

CT 230 YSX CC/CV

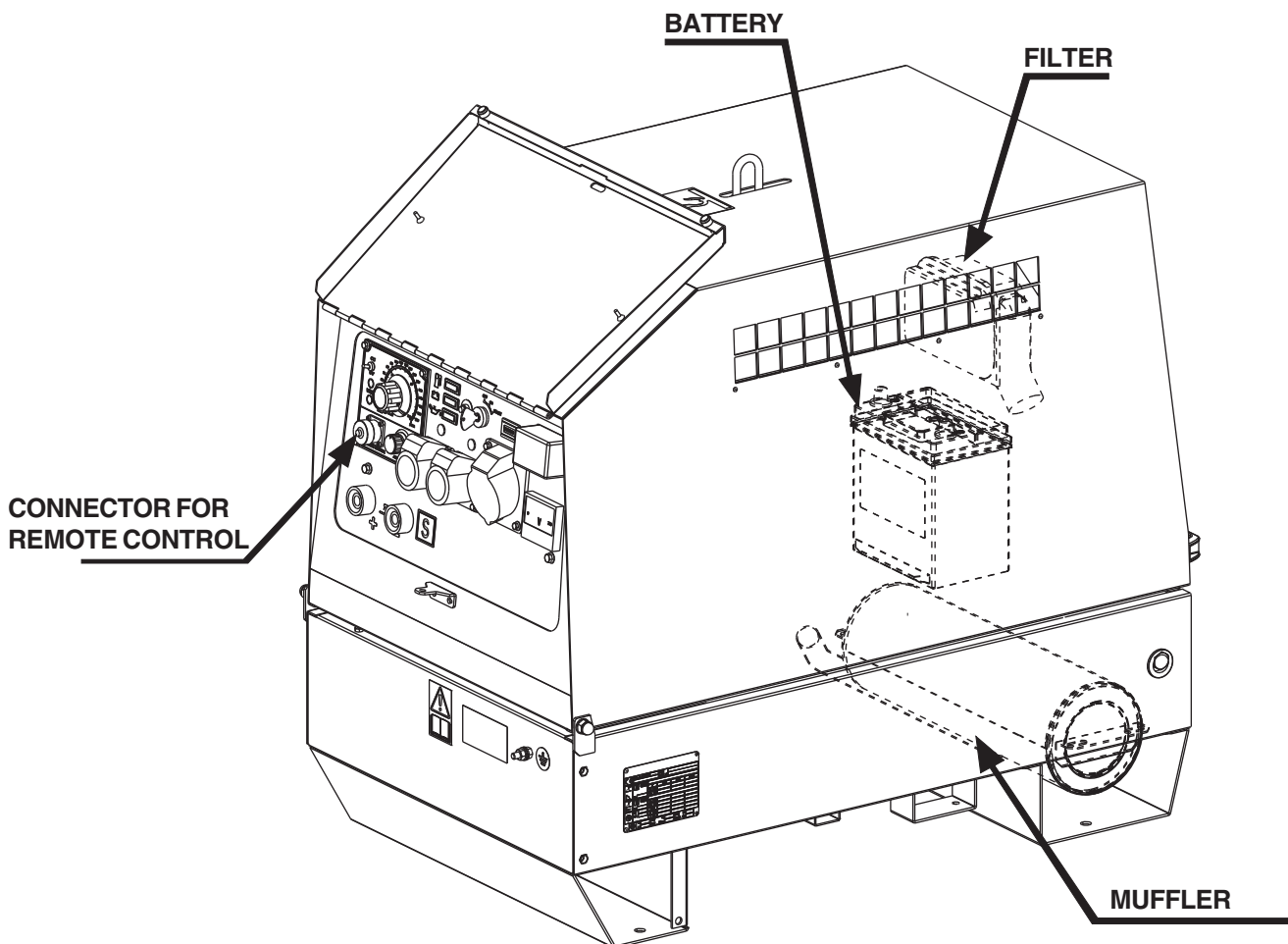
1 2 0 8

372999003 - GB

USE AND MAINTENANCE MANUAL SPARE PARTS CATALOG

Main characteristics of the unit:

- Multi process welder:
 - SMAW: Shielder Metal Arc Welding (Stick)
 - GMAW: Gas Metal Arc Welding (MIG)
- Control of current with CHOPPER technology at high frequency
- Check the maximum engine power
- Maximum welding current 210A/20V
- Arc force for cellulosic electrodes
- 6 kVA of power in three-phase generation 400 V / 50 Hz (Schuko version)
- 5 kVA of power in single-phase generation 230 V / 50 Hz
- Yanmar Diesel engine L 100 N more silenced
- Tank of 23l with autonomy of 20 h
- Noise level at 7m 67dBA
- Dimensions / weight: 1050x650x920 / 247 Kg



The unit is composed of: a structured base which includes a tank, an engine/alternator unit fixed on the base by 3 elastic dampers, a roll-bar, with hook for an easy and sure lifting, a chest hinged to the base for a quick access to the engine, to the air filter and to the battery. The set is completed by a frontal panel where there is the possibility to start the engine, adjust welding parameters and obtain full AUX power.



UNI EN ISO 9001 : 2000

ISO 9001:2000 - Cert. 0192

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 activities 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

M 0	DESCRIPTION OF THE MACHINE
M 01	QUALITY SYSTEM
M 1.01	COPYRIGHT
M 1.1	NOTES
M 1.4	CE MARK
M 1.5	TECHNICAL DATA
M 2 - ...	SYMBOLS AND SAFETY PRECAUTIONS
M 2.5 -....	INSTALLATION AND ADVICE BEFORE USE
M 2.6	INSTALLATION AND ADVICE
M 2.7	INSTALLATION
M 3	UNPACKING
M 4.1	TRANSPORT AND DISPLACEMENTS
M 6.9	ASSEMBLY: CTM 2
M 20	SET-UP FOR OPERATION
M 21	STARTING AND STOPPING THE ENGINE
M 30	CONTROLS LEGEND
M 31	CONTROLS
M 33	WELDING ANALOG CONTROL
M 34	USE AS A WELDER
M 37	USE AS A GENERATOR
M 38...	REMOTE CONTROL
M 40.1	TROUBLE SHOOTING
M 43...	MAINTENANCE
M 45	STORAGE
M 46	CUST OFF
M 53	DIMENSIONS
M 55	RECOMMENDED ELECTRODES
M 60	ELECTRICAL SYSTEM LEGEND
M 61-.....	ELECTRICAL SYSTEM
R 1	SPARE PARTS TABLES
DT ...	SPARE PARTS



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).



© All rights are reserved to said Company.

It is a property logo of MOSA division of B.C.S. S.p.A. All other possible logos contained in the documentation are registered by the respective owners.

▄▄▄▄▶ The reproduction and total or partial use, in any form and/or with any means, of the documentation is allowed to nobody without a written permission by MOSA division of B.C.S. S.p.A.

To this aim is reminded the protection of the author's right and the rights connected to the creation and design for communication, as provided by the laws in force in the matter.

In no case MOSA division of B.C.S. S.p.A. will be held responsible for any damage, direct or indirect, in relation with the use of the given information.

MOSA division of B.C.S. S.p.A. does not take any responsibility about the shown information on firms or individuals, but keeps the right to refuse services or information publication which it judges discutible, unright or illegal.

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.

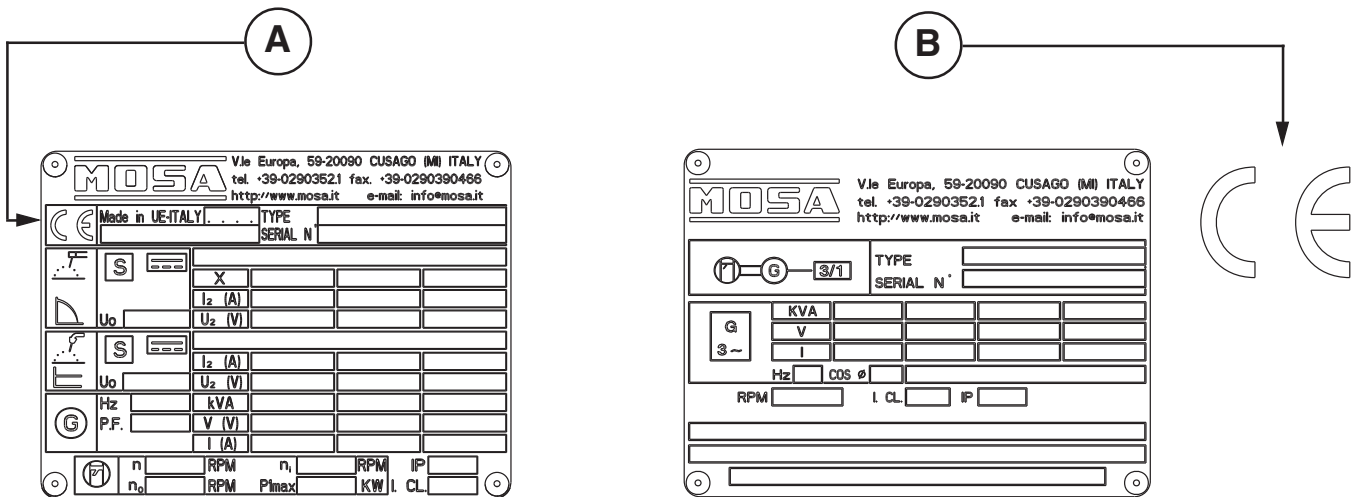
- ☞ **Notice:** *this manual does not engage MOSA, who keeps the faculty, apart the essential characteristics of the model here described and illustrated, to bring betterments and modifications to parts and accessories, without putting this manual uptodate immediately.*



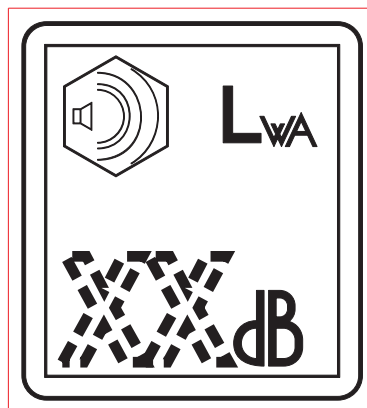
Any of our product is labelled with CE marking attesting its conformity to appliable directives and also the fulfillment of safety requirements of the product itself; the list of these directives is part of the declaration of conformity included in any machine standard equipment. Here below the adopted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



CE marking is clearly readable and unerasable and it can be either part of the data-plate (A) or placed as a sticker near the data-plate (B)



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



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

The CT 230 engine driven welder is a unit which ensures the function as:

- a) a current source for arc welding
- b) a current source for the auxiliary power generation

It 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
CT 230 YSX CC/CV
GENERATOR

Three-phase power	6 kVA / 400 V / 8.7 A
Single-phase power	5 kVA / 230 V / 21.7 A
Single-phase power	2.5 kVA / 110 V / 22.7 A
Frequency	50 Hz

ALTERNATOR

self-excited, self-regulated, brushless

Type	three-phase, asynchronous
Insulating class	H

ENGINE

Mark / Model	Yanmar L 100N
Type	4-Stroke
Cylinders/Displacement	1 / 435 cm ³
Net power	6.5 kW (8.8 HP)
Speed	3000 rpm
Fuel/Fuel consumption	Diesel / 254 g/kWh
Cooling system	Air
Engine oil capacity	1.6 l
Starter	Electric

GENERAL SPECIFICATIONS

Tank capacity	23 l
Running time (at duty cycle 60%)	20 h
Protection	IP 23
Dimensions / max. Lxwxh (mm) *	1050x650x920
Weight *	247 Kg
Measured acoustic power	92 LWA (67 dB(A) - 7 m)
Guaranteed acoustic power	93 LWA (68 dB(A) - 7 m)



* Dimensions and weight are inclusive of all parts without wheels and towbar

POWER

Declared power according to ISO 3046-1 (temperature 25°C, 30% relative humidity, altitude 100 m above sea level).

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

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

ACOUSTIC POWER LEVEL

ATTENTION: The concrete risk due to the machine depends on the conditions in which it is used. Therefore, it is up to the end-user and under his direct responsibility to make a correct evaluation of the same risk and to adopt specific precautions (for instance, adopting a I.P.D. - Individual Protection Device)

Acoustic Noise Level (L_{WA}) - Measure Unit dB(A): it stands for acoustic noise released in a certain delay of time. This is not submitted to the distance of measurement.

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

The here below table shows examples of acoustic pressure (L_p) at different distances from a machine with Acoustic Noise Level (L_{WA}) of 95 dB(A)

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

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

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

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

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

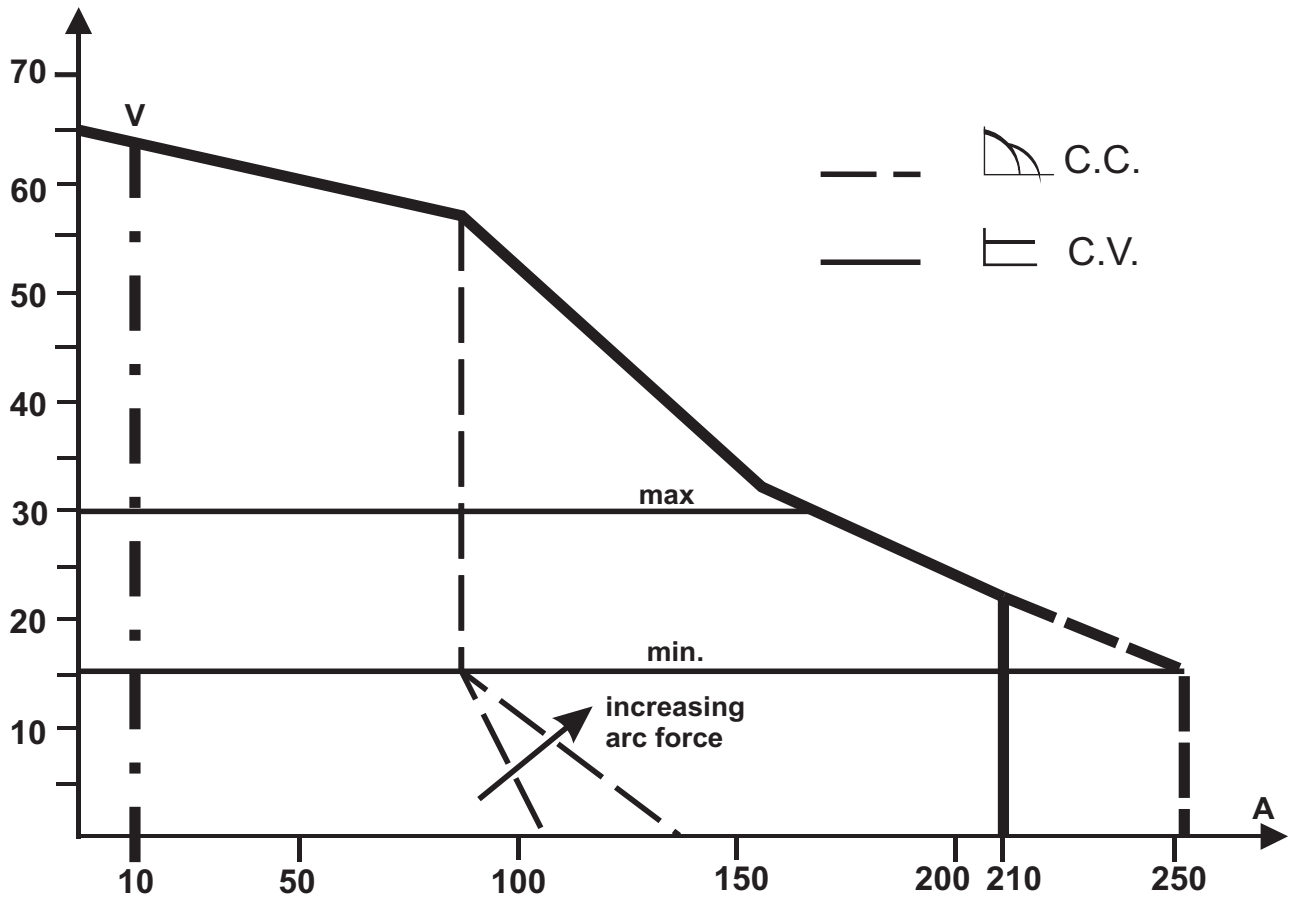
D.C. WELDING

Duty cycle 210A - 60%, 180 A - 100%
 Welding current electronic regulation 20 - 210 A
 Open circuit voltage 65V

C.V. WELDING

Welding current 210 A - 60%, 180 A - 100%
 Welding voltage 15 - 30V

STATIC CHARACTERISTIC



SIMULTANEOUS UTILIZATION FACTORS

In case **Welding** and **Generation** can be used simultaneously, however, the engine **cannot** be overloaded. The table below gives the maximum limits to be respected:

WELDING CURRENT	210 A	150 A	100 A	0
AUXILIARY POWER	0 kVA	0 kVA	2.7 kVA	6.5 kVA

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 authorizad 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.



