OBJECTIVE OF THE CONNECT 5

The CONNECT-5 is a simple automated mode that only works in DC or AC TIG.
The torch triggers and potentiometers are deactivated.

This automated mode is designed to recall pre-programmed welding parameters (internal programmes) between two TIG welding beads. The console or automated system will connect to the remote control connector (pedal or hand held).

To function in such a way the automated system needs to :
- Control the start of the welding cycle.
- Recall up to 5 programmes of the machine or function within the current context.
- Refine / set the current using the potentiometer (aim : define the programmes and adjust the current delivered during the welding by ±15%)
- Receive the information ARC ON on the welding arc.
- Be automatically detected by the welding machine without the user intervention.

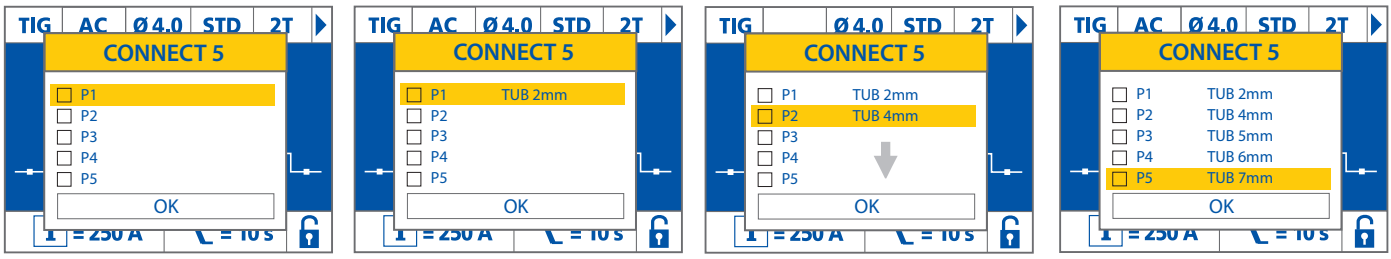
CONSTRAINTS OF CONNECT-5

- In MMA, the CONNECT-5 does not work.
- The CONNECT-5 mode functions in TIG DC or AC, it is not possible to recall programmes used for other processes.
- The operation of the triggers is automatically set on 2T, regardless of the saved setting (4T...).

PROGRAMMES ALLOCATION *(TIG 220 AC/DC AND 250 AC/DC)*

TIG 220 AC/DC, TIG 250 AC/DC

In the tab, an option «CONNECT 5» opens a new window showing the matching table or programme allocation table.



Mode - Programmes selection *(P1, P2, etc.)* **:**
A dedicated window is used to move the cursor through the five Connect-5 programmes and to tick the associated programme.
Pressing the left scroll wheel opens a banner used to select the saved setting to associate (TUB 2mm, etc.).
Press OK to validate the associations.

Mode - Select the save to associate *(TUB 2mm, 4mm, etc.)* **:**
Press OK to open a highlighted text banner where the different saves are displayed by name.
Pressing the scroll wheel validates the selection and returns to the programmes selection mode. The cursor will be placed on the next programme.

If no save setting is recorded in the product : it does not change the way the automated mode operates. No saved setting name appears in the list but the programmes are kept «free», simply press OK.
Then, the current context matching the free programme is valid for the 5 programmes recalled.

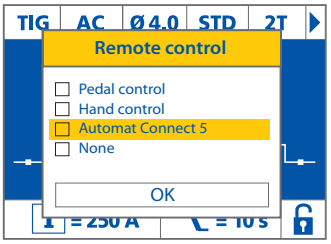
CONNECT-5 RECOGNITION MODES *(PRODUCTS WITH TFT SCREENS)*

TIG 220 AC/DC, TIG 250 AC/DC

When plugging in the automated system, 2 recognition modes exist.

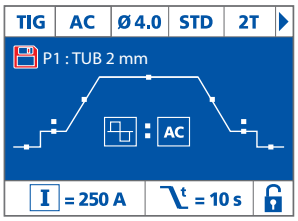
1/ A direct recognition mode detecting the short circuit on ENABLE_C5 (ENABLE = 0), the recognition takes place and the machine starts or goes into CONNECT-5 configuration (only applies to the TIG 220 AC/DC).

2/ An indirect recognition mode detecting the impedance on the remote control. A window will appear requesting precision for the type of remote control connected.



