AHCON®

USER MANUAL

WHEEL TROLLEY TOWER LIFT 2.0/2.1

Declaration of Conformity

FLEX1ONE
Ladelundvej 37-39
DK - 6650 Brørup

Hereby declares that the following product:

CE

Type: WHEEL TROLLEY TOWER LIFT 2.0/2.1

Article nos.: TL2.0 / TL2.0+ / TL2.0L / TL2.0L+ / TL2.1 TL2.1+ / TL2.1L / TL2.1L+

Product no.:

Production year:

have been produced in accordance with Council Directive:

2006/42/EC 17. May 2006
Amended by the following:
98/37EEC

have been produced in accordance with the following standards:

DS/EN 349 + A1: 2010
DS/EN ISO 12100: 2011m
DS/EN ISO 13857: 2008
DS/EN 60204-1
DS/EN ISO 13850

Date: 21/02/2019

Name: Bo Møller Signature:

Manufacturer details

Article nos.: TL2.0 / TL2.0+ / TL2.0L / TL2.0L+ / TL2.1 / TL2.1+ / TL2.1L / TL2.1L+

Type: WHEEL TROLLEY TOWER LIFT 2.0/2.1

Use:

Max. tyre diameter:	680/750 mm
Max. rim width:	10.5”
Max. load:	120/180 Kg

Area of use: Used as an ergonomically correct wheel lifter for storing car wheels in high racks.

Manufacturer:

FLEX1ONE
Ladelundvej 37-39
DK – 6650 Brørup
+45 76152500
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Distributor:

Thank you for your purchase of an AHCON quality product. Before putting the equipment into use, it is important that you familiarise yourself with the how it should be used, as well as with all its safety features and requirements. It is important that all its safety requirements are complied with in order to protect the user and others in and around the area of the *wheel trolley tower lift*.

This manual contains all relevant information to ensure that the user of the lift and others in the vicinity are able to comply with and use the lift safely.
This manual applies to several different types of lift and there may be places where the description and/or illustrations are not quite the same as the lift you have chosen. All types are described in this manual.

Note: It is important to comply with all relevant local laws and regulations before and during use of the lift.

Note: If the lift is sold on, it is important that this manual accompanies the machine to the next owner. This manual is of importance in ensuring proper and safe use of the machine.

WARNINGS!

Safety precautions

WHEEL TROLLEY TOWER LIFT 2.0/2.1 may only be used by trained personnel.

WHEEL TROLLEY TOWER LIFT 2.0/2.1 may only be used for lifting wheels and to a total combined weight of 300 KG. (Operator and tyre.)

AHCON disclaims all responsibility for any malfunction or fault arising from work procedures that are not in accordance with AHCON's instructions.

WARNING: Always comply with warning signs, otherwise there is a risk of personal injury!

NOTE: It is important to observe the maintenance instructions: if maintenance is not carried out correctly, there is a risk of damage to the lift.

Overview of abbreviations and meaning.

Abbreviation	mm	m	s	Km/s	Kg	Lb
Meaning	millimetre	metre	seconds	Kilometre(s)	kilogram	pounds
Abbreviation	%	in	min	Ah	Kw	V
Meaning	Per cent	Inches	Minutes	ampere-hour	kilowatt	volt

Crushing hazard!

Pictograms and warning labels fitted by the manufacturer must not be removed!
Damaged or illegible signs and pictograms must be replaced before use.

The majority of the materials used for the lift are made of recyclable steel. Waste resulting from maintenance, cleaning and even scrapping must be recycled and stored according to local regulations and laws, and must be carried out by authorised companies. When recycling, a special focus must be placed on substances harmful to health such as batteries, hydraulic oil/waste oil and electronic waste.

If there is a need for continuous improvement of the lift, the manufacturer reserves the right to alter its own design and specifications without prior notice. The manufacturer may be contacted for updated product specifications. All parameters and information in this manual are valid for the delivery date of the lift.

WARNING: In order to avoid the risk of injury to the operator or others, the following safety measures must be observed.

Lifts and other lifting gear can pose a safety risk if they are not serviced adequately, or not at all. For this reason, it is important that service is carried out at the correct intervals and by trained and authorised personnel.

Maintenance and inspection shall be in accordance with the information that follows.

1. The described procedure for inspection, lubrication and maintenance of the system must be observed.
2. Only authorised and trained persons may inspect, maintain and repair the lift.
3. Before starting the machine.
    a. Visually inspect the lift for cracks, dents and damage.
    b. Visually inspect the chains, cylinder and other lifting components for wear, damage and leakage.
    c. Switch on the machine and check that the power supply, steering, speed, brake and alarm function all show normal operation in the display, and with no error codes.
4. Before leaving the machine.
    a. Do **NOT** park the lift on a slope.
    b. The basket and forks must be placed in the lowest possible position.
    c. Press the emergency stop button.
    d. Turn the key to OFF.
5. The lift should not be used in very dirty, contentious or corrosive environments. The lift must not be used in areas where there is a risk of fire or explosion.
6. Regularly check the tyres, brakes, power supply, lift, hydraulics and all electrical functions to ensure safe use of the lift.
7. Warning signs, type plates and instructions for use must always be in a clear and legible condition. Damaged or illegible signs must be replaced before the lift can be used.
8. All changes that may affect load capacity, stability and/or safe use may only be implemented following receipt of the manufacturer's written approval. Where such an approval has been received together with a change of name plate, signage and identification number, the user and maintenance manual must be updated to reflect said changes.

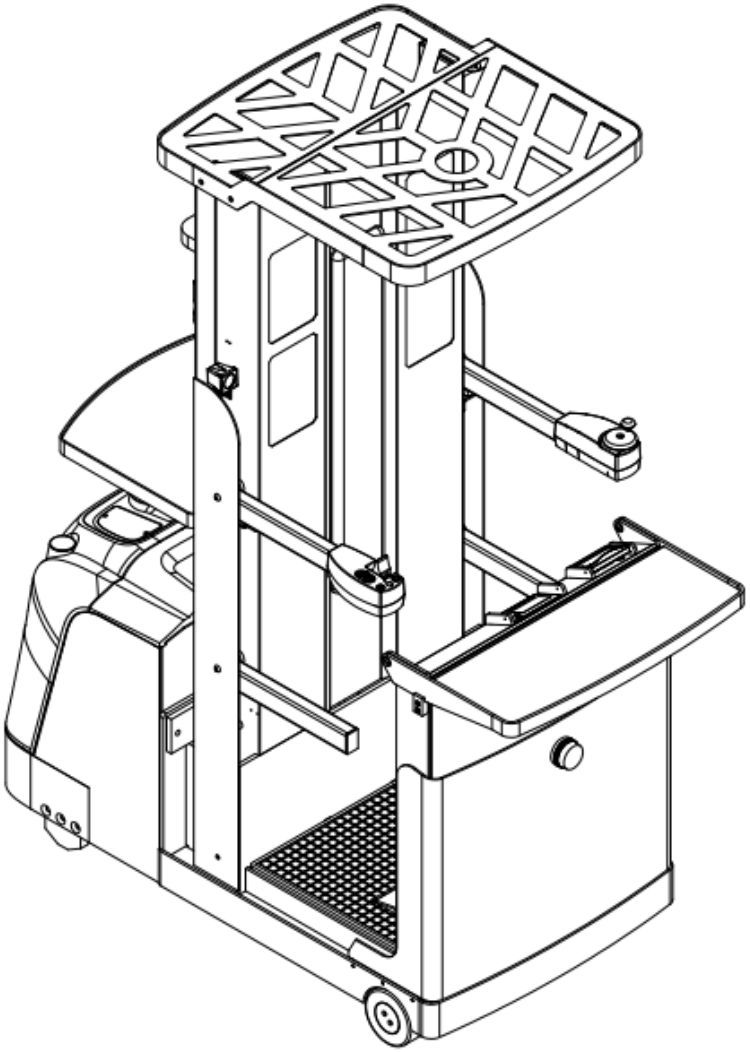
9. Correct use of the lift in accordance with the guidelines in this manual, as well as local and national regulations, must be observed. The lift described in this manual is an industrial machine intended for handling, lifting and stacking tyres. It needs to be used and maintained accordingly. Any other use is outside the scope of application and is not permitted, since being outside the scope of application it may well result in injury to persons, damage to equipment or to the building. It is especially important that the lift is not overloaded and that the maximum load signs are respected. It is important that the lift is not loaded unevenly: always ensure that the load is placed in the middle of the lift.

