



USE AND MAINTENANCE MANUAL

MOBILE PALLET CHANGER LIFT TRUCK MODEL FALCON WINGS



Serial number.

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English translation

DICHIARAZIONE CE DI CONFORMITÀ

CE CONFORMITY DECLARATION – DECLARATION CE DE CONFORMITE – KONFORMITÄTSERKLÄRUNG DER EUROPÄISCHEN UNION – DECLARACION DE CONFORMIDAD

La sottoscritta – The undersigned – Le soussigné – Die unterzeichnete Firma – La infrascritta

TOPPY S.r.l.

Via Muzza Spadetta, 18 – 40053 Bazzano (BO)

Dichiara sotto la propria responsabilità che il carrello semovente di nuova costruzione - Declare under full responsibility that the self-propelled truck of new construction
Déclare sous sa responsabilité que le chariot mobile de nouvelle construction - Bestätigt hiermit, mit eigener Haftung, daß der selbstfahrende Stapler der neuen Bauart
Declama bajo su propia responsabilidad que la carretilla semoviente de nueva construcción

Tipo, Type, Type, Type, Tipo

TOPPY FALCON WINGS

Matricola, serial number, Numéro de série, Registriernummer, Número de serie

.....

Anno di costruzione, Year of manufacture, Année de construction, Baujahr, Año de construcción

.....

Descritto come segue, - Described as follows – Décrit comme suit – Mit der folgenden Beschreibung – Descrita como sigue

CARRELLO TOPPY FALCON WINGS

TOPPY FALCON WINGS LIFT TRUCK – CHARIOT ELEVATEUR TOPPY FALCON WINGS – HEBENSPULE GABELSTAPLER – CARRETILLA ELEVADORA TOPPY FALCON WINGS

È rispondente alla Direttiva Macchine 2006/42/CE. La conformità a suddette norme è determinata dalla rispondenza ai requisiti tecnici degli standard CEN applicabili.

Questo prodotto è inoltre conforme alle applicabili Direttive di Compatibilità Elettromagnetica 89/336/CEE.

Is in conformity with the Machinery directive 2006/42/CE, compliance with this Directive is established by meeting the technical requirements of the relevant CEN standard.

This product is also in conformity with the Electromagnetic Compatibility Directive 89/336/CEE.

Est conforme à la Directive Machine 2006/42/CE. La conformité aux normes indiquées pré cédemment est déterminée d'après les exigences techniques du standard CEN applicables. Cette machine est également conforme à la Directive de Compatibilité Electromagnétique 89/336/CEE.

Mit der Maschinenbestimmung 2006/42/CE unter Bezugnahme auf die CEN-Standards übereinstimmt. Dieses Produkt stimmt auch mit der Verordnung zur Elektromagnetischen Verträglichkeit 89/336/CEE überein.

Y respondiendo a la Directiva de Maquinaria 2006/42/CE. La conformidad a las indicadas normas y determinada responsabilidad de los requisitos técnicos de los estándares CEN aplicables. Este producto es conforme a las Directivas aplicables de Compatibilidad Electromagnética 89/336/CEE.

Nome, Name, Nom, Name, Nombre

Piani Alberto

Posizione aziendale, Position, Position dans la société

Firmenbezeichnung, Cargo en la impresa

Legale Rappresentante, Legal Representative, Représentant Legal

Rechtsgültiger Vertreter, Rappresentante Legal

Luogo e Data, Place and Date

Bazzano,

Lieve t Date, Ort und Datum, Lugar y Fecha

Firma, Signature, Segnatura, Unterschrift, Firma

Preface

General information

Before using this machine it is important for operators and technicians responsible for maintenance to read, understand and closely follow the following instructions.

The running, efficiency and life time of the TOPPY FALCON WINGS lift truck depend on:

- correct behaviour in compliance with the safety regulations,
- daily control by the operator,
- maintenance at regular intervals.

Preservation and delivery

The Use and Maintenance Manual is an integral part of the machine: it must be kept intact and in a safe place throughout the life time of the machine. This manual must always be available for the operator to consult. This manual must be supplied together with the truck in case of sale.

Manufacturer

This machine has been designed and produced in compliance with the UNI EN 1175 – 1 regulation.

This machine is in conformity with the Machinery Directive 2006/42/EC and the Electromagnetic Compatibility Directive 89/336/EEC.

TOPPY S.r.l.

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40053 Valsamoggia (BO) Italia

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Special warnings

The following graphic safety symbols have been used in this manual.



Danger

Underlines the presence of dangers that may cause residual risks and situations in which the operator must act with care and attention to avoid accidents or material damages.



Caution

Underlines how to behave in order to avoid damaging the machine and /or possible dangerous situations.

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1. Description of the machine

1.1 Machine identification

The following information is on the CE label placed on the dashboard of the machine:

- Model
- Serial number
- Year of manufacture
- Rated capacity
- Weight without battery
- Voltage
- Minimum and maximum mass of battery

TOPPY		Tuppy srl Via Muzza Spadella, 18 40053 Bazzano - (BO) - Italy Tel. ++39.051.833701 Fax. ++39.051.834097 www.tuppy.it - info@tuppy.it		CE	
Modello Model	<input type="text"/>		Matricola Serial N.	<input type="text"/>	
Anno di costruzione Manufacturing year	<input type="text"/>		Portata nominale kg Rated capacity kg/Lbs	<input type="text"/>	
F.to max carta mm Max pallet size mm/inch	<input type="text"/>		Baricentro mm Load center mm/inch	<input type="text"/>	
			Massa a vuoto (senza batteria di trazione) kg Unladen weight (without traction battery) kg/Lbs	<input type="text"/>	
Batteria da trazione Traction battery	Volt	<input type="text"/>			
Massa Weight	MIN kg/Lbs	<input type="text"/>	MAX kg/Lbs	<input type="text"/>	

1.2 General description

The machine described here below is a rechargeable battery truck steered by an operator from ground level. It is mainly used in print shops for pallet loading and unloading operations (pallet change-over). The CE data plate shows the maximum load carrying capacity, as specified here above.

The truck structure includes:

- A supporting frame containing the battery, hydraulic system and controls/instrumentation; the frame is supported on three rear wheels, one of which is the driving wheel, and on front rollers below the support legs.
- A steering tiller.
- A hydraulic cylinder to control the mast up/down stroke.
- A gripper with steel jaws and a soft rubber part bolted to the fork plate.
- Blade plate "Wings" system for the load support from below

The battery supplies the necessary power for the hydraulic pump to operate the cylinder and for the electronically controlled drive wheel.

Basic movements:

- Shifting (drive wheel)
- Mast up/down stroke (hydraulic cylinder)
- Gripper arm opening/closing (hydraulic cylinder)
- Blade plates "wings system " tilting upwards/downwards - opening/closing (hydraulic cylinders)



Danger

The maximum load which can be safely handled is indicated in the CE data plate and should not be exceeded.

In the event that your truck has to be used for operations not mentioned in this manual and needs to be altered or completed to this end, please be reminded that any changes introduced in the truck construction may affect the lift truck travelling behaviour and stability and may therefore lead to accidents. We therefore recommend contacting the manufacturer in advance.

To guarantee maximum efficiency and safety, all parameters shown in the CE label must be respected at all times (e.g. nominal carrying capacity, barycentre, electrical tension and frequency, etc.).

Whenever the number of pallets-per-hour is mentioned, the value is purely indicative, and is calculated by dividing 60 minutes for the time of a "reference cycle". The "reference cycle" is run with products having height of at least 90% the machine's maximum forks/platforms opening. If the machine allows different ways to perform pallet change the fastest method is always chosen, unless otherwise indicated.

For correct machine usage, please refer to the correct practice use in this manual.

DC motor overheating, hydraulic control unit control.

Each work cycle must be followed by a pause lasting twice the time required to carry out the work cycle.

Continuous use of the control unit control motor, in addition to causing it to break, will void the warranty.

2. Safety

2.1 Warnings for the employer

The employer is responsible for informing all operators of the content of this manual. Furthermore the employer must provide the necessary training of employees authorised to drive the machine or carry out maintenance of the machine here described. The employer must also assess the suitability the employees to the tasks foreseen.

The employer is responsible for the selection of personnel suitable for the role of operator or for the role of maintenance man: these people must have the specific professional requirements necessary for every operation to be carried out.

Operators must be trained and must be aware of the role that has been given to them. In particular the operator must know and fully understand the operating procedures and the danger warnings indicated in this manual.

Here below a description of the professional profile of people who operate a forklift truck.

Operator

Carries out tasks necessary to run the machine: uses the controls on the dashboard and the steering tiller to load and unload piles, works the aeration/jogging system, and carries out other simple operations connected to the use of the machine, cleaning and daily inspection. The operator strictly operates with all the protections enabled.

Maintenance man

Can carry out the same tasks as the operator but in addition the maintenance man can work with the protection devices disabled as he/she has the means to disable them and is professionally qualified to carry out functional checks in said conditions. The maintenance man carries out all mechanical and electrical adjustments/repairs, even if power is on.

2.2 Responsibility

The non-observance of the instructions contained in this use and maintenance manual relieves the manufacturer of all responsibility. If the maintenance is not carried out in conformity with the instructions supplied, using non-original spare parts or without the manufacturer's written authorisation, or in a manner that may prejudice the integrity or modify the characteristics of the machine, the manufacturer shall not be held responsible for the safety of people and for the failure of the machine to function normally.

For any further information or for explanations please contact the manufacturer directly.

2.3 Warnings for operators

Despite the rigorous respect of the safety regulations during the design and production of the TOPPY machines and despite a correct and proper use by the operator, accidents may occur at work. The operator must always be attentive during all work phases in order to avoid any unforeseen danger.



Danger

People under the influence of drugs, alcohol or medicines that may affect their capacity to react must not use, adjust or carry out maintenance operations on the lift truck.

A strict control of the presence and integrity of the protections and of the correct functioning of the safety devices is necessary at the beginning of every work shift. The use of the machine will be forbidden if a safety device is missing or faulty. Furthermore it is forbidden to modify or remove guards, protection devices and warning labels.

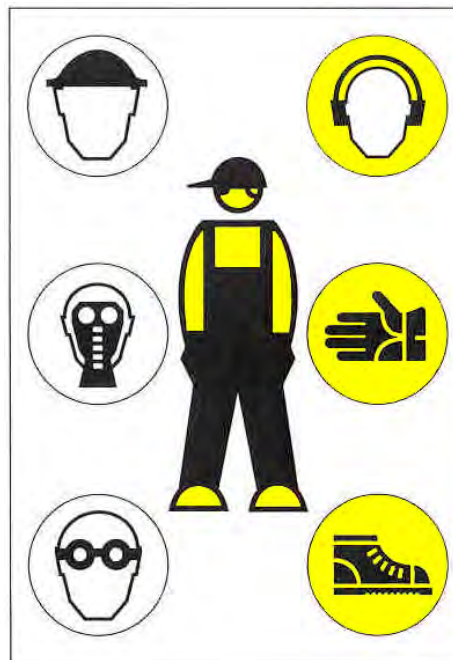
When using the lift truck the operator and maintenance man must wear the appropriate work wear and the adequate personal protective equipment.

2.3.1. Personal protective equipment

- Accident prevention shoes.
- Accident prevention gloves against the risk of cuts or abrasions.
- Hearing protective device (plugs or headphones), if the acoustic pressure level at work is above 85 dB (A).

2.3.2. Work wear

Operators must put long hair up, wear clothes that do not have any loose parts, must not wear necklaces, rings, bracelets or anything else which may easily get caught in moving mechanical parts.



Operator experience and care are required for a safe and profitable use of the lift truck.

CAREFULLY READ THESE RULES OF CONDUCT.



Danger

If you are not adequately trained for the use of the lift truck very serious or fatal accidents may occur.

