TS 350 YSX BC

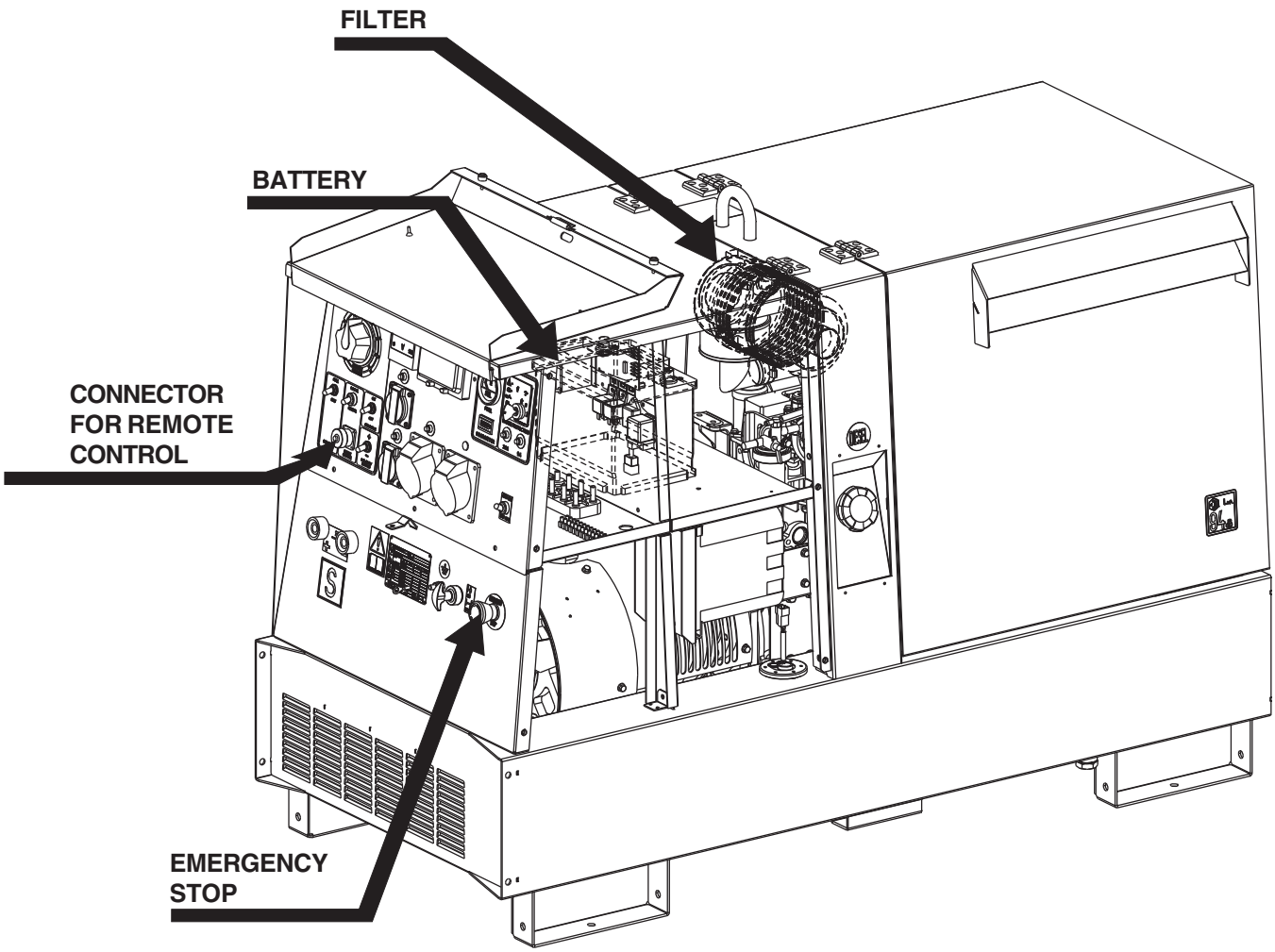
1 1 0 7 **873819003 - GB**

USE AND MAINTENANCE MANUAL
SPARE PARTS CATALOG

12/11/07 87381M00
preparato da UPT
approvato da DITE

Main Characteristics of the unit:

- Welding control with bridge at 6 controle diodes
- Maximum welding current 350A
- Three-phase power genaration 12 kVA / single-phase 7 kVA
- Diesel engine Yanmar 3TNV76
- Noise level at 7m 68dBA
- Dimensions / weight: 1610x720x1110 / 535 Kg.



The engine driven welder TS 350 YSX has been completely renovated in comparison to the previous model, without increasing the length and width of the machine. The height has been increased instead, to improve the access to the electrical box and to counteract, in a more efficient manner, the engine noise. The base of the machine includes the tank, while the loading is obtained from the roll bar without protrusion from the base.

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

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

BCS S.p.A.

Head Office and Operative Unit: **Viale Mazzini, 161 - I-20081 Abbiategrasso (MI)**
(BCS – FERRARI – PASQUALI Trade Marks)
Operative Units
Via Valbrina, 17/19 - I-42045 Luzzara (RE) - (BCS – FERRARI – PASQUALI Trade Marks)
Viale Europa, 59 - I-20090 Cusago (MI) - (Mosa Trade Mark)

for the following field of activities

Design, production and servicing of tractors, agricultural and green maintenance machines.
Design, production and servicing of engine driven welders and generating sets.

has implemented and maintains a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2000

Issued on: **2006-03-06**
Validity date: **2009-03-05**
Registration Number: IT-3722

IQNet — *Fabio Roversi*, *President of IQNet*
CISQ — *Gianrenzo Prati*, *President of CISQ*

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ICIM
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CERTIFICATO n. 0192/4
CERTIFICATE No.

SI CERTIFICA CHE IL SISTEMA DI GESTIONE PER LA QUALITA' DI
WE HEREBY CERTIFY THAT THE QUALITY MANAGEMENT SYSTEM OPERATED BY

BCS S.p.A.

UNITA' OPERATIVE
OPERATIVE UNITS

Sede e Unità Operativa
Viale Mazzini, 161 - 20081 Abbiategrasso (MI)
(marchi BCS – FERRARI – PASQUALI)
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(marchio MOSA)
Italia

E' CONFORME ALLA NORMA
IS IN COMPLIANCE WITH THE STANDARD

UNI EN ISO 9001:2000

PER LE SEGUENTI ATTIVITA'
FOR THE FOLLOWING ACTIVITIES

EA: 18

Progettazione, produzione ed assistenza di trattori, macchine per agricoltura e manutenzione del verde. Progettazione, produzione ed assistenza di motosaldatrici e gruppi elettrogeni.

Design, production and servicing of tractors, agricultural and green maintenance machines. Design, production and servicing of engine driven welders and generating sets.

Riferirsi al Manuale della Qualità per l'applicabilità dei requisiti della Norma ISO 9001:2000.
Refer to Quality Manual for details of application to ISO 9001:2000 requirements.

Il presente certificato è soggetto al rispetto del regolamento per la certificazione dei sistemi di gestione per la qualità della azienda.
The use and the validity of this certificate shall satisfy the requirements of the rules for the certification of company quality management systems.

Data emissione *First issue*	Emissione corrente *Current issue*	Data di scadenza *Expiring date*
30/05/1994	06/03/2006	05/03/2009

ICIM S.p.A. – PIAZZA A. DIAZ, 2 – 20123 MILANO

SINCERT

CISQ è la Federazione Italiana di Organismi di Certificazione dei sistemi di gestione aziendale
CISQ is the Italian Federation of management system Certification Bodies

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ICIM CISQ IQNet
ISO 9001:2000 - Cert. 0192

UNI EN ISO 9001 : 2000

MOSA has certified its quality system according to UNI EN ISO 9001:2000 to ensure a constant, high quality of its products. This certification covers the design, production and servicing of engine driven welders and generating sets.

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

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

The advantages for MOSA clients are:

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

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

⚠ ATTENTION

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

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

MOSA

INFORMATION

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

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

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

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

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

NOTES ABOUT THE MANUAL

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

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

The manual for Use Maintenance and Spare Parts is an integrant part of the product. It must be kept with care during all the life of the product.
In case the machine and/or the set should be yielded to another user, this manual must also given to him.
Do not damage it, do not take parts away, do not tear pages and keep it in places protected from dampness and heat.

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

INFORMATION OF GENERAL TYPE

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

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

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

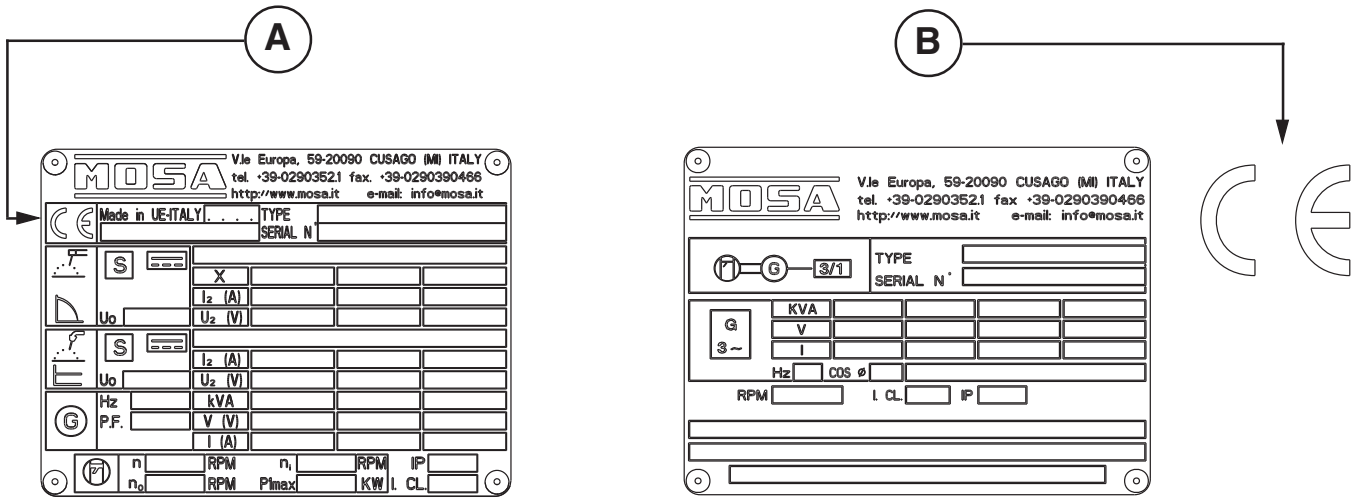
While working it is advisable to keep to the personal safety norms in force in the countries to which the product is destined (clothing, work tools, etc.).

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

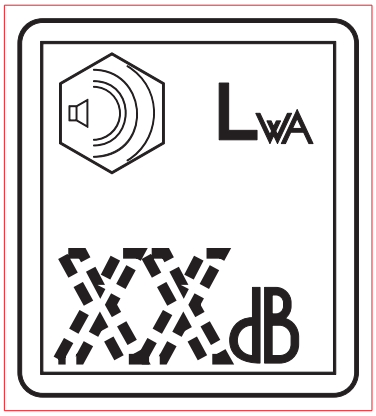
☞ ***Notice:** this manual does not engage MOSA, who keeps the faculty, apart the essential characteristics of the model here described and illustrated, to bring betterments and modifications to parts and accessories, without putting this manual uptodate immediately.*

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 TS 350 engine driven welder ia 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	TS 350 YSX BC
GENERATOR	
Three-phase generation	12 kVA / 400 V / 17.3 A
Single-phase generation	7 kVA / 230 V / 30.4 A
Single-phase generation	4 kVA / 110 V dc / 36.3 A
Single-phase generation	3.5 kVA / 110 V cte / 32 A
Frequency	50 Hz / 60 Hz
Service	100 %
ALTERNATOR	self-excited, self-regulated, brushless
Type	three-phase, asynchronous
Insulating class	H
ENGINE	
Mark / Model	YANMAR / 3TNV76
Type	4-Stroke
Cylinders/ Displacement	3 / 1116 cm^3
Net power	16.5 kW (22.3 HP)
Speed	3000 rpm
Fuel/ Fuel consumption	Diesel / 306 g/kWh
Cooling system	Liquid
Cooling system capacity	4 l
Engine oil capacity	4 l
Starter	Electric
GENERAL SPECIFICATIONS	
Battery	12V - 60Ah
Tank capacity	45 l
Running time (at duty cycle 60%)	13 h
Protection	IP 23
Dimensions / max. Lxwxh (mm) *	1610x720x1110
Weight *	535 Kg
Measured acustic power	93 LWA (68 dB(A) - 7m)
Guaranteed acustic power	94 LWA (69 dB(A) - 7m)

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

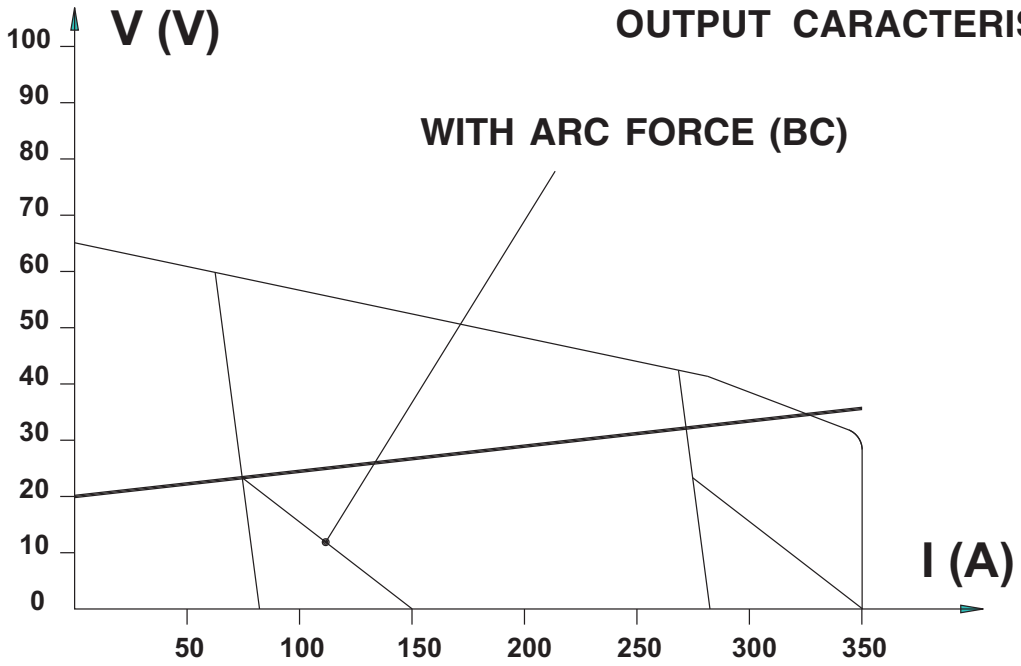
The here below table shows examples of acoustic pressure (Lp) at different distances from a machine with Acoustic Noise Level (L_{WA}) of 95 dB(A)

Lp a 1 meter = 95 dB(A) - 8 dB(A) = 87 dB(A)
Lp a 4 meters = 95 dB(A) - 20 dB(A) = 75 dB(A)
Lp a 7 meters = 95 dB(A) - 25 dB(A) = 70 dB(A)
Lp a 10 meters = 95 dB(A) - 28 dB(A) = 67 dB(A)

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

D.C. WELDING

Service	350 A - 35%, 320 A - 60%, 270A - 100%
Current range, continuous	20 - 350 A
Striking voltage	65 V



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	350 A	175 A	150 A	100 A	0
AUXILIARY POWER	0	1.5 kVA	4 kVA	8 kVA	12 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 assis you in the correct use of the machine and/or accessories.

SYMBOLS (for all MOSA models)

STOP - Read absolutely and be duly attentive

Read and pay due attention

GENERAL ADVICE - If the advice is not respected damage can happen to persons or things.

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

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

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

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

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

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

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

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

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

ACCES FORBIDDEN *to non authorizad* peaple.

PROHIBITIONS No harm for persons

Use only with safety clothing -

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

Use only with safety clothing -

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

Use only with safety protections -

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

Use with only safety material -

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

Use only with non inserted voltage -

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

No smoking -

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

No welding -

It is forbidden to weld in rooms containing explosive gases.

ADVICE 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.

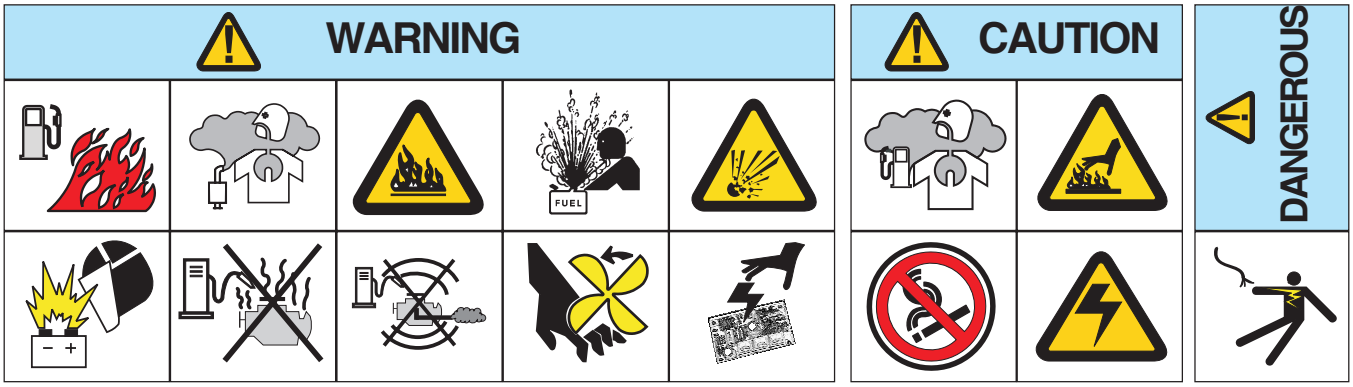
ENGINE	CHECKING BOARD
Stop engine when fueling	Do not touch electric devices if you are barefoot or with wet clothes.
Do not smoke, avoid flames, sparks or electric tools when fueling.	Always keep off leaning surfaces during work operations
Unscrew the cap slowly to let out the fuel vapours.	Static electricity can demage 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 shold be sprayed by accident, from corrosive liquids a/o hot toxic gas or whatever event which may cause serious injuries or death, predispose the first aid in accordance with the ruling labour accident standards or of local instructions.

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

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

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



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

INSTALLATION AND ADVICE BEFORE USE

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 glovers, without holes, and body protection.
- Do not wind cables around the body.
- Use ear protections if the noise level is high.
- Keep flamable material away from the welding area.
- Do not weld on containers which contain flamable material.
- Do not weld near refuelling areas.
- Do not weld on easily flamable 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-flamable protective clothers).

