

USE AND MAINTENANCE MANUAL

LIGHT & ENERGY

TFII9Y J-4x1000
TFII9Y L-4x250

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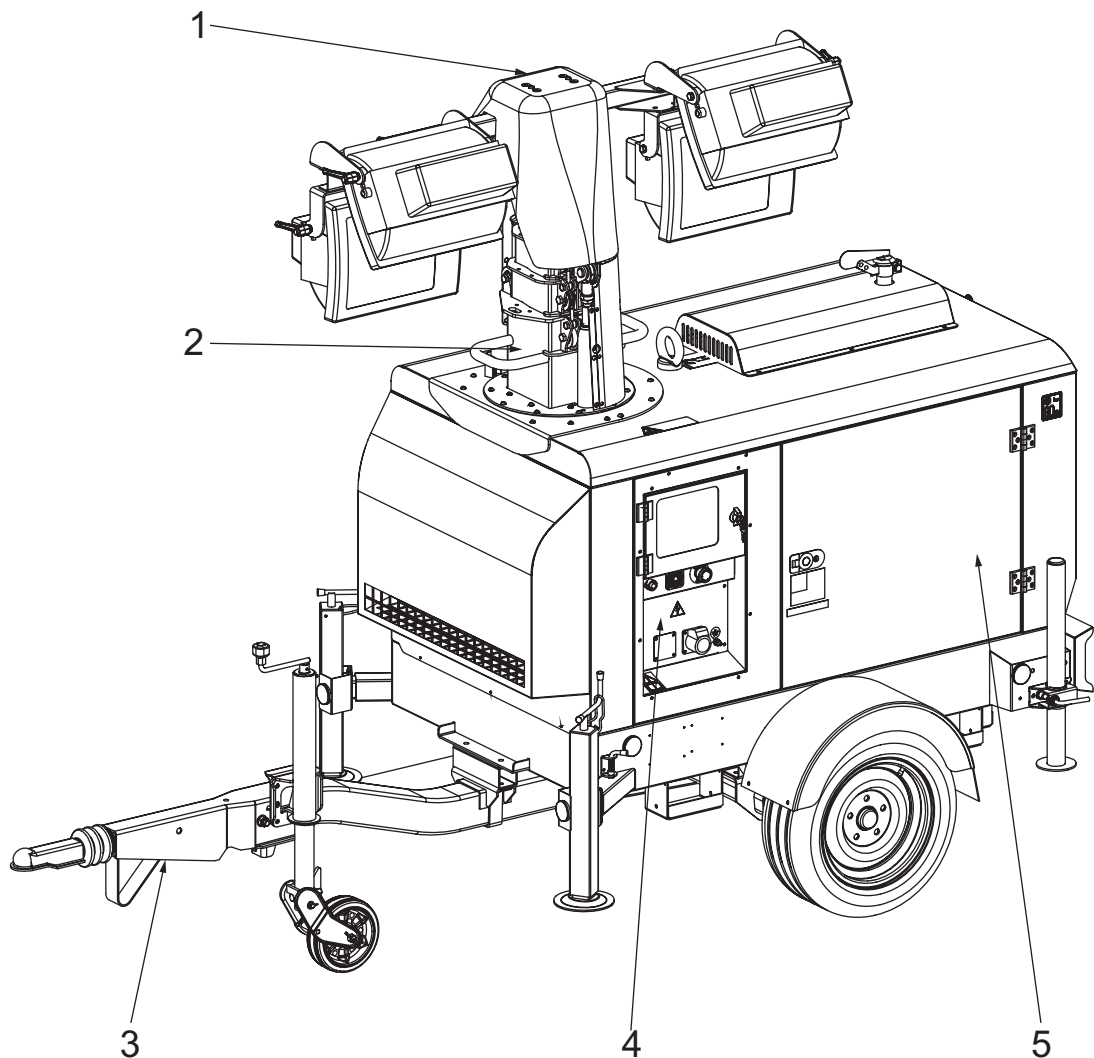
MADE IN ITALY

MOSA

The TF II-9Y J4x1000 a compact and functional model which integrates the functions of lighting tower and electric power generator into a single machine.

The lighting tower is composed of:

- A hydraulic telescopic mast, which can be raised up to a maximum height of 9 meters and manually oriented within a range of 340°
- A light assembly consisting of 4 IP65 floodlights with 1000 W metal halide lamps
- A silent generator driven by a water-cooled, low fuel consumption engine
- A command and control panel for the overall management and protection of the lighting tower
- 4 outriggers, 2 extendable and adjustable in height, to ensure the stability of the tower on any working surface
- The lighting tower can be equipped with a road trailer or a site tow.



1. Floodlights assembly
2. Hydraulic telescopic mast
3. Road trailer or site tow
4. Command and control panel
5. Soundproof generator set

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INFORMATION

Dear Customer

We wish to thank you for having bought a high quality product.

Our sections for Technical Service and Spare Parts will work at best to help you if it were necessary.

To this purpose we advise you, for all control and overhaul operations, to turn to the nearest authorized Service Centre, where you will obtain a prompt and specialized intervention.

☞ In case you do not profit on these Services and some parts are replaced, please ask and be sure that are used exclusively original parts; this to guarantee that the performances and the initial safety prescribed by the norms in force are re-established.

☞ *The use of **non original spare parts will cancel immediately any guarantee and Technical Service obligation.***

NOTES ABOUT THE MANUAL

Before actioning the machine please read this manual attentively. Follow the instructions contained in it, in this way you will avoid inconveniences due to negligence, mistakes or incorrect maintenance. The manual is for qualified personnel, who knows the rules: about safety and health, installation and use of sets movable as well as fixed.

You must remember that, in case you have difficulties for use or installation or others, our Technical Service is always at your disposal for explanations or interventions.

The manual for Use Maintenance and Spare Parts is an integrant part of the product. It must be kept with care during all the life of the product.

In case the machine and/or the set should be yielded to another user, this manual must also given to him.

Do not damage it, do not take parts away, do not tear pages and keep it in places protected from dampness and heat.

You must take into account that some figures contained in it want only to identify the described parts and therefore might not correspond to the machine in your possession.

GENERAL INFORMATION

ANY USE OF THIS PRODUCT OTHER THAN THOSE EXPLICITELY INDICATED IN THIS MANUAL RELIEVE THE MANUFACTURER FROM ANY RESPONSIBILITY ABOUT DAMAGES THAT MAY OCCUR TO PERSONS, OR PROPERTY.

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



Any of our product is labelled with CE marking attesting its conformity to applicable directives and also the fulfillment of safety requirements of the product itself; the list of these directives is part of the declaration of conformity included in any machine standard equipment.

Here below the adopted symbol:



CE marking is clearly readable and unerasable and it can be either part of the data-plate.

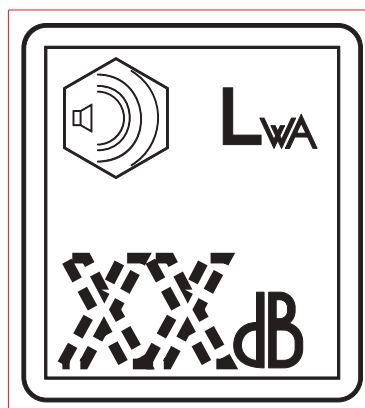
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	SERIAL N°		
	X		
	I ₂ (A)		
	U ₀	U ₂ (V)	
	I ₂ (A)		
	U ₀	U ₂ (V)	
	Hz	kVA	
	P.F.	V (V)	
		I (A)	
	n	RPM	n ₁
	n ₀	RPM	P _{1max}
		IP	
		KW	I. CL.

	Made in UE-ITALY	TYPE	
	Generating Set ISO 8528	SERIAL N°	
	KVA		
	V		
	I		
	Hz	P.F.	LTP POWER IN ACCORDANCE WITH ISO 8528
	RPM	I. CL.	IP
	ALTIT. 100 m	TEMP. 25 °C	MASS

	TYPE	
	SERIAL N°	Made in UE-ITALY
	TYPE/N°	
	VOLTAGE(V)	
	POWER(W)	
	Hz	KVA
	P.F.	V(V)
	I.C.L.	I(A)
	LTP POWER IN ACCORDANCE WITH ISO 8528	
	n	RPM
	P _{max}	TEMP. °C
		ALTIT. m
		IP
		Kg

	Made in UE-ITALY	I. CL.	
	IEC 60974-1	IP	
	U ₀		
	X	I ₂	U ₂
	n	RPM	n ₁
	n ₀	RPM	P _{1max}
		RPM	kw
	P	V	I

Furthermore, on each model it is shown the noise level value; the symbol used is the following:



The indication is shown in a clear, readable and indeleble way on a sticker.

BCS S.p.A.

Sede legale:
Via Marradi 1
20123 Milano - Italia

Stabilimento di Cusago, 20090 (Mi) - Italia

V.le Europa 59
Tel.: +39 02 903521
Fax: +39 02 90390466



ISO 9001:2008 - Cert. 0192

DICHIARAZIONE DI CONFORMITA'



Déclaration de Conformité – Declaration of Conformity – Konformitätserklärung
Conformiteitsverklaring – Declaración de Conformidad

BCS S.p.A. dichiara sotto la propria responsabilità che la macchina:
BCS S.p.A. déclare, sous sa propre responsabilité, que la machine:
BCS S.p.A. declares, under its own responsibility, that the machine:
BCS S.p.A. erklärt, daß die Aggregate:
BCS S.p.A. verklaard, onder haar eigen verantwoordelijkheid, dat de machine:
BCS S.p.A. declara bajo su responsabilidad que la máquina:

GRUPPO ELETTROGENO DI SALDATURA / WELDING GENERATOR

GRUPPO ELETTROGENO / POWER GENERATOR

TORRE FARO / LIGHTING TOWER

Marchio / Brand :

Modello / Model :

Matricola / Serial number :

FAC SIMILE

è conforme con quanto previsto dalle Direttive Comunitarie e relative modifiche:
est en conformité avec ce qui est prévu par les Directives Communautaires et relatives modifications:
conforms with the Community Directives and related modifications:
mit den Vorschriften der Gemeinschaft und deren Ergänzungen übereinstimmt:
in overeenkomst is met de inhoud van gemeenschapsrichtlijnen en gerelateerde modificaties:
comple con los requisitos de la Directiva Comunitaria y sus anexos:

2006/42/CE - 2006/95/CE - 2004/108/CE

Nome e indirizzo della persona autorizzata a costituire il fascicolo tecnico :
Nom et adresse de la personne autorisée à composer le Dossier Technique :
Person authorized to compile the technical file and address :
Name und Adresse der zur Ausfüllung der technischen Akten ermächtigten Person :
Persoon bevoegd om het technische document , en bedrijf gegevens in te vullen
Nombre y dirección de la persona autorizada a componer el expediente técnico :

ing. Benso Marelli - Consigliere Delegato / Managing Director ; V.le Europa 59, 20090 Cusago (MI) – Italy

Cusago,

Ing. Benso Marelli
Consigliere Delegato
Managing Director



Technical data

TF II 9 Y J-4x1000

LIGHTS AND MAST	Lamp type	4 x 1000W - METAL HALIDE	
	Mast rotation	340° - MANUAL	
	Mast	TELESCOPIC - 9 m - HYDRAULIC	
GENERAL CHARACTERISTICS	Wind load stability	UP TO 80 km/h	
	Tank capacity	110 l	
	Running time	75 h (lights load only)	
	Ip protection	IP 44	
	Acoustic power	LwA = 90 dBA LpA = 65 dBA @ 7 m	
	Stabilizers	4 (2 ADJUSTABLE)	
	Dimensions (l x w x h) (mm)	Fully deployed (working conditions)	
		a) NO TRAILER	2210 x 1885 x 9000
		b) SITE TOW	3150 x 1885 x 9000
		c) ROAD TRAILER	3150 x 1885 x 9000
		Transport conditions	
d) NO TRAILER		1745 x 1325 x 2050	
Weight (dry)	e) SITE TOW	3150 x 1325 x 2250	
	f) ROAD TRAILER	3135 x 1400 x 2250	
	a) NO TRAILER	940 kg	
Tyres	b) SITE TOW	1060 kg	
	c) ROAD TRAILER	1075 kg	
	• SITE TOW	2 x 185 / 65 R 14	
	• ROAD TRAILER	2 x 195 / 50 R 13	
ENGINE	Model	YANMAR 3TNV76	
	Net power (st-by / prp)	9 kW / 8.2 kW @ 1500 rpm	
	Cylinders / displacement	3 / 1116 cm ³	
	Fuel consumption	1.5 l / h (lights only); 2.4 l / h (PRP)	
	Battery	12V 45 Ah	
GENERATOR	Alternator	LINZ E1C13SC/4 - 8 kVA, SINGLE PHASE, SYNCHRONOUS, BRUSHLESS, 4 POLES PF = 0.9 ISOLATION CLASS = H	
	Output power	3.5 kVA 230 V / 15.2 A 50 Hz 1x16 A / 230 V 2P+T CEE	
CONTROL PANEL	EP6 controller		
	Functions:		
	• Starter key		
	• Autostart		
• Protections and alarms	High temperature engine shut down; Low oil pressure shut down; Overspeed shut down; Battery charge failure shut down; Delayed (5 min.) low fuel shut down; Overvoltage shut down; Battery over / undervoltage alarm.		
• Measurements	Hourmeter; r.p.m. meter; battery charge alternator voltage; battery voltage; generator voltage; generator current; generator frequency.		
Fuel level gauge - Emergency stop button - Siren - General protection circuit breaker - Output socket protection circuit breaker - Individual circuit breaker switches for the lamps - Mast up / down push buttons - External power supply socket (230 V / 32 A 2P+T) and switch (optional).			

