

OKAPI - User Manual

LIGHTING TOWER WITH HYDRAULIC LIFTING SYSTEM



CONTENTS

1. INTRODUCTION.....	5
1.1 Symbols.....	5
1.2 Warnings	6
1.3 Safety rules	7
2. GENERAL DESCRIPTION	10
3. HANDLING	11
3.1 General precaution when handling the machine.	11
3.2 Moving the generating set via forklift	11
3.3 Moving via cables or chains.....	11
3.4 Machine transportation by a motor vehicle	11
4. PREPARE FOR THE USE	13
4.1 Battery.....	13
4.2 Lubricant.....	13
4.3 Air filter.....	13
4.4 Fuel	14
4.5 Cooling liquid	14
5. INSTALLATION.....	15
5.1 Electrical specifications.....	15
5.2 Preliminary checks	15
5.3 Positioning of the outriggers and levelling of the tower	15
5.4 Orientation of floodlights and mast	16
5.5 Emergency lowering of the mast.....	18
5.6 Mains-0-group selector	18
5.7 Light sensitive relay (optional).....	19
6. MAINTENANCE.....	20

7.	GENERAL CONDITIONS	23
7.1	<i>Warranty</i>	23
8.	LIGHTING TOWER DATA	24

1. INTRODUCTION

1.1 Symbols

This operation and maintenance manual uses the symbols outlined below to indicate risks that may arise in the event of failure to observe the instructions supplied.



GENERIC DANGER - If the advice is not respected damage can happen to persons or things.



HIGH VOLTAGE - Attention High Voltage. There can be parts in voltage, dangerous to touch. The non observance of the advice implies life danger.



FIRE - Danger of flame or fire. If the advice is not respected fires can happen.



HEAT - Hot surfaces. If the advice is not respected burns or damage to things can be caused.



EXPLOSION - Explosive material or danger of explosion. in general, if the advice is not respected there can be explosions.



ACIDS - Danger of corrosion. If the advice is not respected the acids can cause corrosions with damage to persons or things.



PRESSION - Danger of burns caused by the expulsion of hot liquids under pressure.



FIRE PREVENTION. In case the working zone, for whatsoever cause goes on fire with flames liable to cause severe wounds or death, follow the first aid as described by the ruling norms or local ones.



FIRST AID. In case the operator should be sprayed by accident, from corrosive liquids a/o hot toxic gas or whatever event which may cause serious injuries or death, predispose the first aid in accordance with the ruling labour accident standards or of local instructions.

1.2 Warnings

The lighting tower described in this manual is a unit designed to supply lighting and electricity, transforming the mechanical energy generated by a combustion engine with an alternator.

Before operating the machine, carefully read the manual and follow all instructions herein.

This manual, drawn up for use by qualified personnel familiar with all current safety standards and generator set installation procedures, contains important information on the use and maintenance of the unit supplied. Before starting the machine, read this document carefully and strictly observe all the instructions provided, as well as the highlighted warnings.

The machine is supplied together with the original documentation of the engine and alternator. Take care to conserve all documents and ensure that operations are performed by qualified personnel. In the event of machine transfer/sale, enclose all documentation with the unit as it is an integral part of the product.

Our technical service center is available for any requirement or clarification.

If machine parts need to be replaced, ensure that original spare parts are used. Failure to observe the above will render the equipment warranty null and void.

Any use of this product other than those explicitly indicated in this manual relieve the manufacturer from any responsibility about damages that may occur to persons, or property.

Do not damage this manual, do not take parts away, do not tear pages and keep it in places protected from dampness and heat. You must take into account that some figures contained in it want only to identify the described parts and therefore might not correspond to the machine in your possession.

This manual does not engage the manufacturer, who keeps the faculty, apart the essential characteristics of the model here described and illustrated, to bring betterments and modifications to parts and accessories, without putting this manual uptodate immediately.

