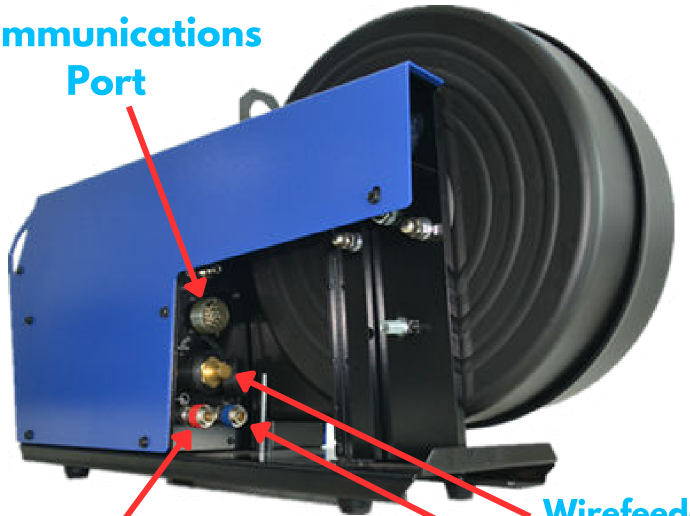
IRONWELD

TOMAHAWK 500DP

PRODUCT INTRODUCTION



PRODUCT INTRODUCTION

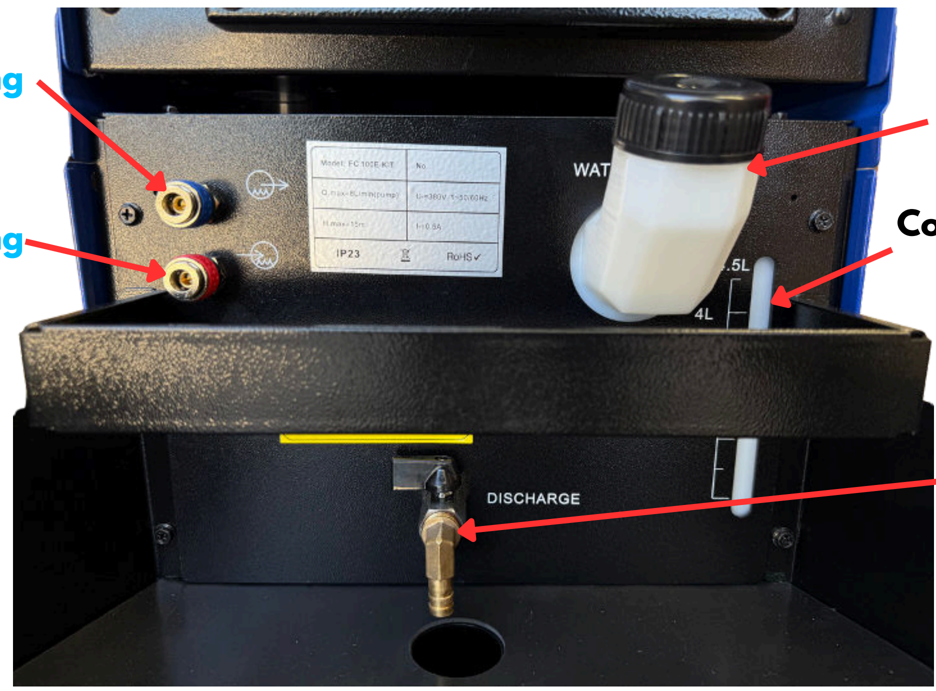
Control Panel
(TIG and STICK Only)

Arcforce Button
(STICK Welding)

Negative Output Terminal (Earth Lead for MIG)

Positive Output Terminal (Earth Lead for TIG)

Remote Control Interface
(Pin Socket for TIG Gun)



Cool Outlet
(Interconnecting Cable)

Hot Outlet
(Interconnecting Cable)

Water Input Funnel

Coolant Capacity Meter

Coolant Discharge Valve

PRODUCT INTRODUCTION

Co2 Heater Power
(To Heat Gas)

Program Input Port

Communications Port
(Interconnecting Cables)

Power output for Wirefeeder
(Interconnecting Cables)

The RILAND TITAN 500 DP Is A High End, Single/Double Pulse MIG Welder. Sporting German Designed Boards And Pulse Systems, It Is Able To Achieve An Almost Perfect, Spatter Free, Ultra Stable Arc. The TITAN 500 DP Is Capable Of Conventional, Pulse, And Synergic MIG Welding, Lift-TIG, MMA (Stick), And Arc Gouging.

100% DUTY CYLCE @ 400AMPS

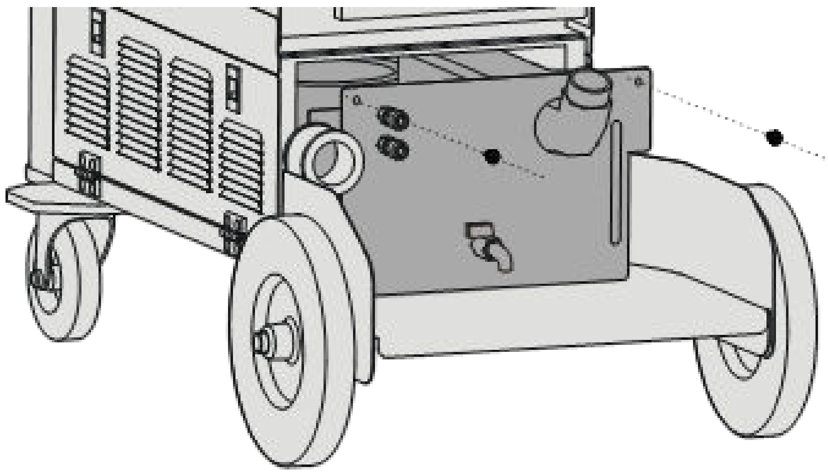
A TRUSTED NAME SINCE 1987

PRODUCT INTRODUCTION

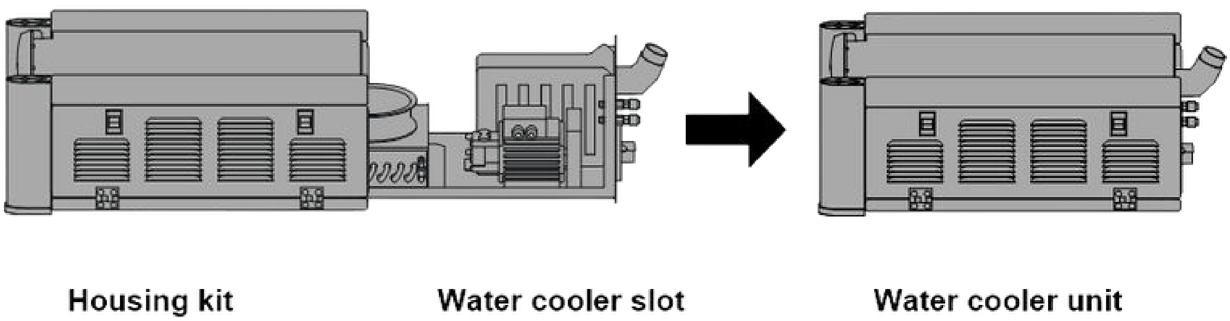
How to Remove Water Cooler If You Dont Intend To Use It

Step 1: Remove 2 x Scews From The Back

Step 2: Unplug the Earth (Green) Cables, Connected to the Side Doors. And The Power Cable attached to the Power Source



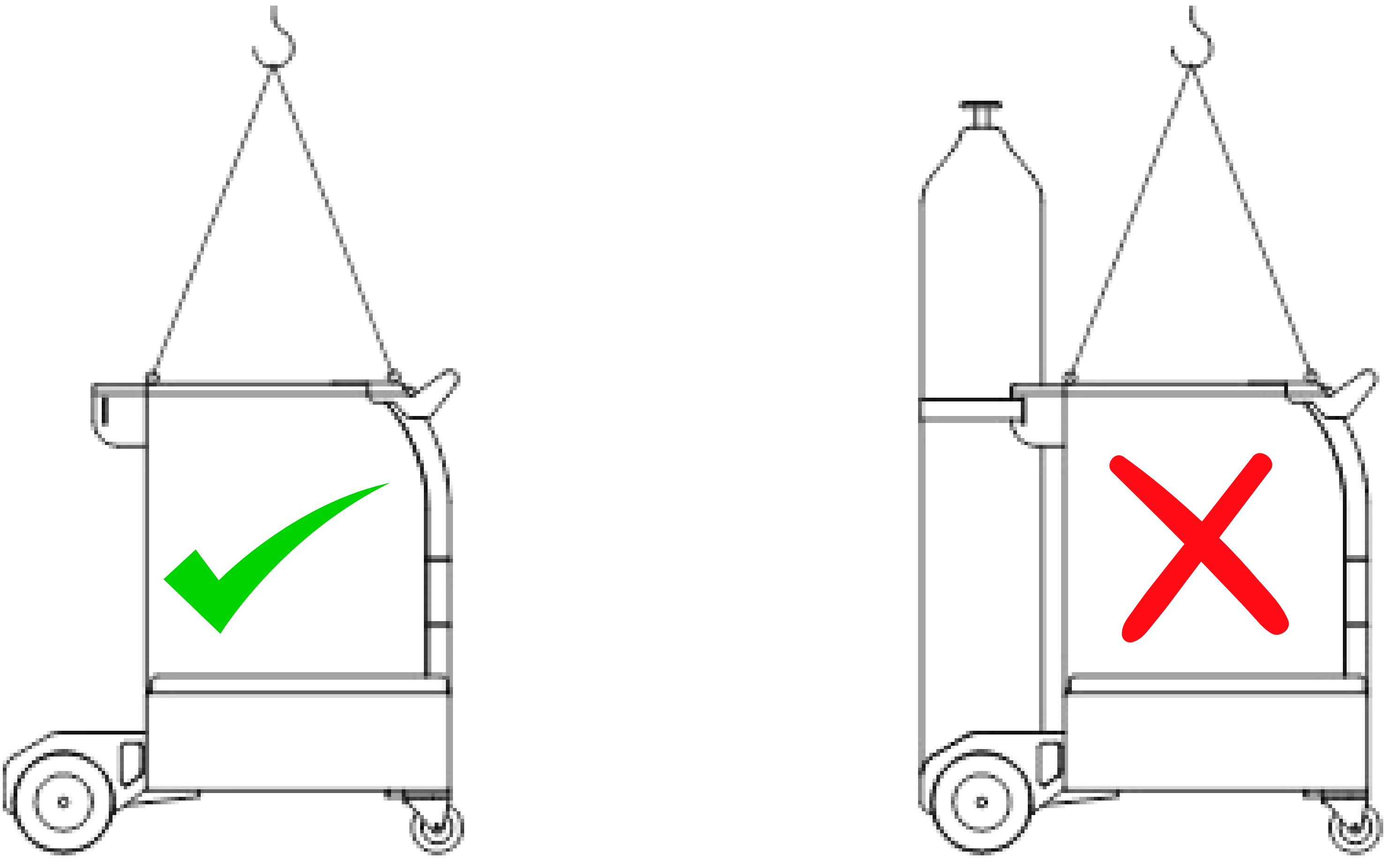
Slide Out Of Welder Case



3 YEAR INDUSTRIAL WARRANTY

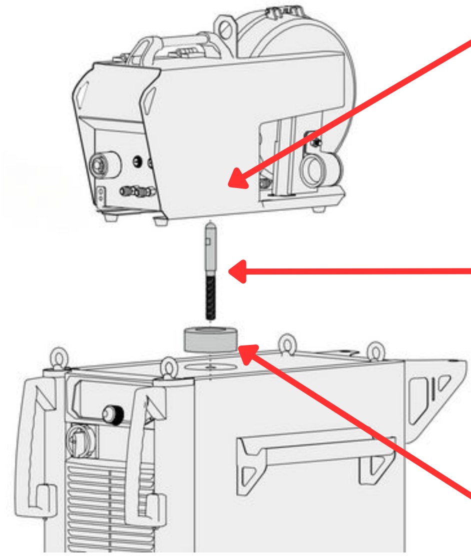
AUTO SLEEP MODE

PRODUCT INTRODUCTION



ASSEMBLING YOUR NEW WELDER

Step 1: Assemble Components:

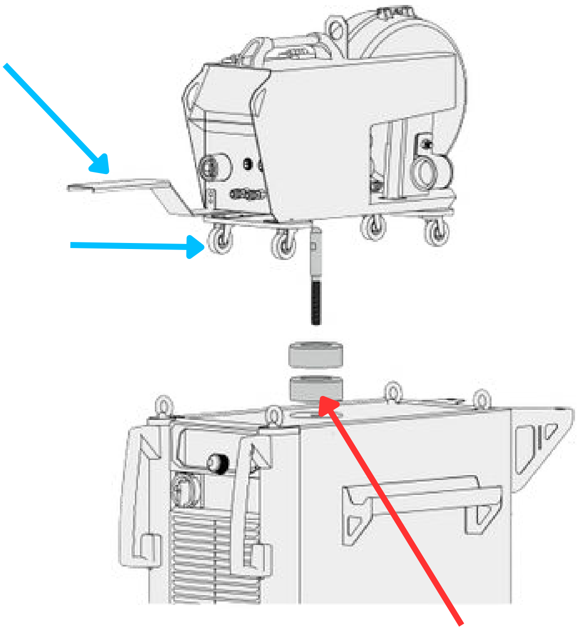


Position the wire feeder on top of the power source (by aligning the hole, with the rod.)

Screw the rod into the power source, Through the Puck (Found in the Wirefeeder Box)

Place the puck on the power source (Found in the Wirefeeder Box)

Step 1a: Assemble Components:



If the IRONWELD Wirefeeder Package was Purchased, adding wheels and the MIG Gun Strain Guard. You will add an additional puck to the power source

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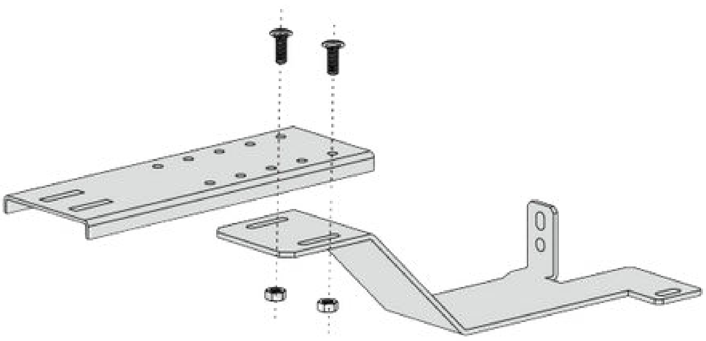
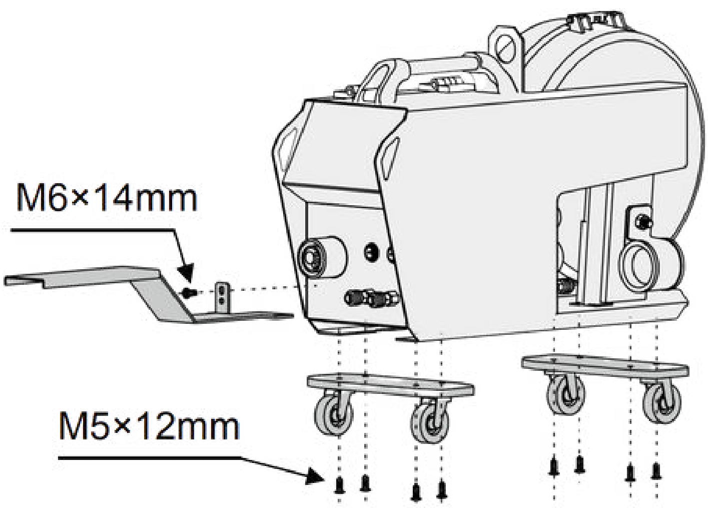
IRONWELD Wirefeeder Package

