USE AND MAINTENANCE MANUAL

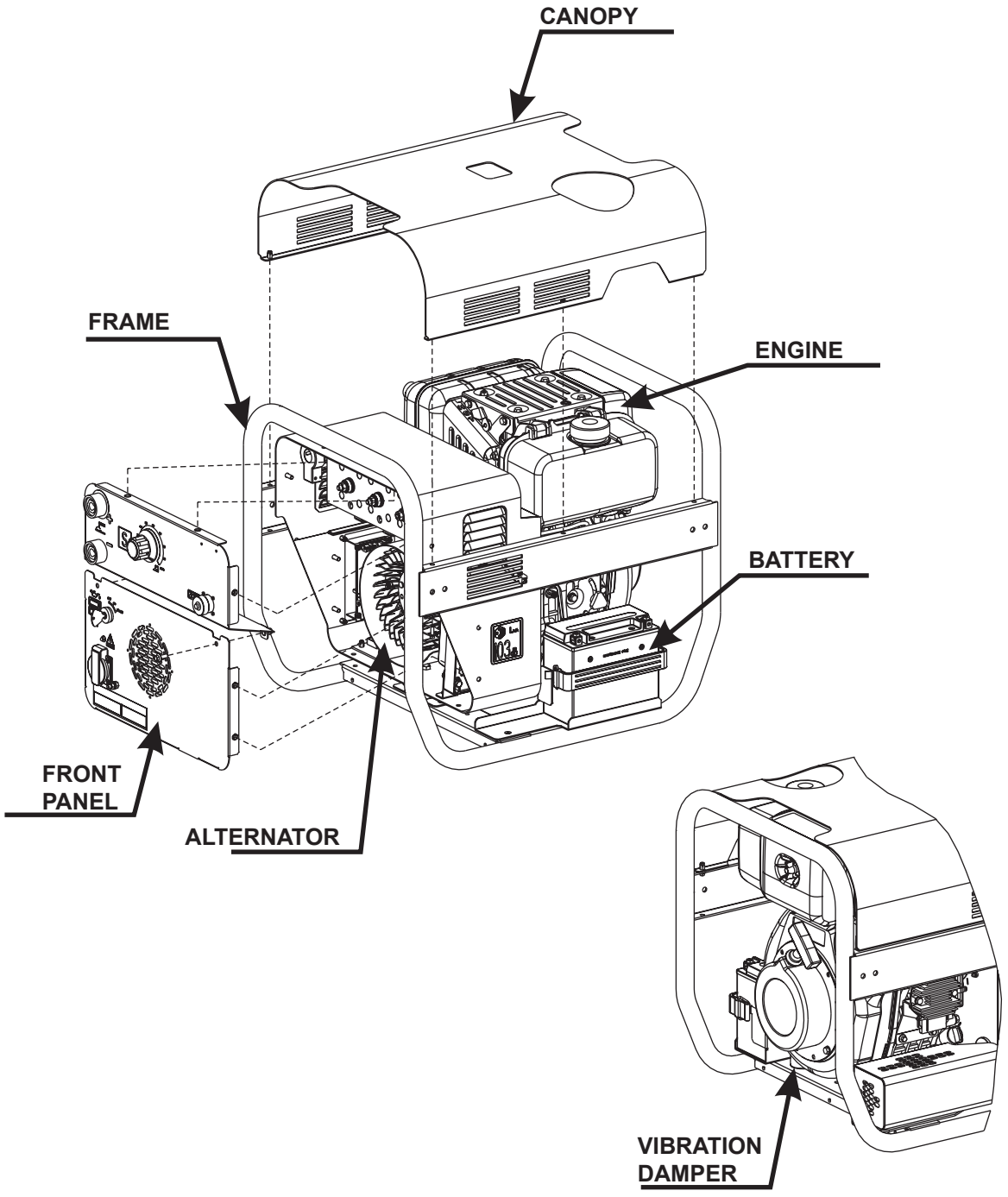
MAGIC WELD 200 YD
MAGIC WELD 200 YDE

Codice Code Codigo Kodezahl	222719003
Edizione Edition Edición Ausgabe	02.2014

MADE IN ITALY

MOSA

The MAGIC WELD engine driven welder is a unit which ensures the dual function as:
a) a current source for are welding
b) current generator for generating auxiliary
Unit meant for industrial and professional use. Powered by an endothermic engine; it is composed of various parts such as: engine, alternator, electric and electronic controls, the fairing at 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.



IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

CISQ/ICIM

hereby certify that the organization

BCS S.p.A.

Head Office and Operative Unit: Viale Mazzini, 161 - I-20081 Abbiategrasso (MI)
Operative Units:Via Valbrina, 17/19 - I-42045 Luzzara (RE)
Viale Europa, 59 - I-20090 Cusago (MI)

for the following field of activities

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

has implemented and maintains a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2008

Issued on: **2012-03-06**
Validity date: **2015-03-05**

Registration Number: IT-3722

Michael Drechsel
President of IQNET

Gianrenzo Prati
President of CISQ

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IQNet, the association of the world's first class certification bodies, is the largest provider of management System Certification in the world. IQNet is composed of more than 30 bodies and counts over 150 subsidiaries all over the globe.

ICIM
www.icim.it

CERTIFICATO n. 0192/6
CERTIFICATE No.

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

BCS S.p.A.
UNITA' OPERATIVE
OPERATIVE UNITS
Sede e Unità Operativa
Viale Mazzini, 161 - 20081 Abbiategrasso (MI)
Unità Operative
Via Valbrina, 17/19 - 42045 Luzzara (RE)
Viale Europa, 59 - 20090 Cusago (MI)
Italia

E' CONFORME ALLA NORMA
IS IN COMPLIANCE WITH THE STANDARD

UNI EN ISO 9001:2008

PER LE SEGUENTI ATTIVITA'
FOR THE FOLLOWING ACTIVITIES

EA: 18

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

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

Riferirsi al Manuale della Qualità per l'applicabilità dei requisiti della norma di riferimento.
Refer to Quality Manual for details of application to reference standard 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*	Emissione corrente *Current issue*	Data di scadenza *Expiring date*
30/05/1994	06/03/2012	05/03/2015

ICIM S.p.A.
Piazza Don Enrico Mapelli, 75 – 20099 Sesto San Giovanni (MI)

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

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

FEDERAZIONE CISQ
www.cisq.com

ICIM CISQ IQNet
ISO 9001:2008 - Cert. 0192

UNI EN ISO 9001 : 2008

MOSA has certified its quality system according to UNI EN ISO 9001:2008 to ensure a constant, highquality of its products. This certification covers thedesign, production and servicing of engine drivenwelders and generating sets.

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

This certification is not a point of arrival but a pledgeon the part of the entire company to maintain a levelof quality of both its products and services whichwill continue to satisfy the needs of its clients, aswell as to improve the transparency and thecommunications regarding all the company's activesin accordance with the official procedures and inharmony with the MOSA Manual of Quality.

The advantages for MOSA clients are:

·Constant quality of products and services at thehigh level which the client expects;

· Continuous efforts to improve the products andtheir performance at competitive conditions;

· Competent support in the solution of problems;

· Information and training in the correct applicationand use of the products to assure the security ofthe operator and protect the environment;

· Regular inspections by ICIM to confirm that therequirements of the company's quality systemand 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

20/02/14 22270-GB

⚠ ATTENTION

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

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

MOSA

INFORMATION

Dear Customer,
We wish to thank you for having bought 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 arts are replaced, please ask and be sure that are used exclusively original 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.*

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).

The Manufacturer shall not be liable for ANY USE OF THE PRODUCT OTHER THAN THAT PRECISELY SPECIFIED IN THIS MANUAL and is thus not liable for any risks which may occur as a result of IMPROPER USE. The Company does not assume any liability for any damage to persons, animals or property.

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.

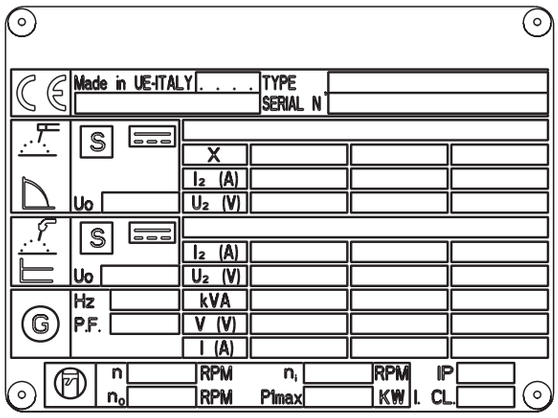
While working it is advisable to keep to the personal safety norms in force in the countries to which the product is destined (clothing, work tools, etc.).

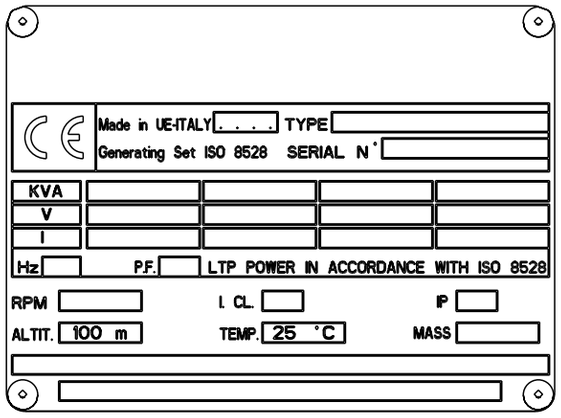
Do not modify for any motive parts of the machine (fastenings, holes, electric or mechanical devices, others..) if not duly authorized in writing: the responsibility coming from any potential intervention will fall on the executioner as in fact he becomes maker of the machine.

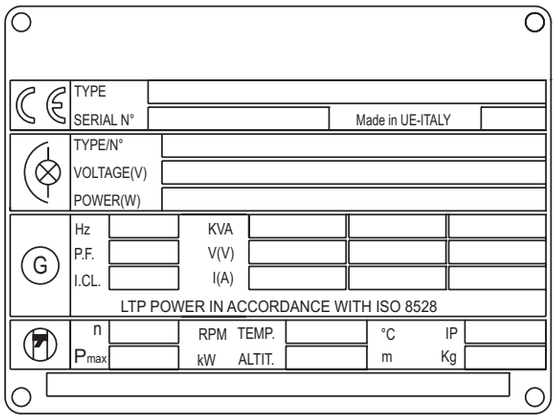
☞ ***Notice:*** *the manufacturer, who keeps the faculty, apart the essential characteristics of the model here described and illustrated, to bring betterments and modifications to parts and accessories, without putting this manual uptodate immediately.*

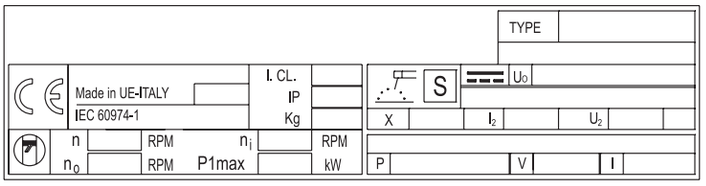
Any of our product is labelled with CE marking attesting its conformity to appliable directives and also the fulfillment of safety requirements of the product itself; the list of these directives is part of the declaration of conformity included in any machine standard equipment.
Here below the adopted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

CE marking is clearly readable and unerasable and it can be either part of the data-plate.









