

GE 6000 SX/GS
GE 6500 SX/GS

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356409003 - GB

ENGLISH



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.0192/3 issued by ICIM S.p.A. - Milano (Italy) - www.icim.it

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⚠ ATTENTION

This use and maintenance manual is an important part of the machines in question.

The assistance and maintenance personnel 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

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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.*



MOSA**CE MARK**

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GE, MS, TS, EAS**M
1.4**

Tel.: 02 - 90352.1 Fax: 02 - 90390466 e-mail : info@mosa.it www.mosa.it	 Divisione della BCS S.p.A. V.le Europa 59 - 20090 Cusago (Mi) - Italia	 ISO 9001:2000 - Cert 0192/3
DICHIARAZIONE DI CONFORMITA'  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/ Código: _____		
è conforme con quanto previsto dalle Directive Comunitarie e relative modifiche: est en conformité avec ce qui est prévu par les Directives Communautaires et relatives modifications: conforms with the Community Directives and related modifications: mit den Vorschriften der Gemeinschaft und deren Ergänzungen übereinstimmt: in overeenkomst is met de inhoud van gemeenschapsrichtlijnen en gerelateerde modificaties: cumple con los requisitos 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 verificación 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 assist 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 authorized people.

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 No harm for persons and things

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.

<p>°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: cm³ (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 simultaneously EP1: automatic accelerator according to requested power, engine protection, low oil pressure, high temperature with engine stop, trouble warning lights EP2: engine protection, low oil pressure, high 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, overspeed, 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 grade for electric devices against access 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)</p>	<p>L: Lombardini engine Lwa: maximum acoustic (power level) according to the regulations in force mm: millimeter (length) (measure) m: meter (length) mA: milliamperere 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 engine SKID: unit assembled on a base with no protection (no fairing) S-SC: silenced (faired) - silenced compact (faired) SX-SXC: supersilenced (faired and sound proof) - supersilenced compact (faired and super sound proof) 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~)</p>
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 Conformity CE	 EEC Sound power conformity	 EN 60974-1 conformity	 Triphase 3~	 Singlephase 1~	 Users' manual	 Information	 Various news
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Equipment and optional


Engine										
Engine protection										
Engine alarms										
Generation										
Electric protection										
Generation use										
Welding control										
Various devices										
Various										
Optionals										

 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.











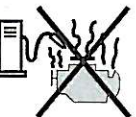
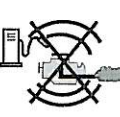




ENGINE	Stop engine when fueling	CHECKING BOARD	Do not touch electric devices if you are barefoot or with wet clothes.
	Do not smoke, avoid flames, sparks or electric tools when fueling.		Always keep off leaning surfaces during work operations
	Unscrew the cap slowly to let out the fuel vapours.		Static electricity can damage the parts on the circuit.
	Slowly unscrew the cooling liquid tap if the liquid must be topped up.		An electric shock can kill
	The vapor and the heated cooling liquid under pressure can burn face, eyes, skin.		
	Do not fill tank completely.		
	Wipe up spilled fuel before starting engine.		
	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 should be sprayed by accident, from corrosive liquids a/o hot toxic gas or whatever event which may cause serious injuries or death, predispose the first aid in accordance with the ruling labour accident standards or of local instructions.

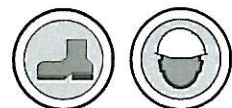
Skin contact	Wash with water and soap
Eyes contact	Irrigate with plenty of water, if the irritation persists contact a specialist
Ingestion	Do not induce vomit as to avoid the intake of vomit into the lungs, send for a doctor
Suction of liquids from lungs	If you suppose that vomit has entered the lungs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

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

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

 WARNING					 CAUTION		DANGEROUS
							
							

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



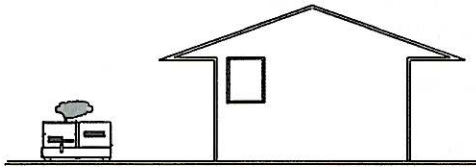
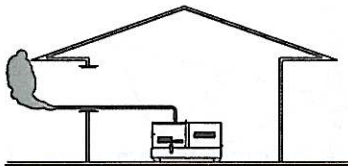
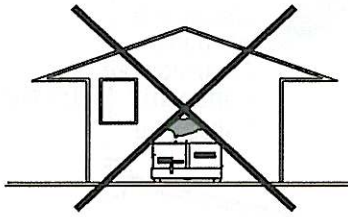
INSTALLATION AND ADVICE BEFORE USE

GASOLINE ENGINES

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

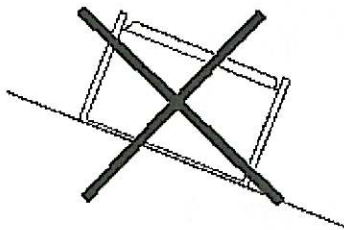
DIESEL ENGINES

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

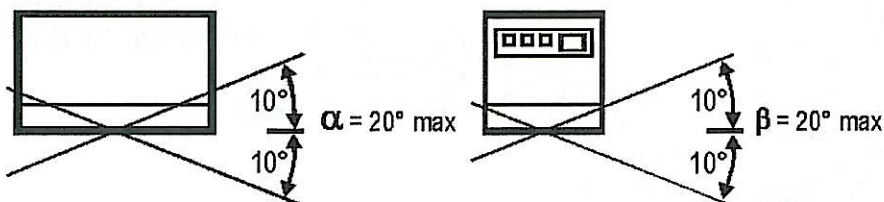


POSITION

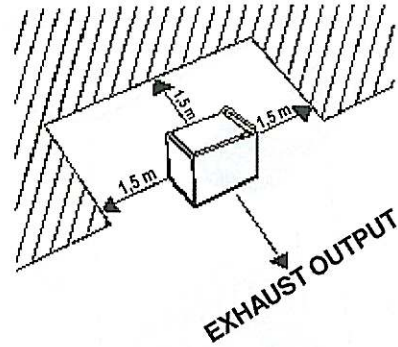
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other plants.



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

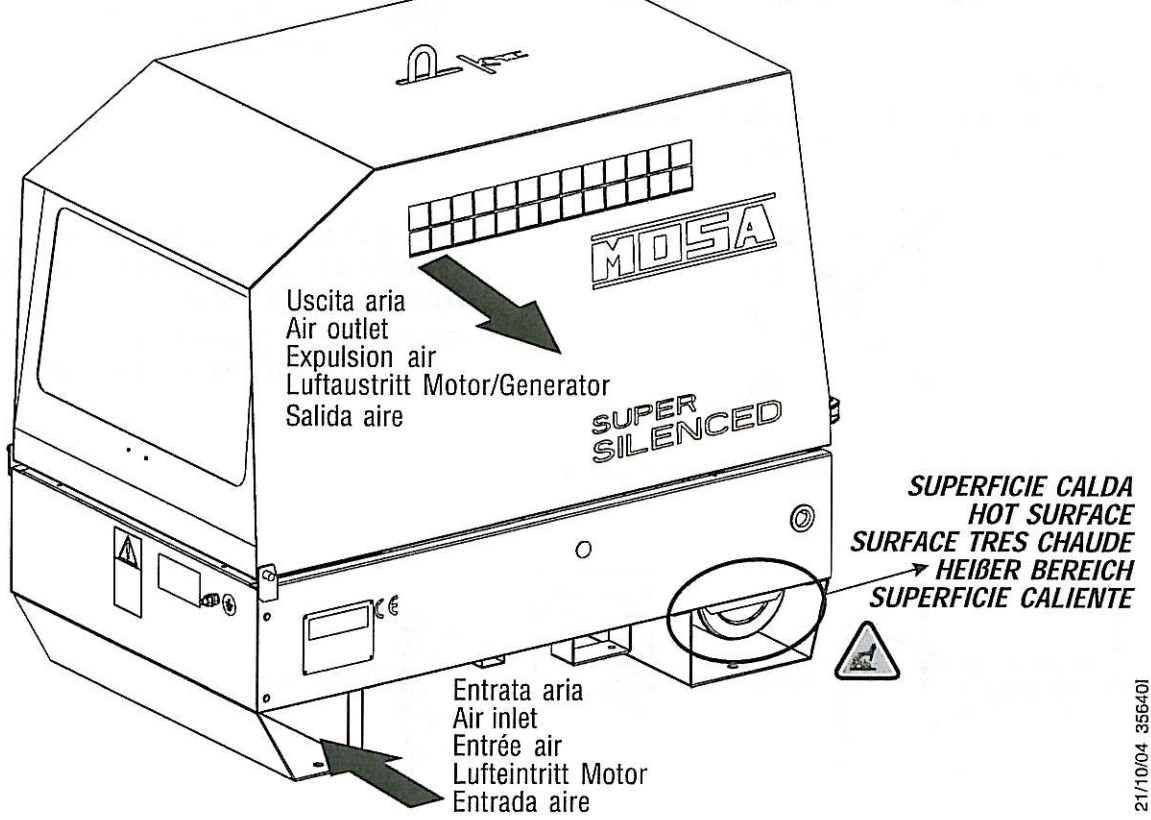
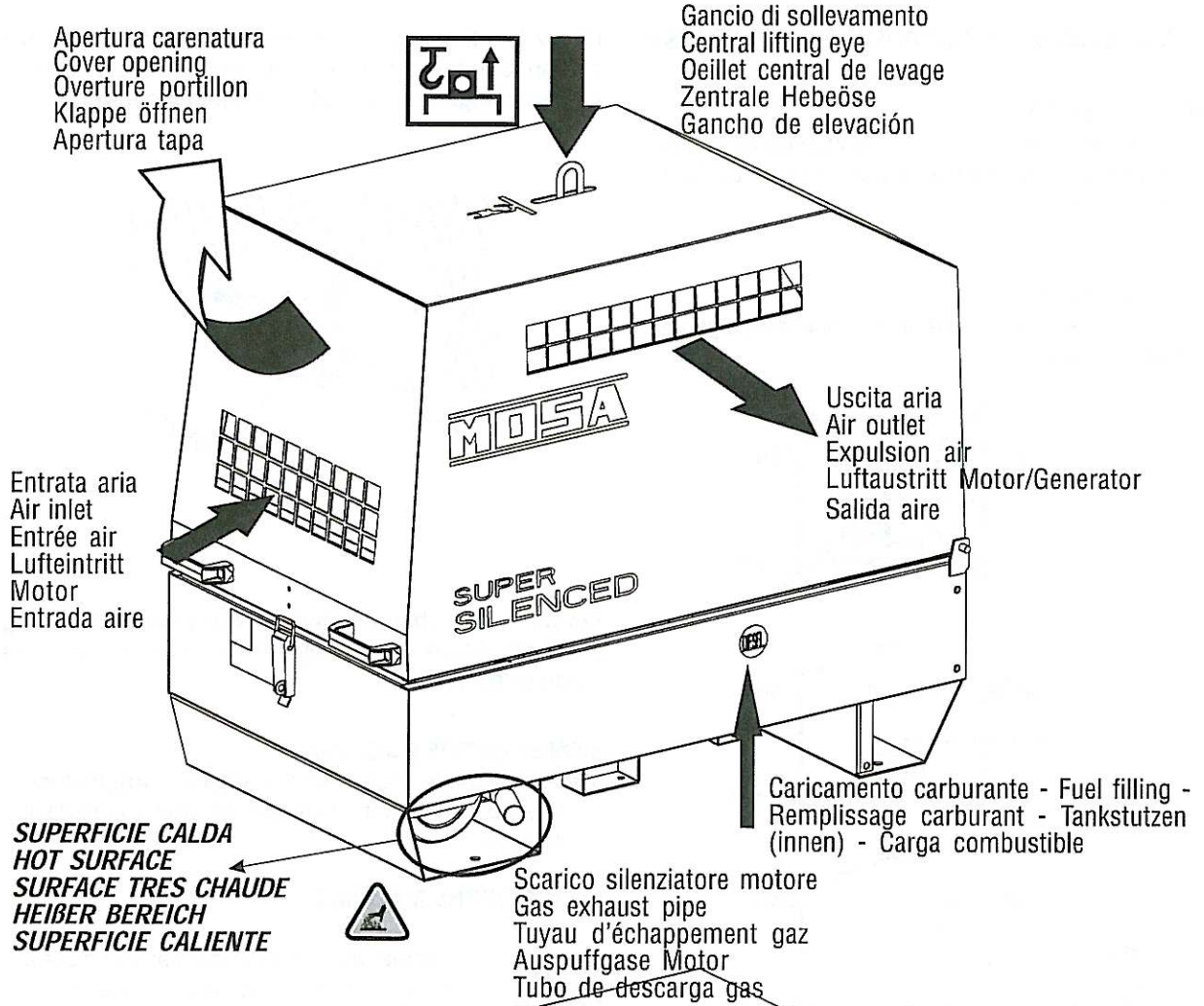


In spots where it often rains and/or there are flooded areas, do **not** put the machine:

- in the bad weather
- in flooded places.

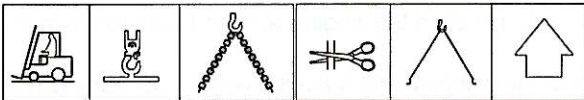
Protect all the electric parts at risk, because water infiltrations could cause short circuits with damages at persons and/or things.

