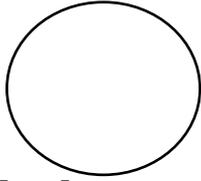


LIFT TRUCK
ALFA SMALL 12V evo
ALFA 12V evo

INSTRUCTION MANUAL



Contents

Chapter 1 General information 1-1

1.1	Available documentation	1-1
	1.1.1 This handbook.....	1-1
1.2	Information ownership.....	1-1
1.3	Manufacturer's identification data.....	1-2
1.4	Machine identification data.....	1-2
1.5	CE conformity statement.....	1-3
1.6	General safety instructions.....	1-3
	1.6.1 Passive safety devices.....	1-4
	1.6.2 Active safety devices.....	1-4
	1.6.3 Personnel qualification.....	1-4
	1.6.4 Danger zones.....	1-5
	1.6.5 Machine danger zones during use and maintenance.....	1-5
	1.6.6 Personal protections.....	1-6
1.7	Uses foreseen.....	1-6
	1.7.1 Operations foreseen.....	1-6
	1.7.2 Installation modalities foreseen.....	1-6
	1.7.3 Operation modalities foreseen.....	1-6
	1.7.4 Safety norms and suggestions.....	1-7
1.8	Uses not foreseen.....	1-9
1.9	Guarantee.....	1-9
1.10	Assistance.....	1-9
	1.10.1 Demand for assistance interventions.....	1-9
1.11	How to use the available documentation.....	1-9
	1.11.1 Use of the handbook.....	1-9
1.12	Handbook preservation.....	1-10
1.13	Conventions.....	1-10
	1.13.1 Typographical conventions.....	1-10

Chapter 2 Description 2-1

2.1	Machine description.....	2-1
	2.1.1 Machine function.....	2-1
	2.1.2 Working principle.....	2-1
	2.1.3 Structure.....	2-1
	.....	2-2
2.2	Properties.....	2-3
	2.2.1 Noise.....	2-3

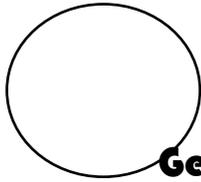
Contents

2.3	Responsibility.....	2-3
Chapter 3 Installation 3-1		
3.1	Storage.....	3-1
	3.1.1 Characteristics of the storage area.....	3-1
	3.1.2 Environmental characteristics of the storage area.....	3-2
3.2	Transport.....	3-2
	3.2.1 Transport conditions.....	3-2
	3.2.2 Transport.....	3-2
	3.2.3 Lifting.....	3-2
	.....	3-3
	3.2.4 Preliminary operations.....	3-3
	.....	3-4
3.3	Collocation.....	3-4
	3.3.1 Physical characteristics of collocation.....	3-4
	.....	3-5
	3.3.2 Environmental characteristics of the collocation area.....	3-5
	3.3.3 Connections.....	3-5
	.....	3-6
3.4	Test.....	3-7
Chapter 4 Use 4-1		
4.1	Operator's qualification.....	4-1
4.2	Danger zones.....	4-1
4.3	Drives and signals.....	4-2
	4.3.1 Drives.....	4-2
	.....	4-3
4.4	Working.....	4-3
	4.4.1 Machine setting and ignition.....	4-3
	4.4.2 Suggestions for a good piling-up.....	4-3
	4.4.3 Working modalities.....	4-4
4.5	Working problems.....	4-4
	4.5.1 The truck does not move.....	4-4
	.....	4-5
Chapter 5 Maintenance 5-1		
5.1	Maintenance obligations in accordance with CE directive 2006/42.....	5-1
5.2	Periodical maintenance checks and technical advice.....	5-2
5.3	Danger zones.....	5-3
5.4	Routine (periodical and preventive) maintenance.....	5-3
	5.4.1 Operator's qualification.....	5-4
	5.4.2 Cleaning.....	5-4
	5.4.3 Periodical inspections.....	5-5
	5.4.4 Special maintenance.....	5-6

Contents

Chapter 6 Dismantling 6-1

6.1	Machine deactivation.....	6-1
6.2	Deactivation procedures.....	6-1 6-2
6.3	Risks solved after the machine deactivation.....	6-2



1.1 Available documentation

1.1.1 This handbook

- Handbook data.
 - Use and maintenance handbook of the ALFA SMALL 12V evo - ALFA 12V evo Lift Truck
 - Edition: 1.0
 - Version: 1.0
 - January 2013

- Consignees.
 - Carrier
 - Installer
 - User
 - Maintenance operator

1.2 Information ownership

This handbook contains confidential information. All rights are reserved.

This handbook cannot be reproduced or photocopied, partially or wholly, without the written authorisation of the producer. The utilisation of this documentation is allowed only to the customer to whom the handbook has been supplied as a machine equipment, only for installation, use and maintenance of the machine handbook.

The producer states that all information of this handbook is in compliance with the technical and safety specifications of the machine handbook. The producer declines all responsibilities for direct or indirect damages to persons, things or domestic animals due to the use of this documentation or of the machine in conditions different from the ones suggested.

The producer has the right to change or improve this handbook and the producer machines without any advance notice, even the machines commercialised with the same nameplate as the one of this handbook but with a different serial number. The information of this handbook particularly refers to the machine described in 1.4 "Machine identification data".

1.3 Manufacturer's identification data

1.4 Machine identification data

- Denomination: LIFT TRUCK
- Model: ALFA SMALL 12V evo - ALFA 12V evo
- Serial number:
- Construction year:
- Possible accessories added:
- For the accessory instruction handbook see enclosures

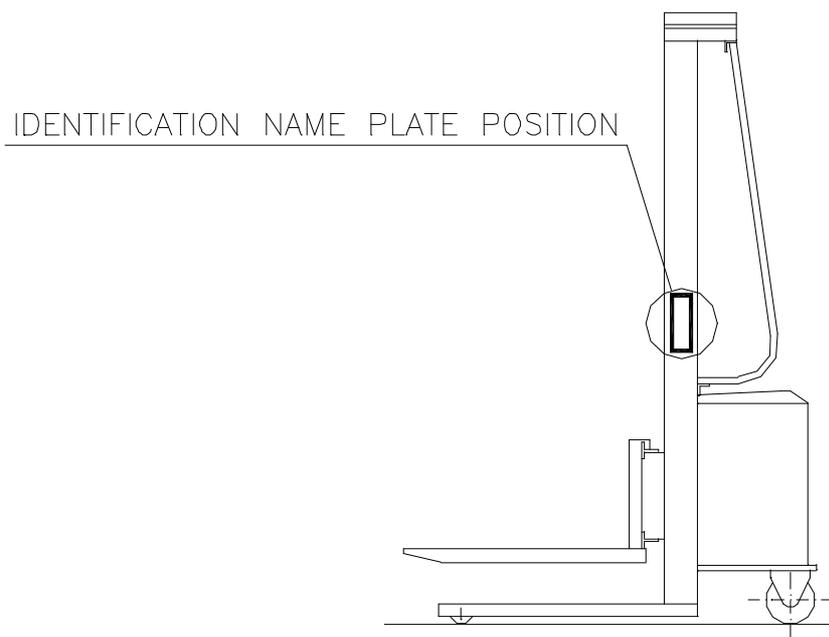


Fig. 1.1 Identification name plate position

Fig. 1.2 Identification name plate

1.5 CE conformity statement

See enclosure: *CE conformity statement*

1.6 General safety instructions

During the design and construction of this machine methods and precautions have been adopted in order to meet the essential safety demands in compliance with the CE Directive 2006/42 and subsequent changes and with applicable norms. In particular, during the design and construction phases precautionary measures have been adopted in order to prevent risks for the operators during installation, use, maintenance, disassemble and deactivation of the machine. The complete documentation of the safety measures is included in the technical brochure of the machine.