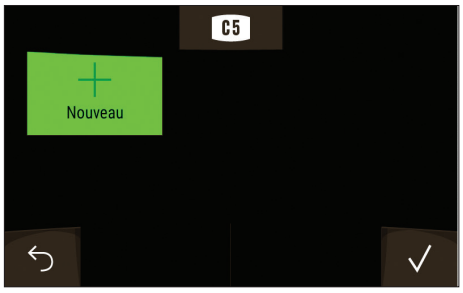
PROGRAMME RECALL BY THE CONSOLE *(TIG 220 AC/DC AND 250 AC/DC)*

When the console takes control over the machine, it can then recall programmes. The name of the recalled programme is displayed in the main window.



PROGRAMMES ALLOCATION *(TITANIUM)*

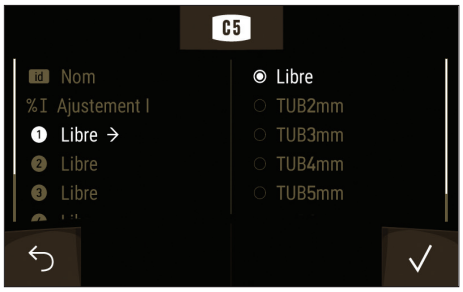
In the window JOB, the mode C5 (Connect-5) allows to recall JOBs via an automaton.



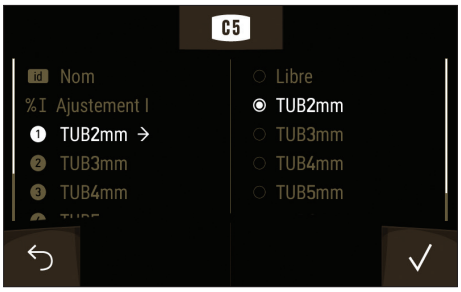
Creating a new program

Choose a program name

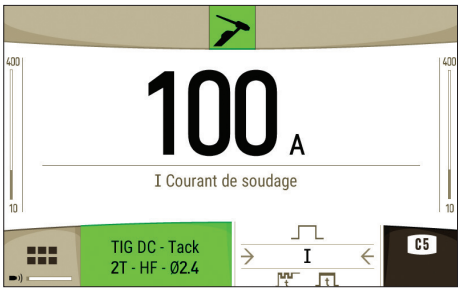
Allows you to adjust the additional current setting (Reg I) from 0 to 50%.



Selection of programs : ❶, ❷, ❸, ❹, ❺



Selection of the JOB to be associated (TUB2mm, etc)



PROGRAMMES ALLOCATION *(PRODUCTS WITH KEYPAD)*

TIG 300 DC

TIG TITAN 400 DC

Access to allocation table and matching table :
The programme allocation is fixed by default to the first five saved settings.

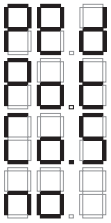
If no saved setting is recorded on the product : this does not change the operation of the automated system mode, each programme will match the default context or free programme.

CONNECT-5 RECOGNITION MODES *(PRODUCTS WITH KEYPAD)*

TIG 300 DC

TIG TITAN 400 DC

When plugging in the automated system, 2 recognition modes exist.
1/ A direct recognition mode detecting the short circuit on AUTODETECT, the recognition takes place and the machine starts or goes into CONNECT-5 configuration.
2/ An indirect recognition mode detecting the impedance on the remote control. A keypad message will appear requesting precision for the type of remote control connected.



→ CONNECT-5 selection mode.

THE «FREE» PROGRAMME

The «free» programme matches the current context by default.
The MMI (man machine interface) gives access to different settings:

IHM with TFT screen

The higher bar is accessible but with restrictions :
- **Process :** TIG – ~~MMA~~
- **Type :** DC – AC – SYNC - AC MIX
- **Ø :** OK
- **Sub-process :** STD – PULSE – SPOT … : OK
- **Type of trigger :** 2T only
- **Arcing :** OK
- **Option :** deactivated
- **Files :** OK
- **Welding and settings cycle :** OK

Keypad

- **Process & Arcing :** TIG-HF – TIG-LIFT – ~~MMA~~
- **Type of trigger :** deactivated for 2T only
- **Sub-process :** STD - PULSE - Easy Pulse - SPOT : OK
- **SAVE / RECALL :** deactivated
- **Welding and settings cycle :** OK

