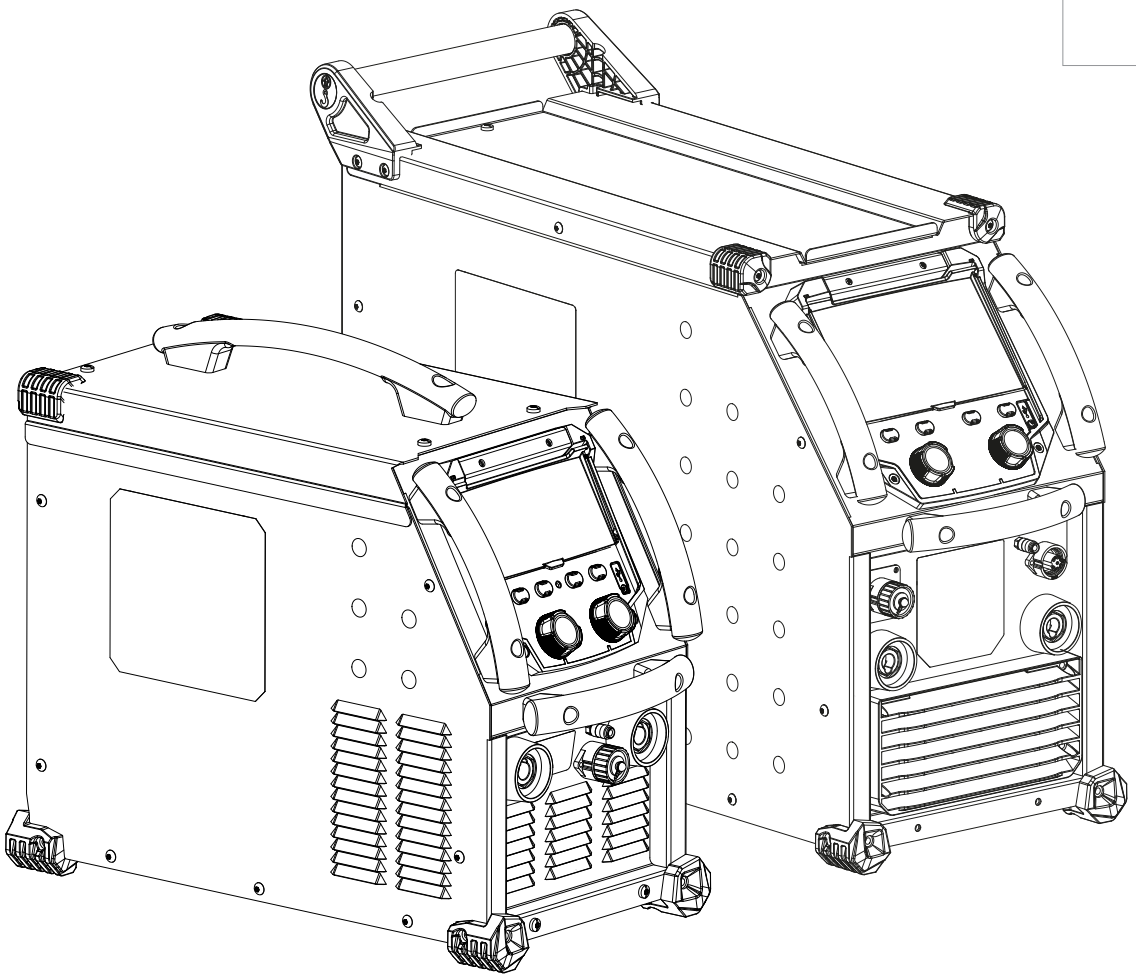


FR	2-3 / 4-20 / 106-124
EN	2-3 / 21-37 / 106-124
DE	2-3 / 38-54 / 106-124
ES	2-3 / 55-71 / 106-124
NL	2-3 / 72-88 / 106-124
IT	2-3 / 89-105 / 106-124

TITANIUM

231 / 321 / 401 / 501 AC/DC FV

Générateur TIG AC/DC - MMA
TIG AC/DC - MMA welding machine
Schweissgerät für WIG AC/DC - E-Hand
Equipo de soldadura TIG AC/DC - MMA
TIG AC/DC - MMA lasapparaat
Generatore TIG AC/DC - MMA

1ÈRE UTILISATION / FIRST USE / ERSTE VERWENDUNG / PRIMERA UTILIZACIÓN / ПЕРВОЕ ИСПОЛЬЗОВАНИЕ / EERSTE GEBRUIK / I° UTILIZZO

Voir la procédure de mise à jour présente dans la notice.
See update procedure in the manual.
Siehe das in der Bedienungsanleitung vorhandene Vorgehen zur Aktualisierung.
Consulte el procedimiento de actualización que figura en las instrucciones.
См. процедуру обновления в руководстве по эксплуатации.
Zie hiervoor de update-procedure in de handleiding.
Vedere la procedura di aggiornamento nel manuale.
Zobacz procedurę aktualizacji w instrukcji obsługi.
Viz postup aktualizace uvedený v návodu k použití.

FR Avant la première utilisation de votre appareil, procédez à la calibration des câbles de soudage.
EN Before using the machine for the first time, calibrate the welding cables.
DE Kalibrieren Sie die Schweißkabel vor der ersten Benutzung Ihres Geräts.
ES Antes de utilizar su aparato por primera vez, calibre los cables de soldadura.
RU Перед первым использованием аппарата откалибруйте сварочные кабели.
NL Voordat u dit apparaat voor de eerste keer gebruikt moeten de laskabels gekalibreerd worden.
IT Prima di effettuare il primo utilizzo del vostro apparecchio, procedere alla calibrazione dei cavi di saldatura.

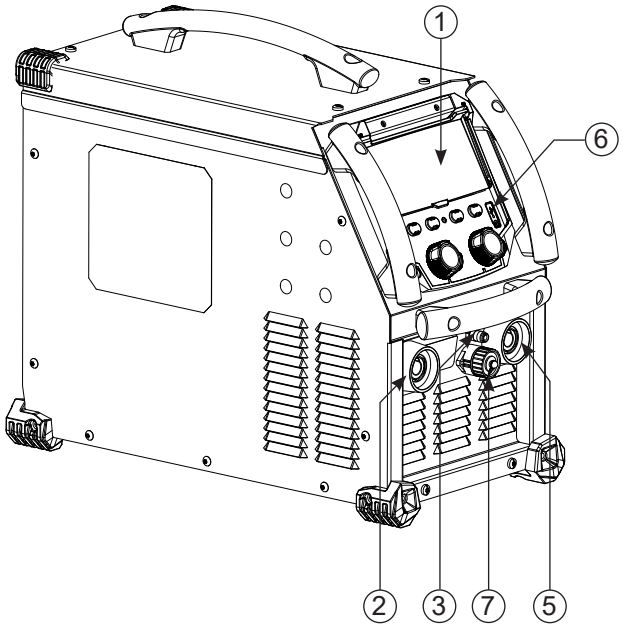


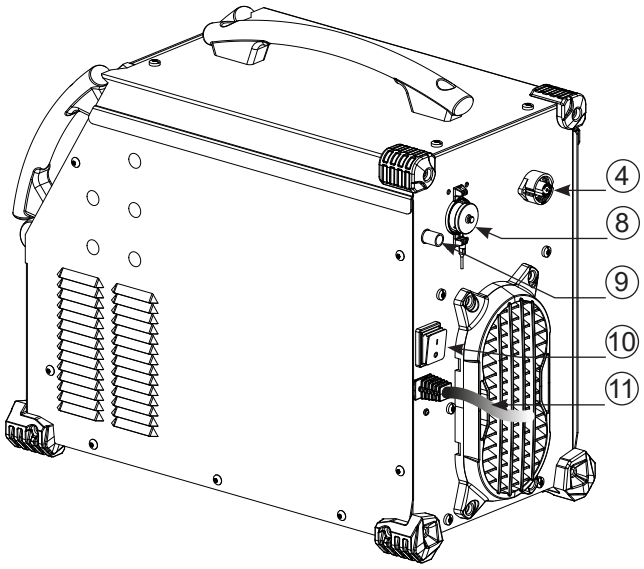
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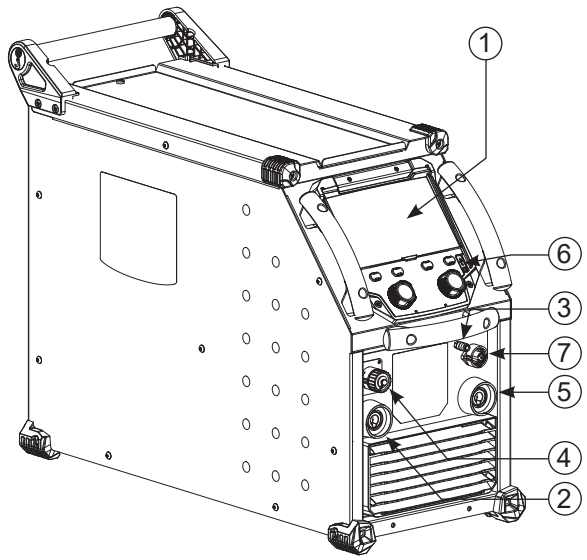
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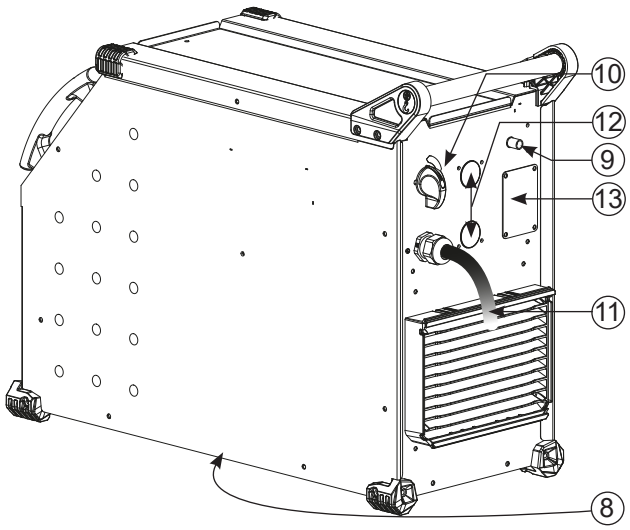
231 AC/DC FV





321 / 401 / 501 AC/DC





WARNINGS - SAFETY INSTRUCTIONS

GENERAL INSTRUCTIONS



These instructions must be read and fully understood before use.
Do not carry out any alterations or maintenance work that is not directly specified in this manual.

The manufacturer shall not be liable for any damage to persons or property resulting from use not in accordance with the instructions in this manual. In case of problems or queries, please consult a qualified tradesperson to correctly install the product.

ENVIRONMENT

This equipment should only be used for welding operations performed within the limits indicated on the information panel and/or in this manual. These safety guidelines must be observed. In the event of improper or dangerous use, the manufacturer cannot be held responsible.

The machine must be set up somewhere free from dust, acid, flammable gases or any other corrosive substances. This also applies to storage on the unit. Operate the machine in an open, or well-ventilated area.

Temperature range:
Use between -10 and +40°C (+14 and +104°F).
Store between -20 and +55°C (-4 and 131°F).
Air humidity:
Lower than or equal to 50% at 40°C (104°F).
Lower than or equal to 90% at 20°C (68°F).
Altitude:
Up to 1,000 m above sea level (3280 feet).

PROTECTING YOURSELF AND OTHERS

Arc welding can be dangerous and cause serious injury or death.
Welding exposes people to a dangerous source of heat, light radiation from the arc, electromagnetic fields (caution to those using pacemakers) and risk of electrocution, as well as noise and fumes.
To protect yourself and others, please observe the following safety instructions:



To protect yourself from burns and radiation, wear clothing that does not have turn-ups, that is insulating, dry, flame-retardant and in good condition, and that covers the whole body.



Wear protective gloves which provide electrical and thermal insulation.



Use welding protection and/or a welding helmet with a sufficient level of protection (depending on the specific use). Protect your eyes during cleaning procedures. Contact lenses are strictly prohibited.
It may be necessary to section off the welding area with fireproof curtains to protect the area from arc radiation and hot spatter.
Inform people in the welding area not to stare at the arc rays or molten parts and to wear appropriate clothing for protection.



Wear noise-cancelling headphones if the welding process becomes louder than the permissible limit (this is also applicable to anyone else in the welding area).

Keep hands, hair and clothing away from moving parts (the ventilation fan, for example).
Never remove the protective covers from the cooling unit while the welding power source is switched on, the manufacturer cannot be held responsible in the event of an incident.



Newly welded parts are hot and can cause burns when handled. When maintenance work is carried out on the torch or electrode holder, ensure that it is sufficiently cold by waiting at least 10 minutes before carrying out any work. The cooling unit must be switched on when using a water-cooled torch to ensure that the liquid cannot cause burns.
It is important to ensure that the work area is safe before leaving it, to help protect both people and property.

WELDING FUMES AND GAS



The fumes, gases and dusts emitted by welding are harmful to health. Sufficient ventilation must be provided and an additional air supply may be required. An air-fed mask could be a solution in situations where there is inadequate ventilation.
Check the extraction system performance against the relevant safety standards.

Caution: Welding in confined spaces requires safety monitoring from a safe distance. In addition, the welding of certain materials containing lead, cadmium, zinc, mercury or even beryllium can be particularly harmful. Remove any grease from workpieces before welding.
Cylinders should be stored in open or well-ventilated areas. They should be stored in an upright position and kept on a stand or trolley.
Welding should not be carried out near grease or paint.

RISK OF FIRES AND EXPLOSIONS



Fully shield the welding area, flammable materials should be kept at least 11 metres away.
Fire-fighting equipment should be kept close to wherever the welding activities are being undertaken.

Beware of spatter or spark projection, as they are a potential source of fire or explosion, even through cracks.
Keep people, flammable objects and pressurised containers at a safe distance.
Welding in closed containers or tubes is to be avoided. If the containers or tubes are open, they must be emptied of all flammable or explosive materials (oil, fuel, gas residues, etc.).
Grinding work must not be directed towards the source of the welding current or towards any flammable materials.

GAS CYLINDERS



Gas escaping from cylinders can cause suffocation if there is too high a concentration of it in the welding area (ensure good ventilation).
The machine must be transported in complete safety: gas cylinders must be closed and the welding power source turned off. They should be stored upright and supported to limit the risk of falling.

Close the cylinder between uses. Beware of temperature variations and exposure to the sun.
The cylinder must not come into contact with flames, arcs, torches, earth clamps or any other sources of heat or ignition.
Be sure to keep it away from electrical and welding circuits. Never weld a pressurised cylinder.
When opening the cylinder valve, keep your head away from the valve and ensure that the gas being used is suitable for the welding process.

ELECTRICAL SAFETY



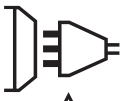
The electrical network used must be earthed. Use the fuse size recommended on the rating plate.
An electric shock, whether direct or indirect, can cause serious injury or death.

Never touch live parts either inside or outside of the power source casing (torches, clamps, cables, electrodes), as these are connected to the welding circuit.
Before opening the welding power source, disconnect it from the mains and wait 2 minutes for all the capacitors to discharge.
Do not touch the torch or the electrode holder and the earth clamp at the same time.
If cables or torches are damaged, they should be replaced by qualified and authorised personnel. Measure the cable cross-section according to the intended application. Always use dry and in-tact clothing to insulate yourself from the welding circuit. Always wear insulated footwear, in all working environments.

EMC CLASSIFICATION



This Class A device is not intended for use in a residential location where electrical power is supplied by the public low-voltage power supply network. There may be potential difficulties in ensuring electromagnetic compatibility at these sites, due to both conducted and radiated radio frequency interference.



TITANIUM 231 AC/DC FV:
Provided that the impedance of the low-voltage public power supply network at the common coupling point is less than Zmax = 0.173 Ohms, this product complies with IEC 61000-3-11 and may be connected to low-voltage public power supply systems. It is the responsibility of the installer or user of the machine to ensure, by consulting the power distribution network provider if necessary, that the network impedance complies with the impedance restrictions.

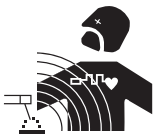


TITANIUM 321AC/DC - 401 AC/DC - 501 AC/DC:
This machine complies with IEC 61000-3-11.

TITANIUM 231 AC/DC FV:
This machine complies with IEC 61000-3-12.

TITANIUM 321AC/DC - 401 AC/DC - 501 AC/DC:
This equipment does not comply with IEC 61000-3-12 and is intended to be connected to private low-voltage power networks, connected to the public power supply network only at medium and high voltage levels. If it is connected to a public low-voltage supply network, it is the responsibility of the installer or user of the machine to ensure, by consulting the distribution network operator, that the machine may be connected.

ELECTROMAGNETIC INTERFERENCES



An electric current passing through any conductor produces localised electric and magnetic fields (EMF). The welding current produces an electromagnetic field around the welding circuit and the welding equipment.

Electromagnetic fields (EMFs) can interfere with some medical devices; pacemakers for example. Protective measures must be taken for people with medical implants. For example, restricted access for passers-by or an individual risk assessment for welders.

Anyone using the welding machine should follow the following guidelines to minimize exposure to the electromagnetic fields generated by the welding circuit:
• position the welding cables together - if possible, securing them with a clamp,
• position yourself (head and body) as far away from the welding circuit as possible,
• never wrap the welding cables around your body,
• do not position yourself in between the welding cables. Keep both welding cables on the same side of the body;
• connect the return cable to the workpiece, as close as possible to the welding area;
• do not work in close proximity to, sit on, or lean against the welding power source;
• do not move the welding power source or wire feeder while it is in use.



Pacemaker users should consult a doctor before using this equipment.
Exposure to electromagnetic fields during welding may have other health effects that are not yet known.

RECOMMENDATIONS FOR ASSESSING THE WELDING AREA AND EQUIPMENT

General Information
It is the responsibility of the user to properly install and use the arc welding equipment in accordance with the manufacturer's instructions. If electromagnetic disturbances are detected, it is the user's responsiblity to resolve the situation using the manufacturer's technical support. In some cases, this corrective action may be as simple as earthing the welding circuit. In other cases, it may be necessary to construct an electromagnetic shield around the welding current source, and around the entire workpiece, by setting up input filters. In any case, electromagnetic interference should be reduced until it is no longer a cause for concern.

Assessing the welding area
Before installing arc welding equipment, the user should assess the potential electromagnetic problems in the surrounding area. The following should be taken into account:
a) the presence of power, control, signal and telephone cables above, below and next to the arc welding equipment,
b) radio and television receivers and transmitters;
c) computers and other control equipment;
d) safety-critical equipment, e.g. industrial machinery protection;
e) the health of nearby persons, e.g. those using pacemakers or hearing aids;
f) equipment used for calibrating or measurement;
g) the sensitivity of other equipment in the surrounding area.
The user must ensure that other equipment installed in the vicinity is compatible. This may require further protective measures;
h) the time of day when welding or other operations are to be carried out.

The size of the surrounding area to be taken into account depends on the structure of the building and other activities taking place there. The surrounding area may extend beyond the boundaries of the facility.

Assessment of the welding equipment
In addition to the assessment of the surrounding area, the arc welding equipment's assessment can be used to identify and resolve cases of interference. It is appropriate that the assessment of any emissions should include in situ procedures as specified in Article 10 of CISPR 11. In-situ measurements can also be used to verify the effectiveness of any mitigation measures.