Thanks to the accurate examination of the risks carried out by the manufacturer most risks in relation to the expected and foreseeable conditions of the machine use have been eliminated. The possible protections to eliminate completely the fall risk of the load from the forks would seriously compromise the functionality and versatility of the machine. Consequently, the residual fall risks of the load from the forks are described in this manual.

The producer recommends to read carefully the instructions, procedures and suggestions of this handbook and follow the safety norms in force and the use of the protection equipment, both those supplemented in the machine and the individual ones.

NOTE

The producer declines all responsibilities for possible damages to persons or things due to the non-observance of the safety norms and recommendations included in the documentation.

1.6.1 Passive safety devices

DEFINITION

Such devices are the devices or precautions that eliminate or reduce the risks for the operators without any active intervention from the operators.

Protection grating: it prevents the operator from bringing his hands near to the moving parts during the load rise and descent.

Bumper on the forks: it prevents the load from falling down on the operator in case of oscillation.

An important passive safety device is the parachute valve situated in the connection between the hydraulic plant and the cylinder. In case of a sudden leakage or a break inside the hydraulic circuit, it locks the load movement in a very short time and avoids the abrupt descent to the ground.

1.6.2 Active safety devices

Such devices are the devices or precautions that eliminate the risks for exposed operators or persons or that reduce the risks that can not be eliminated during the design. Such devices require active and aware interventions from the operator.

The continuous action push-buttons for the forks lifting/lowering are active safety devices; in case of intentional release, they cause the forks movement stop.

The emergency push-button is an active safety device as well, since it locks the whole system when operated in case of danger.

1.6.3 Personnel qualification

The machine working is safe when used by qualified personnel in accordance with the recommendations and instructions of this handbook. All installation, use and maintenance operations of the machine shall be carried out only by authorised and qualified personnel after having acquired the instructions supplied by this handbook.

NOTE The producer declines all responsibilities for possible damages to persons, things or domestic animals due to the use of the machine from unqualified operators.

1.6.4 Danger zones

DEFINITION

A danger zone is any zone inside or near the machine in which the presence of an exposed person represents a risk for the health and safety for that person.

1.6.5 Danger zones of the machine during use and maintenance

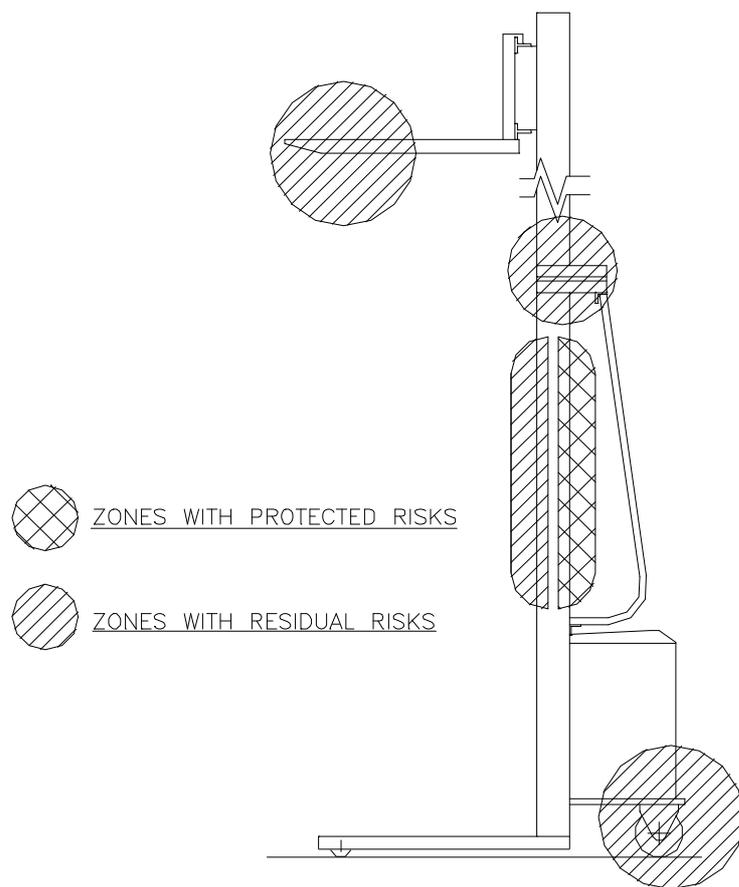


Fig. 1.3 Danger zones of the machine during use and maintenance



DANGER

Each operator shall carry out the operations for which he has been appropriately instructed.

- During installation, use and maintenance operations use appropriate means of personal protection.

The non-utilisation of adequate protection means may be a danger for the operator.

NOTE

The producer declines all responsibilities for possible damages to persons or things due to the non-observance of the safety norms and recommendations included in the documentation supplied.

1.6.6 Personal protections

The utilisation of protective gloves, helmet, and safety steel-toed shoes is foreseen for the machine use

1.7 Uses foreseen

1.7.1 Operations foreseen

- Load positioning
- Load lifting
- Loading and unloading of means of transport
- Load movements

1.7.2 Installation modalities foreseen

The following conditions are necessary for the machine installation:

- An environment with sufficient lighting
- Flat surfaces without holes

1.7.3 Operation modalities foreseen

- The machine is fed by internal electric energy, which is converted into mechanical, hydraulic energy for the uses foreseen.
- One single operator is foreseen for the safe use of the machine.

1.7.4 Safety norms and driving suggestions

In order to use the lift truck safely it is necessary to follow some precautionary norms:

- Only the authorised personnel is allowed to use the truck
- In the work area of the truck there shall be nobody for 5 m. at least, so as to avoid accidents due to the accidental fall of the load.
- While using it, always keep a correct manoeuvre position.

The load shall have the following dimensions in order to work safely: (See Fig. 1.4):

- As for width, its dimensions shall not project from the load holder grating and have the barycenter (G) on the longitudinal axis.
- As for length, it shall not exceed a length of 1200 mm and have the barycenter (G) positioned at a distance lower or equal to the C distance (reported in the technical specifications) from the load holder grating.

As for height two cases may occur:

- 1- If the load is not packed, it shall not absolutely project from the load holder grating
- 2- If the load should project from the load holder grating, the load transport can be carried out only when it is appropriately packed as one single body with all its parts (for example, a pallet consisting of a lot of boxes firmly piled up and cellophaned); In order to reduce the fall risk it will be necessary to keep the load barycenter lower than the load holder grating.

If you follow these regulations, you will obtain a correct load positioning and a weight equally distributed on the forks surface, consequently the load balance will be very stable, thus reducing to a minimum the accident risk due to the accidental fall of the load.

