FUTURA SERIES IGBT MIG/MAG – MMA Inverter

FUTURA 3505 SW – 5005 SW WIRE FEEDER TR25

IT - Manuale Istruzioni

EN - Instruction Manual

FR - Livret d'instructions



Il presente manuale deve essere integrato dal "Manuale d'uso e manutenzione CE" The present manual must be integrated by "Operating ad service manual CE" Ce livret doit être completé avec le "Manuel d'usage et entretien CE"





Italiano

INDICE

Capitolo 1	Par.	Descrizione Introduzione	Pagina 4
2		Manutenzione ordinaria	4
3		Uso Consentito	4
4		Descrizione comandi	5
5		Installazione	7
	5.1	Collegamento del cavo di alimentazione	7
	5.2	Installazione ELETTRODO (MMA)	7
	5.3	Installazione MIG/MAG	8
6		Avvertenze	10
	6.1	Ambiente di lavoro	10
	6.2	Buona ventilazione	10
	6.3	La tensione di alimentazione deve essere corretta	10
	6.4	Il sovraccarico di corrente di saldatura è proibito	10
	6.5	Protezione da sovratemperatura interna	10
7		Ricerca guasti	11
8		Specifiche tecniche	13
9		Lista ricambi	14
		Schema a blocchi	19

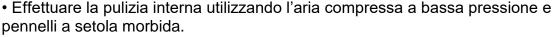
1. Introduzione

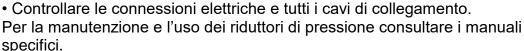
Per ottenere dall'impianto le migliori prestazioni ed assicurare alle sue parti la massima durata, è necessario attenersi scrupolosamente alle istruzioni per l'uso e alle norme di manutenzione contenute in questo manuale. Nell'interesse della clientela si consiglia di fare eseguire la manutenzione e, ove occorra, la riparazione dell'impianto presso le officine della nostra organizzazione di assistenza, in quanto provviste di appropriate attrezzature e di personale particolarmente addestrato. Tutte le nostre macchine ed apparecchiature sono soggette ad un continuo sviluppo. Dobbiamo quindi riservarci modifiche riguardanti la costruzione e la dotazione.

2. Manutenzione ordinaria

Evitare che si accumuli polvere metallica all'interno dell'impianto.







3. Uso Consentito

I generatori della gamma Futura 3505 SW e Futura 5005 SW sono stati sviluppati per applicazioni MIG/MAG ed ELETTRODO con gamma fino a 500A.

• Ogni applicazione diversa da quelle elencate non è consentita e può compromettere la sicurezza di lavoro e l'affidabilità dell'impianto.

È sconsigliato l'uso dei generatori Futura 3505 SW e Futura 5005 SW (versione standard):

- In ambienti con alta concentrazione di umidità e polvere.
- Con cavi di alimentazione di lunghezza superiore ai 50 mt.

Rivolgersi al centro di assistenza per consigli e precauzioni d'uso, qualora l'installazione e l'uso dovessero svolgersi in condizioni simili a quelle sopra esposte.

È consigliata una procedura di manutenzione ordinaria ogni 2-3 mesi da concordare con il centro di assistenza.

Italiano

4. DESCRIZIONE COMANDI

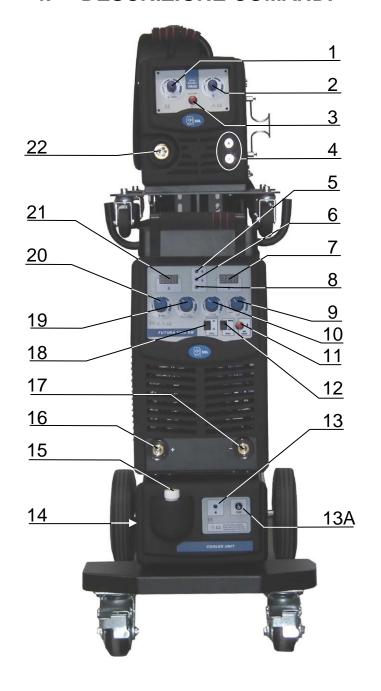
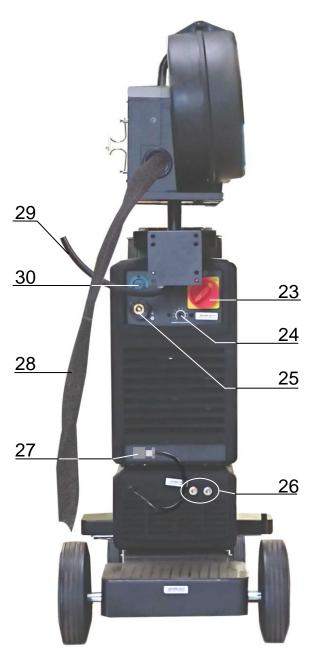


Fig. 1



Fare riferimento alla Fig. 1. Manopola per regolazione VELOCITÀ FILO POS. 1 POS. 2 Manopola per regolazione TENSIONE D'ARCO in MIG/MAG POS. 3 Pulsante INCH WIRE POS. 4 Raccordi rapidi mandata (blu) e ritorno acqua (rosso) per uso torcia raffreddata ad acqua POS. 5 LED power ON **POS. 6** LED allarme sovratemperatura POS. 7 Voltmetro digitale **POS**. 8 LED allarme sovracorrente POS. 9 Manopola per regolazione chiusura cratere "CRATER CURRENT" (Vedi Pag. 9) **POS. 10** Manopola per regolazione corrente in ELETTRODO (MMA) POS. 11 Pulsante CHECK GAS **POS. 12** Deviatore modalità ELETTRODO / MIG/MAG **POS. 13** LED Power ON unità di raffreddamento **POS. 13A** Fusibile protezione unità di raffreddamento **POS. 14** Indicatore di livello liquido di raffreddamento (lato destro dell'unità) **POS. 15** Tappo per riempimento acqua **POS. 16** Presa di uscita (+) **POS. 17** Presa di uscita (-) **POS. 18** Interruttore per ciclo 2 o 4 tempi **POS. 19** Manopola per regolazione INDUTTANZA ELETTRONICA **POS. 20** Manopola per regolazione chiusura cratere "CRATER VOLTAGE" (Vedi Pag. 9) POS. 21 Amperometro digitale **POS. 22** Presa per collegamento torcia MIG/MAG Interruttore macchina ON/OFF **POS. 23 POS. 24** Potenziometro regolazione BBT (Burn Back Time) Tempo bruciatura filo **POS. 25** Uscita per collegamento trainafilo MIG/MAG **POS. 26** Raccordi rapidi mandata (blu) e ritorno acqua (rosso) **POS. 27** Cavo collegamento Unità di Raffreddamento **POS. 28** Fascio cavi

POS. 29

POS. 30

Cavo di alimentazione

Presa 6 poli per collegamento trainafilo MIG / MAG

B.: Attenzione alla polarità di saldatura

Workpiece

5. INSTALLAZIONE

5.1 Collegamento del cavo di alimentazione

Prima di collegare l'impianto alla linea di utenza controllare che la tensione e la frequenza di rete corrispondano a quelle riportate sulla targa dati dell'impianto e che l'interruttore sia sulla posizione "0". L'allacciamento alla rete può essere eseguito mediante il cavo in dotazione all'impianto collegando:

- il conduttore giallo-verde all'impianto di terra;
- i restanti conduttori alla rete.

Collegare al cavo di alimentazione una spina normalizzata di portata adeguata e predisporre una presa di rete dotata di fusibili o interruttore automatico. Assicurarsi che il terminale di terra sia collegato al conduttore di terra (GIALLO-VERDE) della linea di alimentazione.

Nota: eventuali prolunghe del cavo di alimentazione devono essere di sezione adeguata, in nessun caso inferiore a quella del cavo in dotazione.

5.2 Installazione ELETTRODO (MMA)

A.: La macchina è provvista di 2 prese di potenza per là corrente di saldatura. Inserire le spine del cavo di massa (-) e della torcia (+) avvitandole con forza per evitare processi di surriscaldamento dovuti al passaggio della corrente.

richiesta dal costruttore dell'elettrodo che si andrà a fondere nel materiale di base. Generalmente il polo positivo va collegato SCHEMA INSTALLAZIONE alla torcia. mentre quello negativo **ELETTRODO** (massa) va al pezzo da saldare. Se le polarità risulteranno invertite, si noteranno molti spruzzi di saldatura ed un arco molto instabile. C.: Attenzione alla lunghezza del cavo di massa. Se è necessaria una misura oltre i 50mt, consultare la casa costruttrice per un corretto dimensionamento della sezione per evitare una perdita di tensione Power supply troppo alta. cable (-)(+) Ground Electrode cable holder

Operazioni pratiche di installazione:

Fare riferimento alla Fig. 1 di Pag. 5.