GUIDELINES ON HOW TO REDUCE ELECTROMAGNETIC EMISSIONS

a. The mains supply network: Arc welding equipment should be connected to the mains power grid according to the manufacturer's recommendations. If any interference occurs, it may be necessary to take additional precautionary measures such as filtering the mains power supply. Consider protecting the power cables of permanently installed arc welding equipment within a metal pipe or a similar casing. The power cable should be protected along its entire length. The shield should be connected to the welding power source to ensure that there is good electrical contact between the conduit and the welding power source enclosure.
b. The maintenance of arc welding equipment: Arc welding equipment should be subject to routine maintenance as recommended by the manufacturer. All access points, service openings and bonnets should be closed and properly locked when the arc welding equipment is in use. The arc welding equipment should not be modified in any way, except for those modifications and adjustments mentioned in the manufacturer's instructions. It is particularly important that the spark gap of the arc ignition and stabilisation circuit is adjusted and maintained in accordance with the manufacturer's recommendations.
c. Welding cables: Cables should be as short as possible, placed close together, either near or on the ground.
d. Equipotential bonding: Consideration should be given to linking all metal objects in the surrounding area. However, metal objects connected to the workpiece increase the risk of electric shocks to the user should they touch both these metal parts and the electrode. It is necessary to insulate the operator from such metal objects.
e. Earthing the workpiece: In cases where the workpiece is unearthed for electrical safety reasons or due to its size and location, such as ship hulls or structural steel buildings, an earthed connection can reduce emissions in some cases, although not always. Care must be taken to avoid earthing parts that could increase the risk of injury to the user or cause damage to other electrical equipment. If necessary, the workpiece's connection should be earthed directly, but in some countries where a direct connection is not allowed, the connection should be made with a suitable capacitor chosen according to national regulations.
f. Protection and shielding: Selective protection and shielding of other cables and equipment in the surrounding area can help minimise interference problems. Protection and sheilding of the entire welding area may be required for certain specialist applications.

TRANSPORT AND TRANSIT OF THE WELDING POWER SOURCE



The welding power source is equiped with top-mounted handles for manual transport. Be careful not to underestimate the weight of the unit. The handles are not to be considered as a means of slinging the unit.

Do not use the cables or torch to move the welding power source. It should be moved in an upright position.
Do not carry the power source over the heads of people or objects.
Never lift a gas cylinder and the welding power source at the same time. Their transportation requirements are different.

SETTING UP THE MACHINE

• Place the welding power source on a floor with a maximum incline of 10°.
• Provide sufficient space to ventilate the welding power source and access the controls.
• Do not use in an environment containing electrically conductive metallic dust.
• The welding power source should be protected from heavy rain and not exposed to direct sunlight.
• The unit has an IP23 protection rating which means:
- the dangerous parts of the machine are protected against entry by objects greater than 12.5 mm and,
- it is protected against rain falling up to 60° from the vertical.

The equipment can be used outside in accordance with the IP23 protection certification.

Power, extension and welding cables must be completely uncoiled in order to avoid overheating.



The manufacturer assumes no responsibility for damage to persons or objects caused by improper and dangerous use of this equipment.

MAINTENANCE / RECOMMENDATIONS



• Maintenance should only be carried out by a qualified person. Annual maintenance is recommended.
• Switch off the power supply by unplugging the socket, and wait two minutes before working on the product. Inside the macine, the voltages and currents are high and dangerous.

• Regularly remove the cover and blow out any dust. Take the opportunity to have the electrical connections checked by qualified personnel using an insulated tool.
• Regularly check the condition of the power cable. If the power cable is damaged, it must be replaced by the manufacturer, the after sales service team or an equally qualified person to avoid any danger.
• Leave the air inlet and outlet vents of the welding power source clear and unobstructed.
• Do not use this welding power source for thawing pipes, recharging batteries/storage batteries or starter motors.

INSTALLATION - USING THE PRODUCT

Only experienced personnel, authorised by the manufacturer, may carry out the set-up of the machine. During set-up, ensure that the power source is unplugged from the mains. Series or parallel power source connections are not allowed. It is recommended to use the welding cables supplied with the unit in order to obtain the best possible product performance.

DESCRIPTION

This machine is a power source for tungsten inert gas (TIG) welding using direct current (TIG DC) or alternating current (TIG AC), as well as metal arc welding (MMA).

DESCRIPTION OF THE MACHINE (I)

1- Human Machine Interface (HMI)
2- Positive polarity socket
3- Torch gas connector
4- Torch trigger connector
Remote control connector (pedal)
5- Negative polarity socket
6- USB connector
7- Digital remote control connector
8- Cool unit connector
9- Gas bottle connector
10- On/Off switch
11- Power cable
12- Optional flow meter kit (073395)
13- Plate for optional NUM TIG-1 connector kit (037960) = SAM automation

HUMAN-MACHINE INTERFACE (HMI)



Please read the interface (HMI) user manual, which forms part of the complete product literature.

POWER - START-UP

TITANIUM 231 AC/DC FV:
This machine is supplied with a single-phase 3-pin (P+N+PE) 230V 16A CEE17 plug. The machine is equipped with a «Flexible Voltage» system and can be powered by an earthed electrical installation between 110V and 240V (50 - 60 Hz). On a 110 V electrical network, it is necessary to replace the 16 A socket with a 25 A socket in order to guarantee the generator's duty cycle.

In a 230 V system, replacing the original 16 A socket with a 20 A socket allows for higher duty cycles. For the relevant values, please refer to the technical specifications at the end of this manual.

TITANIUM 321 - 401 - 501 AC/DC:
This machine is supplied with a 32 A EN 60309-1 type plug and must only be used on a three-phase 400V (50-60 Hz) electrical installation with four wires and an earthed neutral.

The actual absorbed current (I1eff) for optimal operating conditions is indicated on the machine. Check that the power supply and its protection (fuse and/or circuit breaker) are compatible with the current required to run the machine. In some countries, it may be necessary to change the plug in order to use it at maximum capacity.

• The welding power source will go into protection mode if the supply voltage is less than or greater than 15% of the specified voltage(s) (an error code will appear on the display).
• To start the machine, turn the on/off switch (I-8) to the I position. To stop the machine, turn the switch to the 0 position. **Warning! Never switch off the power supply while the unit is under load.**
• Fan behaviour: this product is equipped with an intelligent ventilation management system to minimise the noise of the machine. The fans will adjust their speed according to usage and the surrounding temperature. In MMA mode, the fan will run continuously. In TIG mode, the fan runs only during the welding phase and stops after cooling.
• Caution: Increasing the length of the torch or earth return cables beyond the maximum length specified by the manufacturer increases the risk of electric shock.
• The arc ignition and stabilisation device is designed for manual and mechanically guided operation.

CONNECTING TO A POWER GENERATOR

This equipment can be powered by a generator, provided that the auxiliary power supply meets the following requirements:
- The voltage must be alternating, set as specified, and with a peak voltage lower than 400 V for the TITANIUM 231 AC/DC FV and 700 V for the TITANIUM 321/401/501 AC/DC.
- The frequency must be between 50 and 60 Hz.
It is essential to check these conditions, as many generators produce high-voltage spikes that can damage your equipment.

USING EXTENSION LEADS

All extension leads must be of an appropriate length and cross-section to suit the voltage of the machine. Use an extension lead that complies with national safety regulations.

<table>
<tr><th rowspan="2"></th><th rowspan="2">Input voltage</th><th colspan="2">Length and thickness of the extension lead</th></tr>
<tr><th>< 45m</th><th>> 45m</th></tr>
<tr><td rowspan="2">TITANIUM 231 AC/DV FV</td><td>110 V</td><td>2.5 mm²</td><td>4mm²</td></tr>
<tr><td>230 V</td><td colspan="2">2.5 mm²</td></tr>
<tr><td>TITANIUM 321 AC/DC</td><td rowspan="3">400 V</td><td colspan="2" rowspan="3">6 mm²</td></tr>
<tr><td>TITANIUM 401 AC/DC</td></tr>
<tr><td>TITANIUM 501 AC/DC</td></tr>
</table>

GAS SUPPLY

This machine is equipped with two connectors. A connector for the gas cylinder inlet to the machine, and a connector for the gas outlet at the end of the torch. We recommend that you use the adapters supplied with your machine to ensure the best possible fit.

Gas hose		
Diameter	**Length**	**Standards**
Ø 6,3 x 12 mm	1,5 m	EN ISO 3821 EN 559

TIG (GTAW) WELDING MODE

INSTALLATION AND GUIDANCE

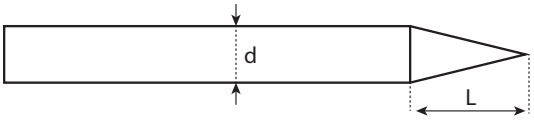
• TIG welding requires gas shielding (argon).
• Connect the earth clamp to the positive (+) plug connector. Connect the torch power cable to the negative (-) socket, along with the torch button(s) and gas connector(s).
• Ensure that the torch is properly fitted and that the consumables (collets and collet bodies, diffusers and nozzles) are not worn out.
• The choice of electrode depends on the welding current setting for the TIG process.

CHOICE OF ELECTRODE DIAMETER

Electrode Ø (mm)	TIG DC		TIG AC	
	Pure tungsten	Tungsten with oxides	Pure tungsten	Tungsten with oxides
1	15 > 75 A	10 > 75 A	15 > 55 A	10 > 70 A
1.6	60 > 150 A	60 > 150 A	45 > 90 A	60 > 125 A
2	70 > 180 A	100 > 200 A	65 > 125 A	85 > 160 A
2.4	120 > 220 A	150 > 250 A	80 > 140 A	120 > 210 A
3.2	160 > 310 A	225 > 330 A	150 > 190 A	150 > 250 A
4	275 > 450 A	350 > 480 A	180 > 260 A	240 > 350 A
4.8	380 > 600 A	450 > 650 A	240 > 350 A	330 > 450 A
	Approx. = 80 A per Ø mm		Approx. = 60 A per Ø mm	

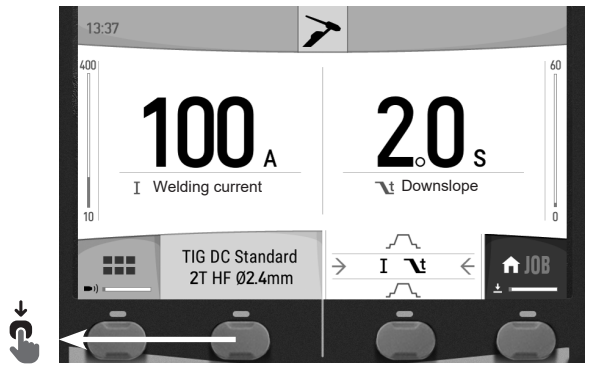
ELECTRODE SHARPENING

For optimum performance, we recommend using an electrode sharpened as follows:

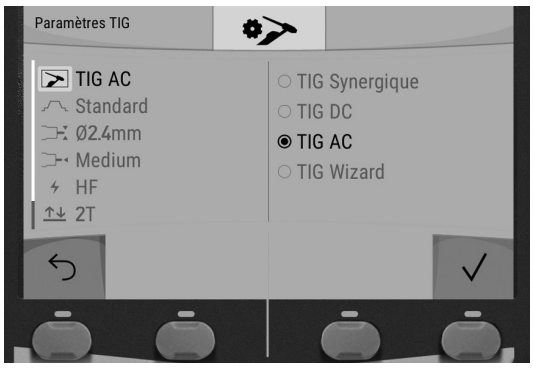


L = 3 x d for low current.
L = d for high current

PROCESS SETTINGS



Press button no. 2 to display the modifiable parameters.



Access to process modes and associated parameters.

Parameters	Settings	Welding processes			
		Synergies	DC	AC	Wizard
Operating mode	Standard		■	■	
	Pulse				
	FastPulse				
	Pulse In Pulse				
	Spot			■	
	Tack				
	Multi-Spot			■	
	Multi-Tack				
	AC Mix			■	
Material selection	Fe, Al99, AlSi, etc	■			
Ignition	Lift	■	■	■	■
	HF				
	Touch.HF				
Electrode diameter	Ø1.0 mm > Ø4.8 mm	■	■	■	■
Electrode tip size	S/M/L			■	
Trigger mode	2T	■	■	■	■
	4T-Start				
	4T-Weld				
	4T-LOG				
E-TIG	ON / OFF	■	■		
Advanced settings (only in display mode: Expert)	HF duration	■	■	■	■
	HF level				■
	Current setting				
	Uc0				■
	Sync AC				
	Breakdown voltage				■*
	Breakdown delay				■*
	Sticking voltage				■*
	Sticking delay				■*

* Wizard Lab only

WELDING PROCESSES

• TIG DC
Designed for welding ferrous metals such as steel, stainless steel, copper and its alloys, and titanium.

• TIG AC
Designed for welding aluminium and its alloys.

• Synergic TIG welding
The system no longer functions based on the selection of DC or AC current type and welding cycle parameter settings, but instead integrates welding rules/synergies based on experience. It therefore restricts the number of settings to four fundamental parameters: welding thickness, welding position, downslope, and post-gas.

• TIG Wizard

Wizard Lab:
See the 'Wizard Lab' section for more details.

Wizard Alu, Alu Aero, Stainless Steel, Steel, Copper:
This mode allows for the pre-assembly or welding of workpieces made of lightweight alloys (AlSi/AlMg/Al99), stainless steel (CrNi), steel (Fe) and copper (CuZn/Cu). When it comes to synergies, the settings to consider are the thickness of the workpieces you're welding and the type of joint (butt joint (BW), lap joint (FW), internal angle joint (BP), external angle joint, or wire-to-wire splicing) To switch from welding to tacking, press button no. 4 on the keypad (see HMI manual).

SETTINGS - TIG DC

• Standard
This welding mode delivers high-quality welding on most ferrous materials such as steel, stainless steel, copper and its alloys, titanium, etc. It offers a wide range of current and gas management options, allowing for complete control of the welding process, from ignition through to the final cooling of the weld bead.

• Pulse
This welding method uses pulsed current, alternating between high current pulses (I, welding pulse) and low current pulses (I_Cold, workpiece cooling pulse). This pulse mode allows workpieces to be welded together while limiting temperature increase and workpiece deformation. Ideal for use in any position.

For example:
The welding current (I) is set to 100 A and % (I_cold) = 50%, i.e. cold current = 50% x 100 A = 50.
F(Hz) is set to 10Hz, the signal period will be 1/10Hz = 100ms -> Over this 100 ms period, the current alternates between a 100 A phase lasting 50 ms and a 50 A phase lasting 50 ms.

• Spot
This spot welding mode lets you pre-assemble workpieces before welding. Spot welds can be performed manually using the trigger, or timed with a predefined spot delay. This timing allows for better reproducibility and the creation of non-oxidised spots.

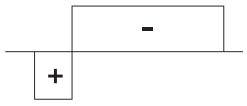
• Spot-Pulse
This method of spot welding with pulsed current is used to pre-assemble thin workpieces before welding. Spot welds can be performed manually using the trigger, or timed with a predefined spot delay. This timing allows for better reproducibility and the creation of non-oxidised spots.

• MultiSpot and Multitack
Based on Spot or Tack modes, Multi allows you to chain together welding points with a predefined rest time without releasing the trigger, thereby increasing productivity.

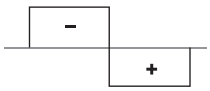
SETTINGS - TIG AC

• Standard
This welding mode is designed for welding aluminium and its alloys (Al, AlSi, AlMg, AlMn, etc.). Alternating current is used to strip the surface, which is essential for welding aluminium.

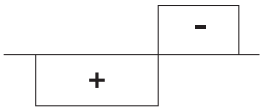
Balance (%T_AC):
During the positive phase of the cycle, any oxidation is broken down. During the negative phase the electrode cools down and the parts fuse together, this is when penetration occurs.
Modifying the ratio between the two wave phases using the balance setting will favour either the stripping effect or the penetration properties.



20%: Max. penetration.



50%



60%: Max. stripping.

• Pulse
This welding method uses pulsed current, alternating between high current pulses (I, welding pulse) and low current pulses (I_Cold, workpiece cooling pulse). This pulse mode allows workpieces to be welded together while limiting temperature increase and workpiece deformation. Ideal for use in any position.

For example:
The welding current (I) is set to 100 A and % (I_cold) = 50%, i.e. cold current = 50% x 100 A = 50.
F(Hz) is set to 10Hz, the signal period will be 1/10Hz = 100ms -> every 100ms, a pulse at 100A followed by another at 50A will occur.

• AC Mix
This alternating current welding mode is used to weld thick aluminium and aluminium alloy workpieces. It mixes DC intervals during AC welding, which increases the energy delivered to the workpiece. The goal is to speed up production and increase productivity when working with aluminium assemblies. This mode causes less stripping, so it is necessary to work on clean workpieces.

• SPOT
This spot welding mode lets you pre-assemble workpieces before welding. Spot welds can be performed manually using the trigger, or timed with a predefined spot delay. This timing allows for better reproducibility and the creation of non-oxidised spots.

• MultiSpot
Based on Spot modes, Multi allows you to chain together welding points with a predefined rest time without releasing the trigger, thereby increasing productivity.

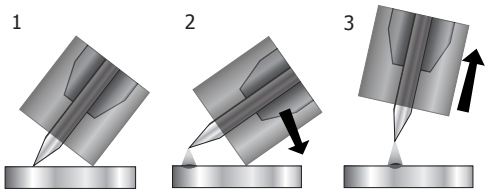
OPERATING MODE

For more information on GYS operating modes, scan the QR code:

SELECT IGNITION MODE

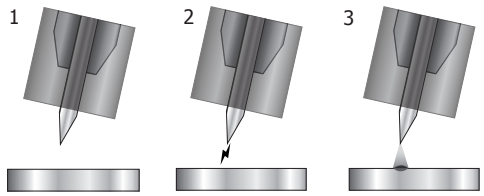
Lift: contact ignition (for applications sensitive to HF disturbances)
HF: high frequency ignition without contact between the tungsten electrode and the workpiece.
Touch.HF: time-delayed high frequency ignition after contact between the tungsten electrode and the workpiece

Lift



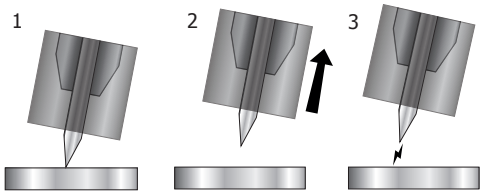
1- Position the torch nozzle and electrode tip on the workpiece and press the torch button.
2- Tilt the torch until there is a gap of approximately 2–3 mm between the electrode tip and the workpiece. The arc starts.
3- Return the torch to a normal position to start the welding cycle.

HF



1- Place the torch in the welding position above the workpiece (distance of about 2-3 mm between the electrode tip and the workpiece).
2- Press the torch button (the arc is activated without physical contact using high-frequency (HF) ignition pulses).
3- The initial welding current flows, and the process continues as per the welding cycle.

Touch.HF



1- Position the electrode tip on the workpiece and press the torch button.
2- Lift the electrode from the workpiece.
3- After a delay of 0.2s, the arc is activated without contact with the workpiece using high voltage HF ignition pulses, the initial welding current flows and the weld continues according to the welding cycle.

ELECTRODE TIP SIZE (CAP BALLING)

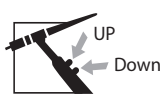
The ‘Cap Balling’ function allows you to choose a rounded shape for the tungsten electrode, ensuring optimal ignition and high arc stability when welding with alternating current (AC). This function can be accessed quickly by holding down button no. 1.