Contact Your Local IRONWELD Distributor To Purchase



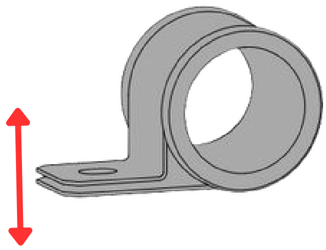
Install torch holder



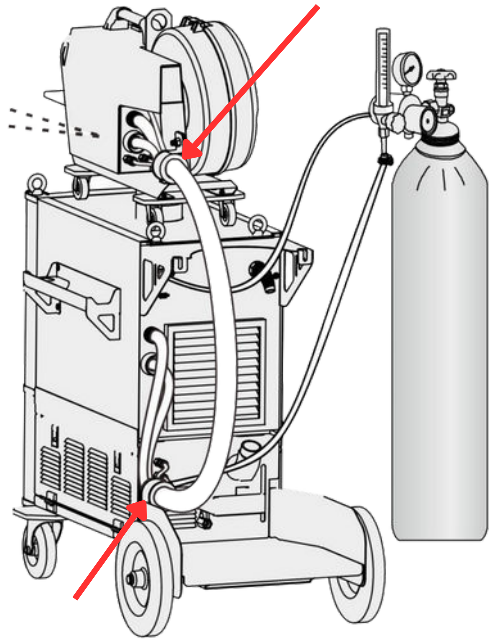
ASSEMBLING YOUR NEW WELDER

Step 2: Assemble Components:

Spread the pull guards (1 Found already attached to the wirefeeder, and one found on the gas trolley of the power source)



Step 3: Attach Interconnecting Cable to the Wirefeeder:

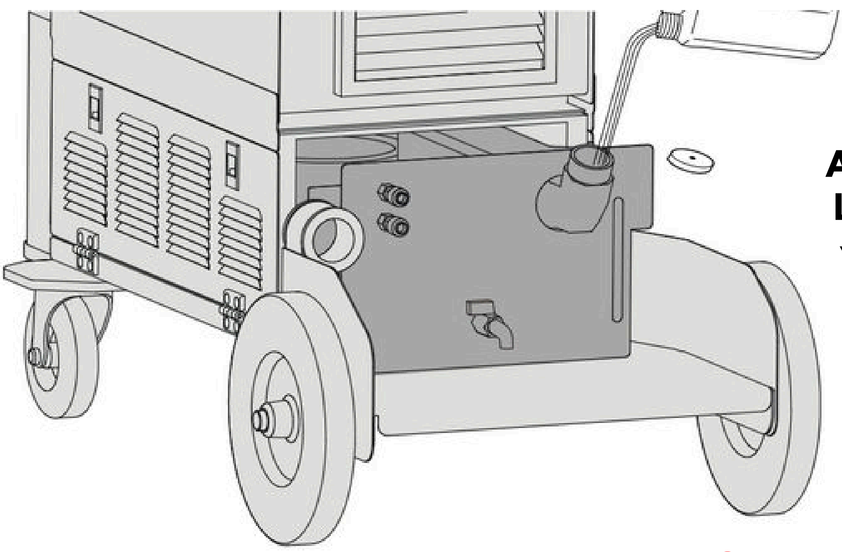


A. Attach the pull guard back to the wire feeder while it is clamped around the collar of the interconnecting cable.

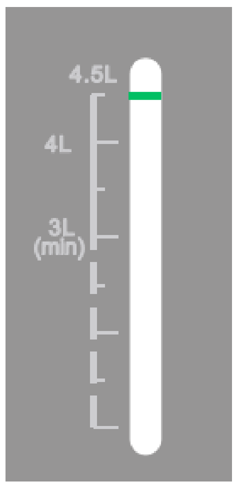
B. If the cables protruding out of the cable cover are too long, pull the cables from the other side of the cable cover to reduce their length

C. Use the Second Pull Guard to attach it to the trolley, and Connect the wire feeder communication, gas, power, and water cables.

Step 4: Fill the Water Tank on the back of the machine:



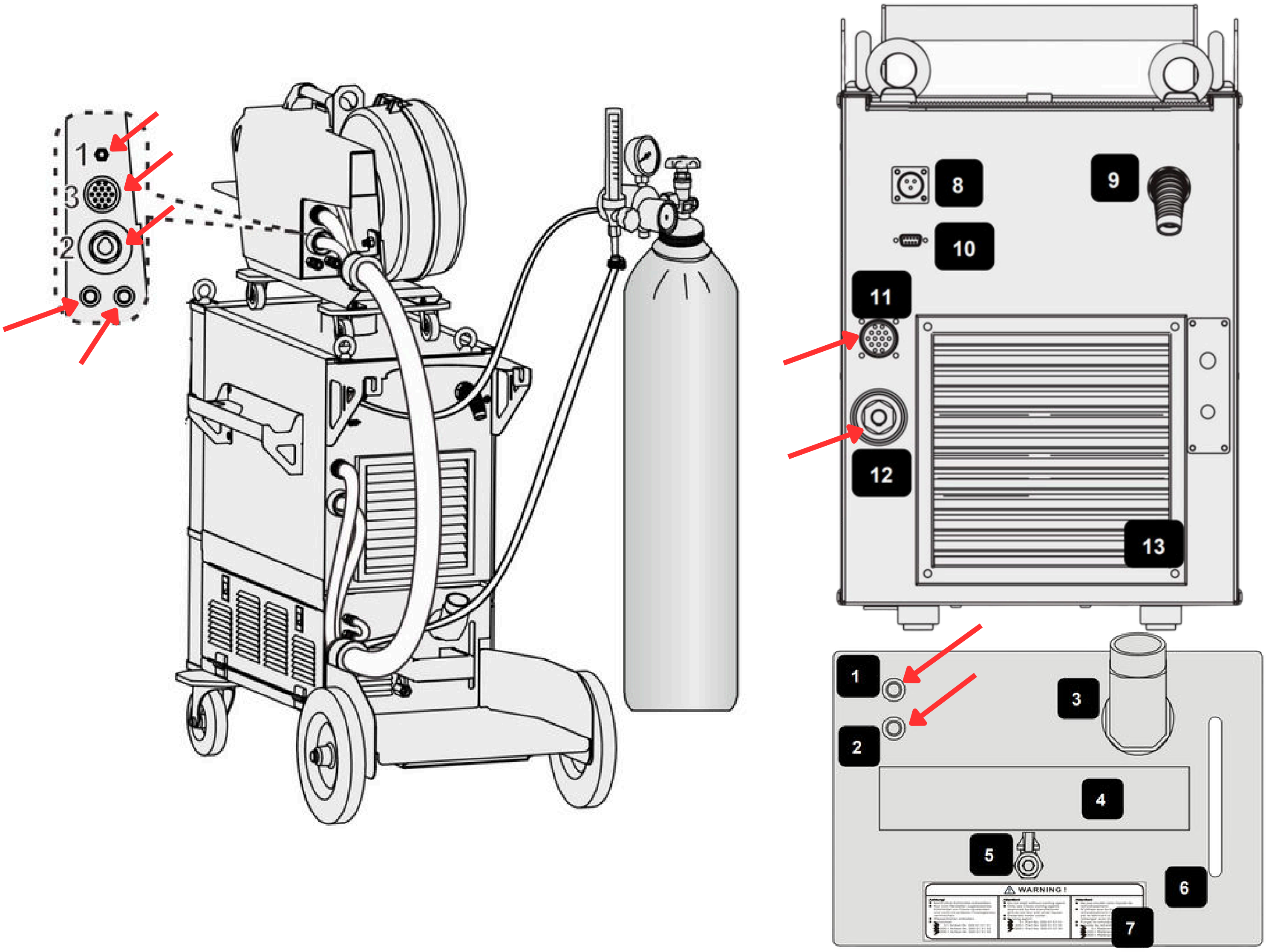
Using IRONWELD Authorised Welder Cooler Liquid, Fill the tank of the water cooler to 4L - 4.5L



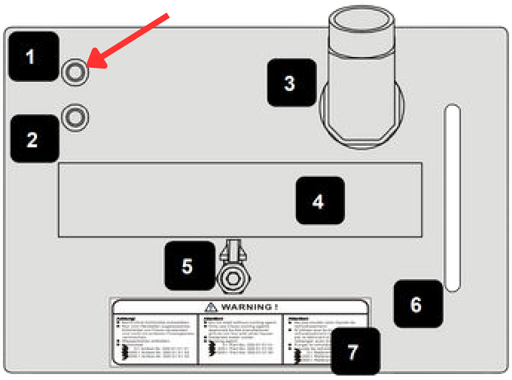
IMPORTANT: DO NOT OVERFILL TANK

ASSEMBLING YOUR NEW WELDER

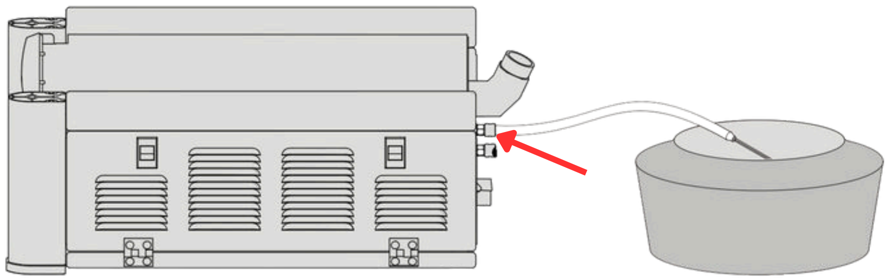
Step 5: **Double Check all ports are correctly connected**



Step 6: **Unplug Cool Water Cable**



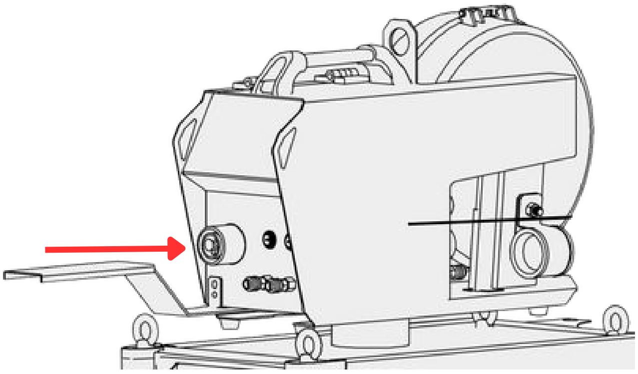
Step 7: **Plug the Bleeding Hose into the Cool Water Port, and the other end into an empty bucket**



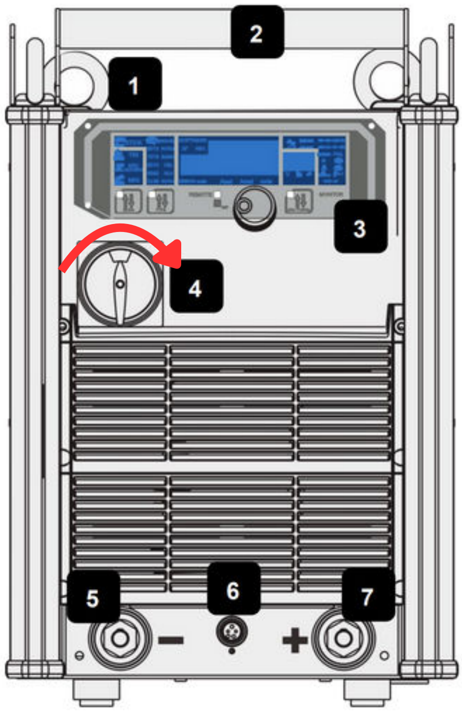
IMPORTANT: MAKE SURE TO HOLD THE HOSE TIGHT WHILE PROCEEDING TO NEXT STEPS

ASSEMBLING YOUR NEW WELDER

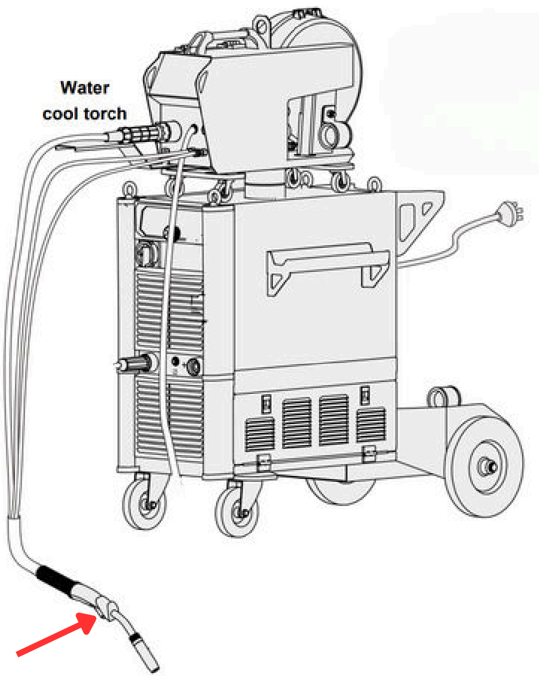
Step 8: Connect the MIG Gun to the wirefeeder



Step 9: Turn the Welder ON, Wait 5 Seconds.

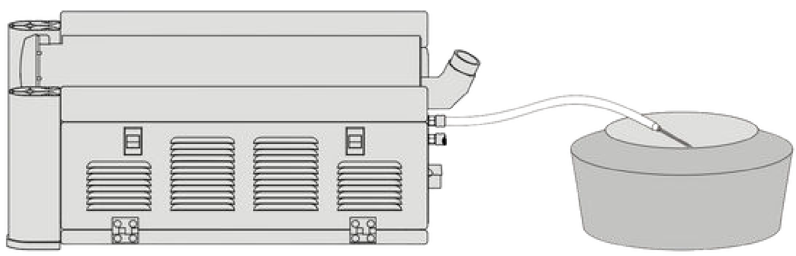


Step 10: Long press the MIG Gun Trigger until you hear the pump Turn on



HOLD the other end of the bleed hose

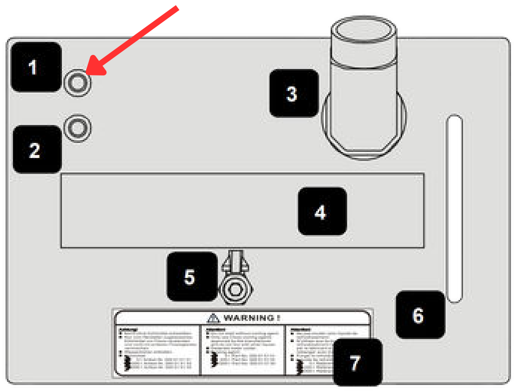
Step 11: Wait about 1-2 Seconds until the air bleeds, While holding the bleeding hose



<u>TURN OFF</u> THE MACHINE AS SOON AS LIQUID STARTS COMING OUT

ASSEMBLING YOUR NEW WELDER

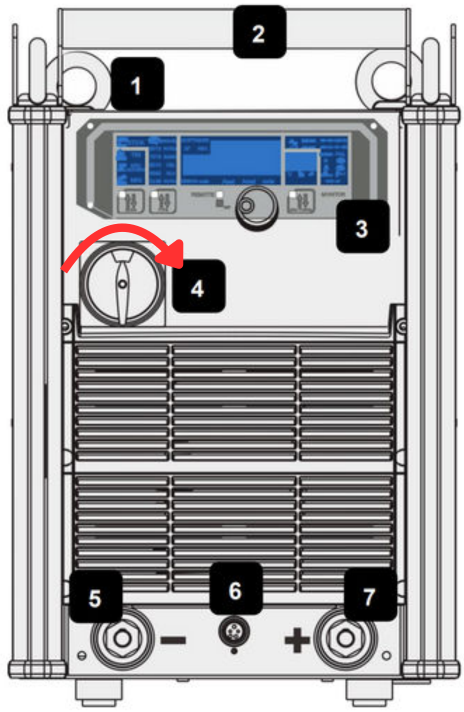
Step 12: Reconnect Interconnecting Cold Water Cable



Step 13:

A. Turn On Machine and Long Press MIG Gun Trigger

B. Wait 30 Seconds until the pump turns off



TROUBLE SHOOTING

If ERROR CODE 33 Shows:

Step A: Turn Off Machine

Step B: Wait 10 Seconds

Step C: Make sure Interconnecting cables and mig guns are layed out straight on the floor

Step D: Turn Machine Back on

Step E: Long Press MIG Gun Until Pump Starts

If ERROR CODE 33 Continues to Show:

Step F: Unplug the Cool Water Hose on the powersource

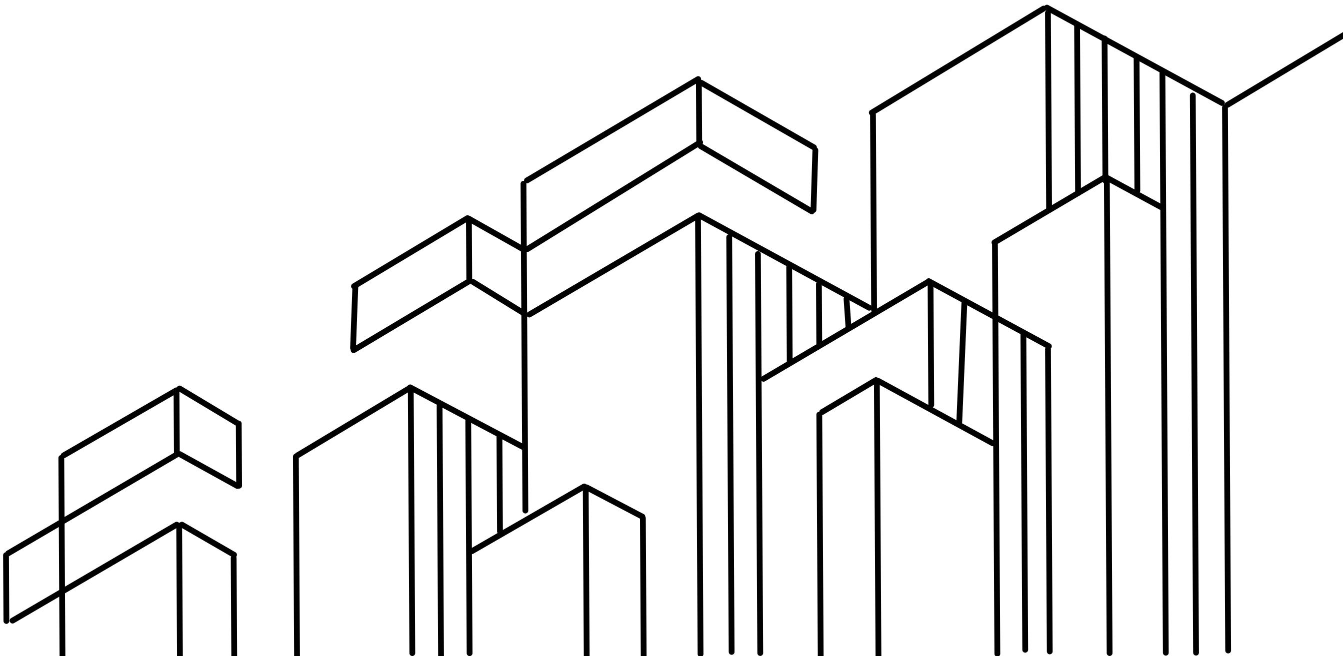
Step G: Plug in the air bleeding hose

Step C: RESTART from Step 11

TOMAHAWK 500DP

MANUAL WELDING PROGRAMMING

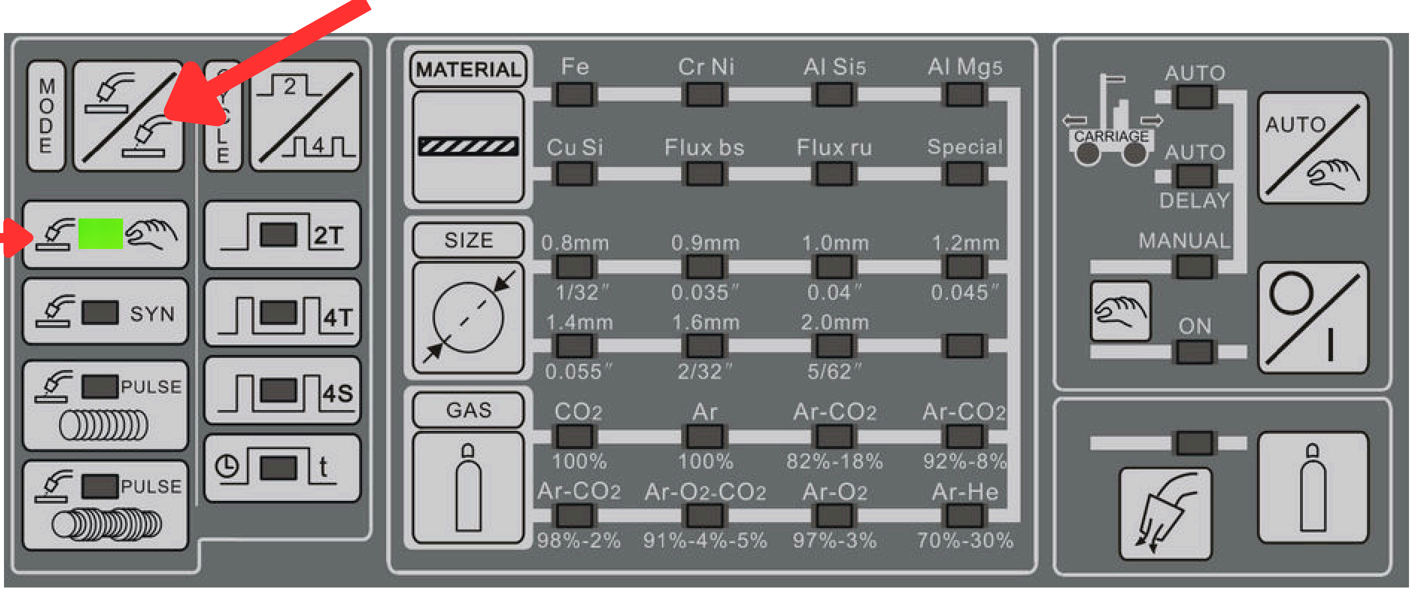
Manual Welding Lets You Operate Your Welder, Your Way.
The Wirespeed and Voltage are Independently Controlled



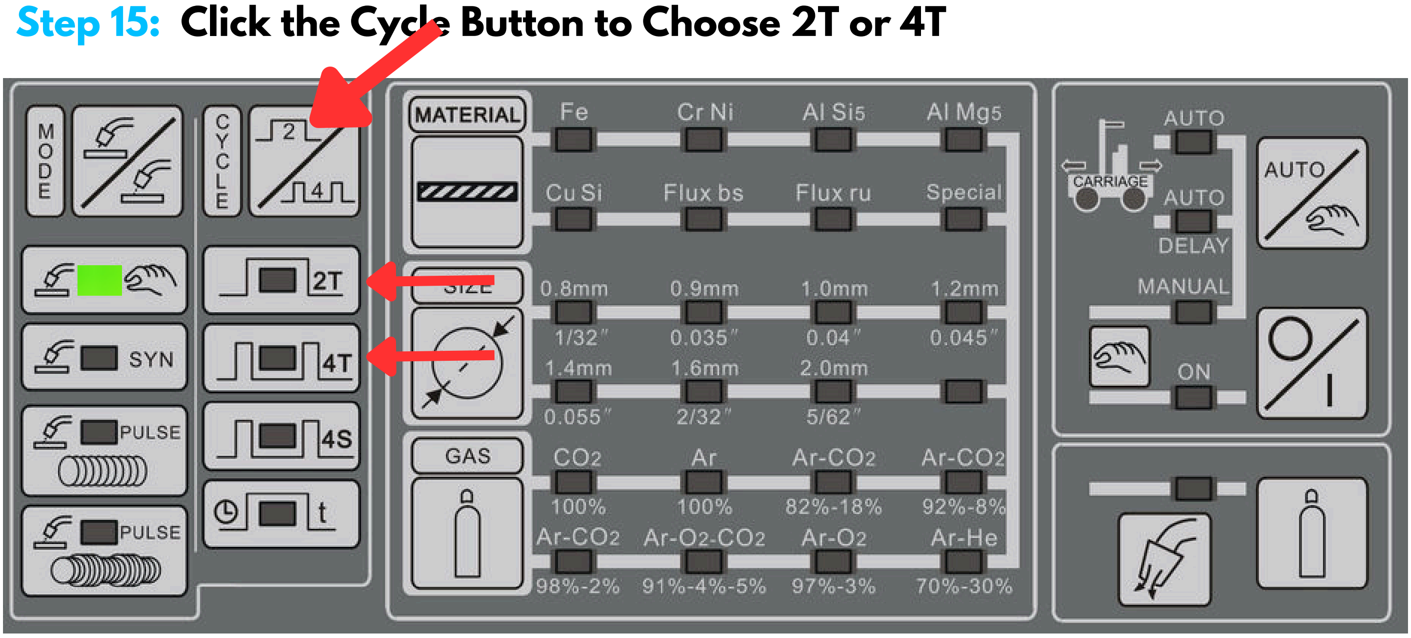
PROGRAMMING YOUR NEW WELDER

MANUAL NON PULSE MODE

Step 14: **Click the Mode Button Once to Access Manual Mode**



Step 15: **Click the Cycle Button to Choose 2T or 4T**



2T: **Refers to a two-touch or two-stroke operation mode for the torch trigger.**
(Click the Trigger Once to Start the Wirefeed, and when let go, it stops)

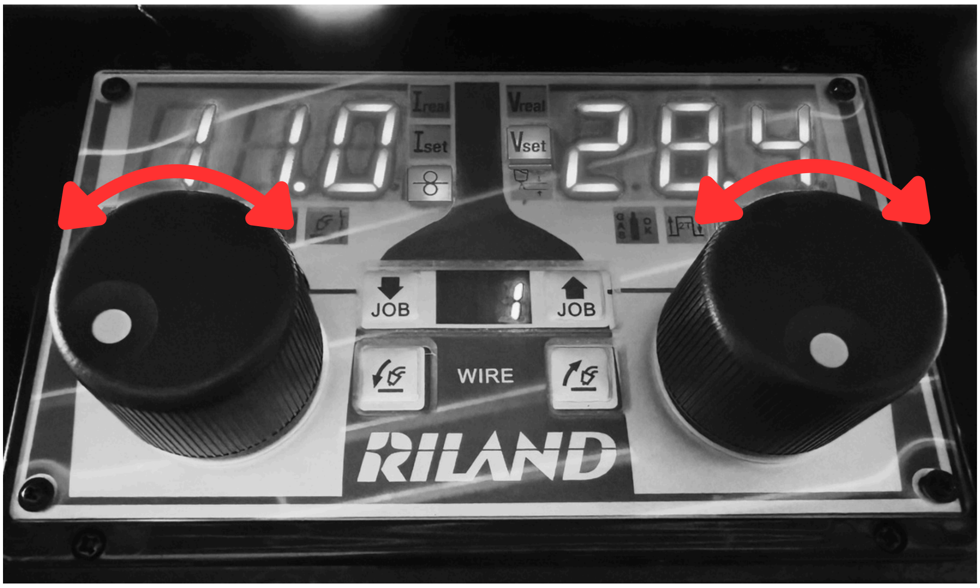
4T: **Refers to a four-touch or four-stroke operation mode for the torch trigger.**
(Click the Trigger once to start the wirefeed, and again to stop it)

PROGRAMMING YOUR NEW WELDER

MANUAL NON PULSE MODE

Step 16: Use the Left and Right Control Knobs to Bring Up and Down the Voltage and Wirespeed

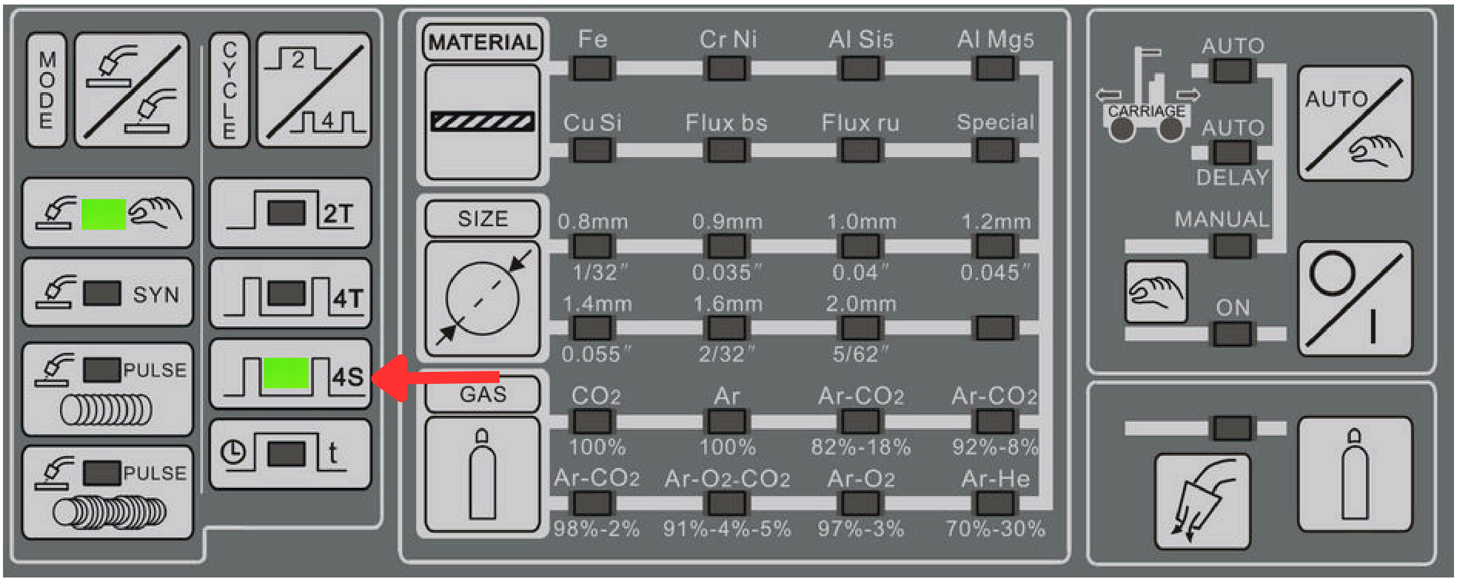
Left Knob is for Wirespeed



Right Knob is for Voltage

ADVANCED SETTINGS

Step 17: To Access Advanced Settings Such as Pre Gas, Arc Initiation Current, Up Slope, Down Slope, Crater Current, And Post Gas. Click the Cycle Button to "4S"

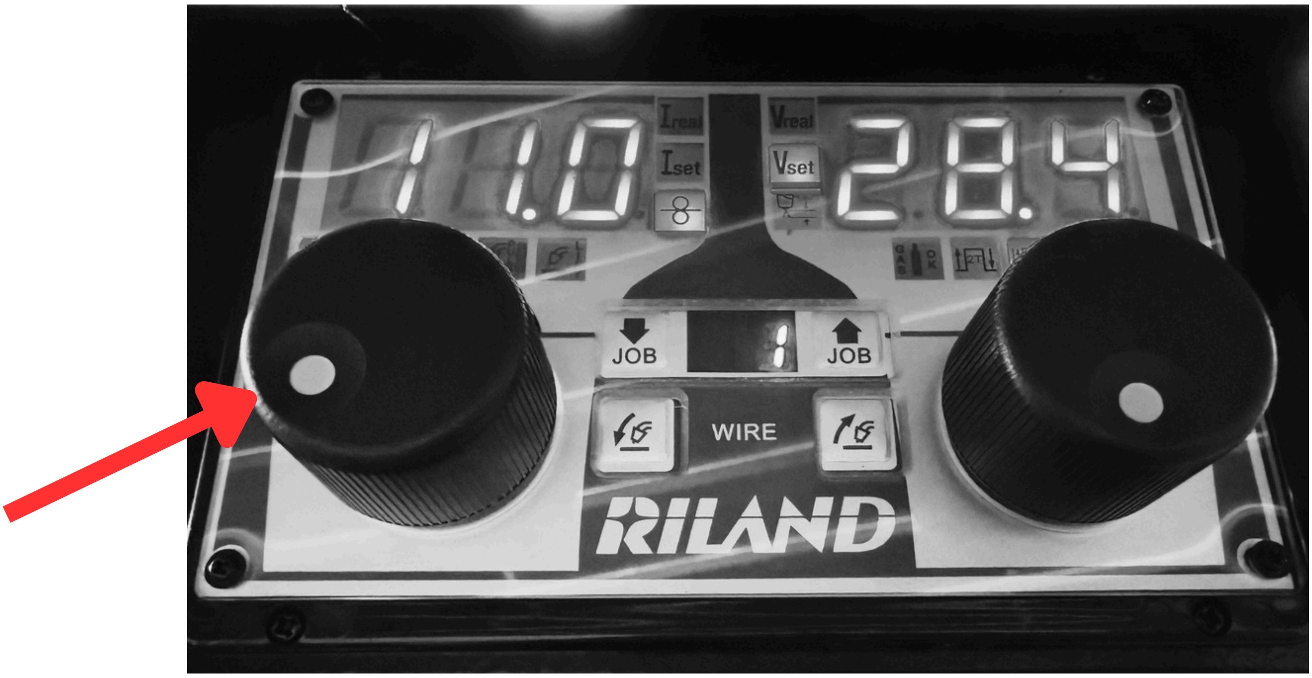


TIP: Make Sure to Change Back to 2T before you start welding, otherwise the welder will act like 4T Mode

