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Group

# 900ECO LIGHTING TOWER USER MANUAL



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## NOTICE

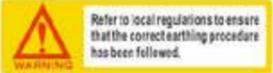
It is the responsibility of the hirer to check and maintain oil and water levels in this tower.

Note: The tables are for informational purposes only and are subject to modifications or upgrading that the manufacturer may carry out in compliance with applicable laws.

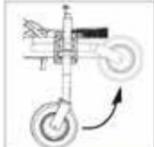
## 1. SAFETY SIGNS

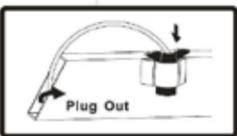
These signs alert the user to any danger that could cause harm to people. Carefully read the warnings and meanings described in this manual.

Signs of Danger	Meaning
	Do not exceed trailer installation angles as below
	Crush hazard! A falling top device can cause death or serious injury
	Contact with overhead electric wire will cause serious injury or death. Do not place the trailer under electric wire
	Keep the pin in the locked position when the trailer is transported or moved
	Danger: do not move the unit with tower lifting up! It must be moved with mast lowering down
	Perform safety maintenance with reference to operation and maintenance manual
	Pinch point area

Prohibition signs	Meaning
	Prohibit unilateral hoisting
	Hot Surfaces. May cause burn
	No Open Flames
	Hot pressurised coolant. Do not operate when hot Can cause severe injury
	Incorrect installation, operation, servicing or replacement of parts can result in severe personal injury or death, and/or equipment damage. Service personnel must be qualified to perform electrical and mechanical service.
	Refer to local regulations to ensure that the correct earthing procedure has been followed.
	No earth connections are made on the generator and reference to site regulations for grounding must be made. Incorrect earthing or protection arrangements can result in personal injury or death.
	Before working inside the generator, during the aligning and fitting of coupling bolts, care should be taken to lock the assembly to ensure there is no possibility of rotational movement.
	During testing it may be necessary to remove covers to adjust controls exposing "live" terminals or components. Only personnel qualified to perform electrical service should carry out testing and/or adjustments. Refit all access covers after adjustments are complete

Prohibition signs	Meaning
	VOLTAGE MAY CAUSE ELECTRIC SHOCK 1.TURN OFF POWER BEFORE CHECKING OR MAINTENANCE. 2.DO NOT TOUCH ANY ELECTRIC EQUIPMENT WHEN POWER IS ON. 3.DO NOT OPERATE WITH DOOR AND PROTECTIVE COVER OPEN.
	HIGH PLACE MAY CAUSE FALLING. 1.BE CAREFUL WHEN YOU STEP ON SCAFFOLD. 2.DO NOT PUT ANY IMPROPER MATERIALS ON ENGINE AND SCAFFOLD.
	HAZARDOUS VOLTAGE Do not change equipment voltage. Will cause equipment damage and personal injury. Verify breaker compatibility with equipment voltage.
	MUST WAIT FOR THE LIGHT TO COOL DOWN(ABOUT 15 MINUTES) BEFORE RESTARTING!!!

Information signs	Meaning
	This signal indicates the lifting point of the machine.
	Raise the unit by forklift
	Can be folded
	Fix with pin when mast completely extends
	Fuel in
	Fuel return

Information signs	Meaning
	Emergency stop
	
	<b>HOT SURFACES</b> HOT SURFACE MAY CAUSE BURNS DO NOT TOUCH HOT SURFACE
	Oil Pressure Alarm
	Water Temperature Alarm
	Plug out
	<b>TOWING INSTRUCTIONS</b> 1. READ OPERATOR'S MANUAL 2. USE RATED HITCH FOR TRAILER'S "GROSS VEHICLE WEIGHT RATING" 3. SECURELY ATTACH TRAILER TO TOWING VEHICLE 4. ATTACH SAFETY CHAINS USING A CROSS PATTERN 5. CHECK TRAILER TAIL LAMPS
	
	Fuel in
	Oil drain
	Water drain

## 2. SAFETY RULES

The manufacturer is not liable for any damage caused to objects or persons, in consequence of non-compliance with safety standards.

