

# OPERATION MANUAL



## TOPGUN 3200 AC/DC TIG

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## 1. SAFETY RULES, DESCRIPTION OF SYMBOLS

It is absolutely necessary to read the following signs and safety rules to protect the health and life of yourself and others.



Read the instructions before starting the device. Use only original equipment supplied by the manufacturer.



Some components may explode. Always use a face shield and protective clothing with long sleeves.



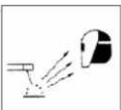
Use approved face shields and welding shields. Always use protective clothing designed for welders. Metal splinters can damage your eyes. Always use safety glasses.



Electric shock can result in death. Do not touch electrical components when the device is connected to power. Use dry and complete protective gloves and protective clothing.



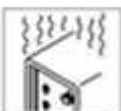
Gases and vapors can be hazardous to health. Welding gases and fumes are emitted during the welding process. Inhalation of these substances can be hazardous to health.



Eye protection with welding filters. Depending on the current used, use protective shields with appropriate filters.



Moving parts of the device can cause injuries.



Continuous operation for too long can cause the device to overheat. Wait until the device cools down. Follow the guidelines in the chapter "Thermal efficiency and protection"



Damaged technical gas cylinders may explode. The cylinders contain high pressure gas. Make sure that cylinders are handled and stored in accordance with health and safety and fire protection requirements.



Welded parts may burn.



The protruding wire from the torch is sharp and can cause skin puncture.



Danger of fire and explosion. During welding work, a fire may result. The welding station must be remote and protected against flammable and explosive materials.



The magnetic field can disrupt the functioning of pacemakers. Consult a doctor before starting work.



Do not weld at height without proper protection.



A device falling or falling over may cause injury.

- Before starting work, specify the place where the device is to be used.
- The device should be connected to the network so that it can be easily manipulated at all times. The power cord should not be taut during operation.
- Do not use the device on a surface that may cause it to tip over.
- Only use the transport handle to move the device.
- The device must not be used to defrost pipes.
- Work on the device may only be carried out by qualified personnel staff with up-to-date training and permits.
- Incorrect use is prohibited.

In situations not specified in the instructions, always follow the safety rules and regulations in force at the place where the device is operated.

### ATTENTION

The heating test was carried out at ambient temperature and the duty cycle (load factor) at 40C was determined as a result of the simulation.

The device is intended for conducting professional welding works in industrial conditions by personnel having valid qualification certificates in accordance with applicable standards.



WARNING: This Class A equipment is not intended for use in residential areas where electricity is supplied through the public low voltage network system. There may be potential difficulties in ensuring electromagnetic compatibility at these locations due to conducted and radiated disturbances.

The device should be operated in accordance with the Regulation of the Minister of Economy of April 27, 2000. on health and safety at work during welding (Journal of Laws No. 40 item 470).

Keeping this user manual and following the guidelines outlined in it will allow for proper maintenance of the device in the future. The following warnings are intended to ensure user safety and environmentally friendly operation. Read the entire manual carefully before installing and using the device.

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- After opening the packaging, check that the device has not been damaged during transport. If in doubt, contact our service department.

The device should only be used by a trained employee or consumer.

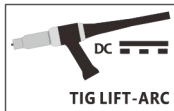
When installing the appliance, you should entrust all electrical activities to a qualified electrician.

## 2. APPLICATION

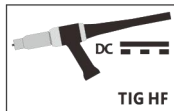
TOPGUN 3200 AC/DC TIG devices are intended for manual welding with a non-fusible electrode in a gas shield - GTAW (TIG AC / DC) and a coated electrode - SMAW (MMA). Industrial devices TOPGUN 3200 AC/DC TIG are microprocessor welding sources based on IGBT technology, adapted for welding carbon, stainless, acid-resistant steel, copper, brass, magnesium, titanium and all aluminum alloys.

## 3. DESCRIPTION OF THE MACHINE

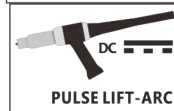
TOPGUN 3200 AC/DC TIG series of devices allows welding in the following modes:



TIG DC lift-arc - In the TIG (Tungsten Inert Gas) method, an electric hatch. strikes in inert gas (argon), between the welded part and the non-fusible electrode made of pure tungsten or tungsten with additions. In the TIG lift-arc mode, the arc strikes when the electrode makes contact with the part being welded.



TIG DC HF - to completely eliminate the possibility of weld contamination tungsten, it is recommended that the electrode does not touch the work piece; for this purpose, contactless touch ignition is used when using high-frequency charges generated by the built-in ionizer.



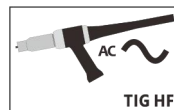
TIG DC PULSE Lift-arc - ignition of the arc occurs by contact of the electrode with the welded material, the pulse function allows welding of heavy elements through periodic changes in current.



