

## USE AND MAINTENANCE MANUAL

# LIGHTING KIT

TFNM5.5 J-4X400 - TFNM5.5 A-4X400

- Torri Faro
- Lighting Towers
- Tours D'éclairage
- Torres de iluminación
- Lichtmasten

Codice  
Code  
Codigo  
Kodezahl

5A5109003

Edizione  
Edition  
Edición  
Ausgabe

10.2014



MADE IN ITALY

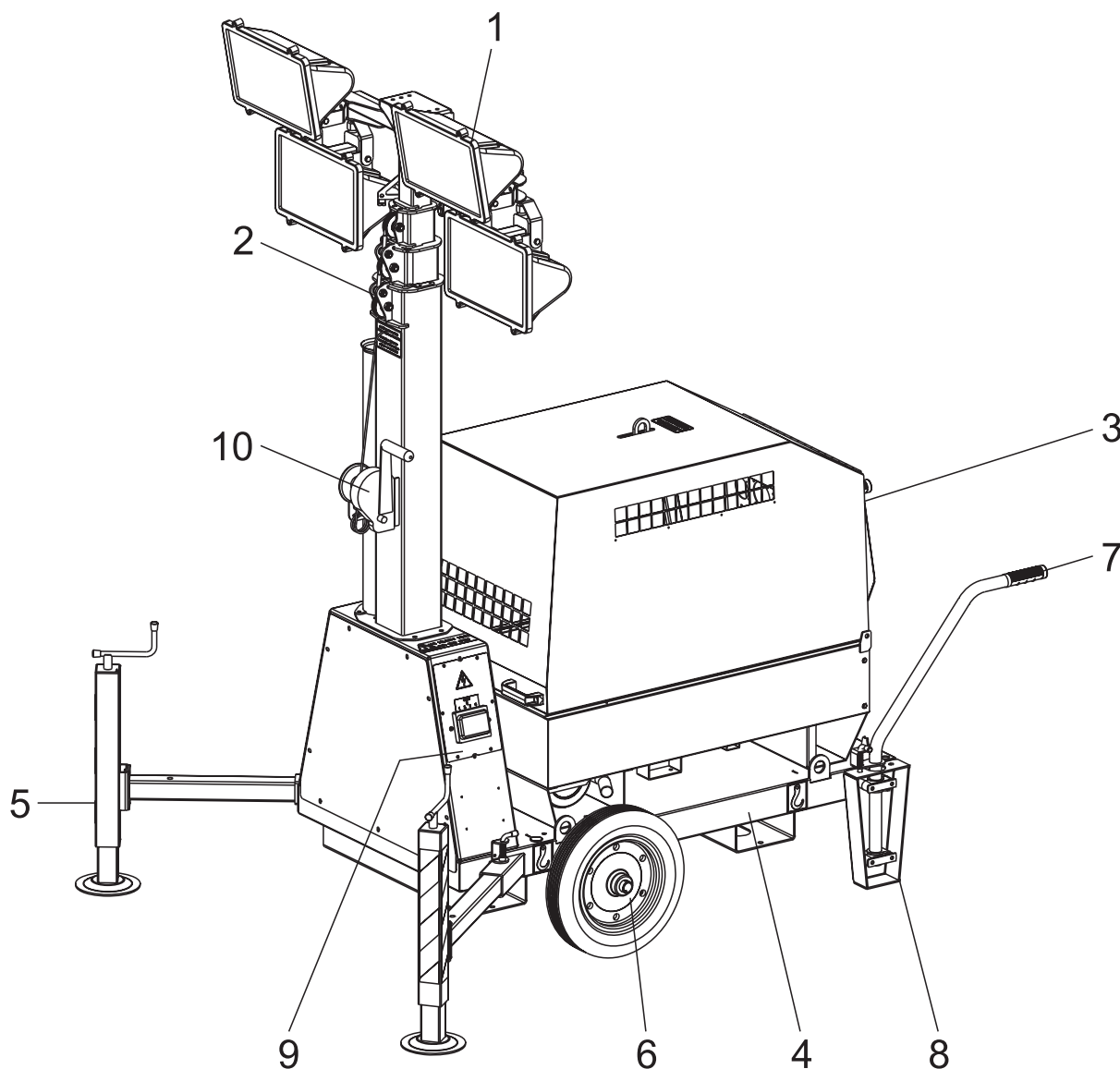
**MOSA Light**



The lighting towers TF NM are mobile units for lighting designed to ensure maximum reliability of operation in all areas even in the heaviest (building sites, ports, airports, etc. ..)

The lighting tower is composed mainly of:

- a frame or base on which the generating set is fixed
- two extensible outriggers and adjustable in height, to ensure the stability of the tower on any working surface.
- a manual trolley at single axle with wheels and handles to move the lighting tower
- a vertical elevation telescopic mast which can be raised up to a maximum height of 5.5 meters.
- a manual winch with automatic pressure brake to raise and lower the telescopic mast
- a floodlights assembly that can be composed of four floodlights with lamps of different types and power: metal halide, LED, halogen
- a control panel with circuit breakers for turn on and turn off each lamp.



- 1- Floodlights assembly
- 2- Telescopic mast
- 3- Generating set
- 4- Base (Frame)
- 5- Outriggers
- 6- Manual trolley wheels
- 7- Positioning handles
- 8- Frame feet
- 9- Control panel
- 10- Manual winch



### UNI EN ISO 9001 : 2008

ISO 9001:2008 - Cert. 0192

The manufacturer has certified its quality system according to UNI EN ISO 9001:2008 to ensure a constant, high quality of its products. This certification covers the design, production and servicing of engine driven welders and generating sets.

The certifying institute, ICIM, which is a member of the International Certification Network IQNet, awarded the official approval to the manufacturer after an examination of its operations at the head office and plant in Cusago (MI), Italy.

This certification is not a point of arrival but a pledge on the part of the entire company to maintain a level of quality of both its products and services which will continue to satisfy the needs of its clients, as well as to improve the transparency and the communications regarding all the company's activities in accordance with the official procedures and in harmony with the Manual of Quality.

The advantages for the manufacturer clients are:

- Constant quality of products and services at the high level which the client expects;
- Continuous efforts to improve the products and their performance at competitive conditions;
- Competent support in the solution of problems;
- Information and training in the correct application and use of the products to assure the security of the operator and protect the environment;
- Regular inspections by ICIM to confirm that the requirements of the company's quality system and ISO 9001 are being respected.

