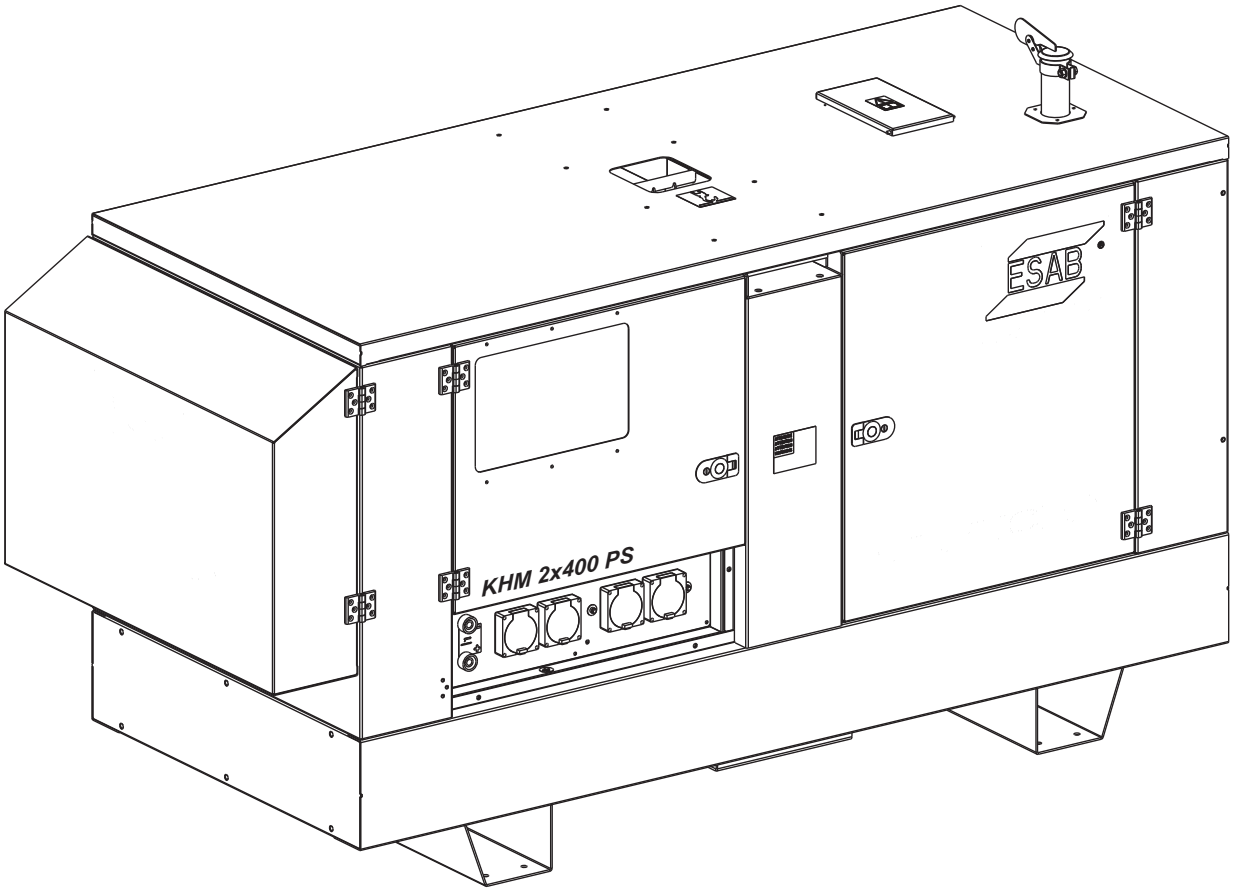
KHM 2x400 PS



Instruction manual

0794 999 944 08/01

Valid for serial No. 802 - XXX - XXXX

Dear Customer,

We wish to thank you for having bought this product.

Please take time to read this manual and familiarize yourself with the machine before attempting to use it.

If you should have questions or problems please contact the nearest authorized Service Center. They have the experience and original spare parts. The use of non-original spare parts will void the warranty.

TABLE OF CONTENTS

23/01/08 78410-GB

GENERAL INFORMATION

– In the envelope where you found this manual you will also find an Owner's manual for the engine, and accessories (if required).

This product has been designed for welding and generation of electrical power for tools and other electrical devices used in construction; ANY OTHER USE, is not permitted and we cannot be held responsible for injuries or damages resulting from such incorrect use.

Our products are made in conformity with the safety norms in force in order to avoid injury to persons or damage to the machine or other things.

☞ **Warranty is not valid if not carried out by ESAB authorized service agent.**

Making modifications to the machine without our written authorization will void the warranty and release us from any liability.

ABOUT THIS MANUAL

Before using the machine please read this manual attentively and follow the instructions contained in it. This will help avoid problems, possible injury and damage to the machine.

The manual is written for experienced, qualified personnel, who are familiar with health and safety laws and related regulations.

This manual is an integral part of the product and should be kept in a safe place so that it will be available for consultation during the life of the product. If the machine is sold the manual should be transferred to the new owner.

Some figures contained in this manual are designed to help identify certain parts and may not correspond to the machine in your possession.

☞ ***Notice:*** *the manufacturer may make improvements or modifications to the product or its accessories as described in this manual without updating the manual.*

HEADINGS USED IN THIS MANUAL

The headings used in this manual are designed to call your attention to potential hazards and important aspects of the operation of the machine…

DANGEROUS

Indìcates a strong possíbility of severe personal injury or death ìf ínstructions are not followed.

WARNING

Indìcates a possibìlìty of personal ínjury or equipment damage if ìnstructions are not followed

CAUTION

Indícates that equipment or property damage can result if instructions are not followed.

IMPORTANT

NOTE

ATTENTION

These headings give helpful information about the preparation, operation and care of the machine.

GENERAL SYMBOLS

STOP – Read with great attention

Read with attention

WRENCH **-** Use the correct tools for the type of work being done

WARNING SYMBOLS

ATTENTION - **If this advice is not followed people or things can be hurt or damaged.**

HIGH VOLTAGE **-** Do not touch – risk of injury or death.

FIRE **-** Risk of fire.

HEAT **-** Hot surfaces.

EXPLOSIVE **-** Explosive material or danger of explosion, in general.

NO WATER **-** *Do not use w*ater as it can cause shortcircuits or other damage.

NO SMOKING **-** Cigarettes, matches or lighters can start a fire or explosion.

ACIDS **-** Danger of corrosion or burns.

SAFETY SYMBOLS

Use the correct protective devices for the type of welding being done

Use protective clothing, etc. specifically designed for the type of welding being done.

Protect yourself when doing maintenance on the machine -

It is advisable to protect yourself when carrying out maintenance, such as filling the battery, refuelling, etc.

Pay attention to safety precautions when moving the machine

Refer to the instructions before moving the machine

Wear indicated safety clothing -

It is compulsory to wear the personal protection items shown when using the equipment.

Use required safety devices -

Safety devices suitable for the type of welding and the location of the job must be used.

Do not use water on electrical fires -

It is prohibited to use water to put our fires in electrical equipment.

Do not touch without having disconnected the electricity -

It is prohibited to work on the machine until the electricity has been turned off.

Welding prohibited -

It is forbidden to weld in areas containing explosive gases.

IMPORTANT

☞ Read and understand these instructions.
☞ Before installing, operating or servicing this equipment, read the operating manuals of the welder and of the engine.
☞ Not observing the information in the manuals can result in personal injury and/or damage to the equipment and other property.
☞ Respect all safety regulations and laws when operting this equipment.

WARNING

Do not remove or disable protective devices
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.

ENGINE FUELLING

⇒ Stop engine when fuelling.
⇒ Do not smoke, avoid open flames and sparks, and do not use electric tools when fueling.
⇒ Unscrew the fuel cap slowly to let out the fuel vapours.
⇒ Do not over-fill the tank.
⇒ Avoid spilling fuel on hot engine.
⇒ Wipe up spilled fuel before starting engine.
⇒ Shut off fuel cock, if present, or remove fuel from tank before moving machine

FOR BATTERY EQUIPPED UNITS ONLY

⇒ Sparks may cause the explosion of battery vapours

WATER COOLED ENGINES ONLY

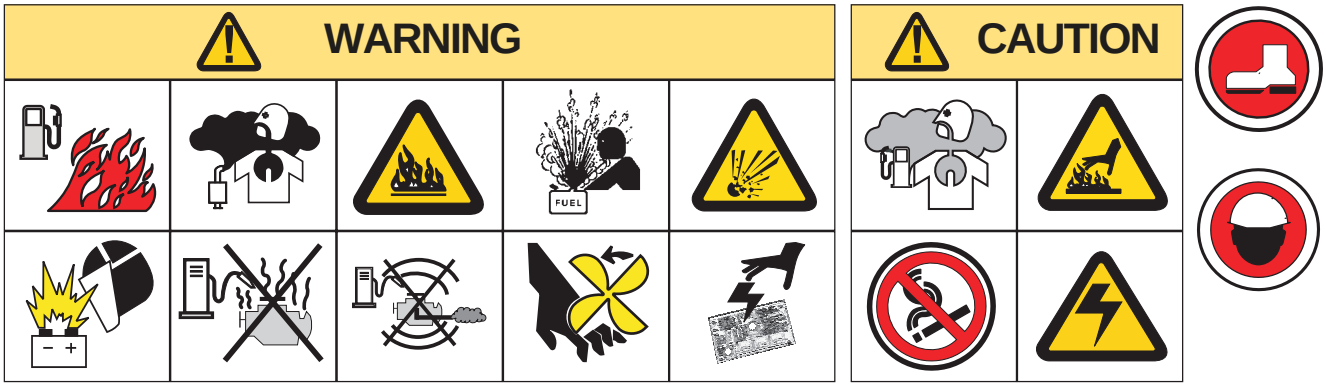
⇒ Slowly unscrew the cooling liquid cap of a hot engine to allow vapours to escape.
⇒ Hot vapor and heated cooling liquid under pressure can burn face, eyes, skin.

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

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

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

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



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

PRECAUTIONS

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.

- 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 flamable material away from the welding area.
- Do not weld on containers which contain flamable material.
- Do not weld near refuellng areas.
- Do not weld on easily flamable surfaces.
- Do not use the welder to defrost (thaw) pipes.
- Remove the electrode from the electrode holder, when not welding.
- Avoid inhaling fumes by providing a ventilation system or, if not possible, use an approved air breather.
- Do not work in closed areas where there is no fresh air flow.
- Protect face and eyes (protective mask with suitable dark lens and side screens), ears and body (non-flamable protective clothes).

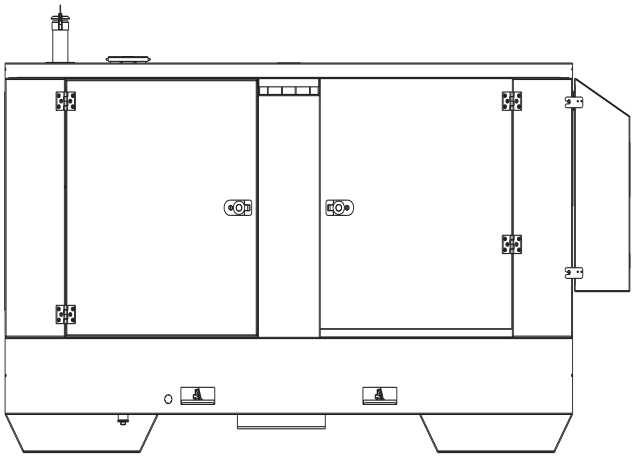
NOTE

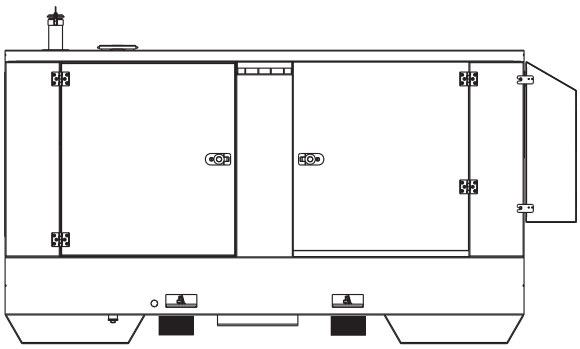
In case you have to move or transport or move the machine, follow the instructions as shown in the figures.
ransport the machine **without** petrol in the tank, **without** oil in the engine and **without** electrolyte in the battery.
e sure that the transportation devices are adequate for the si e and weight of the machine.

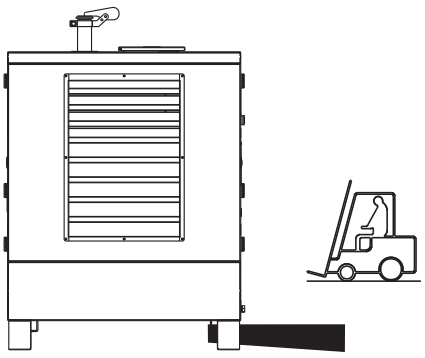
DO NOT TRANSPORT ACCESSORIES OR OTHER ITEMS WHICH COULD INCREASE THE WEIGHT AND/OR CHANGE THE CENTER OF GRAVITY OF THE MACHINE.
DO NOT DRAG THE MACHINE OR TOW IT ON PUBLIC ROADS UNLESS IT IS MOUNTED ON A HOMOLOGATED TRAILER.

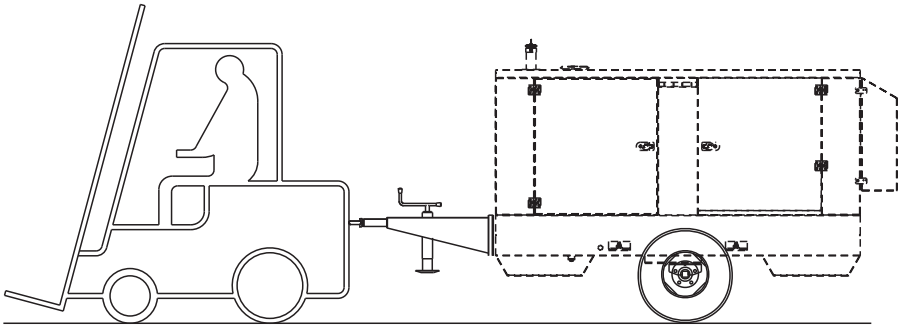
ot following these instructions could cause injury or damage to the machine.

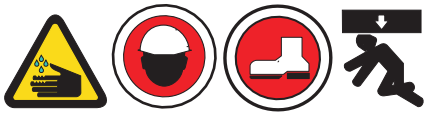
"CTL" SITE TOW
he machines provided for assembling the accessory slow towing trolley can be towed up to a **maximum** speed of **40 Kms/hour** on asphalted surfaces.
☞ owing on public roads or turnpikes of any type **IS EXCLUDED**, because **not** in possesion of the requirements by national and foreign traffic norms.











ES

ATTENTION

he 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.

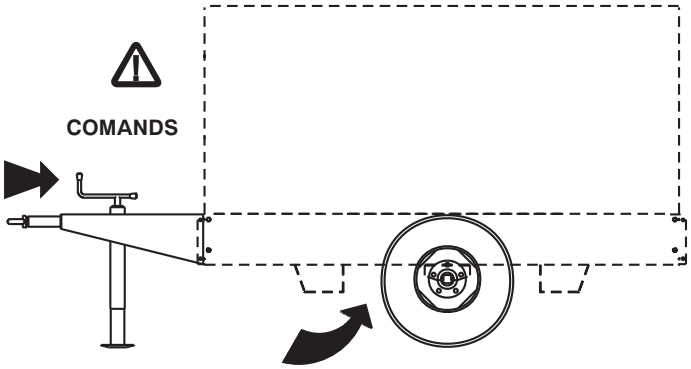
TRAILERS

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

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

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

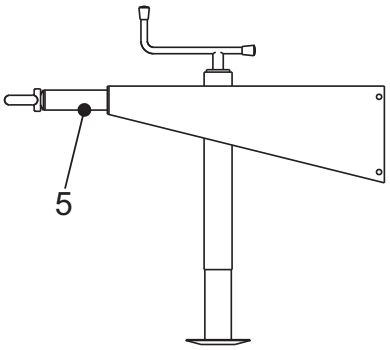
CTL 35
CTL 45



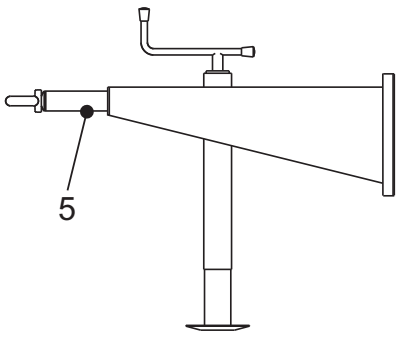
or assembling the generating set on the trolley please keep to following instructions

ift the generating set by means of suitable hook
ssemble on the machine the towbar complete of foot with the x , screws, nuts and washers.
ssemble the axle to the base of the machine with the x screws and relative washers two per part so that their supports coincide.
Insert the wheel on the axle then twist the selfblocking nut .
ump the tyre bringing the pressure to atms for the .
ower the machine to the ground and place the parking foot definitively regulating at the best height .

