GE 14000 SXC/GS

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359269003 - GB

USE AND MAINTENANCE MANUAL
SPARE PARTS CATALOG

18/10/05 35926M00
preparato da UPT
approvato da DITE

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and its partner
CISQ/ICIM
hereby certify that the organization

MOSA Divisione della BCS S.p.A.

Viale Europa, 59
I-20090 CUSAGO (MI)

for the following field of activities

Design, production and servicing of engine driven welders and generating sets.

has implemented and maintains a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2000

Issued on: 2003-03-06
Validity date: 2006-03-05
Registration Number: IT-3722

Fabio Roversi
President of IQNet

Giacomo Pesci
President of CISQ

ICIM

CERTIFICATO n.
CERTIFICATE No. 0192/3

MOSA Divisione della BCS S.p.A.

Viale Europa, 59 - 20090 Cusago (MI)
Italia

UNI EN ISO 9001:2000

EA: 18

Progettazione, produzione ed assistenza
di motosaldatrici e gruppi elettrogeni.
Design, production and servicing
of engine driven welders and generating sets.

SINCERT

CISQ

UNI EN ISO 9001 : 2000

ISO 9001:2000 - Cert. 0192/3

MOSA has certified its quality system according to UNI EN ISO 9001:2000 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 MOSA 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 actives in accordance with the official procedures and in harmony with the MOSA Manual of Quality.

The advantages for MOSA 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

⚠ ATTENTION

This use and maintenance manual is an important part of the machines in question.
The assistance and maintenance personel must keep said manual at disposal, as well as that for the engine and alternator (if the machine is synchronous) and all other documentation about the machine.

We advise you to pay attention to the pages concerning the security (see page M1.1).

MOSA

INFORMATION

Dear Customer,
We wish to thank you for having bought from MOSA a high quality set.

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 MOSA 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 from MOSA.***

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.

INFORMATION OF GENERAL TYPE

In the envelope given together with the machine and/or set you will find: the manual for Use Maintenance and Spare Parts, the manual for use of the engine and the tools (if included in the equipment), the guarantee (in the countries where it is prescribed by law).

Our products have been designed for the use of generation for welding, electric and hydraulic system; ANY OTHER DIFFERENT USE NOT INCLUDED IN THE ONE INDICATED, relieves MOSA from the risks which could happen or, anyway, from that which was agreed when selling the machine; MOSA excludes any responsibility for damages to the machine, to the things or to persons in this case.

Our products are made in conformity with the safety norms in force, for which it is advisable to use all these devices or information so that the use does not bring damage to persons or things.

While working it is advisable to keep to the personal safety norms in force in the countries to which the product is destined (clothing, work tools, etc.).

Do not modify for any motive parts of the machine (fastenings, holes, electric or mechanical devices, others..) if not duly authorized in writing by MOSA: the responsibility coming from any potential intervention will fall on the executioner as in fact he becomes maker of the machine.

☞ ***Notice: this manual does not engage MOSA, 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.***

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MOSA
Divisione della BCS S.p.A.
V.le Europa 59 - 20090 Cusago (Mi) - Italia

ISO 9001:2000 - Cert. 0192/3

DICHIARAZIONE DI CONFORMITA'

CE

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

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

Modello/Modèle/Model/Modell/Model/Modelo: _____

Codice/ Code/ Code/ Kode/ Code/ Codigo: _____

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 gemeenschapsrichtlijnemen gerelateerde modificaties:
comple con los requisítos de la **Directiva Comunitaria** y sus anexos:

98/37/CE - 73/23/CE - 89/336/CE - 2000/14/CE

per la verifica sono state considerate le seguenti norme armonizzate, Norme nazionali e internazionali:
pour la vérification de la conformité ont été consultées les normes harmonisées suivantes, normes nationales et internationales:
to check the conformity, the following harmonized norms, national and international norms, have been consulted:
zur Prüfung hat man die folgenden übereinstimmenden nationalen und internationalen Normen herangezogen:
ter verificatie van de overeenkomst, zijn de volgende geharmoniseerde normen, nationaal en internationaal, geconsulteerd:
para su verification se han tenido en cuenta las Normas armonizadas, Normas nacionales e internacionales:

Norme armonizzate - normes harmonisées - harmonized norms - übereinstimmende Normen
geharmoniseerde normen - Normas armonizadas:
EN 292-1 EN 292-2
EN 60204-1
EN 50199 EN 60974-1 (Solo per modelli - Seulement pour les modèles - Only for models - nur für die Modelle - Alleen voor de modellen - Sólo para modelos: **TS**)
EN 50081-2 EN 50082-2

Altre norme - autres normes - other norms - andere Normen - andere normen - otras normas:
ISO 8528 (Solo per modelli - Seulement pour les modèles - Only for models - nur für die Modelle - Alleen voor de modellen - Sólo para modelos: **GE**)

Ing. Benso Marelli
Direttore Generale

Cusago, _____

MM 065.2.doc

CE The CE mark (European Community) certifies that the product complies with the essential safety requirements provided by the applicable COMMUNITY DIRECTIVES. In the Conformity Declaration are reported the HARMONIZED NORMS and not, used for the checking.

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.

IMPORTANT ADVICE

- Advice to the User about the safety:

☞ N.B.: The information contained in the manual can be changed without notice.
Potential damages caused in relation to the use of these instructions will not be considered because these are only indicative.
Remember that the non observance of the indications reported by us might cause damage to persons or things.
It is understood, that local dispositions and/or laws must be respected.

WARNING

⚠ **Situations of danger - no harm to persons or things**

Do not use without protective devices provided
Removing or disabling protective devices on the machine is prohibited.

Do not use the machine if it is not in good technical condition
The machine must be in good working order before being used. Defects, especially those which regard the safety of the machine, must be repaired before using the machine.

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 assis you in the correct use of the machine and/or accessories.

SYMBOLS (for all MOSA models)

STOP - Read absolutely and be duly attentive

Read and pay due attention

GENERAL ADVICE - 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.

WATER - Danger of shortcircuit. If the advice is not respected fires or damage to persons can be caused.

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

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

WRENCH - Use of the tools. If the advice is not respected damage can be caused to things and even to persons.

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

ACCES FORBIDDEN to non authorizad peaple.

PROHIBITIONS No harm for persons

Use only with safety clothing -

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

Use only with safety clothing -

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

Use only with safety protections -

It is a must to use protection means suitable for the different welding works.

Use with only safety material -

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

Use only with non inserted voltage -

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

No smoking -

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

No welding -

It is forbidden to weld in rooms containing explosive gases.

ADVICE <u>No harm for persons and things</u>

Use only with safety tools, adapted to the specific use -

It is advisable to use tools adapted to the various maintenance works.

Use only with safety protections, specifically suitable

It is advisable to use protections suitable for the different welding works.

Use only with safety protections -

It is advisable to use protections suitable for the different daily checking works.

Use only with safety protections -

It is advisable to use all protections while shifting the machine.

Use only with safety protections -

It is advisable to use protections suitable for the different daily checking works.and/or of maintenance.

°C: temperature Celsius grades
10:10 kVA synchronous (wording example)
10000:10 kVA asynchronous (wording example)
A: Ampere
A: ADIM engine
atm: pressure
B: pretrol
BAT: battery
BC: base current
C.A.(c.a.): alternating current
C.B.: battery charger
C.C.(c.c.): direct current
cc: cm^3 (volume)
CE: European norm conformity
CF: special for pipe welding
CTL: slow touring trolley
CTM CTV: fast touring trolley: hand touring trolley
D: diesel
D: GFI
D: Deutz engine
E: electric start
EAS: automatic intervention panel for generating sets for connection to the mains
EL: electronic regulation, allows to use welder and generating set simultaneausly
EP1: automatic accelerator according to requestedpower, engine protection, low oil pressure, high temperature with engine stop, troble warning lights
EP2: engine protection, low oil pressure, hight temperature with engine stop, trouble warning lights
EP4: engine protection, low oil pressure, high temperature with engine stop, no battery charge, belt broken, low fuel level with engine stop, trouble warning lights
EP5: engine protection, low oil pressure, high temperature with engine stop, no battery charge, belt broken, low fuel level with engine stop, everspeed, trouble warning lights
ES: oil/temperature engine protection device
EV: electrovalve
g/kwh: grams/kilowatt hour (engine consumption)
GA: asynchronous alternator
GE: generating set
GHF: high frequency alternator
GS: synchronous alternator
h: hour meter (symbol)
H: Hatz engine
H: Honda engine
HI: hydraulic central
Hz: frequency
I: single-phase auxiliary generation (symbol 1~)
IP: protection grads for electric devices against acess to dangerous parts according to the IEC 529 norm (Internal Protection)
kg: kilogram (mass)
K: welding cables set
kVA: kilovolt ampere
kW: kilowatt (engine power)
kWh: kilowatt hour (energy)
l: liters (capacity)
L: Lombardini engine
Lwa: maximum acoustic (power level) according to the regulations in force
mm: millimeter (length) (measure)
m: meter (length)
mA: milliampere
MS-MSG: MOSA engine driven welder with high frequency alternator
MT: magnetothermic switch
MT: grounding kit
MTD: magnetothermic switch / GFI
OH: heater (engine oil) for generating sets
P: plus
PAC: power electric frame
PAR: device for double
PB: battery holder
PL: „pipe line“ welding
PS: exhaust pipe extension
PW: welder for polyethylene and propylene pipes
QEA: automatic electric panel
QEM: manual electric panel
R: Ruggerini engine
RVT: voltage electronic regulator
S: symbol of EN 60974-1
S: Suzuki mengineotore
SKID: unit assembled on a base with no protection (no fairing)
S-SC: silenced (faired) - silenced compact (faired
SX-SXC: supersilenced (faired and sound prof) - supersilenced compact (faired and super sound prof)
T: thermic switch
TC-TCM-TCPL: remote control
TS: welder with asynchronous alternator
V: Volt
Y: Yanmar engine
Y: three-phase auxiliary generation (symbol 3~)

	CE Conformity CE	ELWA EEC Sound power conformity	S EN 60974-1 conformity	Y Triphase 3 ~	I Singlephase 1 ~			Users' manual	Information	Various news

Equipment and optional

Engine	Gasoline engine	Diesel engine	Air cooling	Water cooling	Manual recoil	Electric start	Battery 12 V				
Engine protection	EV Engine protection	ES Engine protection	EP2 Engine protection	EP1 Engine protection	EP4 Engine protection	EP5 Engine protection	Siren	Engine shut down (oil)	Engine speed		
Engine alarms	Oil level indicator	Battery charger indicator	Fuel level gauge/low fuel	Low fuel indicator	Oil temperature	Warning light for preheating glow plugs	Air filter blockage	Belt breakage	Over speed	Control unit QEA	
Generation	GA Asynchronous alternator	GS Synchronous alternator	GHF Generator high frequency	V Voltmeter	Hz Frequency-meter	A Ammeter	Compound	V Voltmeter phase selector	RVT Electronic Voltage regulator	Switch	
Electric protection	MTD Circuit breaker/ Ground fault interrupter	MT Circuit breaker	D Ground fault interrupter	T Thermal shut off	Fuse	R< Isolation monitoring					
Generation use	Terminal strip	3 ~ CEE Socket 400/230V EEC	1 ~ CEE Socket 230/110/48V EEC	1~ Schuko Socket 230V Schuko	Socket 48V EEC	Battery charger	Engine booster				
Welding control	Arc control	Welding with covered electrode	Welding current electr. regulation	Base current diode bridge	Polarity inverter	CC/CV selector					
Various devices	h Hour counter	Ready for TC	Ground connection point	Emergency stop button	Central lifting eye						
Various	Standard equipment	Options on request					D.C.	~ A.C.	+ Plus	- Minus	Maintenance Time
Optionals	Trolley	Site tow	Welding cables	Remote control							

⚠ The installation and the general advice concerning the operations, are finalized to the correct use of the machine, in the place where it is used as generator group and/or welder.

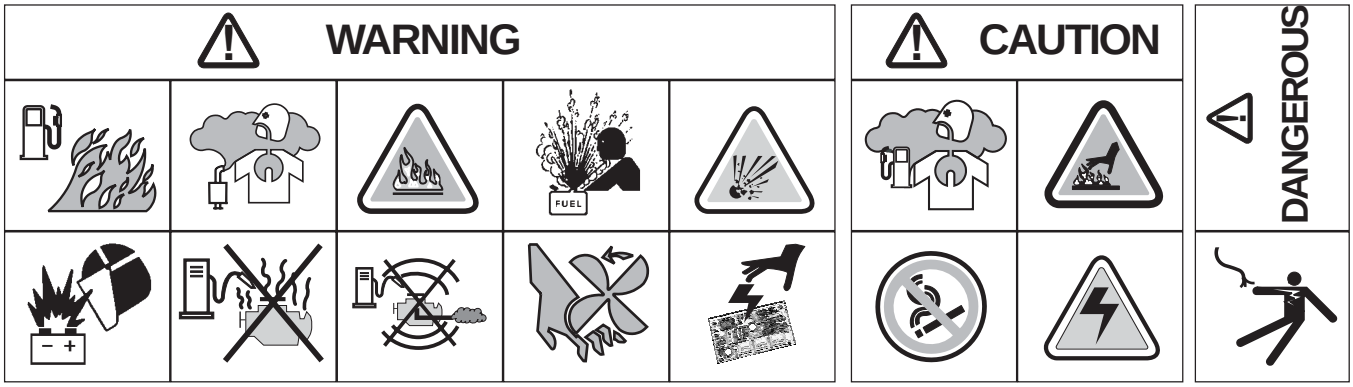
ENGINE	CHECKING BOARD
Stop engine when fueling	Do not touch electric devices if you are barefoot or with wet clothes.
Do not smoke, avoid flames, sparks or electric tools when fueling.	
Unscrew the cap slowly to let out the fuel vapours.	Always keep off leaning surfaces during work operations
Slowly unscrew the cooling liquid tap if the liquid must be topped up.	
The vapor and the heated cooling liquid under pressure can burn face, eyes, skin.	Static electricity can demage the parts on the circuit.
Do not fill tank completely.	
Wipe up spilled fuel before starting engine.	An electric shock can kill
Shut off fuel of tank when moving machine (where it is assembled).	
Avoid spilling fuel on hot engine.	
Sparks may cause the explosion of battery vapours	

☞ **FIRST AID.** In case the operator shold 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.

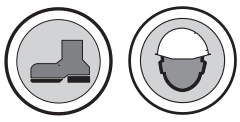
Skin contact	Wash with water and soap
Eyes contact	Irrigate with plenty of water, if the irritation persists contact a specialist
Ingestion	Do not induce vomit as to avoid the intake of vomit into the lungs, send for a doctor
Suction of liquids from lungs	If you suppose that vomit has entered the lungs (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 dioxyde) 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 inflamability point is very low.



WARNING ***THE MACHINE MUST NOT BE USED IN AREAS WITH EXPLOSIVE ATMOSPHERE***



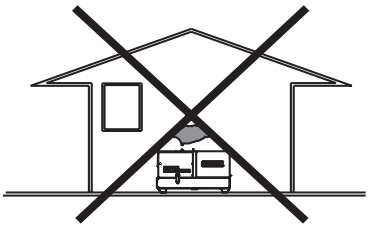
INSTALLATION AND ADVICE BEFORE USE

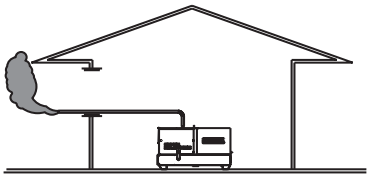
GASOLINE ENGINES

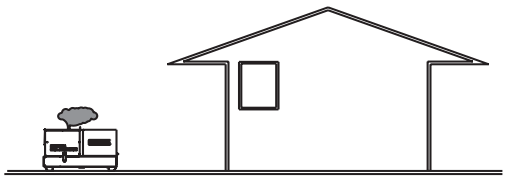
- Use in open space, air swept or vent exhaust gases, which contain the deathly carbone oxyde, far from the work area.

DIESEL ENGINES

- Use in open space, air swept or vent exhaust gases far from the work area.

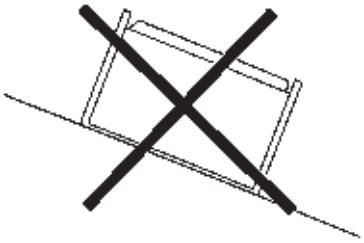




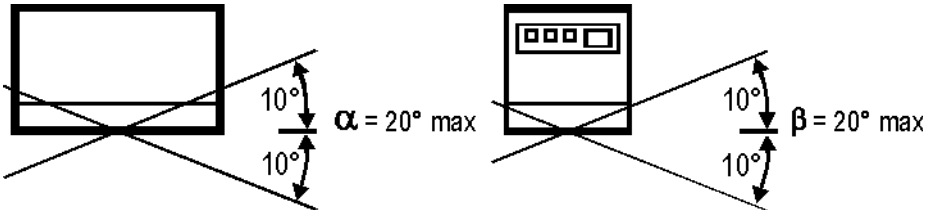


POSITION

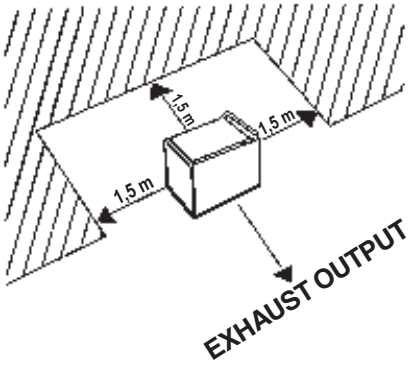
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other plants.



Maximum leaning of the machine (in case of dislevel)



Check that the air gets changed completely and the hot air sent out does not come back inside the set so as to cause a dangerous increase of the temperature.



☞ Make sure that the machine does not move during the work: **block** it possibly with tools and/or devices made to this purpose.

MOVES OF THE MACHINE

☞ At any move check that the engine is **off**, that there are no connections with cables which impede the moves.