3 formats available:



S	M	L
Small	Medium	Large

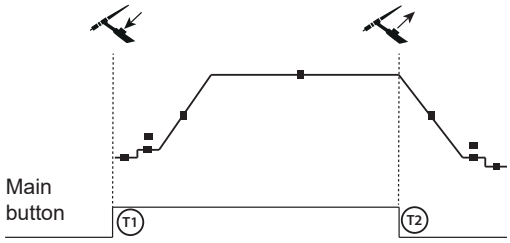
COMPATIBLE TORCHES AND TRIGGER BEHAVIOUR

				
Trigger	Single button	Double button	Button + potentiometer	Up & Down
✓	✓	✓	✓	✓

For the 1-button torch, the button is called the «Main button».
For the 2-button torch, the first button is called the «Main button» and the second one is called «Secondary button».

2T

Conventional welding mode, with the trigger held down throughout the welding process.

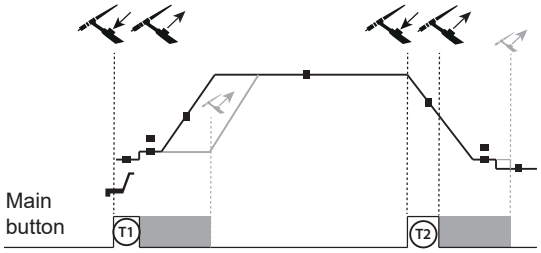


T1 - The main button is pressed, the cycle starts from the Pre-Gas phase.
T2 - The main button is released, the cycle switches to DownSlope and stops after the I_Stop phase.

If the main button is pressed again during the DownSlope, the current will resume as welding current.

4T-Start

Welding mode with trigger release management to activate the welding phase, allowing for welding without the need to hold the trigger down.

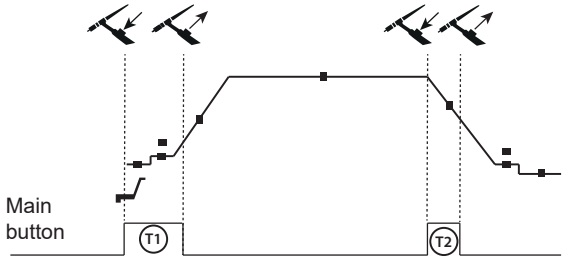


T1 - The main button is pressed, the cycle starts from the Pre-Gas phase, enters the I_Start phase and continues until the main button is released.
T2 - The main button is pressed, the cycle switches to DownSlope, then enters the I_Stop phase and continues until the main button is released.

If the main button is pressed again during the DownSlope, the current will resume as welding current.

4T-Weld

Welding mode without trigger release management, for welding without the need to hold down the trigger.

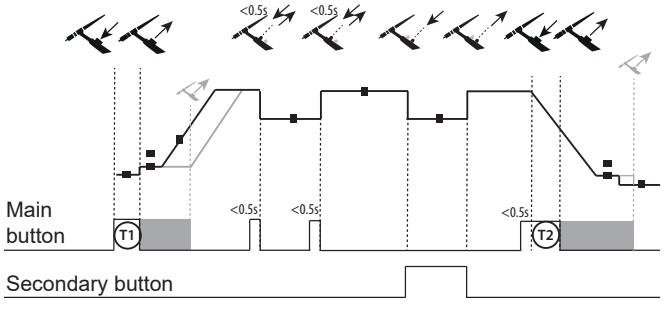


T1 - The main button is pressed, the cycle starts from the Pre-Gas phase through to welding, even if the trigger remains pressed.
T2 - The main button is pressed, the cycle switches to DownSlope and completes the welding cycle through to PreGas even if the trigger remains pressed.

If the main button is pressed again during the DownSlope, the current will resume as welding current.

4T-LOG

Welding mode that allows the operator to switch between two pre-set welding currents using the trigger.



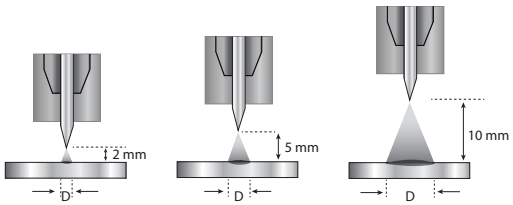
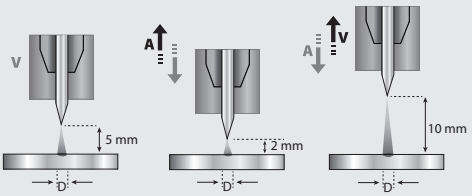
T1 - The main button is pressed, the cycle starts from the Pre-Gas phase, enters the I_Start phase and continues until the main button is released.
During the welding phase, quickly pressing and releasing the main button (<0.5 s) switches the current from welding current to cold current (and vice versa), or pressing the secondary button switches to cold current and releasing it reverts back to welding current (no delay with the secondary button).
T2 - The main button is held down (>0.5s), the cycle switches to DownSlope, then enters the I_Stop phase and continues until the main button is released.

If the main button is pressed for >0.5 seconds (and then released) during the DownSlope, the current will resume as welding current.

For double-button or double-trigger torches + potentiometer, the ‘high’ trigger has the same functionality as the single-trigger torch. The «low» trigger, when held down, switches to the cold current. When using a potentiometer torch, the welding current can be adjusted between 50% and 100% of the value displayed. The Up & Down feature allows the current to be adjusted at the torch.

E-TIG

This mode ensures consistent welding power by measuring variations in arc length in real time to ensure uniform bead width and penetration. In applications where the assembly requires precise control of the welding energy, E-TIG mode ensures that the welding power remains consistent regardless of the position of the torch in relation to the workpiece.

Standard *(consistant current)*	E-TIG *(consistant energy)*
	

ADVANCED SETTINGS

Advanced settings	Settings	Description
HF duration	0.01 - 3 s	HF time before it stops
HF level	1 - 10	Voltage adjustment range from 5 kV to 14 kV
Current setting	-	Percentage / Absolute
Uc0	30 V / 50 V	Adjustment of breakdown voltage to suit the application
Sync AC	OFF - ON	Synchronous welding mode for eliminating interference when two AC power sources are used simultaneously on the same workpiece. Welding with this function will automatically synchronize the frequency with the mains power. AC frequencies will be restricted to 50Hz, 100Hz and 150Hz.
	Phase shift 0° - 300%	Power supply phase adjustment in 60° increments. This setting allows you to bypass the polarity switching of the connection plugs on the power source sockets.
	High-precision phase shift 0° - 59°	Fine adjustment of the power supply phase in 1° increments.

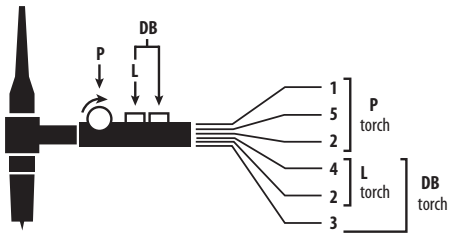
Wizard Lab

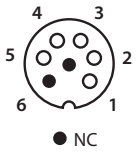
This welding mode enables complex (non-standard) welding cycles to be performed by a series of Steps. Each Step is determined by a ramp, a current plateau, and a type of current (DC-/DC+/AC/Pulse) during that Step.
The Wizard Lab configuration is done in two stages:
- Adjustment of the welding cycle and number of Steps
- Adjustment of each Step:
    - STEP (X/Y)
    - MODE (DC-/DC+/AC)
    - PULSE (ON/OFF)

Advanced settings, in ‘Expert display mode only:

Advanced settings	Setting	Description
Breakdown voltage	OFF, 0 - 50 V	Increased arc voltage before the welding machine cuts out
Breakdown delay	0 - 10 s	Time period for determining the breakdown voltage
Sticking voltage	OFF, 0 - 50 V	Lower arc voltage before welding machine shuts down (anti-sticking)
Sticking delay	0 - 10 s	Duration for which the sticking voltage is taken into account.

TRIGGER CONNECTION





Wiring diagram according to torch type

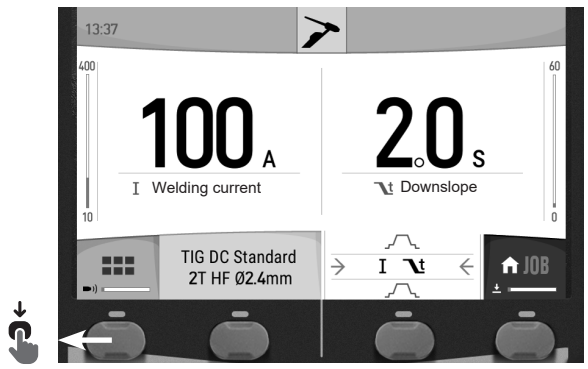
Electrical diagram according to torch type.

Torch type				Wire description	Associated connector pin
Up & Down torch	Torch button + potentiometer	Double button torch	Torch with trigger Single button torch	Common/Earth	2
				Button 1	4
				Button 2	3
				Common/Ground of potentiometer	2
				10 V	1
				Cursor	5
				Common/Ground of potentiometer	2
				Switch Up	1
				Switch Down	5

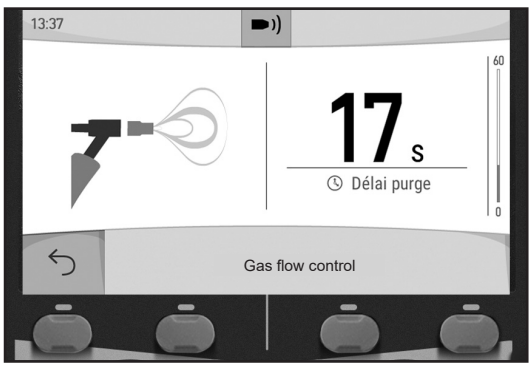
To enable automatic detection of your Up & Down torch, fit a 4.7 kΩ resistor between pins 1 and 2.
If you do not wish to use automatic detection, the Up & Down torch can be recognised manually by pressing the Up or Down button on your torch once.

MANUAL GAS PURGE

The presence of oxygen in the torch can lead to a decline in mechanical performance, resulting in reduced corrosion resistance. To purge the gas from the torch, press and hold button no. 1 (see HMI manual) and follow the procedure on the screen.



Hold down button no. 1 for 5 seconds.



Follow the procedure on the screen.

CONFIGURING THE SETTINGS

	Unity	Display mode			
		Easy	Pro	Expert	
Pre-Gas	s		✓	✓	Time required to purge the torch and create gas shielding before ignition
Current power	%/A		✓	✓	This starting current is a preheating phase before the current upslope.
Time power	s		✓	✓	Time of starting plateau before the current upslope.
Upslope	s		✓	✓	Provides a gradual increase in welding current
Welding current	A	✓	✓	✓	Welding current
Downslope	s	✓	✓	✓	Prevents cratering at the end of the welding process, and reduces the risk of cracking, particularly in light alloys.
End current	%/A		✓	✓	This stopping current is a phase after the current downslope.
Stopping time	s		✓	✓	Time of stopping plateau after the current downslope.
Thickness	mm / ″	✓	✓	✓	Thickness of the workpiece to be welded.
Welding	-	✓	✓	✓	Welding position
Post-Gas	s	✓	✓	✓	Duration of the gas shielding after the arc is extinguished. It protects the workpiece and the electrode from oxidation during cooling.
Waveform	-		✓	✓	Waveform of the pulse
AC wave shape	-		✓	✓	Alternating current (AC) waveform
AC current offset	-10/+10		✓	✓	AC current shift to positive or negative
Cold current	%/A		✓	✓	Secondary welding current known as a «cold» current.
Cold time	%		✓	✓	Balance of cold current pulse time
Frequency of pulses	Hz		✓	✓	Pulse frequency between welding current and cold current: ADJUSTMENT TIPS: • If welding with manual mfiller metal, then F(Hz) should be synchronized with the filler movement. • If the metal is thin and you are not using filler (< 0.8mm), F(Hz) > 10Hz • If welding in position, then F(Hz) < 100Hz
Welding frequency	Hz		✓	✓	Frequency of welding polarity inversions - stripping
Percentage of stripping / cleaning	%		✓	✓	Percentage of the welding period dedicated to stripping (default 30-35%)
AC time	s		✓	✓	Duration of the AC sequence in AC Mix mode
AC Current	A		✓	✓	Current of the AC sequence in AC Mix mode
DC time	s		✓	✓	Duration of the DC sequence in AC Mix mode
DC current	A		✓	✓	Current of the DC sequence in AC Mix mode
Spot duration	s	✓	✓	✓	Manual or fixed-duration spot phase

Access to certain welding parameters depends on the welding process (Synergic, AC, DC, etc.) and the selected display mode (Easy, Pro or Expert). Refer to the HMI manual. Some settings are expressed as % or A depending on the display mode selected (Easy, Pro, or Expert).

RECOMMENDED COMBINATIONS

	 (mm)	Current (A)	Ø Nozzle (mm)	Argon flow rate (L/min)
TIG DC	0.3 - 3	3 - 75	6.5 / 8	5 - 6
	2.4 - 6	60 - 150	6.5 / 8 / 9.5	6 - 7
	4 - 8	70 - 200	6,5 / 8 / 9.5	6 - 7
	6.8 - 10	120 - 250	9.5 / 11	7 - 8
	9 - 12	160 - 330	11 / 12.5 / 16	8 - 10
	10 - 14	275 - 450	16 / 17.5	10 - 12
	12 - 16	380 - 500	16 / 19	12 - 18
TIG AC	0.5 - 3	5 - 125	6.5 / 8 / 9.5	6 - 7
	0.8 - 5	80 - 210	9.5 / 11	7 - 8
	1.5 - 6	150 - 250	11 / 12.5 / 16	8 - 10
	1.6 - 11	180 - 350	16 / 17.5	10 - 12
	2 - 15	240 - 500	16 / 19	12 - 18

MMA (SMAW) WELDING MODE

INSTALLATION AND GUIDANCE

• Plug the cables, electrode holder and earth clamp into the connection sockets.
• Ensure that the welding polarities and power settings indicated on the electrode boxes are observed.
• Remove the electrode from the electrode holder when the welding power source is not in use.
• The unit is fitted with 3 features:
- Hot Start provides an overcurrent at the beginning of the welding process.
- Arc Force delivers an overcurrent that prevents sticking when the electrode re-enters the weld pool.
- Anti-Sticking makes it easier to remove the electrode from the workpiece if it sticks.

CHOOSING COATED ELECTRODES

• Rutile electrodes: very easy to use in any position.
• Basic electrodes: it can be used in all positions and is suitable for safety work due to its superior mechanical properties.
• Cellulosic electrodes: very dynamic arc with a high melting speed, it is suitable for use in all positions so it ideal for pipeline work.

PROCESS SETTINGS

		Welding processes			
Parameters	Settings	Standard	Pulse	AC	
Electrode type	Rutile Basic Cellulosic	✓	✓	✓	The type of electrode will determine specific parameters according to the elecrode profile, in order to optimise weldability.
Anti-sticking	OFF - ON	✓	✓	✓	The anti-stick feature is recommended to safely remove the electrode in the event of it sticking to the workpiece (the current is cut off automatically).
Polarity	Direct (+=+ and -=-) Inverse (+=- and -=+)	✓	✓	-	The polarity (forward or reverse) is selected electronically via the HMI.
Energy	Hold Thermal coefficient	✓	✓	✓	See «Energy» section on the following page.

Access to some of the welding parameters depends on the selected display mode: Settings/Display mode: Easy, Pro, Expert. Refer to the HMI manual.

WELDING PROCESSES

• Standard
This welding method is suitable for most applications. It is suitable for welding with all types of coated, rutile, basic and cellulosic electrodes and on all materials: steel, stainless steel and cast iron.

• Pulse
This welding mode is recommended for applications in a vertical upright position (PF). Pulsing keeps the weld pool colder while still promoting material transfer. Without pulsing, vertical rising welds require a «fir tree» movement, i.e. a challenging triangular movement. With MMA Pulse, this movement is not necessary, and depending on the thickness of your workpiece, a straight upward movement may be sufficient. However, if you want to enlarge your weld pool, a simple sideways movement similar to flat welding will be adequate. If this is the case, you can set the frequency of your current pulse on the display. This process offers greater control of vertical welding tasks.

• AC
This welding mode is used in very specific conditions where the arc is unstable or not straight, when it is subject to magnetic interference (magnetised parts, nearby magnetic fields, etc.). The alternating current (AC) renders the welding arc less sensitive to changes in the electrical conditions. It is necessary to ensure that your electrode is suitable for use with alternating current.

CONFIGURING THE SETTINGS

	Unity	Display mode			
		Easy	Pro	Expert	
Percentage/Current Hot Start	%/A	✓	✓	✓	Percentage of Hot Start relative to welding current / Hot Start current setting
Duration of Hot Start	s		✓	✓	Hot Start phase.
Welding current	A	✓	✓	✓	Welding current.
Hot current	A		✓	✓	First welding current known as «hot».
Cold current	A		✓	✓	Second welding current known as «cold».
Cold weather	%		✓	✓	Balance of the cold current time of the pulse.
Frequency of the pulse	Hz		✓	✓	Pulse mode pulse frequency.
Arc Force	-10/+10		✓	✓	Welding aid to prevent sticking.
Pulse strength	1-10	✓			Assistance with pulsed welding.

Access to some of the welding parameters depends on the selected display mode: Settings/Display mode: Easy, Pro, Expert. Refer to the HMI manual.

ADJUSTING THE WELDING INTENSITY

The following settings correspond to the usable current range based on electrode type and diameter. The ranges are quite broad, as they vary depending on the application and the welding position.

Electrode Ø (mm)	Rutile E6013 (A)	Basic E7018 (A)	Cellulosic E6010 (A)
1.6	30-60	30-55	-
2.0	50-70	50-80	-
2.5	60-100	80-110	60-75
3.15	80-150	90-140	85-90
4.0	100-200	125-210	120-160
5	150-290	200-260	110-170
6.3	200-385	220-340	-

ADJUSTING THE ARC FORCE

It is advisable to set the Arc Force to the middle position (0) to begin welding, and then adjust it according to the results and personal welding preferences. Note: The adjustment range of the Arc Force is specific to the type of electrode chosen.

ADJUSTING THE HOT START

It is advisable to set a low Hot Start for thin gauges and a high Hot Start for thick gauges and difficult materials (dirty or oxidised workpieces).

ACTIVATION OF THE VRD FUNCTION (VOLTAGE REDUCTION DEVICE)

The voltage reduction device (or VRD) is used to protect the welder. The welding current is only delivered when the electrode is in contact with the workpiece (low resistance). As soon as the electrode is removed, the VRD function lowers the voltage considerably.

By default, the voltage reduction device is deactivated. In order to activate it, the user must open the product and complete the following procedure:
1. DISCONNECT THE PRODUCT FROM THE POWER SUPPLY AND WAIT 5 MINUTES FOR SAFETY.
2. Remove the side of the power source (see page at the end of the manual).
3. Locate the control board and the VRD switch (see page at the end of the manual).
4. Toggle the switch to the ON position.
5. The VRD function is activated.
6. Refit the side panel of the unit.
7. The VRD icon on the interface (HMI) will be lit.

To deactivate the VRD function, simply flip the switch back to the opposite position.

POWER

This mode, developed for energy-controlled welding using a DMOS, allows you to view the energy used in the weld bead post-welding, and to adjust:
- The thermal coefficient according to the standard used: 1 for ASME standards and 0.6 (TIG) or 0.8 (MMA) for European standards. The energy displayed is calculated taking into account this coefficient.
- Length of the weld bead (OFF - mm): if a length is recorded, then the energy display is no longer in joules, but in joules/mm (the ‘J’ unit on the display flashes).