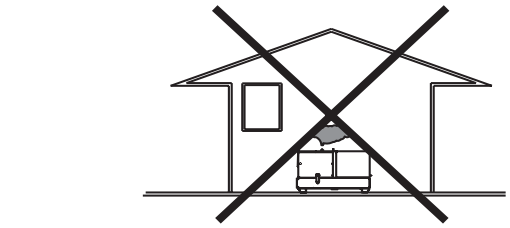
INSTALLATION AND ADVICE BEFORE USE

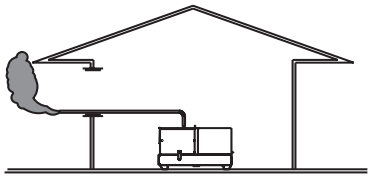
GASOLINE ENGINES

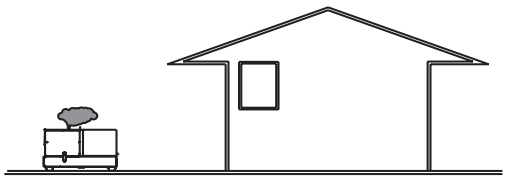
- Use in open space, air swept or vent exhaust gases, which contain the deathly carbone oxyde, far from the work area.

DIESEL ENGINES

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

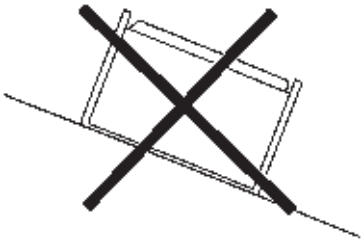




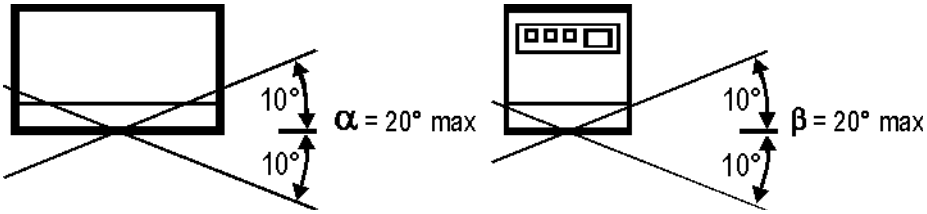


POSITION

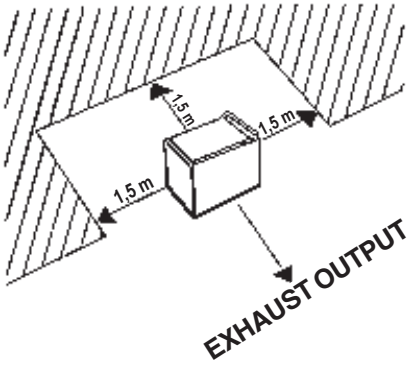
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other plants.



Maximum leaning of the machine (in case of dislevel)



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



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

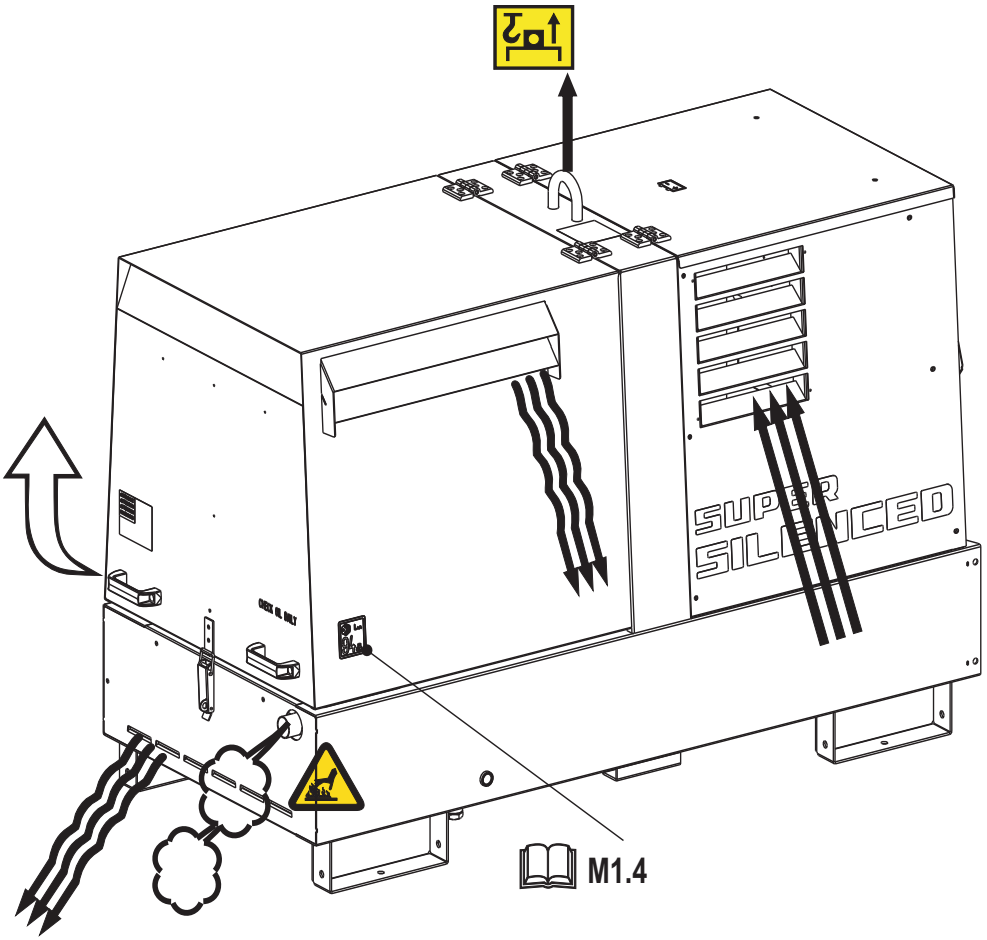
MOVES OF THE MACHINE

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

PLACE OF THE MACHINE

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.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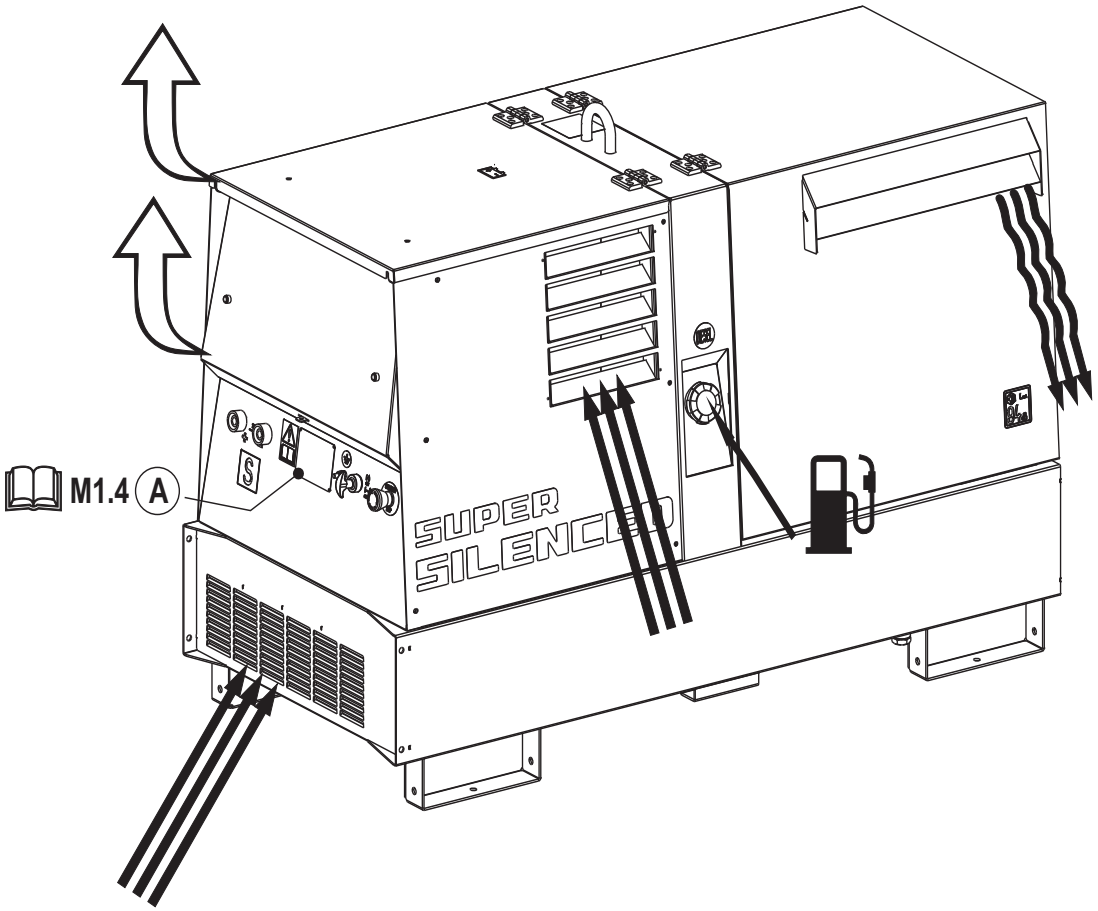
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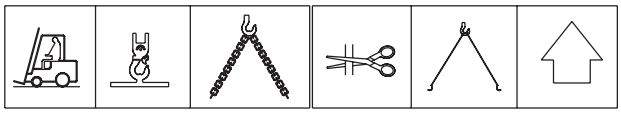
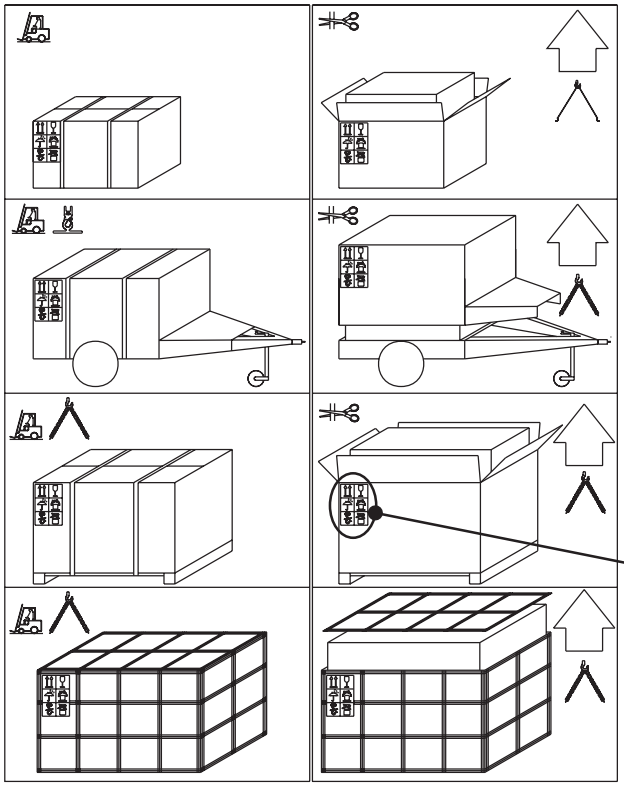
SILENCED

NOTE



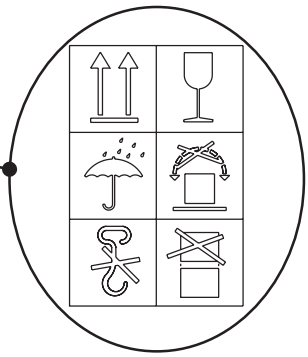


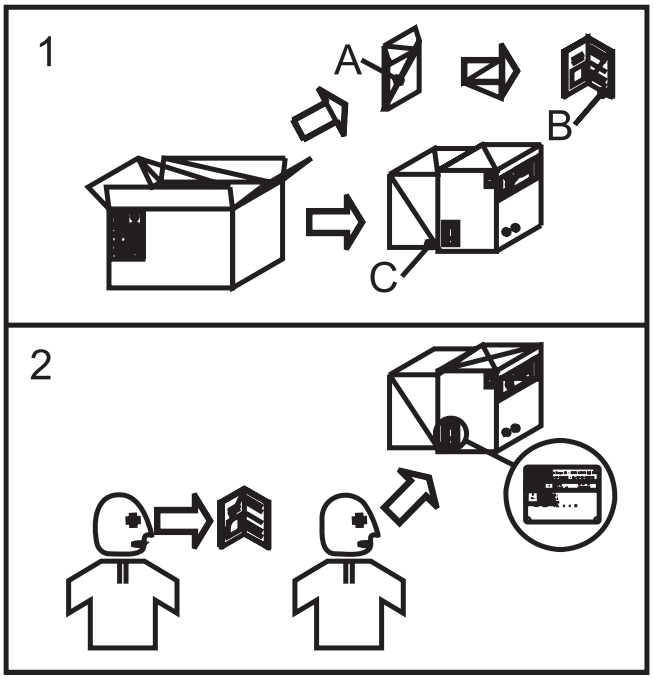
☞ Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conforms to local rules and regulations.

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

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

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



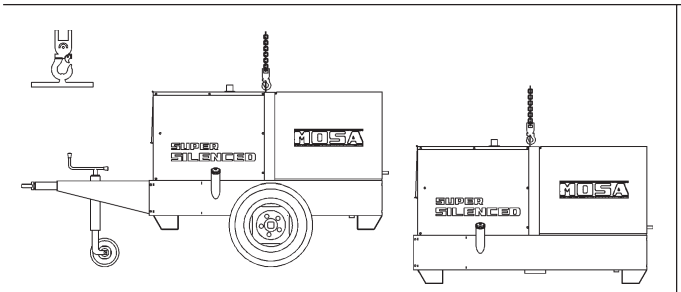


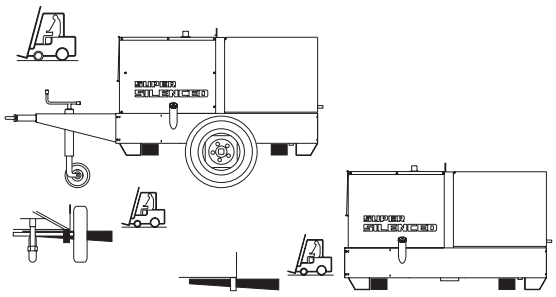
1) Take the machine (C) out of the shipment packing. Take out of the envelope (A) the user's manual (B).
2) Read: the user's manual (B), the plates fixed on the machine, the data plate.

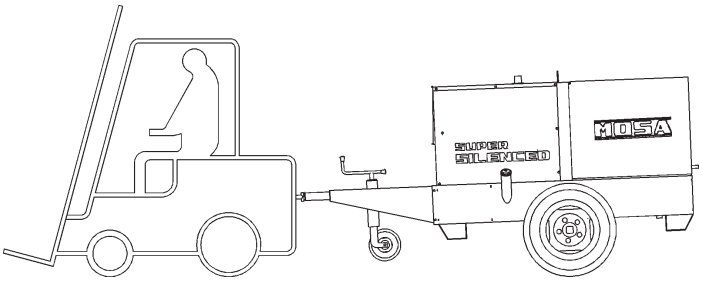
NOTE

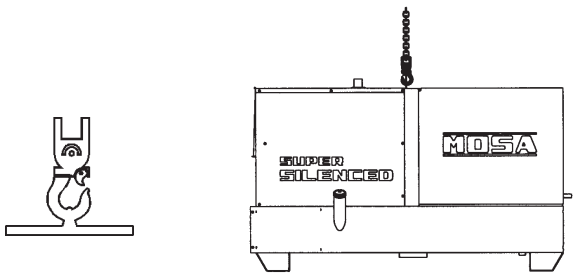
In case you should transport or move the machine, keep to the instructions as per the figures.
Make the transportation when the machine has **no** petrol in its tank, **no** oil in the engine and and electrolyte in the battery.
Be sure that the lifting devices are: correctly mounted, adequate for the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

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

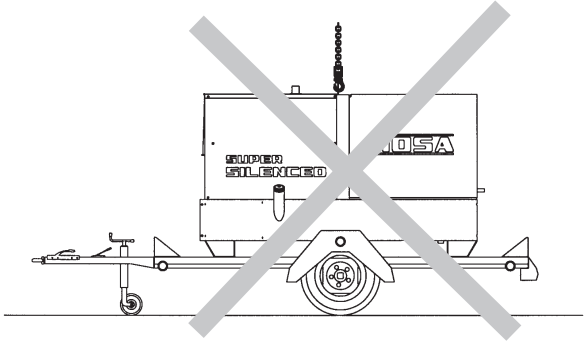






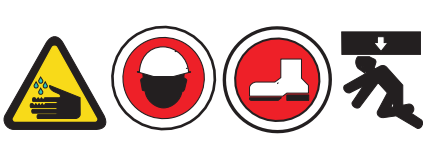


LIFT ONLY THE MACHINE



DO NOT LIFT THE MACHINE AND TRAILER

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



ATTENTION

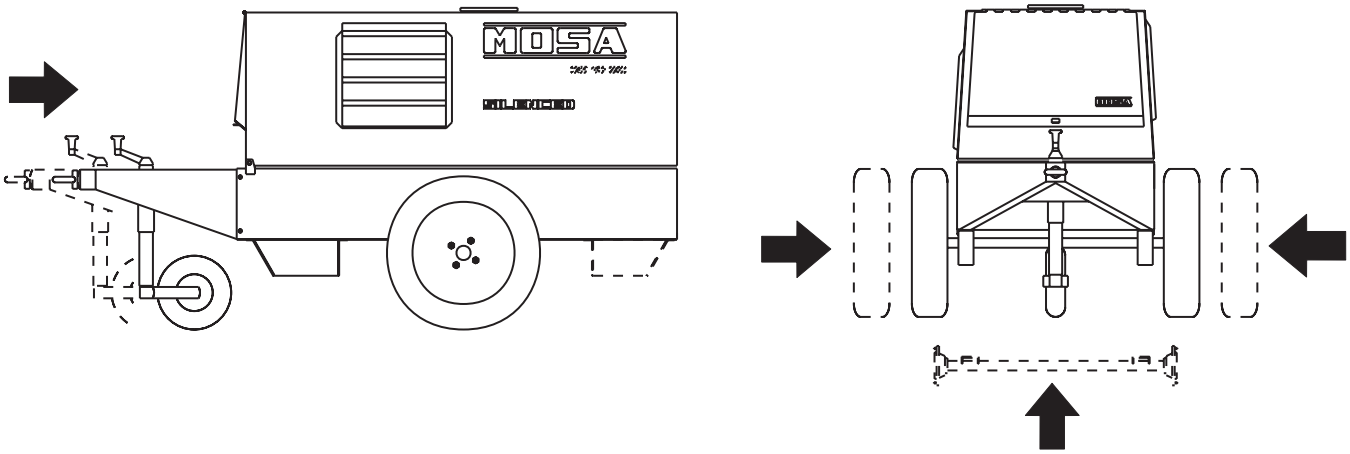
The CTL accessory cannot be removed from the machine and used separately (actioned manually or following vehicles) for the transport of loads or anyway for used different from the machine movements.