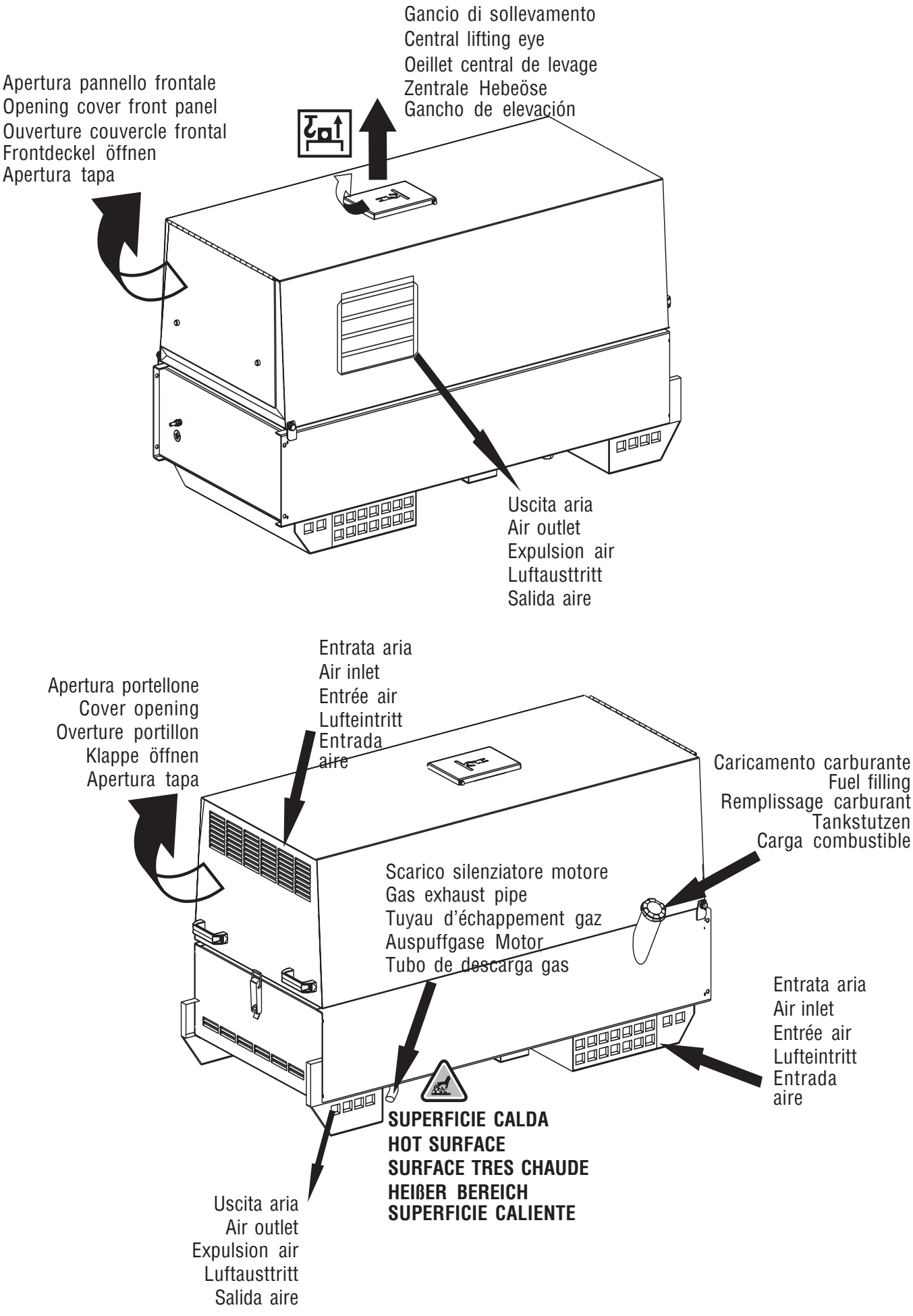
PLACE OF THE MACHINE

In spots where it often rains and/or there are flooded areas, do **not** put the machine:

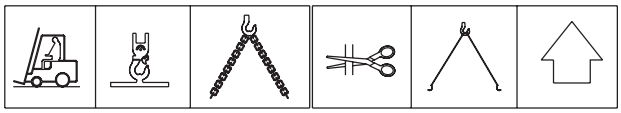
- *in the bad weather*
- *in flooded places.*

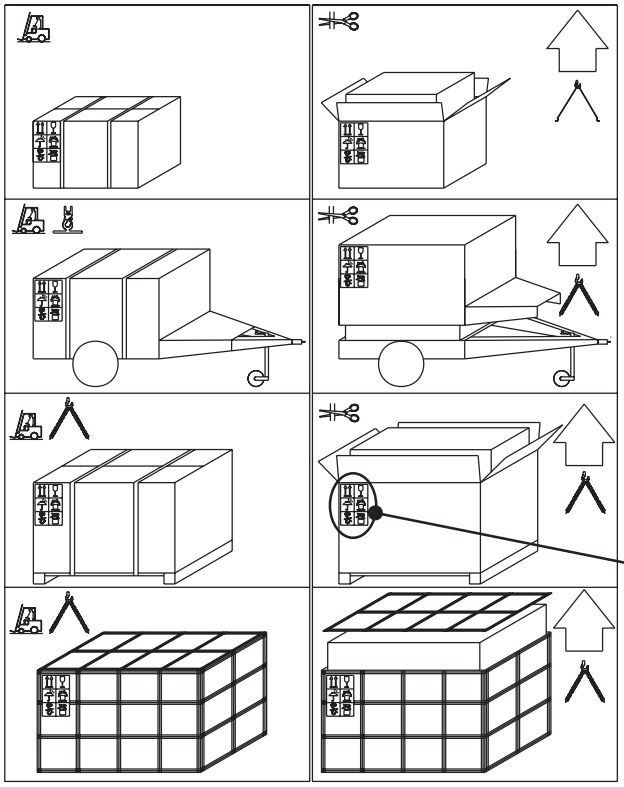
Protect all the electric parts at risk, because water infiltrations could cause short circuits with damages at persons and/or things.

The protection degree of the machine is put on the data plate and in this manual at page "Technical Data".


Gancio di sollevamento
Central lifting eye
Oeillet central de levage
Zentrale Hebeöse
Gancho de elevación
Apertura pannello frontale
Opening cover front panel
Ouverture couvercle frontal
Frontdeckel öffnen
Apertura tapa
Uscita aria
Air outlet
Expulsion air
Luftausttritt
Salida aire
Entrata aria
Air inlet
Entrée air
Lufteintritt
Entrada aire
Apertura portellone
Cover opening
Overture portillon
Klappe öffnen
Apertura tapa
Caricamento carburante
Fuel filling
Remplissage carburant
Tankstutzen
Carga combustible
Scarico silenziatore motore
Gas exhaust pipe
Tuyau d'échappement gaz
Auspuffgase Motor
Tubo de descarga gas
Entrata aria
Air inlet
Entrée air
Lufteintritt
Entrada aire
SUPERFICIE CALDA
HOT SURFACE
SURFACE TRES CHAUDE
HEIßER BEREICH
SUPERFICIE CALIENTE
Uscita aria
Air outlet
Expulsion air
Luftausttritt
Salida aire

NOTE



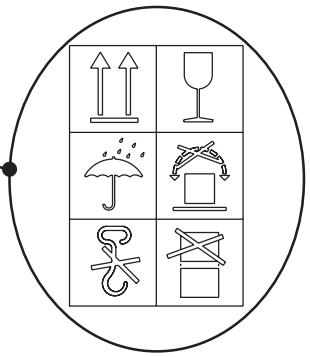


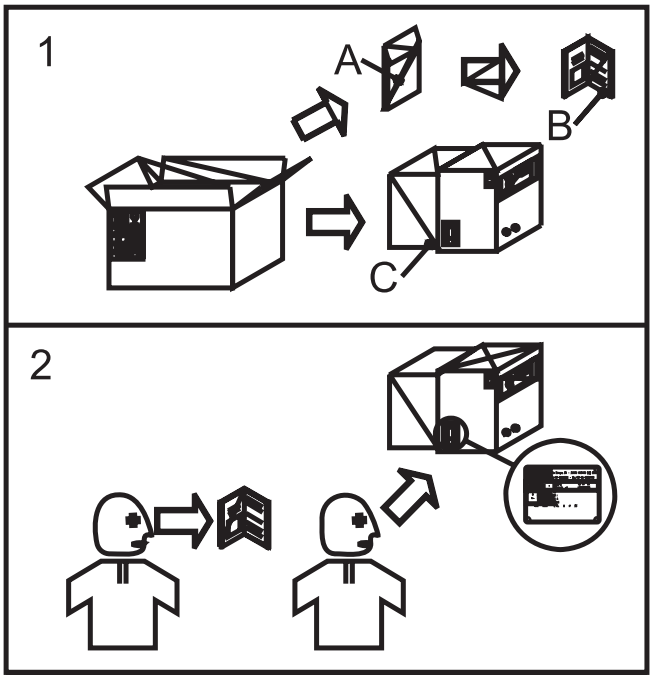
☞ Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conforms to local rules and regulations.

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.



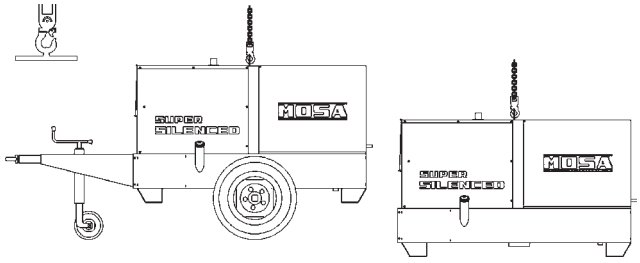


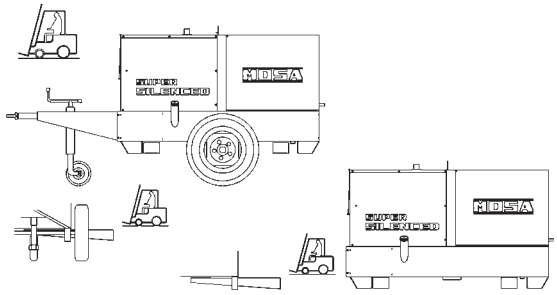
1) Take the machine (C) out of the shipment packing. Take out of the envelope (A) the user's manual (B).
2) Read: the user's manual (B), the plates fixed on the machine, the data plate.

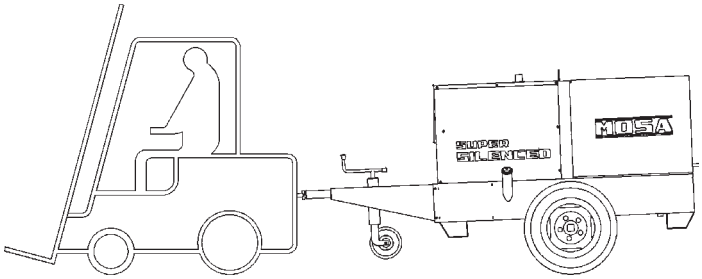
NOTE

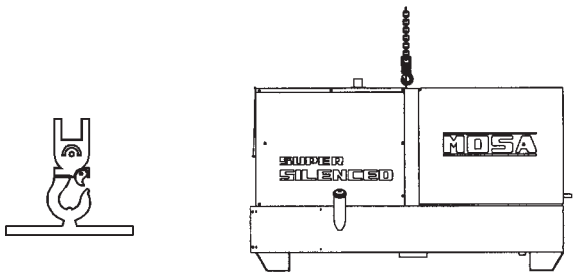
In case you should transport or move the machine, keep to the instructions as per the figures.
Make the transportation when the machine has **no** petrol in its tank, **no** oil in the engine and and electrolyte in the battery.
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.
Only authorized persons involved in the transport of the machine should be in the area of movement.

DO NOT LOAD OTHER PARTS WHICH CAN MODIFY WEIGHT AND BARICENTER POSITION.
IT IS STRICTLY FORBIDDEN TO DRAG THE MACHINE MANUALLY OR TOW IT BY ANY VEHICLE (model with no CTL accessory).
If you did not keep to the instructions, you could damage the structure of the machine.

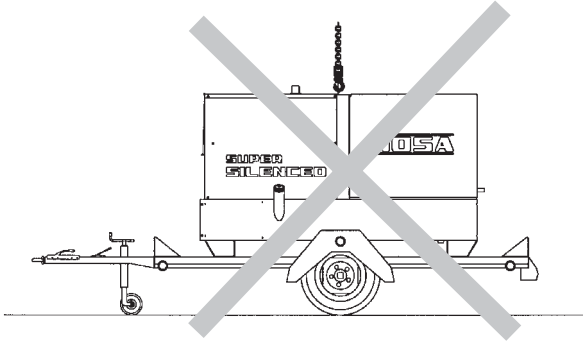








LIFT ONLY THE MACHINE



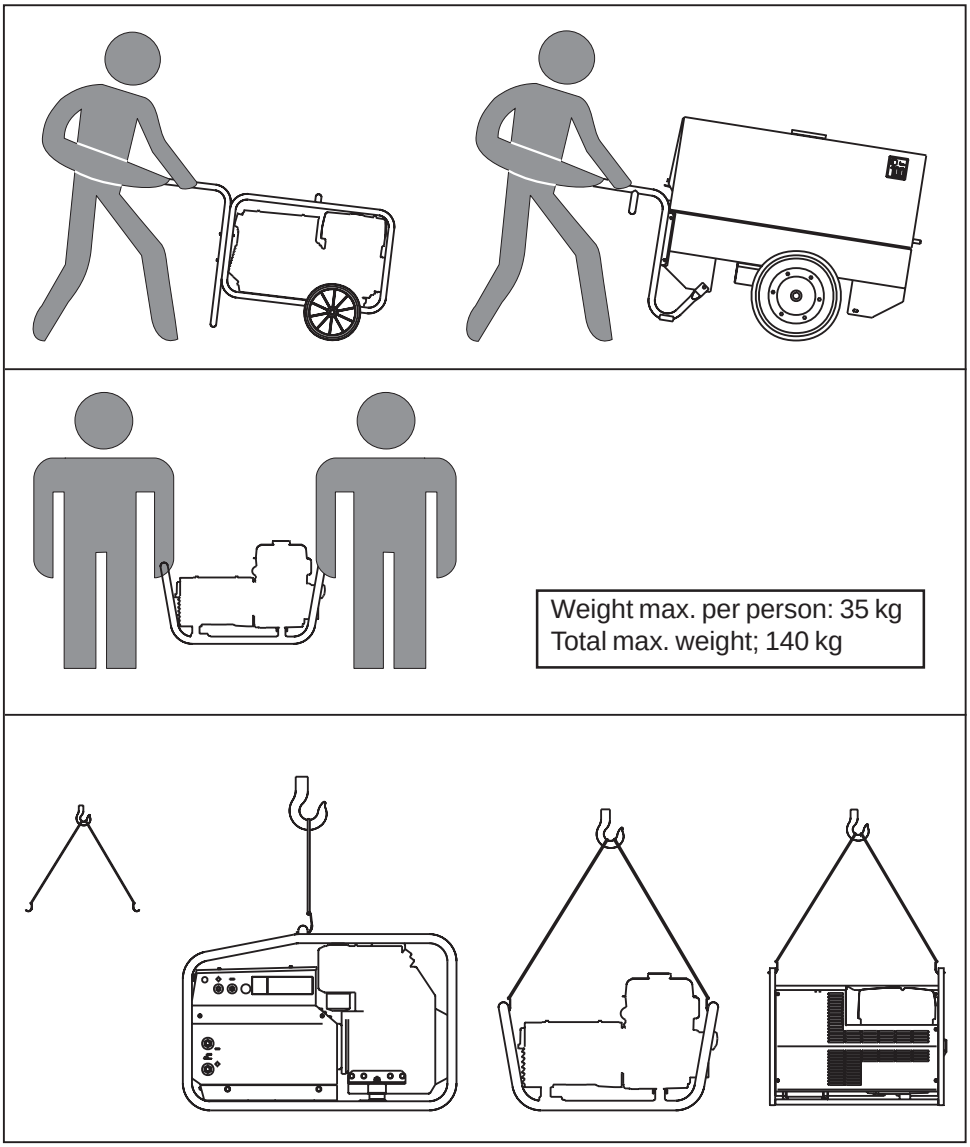
DO NOT LIFT THE MACHINE AND TRAILER

DANGER: LIFTING EYE IS NOT DESIGNED TO SUPPORT ADDED WEIGHT OF ROAD TOW TRAILER

NOTE

In case you should transport or move the machine, keep to the instructions as per the figures.
Make the transportation when the machine has **no** petrol in its tank, **no** oil in the engine and and electrolyte in the battery.
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.
Only authorized persons involved in the transport of the machine should be in the area of movement.

DO NOT LOAD OTHER PARTS WHICH CAN MODIFY WEIGHT AND BARICENTER POSITION.
IT IS STRICTLY FORBIDDEN TO DRAG THE MACHINE MANUALLY OR TOW IT BY ANY VEHICLE (model with no CTM accessory).
If you did not keep to the instructions, you could damage the structure of the machine.



⚠ ATTENTION

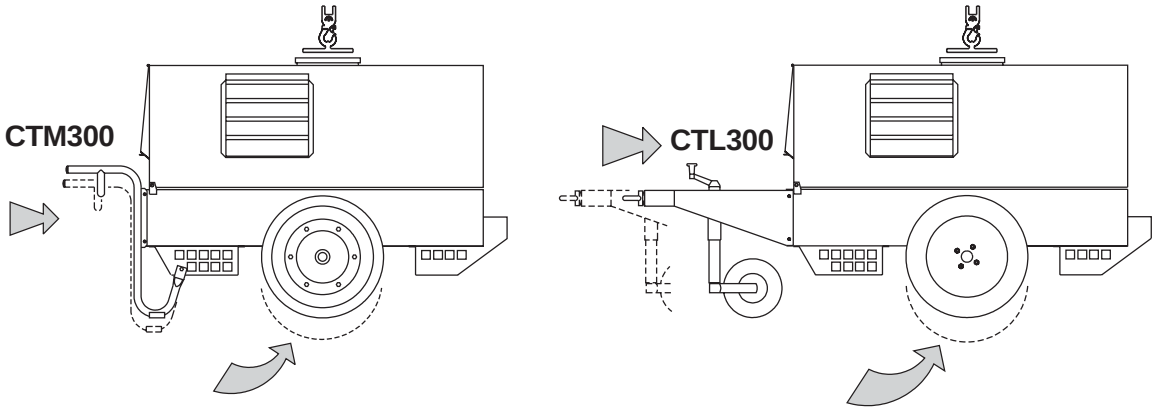
The CTL or CTM accessory cannot be removed from the machine and used separately (actioned manually or following vehicles) for the transport of loads or anyway for used different from the machine movements.