OPTIONAL REMOTE CONTROL

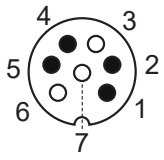
	231 AC/DC	321 AC/DC	401 AC/DC	501 AC/DC	
Options Reference	Connection fitting				Description
RC-FA2 083356	I-4		I-9		The RC-FA2 pedal is used to vary the current between minimum and 100% of the user-set intensity setting. In TIG, the power source will only work in 2-T mode. Additionally, increasing and decreasing the current is no longer controlled via the power source (inactive function) but by the user via the foot pedal.
RC-HD3 079700	I-9		I-3		The RC-HD3 is a wired digital remote control featuring all the options and functions of a Titanium model.
RC-HD4 082076	I-9		I-3		RC-HD4 is a multifunctional wired remote control with a digital display, allowing precise and instanteous adjustment of the welding current. Easy to use, and featuring a lockable screen, it is the ideal solution for remote operations away from the power source or in confined spaces. It can also be used for “Degaussing”.

C5 (Connect 5) **:**

Using a previously created C5 list of 5 JOBS and a free programme, this simple automation mode allows JOBS to be recalled via a PLC (see note on the website :
https://planet.gys.fr/extranet/fr/document/CONNECT5/media_3032/fr%2Cuk%2Cde%2Cit%2Ces%2Cnl).

Pedal connections:
The I-11 connector can be used to connect any pedal-type remote control.
For users with a foot pedal other than part no. 083356, use the specific 7-pin socket (option ref. 046238) and follow the wiring diagram below, adding a 3.3 kΩ resistor between pins 1 and 2.

Type of remote control	Wire description	Pin
Foot pedal	VCC	1
	Common/Earth	2
	Interrupteur	4
	Switch	5



External view

OPTIONAL COOLING UNIT

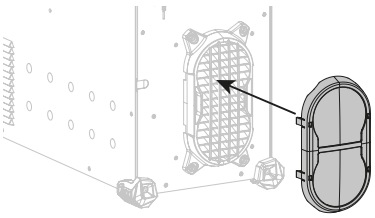
The cooling unit is automatically detected by the machine. To deactivate the cooling unit (OFF), please refer to the interface manual.
Depending on the type of cooling unit used, various safety devices are integrated to provide protection for the torch and the user, including:

	Cooling power	Capacity	Power supply voltage	Compatibility	Protections		
					Thermal protection	Coolant flow sensor	Coolant level sensor
KOOLWELD 1 070820	1000 W	3 L	24 V DC	231	✓	✓	✓
KOOLWELD 4 087293					✓		
KOOLWELD 3 083363		5.5 L	400 V +/-15%	321 / 401 / 501	✓	✓	✓

Make sure that the cooling unit is switched off before disconnecting the liquid inlet and outlet pipes from the torch.
Coolant is harmful and can irritate the eyes, respiratory tract, and skin. Hot liquid may cause burns.

OPTIONAL FILTER KIT

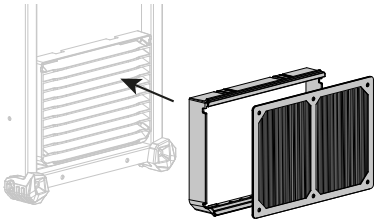
231:



Dust filter (ref. 063143) with filtration level: 270 µm (0.27 mm).
Please note that the use of this filter reduces the duty cycle of your machine.

To avoid the risk of overheating due to clogged air vents, the dust filter should be cleaned on a regular basis. Unclip it and clean it with compressed air.

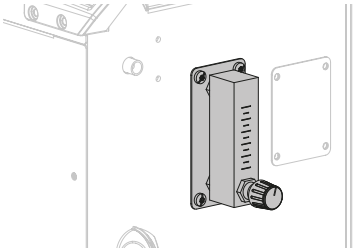
321 / 401 / 501:



Dust filter (ref. 046580) with filtration level: 630 µm (0.63 mm).
Please note that the use of this filter reduces the duty cycle of your machine.

To avoid the risk of overheating due to clogged air vents, the dust filter should be cleaned on a regular basis. Unclip and clean with compressed air.

OPTIONAL FLOW METER KIT (321 / 401 / 501)



The flow meter kit (ref. 073395) allows for precise adjustment and control of the gas flow from the torch, when connected to a gas supply. The gas pressure in the system must be stable and between 2 and 7 bar. The flow rate can be set between 3 and 30 l/min.

UPDATE PROCEDURE

Download the latest firmware:
To download the latest software version, enter the serial number of your welding power source here:
https://update.jbdc.pro/getlastupdate

Then copy the '.egf' file to the USB stick. This file must not be located in a folder or subfolder of the USB stick.
The USB stick must contain only one '.egf' file and must be formatted in FAT32 or exFAT.

Update your unit:
1. Turn off your unit using the On/Off button.
2. Plug the USB stick into the USB port.
3. Press and hold both buttons in the center of the HMI.
4. Turn on your product using the On/Off button while holding down both buttons in the center of the HMI. When the screen displays one of these messages, you can release the buttons.

System Update V__.__ Please Wait ...	Versions are up-to-date	USB Stick Detection
Update in progress. When the update is complete, the product will display 'Update completed' and automatically restart after 3 seconds.	The product is already up to date and will restart automatically after 3 seconds.	The USB stick is not recognised. Format your USB stick in FAT32/exFAT and copy the '.egf' file to the USB stick.

WARRANTY CONDITIONS

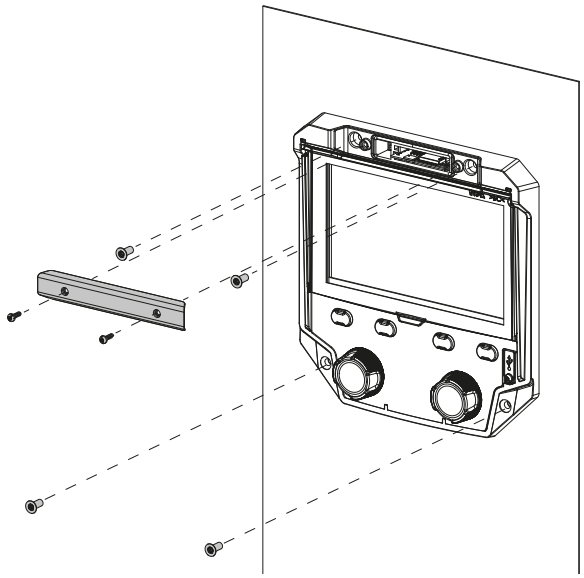
The warranty covers any defects or manufacturing faults for two years from the date of purchase (parts and labour).
The warranty does not cover:
• Any other damage caused during transport.
• The general wear and tear of parts (i.e. : cables, clamps, etc.).
• Incidents caused by misuse (incorrect power supply, dropping or dismantling).
• Environmental failures (contamination, corrosion, etc).
In the event of a breakdown, please return the item to your distributor, along with:
- dated proof of purchase (receipt, invoice, etc.),
a note explaining the issue.

BUTTON CELL REPLACEMENT / KNOPFZELLE AUSTAUSCHEN / SUSTITUCIÓN DE LA PILA DE BOTÓN / ЗАМЕНА БАТАРЕИ / KNOOPCEL VERVANGEN / BATTERIA DI RICAMBIO A BOTTONE

SECURITY

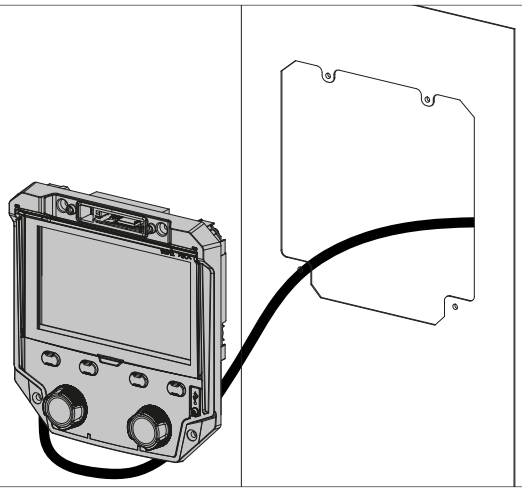
Pendant l'installation de la pile, s'assurer que le produit est déconnecté du réseau.
During battery installation, ensure that the product is disconnected from the network.
Während der Installation der Batterie stellen Sie sicher, dass das Gerät vom Netz getrennt ist.

1

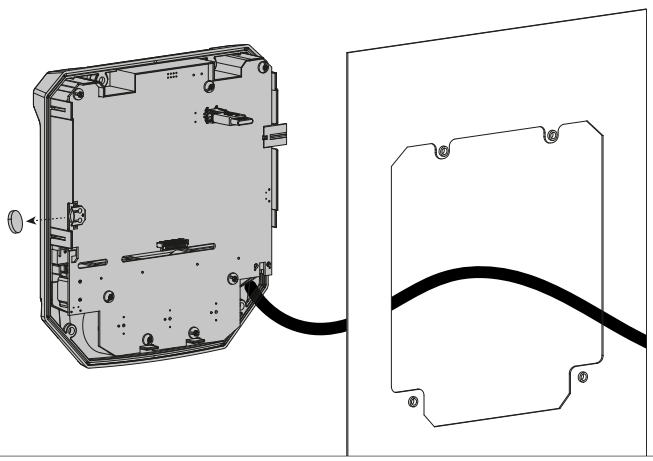


D3x10 Torx (x2) + M5x12 Torx (x4)

2



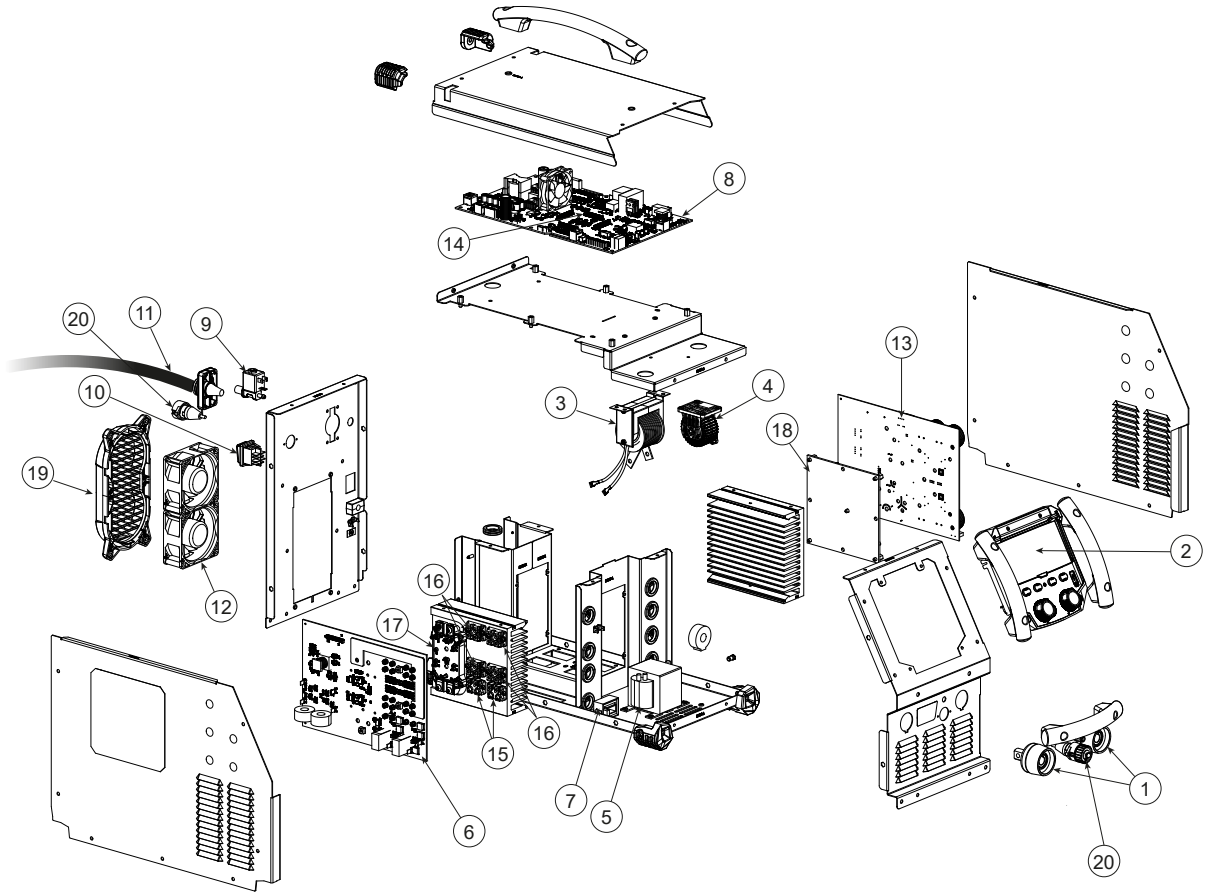
3



231	321 / 401/501
Lithium CR2032	Lithium CR1220

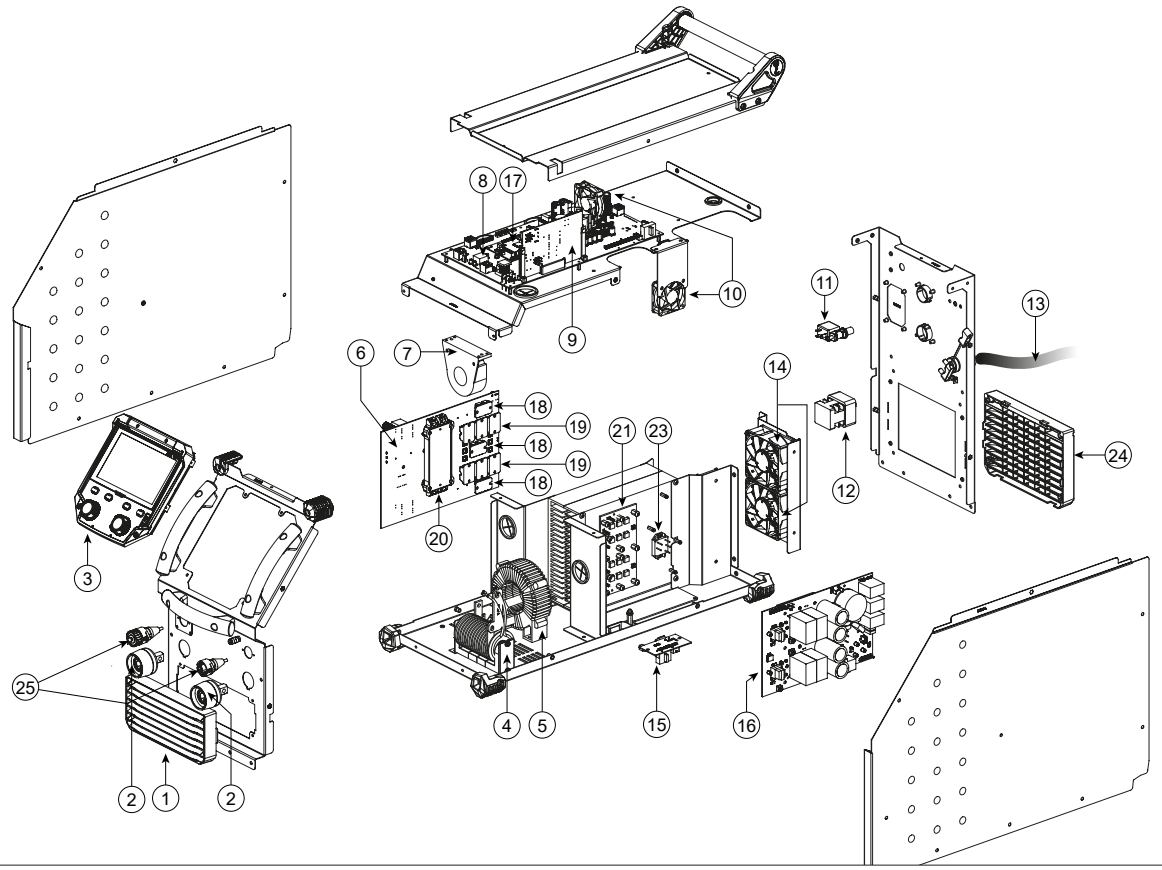
SPARE PARTS / ERSATZTEILE / PIEZAS DE REPUESTO / ЗАПАСНЫЕ ЧАСТИ / RESERVE ONDERDELEN / PEZZI DI RICAMBIO

TITANIUM 231 AC/DC FV



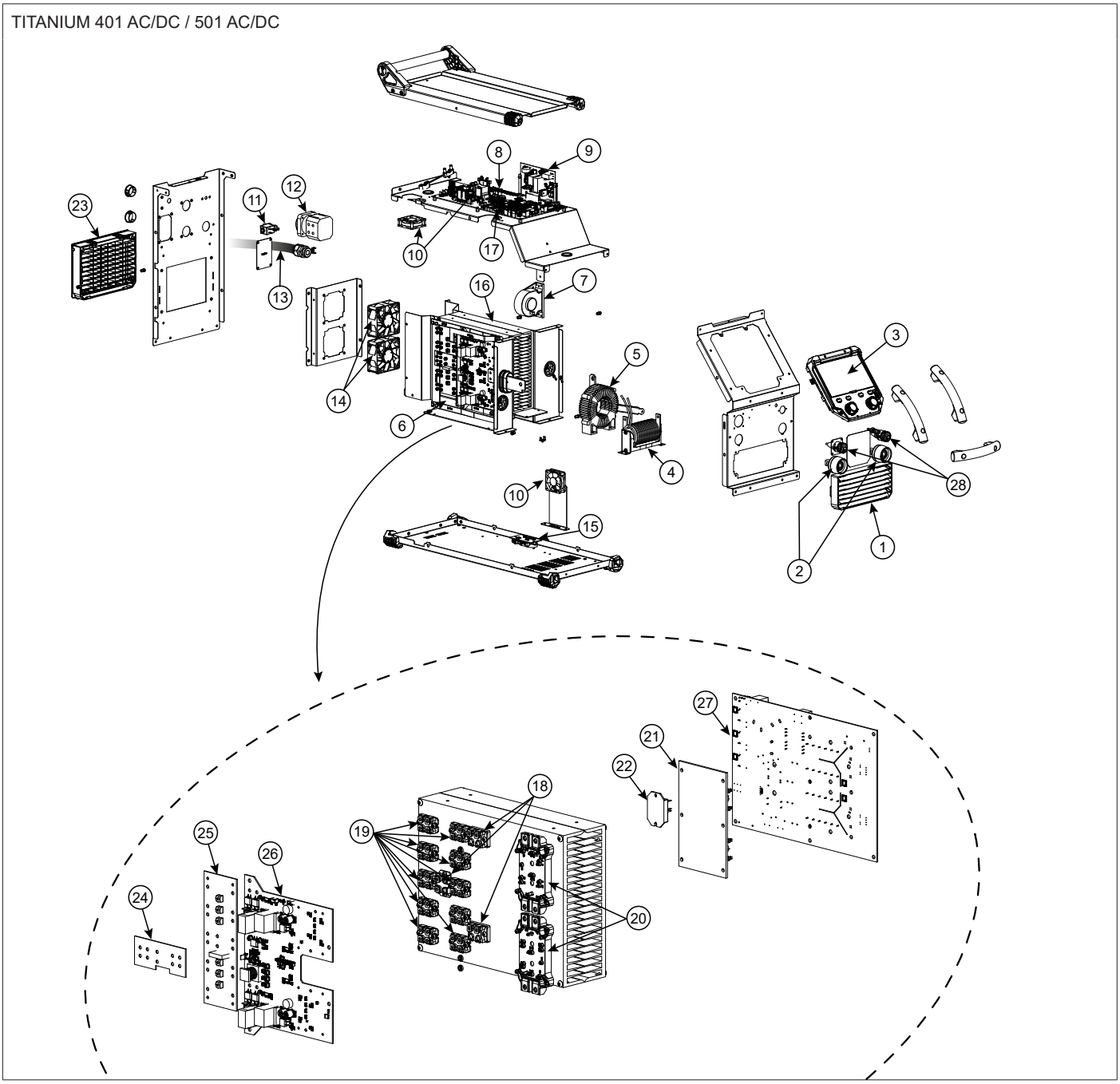
1	Embase texas femelle / Female dinse socket	51528
2	IHM / HMI	E0336C
3	Transformateur HF / HF transformer	63309
4	Transformateur de puissance / Power Transformer	63014
5	Bloc secondaire / Secondary block	E5083
6	Capteur de courant / Current sensor	64452
7	Carte fond de panier / Backplane circuit	E0274C
8	Ventilateur / Ventilateur / Fan	51018
9	Electrovanne / Solenoid valve	71542
10	Interrupteur / Switch	52402
11	Cordon secteur / Power cord	21464
12	Ventilateur de puissance / Power fan	50999
13	Bloc primaire / Primary block	E5096
14	Carte Micro / Microcard	E0232C
15	Module résistance / Resistance module	51424
16	Module diode / Diode module	52197
17	Module IGBT / IGBT module	52211
18	SMI primaire / Primary SMI	E5082
19	Grille arrière / Rear grille	56225
20	Connecteur CAD / Remote or torch connector	56094
21	Self PFC / Self PFC	63691
22	Connecteur Groupe Froid / Cool Unit connector	72196