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

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

(I) Dichiarazione conformità (D) Konformitätserklärung (GB) Declaration of conformity (E) Declaración de conformidad (F) Déclaration de conformité (PT) Declaração de conformidade	M 1.4.1 REV.2-10/13

BCS S.p.A.
Sede legale:
Via Marradi 1
20123 Milano - Italia

Stabilimento di Cusago, 20090 (Mi) - Italia
V.le Europa 59
Tel.: +39 02 903521
Fax: +39 02 90390466

ISO 9001:2008 - Cert. 0192

DICHIARAZIONE DI CONFORMITA'

CE

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

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

GRUPPO ELETTROGENO DI SALDATURA / WELDING GENERATOR ☐

GRUPPO ELETTROGENO / POWER GENERATOR ☐

TORRE FARO / LIGHTING TOWER ☐

Marchio / Brand :

Modello / Model :

Matricola / Serial number :

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 gemeenschapsrichtlijnemen gerelateerde modificaties:
comple con los requisítos de la Directiva Comunitaria y sus anexos:

2006/42/CE - 2006/95/CE - 2004/108/CE

Nome e indirizzo della persona autorizzata a costituire il fascicolo tecnico :
Nom et adresse de la personne autorisée à composer le Dossier Technique :
Person authorized to compile the technical file and address :
Name und Adresse der zur Ausfüllung der technischen Akten ermächtigten Person :
Persoon bevoegd om het technische document , en bedrijf gegevens in te vullen
Nombre y dirección de la persona autorizada a componer el expediente técnico :

ing. Benso Marelli - Consigliere Delegato / Managing Director ; V.le Europa 59, 20090 Cusago (MI) – Italy

Cusago,

Ing. Benso Marelli
Consigliere Delegato
Managing Director

MM 083.1

04/06/10 M1.4.1

Technical data	MAGIC WELD 200 YD	MAGIC WELD 200 YDE
A.C. GENERATION 50/60 Hz		
Single-phase output 230V (max)		3.3 kVA / 230 V / 14.3 A
Single-phase output 230V (continuous)		3 kVA / 230 V / 13 A
Single-phase output 115V (max)		2.1 kVA / 110 V / 18.3A
Single-phase output 115V (continuous)		1.8 kVA / 110 V / 16.4 A
Cos φ		0.8
ALTERNATOR		
Type		permanent magnet, self-excited, brushless
Insulating class		H
ENGINE		
Mark / Model		YANMAR L70N
Type / Cooling system		Diesel 4-stroke / Air
Cylinders / Displacement		1 / 320 cm^3
Net power		4.9 kW (6.7 HP)
Speed		3600 rpm
Fuel consumption (Welding 60%)		1 l/h
Engine oil capacity		1.05 l
Starter	recoil	Electric
GENERAL SPECIFICATIONS		
Tank capacity		3.3 l
Running time (Welding 60%)		3.3 h
Protection		IP 23
Dimensions max. on base Lxlxh *		630x480x540
***Weight (dry)**	72 Kg	91 Kg
Acoustic power LwA (pressure LpA)		103 dB(A) (78 dB(A) @ 7 m)

* Dimensions and weight are inclusive of all parts.

POWER

Declared power according to ISO 3046-1 (temperature 25°C, 30% relative hummidity, altitude 100 m above sea level).
It's admitted overload of 10% each hour every 12 h.
In an **approximative** way one reduces: of 1% every 100 m altitude and of 2.5% for every 5°C above 25°C.

ACOUSTIC POWER LEVEL

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

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

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

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

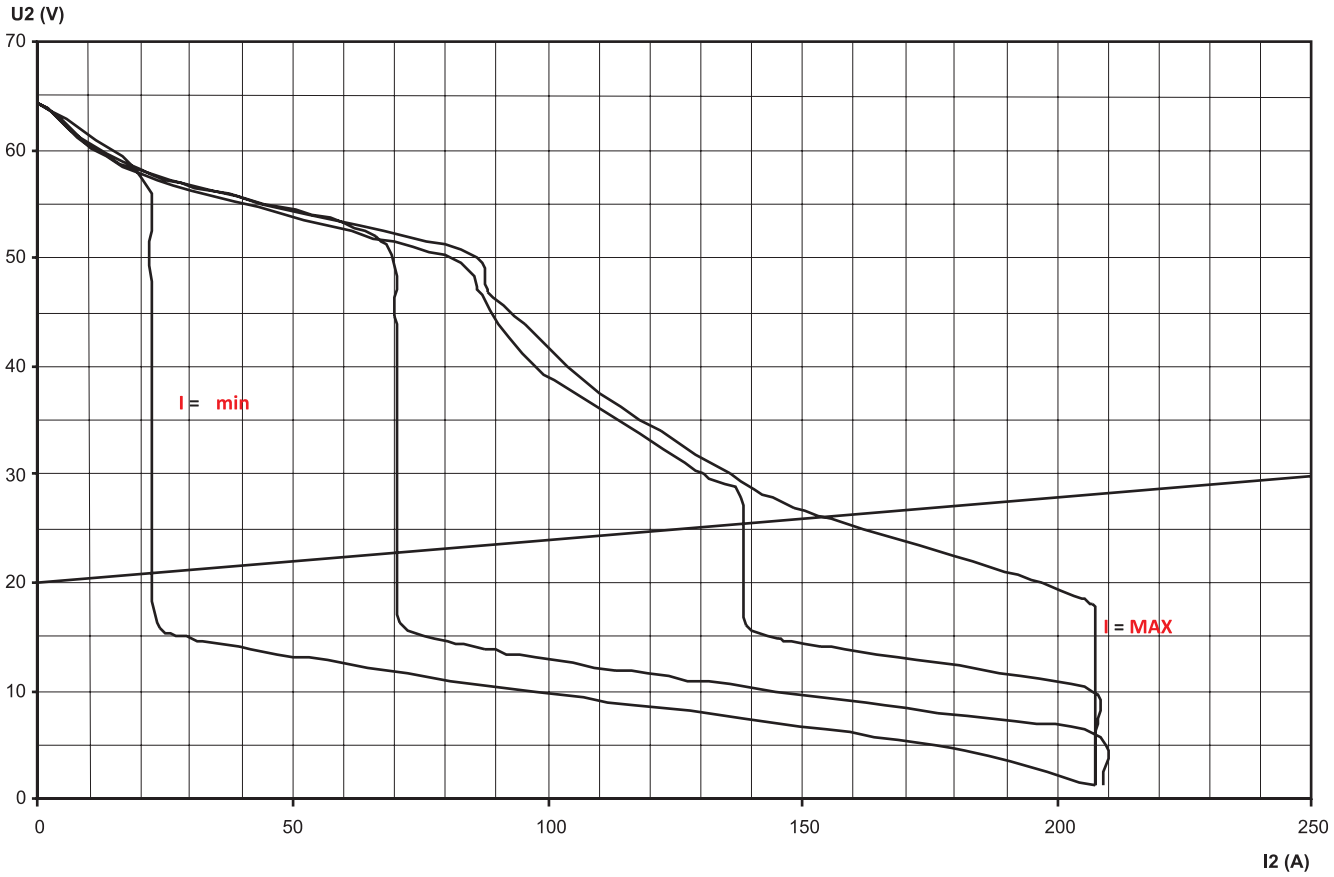
Lp a 1 meter = 95 dB(A) - 8 dB(A) = 87 dB(A)
Lp a 4 meters = 95 dB(A) - 20 dB(A) = 75 dB(A)
Lp a 7 meters = 95 dB(A) - 25 dB(A) = 70 dB(A)
Lp a 10 meters = 95 dB(A) - 28 dB(A) = 67 dB(A)

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

D.C. WELDING

Current range, continuous	20 - 200A
Open circuit voltage	65V
Duty cycle	200 A - 60%

OUTPUT CARACTERISTIC



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	>150A	125A	100A	75A	50A	0A
POWER GENERATION 230 Vac	0 kVA	0.8 kVA	1.5 kVA	2.1 kVA	2.5 kVA	3 kVA
POWER GENERATION 115 Vac	0 kVA	0.5 kVA	1 kVA	1.3 kVA	1.5 kVA	1.8 kVA

The installation and general warnings regarding operations are aimed achieving correct use of the machine and/or apparatus in the place where it is used as a genset and/or motor welder.
- Advice to the User about the safety:

☞ NB: The information contained in the manual can be changed without notice.
Any damage caused in connection with the use of these instructions shall not be considered as they 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.

⚠ DANGEROUS

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

⚠ WARNING

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

⚠ CAUTION

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

⚠ IMPORTANT
⚠ NOTE
⚠ ATTENTION

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

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

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

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

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

SYMBOLS

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* peaple.

PROHIBITIONS No harm for persons

Use only with safety clothing -

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

Use only with safety clothing -

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

Use only with safety protections -

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

Use with only safety material -

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

Use only with non inserted voltage -

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

No smoking -

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

No welding -

It is forbidden to weld in rooms containing explosive gases.

ADVICE <u>No harm for persons and things</u>

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.

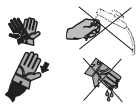
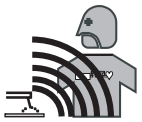
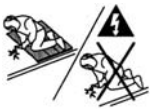
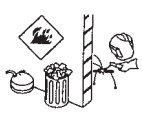
Use only with safety protections -

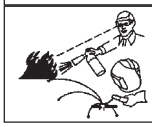
It is advisable to use all protections while shifting the machine.

Use only with safety protections -

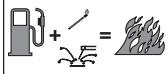
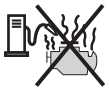
It is advisable to use protections suitable for the different daily checking works.and/or of maintenance.

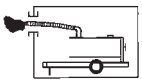
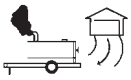
ARC WELDING HAZARDS

	Electric shock from welding electrode or wiring can kill.
	Wear dry, hole-free insulating gloves and body protection. Do not touch electrode with bare hand. Do not wear wet or damaged gloves. Do not touch live electrical parts. Wet or confined spaces, or if their is una danger of falling. Use AC output ONLY if required for the welding process. If AC output is required, use remote output control if present on unit.
	Magnetic fields can affect pace-makers. Pace-maker wearers keep away from arc welding and cutting operations and equipment. Wearers should consult their doctor before going near arc welding, gouging, arc cutting, or spot welding operations.
	Protect yourself from electric shock by insulating yourself from work and ground. Use non-flammable, dry insulating material if possible, or use dry rubber amts, dry wood or plywood, or other dry insulating material big enough to cover your full area of contract with the work or ground, and watch for fire.
	Breathing welding fumes can be hazardous to your health.
	Keep your out of the fumes. Do not breathe the fumes.Use enought ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area.
	Use enought forced ventilation or local exhaust (forced suction) at the arc to remove the fumes from your breathing area.
	Use a ventilating fan to remove fumes from the breathing zone and welding area. If adequancy of ventilation or exhaust is uncertain, have your exposure measured and compared to the T
	Welding can cause fire or explosion.
	Do not weld near flammable material. Move flammanles at least (10 m) away or protect them with flame-proof covers.

	Do not weld on drums, thanks, or any closed containers unless a qualified person has tested it and declared it or prepared it to be safe.
	Welding sparks can cause fires. Have a fire extinguisher nearby, and have a trained fire watcher ready to use it.
	Arc rays can burn eyes and skin.
	Use welding helmet with correct shade of filter.
	Wear welders cap and safety glasses with side shields. Use ear protection when welding out of position or in confined spaces. Button shirt collar.
	Wear complete body protection. Wear oil-free protective clothing such as leather gloves, heavy shirt, cuffless pants, and hight boots.

ENGINE HAZARDS

	Fuel can cause fire or explosion.
	Engine fuel plus flames or sparks can cause fire or explosion. Do not weld near engine fuel. Do not spill fuel. If fuel is spilled, clean it up and do not start engine until fumes are gone.
	Do not smoke while fieling or if near fuel or fumes.
	STOP engine before fueling.
	DO NOT fuel a hot engine. Stop engine and let it cool off before checking or adding fuel.

	Engine exhaust gases can kill.
	Vent exhaust outside and away from any building air intakes.
	Use unit outside in open, well ventilated areas.

	Moving parts can cause injury. Keep hands, hair, loose clothing, and tools away from moving parts such as fans, belts, and rotors. Keep all doors, panels, and guards closed and secured.

	Battery explosion can blind. Sparks can cause battery gases to explode. Do not smoke and keep matches and flames away from battery. Wear a face shield or safety glasses when working near or on a battery.

	Bettery acid can burn skin and eyes. Do not spill acid. Wear rubber gloves and a face shield or safety glasses when working on a battery.

	Steam and hot coolant can burn. Check coolant level when engine is cold to avoid scalding. If the engine is warm and checking is needed, wear safety glassesand gloves and put a rag over radiator cap. Turn cap slightly and let pressure escape slowly before completely removing cap.

	Exhaust sparks can cause fire. Use approved engine exhaust spark arrestor in required areas. Keep exhaust and exhaust pipes away from flammables. Do not locate unit near flammables.

	Hot parts can cause severe burns. Do not touch not welder with bare hand. If handling is needed, use proper tools and/ or wear heavy, insulated welding gloves to prevent burns. Allow cooling period before handing parts or working on gun or torch.

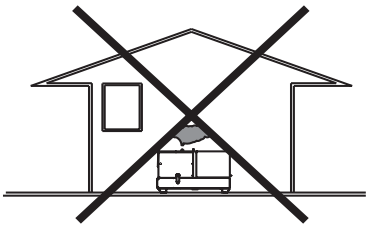
INSTALLATION AND ADVICE BEFORE USE

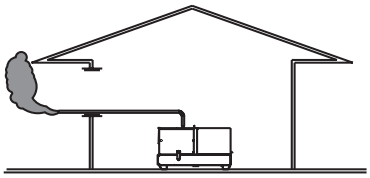
GASOLINE ENGINES

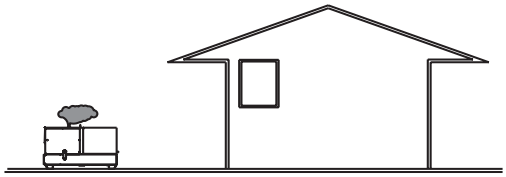
☞ Use in open space, air swept or vent exhaust gases, which contain the deathly carbone oxyde, far from the work area.