Contents

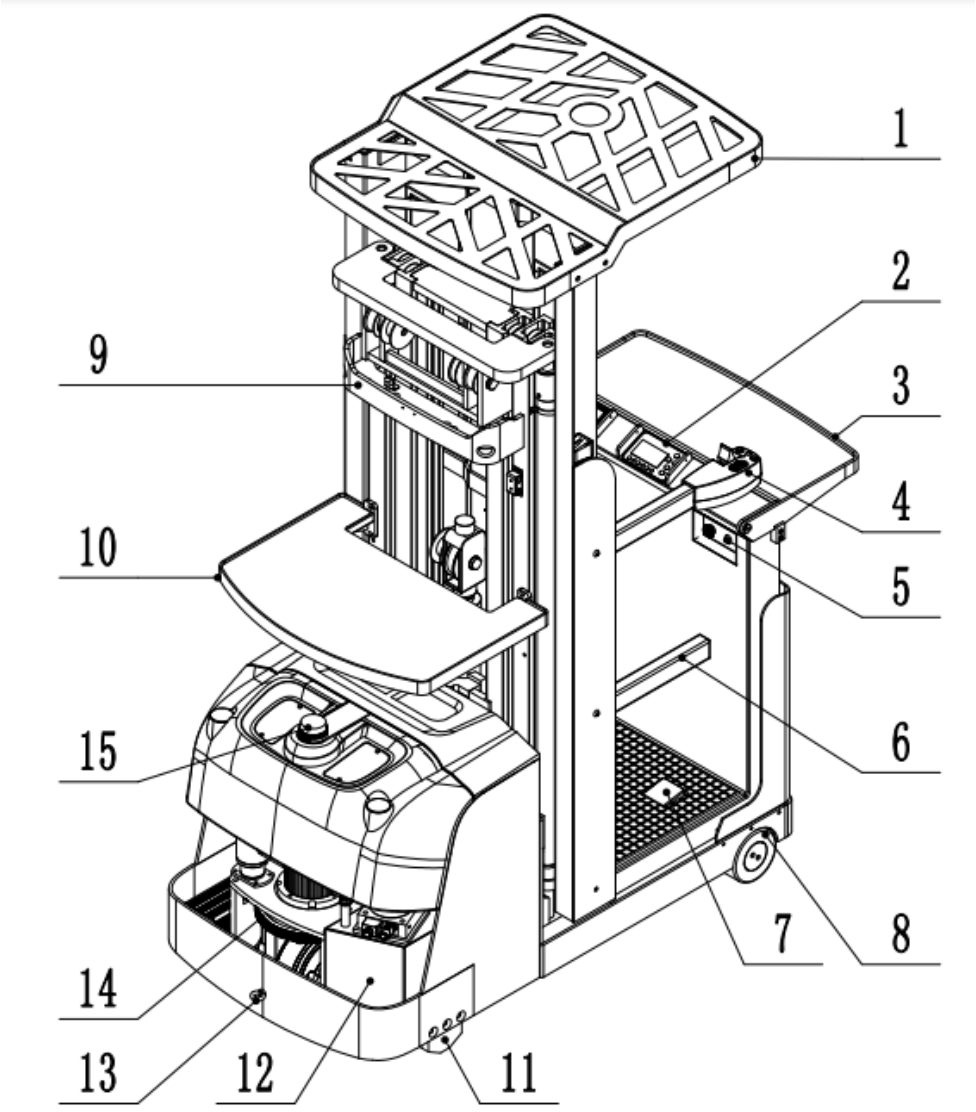
1. Introduction

1.1 Applications:

The lift described in this manual is an industrial lift used to transport lifted goods. It is forbidden to use the lift in areas in which the clearance is lower than the top of the lift or the top of the goods.
The lift may not be used in public areas.
The lift may only be used on surfaces that have sufficient bearing capacity to absorb the total weight of the lift, the load and the operator. The surface must be even and clean.



1.2 Overview



1. **Top rack:** Available in different configurations depending on the model.
2. **Display:** All relevant information is available on the display: the steering wheel position, lift status, error codes (if any), battery capacity, direction of travel, etc.
3. **Unloading tray:** Not available for tyre lifting machines.
4. **Control buttons:** Control buttons for forward and backward, turning handle for steering, horn, light and other functions.
5. **Emergency stop:** Press emergency stop if a dangerous situation arises. The emergency stop closes down all electrical functions.
6. **Safety arms:** The lift cannot be operated if the arms are not folded down.
7. **Dead man's control:** To operate the lift, the foot pedal must be activated.
8. **Driving wheels:** High-strength wheels, suitable for hard and flat surfaces.
9. **Frame construction:** Frame construction in high-strength steel.
10. **Shelf:** Available in different configurations depending on the model.

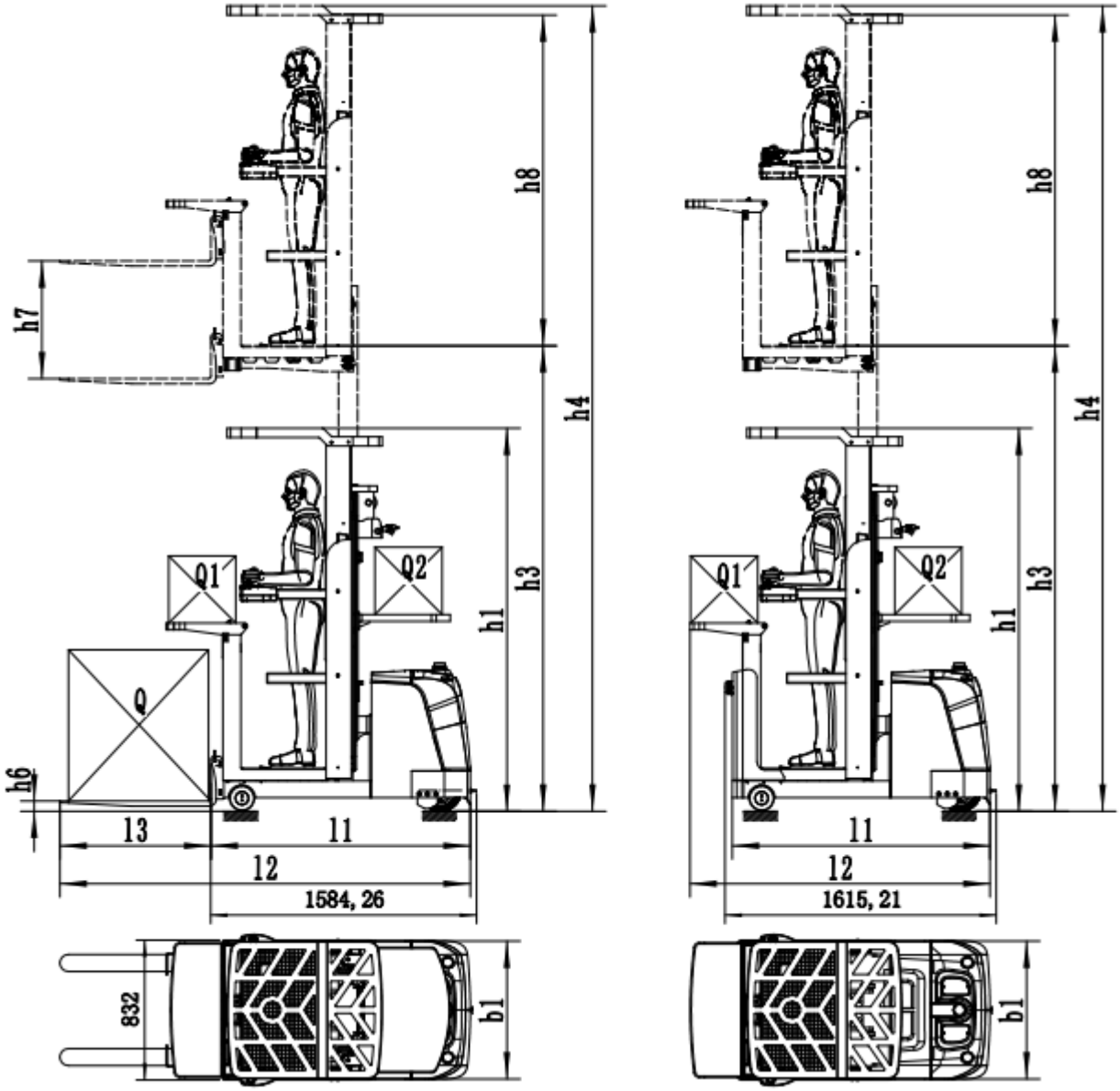
11. **Anti-tip block:** Fittings that ensure that the lift does not tip over, safety fittings that must be inspected regularly.
12. **Hydraulic station:** High pressure unit to drive the hydraulic system.
13. **Pull ring:** The lift can be pulled along using this ring.
14. **Drive unit:** The unit is mounted on the frame in the lift. The electronic traction controller ensures smooth motor start-up and provides a smooth start and acceleration.
15. **Warning light:** Warns people in the vicinity that there is a working lift. Warning lights are available in different versions.