OUTPUT

Declared power according to ISO 8528-1 (temperature 25°C, 30% relative humidity, altitude 100 m above sea level).

(*Stand-by) = maximum available power for use at variable loads for a yearly number of hours limited at 500 h. No overload is admitted.

(**Prime power PRP) = maximum available power for use at variable loads for a yearly unlimited number of hours. The average power to be taken during a period of 24 h must not be over 80% of the PRP.

It's admitted overload of 10% each hour every 12 h.

In an approximative way one reduces: of 1% every 100 m altitude and of 2.5% for every 5°C above 25°C.

ACOUSTIC POWER LEVEL

ATTENTION: The concrete risk due to the machine depends on the conditions in which it is used. Therefore, it is up to the end-user and under his direct responsibility to make a correct evaluation of the same risk and to adopt specific precautions (for instance, adopting a I.P.D. -Individual Protection Device) **Acoustic Noise Level (LwA) - Measure Unit dB(A):** it stands for acoustic noise released in a certain delay of time. This is not submitted to the distance of measurement.

Acoustic Pressure (Lp) - Measure Unit dB(A): it measures the pressure originated by sound waves emission. Its value changes in proportion to the distance of measurement.

The here below table shows examples of acoustic pressure (Lp) at different distances from a machine with Acoustic Noise Level (LwA) of 95 dB(A)

Lp a 1 meter = 95 dB(A) - 8 dB(A) = 87 dB(A)

Lp a 7 meters = 95 dB(A) - 25 dB(A) = 70 dB(A)

Lp a 4 meters = 95 dB(A) - 20 dB(A) = 75 dB(A)

Lp a 10 meters = 95 dB(A) - 28 dB(A) = 67 dB(A)

PLEASE NOTE: the symbol  when with acoustic noise values, indicates that the device respects noise emission limits according to 2000/14/CE directive.

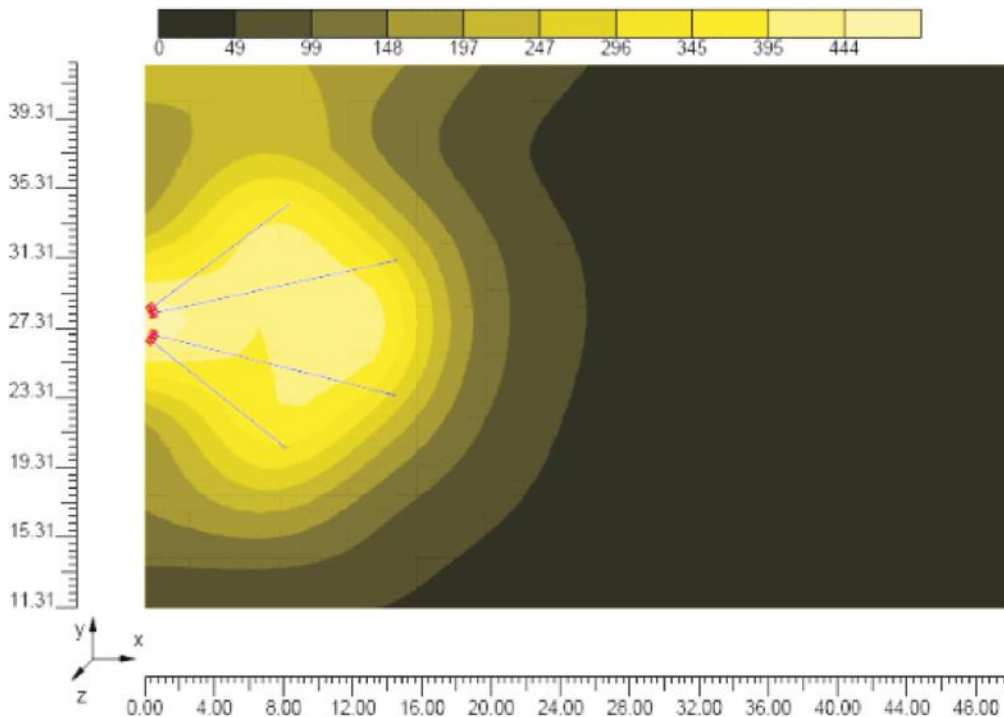
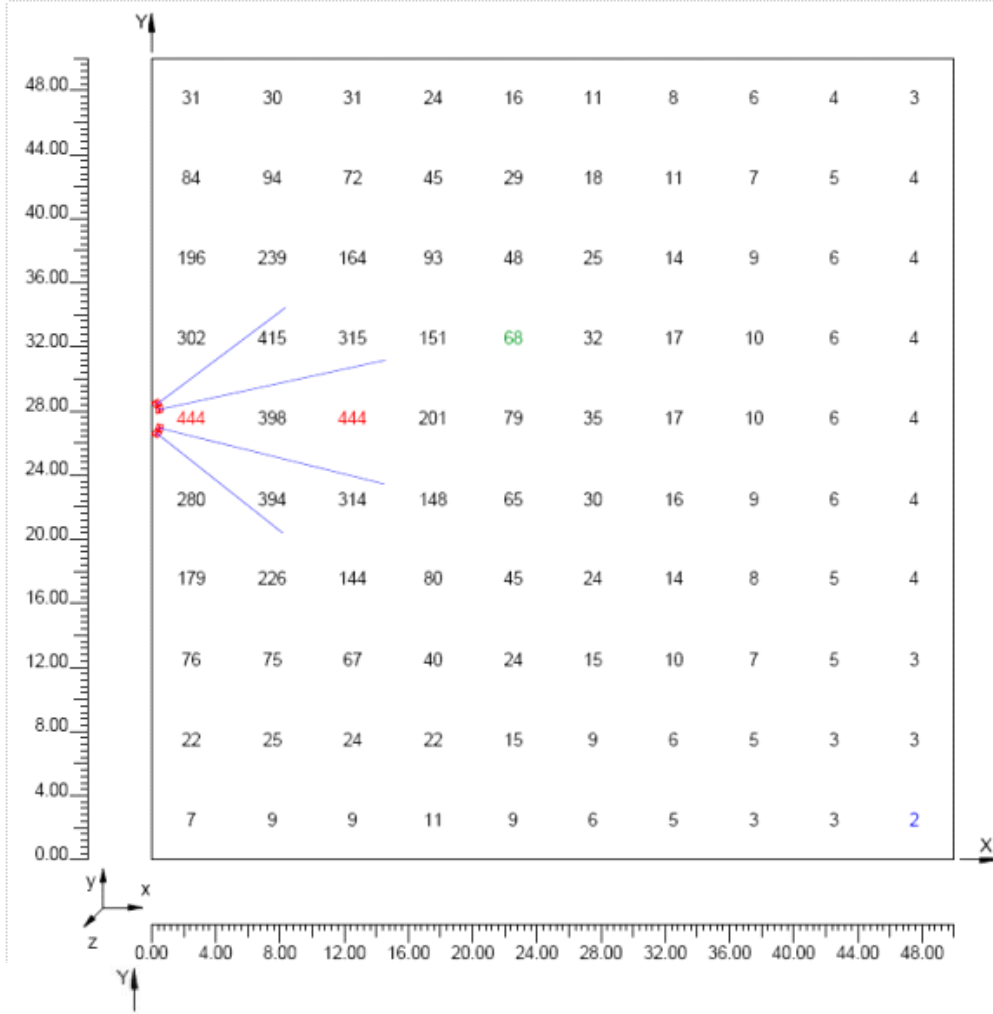


ILLUMINATION DIAGRAM

TF II 9 Y J-4x1000
Lighting Tower 9m – 4 x 1000W metal halide

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1.5.1
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Fixture type	Power	Flux (each lamp)	Light type	Color temperature	Mounting height	n° of lamps
Titano	1000 W	85000 lm	Osram HQI-T 1000W/D	7500 °K	9 m	4



SYMBOLS IN THIS MANUAL

- The symbols used in this manual are designed to call your attention to important aspects of the operation of the machine as well as potential hazards and dangers for persons and things.
Moreover, this symbolism intends to draw your attention with the aim to give you indications for a correct use and, as a result, to obtain a good operation of the machine or equipment used.

SAFETY PRECAUTIONS

 **DANGEROUS**

This heading warns of an immediate danger for persons as well for things. Not following the advice can result in serious injury or death.

 **WARNING**

This heading warns of situations which could result in injury for persons or damage to things.

 **CAUTION**

To this advice can appear a danger for persons as well as for things, for which can appear situations bringing material damage to things.

 **IMPORTANT**

 **NOTE**

 **ATTENTION**

These headings refer to information which will assist you in the correct use of the machine and/or accessories.

SYMBOLS



STOP - Read absolutely and be duly attentive.



Read and pay due attention.



DANGER



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



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



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



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



EXPLOSION - Explosive material or danger of explosion. In general. If the advice is not respected there can be explosions.



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



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

PROHIBITIONS

It is prohibited to smoke while filling the tank with fuel.



The cigarette can cause fire or explosion. If the advice is not respected fires or explosions can be caused.

It is prohibited to use water to quench fires on the electric machines.



If the advice is not respected fires or damage to persons can be caused.

Use only with non inserted voltage



It is prohibited to make interventions before having disinserted the voltage.



ACCES FORBIDDEN to non authorized people

OBLIGATIONS

Use only with safety clothing



It is compulsory to use the personal protection means given in equipment.



It is compulsory to use tools adapted to the various maintenance works
If the advice is not respected damage can be caused to things and even to persons.

GENERAL SAFETY INSTRUCTIONS

NOTE: the information contained in this manual are subject to change without notice.

The instructions in this manual are intended as indicative only. It is the responsibility of the owner/operator to evaluate risks and potential damages in relation to the use of the product in the specific conditions of application. Remember that the non observance of the indications of this manual may result in damage to people or things.

In all cases, however, it is understood that the use shall be in compliance with the applicable laws/regulations.

- Before operating the machine, read carefully the safety instructions contained in this manual and other manuals supplied (engine, alternator, etc.).
- All operations, handling, installation, use, maintenance, repair should be carried out by authorized and qualified personnel.
- When operating, wear personal protective equipment (PPE): footwear, gloves, helmet, etc..
- The owner is responsible for maintaining the equipment in safe conditions.

Use only in perfect technical conditions

The machinery or equipment must be used in perfect technical condition. Remove immediately any defects that may affect the safe conditions of use.

- Before starting to use this equipment it is important to take knowledge of all the controls of the machine, all its functions and its correct installation in order to avoid accidents to people and damage to the machine itself. In particular, it is important to know how to stop the equipment quickly in case of emergency.
- Do not allow the use of the machine to people unless previously instructed with all the information for a proper, safe use.
- Forbid the access in the operational area to non authorized personnel, children and pets so as to protect them from possible injury caused by any part of the machine.

