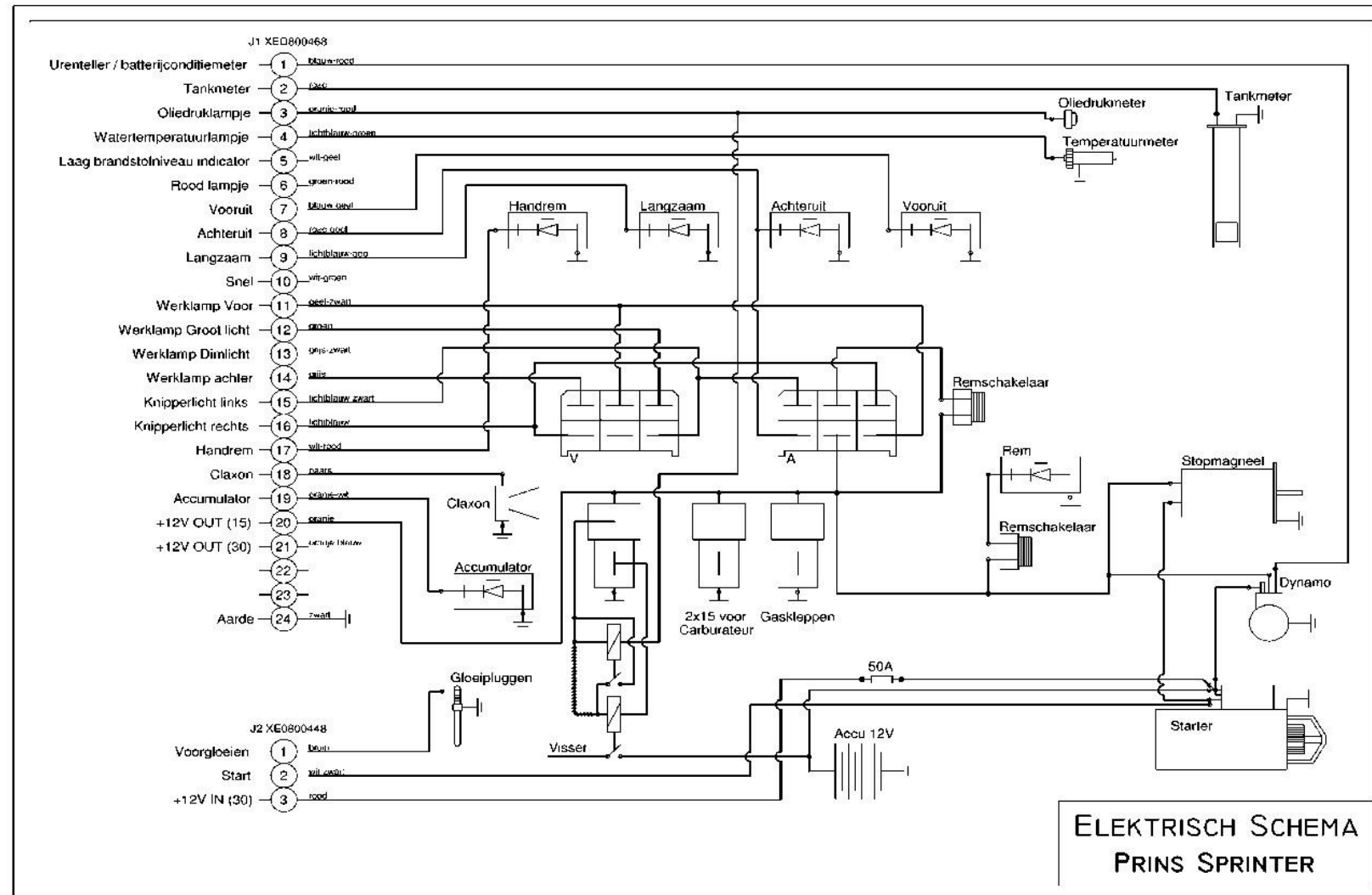
Table 9.2 |

Model		Sprinter	Trike
Front tires		295/50R15	295/50R15
Rear tires		24x13-12	24x13-12
A	mm	1780	1780
B	mm	1480	1480
C	mm	480	480
D	mm	1250	1600
E	mm	2150	2360
F	mm	680	680
G	mm	340	360
H	mm	260	260
I	mm	1170	1170
J	mm	2140	2140
K	mm	1295	1295
L	mm	2600	2280

