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LIGHTING TOWER
FOR STATIONARY USE
USE AND MAINTENANCE MANUAL

CE

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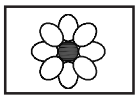
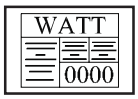
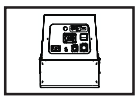
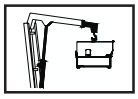
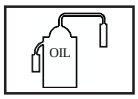
Machine specifications can be modified at any time without any obligation to update this publication. It is recommended to read this manual thoroughly because incorrect operation may result in the warranty being void. Therefore it is also recommended to use only original MASE GENERATORS spare parts.

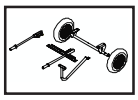


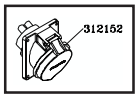


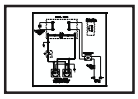












01.1 THIS PUBLICATION

The "USE AND MAINTENANCE MANUAL", published by the manufacturer, is an integral part of the power generator. The manual is identified by a publication identifier, printed on the cover page and repeated at the foot of every page, which allows the reader to identify and locate the publication and/or make subsequent reference to it.
All the information included herein is brought up to the date of publishing. The manufacturer reserves the right to modify it without notice, and accepts no responsibility for any error and/or omission.

01.2 PURPOSE

The USE AND MAINTENANCE MANUAL is intended for users and holds all the information necessary for using the product and perform its regular maintenance. Good working conditions, long life of the power generator, and the protection and safety of users, will be dependent upon strict observance of the instructions included in this manual. It is advisable to read thoroughly and observe the directions included in this publication, which are organised, as far as possible, according to the chronological sequence of operations when approaching the unit.

01.3 REFERENCE TO REGULATIONS

This manual has been produced according to the regulations provided by:
– Attachment "I" to 2006/42/CE 98/37/EC Directive and subsequent amendments (paragraphs "b", "c" of article 1.1.2 and article 1.7.4);
– UNI EN 292/2 - 1992, article 5.5.
This generator is complying with the provisions of the following directives:
– 2006/42/EC: Machine Directive (former 98/37/EC);
– 89/336/EC, 93/68/EC: Electromagnetic Compatibility Directive;
– 73/23/EC: Low Voltage Directive;
– 2000/14/EC: Noise Emission in the Environment Directive.

SOME NOTES ABOUT NOISE EMISSION (2000/14/EC Directive)

Sound power level (L_{WA}):
Indicates the level of noise as required by the European Directive. It represents the amount of sound energy emitted in the time unit and is a characteristic of the sound source independent of the distance from the point of measurement. dB(A) is the unit of measurement.

Sound pressure (Lp):
Measurement of the pressure generated by the emission of sound waves taken at a certain distance from the source. Its value changes with the distance from the source and is also measured in dB(A).
WARNING! Special attention must be paid to avoiding confusion between L_{WA} and Lp. In this manual the noise emission is indicated as sound power level (L_{WA}) and sound pressure (Lp) as well. Sound pressure values (Lp), as a function of distance, can be calculated for equipment with a given sound power level (L_{WA}) using the following table:
Lp at 1 m = L_{WA} -8 dB
Lp at 4 m = L_{WA} -20 dB
Lp at 7 m = L_{WA} -25 dB
Lp at 10 m = L_{WA} -28 dB
Lp at 16 m = L_{WA} -32 dB
Example: for equipment with L_{WA} = 90 dB:
Lp at 1 m = 90 dB - 8 dB = 82 dB
Lp at 4 m = 90 dB - 20 dB = 70 dB
Lp at 7 m = 90 dB - 25 dB = 65 dB
Lp at 10 m = 90 dB - 28 dB = 62 dB
Lp at 16 m = 90 dB - 32 dB = 58 dB
The Directive 2000/14/EC specifies that the limits of sound emissions are dependent on the power output of power generators or welding generators. The limits set down by this Directive are relating to the sound power level guaranteed and not to the sound power level measured, which does not take account of all the possible variables resulting from either the production stage or the different measurement procedures.
The reduction of the limits provided for has been divided in two phases: the first phase in force from 03/01/02 and the second phase in force from 03/01/06. The following table shows the sound power levels (L_{WA}) approved for power generators and welding generators.

Electric power output P_{el} kW	Sound power level permitted from 03/01/02 Phase 1	Sound power level permitted from 03/01/06 Phase 2
$P_{el} \leq 2$	L_{WA} dB (A) 97 + log P_{el}	L_{WA} dB (A) 95 + log P_{el}
$2 < P_{el} \leq 10$	L_{WA} dB (A) 98 + log P_{el}	L_{WA} dB (A) 96 + log P_{el}
$10 > P_{el}$	L_{WA} dB (A) 97 + log P_{el}	L_{WA} dB (A) 95 + log P_{el}

The Directive 2000/14/EC requires that the power generator or welding generator is marked with the sound power level guaranteed and the CE Marking relating to the EC Declaration of Conformity.
The marking of the sound power level guaranteed consists of a number in dB, the L_{WA} mark and the specific symbol:

01.4 USING THIS MANUAL

"Symbols" are used along with text to highlight and point out visually the relevance of different types of information. Graphic representation of symbols and their meaning:

Points out to important complementary information.

The non-observance of associated directions can cause damage, even irreparable, to the power generator.

Points out to possible situations dangerous for people.

This manual, together with appendices and any inclusions, must be kept with the utmost care and always be unabridged, undamaged and readable in its entirety.
If lost, a copy must be promptly requested to the manufacturer.

01.5 TERMINOLOGY

Explanation of some of the terms relating to the power generator and used in this publication.

FRONT: the part of the unit where the control panel is located.

BACK: the opposite part.

RIGHT OR LEFT SIDE: referred to an operator standing in front of the unit and looking at the control panel.

01.6 ABBREVIATIONS

A	ampere
V	volt
ca	alternate current
cc	direct current
3F + N	three phase plus neutral
Ah	ampere / hour
Hz	hertz
hp	horsepower (1hp = 0,736 kW)
cos φ	power factor
kW	kilowatt
kWm	kilowatt motor
kVA	kilovolt ampere
kg	kilogram
l	litre
l/h	litre / hour
mm	millimetre
m	metre
s	second
°C	degree Celsius
L_{WA}	sound power level
Lp	sound pressure
dB(A)	decibel

Read carefully the instructions for use; operate according to the regulations in force in your country.

02.1 SAFETY PRECAUTIONS TO BE OBSERVED

WHEN FUELLING

Engine fuel can cause fire or explosion:
- Stop the engine before fuelling and let the machine cool.
- Do not fuel while smoking or near sparks or flames.
- Do not overfill the tank. In case, clean up any spilled fuel immediately before starting the engine.

WHEN PERFORMING MAINTENANCE

- Always switch off the generator before performing any service.
- It is not advisable that maintenance operations are performed by unskilled personnel.
- Always use the necessary individual protection equipment.
- The battery contains sulphuric acid in solution, and can cause explosion:
  - Always disconnect the battery.
  - Never short battery's positive and negative terminals, as this can cause battery explosion.
  - Battery explosion can cause burns and blindness.
  - Always wear protection gloves, face masks and acid resistant cloth.
- In case of contact with acid do the following:
  - In case of splash of acid into the eyes: wash immediately with clean water and seek medical advice as soon as possible.
  - In case of splash of acid on the skin: wash immediately with clean water and seek medical advice as soon as possible.
  - In case of ingestion of acid: seek medical advice immediately.
- When checking the engine oil level or changing the oil:
  - Beware: hot oil can cause burns. Always wear protective gloves.

BEFORE STARTING THE GENERATOR

- Connect the power generator to earth using the proper terminal and a cable of suitable size without interposing switches or other devices capable of breaking the electrical connection. Make sure that no load is connected to the machine.

WHEN MOVING THE GENERATOR

- When transporting the generator to the place of use, it must be firmly fastened to the vehicle.
- When moving and transporting the generator, do not tilt excessively.
- Lift the generator using the lifting eye provided on the top of the unit.
- If it is necessary to lift the generator using a forklift, the position of forks in such a way as to balance the generator weight correctly.
- When lifting and moving the generator, do not stay or walk within the proximity of the lifting and moving equipment.
- Never leave the generator slung overhead.

WHEN USING THE GENERATOR

- Check that the generator is properly connected to earth.
- Check that your tools' cables are in perfect conditions.
- Make sure that switches and controls are correctly set for starting (see Chapter 07).
- Operate the generator in well-ventilated areas, making sure that the exhaust is not restricted.
- Keep the generator away from walls or other obstructions to avoid the hot air or exhaust recycling that would cause generator overheating.
- Use fume extractors to ensure the correct air turnover when operating indoors.
- Do not operate near flammable materials.
- Fill fuel tank when engine is stopped. Do not smoke when fuelling.
- Do not overfill the tank and clean up any spilled fuel.

• Check the level of any liquids that may leak into the bund.. Empty the bund if necessary. Do not dump the liquids onto land but dispose of them according to the local legislation.
• Check daily that there are no leaks of liquids from the engine.

Do not disconnect the battery cables when the power generator is running.

USES NOT ALLOWED

• Do not connect the power generator to the commercial electrical grid.
• Do not operate near flammable materials or if explosive gases or vapours are present.
• Do not operate in narrow or poorly ventilated places.
• Do not operate if the electrical protections are not effective.
• Do not touch the silencer and the engine parts close to it.
• Do not perform service when the engine is running.
• Do not tamper with electrical components.
• Any service operation on electrical components must be performed after stopping the engine and by skilled personnel.
• Stay away from moving parts and do not get close wearing loose clothing, ties, necklaces, bracelets, and anything that can be caught by moving parts.

02.2 RISKS FOR THE OPERATOR WHEN USING THIS UNIT

ELECTRIC SHOCK

Electric shock can injure or kill. This electric energy can cause severe or fatal shock to the operator or others in the workplace.
• Always connect the generator to earth.
• Never touch any parts that are electrically live.
• Repair or replace all worn or damaged parts.
• Install and maintain equipment according to regulations.
• Switch off the generator and disconnect the battery before performing any service or repairs.
• Read and follow all the instructions in this Manual.

FIRE AND EXPLOSION

Fire and explosion can be caused by hot slag or sparks.
• Be sure there is no combustible or flammable material in the workplace. Any material that cannot be removed must be protected.
• Ventilate all flammable or explosive vapours from the workplace.
• Do not cut or weld on containers that may have held combustibles.
• Provide a fire watch when working in an area where fire hazards may exist.

NOISE

Noise can cause permanent hearing loss.
You must protect your ears from loud noise to prevent loss of hearing.
• To protect your hearing, wear protective ear plugs and/or earmuffs. Protect others in the workplace.
• Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.
• For information on how to measure noise, please refer to Section 01.3 on page 5.

GASES AND FUMES

Combustion gases produced by the machine, if inhaled, are hazardous to your health. Make sure that these can dissipate in the atmosphere without obstructions.

02.3 PROTECTIVE CLOTH RECOMMENDED FOR OPERATORS

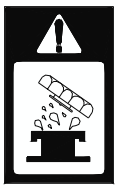
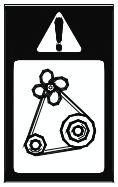
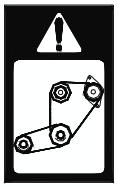
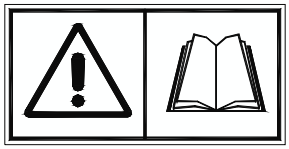
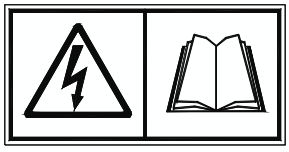
It is recommended that operators wear the following equipment:
• Coveralls
• Medium/heavy duty gloves
• Acid resistant gloves (only for battery maintenance)
• Protective ear plugs and/or earmuffs

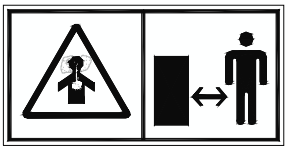
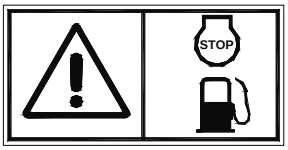
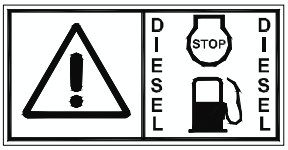
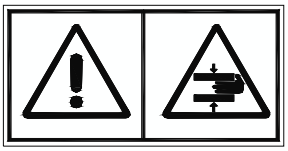
N.B.: material not supplied.

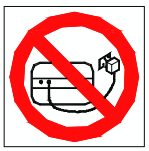
02.4 MEANING OF SAFETY SIGNS

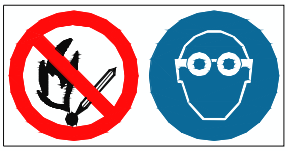
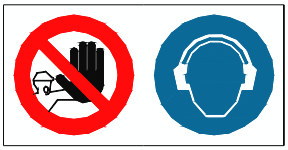
These signs inform the user about any hazards that can cause severe injury. Read carefully the meanings and precautions indicated in this manual.

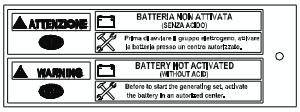
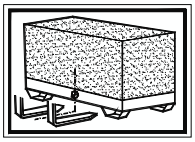
If the original stickers attached to the machine get lost, damaged or even partially unreadable, they must be replaced.

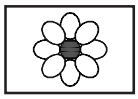
Danger signs	Meaning
	Danger of electric discharges.
	Danger: the generator can be started remotely, do not stay in the proximity.
	Danger of burns: hot surfaces.
	Danger: do not open when the engine is hot.
	Danger: belt and fan propeller. Turn off the generator before opening covers or raising the canopy.
	Danger: belt. Turn off the generator before opening covers or raising the canopy.
	Read and understand the Use and Maintenance Manual before operating the generator. The machine has been designed in such a way as to guarantee the safe and reliable operation, as long as the instructions are followed; otherwise personal injury or equipment damage could result.
	Danger of electric discharges: read the manual.

Danger signs	Meaning
	Danger of burns! Do not touch the exhaust manifold or the engine when the generator is in operation. Stay away from the generator.
	Exhaust gases contain carbon monoxide, and other components dangerous to your health.. Never operate the generator in a closed room. If installed inside, strictly observe the rules in force about ventilation.
	Fuels are extremely flammable, and in certain conditions even explosive. Fuel in a well ventilated area and after stopping the engine. Do not bring close cigarettes, sparks or flames while fuelling. Clean any petrol spill immediately.
	Fuels are extremely flammable, and in certain conditions even explosive. Fuel in a well ventilated area and after stopping the engine. Do not bring close cigarettes, sparks or flames while fuelling. Clean any diesel oil spill immediately.
	Danger of leaks of corrosive liquids.
	Danger of crushing the upper limbs.