- ✓ The lift truck must only be used by qualified and authorised personnel.
- ✓ The lift truck must only be used indoors.
- ✓ Work wear and the personal protective equipment supplied by the employer (gloves, shoes, etc.) must be worn.
- ✓ Carry out the necessary controls before using the lift truck. Report any fault to your superior and stop using the faulty lift truck.
- ✓ Follow the rules concerning traffic and speed limits in the work place.
- ✓ Keep a safe distance between trucks, people and obstacles so you can stop in time.
- ✓ Pay attention to pedestrians.
- ✓ Be careful when turning in transit: the lift truck moves in the opposite direction to the forks. Make sure there is enough space to pass without knocking pedestrians over.
- ✓ Keep feet away from lift truck when walking.
- ✓ Watch where you are going especially when changing direction. Injuries can be caused by objects entering the driver area.
- ✓ Be careful when starting, braking or turning suddenly.
- ✓ Do not transit over holes, on slippery surfaces or rough ground. This may lead to dangerous situations. Drive at low speed and if possible pass over thresholds, tracks and runners of sliding doors at an angle.
- ✓ When turning corners and going through doors pay particular attention to hidden corners and tight passages. Reduce speed and use the acoustic warning signal.
- ✓ Drive with special care on ramps without railings.
- ✓ Reduce speed down a slope. Remember that going downhill the braking space required increases compared to going on a flat surface..
- ✓ When walking on a slope proceed keeping the load as low as possible. If you need to transport a load up a slope be very careful and walk beside the lift truck.

- ✓ Only lift loads with declared dimensions.
- ✓ Only lift the load on flat surfaces.



Danger

Serious or fatal accidents can occur if the truck is overloaded or if attention is not paid during load pick-up. The load can fall onto the operator or other workers.

- Test the load capacity of gangways before passing. Check stability of gangways. Do not exceed maximum capacity of lifts and gangways.
 - ✓ Park on a level and stable surface. Do not obstruct passages, emergency exits, control panels and fire protection points..
 - ✓ Before switching the lift off, lower the forks completely. Remove the key in order to prevent unauthorised use.

Safety at work has priority over speed at work!

2.4 Maintenance plan

The word “maintenance” describes all those activities of control, cleaning, adjustment and repair of the machine necessary to maintain the correct operating and safety functions.

The non-respect of the maintenance programmes indicated in this manual causes:

- loss of functionality and safety;
- shorter life time of the truck;
- consequent loss of value of the truck itself.

CAREFULLY READ THESE RULES OF CONDUCT

- ✓ During each maintenance phase, operators must wear the necessary accident prevention equipment (work wear, protective glasses, gloves, accident prevention footwear) and during maintenance of electric components operators must not wear rings, bracelets, etc.
- ✓ Always keep the maintenance area clean and dry and remove any oil marks.
- ✓ Do not allow unauthorised personnel to carry out any intervention.
- ✓ Never put body, limbs or fingers in articulated parts or sharp openings of the machine that do not have a guard.
- ✓ Never align holes or slots with your fingers, always use the special instruments.
- ✓ Do not use petrol or solvents as detergents, always use non-flammable and non-toxic solvents.
- ✓ Limit as much as possible the use of compressed air. Wear glasses with side protections and do not exceed a pressure of 2 bar.
- ✓ Never use naked flames for illumination purposes when carrying out maintenance or control operations.
- ✓ To avoid damage to the machine and/or injuries to personnel after each maintenance or adjustment make sure that you do not leave any tools or foreign bodies in the moving parts of the machine.

2.4.1. Original spare parts

TOPPY spare parts and accessories have been especially designed for your lift truck.

The installation and/or use of non-original spare parts and/or accessories could modify in a negative way the characteristics of your lift compromising safety during operation. The manufacturer is not liable for any damage caused by the use of non-original spare parts and accessories.

2.4.2. Safety regulations concerning to working materials

The working materials used in the lift truck are the following:

- Oil for transmissions.
- Hydraulic oil.

2.4.3. Oil for transmissions and hydraulic oil

- Avoid contact with skin, in particular in the case of oil leaks under pressure (pipe breakage, leaks);
- Oils cause water pollution: for this reason they must always be collected and transported in suitable containers;
- Recycle oils, filters and containers according to the relevant regulations;
- Use the special personal protective equipment (gloves, glasses, etc.) when handling oils. In case of accidental contact with the oils rinse immediately with soap and water.

2.4.4. Battery electrolytes

- The battery electrolyte is in gel form, therefore there is only a remote possibility of spraying, pouring out onto the ground etc. In all cases, however, avoid contact of the electrolyte with the skin and the inhalation of vapours;
- Only handle when using relevant IPD (gloves, protective clothing and face mask). In the case of contact, rinse immediately with water and consult a doctor;
- On charging the battery, the formation of a mixture of explosive gases is possible, which are also present for a long period of time after termination of the charging process. Air the room in which the battery has been charged well.



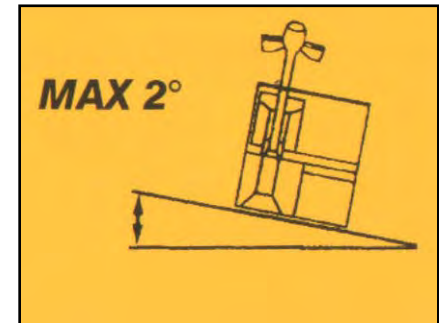
Danger

It is prohibited to smoke or approach free flames within a radius of 2 m from the charging battery.

2.5 *Pictogram signs*

Make sure that labels and warnings are legible. If this is not the case replace with new ones. Replacement labels can be obtained from TOPPY S.r.l. It is advisable to respect the warnings indicated on the warning signs.

On the dashboard: MAXIMUM GRADIENT.



EMERGENCY.



On both sides of the clamp unit,, visible from the side: DANGER OF CRUSHING OR LOSING FINGERS IN THE MOVING PARTS OF THE FORK.



At the bottom on both sides of the frame, visible from the sides: DANGER OF CRUSHING FEET



On both sides of the must: ATTACHMENT POINTS FOR EXTERNAL LIFTING EQUIPMENT

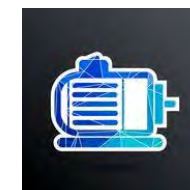


ATTENTION

IT IS FORBIDDEN TO STAND IN THE RADIUS OF ACTION AND CROSS WHEN THE TRUCK IS IN MOTION.

WARNING

THE HYDRAULIC POWER UNIT'S DC MOTOR CAN OVERHEAT.

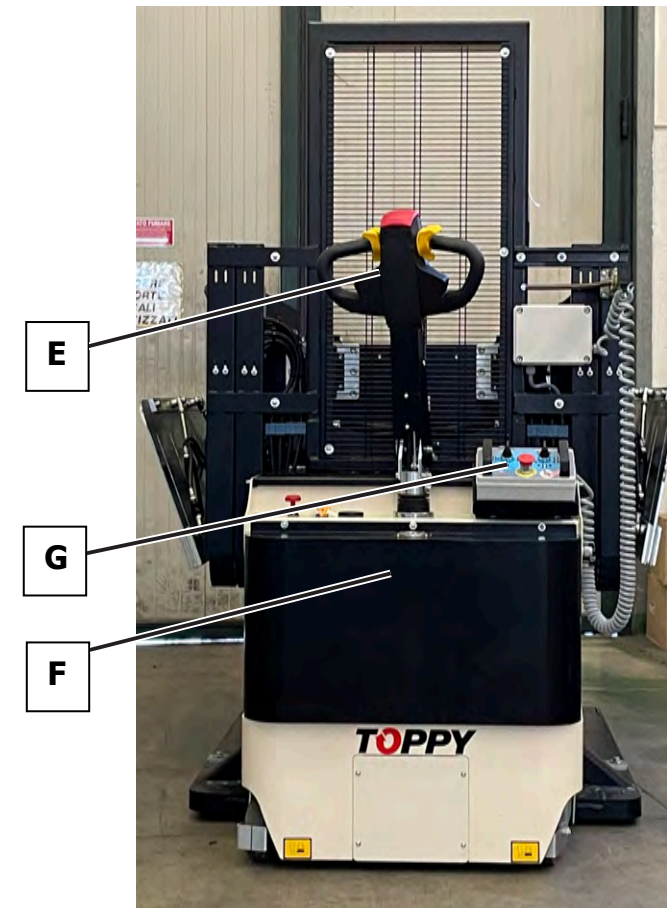
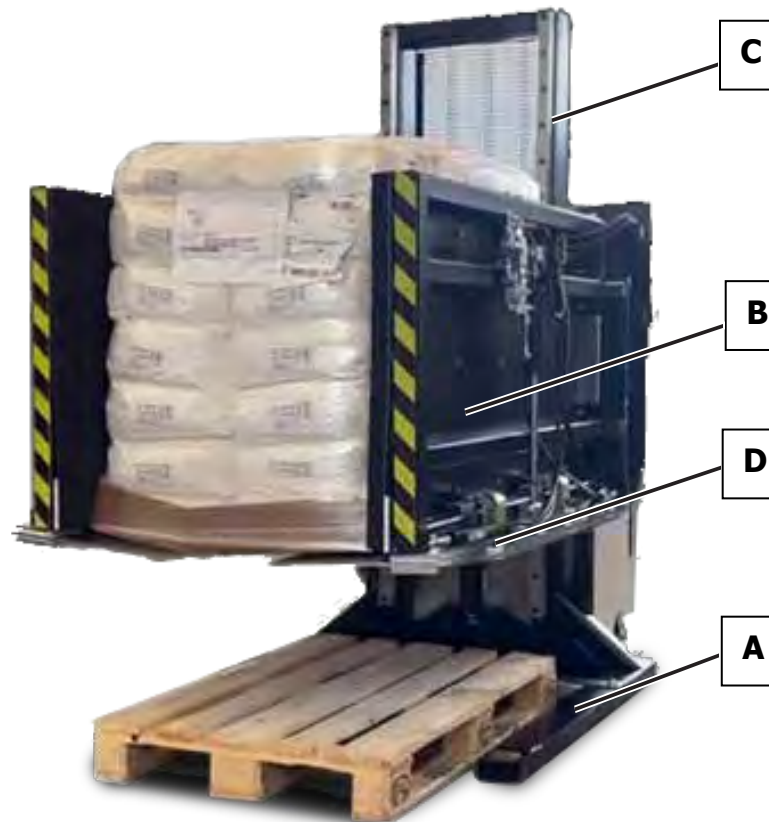


3. TOPPY FALCON WINGS lift truck description

The operating instructions regarding individual functions are described in the corresponding chapters.

3.1 Machine view

- A) Support rollers
- B) Gripper
- C) Mast
- D) Blade plate system
- E) Steering tiller
- F) Battery compartment cover
- G) Operator control panel



Use and maintenance manual: TOPPY FALCON WINGS lift truck

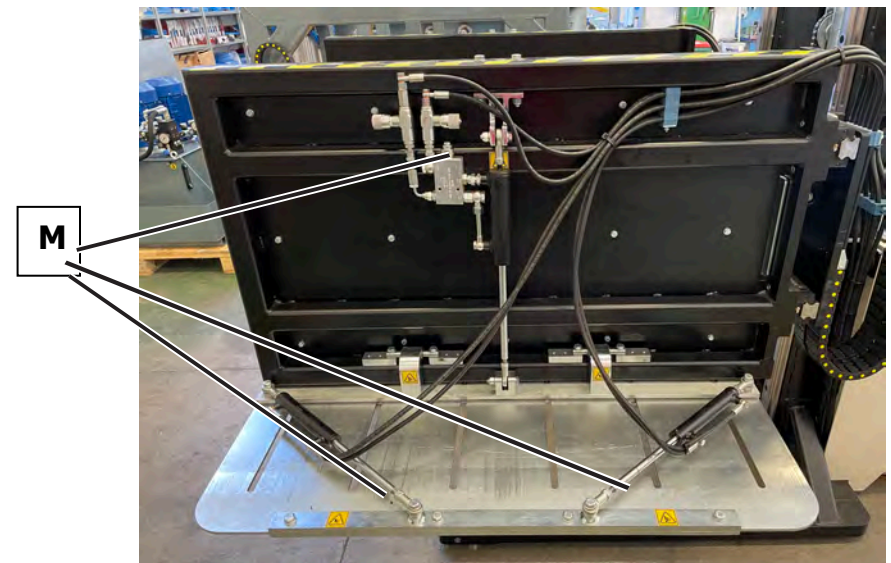
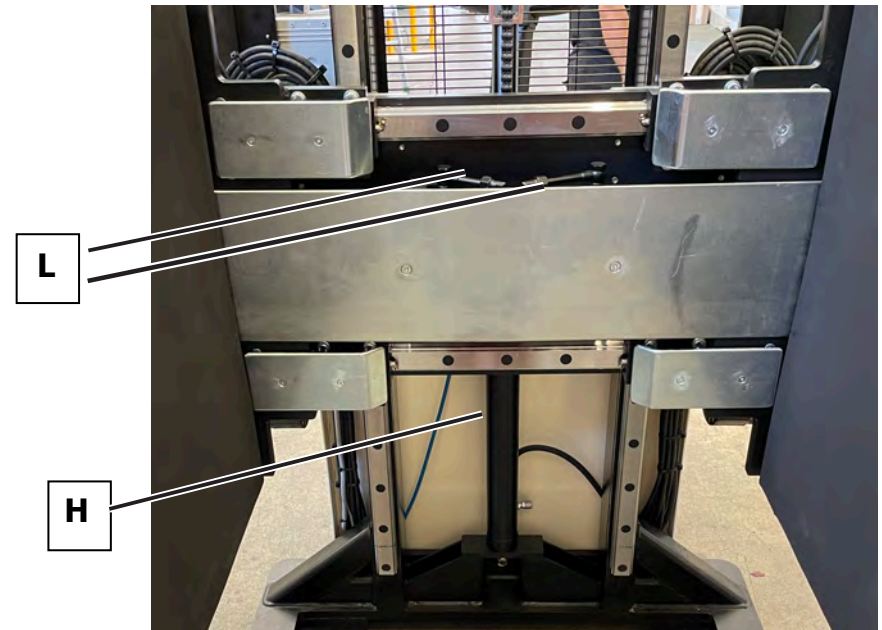
H) Hydraulic cylinder for gripper lifting/lowering.