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	<p>THE MACHINE MUST NOT BE USED IN AREAS WITH EXPLOSIVE ATMOSPHERE</p>
--------------------	---



INSTALLATION AND ADVICE BEFORE USE

The operator of the welder is responsible for the security of the people who work with the welder and for those in the vicinity.

The security measures must satisfy the rules and regulations for engine driven welders.

The information given below is in addition to the local security norms.

Estimate possible electromagnetic problems in the work area taking into account the following indications.

1. Telephonic wirings and/or of communication, check wirings and so on, in the immediate vicinity.
2. Radio and television receptors and transmettors.
3. Computer and other checking devices.
4. Critical devices for safety and/or for industrial checks.
5. Peapol who, for instance, use pace-maker, hearing-aid for deaf or something and else.
6. Devices used for rating and measuring.
7. The immunity of other devices in the operation area of the welder. Make sure that other used devices are compatible. If it is the case, provide other additional measures of protection.
8. The daily duration of the welding time.



Make sure that the area is safe before starting any welding operation.

- ⚡ Do not touch any bare wires, leads or contacts as they may be live and there is danger of electric shock which can cause death or serious burns. The electrode and welding cables, etc. are live when the unit is operating.
- ⚡ Do not touch any electrical parts or the electrode while standing in water or with wet hands, feet or clothes.
- ⚡ Insulate yourself from the work surface while welding. Use carpets or other insulating materials to avoid physical contact with the work surface and the floor.
- ⚡ Always wear dry, insulating gloves, without holes, and body protection.
- ⚡ Do not wind cables around the body.
- ⚡ Use ear protections if the noise level is high.
- ⚡ Keep flammable material away from the welding area.
- ⚡ Do not weld on containers which contain flammable material.
- ⚡ Do not weld near refuelling areas.
- ⚡ Do not weld on easily flammable surfaces.
- ⚡ Do not use the welder to defrost (thaw) pipes.
- ⚡ Remove the electrode from the electrode holder, when not welding.
- ⚡ Avoid inhaling fumes by providing a ventilation system or, if not possible, use an approved air breather.
- ⚡ Do not work in closed areas where there is no fresh air flow.
- ⚡ Protect face and eyes (protective mask with suitable dark lens and side screens), ears and body (non-flammable protective clothers).



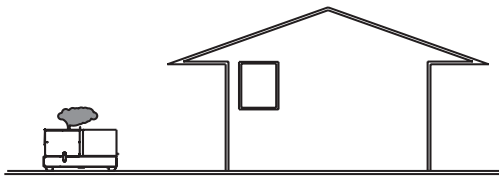
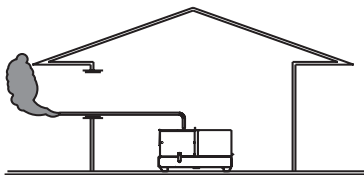
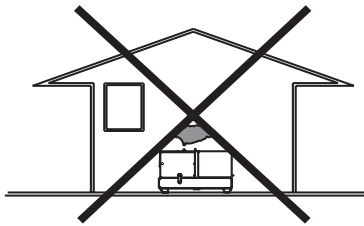
INSTALLATION AND ADVICE BEFORE USE

GASOLINE ENGINES

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

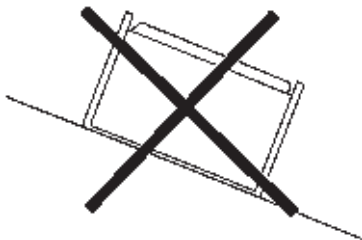
DIESEL ENGINES

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

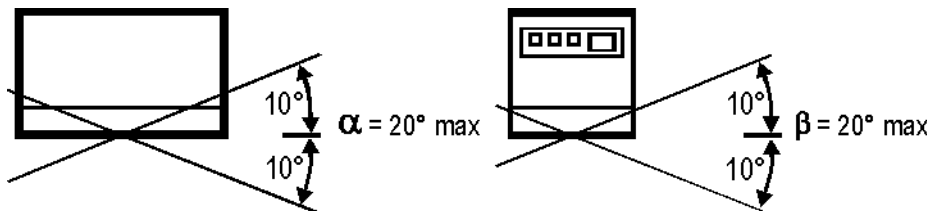


POSITION

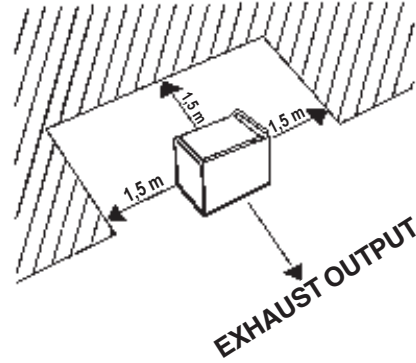
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other plants.



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.



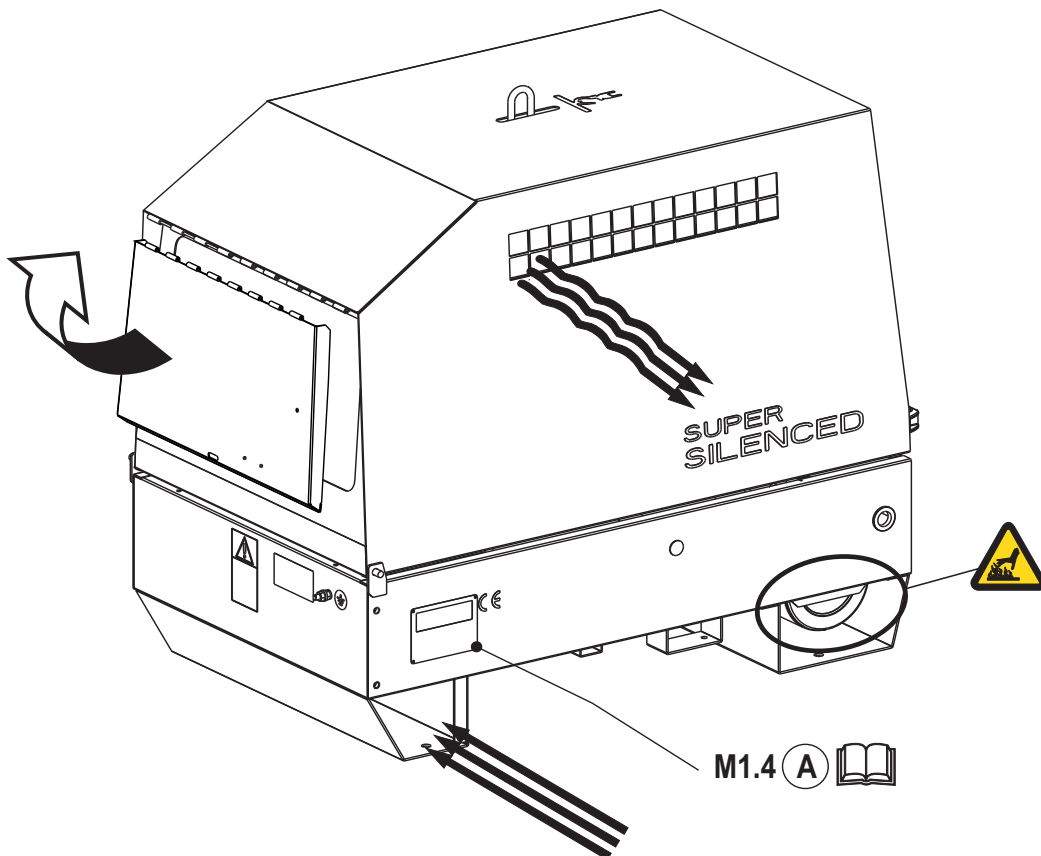
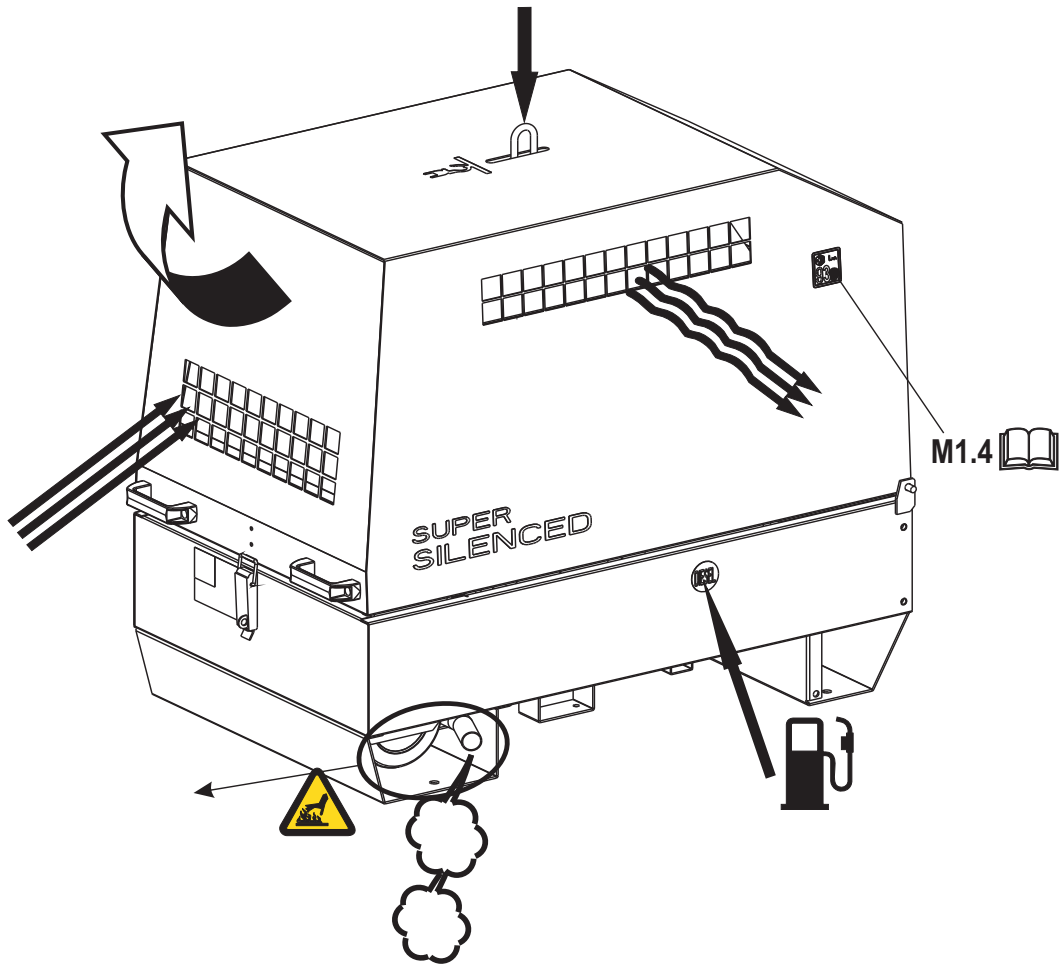
☞ Make sure that the machine does not move during the work: **block** it possibly with tools and/or devices made to this purpose.

MOVES OF THE MACHINE

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

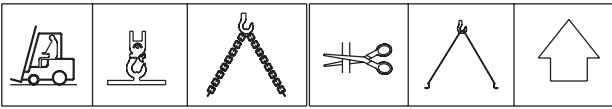
PLACE OF THE MACHINE

	ATTENTION
	For a safer use from the operator DO NOT fit the machine in locations with high risk of flood.
	Please do not use the machine in weather conditions which are beyond IP protection shown both in the data plate and on page named "technical data" in this same manual.





NOTE



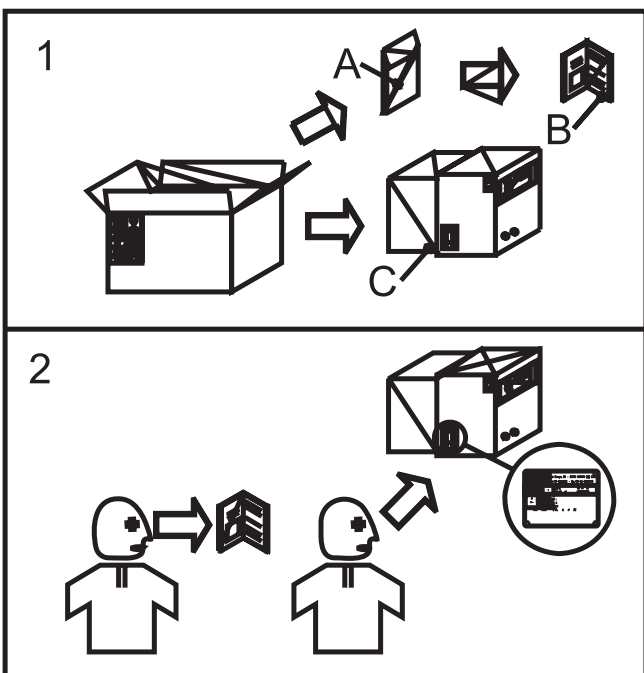
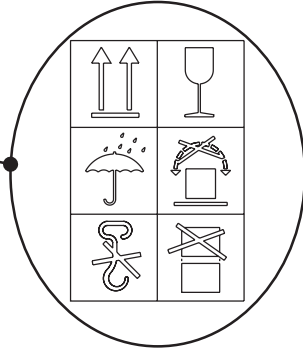
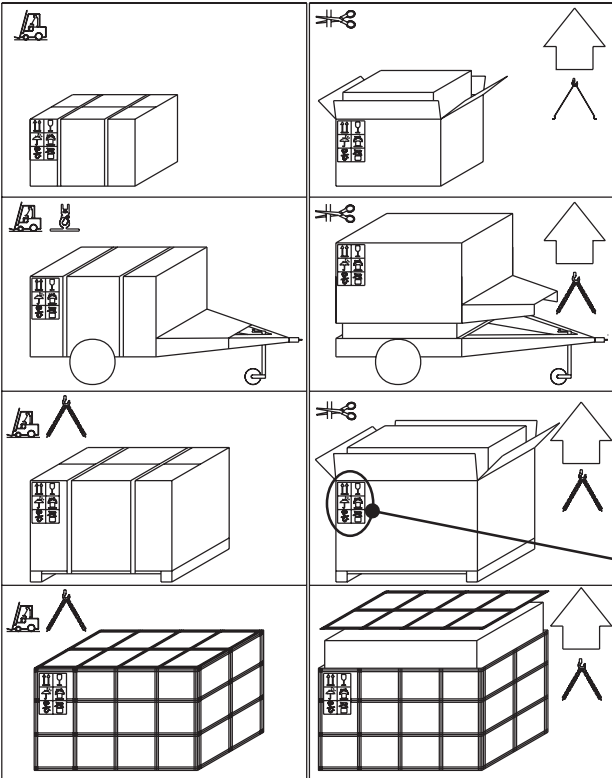
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with its packaging, and conforms to local rules and regulations.

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.

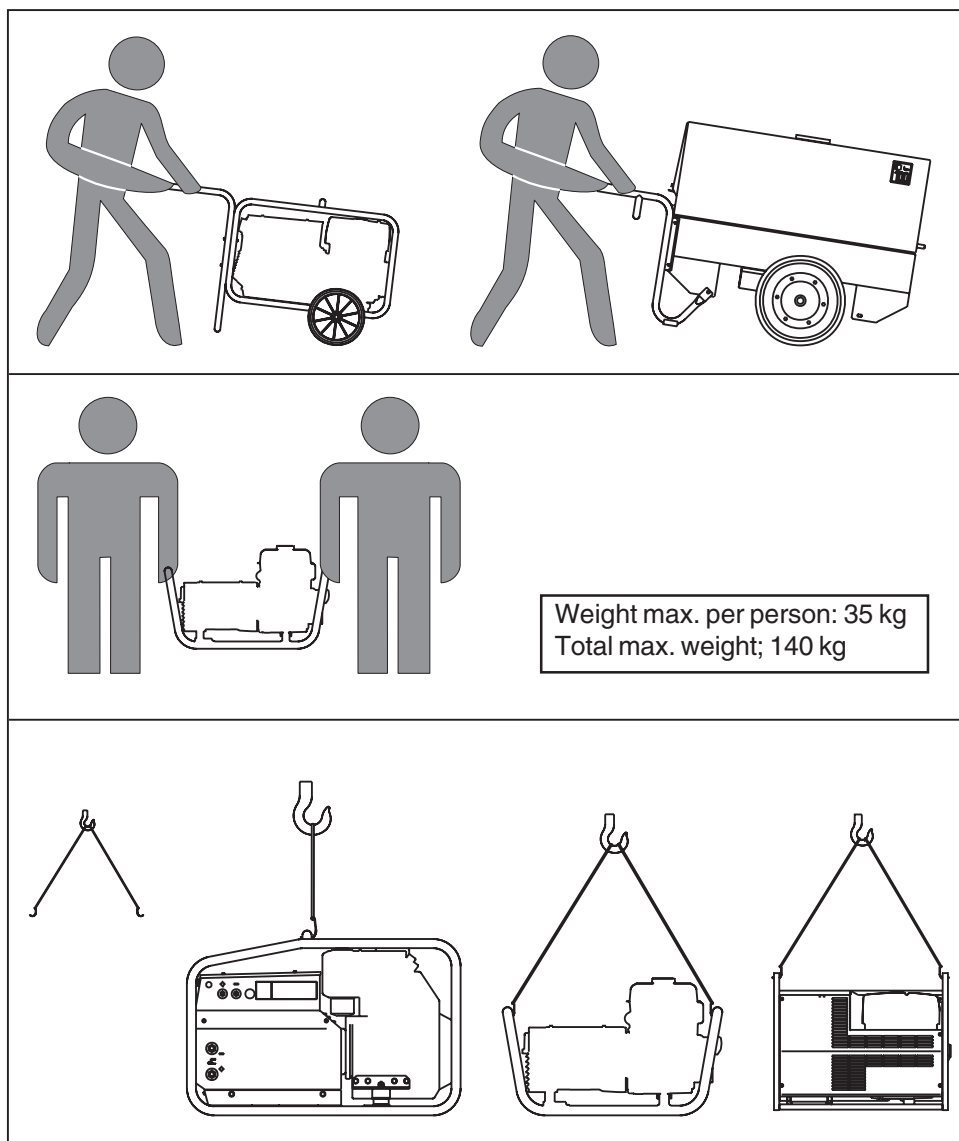
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.