### 2.1 BEFORE USING THE MACHINE

- It is advisable to wear protective equipment, gloves, safety boots and ear protectors.
- Appropriate knowledge of the operation of all lighting tower controls is recommended.
- It is recommended that authorised personnel consult all warnings and risks described in this manual.
- Provide barriers to be placed 2 meters away around the light tower to prevent unauthorized persons from approaching the machine.
- Make sure that the light tower is not energised and there are no moving parts.
- The use of the lighting tower is only permitted by qualified personnel.
- Read the machine related signage plates.
- Ground the unit by means of its respective clamp.
- The appliance must be connected to the ground by means of a copper cable with a cross section of 6 mm<sup>2</sup>.
- The manufacturer is not liable for any damage caused by ground fault.

### 2.2 DURING MAINTENANCE

- Always switch the appliance off before performing any maintenance operations.
- Extraordinary maintenance should always be carried out by authorised personnel.
- Before performing any maintenance operation on the reflectors, turn off the power and wait for the lamps to cool.
- Always use protective devices that fit you.
- The fluid battery contains sulphuric acid, which is extremely corrosive and harmful to the skin. Always wear gloves and be extremely cautious to avoid spillage when pouring the acid.
- Contact with engine oil can cause damage to your skin. Wear gloves when using engine oil. In case of contact with engine oil, wash immediately.

### 2.3 DURING TRANSPORTATION

- Use EXCLUSIVELY points with pre-installed lifting eyes, if any.
- The lifting hook, if installed, must be used exclusively for the temporary lifting and not to keep machines suspended for a long period of time.
- The manufacturer is not responsible for any damage caused by negligence during the transport operations.

## 3. GENERAL DANGER INFORMATION

### 3.1 RISK OF BURNS

- Do not touch with hands in hot surfaces, such as extension mufflers or the engine body when the engine is running.
- Do not touch the spotlight when they are lit.
- Always wear suitable gloves.

### 3.2 RISK OF ELECTROCUTION

- Do not touch the parts with tension, this can cause mortal electric shock.
- Do not touch the electrical wires when the machine is running.

### 3.3 RISK OF TREATMENT

- Do not remove protective caps installed on rotating parts, air intakes, and belts.
- Do not clean or perform maintenance on moving parts.
- Wear appropriate clothing while using the light tower.

### 3.4 FIRE OR EXPLOSION WARNING DURING REPLACEMENT OPERATIONS

- Stop engine before refuelling.
- Do not smoke during refuelling operation.
- The refuelling operation must be carried out in such a way that there is no fuel spillage from the tank.
- In the event of fuel spillage from the tank, dry and clean the handles.
- Check for any spillage of fuel and damage to the tubes.

### 3.5 SOUND EMISSIONS

- Wear ear protectors or soundproofing pads against strong sound emissions.

### 3.6 EXHAUST GASES

- Exhaust gases are harmful to health. Keep away from sources of ignition.
- If the light tower is used indoors, make sure exhaust gases are dispersed into the atmosphere without hindrance.

#### 4. GENERAL DESCRIPTION OF THE MACHINE

The VK4K-B lighting tower was conceived taking into consideration 3 fundamental characteristics:

- Dimensions contained
- High reliability
- High quality construction material

The materials used in the manufacture not only ensure that the tower is extremely strong but also its longevity and protection against oxidation. The possibility of lowering the tower and one of the fundamental factors in the field of movement and transport. The tower can be installed and used by a single operator with the maximum safety. The reflectors used in the tower, complete with lamps, are made by the best producers in the world and carefully checked.

#### 5. PERIOD OF INACTIVITY

If the machine has to be stopped for a long period (over a year), we suggest keeping the oil and fuel inside the engine in order to avoid oxidising effects; We also suggest that the battery cables are also switched off. When the machine is switched on again, the liquids must be replaced, the battery must be charged; Belts, tubing, rubber hoses and their strength must be checked and visual inspection of the electrical connections must be carried out.

### 6. TECHNICAL SPECIFICATIONS

#### 6.1 DIMENSIONS & WEIGHT

<b>Model</b>	<b>VL4K-B</b>
<b>Min Dimensions (mm)</b>	<b>2680x1400x2500</b>
<b>Max Dimensions (mm)</b>	<b>2680x2500x8000</b>
<b>Weight (Kg)</b>	<b>750</b>