1.3 Standard version spec.

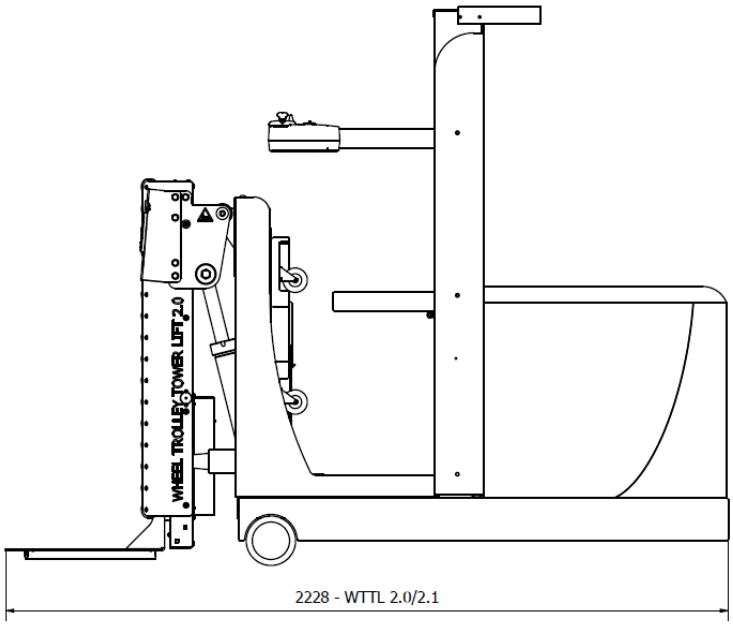
Technical specification is JB/ T3773.1-84.

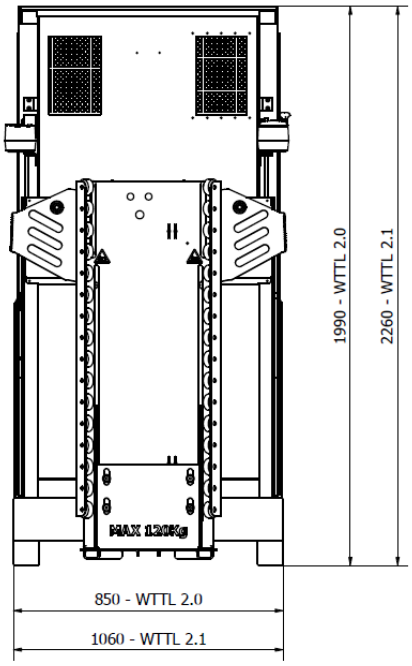
1.3.1 Technical data for standard lift.

Model		**QDJ-V2**	**QDJ-V3**
Propellant		Electric	Electric
Loading ability (Goods tray + forks +operator)	Q (kg)	400 kg	400 kg
Goods tray	Q1 (kg)	250 kg	250 kg
Shelf	Q2 (kg)	150 kg	150 kg
Wheel material		polyurethane (PU)	polyurethane (PU)
Drive wheel size	mm	Φ250×75	Φ250×75
Load wheel size	mm	Φ152×75	Φ152×75
Lowered mast height	h1 (mm)	1595/1700/1955	1700/2230
Max. height	h4 (mm)	4630/4985/6075	4985/7055
Max. cabin height	h3 (mm)	3200/3500/4200	3500/5000
Length (shelf folded in)	l1 (mm)	1500	1510
Length (shelf folded out)	mm	1980	1745
Width	b1 (mm)	832	832
Handle height	h5 (mm)	1065	1065
Vertical clearance	m2 (mm)	81	81
Aisle width	Ast (mm)	1930	1835
Turning radius	Wa (mm)	1500	1405
Drive speed (1st)	Km/h	5	5
Drive speed (2nd)	Km/h	2.5	2.5
Drive speed (3rd)	Km/h	1.2	1.2
Drive speed (4th)	Km/h	0.6	0.6
Max. inclination, when loaded and unloaded.	%	0	0
Drive motor	Kw	1.5	1.5
Lift motor	Kw	2.2	2.2
Battery volt/amp hours	V/Ah	24V/210Ah	24V/210Ah
Steering type		Electric	Electronic
Drive control type		AC	AC



The table contains the technical data for a standard lift only. The technical data may vary on non-standard lifts, lifts with other accessories or other combinations as shown above with and without forks. The manufacturer reserves the right at all times to update the technical parameters of the lift.





Shipping measurement

Height:	1990/2260mm
Length:	2300mm
Width:	850/1060mm

Working height:	5300/6000 mm
Max. load:	120/ 180 kg
Max. total load:	300 kg
Max/min usage temp.:	+40 -25^{0}C

Net weight WTTL 2.0:	1700 kg
Net weight WTTL 2.0L:	1565 kg
Net weight WTTL 2.1:	1790 kg
Net weight WTTL 2.1L:	1665 kg

Gross weight WTTL 2.0:	1786 kg
Gross weight WTTL 2.0L:	1651 kg
Gross weight WTTL 2.1:	1876 kg
Gross weight WTTL 2.1L:	1751 kg

2 Start-up.

Warranty provisions

AHCON guarantees that the product meets the specifications at the time of delivery, and will be free from defects in materials and workmanship for a period of 12 months after the product has been invoiced to the end user.

Components and parts subject to normal wear and tear are not covered by the warranty scheme.

AHCON assumes no responsibility for damage caused by accidental and careless use, incorrect installation etc.

Goods and machine parts returned to AHCON for repair and exchange must be sent carriage paid.

2.1 Before initial operation.

The lift can/may only be used with a battery as power supply.

The lift is ready for use upon receipt.

Check that the equipment has not been damaged in transit and is complete with charger and other accessories.

Check the hydraulic oil level.

Check the battery is connected. Refer to section 4.10 if necessary.

Charge the battery, refer to section 4.8.

During long-term storage/standstill, the wheels may develop a flat spot, which will gradually diminish when put into use.

2.2 First use

We recommend using the machine under light load conditions, i.e., low weight and low lifting height, until you have become an experienced user and know the lift's operation, functions and limitations. The recommendation from the supplier is 100 hours of use/driving with the lift.
We recommend that you avoid heavy braking, turning or deceleration, especially with a full load.

2.3 Unpacking

Remove the wrapping foil and remove the lift from the pallet with a forklift.

Place the machine on an even floor.

2.4 Power connection

Charging is undertaken via the accompanying battery charger, which requires standard 220V.

2.5 Noise

Noise from this machine is below 70 Db.

3 Use.

3.1 Safety requirements

Operator authorisation: the lift may only be used by properly trained and instructed personnel who can prove to the owner/employer that they can drive and operate the lift safely with and without load. The operator must not use the lift before it has been approved by the employer.
It is the employer's responsibility to ensure that the operator has been informed of his/her duties, responsibilities and requirements. The operator must be informed and instructed in the use of the machine and must have read and understood the accompanying user manual . The operator must wear safety shoes when using the lift.
The operator must ensure that the lift is not used by untrained personnel, who do not have sufficient approvals and training.
It is not permitted to transport other people on the lift.
Defects: any error or defect must be reported to the immediate manager or employer. Damaged safety components must be replaced before further use. If in doubt, take the lift out of service.
The operator must not carry out repairs or maintenance on the lift without the necessary training and qualifications. The operator must **NOT** fix, block or adjust any safety devices.

The lift is constructed in such a way that the user cannot be injured during normal use of the lift, as long as the instructions for use are followed.

The lift is extremely ergonomic and user-friendly.

A type sign is placed on the lift which must be easy to read and which clearly shows the model, main parameter, manufacturer and date.

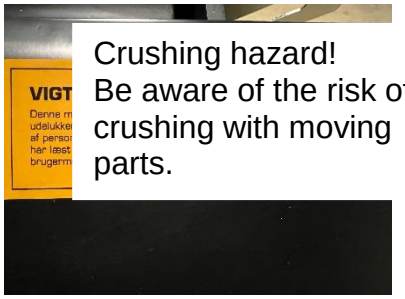
Hazardous areas: the area in which the lift is operated is designated as a hazardous area. When the lift is being driven with raised forks, raised load, raised basket or transport, there is an increased risk of personal injury.
Unauthorised persons must not be within the lift's operating area.

It is not recommended to use the lift if you are emotionally affected and/or are not fully focused on operating the lift and any potential hazard.
Always follow recommendations from warning signs and warning instructions, and ensure full and correct operation of all safety devices.

Failure to comply with the foregoing instructions and recommendations will result in loss of warranty in the event of damage to the vehicle.

Surface: The lift must never be raised on a surface with an incline in excess of 3^0. An acoustic warning sound is emitted if the lift is driven with a raised basket or is raised on a surface with an incline of 3^0 or more. The basket must be lowered immediately and the lift placed in or used in another area where the surface allows it.
When transporting/driving loads on slopes or loading ramps, the forks and goods must always be placed in the lowest possible position. When carrying a load, always drive up forwards and down backwards.
Never drive across slopes, as there is a possibility of the lift tipping over!