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).

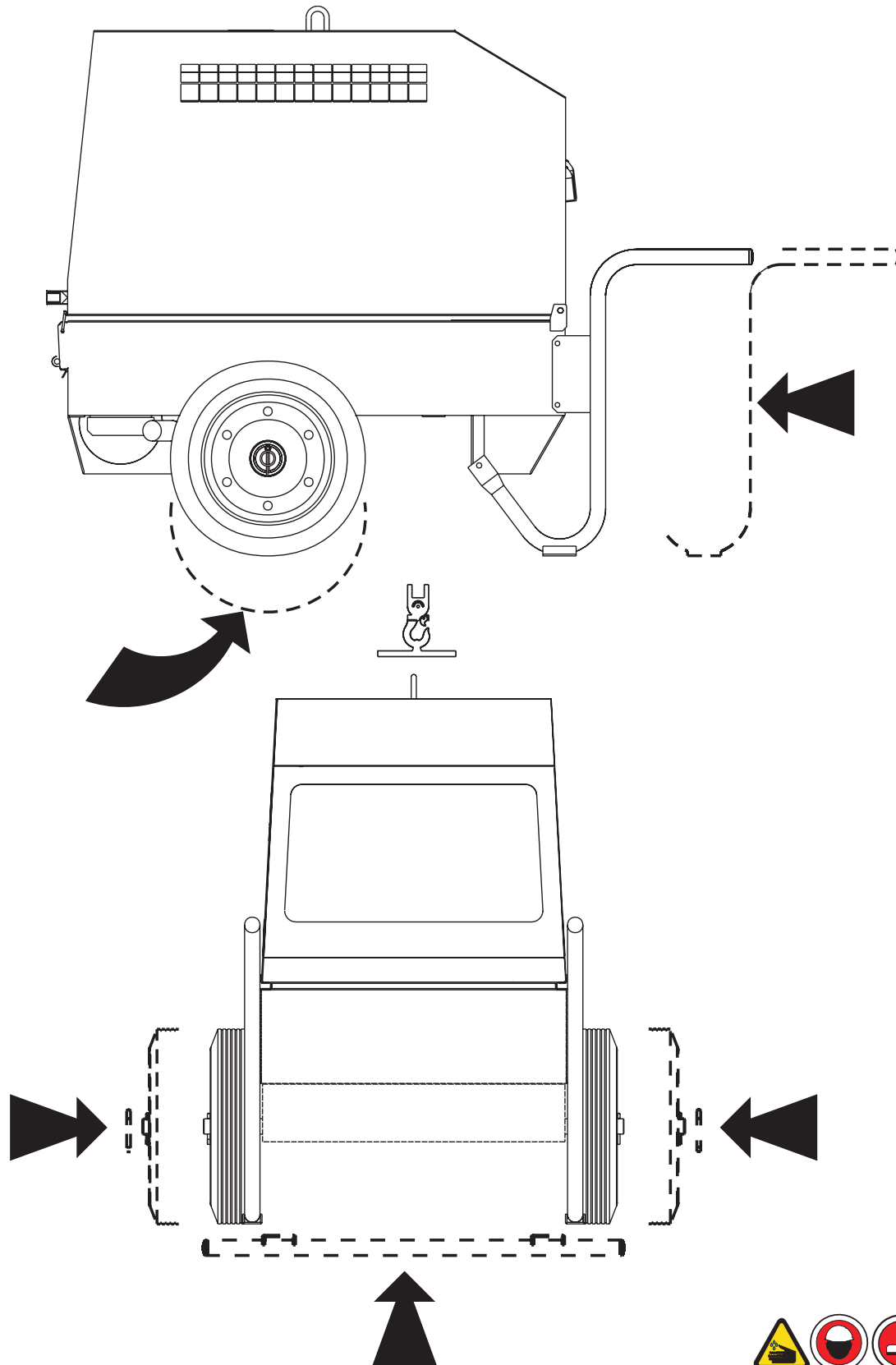
If you did not keep to the instructions, you could damage the structure of the machine.



**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 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.

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 ₂ O)	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 daily

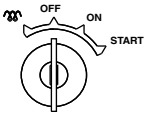


NOTE

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

STARTING THE ENGINE

Insert the electric protection device (D) lever towards above, see page M37 –



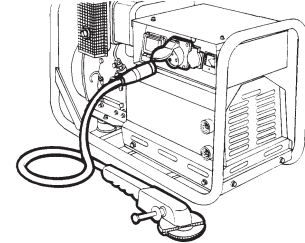
Introduce the key (Q1), turn it clockwise completely, leaving it as soon as the engine starts.

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

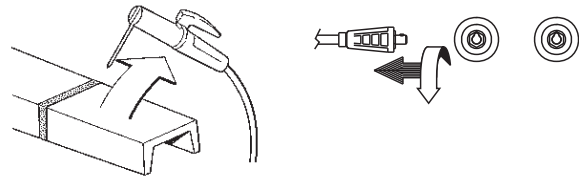
STOPPING THE ENGINE

Before stopping the engine **it is compulsory** to effect the following operations:

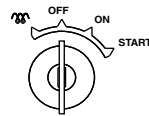
- stop to draw three/single-phase current from the auxiliary sockets.



- stop to draw power from the welding sockets



Make sure that the unit is not supplying any power. Disconnect the electrical protection device (D) lever downward.



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

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



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.



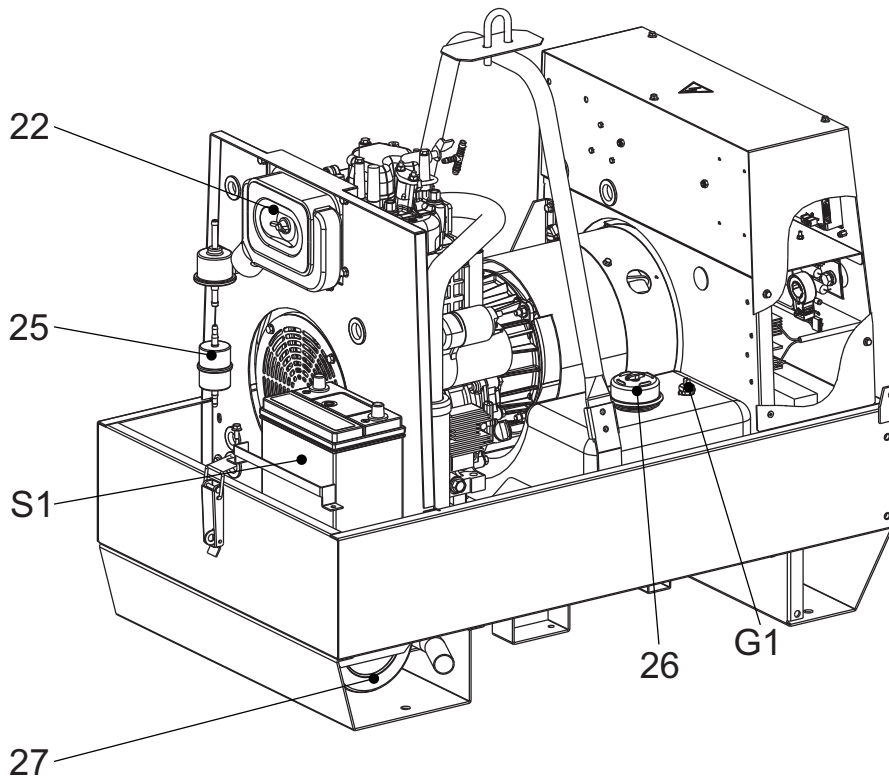
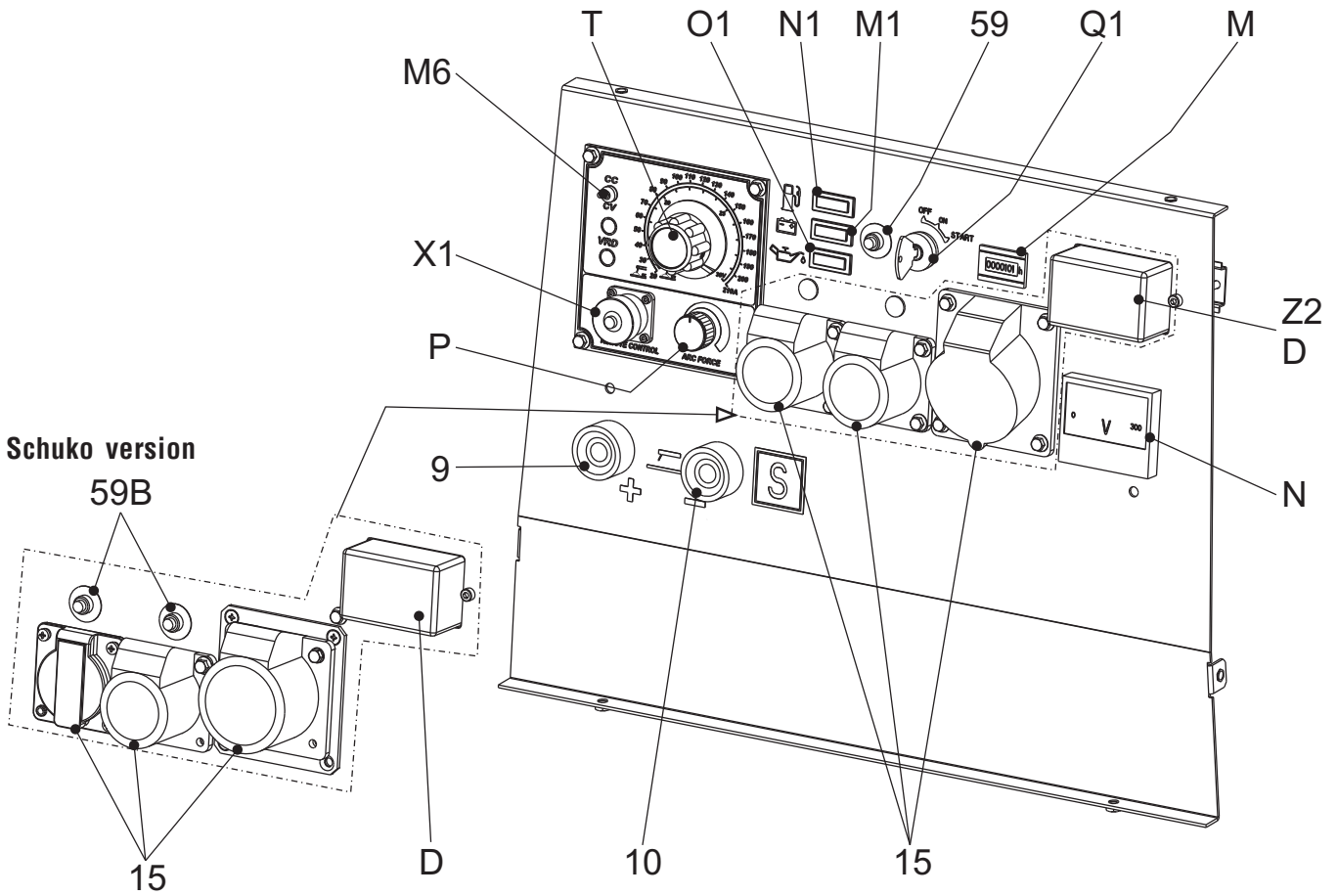
CAUTION

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.

4A	Hydraulic oil level light	A4	Button indicating light 30 I/1' PTO HI	W5	Battery voltmeter
9	Welding socket (+)	B2	Engine control unit EP2	X1	Remote control socket
10	Welding socket (-)	B3	E.A.S. connector	Y3	Button indicating light 20 I/1' PTO HI
12	Earth terminal	B4	Exclusion indicating light PTO HI	Y5	Commutator/switch, serial/parallel
15	A.C. socket	B5	Auxiliary current push button	Z2	Thermal-magnetic circuit breaker
16	Accelerator lever	C2	Fuel level light	Z3	Selection push button 20 I/1' PTO HI
17	Feed pump	C3	E.A.S. PCB	Z5	Water temperature indicator
19	48V D.C. socket	C6	Control unit for generating sets QEA		
22	Engine air filter	D	Ground fault interrupter (30 mA)		
23	Oil level dipstick	D1	Engine control unit and economiser EP1		
24	Engine oil reservoir cap	D2	Ammeter		
24A	Hydraulic oil reservoir cap	E2	Frequency meter		
24B	Water filling cap	F	Fuse		
25	Fuel prefilter	F3	Stop switch		
26	Fuel tank cap	F5	Warning light, high temperature		
27	Muffler	F6	Arc-Force selector		
28	Stop control	G1	Fuel level transmitter		
29	Engine protection cover	H2	Voltage commutator		
30	Engine cooling/alternator fan belt	H6	Fuel electro pump		
31	Oil drain tap	H8	Engine control unit EP7		
31A	Hydraulic oil drain tap	I2	48V A.C. socket		
31B	Water drain tap	I3	Welding scale switch		
31C	Exhaust tap for tank fuel	I4	Preheating indicator		
32	Button	I5	Y/▲ switch		
33	Start button	I6	Start Local/Remote selector		
34	Booster socket 12V	I8	AUTOIDLE switch		
34A	Booster socket 24V	L	A.C. output indicator		
35	Battery charge fuse	L5	Emergency button		
36	Space for remote control	L6	Choke button		
37	Remote control	M	Hour counter		
42	Space for E.A.S.	M1	Warning level light		
42A	Space for PAC	M2	Contactora		
47	Fuel pump	M5	Engine control unit EP5		
49	Electric start socket	M6	CC/CV switch		
54	Reset button PTO HI	N	Voltmeter		
55	Quick coupling m. PTO HI	N1	Battery charge warning light		
55A	Quick coupling f. PTO HI	N2	Thermal-magnetic circuit breaker/ Ground fault interrupter		
56	Hydraulic oil filter		Pre-heat push-button		
59	Battery charger thermal switch	N5	Connector - wire feeder		
59A	Engine thermal switch	N6	Oil pressure warning light/Oil alert		
59B	Aux current thermal switch	O1	Welding arc regulator		
59C	Supply thermal switch wire feeder- 42V	P	Starter key		
59D	Pre-heater (spark plug) thermal switch	Q1	Derivation box		
59E	Supply thermal switch oil/water heater	Q3	Battery charge sockets		
59F	Electropump thermal switch	Q4	Welding selector mode		
63	No load voltage control	Q7	Siren		
66	Choke control	R3	Welding ammeter		
67A	Auxiliary / welding current control	S	Battery		
68	Cellulosic electrodes control	S1	Engine control unit EP4		
69A	Voltmeter relay	S3	Wire feeder supply switch		
70	Warning lights	S6	Plug 230V singlephase		
71	Selecting knob	S7	Welding current regulator		
72	Load commut. push button	T	Dirty air filter warning light/indicator		
73	Starting push button	T4	Earth leakage relay		
74	Operating mode selector	T5	Analogic instrument V/Hz		
75	Power on warning light	T7	Current transformer		
76	Display	U	R.P.M. adjuster		
79	Wire connection unit	U3	Polarity inverter remote control		
86	Selector	U4	Release coil		
86A	Setting confirmation	U5	Engine control unit EP6		
87	Fuel valve	U7	Welding voltage voltmeter		
88	Oil syringe	V	Polarity inverter control		
A3	Insulation monitoring	V4	Oil pressure indicator		
		V5	Remote control switch		
		W1	Selection push button 30 I/1' PTO HI		
		W3			

230V 110V version



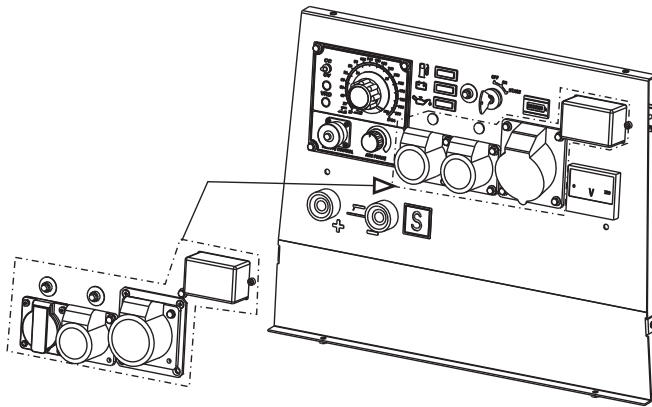
After having prepared the machine (put in oil and fuel) the machine is ready for operation.