SAFETY PRECAUTIONS DURING HANDLING AND TRANSPORTATION

- Lift the machine using only the points allocated for this function.

The lifting eye (or eyes) and the correct positioning of the forks of the forklift are marked with specific adhesives.

- Before moving a lighting tower lower the telescopic mast and block properly all movable parts such as the access doors, the mast, the outriggers, the floodlights.

- Clear the operational area of possible obstacles and all unnecessary personnel.
- Always use lifting equipment properly sized and controlled by enabled bodies.
- It is forbidden to set on the frame of the equipment objects or accessories that alter weight and center of gravity and cause stresses not foreseen to the lifting points.
- Do not submit the machine and the lifting equipment to swinging or shock which may transmit dynamic stress to the structure.

Equipments with trailers or site tows

- Never drag the machine without trailer (or site tow)
- Check for a correct assembly of the machine to the towing device.
- Always make sure that the hook of the vehicle is suitable for towing of the total mass of the trailer.
- Do not tow the trailer if the coupling devices are worn or damaged.
- Check for proper tire pressure.
- Do not replace the tires with types different from the original ones.
- Check that the brakes and the optical signaling of the trailer are working properly.
- Verify that the bolts of the wheels are in place and well tightened.
- Do not park the machine (on trailer or site tow) on a steep slope.
For the stops, not followed by a work session, always engage the parking brake and / or block the wheels by means of wheel chocks.
- Do not tow the trailer on bumpy roads.
- Do not exceed the maximum permissible speed on public roads of 80 km/h with the trailer, in any case comply with the legislation applicable in the country of use.
- Do not use the site tow on public roads, this is intended for use only in private and delimited areas. The maximum permitted speed is 40 km/h on smooth surfaces (asphalt or concrete), adapt in each case the speed to the type of ground.

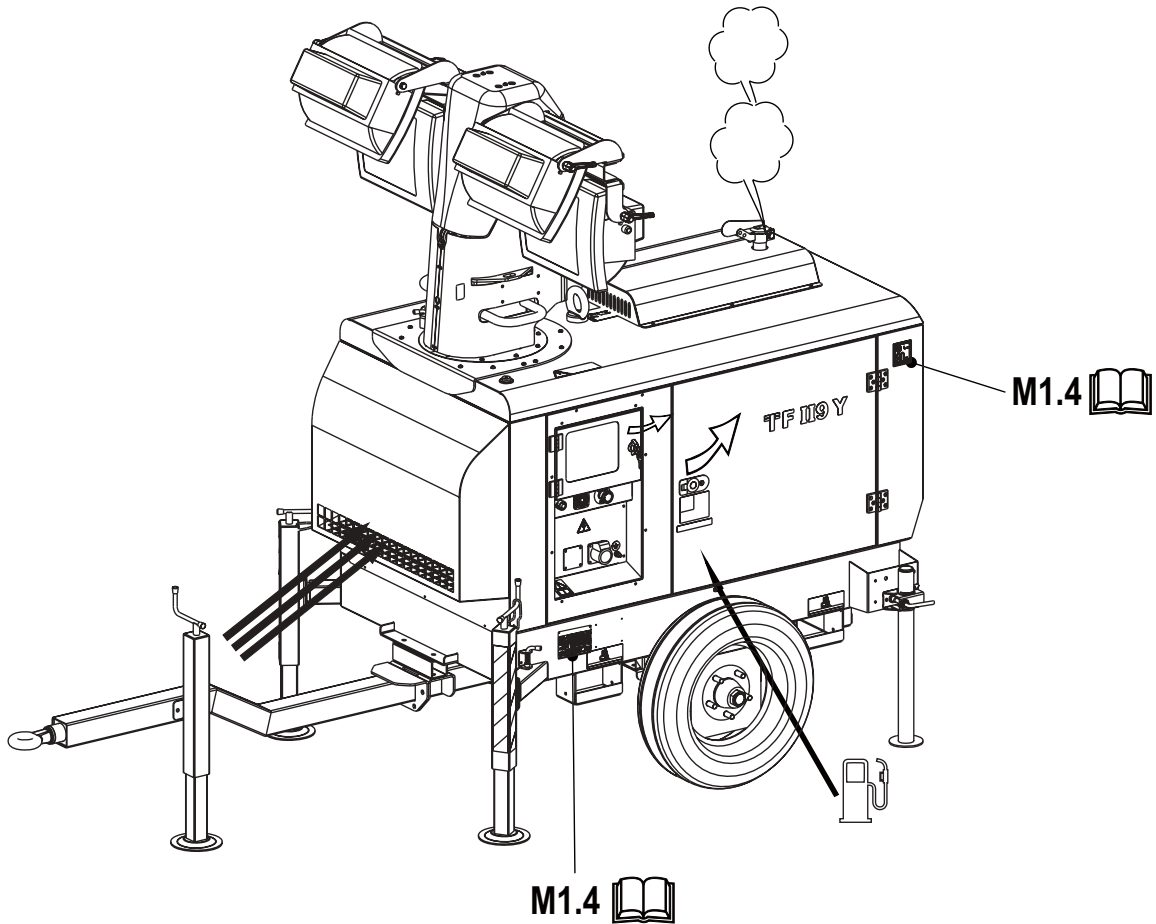
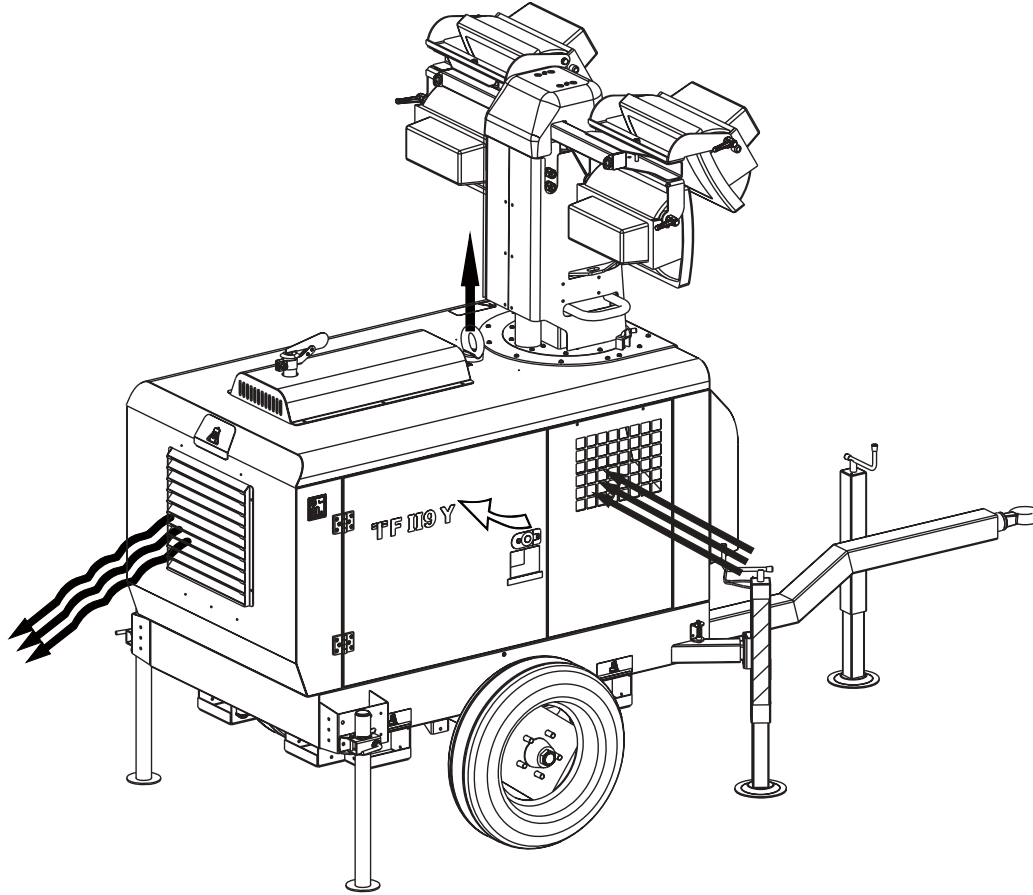
SAFETY PRECAUTIONS DURING INSTALLATION AND USE

- Always locate the lighting tower on a flat and solid ground, so as to avoid tipping, slipping or falling during operation. Avoid using the lighting tower on slopes greater than 10 degrees.
- Make sure the area immediately surrounding the machine is clean and free from debris.
- Make sure the area above the lighting tower is free from overhead cables or other obstacles. The lighting tower reaches a maximum height of 9 meters.

- Before raising the mast extract the outriggers located at the sides of the machine. Acting on the outriggers level the lighting tower making use of the bubble, so as to bring the equipment in a horizontal position. Make sure that the tower rests securely on the outriggers. If the lighting tower is mounted on road trailer pull the handbrake.
- Do not operate the lighting tower if the wind speed exceeds the safe speed indicated or if it is expected the arrival of storms or thunderstorms in the area.
- Lower the telescopic mast when the tower is not used.
- Connect the machine to an earthing system according to the regulations in force at the place of installation. Use the ground terminal on the front of the machine.
- Do not use the lighting tower with wet or damp hands and / or clothing.
- Use plugs suitable for the output sockets of the machine and make sure that electrical cords are in good condition.
- The machine must always be positioned so that the exhaust gases are dispersed in the air without being inhaled by people or living beings.
- If you use the machine indoors is necessary that the installation is designed and built by skilled technicians in a workmanlike manner.
- During normal operation, keep doors closed. The access to the internal parts should be allowed only for maintenance reasons.
- Do not place objects or obstructions in the vicinity of the air intakes and air outlets, a possible overheating of the generator could cause a fire.
- Keep area near to the muffler free from objects such as rags, paper, cardboard. The high temperature of the muffler could cause the burning of objects and cause fire.
- Do not touch and do not place objects on the lamps during operation or immediately after use. The lamps become very hot.
- Do not turn on the lamps without the protective glass or with the same broken or damaged.
- Immediately stop the machine in case of malfunction.
Do not restart the machine without first having found and fixed the problem.
- Always cut off power to the lamps and wait for their cooling before performing any maintenance or replacement.
- Do not touch the engine, the exhaust pipes and the muffler during operation or immediately after. Allow the engine to cool before performing any operation.
- With the machine running pay attention to moving parts such as fans, belts, pulleys.
- Do not remove the protections and the safety devices unless absolutely necessary, restore them after completion of the maintenance or repair.
- Do not refuel while the engine is running or hot. Do not smoke or use naked flames when refueling.
- Refuel only outdoors or in well ventilated areas.
- Avoid spilling fuel, especially on the engine. Clean and dry any leaks before restarting the machine.
- Slowly unscrew the cap of the fuel tank and put it back always after refueling.
- Do not fill the tank completely to allow for expansion of the fuel inside.
- Do not remove the radiator cap when the engine is running or still hot, the coolant may spurt out and cause serious burns.
- Do not handle the battery without the use of protective gloves, the battery fluid contains sulfuric acid, which is very corrosive and dangerous.
- Do not smoke, avoid any naked flames or sparks near the battery, the vapors exhaled could cause the battery to explode

SAFETY PRECAUTIONS DURING MAINTENANCE

- Make use of **qualified** personnel to carry out maintenance and troubleshooting.
- It is mandatory to stop the engine before performing any maintenance on the machine.
- Always use protective devices and suitable equipment.