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





NOTE



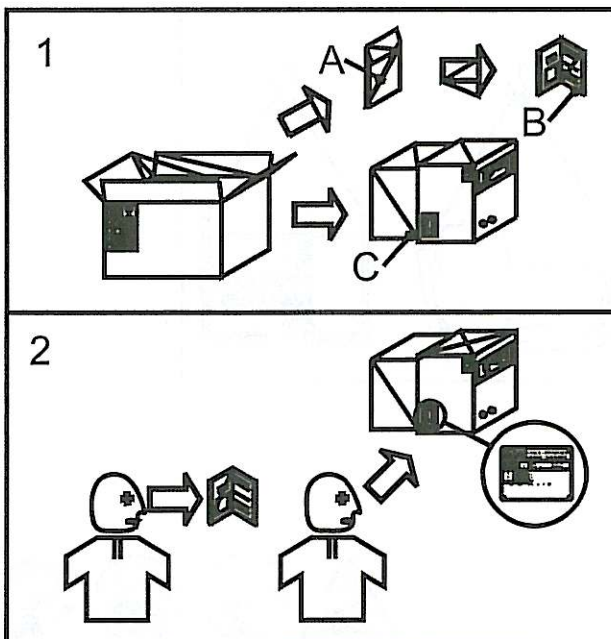
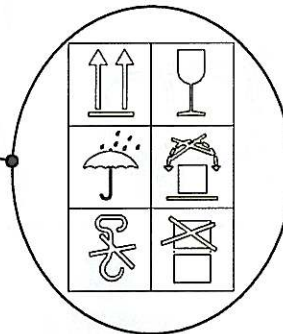
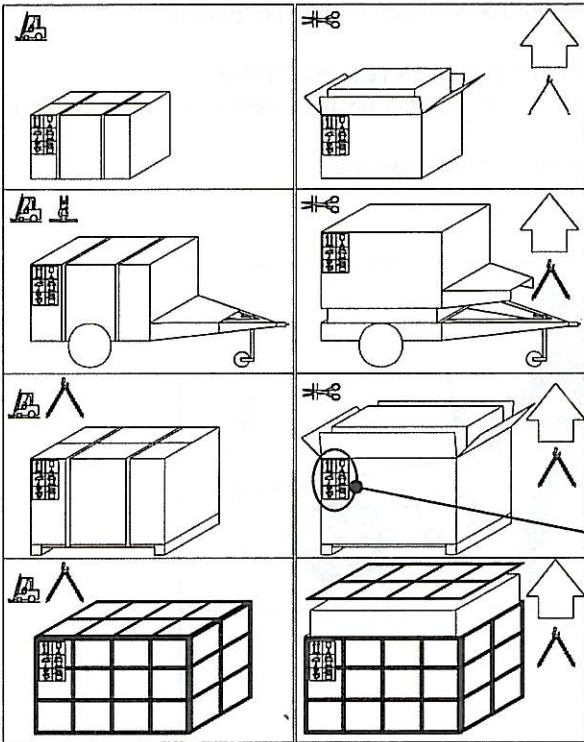
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with its packaging, and conforms to local rules and regulations.

When receiving the goods make sure that the product has not suffered damage during the transport, that there has not been rough handling or taking away of parts contained inside the packing or in the set.

In case you find damages, rough handling or absence of parts (envelopes, manuals, etc.), we advise you to inform immediately our Technical Service.



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



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



**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.

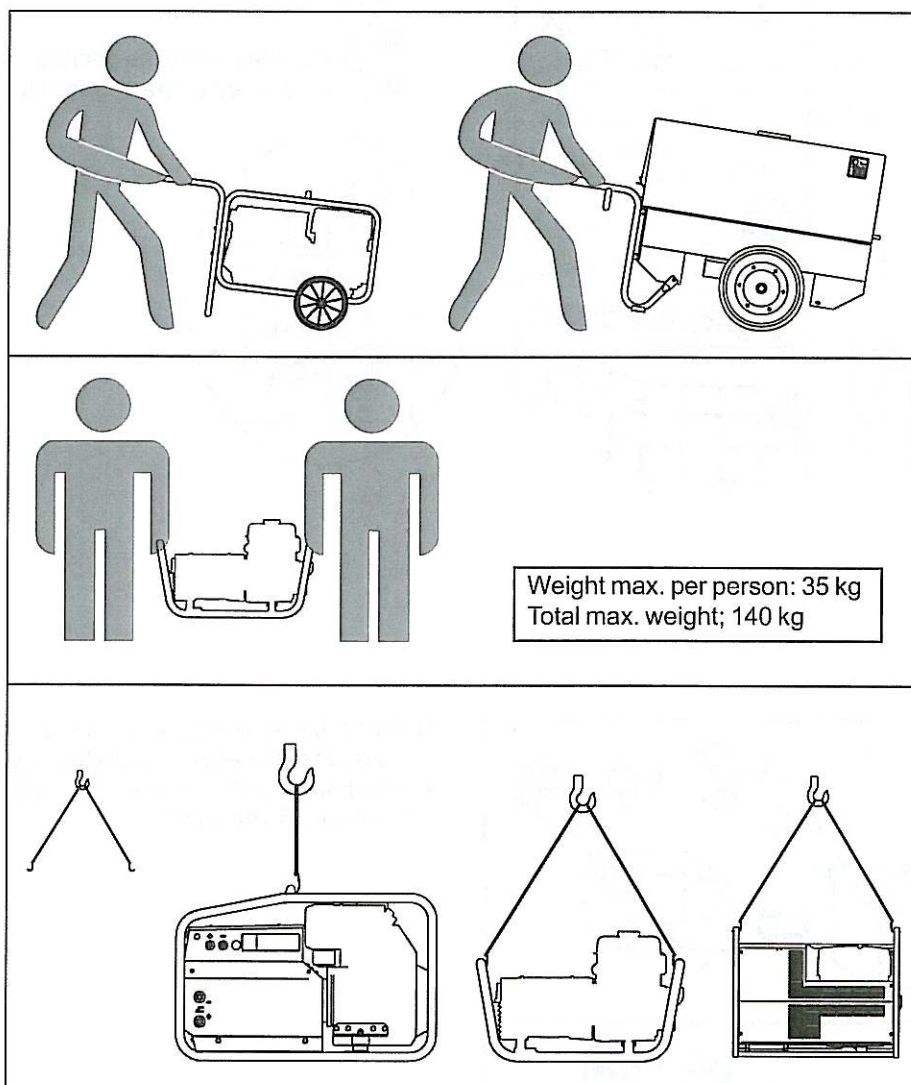
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.

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).

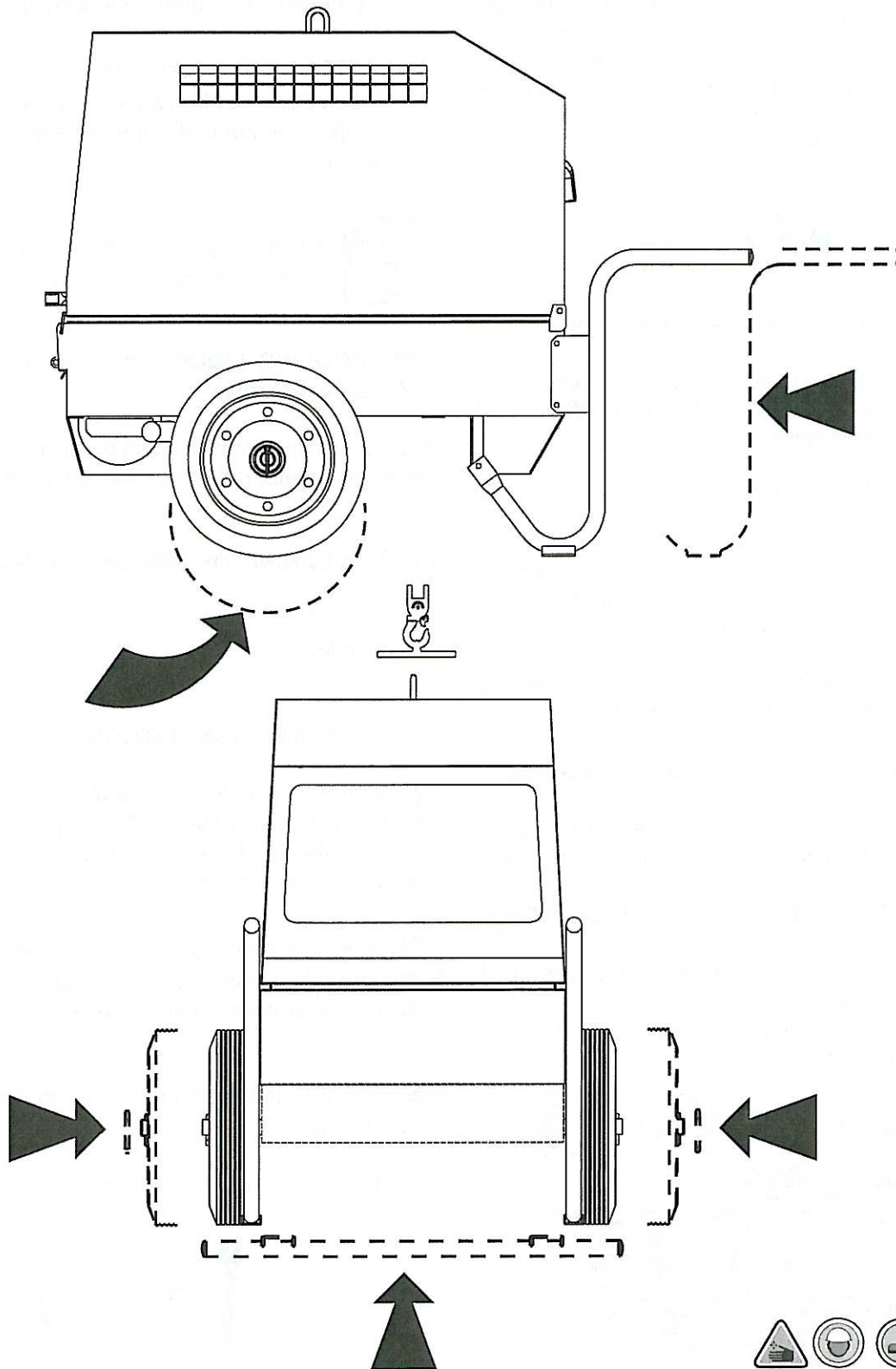
If you did not keep to the instructions, you could damage the structure of the machine.



**ATTENTION**

The 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.

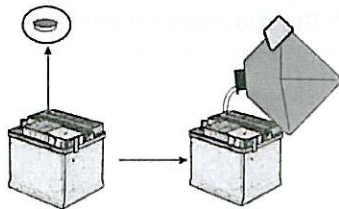
Note: Lift the machine and assemble the parts as shown in the drawing





BATTERY

Take the battery out of the machine.



Fill the battery (S1) to the maximum level with electrolyte. Wait for about 30 minutes and top up with electrolyte.

In case of spilled acid, rinse with water before putting the battery back into the machine and reconnecting cables.

NOTE: Before starting the engine read the instructions in the owner's manual for the engine



FUEL

Fill the tank with good quality diesel fuel.

ATTENTION: Diesel fuel is highly inflammable; before filling the tank, stop the engine. Do not fuel in the presence of open flames.



WARNING



Sulfuric acid is corrosive. Protect hands, eyes and clothes

Take the battery out of the machine for filling. Warranty **VOIDED** for damages due to spilled acid.



If fuel is spilled on the engine, clean it immediately before starting up the engine.



COOLING LIQUID (Water-cooled engines only)

Pour the cooling liquid through the hole (24B) at the top of the radiator until it reaches the opening.



LUBRIFICANT



Check the level of the engine oil using the oil dipstick. The level should be between the minimum and maximum marks. If necessary, add more oil.



CLEANING OF DRY AIR FILTER

See page M43.

If the air filter is of the oil bath type, fill it with the same oil up to the level indicated on the filter.



GROUND CONNECTION

A good ground is obligatory for all models with GFI (ground fault interrupter) / ELCB (earth leakage circuit breaker). These protective devices will not protect the operator unless there is a good ground.

RECOMMENDED SAE VISCOSITY GRADES

For the type and viscosity of oil refer to owner's manual for the engine (supplied with the machine).

Use a good quality ground cable and connect it to the grounding point of the machine (12). Follow all local rules and/or regulations in force.

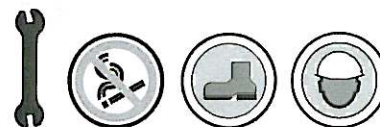
OIL AND COOLING LIQUID RECOMMENDED

MOSA advises to choose **AGIP** for the type of oil and cooling liquid. Please keep to the label put on the engine for the recommended products.

<p>PRODOTTI RACCOMANDATI RECOMMENDED PRODUCTS</p>	
<p>AGIP SUPERDIESEL 15W/40 API CF4-SG</p>	<p>OLIO MOTORE DIESEL DIESEL ENGINE OIL</p>
<p>AGIP SUPERMOTOROIL 20W/50 API CC-SF</p>	<p>OLIO MOTORE BENZINA GASOLINE ENGINE OIL</p>
<p>AGIP ANTIFREEZE EXTRA INIBITE ETHYLENE GLYCOL (50% + 50% H₂O)</p>	<p>CIRCUITO DI RAFFREDDAMENTO COOLING CIRCUIT (CUNA NC 956-16 ED 97)</p>

Machines with Isometer protection do not need to be grounded.

Once the above operations have been completed,





Check daily



NOTE

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

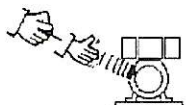
ENGINES WITH MANUAL RECOIL



Hold the starting handle firmly.



Pull the rope hard and fast. Pull it all the way out. Use two hands if necessary.

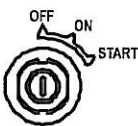


Then returning it slowly.

ENGINES WITH ACCELERATOR LEVER

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

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



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.

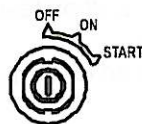
NB.: for safety reason the key must be kept by qualified personel.

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

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

ENGINES WITHOUT ACCELERATOR LEVER

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



Introduce the key (Q1), turn it clockwise completely, leaving it as soon as the engine starts.

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

Let the engine run for some minutes before drawing the load.

Open the fuel cock (where it is assembled).



CAUTION

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



NOTE

The machines with E.P.1 engine protection device (D1), use the accelerator lever ONLY IN EMERGENCY when the engine protection does not work. In this case turn immediately to our Authorized Assistance Centers.

**ENGINE WITH PREHEATING GLOW PLUGS**

Turn the starter key (Q1) on the position „preheating glow plugs“ (the glow plugs light will be on I4), when the light is off, turn the starter key completely clockwise until the engine begins to fire.

Let the engine run for some minutes before drawing the load.

ENGINES WITH R.P.M. ELECTRONIC ADJUSTER (ONLY FOR GENERATING SET)

Turn the starter key (Q1) completely clockwise until the engine begins to fire.

☞ Wait for the AUTOMATIC preheating time before drawing the load

OCCASIONAL USE OF THE ENGINE

Using the engine in special conditions which need an immediate intervention, such as emergency plants, etc., use advise to use our Engine Assistance Centres for specific interventions or our Technical Assistance Service.

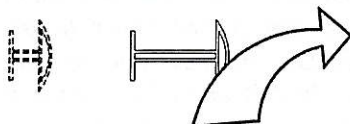
**CAUTION**

If the engine fails to start, do not insist for at least 15 seconds.

Space the further operations waiting for at least 4 minutes.

