

**OWNER'S MANUAL**  
**MOD. PL4000 & PL2000 ECO LED**  
**METAL HALIDE & LED**

INDICE-INDEX

<b>1. CE MARK</b> .....	<b>4</b>
<b>2. USE &amp; MAINTENANCE</b> .....	<b>4</b>
<b>3. GENERAL INFORMATION</b> .....	<b>4</b>
3.1 EQUIPMENT DOCUMENTATION OF THE LIGHTING TOWER .....	4
<b>4. SAFETY SIGNS</b> .....	<b>5</b>
<b>5. SAFETY REGULATIONS TO OBSERVE</b> .....	<b>7</b>
5.1 BEFORE THE USE OF MACHINE.....	7
5.2 DURING THE MAINTENANCE .....	7
5.3 DURING THE TRANSPORT .....	7
<b>6. GENERAL DANGER INFORMATION</b> .....	<b>8</b>
6.1 DANGER OF BURN .....	8
6.2 DANGER OF ELECTROCUTION .....	8
6.3 DANGER OF ENTANGLE .....	8
6.4 WARNING OF FIRE OR EXPLOSION DURING OPERATIONS OF REFUELING .....	8
6.5 NOISE.....	8
6.6 EXHAUST GASES .....	8
<b>7. GENERAL DESCRIPTION OF THE MACHINE</b> .....	<b>9</b>
<b>8. PERIOD OF INACTIVITY</b> .....	<b>9</b>
<b>9. TECHNICAL SPECIFICATION</b> .....	<b>10</b>
9.1 GENERATOR.....	10
9.2 ENGINE.....	10
9.3 LIGHTING TOWER .....	11
9.4 RAISING AND LOWERING ROPE.....	11
9.5 900 Kg MANUAL WINCH.....	12
9.6 SPECIFICATION OF THE WINCH.....	12
9.7 FLOODLIGHT .....	13
9.8 LAMP.....	13
<b>10. LIGHTING FOOT PRINT DIAGRAM</b> .....	<b>14</b>
<b>11. IDENTIFICATION OF EXTERNAL COMPONENTS</b> .....	<b>15</b>
11.1 LIGHTING TOWER COMPOSITION.....	15
<b>12. CONTROLS DESCRIPTION</b> .....	<b>17</b>
12.1 COMMAND PANEL.....	17
12.2 BATTERY.....	19
12.3 FUEL TANK .....	20
12.4 CHECK ENGINE OIL LEVEL .....	21
12.5 CONTROL WATER LEVEL IN THE RADIATOR.....	22
12.6 CHANGE ENGINE OIL.....	23

<b>13. OPERATING INSTRUCTIONS .....</b>	<b>24</b>
13.1 LIGHTING TOWER POSITIONING.....	24
13.2 CONNECTING OF THE BATTERY .....	24
13.3 EARTHING .....	24
13.4 PRELIMINAR CHECKS .....	24
13.5 ENGINE STARTING .....	25
13.6 RUNNING IN.....	25
13.7 USE OF MACHINE.....	25
13.8 STOPPING THE ENGINE.....	25
13.9 INDICATORS DESCRIPTION .....	26
13.10 REMARKS .....	28
13.11 USE OF THE LIGHTING TOWER .....	30
13.12 USE OF THE LIGHTING TOWER .....	32
<b>14. ENGINE MAINTENANCE .....</b>	<b>34</b>
<b>15. LIGHTING TOWER MAINTENANCE .....</b>	<b>34</b>
15.1 LUBRICATION OF THE ROLLERS .....	34
15.2 LUBRICATION OF MAST SECTIONS .....	34
15.3 LUBRICATION OF STABILIZERS.....	34
15.4 LUBRICATION OF THE WINCH.....	34
15.5 CHECK OF STEEL CABLES.....	34
<b>16. TROUBLESHOOTING GUIDE.....</b>	<b>35</b>
16.1 MAIN TROUBLES ANOMALY .....	35
<b>17. REPLACE THE LAMP AND FLOODLIGHT GLASS .....</b>	<b>41</b>
<b>18. SPARE PARTS .....</b>	<b>42</b>
18.1 SPARE PARTS LIST FOR MAIN FRAME .....	42
18.2 SPARE PARTS LIST FOR TELESCOPIC MAST.....	45
18.3 SPARE PARTS LIST FOR FLOODLIGHT GROUP .....	48
18.4 SPARE PARTS LIST FOR GENERATOR UNIT.....	50
18.5 SPARE PARTS LIST FOR COMMAND PANEL .....	53
18.6 SPARE PARTS LIST FOR SLOW TOWING .....	58
18.7 SPARE PARTS LIST FOR ALTERNATOR .....	58
<b>19. WIRING DIAGRAM .....</b>	<b>60</b>
19.1 LIGHTING TOWER WIRING DIAGRAM .....	60
19.2 ENGINE WIRING DIAGRAM.....	61

## 1. CE MARK



The CE mark (European Community) certifies that the product complies with essential safety requirements provided by the applicable Community Directives.

## 2. USE & MAINTENANCE

Dear Customer, many thanks for the purchase of our product. In this manual are contained all the necessary information for use and the general maintenance of the lighting tower.

The responsibility of the good operation depends on the sensibility of the operator that needs to be qualified and trained to use this machine.

Before install the machine and however before every operation, read carefully the following manual of instruction and use. If this manual were not perfectly clear or comprehensible, contact the manufacturer directly.

The present manual of instruction is integrating part of the machine and must follow the cycle of life of the machine for 10 years from the putting in service, also in case of transfer of the same one to another user.

**All the specifications and pictures of the present catalogue are subject to modifications without prior notice.**

## 3. GENERAL INFORMATION

The lighting tower is designed, produced and tested by Tower Light S. for Projalite, to meet the European rule and to reduce at the minimum the electrical risks in compliance the actually laws.

**The manufacturer declines every responsibility deriving by the modification of the product not explicitly authorized for enrolled.**

### 3.1 EQUIPMENT DOCUMENTATION OF THE LIGHTING TOWER

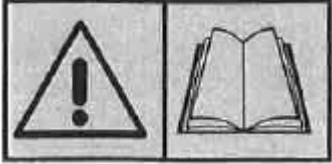
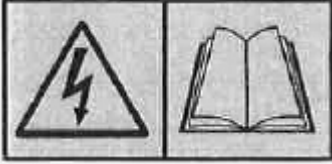
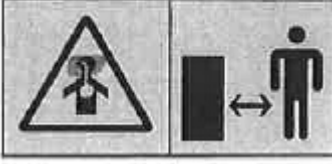



Together at this manual we are supplying the following documents:



- Instruction manual and use for the lighting tower (this manual).
- Engine use and maintenance manual.
- Alternator use and maintenance manual.
- EC Declaration of conformity.




#### 4. SAFETY SIGNS


These signs inform the user of any danger which may cause damages to persons.

Read the precautions and meant described in this manual.

Danger signs	Meant
	<ul style="list-style-type: none"> <li>·Read the instruction handbook before use the machine.</li> </ul>
	<ul style="list-style-type: none"> <li>·Danger of electric discharges.</li> <li>·Consult the manual.</li> </ul>
	<ul style="list-style-type: none"> <li>·Attention injurious exhaust gases for the health.</li> <li>·Maintain one sure distance from the emission zone.</li> </ul>
	<ul style="list-style-type: none"> <li>·Danger of burns.</li> <li>·Don't touch the exhaust collector and the engine when the machine is in motion.</li> </ul>
	<ul style="list-style-type: none"> <li>·Danger: don't open when the engine is hot.</li> </ul>
	<ul style="list-style-type: none"> <li>·Stop the engine before refueling it.</li> <li>·Use only diesel fuel.</li> </ul>

	<p>·Danger possible spillage of corrosive substances</p>
	<p>·Danger of hand crush</p>

Prohibition signs	Meant
	<p>·It is prohibited to clean, to lubricate and to regulate organs in motion.</p>
	<p>·It is prohibited to extinguish fires with water, use only extinguishers.</p>
	<p>·It is prohibited to use free flames.</p>

Information signs	Meant
	<p>·This sign indicates the position of a point of machine raising.</p>

## 5. SAFETY REGULATIONS TO OBSERVE

The manufacturer is not responsible of any damage at things or person, in consequence at the inobservance of safety norms.

### 5.1 BEFORE THE USE OF MACHINE

- It is advised to wear protective clothes, gloves, safety shoes, stoppers for the acoustics protection.
- It is recommended the correct acquaintance of operation for all the commands of the lighting tower.
- It is recommended to the authorised staff to consultate all warnings and dangers described into this manual.
- Predispose the barriers placed to 2 meters of distance around the lighting tower in order to prevent to the staff non-authorized to approach itself the machine.
- Ensure yourself that the lighting tower is not feeded and that there are not any parts in movements.
- It is allowed the use of the lighting tower only at a qualified staff.
- Read the segnaletic plates applied on the machine.
- Connect the unit to the earth through the apposite clamp.
- The unit must be connected to the earth using a copper cable with a minimum cross-section of 6 mm<sup>2</sup>.
- **The manufacturer is not responsible for any damage caused by failure of earthing.**

### 5.2 DURING THE MAINTENANCE

- Turn always off the machine before any maintenance operation.
- Extraordinary maintenance must always be carried out by a qualified operator.
- Before any maintenance operation on the floodlights, disconnect the feeding and wait the cooling of the lamps.
- Use always dispositives of protection adapted to you.
- The fluid of battery contains sulphuric acid which is extremely corrosive and harmful to the skin. Always wear protective gloves and be extremely careful to avoid spillage when pouring the acid.
- Contact with engine oil can damage your skin. Put on gloves when using engine oil. If you come in contact with engine oil, wash it off immediately.

### 5.3 DURING THE TRANSPORT

- Use **EXCLUSIVELY** the predisposed point of raising, where present.
- The raising hook, where present, must be exclusively used for the temporary raising and not for suspension in air of the machines for a long time.
- The manufacturer is not responsible for any damage caused by negligence during transport operations.

## **6. GENERAL DANGER INFORMATION**

### **6.1 DANGER OF BURN**

Do not touch with the hands the hot surfaces, like silencers with relatives extension and engine body when it is in function.

- Do not touch the floodlights when are lighted.
- Use always gloves appropriate to you.

### **6.2 DANGER OF ELECTROCUTION**

- Do not touch parts in tension, it may causes mortal shock.
- Do not touch the electric cables when the machine in function.

### **6.3 DANGER OF ENTANGLE**

- Do not remove the protections placed on the rotating parts, on the air intakes and over the belts.
- Do not clean or execute maintenance operation on moving parts.
- Use appropriate clothes during the use of the lighting tower.

### **6.4 WARNING OF FIRE OR EXPLOSION DURING OPERATIONS OF REFUELING**

- Turn off the engine before refueling operation.
- Do not smoke during the refueling operation.
- The refueling operation must be effected in way that not discharge the fuel from the tank.
- In case of discharging of the fuel from the tank, dry and clean the parts, to prevent pollution of the ground. In the event of the ground contamination you need to use specific absorbent materials.
- Check that there isn't any discharge of fuel and that the tubes are not damaged.

### **6.5 NOISE**

- Use stoppers or caps for the acoustic protection from strong noises.

### **6.6 EXHAUST GASES**

- The exhaust gases are injurious for the health. Maintain a sure distance from the emission zone.
- In case the generating set of the lighting tower came used in closed places, make sure that the exhaust gases can be disperded without impediments in the atmosphere, through adequate natural ventilation and/or forced ventilation.



## **7. GENERAL DESCRIPTION OF THE MACHINE**

The lighting tower HLT8-4K has been studied taking in consideration 3 fundamental characteristics:

- enough contained dimensions
- high reliability
- quality of the constructive materials

The constructive materials in uses guarantee not only an extreme strength of the tower, but they are also synonymous of longevity, in fact these materials are protected against oxidation. The possibility to lowering the tower is the fundamental factors in the field of the movement and the transports. The tower can be installed and used by a single operator in the maximum safety. The floodlights used on tower, complete with lamps, are made from the best producers in the world and carefully checked.

## **8. PERIOD OF INACTIVITY**

If the machine has to be stopped for a long period (more than one year), we suggest to keep the oil, the fuel to the inside of engine, in order to avoid oxidizing effects; we suggest to disconnect also the battery cables. When the machine turns to work again, the liquids must be replaced, the battery must be charged; the belts and their statem the pipes, the rubber hoses and their resistance must be checked and a visual inspections of the electric connections must be done.

## 9. TECHNICAL SPECIFICATION

### 9.1 GENERATOR

Model	<b>Synchronous</b>
Single phase voltage	<b>9 kVA-220 V</b>
Single phase auxiliary	<b>3 kVA-220 V</b>
Frequency	<b>60 Hz/50Hz</b>
Cos $\phi$	<b>0.8</b>
Insulation class	<b>F</b>
Mechanical protection	<b>IP 23</b>

### 9.2 ENGINE

Make/Type	<b>LOMBARDINI FOCS LOW 1003</b>
Number of cylinders	<b>3</b>
Displacement	<b>1028 cm<sup>3</sup></b>
Power "NB intermittent"	<b>10,0 Kw</b>
Engine speed	<b>1800 r.p.m./1500 r.p.m.</b>
Cooling	<b>Water</b>
Fuel	<b>Diesel</b>
Starting system	<b>Electric</b>
Oil sump capacity	<b>2,41</b>
Fuel tank capacity	<b>751</b>
consumption	<b>263 g/kWh</b>
Noise level	<b>93 Lwa</b>
Battery	<b>12 V- 44 Ah</b>

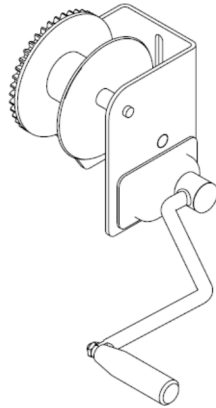
**9.3 LIGHTING TOWER**

Maximum height	<b>8 mt</b>
Raising	<b>Manual</b>
Section	<b>6</b>
Rotation Section	<b>340°</b>
Electrical coiled cable	<b>9G2,5 mmq</b>
Electrical cable of floodlights	<b>H07RN-F</b>
Maximum wind stability	<b>80 km/h</b>
Minimum dimension (L x W x H mm)	<b>2650 x 1300 x 2460</b>
Maximum dimension (L x W x H mm)	<b>2650 x 2460 x 8000</b>
Weight with dray	<b>716 kg</b>

**9.4 RAISING AND LOWERING ROPE**

Rope type	<b>AZN625APPCOM</b>
Rope diameter	<b>6mm</b>
Outer wires diameter	<b>0,4mm</b>
Weight per meter	<b>0,15 Kg</b>
Construction	<b>6x(12+(6)+6+1)KF+PP</b>
Type of lay	<b>Right hand ordinary lay</b>
Tensile strenght	<b>2160 N/mm<sup>2</sup></b>
Strands	<b>Compacted</b>
Preformed	<b>Yes</b>
Steel wires	<b>Carbon</b>
Protection of wire rope	<b>Galvanized class B</b>
Minimum breaking load	<b>32,3 kN 3230 Dan 3294 Kg</b>

### 9.5 900 Kg MANUAL WINCH



Treatment	powder coated
Maximum load	900 kg
Traction	Rotate in clockwise direction
Release	Rotate in counterclockwise direction

### 9.6 SPECIFICATION OF THE WINCH

**•WARNING!!! The maximum load of the winch is 900 kg. It is important that the entire structure of the lighting tower does not come modified in order not to compromise of the stability and the functionality of the winch.**

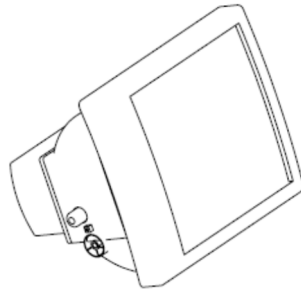
•The winch is provided by an automatic pressure brake with anti-slip mechanism that consents an easy and uniform raising and lowering of the telescopic mast. The reducer is lodge protected from every impurity; the new side cover eliminates the chine and protect it from dust.

