

# **DSP 415 VS/VSX**

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## **USE AND MAINTENANCE MANUAL SPARE PARTS CATALOG**



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  
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Fabio Roversi  
President of IQNet



Gianrenzo Prati  
President of CISQ

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CERTIFICATO n. 0192/4  
CERTIFICATE No.

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

**BCS S.p.A.**  
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Sede e Unità Operativa  
Viale Mazzini, 161 - 20081 Abbiategrasso (MI)  
(marchi BCS - FERRARI - PASQUALI)  
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E' CONFORME ALLA NORMA  
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**UNI EN ISO 9001:2000**

PER LE SEGUENTI ATTIVITÀ  
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.

Referirsi 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 delle aziende.  
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 30/05/1994	Emissione corrente Current issue 06/03/2006	Data di scadenza Expiring date 05/03/2009
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ICIM S.p.A. - PIAZZA A. DIAZ, 2 - 20123 MILANO



Membro degli Accordi di Mutuo Riconoscimento: EA e UK  
Signatory of EA and UK Mutual Recognition Agreements



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

www.cisq.com



**UNI EN ISO 9001 : 2000**

ISO 9001:2000 - Cert. 0192/3

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

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

This certification is not a point of arrival but a pledge on the part of the entire company to maintain a level of quality of both its products and services which will continue to satisfy the needs of its clients, as well as to improve the transparency and the communications regarding all the company's 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](http://www.icim.it)

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**⚠ ATTENTION**

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

The assistance and maintenance personnel must keep said manual at disposal, as well as that for the engine and alternator (if the machine is synchronous) and all other documentation about the machine.

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



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## INFORMATION

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

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

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

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

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

## NOTES ABOUT THE MANUAL

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

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

The manual for Use Maintenance and Spare Parts is an integrant part of the product. It must be kept with care during all the life of the product.

In case the machine and/or the set should be yielded to another user, this manual must also given to him.

Do not damage it, do not take parts away, do not tear pages and keep it in places protected from dampness and heat.

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

## INFORMATION OF GENERAL TYPE

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

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

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

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

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

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



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ISO 9001:2000 - Cert. 0192/3

**DICHIARAZIONE DI CONFORMITA'**

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

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

Modello/Modèle/Model/Modell/Model/Modelo: \_\_\_\_\_

Codice/ Code/ Code/ Kode/ Code/ Codice: \_\_\_\_\_

è conforme con quanto previsto dalle **Directive Comunitarie** e relative modifiche:  
 est en conformité avec ce qui est prévu par les **Directives Communautaires** et relatives modifications:  
 conforms with the **Community Directives** and related modifications:  
 mit den Vorschriften der Gemeinschaft und deren Ergänzungen übereinstimmt:  
 in overeenkomst is met de inhoud van gemeenschapsrichtlijnen en gerelateerde modificaties:  
 cumple con los requisitos de la **Directiva Comunitaria** y sus anexos:

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

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

Norme armonizzate - normes harmonisées - harmonized norms - übereinstimmende Normen  
 geharmoniseerde normen - Normas armonizadas:

**EN 292-1 EN 292-2****EN 60204-1**

**EN 50199 EN 60974-1** (Solo per modelli - Seulement pour les modèles - Only for models - nur für die  
 Modelle - Alleen voor de modellen - Sólo para modelos: **TS**)

**EN 50081-2 EN 50082-2**

Altre norme - autres normes - other norms - andere Normen - andere normen - otras normas:

**ISO 8528** (Solo per modelli - Seulement pour les modèles - Only for models - nur für die  
 Modelle - Alleen voor de modellen - Sólo para modelos: **GE**)

Ing. Benso Marelli  
 Direttore Generale

Cusago, \_\_\_\_\_

MM 065.2.doc


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

## SYMBOLS IN THIS MANUAL

- The symbols used in this manual are designed to call your attention to important aspects of the operation of the machine as well as potential hazards and dangers for persons and things.

## IMPORTANT ADVICE

- Advice to the User about the safety:

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

## WARNING



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

### ***Do not use without protective devices provided***

Removing or disabling protective devices on the machine is prohibited.

### ***Do not use the machine if it is not in good technical condition***

The machine must be in good working order before being used. Defects, especially those which regard the safety of the machine, must be repaired before using the machine.

## SAFETY PRECAUTIONS



### **DANGEROUS**

This heading warns of an immediate danger for persons as well for things. Not following the advice can result in serious injury or death.



### **WARNING**

This heading warns of situations which could result in injury for persons or damage to things.



### **CAUTION**

To this advice can appear a danger for persons as well as for things, for which can appear situations bringing material damage to things.



### **IMPORTANT**



### **NOTE**



### **ATTENTION**

These headings refer to information which will assist you in the correct use of the machine and/or accessories.

**SYMBOLS** (for all MOSA models)



**STOP** - Read absolutely and be duly attentive



Read and pay due attention



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



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



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



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



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



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



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



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



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



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



**ACCES FORBIDDEN** to non 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.


<b>ENGINE</b>	Stop engine when fueling	<b>CHECKING BOARD</b>	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		














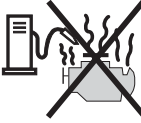






 **FIRST AID.** In case the operator should be sprayed by accident, from corrosive liquids a/o hot toxic gas or whatever event which may cause serious injuries or death, predispose the first aid in accordance with the ruling labour accident standards or of local instructions.

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.

<b>EXTINCTION MEANS</b>	
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.

 <b>WARNING</b>					 <b>CAUTION</b>		 <b>DANGEROUS</b>
							
							

 **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 transmitters.
3. Computer and other checking devices.
4. Critical devices for safety and/or for industrial checks.
5. People 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).





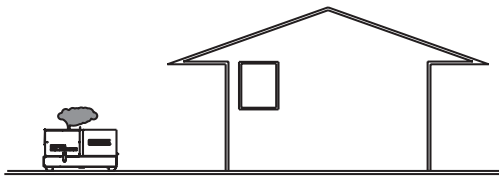
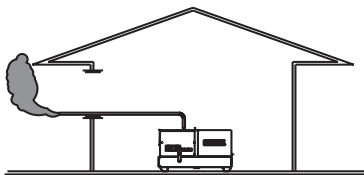
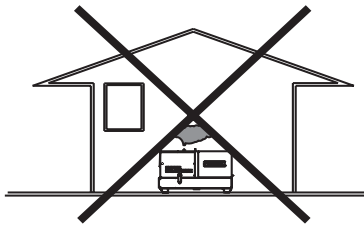
**INSTALLATION AND ADVICE BEFORE USE**

**GASOLINE ENGINES**

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

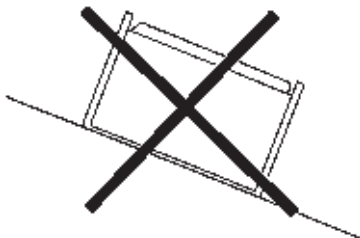
**DIESEL ENGINES**

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

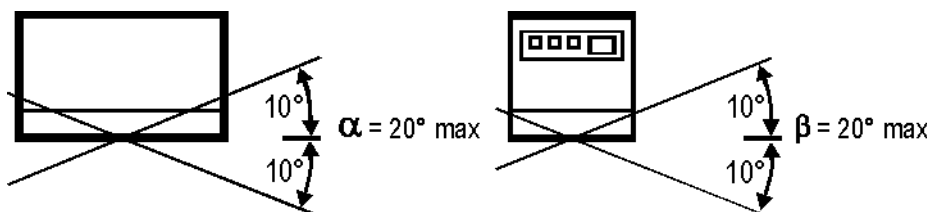


**POSITION**

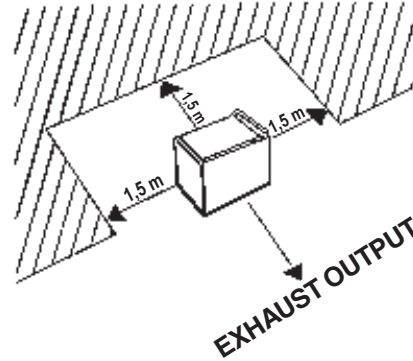
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other plants.



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**

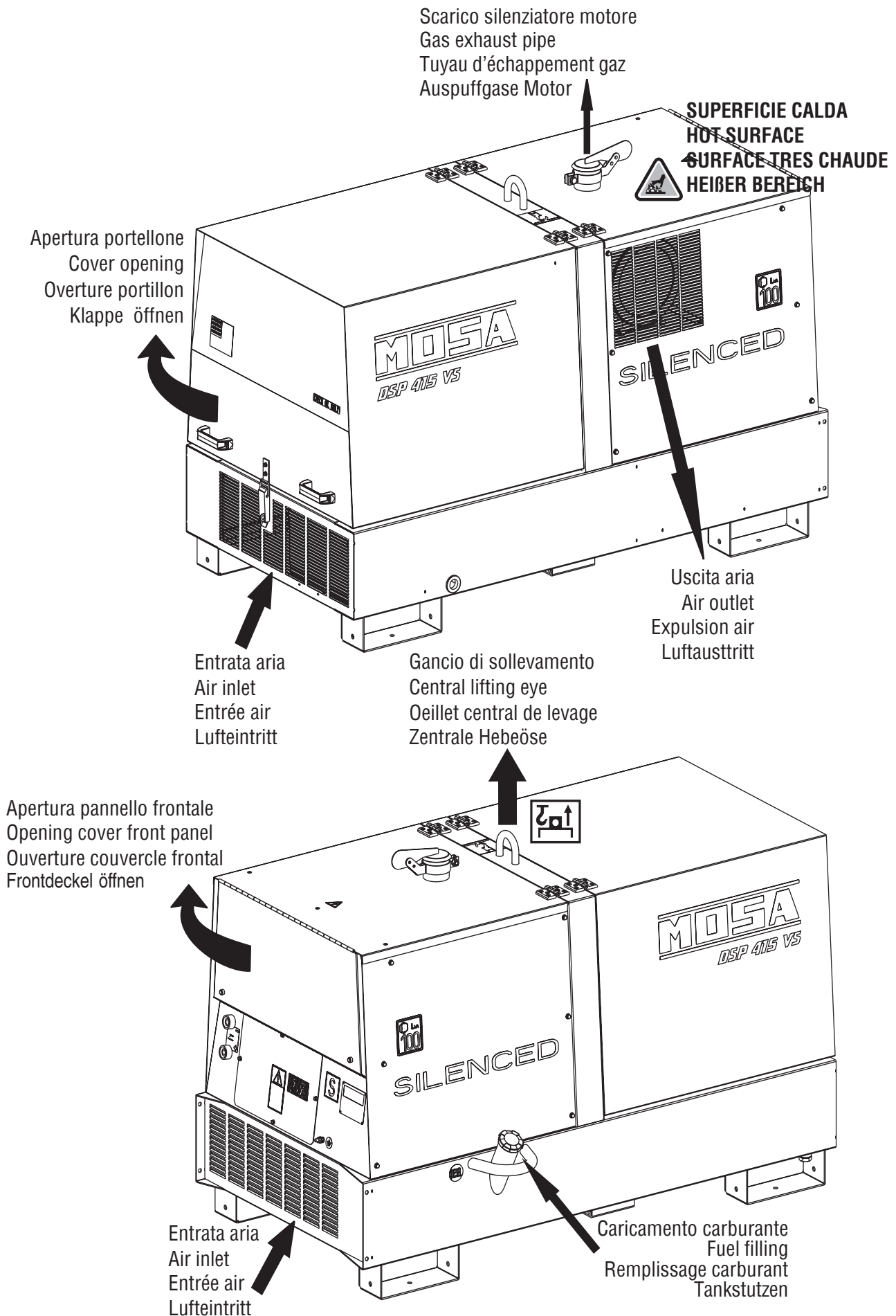


In spots where it often rains and/or there are flooded areas, do **not** put the machine:

- in the bad weather
- in flooded places.

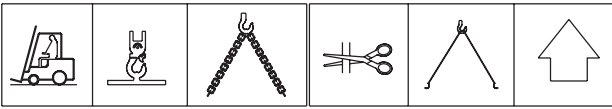
**Protect all the electric parts at risk, because water infiltrations could cause short circuits with damages at persons and/or things.**

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





**NOTE**



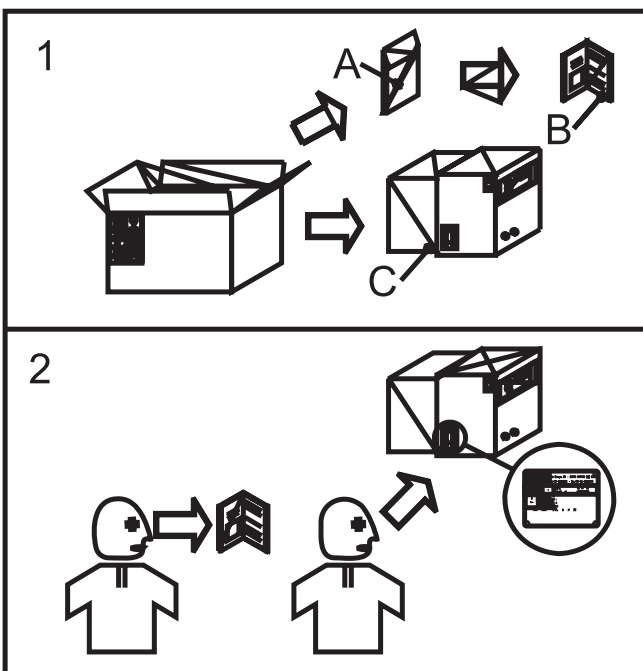
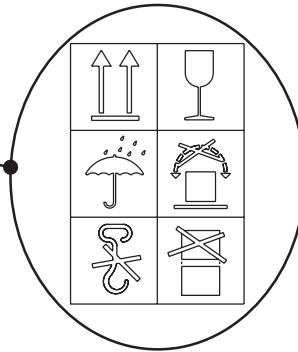
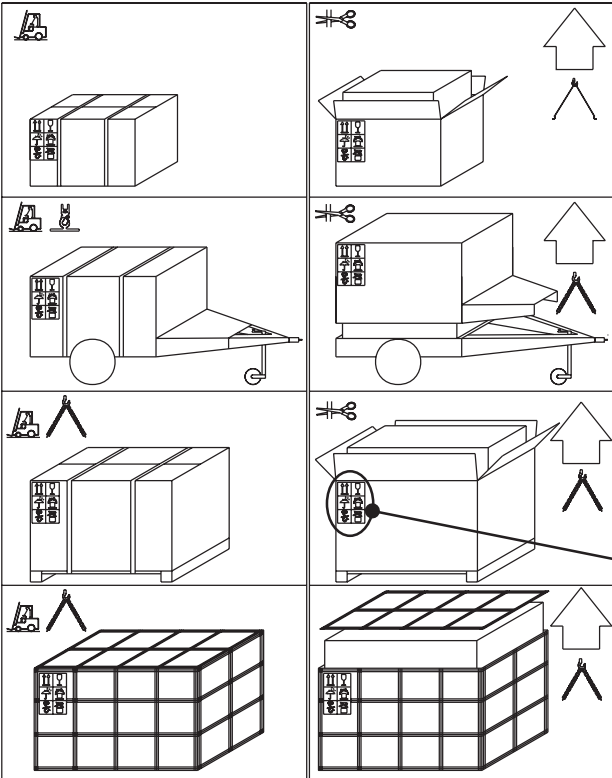
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with its packaging, and conforms to local rules and regulations.

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

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



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



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



**NOTE**

In case you should transport or move the machine, keep to the instructions as per the figures.

Make the transportation when the machine has **no** petrol in its tank, **no** oil in the engine and and electrolyte in the battery.