I) Safety grid

L) Hydraulic cylinders for gripper opening/closing

M) Hydraulic cylinders for blade plate " wings system system "
Tilting upwards/downwards - opening/closing.

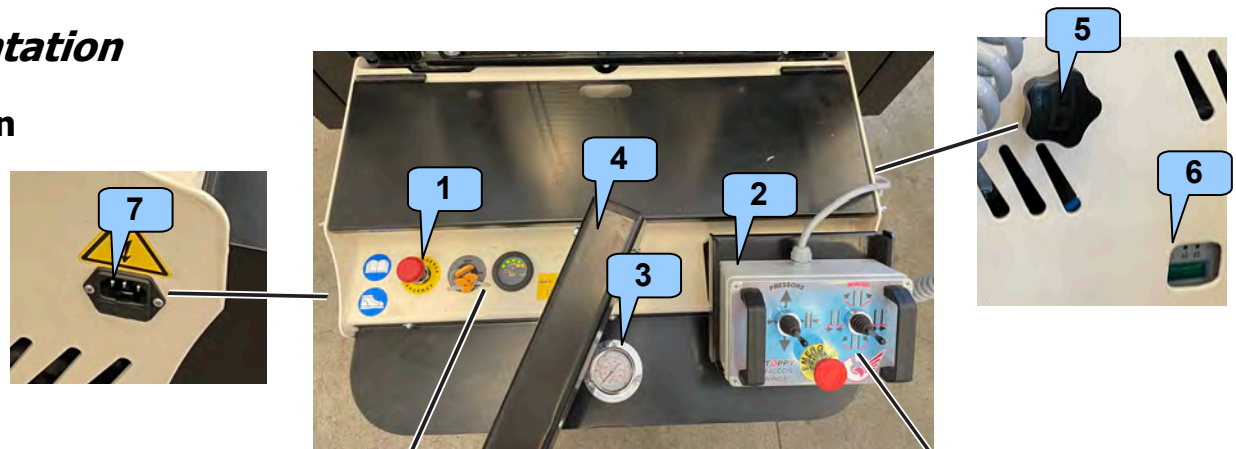
The hydraulic cylinders are equipped with safety locking valves.



3.2 Operator's controls and instrumentation

Instrument panel levers and instrumentation

- 1) Control panel
- 2) Remote control panel
- 3) Manometer/pressure gauge
- 4) Tiller/rudder
- 5) Knob for gripper operative pressure adjustment
- 6) Charge indicator / hour meter
- 7) Plug socket



Controls equipped on the control panel 1:

- 8) Emergency stop button
- 9) Truck activation key selector switch ON/OFF
- 10) Charge indicator - machine ON/OFF indicator

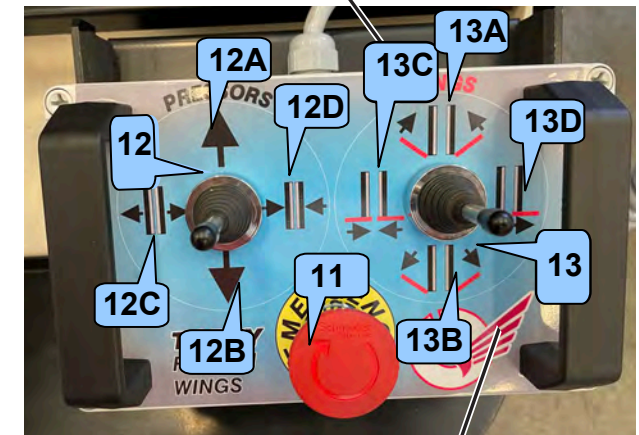


Controls equipped on the remote control panel 2:

- 11) Emergency stop button
- 12) Gripper/presser control lever:
 - 12A** - Lifting of the gripper
 - 12B** - Lowering of the gripper
 - 12C** - Opening of the gripper
 - 12D** - Closing of the gripper
- 13) Blade plates/"wings" control lever:
 - 13A** - Plates tilting upwards
 - 13B** - Plates tilting backwards
 - 13C** - Closing of the plates
 - 13D** - Opening of the plates
- 14) Compartment for positioning the remote control panel 2 equipped with microswitch.

The microswitch enables the tiller controls, it's not possible to use the tiller/rudder controls if the remote control panel is not placed on the compartment.

Place the remote control panel on the compartment to enable the rudder controls.



Use and maintenance manual: TOPPY FALCON WINGS lift truck

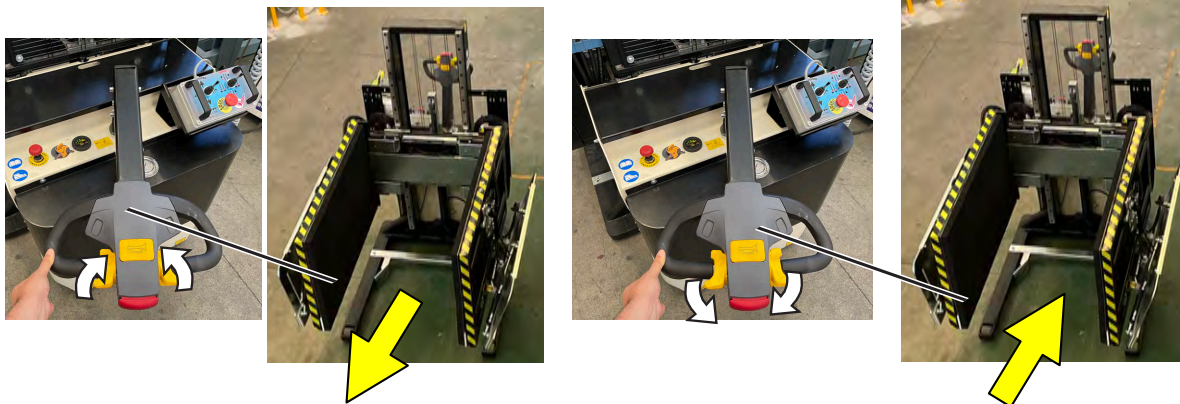
Tiller

- 1 - Anti-crushing switch/stop button
- 2 - Winged switches for truck movement (fowards/reverse)
- 3 - Grab handle
- 4 - Warning buzzer button/Horn

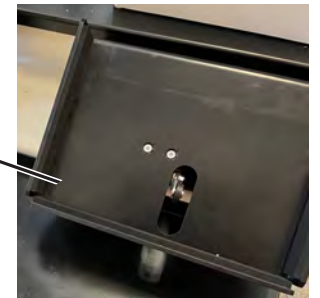
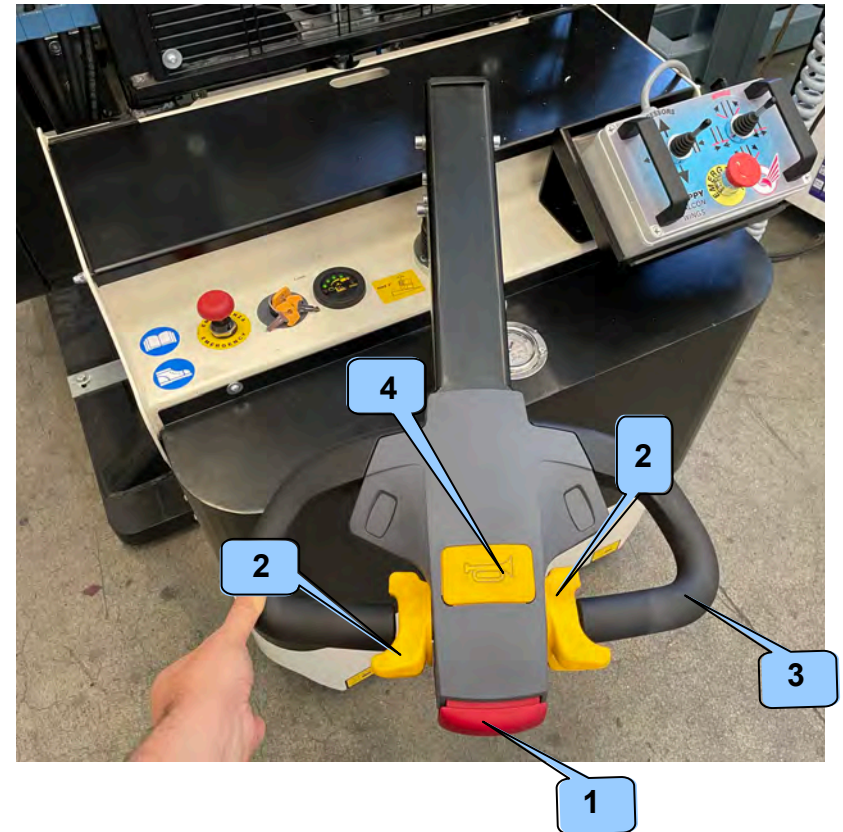
Turn the flap switch 2 to select the direction and speed.

Therefore turn the switch towards the grips to activate the lift truck in the direction of the grips and turn it towards the tiller to activate it in the direction of the tiller.

The speed of the lift truck increases proportionally to rotation of the switch. The driver must adapt speed to working conditions. When turning, he must stay at a speed proportional to the turning radius. The less the radius, the less the speed must be. The flap switch can be activated with your right or left thumb. When the flap switch is released, the lift truck stops after a short span. Travel direction can be switched directly from forward to reverse.



Compartment for positioning the remote control panel equipped with microswitch. The microswitch enables the tiller controls, it's not possible to use the tiller/rudder controls if the remote control panel is not placed on the compartment. Place the remote control panel on the compartment to enable the rudder controls.



3.3 *Technical specifications*

Model		TOPPY FALCON WINGS
CHARACTERISTICS		
Capacity	kg	1000
Gripper size	mm	Two side plates covered with mousse H800 x 1300
Admitted pallet size	mm	800 x 1200
Max lifting height	mm	1400
Legs dimensions		Suitable for pallet placement from the side 800
Type of traction		Electric by battery
Drive		On foot using steering device
Tyres		Wheels with solid rubber
Brake		Electromagnetic
Truck weight without battery	kg	1315
Battery (min / max)	kg	2 x 27 / 2 x 37
Battery voltage	V	24
Drive battery	Ah	120 Lead acid batteries
Battery charger	A	16
Pressure selector		Direct regulation (manual)
Hydraulic circuit maximum power	bar	125

3.4 Work area

The work area must be indoors with a flat compact surface, without obstacles, holes or humps and with a sufficient capacity to support the weight of the lift truck and its load. MAXIMUM GRADIENT/INCLINATION = 2°

The lift truck must be used inside covered factories with a regulated temperature and a limited exposure to dust and humidity. Ideal conditions are: temperature from -5° to +50°C, humidity from 40 to 90%, maximum altitude 1000 m above sea level.