•A new procedure of construction with the aid of CNC Machines assures the maximum quality and robustness, thanks also to the use of new valuable materials; the life of the winch is increased thanks to the strengthening of the frame.

**•WARNING!!! It is important that, for any problems there were imperfections or damaged parts, the user does not proceed to the raising of the mast until to the resolution of such problems.**

**•WARNING!!! Verify, at every use, that the steel cable winds correctly up on the drum hub. It is necessary to prevent that the steel cable kinks itself in improper way on the winch, eventually helping itself with the hands, protected by gloves, to "address" the steel cable. Check that the cable is lubricated and that it doesn't generate friction along its way.**

## 9.7 FLOODLIGHT



Lamp	<b>Metal halide</b>
Power	<b>4x1000 W</b>
Degree of protection	<b>IP 66</b>
Constructor material of the body	<b>Die-cast aluminium</b>
Constructor material of lampholder	<b>Ceramic</b>
Reflector	<b>Polished and anodized aluminium 99.85</b>
Cable gland	<b>Stainless steel</b>
Optical case opening system	<b>Stainless steel clips</b>
Dimensions (L x H x D mm)	<b>404 x 260 x 328</b>

The floodlight is provided by tempered glass and silicone seals. Closing hooks and external nuts and bolts in stainless steel. The casing's protection against corrosion is ensured by Alodine 1200 chromate treatment and polyester powder coating for outdoors in graphite grey finishing. The frame is equipped with special drains to prevent water from accumulating.

## 9.8 LAMP

The metal halide lamps used in the floodlights of the lighting tower allow to a greater lighting system regarding the traditional halogen lamps and concur to an inferior energetic consumption beyond to one duration much elevating.

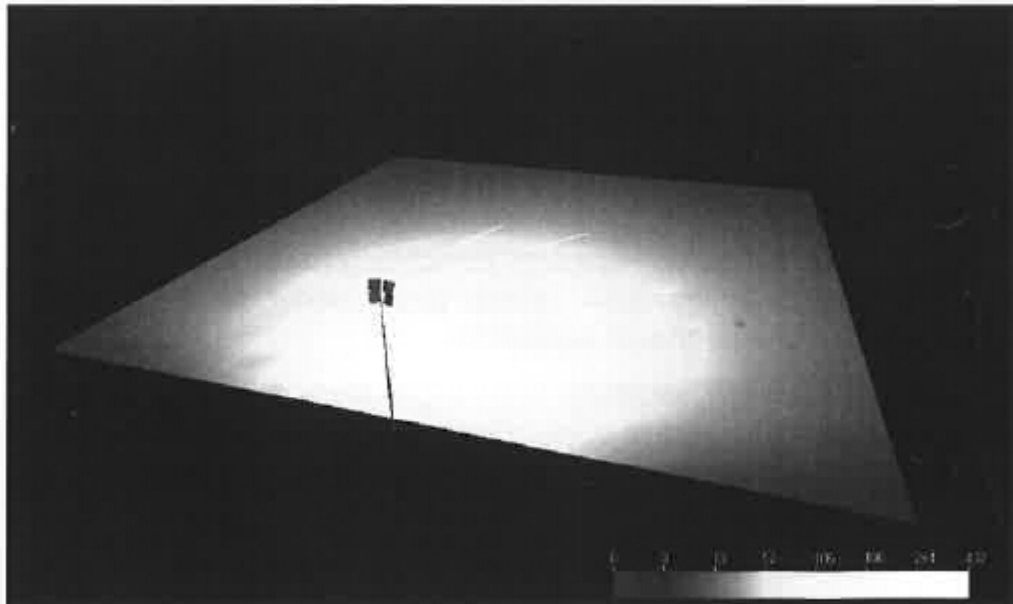
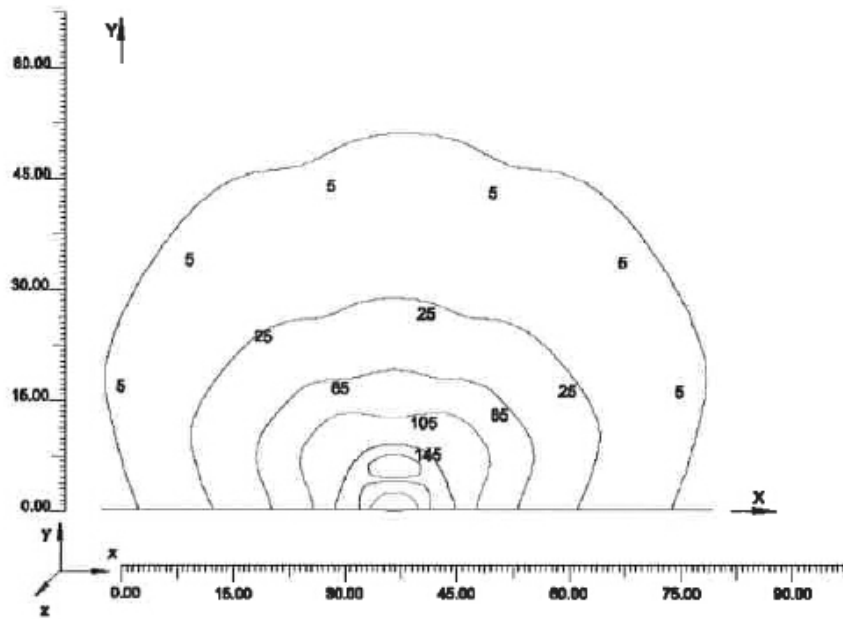
The metal halide lamp is a high intensity discharge lamp based on the emission of electromagnetic cancellation from part of a ionized gas plasma. The ionization of the gas is obtained for means of a discharge electrical worker (from which the name) through the gas.

The metal halide lamps derive from the high pressure sodium vapor lamps with the added of thallium, Indian, dysprosium, holmium, cesium, thulium, which they improve the yield of the colors of the sodium lamps, and give one temperature to their color 1 much elevated (4000-5600) K. Their chromatic yield renders them particularly adapted where there is the necessity of having a light perfectly white. For being ignited they need of apposite igniters and injectors that produce impulses of tension between 0,75 and 5 kV and for the attainment of the full light flux, in phase of ignition, they are necessary few minutes.

**In case of accidental putting out it is necessary to wait the cooling of the lamp (about 15 minutes) before a new ignition, because of the high tension that would be necessary for a hot ignition.**

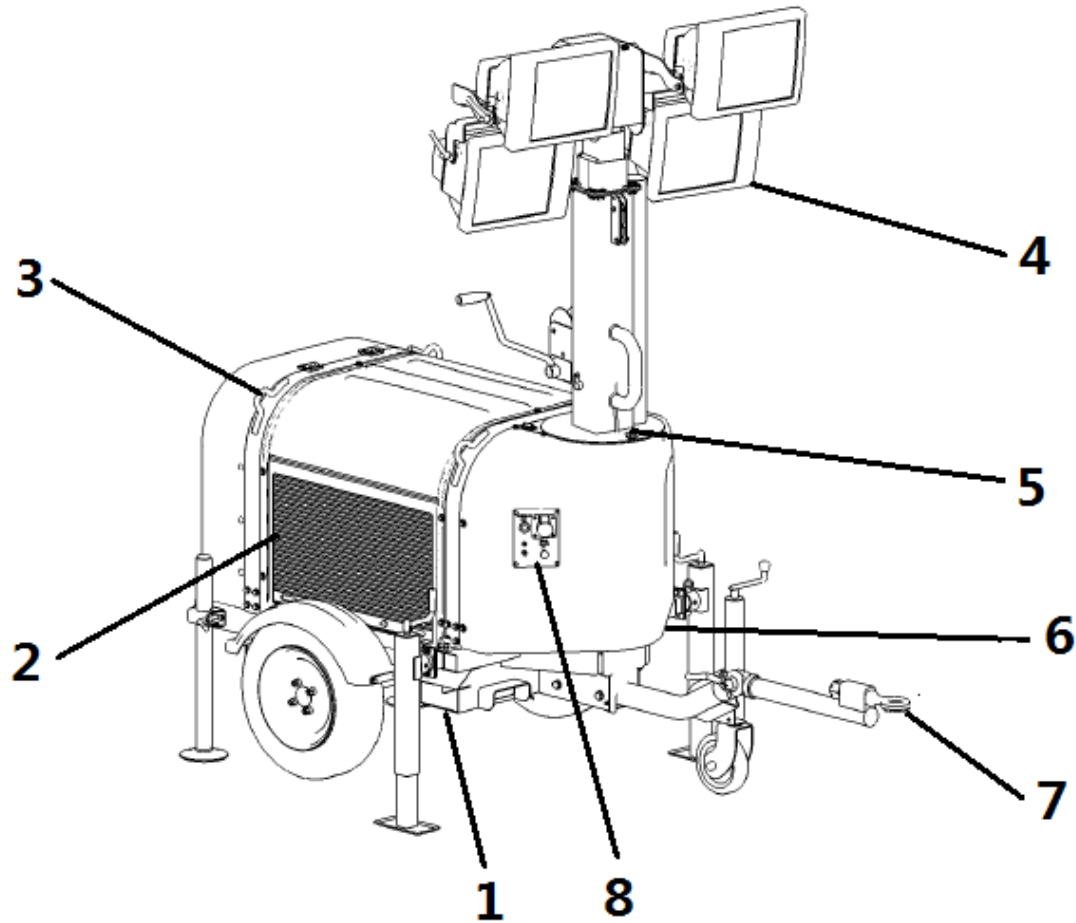
### 10. LIGHTING FOOT PRINT DIAGRAM

ILLUMINATED AREA  
3800 m<sup>2</sup>

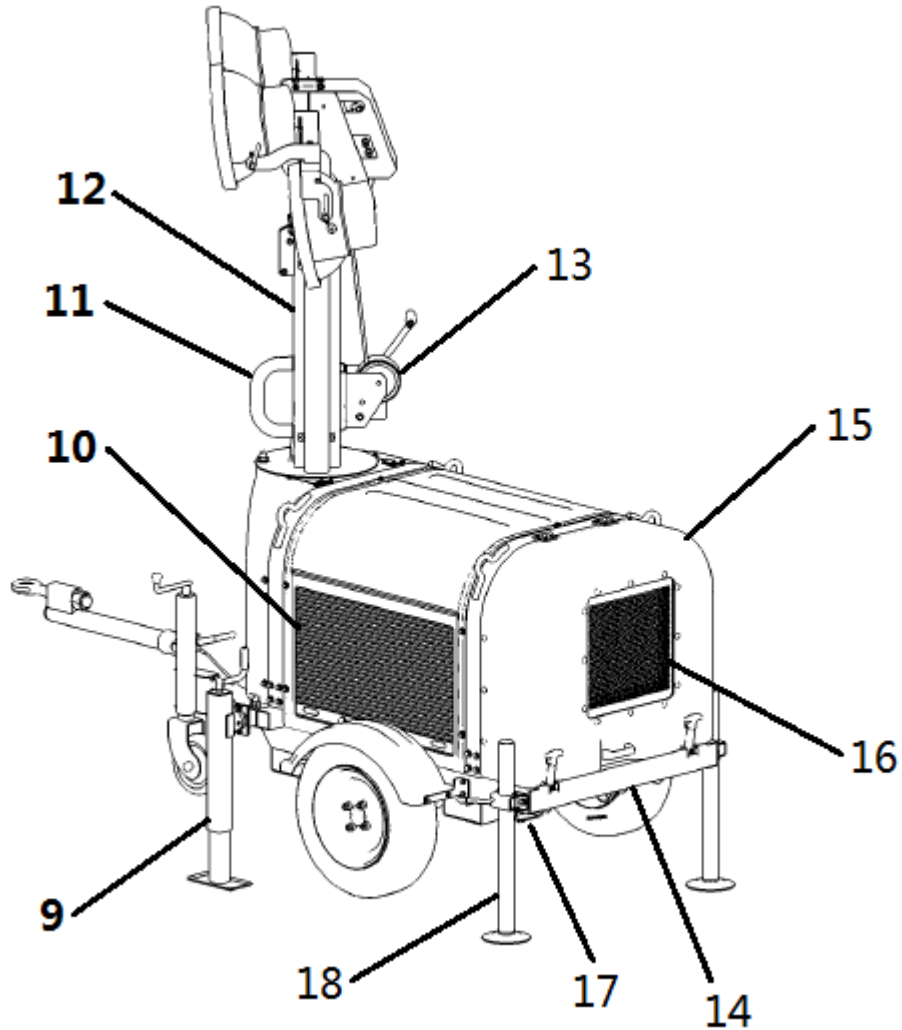


## 11. IDENTIFICATION OF EXTERNAL COMPONENTS

### 11.1 LIGHTING TOWER COMPOSITION



Items	Description
1	Lifting points
2	Lightin tower command panel door and inspection motor
3	Lifting hook
4	Floodlights
5	Floodlights blocking rotation pin
6	Air inlet grill
7	Trailer for slow towing
8	Floodlights control panel with power supply 220V single phase

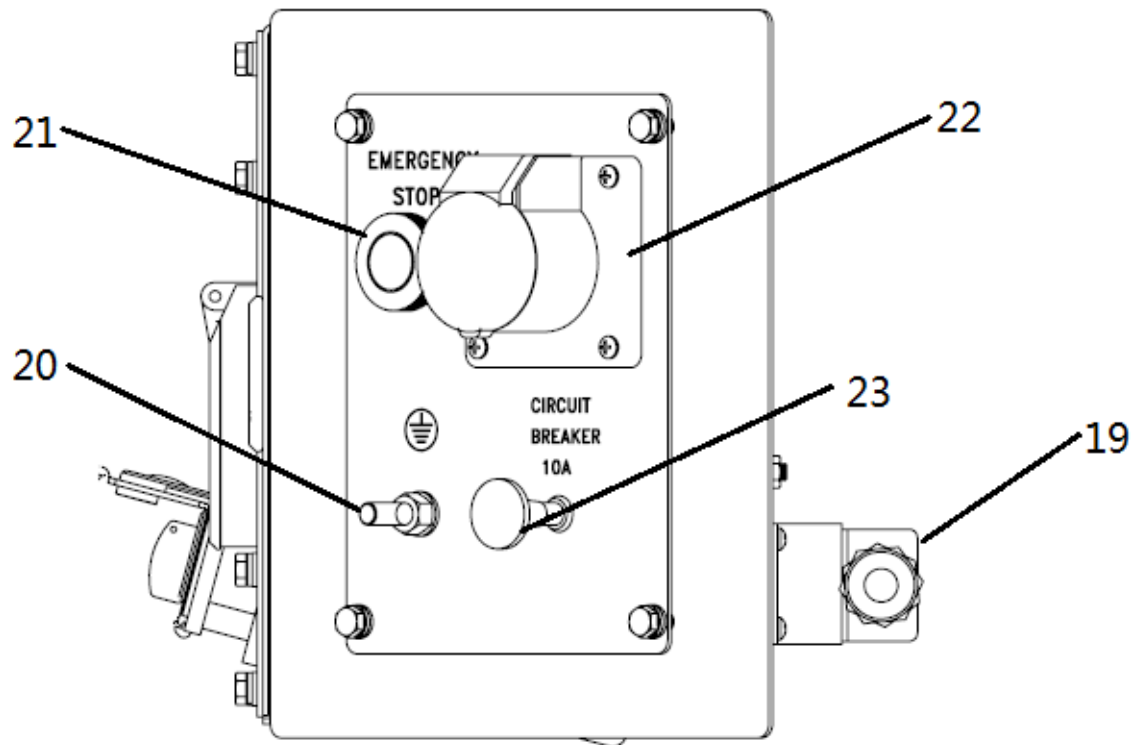


Items	Description
9	Extractable stabilizers
10	Engine inspection motor
11	Floodlights rotation handles
12	Telescopic mast
13	Winch
14	Gas exhaust outlet
15	Radiator and oil level inspection door
16	Air outlet
17	Lifting points
18	Fixed stabilizer