PROGRAMMING YOUR NEW WELDER

MANUAL NON PULSE MODE

Step 18: Click the Left Knob Once



Step 19: Rotate the Left Knob to Select through all Setting available to you (Mentioned in Step 17) and Use the Right knob to change the values of those settings

Refer to the end of this manual for an explanation on these settings

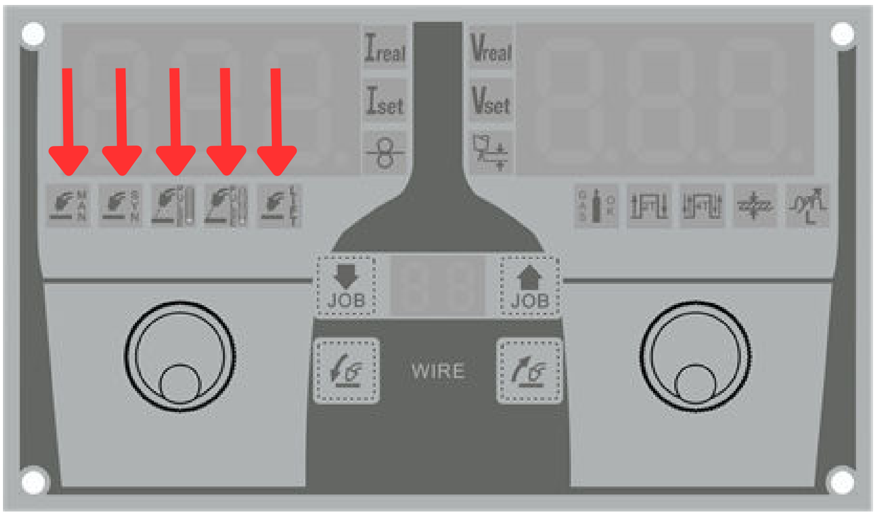
PROGRAMMING YOUR NEW WELDER

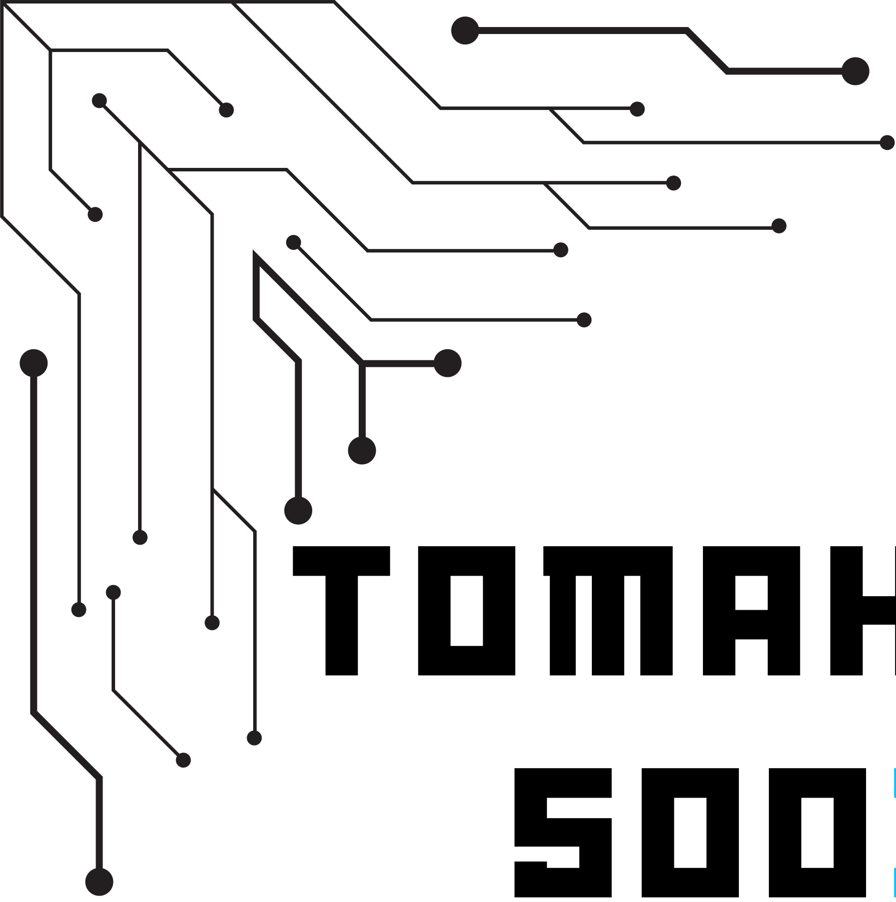
MANUAL NON PULSE MODE

Step 20: To Change the Inductance, (In the main Menu) <u>Click the Right Knob</u> Once. Then Turn the Knob Left and Right to Change the value

Refer to the end of this manual for an explanation on these settings

TIP: When you Change Weld modes, it will display on the front control Panel

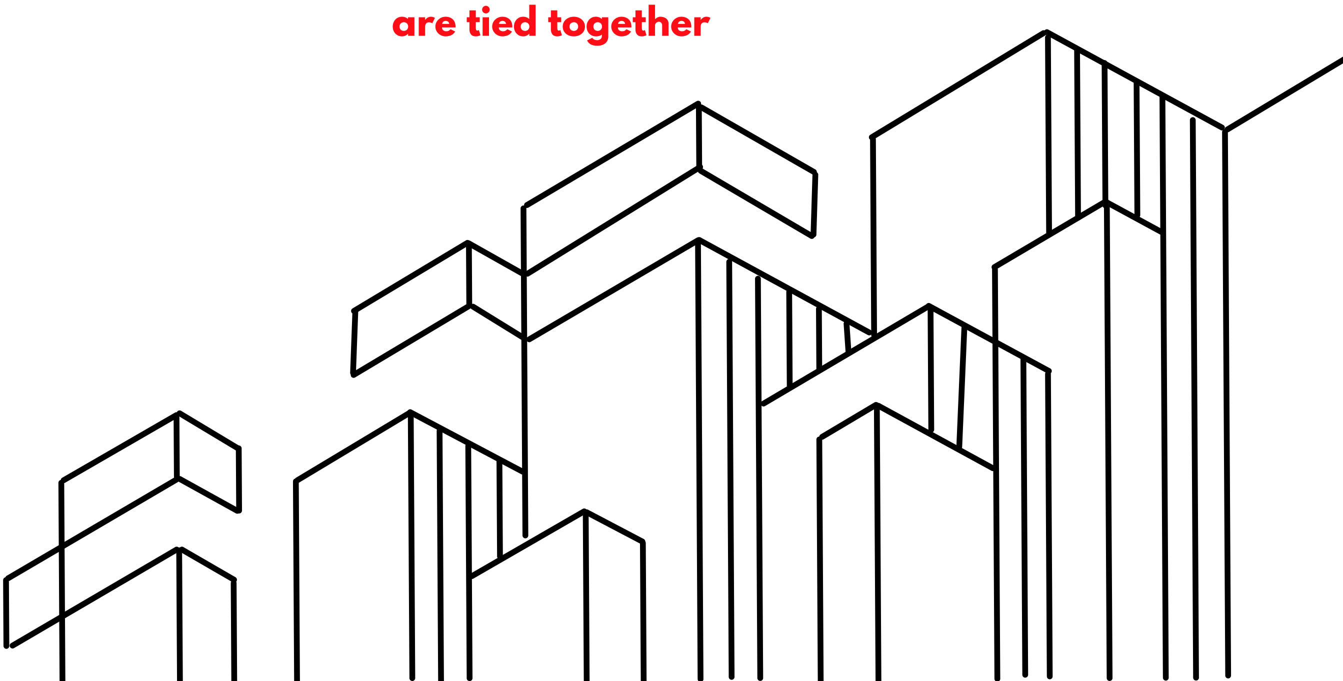




TOMAHAWK 500DP

SYNERGIC WELDING PROGRAMMING

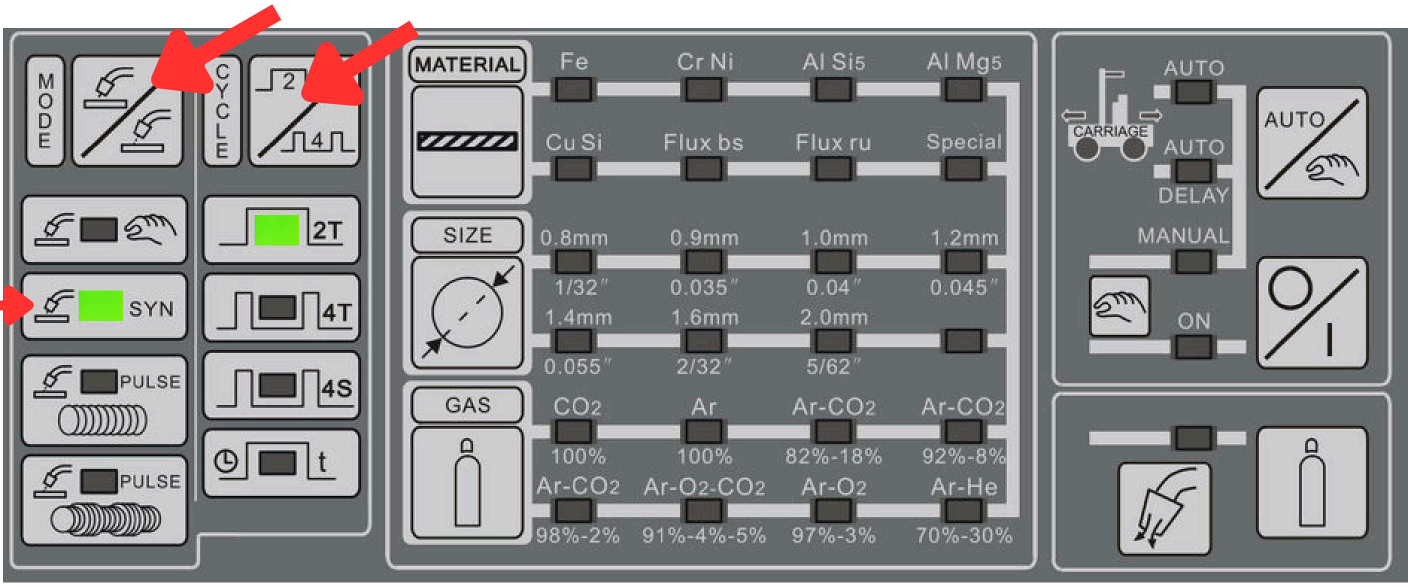
SYNERGIC Welding Lets You Operate Your Welder, Without having to manually set the amerage and wirespeed. They are tied together



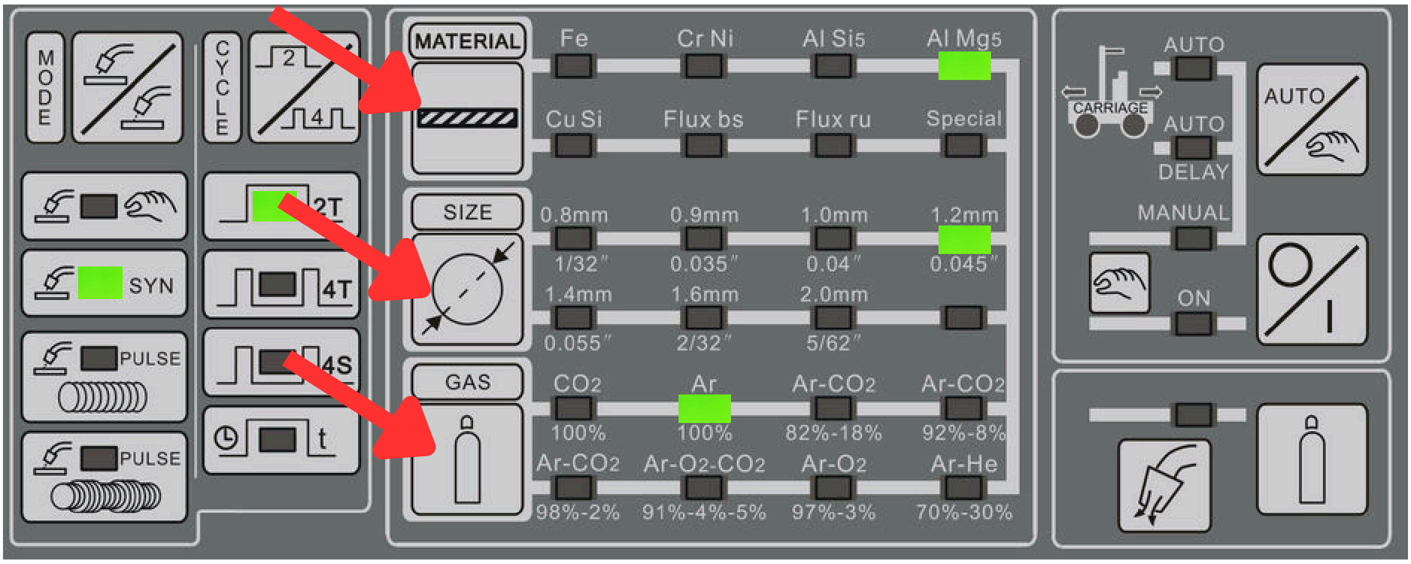
PROGRAMMING YOUR NEW WELDER

SYNERGIC NON PULSE MODE

Step 1: Select "SYN" And Cycle Type



Step 2: Choose your Material, Wire Diamiter, Gas Type



Fe: Carbon Steel, Mild Steel, and all Iron-based steels

Cr Ni: (Chromium Nickel): Stainless Steels e.g. 304L, 308L, 309L, 316L

Al Si5: (95% Ali, 5% Silicon) Aluminium e.g. 4043 Grade

AL Mg5: (95% Ali, 5% Magnesium) Aluminium e.g. 5356 Grade

Cu Si: (Copper Silicon) e.g. ERCuSi-A Silicon Bronze

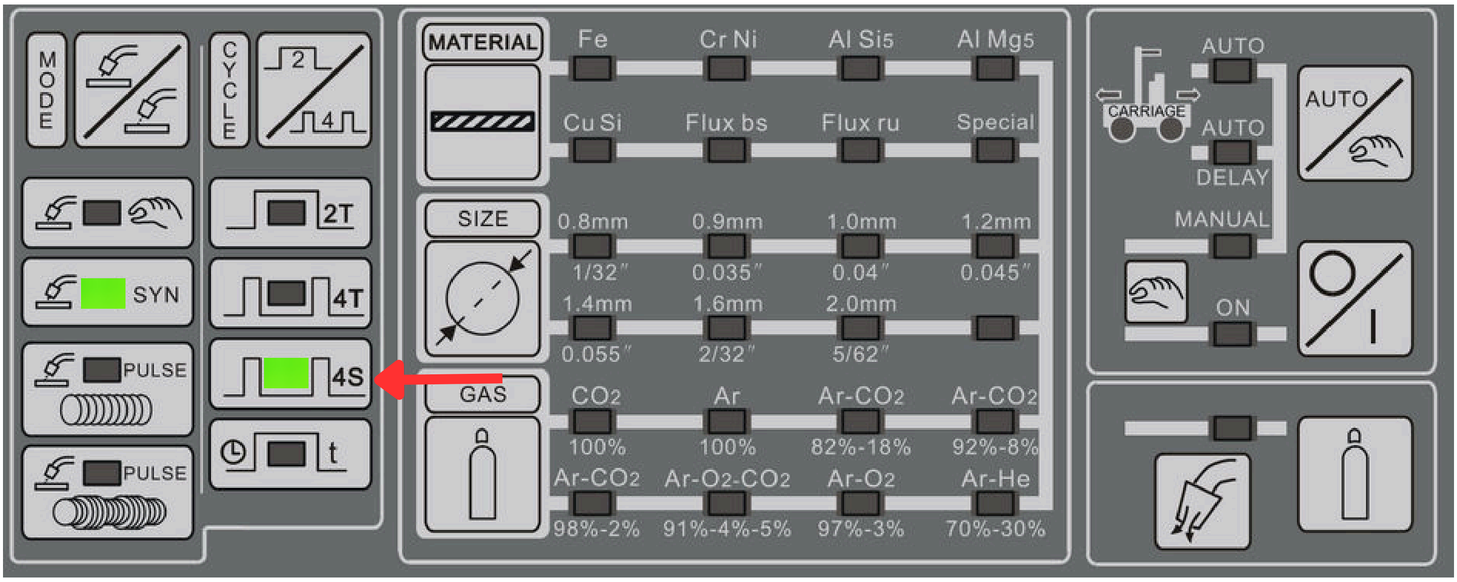
Flux bs: (Standard Flux Corded) e.g. E71T-11