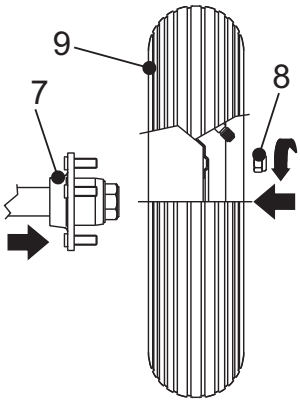
CTL 35



CTL 45



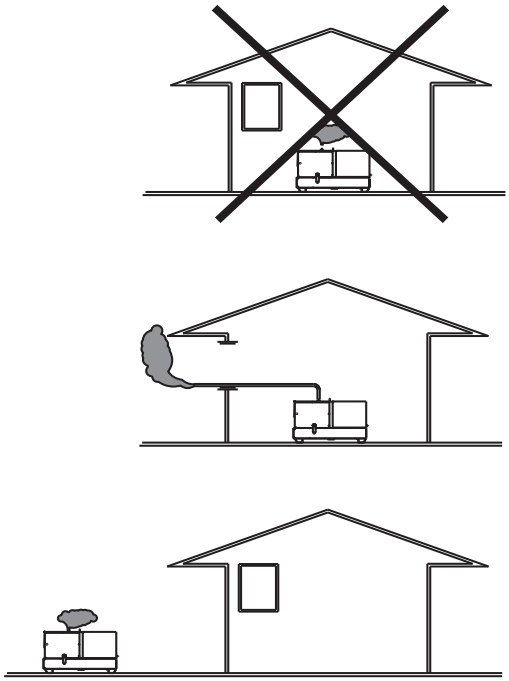
ATTENTION
Do not substituite the original tyres with other types.



ES

DIESEL ENGINES

· Use in open space with fresh air flow or vent exhaust gases far from the work area.



☞ Assure that the hot air and/or exhaust gas from the machine are vented and are not recirculated in the machine. Hot air and/or exhaust gas which is recirculated wll cause overheating of the machine and poor combustion in the engine

☞ Make sure that the machine does not move during operation.

MOVES OF T E MAC INE

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

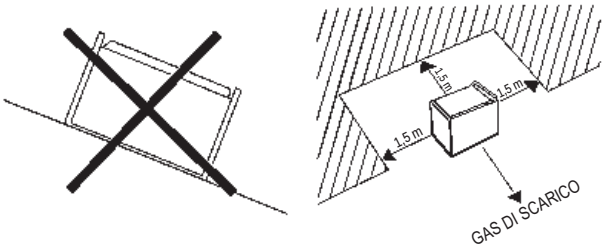
PLACE OF T E MAC INE

ATTENTION

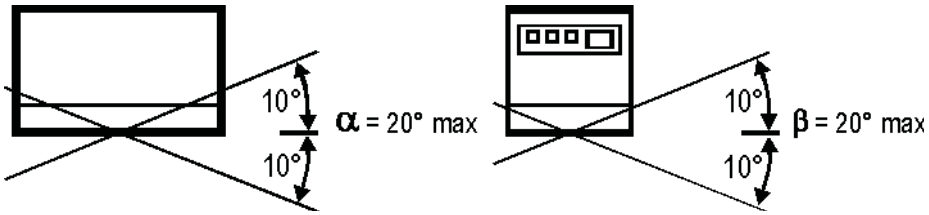
For a safer use from the operator **DO NOT** fit the machine in locations with high risk of flood.
Please do not use the machine in weather conditions which are beyond IP protection shown both in the data plate and on page named "technical data" in this same manual.

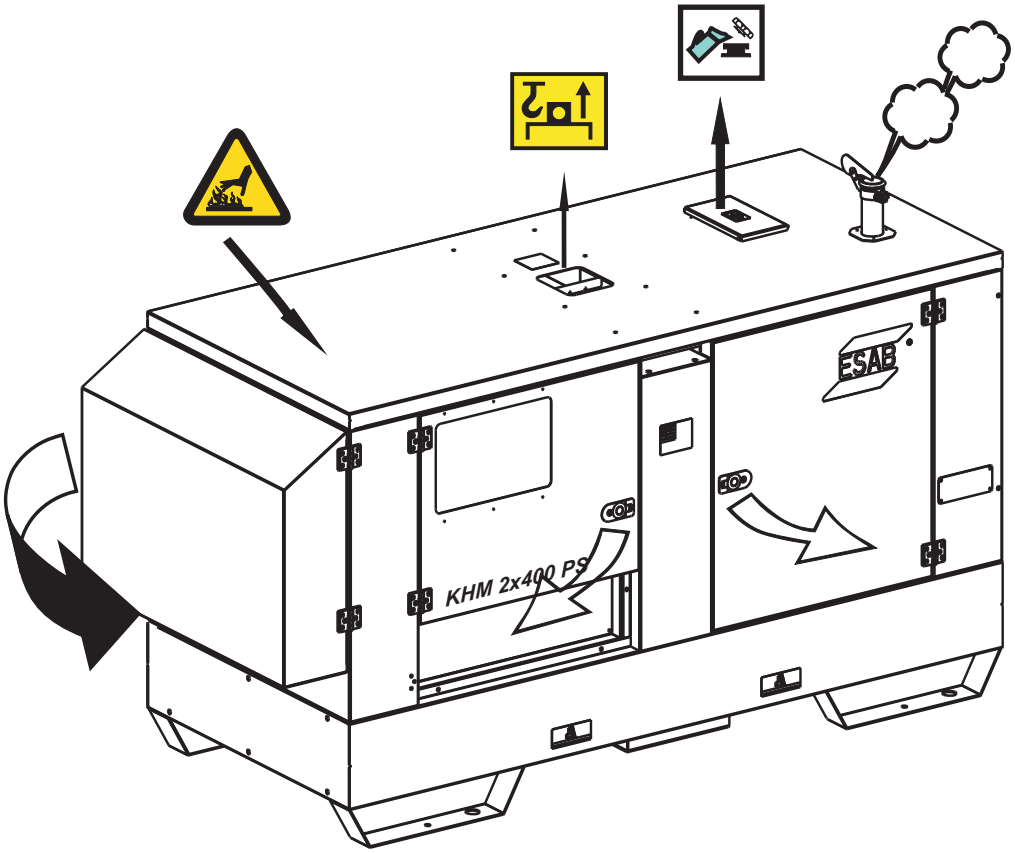
POSITIONING T E MAC INE

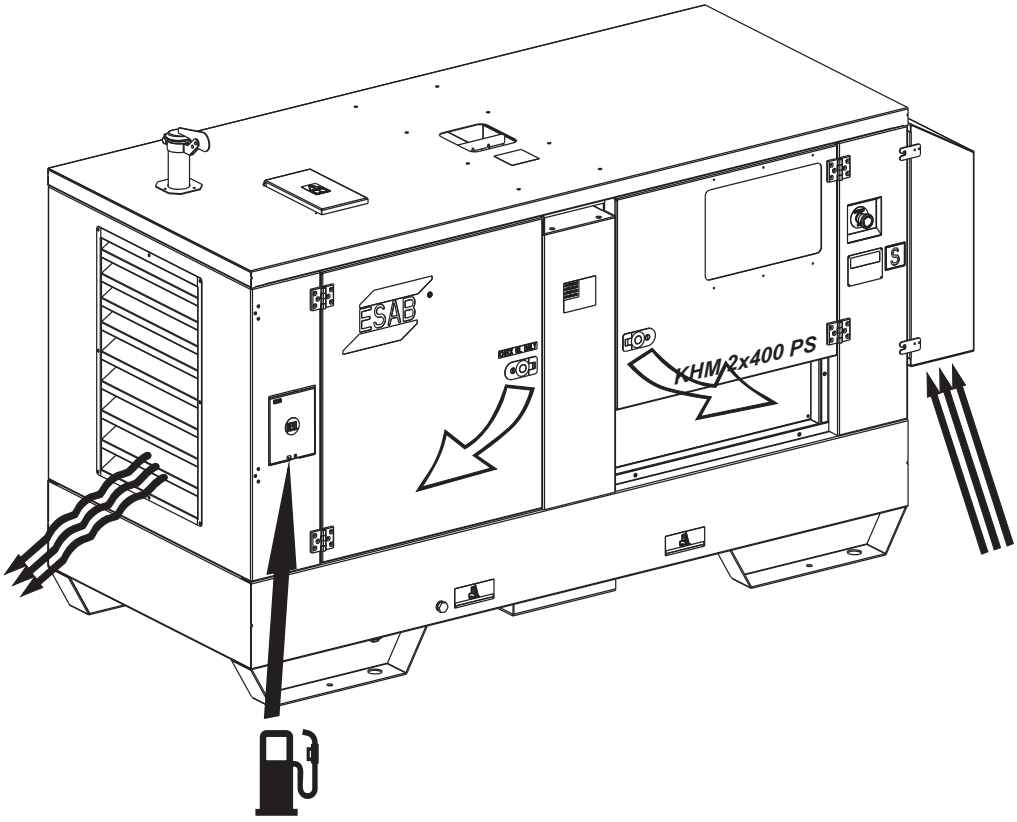
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other structures.



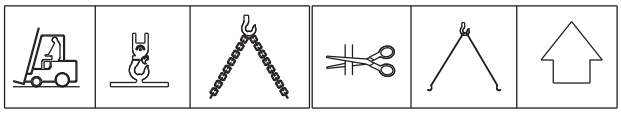
If the surface is not level be sure that the angle of the machine does not exceed the values shown in the drawings below.

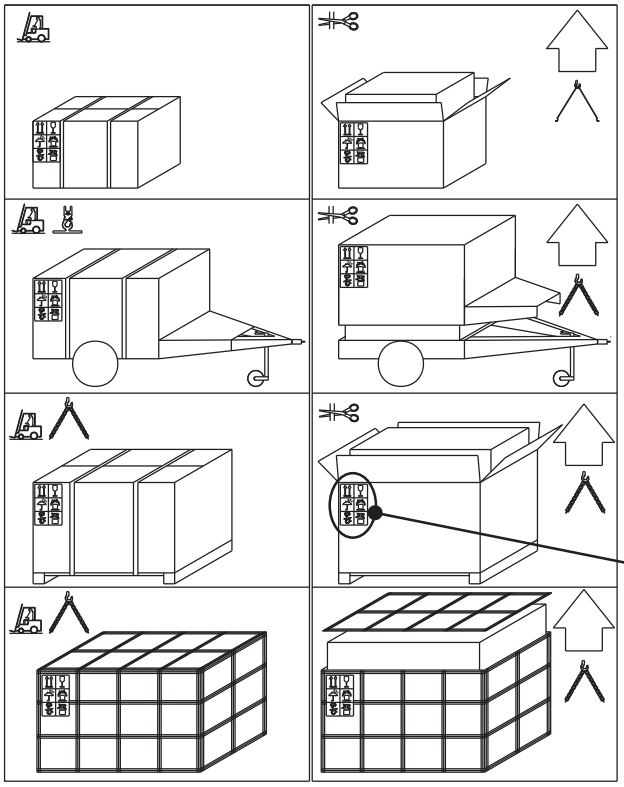


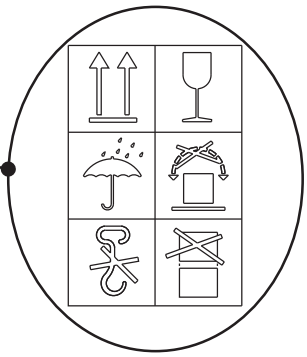

ESAB
KHM 2x400 PS


ESAB
KHM 2x400 PS

GENERAL PACKING INFORMATION



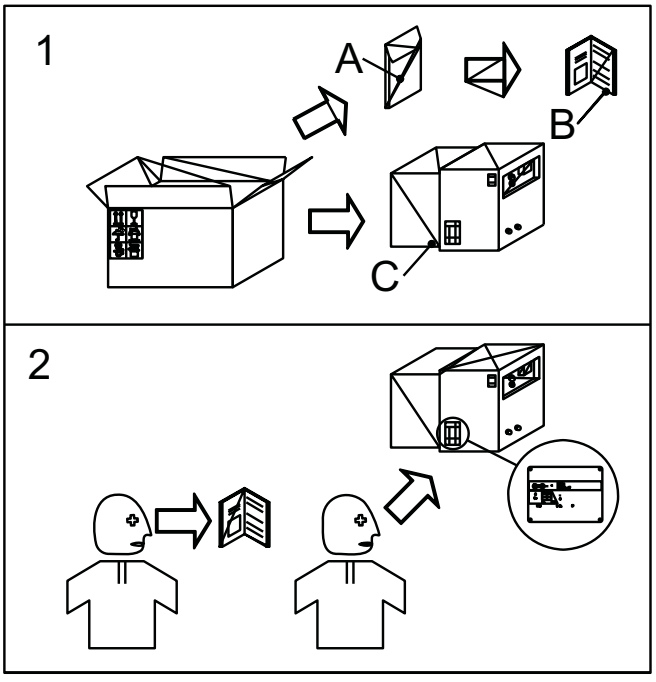




Upon receipt of the goods make sure that the product has not been damaged during transport.

In case of damage or missing items you must inform your freight forwarder immediately.

acking materials must be disposed of according to local regulations.



UNPAC ING T E MAC INE

ake the machine out of the carton. ocate the User s anual , which is packed together with the engine manual and accessories in a plastic envelope . his envelope may be under or inside the machine.

heck the rating plate on the machine and confirm that the serial number and model are the same as shown on the packing note invoice.

NB. or further information on preparing the unit for use refer to the related parts of this manual.

he H x engine driven welder is a unit which function as
a a current source for arc welding
b an electric auxiliary power generator
It is meant for industrial and professional use, powered by an internal combustion engine. It is composed of an engine, alternator, electric and electronic controls, and a protective housing.

Technical data	KHM 2x400 PS
GENERATOR	
Output three-phase	40 kVA / 400 V / 57.8 A
Output single-phase	20 kVA / 230 V / 87 A
Output single-phase	10 kVA / 110 V / 90.9 A
Frequency	50 Hz
Cos φ	0.8
ALTERNATOR	Self-excited, self-regulated, brushless
Type	three-phase, asynchronous
Insulating class	H
ENGINE	
Mark / Model	PERKINS / 1103C - 33TG3
Type / Cooling system	4-Stroke / Liquid
Cylinders / Displacement	3 / 3300 cm^3
Output max	45.6 kW (62.1 HP)
Speed	1500 rpm
Fuel / Fuel consumption (P.R.P.)	Diesel / 215 g/kWh
Cooling system capacity	10.2 l
Engine oil capacity	8.3 l
Starter	Electric
GENERAL SPECIFICATIONS	
Battery	12V - 100Ah
Tank capacity	102 l
Running time (at duty cycle 60%)	13 h
Protection	IP 44
Dimensions Lxwxh (mm) *	2490x1030x1300 (1480)
Weight *	1300 Kg
Measured acoustic power	93 LWA (68 dB(A) - 7m)
Guaranteed acoustic power	94 LWA (69 dB(A) - 7m)

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

POWER

Declared power according to IS temperature , relative humidity, altitude m above sea level .
It s admitted overload of each hour every h.
In an approximative way one reduces of every m altitude and of . for every above .