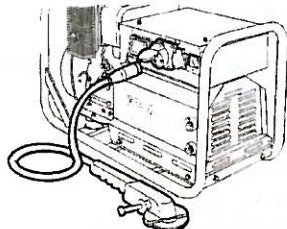
**CAUTION****MACHINE WITH EMERGENCY BUTTON**

Before starting the engine, make sure that the emergency button (32B) is off (turn the button clockwise for this operation)

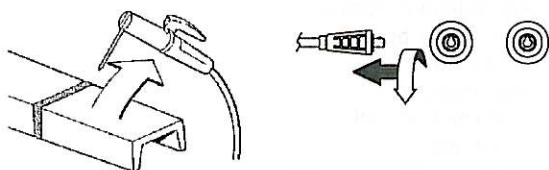
**CAUTION****RUNNING-IN**

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, please follow the instructions on the engine use and maintenance manual..

☞ Before stopping the engine **it is compulsory** to effect the following operations:
- stop to draw three/single-phase current from the auxiliary sockets.



- stop to draw power from the welding sockets (only for TS models).



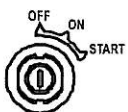
ENGINES WITH ACCELERATOR LEVER

☞ Make sure that the unit is not supplying any power.

Disconnect the electrical protection device (D-Z2-N2) lever downward.

Set the accelerator lever or the switch (16) to minimum position and wait for a few minutes to allow the engine to cool, anyway follow the instructions contained in the engine manual.

Pull the stop lever (28) until the engine stops (where it is assembled).

 Remove the key (Q1) turning it counter clockwise, OFF position, then take it out.

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

ENGINES WITHOUT ACCELERATOR LEVER

Make sure that the unit is not supplying any power.

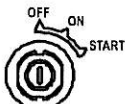
Disconnect the electrical protection device (D-Z2-N2) lever downward.

Let the engine idle for a few minutes.

Press the pushbutton (F3) until the engine stops

(where it is assembled).

Shut the fuel cock (where it is assembled).

 Remove the key (Q1) turning it counter clockwise, OFF position, then take it out.

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


ENGINES WITH R.P.M. ELECTRONIC ADJUSTER (ONLY FOR GENERATING SET)

Make sure that the unit is not supplying any power.



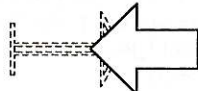
Disconnect the electrical protection device (D-Z2-N2) lever downward.

Let the engine idle for a few minutes.

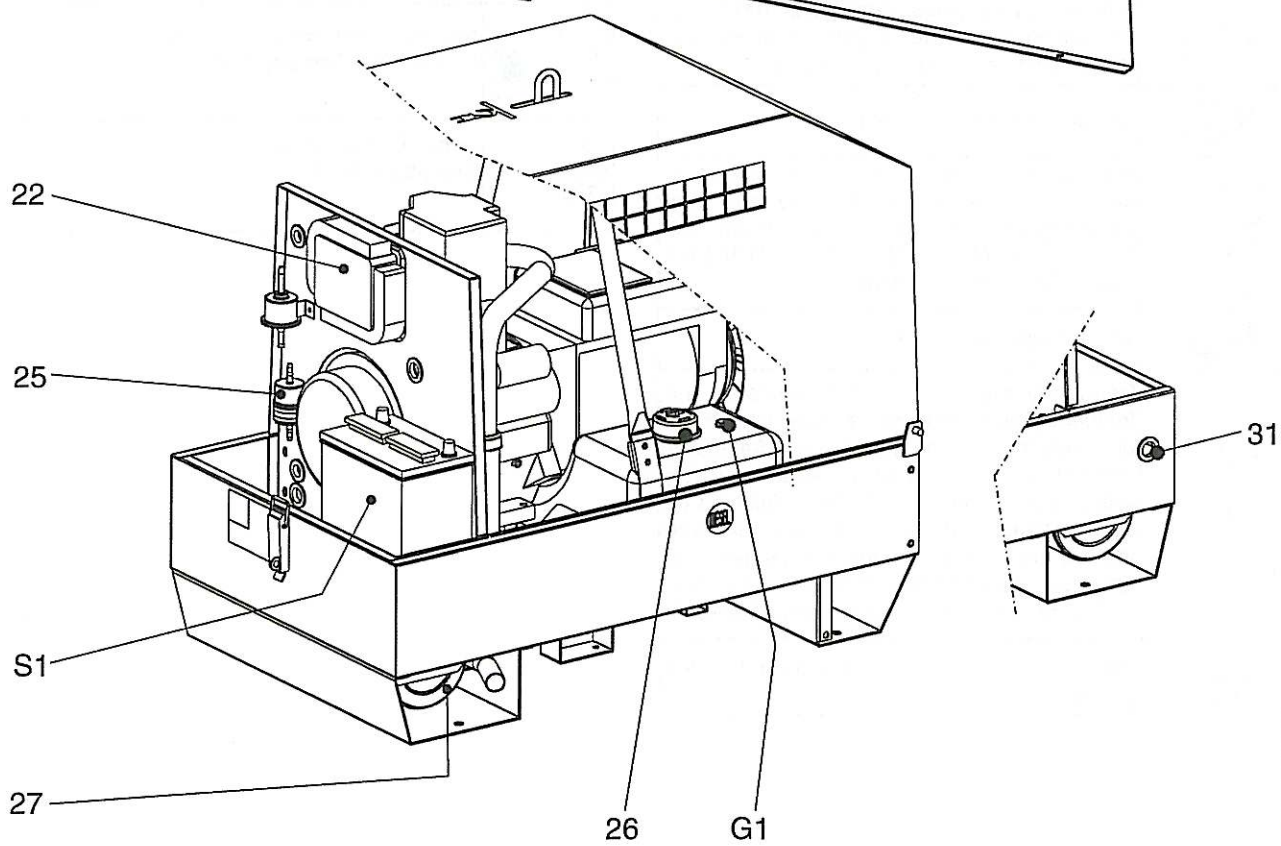
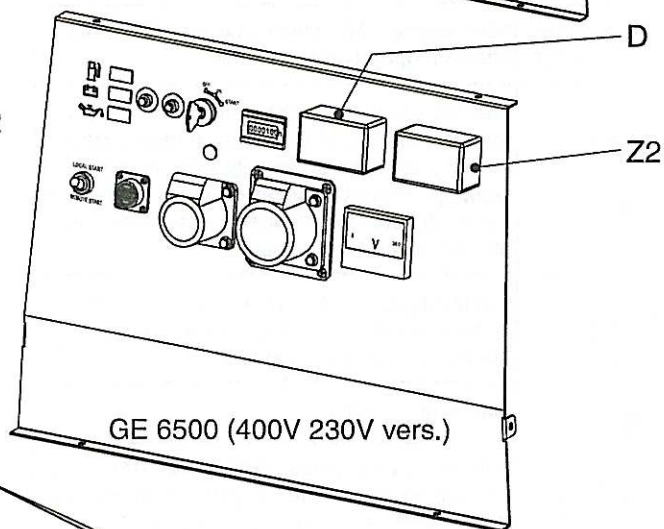
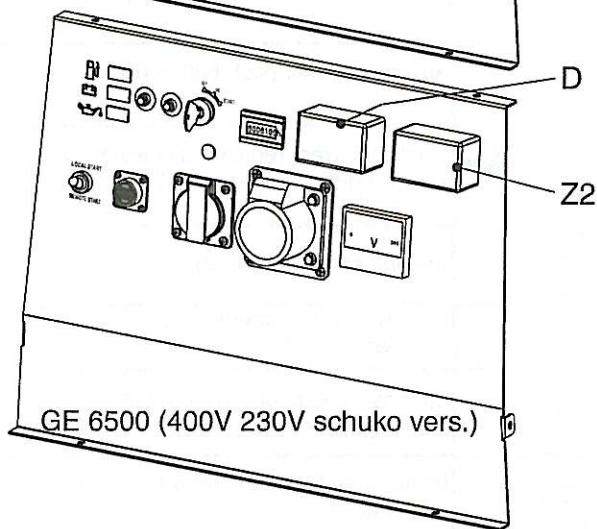
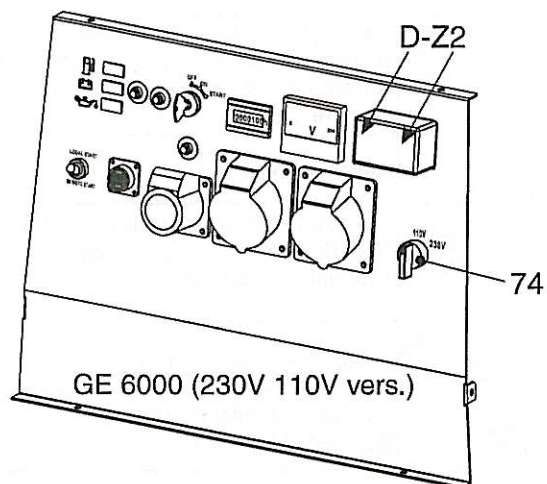
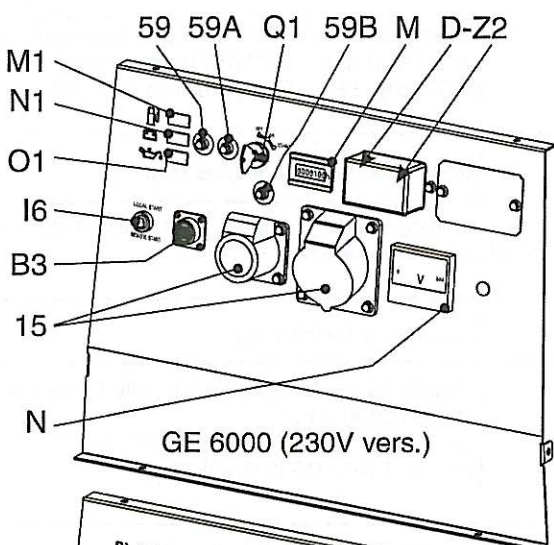
Press the pushbutton (F3) until the engine stops (where it is assembled).

 Remove the key (Q1) turning it counter clockwise, OFF position, then take it out.

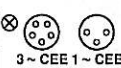



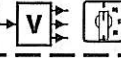






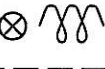





☞ **NB.: for safety reason the key must be kept by qualified personel.**









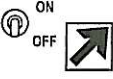

	CAUTION
MACHINE WITH EMERGENCY BUTTON	
Pressing it, it allows to stop the engine in any condition (32B) (when assembled).	
To re-establish it, see page M21...	
	

4A	Hydraulic oil level light	C6	Control unit for generating sets QEA
9	Welding socket (+)	D	Ground fault interrupter (30 mA)
10	Welding socket (-)	D1	Engine control unit and economiser EP1
12	Earth terminal	D2	Ammeter
15	A.C. socket	E2	Frequency meter
16	Accelerator lever	F	Fuse
17	Feed pump	F3	Stop switch
19	48V D.C. socket	F5	Warning light, high temperature
22	Engine air filter	F6	Arc-Force selector
23	Oil level dipstick	G1	Fuel level transmitter
24	Engine oil reservoir cap	H2	Voltage commutator
24A	Hydraulic oil reservoir cap	H6	Fuel electro pump
24B	Water filling cap	I2	48V A.C. socket
25	Fuel prefilter	I3	Welding scale switch
26	Fuel tank cap	I4	Preheating indicator
27	Muffler	I5	Y/s switch
28	Stop control	I6	Start Local/Remote selector
29	Engine protection cover	L	A.C. output indicator
30	Engine cooling/alternator fan belt	L5	Emergency button
31	Oil drain tap	L6	Choke button
31A	Hydraulic oil drain tap	M	Hour counter
31B	Water drain tap	M1	Warning level light
31C	Exhaust tap for tank fuel	M2	Contactator
32	Button	M5	Engine control unit EP5
33	Start button	M6	CC/CV switch
34	Booster socket 12V	N	Voltmeter
34A	Booster socket 24V	N1	Battery charge warning light
35	Battery charge fuse	N2	Thermal-magnetic circuit breaker/Ground fault interrupter
36	Space for remote control	N5	Pre-heat push-button
37	Remote control	N6	Connector – wire feeder
42	Space for E.A.S.	O1	Oil pressure warning light/Oil alert
42A	Space for PAC	P	Welding arc regulator
47	Fuel pump	Q1	Starter key
49	Electric start socket	Q3	Derivation box
54	Reset button PTO HI	Q4	Battery charge sockets
55	Quick coupling m. PTO HI	R3	Siren
55A	Quick coupling f. PTO HI	S	Welding ammeter
56	Hydraulic oil filter	S1	Battery
59	Battery charger thermal switch	S3	Engine control unit EP4
59A	Engine thermal switch	S6	Wire feeder supply switch
59B	Aux current thermal switch	T	Welding current regulator
59C	Supply thermal switch wire feeder-42V	T4	Dirty air filter warning light/Indicator
63	No load voltage control	T5	Earth leakage relay
66	Choke control	U	Current transformer
67A	Auxiliary / welding current control	U3	R.P.M. adjuster
68	Cellulosic electrodes control	U4	Polarity inverter remote control
69A	Voltmeter relay	U5	Release coil
70	Warning lights	V	Welding voltage voltmeter
71	Selecting knob	V4	Polarity inverter control
72	Load commut. push button	V5	Oil pressure indicator
73	Starting push button	W1	Remote control switch
74	Operating mode selector	W3	Selection push button 30 I/1' PTO HI
75	Power on' warning light	W5	Battery voltmeter
76	Display	X1	Remote control socket
79	Wire connection unit	Y3	Button indicating light 20 I/1' PTO HI
86	Selector	Y5	Commutator/switch, serial/parallel
86A	Setting confirmation	Z2	Thermal-magnetic circuit breaker
87	Fuel valve	Z3	Selection push button 20 I/1' PTO HI
A3	Insulation monitoring	Z5	Water temperature indicator
A4	Button indicating light 30 I/1' PTO HI		
B2	Engine control unit EP2		
B3	E.A.S. connector		
B4	Exclusion indicating light PTO HI		
B5	Auxiliary current push button		
C2	Fuel level light		
C3	E.A.S. PCB		



According to the version of the machine on the front panel there are assembled some instruments:

	warning lights (L) corresponding to the current sockets on the front panel, indicate that the current can be drawn from the sockets when they are lit (15);
	voltmeter (N);
	GFI (D), Thermal magnetic circuit breaker (Z2) (TS...PL: : one for each auxiliary socket) or Thermal magnetic circuit breaker/GFI (N2);
	
	voltage selector switch (H2);
	insulation monitoring (A3)- See page M 39.10 -;
	hour-counter (M), which indicates the hours of effective operation of the unit;
	fuse (F), which protects the electric circuit of the engine, replacement of which, in case it breaks, must be effected <u>absolutely</u> with the machine <u>stopped</u> . Remove the mechanical protection, then shift down the small lever of the fuse holder placed on the front panel;
	
	fuel level gauge (M1): when the quantity of fuel in the tank falls below 5 litres a warning light on the instrument panel lights up;
	fuel level indicator (C2);
	preheating glow plugs warning light (I4) for the preheating (for diesel engines it shows the intervention time of the glow plugs);
	dirty air filter warning light (T4);
	ammeter (D2) indicates the drawn current. In case current is drawn simultaneously from several sockets, it shows the current sum. (DO NOT GO OVER THE MAX. CURRENT INDICATED ON THE LABEL);
	star/ triangle switch (I5);
	frequency meter (E2), that indicates the frequency generated and therefore the number of revolutions of the engine: the frequency should be of 52 Hz» or 62 Hz» when the unit is idle and about 50 Hz or 60 Hz at full load (in case that the found value is different make sure that the engine is completely accelerated), (do never use the unit with a frequency lower than 49 Hz or 59 Hz, in this case decrease the load);
	tone horn (R3)) indicates the defects in the engine;

	engine protections: EV - EP1 (D1) (for engine at 3000/3600 rpm.), EP2 (B2 for engine at 1500/1800 rpm), EP4 – EP5 (M5)- See pag. M39 -;
	starter key (Q1) and engine stop;
	welding socket (gouging, when assembled, - 9+ - 10-) - See pag. M 34 -;
	Emergency button (L5);
	Control switch for accelerator (only for engine at 3000/3600 rpm) - ☞ WE ADVISE TO USE THE SWITCH ONLY IF THE EP1 DEVICE IS BROKEN;
	auxiliary current push button (B5);
	welding current regulator (T) and/or „arc force“ selector (F6) - See pag. M34 -1;
	welding scale switch (I3);
	polarity inverter control (V4);- See pag M34 -1;
	cellulosic electrodes control (68);- See pag M34 -1;
	Protection fuse for welding PCB, welding ammeter (S);
	remote control switch (W1) and remote control socket (X1) - See pag M38 -;
	switch CC/CV (M6)- See pag M34 -1;-

☞ **It is strictly forbidden to connect the group to the public mains a/o to another source of electric power.**



WARNING

Sockets are not **self-locked**: tension is available immediately after starting also with no plug.