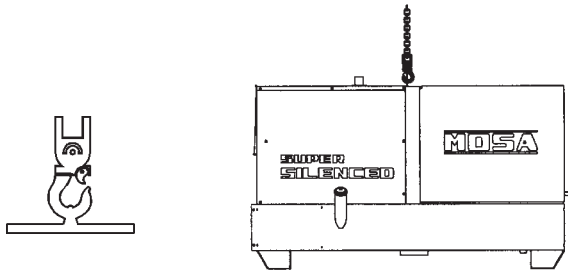
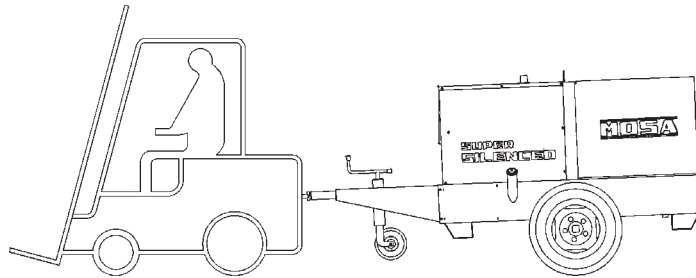
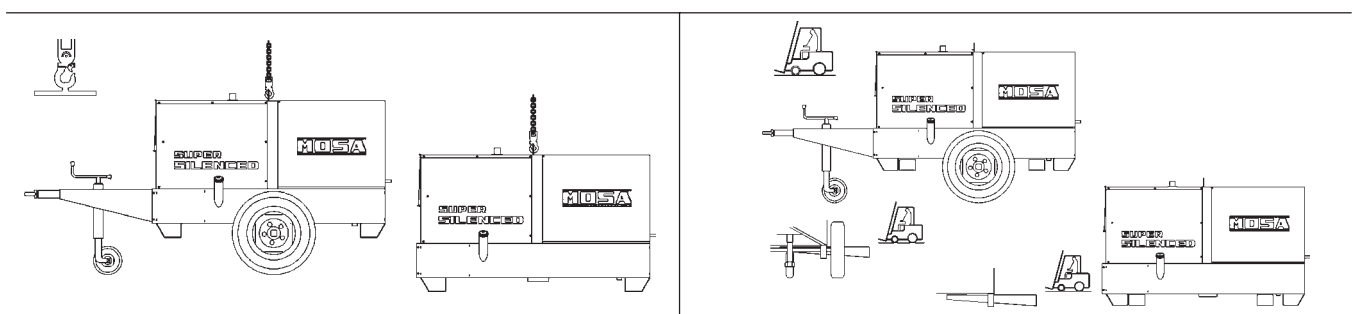
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.

Only authorized persons involved in the transport of the machine should be in the area of movement.

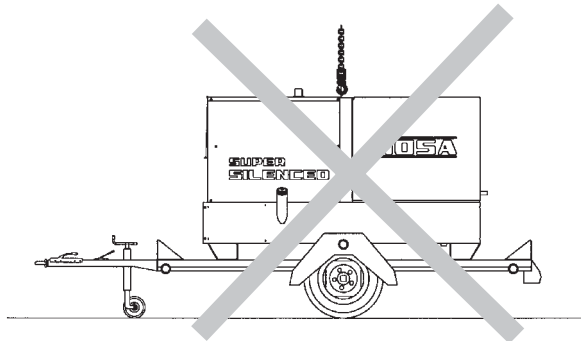
**DO NOT LOAD OTHER PARTS WHICH CAN MODIFY WEIGHT AND BARICENTER POSITION.**

**IT IS STRICTLY FORBIDDEN TO DRAG THE MACHINE MANUALLY OR TOW IT BY ANY VEHICLE (model with no 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

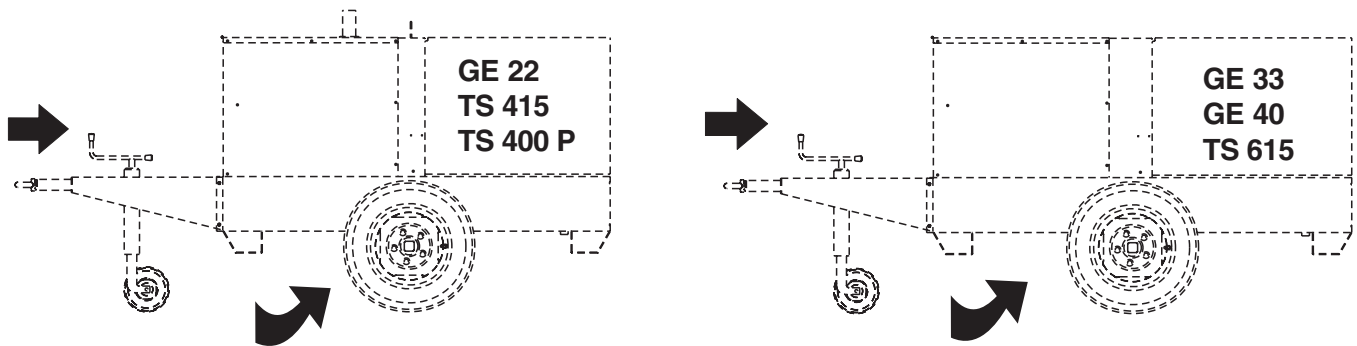
The CTL accessory cannot be removed from the machine and used separately (actioned manually or following vehicles) for the transport of loads or anyway for used different from the machine movements.

### 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.

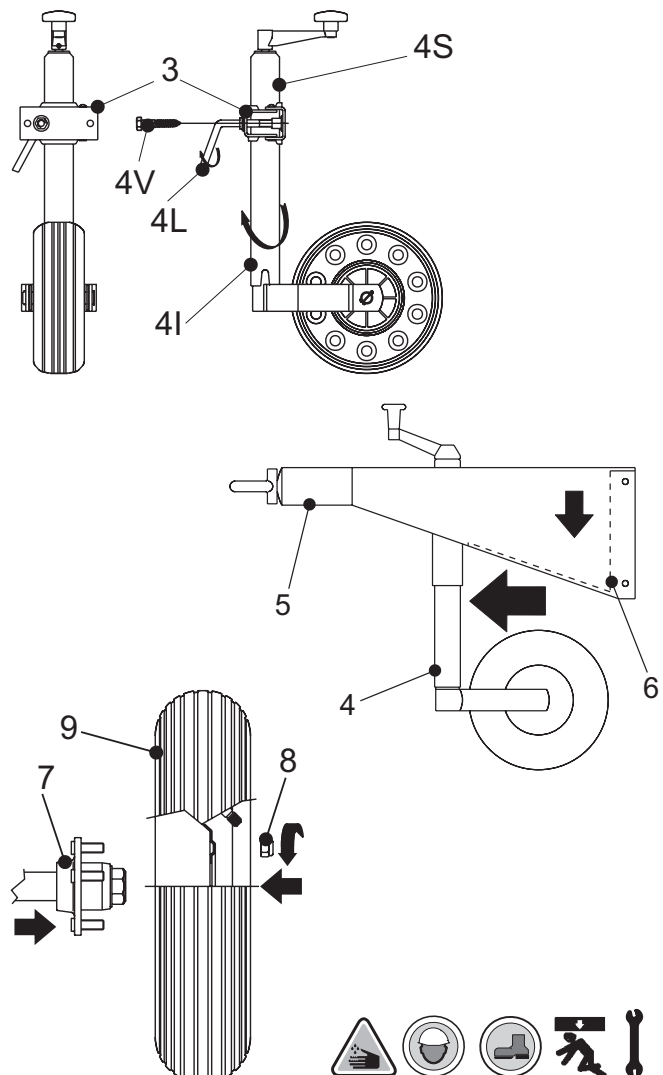
Towing on public roads or turnpikes of any type **IS EXCLUDED**, because **not** in possession of the requirements by national and foreign traffic norms.

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



For assembling the generating set on the trolley CTL22 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 momentarily with the lever (4L) the whole foot.
- 5) - Assemble the tool holder (6) on the towbar with the M8x14 screws, nuts and washers.
- 6) - Assemble on the machine the towbar (5) complete of foot with the M10x20 screws, nuts and washers (see fig. page M6.3).
- 7) - Assemble the axle (7) to the base of the machine (see fig. page M6.3) with the M 10x25 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

If any acid is spilled, rinse with abundant fresh water before re-assembling.



**LUBRICANT**

The motor is shipped without engine oil. Please refer to the motor operating manual for the recommended viscosity.



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

If necessary, fill through the special hole on the engine. See engine operating manual.

**RECOMMENDED OIL**

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

<p>PRODOTTI RACCOMANDATI RECOMMENDED PRODUCTS</p>	
<p><b>AGIP</b> SUPERDIESEL 15W/40 API CF4-SG</p>	<p>OLIO MOTORE DIESEL DIESEL ENGINE OIL</p>
<p><b>AGIP</b> SUPERMOTOROIL 20W/50 API CC-SF</p>	<p>OLIO MOTORE BENZINA GASOLINE ENGINE OIL</p>
<p><b>AGIP</b> ANTIFREEZE EXTRA INIBITE ETHYLENE GLYCOL (50% + 50% H<sub>2</sub>O)</p>	<p>CIRCUITO DI RAFFREDDAMENTO COOLING CIRCUIT (CUNA NC 956-16 ED 97)</p>

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



**FUEL**



**ATTENTION**



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



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

Fill the tank with good quality diesel fuel.



**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.



**GROUND CONNECTION**

Proper grounding is obligatory for all models featuring a ground fault interruptor (G.F.I.) switch. This safety device functions correctly only if the machine is grounded.

Use a good quality grounding cable and connect it to the machine's ground terminal (12). Abide by local norms and/or laws concerning safety and electrical installations.

When these operations have been carried out, the unit can be started up for operation.





**START-UP**

**STOP**

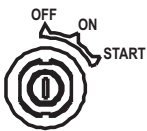
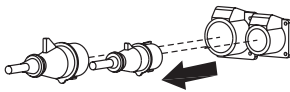
check before each start-up



**NOTE**

*Do not alter the factory adjustment of the engine and do not touch the sealed parts.*

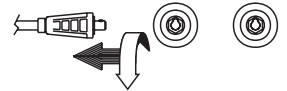
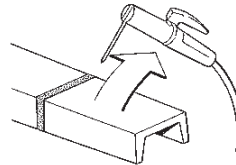
Check that the start-up of the motor occurs with no loads inserted, disconnecting the welding cables and the c.a. load input plugs.



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

Before stopping the engine it is compulsory to assure that the machine is not working

- interrupt the pick-up from all power from the auxiliary current plugs.
- interrupt the welding process.



Wait for a few minutes to allow the engine to cool down.



Turn on counterclockwise the starting key (Q1), position OFF, than extract it.

The engine will start up at its operating speed. Allow the engine to run a few minutes before picking up the load.

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

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

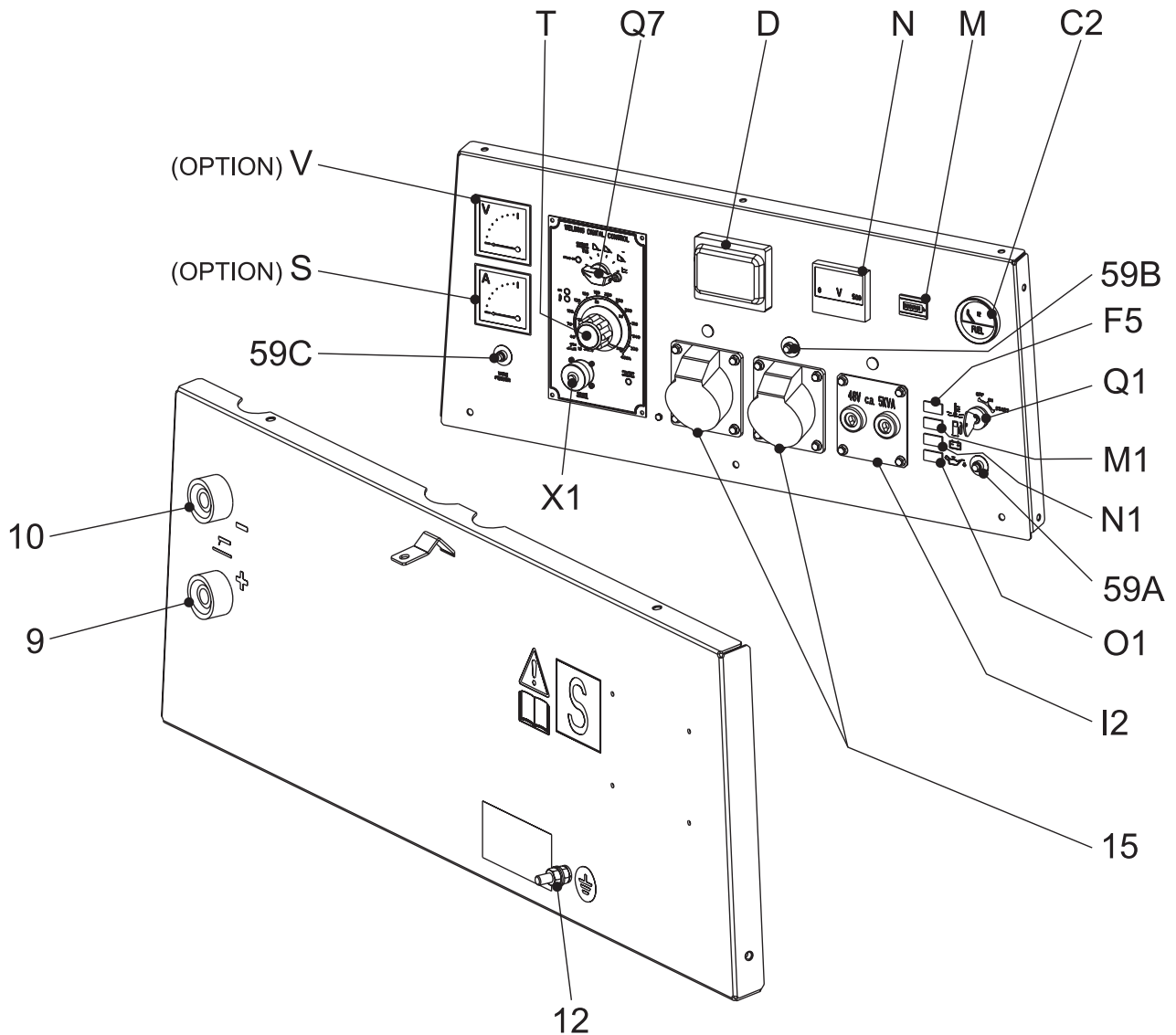


**CAUTION**

**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.*





Pos.	Descrizione	Description	Description	Referenzliste
9	Presca di saldatura (+)	Welding socket (+)	Prise de soudage (+)	Schweißbuchse (+)
10	Presca di saldatura (-)	Welding socket (-)	Prise de soudage (-)	Schweißbuchse (-)
12	Presca di messa a terra	Earth terminal	Prise de mise à terre	Erdanschluss
15	Presca di corrente in c.a.	A.C. socket	Prises de courant en c.a.	Steckdose AC
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
59C	Protezione termica alim.trainafile 42V	Supply therm.switch wire feeder 42V	Protection thermique alimentation 42V fil	Thermoschutz Drahtvorschub
C2	Indicatore livello combustibile	Fuel level light	Indicateur niveau carburant	Anzeige Kraftstoffpegel
D	Interruttore differenziale (30mA)	G.F.I.	Interrupteur différentiel	FI-Schalter (GFI)
F5	Spia alta temperatura	Warning light, high temperat.	Voyant haute température	Warnleuchte Temperatur
I2	Presca di corrente 48V (c.a.)	48V A.C. socket	Prise de soudage 48V (c.a.)	Steckdose 48V AC
M	Contaore	Hour counter	Compte-heures	Stundenzähler
M1	Spia livello combustibile	Warning level light	Voyant niveau carburant	Warnleuchte Kraftstoff
N	Voltmetro	Voltmete	Voltmètre	Voltmeter
N1	Spia carica batteria	Battery charge warning light	Voyant charge batterie	Warnleuchte Batterieladung
O1	Spia lumin. press. olio/oil alert	Oil press.warning light/oil alert	Voyant lumineux pression huile/oil alert	Warnleuchte Öldruck
Q1	Chiave di avviamento	Starter key	Clé de démarrage	Zündschloss
Q7	Selettore modalità saldatura	Welding selector mode	Sélecteur madalité soudage	Schweisssschalter
S	Amperometro di saldatura	Welding ammeter	Ampéromètre de soudage	Amperemeter Schweißstrom
T	Regolatore corrente di saldatura	Welding current regulator	Régulateur courant soudage	Schweißstromregler
V	Voltmetro tensione saldatura	Welding voltage voltmeter	Voltmètre tension soudage	Voltmeter Schweißspannung
X1	Presca per comando a distanza	Remote control socket	Prise pour télécommande	Steckdose Fernbedienung

**ATTENTION**

Access to non qualified personnel is prohibited in proximity of these areas:

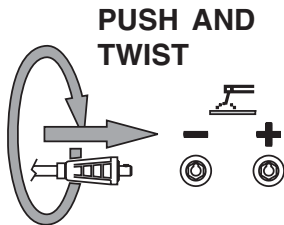
- the control panel (front-end) - the engine exhaust fumes - the welding process.



This symbol (regulation EN 60974-1 on safety requirements for arc welding apparatus) indicates that the engine driven welder is suitable for use in environments with an increased risk of electrical shock.