1.3 Safety rules

The information contained in this manual are subject to change without notice. The instructions in this manual are intended as indicative only. It is the responsibility of the owner/operator to evaluate risks and potential damages in relation to the use of the product in the specific conditions of application. Remember that the non observance of the indications of this manual may result in damage to people or things. In all cases, however, it is understood that the use shall be in compliance with the applicable laws/regulations.

- Before operating the machine, read carefully the safety instructions contained in this manual and other manuals supplied (engine, alternator, etc).
- All operations, handling, installation, use, maintenance, repair should be carried out by authorized and qualified personnel.
- When operating, wear personal protective equipment (PPE): footwear, gloves, helmet, etc.
- Il proprietario è responsabile del mantenimento dell'apparecchiatura in condizioni di sicurezza. The owner is responsible for maintaining the equipment in safe conditions.
- Use only in perfect technical conditions The machinery or equipment must be used in perfect technical condition. Remove immediately any defects that may affect the safe conditions of use.
- Before starting to use this equipment it is important to take knowledge of all the controls of the machine, all its functions and its correct installation in order to avoid accidents to people and damage to the machine itself. In particular, it is important to know how to stop the equipment quickly in case of emergency.
- Do not allow the use of the machine to people unless previously instructed with all the information for a proper, safe use.
- Forbid the access in the operational area to non authorized personnel, children and pets so as to protect them from possible injury caused by any part of the machine.

SAFETY PRECAUTIONS DURING HANDLING AND TRANSPORTATION

- Lift the machine using only the points allocated for this function. The lifting eye (or eyes) and the correct positioning of the forks of the forklift are marked with specific adhesives.
- Before moving a lighting tower lower the telescopic mast and block properly all movable parts such as the access doors, the mast, the outriggers, the floodlights.
- Clear the operational area of possible obstacles and all unnecessary personnel.
- Always use lifting equipment properly sized and controlled by enabled bodies.
- It is forbidden to set on the frame of the equipment objects or accessories that alter weight and center of gravity and cause stresses not foreseen to the lifting points.
- Do not submit the machine and the lifting equipment to swinging or shock which may transmit dynamic stress to the structure.

SAFETY PRECAUTIONS DURING INSTALLATION AND USE

- Always locate the lighting tower on a flat and solid ground, so as to avoid tipping, slipping or falling during operation. Avoid using the lighting tower on slopes greater than 10 degrees.
- Make sure the area immediately surrounding the machine is clean and free from debris.
- Make sure the area above the lighting tower is free from overhead cables or other obstacles. The lighting tower reaches a maximum height of 8,5 meters.
- Before raising the mast extract the outriggers located at the sides of the machine. Acting on the outriggers level the lighting tower making use of the bubble, so as to bring the equipment in a horizontal position. Make sure that the tower rests securely on the outriggers. If the lighting tower is mounted on road trailer pull the handbrake.
- Do not operate the lighting tower if the wind speed exceeds the safe speed indicated or if it is expected the arrival of storms or thunderstorms in the area.
- Lower the telescopic mast when the tower is not used.
- Connect the machine to an earthing system according to the regulations in force at the place of installation. Use the ground terminal inside the machine.
- Do not use the lighting tower with wet or damp hands and / or clothing.
- Use plugs suitable for the output sockets of the machine and make sure that electrical cords are in good condition.
- The machine must always be positioned so that the exhaust gases are dispersed in the air without being inhaled by people or living beings.
- If you use the machine indoors is necessary that the installation is designed and built by skilled technicians in a workman like manner.
- During normal operation, keep doors closed. The access to the internal parts should be allowed only for maintenance reasons.
- Do not place objects or obstructions in the vicinity of the air intakes and air outlets, a possible overheating of the generator could cause a fire.
- Keep area near to the muffler free from objects such as rags, paper, cardboard. The high temperature of the muffler could cause the burning of objects and cause fire.
- Do not touch and do not place objects on the lamps during operation or immediately after use. The lamps become very hot.
- Do not turn on the lamps without the protective glass or with the same broken or damaged.
- Immediately stop the machine in case of malfunction. Do not restart the machine without first having found and fixed the problem.