#### 6.2 GENSET PARAMETER

<b>Engine</b>	<b>Kubota,three cylinders,water cooled,four stroke</b>
<b>Make/Model</b>	<b>D1105-E2BG-CHN-1</b>
<b>Output</b>	<b>6kw/6kva</b>
<b>Frequency</b>	<b>50HZ</b>
<b>Voltage Output</b>	<b>220V</b>
<b>Insulation</b>	<b>H</b>
<b>Fuel Box</b>	<b>70L</b>
<b>Type of bearing/Brush</b>	<b>Single/Brushless Self excitation</b>
<b>Available Receptacles</b>	<b>220V/16A</b>
<b>Alternator</b>	<b>SINOCOX SMU132C</b>
<b>Control Panel</b>	<b>Meter panel</b>

#### 6.3 LIGHTING TOWER

<b>Type</b>	<b>Multi-Sections Telescoping mast</b>
<b>Total Height</b>	<b>8M/26'3"</b>
<b>Operate for Extends and Lifts</b>	<b>Hydraulic</b>

#### 6.4 TRAILER

<b>Trailer/Cabin</b>	<b>With the manual outriggers extended and all jack down</b>
<b>Removable Tonge</b>	<b>1100mm</b>
<b>Jack Type</b>	<b>4) 2205lb. (1000kg) Adjustable levelling jacks</b>
<b>Jack Details</b>	<b>(2) Jacks can be retracted, (2) jacks transport and lock in horizontal position for storage</b>
<b>Side Outriggers</b>	<b>2.5m span</b>
<b>Safety Chains</b>	<b>5512lb. (2500kg) with spring loaded safety hooks</b>
<b>Fenders</b>	<b>Single wall polyethylene</b>
<b>Leaf Spring Axle</b>	<b>3307lb. (1500kg)</b>
<b>Approval</b>	<b>CE approved tail, side</b>
<b>Axle Span</b>	<b>950mm</b>
<b>Wheel and Rim</b>	<b>Single axle,tire size 215/70 R/15"</b>
<b>Trailer Suspension System</b>	<b>Steel plate spring</b>
<b>Towing Type</b>	<b>50mm Ball hitch</b>
<b>Cabin</b>	<b>With two doors access for easy maintenance with hanger for handling Detachable Roof,Silent type</b>

## 6.5 HYDRAULIC

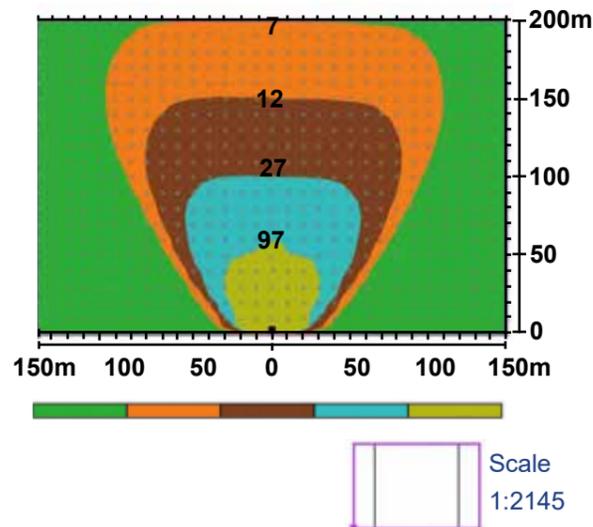


### 11.6 SPECIFICATIONS OF HYDRAULIC

ATTENTION!!! It is important that in case of problems associated with imperfections or damaged parts, the user does not carry out the lifting of the mast until the solution of referred problems, with the collaboration of the lighting tower team of Valiant Power. ATTENTION!!! Check if the cable is greased, and that there is no generation of friction in its extension.

Model	DC12V/1.8KW-01-10LF-V
Code	2021-289
Oil Pressure	16Mpa(can hold 2 tons)

## 7. LIGHT SCOPE SCHEME



## 6.6 LED LIGHT



### 11.8 LAMP

The LED lamp is an electric light that produces light using light-emitting diodes (LEDs). LED lamps are significantly more energy-efficient than equivalent incandescent lamps and can be significantly more efficient than most fluorescent lamps. The LED lamp have a lifespan many times longer than incandescent lamps.

LEDs come to full brightness immediately with no warm-up delay. Frequent switching on and off does not reduce life expectancy as with fluorescent lighting. White-light LED lamps have longer life expectancy and higher efficiency (more light for the same electricity) than most other lighting when used at the proper temperature. LED sources are compact, which gives flexibility in designing lighting fixtures and good control over the distribution of light with small reflectors or lenses.

