



01

TIG 200 AC/DC

1.1 WHAT IS TIG WELDING?

TIG stands for tungsten inert gas and is technically called gas tungsten arc welding (GTAW). The process uses a nonconsumable tungsten electrode that delivers the current to the welding arc. The tungsten and weld puddle are protected and cooled with an inert gas, typically argon. TIG welding is similar to oxy-acetylene welding in that you use a filler material for build-up or reinforcement.



1.2 TIG WELDING BASICS

The TIG process is not unlike welding with an oxy-acetylene torch. You hold the torch in one hand and feed a filler rod with the other. An auto-darkening welding hood makes starting the weld more accurate.

A common available filler rod for welding aluminium is the 4043 alloy. If you are trying to colour match welds on parts to be anodized, use 5356, which will match better than most others. Use a filler material guide to better match the base material to the filler material.

When TIG welding steel, use a filler material with a thin copper coating to inhibit rusting, similar to the filler rod used in oxy-acetylene welding.

To start, gather up some clean metal scraps. You should have a metal top table or at least a metal plate clamped firmly to the table. Pull up a stool. Place the foot pedal within easy reach once you are seated. It is important to wear the proper protective welding gear, such as a long-sleeved shirt or overalls, a welding helmet, and leather gloves and shoes — even when TIG welding.

Set the welder to the correct polarity for the base material type — AC for aluminium (nonferrous) or DC (ferrous) metals. Select the appropriate welding rod. Make sure the gas bottle is turned on. I set the regulator at about 20 cubic feet per hour (cfh). Check that the tungsten has the correct point for the metal you are welding. It should stick out of the cup by about 1/8 inch. Hold the torch up, away from your body, and depress and release the foot pedal. You should hear the gas flow. If not, then find out why. Did you turn on both the welder and the bottle?

THE TUNGSTEN SHOULD NEVER TOUCH THE WORK PIECE. When it does, you will notice a different sound and colour, which means the tungsten is contaminated. Loosen the back cap and slip the tungsten (it is hot) out. Go to the grinder, preferably one with a wheel dedicated to tungsten, and clean the end of the tungsten. Reshape the end as necessary. You will dip the tungsten many times as you learn, but with more practice you'll be steadier and it will happen less.

VERY IMPORTANT: Always ensure that the piece of metal that is going to be welded is properly cleaned before welding. Use a low VOC Pre solvent or acetone to remove any oils or grease on the surface. The next step is to remove the oxides on the surface of the metal. To do this, use stainless steel wool or a stainless steel brush on the area to be welded.

TIG WELDER



1.3 USAGE SCENARIOS FOR DIFFERENT MODES:

- MMA:** Carbon (mild) steel
- DC TIG:** Carbon (mild) steel or stainless steel
- AC TIG:** Aluminium Plate

MMA:

On MMA mode we control the welding current by adjusting the Welding knob. (Welding A)

- (1) 2mm Carbon steel
- (2) 3mm Carbon steel
- (3) 5mm Carbon steel

- (1) 2mm Carbon steel

60 Ampere

Welding Current (A)

Foot Pedal Control (OFF)