Correct lighting in the area of use of the truck is important for the safety of people and for the quality of the work; the minimum lighting necessary must be sufficient to guarantee the correct vision of controls, symbols and marks without dazzling the operator (from 300 to 500 lux).

The machine here described is not equipped for use in explosive areas and/or areas at risk of fire. If this is the case the customer must specify that this risk exists when ordering the machine.



Danger

The lift truck here described must not be used:

- in areas subject to risk of fire or explosions
- in environments characterised by a corrosive atmosphere
- in environments with a high level of dust
- in environments with insufficient lighting
- on roads
- in refrigerating rooms

3.5 Translation

Direction and speed are selected using the throttle on the head of the tiller. The lift truck stops a short distance after the throttle has been released. The direction of translation can be changed directly from forward to reverse (inversion): the lift truck brakes electronically in a continuous and controlled way.

3.6 Braking

To stop the truck in an emergency it is possible to release the throttle. In this way the electromagnetic brake is introduced.

3.7 Steering

The lift truck can be driven using the tiller which is directly connected to the driving wheel.

3.8 Hydraulic system

The lifting/lowering of the mast is activated by a central piston that is hinged at the bottom. The opening/closure of the gripper is controlled by a hydraulic cylinder in the same way, which moves the arms with rubberised ends. Every blade plate ("Wings system ") is equipped with an hydraulic cylinder for the device tilting/opening/closing movements. The levers equipped on the remote control panel control the movement of the various cylinders.

3.9 Performance

To guarantee maximum efficiency and safety, all parameters shown in the CE label must be respected at all times (e.g. nominal carrying capacity, barycentre, electrical tension and frequency, etc.).

Whenever the number of pallets-per-hour is mentioned, the value is purely indicative, and is calculated by dividing 60 minutes for the time of a "reference cycle". The "reference cycle" is run with products having height of at least 90% the machine's maximum forks/platforms opening. If the machine allows different ways to perform pallet change the fastest method is always chosen, unless otherwise indicated.

For correct machine usage, please refer to the correct practice use in this manual.

4. Lifting and transporting the lift truck

The truck described is supplied ready for functioning. All of the material inherent to the supply is accurately controlled by the Manufacturer before shipping.

Packaging can be a wooden crate or wooden bed covered by a plastic sheet that prevents direct contact with dust and humidity. On unpacking, dispose of all materials correctly. On receipt, check that the truck is integral and has not been damaged during transport and that the packaging is not open. Particularly check the state of the following components:

- Cylinder and lifting rod of the mast;
- chain and chain pins;
- limit switches;
- emergency switch;
- electric cables for motor power supply;
- hydraulic feeding pipes;
- electric motor;
- hydraulic pump;
- control board.

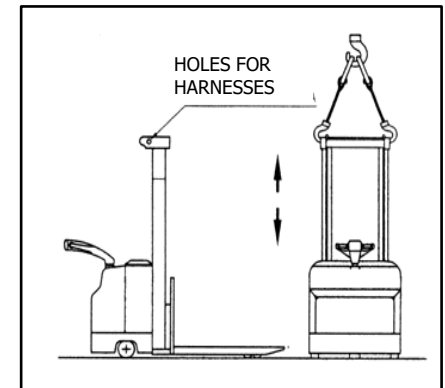
If damage is detected or parts are missing inform the carrier and Manufacturer immediately.

4.1 Lifting

The standard truck has a total weight (including the battery) that can reach 1400 kg. The maximum capacity of the lifting device must therefore be at least 2000 kg. All of the potentially mobile elements must be tightly fastened to the machine to prevent dangerous detachments or unbalancing.

An overhead crane or tackle with harnesses must be used to lift the truck; chains and hooks must be in good condition (no damage or deterioration) and bear sure indications of the guaranteed capacity. Use two chains (or ropes) to attach to the mast, as illustrated in the diagram, in correspondence with the points indicated by the relevant stickers.

Before lifting the truck completely, check the correct balance.



The truck must be lifted slowly without jerking; lift the trolley as little as possible from the ground.
The Manufacturer is not liable for breakage due to transport of the machine after delivery.



Danger

Extreme care must be taken during lifting and transport in order to prevent injury to persons and damage to objects. Ensure that no-one is exposed to the danger area near to the truck being lifted.
This operation must be carried out by expert staff.

4.2 Transport

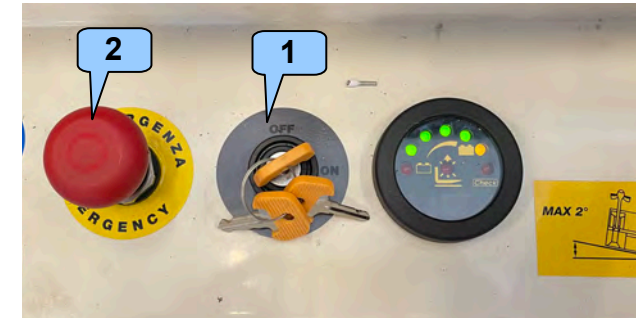
To guarantee safe transport on a lorry or railway wagon, prevent the truck from moving by means of parking wedges and also apply straps or anchorage tables that are in a good state.
Regarding this, the attachment devices must be installed in a way so as not to damage the bodywork panels.
Transport of the packaged machine can take place by means of a lifting truck with forks measuring at least 1500 mm and with adequate capacity to lift the machine and the packaging.
If the truck is transported without packaging, lower the pincer completely and cover the machine with a plastic sheet to prevent direct contact with dust and humidity.

5. Safety equipment

5.1 Ignition key

The machine is equipped with the extractable key (1) switch to prevent use by unauthorised staff. To turn ON the machine, place the ignition key on the ignition key compartment and turn the key on ON position.

To turn OFF the machine, turn the key on OFF position, to avoid unauthorized use remove the key from the ignition key compartment.



5.2 Emergency stop button

In critical situations the power supply can be interrupted by pressing the red emergency button (2) on the dashboard of the lift truck.

In critical situations, the power supply can be interrupted by pressing the red emergency stop button (3) on the remote control panel.

Disconnection

Press the red button on the dashboard/remote control panel for the emergency stop.

The machine stops in the reached working position and keeps the load being processed.

Connection

To reconnect the battery, pull the red button.



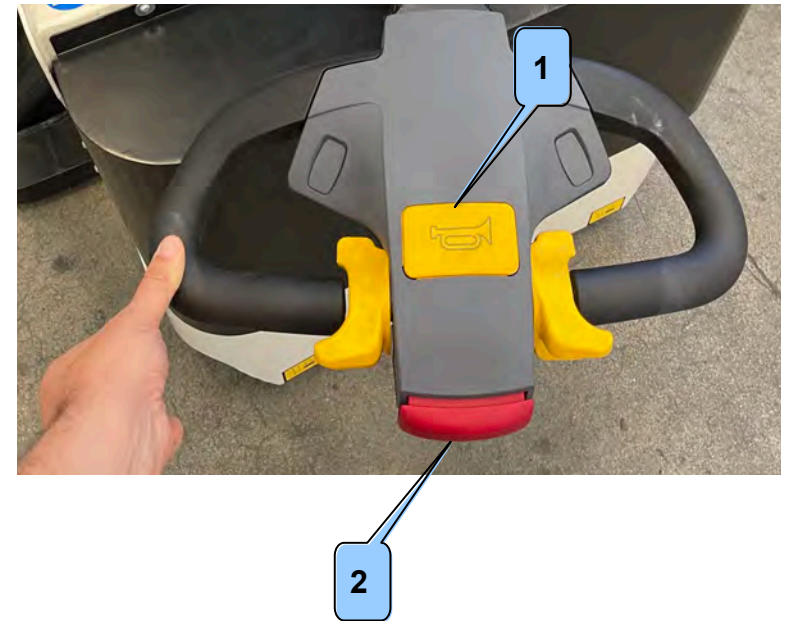
5.3 Braking system

The maintained action winged switch (4) on the steering device, controls the travel system and has automatic return to the neutral position. When it is released, the truck stops and the electromagnetic parking brake is automatically triggered; the latter is also activated in the case of a power cut or fault.



5.4 Acoustic warningsignal

The tiller/rudder is equipped with the acoustic warning signal (1) with which the operator must signal his arrival in points with low visibility. The acoustic warning signal is a safety device and must be able to work at all times. When the ignition key is in the switch-on position, a sound will be emitted if the acoustic warning button is pressed.



5.5 Safety reverser

The tiller/rudder is equipped with an additional safety device that protects the operator from injury when he walks preceding the truck. The switch (2) located in the upper part of the steering device, if touched, immediately inverts truck movement and stops it after a brief tract.



Danger

Never activate the safety reverser unless strictly necessary: persons standing in front of the truck can be seriously injured.

5.6 Other safety devices

The TOPPY FALCON WINGS truck is equipped with other safety devices for the hydraulic system and for the electrical system:

- Locking valve to prevent mast lowering in the event of a hydraulic system failure,
- flow control valve overpressure system,
- check valve to prevent pump operation as a hydraulic engine,
- lock valves on the gripper hydraulic cylinders to prevent unwanted load movement in the event of the hydraulic pressure drop,
- lock valves on the wings sysem hydraulic cylinders to prevent unwanted load movement in the event of the hydraulic pressure drop,
- end-of-stroke microswitch for the mast up/down stroke,
- shearing hazard preventing grid on the mast (to prevent accidental contact between the operator and any moving parts),
- mechanical limit stops on mast.

6. Starting the machine

6.1 Before starting up

Before using the truck for the first time make sure it has not been damaged during transport and that it is correctly assembled. Check all electric and hydraulic connections, and in particular: the sheaths must be without cuts or abrasions and the ends must be well tightened.

Mechanical connections must be restored as accurately as possible: all screw joints must be screwed tightly using the appropriate torque.

The quantity of liquid in the hydraulic tank and oil in the drive transmission must be checked. Levels should be just below the cap.

Once the battery is charged the truck can be checked: carry out a series of movements without a load to simulate the real functions of the machine.

Use the controls and check that the movements selected are correct.

Initial machine start-up should be done by **TOPPY s.r.l.** maintenance personnel.

Electrical connections

The machine is equipped with a power cord with two connectors enabling to plug the battery into its charger. The battery and battery charger are supplied with the machine.

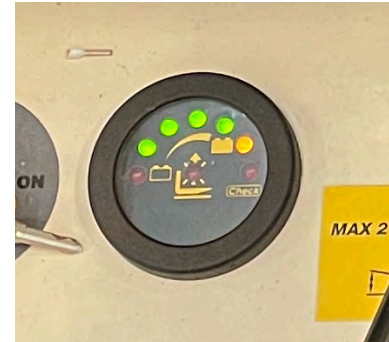
Battery requirements:

Voltage: 24V Max amp rating: 120Ah

Battery charger requirements:

24 V - 16 A

The battery charger/line connection must be implemented as described in Fig.



Battery charger operating instructions

Before plugging the power cord into the battery charger, lower the forks to the ground.

- 1) Connection to the power supply. Before plugging the rectifier into the power line, make sure that the voltage rating matches the indication on the battery charger data plate.
- 2) Unplug by pressing the emergency button, turn the machine OFF; screw out counter-clockwise to remove it.
- 3) Remove the battery compartment protective guard.
- 4) Screw the emergency button back into its seat and turn clock-wise all the way to the end of its travel, then pull up to engage it.
- 5) Plug the battery charger into the power mains by using the supplied power cord.
- 6) A number of LEDs will show the battery charge state; some of the LEDs will flash to indicate charging start.
- 7) Once recharging is complete, all LEDs will remain lit with a steady light.
- 8) Turn off the power switch, unplug the power cord from the power supply.
- 9) Remove plugs from battery cells. Check the level of liquid in the battery.

- 10) Replace the battery plugs, release the emergency button, replace the protective guard, reset the emergency button and pull up.
- 11) After recharging the battery, the truck is ready to be tested: a number of small movements must be controlled to simulate the machine actual behaviour. Control machine functions (without any load on the machine) as required and ensure that movements are correctly performed. The truck is now ready to be used.
- 12) A battery charger failure to operate may be due to:
 - No voltage supply from factory line.
 - The battery charger protective fuse has tripped: turn off the battery charger and unplug it from its line outlet, then replace the fuse with another similar one.