All these advantages are guaranteed by the CERTIFICATE OF QUALITY SYSTEM No.0192 issued by ICIM S.p.A. - Milano (Italy) - www.icim.it

M 0	DESCRIPTION OF THE MACHINE
M 01	QUALITY SYSTEM
M 1.1	NOTES
M 1.4	CE MARKING
M 1.4.1	DECLARATION OF CONFORMITY
M 1.5	TECHNICAL DATA
M 2	SYMBOLS AND SAFETY PRECAUTIONS
M 2.5 ...	SAFETY RULES
M 2.7.1 ...	DIMENSIONS
M 4.2	TRANSPORT AND HANDLING
M 23	PRELIMINARY CHECKS AND POSITIONING OF THE LIGHTING TOWER
M 23.1	FLOODLIGHTS ORIENTATION AND MAST RAISING/LOWERING
M 31	CONTROLS
M 43.3 ...	MAINTENANCE OF THE LIGHTING TOWER
M 45	STORAGE / CUST OFF
M 60	ELECTRICAL SYSTEM LEGEND
M 61-.....	ELECTRICAL SYSTEM

## 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 is part of the data-plate.

	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	TEMP.	°C	IP
	P <sub>max</sub>		KW	ALTIT.	m	Kg
<input type="text"/>						

**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 NM 5.5 J-4x400**

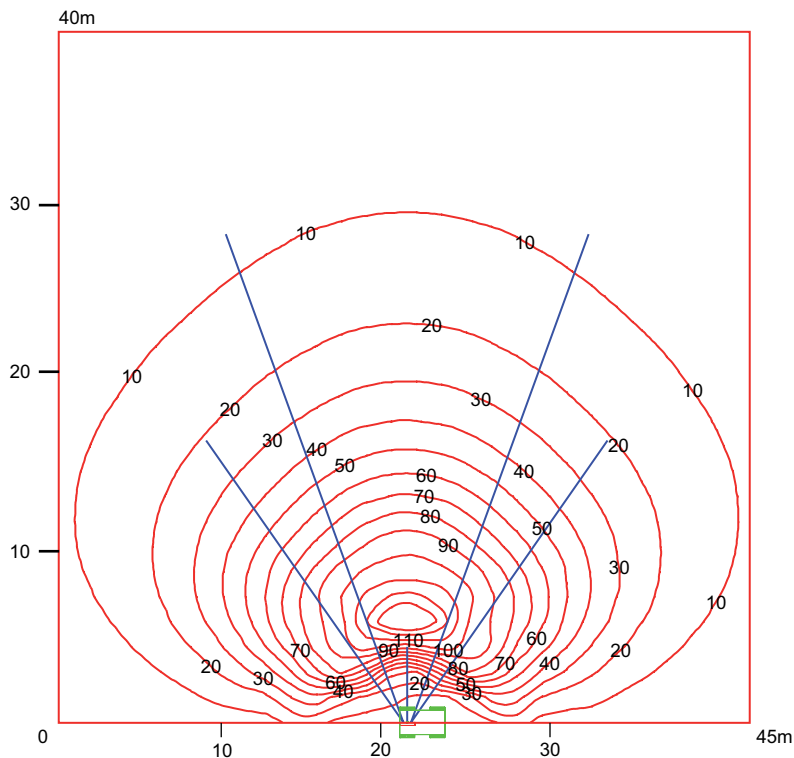
<b>LIGHTS AND MAST</b>	Lamp type	4 x400 W – METAL HALIDE		
	Mast rotation	-		
	Mast	TELESCOPIC - 5.5 m - MANUAL		
<b>GENERAL CHARACTERISTICS</b>	Wind load stability	UP TO 80 km/h (*)		
	IP protection	IP 55		
	Stabilizers	2 ADJUSTABLE		
	Dimensions (l x w x h)	Minimum	1480 x 1090 x 2180	
		Maximum	1730 x 1570 x 5500	
Weight	excluding the generator	226 kg		

(\*) applicable to trailer loaded with generator having weight ≥ 80 kg

**ILLUMINATION DIAGRAM**

Type and n° of lamps	Power	Flux (each lamp)	Temperature	Lamps model	Mounting height
Metal halide N° 4	400 W	3500 lm	5500 K	Osram HQI-BT 400 /D	5.5 m

**ISOLUX DIAGRAMS– ILLUMINATED AREA 1800 mq - Average Lux 12 - Maximum Lux 137 (5/10 m)**



**Technical data**

**TF NM 5.5 A-4x400**

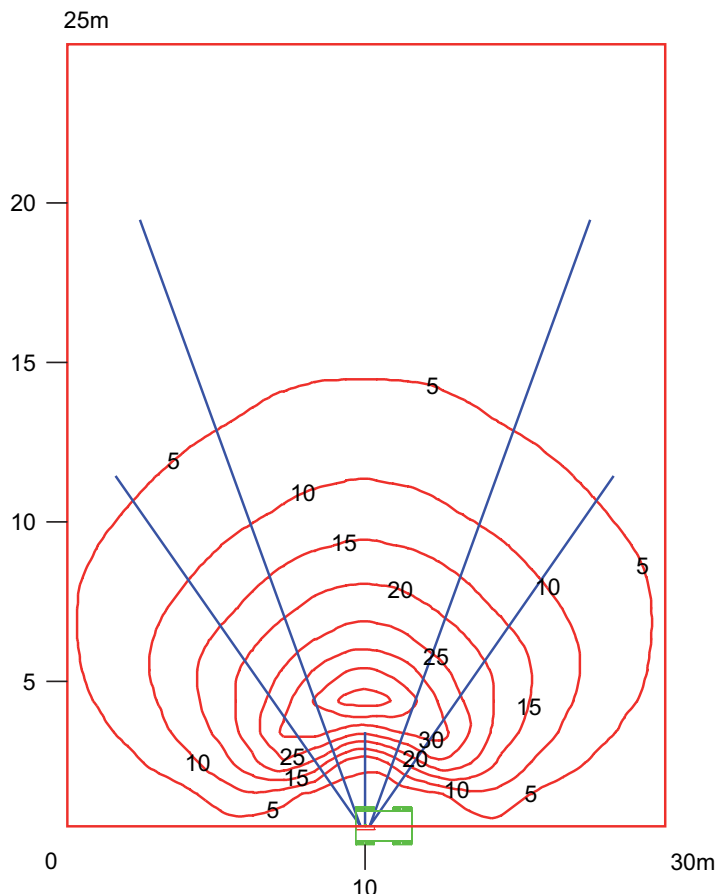
<b>LIGHTS AND MAST</b>	Lamp type	4 x400 W – HALOGEN		
	Mast rotation	-		
	Mast	TELESCOPIC - 5.5 m - MANUAL		
<b>GENERAL CHARACTERISTICS</b>	Wind load stability	UP TO 80 km/h (*)		
	IP protection	IP 55		
	Stabilizers	2 ADJUSTABLE		
	Dimensions (l x w x h)	Minimum	1480 x 1090 x 2180	
		Maximum	1730 x 1570 x 5500	
Weight	excluding the generator	195 kg		

(\*) applicable to trailer loaded with generator having weight ≥ 80 kg

**ILLUMINATION DIAGRAM**

Type and n° of lamps	Power	Flux (each lamp)	Temperature	Lamps model	Mounting height
Halogen N° 4	400 W	950 lm	3000 K	HD 400	5.5 m

**ISOLUX DIAGRAMS– ILLUMINATED AREA 750 mq - Average Lux 5 - Maximum Lux 40 (5/7 m)**



**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.

I

GB WARNINGS

F

M

2.1

REV.0-10/13



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

Skin contact	Wash with water and soap
Eyes contact	Irrigate with plenty of water, if the irritation persists contact a specialist
Ingestion	Do not induce vomit as to avoid the intake of vomit into the lungs, send for a doctor
Suction of liquids from lungs	If you suppose that vomit has entered the lungs (as in case of spontaneous vomit) take the subject to the hospital with the utmost urgency
Inhalation	In case of exposure to high concentration of vapours take immediately to a non polluted zone the person involved



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


EXTINCTION MEANS	
Appropriated	Carbonate anhydride (or carbon dioxide) powder, foam, nebulized water
Not to be used	Avoid the use of water jets
Other indications	Cover eventual shedding not on fire with foam or sand, use water jets to cool off the surfaces close to the fire
Particular protection	Wear an autorespiratory mask when heavy smoke is present
Useful warnings	Avoid, by appropriate means to have oil sprays over metallic hot surfaces or over electric contacts (switches, plugs, etc.). In case of oil sprinkling from pressure circuits, keep in mind that the inflammability point is very low.