Pulse: -- TIG/MMA: MMA
AC/DC: DC 2T/4T: /

- (2) 3mm Carbon steel

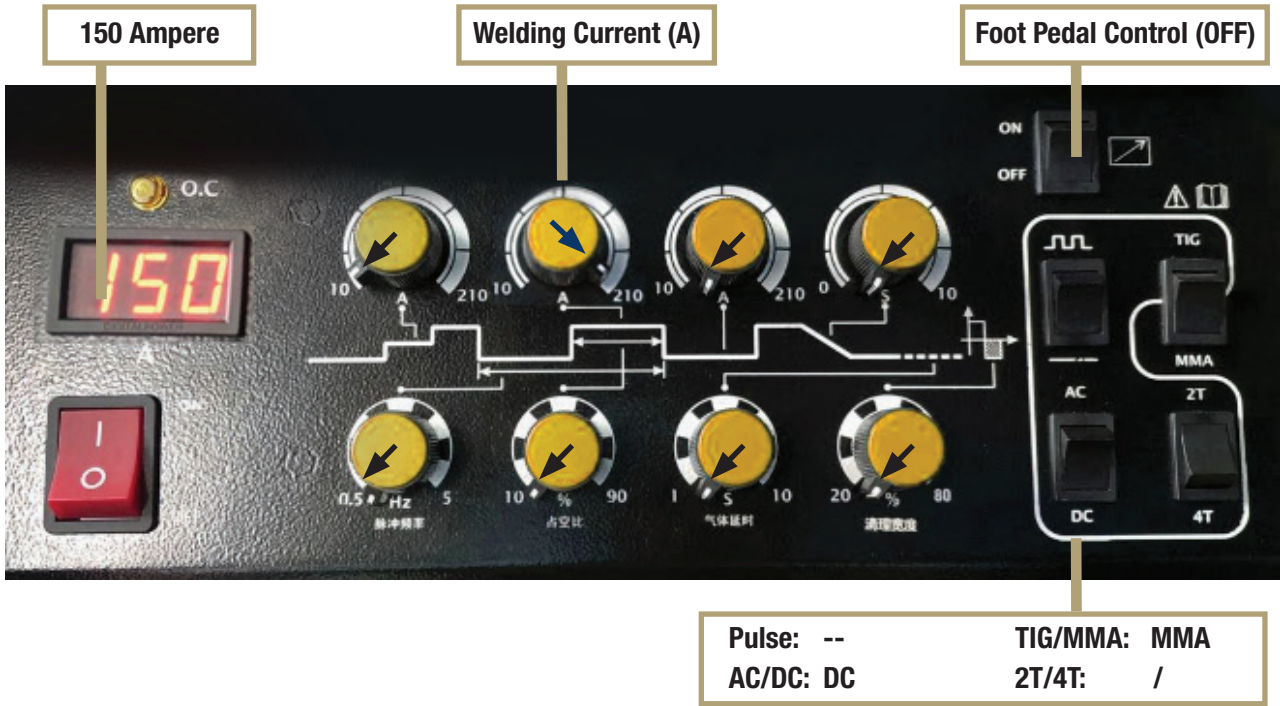
90 Ampere

Welding Current (A)

Foot Pedal Control (OFF)

Pulse: -- TIG/MMA: MMA
AC/DC: DC 2T/4T: /

(3) 5mm Carbon steel

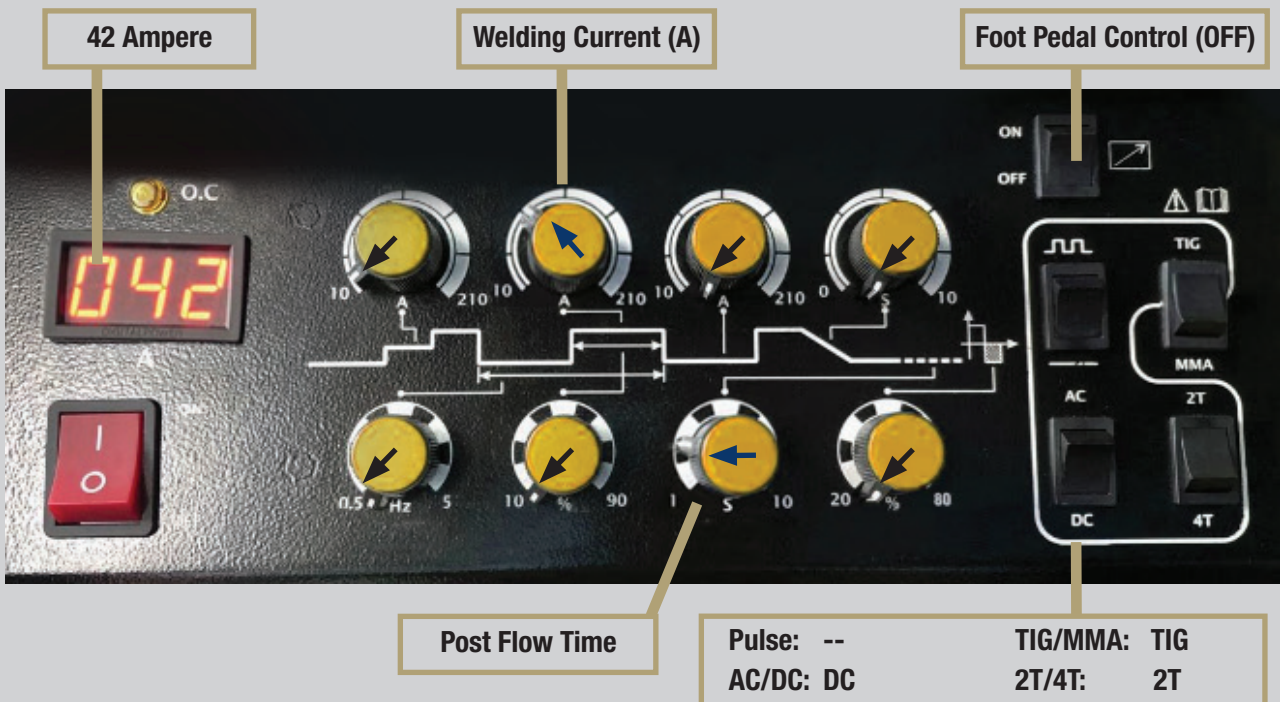


DC TIG:

