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USE AND MAINTENANCE MANUAL SPARE PARTS CATALOG



UNI EN ISO 9001 : 2000

ISO 9001:2000 - Cert. 0192/3

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

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

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

The advantages for MOSA clients are:

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

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

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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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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/ Código: _____

è conforme con quanto previsto dalle **Direttive Comunitarie** e relative modifiche:
 est en conformité avec ce qui est prévu par les **Directives Communautaires** et relatives modifications:
 conforms with the **Community Directives** and related modifications:
 mit den Vorschriften der Gemeinschaft und deren Ergänzungen übereinstimmt:
 in overeenkomst is met de inhoud van 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




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

SYMBOLS IN THIS MANUAL

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

IMPORTANT ADVICE

- Advice to the User about the safety:

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

WARNING



Situations of danger - no harm to persons or things

Do not use without protective devices provided

Removing or disabling protective devices on the machine is prohibited.

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

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

SAFETY PRECAUTIONS



DANGEROUS

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



WARNING

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



CAUTION

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



IMPORTANT



NOTE



ATTENTION

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

SYMBOLS (for all MOSA models)


STOP - Read absolutely and be duly attentive



Read and pay due attention



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



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



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



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



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



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



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



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



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



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



ACCES FORBIDDEN to non authorized people.

PROHIBITIONS No harm for persons

Use only with safety clothing -


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

Use only with safety clothing -


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

Use only with safety protections -


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

Use with only safety material -


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

Use only with non inserted voltage -


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

No smoking -


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

No welding -


It is forbidden to weld in rooms containing explosive gases.

ADVICE No harm for persons and things
Use only with safety tools, adapted to the specific use -

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

Use only with safety protections, specifically suitable


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

Use only with safety protections -


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

Use only with safety protections -


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

Use only with safety protections -


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


°C: temperature Celsius grades
10:10 kVA synchronous (wording example)
10000:10 kVA asynchronous (wording example)
A: Ampere
A: ADIM engine
atm: pressure
B: petrol
BAT: battery
BC: base current
C.A.(c.a.): alternating current
C.B.: battery charger
C.C.(c.c.): direct current
cc: cm³ (volume)
CE: European norm conformity
CF: special for pipe welding
CTL: slow touring trolley
CTM CTV: fast touring trolley: hand touring trolley
D: diesel
D: GFI
D: Deutz engine
E: electric start
EAS: automatic intervention panel for generating sets for connection to the mains
EL: electronic regulation, allows to use welder and generating set simultaneously
EP1: automatic accelerator according to requested power, engine protection, low oil pressure, high temperature with engine stop, trouble warning lights
EP2: engine protection, low oil pressure, high temperature with engine stop, trouble warning lights
EP4: engine protection, low oil pressure, high temperature with engine stop, no battery charge, belt broken, low fuel level with engine stop, trouble warning lights
EP5: engine protection, low oil pressure, high temperature with engine stop, no battery charge, belt broken, low fuel level with engine stop, overspeed, trouble warning lights
EP6: Control and protection unit of generating sets. It has operating modes OFF – MAN – AUTO. It protects the engine for low oil pressure, high temperature, belt broken, no battery charge and low fuel level, overspeed and under speed, over and under voltage and no starting. It shows besides: voltage, frequency and current generator, current battery voltage and battery charge, engine rpm. EP6 disposes of 29 programmable parameters.
ES: oil/temperature engine protection device
EV: electrovalve
g/kwh: grams/kilowatt hour (engine consumption)
GA: asynchronous alternator
GE: generating set
GHF: high frequency alternator
GS: synchronous alternator
h: hour meter (symbol)
H: Hatz engine
H: Honda engine
HI: hydraulic central
Hz: frequency
I: single-phase auxiliary generation (symbol 1~)

IP: protection grade for electric devices against access to dangerous parts according to the IEC 529 norm (Internal Protection)
kg: kilogram (mass)
K: welding cables set
kVA: kilovolt ampere
kW: kilowatt (engine power)
kWh: kilowatt hour (energy)
l: liters (capacity)
L: Lombardini engine
Lwa: maximum acoustic (power level) according to the regulations in force
mm: millimeter (length) (measure)
m: meter (length)
mA: milliamperes
MS-MSG: MOSA engine driven welder with high frequency alternator
MT: magnetothermic switch
MT: grounding kit
MTD: magnetothermic switch / GFI
OH: heater (engine oil) for generating sets
P: plus
PAC: power electric frame
PAR: device for double
PB: battery holder
PL: „pipe line“ welding
PS: exhaust pipe extension
PW: welder for polyethylene and propylene pipes
QEA: automatic electric panel
QEM: manual electric panel
R: Ruggerini engine
RVT: voltage electronic regulator
S: symbol of EN 60974-1
S: Suzuki engine
SKID: unit assembled on a base with no protection (no fairing)
S-SC: silenced (faired) - silenced compact (faired)
SX-SXC: supersilenced (faired and sound proof) - supersilenced compact (faired and super sound proof)
T: thermic switch
TC-TCM-TCPL: remote control
TS: welder with asynchronous alternator
V: Volt
Y: Yanmar engine
Y: three-phase auxiliary generation (symbol 3~)

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


Equipment and optional

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

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


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














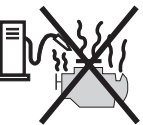






 **FIRST AID.** In case the operator should be sprayed by accident, from corrosive liquids a/o hot toxic gas or whatever event which may cause serious injuries or death, predispose the first aid in accordance with the ruling labour accident standards or of local instructions.

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



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

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

|  WARNING | | | | |  CAUTION | |  DANGEROUS |
|--|---|---|---|---|--|---|--|
|  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |

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



INSTALLATION AND ADVICE BEFORE USE

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

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

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

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

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



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

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



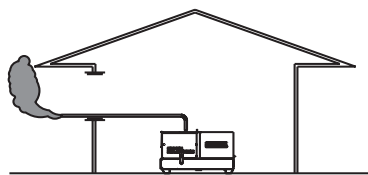
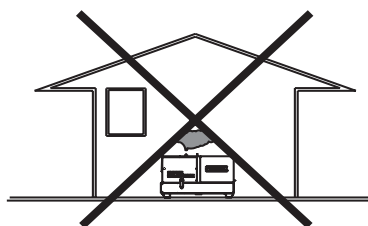
INSTALLATION AND ADVICE BEFORE USE

GASOLINE ENGINES

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

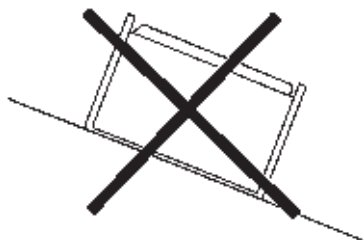
DIESEL ENGINES

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

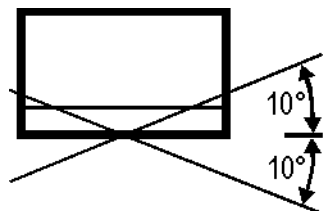


POSITION

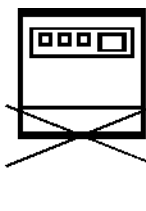
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other plants.