Lamp	LED
Power	2021-289
Degree of protection	IP67
Body building material	Aluminium extrusion profiles
Manufacturing material of lamp holder	Metal
Optical Part	Optical part Optical lens
Optical case opening system	Stainless steel clips
Dimensions (L x H x W mm)	560 x 220 x 560

## 8. IDENTIFICATION OF EXTERNAL COMPONENTS

### 8.1 COMPOSITION OF LIGHTING TOWER



- Elevation Points
- Control Panel door and Lighting Tower inspection motor
- Lifting Eye
- LED Lights
- LED Light rotation pin lock
- Trailer for slow towing
- Removable stabilisers
- Engine Inspection
- LED Light rotation handle
- Telescopic Mask
- Exhaustion of gases
- Radiator and oil level inspection door
- Air Outlet
- Elevation Points
- Fixed Stabiliser

## 9. DESCRIPTION OF CONTROLS



- Emergency Stop
- Connection of the grounding clip
- 220 V 60 Hz 32 A 2p + T EEC Single-phased power plug
- Lamp power connector

It is possible at the same time to use the light tower and use current from the single phase power plug 220 V 50 Hz to 16 A (18). It is recommended not to exceed the specifications of the equipment rating plate. Connect to the generator using plugs that fit into the sockets and cables in excellent state of repair. The minimum section of connecting cables must be chosen considering the voltage, installed power and distance between the source and uses.

### 9.1 CONTROL PANEL



- Light Indicator of high temperature of water
- Low oil pressure indicator
- Time Metre Indication and Battery Indication
- Starting Wrench
- Fuel Metre - Fuel Level Monitor
- Circuit Breaker for the Lamp Switch
- Light Indicator of charge fault

## 9.2 BATTERY



27. Battery 44Ah 12V Battery

The device is supplied with the battery not connected. Connect the battery with cables already predisposed, taking care with the correct polarity. The battery fluid contains sulphuric acid, which is extremely corrosive and harmful to the skin. Always wear gloves and be extra careful to avoid spillage of acid. If it is necessary to stop the machine for a long time, we suggest that the battery be switched off.

## 9.4 CHECKING THE ENGINE OIL LEVEL



29. Radiator and oil level inspection door  
30. Engine Oil cover  
31. Oil Level indicator

## 9.5 CONTROL OF RADIATOR WATER LEVEL



32A. Emergency Stop  
32B. Connection of the grounding clip

Lift the cover (29) to control the water level. Check the cooling liquid level before each operation. To avoid injury, do not remove the radiator cap when the engine is hot. When the engine is cold, loosen the cover lightly until excess pressure is released before removing it completely. If the machine has to be interrupted for a long period (over a year), it is suggested to keep the coolant in the radiator in order to avoid oxidising effects.

## 9.3 FUEL TANK

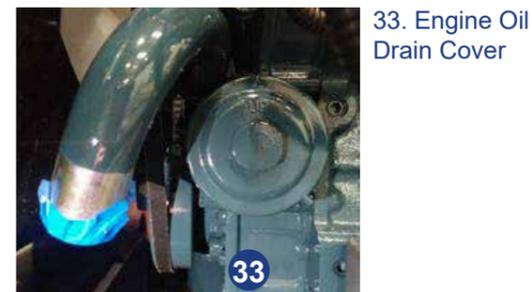


28. Fuel tank cover

Fill the diesel fuel tank with respect to its capacity limit (Lt. 75). The fuel reserve and indicated by the Fuel Metre placed on the control panel. Always switch off the engine before any refuelling operation. The fuel supply operation shall be such that there is no fuel leakage from the tank. If the machine has to be interrupted for a long period (more than one year), it is suggested that fuel be kept in the tank in order to avoid oxidising effects.

Lift the cover (33) to check the engine oil level. Check the engine oil level before starting or at least five minutes after stopping. Do not discharge liquid pollutants into the atmosphere. If the machine has to be interrupted for a long period (over one year), it is suggested to keep oil in the engine to avoid oxidising effects.

## 9.6 ENGINE OIL EXCHANGE



33. Engine Oil Drain Cover

Place a small bowl under the cover (33), unscrew the cover and drain the oil. Draining the oil will be easier while it is hot.