TITANIUM 321 AC/DC



1	Grille face avant / Front grille		56286
2	Embase texas femelle / Female dinse socket		51528
3	IHM / HMI		E0233C
4	Transformateur HF / HF transformer		63716
5	Transformateur torique / Toroidal transformer		63163
6	Bloc secondaire / Secondary block		E5065
7	Capteur de courant / Current sensor		64460
8	Carte fond de panier / Backplane circuit		E0229C
9	Carte HF / HF card	serial number ≤ 25.10.069879.020001	E0099C
		serial number > 25.10.069879.020001	E0298C
10	Ventilateur auxiliaire / Auxiliary fan		51018
11	Electrovanne / Solenoid valve		71542
12	Interrupteur / Switch		51069
13	Cordon secteur / Power cord	5 m	21589
14	Ventilateur de puissance / Power fan		50999
15	Carte groupe froid / Cooler board		E0262C
16	Bloc primaire / Primary block		E5066
17	Carte Micro / Microcard		E0232C
18	Module résistance / Resistance module		51424
19	Module diode / Diode module		52197
20	Module IGBT / IGBT module		52214
21	SMI primaire / Primary SMI		97725
22	Grille arrière / Rear grille		56094
23	Module diode / Diode module		64457
24	Grille face arrière / Back grille		56094
25	Connecteur CAD / Remote or torch connector		72172

TITANIUM 401 AC/DC / 501 AC/DC

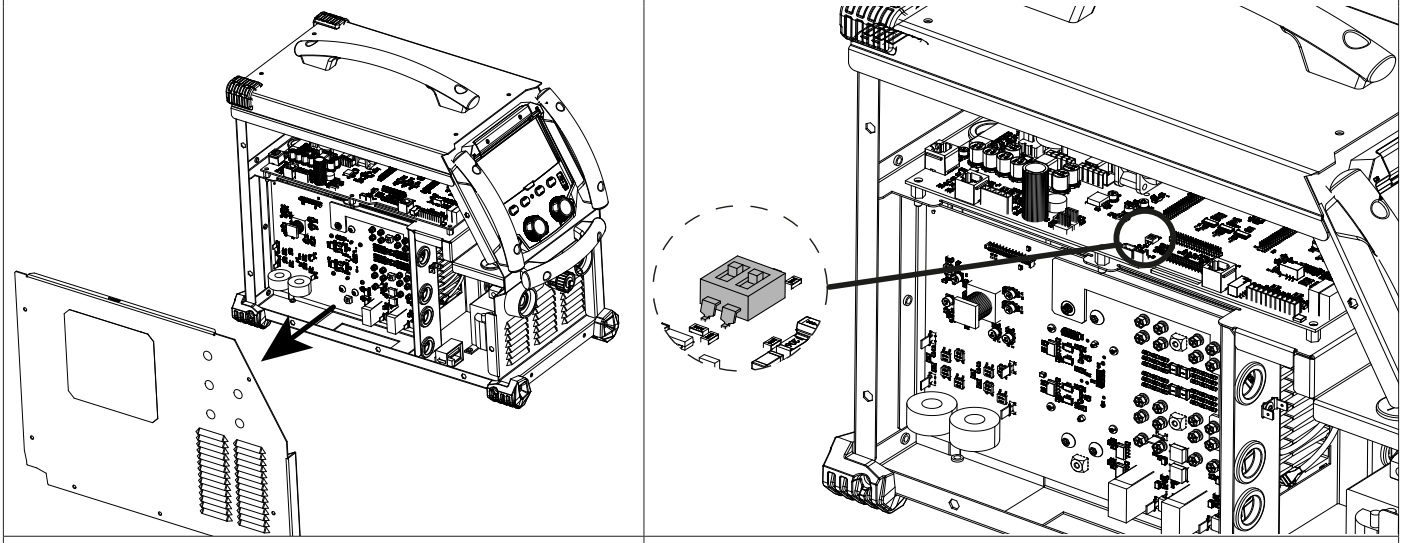


		401 AC/DC	501 AC/DC
1	Grille face avant / Front grille	56286	
2	Embase texas femelle / Female dinse socket	51528	
3	IHM / HMI	E0233C	
4	Transformateur HF / HF transformer	63716	
5	Transformateur torique / Toroidal transformer	63873	
6	Bloc secondaire / Secondary block	E5099	
7	Capteur de courant / Current sensor	64460	
8	Carte fond de panier / Backplane circuit	E0309C	E0313C
9	Carte HF / HF card	E0298C	
10	Ventilateur auxiliaire / Auxiliary fan	51018	
11	Electrovanne / Solenoid valve	71542	
12	Interrupteur / Switch	51061	
13	Cordon secteur / Power cord	21589	
14	Ventilateur de puissance / Power fan	50999	

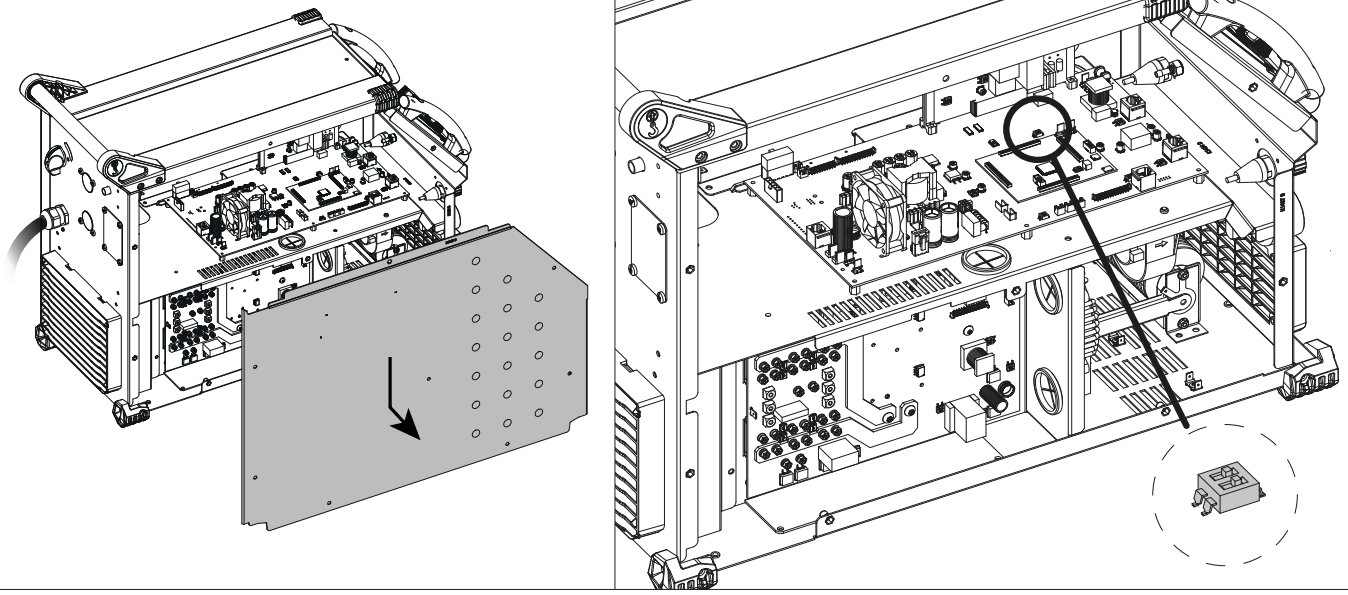
15	Carte groupe froid / Cooler board	E0262C
16	Bloc primaire / Primary block	E5098
17	Carte Micro / Microcard	E0232C
18	Module résistance / Resistance module	51424
19	Module diode / Diode module	52197
20	Module IGBT / IGBT module	52211
21	SMI primaire / Primary SMI	97735
22	Module diode / Diode module	52193
23	Grille face arrière / back grille	56094
24	Carte protection diodes / diodes protection board	E0353C
25	Carte diode secondaire / diode board	E0335C
26	Carte secondaire / secondary board	E0308C
27	Carte primaire / primary board	E0307C
28	Connecteur CAD / Remote or torch connector	72172

INTERRUPTEUR VRD / VRD SWITCH / VRD-SCHALTER / INTERRUPTOR VRD / VRD SCHAKELAAR / INTERRUTTORE VRD

TITANIUM 231 AC/DC FV



TITANIUM 321 AC/DC

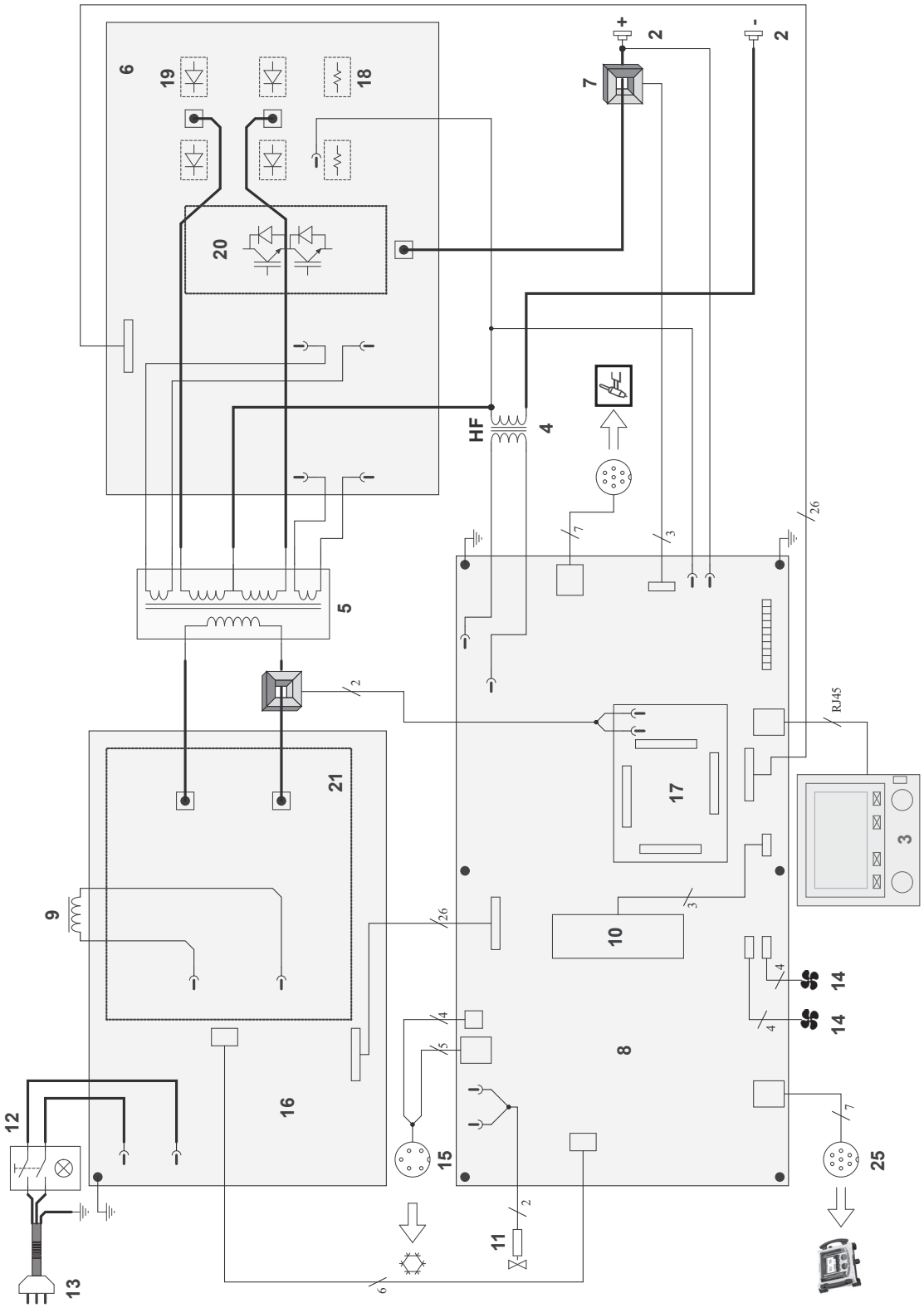




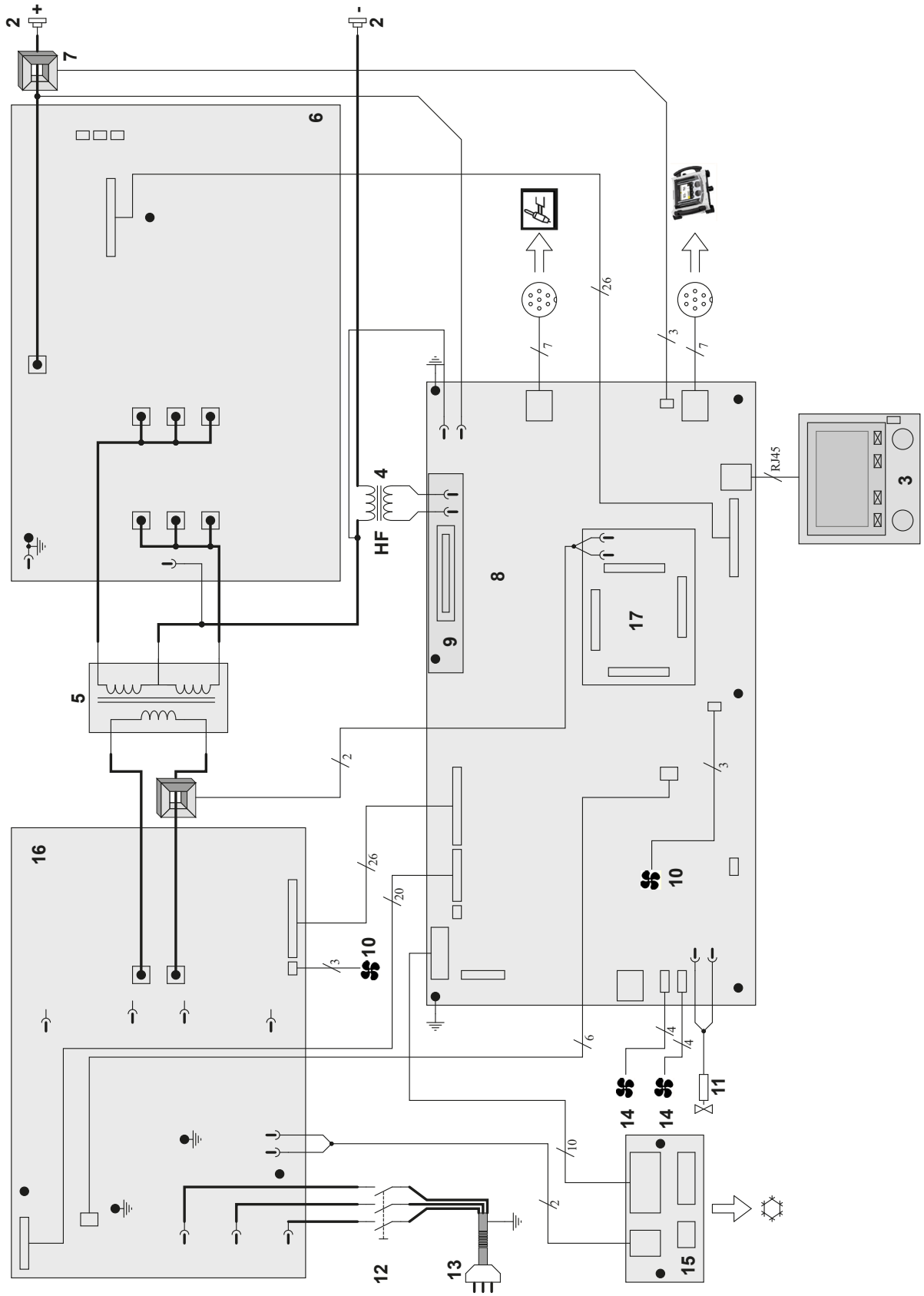
VRD OFF **VRD ON**

CIRCUIT DIAGRAM / SCHALTPLAN / DIAGRAMA ELECTRICO / ЭЛЕКТРИЧЕСКАЯ СХЕМА / ELEKTRISCHE SCHEMA / SCEMA ELETTRICO

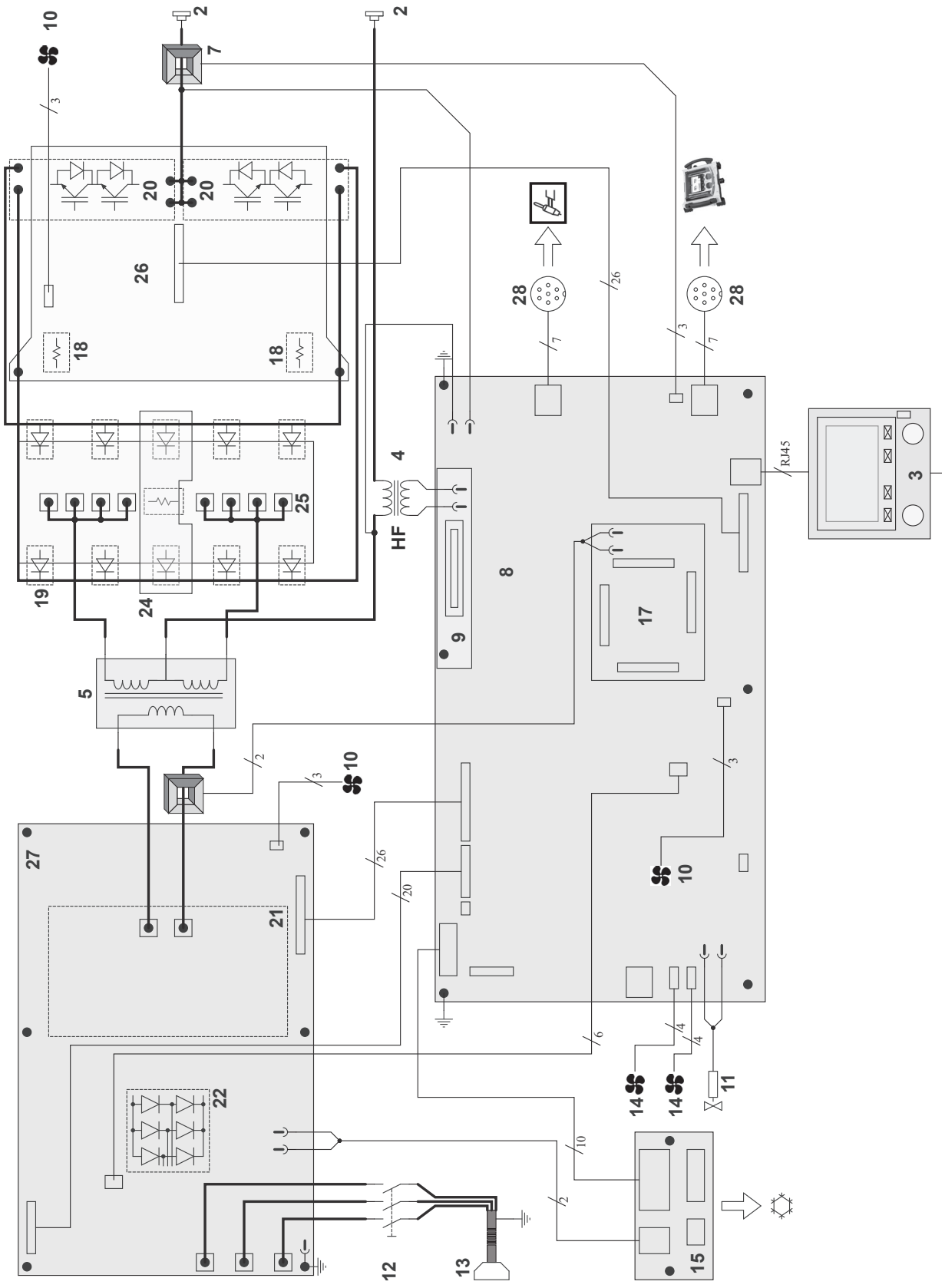
TITANIUM 231 AC/DC FV



TITANIUM 321 AC/DC



TITANIUM 401 AC/DC / 501 AC/DC



TECHNICAL SPECIFICATIONS / TECHNISCHE DATEN / ESPECIFICACIONES TÉCNICAS / ТЕХНИЧЕСКИЕ СПЕЦИФИКАЦИИ / TECHNISCHE GEGEVENS / SPECIFICHE TECNICHE

