French industrial manufacturer since 1964

gys-welding.com

Made in France

TITANIUM 400 AC/DC

A unique AC/DC TIG welding experience

V1 EN - 90g

An advanced Powersource

The TITANIUM 400 AC/DC is a high-performance inverter dedicated to AC/DC TIG and MMA welding. Equipped with pulsed modes and a truly intuitive interface, it guarantees precision welding on alloy, low alloy or stainless steels, aluminium and its alloys, as well as on copper metals.

Innovative digital architecture

The TIG TITANIUM 400 AC/DC Powersource is the completion of many years of development and represents the ultimate for all AC & DC TIG welding. It features the latest generation of electronics and fully digital management. Two indispensable elements to guarantee welding quality and maximum productivity.

Its innovative design allows it to operate in the most demanding environments with very high efficiency. The 60% duty cycle of 400 A (40°C, EN60974-1 standard), the adjustable welding current from 3 A, the waveform configuration, the optimization of the ignition, or the multiple welding modes are only a part of these numerous specific features.

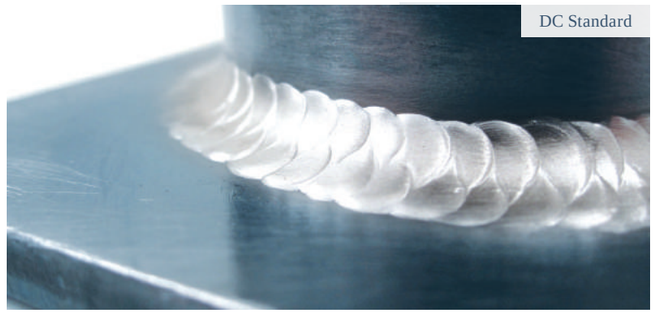
The TITANIUM 400 AC/DC is the ideal choice for all welders looking for the perfect AC/DC TIG Powersource, already designed for use on welding robots.

Product benefits

- High duty cycle
- Fully digital technology
- Pulse Mode
- High welding accuracy
- Robust design

Field of applications

- Sheet metalwork
- Shipbuilding
- Railway construction
- Steel construction



6 TIG welding modes

- DC Standard: DC welding on most ferrous materials.
- DC pulse (Frequency up to 2.5 kHz): Provides a high control of the dilution and limits the temperature of the welded parts. In particular, this allows very thin sheets to be welded and reduces their distortion. Working in position is also easier.
- DC FastPulse (Frequency up to 20 kHz): allows to keep the arc constriction properties of the Pulse mode, at high frequencies, staying within comfortable sound frequencies even inaudible for the welder.
- AC Standard: welding of aluminium (Al, AlSi, AlMg, AlMn...) and its light alloys (magnesium and brass).
- AC pulse: same contribution as in DC on aluminium.
- AC Mix: alternating AC and DC current to increase welding speed on aluminium assemblies. The DC phase is used to preheat the part.

Synergic TIG

In order to simplify the setting of parameters and increase the productivity, the TITANIUM features a “Synergic” mode. The adjustment of the current or other parameters of the welding cycle is no longer necessary, 3 basic settings are all that are needed to begin welding:

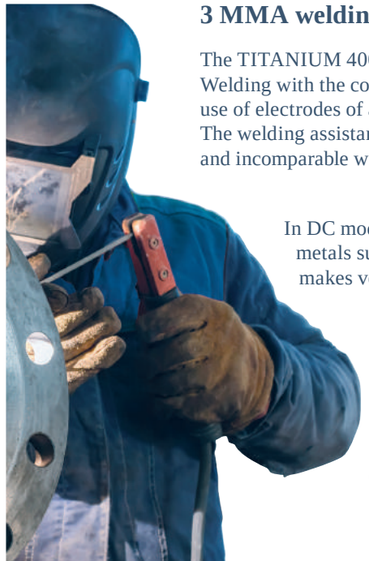
1. Materials (6) — DC : Fe, CrNi or CuZn/Cu; AC : AlMg, AlSi or Al99
2. Support thickness
3. Position (4)

1-2-3 weld!

These 3 basic settings automatically determine the optimal welding parameters to help each welder achieve an accurate and efficient weld.