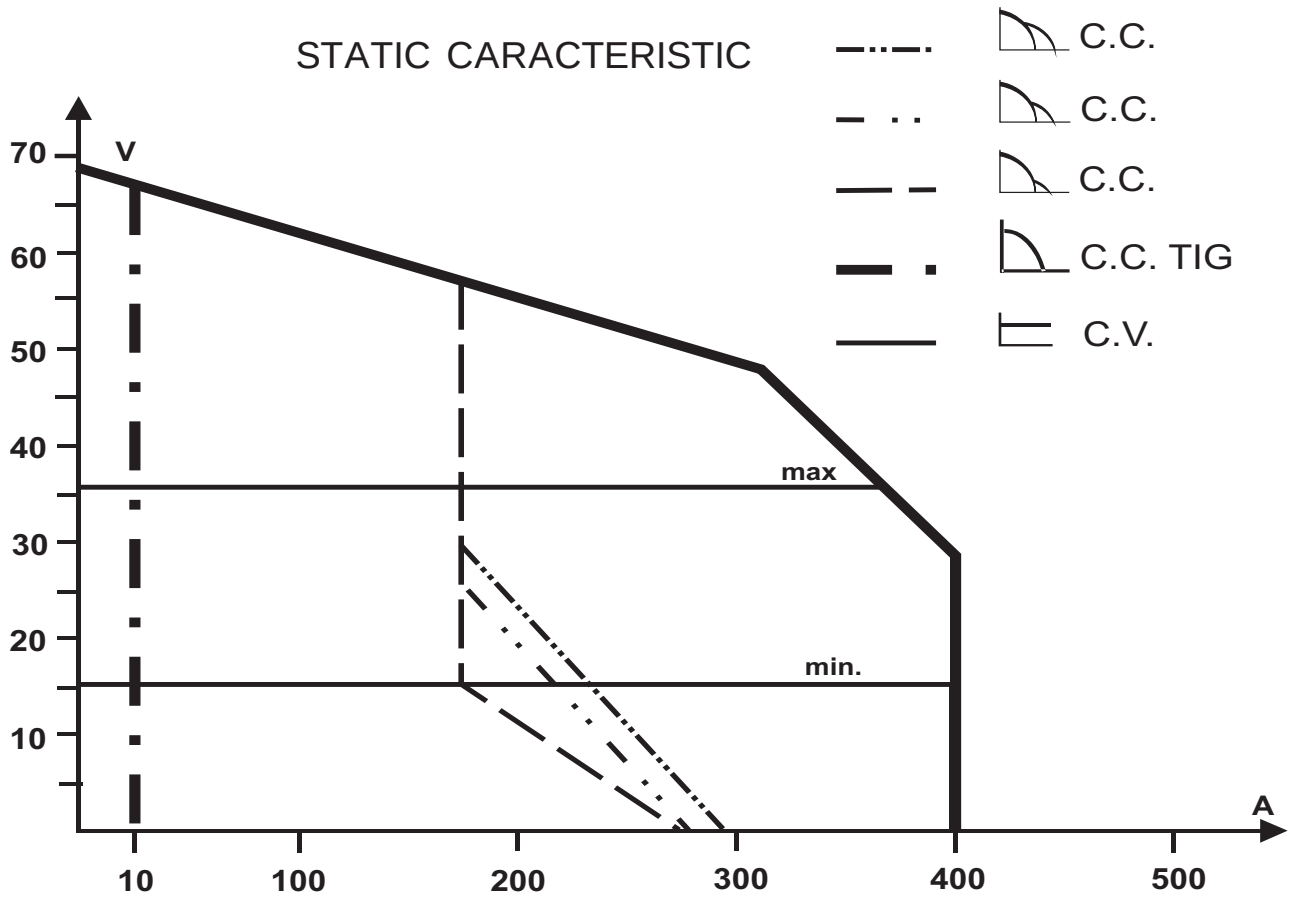
ACOUSTIC POWER LEVEL

ATTENTION: he concrete risk due to the machine depends on the conditions in which it is used. herefore, 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. .D. Individual rotection Device
Acoustic Noise Level (LWA) - Measure Unit dB(A): it stands for acoustic noise released in a certain delay of time. his 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.
he here below table shows examples of acoustic pressure p at different distances from a machine with coustic oise evel LWA of d

p a	meter	d	d	d	p a	meters	d	d	d
p a	meters	d	d	d	p a	meters	d	d	d

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

C.C. WELDING	
Welding current	2x400A/35% - 2x360A/60% - 2x330A/100%
Starting voltage	68V
C.V. WELDING	
Welding current	2x360A/60% - 2x330A/100%
Welding voltage	16 - 36V



SIMULTANEOUS UTILI ATION FACTORS

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

WELDING CURRENT SINGLE POSITION	400A	00A	200A	100A	0
AU ILIAR POWER	25kVA	0kVA	5 kVA	40 kVA	40 kVA

WELDING CURRENT DOUBLE POSITION	2x400A	2x 00A	2x200A	2x100A	0
AU ILIAR POWER	10kVA	20 kVA	0 kVA	40 kVA	40 kVA

BATTERY WITHOUT MAINTENANCE

onnect the cable positive to the pole positive of the battery after having taken away the protection , by properly tightening the clamp.
heck the state of the battery from the colour of the warning light which is in the upper part.

reen colour battery
lack colour battery to be recharged
hite colour battery to be replaced
DO NOT OPEN THE BATTERY.

LUBRICANT

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

If the air filter is of the oil bath type, fill it with the same oil up to the level indicated on the filter.

RECOMMENDED SAE VISCOSITY GRADES

or the type and viscosity of oil refer to owner s manual for the engine supplied with the machine .

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

FUEL

ill the tank with good quality diesel fuel.

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

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

COOLING LIQUID (Water-cooled engines only)

our the cooling liquid through the hole at the top of the radiator until it reaches the opening. or the type of cooling liquid to be used and for maintenance of the cooling system, refer to the engine manual.

GROUND CONNECTION

good ground is obligatory for all models with I ground fault interrupter E earth leakage circuit breaker . hese protective devices will not protect the operator unless there is a good ground.

☞ Use a good quality ground cable and connect it to the grounding point of the machine .
ollow all local rules and or regulations in force.

achines with Isometer protection do not need to be grounded.

nce the above operations have been completed, the machine can be used.

heck daily

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

STARTING THE ENGINE

1500 1 00 RPM ENGINES

hese engines start their normal operating speed.

IGNITION KE

he ignition key is a part of the E engine protection device and has three positions.

o start the engine introduce the key , turn it clockwise completely, leaving it as soon as the engine starts.

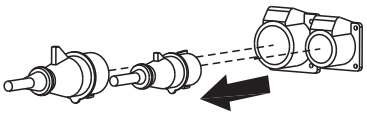
NB.: <u>for safety reason the key must be kept by ualified personel.</u>

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

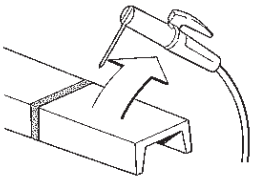
STOPPING THE ENGINE

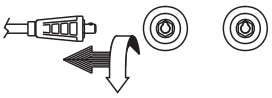
☞ efore stopping the engine <u>it is compulsory</u> to

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



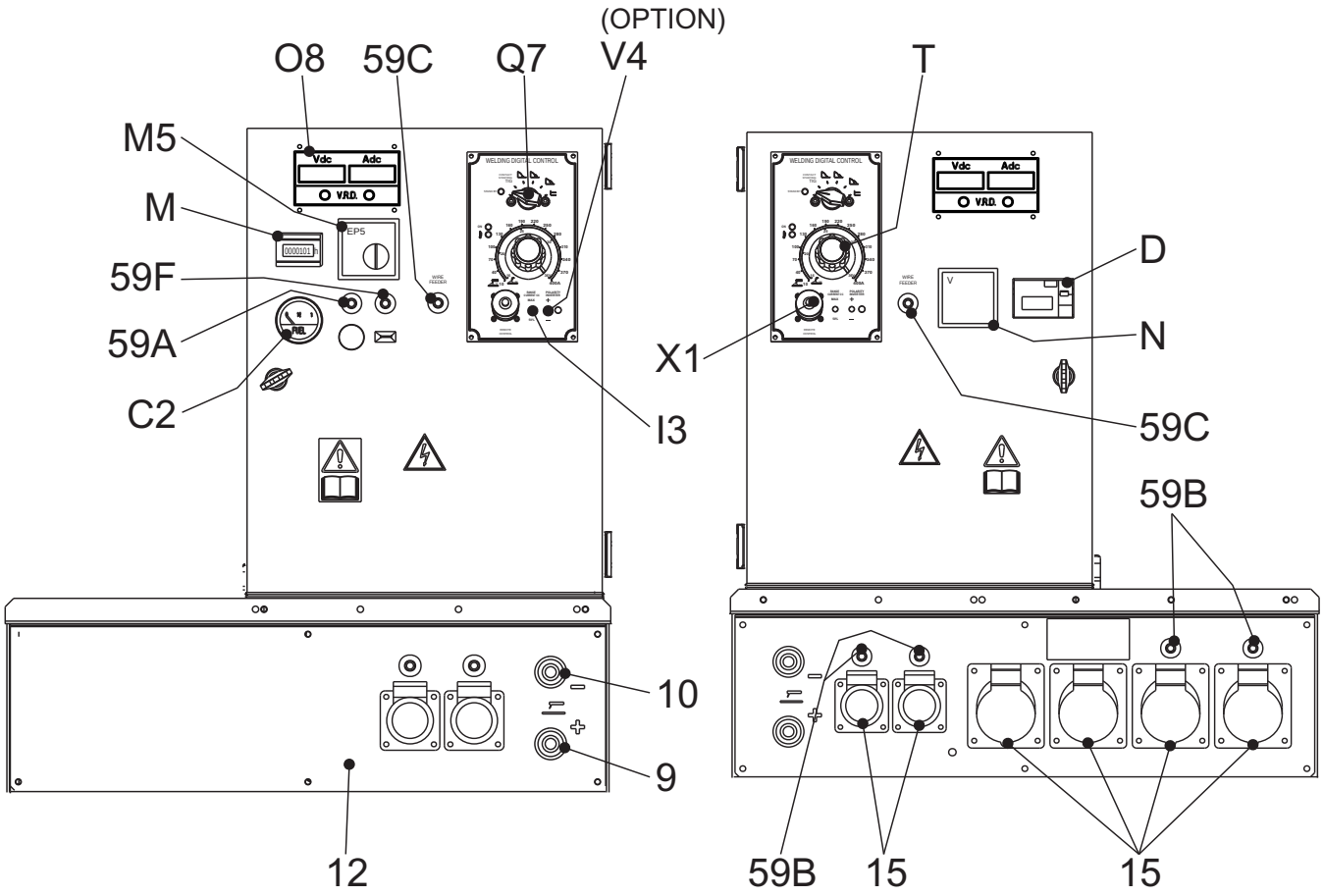
stop welding.





To stop the engine:

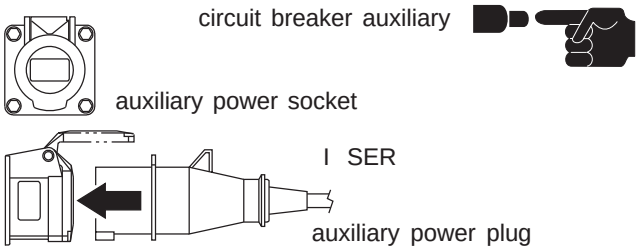
urn the starter key to the off position.



os.	Description	os.	Description
9	Welding socket (+)	O8	V/A digital instruments PCB and Led V.R.D. PCB
10	Welding socket (-)	Q7	Welding selector mode
12	Earth terminal	T	Welding current regulator
15	A.C. socket	V4	Polarity inverter control (Optional)
59A	Engine thermal switch	X1	Remote control socket
59B	Aux current thermal switch		
59C	Supply thermal switch wire feeder-42V		
59F	Fuel injection pump thermal switch		
C2	Fuel level gauge		
D	Ground fault interrupter (30 mA)		
I3	Welding scale switch		
M	Hour counter		
M5	Engine control unit EP5		
N	Voltmeter		

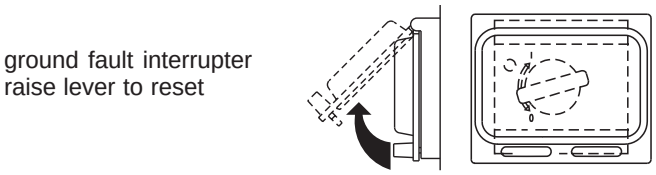
Auxiliary power outlets and thermal circuit breaker

he unit is equipped with auxiliary output sockets three phase and single phase. he voltages depend on the version selected. he three phase socket requires no protection as the asynchronous alternator protects itself. he single phase sockets are supplied with thermal circuit breakers which pop out when overloaded. fter they have been activated give them a short time to cool down before re inserting. If they continue to pop out check that the load is not too large for the output of the socket.



Ground fault interrupter

he ground fault interrupter protects the operator from injury in the event of a ground fault. If it is activated, raise the plastic cover and push the lever up to reset.



EP5 engine protection module and starter key

he engine protection module contains the starter key, an emergency stop switch and a set of ED s which show the status of the alarms. or a few seconds after the engine is started the shut down function is inhibited to allow the engine to start. he two thermal switches located below the module protect the starting system and the fuel injection pump thermal switch .

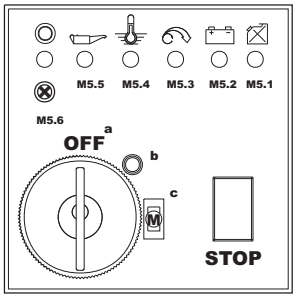
I I I E

he ignition key has three positions

a

b

c S R with automatic return



S U

Stops the engine at any time. ush the button until the engine stops.

ERS EED .

It signals the intervention of the overspeed protection.

he optical and acoustic signal is activated, and the engine stopped.

HI H E ER URE .

It signals, through the temperature sensor, a high temperature anomaly.

he optical and acoustic signal is activated, and the engine stopped.

heck the air inlets there must be no obstruction , the cooling liquid

if engine is water cooled , the oil level, etc....

I RESSURE .

It signals, through the pressure sensor, a low oil pressure anomaly.

he optical and acoustic signal is activated, and the engine stopped.

heck the oil level and, if it is correct, call the Service.

UE RESER E .

It signals the fuel running out, acoustically with the siren and optically,

without stopping the engine the signal lasts until the cause is eliminated .

ER H R E .

It signals a failure of the battery charge generator and therefore the battery charging.

he visual signal will last without stopping the engine, until the cause is eliminated.

U I .

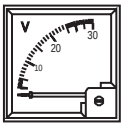
he signal shows that the device is working.

Instruments

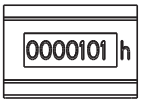
Standard instruments include a fuel level gauge, an operating hour counter and a voltmeter for the auxiliary power which shows the three phase voltage . If the voltmeter does not show any voltage check that the I ground fault interrupter is inserted. he voltage shown will vary depending on the load and the welding current being drawn. t no load and when not welding, the voltage can be as high as . he auxiliary power cannot be used when it drops below .

ptionally an ammeter and a voltmeter for the welding output are available.

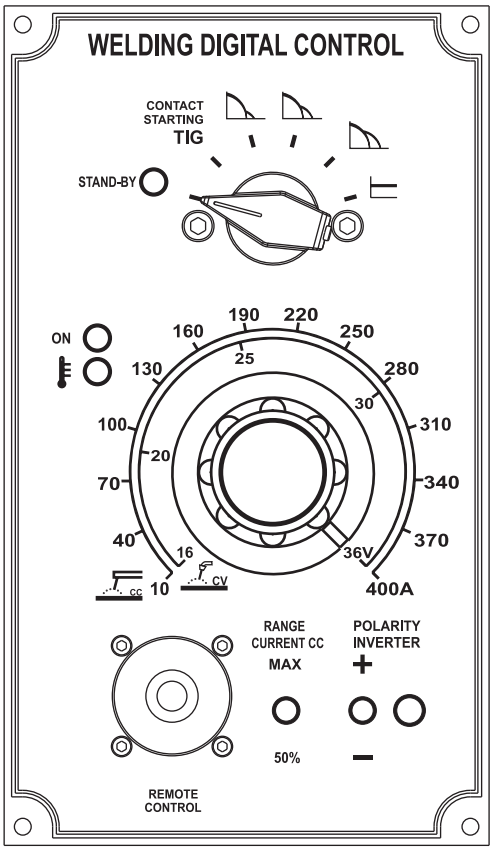
uel gauge



auxiliary power voltmeter



operating hours



GETTING STARTED

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

efore starting the engine please note the following

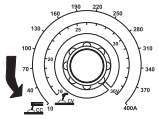
he welder should only be operated by qualified personnel with experience in working with engine driven welders.

heck the oil level daily. uel should be put in before starting the engine.

efore using the welder or the auxiliary power let the engine warm up and before stopping the engine let it run without load to cool down.

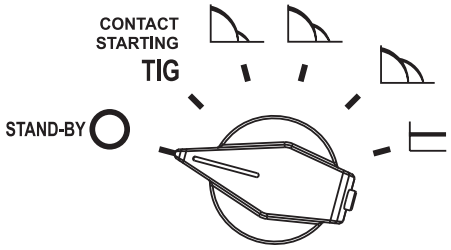
Refer to the following instructions regarding the function of the various controls on the front panel.

2) Start the engine of the welder



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

SETTING THE WELDING PROCESS



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

here are processes to choose from

for I welding

for S I welding electrode

for I welding continuous wire .

he switch can also be set to stand by first position . In this position there is no current at the welding connections led off.

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

fter selecting the mode, the ED lights up. If the wirefeeder connector is connected on remote control connector the ED light only when the button torch is pressed.

TIG MODE

ontact starting I

his position is specifically for I welding. o create the arc simply place the tip of the I electrode on the piece that requires welding then gently move the tip away. he arc starts automatically and at the same time the welding current rises to the preset value, first using the welding current adjustment knob which is on the lower part of the control panel.

he welding current can be adjusted continuously from a minimum of to a maximum which depends on the power of the machine , , .

WARNING

or E version it is compulsory to accelerate the engine manually.

STICK MODE (Electrode)

eatures . . onstant urrent

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

MIG/MAG MODE (continuous wire)

eatures . . onstant oltage

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

he voltage can be adjusted using the same knob which adjusts the current in S I mode.

djustment is continuous and goes from a minimum of to a maximum of , .

Optional remote control

he welding current can also be set from a distance using the optional remote control. nce the remote control is connected to the connector , the current is controlled by the remote control. o return to front panel control remove the connector.

Optional VRD program oltage Reduction Device RD

hen you choose the program stick or stick arc force the pen ircuit oltage go up, red light switch and green light switch , bat only for about , than the go down, green light switch on and red light switch , about and stop there, until the welder start welding.

hen you make a short circuit with the stick the immediately go up, so you can start to welding.