TRAILERS

The machines provided for assembling the CTL accessory (slow towing trolley) can be towed up to a **maximum** speed of **40 Kms/hour** on asphalted surfaces.

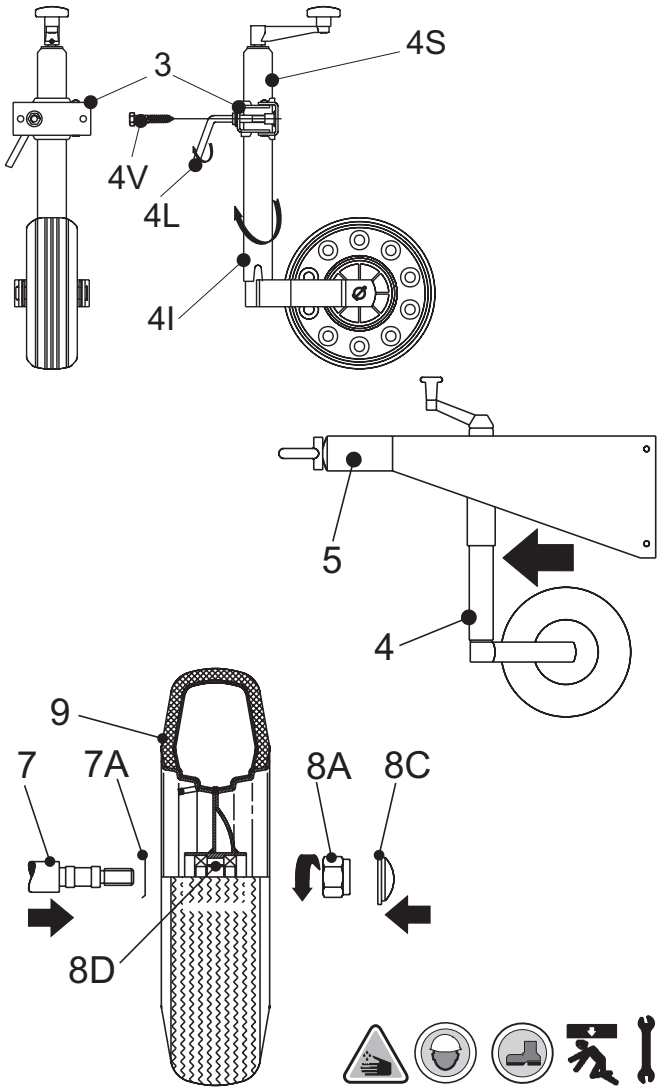
Towing on public roads or turnpikes of any type **IS EXCLUDED**, because **not** in possesion of the requirements by national and foreign traffic norms.

Nota: Lift the machine and assemble the parts as shown in the drawing



For assembling the generating set on the trolley CTL300 please keep to following instructions:

1) - Lift the generating set (by means of suitable hook).
2) - Slightly fix the jaw (3) of the parking foot to the bar with the M10x20 screws, the M10 nuts and the washers (so as to let the foot sprag go through.
3) - Split (unscrewing them) the two parts of the foot (4S-4I) to be able later to assemble them on the jaw.
4) - Introduce into the jaw (3) the upper part (4S) of the foot and screw again the lower part (4I), then tighten the screws (4V) of the jaw to the towbar and block momentaneously with the lever (4L) the whole foot.
5) - Assemble on the machine the towbar (5) complete of foot with the M10x20 screws, nuts and washers (see fig. page M6.4).
6) - Assemble the axle (7) to the base of the machine (see fig. page M6.4) with the M 8x20 screws and relative washers (two per part) so that their supports coincide.
7) - Introduce on the axle the antidust ring (7A) with folded edges turned toward the machine.
8) - Insert the wheel (9) on the axle paying attention to the spacer (8D) which is between the two bearings, then insert the selfblocking nut (8A) and finally assemble the shutting cap (8C).
9) - Pump the tyre (9) bringing the pressure to three atms.
10) - Lower the machine to the ground and place the parking foot definitively (regulating at the best height).



⚠ **ATTENTION**
Do not substitute the original tires with other types.

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.

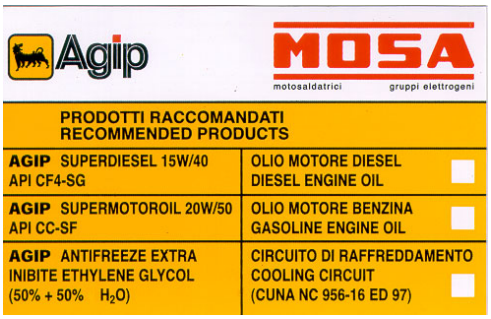
- Green colour: battery OK
- Black colour: battery to be recharged
- White colour: battery to be replaced

DO NOT OPEN THE BATTERY.

LUBRICANT

RECOMMENDED OIL

MOSA recommends selecting **AGIP** engine oil.
Refer to the label on the motor for the recommended products.



Agip MOSA motosaldatrici gruppi elettrogeni

PRODOTTI RACCOMANDATI RECOMMENDED PRODUCTS	
AGIP SUPERDIESEL 15W/40 API CF4-SG	OLIO MOTORE DIESEL DIESEL ENGINE OIL
AGIP SUPERMOTOROIL 20W/50 API CC-SF	OLIO MOTORE BENZINA GASOLINE ENGINE OIL
AGIP ANTIFREEZE EXTRA INIBITE ETHYLENE GLYCOL (50% + 50% H_2O)	CIRCUITO DI RAFFREDDAMENTO COOLING CIRCUIT (CUNA NC 956-16 ED 97)

Please refer to the motor operating manual for the recommended viscosity.

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.

DRY 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.

OIL BATH AIR FILTER

Fill the air filter using the same engine oil up to the level indicated on the filter.

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.

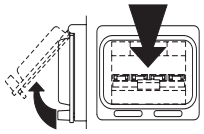
GROUNDING CONNECTION

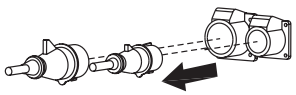
The grounding connection to an earthed installation **is obligatory** for all models equipped with a differential switch (circuit breaker). In these groups the generator star point is generally connected to the machine's earthing; by employing the TN or TT distribution system, the differential switch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

check before each start-up

START-UP FROM FRONT PANEL

1. Position the LOCAL START / REMOTE START (I6) selector on LOCAL START **(only EAS version)**;
2. check to ensure the emergency stop button is unblocked (where it is assembled);
3. make sure the load plugs are disconnected or the thermal-magnetic switch (Z2) is not inserted (intervention/ insertion lever facing down), so as to ensure the motor's start-up without any loads inserted;

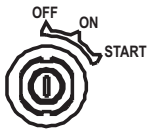




4. Make sure that the accelerator lever or the switch (16) is at its minimum setting;

5. Insert the electric protection device (D-Z2-N2) lever towards above and, where mounted, check the isolation monitor (A3) see page M37 –

6. Introduce the key (Q1), turn it clockwise completely, leaving it as soon as the engine starts and/or the push button (32) (models without key) leaving it as soon as the engine starts.



☞ **NB.: for safety reason the key must be kept by qualified personel.**

Temperature	Time
≤ - 20° C	5 min.
to - 20° C from -10°C	2 min.
to - 10° C from -5°C	1 min.
≥ 5° C	20 sec.

7. Once the engine has started leave it running at a reduced speed for some minutes.

8. Accelerate the engine at max., set lever on maximum position and then take up load.

☞ ***In case of unsuccessful start-up, do not insist for longer than 5 seconds. Wait 10 - 15 seconds before attempting another start-up .***

REMOTE START (Only EAS version)

The unit can also be started by means of the remote TCM control device, or through the EAS automatic intervention panel.

1. Position the LOCAL START / REMOTE START (I6) selector on REMOTE START;
2. check that the emergency stop button is unblocked (where it is assembled);
3. Connect to the EAS (B3) connector the TCM or the EAS panel.
4. Start-up with EAS
The EAS panel automatically sees to controlling the motor's start-up cycle.
☞The preheating time on the EAS panel is normally set at 10 seconds; for low temperatures, it may be necessary to increase it to 15 or 20 seconds to ensure start-up.
Contact an authorized Service Centre or our Technical Service Department directly to modify this setting.
5. Start-up with TCM
Perform the same procedure for start-up from the front panel using the TCM start-up key (Q1).

⚠ CAUTION

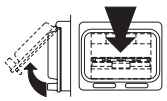
RUNNING-IN
During the first 50 hours of operation, do not use more than 60% of the maximum output power of the unit and check the oil level frequently, in any case please stick to the rules given in the engine use manual.

SHUT-DOWN FROM FRONT PANEL

For shutdown under normal conditions, proceed as follows:

1. Position the LOCAL START /REMOTE START (I6) selector on LOCAL START; **(only EAS version)**;

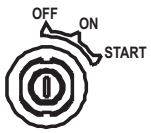
2. cut off power to all utilities by opening the load switch or opening the thermal-magnetic switch (Z2) (input lever in downward position);



3. Turn and push the accelerator lever (16) in minimum position;

4. allow the motor to run without any load for a few minutes;

5. turn the key (Q1) to the OFF position.



☞ **NB.: as a safety measure the start-up key must be entrusted to qualified personnel.**

SHUT-DOWN FROM REMOTE

(only EAS version)

WARNING

The start-up selector (I6) LOCAL START / REMOTE START enables the start-up and stop controls for the selected position.

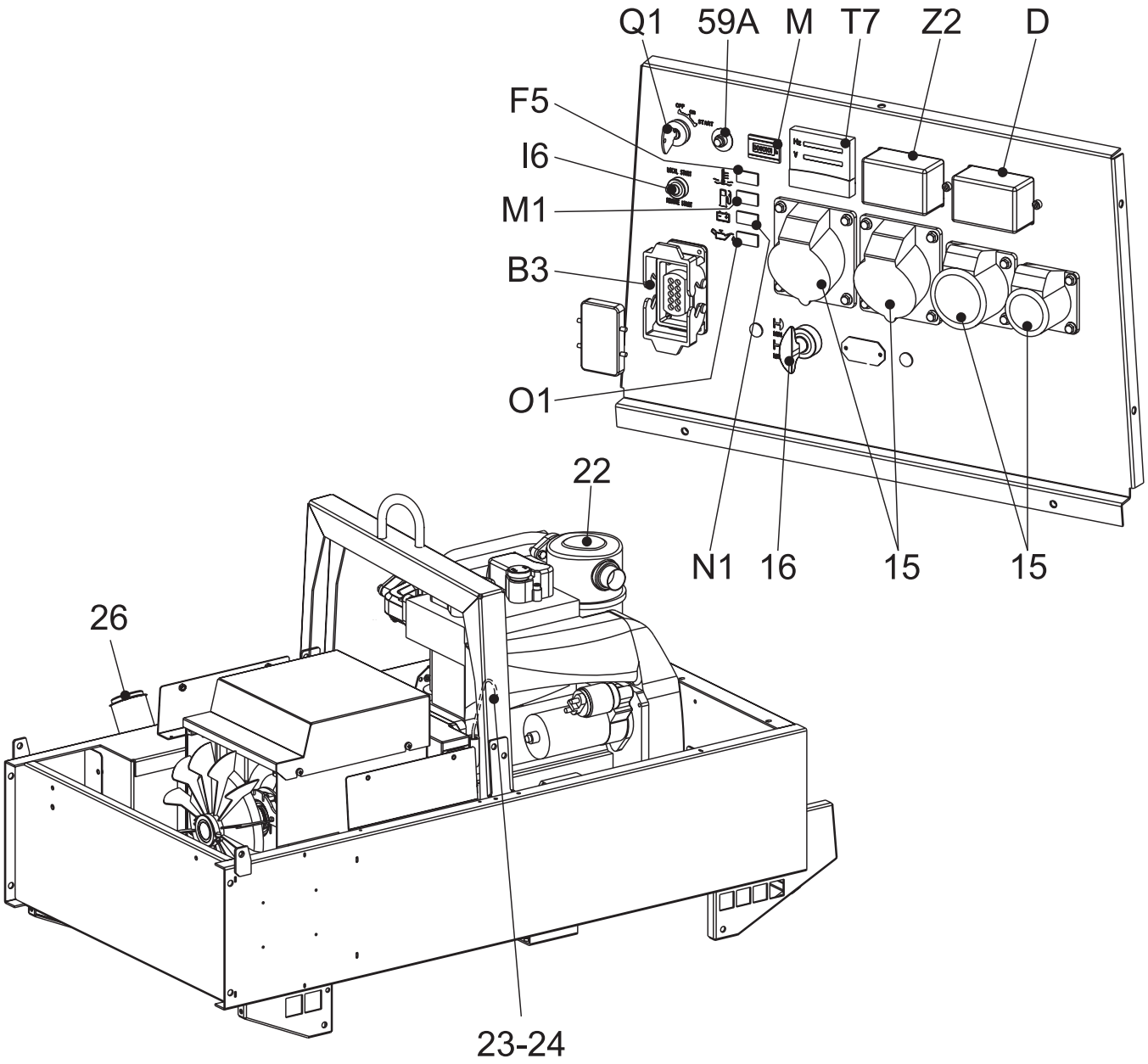
From the REMOTE START position, the start-up key on the front panel is completely disabled; to stop the generator, use the controls on the TCM or EAS panel.

The unit can also be shut down by means of the TCM remote control or EAS panel.

1. Check that the EAS (B3) connector is connected to the cable from the TCM or EAS panel.
2. Verify or position the LOCAL START / REMOT START (I6) selector on REMOTE START.
3. **SHUT-DOWN with EAS**
   The EAS panel automatically sees to controlling the motor shutdown cycle, including the cooling cycle.
4. **SHUT-DOWN with TCM**
   Follow the same shutdown procedure described for shutdown from the front panel using the TCM key (Q1).

EMERGENCY SHUTDOWN

Turn the key (Q1) to the OFF position.



Pos.	Descrizione	Description	Description	Descripción
15	Presa di corrente in c.a.	A.C. socket	Prises de courant en c.a.	Toma de corriente en c.a
16	Comando acceler./puls. marcia	Accelerator lever	Commande accélér./bouton marche	Mando de acel./pulsador marcha
22	Filtro aria motore	Engine air filter	Filtre air moteur	Filtro aire motor
23	Asta livello olio motore	Oil level dipstick	Jauge niveau huile moteur	Aguja nivel aceite motor
24	Tappo caricamento olio motore	Engine oil reservoir cap	Bouchon remplissage huile moteur	Tapón llenado aceite motor
26	Tappo serbatoio	Fuel tank cap	Bouchon réservoir	Tapón depósito
59A	Protezione termica motore	Engine thermal switch	Protection thermique moteur	Protección térmica motor
B3	Connettore EAS	EAS connector	Connecteur EAS	Conector E.A.S.
D	Interruttore differenziale (30mA)	G.F.I.	Interrupteur différentiel	Interruptor diferencial (30 mA)
F5	Spia alta temperatura	Warning light, high temperature	Voyant haute température	Piloto alta temperatura
I6	Selettore Start Local/Remote	Start Local/Remote selector	Selecteur Start Local/Remote	Selector Start Local/Remote
M	Contaore	Hour counter	Compte-heures	Cuentahoras
M1	Spia livello combustibile	Warning level light	Voyant niveau carburant	Piloto nivel combustible
N1	Spia carica batteria	Battery charge warning light	Voyant charge batterie	Piloto carga bateria
O1	Spia lumin. press. olio/oil alert	Oil press.warning light/oil alert	Voyant lumin. press.huile / oil alert	Indic.lum.pres. aceite/oil alert
Q1	Chiave di avviamento	Starter key	Clé de démarrage	Llave de arranque
T7	Strumento analogico V/Hz	Analogic instrument V/Hz	Instrument analogique	Instrumento analógico V/Hz
Z2	Interruttore magnetotermico	Thermal-magnetic circ.breaker	Interrupteur magnétothermique	Interruptor magnetotérmico

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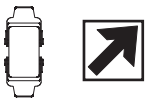
	**15** Power sockets c.a. - Load connection point to generator
	**Z2** Thermal-magnetic switch - Protects the alternator and generation circuit from overloads and short circuits.
	**D** Differential switch - Generally with a current of 30 mA, this is the safety device against indirect contacts
	**59B** Thermal protection for inputs c.a. - Protects individual sockets, generally the monophase inputs, from overloads.
	**N** Line voltmeter - The presence of line voltage indicates power can be drawn from the sockets c.a.
	**E2** Frequency meter - Indicates the frequency of the current c.a. from the generator. Directly proportional to the number of revolutions of the motor. 50Hz corresponds to 1500 or 3000 rpm; 60Hz corresponds to 1800 or 3600 rpm.
	**12** Grounding terminal - PE terminal for the group's earthing connection to a grounding installation.

	Motor protection - Motor control circuit with automatic shutdown for low oil pressure and high temperature.
	**Q1** Start-up key - Control unit for start-up, shutdown operations.
	**59A** Motor thermic protection - Protects the battery circuit auxiliary devices: pilot lights, relays, instruments, sensors, etc. from power overloads and short circuits.
	**M** Hours counter - Indicates effective operating hours for the electricity-generating group.
	**O1** Oil pressure warning light - If on during the group's operation, indicates a malfunction in the motor's oil circuit.
	**F5** High temperature warning light - For groups with water cooled motor, indicates a malfunction in the cooling circuit.