Warning and information on the lift.



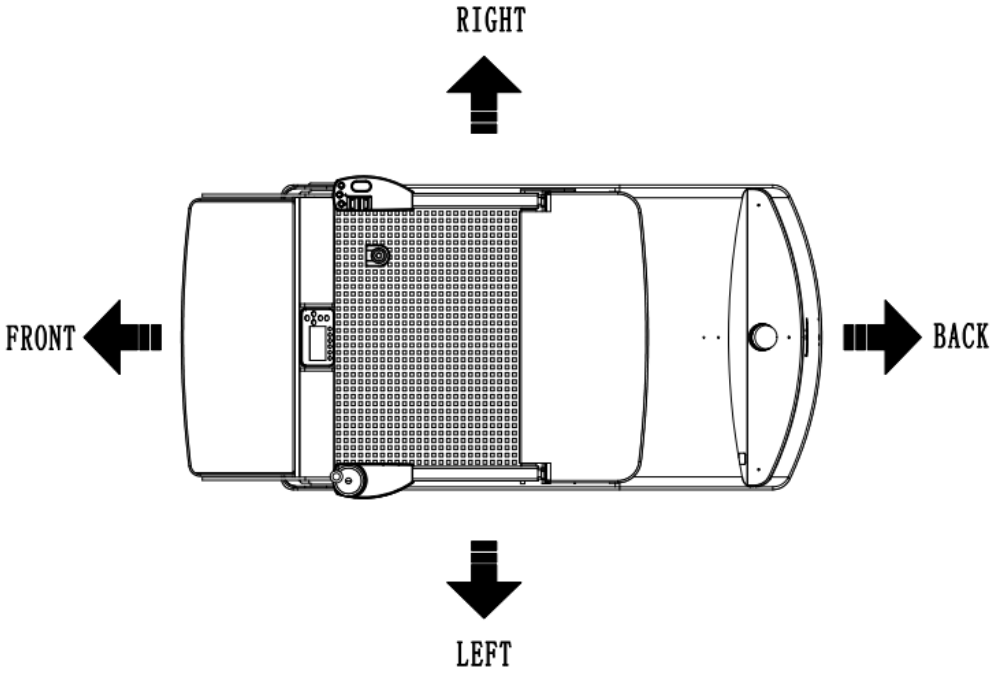
s machine must only be
rated by personnel who
e carefully read and
erstood the user manual.

Max. load capacity:
never exceed the
maximum load capacity!

Sign and date for the next
annual safety inspection.
The inspection must be
carried out by an

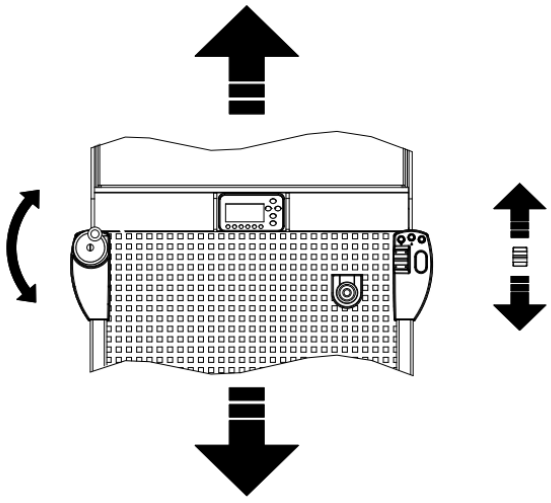
3.2 Direction of motion.

RIGHT LEFT FRONT BACK



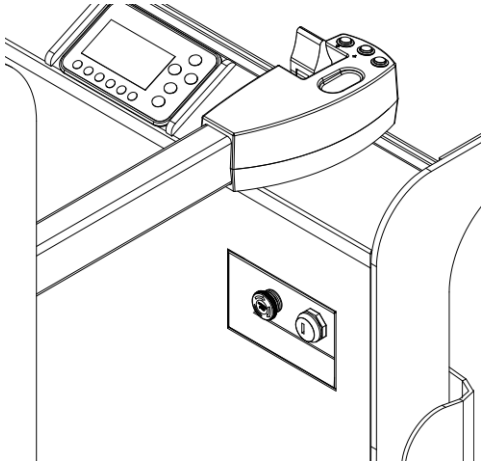
3.3 Steering, driving and reversing

The dead man's control, which is the foot pedal on the right side of the bottom of the platform, must be activated in order to drive and operate the lift.



Warning!

When the lift is switched on, it first runs a self-test of the control systems. Wait until the display is in normal mode before using the lift.



There is an emergency stop located next to the ignition key. This should be activated when sudden hazardous situations arise and where the operator has no control over or cannot handle the situation. Deactivate the emergency stop only when the hazardous situation has been removed or rectified. Should the lift be damaged, it must not be used until the damage has been repaired.

3.4 Start

- The protective arm is tilted down. (Closed)
- Put the key in the ignition and turn it to "on".
- Pull out the emergency stop if it has been activated.
- The speed can be controlled via the rocker switch as well as in intervals.
- Use the rotary handle on the left-hand side to steer the lift. The steering wheel angle/direction can be seen in the display.

3.5 Stop.

Stopping depends to a large extent on the surface. It is important that the operator takes the surface into account when operating the lift, and is very aware of the drive path in front of the lift and of any obstacles as well as vertical clearance.

3.6 Display

The screen has 6 LED icons and an LCD screen.
You can choose between different driving speeds by means of the arrow on the screen
An automatic diagnostic check is made of the lift every time it is switched on.
The display shows speed, hour counter, drive wheel position, battery level, selection of driving speed and system check.

3.7 Lifting

Always ensure that no one is under the lift when it is raised. Instruct all who may come near the lift to keep their distance and leave the dangerous area under the lift when it is in use.

When the lift is loaded with wheels, it may only be raised between rack aisles.

A safety distance of 10 metres must be observed by everyone other than the operator in the basket when the lift is raised with a load.

When the foot switches for the automatic wheel advance on the tool are activated, the operator must keep his/her hands inside the basket on the lift.

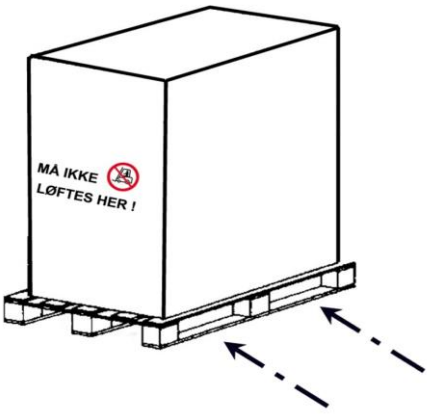
An acoustic warning is emitted when the lift is being lowered.

Warning!

Never climb out when the operator platform is raised!! A raised platform means a raised centre of gravity, and the lift is then more easily toppled over. Standing on the outside or pushing against objects outside the basket can cause the lift to tip over. Should the lift tip over, this can result in
serious injury or death and serious damage to equipment or the building.

OBSERVE A SAFETY DISTANCE OF 2 METRES WHEN LOWERING THE FORKLIFT!

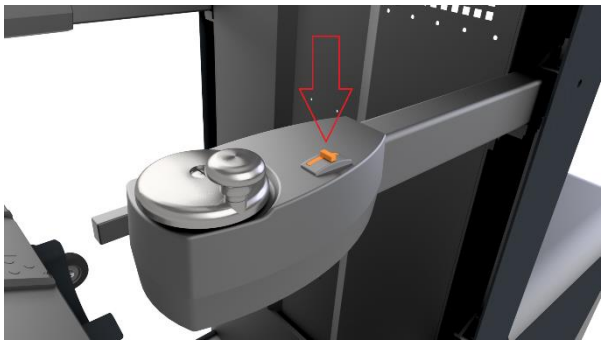
This machine must be transported by pallet truck or forklift in accordance with the following regulations.



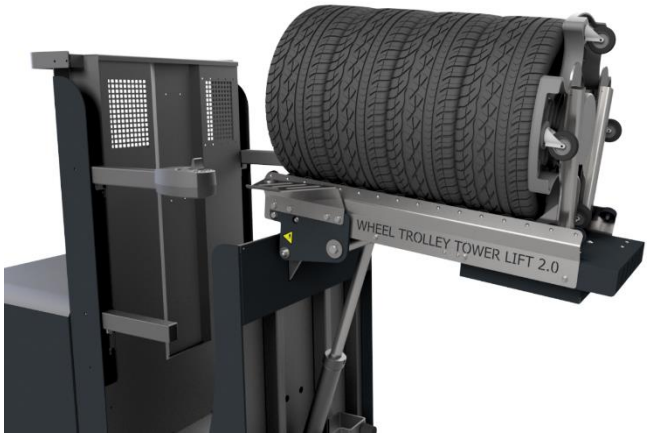
3.8 Instructions for use

WHEEL TROLLEY with wheels is driven over the forks of the WHEEL TROLLEY TOWER LIFT 2.0/2.1.