DIESEL ENGINES

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

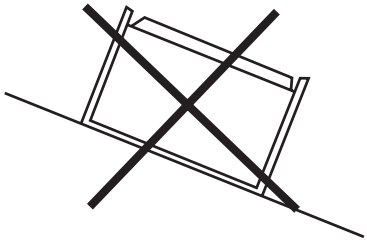




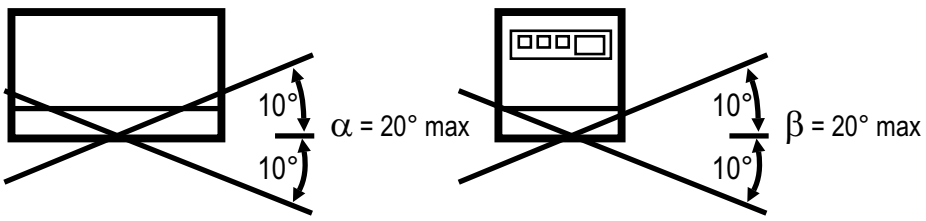


POSITION

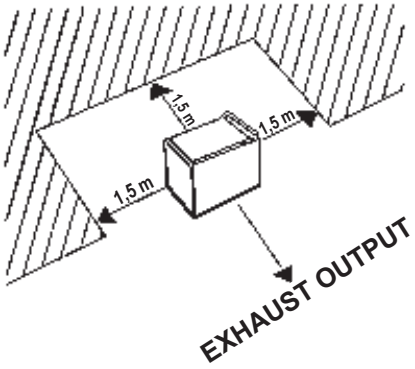
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other plants.



Maximum leaning of the machine (in case of dislevel)



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



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

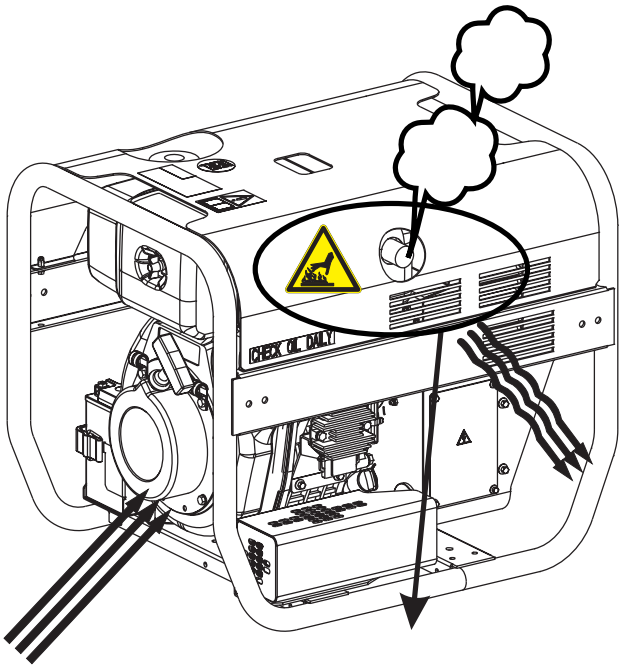
MOVES OF THE MACHINE

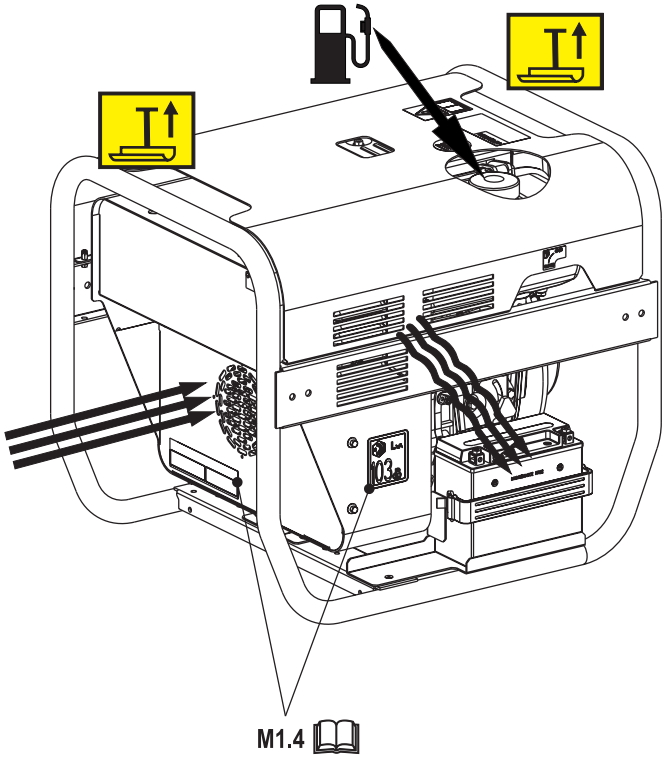
☞ At any move check that the engine is **off**, that there are no connections with cables which impede the moves.

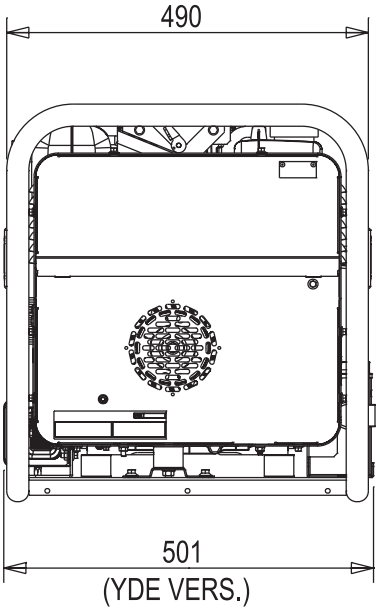
PLACE OF THE MACHINE

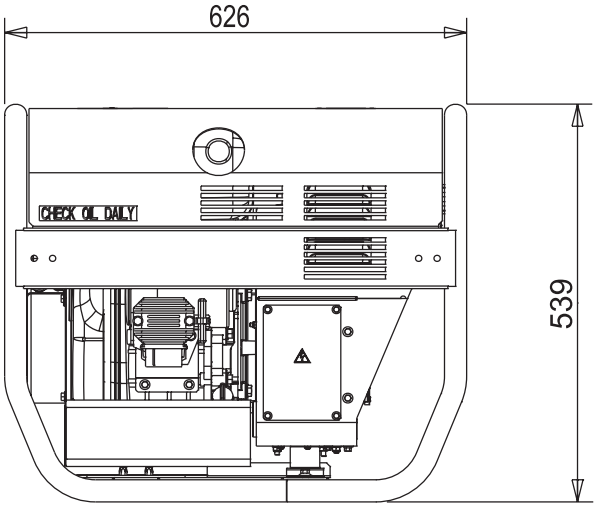
ATTENTION

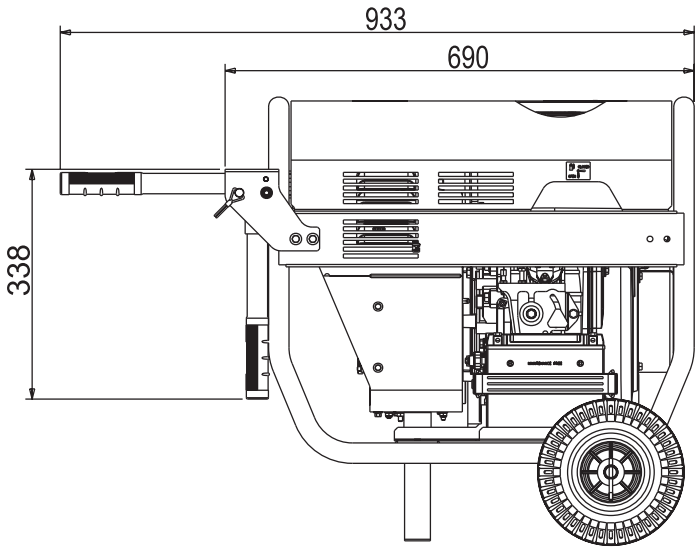
For a safer use from the operator **DO NOT** fit the machine in locations with high risk of flood.
Please do not use the machine in weather conditions which are beyond IP protection shown both in the data plate and on page named "technical data" in this same manual.

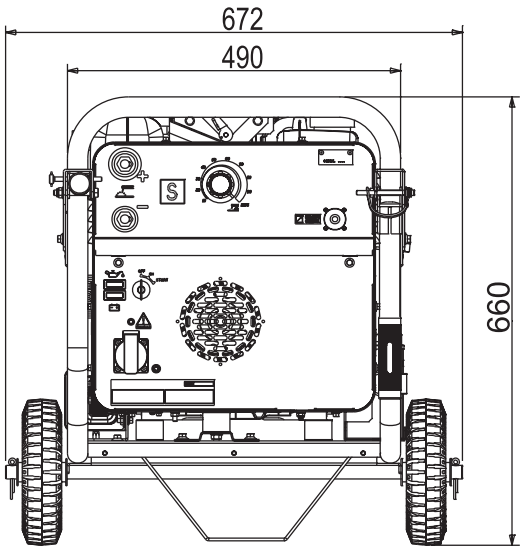

CHECK OIL DAILY


M1.4


490
501
(YDE VERS.)


626
CHECK OIL DAILY
539


933
690
338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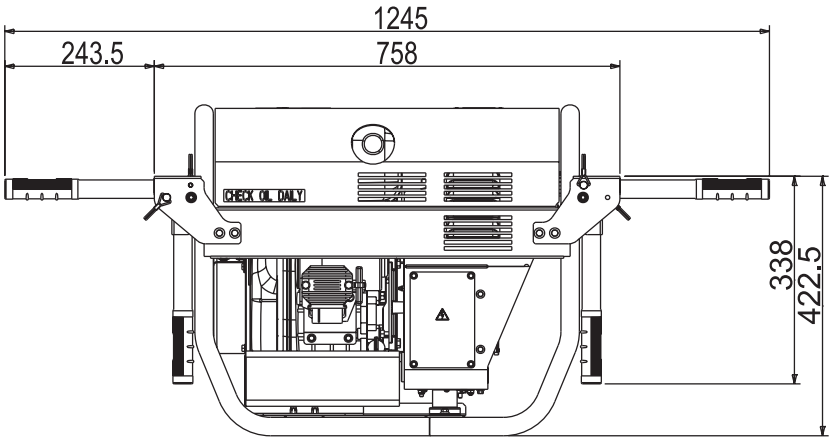
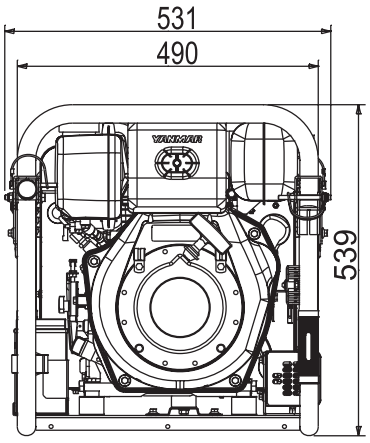
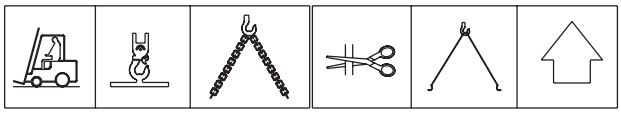
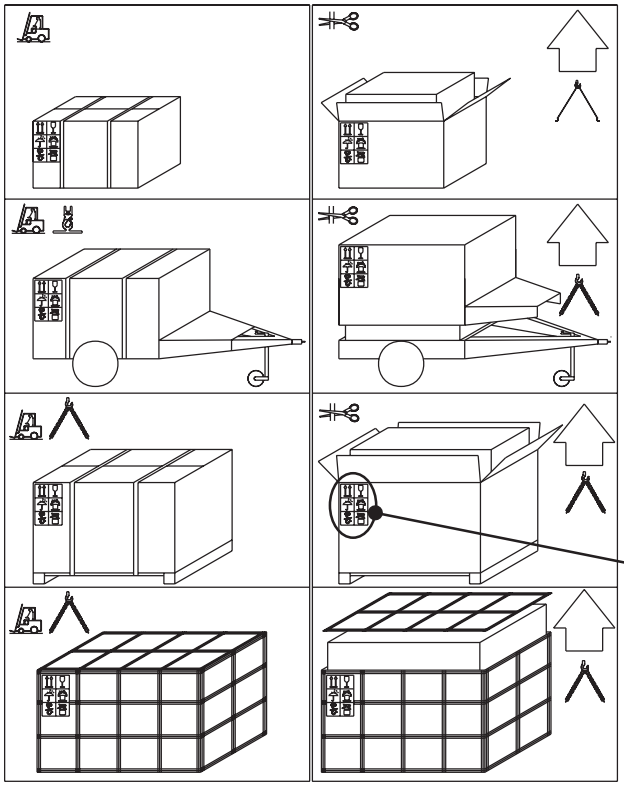
660