	**N1** Battery charge warning light - If on during the group's operation, indicates a malfunction in the motor's battery charge circuit.
	**M1** Low fuel warning light - If on, indicates the fuel in the tank has reached the low level point.
	**B3** EAS connector - Connects the or electricity-generating group and automatic EAS start-up panel or TCM remote control.
	**I6** LOCAL/START-REMOTE/START switch - Allows for the group's start-up and shutdown from a sole command position: front panel or remote.

⚠ WARNING

It is absolutely forbidden to connect the unit to the public mains and/or another electrical power source .

Access <u>forbidden</u> to area adjacent to electricity-generating group for all non-authorized personnel.

The electricity-generating groups are to be considered electrical energy producing stations.
The dangers of electrical energy must be considered together with those related to the presence of chemical substances (fuels, oils, etc.), rotating parts and waste products (fumes, discharge gases, heat, etc.).

GENERATION IN AC (ALTERNATING CURRENT)

Before each work session check the efficiency of the ground connection for the electricity-generating group if the distribution system adopted requires it, such as, for example, the TT and TN systems.

Check that the electrical specifications for the units to be powered - voltage, power, frequency - are compatible with those of the generator. Values that are too high or too low for voltage and frequency can damage electrical equipment irreparably.
In some cases, for the powering of three-phase loads, it is necessary to ensure that the cyclic direction of the phases corresponds to the installation's requirements.

Connect the electric devices to be powered to the AC sockets, using suitable plugs and cables in prime condition.

Before starting up the group, make certain no dangerous situations exist on the installation to be powered.
Check that the thermal-magnetic switch (Z2) is in the OFF position (input lever in downward position).

Start up the electricity-generating group, positioning the thermal-magnetic switch (Z2) and differential switch (D) to ON (input lever in upward position).
Before powering on the utilities, check that the voltmeter (N) and frequency meter (E2) indicate nominal values; in addition, check on the voltmeter change-over switch (H2) (where it is assembled) that the three line voltages are the same.
☞ In the absence of a load, the values for voltage and frequency can be greater than their nominal values. See sections on VOLTAGE and FREQUENCY.

OPERATING CONDITIONS

<u>POWER</u>

The electrical power expressed in kVA on an electricity-generating group is the available output power to the reference environmental conditions and nominal values for: voltage, frequency, power factors (cos φ).

There are various types of power: PRIME POWER (PRP), STAND-BY POWER established by ISO 8528-1 and 3046/1 Norms, and their definitions are listed in the manual's TECHNICAL SPECIFICATIONS page.

☞ During the use of the electricity-generating group **NEVER EXCEED** the power indications, paying careful attention when several loads are powered simultaneously.

<u>VOLTAGE</u>

GENERATORS WITH COMPOUND SETTING.

In these types of generators, the no-load voltage is generally greater than 3–5% with respect to its nominal value; f.e. for nominal voltage, threephase 400Vac or singlephase 230Vac, the no-load voltage can be comprised between 410-420V (threephase) and 235-245V (singlephase). The precision of the load voltage is maintained within ±5% with balanced loads and with a rotation speed variation of 4%. Particularly, with resistive loads (cos φ = 1), a voltage over-elevation occurs which, with the machine cold and at full load, can even attain +10 %, a value which in any case is halved after the first 10-15 minutes of operation.
The insertion and release of the full load, under constant rotation speed, provokes a transitory voltage variation that is less than 10%; the voltage returns to its nominal value within 0.1 seconds.

GENERATORS WITH ELECTRONIC SETTING (A.V.R.).

In these types of generators, the voltage precision is maintained within ±1,5%, with speed variations comprised from -10% to +30%, and with balanced loads. The voltage is the same both with no-load and with load; the insertion and release of the full load provokes a transitory voltage variation that is less than 15%; the voltage returns to its nominal value within 0.2–0.3 seconds.

<u>FREQUENCY</u>

The frequency is a parameter that is directly dependent on the motor's rotation speed. Depending on the type of alternator, 2 or 4 pole, we will have a frequency of 50/60 Hz with a rotation speed of 3000/3600 or 1500/1800 revolutions per minute.
The frequency, and therefore the number of motor revolutions, is maintained constant by the motor's speed regulation system.
Generally, this regulator is of a mechanical type and presents a droop from no-load to nominal load which is less than 5 % (static or droop), while under static conditions precision is maintained within ±1%.Therefore, for generators at 50Hz the no-load frequency can be 52–52.5 Hz, while for generators at 60Hz the no-load frequency can be 62.5-63Hz.

In some motors or for special requirements the speed regulator is electronic; in these cases, precision under static operating conditions attains ±0.25%, and the frequency is maintained constant in operation from no-load to load (isochronal operation).

POWER FACTOR - COS φ

The power factor is a value which depends on the load's electrical specifications; it indicates the ratio between the Active Power (kW) and Apparent Power (kVA). The apparent power is the total power necessary for the load, achieved from the sum of the active power supplied by the motor (after the alternator has transformed the mechanical power into electrical power), and the Reactive Power (kVAR) supplied by the alternator. The nominal value for the power factor is cos φ = 0,8; for different values comprised between 0.8 and 1 it is important during usage not to exceed the declared active power (kW), so as to not overload the electricity-generating group motor; the apparent power (kVA) will diminish proportionally to the increase of cos φ.
For cos φ values of less than 0.8 the alternator must be downgraded, since at equal apparent power the alternator should supply a greater reactive power. For reduction coefficients, contact the Technical Service Department.

START-UP OF ASYNCHRONOUS MOTORS

The start-up of asynchronous motors from an electricity-generating group can prove critical because of high start-up currents the asynchronous motor requires (I start-up = up to 8 times the nominal current In.). The start-up current must not exceed the alternator's admissible overload current for brief periods, generally in the order of 250–300% for 10–15 seconds.
To avoid a group oversize, we recommend following these precautionary measures:

- in the case of a start-up of several motors, subdivide the motors into groups and set up their start-up at intervals of 30–60 seconds.
- when the operating machine coupled to the motor allows it, see to a start-up with reduced voltage, star point/triangle start-up or with autotransformer, or use a soft-start system.

In all cases, when the user circuit requires the start-up of an asynchronous motor, it is necessary to check that there are no utilities inserted into the installation, which in the case of a voltage droop can cause more or less serious disservices (opening of contact points, temporary lack of power to control and command systems, etc.).

SINGLE-PHASE LOADS

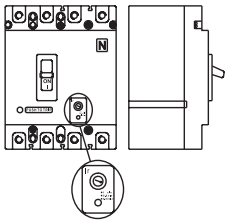
Power to monophase utilities by means of three-phase generators requires some operating limitations.

- In single-phase operation, the declared voltage tolerance can no longer be maintained by the regulator (compound or electronic regulator), since the system becomes highly unbalanced. **The voltage variation on the phases not affected by the power can prove dangerous; we recommend sectioning the other loads eventually connected**.
- The maximum power which can be drawn between Neutral and Phase (start connection) is generally 1/3 of the nominal three-phase power; some types of alternators even allow for 40%. Between two Phases (triangle connection) the maximum power cannot exceed 2/3 of the declared three-phase power.
- In electricity-generating groups equipped with monophase sockets, use these sockets for connecting the loads. In other cases, always use the "R" phase and Neutral.

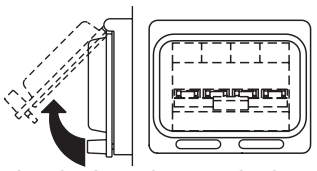
ELECTRIC PROTECTIONS

THERMAL-MAGNETIC SWITCH

The electricity-generating group is protected against short-circuits and against overloads by a thermal-magnetic switch (Z2) situated upstream from the installation. Operating currents, both thermic and magnetic, can be fixed or adjustable in relation to the switch model.
☞ In models with adjustable operating current **do not modify** the settings, since doing so can compromise the installation's protection or the electricity-generating group's output characteristics. For eventual variations, contact our Technical Service Department.



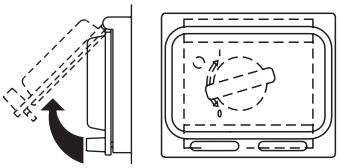
The intervention of the protection feature against overloads is not instantaneous, but follows a current overload/time outline; the greater the overload the less the intervention.
Furthermore, keep in mind that the nominal operating current refers to an operating temperature of 30°C, so that each variation of 10°C roughly corresponds to a variation of 5% on the value of nominal current.

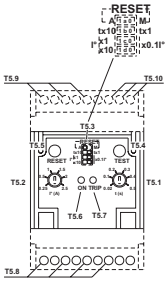


In case of an intervention on the part of the thermal magnetic protection device, check that the total absorption does not exceed the electricity-generating group's nominal current.

DIFFERENTIAL SWITCH

The differential switch or differential relay guarantee protection against indirect contacts due to malfunction currents towards the ground. When the device detects a malfunction current that is higher than the nominal current or the set current, it intervenes by cutting off





power to the circuit connected.

In the case of an intervention by the differential switch, check that there are no sheathing defects in the installation: connection cables, sockets and plugs, utilities connected.

☞ Before each work session, check the operation of the differential protection device by pressing the test key. The electricity-generating group must be in operation, and the lever on the differential switch must be in the ON position.

THERMIC PROTECTION

Generally present to protect against overloads on an individual power socket c.a.

When the nominal operating current has been exceeded, the protection device intervenes by cutting off power to the socket.

The intervention of the protection device against overloads is not instantaneous, but follows a current overload/time outline; the greater the overload the less the intervention.

In case of an intervention, check that the current absorbed by the load does not exceed the protection's nominal operating current.

Allow the protection to cool off for a few minutes before resetting by pressing the central pole.

⚠ ATTENTION

Do not keep the central pole on the thermic protection forcefully pressed to prevent its intervention.

USAGE WITH EAS AUTOMATIC START-UP PANEL

The electricity-generating group in combination with the EAS automatic start-up panel forms a unit for distributing electrical energy within a few seconds of a power failure from the commercial electrical power line.

Below is some general operating information; refer to the automatic panel's specific manual for details on installation, command, control and signalling operations.

- ❑ Perform connections on the installation in safety conditions. Position the automatic panel in RESET or LOCKED mode.
- ❑ Carry out the first start-up in MANUAL mode.
  Check that the generator's LOCAL START / REMOTE START switch (I6) is in the REMOTE position.
  Check that the generator switches are enabled (input lever in upward position).
  Position the EAS panel in manual mode by pressing MAN. key, and only after having checked that there are no dangerous situations, press the START key to start the electricity-generating group.
- ❑ During the operation of the generator, all controls and signals from both the automatic panel and group are enabled; it is therefore possible to control its operation from both positions.
  In case of an alarm with a shutdown of the motor (low pressure, high temperature, etc.), the automatic panel will indicate the malfunction that has caused the stoppage, while the generator's front panel will be disabled and will no longer supply any information.

⚠ MAKE SURE

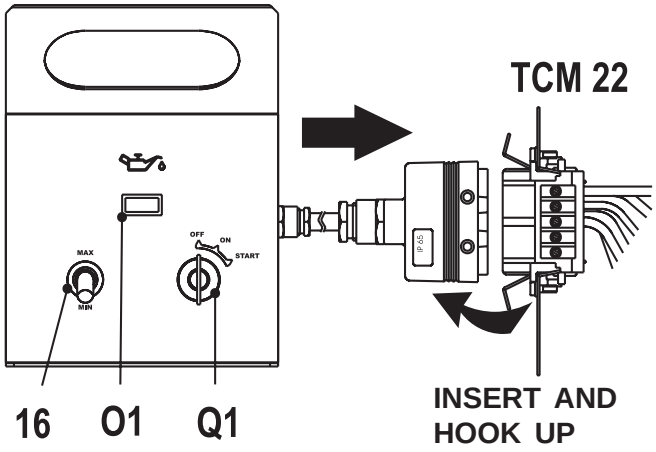
- ***When the TCM 22-40 is used, it is not possible to connect the E.A.S automatic intervention unit.***
- The selector LOCAL START/REMOTE START (I6) of the generating set must be switched on REMOTE START.

USE OF THE REMOTE CONTROL TCM 22

The coupling of the TCM 22 with the generating set, ready for remot starting, permits to work far from the set itself.
The remote control is connected to the front plate, and/or rear plate, with a multiple connector.

The TCM 22 assures the following fonctions:
- starting (starting key Q1)
- acceleration (selector 16)
- stop (starting key Q1)
- indication of oil low pressure (warning light O1)

To stop the set, move the accelerator lever (16) to the minimum position, them turn the key to "OFF" position.



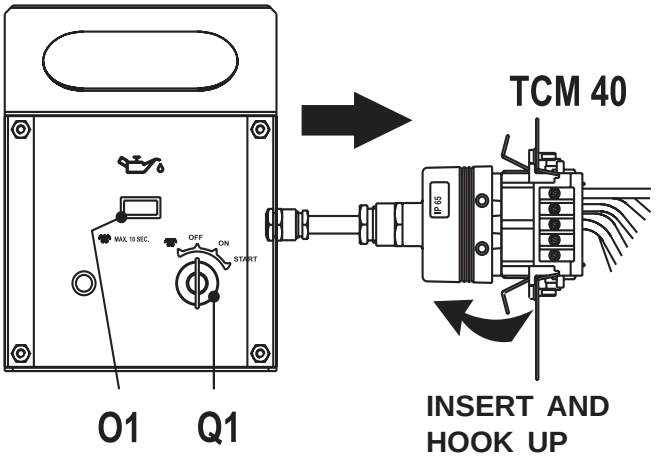
USE OF THE REMOTE CONTROL TCM 40

The coupling of the TCM 40 with the generating set, ready for remot starting, permits to work far from the set itself.
The remote control is connected to the front plate, and/or rear plate, with a multiple connector.

The TCM 40 assures the following fonctions:

- Preheat (starting key Q1). Use only for the models that need such function:
- starting (starting key Q1)
- stop (starting key Q1)
- indication of oil low pressure (warning light O1)

To stop the set turn the key to the position.“OFF“.



ENGINE PROTECTION (ES - EV)

The devices ES or EV ensure the protection of the engine in case of low oil pressure or engine high temperature.

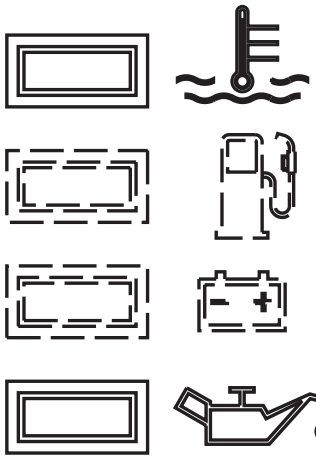
The system consist of electronic card of control and check, and of an engine stop device: solenoid (**E**lettro**S**top), electrovalve (**E**lettro**V**alvola)

The device enter in operation when the engine starts and, in case of low oil pressure and high temperature, will stop the machine and show the cause of the stop with the warning light of high temperature or low oil pressure.

In case of low oil pressure, check the level and if it is correct, call the Service Station. In case of high temperature, make sure that there are no leaves and/or pieces of material obstructing the air ducts.

☞ **N.B.:** if the unit is used as a generator in hot climates and with loads near to the maximum, the protection device can be triggered off, please reduce the load of the engine.

Once the cause of the problem is removed, to reset the protection, it is enough to report the ignition key (Q1) on "OFF" position and start the engine again.



High temperature

Low oil pressure

NOTE

THE ENGINE PROTECTIONS DO NOT WORK WHEN THE OIL IS OF LOW QUALITY BECAUSE NOT CHANGED REGULARLY AT INTERVALS AS PRESCRIBED IN THE OWNER'S ENGINE MANUAL.

Problem	*Possible cause*	*Solution*
The motor does not start up	1) Start-up switch (I6) in incorrect position	1) Check position
	2) Emergency button (L5) pressed	2) Unblock
	3) Preheating (where it is assembled)	3) Lacking or insufficient preheating phase for sparkplugs. Malfunction in circuit: repair.
	4) Battery low	4) Recharge or replace. Check the battery charge circuit on motor and automatic panel.
	5) Battery cable terminals loose or corroded	5) Tighten and clean. Replace if corroded.
	6) Start-up motor defective	6) Repair or replace.
	7) No fuel or air in feed circuit	7) Refill tank, un-aerate the circuit.
	8) Malfunction on feed circuit: defective pump, injector blocked, etc.	8) Ask for intervention of Service Department.
	9) Air filter or fuel filter clogged	9) Clean or replace
	10) Motor stopping device defective	10) Replace.
	11) Malfunction on electrical power circuit on generator control panel	11) Check and repair.
The motor does not accelerate. Inconstant speed.	1) Air filter or fuel filter clogged.	1) Clean or replace.
	2) Malfunction on feed circuit: defective pump, injector blocked, etc.	2) Ask for intervention of Service Department.
	3) Oil level too high.	3) Eliminate excess oil.
	4) Motor speed regulator defective.	4) Ask for intervention of Service Department
Black smoke	1) Air filter clogged.	1) Clean or replace
	2) Overload.	2) Check the load connected and diminish.
	3) Injectors defective. Injection pump requires calibration.	3) Ask for intervention of Service Department.
White smoke	1) Oil level too high.	1) Eliminate excess oil.
	2) Motor cold or in prolonged operation with little or no load.	2) Insert load only with motor sufficiently hot
	3) Segments and/or cylinders worn out.	3) Ask for intervention of Service Department.
Too little power provided by motor.	1) Air filter clogged.	1) Clean or replace.
	2) Insufficient fuel distribution, impurities or water in feed circuit.	2) Check the feed circuit, clean and refill once again.
	3) Injectors dirty or defective.	3) Ask for intervention of Service Department.
Low oil pressure	1) Oil level insufficient	1) Reset level. Check for leaks.
	2) Air filter clogged.	2) Replace filter.
	3) Oil pump defective.	3) Ask for intervention of Service Department.
	4) Alarm malfunction.	4) Check the sensor and electrical circuit.
High temperature	1) Overload	1) Check the load connected and diminish.
	2) Insufficient ventilation.	2) Check the cooling vent and relative transmission belts
	3) Insufficient coolant liquid (Only for water cooled motors)	3) Restore level. Check for leaks or breakage in the entire cooling circuit, pipes, couplings, etc.