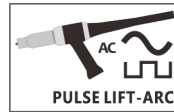
TIG DC PUL S HF - HF non-contact ignition by means of an ionizer in the TIG DC PULS mode.



TIG AC lift-arc - a function that allows aluminum welding through the use of alternating current, which means aluminum welding, cathodic cleaning. By setting the AC BALANCE parameter, i.e. the balance of alternating current, it is possible to adjust the ratio of its phase duration relative to each other.



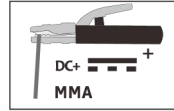
TIG AC HF - analogous function enabling alternating current aluminum welding, ignition occurs contactless through high-frequency current generated by the ionizer.



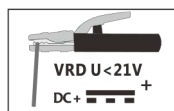
TIG AC PULS lift-arc - welding in this mode is a combination of the use of alternating current with pulse, which allows welding of very thin aluminum parts. The tuk ignition occurs through the contact of the electrode with the workpiece. TIG AC PULS HF - a function that allows welding of aluminum elements with a small thickness. Non-contact ignition through the use of an ionizer.



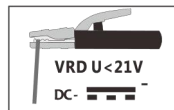
MMA DC + - in the MMA method a coated electrode is used, consisting of a metal core covered with a lagging. An electric tuk is produced between the end of the electrode and the welded material. Tuk striking occurs by touching the electrode tip to the workpiece. MMA DC + means welding with positive polarity - more heat is released in the material and less in the electrode.



MMA DC- - the difference between MMA DC + lies in the fact that the polarity in MMA DC mode is clear, so the distribution of the heat is the opposite - more heat is emitted on the electrode, and less in the welded material.




MMA VRD DC + - available in MMA DC mode + VRD (Voltage Reduction Device - function module that reduces the quiescent (no-load) voltage of the device's secondary circuit. Increases safety and reduces the risk of electric shock. The function turns off and on welding power, when resistance between the terminals is measured during welding.



MMA VRD DC- - available in MMA DC mode - the VRD (Voltage Reduction Device) function works in the same way as MMA VRD DC +, the difference is the negative polarity.

**4. TECHNICAL SPECIFICATIONS**

Parameter		TOPGUN 3200 AC/DC TIG
Output current range TIG DC [A]		10-320
Output current range TIG AC [A]		10-320
Efficiency [A]	30%	320
	60%	226
	100%	175
Waveform on AC mode		 <ul style="list-style-type: none"> <li>Square Wave</li> <li>Sine Wave</li> <li>Triangular</li> <li>Ramp Wave</li> <li>Triangular growing</li> <li>Triangular sloping</li> <li>Trapezoidal wave</li> </ul>
AC current frequency	range [Hz]	40-100
AC balance [%]		10-90
Pre-Flow / Post-Flow AC / DC mode [s]		0-10/0-10
initial/final current DC mode [A ]		10-320
initial/final current AC mode [A ]		20-320
Pulse base current DC	[A]	10-304
Pulse base current AC	[A]	20-304
Pulse current frequency	[Hz]	1-200
Pulse modulation [%]		5-95
arc ignition function		HF
Load voltage [V]		71
Welding current range	MMA [A]	30-250
Efficiency [A]	40%	320
	60%	261
	100%	202
Arc Force [%]		0-100
Power consumption [KVA]		TIG: 9.2/MMA: 9.5
Degree of protection		IP21S
power voltage		3~415 V 50 Hz
Insulation class		F
Dimension [mm ]		810x510x800
Net weight [kg]		53.8

## 5. EQUIPMENT

### STANDARD PACKAGE

1. WP-18 WATER COOLING TORCH WITH CABLE X8 METERS
2. EARTH CLAMP WITH CABLE X5 METERS
3. 3 MTR QUICK CONNECT GAS HOSE WITH FITTINGS
4. TOPGUN TIG CONSUMABLE KIT
5. MANUAL

## 6. TIG / MMA WELDING BEFORE YOU WORK

- Specify the location where the device is operated.
- Check the voltage, number of phases and frequency of the supply current before switching on mains devices.
- Supply voltage parameters with technical data are given in this chapter and on the type plate of the device.
- Check the connection of the machine's earth wires and the power supply wire.
- Ensure that the power can cover the input power demand of this device in the conditions of its operation.
- Fuse size and parameters power cord are provided in the technical data and on the rating plate.
- Remove any flammable materials from the welding area.
- Do not use the device on a stable surface.
- Use suitable protective clothing for welding: gloves, apron, work boots, mask or a helmet with certification.