- All movements inside the firm shall be carried out only along the yellow stripes on the floor.
- During the movements from one area to the other always keep the forks at a maximum height of 20 cm from the ground.
- Never overload the truck.
- Center the load on the two forks, so that its barycenter falls on the longitudinal axis of the truck and the weight is equally distributed on the forks (always refer to the diagrams of the technical specifications and the label on the mast).
- If the load should hinder the visibility during the movements, carry out a reverse and go on by keeping the truck behind you.
- Be careful with the piling-up of the material; when starting, avoid abrupt manoeuvres, stops and steering; Carry out the loading, unloading and movement operations by keeping the truck motion as straightaway as possible.
- Moderate the speed in the dangerous zones or near obstacles.
- Never overpass gradient sections.
- In case of any danger, push immediately the emergency push-button downward. (Fig. 4.2 point 01).
- Never get near the battery during the recharge with free flames. Read carefully the use and maintenance handbook of the battery in order to obtain a perfect efficiency.
- Be careful with fires and explosions, especially in environments where gas fumes or fuels are present. The truck is not explosion-proof.
- Never leave the truck with hanging loads or with the forks lifted. If left unattended, clear by pressing the emergency push-button.
Park the truck only in appropriate areas or far from other work areas or working machines (minimum distance: 5m.).
- Connect the manual brake, positioned on the right back wheel, whenever one leaves the truck.

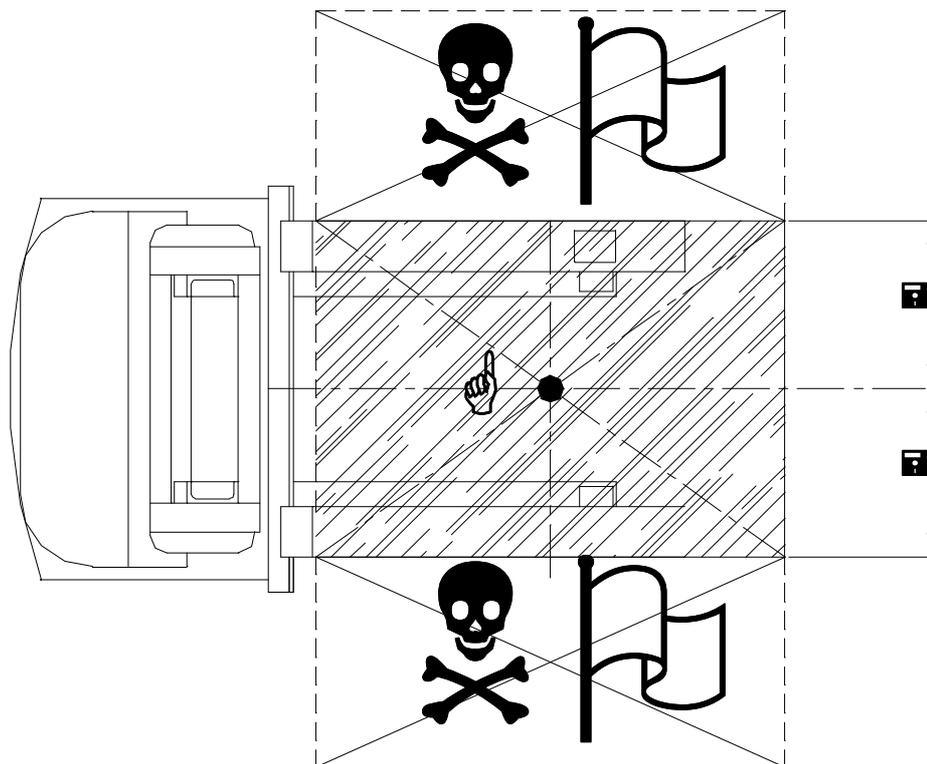


Fig. 1.4 Load position



DANGER

The non-observance of the regulations for the load positioning previously mentioned can seriously increase the fall risk of the load with consequent physical damages to the operator.

1.8 Uses not foreseen

The uses not foreseen are the uses that are not expressly specified in 1.7 *Uses foreseen*, and in particular:

- The use of the lift truck as an elevator for the rise or descent of persons or for the transport of persons besides the operator (see version with footboard for operator's transport).

1.9 Guarantee

For the general conditions of guarantee refer to *Certification of guarantee*, in the 3 *Enclosure*.

1.10 Assistance

The supplier places at his own clients' disposal an Assistance Service

1.10.1 Demand for assistance interventions

In case of problems during the machine use, it is advisable to read this handbook. Contact the Assistance Service to solve the problems not mentioned in the handbook or if the problem persists even after your intervention.

Assistance Service

In case of necessary interventions:

During the guarantee period please contact:

The producer manufacturer

Once the guarantee period is expired, address to:

The producer if the jobber or the assistance centre is unknown.

For spare parts address to:

The producer if the jobber or the assistance centre is unknown.

1.11 How to use the available documentation

1.11.1 Use of the handbook

Before using the machine and carrying out any maintenance operation, read carefully the conditions given by this handbook.

Table 1.1 How to use the documentation

If you want to:	Read
Transport, move, load, unload and operate the machine	Chapter 3 Installation
Set and equip the machine	Chapter 4 Use
Use the machine already installed and set	Chapter 4 Use
Carry out regulations during the use	Chapter 4 Use
Solve the use problems	Chapter 4 Use
Estimate and carry out maintenance	Chapter 5 Maintenance
Deactivate or dismantle completely the machine	Chapter 6 Dismantling

1.12 Handbook preservation

This handbook and the whole documentation shall be preserved for all the technical duration of the machine. In case of sale of the machine used, the machine shall be sold along with the documentation supplied.

1.13 Conventions

1.13.1 Typographical conventions

- *Italics text*: it refers to the title of a chapter, a section, a sub-section, a paragraph, a table or a figure of this handbook or another reference publication.

NOTE The notes contain important information, highlighted outside the text they refer to.



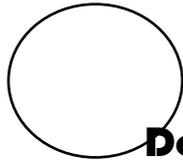
ATTENTION

The attention references indicate those procedures whose non or partial observance can cause damages to the machine or its equipment.



DANGER

The danger references indicate those procedures whose non or partial observance can cause physical damages to the operator.



2.1 Machine description

2.1.1 MACHINE FUNCTION

The lift truck is used for lifting and lowering loads and positioning them as desired; or, once they are lifted from the ground, it is useful for their transport, for short distances (inside a workshop, warehouse, truck loading/unloading, storage on stands etc.).

2.1.2 WORKING PRINCIPLE

The lift truck moves objects vertically with onward-backward movements or towards a direction desired by the operator, since he can change both direction and the running direction by means of the steering wheel.

- Rise
 - The high hydraulic pressure generated by a hydraulic pump manually operated moves the stem of a hydraulic cylinder. The hydraulic cylinder fastened to the basement by means of a flange and having at the ends of the stem a support with pulley transmits its movement, by means of the latest, to a chain that, connected to the forks, moves them in the same translation direction as the stem
- Descent
 - The force of gravity operates on the forks which drag downward the whole system moved during the rise. The descent speed is kept constant by the action of a balancing valve in the gearcase that checks the oil flow from the cylinder to the tank.
- Movement
 - Since the truck does not have its own energy, it is moved and directed with the operator's manual energy by means of the steering wheel or the side handgrips (fastened to the mast) and by means of traction or thrust stresses. Also the truck stop is controlled manually and can be stabilized by means of the parking brake positioned on the right back wheel by means of a slight pressure of the foot downwards; the disconnection of this brake is possible by means of a pressure on it in direction opposed to the connection direction that causes its unlock.

2.1.3 Structure

The main structural elements of the machine are the following:
Mechanical electro-welded steel structure.

- Basement for stabilising driving wheels consisting of a closed basement welded to the two truck legs and external mast.

- Internal mast or headframe sliding inside the external mast.
- The cylinder-stem group
- The forks group adjustable in its width that is integral to the headframe by means of a pulley-chain connection.
- The sump group.