Before starting the engine please note the following:

- The welder should only be operated by qualified personnel with experience in working with engine driven welders.
- Check the oil level daily. Fuel should be put in before starting the engine.
- Before using the welder or the auxiliary power let the engine warm up and before stopping the engine let it run without load to cool down.

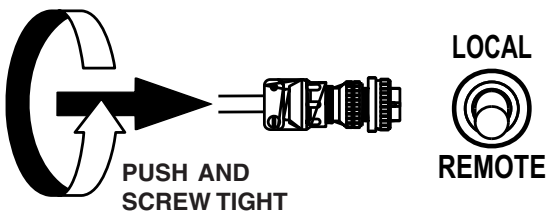
Refer to the following instructions regarding the function of the various controls on the front panel.

Controls and Instruments



Remote control connection

The optional RC remote control is used to control the current or voltage at a distance. When the switch is "ON" (pointing toward the remote control connector), the current/voltage is regulated by the remote control. When the switch is "OFF" the current/voltage is regulated by the front panel potentiometer.

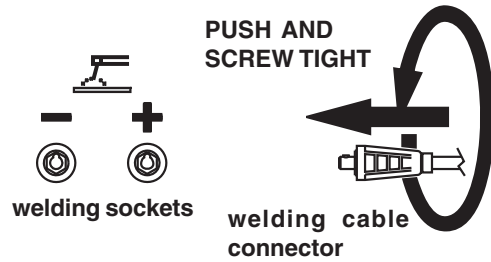


Front panel control regulates welding current
Remote control regulates welding current

Welding cable connections

For direct current electrode positive, connect work cable to negative (-) terminal and electrode holder to positive (+) terminal. For direct current electrode negative, reverse cable connections.

☞ Make sure that the ground clamp makes a good connection and is near the welding position.



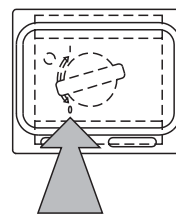
Auxiliary power outlets

The unit is equipped with auxiliary output sockets. The voltages depend on the version selected. The three-phase socket, where it is mounted, requires no protection as the asynchronous alternator protects itself. The single-phase sockets are always protected with Circuit Breakers (CB) or Thermal Circuit Breakers (TCB). The TCBs have a push button that pops out when overloaded, the CBs have a lever that gets down when overloaded. After they have been activated they need a short time to cool down out then they can be re-inserted. If the TCB or CB continue to pop out check that the load is not too large for the output of the socket.



Ground fault interrupter

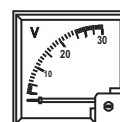
The ground fault interrupter protects the operator from injury in the event of a ground fault.



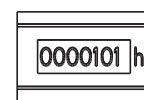
Turn on the GFI (ground fault interrupter) (D) by pushing it upwards.

Instruments

Standard instruments include an operating hour counter and a voltmeter for the auxiliary power which shows the three phase voltage (400V) or single phase (230V). If the voltmeter does not show any voltage check that the GFI (ground fault interrupter) is inserted. The voltage shown will vary depending on the load and the welding current being drawn. At no load and when not welding, the voltages can be higher than the nominal values, 440V / 250V. The auxiliary power cannot be used when it drops below: 360V three phase; 200V / 100V single phase.



auxiliary power voltmeter



operating hours



This symbol (Norm EN 60974-1 security standards for arc welders) signifies that the welder can be used in areas with increased risk of electrical shock.

**ATTENTION**

The areas, access of which is forbidden to unqualified personnel, are:

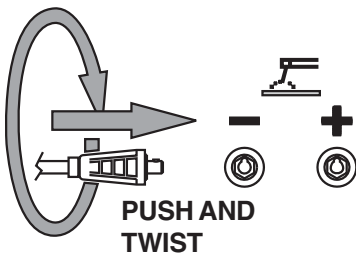
- the control switchboard (front) - the exhaust of the engine - the welding process.

Check at the beginning of each work the electric parameters and the controls placed on the front panel.

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

See page M20.

Fully insert the welding cable plugs into the corresponding sockets turning them clockwise to lock them in position.



Make sure that the ground clamp, whose cable must be connected to the + or - terminal, depending on the type of electrode, makes a good connection and is near to the welding position.

Pay attention to the two polarities of the welding circuit, which must not come in electric contact between themselves.

**REMOTE CONTROL RC...**

See page M 38

**ATTENTION**

To reduce the risk of electromagnetic interferences, use the minimum length of welding cables and keep them near and down (ex. on the floor).

The welding operations must take place far from any sensitive electronic device. Make sure that the unit is earthed (see M20). In case the interference should last, adapt further disposition, such as: move the unit, use screened cables, line filters, screen the entire work area.

In case the above mentioned operations are non sufficient, please contact our Technical Assistance Service.

**CAUTION**

With a welding cable length up to 20 m is suggested a section of 35 mm²; with longer cables a bigger section is required.



☞ **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**: voltages are available immediately after starting also with no plugs.



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.

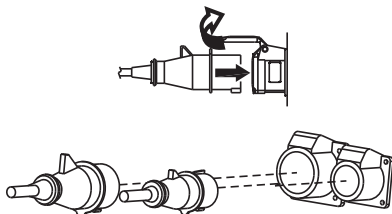
Make sure that the ground connection (12) is efficient (keep to installation local rules and/or to national laws), in order to integrate or ensure the working of various electric protection devices referring to the several distribution system TT/TN/IT, operation unnecessary for machine with isometer.

- See page M 20-21.

Check the voltmeter (N) shows the voltage three or single-phase has to be drawn.

Nominal voltage	Indicative no-load voltage
230V	+10%
400V	+10%

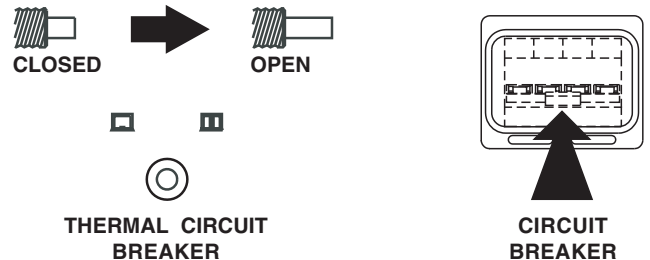
Connect up the machine, using proper plugs and cables in good condition to the AC socket (15) to draw single or three-phase power, or, by cables with adequate section, to the terminal board, placed inside the derivation box (Q3).



Using several sockets at the same time, the maximum power possible is that indicated on the data plate. The max. continuous power of the generating set or the load current must not be exceeded.

**THERMAL CIRCUIT BREAKER (TBC)
CIRCUIT BREAKER (BC)**

If you overload the generator the TBCs or BCs will automatically switch off. If the protection is released, disconnect all the connected loads.



Reset the TCBs pressing the central pole or upwards the lever of the CBs.

When reset, connect the loads again.

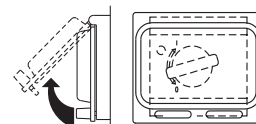
In case the protection should act furtherly, check: the connections, the wires or others, and if necessary call the Assistance Service.



NOTE: Avoid to hold the central pole of the TCBs pressed for a long time.

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

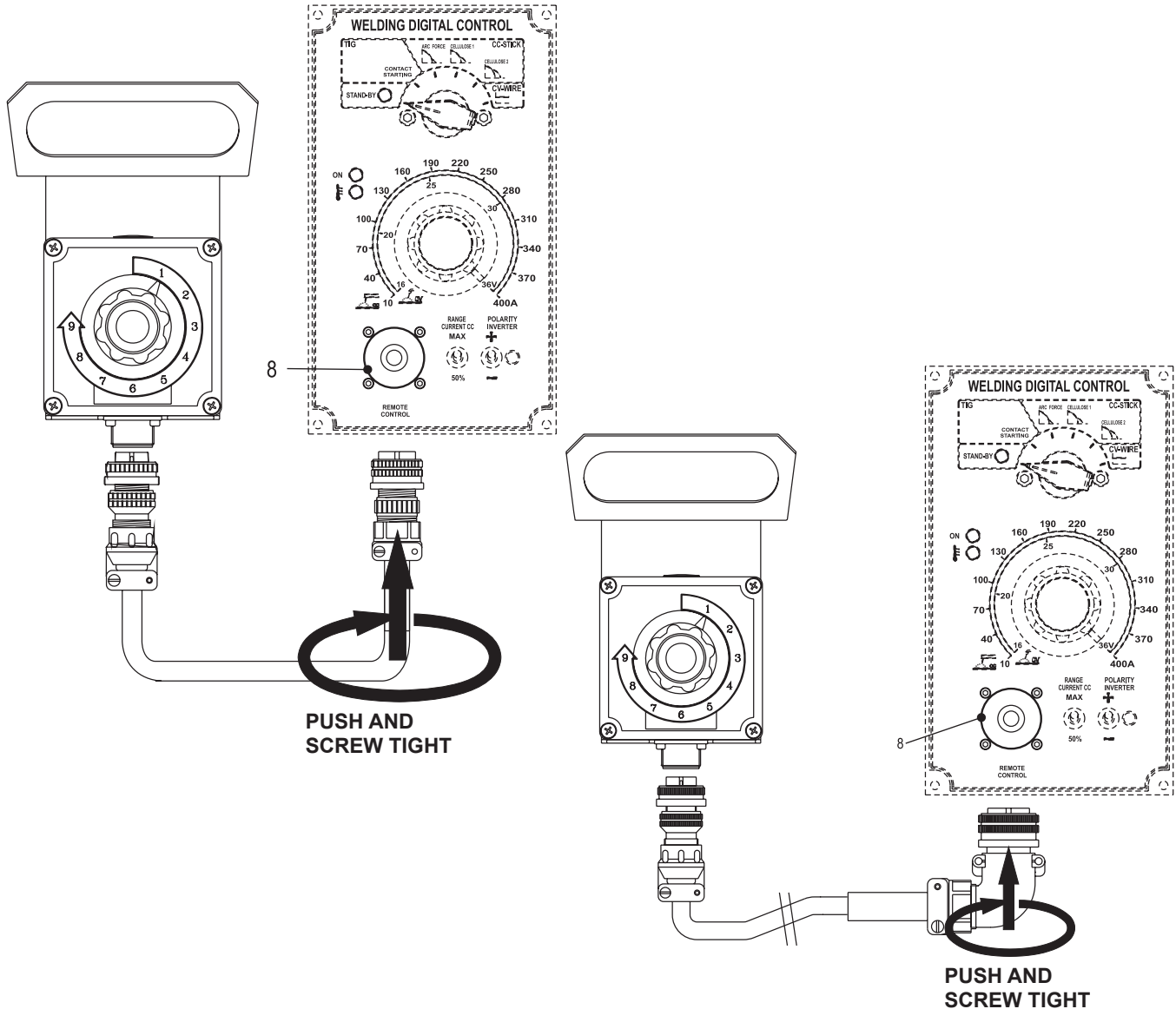
GROUND FAULT INTERRUPTER (GFI)



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 some part of the electric connections a current leakage of more than 30 mA occurs.





The remote control RC, which regulates the welding current in the CC (STICK welding) mode and the welding voltage in the CV (MIG/MAG welding), is connected to the front panel by means of a multipole connector.

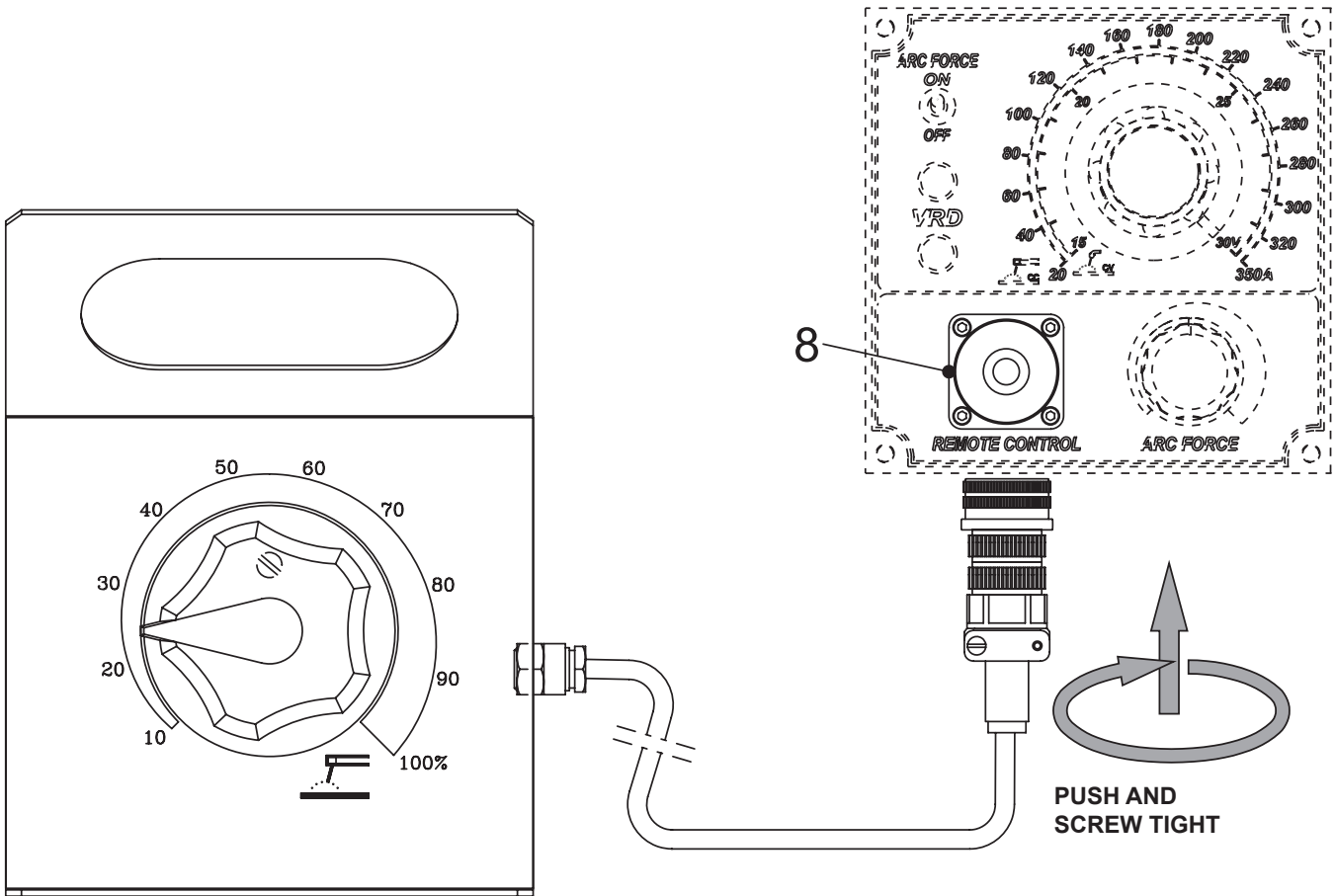
When the remote control is connected to the remote control connector (8), it is functional and automatically excludes the front panel regulation. The remote control can also be connected to the connector on the wire feeder front panel but in this case it is necessary to switch the wire feeder commutator so it can operate.

Adjust the welding current control knob to the correct current for the diameter and type of electrode being welded.



ATTENTION

When the RC is not used, it is necessary to disconnect the multipole connector



The remote control device for regulating the welding current is connected to the front panel by means of a multipole connector.

When the remote control is connected to the remote control connector (8), it is functional and automatically excludes the front panel regulation.

Position welding current adjusting (T) knob at the necessary current value for the diameter and type of electrode.

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.

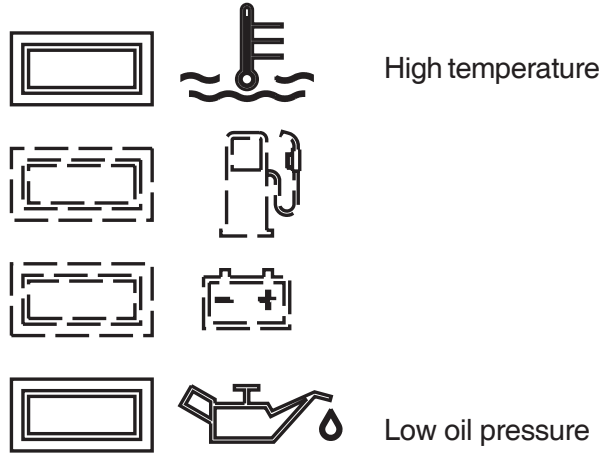
The system consist of electronic card of control and check, and of an engine stop device: solenoid (**ElettroStop**), electrovalve (**ElettroValvola**)

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.