## ATTENTION

The lighting towers is designed to be used with a generating set or with a fixed mass on its base. The weight and positioning of the generating set on the base are essential for the safety of the lighting tower. Failure to comply with this provision causes a serious danger of tipping or instability during operation and during handling with site tow if necessary, contact the service.

### 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, on the manual of the generating set and all other manuals supplied.
- 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.
- Check for proper tire pressure.
- Do not replace the tires with types different from the original ones.
- Check the fastening of the wheels of the trolley.
- Do not park the machine (on trailer) on a steep slope.

**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 5.5 meters.
- Make sure all the ropes and the manual winch are in perfect condition.
- Place the lighting tower in order to avoid that the winch can receive shocks which may cause damage to the automatic brake.
- 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.
- Always check the good condition of the power cable before connecting the lighting tower to the generating set.
- Do not use the lighting tower with wet or damp hands and / or clothing.
- 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.

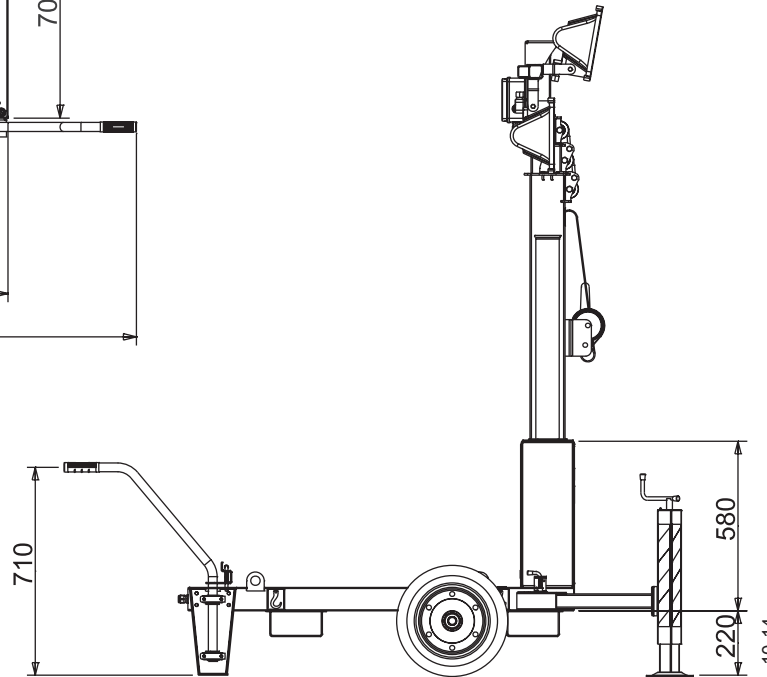
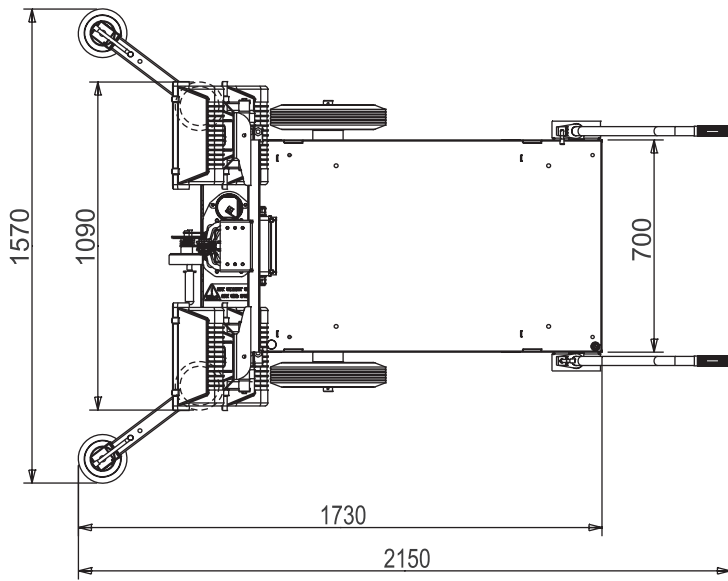
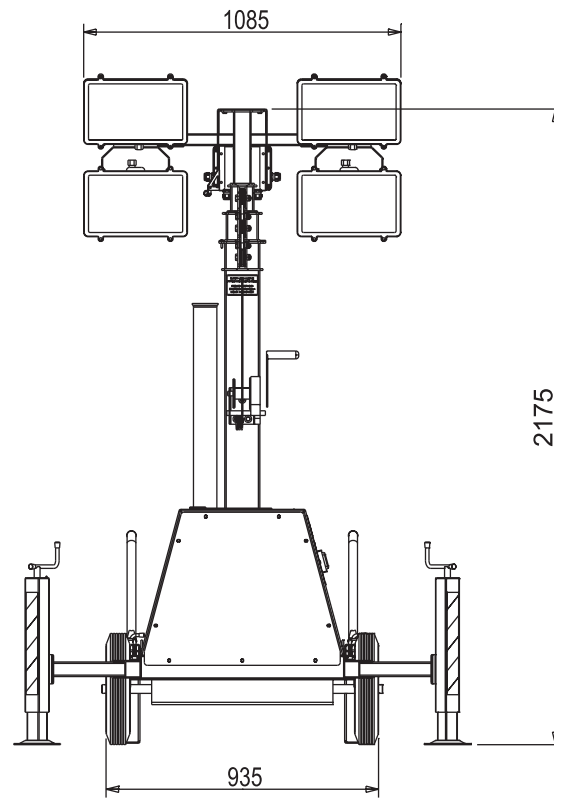
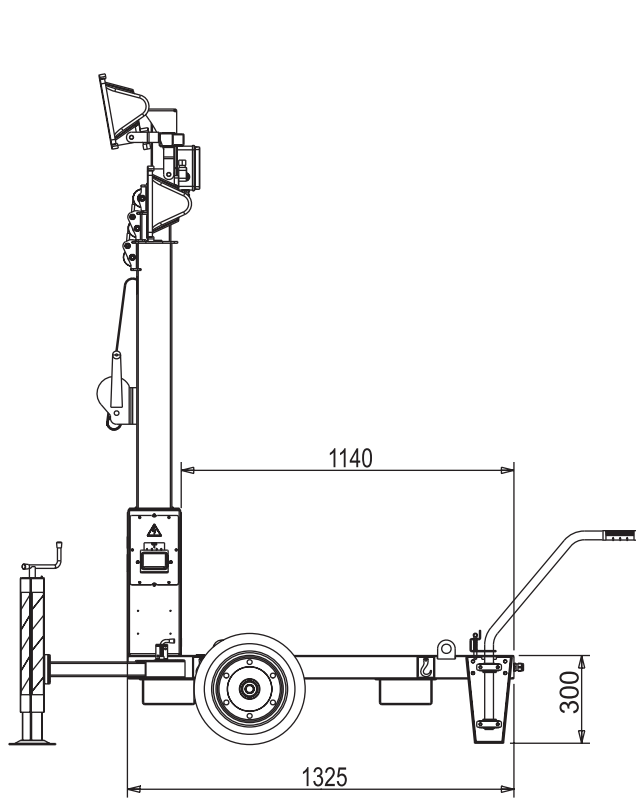
**SAFETY PRECAUTIONS DURING MAINTENANCE**

- Make use of **qualified** personnel to carry out maintenance and troubleshooting.
- Always use protective devices and suitable equipment.
- Turn off the generating set or unplug the power cable before carrying out any type of maintenance on the lighting tower.
- Always cut off power to the lamps and wait for their cooling before performing any maintenance or replacement.
- Do not remove the protections and the safety devices unless absolutely necessary, restore them after completion of the maintenance or repair
- Before carrying out any type of maintenance or repairs on the generating set refer to the manual of the generating set and the other manuals supplied.