## 7. WORKING CONDITIONS

- Working temperature: -10 ° C to 40 ° C
- It is forbidden to work in conditions of high humidity.
- Protect against flooding (in case of flooding, immediately turn off the device, power sources, contact the service center). Avoid working in the environment of flammable, aggressive gases and dust.
- Ensure good dissipation. Avoid interference with the cooling system.
- It is forbidden to cover the ventilation openings of the device.
- Do not overload the device. Maintain the correct machine work cycle.
- Do not allow the maximum permissible voltage fluctuations from the mains to be exceeded.

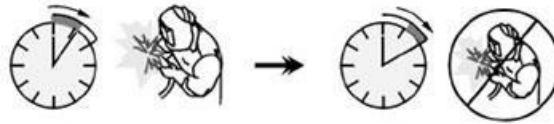
The duty cycle (efficiency) is always given in the technical data table and on the device rating plate.

It is determined according to the requirements specified in the EN 609741 standard. It is expressed as a

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percentage for a 10-minute work cycle. Determines the time enabling the device to work under maximum / set load. When the duty cycle is exceeded, the device parameters drop temporarily or the overload protection switches on.



The operator must wait a certain amount of time to cool down the device, depending on degree of device overload and external conditions it may take a few to several minutes.

**Efficiency 40%** 4 minutes of continuous operation of the device under maximum / set load. **Efficiency 60%** 6 minutes of continuous operation of the device under maximum / set load. **Efficiency 100%** uninterrupted operation of the device under maximum / set load.

## 8. DESCRIPTION OF THE CONTROL PANEL FUNCTIONS



1. LCD display
2. Left function key when welding parameters are selected. (Additionally holding for 5 to save settings. View all welding parameters).
3. Button to return to the previous menu. (Additionally held for 5 seconds to return to factory settings (RESET))
4. Adjustment knob,  
 Turn - Select and Adjust.  
 Press - Confirm and Switch to next.  
 Long press for 5 second in welding mode setting to turn on/off water cooling.
5. Button confirming selected settings and entering the next menu. (in addition, holding for 5 seconds to recall setting).
6. Function key "right" when selecting welding parameters.

## 9. DESCRIPTION OF THE SYSTEM



### B. CHOICE OF WELDING METHOD

Use the button 2



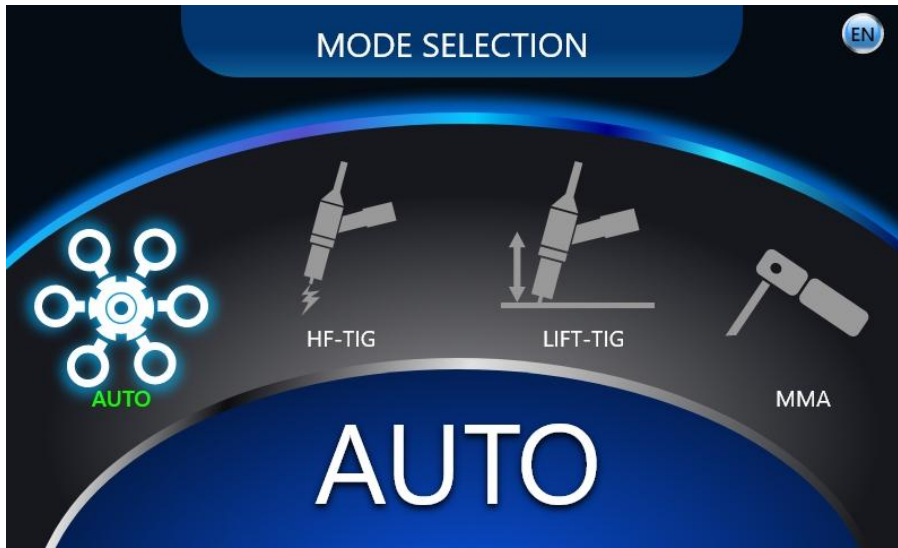
to choose welding method

press button 5



to confirm.

C. TIG AUTO MODE



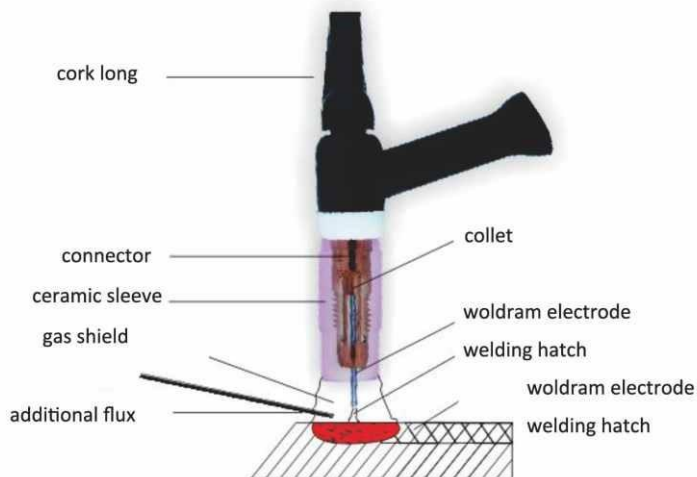
TIG AUTO MODE - synergic settings. The user selects the basic parameters such as the type of material and the thickness of the material being welded. Other parameters of the device are selected automatically using the database of uploaded programs.