TRAILERS

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

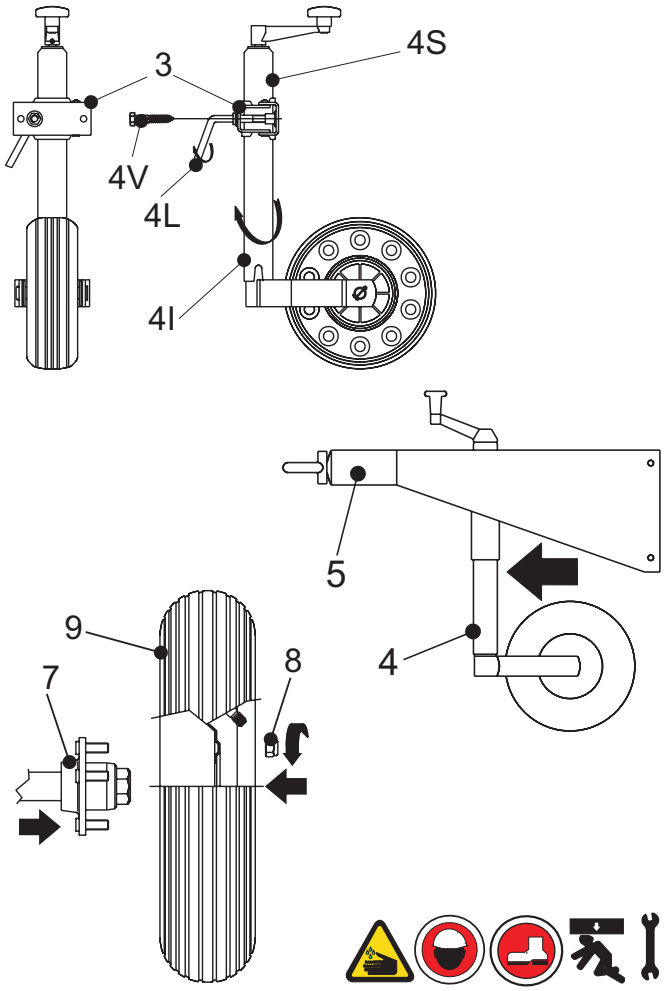
Towing on public roads or turnpikes of any type **IS EXCLUDED**, because **not** in possesion of the requirements by national and foreign traffic norms.

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



For assembling the generating set on the trolley CTL400 please keep to following instructions:

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



ATTENTION

Do not substitute the original tires with other types.

BATTERY WITHOUT MAINTENANCE

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

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

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

DO NOT OPEN THE BATTERY.

LUBRICANT

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

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.

AIR FILTER

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

FUEL

ATTENTION

Do not smoke or use open flames during refuelling operations, in order to avoid explosions or fire hazards.
Fuel fumes are highly toxic; carry out operations outdoors only, or in a well-ventilated environment.

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

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

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

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

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

COOLING LIQUID

ATTENTION

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

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

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.

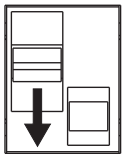
NOTE

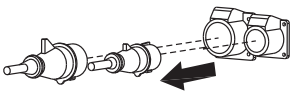
Do not alter the primary conditions of regulation and do not touch the sealed parts.

⚠ ATTENTION

1. By start-up of the generator the welding circuit is immediately operative, i.e. under voltage. Make sure that there are no unwished electrical contacts between the components of the outside welding circuit (electrode, electrode holder gun, workpiece, etc…).

2. Check that at the start-up the a.c. auxiliary generation sockets do not feed any load. Open the electric protection interrupter of the generator or disconnect the plugs of the loads from the sockets.





3. START-UP

Remember that when the machines with auto-idle have the signal set to “auto-idle” will remain at the minimum no. of revs (tickover) as long as no current is drawn.

Drawing power will automatically raise the number of engine revs to the nominal value and likewise the tension in the alternator.

Instead, by setting the auto-idle signal to “max”, the engine revs will immediately rise to the nominal value and likewise the tension in the alternator.

For the machines with manual accelerator, it is necessary to accelerate the motor manually in order to reach the nominal tension.

Starting is actuated using the key which is an integral part of the EP7 post on the front panel.

A) - Turn the key in a clockwise direction until all the LED lights are illuminated.

B) - Wait until the “OIL PRESSURE” and “BATTERY VOLTAGE” LEDs remain illuminated. If the timer lamp is used, the yellow “PREHEAT” LED comes on for the set time of the imposed settings.

C) - As soon as the green “ENGINE RUNNING” LED starts to flash, actuate the key switch in a clockwise direction (momentarily in the position then with return to rest) until obtaining starting of the engine.

If the motor does not start within 15 seconds, the non starting alert will intervene: the two LEDs “Engine running” and “glow plug” will flash alternately (see motor protection description).

D) - At any time it is possible to stop the engine by turning the key in an anti-clockwise direction (OFF position).

In case of engine anomaly due to low oil pressure, high temperature, broken transmission belt, low fuel level or emergency the EP7 will automatically stop the engine.

4. The machines with auto-idle tickover at a minimum of 2400- 2500 rpm. After starting, allow the engine to run for a few minutes before drawing any charge, see the related table below.

The machines with a manual accelerator tickover at around 2000 rpm. Also in this case, respect the warm up period in the table.

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

5. start-up at low temperatures.

The motor will normally start up without problems down to temperatures of -10° C, -15° C. In case of starting difficulty, it is possible to repeat the starting preheating for a max. time of 10 second, .lightly turning the trimmer situated at the back of the EP7 in a clockwise direction (see page M39.13 relating to engine protection “trimmer/ glow plug”). For start-up and use at lower temperatures please see the engine manual or turn to our Technical Assistance Center.

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

⚠ CAUTION

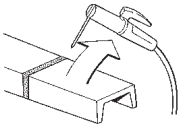
RUNNING-IN

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.

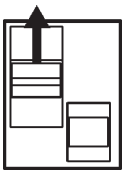
STOP

For shutdown under normal conditions, proceed as follows:

1. Break the welding process in course

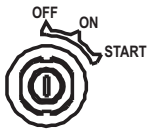


2. Break the production of a.c. auxiliary generation dividing the loads or opening the GFI (D).



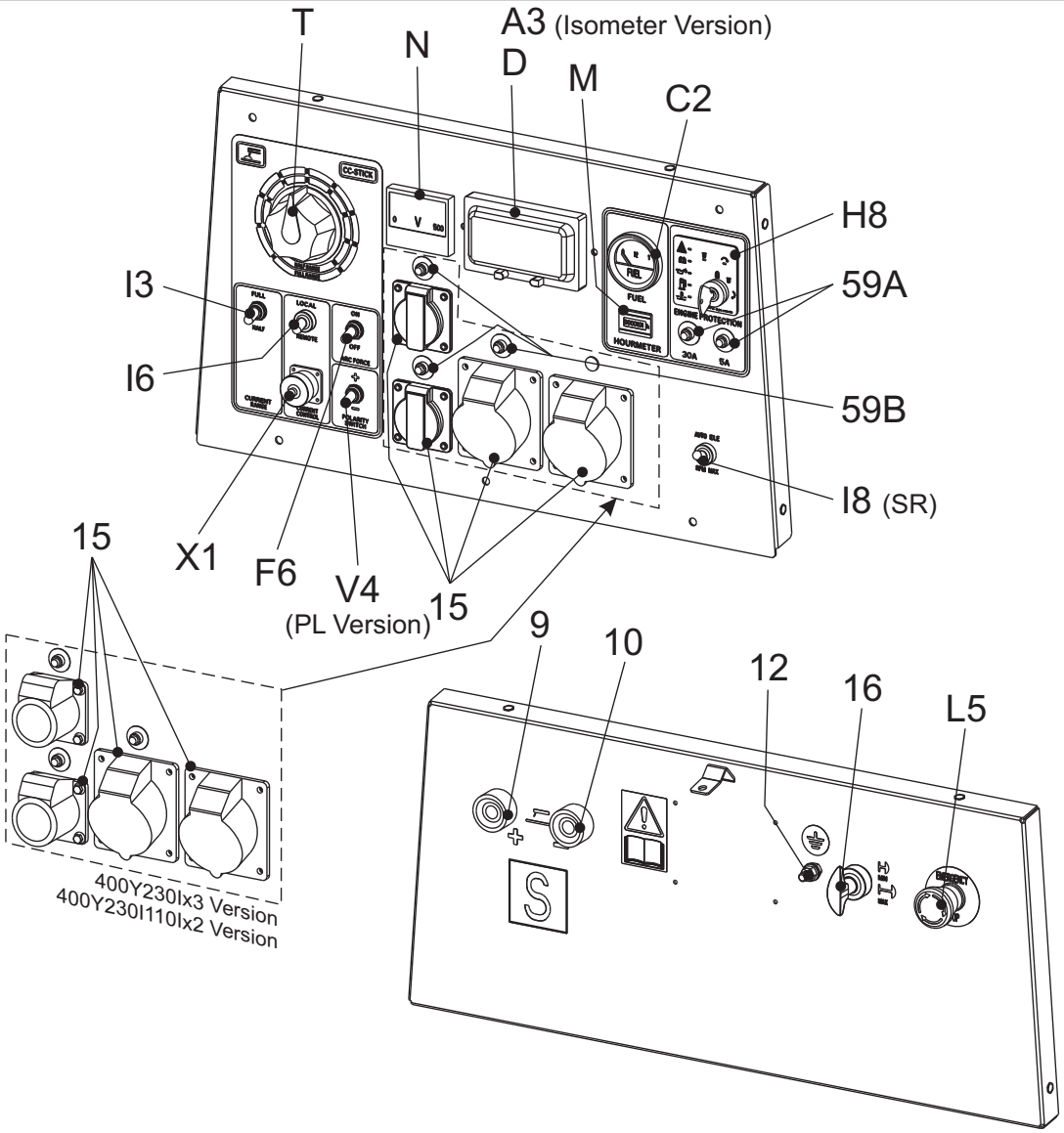
3. Let the engine run with no load for a few minutes. Set the engine speed to minimum, signal of motor speed to “auto-idle”, or accelerator to minimum for manual accelerator.

4. Turn the start key on the EP7 to the OFF position.



EMERGENCY SHUTDOWN

To stop the group in a dangerous situation, press the emergency stop button (L5) (or turn the start key (Q1) to the OFF position). To reset the knob, turn it clockwise.



Pos.	Descrizione	Description	Description	Referenzliste
9	Presa di saldatura (+)	Welding socket (+)	Prise de soudage (+)	Schweißbuchse (+)
10	Presa di saldatura (-)	Welding socket (-)	Prise de soudage (-)	Schweißbuchse (-)
12	Presa di messa a terra	Earth terminal	Prise de mise à terre	Erdanschluß
15	Presa di corrente in c.a.	A.C. socket	Prises de courant en c.a.	Steckdose AC
16	Comando acceleratore	Accelerator lever	Commande accélérateur	Beschleuniger (Gashebel/Gaszug)
59A	Protezione termica motore	Engine thermal switch	Protection thermique moteur	Thermoschutz Motor
59B	Protezione termica corrente aux	Aux current thermal switch	Protection thermique courant aux.	Thermoschutz Hilfsstrom
A3	Sorvegliatore d'isolamento	Insulation monitoring	Contrôle d'isolation	Isolationsüberwachung
C2	Indicatore livello combustibile	Fuel level light	Indicateur niveau carburant	Anzeige Kraftstoffpegel
D	Interruttore differenziale (30mA)	G.F.I.	Interrupteur différentiel	FI-Schalter (GFI)
F6	Selettore Arc-Force	Arc-Force selector	Selecteur Arc-Force	Schalter Arc-Force
H8	Unità controllo motore EP7	Engine control unit EP7	Protection moteur EP7	Motorschutz EP7
I3	Commut. riduz. scala saldatura	Welding scale switch	Commutateur échelle soudage	Bereichsschalter Schweißstrom
I6	Selettore Start Local/Remote	Start Local/Remote selector	Selecteur Start Local/Remote	Umschalter Fernstart
I8	Selettore AUTOIDLE	AUTOIDLE switch	Selecteur AUTOIDLE	Selettore AUTOIDLE
L5	Pulsante stop emergenza	Emergency button	Bouton d'urgence	Notschalter
M	Contaore	Hour counter	Compte-heures	Stundenzähler
N	Voltmetro	Voltmete	Voltmètre	Voltmeter
T	Regolatore corrente di saldatura	Welding current regulator	Régulateur courant soudage	Schweißstromregler
V4	Comando invertitore polarità	Polarity inverter control	Commande inverseur polarité	Polwendeschalter
X1	Presa per comando a distanza	Remote control socket	Prise pour télécommande	Steckdose Fernbedienung

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 sockets, after the machine is started (see pages M21-26), also with no cables, are anyway under voltage.

ATTENTION

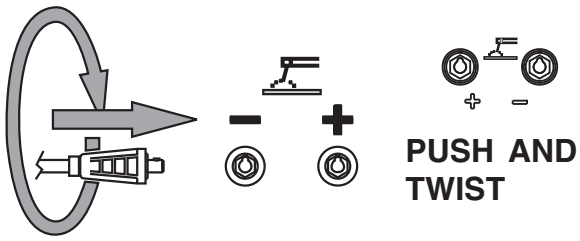
The areas, access of which is forbiden to unqualified personel, are:

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

Check at the beginning of any work the electric parameters and/or the control placed on the front.

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

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



PUSH AND TWIST

☞ 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 TC...

See page M 38

WELDING CURRENT REGULATOR

Position welding current adjusting knob (T) in correspondance of the chasen current value, so as to obtain the necessary amperage, taking into acount the diameter and the type of the electrode.
For technical data see page M52

SWITCH REDUCTION SCALE

For small electrodes (up to Ø 3.25-130A and 4-200A) it is recommended to use the reduction scale switch (I3) allowing a more accurate regulation of the welding current (lever position at 200A).
When using electrodes of a diameter greater than 3.25 and/or 4 set the welding scale knob to max. position.

SWITCH POLARITY INVERTER

It permits to have at the electrode holder the positive or negative polarity of the welding diode bridge.
It is used above all in the first run with cellulosic electrodes to lower the bath temperature and so doing ease up the welding on pipes of small thickness

SWITCH "ARC FORCE" (BASE CURRENT)

Positioning the switch on „ON“, is obtained a low voltage welding current which keeps, always, the lit arc necessary for some types of cellulosic/basic electrodes or when a high penetration is wanted.

For electrodes of rutile type, position the switch on "OFF".
For technical data see page M52

☞ At the end of every welding process and/or work, proceed with all the use operations **in inverted sense**.

To stop the machine see pages M 22.

ATTENTION

To reduce the risk of electromagnetic interferences, use the minimum lenght 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 and/or M25). 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 Thechnical Assistance Service.

CAUTION

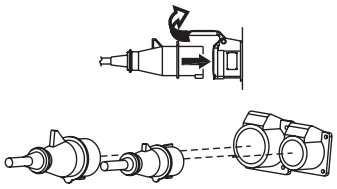
With a welding cable length up to 20 m is suggested a section of 35 mm²; with longer cables a bigger section is required.

WARNING

It is strictly forbidden to connect the group to the public mains and/or to any other source of electric power.

GENERATION IN AC (ALTERNATING CURRENT)

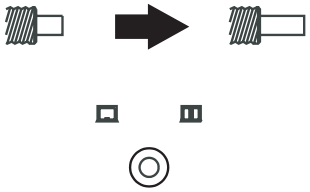
Make certain of the efficiency of the ground connection (12) - See page M20 -.
Position the G.F.I. switch to ON.
☞ Voltage is now immediately available to the AC sockets.
Verify that the voltmeter displays the nominal voltage value + 10%.
Connect the electric devices to be powered to the AC sockets, using suitable plugs and cables in good condition.



☞ Verify that the electrical characteristics (voltage/frequency/power) of the device being powered are compatible with those of the generator.
Low frequency and/or voltage can irreparably damage some electrical devices.
Verify that the ground lead of the electrical appliance/tool to be powered is correctly connected to the terminal of the plug.
☞ For double insulation devices with the symbol ⧈ , the plug's ground terminal does not need to be grounded.

THERMAL PROTECTION

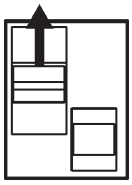
The monophase outputs are protected against overloads by the thermal protection (59B).
When the rated current is exceeded, the protection intervenes to cut off the voltage to the AC socket.
. Note: the intervention of the thermal protection is not instantaneous, but reacts according to an overcurrent/time characteristic, whereby the greater the overcurrent the quicker the intervention.
In case of intervention by the protection device, verify that the total power for the loads connected does not exceed the declared rating and decrease if necessary. Disconnect the loads and wait a few minutes to allow the thermal protection to cool down.



Before resetting by pressing the central button and then connect the load again.
If the protection should intervene again, replace it with another one with matching intervention current specifications and/or contact the Service Department.
. Note: do not forcibly hold the central button of the thermal protection device to prevent its intervention, as this could irreparably **damage** the unit's alternator.
☞ Note: the three phase output does not require any protection against overcurrents, since it uses a self-protecting asynchronous type alternator.

GROUND FAULT INTERRUPTOR SWITCH

The high-sensitivity ground fault interruptor switch [G.F.I.] (30mA) (D), guarantees protection against indirect contacts due to faulty ground currents .
When the G.F.I. switch picks up a faulty ground current that is higher than 30mA, it intervenes by immediately cutting off voltage to the AC sockets.



In case of intervention by this protection device, reset the G.F.I. switch by moving the lever to the ON position. In case of another intervention, verify that there are no faults in the tools connected, or replace the G.F.I. switch with another one of matching specifications and/or contact the Service Department.

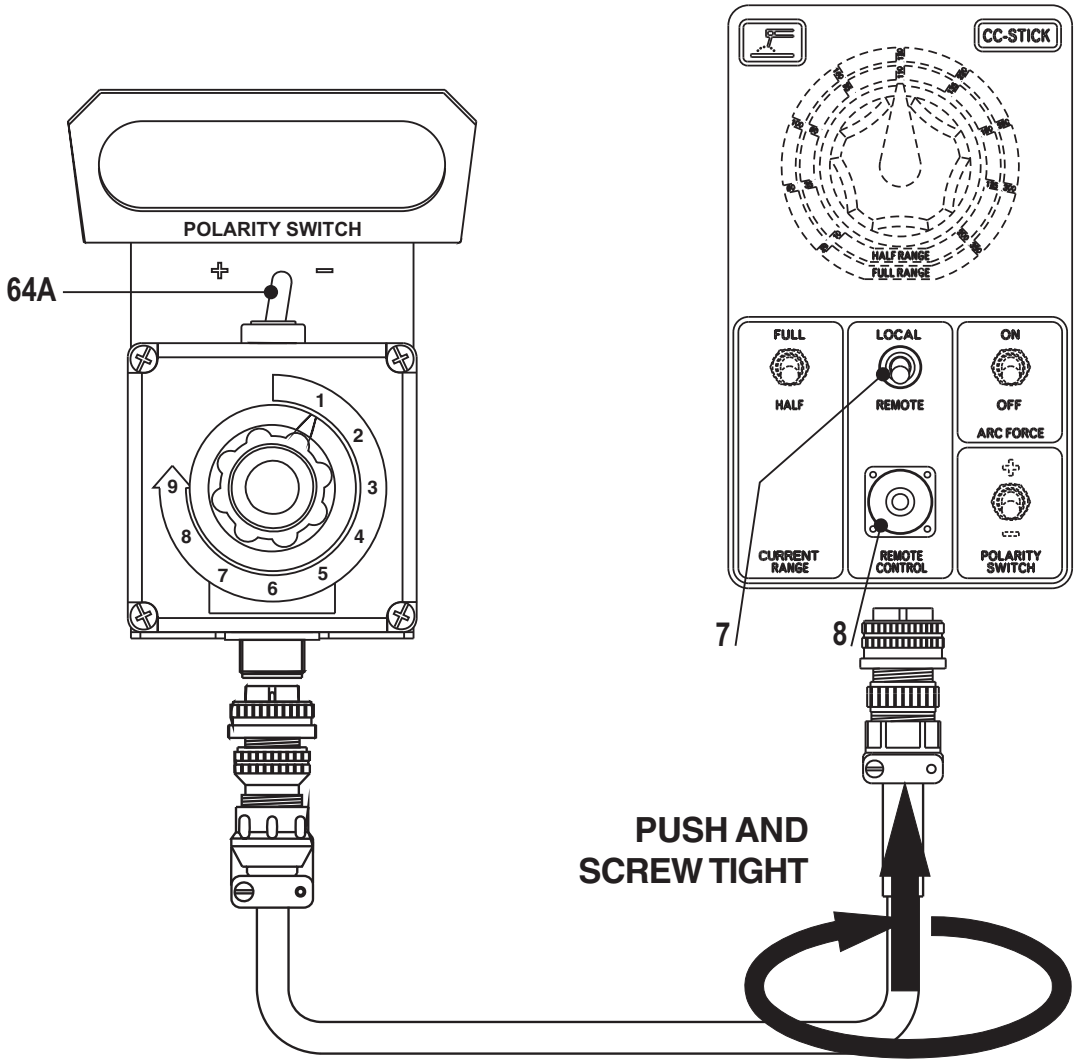
☞ Notes: Verify the operation of the G.F.I. switch at least once a month by pressing the TEST button. The generator must be running and the G.F.I. lever in the ON position.