Ⓡ Dimensioni  
Ⓢ Dimensions  
Ⓣ Dimensions


Ⓛ Abmessungen  
Ⓜ Dimensiones  
Ⓝ

**M**  
**2.7.1**  
REV.0-10/14






### 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.

### Machine transportation by a motor vehicle

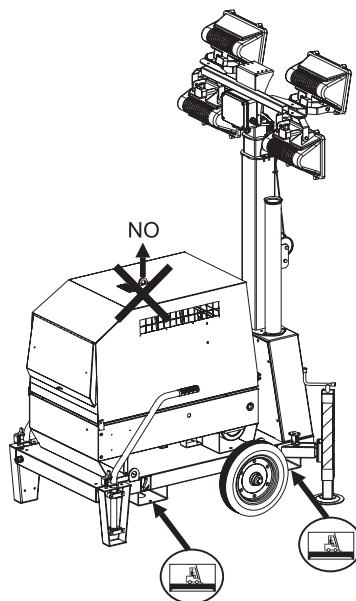
During the transportation with a motor vehicle it is important to use appropriate belts/straps to stabilise the unit, thus avoiding that unexpected jumps or jolts can cause damage to the baseframe and to the engine or even worse the loss or the overturning of the load. It is the carriers responsibility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

### Moving the generating set via forklift

When lifting with a forklift it is necessary to:

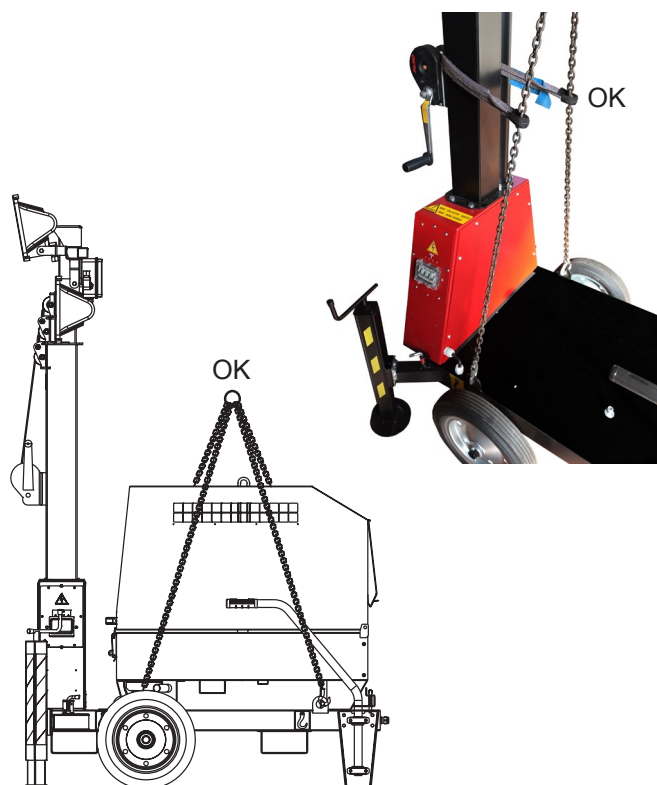
- insert the forks of the forklift into the specific pockets located sideways on the baseframe, as indicated in the figures.
- Fully insert the forks so that they stick out from the opposite side and be careful to keep the equipment in horizontal position.

**Do not use the generator lifting eye to lift if fitted to lighting tower.**



### 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.







## ATTENTION

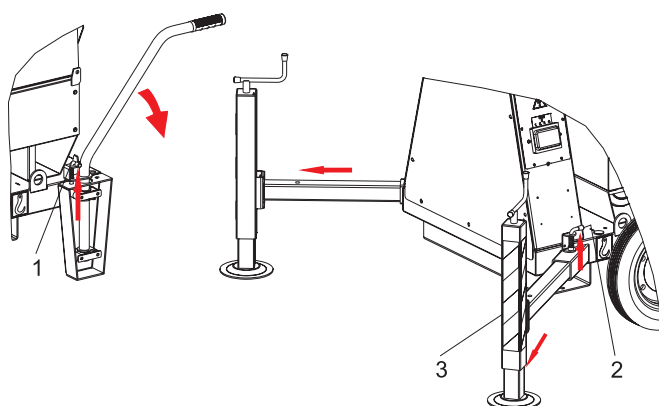
Before operating the lighting tower make sure that all safety regulations concerning installation and use are satisfied.

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 the safe speed indicated
- there are no obstacles or overhead power lines above the lighting tower
- the status of the lighting tower is adequate, in general
- the ropes and the winch for the lifting the mast are in perfect condition.

### POSITIONING OF THE LIGHTING TOWER

- To move the lighting tower, first turn the handles from the inner to the outer position by lifting the locking pins and turning the handle into forward facing position.
- Raise the locking pins of the outriggers extension arms and extract them until the pins lock again the arms in their extended position.
- Lower the outriggers and adjust the lighting tower position by acting on their handles.



1. Handle locking pin
2. Outrigger locking pin
3. Outrigger

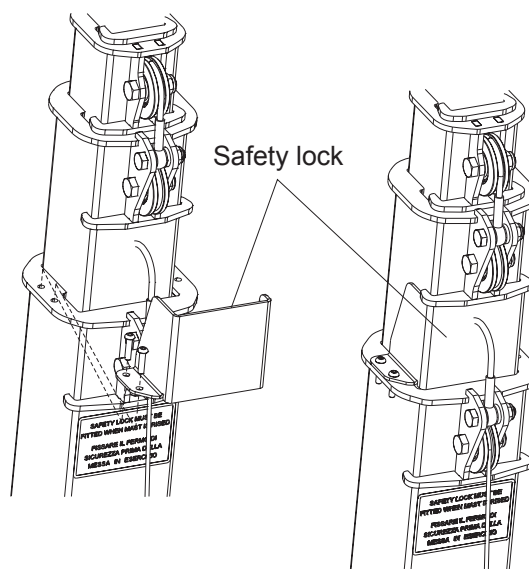
### SAFETY LOCK



## ATTENTION

Check the safety lock on the telescopic mast. The safety lock may be removed to facilitate shipping operations.

Before operating the lighting tower put the safety lock in its position as shown in the figure.



The safety lock stops the lowering of the mast at a safe height. This avoids the risk of operator injuries in the event of sudden failure of the telescopic mast ropes or the automatic brake of the manual winch.

### ELECTRICAL CONNECTION



#### Grounding

Follow the instructions on the manual of the generating set.

The grounding is not necessary, even if requested by the manual of the generating set, if the following conditions are satisfied:

- 1) the lighting tower is the only device powered by generating set
  - 2) the generating set is placed on the lighting tower frame
  - 3) the two devices must be connected to a bonding connection
- Make sure that the electrical power supply system (generating set) matches the electrical characteristic of the lighting tower (power, voltage, frequency).
  - Make sure the power cable is always in good condition and is placed so as to it can not be damaged.