Prohibition signs	Meaning
	Electrical connections to an emergency grid must be carried out by qualified electricians and in conformity with the rules in force on that matter. Improper connections can result in current returns from generator to connected lines. Such current returns can result in electric shocks received by workers of the electric company or by people coming into contact with electric lines during failure recovery. Moreover, as soon as the line is recovered, the generator can explode, burn or cause fires in the building electrical system.
	Prohibition of cleaning, lubricating, repairing or adjusting moving parts.
	Prohibition of extinguishing fires with water; use fire extinguishers containing proper extinguishing agents.
	Prohibition of using flames or smoking.

Obligation signs	Meaning
	Do not go close to the generator with flames. Obligation of wearing protection goggles when using grinders, power tools etc., connected to the generator.
	Do not perform service when the generator is in operation. Wear protective ear plugs and/or earmuffs when close to the generator.

Information signs	Meaning
	Indicates the location of a point for lifting the generator unit.
	This card warns that the battery that the has no acid. Before starting the generator, prepare the battery according to the instructions of Chapter "06".
	Marks the position of the points for lifting the unit using a fork lift.



03.1 WASTE MATERIAL AND LUBRICATING OIL

When running, the generator produces no waste material. Spare parts replaced during the unit life and the lubricating oil are counted as waste, and must be disposed of according to the laws in force in the country where the generator is located.

03.2 DISPOSAL OF THE UNIT

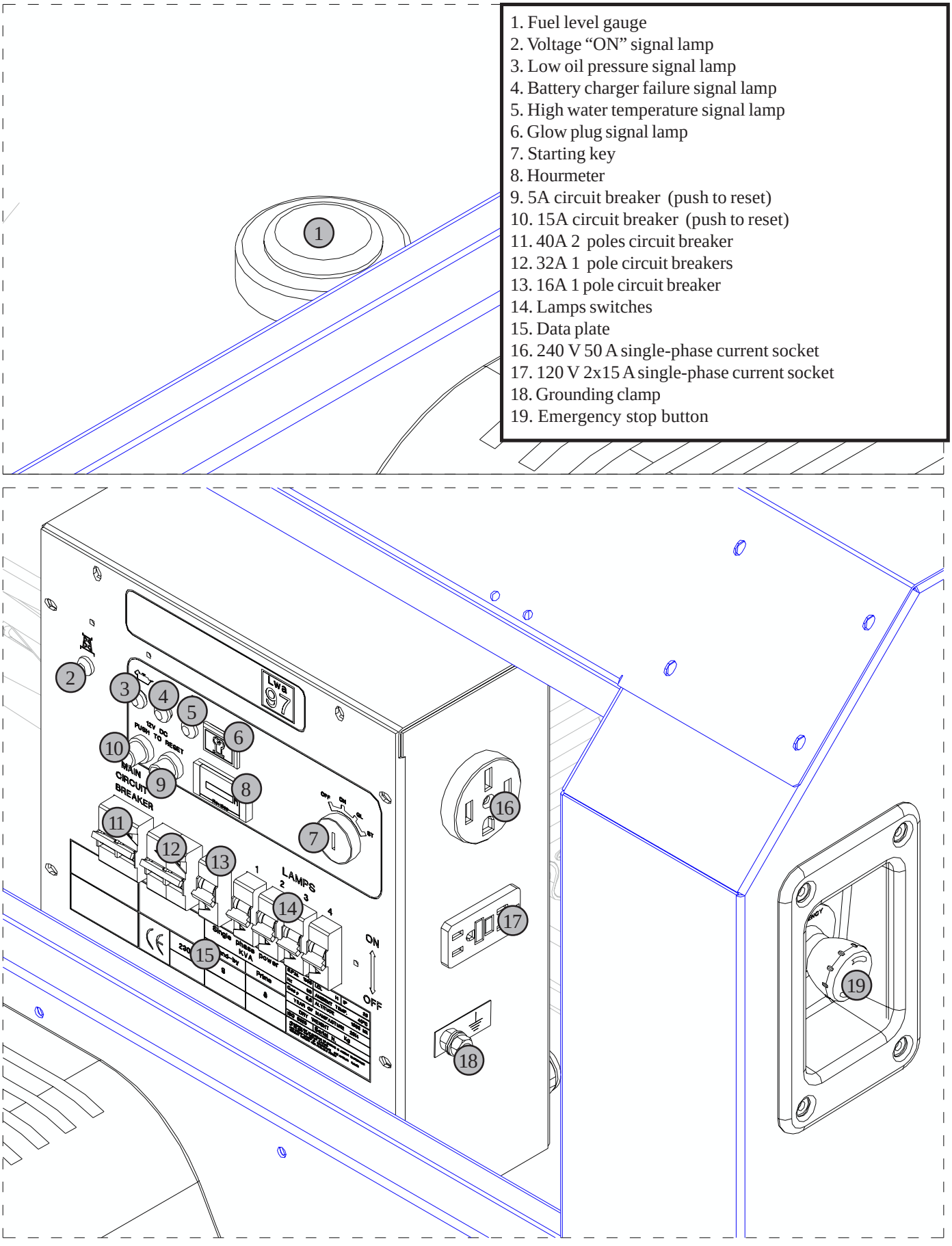
Procedure

1. Disassemble the unit and classify its components according to the following rule:
- Reusable components
- Components made of recyclable material
- Components to be disposed of and lubricating oil (waste)

The parts so disassembled must be disposed of according to the laws in force in the country where the power generator is located.

Do not dispose of any type of lubricating oil, mineral or synthetic, onto land,drains or sewers.
Dispose of batteries as instructed by local legislation.

04.1 CONTROL PANEL DESCRIPTION



1. Fuel level gauge
2. Voltage “ON” signal lamp
3. Low oil pressure signal lamp
4. Battery charger failure signal lamp
5. High water temperature signal lamp
6. Glow plug signal lamp
7. Starting key
8. Hourmeter
9. 5A circuit breaker (push to reset)
10. 15A circuit breaker (push to reset)
11. 40A 2 poles circuit breaker
12. 32A 1 pole circuit breakers
13. 16A 1 pole circuit breaker
14. Lamps switches
15. Data plate
16. 240 V 50 A single-phase current socket
17. 120 V 2x15 A single-phase current socket
18. Grounding clamp
19. Emergency stop button

WATT 0000

05.1 GENERATOR

Type	Synchronous
Single phase power (Standby Power)	9 kVA - 240 V (according to DIN 6271)
Single phase power (Prime Power)	8 kVA - 240 V (according to DIN 6271)
Single phase power (Standby Power)	4,5 kVA - 120 V (according to DIN 6271)
Single phase power (Prime Power)	4 kVA - 120 V (according to DIN 6271)
Frequency	60 Hz
Power factor	0,8
Insulation class	H
Degree of protection	IP 23

Prime power: 10% overload permitted for 1 hour every 12 hours
Standby power: no overload permitted

05.2 ENGINE

Engine type	Kubota D1105-E
Number of cylinders	3
Displacement	1123 cm^3
Power (emergency service)	13,5 HP (10,1 kWm)
Engine speed	1800 rpm
Cooling system	Water
Fuel type	Diesel
Oil tank capacity	5,1 l
Starting system	Electric (12Vdc)
Consumption per hour (at 75% of continuous service)	2,4 l/h

05.3 GENERAL SPECIFICATIONS

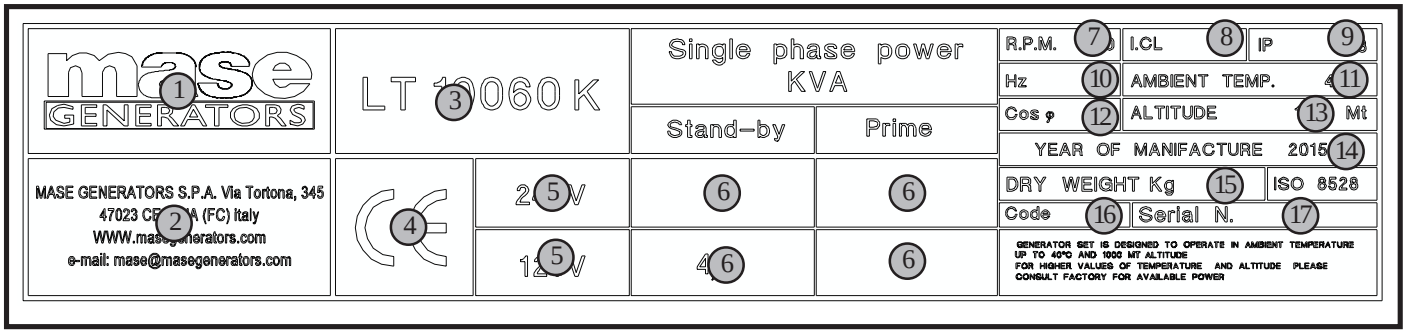
Noise power emission level	L_{wa} 97
Battery	12 V - 44 Ah
Fuel tank capacity	100 l
Operating range at 75% of continuous service power	42 h ~
Dry weight	670 Kg

05.4 LIGHTING TOWER

Machine model	008697	008702
Lamp	Halogen	High pressure sodium
A.C. power	4x1500W	4x1000W
Lumen	120000	560000
Illuminated area	2000 mq	8000 mq
Lifting	with manual winch	
Brake	Automatic	

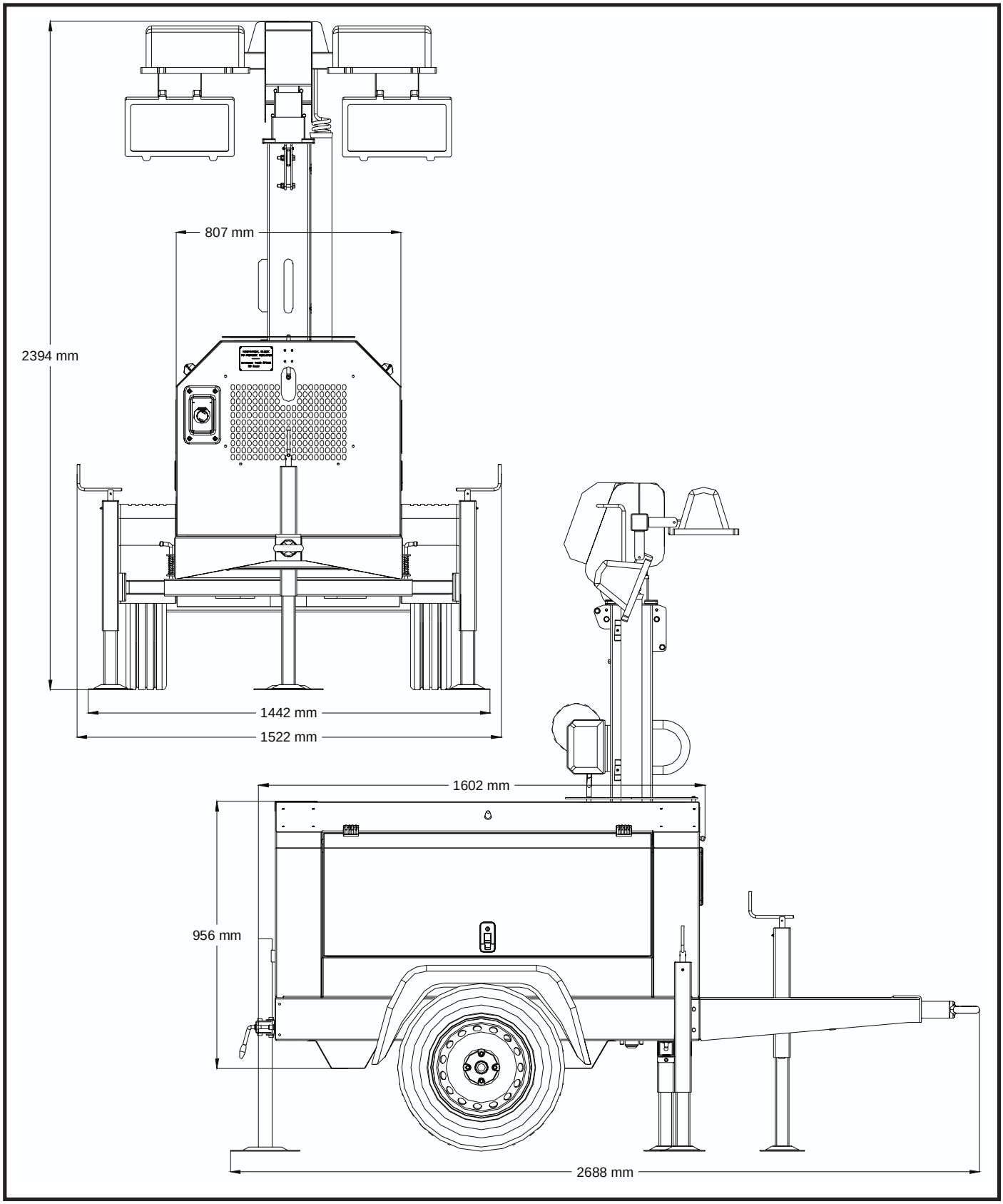
05.5 RATING PLATE DESCRIPTION

A rating plate showing the operation capabilities and performance limits is provided on the unit.