SAFETY PRECAUTIONS DURING MAINTENANCE



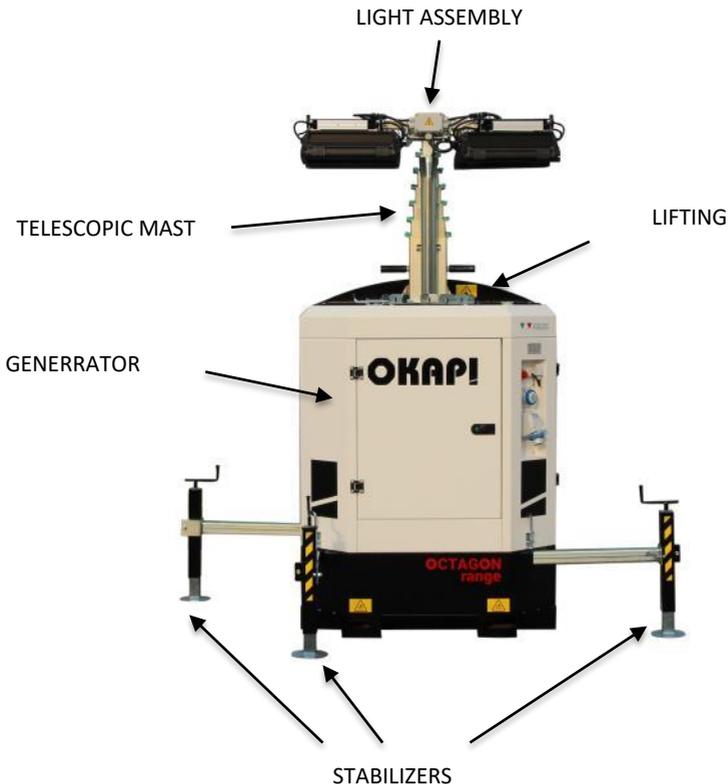
- Make use of qualified personnel to carry out maintenance and troubleshooting.
- It is mandatory to stop the engine before performing any maintenance on the machine.
- Always use protective devices and suitable equipment.
- Always cut off power to the lamps and wait for their cooling before performing any maintenance or replacement.
- Do not touch the engine, the exhaust pipes and the muffler during operation or immediately after. Allow the engine to cool before performing any operation.
- With the machine running pay attention to moving parts such as fans, belts, pulleys.
- Do not remove the protections and the safety devices unless absolutely necessary, restore them after completion of the maintenance or repair.
- Do not refuel while the engine is running or hot. Do not smoke or use naked flames when refueling.
- Refuel only outdoors or in well ventilated areas.
- Avoid spilling fuel, especially on the engine. Clean and dry any leaks before restarting the machine.
- Slowly unscrew the cap of the fuel tank and put it back always after refueling.
- Do not fill the tank completely to allow for expansion of the fuel inside.
- Do not remove the radiator cap when the engine is running or still hot, the coolant may spurt out and cause serious burns.
- Do not handle the battery without the use of protective gloves, the battery fluid contains sulfuric acid, which is very corrosive and dangerous.
- Do not smoke, avoid any naked flames or sparks near the battery, the vapors exhaled could cause the battery to explode.

2. GENERAL DESCRIPTION

The light tower consists mainly of a lighting tower and a generator set integrated into a single piece of equipment.

The lighting tower is composed of:

- A hydraulic telescopic mast, which can be raised up to a maximum height of 8,5 meters and manually oriented within a range of 350°;
- A light assembly;
- A silent generator driven by a water-cooled;
- A command and control panel for the management and protection of the lighting tower;
- 4 outriggers, 2 extendable and adjustable in height, to ensure the stability of the tower on any working surface;



3. HANDLING

3.1 General precaution when handling the machine.



During handling of the lighting tower is essential to pay close attention. All handling operations must be performed by qualified personnel. For the characteristics of weight and size, an error during the handling of the machine may result in serious damage to the surrounding people and to the machine itself.