Problem	*Possible cause*	*Solution*
	4) Water radiator or oil clogged (where it is assembled)	4) Clean cooling fins on radiator
	5) Water circulating pump defective (Only for water cooled motors)	5) Ask for intervention of Service Department
	6) Injectors defective. Injection pump requires calibration	6) Ask for intervention of Service Department
	7) Alarm malfunction	7) Check the sensor and electrical circuit
Absence of output voltage	1) Protection tripped due to overload	1) Check the load connected and diminish
	2) Differential protection device tripped. (Differential switch, differential relay)	2) Check on the entire installation: cables, connections, utilities connected have no defective sheathing which may cause incorrect currents to ground
	3) Protection devices defective	3) Replace
	4) Alternator not sparked	4) Carry out external spark test as indicated in alternator manual. Ask for intervention of Service Department
	5) Alternator defective	5) Check winding, diodes, etc. on alternator (Refer to alternator manual) Repair or replace. Ask for intervention of Service Department
No-load voltage too low or too high	1) Incorrect motor running speed	1) Regulate speed to its nominal no-load value
	2) Voltage regulating device (where it is assembled) defective or requires calibration	2) Adjust regulator device as indicated in alternator manual, or replace
	3) Alternator defective	3) Check winding, diodes, etc. on alternator (Refer to alternator manual) Repair or replace Ask for intervention of Service Department
Corrected no-load voltage too low with load	1) Incorrect motor running speed due to overload	1) Check the load connected and diminish
	2) Load with cos φ less than 0.8	2) Reduce or rephase load
	3) Alternator defective	3) Check winding, diodes, etc. on alternator (Refer to alternator manual) Repair or replace Ask for intervention of Service Department
Unstable tension	1) Contacts malfunctioning	1) Check electrical connections and tighten
	2) Irregular rotation of motor	2) Ask for intervention of Service Department
	3) Alternator defective	3) Check winding, diodes, etc. on alternator (Refer to alternator manual) Repair or replace Ask for intervention of Service Department

⚠ WARNING

MOVING PARTS can injure

- 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.
- Use suitable tools and clothes.
- Do not modify the components if not authorized.

- See pag. M1.1 -

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 MOSA.

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.

⚠ 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 surroindings, health or safety respecting completely the laws and/ or dispositions in force in the place.

ENGINE and ALTERNATOR

PLEASE REFER TO THE SPECIFIC MANUALS PROVIDED.

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 suppplied 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

⚠ NOTE

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.

⚠ ATTENTION

- Maintenance operations on the electricity-generating group prearranged for automatic operation must be carried out with the panel in RESET mode.
- Maintenance operations on the installation's electrical panels must be carried out in complete safety by cutting off all external power sources: ELECTRICAL POWER, GROUP and BATTERY.

For the electricity-generating groups prearranged for automatic operation, in addition to carrying out all periodic maintenance operations foreseen for normal usage, various operations must be carried out that are necessary in relation to the specific type of use. The electricity-generating group in fact must be continuously prepared for operation, even after prolonged periods of inactivity.

MAINTENANCE GENERATING SET WITH AUTOMATIC BOARD

	EVERY WEEK	EVERY MONTH AND/OR AFTER INTERVENTION ON LOAD	EVERY YEAR
1. TEST or AUTOMATIC TEST cycle to keep the generating set constantly operative	NO-LOAD X	WITH LOAD X	
2. Check all levels: engine oil, fuel level, battery electrolyte,, if necessary top it up.	X	X	
3. Control of electrical connections and cleaning of control panel		X	X

☞ **Carry out motor oil change at least once a year, even if the requested number of hours has not been attained.**

In case the machine should not be used for more than 30 days, make sure that the room in which it is stored presents a suitable shelter from heat sources, weather changes or anything which can cause rust, corrosion or damages to the machine.

☞ Have **qualified** personnel prepare the machine for storage.

GASOLINE ENGINE

Start the engine: It will run until it stops due to the lack of fuel.

Drain the oil from the engine sump and fill it with new oil (see page M25).

Pour about 10 cc of oil into the spark plug hole and screw the spark plug, after having rotated the crankshaft several times.

Rotate the crankshaft slowly until you feel a certain compression, then leave it.

In case the battery, for the electric start, is assembled, disconnect it.

Clean the covers and all the other parts of the machine carefully.

Protect the machine with a plastic hood and store it in o dry place.

DIESEL ENGINE

For short periods of time it is advisable, about every 10 days, to make the machine work with load for 15-30 minutes, for a correct distribution of the lubricant, to recharge the battery and to prevent any possible bloking of the injection system.

For long periods of inactivity, turn to the after soles service of the engine manufacturer.

Clean the covers and all the other parts of the machine carefully.

Protect the machine with a plastic hood and store it in a dry place.

In case of necessity for first aid and of fire prevention, see page. M2.5.

IMPORTANT

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

☞ Have **qualified** personnel disassemble the machine and dispose of the parts, including the oil, fuel, etc., in a correct manner when it is to be taken out of service.

As cust off we intend all operations to be made,at utilizer's care,at the end of the use of the machine. This comprises the dismantling of the machine, the subdivision of the several components for a further reutilization or for getting rid of them, the eventual packing and transportation of the eliminated parts up to their delivery to the store, or to the bureau encharged to the cust off or to the storage office, etc.

The several operations concerning the cust off, involve the manipulation of fluids potentially dangerous such as: lubricating oil and battery electrolyte.

The dismantling of metallic parts liable to cause injuries or wounds, must be made wearing heavy gloves and using suitable tools.

The getting rid of the various components of the machine must be made accordingly to rules in force of law a/o local rules.
Particular attention must be paid when getting rid of:
lubricating oils, battery electrolyte, and inflamable liquids such as fuel, cooling liquid.

The machine user is responsible for the observance of the norms concerning the environment conditions with regard to the elimination of the machine being cust off and of all its components.

In case the machine should be cust off without any previous disassembly it is however compulsory to remove:
- tank fuel
- engine lubricating oil
- cooling liquid from the engine
- battery

NOTE: MOSA is involved with custing off the machine **only** for the second hand ones, when not reparable.
This, of course, after authorization.

In case of necessity for first aid and fire prevention, see page M2.5.

IMPORTANT

In the cust-off operations avoid that polluting substances, liquids, exhausted oils, etc. bring damage to people or things or can cause negative effects to surroindings, health or safety respecting completely the laws and/or dispositions in force in the place.

The generating set GE 14000 is a unit which transforms the mechanical energy, generated by endothermic engine, into electric energy, through an alternator.
Is meant for industrial and professional use, powered by an endothermic engine; it is composed of various main parts such as: engine, alternator, electric and electronic controls, the fairing or a protective structure.
The assembling is made on a steel structure, on which are provided elastic support which must damp the vibrations and also eliminate sounds which would produce noise.

Technical data	GE 14000 SXC/GS
A.C. GENERATOR	
Three-phase generation (Stand-by)	15kVA (12 kW) / 400 V / 21.7 A
Three-phase generation(P.R.P.)	13.5 kVA (10.8 kW) / 400 V / 19.5 A
Single-phase generation	5 kVA / 230 V / 21.7 A
Frequency	50 Hz
Cos φ	0.9
ALTERNATOR	self-excited, self-regulated, with brush
Type	synchronous, threephase
Insulating class	H
ENGINE	
Mark	RUGGERINI
Model	RD 210
Type	4 Stroke
Displacement	954 cm^3
Cylinders	2
Output	14 kW (19 CV)
Speed	3000 rpm
Fuel consumption	250 g/kWh
Cooling system	air
Engine oil capacity	3 l
Starter	Electric
Fuel	Diesel
GENERAL SPECIFICATIONS	
Tank capacity	23 l
Running time (75%)	9 h
Protection	IP 23
Dimensions / max. Lxwxh (mm) *	1320x790x750
Weight on base*	315 Kg
Noise level	95 LWA (70 db(A) - 7 m)

* Dimensions and weight are inclusive of all parts

Declared power according to ISO 3046/1 (temperature 25°C, 30% relative hummidity, 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 P.R.P.) = maximum available power for use at variable loads for a yearly illimited number of hours. The average power to be taken during a period of 24 h must not be over 80% of the P.R.P. It's admitted overload of 10% each hour every 12 h.

OUTPUT

In an **approximative** way one reduces: of 1% every 100 m altitude and of 2.5% for every 5°C above 25°C.
For possible modifications or changes to be brought on the engines, with climate conditions different from those above mentioned, please call our Assistance Authorized Centers.

ACOUSTIC POWER LEVEL

The machine respects the noise limits, expressed in sound power, given in the a.m. directives.
These limits can be used to judge the sound level produced on site.
For example: the sound power level of 100 LWA.
The sound pressure (noise produced) at 7 meters distance is about 75dBA (the limit value less 25).
To calculate the sound level at other distances use this formula:

$$dBAx = dBAy + 10 \log \frac{ry^2}{rx^2}$$

At 4 meters the noise level becomes: $75 \text{ dBA} + 10 \log \frac{7^2}{4^2} = 80 \text{ dBA}$

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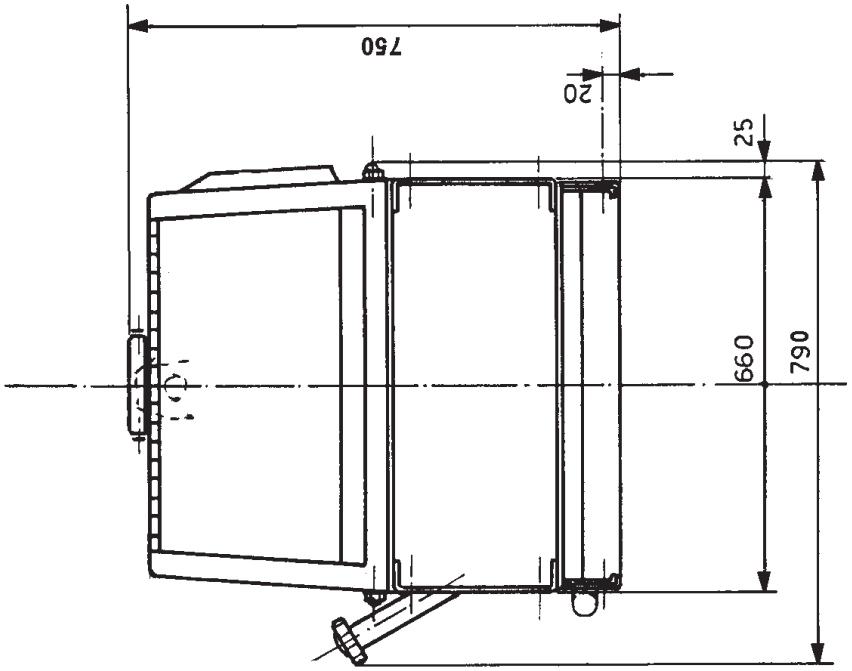
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25
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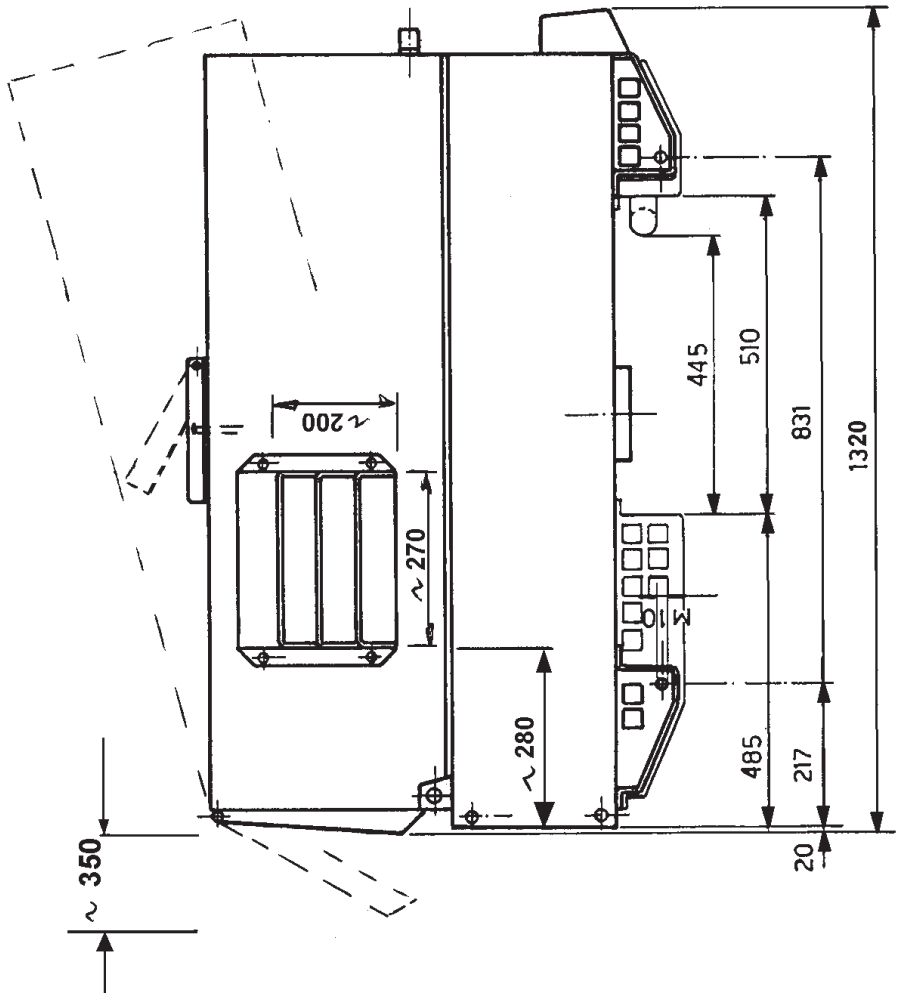
790


~200
~270
~280
~350
445
510
831
1320
485
217
20

A: Alternator
B: Wire connection unit
C: Capacitor
D: G.F.I.
E: Welding PCB transformer
F: Fuse
G: 400V 3-phase socket
H: 230V 1phase socket
I: 110V 1-phase socket
L: Socket warning light
M: Hour-counter
N: Voltmeter
P: Welding arc regulator
Q: 230V 3-phase socket
R: Welding control PCB
S: Welding current ammeter
T: Welding current regulator
U: Current transformer
V: Welding voltage voltmeter
Z: Welding sockets
X: Shunt
W: D.C. inductor
Y: Welding diode bridge

A1: Arc striking resistor
B1: Arc striking circuit
C1: 110V D.C./48V D.C. diode bridge
D1: E.P.1 engine protection
E1: Engine stop solenoid
F1: Acceleration solenoid
G1: Fuel level transmitter
H1: Oil or water thermostat
I1: 48V D.C. socket
L1: Oil pressure switch
M1: Fuel warning light
N1: Battery charge warning light
O1: Oil pressure warning light
P1: Fuse
Q1: Starter key
R1: Starter motor
S1: Battery
T1: Battery charge alternator
U1: Battery charge voltage regulator
V1: Solenoid valve control PCBT
Z1: Solenoid valve
W1: Remote control switch
X1: Remote control and/or wire feeder socket
Y1: Remote control plug

A2: Remote control welding regulator
B2: E.P.2 engine protection
C2: Fuel level gauge
D2: Ammeter
E2: Frequency meter
F2: Battery charge trasformer
G2: Battery charge PCB
H2: Voltage selector switch
I2: 48V a.c. socket
L2: Thermal relay
M2: Contactor
N2: G.F.I. and circuit breaker
O2: 42V EEC socket
P2: G.F.I. resistor
Q2: T.E.P. engine protection
R2: Solenoid control PCBT
S2: Oil level transmitter
T2: Engine stop push-button T.C.1
U2: Engine start push-buttonT.C.1
V2: 24V c.a. socket
Z2: Thermal magnetic circuit breaker
W2: S.C.R. protection unit
X2: Remote control socket
Y2: Remote control plug

A3: Insulation moitoring
B3: E.A.S. connector
C3: E.A.S. PCB
D3: Booster socket
E3: Open circuit voltage switch
F3: Stop push-button
G3: Ignition coil
H3: Spark plug
I3: Range switch
L3: Oil shut-down button
M3: Battery charge diode
N3: Relay
O3: Resistor
P3: Sparkler reactor
Q3: Output power unit
R3: Electric siren
S3: E.P.4 engine protection
T3: Engine control PCB
U3: R.P.M. electronic regulator
V3: PTO HI control PCB
Z3: PTO HI 20 l/min push-button
W3: PTO HI 30 l/min push-button
X3: PTO HI reset push-button
Y3: PTO HI 20 l/min indicator