WARNING

The areas, **access** of which is forbidden to unqualified personel, are:
- the control switchboard (front), the exhaust of the endothermic engine.

☞ At the beginning of every work, check the electric parameters and/or the controls placed on the front.

Make sure the unit is properly grounded (12) (where it is assembled).

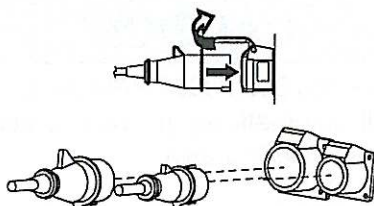
- See page M20, 21, 22, 25, 26, 27 -.

Move the accelerator lever (16) and reach the engine maximum speed, except for the engines with constant rpm; the voltmeter (N) (where it is assembled) shows the single-phase voltage whether three or single-phase current has to be drawn.

Nominal voltage	Indicative no-load voltage	
	asynchronous	synchronous (*)
110V	±10%	±5%
230V	±10%	±5%
230V	±10%	±5%
400V	±10%	±5%

*N.B.: with electronic tens. regul. RVT ±1%

Connect up the machine, using proper plugs and cables in good condition to the AC socket (15) to draw single or three-phase power, or, by cables with adequate section, to the terminal board, placed inside the derivation box (Q3).



The warning light (L), located near the current socket, lights up when the unit can supply alternated current, on condition that the engine is at the maximum rpm.

☞ N.B.: if the warning light does not flash, check the accelerator which must be at its maximum, or the fuse of the relevant socket. (single-phase) or the thermoprotection.

Using several sockets at the same time, the maximum power possible is that indicated on the data plate.

To draw power simultaneously in the TS welder version see page M52.



CAUTION

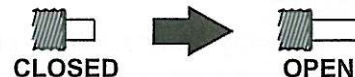
The replacement of the fuse must absolutely be done with the engine off (remove the mechanical protection, then shift down the small lever of the fuse holder placed on the front panel).

The max. continuous power of the generating set or the load current must not be exceeded.

MACHINE WITH THERMOPROTECTION

If you overload the genset the thermoprotection will automatically switch off.

If the thermoprotection is released, disconnect all the connected loads.

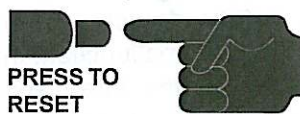


CIRCUIT BREAKER

Reset the thermoprotection pressing the central pole.

When reset, connect the loads again.

In case the protection should act furtherly, check: the connections, the wires or others, and if necessary call the Assistance Service.



Avoid to hold the central pole of the thermoprotection pressed for a long time.

Otherwise, in case of trouble, it will not click, **damaging** the generating set.



TS ... PL VERSION

Start the machine and wait for the end of the preheating time imposed by the EP1, EP2, EP5 engine protection device. - See pages M39... -

Press the „generation possibility“ push button (B5) placed on the front side of machine.

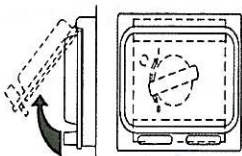
The voltmeter will show the auxiliary voltage which, for machines at 1500/1800 RPM, must be approx. $\approx 230V \pm 10\%$ and for machines at 3000/3600 RPM (engine idling) must be approx. $\approx 180V \pm 10\%$.

Push upwards the lever of magnetothermic switch referring to the socket from which load is to be drawn.

MACHINE WITHOUT PROTECTIVE DEVICE

In case machine is not equipped with protective device of indirect contacts, by means of automatic breaking of supply, it **is necessary** to put between the load and the generation a differential switch or a similar equipment capable, in any case, to observe the regulations in force CEI 64/8 (and/or successive) Part 4 Par. 4.13.1 and harmonized by directive Nr. 72/23/EEC.

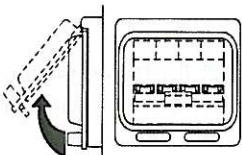
UNIT FITTED WITH GROUND FAULT INTERRUPTER SWITCH (GFI)



Turn on the GFI safety-switch (D) by pushing it upwards.

The GFI is a safety device which protects the circuit in the event of a malfunction. In this case the switch disconnects the three and single-phase circuit when in any part of the electric connections a current leakage of more than 30 mA occurs.

UNIT FITTED WITH THERMAL MAGNETIC BREAKER

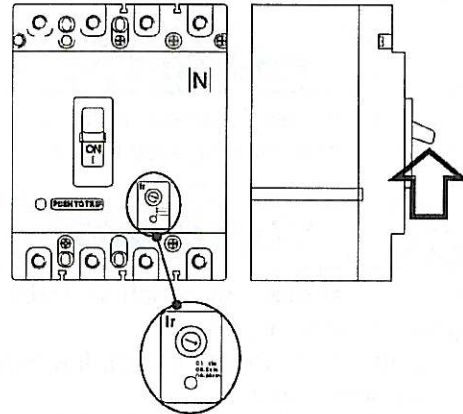


Turn on the thermal magnetic breaker (Z2) by pushing it to the ON position.

The thermal-magnetic breaker is a safety device which protects the circuit in the event of a malfunction. In this case the switch disconnects the three and single-phase circuit when in any part of the electric connections a short circuit or a current absorption occurs above the data specified on the label of the unit.

In the model with setting **DO NOT INTERVENE** on the setting itself. To modify it, please contact our Technical Assistance Service.

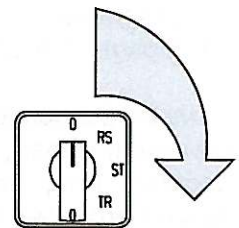
UNIT FITTED WITH GFI SWITCH THERMAL MAGNETIC BREAKER



This switch includes the characteristics of both types of breakers (N2).

UNIT WITH VOLTMETRIC COMMUTATOR (ONLY FOR GENERATING SET)

WARNING: the possible single-phase loads must be correctly divided in the three phases, in order to avoid any possible voltage fall on one phase that results excessively loaded.



Check the voltages on the various phases with the switch located on the front (H2) and check, reading on the voltmeter (N) about the same voltage value

N.B.: in case of overload, it is possible that the engine lowers its speed and the voltage is reduced remarkably. In this case, it is necessary to reduce immediately the load.

CAUTION

For machines at 3000/3600 RPM the EP1 safety device will automatically provide to accelerate engine when load is drawn.
- See page M39.1 -





MAKE SURE

When the TCM 5 5D-6 is used, it is not possible to connect the E.A.S automatic intervention unit.

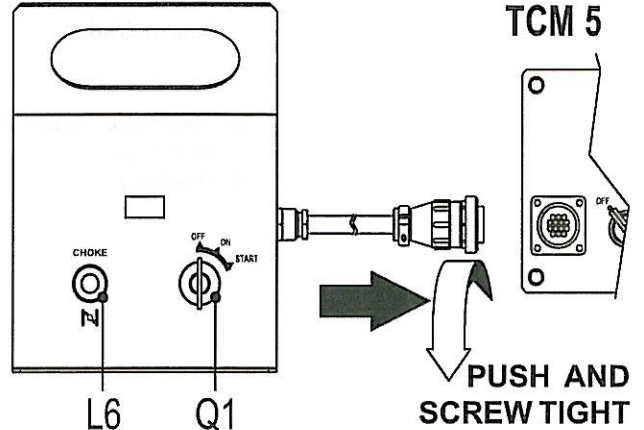
USE OF THE REMOTE CONTROL TCM 5

The coupling of the TCM 5 with the generating set, permits to work far from the set itself. The remote control is connected to the front plate, with a multiple connector.

The TCM 5 assures the following functions:

- starting (starting key Q1)
- stop (starting key Q1)
- choke control (L6)

- 1) the position of the selector LOCAL START/REMOTE START (I6) on the generating sets GE 4500 HSX and GE 4500 SX-EAS must be on the position "REMOTE START".
- 2) The position of the key (Q1) on the generating set GE 4500 SX-EAS must be on the position "ON"



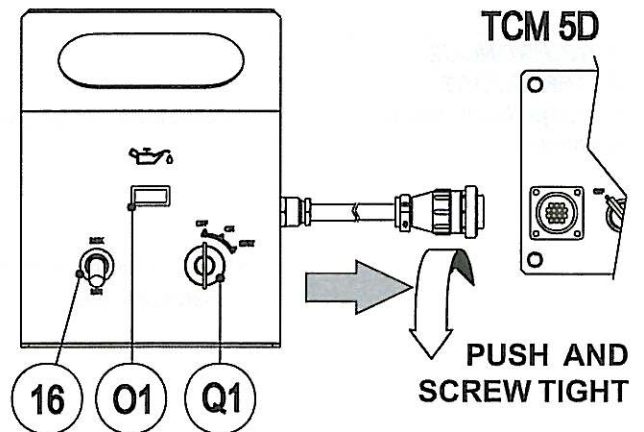
USE OF THE REMOTE CONTROL TCM 5D

The coupling of the TCM 5D 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 5D assures the following functions:

- 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, then turn the key to "OFF" position.



USE OF THE REMOTE CONTROL TCM 6

The coupling of the TCM 5D with the generating set, ready for remot starting, permits to work far from the set itself.

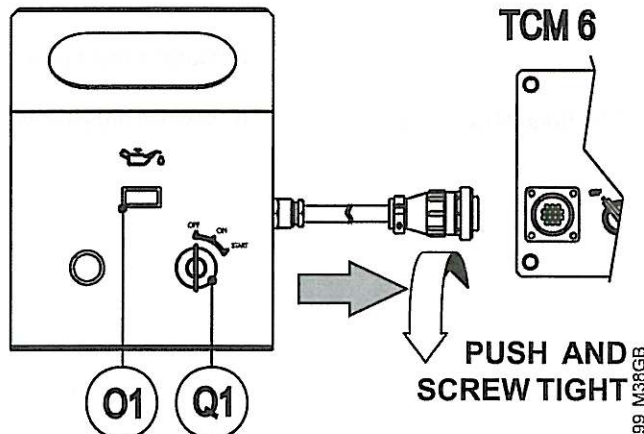
The remote control is connected to the front plate, and/or rear plate, with a multiple connector.

The TCM 5D assures the following functions:




- 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". (O1)

Per l'arresto del motore portare la chiave sulla posizione "OFF".



PROBLEM	POSSIBLE CAUSE	WHAT TO DO
ASYNCHRONOUS ALTERNATORS		
No output	<ol style="list-style-type: none"> 1) GFI or Isometer (if installed) have been activated 2) Thermal protection activated or fuse burned out 3) Overload 4) Bad condenser or stator burned out 	<ol style="list-style-type: none"> 1) Reset GFI or Isometer. If they are activated again check the cables and tools attached to the auxiliary sockets for short circuits or grounded leads 2) Reset the thermal protection and check the fuses of the single phase sockets. 3) Disconnect the load and see if the voltage is normal. If so the load caused the generator to lose its excitation. This can occur when the kWatt of the load is larger than that of the generator or, in the case of inductive loads (motors), when the device has a high starting current. In both cases the solution is a larger genset. 4) Disconnect all leads from the stator except for those going to the condenser box. If there is no output from the auxiliary leads check the condenser box. If it is OK replace the stator.
SYNCHRONOUS ALTERNATORS		
No output Mechanical damage	<ol style="list-style-type: none"> 1) Overload - circuit breaker activated 2) GFI or Isometer (if installed) have been activated 3) Fuse burned out 4) Stator burned out 5) Carbon brushes worn out 6) Carbon brushes worn out 	<ol style="list-style-type: none"> 1) Remove the load and insert the circuit breaker. Reconnect the load. If it activates again check the rating of the load and the wiring between load and generator. 2) Remove the load and reset Isometer or GFI. Check without the load. If they activate there is an isolation fault or leakage to ground in the generator or internal wiring. If not, reconnect the load. If they are activated with the load attached there is an isolation fault or leakage to ground in the load or related cables. 3) Check the fuses of the single phase sockets. 4) Disconnect the load and see if the voltage is normal. If there is not output replace the alternator. 5) Check the condition of the brushes (if mounted) and their position. 6) Worn out brushes can damage the brush holder and/or collector.

 WARNING		
	<ul style="list-style-type: none"> • Have qualified personnel do maintenance and troubleshooting work. • Stop the engine before doing any work inside the machine. If for any reason the machine must be operated while working inside, pay attention moving parts, hot parts (exhaust manifold and muffler, etc.) electrical parts which may be unprotected when the machine is open. • Remove guards only when necessary to perform maintenance, and replace them when the maintenance requiring their removal is complete. • Use suitable tools and clothes. • Do not modify the components if not authorized. - See pag. M1.1 - 	
MOVING PARTS can injure		HOT surface can hurt you

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.