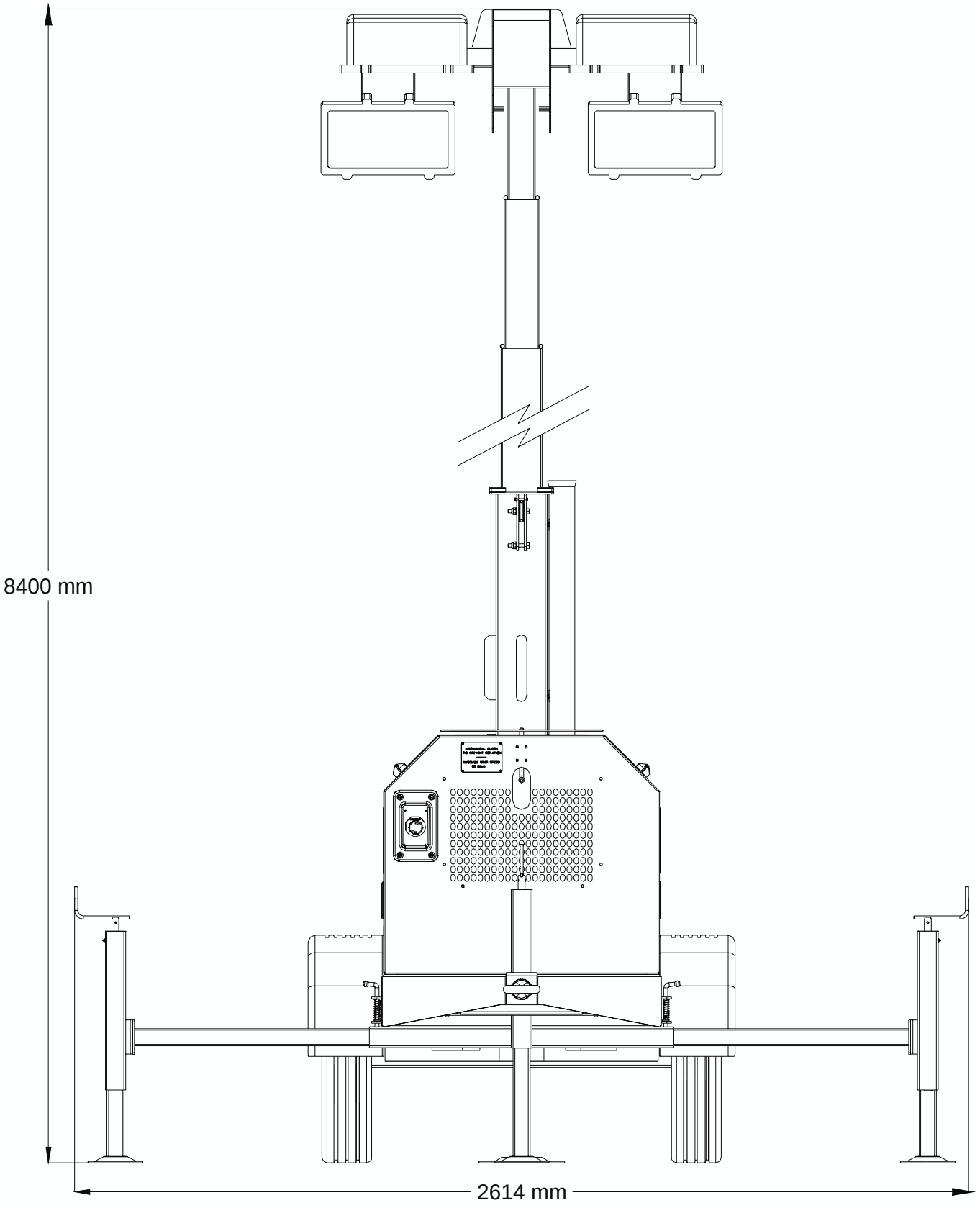


1. Manufacturer's logo
2. Manufacturer's address
3. Lighting tower model
4. EC mark
5. Rated voltage values
6. Rated power kVA
7. Engine speed
8. Insulation class
9. Unit's degree of protection
10. Rated frequency
11. Ambient temperature
12. Power factor
13. Altitude reference
14. Manufacture year
15. Dry weight
16. Machine code
17. Machine serial number

05.6 OVERALL DIMENSIONS



Dimensions of the machine in operation



06.1 PRELIMINARY OPERATIONS

BEFORE STARTING THE UNIT

ENGINE OIL (picture 1)

The unit is delivered complete with lubricating oil.

Check the oil level in the sump using the dipstick **(1)** located on the right side of the engine; refill the correct level using the oil filler **(2)**, if necessary; choose the oil viscosity according to the ambient temperature.
Wait at least five minutes, then check the oil level again.
It is important that the unit is sitting on level ground.

pic.1

FUEL CHECKING (picture 2)

Before starting the machine check the fuel level, and refuel the tank if necessary.
To refuel the machine proceed as here under indicated:

- Remove the fuel cap **(3)**.
- Proceed to fill up the fuel tank.
- Put the fuel cap back on.
- In case, clean up any spilled fuel immediately before starting the machine.

pic.2

COOLANT CHECKING (picture 3)

The machine is supplied filled up with coolant. Before starting the machine check for the right coolant level.

To check the coolant level remove the radiator cap which is located under the plate **(4),** after the engine has completely cooled, and check to see that coolant reaches the supply port; or check the coolant level of the reserve tank **(5)**. When it is between the "FULL" and "LOW" marks, the coolant will last for one day's work.

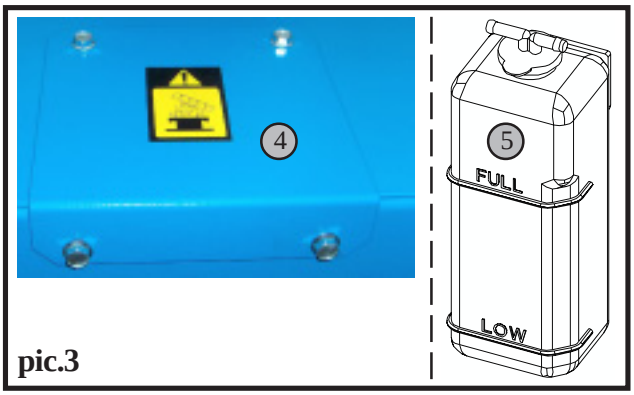
The marks of the reserve tank do not indicate the coolant of the engine inside.

When the coolant level drops due to evaporation, add water only up to the full level.

Use clean, fresh water and 50% anti-freeze to fill the recovery tank.

If coolant should be leak, consult your local KUBOTA dealer.

Be sure to close the radiator cap securely. if the cap is loose or improperly closed, coolant may leak out and decrease quickly.



pic.3

BATTERY (picture 4)

The unit is delivered with a fully charged battery (disconnected).

The battery is factory filled with acid at density of 1.28 g/ml and is ready for operation.
If the starting power is not enough, it is advisable to further charge the battery as follows. For this operation it is advisable to wear protective gloves and acid resistant overalls.
• Disconnect battery cables starting from the negative terminal and remove the battery from the unit.
• Remove battery caps.
• Make sure that the room where the recharging will take place is properly ventilated.
• Use only a DC battery charger with a proper voltage to the system.
• Connect to the battery charger the positive terminal first and then the negative terminal.
• Operate the battery charger. It is advised that the charging current be about 1/10 of the value of battery capacity (e.g. for a 44 Ah battery it is advised that the charging current be about 4,4 A).
• The battery is deemed fully charged if the charging voltage has no increased within the two hours.

In case of accidental contact with the battery acid it is advised to:

- **Wash immediately with clean water any splash of acid into the eyes. Seek medical advice as soon as possible.**
- **Wash immediately with clean water any splash of acid onto the skin or clothing.**
- **In case of ingestion of acid: seek medical advice immediately.**

pic.4

06.2 MAXIMUM OPERATING ANGLES (picture 5)

Do not exceed the operating angles shown in the figure while running the power generator unit, or engine damage will occur.

06.3 LOCATION

A proper installation site should be selected for the power generator if the unit is to provide dependable service.

Operate in open, well-ventilated areas; if operated indoors, vent the engine exhaust outside the building and make sure that the room has good air turnover. Keep the engine exhaust outlet away from building exterior and interior walls and air intakes.

06.4 AIR FLOW CLEARANCE

Maintain at least 1 metre of unrestricted space on all sides of the unit. The service life and operating efficiency of the power generator is reduced when the unit is subjected to high levels of dust, moisture, and corrosive vapours.

Do not place any additional filtering device over the air intake and air outlet.
Keep clean the area surrounding the air intake and outlet screen.

Operate in well ventilated environment, worrying himself that the gases of unloading don't stagnate in the environment of job; tender the unit away from walls or other obstacles to avoid recycles of air or of gas that they would provoke the overheating of it. In the case you had to be operated in local closed, to use some aspirators to guarantee a correct exchange of air.

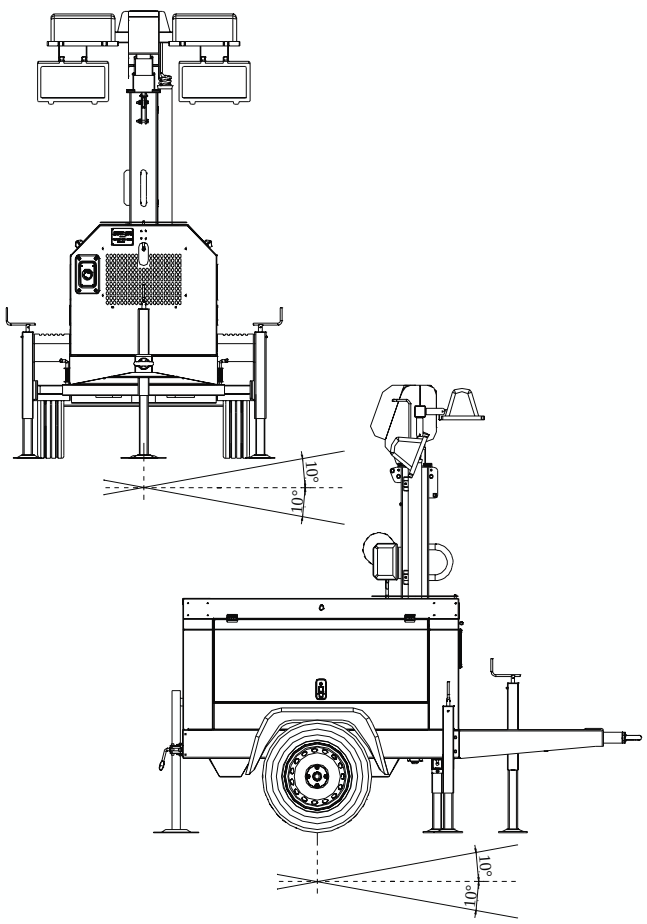
06.5 CHECKING MACHINE OPERATION

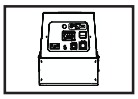
Perform a test of operation according to the instructions included in the following Chapter

06.6 RUN-IN

The application of heavy loads to a new engine has the effect of shortening the engine life. During the first 20 hours of operation, and to allow for a good engine run-in, do not use more than 70% of the maximum power output rated in the technical specifications.
After first 50 hours of operation change the engine oil.

pic.5





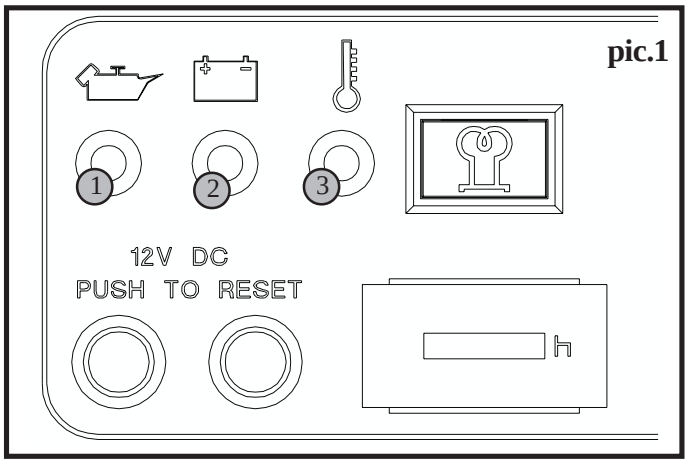
07.1 CONTROL DEVICES MOUNTED ABOARD

Das, automatic engine shut off (picture 1)

Safety device mounted aboard. It shuts off the engine automatically to avoid possible damage, in case of one of the following irregularities: low oil pressure **(N. 1)**, failure of the battery charger **(N. 2)**, water high temperature **(N. 3)**. The lighting of one of the indicator lamps on the control panel points to the specific failure.

When the engine is off and the start key switch is in the ON position, the low oil pressure and battery charger failure lamps will be illuminated.

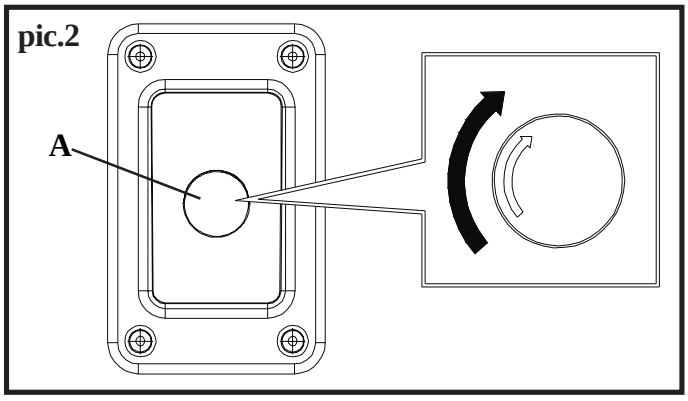
This device does not exempt the user from checking the engine oil level by using the dipstick located on the right side of the unit. This check must be made daily.



Emergency stop pushbutton (picture 2)

The power generator is equipped with an EMERGENCY STOP device to stop immediately the generator in case of danger. The device is actuated by pressing the red pushbutton **(A)** located on the front of the generator. The engine stops. To disengage the emergency stop device, rotate the red pushbutton clockwise until it pops out.

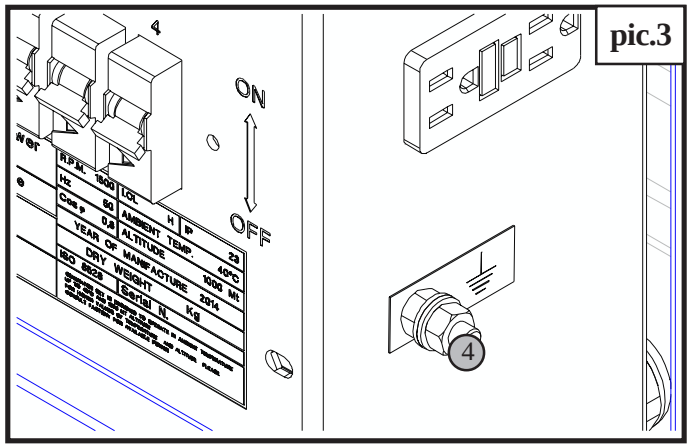
The generator cannot be restarted using the start key if the emergency stop device is activated.



07.2 EARTHING THE MACHINE (picture 3)

Before starting the generator, connect it to earth by using the earth connection provided **(4)** and a cable of suitable size without interposing switches or other devices capable of breaking the electrical connection to earth. The earth system must conform to CEI 64-8 regulations.

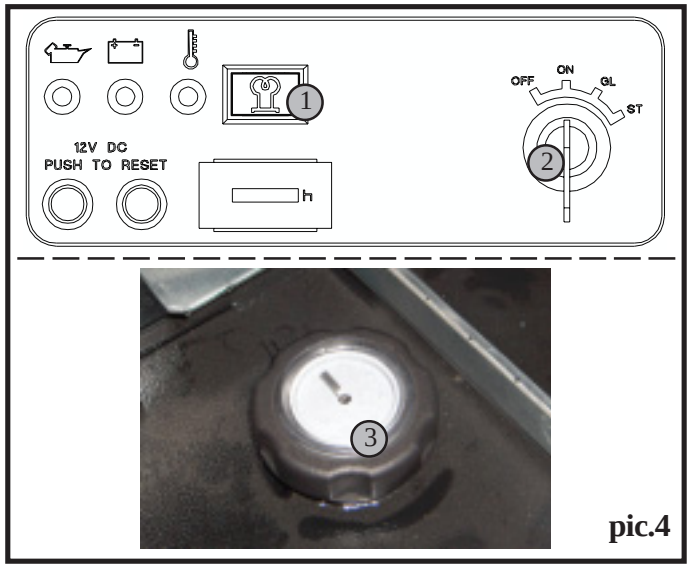
Do always connect the power generator to earth. Check that the cables are in perfect condition.