WARNING

The battery charger must not for any reason be washed with pressurised water jets or steam cleaners. Doing this may severely affect the device efficiency and safety.

The first start-up should be carried out under the supervision of TOPPY after-sale service staff.

6.2 *Before each use*

Before each shift the operator must check the safety condition of the lift truck. The driver must have followed and passed a special training course to drive this machine.

The national regulations in force must be observed.

6.2.1. Checking the braking system

Check that the brake is working by inserting and releasing the throttle while moving. Braking and acceleration must be smooth and without jolts.

6.2.2. Checking the tiller

Check that there is no degree of play and that the tiller moves without jolts and that it doesn't make any strange noises.

6.2.3. Checking the safety and control devices

- Check that the controls are in perfect condition.
- Controls must return automatically to neutral position.
- Safety micro-switches must work perfectly.

6.2.4. Ignition key check

- The key is only removable from its OFF position.
- The truck may not be used if the key is turned to OFF or has been removed.

6.2.5. Checking the lifting units

- Frame, clamp, mast and welded joints must not be fractured or show any signs of damage.
- Frame, mast and clamp must not be bent.
- Check condition, wear and tightening of all bolts and hydraulic connecting blocks of the machine.

6.2.6. Checking the wheels

- Check for foreign bodies on the wheels.
- Check that the condition of the load bearing wheels and of the driving wheel is perfect.

If any defects of any type are found during the daily controls which may affect safety at work then the necessary repairs must be immediately carried out in a competent way. The lift truck must not be used until it has been repaired.

6.3 Checking the battery



Danger

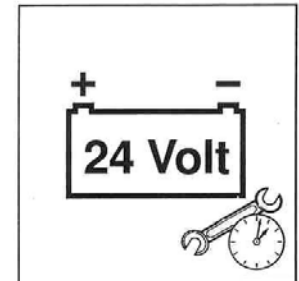
The battery electrolyte is in gel form, therefore there is only a very low probability of spraying, pouring out onto the ground etc.

In any case is poisonous and corrosive and for this when working with battery acid, always keep to safety norms.

In particular, in the case of batteries that have just been charged remember that there is a danger of explosion due to the gas that leaks out of the battery caps (see page 19)

The battery must be treated with great care as it supplies power, therefore:

- Keep the battery dry and clean.
- Regularly recharge the battery and control the condition of the electrolyte.
- Check that the connection of the battery cable and plug is in perfect condition.
- Apply the special insulating grease on the battery poles against corrosion.
- The top parts of the elements must be kept clean and dry, there must not be any oxides on the terminals and these must be slightly greased and properly tightened.



6.3.1 BATTERY LOW CHARGE INDICATOR

When the lifter is turned on, the battery low charge indicator (A) turns on. Check the discharging of the battery to prevent it from becoming completely discharged.



WARNING

Prevent the battery from discharging completely. Recharge when there is a residual charge of 20 - 30%. Only one green light is turned on (on the left position)



6.4 RECHARGING THE BATTERY

The batteries must be recharged in areas set aside for this purpose, furthermore all precautions must be taken to prevent spillage of diluted sulphuric acid.

Recharging must be performed only by trained and authorized personnel. Personnel must wear protective clothing, such as gloves and goggles, during recharging.

The machine has an internal battery compartment.



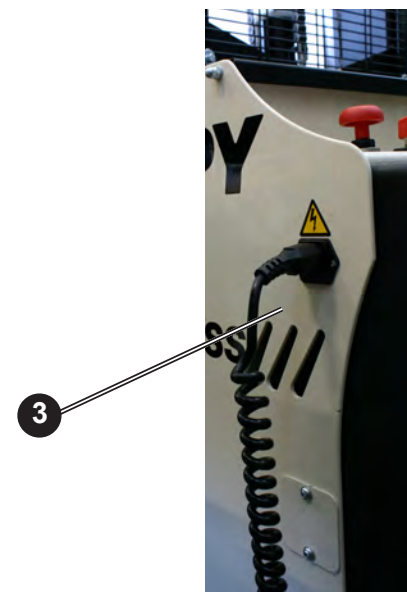
DANGER

During recharging, highly flammable gas is generated, therefore the recharging area must be well ventilated. The room temperature must be below 45°C.

If ventilation is insufficient, airing must be ensured by suitable extractors and relevant discharge ducts. It is absolutely prohibited to smoke, use naked flames, electrical arcs, sparks or any other source of ignition within the recharging area.

- Park the lifter in the recharging area and turn it off, pulling out the key.
- Open the battery compartment **1** and open all battery plugs **2**.
- Ensure the level of electrolyte in the elements is 5mm above the elements and top up with distilled water through a clean plastic or glass funnel, if necessary.
- Get the power cable **2**.
- Connect cable **2** to socket **3**.
- After recharging, disconnect cable **2** from socket **3** and close the battery plugs, checking that no foreign body has entered into the elements. Close the battery compartment **1**.

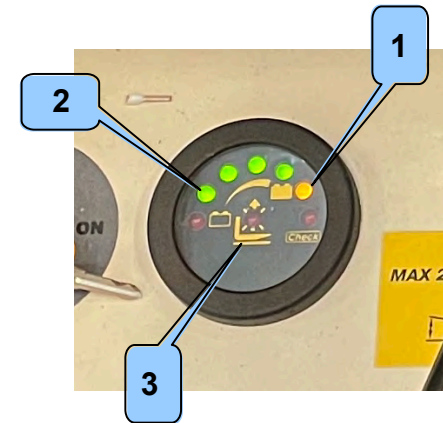
TOPPY



6.4 Low-battery indicator

When the truck is switched on, the low battery indicator comes on. It is important to control the charge level in order to stop the battery going completely flat.

1. Battery fully recharged
2. Battery at 20% charge capacity (the other green leds turned off). The operator shall recharge the battery
3. Battery fully discharged, only the tiller controls are enabled



Under the charge level you can find the machine lifetime meter (Optional).



Caution

Do not allow the battery to go flat. Recharge when there is a 20 – 30% charge, in other words when only one green light is turned on (on the left position) - LED 2

6.5 Recharging the battery

The battery must be recharged in special areas and necessary precautions must be taken against the spillage of electrolyte. All operations must be carried out by qualified and authorised personnel. Protective clothing such as gloves and glasses must be worn during recharge operations.



Danger

Highly flammable gases are released during the recharge phase therefore the area intended for recharging must be well ventilated. Ambient temperature must be lower than 45°C. If the area is not sufficiently ventilated then special extractors with outlets must be used to change the air. Smoking, naked flames, electric arcs, sparks or any other source of spark are strictly forbidden in the recharge area.

- Park the truck in the recharge area and switch it off by removing the key. The truck is equipped with internal battery charger with plug on the side of the battery compartment.
- Lift the cover of the battery compartment to prevent the accumulation of explosive gas.
- With battery charger off, switch to position 0 (OFF), connect the battery charger cable into a suitable socket.
- Turn the battery charger moving the switch to I (ON) and follow the process of charging by the LEDs on the charging socket.
- After charging, unplug the charger cable from the socket and close the battery cover.



7. Using the truck

Before starting work, read the check list on page 36 including the safety instructions on page 14.

The TOPPY FALCON WINGS lift truck can be used only to transfer a set of products placed on a pallet to another empty pallet, previously prepared. The content must have dimensions and mass within the expected limits, which are shown in the rating plate on the dashboard.



Danger

To avoid accidents caused by machine failure, it is forbidden to use the lift truck if a problem occurs during the preliminary daily inspections or use.



Warning

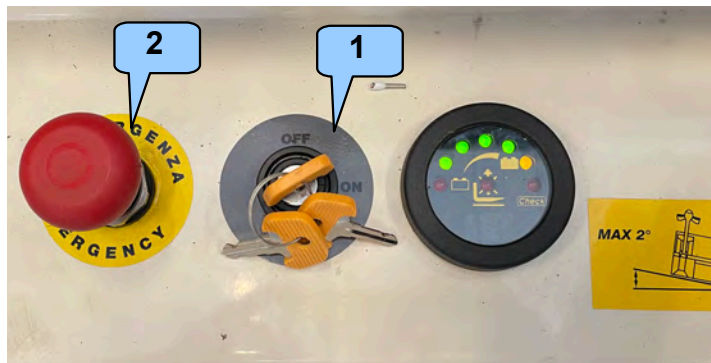
The hydraulic power unit's DC motor can overheat. After every work cycle the motor must cool-down for a duration of twice the work cycle's time. Continued use of the power unit's motor may cause failure of the part and will void the warranty.

7.1 Truck power on / power off

To power on the truck, an exact sequence of operations must be carried out. Check the emergency buttons (2) and (3) and battery charge level. Insert the ignition key in the instrument panel switch slot (1) and turn it clockwise to its ON position.

The lift truck is now ready to be started. If the truck will not start, check the emergency button and battery charge level and repeat the ignition procedure. If the truck still won't be started, contact TOPPY's after-sale service.

To power off the truck, turn the key to its OFF position. In case of emergency, press the red emergency stop button (2/3)



7.2 Side shifting and speed

The steering tiller is equipped with a winged switch for the lift truck movements



All the operations regarding pallet change-over (moving closer to the material to palletise and material transfer) should be carried out in the low speed mode.

Only use the high speed mode to move an empty truck (without any product load).

By rotating the winged switch in the direction corresponding to the required travelling direction, the travelling direction and speed can be selected. The truck speed will increase proportionally to the winged switch rotation. The driver must adjust the truck travelling speed to existing operating conditions. Especially when going into corners, the truck speed must be proportional to the corner radius: the smaller the radius, the lower the recommended speed.

The winged switch can be operated with both the right-hand and the left-hand thumb.

7.3 *Changing direction of movement*

The direction of movement can be changed directly from "forward" to "reverse" by simply turning the winged switch. Braking and acceleration in the following opposite direction are electronically controlled.

7.4 *Braking*

When the winged switch is released, the electro-mechanical brakes is enabled. When the brake is applied, the truck does not move and the current to the translation motor is interrupted.

7.5 Stopping/Leaving the truck

When the operator leaves the truck unguarded, he/she must switch off and extract the key selector, thus preventing any unauthorised use. The truck must be parked in the dedicated parking areas so as not to block passage ways, emergency exits, control panels and fire protection points.

7.6 Steering

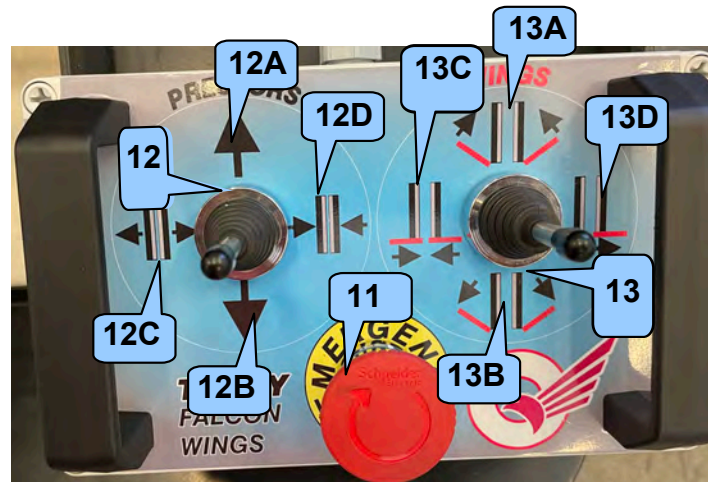
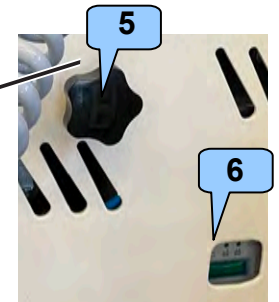
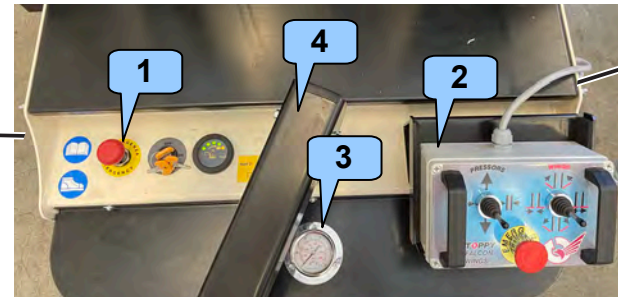
Direction is given by moving the tiller. The tiller is directly connected to the driving wheel and the position of the wheel is given by the tiller itself.