A.: Dopo aver fatto le operazioni sopra descritte, accendere (posizione "ON") l'interruttore di potenza del generale posto sul retro della macchina (Pos. 23). Una spia posta sul frontale della macchina indicherà l'avvenuta alimentazione.

B.: Selezionare saldatura Stick (MMA elettrodo) tramite l'interruttore posto sul frontale della macchina (Pos. 11), ed impostare la corrente di saldatura come richiesto dalla sezione dell'elettrodo che si vuole utilizzare (Pos. 20).

C.: Generalmente, la relazione tra corrente e diametro dell'elettrodo segue la tabella sotto indicata:

Φ elettrodo (MMA) 2.0
 Φ elettrodo (MMA) 2.5
 Φ elettrodo (MMA) 3.25
 Φ elettrodo (MMA) 4.0
 Φ elettrodo (MMA) 5.0
 Φ elettrodo (MMA) 6.0

5.3 Installazione MIG/MAG (a filo)

Fare riferimento alla Fig. 1 di Pag. 5.

A.: Collegare la macchina al trainafilo con il fascio cavi. (Pos. 25, 26, 28, 30).

B.: Collegare il tubo gas del fascio cavi alla bombola di gas.

C.: Collegare l'Unità di Raffreddamento con il cavo Pos. 27.

D.: Avvitare la torcia MIG/MAG nell'apposito connettore (Pos. 22) posto sul frontale del trainafilo e far passare il filo della bobina dentro la torcia spingendolo per un po' a mano (10 cm). Nel caso di torcia raffreddata ad acqua, collegare i tubi di "mandata e ritorno", ai raccordi Pos. 4.

E.: Inserire la spina del cavo di massa nella presa negativo (-) con l'attenzione di avvitarla ben stretta.

F.: Chiudere il braccetto con rullo soprastante del trainafilo accertandosi che il filo passi per la cava del rullo sottostante e che la misura della cava stessa sia compatibile al diametro del filo (1,0 : 1,2 mm etc.). Controllare che il tubetto portacorrente, situato sulla punta della torcia, sia compatibile con la misura del filo che deve passare: es. il filo da 1,2 richiederà un foro da 1,2 mm.

Operazioni pratiche di installazione:

A.: Dopo aver eseguito le operazioni sopra descritte, accendere (posizione "ON") l'interruttore di potenza del generale posto sul retro della macchina (Pos. 23). Una spia posta sul frontale della macchina indicherà l'avvenuta alimentazione.

Aprire la valvola della bombola di gas, regolare il flusso di gas in uscita come desiderato (10-14 l/min), utilizzare l'interruttore Gas Check Pos. 12.

B.: Selezionare saldatura MIG/MAG (a filo) tramite l'interruttore posto sul frontale della macchina (Pos 11), ed impostare la tensione di saldatura (V) (Pos 2) e la velocità del filo (m/min) (Pos. 1) come richiesto dal pezzo che si desidera saldare. Tramite il pulsante "INCH WIRE" (Pos. 3) far passare il filo per tutta la torcia.

C.: Selezionare il ciclo di funzionamento 2 Tempi o 4 Tempi con il deviatore Pos. 18.

Il ciclo 2T è normalmente utilizzato per saldature brevi come la puntatura.

La macchina eroga corrente solo quando il pulsante torcia è premuto.

Il ciclo 4T permette di mantenere la corrente senza tenere premuto il pulsante torcia. Alla prima pressione del pulsante, fuoriescono il gas di protezione e la corrente di saldatura,

quando viene rilasciato la corrente rimane allo stesso valore fino a che non viene premuto nuovamente. A questo punto la corrente si blocca e il gas continua a fuoriuscire fino a che il pulsante non viene rilasciato.

D.: Regolare la chiusura cratere con le due manopole Pos. 10 e 19.

Questa funzione è attiva solo in ciclo 4 Tempi e permette di impostare un valore più basso di velocità filo (CRATER CURRENT) e tensione d'arco (CRATER VOLTAGE), durante il 3° ciclo di funzionamento del pulsante torcia. Premerlo e tenerlo premuto durante la saldatura in 4 tempi e impostare i valori ottimali per la chiusura del cratere. Rilasciare il pulsante per terminare la saldatura.

E.: Regolare il BBT (Pos. 24).

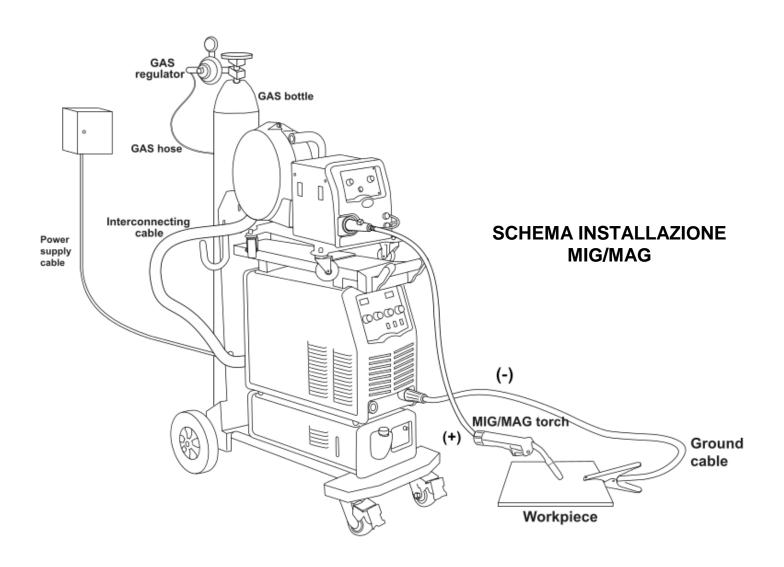
Regolare il potenziometro del BBT (burn-back-time) in modo che il filo in uscita del tubetto portacorrente non si attacchi né al pezzo in lavorazione né alla torcia.

F.: Regolare l'Induttanza Elettronica (Pos. 9).

Considerare che incrementando l'induttanza elettronica, l'arco si restringe e diventa più "morbido".

Decrementando l'induttanza elettronica, l'arco si allarga e diventa più "energico".

G.: Il post gas è regolato ad un secondo dopo l'interruzione dell'arco elettrico.



Verificare che:

- -- La saldatrice sia collegata all'impianto di terra.
- -- Tutti i collegamenti siano corretti. Particolare attenzione deve essere fatta al collegamento del pezzo da saldare ed al cavo di massa.
- -- I terminali della pinza portaelettrodo e cavo di massa non siano in corto circuito.
- -- La polarità di uscita sia corretta.

MANUTENZIONE

L'esposizione ad ambienti polverosi, umidi o corrosivi è dannoso per la macchina. Al fine di evitare qualsiasi possibile guasto o il malfunzionamento della macchina, pulire la polvere ad intervalli regolari con aria compressa.

Nota bene: la mancata manutenzione può definire l'indisponibilità e annullamento della garanzia.

AVVERTENZE 6.

6.1 Ambiente di lavoro.

A.: La saldatura dovrebbe essere fatta in un ambiente relativamente asciutto con una umidità inferiore al 90%.

B.: La temperatura dell'ambiente di lavoro deve essere compresa tra -10°C e +40°C.

C.: Se si usa l'impianto all'aperto proteggerlo dal contatto diretto del sole e della pioggia. Non lasciare mai che l'acqua si infiltri all'interno della macchina.

D.: Se si usa l'impianto in un'area molto sporca proteggerlo dalla presenza di gas e acidi corrosivi.

E.: Attenzione alle correnti d'aria molto forti perché potrebbero disturbare il gas di protezione della saldatura.

Buona ventilazione.

Il corretto funzionamento dell'impianto alle alte correnti di saldatura è garantito anche dalla ventilazione forzata. Assicurarsi che il ventilatore giri e che copertura e pannelli laterali siano sempre ben chiusi.

La tensione di alimentazione deve essere corretta.

Il corretto funzionamento dell'impianto è garantito se il valore della tensione di alimentazione (Volt) e la sua frequenza (Hz) sono corretti. Prima di allacciare l'impianto l'utilizzatore li deve sempre conoscere e considerare la massima tolleranza ammessa (+/-10%). Superati leggermente (+/- 5%) questi limiti la macchina si spegne automaticamente, oltre c'è il rischio di un serio danno all'impianto.

Il sovraccarico di corrente di saldatura è proibito.