## 12. CONTROLS DESCRIPTION

### 12.1 COMMAND PANEL

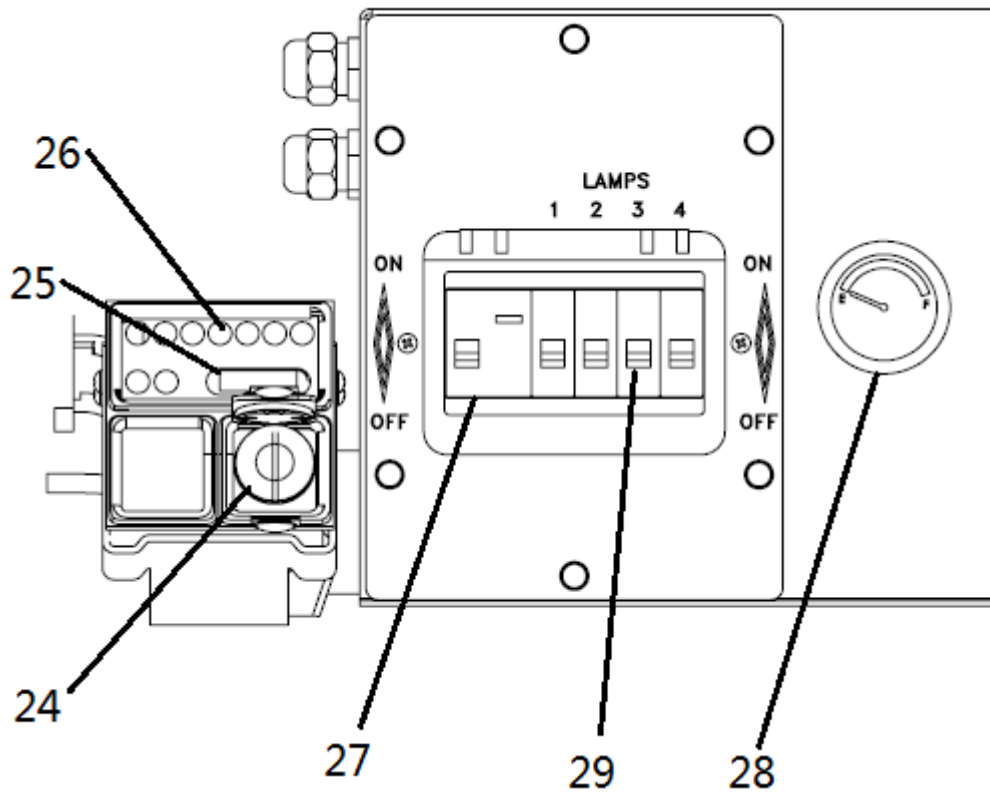


Items	Description
19	Power connector lamps
20	Earth clamp connection
21	Emergency stop button
22	220 V 16 A 2p+T EEC single phase socket
23	10 A push button circuit breaker control 220 V socket

It is possible, at the same time, to use the lighting tower and to capture current from the single phase socket 220 V 16 A (22). It is recommended not to exceed the plate data.

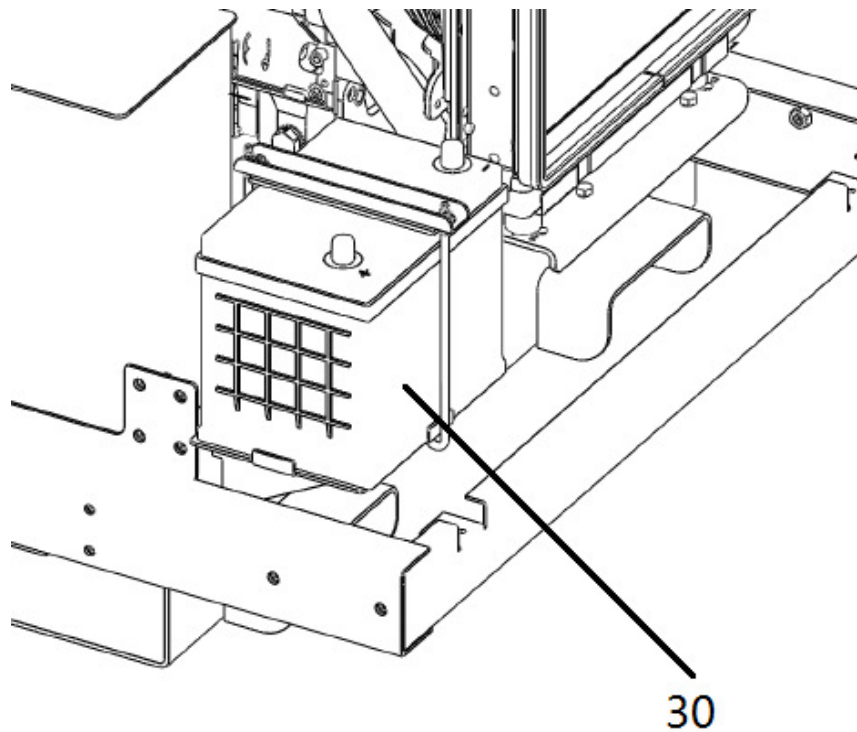
Connect up to the generator using plugs that fit the sockets and cables compliance with the international regulations.

The minimal section of connection cables must be choose in relationship to the voltage, to the installed power and to the distance between source and uses.



Items	Description
24	Starting key
25	Hour counter display
26	Signals lamp for motors operation
27	40 A earth leakage circuit breaker
28	Fuel gauge-Monitor fuel level
29	16 A circuit breaker for lamps switch

## 12.2 BATTERY



Items	Description
30	60 Ah 12 V battery

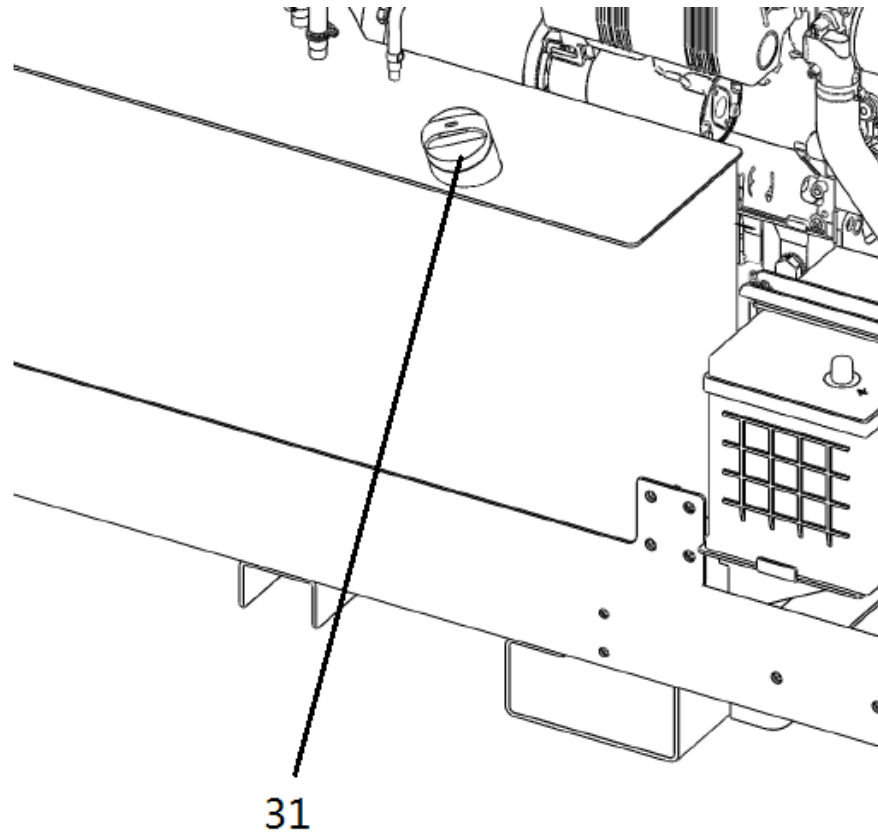
The machine is supplied with the battery not connected.

Connect the battery with cables already predisposed making attention the correct polarity.

The battery fluid contains sulphuric acid which is extremely corrosive and harmful to the skin. Always wear protective gloves and be extremely careful to avoid spillage when pouring the acid.

If the machine has to be stopped for a long period, we suggest to disconnect the battery.

### 12.3 FUEL TANK



Items	Description
31	Fuel tank cap

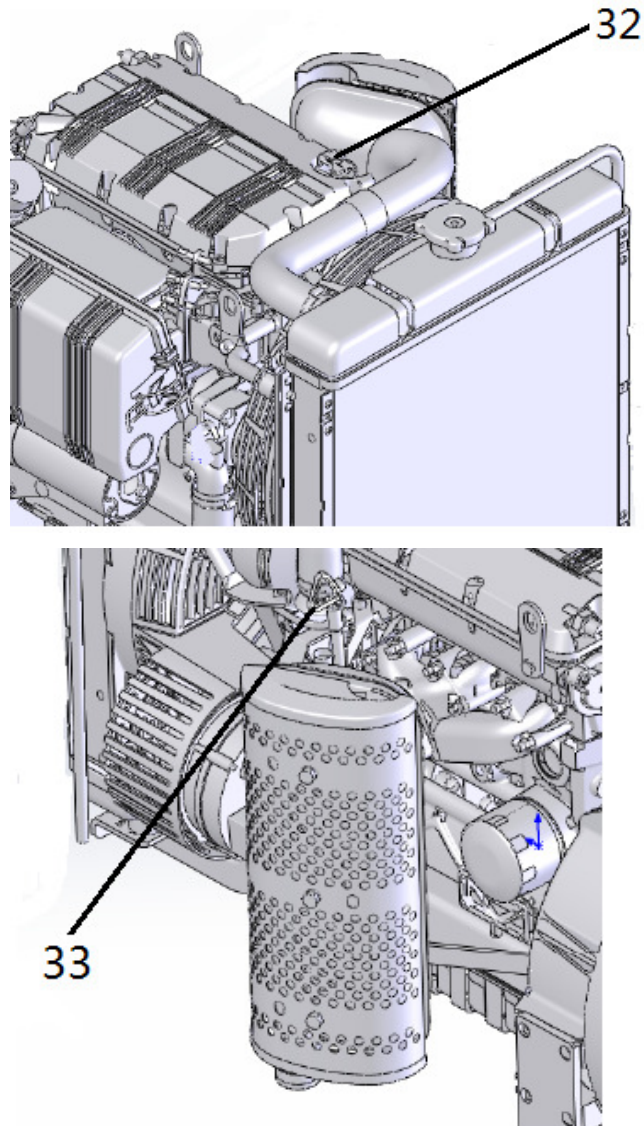
Fill up the tank of diesel fuel respecting the tank capacity (it. 75). The fuel reserve is indicated by the instrument **(28)** placed on the command panel.

Always turn off the engine before any operation of refueling.

The operation of refueling must be done in way that there isn't any discharge of fuel from the tank.

If the machine has to be stopped for a long period (more than one year), we suggest to keep the fuel in the tank, in order to avoid oxidizing effects.

## 12.4 CHECK ENGINE OIL LEVEL



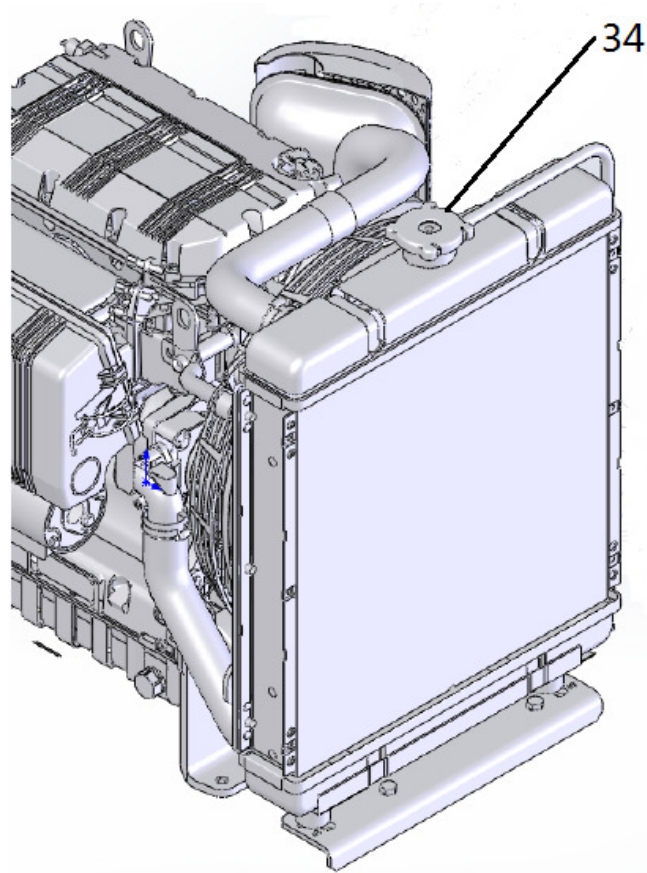
Items	Description
32	Engine oil cap
33	Oil level indicator

Check the engine oil level before starting or more than five minutes after stopping .

### **Do not discharge polluting liquids in the atmosphere.**

In the event of ground's contamination, you need to use specific absorbent material.  
 If the machine has to be stopped for a long period (more than one year), we suggest to keep the oil into the engine in order to avoid oxidizing effects.  
 For the characteristics oil read the engine owner manual.

## 12.5 CONTROL WATER LEVEL IN THE RADIATOR



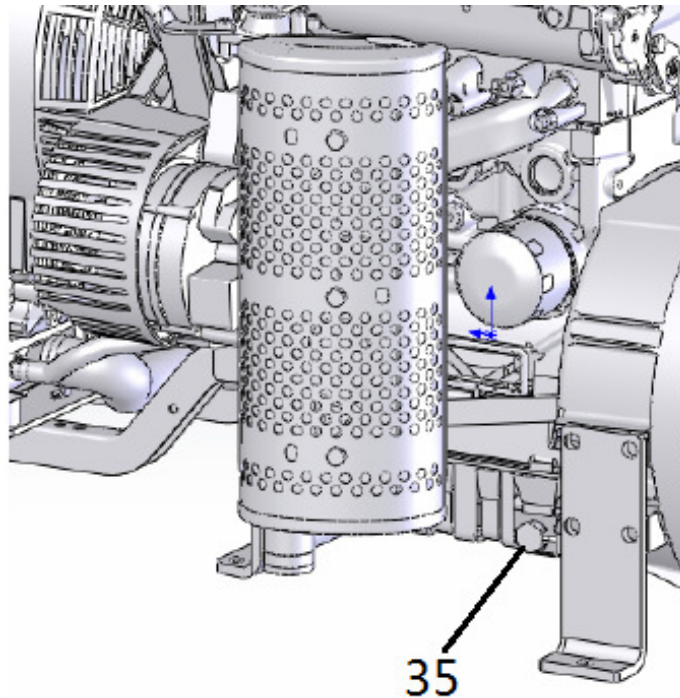
Items	Description
34	Radiator cap

The coolant will last for one day's work if filled all the way up before operation start; therefore check the coolant level before every operation.

In order to avoid personal injury do not remove the radiator cap when the engine is hot. When the engine is cold, loose the cap slightly to the stop to relieve any excess of pressure before removing cap completely.

If the machine has to be stopped for a long period (more than one year), we suggest to keep the coolant into the radiator in order to avoid oxidizing effects.

## 12.6 CHANGE ENGINE OIL



Items	Description
35	Drain out engine oil cap

Place a small basing under the cap (37), unscrew it and discharge the oil.

Drain oil will drain easier when the oil is warm.

**WARNING:** after using the screw cap.

Contact with engine oil can damage your skin. Put on gloves when engine oil. If you come in contact with engine oil, wash it off immediately.

**Do not discharge polluting liquids in the atmosphere.**

in the event of ground's contamination, you need to use specific absorbent material. Change oil every 250 hours (2,4 l oil sump capacity).

For more information refer to the use and maintenance of the engine.

## **13. OPERATING INSTRUCTIONS**

### **13.1 LIGHTING TOWER POSITIONING**

Place the lighting tower on a flat surface, taking care not to exceed 10° of inclination.

Choose an open location and very ventilated taking care that the discharge of the exhaust gases happens far from the work-zone.