SIMULTANEOUS USE

The welder's alternator permits the simultaneous use of auxiliary power and welding current. The auxiliary power available to the AC plugs (15) diminishes as the welding current drawn increases. The table on page M52 TECHNICAL SPECIFICATIONS shows the amount of auxiliary power available as the welding current varies.

COMBINED USE

The output available from the various auxiliary power sockets is limited, not only by the declared output of the unit but also by the capacity of each individual socket.



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

To regulate the current from the TCPL 4, move the switch (7), located above the multipole connector (8), to „ON“ position.

The remote control of the polarity inverter (64A) permits to inverse the polarity directly from the control itself.

MAKE SURE

When the TCPL 4 is not used, make sure that the switch is in the "LOCAL" position.

Position the (T) welding current adjusting knob at the necessary current value in order to obtain the necessary amps, according to the diameter and type of electrode.

- See page M34.2 -

NOTE

Don not intervene on the setting of the protection switch. Before using the machine check the ON warning lamp lighting.

USE AS TROUBLE INDICATOR:

Placed on the front panel, the insulation monitor (A3) is a relay which controls continuously the insulation of the generation a.c. circuits towards the ground.

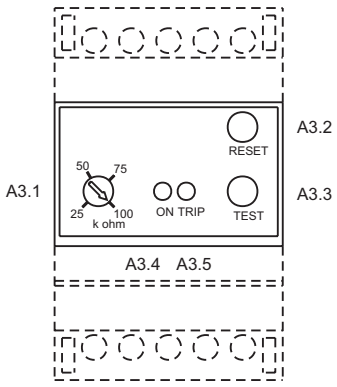
The device generates internally a continuous 12V voltage which is applied between the circuit under control and the ground.

USE AS TROUBLE INDICATOR AND INTERVENTION:

The insulation monitor controls a device (release coil, contactor, etc.) which opens the whole circuit, lifting voltage in the whole part of the machine a.c. generation.

USE OF RI – R22M MODEL:

- To vary the regulation call our Technical Assistance Department
- The LED ON shows that the device is fed.
- Check that it works correctly pressing the TEST push button
- The LED TRIP will simulate on intervention or anyway will show the real intervention in case the insulation fails.
- Reset the circuit pressing the RESET push button after having checked the plant and removed the problem cause.

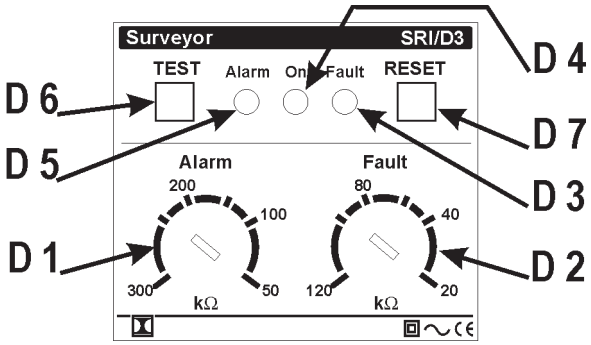


LEGEND:

A3.1 - Adjustment potentiometer insulation resistance
A3.2 - Manual reset push button
A3.3 - Test push button
A3.4 - Auxiliary fedding presence LED
A3.5 - TRIP LED

USE OF SRI/D3 MODEL

- To vary the regulation call our Technical Assistance Department
- The warning light ON shows that the device is fed.-
- Pressing a long time the Test push-button, the Fault led lights and the Alarm led twinkles;
- Leaving it, the Alarm led goes off while the Fault led remains lit. The pressure on the Reset key brings the device back to initial conditions.
- If the insulation resistance goes down below the fixed alarm value, the Alarm led twinkles, at the same time the Alarm contact switches; if the insulation resistance goes down furtherly and becomes inferior to the fixed value for the Fault, the Fault led lights and at the same time both exchange contacts switch putting the Fault in activity and the Alarm at rest.
- After having checked the device and removed the cause of the problem, re-establish the circuit pressing the push-button RESET.



LEGEND:

D1 Regulation of Alarm threshold
D2 Regulation of Fault threshold
D3 Led, fault indication
D4 Led feeding indication
D5 Led Alarm indication
D6 Test push-button
D7 Reset push-button

Description

The EP7 includes the basic safeguards to protect an DIESEL engine. The EP7 features 7 LEDs, 3 Static Outputs and a 30A Key Switch. The EP7 monitors an Oil Pressure-switch, Temperature-switch, Fuel Level-switch, Charger Alternator Voltage, and an Emergency-switch.

Specification

DC Supply, Battery Plant	8V up to 36 Vdc
Static Outputs (short circuit proof)	200 mAdc
Key Switch Rating	30 A (30 secs)/80 A (5 secs)
Dimensions-DIN 96 Size	72X72X55 (ex switch /key)
Weight	300 gr
Operating Temperature	-30° C /+70° C
Operating Humidity	96% (non-condensing)

[ENGINE RUNNING] green LED
This LED blinks for 15 seconds, indicating that the EP7 is ready to start the engine (you have to turn the key to start). If the engine does not run within 15 seconds, the "Starting Failure" alarm will take place. This LED illuminates continuously if the engine runs.

[PREHEAT] yellow LED
This indicator illuminates during the Pre-Glow cycle (10 secs to 60 secs).

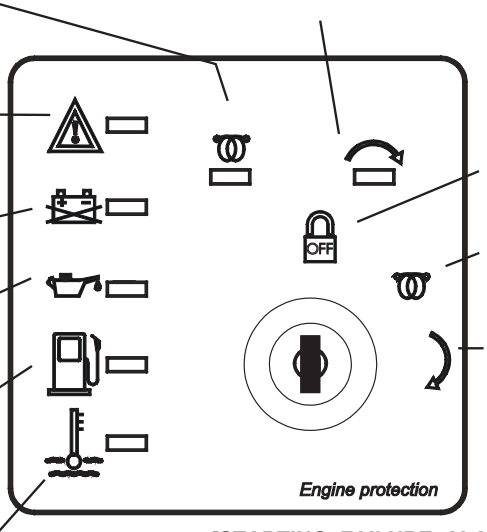
[EMERGENCY] red LED
This LED illuminates continuously when a shut down has been caused by the Emergency switch.

[ALTERNATOR FAILURE] red LED
This LED illuminates before engine starting or if a Belt Break shut down occurs (than 20 secs).

[OIL PRESSURE] red LED
This LED illuminates before engine starting or if an Oil Pressure shut down occurs.

[FUEL LEVEL] red LED
This LED blinks when a low fuel condition occurs.
This LED illuminates continuously to indicate a shut down, if the switch has been closed for more than 5 minutes.

[TEMPERATURE] red LED
This LED illuminates when an High Temperature shut down occurs.



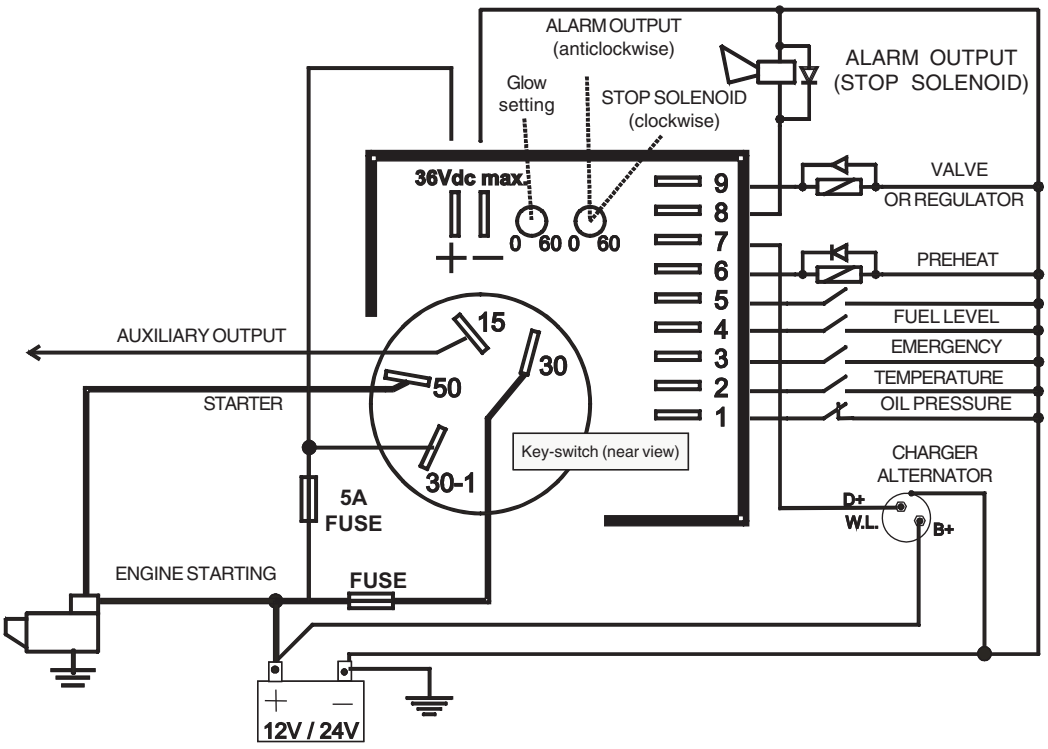
[KEY-SWITCH] OFF position

[KEY-SWITCH] Pre-Heat position

[KEY-SWITCH] START position

[STARTING FAILURE ALARM] indication
These 2 LEDs blink alternatevely (slowly) to indicate a starting failure alarm.

[OPTIONAL ALARM] indication
These 2 LEDs blink alternatevely (quickly) to indicate the intervention of the alarm.



07/05/01 M39GB

Problems	Possible cause	Solution
WELDING		
P1 No welding current but auxiliary output is OK	1) Position of remote control switch 2) Potentiometer defect in welding current control 3) Welding current signal interrupter 4) Defect card 5) Defect in diode bridge	1) Check that it is in OFF position if there is no remote control, on "0" with remote control inserted. 2) Check the continuity of the welding potentiometer and relative connections. 3) Check that cables from current sensor to card are in perfect state. 4) Replace card. 5) Check the diode or the controlled diodes.
P2 There is welding but non penetration	1) Starter (STARTER for SCR) faulty 2) Welding bridge faulty	1) Replace starter 2) Replace the welding bridge
P3 Defect in welding, high and discontinued sparks	1) Current sensor faulty 2) Defect in diode bridge 3) Defect in card	1) Replace the current sensor 2) Check the diodes and controlled diodes. 3) Replace the card.
P4 No welding output and no auxiliary power output	1) Short circuit in wiring 2) Defective condenser 3) Defective stator 4) Short circuited diode bridge	1) Check the wiring inside the welder for a short circuit between cables or to ground. 2) If the wiring is OK, short circuit the condenser to be sure that it is discharged, disconnect all wires from condenser and, using an ohmmeter, check that the condenser is not short circuited. 3) If the condenser box is OK, disconnect all leads from the stator except for those going to the condenser box and check the output from the alternator. If there is no output from the welding winding and the auxiliary winding, replace the stator. 4) If there is output from all windings reconnect the diode bridge and check if there is welding current. If not the diode bridge is defective. If there is welding current connect the auxiliary power leads one at a time until there is no output; at this point, the short circuit is in that line..
GENERETING		
P1 Voltmeter shows no voltage or low voltage but actual voltage at the sockets is OK.	1) Voltmeter malfunction	1) Replace the voltmeter.
P2 No three-phase voltage present at the socket(s) but voltmeter reading is normal and there is voltage on the other sockets.	1) Differential or isometer switch not inserted 2) Differential or isometer switch malfunction	1) Turn on the switch. 2) Replace the switch.
P3 No single phase voltage one socket but voltmeter reading is normal and there is voltage on the other sockets.	1) Intervention of thermal switch due to excessive current. 2) Thermal switch malfunction.	1) Push in the thermal switch. 2) Replace the thermal switch.
P4 No voltage present.	1) Short circuit present on the generator outputs.	1) Disconnect all outputs on the generator except for those on the condensers and re-start machine; check for voltage on condensers.

Problems	Possible cause	Solution
	ENGINE	
P1 The engine does not start or stops immediately after startup.	1) Low battery voltage, battery dead or defective 2) Presence of air in the fuel supply circuit 3) Presence of water in the pre-filter (where fitted). 4) Engineprotection termic/fuse blown	1) Check the level of the electrolyte. Fill or replace the battery 2) Carry out de-aeration on the fuel system. See engine operating manual 3) Eliminate the water, see motor manual 4) Replace. In case the problem persists, check the electrical circuit and eliminate the problem. Call an authorised service centre.
P2 Engine stops due to intervention of ES protection.	1) Engine temperature too high or insufficient oil pressure. 2) High temperature sensor or oil pressure defective. 3) ES protection defective. 4) Stop solenoid defective.	1) Check oil level. 2) Replace the malfunctioning sensor. 3) Replace the protection. 4) Replace
P3 The battery is not charged.	1) Battery charger alternator de-fective. 2) Battery charger warning light de-fective.	1) Replace 2) Replace
P4 For other problems, refer to the attached engine manual		

WARNING

MOVING PARTS can injure

- Have **qualified** personnel do maintenance and troubleshooting work.
- Stop the engine before doing any work inside the machine. If for any reason the machine must be operated while working inside, **pay attention** moving parts, hot parts (exhaust manifold and muffler, etc.) electrical parts which may be unprotected when the machine is open.
- Remove guards only when necessary to perform maintenance, and replace them when the maintenance requiring their removal is complete.
- Use suitable tools and clothes.
- Do not modify the components if not authorized.

- See pag. M1.1 -

HOT surface can hurt you

NOTE

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

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

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

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

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

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

IMPORTANT

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

ENGINE and ALTERNATOR

PLEASE REFER TO THE SPECIFIC MANUALS PROVIDED.

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

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

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

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

BATTERY WITHOUT MAINTENANCE
DO NOT OPEN THE BATTERY

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

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

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

NOTE

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

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

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

GASOLINE ENGINE

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

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

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

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

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

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

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

DIESEL ENGINE

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

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

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

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

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

IMPORTANT

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

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

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

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

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

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

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

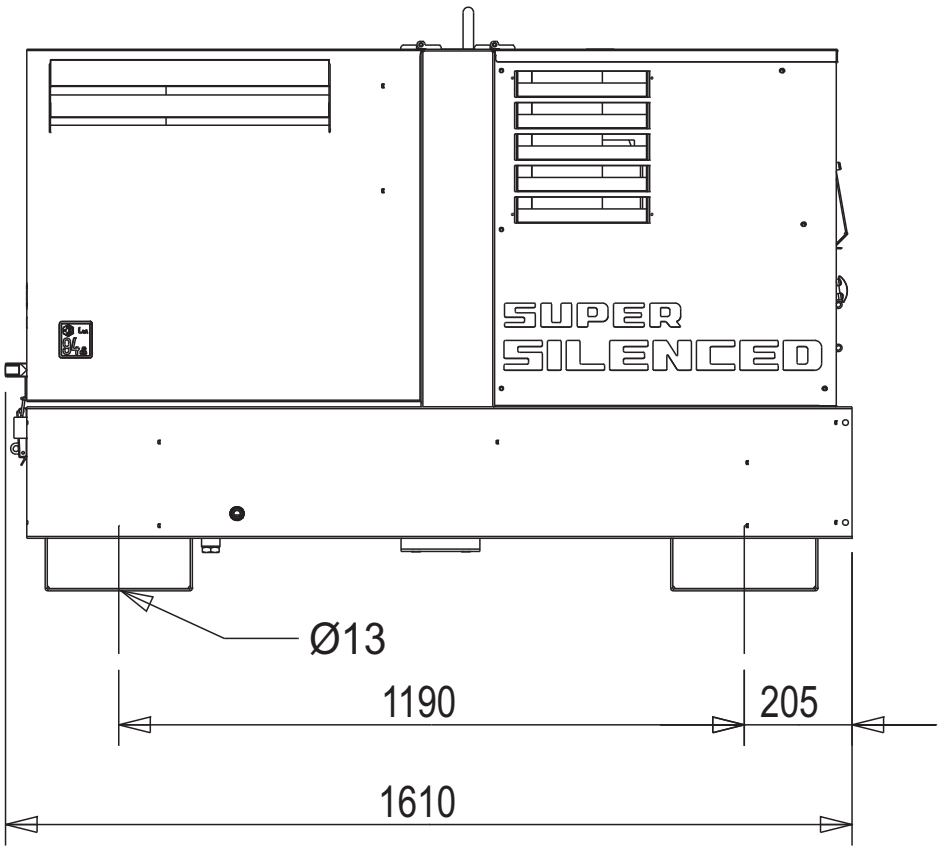
In case the machine should be cust off without any previous disassembly it is however compulsory to remove:
- tank fuel
- engine lubricating oil
- cooling liquid from the engine
- battery