L'utilizzatore deve sempre conoscere la massima corrente di saldatura disponibile anche in relazione al suo duty cycle dichiarato in targa caratteristiche. Superare questo limite significa richiedere l'intervento della protezione termica che a lungo andare riduce la vita della macchina stessa.

6.5 Protezione da sovratemperatura interna.

Nel caso si sovratemperatura interna, la macchina accenderà il led sul frontale che indica lo stop della saldatura fino al raffreddamento interno. Tutto si ripristinerà automaticamente dopo pochi minuti se il ventilatore funziona correttamente.

English 👺

INDEX

Chapter	Par.	Description	Page
1		Introduction	4
2		Ordinary maintenance	4
3		Possible Application	4
4		Commands description	5
5		Installation	7
	5.1	Connection to the line of user	7
	5.2	STICK installation (MMA)	7
	5.3	MIG/MAG installation	8
6		Caution	10
	6.1	Working Environment	10
	6.2	Good Ventilation	10
	6.3	Over-voltage is forbidden	10
	6.4	Over-load is forbidden	10
	6.5	Over-heating Protection	10
7		Troubleshooting	11
8		Technical specifications	13
9		Spare parts list	14
		Schematic block diagram	19

1. Introduction

To obtain the best performance from the machine and ensure the longest possible life of all its components you must carefully follow the instructions for use and maintenance detailed in this manual. In the interest of our customers we suggest any maintenance or repair of the equipment has to be made by qualified personnel.

All our products are subject to a constant development. We are therefore compelled to reserve the right to make any necessary or useful changes in design and equipment.

2. Ordinary maintenance

Avoid any deposit of metallic dust inside the generator.



Disconnect the generator from the net, before operating any servicing! Standard checks to the generator:

- Operate an internal cleaning by using low pressure compressed air and soft bristle brushes.
- Check the electrical connections and all the rest of the connecting cables.
 For the maintenance and the use of gas regulators consult the specific handbook.

3. Possible Application

Power sources type Futura 3505 SW and Futura 5005 SW are suited for MIG/MAG and ELECTRODE welding in the range of 500A.

• It is forbidden to use the equipment for different application from the ones listed in this manual. A different use from the one here after described can compromise the security of work and the reliability of the equipment.

We suggest not to use the Inverter Power Source Futura 3505 SW and Futura 5005 SW (standard version):

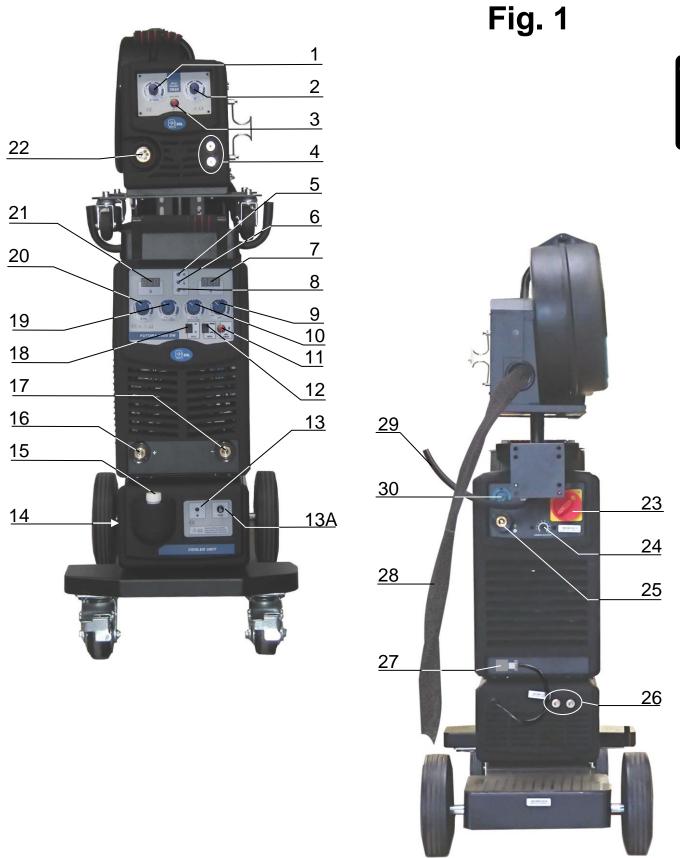
- In environments with high concentration of humidity and dust.
- With Input cables longer than 50 mt.

Contact the service center for advice and precautions, in case the unit must be installed and used under the above listed conditions.

It is suggested to make a maintenance cleaning of the unit every 2-3 months of work, for this operation, please contact the service center.

English 🗒

4. COMMANDS DESCRIPTION



Refer to Fig. 1.

<u>POS. 1</u>	Wire feeder speed adjustment in MIG/MAG
POS. 2	WELDING VOLTAGE adjustment in MIG/MAG
POS. 3	INCH WIRE push button
<u>POS. 4</u>	Quick release connectors for inlet (blue) and outlet (red) for MIG/MAG water cooling torch
POS. 5	Power ON LED
POS. 6	Over-heating LED
POS. 7	Digital Voltmeter
POS. 8	Over-current LED
POS. 9	Knob for adjust the crater filler "CRATER CURRENT" (See Page 9)
POS. 10	Knob for adjust STICK welding
POS. 11	TEST GAS switch
POS. 12	STICK (MMA) / MIG/MAG switch selector
POS. 13	LED cooler unit power ON
POS. 13A	Protection fuse for cooler unit
POS. 14	Cooling water level indicator (right side)
POS. 15	Water tank cap
POS. 16	Output socket (+)
POS. 17	Output socket (-)
POS. 18	2/4 times switch
POS. 19	Electronic INDUCTANCE adjustment in MIG/MAG
POS. 20	Knob for adjust the crater filler "CRATER VOLTAGE" (See Page 9)
POS. 21	Digital Ammeter
POS. 22	MIG/MAG torch receptacle
POS. 23	Power switch ON/OFF
POS. 24	Burn Back Time adjustment (BBT)
POS. 25	Power output for MIG/MAG wire feeder
POS. 26	Quick release connectors for inlet (blue) and outlet (red)
POS. 27	Cable for Cooler Unit connection
POS. 28	Interconnecting Cable
POS. 29	Input power supply cable
POS. 30	6 pins socket for MIG/MAG wire feeder connection

5. INSTALLATION

5.1 Connection to the line of user

Before connecting the system to the net, check that the input voltage (V) and work frequency (Hz) correspond to the values that are printed on the machine serial number sticker and make sure that the main switch is on the "0" position. The electrical connection to the net can be operated through the equipped cable as follows:

- yellow-green cable to earth;
- the remaining wires to the net.

Connect to the input cable a certified plug with the correct capacity, predispose a net socket with safety fuses or with an automatic safety switch OFF. Make sure that the earth cable is securely connected to the earth conductor (YELLOW-GREEN) of the input net line.

Note: if input cable extensions are needed, make sure to use the correct size, which does not have to be smaller than the one that the machine is equipped with.

5.2 STICK installation (MMA)

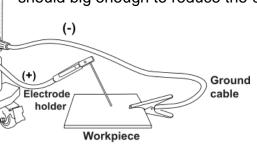
A.: Every welding machine matches two plugs. Insert the plug into the socket at the bottom of the front panel, and tighten it, ensure contact good. Otherwise if the working time is long and the working current is big, it will burn the pin and socket. Please treat it seriously.

B. Insert the Electrode holder cable into the (+) socket and the Ground cable into the (-) socket. Connect the Ground cable to the workpiece.

C. It should be pay attention to the wire's polarity. Generally, DC welding machines have two connection methods: positive connection and negative connection.

Positive connection: insert the Electrode holder into the (+) and the workpiece into the (-); Negative connection: insert the Electrode holder into the (-) and the workpiece into the (+). Choose which connection method when welding should according to workpiece metal and craft requirements. If select inappropriately, the electric arc will be instable, also have some spatter, stick the welding rod and so on. In this case, you can replace the plug conveniently to change the polarity.

D. If the distance between workpiece and welder is too far (50-100m), the welding cable and earth cable are long, in this case, the cross-sectional area of wire should big enough to reduce the cable voltage falling.



STICK INSTALLATION SCHEME

Operations for installation:

Refer to Fig. 1 of Page 5.

A.: After installing the machine according to the above steps, set the power switch of the back panel in the "ON" position (Pos. 23), and the machine will be started. The power supply LED lights, the fan begins to turn.

B.: Select the Stick (MMA Electrode) welding through the function switch at the bottom of front panel (Pos. 11). According to the thickness of workpiece, adjust the welding current adjustment knob (Pos. 20), let the welding performance reach to the requirements.