7.7 Pallet change cycle

1. Turn ON the machine: Insert the ignition key in the control panel switch slot (9) and turn it clockwise to ON position.
2. Check the emergency stop buttons (8) and (11) and the battery charge.
3. Select the operative pressure from the knob (5). The operative pressure is shown on the gauge (3)
4. Use the controls (12) and (13) to set the machine on starting conditions (travel mode):

- No pallet/ load on the machine
- Wings system plates totally open (**13D**) and on 90° inclination range respect to the floor(**13A**). In this configuration the overall dimensions of the machine are reduced due to the position of the "wings system" in order to make easier the handling/travel operations of the lift truck with the tiller controls.
- Grippes totally open (12C) and on the lowest position (12B).
- Place the remote control panel (2) on the compartment (14).

The lift truck is ready for the motion operations



Use and maintenance manual: TOPPY FALCON WINGS lift truck

5. Place the origin pallet with the load on the ground, place the destination pallet without the load on the ground.

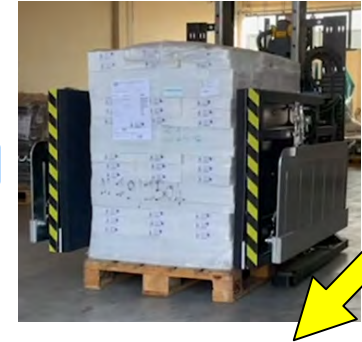
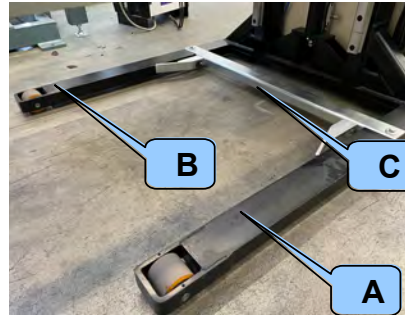


Danger

IT IS STRICTLY FORBIDDEN TO PLACE AN EMPTY PALLET UNDER A LOAD HELD UP BY THE GRIPPER
DANGER OF CRUSHING.

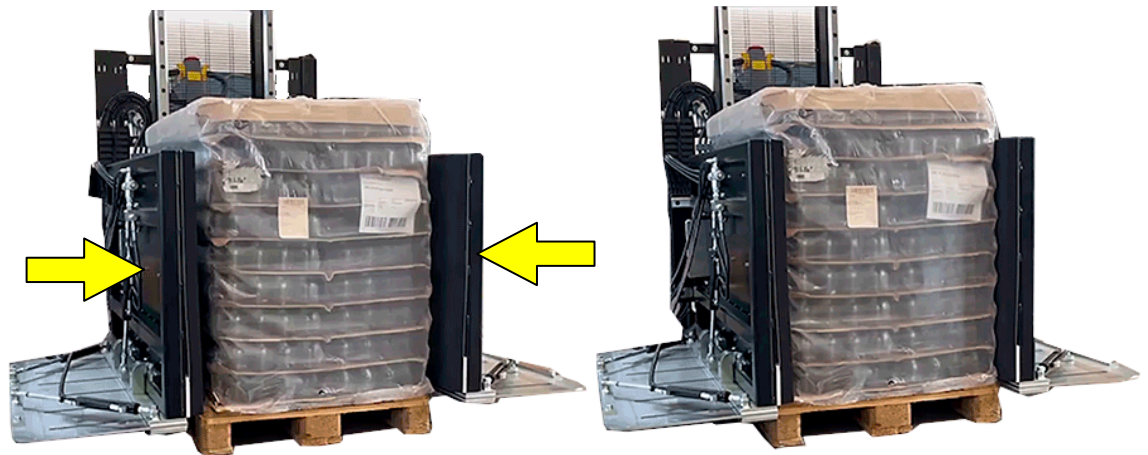
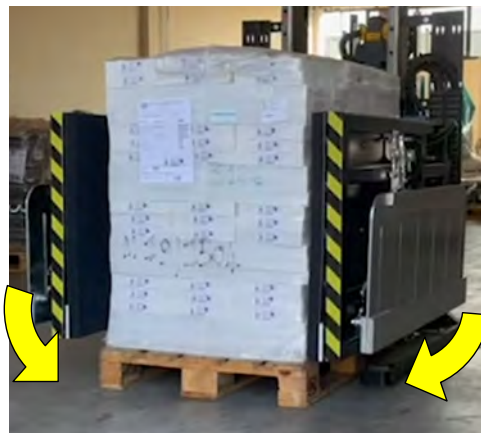
6. Make sure that there aren't any persons within the work range. Use the controls equipped on the tiller to align the lift truck with the origin pallet with the load. Use the manual controls equipped on the tiller to move the lift truck towards the origin pallet with the load, in this way the origin pallet is placed between the support leg of the lift truck.

The short side (800 mm) of the pallet shall be placed in contact with the support frame (C) and the long side (1200 mm) of the pallet shall be parallel to the support legs (A) and (B).



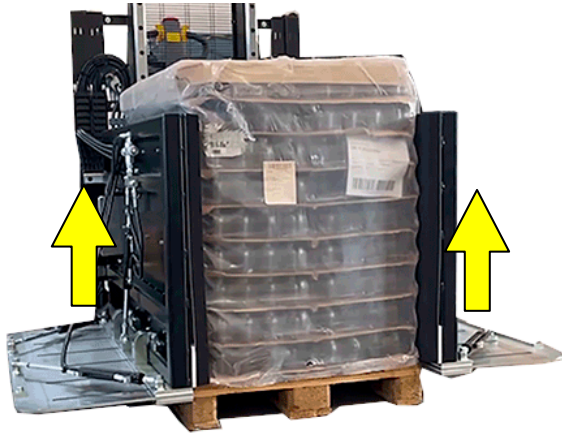
7. Check the vertical alignment of the gripper respect to the load (the load shall be aligned with the gripper, not the pallet).

Use the manual controls **(12A/12B)** to align the gripper, the lowest side of the gripper shall not be in contact with the pallet. Make sure there is a small gap between the bottom of the gripper and the pallet. Use the control **(13B)** to perform the downwards tilting cycle of the wings. The wings shall be on 0° inclination respect to the floor. Use the control **(12D)** to close the gripper. Make sure the load is properly grabbed and clamped.

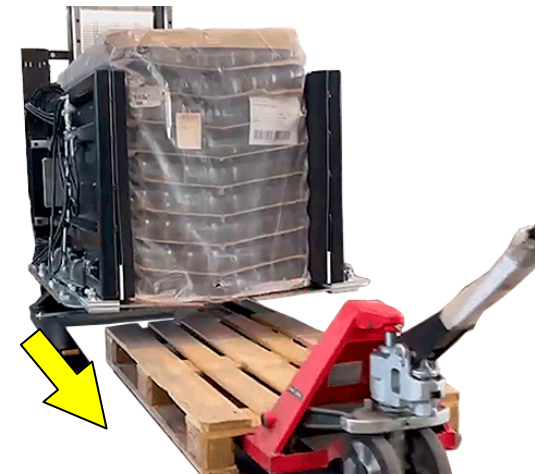


Use and maintenance manual: TOPPY FALCON WINGS lift truck

8. Use the control **(12A)** to lift the gripper unit. Do not lift the unit till the end of the stroke of the cylinder. Perform a small stroke lifting cycle in order to lift the load and achieve enough space for the plates insertion. Use the control **(13C)** to insert the plates "wings systems" under the load. During the plates insertion cycle, check the inclination of the "wings", if the plates are not placed properly, adjust the plates inclination angle through the controls **(13A/13B)**.

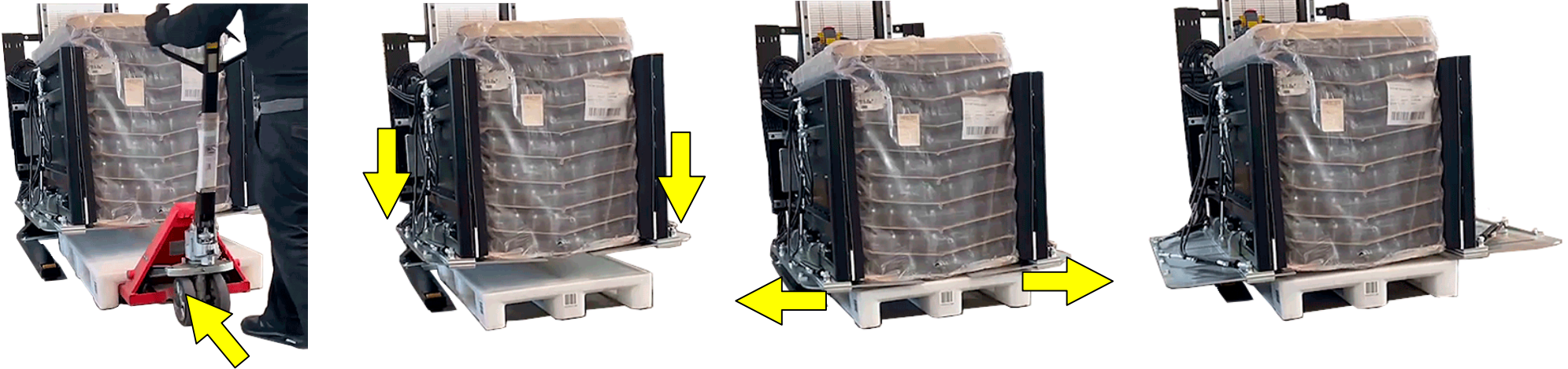


9. Use the control **(12A)** to lift the gripper unit. Do not lift the unit till the end of the stroke of the cylinder. Perform the lifting cycle in order to lift the load and achieve enough space for the pallet removal. At this stage the load is lifted and is supported from the sides by the gripper unit and from below by the wings system. Use the pallet truck to remove the pallet from the Toppo Falcon Wings lift truck.

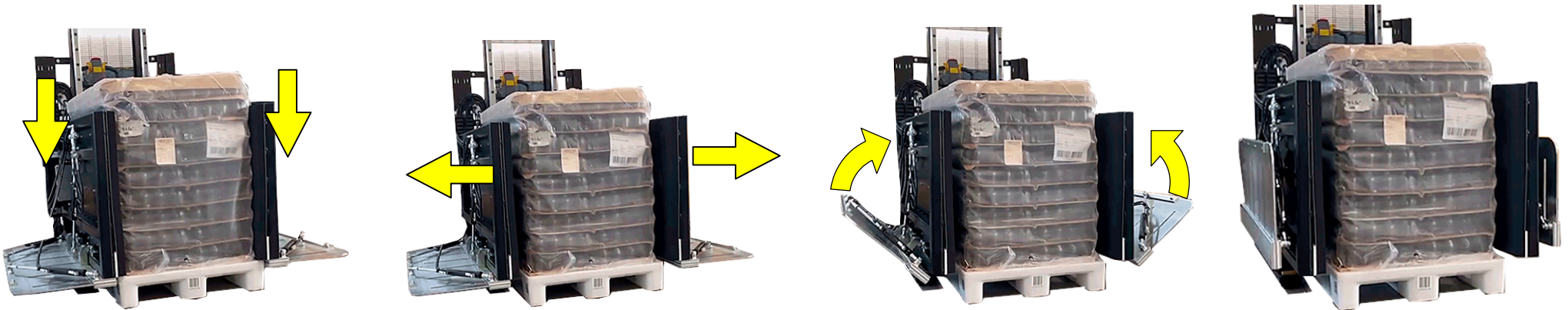


Use and maintenance manual: TOPPY FALCON WINGS lift truck

10. Use the pallet truck to place the destination pallet under the load. The short side (800 mm) of the pallet shall be placed in contact with the support frame (C) and the long side (1200 mm) of the pallet shall be parallel to the support legs (A) and (B). Use the control **(12B)** to lower the grip unit. Do not place the load on the pallet, make sure there is enough space between the gripper unit and pallet for the "wings" removal operation. Use the control **(13D)** to perform the wings opening cycle.