Flux ru: (German Standard Flux Corded)

PROGRAMMING YOUR NEW WELDER

SYNERGIC NON PULSE MODE
ADVANCED SETTINGS

Step 3: To Access Advanced Settings Such as Pre Gas, Arc Initiation Current, Up Slope, Down Slope, Crater Current, And Post Gas. Click the Cycle Button to "4S"



TIP: Make Sure to Change Back to 2T before you start welding, otherwise the welder will act like 4T Mode

Step 18: Click the Left Knob Once

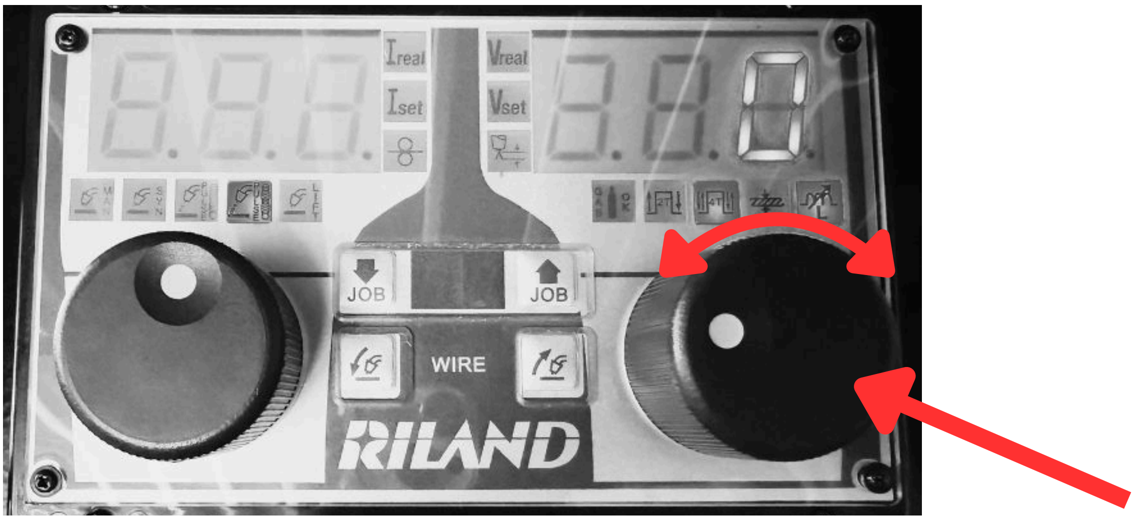
PROGRAMMING YOUR NEW WELDER

SYNERGIC NON PULSE MODE
ADVANCED SETTINGS

Step 19: Rotate the <u>Left</u> Knob to Select through all Settings available to you (Mentioned in Step 17) and Use the <u>Right</u> knob to change the values of those settings

Refer to the end of this manual for an explanation on these settings

Step 20: To Change the <u>Inductance</u>, Click the Right Knob Once. Then Turn the Knob Left and Right to Change the value



TIP: When you Change to Synergic Mode, Voltage and Amerage Will be Linked Together

PROGRAMMING YOUR NEW WELDER

SYNERGIC NON PULSE MODE
ADVANCED SETTINGS

Step 21: To Change Length,Use the Right Knob to Change the Value of that Setting

Refer to the end of this manual for an explanation on these settings

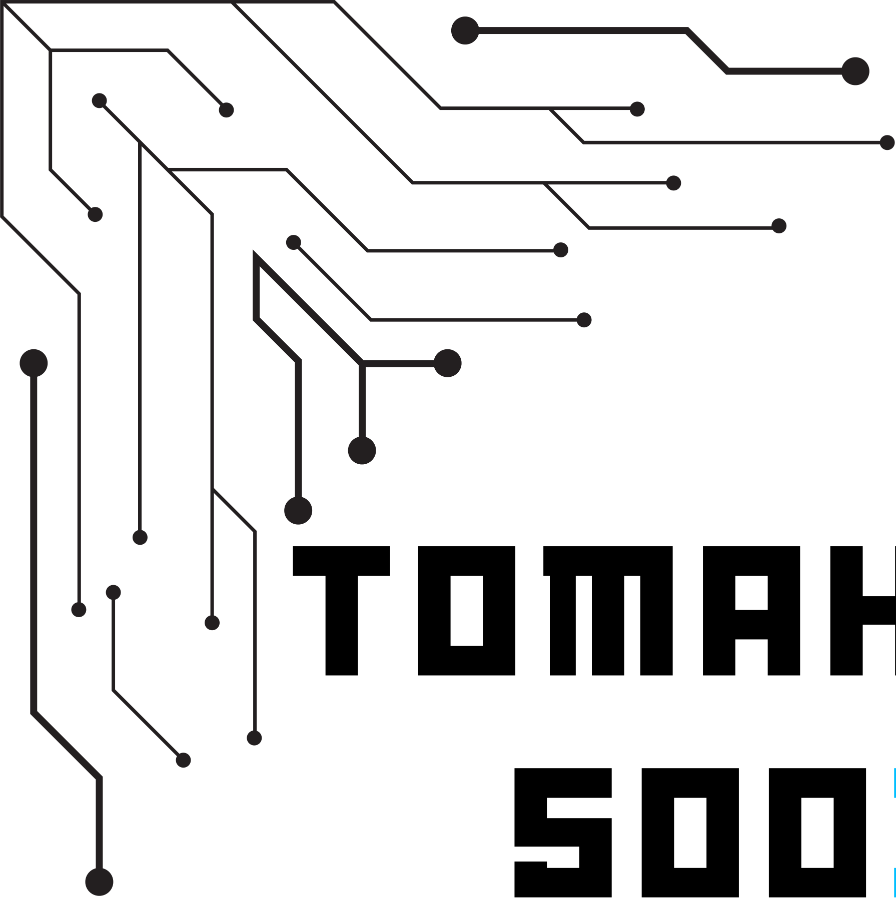
SYNERGIC MIG WELDING OFFERS NUMEROUS ADVANTAGES:

1. Simplified setup and operation, as it automatically adjusts parameters like voltage and amperage based on the selected settings, making it user-friendly even for beginners.

2. Automation ensures consistent weld quality by maintaining a stable arc and reducing defects like spatter or undercut. The process also increases efficiency by minimizing setup time and enabling faster adjustments, allowing operators to focus on welding.

3. Provides cost savings by reducing material waste, consumable use, and the likelihood of rework due to errors.

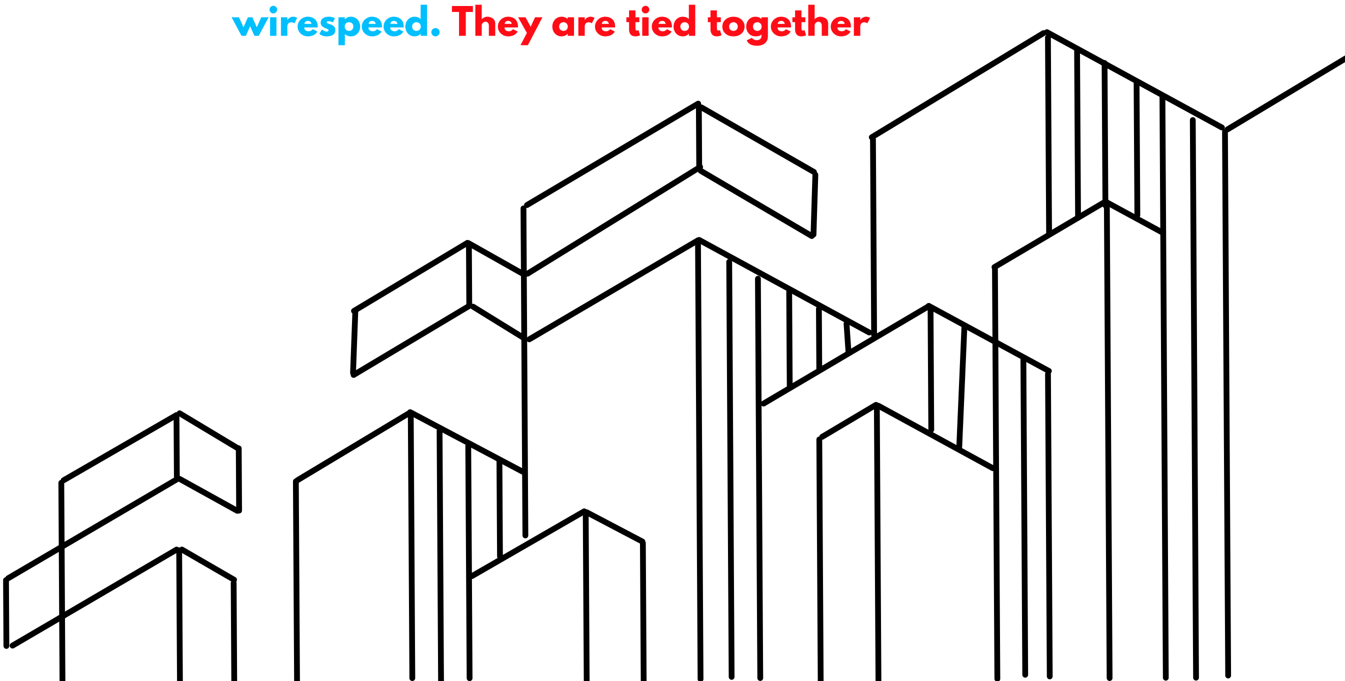
4. Synergic MIG welding shortens the learning curve, helping new welders achieve high-quality results more quickly. These benefits make it a valuable choice for improving productivity and precision in welding.



TOMAHAWK 500DP

SINGLE PULSE WELDING PROGRAMMING

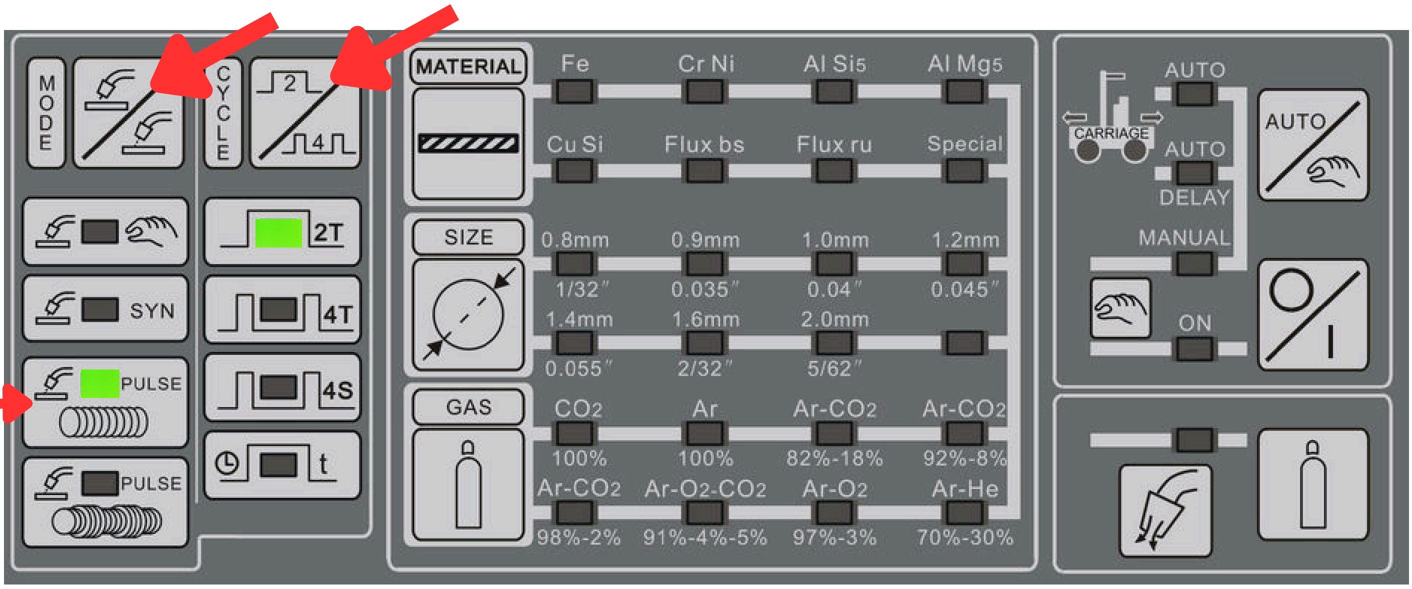
SYNERGIC PULSE Welding Lets You Operate Your Welder, Without having to manually set the amerage and wirespeed. They are tied together



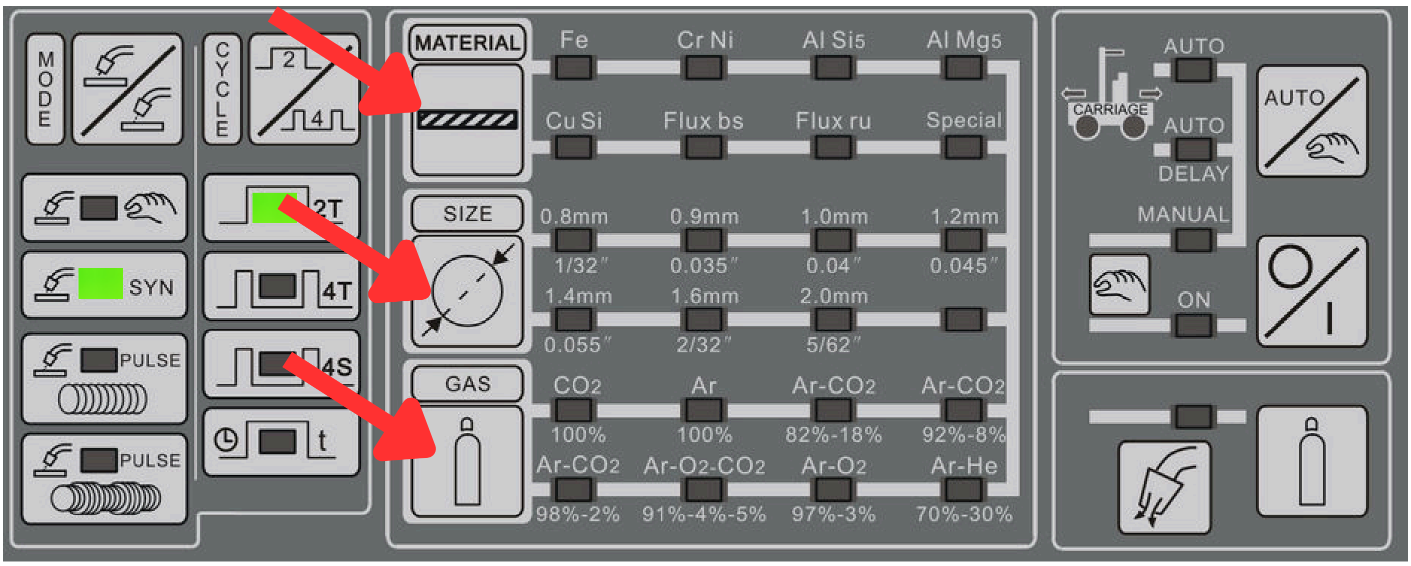
PROGRAMMING YOUR NEW WELDER

SINGLE PULSE MODE

Step 22: Select "PULSE" And Cycle Type



Step 23: Choose your Material, Wire Diamiter, Gas Type



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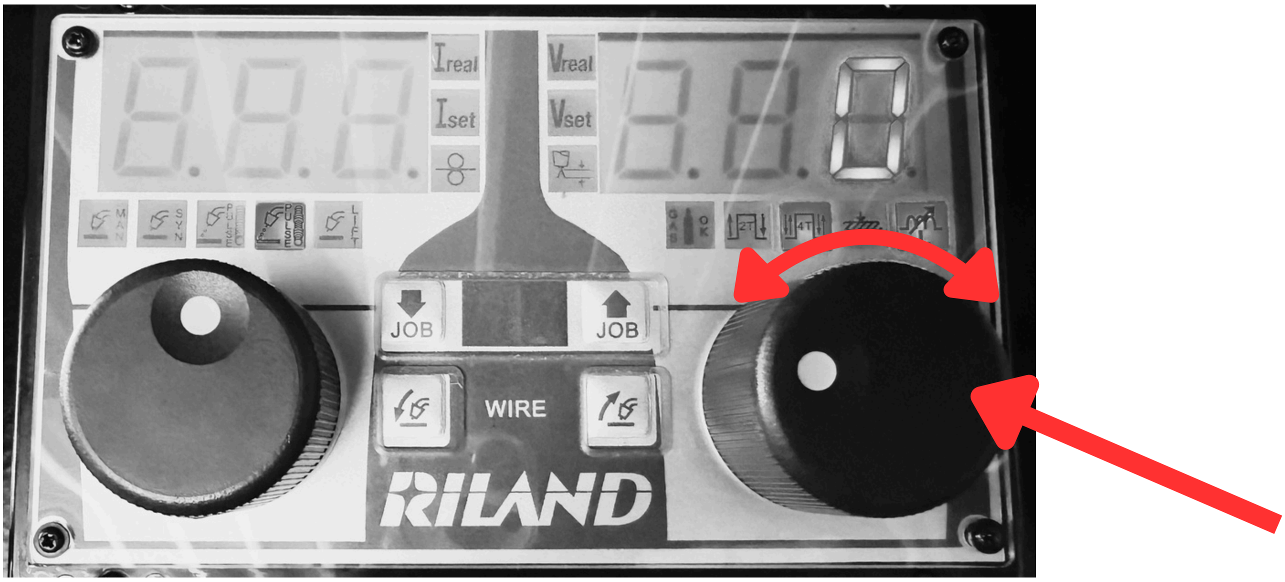
PROGRAMMING YOUR NEW WELDER