Maximum leaning of the machine (in case of dislevel)

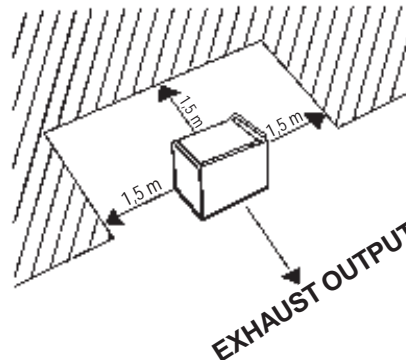


$\alpha = 20^\circ \text{ max}$



$\beta = 20^\circ \text{ max}$

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:

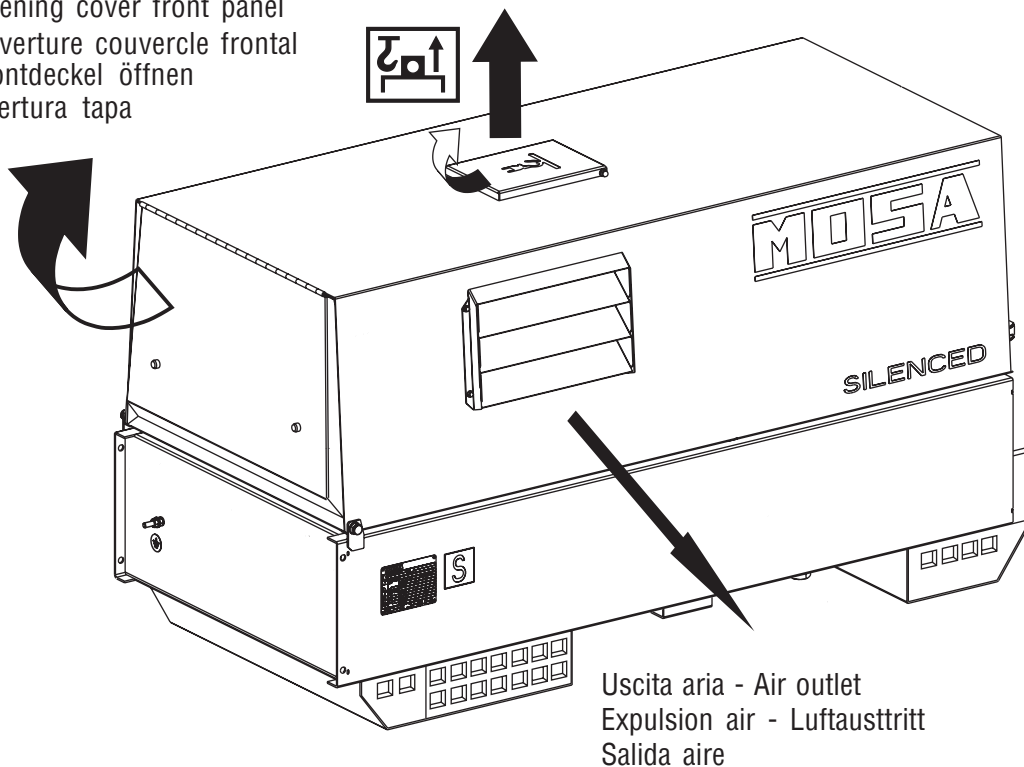
- in the bad weather
- in flooded places.

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".

Apertura pannello frontale
 Opening cover front panel
 Ouverture couvercle frontal
 Frontdeckel öffnen
 Apertura tapa

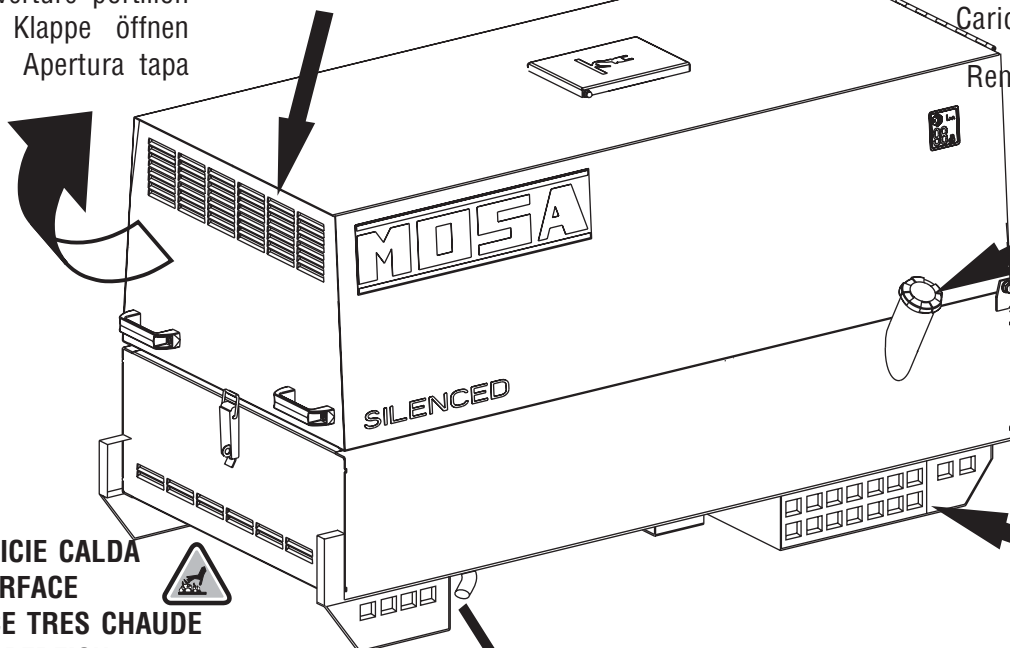
Gancio di sollevamento - Central lifting eye
 Oeillet central de levage - Zentrale Hebeöse
 Gancho de elevación



Uscita aria - Air outlet
 Expulsion air - Luftaustritt
 Salida aire

Apertura portellone
 Cover opening
 Overture portillon
 Klappe öffnen
 Apertura tapa

Entrata aria - Air inlet
 Entrée air - Lufteintritt
 Entrada aire



Caricamento carburante
 Fuel filling
 Remplissage carburant
 Tankstutzen
 Carga combustible

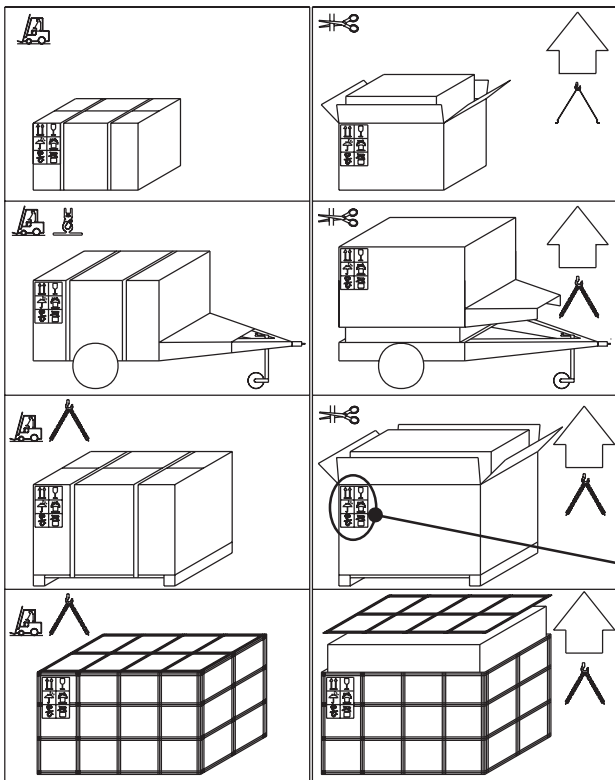
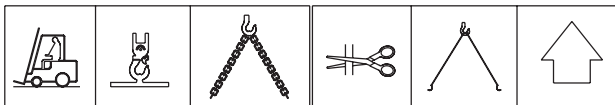
SUPERFICIE CALDA
HOT SURFACE
SURFACE TRES CHAUDE
HEIßER BEREICH
SUPERFICIE CALIENTE

Scarico silenziatore motore
 Gas exhaust pipe
 Tuyau d'échappement gaz
 Auspuffgase Motor
 Tubo de descarga gas