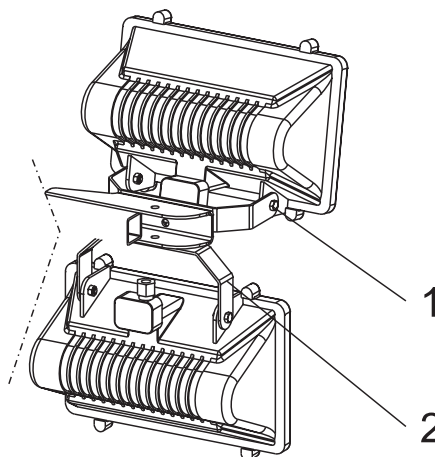
### ORIENTATION OF FLOODLIGHTS AND MAST

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

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

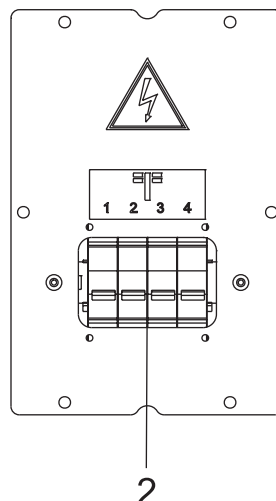
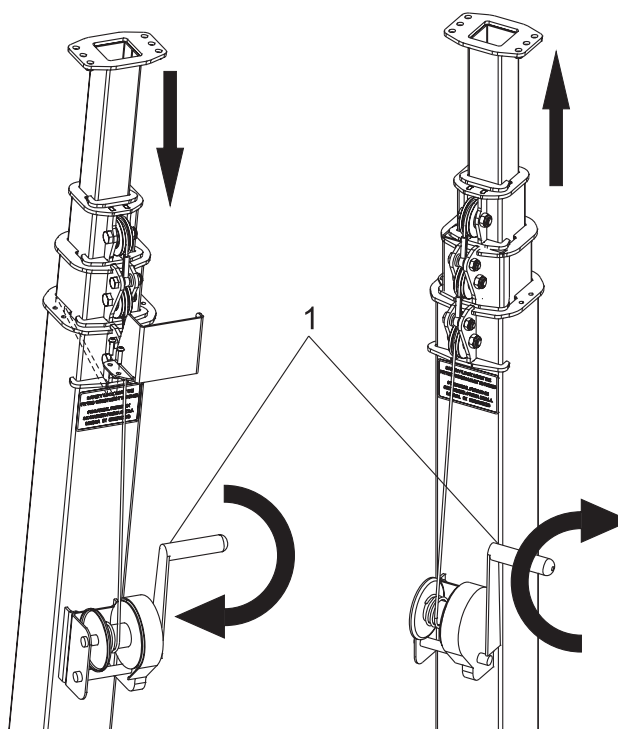
To adjust the inclination of the floodlights loosen the screws (1), turn the floodlight to the desired position and lock again.

To rotate the floodlight the desired position act on the bracket (2).



### RAISING AND LOWERING OF THE MAST

- Rotate the handle of the manual winch to raise the tower. The automatic brake of the winch will stop the tower at the preferred height when the handle is released.
- Start the generating set following the instructions of the manual.
- Before powering up the lighting tower to make sure that the circuit breakers (2) on the front panel are all in the OFF position.
- Connect the power plug of the lighting tower to the generating set and turn ON the lamps by means of the circuit breakers on the control panel.
- After use, turn OFF the lamps before starting the lowering of the mast.
- Rotate the handle of the manual winch in the opposite direction to lowering the mast.



### ATTENTION

After switch off, the metal halide lamps require a cooling time of about 10 minutes before subsequent switch on.





## ATTENTION

Any maintenance or troubleshooting must be carried out in compliance with the requirements given in section: SAFETY PRECAUTIONS DURING MAINTENANCE.

### 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.

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.

### MANUAL WINCH

the manual winch requires regular maintenance in particular the parts that need to be lubricated.

Refer to the manual of use and maintenance of the winch supplied with the lighting tower

### 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: wait them to cool down before replacing.

### TIRES

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

### GENERATING SET

Refer to the manual of the generating set and the other manuals supplied.



## IMPORTANT



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.