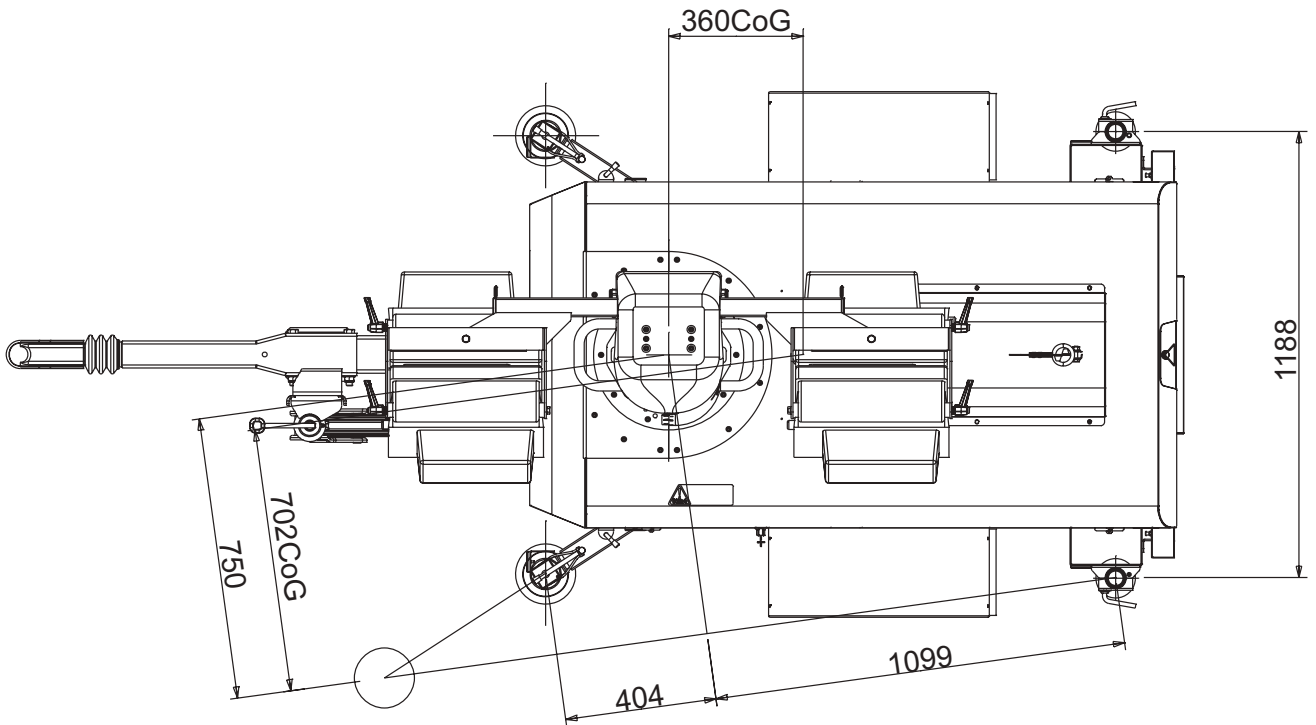
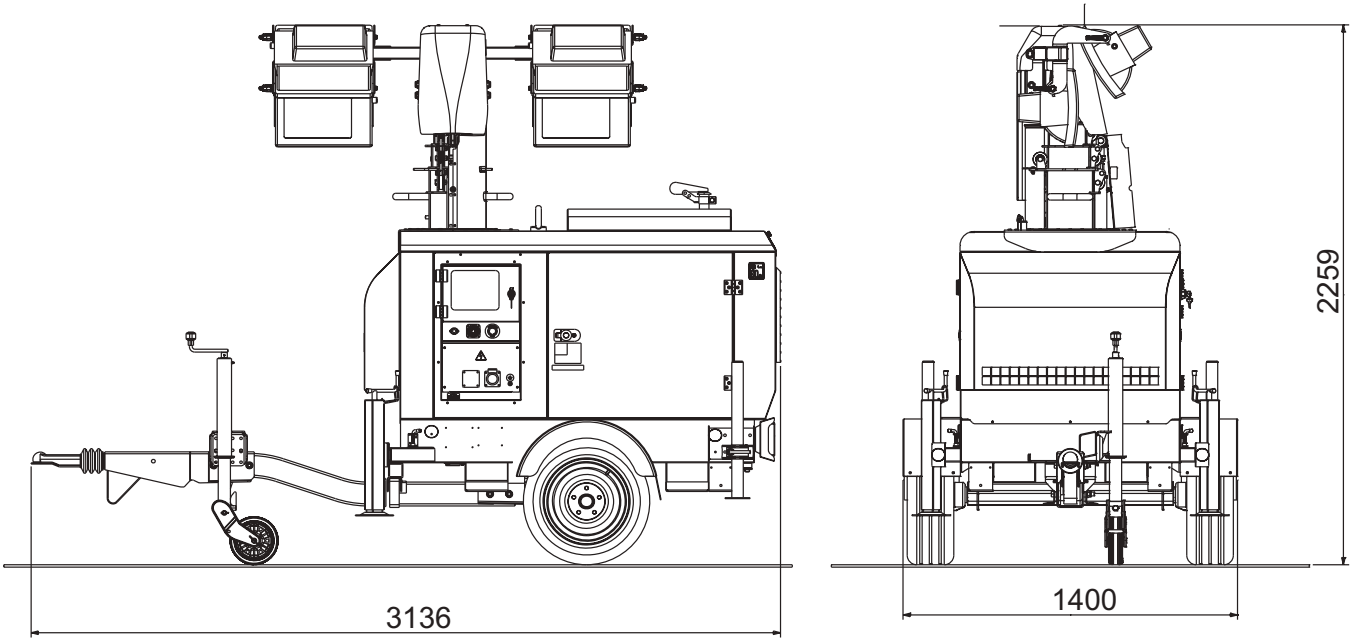


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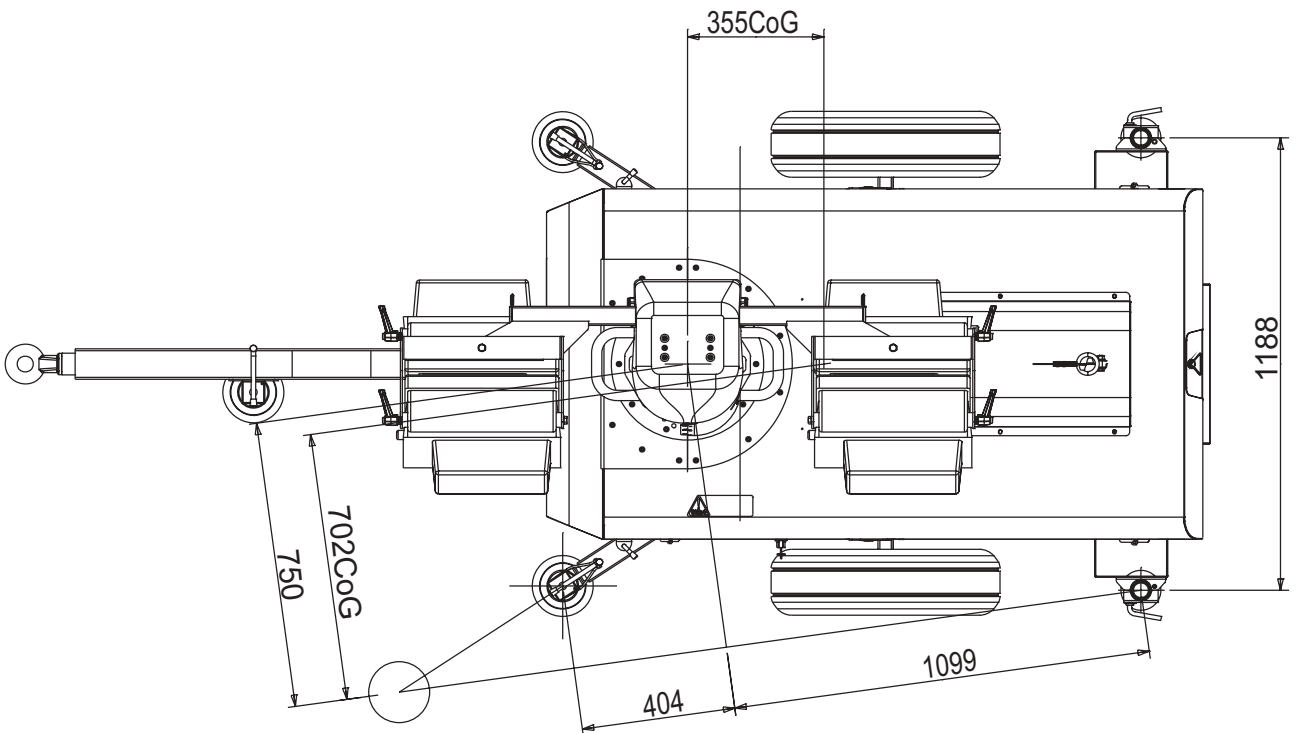
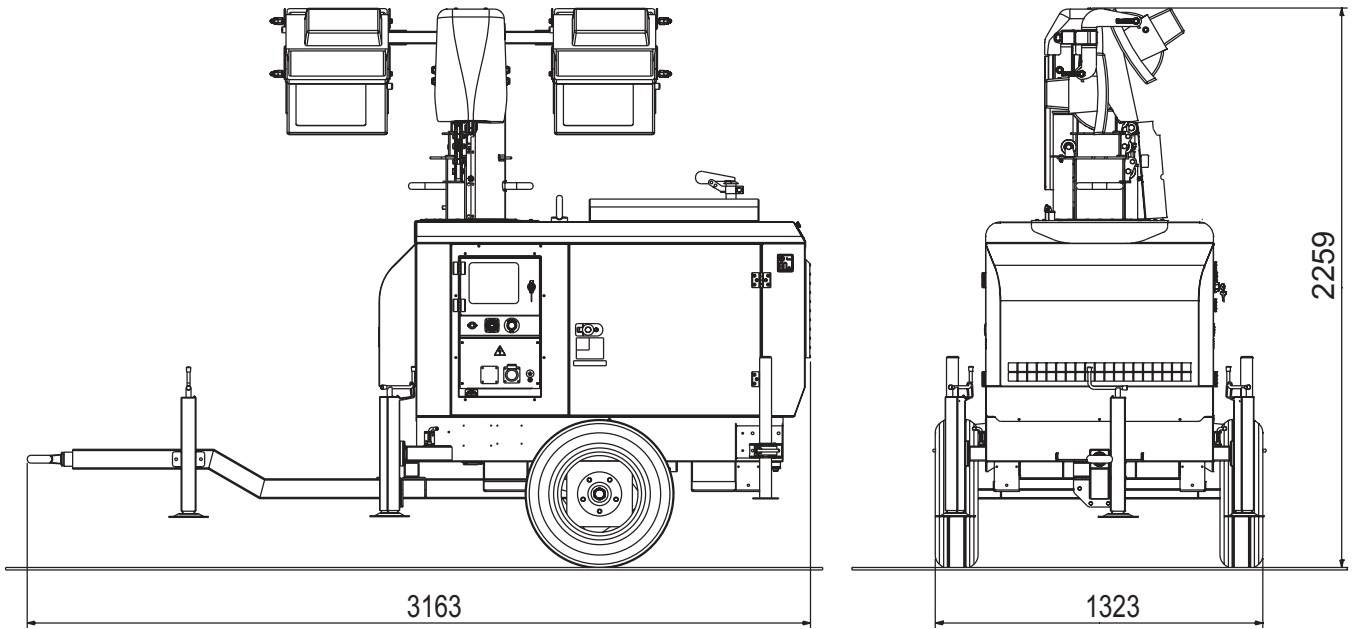


Ⓘ Dimensioni
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Ⓓ Abmessungen
Ⓔ Dimensiones
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TF II 9 Y J-4x1000