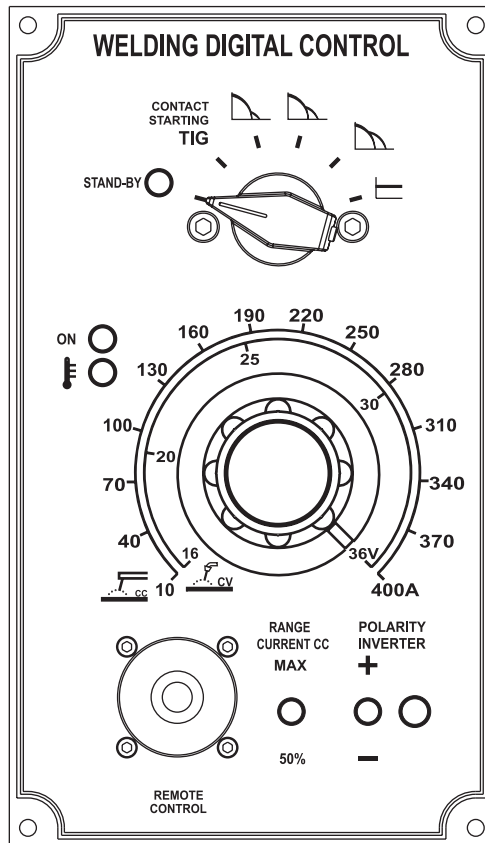
**WELDING CABLE CONNECTION**

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.



**GETTING STARTED**

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

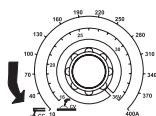
Before starting the engine please note the following:

- 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.

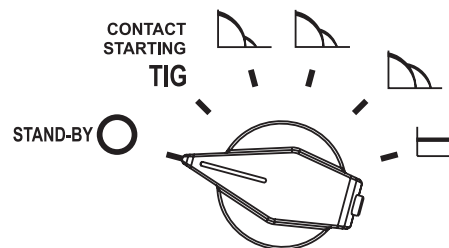


2) Start the engine of the welder



3) Turn the welding current/voltage adjusting knob to the minimum setting.

**SETTING THE WELDING PROCESS**



There is a manual switch for selecting the various welding processes on the welding control panel.

There are 5 processes to choose from:

- 1 for TIG welding
- 3 for STICK welding (electrode)
- 1 for MIG/MAG welding (continuous wire).

The switch can also be set to “stand-by” (first position). In this position there is no current at the welding connections; led “ON” off.

The process can be selected either before or after starting the motor powered welder.

After selecting the mode, the “ON” LED lights up except for the MIG/MAG mode which can only be selected when the button on the torch is pressed.

## TIG MODE

Contact starting TIG

This position is specifically for TIG welding. To create the arc simply place the tip of the TIG electrode on the piece that requires welding then gently move the tip away. The arc starts automatically and at the same time the welding current rises to the preset value, first using the welding current adjustment knob which is on the lower part of the control panel. The welding current can be adjusted continuously from a minimum of 10 A to a maximum which depends on the power of the machine 400 A, 500 A, 600 A.



## WARNING

For EP1 version it is compulsory to accelerate the engine manually.

## STICK MODE (Electrode)

Features C.C. (Constant Current)

There are three stick modes which feature increasing "arc forces" so that the arc has different levels of penetration according to the electrode and/or welding position.

## MIG/MAG MODE (continuous wire)

Features C.V. (Constant Voltage)

All wire type welding processes can be carried out, naked or coated.

The voltage can be adjusted using the same knob which adjusts the current in STICK mode. Adjustment is continuous and goes from a minimum of 15 V to a maximum of 36V, 40 V.

## Optional remote control

The welding current can also be set from a distance using the optional remote control. Once the remote control is connected to the connector (X1), the current is controlled by the remote control. To return to front panel control remove the connector.

## Optional VRD program (Voltage Reduction Device VRD)

When you choose the program stick or stick arc force the Open Circuit Voltage (OCV) go up but only for about 3", then the OCV go down about 11V and stop there, until the welder start welding.

When you make a short circuit with the stick the OCV immediately go up, so you can start to welding. VRD don't work with the program MIG-MAG.

## Inversion of polarity (Optional, available on request)

In order to invert polarity, press the switch on the remote control unit.

By selecting "inversion" the "ON" LED switches off and the voltage at the welding socket becomes zero. The power contactor is witted inside the electrical box and the voltage reappears at the welding sockets. The "ON" LED switches back on at the same time.

The "Invert polarity" LED on the front panel near the welding current adjuster switches on .

You cannot invert polarity in "MIG/MAG" mode.

## PROTECTIONS

The Welding Digital Control features 3 protections for the control and chopper.

### 1) "ON" LED blinking



When the engine of the welder is started the control unit automatically goes to the stand by mode for few instants (stand-by LED on) and performs a self-diagnosis of the current sensor connector and power source voltage + 15V; than the last process is loaded (on led turned ON). In case of malfunction the "ON" LED blinks.

### 2) Red LED blinking



The chopper has a thermal protection, which intervenes in case the operating temperature exceeds 85°C.

If the protection intervenes, the red LED begins to flash and the welding current/voltage goes to zero. In this case do not switch off the welder, since the alternator fan will help cool down the chopper more quickly.

After a few minutes, the LED will automatically switch itself off and the welding voltage/current will once again be available at the plugs.

### 3) Red LED continuously lit



If an anomalous current is detected in the chopper, the control blocks the conversion immediately, the output welding current/voltage goes to zero and the red LED lights up. To reset everything, it is necessary to switch off the machine.

If the protections 1) and 3) should intervene, it is best to immediately contact the nearest authorised Service Centre.

### WIRE WELDING with constant voltage (C.V.)

“Wire welding” can be performed in two modes:  
”short arc” or “spray arc.”

#### TERMS

- 1) “**Short**” refers to the way of transferring the material (wire) to the work piece.  
In this case, each time a drop of molten material is formed at the tip of the wire, assuming that the rod continues to advance, the tip touches the molten weld pool and is combined with it, provoking a very brief short circuit - hence the term “Short” is commonly used.
- 2) “**Spray**” refers to the transfer of material in the form of tiny molten droplets which, by means of the arc itself, pass into the molten weld pool as if they were sprayed by the arc.

“**Short arc**” welding requires a much lower arc voltage than “spray arc,” on the order of 25% less. The passage from “short arc” to “spray arc” occurs automatically by setting a higher operating voltage, if using inert gases or a mixture of gases, but not with pure CO<sub>2</sub>. With pure CO<sub>2</sub> the “spray arc” occurs only in part and, in any case, over a wide area resulting in excessive splatter.

“**Short arc**” welding can be performed with low currents, in relation to the diameter of the wire and is, therefore, especially suitable when working with thin material or in cases where the welding heat could create warping problems.

“**Spray arc**” welding requires higher arc voltages, which also imply higher currents for an equal size of wire in respect to “**short arc**” and is used with medium/high sheet thicknesses.

For high currents with thick materials, it is preferred with respect to “**short arc**”.

“Spray arc” welding is ideal for welding aluminium or magnesium.



**WIRE FEEDER CONNECTION**

**Model WF4**

Connect the wire feeder to the welder with the welder turned off:

- Welding cable between the machine's (9) welding plug (+) and the wire feeder.
- Welding cable between the machine's (10) welding plug (-) and the piece to be welded.
- Control/power cable between the machine's connector (X1) and the corresponding connector on the wire feeder.

**Start the machine welder**

The "ON" LED will be off and will turn on only when there is voltage at the welding plugs (and therefore at the wire).

The voltage is only present when the welding torch button is pressed.

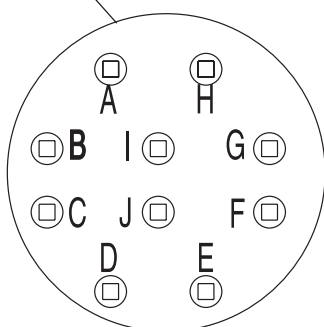
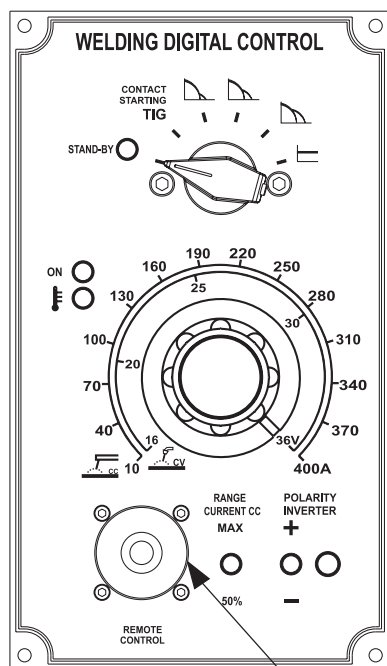
The setting of the welding voltage is done using the knob on the wire feeder.

The adjusting knob on the welder is automatically inhibited.



**WARNING**

*The connection of other brands of 42V AC wire feeders to the front panel connection can be done ONLY if wire feeder connector has the same configuration as showed below.*



NAME OF CONTACT	DESCRIPTION
A (electric ground)	To potentiometer RC1 "terminal a"
B	To potentiometer RC1 "central b"
C (5 V d.c.)	To potentiometer RC1 "terminal c"
D	short circuit with contact "C"
E	To switch "Polarity Inverter"
F (5 V d.c.)	(Close for negative polarity)
G	Return from switch on CV welding gun, 1-phase (44 - 48V a.c.)
H (welding ground)	Welding ground for d.c. voltmeter on wire feeder
I (44 - 48V a.c.)	Voltage supply for wire feeder
J (44 - 48V a.c.)	



**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 -.

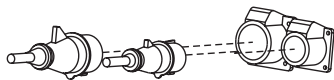
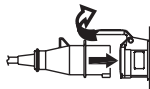
Position the G.F.I. switch to ON.

☞ 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.


**ATTENTION !**



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.



CIRCUIT BREAKER



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.

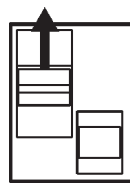
. Note: do not forcibly hold the central button of the thermal protection device to prevent its intervention, as this could irreparably **damage** the unit's alternator.

☞ 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.

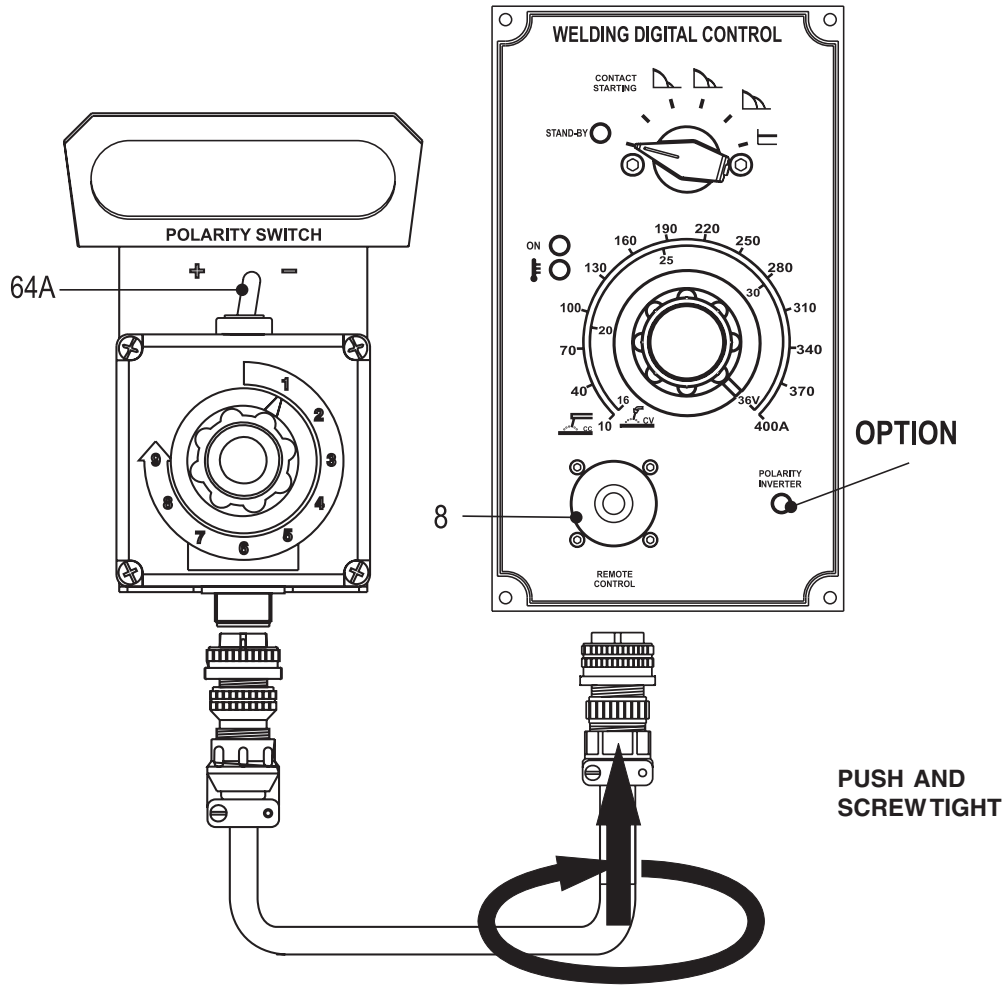
☞ Notes: Verify the operation of the G.F.I. switch at least once a month by pressing the TEST button. The generator must be running and the G.F.I. lever in the ON position.

**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.



Is it possible to connect the RC1, to all **DSP** engine driven welders.

The remote control RC1, which regulates the welding current in the CC mode and the welding voltage in the CV mode, 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.

The polarity inverter (64A), if installed, can be operated from the remote control.

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



**ATTENTION**

*When the RC1 is not used, it is necessary to disconnect the multipole connector*

**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.

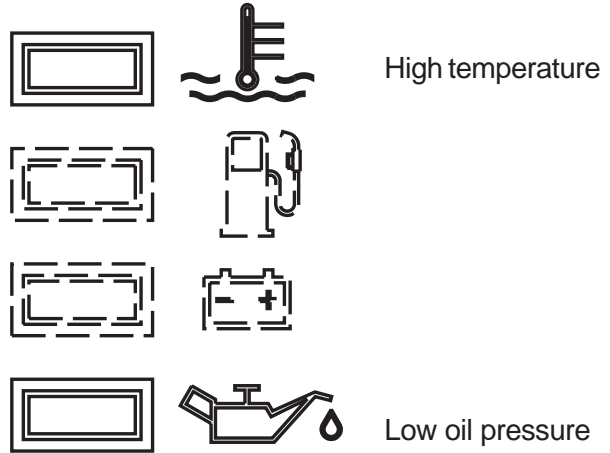
The system consist of electronic card of control and check, and of an engine stop device: solenoid (**ElettroStop**), electrovalve (**ElettroValvola**)

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.