<p>The screen shows 'TIG SYNERGY SETTING' with 'Current' at 60 A and 'Thickness' at 2.0 mm. A circular dial lists materials: Carbon steel, Stainless steel, Al-Mg, Al-Si (highlighted), and Cu-Si. A 'Material selection' button is visible.</p>	<p><b>Step 1 material selection</b></p> <p>The user selects the welded material from the list of alloys</p>
<p>The screen shows 'TIG SYNERGY SETTING' with 'Current' at 60 A and 'Thickness' at 2.0 mm. A circular dial shows '2.0 mm' selected. A 'Thickness' button is visible.</p>	<p><b>Step 2 choice of the thickness of the plate</b></p> <p>Choose the welding plate thickness. The device will automatically change the voltage the current.</p>

**D. TIG mode****GENERAL OPERATION**

In the TIG method (Tungsten Inert Gas), the electric arc ignites in an inert gas (argon) shield, between the welding element and the non-fusible electrode, made of pure tungsten or tungsten with additives. The TIG method is especially recommended for aesthetic and high-quality bonding of metals, no labor-intensive mechanical processing after welding. However, this requires proper preparation and cleaning of the edges of both welded elements. The mechanical properties of the additive material should be similar to the properties of the welded parts. The role of shielding gas is always played by pure argon, supplied in quantities depending on the welding current set.

Lynx. 1 TIG welding process, diagram



Negative polarity is used for most TIG welding operations. The welding gun is connected to the negative pole, while the earth gun to the positive pole. In this way, the electrode consumption is reduced, the amount of heat accumulated in the welded material increases.

**PREPARATION OF WOLFRAM ELECTRODES**

Preparation of tungsten electrodes depending on the type of welding current

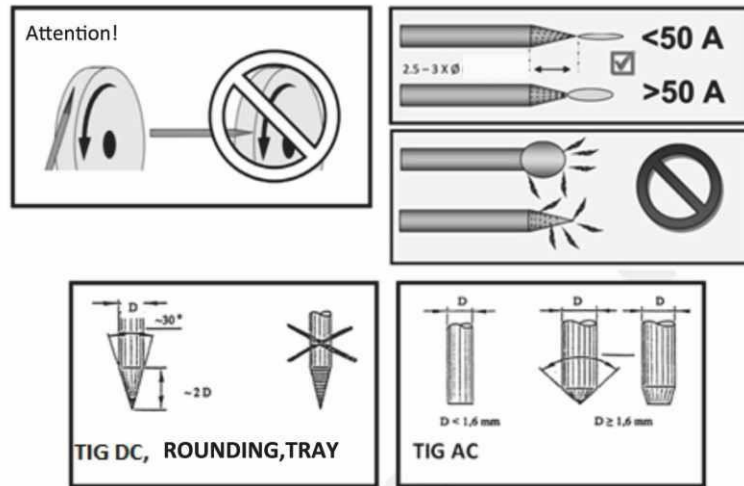


Table 1. Choice of electrode diameter - steel welding

Current range welding [A]	The diameter of electrode [ mm]	Material thickness [mm]
Stainless steel		
10-50	0.5	0.5-1.0
20-80	1.0	1.0-1.5
50-160	1.6	1.5-3.0
110-250	2.4	3.0-5.5
200-350	3.2	5.5-8.0


Table 2. Choice of electrode diameter - aluminum welding

Current range welding [A]	diameter of the electrode [mm]	Material thickness [mm]
Aluminum welding		
20-75	1.0	0.5-1.0
25-110	1.6	1.0-2.0
60-160	2.4	2.0-3.0
110-225	3.2	3.0-5.0
160-310	4.0	5.0-8.0
240-370	4.8	8.0-10.0

Table 3. Choice of electrode diameter - CuZn alloy welding

Current range welding [A]	The diameter of electrode [ mm]	Material thickness [mm]
Cu Alloy		
10-20	1.6	$\leq 2.0$
15-25	2.0	
17-30	2.5	
20-35	3.2	
35-50	4.0	
50-70	5.0	
65-100	6.3	

TIG DC WELDING

	<p><b>AC / DC welding current selection</b> -select DC mode</p>
	<p><b>Select operation mode on the right side</b> -select 2T/4T</p>
	<p><b>Pulse or continuous current welding</b> description of pulse welding parameters is on page19)</p>
	<p><b>Synergic mode / manual mode</b> In synergic mode, the user only need to adjusts the basic welding parameters. The device constantly checks the correctness of settings. Automactically suggest the plate thickness on the left.</p>