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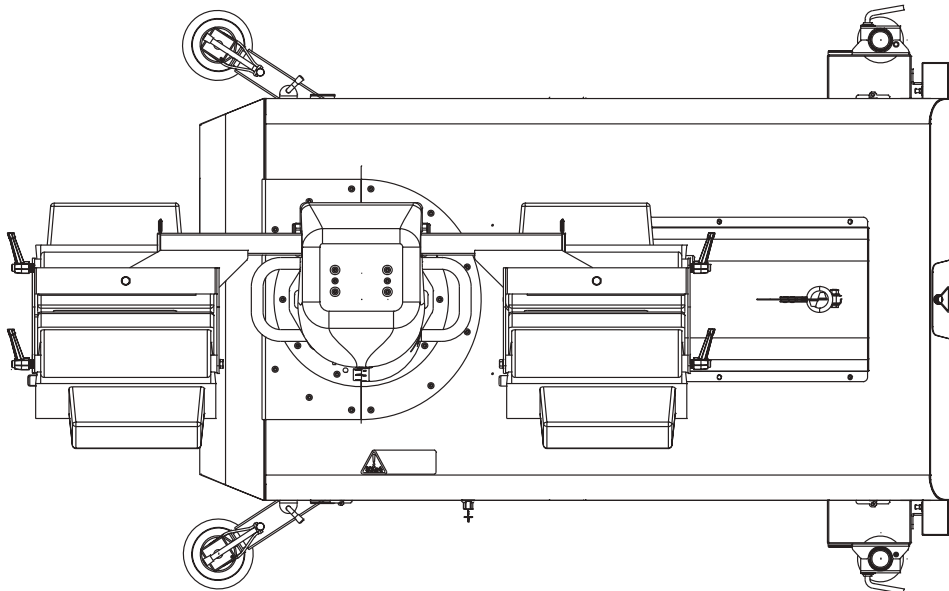
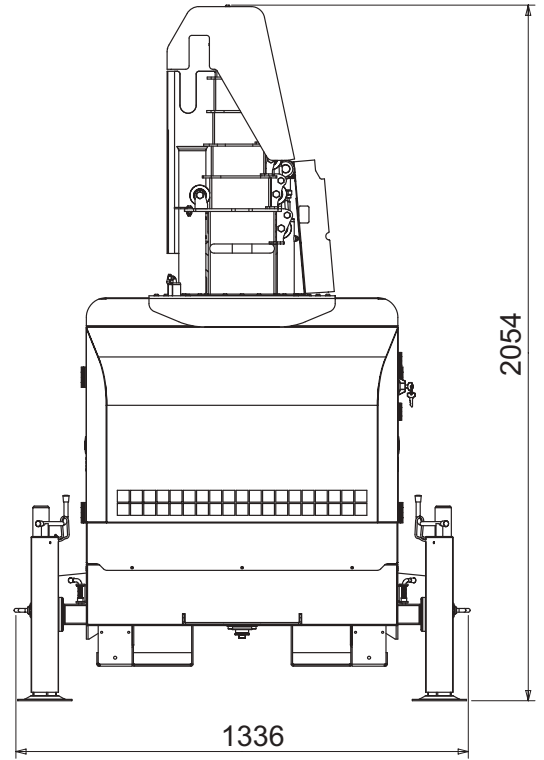
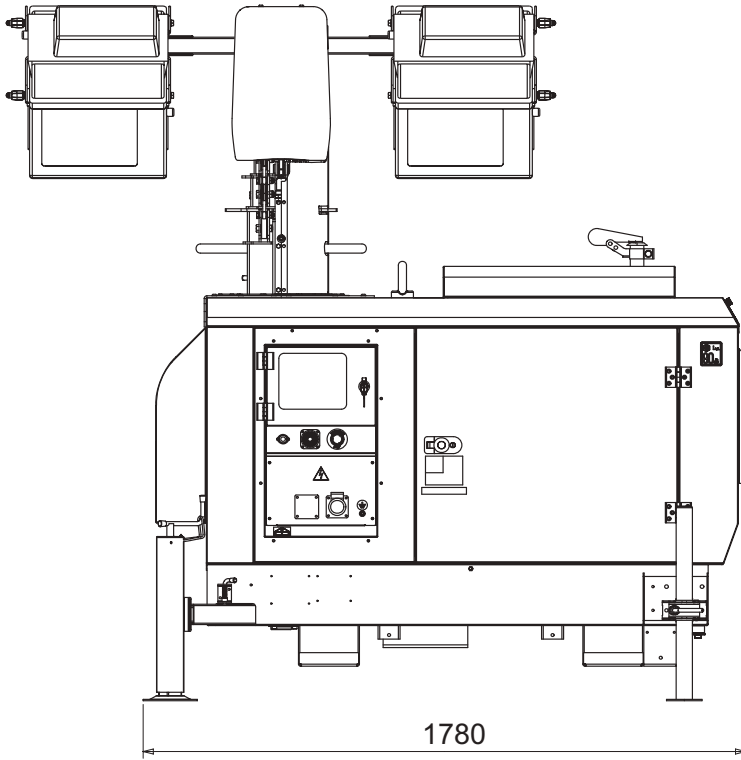


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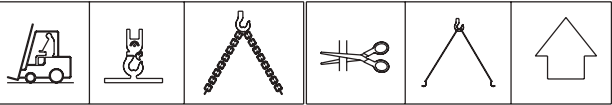
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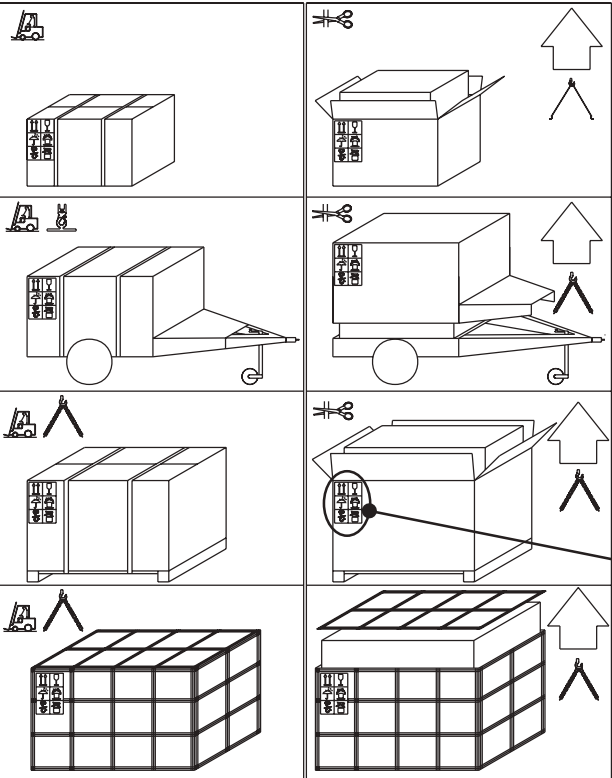
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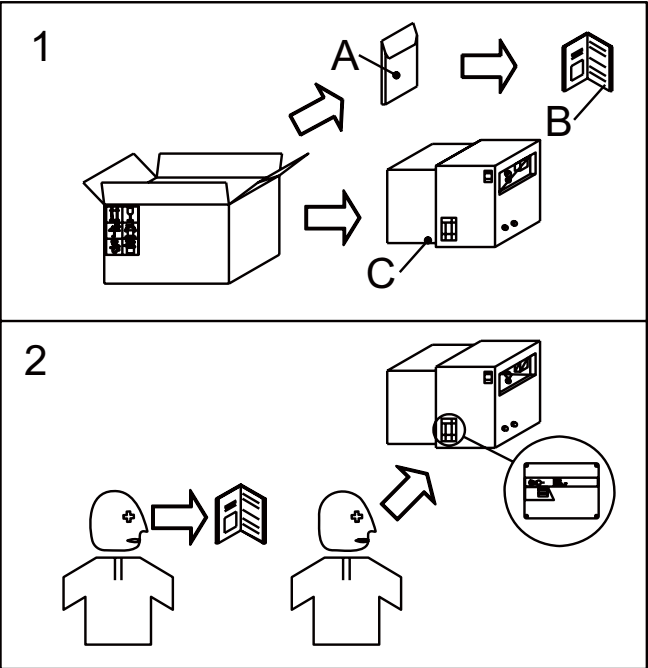
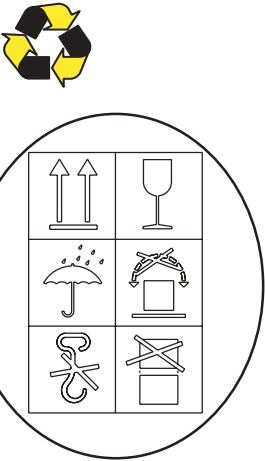
 **NOTE**



Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with its packaging, and conforms to local rules and regulations. When receiving the goods make sure that the product has not suffered damage during the transport, that there has not been rough handling or taking away of parts contained inside the packing or in the set. In case you find damages, rough handling or absence of parts (envelopes, manuals, etc.), we advise you to inform immediately our Technical Service.




For eliminating the packing materials, the User must keep to the norms in force in his country.




- 1) Take the machine (C) out of the shipment packing. Take out of the envelope (A) the user's manual (B).
- 2) Read: the user's manual (B), the plates fixed on the machine, the data plate.

General precaution when handling the machine.



ATTENTION



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

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

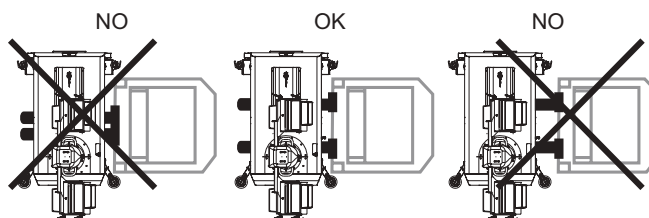
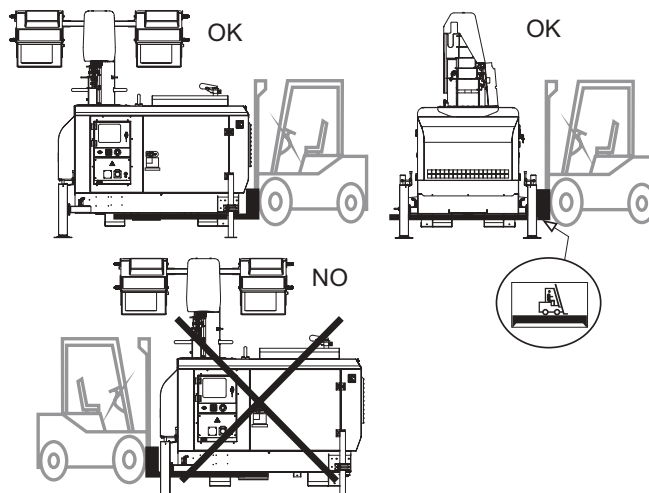
- The transport must always be done with the engine off, with electrical cables and starting battery disconnected, fuel tank empty.
- Clear the moving zone of all possible obstacles and from all unnecessary personnel.
- Use properly sized lifting equipment regularly submitted to major overhaul by an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

Moving the generating set via forklift

When lifting with a forklift it is necessary to:

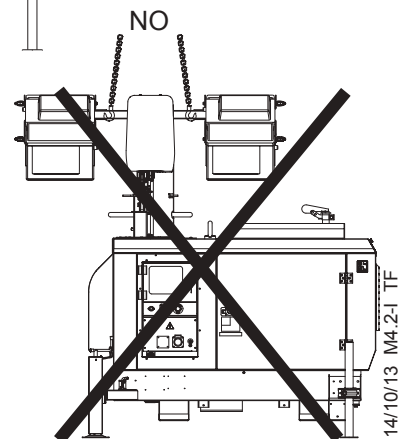
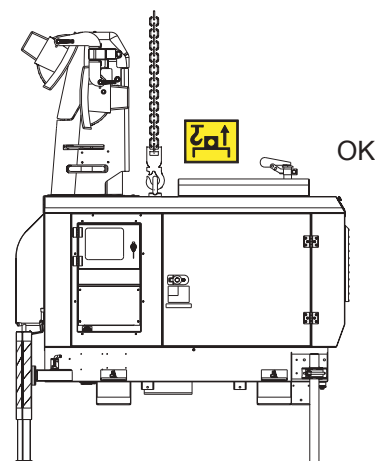
- Insert the forks of the forklift into the specific pockets located sideways and frontally on the baseframe, as indicated in the figures.
- Fully insert the forks so that they stick out from the opposite side and be careful to keep the equipment in horizontal position.

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



Moving the generating set via cables or chains

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



Moving by site trolley / trailer



CAUTION

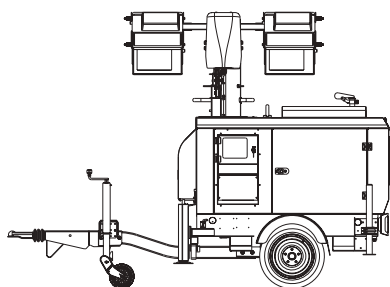
the trailer can be driven only after you have done the following:

- complete lowering of the mast
- engine shutdown
- positioning of the floodlights for the transportation (see picture)

Before starting to tow do the following:

- Fully raise the outriggers and lock the crank with its clamp
- Fully retract the outriggers up to snap the locking pins
- Use the crank of the jockey wheel to raise / lower the drawbar on the hook of the towing vehicle lock the hook
- lock the hook
- Connect the cable from the trailer to the towing vehicle and make sure all the lights work properly
- Make sure that the doors are locked
- Check for proper tire inflation of the trailer

Road trailer (CTV):



It is homologated for use on public roads. The maximum speed allowed is 80 km/h, in any case, the transportation laws in force in the place of use shall be respected.