07.3 STARTING THE ENGINE (pic. 4)

After checking and restoring if necessary the engine oil level, and fuelling the unit, (if this is the first starting, it is necessary to fuel the unit until the fuel gauge **(3)** on the front panel is above the 50% of fuel capacity), proceed as follows:

- Make sure that no load is connected to the unit.
- Turning the key switch **(2)** in "ON" position; (the alarm lamp **1** and **2, picture 1,** will be lighted).
- Turning the key switch **(2)** in "GL" position; (the lamp **1** will be lighted).
- When the lamp **(1)** will not be lighted, turning the key switch **(2)** in "START" position.



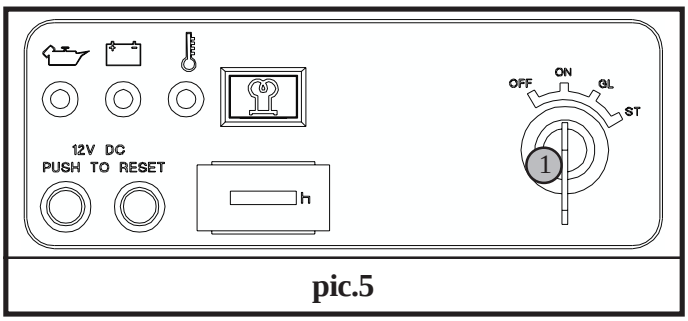
If the engine does not start, turn the key switch (2) to the OFF position (otherwise, the automatic engine shut off - DAS, will prevent starting the engine), wait about 10 seconds and repeat the starting procedure.

• Let the unit run for about 10 minutes without connecting any load, to allow the regular warm-up. The unit is running at low rpm.

07.4 STOP THE ENGINE (picture 5)

• Disconnect the loads.
• Let the engine run in this condition for about one minute, then turning the key switch **(1)** in "OFF" position.

If none emergency situation occurs, don't use the emergency stop button to stop the machine.



pic.5

07.5 USING THE UNIT

The unit is equipped with a circuit breaker capable of ensuring user protection in case of accidental contact with live parts or failure of the insulation system of connected users.

Apply only to authorised MASE GENERATORS centres for technical service on electrical components.

• Before connecting a load to sockets on the front panel of the unit, make sure that the generator supplies enough power for the tools that are connected.

Beware: electric motors' starting current requirements are considerably higher than rated full load values.

• Before connecting a load to single phase and/or three phase sockets, make sure that the circuit breakers are open.
• At the end of work, before removing plugs from panel sockets, open the circuit breakers.
• Connect loads to generator's sockets only by using cables of suitable size and in good conditions, with plugs fitted for the sockets on the panel. Do not use adapters.

07.6 ADJUSTMENTS AND SETTINGS

All controls for the adjustments and settings necessary when using the generator are mounted on the control panel and are described in this Chapter.
It is forbidden to perform further adjustments and settings other than those described here.

Any adjustment and setting other than those made by the manufacturer may compromise the reliability of the power generator and make the warranty void.

The engine oil level should be checked daily by the operator, using the dipstick located on the right side of the unit.

Do not disconnect the battery cables when the generator is running as this can cause improper operation of the battery charger.

Stop the engine before fuelling. Do not smoke when fuelling. Do not perform fuelling near flames.

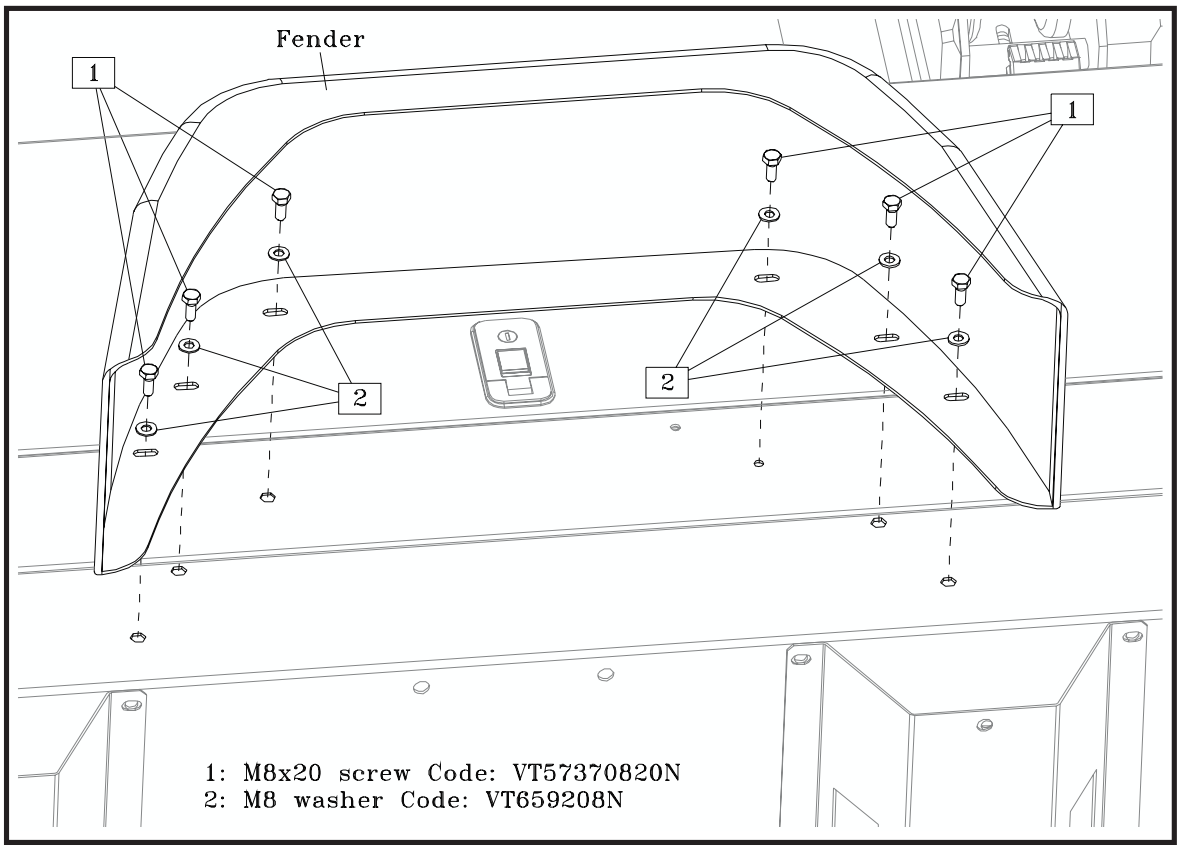
Do not overfill the fuel tank and clean up any spillages. Check daily that there is no leakage of fuel or oil from the engine.

07.7 PUTTING THE MACHINE TEMPORARILY OUT OF SERVICE AND RESTARTING OPERATION

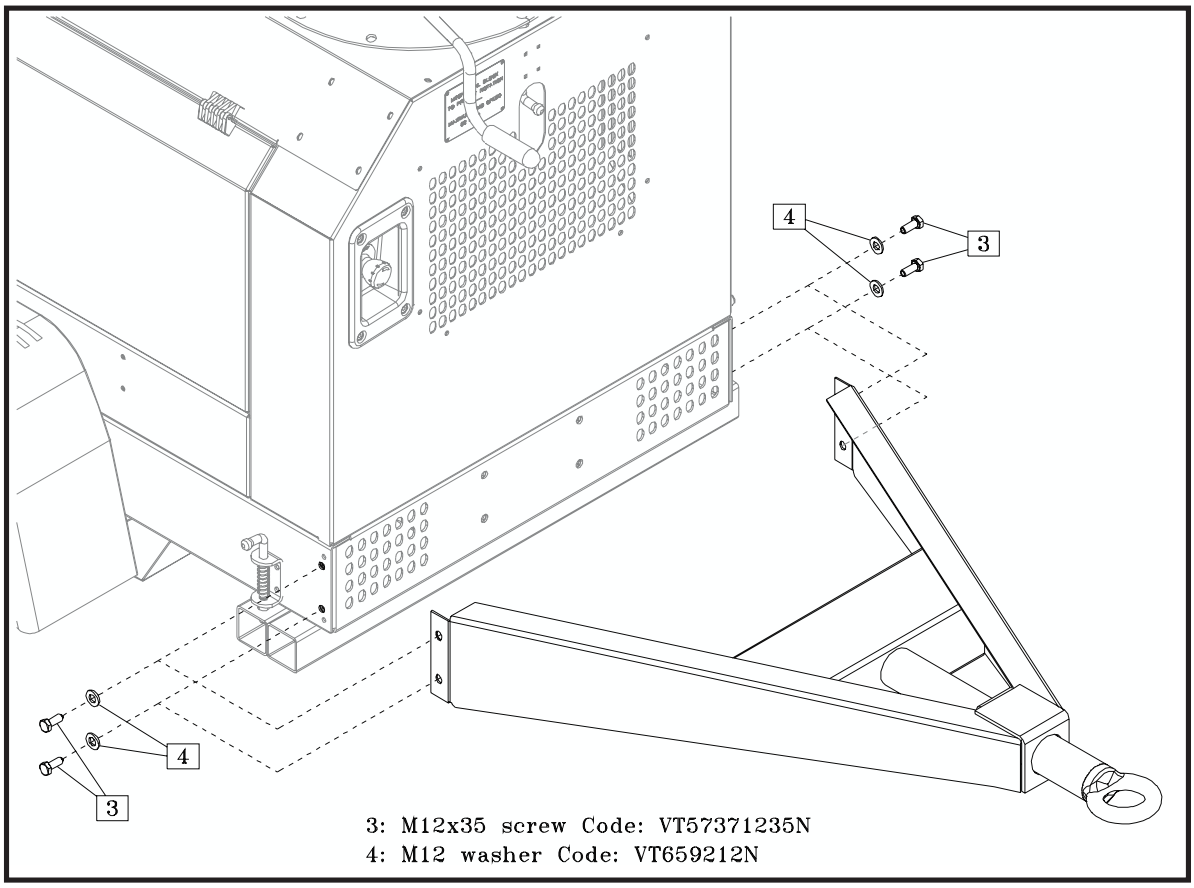
If the generator is put out of service for longer than 6 months, it is advisable to disconnect the negative terminal of the battery and to leave engine oil and fuel in to protect mechanical parts, along with the fuel supply, injection system and the fuel tank from oxidation.
When putting the generator back to service, all fluids should be replaced, the battery should be charged, engine belts, if any, all couplings and fuel pipes and seals should be checked.
In case of longer out of service periods, contact MASE GENERATORS Service Department.