	<p><b>Control of welding parameters panel/remoet control</b></p> <p>potentiometer in the welding gun or pedal</p>
	<p><b>Pre-flow-time before ignition of the arc</b></p> <p>The welding arc will fire any time afte the set gas flow time before welding. For a 4m long handle max. suggested time: 2 seconds</p>
	<p><b>Start current - 4 clock mode</b></p> <p>Take-off current should be 70 to 90% values of the basic welding current. It is used to avoid remelting and melting in the initial welding phase.</p>
	<p><b>Up slope</b></p> <p>Time at which the start current reaches the value of the main welding current.</p>

	<p><b>Peak current</b> Basic welding current.</p>
	<p><b>Down slope</b> Time at which the peak welding current will pass to the final current (crater filling).</p>
	<p><b>Crater current</b> The final current should be 70 to 90% values of the basic welding current. It is used for the correct purpose end of weld in its final phase (crater filling). Very important when welding alloys aluminum.</p>
	<p><b>Post Flow</b> Attention ! After the arc has expired, it should be keep the torch in the allowing position to cool the welded area with gas.</p>



**Welding parameters - summary chart**

The screen shows all parameters welding selected by the user.

TIG PARAMETER LIST			Save JOB 18
AC/DC	2T/4T	Pulse	
AC	4T	ON	
AC Wave	AC Auto	Remote	
3	OFF	OFF	
Start current	Pre Flow	AC frequency	
30	4.0	60	
Peak current	Post Flow	AC balance	
250	3.2	21	
Base current	Up slope	Pulse frequency	
92	9	9	
Crater current	Down slope	Pulse duty cycle	
158	3	29	

**Saving data in the device's memory**

TIG PARAMETER LIST			Call JOB 18
AC/DC	2T/4T	Pulse	
AC	4T	ON	
AC Wave	AC Auto	Remote	
3	OFF	OFF	
Start current	Pre Flow	AC frequency	
30	4.0	60	
Peak current	Post Flow	AC balance	
250	3.2	21	
Base current	Up slope	Pulse frequency	
92	9	9	
Crater current	Down slope	Pulse duty cycle	
158	3	29	

**Using saved programs**

TIG DC (direct current) welding is used for welding all types of steel, alloys copper and some non-ferrous metal alloys. A distinction is made between DC negative and DC + positive polarity welding on a TIG welding torch. Most welding work is carried out using DC negative polarity (used for welding e.g. carbon steel, alloy steel, titanium, nickel, etc.)

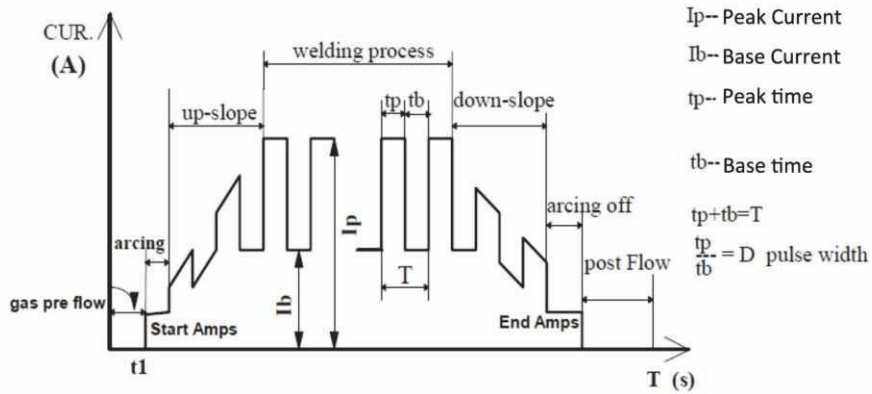
The use of DC + positive polarity is recommended for welding zinc, copper and its alloys (bronzes, brass). However, it should be remembered that the use of positive polarity causes high wear fusible electrode.

Table 4. Heat distribution and its impact on DC TIG welding process

Polarity	Negative (DC-)	Positive (DC+)
Penetration	Deep and narrow	Shallow and wide
Efficiency heat electrode	Very good	BAD - high wear
Heat distribution	70% - material	30% - material
	30% - electrode	70% - electrode

**WELDING PULSE WELDING - TIG PULSE**

Lynx 3 TIG welding process -PULSE



**SETTING OF THE PULSING CURRENT PARAMETERS OF TIG 3200 AC / DC DEVICE**

	<p><b>Pulse or continuous current welding</b> Select the pulse mode</p>
	<p><b>Select the pulse mode</b> The parameter specifies the time proportion between welding with peak current in relation to the base current.</p>
	<p><b>Pulse frequency</b> Parameter specifying the number of changes between the peak current value and the base current value in one second.</p>
	<p><b>Base current</b> The base current should be 80 to 90% of the peak current. This function is used to reduce the influence of the heat zone on the area of the material being welded.</p>

**ALTERNATING CURRENT WELDING-TIG AC**

TIG AC (AC) welding is used to connect magnesium or aluminum components and their alloys. During AC welding, polarity changes between the poles positive and negative. A positive halfwave allows the oxide surface layer to penetrate, while a half-wave negative, which is accompanied by a decrease in the temperature of the electrode and heat flow to the workpiece, promotes deeper arch penetration. By adjusting the AC wave balance, you can fine-tune the proportions between spreading and penetrating electric arc.