In order to minimize the dangers involved in moving the equipment it is important to follow carefully the requirements below:

- The transport must always be done with the engine off, with electrical cables and starting battery disconnected, fuel tank empty.
- Clear the moving zone of all possible obstacles and from all unnecessary personnel.
- Use properly sized lifting equipment regularly submitted to major overhaul by an authorized organisation. It is prohibited to fasten objects or accessories on the lighting tower baseframe that may modify weight and center of gravity and may cause movements unforeseen by the lifting eyes.
- Do not subject the lighting tower and lifting equipment to abrupt or undulating movements that pass on stress dynamics to the structure.
- Do not lift the equipment at heights greater than those strictly necessary.
- To access the attachment points on the roof of the machine, use approved ladders only. Climb the ladder being supported by a second operator and wear special non-slip shoes.

3.2 Moving the generating set via forklift

When lifting with a forklift it is necessary to:

- Insert the forks of the forklift into the specific pockets located sideways and frontally on the baseframe, as indicated in the figures.
- Fully insert the forks so that they stick out from the opposite side and be careful to keep the equipment in horizontal position.

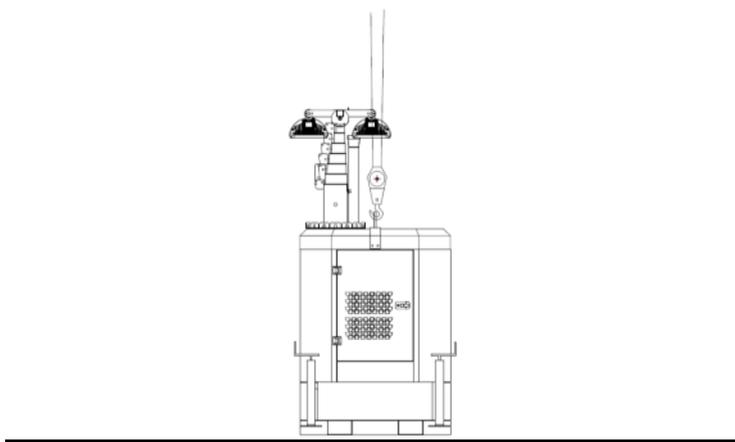
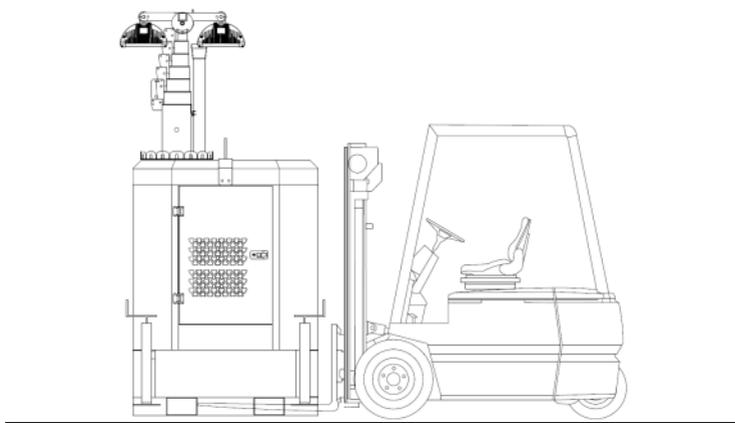
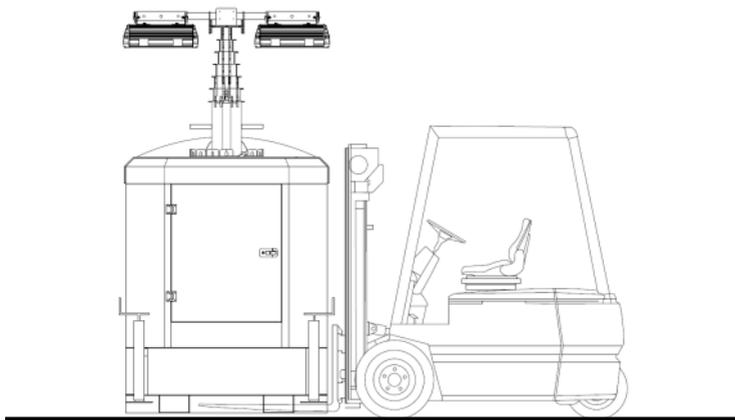
Stickers on the base indicate where to place the lifter forks.