1245
243.5
758
CHECK OIL DAILY
338
422.5


531
490
YANMAR
539

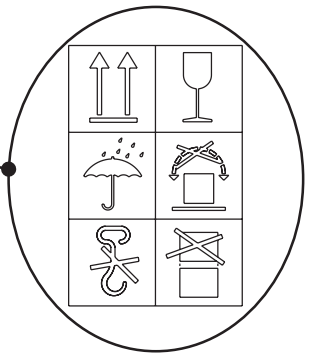
NOTE

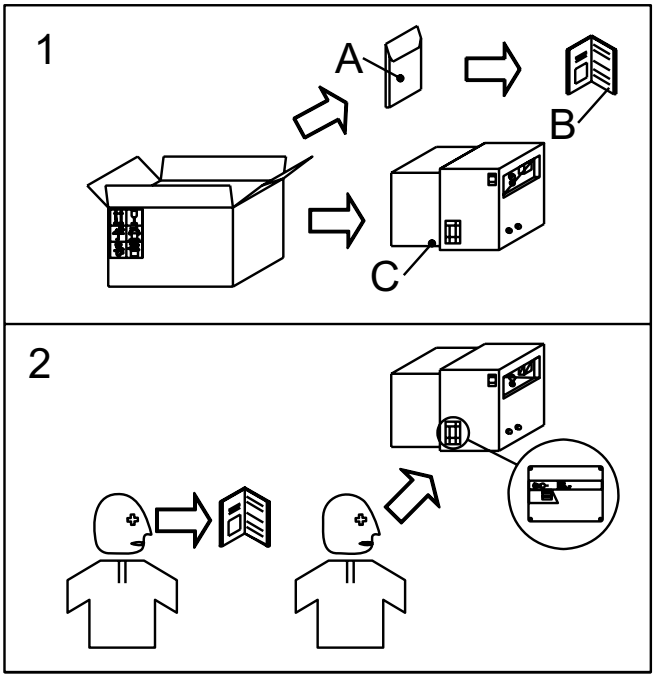




☞ Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conforms to local rules and regulations.
When receiving the goods make sure that the product has not suffered damage during the transport, that there has not been rough handling or taking away of parts contained inside the packing or in the set.
In case you find damages, rough handling or absence of parts (envelopes, manuals, etc.), we advise you to inform immediately our Technical Service.

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



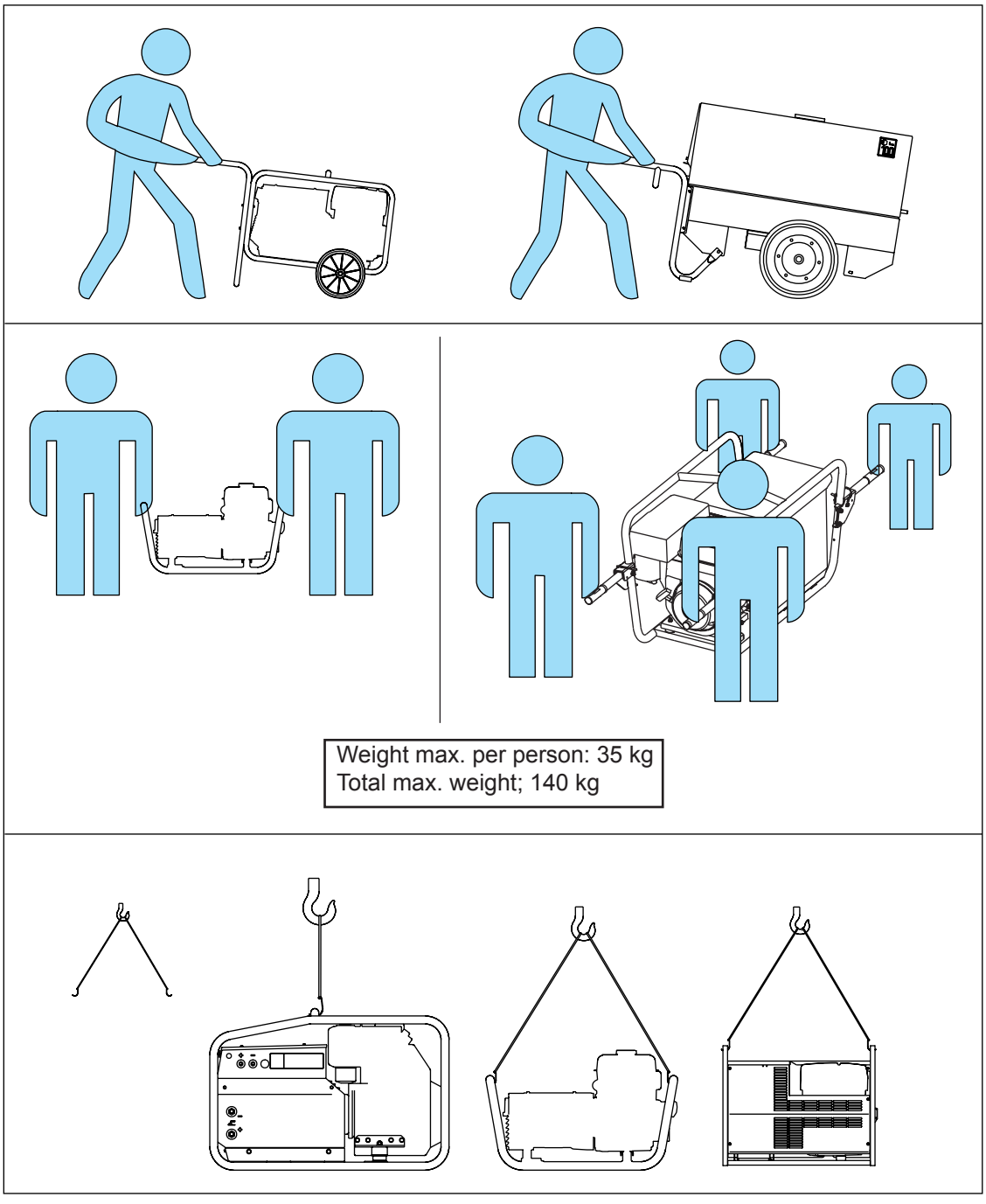


1) Take the machine (C) out of the shipment packing. Take out of the envelope (A) the user's manual (B).
2) Read: the user's manual (B), the plates fixed on the machine, the data plate.

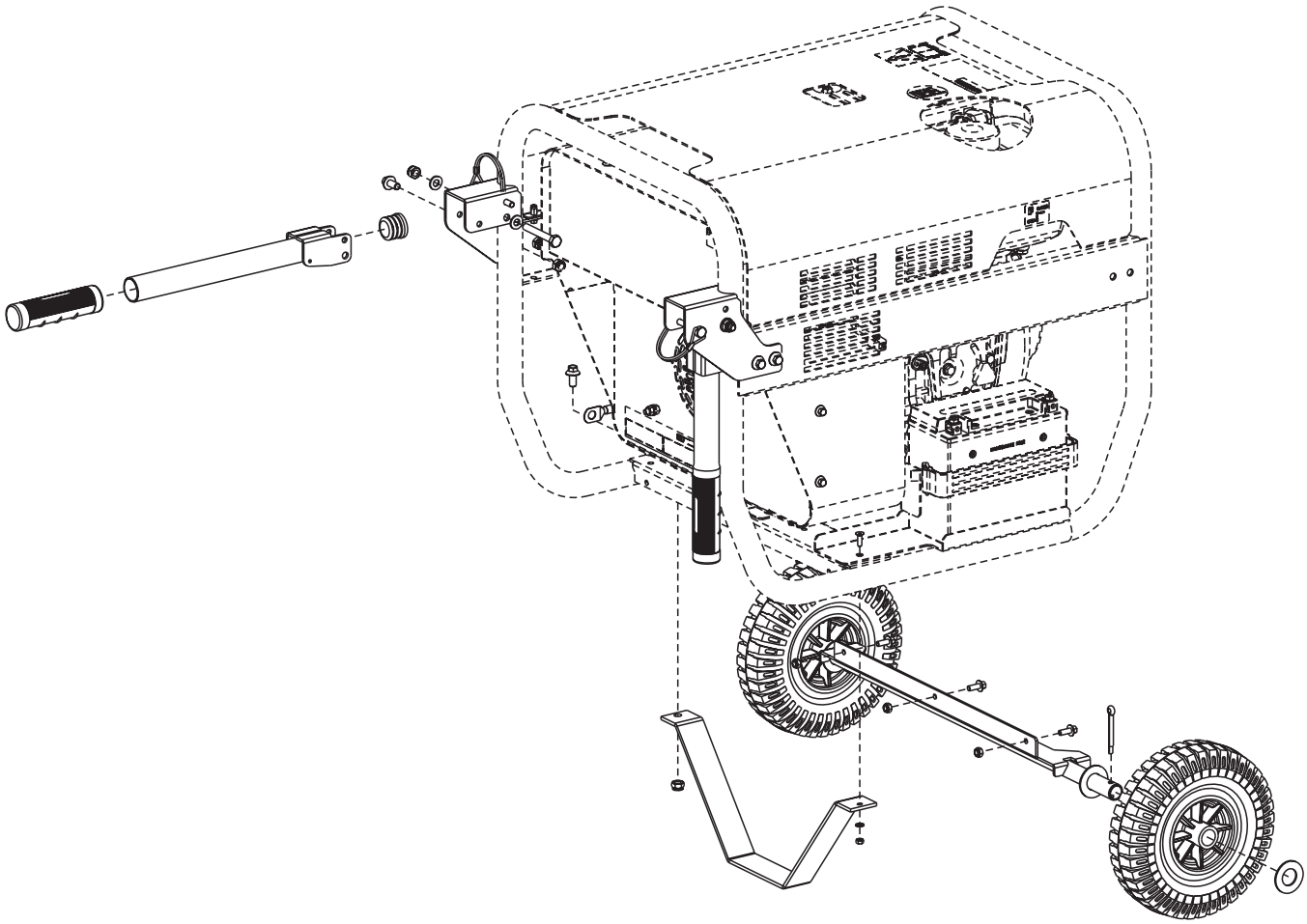
NOTE

Transportation must always take place with the engine off, electrical cables and starting battery disconnected and fuel tank empty.
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.



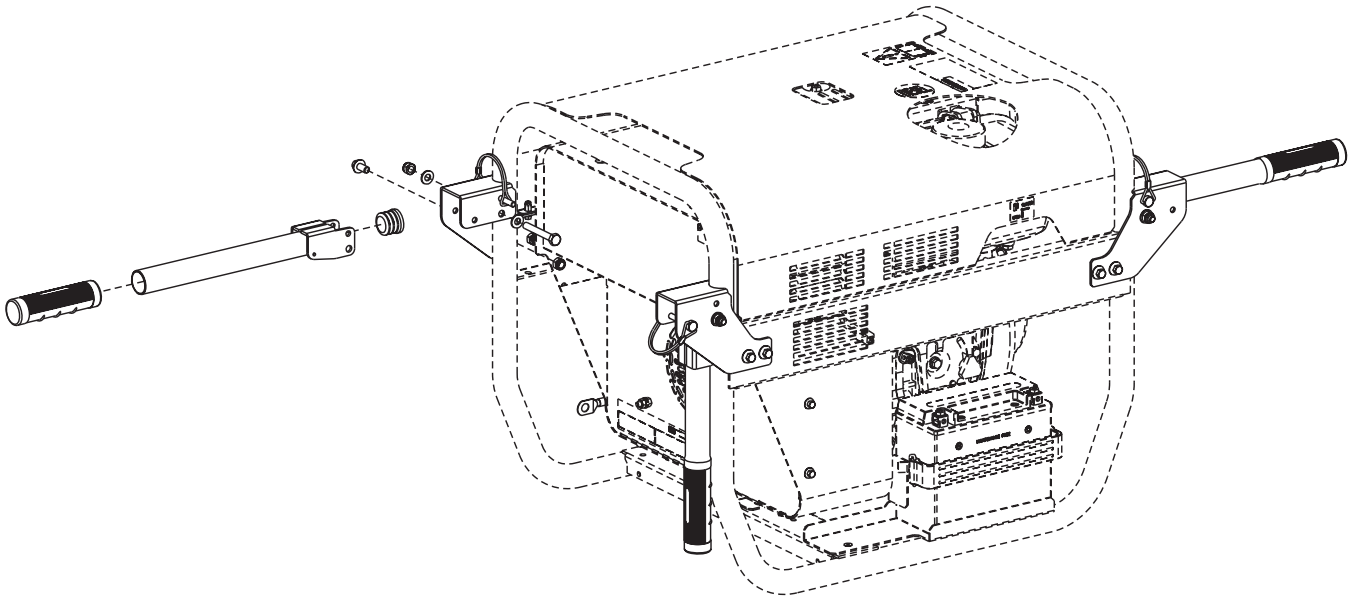
***Note*:** Lift the machine and assemble the parts as shown in the drawing



⚠ ATTENTION

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

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



⚠ ATTENTION

The TRM 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.