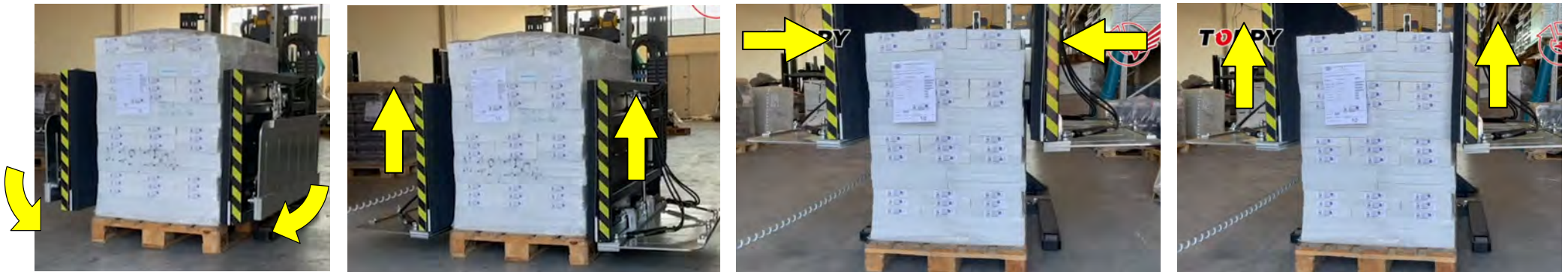
11. Use the control **(12B)** to lower the the grip unit and place the load on the destination pallet. Use the control **(12D)** - till the end of the stroke of the cylinder) to open the grip unit and release the load on the pallet. Use the control **(13A)** to perform the upwards tilting cycle of the wings system. Use the lift truck to remove the destination pallet with the load from the Topy Falcon Wings Lift truck.



7.8 Load split/separation cycle

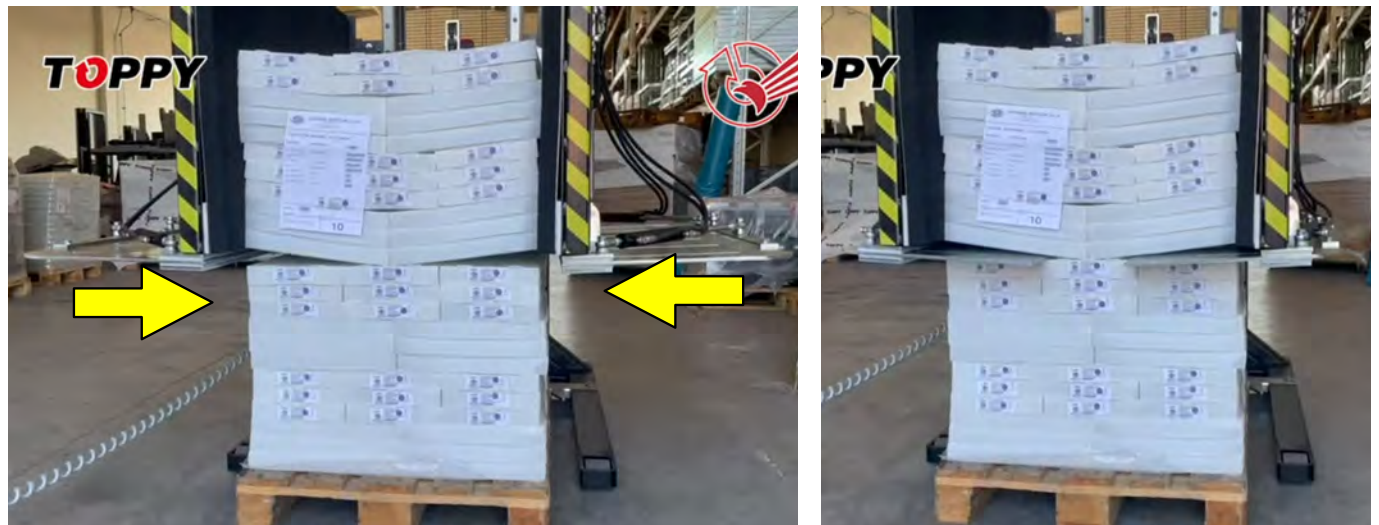
See page 45 paragraph " 7.7 Pallet change cycle ":perform the operation from point 1 to point 6, then for the load separation/split operations continue as follows.

1. Use the control **(12A)** to lift the gripper unit to the middle of the load. Check the alignment of the grip unit with the load. Use the control **(12D)** to close the gripper unit. Make sure the load is properly grabbed and clamped. Use the control **(12D)** to lift the gripper unit and the load. Do not lift the unit till the end of the stroke of the cylinder. Perform a small stroke lifting cycle in order to lift the load and achieve enough space for the plates insertion.



2. Use the control **(13C)** to insert the plates "wings systems " under the upper layer of the load.

During the plates insertion cycle, check the inclination of the "wings", if the plates are not placed properly, adjust the plates inclination angle through the controls **(13A/13B)**.



Use and maintenance manual: TOPPY FALCON WINGS lift truck

3. Use the control **(12D)** to lift the gripper unit and the load. Perform the lifting cycle in order to lift the load and achieve enough space for the origin pallet and splitted load removal. Use the pallet truck to remove the load with the splitted load from the Toppo Falcon wings lift truck

To finish the cycle, see page 45 paragraph " 7.7 Pallet change cycle ":perform the operation from point 10 to point 11 to finish the load/split separation cycle



7.8.1 High Resolution Cameras (Optional)

To help the correct positioning of the blades at the moment of insertion **(13D)**, the truck can be equipped with two high resolution cameras. The cameras are oriented towards the blade plates.

The images sent to the monitors will allow you a better control, without leaving the tiller controls.



7.9 Improper and forbidden use

- To bypass or disconnect safety devices.
- To place hands in the lifting mechanisms.
- To carry passengers.
- To stop near a truck that is operating especially if the clamp is lifted.
- To trap people between the truck and fixed obstacles (walls, shelving, etc.) or use the machine where there isn't much space.
- To place body, limbs or fingers in the moving parts of the machine.
- To try to stop the truck using arms or legs even if it is going slowly.
- To transit or stop on slopes which exceed the limits indicated.
- To manoeuvre on a damp floor or on a floor full of material.
- To cross ramps half way up or turn round on a slope.
- To use different pallets for the top and the bottom of the pile.
- To exceed the maximum capacity indicated on the plate on the truck.
- To block passage ways, emergency exits, control panels and fire protection points.
- To carry out operations not included in this manual.

Safety at work has priority over speed at work!

8. Maintenance

8.1 General information



Danger

During all maintenance operations follow the safety measures. On this subject consult the indications on page 18.

All maintenance operations must be carried out by the maintenance man and the truck must be stationary with the electric and hydraulic power supplies disconnected. When working on the hydraulic system lower the clamp to the ground to make sure there is no pressure.

To maintain your truck in a good working condition over a long period of time it is necessary to carry out the maintenance indicated at the intervals foreseen, in a correct way and with professional expertise.

Maintenance operations are described in the maintenance schedule and must be carried out by trained personnel. The manufacturer TOPPY recommends the use of original spare parts.

The guarantee shall no longer be valid if parts which are not TOPPY original ones are mounted.

The assistance service is at your disposal to supply any indication you may require and meet any requirements you may have in order to take care of and maintain your truck in a perfect and efficient condition.

8.2 *Cleaning*

Cleaning the machine is not only a matter of appearance, but this allows any defects such as an oil leak to be seen immediately. Some precautions must be taken when cleaning in order not to damage or compromise the operation of various components and in particular of the electric parts.

If you use steam cleaners or sprayers adjust the working pressure as required and in particular avoid or reduce to a minimum the direct pressure towards electric parts (dashboard, fuse box, motor, etc.). For these parts it is advisable to use cloths or sponges so that the cleaning operations are better controlled. Before starting the truck dry it completely using low pressure compressed air and check that the electric components are not damp.

8.2.1. Labels

Check that the plate and warning stickers on the truck are present and visible.

8.3 *Frequency and intervals of maintenance operations*

Maintenance intervals are expressed in hours of use so it is necessary to regularly check the hour meter in order to know if it is nearly time for maintenance. If the truck is only used occasionally the foreseen controls must be carried out considering a use of 100 hours per month. If the environment is dusty and the difference in temperature is great, we recommend a shorter interval between maintenance controls than that foreseen.

Every inspection includes checking the general and working conditions.

The first inspection must be carried out after the first 100 hours of use, the maintenance intervals that follow are indicated in the table in the following page.

Any work related to the electric system apart from recharge must only be carried out by specialised personnel authorised by TOPPY S.r.L.

8.4 Maintenance interval table

OPERATION	PERIODICITY (hours)					
	First 100	100	250	500	1000	2000
Check brakes	✓			✓		
Check hydraulic system	✓		✓			
Check oil level (hydraulic and transmission)	✓	✓				
Replace hydraulic oil						✓
Lubricate the chains			✓			
Check backlash of the clamp unit	✓				✓	
Grease the guides						
Check electric cables					✓	
Check that buttons are working	✓	✓				
Check electric components	✓			✓		
Check tightening of connections and condition of pads of remote control switches					✓	
Check brushes of drive motor						✓
Check brushes of electro-pump						✓
Check the lifting chains				✓		
Check bearing parts of the frame				✓		
Check steering backlash			✓			
Check bearings and wheels			✓			
Check bolt tightening	✓	✓				

8.5 First inspection after the first 100 hours

- Check the level of the transmission oil and if necessary top it up (level of the top up cap).
- Check the level of hydraulic oil in the tank.
- Make sure that all the bolts on the machine are tight.
- Check that all electric connections are well fixed.
- Check that the buttons work correctly.
- Check for leaks from the hydraulic connections and if necessary tighten them or replace them.
- Check that the brake works.
- Check for backlash of the clamp unit.

8.6 Lubrication

The following lubricants may be used:

Hydraulic oil ESSO NUTO H46 (or another equivalent product)

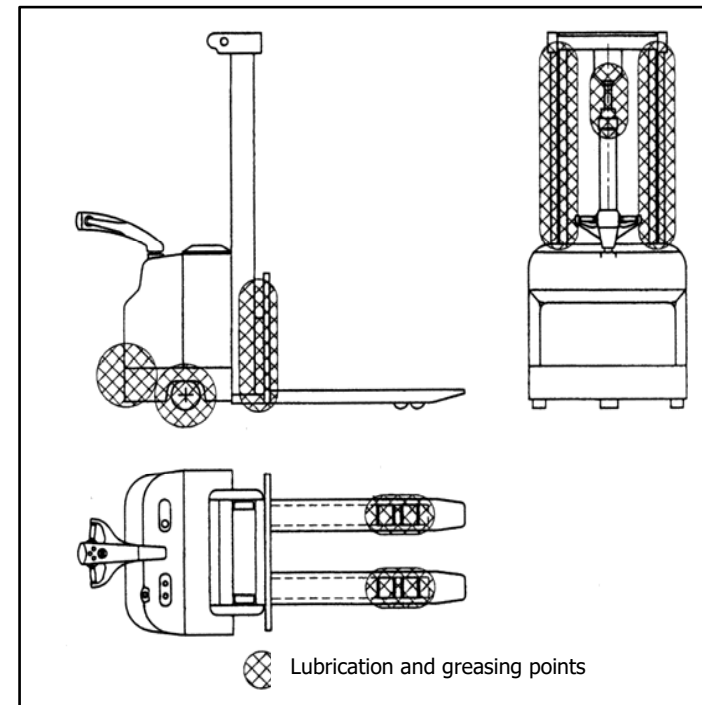
Drive system oil SAE 90

Multi-purpose Grease ESSO Beacon 2 (or another equivalent product)

8.6.1 Every 250 hours

Lubricate all the moving parts (hydraulic cylinder pins, rollers, sliding surfaces, mast guides) with grease.

Lubricate the mast lifting chains with grease.



8.7 Maintenance every 100 work hours

8.7.1 Operation

Check that none of the machine bolts has become loose: in particular, check the bolts fixing the equipment to the fork plate and the locking bolts of lift chains.

Plate connection



Check the level of hydraulic oil in the tank while the truck is parked on level ground: open the oil tank cap located below the pump and check the oil level. Top up if necessary with **ESSO H32 NUTO** or another equivalent type of oil.