		TITANIUM 231 AC/DC FV					
Primaire / Primary / Primär / Primario / Първичка / Primaire / Primario							
Tension d'alimentation / Power supply voltage / Versorgungsspannung / Tensión de red eléctrica / Напряжение питания / Voedingsspanning / Tensione di alimentazione	U1	110 V +/- 15%		230 V +/- 15%			
Fréquence secteur / Mains frequency / Netzfrequenz / Frecuencia / Частота сети / Frequentie sector / Frequenza settore		50 / 60 Hz					
Nombre de phases / Number of phases / Anzahl der Phasen / Número de fases / Количество фаз / Aantal fasen / Numero di fase		1					
Fusible disjoncteur / Fuse / Sicherung / Fusible disyuntor / Плавкий предохранитель прерывателя / Zekering hoofdschakelaar / Fusibile disgiuntore		25 A		16 A		20 A**	
Courant d'alimentation effectif maximal / Maximum effective supply current / Corriente de alimentación efectiva máxima / Maximale effectieve voedingsstroom / Corrente di alimentazione effettiva massima / Maksymalny efektywny prąd zasilania	I1eff	25 A		16 A		20 A**	
Courant d'alimentation maximal / Maximum supply current / Corriente de alimentación máxima / Maximale voedingsstroom / Corrente di alimentazione massima / Maksymalny prąd zasilania	I1max	45 A		35.7 A			
Section du cordon secteur / Mains cable section / Sectie netsnoer / Sección del cable de alimentación / Sezione del cavo di alimentazione / Odcinek przewodu zasilającego		3 x 2.5 mm²					
Puissance active maximale consommée / Maximum active power consumed / Consumo máximo de energía activa / Maximale actieve verbruikte vermogen / Potenza attiva massima consumata / Maksymalny pobór mocy czynne		6720 W					
Consommation au ralenti / Idle consumption / Consumo en ralentizado / Stationair verbruik / Consumo al minimo / Zużycie na biegu jałowym		20 W					
Rendement à I2max / Efficiency at I2max / Eficiencia a I2máx / Rendement bij I2max / Efficienza a I2max / Sprawność przy I2max		82 %					
Facteur de puissance à I2max / Power factor at I2max / Factor de potencia a I2max / Inschakelduur bij I2max / Ciclo di potenza a I2max / Współczynnik mocy przy I2max	λ	0.99					
COS PHI		0.99					
Classe CEM / EMC class / Classe CEM / Klasse CEM / Classe CEM / Klasa EMC		A					
Secondaire / Secondary / Sekundär / Secundario / Вторичка / Secondair / Secondario		MMA	TIG	MMA	TIG	MMA	TIG
Tension à vide / No load voltage / Leerlaufspannung / Tensión al vacío / Напряжение холостого хода / Nullastspanning / Tensione a vuoto	U0 (TCO)	60 V					
Tension à vide réduite (Tension VRD) / Reduced open circuit voltage (VRD voltage) / Tensión reducida en vacío (tensión VRD) / Nullast spanning (Spanning VRD) / Tensione a vuoto ridotta (Tensione VRD) / Obniżone napięcie biego jałowego (Napięcie VRD)	Ur	25.6 V					
Nature du courant de soudage / Type of welding current / Tipo de corriente de soldadura / Type lasstroom / Tipo di corrente di saldatura / Rodzaj prądu spawania		AC / DC					
Modes de soudage / Welding modes / Modos de soldadura / Lasmodules / Modalità di saldatura / Tryby spawania		MMA, TIG					
Tension crête du dispositif d'amorçage manuel (EN60974-3) / Manual striking system's maximum voltage (EN60974-3) / Spitzenspannung des manuellen Startgerätes (EN60974-3) / Tensión pico del dispositivo de cebado manual (EN60974-3) / Пиковое напряжение механизма ручного поджига (EN60974-3) / Piekspanning van het handmatige startsysteem (EN60974-3) / Tensione di picco del dispositivo di innesco manuale (EN60974-3) / Napięcie szczytowe urządzenia do rozruchu ręcznego (EN60974-3)		10 kV					
Courant de soudage minimal / Minimum welding current / Corriente mínima de soldadura / Minimale lasstroom / Corrente minima di saldatura / Minimalny prąd spawania		5 A	3 A	5 A	3 A	5 A	3 A
Courant de sortie nominal / Rate current output / nominaler Arbeitsstrom / Corriente de salida nominal / Номинальный выходной ток / Nominale uitgangsstroom / Corrente di uscita nominale	I2	5 ➔ 120 A	3 ➔ 140 A	5 ➔ 230 A	3 ➔ 230 A	5 ➔ 230 A	3 ➔ 230 A
Tension de sortie conventionnelle / Conventional voltage output / entsprechende Arbeitsspannung / Условное выходные напряжения / Tensión de salida convencional / Conventionele uitgangsspanning / Tensione di uscita convenzionale	U2	20.2 ➔ 25.6 V	10.12 ➔ 17.2 V	20.2 ➔ 29.2 V	10.12 ➔ 19.2 V	20.2 ➔ 29.2 V	10.12 ➔ 19.2 V
* Facteur de marche à 40°C (10 min), Norme EN60974-1 / Duty cycle at 40°C (10 min), Standard EN60974-1. Einschaltdauer @ 40°C (10 min), EN60974-1-Norm / Ciclo de trabajo a 40°C (10 min), Norma EN60974-1/ ПВ% при 40°C (10 мин), Норма EN60974-1. / Inschakelduur bij 40°C (10 min), Norm EN60974-1, Ciclo di lavoro a 40°C (10 min), Norma EN60974-1.	Imax	45 %	35 %	20 %	40 %	20 %	40 %
	60 %	95 A	155 A	155 A	205 A	180 A	215 A
	100 %	75 A	130 A	130 A	170 A	150 A	200 A
Température de fonctionnement / Functionning temperature / Betriebstemperatur / Temperatura de funcionamiento / Рабочая температура / Gebruikstemperatuur / Temperatura di funzionamento		-10°C ➔ +40°C					
Température de stockage / Storage temperature / Lagertemperatur / Temperatura de almacenaje / Температура хранения / Bewaartemperatuur / Temperatura di stoccaggio		-20°C ➔ +55°C					
Degré de protection / Protection level / Schutzart / Grado de protección / Степень защиты / Beschermingsklasse / Grado di protezione		IP23					
Classe d'isolation minimale des enroulements / Minimum coil insulation class / Clase mínima de aislamiento del bobinado / Minimale isolatieklasse omwikkelingen / Classe minima di isolamento degli avvolgimenti / Minimalna klasa izolacji okablowania		B					
Dimensions (Lxlxh) / Dimensions (LxWxH) / Abmessungen (Lxbxt) / Dimensiones (Lxlxh) / Размеры (ДхШхВ) / Afmetingen (Lxlxh) / Dimensioni (Lxlxh)		58 x 26 x 44 cm					
Poids / Weight / Gewicht / Bec / Peso / Gewicht / Peso		20.1 kg					

*Les facteurs de marche sont réalisés selon la norme EN60974-1 à 40°C et sur un cycle de 10 min. Lors d'utilisation intensive (supérieur au facteur de marche) la protection thermique peut s'enclencher, dans ce cas, l'arc s'éteint et le témoin ⇓ s'allume. Laissez l'appareil alimenté pour permettre son refroidissement jusqu'à annulation de la protection. La source de courant décrit une caractéristique de sortie de type tombante. Dans certains pays, U0 est appelé TCO.

*The duty cycles are measured according to standard EN60974-1 à 40°C and on a 10 min cycle. While under intensive use (> to duty cycle) the thermal protection can turn on, in that case, the arc swictes off and the indicator ⇓ switches on. Keep the machine's power supply on to enable cooling until thermal protection cancellation. The welding power source describes an external drooping characteristic. In some countries, U0 is called TCO.

* Einschaltdauer gemäß EN60974-1 (10 Minuten - 40°C). Bei sehr intensivem Gebrauch (>Einschaltdauer) kann der Thermoschutz ausgelöst werden. In diesem Fall wird der Lichtbogen abgeschaltet und die entsprechende Warnung ⇓ erscheint auf der Anzeige. Das Gerät zum Abkühlen nicht ausschalten und laufen lassen bis das Gerät wieder bereit ist. Das Gerät entspricht in seiner Charakteristik einer Spannungsquelle mit fallender Kennlinie. In einigen Ländern wird U0 als TCO bezeichnet.

*De inschakelduur is gemeten volgens de norm EN60974-1 bij een temperatuur van 40°C en bij een cyclus van 10 minuten. Bij intensief gebruik (superieur aan de inschakelduur) kan de thermische beveiliging zich in werking stellen. In dat geval gaat de boog uit en gaat het beveiligingslampje ⇓ gaat branden. Laat het apparaat aan de netspanning staan om het te laten afkoelen, totdat de beveiliging afslaat. Het apparaat heeft een uitgaande dalende eigenschap. In sommige landen wordt U0 TCO genoemd.

*I cicli di lavoro sono realizzati secondo la norma EN60974-1 a 40°C e su un ciclo di 10 min. Durante l'uso intensivo (> al ciclo di lavoro) la protezione termica può attivarsi, in questo caso, l'arco si spegne e la spia ⇓ si illumina. Lasciate il dispositivo collegato per permetterne il raffreddamento fino all'annullamento della protezione. La fonte di corrente di saldatura presenta una caratteristica di uscita spiovente. In alcuni Paesi, U0 viene chiamata TCO.

*Los ciclos de trabajo están realizados en acuerdo con la norma EN60974-1 a 40ºC y sobre un ciclo de diez minutos. Durante un uso intensivo (superior al ciclo de trabajo), se puede activar la protección térmica. En este caso, el arco se apaga y el indicador ⇓ se enciende. Deje el aparato conectado para permitir que se enfríe hasta que se anule la protección. La fuente de corriente de soldadura posee una salida de tipo corriente constante. En algunos países, U0 se llama TCO.

**nécessite le remplacement de la prise 16 A d'origine par une prise 20 A. / **Requires the original 16 A socket to be replaced with a 20 A socket. / **Erfordert den Austausch der ursprünglichen 16-A-Steckdose durch eine 20-A-Steckdose. / **Es necesario sustituir la toma de corriente original de 16 A por una de 20 A. / **требует замены штатной розетки на 16 А на розетку на 20 А. / **Hiervoor moet de originele 16 A-stekker worden vervangen door een 20 A-stekker. / **richiede la sostituzione della presa originale da 16 A con una da 20 A.

		TITANIUM 321 AC/DC		
Primaire / Primary / Primär / Primario / Първична / Primaire / Primario				
Tension d'alimentation / Power supply voltage / Versorgungsspannung / Tensión de red eléctrica / Напряжение питания / Voedingsspanning / Tensione di alimentazione	U1	400 V +/- 15%		
Fréquence secteur / Mains frequency / Netzfrequenz / Frecuencia / Честота сети / Frequentie sector / Frequenza settore		50 / 60 Hz		
Nombre de phases / Number of phases / Anzahl der Phasen / Número de fases / Количество фаз / Aantal fasen / Numero di fase		3		
Fusible disjoncteur / Fuse / Sicherung / Fusible disyuntor / Плавкий предохранитель прерывателя / Zekering hoofdschakelaar / Fusibile disgiuntore		32 A		
Courant d'alimentation effectif maximal / Maximum effective supply current / Corriente de alimentación efectiva máxima / Maximale effectieve voedingsstroom / Corrente di alimentazione effettiva massima / Maksymalny efektywny prąd zasilania	I1eff	21 A		
Courant d'alimentation maximal / Maximum supply current / Corriente de alimentación máxima / Maximale voedingsstroom / Corrente di alimentazione massima / Maksymalny prąd zasilania	I1max	29 A		
Section du cordon secteur / Mains cable section / Sectie netsnoer / Sección del cable de alimentación / Sezione del cavo di alimentazione / Odcinek przewodu zasilającego		3 x 4 mm²		
Puissance active maximale consommée / Maximum active power consumed / Consumo máximo de energía activa / Maximale actieve verbruikte vermogen / Potenza attiva massima consumata / Maksymalny pobór mocy czynne		12 200 W		
Consommation au ralenti / Idle consumption / Consumo en ralentizado / Stationair verbruik / Consumo al minimo / Zużycie na biegu jałowym		21 W		
Rendement à I2max / Efficiency at I2max / Eficiencia a I2máx / Rendement bij I2max / Efficienza a I2max / Sprawność przy I2max		85.6 %		
Facteur de puissance à I2max / Power factor at I2max / Factor de potencia a I2max / Inschakelduur bij I2max / Ciclo di potenza a I2max / Współczynnik mocy przy I2max	λ	0.69		
COS PHI		0.99		
Classe CEM / EMC class / Classe CEM / Klasse CEM / Classe CEM / Klasa EMC		A		
Secondaire / Secondary / Sekundär / Secundario / Вторичка / Secondair / Secondario		MMA	TIG AC	TIG DC
Tension à vide / No load voltage / Leerlaufspannung / Tensión al vacío / Напряжение холостого хода / Nullastspanning / Tensione a vuoto	U0 (TCO)	83 V		
Tension à vide réduite (Tension VRD) / Reduced open circuit voltage (VRD voltage) / Tensión reducida en vacío (tensión VRD) / Nullast spanning (Spanning VRD) / Tensione a vuoto ridotta (Tensione VRD) / Obniżone napięcie biego jałowego (Napięcie VRD)	Ur	25.6 V		
Nature du courant de soudage / Type of welding current / Tipo de corriente de soldadura / Type lasstroom / Tipo di corrente di saldatura / Rodzaj prądu spawania		AC / DC		
Modes de soudage / Welding modes / Modos de soldadura / Lasmodules / Modalità di saldatura / Tryby spawania		MMA, TIG		
Tension crête du dispositif d'amorçage manuel (EN60974-3) / Manual striking system's maximum voltage (EN60974-3) / Spitzenspannung des manuellen Startgerätes (EN60974-3) / Tensión pico del dispositivo de cebado manual (EN60974-3) / Пиковое напряжение механизма ручного поджига (EN60974-3) / Piekspanning van het handmatige startsysteem (EN60974-3) / Tensione di picco del dispositivo di innesco manuale (EN60974-3) / Napięcie szczytowe urządzenia do rozruchu ręcznego (EN60974-3)		13.5 kV		
Courant de soudage minimal / Minimum welding current / Corriente mínima de soldadura / Minimale lasstroom / Corrente minima di saldatura / Minimalny prąd spawania		5 A	5 A	3 A
Fusible (à titre indicatif) / Fuse (indicative) / Sicherung (als Richtwert) / Fusible (orientativo) / Предохранитель (для руководства) / Zekering (voor begeleiding) / Fusibile (a titolo indicativo)		32 A	32 A	32 A
Courant de sortie nominal / Rate current output / nominaler Arbeitsstrom / Corriente de salida nominal / Номинальный выходной ток / Nominale uitgangsstroom / Corrente di uscita nominale	I2	5 ➔ 320 A	5 ➔ 320 A	3 ➔ 320 A
Tension de sortie conventionnelle / Conventional voltage output / entsprechende Arbeitsspannung / Условное выходные напряжения / Tensión de salida convencional / Conventionele uitgangsspanning / Tensione di uscita convenzionale	U2	20.2 ➔ 32.8 V	10.2 ➔ 22.8 V	10.12 ➔ 22.8 V
* Facteur de marche à 40°C (10 min), Norme EN60974-1 / Duty cycle at 40°C (10 min), Standard EN60974-1. Einschaltdauer @ 40°C (10 min), EN60974-1-Norm / Ciclo de trabajo a 40°C (10 min), Norma EN60974-1/ ПВ% при 40°C (10 мин), Норма EN60974-1. / Inschakelduur bij 40°C (10 min), Norm EN60974-1, Ciclo di lavoro a 40°C (10 min), Norma EN60974-1.	Imax	40 %	80 %	80 %
	60 %	270 A	320 A	
	100 %	220 A	310 A	
Température de fonctionnement / Functionning temperature / Betriebstemperatur / Temperatura de funcionamiento / Рабочая температура / Gebruikstemperatuur / Temperatura di funzionamento		-10°C ➔ +40°C		
Température de stockage / Storage temperature / Lagertemperatur / Temperatura de almacenaje / Температура хранения / Bewaartemperatuur / Temperatura di stoccaggio		-20°C ➔ +55°C		
Degré de protection / Protection level / Schutzart / Grado de protección / Степень защиты / Beschermingsklasse / Grado di protezione		IP23		
Classe d'isolation minimale des enroulements / Minimum coil insulation class / Clase mínima de aislamiento del bobinado / Minimale isolatieklasse omwikkelingen / Classe minima di isolamento degli avvolgimenti / Minimalna klasa izolacji okablowania		B		
Dimensions (Lxlxh) / Dimensions (LxWxH) / Abmessungen (Lxbxt) / Dimensiones (Lxlxh) / Размеры (ДхШхВ) / Afmetingen (Lxlxh) / Dimensioni (Lxlxh)		72 x 30 x 56 cm		
Poids / Weight / Gewicht / Bec / Peso / Gewicht / Peso		30.5 Kg		

*Les facteurs de marche sont réalisés selon la norme EN60974-1 à 40°C et sur un cycle de 10 min. Lors d'utilisation intensive (supérieur au facteur de marche) la protection thermique peut s'enclencher, dans ce cas, l'arc s'éteint et le témoin ⚠ s'allume. Laissez l'appareil alimenté pour permettre son refroidissement jusqu'à annulation de la protection. La source de courant décrit une caractéristique de sortie de type tombante. Dans certains pays, U0 est appelé TCO.

*The duty cycles are measured according to standard EN60974-1 à 40°C and on a 10 min cycle. While under intensive use (> to duty cycle) the thermal protection can turn on, in that case, the arc swictes off and the indicator ⚠ switches on. Keep the machine's power supply on to enable cooling until thermal protection cancellation. The welding power source describes an external drooping characteristic. In some countries, U0 is called TCO.