3.3 Moving via cables or chains

When lifting the genset with the aid of cables or chains it is necessary to use equipment periodically checked by a licensed organisation. Hook the cables only on to the points provided for this use and shown via the appropriate stickers.

3.4 Machine transportation by a motor vehicle

During the transportation with a motor vehicle it is important to use appropriate belts/straps to stabilize the unit, thus avoiding that unexpected jumps or jolts can cause damage to the baseframe and to the engine or even worse the loss or the overturning of the load. It is the carriers responsibility to always respect the Highway Code in force.



4. PREPARE FOR THE USE

4.1 Battery



The starter battery is supplied already charged and ready for use.

Before starting connect the cable to the pole of the battery, by properly tightening the clamp.

Batteries contain sulphuric acid, which is highly corrosive. The acid may leak from the batteries when handled. In the event of acid contact with the skin, rinse thoroughly with clean cool water and seek medical attention.

4.2 Lubricant



To replace the engine oil, refer to the instruction manual of the engine about the viscosity and the type recommended.

REFUELLING AND CONTROL:

Carry out refuelling and controls with motor at level position.

1. Remove the oil-fill tap
2. Pour oil and replace the tap
3. Check the oil level using the dipstick; the oil level must be comprised between the minimum and maximum indicators.



It is dangerous to fill the motor with too much oil, as its combustion can provoke a sudden increase in rotation speed.

4.3 Air filter



Check that the dry air filter is correctly installed and that there are no leaks around the filter which could lead to infiltrations of non-filtered air to the inside of the motor.

Keep the filter clean to avoid reduced performance levels or increased engine noise: remove from its seat and remove all impurities using a dry air jet. If this is not sufficient to completely clean the filter and ensure full efficiency, replace the entire filter.

4.4 Fuel



Stop engine when fueling. Do not smoke or use open flames during refueling operations, in order to avoid explosions or fire hazards. Fuel fumes are highly toxic; carry out operations outdoors only, or in a well ventilated environment. Avoid accidentally spilling fuel. Clean any eventual leaks before starting up motor.

Refill the tank with good quality diesel fuel, such as automobile type diesel fuel, for example.

For further details on the type of diesel fuel to use, see the motor operating manual supplied. Do not fill the tank completely; leave a space of approx. 10 mm between the fuel level and the wall of the tank to allow for expansion. In rigid environmental temperature conditions, use special winterized diesel fuels or specific additives in order to avoid the formation of paraffin.

4.5 Cooling liquid



Do not remove the radiator tap with the motor in operation or still hot, as the liquid coolant may spurt out and cause serious burns. Remove the tap very carefully.

Remove the tap and pour the liquid coolant into the radiator; the quantity and composition of the liquid coolant are indicated in the motor operating manual. Replace the tap, ensuring it is perfectly closed. After refilling operations, allow the motor to run for a brief time and check the level, as it may have diminished due to air bubbles present in the cooling circuit; restore the level with water.

To replace the liquid coolant, follow the operations described in the motor operating manual.

During the engine life it is strongly recommended to use the same coolant type. This is because a coolant change would require a careful cleaning of the cooling system, which is not an easy job. A lack in tacking these precautions would result in the mix of different additives used in different coolants which would originate gelatinous substances capable of obstructing the cooling system.