**ATTENTION:** Screw the cover in the end of use. Contact with engine oil can damage your skin. Put on gloves when handling engine oil. If there is contact with engine oil, wash immediately. Do not discharge liquid pollutants into the atmosphere. Change the oil every 250 hours (Capacity of the oil tank is 2.4 litres)

## 10. OPERATING INSTRUCTIONS

### 10.1 POSITIONING OF THE LIGHTING TOWER

Place the light tower on a flat surface, taking care not to exceed 10 ° inclination. Choose an open, well-ventilated area, taking care that the discharge of exhaust gases occurs far from the work area. Check the existence of the complete air exchange and that the hot exhaust air does not circulate and that the inside of the machine caused the risk of temperature rise. Arrange protection barriers 2 meters away from the light tower, thus preventing unauthorised persons from approaching the machine.

### 10.2 BATTERY CONNECTION

The machine is supplied with the battery not connected. Turn on the battery switch (27).

### 10.3 GROUNDING

Ground the unit using the clamp (17). The appliance must be connected to the ground by means of a copper cable with a minimum cross section of 6 mm<sup>2</sup>. The manufacturer is not liable for any damage caused by failure to ground.

### 10.4 PRELIMINARY CHECKS

At the time of purchase, the machine is supplied with engine oil, water in the radiator. Before each use, check the respective levels.

Check that the circuit breakers (25) on the door are in the "OFF" position. Ensure that all loads are connected to the 220 V 60 Hz to 16 A (18) Make sure that the emergency stop button (16) is reset. If not, rotate clockwise.

### 10.5 ENGINE STARTING

Set the ignition key (23) in the first step, wait a few seconds, and start the engine by moving the key all the way clockwise. Note: If the engine fails to start, turn the key to the OFF position and wait 10 seconds before operating the starter again.

Let the engine run for about 5 minutes to warm it up.

The engine is set at (1800 rpm) so no adjustment is necessary. For more information, consult the use and maintenance of the engine.

### 10.6 FUNCTIONING

During the first 50 hours of operation of the machine, not more than 70% of the maximum power indicated in the technical specifications must be used. This ensures proper engine operation.

### 10.7 USE OF THE MACHINE

It is possible to use both the light tower and the current from the single phase power plug 220 V 50 Hz to 16 A (18) at the same time. It is recommended that the machine's characteristics be respected.

Connect to generator using plugs suited to sockets and cables in excellent state of repair.

The minimum section of connection cables must be chosen respecting the voltage, installed power and distance between source and uses.

The hour-meter only indicates the working hours of the engine and only operates when the engine is running. The data can be used as a reference for the periodic and extraordinary maintenance of the machine.

### 10.8 MOTOR STOP

Disconnect the loads.

Disconnect all lamps from the circuit - breakers (25).

Let the engine run in these conditions for about 1 minute, then turn the ignition key (23) to the stop position.

In case of emergency, it is possible to stop the generator set by pressing the stop button

### 10.9 INDICATOR DESCRIPTIONS

The generator set is equipped with a protection that shuts off the machine after 20 seconds after identifying a fault, signalled by the warning lights on the control panel. When the problem is remedied, a new match clears the DAS memory.

High water temperature.

When the temperature of engine water is too high, the light turns on (20).

Check engine water level.

No battery charge.  
 When the Alternator does not charge the battery or battery does not handle the charge, the light goes on (26). Check the alternator and the battery.  
 Low fuel level  
 When the fuel level goes down, the light turns on (24). Periodically check the fuel level by the monitor.  
 Fill the tank when the fuel level is low.

### 10.10 COMMENTS

It is important that the operator is always careful in all possible disadvantages due to damage or failure.  
 It is necessary that the lighting tower be operated by specialized people, in regard to structural problems, given the size of the structure.  
 It is advisable to always carry out a visual and general inspection for each use, especially in those parts that are always in motion and subject to malfunctions.  
 The experienced user should not allow the presence of people near the lighting tower when it is in operation.  
 Always leave enough space around the lighting tower.  
 It is recommended to position the base of the machine as flat as possible in order to facilitate the adjustment of the stabilizers (use as reference to the level markers placed on the frame) (Fig. 1).