07.8 TWO WHEELS SITE TOW UNDERCARRIAGE - STABILIZERS ASSEMBLY

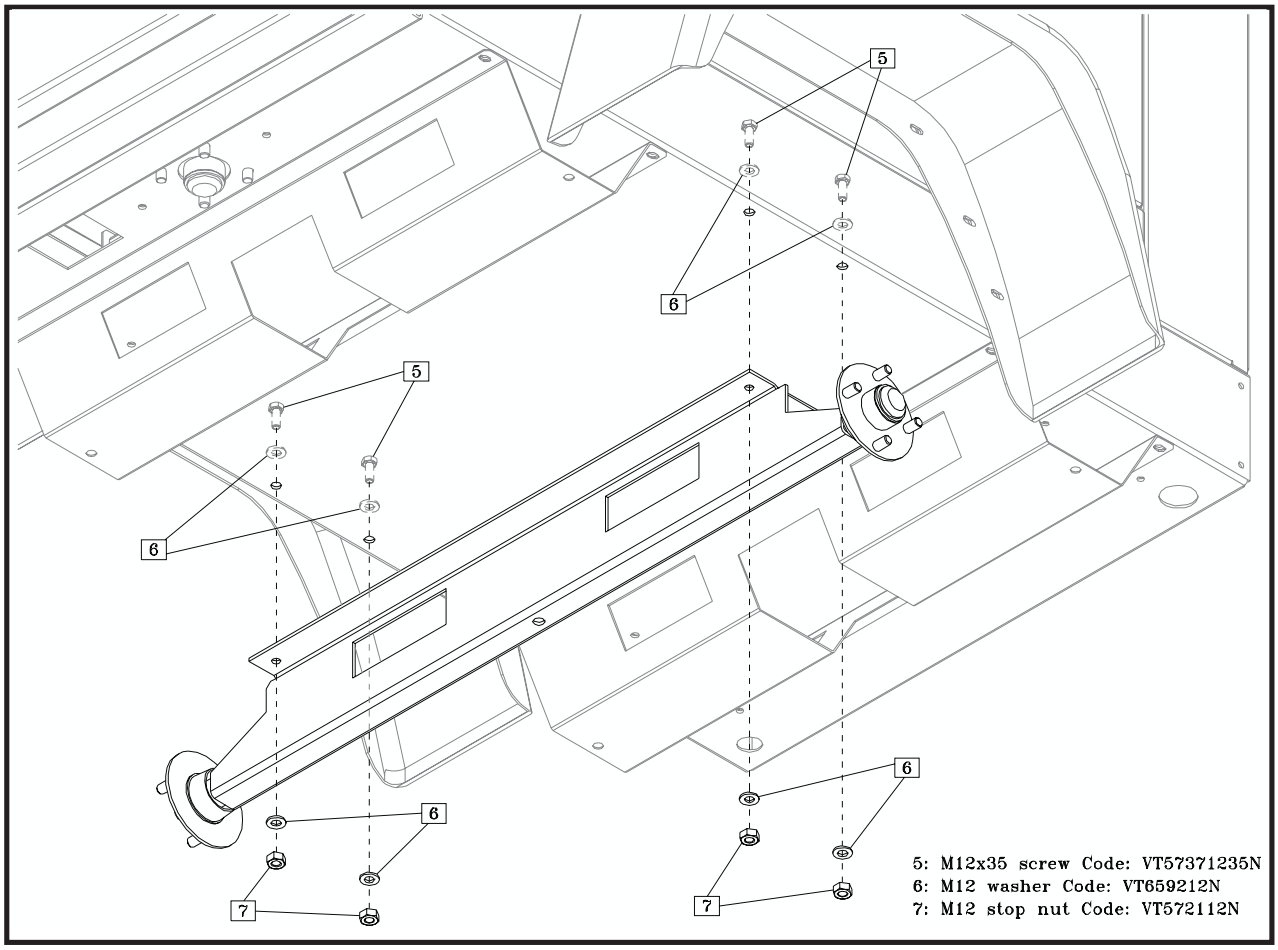
1. Attach the fenders to the unit



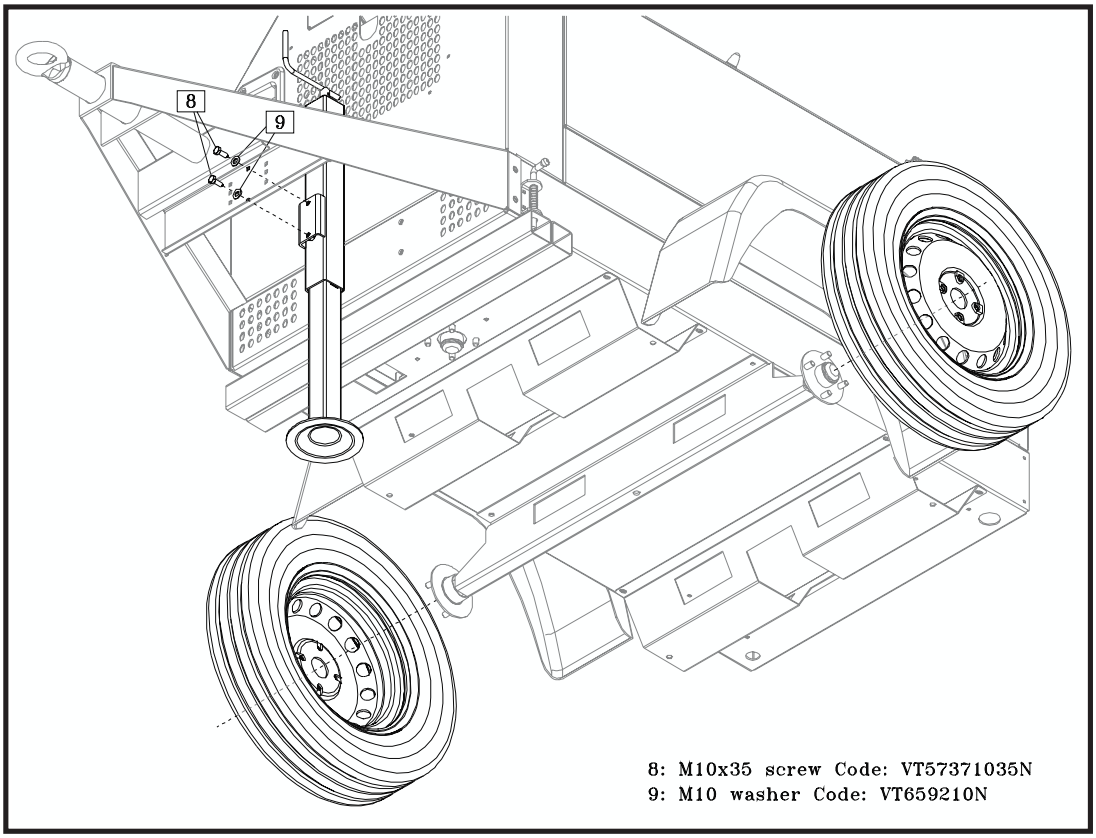
2. Attach the rudder to the unit



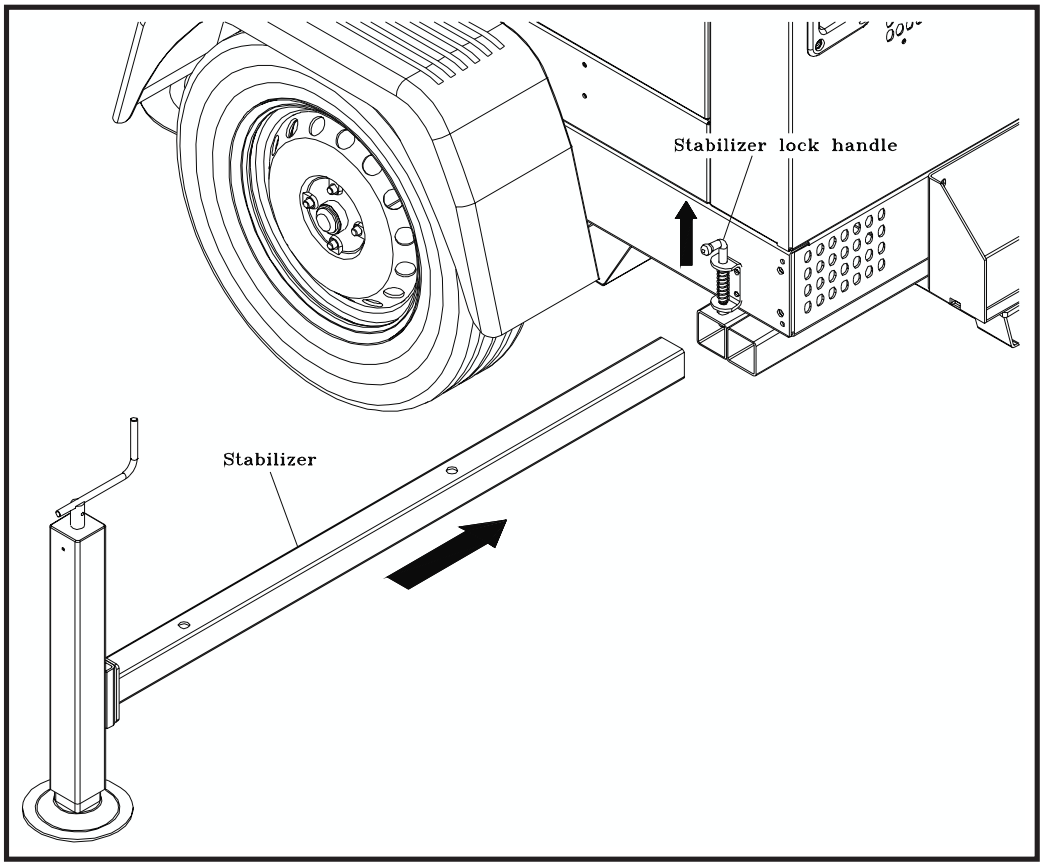
3. Attach the wheels axle to the unit



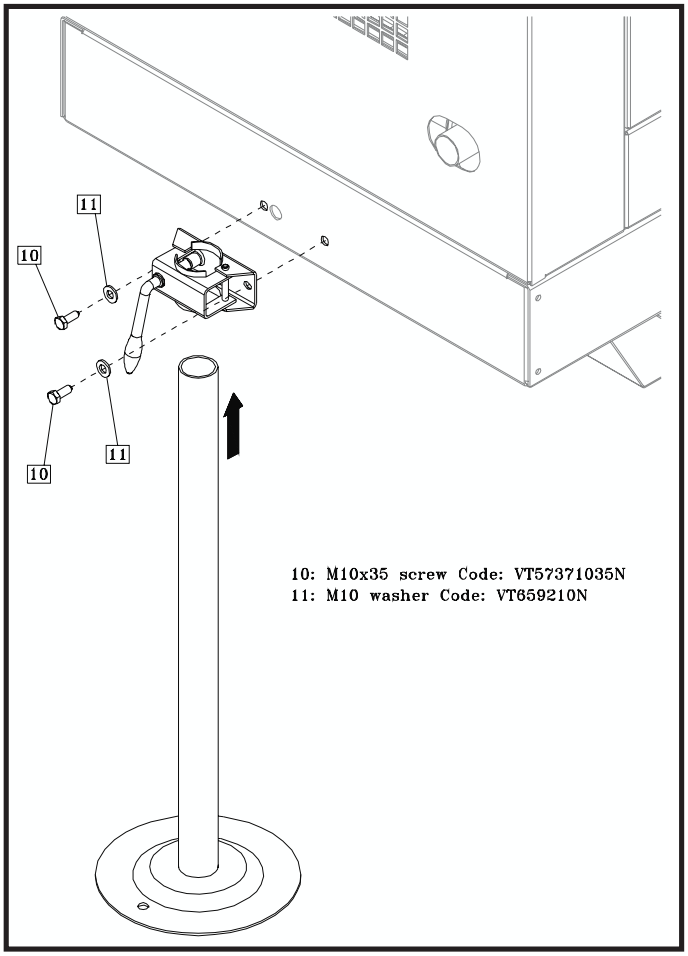
4. Attach the wheels and the front stabilizer to the unit

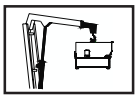


5. Pull the stabilizer lock handle up and make the lateral stabilizers inside the unit



6. Attach the rear stabilizer to the unit





08.1 PACKING, TRANSPORTING AND STORING THE UNIT

Packaging

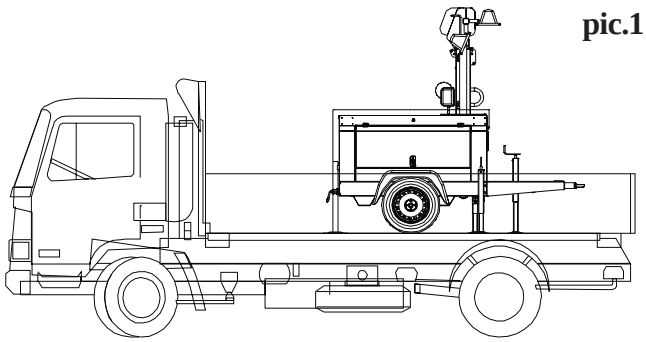
The package is provided by factory.

Disposing of packaging onto land is strictly forbidden.

Transport (picture 1)

Do not overturn the generator (with or without packaging) during transport.
The generator must be transported without fuel to avoid any leakage.
The generator must be secured to the vehicle during transportation.

pic.1



Storage

The generator unit must be stored in the horizontal position.

08.2 LIFTING AND MOVING THE UNIT

All lifting operations must be carried out by qualified personnel, such as fork lift operators, crane operators and slingers. The operator should be deemed responsible for using the correct method of slinging and lifting the generator unit.

Lifting and moving

The generator must be lifted and moved as indicated in pictures **2**. Use a fork lift of proper capacity, fitted with wide forks, and lift the unit as illustrated.

Never leave the load insecure.

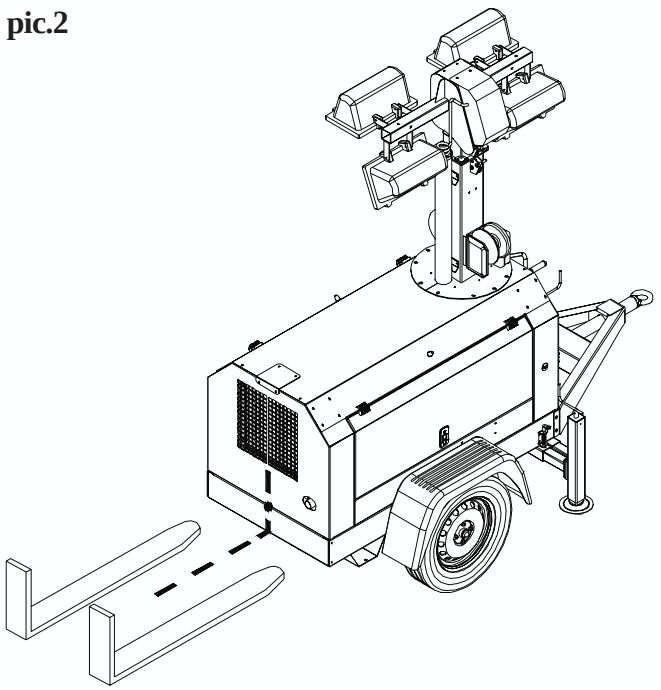
Lay the generator on the ground gently.

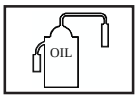
When lifting and moving the generator, do not stay or walk within it's proximity.

Never leave the generator slung overhead

When moving and transporting the generator, do not tilt it excessively.

pic.2





09.1 MAINTENANCE

MAINTENANCE SHEDULE

FREQUENCY	OPERATIONS
Every 50 hours.	Check of fuel pipes and clamp bands.
Every 100 hours.	Cleaning of air cleaner element.
	Cleaning of fuel filter.
	Check of battery electrolyte level.
	Check of fan belt tightness.
Every 200 hours.	Engine oil replacement (first time after 50 hours)
	Check of radiator hoses and clamp bands.
	Replacement of oil filter cartridge.
	Check of intake air line.
Every 400 hours.	Replacement of fuel filter cartridge.
Every 500 hours.	Removal of sediment in fuel tank.
	Cleaning of water jacket (radiator interior).
	Replacement of fan belt.
Every one or two months.	Recharging of battery.
Every year.	Replacement of air cleaner element.
	Check of damage in electric wiring and loose connections.
Every 800 hours.	Check of valve clearance.
Every 1500 hours.	Check of fuel injection pressure.
Every 3000 hours.	Check of turbo charger.
	Check of injection pump.
	Check of fuel injection timer.
Every two years.	Change of radiator coolant.
	Replacement of battery.
	Replacement of radiator hoses and clamp bands.
	Replacement of fuel pipes and clamp bands.
	Replacement of intake air line.

REGULAR MAINTENANCE

For service and maintenance operations relating to the engine, refer to the engine manufacturer's manual provided with the generator unit. To prevent breakdowns to the generator it is important to keep the engine properly serviced and maintained. Observe the maintenance directions provided in this Chapter and the "Use and Maintenance Manual" provided by the engine manufacturer.
If the generator works in adverse conditions, the intervals between maintenance schedules must be reduced.

Checking the engine oil level (picture 1)

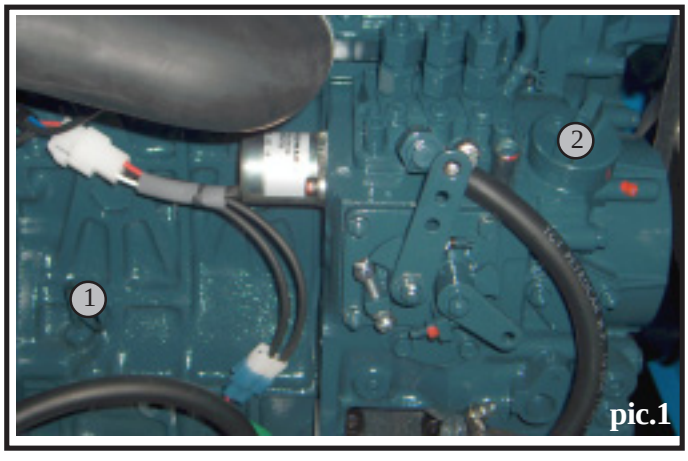
• The oil level check must be performed when the engine is cold, before starting or at least 5 minutes after engine shut-off.

To check the oil level correctly, the power generator must be sitting on level ground.

The lubricating oil and the engine can be very hot, take care when performing these checks and in particular when cleaning the dipstick.