The routine cleaning of the machine is also considered maintenance.

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.

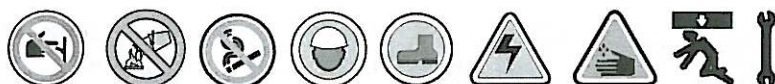
For the maintenance of the gasoline or Diesel engine please refer to the specific manual supplied with the unit.

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.

Every day check the oil level in the engine and in the air filter (if at oil bath). Make sure that these are no obstructions in the aspiration/exhaust ducts of the alternator, in the engine or in the cover (pieces of material, leaves or other).

See page M21 and M26.

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



UNITS WITH ELECTRIC STARTER

Check periodically the electrolyte level in the battery, especially after long periods of inactivity.

☞ **ATTENTION:** the battery must have all its elements in good condition and must be filled with electrolyte.

The battery is automatically charged while the engine is running at speed.

☞ **N.B.:** In the models with safety protections, in case the battery is not reloaded, check the thermic protection (59A) reload it if it is the case as well as the fuse (35).

PROCEDURE FOR RECHARGING A BATTERY

Keep to the advice indicated page - M36 -
Take off the breather caps of the battery.
Check the electrolyte level in all the elements of the battery.
If necessary, add up **distilled water** to have the liquid at the recommended level.
Put back the breather caps of the battery.
Use a densimeter to determine the charge state of the battery.

SPECIFIC WEIGHT	CHARGE PERCENTAGE
1.265	100%
1.230	75%
1.200	50%
1.170	25%

MODELS WITH DRY AIR FILTER (CLEANING)

Replace the air filter cartridge every 200 hours when using the unit in a clean environment.

In a dusty environment, the filter cartridge must be replaced every 100 hours.

ALTERNATOR (brushless)

No other further periodical maintenance is necessary, as the alternator has no brushes or slip rings, and the output regulation is entirely electronic.

ALTERNATOR (with brushless)

Control the wear and the position of the carbon brushes at regular intervals (refer to the alternator manual supplied with the machine for details).

MODEL WITH COOLING LIQUID

Every day check the cooling liquid level.
Verify each day freezing liquid and check periodically the radiator state (losses obstructions for air circulation etc.)


☞ **N.B.:** all warning and decals should be checked once a year and **replaced** if missing or unreadable.

Check periodically the condition of the cables and tighten the connections.


In case the machine should not be used for more than 30 days, make shure 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. See page M45.

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


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

 **IMPORTANT**

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





	<p>EVERY WEEK</p>	<p>EVERY ONTH AND/OR AFTER INTERVENTION ON LOAD</p>	<p>EVERY YEAR AND/OR AT PRESCRIBED TIMES</p>
<p>1. TEST or AUTOMATIC TEST cycle to keep the generating set constantly operative</p>	<p>○</p>		
<p>2. Check all levels: engine oil, fuel level, battery electrolyte,, if necessary top it up.</p>		<p>○</p>	
<p>3. Keep to the advice given in manuals: engine, alternator, and machine specific one.</p>			<p>○</p>

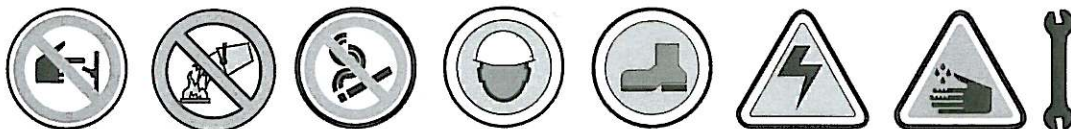


ATTENTION

Before any intervention on the generating set, KEEP TO FOLLOWING:

- Preset the unit so as to execute the maintenance of the set.
- Disconnect the three phase, single phase plugs and/or the wires to the feed box
- Disconnect the plug of the connection cable to the EAS unit and/or to PAC 150..

After having effected the routine checks, reset all electric connections and follow the indications for a new working cycle



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 a 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 blocking of the injection system.

For long periods of inactivity, turn to the after sales 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 surroundings, 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 inflammable 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 surroundings, health or safety respecting completely the laws and/or dispositions in force in the place.

The generating set GE 6000 / 6500 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 6000 SX/GS	GE 6500 SX/GS
A.C. GENERATOR		
<i>Three-phase generation</i>	-	6.5 kVA (5.2 kW) / 400 V / 9.4 A
<i>Single-phase generation</i>	6 kVA (5.4 kW) / 230 V / 26 A	4 kVA / 230 V / 17.4 A
<i>Single-phase generation</i>	6 kVA (5.4 kW) / 110 V / 54.5 A	-
<i>Frequency</i>	50 Hz	50 Hz
<i>Power factor (cos φ)</i>	0.9	0.8
ALTERNATOR		
<i>Type</i>	self-excited, self-regulated, brushless	self-excited, self-regulated, with brush
<i>Insulating class</i>	Single-phase, synchronous H	Three-phase, synchronous H
ENGINE		
<i>Mark</i>	YANMAR	
<i>Model</i>	L 100 AE	
<i>Type</i>	4-Stroke	
<i>Displacement</i>	406 cm ³	
<i>Cylinders</i>	1	
<i>Output</i>	6.5 kW (8.8 HP)	
<i>Speed</i>	3000 rpm	
<i>Fuel consumption</i>	245 g/kWh	
<i>Cooling system</i>	Air	
<i>Engine oil capacity</i>	1.6 l	
<i>Starter</i>	Electric	
<i>Fuel</i>	Diesel	
GENERAL SPECIFICATIONS		
<i>Battery</i>	12V - 45Ah	
<i>Fuel tank capacity</i>	23 l	
<i>Running time</i>	17.5 h	
<i>Protection</i>	IP 23	
<i>Dimensions max. Lxwxh *</i>	1020x645x930	
<i>Weight (dry) *</i>	194 Kg	200Kg
<i>Noise level</i>	94 LWA (69 dB(A) - 7 m)	92 LWA (67 dB(A) - 7 m)

* Dimensions and weight are inclusive of all parts.

OUTPUT

Declared powers at the following ambient conditions: temperature 20°C, relative humidity 30% altitude 100 m above sea level. 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 75dB(A) (the limit value less 25).

To calculate the sound level at other distances use this formula:

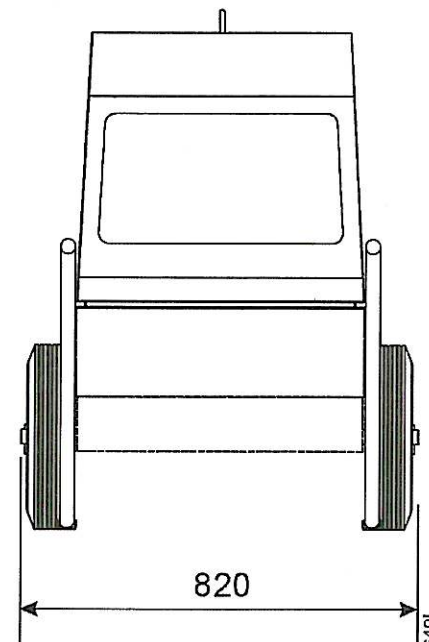
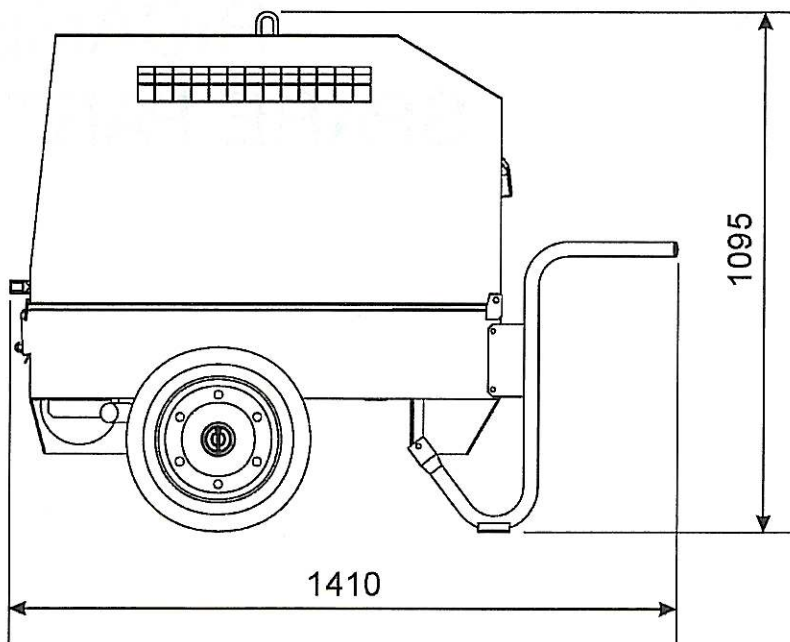
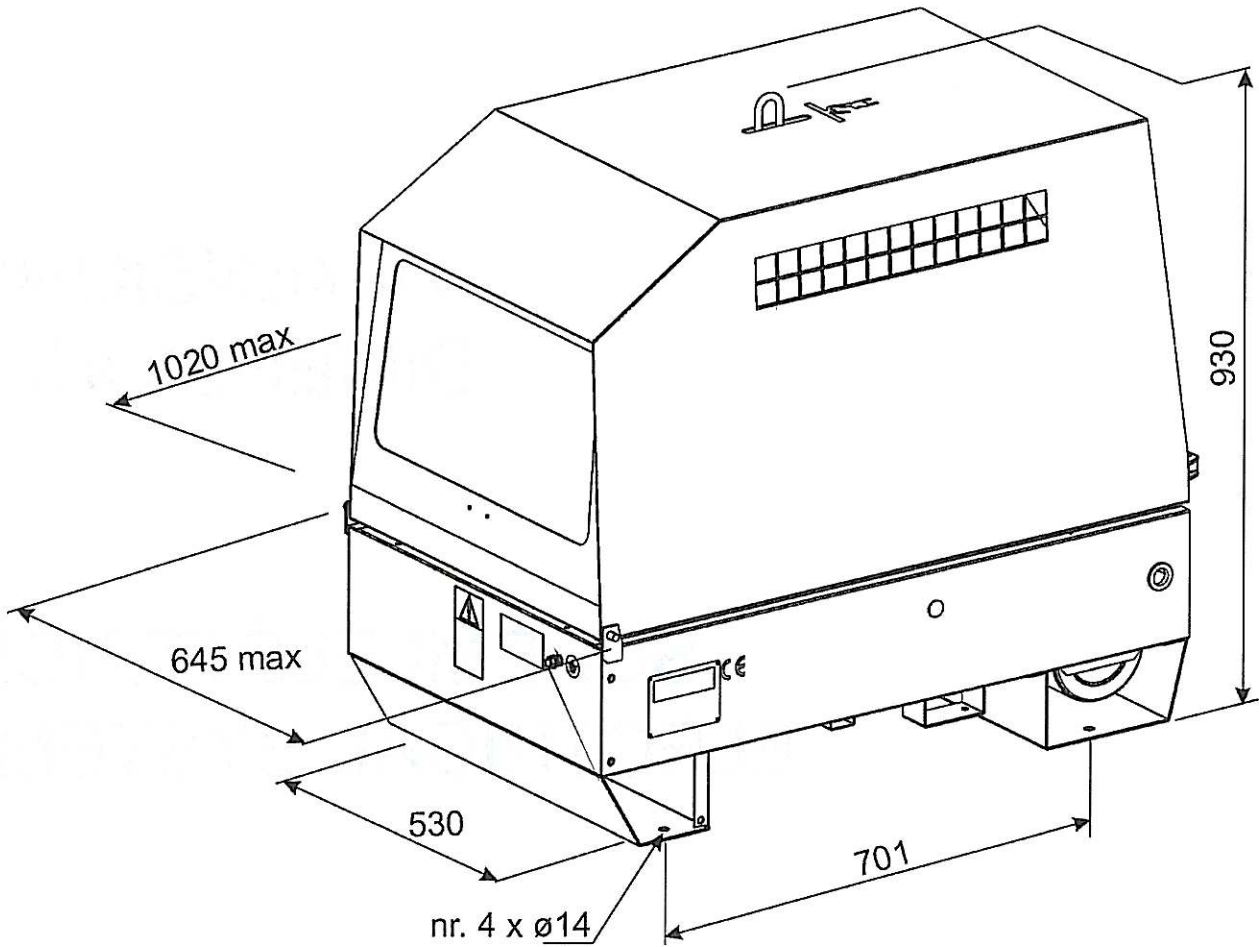
$$dBA_x = dBA_y + 10 \log \frac{r_y^2}{r_x^2}$$

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

**DIMENSIONI
DIMENSIONS**

**SCHEMI ELETTRICI
ELECTRICAL SYSTEM**

**RICAMBI
SPARE PARTS**



Legenda schema elettrico

A	: Alternatore
B	: Supporto connessione cavi
D	: Interruttore differenziale
F	: Fusibile
G	: Presa 400V trifase
H	: Presa 230V monofase
I	: Presa 110V monofase
M	: Contatore
N	: Voltmetro
G1	: Trasmettitore livello carburante
L1	: Pressostato
M1	: Spia riserva carburante
N1	: Spia carica batteria
O1	: Spia pressostato
R1	: Motorino avviamento
S1	: Batteria
U1	: Regolatore tensione batteria
V1	: Unità controllo elettrovalvola
Z1	: Elettrovalvola
Z2	: Interruttore magnetotermico
B3	: Connettore E.A.S.
N3	: Relè
P4	: Protezione termica
Y5	: Commutatore Serie/Paralelo
H6	: Elettropompa carburante 12V c.c.
I6	: Selettore Start Local/Remote

Electrical system legende

A:	Alternator
B:	Wire connection unit
D:	G.F.I.
F:	Fuse
G:	400V 3-phase socket
H:	230V 1phase socket
I:	110V 1-phase socket
M:	Hour-counter
N:	Voltmeter
G1:	Fuel level transmitter
L1:	Oil pressure switch
M1:	Fuel warning light
N1:	Battery charge warning light
O1:	Oil pressure warning light
R1:	Starter motor
S1:	Battery
U1:	Battery charge voltage regulator
V1:	Solenoid valve control PCBT
Z1:	Solenoid valve
Z2:	Thermal magnetic circuit breaker
B3:	E.A.S. connector
N3:	Relay
P4:	Circuit breaker
Y5:	Commutator/switch, series/parallel
H6:	Fuel electro pump 12V c.c.
I6:	Start Local/Remote selector