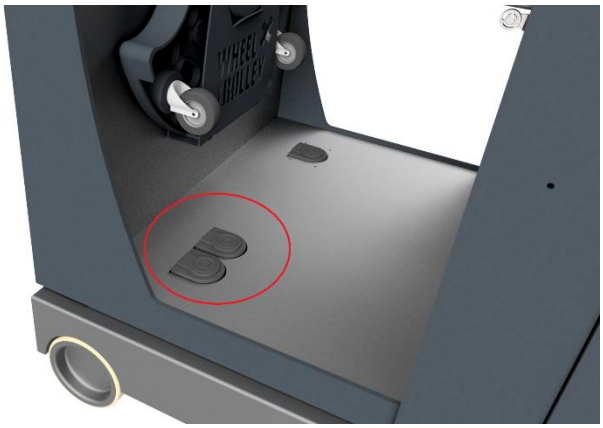
Make sure the WHEEL TROLLEY is positioned correctly and is centred over the forks before it is lifted.



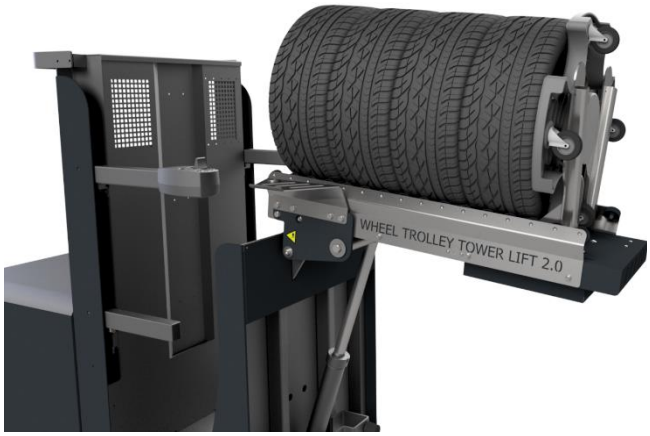
The switch for left operation lifts the WHEEL TROLLEY TOWER LIFT unit. When the switch is activated backwards, the hydraulics tilt the unit.
Depending on the model, this switch may be located on the right-hand side.



Raise the tool so that it is in an almost horizontal position, as shown in the picture.



Use the foot switches on the left of the basket to bring the wheels close to your body.
The foot switch on the right moves the wheels away from the basket/operator. This is used when removing tyres from the rack.



Move the wheels close to your body as shown in the picture.

Now roll the wheels into the racks one by one and use the foot switches to advance the wheels, so that you always have the wheels close to your body when you roll them into the racks.

Continue the process with all the wheels until you only have the Wheel trolley left on the WHEEL TROLLEY TOWER LIFT tool.
The process is the same when taking wheels out of the racks, but in reverse of course.

When the button with the light icon is activated, the forward-directed LED work lights on both sides of the lift are switched on. We recommend you switch off the work lights when they are no longer necessary.

There are buttons on the right side of the lift for driving, raising the basket and tilting the forks.
The black rocker switch is for driving and it controls the direction of travel forward and backward. The driving speed depends on the extent to which the button is pushed forward or backward.
The two orange rocker switches are for raising the basket and forks, by pushing them back and forth, the basket and forks are raised and lowered.
There is also a button for sounding the horn.

There is a rotary handle on the left-hand side of the lift to control the lift's direction of travel. The display shows the direction of travel of the lift. The lift automatically reduces speed if it is going too fast. It also reduces speed when the basket is raised. Always try to use the steering handle calmly to achieve as smooth a ride as possible.

There is a flashing warning light located at the rear of the lift, which flashes when the lift is switched on. When the basket is lowered or the lift is travelling in reverse, a beeping warning signal is sounded.

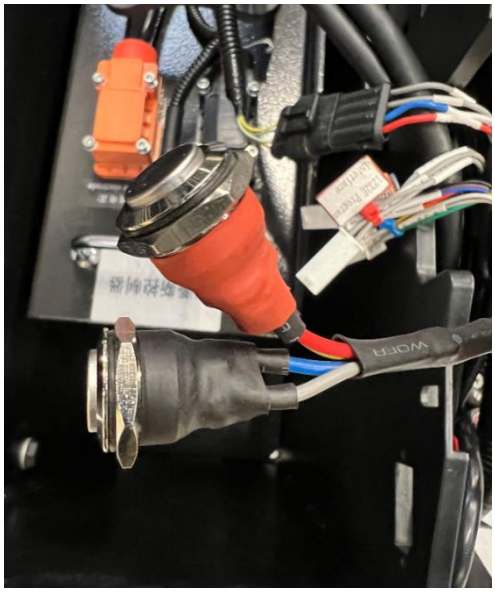
There is a camera is located on the left side of the front of the lift to help with orientation of obstacles and any people who may be behind the lift.

Note that there may be objects or people that can be overlooked in the camera. When in doubt, always get off the lift and get your bearings or have someone supervise and direct you.

To enter the lift, one of the safety arms must be raised.
The lift can be accessed from both sides.

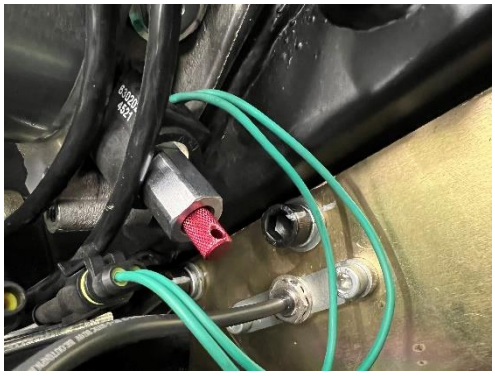
The safety arms must be lowered before the lift can be operated.
If the lift will not run or the basket will not raise, check that the arms are fully down and that nothing is caught between the safety arm and its bracket.

3.9 Emergency lowering



The battery box has 2 push buttons that can be used to lower and raise the lift if necessary for service, inspection, contact faults or if the operator in the basket is unwell and needs immediate help.
The red button is used to lower the basket and the black button is used to raise the basket.
It is extremely important that you only use these buttons in situations where it is safe or necessary. Using the button to raise the basket must be done with great care, while ensuring that there is space above the lift. Otherwise, there is a risk of serious injury to the operator, or damage to equipment or the building.
The buttons can only be used if the lift is switched on. Using either of the buttons will activate the acoustic signal.

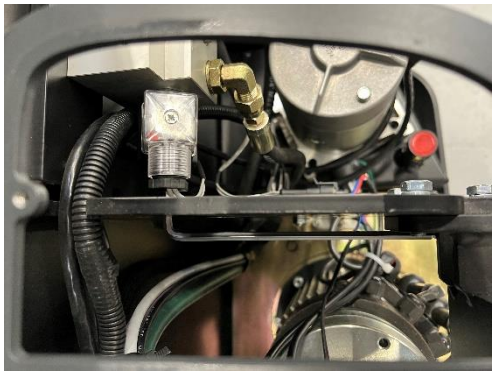
If emergency lowering is required and there is no power in the battery or if the lift is switched off, the basket can be lowered manually using the following procedure:



The hydraulic pump has a safety valve which is coloured red (anodized). Press the valve in and turn it to the right. You will hear a small click. The valve can now be released and is ready for emergency lowering.

⚠ tools to turn the valve.

Remember to return the valve to its initial position ⚠ after emergency lowering!



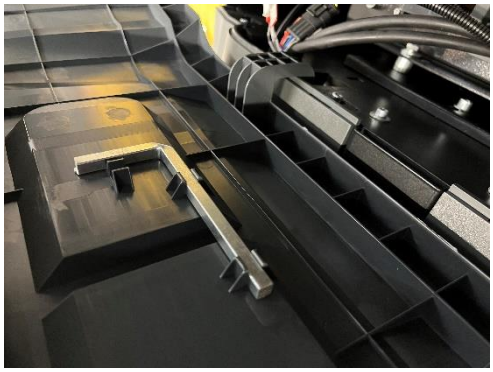
Once the safety valve has been manually opened, the lowering valve can be activated by using a hexagonal Allen key. There is a hexagonal hole at the end of the valve, where a corresponding key is placed as shown in the illustration. Turn the key lightly and the basket will lower as long as the key is turned.

⚠ It is important to ensure that there are no others in the area when lowering, as it can be difficult to monitor the entire area and there is no acoustic or light signal to warn that the lift is lowering. Emergency lowering should only be carried out by a trained and experienced operator

The lowering valve can be accessed by removing the cover shown on the back of the lift. The cover is mounted with 2 screws.