Check the lubricating oil level using the dipstick **(1)**, located on the right side of the engine.
• Pull the dipstick out and clean it with cloth or paper towels.
• Fully push the dipstick back into its seating.
• Pull the dipstick out again and check that the lubricating oil level is between the minimum and maximum marks.
If the oil level is too low add new oil (see the **Engine oil grade table**) through the oil fill cap **(2)**, located on the right side of the engine.
Wait at least five minutes, then recheck that the oil level is between the minimum and maximum marks.

Do not overfill the oil above the maximum mark on the dipstick because oil combustion can cause a sudden increase in engine speed.



pic.1

Engine oil grade table

oltre 25° C	SAE30	oppure	SAE10W-30 SAE10W-40
0° C fino a 25° C	SAE20	oppure	
oltre 25° C	SAE10W	oppure	

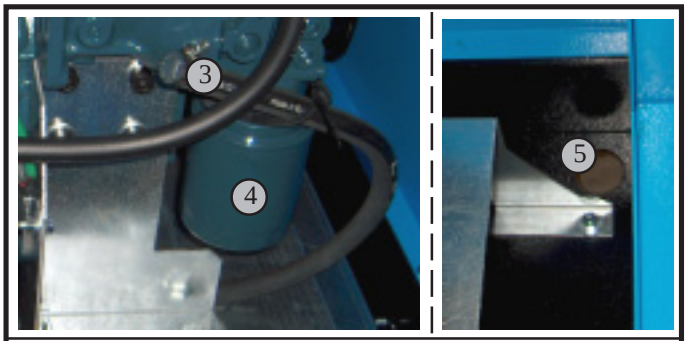
Changing engine oil (picture 2)

Be sure to stop the engine before draining engine oil.

When draining engine oil, place some container underneath the engine and dispose it according to local regulations.

Do not drain oil after running the engine. AIlow engine to cool down sufficiently.

For the substitution to proceed like it follows:
• To have the pipe of unloading escaped oil **(3)** through the special hole **(5)**.
• To remove the aluminum cork from the extremity of the pipe and to attend that the whole oil flows from the motor. Drain oil will drain easier when the oil is warm.



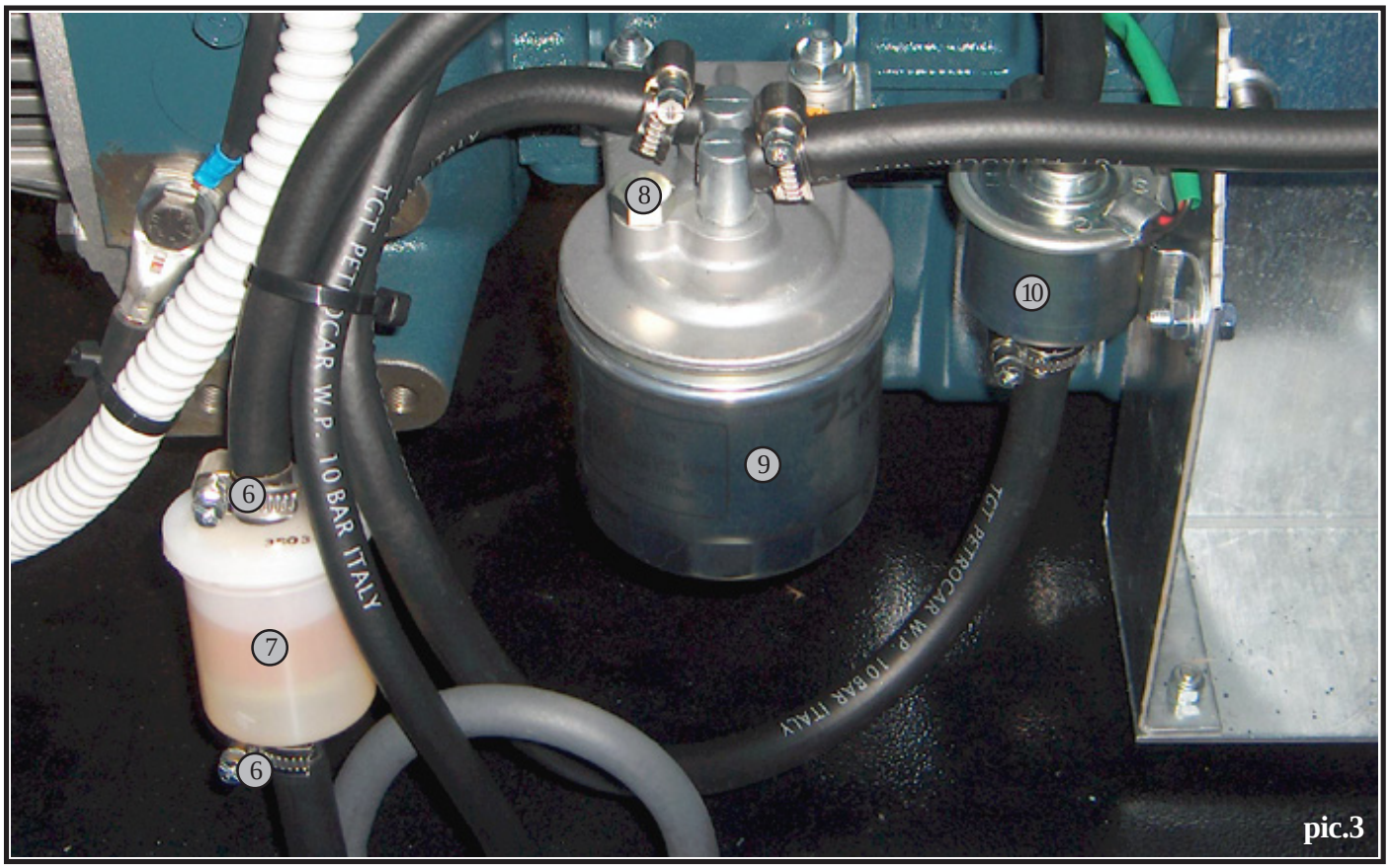
pic.2

Replacing the oil filter cartridge (picture 2)

Be sure to stop the engine before changing the oil filter cartridge.

Allow engine to cool down sufficiently, oil can be hot and cause burns.

Replace the oil filter cartridge after the initial 50 hours of operation and every 200 hours thereafter.
• Remove the old oil filter cartridge **(4)** with a filter wrench.
• Apply a film of oil to the gasket for the new cartridge.
• Screw in the cartridge by hand. When the gasket contacts the seal surface, tighten the cartridge enough by hand. Because, if you tighten the cartridge with a wrench, it will be tightened too much.
• After the new cartridge has been replaced, the engine oil level normally decreases a little. Thus, run the engine for a while and check for oil leaks through the seal before checking the engine oil level. Add oil if necessary.



pic.3

Fuel filter cartridge replacement (picture 3)

• Replace the fuel filter cartridge **(9)** with a new one every 400 operating hours.
• Apply fuel oil thinly over the gasket and tighten the cartridge into position by hand-tightening only.
• Finally, vent the air.

Air bleeding the fuel system (picture 3)

Do not bleed a hot engine as this could cause fuel to spill onto a hot exhaust manifold creating a danger of fire.

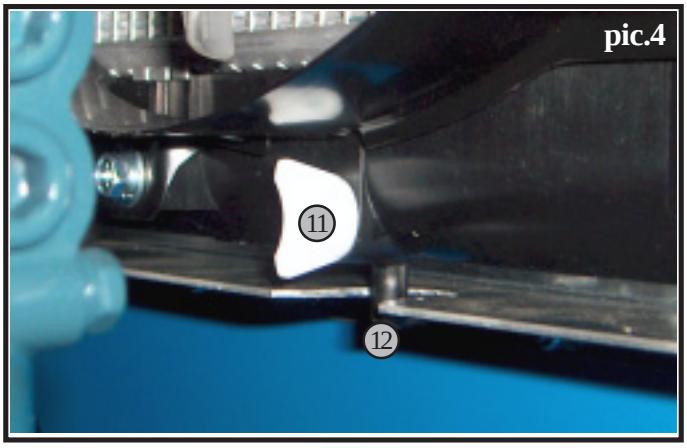
• Loosen air vent plug **(8)** of the fuel filter a few turns.
• Turning the starting key in "ON" position; the electric pump **(10)** started.
• Screw back the plug **(8)** when bubbles do not come up any more.
• Turning the starting key in "OFF" position.

Replacing the fuel pre-filter (picture 3)

• Loosen the two hose **(6)** clamps using a flathead screwdriver.
• Replace the filter **(7)**, note flow direction.
• Tighten the two hose clamps.
• If necessary, repeat the bleeding operation as with the fuel filter.

Changing coolant (picture 4)

• Place a container under the coolant drain **(12)**, below the radiator.
• To open the coolant drain cock **(11)**.
• To open the radiator cap. With the radiator cap kept closed, a complete drain of water is impossible.

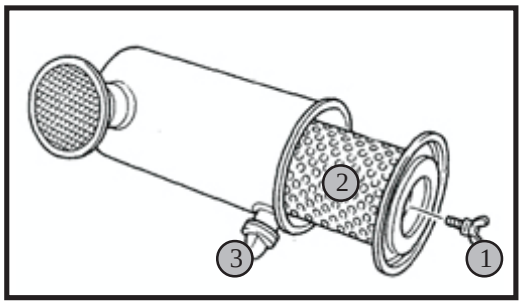


pic.4

Remedies for quick decrease of coolant

• Check any dust and dirt between the radiator fins and tube. If any, remove them from the fins and the tube.
• Check the tightness of the fan belt. If loose, tighten it securely.
• Check the internal blockage in the radiator hose.
If scale forms in the hose, clean with the scale inhibitor or its equivalent.

Air cleaner



A dirty air filter cause difficulty in the start of the engine, diminution of power and dysfunctions, and it shortens in substantial way the duration of the motor. The filtering element must always be kept clean. Progress like it follows:
• Remove the wing bolt **(1)** from the cover of the air filter.
• Remove the element **(2)** and if dust had to stick to it, to remove it through air compressed by the inside toward the outside, rotating the element.
• Cleaning the inside of the air filter with a cloth if it was dirty or damp.
In normal conditions of exercise, the evacuator valve **(3)** must be opened to the week or every day once if it is used in a dusty environment, in way to remove dust and small impurities.
To replace the element every year or every 6 operations of cleaning.

Replacing the battery (picture 5)

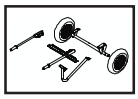
• Open the right door.
• Loosen the two retaining nuts from the battery.
• Disconnect the battery cables, negative terminal first and remove the battery.
• Replace the battery, using type of same amperage.

To avoid damage to the battery, do not disconnect the battery cables whilst the engine is running.

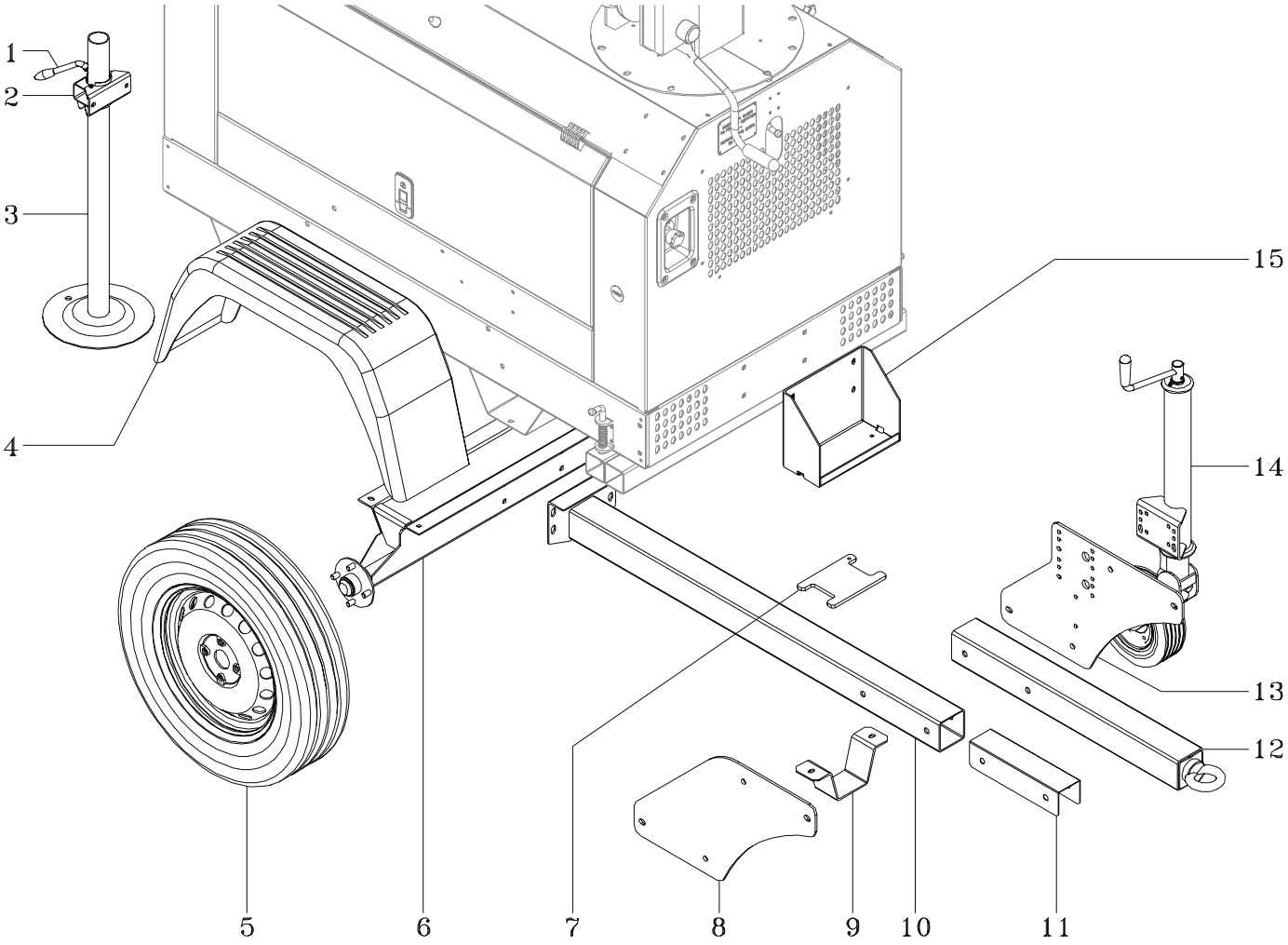
When reconnecting the battery, note position of positive and negative cables.

The battery contains sulphuric acid, always use acid resistant protective gloves.

The old battery should be given to authorised collection centres. Refer to local regulations and laws relating to disposal of waste materials.