5. INSTALLATION

5.1 Electrical specifications



The grounding connection to an earthed installation is obligatory for all models equipped with a differential switch (circuit breaker). In these groups the generator star point is generally connected to the machine's earthing; by employing the TN or TT distribution system, the differential switch guarantees protection against indirect contacts. In the case of powering complex installations requiring or employing additional electrical protection devices, the coordination between the protection devices must be verified. For the grounding connection, use the terminal; comply to local and/or current regulations in force for electrical installations and safety.

5.2 Preliminary checks

Before operating the lighting tower make sure that all safety regulations concerning installation and use are satisfied, as indicated in the relevant section of this manual!



In particular, be sure that:

- the surface on which the lighting tower is placed is flat and free of obstacles
 - the wind speed does not exceed 80 km/h
 - there are no obstacles or overhead power lines above the lighting tower
 - the status of the lighting tower is adequate, in general
 - the lifting ropes of the mast are in perfect condition.
- Check the engine oil level, hydraulic oil and radiator fluid
 - Check the fuel level

5.3 Positioning of the outriggers and levelling of the tower

- Raise the locking pins of the extension arms of the front outriggers and extract them until the pins block again the arms in their extended position.
- Lower the rear outriggers and secure them with the locking lever
- Lower the front outriggers and adjust the lighting tower position by acting on their handles, looking at the bubble level on the machine, until the horizontal position is reached.

5.4 Orientation of floodlights and mast

The floodlights beam can be oriented, according to the needs, by acting in the following two ways:

- by adjusting the inclination of each floodlight
- by rotating the mast in the desired direction

To adjust the angle of the floodlights loosen the clamping screw, turn the floodlight to the desired position and lock again. To rotate the mast lift the pin and turn it in such a way as to keep it extracted. Direct the mast in the desired direction by acting on the handles. Unlock the pin and slightly rotate the mast until the pin gets into a hole, thereby locking of the rotation of the mast.



Before starting the engine, make sure that switches of the lamps on the panel are all in OFF position.

FOR MORE INFORMATION ON THE OPERATION OF THE CONTROL UNIT, REFER TO THE UNIT MANUAL

Start the generator with the key on the front panel and push the START button.

Put the circuit breaker in ON position. Activate the raise of the mast through the relevant button on the control panel (B) until the mast is fully extended. Turn on the lamps by means of the circuit breakers (D) on the front panel. After use, turn off the lamps before actuating the lowering of the mast. Lower the mast by pressing the appropriate button (C) on the control panel.



1. Key
2. START button
3. Mast up button
4. Mast down button
5. Main switch
6. Lights switches
7. Light sensitive relay MAN-0-AUT selector
8. Light sensitive relay
9. Pump thermal protection
10. Socket thermal protection
11. MAIN-0-GROUP selector



- 12 Emergency button
- 13 Light sensitive relay sensor
- 14 Service socket
- 15 Power supply plug

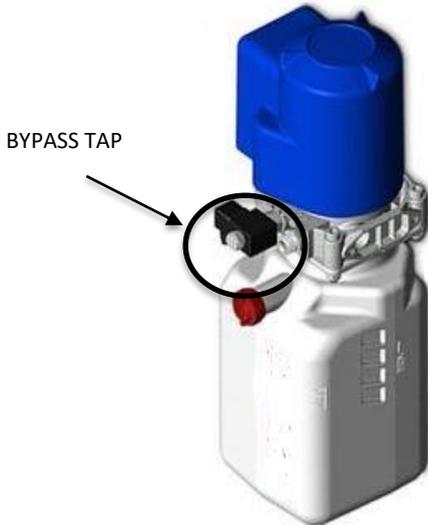


MACHINE WITH EMERGENCY BUTTON

Pressing the button the engine will stop immediately in any working condition. Turn clockwise to reset the button.