Electric installation:

- Gearcase of electric installation control.
 - One fuse
 - Series of LED indicating the residual charge state of the battery (controlled by a little electronic card)
 - Pilot light of battery charged
 - Emergency push-button for deactivating the electric installation
 - 12 V battery
 - Battery charger
- Switches
 - A limit switch for the rise
 - Push-button emergency switch

Hydraulic system

- Hydraulic pump
- Tank built-in in the pump
- Hydraulic gearcase:
 - 12 V electromotor
 - Gearcase lock
 - Solenoid valve
 - Maximum pressure valve
 - Nonreturn valve
- Filter
- Flow adjustment valve to check the oil downflow from the cylinder
- Parachute-type valve to stop the oil flow and the load descent in case of break of the hydraulic system
- Connectors
- Plastic pipelines

Drive device:

- Rise push-button
- Descent push-button



Fig. 2.1 Photograph of the machines

2.2 Properties

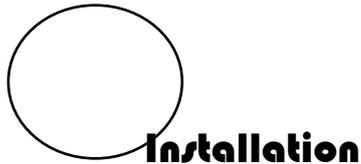
2.2.1 Noise

The parameter values of the aerial noise caused by the machine are within the limits in accordance with the 2006/42 CE European Directive.

- The weighted continuous equivalent level A of the acoustic pressure is under 70 dB (A)
- The maximum value of the weighted instantaneous acoustic pressure C is under 63 Pa

2.3 Responsibilities

NOTE The producer declines all responsibilities for possible inconvenience, failures or malfunctioning due to the non-observance of the feed values supplied.



The instructions of this section shall be followed during the periods of temporary storage of the machine that can occur in the following situations:

- Machine installation not immediately after its supply
- Machine disassemble and storage awaiting its re-collocation

In case of non-observance of these instructions, the producer declines all responsibilities for possible damages to the machine or subsequent performance not in compliance with the technical specifications supplied.

3.1 Storage

3.1.1 Characteristics of the storage area

The machine shall be collocated in a space having the following characteristics:

Dimensions

Besides the overall dimensions of the machine, it is necessary to provide for the appropriate circulation and manoeuvre spaces so as to allow the personnel to carry out safely and comfortably the machine sling and lifting.

Protection from environmental and external agents

The storage area shall be covered and protected by the action of the atmospheric precipitations and is accessible to authorised personnel only.

Supporting plane capacity

The floor shall assure a whole capacity (G) equal to:

$$G = \frac{P.K \cdot 9,81}{1000} = \frac{Kg \cdot 1,1 \cdot 9,81 \text{ m/S}^2}{1000} = \dots\dots\dots\text{KN}$$

Where: G = whole capacity referred to the whole storage area, expressed in (KN)
P = machine weight, expressed in (kg)
K = fixed increased coefficient, in order to include the packaging weight in the calculation
9,81 = gravity acceleration expressed in (m/S²)
And consequently a unit load (C) equal to:

$$C = \frac{G \cdot 1000}{S} = \frac{KN \cdot 1000}{m^2} = \dots\dots\dots N/m^2$$

Where: C = minimum unit load, expressed in (N/m²)
S = support surface, expressed in (m²)

3.1.2 Environmental characteristics of the storage area

- Temperature admitted: from 0°C to 40°C +/-5°C.
- Relative humidity admitted: from 30% to 90% +/-5%

3.2 Transport

3.2.1 Transport conditions

The machine shall be transported in the following conditions:
Position the truck with the forks lowered

- Cover completely the truck with a plastic covering to protect the machine from atmospheric agents.

The machine is normally delivered wrapped in a cellophane cloth.

ATTENTION

If there should be particular height problems in the vertical positioning, the truck can be positioned horizontally on one side (left or right, indifferently) removing the battery and putting a cap to the oil tank before carrying out the operation.

- The bolts and any other material supplied with the machine shall be put into plastic bags.

Total weight

See technical specifications

3.2.2 Transport

During the transport, the machine shall be correctly covered with cellophane and fastened to the means of transport so as to avoid movements or turnovers. During transport operations avoid impacts or turnovers.

3.2.3 Lifting Lifting equipment

For the lifting of the machine components use:

- Cranes or lift trucks with a minimum capacity of 1500 Kg.
- Two-terminal sling accessories

Procedures

- Sling the machine in the appropriate holes foreseen in the upper part of the mast as in Fig. 3.1 *Machine lifting points*.
- The machine is ready for the lifting

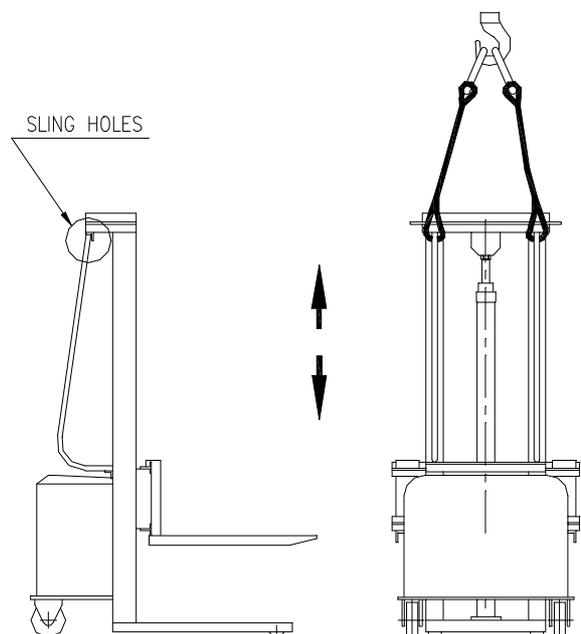


Fig. 3.1 Machine lifting points

3.2.4 Preliminary operations

Unpacking

- Remove the plastic wrapping covering the machine.

Preservation of the transport accessories

When the lift truck is transported horizontally, the drilled gearcase plug is normally replaced with a closed plug; keep the closed plug for the next machine transports.

Verification of the damages occurred during transport

Before installing the machine check the presence of possible damages occurred to the machine components during transport.

Check in particular the condition of the following components:

- Lifting stem and cylinder of the lift truck
- Chain and chain pivots
- Limit switches
- Emergency switches
- Motor feed cables
- Hydraulic pump
- Control panel
- Manual brake

Machine cleaning

Remove the machine dust and dirt due to the transport. Use a rag or compressed air.

In case of damages

Before using the machine, it is necessary to check its conditions.

The damages due to transport are attributed to the carrier and immediately communicated to the supplier.

3.3 Collocation

The physical characteristics and pre-arrangement procedures of the collocation areas of the truck are described as follows:

3.3.1 Physical characteristics of the collocation area

Space requirements

The machine simply needs a work area suitable for its dimensions supplied in the *Technical specifications* in order to obtain a good manoeuvrability; the work surface shall be flat and smooth.

Flooring

Der boden muss flach und ohne loecher sein.

Furthermore, the floor shall assure a whole work capacity (GL) equal to:

$$GL = \frac{(P + Q) \cdot 9,81}{1000} = \frac{(Kg + Kg) \cdot 9,81 \text{ m/S}^2}{1000} = \dots\dots\dots\text{KN}$$

Where: GL = whole work capacity expressed in (KN)

P = machine weight expressed in (Kg)

Q = machine capacity expressed in (kg)

9,81 = gravity acceleration expressed in (m/S²)

Consequently, a work unit load (CL) equal to:

$$CL = \frac{GL \cdot 1000}{S} = \frac{KN \cdot 1000}{m^2} = \dots\dots\dots N/m^2$$

Where: CL = minimum work unit load, expressed in (N/m²)
S = machine support surface, expressed in (m²)

In addition, the floor shall assure a whole capacity of 20 KN/m² referred to the whole storage surface and a minimum unit load of 20 KN/m².