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	ASSOCIATED SYMPTOMS	POSSIBLE CAUSE	VERIFICATIONS	WHAT TO DO
P1 No welding arc (applicable only to machines with WAC)	No open circuit voltage	Failed power supply within the welding control board (WAC)	With the machine running, by means of a multimeter, check if there is a voltage of 5VDC ± 0,125V between the contacts A (-) and C (+) on the circular connector of the WAC. In case of lack of voltage or condition not satisfied consider the suggested action.	Replace the welding control board of the WAC
P2 No welding arc (applicable only to machines without WAC)	No open circuit voltage	Failed power supply within the welding control board (WAC)	With the machine running, by means of a multimeter, check if there is a voltage of 5VDC ± 0,125V between the contacts 1 (-) and 2 (+) on the circular connector of the front panel, after having set the remote control switch in ON position. In case of lack of voltage or condition not satisfied consider the suggested action.	Replace the welding control board
P3 No welding arc	No open circuit voltage	Failure in the control or drive circuits of the welding control board	In order to check the proper operation of these circuits it is necessary to use specific test and troubleshooting tools. Anyway, a visual inspection could be enough to localise possible damages caused by a failure. In case of evidence of damages consider the suggested action.	Replace the welding control board ATTENTION For the CT 230 only, there is a risk of failure propagation towards the chopper. Before replacing this board please check that the chopper works properly. If not replace both.
P4 Lack of welding current control	Full welding power (without current control) regardless of the knob position	Failure in the control or drive circuits of the welding control board	In order to check the proper operation of these circuits it is necessary to use specific test and troubleshooting tools. Anyway, a visual inspection could be enough to localise possible damages caused by a failure. In case of evidence of damages consider the suggested action.	Replace the welding control board ATTENTION For the CT 230 only, there is a risk of failure propagation towards the chopper. Before replacing this board please check that the chopper works properly. If not replace both.
P5 No welding arc	No open circuit voltage or welding available current low or negligible. With auto-idle installed, the r.p.m. never slows-down to idle.	Hall sensor failed	Disconnect the Hall sensor from the welding control board (on the WAC or within the electrical box, as applicable) and check that, in this condition, the open circuit voltage reading is correct. When the VRD is installed, the voltage goes to VRD value. If a resistive load bank is available, check that it is possible draw power (do not exceed 100A). If the Auto-idle is installed, in this condition the machine does not exit the idle. In any case, don't try to weld with the Hall sensor disconnected. If the test gives positive result, consider the indicated action.	Replace the Hall sensor

PROBLEM	ASSOCIATED SYMPTOMS	POSSIBLE CAUSE	VERIFICATIONS	WHAT TO DO
P6 Lack of voltage control in CV mode (applicable to the CC-CV machines provided with filter board)	The open circuit voltage in CV mode is the same as for the CC mode, regardless of the control knob position	Failure in the EMC filter board on the welding sockets	Check by means of a multimeter (stopped machine) the resistance value between positive welding socket and the corresponding faston connector on the filter board. The condition to check is: ohmic value between + welding socket and + board faston (the one to which the red cables are connected) < 4 ohm In case of condition not satisfied take the indicated corrective action.	Replace the EMC filter board
P7 No welding arc (applicable to the machines provided with the filter board on the welding sockets)	The open circuit voltage is zero	Failure in the EMC filter board on the welding sockets	Check by means of a multimeter (stopped machine) the resistance value between positive welding socket and the corresponding faston connector on the filter board. The condition to check is: ohmic value between - welding socket and - board faston (the one to which the black cables are connected) < 4 ohm In case of condition not satisfied take the indicated corrective action.	Replace the EMC filter board
P8 Minimum welding current in CC mode too high (applicable to the machines provided with the filter board on the welding sockets)	The welding current in CC mode with the knob at beginning of scale is too high and changes when turning the arc force knob (if present, switch in ON position)	Failure in the EMC filter board on the welding sockets	Check by means of a multimeter (stopped machine) the resistance value between positive welding socket and the corresponding faston connector on the filter board. The condition to check is: ohmic value between + welding socket and + board faston (the one to which the red cables are connected) < 4 ohm In case of condition not satisfied take the indicated corrective action.	Replace the EMC filter board
P9 Minimum welding current in CC mode too high	The welding current in CC mode with the knob at beginning of scale is too high and changes when turning the arc force knob (if present, switch in ON position)	Cable interruption between the WAC or the welding control board (as applicable depending on the machine type) and the welding sockets	With the machine stopped, extract the connector plugged to J1 of the WAC / Welding control board (as applicable depending on the machine type). Check by means of a multimeter the continuity between pin 6 of the connector and the positive welding socket. The resistive value shall be < 4 ohm if there is a filter board behind the sockets, otherwise shall be < 0.5 ohm. In case of condition not satisfied take the indicated corrective action.	Fix the cabling or replace it.
P10 No welding arc	The open circuit voltage is zero	Cable interruption between the WAC or the welding control board (as applicable depending on the machine type) and the welding sockets	With the machine stopped, extract the connector plugged to J1 of the WAC / Welding control board (as applicable depending on the machine type). Check by means of a multimeter the continuity between pin 5 of the connector and the negative welding socket. The resistive value shall be < 4 ohm if there is a filter board behind the sockets, otherwise shall be < 0.5 ohm. In case of condition not satisfied take the indicated corrective action	Fix the cabling or replace it.

PROBLEM	ASSOCIATED SYMPTOMS	POSSIBLE CAUSE	VERIFICATIONS	WHAT TO DO
P11 Lack of welding current control	Full welding power (without current control) regardless of the knob position. When the auto-idle is installed, the machine remains at low r.p.m.	Hall sensor failed	In order to check the proper operation of the Hall sensor it is necessary to use specific test and troubleshooting tools. Anyway, a visual inspection could be enough to localise possible damages, with particular reference to possible wear of the cable end coming out of the Hall sensor potting. Please check also the connector contacts crimping at the opposite end of the cable. In case of evidence of damages consider the suggested action	Replace the Hall sensor
P12 Lack of welding current control (applicable only to CT 350)	Full welding power (without current control) regardless of the knob position	Chopper and/or driver board failed	Disconnect the chopper cable from the connector J3 of the WAC. Check that the open circuit voltage is < 1V. If not put a light resistive load at the welding output (few kohms are enough) and check again the previous condition. If it is not satisfied the chopper is faulty. If a welding load bank and a clamp DC amp meter are available, another test can be done to localise the failed section/s. To this purpose set the load bank for a current of a few tens of amps and measure the current at the output of each chopper section (the group of cables which connect the chopper to one end of the welding current leveling reactor). The sections through which the current flows are failed or improperly driven by the driver board. If the test confirms this type of failure consider the suggested corrective action.	Replace the chopper and the driver board
P13 Lack of welding current control (applicable only to CT 230)	Full welding power (without current control) regardless of the knob position	Chopper faulty	Disconnect the chopper cable from the connector J3 of the WAC. Check that the open circuit voltage is < 1V. If not put a light resistive load at the welding output (few kohms are enough) and check again the previous condition. If it is not satisfied the chopper is faulty. In this case consider the suggested corrective action.	Replace the chopper
P14 Knob irregular or missing current adjustment	When turning the knob the current setting (and the voltage setting, if applicable) do not change or change irregularly	The potentiometer which regulates the welding current (and the welding voltage, when applicable) is faulty	Check if the regulation through remote control works properly. If confirmed, consider the suggested corrective action.	Replace the potentiometer



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.

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 supplied with the engine.

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

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



IMPORTANT



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.




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.



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 bloking 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.

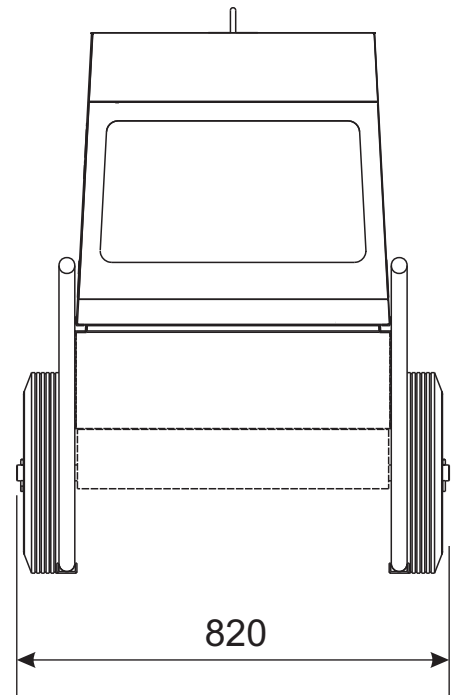
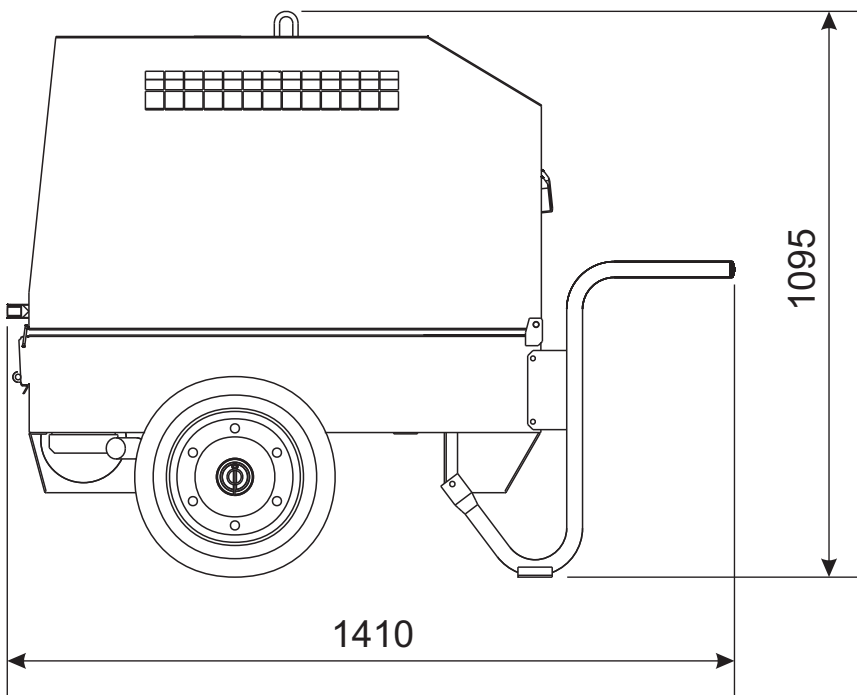
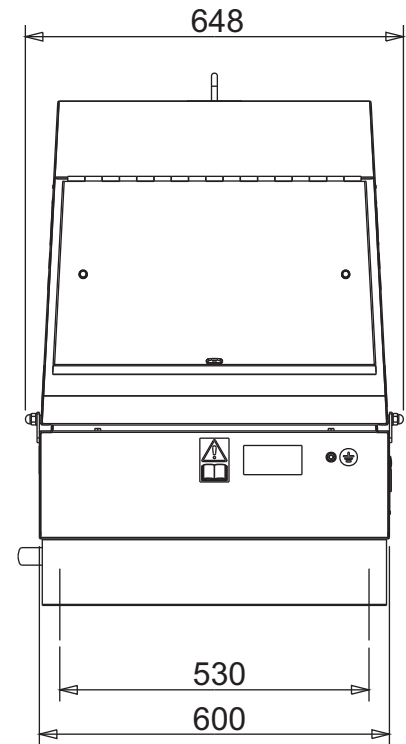
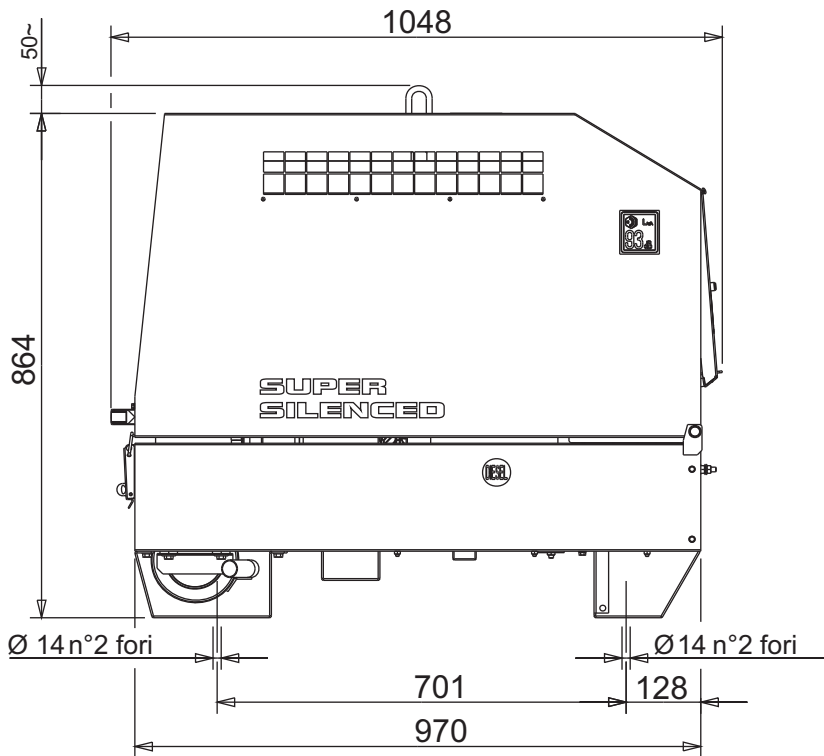
In case of necessity for first aid and fire prevention, see page M2.5.



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 information here below are to be intended only as indicative since the above norm is much larger. For further details please see the specific norms and/or the manufacturers of the product to be used in the welding process.

RUTILE ELECTRODES: E 6013

Easily removable fluid slag, suitable for welding in all position.
 Rutile electrodes weld in d.c. with both polarities (electrode holder at + or -) and in a.c..
 Suitable for soft steels R-38/45 kg/mm². Also for soft steels of lower quality.

BASIC ELECTRODES: E 7015

Basic electrodes weld only in d.c. with inverse polarity (+ on the electrode holder) ; there are also types for a.c.
 Suitable for impure carbon steels. Weld in all position.

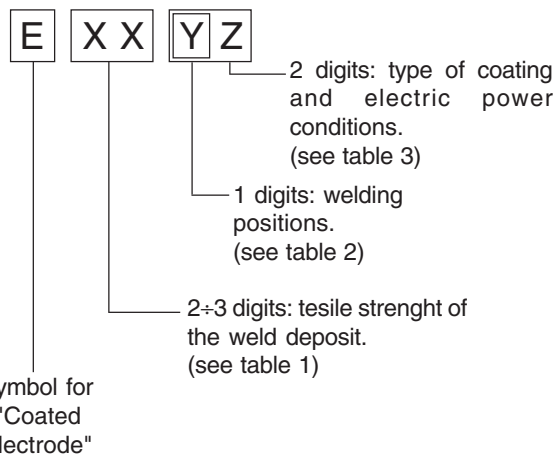
HIGH YIELD BASIC ELECTRODES: E 7018

The iron contained in the coating increases the quality of metal added. Good mechanical properties. Weld in all position.
 Electrode holder at + (inverse polarity). Weld deposit of nice aspect, also vertical. Workable; high yield.
 Suitable for steels with high contents of sulphur (impurities).

CELLULOSIC ELECTRODES: E 6010

Cellulosic electrodes weld only in d.c. with polarity + electrode holder - ground clamp.
 Special for steels run on pipes with R max 55 kg/mm². Weld in all position. volatile slag.