5.5 Emergency lowering of the mast

In case of emergency due to engine failure, or due to failure of the hydraulic power pack or the electrical system, use the bypass tap of the solenoid valve, positioned on the hydraulic power unit, to lower the mast. When the mast is completely down, close the tap again.



5.6 Mains-0-group selector

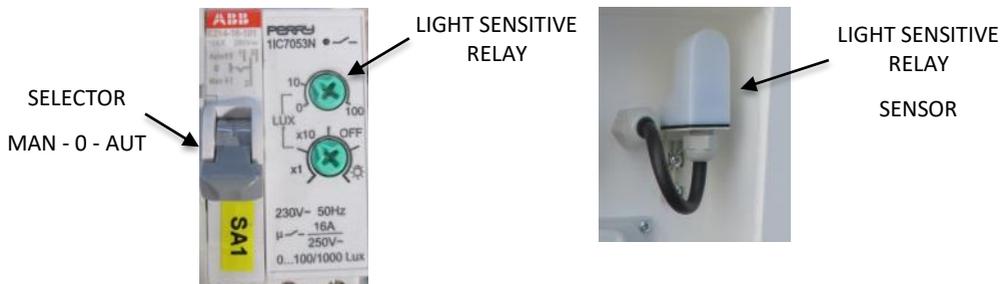
Position 1
Main supply



Position 2
Group supply

The floodlights and the hydraulic power pack can be charged directly from the 230V mains on request. Connect a socket with the same features to the 230V 32A 2P+T EEC plug. The minimum cable section should be selected based on the voltage, the installed power and the distance between the source and application. To power the Lighting Tower from the mains, move the selector switch to "MAIN" (position 1) and move the selector switch to "GROUP" symbol (position 2) to power from the generating set unit. On "0" position operation from both the main and the generator is inhibited.

5.7 Light sensitive relay (optional)



The control panel is equipped with a light sensitive relay, and its sensor, controlled by a selector. With the selector switch in the MAN position: the light sensitive relay is bypassed and the lights function dependent on the position of the relative switches. With selector in position 0: the function of the light sensitive relay is inhibited and the lights can not be switched on. With selector in AUT position: the lights are switched on by the light sensitive relay (the lights switches must be in the ON position).

FOR MORE INFORMATION ON THE LIGHT SENSITIVE RELAY AND THE REGULATIONS, REFER TO THE RELATIVE MANUAL.

6. MAINTENANCE



- Have qualified personnel do maintenance and troubleshooting work.
- Stop the engine before doing any work inside the machine. If for any reason the machine must be operated while working inside, pay attention moving parts, hot parts (exhaust manifold and muffler, etc.) electrical parts which may be unprotected when the machine is open.
- Remove guards only when necessary to perform maintenance, and replace them when the maintenance requiring their removal is complete.
- Please wear the appropriate clothing and make use of the PPE (Personal Protective Equipment), according to the type of intervention (protective gloves, insulated gloves, glasses).
- Do not modify the components if not authorized.

NOTE

By maintenance at care of the utilizer we intend all the operations concerning the verification of mechanical parts, electrical parts and of the fluids subject to use or consumption during the normal operation of the machine. For what concerns the fluids we must consider as maintenance even the periodical change and or the refills eventually necessary. Maintenance operations also include machine cleaning operations when carried out on a periodic basis outside of the normal work cycle.

The repairs cannot be considered among the maintenance activities, i.e. the replacement of parts subject to occasional damages and the replacement of electric and mechanic components consumed in normal use, by the Assistance Authorized Center as well as by manufacturer. The periodic maintenance should be performed according to the schedule shown in the engine manual. An optional hour counter (M) is available to simplify the determination of the working hours.



In the maintenance operations avoid that polluting substances, liquids, exhausted oils, etc. bring damage to people or things or can cause negative effects to surroundings, health or safety respecting completely the laws and/or dispositions in force in the place.