Entrata aria
 Air inlet
 Entrée air
 Lufteintritt
 Entrada aire



NOTE



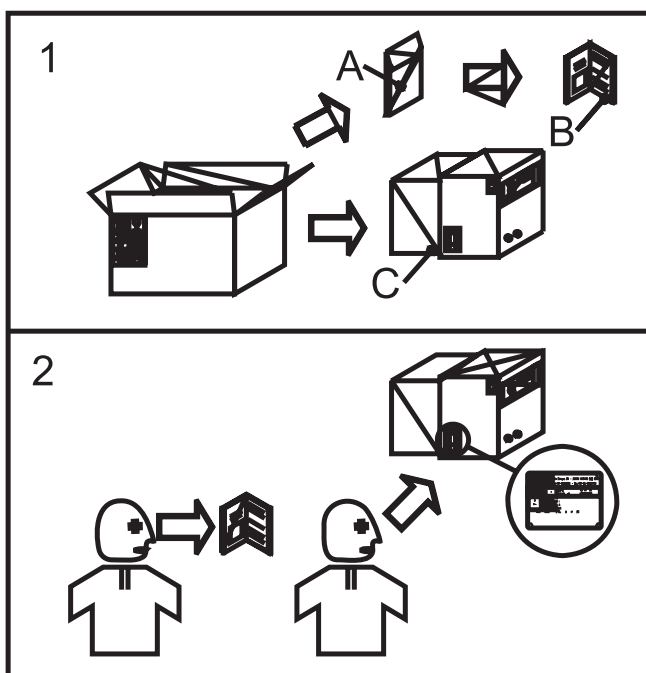
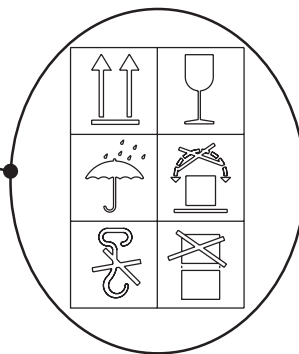
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with its packaging, and conforms to local rules and regulations.

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.

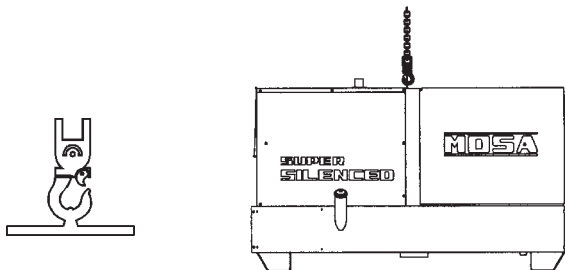
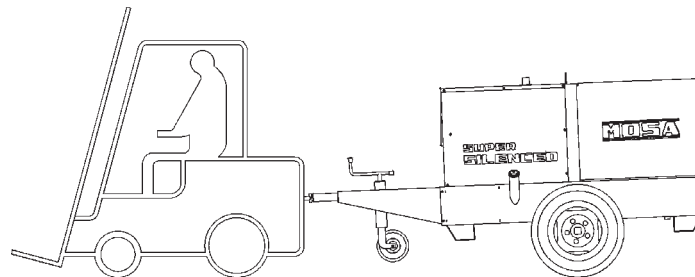
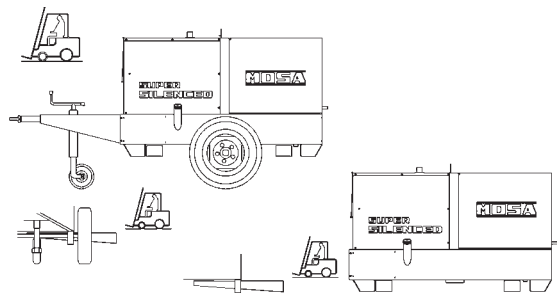
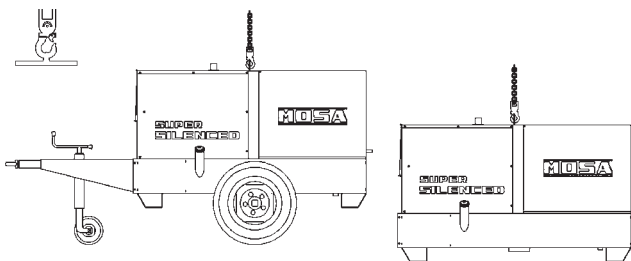
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.

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

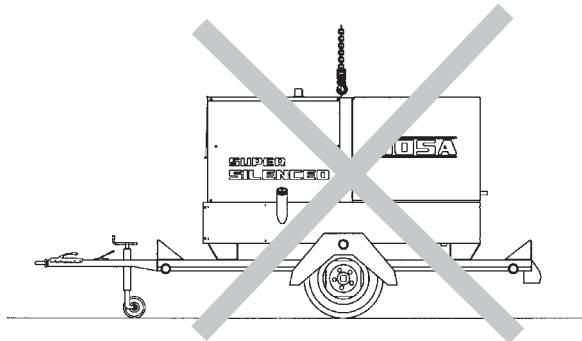
DO NOT LOAD OTHER PARTS WHICH CAN MODIFY WEIGHT AND BARICENTER POSITION.

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





NOTE

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

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

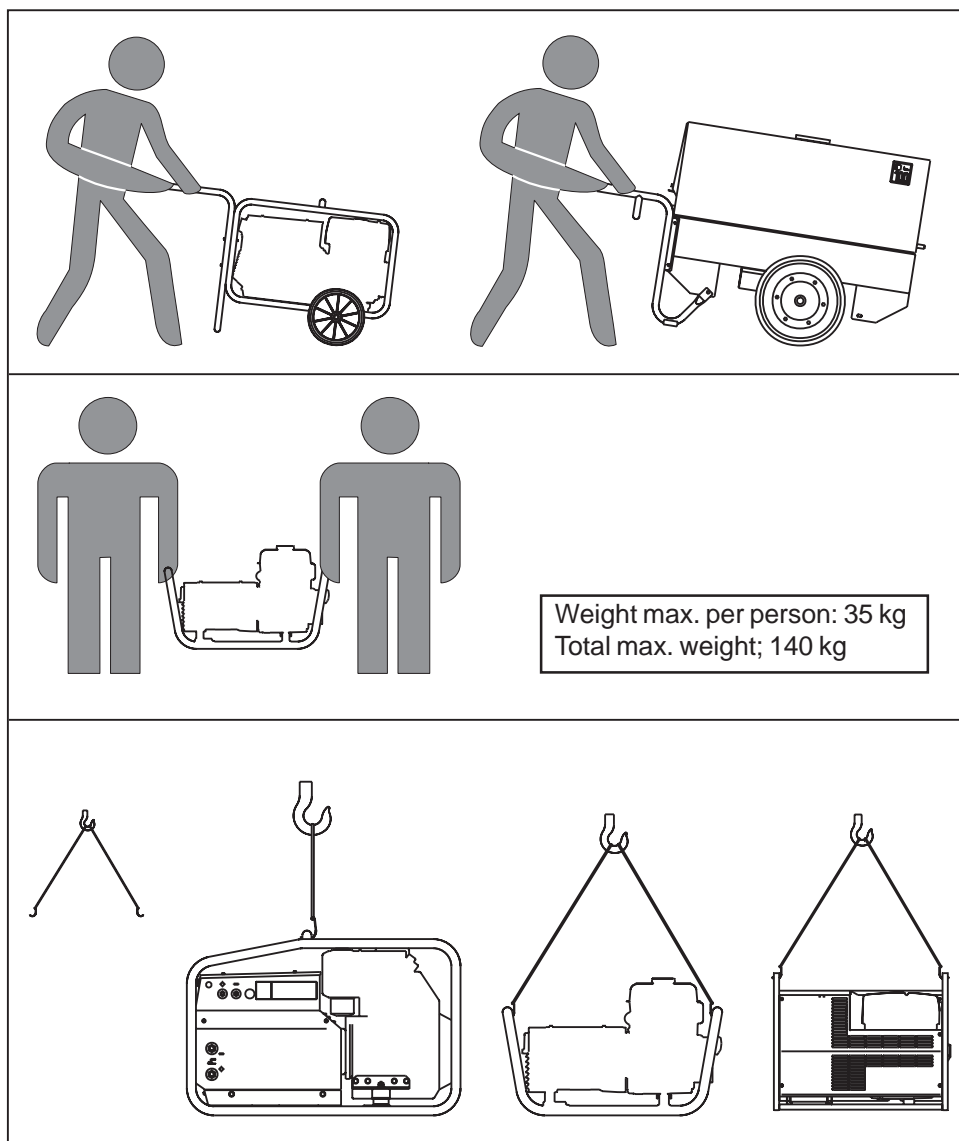
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.