SINGLE PULSE MODE

Step 24: Click the Left Knob to Access the Pulse Frequency, and Rotate the Right knob to change the value

Refer to the end of this manual for an explanation on these settings

Step 25: To Change the Inductance, Click the Right Knob Once. Then Turn the Knob Left and Right to Change the value (After 2-3 Seconds of no input it will return to main menu)

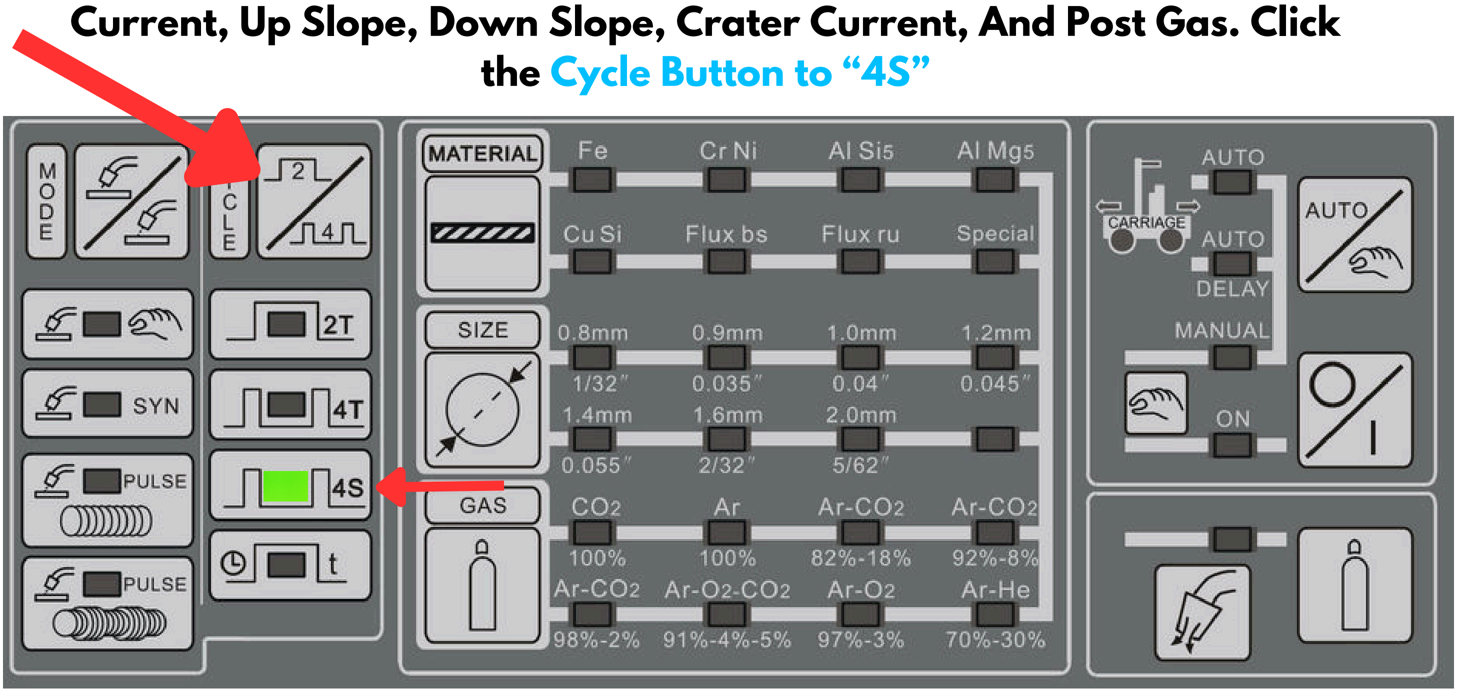


PROGRAMMING YOUR NEW WELDER

SINGLE PULSE MODE

Step 26: To Change Arc Length, Use the Right Knob to Change the Value of that Setting (Check final pages to see detailed description of all settings)

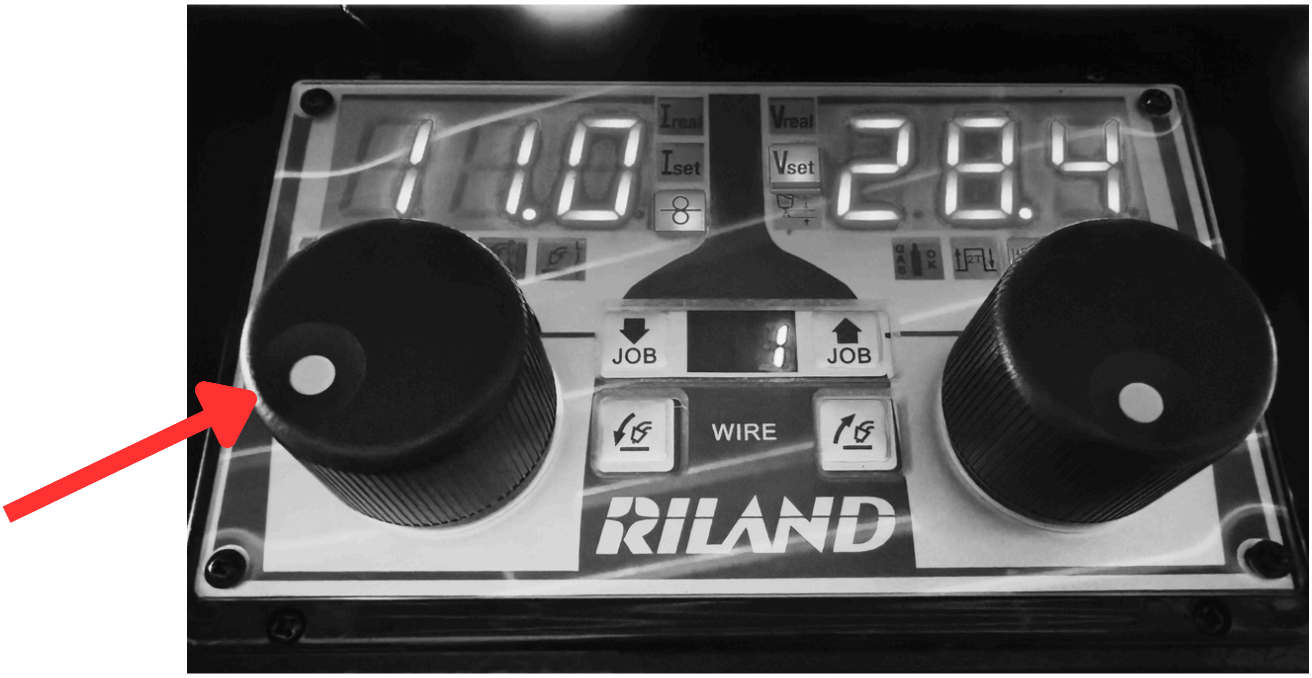
Step 27: To Access Advanced Settings Such as Pre Gas, Arc Initiation Current, Up Slope, Down Slope, Crater Current, And Post Gas. Click the Cycle Button to "4S"



PROGRAMMING YOUR NEW WELDER

SINGLE PULSE MODE

Step 28: Click the Left Knob Once



Step 29: Rotate the Left Knob to Select through all Setting available to you (Mentioned in Step 27) and Use the Right knob to change the values of those settings

Refer to the end of this manual for an explanation on these settings

TOMAHAWK 500DP

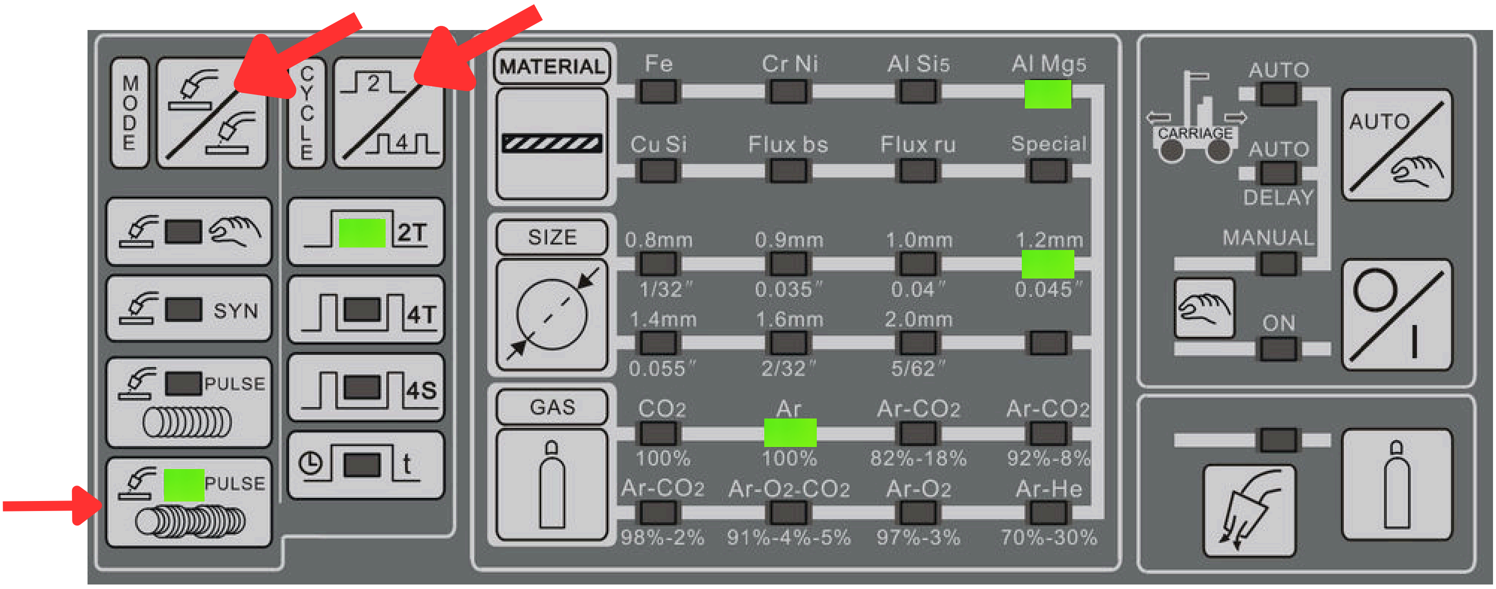
DOUBLE PULSE WELDING PROGRAMMING

SYNERGIC DOUBLE PULSE Welding Lets You Operate Your Welder, Without having to manually set the amerage and wirespeed. They are tied together

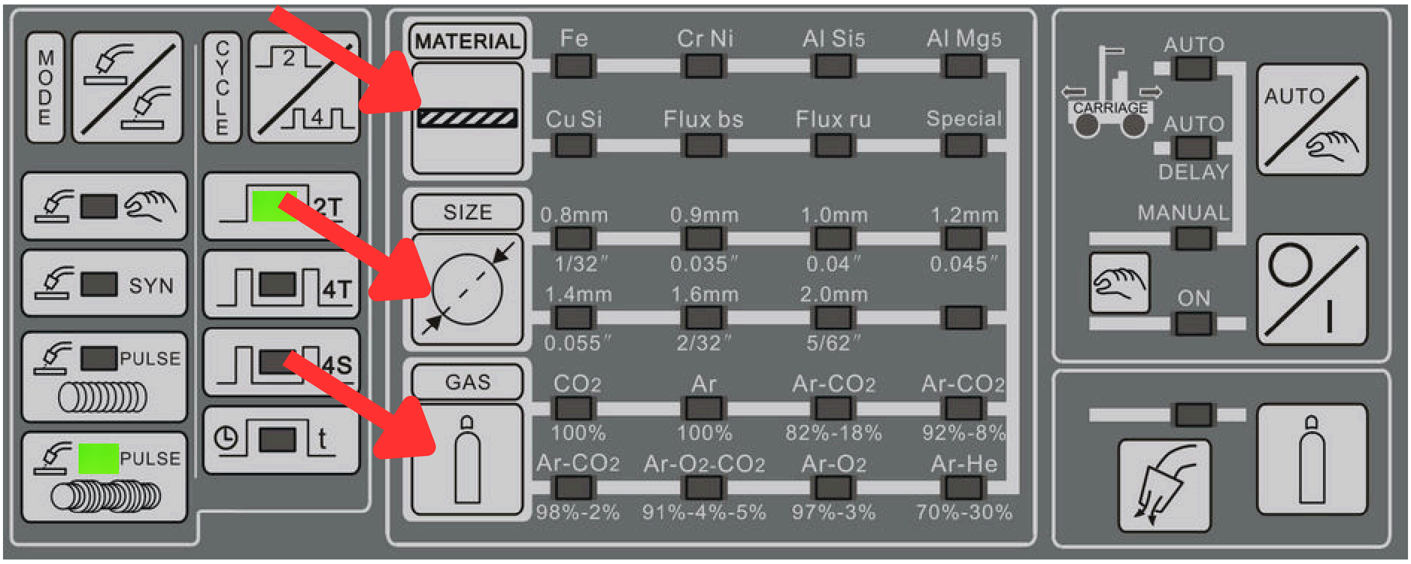
PROGRAMMING YOUR NEW WELDER

DOUBLE PULSE MODE

Step 30: Select “Double PULSE” And Cycle Type



Step 31: Choose your Material, Wire Diamiter, Gas Type



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Flux ru: (German Standard Flux Corded)

PROGRAMMING YOUR NEW WELDER

Step 32: Click the Left Knob to Access the Pulse Frequency, and Rotate the Right knob to change the value