In the case of more specific applications, the other modes (Standard, Pulse, etc.) offer total freedom in the adjustment of the different parameters, from ignition to the final crater fill and post gas of your weld bead.

This synergistic mode makes it easy to weld thin sheets, to work in a vertical position or overhead to obtain the most aesthetic welds.



3 MMA welding modes suitable for all situations

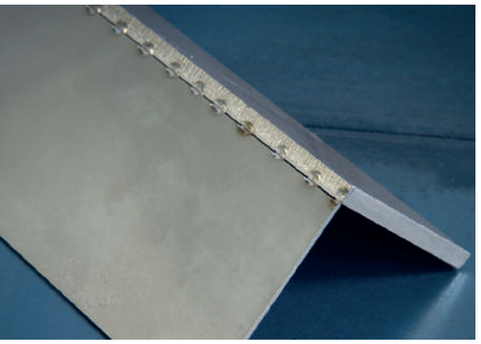
The TITANIUM 400 AC/DC offers a complete solution for welding all types of materials.
Welding with the coated electrode (MMA) is an essential component of this solution. Whatever the mode, it allows the use of electrodes of all types of coatings up to 8 mm diameter (rutile, basic, cellulosic, etc).
The welding assistants; “Arc Force” and “Hot Start” are predetermined by manual adjustment to provide perfect ignition and incomparable welding performances with the 3 modes (DC, pulsed DC & AC).

In DC mode, the TITANIUM 400 AC/DC delivers a very stable DC current and allows the welding of all metals such as alloy or non-alloy steels, stainless or duplex steels and cast irons. Switched to pulsed DC, it makes vertical upward welding phases easier.

AC welding is an efficient process allowing you to weld without magnetic disturbances of the arc when welding electrically charged parts.
This process also provides additional adjustment potentials for modern construction sites.
This is particularly beneficial for the conservation of old welding processes, where changing DMOS/WPS would be difficult. The adjustable frequency from 15 to 150 Hz, the half-waveform configuration or the modulation of 40 to 60 % duty cycle are the major components.

Ingenuity for heavy industry

More than a simple powersource, the TITANIUM 400 AC/DC includes numerous functions guaranteeing great flexibility of use and total control at each stage of the welding process. The ignition, the tacking, the arc behaviour or the energy input have been worked on in the laboratory to provide maximum performance and perfect results on all applications. Every detail has been designed to provide a unique welding experience.



TACK, the ultimate in tacking

The TITANIUM 400 AC/DC features 2 tacking modes with or without delay for pre-assembly of parts before welding:

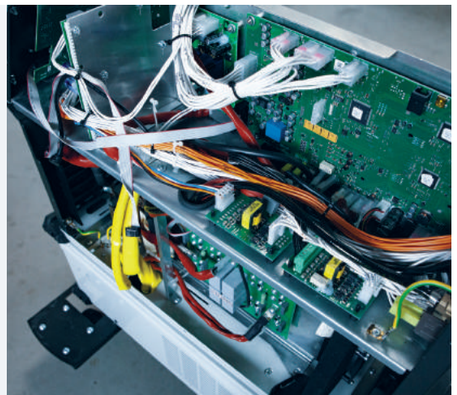
- **TACK welding:** allows a fast and precise tacking with minimum heat input for DC TIG welding. Ideal for multiple repetitive tack welding on thin sheet metal, where a uniform and controlled appearance is essential. The distortion is reduced, the point shows no oxidisation and the regularity is almost perfect. This mode also allows for greater productivity, as the spot is concealed under the weld bead without any further action from the welder.
- **Traditional SPOT tacking**

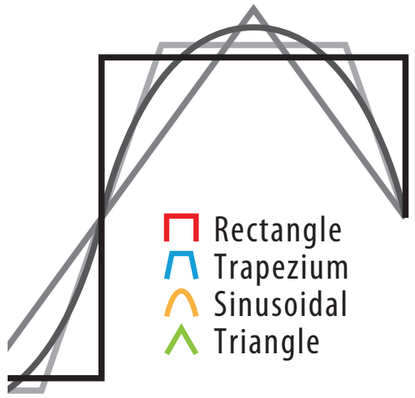
Excellent arc ignition

The TITANIUM includes, as its default, High Frequency (HF) TIG ignition with adjustable level. With non-contact ignition, the arc starts immediately with a high-voltage pulse, which ensures perfect ignition even with long torch lengths at the first trigger pressure. TIG Lift ignition (without HF) is especially used in electrosensitive environments where it is important that there are no tungsten inclusions. This function also allows, from 3 A in DC and 5 A in AC, the assembly of very thin sheets (0.3 mm thick).