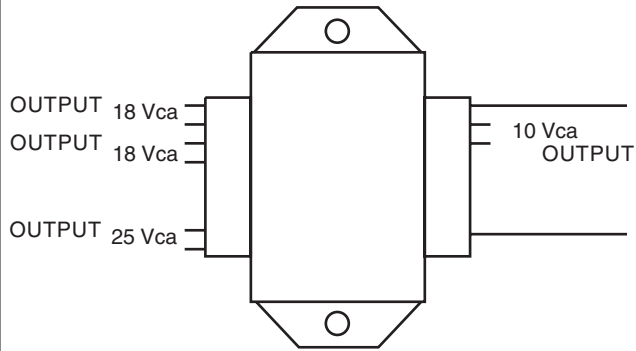
**NOTE**

*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	POSSIBLE CAUSE	WHAT TO DO
<b>WELDING</b>		
<b>P1</b> All functions performed by the WDC are regular, but there is no tension on the welding sockets	1) Position of regulation potentiometer incorrect knob	1) Adjust the position of the WDC regulation knob on the potentiometer spindle so that the potentiometer is not completely at the end of its travel when the knob reaches its minimum position. Idem for the RC1 remote control knob.
<b>P2</b> Malfunction in the selection of welding processes or in their confirmation on other functions performed by the WDC	1) WDC defective	1) <b>Replace</b> the WDC.
<b>P3</b> Blinking "ON" LED	1) Current sensor connector P3 2) Aux power voltage value ( $\pm 15V$ ) too high or too low	1) Connector P3 not inserted or defective - see drawing 5 2) Check the aux transformer, see drawing 1
<b>P4</b> Blinking red LED 	1) The chopper thermic protection is intervening  2) Temperature sensor situated on chopper (NTC resistor) short circuited or open.  3) WDC defective	1) The output is inhibited automatically; let the motor continue to run to cool down the chopper, and after a few minutes the LED will automatically switch off and there will be current/voltage once again at the welding sockets. 2) Check chopper connector, drawing 2, from pin 1-2. The resistor must be bigger than $1800 \Omega$ and less than $25 K\Omega$ , otherwise the led blinking. <b>Replace</b> the chopper. In the meantime you can work cutting the wire which arrives to pin 1 - pin 2 and put on it one resistor $10 K\Omega$ . In this case the thermic protection don't work but you can use the machine. 3) <b>Replace</b> the WDC.
<b>P5</b> Red LED always on 	1) WDC defective  2) Chopper defective 3) Current sensor defective	1) <b>Switch off</b> the machine and start it up again; if the LED remains off try to weld, verifying that the welding is regular; if the LED lights up again. Replace the WDC. 2) Check the chopper as shown on drawing 2. 3) Replace the sensor.
<b>P6</b> PHG1 remote does not operate.	1) Remote control (or cable) defective. 2) WDC defective.	1) Check the remote control as drawing 4 2) <b>Replace</b> the WDC
<b>P7</b> The welding current is always at max or always at minimum	1) Potentiometer on WDC defective 2) WDC defective 3) Welding current sensor defective	1) Check from pin 1-12 connector P4 (pin 1 - ground see drawing 3) 2) Replace the WDC 3) Replace the current sensor
<b>P8</b> No voltage at the welding sockets in CV mode	1) Defective wire feeder cable 2) Defective wire feeder 3) Defective WDC	1) Check the connections pin to pin of the wire 2) Check the wire feeder 3) Without wire feeder cable put the pin I in short circuit with G on remote control connector, the led ON must be light - WDC ok otherwise change WDC
<b>P9</b> No welding or generation output	1) Short circuit of chopper.  2) Short circuit of generation unit.  3) Alternator defective.	1) <b>Disconnect</b> the chopper and re-start the machine; if there is now an output present, replace the chopper 2) <b>Disconnect</b> the auxiliary output circuit and re-start the machine; if there is now an output present, there is a short circuit in the auxiliary output circuit or in one of the components 3) <b>Disconnect</b> all outputs on the alternator (welding and

PROBLEMS	POSSIBLE CAUSE	WHAT TO DO
		generation unless the output going to the condensers) and check the capacity of the condensers. Restart the machine, if there is still no output, replace the alternator.
<b>WELDING WITH V.R.D.</b>		
<b>P10</b> The welding tension after 3 sec isn't less enough (plus in 12V dc)	1) Net R.C. defective or disconnected from + or - welding socket 2) WDC defective.	1) Check the net R.C. Check the connections.  2) <b>Replace</b> the WDC.
<b>GENERATING</b>		
<b>P1</b> Voltmeter shows no voltage or low voltage but actual voltage at the sockets is OK.	1) Voltmeter malfunction	1) <b>Replace</b> the voltmeter.
<b>P2</b> No three-phase voltage present at the socket(s).	1) Differential switch not inserted 2) Differential switch malfunction	1) <b>Turn on</b> the switch. 2) <b>Replace</b> the switch.
<b>P3</b> 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) <b>Push in</b> the thermal switch. 2) <b>Replace</b> the thermal switch.
<b>P4</b> No voltage present. (See problem P9)	1) Short circuit present on the generator outputs.	1) <b>Disconnect</b> all outputs on the generator except for those on the condensers and re-start machine; check for voltage on condensers.
<b>MOTOR</b>		
<b>P1</b> 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) Starting system thermal switch 4) Fuel injection pump thermal switch 5) Engine solenoid	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) Push in the thermal switch. In case the problem persists, check the electrical circuit and eliminate the problem. Call an authorised service centre. 4) Push in the thermal switch. In case the problem persists, check the electrical circuit and eliminate the problem. Call an authorised service centre. 5) See engine manual
<b>P2</b> Engine stops due to intervention of EP5/ES.	1) Engine temperature too high or insufficient oil pressure. 2) High temperature sensor or oil pressure defective. 3) EP5/ES protection defective.	1) <b>Check</b> oil level. 2) <b>Replace</b> the malfunctioning sensor. 3) <b>Replace</b> the protection.
<b>P3</b> The battery is not charged.	1) Battery charger alternator defective. 2) Battery charger warning light defective.	1) <b>Replace</b>  2) <b>Replace</b>
<b>P4</b> For other problems, refer to the attached engine manual		





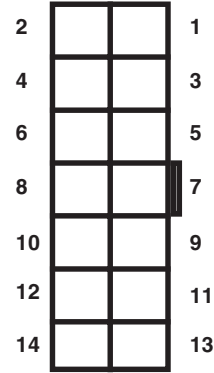
Check the transformer in this way:

input: 220 Vac  
output: 18 Vac, 25 Vac, 10 Vac

**DRAWING 1**

**CHECK THE CHOPPER FROM THE CONNECTOR**

CHOPPER CONNECTOR  
CHECK MOSFET ON CHOPPER



FOR THE CHECK HOLD THE CONNECTOR AS SHOWN ABOVE WITH A TESTER CHECK THERE ARE

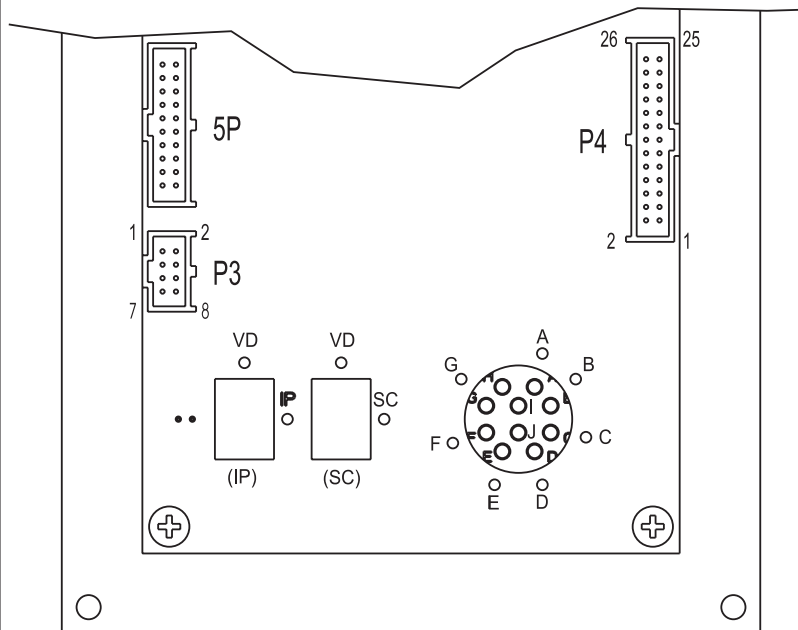
Pin 1-2	1,8÷ 25 KΩ
Pin 3-4	(open)
Pin 5-6	(open)
Pin 7-8	(open)
Pin 9-10	3,3KΩ
Pin 11-12	3,3KΩ
Pin 13-14	3,3KΩ

	(open)	3,3KΩ	} DSP 400 - 415	(open)	3,3KΩ	} DSP 2400 - 500	3,3KΩ	} DSP 600-615
	3,3KΩ	3,3KΩ		3,3KΩ	3,3KΩ		3,3KΩ	

**DRAWING 2**

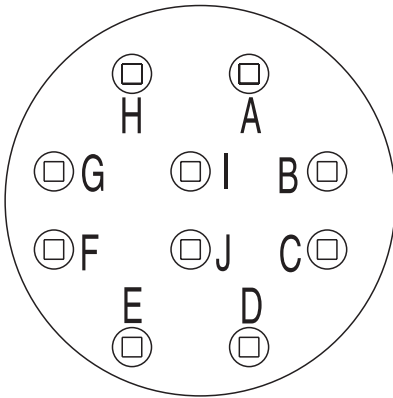
**Connector P4 on WDC**



How to check the potentiometer put on WDC  
1) Start the welding without load (at max RPM)  
2) Take the voltage from pin 1 - pin 12 on connector P4  
3)

Position Knob	Voltage from pin 1 - pin 12 on P4
Minimum	0 Vdc
Max	4,5 - 4,7 Vdc

**DRAWING 3**

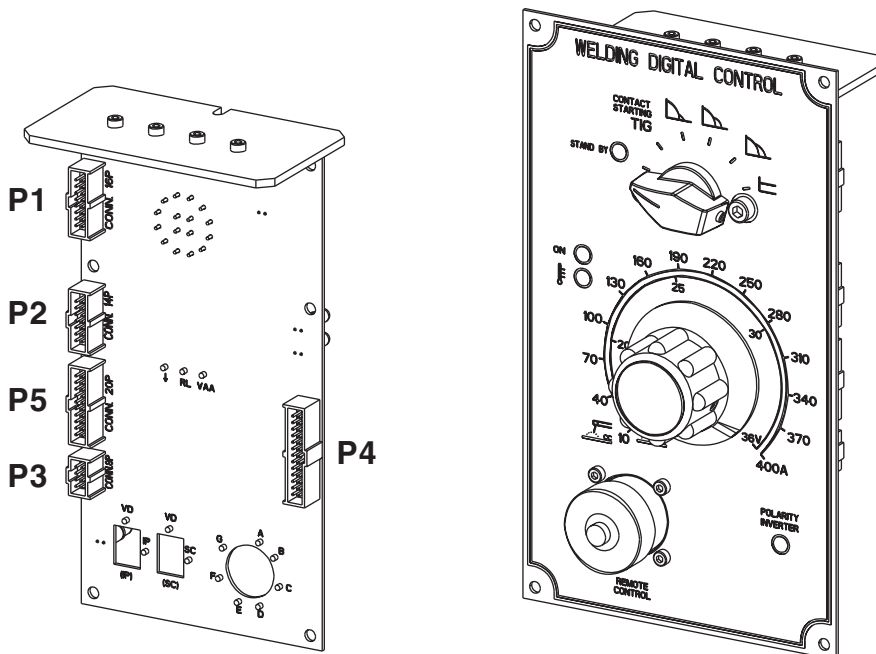


Put the knob on RC1 at minimum/max, put one ohmmeter from pin A - B and measure the resistance.

Knob	Resistance
Minimum	50 ÷ 100 Ω
Max	4,5 - 4,7 KΩ

**DRAWING 4**

- P1 Supply connector
- P2 Chopper connector
- P3 Current sensor connector
- P4 - P5 Free



**DRAWING 5**

**⚠ 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 entrusted 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 DSP 415 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.

<b>Technical data</b>	<b>DSP 415 S</b>	<b>DSP 415 SX</b>
<b>GENERATOR</b>		
Output three-phase	16 kVA / 400 V / 23.1 A	
Output single-phase	12 kVA / 230 V / 52.1 A	
Output single-phase	5 kVA / 48 V / 104 A	
Frequency	50 Hz	
Cos φ	0.8	
<b>ALTERNATOR</b>		
	Self-excited, self-regulated, brushless	
Type	three-phase, asynchronous	
Insulating class	H	
<b>ENGINE</b>		
Mark	VM	
Model	SUN 2105	
Type	4-Stroke	
Displacement	1990 cm <sup>3</sup>	
Cylinders	2	
Output max	20.6 kW (28 HP)	
Speed	1500 rpm	
Fuel consumption	210 g/kWh	
Cooling system	air	
Engine oil capacity	5.5 l	
Starter	Electric	
Fuel	Diesel	
<b>GENERAL SPECIFICATIONS</b>		
Tank capacity	60 l	
Running time	18 h	
Protection	IP 23	
Dimensions Lxwxh (mm) *	1720x980x1080	
Weight *	770 Kg	790 Kg
Noise level	98 LWA (73 dB(A))	95 LWA (70 dB(A))

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

### OUTPUT

Declared powers at the following ambient conditions: temperature 20°C, relative humidity 30% altitude 100 m above sea level.

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

### ACOUSTIC POWER LEVEL

The machine respects the noise limits, expressed in sound power, given in the a.m. directives.

These limits can be used to judge the sound level produced on site.

For example: the sound power level of 100 LWA.

The sound pressure (noise produced) at 7 meters distance is about 75dBA (the limit value less 25).

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

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



**C. C. WELDING**

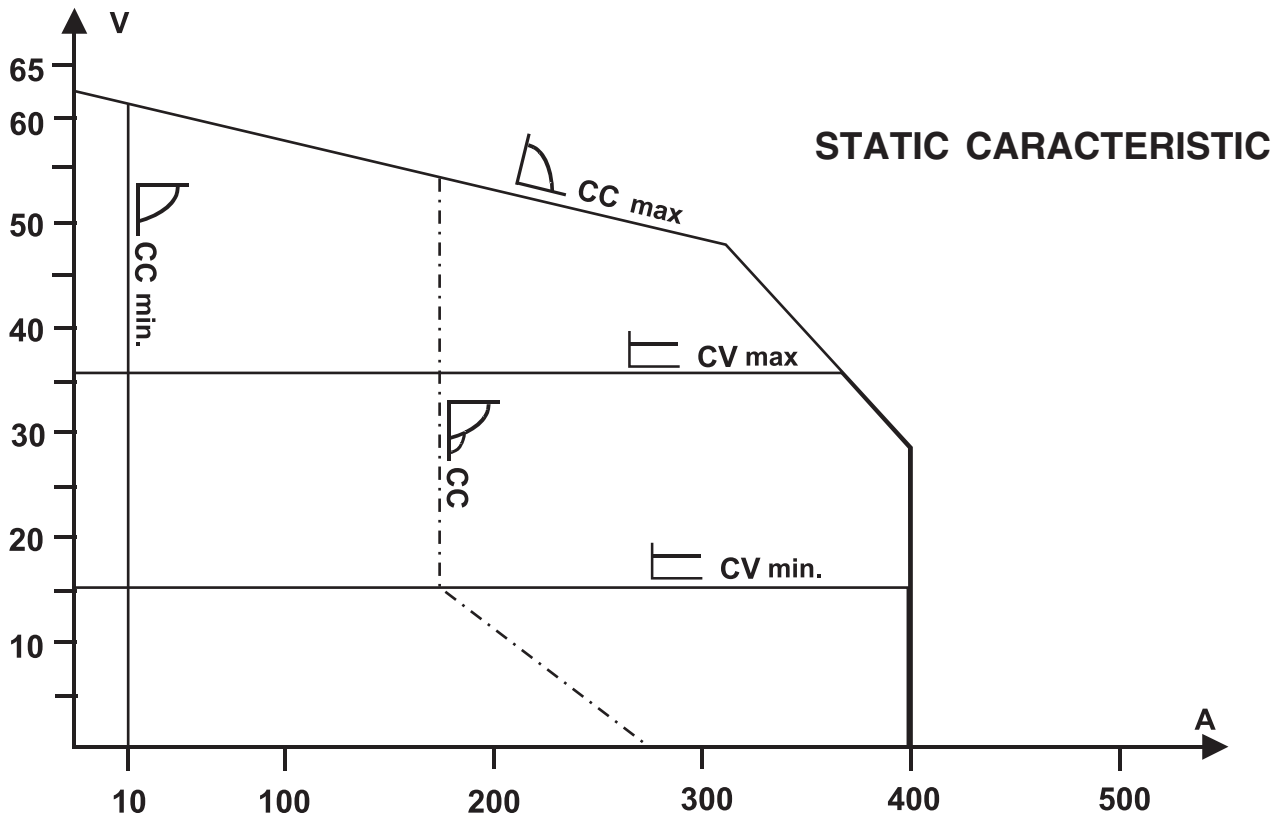
Welding current 400A/60% - 350A/100%  
Starting voltage 63V

**C. V. WELDING**

Welding current 350A/60% - 300A/100%  
Welding voltage 16 - 36V

**C. V./PUL WELDING**

Pulse frequency limits 50 - 250 Hz  
P1 max current at 250 Hz 180A/100%  
P2 max current at 250 Hz 280A/100%



**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:

<b>WELDING CURRENT</b>	<b>400A</b>	<b>350 A</b>	<b>300 A</b>	<b>200 A</b>	<b>100 A</b>	<b>0</b>
<b>AUXILIARY POWER</b>	<b>0</b>	<b>1.5 kVA</b>	<b>4 kVA</b>	<b>8 kVA</b>	<b>13.5 kVA</b>	<b>16 kVA</b>