Legende des schemas electriques

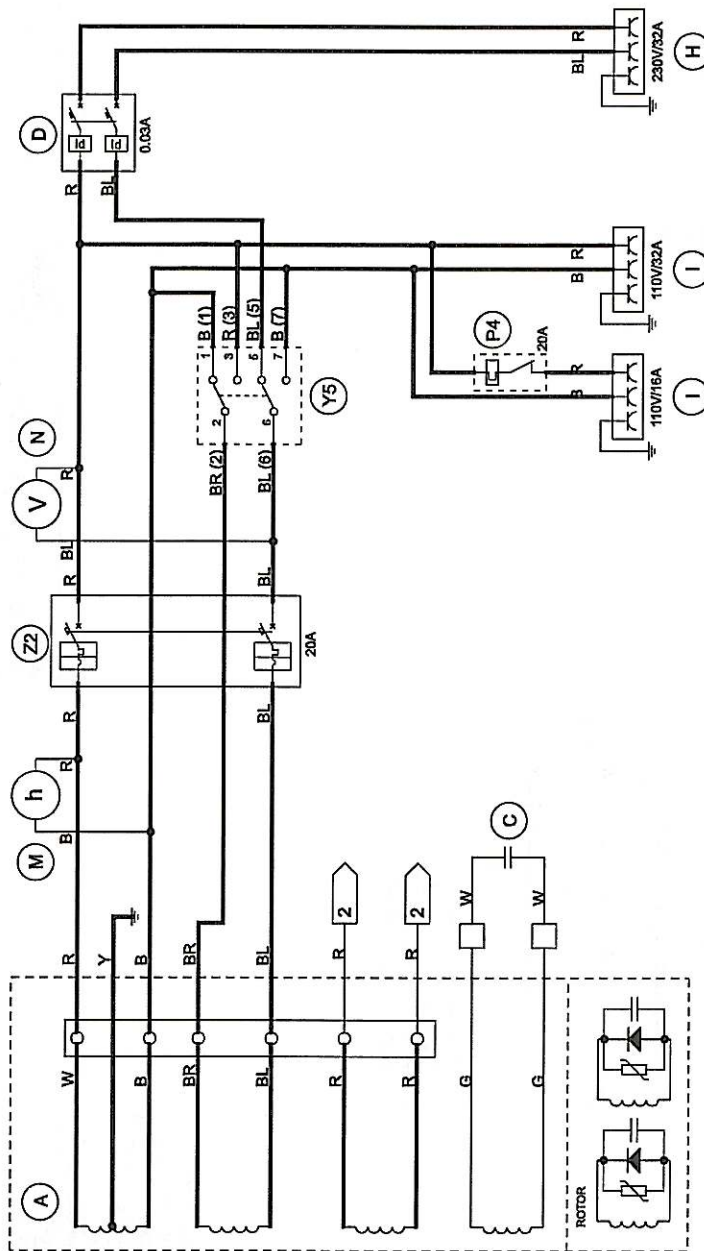
A	: Alternateur
B	: Connexion câbles
D	: Interrupteur différentiel
F	: Fusible
G	: Prise 400V triphasé
H	: Prise 230V monophasé
I	: Prise 110V monophasé
M	: Compte-heures
N	: Voltmètre
G1	: Niveau carburant
L1	: Pressostat huile
M1	: Voyant réserve carburant
N1	: Voyant charge batterie
O1	: Voyant pressostat
R1	: Moteur de démarrage
S1	: Batterie
U1	: Régulateur tension batterie
V1	: Unite de contrôle électrosoupape
Z1	: Electrosoupape
Z2	: Interrupteur magnétothermique
B3	: Connecteur E.A.S.
N3	: Relais
P4	: Protection thermique
Y5	: Commutateur Série/Parallèle
H6	: Electropompe carburant
I6	: Selecteur Start Local/Remote

Stromlaufplan-Referenzliste

A	Generator
B	Klemmleiste
D	FI-Schalter (GFI)
F	Sicherung
G	Steckdose 400V 3-phasig
H	Steckdose 230V 1-phasig
I	Steckdose 110V 1-phasig
M	Stundenzähler
N	Voltmeter
G1	Füllstandssensor Kraftstoff
L1	Öldruckschalter
M1	Warnleuchte Kraftstoff
N1	Warnleuchte Batterieladung
O1	Warnleuchte Öldruck
R1	Anlasser
S1	Batterie
U1	Laderegler Batterie
V1	Steuereinheit Magnetventil
Z1	Magnetventil
Z2	Thermomagnetschalter (Si-Automat)
B3	Steckdose EAS/Fernstart
N3	Relais
P4	Thermosicherung
Y5	Anzeige Wassertemperatur
H6	Kraftstoffpumpe 12V
I6	Umschalter Fernstart

Leyenda esquema eléctrico

A	: Alternador
B	: Soporte conexión cables
D	: Interruptor diferencial
F	: Fusible
G	: Toma 400V trifásica
H	: Toma 230V monofásica
I	: Toma 110V monofásica
M	: Cuentahoras
N	: Voltímetro
G1	: Captador nivel carburante
L1	: Presostato
M1	: Piloto reserva carburante
N1	: Piloto carga batería
O1	: Piloto presostato
R1	: Motor arranque
S1	: Batería
U1	: Regulador tensión batería
V1	: Unidad control electroválvula
Z1	: Electroválvula
Z2	: Interruptor magnetotérmico
B3	: Conector E.A.S.
N3	: Relé
P4	: Protección térmica
Y5	: Contactor Serie/Paralelo
H6	: Electrobomba carburante 12 V c.c
I6	: Selector Start Local/Remote



110V POSITION 230V POSITION



LEGENDA COLORI KEY COLOR	
R	ROSSO/RED
B	NERO/BLACK
BL	BLU/BLUE
BR	MARRONE/BROWN
G	GRIGIO/GREY
W	BIANCO/WHITE

		Modifica Denominazione: Da Page From Page Denominazione: 20090-CUSAGO (M)-ITALY http://www.mosa.it		Disegnato: Design: Leporace N.		Data: Date: 16.12.2003		Dis. n.º: Dwg. n.º: 35641.S.020		Approvato: Approved:	
Eqp. Esp.		Denominazione: ADX. (230M/110CTEX2) DMT		Design:		Date:		Dis. n.º:		Approvato:	
Macchine: GE 6000 SX/GS		Design:		Date:		Dis. n.º:		Approvato:		Approved:	
La MOSA si riserva a termini di legge la proprietà del presente disegno con divieto di riprodurlo o comunicarlo a terzi senza sua autorizzazione.		Project: 35641-ptg		Design:		Date:		Dis. n.º:		Approved:	
Modifica Denominazione: Da Page From Page Denominazione: 20090-CUSAGO (M)-ITALY http://www.mosa.it		Project: 35641-ptg		Design:		Date:		Dis. n.º:		Approved:	
Modifica Denominazione: Da Page From Page Denominazione: 20090-CUSAGO (M)-ITALY http://www.mosa.it		Project: 35641-ptg		Design:		Date:		Dis. n.º:		Approved:	
Modifica Denominazione: Da Page From Page Denominazione: 20090-CUSAGO (M)-ITALY http://www.mosa.it		Project: 35641-ptg		Design:		Date:		Dis. n.º:		Approved:	

La MOSA è in grado di soddisfare ogni richiesta di pezzi di ricambio.

Se si desidera mantenere in efficienza la macchina, sempre nel caso di riparazione che comportino sostituzioni di pezzi MOSA, si deve pretendere che vengano usati solo parti di ricambio originali.

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.

MOSA est en mesure de satisfaire toute demande de pièces de rechange.

Si l'ont veut garder l'appareil en bonne condition de fonctionnement, dans le cas de réparations qui comportent le remplacement de pièces, on doit exiger que soient employées des pièces d'origine MOSA.

MOSA kann jedes Verlangen von Ersatzteilen befriedigen.

Wenn man die Maschine arbeitsfaehig halten will, im Falle von Reparaturen, die den Ersatz von MOSA-Teilen benoetigen, muss man immer originale MOSA Ersatzteile fordern.

MOSA está capacitada para satisfacer cualquier pedido de piezas de recambio.

Si se desea mantener la máquina en un funcionamiento eficaz, se debe usar siempre recambios originales, cuando es preciso sustituir piezas MOSA.

Per ordinare le parti di ricambio indicare - When ordering the spare parts, it is recommended to indicate - Pour commander les pièces de rechange, indiquer - Zur Bestellung der Teile muss man - Para hacer un pedido de piezas de recambio indicar:

- 1) * n. di matricola / serial number / matricule de la machine / Seriennummer / n. de matricula
- 2) * tipo motosaldatrice e/o gruppo elettrogeno / model of welder and/or generating set / type de motosoudeuse et/ou groupe électrogène / Typ des Schweißgeraets und/oder Stromerzeugers / tipo motosoldadora y/o grupo electrógeno
- 3) ◆ n. tavola / n. table / n. table / taflenummer / n. tabla
- 4) ◆ n. posizione / n. position / n. position / positionnummer / n. posición
- 5) quantitativo / quantity / quantité / Menge / cantidad

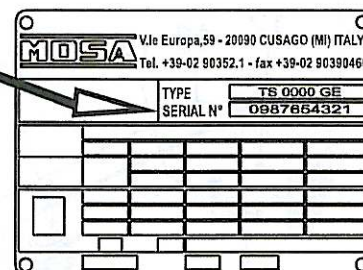
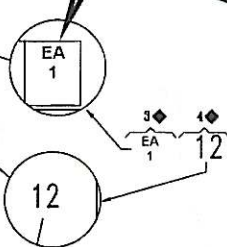
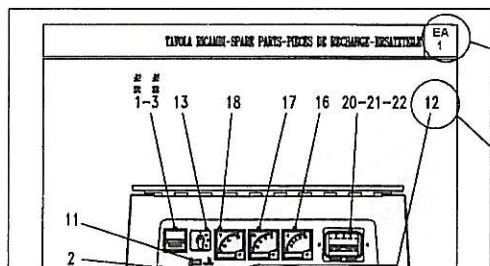
Il dati richiesti si trovano sulla targa dati situata sulla struttura della macchina ben visibile e di facile consultazione.

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

Les données demandées se trouvent sur la plaque des données, située sur la structure de la machine, bien visible et facile à consulter.

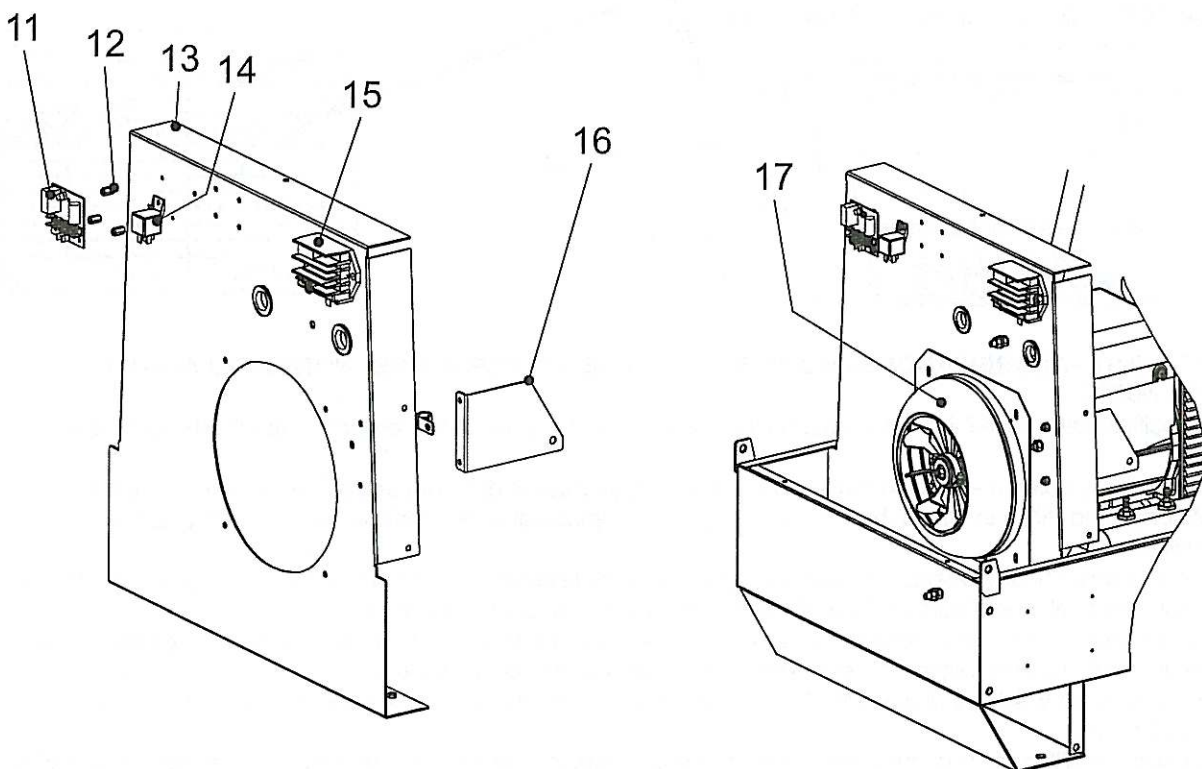
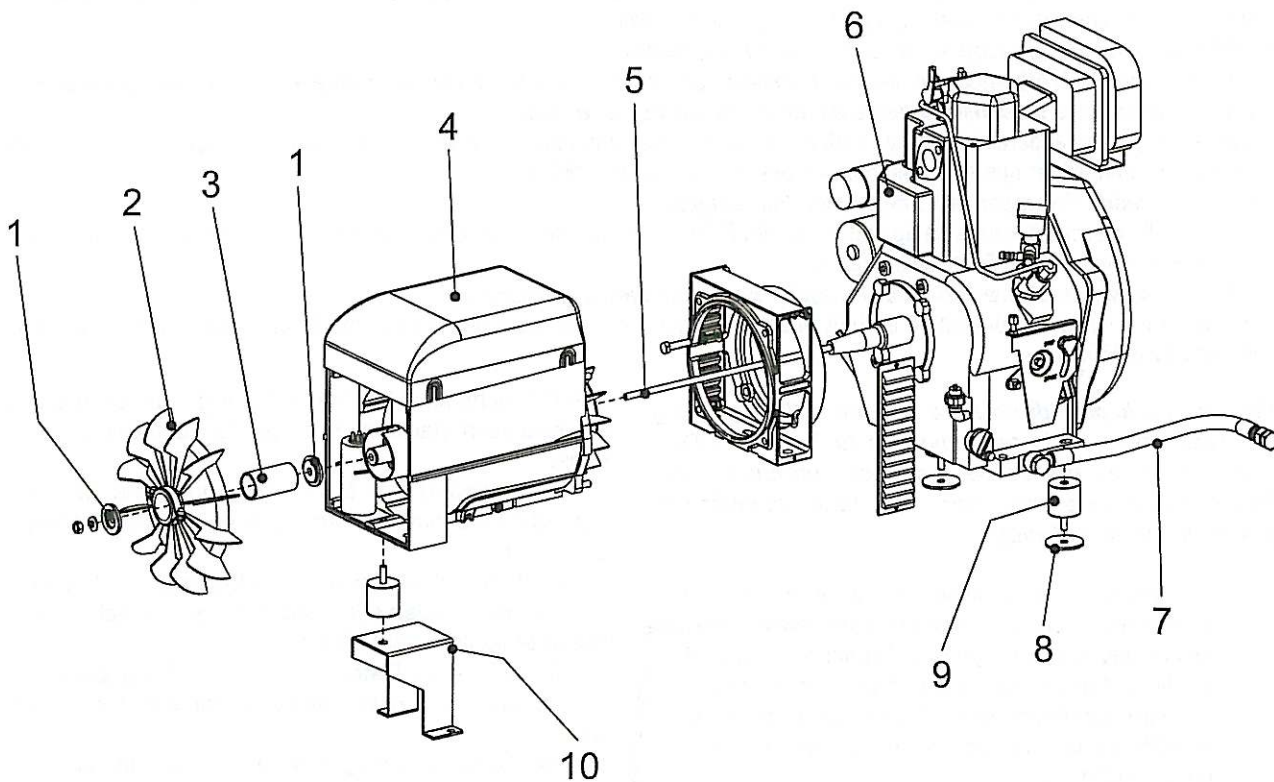
Die verlangten Daten sind auf der Datenplatte, die sichtbar und leicht zu verstehen an der Maschinestruktur gehoert.