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

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

IT IS STRICTLY FORBIDDEN TO DRAG THE MACHINE MANUALLY OR TOW IT BY ANY VEHICLE (model with no CTM accessory).

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





ATTENTION

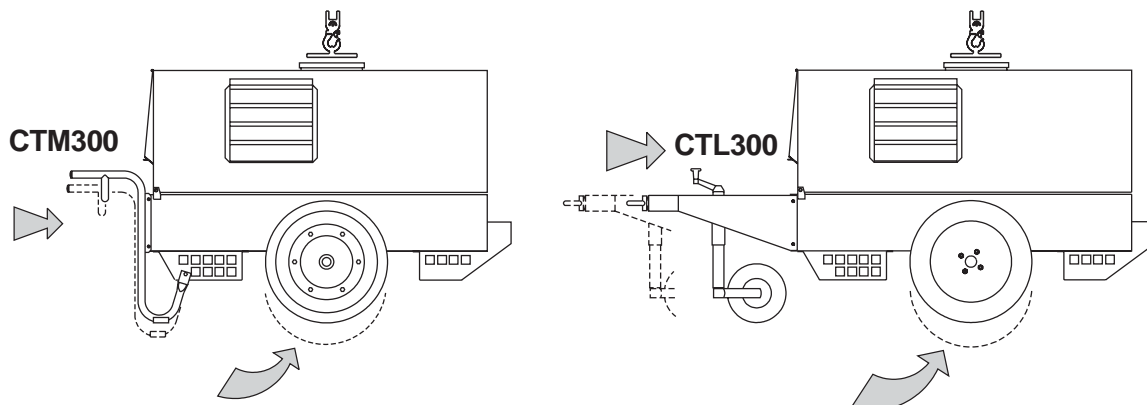
The CTL or CTM accessory cannot be removed from the machine and used separately (actioned manually or following vehicles) for the transport of loads or anyway for used different from the machine movements.

TRAILERS

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

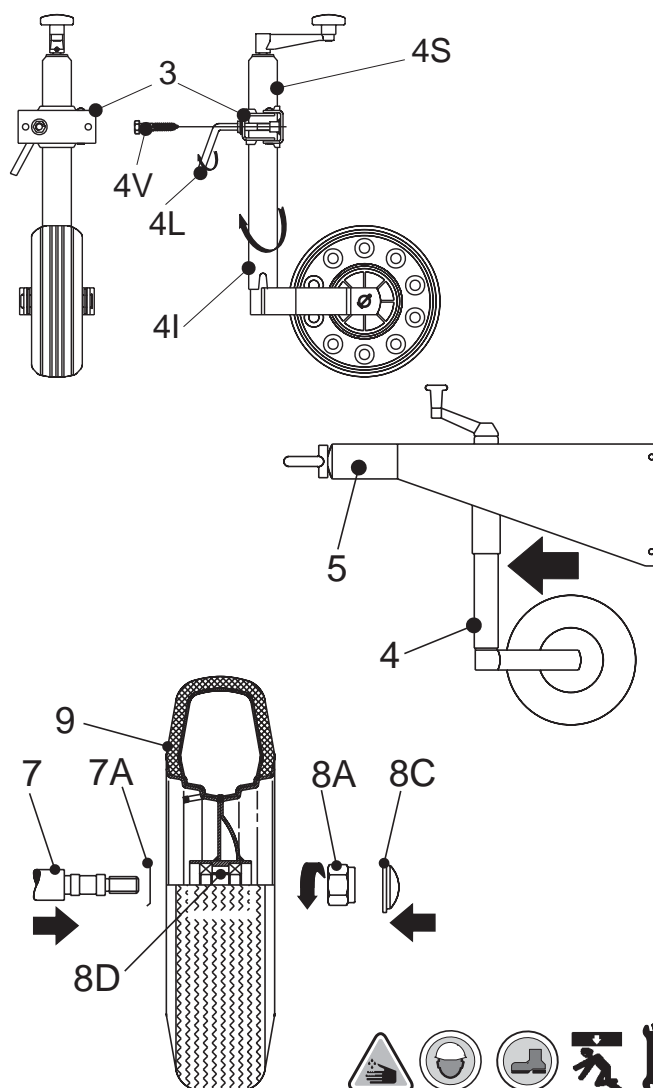
Towing on public roads or turnpikes of any type **IS EXCLUDED**, because **not** in possession of the requirements by national and foreign traffic norms.

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



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

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



ATTENTION

Do not substitute the original tires with other types.



BATTERY WITHOUT MAINTENANCE



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

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

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

DO NOT OPEN THE BATTERY.



LUBRICANT

RECOMMENDED OIL

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

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

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

REFUELLING AND CONTROL:

Carry out refuelling and controls with motor at level position.

1. Remove the oil-fill tap (24)
2. Pour oil and replace the tap
3. Check the oil level using the dipstick (23); the oil level must be comprised between the minimum and maximum indicators.



ATTENTION

It is dangerous to fill the motor with too much oil, as its combustion can provoke a sudden increase in rotation speed.



DRY AIR FILTER

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



OIL BATH AIR FILTER

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



FUEL



ATTENTION



Do not smoke or use open flames during refuelling operations, in order to avoid explosions or fire hazards.

Fuel fumes are highly toxic; carry out operations outdoors only, or in a well-ventilated environment.



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

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

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

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

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



GROUNDING CONNECTION

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

In the case of powering complex installations requiring or employing additional electrical protection devices, the coordination between the protection devices must be verified.

For the grounding connection, use the terminal (12); comply to local and/or current regulations in force for electrical installations and safety.





Check daily



NOTE

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

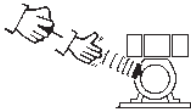
ENGINES WITH MANUAL RECOIL



Hold the starting handle firmly.



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

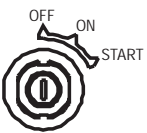


Then returning it slowly.

ENGINES WITH ACCELERATOR LEVER

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

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



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

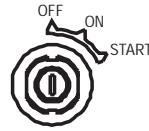
NB.: for safety reason the key must be kept by qualified personnel.

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

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

ENGINES WITHOUT ACCELERATOR LEVER

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



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

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

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

Open the fuel cock (where it is assembled).



CAUTION

RUNNING-IN

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



NOTE

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




ENGINE WITH PREHEATING GLOW PLUGS

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

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

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

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

 Wait for the AUTOMATIC preheating time before drawing the load

OCCASIONAL USE OF THE ENGINE

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



CAUTION

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

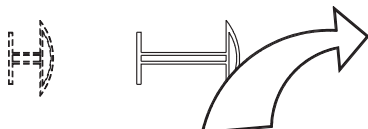
Space the further operations waiting for at least 4 minutes.



CAUTION

MACHINE WITH EMERGENCY BUTTON

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



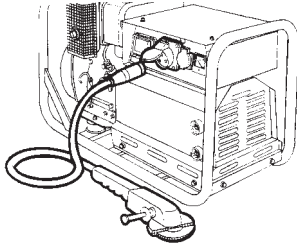
CAUTION

RUNNING-IN

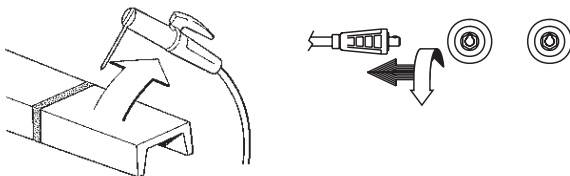
During the first 50 hours of operation, do not use more than 60% of the maximum output power of the unit and check the oil level frequently, please follow the instructions on the engine use and maintenance manual..

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

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



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



ENGINES WITH ACCELERATOR LEVER

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

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

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

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



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

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

ENGINES WITHOUT ACCELERATOR LEVER

Make sure that the unit is not supplying any power.

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

Let the engine idle for a few minutes.

Press the pushbutton (F3) until the engine stops

(where it is assembled).