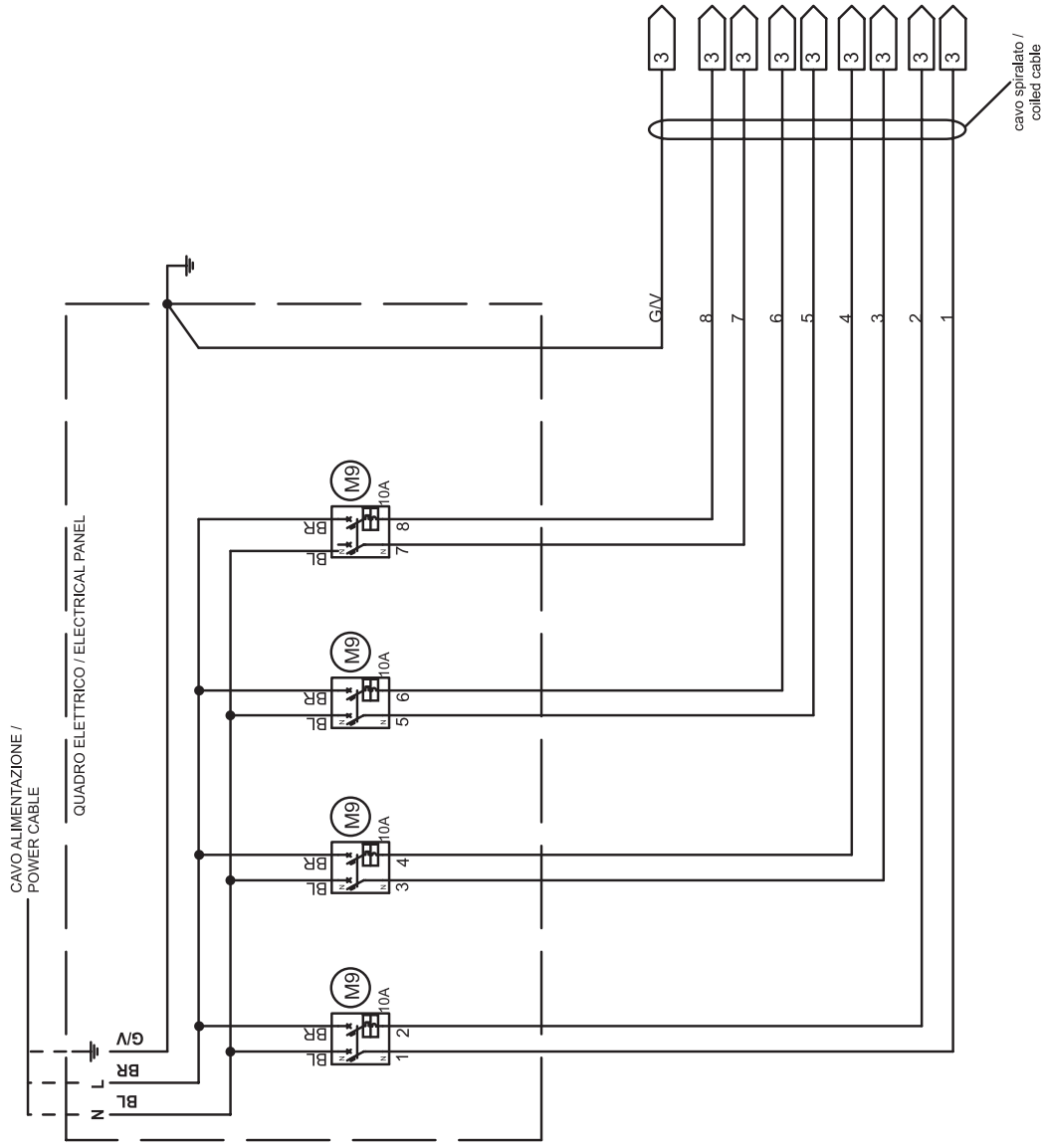


# ELECTRICAL SYSTEM LEGENDE

M  
60

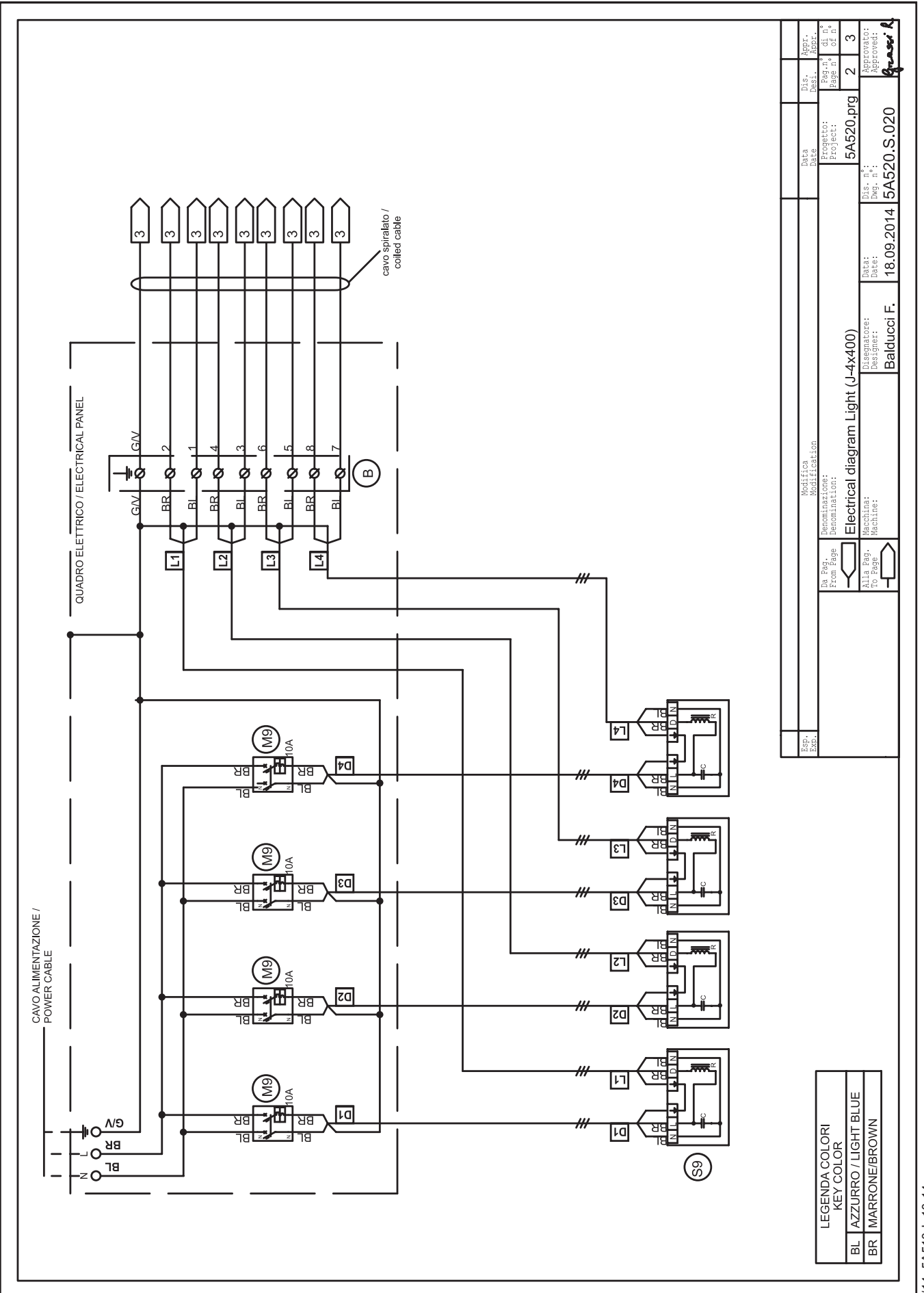
REV.11-06/14

A : Alternator	E3 : Open circuit voltage switch	I6 : Start Local/Remote selector	N9 : UP/DOWN button mast
B : Wire connection unit	F3 : Stop push-button	L6 : Choke button	O9 : Hydraulic unit solenoid valve
C : Capacitor	G3 : Ignition coil	M6 : Switch CC/CV	P9 : Hydraulic unit engine
D : G.F.I.	H3 : Spark plug	N6 : Connector – wire feeder	Q9 : Ignitor
E : Welding PCB transformer	I3 : Range switch	O6 : 420V/110V 3-phase transformer	R9 : Lamp
F : Fuse	L3 : Oil shut-down button	P6 : Switch IDLE/RUN	S9 : Power system
G : 400V 3-phase socket	M3 : Battery charge diode	Q6 : Hz/V/A analogic instrument	T9 : 48Vdc power system
H : 230V 1phase socket	N3 : Relay	R6 : EMC filter	U9 : LED projector
I : 110V 1-phase socket	O3 : Resistor	S6 : Wire feeder supply switch	V9 :
L : Socket warning light	P3 : Sparkler reactor	T6 : Wire feeder socket	Z9 :
M : Hour-counter	Q3 : Output power unit	U6 : DSP chopper PCB	W9 :
N : Voltmeter	R3 : Electric siren	V6 : Power chopper supply PCB	X9 :
P : Welding arc regulator	S3 : E.P.4 engine protection	Z6 : Switch and leds PCB	Y9 :
Q : 230V 3-phase socket	T3 : Engine control PCB	W6 : Hall sensor	
R : Welding control PCB	U3 : R.P.M. electronic regulator	X6 : Water heater indicator	
S : Welding current ammeter	V3 : PTO HI control PCB	Y6 : Battery charge indicator	
T : Welding current regulator	Z3 : PTO HI 20 l/min push-button	A7 : Transfer pump selector AUT-0-MAN	
U : Current transformer	W3 : PTO HI 30 l/min push-button	B7 : Fuel transfer pump	
V : Welding voltage voltmeter	X3 : PTO HI reset push-button	C7 : "GECO" generating set test	
Z : Welding sockets	Y3 : PTO HI 20 l/min indicator	D7 : Flooting with level switches	
X : Shunt	A4 : PTO HI 30 l/min indicator	E7 : Voltmeter regulator	
W : D.C. inductor	B4 : PTO HI reset indicator	F7 : WELD/AUX switch	
Y : Welding diode bridge	C4 : PTO HI 20 l/min solenoid valve	G7 : Reactor, 3-phase	
A1 : Arc striking resistor	D4 : PTO HI 30 l/min solenoid valve	H7 : Switch disconnecter	
B1 : Arc striking circuit	E4 : Hydraulic oil pressure switch	I7 : Solenoid stop timer	
C1 : 110V D.C./48V D.C. diode bridge	F4 : Hydraulic oil level gauge	L7 : "VODIA" connector	
D1 : E.P.1 engine protection	G4 : Preheating glow plugs	M7 : "F" EDC4 connector	
E1 : Engine stop solenoid	H4 : Preheating gearbox	N7 : OFF-ON-DIAGN. selector	
F1 : Acceleration solenoid	I4 : Preheating indicator	O7 : DIAGNOSTIC push-button	
G1 : Fuel level transmitter	L4 : R.C. filter	P7 : DIAGNOSTIC indicator	
H1 : Oil or water thermostat	M4 : Heater with thermostat	Q7 : Welding selector mode	
I1 : 48V D.C. socket	N4 : Choke solenoid	R7 : VRD load	
L1 : Oil pressure switch	O4 : Step relay	S7 : 230V 1-phase plug	
M1 : Fuel warning light	P4 : Circuit breaker	T7 : V/Hz analogic instrument	
N1 : Battery charge warning light	Q4 : Battery charge sockets	U7 : Engine protection EP6	
O1 : Oil pressure warning light	R4 : Sensor, cooling liquid temperature	V7 : G.F.I. relay supply switch	
P1 : Fuse	S4 : Sensor, air filter clogging	Z7 : Radio remote control receiver	