ENGINE and ALTERNATOR

PLEASE REFER TO THE SPECIFIC MANUALS PROVIDED.

Every engine and alternator manufacturer has maintenance intervals and specific checks for each model: it is necessary to consult the specific engine or alternator USER AND MAINTENANCE manual.

VENTILATION

Make certain there are no obstructions (rags, leaves or other) in the air inlet and outlet openings on the machine, alternator and motor.

ELECTRICAL PANELS

Check condition of cables and connections daily. Clean periodically using a vacuum cleaner, DO NOT USE COMPRESSED AIR.

DECALS AND LABELS

All warning and decals should be checked periodically and replaced if missing or unreadable.

STRENUOUS OPERATING CONDITIONS

Under extreme operating conditions (frequent stops and starts, dusty environment, cold weather, extended periods of no load operation, fuel with over 0.5% Sulphur content) do maintenance more frequently.



The engine protection not work when the oil is of low quality because not charged regularly at intervals as prescribed in the owner's engine manual.

HYDRAULIC POWER PACK

- Check the level and condition of the hydraulic fluid. Carry out the check with the mast down and cool fluid.
- It is recommended a first fluid change within 3000 hours or once every 2 years.
- When topping up, it is important not to mix hydraulic fluids of different manufacturers, or different types, which may cause the formation of sludge and sediments that could affect the proper operation of the power pack.
- For the oil replacement, use oils with a high viscosity index and temperature range appropriate to the conditions of use.

WIRE ROPES

Periodically check that the steel ropes of the mast are in perfect conditions. If there is evidence of wear, abrasion, broken wires or loose connection do not use the lighting tower and plan immediately the cables replacement.

CAUTION: When replacing use ropes of the same type of the originals. For this purpose, it is highly advisable to use original spare parts.

PULLEYS

Periodically check the regular rotation of the pulleys and the correct position of the ropes on the pulleys. Periodically lubricate with lithium multifunctional grease.

TELESCOPIC MAST

Check the regular movement of the mast during the raise and the lowering. Periodically grease the mast with anti-corrosion waterproof spray lubricant.

LIGHTS

In case of need of replacement, do not directly touch the lights with your fingers, use a cloth or use cotton gloves. Pay attention to the high temperature that the lights reach during operation: if possible, wait them to cool down before replacing.

7. GENERAL CONDITIONS

7.1 Warranty

The product warranty is subject to the company's general terms and conditions of sale.

Acknowledgment of the warranty depends on the strict and proven observance of the operating instructions in this booklet and application of the correct mechanical, hydraulic and electro-technical practices.

All the products are covered by a 12-month warranty, which covers every defect in the manufacture of our products and includes the replacement/repair of the faulty pieces.

The warranty will not be deemed valid in the event of:

- tampering with the lighting tower (modifications without prior authorisation);
- breakdown due to lack of or inadequate protection and/or incorrect connection;
- breakdown caused by exceeding the rating plate limits;
- normal wear and tear of the lighting tower;
- non-compliance by the personnel in charge of installation of the operational regulations given;
- accidental causes, natural disasters of every kind, e.g. fires, floods, water or lightning;

The faulty material shall be sent carriage paid to the producer, which reserves the right to pass unquestionable judgement on the reason for the defect.

The warranty applies solely to resetting the original specifications of the product and does not cover any damage to people or objects.

8. LIGHTING TOWER DATA

MODEL	
S/N GENERATOR	
ENGINE	
S/N ENGINE	
ALTERNATOR	
S/N ALTERNATOR	
VOLTAGE	
FREQUENCY	
MAX CURRENT	
ENGINE SPEED	
POWER PRP KVA (KW)	
POWER LTP KVA (KW)	
WEIGHT	
DATE START-UP	

It is recommended to compile the table and copy all data specified on the model label affixed on the unit, for retrieval in the event of damage to the adhesive.