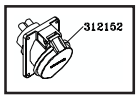


10.1 TWO WHEELS SIDE TRAILER WITH TOWING BAR

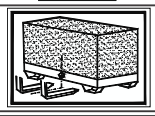
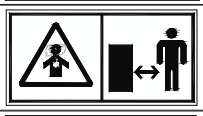
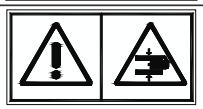


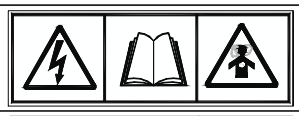
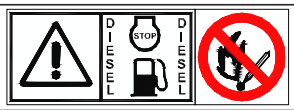
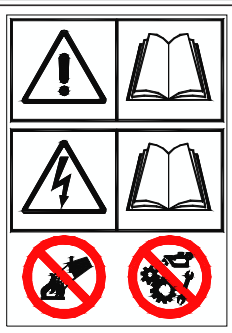
List of spare part codes

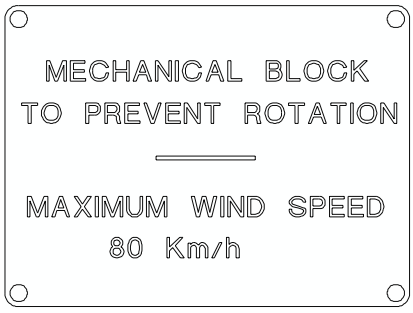
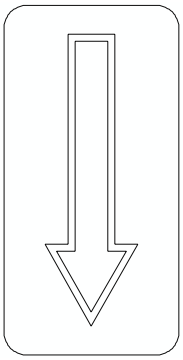
N.	DESCRIPTION	SPARE PART CODE
1	Clamp handle	4296
2	Rear stabilizer clamp	4238
3	Rear stabilizer	151264
4	Fender	153771
5	Ruota	4271
6	Axle	153351
7	Contrast plate	144889
8	Junction plate	144886
9	U-bolt	144888
10	Inferior axle of traction	153352
11	Nuts support	135917
12	Top axle of traction	153348
13	Junction plate / Front wheel support	152415
14	Front wheel	151283
15	Rudder support	153350

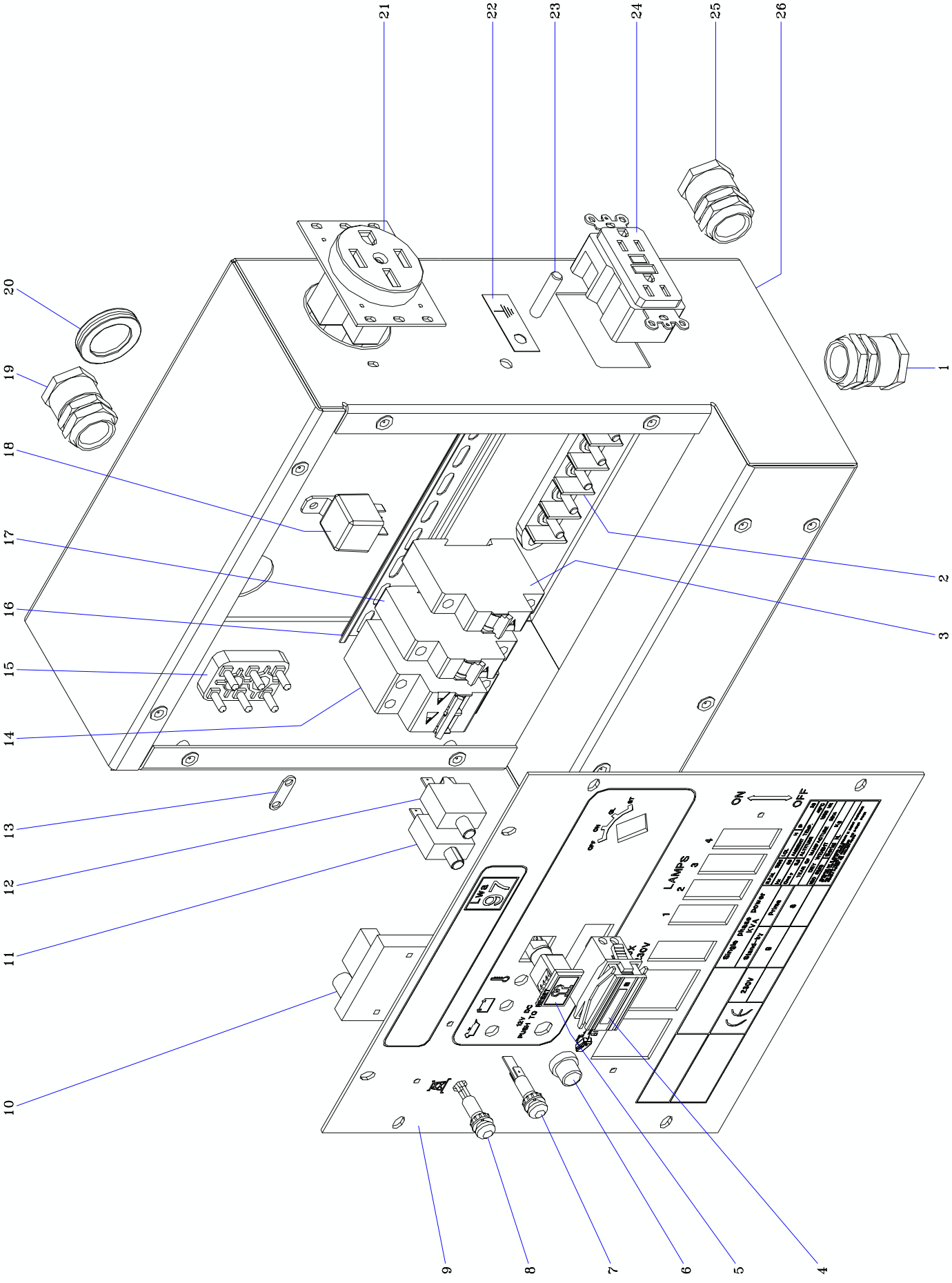


11.1 SPARE PART CODES

STICKER	SPARE PART CODE
	41810
	41811
	41776
	41775
	41777
	41778
	41781
	42353
	42109
	42132
	42108
	42110
	42111
	42112
	42119
	42114

STICKER	SPARE PART CODE
	42116
	42117
	42115
	42348
	42349 (120X30) 42352 (160X40)
	42467
	42653
	42350
	42351
	42466
	42573
	42397

RATING PLATE	SPARE PART CODE
	64143
	64163
	64164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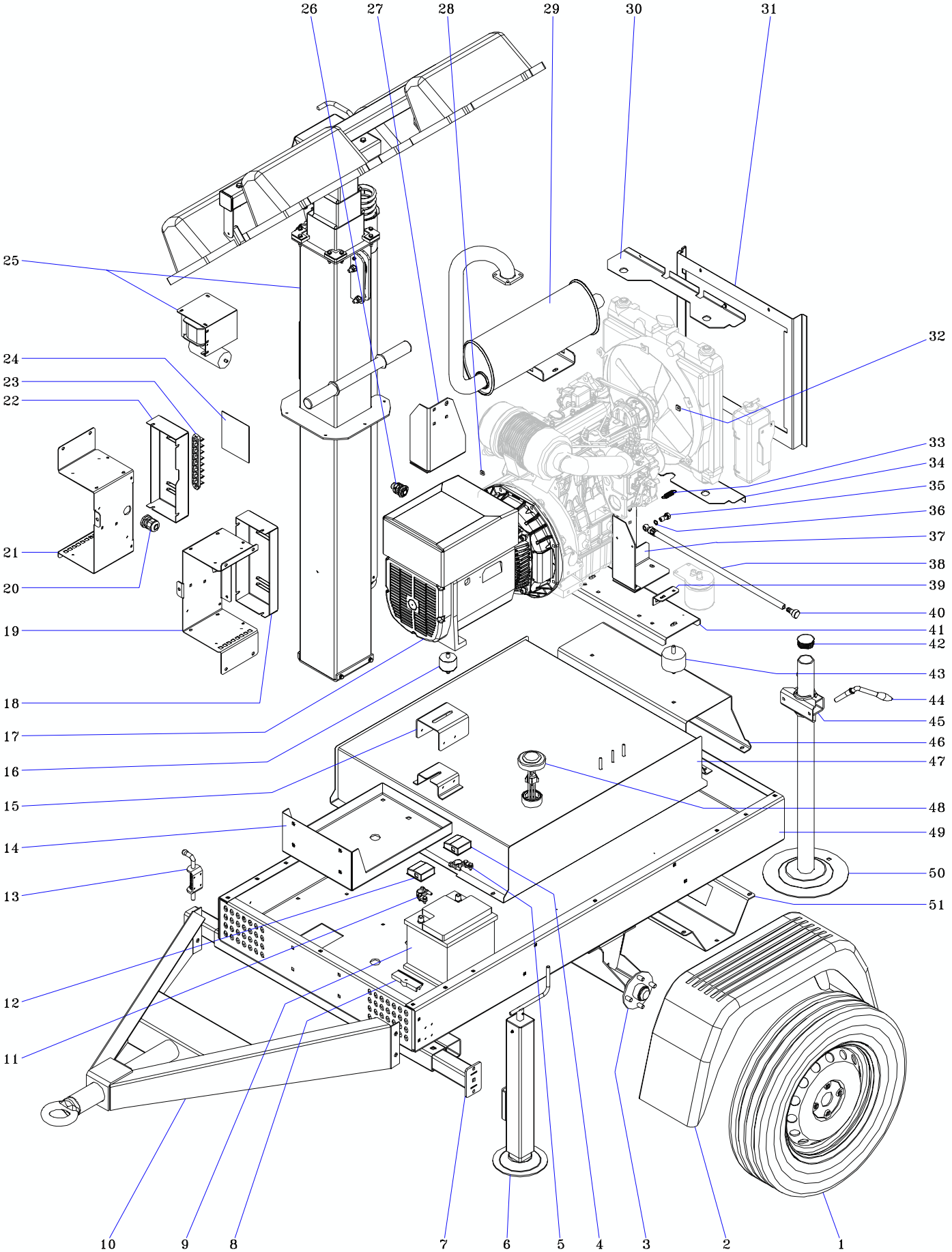
ON
OFF
LAMPS
230V

List of spare part codes

N.	DESCRIPTION	SPARE PART CODE
1	D.16 wire holder	5960/4
2	Terminal board	131585
3	16 A 1 pole circuit breaker	1428
4	Hourmeter	100980
5	Glow plug lamp	9454
6	Circuit breaker cover	131193
7	Red lamp	143837
8	Green lamp	114592
9	Instruments support	156607
10	Electric panel	121004
11	15 A circuit breaker	101266
12	5 A circuit breaker	102204
13	Conductor	138816
14	40 A 2 poles circuit breaker	4678
15	Terminal board	101433
16	L.250 omega profile	5828/250
17	40 A 1 pole circuit breaker	3311
18	12 V 70 A relay	137052
19	3/4 wire holder	5949
20	Wire holder	10566
21	240 V 50 A current socket	127021
22	Grounding clamp plate	3269/DX
23	M8x50 tie rod	110711
24	120 V 2x15 A current socket	113975
25	PG16 wire holder	113453
26	Control panel box	156606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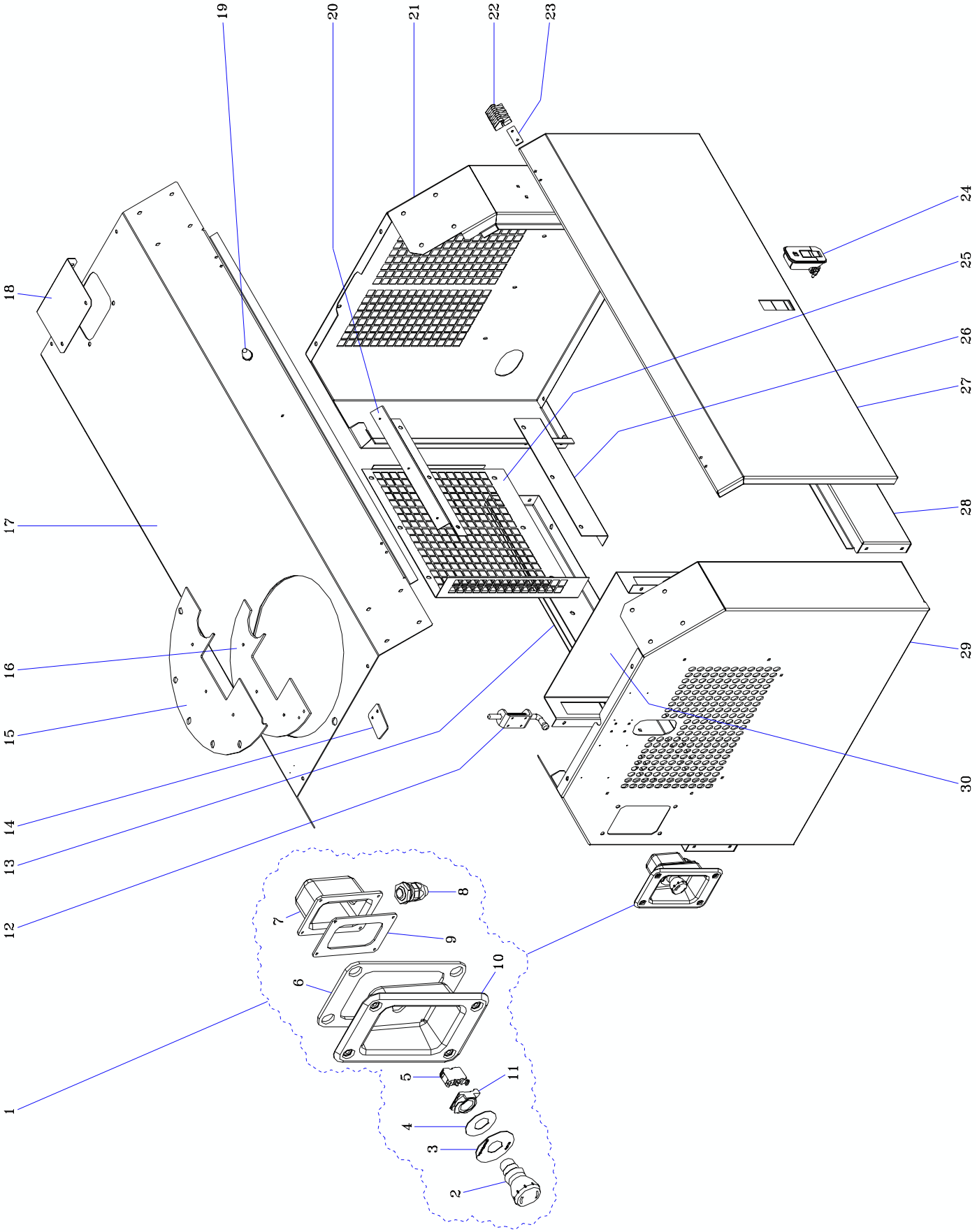
List of spare part codes