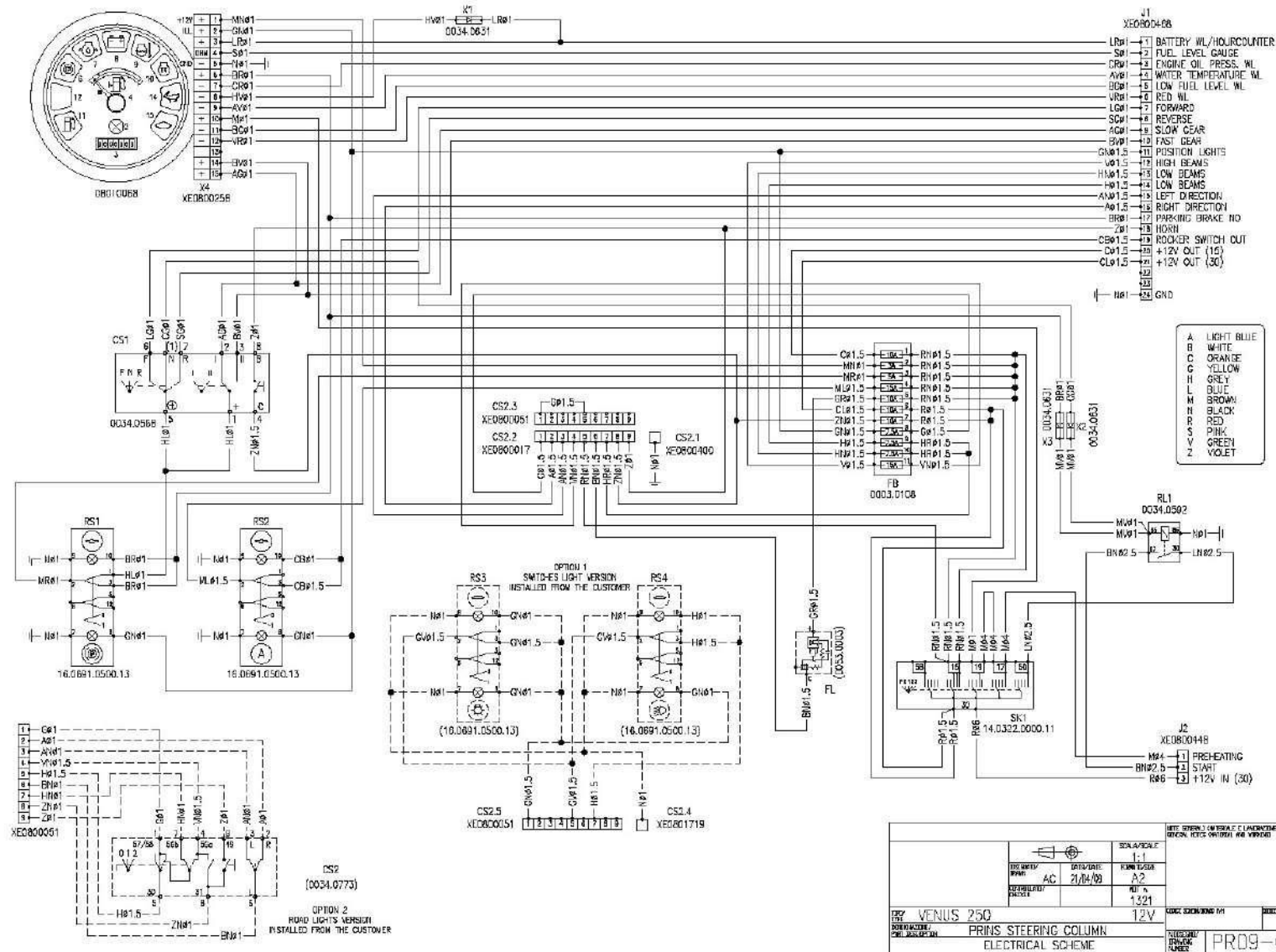
Sizing



10 Electrical Diagram



Schedule 10.1 | Wiring harness electrical diagram



Schedule 10.2 | Electrical diagram dashboard