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

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

IMPORTANT

In the cust-off operations avoid that polluting substances, liquids, exhausted oils, etc. bring damage to people or things or can cause negative effects to surroindings, health or safety respecting completely the laws and/or dispositions in force in the place.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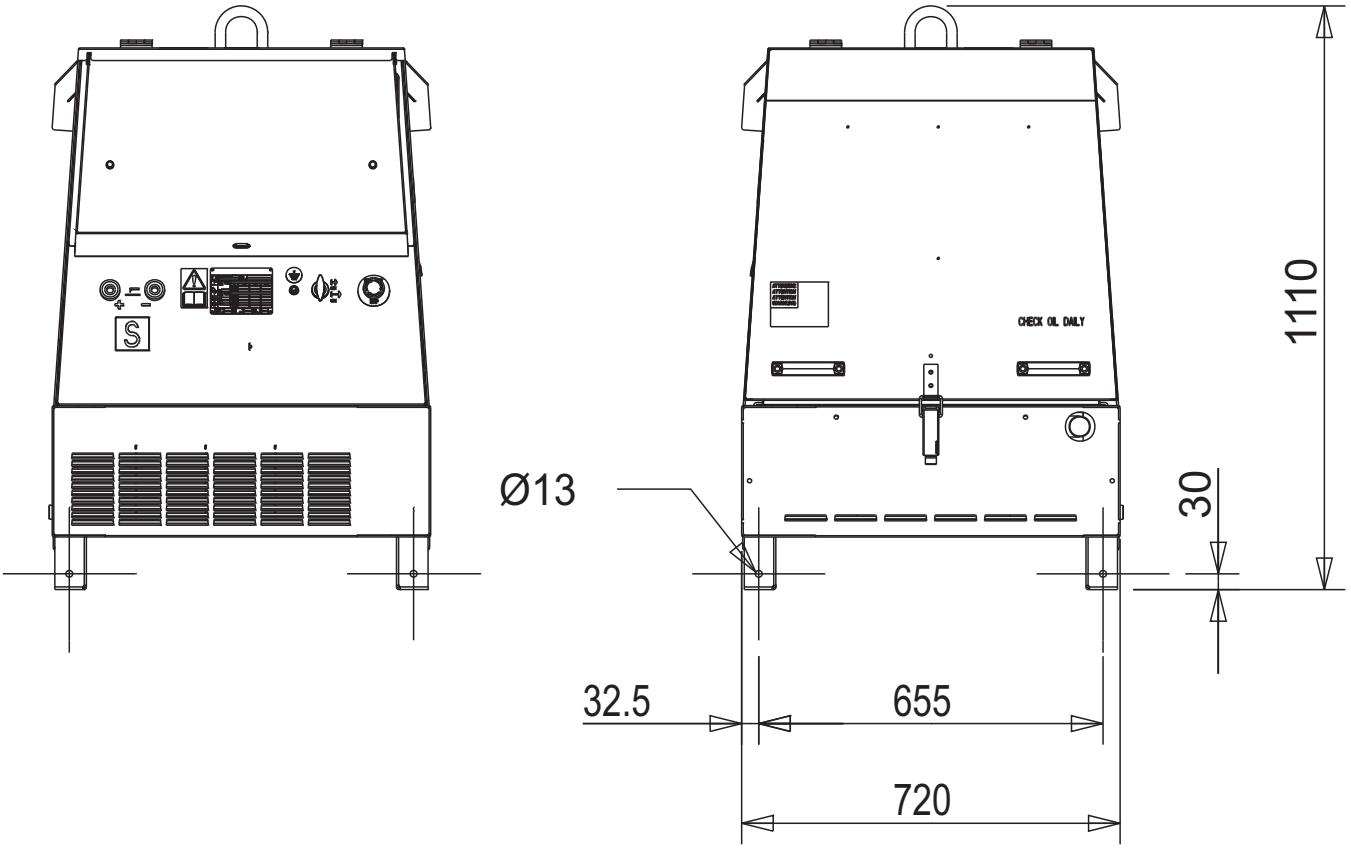
CHECK OIL DAILY
1110
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32.5
655
720

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

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

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

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

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

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

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

A7: Transfer pump selector AUT-0-MAN
B7: Fuel transfer pump
C7: „GECO“ generating set test
D7: Flooting with level switches
E7: Voltmeter regulator
F7: WELD/AUX switch
G7: Reactor, 3-phase
H7: Switch disconnector
I7: Solenoid stop timer
L7: "VODIA" connector
M7: "F" EDC4 connector
N7: OFF-ON-DIAGN. selector
O7: DIAGNOSTIC push-button
P7: DIAGNOSTIC indicator
Q7: Welding selector mode
R7: R.C. net
S7: 230V 1-phase plug
T7: V/Hz analogic instrument
U7: Engine protection EP6
V7: G.F.I. relay supply switch
Z7: Radio remote control receiver
W7: Radio remote control trasnsmitter
X7: Isometer test push-button
Y7: Remote start socket

A8: Transfer fuel pump control
B8: Ammeter selector switch
C8: 400V/230V/115V commutator
D8: 50/60 Hz switch
E8: Cold start advance with temp. switch
F8: START/STOP switch
G8: Polarity inverter two way switch
H8: Engine protection EP7
I8: AUTOIDLE switch
L8: AUTOIDLE PCB
M8:
N8:
O8:
P8:
Q8:
R8:
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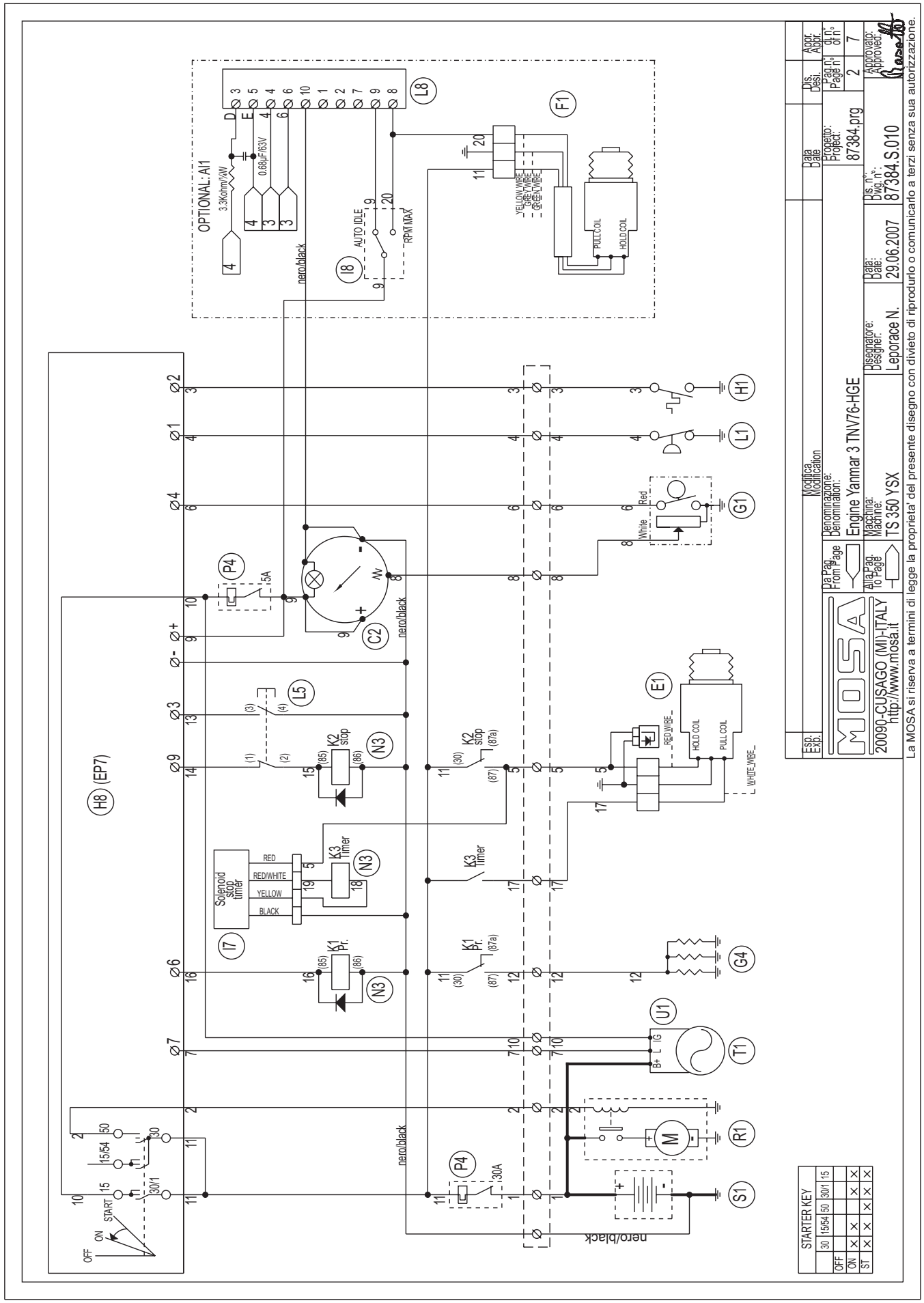
U8:
V8:
Z8:
W8:
X8:
Y8:



MOSA

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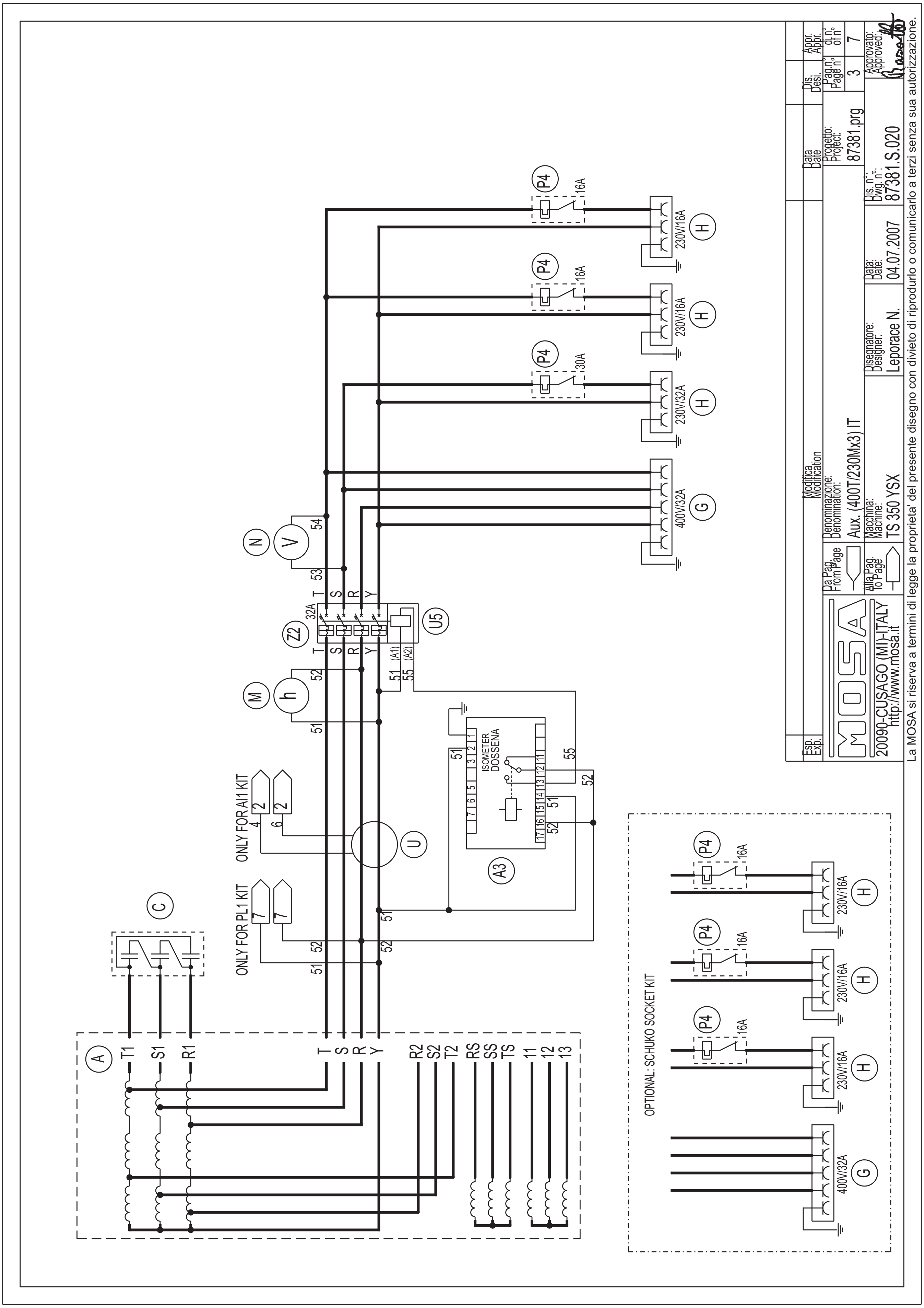
Ⓘ **Schema elettrico**
ⒼⒷ **Electric diagram**
Ⓕ **Schemas electriques**

TS 350 YSX BC
(Isometer Version)

M 61.2



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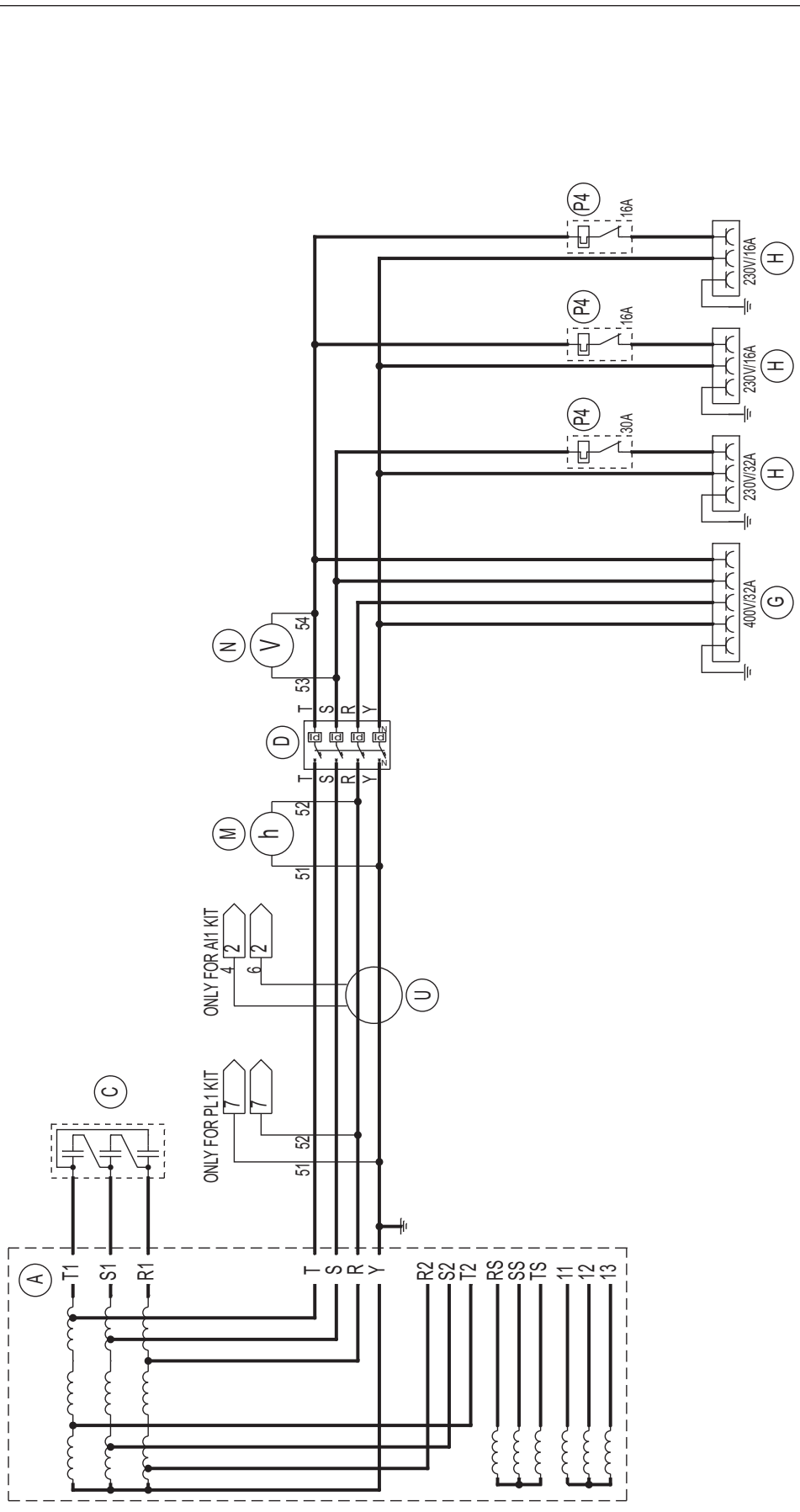