**MOSA**

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I Dimensioni

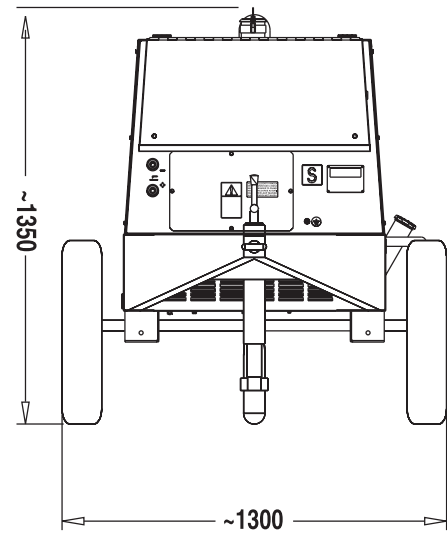
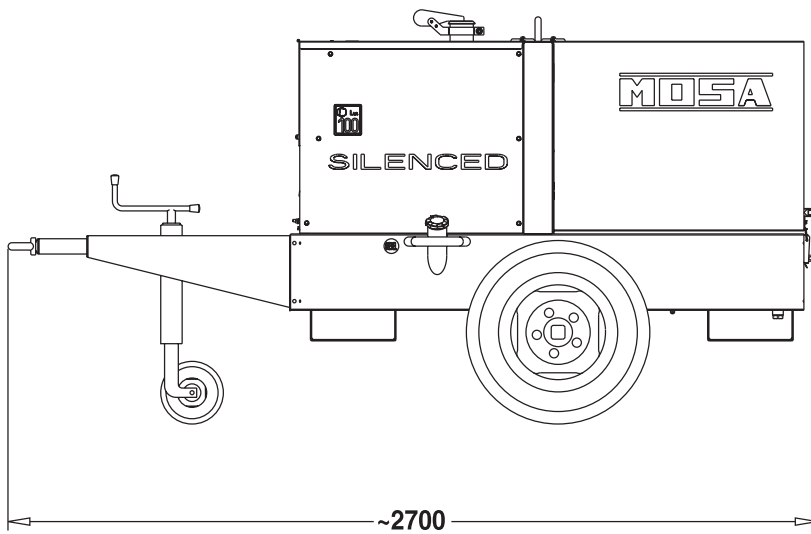
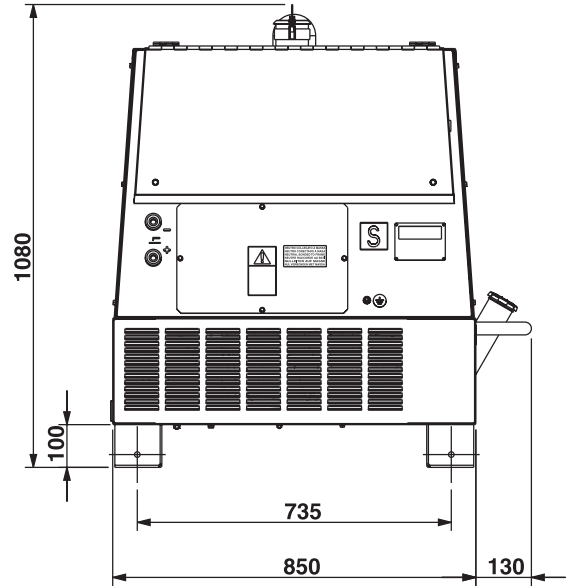
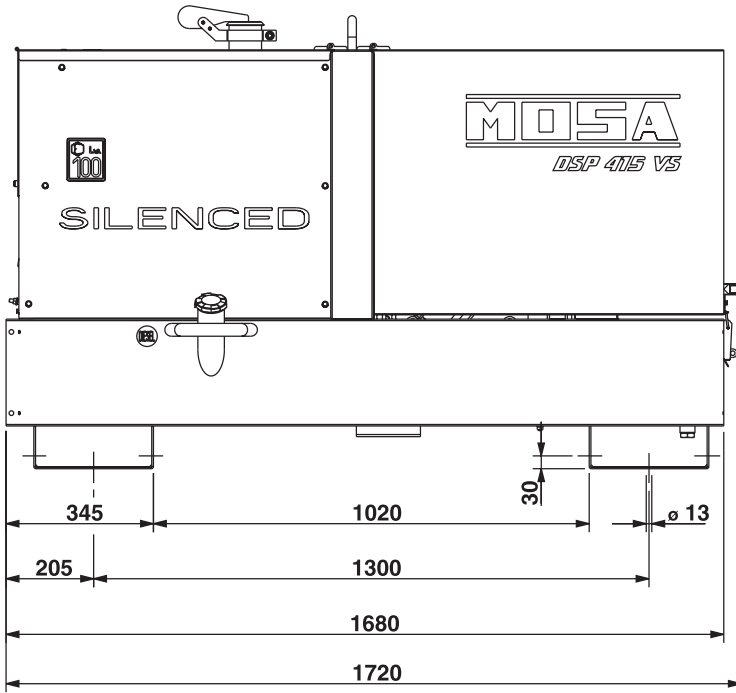
GB Dimensions

F Installation

D Abmessungen

E

NL

**DSP 415 VS/VSX****M  
53**

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/mm<sup>2</sup>. 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.

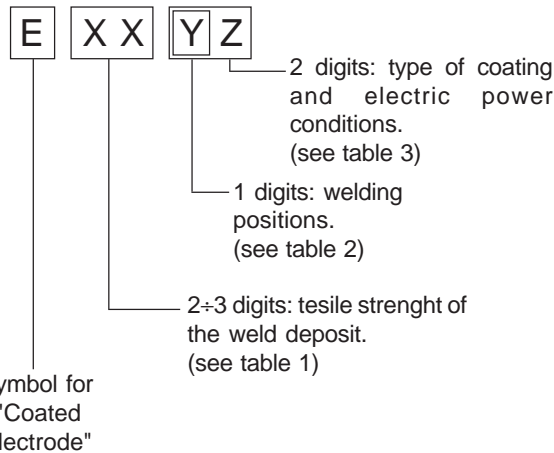
**HIGH YIELD BASIC ELECTRODES: E 7018**

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/mm<sup>2</sup>. Weld in all position. volatile slag.

**ELECTRODES IDENTIFICATION ACCORDING TO A.W.S. STANDARDS**



Number	Strength	
	K.s.l.	Kg/mm <sup>2</sup>
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

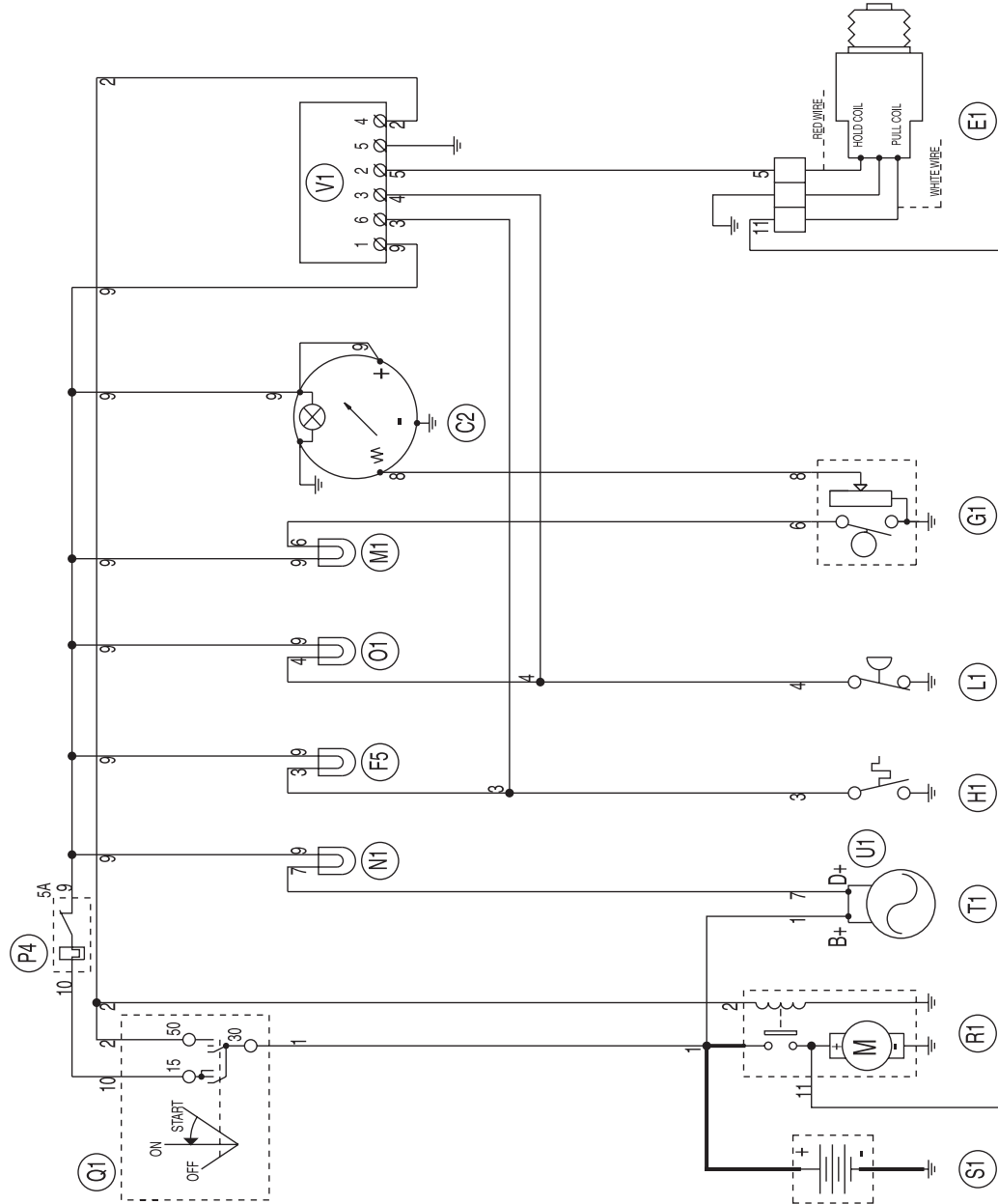
1	for all positions
2	for plane and vertical
3	for plane position only

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

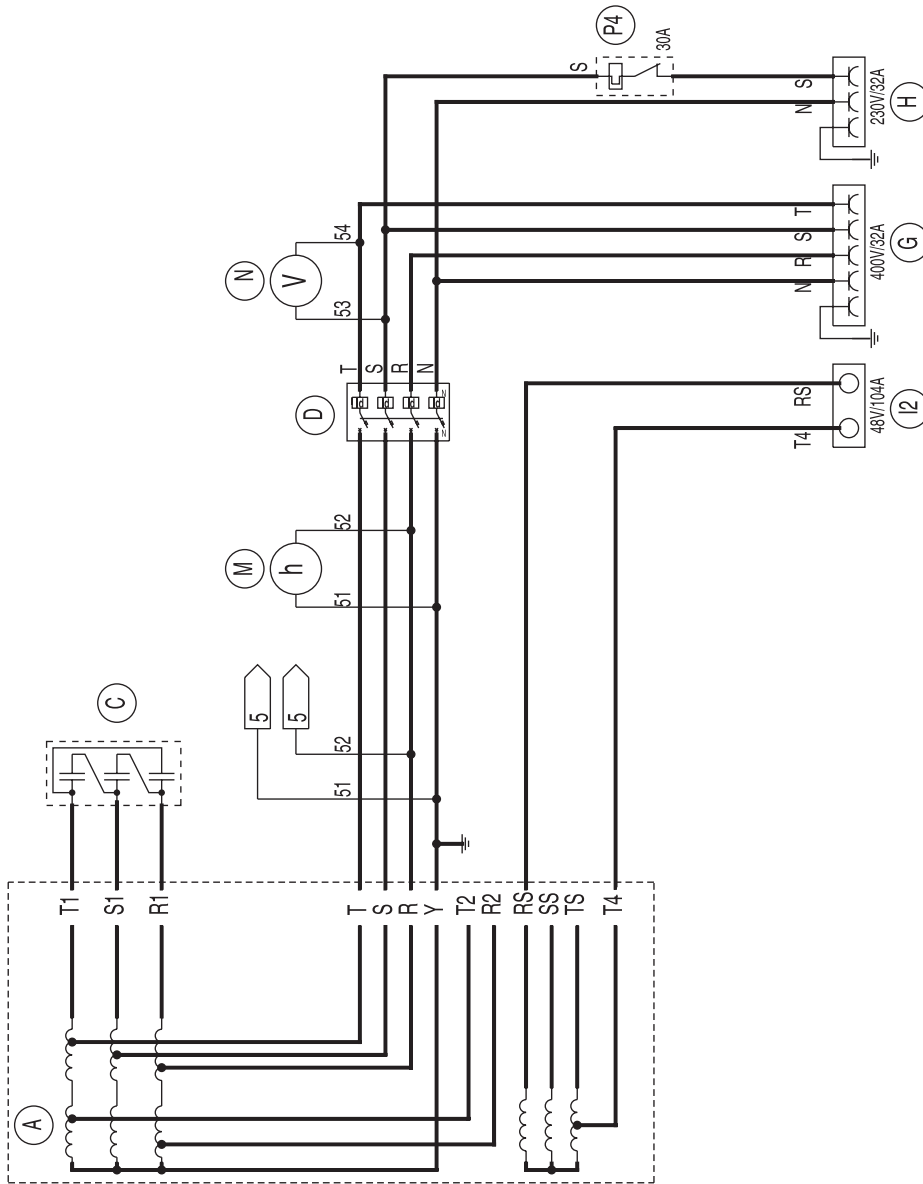
A: Alternator	A3: Insulation monitoring	A6: Commutator/switch
B: Wire connection unit	B3: E.A.S. connector	B6: Key switch, on/off
C: Capacitor	C3: E.A.S. PCB	C6: QEA control unit
D: G.F.I.	D3: Booster socket	D6: Connector, PAC
E: Welding PCB transformer	E3: Open circuit voltage switch	E6: Frequency rpm 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: R.C. net
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:
D2: Ammeter	D5: Actuator	D8:
E2: Frequency meter	E5: Pick-up	E8:
F2: Battery charge transformer	F5: Warning light, high temperature	F8:
G2: Battery charge PCB	G5: Commutator auxiliary power	G8: Polarity inverter two way switch
H2: Voltage selector switch	H5: 24V diode bridge	H8:
I2: 48V a.c. socket	I5: Y/s commutator	I8:
L2: Thermal relay	L5: Emergency stop button	L8:
M2: Contactor	M5: Engine protection EP5	M8:
N2: G.F.I. and circuit breaker	N5: Pre-heat push-button	N8:
O2: 42V EEC socket	O5: Accelerator solenoid PCB	O8:
P2: G.F.I. resistor	P5: Oil pressure switch	P8:
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
ON	OFF
ST	OFF

A		Sostituto fusibile con disgiuntore 5A (P4).		21.11.2002		L.N.	
Esq.	Exco.	Modifica		Data	Appr.	di n°	
		Denominazione:		Projecto:	Page n°	of n°	
		Da Pag. From Page		28200.plg	2	5	
		Alia Pag. To Page		Dis. n°:	Date:		Approvato:
		Maccchina: Machine:		28200.S.010-A	04.02.2002		Approvato:
		Leporace N.		Designer:		Approvato:	

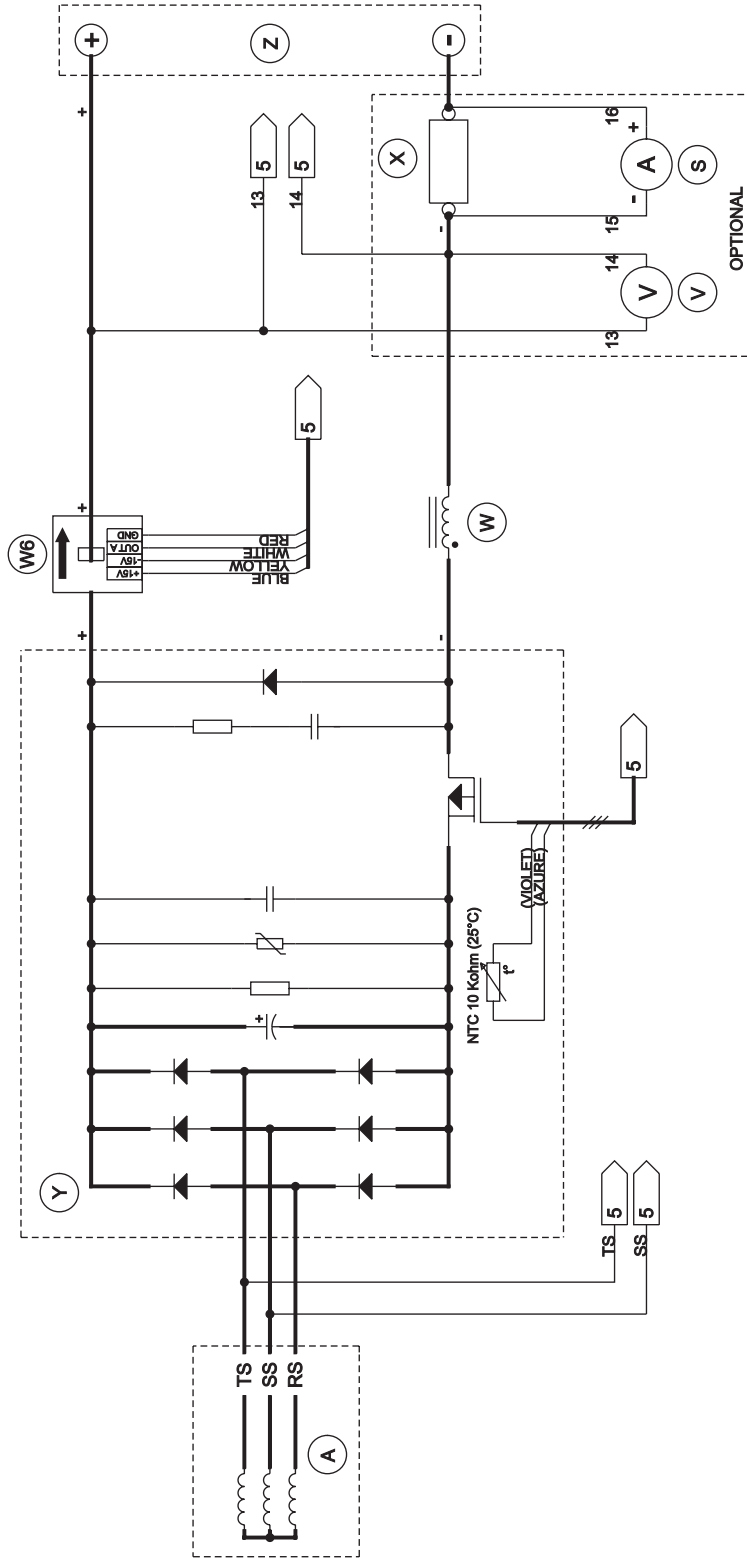
La MOSA si riserva a termini di legge la proprietà del presente disegno con divieto di riproduzione o comunicato a terzi senza sua autorizzazione



Esp. Exe.	Modifica		Data	Dis. Dis.	Appr. Appr.
	Modification		Date	Page n°	Page n°
	Denominazione:		Progetto:	Page n°	Page n°
	AUX. (400T/230M/48M) DT		28200.prg	3	5
	Macchina:		Dis. n°	Approvato:	
	DSP 415 VS		28200.S.020	6	
	http://www.mosa.it		Data:	Date:	
			04.02.2002	04.02.2002	
	Leporace N.		Designatore:		
			Leporace N.		
			Designer:		
			Leporace N.		