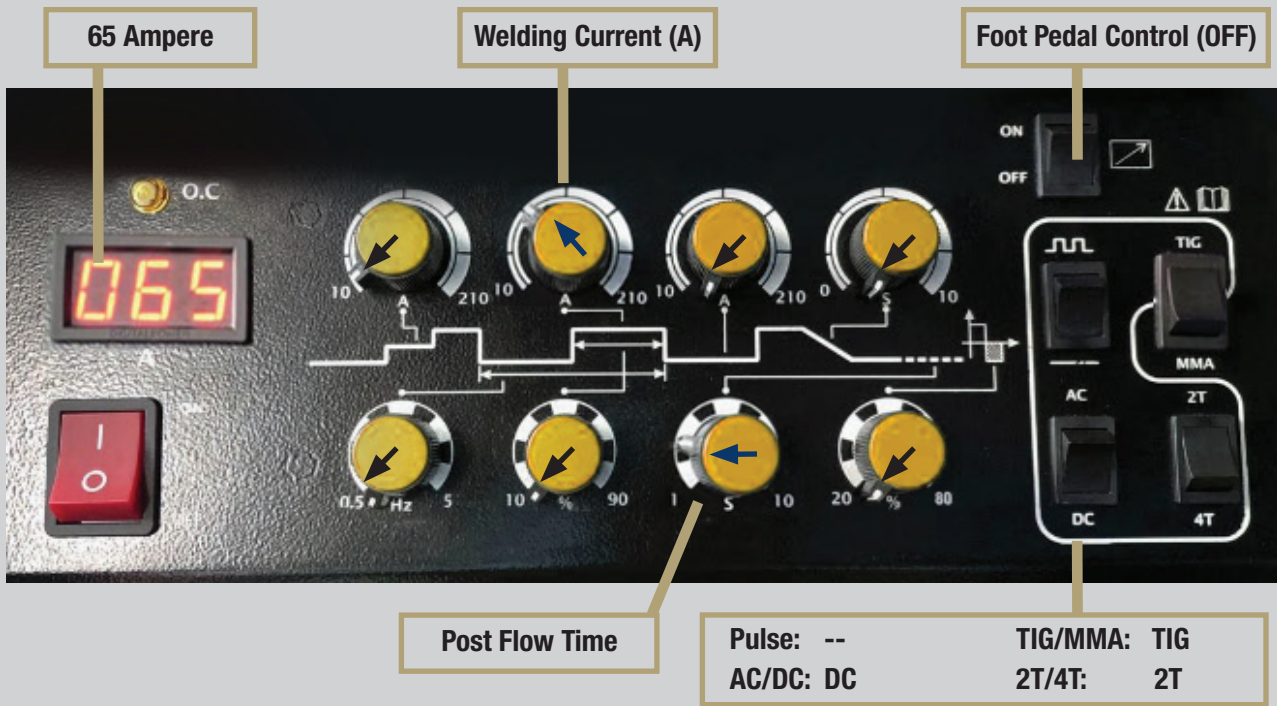
On DC TIG mode Change the welding current by adjusting the Welding knob (Welding A). Change post flow time by adjusting the post flow knob. **NB* Use thoriated tungsten tips (RED) for DC TIG**

- (1) 2mm Carbon steel or stainless steel
- (2) 3mm Carbon steel or stainless steel

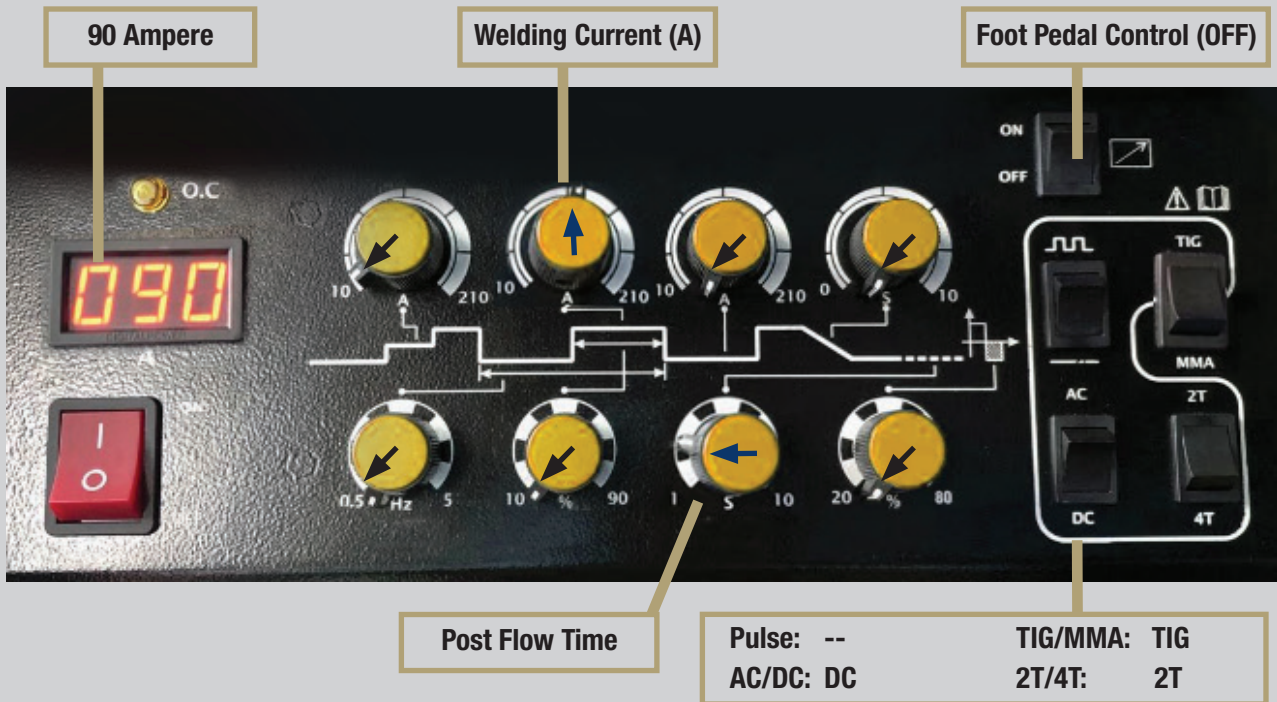
- (1) 2mm Carbon steel or stainless steel