Designed to last

The TITANIUM powersource withstands harsh environments thanks to its ventilation tunnel that isolates the electronic components from dust. The internal components are cooled by an aluminium radiator and a precise fan that automatically adapts to the actual needs of the machine. This reduces the noise level, energy consumption and the amount of dust in the machine, thus extending the lifespan of the machine.

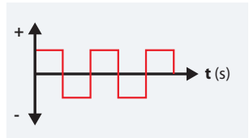




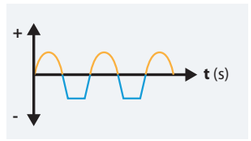
16 possible waveform combinations

The TITANIUM offers a multitude of configurations to specify the current behavior between positive and negative.

These waveforms can be set by half-waveform in Standard AC, AC Pulse and DC Pulse modes. The TITANIUM 400 AC/DC is the first powersource to be equipped with this pulsed DC setting. This essential function reduces the high-frequency noise level and plays a decisive role in the energy supply.



The current flows first in the positive range and then in the negative range at constant force, resulting in a hard rectangle. With this setting, the arc is very stable, but the extremely loud operating noise is less comfortable for the welder. Wearing hearing protection is recommended.



Sine waves are also possible. The arc is then smoother and the welding noise is lower. In most aluminum applications, a combination of the two is the best choice; a trapezoid for the negative half-wave and a sine wave for the positive half-wave.

4 signals	Efficiency
Very stable noisy arc	★★★
Very stable silent arc	★★½
Silent soft arc	★★
Stable high pressure arc	★ (ideal for thin sheets)

E-TIG, the controlled supply of energy

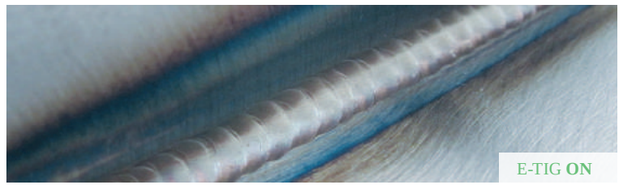
Regardless of the arc length between the torch and the welded part, the E-TIG regulates the energy input. The penetration and bead width stay constant. In the case of abrupt changes in arc length, the E-TIG system automatically adjusts the power to ensure an appropriate energy supply.

- The welding current increases (I▲) when the arc length is shortened.
- The welding current reduces (I▼) when the arc length is lengthened.

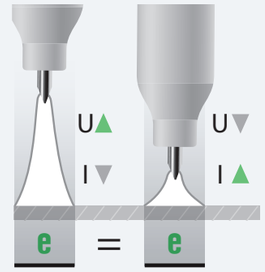
The E-TIG provides a real breakthrough for precise work and provides additional freedom in the welder's handiwork.

Main benefits :

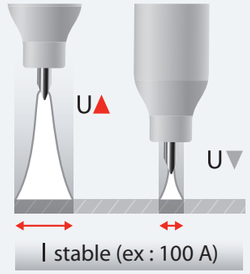
- Faster welding thanks to concentrated arc
- Reduction of the heat effected zone on the part
- Deeper penetration
- Reduced distortion
- Prevention of tungsten inclusions



E-TIG **ON**



E-TIG **OFF**

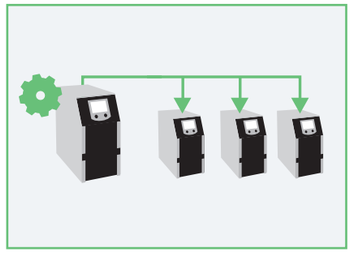


A modification of the arc length leads to a voltage change and therefore to arc power variations.