C.: General speaking, welding rod corresponding to the welding current as below:

Φ electrode (MMA) 2.0
 Φ electrode (MMA) 2.5
 Φ electrode (MMA) 3.25
 Φ electrode (MMA) 4.0
 Φ electrode (MMA) 5.0
 Φ electrode (MMA) 6.0

5.3 MIG/MAG welding installation

Refer to Fig. 1 of Page 5.

A.: Connect the machine to wire feeder with Interconnecting cable. (Pos. 25, 26, 28, 30).

B.: Connect the gas hose of the interconnecting cable to the gas cylinder.

C.: Connect the water cooler unit with the cable Pos. 27.

D.: Screw the welding torch into the output socket (Pos. 22) at the front panel of the wire feeder, and tighten it. Meanwhile, let the welding wire penetrate into the torch by hand (10cm). When using water cooled torch, connect the pipes of water flow and return to the fittings Pos. 4.

E.: Connect the cable plug with ground clamp into the (-) socket at the front panel of the machine, and tighten it clockwise.

F.: Fix the wire reel to the wire feeding rack axis, matching the groove position of the wire feeding wheel with the contact tip of the welding torch and the welding wire diameter. Meanwhile, loosen the strut bracing, and make the wire into the glove of the wire feed wheel, press the wire tightly, but not too tight, and then thread the wire into the torch.

Operations for installation:

A.: After installing the machine according to the above steps, set the power switch (Pos. 23) of the back panel in the "ON" position, and the power supply LED lights, the fan begins to turn. Open the gas bottle and adjust the flow meter on the gas meter to get the desired gas flow volume (10-14 l/min). Use the switch Gas Check (Pos. 12).

B.: Set the function switch of the front panel in the MIG/MAG welding mode (Pos. 11), and adjust the welding voltage (V) (Pos. 2) and wire feeding speed (m/min) (Pos. 1) with the knobs, as required by the piece to be welded. Press the "INCH WIRE" button (Pos. 3) to feed the wire out of the welding torch.

C.: Select the operating cycle of 2 Time or 4 Time with the switch (Pos. 18).

2T cycle is usually used for short works as the spot welding. The machine produces output current only when the Torch switch is pressed. 4T cycle allows the production of current even without the activating of the Torch switch. During the first pressure of the button, shielding gas and welding current escape; when it is released, the current keeps staying at the same value, until the button is pressed again.

At this point, the output current stops, while the gas keep on flowing until the button is released.

D.: Adjust the crater filler with the two knobs Pos. 10 and 19.

This function is activated only in the cycle of 4 Time and it allows you to set a lower value of the crater current and crater voltage, during the 3rd operating cycle of the Torch switch. Press it and keep pressing it during the welding process in 4 time and set the optimal values for the closure of the crater. Release the button to finish the weld.

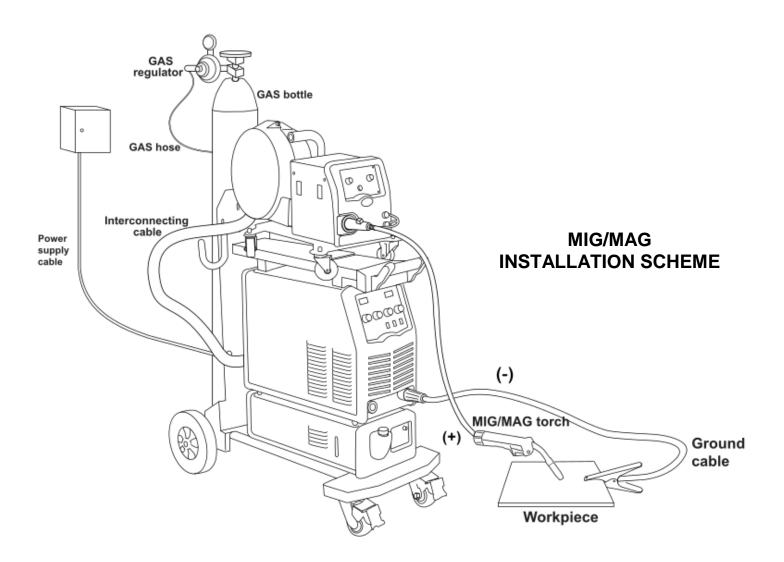
E.: Adjust the BBT (Pos. 24).

According to the requirements, adjust the burn back time potentiometer in the back panel to change the length of welding wire extend contact tip after welding.

F.: Adjust the Electronic Inductance (Pos. 9).

Take into account that by increasing the electronic inductance the arc becomes narrower and more pliable. On the contrary, by decreasing the electronic inductance the arc becomes wider and more "energetic".

G.: The gas will be cut off 1s after the arc stops.



Check Whether:

- -- The power source is connected with earth cable
- -- All the connections are available. Particular attention should be drawn to the connection of earth clamp and work piece
- -- The output terminal of electrode holder and earth cable is not short-circuited;
- -- The polarity of output terminals are correct

MAINTENANCE

Exposure to extremely dusty, damp, or corrosive air is damaging to the welding machine. In order to prevent any possible failure or fault of this welding equipment, clean the dust at regular intervals with clean and dry compressed air of required pressure.

Please note that: lack of maintenance can spell to the unavailability and cancellation of the guarantee.

CAUTION 6.

6.1 **Working Environment**

- A. Welding should be carried out in a relatively dry environment with its humidity of 90% or less.
- B. The temperature of the working environment should be within -10°C to 40°C.
- C. Avoid welding in the open air unless sheltered from sunlight and rain, and never let rain or water go into the machine.
- D. Avoid welding in dusty area or environment with corrosive chemical gas.
- E. Avoid gas shielded arc welding in environment with strong airflow.

Good Ventilation

This welding machine has so big welding current when working that nature ventilation can not meet the cooling demand, while the inner fan enables the machine to work steadily by its effective cooling. Operator should make sure the louvers are uncovered and unblocked. The minimum distance between the machine and nearby objects should be 30cm. Good ventilation is of critical importance to the normal performance and service life of the machine.

6.3 Over-voltage is forbidden

The power supply voltage has been showed in the main parameter table. General speaking, the voltage in the welding machine will compensate the circuit automatically, for ensuring the welding current in the permitted range. If the voltage exceeds the permitted limit, the machine will be damaged. The users should know this situation, and take the corresponding measures. So pay attention to the changes in voltage. Once over-voltage occurs, stop welding and switch off the power.

Over-load is forbidden 6.4

The users should check the max permitted load current at any time (relatively the fixed duty cycle). The welding current can't exceed the max permitted load current. Over-loaded current will cut the welding machine use life remarkably, and maybe burn the welding machine.

6.5 **Over-heating Protection**

Over-heating protection appears while the machine is of overload status because of continuous welding for a long time, and a sudden halt of welding occurs. In this case, it is unnecessary to restart the machine, but just wait for the over-heating LED to go out, and welding can be recovered.

INDEX

Chap. 1	Par.	Description Introduction	Page 4
2		Maintenance ordinaire	4
3		Emploi consenti	4
4		Description des commandes	5
5		Installation	7
	5.1	Raccordement à la ligne de l'utilisateur	7
	5.2	Installation ÉLECTRODE (MMA)	7
	5.3	Installation MIG/MAG	8
6		Avertissements	10
	6.1	Milieu de travail	10
	6.2	Bonne ventilation	10
	6.3	La tension d'alimentation doit être correcte	10
	6.4	La surcharge de courant de soudage est interdite	10
	6.5	Protection contre la surchauffe interne	10
7		Dépannage	11
8		Specifiques techniques	13
9		Liste pieces	14
		Schèmas electriques	19

1. Introduction

Pour obtenir la performance optimale de cette installation et assurer une durée maximum à ses composants, il est impératif de suivre rigoureusement les instructions pour l'utilisation et l'entretienqui se trouvent dans ce livret.

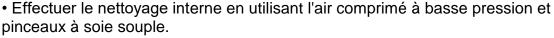
Dans votre intérêt, nous vous conseillons de vous adresser au personnel spécialisé pour l'entretien et le cas échéant, pour la réparation de l'installation.

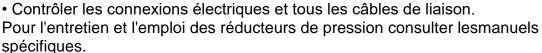
Toutes nos machines sont sujettes à une évolution continue. Nous réservons donc effectuer des modifications concernant la construction et l'équipement aussi.

2. Maintenance ordinaire

Éviter qu'on cumule de la poussière métallique à l'intérieur del'installation.







3. Emploi consenti

Les générateur type Futura 3505 SW et Futura 5005 SW sont developpé pour soudage MIG/MAG et ELECTRODE avec gamme jusqu'à 500A.

• Il n'est pas consenti l'usage des machines et de ses parties pour applications differentses de celles énumérées dans ce manuel.