RD don t work with the program I .

Inversion of polarity (Optional, available on request)

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

y selecting inversion the ED switches off and the voltage at the welding socket becomes ero. he power contactor is witched inside the electrical box and the voltage reappears at the welding sockets. he ED switches back on at the same time.

he Invert polarity ED on the front panel near the welding current adjuster switches on .

ou cannot invert polarity in **"MIG/MAG"** mode.

PROTECTIONS

he elding Digital ontrol features protections for the control and chopper.

1) "ON" LED blinking

ON hen the engine of the welder is started the control unit automatically goes to the stand by mode for few istants stand by ED on and performs a self diagnosis of the current sensor connector and power source voltage than the last process is loaded on led turned .

In case of malfunction the **"ON" LED** blinks.

2) Red LED blinking

he chopper has a thermal protection, which intervenes in case the operating temperature exceeds .

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

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

3) Red LED continuously lit

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

If the protections and should intervene, it is best to immediately contact the nearest authorised Service entre.

DIGITAL INSTRUMENTS

wo digital instruments showed the operating value of welding current and welding voltage.

D

WIRE FEEDER CONNECTED WITH REMOTE CONTROL CONNECTOR

Wire feeder connection

onnect the wire feeder to the welder with the welder turned off

elding cable between the machine s welding plug and the wire feeder.

elding cable between the machine s welding plug and the piece to be welded.

ontrol power cable between the machine s connector and the corresponding connector on the wire feeder.

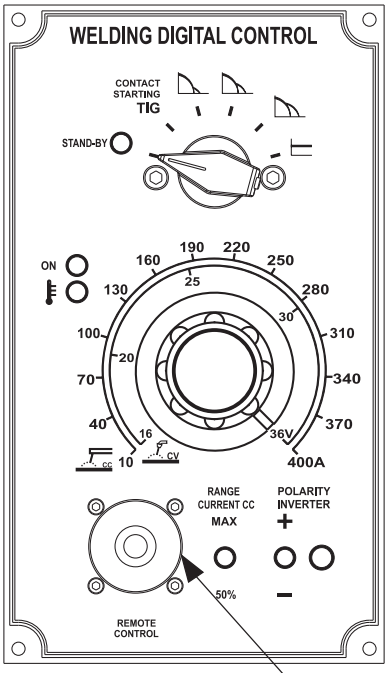
Start the machine welder

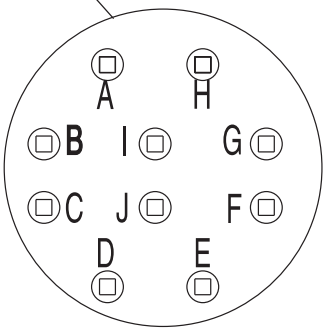
he ED will be off and will turn on only when there is voltage at the welding plugs and therefore at the wire .

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

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

he adjusting knob on the welder is automatically inhibited.





WARNING

ou can use the wire feeder only by respecting the pin configuration as shown on the below mentioned table.

“WIRE FEEDER NOT CONNECTED WITH REMOTE CONTROL CONNECTOR”

elding voltage is always present on welding sockets and also RD is active.

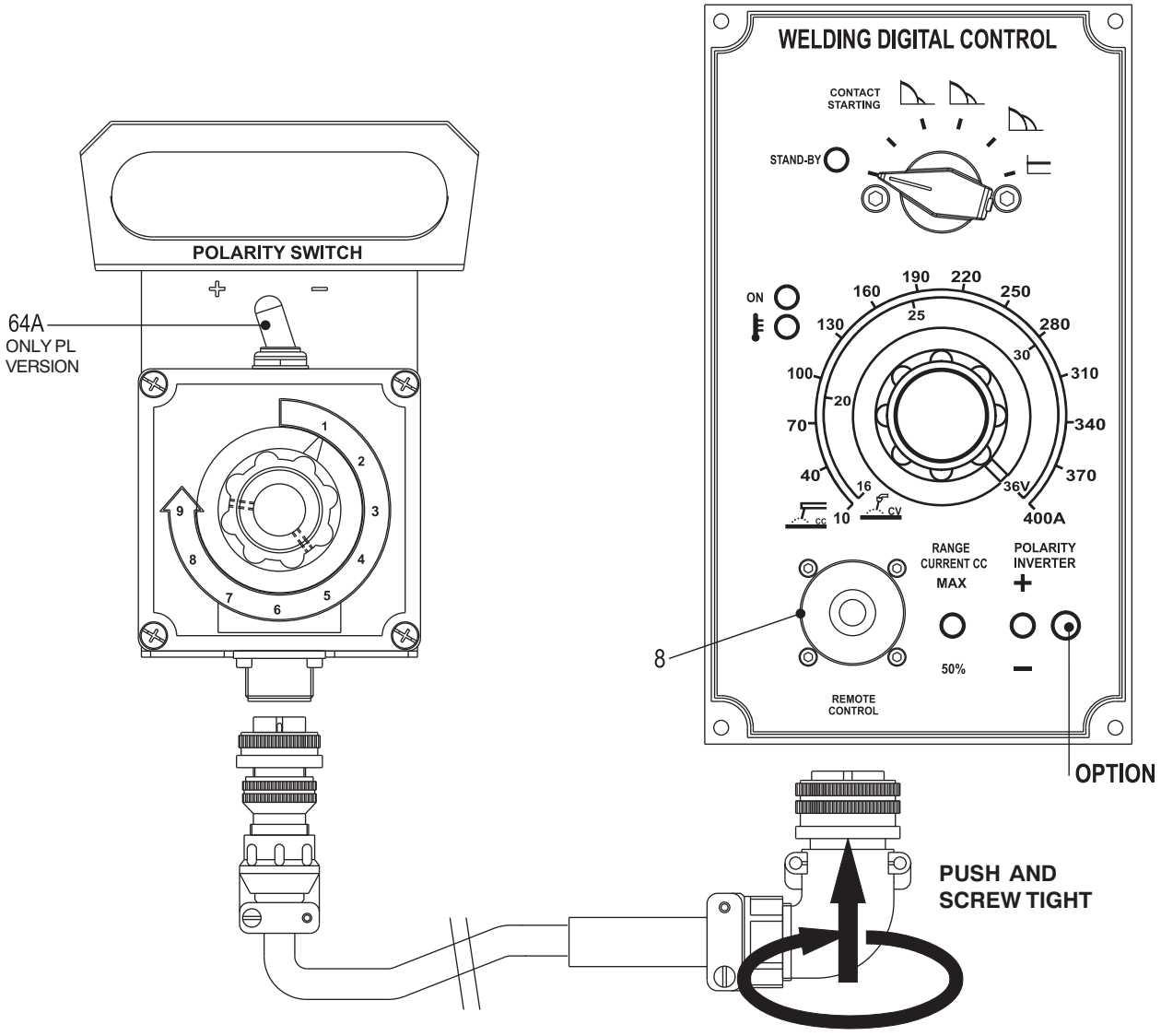
elding cable between the machine s welding plug and the wire feeder.

elding cable between the machine s welding plug and the piece to be welded.

he setting of the welding voltage is done by using the knob on the front panel.

NAME OF CONTACT	DESCRIPTION
electric ground	o potentiometer R terminal a
	o potentiometer R central b
d.c.	o potentiometer R terminal c
D	short circuit with contact
E d.c.	o switch olarity Inverter lose for negative polarity
	Return from switch on welding gun, phase a.c.
H welding ground	elding ground for d.c. voltmeter on wire feeder
I a.c. a.c.	oltage supply for wire feeder

D



The remote control PHG1A, which regulates the welding current in the CC (STICK welding) mode and the welding voltage in the CV (MIG/MAG welding) mode, is connected to the front panel by means of a multipole connector.

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

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

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

ATTENTION

When the PHG1A is not used, it is necessary to disconnect the multipole connector

⚠ WARNING

- Have **ali ied** 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, **ay 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 authori ed.

MOVING PARTS can in re

HOT s r ace can rt yo

MAINTENANCE OF THE MACHINE

aintenance refers to all operations regarding the control and replacement of mechanical and electrical parts subject to wear. In addition it refers to the control and topping up or replacement of fluids such as fuel, and the regular cleaning of the machine.

Repairs refers to the substitution of worn or damaged parts and repairs should be carried out by uthori ed Service enters.

Refer to the Engine anufacturer s anual for the maintenance instructions for the engine. eriodic maintenance should be performed according to the schedule shown in this manual.

n a regular basis check that there are no obstructions in the aspiration exhaust ducts of the alternator, the engine or the housing which could restrict the flow of cooling air.

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

DRY AIR FILTER

Replace the air filter cartridge every 200 hours under normal conditions and every 100 hours in dusty environents.

RADIATOR

Check the liquid level in the radiator regularly and refill as required. In the fall check the amount of antifreeze and add required to prevent freezing during the winter months.

ASYNCHRONOUS ALTERNATOR

No maintenance is necessary, as the alternator has no brushes or slip rings, and there are no devices for regulation of the output.

WARNING LABELS AND DECALS

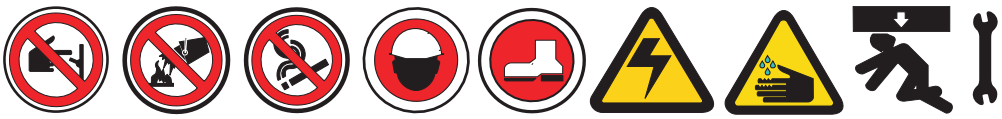
Check warning labels and decals once a year and replaced if missing or unreadable.

CABLES AND CONNECTIONS

Periodically check the condition of the cables and tighten the connections.

IMPORTANT

When carrying out maintenance operations be careful to avoid polluting the environment with the materials used during maintenance. Follow all local health and safety regulations.



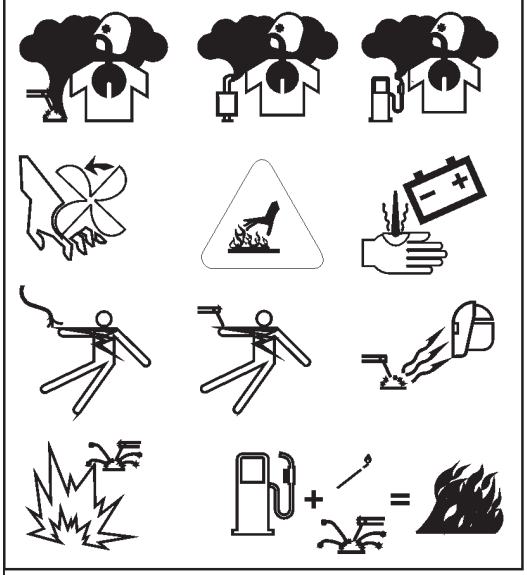
IMPORTANT

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 to rotating parts and hot surfaces 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.

WARNING



ARC WELDING SAFETY PRECAUTIONS

WARNING: PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH

FUMES AND GASES CAN BE DANGEROUS
Use ventilator or exhaust to system remove fumes from breathing zone.

FOR ENGINE POWERED EQUIPMENT
Moving parts can injure.
Hot surface can hurt you.

BATTERY
Sulfuric acid is corrosive; protect hands, eyes and clothes, etc.

ELECTRIC SHOCK CAN KILL
Do not touch electrically live parts or electrodes with skin or wet clothing.
Insulate youself from work and ground.
Always wear dry insulating gloves.

ARC RAYS CAN BURN
NOISE CAN DAMAGE HEARING
Wear eyes, ear and body protection

WELDING SPARKS CAN CAUSE FIRE OR EXPLOSION
Keep flammable material away
Do not weld containers which have held flammable materials.

DIESEL IS VERY FLAMMABLE

PERIODICAL MAINTENANCE

TYPE OF MAINTENANCE / TIME PERIOD			EVERY DAY	EVERY 100 HOURS	EVERY 150 HOURS	EVERY 300 HOURS	EVERY 500 HOURS	EVERY 1000 HOURS	EVERY 2000 HOURS
CHECK	Air filter condition		●						
	Crankcase oil level		●						
	Battery electrolyte level			●					
	Amount of coolant		●						
	Belt - Fan and fan belt		●		●				
	Tighten nuts and bolts					●			
	Valves, rocker arms						●		
	Injector regulation								●
	Water in the fuel pre-filter		●						
CLEANING	Filters	Dry air filter		●					
		Fuel pump filter		●					
	Radiator	Air passages	●				●		
		Fan	●						
	Injectors						●		
	Fuel tank							●	
REPLACEMENT	Change oil	Crankcase (1)			●				
	Cartridge	Dry air filter					●		
		Fuel filter				●			
		Oil filter (1)				●			
	Brushes, starter motor								●
	Fan belt								●

1) Replace oil and oil filter after the first 50 working hours.

Note: 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. Check condition of cables and connections daily!

For detailed maintenance instructions refer to manuals.

In case the machine will not be used for more than days, it should be stored in a suitable area where it is protected from the elements to prevent rusting, corrosion and other damage to the machine.

DIESEL ENGINES

If the machine will be stored for short periods of time it is advisable to start the engine every days and operate it for minutes under load. his will distribute the oil, recharge the battery and prevent blockage of the injection system.

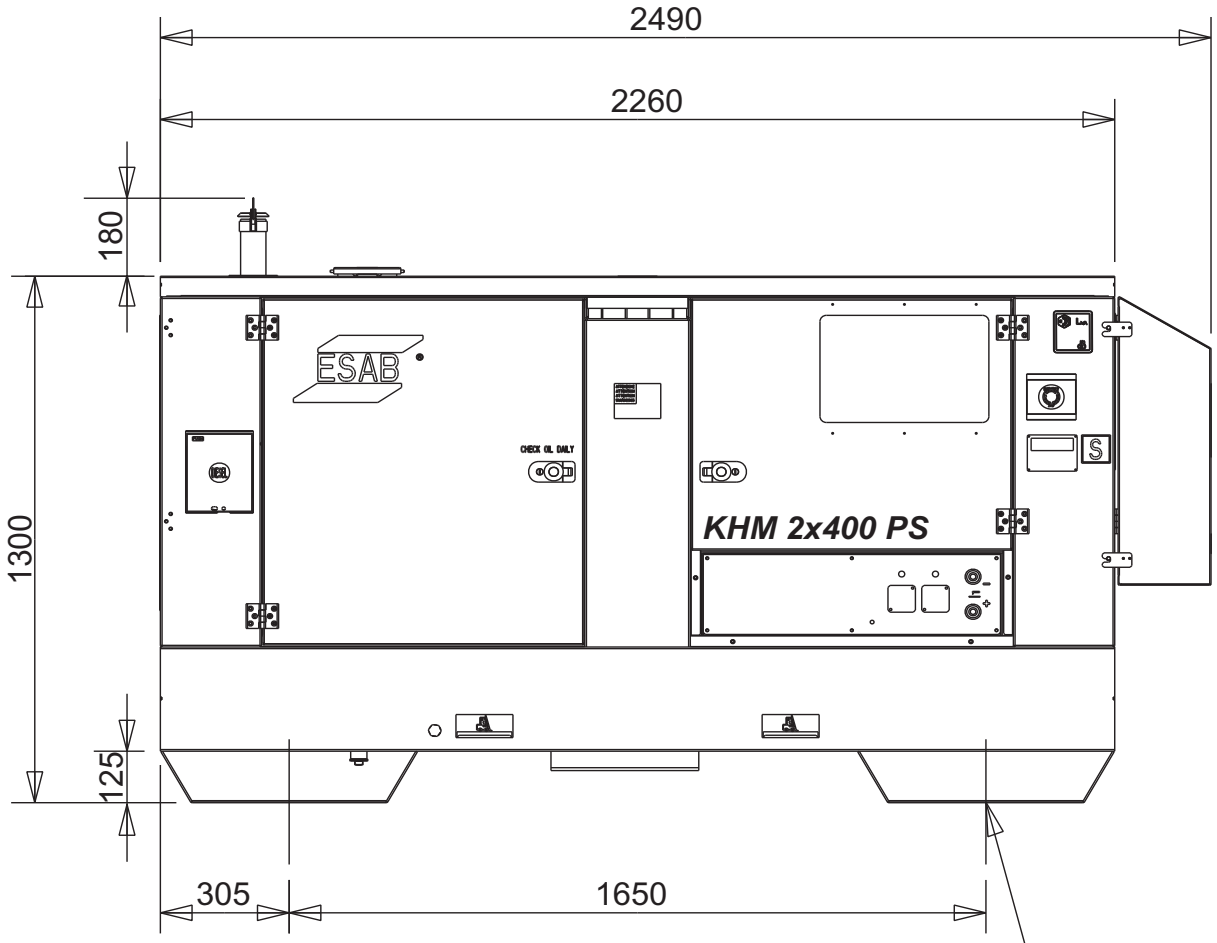
or long periods of storage, refer to the engine manufacturer s manual.