Ergonomic & productivity

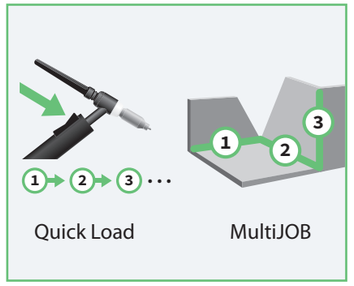
Entirely effective

Simplifying implementation is a major challenge for the TITANIUM 400 AC/DC. Quickly changing the stored programs, configuring an entire machine to be transferred identically, recording all welding data and storing it in a digital format are essential criteria in industrial environments. The TITANIUM 400 AC/DC is one of the few generators with these properties as standard. Truly designed for welders, the interface is optimized to support them in all steps in a very intuitive way.



Unlimited portability

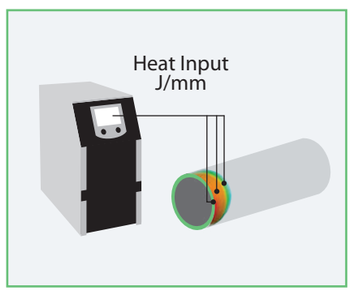
A single USB key is enough to setup an entire fleet composed of several TITANIUM 400 AC/DC. Up to 500 programs can be stored. The interface preferences, the welding programs, etc. Everything can be endlessly reproductible. The welder can thus travel with his configuration prepared in the workshop and install it on the machine(s) waiting for him on site or on a remote site. This can be done simply via the menu.



Welding programs (JOBs) available very quickly

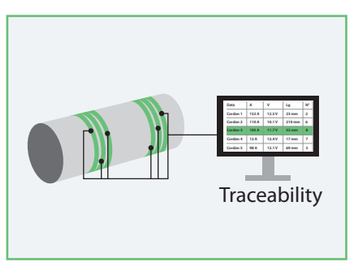
The sequence of programs can be completed in no time at all with a short touch on the torch's trigger. The changeover from one sequence to another is thus carried out without any intervention on the generator and is the ideal solution to increase the productivity, especially when the powersource is not within the welder's reach.

Two modes are available:
- The QUICK LOAD is accessible outside welding to scroll through the registered JOBs.
- The MULTIJOB makes it possible to set up and plan the different welding sequences according to the parts to be welded. Up to 20 JOBs come one after another without any interruption.



Precisely measured energy input

The on-board digital technology gives the TITANIUM 400 AC/DC a capacity to measure welding voltages (U) and currents (I) at 20 kHz. This acquisition frequency is much better than the current clamps available on the market and recommended by standard EN 50504. Thus, the welding energy is transmitted precisely, even when high-frequency current with complex waveforms are used. The instantaneous display of this data is visible via the ENERGY mode (EN1011-1, ISO/TR 18491, QW-409 standards). This system has major advantages in weld bead making and monitoring. Especially in the QMOS / DMOS (EN ISO 15614 / 15609-1) framework, or for the welding quality assurance (EN ISO 3834).



Traceability of all weld beads

The internal memory of the TITANIUM 400 AC/DC allows to track each weld bead with all the welding variables, especially to present an evidence of the respect of the manufacturing rules (DMOS/QMOS). The measurement sampling time is adjustable to the hundredth of a second (0.5 to 5 seconds). These records can be exported to a USB key in ".csv" format and can be analyzed on a simple spreadsheet.

5-inch color interface, ultra intuitive

Modernized in terms of design and redesigned in terms of ergonomics, the new TITANIUM interface is the result of many years of work and thought. The GYS design engineers have never stopped thinking about the welders and their habits in order to optimise their interaction with this XXL colour screen 5″ (12.7 cm diagonal).

The control panel, which features 2 navigation wheels and 4 selection buttons, gives access to all the necessary functions for AC/DC TIG welding: pre-gas, post-gas, adjustment of welding current rise and fall, AC balance control, arc shape, etc. Very easy to use thanks to its numerous icons and animations, this multilingual interface (10 languages) allows you to navigate through the different menus by clearly identified headings. The configuration is fast and presents 100 memory programs by process to store the best parameters or DMOS values. Protected by a 4 mm thick removable housing, this control panel is suitable for professional use in industrial environments.

3 display modes

The display mode gives access to more or less parameters and welding configurations according to the user's needs :
- Easy: simplified functionalities
- Expert: full display
- Advanced: full access to all parameters

«Home» always visible

The «Home» button always visible in the lower left part of the screen allows quick and easy access to the essential functions of the powersource (Processes, Parameters, Calibration, etc).