Lighting

In order to carry out safely and correctly the working and maintenance operations of the machine a good lighting is necessary. The machine is not equipped with a built-in lighting system.

A room lighting having a normal value allows any operation without any risks due to shadow areas.



DANGER

The use of the machine is authorised to one single operator. It is advisable not to park the machine near a work area or a passage area of other persons. Refer to *1.6.4 Danger zones*. Never leave hanging loads.

Protection from atmospheric agents

The machine shall be collocated in a covered place protected from the direct contact with atmospheric agents.

3.3.2 Environmental characteristics of the collocation area

- Temperature admitted: from 5°C to 40°C +/- 5°C
- Relative humidity admitted: from 30% to 90% +/- 5%

3.3.3 Electrical connections

The machine is provided with a cable with two connectors in order to connect the battery to the battery charger.

The battery and battery charger are supplied with the machine

The battery shall have the following requirements:

Voltage: 12V; maximum amperage: 190Ah

The battery charger shall have the following requirements:

Battery recharge capacity: 12 V

The battery-battery charger connection is carried out as described in Fig. 3.2:

Use instructions of the battery charger

1. Disconnect by pressing the emergency push-button, unscrew by turning it anticlockwise and extract it
2. Remove the protection sump of the battery compartment.
3. Remove the taps from the elements. Check the liquid level of the battery
4. Screw the emergency push-button into the appropriate seat and turn it clockwise up to stroke end, then pull upward to insert it.
5. Connect the battery charger to the network 220 V 50/60 Hz by means of the suitable cable supplied as per Fig. 3.2
6. The series of LED will show the state of the battery charge, the flickering LEDs will indicate the beginning of the charge.
7. When the charging is over, all LEDs will show a fixed light on.
8. Take the electric switch in OFF position, disconnect the feed cable from the 220 V network, put the taps on the battery, remove the emergency push-button, reposition the protection sump, re-insert the emergency push-button, and pull it upward. The truck is ready to be used.
9. The working lack of the battery charger may be due to:
 - Voltage lack in the supply mains
 - Protection fuse intervention of the battery charger; switch off the battery charger and disconnect the pin from the line plug and replace the fuse with one of the same kind.



ATTENTION

The battery charger shall not be absolutely washed with bolts of water or steam cleaning machines. This operation may seriously compromise the functionality and safety of the device.

BATTERY CHARGER



Fig. 3.2 Battery-battery charger connection

NB. Before connecting the supply wire to the battery charger, lower the forks down.

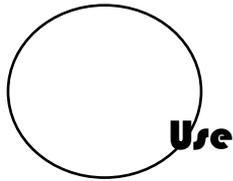
NB. Read the operation and maintenance handbook supplied together with the battery charger.

3.4 Test

The machine is tested by the constructor before going out of the factory. The test includes the static and dynamic tests to guarantee that the machines have been produced and assembled correctly.

The tests carried out are:

- General inspection of the lift truck in order to find possible assemble errors.
- Test without load so as to check the correct working of the hydraulic and mechanical systems and control devices.
- Fully laden static test for different heights
- Fully laden dynamic test in rise and descent
- Check test of the safety device efficiency
- Loadless translation test and with maximum load
- Loadless brake test and with maximum load.



This chapter describes the use functions and modalities of the machines.

4.1 Operator's qualification

The machine can be used by one single operator in order to eliminate the risks due to movements and the truck movement along with the load. For the lift truck use, no specialised qualification is required, but it is advisable to use it carefully so as to avoid damages to things or persons.

4.2 Danger zones

Definition

The danger zones are the zones inside and near the machine in which the presence of an exposed person represents a risk for the health and safety of that person.

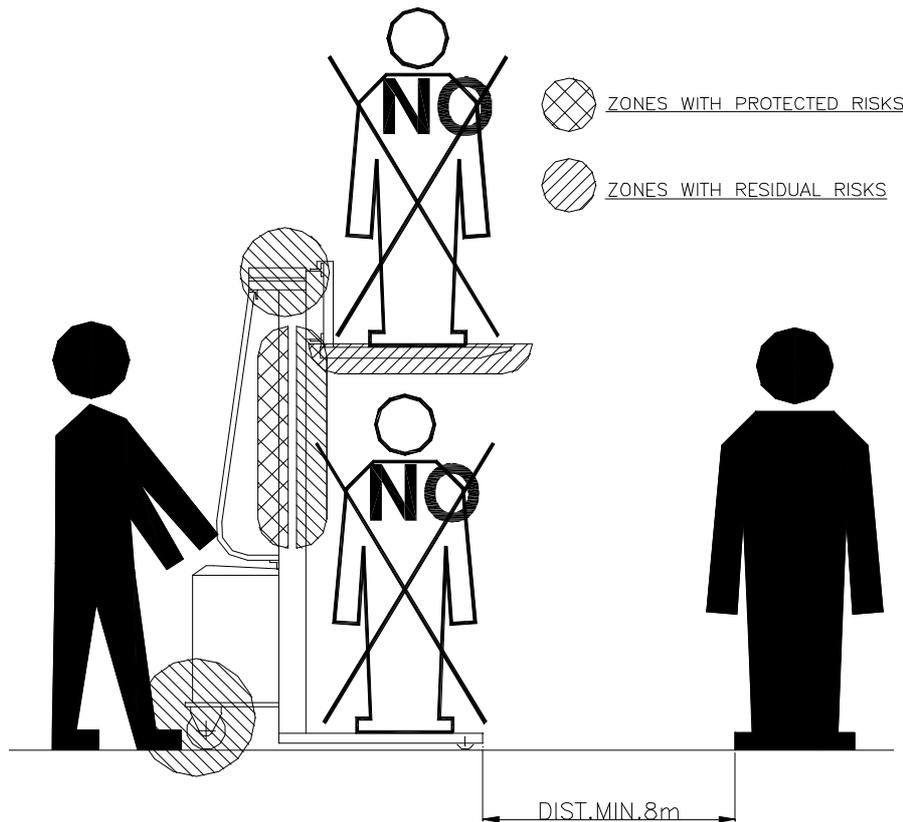
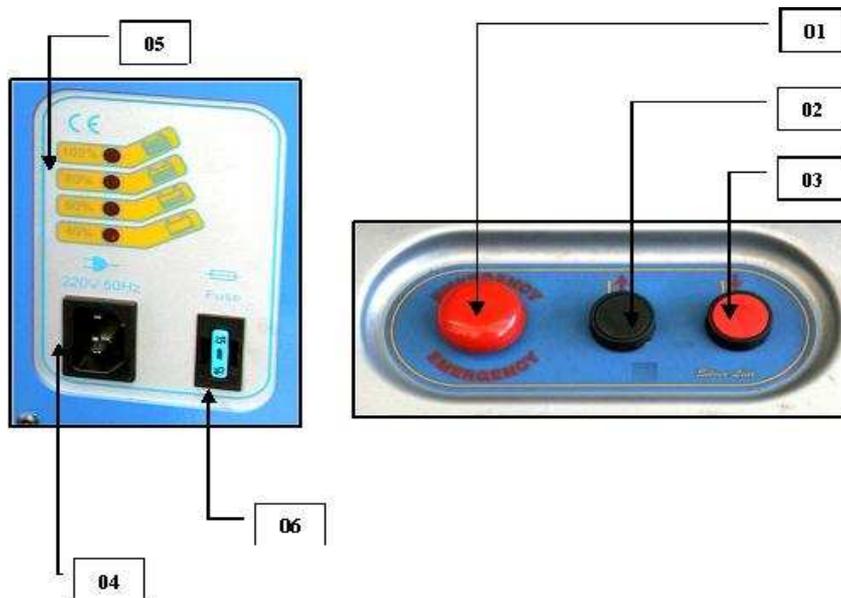


Fig. 4.1 Operator's position and danger zones of the machine during its use.