For TIG AC welding, the most common electrode is pure tungsten (green) or tungsten with the addition of lanthanum (gold color - recommended for low welding currents); preparation of the electrode consists in appropriate blunting of the tip, which under the influence of high temperature and electric arc takes a gradually rounded shape.





Both argon and helium can play the role of shielding gas in this welding method. generally however, argon is used because it is cheaper and produces a more stable arc, which translates into for greater maneuverability. However, it works better with some types of welds helium or a mixture of helium and argon, which in addition to higher welding speeds also allows deeper penetration.



**Welding current selection** Select a mode AC






**Selection of the handle button operating mode**  
2T/4T

	<p><b>Pulse or continuous current welding</b></p>
	<p><b>Synergy mode / manual mode</b> In synergic mode the user regulates only basic welding parameters. The device constantly checks the correctness settings, suggesting the user thickness material to be welded (see screen for current). In manual mode all parameters welding are manually adjusted by user.</p>
	<p><b>Control of welding parameters from the panel / remote control</b> (potentiometer in welding gun or pedal)</p>
	<p><b>Selection of AC wave form:</b></p> <ol style="list-style-type: none"> <li>1. Square Wave</li> <li>2. Sine Wave Triangular</li> <li>3. Ramp Wave</li> <li>4. Triangular growing</li> <li>5. Triangular sloping</li> <li>6. Trapezoidal wave</li> </ol>

	<p><b>Pre-flow</b></p> <p>Attention !</p> <p>The welding arc will catch fire any time after the set gas flow time before welding. For a 4m long handle max. suggested time: 2 seconds.</p>
	<p><b>Welding peak current</b></p> <p>Basic welding current</p> <p>ATTENTION !</p> <p>The characters in the top frame match suggested thickness of welded material.</p>
	<p><b>AC balance</b></p> <p>Parameter specifying the heat ratio carried between the electrode tungsten and welded material. It enables welding of thin elements in the case of heat transfer on the electrode or reaching a larger one remelting in a heat transfer situation from the electrode to the workpiece. See description page 25.</p>



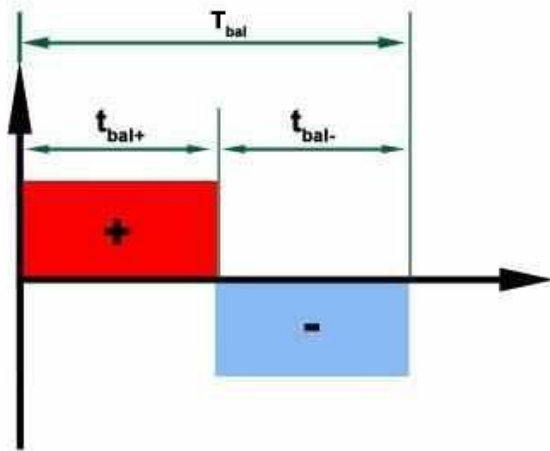
	<p><b>AC frequency</b></p> <p>Number of voltage and current changes AC welding in one second.</p>
	<p><b>Post flow</b></p> <p>Attention! After the welding arc has expired, keep the torch in a position that allows the welding area to cool down with shielded gas.</p>
	<p><b>Welding parameters-summary graph</b></p> <p>The screen shows all welding parameters selected by the user.</p>

	<p><b>Saving data in the device's memory</b></p>
	<p><b>Using saved programs</b></p>

**AC Balances settings**

AC balance is the ratio of the positive current  $t_{bal+}$  to the negative  $t_{bal-}$  current in a single cycle Tbal alternating current waveform. The ability to adjust the balance allows you to control the temperature of the electrode and the workpiece, including the welder has an effect on the depth of penetration and the width of the weld. In a situation where balance is positive (longer duration  $t_{bal+}$  compared to the duration  $t_{bal-}$ ) the electrode heats up faster than welded material - we get less penetration. In a situation where the balance is negative (longer duration  $t_{bal-}$  in relation to  $t_{bal+}$ ), the electrode heats up more slowly than the welded material - we get more penetration.