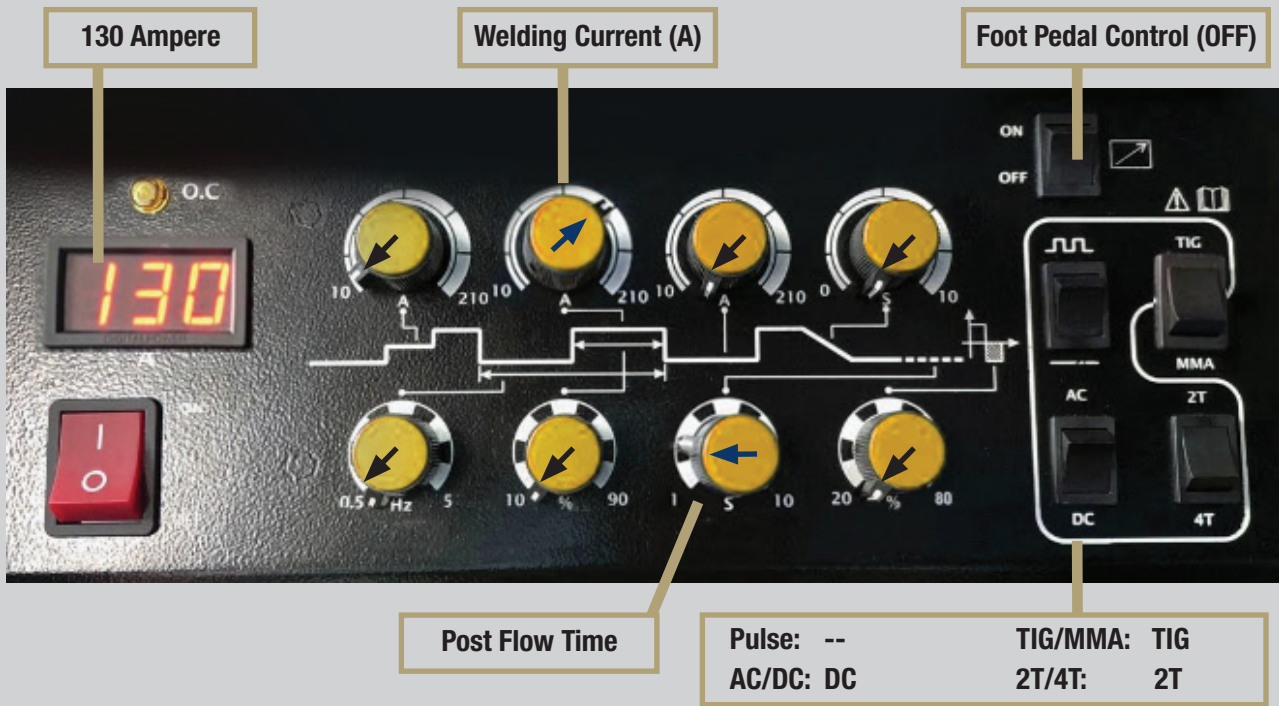
(2a) 3mm Carbon steel or stainless steel