BATTERY WITHOUT MAINTENANCE (where it is assembled)

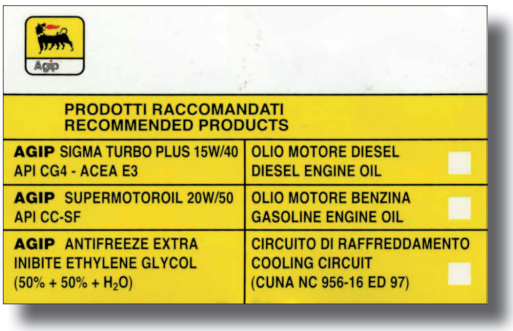
The included battery must be activated.
To activate it (fill the included acid) please follow the instructions shown on the manual attached to the battery.
When battery is activated, **DON'T** add any other liquid.

LUBRICANT

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

RECOMMENDED OIL

The manufacturer recommends selecting AGIP engine oil.
Refer to the label on the motor for the recommended products.



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.

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

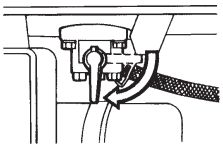
See section "Use as a generator" page M37.

Check daily

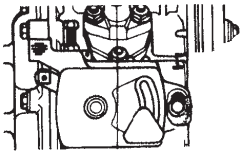
NOTE

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

RECOIL VERSION

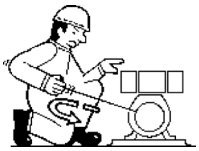


1) Open fuel cock

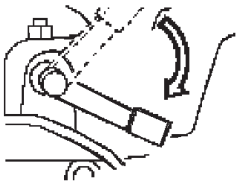


2) Accelerator lever must be in the "START" position.

3) Grasp the starter handle as shown



4) Pull the starter rope until you feel resistance and let it return slowly to its original position



5) lower the decompression lever

6) pull the rope firmly as far as it will go. If necessary use two hands

ELECTRIC STARTING

1) Carry out operations 1) and 5) as with pull start

2) Turn the starter key to the “ON” position, the accelerator control solenoid will automatically move the accelerator lever into the "START" position

3) Turn the starter key to the “ON” position, when the motor is running, let the key reposition itself to "ON"

4) When the motor is started, it will immediately reach the nominal RPM for approx. 6/7 seconds, after which time it will automatically go down to the minimum set by the solenoid which controls the accelerator lever.

5) When welding power or auxiliary generation is required, the motor will automatically go up to the nominal RPM necessary for the use of the machine.

EMERGENCY PULL START FOR ELECTRIC STARTER VERSIONS

If all the above conditions have been met, proceed as follows:

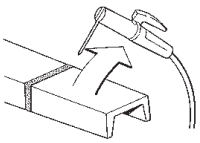
WARNING

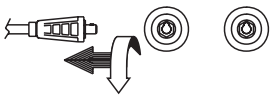
The pull start, for electric starter versions, is only possible if the all the conditions listed below have been met:
- the starter battery must remain connected to the electrical circuit;
- the starter battery must be able to power the accelerator control solenoid, check this condition turning the starter key to the “ON” position;
- unplug the pressure switch cable.

1) Open fuel cock
2) Turn the starter key into the “ON” position, check that the accelerator control solenoid moves the accelerator lever into the “START” position
3) Grasp the starter handle as shown
4) Pull the starter rope until you feel resistance and let it return slowly to its original position
5) lower the decompression lever
6) pull the rope firmly as far as it will go. If necessary use two hands.

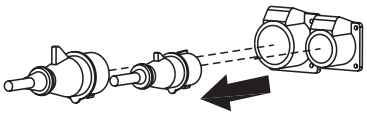
☞Before stopping the engine it is compulsory to stop the load:

- stop welding;

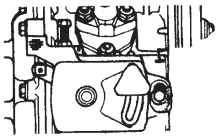




- shut off any loads which are connected to the unit auxiliary outputs.

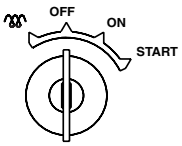


RECOIL VERSION



Let the motor run at no load for several minutes to allow for cooling and then move the accelerator control into the “STOP” position.

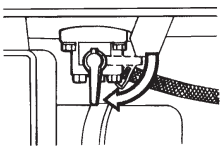
ELECTRIC STARTING



Wait for the motor to automatically go to the minimum RPM, 6/7 seconds after load release, leave the motor running under these conditions for several minutes in order to allow for cooling, then turn the starting key to the “OFF” position.

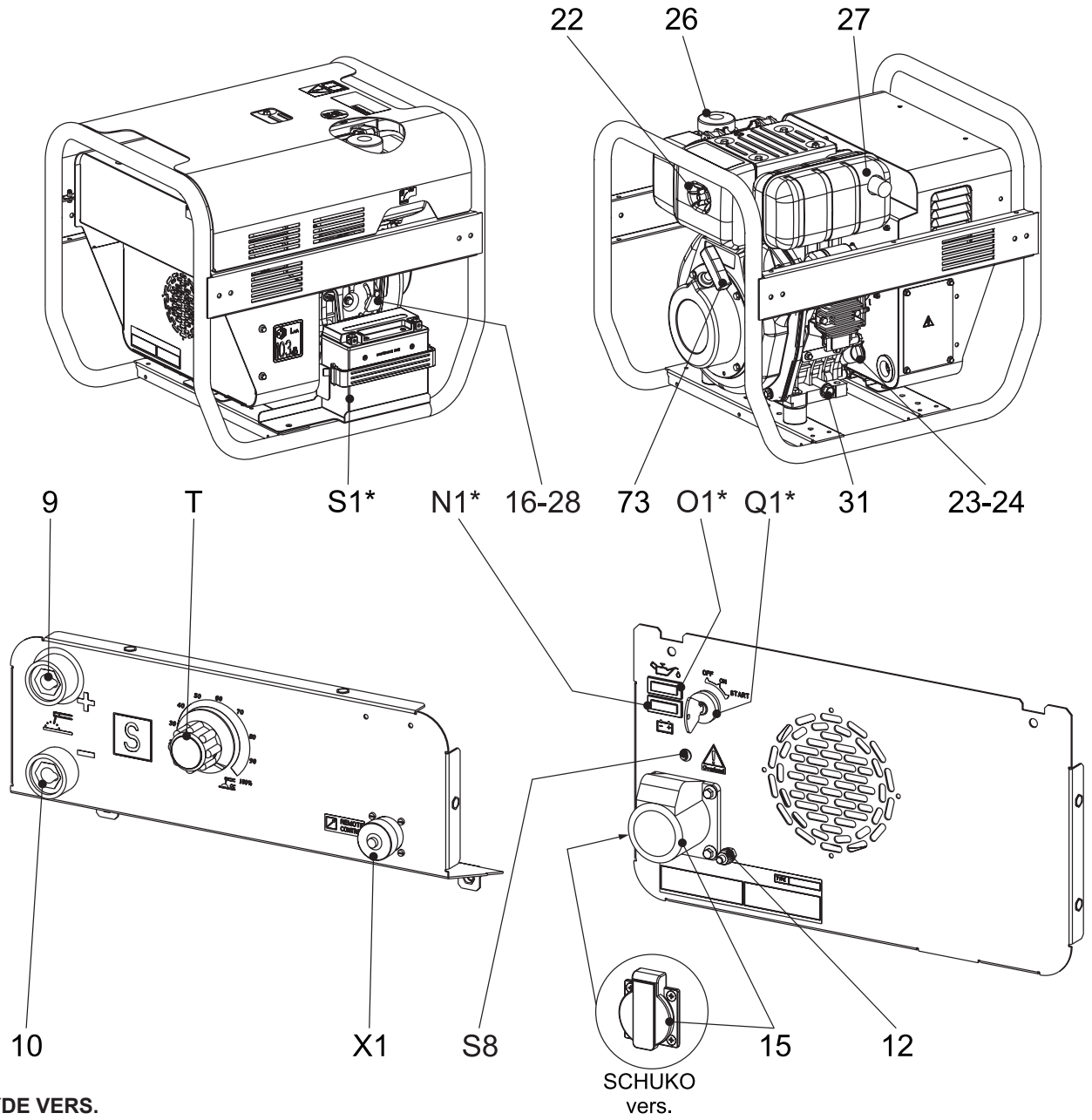
⚠ ATTENTION

To switch off the motor in case of emergency, either move the accelerator control to the “STOP” position immediately or move the starter key to the “ON” position.



Shut the fuel cock.

☞ **NB.: for safety purposes remove the starter key from the machine at the end of every work session.**



(*) YDE VERS.

Pos.	Descrizione	Description	Description	Descripción
9	Prese di saldatura (+)	Welding sockets (+)	Prises de soudage (+)	Tomas de soldadura (+)
10	Prese di saldatura (-)	Welding sockets (-)	Prises de soudage (-)	Tomas de soldadura (-)
12	Presa di messa a terra	Earth terminal	Prise de mise à terre	Toma de puesta a tierra
15	Presa di corrente in c.a.	a.c. socket	Prises de courant en c.a.	Toma de corriente en c.a
16	Comando acceleratore	Accelerator control	Commande accélérateur	Mando de aceleración
22	Filtro aria motore	Engine air filter	Filtre air moteur	Filtro aire motor
23	Asta livello olio motore	Oil level dipstick	Jauge niveau huile moteur	Aguja nivel aceite motor
24	Tappo caricamento olio motore	Engine oil reservoir cap	Bouchon remplissage huile moteur	Tapón llenado aceite motor
26	Tappo serbatoio	Fuel tank cap	Bouchon réservoir	Tapón depósito
27	Silenziatore di scarico	Muffler	Silencieux d'échappement	Silenciador de descarga
28	Comando stop	Stop control	Commande stop	Mando stop
31	Tappo scarico olio motore	Oil drain tap	Bouchon décharge huile moteur	Tapón vaciado aceite motor
73	Comando manuale avviamento	Starting push button	Commande manuelle démarrage	Mando manual arranque
N1	Spia carica batteria (*)	Battery charge warning light (*)	Voyant charge batterie (*)	Piloto carga bateria (*)
O1	Spia bassa pressione olio (*)	Oil pressure warning light (*)	Voyant lumineux pression huile (*)	Indicador luminoso pres. aceite (*)
Q1	Chiave di avviamento (*)	Starter key (*)	Clé de démarrage (*)	Llave de arranque (*)
S1	Batteria (*)	Battery (*)	Batterie (*)	Batería (*)
S8	Led di sovraccarico	Overload led	Led Overload (surcharge)	Led sobrecarga
T	Regolatore corrente di saldatura	Welding current regulator	Régulateur courant soudage	Regulador corr. de soldadura
X1	Presa per comando a distanza	Remote control socket	Prise pour télécommande	Toma para mando a distancia

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

ATTENTION

It is prohibited for any unauthorized persons to access areas adjacent to the engine driven welder or the welding process.

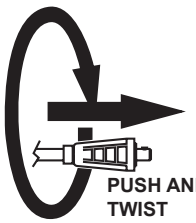
ATTENTION

To reduce the risk of electromagnetic interfe-rence, keep the welding cable length short and keep them on or near the ground. If possible, welding operations should not be done near sensitive electronic devices. If interference continues to occur, adopt additional measures: shift the group, use shielded cables, line flters, shield the entire work area.If the above solutions do not suffice,consult our Technical Servicing Department.

ATTENTION

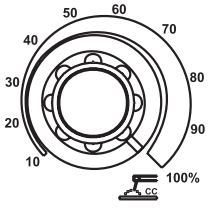
With a welding cable length up to 10 m is suggested a section of 35 mm²; wìth longer cables a bigger section is required.