4.3 Drives and signals



4.3.1 Drives

The drives for truck operation are placed on the instrument board, as shown in Fig. 4.2. Their functions are described as follows by their relevant position order:

- 01:** Emergency push-button. It is normally in vertical position; by pressing it, you may cut the whole system's supply. This push-button is provided with a device, so that in case of any risk it can be released with a simple touch.
NB: The emergency push-button will work if in vertical position (pull up).
- 02:** Continuous action lifting push-button: by pressing it, the forks are lifted.
- 03:** Continuous action lowering push-button: by pressing it, the forks are lowered down.
- 04:** Connector plug, battery charger-network connection
- 05:** Set of LEDs indicating the battery charging state (the highest is the number of luminous LEDs, the most the battery is charged).
- 06:** Protection fuse carrier of the battery charger.
- 07:** All LEDs lighted indicate that the battery charging is over. (Point 05)
- 08:** To stop the truck in a steady position, engage the brake, which is placed on the right back wheel, by pressing it with your foot. To check the brake engagement, push the brake lever downward to stroke end and try to move the truck to check that the blockage has taken place. To disengage the brake, press the brake control lever again with your foot; This operation is favoured by the presence of a spring on the brake, which intervenes as soon as the brake is unblocked, takes it back to the initial position and completely clears the wheel of any braking constraint.

4.4 Working

4.4.1 Machine setting and ignition

The ALFA SMALL 12V evo—ALFA 12V evo lift truck is equipped with all protections in accordance with the safety norms in order to obtain a correct machine working and the operator's safety. It is advisable to follow strictly the use norms reported as follows:

- Remove the protection sump of the battery compartment and check that the battery is in the truck.
- Reassemble the protection sump
- Check that the emergency push-button is in vertical position (switched downward).
- For the forks lifting and lowering press the relative push-buttons positioned on the instrument board of the truck (02-03 push-buttons, see Fig. 4.2).
- For the movements, handle the steering wheel and operate manually, by pulling or pushing the truck to the various directions.
- To engage/to disconnect the brake, see point 08, Chapter "Drives".

4.4.2 Suggestions for a good piling-up

- Slowly get near to the pallet to be lifted, with the forks on the ground.
- Introduce the forks into the appropriate spaces on the pallet
- Once sure that the truck position is correct in comparison with the forks, lift the load slowly as far as the forks are at a maximum height of 20 cm from the ground.
- Get near to the place where the load must be positioned keeping a safety distance of about 50 cm with the forks.
- Gradually lift the load up to a height superior to the piling-up plane in about 8 cm.
- Gradually get near at moderate speed, avoiding abrupt starts, steering and stops that may cause the load fall.
- Once the correct position is reached, stop the truck, lower the forks slowly as far as the pallet reaches the pile.
- Once the pallet has been laid down, slightly lower the forks as far as they are free of any load; the lower part of the forks must not touch the pile.
- Slowly go back and with the forks go out of the pile or shelving area. Once the forks are far from this area at least 1/2 meter lower them to the ground and carry out the following operation.

In order to remove a piled-up pallet it is necessary to do what follows:

- Get near to the piling-up place with the forks lowered
- Stop the forks at least at 50 cm from the pile or stand
- Lift the forks up to the desired height of the pallet in a position that allows the forking without touching the pallet or the pile.
- Get near slowly and fork the pallet without causing accidental impacts with the forks.
- Once the forks position is correct, lift the pallet slowly up to a height of 10 cm from the supporting plane.
- Go back with the pallet and go out of the pile or stand area in about 50 cm.
- Lower the forks slowly with the load up to a fork height of 20 cm from the ground
- Move the load to the position desired.

Never overload the truck in order not to compromise the stability and the good working. As for the maximum admitted capacity always refer to the diagrams reported in the technical specifications and on the nameplate applied on the mast. Make yourself sure that nobody is under or above the load during the rise or descent operations.

4.4.3 Working modalities

For the use modalities see *4.3 Drives and signals*, for information and technical data refer to *Technical specifications*.

Overload working

In order to avoid overloads, the maximum pressure valve is calibrated for a pressure value a bit higher than the maximum allowed load. In case of overload the lift truck will behave as follows:

Rise

- At the beginning of the load lifting, the pressure in the oleodynamic circuit will exceed the maximum value admitted. The maximum pressure valve will drain oil into the tank and the forks will be standstill. The load is not moved.

Descent

- If there should be a too heavy load on the forks already lifted, the flow adjusting valve will keep constant the descent speed of the forks themselves. The load is moved.



DANGER

It is advisable not to exceed the load limits foreseen for the machine so as to avoid machine stresses that could seriously compromise the technical life and safety of the user.

Emergency stop

In case of danger operate on the emergency devices as mentioned in the Chapter *4.3 Drives and signals*.

Restarting after emergency stop

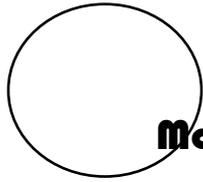
Reset the machine by zeroing the emergency devices and go on with the operations interrupted by means of the drives.

4.5 Working problems

4.5.1 The truck does not move

A table concerning the main possible failures that may occur while using the lift truck is reported as follows along with the possible solutions of the problems. Remember that any repair of the truck shall be carried out by qualified and competent technical personnel. If no qualified personnel should be available for these operations, please contact the technical assistance.

First-intervention handbook of failure search	
PROBLEM	CAUSE/SOLUTION
The truck does not work	<ul style="list-style-type: none"> - Check that the battery is charged - Check that the battery-electric installation connection plug is correctly connected. - Check that the emergency push-button is in vertical position. - Check that all cables are connected and that the fuses are not burnt. - If all checks are positive, contact the Technical Assistance.
The lifting does not work	<ul style="list-style-type: none"> - Check that the stop microswitch placed on the mast is not pressed down or damaged - Check that the rise-descent push-buttons seal - Check that all cables are connected - Check the lifting motor brushes - If, necessary, replace the simple relay placed on the lifting motor - Contact the Technical Assistance
The truck is braked	<ul style="list-style-type: none"> - Disconnect the brake - Release the wheels from all obstacles - Contact the Technical Assistance
The lift truck does not remain braked.	<ul style="list-style-type: none"> - Check that the brake is not damaged - Contact the Technical Assistance
The forks do not go down	<ul style="list-style-type: none"> - Check the forks adjustment (see point 5.2.) - Check that the of filter of the solenoid valve on the gearcase is not obstructed - Check that the electric pulse reaches the solenoid valve - Contact the Technical Assistance
The forks go down by themselves	<ul style="list-style-type: none"> - Load the forks and press the rise-descent push-buttons may times - Clean the seal valve on the lifting gearcase - Contact the Technical Assistance
The forks go down by strokes	<ul style="list-style-type: none"> - Check the correct forks adjustment - check the descent adjusting valve on the lifting gearcase (placed on the level of the oil pipe connection), if necessary replace it - Contact the Technical Assistance
The damaged truck blocks the way	<ul style="list-style-type: none"> - Move manually the truck in a free zone - Bring the steering wheel to the initial position



5.1 Maintenance obligations in accordance with CE 2006/42 directive

The lift truck maintenance is very important since it is aimed at preserving the operating and safety characteristics defined by the constructor in the design.