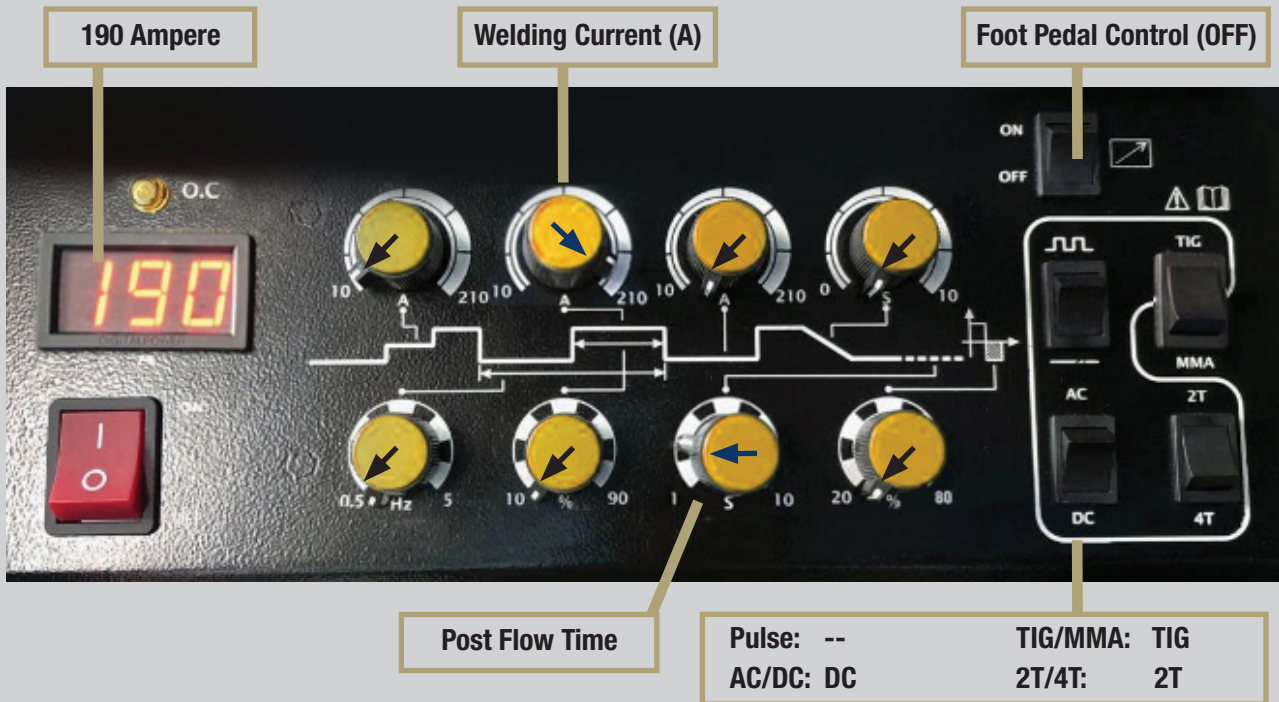
(2b) 3mm Carbon steel or stainless steel