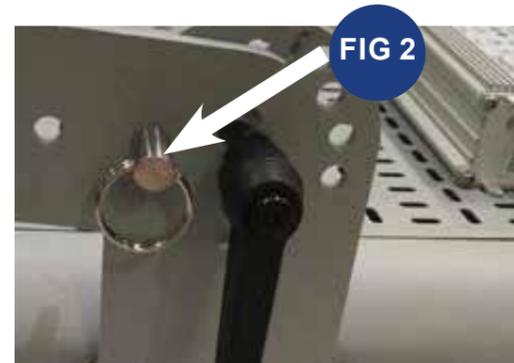


It is also recommended to place the structure in a stable location, verifying the consistency of the ground thus allowing a firm support to the stabilizers.  
 Pull the hand brake if the tower is equipped with a trolley.  
 Only qualified persons are authorized to use the light tower. Before using the light tower, it is recommended that authorized persons consult all warnings and risks described in this manual.  
 The manufacturer is not liable for any damage caused to objects or persons as a result of non-observance of the safety regulations.  
 Before any operation on the machine, make sure that the light tower is not energized and there are no moving handles.  
 To carry out the electrical connection between the projectors and the control tower control panel a 9G2, 5 MMQ cable was used which is placed inside a cylinder that allows a smooth slide.  
 The electrical connections are simplified in order to enable the control panel to be disconnected for inspection purposes and for possible maintenance or replacement of damaged parts. It is also possible to remove and replace the base of the light tower.

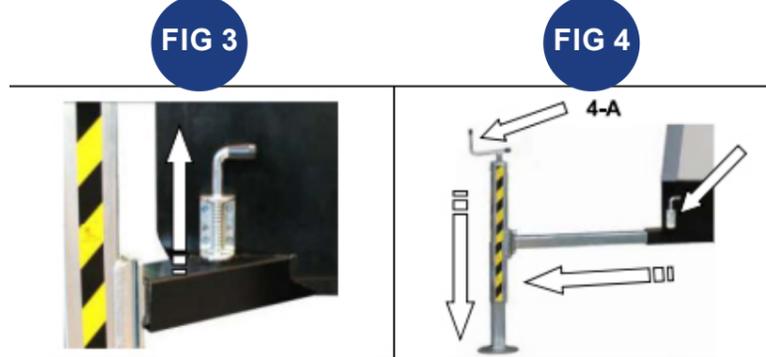
For the electrical connection of the reflectors are provided plastic boxes with IP67 degree of protection.  
 In case of use of the lighting tower in adverse climatic situations with very low or very high temperatures, care must be taken with the return of the cable that can run into the cylinder, once the cable is subject to momentary structural deformation.

### 10.11 USING THE LIGHTING TOWER

Tilt the LED light manually by releasing the lever (Fig. 2) placed on the projector holder.  
 Turn the LED light to the chosen position depending on the type of angle you want.



Remove the pins from the hole (Fig. 3), then proceed to manually remove the stabilizers until the locking pins come out of the tube (Fig. 4); Check that the bolts fit into the respective tube locking bases. Lower the outriggers using the handle (Fig. 4-A).



Remove the locking pin from the stabilising leg (Fig. 5) you can then insert the winch to allow you to lower the leg (Fig. 6).



Before rotating the winch, it is **essential** that you reinsert the locking pin through the winch (Fig.7). You can now successfully lower the stabilising leg by rotating the winch.



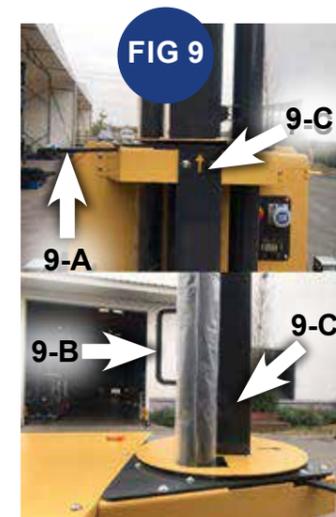
Use as reference the level markers placed on the structure (Fig. 8).

**ATTENTION!** It is not possible to increase the tower if all the stabilisers have not been extracted correctly.

Before using the machine, it is recommended that you fully familiarise yourself with the operating controls of the light tower. Start the engine as described in chapter "15.5 ENGINE START".

### 15.12 USING THE LIGHTING TOWER

Before lifting the mast, check that the reference arrows are as shown (Fig. 9-C).  
 Pull the mast locking pin (Fig. 9-A) to allow it to rotate. To simplify the rotation a handle is present (Fig. 9-B). Locking occurs with reinsertion of the pin.  
 Lift the tower pressing the "UP" button . When the maximum height is reached, the lift is stopped .  
 Rotate the mast in the proper way to position the illumination beam in the desired position. Locking occurs with reinsertion of the pin into one of several holes present along the ring. The mechanical block allows the turn to stop at 340 °  
 The right 4 breakers (Fig.10) can control the LED lights.