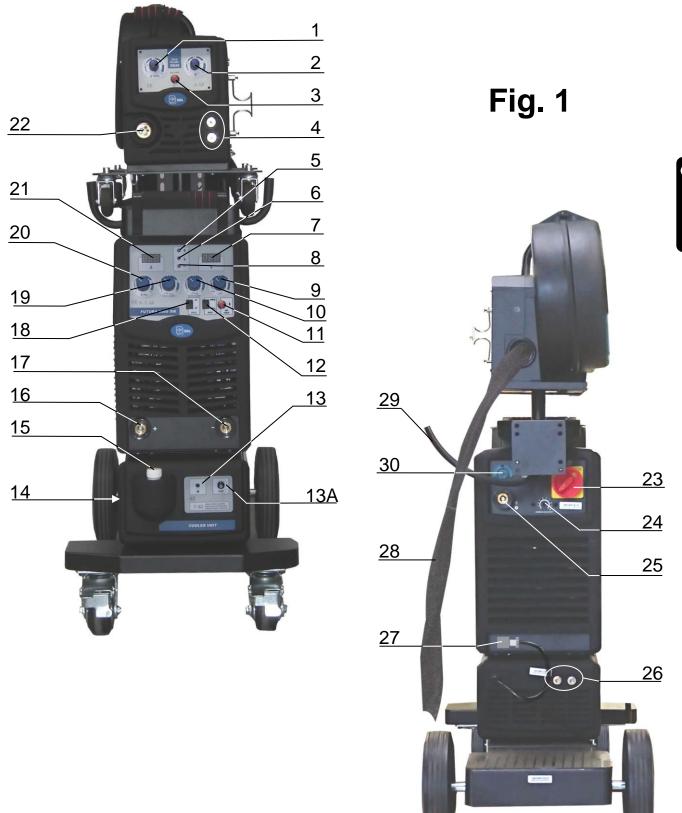
Il est conseillé l'usage des générateurs Futura 3505 SW et Futura 5005 SW (version standard):

- En ambientations avec haute concéntration d'humidité et poudre.
- Avec câbles d'alimentaton de longueur supérieure aux 50mt.

Addressez-vous au centre d'assistence pour conseilles et précautions d'usage, lors que l'installation et l'usage doit se passer dans une des conditions décrites an-dessous.

Il est conseillé une procedure de manutention tous les 2-3 mois à concorder avec le centre d'assistence.

4. DESCRIPTION DES COMMANDES



Se référer à la Fig. 1.

Manette pour réglage VITESSE FIL
Manette pour réglage TENSION D'ARC en MIG/MAG
Bouton INCH WIRE
Raccordes des rapides envoyée (bleus) et reviens (rouge) eau. Pour emploie torche refroidie eau.
LED power ON
LED alarme surchauffe
Voltmètre numérique
LED allarme surintensité
Bouton de réglage de la fermeture du cratère « CRATER CURRENT » (Voir Page 9)
Manette pour réglage courant en ÉLECTRODE (MMA) Bouton
Déviateur TEST GAS
Déviateur modalité ÉLECTRODE / MIG/MAG
LED Power ON Unité de refroidissement
Fusible de protection de l'unité de refroidissement
Indicateur de niveau liquide de refroidissement
Bouchon pour le remplissage de l'eau
Prise de sortie (+)
Prise de sortie (-)
Interrupteur pour cycle 2 ou 4 temps
Potentiomètre pour réglage de l'INDUCTANCE ÉLECTRONIQUE
Bouton de réglage de la fermeture du cratère « CRATER VOLTAGE » (Voir Page 9)
Ampèremètre numérique
Prise pour branchement torche MIG/MAG
Interrupter machine ON/OFF
Burn Back Time adjustment (BBT)
Sortie pour liaison dévidoir MIG/MAG
Raccords des connections rapides envoi (bleus) et retour eau (rouge)
Câble de connexion Unité de Refroidissement
Faisceau de cables
Câble d'alimentation
Prise 6 poles pour liaison dévidoir MIG/MAG

5. INSTALLATION

5.1 Raccordement à la ligne de l'utilisateur

Avant de relier l'installation à la ligne d'usage contrôler que la tension et la fréquence de réseau correspondent à celles reportées sur la plaque des donnés de l'installation et que l'interrupteur soit sur la position "0". Le branchement au réseau peut être exécuté au moyen du câble en dotation à l'installation en reliant:

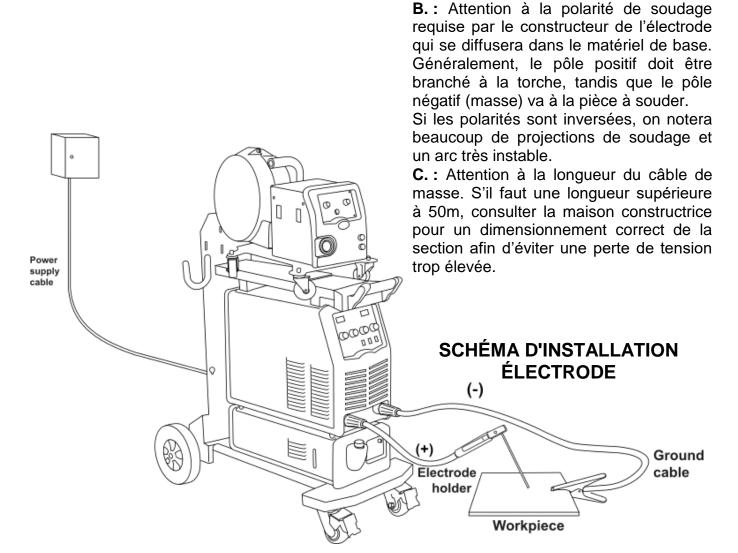
- le conducteur jaune-vert à l'installation de terre;
- les restants conducteurs au réseau.

Relier au câble d'alimentation une épine normalisée de portée adéquateet prevoir une prise de réseau douée de fusibles ou interrupteur automatique. S'assurer que le terminal de terre soit relié au conducteur de terre (JAUNE-VERT) de la ligne d'alimentation.

NOTE: eventuels prolonges du câble d'alimentation doivent être de section adaptée, dans aucun cas inférieur à celle du câble en dotation.

5.2 Installation ÉLECTRODE (MMA)

A.: La machine est pourvue de 2 prises de puissance pour le courant de soudage. Insérer les fiches du câble de masse (-) et de la torche (+) en les vissant avec force pour éviter des processus de surchauffe dus au passage du courant.



Opérations pratiques d'installation:

Faire référence aux Fig. 1 à la Page 5.

A.: Après avoir effectué les opérations décrites ci-dessus, allumer (position « ON ») l'interrupteur général de puissance placé sur l'arrière de la machine (Pos. 23). Un témoin situé sur l'avant indiquera que l'alimentation a eu lieu.

B.: Sélectionner soudage Stick (MMA électrode) à l'aide de l'interrupteur placé sur l'avant de la machine (Pos. 11), et programmer le courant de soudage selon ce qui est requis par la section de l'électrode que l'on veut utiliser (Pos. 20).

C.: Généralement, la relation entre courant et diamètre de l'électrode correspond à ce qui est indiqué dans le tableau ci-dessous:

Φ électrode (MMA) 2.0
 Φ électrode (MMA) 2.5
 Φ électrode (MMA) 3.25
 Φ électrode (MMA) 4.0
 Φ électrode (MMA) 5.0
 Φ électrode (MMA) 6.0
 40-70A
 60-90A
 90-140A
 130-170A
 40-230A
 40-230A
 40-260A

5.3 Installation MIG/MAG (au fil)

Faire référence aux Fig. 1 à la Page 5.

A.: Brancher la machine au dispositif à dévider avec le faisceau de câbles. (Pos. 25, 26, 28, 30).

B.: Connecter le tube à gaz du faisceau des câbles à la bouteille à gaz.

C.: Brancher l'Unité de Refroidissement au câble Pos. 27.

D.: Visser la torche MIG/MAG dans le connecteur prévu à cet effet (Pos. 22) et placé sur l'avant du dispositif à dévider, puis faire passer le fil de la bobine dans la torche en le poussant de la main sur environ 10 cm. Dans le cas d'une torche refroidie par eau, brancher les tuyaux de « refoulement et de retour », aux raccordements Pos. 4.

E.: Insérer la fiche du câble de masse dans la prise négative (-) en faisant attention de bien serrer en le vissant.

F.: Fermer le bras avec le rouleau situé au-dessus du dévidoir du dispositif à dévider en s'assurant que le fil passe par la cavité du rouleau sous-jacent et que la mesure de la cavité est compatible avec le diamètre du fil (1,0 : 1,2 mm etc.).