(2c) 3mm Carbon steel or stainless steel



(2d) 3mm Carbon steel or stainless steel

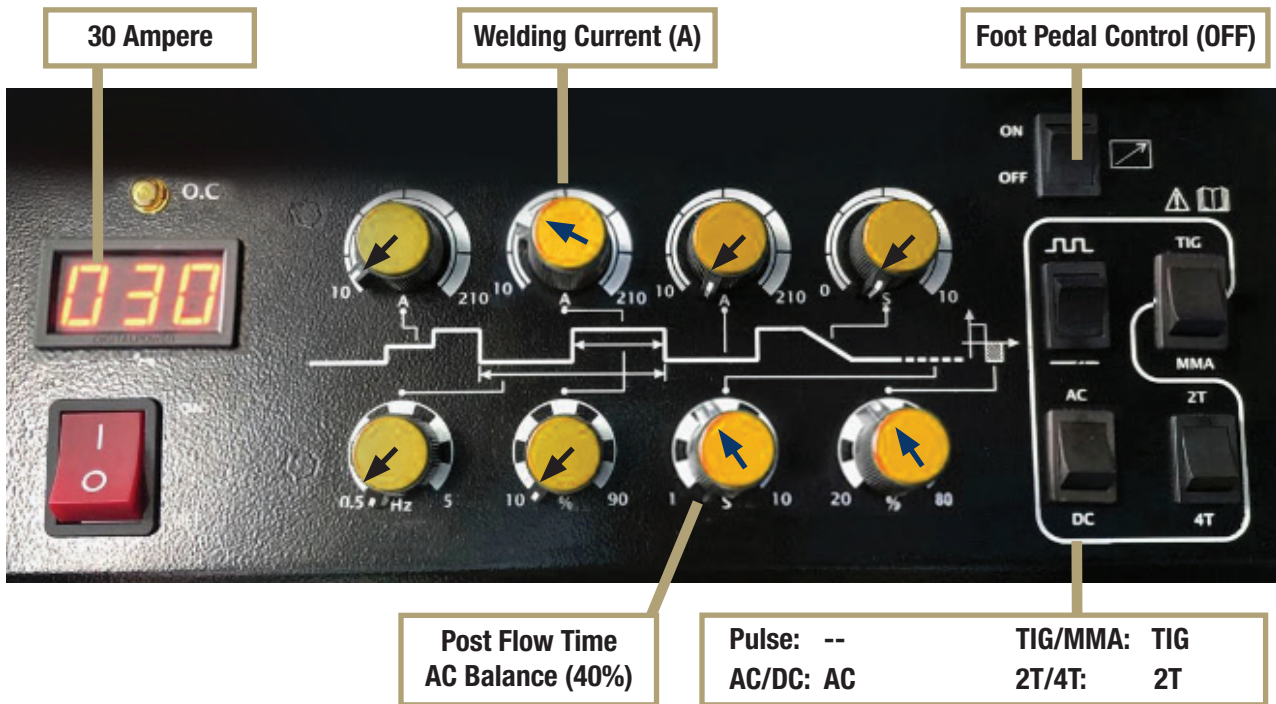


AC TIG:

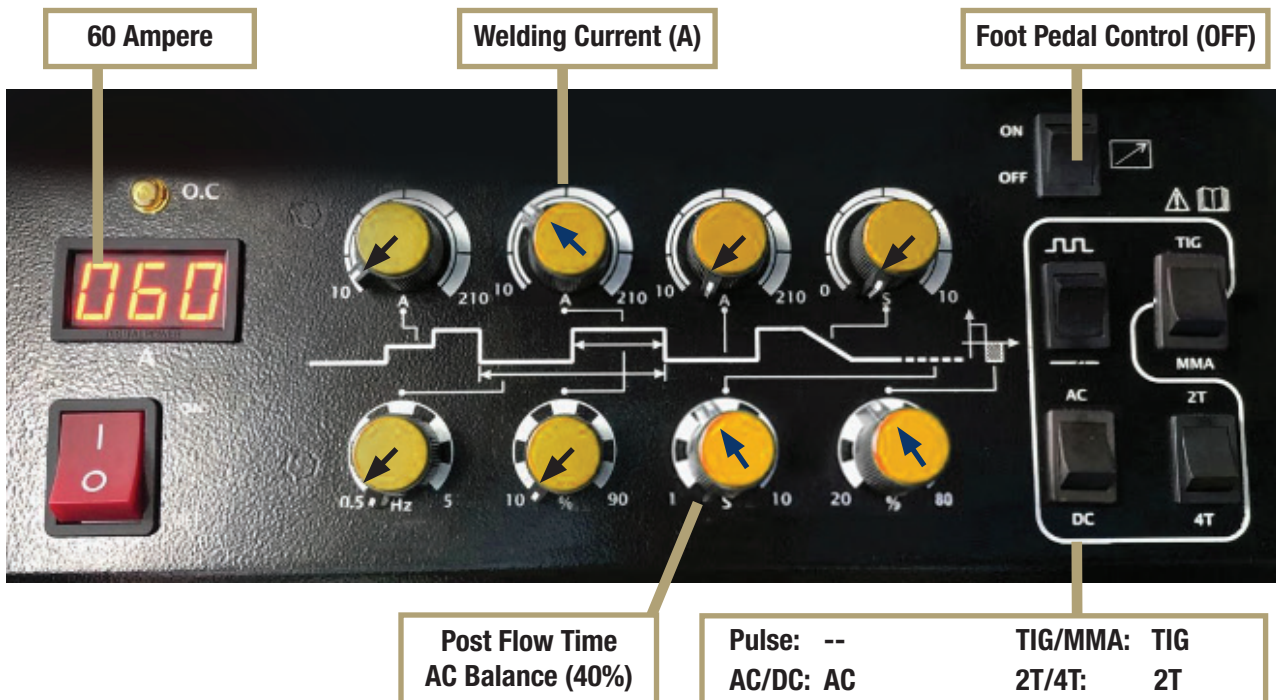
On AC TIG mode Change the welding current by adjusting the Welding knob (Welding A). Change post flow time by adjusting the post flow knob. Adjust the AC balance knob. **NB* Use Zirconiated tungsten tips (WHITE) for AC TIG.**