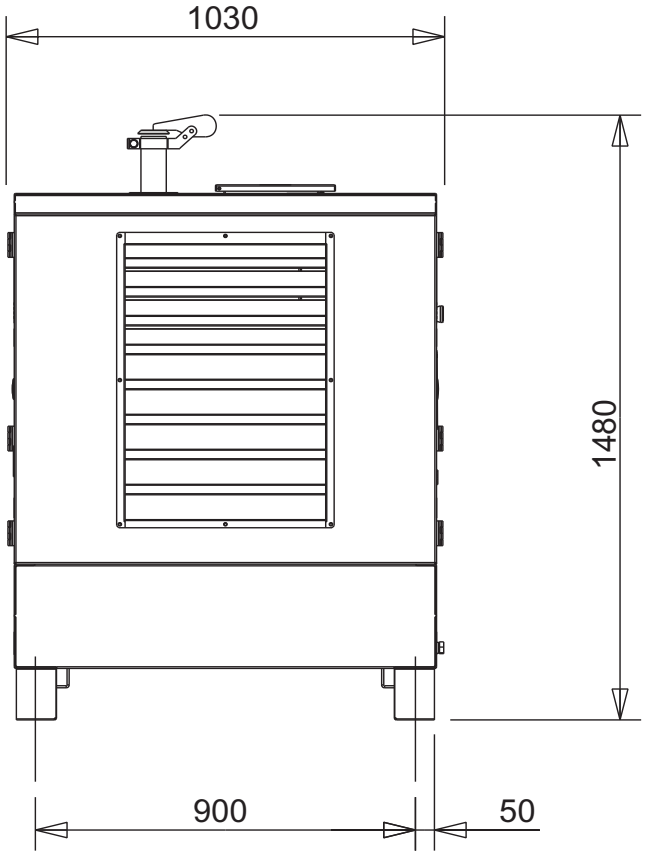
lean the machine carefully.

over the machine with a plastic cover and store in a dry place.

IMPORTANT

en n out t e o e t ons to e e t e ne o sto e e e u to o o ut n t e en on ent w t t e te s use u n nten n e o ow o e t n s et e u t ons


2490
2260
180
1300
125
305
1650
ESAB
CHEX OIL DAILY
KHM 2x400 PS
n°4 fori ∅16


1030
1480
900
50

E

E

C

Запасные части можно заказать у ближайшего к Вам представителя фирмы E смотри обратную сторону обложки
Для упрощения отправки и гарантии правильности запросов в момент заказа запчастей необходимо уточнить тип машины и заводской номер а также указать наименование и код запасной части по таблице запчастей

E E

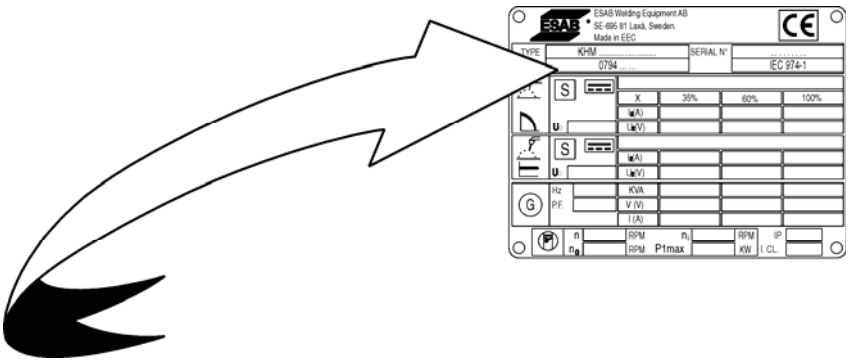
E

E E

E

E

C



P P **При заказе запасных частей указать**
E

1 ✹ заводской номер

2 ✹ / / модель сварочного агрегата и/или генератора
/

◆ страницу для ссылки

количество

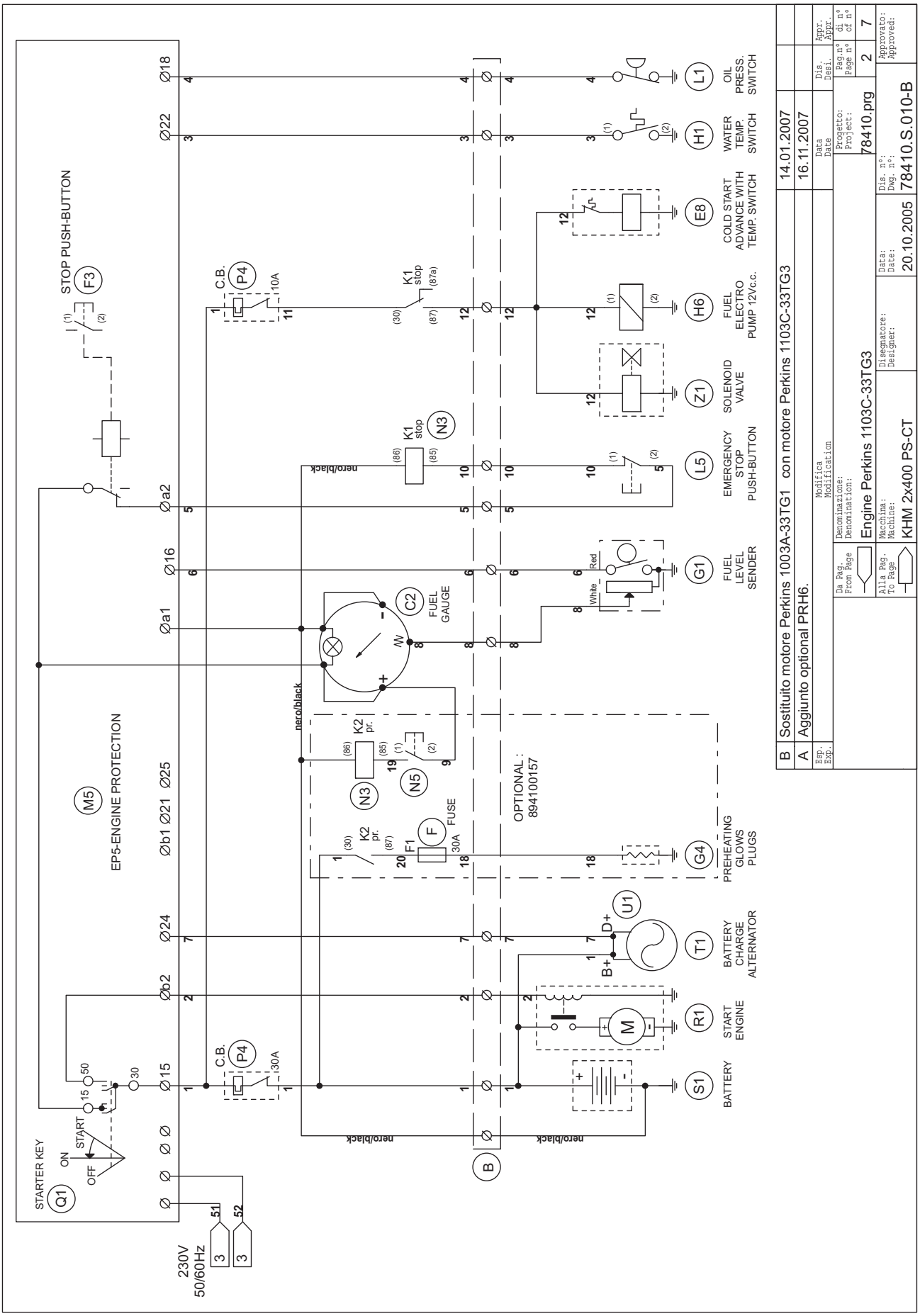
☞ ✹

✹
✹ требуемые данные приведены на табличке с паспортными данными машины
✹

✹

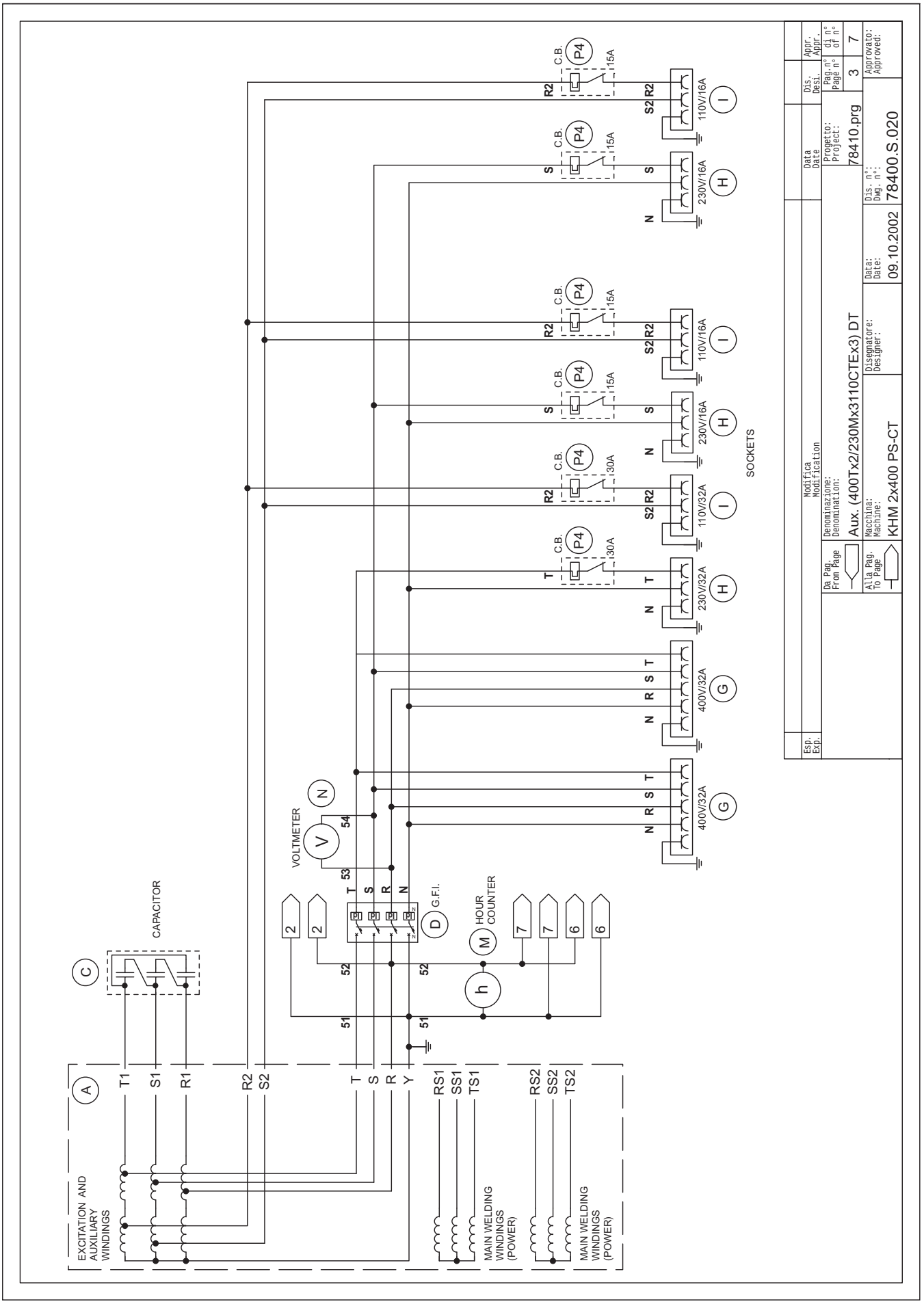
✹

25/11/02 ESABR1-E-I-RUS-D-GB-F



B	Sostituito motore Perkins 1003A-33TG1 con motore Perkins 1103C-33TG3	14.01.2007	
A	Aggiunto optional PRH6.	16.11.2007	
Bsp. Exp.	Modifica Modification	Data Date	Dis. Desi. / Appr. Appr.

Da Pag. / From Page
Alla Pag. / To Page
Denominazione: / Denomination: Engine Perkins 1103C-33TG3
Macchina: / Machine: KHM 2x400 PS-CT
Disegnatore: / Designer:
Data: / Date: 20.10.2005
Progetto: / Project: 78410.prg
Pag n° / Page n° 2 di n° / of n° 7
Dis. n° / Dwg. n°: 78410.S.010-B
Approvato: / Approved:


EXCITATION AND AUXILIARY WINDINGS
MAIN WELDING WINDINGS (POWER)
MAIN WELDING WINDINGS (POWER)
CAPACITOR
VOLTMETER
G.F.I.
HOUR COUNTER
SOCKETS
400V/32A
230V/32A
110V/32A
230V/16A
110V/16A
C.B.
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Modification
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Macchina:
Machine:
KHM 2x400 PS-CT
Disegnatore:
Designer:
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78400.S.020
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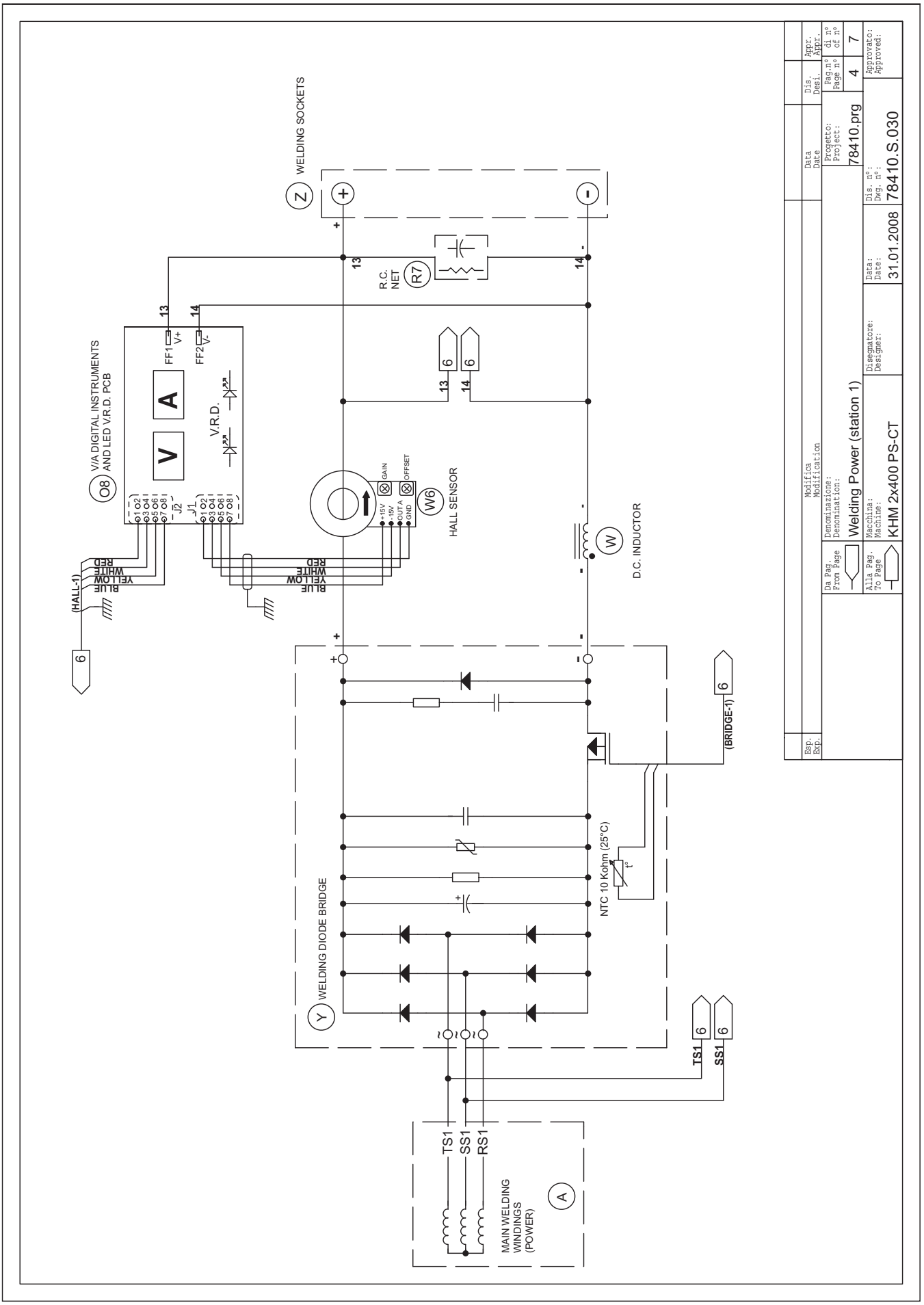
WELDING SOCKETS
Z
+
-
13
14
R.C. NET
R7
V/A DIGITAL INSTRUMENTS AND LED V.R.D. PCB
O8
FF1 V+
FF2 V-
V
A
V.R.D.
J1
J2
HALL SENSOR
W6
GAIN
OFFSET
+15V
-15V
OUT A
GND
D.C. INDUCTOR
W
(HALL-1)
BLUE
YELLOW
WHITE
RED
6
(BRIDGE-1)
WELDING DIODE BRIDGE
Y
NTC 10 Kohm (25°C)
TS1
SS1
RS1
MAIN WELDING WINDINGS (POWER)
A
Modifica
Modification
Data
Date
Dis.
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Appr.
Appr.
Denominazione:
Denomination:
Welding Power (station 1)
Progetto:
Project:
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To Page
Macchina:
Machine:
KHM 2x400 PS-CT
Disegnatore:
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Data:
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31.01.2008
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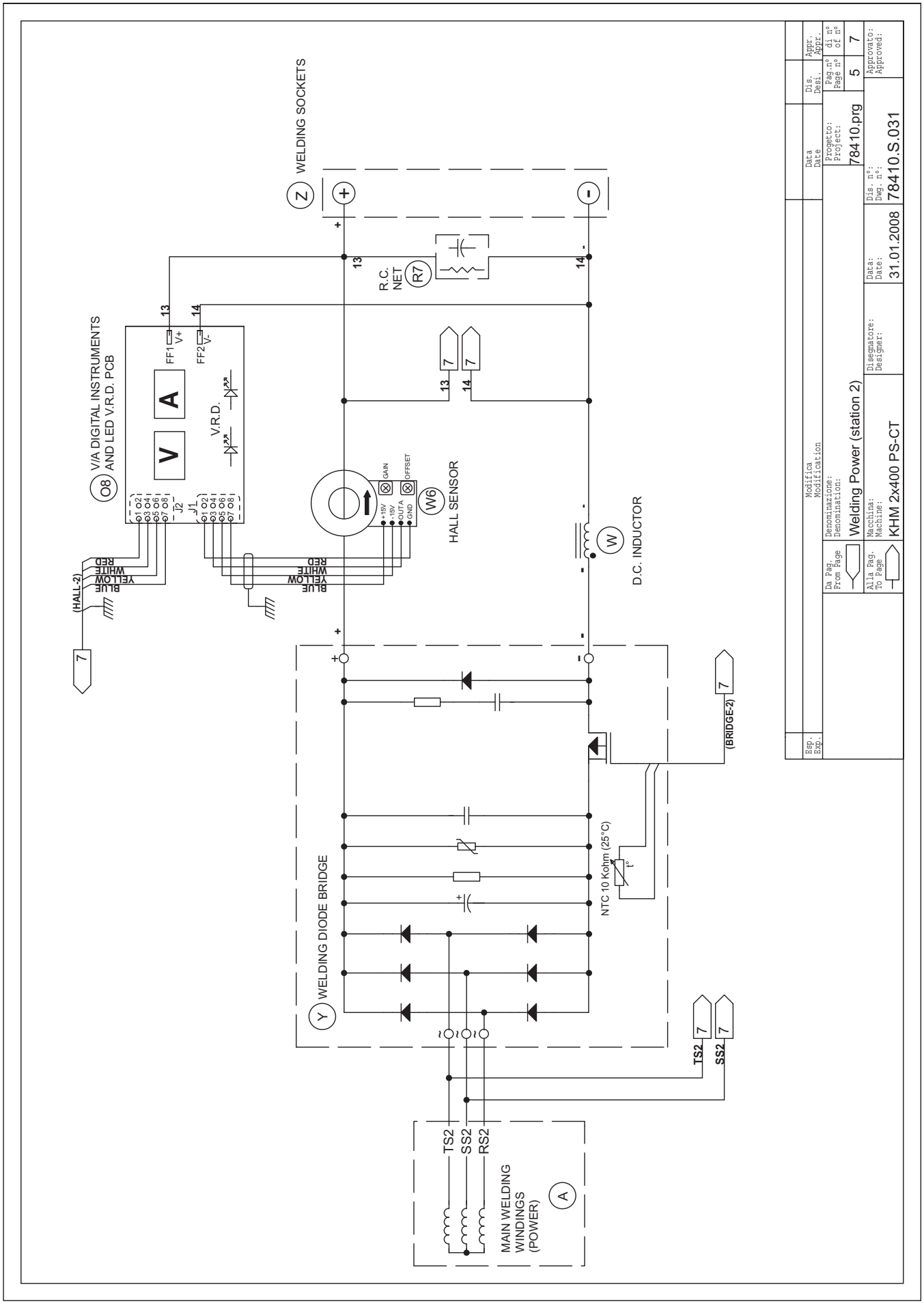
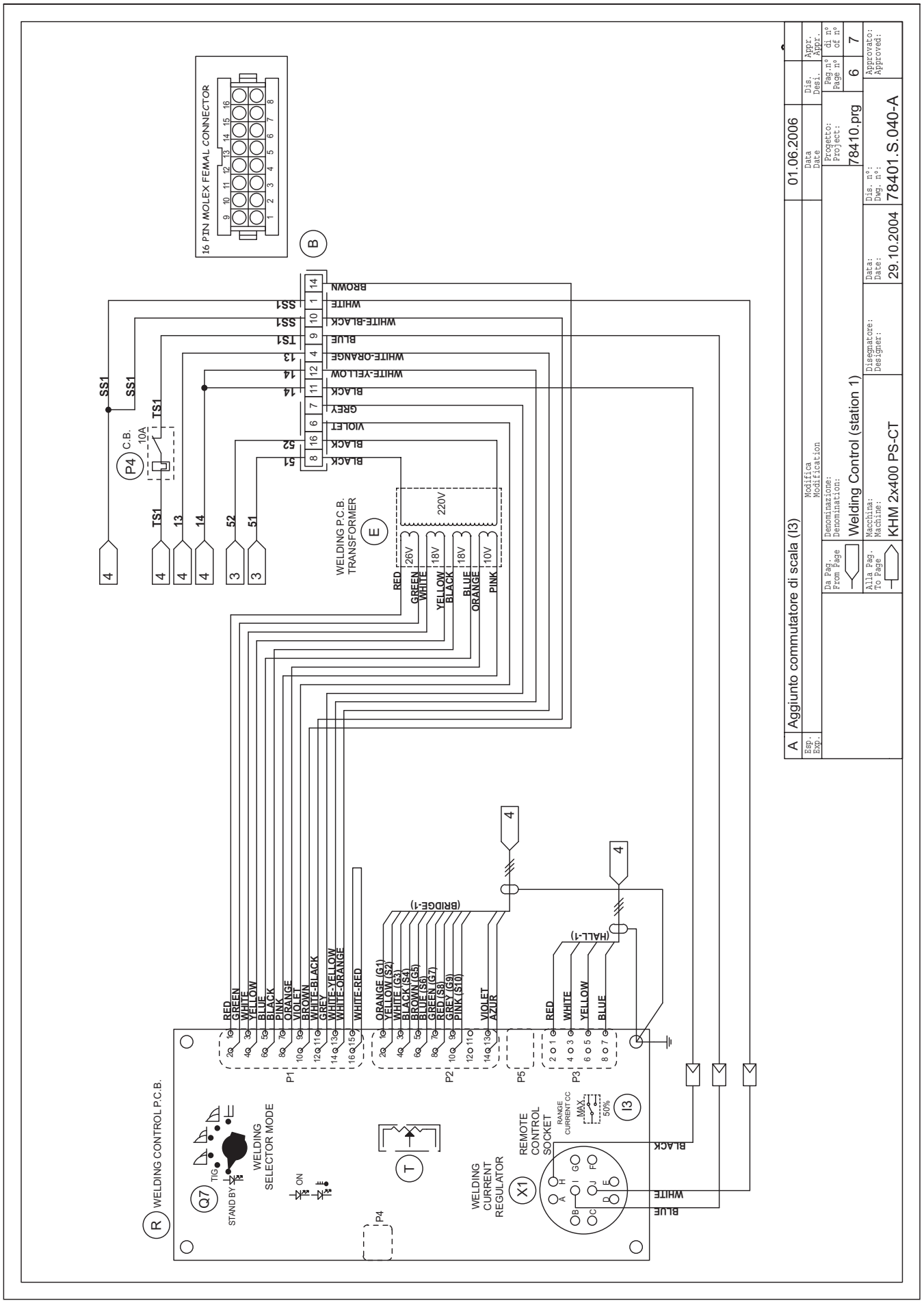
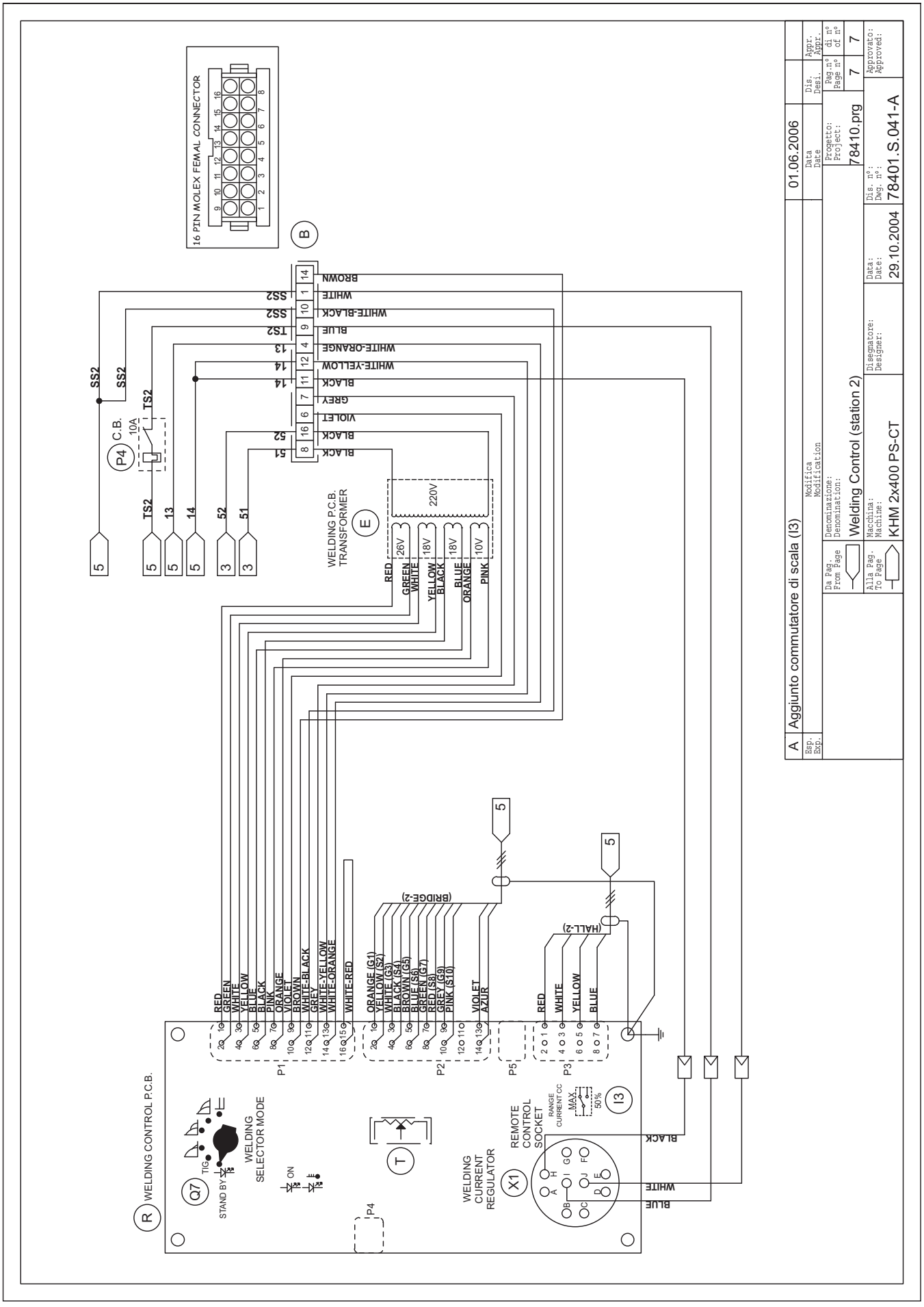

WELDING SOCKETS
Z
+
-
13
14
R.C. NET
R7
V/A DIGITAL INSTRUMENTS AND LED V.R.D. PCB
O8
FF1 V+
FF2 V-
V.R.D.
J1
J2
HALL SENSOR
W6
GAIN
OFFSET
+15V
-15V
OUTA
GND
(HALL-2)
BLUE
YELLOW
WHITE
RED
D.C. INDUCTOR
W
WELDING DIODE BRIDGE
Y
(BRIDGE-2)
NTC 10 Kohm (25°C)
t°
TS2
SS2
RS2
MAIN WELDING WINDINGS (POWER)
A
Esp. Espl.
Modifica Modification
Data Date
Dis. Desi.
Appr. Appr.
Da Pag. From Page
Alla Pag. To Page
Denominazione: Denomination:
Welding Power (station 2)
Macchina: Machine:
KHM 2x400 PS-CT
Disegnatore: Designer:
Data: Date:
31.01.2008
Progetto: Project:
78410.prg
Pag. n° Page n°
5
di n° of n°
7
Dis. n°: Dwg. n°:
78410.S.031
Approvato: Approved:


16 PIN MOLEX FEMAL CONNECTOR
WELDING P.C.B. TRANSFORMER
220V
26V
18V
18V
10V
WELDING CONTROL P.C.B.
WELDING SELECTOR MODE
WELDING CURRENT REGULATOR
REMOTE CONTROL SOCKET
C.B. 10A
(BRIDGE-1)
(HALL-1)
A Aggiunto commutatore di scala (I3)
01.06.2006
Welding Control (station 1)
78410.prg
KHM 2x400 PS-CT
78401.S.040-A
29.10.2004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WELDING CONTROL P.C.B.
WELDING SELECTOR MODE
STAND BY
TIG
ON
WELDING CURRENT REGULATOR
REMOTE CONTROL SOCKET
RANGE CURRENT CC
MAX.
50%
WELDING P.C.B. TRANSFORMER
220V
26V
18V
18V
10V
C.B.
10A
SS2
TS2
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14
52
51
BROWN
WHITE
WHITE-BLACK
BLUE
WHITE-ORANGE
WHITE-YELLOW
BLACK
GREY
VIOLET
BLACK
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GREEN
WHITE
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PINK
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YELLOW
BLUE
ORANGE
PINK
VIOLET
BROWN
WHITE-BLACK
GREY
WHITE-YELLOW
WHITE-ORANGE
WHITE-RED
ORANGE (G1)
YELLOW (G2)
WHITE (G3)
BLACK (G4)
BROWN (G5)
BLUE (G6)
GREEN (G7)
RED (G8)
GREY (G9)
PINK (G10)
VIOLET
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(BRIDGE-2)
(HALL-2)
RED
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YELLOW
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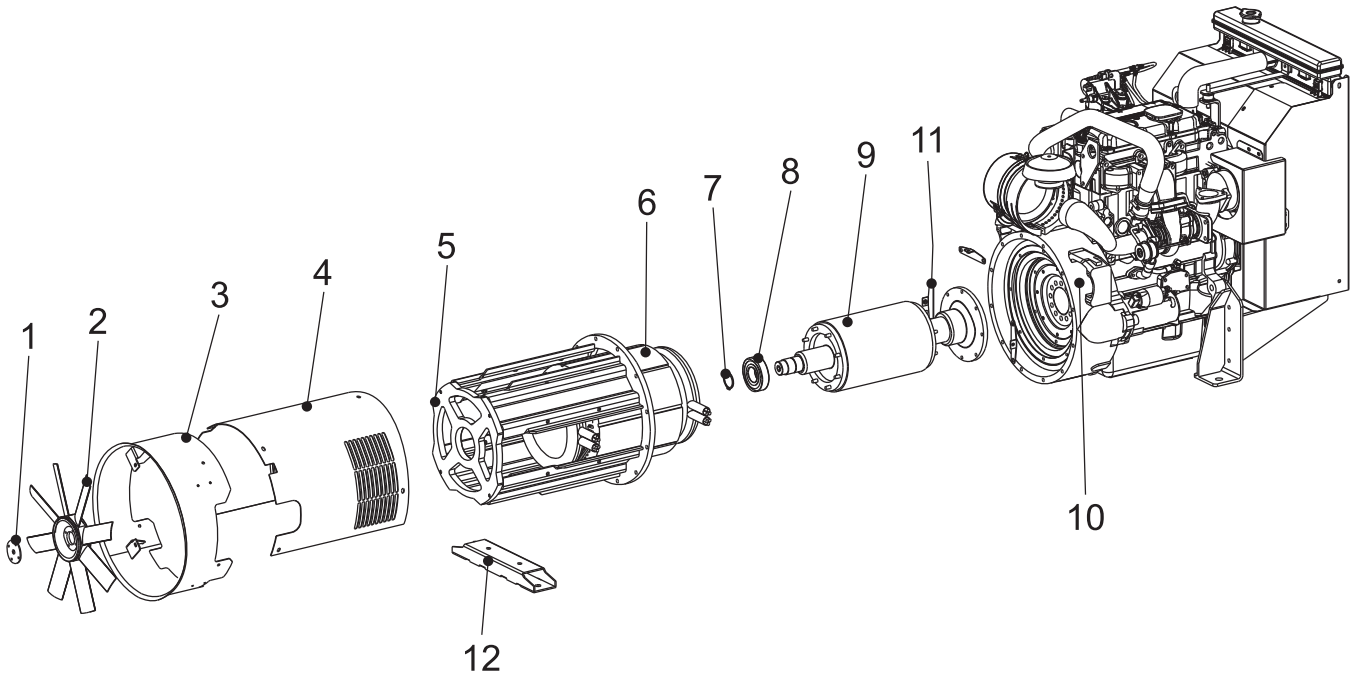
P1
P2
P3
P4
P5
A Aggiunto commutatore di scala (I3)
Rep. Rep.
Modifica Modification
01.06.2006
Data Date
Dis. Desi.
Appr. Appr.
Da Pag. From Page
Alla Pag. To Page
Denominazione: Denomination:
Welding Control (station 2)
Macchina: Machine:
KHM 2x400 PS-CT
Disegnatore: Designer:
Data: Date:
29.10.2004
Progetto: Project:
78410.prg
Pag. n° Page n°
7
di n° of n°
7
Dis. n°: Dwg. n°:
78401.S.041-A
Approvato: Approved: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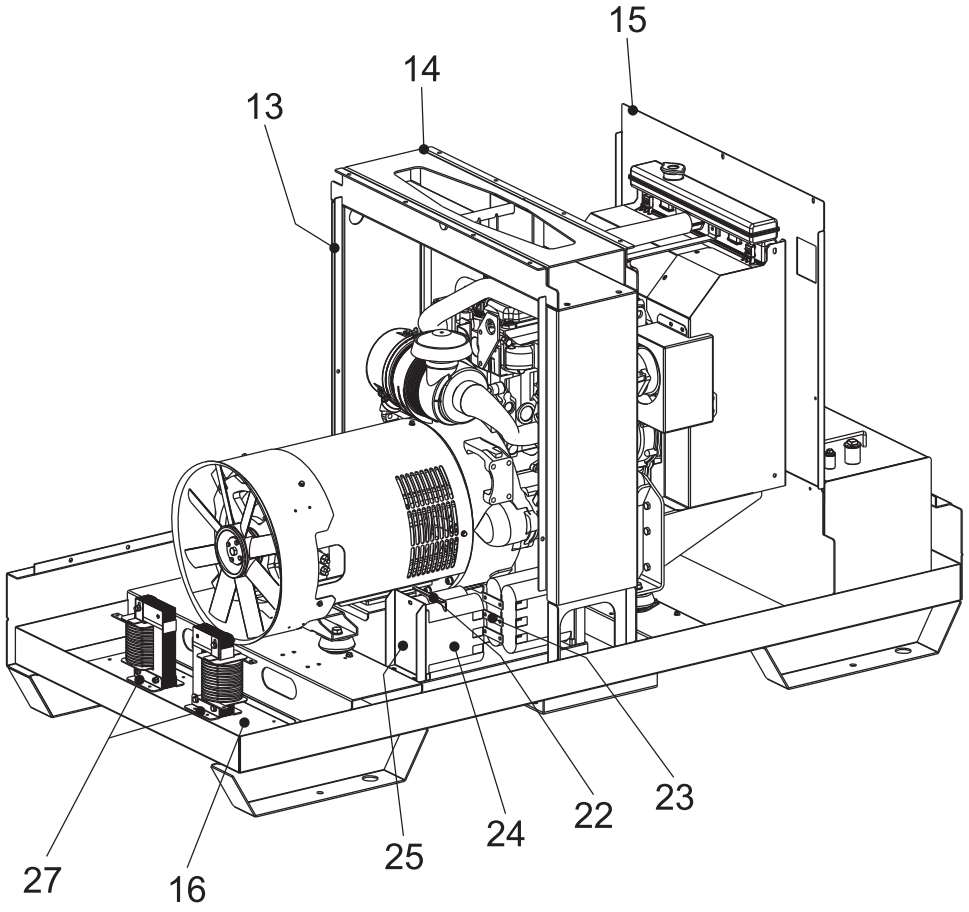
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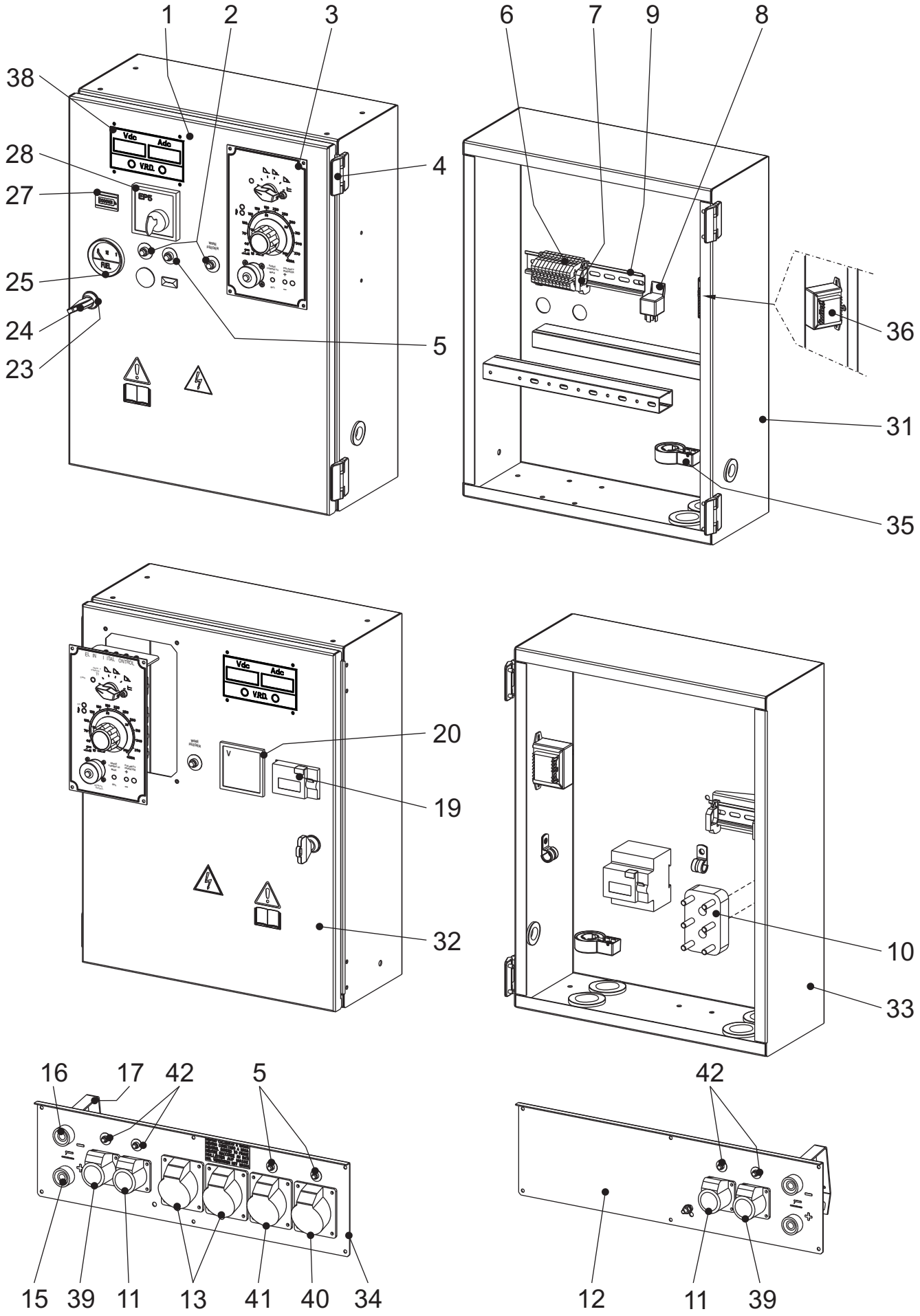
ED

Item no.	Q.ty	Ordering no.	Denomination	NOTES	C
1	1	0794000149	RING FIXING FAN		
2	1	0794000320	FAN		
3	1	0794000354	ALTERNATOR AIR CONVEYOR		
4	1	0794000355	ALTERNATOR COVEER		
5	1	0794000319	HOUSING		
6	1	0794000318	STATOR		A
7	1	0794000084	RING, SEEGER		
8	1	0794000151	BEARING		
9	1	0794000356	SHAFT ROTOR (COMPL.)		
10	1		PERKINS ENGINE 1103C-33TG3		
11	3	0794000293	ALTERNATOR COVER SUPPORT		
12	1	0794000358	ALTERNATOR BRACKET (COMPL.)		
13	2	0794000366	COVERS BRACKET		
14	1	0794000359	BRACKET LIFT		
15	1	0794000448	ENGINE AIR EXHAUST SITE		
16	1	0794000449	REACTOR HOLDING STEEL SHEET		
22	2	0794000211	CAPACITOR BOX BRACKET		
23	6	0794000109	CAPACITOR BOX BRACKET		
24	4	0794000025	CAPACITOR BOX	3x80 UF	C
25	2	0794000450	CAPACITOR BOX FIXING PLATE (COMPL)		
26	4	0794000369	SUPPORT BRACKET REACTOR	Delivered up to 538 - XXX - XXXX	
27	2	0794000370	INDUCTOR	Delivered up to 538 - XXX - XXXX	W
27	2	0794000491	LEVEL REACTOR	Delivered from 623 - XXX - XXXX	W

C = component designation in the electrical system.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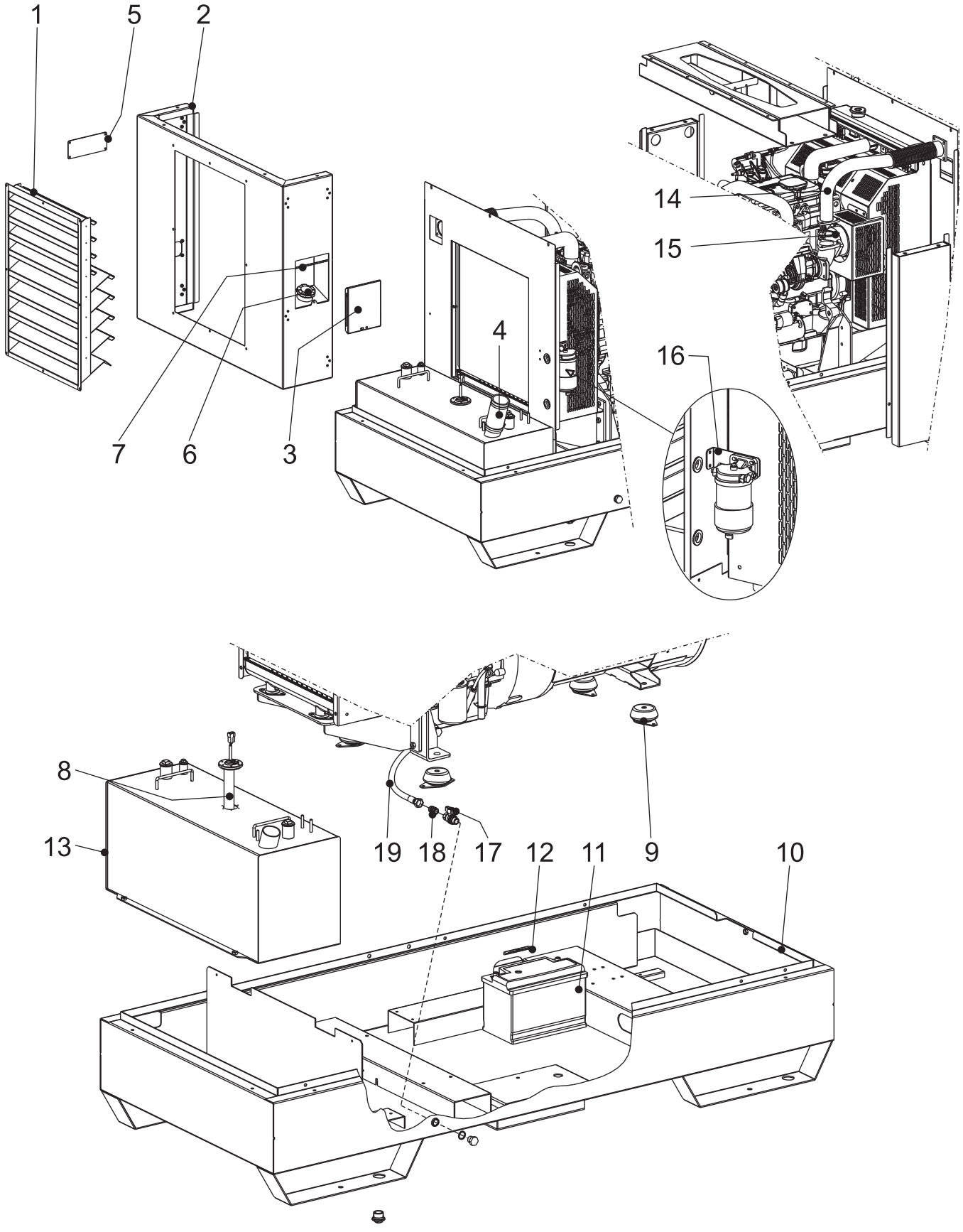
ED14

Item no.	Q.ty	Ordering no.	Denomination	NOTES	C
1	1	0794000371	ENGINE SIDE FRONT PANEL		
2	3	0794000301	CIRCUIT BREAKER	10A/250V	P4
3	2	0794000330	W.D.C.		R
4	4	0794000372	LATCH X FRONT COVER		
5	3	0794000381	CIRCUIT BREAKER	30A/250V	P4
6	13	0794000373	TERMINAL	4mmq	
7	4	0794000374	PLATE		
8	1	0794000097	RELAY		N3
9	1	0794000375	TERMINAL GUIDE	order q.ty in meter	
10	1	0794000098	TERMINAL BOARD		
11	2	0794000034	EEC SOCKET 230V 16A		H
12	1	0794000377	SOCKET HOLDER PANEL, WELDER SIDE		
13	2	0794000070	EEC SOCKET 400V 32A		G
15	2	0794000019	WELDING SOCKET (+)		Z
16	2	0794000020	WELDING SOCKET (-)		Z
17	2	0794000380	SHUNT		X
19	1	0794000161	GROUND FAULT INTERRUPTOR (GFI)		D
20	1	0794000162	VOLTMETER		N
23	2	0794000382	FRONT COVER LOCK		
24	2	0794000383	ELECTRICAL BOARD KEY		
25	1	0794000165	FUEL LEVEL INDICATOR		C2
27	1	0794000063	HOURMETER	230V 50Hz	M
28	1	0794000163	ENGINE PROTECTION EP5		M5
29	2	0794000384	WELDING VOLTMETER 100V DC	Delivered up to 623 - XXX - XXXX	V
30	2	0794000385	WELDING AMMETER 600A, 90mV	Delivered up to 623 - XXX - XXXX	S
31	1	0794000386	ELECTRICAL BOX ENGINE SIDE		
32	1	0794000387	FRONT PANEL GENERATION SIDE		
33	1	0794000388	ELECTRICAL BOX GENERATION SIDE		
34	1	0794000510	SOCKETS HOLDER FRONT PANEL		
35	2	0794000350	HALL SENSOR		W6
36	2	0794000351	WELDING PCB TRANSFORMER		E
38	1	0794000508	LED V.R.D. PCB and V/A DIGITAL INSTRUMENTS PCB	Delivered from 802 - XXX - XXXX	O8
39	2	0794000307	EEC SOCKET 110V 16A		I
40	1	0794000121	EEC SOCKET 110V 32A		I
41	1	0794000069	EEC SOCKET 230V 32A		H
42	4	0794000057	CIRCUIT BREAKER	15A	P4

C = component designation in the electrical system.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Item no.	Q.ty	Ordering no.	Denomination	NOTES	C
1	1	0794000390	COVER GRATE		
2	1	0794000391	REAR COVER		
3	1	0794000392	FUEL COVER		
4	1	0794000393	PIPE		
5	1	0794000394	COVER		
6	1	0794000107	CAP, FUEL TANK		
7	1	0794000395	TIE-ROD		
8	1	0794000396	FUEL LEVEL SENSOR		G1
9	4	0794000343	VIBRATION DAMPER		
10	1	0794000451	BASE		
11	1	0794000446	BATTERY (Without maintenance)	12V 100 Ah	S1
12	1	0794000398	BATTERY BRACKET		
13	1	0794000452	FUEL TANK		
14	1	0794000453	EXHAUST PIPE		
15	1	0794000454	GASKET		
16	1	0794000361	SUPPORT FILTER		
17	1	0794000455	COCK		
18	1	0794000456	OLEODYNAMIC NIPPLE		
19	1	0794000190	OIL EXHAUST TUBE		