Contrôler que le tube porte-courant, situé sur la pointe de la torche, est compatible avec la mesure du fil qui doit passer: ex. le fil de 1,2 demandera un trou de 1,2mm.

Opérations pratiques d'installation:

A.: Après avoir effectué les opérations décrites ci-dessus, allumer (position « ON ») l'interrupteur général de puissance placé sur l'arrière de la machine (Pos. 23). Un témoin situé sur l'avant indiquera que l'alimentation a eu lieu. Ouvrir la valve de la bouteille de gaz, régler le flux de gaz en sortie comme on le désire (10-14 l/min), utiliser l'interrupteur Gaz Check Pos. 12.

B.: Sélectionner soudage Mig/Mag (au fil) à l'aide de l'interrupteur placé sur l'avant de la machine (Pos 11), et programmer la tension de soudage (V) (Pos 2) et la vitesse du fil (m/min) (Pos. 1) selon la pièce que l'on désire souder. À l'aide du bouton « INCH WIRE » (Pos. 3) faire passer le fil sur toute la longueur de la torche.

C.: Sélectionner le cycle de fonctionnement 2 Temps ou 4 Temps à l'aide du déviateur Pos. 18. Le cycle 2T est normalement utilisé pour des soudages brefs comme le soudage par points. La machine envoie du courant seulement quand la gâchette de la torche est

pressée. Le cycle 4T permet de maintenir le courant sans maintenir la pression sur la gâchette de la torche. A la première pression de la gâchette, le gaz de protection et le courant de soudage sortent, quand on relâche, le courant reste à la même valeur jusqu'à ce qu'on appuie à nouveau sur la gâchette. Le courant se bloque alors et le gaz continu à sortir jusqu'à ce qu'on relâche la gâchette.

D.: Régler la fermeture du cratère à l'aide des deux boutons Pos. 10 et 19.

Cette fonction est active seulement en cycle 4 Temps et permet de programmer une valeur plus basse de la vitesse du fil (CRATER CURRENT) et de la tension d'arc (CRATER VOLTAGE), durant le 3ème cycle de fonctionnement de la gâchette de la torche. Appuyer sur la gâchette et maintenir la pression durant le soudage en 4 temps. Programmer les valeurs optimales pour la fermeture du cratère. Relâcher la gâchette pour terminer le soudage.

E.: Régler le BBT (Pos. 24).

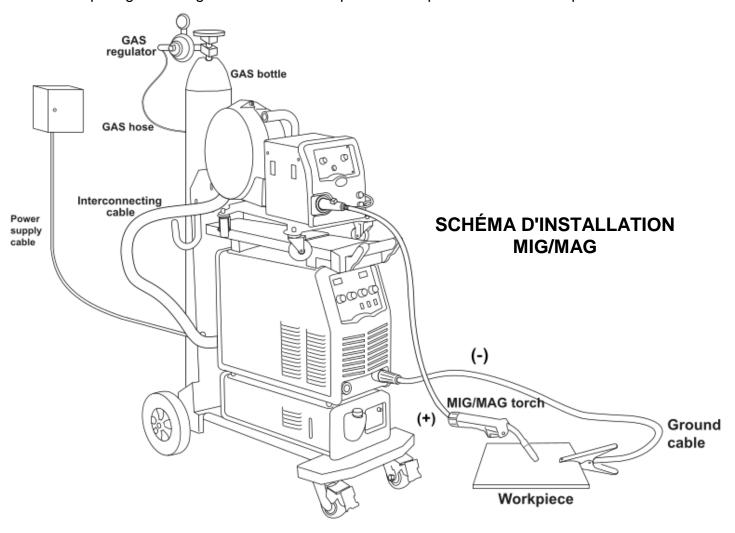
Régler le potentiomètre du BBT (burn-back-time) afin que la longueur du fil sortant du tube porte-courant ne reste pas attachée à la pièce en usinage, ni à la torche.

F.: Régler l'Inductance Électronique (Pos. 9).

Régler l'Inductance Électronique Considérer qu'en augmentant l'inductance électronique, l'arc se resserre et devient plus « souple ».

En diminuant l'inductance électronique, l'arc s'élargit et devient plus « énergique ».

G.: Le post gaz est réglé à une seconde après l'interruption de l'arc électrique.



Contrôler que:

- -- Le poste à souder est branché à l'installation de terre.
- -- Tous les branchements sont corrects. Il faut faire particulièrement attention au branchement de la pièce à souder et du câble de masse.
- -- Les terminaux de la pince porte-électrode et le câble de masse ne sont pas en courtcircuit.
- -- La polarité de sortie est correcte.

MAINTENANCE

L'exposition à des milieux poussiéreux, humides ou corrosifs est nocive pour la machine. Afin d'éviter toute panne ou dysfonctionnement de la machine, nettoyer la poussière à intervalles réguliers avec de l'air comprimé.

Nota bene: le manque de maintenance peut définir l'indisponibilité et l'annulation de la garantie.

AVERTISSEMENTS 6.

Milieu de travail. 6.1

- A. : Le soudage devrait être effectué en milieu relativement sec avec une humidité inférieure à 90%.
- B.: La température du milieu de travail doit être comprise entre -10° C et +40° C.
- C. : Si l'on utilise l'installation en plein air, la protéger contre l'exposition directe au soleil et à la pluie. Ne jamais laisser l'eau s'infiltrer à l'intérieur de la machine.
- D. : Si on utilise l'installation en milieu très sale, la protéger contre la présence de gaz et d'acides corrosifs.
- E.: Attention aux courants d'air très forts car ils pourraient perturber le gaz de protection du soudage.

Bonne ventilation.

Le fonctionnement correct de l'installation à de forts courants de soudage est aussi garanti par la ventilation forcée. S'assurer que le ventilateur tourne et que les couvertures et panneaux latéraux sont toujours bien fermés.

La tension d'alimentation doit être correcte.

Le fonctionnement correct de l'installation est garanti si la valeur de la tension d'alimentation (Volt) et sa fréquence (Hz) sont correctes. Avant de brancher l'installation, l'utilisateur doit toujours connaître et considérer la tolérance maximale admise (+/-10%). Si on dépasse légèrement ces limites (+/- 5%), la machine s'éteint automatiquement, si on va au-delà, il y a un risque sérieux de dommage à l'installation.

La surcharge de courant de soudage est interdite.

L'utilisateur doit toujours connaître le courant maximum de soudage disponible, en rapport également avec le cycle de fonctionnement déclaré sur sa plaquette de caractéristiques. Dépasser ses limites signifie demander l'intervention de la protection thermique qui à long terme réduit la durée de vie de la machine.

6.5 Protection contre la surchauffe interne.

En cas de surchauffe interne, la machine allumera la LED sur l'avant qui indique l'arrêt du soudage jusqu'au refroidissement interne.

Tout sera rétabli automatiquement après quelques minutes si le ventilateur fonctionne correctement.



7. TROUBLESHOOTING / RICERCA GUASTI



The following operation requires sufficient professional knowledge on electric aspect and comprehensive safety knowledge. Operators should be holders of valid qualification certificates which can prove their skills and knowledge. Make sure the input cable of the machine is cut off from the electricity utility before uncovering the welding machine.

Common Malfunction Analysis and Solution:

Malfunction Phenomena	Cause and Solution
1. The overheating LED is ON.	 Check the welding current and welding time. Refer to
	the manual, and operate according to the duty cycle
	requirement.
	2. Check the running status of the fan when welding. If
	the fan does not work, check if the power supply of the
	fan is 230V AC: If the power supply is normal, check
	the fan; if the power supply is abnormal, check the
	connecting cable of the power supply.
	Replace the thermal switch if it is damaged.
2. There is no response when	Check if the power LED is ON and if the digital meter
pushing the torch switch and	is light on.
the protection LED is OFF.	2. Check if the torch switch is in good contact and check
	the welding torch for good connection.
	3. Check the wire feeder for good connection
	(interconnecting cable).
3. The Wire feeder and gas outlet	Check if the ground cable connected to the workpiece
are ok when pushing the torch	is in good contact.
switch but there is no output	2. Check if the quick plug is connected to correct quick
current and the protection LED	socket.
is OFF.	3. Check the wire feeder for good connection
	(interconnecting cable).
	4. Check the welding torch for damage.
	5. The control PCB of the welding machine fails
	(see Pos 6 on Spare parts list).
4. There is output current when	 Check the wire feeder for clogging or damage.
pushing the torch switch to	2. Check the contact tip of welding torch for clogging or
feed gas, but the	damage.