The safety valve can be accessed by removing the bottom cover. The cover is fitted with two locks that can be unlocked with the key provided.
It is also possible to access the lowering valve when the lower screen is removed.

⚠ Remember to carefully replace all covers and shields that have been removed to carry out this operation. Remember to return the safety valve to its initial position.



The key for removing the cover is located under the lid of the battery box.

⚠ Always replace the key in the holder after use. The key must not be removed from the lift

3.10 Use of the Wheel Trolley

The following trolleys can be used with a 120 kg and 180 kg lifting unit.
Only use AHCON trolleys with the AHCON Wheel Trolley Tower Lift.

	120 kg. 	180 kg. 
Wheel trolley recycled 	X	X
Wheel trolley recycled off-road 		X
Wheel trolley recycled XL 		
Wheel trolley 	X	X
Wheel trolley off-road 		X
Wheel trolley XL 		

4 Maintenance, charging and replacement of batteries.

4.1 Safe handling of lead-acid batteries

Before any handling of batteries, make sure that the lift is parked in a correct and safe position.

4.2 Maintenance

Charging, maintenance and battery replacement must be carried out by qualified and trained personnel. All instructions must be read carefully before preparing for replacement, including the manual recharging procedure and charging requirements.

4.3 Fire hazard

Do not smoke or use a naked flame when working with batteries. Storage and charging must be done at least 2 metres away from flammable materials, and must be performed in ventilated rooms with adequate fire extinguishing equipment.

4.4 Maintenance of batteries

1. The connectors on each cell must be kept dry and clean. All connectors and cables must be tight and clean and lubricated with grease to prevent corrosion. Connection ends must be provided with non-slip insulation covers.
2. The cables between each two units must have good contacts. Check that the connectors on each pole are tight and tighten them if necessary.
3. The surface of the battery must be clean and dry. After charging, use a cotton cloth to dry any acid spillage. Moisten the cloth if necessary.
4. Avoid unnecessary charging or discharging of the battery. Rapid charging and lack of charging should be avoided, as this will affect the life of the battery.
5. It is forbidden to place conductive objects on the battery, including tools. Conductive objects can cause short-circuiting of the battery and they can even cause an explosion.
6. It is forbidden to use any harmful/corrosive liquids and materials on the battery. If a densitometer or thermometer is used, its surface must be completely clean.
7. Batteries should be serviced for long-term storage. Batteries should normally not be drained for more than 24 hours. If batteries are stored in a cold environment, they should not be charged, and then, when they are to be recharged, moved to a heated room.
8. If the battery is stored for a long time, it should be charged at least once a month, and fully charged each time.
9. Evaporation of water will occur during charging, so always fill the batteries with battery water once charging is complete.
10. If a cell is damaged, it must be repaired as soon as possible. If this is not possible, it must be replaced.

11. There must be sufficient ventilation when charging. There must be no smoking or naked flames, otherwise there is a risk of a hydrogen explosion.
12. The electrolyte band in the battery is toxic and corrosive, so it is important that the battery is sealed and undamaged.
13. Suitable protective clothing and a protective shield must be worn when working on the battery, so that all contact with the skin is avoided.
14. If clothing, skin or eyes are affected by battery acid, rinse immediately with copious amounts of water. If the skin or eyes are affected, in addition to vigorous rinsing, a hospital or doctor must also be contacted for further treatment, so that the acid can be neutralised as soon as possible.
15. The weight and size of the battery has a big effect on the stability of the lift. It is therefore only permitted to change the battery model or type having received written permission from the manufacturer.
16. It is forbidden to vigorously discharge the battery by driving and lifting at the same time.
17. To guarantee safety during use, it is important that the battery is protected during this time. Any broken screens, shields or brackets must be replaced before further use.

4.5 Disposal of batteries

Used batteries must be disposed of according to applicable local laws and regulations. Batteries must be stored in specially protected areas or a suitable waste site, and handled by a certified company.

4.6 Battery specifications

The weight and size of the battery can be found on the rating plate on the battery.

 The poles of the battery must be protected with an insulating cover.

When connecting the battery in the lift, the lift must be switched off and the key turned to the off position.

If the battery is changed or installed, you must ensure that it is placed in a stable position and fixed in the battery box.

If a lift with a lithium battery is left with or without ignition for a long period of time without use, the lift and the battery controller are automatically switched off. To re-activate the lift, the emergency stop must be activated and then deactivated.

4.7 Storage and installation of batteries.

The lift must be stopped on level ground before changing the battery. Exposed terminals and connectors must be protected with an insulating cover to avoid short-circuiting. When the battery is lifted out, cables and cable lugs must be removed from the battery and positioned so that they do not prevent the battery from being lifted out.

When lifting equipment is used to lift the battery out of the lift, you must ensure that the lifting equipment has sufficient lifting capacity. The weight of the battery is indicated on the rating plate on the side of the battery. The lifting equipment and the battery must be lifted vertically so as not to damage the battery box. Hooks and similar must be approved, safe and suitable for the task. Hooks, chains and other gear must not be placed on or fall onto the battery, as there will be a risk of short-circuiting or of damaging the battery

- The key must be turned to off before replacing the battery.
- Remove the battery box cover and disconnect the plug connecting the battery and the lift.
- Lift the battery out of the box.

The re-installation sequence is the same as for removal, but in reverse order.
Note that batteries must be stored in the correct position and connected correctly.
After the battery is installed, all cable connections and plug connections must be checked to ensure they function correctly. The lift and battery must also be checked for damage.

4.8 Charging

The lift is equipped with its own special charger. It is important that the manual for the charger is read thoroughly before use. Adequate ventilation must be ensured during charging. Check that there are no metal objects placed on the battery, and check cables and plug connections for faults and damage before starting the process. All safety instructions regarding charging, preparation, etc. must be strictly observed.

4.9 Equalizing charge

After the battery has been used for a period of time, the voltages between the battery and the electrolyte concentration may differ. This difference can be removed by an equalizing charge, thus keeping the performance of the battery constant.
Equalizing charge is necessary if:

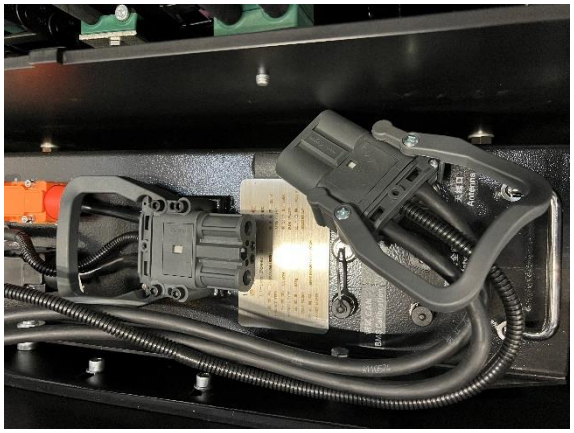
- Any individual cell has a voltage lower than 1.7 V.
- There has been a heavy discharge of the battery by e.g., driving and lifting the basket at the same time. (Not recommended)
- The battery is not charged in time after discharge.
- Battery with excessive discharge.
- Battery with long periods without use.

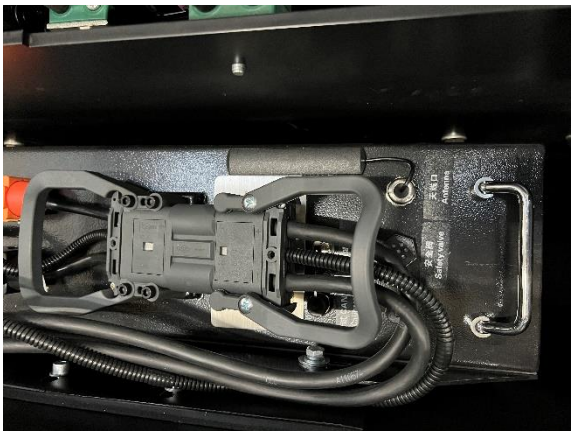
Equalizing charge

A. Charge at 0.1 I5A current.
B. Charge until the voltage reaches 2.5 V, then halve the current (e.g., 0.05 I5A) and continue charging until bubbles appear in the electrolyte.
C. When the battery is sufficiently charged, stop the charging for 0.5 hours. Then charge with half current (e.g., 0.025 I5A) for 1 hour.
D. After a 0.5-hour break, charge again with the same current (e.g., 0.025 I5A) for 1 hour.
E. Repeat until bubbles appear in the electrolyte as soon as the charger is connected.

In the event of prolonged downtime, batteries should be charged once a month.

4.10 Disconnect and re-connect the battery.





5 Maintenance manual

The lift's parts and components, especially its safety components, must not be changed without permission from the manufacturer, and the speed of the lift must never be changed. All spare parts delivered from the manufacturer undergo strict quality control and inspection. To ensure proper functioning and safety, it is recommended to use original spare parts for the lift. Used parts, liquids and oil must be disposed of in accordance with applicable regulations and laws.