Check that there is a complete change of air and the hot air expelled don't circulate into the group in way that it's caused a dangerous elevation of the temperature.

Predispose the barriers placed to 2 meters of distance around the lighting tower in order to prevent to the staff non-authorized to approach itself the machine.

### **13.2 CONNECTING OF THE BATTERY**

The machine is supplied with the battery not connected. Connect the battery switch (31).

### **13.3 EARTHING**

Connect the unit to the earth, through the clamp (20).

The unit must be connected to earth using a copper cable with a minimum cross-section of 6 mm<sup>2</sup>.

**The manufacturer is not responsible for any damage caused by failure of the earthing.**

### **13.4 PRELIMINAR CHECKS**

At the moment of purchase, the machine is supplied of engine oil, water in the radiator.

Before every next use, verify the relative levels.

Check that the circuit breakers (29) placed into the door are in "OFF" position.

Make sure that any load is connected to the plug 220 V 16 A (22)

Make sure that the emergency stop button (21) is rearmed. If it doesn't, turn the grip handle in clockwise direction.



### **13.5 ENGINE STARTING**

Position the starting key (**24**) on the first step, wait few second and start the engine by moving key completely in clockwise direction.

**Note:** If the engine falls to start, turn the key to the OFF position and wait 10 seconds before operating the starter again.

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

The engine is set at (1800 r.p.m.) therefore it is not necessary to make any adjustment. For more information refer to the use and maintenance of the engine.

### **13.6 RUNNING IN**

For the first 50 hours of operation of the machine do not employ more than 70% of the maximum power indicated in the technical specifications. In this way a proper engine running in is guaranteed.

### **13.7 USE OF MACHINE**

It is possible, at the same time to use the lighting tower and to draw current from the single phase socket 220 V 16 A (**22**). It is recommended not to exceed the plate data.

Connect up to the generator using plugs that fit the sockets and cables in excellent condition.

The minimal section of connection cables must be choose in relationship on the tension, to the installed power and the distance between source and uses.

The hour meter exclusively indicates the hours of working of the engine because it only works with the engine in motion. It could be a reference for the periodic ordinary and extraordinary maintenance of the machine.

### **13.8 STOPPING THE ENGINE**

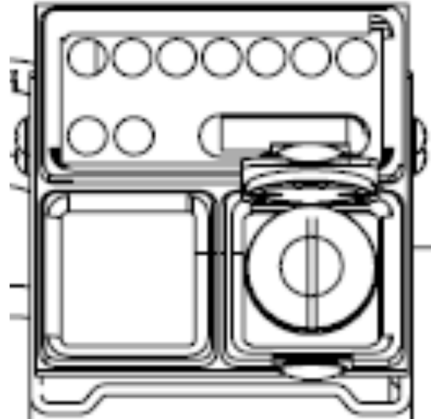
Disconnect the loads.

Switch off all the lamps through the circuit breakers (**29**).

Wait that the engine works in these conditions for approximately 1 minute, then turn the starting key (**24**) to the stop position.

In emergency case it is possible to stop the generating set by pressing the stop button (**21**).

### 13.9 INDICATORS DESCRIPTION



- **Hour counter display**

Indicates engine's running hours and tenths.

- **Engine protection indicator light (Green colour)**

Lights up when the engine is running and all the other indicator lights are off, if everything works correctly, it remains on while the machine is running.

If one of the three following important engine conditions takes place:

The oil pressure is low, the coolant temperature is too high or the air filter is clogged; the engine protection indicator light turns off and the failure indicator light turns on. If the failure indicator light remains on for three seconds, the engine turns off.

The engine stop takes place by means of a solenoid valve that, in case of failure of the engine basic functions described above, stops the fuel supply.

- **Fuel indicator (Yellow colour)**

Turns on when the fuel is about to finish.

This indicator light is on all our control panels, but its function depends on the application type.

In the panels with revolution counter, when the fuel indicator light turns on, the green engine protection indicator light turns red and starts blinking.

- **Oil pressure indicator (Red colour)**

Turns on when oil pressure is low. When the indicator light remains fixed for three seconds, the engine stop takes place.

- **Battery recharge indicator (Yellow colour)**

Turns on in the case of a battery recharge failure. When the indicator light remains fixed for three seconds, the engine stop takes place.

PM4000

- **Oil or cylinder over-temperature indicator (Red colour)**

Turns on when the coolant temperature is above safety level. When the indicator light remains fixed for three seconds, the engine stop takes place.

- **Engine stop (Red colour)**

This indicator light is on all our control panels, but its function depends on the application type.

When the indicator light remains fixed for three seconds, the engine stop takes place.

- **Plugs indicator (Yellow colour)**

Remains on during preheat (The preheating time varies according to the environment temperature: longer in cold periods and shorter in hot periods).

In the panels without revolution counter, the glow plug indicator light starts blinking when the glow plug supply is missing (burnt-out fuse or relay failure).

In the panels with revolution counter, during the preheating phase the engine protection indicator light turns green when the glow-plug supply is missing (burnt-out fuse or relay failure).

For more information refer to the use and maintenance of the engine.

PM4000

### 13.10 REMARKS

It is important that the operator will be always careful at every eventual disadvantage had at usury or breakdown.

It is necessary that the use of the lighting tower will be effected from expert personnel, careful at eventual structural disadvantage, seen the size of the structure.

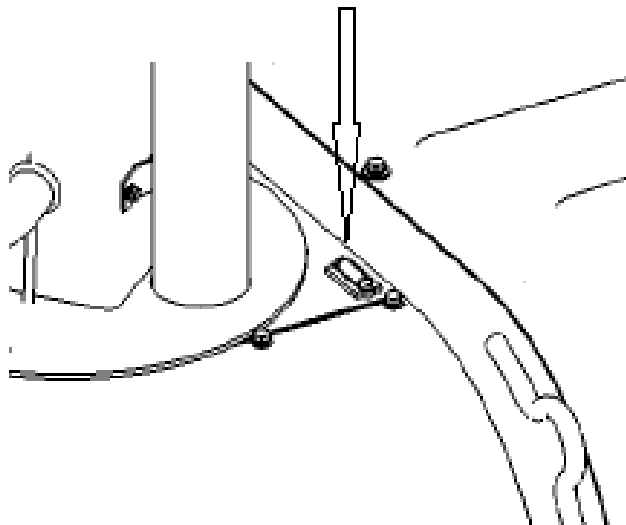
It is advised to do always a visual check and general at every use, above all at those parts always in movement and subjected at usury.

The expert user must not permit to anybody to stay near to the lighting tower, when it is in function.

Let always wide space round to the lighting tower.

It is recommended to place the base the most possible in plan in order to facilitate the regulation of the stabilizers (make reference to the spirit level placed on the frame (Fig. 1)).

(Fig. 1)



PM4000

**It is also recommended to place the structure in a stable place, verifying the consistence of the earth to allow a sure support to the stabilizers.**

Pull the hand brake if the tower is supplied of undercarriage for towing. It is allowed the use of the lighting tower only at a qualified staff.

Before to use the lighting tower it is recommended to the authorised staff to consultate all warnings and dangers described into this manual.

**The manufacturer is not responsible of any damage at things or person, in consequence at the inobservance of safety norms.**

Before any operation on the machine ensure yourself that the lighting tower is not feeded and that there are not any parts in movement.

For the electrical connection between the floodlights and the command panel of the lighting tower it has been used a turn cable 9G2,5 mmq placed to the inside of a cylinder that allows a comfortable sliding.

The electrical connections are simplified so as to concur the uncoupling of the command panel for a check and an eventual maintenance or substitution of damages pieces. It is also possible to remove and to replace the cruise of the lighting tower. For the electrical connection of the floodlights we are previewed plastic boxes with degree of protection IP56.

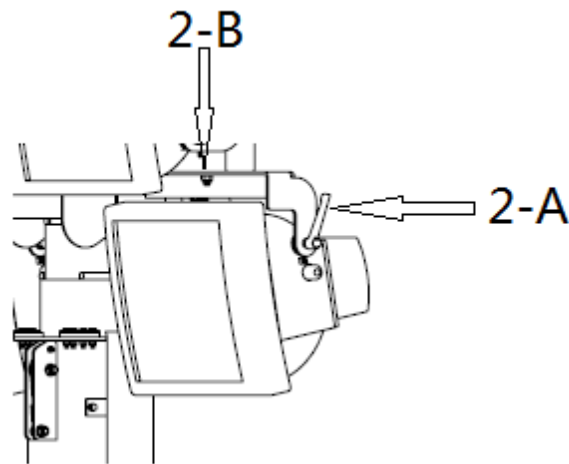
In case of use of the lighting tower in adverse acclimatizes situations, with too much low temperatures or high, take care to the turn cable and its normal sliding to the inside of the cylinder because the cable is subject to momentary structural deformation.

### 13.11 USE OF THE LIGHTING TOWER

Tilt manually the floodlights unscrewing the lever (Fig. 2-A) placed on the support of the floodlight.

Rotate the floodlights in the position you prefer, in function of the type of lighting you want to obtain, unscrewing the stop nut of the floodlight support (Fig. 2-B).

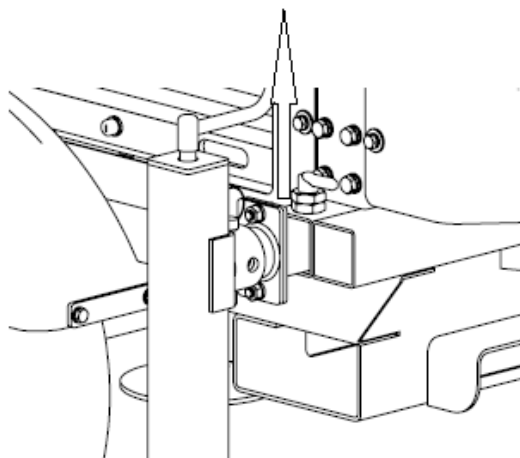
(Fig.2)



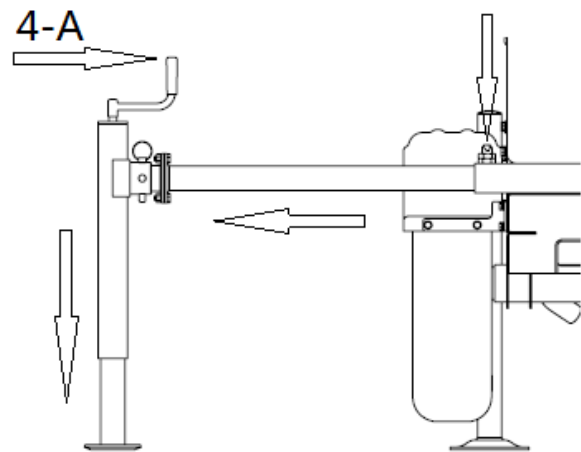
Release the pins from their hole (Fig. 3) and then proceed manually to the extraction of stabilizers until the pins lock the exit of the tubular (Fig. 4); check that the pins go into the respective seats of blocking of the tubular.

Lower the stabilizers through the handle (Fig. 4-A).

(Fig.3)



(Fig.4)



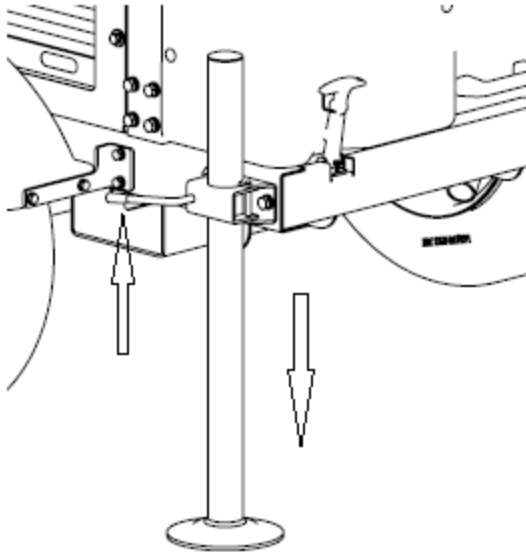
PM4000

Lower rear stabilizer by loosening the blocking lever (Fig. 5).

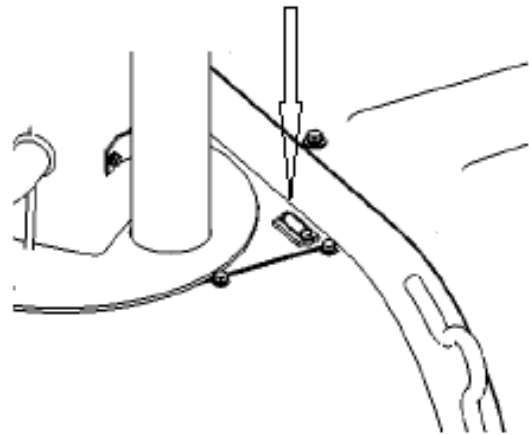
Make reference to the spirit level for the correct stability of the structure (Fig. 6).

**Warning!!! It is not possible to raise the tower if all stabilizers are not correctly extracted.**

(Fig. 5)



(Fig. 6)



Before use the machine it's recommended the correct acquaintance on operation for all the commands of the lighting tower.

Start the engine like described at the chapter "**13.5 ENGINE STARTING**".

### 13.12 USE OF THE LIGHTING TOWER

Pull the locking pin of the mast (Fig. 7-B) in way to concur the rotation of it. For simplify the rotation they are predisposed two handle (Fig. 7-C). The blocking happens re-inserting the pin.

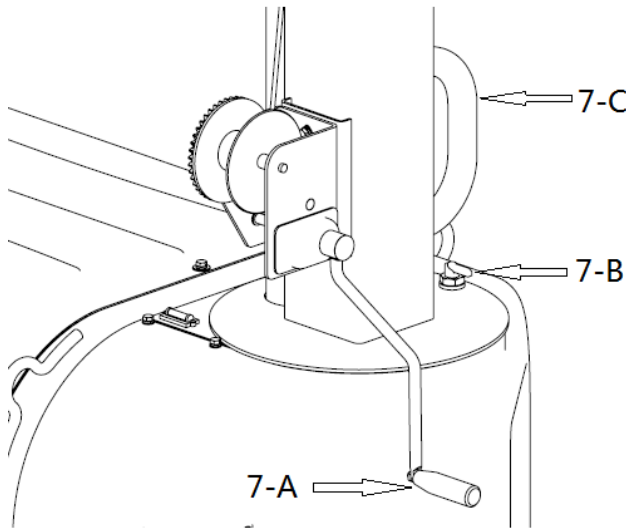
Raise the tower to the best solution used the manual winch (Fig. 7-A) rotating the crank in clockwise direction. Arrived to the maximum height sections stop to raise and will result impossible continue to operate on the winch. The attainment of the maximum height is evidenced by a red wrap placed on the base of the mast.

Light the first lamp (Fig. 8) and allow 2 minutes for it to warm up, then light the next lamps, remembering to allow each lamp to warm up for 2 minutes.

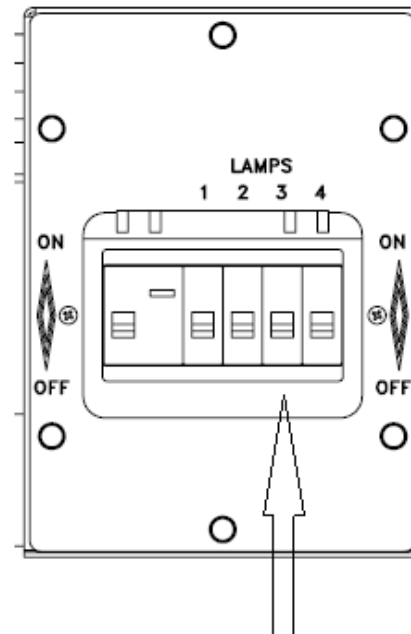
Rotate the mast on the oportune way to place the lighting beam in the desiderate position. For simplify the rotation there is predisposed one handle (Fig. 7-C)

Pull the locking pin of the mast (Fig. 7-B) in way to concur the rotation of it. The blocking happens re-inserting the pin in one of the many centers predisposed along the sping ring. The mechanical block concurs to stop the spin to 340°.