Shut the fuel cock (where it is assembled).



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

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

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

Make sure that the unit is not supplying any power.

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

Let the engine idle for a few minutes.

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



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

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

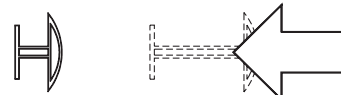


CAUTION

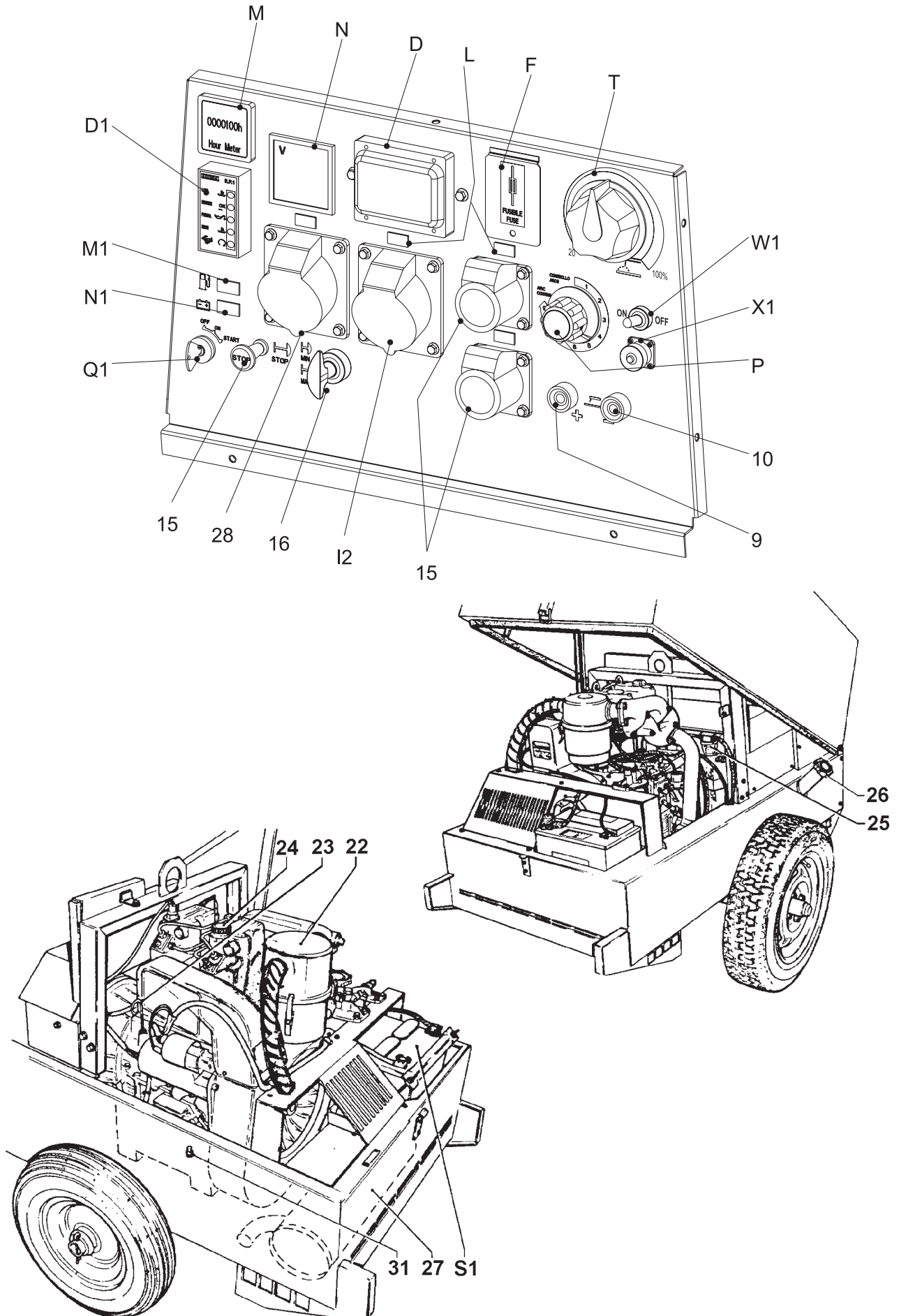
MACHINE WITH EMERGENCY BUTTON

Pressing it, it allows to stop the engine in any condition (32B) (when assembled).
















To re-establish it, see page M21...
















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



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

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

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



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



ATTENTION

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



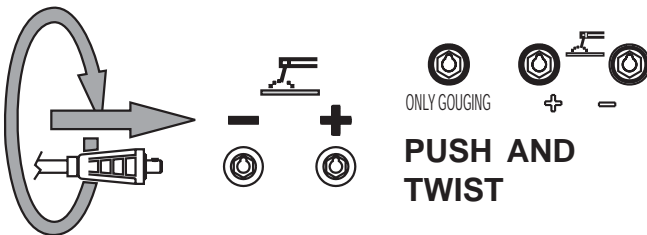
ATTENTION

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

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

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

Fully insert the welding cable plugs into the corresponding sockets ("only gauging", 9+/10-) 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.

When using the welder for air arc gouging connect the ground lead to the - socket and the gouging lead to the socket marked "only gouging" (if present).

MACHINES WITH E.V. PROTECTION

Accelerate the engine at max. with the accelerator lever (16).See page M 39.

MACHINE WITH E.P.2 PROTECTION (B2)

Accelerate the engine at max. with the accelerator lever (16) (when assebled).

See page M 39

MACHINE WITH E.P.1 PROTECTION (D1)

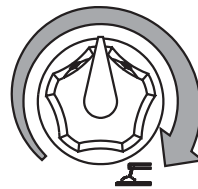
See page M 39.1

REMOTE CONTROL TC...



See page M 38

WELDING CURRENT REGULATOR



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

For technical data see page M52



ATTENTION

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

The welding operations must take place far from any sensitive electronic device.Make sure that the unit is earthed. (see M20 and/or M25). In case the interference should last, adapt further disposition,such as: move the unit, use screened cables, line filters, screen the entire work area. In case the above mentioned operations are non sufficient, please contact our Thechnical Assistance Service.



CAUTION

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



MACHINE WITH REDUCTION SCALE SWITCH

100%


 XXX A
max

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

When using electrodes of a diameter greater than 3.25 and/or 4 set the welding scale knob to 100% and/or max. position.

The arc regulator (T) functions equally between both positions (100%-130A and/or 200A).



Protection fuse (when assembled): the fuse protects the electronic welding PCB in case the remote control is short circuited.

MACHINE WITH O.C.V.

It permits to choose, according to the work to be done and/or the electrode type used, the best O.C.V.

65V

75V



Uo

MACHINE WITH POLARITY INVERTER


 Polarity
switch

It permits to have at the electrode holder the positive or negative polarity of the welding diode bridge.

It is used above all in the first run with cellulosic electrodes to lower the bath temperature and so doing ease up the welding on pipes of small thickness

MACHINE WITH BASIC CURRENT "BC"

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



ON

OFF

For electrodes of basic or rutile type, position the switch on "OFF", the welding current will always remain constant.

"CC/CV" MODELS



CC



CV

These models can be used with electrodes or for TIG welding by selecting the CC (constant current) mode, and with solid wire (MIG, MAG) or flux cored wire selecting the CV (constant voltage) mode. The mode of operation is selected by a switch on the front panel.



MACHINE WITH ARC CONTROL OR SELECTOR "ARC FORCE"



Set the welding arc using adjuster knob (6) so as to obtain, for the chosen current value, the best arc characteristic according to the electrode type and to the work to be performed.



ON

OFF

ARC FORCE

On machines with an Arc Force selector, the same result can be obtained by turning the selector "ON" or "OFF". When switched "ON" a base current is applied to the welding current output acting as a sort of "automatic" arc forcing that does not need to be regulated.

For technical data see page M52



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

To stop the machine see pages M 22-27.