Los datos solicitados se hallan en la placa de datos situada en la estructura de la máquina en un lugar visible y de fácil consulta. *



LEGENDA NOTE - ABBREVIATIONS AND SYMBOLS - LEGENDE DES NOTES - NOTENERKLAERUNG - LEYENDA NOTAS:

- (EV) Specificare all'ordine il tipo di motorizzazione e le tensioni ausiliarie - When ordering, specify the engine type and the auxiliary voltage - Type de moteur et/ou tensions auxiliaires doivent être spécifiés à la commande - Motortyp und Hilfspannungen beim Auftrag angeben - Especificar en el pedido el tipo de motor y las tensiones auxiliares
- (ER) Solo motore con avviamento a strappo - Engine with recoil starter only - Moteur avec démarrage à cordelette seulement - Nur bei Motor mit Reversierstart - Sólo motor con arranque por tirón
- (ES) Solo motore con avviamento elettrico - Engine with electric starter only - Moteur avec démarrage électrique seulement - Nur bei Motor mit Elektrostart - Sólo motor con arranque eléctrico
- (VE) Solo versione E.A.S. - E.A.S version only - Version E.A.S. seulement - Nur bei E.A.S Ausfuehrung - Sólo versión E.A.S.
- (QM) Specificare all'ordine la quantità in m - When ordering, specify the length in meters - A la commande spécifier la longueur en mètres - Beim Auftrag die Laenge in Metern angeben - Especificar en el pedido la cantidad en m
- (VS) Solo versioni speciali - Special version only - Versions spéciales seulement - Nur bei Sonderausfuehrungen - Sólo versiones especiales
- (SR) Solo a richiesta - By request only - Sur demande seulement - Nur auf Wunsch - Sólo bajo pedido





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1.0-10/04

I Ricambi

GB Spare parts

F Pièces de rechange

D Ersatzteile

E Tabla de recambios

NL

GE 6000 SX/GS

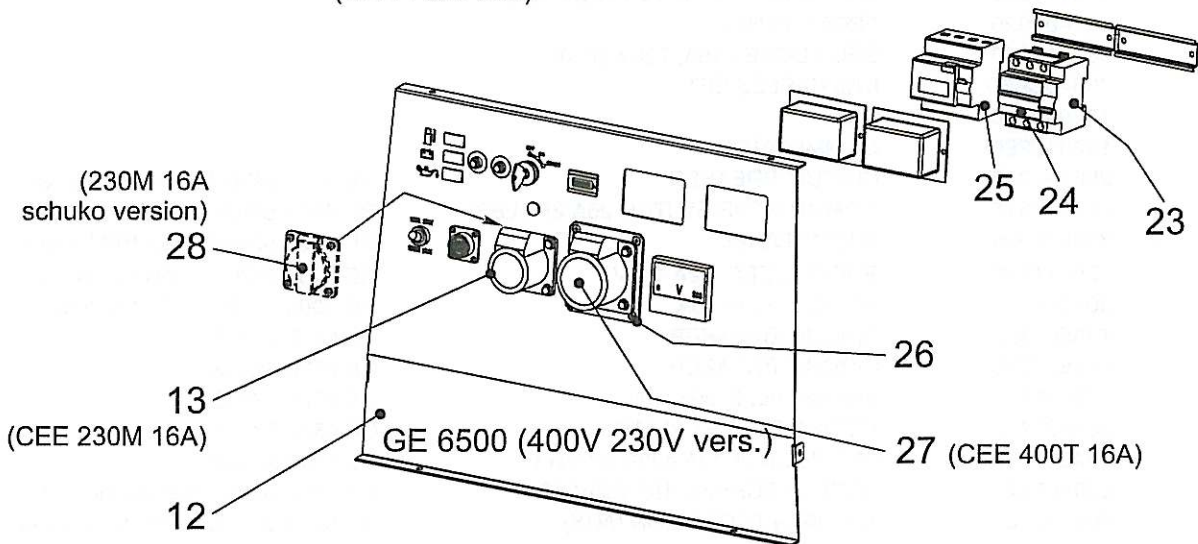
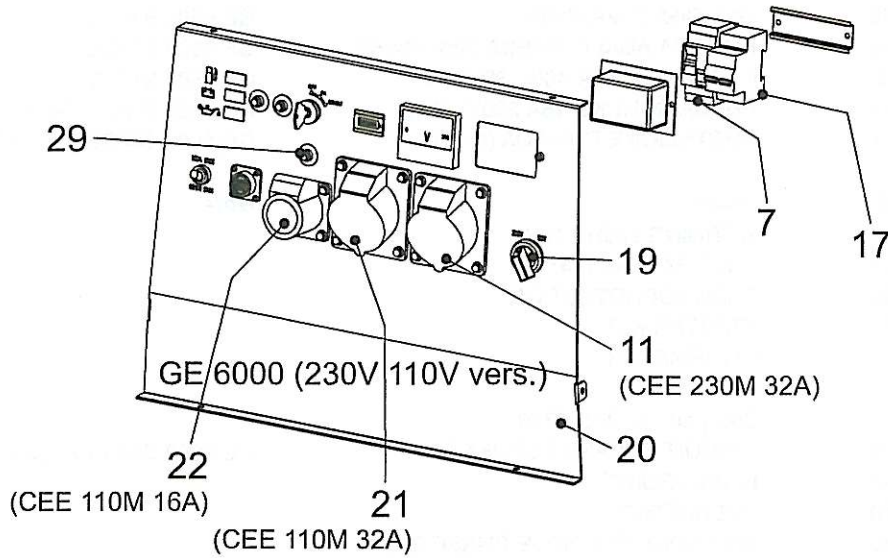
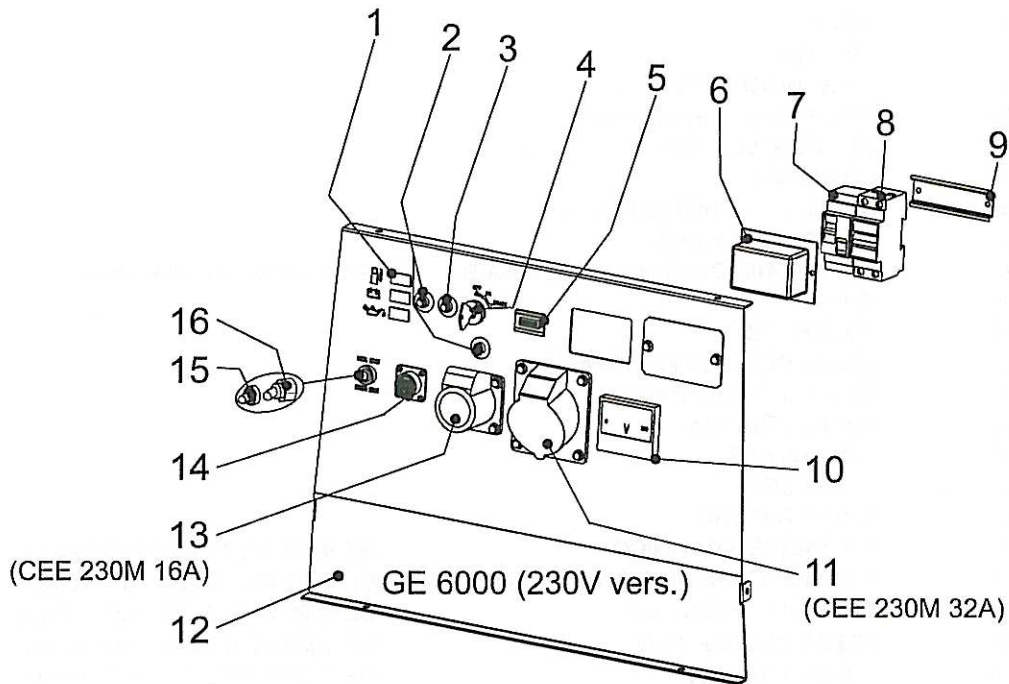
GE 6500 SX/GS

HP

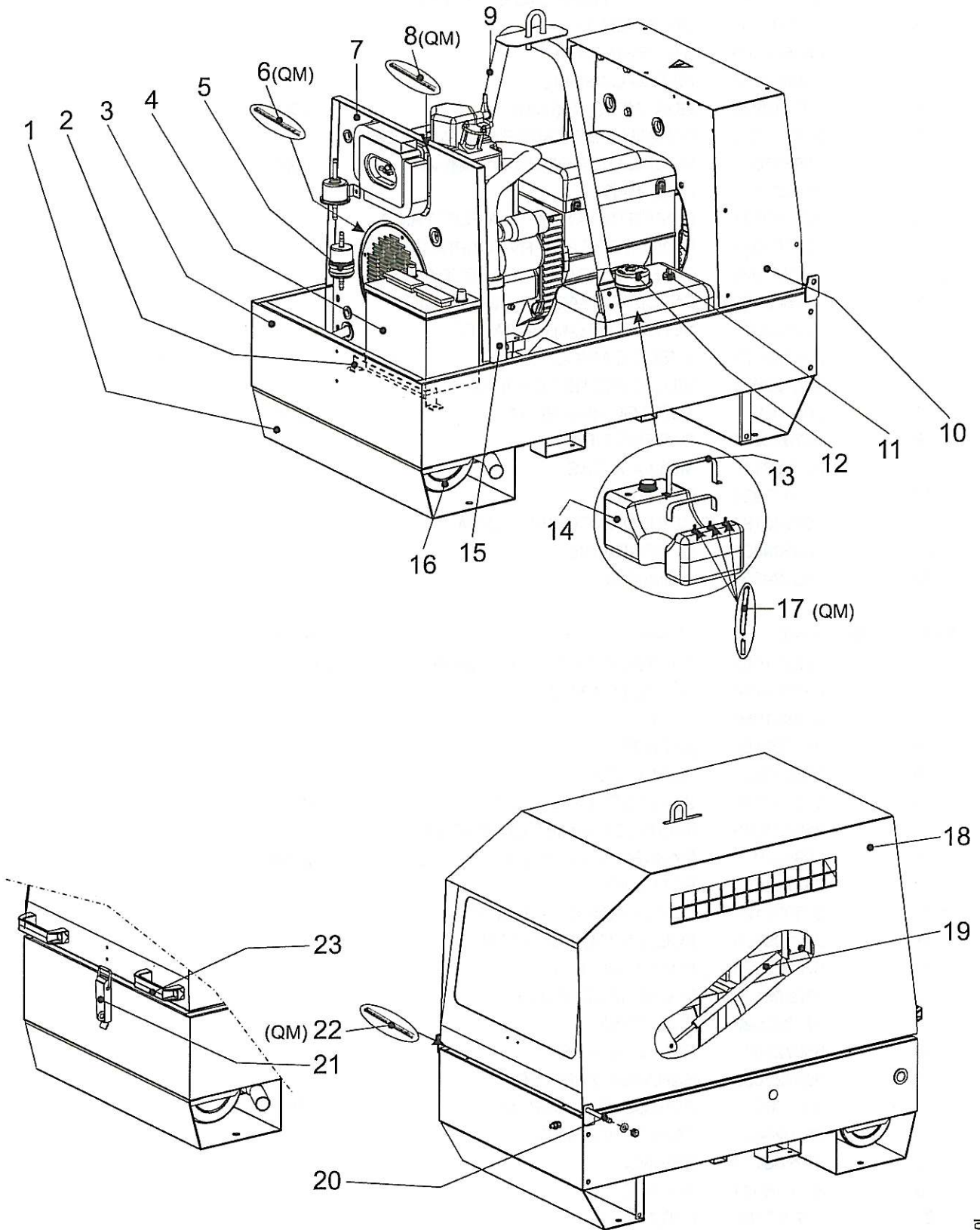
42.1

<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	356403038	RONDELLA BLOCC. DIST/VENTOLA	
2	105111290	VENTOLA CON FASCETTA	
3	356323039	DISTANZIALE FISS. VENTOLA	
4	256703100	ALTERNATORE	
5	356343036	TIRANTE	
6	372802200	MOTORE YANMAR L100AE-DEG	
7	372802212	TUBO SCARICO OLIO	
8	372802038	RONDELLA DI BLOCCAGGIO	
9	356321035	ANTIVIBRANTE	
10	356403101	SUPP. ALTERNATORE	
11	209719850	SCHEDA EV/ES	
12	282009807	DISTANZ. ISOLANTE PER SCHEDE	
13	356408218	PARATIA ALTERNATORE	
14	306479199	RELE' AVV. ELETTRICO	
15	256022275	REGOLATORE DI TENSIONE	
16	356341105	STAFFA FISS. MOLLA A GAS	
17	356746010	CONVOGLIATORE ARIA ALTERNATORE	