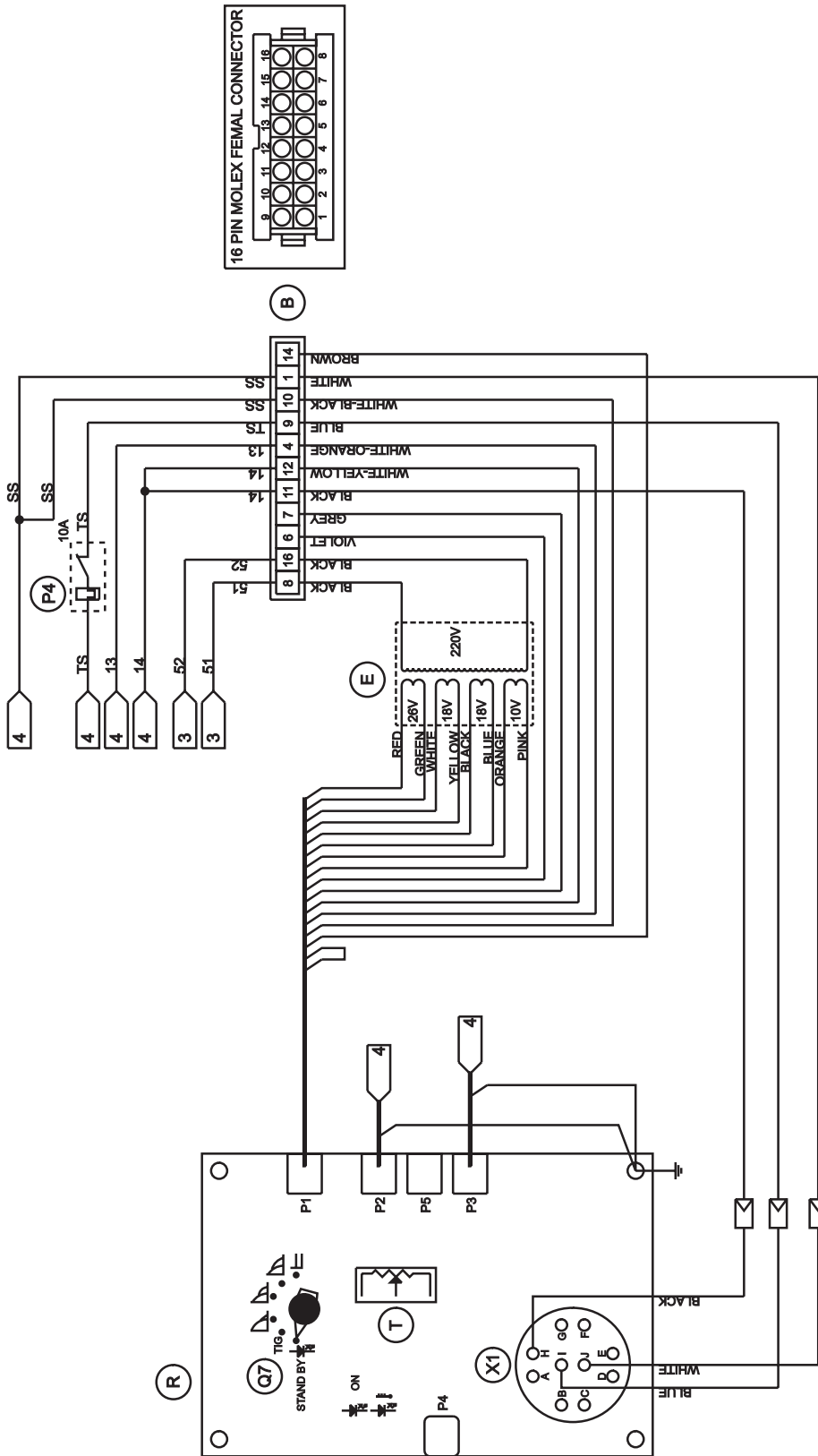
La MOSA si riserva a termini di legge la proprietà dei presente disegno con divieto di riprodurlo o comunicarlo a terzi senza sua autorizzazione





C	Sostituito reattore cavo avvolto con reattore in rame (W).	12.06.2006	N.L.
B	Modificato schema con nuovo sensore di Hall (WG)	05.05.2005	N.L.
A	Modificato spire reattore da 12 a 18 e cambiato Sensore di Hall.	17.10.2002	N.L.
Exp.	Modifica	Data	Dis. Desi.
	Denominazione:	Projecto:	Dis. Desi.
	From Page	28200.prg	Page n° of n°
	To Page	4	5
	Alia Pag. Machine:	Dis. n°	Approvato:
	Machine:	Date:	Approved:
	DSP 415 VS	04.02.2002	28200.S.030-C
	http://www.mosa.it	Leporace N.	1/2/3/4/5/6/7/8/9/10

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Exp.:	Modifica	Data	Dis.	Appr.
Exp.	Modificazion	Date	Desi.	Abbr.
	Da Pag.:	Progetto:	Dis. di n°	Appr. di n°
	Da Pag.:	Project:	Page n°	Page n°
	Alia Pag.:	89400.prg	5	5
	To Page:			
	Macchine:	Designator:	Dis. n°:	Appr. n°:
	DSP 400 YSX	Designer:	Dwg. n°:	Approved:
		Leporace N.	38200.S.040	

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

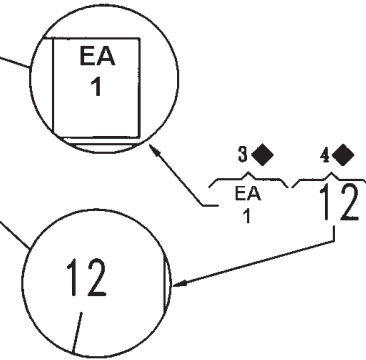
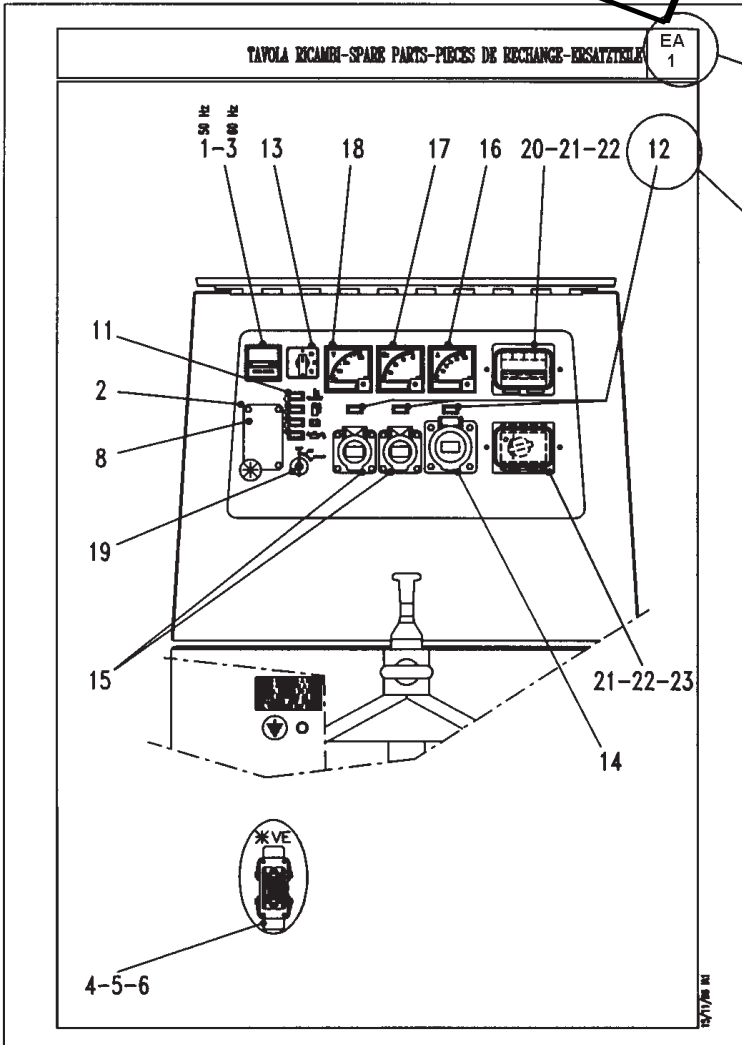
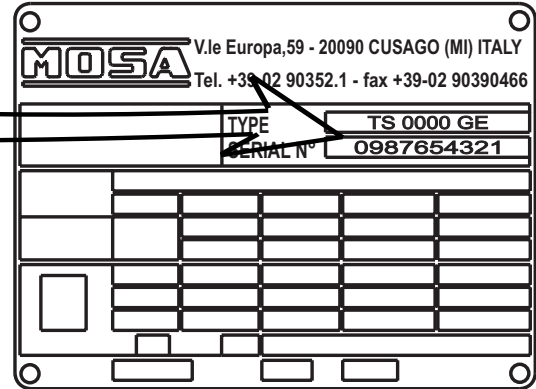
## MOSA guarantees that any request for spare parts will be satisfied.

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. \*

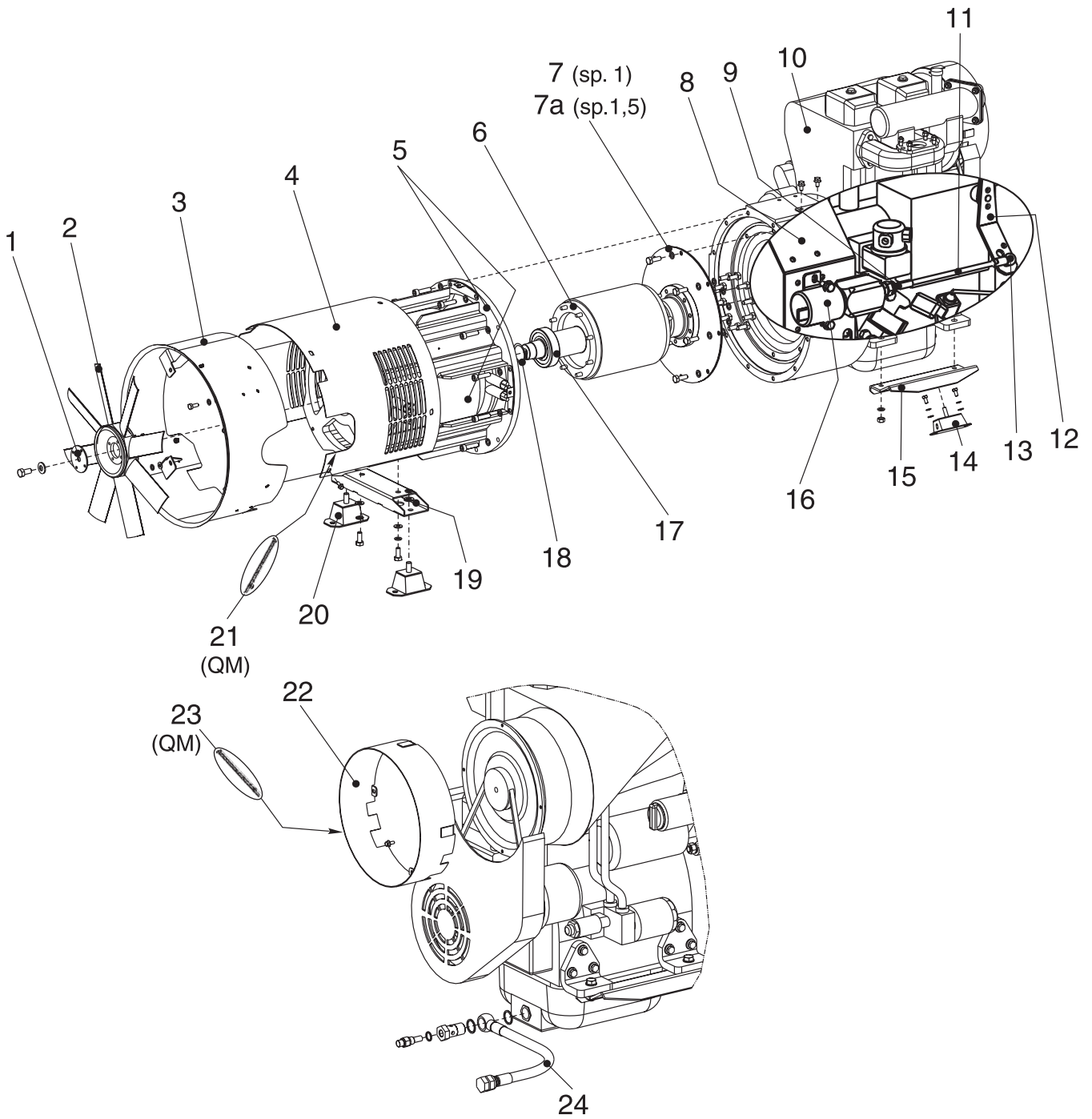
When ordering the spare parts, it is recommended to indicate:

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



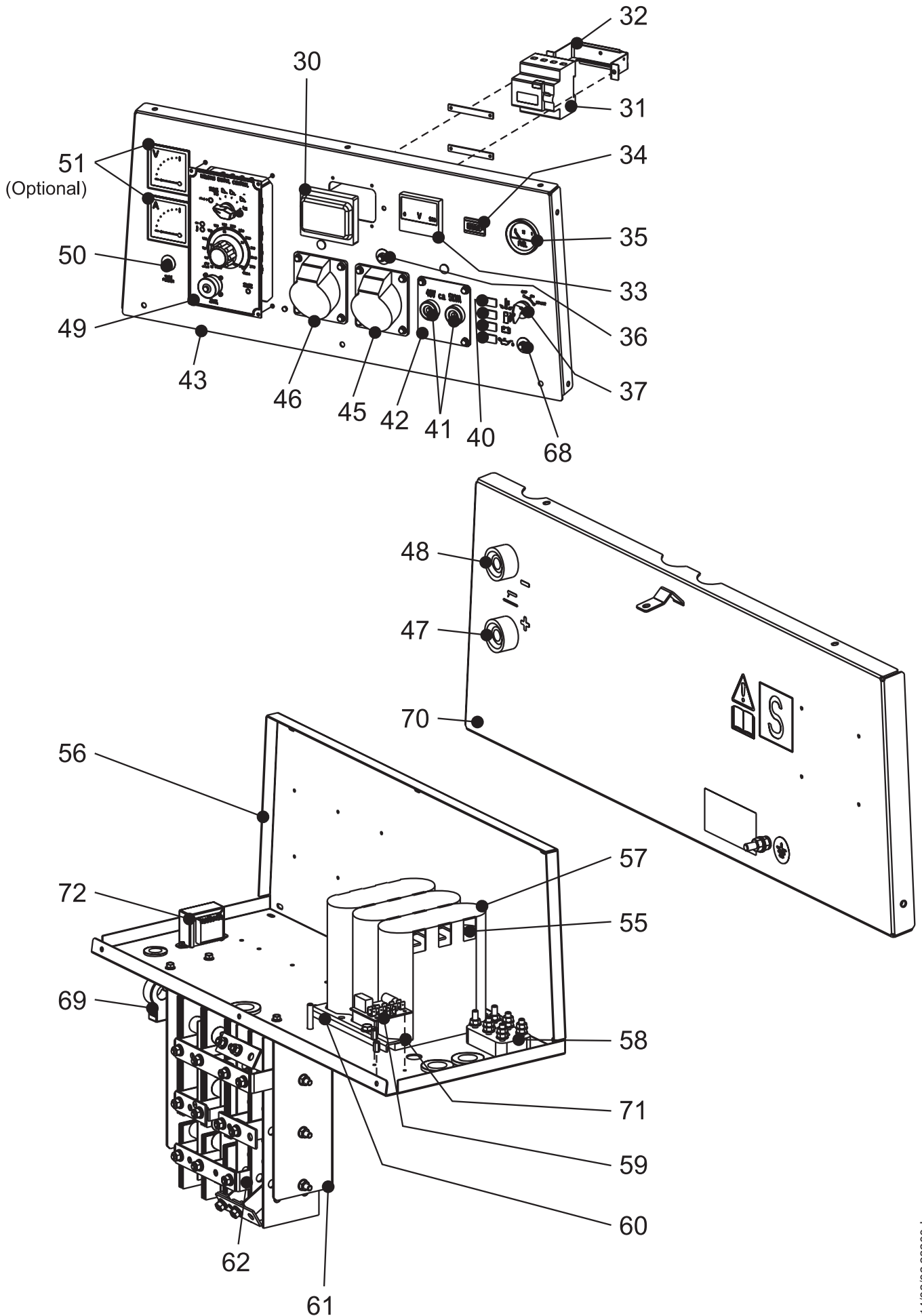
### ABBREVIATIONS AND SYMBOLS:

- (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



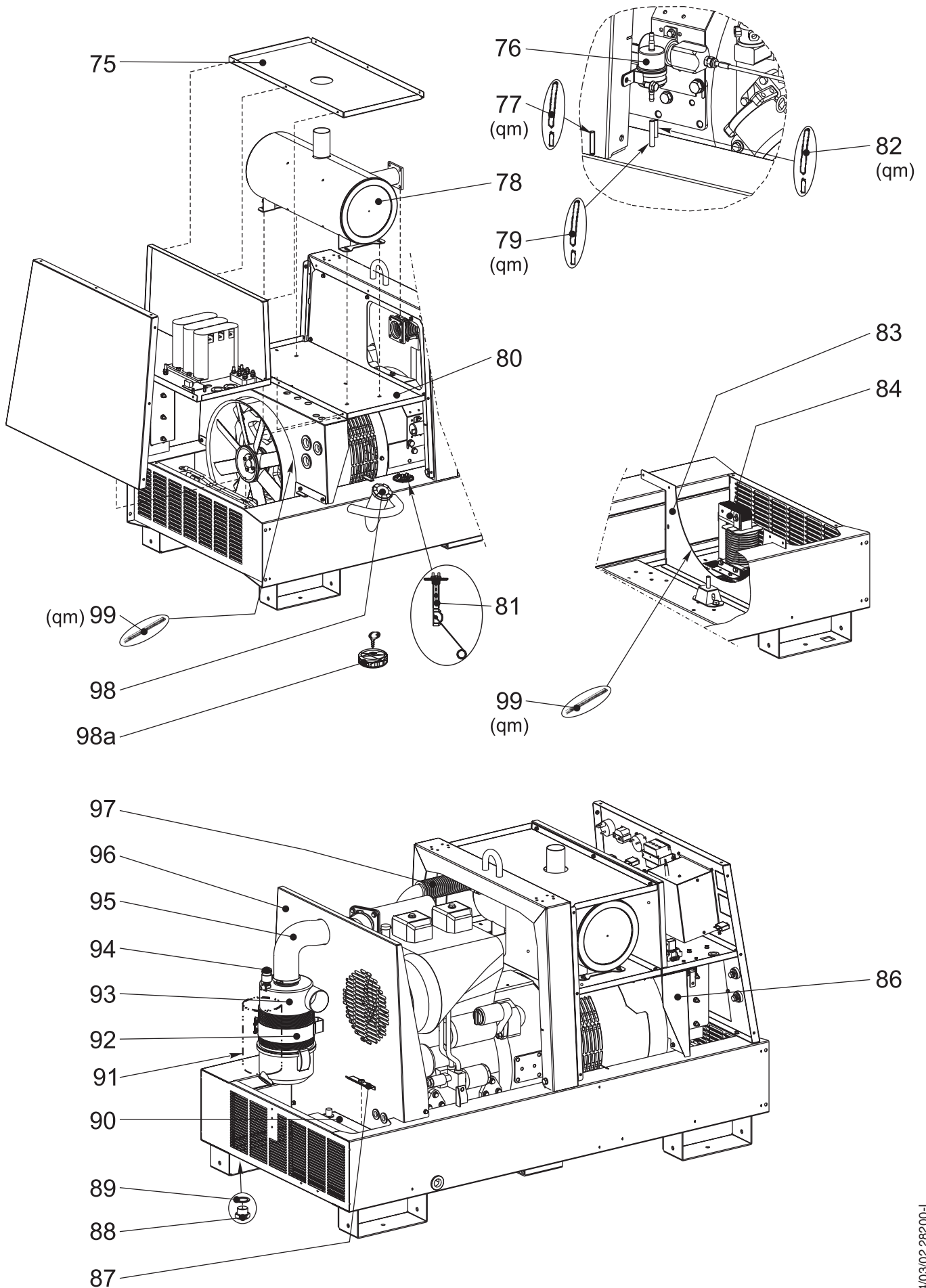
<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
1	107301390	ANELLO	
2	107601470	VENTOLA COMPLETA	
3	307806010	CONVOGLIATORE GENERATORE	
4	282008222	COPERTURA ALTERNATORE	
5	282003015	CARCASSA CON STATORE (RICAMBI)	Carcassa con statore (ricambi)
6	282003030	ALBERO ROTORE (COMPL.)	
7	765003012	DISCO X ALBERO ROTORE	sp. 1
7 a	765013012	DISCO ALBERO ROTORE	sp. 1,5
8	305779101	STAFFA	
9	342209058	TIRANTE SNODATO	
10	282002200	MOTORE VM SUN2105 (14A)	
11	342209056	TIRANTE COMANDO ELETTROMAGNETE	
12	305772219	LEVA COMANDO GAS	
13	105631146	TESTINA SNODATA	
14	105612060	ANTIVIBRANTE	
15	307802224	PIASTRA SUPPORTO MOTORE	
16	219869055	ELETTROMAGNETE ARRESTO MOTORE	
17	1001050	CUSCINETTO	
18	6050050	ANELLO SEEGER	
19	307803101	TRAVERSA ALTERNATORE	
20	105612070	ANTIVIBRANTE	
21	107509005	GUARNIZIONE	(qm) 290
22	343332040	CONVOGLIATORE ARIA MOTORE	
23	102302280	GUARNIZIONE (L=MT.1)	(qm) 850
24	343332212	TUBO SCARICO OLIO	

<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	
1	107301390	RING FIXING FAN	
2	107601470	FAN	
3	307806010	GENERATOR CONVEYOR	
4	282008222	COVER ALTERNATOR	
5	282003015	STATOR + HOUSING	Carcassa con statore (ricambi)
6	282003030	SHAFT WITH ROTOR	
7	765003012	DISC FOR SHAFT WITH ROTOR	sp. 1
7 a	765013012	SHAFT WITH ROTOR DISC	sp. 1,5
8	305779101	BRACKET	
9	342209058	TIE ROD	
10	282002200	VM SUN2105 (14A) ENGINE	
11	342209056	SOLENOID TIE-ROD	
12	305772219	LEVER, ACCELERATOR	
13	105631146	BALL JOINT	
14	105612060	VIBRATION DAMPER (40x100)	
15	307802224	PLATE SUPPORTING ENGINE	
16	219869055	STOP SOLENOID	
17	1001050	BEARING	
18	6050050	RING, SEEGER	
19	307803101	ALTERNATOR BRACKET	
20	105612070	VIBRATION-DAMPER (40x50)	
21	107509005	GASKET	(qm) 290
22	343332040	ENGINE CONVEYOR	
23	102302280	GASKET (L=MT.1)	(qm) 850
24	343332212	EXHAUST OIL PIPE	

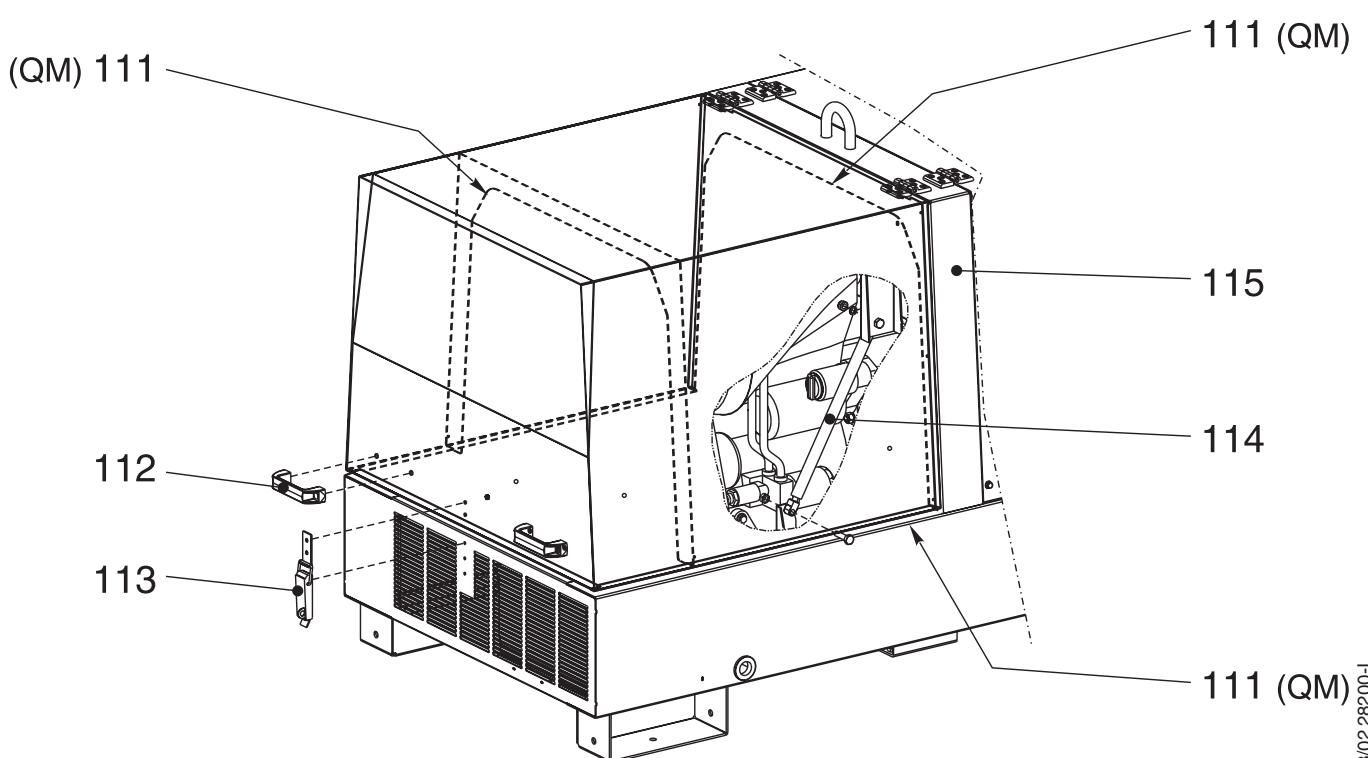
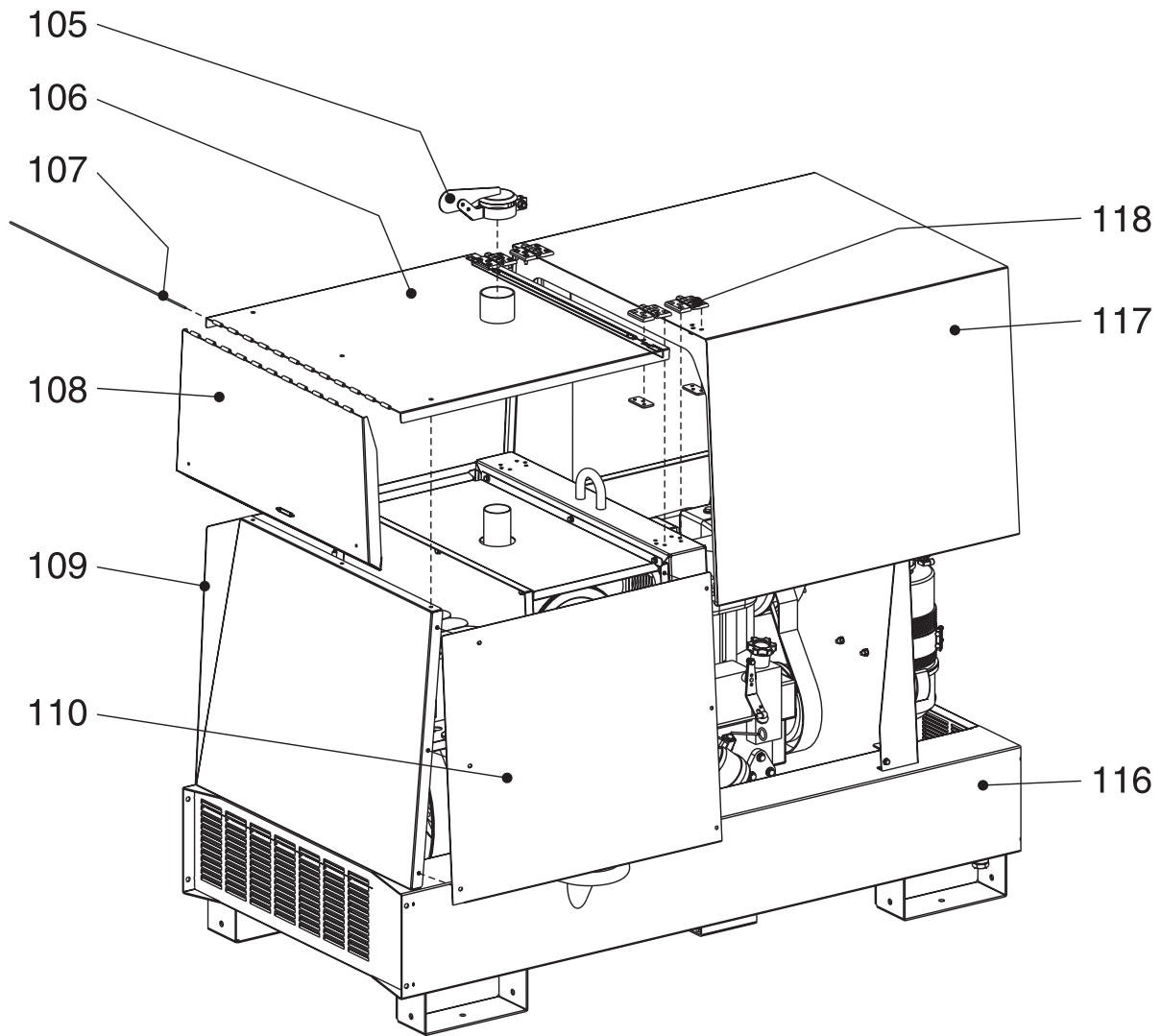