Q1 : Starter key	T4 : Warning light, air filter clogging	W7 : Radio remote control transmitter	
R1 : Starter motor	U4 : Polarity inverter remote control	X7 : Isometer test push-button	
S1 : Battery	V4 : Polarity inverter switch	Y7 : Remote start socket	
T1 : Battery charge alternator	Z4 : Transformer 230/48V	A8 : Transfer fuel pump control	
U1 : Battery charge voltage regulator	W4 : Diode bridge, polarity change	B8 : Ammeter selector switch	
V1 : Solenoid valve control PCB	X4 : Base current diode bridge	C8 : 400V/230V/115V commutator	
Z1 : Solenoid valve	Y4 : PCB control unit, polarity inverter	D8 : 50/60 Hz switch	
W1 : Remote control switch	A5 : Base current switch	E8 : Cold start advance with temp. switch	
X1 : Remote control and/or wire feeder socket	B5 : Auxiliary push-button ON/OFF	F8 : START/STOP switch	
Y1 : Remote control plug	C5 : Accelerator electronic control	G8 : Polarity inverter two way switch	
A2 : Remote control welding regulator	D5 : Actuator	H8 : Engine protection EP7	
B2 : E.P.2 engine protection	E5 : Pick-up	I8 : AUTOIDLE switch	
C2 : Fuel level gauge	F5 : Warning light, high temperature	L8 : AUTOIDLE PCB	
D2 : Ammeter	G5 : Commutator auxiliary power	M8 : A4E2 ECM engine PCB	
E2 : Frequency meter	H5 : 24V diode bridge	N8 : Remote emergency stop connector	
F2 : Battery charge transformer	I5 : Y/▲ commutator	O8 : V/A digital instruments and led VRD PCB	
G2 : Battery charge PCB	L5 : Emergency stop button	P8 : Water in fuel	
H2 : Voltage selector switch	M5 : Engine protection EP5	Q8 : Battery disconnect switch	
I2 : 48V a.c. socket	N5 : Pre-heat push-button	R8 : Inverter	
L2 : Thermal relay	O5 : Accelerator solenoid PCB	S8 : Overload led	
M2 : Contactor	P5 : Oil pressure switch	T8 : Main IT/TN selector	
N2 : G.F.I. and circuit breaker	Q5 : Water temperature switch	U8 : NATO socket 12V	
O2 : 42V EEC socket	R5 : Water heater	V8 : Diesel pressure switch	
P2 : G.F.I. resistor	S5 : Engine connector 24 poles	Z8 : Remote control PCB	
Q2 : T.E.P. engine protection	T5 : Electronic GFI relais	W8 : Pressure turbo protection	
R2 : Solenoid control PCB	U5 : Release coil, circuit breaker	X8 : Water in fuel sender	
S2 : Oil level transmitter	V5 : Oil pressure indicator	Y8 : EDC7-UC31 engine PCB	
T2 : Engine stop push-button T.C.1	Z5 : Water temperature indicator	A9 : Low water level sender	
U2 : Engine start push-button T.C.1	W5 : Battery voltmeter	B9 : Interface card	
V2 : 24V c.a. socket	X5 : Contactor, polarity change	C9 : Limit switch	
Z2 : Thermal magnetic circuit breaker	Y5 : Commutator/switch, series/parallel	D9 : Starter timing card	
W2 : S.C.R. protection unit	A6 : Commutator/switch	E9 : Luquid pouring level float	
X2 : Remote control socket	B6 : Key switch, on/off	F9 : Under voltage coil	
Y2 : Remote control plug	C6 : QEA control unit	G9 : Low water level warning light	
A3 : Insulation moiting	D6 : Connector, PAC	H9 : Chopper driver PCB	
B3 : E.A.S. connector	E6 : Frequency rpm regulator	I9 : Fuel filter heater	
C3 : E.A.S. PCB	F6 : Arc-Force selector	L9 : Air heater	
D3 : Booster socket	G6 : Device starting motor	M9 : ON/OFF switch lamp	
	H6 : Fuel electro pump 12V c.c.		