5.1 Safety regulations for maintenance and repair.

Maintenance staff: All maintenance and repair to the lift must be carried out by specialised personnel who have received training from the manufacturer. The manufacturer's service and spare parts department has authorised service personnel who, after completing service and repair, can deliver an approved and signed service form from the manufacturer.

Lifting the lift: if the lift is to be lifted for service or repair, all lifting gear must be suitably approved and safe, and must only be attached to suitable lifting points. When the lift is raised, it must be ensured that it is properly secured so that it cannot slide or tip over. (Wedge blocks or chains can be used)

Cleaning: Flammable liquids must not be used to clean the lift. Safety measures must be taken before cleaning so that a short-circuit cannot occur during cleaning. Any use of steam cleaners or degreasing agents must be undertaken with great care, as this can have a critical impact on bearings and other equipment that require grease/lubrication to

ensure long life. The battery must be disconnected before any work and cleaning is performed on it. Electrical and conductive components must only be cleaned with weak suction, limited compressed air or non-conductive and antistatic brushes.

If the lift is cleaned with a water hose or high-pressure cleaner, all electrical components must be thoroughly covered before cleaning, as water and moisture can lead to malfunction. Do not use hot water cleaners or steam pressure cleaners.

Welding: When welding work is to be carried out, to avoid damage to electrical components, these should be removed prior to commencement of the work. When repairing or replacing hydraulic or electrical components, it must be ensured that they are re-installed correctly.

Wheel: the quality of the wheels has a major impact on the lift's stability and driving characteristics. Replacement of wheels must be approved by the manufacturer. If the wheels are replaced, the horizontal positioning of the lift must be the same as when it left the factory. Wheels must always be changed in pairs.

Lifting chains and rollers: It is important that lifting chains and lifting wheels are thoroughly lubricated. Otherwise, the service life will be reduced considerably. Chains and wheels must be lubricated according to the maintenance table below. In situations involving increased use or a harsh environment, the maintenance periods should be shortened (e.g., a very dusty environment or high temperatures).

Damaged hydraulic hoses must be replaced immediately and the lift must not be used until this has been done.

5.2 Daily maintenance (before each shift)

1. Check the battery electrolyte levels. These levels rise when the battery is charged.
2. Check the battery terminals, cables and protective cover.
3. Check that the battery box is stable and attached.
4. Check the lift for oil spillage/leakage.
5. Check lifting chains, rollers, forks, hose guides and the horn for damage, wear, breakage and function, and that the chain is tight.
6. Test the brakes.
7. Check wear on the drive wheel and tram wheel.

5.3 Main servicing

Comprehensive and professional maintenance is critical to ensure safe operation of the lift. Failure to perform maintenance according to the specified intervals will result in failure of the lift and thus risk potential danger to the operator and equipment.
The maintenance cycle shown in this manual is for single shift work and normal working conditions. If there are dusty areas, if the average temperature rises considerably or if the lift is used on multiple shifts, the lift must be maintained more often than described.

The lift's drive wheel is a floating system and there is therefore no closed protection. Because of this, internal dust must be removed at least once a month. Follow the maintenance list shown below and follow the intervals.
The maintenance intervals are described as shown below:

W1 = After every 50 hours, at least once a week.

M3 = After every 500 hours, at least once every 3 months

M6 = After every 1,000 hours, at least once every 6 months

M12 = After every 2,000 hours, at least once every 12 months

For initial operation of the lift, the following points must be checked. (50 – 100 hours or 2 months after first start-up.) Check it again after 500 hours.

- Check that the nuts and bolts on drive and tram wheels are tight. Re-tighten them if necessary.
- Check the hydraulic parts for leaks and tighten them if necessary.
- Replace the hydraulic filter.

			Maintenance interval			
			W	M	M	M
			1	3	6	12
Frame and basket	1.1	Check all load-bearing parts for wear and damage		●		
	1.2	Check all bolt connections		●		
Drive system	2.1	Check for noise and leaks in the transmission system		●		
	2.2	Check the transmission oil level		●		
	2.3	Replace gearbox oil				●
Wheel	3.1	Check for wear, damage and noise		●		
	3.2	Remove dirt, grime and strings that have been wrapped around the wheels, and lubricate the bearings.				
	3.3	Check the bearings in the wheels, and check for a tight fit between the wheel and the bearing.		●		
Steering system	4.1	Check the steering and its movement		●		
Brake system	5.1	Check the effect, adjustment and wear on brake linings		●		
	5.2	Check the foot switch and its operation		●		
	5.3	Clean and check the electro-mechanical brake and its operation.		●		

Lifting equipment	6.1	Check the frame and hose guide for breaks, wear and damage, as well as function.		●		
	6.2	Visual control of lifting wheels and mast and free movement. Lubricate both parts.		●		
	6.3	Lubricate chains and check the pins in the chain, the anchoring points and safety cotter pins	●			
Hydraulic system	7.1	Function control, load capacity.		●		
	7.2	Check all connections for leaks and damage.		●		
	7.3	Check the hydraulic system for damage and leaks.		●		
	7.4	Check the oil level		●		
	7.5	Oil and filter replacement				●
	7.6	Check the pressure relief valve is adjusted correctly.				●
Electrical system	8.1	Function check		●		
	8.2	Check that all cable connections are secure and undamaged.		●		
	8.3	Check the amperage of the fuse and replace if necessary.				
	8.4	Check that switches and safety valves are secure and working properly.		●		
	8.5	Check plug connections and replace any worn parts.				
	8.6	Check the warning system is functioning correctly		●		
Motor	9.1	Check for wear on the carbon element.		●		
	9.2	Check the motor's safety function.		●		
Battery	10.1	Check the acid level, charging capacity and voltage. There should be 10-15 mm of liquid level above the electrolyte plate.		●		
	10.2	Check the safety components and lubricate the terminals as necessary.		●		
	10.3	Clean the battery terminals and connectors and re-tighten if necessary.		●		
	10.4	Check cables and replace if necessary.		●		
Lubrication	11.1	Lubricate the lift according to the lubrication schedule		●		
System measurement	12.1	Check the electrical system for earth faults.				●
	12.2	Check the speed and braking distance				●
	12.3	Check the lifting and lowering speed				●
	12.4	Inspection of safety components and boxes.		●		

5.4 Maintenance of the electrical system

1. Check all contacts for wear and replace where necessary. All switches should be checked at least every three months
2. Check foot switches and switches at the handles. Measure voltage loss at both ends of min. and max. trip. The trip should open and close without resistance. Activation of the switch should produce a clear sound. Check every 3 months.
3. Check the main circuit, battery – inverter – motor connection cable. Check that the cable's insulation is in good condition and that all connections are secure. Check every 3 months.
4. Check the mechanical movement of all switches. They should move freely without sluggishness or stops. Check the mechanical movement of switches every 3 months.

5.5 Preparation before repair

The following preparations must be carried out in order to avoid possible accidents during repair and maintenance tasks.
Safe parking.
Press the stop button and disconnect the battery.
When it is necessary to raise forks or the lift to perform service, necessary measures must be taken to ensure that the lift does not tip over, slide or drop suddenly. For safe lifting of the lift, refer to section 5.1 for safe lifting.

5.6 Checking the hydraulic oil

Prepare the lift for repair and maintenance.
Open the rear shield.
Check the oil level in the tank.
When checking the oil level, the lift and the forks must be in the lowest position.

5.7 Preparation for use after maintenance

The lift may only be put into use after maintenance when the following points have been carried out.

The lift has been cleaned
The brake function has been checked and approved
The emergency stop button has been checked and approved
The horn has been tested and approved.

5.8 Lift storage

If the lift is to be stored for more than 2 months, it must be stored in a frost-free and dry environment, and necessary protective measures should be carried out before storage.

If the lift is to be stored for more than 6 months, this should be done according to recommendations from the manufacturer's service department.

To protect the wheels and bearings during storage, it is recommended that the lift be placed on jacks so that the wheels are clear of the ground.

5.9 Before storage

Clean the lift thoroughly.
Check the brake function
Check the oil level and top up if necessary
Provide all lubrication points with grease or oil.
Lubricate the lift according to the lubrication chart.
Charge the battery.
Disconnect and clean the battery and add suitable grease to the terminals.
In addition to the above, the battery must be protected in accordance with the specific requirements as described under the battery specifications.

5.10 During storage

The battery must be charged once a month.
Testing the battery.
It is extremely important that the battery is charged at regular intervals, since it discharges over time and will become defective if completely discharged.