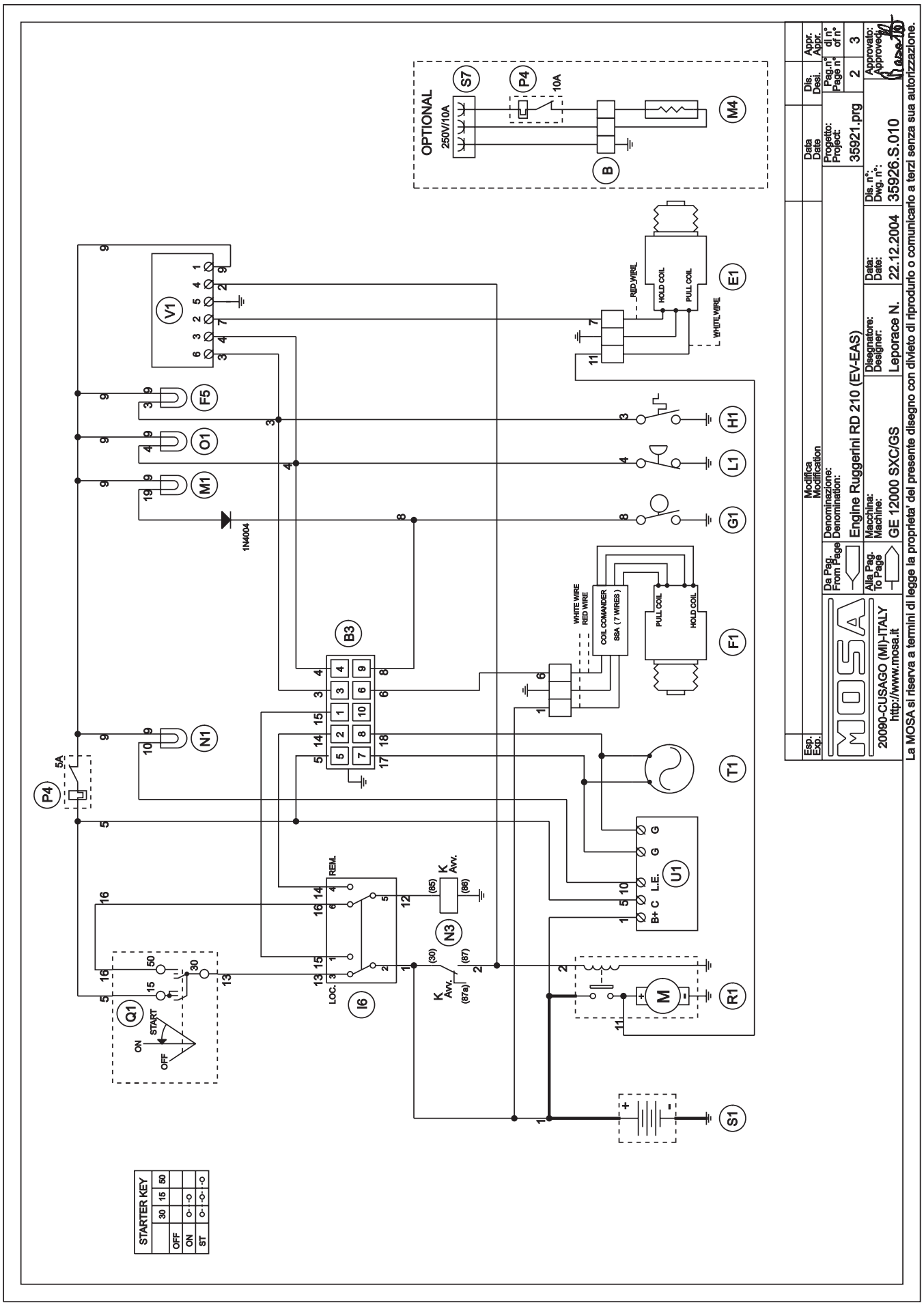
A4: PTO HI 30 l/min indicator
B4: PTO HI reset indicator
C4: PTO HI 20 l/min solenoid valve
D4: PTO HI 30 l/ min solenoid valve
E4: Hydraulic oil pressure switch
F4: Hycraulic oil level gauge
G4: Preheating glow plugs
H4: Preheating gearbox
I4: Preheating indicator
L4: R.C. filter
M4: Heater with thermostat
N4: Choke solenoid
O4: Step relay
P4: Circuit breaker
Q4: Battery charge sockets
R4: Sensor, cooling liquid temperature
S4: Sensor, air filter clogging
T4: Warning light, air filter clogging
U4: Polarity inverter remote control
V4: Polarity inverter switch
Z4: Transformer 230/48V
W4: Diode bridge, polarity change
X4: Base current diode bridge
Y4: PCB control unit, polarity inverter

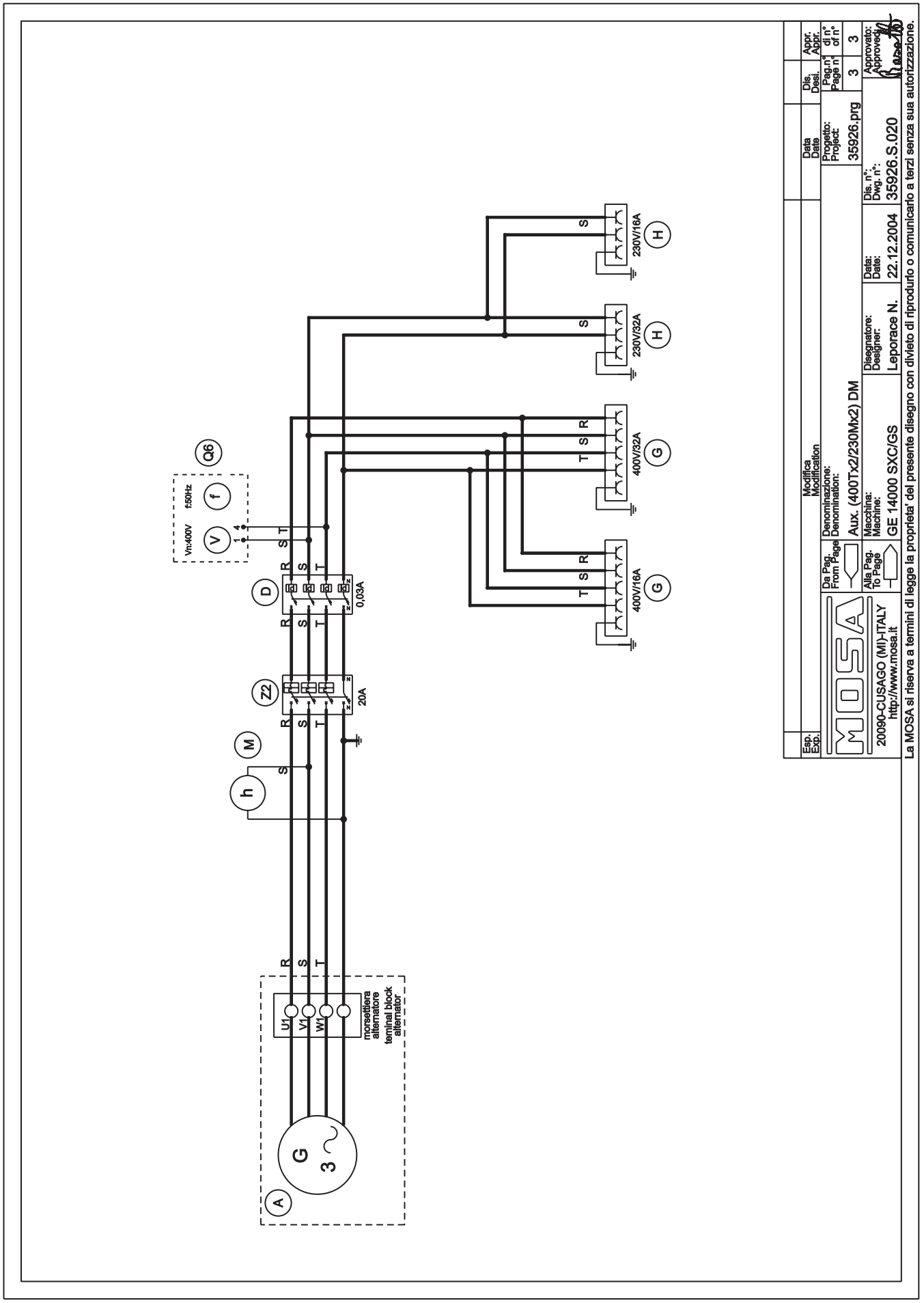
A5: Base current switch
B5: Auxiliary push-button ON/OFF
C5: Accelerator electronic control
D5: Actuator
E5: Pick-up
F5: Warning light, high temperature
G5: Commutator auxiliary power
H5: 24V diode bridge
I5: Y/s commutator
L5: Emergency stop button
M5: Engine protection EP5
N5: Pre-heat push-button
O5: Accelerator solenoid PCB
P5: Oil pressure switch
Q5: Water temperature switch
R5: Water heater
S5: Engine connector 24 poles
T5: Electronic GFI relais
U5: Release coil, circuit breaker
V5: Oil pressure indicator
Z5: Water temperature indicator
W5: Battery voltmeter
X5: Contactor, polarity change
Y5: Commutator/switch, series/parallel

A6: Commutator/switch
B6: Key switch, on/off
C6: QEA control unit
D6: Connector, PAC
E6: Frequency rpm regulator
F6: Arc-Force selector
G6: Device starting motor
H6: Fuel electro pump 12V c.c.
I6: Start Local/Remote selector
L6: Choke button
M6: Switch CC/CV
N6: Connector – wire feeder
O6: 420V/110V 3-phase transformer
P6: Switch IDLE/RUN
Q6: Hz/V/A analogic instrument
R6: EMC filter
S6: Wire feeder supply switch
T6: Wire feeder socket
U6: DSP chopper PCB
V6: Power chopper supply PCB
Z6: Switch and leds PCB
W6: Hall sensor
X6: Water heather indicator
Y6: Battery charge indicator

A7: Transfer pump selector AUT-0-MAN
B7: Fuel transfer pump
C7: „GECO“ generating set test
D7: Flooting with level switches
E7: Voltmeter regulator
F7: WELD/AUX switch
G7: Reactor, 3-phase
H7: Switch disconnector
I7: Solenoid stop timer
L7: "VODIA" connector
M7: "F" EDC4 connector
N7: OFF-ON-DIAGN. selector
O7: DIAGNOSTIC push-button
P7: DIAGNOSTIC indicator
Q7: Welding selector mode
R7: R.C. net
S7: 230V 1-phase plug
T7: V/Hz analogic instrument
U7:
V7:
Z7:
W7:
X7:
Y7:

A8:
B8:
C8:
D8:
E8:
F8:
G8: Polarity inverter two way switch
H8:
I8:
L8:
M8:
N8:
O8:
P8:
Q8:
R8:
S8:
T8:
U8:
V8:
Z8:
W8:
X8:
Y8:




Q6
Vn:400V
f:50Hz
V
f
D
0,03A
Z2
20A
M
h
A
G
3
U1
V1
W1
morsettiera alternatore
terminal block alternator
400V/16A
400V/32A
230V/32A
230V/16A
G
H
Esp.
Exp.
Modifica
Modification
Data
Date
Dis.
Desi.
Appr.
Abbr.
Da Pag.
From Page
Denominazione:
Denomination:
Aux. (400Tx2/230Mx2) DM
Progetto:
Project:
35926.prg
Pag.n°
Page n°
3
di n°
of n°
3
Alla Pag.
To Page
Macchina:
Machine:
GE 14000 SXC/GS
Disegnatore:
Designer:
Leporace N.
Data:
Date:
22.12.2004
Dis. n°:
Dwg. n°:
35926.S.020
Approvato:
Approved:
20090-CUSAGO (MI)-ITALY
http://www.mosa.it
La MOSA si riserva a termini di legge la proprieta' del presente disegno con divieto di riprodurlo o comunicarlo a terzi senza sua autorizzazione.

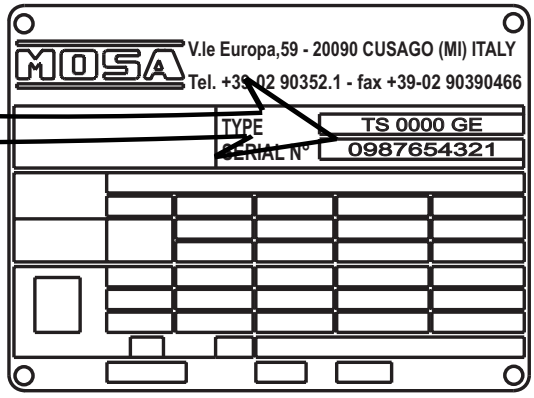
MOSA guarantees that any request for spare parts will be satisfied.

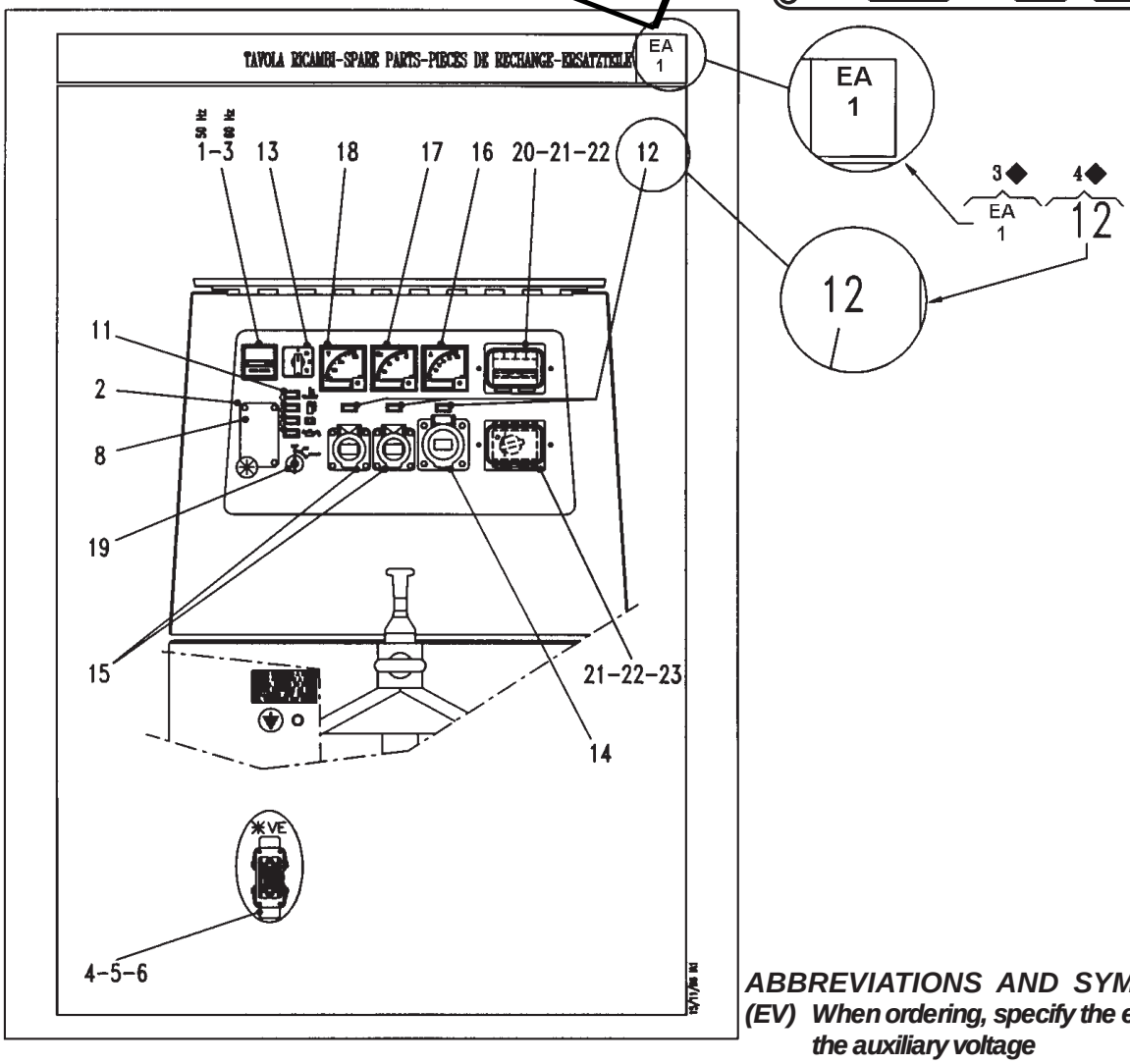
To keep the machine in full working order, when replacement of MOSA spare parts is required, always ask for genuine parts only.

☞ The requested data are to be found on the data plate located on the machine structure, quite visible and easy to consult. ✹

When ordering the spare parts, it is recommended to indicate:

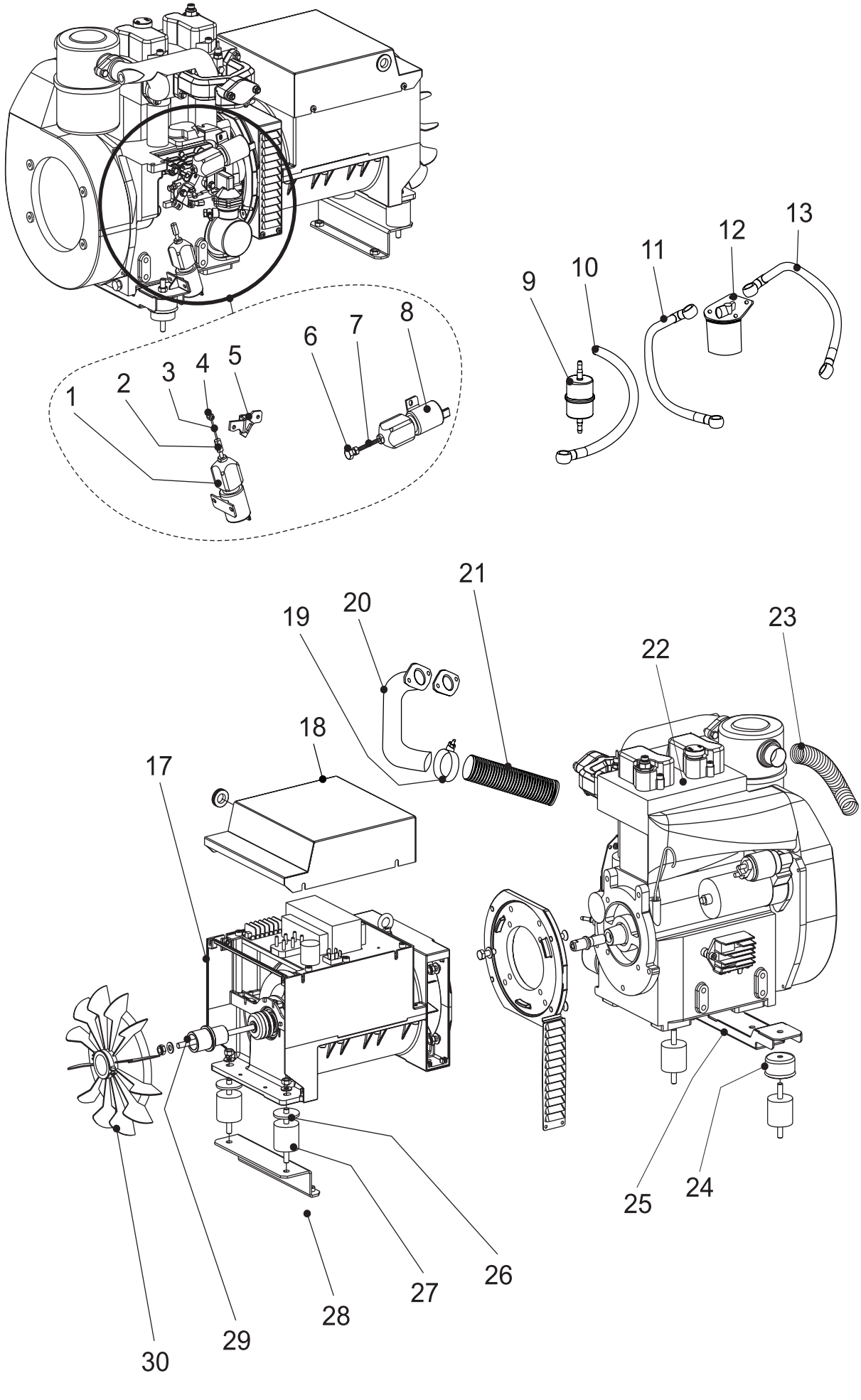
1) ✹ serial number
2) ✹ model of welder and/or generating set
3) ◆ n. table
4) ◆ n. position
5) quantity