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



WARNING

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



WARNING

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

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

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

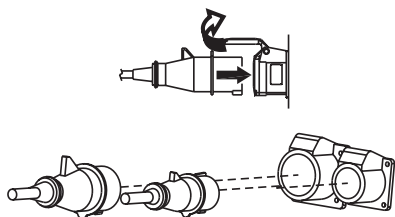
- See page M20, 21, 22, 25, 26, 27 -.

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

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

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

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



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

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

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

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



CAUTION

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

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

MACHINE WITH THERMOPROTECTION

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

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



CIRCUIT BREAKER

Reset the thermoprotection pressing the central pole.

When reset, connect the loads again.

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



PRESS TO RESET

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

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



TS ... PL VERSION

Start the machine and wait for the end of the preheating time imposed by the EP1, EP2, EP5 engine protection device. - See pages M39... - Press the „generation possibility“ push button (B5) placed on the front side of machine.

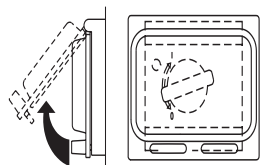
The voltmeter will show the auxiliary voltage which, for machines at 1500/1800 RPM, must be approx. $\approx 230V \pm 10\%$ and for machines at 3000/3600 RPM (engine idling) must be approx. $\approx 180V \pm 10\%$.

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

MACHINE WITHOUT PROTECTIVE DEVICE

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

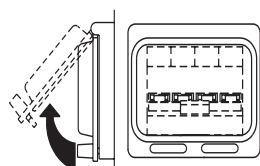
UNIT FITTED WITH GROUND FAULT INTERRUPTER SWITCH (GFI)



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

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

UNIT FITTED WITH THERMAL MAGNETIC BREAKER

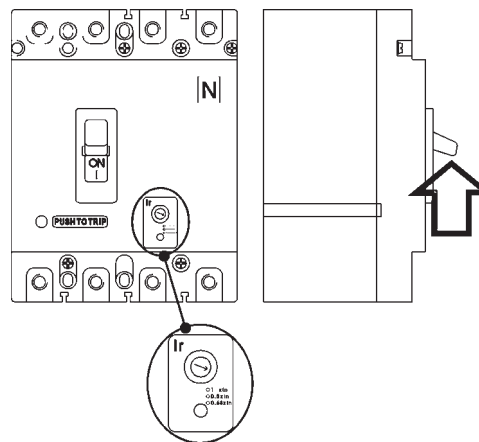


Turn on the thermal magnetic breaker (Z2) by pushing it to the ON position.

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

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

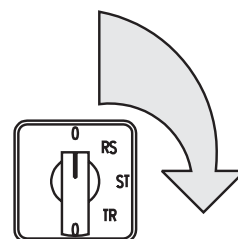
UNIT FITTED WITH GFI SWITCH THERMAL MAGNETIC BREAKER



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

UNIT WITH VOLTMETRIC COMMUTATOR (ONLY FOR GENERATING SET)

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



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

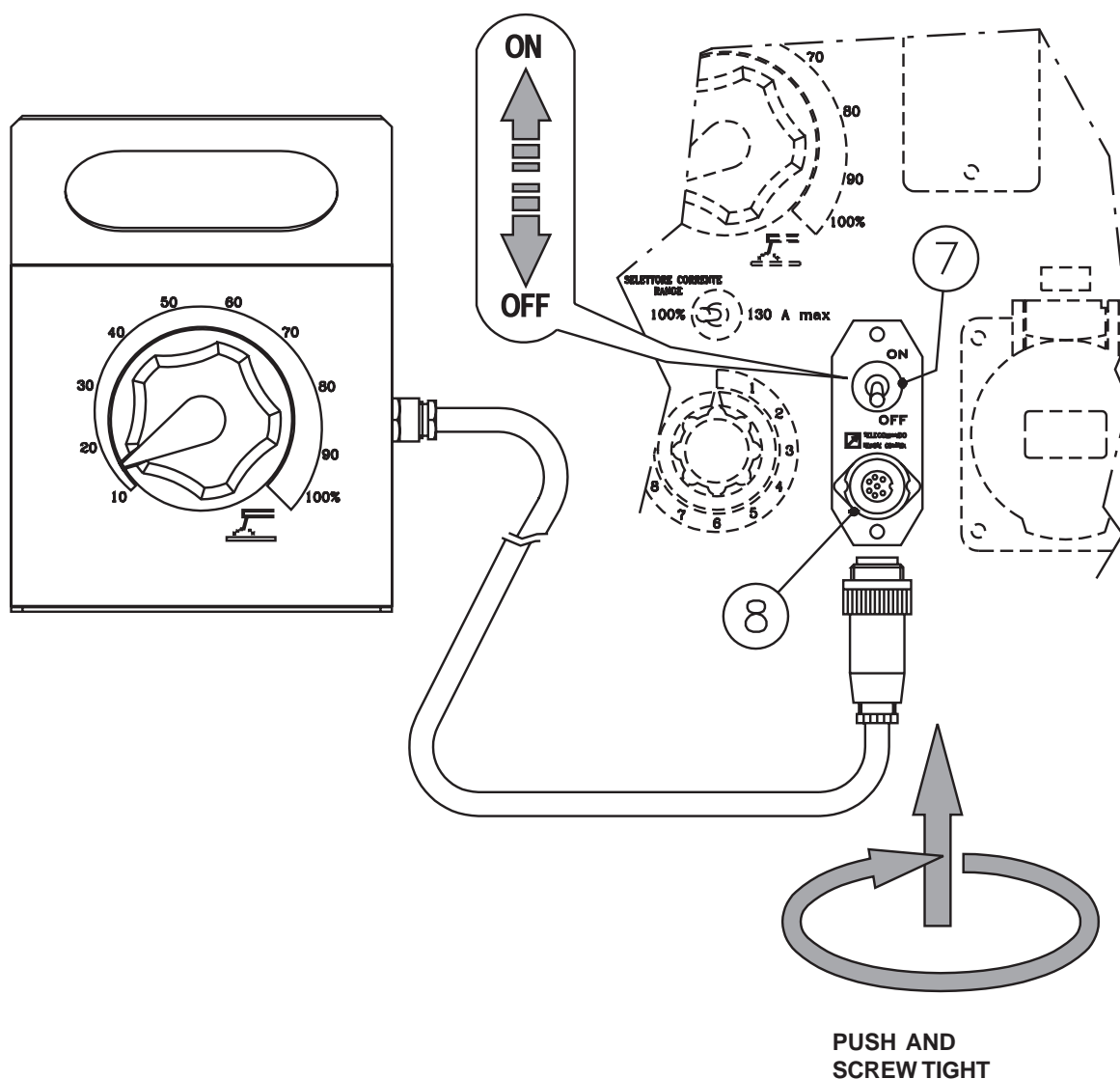
N.B.: in case of overload, it is possible that the engine lowers its speed and the voltage is reduced remarkably. In this case, it is necessary to reduce immediately the load.