- (1) 2mm Aluminium Plate
- (2) 3mm Aluminium Plate
- (3) 5mm Aluminium Plate

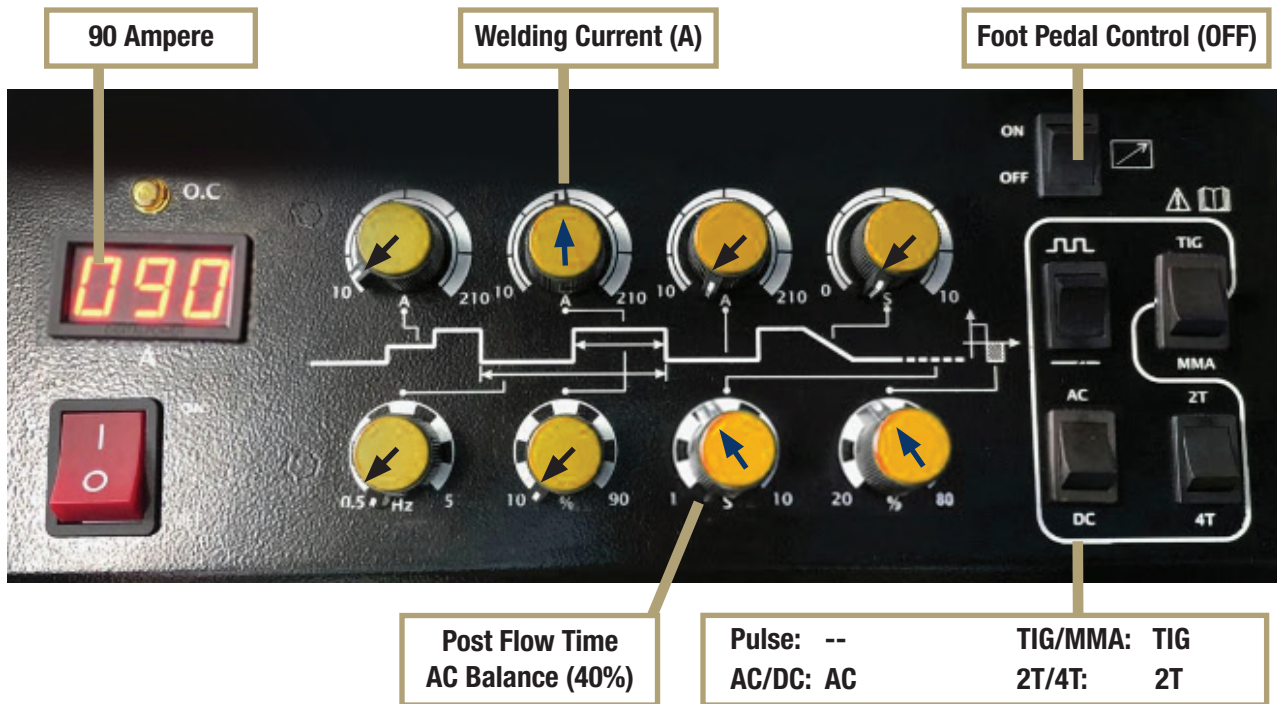
- (1) 2mm Aluminium Plate



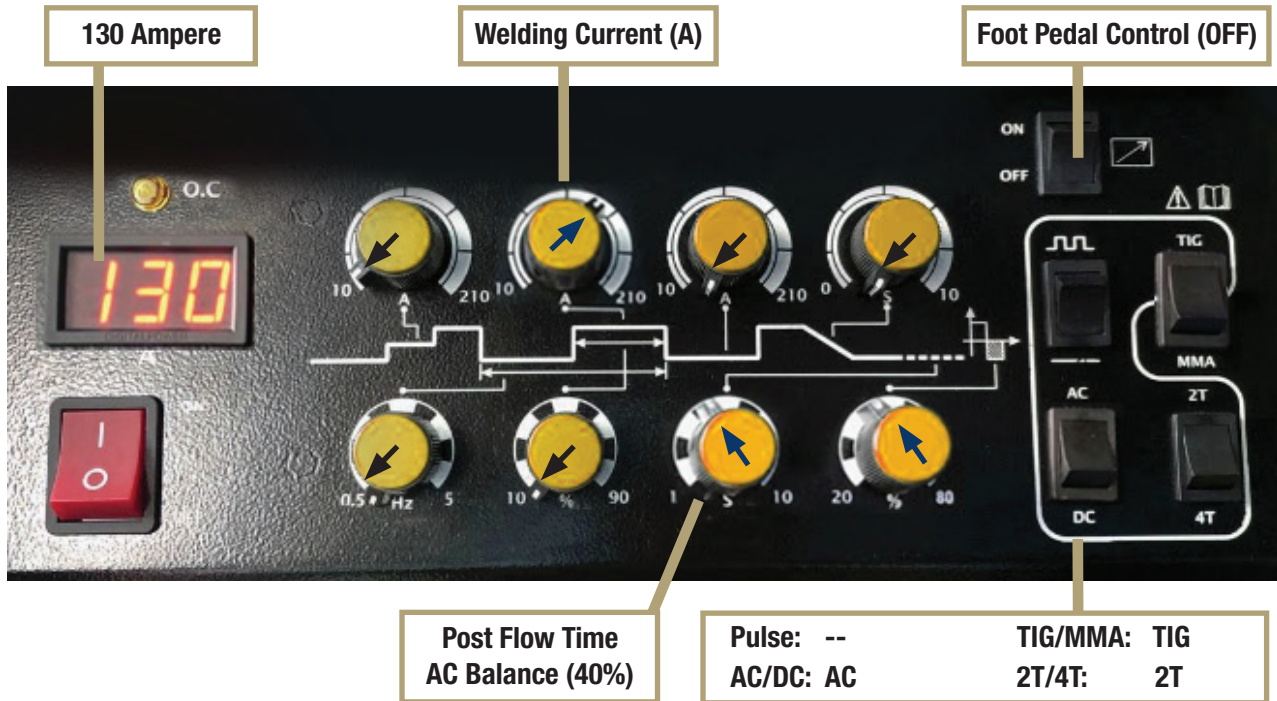
- (2) 3mm Aluminium Plate



(2b) 3mm Aluminium Plate



(3) 5mm Aluminium Plate



1.4 ON MMA MODE

Control the welding current by adjusting the Welding knob (Welding A).

1.5 ON 2T TIG MODE

Close the torch switch and control the welding current by adjusting the Welding knob (Welding A). Control the time of gas flow after welding by adjusting the Post flow control knob.

1.6 ON 4T TIG MODE

(This mode is usually used when repetitive production consistency is required)

First step: Close the torch switch, then set the starting amperage current by adjusting the start “A” knob.