Consequently, the routine maintenance and above all the repairs shall be carried out by specialised technical personnel authorised by the constructor by using original spare parts.

The frequency of maintenance is defined by the manufacturer (see Table 5.1, section 5.4.3).

Check what follows:

1. Frame
2. Forks
3. Chains and relative pivots, tie rods, chain fastening block
4. Masts
5. Wheels
6. General screw and bolt tightening
7. Pipelines
8. Hydraulic valves
9. Brake
10. Safety protections
11. Identification nameplates of trucks (capacity and lifting graphics), drives and equipment.

5.2 Periodical maintenance checks and technical advice

Hydraulic system

Check the seal of all pipes, pipe fittings, gaskets and oleodynamic cylinder.
In order to carry out oil topping up, lower the forks to the ground, remove the tap positioned on the top of the piston by adding LI 32 oil to obtain the correct level.

Chain, nut and screw tightening check

Check all truck screws and nuts and particularly wheels, traction motor and lifting group.
Check and adjust the lifting chain, pivots and chain fastening tie rods (check that the hole of the chain fastening pivot has no backlash, otherwise replace the chain fastening block by contacting the Technical Assistance). Replace periodically chain, pulley, pivots and tie rod.

Greasing

Grease the battery terminals with vaseline grease.
Grease the masts
Grease the chain and relative pulley

Electric parts

Check the insulation of the electric installation
Check the battery and the terminal oxidation (water level)
Check the tightening of the power cables in the anchor points

Battery maintenance

In order to obtain the best performance and a good duration of the battery, it is advisable to follow some maintenance norms:
The electrolyte level must always cover the plates, consequently it is necessary to add periodically distilled water after the charging.
Do not drop water into the battery box.
Keep dry the caps of the elements and the box.
Do not grease the connections, but only the side plugs with pure vaseline.
Do not clean the caps of the elements with any kind of diluent, but with a rag soaked in water.
For further information about the battery, read the use and maintenance handbook of the battery.

5.3 Danger zones

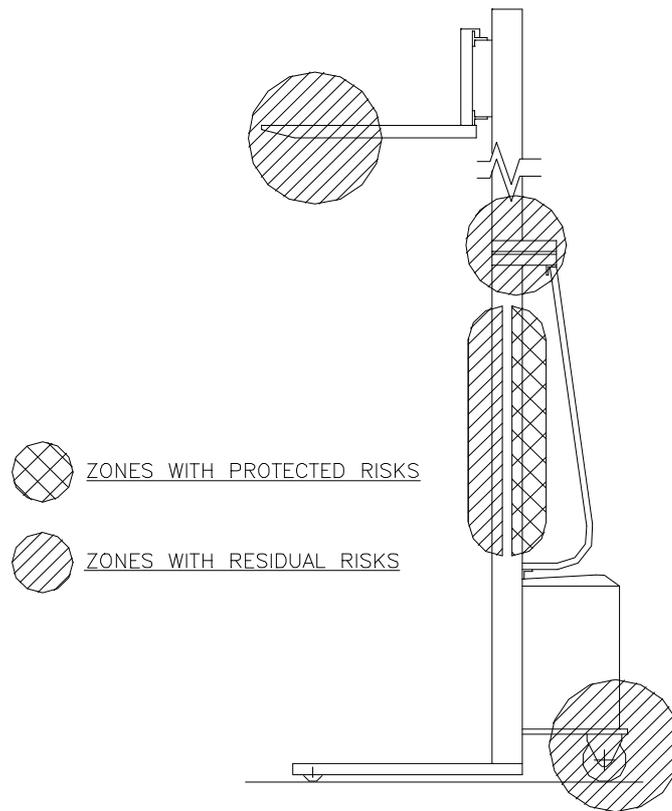


Fig. 5.1 Danger zones of the machine



DANGER

Carry out all maintenance operations when the machine is off and the emergency push-button is pressed (disconnected).

5.4 Routine (periodical and preventive) maintenance

The routine maintenance operations are all those operations that are carried out at regular intervals so as to keep the machine always efficient.

5.4.1 Operator's qualification

- The routine maintenance operations can be carried out by the user in safe conditions after having read carefully all recommendations and instructions of this section.
- It is advisable for the machine user to take care of the machine maintenance as well.
- The maintenance operations can be carried out by using normal mechanical tools.

5.4.2 Cleaning

Cleaning products and tools

For the machine cleaning it is necessary to have:

- Plastic spatula
- Sponge or cloth
- Compressed air gun
- Protective glasses

Cleaning products

For the cleaning operations a normal detergent and non-potable water are sufficient.

Cleaning procedures

Prepare the machine for the cleaning.

- Lower the forks up to lower position
- With a plastic spatula, a sponge or a clean wet cloth remove the residual materials on the forks.
- Lift the forks up to the maximum height position
- Press the emergency push-button
- Clean the remainder of the machine.



ATTENTION

The truck must not be washed with bolts of water or steam cleaning machine. This operation may cause serious damages to the electric installation.



DANGER

Do not use any solvents since they damage the painting.



ATTENTION

Do not use a bolt of current water. The water could reach the motor and damage it.

5.4.3 Periodical inspections

Table 5.1 Periodical inspections of the lift truck

Parts to be inspected	Inspection frequency
Oil level	3 months
Lubrication of pivots and masts	1 month
Oil filter change	6 years or 8000 hours
Oil replacement	6 years or 8000 hours
Safety devices check	Every day
Battery acid level	Every day
Chains	3 months

Oil replacement

In order to drain the oil from the tank, follow the instructions of the deactivation procedures in Chapter 6 concerning the oil drain. For the supply of the new oil refer to the previous paragraph.