* Einschaltdauer gemäß EN60974-1 (10 Minuten - 40°C). Bei sehr intensivem Gebrauch (>Einschaltdauer) kann der Thermoschutz ausgelöst werden. In diesem Fall wird der Lichtbogen abgeschaltet und die entsprechende Warnung ⚠ erscheint auf der Anzeige. Das Gerät zum Abkühlen nicht ausschalten und laufen lassen bis das Gerät wieder bereit ist. Das Gerät entspricht in seiner Charakteristik einer Spannungsquelle mit fallender Kennlinie. In einigen Ländern wird U0 als TCO bezeichnet.

*Los ciclos de trabajo están realizados en acuerdo con la norma EN60974-1 a 40ºC y sobre un ciclo de diez minutos. Durante un uso intensivo (superior al ciclo de trabajo), se puede activar la protección térmica. En este caso, el arco se apaga y el indicador ⚠ se enciende. Deje el aparato conectado para permitir que se enfríe hasta que se anule la protección. La fuente de corriente de soldadura posee una salida de tipo corriente constante. En algunos países, U0 se llama TCO.

*ПВ% указаны по норме EN60974-1 при 40°C и для 10-минутного цикла. При интенсивном использовании (> ПВ%) может включиться тепловая защита. В этом случае дуга погаснет и загорится индикатор ⚠ . Оставьте аппарат подключенным к питанию, чтобы он остыл до полной отмены защиты. Аппарат описывает падающую характеристику на выходе. В некоторых странах U0 называется TCO.

*De inschakelduur is gemeten volgens de norm EN60974-1 bij een temperatuur van 40°C en bij een cyclus van 10 minuten. Bij intensief gebruik (superieur aan de inschakelduur) kan de thermische beveiliging zich in werking stellen. In dat geval gaat de boog uit en gaat het beveiligingslampje ⚠ gaat branden. Laat het apparaat aan de netspanning staan om het te laten afkoelen, totdat de beveiliging afslaat. Het apparaat heeft een uitgaande dalende eigenschap. In sommige landen wordt U0 TCO genoemd.

*I cicli di lavoro sono realizzati secondo la norma EN60974-1 a 40°C e su un ciclo di 10 min. Durante l'uso intensivo (> al ciclo di lavoro) la protezione termica può attivarsi, in questo caso, l'arco si spegne e la spia ⚠ si illumina. Lasciate il dispositivo collegato per permetterne il raffreddamento fino all'annullamento della protezione. La fonte di corrente di saldatura presenta una caratteristica di uscita spiovente. In alcuni Paesi, U0 viene chiamata TCO.

		TITANIUM 401 AC/DC		
Primaire / Primary / Primär / Primario / Первичка / Primaire / Primario				
Tension d'alimentation / Power supply voltage / Versorgungsspannung / Tensión de red eléctrica / Напряжение питания / Voedingsspanning / Tensione di alimentazione	U1	400 V +/- 15%		
Fréquence secteur / Mains frequency / Netzfrequenz / Frecuencia / Частота сети / Frequentie sector / Frequenza settore		50 / 60 Hz		
Nombre de phases / Number of phases / Anzahl der Phasen / Número de fases / Количество фаз / Aantal fasen / Numero di fase		3		
Fusible disjoncteur / Fuse / Sicherung / Fusible disyuntor / Плавкий предохранитель прерывателя / Zekering hoofdschakelaar / Fusibile disgiuntore		32 A		
Courant d'alimentation effectif maximal / Maximum effective supply current / Corriente de alimentación efectiva máxima / Maximale effectieve voedingsstroom / Corrente di alimentazione effettiva massima / Maksymalny efektywny prąd zasilania	I1eff	32 A		
Courant d'alimentation maximal / Maximum supply current / Corriente de alimentación máxima / Maximale voedingsstroom / Corrente di alimentazione massima / Maksymalny prąd zasilania	I1max	35 A		
Section du cordon secteur / Mains cable section / Sectie netsnoer / Sección del cable de alimentación / Sezione del cavo di alimentazione / Odcinek przewodu zasilającego		3 x 4 mm²		
Puissance active maximale consommée / Maximum active power consumed / Consumo máximo de energía activa / Maximale actieve verbruikte vermogen / Potenza attiva massima consumata / Maksymalny pobór mocy czynne		16 700 W		
Consommation au ralenti / Idle consumption / Consumo en ralentizado / Stationair verbruik / Consumo al minimo / Zużycie na biegu jałowym		30 W		
Rendement à I2max / Efficiency at I2max / Eficiencia a I2máx / Rendement bij I2max / Efficienza a I2max / Sprawność przy I2max		87.5 %		
Facteur de puissance à I2max / Power factor at I2max / Factor de potencia a I2max / Inschakelduur bij I2max / Ciclo di potenza a I2max / Współczynnik mocy przy I2max	λ	0.69		
COS PHI		0.99		
Classe CEM / EMC class / Classe CEM / Klasse CEM / Classe CEM / Klasa EMC		A		
Secondaire / Secondary / Sekundär / Secundario / Вторичка / Secondair / Secondario		MMA	TIG AC	TIG DC
Tension à vide / No load voltage / Leerlaufspannung / Tensión al vacío / Напряжение холостого хода / Nullastspanning / Tensione a vuoto	U0 (TCO)	83 V		
Tension à vide réduite (Tension VRD) / Reduced open circuit voltage (VRD voltage) / Tensión reducida en vacío (tensión VRD) / Nullast spanning (Spanning VRD) / Tensione a vuoto ridotta (Tensione VRD) / Obniżone napięcie biego jałowego (Napięcie VRD)	Ur	26.5 V		
Nature du courant de soudage / Type of welding current / Tipo de corriente de soldadura / Type lasstroom / Tipo di corrente di saldatura / Rodzaj prądu spawania		DC & AC		
Modes de soudage / Welding modes / Modos de soldadura / Lasmodules / Modalità di saldatura / Tryby spawania		MMA, TIG		
Tension crête du dispositif d'amorçage manuel (EN60974-3) / Manual striking system's maximum voltage (EN60974-3) / Spitzenspannung des manuellen Startgerätes (EN60974-3) / Tensión pico del dispositivo de cebado manual (EN60974-3) / Пиковое напряжение механизма ручного поджига (EN60974-3) / Piekspanning van het handmatige startsysteem (EN60974-3) / Tensione di picco del dispositivo di innesco manuale (EN60974-3) / Napięcie szczytowe urządzenia do rozruchu ręcznego (EN60974-3)		13.5 kV		
Courant de soudage minimal / Minimum welding current / Corriente mínima de soldadura / Minimale lasstroom / Corrente minima di saldatura / Minimalny prąd spawania		5 A	5 A	3 A
Courant de sortie nominal / Rate current output / nominaler Arbeitsstrom / Corriente de salida nominal / Номинальный выходной ток / Nominale uitgangsstroom / Corrente di uscita nominale	I2	5 ➔ 400 A	5 ➔ 400 A	3 ➔ 400 A
Tension de sortie conventionnelle / Conventional voltage output / entsprechende Arbeitsspannung / Условное выходные напряжения / Tensión de salida convencional / Conventionele uitgangsspanning / Tensione di uscita convenzionale	U2	20.2 ➔ 36 V	10.2 ➔ 26 V	10.12 ➔ 26 V
Facteur de marche à 40°C (10 min), Norme EN60974-1 / Duty cycle at 40°C (10 min), Standard EN60974-1. * Einschaltdauer @ 40°C (10 min), EN60974-1-Norm / Ciclo de trabajo a 40°C (10 min), Norma EN60974-1/ ПВ% при 40°C (10 мин), Норма EN60974-1. / Inschakelduur bij 40°C (10 min), Norm EN60974-1, Ciclo di lavoro a 40°C (10 min), Norma EN60974-1.	Imax	40 %	100 %	
	60 %	330 A	400 A	
	100 %	300 A	400 A	
Température de fonctionnement / Functionning temperature / Betriebstemperatur / Temperatura de funcionamiento / Рабочая температура / Gebruikstemperatuur / Temperatura di funzionamento		-10°C ➔ +40°C		
Température de stockage / Storage temperature / Lagertemperatur / Temperatura de almacenaje / Температура хранения / Bewaartemperatuur / Temperatura di stoccaggio		-20°C ➔ +55°C		
Degré de protection / Protection level / Schutzart / Grado de protección / Степень защиты / Beschermingsklasse / Grado di protezione		IP23		
Classe d'isolation minimale des enroulements / Minimum coil insulation class / Clase mínima de aislamiento del bobinado / Minimale isolatieklasse omwikkelingen / Classe minima di isolamento degli avvolgimenti / Minimalna klasa izolacji okablowania		B		
Dimensions (Lxlxh) / Dimensions (LxWxH) / Abmessungen (Lxbxt) / Dimensiones (Lxlxh) / Размеры (ДхШхВ) / Afmetingen (Lxlxh) / Dimensioni (Lxlxh)		72 x 30 x 56 cm		
Poids / Weight / Gewicht / Bec / Peso / Gewicht / Peso		33 Kg		

*Les facteurs de marche sont réalisés selon la norme EN60974-1 à 40°C et sur un cycle de 10 min. Lors d'utilisation intensive (supérieur au facteur de marche) la protection thermique peut s'enclencher, dans ce cas, l'arc s'éteint et le témoin ⚠ s'allume. Laissez l'appareil alimenté pour permettre son refroidissement jusqu'à annulation de la protection. La source de courant décrit une caractéristique de sortie de type tombante. Dans certains pays, U0 est appelé TCO.

*The duty cycles are measured according to standard EN60974-1 à 40°C and on a 10 min cycle. While under intensive use (> to duty cycle) the thermal protection can turn on, in that case, the arc swictes off and the indicator ⚠ switches on. Keep the machine's power supply on to enable cooling until thermal protection cancellation. The welding power source describes an external drooping characteristic. In some countries, U0 is called TCO.

* Einschaltdauer gemäß EN60974-1 (10 Minuten - 40°C). Bei sehr intensivem Gebrauch (>Einschaltdauer) kann der Thermoschutz ausgelöst werden. In diesem Fall wird der Lichtbogen abgeschaltet und die entsprechende Warnung ⚠ erscheint auf der Anzeige. Das Gerät zum Abkühlen nicht ausschalten und laufen lassen bis das Gerät wieder bereit ist. Das Gerät entspricht in seiner Charakteristik einer Spannungsquelle mit fallender Kennlinie. In einigen Ländern wird U0 als TCO bezeichnet.

*Los ciclos de trabajo están realizados en acuerdo con la norma EN60974-1 a 40ºC y sobre un ciclo de diez minutos. Durante un uso intensivo (superior al ciclo de trabajo), se puede activar la protección térmica. En este caso, el arco se apaga y el indicador ⚠ se enciende. Deje el aparato conectado para permitir que se enfríe hasta que se anule la protección. La fuente de corriente de soldadura posee una salida de tipo corriente constante. En algunos países, U0 se llama TCO.

*ПВ% указаны по норме EN60974-1 при 40°C и для 10-минутного цикла. При интенсивном использовании (> ПВ%) может включиться тепловая защита. В этом случае дуга погаснет и загорится индикатор ⚠ . Оставьте аппарат подключенным к питанию, чтобы он остыл до полной отмены защиты. Аппарат описывает падающую характеристику на выходе. В некоторых странах U0 называется TCO.

*De inschakelduur is gemeten volgens de norm EN60974-1 bij een temperatuur van 40°C en bij een cyclus van 10 minuten. Bij intensief gebruik (superieur aan de inschakelduur) kan de thermische beveiliging zich in werking stellen. In dat geval gaat de boog uit en gaat het beveiligingslampje ⚠ gaat branden. Laat het apparaat aan de netspanning staan om het te laten afkoelen, totdat de beveiliging afslaat. Het apparaat heeft een uitgaande dalende eigenschap. In sommige landen wordt U0 TCO genoemd.

*I cicli di lavoro sono realizzati secondo la norma EN60974-1 a 40°C e su un ciclo di 10 min. Durante l'uso intensivo (> al ciclo di lavoro) la protezione termica può attivarsi, in questo caso, l'arco si spegne e la spia ⚠ si illumina. Lasciate il dispositivo collegato per permetterne il raffreddamento fino all'annullamento della protezione. La fonte di corrente di saldatura presenta una caratteristica di uscita spiovente. In alcuni Paesi, U0 viene chiamata TCO.

		TITANIUM 501 AC/DC		
Primaire / Primary / Primär / Primario / Първичка / Primaire / Primario				
Tension d'alimentation / Power supply voltage / Versorgungsspannung / Tensión de red eléctrica / Напряжение питания / Voedingsspanning / Tensione di alimentazione	U1	400 V +/- 15%		
Fréquence secteur / Mains frequency / Netzfrequenz / Frecuencia / Частота сети / Frequentie sector / Frequenza settore		50 / 60 Hz		
Nombre de phases / Number of phases / Anzahl der Phasen / Número de fases / Количество фаз / Aantal fasen / Numero di fase		3		
Fusible disjoncteur / Fuse / Sicherung / Fusible disyuntor / Плавкий предохранитель прерывателя / Zekering hoofdschakelaar / Fusibile disgiuntore		32 A		
Courant d'alimentation effectif maximal / Maximum effective supply current / Corriente de alimentación efectiva máxima / Maximale effectieve voedingsstroom / Corrente di alimentazione effettiva massima / Maksymalny efektywny prąd zasilania	I1eff	32 A		
Courant d'alimentation maximal / Maximum supply current / Corriente de alimentación máxima / Maximale voedingsstroom / Corrente di alimentazione massima / Maksymalny prąd zasilania	I1max	45 A		
Section du cordon secteur / Mains cable section / Sectie netsnoer / Sección del cable de alimentación / Sezione del cavo di alimentazione / Odcinek przewodu zasilającego		3 x 4 mm²		
Puissance active maximale consommée / Maximum active power consumed / Consumo máximo de energía activa / Maximale actieve verbruikte vermogen / Potenza attiva massima consumata / Maksymalny pobór mocy czynne		23 000 W		
Consommation au ralenti / Idle consumption / Consumo en ralentizado / Stationair verbruik / Consumo al mínimo / Zużycie na biegu jałowym		30 W		
Rendement à I2max / Efficiency at I2max / Eficiencia a I2máx / Rendement bij I2max / Efficienza a I2max / Sprawność przy I2max		87 %		
Facteur de puissance à I2max / Power factor at I2max / Factor de potencia a I2max / Inschakelduur bij I2max / Ciclo di potenza a I2max / Współczynnik mocy przy I2max	λ	0.69		
COS PHI		0.99		
Classe CEM / EMC class / Classe CEM / Klasse CEM / Classe CEM / Klasa EMC		A		
Secondaire / Secondary / Sekundär / Secundario / Вторичка / Secondair / Secondario		MMA	TIG AC	TIG DC
Tension à vide / No load voltage / Leerlaufspannung / Tensión al vacío / Напряжение холостого хода / Nullastspanning / Tensione a vuoto	U0 (TCO)	83 V		
Tension à vide réduite (Tension VRD) / Reduced open circuit voltage (VRD voltage) / Tensión reducida en vacío (tensión VRD) / Nullast spanning (Spanning VRD) / Tensione a vuoto ridotta (Tensione VRD) / Obniżone napięcie biego jałowego (Napięcie VRD)	Ur	26.5 V		
Nature du courant de soudage / Type of welding current / Tipo de corriente de soldadura / Type lasstroom / Tipo di corrente di saldatura / Rodzaj prądu spawania		DC & AC		
Modes de soudage / Welding modes / Modos de soldadura / Lasmodules / Modalità di saldatura / Tryby spawania		MMA, TIG		
Tension crête du dispositif d'amorçage manuel (EN60974-3) / Manual striking system's maximum voltage (EN60974-3) / Spitzenspannung des manuellen Startgerätes (EN60974-3) / Tensión pico del dispositivo de cebado manual (EN60974-3) / Пиковое напряжение механизма ручного поджига (EN60974-3) / Piekspanning van het handmatige startsysteem (EN60974-3) / Tensione di picco del dispositivo di innesco manuale (EN60974-3) / Napięcie szczytowe urządzenia do rozruchu ręcznego (EN60974-3)		13.5 kV		
Courant de soudage minimal / Minimum welding current / Corriente mínima de soldadura / Minimale lasstroom / Corrente minima di saldatura / Minimalny prąd spawania		5 A	5 A	3 A
Courant de sortie nominal / Rate current output / nominaler Arbeitsstrom / Corriente de salida nominal / Номинальный выходной ток / Nominale uitgangsstroom / Corrente di uscita nominale	I2	5 ➔ 500 A	5 ➔ 500 A	3 ➔ 500 A
Tension de sortie conventionnelle / Conventional voltage output / entsprechende Arbeitsspannung / Условное выходные напряжения / Tensión de salida convencional / Conventionele uitgangsspanning / Tensione di uscita convenzionale	U2	20.2 ➔ 40 V	10.2 ➔ 30 V	10.12 ➔ 30 V
Facteur de marche à 40°C (10 min), Norme EN60974-1 / Duty cycle at 40°C (10 min), Standard EN60974-1. * Einschaltdauer @ 40°C (10 min), EN60974-1-Norm / Ciclo de trabajo a 40°C (10 min), Norma EN60974-1/ ПВ% при 40°C (10 мин), Норма EN60974-1. / Inschakelduur bij 40°C (10 min), Norm EN60974-1, Ciclo di lavoro a 40°C (10 min), Norma EN60974-1.	Imax	40 %	47 %	37%
	60 %	365 A	470 A	460 A
	100 %	330 A	440 A	430 A
Température de fonctionnement / Functionning temperature / Betriebstemperatur / Temperatura de funcionamiento / Рабочая температура / Gebruikstemperatuur / Temperatura di funzionamento		-10°C ➔ +40°C		
Température de stockage / Storage temperature / Lagertemperatur / Temperatura de almacenaje / Температура хранения / Bewaartemperatuur / Temperatura di stoccaggio		-20°C ➔ +55°C		
Degré de protection / Protection level / Schutzart / Grado de protección / Степень защиты / Beschermingsklasse / Grado di protezione		IP23		
Classe d'isolation minimale des enroulements / Minimum coil insulation class / Clase mínima de aislamiento del bobinado / Minimale isolatieklasse omwikkelingen / Classe minima di isolamento degli avvolgimenti / Minimalna klasa izolacji okablowania		B		
Dimensions (Lxlxh) / Dimensions (LxWxH) / Abmessungen (Lxbxt) / Dimensiones (Lxlxh) / Размеры (ДхШхВ) / Afmetingen (Lxlxh) / Dimensioni (Lxlxh)		72 x 30 x 56 cm		
Poids / Weight / Gewicht / Bec / Peso / Gewicht / Peso		33 Kg		

*Les facteurs de marche sont réalisés selon la norme EN60974-1 à 40°C et sur un cycle de 10 min. Lors d'utilisation intensive (supérieur au facteur de marche) la protection thermique peut s'enclencher, dans ce cas, l'arc s'éteint et le témoin ⚠ s'allume. Laissez l'appareil alimenté pour permettre son refroidissement jusqu'à annulation de la protection. La source de courant décrit une caractéristique de sortie de type tombante. Dans certains pays, U0 est appelé TCO.

*The duty cycles are measured according to standard EN60974-1 à 40°C and on a 10 min cycle. While under intensive use (> to duty cycle) the thermal protection can turn on, in that case, the arc swictes off and the indicator ⚠ switches on. Keep the machine's power supply on to enable cooling until thermal protection cancellation. The welding power source describes an external drooping characteristic. In some countries, U0 is called TCO.