<i>Pos.</i>	<i>Rev.</i>	<i>Cod.</i>	<i>Descr.</i>	<i>Note</i>
30		219937130	COPERCHIO INTERRU.T.DIFFERENZ.	
31		105111540	Vedi Cod.219937105	
32		219937036	STAFFA	
33		105111550	VOLTMETRO FS 500V	
34		105511810	CONTAORE 230V 50Hz IP65	
35		325507210	INDICATORE LIVELLO CARBURANTE	
36		873407107	DISGIUNTORE TERMICO 30A/250V	
37		107302460	STARTER A CHIAVE	
40		1302040	SPIA ROSSA 12V	
41		101131220	PRESA DINSE	
42		107517032	COPERCHIO PRESE 48V	
43	B	282017020	PANNELLO FRONTALE	era 282007020 Del. 59/05 del 10/05/05
45		105111520	PRESA CEE 220V MONOF. 2POLI+T	
46		105111510	PRESA CEE 380V TRIFASE	
47		102301310	PRESA DI SALDATURA (+)	
48		102044400	PRESA DI SALDATURA (-)	
49	B	0000794057425	WDC (PROGRAMMATO) RICAMBI	era 282000556
50		306467109	PROTEZIONE TERMICA (C.B.)	
51		282000166	AV2 KIT AMPEROM/VOLTM.DI SALD.	OPTIONAL
55		765009041	SBARRETTA BOX CONDENSATORI	
56		282007010	SCATOLA ELETTRICA	
57	B	107019880	BOX CONDENSATORI	era 866709880
58		105111830	MORSETTIERA	
59		209719850	SCHEDA EV/ES	
60		765009882	STAFFA FISSAGGIO BOX CONDENS.	
61		282005091	STAFFA SUPPORTO CHOPPER	
62		282005400	PONTE DIODI	
68	A	352007109	PROTEZIONE TERMICA 5A	sost. pos.38 e 39 cod.1291120 e 307759045
69	B	282005107	SENSORE DI HALL 400A	Sensore di hall (variante) sost. pos. 64 cod. 000028200A903 Ind.A - era 000089400A903
70	B	382007205	PANNELLO FRONTALE (inferiore)	
71	B	282009807	DISTANZ. ISOLANTE PER SCHEDE	
72	B	282009869	TRASFORMATORE	
<i>Pos.</i>	<i>Rev.</i>	<i>Cod.</i>	<i>Descr.</i>	<i>Note</i>
30		219937130	COVER GFI	
31		105111540	See part no. 219937105	
32		219937036	BRACKET	
33		105111550	VOLTMETER	
34		105511810	HOURMETER 230V 50Hz IP65	
35		325507210	FUEL LEVEL GAUGE	
36		873407107	CIRCUIT BREAKER 30A/250V	
37		107302460	STARTER KEY	
40		1302040	RED WARNING LIGHT 12V	
41		101131220	SOCKET	
42		107517032	BLIND PLATE, SOCKETS 48V	
43	B	282017020	FRONT PANEL	era 282007020
45		105111520	EEC SOCKET SINGLE-PH.220V 2P+	
46		105111510	EEC SOCKET THREE-PHASE 380V	
47		102301310	WELDING SOCKET (+)	
48		102044400	WELDING SOCKET (-)	
49	B	0000794057425	WDC	era 282000556
50		306467109	THERMOPROTECTION (B.C.)	
51		282000166	WELDING AMMETER/VOLTMETER KIT	OPTIONAL
55		765009041	CAPACITORS BOX BRACKET	
56		282007010	ELECTRICAL BOX	
57	B	107019880	CAPACITOR BOX	era 866709880
58		105111830	TERMINAL BOARD	
59		209719850	PCB EV/ES	
60		765009882	CAPACITORS BOX FIXING BRACKET	
61		282005091	BRACKET CHOPPER BRIDGE	
62		282005400	DIODE BRIDGE	
68	A	352007109	THERMOPROTECTION	sost. pos.38 e 39 cod.1291120 e 307759045
69	B	282005107	HALL SENSOR	Sensore di hall (variante) sost. pos. 64 cod. 000028200A903 Ind.A - era 000089400A903
70	B	382007205	FRONT PANEL	
71	B	282009807	SPACER	
72	B	282009869	TRANSFORMER	

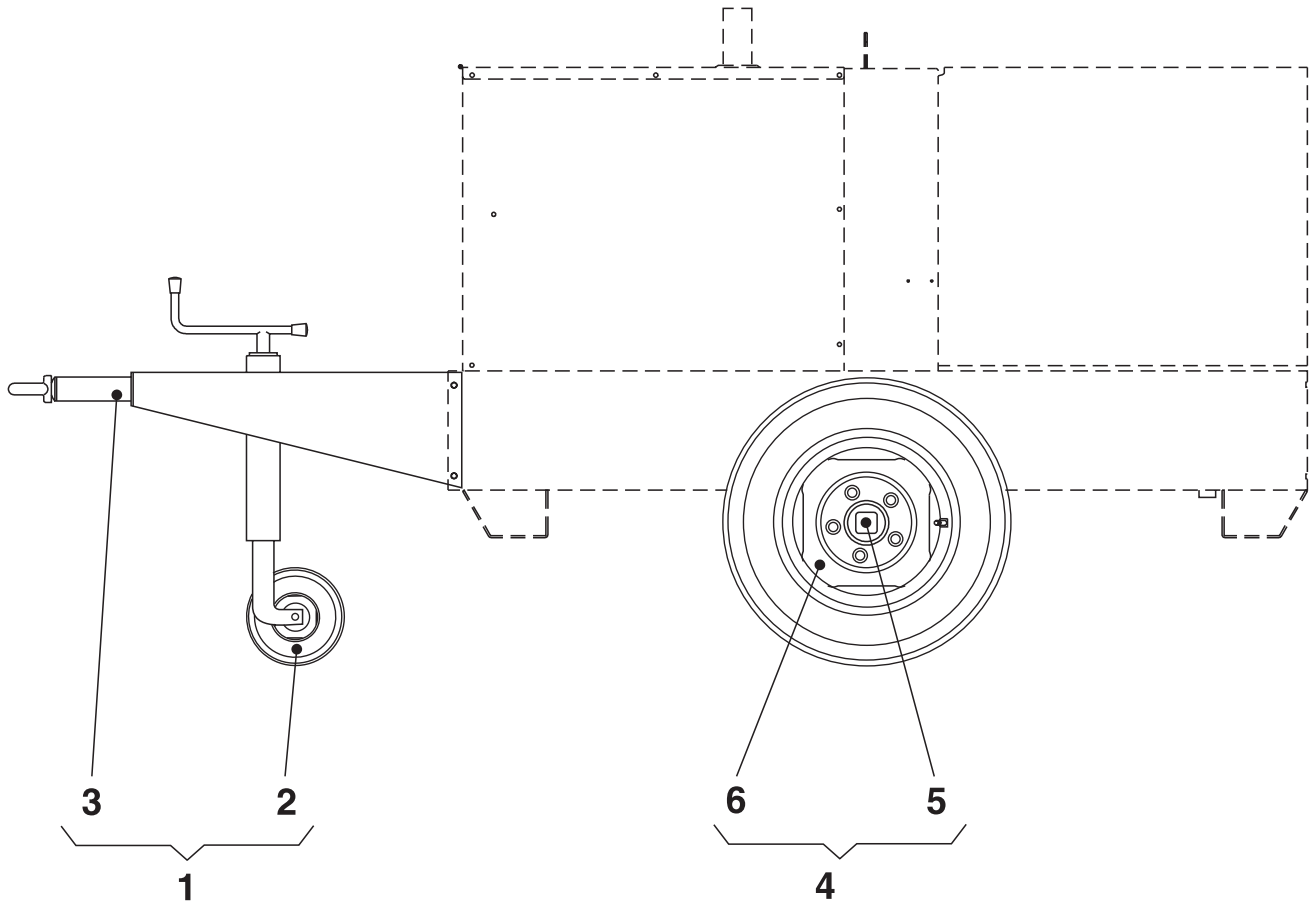


<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
75	282008123	COPERCHIO CAMERA SILEN.SCARICO	
76	256602228	FILTRO GASOLIO	
77	107301890	TUBO SFIATO (L=MT.1)	(QM)
78	343332050	SILENZIATORE DI SCARICO	
79	308102207	TUBO GOMMA (L=MT.1)	(QM)
80	282008225	PARATIA CAMERA SILENZ. SCARICO	
81	307719975	GALLEGGIANTE LIV.CARB.(FINITO)	
82	307402208	TUBO IN GOMMA (L=MT.1)	(QM)
83	366108218	PARATIA INFERIORE ALTERNATORE	
84	282004100	REATTORE DI LIVELLO	fino a rev.06/05 Del. 100/06 del 23/06/06
84	786104100	REATTORE DI LIVELLO	da Rev. 06/06 Del. 100/06 del 23/06//06
85	282004110	STAFFA SUPPORTO REATTORE	fino a rev.06/05 Del. 100/06 del 23/06/06
86	366108217	PARATIA SUPERIORE ALTERNATORE	
87	107301770	STAFFA	
88	308101262	TAPPO SCARICO SERBATOIO	
89	308102023	GUARNIZIONE	
90	764409150	BATTERIA 100 AH	
91	342802132	ELEMENTO FILTRANTE	
92	342802125	FASCETTA	
93	342802130	FILTRO ARIA COMPLETO	
94	325462131	INDICAT.INTASAMENTO F.ARIA	
95	1229870	TUBO FLESSIBILE (MT.1)	
96	343338221	PARATIA ASPIRAZIONE MOTORE	
97	282002070	TUBO SCARICO	
98	342202026	TAPPO SERBATOIO	
98 a	317802026	TAPPO SERBATOIO CON CHIAVE	(SR)
99	102302280	GUARNIZIONE (L=MT.1)	
<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
75	282008123	EXHAUST MUFFLER COVER	
76	256602228	FUEL FILTER	
77	107301890	PIPE, BREATHER (L=MT.1)	(QM)
78	343332050	EXHAUST MUFFLER	
79	308102207	PIPE	(QM)
80	282008225	EXHAUST MUFFLER COVER	
81	307719975	FUEL LEVEL GAUGE	
82	307402208	RUBBER PIPE	(QM)
83	366108218	ALTERNATOR UNDERWALL	
84	282004100	REACTOR	Delivered up to rev.06/05 Del. 100/06 del 23/06/06
84	786104100	REACTOR	Delivered from Rev. 06/06 Del. 100/06 23/06//06
85	282004110	SUPPORT REACTOR BREAKER	Delivered up to rev.06/05 Del. 100/06 del 23/06/06
86	366108217	ALTERNATOR TOP WALL	
87	107301770	BRACKET	
88	308101262	FUEL TANK CAP	
89	308102023	GASKET	
90	764409150	BATTERY 100 AH	
91	342802132	AIR FILTER	
92	342802125	CLAMP	
93	342802130	AIR FILTER,ASSY	
94	325462131	WARNING LIGHT	
95	1229870	FLEXIBLE PIPE (MT.1)	
96	343338221	BULKHEAD, ENGINE AIR INLET	
97	282002070	EXHAUST PIPE	
98	342202026	CAP, FUEL TANK	
98 a	317802026	CAP, TANK	(SR)
99	102302280	GASKET (L=MT.1)	(QM)



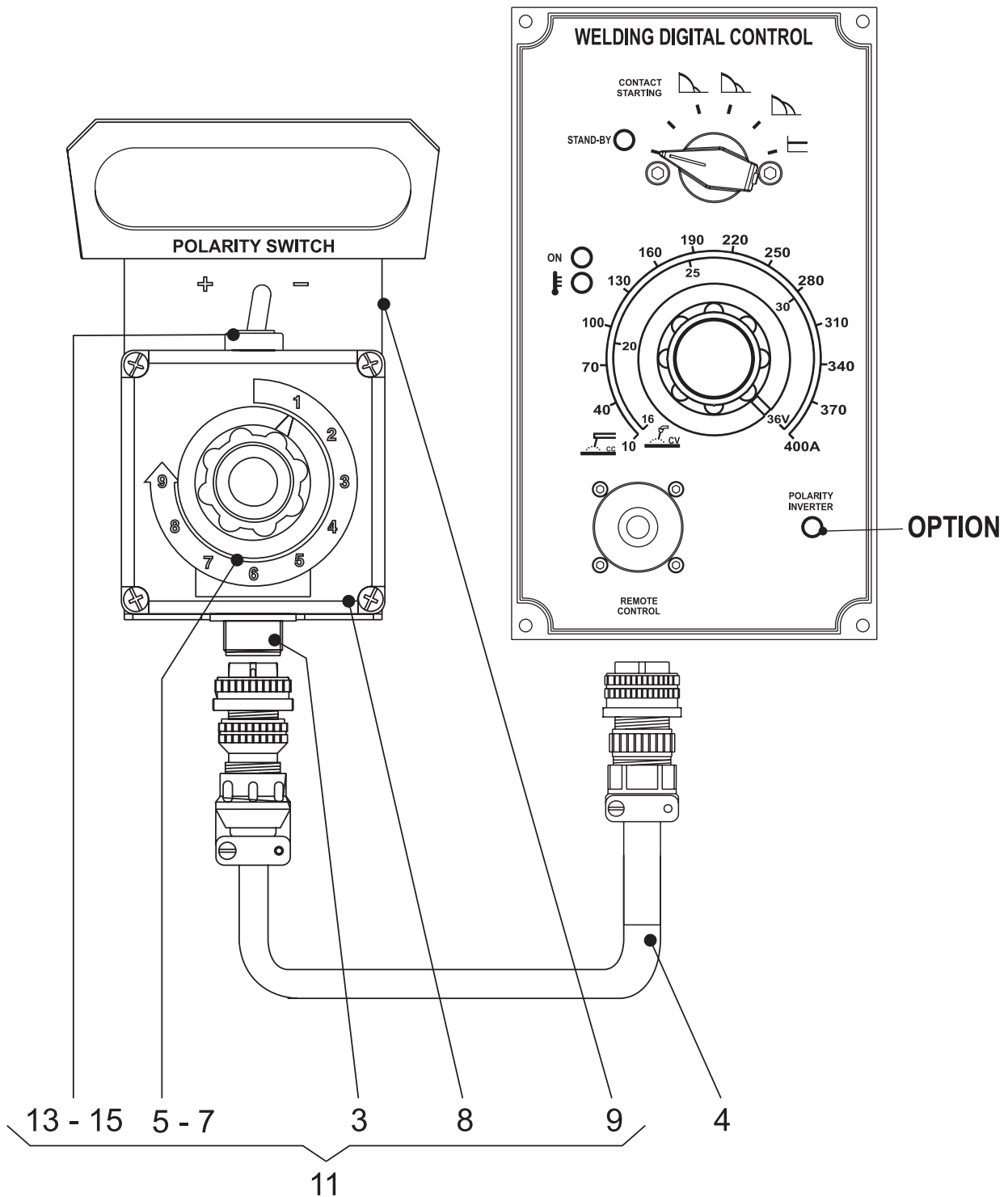
<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
105	840952053	COPERCHIETTO PARAPIOGGIA	
106	282008021	COPERCHIO CARENATURA ANTERIORE	
107	343338270	PERNO PER CERNIERA	
108	343338100	COPERCHIO FRONTALE	
109	282008015	FIANCATA (SX) CARENATURA ANTER.	
110	282008010	FIANCATA (DX) CARENAT.ANTERIORE	
111	105112270	GUARNIZIONE (L=MT.1)	(QM)
112	343339601	MANIGLIA	
113	107300180	CHIUSURA COMPL. A LEVA	
114	305718115	PISTONE SOSTEGNO	
115	282001100	ROLL-BAR (COMPLETO)	
116	282001050	BASAMENTO	
117	343338035	CARENATURA POSTERIORE	
118	744508140	CERNIERA PER FIANCATA	

<i>Pos.</i>	<i>Rev. Cod.</i>	<i>Descr.</i>	<i>Note</i>
105	840952053	WATER CAP	
106	282008021	FRONT COVER	
107	343338270	HINGE PIN	
108	343338100	FRONT COVER	
109	282008015	FRONT COVER LEFT SIDE	
110	282008010	FRONT HOUSING RIGHT SIDE	
111	105112270	STRIP, SEALING (L=MT.1)	(QM)
112	343339601	KNOB	
113	107300180	LATCH	
114	305718115	SUPPORT, REAR COVER	
115	282001100	ROLL-BAR	
116	282001050	BASE	
117	343338035	REAR COVER	
118	744508140	LATCH	



Pos.	Rev.	Cod.	Descr.	Descr.	Note
1	A	0000305200141	GR. TIMONE, PIEDE X TRAINO LENTO	KIT SITE TOW	era 305200141 10/12/02
2		102351750	PIEDE DI STAZIONAMENTO	PARKING STAND	
3		305201150	TIMONE	TOW BAR	
4	A	0000305600142	GR. ASSALE, RUOTE TRAINO LENTO	KIT SITE TOW	era 305600142 10/12/02
5		305751160	ASSALE	AXLE	
6		105612030	RUOTA	WHEEL	





Pos.	Rev.	Cod.	Descr.	Descr.
3		836709910	CONNETTORE FEMMINA	FEMALE CONNECTOR
4		936809904	CAVO COMANDO DISTANZA	REMOTE CONTROL CABLE
5		308300543	MANOPOLA REGOLAZIONE COMPL.	KNOB, REGULATOR COMPLETE
7		836709715	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		102042740	CAPPUCCIO	CAP
15		102013290	COMMUTATORE	COMMUTATOR



Dear Customer,

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



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

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

**MOSA SPARE PARTS:**

model type:.....

serial nr:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NEW TABLES		
table nr.	position	q.ty

OLD TABLES	
code	q.ty

**ENGINE SPARE PARTS:**

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

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

**SYNCHRONOUS ALTERNATOR SPARE PARTS:**

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

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