CONNECT WELDING CABLES



Fully insert the welding cable plugs into the corresponding sockets turning them clockwise to lock them in position.
Ensure that ground clamp, whose cable must be connected to the (-) socket or the (+) socket, according to the type of electrode, makes good contact and that, if possible, it is close to the welding position. Pay attention to the two polarities of the welding circuit, which must not come into electrical contact with each other.

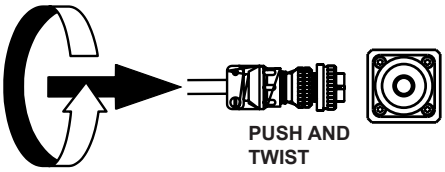
ADJUSTING THE WELDING CURRENT



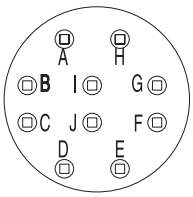
The welding current is regulated by turning knob “T” continuously. If set to the minimum (turned fully in an anticlockwise direction) it provides a current of approximately 30 A; if set to the maximum (turned fully in a clockwise direction) it gives a maximum current of approximately 200A (20V).

REMOTE CONTROL

The welding machine is predisposed for connection to a remote control (optional) by means of the circular connector located on the front panel. Once the connection to the remote control has been made, the function of regulating the main potentiometer, located on the front panel, will be automatically switched to the remote control potentiometer.



The following table describes the functions of each of the connector’s contacts.



CONTATTI	DESCRIZIONE
A (electric ground)	To the RC/TC potentiometer - GND terminal
B	To the RC/TC potentiometer - V_{CONTR} terminal
C	To the RC/TC potentiometer - V_{REF} terminal
D	Remote connection presence contact - wire bridge towards (C) cabling side
E	Non connected
F	
G	
H	
I	
J	

AUTO IDLE

Operation

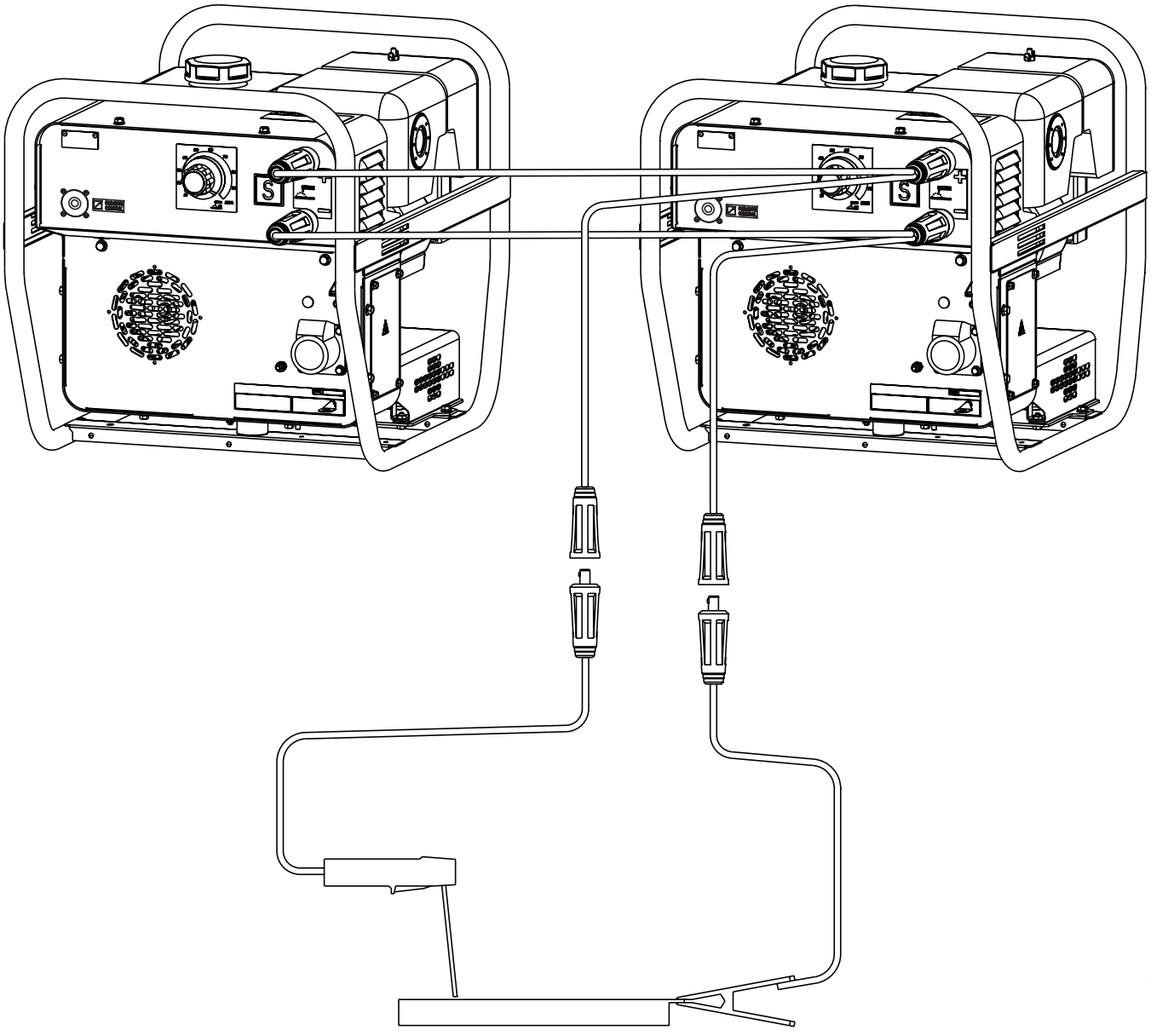
When the engine is switched on it immediately reaches a maximum speed of 3720 rpm for approximately 6/7 seconds for easy start up, after which it automatically decreases and idles at 2650 rpm. It remains at this speed until current is drawn when set to weld or auxiliary power.When set to weld mode the machine reaches maximum engine speed as soon as there is minimum contact between the tip of the electrode and the piece to be welded and also when set to generation drawing a minimum of 250 - 300 W.
The machine returns to minimum 6/7 seconds later if power is not drawn during welding or generation.

How to put two machines in parallel:

from the front panels of the machines connect the two positives welding sockets(+) between themselves and the two negative welding sockets bethween themselves.
To effect the connection ask for the accessory K2X150.

ATTENTION: use fit cables and tight at the connection point.

How to proceed:
- start the machine putting the two welding handles (T) in the wanted position (half of the total current);
- put in parallel with the right cables;
- proceed with welding.



ATTENTION

It is absolutely forbidden to connect the unit to the public mains and/or another electrical power source.

ATTENTION

It is prohibited for any unauthorized persons to access areas adjacent to engine driven welder.

AUXILIARY GENERATION IN AC 230V/50Hz

The auxiliary output is drawn by means of a 3 pole socket, the two poles are live, phase and neutral, plus the earth for the machine.

The single phase generation of the machine was designed to supply small power tools (grinders, drills etc.) to assist the welding operations with a quick, safe connection without the need to connect to earth. In addition, supplying only one tool at a time, the protection against indirect contact is assured by “electrical separation”.

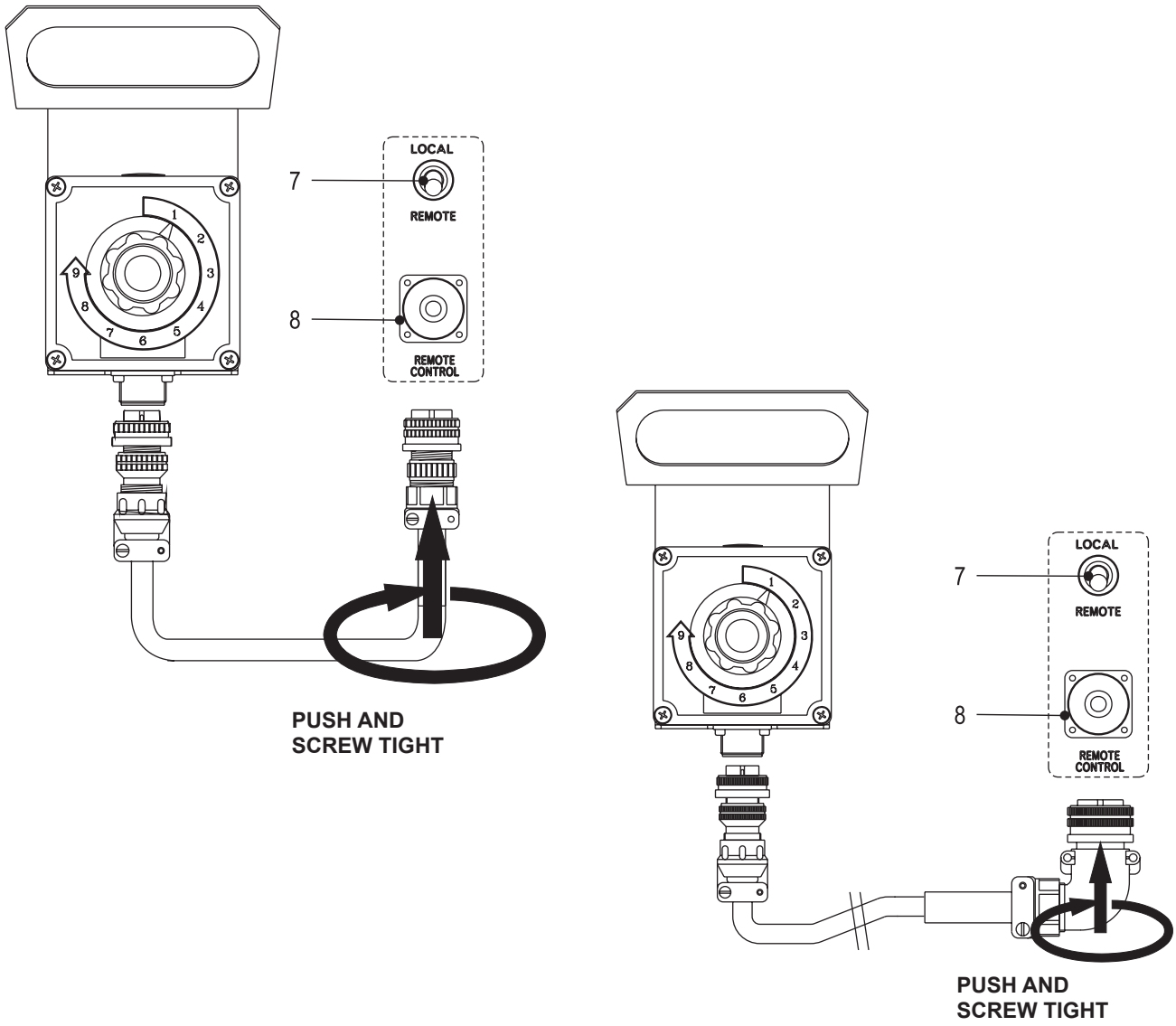
Therefore, the machine MUST NOT be intentionally connected to earth, attaching cables must be of 3 wires and the electrical equipment on which it being used must have an extension length limited to 100-200 metres. This limitation of circuit extension length is fundamental for safety.

The cables must be SUITED to the environment in which they are to be used. Bear in mind that at temperatures below 5°C PVC cables become rigid and the PVC insulation tends to split at the first crease.

Using double insulated equipment is advisable, this is identifiable by the symbol ⧈ and for having no earth facility.
If the machine is designed to supply circuits which are particularly complex or in an area with potential electrical risk, it is required to interpose a complete electrical distribution panel, equipped with all electrical protections required, between the plug and loads.

For example: you can use a distribution system TN-S. In this case one of the phases, used as a neutral must be grounded; a bipolar 30mA differential switch (GFI) must be mounted inside the electrical box, before the sockets to which loads are connected; the terminal in the frontal panel of the generating set near the socket is to be used as earth connection, wiring it to the ground of the electrical plant with which the machine is going to work.