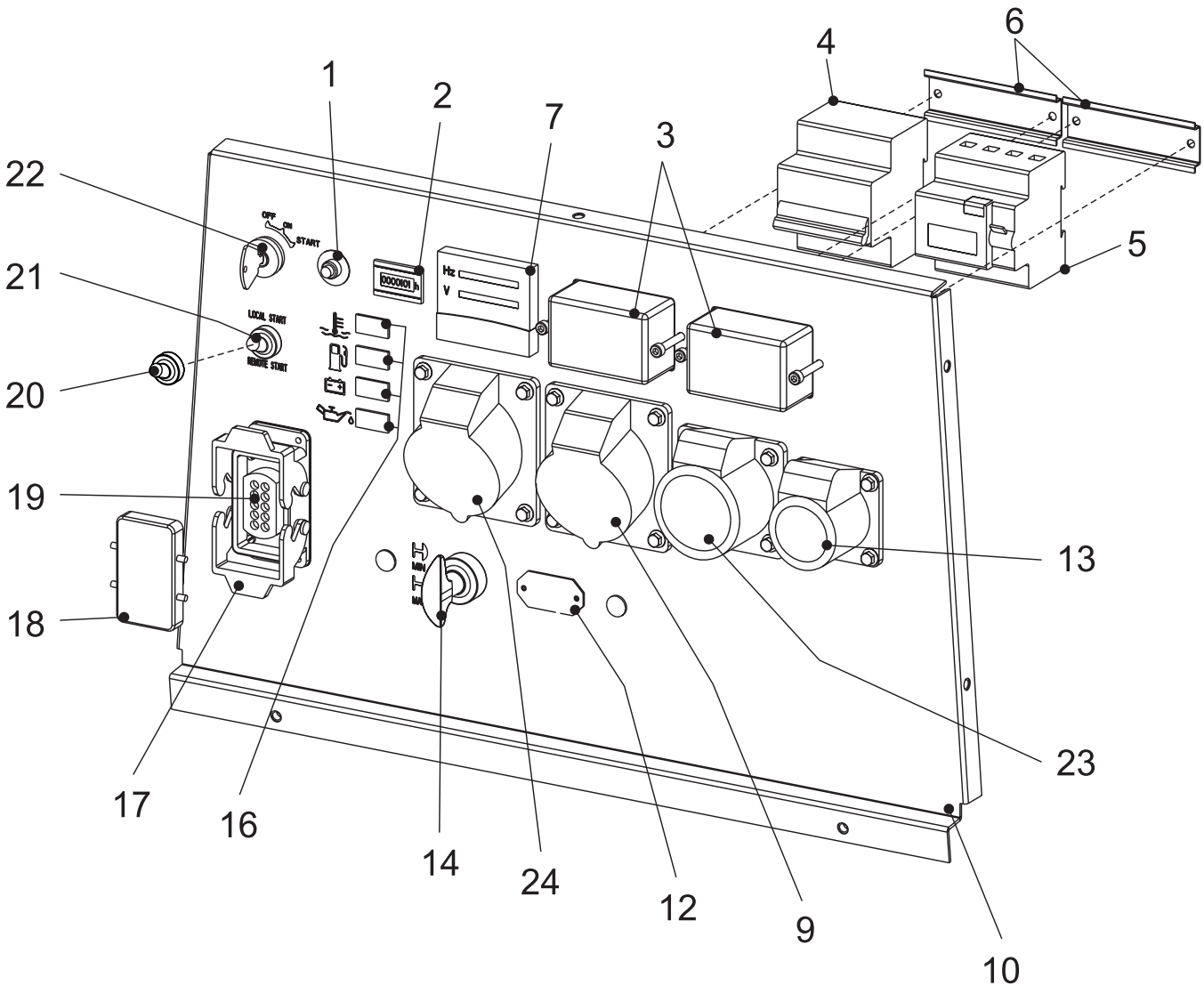
ABBREVIATIONS AND SYMBOLS:

(EV) When ordering, specify the engine type and the auxiliary voltage
(ER) Engine with recoil starter only
(ES) Engine with electric starter only
(VE) E.A.S version only.
(QM) When ordering, specify the length in meters
(VS) Special version only
(SR) By request only



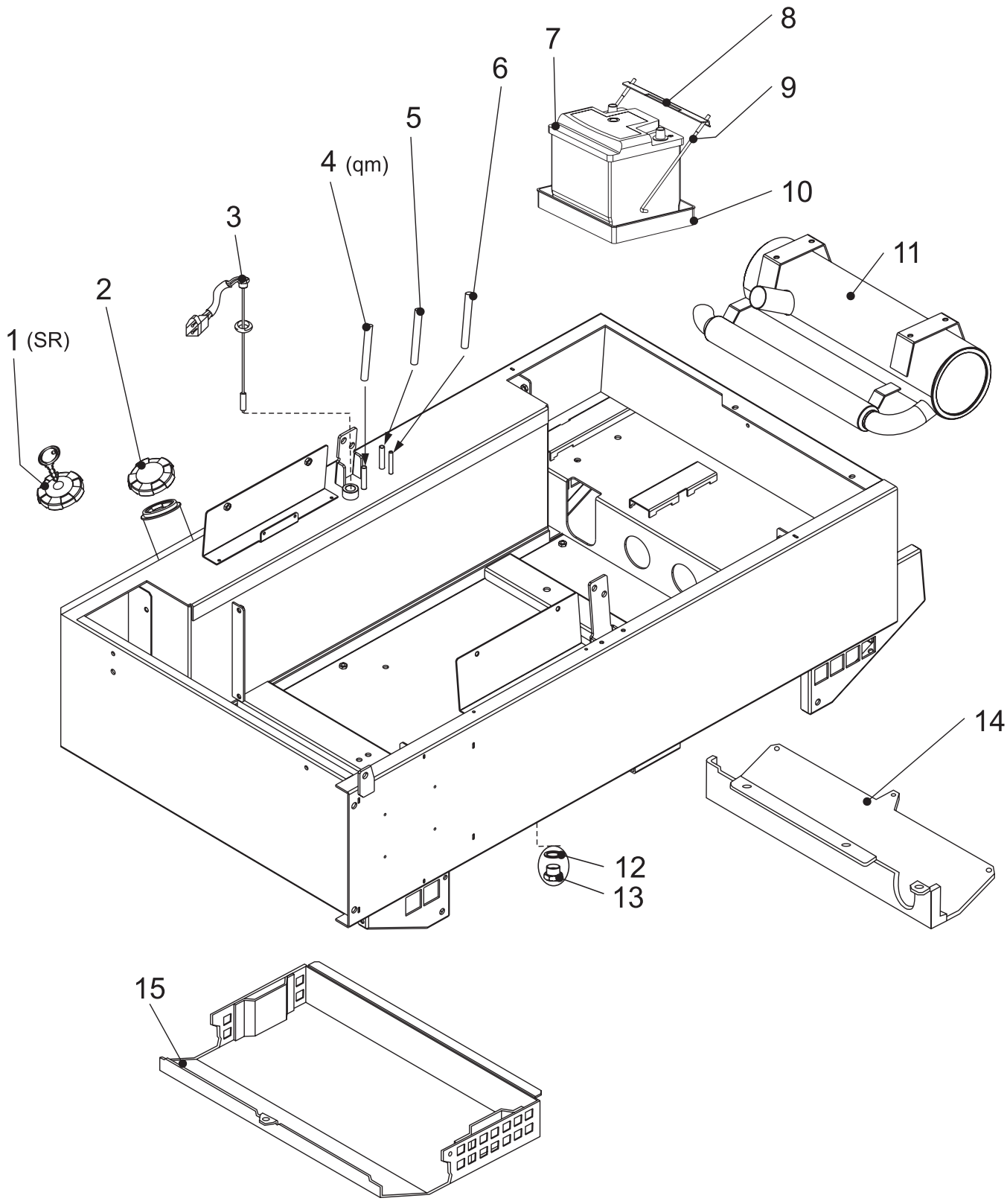
Pos.	Rev.	Cod.	Descr.	Note
1		219869050	ELETTROMAGNETE ECONOMIZZATORE	
2		107302860	GHIERA	
3		319869056	FUNE COMANDO ELETTROMAGNETE	
4		319862244	MORSETTO PER FUNE	
5		209812230	LEVA	
6		209509057	DISTANZIALE	
7		209509056	TIRANTE	
8		219869055	ELETTROMAGNETE ARRESTO MOTORE	
9		256602228	FILTRO GASOLIO	
10		209702203	TUBO COMBUSTIBILE	
11		209712205	TUBO COMBUSTIBILE	
12		102011190	FILTRO NAFTA	
13		209712206	TUBO COMBUSTIBILE	
17		359253100	ALTERN. SINCRO FT2 MAS 13.5kVACONO 38 230V	
18		359253024	COPERCHIO ALTERNATORE	
19		6087740	FASCETTA STR.TUBO 38-50 ACC.ZN	
20		219932070	TUBO DI SCARICO	
21		309502077	TUBO FLESSIBILE FINITO	
22		209502200	MOTORE RUGGERINI RD210 (M8975)	
23		1229810	TUBO FLESSIBILE (MT.1)	
24		307012037	PROTEZIONE ANTIVIBRANTE	
25		209812035	TRAVERSA SUPPORTO MOTORE	
26		307012038	RONDELLA PER ANTIVIB. 10,5X52	
27		105112020	ANTIVIBRANTE	
28		359253101	SUPPORTO ALTERNATORE	
29		359253039	DISTANZIALE FISSAGGIO VENTOLA	
30		210016020	VENTOLA	

Pos.	Rev.	Cod.	Descr.	Note
1		219869050	ACCELERATOR SOLENOID	
2		107302860	RING NUT	
3		319869056	WIRE	
4		319862244	TERMINAL	
5		209812230	LEVER	
6		209509057	SPACER	
7		209509056	TIE-ROD	
8		219869055	STOP SOLENOID	
9		256602228	FUEL FILTER	
10		209702203	PIPE, FUEL	
11		209712205	PIPE, FUEL	
12		102011190	FILTER, FUEL	
13		209712206	PIPE, FUEL	
17		359253100	ALTERNATOR	
18		359253024	ALTERNATOR COVER	
19		6087740	CLAMP	
20		219932070	EXHAUST PIPE	
21		309502077	FLEXIBLE PIPE (COMPL.)	
22		209502200	RUGGERINI ENGINE RD210 (M8975)	
23		1229810	FLEXIBLE PIPE (MT.1)	
24		307012037	PROTECTION, VIBRATION-DAMPER	
25		209812035	ENGINE SUPPORT CROSSBAR	
26		307012038	WASHER X VIBRATION DAMPER	
27		105112020	VIBRATION DAMPER	
28		359253101	ALTERNATOR SUPPORT	
29		359253039	FIXING FAN SPACER	
30		210016020	FAN	


1
2
7
3
4
6
5
22
21
20
19
18
17
16
14
24
12
9
10
23
13
OFF
ON
START
LOCAL START
REMOTE START
Hz
V

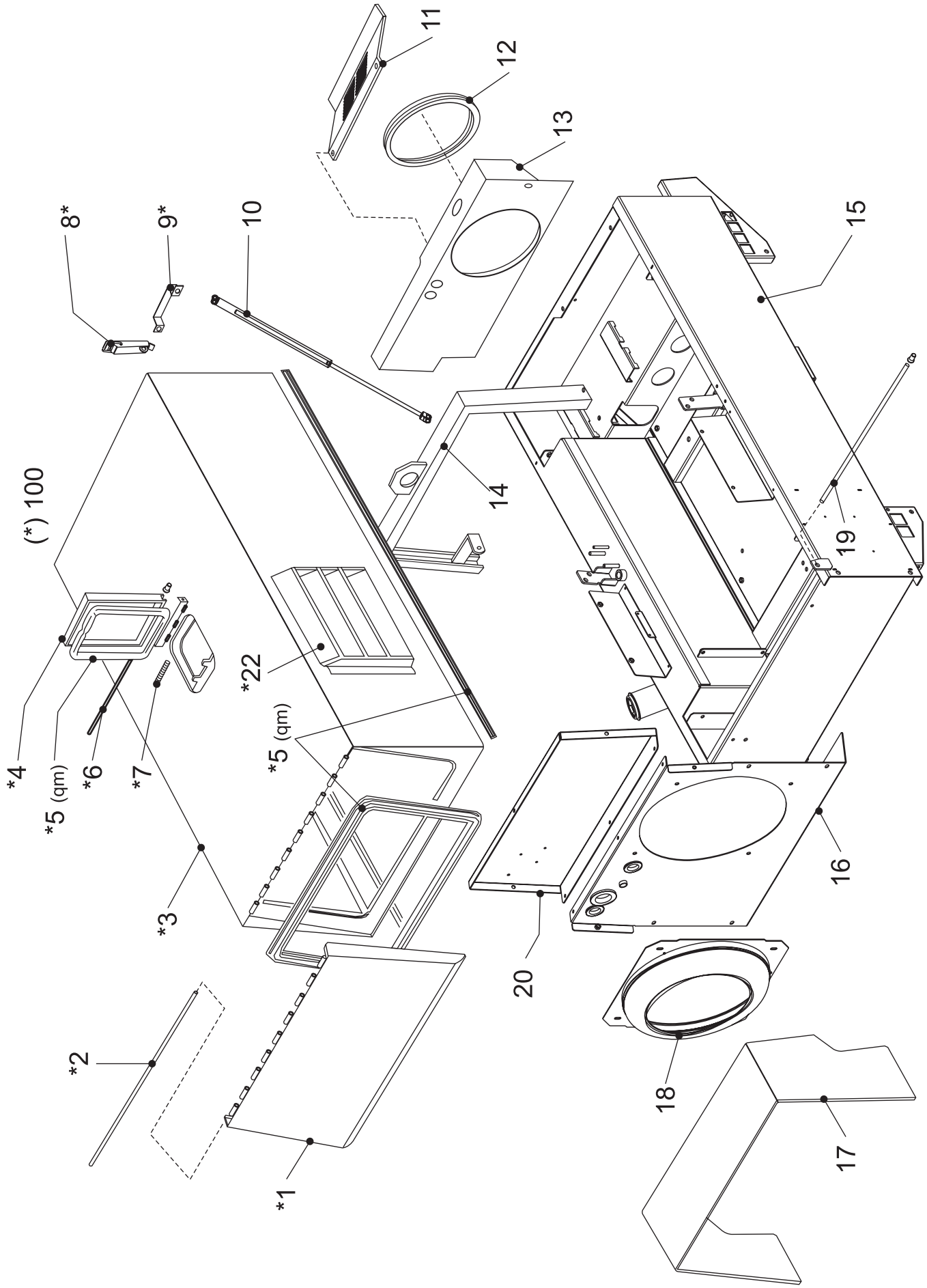
Pos.	Rev.	Cod.	Descr.	Note
1		352007109	PROTEZIONE TERMICA 5A	
2		105511810	CONTAORE 230V 50Hz IP65	
3		232027130	CAPPUCCIO PROTEZIONE I.D.	
4		305209705	INTERRUTTORE MAGNETOTERMICO	
5		105111540	Vedi Cod. 219937105	
6		232027036	GUIDA	
7		HP0117300	STRUMENTO ANAL.A LED V/Hz 400V	
9		105111520	PRESA CEE 220V MONOF. 2POLI+T	
10		359257020	FRONTALE	
12		359257032	COPERCH. CHIUS.FORO SCALDIGLIA	
13		307017240	PRESA 220V 16A	
14		209719105	COMANDO ACCELERATORE	
16		1302040	SPIA ROSSA 12V	
17		105191550	CUSTODIA PER PRESA EAS	
18		105191570	COPERCHIO PER PRESA EAS	
19		105191560	FRUTTO PRESA CONNETTORE	
20		102042740	CAPPUCCIO	
21		102013290	COMMUTATORE	
22		107302460	STARTER A CHIAVE	
23		305907270	PRESA CEE 16A 400V 3P+N+T	
24		105111510	PRESA CEE 380V TRIFASE	

Pos.	Rev.	Cod.	Descr.	Note
1		352007109	THERMOPROTECTION	
2		105511810	HOURMETER 230V 50Hz IP65	
3		232027130	CAP	
4		305209705	CIRCUIT BREAKER	
5		105111540	See part no. 219937105	
6		232027036	FIXING GUIDE	
7		HP0117300	ANALOGIC INSTRUMENT V/Hz	
9		105111520	EEC SOCKET SINGLE-PH.220V 2P+	
10		359257020	FRONT PANEL	
12		359257032	COVER	
13		307017240	EEC SOCKET 16A, 220V 2P+T	
14		209719105	ACCELERATOR LEVER	
16		1302040	RED WARNING LIGHT 12V	
17		105191550	BOX, EAS SOCKET	
18		105191570	BLIND PLATE, EAS SOCKET	
19		105191560	SOCKET, EAS	
20		102042740	CAP	
21		102013290	COMMUTATOR	
22		107302460	STARTER KEY	
23		305907270	EEC SOCKET 16A 400V 3P+N+T	
24		105111510	EEC SOCKET THREE-PHASE 380V	