**ATTENTION:** it is strictly forbidden to close the stabilisers when the light tower is in the vertical position at the maximum height.  
**ATTENTION:** The lighting tower is manufactured to withstand winds of 110 Km / h at maximum height. In case of use in places of winds, be careful and reduce the height in enabled time when necessary.  
 At the end of use lower the telescopic mast pressing the "Down" button until the entire telescopic section is contained in the first one.  
 Turn off the lights by placing the circuit breakers (25) in the "OFF" position.  
 Let the engine run in these conditions for about 1 minute, then turn the ignition key (23) to position 0.  
 In case of an emergency, it is possible to stop the generator set by pressing the stop button (16).

## 11. MOTOR MAINTENANCE

MAINTENANCE TIMETABLE OF DIESEL GENERATING SET							
System	Maintenance Job	Component	Every Day	Every Week	Every Month	Every Six Months	Every Year or 250 Hours
Lubricating System	Check	Oil Leakage	✓	✓	✓	✓	✓
		Level of Engine Oil	✓	✓	✓	✓	✓
	Replace	Filter of Engine Oil				✓	✓
		Engine Oil				✓	✓
Clean	Crankcase Box				✓		
Cooling System	Check	Oil Leakage	✓	✓	✓	✓	✓
		Radiator Block			✓	✓	✓
		Soft Tube & Joint			✓	✓	✓
		Volume of Cooling Fluid		✓	✓	✓	✓
		Anti-freeze & Anti-corrosion			✓	✓	✓
		Belt Status				✓	✓
	Add Grease Lubricant	Fan				✓	✓
		Tensive Belt Wheel				✓	✓
	Check	Driving Belt Wheel & Pump				✓	✓
	Replace	Cooling Liquid	Every 12 Months				
Clean	Cooling System						
Air Inflow System	Check	Resistance of Air Filter		✓	✓	✓	✓
		Pipe Fittings & Joint				✓	✓
	Replace	Air Filter Element				✓	✓
Fuel System	Check	Leakage	✓	✓	✓	✓	✓
		Fuel Volume		✓	✓	✓	✓
		Pump Nozzle					✓
		Fuel Pipe and Joint				✓	✓
		Fuel Pump			✓	✓	✓
	Discharge	Deposition of Fuel Tank			✓	✓	✓
	Replace	Filter of Diesel Oil					
	Check	Nozzle	Every 2 Years				
Adjust	Cross Arm & Air Valve					✓	

Exhaust System	Check	Air Leakage			✓	✓	✓
		Resistance of Exhaust			✓	✓	✓
		Charging Alternator's Belt Status			✓	✓	✓
		Liquid Level of Storage Battery			✓	✓	✓
Electrical System	Check	Density of Battery Liquid		✓	✓	✓	✓
		Protection Switch and Alarm System		✓	✓	✓	✓
		Bolt and Joint of Starting Motor					✓
		Engine & Other Parts System	Check	Abnormal Vibrating		✓	✓
Fastening Level with Frame							✓
	Clean	Engine					✓

## 12. THE LIGHTING TOWER MAINTENANCE

We suggest frequent cleaning of the machine in order to avoid the presence of dirt, which can compromise the efficiency of the machine. The frequency of this operation depends very much on where the machine is used. Extraordinary service operations not mentioned above require the assistance of specialised technicians.

### 12.1 LUBRICATION OF ROLLERS

For the lubrication of the rollers, use a low temperature and high speed bearing grease. We recommend using SKF type LGLT 2 grease, a superior synthetic grade oil based grease containing lithium soap. When using another product, the grease must have a viscosity of 18 mm<sup>2</sup> / s at 40 ° C and 4.5 mm<sup>2</sup> / s at 100 ° C.

### 12.2 LUBRICATION OF MAST SECTIONS

For lubrication of mast sections, we recommend the use of a light lubricating oil such as WD40. Apply the product to the metal parts of the mast to avoid creaking and scratching during lifting and lowering operations. In case of frequent use lubricate every three months.

### 12.3 LUBRICATION OF STABILISERS

Periodically lubricate the stabilizer using a dense grease adapted to the sliding system by applying with a suitable tool inserting into the valves placed on the stabilizer (if provided). Check that the stabilizer movement is correct.