ELECTRODES IDENTIFICATION ACCORDING TO A.W.S. STANDARDS



Number	Strength	
	K.s.l.	Kg/mm ²
60	60.000	42
70	70.000	49
80	80.000	56
90	90.000	63
100	100.000	70
110	110.000	77
120	120.000	84

Table 1

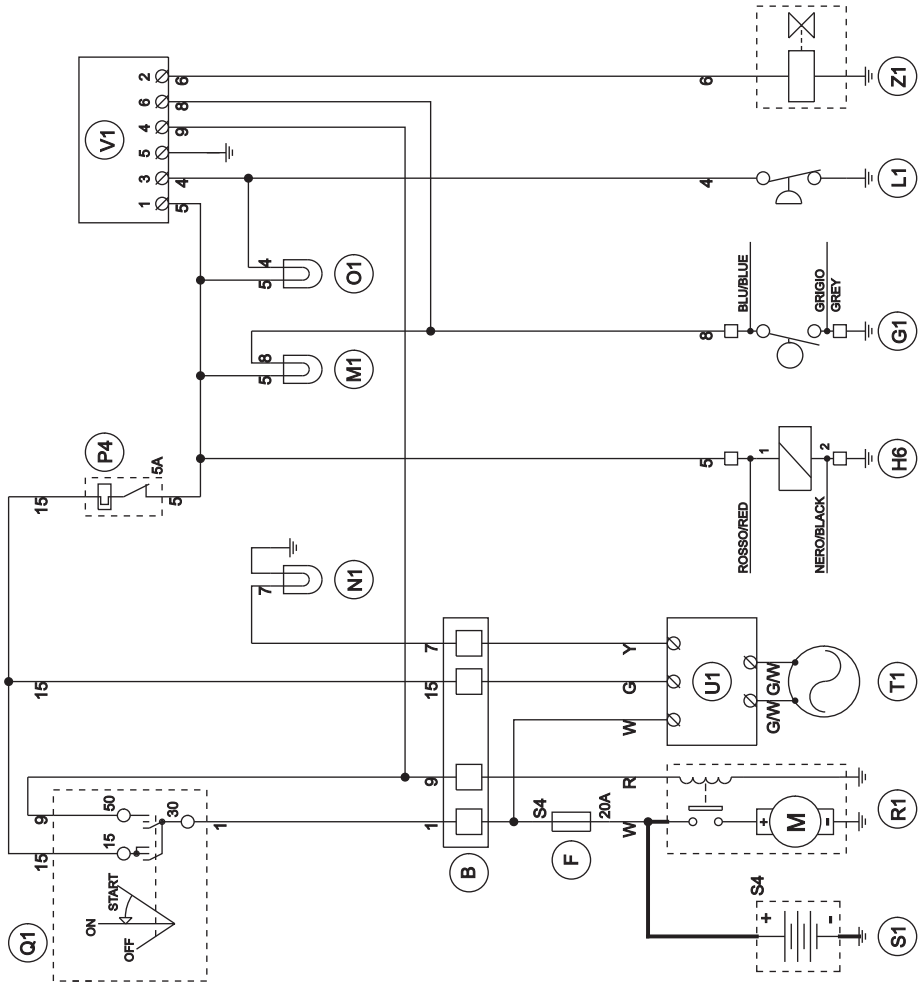
1	for all positions
2	for plane and vertical
3	for plane position only

Table 2

N°	Descrizione
10	Cellulose electrodes for d.c.
11	Cellulose electrodes for a.c.
12	Rutile electrode for d.c.
13	Rutile electrode for a.c.
14	High yield rutile electrodes
15	Basic electrodes for d.c.
16	Basic electrodes for a.c.
18	High yield basic electrodes for d.c. (inverse polarity)
20	Acid electrodes for flat or front position welding for d.c. (- pole) and for a.c.
24	High yield rutile electrodes for flat or front plane position welding for d.c. and a.c.
27	High yield acid electrodes for flat or front plane position welding for d.c. (- pole) and a.c..
28	High yield basic electrodes for flat or front plane position welding for d.c. (inverse polarity)
30	Extra high yield acid electrodes, extra high penetration if required, for flat position welding only for d.c. (- pole) and a.c.

Table 3

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



STARTER KEY

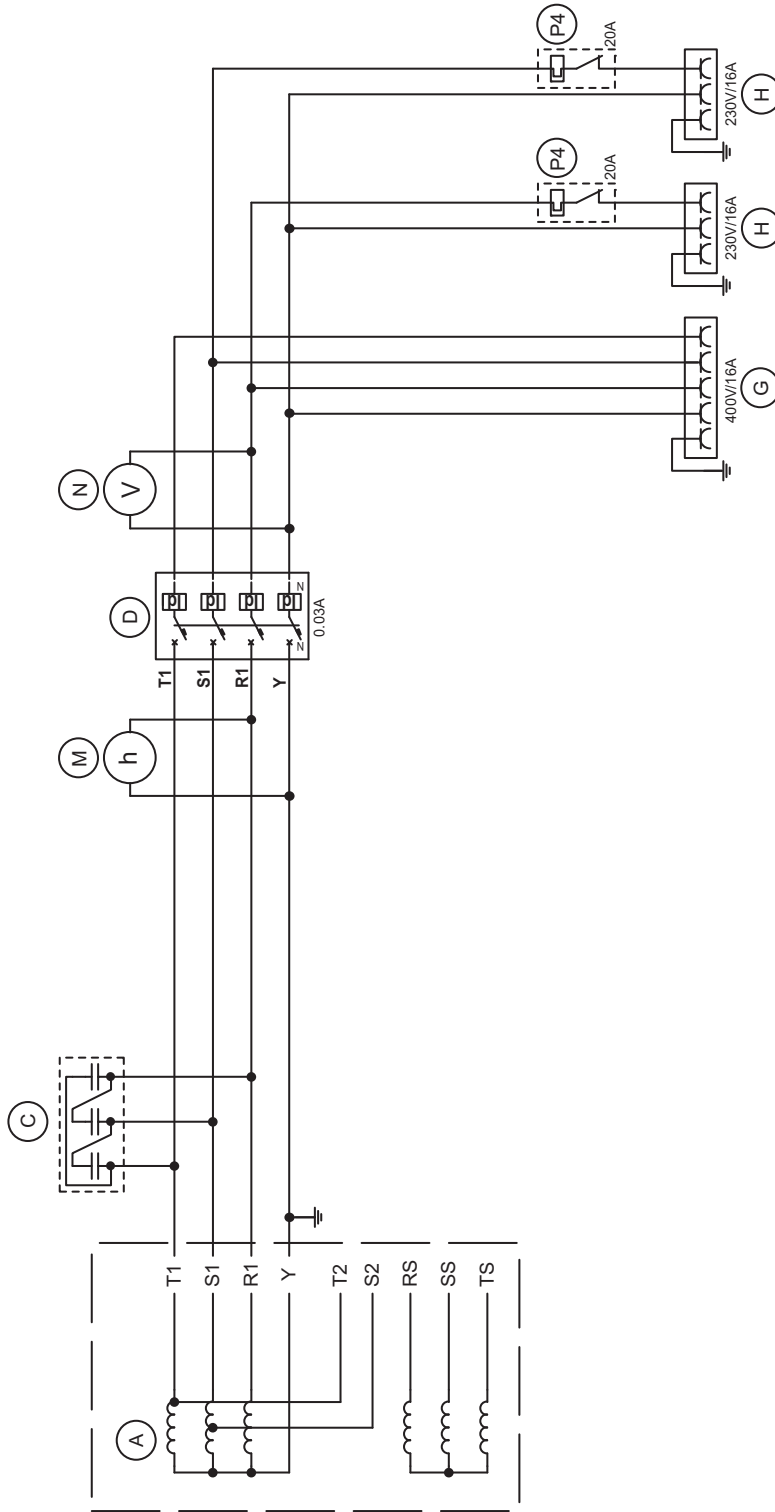
30	15	50
OFF	ON	ST

LEGENDA COLORI
KEY COLOR

R	ROSSO/RED
G/W	VERDE/BIANCO GREEN/WHITE
G	VERDE/GREEN
W	BIANCO/WHITE
Y	GIALLO/YELLOW

A		Modificato schema con nuovo motore completo di avvog. carica batteria.		23.02.2006		N.L.	
Eqb. Exp.	Modifica	Data	Dis. Desi.	Data	Dis. Desi.	Abbr.	Abbr.
	Denominazione:		Progetto:		Progetto:		
	Da Pag. From Page		Project:		Project:		
	To Page		37285.prg		37285.prg		
MOSA		Engine Yanmar L100-AE (EV)		Dis. n°:		Approvato:	
20090-CUSAGO (MI)-ITALY		Macchina:		Dwg. n°:		Approvato:	
http://www.mosa.it		Machine:		37280.S.010-A		Approvato:	
		CT 230 SX		Leporace N.		Leporace	
				28.07.2000		Leporace	

La MOSA si riserva a termini di legge la proprietà del presente disegno con divieto di riproduzione o comunicato a terzi senza sua autorizzazione.



Esp. Exp.	Modifica	Data	Dis. Desi.	Appr. Appr.
	Modification	Date	Page n°	Page n°
	Denominazione:	Progetto:	37299-ptg	3
	Denomination:	Project:		4
	Aux. (400T/230Mx2) DT			
	Macchina:	Disegnato:	Dis. n°:	
	Machine:	Designer:	Dwg. n°:	
	CT 230 YSX/CC-CV	Leporace N.	37299.S.020	
	http://www.mosa.it			

La MOSA si riserva a termini di legge la proprietà del presente disegno con divieto di riprodurlo o comunicarlo a terzi senza sua autorizzazione.

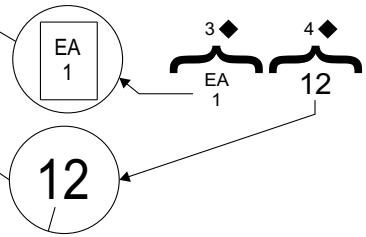
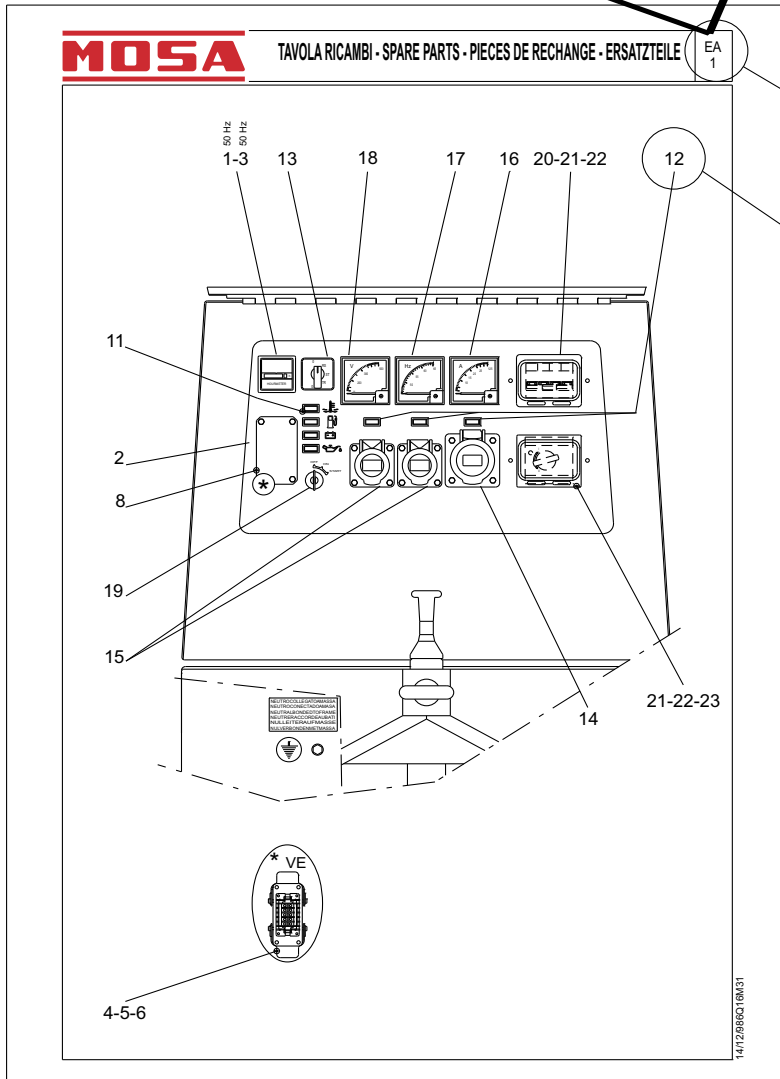
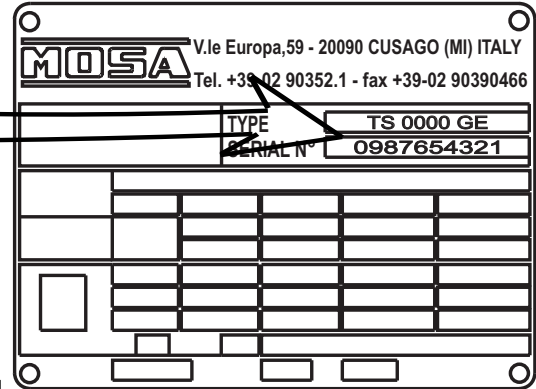
MOSA guarantees that any request for spare parts will be satisfied.

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. *

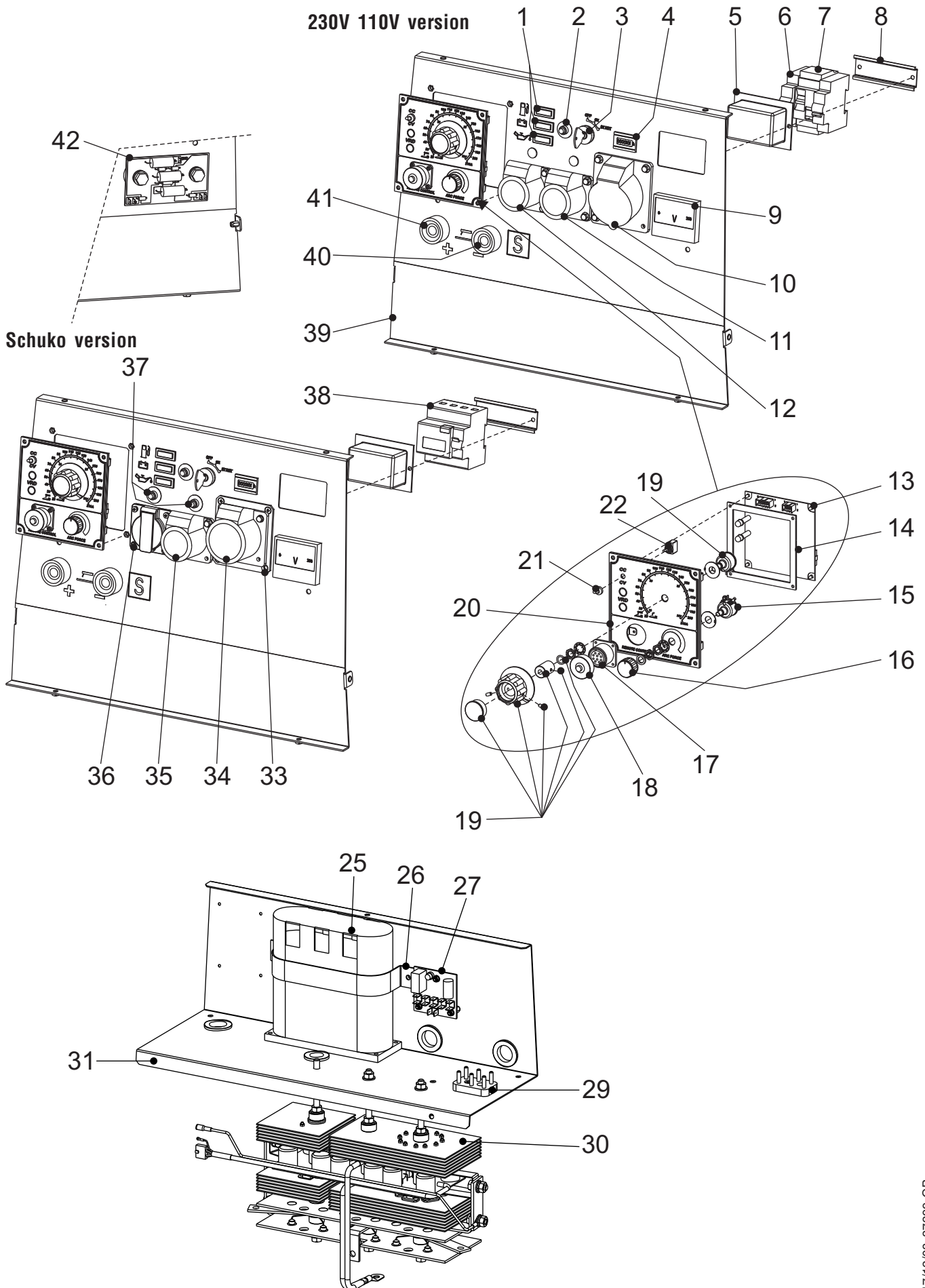
When ordering the spare parts, it is recommended to indicate:

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

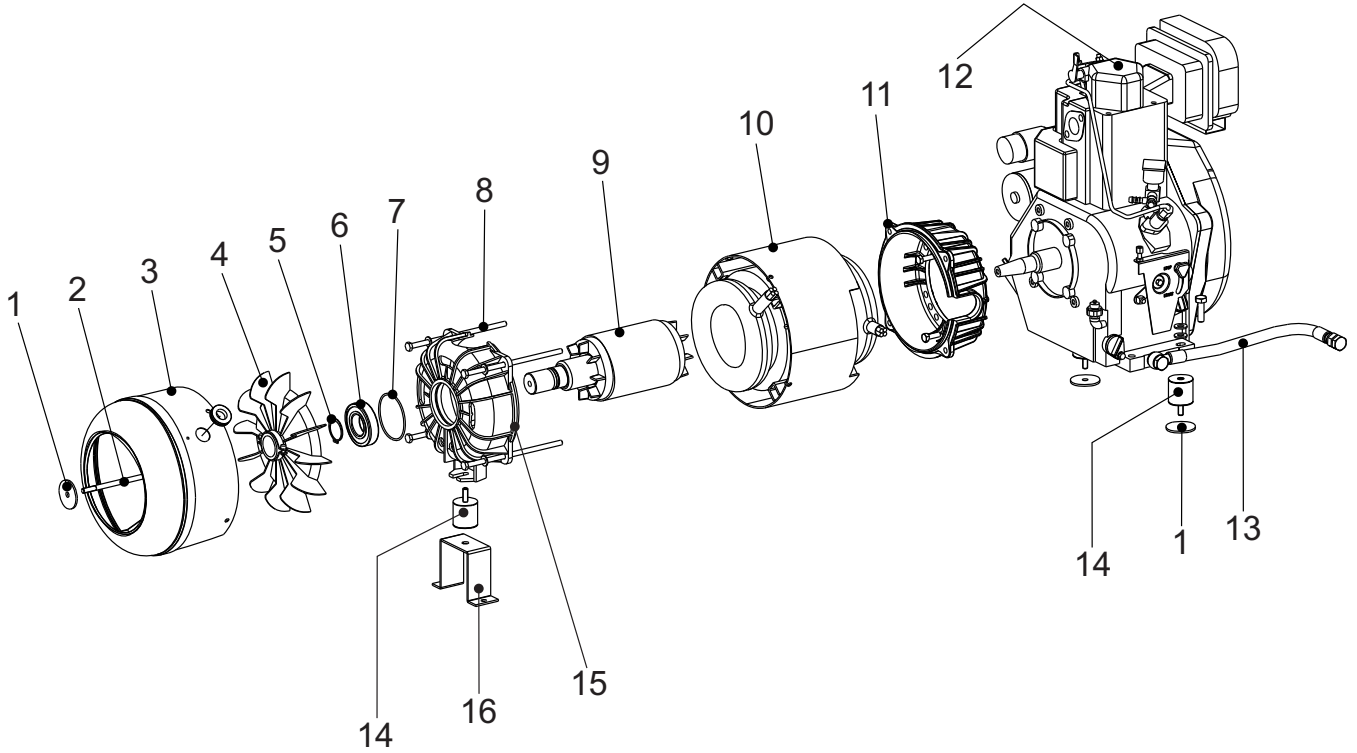


ABBREVIATIONS AND SYMBOLS:

- (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

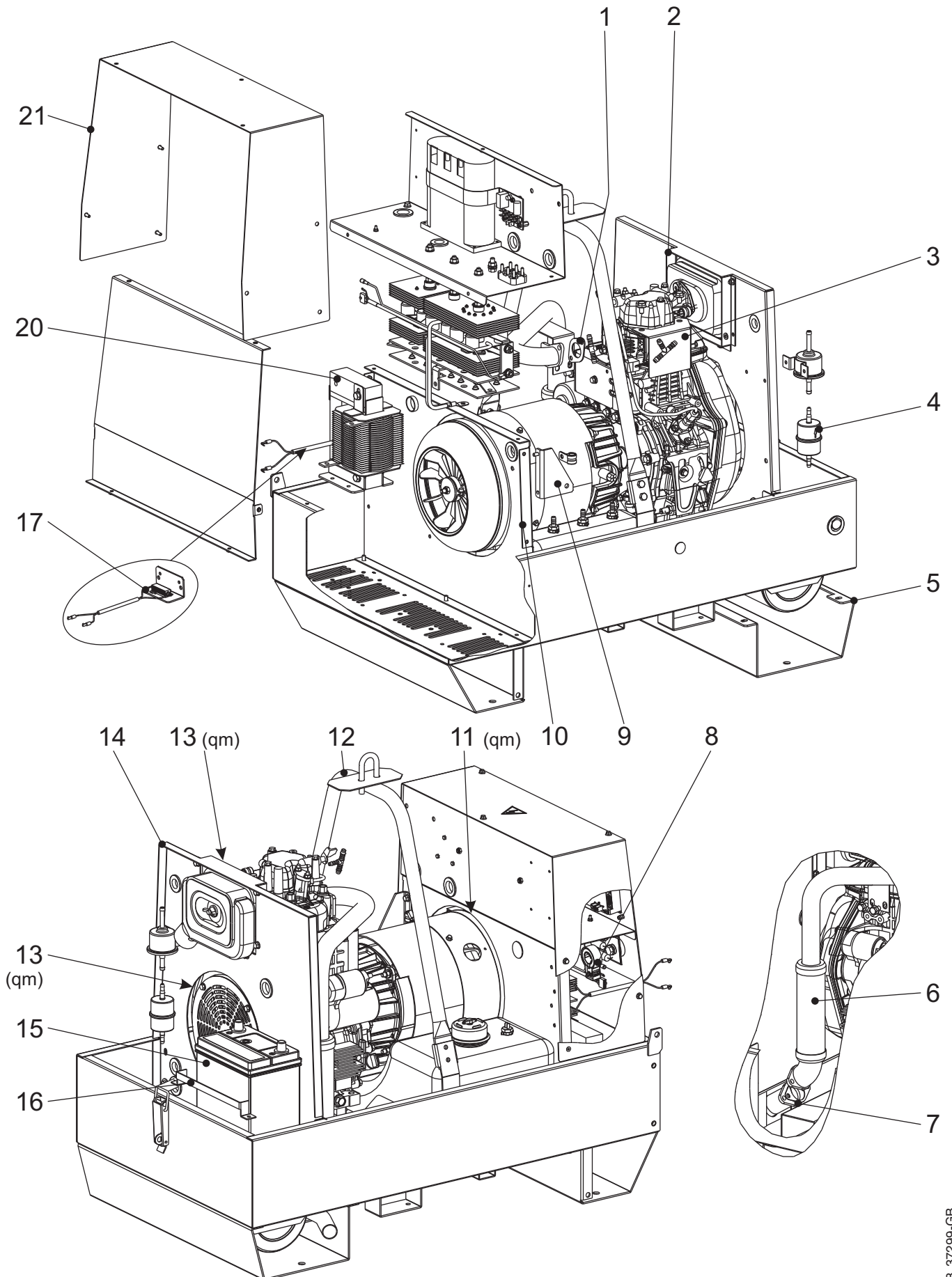


<i>Pos.</i>	<i>Rev.</i>	<i>Cod.</i>	<i>Descr.</i>
1		1302500	SEGNALATORE RETT. 12V DC ROSSO / <i>WARNING LIGHT</i>
2		352007109	PROTEZIONE TERMICA 5A / <i>THERMOPROTECTION</i>
3		107302460	STARTER A CHIAVE / <i>STARTER KEY</i>
4		105511810	CONTAORE 230V 50Hz IP65 / <i>HOURMETER 230V 50Hz IP65</i>
5		232027130	CAPPUCCIO PROTEZIONE I.D. / <i>CAP</i>
6		105277325	INTERRUTTORE MAGNETOTERMICO / <i>MAGNETO SWITCH</i>
7		220237105	Vedi Cod.256007105 / <i>See Part n°256007105</i>
8		232027036	GUIDA / <i>FIXING GUIDE</i>
9		103011310	VOLTMETRO FONDO SCALA 300V / <i>VOLTMETER 300V</i>
10		105111530	PRESA CEE 32A 110V 2 POLI + T / <i>EEC SOCKET 32A 110V 2 POLES+N</i>
11		307047250	PRESA CEE 110V 16A 2 POLI + T / <i>EEC SOCKET 110V 16A 2 POLES +N</i>
12		307017240	PRESA 220V 16A / <i>EEC SOCKET 16A, 220V 2P+T</i>
13		372959800	SCHEDA UNITA' CONTROLLO SALD.(WAC) / <i>WELDING CONTROL PCB</i>
14		372959628	GUARNIZIONE X SCHEDA SALDATURA / <i>GASKET FOR WELDING PCB</i>
15		372959701	POTENZ.LINEARE A FILO / <i>POTENTIOMETER</i>
16		372959702	MANOPOLA CON INDICE / <i>KNOB WITH INDEX</i>
17		765009910	CONNETTORE / <i>CONNECTOR</i>
18		765009911	CAPPUCCIO X CONNETTORE / <i>CONNECTOR CAP</i>
19		222440543	KIT POTENZIOMETRO + MANOPOLA / <i>POTENTIOM. KIT + KNOB</i>
20		372957169	FRONTALE PER SCHEDA SALDATURA / <i>FRONT PANEL FOR WELDING PCB</i>
21		382009962	CAPPUCCIO ISOLANTE / <i>CAP</i>
22		282009902	DEVIATORE UNIPOLARE / <i>SWITCH</i>
25		305159880	BOX CONDENSATORI / <i>CAPACITOR BOX 3X75</i>
26		307017037	STAFFA / <i>BRACKET</i>
27		209719850	SCHEDA EV/ES / <i>PCB EV/ES</i>
29		218017226	MORSETTIERA / <i>TERMINAL BOARD</i>
30		372855400	PONTE CHOPPER 250A / <i>CHOPPER BRIDGE 250A</i>
31		372858248	PIANALE SCATOLA ELETTRICA / <i>ELECTRIC BOX</i>
33		734517032	PIASTRINA RIDUZIONE / <i>REDUCTION FOR SOCKET 32A/16A</i>
34		305907270	PRESA CEE 16A 400V 3P+N+T / <i>EEC SOCKET 16A 400V 3P+N+T</i>
35		307017240	PRESA 220V 16A / <i>EEC SOCKET 16A, 220V 2P+T</i>
36		259107241	PRESA SCHUKO 16A 230V - 2P+T / <i>SOCKET SCHUKO 16A 230V 2P+T</i>
37		306467107	DISGIUNT. TERMICO 20AMP 250 V / <i>THERMOPROTECTION 20AMP 250 V</i>
38		105111540	Vedi Cod.219937105 / <i>See part no. 219937105</i>
39		372987020	PANNELLO FRONTALE / <i>FRONT PANEL</i>
40		102044400	PRESA DI SALDATURA (-) / <i>WELDING SOCKET (-)</i>
41		102301310	PRESA DI SALDATURA (+) / <i>WELDING SOCKET (+)</i>
42		372959860	SCHEDA FILTRO ANTIDISTURBI / <i>ANTI-JAMMING FILTER PCB</i>



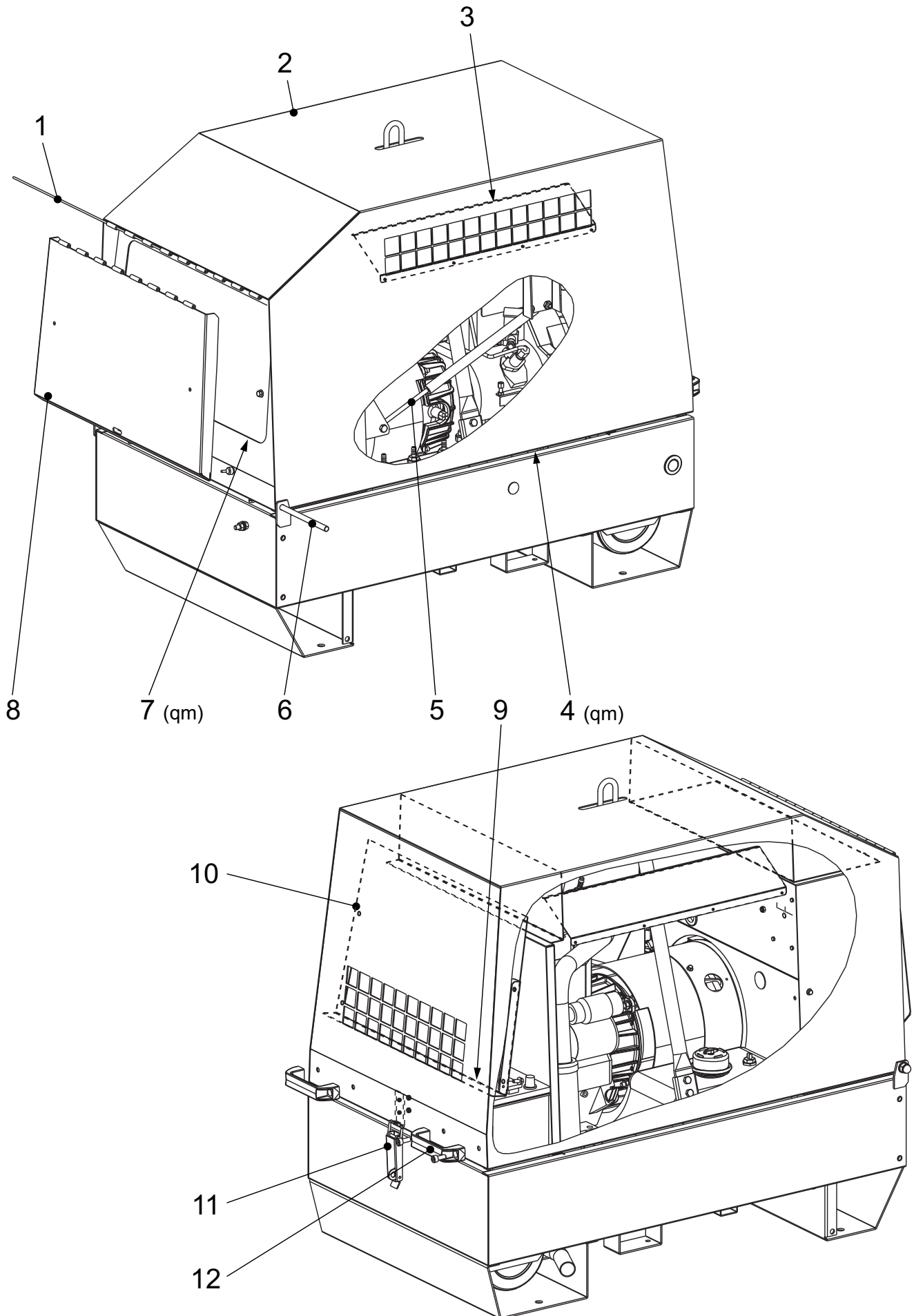
<i>Pos.</i>	<i>Rev.</i>	<i>Cod.</i>	<i>Descr.</i>	<i>Note</i>
1		372802038	RONDELLA DI BLOCCAGGIO	
2		372803036	TIRANTE ALBERO ROTORE	
3		272506010	CONVOGLIATORE ARIA	
4		105111290	VENTOLA CON FASCETTA	
5		6050090	ANELLO ELASTICO	
6		1001070	CUSCINETTO	
7		1018100	ANELLO OR	
8		107011280	TIRANTE	
9		372803030	ALBERO CON ROTORE	
10		372803025	STATORE	fino a REV.0-04/05 Del.26/06 - 01/03/06
10		372853025	STATORE AVV.400T230M110CTE 48M	da REV.1-07/06 Del.26/06 - 01/03/06
11		232123040	FLANGIA ATTACCO MOTORE	
12		372802200	MOTORE YANMAR L100AE-DEG	fino a REV.0-04/05 Del.26/06 - 01/03/06
12		HP0152200	MOT. YANMAR L100AE-DEG	da REV.1-07/06 Del.26/06 - 01/03/06
12		356402200	MOT. YANMAR L100N	fino a REV.1-07/06 Del.44/08 - 25/02/08 da REV.2-12/08 Del.44/08 - 25/02/08
13		372802212	TUBO SCARICO OLIO	
14		356321035	ANTIVIBRANTE	
15		105913045	FLANGIA PORTA ALTERNATORE	
16		372803101	SUPPORTO ALTERNATORE	

<i>Pos.</i>	<i>Rev.</i>	<i>Cod.</i>	<i>Descr.</i>	<i>Note</i>
1		372802038	STOP WASHER	
2		372803036	SHAFT ENGINE TIE-ROD	
3		272506010	AIR DUCT	
4		105111290	FAN	
5		6050090	RING	
6		1001070	BEARING	
7		1018100	OR RING	
8		107011280	TIE - ROD	
9		372803030	SHAFT WITH ROTOR	
10		372803025	STATOR	up to REV.0-04/05 Del.26/06 - 01/03/06
10		372853025	STATOR	from REV.1-07/06 Del.26/06 - 01/03/06
11		232123040	FLANGE FIXING ENGINE	
12		372802200	YANMAR ENGINE L100AE-DEG	up to REV.0-04/05 Del.26/06 - 01/03/06
12		HP0152200	YANMAR ENGINE L100AE-DEG	from REV.1-07/06 Del.26/06 - 01/03/06 up to REV.1-07/06 Del.44/08 - 25/02/08
12		356402200	YANMAR ENGINE L100N	from REV.2-12/08 Del.44/08 - 25/02/08
13		372802212	OIL EXHAUST PIPE	
14		356321035	VIBRATION DAMPER	
15		105913045	FLANGE, ALTERNATOR HOLDER	
16		372803101	ALTERNATOR SUPPORT	