Second step: Loosen the torch switch, then set the welding amperage current by adjusting the welding “A” knob. Close the torch switch, the machine has a constant output current. Loosen the torch switch, we control the time of Down slope by adjusting the Down slope knob. After the Down slope time, stop welding.

1.7 ON PULSE DC TIG MODE

(This mode is ideally used for welding thinner forms of metal)

Control the amperage current by adjust the Welding “A” knob.

Control the low current by adjusting the Background knob.

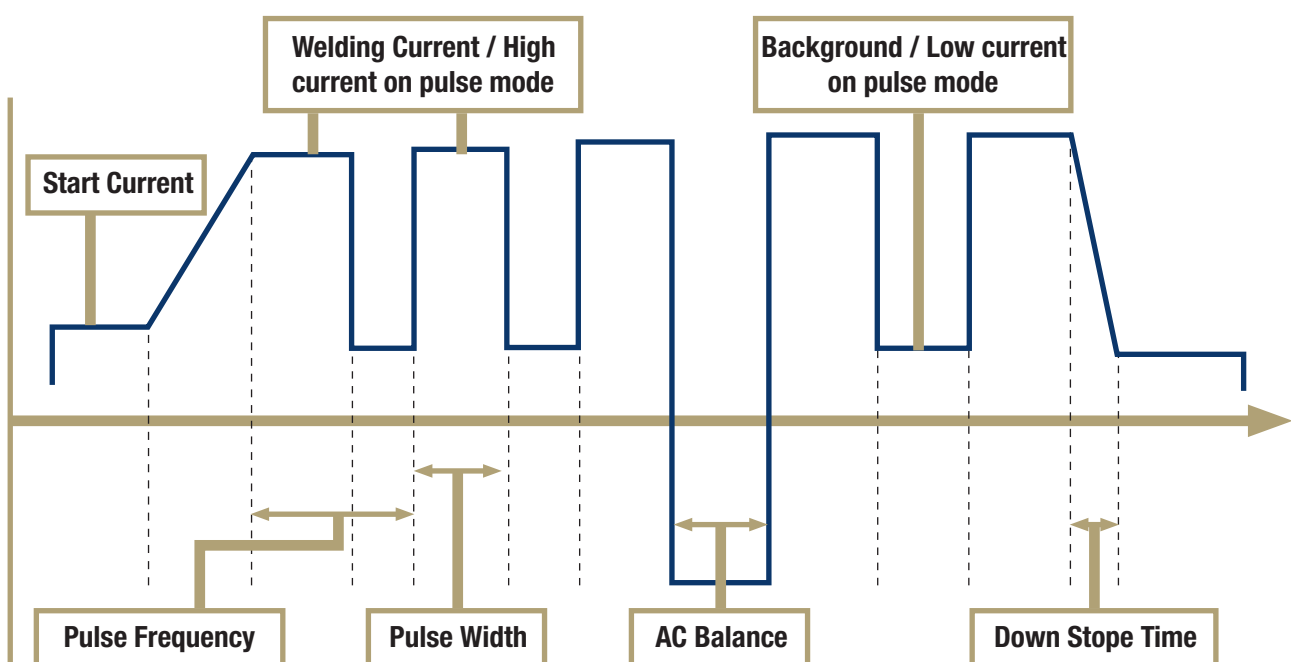
Control the pulse frequency by adjusting Pulse frequency knob.

Adjust the Pulse width knob to control the time ratio of high/low currents per cycle.

1.8 ON AC TIG MODE

Adjust the knob to a suitable value of the AC balance to weld the aluminium alloy. (Material and actual scenario dependant)

Adjust the AC balance knob to control the time ratio of positive/negative currents per cycle.



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