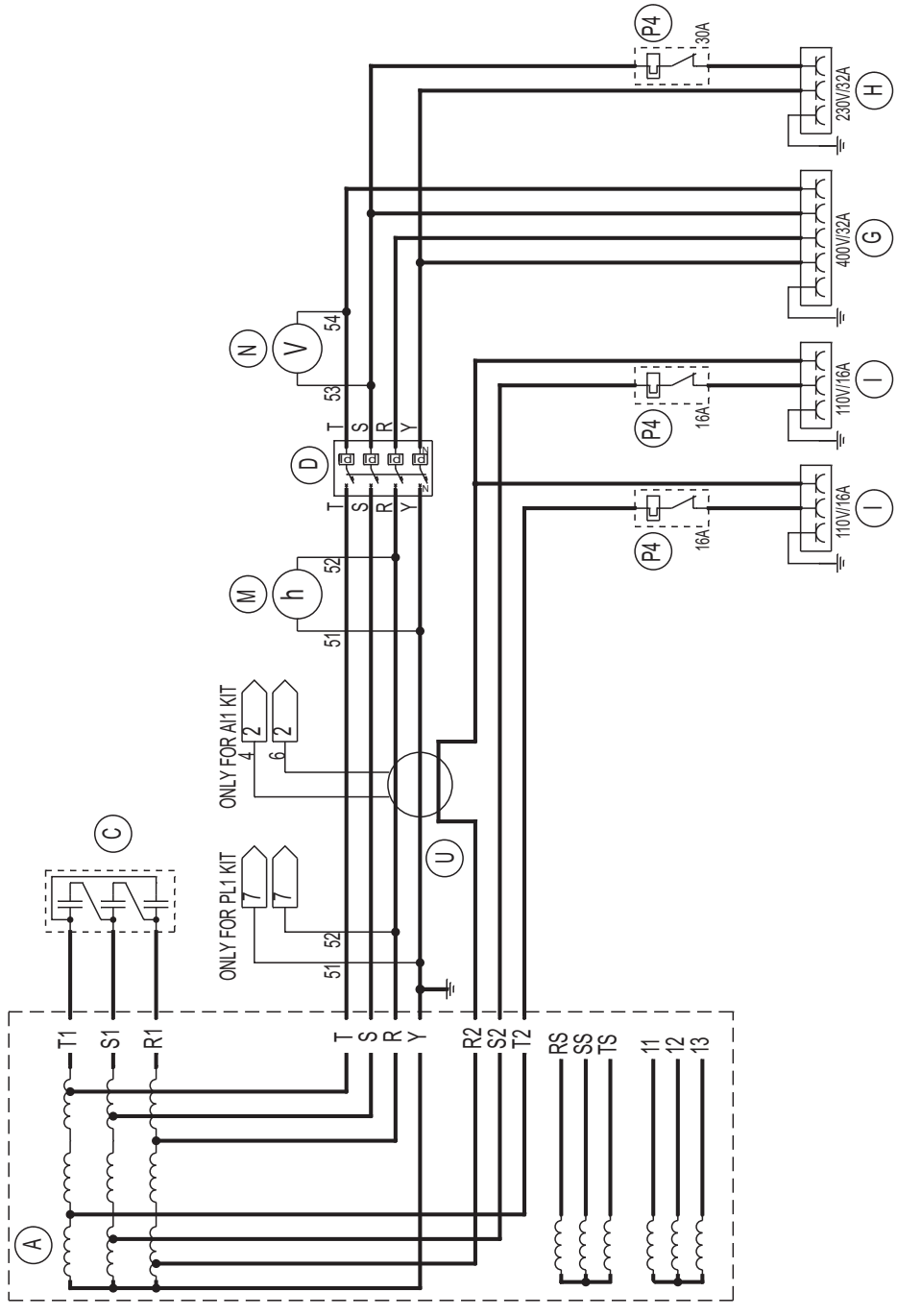

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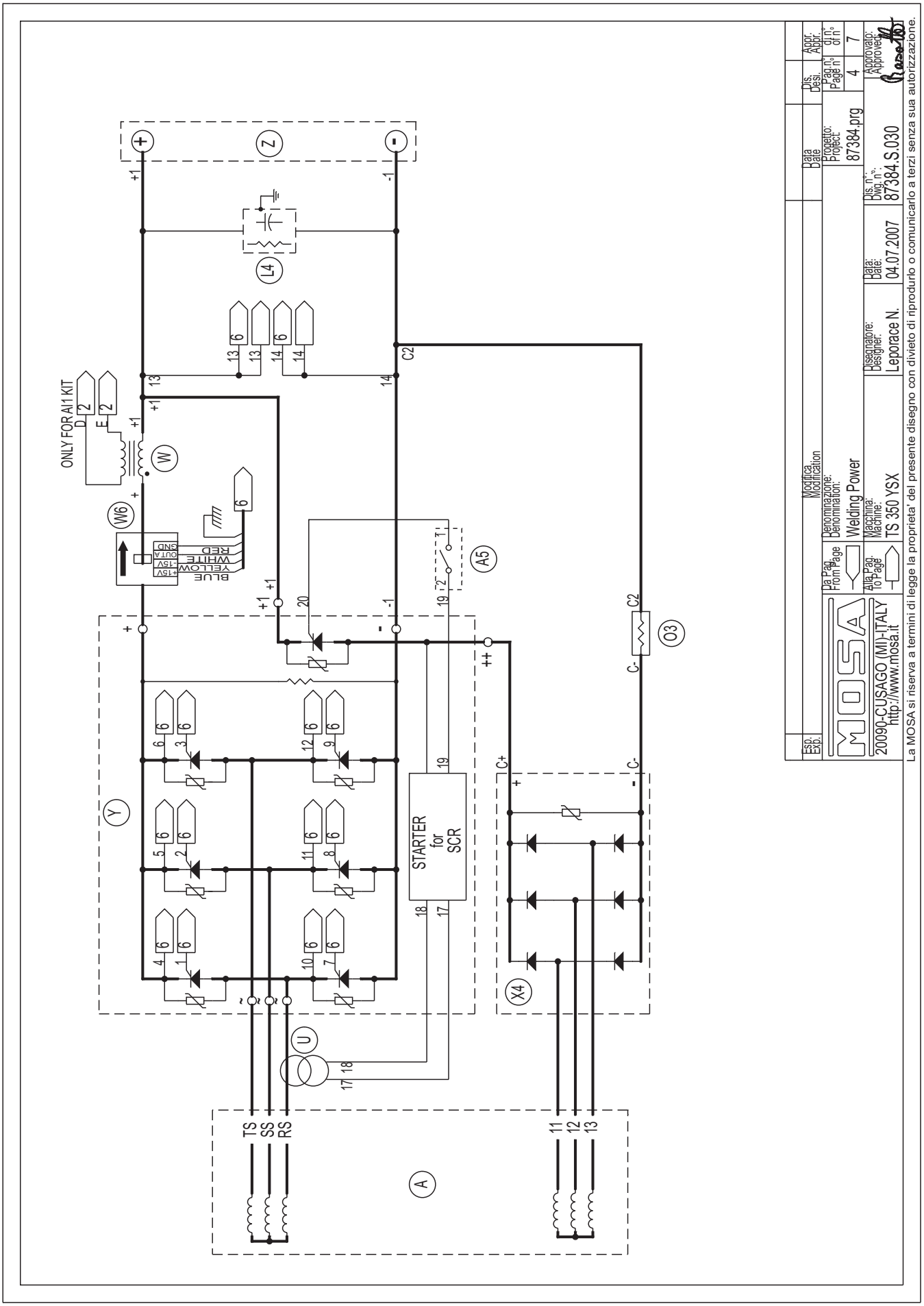
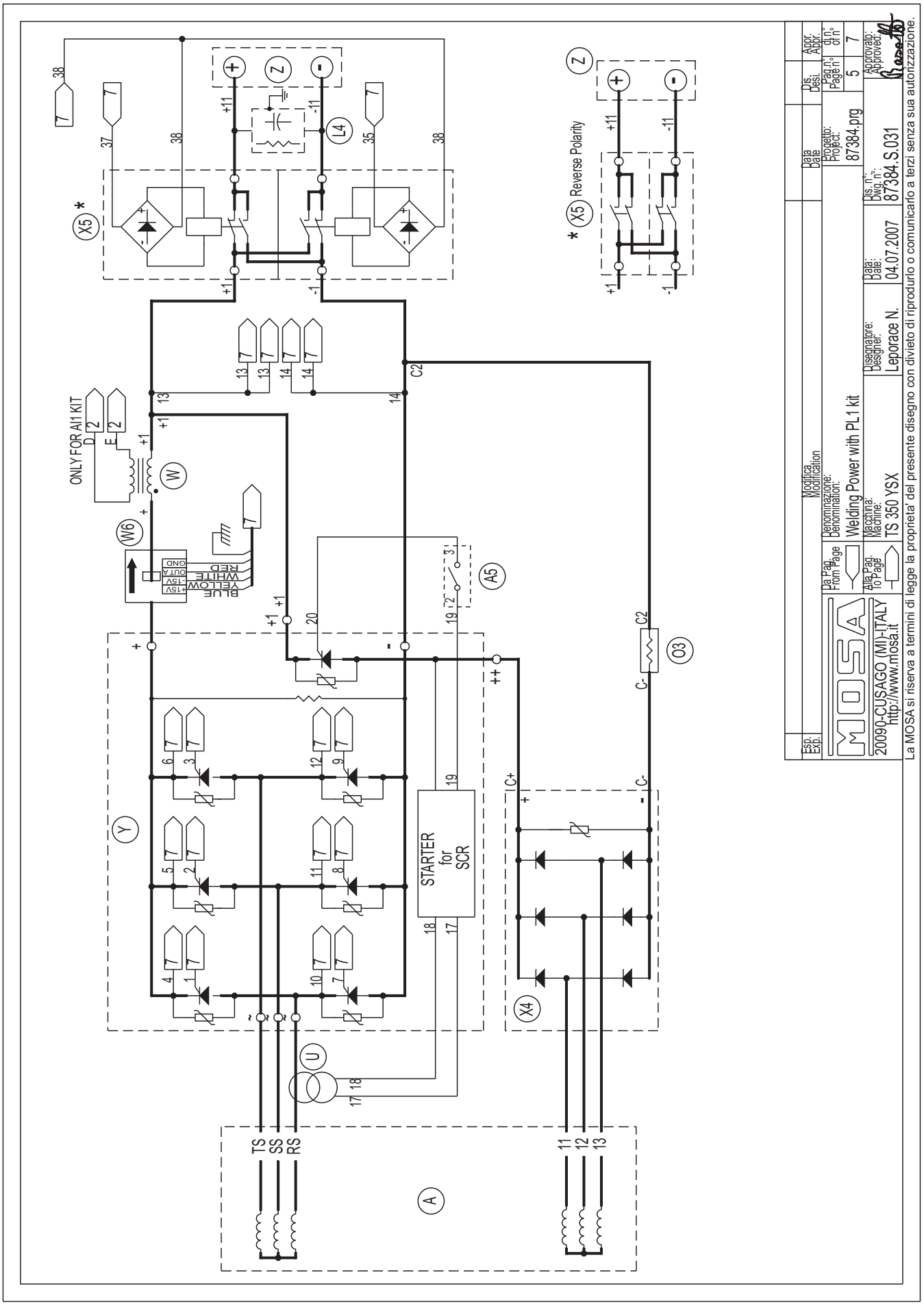
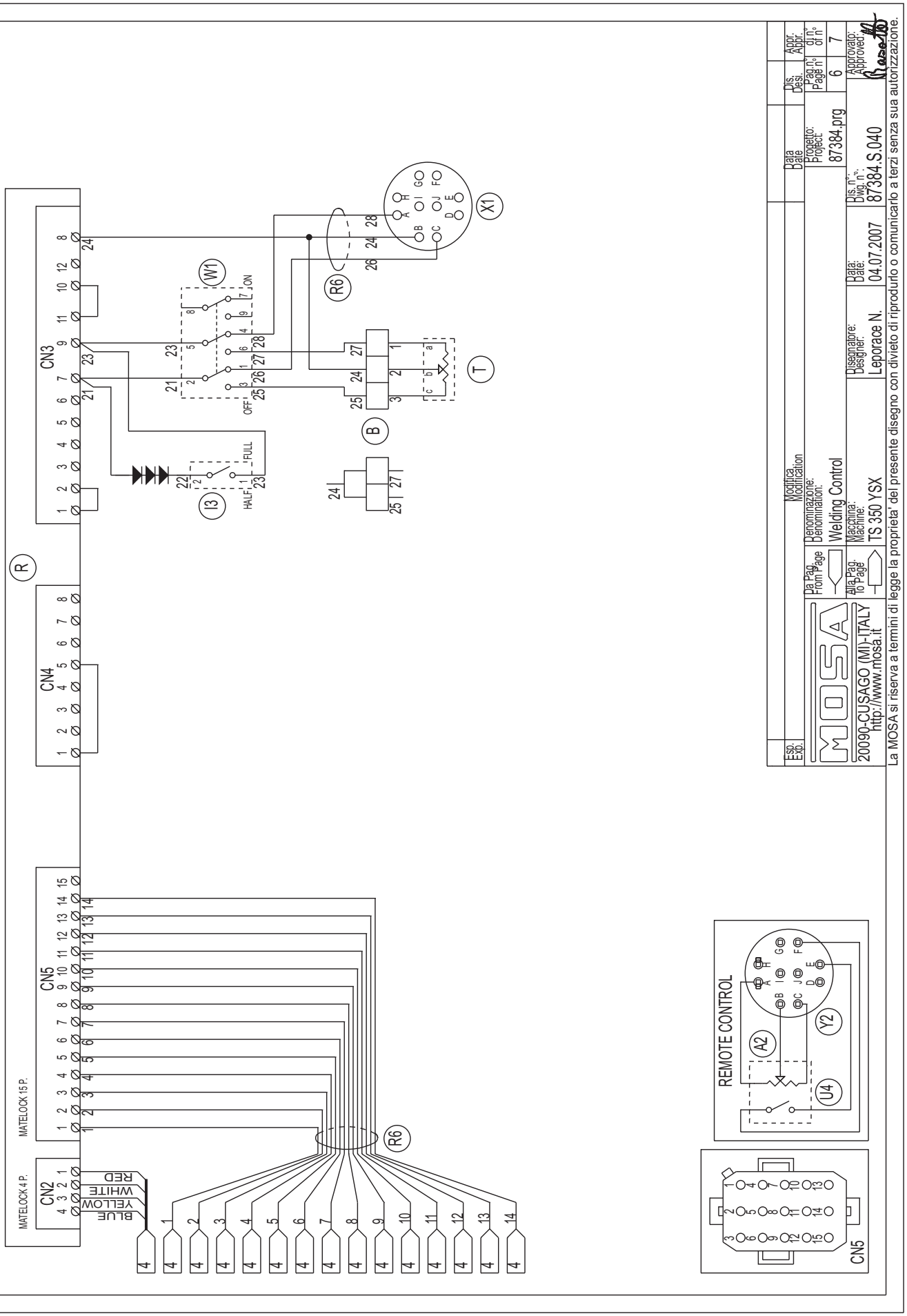
Progetto: Project: 87386.prg
Pag.n° Page n° 3
di n° 7
Alla Pag. To Page
Macchina: Machine: TS 350 YSX
Disegnatore: Designer: Leporace N.
Data: Date: 11.07.2007
Approvato: Approved:
Dis. n°: Dwg. n°: 87386.S.020
MOSA
20090-CUSAGO (MI)-ITALY
http://www.mosa.it







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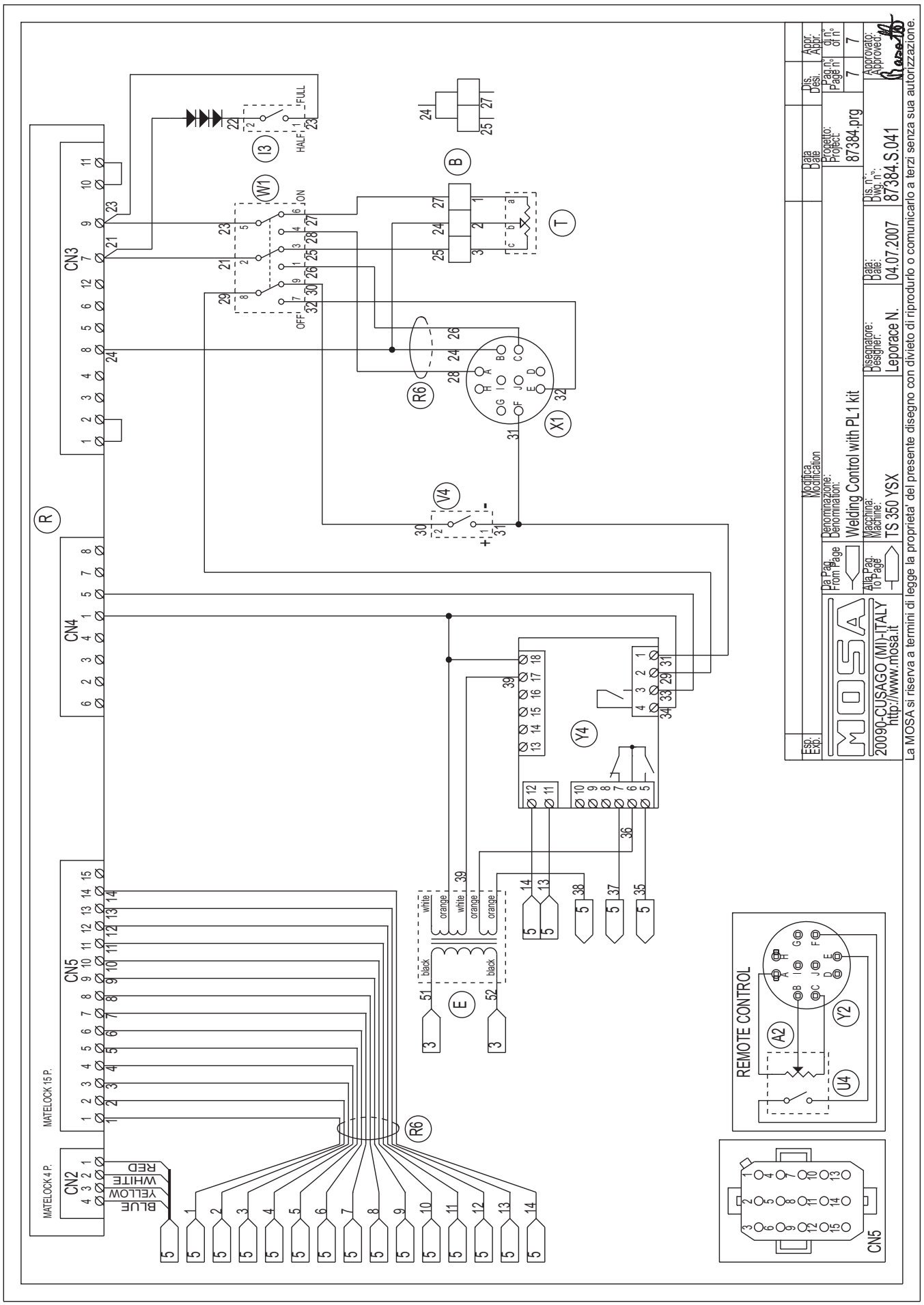


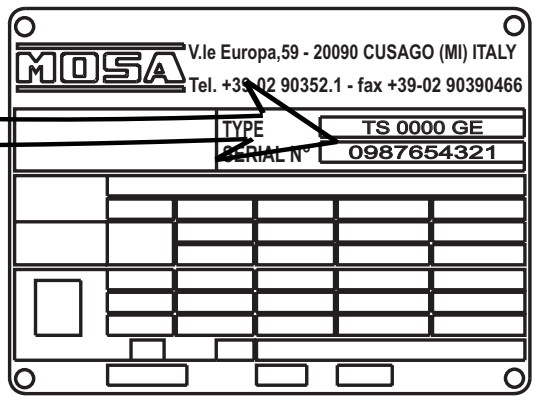
MOSA guarantees that any request for spare parts will be satisfied.

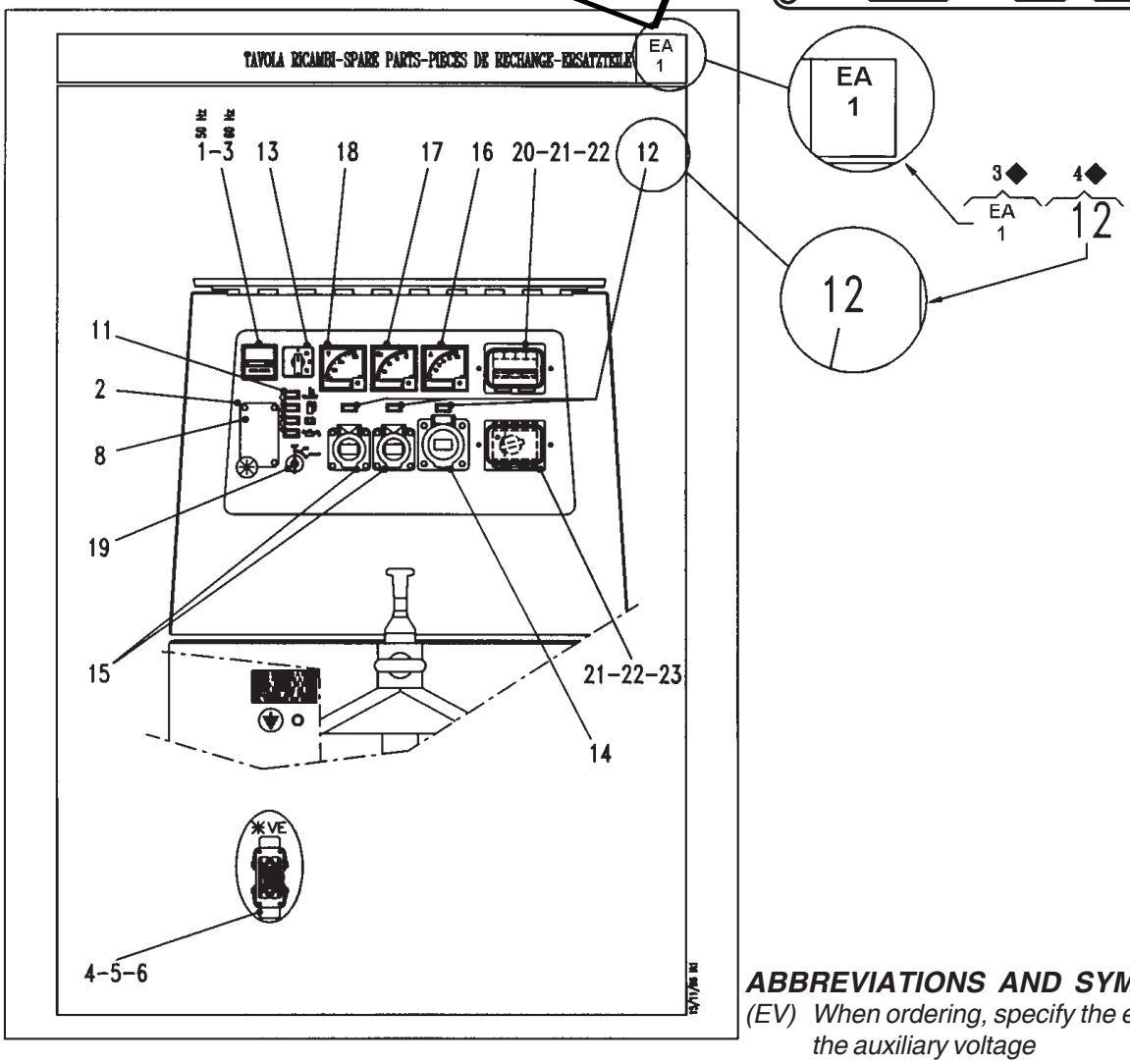
To keep the machine in full working order, when replacement of MOSA spare parts is required, always ask for genuine parts only.