Locking bolts of chains



8.7.2 Safety systems and controls

- Check that the safety systems installed on the truck (emergency button, micro-switches) and if necessary restore the perfect working condition.
- Check that the running, acceleration and reverse controls work.
- Check that the clamp control buttons function perfectly.

8.8 Maintenance every 250 hours of use

8.8.1 Hydraulics

- Check all the hydraulic connections: if they leak tighten or replace them.
- Check that the pump motor doesn't make unusual noises.

8.8.2 Lifting devices

- Check that there are no leaks in the lifting circuit.
- Check the condition and lubrication of the clamp.
- Check for any wear of the guides and of sliding surfaces.
- Visually check the clamp for any dents or if it is bent.



8.8.3 Wheels

- Check the condition, fixing and wear of the load bearing roller and wheels. Check that they work properly.
- Check the backlash of the tiller is not excessive.
- Check the condition and wear of the driving wheel.
- Check that the driving wheel, the bolts and the rims are well fixed.

8.9 *Maintenance every 500 hours of use*

8.9.1 Brake

- Check that the electromechanical brake works.
- Check that the anti-crushing safety device is working perfectly; for this purpose find a free area and simulate the action of the anti crushing switch. The truck must stop, change direction and stop again.

8.9.2 Electric components

- Check that the running, acceleration and reverse controls work.
- Check that all connections and plugs are properly fixed.
- Check the condition of the fuses and that they meet the required specifications.



Danger

It is extremely dangerous to work on the electric system or on the electronic equipment of the lift truck without having disconnected the battery beforehand.

8.9.3 Frame

- The truck frame and welds must be free from visible defects such as: cracks, deformation, straining, dents, corrosion etc.
- The lift chains must be inspected by experienced, qualified personnel. Even if they are not used, the chains must be inspected every three months to ensure their good condition.

8.10 Maintenance every 1000 hours of use

8.10.1 Operation

- Check and if necessary adjust the backlash of the clamp unit.
- Check the condition and fixing of cables, connection and battery plug: the sheaths of the electric cables must be in good condition and the terminals must be tight, not corroded and covered in insulating grease.
- Make sure that the remote control switches aren't burnt and check the condition of the contacts, replace them if necessary.
- Clean the electric drive and lifting motors by blowing dry and clean compressed air into the slats.



Danger

Abrasive material is bad for the health. Wear a protective mask.

- Make sure the manifolds are not dirty with grease, that the blades are not unequal, that they are not rough and that there are no protrusions between one blade and another. Always keep the manifold smooth. If necessary clean with fine-grain sandpaper or, in the more serious cases, grind on a lathe.

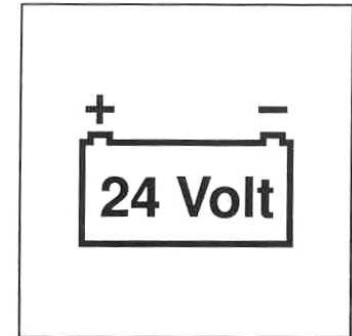
8.11 Maintenance every 2000 hours of use

- Change the hydraulic fluid and the drive transmission oil. Old oil should be disposed of through Authorised Channels (Consorzio Obbligatorio degli Oli Usati in Italy).
- Check the condition of the brushes and replace them before they are totally worn.
- Blow off the brush abrasion material using a jet of dry air.

8.12 Replacing the battery

The truck is fitted with a battery suitable for the performance of the truck and has a rated voltage of 24 Volt.

The life of the battery in normal conditions of use is of 3-4 years. To increase the life of the battery it is necessary to arrange the work shifts so that the loss of charge of the battery is never more than 85% of its rated capacity.



Caution

The battery must meet the requirements on the label of the truck as regards voltage, capacity and mass. Compare the label on the truck with the one of the battery.

The battery of the truck must be replaced with another one that has the voltage, capacity and mass values indicated on the plate on the battery.

On the front there is an openable cover that makes it possible to remove the battery and replace it. The truck must be parked correctly, with the ignition key taken out and the fixing plate of the battery disassembled.

Great care must be taken when removing and installing the battery to avoid short circuits on the elements of the battery and to avoid knocking surrounding objects.

8.12.1 Battery removal

- Disconnect the battery terminals (first the negative then the positive one).
- Place a pallet or battery truck in front of the battery support surface having the same height as the support surface.
- Prevent the pallet from moving by fitting suitable stops.
- Open the front door.
- Cause the battery to slide out on to the pallet and secure it.

8.12.2 Fitting the battery

Carefully clean the top part of the battery, check the condition of the connection terminals and protect the battery elements using a panel of insulating material (rubber, PVC, etc.).

Perform the above operations in reverse sequence. In particular connect the terminals of the battery in the following order: first the positive one and then the negative one.

8.12.3 Plug – socket

The plug – socket connection block of the battery does not require any maintenance.

To replace it is necessary to respect the following:

- Only use the original TOPPY S.r.L. spare part to replace the connector.
- The contacts of the connector must be replaced in pairs.
- When replacing the plug-socket reconnect the cables respecting the polarity indicated on the plug itself..

8.13 *Troubleshooting*

The table here below shows the main problems which may be experienced during operation.

TROUBLES	CAUSES	REMEDIES
The truck will not start	Flat battery	Recharge battery
	Emergency button pressed	Release emergency device
	Battery unplugged	Plug in battery
	Blown fuse	Replace fuse
	Key turned to OFF	Key turned to ON
No or slow shifting despite truck being on	Drive motor brush malfunction	Check/replace brushes
No lifting despite truck being on	Jammed or damaged end-of-stroke microswitch	Release/replace microswitch
	Control lever malfunction	Solenoid valve contact check
	Lift motor brush malfunction	Check/replace brushes
	Low oil level	Top up
Grip won't close/open correctly	Hydraulic oil filter clogged	Clean/replace filter
	Faulty solenoid valve	Check wiring, replace solenoid valve
Truck won't brake	Incorrect brake adjustment	Tighten electromagnetic brake adjustment nut
	Worn out brake pads	Replace brake pads
Truck jerky start	Electronic speed adjustment problems	Contact after-sale service

8.14 *Technical assistance and spare parts*

If technical assistance is required or for a prompt delivery of spare parts please provide the following information:

- a) Type of machine
- b) Serial number
- c) Year of manufacture
- d) Table number and position
- e) Code and description
- f) Quantity required

8.15 *Period of inactivity of the truck*

If you foresee that your truck will not be used for long periods then the following operations must be carried out:

- Store it in a dry and ventilated place.
- Clean the truck.
- Check that all bolts are tight.
- Leave the truck in idle position, with the clamp resting on the ground so that none of the cylinders of the hydraulic system are under pressure.
- Disconnect the battery, insulating the poles; recharge the battery every month.
- Protect any exposed electric contact with special antioxidant products.
- Grease all surfaces which are not protected with paint or anti corrosion treatments, in particular the sliding guides of the clamp.
- If possible lift the truck and place it on an appropriate support to avoid damaging the tyres.

8.16 *Withdrawal from use - disposal*

If the truck here described is no longer in use, make sure that all its components are disposed of in compliance with the regulation in force. Before the demolition of the truck the user must communicate to the manufacturer all the information that is on the identification plate.

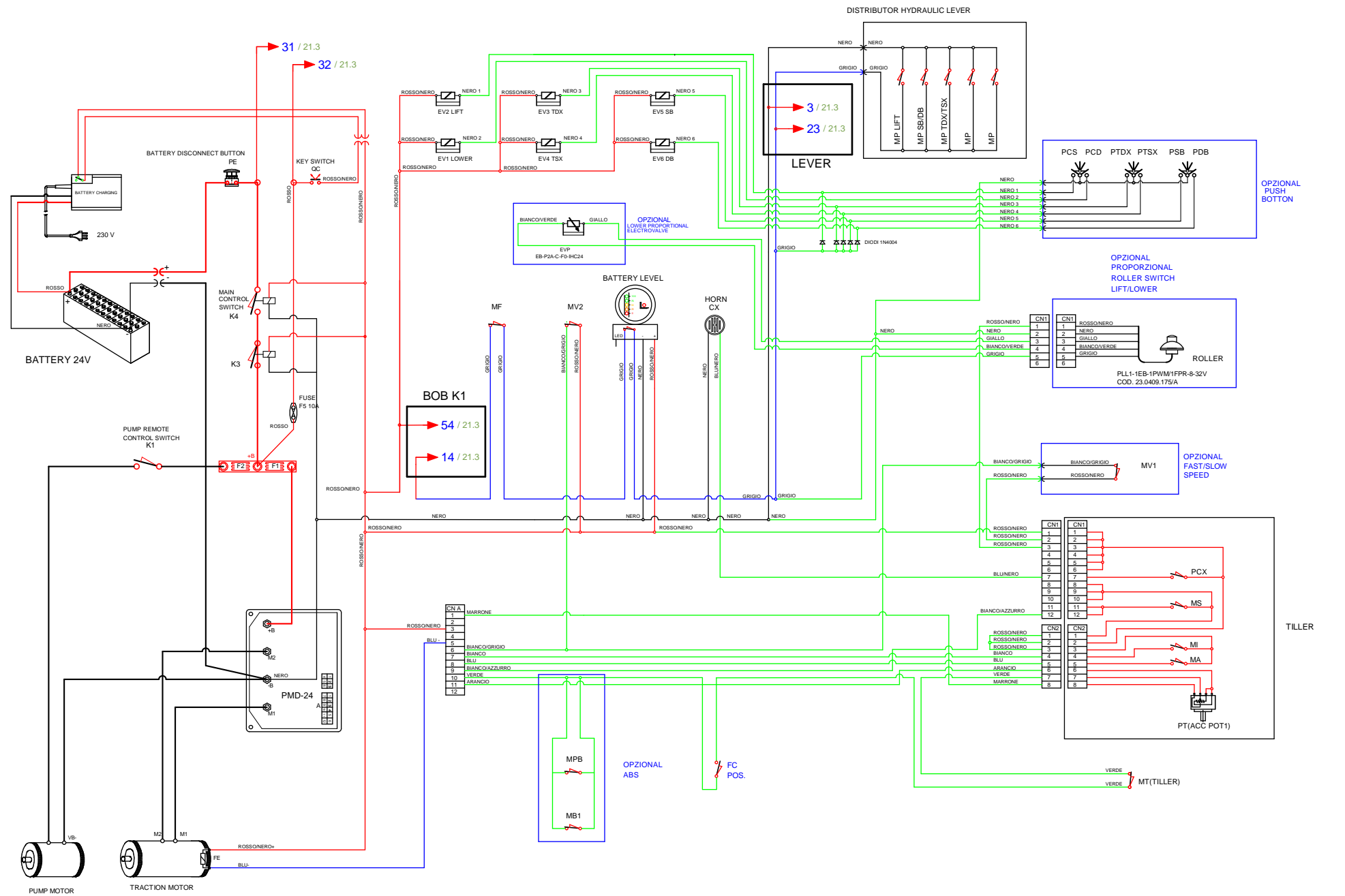
Lubricants and other products used must be delivered for recycling or differentiated waste management, in particular:

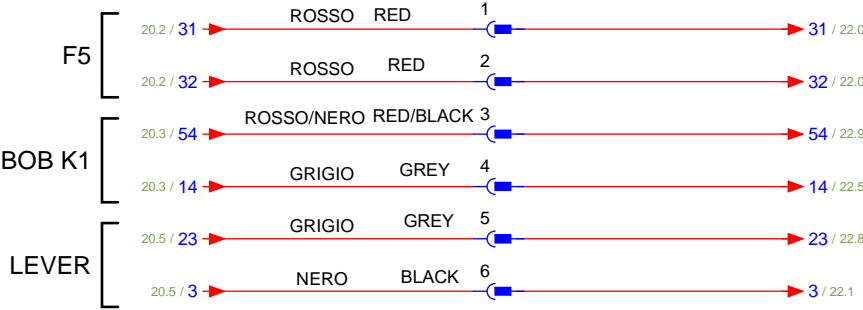
- Batteries
- Rubber from the hydraulic pipes
- Covered electric cables
- Plastic covering from the wheels
- Transmission and hydraulic oil



9 Enclosures

Electric wiring diagram





CONNETTORI DI COLLEGAMENTO
CONNECTORS/PLUGS