<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	356403038	WASHER	
2	105111290	FAN	
3	356323039	FIXING FAN SPACER	
4	256703100	ALTERNATOR	
5	356343036	TIE-ROD	
6	372802200	YANMAR ENGINE L100AE-DEG	
7	372802212	OIL EXHAUST PIPE	
8	372802038	STOP WASHER	
9	356321035	ALTERNATOR BREAKET	
11	209719850	PCB EV/ES	
12	282009807	SPACER	
13	356408218	ALTERNATOR WALL	
14	306479199	RELAY, ELECTRIC START	
15	256022275	VOLTAGE REGULATOR	
16	356341105	SPRING BRACKET	
17	356746010	CONVEYOR	

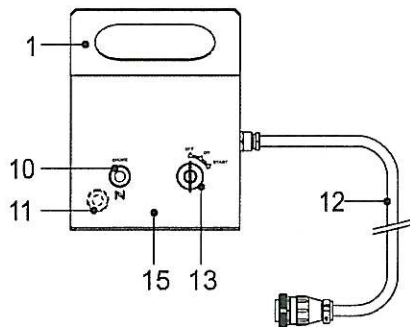
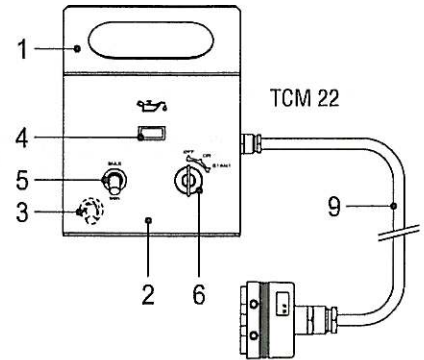
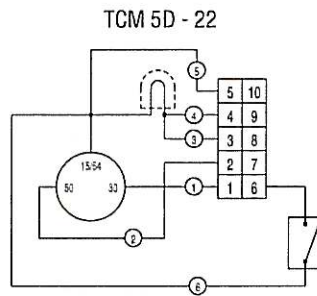
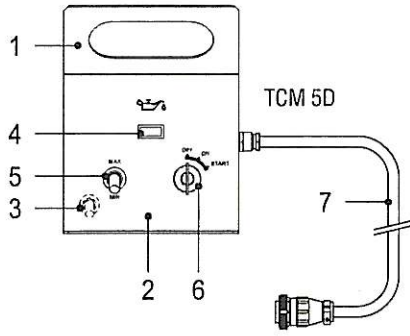


<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	1302040	SPIA 12V	
2	155307107	DISGIUNTORE TERMICO	
3	352007109	PROTEZIONE TERMICA 5A	
4	107302460	STARTER A CHIAVE	
5	105511810	CONTAORE	
6	232027130	CAPPUCCIO PROTEZIONE I.D.	
7	220237105	Vedi Cod.256007105	
8	256707325	INT. MAGNETOTERMICO 2POLI 25A-B	GE 6000 SX/GS 230V Version
9	232027036	GUIDA	
10	103011310	VOLTMETRO	
11	105111520	PRESA CEE 220V MONOFASE	
12	356407020	PANNELLO FRONTALE	
13	307017240	PRESA 220V 16A	
14	35640C030	GR. CAVI EAS	
15	102042740	CAPPUCCIO	
16	102013290	COMMUTATORE	
17	256127325	INT. MAGNETOTERMICO	GE 6000 SX/GS 230/110V Version
19	256417315	COMMUTATORE DI LINEA 25A 2POLI	GE 6000 SX/GS 230/110V Version
20	356417020	PANNELLO FRONTALE	GE 6000 SX/GS 230/110V Version
21	105111530	PRESA CEE 32A 110V	GE 6000 SX/GS 230/110V Version
22	307047250	PRESA 110V 16A	GE 6000 SX/GS 230/110V Version
23	734507325	INTERRUTTORE MAGNETOTERMICO	GE 6500 SX/GS
24	256557325	INTERRUTTORE MAGNETOTERMICO	GE 6500 SX/GS
25	105111540	Vedi Cod. 219937105	GE 6500 SX/GS
26	305907270	PIASTRA ADATT. PRESA 32A-16A 5P	GE 6500 SX/GS
27	734517032	PRESA CEE 16A 400V 3P+N+T	GE 6500 SX/GS
28	259107241	PRESA SCHUKO 16A 230V - 2P+T	GE 6500 SX/GS Schuko version
29	306467107	PROTEZIONE TERMICA (AUX)	GE 6000 SX/GS 230/110V Version
<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	1302040	WARNING LIGHT 12V	
2	155307107	THERMAL SWITCH	
3	352007109	THERMOPROTECTION	
4	107302460	STARTER KEY	
5	105511810	HOURLMETER	
6	232027130	CAP	
7	220237105	See part no. 256007105	
8	256707325	CIRCUIT BREAKER 2P 25A-B	GE 6000 SX/GS 230V Version
9	232027036	FIXING GUIDE	
10	103011310	VOLTMETER	
11	105111520	EEC SOCKET SINGLE-PHASE 220V	
12	356407020	FRONT PANEL	
13	307017240	EEC SOCKET 16A, 220V 2P+T	
14	35640C030	EAS CABLES SET	
15	102042740	CAP	
16	102013290	COMMUTATOR	
17	256127325	CIRCUIT BREAKER	GE 6000 SX/GS 230/110V Version
19	256417315	COMMUTATOR SWITCH 25A 2POLES	GE 6000 SX/GS 230/110V Version
20	356417020	FRONT PANEL	GE 6000 SX/GS 230/110V Version
21	105111530	SOCKET, EEC, 32A 110V	GE 6000 SX/GS 230/110V Version
22	307047250	SOCKET 110V 16A	GE 6000 SX/GS 230/110V Version
23	734507325	CIRCUIT BREAKER	GE 6500 SX/GS
24	256557325	CIRCUIT BREAKER	GE 6500 SX/GS
25	105111540	See part no. 219937105	GE 6500 SX/GS
26	305907270	FITTING SOCKET PLATE	GE 6500 SX/GS
27	734517032	EEC SOCKET 16A 400V 3P+N+T	GE 6500 SX/GS
28	259107241	SOCKET SCHUKO 16A 230V 2P+T	GE 6500 SX/GS Schuko version
29	306467107	THERMOPROTECTION (AUX)	GE 6000 SX/GS 230/110V Version

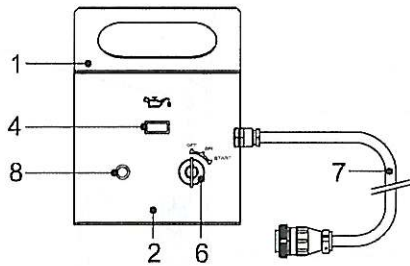
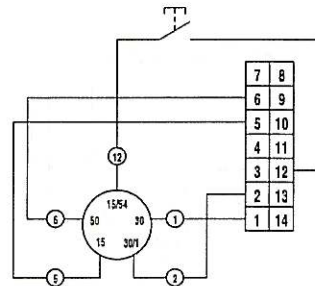


<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	372801082	TRAVERSA PROTEZIONE SIL. SCAR.	
2	259109154	STAFFA FISSAGGIO BATTERIA	
3	372801050	BASAMENTO	
4	209509150	BATTERIA 45 AH	
5	256602228	FILTRO GASOLIO	
6	105112270	GUARNIZIONE (L=MT.1)	(QM)
7	356721046	PARATIA PER CAMERA ASPIRAZIONE	
8	6096010	PROFILATO GOMMA"U"(alett.vert)	(QM)
9	356721100	ROLL-BAR	
10	372808121	COPERTURA SCATOLA ELETTRICA	
11	372809875	INDICATORE RISERVA CARBURANTE	
12	372802026	TAPPO SERBATOIO CARBURANTE	
13	372802139	FASCIA FISSAGGIO SERBATOIO	
14	372822020	SERBATOIO CARBURANTE	
15	356722070	TUBO SCARICO	
16	356722050	SILENZIATORE SCARICO	
17	6095060	TUBO GOMMA NERA	(QM)
18	357028005	CARENATURA	
19	372808115	MOLLA A GAS	
20	307018024	TIRANTE	
21	107300180	CHIUSURA COMPL.A LEVA	
22	309509005	GUARNIZIONE	
23	343339601	MANIGLIA	

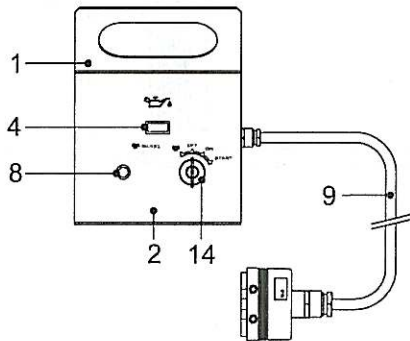
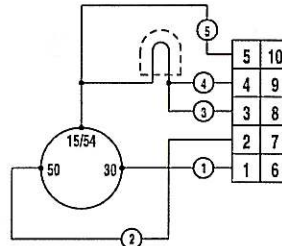
<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	372801082	PROTECTIO BRACKET EXHAUST MUFFLER	
2	259109154	BATTERY BRACKET	
3	372801050	BASE	
4	209509150	BATTERY	
5	256602228	FUEL FILTER	
6	105112270	STRIP, SEALING (L=MT.1)	(QM)
7	356721046	INTAKE CHAMBER BULKHEAD	
8	6096010	GASKET "U"(alett.vert)	(QM)
9	356721100	ROLL-BAR	
10	372808121	COVER FOR ELECTRICAL BOX	
11	372809875	FUEL LEVEL INDICATOR	
12	372802026	FUEL TANK, CAP	
13	372802139	FIXING TANK, BAND	
14	372822020	FUEL TANK	
15	356722070	EXHAUST PIPE	
16	356722050	EXHAUST MUFFLER	
17	6095060	PIPE BLACK RUBBER	(QM)
18	357028005	COVER, HOUSING	
19	372808115	SPRING	
20	307018024	TIE-ROD	
21	107300180	LATCH	
22	309509005	GASKET	
23	343339601	KNOB	



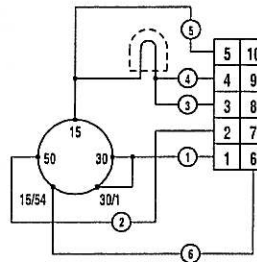
TCM 5



TCM 6

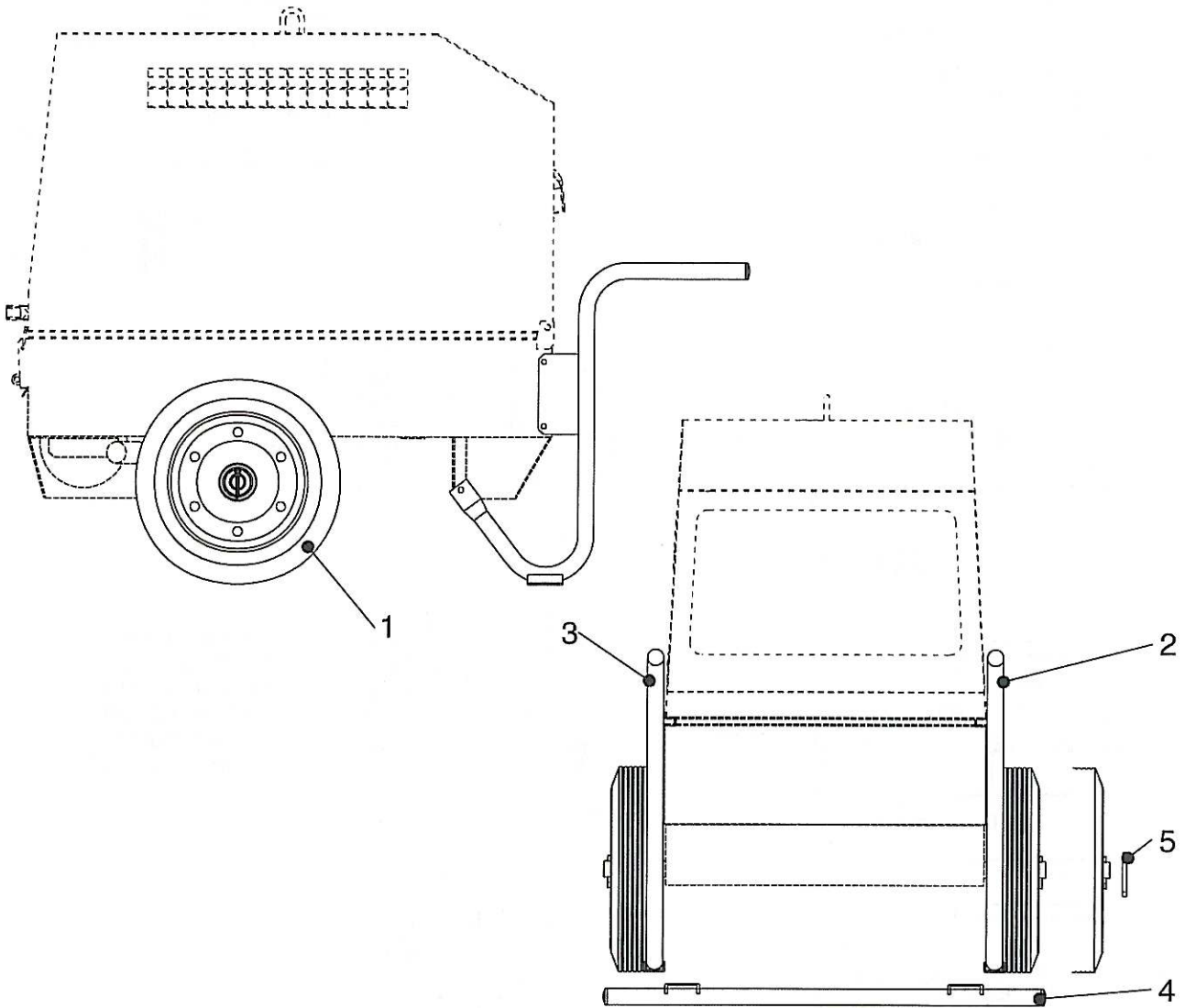


TCM 40



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



<i>Pos.</i>	<i>Rev.</i>	<i>Cod.</i>	<i>Descr.</i>	<i>Descr.</i>	<i>Note</i>
1		102042490	RUOTA	WHEEL	
2		372801234	MANIGLIA DX DI STAZIONAMENTO	STANDING KNOB	
3		372801235	MANIGLIA SX DI STAZIONAMENTO	STANDING KNOB (LEFT)	
4		372801160	ASSALE	AXLE	
5		6075020	COPIGLIA	PIN, SPLIT	