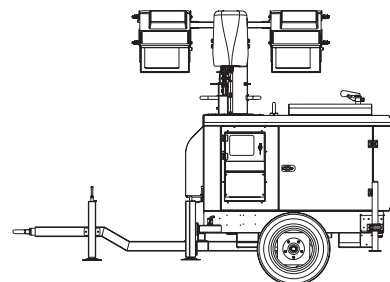
Site tow CTL:

this trailer is made by the manufacturer, it can not be towed on public roads. Therefore it can only be used on private roads and no through traffic zones.

The maximum speed allowed is 40 km/h on smooth surfaces (asphalt, cement) and, in any case, the laws in force in the place of use should be respected.

Always follow the directions below for any tipe of tow:

- Do not park the machine (on trailer or site tow) on a slant ground.
- When parking always use the emergency/hand brake and/or safety clamps.
- DO NOT tow the trailer on bumpy roads.



Machine transportation by a motor vehicle

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





BATTERY WITHOUT MAINTENANCE



Connect the cable + (positive) to the pole + (positive) of the battery (after having taken away the protection), by properly tightening the clamp.

Check the state of the battery from the colour of the warning light which is in the upper part.

- Green colour: battery OK
- Black colour: battery to be recharged
- White colour: battery to be replaced

DO NOT OPEN THE BATTERY.



LUBRICANT

OIL REPLACEMENT

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

Originally, the machine is supplied with engine oil type:

ENI SIGMA PERFORMANCE 15W-40SE

REFUELLING AND CONTROL:

Carry out refuelling and controls with motor at level position.

1. Remove the oil-fill tap (24)
2. Pour oil and replace the tap
3. Check the oil level using the dipstick (23); the oil level must be comprised between the minimum and maximum indicators.



ATTENTION

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



AIR FILTER

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



FUEL



ATTENTION



Do not smoke or use open flames during refuelling operations, in order to avoid explosions or fire hazards.

Fuel fumes are highly toxic; carry out operations outdoors only, or in a well-ventilated environment.



Avoid accidentally spilling fuel. Clean any eventual leaks before starting up motor.

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

For further details on the type of diesel fuel to use, see the motor operating manual supplied.

Do not fill the tank completely; leave a space of approx. 10 mm between the fuel level and the wall of the tank to allow for expansion.

In rigid environmental temperature conditions, use special winterized diesel fuels or specific additives in order to avoid the formation of paraffin.





COOLING LIQUID



ATTENTION



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

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

ATTENTION:

The engine cooling system is originally filled with coolant type:

AGIP ANTIFREEZE EXTRA

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



GROUNDING CONNECTION

The grounding connection to an earthed installation **is obligatory** for all models equipped with a differential switch (circuit breaker). In these groups the generator star point is generally connected to the machine's earthing; by employing the TN or TT distribution system, the differential switch guarantees protection against indirect contacts.

In the case of powering complex installations requiring or employing additional electrical protection devices, the coordination between the protection devices must be verified.

For the grounding connection, use the terminal (12); comply to local and/or current regulations in force for electrical installations and safety.





ATTENTION

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

In particular, be sure that:

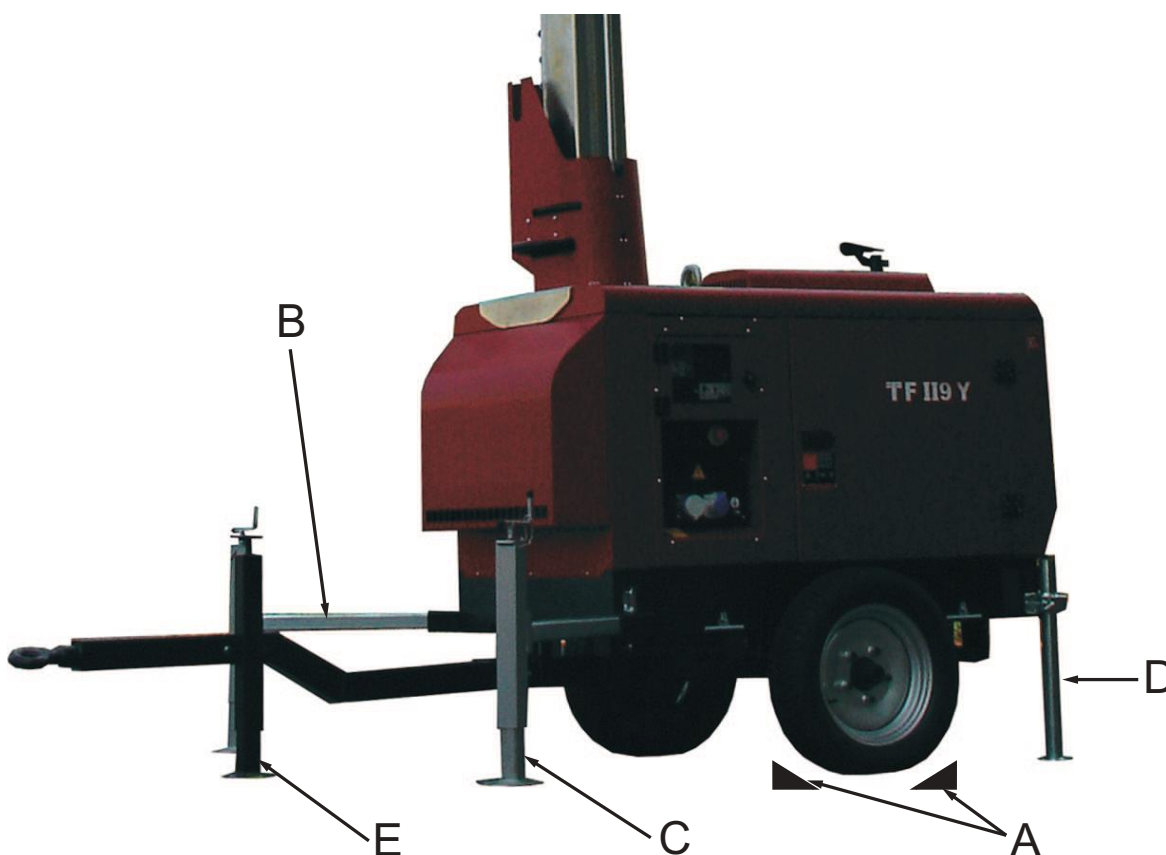
- the surface on which the lighting tower is placed is flat and free of obstacles
- the wind speed does not exceed 80 km/h
- there are no obstacles or overhead power lines above the lighting tower
- the status of the lighting tower is adequate, in general
- the lifting ropes of the mast are in perfect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

PRELIMINARY CHECKS

- Check the engine oil level, hydraulic oil and radiator fluid
- Check the fuel level

POSITIONING OF THE OUTRIGGERS AND LEVELLING OF THE TOWER

- Block the wheels using the hand brake (road trailer) or chocks (site-tow)
- Raise the locking pins of the extension arms of the front outriggers and extract them until the pins block again the arms in their extended position.
- Lower the rear outriggers and secure them with the locking lever
- Lower the front outriggers and adjust the lighting tower position by acting on their handles, looking at the bubble level on the machine, until the horizontal position is reached.
- Lower the jack of the drawbar (site-tow) or the jockey wheel (road trailer) until it is resting on the ground.

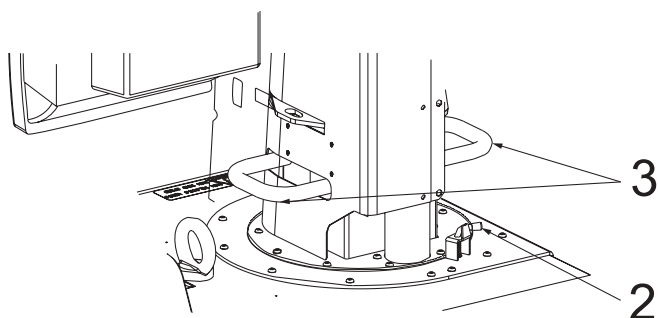
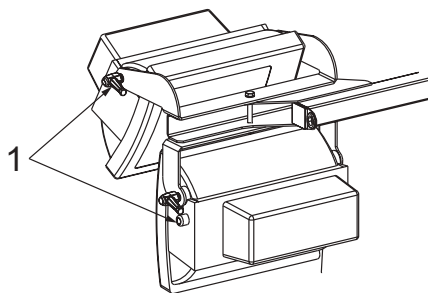


- A. Wheel chocks
 B. Outriggers extension arm
 C. Front outrigger
 D. Rear outrigger
 E. Jack



ORIENTATION OF FLOODLIGHTS AND MAST

RAISING AND LOWERING OF THE MAST



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

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

To adjust the angle of the floodlights loosen the clamping lever (1), turn the floodlight to the desired position and lock again.

To rotate the mast lift the pin (2) and turn it in such a way as to keep it extracted. Direct the mast in the desired direction by acting on the handles (3). Unlock the pin (2) and slightly rotate the mast until the pin gets into a hole, thereby locking of the rotation of the mast.



ATTENTION

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

Start the generator with the key on the front panel, following the instructions in the section "START AND STOP (EP6)".

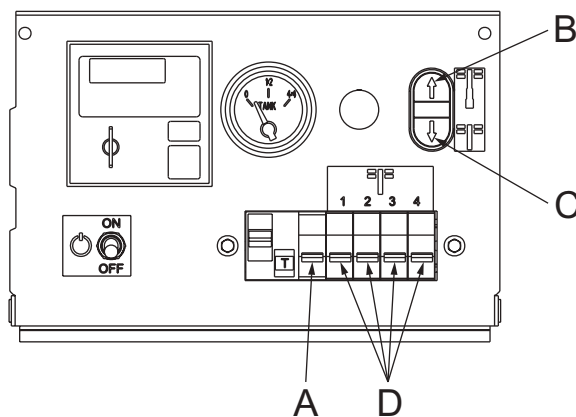
Put the circuit breaker (A) in ON position.

Activate the raise of the mast through the relevant button on the control panel (B) until the mast is fully extended.

Turn on the lamps by means of the circuit breakers (D) on the front panel.

After use, turn off the lamps before actuating the lowering of the mast.

Lower the mast by pressing the appropriate button (C) on the control panel.



EMERGENCY LOWERING OF THE MAST

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



ATTENTION

After switch off, the metal halide lamps require a cooling time of about 15 minutes before subsequent switch on.





Check daily



NOTE

Do not alter the primary conditions of regulation and do not touch the sealed parts.

The starting of the **lighting tower** can be effected in 2 different modes:

1) Start with EP6 key (Engine Control)

Put the “Local/Remote” selector on Local. Turn the key on “ON”, the EP6 display shows, only on the machines with mounted glow plugs for 5 secs, the symbol “UUUU”, then the message “Sta” appears the engine can be started, for then turn the key on “start” and start the engine.

On the display the word “Sta” remains for about 20 sec then automatically disappears; the engine **must be** started within 20 secs, otherwise the EP6 blocks the starting and on the display the word “fail” appears. Turning the key on “OFF” the EP6 is reset and a new starting cycle can be fixed.

Stop:
it is COMPULSORY to disconnect the load first, then to stop the engine turn the key on “OFF”.

2) Remote starting with TCM35

Put the “Local/Remote” selector on Local. Connect TCM35 to the plug on the front panel and put the switch on “0”.

Turn the key on ON in the EP6, wait for the various signals to go out then press the button “AUTO” in the EP6 until the led “AUTO” flashes.

Shift the switch on “1” in the TCM35 and automatically the starting cycle will start. On the machines with mounted glow plugs appears in the display EP6 (for about 5 secs), the symbol “UUUU”; the starting cycle includes 3 starting trials.

When the engine starts the led “AUTO” remains lit continuously and simultaneously the red warning light will light in the TCM35.

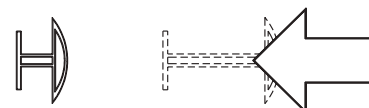
Stop:
it is COMPULSORY to disconnect the load first, then shift the switch of the TCM35 on “0”, the engine will stop immediately.