* Einschaltdauer gemäß EN60974-1 (10 Minuten - 40°C). Bei sehr intensivem Gebrauch (>Einschaltdauer) kann der Thermoschutz ausgelöst werden. In diesem Fall wird der Lichtbogen abgeschaltet und die entsprechende Warnung ⚠ erscheint auf der Anzeige. Das Gerät zum Abkühlen nicht ausschalten und laufen lassen bis das Gerät wieder bereit ist. Das Gerät entspricht in seiner Charakteristik einer Spannungsquelle mit fallender Kennlinie. In einigen Ländern wird U0 als TCO bezeichnet.

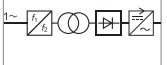
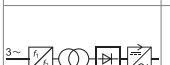
*Los ciclos de trabajo están realizados en acuerdo con la norma EN60974-1 a 40ºC y sobre un ciclo de diez minutos. Durante un uso intensivo (superior al ciclo de trabajo), se puede activar la protección térmica. En este caso, el arco se apaga y el indicador ⚠ se enciende. Deje el aparato conectado para permitir que se enfríe hasta que se anule la protección. La fuente de corriente de soldadura posee una salida de tipo corriente constante. En algunos países, U0 se llama TCO.

*ПВ% указаны по норме EN60974-1 при 40°C и для 10-минутного цикла. При интенсивном использовании (> ПВ%) может включиться тепловая защита. В этом случае дуга погаснет и загорится индикатор ⚠ . Оставьте аппарат подключенным к питанию, чтобы он остыл до полной отмены защиты. Аппарат описывает падающую характеристику на выходе. В некоторых странах U0 называется TCO.

*De inschakelduur is gemeten volgens de norm EN60974-1 bij een temperatuur van 40°C en bij een cyclus van 10 minuten. Bij intensief gebruik (superieur aan de inschakelduur) kan de thermische beveiliging zich in werking stellen. In dat geval gaat de boog uit en gaat het beveiligingslampje ⚠ gaat branden. Laat het apparaat aan de netspanning staan om het te laten afkoelen, totdat de beveiliging afslaat. Het apparaat heeft een uitgaande dalende eigenschap. In sommige landen wordt U0 TCO genoemd.

*I cicli di lavoro sono realizzati secondo la norma EN60974-1 a 40°C e su un ciclo di 10 min. Durante l'uso intensivo (> al ciclo di lavoro) la protezione termica può attivarsi, in questo caso, l'arco si spegne e la spia ⚠ si illumina. Lasciate il dispositivo collegato per permetterne il raffreddamento fino all'annullamento della protezione. La fonte di corrente di saldatura presenta una caratteristica di uscita spiovente. In alcuni Paesi, U0 viene chiamata TCO.

SYMBOLS / ZEICHENERKLÄRUNG / ICONOS / СИМВОЛЫ / PICTOGRAMMEN / ICONE

	FR Attention ! Lire le manuel d'instruction avant utilisation. EN Warning ! Read the user manual before use. DE ACHTUNG ! Lesen Sie diese Anleitung sorgfältig durch vor Inbetriebnahme des Geräts. ES ¡Atención! Lea el manual de instrucciones antes de su uso. RU Внимание! Прочтите инструкцию перед использованием. NL Let op! Lees aandachtig de handleiding. IT Attenzione! Leggere il manuale d'istruzioni prima dell'uso.
	FR Symbole de la notice EN User manual symbol DE Symbole in der Bedienungsanleitung ES Símbolo del manual RU Символы, использующиеся в инструкции NL Symbool handleiding IT Simbolo del manuale
	FR Source de courant de technologie onduleur délivrant un courant C.C. et C.A. EN Inverter technology current source delivering DC and AC current. DE Inverter-Wechsel-/Gleichstromquelle. ES Fuente de corriente de tecnología ondulador que libera una corriente CC o CA. RU Источник тока с технологией преобразователя, выдающий постоянный и переменный токи. NL Stroombron met UPS technologie, levert gelijkstroom en wisselstroom. IT Fonte di corrente di tecnologia inverter rilasciando una corrente C.C. e C. A.
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	FR Soudage à l'électrode enrobée - MMA (Manual Metal Arc) EN MMA welding (Manual Metal Arc) DE Schweißen mit umhüllter Elektrode (E-Handschweißen) ES Soldadura con electrodo revestido (MMA - Manual Metal Arc) RU Сварка электродом с обмазкой: MMA (Manual Metal Arc) NL Lassen met beklede elektrode - MMA (Manual Metal Arc) IT Saldatura all'elettrodo rivestito - MMA (Manual Metal Arc).
	FR Soudage TIG (Tungsten Inert Gaz) EN TIG welding (Tungsten Inert Gas) DE TIG- (WIG-)Schweißen (Tungsten (Wolfram) Inert Gas) ES Soldadura TIG (Tungsten Inert Gaz) RU Сварка TIG (Tungsten Inert Gaz) NL TIG lassen (Tungsten Inert Gaz) IT Saldatura TIG (Tungsten Inert Gaz).
	FR Convient au soudage dans un environnement avec risque accru de choc électrique. La source de courant elle-même ne doit toutefois pas être placée dans de tels locaux. EN Suitable for welding in an environment with an increased risk of electric shock. However this a machine should not placed in such an environment. DE Geeignet für Schweißarbeiten im Bereich mit erhöhten elektrischen Risiken. ES Adaptado para soldadura en lugar con riesgo de choque eléctrico. Sin embargo, la fuente eléctrica no debe estar presente en dichos lugares. RU Подходит для сварки в среде с повышенным риском удара током. В этом случае источник тока не должен находиться в том же самом помещении. NL Geschikt voor het lassen in een ruimte met verhoogd risico op elektrische schokken. De voedingsbron zelf moet echter niet in dergelijke ruimte worden geplaatst. IT Conviene alla saldatura in un ambiente a grande rischio di scosse elettriche. L'origine della corrente non deve essere localizzata in tale posto.
	FR Courant de soudage continu EN Direct welding current DE Gleichschweißstrom ES Corriente de soldadura continua. RU Постоянный сварочный ток NL Gelijkstroom IT Corrente di saldatura continuo
	FR Symbole du courant alternatif EN Alternative current symbol DE Symbol Wechselstrom ES Símbolo de corriente alterna RU Символ переменного тока NL Symbool wisselstroom IT Simbolo di corrente alternata
	FR Courant de soudage continu et alternatif EN Direct and alternating welding current DE Gleich- und Wechselstrom ES Corriente de soldadura continua y alterna. RU Постоянный и переменный сварочный ток. NL Gelijkstroom en wisselstroom IT Corrente di saldatura continua e alternata
U0	FR Tension assignée à vide EN Open circuit voltage DE Leerlaufspannung ES Tensión asignada en vacío RU Номинальное напряжение холостого хода NL Nullastspanning IT Tensione nominale a vuoto
Ur	FR Tension à vide réduite assignée dans le cas d'un dispositif réducteur de tension EN Rated reduced open circuit voltage in the case of a voltage reducing device DE Bemessene reduzierte Leerlaufspannung im Falle einer spannungsreduzierenden Vorrichtung. ES Tensión nominal de circuito abierto reducida en el caso de un dispositivo reductor de tensión RU Номинальное пониженное напряжение разомкнутой цепи в случае использования устройства снижения напряжения NL Nominale gereduceerde open kringspanning in geval van een spanningsverlagende voorziening IT Tensione nominale ridotta a circuito aperto nel caso di un dispositivo di riduzione della tensione
Up	FR Tension de crête assignée EN Rated peak voltage DE Nenn-Spitzenspannung ES Tensión nominal de pico RU Номинальное пиковое напряжение NL Nominale piekspanning IT Tensione nominale di picco
X(40°C)	FR Facteur de marche selon la norme EN60974-1 (10 minutes – 40°C). EN Duty cycle according to standard EN 60974-1 (10 minutes – 40°C). DE Einschaltdauer: 10 min - 40°C, richtlinienkonform EN60974-1. ES Ciclo de trabajo según la norma EN60974-1 (10 minutos – 40°C). RU ПВ% согласно норме EN 60974-1 (10 минут – 40°C). NL Inschakelduur volgens de norm EN60974-1 (10 minuten – 40°C). IT Ciclo di lavoro conforme alla norma EN60974-1 (10 minuti – 40°C).
I2	FR Courant de soudage conventionnel correspondant EN Corresponding conventional welding current DE Entsprechender Schweißstrom ES Corriente de soldadura convencional correspondiente. RU Соответствующий номинальный сварочный ток NL Corresponderende conventionele lasstroom IT Corrente di saldatura convenzionale.
A	FR Ampères EN Amperes DE Ampere ES Amperios RU Амперы NL Ampère IT Amper
U2	FR Tensions conventionnelles en charges correspondantes EN Conventional voltage in corresponding loads. DE Entsprechende Arbeitsspannung ES Tensiones convencionales en cargas correspondientes. RU Номинальные напряжения при соответствующих нагрузках. NL Conventionele spanning in corresponderende belasting IT Tensioni convenzionali in cariche corrispondenti
V	FR Volt EN Volt DE Volt ES Voltio RU Вольт NL Volt IT Volt
Hz	FR Hertz EN Hertz DE Hertz ES Hercios RU Герц NL Hertz IT Hertz
1~ 50/60 Hz	FR Alimentation électrique monophasée 50 ou 60Hz EN Single phase power supply 50 or 60 Hz DE Einphasige Netzversorgung mit 50 oder 60Hz ES Alimentación eléctrica monofásica 50 o 60Hz RU Однофазное электропитание 50 или 60Гц NL Enkelfase elektrische voeding 50Hz of 60Hz. IT Alimentazione elettrica monofase 50 o 60Hz. PL Zasilanie jednofazowe 50 lub 60Hz
 3~ 50/60 Hz	FR Alimentation électrique triphasée 50 ou 60Hz EN Three-phase power supply 50 or 60Hz DE Dreiphasige Netzversorgung mit 50 oder 60Hz ES Alimentación eléctrica trifásica 50 o 60Hz RU Трехфазное электропитание 50 или 60Гц NL Driefasen elektrische voeding 50Hz of 60Hz. IT Alimentazione elettrica trifase 50 o 60Hz
U1	FR Tension assignée d'alimentation EN Assigned voltage DE Netzspannung ES Tensión asignada de alimentación eléctrica. RU Номинальное напряжение питания NL Nominale voedingsspanning IT Tensione nominale d'alimentazione
I1max	FR Courant d'alimentation assigné maximal (valeur efficace) EN Maximum rated power supply current (effective value). DE Maximaler Versorgungsstrom ES Corriente de alimentación eléctrica asignada máxima (valor eficaz). RU Максимальный сетевой ток (эффективное значение) NL Maximale nominale voedingsstroom (effectieve waarde) IT Corrente d'alimentazione nominale massima (valore effettivo)
I1eff	FR Courant d'alimentation effectif maximal EN Maximum effective power supply current. DE Maximaler effektiver Versorgungsstrom ES Corriente de alimentación eléctrica máxima. RU Максимальный эффективный сетевой ток NL Maximale effectieve voedingsstroom IT Corrente effettivo massimo di alimentazione
CE	FR Matériel conforme aux Directives européennes. La déclaration UE de conformité est disponible sur notre site (voir à la page de couverture). EN Device complies with europeans directives, The EU declaration of conformity is available on our website (see cover page). DE Gerät entspricht europäischen Richtlinien. Die Konformitätserklärung finden Sie auf unsere Webseite. ES Aparato conforme a las directivas europeas. La declaración de conformidad UE está disponible en nuestra página web (dirección en la portada). RU Устройство соответствует директивам Евросоюза. Декларация о соответствии доступна для просмотра на нашем сайте (ссылка на обложке). NL Apparaat in overeenstemming met de Europese richtlijnen. De verklaring van overeenstemming is te downloaden op onze website (adres vermeld op de omslag). IT Materiale in conformità alle Direttive europee. La dichiarazione di conformità è disponibile sul nostro sito (vedere sulla copertina).

UK CA	FR Matériel conforme aux exigences britanniques. La déclaration de conformité britannique est disponible sur notre site (voir à la page de couverture). EN Equipment in compliance with British requirements. The British Declaration of Conformity is available on our website (see home page). DE Das Gerät entspricht den britischen Richtlinien und Normen. Die Konformitätserklärung für Grossbritannien ist auf unserer Internetseite verfügbar (siehe Titelseite). ES Equipo conforme a los requisitos británicos. La Declaración de Conformidad Británica está disponible en nuestra página web (véase la portada). RU Материал соответствует требованиям Великобритании. Заявление о соответствии для Великобритании доступно на нашем веб-сайте (см. главную страницу) NL Materiaal conform aan de Britse eisen. De Britse verklaring van overeenkomt is beschikbaar op onze website (zie omslagpagina). IT Materiale conforme alla esigenze britanniche. La dichiarazione di conformità britannica è disponibile sul nostro sito (vedere pagina di copertina).
	FR Matériel conforme aux normes Marocaines. La déclaration C_ϕ (CMIM) de conformité est disponible sur notre site (voir à la page de couverture). EN Equipment in conformity with Moroccan standards. The declaration C_ϕ (CMIM) of conformity is available on our website (see cover page). DE Das Gerät entspricht die marokkanischen Standards. Die Konformitätserklärung C_ϕ (CMIM) ist auf unserer Webseite verfügbar (siehe Titelseite). ES Equipamiento conforme a las normas marroquíes. La declaración de conformidad C_ϕ (CMIM) está disponible en nuestra página web (ver página de portada). RU Товар соответствует нормам Марокко. Декларация C_ϕ (CMIM) доступна для скачивания на нашем сайте (см на титульной странице). NL Dit materiaal voldoet aan de Marokkaanse normen. De verklaring C_ϕ (CMIM) van overeenstemming is beschikbaar op onze internet site (vermeld op de omslag). IT Materiale conforme alle normative marocchine. La dichiarazione C_ϕ (CMIM) di conformità è disponibile sul nostro sito (vedi scheda del prodotto).
	FR Matériel conforme aux exigences chinoises sur l'utilisation restreinte de substances dangereuses dans les produits électriques et électroniques. EN Equipment complying with Chinese requirements on the restricted use of hazardous substances in electrical and electronic products. DE Material, das den chinesischen Anforderungen für die eingeschränkte Verwendung gefährlicher Substanzen in elektrischen und elektronischen Produkten entspricht. ES Equipos que cumplen los requisitos chinos sobre el uso restringido de sustancias peligrosas en productos eléctricos y electrónicos. RU Оборудование, соответствующее китайским требованиям по ограниченному использованию опасных веществ в электрических и электронных изделиях. NL Apparatuur die voldoet aan de Chinese vereisten voor het beperkte gebruik van gevaarlijke stoffen in elektrische en elektronische producten. IT Apparecchiature conformi ai requisiti cinesi sull'uso limitato di sostanze pericolose nei prodotti elettrici ed elettronici. PL Sprzęt zgodny z chińskimi wymogami dotyczącymi ograniczonego stosowania niebezpiecznych substancji w produktach elektrycznych i elektronicznych.
IEC 60974-1 IEC 60974-10 Class A	FR L'appareil respecte la norme EN60974-1 et EN60971-10 appareil de classe A. EN The device is compliant with standard EN60974-1 and EN60971-10 class A device. DE Das Gerät erfüllt die Norm EN 60974-1 und EN 60971-10 der Geräteklasse A ES El aparato se ajusta a la norma EN60974-1 y EN 60971-10, aparato de clase A. RU Аппарат соответствует нормам EN60974-1 и EN60971-10 аппарат класса A. NL Dit klasse A apparaat voldoet aan de EN60974-1 en EN60971-10 normen. IT Il dispositivo rispetta la norma EN60974-1 e EN 60971-10 dispositivo classe A.
IEC 60974-2	FR L'appareil respecte la norme EN 60974-2. EN This product is compliant with standard EN 60974-2. DE Das Gerät entspricht der Norm EN 60974-2. ES El aparato es conforme a las normas EN60974-3. RU Аппарат соблюдает нормы EN 60974-2. NL Het apparaat voldoet aan de norm EN 60974-2. IT Il dispositivo rispetta la norma EN 60974-2.
IEC 60974-3	FR L'appareil respecte la norme EN 60974-3. EN This product is compliant with standard EN 60974-3. DE Das Gerät entspricht der Norm EN 60974-3. ES El aparato es conforme a las normas EN60974-3. RU Аппарат соблюдает нормы EN 60974-3. NL Het apparaat voldoet aan de norm EN 60974-3. IT Il dispositivo rispetta la norma EN 60974-3.
IEC 60974-5	FR L'appareil respecte la norme EN 60974-5. EN This product is compliant with standard EN 60974-5. DE Das Gerät entspricht der Norm EN 60974-5. ES El aparato es conforme a las normas EN60974-3. RU Аппарат соблюдает нормы EN 60974-5. NL Het apparaat voldoet aan de norm EN 60974-5. IT Il dispositivo rispetta la norma EN 60974-5.
	FR Ce matériel faisant l'objet d'une collecte sélective selon la directive européenne 2012/19/UE. Ne pas jeter dans une poubelle domestique ! EN This hardware is subject to waste collection according to the European directives 2012/19/EU. Do not throw out in a domestic bin ! DE Für die Entsorgung Ihres Gerätes gelten besondere Bestimmungen (sondermüll) gemäß europäische Bestimmung 2012/19/EU. Es darf nicht mit dem Hausmüll entsorgt werden! ES Este material requiere una recogida de basuras selectiva según la directiva europea 2012/19/UE. ¡No tirar este producto a la basura doméstica! RU Это оборудование подлежит переработке согласно директиве Евросоюза 2012/19/UE. Не выбрасывать в общий мусоросборник! NL Afzonderlijke inzameling vereist volgens de Europese richtlijn 2012/19/UE. Gooi het apparaat niet bij het huishoudelijk afval ! IT Questo materiale è soggetto alla raccolta differenziata seguendo la direttiva europea 2012/19/UE. Non smaltire coni rifiuti domestici!
	FR Produit recyclable qui relève d'une consigne de tri. EN This product should be recycled appropriately DE Recyclingprodukt, das gesondert entsorgt werden muss. ES Producto reciclable que requiere una separación determinada. RU Этот аппарат подлежит утилизации. NL Product recyclebaar, niet bij het huishoudelijk afval gooien IT Prodotto riciclabile soggetto a raccolta differenziata.
EAC	FR Marque de conformité EAC (Communauté économique Eurasienne) EN EAEC Conformity marking (Eurasian Economic Community). DE EAC-Konformitätszeichen (Eurasische Wirtschaftsgemeinschaft) ES Marca de conformidad EAC (Comunidad económica euroasiática). RU Знак соответствия EAC (Евразийское экономическое сообщество) NL EAC (Euraziatische Economische Gemeenschap) merkteken van overeenstemming IT Marca di conformità EAC (Comunità Economica Eurasiatica)
	FR Information sur la température (protection thermique) EN Temperature information (thermal protection) DE Information zur Temperatur (Thermoschutz) ES Información sobre la temperatura (protección térmica) RU Информация по температуре (термозащита). NL Informatie over de temperatuur (thermische beveiliging) IT Informazione sulla temperatura (protezione termiche)
	FR Entrée de gaz EN Gas input DE Gaseingang ES Entrada de gas RU Подача газа NL Ingang gas IT Entrata di gas
	FR Sortie de gaz EN Gas output DE Gasausgang ES Salida de gas RU Выход газа NL Uitvoer gas IT Uscita di gas
	FR Commande à distance EN Remote control DE Fernregler ES Control a distancia RU Дистанционное управление NL Afstandsbediening. IT Telecomando a distanza

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