(Fig. 7)



(Fig. 8)





**In case of accidental putting out it is necessary to wait the cooling of the lamp (about 15 minutes) before a new lighting, because of the high tension that would be necessary for a hot ignition.**

**WARNING: it is strictly prohibited to close the stabilizers when the lighting tower is in vertical position at the maximum height.**

**WARNING: the lighting tower is prearranged to withstand 80 km/h wind at the maximum height. In case of using in windy places, be careful and lower timely the telescopic mast.**

At the end of use lower the telescopic mast through manual winch rotating the crank in anticlockwise direction until all the telescopic section are contained into the first one.

Turn off the lamps carrying the relatives circuit breaker **(29)** in "OFF" position.

Wait that the engine works in these conditions for approximately 1 minute, then turn the starting key **(24)** to the 0 position.

In emergency case it is possible to stop the generating set by pressing the stop button **(21)**.

## **14. ENGINE MAINTENANCE**

For the engine maintenance look at the attached specific manual.

## **15. LIGHTING TOWER MAINTENANCE**

We suggest a 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 tightly depends on the place where the machine is used.

The extraordinary service operations not mentioned here above require the aid of specialized technicians.

### **15.1 LUBRICATION OF THE ROLLERS**

For the lubrication of the rollers, use a low temperatures and extremely high speed bearing grease. We recommend to use SKF LGLT 2 grease, a premium quality fully synthetic oil based grease using lithium soap. In case of use of an other product, the grease will must have a base oil viscosity equal to 18 mm<sup>2</sup>/s at 40°C and to 4,5 mm<sup>2</sup>/s at 100°C.

### **15.2 LUBRICATION OF MAST SECTIONS**

For the lubrication of the mast sections, we recommend to use a light lubricating oil like WD40. Spray it on the metal parts of the mast, in order to avoid squeaking and scrapping noises during the raising and the lowering operations. In case of frequent use, lubricate every three months.

### **15.3 LUBRICATION OF STABILIZERS**

Grease periodically the stabilizer using a dense grease adapted to sliding system sto apply through the apposite tool to insert in the valves placed on the stabilizer (if previewed). Verify if the movement of the stabilizer is correctly.

### **15.4 LUBRICATION OF THE WINCH**

The winch has already been lubricated in the works. It is recommended however that the drive shaft bearing bushers and the drum hub be oiled regularly. Grease the toothed wheel rim regularly. Ensure that the crank gear is always lubricated.

**WARNING!!!** Do not oil or grease the brake mechanism.

### **15.5 CHECK OF STEEL CABLES**

The steel cables are 6mm diameter composed of Carbon wires with Class B Galvanised protection and a Polymer core with a minimum breaking load of 3294 kgs. They enable the raising and lowering of the telescopic mast. It is periodically necessary to verify their conditions and their perfect dragging inside the pulleys It is recommended to periodically to verify their condition and ensure their correct position inside the pulleys. It is the Manufactures recommendation that all cables and pulleys are replaced as required. If the steel cable shows unusual signs of wear or damage, do not use the lighting tower and contact directly house manufacturer.

## 16. TROUBLESHOOTING GUIDE

Listed below are the most common troubles that may occur during use of the lighting tower and possible remedies. In the event that you will not solve the problems that you have had with our tower, please contact immediately the builder.

If the engine did not have to work correctly, we suggest to follow the maintenance operations and the maintenance schedules reported in the engine "Operator's manual" at chapter "MAINTENANCE", in order to find and to eliminate the cause of the trouble.

### 16.1 MAIN TROUBLES ANOMALY

#### ANOMALY

- Turning the starting key in ON position, no signal lamps ignites and the starting motor does not work.

#### **CAUSE**

The battery switch is disconnected

#### **REMEDY**

Connect the battery switch

#### **CAUSE**

The battery is disconnected.

#### **REMEDY**

Open the door and connect the battery.

#### **CAUSE**

The battery is discharge.

#### **REMEDY**

Recharge the battery.

#### **CAUSE**

The battery is defective.

#### **REMEDY**

Replace the battery.

#### **CAUSE**

Steerg lock is failure.

#### **REMEDY**

Replace the steerg lock.

PM4000

**CAUSE**

The starting motor does not work.

**REMEDY**

Contact a Lombardini assistance centre for a check.

**CAUSE**

The emergency stop button is pressed.

**REMEDY**

Check that the stop button is reamed. If it doesn't, turn the grip handle in clockwise direction.

**CAUSE**

There are many disconnected cables in the electrical system.

**REMEDY**

Check visually the electrical system to find the disconnected cables (make reference to the wiring diagram), eventually contact directly the manufacturer.

**ANOMALY**

- The starting motor works but the engine does not start.

**CAUSE**

Possible lack of fuel in the tank.

**REMEDY**

Refuel the machine.

**CAUSE**

Fuel filter dirty.

**REMEDY**

Replace the filter.

**CAUSE**

The fuel pump does not work.

**REMEDY**

Check the electrical connection of the pump and eventually contact a Lombardini assistance centre for a check.

PM4000

**ANOMALY**

- The starting of the engine is difficult and there is an insufficient rendering.

**CAUSE**

The element air cleaner is dirty.

**REMEDY**

Clean up the element and eventually replace it.

**CAUSE**

Injection pump wear.

**REMEDY**

Do not use poor quality fuel as it will cause wear of the pump. Check the fuel injection pump element and replace it if necessary.

**CAUSE**

Overheating of moving parts.

**REMEDY**

Check lubricating oil system.

Check to see if lubricating oil filter is working properly or replace it.

**ANOMALY**

- Output voltage unstable.

**CAUSE**

Irregular engine speed.

**REMEDY**

The engine is set at the exactly speed (1800 r.p.m.), in case of unsetting contact directly the manufacturer!.

**CAUSE**

The alternator is defective.

**REMEDY**

Replace the alternator and eventually contact directly the manufacturer.

PM4000

**ANOMALY**

- The machine stops with the oil low pressure signal lamp ignited.

**CAUSE**

The oil level is low.

**REMEDY**

Verify the level and add oil if necessary.

**CAUSE**

The pressure switch is defective.

**REMEDY**

Replace the pressure switch.

**ANOMALY**

- The machine stops with the battery charge signal lamp ignited.

**CAUSE**

The battery is defective.

**REMEDY**

Replace the battery.

**CAUSE**

The engine's alternator is failure.

**REMEDY**

Check it and eventually contact a Lombardini assistance centre.

**ANOMALY**

- After refueling, the fuel level monitor does not move.

**CAUSE**

The fuel level monitor does not work.

**REMEDY**

Check the fuel level monitor and its relative electrical connection.

**CAUSE**

The floating does not work.

**REMEDY**

Check the floating and its relative electrical connection. If the sensor is blocked, eventually replace it.

PM4000

**ANOMALY**

- The machine stops with the high water temperature signal lamp ignited.

**CAUSE**

The level of the coolant in the radiator is low.

**REMEDY**

Verify the level and add coolant if necessary.

**CAUSE**

Radiator net or radiator fin clogged with dust.

**REMEDY**

Clean net or fin carefully.

**CAUSE**

Radiator fan does not work.

**REMEDY**

Check the fan.

**ANOMALY**

- With the engine in motion the hour meter does not work.

**CAUSE**

The hour meter does not work.

**REMEDY**

Check the hour meter and its relatives electrical connection.

**ANOMALY**

- One or more lamps does not light.

**CAUSE**

Defective or failure lamps.

**REMEDY**

Before replace the lamp, it is advisable to make a test, installing the lamp that it is presumed failure in a floodlight with lamp previously working.

**ANOMALY**

- The lamps fails to light.

**CAUSE**

The lamps have been accidentally putted out.

**REMEDY**

The lamps could not be relighted up, it is necessary to wait the cooling of the lamp (about 15 minutes).

PM4000

**ANOMALY**

- Winch load is not held.

**CAUSE**

Cable wound up incorrectly, direction of rotation when lifting incorrect.

**REMEDY**

Lay cable in place correctly.

**CAUSE**

Brake torn or faulty.

**REMEDY**

Check brake parts and renew torn parts.

**CAUSE**

Brake disk damp or oily.

**REMEDY**

Clean or replace the brake-disks.

**ANOMALY**

- Friction disk brake does not open.
- Lowering is difficult.

**CAUSE**

Brake disk mechanism or brake disks distorted -or crank is stud.

**REMEDY**

Slacken brake hitting the crank hand lightly using the palm of the hand in anticlockwise direction (to do this block the gearwheels if necessary, until the crank becomes loose, grease crank thread).

**ANOMALY**

- Friction disk brake does not close (load is not held).

**CAUSE**

Crank not quite wound up during and thus distorted by the hexagonal screw.

**REMEDY**

Reassemble the crank in correct way.



## 17. REPLACE THE LAMP AND FLOODLIGHT GLASS

In case of replacement of the lamps or the floodlight's glass, open the floodlight through the 4 stainless steel hooks (1), inserting a screwdriver in the appropriate slots previewed on the hooks. The hooks are with hinge to support the frame when opened. Replace the lamp or the glass. Close the floodlight's glass being careful to position correctly the hooks in their seat.

**N.B.:** in the 2 inferior floodlights the hooks that support the frame when opened are situated on the superior side, therefore it is necessary to sustain manually the cover during the operations of lamp's replacing.

The use of the NARVA-G.L.E. NACHROMA NCT 1000 W 220 V lamp is recommended. If a lamp by a different manufacturer is used, the same shall necessarily meet the requirements here below:

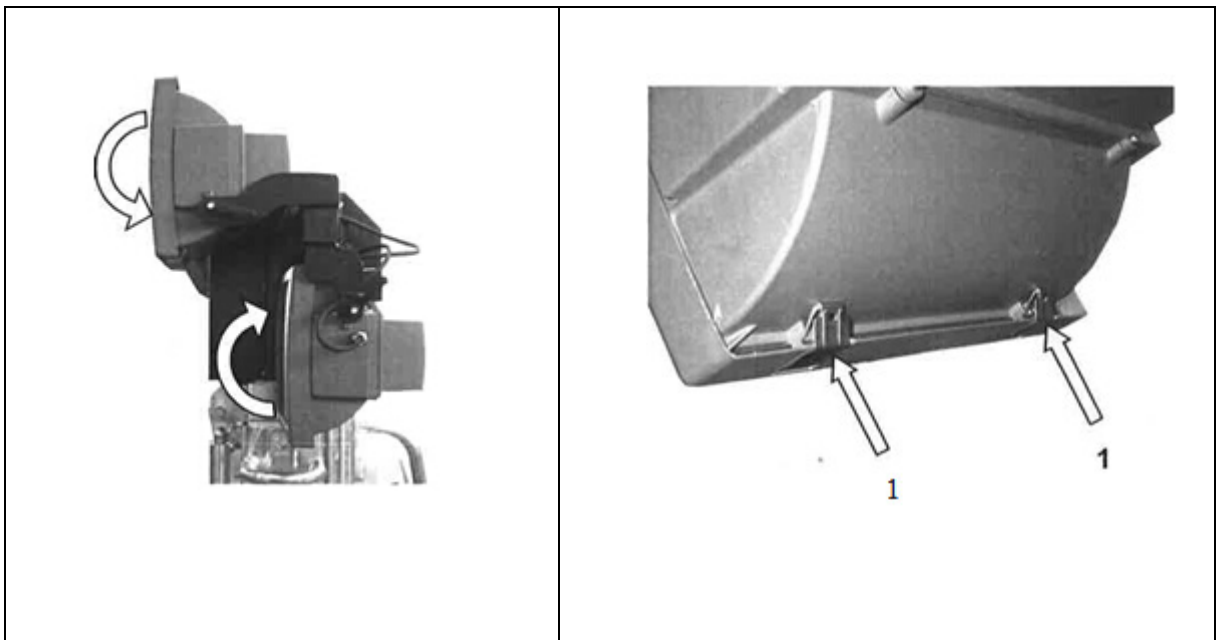
Type of lamp: metal halide

Base: E40

Nominal power: 1000 W

Nominal voltage: 220 V - 60 Hz

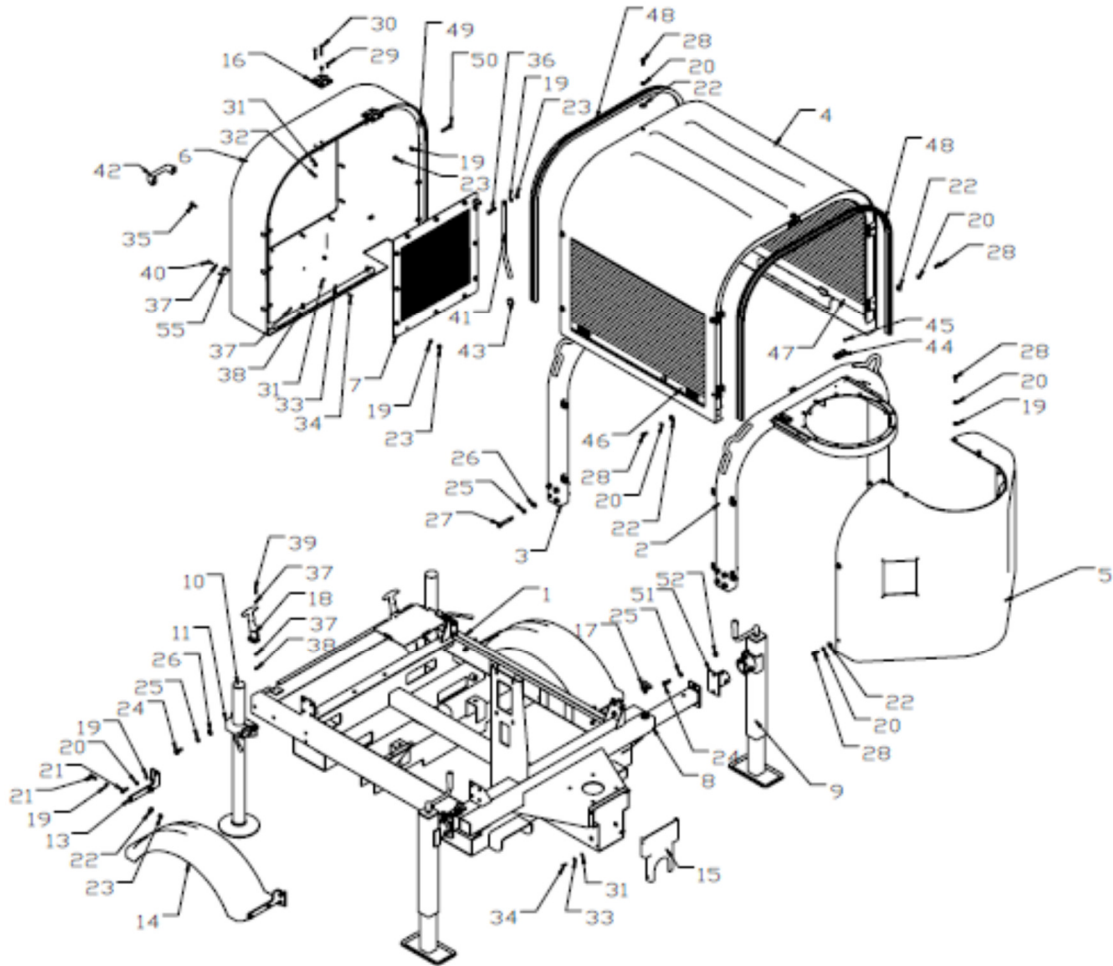
Operating current: 9,5 + 10,5 A



PM4000

## 18. SPARE PARTS

### 18.1 SPARE PARTS LIST FOR MAIN FRAME



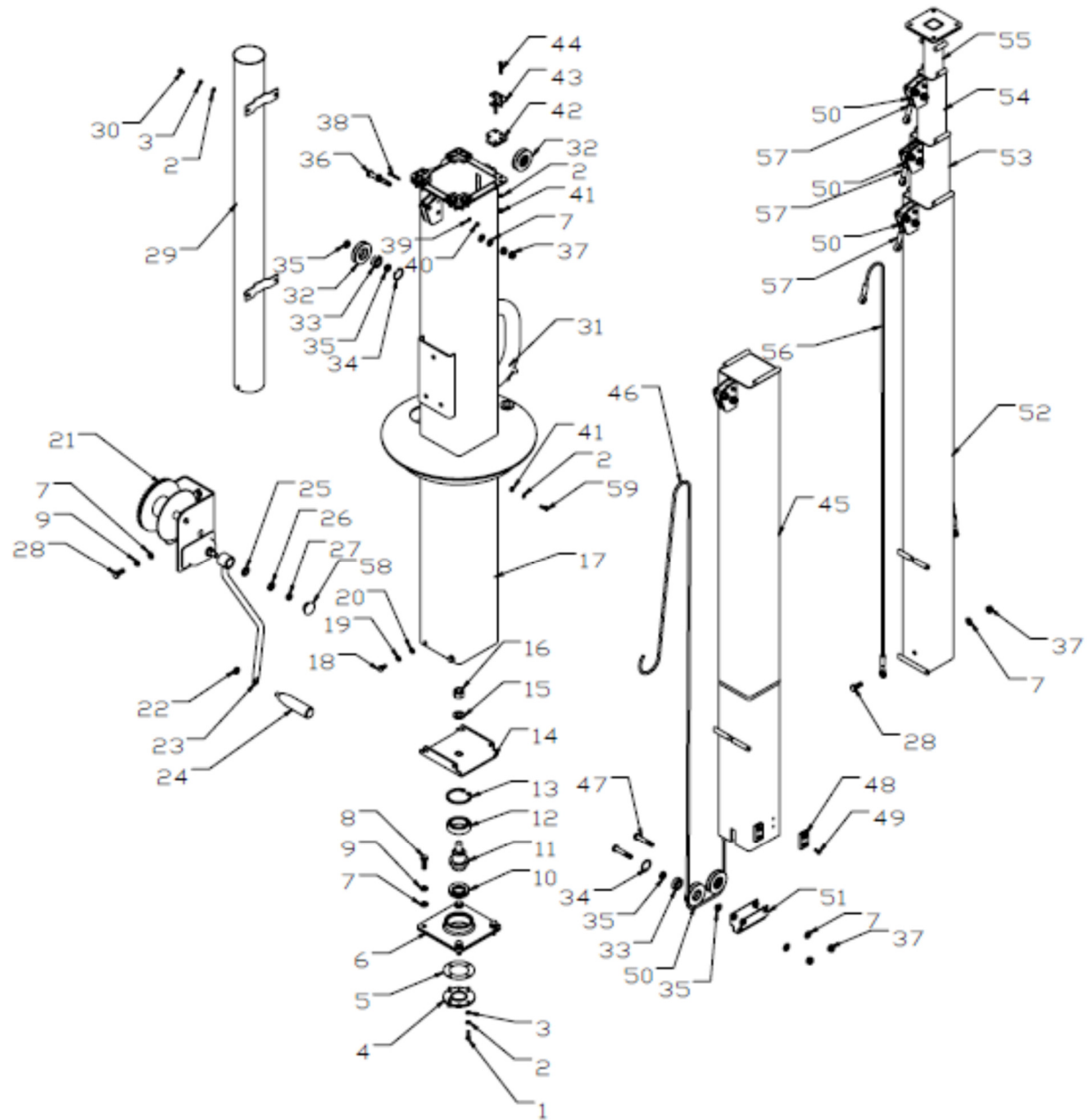
PM4000

NO.	PART NO.	PART DESCRIPTION	QTY
01-1	PM4000-HLT8-4K-010100	MAIN FRAME	1
01-2	PM4000-HLT8-4K-010200	FRONT FRAME	1
01-3	PM4000-HLT8-4K-010300	REAR FRAME	1
01-4	PM4000-HLT8-4K-010400	COVER	1
01-5	PM4000-HLT8-4K-010500	FRONT COVER	1
01-6	PM4000-HLT8-4K-010600	REAR COVER	1
01-7	PM4000-HLT8-4K-010700	RADIATOR SHUTTER	1
01-8	PM4000-HLT8-4K-010800	TUBULAR FOR STABILIZER	2
01-9	PM4000-HLT8-4K-010900	STABILIZER	2
01-10	PM4000-HLT8-4K-011000	SUPPORT FOOT	2
01-11	PM4000-HLT8-4K-011100	CLAMP FOR FOOT	2
01-12	PM4000-HLT8-4K-011200	RIGHT BRACKET FOR FENDER	2
01-13	PM4000-HLT8-4K-011300	LEFT BRACKET FOR FENDER	2
01-14	PM4000-HLT8-4K-011400	FENDER	2
01-15	PM4000-HLT8-4K-011600	FRONT COVER	1
01-16	PM4000-HLT8-4K-011800	HINGE	4
01-17	PM4000-HLT8-4K-011900	LOCKPIN	2
01-18	PM4000--500S-010505	BUCKLE	2
01-19	PM4000- FN.W8-DIN-2	WASHER	41
01-20	PM4000- HSPG.W8-DIN-2	SPRING WASHER,TANG ENDS	26
01-21	PM4000-FN.B-M8x25-8.8-DIN-2	BOLT	16
01-22	PM4000- WOD.W8-GB-2	WASHER	22
01-23	PM4000- IN.N-M8-DIN-2	LOCK NUT	29
01-24	PM4000- M10x25-8.8-DIN-2	BOLT	8
01-25	PM4000- HSPG.W10-DIN-2	SPRING WASHER,TANG ENDS	24
01-26	PM4000- FN.W10-DIN-2	WASHER	20
01-27	PM4000- FN.B-M10x70-8.8HALF-DIN-2	BOLT	16
01-28	PM4000- FN.B-M8x20-8.8-DIN-2	BOLT	18
01-29	PM4000- HSF.S-M6x16-8.8-DIN-1	SOCKET COUNTERSUNK HEAD SCREW	4
01-30	PM4000- HSF.S-M6x45-8.8-DIN-1	SOCKET COUNTERSUNK HEAD SCREW	4
01-31	PM4000- FN.W6-DIN-2	WASHER	10
01-32	PM4000- IN.N-M6-DIN-2	LOCK NUT	4
01-33	PM4000- HSPG.W6-DIN-2	SPRING WASHER,TANG ENDS	6
01-34	PM4000- FN.B-M6x16-8.8-DIN-2	BOLT	6

## PM4000

NO.	PART NO.	PART DESCRIPTION	QTY
01-35	PM4000-CHSN.B-M8x25-8.8-GB-2	BOLT	12
01-36	PM4000- HS.B-M8x35-8.8-GB-2	SCREW	1
01-37	PM4000- FN.W5-DIN-2	WASHER	16
01-38	PM4000- IN.N-M5-DIN-2	LOCK NUT	8
01-39	PM4000- FN.B-M5x16-8.8-DIN-2	BOLT	4
01-40	PM4000- FN.B-M5x20-8.8-DIN-2	BOLT	4
01-41	PM4000-HLT8-4K-012000	STAND BAR	1
01-42	PM4000-HLT8-4K-012300	HANDLE	1
01-43	PM4000-HLT8-4K-012100	PIPE CAP	1
01-44	PM4000-HLT8-4K-012200	SPIRIT LEVEL	2
01-45	PM4000- PAN.S-M4x10-GB-2	PAN HEAD SCREW	4
01-46	PM4000-HLT8-4K-012400	SIDE DOOR,RIGHT	1
01-47	PM4000-HLT8-4K-012500	SIDE DOOR,LEFT	1
01-48	PM4000-HLT8-4K-012600	GASKETING	2
01-49	PM4000-HLT8-4K-012700	BRACKET	1
01-50	PM4000- CHSN.B-M8x35-GB-2	BOLT	8
01-51	PM4000-HLT8-4K-012900	CONNECTOR	2
01-52	PM4000- FN.N-M10-DIN-2	NUT	4

### 18.2 SPARE PARTS LIST FOR TELESCOPIC MAST



## PM4000

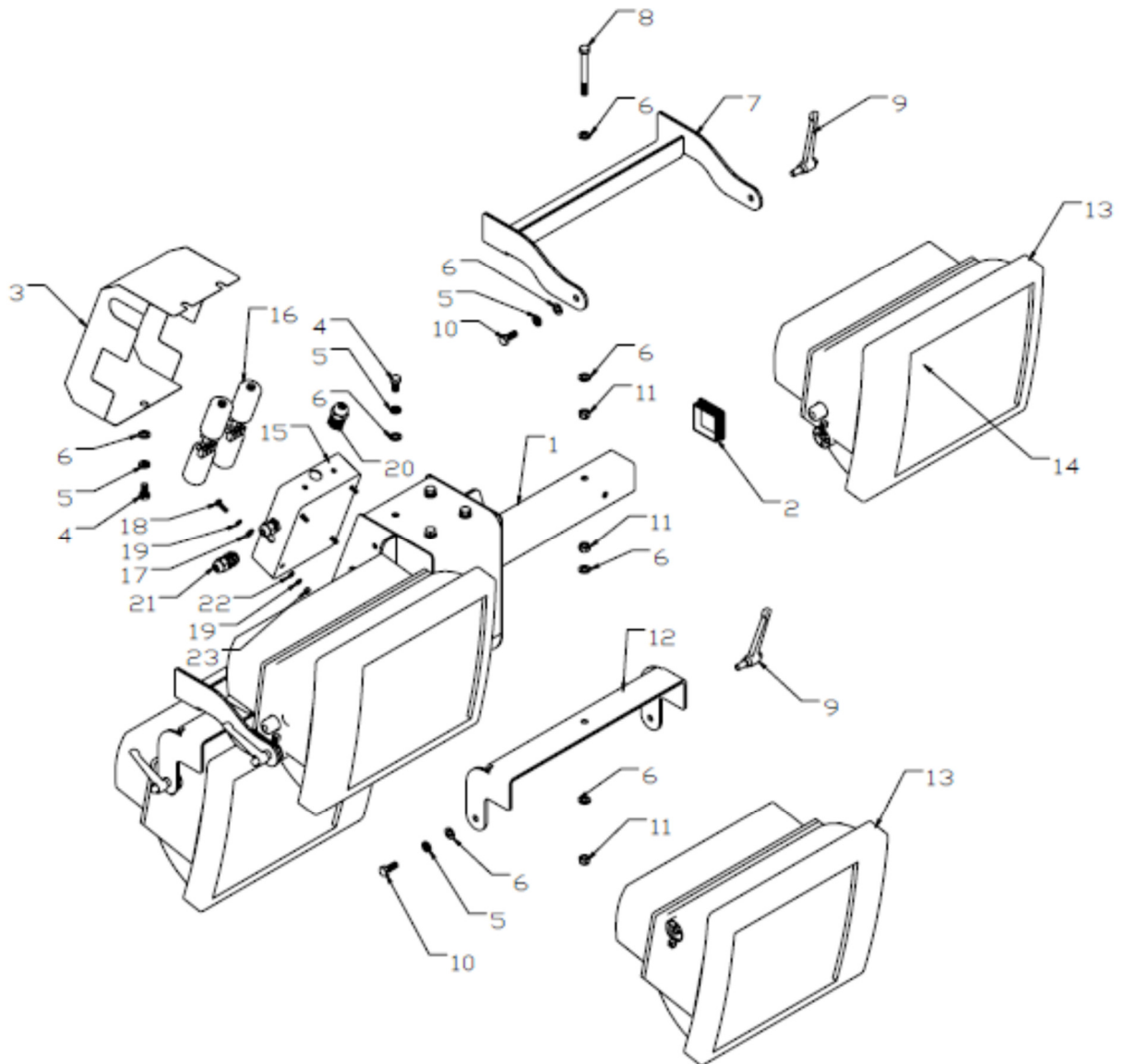
NO.	PART NO.	PART DESCRIPTION	QTY
02-1	PM4000FN.B-M6x20-8.8-DIN-2	BOL	4
02-2	PM4000- FN.W6-DIN-2	WASHER	24
02-3	PM4000- HSPG.W6-DIN-2	SPRING WASHER,TANG ENDS	8
02-4	PM4000-HLT8-4K-021800	COVER	1
02-5	PM4000- 100GB-040401	PACKING PLATE	1
02-6	PM4000-HLT8-4K-020900	HUB FOR MAST	1
02-7	PM4000- FN.W10-DIN-2	WASHER	25
02-8	PM4000- FN.B-M10x30-8.8-DIN-2	BOLT	4
02-9	PM4000-HSPG.W10-DIN-2	SPRING WASHER,TANG ENDS	7
02-10	PM4000-W01-51107-J	PLANE BEARING	1
02-11	PM4000-HLT8-4K-021000	SHAFT	1
02-12	PM4000-W01-6007ZZ-J	BEARING	1
02-13	PM4000- CH.RG62	INTERNAL CIRCLIP	1
02-14	PM4000-HLT8-4K-020800	JUNCTION PLATE	1
02-15	PM4000-FN.W16-DIN-2	WASHER	1
02-16	PM4000-IN.N-M16-DIN-2	LOCK NUT	1
02-17	PM4000-HLT8-4K-020100	FIRST MAST	1
02-18	PM4000-FN.B-M8x16-8.8-DIN-2	BOLT	4
02-19	PM4000-HSPG.W8-DIN-2	SPRING WASHER,TANG ENDS	4
02-20	PM4000-FN.W8-DIN-2	WASHER	4
02-21	PM4000-HLT8-4K-021900	WINCH	1
02-22	PM4000-FNL.N-M10-DIN-2	HEXAGON THIN NUT	1
02-23	PM4000-HLT8-4K-022000	HANDLE ROD	1
02-24	PM4000-HLT8-4K-16-000009	HANDLE	1
02-25	PM4000-FN.W12-DIN-2	WASHER	1
02-26	PM4000-HSPG.W12-DIN-2	SPRING WASHER,TANG ENDS	1
02-27	PM4000-FN.N-M12-DIN-2	NUT	1
02-28	PM4000-FN.B-M10x25-8.8-DIN-2	BOLT	7
02-29	PM4000-HLT8-4K-020700	CONDUIT	1
02-30	PM4000-FN.B-M6x10-8.8-DIN-1	BOLT	4
02-31	PM4000-HLT8-4K-011900	LOCKPIN	1
02-32	PM4000-HLT8-4K-021100	PULLEY A	2
02-33	PM4000-W01-6002LLU-J	BEARING	8
02-34	PM4000-CH.RG32	INTERNAL CIRCLIP	8

## PM4000

NO.	PART NO.	PART DESCRIPTION	QTY
02-35	PM4000-HLT8-4K-021300	BUSH	16
02-36	PM4000-FN.B-M10x40-8.8-DIN-2	BOLT	12
02-37	PM4000-N.N-M10-DIN-2	LOCK NUT	18
02-38	PM4000-FN.B-M5x35-8.8-DIN-2	BOLT	6
02-39	PM4000-FN.W5-DIN-2	WASHER	6
02-40	PM4000-IN.N-M5-DIN-2	LOCK NUT	6
02-41	PM4000-IN.N-M6-DIN-2	LOCK NUT	16
02-42	PM4000-HLT8-4K-021400	UPPER ANGULAR FOR MAST	4
02-43	PM4000-HLT8-4K-021500	BLOCKING PLATE	4
02-44	PM4000-FN.B-M6x30-8.8-DIN-2	BOLT	16
02-45	PM4000-HLT8-4K-020200	2nd MAST	1
02-46	PM4000-HLT8-4K-022300	STEEL CABLE	1
02-47	PM4000-FN.B-M10x55-8.8-DIN-2	BOLT	2
02-48	PM4000-HLT8-4K-021600	NYLON DOWEL	4
02-49	PM4000-HSF.S-M6x16-8.8-DIN-2	SOCKET COUNTERSUNK HEAD CREW	8
02-50	PM4000-HLT8-4K-021200	PULLEY	6
02-51	PM4000-HLT8-4K-021700	LIMIT PLATE FOR STEEL CABLE	1
02-52	PM4000-HLT8-4K-020300	3rd MAST	1
02-53	PM4000-HLT8-4K-020400	4th MAST	1
02-54	PM4000-HLT8-4K-020500	5th MAST	1
02-55	PM4000-HLT8-4K-020600	6th MAST	1
02-56	PM4000-HLT8-4K-022100	STEEL CABLE	1
02-57	PM4000-HLT8-4K-022200	STEEL CABLE	3
02-58	PM4000-HLT8-4K-023000	PIASTIC CAP	1
02-59	PM4000-HS.B-M6x16-8.8-GB-2	SCREW	1