when pushing the torch switch, but the voltage cannot be adjusted. 2. The control PCB of the welding machine fails (see Pos 6 on Spare parts list). 6. Welding current is unstable. 1. Check the pressure arm on the wire feeder for proper pressure. 2. Check if the drive roll matches the wire size being used. 3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list).		•
 Welding can be carried out when pushing the torch switch, but the voltage cannot be adjusted. The control PCB of the welding machine fails (see Pos 6 on Spare parts list). Check the pressure arm on the wire feeder for proper pressure. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. Check if the drive roll matches the wire size being used. Check the welding wire for good quality. Check if the quick plug is loose. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. Prolong the post-flow time of the shielded gas, and contact our company. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). Select 4T cycle and carried out crater welding under low current. 	wire feeder does not feed wire.	3. The Wire feeder power PCB of the welding machine
when pushing the torch switch, but the voltage cannot be adjusted. 2. The control PCB of the welding machine fails (see Pos 6 on Spare parts list). 3. Check the pressure arm on the wire feeder for proper pressure. 4. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding.		fails (see Pos 15 on Spare parts list).
but the voltage cannot be adjusted. 2. The control PCB of the welding machine fails (see Pos 6 on Spare parts list). 1. Check the pressure arm on the wire feeder for proper pressure. 2. Check if the drive roll matches the wire size being used. 3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding.	5. Welding can be carried out	Check if control cable of the wire feeder is in good
adjusted. (see Pos 6 on Spare parts list). 1. Check the pressure arm on the wire feeder for proper pressure. 2. Check if the drive roll matches the wire size being used. 3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding.	when pushing the torch switch,	condition.
1. Check the pressure arm on the wire feeder for proper pressure. 2. Check if the drive roll matches the wire size being used. 3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding.	but the voltage cannot be	2. The control PCB of the welding machine fails
pressure. 2. Check if the drive roll matches the wire size being used. 3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding.	adjusted.	(see Pos 6 on Spare parts list).
2. Check if the drive roll matches the wire size being used. 3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding.	6. Welding current is unstable.	Check the pressure arm on the wire feeder for proper
used. 3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding.		pressure.
3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding.		2. Check if the drive roll matches the wire size being
Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.		used.
4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.		3. Check the contact tip of the welding torch for wear.
5. Check if the torch cable is too twisted. 6. Check if the quick plug is loose. 7. Weld bead is not well protected. 1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.		Replace it and tighten it if necessary.
 Check if the quick plug is loose. Weld bead is not well protected. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. Prolong the post-flow time of the shielded gas, and contact our company. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). Select 4T cycle and carried out crater welding under low current. 		4. Check the welding wire for good quality.
 Weld bead is not well protected. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. Prolong the post-flow time of the shielded gas, and contact our company. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). Select 4T cycle and carried out crater welding under low current. 		Check if the torch cable is too twisted.
when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.		6. Check if the quick plug is loose.
protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.	7. Weld bead is not well	Do not move the welding torch away immediately
2. Prolong the post-flow time of the shielded gas, and contact our company. 8. No gas flow when the torch switch is pushed, but the wire feed operates normally. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.	protected.	when stopping welding, so that the shielded gas can
contact our company. 1. The control PCB of the welding machine fails (see Pos 15 on Spare parts list). 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.		protect the weld bead.
 No gas flow when the torch switch is pushed, but the wire feed operates normally. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). There are big craters after welding. Select 4T cycle and carried out crater welding under low current. 		2. Prolong the post-flow time of the shielded gas, and
switch is pushed, but the wire feed operates normally. 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.		contact our company.
feed operates normally. 2. The gas valve on the Wire Feeder is clogged or damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.	8. No gas flow when the torch	The control PCB of the welding machine fails
damaged. (See Pos 22 on Spare parts list). 3. The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.	switch is pushed, but the wire	(see Pos 15 on Spare parts list).
 The auxiliary transformer of the power supply is damaged (see Pos 7-14 on Spare parts list). There are big craters after welding. Select 4T cycle and carried out crater welding under low current. 	feed operates normally.	2. The gas valve on the Wire Feeder is clogged or
damaged (see Pos 7-14 on Spare parts list). 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current.		damaged. (See Pos 22 on Spare parts list).
 9. There are big craters after welding. 1. Select 4T cycle and carried out crater welding under low current. 		3. The auxiliary transformer of the power supply is
welding. low current.		damaged (see Pos 7-14 on Spare parts list).
	9. There are big craters after	Select 4T cycle and carried out crater welding under
2. Change the operation mode.	welding.	low current.
		2. Change the operation mode.

This machine is in continuous improvement, so other parts may be different except the function and operation.



8. TECHNICAL SPECIFICATIONS / SPECIFICHE TECNICHE

TYPE	Futura 3505 SW (set)	Futura 5005 SW (set)
Code	1709A	17104
Input voltage (VAC)	400 ±15%	400 ±15%
Input Frequency (Hz)	50/60	50/60
Rated input power (KVA)	14,9	25
Rated input current (A)	21,5	36
Output current range (A)	50 - 350	50 - 500
Rated Duty cycle ED % (40°C)	40% at 350A	60% at 500A
Rated Duty cycle ED % (25°C)	60% at 350A	70% at 500A
Permanent secondary current 100% (A)	220	390
No-load voltage (VDC)	65	75
Stick Electrode possibility (Ø)	6	6
Feed speed adjustment range (m/min)	1,5 - 16	1,5 - 16
Welding wire diameter applicable (mm)	0.8 / 1.0 / 1.2	0.8 / 1.0 / 1.2 / 1.6
Efficiency (%)	85%	85%
Power factor	0.93	0.93
Insulation class	F	F
Protection class	IP21S	IP21S
Weight (kg)	100	115
Size (mm) 1 2 (Width×Height×Length)	510 × 1380 × 1060	510 × 1380 × 1060

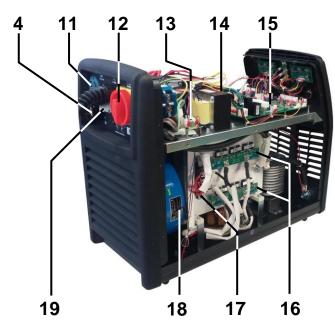


9. SPARE PARTS LIST / LISTA RICAMBI

POWER SOURCE









Pos.	Qty	DESCRIPTION	Futura 3505 SW PART No.	Futura 5005 SW PART No.
1	4	Knob	VC14	016
2	2	Digital Meter PCB	V1660	8SC
3	1	Blue cover with serigraphy	C1325C	A10S
4	3	Dince socket	VRSC02067	VRSC02013
5	2	2 positions Switch	VRSC16	6014-1
6	1	Control PCB (*)	V1660	9SC
7	1	Auxiliary transformer (big)	M350	TA
8	1	Emc filter PCB	V1590	0SC
9	1	Inverter PCB (*)	V16633SC	V16635SC
10	1	Shunt assembly	VRSB18033	VRSB18038
11	1	6 poles receptacle	VRSB20028	
12	1	Main Switch	VRSB24045	VRSB24068
13	1	Auxiliary transformer PCB	V16500SC	
14	1	Auxiliary transformer (small)	M351	TA
15	1	Wire feeder power PCB (*)	V16610SC	
16	2	Secondary rectifier PCB (*)	V16480SC	V16502SC
17	1	3 phase bridge rectifier	VRSD18042-1	VRSD18014-1
18	1	Fan motor	K349VE	
10	1	5-poles socket	J420	FR
19	1	Cover for 5-poles socket	J421CO	

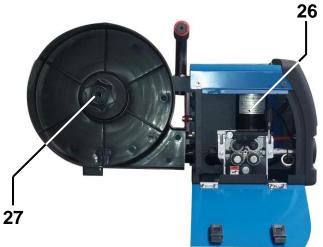
^{(*) =} Suggested spare parts / Ricambi consigliati