Simple and friendly

With its modifiable contrast, its colours adapted to each process and easily identifiable and memorable icons, the TITANIUM's interface has been redesigned to make welders' everyday life easier.

Synergic mode

Select the support, thickness and welding position. These 3 settings automatically determine the appropriate parameters to achieve an accurate and efficient weld.

Connectivity

Robotic integration

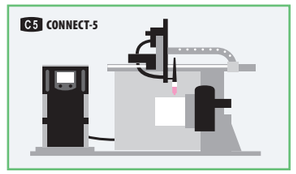
Destined for the industrial field, the TITANIUM 400 AC/DC is an “open” system.

The powersource is equipped with all connectivity to respond to current and future requirements. With its cooling unit, it will guarantee an optimal temperature control and energy efficiency. Integrated on a robot, it will become the head of it. Whichever device is connected to the TITANIUM, it will be the heart of a high-performance system.

SAM, the “Plug-and-Play” automation solution

GYS offers, via its “SAM” control interface, a TIG automation solution that perfectly meets the mechanical and communication compatibility requirements with most robot and automaton brands.

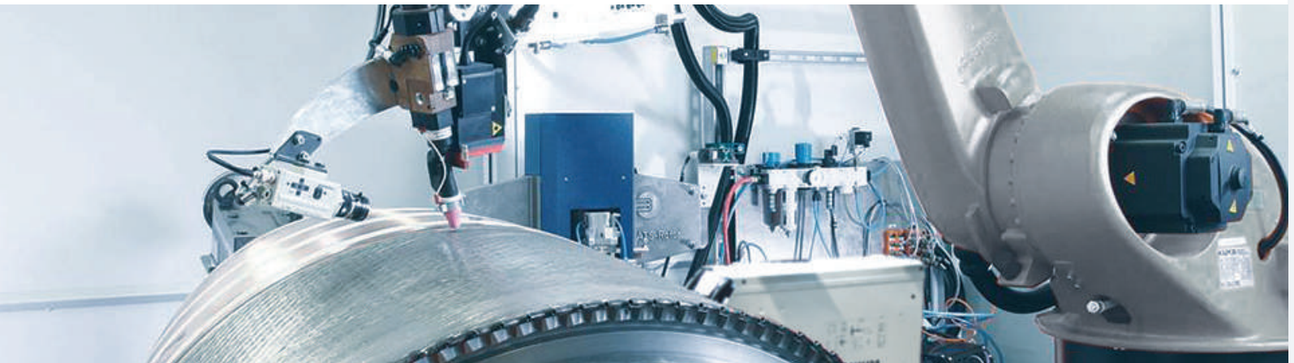
The TITANIUM powersource is simply and quickly connected to the robot controller via the SAM module. This means that the automation engineer has all the functions of the welding equipment and the robot at his disposal at all times.



In C-5 mode, up to 5 programs can be recalled and the current setting can be refined by ±50%.

CONNECT-5, simple mode for recalling JOBs via an automaton

The purpose of this automaton mode is to recall pre-programmed welding configurations (internal programs) between two AC or DC TIG weld beads. The automaton is connected to the remote control connector and is automatically recognized by the generator without any operator manipulation.



RC-HD2, the remote control for greater comfort

All TITANIUM generators can be equipped with an additional control panel, identical to the original.
Fixed on the robotic solution or remotely from the generator, the operator thus has the same functions and controls for setting the welding parameters.

Innovative automated solutions

In order to always be able to offer the best solution to its customers, GYS works closely with integrators. These highly qualified partners who design the systems and supply the robots ensure that you benefit from specific know-how adapted to your sector or your requirements.

ref. 037960

SAM, the intelligent robot control interface

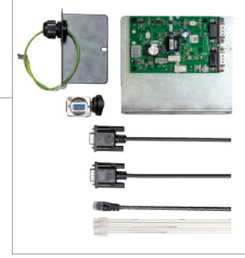
The digital box SAM (Smart Automation Module) allows the TITANIUM 400 AC/DC powersource to be used with most of the existing robots and automatons.
It considerably makes technical integration easier thanks to its multi-network connector. The compact box is fixed directly on the powersource via a removable attachment system.