Lyn. 4 TIG 3200 AC/DC Balance AC 50%

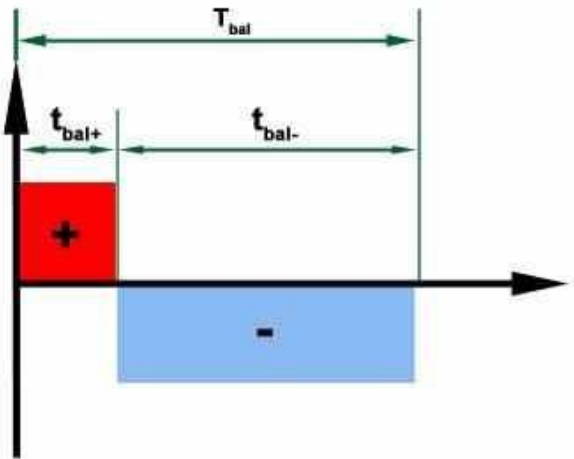


Turning the adjustment dial to the left and setting the AC Balances below 50 will reduce the time

$t_{bal+}$  duration and proportional extension of the  $t_{bal-}$  duration Fig.

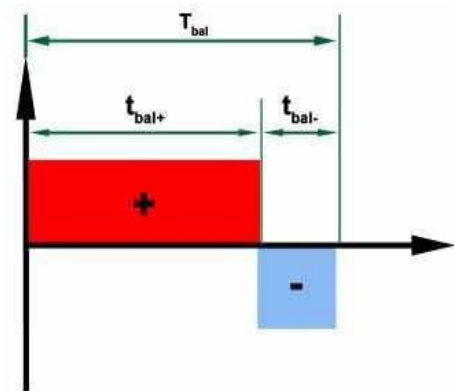
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Lyn. 5 TIG 3200 AC/DC Balance AC 25 %



Turning the control knob to the right and setting AC Balances above 50 will shorten duration  
 duration  $t_{bal-}$  i proportional increase in duration  $t_{bal+}$

Rys. 6 TIG 3200 AC/DC Balance AC 75%



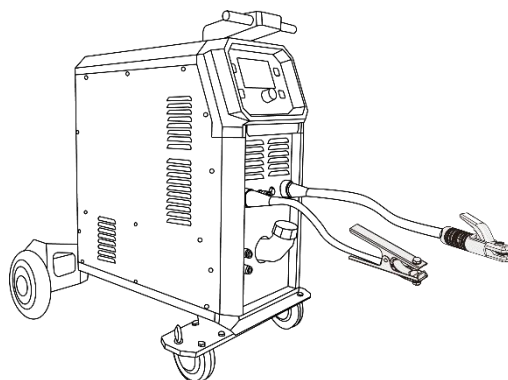
## E. MMA MODE






Arc welding with a coated electrode is also called the MMA (Manual Arc Welding) and this is the oldest and most universal method of arc welding.

The MMA method uses a covered electrode, consisting of a metal core covered with lagging. An arc is created between the end of the electrode and the workpiece electric. Arc ignition is created by touching the electrode with the end of the workpiece.

The welder feeds the electrode as it melts into the workpiece to hold the arc with a fixed length and at the same time shifts its melting end along the welding line. Melting cover the electrodes give off protective gases that protect liquid metal from surrounding influences atmosphere, and then solidifies and forms a slag on the surface of the lake, which protects the solidifying weld against cooling down too quickly and harmful environmental influences.



Connect the welding and mass leads to the appropriate output sockets on the welding machine, in accordance with the polarity recommended by the manufacturer of the electrodes you intend to weld.

	<p><b>Welding current setting</b></p> <p>Spin the knob to adjust welding current.</p>
	<p><b>HOT-START</b></p> <p>Function facilitating the start of welding. When the arc strikes, the welding current is temporarily increased to heat up the material and electrode at the point of contact, and to properly shape the penetration and weld face at the initial stage of welding.</p>
	<p><b>ARC FORCE</b></p> <p>Stabilizes the arc regardless of fluctuations its length, reduces the amount of spatter.</p>



#### VRD

The device has a VRD (Voltage Reduction Device), which for welding mode MMA with rutile and basic electrodes reduces no-load voltage, which significantly increases user security.

**VRD CAN ONLY BE TURN ON IN MMA MODE DUE TO REGULATION IN AU.**

## 10. MAINTENANCE

Regular cleaning and maintenance of the device will reduce the risk of unwanted faults. Devices are factory-fitted with service seals that will break before the warranty period may expire.