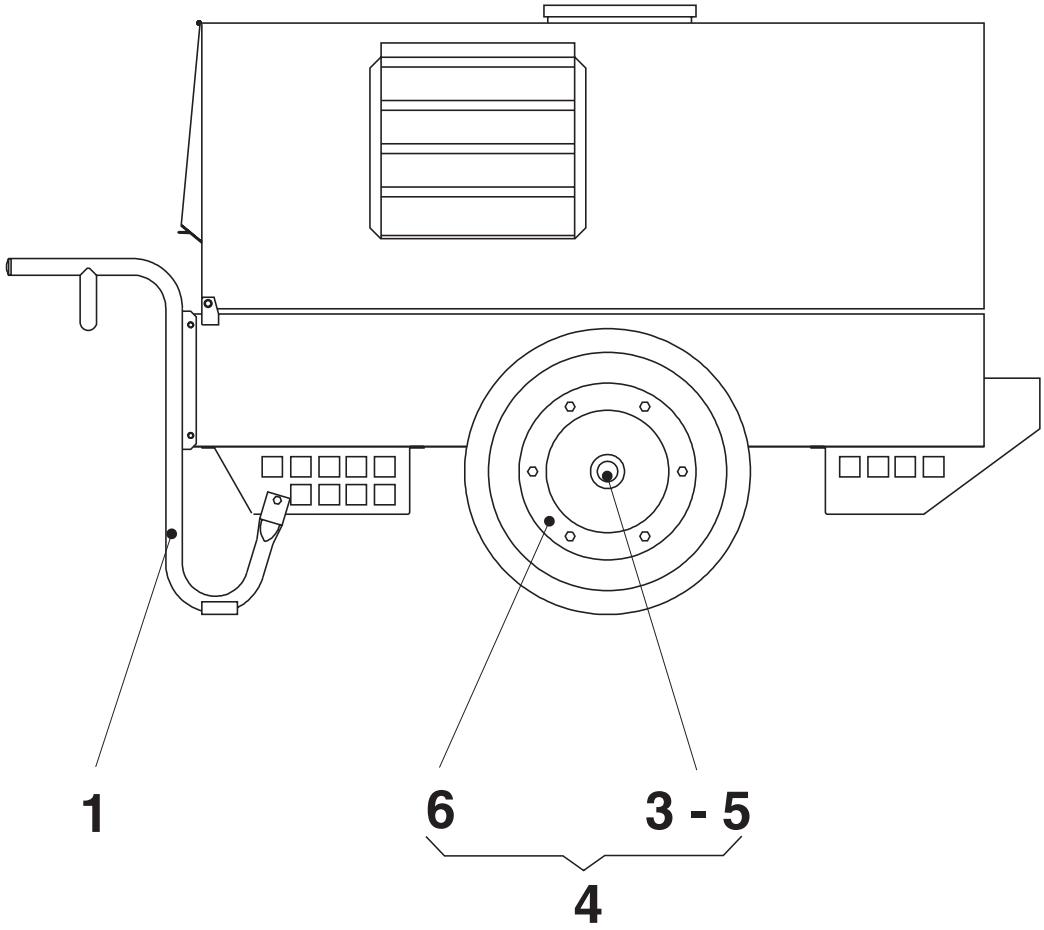
Pos.	Rev.	Cod.	Descr.	Note
1		317802026	TAPPO SERBATOIO CON CHIAVE	(SR)
2		342202026	TAPPO SERBATOIO	
3		305719875	GALLEGGIANTE	
4		107301890	TUBO GOMMA	(qm)
5		107502208	TUBETTO RITORNO GASOLIO	(qm)
6		209702203	TUBO COMBUSTIBILE	
7		359259150	BATTERIA 12V 45Ah (senza manut.)	
8		209509152	TRAVERSA FISSAGGIO BATTERIA	
9		105611270	TIRANTE PER BATTERIA	
10		102042380	VASCHETTA BATTERIA	
11		309702050	SILENZIATORE DI SCARICO	
12		308102023	GUARNIZIONE	
13		308101262	TAPPO SCARICO SERBATOIO	
14		319930515	CASSONETTO SCARICO	
15		309708200	CASSONETTO ASPIRAZ.ALTERNATORE	

Pos.	Rev.	Cod.	Descr.	Note
1		317802026	CAP,TANK	(SR)
2		342202026	CAP, FUEL TANK	
3		305719875	FLOAT	
4		107301890	PIPE, BREATHER (L=MT1)	(qm)
5		107502208	PIPE	(qm)
6		209702203	PIPE, FUEL	
7		359259150	BATTERY 12V 45Ah (without maintenance)	
8		209509152	BRACKET, BATTERY FIXING	
9		105611270	TIE ROD, BATTERY	
10		102042380	HOLDER, BATTERY	
11		309702050	MUFFLER, EXHAUST	
12		308102023	GASKET	
13		308101262	FUEL TANK CAP	
14		319930515	BOX, EXHAUST	
15		309708200	ALTERNATOR INTAKE BOX	

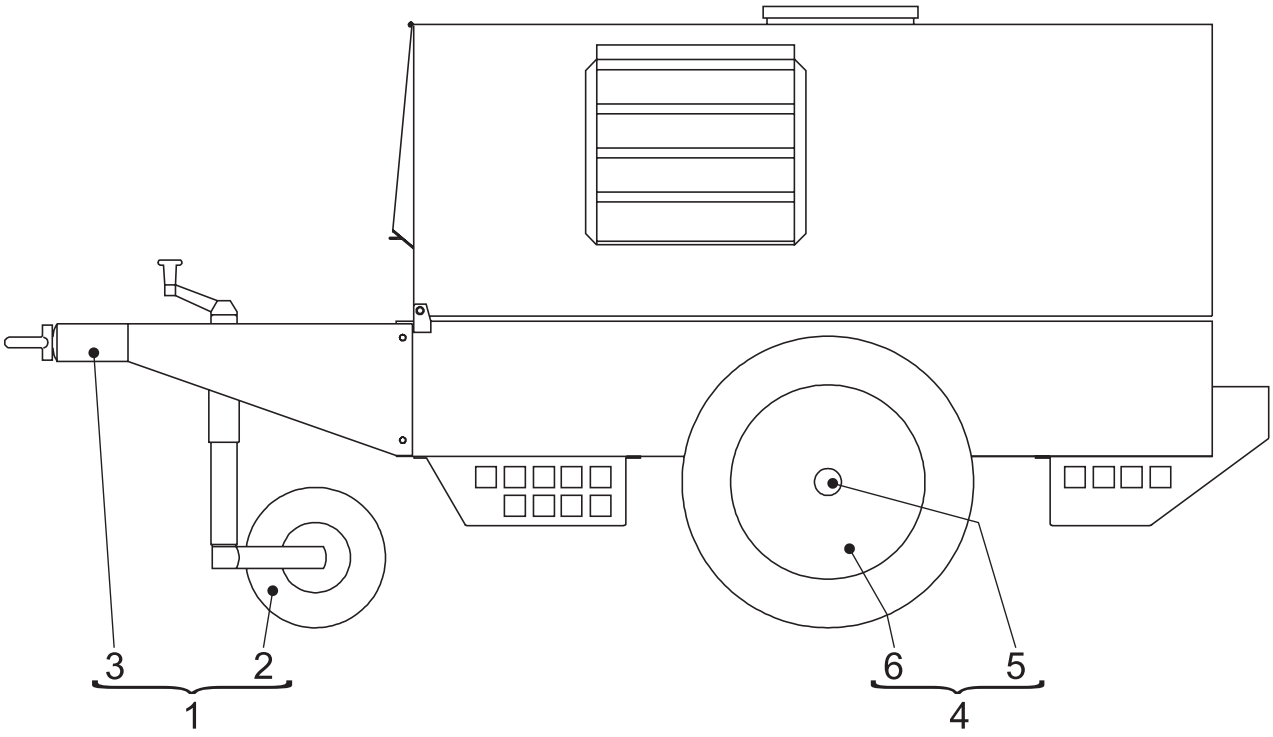

11
12
13
8*
9*
10
15
(*) 100
14
19
*22
*4
*5 (qm)
*6
*7
*5 (qm)
*3
16
20
18
*2
17
*1
01/03/05 35921-I

Pos.	Rev.	Cod.	Descr.	Note
1		209748100	COPERCHIO FRONTALE	(*)
2		209818270	PERNO PER CERNIERA	(*)
3		373008005	CARENATURA (COMPL.)	(*)
4		209718070	COPERCHIETTO	(*)
5		105112270	GUARNIZIONE (L=MT.1)	(qm) (*)
6		209718073	TIRANTE	(*)
7		102042870	MOLLA	(*)
8		107300180	CHIUSURA COMPL.A LEVA	(*)
9		343339601	MANIGLIA	(*)
10		209508115	PISTONE SOSTEGNO	
11		219828230	GRIGLIA ASPIRAZIONE ARIA	
12		105112270	GUARNIZIONE (L=MT.1)	
13		219828200	PARATIA ASPIRAZ. MOTORE	
14		209711100	ROLL BAR	
15		319930501	BASAMENTO (VERS.SX/C)	
16		359258218	PARATIA INF. ASP. ALTERNATORE	
17		359258121	COPERTURA APP. ELETTRICHE	
18		359256010	CONVOGLIATORE ARIA ALTERNATORE	
19		209718024	PERNO DI CERNIERA	
20		359258217	PARATIA SUP. ASP. ALTERNATORE	
21		209808065	GRIGLIA USCITA ARIA	
100		359210540	GR.CARENATURA COMPL.RICAMBI	(*) 1-9

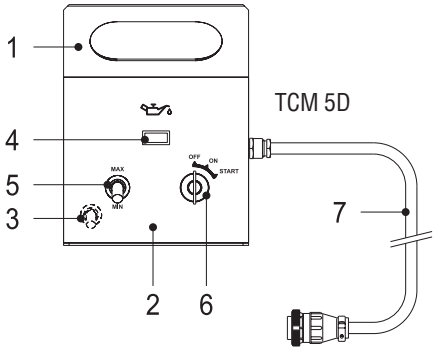
Pos.	Rev.	Cod.	Descr.	Note
1		209748100	FRONT COVER	(*)
2		209818270	HINGE PIN	(*)
3		373008005	COVER (COMPL.)	(*)
4		209718070	COVER	(*)
5		105112270	STRIP, SEALING (L=MT.1)	(qm) (*)
6		209718073	TIE-ROD	(*)
7		102042870	SPRING	(*)
8		107300180	LATCH	(*)
9		343339601	KNOB	(*)
10		209508115	SUPPORT, AIR INLET WALL	
11		219828230	ENGINE INTAKE GRATE	
12		105112270	STRIP, SEALING (L=MT.1)	
13		219828200	ENGINE INTAKE COVER	
14		209711100	ROLL BAR	
15		319930501	CRANKASE (VERS.SX/C)	
16		359258218	*Manca* PARATIA INF. ASP. ALTERNATORE	
17		359258121	COVER, ELEVTRICAL BOX	
18		359256010	*Manca* CONVOGLIATORE ARIA ALTERNATORE	
19		209718024	HINGE PIN	
20		359258217	*Manca I*PARATIA SUP. ASP. ALTERNATORE	
21		209808065	SCREEN, AIR OUTLET	
100		359210540	COVER UNIT	

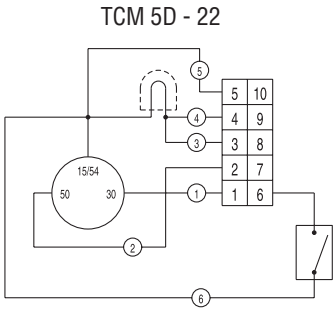


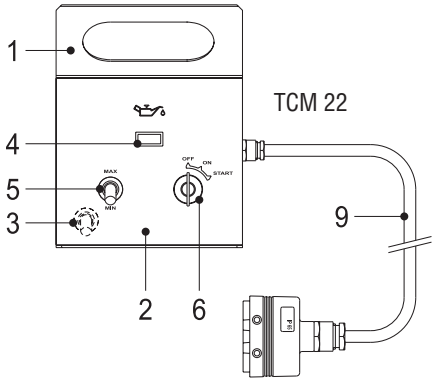
Pos.	Rev.	Cod.	Descr.	Descr.	Note
1		219930131	GR.TIMONE,PIEDE X TRAINO LENTO	***KIT SITE TOW***	
3		102012560	PARAPOLVERE	***COVER,DUST***	
4		219930132	GR. ASSALE, RUOTE TRAINO LENTO	***KIT SITE TOW***	
5		209711160	ASSALE	***AXLE***	
6		209711170	RUOTA	***WHEEL***	

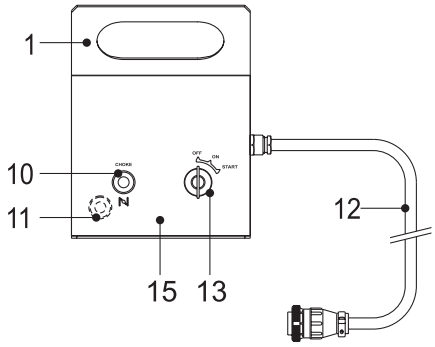


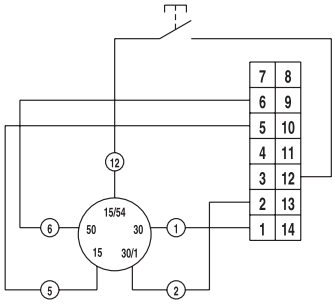
Pos.	Rev.	Cod.	Descr.	Descr.	Note
1		219930141	GR.TIMONE,PIEDE X TRAINO LENTO	***KIT SITE TOW***	
2		102351750	PIEDE DI STAZIONAMENTO	***PARKING STAND***	
3		209701150	TIMONE	***TOW BAR***	
4		219930142	GR. ASSALE, RUOTE TRAINO LENTO	***KIT SITE TOW***	
5		209701160	ASSALE	***AXLE***	
6		105112770	RUOTA	***WHEEL***	

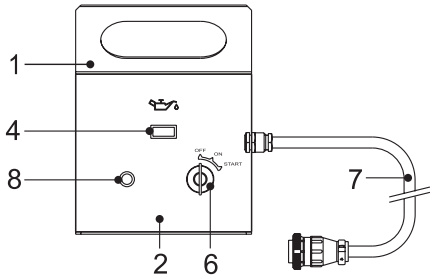


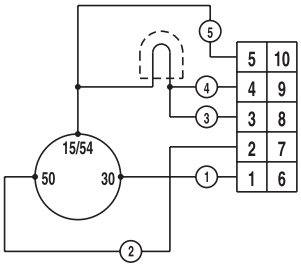




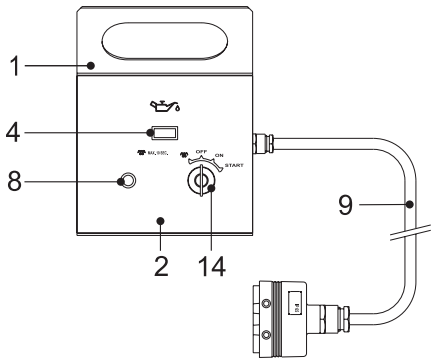


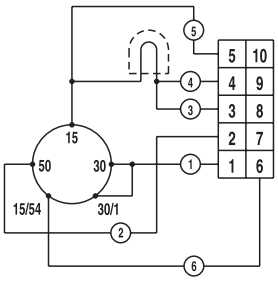






SCHEMA ELETTRICO
ELECTRICAL DIAGRAM
ELECTRIQUE SCHEMA
ELEKTRISCHES SCHEMA
ELECTRISCH GEDEELTE
ESQUEMA ELÉCTRICO





Pos.	Rev.	Cod.	Descr.	Descr.	Note
1		107509900	SCATOLA	CASE, BOTTOM HALF	
2		330109901	COPERCHIO PER SCATOLA TCM	TCM COVER	
3		102042740	CAPPUCCIO	CAP	
4		1302040	SPIA 12V	WARNING LIGHT 12V	
5		102013290	COMMUTATORE	COMMUTATOR	
6		107302460	STARTER A CHIAVE	STARTER KEY	
7		33010C060	GRUPPO CAVI TC	TC CABLE KIT	TCM5D-6
8		6062050	TAPPO	CAP	
9		33020C060	GR.CAVI TCM	TCM CABLE KIT	TCM22-40
10	A	101091830	PULSANTE DI STOP	BUTTON, STOP	TCM5
11	A	101091840	CAPPUCCIO	CAP	TCM5
12	A	93015C060	GRUPPO CAVI TCM	TCM CABLE KIT	TCM5
13	A	259107055	STARTER A CHIAVE	KEY STARTER	TCM5
14	A	307457055	INTERRUTT.ACCENSIONE A CHIAVE	STARTER SWITCH	TCM40
15	A	930159901	COPERCHIO PER SCATOLA TCM	TCM COVER	TCM5

MOSA (I) (GB) (F)

REQUEST FOR ORDER SPARE PARTS

R 1.1

Dear Customer,
You can send us the request for order of MOSA original spare parts, filling in this form, with the new spare parts tables as well as with the old ones, by FAX or mail.

Request from:..... date:..... signature:.....

Please send use us following sapre parts for the machine below:
MOSA SPARE PARTS:

model type:.....

serial nr: | | | | | | | | | | |

NEW TABLES		
table nr.	position	q.ty

OLD TABLES	
code	q.ty

ENGINE SPARE PARTS:

engine model: ..... engine serial nr.:.....

code and/or position	description and/or table	q.ty

SYNCHRONOUS ALTERNATOR SPARE PARTS:

alternator model:..... alternator serial nr.:.....

code and/or position	description and/or table	q.ty