9. SPARE PARTS LIST / LISTA RICAMBI

WIRE FEEDER

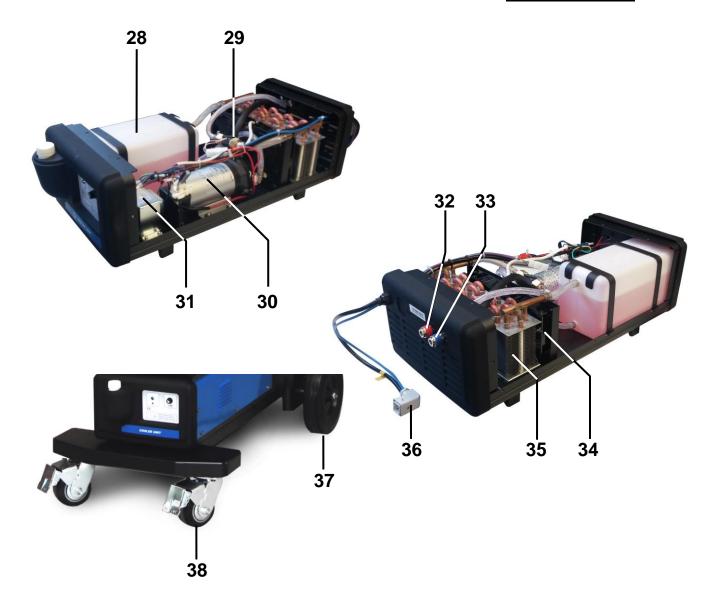




Pos.	Qty	DESCRIPTION	Wire Feeder TR25 PART No.
20	2	Black knob with blue cap	D550MA
21	1	Inch wire push-button	K345PU
22	1	Gas valve (not visible)	K346PU
23	2	Water in-let / out-let blue pressure socket	B165AT
24	2	Water in-let / out-let red pressure socket	B166AT
25	1	Binzel socket	R168AT
26	1	Wire feeder motor group (See page 18 for codes of the rollers)	V16534TR
27	1	Spool holder	D510AS



9. SPARE PARTS LIST / LISTA RICAMBI COOLER UNIT



Pos.	Qty	DESCRIPTION	Cooler Unit PART No.
28	1	Plastic Tank with cap	D551SE
29	1	Inhibit water switch	K383FL
30	1	Pump DC 24V	K384EP
31	1	Auxiliary transformer for cooler unit	M352TA
32	2	Water in-let / out-let red pressure socket	B166AT
33	2	Water in-let / out-let blue pressure socket	B165AT
34	2	Fan motor for cooler unit	K385VE
35	1	Radiator	K386RA
36	1	5-poles plug	J422FR
30 1	Cover for 5-poles plug	J423CO	
37	2	Rear wheel D250	D569RU
38	2	Front wheel D100	D570RU



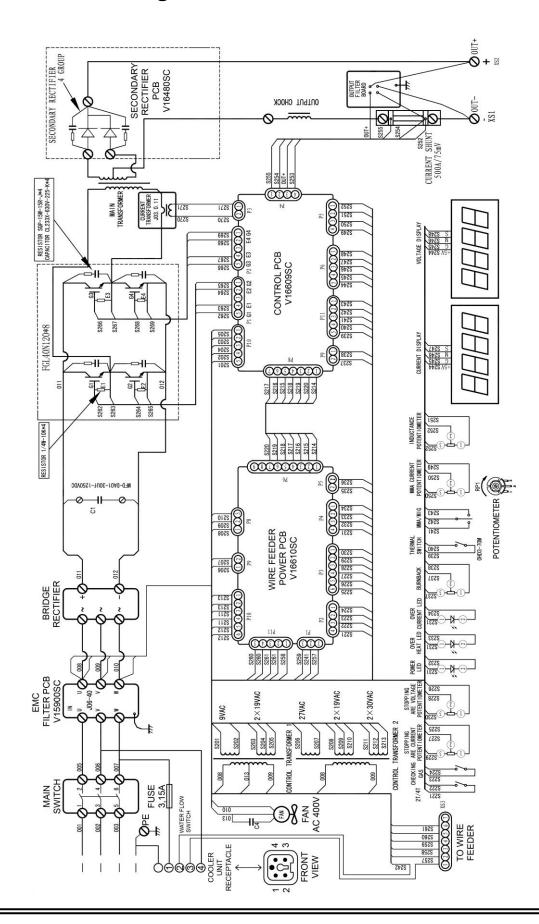
Wire feeder rolls available on Futura series Rulli di trascinamento disponibili su serie Futura

 $\sqrt{}$ = Fitted as standard Opt. = Optional (-) = Not provided

	() 1101 9107							
			Power Source Model and Rolls qty					
15	Roll	Groove type and material Tipo Gola e	Futura 1602 C	Futura 2000 C	Futura 2500 C	Futura 3501 C	Futura 3505 SW (Wire Feeder)	Futura 5005 SW (Wire Feeder)
Rolls Description:	Code:	materiale	Rolls Qty 1	Rolls Qty 2	Rolls Qty 2	Rolls Qty 2	Rolls Qty 2	Rolls Qty 2
ROLL D30 0,6-0,8 V FUT1602	V17396RU	\checkmark	√	-	-	-		-
ROLL D30 0,8-1,0 V FUT1602	V17395RU		√	-	-	-	-	-
ROLL D30 0,6-0,8 V TYPE	V16504RU		-	Opt.	Opt.	-	14	-
ROLL D30 0,8-1,0 V TYPE	V16508RU	CARBON STEEL	-	√	√	√	√	Opt.
ROLL D30 1,0-1,2 V TYPE	V16506RU	and STAIN STEEL	-	√	√	\checkmark	\checkmark	\checkmark
ROLL D30 1,2-1,6 V TYPE	V16507RU		-	-	-	Opt.	Opt.	√
ROLL D30 0,8-1,0 "U"	V16514RU		Opt.	-	-	-	•	-
ROLL D30 0,8-1,0 "U"	V16513RU		-	Opt.	Opt.	Opt.	Opt.	Opt.
ROLL D30 1,0-1,2 "U"	V16509RU	ALUMINUM	-	-	Opt.	Opt.	Opt.	Opt.
ROLL D30 1,2-1,6 "U"	V16510RU	ALLUMINIO	-	-	-	Opt.	Opt.	Opt.
ROLL D30 1,0-1,2 KNURLED (ZIGRINATO)	V16511RU	KNURLED ZIGRINATO	Opt.	-	Opt.	Opt.	Opt.	Opt.
ROLL D30 1,2-1,6 KNURLED (ZIGRINATO)	V16512RU	FLUX CORE WIRE FILO ANIMATO	-	-	-	Opt.	Opt.	Opt.

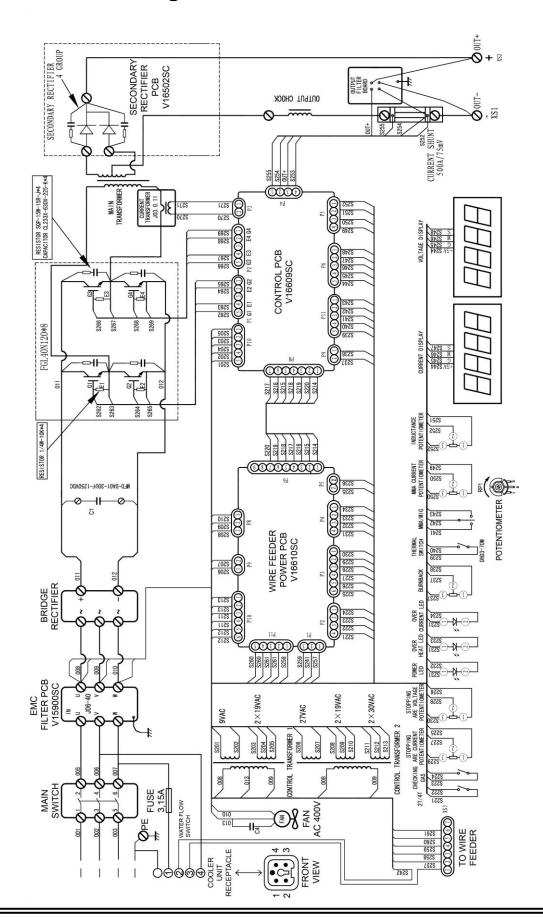


Schematic block diagram FUTURA 3505 SW



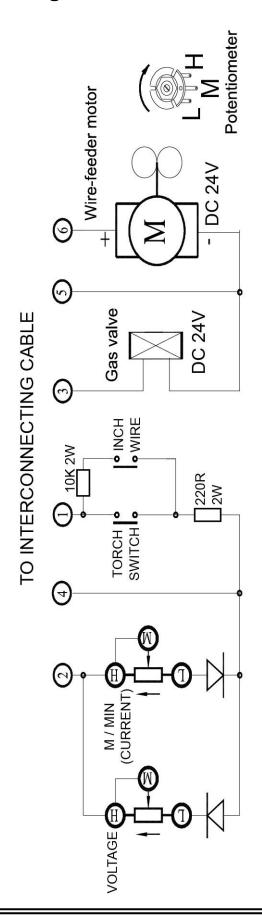


Schematic block diagram FUTURA 5005 SW





Schematic block diagram WIRE FEEDER TR25



Made in PRC with the technical collaboration of SOL

Sol spa

Via Borgazzi, 27 20900 Monza, Italy t +39 039 2396.1 e tecnosol@sol.it www.solgroup.com

Part code T1549M Printed in date 27/03/19 Rev. 01