PM4000

### 18.3 SPARE PARTS LIST FOR FLOODLIGHT GROUP



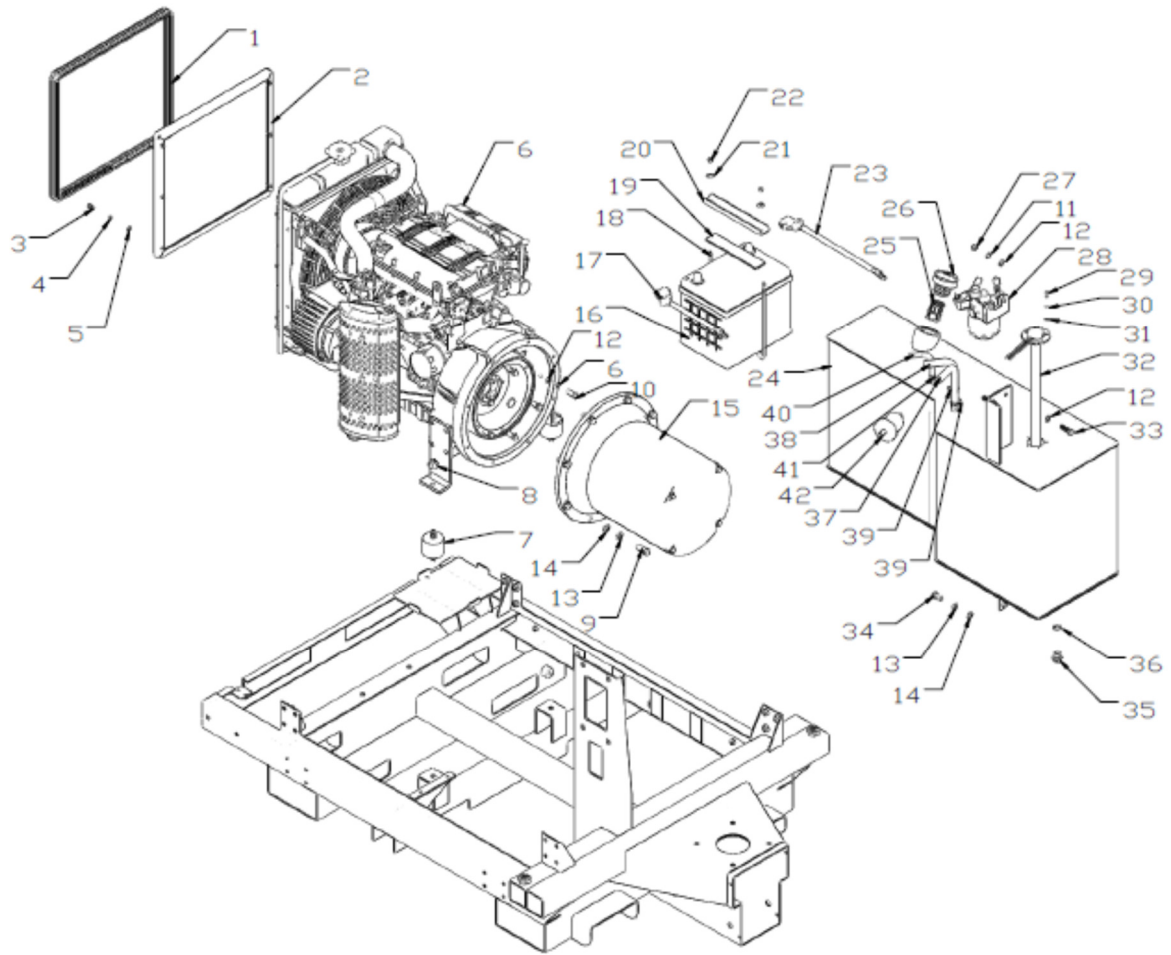


## PM4000

NO.	PART NO.	PART DESCRIPTION	QTY
03-1	PM4000-HLT8-4K-030100	FLOODLIGHT FRAME	1
03-2	PM4000-HLT8-4K-030700	COVER	2
03-3	PM4000-HLT8-4K-030200	ELECTRIC BOX COVER	1
03-4	PM4000-FN.B-M10x20-8.8-DIN-2	BOLT	5
03-5	PM4000-HSPG.W10-DIN-2	SPRING WASHER,TANG ENDS	9
03-6	PM4000-FN.W10-DIN-2	WASHER	17
03-7	PM4000-HLT8-4K-030400	UPPER SUPPORT FLOODLIGHT	2
03-8	PM4000-FN.B-M10x90-8.8HALF-DIN-2	BOLT	2
03-9	PM4000-HLT8-4K-030800	CLAMPING HANDLE	4
03-10	PM4000-FN.B-M10x25-8.8-DIN-2	BOLT	4
03-11	PM4000-IN.N-M10-DIN-2	LOCK NUT	6
03-12	PM4000-HLT8-4K-030300	LOWER SUPPORT FLOODLIGHT	2
03-13	PM4000-HLT8-4K-030500	LAMPSHADE	4
03-14	PM4000-HLT8-4K-030600	LAMP	4
03-15	PM4000-HLT8-4K-030900	ELECTRIC BOX	1
03-16	PM4000-HLT8-4K-031000	IGNITER	4
03-17	PM4000-WOD.W6-GB-2	WASHER	4
03-18	PM4000-FN.B-M6x20-8.8-DIN-2	BOLT	4
03-19	PM4000-HSPG.W6-DIN-2	SPRING WASHER,TANG ENDS	4
03-20	PM4000-HLT8-4K-052200	CABLE GLAND	1
03-21	PM4000-HLT8-4K-031100	CABLE GLAND	4
03-22	PM4000-FN.W6-DIN-2	WASHER	4
03-23	PM4000-FN.N-M6-DIN-2	NUT	4

PM4000

### 18.4 SPARE PARTS LIST FOR GENERATOR UNIT



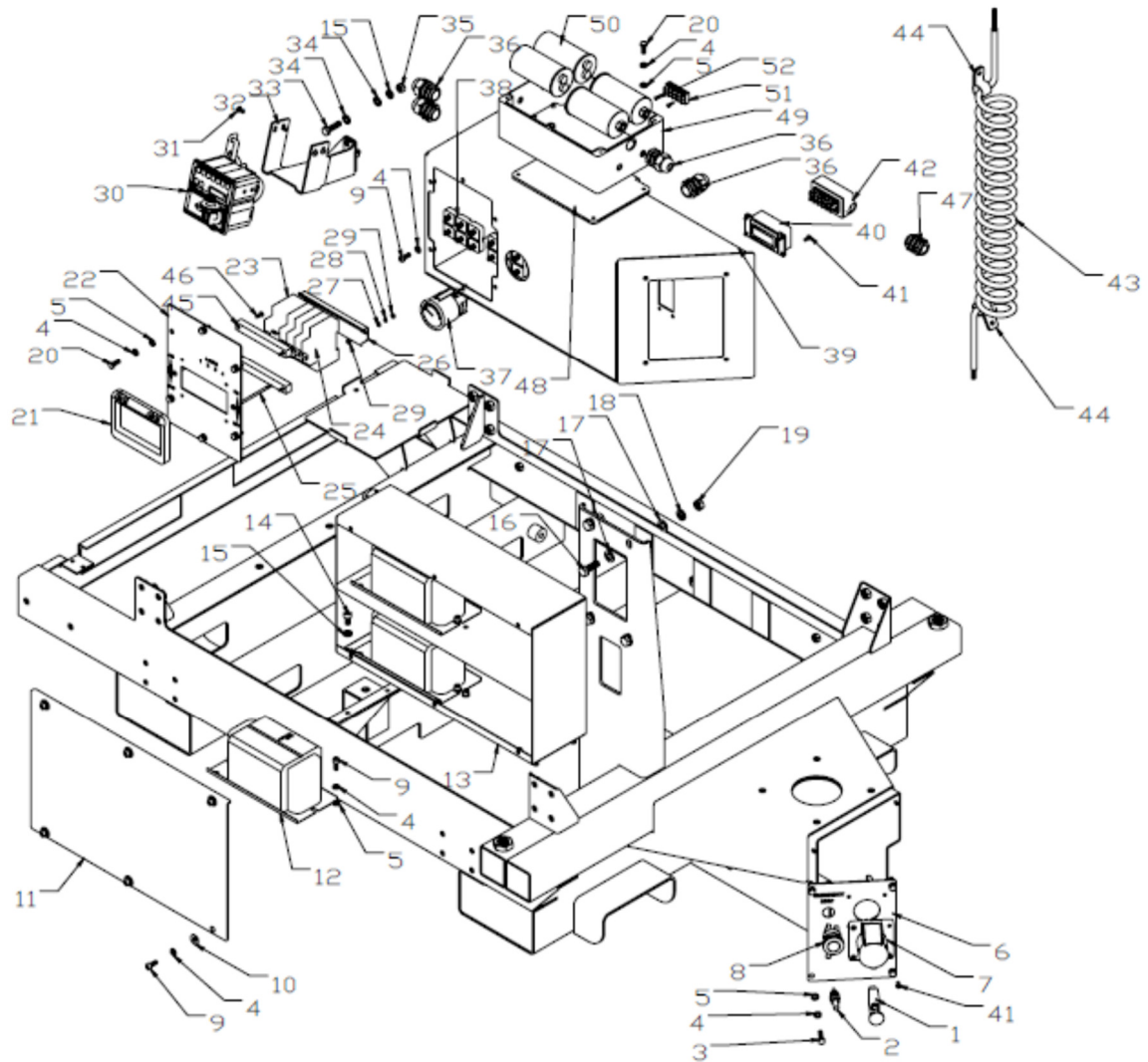
PM4000

NO.	PART NO.	PART DESCRIPTION	QTY
04-1	PM4000-HLT8-4K-040300	GASKETING	1
04-2	PM4000-HLT8-4K-040100	BRACKET FOR RADIATOR	1
04-3	PM4000-FN.B-M6x12-8.8-DIN-2	BOLT	6
04-4	PM4000-HSPG.W6-DIN-2	SPRING WASHER,TANG ENDS	6
04-5	PM4000-FN.W6-DIN-2	WASHER	6
04-6	PM4000-W05-PH-KDW1003-5015B	DIESEL ENGINE 1800RPM	1
	PM4000-W05-PH-KDW1003 /ED794824-2	DIESEL ENGINE 1500RPM	
04-7	PM4000-90B-030100	SHOCK ABSORBER	4
04-8	PM4000- HF.N-M12-DIN-2	FLANGE NUT	4
04-9	PM4000-FN.B-3 / 8-16 × -1 1 / 4-2	BOLT	8
04-10	PM4000-FN.B-5 / 16-18 × 1 -2	BOLT	6
04-11	PM4000- HSPG.W8-DIN-2	SPRING WASHER,TANG ENDS	8
04-12	PM4000-FN.W8-DIN-2	WASHER	10
04-13	PM4000-HSPG.W10-DIN-2	SPRING WASHER,TANG ENDS	11
04-14	PM4000-FN.W10-DIN-2	WASHER	11
04-15	PM4000-HLT8-4K-040700	ALTERNATOR 60Hz	1
	PM4000-W17-LT3N-160/4-50HZ	ALTERNATOR 50Hz	
04-16	PM4000-800-000001D	BATTERY	1
04-17	PM4000-400D-132242B	CATHODE WIRE	1
04-18	PM4000-800-080800	PULL ROD	1
04-19	PM4000-800-081000	UP UNDERLAY	2
04-20	PM4000-800-081100	FIXED PLATE	1
04-21	PM4000-WOD.W6-GB-2	WASHER	1
04-22	PM4000-N.N-M6-DIN-2	LOCK NUT	2
04-23	PM4000- 400D-132243B	ANODE WIRE	2
04-24	PM4000-HLT8-4K-040200	FUEL TANK	1
04-25	PM4000-70ND-010114	STRAINER	1
04-26	PM4000-01-3150-1415-01	FUEL TANK CAP WITH LOCK	1
04-27	PM4000-FN.N-M8-DIN-2	NUT	1
04-28	PM4000-HLT8-4K-040900	FUEL FILTER	4
04-29	PM4000-FN.B-M5x12-8.8-DIN-2	BOLT	5
04-30	PM4000-SPG.W5-DIN-2	SPRING WASHER	5
04-31	PM4000-FN.W5-DIN-2	WASHER	5
04-32	PM4000-HLT8-4K-040800	FUEL LEVEL SENSOR	1
04-33	PM4000-FN.B-M8x35-8.8-DIN-2	BOLT	2
04-34	PM4000-FN.B-M10x20-8.8-DIN-2	BOLT	3

## PM4000

<b>NO.</b>	<b>PART NO.</b>	<b>PART DESCRIPTION</b>	<b>QTY</b>
04-35	PM4000-HHOS.B-M16x1.5	HEXAGON HEAD PLUG	1
04-36	PM4000-GB97.1-M16	CUPRUM WASHER	1
04-37	PM4000-HLT8-4K-041000	INLET PIPE	1
04-38	PM4000-HLT8-4K-041100	BREATH PIPE	1
04-39	PM4000-OOP.D8-20	HOSE CLAMP	2
04-40	PM4000-HLT8-4K-041200	OIL RETURN PIPE	1
04-41	PM4000-85d-000026	HOSE CLAMP	1
04-42	PM4000-01-1150-1512-01	DIESEL FILTER 1	1