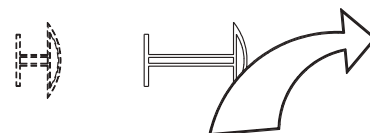
CAUTION

MACHINE WITH EMERGENCY BUTTON

Pressing the button the engine will stop immediately in any working condition.



Turn clockwise to reset the button.



CAUTION

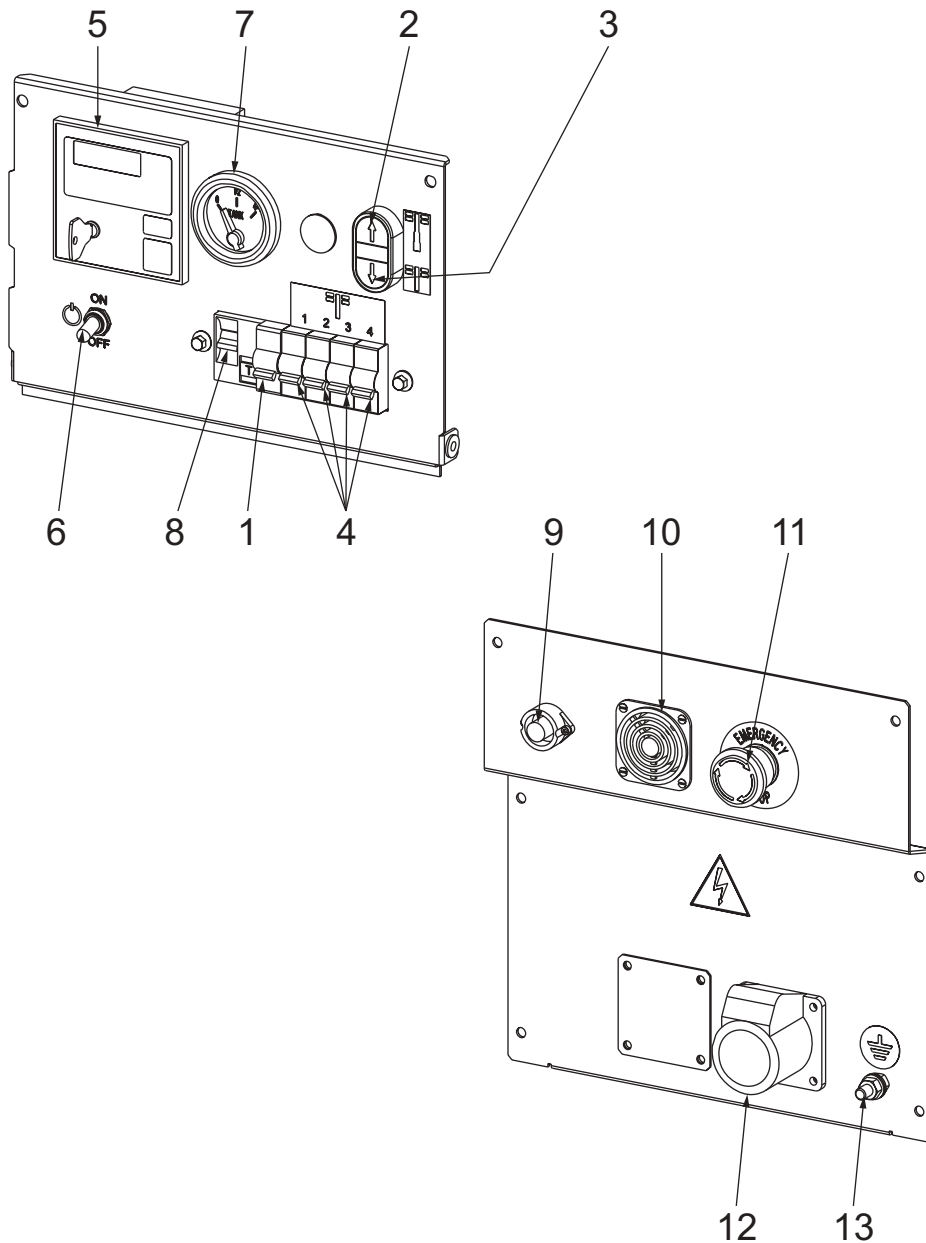
RUNNING-IN

During the first 50 hours of operation, do not use more than 60% of the maximum output power of the unit and check the oil level frequently, in any case please stick to the rules given in the engine use manual.



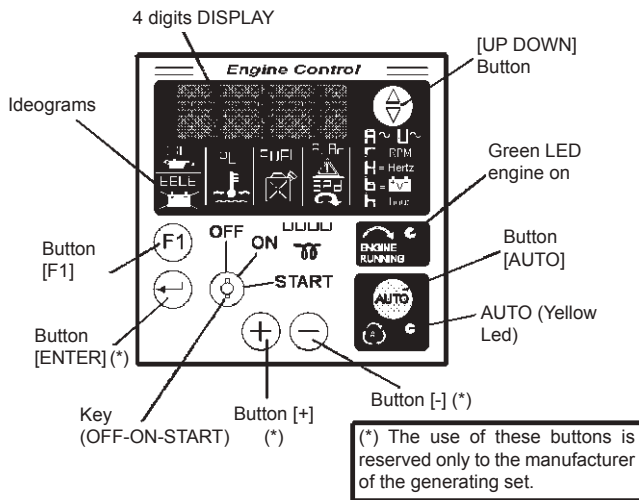
NOTE

For safety reason the key must be kept by qualified personel.



POS.	DESCRIZIONE	DESCRIPTION
1	Interruttore magnetotermico generale	General circuit breaker
2	Pulsante salita palo	Mast-up button
3	Pulsante discesa palo	Mast-down button
4	Interruttori magnetotermici lampade	Circuit breakers of the lamps
5	Protezione motore EP6	Engine protection EP6
6	Selettore start local / remote	Local / remote start selector
7	Indicatore livello carburante	Fuel gauge
8	Interruttore differenziale	Ground fault circuit interrupter
9	Presca comando a distanza	Remote control socket
10	Avvisatore acustico	Siren
11	Pulsante stop emergenza	Emergency stop button
12	Presca di corrente	Auxiliary power socket
13	Presca di messa a terra	Earth terminal

FRONT PANEL



1.0 INTRODUCTION

The EP6 features Engine and Generating Set control and monitoring. The EP6 provides visual indication by means of LEDs (solid state lamps) and a Display (see section 10.0). It features OFF, MAN and AUTO operating modes. The display gives Messages for alarms and Measurement indications.

EP6 has programmable parameters. Please contact the producer of the generating set to receive instructions related to programming.

2.0 OPERATING MODE selection

The EP6 features AUTO (section 2.1), MANUAL (section 2.2) and OFF (section 2.3) operating modes. When the power supply is switched on, the EP6 behaves as follow:

- A) if the KEY-SWITCH is in the **OFF position**, the EP6 enters the OFF operating mode.
- B) if the KEY-SWITCH is in the **ON position**, the EP6 enters the AUTO operating mode. That is, if the EP6 was in AUTO prior to the supply removal. If not, the EP6 enters the MANUAL operating mode.

2.1 AUTO operating mode

To enter the "AUTO" operating mode use the following instructions:

- A) - Turn ON the key switch: the Display and LEDs illuminate for 1 second.
- B) - Wait for the end of the LAMP test, then push the AUTO pushbutton after the [UUUU] (Pre-glow) or [Sta-] (Start prompt) has been displayed. After this, the yellow Led AUTO will illuminate. If the REMOTE START input is not operative, the LED will flash. If operative, the LED illuminates continuously and a start cycle will take place (**NOTE**: the EP6 shuts down the display during the crank).

- C) - In order to cancel the AUTO operating mode, push the AUTO pushbutton (the yellow Led will turn OFF) or turn the KEY-SWITCH to OFF. Once in AUTO, the EP6 waits for a REMOTE START activation (see section 7.0). In case of an Automatic Periodic Test (A.P.T.), the display will show the message [tEst].

2.2 MANUAL operating mode

To start the engine follow the instructions:

- A) - Turn ON the KEY-SWITCH; the EP6 illuminates the LEDs and Display.
- B) - If the display shows the message [uuuu], the EP6 is counting the PRE-GLOW time; wait until the message disappears.
- C) - After the display shows the flashing message [StA-] (**NOTE**), turn the Key to START position (momentary position with spring-loaded return) until the engine starts. The message [. . .] indicates a MANUAL start.
- D) - To stop the engine, turn the KEY SWITCH to OFF.

NOTE: EP6 shows the blinking [StA-] message for 20 seconds. After this time, if the engine does not start, the EP6 displays the message [FAIL] (Fail to start, see section 4.07). To clear the alarm, turn the KEY-SWITCH to OFF.

2.3 OFF operating mode

This function is obtained by turning the KEY SWITCH to OFF. The OFF operating mode clears the fault alarms and shuts down the Display after 5 seconds. A blinking dot indicates the presence of the power supply. Press one of the pushbuttons to energize the display. In OFF operating mode, the EP6 allows reading of the parameters (see section 6.0).

3.0 DISPLAY features

The EP6 features a 4 Digit Display (section 10.0) to show measurements, settings and error messages. The [UP-DOWN] pushbutton selects one of the following menus:

- [AXXX] (*) Generator Current measurement
- [UXXX] The Voltage of the Generating Set
- [rPM] [XXXX] Speed of the engine
- [HXX.X] Frequency of the Generator
- [bXX.X] Battery Voltage
- [cXX.X] Charger Alternator Voltage
- [h] [XXXX] HOUR METER (the message [h] appears for a moment, and then, the counter will be displayed continuously).

(*): the symbol "X" means a numerical field.

4.0 ALARM messages

The alarms are displayed by means of messages. In case of alarm consult your Generating Set manufacturer. To remove the message, turn OFF the KEY-SWITCH. The EP6 may show one of the following:

[OIL]	Low Oil Pressure
[°C]	High Temperature
[O.SPd.]	Over Speed of the engine
[U.SPd]	Under Speed of the engine
[bELt]	Failure of the belt
[ALAR]	External Emergency Stop
[FUEL](1)	Low Fuel in the tank
[FAIL]	Starting Failure Alarm
[E 04]	Alternator Failure
[E 05](2)	Generator Overload
[Hi H](2)	Generator Over Frequency
[Lo H](2)	Generator Under Frequency
[Hi U] (2)	Generator Under Voltage
[Lo U](2)	Generator Under Voltage
[XX.X]	Battery Voltage
[Err]	Memory error

(1) **[FUEL]** This message indicates Low Fuel in the tank . The engine stops if the contacts remain closed for 5 minutes continuously.

(2) To determine the value that caused the failure, push the [F1] pushbutton.

4.1 OPERATING messages

EP6 features messages to inform you about the following:

- [uuuu] Glow-plugs timing
- [U—] Voltage out of range
- [StA-] Start prompt
- [. . .] Starting by key switch
- [rEst] Rest timing
- [tEst] Automatic Test
- [CAL] Calibration
- [ProG] Programming
- [StOP] Stopping cycle

5.0 LEDs for visual indication

The EP6 features two LEDs (**see section 10.0**) to indicate the following conditions:

[ENGINE RUNNING]: this green led illuminates when the engine is running.

[AUTO]: this yellow LED blinks to indicate a standby mode. The EP6 monitors the REMOTE CONTROL and expects a command. The LED illuminates continuously when the REMOTE START is activated.

5.1 LEDs and Display Test

A test of the LEDs and DISPLAY is obtained automatically anytime the key switch is turned ON. The LEDs and DISPLAY light up for about 1 second.

6.0 Parameters and settings

The unit is programmed by the supplier of the Generating Set. Contact the Generator manufacturer in order to have the permission to program the module. It is possible to read the status of the internal programming at anytime. Follow the instructions:

- A) - Turn the Key in OFF (if the display indicates [STOP], wait until it disappears)
- B) - Push the pushbutton [F1] the display will show the first programmable parameter **[P.0]**.
- C) - Push the pushbutton [F1] the display will indicate the value of the parameter ([1"]).
- D) - Push the pushbutton [UP-DOWN] to select a parameter. Push [F1] to display the setting.
- E) - The display returns to menu mode if you have not used the pushbuttons for 2 minutes.

The list of the parameters follows (['] means minutes and ["] means seconds). Some parameters may differ according to the programming done by the genset manufacturer.