CAUTION

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





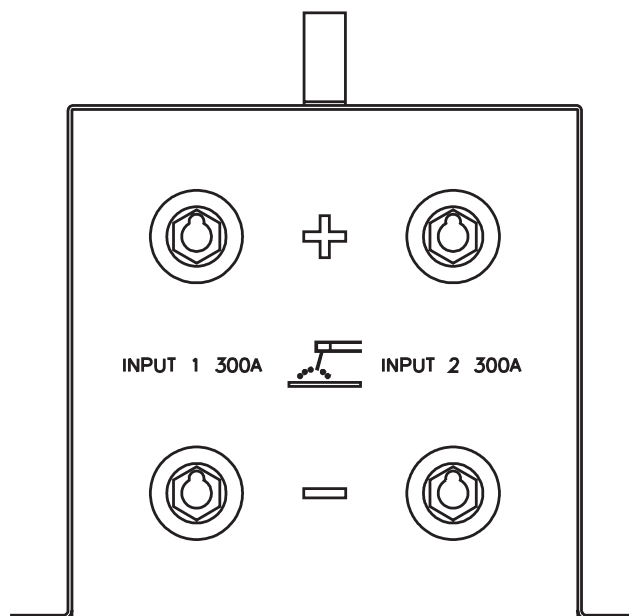
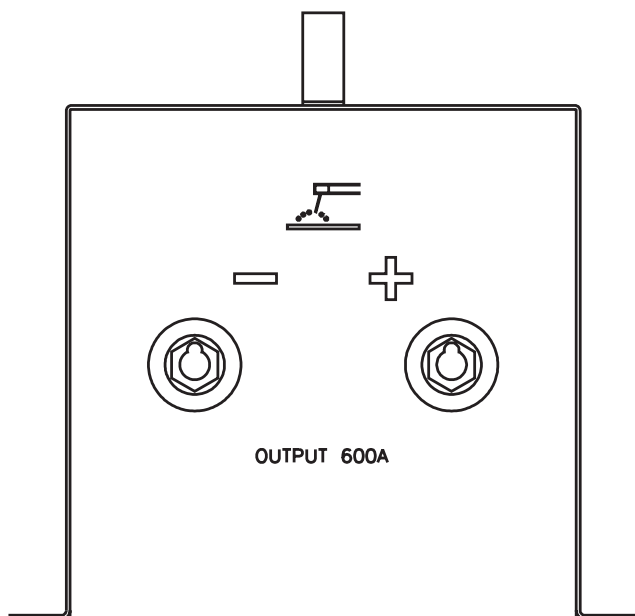
**PUSH AND
SCREW TIGHT**

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

To regulate the current from the TC2 / TC2/50, move the switch (7), located above the multipole connector (8), to "ON" position.

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

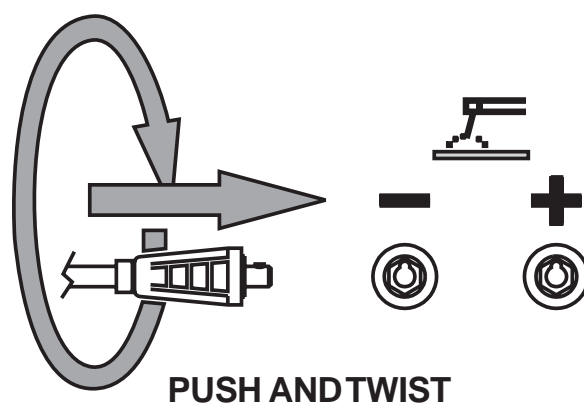
- See page M51 -



The device enables to totalize the welding current of two positions or of two welding machine.

Connect each one of the inputs "+" and "-" of the PAR 600 to each welding position and draw, according to the use, the total current from the "+" and "-" output socket.

Fully insert the welding cable plugs into the corresponding socket (9+/10-) turning them clockwise to lock them in position.

**MAKE SURE**

- 1) the both positions have an identic polarity
 - 2) that O.C.V. have an identic position
- See page M34.2 -

ENGINE PROTECTION (EP1)

The electronic device EP.1 (D1) is a microprocessor with logic-circuit board that ensures the protection of the engine in case of low oil pressure or engine high temperature.

Located on the front of the machine, the EP.1 enters in operation when the engine has been turned on with the ignition key.

The yellow warning light for low oil temperature (D1.1) will immediately light up; **after** 15 seconds the engine will be checked and if everything is operating normally, the "OK engine" light will switch on.



CAUTION

IN THE FIRST FRACTION OF TIME THE DEVICE DOES NOT MAKE ANY PROTECTION.

The automatic device requires an engine warning up time of at least 45 seconds, not permitting to draw power when the engine is still cold.

N.B.: A longer warning up time (4-5 minutes) is advisable for temperatures below +10°C.

When the warning light (D1.1) goes off, whether the unit is used as welder or as a generator, the green light (D1.5) will light up, the engine will go to maximum speed, permitting to draw power.

Should the oil pressure be insufficient, the red light (D1.3) will light up and the EP.1 device will stop the engine.

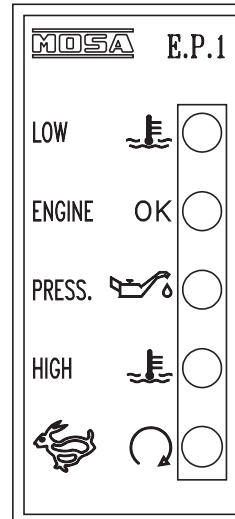
If the temperature rises to dangerous levels, the red light (D1.4) will light up and the engine will stop thus preventing to draw power.

LIQUID COOLED ENGINE

In case of cooling liquid high temperature, the warning light (D1.4) will light up and the engine will stop thus preventing to draw power.

In this case it is **SUGGESTED** to stop the engine and control the cooling level.

In case of low 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 circuit.



D1.1(G) Low oil temperature/ Cold engine

D1.2(V) Engine test/ OK engine

D1.3(R) Low oil pressure

D1.4(R) High temperature

D1.5(V) Engine at maximum

COLORS

G = yellow

V = green

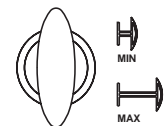
R = red

ENGINE EQUIPPED WITH A MANUAL ACCELERATOR

NOTE: This unit is equipped with a manual accelerator for use in the unlikely event that the EP.1 or the accelerator solenoid should fail. This manual accelerator can also be used in cases where the auto-idle function is not suitable for the type of welding being carried out.

CAUTION: for machines with EP.1 engine protection: use the accelerator lever **ONLY IN EMERGENCY** when the automatic idle does not work.

Accelerator lever



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

Once the cause of the problem has been removed, to ensure the protection it is sufficient to set the key to zero and restart the engine.



NOTE

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

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.

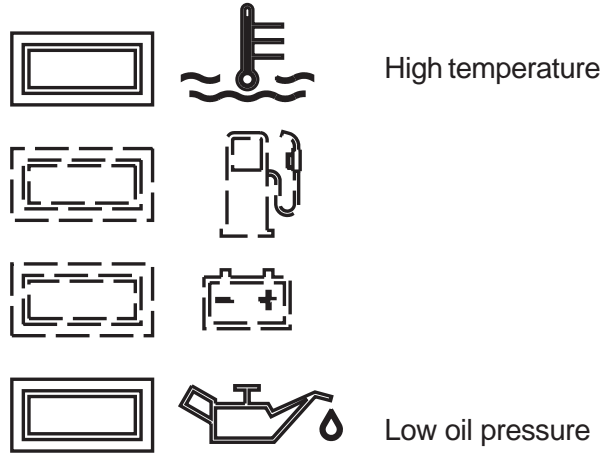
The system consist of electronic card of control and check, and of an engine stop device: solenoid (**ElettroStop**), electrovalve (**ElettroValvola**)

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 |
|---|--|---|
| No welding current but auxiliary output is OK | 1) Defective diode bridge 2) Problem with welding current control (PCB) | 1) Check the diodes of the bridge 2) Is the remote control switch in the internal position? 3) Check the diodes and SCR's of the bridge. 4) Check the transformer which supplies power to the welding control PCB. If it is OK replace the PCB |
| Weld poorly | 1) Defective diode bridge 2) Problem with welding current control (PCB) | 1) Check the open circuit welding voltage. If it is OK the diode bridge is OK. If it is 1/3 or 2/3 of the nominal value check the diodes or the SCR's. 2) If the diode bridge is OK replace the PCB. |
| Intermittently welds poorly | 1) Bad connections to welding current PCB 2) Problem with welding current control PCB | 1) Check that the pins of the green connectors are clean and making good contact. Check that shunt connections are tight. 2) Replace the welding current control PCB |
| No welding output and no auxiliary power output | 1) Short circuit in wiring 2) Defective condenser 3) Defective stator 4) Short circuited diode bridge | 1) Check the wiring inside the welder for a short circuit between cables or to ground. 2) If the wiring is OK, short circuit the condenser to be sure that it is discharged, disconnect all wires from condenser and, using an ohmmeter, check that the condenser is not short circuited. 3) If the condenser box is OK, disconnect all leads from the stator except for those going to the condenser box and check the output from the alternator. If there is no output from the welding winding and the auxiliary winding, replace the stator. 4) If there is output from all windings reconnect the diode bridge and check if there is welding current. If not the diode bridge is defective. If there is welding current connect the auxiliary power leads one at a time until there is no output; at this point, the short circuit is in that line. |



WARNING



**MOVING
PARTS
can injure**

- Have **qualified** personnel do maintenance and troubleshooting work.
 - Stop the engine before doing any work inside the machine. If for any reason the machine must be operated while working inside, **pay attention** moving parts, hot parts (exhaust manifold and muffler, etc.) electrical parts which may be unprotected when the machine is open.
 - Remove guards only when necessary to perform maintenance, and replace them when the maintenance requiring their removal is complete.
 - Use suitable tools and clothes.
 - Do not modify the components if not authorized.
- See pag. M1.1 -



**HOT surface
can
hurt you**

NOTE

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

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

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

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

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

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



IMPORTANT



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

ENGINE and ALTERNATOR

PLEASE REFER TO THE SPECIFIC MANUALS PROVIDED.