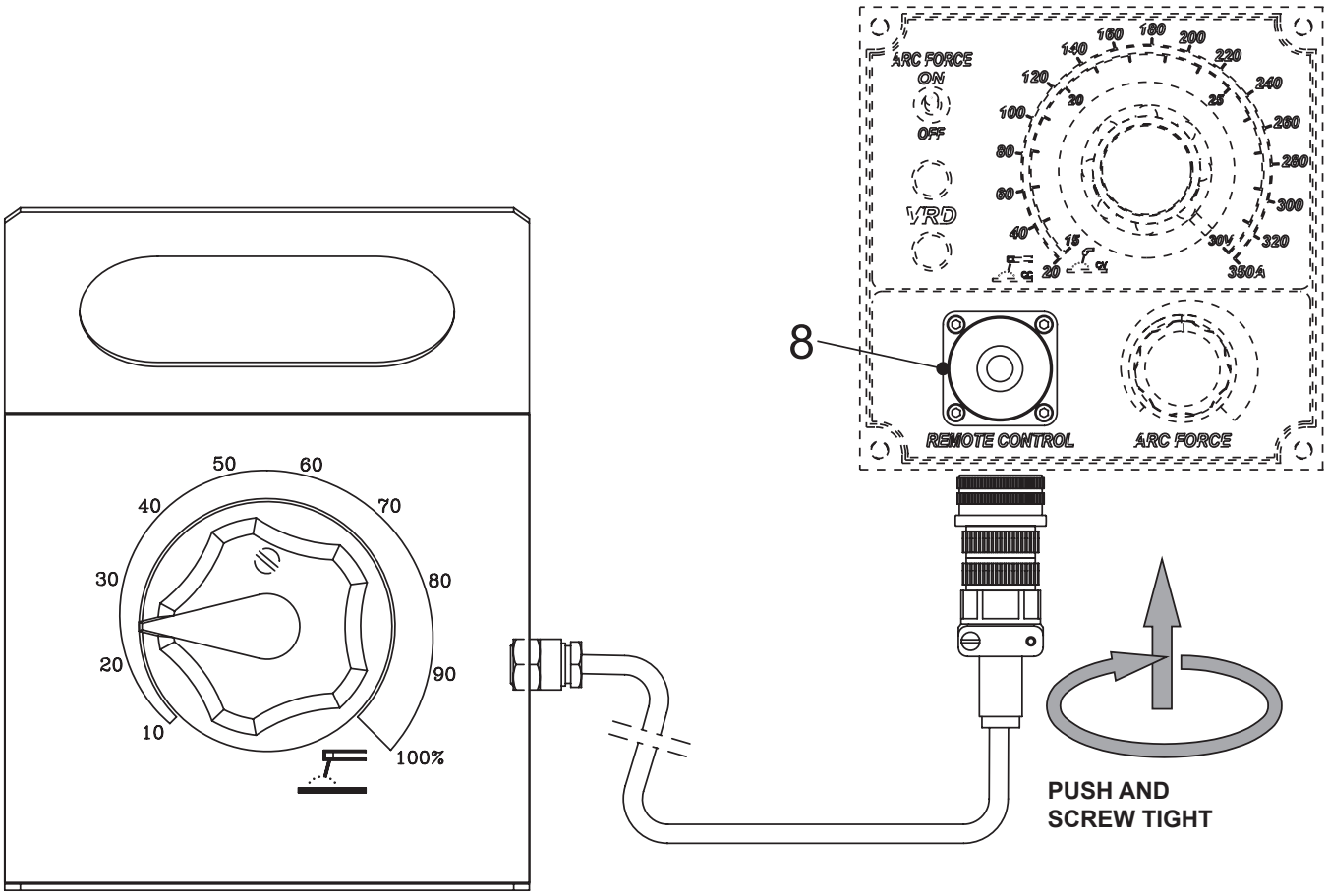
WARNING: bound the neutral to frame BEFORE the GFI.



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 RC2, 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.



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

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

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

The engine is equipped with system protection (stop) in the event the oil pressure is too low.

In the event of a malfunction in the battery charging system, the warning light will come on without stopping the engine.

Problem	Possible cause	Solution
MOTORE		
The motor does not start up, or starts up and then stops immediately	1) Lack of fuel in tank 2) Air in the fuel circuit 3) Incorrect position of accelerator control knob 4) Battery low 5) Battery cable terminals loose or corroded 6) Start-up motor defective 7) Faulty starter key 8) Faulty emergency stop of engine 9) Malfunction on electrical power circuit 10) Malfunction on feed circuit: defective pump, injector blocked 11) Air filter or fuel filter clogged 12) Other causes	1) Rifornire il serbatoio 2) Check power supply circuit 3) Check position 4) Recharge or replace. Check the battery charge circuit. 5) Tighten and clean. Replace if corroded. 6) Repair or replace. 7) Replace 8) Replace 9) Check and repair 10) Ask for intervention of Service Department. 11) Clean or replace 12) Consult instruction and maintenance manual of the engine.
The motor does not accelerate. Inconstant speed.	1) Air filter or fuel filter clogged. 2) Malfunction on feed circuit: defective pump, injector blocked. 3) Oil level too high. 4) Motor speed regulator defective.	1) Clean or replace. 2) Ask for intervention of Service Department. 3) Eliminate excess oil. 4) Ask for intervention of Service Department
Black smoke	1) Air filter clogged. 2) Overload. 3) Injectors defective. Injection pump requires calibration.	1) Clean or replace 2) Check the load connected and diminish. 3) Ask for intervention of Service Department.
White smoke	1) Oil level too high. 2) Motor cold or in prolonged operation with little or no load. 3) Segments and/or cylinders worn out.	1) Eliminate excess oil. 2) Insert load only with motor sufficiently hot 3) Ask for intervention of Service Department.
Too little power provided by motor.	1) Air filter clogged. 2) Insufficient fuel distribution, impurities or water in feed circuit. 3) Injectors dirty or defective.	1) Clean or replace. 2) Check the feed circuit, clean and refill once again. 3) Ask for intervention of Service Department.
Low oil pressure	1) Oil level insufficient 2) Air filter clogged. 3) Oil pump defective. 4) Alarm malfunction.	1) Reset level. Check for leaks. 2) Replace filter. 3) Ask for intervention of Service Department. 4) Check the sensor and electrical circuit.

Problem	Possible cause	Solution
WELDING CIRCUIT		
No current under no-load conditions in weld mode	1) Faulty welding control board 2) Faulty Hall sensor	1) With a voltmeter check that between pins A (-) and B (+) of the circular connector on the front panel there is 5 Vdc. Ask for intervention of Service Department to replace the board. 2) Ask for intervention of Service Department to replace the Hall sensor.
Irregular or inconsistent welding current	1) Faulty welding control board 2) Faulty Hall sensor 3) Chopper bridge short circuit	1) With a voltmeter check that between pins A (-) and B (+) of the circular connector on the front panel there is 5 Vdc. Ask for intervention of Service Department to replace the board. 2) Ask for intervention of Service Department to replace the Hall sensor. 3) Ask for intervention of Service Department to replace the Chopper Bridge.
Engine always at idle speed . Engine always at maximum speed	1) Faulty welding control board 2) Fault to the Auto Idle - Economizer system	1) With a voltmeter check that between pins A (-) and B (+) of the circular connector on the front panel there is 5 Vdc. Ask for intervention of Service Department to replace the board. 2) Ask for intervention of Service Department
AUXILIARY POWER GENERATION CIRCUIT		
No current under no-load conditions in auxiliary power mode	1) Auxiliary power diode bridge broken 2) Faulty inverter 3) Faulty alternator	Ask for intervention of Service Department

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.
- Please wear the appropriate clothing and make use of the PPE (Personal Protective Equipment), according to the type of intervention (protective gloves, insulated gloves, glasses).
- 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 manufacturer.

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.

Every engine and alternator manufacturer has maintenance intervals and specific checks for each model: it is necessary to consult the specific engine or alternator USER AND MAINTENANCE manual.

VENTILATION

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

ELECTRICAL PANELS

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

DECALS AND LABELS

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

STRENUOUS OPERATING CONDITIONS

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

BATTERY WITHOUT MAINTENANCE
DO NOT OPEN THE BATTERY

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

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

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

NOTE

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

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

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

GASOLINE ENGINE

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

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

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

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

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

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

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

DIESEL ENGINE

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

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

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

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

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

IMPORTANT

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

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

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

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

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

The getting rid of the various components of the machine must be made accordingly to rules in force of law a/o local rules.
Particular attention must be paid when getting rid of:
lubricating oils, battery electrolyte, and 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: The manufacturer is involved with custing off the machine **only** for the second hand ones, when not reparable.
This, of course, after authorization.

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

IMPORTANT

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

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 foe 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^2 . Also for soft steels of lower quality.

BASIC ELECTRODES: E 7015

Basic electrrodes wels onlu 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.

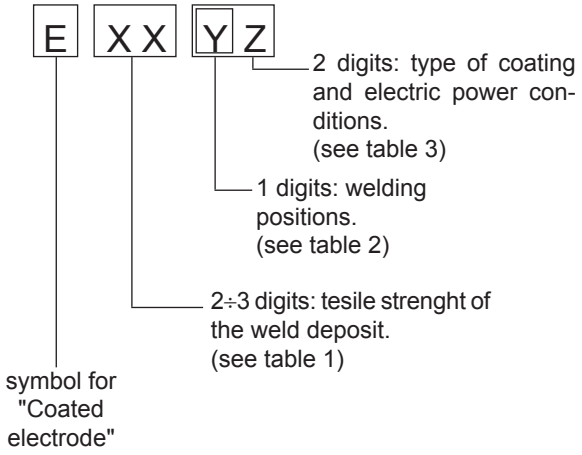
HIGH YIELD BASIC ELECTRODES: E 7018

The iron contained in the coating increases the quality of metal added. Good mechanical properties. Weld in all position. Electrode holder at + (inverse polarity). Wld deposit of nice aspect, also vertical. Workable; high yield.
Suitable for steels with high contens 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^2. Weld in all position. volatile slag.

ELECTRODES IDENTIFICATION ACCORDING TO A.W.S. STANDARDS



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

Table 1

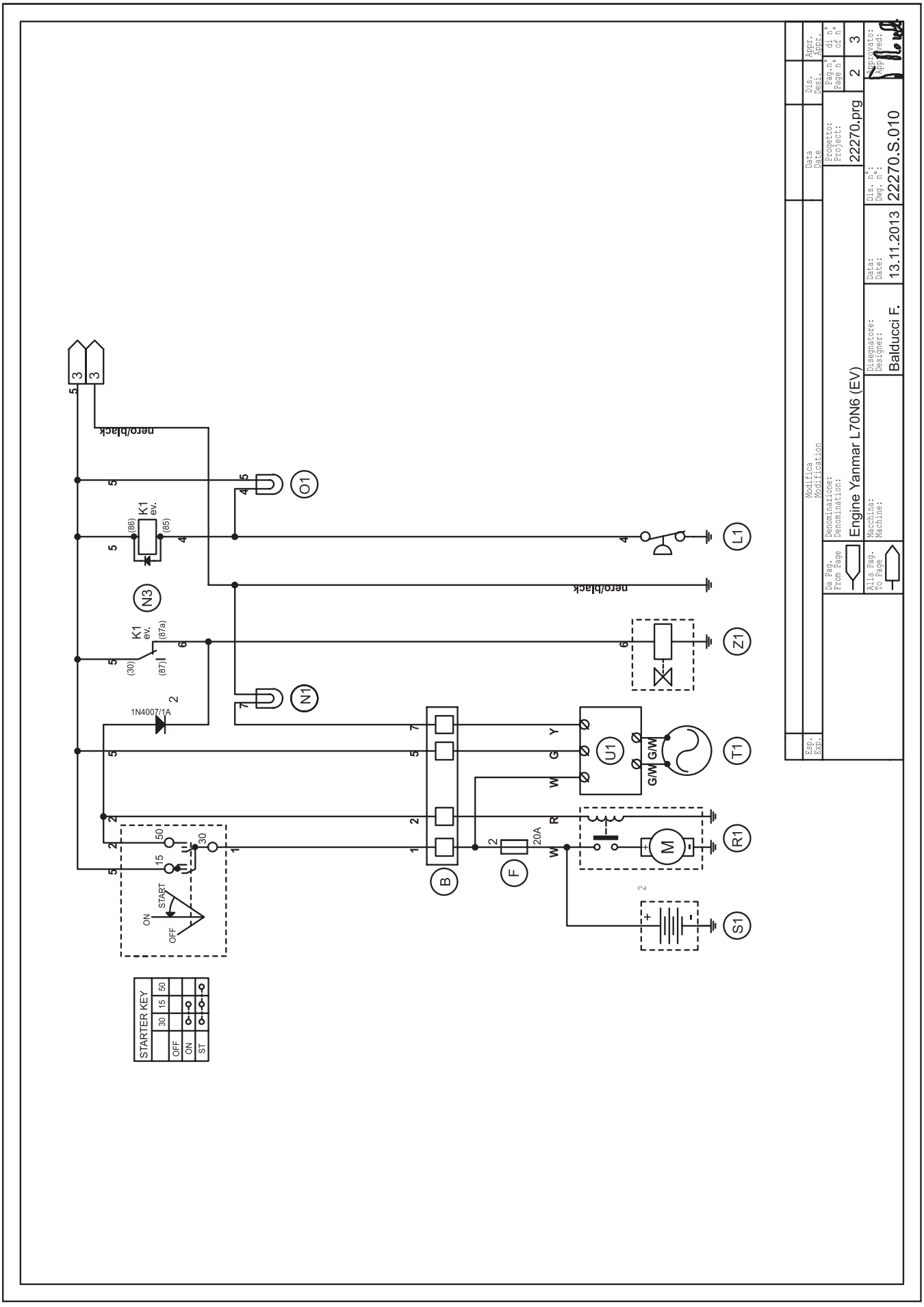
1	for all positions
2	for plane and verticl
3	for plane posotion only