5.11 After storage

Clean the lift
Lubricate the lift according to the lubrication chart
Clean the battery, add suitable grease to the terminals, terminal shoes and bolt connectors.
Charge the battery.
Check that the gearbox oil on the drive wheel does not contain water. Change the oil if necessary.
Check that the hydraulic oil does not contain water. Change the oil if necessary.
Start the lift.
If there are contacts with a poor connection, clean all exposed contacts with contact cleaner and remove the oxide layer. Repeat this process until there is a satisfactory contact. After the test drive, test the brake several times to ensure it functions correctly before initial operation.

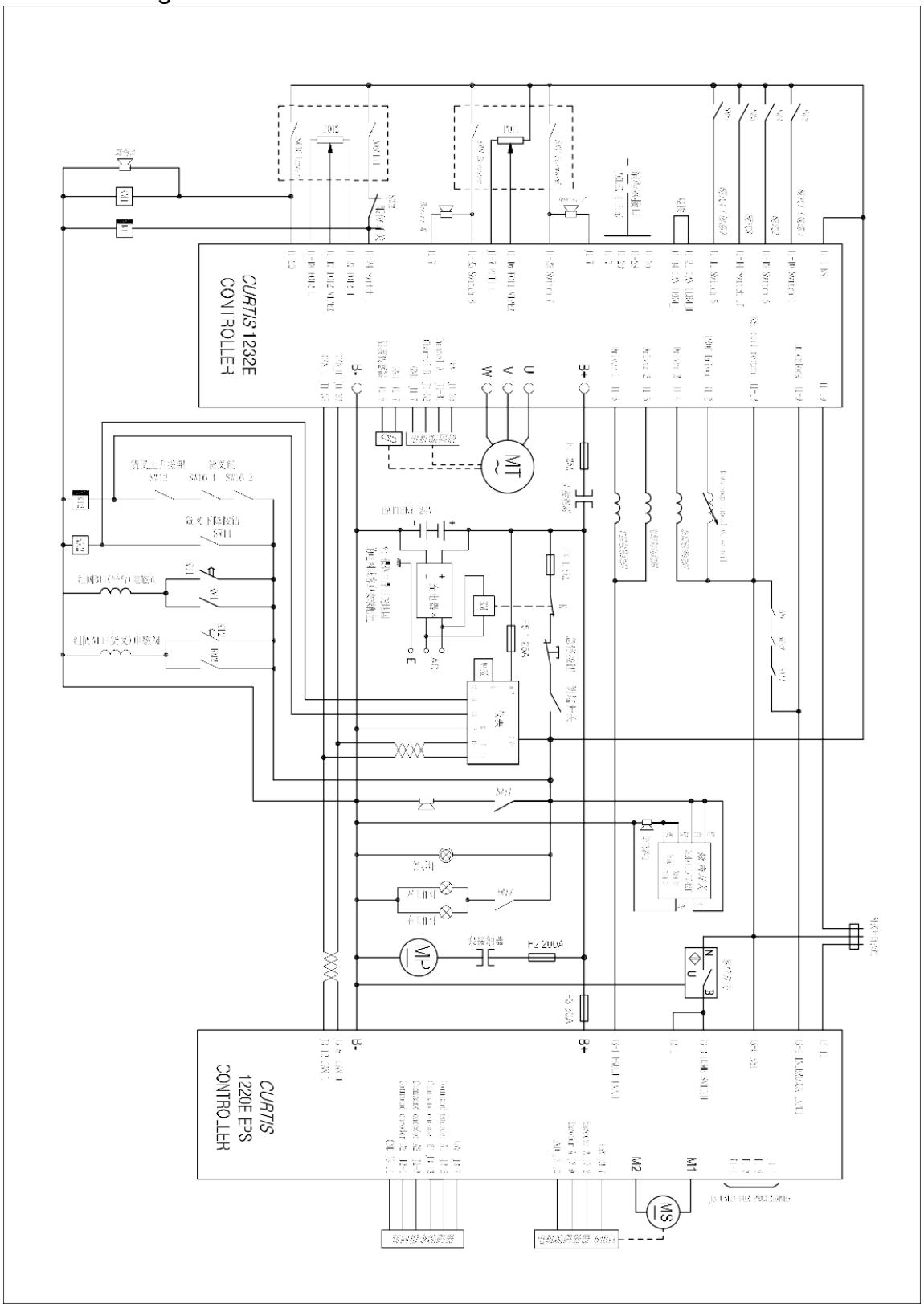
5.12 Oil and lubricants

Description of oil and grease.

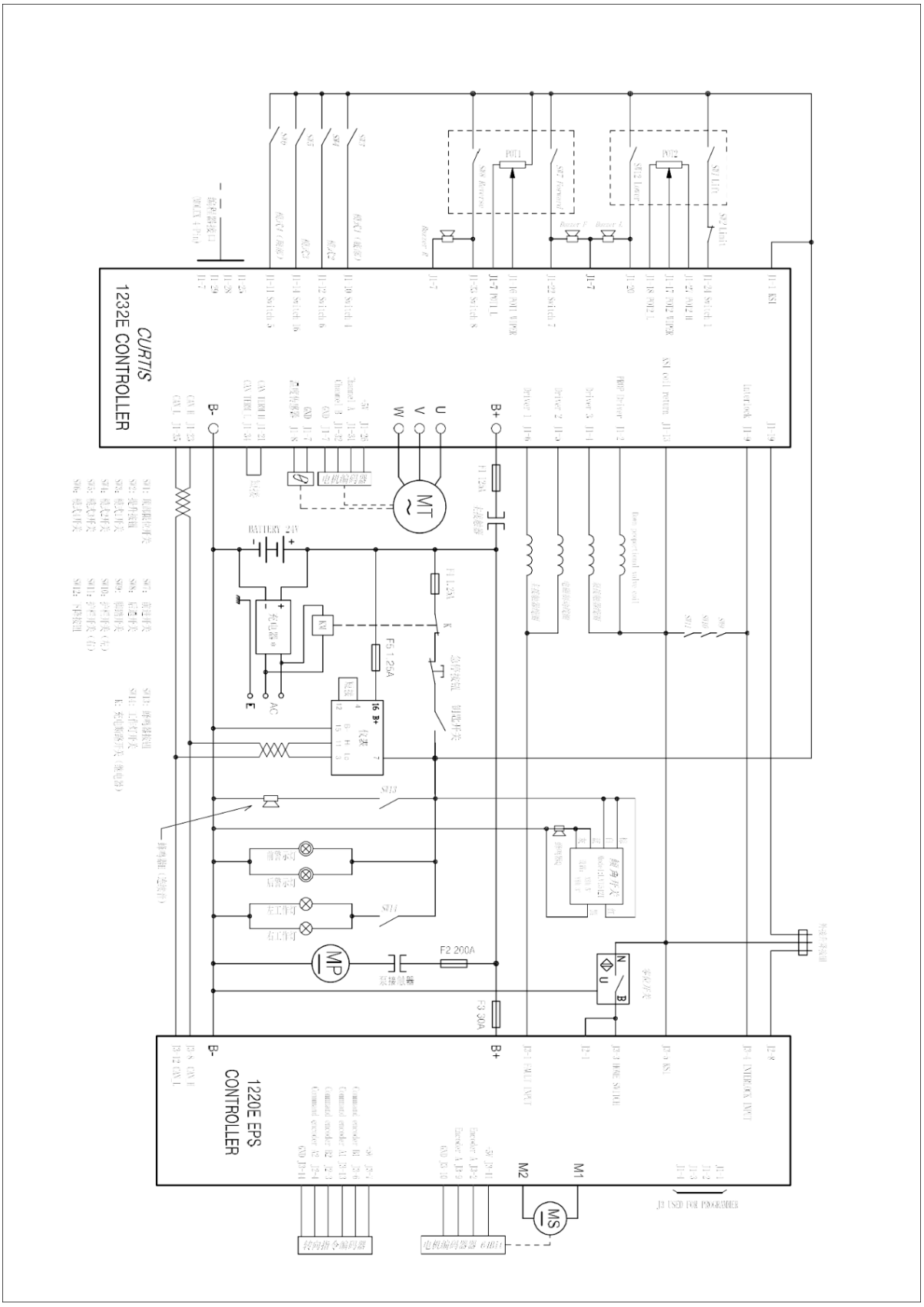
Type of lubricant		Name of lubricant >-15℃	Name of lubricant <-15℃	Field of application
A	Grease	EP-2 Lithium grease	EP-2 Lithium grease	Bearings, bushings, assemblies
B	Grease	EP-2 Lithium grease	EP-2 Lithium grease	Frame
C	Grease	EP-2 Lithium grease	EP-2 Lithium grease	Chains
D	Hydraulic oil	HM 32	HM 32	Hydraulic system
E	Grease	EP-2 Lithium grease	EP-2 Lithium grease	Bearings
F	gear oil	W85-90 gear oil	W85-90 gear oil	gearbox

6 Diagrams

6.1 Electrics diagram V3



6.2 Electrics diagram V2



6.3 Hydraulics diagram