**ATTENTION! Do not use oil or grease on the brake mechanism.**

### 12.4 VERIFICATION OF STEEL CABLES

The steel cables are 6 mm in diameter composed of carbon wires with galvanized class B protection and a polymer core with a minimum breaking load of 3.294 kg. They allow the telescopic mast to be raised and lowered. It is necessary to periodically check your drag conditions inside the pulleys. It is recommended to periodically check its position and ensure correct positioning inside the pulleys. The manufacturer recommends that all cables and pulleys be replaced when necessary. If the cable shows signs of unusual wear or damage, do not use the light tower and contact Valiant Power.

## 13. GUIDE OF RESOLUTION OF PROBLEMS

Listed below are the most common problems that may occur during the use of the light tower and its possible solutions. If the engine does not operate properly, we suggest that you follow the maintenance and servicing procedures listed in the "Operator's Manual" in the "Maintenance" chapter to find and eliminate the cause of the problems.

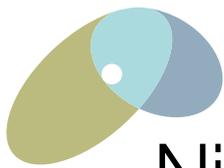
### 13.1 MAIN PROBLEMS

Anomaly	Cause	Solution
Turn the ignition key to the ON position, no lamp signal lights up and the starter does not work	Connect the battery switch	The battery switch is disconnected
	The battery is disconnected	Open the door and connect the battery
	The battery is disconnected	Recharge the battery
	The battery is defective	Replace the battery
	Steering wheel lock failed	Replace the steering wheel lock
	The starter does not want to run	Contact a Lombardini assistance centre to check
	The emergency button is pressed	Check that if the stop button is pressed. If not, turn clockwise
	Many cables disconnected from the electrical system	Visually check the electrical system to find the cables disconnected (see the wiring diagram), if necessary, contact the Valiant Machinery
	Possible lack of fuel in the tank	Refill the machine
The starter works, but the engine will not start	Dirty fuel filter	Replace the filter
	The fuel pump does not work	Check the electrical connection of the pump and, if necessary, contact a Lombardini service centre for a check

Anomaly	Cause	Solution
There is difficulty in starting the engine and the operation is insufficient	The air filter element is dirty	Clean the element and, if necessary, replace it
	Injection pump wear	Do not use fuel of low quality, as this will cause pump wear. Check the fuel injection pump element and replace if necessary.
	Overheating of movable handles	Check the lubricating oil system Check that the lubricating oil filter is working properly, otherwise replace it.
Unstable output voltage	Irregular motor speed	The engine is set exactly at Speed (1800 rpm), in case of deactivation, contact Valiant Machinery directly.
	The alternator is defective	Replace the alternator and eventually contact Valiant Machinery
The machine stops with the light signal of low pressure of the activated oil	The oil level is low	Check the level and add if necessary
	The pressure switch is defective	Replace the pressure switch
	The "DAS" TP0401 protection panel is defective.	Replace the panel
The machine stops when the battery charge lamp signal lights	The battery is defective	Replace the battery
	The alternator motor failed	Check and eventually contact a Lombardini service centre

Anomaly	Cause	Solution
	The "DAS" TP0401 protection panel is defective	Replace the panel
After refuelling, the fuel level monitor does not move	The fuel level of the engine does not work	Check the fuel level monitor and its electrical connection
	The float does not work	Check the float and its electrical connection If the sensor is blocked, replace it
The machine stops when the lamp indicating high water temperature lights up	The coolant level in the radiator is low	Check the level and add coolant if necessary
	Grid or Radiator flap clogged with dust	Clean grid or flap carefully
	Radiator fan does not work	Check the fan
	The "DAS" TP0401 protection panel is defective	Replace the panel
With the engine in motion the hour meter does not work	The hour meter does not work	Check the hour meter and their electrical connections
One or more bulbs do not light up	Lamp defective or does not light	Before replacing the lamp, it is advisable to perform a test by installing the lamp that is presumed to be defective in a projector with a working lamp
Hoist load is not maintained	Cable placed incorrectly or incorrect direction of lifting rotation	Put cable in place correctly
	Brake broken or defective	Check parts of the brakes and restore broken parts
	Brake broken or defective	Clean or replace the brake discs
Friction disc brake does not open The reduction is difficult	Brake disc mechanism or brake discs distorted - or crank is engaged	Release brake slightly by tapping with the palm of the hand clockwise (to perform this procedure, lock the gears if necessary, until the crank releases, lubricate the shaft)
Brake disc friction does not close (load is not maintained)	Crank is not properly secured and therefore distorted by the hexagonal bolt	Reassemble the crank correctly

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