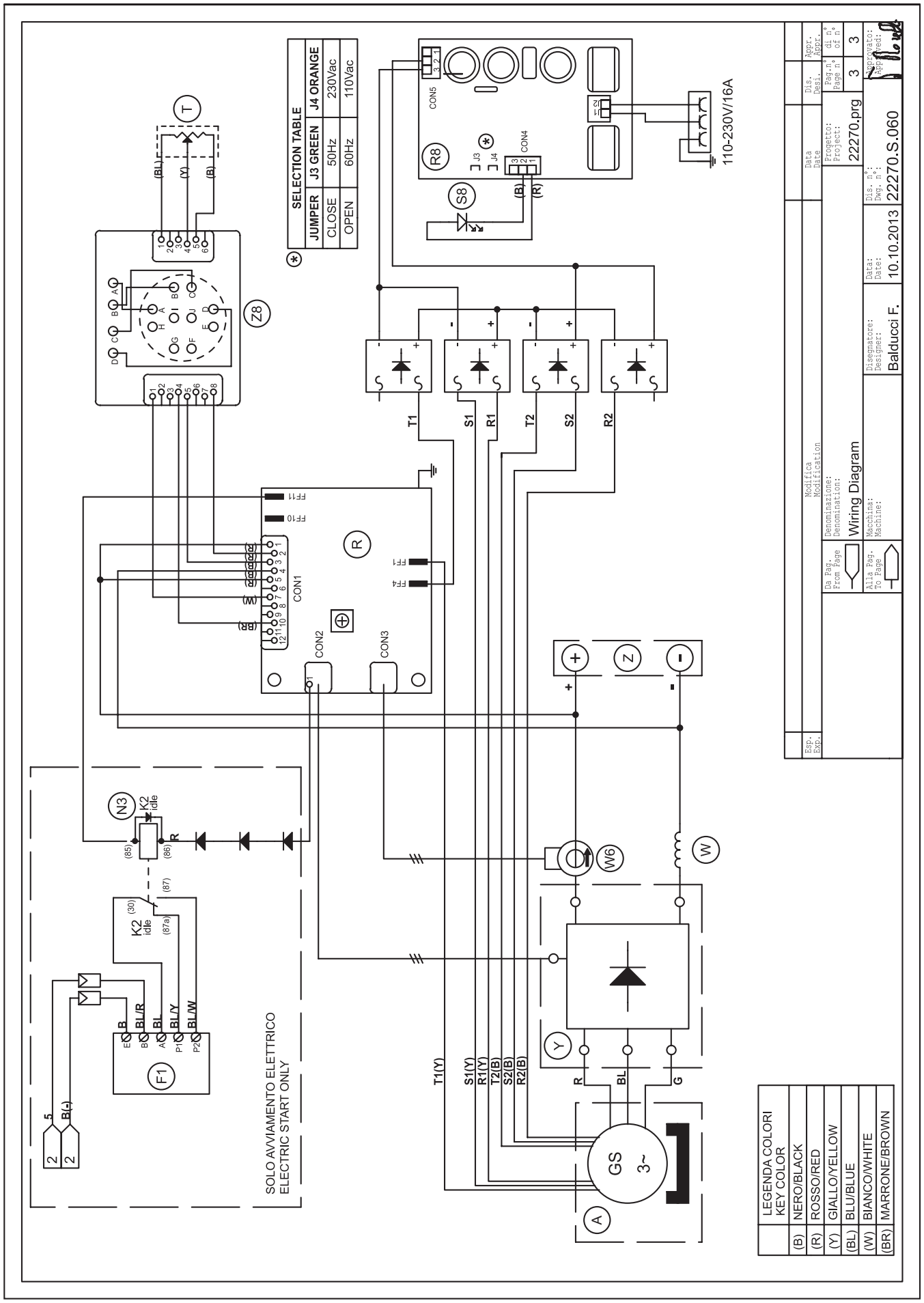
Table 2

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 c.a.
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
B : Wire connection unit
C : Capacitor
D : G.F.I.
E : Welding PCB transformer
F : Fuse
G : 400V 3-phase socket
H : 230V 1phase socket
I : 110V 1-phase socket
L : Socket warning light
M : Hour-counter
N : Voltmeter
P : Welding arc regulator
Q : 230V 3-phase socket
R : Welding control PCB
S : Welding current ammeter
T : Welding current regulator
U : Current transformer
V : Welding voltage voltmeter
Z : Welding sockets
X : Shunt
W : D.C. inductor
Y : Welding diode bridge
A1 : Arc striking resistor
B1 : Arc striking circuit
C1 : 110V D.C./48V D.C. diode bridge
D1 : E.P.1 engine protection
E1 : Engine stop solenoid
F1 : Acceleration solenoid
G1 : Fuel level transmitter
H1 : Oil or water thermostat
I1 : 48V D.C. socket
L1 : Oil pressure switch
M1 : Fuel warning light
N1 : Battery charge warning light
O1 : Oil pressure warning light
P1 : Fuse
Q1 : Starter key
R1 : Starter motor
S1 : Battery
T1 : Battery charge alternator
U1 : Battery charge voltage regulator
V1 : Solenoid valve control PCBT
Z1 : Solenoid valve
W1 : Remote control switch
X1 : Remote control and/or wire feeder socket
Y1 : Remote control plug
A2 : Remote control welding regulator
B2 : E.P.2 engine protection
C2 : Fuel level gauge
D2 : Ammeter
E2 : Frequency meter
F2 : Battery charge trasformer
G2 : Battery charge PCB
H2 : Voltage selector switch
I2 : 48V a.c. socket
L2 : Thermal relay
M2 : Contactor
N2 : G.F.I. and circuit breaker
O2 : 42V EEC socket
P2 : G.F.I. resistor
Q2 : T.E.P. engine protection
R2 : Solenoid control PCBT
S2 : Oil level transmitter
T2 : Engine stop push-button T.C.1
U2 : Engine start push-buttonT.C.1
V2 : 24V c.a. socket
Z2 : Thermal magnetic circuit breaker
W2 : S.C.R. protection unit
X2 : Remote control socket
Y2 : Remote control plug
A3 : Insulation moitoring
B3 : E.A.S. connector
C3 : E.A.S. PCB
D3 : Booster socket
E3 : Open circuit voltage switch
F3 : Stop push-button
G3 : Ignition coil
H3 : Spark plug
I3 : Range switch
L3 : Oil shut-down button
M3 : Battery charge diode
N3 : Relay
O3 : Resistor
P3 : Sparkler reactor
Q3 : Output power unit
R3 : Electric siren
S3 : E.P.4 engine protection
T3 : Engine control PCB
U3 : R.P.M. electronic regulator
V3 : PTO HI control PCB
Z3 : PTO HI 20 l/min push-button
W3 : PTO HI 30 l/min push-button
X3 : PTO HI reset push-button
Y3 : PTO HI 20 l/min indicator
A4 : PTO HI 30 l/min indicator
B4 : PTO HI reset indicator
C4 : PTO HI 20 l/min solenoid valve
D4 : PTO HI 30 l/ min solenoid valve
E4 : Hydraulic oil pressure switch
F4 : Hycraulic oil level gauge
G4 : Preheating glow plugs
H4 : Preheating gearbox
I4 : Preheating indicator
L4 : R.C. filter
M4 : Heater with thermostat
N4 : Choke solenoid
O4 : Step relay
P4 : Circuit breaker
Q4 : Battery charge sockets
R4 : Sensor, cooling liquid temperature
S4 : Sensor, air filter clogging
T4 : Warning light, air filter clogging
U4 : Polarity inverter remote control
V4 : Polarity inverter switch
Z4 : Transformer 230/48V
W4 : Diode bridge, polarity change
X4 : Base current diode bridge
Y4 : PCB control unit, polarity inverter
A5 : Base current switch
B5 : Auxiliary push-button ON/OFF
C5 : Accelerator electronic control
D5 : Actuator
E5 : Pick-up
F5 : Warning light, high temperature
G5 : Commutator auxiliary power
H5 : 24V diode bridge
I5 : Y/▲ commutator
L5 : Emergency stop button
M5 : Engine protection EP5
N5 : Pre-heat push-button
O5 : Accelerator solenoid PCB
P5 : Oil pressure switch
Q5 : Water temperature switch
R5 : Water heater
S5 : Engine connector 24 poles
T5 : Electronic GFI relais
U5 : Release coil, circuit breaker
V5 : Oil pressure indicator
Z5 : Water temperature indicator
W5 : Battery voltmeter
X5 : Contactor, polarity change
Y5 : Commutator/switch, series/parallel
A6 : Commutator/switch
B6 : Key switch, on/off
C6 : QEA control unit
D6 : Connector, PAC
E6 : Frequency rpm regulator
F6 : Arc-Force selector
G6 : Device starting motor
H6 : Fuel electro pump 12V c.c.
I6 : Start Local/Remote selector
L6 : Choke button
M6 : Switch CC/CV
N6 : Connector – wire feeder
O6 : 420V/110V 3-phase transformer
P6 : Switch IDLE/RUN
Q6 : Hz/V/A analogic instrument
R6 : EMC filter
S6 : Wire feeder supply switch
T6 : Wire feeder socket
U6 : DSP chopper PCB
V6 : Power chopper supply PCB
Z6 : Switch and leds PCB
W6 : Hall sensor
X6 : Water heather indicator
Y6 : Battery charge indicator
A7 : Transfer pump selector AUT-0-MAN
B7 : Fuel transfer pump
C7 : "GECO" generating set test
D7 : Flooting with level switches
E7 : Voltmeter regulator
F7 : WELD/AUX switch
G7 : Reactor, 3-phase
H7 : Switch disconnector
I7 : Solenoid stop timer
L7 : "VODIA" connector
M7 : "F" EDC4 connector
N7 : OFF-ON-DIAGN. selector
O7 : DIAGNOSTIC push-button
P7 : DIAGNOSTIC indicator
Q7 : Welding selector mode
R7 : VRD load
S7 : 230V 1-phase plug
T7 : V/Hz analogic instrument
U7 : Engine protection EP6
V7 : G.F.I. relay supply switch
Z7 : Radio remote control receiver
W7 : Radio remote control trasnsmitter
X7 : Isometer test push-button
Y7 : Remote start socket
A8 : Transfer fuel pump control
B8 : Ammeter selector switch
C8 : 400V/230V/115V commutator
D8 : 50/60 Hz switch
E8 : Cold start advance with temp. switch
F8 : START/STOP switch
G8 : Polarity inverter two way switch
H8 : Engine protection EP7
I8 : AUTOIDLE switch
L8 : AUTOIDLE PCB
M8 : A4E2 ECM engine PCB
N8 : Remote emergency stop connector
O8 : V/A digital instruments and led VRD PCB
P8 : Water in fuel
Q8 : Battery disconnect switch
R8 : Inverter
S8 : Overload led
T8 : Main IT/TN selector
U8 : NATO socket 12V
V8 : Diesel pressure switch
Z8 : Remote control PCB
W8 : Pressure turbo protection
X8 : Water in fuel sender
Y8 : EDC7-UC31 engine PCB
A9 : Low water level sender
B9 : Interface card
C9 : Limit switch
D9 : Starter timing card
E9 : Luquid pouring level float
F9 : Under voltage coil
G9 : Low water level warning light
H9 : Chopper driver PCB
I9 : Fuel filter heater
L9 : Air heater
M9 : ON/OFF switch lamp
N9 : UP/DOWN button mast
O9 : Hydraulic unit solenoid valve
P9 : Hydraulic unit engine
Q9 : Ignitor
R9 : Lamp
S9 : Power system
T9 :
U9 :
V9 :
Z9 :
W9 :
X9 :
Y9 :


Engine Yanmar L70N6 (EV)
Balducci F.
13.11.2013
22270.S.010
22270.prg
1N4007/1A
20A
START
ON
OFF
STARTER KEY
nero/black
K1 ev.
N3
N1
O1
L1
Z1
T1
U1
R1
S1
B
F
M



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