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

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

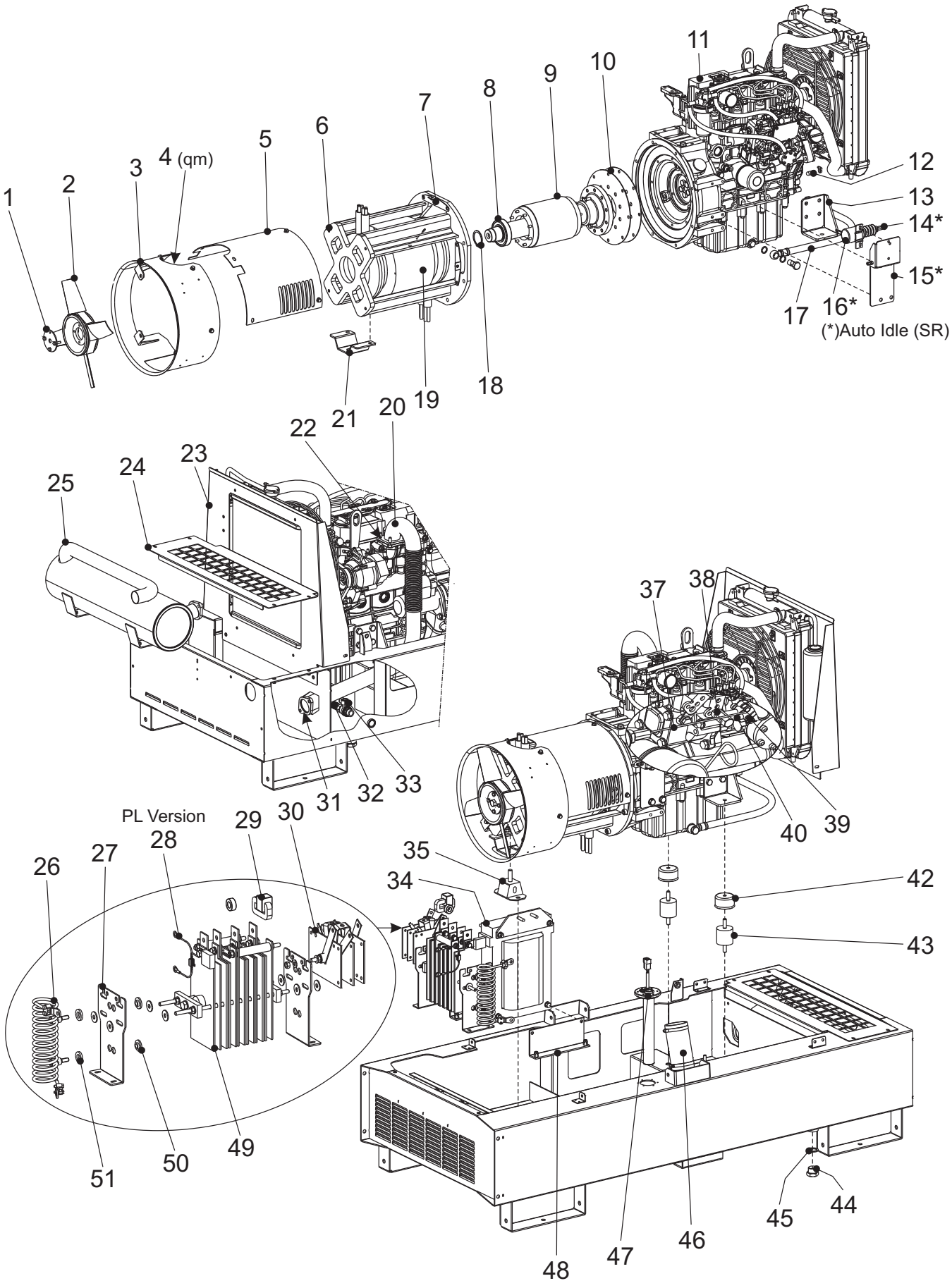
1) ✹ serial number
2) ✹ model of welder and/or generating set
3) ◆ n. table
4) ◆ n. position
5) quantity



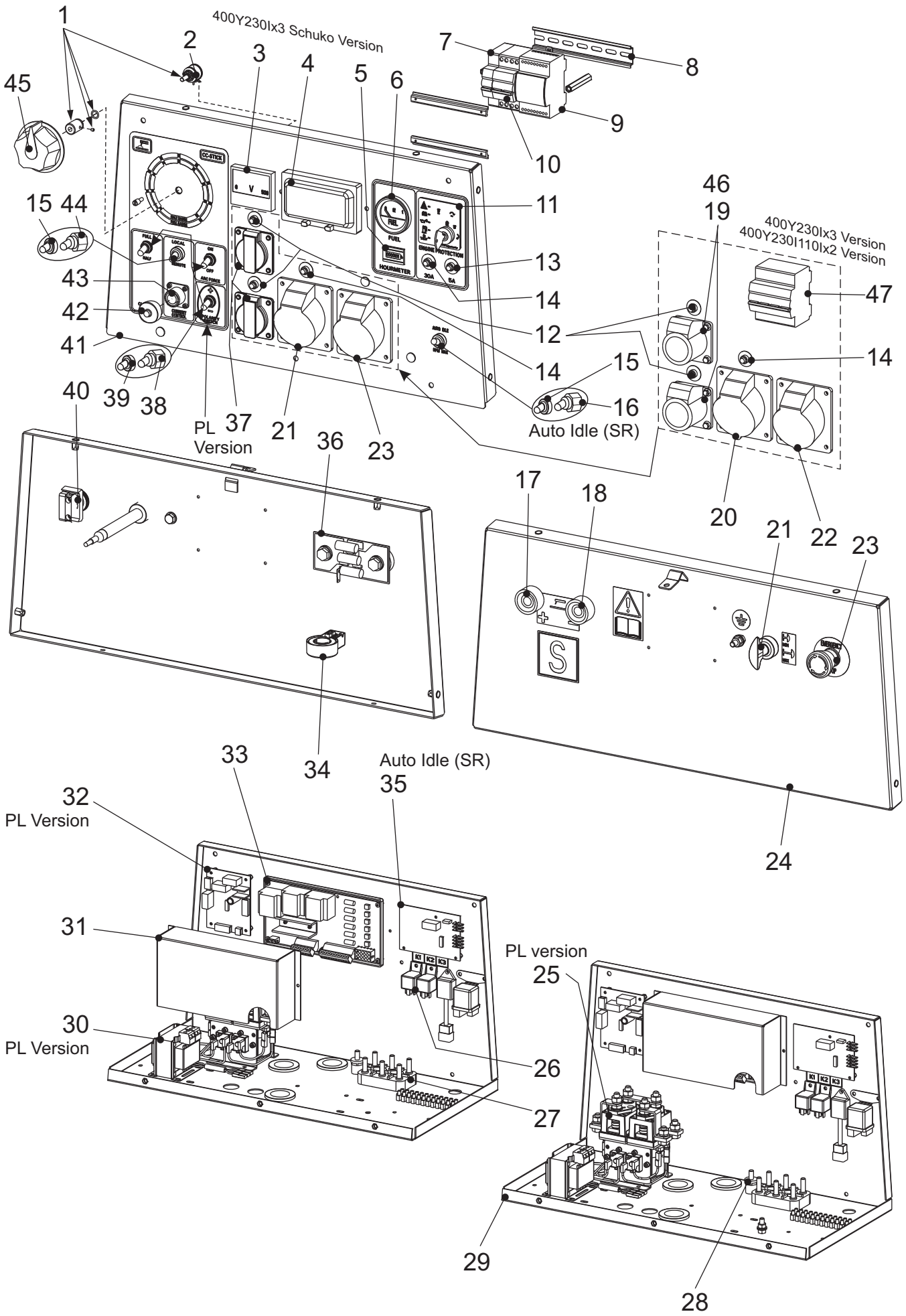


ABBREVIATIONS AND SYMBOLS:

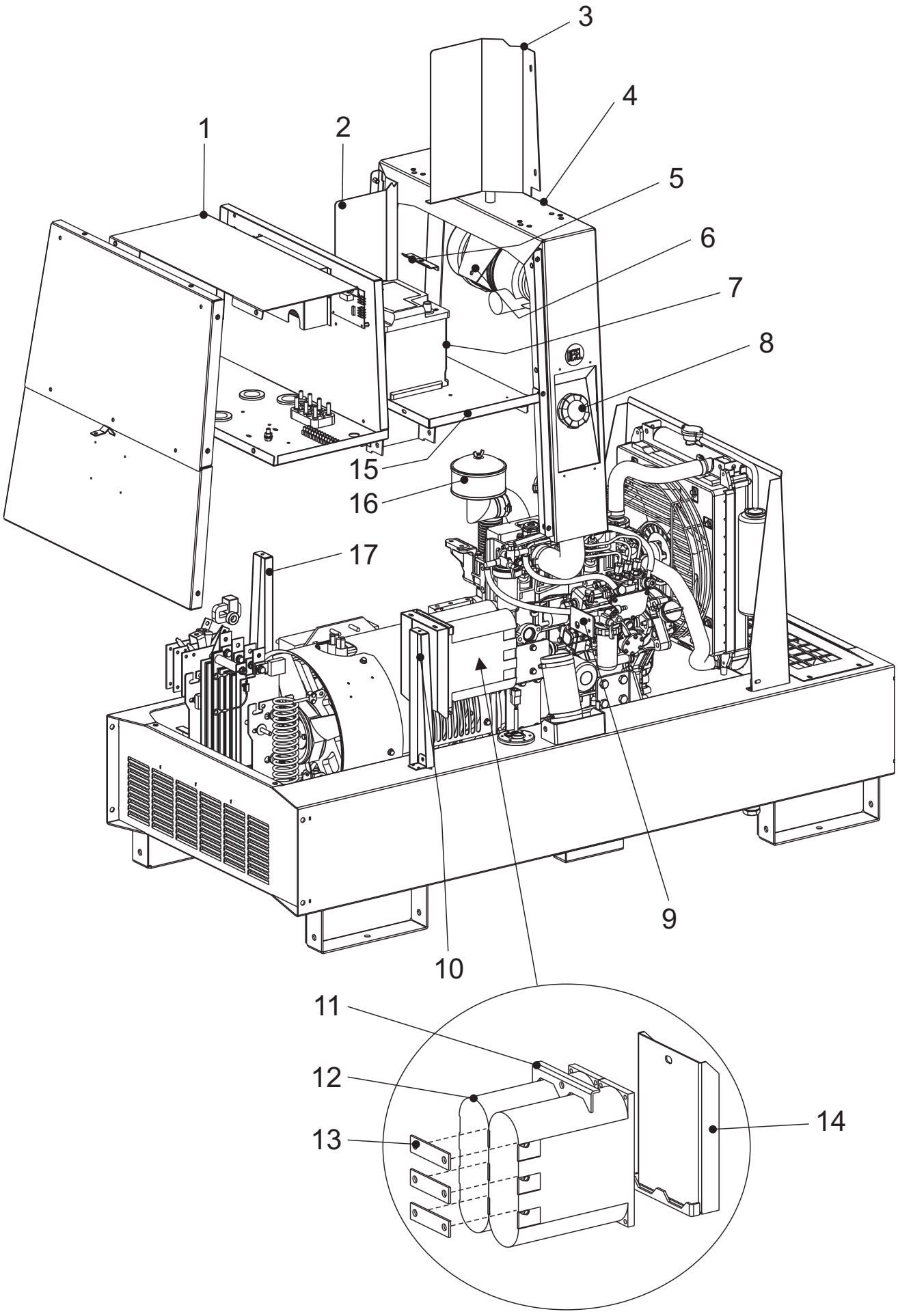
(EV) When ordering, specify the engine type and the auxiliary voltage
(ER) Engine with recoil starter only
(ES) Engine with electric starter only
(VE) E.A.S version only.
(QM) When ordering, specify the length in meters
(VS) Special version only
(SR) By request only



Pos.	Rev.	Cod.	Descr.	Note
1		107301390	ANELLO / *RING FIXING FAN*	
2		700406020	VENTOLA / *FAN*	
3		700406010	CONVOGLIATORE ARIA / *AIR CONVEYOR*	
4		107509005	GUARNIZIONE / *GASKET*	qm
5		773748222	COPERTURA ALTERNATORE / *Cover alternator*	
6		700403010	CARCASSA STATORE / *HOUSING*	
7		773748224	STAFFA SUPP. COPERTURA ALT. / *BRACKET*	
8		1001060	CUSCINETTO / *BEARING*	
9		773703030	ALBERO CON ROTORE / *SHAFT WITH ROTOR*	
10		773713012	DISCO ALBERO ROTORE / *SHAFT WITH ROTOR DISC*	NSM
10	a	773703012	DISCO PER ALBERO ROTORE / *DISC*	MECC-ALTE
11		773812200	MOTORE YANMAR 3TNV76 / YANMAR ENGINE 3TNV76	
12		7737812019	CAPPUCCIO / *CUP*	
13		773812034	STAFFA SUPPORTO MOTORE / *BRACKET*	
14		107302860	GHIERA / *RING NUT*	SR-Kit Auto Idle
14	a	305519056	TIRANTE / *TIE ROD*	SR-Kit Auto Idle
15		773709102	PIASTRA SUPP. SOLENOIDE ACC. / *SOLENOID SUPPORT PLATE*	SR-Kit Auto Idle
16		264149050	ELETTROMAGNETE / *SOLENOID*	SR-Kit Auto Idle
17		773812212	TUBO SCARICO OLIO / *OIL EXHAUST TUBE*	
18		6050050	ANELLO SEEGER / *RING, SEEGER*	
19		873763020	STATORE / *STATOR 400T230M110CTE*	
20		773812070	TUBO SCARICO / *EXHAUST TUBE*	
21		773723101	STAFFA SUPPORTO ALTERNATORE / *BRACKET*	
22		773812071	GUARNIZIONE SCARICO PER MOTORE / *GASKET, ENGINE EXHAUST*	
23		773818215	PARATIA SCARICO ARIA MOTORE / ENGINE INLET COVER	
24		773818230	GRIGLIA PROT. SILENZIATORE SCARICO / ***Manca la descrizione aggiuntiva***	
25		773812050	SILENZIATORE SCARICO / *EXHAUST MUFFLER*	
26		766704010	RESISTORE DI POTENZA / *POWER RESISTANCE*	
27		773715091	STAFFA / *BASE DIODE SUPPORT*	
28		873769895	RESISTENZA CABLATA / *WIRED RESISTOR*	PL Version
29		107659871	TRASFORMATORE SENSORE AUX / *TRANSFORMER AUX*	
30		366105090	PONTE DI BASE / *BASE CURRENT BRIDGE*	
31		305232071	GUARNIZIONE PER FLANGIA / *GASKET X FAN*	
32		JJ0062292	NIPPLO OLEODINAMICO 1/2" G / OLEODYNAMIC NIPPLE	
33		JJ0062025	RUBINETTO M-F 1/2" G / VALVE	
34		866004100	REATTORE DI LIVELLO / *LEVEL INDUCTOR*	
35		105612070	ANTIVIBRANTE (40x50) / *VIBRATION-DAMPER (40x50)*	
37		773709056	FUNE COMANDO ELETTROMAGNETE /SOLENOID TIE-ROD	
38		773702244	MORSETTO PER FUNE COMANDI /TERMINAL	
39		105111450	MORSETTO / *TERMINAL*	
40		105111460	MOLLA / *SPRING*	
42		307012037	PROTEZIONE ANTIVIBRANTE / *PROTECTION, VIBRATION-DAMPER*	
43		773721035	ANTIVIBRANTE / *VIBRATION DAMPER*	
44		308101262	TAPPO SCARICO SERBATOIO / *FUEL TANK CAP*	
45		308102023	GUARNIZIONE / *GASKET*	
46		6095030	TUBO GOMMA / *PIPE*	
47		764409975	SENSORE LIVELLO CARBURANTE(L=225) / *FUEL LEVEL SENSOR*	
48		209714110	SUPPORTO REATTANZA / *SUPPORT, REACTOR*	
49		873765100	PONTE DIODI / *DIODE BRIDGE*	
50		309015043	RONDELLA / *WASHER*	
51		309014013	DISTANZIALE / *SPACER*	


400Y230Ix3 Schuko Version
400Y230Ix3 Version
400Y230I110Ix2 Version
PL Version
Auto Idle (SR)
PL version
01/10/07 87381-I