VENTILATION

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

ELECTRICAL PANELS

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

DECALS AND LABELS

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

STRENUOUS OPERATING CONDITIONS

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

BATTERY WITHOUT MAINTENANCE DO NOT OPEN THE BATTERY

The battery is charged automatically from the battery charger circuit 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



NOTE

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



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

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

GASOLINE ENGINE

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

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

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

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

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

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

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

DIESEL ENGINE

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

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

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

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

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



IMPORTANT



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

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

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

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

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

The getting rid of the various components of the machine must be made accordingly to rules in force of law a/o local rules.

Particular attention must be paid when getting rid of:

lubricating oils, battery electrolyte, and inflammable liquids such as fuel, cooling liquid.

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

In case the machine should be cust off without any previous disassembly it is however compulsory to remove:

- tank fuel
- engine lubricating oil
- cooling liquid from the engine
- battery

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

This, of course, after authorization.

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



IMPORTANT



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

The TS 200 BS/CF engine driven welder is a unit which ensures the function as:

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

It is meant for industrial and professional use, powered by an endothermic engine; it is composed of various main parts such as: engine, alternator, electric and electronic controls, the fairing or a protective structure.

The assembling is made on a steel structure, on which are provided elastic support which must damp the vibrations and also eliminate sounds which would produce noise.

| Technical data | | TS 300 SC | TS 300 SXC |
|----------------------------------|------------------------|---|------------------------|
| ALTERNATOR | | self-excited, self-regulated, brushless | |
| Type | | Three-phase, asynchronous | |
| Insulating class | | H | |
| A.C. GENERATORA. | | | |
| Three-phase generation | | 10 kVA / 400 V / 14.4 A | |
| Single-phase generation | | 5 kVA / 230 V / 21.7 A | |
| Single-phase generation | | 2.5 kVA / 110 V / 22.7 A | |
| Single-phase generation | | 5 kVA / 48 V / 104 A | |
| Frequency | | 50 Hz | |
| Service | | 100 % | |
| ENGINE | | | |
| Mark | | RUGGERINI | |
| Model | | RD 210 | |
| Type | | 4-Stroke | |
| Displacement | | 954 cm ³ | |
| Cylinders | | 2 | |
| Output | | 14 kW (19 HP) | |
| Speed | | 3000 rpm | |
| Fuel consumption | | 250 g/kWh | |
| Cooling system | | Air | |
| Engine oil capacity | | 3 l | |
| Starter | | Electric | |
| Fuel | | Gasoline | |
| GENERAL SPECIFICATIONS | | | |
| Battery | | 12V - 45Ah | |
| Tank capacity | | 23 l | |
| Running time (60%) | | 9 h | |
| Protection | | IP 23 | |
| Dimensions / max. (LxIxxh in mm) | | 1320x790x750 | |
| Dimensions with CTM | | 1630x920x930 | |
| Dimensions with CTL | | 2050x980x990 | |
| Weight | 350 Kg | | 370 Kg |
| Weight with CTM | 370 Kg | | 390 Kg |
| Weight with CTL | 410 Kg | | 440 Kg |
| Noise Level | 99 LWA (74 dB(A) - 7m) | | 93 LWA (68 dB(A) - 7m) |

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:

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

Technical data
TS 300 SC
TS 300 SXC
D.C. WELDING C.C.

Welding current regulation (I Scale)

20 - 300 A

Service

300 A - 60%, 250 A - 100%

Regulation of welding *

0 - 9

Open circuit voltage

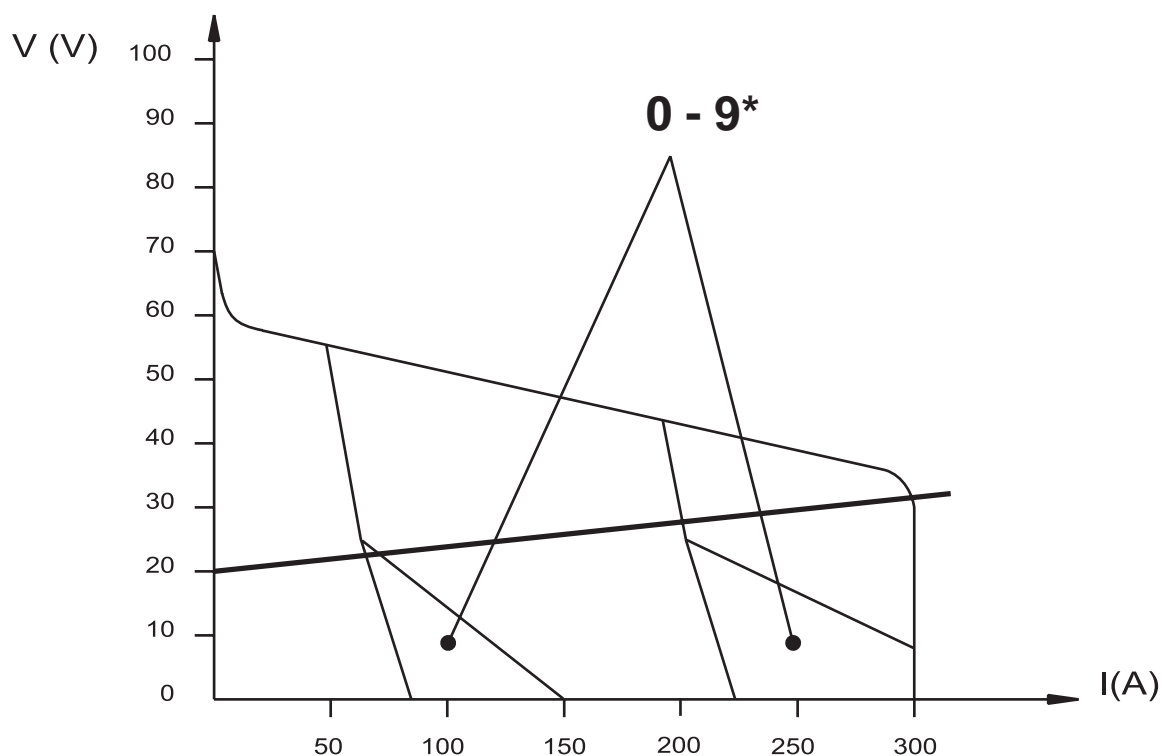
70 V

Welding voltage

20 - 32 V

Ø electrode

2 - 6 mm

OUTPUT CHARACTERISTIC


| Welding current regulator position | % | 0 | 25 | 50 | 75 | 100 |
|------------------------------------|---|----|----|-----|-----|-----|
| approx. current values | A | 20 | 80 | 150 | 240 | 300 |

SIMULTANEOUS UTILIZATION FACTORS

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

| WELDING CURRENT | >170 A | 130 A | 80 A | 0 A |
|-----------------|--------|---------|-------|--------|
| AUXILIARY POWER | 0 | 2.5 kVA | 5 kVA | 10 kVA |