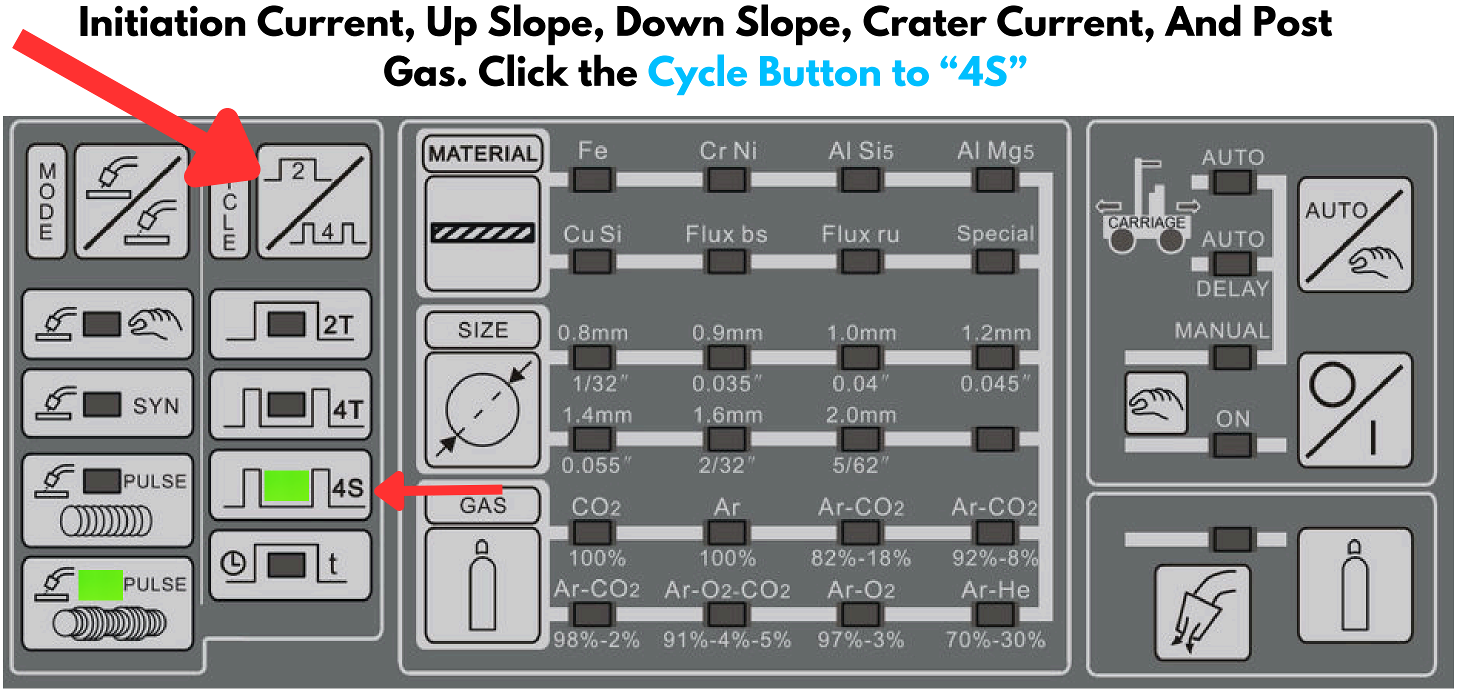
Refer to the end of this manual for an explanation on these settings

Step 33: To Change the Inductance, Click the Right Knob Once. Then Turn the Knob Left and Right to Change the value

PROGRAMMING YOUR NEW WELDER

Step 26: To Change Length,Use the Right Knob to Change the Value of that Setting

Step 35: To Access Advanced Settings Such as Frequency Pre Gas, Arc Initiation Current, Up Slope, Down Slope, Crater Current, And Post Gas. Click the Cycle Button to "4S"



PROGRAMMING YOUR NEW WELDER

1.5mm Aluminium

Machine Model: RILAND TITAN 500DP

Welding Wire: IRONWELD 5356 1.2mm Pulse Wire

Welding Current: 60A

Welding Current: 17.0V

Inductance: -1

Arc length: 40

Protective gas: 100% Argon (15L/Min)

Mode: Single Pulse

PROGRAMMING YOUR NEW WELDER

3mm Aluminium

Machine Model: RILAND TITAN 500DP
Welding Wire: IRONWELD 5356 1.2mm Pulse Wire
Welding Current: 109A
Welding Current: 20.1V
Inductance: 5
Arc length: 5
Protective gas: 100% Argon (15L/Min)
Mode: Single Pulse

PROGRAMMING YOUR NEW WELDER

6mm Aluminium

Machine Model: RILAND TITAN 500DP

Welding Wire: IRONWELD 5356 1.2mm Pulse Wire

Welding Current: 180A

Welding Current: 23.3V

Inductance: 9

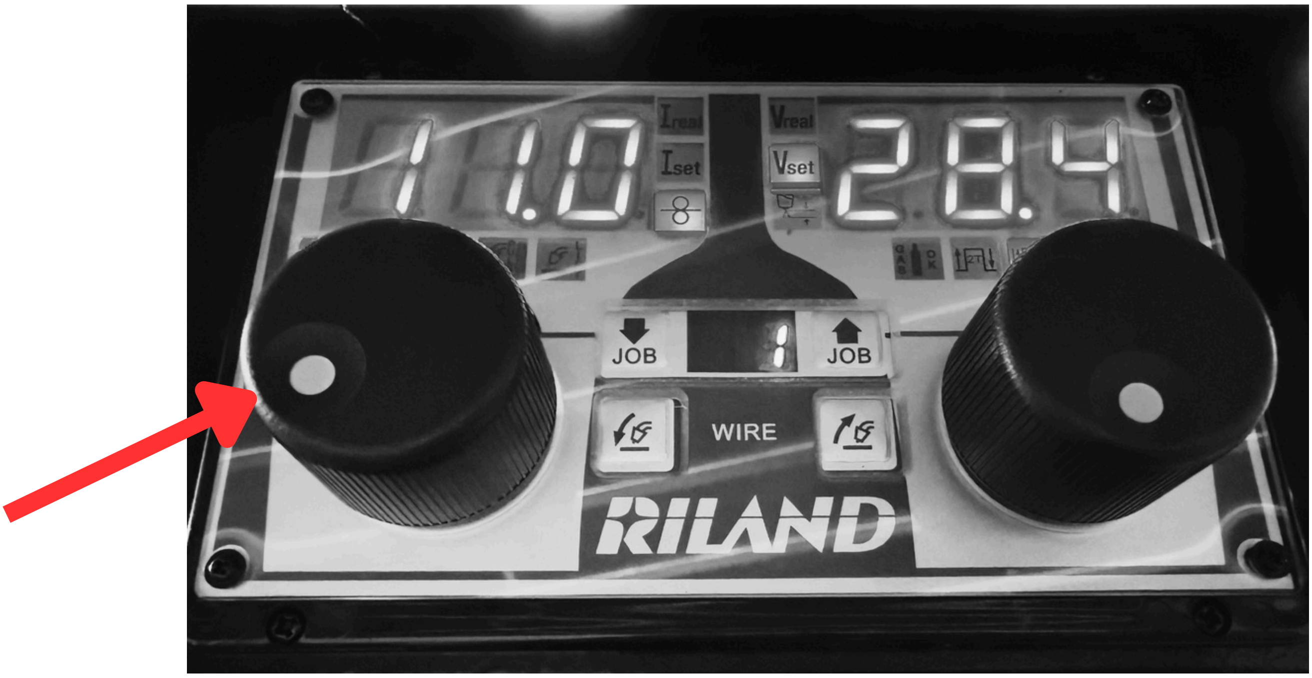
Arc length: 20

Protective gas: 100% Argon (25L/Min)

Mode: Single Pulse

PROGRAMMING YOUR NEW WELDER

Step 36: Click the Left Knob Once



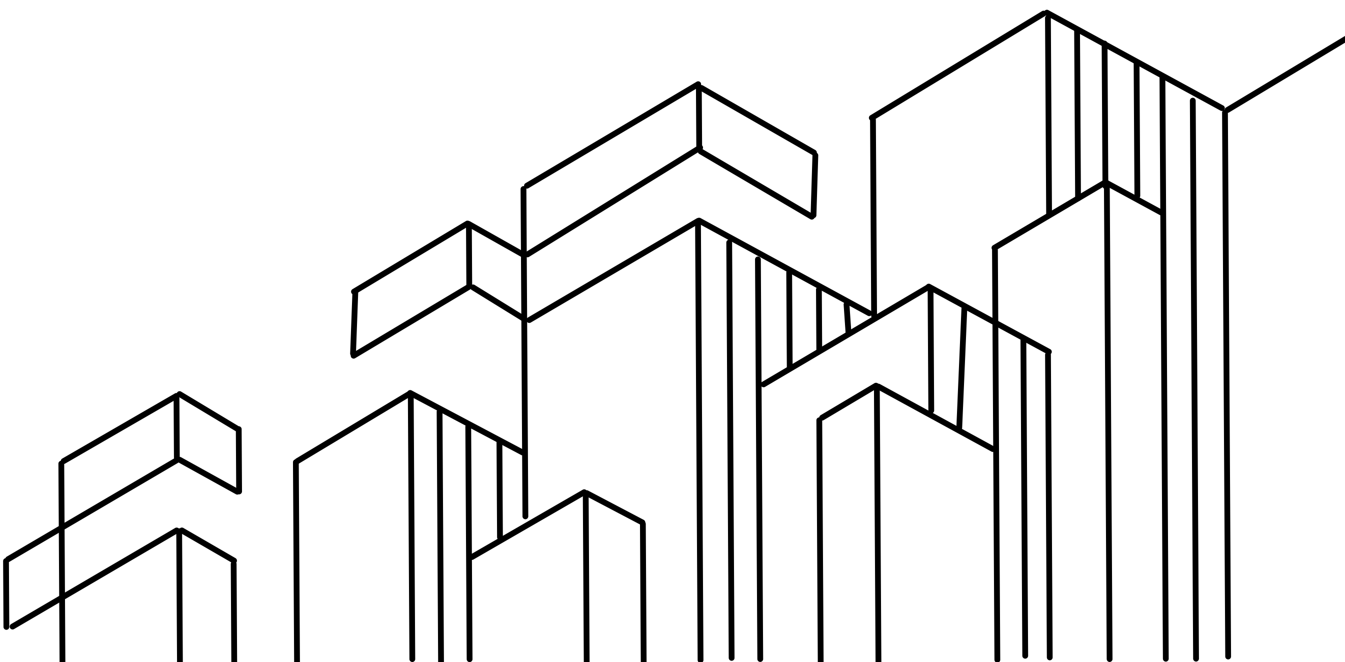
Step 37: Rotate the Left Knob to Select through all Setting available to you (Mentioned in Step 35) and Use the Right knob to change the values of those settings

Refer to the end of this manual for an explanation on these settings

IRONWELD

ADVANCED SETTINGS

CHEAT SHEET



PULSE FREQUENCY (FRE)

Every welder has a unique style, and there is no universal formula for determining the perfect pulse frequency or machine settings. The optimal setup depends on your technique, preferences, and the specific job requirements. Before starting your weld, it's always a good practice to test your machine on a scrap piece of the job material. This allows you to fine-tune the settings to match your personal style and achieve the best possible results for your work

What is Pulse Frequency?

The Pulse Frequency setting on a Pulse MIG Welder controls the rate at which the welding current transitions between a high (peak) and low (background) amperage during the welding process. This pulsing creates a more controlled and stable arc, allowing for better precision and weld quality. The higher the number you choose, the more quickly the welder transitions from the peak to the low.

Low end Pulse Frequency

- Each pulse lasts longer, allowing for distinct, visible droplet transfer during each cycle.
- Best for thicker materials or where you need to deposit more filler metal per pulse.
- Ideal for out-of-position welding, such as vertical-up or overhead, where slower pacing gives better control of the molten pool.

PULSE FREQUENCY (FRE)

Middle end Pulse Frequency

- Pulses are faster but still individually discernible. The arc maintains stability while slightly increasing travel speed.
- Useful for thin-to-moderate material thicknesses, balancing heat input with productivity.
- Offers more consistent bead formation compared to very low frequencies.

High end Pulse Frequency

- A higher frequency produces a more stable and consistent arc, reducing spatter and improving control over the molten pool.
- Ensures cleaner welds with minimal post-weld cleanup.
- Higher pulse frequencies reduce the time the arc spends at peak amperage, lowering the overall heat input.
- Prevents overheating and distortion of thin or heat-sensitive materials like aluminium and stainless steel.
- High pulse frequencies are highly effective for thin materials and precision welding but may not provide the desired results for general-purpose or structural welding tasks.

To Consider:

While higher pulse frequencies offer many advantages, they may require careful tuning of other parameters (e.g., wire feed speed, voltage, and shielding gas flow) to achieve optimal results

PRE GAS

Understanding Pre-Gas Settings on a MIG Welder

The pre-gas setting on a MIG welder determines how long shielding gas flows from the nozzle before the welding arc starts. Adjusting this setting can influence weld quality, consistency, and efficiency. Here's a breakdown of what increasing or decreasing the pre-gas setting means and how it affects your welding process:

Increasing the Pre-Gas Setting

When you increase the pre-gas setting, the shielding gas flows for a longer time before the arc ignites.

Effects:

- **Improved Shielding:** A longer pre-gas flow ensures the welding area is fully purged of atmospheric gases like oxygen, nitrogen, and moisture. This reduces the risk of porosity and contamination in the weld.
- **Best for Critical Welds:** It's especially useful for welding reactive metals or when starting a weld in challenging conditions, like outdoors or in drafty environments.
- **Gas Consumption:** Increased pre-gas time will use more shielding gas, potentially leading to higher operating costs if overused.

When to Increase:

- Welding materials prone to contamination (e.g., stainless steel, aluminium).
- Starting on a clean surface where gas coverage must be perfect.
- Situations requiring the highest weld integrity.

PRE GAS

Decreasing the Pre-Gas Setting

When you decrease the pre-gas setting, the shielding gas flows for a shorter duration before the arc starts.

Effects:

- Faster Start-Up: Shorter gas flow times reduce delays, making the process more efficient.
- Higher Risk of Contamination: Insufficient pre-gas may result in poor shielding at the start of the weld, leading to defects such as porosity, especially on critical projects or reactive materials.
- Gas Conservation: Reducing pre-gas can save on shielding gas, which is beneficial for high-volume, non-critical welding tasks.

When to Decrease:

- Non-critical welding tasks (e.g., tacking or basic steel fabrication).
- Projects where cost savings on gas outweigh the need for perfect shielding at weld start.
- Environments with little to no risk of atmospheric contamination (e.g., controlled indoor settings).

Finding the Right Balance:

The ideal pre-gas setting depends on the material, weld environment, and project requirements. A common approach is to start with the manufacturer-recommended setting and adjust as needed:

- Increase pre-gas for critical welds or when welding in difficult conditions.
- Decrease pre-gas for faster operation in less demanding applications.

ARC INITIATION CURRENT (STA)

Increasing the Arc Initiation Current

When you increase the arc initiation current, the initial amperage delivered to the weld is higher. Essentially making the first “Bite” of the weld have more current.

Effects:

- Faster Arc Establishment: Higher current provides more energy, ensuring the arc ignites quickly and reliably.
- Better Penetration at Start: The increased energy can help achieve good fusion at the start of the weld, reducing the risk of weak spots.
- Ideal for Heavier Materials: Useful when welding thicker materials where more energy is needed to properly establish the arc.

Advantages of Increasing:

- Improves arc stability in challenging conditions.
- Reduces the risk of incomplete fusion or cold starts.

Drawbacks of Increasing:

- May cause excess spatter or overheating on thinner materials.
- Can result in an overly aggressive start if not controlled.

When to Increase:

- Welding thicker materials or joints requiring strong starts.
- Applications where consistent penetration at the weld start is critical.

ARC INITIATION CURRENT (STA)

Decreasing the Arc Initiation Current

When you decrease the arc initiation current, the initial amperage is lower.

Effects:

- Softer Arc Start: A lower current provides a gentler ignition, reducing the risk of spatter or burn-through on thin materials.
- Reduced Heat Input: Less heat is applied at the start, which is beneficial for preventing warping or damage to delicate materials.

Advantages of Decreasing:

- Ideal for thin materials, minimizing the risk of burn-through.
- Creates a smoother, cleaner start with less spatter.

Drawbacks of Decreasing:

- May lead to incomplete fusion at the start of the weld.
- Can cause difficulty in arc initiation on dirty or oxidized surfaces.

When to Decrease:

- Welding thin materials like sheet metal.
- Applications requiring precise, clean starts.

TIP: Always perform test welds to refine the setting based on your specific conditions.

UP SLOPE

Understanding Current Up-Slope
The up-slope time setting controls the rate at which the welding current increases to the preset working current after the arc is initiated. Adjusting this parameter can impact weld quality, reduce defects, and enhance operator control during the start of a weld.

Increasing the Up Slope

When you increase the current up-slope time, the welding current rises more gradually to the target value.

Effects:

- Smooth Arc Start: A slower increase in current provides a gentler arc ignition, reducing the risk of spatter or sudden heat spikes.
- Improved Control on Thin Materials: Helps prevent burn-through or distortion when welding thin materials.
- Reduced Stress on Materials: Minimizes thermal shock at the weld start, which can reduce cracking in sensitive or brittle metals.

Advantages of Increasing:

- Ideal for thin metals, aluminum, or materials prone to heat distortion.
- Produces cleaner starts with less spatter.
- Increases operator control during the initial stages of welding.

Drawbacks of Increasing:

- May slightly slow down the welding process.
- Can lead to insufficient penetration at the very start of the weld if the slope time is too long.

UP SLOPE

Decreasing the Up Slope

When you decrease the current up-slope time, the welding current reaches the preset value more quickly.

Effects:

- Faster Heat Build-Up: The arc rapidly reaches full strength, making it easier to achieve proper penetration and fusion at the weld start.
- More Aggressive Start: Ideal for thicker materials or situations where quick heat input is needed.