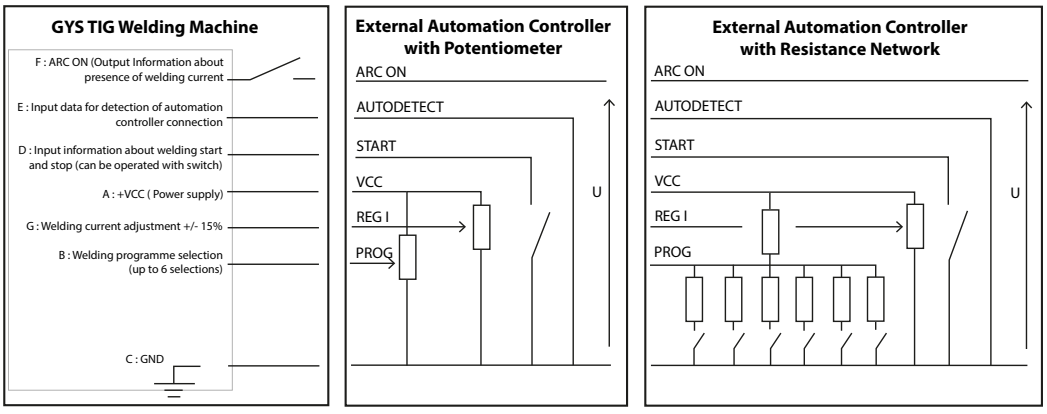
ARC ON

L'ARC ON is a piece of information sent by the welding machine and equal to the state of the welding arc.
During a welding cycle, the ARC ON is at 0 while the arc is on (from I_Start to I_Stop).
L'ARC ON is at 1 while the arc is off (during the Pregas or Postgas phases but also if the arc stops because the machine encountered a problem).

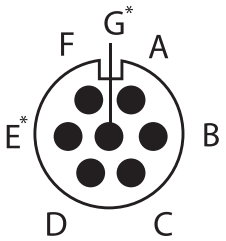
AUTOMATED SYSTEM SIDE

The automated system needs to start the welding cycle using the selected programme and to receive the ARC ON information while the welding arc is on.

Examples of automated systems consoles :



Connections:



**non available on the 250 AC/DC*

A	**VCC**, power supplied by the welding machine and allowing the connection of the potentiometers. ⚠ **This power supply is not designed for other uses.**
B	**PROG**, analogical output to return to the welding machine and allowing the selected programme to be recalled. This value can be done using a potentiometer or a relay box. **Example of range where VCC = 3.3V :** - POSITION 0 : 0V - 0.5V -> programme 0, match the current context - POSITION 1 : 0.6V - 1.1V -> programme 1 - POSITION 2 : 1.2V - 1.6V -> programme 2 . . . . - POSITION 5 : 2.8V - 3.3V -> programme 5 For a VCC = 5 V or 10 V and a robot not using a resistance network, a cross-multiplication rule is used.
C	**GND *(COMMUN)***
D	**START**, on-off welding control output (activates on contact).
E*	**AUTODETECT**, a strap between E and C will allow the machine to detect the direct recognition mode.
F	**ARC ON**, Pull Up input (100k robot side) returning to the automated system and giving information on the state of the arc ((0 : ARC ON, 1 : ARC OFF), VCC_max = 6V). The type of contact can be polarized as dry depending on the product generation:
G*	**REG I**, sanalogical output to return to the welding machine and allowing the welding current to be adjusted during the weld by ± 15%. This value can be done using a POT 2 potentiometer.

TIG	220 AC/DC	250 AC/DC	300 DC	TITAN 400 DC	Titanium
3.3 V	✓	✓			
5 V			✓		
10 V				✓	✓

	220 AC/DC	250 AC/DC	300 DC	TITAN	TITANIUM
Polarized (ARC ON +)	✓	✓	✓		
Dry contact				✓	✓

Functioning principle using the console or automated system:

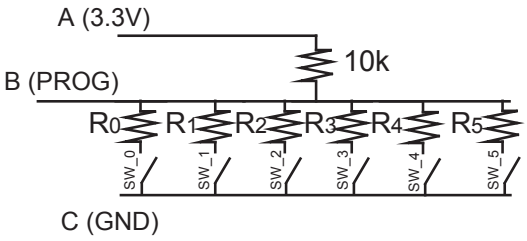
• **SW1 is ON :** the welding cycle has started the welding configuration matching the last recall. Modifying the programme will have no impact during the weld.
At reception of the information ARC ON = 0, the welding arc is present.

• **SW1 is OFF :** the welding cycle ends (DownSlope … PostGaz).
At reception of the information ARC ON = 1, the welding arc is off.

If the default context is selected, the interface settings are always adjustable when not welding.
Regardless the programmes or context selected, the current is always adjustable using the potentiometer (POT 2).

When disconnecting the console from the product, the context goes back to default.

Resistance proposal:



Resistance values proposal:
R0 : 1K
R1 : 3.3k
R2 : 6.8k
R3 : 15k
R4 : 33k
R5 : 100k