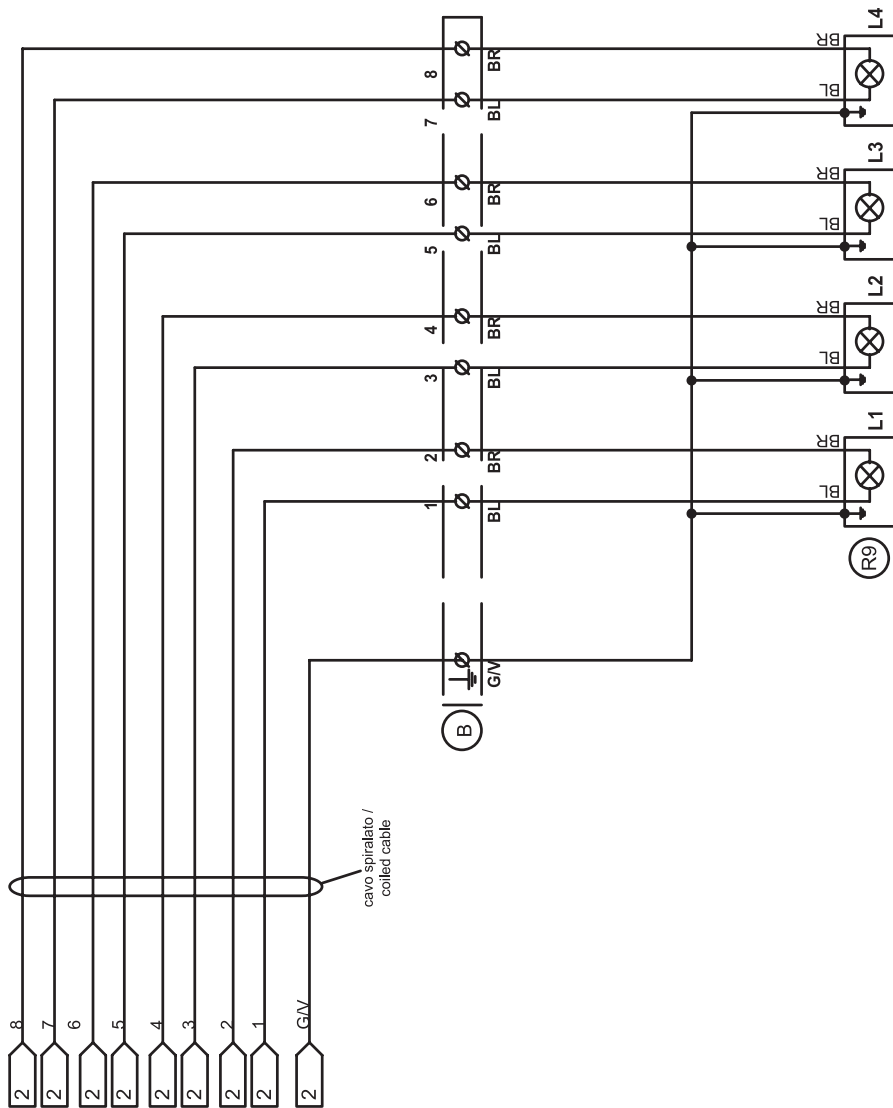


LEGENDA COLORI KEY COLOR	
BL	AZZURRO / LIGHT BLUE
BR	MARRONE/BROWN

Esp. / Exc.	Modifica / Modification		Data / Date	Dis. / Desl.	Appr. / Appr.
	Da Pag. / From Page	Denominazione: / Electrical diagram Light (A-4x400)	Progetto: / Project:	Pag. n. / Page n.	di n. / of n.
	Alla Pag. / To Page	Macchina: / Machine:	Data: / Date:	2	3
		Disegnatore: / Designer: Balducci F.	10.10.2014	5A510.S.020	Approvato: / Approved: <i>[Signature]</i>



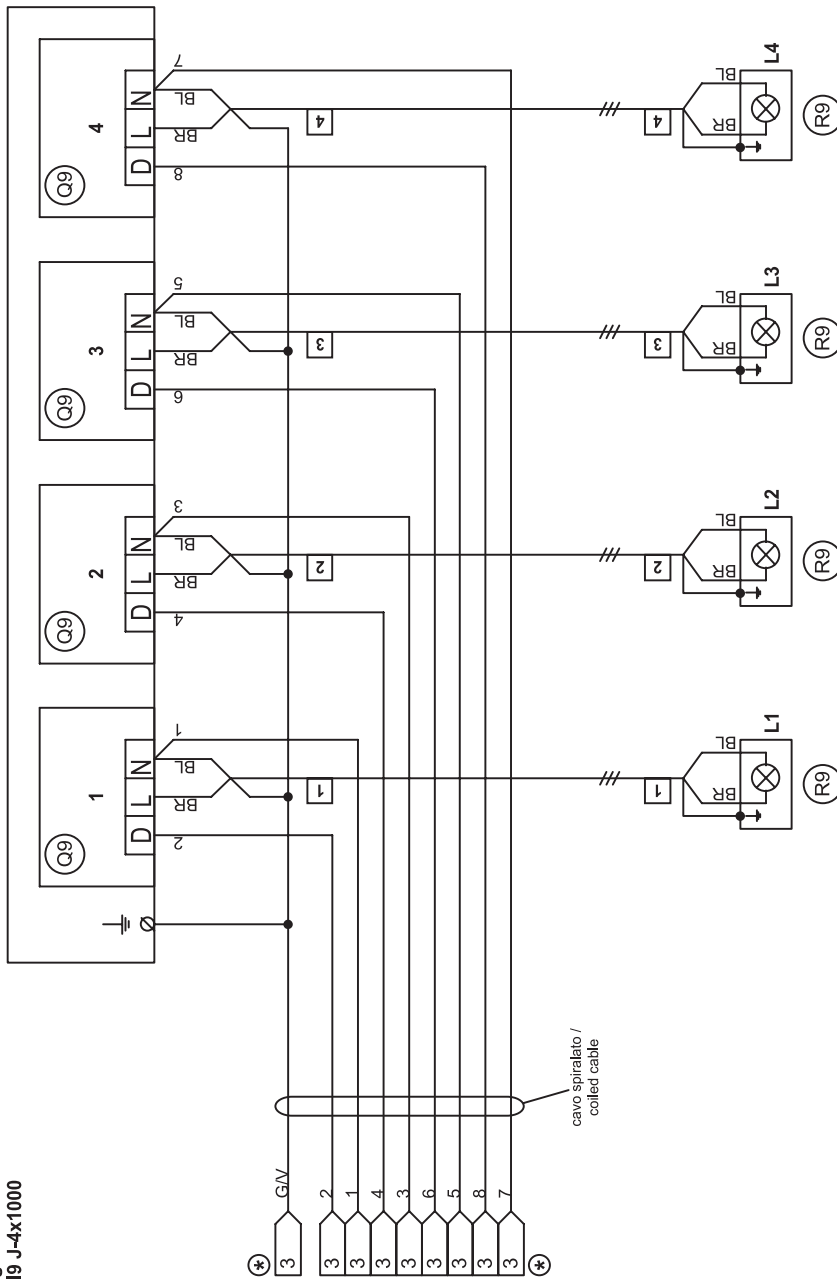
Esp. / Exc.	Modifica / Modification	Data / Date	Dis. / Desi. / Appr. /
Da Pag. / From Page	Denominazione: / Denomination:	Progetto: / Project:	Dis. / Desi. / Appr. /
Alla Pag. / To Page	Electrical diagram Light (J-4x400)	5A520.prg	Page n° / of n°
	Macchina: / Machine:	18.09.2014	2 / 3
	Disegnatore: / Designer:	5A520.S.020	Approvato: / Approved:
	Balducci F.		Quasi



LEGENDA COLORI KEY COLOR	
BL	AZZURRO / LIGHT BLUE
BR	MARRONE/BROWN

Rev. / Rev.	Modifica / Modification	Data / Date	Dis. / Desi. / Appr.
Denominazione: / Project:		5A510.prg	3
Da Pag. / From Page:			
To Page:			
Disegnatore: / Designer:		Balducci F.	
Macchina: / Machine:			
Dis. n.° / Dwg. n.°:		5A510.S.027	
Data: / Date:		25.03.2014	
Disegnato: / Drawn:			
Approvato: / Approved:			

(\*) **ATTENZIONE:**  
 Per TF NI9 J-4x1000  
 da pag. 2  
**ATTENTION:**  
 From page 2  
 for TF NI9 J-4x1000



LEGENDA COLORI KEY COLOR	
BL	AZZURRO / LIGHT BLUE
BR	MARRONE/BROWN

Exp. / Exp.	Modifica / Modification		Data / Date	02.04.2014	B.F.
Da Pag. / From Page	Denominazione / Denomination:	Progetto: / Project:	Dis. / Desi.	5A970.prg	3
App. / Appr.	Macchina: / Machine:	Disegnato: / Designer:	Data: / Date:	07.05.2013	8B970.S.027-A
		Balducci F.			







**MOSA**

**MOSA div. della BCS S.p.A.**

Viale Europa, 59 20090 Cusago (Milano) Italy

Tel. +39 - 0290352.1 Fax +39 - 0290390466 [www.mosa.it](http://www.mosa.it)