N.	DESCRIPTION	SPARE PART CODE
1	Wheel	4271
2	Fender	153771
3	Axle	031041
4	Blue clamp cover	109606/B
5	Battery negative clamp	4352
6	Lateral stabilizer	156128
7	Stabilizer pocket	151641
8	Battery lock	133064
9	Batery	116187
10	Rudder	031039
11	Battery positive clamp	4351
12	Red clamp cover	109606/R
13	Lock stabilizer	128823
14	Lighting tower support	031035
15	Alternator support	031313
16	Alternator schock absorber	9895
17	Alternator	156507
18	Transformer right cover (008702)	155769
19	Transformer right support (008702)	155767
20	Wire holder	100483/1
21	Transformer left support (008702)	155770
22	Transformer left cover (008702)	155771
23	Terminal board	131585
24	Protection	155905
25	Lighting tower (008697)	032315
	Lighting tower (008702)	032426
26	Wire holder	100483/1
27	Engine left support	031312
28	Spacer	105384
29	Silencer	155349
30	Radiator top support	031314

N.	DESCRIPTION	SPARE PART CODE
31	Radiator frame	031316
32	Engine grid spacer	140607
33	Spring	156601
34	Radiator inferior support	031315
35	Perforated screw	115601
36	Washer	5678
37	Engine right support	031311
38	Oil drain pipe	143720
39	Fuel filter support	031321
40	Oil drain pipe cap	117221
41	Engine support	031261
42	Rear stabilizer cap	121196
43	Engine left support	4827
44	Clamp handle	4296
45	Clamp	4238
46	Engine support	031262
47	Fuel tank	031043
48	Fuel level transmitter	153772
49	Basement	031031
50	Rear stabilizer	151264
51	Fork-lift pocket	031062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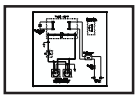
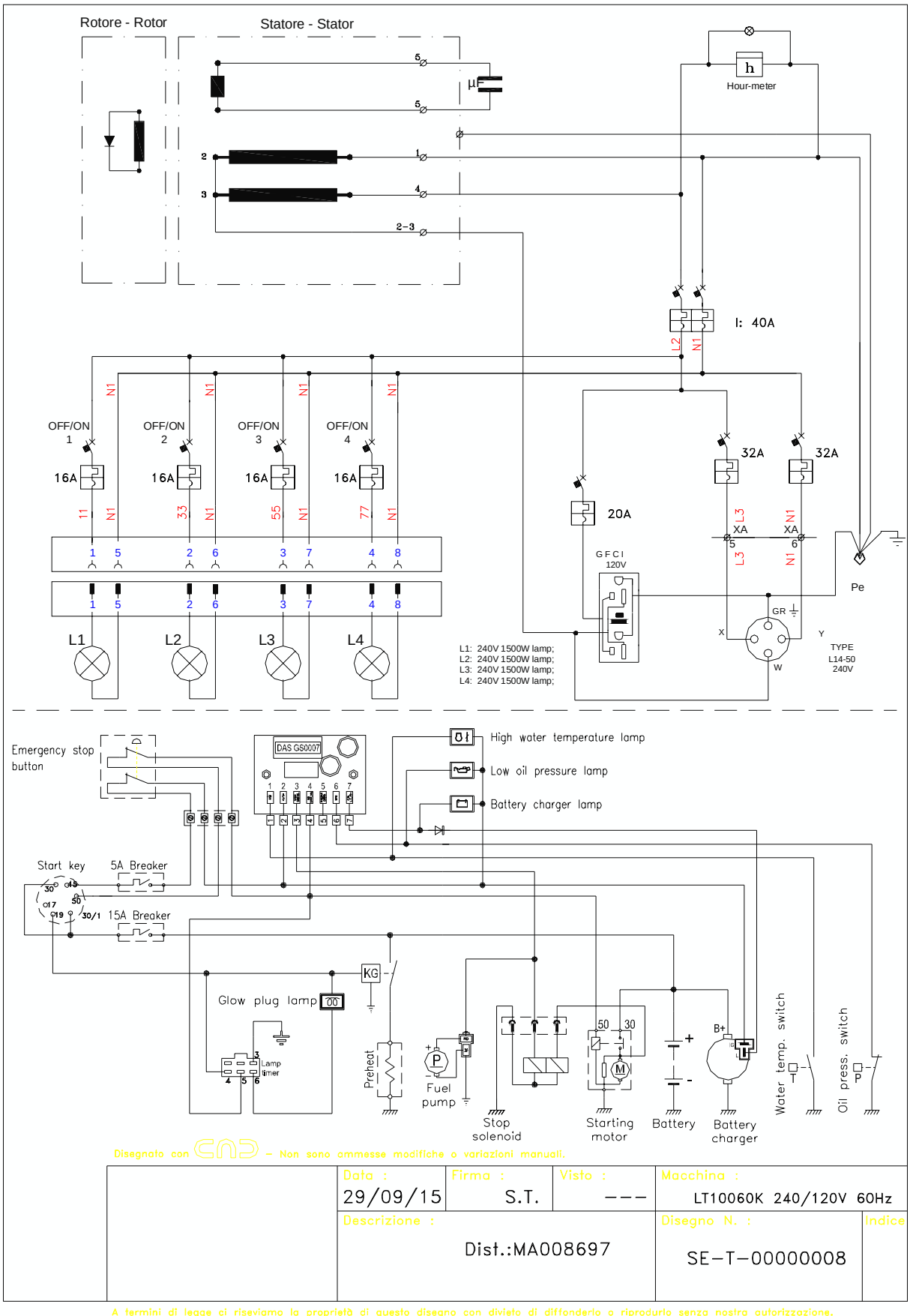
List of spare part codes

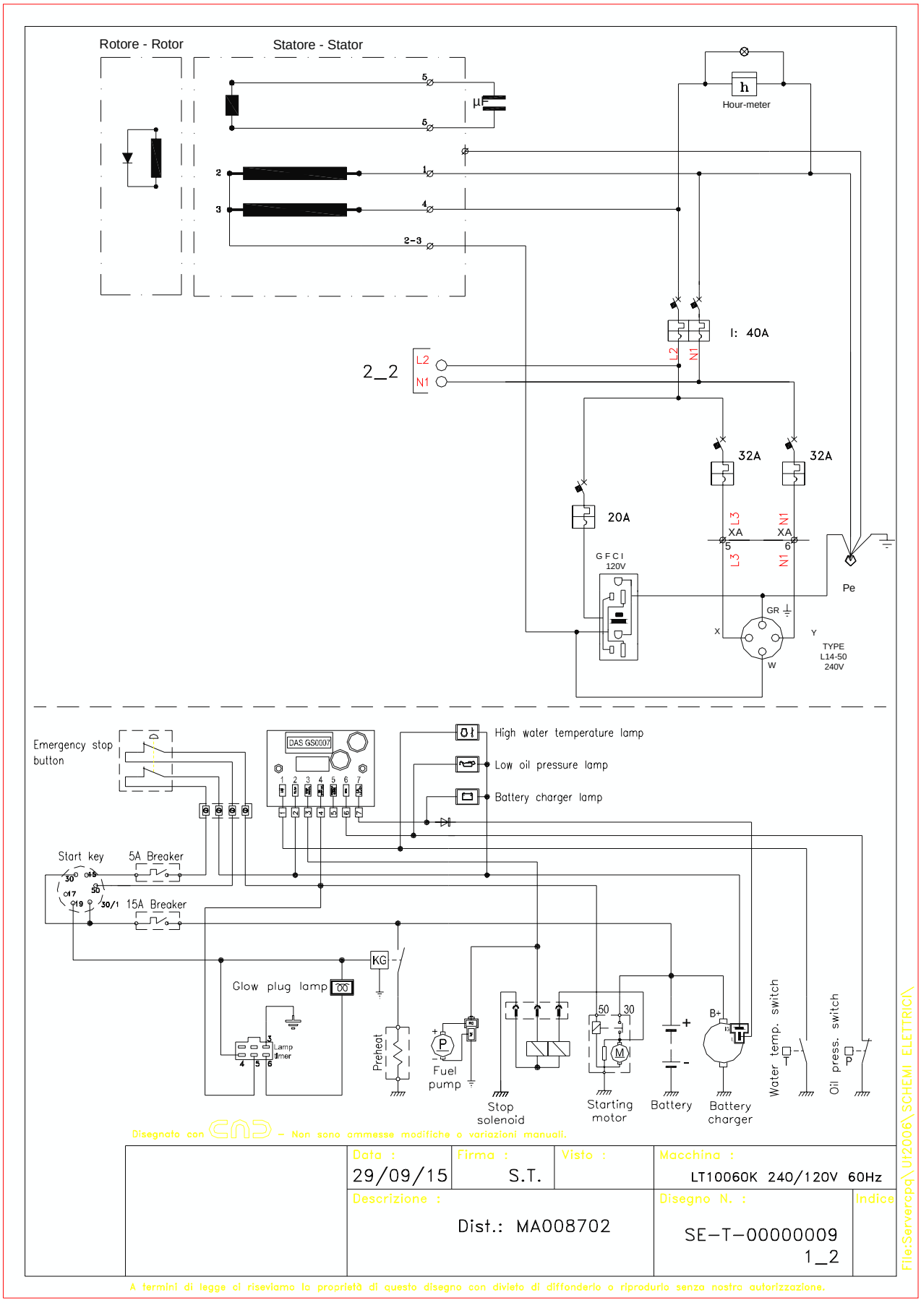
N.	DESCRIPTION	SPARE PART CODE
1	Complete stop button	141450
2	Stop button	33482
3	Stop button rating plate	129871
4	Contrast plate	135455
5	N.C. contact	33485
6	Stop button box gasket	133397
7	Contacts protection	140975
8	D.16 wire holder	5960/4
9	Contacts protection gasket	140976
10	Stop button box	140974
11	Stop button base	33483
12	Lighting tower lock	128823
13	Left connection	031501
14	Plate	031045
15	Lighting tower anchor plate	64134
16	Lighting tower dowel plate	64135
17	Top canopy	031503
18	Radiator cap cover	031505
19	Bumper	135197
20	Silencer protection top support	031034
21	Canopy rear panel	031499
22	Hinge	126007
23	Hinge spacer	031507
24	Door lock	137322
25	Silencer protection	031100
26	Silencer protection inferior support	031004
27	Door	031506
28	Right connection	031502
29	Canopy front panel (008697)	031500
	Canopy front panel (008702)	154455
30	Intake box	031504

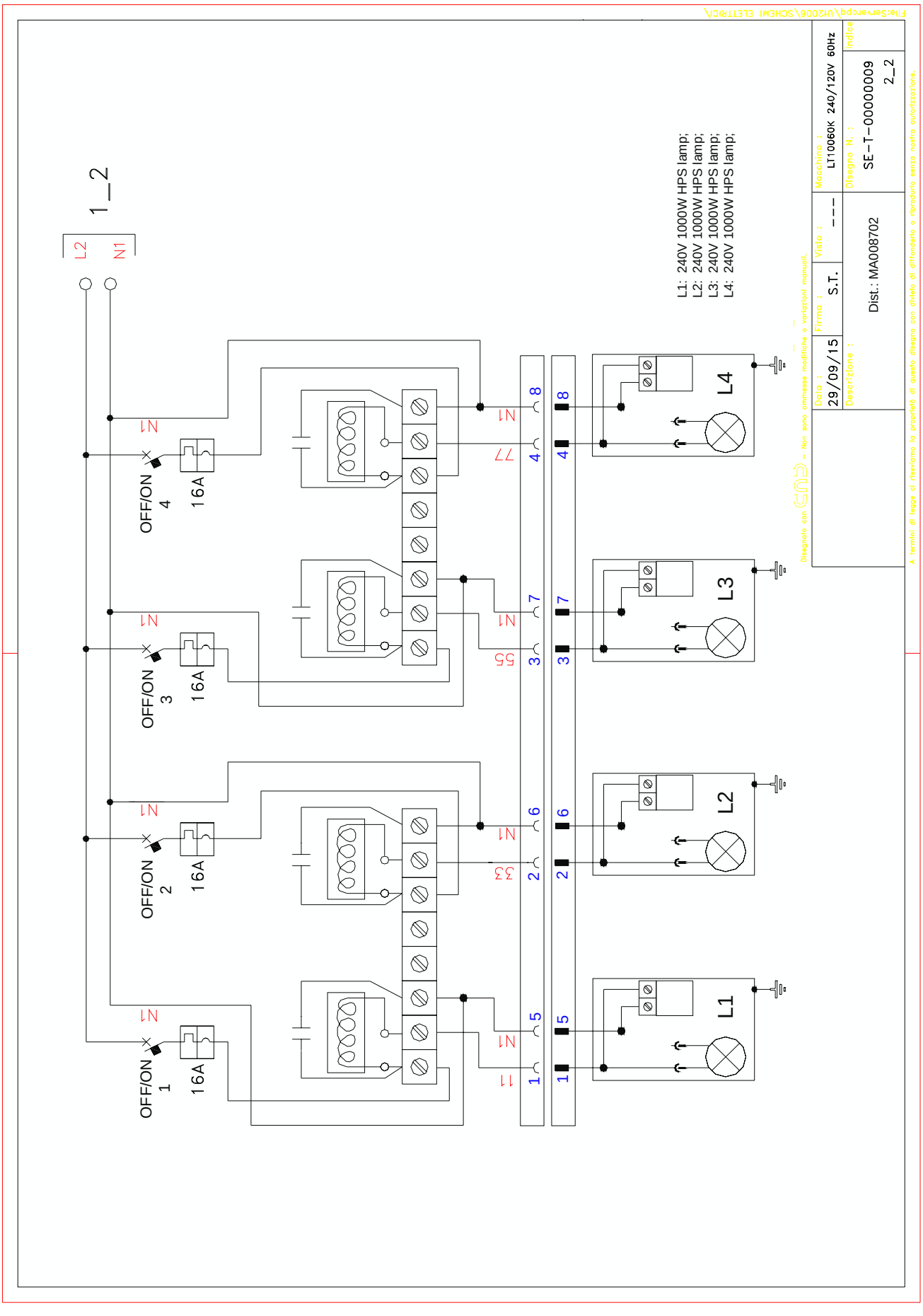


12.1 ELECTRICAL DIAGRAM (008697)



12.2 ELECTRICAL DIAGRAM (008702)




L1: 240V 1000W HPS lamp;
L2: 240V 1000W HPS lamp;
L3: 240V 1000W HPS lamp;
L4: 240V 1000W HPS lamp;
1_2
L2
N1
OFF/ON 4
OFF/ON 3
OFF/ON 2
OFF/ON 1
16A
L4
L3
L2
L1
Macchina : LT10060K 240/120V 60Hz
Disegno N. : SE-T-00000009
Indice 2_2
Visto : ---
Firma : S.T.
Data : 29/09/15
Descrizione : Dist.: MA008702