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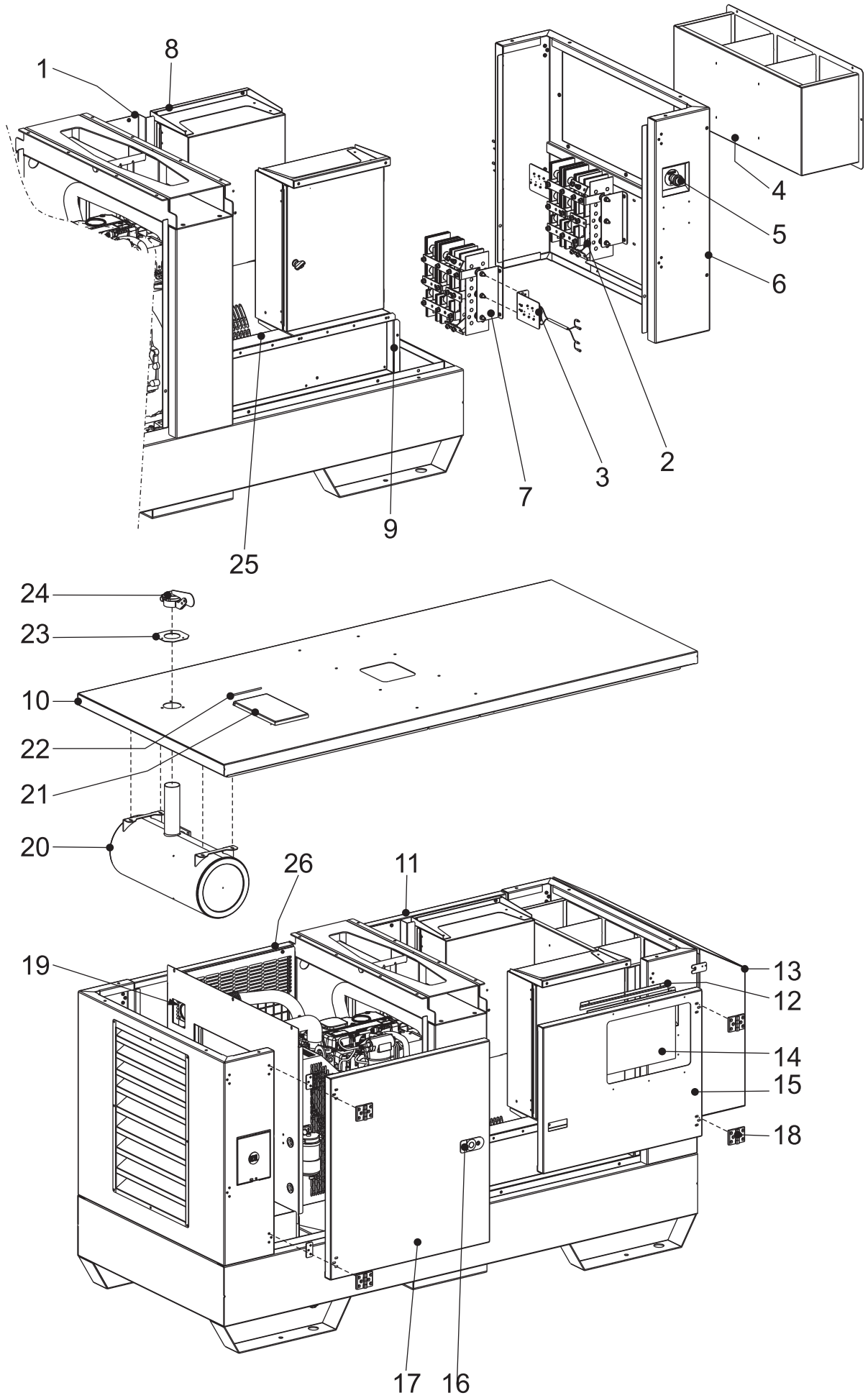
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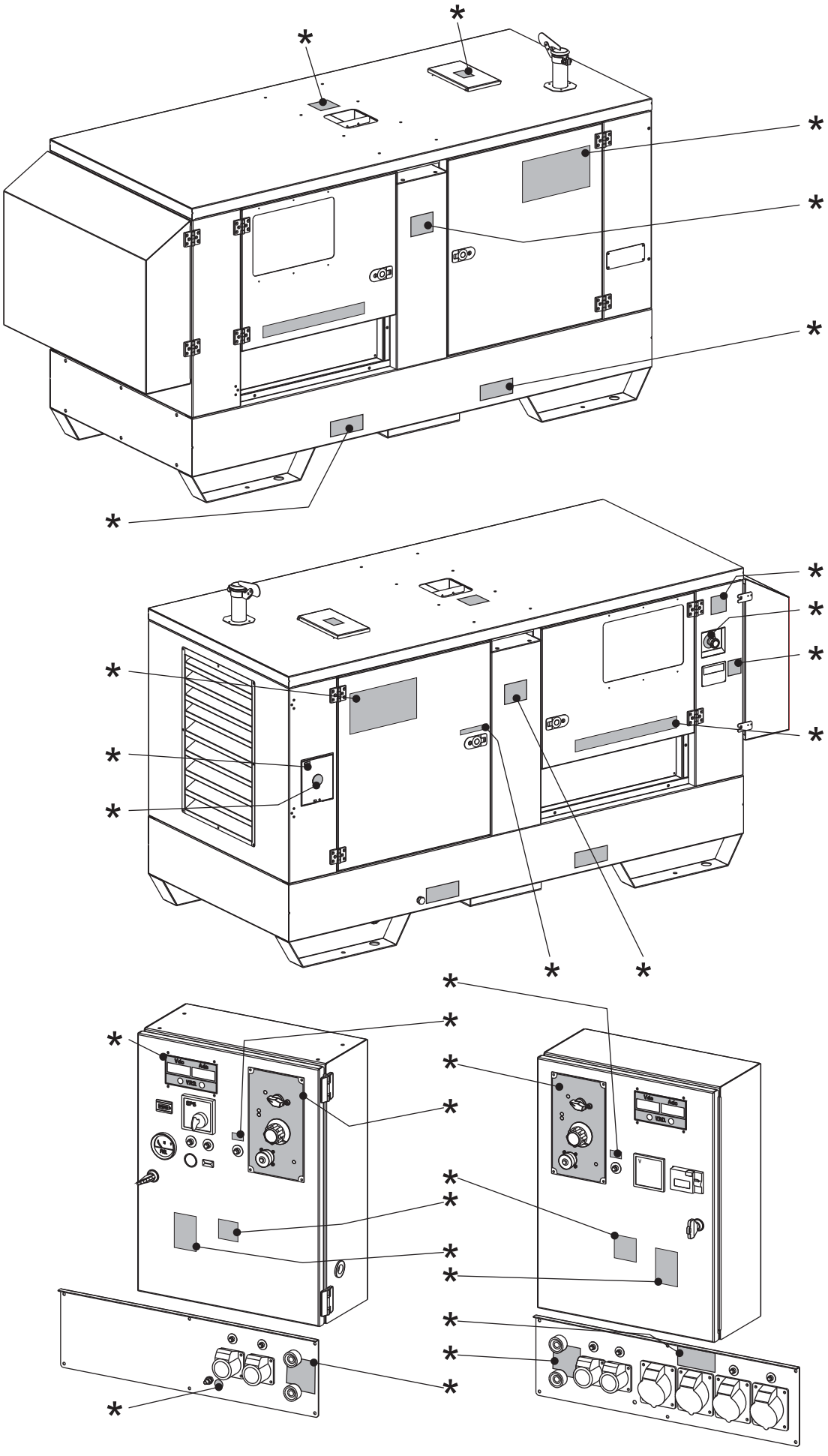
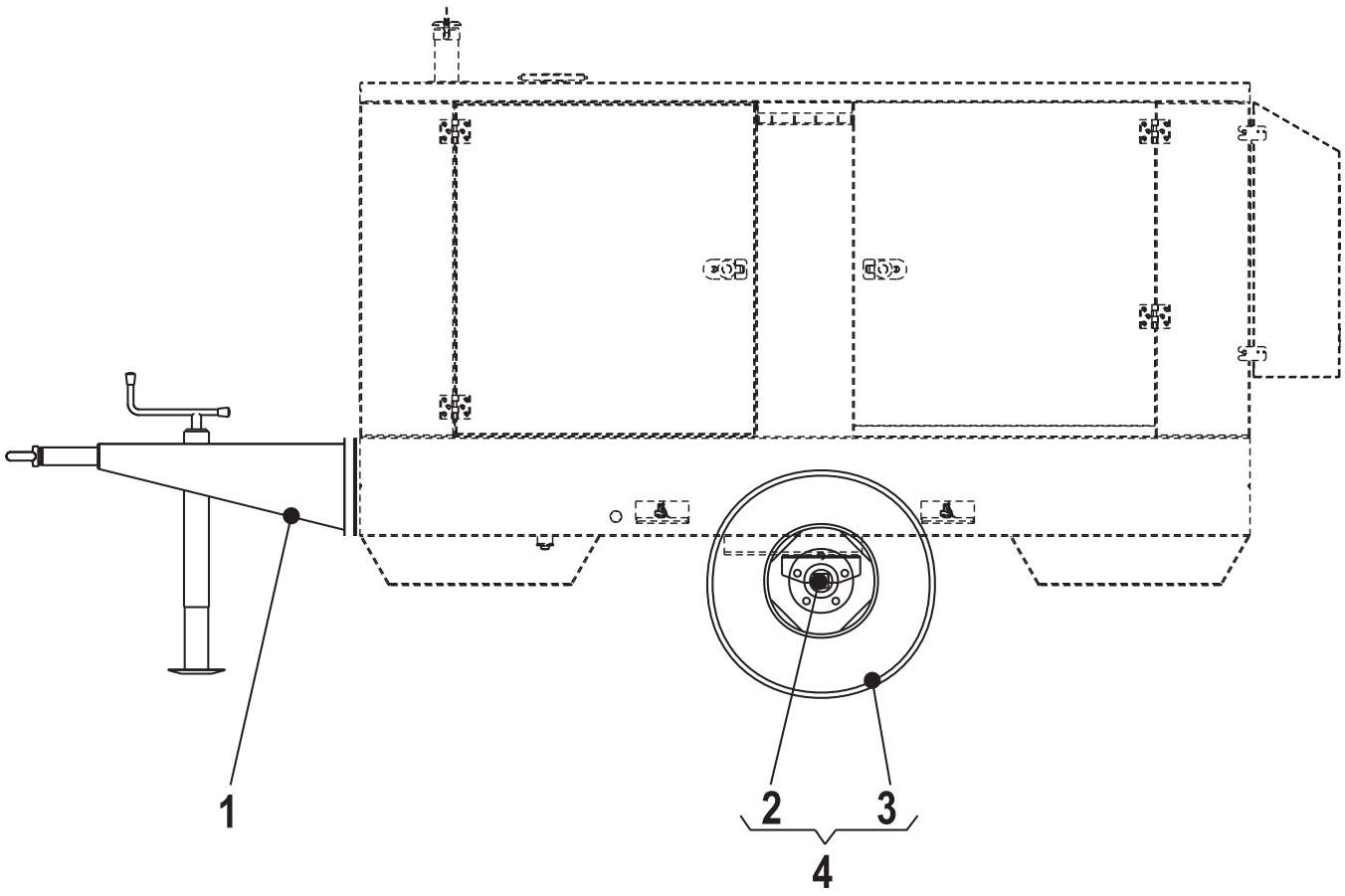
ED

Item no.	Q.ty	Ordering no.	Denomination	NOTES	C
1	1	0794000400	RIGHT SIDE ELECTRICAL BOX COVER		
2	2	0794000353	CHOPPER BRIDGE		Y
3	2	0794000352	R.C. NET (VRD)	Delivered up to 538 - XXX - XXXX	R7
3	2	0794000481	R.C. NET (VRD)	Delivered from 623 - XXX - XXXX	R7
4	1	0794000401	INTAKE CASE (COMPL.)		
5	1	0794000402	EMERGENCY PUSH BUTTON STOP		L5
6	1	0794000403	FRONT COVER (COMPL.)		
7	4	0794000404	SUPPORT BRACKET DIODE BRIDGE		
8	4	0794000405	SUPPORT BRACKET ELECTRIC BOX		
9	2	0794000406	ELECTRICAL DEVICES HOLDING BOX		
10	1	0794000457	TOP COVER		
11	1	0794000408	INSTRUMENTS SIDE		
12	4	0794000409	FIXING BRACKET DOOR SCREEN		
13	1	0794000410	AIR INTAKE BOX		
14	2	0794000411	GLASS COVER		
15	1	0794000412	COVER COMMANDS SIDE		
16	4	0794000413	HANDLE		
17	2	0794000414	MIDDLE COVER		
18	10	0794000176	LATCH		
19	1	0794000415	GASKET		
20	1	0794000416	EXHAUST MUFFLER		
21	1	0794000417	RADIATOR COVER CAP		
22	1	0794000146	TIE-ROD		
23	1	0794000418	FLANGE FOR EXHAUST PIPE		
24	1	0794000419	CAP		
25	1	0794000458	SOCKET PROTECTING BOX		
26	1	0794000459	THERMAL PROTECTION		

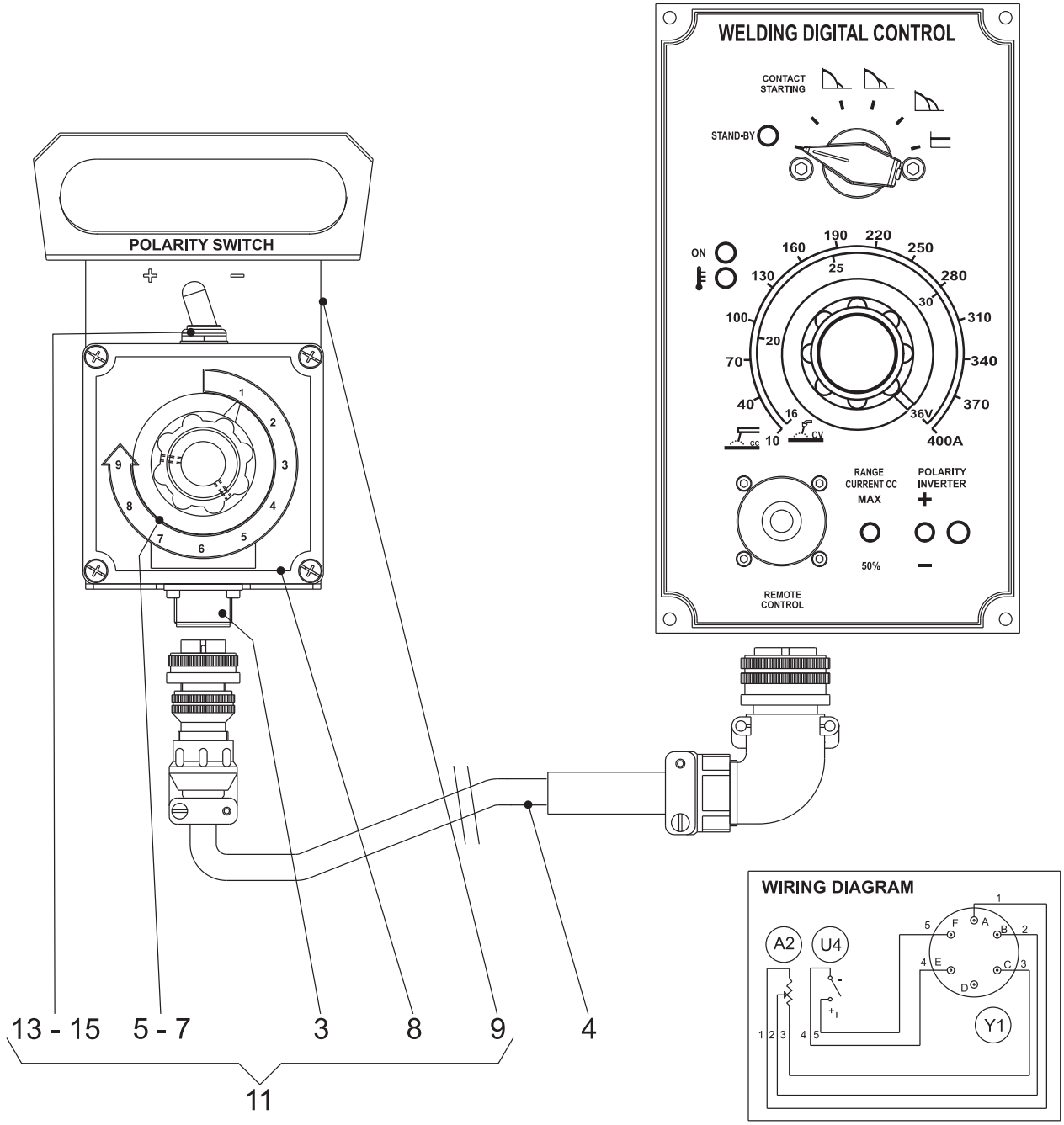
C = component designation in the electrical system.





Item no.	Q.ty	Ordering no.	Denomination	NOTES	C
1	1	0794000424	*KIT SITE TOW*		
2	1	0794000426	*AXLE*		
3	1	0794000427	*WHEEL*		
4	1	0794000425	*KIT WHEELS AND HANDLES*		

C = component designation in the electrical system.



Item no.	Q.ty	Ordering no.	Denomination	NOTES	C
3	1	0794000278	FEMALE CONNECTOR		Y1
4	1	0794000420	REMOTE CONTROL CABLE		
5	1	0794000206	KNOB, REGULATOR COMPLETE		
7	1	0794000207	WELDING CURRENT REGULATOR		A2
8	1	0794000280	BOX TCPL3		
9	1	0794000281	REMOTE CONTROL HANDLE		
11	1	0794000421	REMOTE CONTROL ASSY		
13	1	0794000422	CAP		
15	1	0794000423	COMMUTATOR		U4

C = component designation in the electrical system.

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