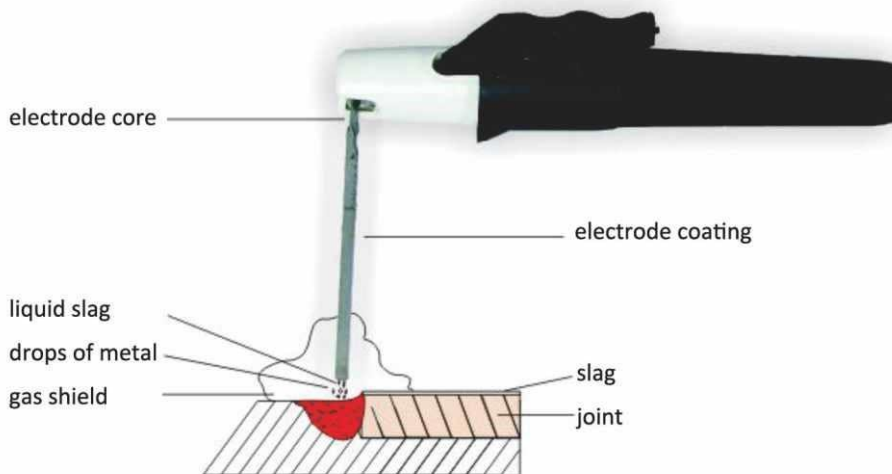
Regularly clean the inside of the device through the ventilation holes, clean and dry compressed air (compressed air in an aerosol for use in electronics, compressed air produced by the compressor - subjected to appropriate filtration \*).

\* Minimal degree of compressed air filtration - 5µm pre-filter, oil mist filter.

**BEFORE ANY MAINTENANCE, SWITCH OFF DEVICE, AND THEN DISCONNECT THE PLUG FROM THE POWER SOURCE!**

**MAXIMUM PERMISSIBLE PRESSURE AIR USED FOR INTERIOR FAN**  
THE DEVICES ARE 3 BAR. USING THE AIR AT HIGHER PRESSURE MAY DAMAG ELECTRONIC SUBASSEMBLIES LOCATED INSIDE THE DEVICE.

Lyn. 7 MMA welding process, diagram



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The procedure of cleaning the interior of the device (illustrative pictures):

Lyn. 8 Purge of the device interior, compressed air procedure. -



		
<p>Blow out the front of the device</p>	<p>Blow out sideways vents devices</p>	<p>Blow the appliance fan thoroughly</p>

Periodic maintenance can also be carried out by an authorized service center.



**ERROR CODES**

In special cases, the following messages may appear on the display indicating a problem with the operation of the device. Errors on the display will appear until the defect is removed.

	<p><b>Error 001 Overload</b></p> <p>The device is operated in a step exceeding its rated efficiency. The message may also appear when using an extension cord with the wrong diameter. After this message appears, please turn off the devices for 5 minutes. If it is still displayed after being turned back on this message should be contacted with the service.</p>
	<p><b>Error 002 High temperature</b></p> <p>The device is equipped with a safety device before overheating. If found by too high sensors installed temperature (e.g. failure of the fan or its lock) the device turns off, automatically, and this message will appear on the display.</p>

**11. Trouble shooting**

Table 5. trouble shooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
<b>DEVICE FUNCTIONING PROBLEMS</b>		
Device does not turn on	The device is not connected to the network supply, the device does not receive input voltage, defective switch	xCheck if the device is connected is to the mains xCheck the voltage at the socket at assistance of a specialized meter Check the condition of the fuses
The machine stopped welding, the thermal protector light turn	The safety system turn on to protect the device	x Check if there are Excessive voltage. x Check if the machine is overheated if so - wait until the welding machine cools down
<b>PROBLEMS DURING WELDING PROCESS</b>		
(MMA) Difficulties in maintaining the arc, breaking the arc	Wet electrode; not suitable prepared welding material	x Check if the electrode was prepared for welding and is stored according to guidelines procedure. Check if the material surface was purified.
(MMA ) Excessive splatter	Welding current too high; too small electrode diameter; incorrect connection of welding poles; inadequately prepared material for welding	x Check if the welding current is within the range specified by the electrode manufacturer x Check that the electrode thickness is selected according to the thickness of the workpiece x Check welding polarity - is it compatible with the electrode manufacturer's recommendation x Check if the surface of the
(TIG) Excessive wear of the fusible electrode.	Insufficient shielding gas flow; wrong electrode diameter up to welding current; inverted welding polarity, not suitable gas shield.	x Increase shielding gas flow x Replace the non-fusible electrode with an appropriate diameter x Check the welding polarity, the TIG torch should be connected to the negative pole, the ground clamp to the positive pole  x Check shielding gas - suitable

<p>(TIG) Difficulties with ignition of the arc</p>	<p>Incorrectly selected consumables TIG torch (connector, collet, electrode)</p>	<p>Select the handle components x for these same parameters - diameter.</p>
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## 12. ELECTRICAL DIAGRAM

Lyn. 9 Electrical diagram