Advantages of Decreasing :

- Ensures good fusion on thicker or less conductive materials.
- Speeds up welding in high-production environments.

Drawbacks of Decreasing :

- Can cause spatter and rough starts, especially on thin materials.
- Increases the risk of burn-through or thermal distortion on heat-sensitive workpieces.

When to Decrease :

- Welding thick or highly conductive materials like steel or copper.
- Applications where quick starts and efficient heat input are prioritized.

DOWNSLOPE

Increasing the Down Slope

When you increase the current down-slope time, the welding current decreases more slowly, tapering off gradually instead of stopping abruptly.

Effects:

- Smoother Weld Termination: A gradual reduction in current helps eliminate craters, cracks, or sharp edges at the end of the weld.
- Reduced Stress on the Weld Area: Slower cooling minimizes the risk of thermal shock, which can cause cracking or other defects.
- Improved Appearance: Leaves a clean, tapered weld bead with no abrupt termination marks.

Advantages of Increasing:

- Ideal for finishing welds on thin or brittle materials, such as aluminium or stainless steel.
- Enhances weld aesthetics and structural integrity.
- Reduces the risk of crater cracks, especially in critical applications.

Drawbacks of Decreasing :

- May slightly extend the welding process.
- Uses more shielding gas due to the prolonged arc.

When to Decrease :

- For critical welds where appearance and strength at the end are important.

DOWNSLOPE

Decreasing Downslope

When you decrease the current up-slope time, the welding current reaches the preset value more quickly.

Effects:

- Smoother Weld Termination: A gradual reduction in current helps eliminate craters, cracks, or sharp edges at the end of the weld.
- Reduced Stress on the Weld Area: Slower cooling minimizes the risk of thermal shock, which can cause cracking or other defects.
- Improved Appearance: Leaves a clean, tapered weld bead with no abrupt termination marks.

Advantages of Decreasing :

- Ideal for finishing welds on thin or brittle materials, such as aluminium or stainless steel.
- Enhances weld aesthetics and structural integrity.
- Reduces the risk of crater cracks, especially in critical applications.

Drawbacks of Decreasing :

- May slightly extend the welding process.
- Uses more shielding gas due to the prolonged arc.

When to Decrease :

- When weld-end quality is less important, such as tacking or temporary joints

CRATER CURRENT (STO)

The crater current setting on a MIG welder controls the current applied during the final moments of a weld as the arc is extinguished. This setting helps prevent defects such as craters, poor weld finishes, or weak welds. Adjusting the crater current ensures a smooth and strong end to the weld.

Increasting Crater Current

When you increase the crater current, the welding current remains higher for a longer duration as the weld finishes.

Effects:

- Smoother Weld Termination: A higher crater current provides sufficient heat to fill in any craters or gaps, ensuring a clean and strong weld finish.
- Reduced Crater Formation: Helps prevent defects such as small craters or weak spots at the end of the weld.
- Improved Weld Strength: Maintains good heat input to ensure proper fusion at the end of the weld.

Advantages of Increasing:

- Ideal for critical welds where structural integrity is paramount.
- Helps achieve a polished and finished weld bead.
- Minimizes the risk of weak welds or structural issues.

Drawbacks of Increasing:

- Increase the amount of heat and spatter at the end of the weld.
- Uses more shielding gas if the time for crater fill is extended.

When to Increase:

- In structural welding or situations requiring high-quality weld finishes

CRATER CURRENT (STO)

Decreasing Crater Current

When you decrease the crater current, the welding current tapers off more quickly, with less heat applied toward the end of the weld.

Effects:

- Faster Weld Completion: A lower crater current reduces the amount of heat used to finish the weld, allowing for quicker welds.
- Increased Risk of Craters: Lower current at the end of the weld may leave small craters or weak areas.
- Weaker Weld Finish: Insufficient heat can lead to incomplete fusion, affecting the strength and quality of the weld.

Advantages of Decreasing:

- Faster welding times, making it suitable for high-production environments.
- Conserves shielding gas and electricity.

Drawbacks of Decreasing:

- Higher likelihood of craters and defects at the end of the weld.
- Can result in an uneven, visually poor weld finish.

When to Decrease:

- For non-critical welds where a slight reduction in weld quality is acceptable.
- In scenarios where welding speed takes precedence over weld appearance.

POST GAS

The post-gas time setting on a MIG welder controls how long the shielding gas flows after the welding arc is extinguished. This setting plays a crucial role in protecting the weld from atmospheric contamination and ensuring a clean, high-quality finish. Adjusting the post-gas time affects the cooling process and overall weld integrity.

When you increase the post-gas time, the shielding gas continues to flow for a longer period after the welding arc is turned off.

Increasing the Post Gas Time

Effects:

- Enhanced Protection: A longer post-gas flow ensures that the weld is fully shielded from atmospheric gases, reducing the risk of oxidation, porosity, and other defects.
- Improved Weld Quality: Helps achieve a smoother and cleaner weld finish with fewer imperfections.
- Reduced Spatter and Oxidation: Ensures that the molten metal is protected for a more refined weld bead.

Advantages of Increasing:

- Essential for welding reactive materials like aluminum or stainless steel.
- Provides a stronger, more durable weld by minimizing oxidation and contamination risks.

Drawbacks of Increasing:

- Increased shielding gas consumption, leading to higher operating costs.
- Can lengthen the overall welding time slightly.

POST GAS

Decreasing the Post-Gas Time Setting

When you decrease the post-gas time, the shielding gas flows for a shorter duration after the welding arc is extinguished.

Effects:

- Reduced Gas Usage: Shorter post-gas flow saves shielding gas and may speed up the welding process.
- Increased Risk of Contamination: Less protection for the molten weld pool can lead to oxidation and defects.
- Potential Weld Defects: A shorter post-gas time may result in spatter, porosity, and other quality issues at the end of the weld.

Advantages of Decreasing :

- Lower gas consumption leads to cost savings.
- Faster welding process, ideal for non-critical applications.

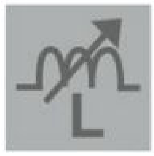
Drawbacks of Decreasing :

- Higher chance of weld oxidation and contamination.
- Poorer weld appearance and structural integrity on sensitive materials.

Drawbacks of Decreasing :

- For non-critical welds where appearance and oxidation risks are less significant.
- In high-speed production environments where efficiency is prioritized over quality.

INDUCTANCE



What Does Inductance Do

The inductance setting controls the characteristics of the welding arc and the deposition of the molten metal. Specifically, it affects the rate at which the current rises and falls during the welding process. This can have a significant impact on the weld bead appearance, spatter levels, and arc stability. Similar to Increasing the Frequency in a TIG Welder.

How Does Inductance Work

Low Inductance:

- Faster current rise and fall.
- Produces a more focused, aggressive arc with rapid short-circuits. This **minimizes the heat input, reducing the risk of burn-through on thin materials**

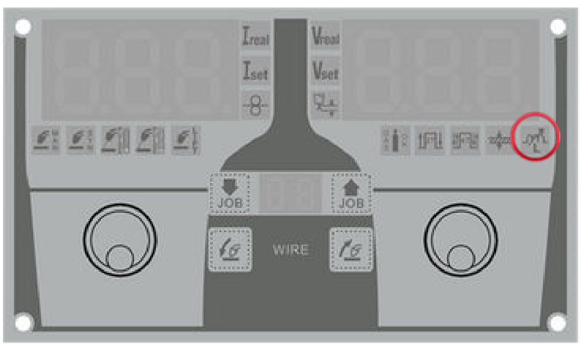
High Inductance:

- Slower current rise and fall.
- Creates a smoother arc with less spatter.
- Creates a softer arc and a steadier molten pool, **reducing spatter and improving the wetting of the weld bead** into the base material

TIP:

No Inductance: HARD, CRISPY, and SHARP Weld Pool

High Inductance, WET, FLUID, and BUTTERY Weld Pool



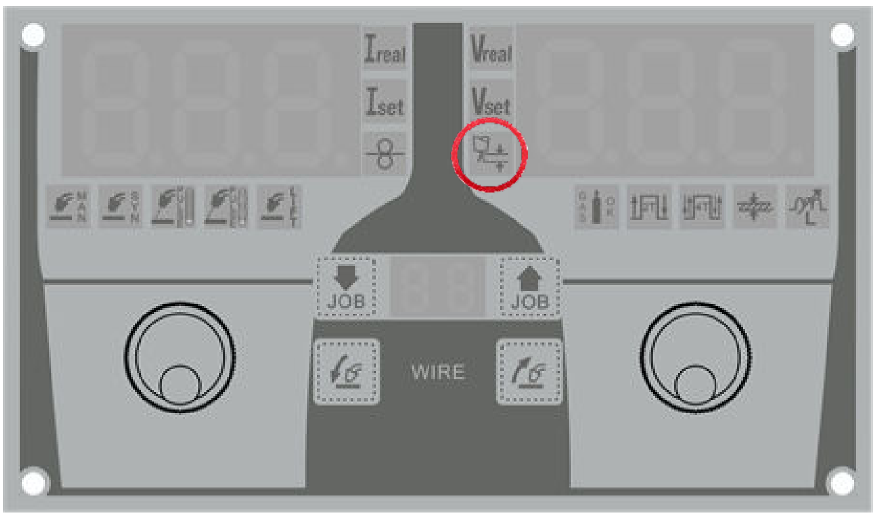
ARC LENGTH 

What Does ARC LENGTH Do

The ARC Length setting fine-tunes the wire feed speed that the welder's synergic program has automatically selected. It allows the user to make precise adjustments to the arc characteristics without manually changing the preset parameters.

- Adjustment Range: -50 to +50
- Functionality:
  - Decreasing (-50 to 0): Reduces wire feed speed slightly, shortening the arc length. This can provide a softer arc, improve puddle control, and reduce spatter in certain conditions.
  - Increasing (0 to +50): Increases wire feed speed slightly, lengthening the arc. This results in a hotter, more aggressive arc, improving penetration but potentially increasing spatter.

This setting is useful for fine-tuning the welding process to match different materials, thicknesses, and welding positions while still utilizing the efficiency of the synergic welding mode.



PRECISION ARC START (F16)

Precision Arc Start ON

- The machine feeds the wire until it touches the workpiece.
- Then, it pulls the wire back slightly (retracts it) before applying current to establish the arc.
- If the arc doesn't start, the machine tries again by feeding the wire forward and retrying.
- This reduces spatter and provides a cleaner start.

Precision Arc Start OFF (Normal Start)

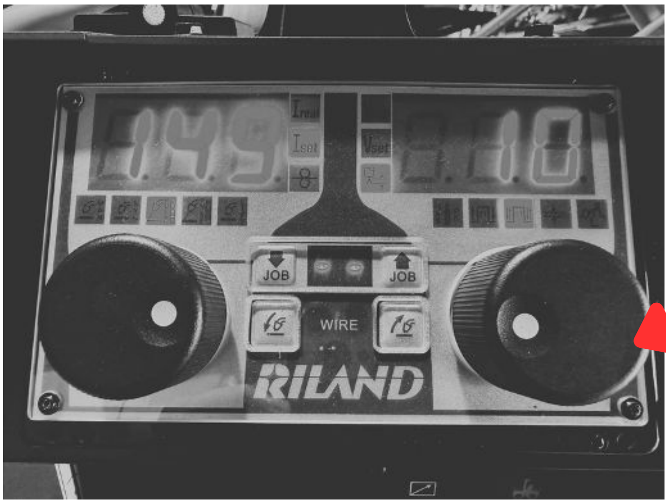
- The machine simply feeds the wire until it touches the workpiece and applies current immediately.
- If the arc doesn't start, the wire just keeps feeding, which can cause the wire to keep hitting the workpiece, leading to more spatter and less reliable arc starts.

What This Means for You:

- If you want smoother arc starts with less spatter, turn F16 ON.
- If you prefer a more traditional, continuous wire feed start, leave F16 OFF.

This setting is useful in pulse MIG and advanced MIG machines to improve starting reliability, especially on thin materials or when using soft or small-diameter wires (like aluminum or stainless steel).

HOW TO SAVE A JOB



Hold the Right Knob for 5 Seconds

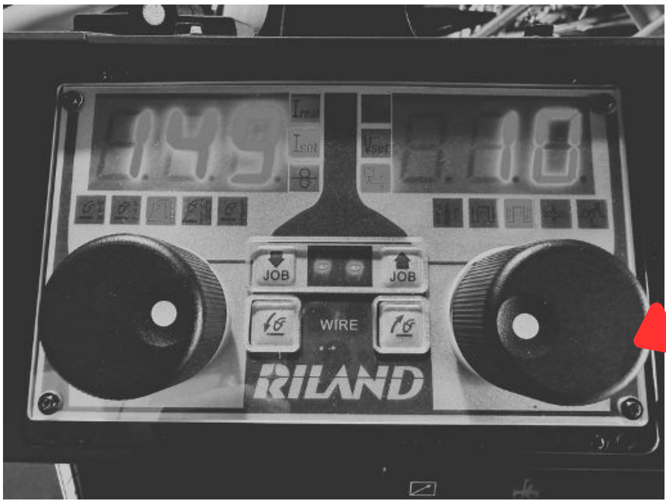
Rotate the Left Knob to the Right. Until You See “F50”

Use the Right Knob to cycle through the saved jobs. If it is your first job it will only show 1

Hold the Right Knob for 5 seconds.

Click the left knob to abort the save, Click the right knob to save your job

HOW TO ADJUST BURN BACK



Hold the Right Knob for 5 Seconds

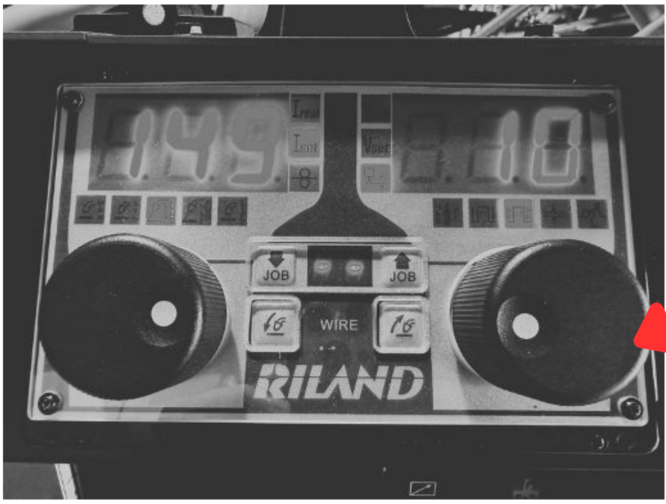
Rotate the Left Knob to the Right. Until You See "F15" (BBT)

Use the Right Knob to cycle through the amount of burn back required. From -10 to +10

Hold the Right Knob for 5 seconds.

Click the left knob to abort the save, Click the right knob to save your job

HOW TO ADJUST PRECISION ARC START



Hold the Right Knob for 5 Seconds

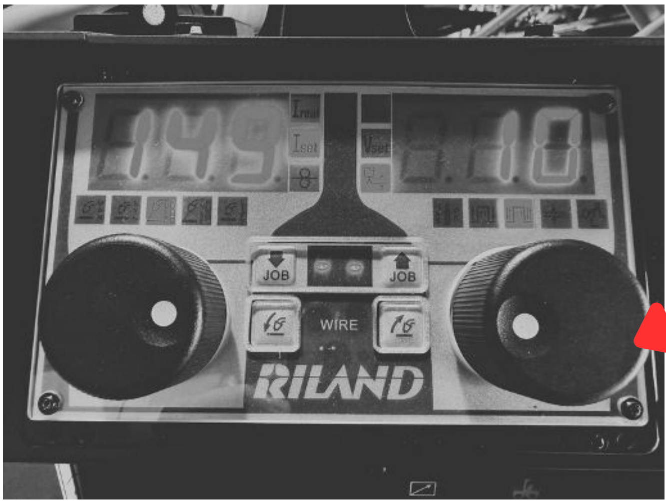
Rotate the Left Knob to the Right. Until You See "F16"

Use the Right Knob To Turn ON / OFF

Hold the Right Knob for 5 seconds.

Click the left knob to abort the save, Click the right knob to save your job

HOW TO ADJUST HOT START



Hold the Right Knob for 5 Seconds

Rotate the Left Knob to the Right. Until You See "F22"

Use the Right Knob To Increase Or Decrease Hot Start From 0-10

Hold the Right Knob for 5 seconds.

Click the left knob to abort the save, Click the right knob to save your job