### 18.5 SPARE PARTS LIST FOR COMMAND PANEL



PM4000

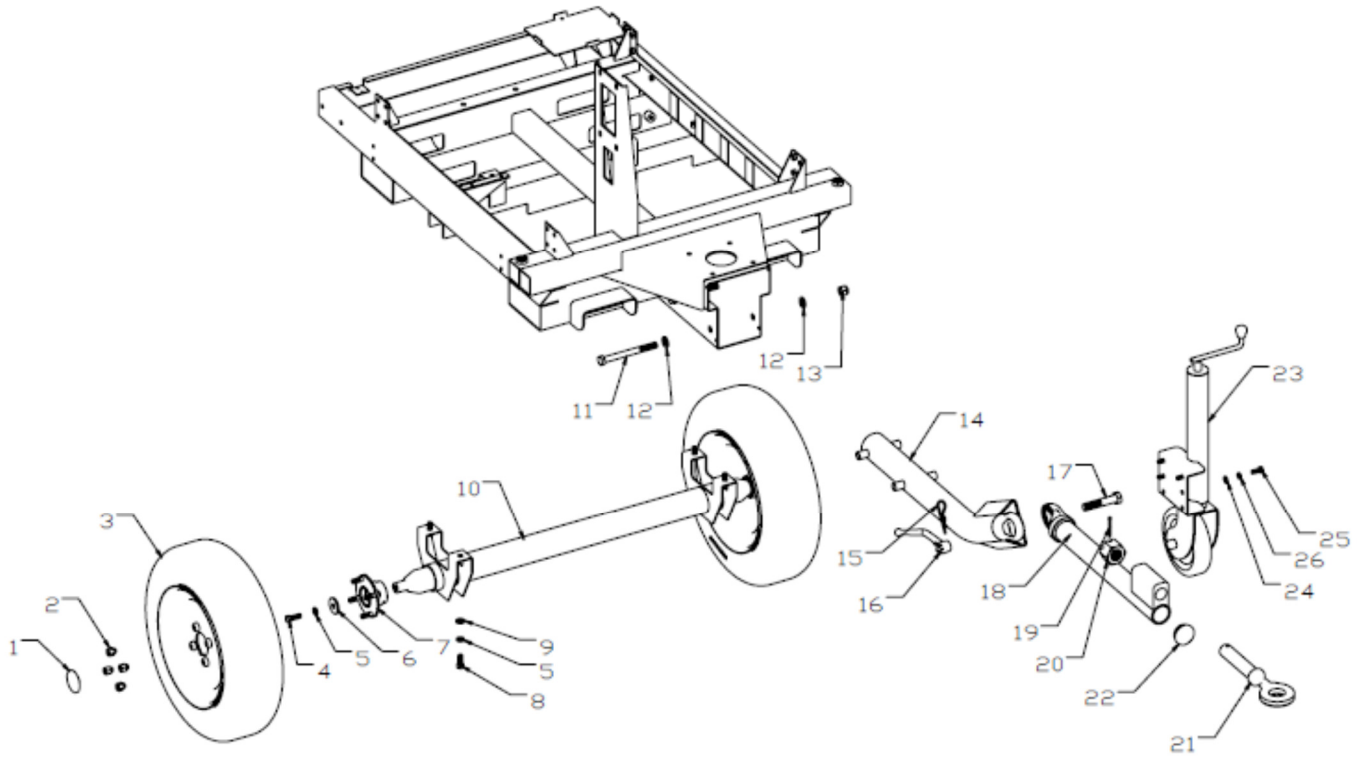
NO.	PART NO.	PART DESCRIPTION	QTY
05-1	PM4000-HLT8-4K-051100	BUTTON BREAKER	1
05-2	PM4000-HLT8-4K-051200	EARTH CLAMP CONNECTION	1
05-3	PM4000-FN.B-M6x25-8.8-DIN-2	BOLT	4
05-4	PM4000-HSPG.W6-DIN-2	SPRING WASHER,TANG ENDS	34
05-5	PM4000-N.W6-DIN-2	WASHER	22
05-6	PM4000-HLT8-4K-050400	CONTROL PANEL B	1
05-7	PM4000-HLT8-4K-051000	SINGLE PHASE SOCKET	1
05-8	PM4000-HLT8-4K-20A-020210	SAFETY SWITCH	1
05-9	PM4000-HS.B-M6x16-8.8-GB-2	SCREW	14
05-10	PM4000-WOD.W6-GB-2	WASHER	6
05-11	PM4000-HLT8-4K-050300	COVER FOR BALLAST	1
05-12	PM4000-HLT8-4K-051900	BALLAST	4
05-13	PM4000-HLT8-4K-050200	BOX FOR BALLAST	1
05-14	PM4000-HS.B-M8x16-8.8-GB-2	SCREW	4
05-15	PM4000-HSPG.W8-DIN-2	SPRING WASHER,TANG ENDS	6
05-16	PM4000-FN.B-M10x25-8.8-DIN-2	BOLT	4
05-17	PM4000-FN.W10-DIN-2	WASHER	8
05-18	PM4000-HSPG.W10-DIN-2	SPRING WASHER,TANG ENDS	4
05-19	PM4000-FN.N-M10-DIN-2	NUT	4
05-20	PM4000-FN.B-M6x16-8.8-DIN-2	BOLT	6
05-21	PM4000-HLT8-4K-050900	CIRCUIT BREAKER PROTECTION	1
05-22	PM4000-HLT8-4K-050500	CONTROL PANEL A	1
05-23	PM4000-HLT8-4K-050600	EARTH LEAKAGE RELAY	1
05-24	PM4000-HLT8-4K-050700	CIRCUIT BREAKER	4
05-25	PM4000-PAN.S-M4x90-GB-2	PAN HEAD SCREW	2
05-26	PM4000-HLT8-4K-050800	CIRCUIT BREAKER BRACKET	1
05-27	PM4000-FN.W4-DIN-2	WASHER	2
05-28	PM4000-SPG.W4-DIN-2	SPRING WASHER	2
05-29	PM4000-FN.N-M4-DIN-2	NUT	4
05-30	PM4000-HLT8-4K-052100	ENGINE STARTING PANEL	1
05-31	PM4000-PAN.S-M5x10 -GB-3	PAN HEAD SCREW	4
05-32	PM4000-HLT8-4K-052000	STARTING PLAN SUPPORT	1
05-33	PM4000--FN.B-M8x30-8.8-DIN-2	BOLT	2
05-34	PM4000-FN.W8-DIN-2	WASHER	4

## PM4000

NO.	PART NO.	PART DESCRIPTION	QTY
05-35	PM4000-FN.N-M8-DIN-2	NUT	2
05-36	PM4000-HLT8-4K-052200	CABLE GLAND	5
05-37	PM4000-HLT8-4K-051400	FUEL GAUGE	1
05-38	PM4000-HLT8-4K-051300	6 POLES TERMINAL BOARD	3
05-39	PM4000-HLT8-4K-050100	JUNCTION BOX	1
05-40	PM4000-HLT8-4K-051500	10 POLES SOCKET	1
05-41	PM4000-PAN.S-M4x10-GB-2	PAN HEAD SCREW	8
05-42	PM4000-HLT8-4K-051600	10 POLES PLUG	1
05-43	PM4000-HLT8-4K-051700	SPRING CABLE	1
05-44	PM4000-HLT8-4K-051800	R-CLAMP	2
05-45	PM4000-HLT8-4K-052300	SPACER	2
05-46	PM4000-ST4x13	TAPPING SCREW	4
05-47	PM4000-HLT8-4K-052200	CABLE GLAND	
05-48	PM4000-HLT8-4K-052800	BRACKET FOR CAPACITOR BOX	
05-49	PM4000-HLT8-4K-052600	CAPACITOR BOX	
05-50	PM4000-HLT8-4K-052700	CAPACITOR	
05-51	PM4000-HLT8-4K-053300	5 POLES TERMINAL BOARD	
05-52	PM4000-ST3X13	SCREW	

PM4000

### 18.6 SPARE PARTS LIST FOR SLOW TOWING



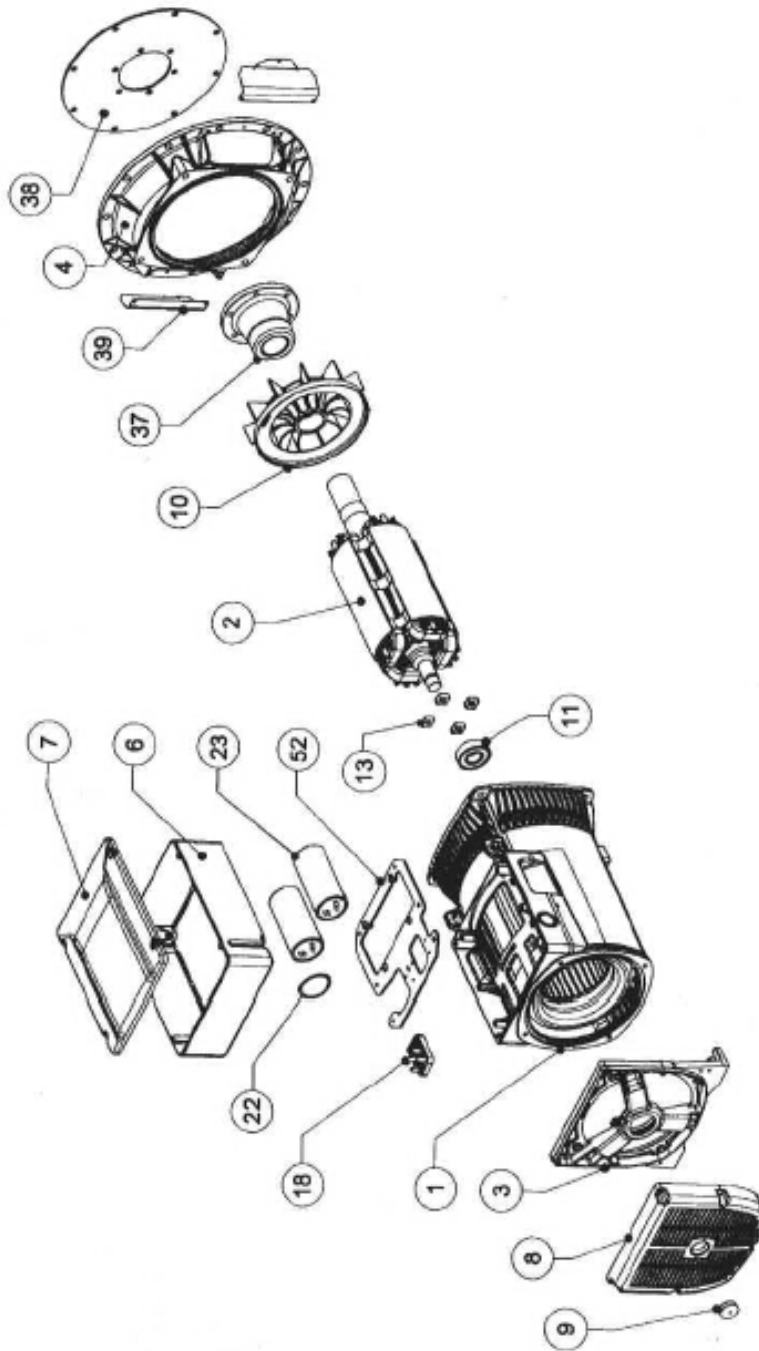


## PM4000

NO.	PART NO.	PART DESCRIPTION	QTY
06-1	PM4000-HLT8-4K-060600	DUST CAP	2
06-2	PM4000-HLT8-4K-060500	HUB NUT	8
06-3	PM4000-HLT8-4K-060400	WHEEL	2
06-4	PM4000-FN.B-M12x35-8.8-DIN-2	BOLT	2
06-5	PM4000-HSPG.W12-DIN-2	SPRING WASHER,TANG ENDS	6
06-6	PM4000-HLT8-4K-060300	WASHER	2
06-7	PM4000-HLT8-4K-060200	HUB UNIT	2
06-8	PM4000-N.B-M12x30-8.8-DIN-2	BOLT	4
06-9	PM4000-FN.W12-DIN-2	WASHER	4
06-10	PM4000-HLT8-4K-060100	AXLE	1
06-11	PM4000-FN.B-M16x170-8.8HALF-DIN-2	BOLT	2
06-12	PM4000-FN.W16-DIN-2	WASHER	4
06-13	PM4000-N.N-M16-DIN-2	LOCK NUT	2
06-14	PM4000-HLT8-4K-060700	DRAG ROD	1
06-15	PM4000-SCP.PIN-5x100-DIN-2	SPRING COTTER	1
06-16	PM4000-HLT8-4K-061000	SLOTTED NUT WITH HANDLE	1
06-17	PM4000-HLT8-4K-060900	BOLT	1
06-18	PM4000-HLT8-4K-060800	ADJUSTMENT ROD	1
06-19	PM4000-SP.PIN-5x50-GB-2	SPLIT PIN	1
06-20	PM4000-S.N-M36-GB-1	SLOTTING NUT	1
06-21	PM4000-HLT8-4K-061300	TOWING EYE	1
06-22	PM4000-HLT8-4K-061200	PLASTIC CAP	1
06-23	PM4000-HLT8-4K-061100	ADJUSTABLE SUPPORT FOOT	1
06-24	PM4000-FN.W10-DIN-1	WASHER	4
06-25	PM4000-FN.B-M10x25-8.8-DIN-2	BOLT	4
06-26	PM4000-HSPG.W10-DIN-2	SPRING WASHER,TANG ENDS	4

PM4000

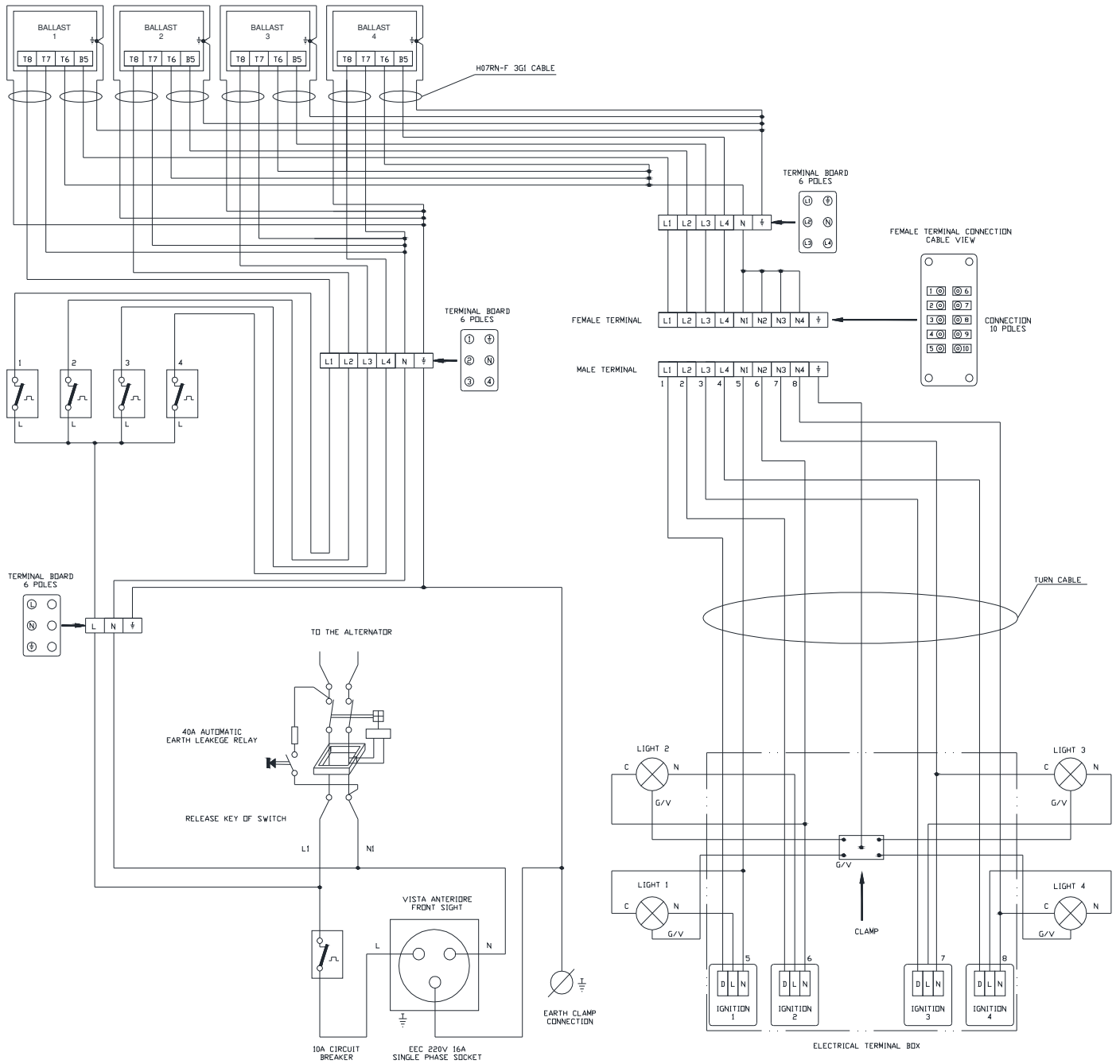
### 18.7 SPARE PARTS LIST FOR ALTERNATOR



<b>Items</b>	<b>Code</b>	<b>Denomination</b>
-	7833	E1C13SD/4 9kVA Linz alternator complete
1	7833-1	Frame with alternator
2	7833-2	Rotatine inductor
3	7833-3	Rear shield
4	7833-4	Sae 5 front cover
6	7833-6	Terminal box
7	7833-7	Terminal box cover
8	7833-8	Rear cover
9	7833-9	Rear plug
10	7833-10	Fan
11	7833-11	Rear bearing
13	7833-13	Diode
18	7833-18	4 stud terminal board
22	7833-22-55	Capacitor clamp
23	7833-23-55	40 $\mu$ F capacitor
37	7833-37	Coupling hub
38	7833-38	Sae coupling disc plate
39	7833-39	MD35 front cover protection
52	7833-52	Capacitors base

## 19. WIRING DIAGRAM

### 19.1 LIGHTING TOWER WIRING DIAGRAM



PM4000

## **19.2 ENGINE WIRING DIAGRAM**

**PLEASE REFERENCE ENGINE OWNER'S MANUAL**