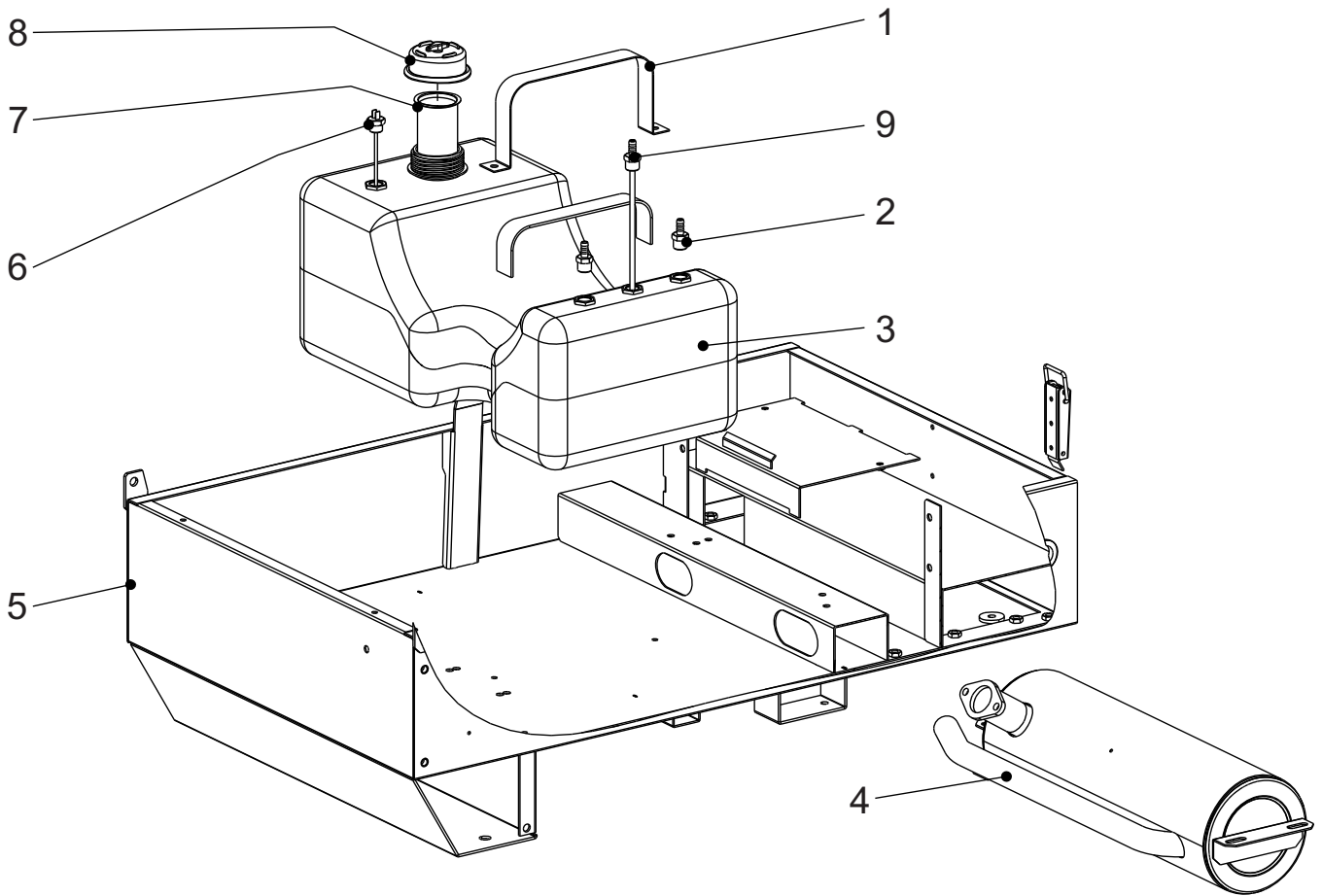
<i>Pos.</i>	<i>Cod.</i>	<i>Descr.</i>
1	372802071	GUARNIZIONE X COLL. SCARICO
2	HP0211242	CORNICE FISS.PROFILATO GOMMA
3	372802135	DEFLETTORE SCARICO ARIA MOTORE
4	256602228	FILTRO GASOLIO
5	372801082	TRAVERSA PROTEZIONE SIL. SCAR.
6	HP0212070	TUBO SCARICO
7	209502071	GUARNIZIONE SILENZIAT.SCARICO
8	372955107	SENSORE DI HALL 300A
9	372801105	STAFFA FISSAGGIO MOLLA A GAS
10	372808218	PARATIA INFERIORE ALTERNATORE
11	102302280	GUARNIZIONE (L=MT.1) qm
12	356721100	ROLL-BAR
13	105112270	GUARNIZIONE (L=MT.1) qm
14	HP0211046	PARATIA PER CAMERA ASPIRAZIONE
15	372859150	BATTERIA
16	259109154	STAFFA FISSAGGIO BATTERIA
17	000037295A725	ASSIEME RETE R.C.(VRD)
20	794004100	REATTORE DI LIVELLO
21	372808121	COPERTURA SCATOLA ELETTRICA

<i>Pos.</i>	<i>Cod.</i>	<i>Descr.</i>
1	372802071	GASKET FOR EXHAUST MANIFOLD
2	HP0211242	RUBBER FIXING FRAME
3	372802135	DEFLECTOR FOR ENGINE AIR EXHAUST
4	256602228	FUEL PRE-FILTER
5	372801082	CROSS PROTECTION EXHAUST SILENCER
6	HP0212070	EXHAUST PIPE
7	209502071	GASKET FOR EXHAUST
8	372955107	HALL SENSOR
9	372801105	FIXING BRACKET X SPRING
10	372808218	ALTERNATOR UNDERWALL
11	102302280	GASKET (L=MT.1) qm
12	356721100	ROLL-BAR
13	105112270	STRIP, SEALING (L=MT.1) qm
14	HP0211046	INTAKE CHAMBER BULKHEAD
15	372859150	BATTERY
16	259109154	BATTERY BRACKET
17	000037295A725	KIT FOR MAINS (VRD)
20	794004100	REACTOR
21	372808121	COVER FOR ELECTRICAL BOX



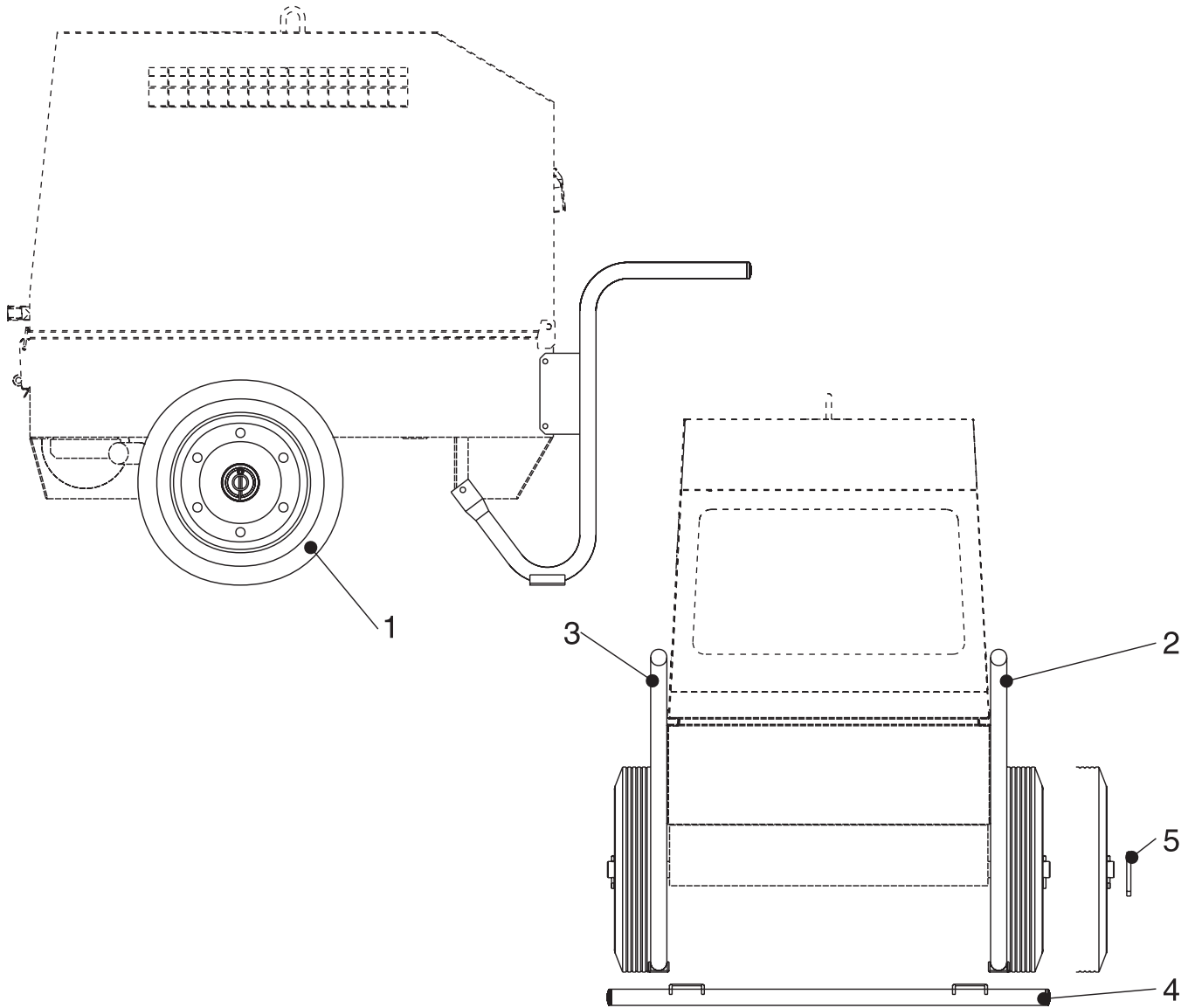
<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	356708270	PERNO PER CERNIERA	
2	356728005	CARENATURA	
3	356728143	DEFLETTORE ARIA PER CAREN.	
4	309509005	GUARNIZIONE	(qm)
5	372808115	MOLLA A GAS	
6	307018024	TIRANTE	
7	105112270	GUARNIZIONE (L=MT.1)	(qm)
8	356708100	COPERCHIO FRONTALE	
9	102302280	GUARNIZIONE (L=MT.1)	(qm)
10	356728200	CASSONETTO ASPIRAZIONE	
11	107300180	CHIUSURA COMPL.A LEVA	
12	343339601	MANIGLIA	

<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	356708270	HINGE PIN	
2	356728005	COVER	
3	356728143	AIR DEFLECTOR FOR COVER	
4	309509005	GASKET	(qm)
5	372808115	GAS SPRING	
6	307018024	TIE-ROD FOR COVER	
7	105112270	STRIP, SEALING (L=MT.1)	(qm)
8	356708100	FRONT COVER	
9	102302280	GASKET (L=MT.1)	(qm)
10	356728200	INDUCTION CASE	
11	107300180	LATCH	
12	343339601	KNOB	

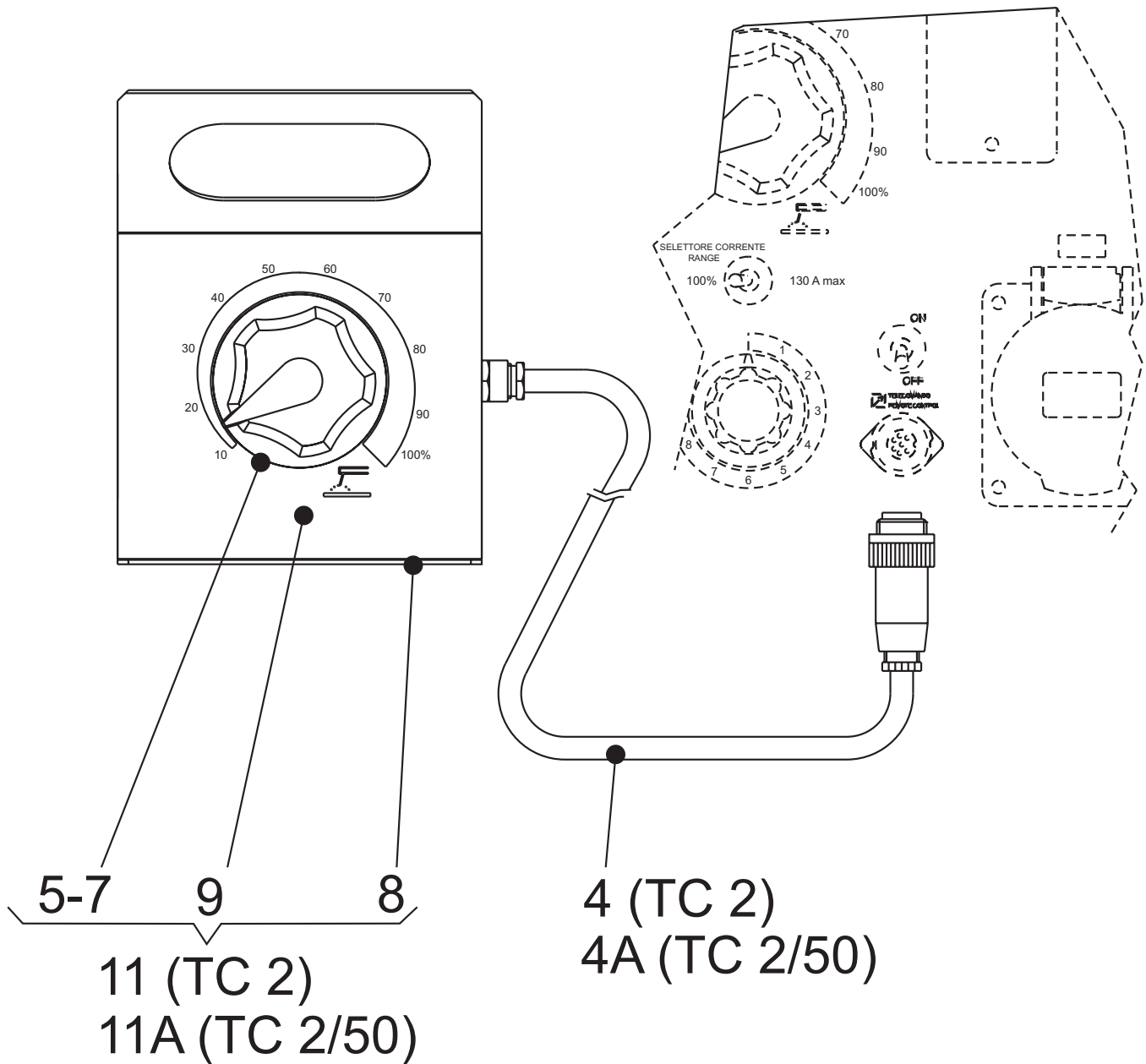


<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	372802139	FASCIA FISSAGGIO SERBATOIO	
2	209702242	RACCORDO	
3	372822020	SERBATOIO CARBURANTE	
4	356722050	SILENZIATORE SCARICO	
5	372801050	BASAMENTO	
6	372809875	INDICATORE RISERVA CARBURANTE	
7	272822228	FILTRO PER SERBATOIO	
8	372802026	TAPPO SERBATOIO CARBURANTE	
9	372821031	TUBO MANDATA CARBURANTE	

<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	372802139	FIXING TANK, BAND	
2	209702242	PIPE FITTING FOR TANK	
3	372822020	FUEL TANK	
4	356722050	EXHAUST MUFFLER	
5	372801050	BASE	
6	372809875	FUEL LEVEL FLOAT	
7	272822228	PREFILTER	
8	372802026	FUEL TANK, CAP	
9	372821031	FUEL OUTLET TANK	



Pos.	Rev.	Cod.	Descr.	Descr.	Note
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	



Pos. Cod.	Descr.	Note
4	209519904 CONNETTORE COMPLETO DI CAVI / CONNECTOR WITH CABLES	TC2 vers.
4a	930609904 CONNETTORE CON CAVI / CONNECTORS WITH CABLES	TC2/50 vers.
5	107509702 MANOPOLA REG. CORRENTE SALDAT. / KNOB, WELDING CURRENT REGULAT.	
7	107509700 POTENZIOMETRO / WELDING CURRENT REGULATOR	Fino a/ Up to REV. 10/99 - Del. 129/06 - 04/09/07
7	836709715 POTENZIOMETRO / WELDING CURRENT REGULATOR	Da/From REV. 07/07- Del. 129/06 - 04/09/07
8	107509900 SCATOLA / CASE, BOTTOM HALF	
9	209519901 COPERCHIO (CD) / COVER	
11	209510018 TC2 COMANDO DISTANZA STD / TC2 STD REMOTE CONTROL	
11a	930600018 TC2/50 COMANDO DISTANZA STD / TC2/50 STD REMOTE CONTROL	