- Interface compatible with TIG / MIG welding processes.
- Compatible with 90% of robot/automatons brands.
- Solution available with 6 communication protocols:

EtherNet/IP	062078
DeviceNet	062092
EtherCAT	063006
CANopen	062108
Modbus	063013
PROFINET	062085

- Automatic detection of robotic mode.

Connection kit



Power supply circuit board

DB9 connection cables

RJ45 cable
Security cable

Technical specifications

TITANIUM 400 AC/DC (ref. 013568)		
Mains voltage		3 x 400 V
Mains voltage tolerance		-15 / +15%
Mains protection (delayed)		32 A
Rated power	60 %	26 kVA (MMA) / 19 kVA (TIG)
	100 %	22.5 kVA (MMA) / 16 kVA (TIG)
Duty cycle factor 10 min/40°C	60 %	400 A
	100 %	360 A
Current range	TIG AC	5 - 400 A
	TIG DC	3 - 400 A
	MMA	5 - 400 A
No load voltage		85 V
Charging voltage	TIG AC	10.2 - 26 V
	TIG DC	10.12 - 26 V
	MMA	20.2 - 36 V
Max. efficiency	%	87
No-load consumption	TIG	35 W
	MMA	170 W
Working temperature range		-10 ... +40 °C
Storage temperature range		-20 ... +55 °C
Protection class		IP23
CEM class		A
Standards		EN/IEC 60974-1 EN/IEC 60974-3 EN/IEC 60974-10
Dimensions		680 x 300 x 540 mm
Weight		43 kg

Cooling unit (option - ref. 013537)	
Product name	WCU 1 kW C*
Cooling power at Q = 1l / min	1000 W
Max. backflow capacity	3,5 l / min
Capacity	5.5 l
Maximum pressure	4 bars
Protection class	IP23
Dimensions	680 x 300 x 230 mm
Weight (without liquid)	17 kg

*Cooling unit as an option (ref. 013537)

Accessories & consumables

Indispensable elements

Torch ABITIG 450 W - 8 m
ref. 037359

Double-bouton torch ABITIG 450 W - 8 m
ref. 037366

Potentiometer torch ABITIG 450 W - 8 m
ref. 060760

Earth cable 600 A - 4 m / 70 mm²
ref. 043831

Electrode holder 600 A - 5 m / 70 mm²
ref. 047006

Mobility and productivity

Trolley 10 m³
ref. 037328

Support RC-HD2 for trolley
ref. 037779

Trolley skate
ref. 037717

Cooling unit WCU 1kW C
ref. 013537

Coolant
5 l - ref. 062511
10 l - ref. 052246

Filter kit
ref. 046580

Remote controls + connected accessories

Digital remote control RC-HD2
ref. 062122

Foot pedal RC-FA1 - 4 m
ref. 045682

Remote control RC-HA1 - 8 m
ref. 045675

Mini USB keyboard
AZERTY - ref. 027725
QWERTY - ref. 027770

supplied with TITANIUM

USB stick - 16 Go
ref. 062344

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TIG TITANIUM pack

	 TITANIUM 400 AC/DC HF 013568	 Torch ABITIG 450W - 8 m 037359	 Double-bouton torch ABITIG 450W - 8 m 037366	 Earth cable 600 A 4 m / 70 mm² (with earth clamp) 043831	 Cooling unit WCU 1KW C 013537	 Trolley 10m³ 037328
1 014763	•	•		•	•	•
2 062047	•		•	•	•	•

ASK FOR DEMONSTRATION
Would you like to discover how TITANIUM works? We can show you this perfect Tig welding solutions characteristics, and allow you to try it out to test all its features. Contact us : service.client@gys.fr

GYS expertise
A welding demonstrators team assists you to determine your needs and brings to you adapted solutions according to the field realities. Our mission is to guarantee a quality service and user requirements

Individualized warranty
The TITANIUM and all its accessories have been designed and tested for industrial and professional environments. Once you have purchased your welding equipment from a GYS representative (reseller or distributor), your 2-year warranty is immediately activated.

Updates and manuals
For more information on TITANIUM generators, visit www.gys-welding.com

Welding Catalogue
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Created in 1964, GYS is a French family group with 700 worldwide employees.
With its research centre, GYS is a leading player in the design and manufacturing of welding, battery charging and car-body repair equipment.

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