Pos.	Rev.	Cod.	Descr.	Note
1		836709715	POTENZIOMETRO / *WELDING CURRENT REGULATOR*	
2		0000836709701	POTENZIOMETRO / *WELDING CURRENT REGULATOR*	
3		105111550	VOLTMETRO FS 500V / *VOLTMETER*	
4		220117130	COPERCHIO PROTEZIONE / *PROTECTION COVER*	
5		105511810	CONTAORE 230V 50Hz IP65 / *HOURMETER 230V 50Hz IP65*	
6		325507210	INDICATORE LIVELLO CARBURANTE / *FUEL LEVEL GAUGE*	
7		IB0179706	BOBINA DI SGANCIO 220V / ***Manca la descrizione aggiuntiva***	
8		1243020	GUIDA PER MORSETTIERA / *TERMINAL GUIDE*	
9		740557105	SORVEGLIATORE D'ISOLAMENTO / *INSULATING ALARM*	
10		KJ0187325	INT.MAGNET. 4P 32A-C COMPACT(PI 4.5KA) / *CIRCUIT BREAKER*	
11		265509770	UNITA' CONTROLLO MOTORE EP7 / *UNIT ENGINE CONTROLEP7*	
12		155307107	DISGIUNTORE TERMICO 15A-250V / *THERMAL SWITCH 15A-250V*	
13		352007109	PROTEZIONE TERMICA 5A / *THERMOPROTECTION*	
14		873407107	DISGIUNTORE TERMICO 30A/250V / *CIRCUIT BREAKER 30A/250V*	
15		102042740	CAPPUCCIO / *CAP*	SR-Kit Auto Idle
16		102013290	COMMUTATORE / *COMMUTATOR*	
17		102301310	PRESA DI SALDATURA (+) / *WELDING SOCKET (+)*	
18		102044400	PRESA DI SALDATURA (-) / *WELDING SOCKET (-)*	
19		307017240	PRESA 220V 16A / *EEC SOCKET 16A, 220V 2P+T*	400Y230Ix3 Version
20		105111520	PRESA CEE 220V MONOF. 2POLI+T / *EEC SOCKET SINGLE-PH.220V 2P+T*	
21		773709105	COMANDO ACCELERATORE MOTORE / *ENGINE ACCELERATOR LEVER*	
22		105111510	PRESA CEE 380V TRIFASE / *EEC SOCKET THREE-PHASE 380V*	
23		744507219	PULSANTE STOP D'EMERGENZA / *EMERGENCY PUSH BUTTON STOP*	
24		773817205	PANNELLO FRONTALE (INF.) / *FRONT PANEL*	
25		0000873797420	TELERUTTORE INVERS. POLARITA(compl.) / *PLARITY CHANGE CONTACTOR*	PLVersion
26		306479199	RELE' AVV. ELETTRICO / *RELAY, ELECTRIC START*	
27		105111830	MORSETTIERA / *TERMINAL BOARD*	
28		208029104	DISTANZIALE ISOLANTE / *SPACER*	
29		773817010	SCATOLA ELETTRICA / *ELECTRIC BOX*	
30		ED0109870	TRASFORMATORE AUSILIARIA / *WELDING PCB PROTECTION BOX*	PL Version
31		766019654	SCATOLA PROTEZ. SCHEDA SALD. / *PCB POLARITY INVERTER*	
32		366609690	SCHEDA COMANDO INVERT.POLARITA / *WELDING CONTROL PCB*	PL Version
33		766029800	SCHEDA CONTROLLO SALDATURA / *WELDING CONTROL UNIT*	
34		773815107	SENSORE DI HALL / ***Manca la descrizione aggiuntiva***	
35		873819638	SCHEDA AUTO IDLE / ***Manca la descrizione aggiuntiva***	SR-Kit Auto Idle
36		700409860	UNITA' FILTRO ANTIDISTURBI / *ANTIJAMMING FILTER*	
37		259107241	PRESA SCHUKO 16A 230V - 2P+T / *SOCKET SCHUKO 16A 230V 2P+T*	
38		282009741	INTERRUTTORE UNIPOLARE 15A / *UNIPOLAR SWITCH*	
39		282009962	CAPPUCCIO ISOLANTE x INTERRUT. / *CAP*	
40		265507237	CONTATTO NORMALMENTE APERTO / ***Manca la descrizione aggiuntiva***	
41		773817020	PANNELLO FRONTALE / FRONT PANEL	
42		765009911	CAPPUCCIO X CONNETTORE / *CONNECTOR CAP*	
43		765009910	CONNETTORE / *CONNECTOR*	
44		107509902	COMMUTATORE TRIPOLARE / *TRIPOLES SWITCH*	
45		107509702	MANOPOLA REG.CORRENTE SALDAT. / *KNOB,WELDING CURRENT REGULAT.*	
46		307047250	PRESA CEE / *EEC SOCKET* 110V 16A 2 POLI + T	400Y230I110Ix2 Version
47		105111540	Vedi Cod./ *See part no* 219937105	400Y230Ix3 / 400Y230I110Ix2 Version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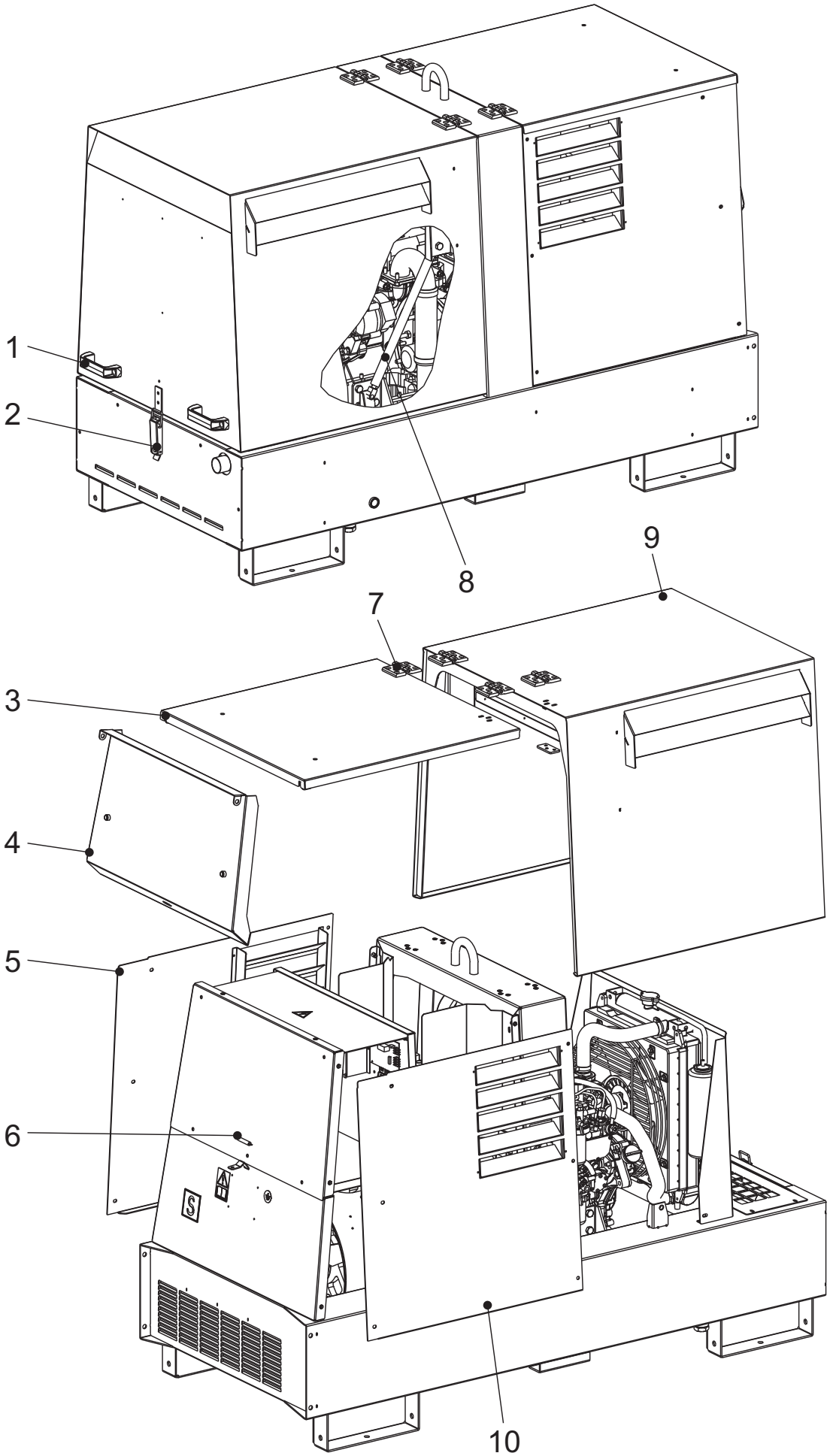
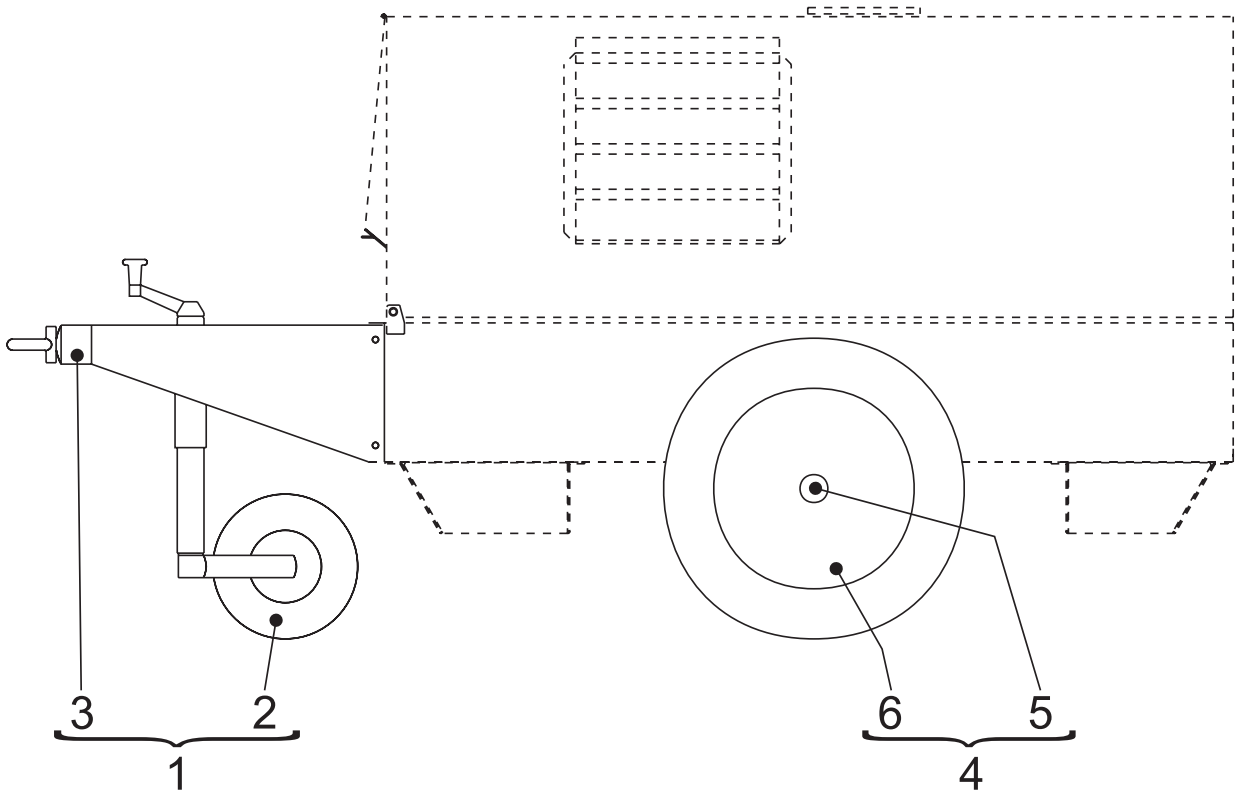
Pos.	Rev.	Cod.	Descr.	Note
1		773817015	COPERCHIO SCATOLA ELETTRICA	
2		773818315	PARATIA ASPIRAZIONE ARIA SX	
3		773818314	PARATIA ASPIRAZIONE ARIA DX	
4		773811100	ROLL-BAR	
5		400409154	STAFFA FISSAGGIO BATTERIA	
6		773812122	STAFFA SUPP. FILTRO ARIA	
7		773749150	BATTERIA	
8		342202026	TAPPO SERBATOIO	
9		841552241	STAFFA SUPP.PRE-FILTRO GASOLIO	
10		773818239	TRAVERSINO DX RINF.PARATIA ALTER.	
11		209719882	STAFFA BOX CONDENSATORI	
12		107019880	BOX CONDENSATORI	
13		107509041	SBARRETTA BOX CONDENSATORI	
14		784109887	PIASTRA FISS.BOX COND.(COMPL.)	
15		873818290	PARATIA SUP. ALTERNATORE	
16		773812145	PREFILTRO A CICLONE CON CURVA	
17		773818240	TRAVERSINO SX RINF.PARATIA ALTER.	

Pos.	Rev.	Cod.	Descr.	Note
1		773817015	ELECTRICAL BOX COVER	
2		773818315	*Manca la descrizione aggiuntiva*	
3		773818314	*Manca la descrizione aggiuntiva*	
4		773811100	ROLL-BAR	
5		400409154	BATTERY BRACKET	
6		773812122	BRACKET AIR FILTER SUPPORT	
7		773749150	BATTERY	
8		342202026	CAP, FUEL TANK	
9		841552241	BRACKET DIESEL PRE-FILTER SUPPORT	
10		773818239	*Manca la descrizione aggiuntiva*	
11		209719882	CAPACITOR BOX BRACKET	
12		107019880	CAPACITOR BOX	
13		107509041	CONNECTING PLATE-CAPACITOR BOX	
14		784109887	*Manca la descrizione aggiuntiva*	
15		873818290	ALTERNATOR TOP BULKHEAD	
16		773812145	*Manca la descrizione aggiuntiva*	
17		773818240	*Manca la descrizione aggiuntiva*	

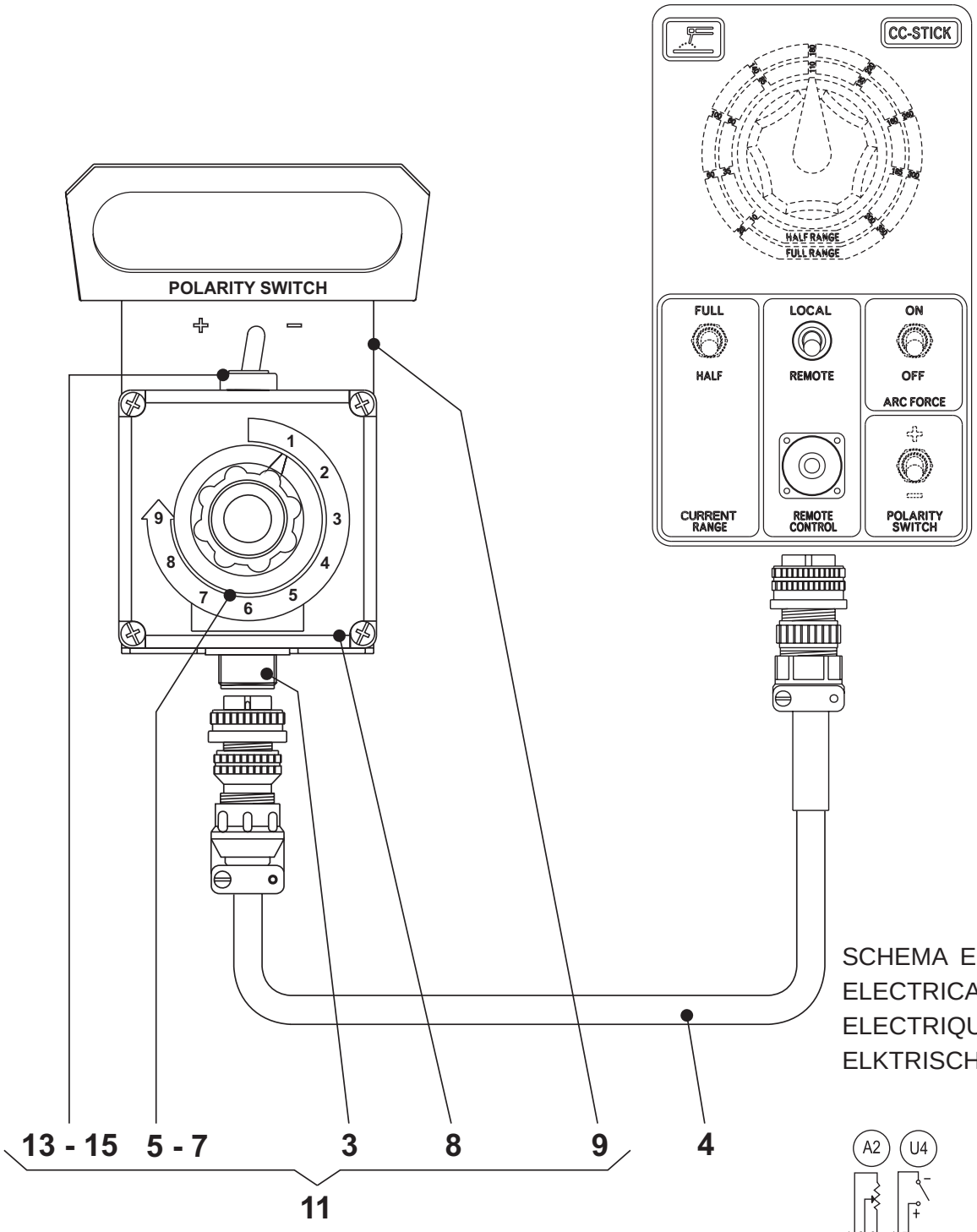


Pos.	Rev.	Cod.	Descr.	Note
1		343339601	MANIGLIA	
2		107300180	CHIUSURA COMPL.A LEVA	
3		7737818021	COPERCHIO CARENATURA ANT. (COMPL.)	
4		773818100	COPERCHIO FRONTALE	
5		773818015	FINCATA SX CAREN.ANT. (COMPL.)	
6		102042870	MOLLA	
7		744508140	CERNIERA PER FIANCATA	
8		305718115	PISTONE SOSTEGNO	
9		773818035	CARENATURA POSTERIORE	
10		773818010	FINCATA DX CAREN.ANT. (COMPL.)	

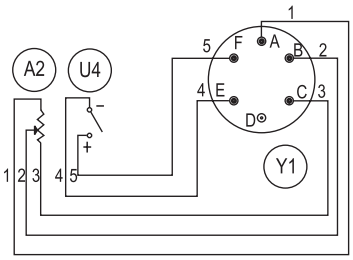
Pos.	Rev.	Cod.	Descr
1		343339601	KNOB
2		107300180	LATCH
3		7737818021	FRONT HOUSING COVER (COMPL.)
4		773818100	FRONT COVER
5		773818015	FRONT COVER (LEFT)
6		102042870	SPRING
7		744508140	LATCH
8		305718115	SUPPORT, REAR COVER
9		773818035	COVER, REAR
10		773818010	FRONT COVER (RIGHT)



Pos.	Rev.	Cod.	Descr.	Descr.
1		0000217600141	GR.TIMONE,PIEDE X TRAINO LENTO	KIT SITE TOW
2		102351750	PIEDE DI STAZIONAMENTO	PARKING STAND
3		207401150	TIMONE	TOW BAR
4		0000217600142	GR. ASSALE, RUOTE TRAINO LENTO	KIT SITE TOW
5		207401160	ASSALE	AXLE
6		102351740	RUOTA	WHEEL



SCHEMA ELETTRICO
ELECTRICA DIAGRAM
ELECTRIQUE SCHEMA
ELKTRISCHES SCHEMA



Pos.	Cod.	Descr.	Note
3	836709910	CONNETTORE FEMMINA / *FEMALE CONNECTOR*	
4	936709904	CAVO COMANDO DISTANZA / *REMOTE CONTROL CABLE*	Fino a/*Up to* REV. 0-02/00 Del.140-15/06/07
4	KD0259904	CAVO COMANDO DISTANZA / *REMOTE CONTROL CABLE*	Da/*From* REV.1-10/07 Del.140-15/06/07
5	308300543	MANOPOLA REGOLAZIONE COMPL. / *KNOB, REGULATOR COMPLETE*	
7	836709701	POTENZIOMETRO / *WELDING CURRENT REGULATOR*	
8	836700524	SCATOLA TCPL3 / *BOX TCPL3*	
9	308309900	MANIGLIA COMANDO A DISTANZA / *REMOTE CONTROL HANDLE*	
11	836700555	COMANDO TCPL3 SENZA CAVO / *TCPL3 REMOTE CONTROL*	
13	102013290	COMMUTATORE / *COMMUTATOR*	
15	102042740	CAPPUCCIO / *CAP*	