Machine lubrication

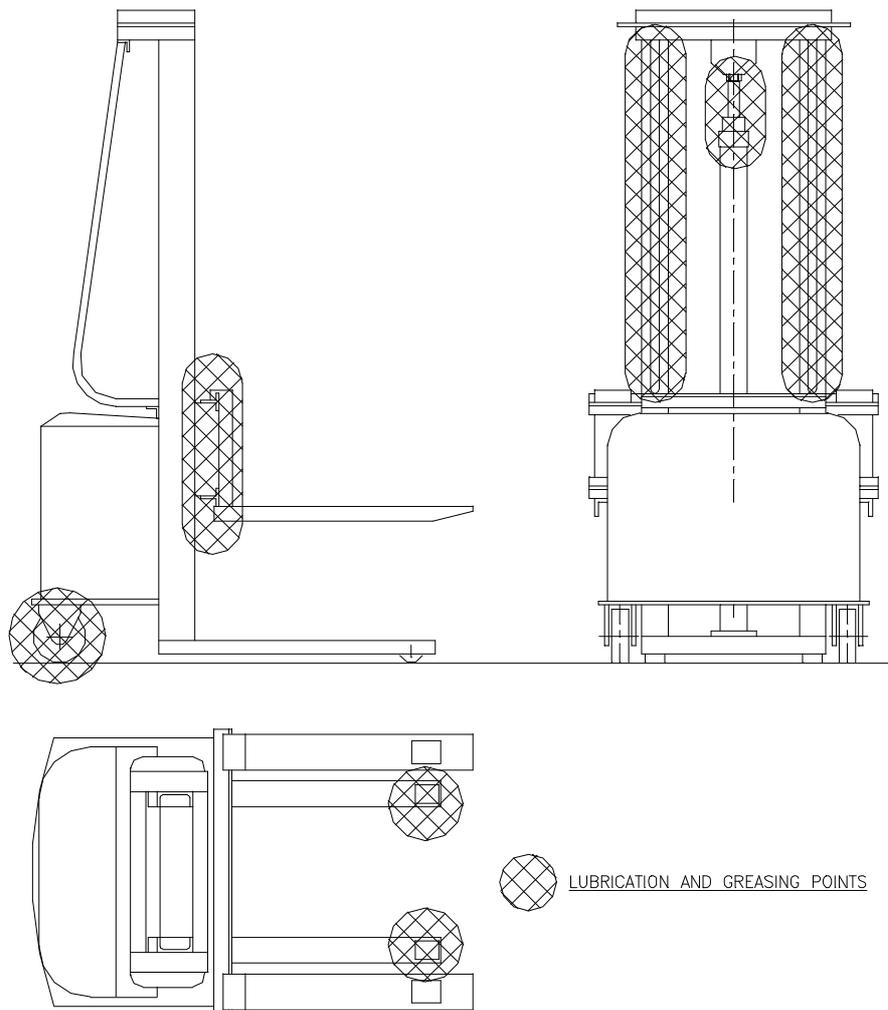


Fig. 5.2 Lubrication and greasing points

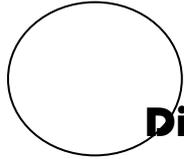
5.4.4 Special maintenance

The special maintenance includes all interventions specialised in mechanical, hydraulic or electric parts.

Contact the Technical Assistance for the repairs and supply of the spare parts.

NOTE

The failures caused by a wrong maintenance or repairs carried out by unauthorised personnel are not included in the guarantee.



6.1 Machine deactivation

The producer machines are designed and produced according to duration and flexibility criteria that allow their utilisation for several years. At the end of its technical and operating life, the machine shall be deactivated. The disability and deactivation of all the functions for which the machine had been designed and manufactured must allow the re-utilisation of its raw materials.

It is necessary to carry out a safe deactivation and dismantling of the machine so as to eliminate the following risks:

- Impact or squashing risks due to the presence of movable parts and stored energies (oil under pressure, forks in high position).
- Poisoning or environmental pollution risks due to the presence of oil in the hydraulic circuit.

NOTE

The producer declines all responsibilities for damages to persons or things due to the re-utilisation of single parts of the machine for functions or assemble operations different from the original ones.

6.2 Deactivation procedures

In order to deactivate completely the machine do what follows:

- Lower the forks up to the lower position
- The truck is in the position in which it had been transported
- Disconnect the truck by pressing the emergency push-button. Disconnect the battery.
- Remove the sump and the instrument board
- Remove the oil tank and keep the oil inside a basin



DANGER

Give the oil to the Body in charge of the dismantling of the residual oils.
Give all the other materials (ferrous and nonferrous) to the bodies in charge of the recycle and dismantling

- Remove the battery
-



DANGER

Give the battery to the Body in charge of the dismantling of run-down batteries.

- Disassemble and remove the pump, the electromotor and the electric gearcase with the connection wires.
 - Reassemble the sump and the instrument board
 - Sling the truck by means of the special lifting ears and lift it in order to load it.
 - Carry the machine to destination.
-



ATTENTION

The deactivation and dismantling operations of the machine shall be carried out only by personnel adequately trained and equipped.

6.3 Hazards solved after the machine deactivation

If the machine deactivation procedure of this instruction handbook is followed accurately, all movable parts will be stopped; this will cause no residual risk.



HYDRAULIC DRUM TIPPER

Description and use

This kind of device can be applied to any truck and is used to lift and transfer drums and containers , to carry out metering safely and precisely by means of the manual reducer with worm screw. The drums are slung so as to be lifted by means of bands which, when they are closed, form a ring around the drum.

In order to lift a container operate manually as follows:

- 01: First of all, the drum shall be in vertical position.
Lift the drum tipper device as far as the fulcrum of the circular-sector bands is in the middle of the drum height, close the bands around the drum, use the lifting control devices.
- 02: In order to turn the drum, use the hydraulic distributor by rotating the crank (Leve 2).
- 03: For the drum descent, hydraulic distributor control devices (Leve 1).

In order to work safely, the load shall have the following overall dimensions (see Fig. 1.4 "Load position" of Chapter 1 "General information of instruction manual):

- The drum diameter cannot exceed 580 mm
- The height cannot exceed 880 mm

Grease the manual reducer having worm screw and the rotation points of the circular-sector bands. Periodically check the parts to be greased and lubricate every three months of use.

-
- WARNING:**
- IT IS COMPULSORY TO WEAR SAFETY SHOES WHEN USING THE DRUM TURNING TRUCK.
 - ONLY ONE OPERATOR CAN USE THE TRUCK.
 - DURING THE USE, CHECK THAT THERE ARE NO OTHER PEOPLE WITHIN THE RANGE OF THE TRUCK.
 - AS FOR ALL OTHER INSTRUCTIONS (NOTES, WARNINGS, HAZARDS, PROHIBITIONS ...), THOROUGHLY COMPLY WITH THE USER AND MAINTENANCE MANUAL.
-

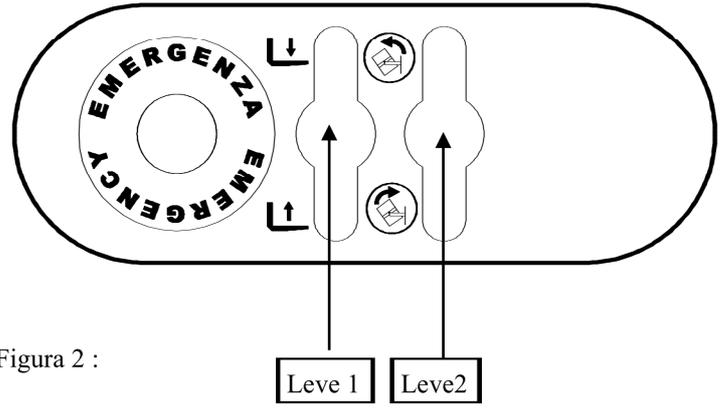
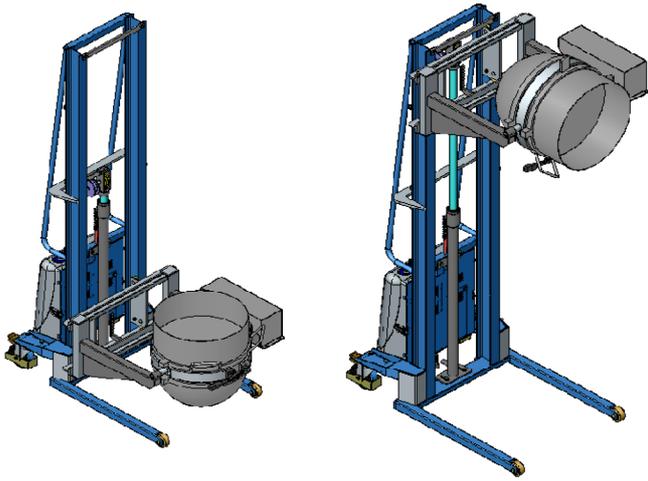


Figura 2 :

Figura 1 Example for forklift



Figura 3 : drums locking by lever