Display	Parameter [Default]
[P.0]	Remote Start Delay Timing (Input #7) [1"] Range: 1-59 secs or 1-15 mins Seconds or minutes of continuous REMOTE START command to initiate the automatic engine start (see section 7.0 and [P20] in this section).
[P.1]	Remote Stop Delay Timing (Input #7) [1"] Range: 1-59 secs or 1-15 mins Seconds or minutes of continuous absence of the REMOTE START command to initiate the stop cycle (see section 7.0 and [P.20] in this section).
[P.2]	Crank Timing (Output #10) [5"] Range:1-20 seconds Maximum insertion time of the <i>Starter Motor</i> .
[P.3]	Engine Running Trigger (Input #1) [8.0] Range: 3V-24V, [inh.]. If the voltage of the Charger Alternator rises above the [setting], the <i>Starter Motor</i> is disconnected.
[P.4]	Rest Timing [3"] Range: 3-20 secs. Time interval between starting attempts
[P. 5]	Starting Attempts [3] Range: 1-10 This parameter sets the number of attempts in the automatic start cycle
[P.6]	Generator UnderVoltage, short-circuit [inh.] Range: 80-400V. If the voltage drops under the [setting] for at least 6 secs, or under [setting]-20% for 1 sec, the Under-Voltage protection [Lo U] will shut down the engine.
[P.7]	Generator Over-Voltage [500V] Range: 110-550V or [inh.]. If the Generator voltage rises above the [setting] for at least 2 seconds, the EP6 will energize the over voltage protection [Hi U] (see section 4.0) to stop the engine. The [inh.] code inhibits the over voltage.
[P.8]	Generator Under-Frequency [Inh.] [inh.] 1 to 99Hz ([inh.]=disables the under frequency) This protection is delayed by about 6 seconds. The EP6 shuts down the engine and the display will show the [Lo H] message.
[P.9]	Generator Over-Frequency [55] 45 Hz to [inh.] ([inh.] disables the over frequency) This protection is delayed by about 2 seconds. The EP6 shuts down the engine and displays [Hi H]
[P.10]	Current Transformer Size [...] The range is 10/5 up to 1000/5
[P.11]	Generator Overload Setting [inh.] Range: [inh.] to 1000 AThe EP6 shuts down the engine after a delay of 6 secs and shows the message [E05].
[P.12]	Generator Failure Alarm [OFF] selection: [on] or [OFF].The code [on] enables the <i>Generator</i> failure alarm. The EP6 shows the [E04] message and the engine will shut down.
[P.13]	Glow Plugs/Choke Control (Output #11) [5"] Range: 1 to 99 secs.The EP6 energizes the output #11 for the programmed time.
[P.14]	Output Control [0] The following options are available: [0] None - [1] Choke Control - [2] Glow Plugs Control - [3] Choke Control
[P.15]	Belt Break Control [ON] Selection: [on] or [OFF]. The Belt Break alarm is indicated by means of the message [bELt]
[P.16]	Stop Solenoid Timing [2"] Range: 2-99 secs. Duration of the Stop cycle.

- [P.17] Alarm Output Timing [1']**
[inh.] 1-59 secs 1-15 mins and [cont]. Time-out of the alarm output. The code [cont] disables the time-out, and the alarm remains energized until the OFF operating mode is selected. The [inh.] mode enables the use of the external contactor
- [P.18] Temperature Switch [n.o.]**
Selection: [n.o.] or [n.c.]
[n.o.] the engine shuts down if the contact closes
[n.c.] the engine shuts down if the contact opens
- [P.19] ALARM Control [n.c.]**
Selection: [n.o.] or [n.c.]
[n.o.] the engine shuts down if the contact closes
[n.c.] the engine shuts down if the contact opens
- [P.20] Remote Start [n.o.]**
Selection: [n.o.] or [n.c.]
[n.o.] the engine starts if the contact closes
[n.c.] the engine starts if the contact opens
- [P.21] Under Speed setting [1200]**
[Inh.] or 100-4000 r.p.m. The [Inh.] code disables the Under Speed shut down.
- [P.22] Over Speed setting [1700]**
100-4000 rpm or [Inh.]. The EP6 provides one second bypass delay. The [Inh.] code (>4000 r.p.m.) disables the Over Speed shut down.
- [P.23] Number of Teeth of the Flywheel [Inh.]**
[Inh.] or 1-500 teeth.
The [Inh.] code disables the reading of the Speed (section 3.0), the Over/Under Speed alarms, and the Crank termination (see [P.24]).
- [P.24] Crank OFF [Inh.]**
Crank Termination setting: 100-800 rpm
If the speed rises above the setting, the EP6 terminates the crank cycle. One second delay avoids false termination. The code [Inh.] inhibits the crank termination
- [P.25] Low Oil Pressure Alarm By-Pass [6"]**
Range: 0-99 secs. By-Pass Delay to ignore the Oil Pressure (input #3) during the engine starting cycle. This input requires normally closed contact
- [P.26] Automatic Periodic Test Cycle [inh.]**
Range: [inh.], 1-99 days
This is the interval time between the automatic periodic tests of the engine. The code [inh.] disables the Automatic Periodic Test (see section 19.0)
- [P.27] Automatic Engine Test Duration [10']**
Range: 1-99 minutes.
This is the duration of the automatic engine test.
- [P.28] Generator warm-up timing [20"]**
Range [inh.] 1-59 secs or 1-15 mins ([inh.]=No warm-up)
Active only when [P17]= [inh.] and the ALARM output is used to drive the contactor
- [P.29] Generator cooling timing [30"]**
Range [inh.] 1-59 secs or 1-15 mins ([inh.]=No cooling)
Active only when [P28]= [inh.] and the ALARM output is used to drive the GEN-SET contactor
- [P.30] N° poles of the alternator [...]**
Range [inh.] - [2] = 2 pole alternator - [4] = 4 pole alternator
- [P.31] Engine shut-down delay for low fuel [5']**
Range [inh.] = provides only optical - acoustical warning - 1 - 99 min.

7.0 REMOTE START

The EP6 features REMOTE START only in AUTO operating mode.

To operate the REMOTE START, follow the instructions.

- A) - Turn the KEY-SWITCH to the ON position; the Display and LEDs illuminate for 1 sec.
- B) - Wait until the end of the LEDs test.
- C) - Push the AUTO pushbutton as soon as possible (otherwise, after 20 seconds the EP6 enters the STARTING FAILURE); the [AUTO] yellow LED will illuminate as described in the section 4.

REMOTE START SWITCH:

If the REMOTE START input is activated, the [AUTO] yellow LED illuminates continuously and the display will indicate the count down of the internal **start delay** timer. The engine will start after the programmed **start delay** time. If the REMOTE START is deactivated, the EP6 drives the **stop delay time**. The display will indicate the count down and the [AUTO] yellow LED will flash. The engine will stop after the programmed **stop delay** time.

The EP6 will start the engine after the programmed number of days and the engine will run for the programmed time. To determine how the Automatic Periodic Test is programmed enter the Reading Mode (section 6.0 parameter [P.26] and [P.27]).

IMPORTANT NOTES

If the supply (battery voltage) is removed, the EP6 loses the counts and timings. If the supply restores, the EP6 starts to count the A.P.T. according to the programmed parameters [P.26] and [P.27]. It is important to synchronize the power on sequence with the desired Automatic Periodic Test.

8.0 SAFETY






NOTE

High voltage is present inside the EP6. To avoid electric-shock hazard, operating personnel must not remove the protective cover. Do not disconnect the grounding connection. Any interruption of the grounding connection can create an electric shock hazard. Before making external connections, always ground the PANEL first by connecting the control panel to ground.

9.0 Automatic periodic TEST

The EP6 does not use a clock to count the programmed days ([P.26] setting, section 6.0). The maximum error and drift of the counter is +/-0,5%. The user may experiment with shifting the periodic tests. To avoid error accumulation, and in case your unit is programmed to allow Automatic Periodic Test, we recommend the following procedures.

- disconnect the power supply of the EP6 (consult your genset supplier)
- wait for the desired start time (external clock reference)
- apply the power supply to the EP6 (consult your genset supplier)
- select the "AUTO" operating mode

 WARNING		
	<ul style="list-style-type: none"> Have qualified personnel do maintenance and troubleshooting work. Stop the engine before doing any work inside the machine. If for any reason the machine must be operated while working inside, pay attention moving parts, hot parts (exhaust manifold and muffler, etc.) electrical parts which may be unprotected when the machine is open. Remove guards only when necessary to perform maintenance, and replace them when the maintenance requiring their removal is complete. Please wear the appropriate clothing and make use of the PPE (Personal Protective Equipment), according to the type of intervention (protective gloves, insulated gloves, glasses). Do not modify the components if not authorized. <p style="text-align: center;">- See pag. M1.1 -</p>	
MOVING PARTS can injure		HOT surface can hurt you

NOTE

By maintenance at care of the utilizer we intend all the operatios concerning the verification of mechanical parts, electrical parts and of the fluids subject to use or consumption during the normal operation of the machine.

For what concerns the fluids we must consider as maintenance even the periodical change and or the refills eventually necessary.

Maintenance operations also include machine cleaning operations when carried out on a periodic basis outside of the normal work cycle.

The repairs **cannot be considered** among the maintenance activities, i.e. the replacement of parts subject to occasional damages and the replacement of electric and mechanic components consumed in normal use, by the Assistance Authorized Center as well as by manufacturer.

The replacement of tires (for machines equipped with trolleys) must be considered as repair since it is not delivered as standard equipment any lifting system.

The periodic maintenance should be performed according to the schedule shown in the engine manual. An optional hour counter (M) is available to simplify the determination of the working hours.

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

VENTILATION

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

ELECTRICAL PANELS

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

DECALS AND LABELS

All warning and decals should be checked once a year and **replaced** if missing or unreadable.

STRENUOUS OPERATING CONDITIONS



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

**BATTERY WITHOUT MAINTENANCE
DO NOT OPEN THE BATTERY**

The battery is charged automatically from the battery charger circuit supplied with the engine.

Check the state of the battery from the colour of the warning light which is in the upper part.

- Green colour: battery OK
- Black colour: battery to be recharged
- White colour: battery to be replaced


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

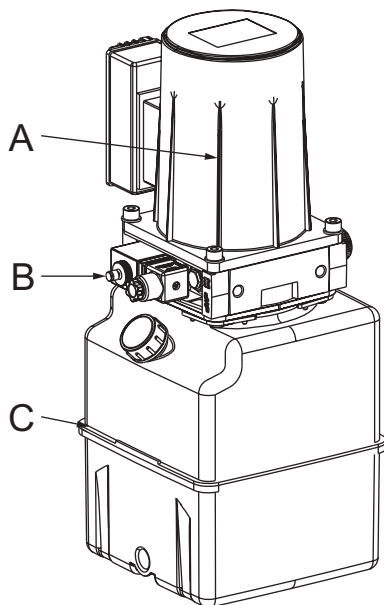
ENGINE and ALTERNATOR

PLEASE REFER TO THE SPECIFIC MANUALS PROVIDED.

Every engine and alternator manufacturer has



 NOTE	
<p>THE ENGINE PROTECTION NOT WORK WHEN THE OIL IS OF LOW QUALITY BECAUSE NOT CHARGED REGULARLY AT INTERVALS AS PRESCRIBED IN THE OWNER'S ENGINE MANUAL.</p>	



- A. Electric Motor
- B. Bypass tap for manual lowering of the mast
- C. Hydraulic fluid tank

- Check the level and condition of the hydraulic fluid. Carry out the check with the mast down and cool fluid.
- It is recommended a first fluid change after the first 10 hours. Do the following oil changes within 3000 hours or once a year.
- The hydraulic power pack is supplied from factory with hydraulic oil type: **AGIP OSO 46**
- When topping up, it is important not to mix hydraulic fluids of different manufacturers, or different types, which may cause the formation of sludge and sediments that could affect the proper operation of the power pack.
- Each time you change the hydraulic fluid, replace (or wash and clean) the inlet filter and do an internal cleaning of the tank.
- For the oil replacement, use oils with a high viscosity index and temperature range appropriate to the conditions of use.

WIRE ROPES

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

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

PULLEYS

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

TELESCOPIC MAST

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

LAMPS

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

TIRES

On the trailer/site-tow versions periodically verify the proper tire pressure (2.2 bar).



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