



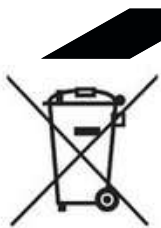
User Manual TIG Welder Novi AC/DC 315 incl. water cooler Type - NVT315ACDCW



Read this manual carefully before using the welding machine.

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Dispose of electrical appliances in an environmentally friendly manner. Do not throw electrical appliances in with household waste. In accordance with European Directive 2012/19/EU on electronic devices, they must be collected separately for recycling. Contact your local authorities for available disposal options for your worn-out appliance.

1 SAFETY REGULATIONS

1.1 General Safety Regulations

WARNING: Read and understand all instructions. Failure to follow all instructions listed below may result in serious injury. The warnings, points of attention, and instructions discussed in this manual cannot cover all possible circumstances or situations that may arise. The user must understand that common sense and caution are factors that cannot be built into this product but must be applied by the user themselves.

- Follow the instructions in this manual.
- Switch off the welding machine when not in use.
- Connect the ground cable as close as possible to the welding area to ensure proper grounding.
- Ensure that no part of the body comes into contact with the welding wire when you are simultaneously in contact with the material being welded, the ground, or an electrode of another welding machine.
- Do not weld from an uncomfortable or unstable position. Always ensure a firm and safe working posture to prevent accidents. Wear a safety harness when working at height.
- Do not let cables hang over or around your body.
- During welding, wear a fully protective welding helmet with the correct degree of darkening (see safety standard ANSI Z87.1) and safety glasses.
- Wear suitable gloves and protective clothing to prevent your skin from being exposed to hot metal, UV radiation, and infrared radiation.
- Check the earth cable, power cable, and welding cable to ensure that the insulation is not damaged. Never replace or repair damaged parts yourself, but always have this done by a certified company.
- Check all parts to ensure they are clean and in good working order before using the welding machine.
- Do not overload or overheat the welding machine. Ensure sufficient cooling time between work cycles.
- Keep hands and fingers away from moving parts.
- Never point the welding torch at yourself or others.
- Always use this welding machine within the prescribed duty cycle to prevent excessive heat generation and malfunctions.
- Keep the area where you are going to weld free of flammable materials.
- Always ensure that a fire extinguisher is within easy reach of your welding area.
- Have this equipment installed and operated exclusively by a qualified person.
- Ensure that the workspace is clean, dry, and well-ventilated. Do not use the welding machine in damp, wet, or poorly ventilated areas.
- Always have your welding machine serviced by a qualified technician, in accordance with local, regional, and national regulations.
- Always be aware of your work environment. Ensure that other people, especially children, stay away while you are bothering someone.
- Ensure that harmful light rays from the welding arc are not visible to bystanders.
- Place the welding machine on a sturdy workbench or trolley so that it remains stable and cannot tip over or fall over.
- Wear dry protective clothing: jacket, shirt, gloves, and insulated footwear.
- Isolate yourself from the workpiece. Avoid contact with the workpiece or with the ground.
- Do not attempt to repair or maintain the welding machine while it is switched on.
- Check all cables and cords for exposed wires and replace them immediately if damage is found.
- Use only recommended replacement cables and cords.
- Always attach the ground clamp to the workpiece or workbench as close as possible to the welding area.
- Never touch the welding wire and the earth or an earthed workpiece at the same time.
- Do not use a welding machine to thaw frozen pipes.

1.2 Specific safety regulations and warnings

1.2.1 Electric shock



- Wear dry protective clothing: jacket, shirt, gloves, and insulated footwear.
- Isolate yourself from the workpiece. Avoid contact with the workpiece or with the ground.
- Do not attempt to repair or maintain the welding machine while it is switched on.
- Check all cables and cords for exposed wires and replace them immediately if damage is found.
- Use only recommended replacement cables and cords.
- Always attach the ground clamp to the workpiece or workbench as close as possible to the welding area.
- Never touch the welding wire and the earth or an earthed workpiece at the same time.
- Do not use a welding machine to thaw frozen pipes.

WARNING: Electric arc welding machines can cause an electric shock that can result in injury or death. Touching live parts can cause fatal electric shocks and severe burns. During welding, all metal parts connected to the welding wire are under electrical voltage. Poor ground connections pose a hazard; therefore, always ensure the ground cable is properly connected before starting to weld.

1.2.2 The vapor and the gas



- Do not inhale fumes released during welding. Ensure that the air you breathe is clean and safe.
- Work exclusively in a well-ventilated area or use a ventilation system to remove welding fumes from the work environment.
- Do not weld on coated materials (such as galvanized steel, cadmium-plated materials, or materials containing zinc, mercury, or barium). These can release harmful fumes that are dangerous to inhale. If necessary, use a fan, respiratory protection with air supply, or remove the coating in the welding area.
- The fumes released when certain metals are heated are extremely toxic. Consult the material's safety data sheet (MSDS/SDS) for the manufacturer's instructions.
- Do not weld near materials that release toxic fumes when heated. Fumes from cleaning agents, sprays, and degreasers can be highly toxic when heated.

WARNING: Vapors released during the welding process displace clean air and can lead to injury or death.

1.2.3 UV and IR arc radiation



- Always use a welding mask that covers your entire face, from the neck to the top of the head and to behind both ears.
- Use a welding filter that complies with ANSI standards and also wear safety glasses. For welding machines with an output current of up to 160 amperes, a welding filter with protection grade 10 is recommended; above 160 amperes, protection grade 12. Consult ANSI standard Z87.1 for more information.
- Cover all unprotected skin that may be exposed to the welding arc with protective clothing and safety shoes. Flame-retardant fabrics or leather shirts, jackets, trousers, and overalls provide suitable protection.
- Use welding screens or other shields to protect other persons from the arc radiation released during welding.
- Warn people in the welding area before igniting a welding arc, so that they can protect themselves.

DANGER: The welding arc produces ultraviolet (UV) and infrared (IR) radiation that can cause injury to the eyes and skin. Never look at the welding arc without suitable eye protection.

1.2.4 Fire hazard



- Do not use an electric arc welding machine in areas where flammable or explosive materials are present.
- Remove all combustible materials within a radius of 10 meters (35 feet) of the welding arc. If removal is not possible, completely cover these materials with fire-resistant covers.
- Take precautions to prevent flying sparks from causing fires or explosions in hidden spaces, cracks, or other places that are not immediately visible.
- Always keep a fire extinguisher within reach for emergencies.
- Wear clean, oil-free clothing without pockets or flaps where sparks can collect.
- Do not carry flammable objects with you, such as lighters or matches.
- Attach the ground cable as close as possible to the welding area to prevent unwanted current paths that could cause electric shocks or fire hazards.
- After welding, trim the excess welding wire to approximately 6 mm ($\frac{1}{4}$ inch) to prevent unintended arc formation.

WARNING: Do not weld containers or pipes that contain or have contained flammable gases, liquids, or other flammable substances. Welding produces sparks and heat that can ignite flammable and explosive materials.

1.2.5 Hot materials



- Do not touch welded materials with bare hands.
- Do not touch the nozzle of the TIG torch immediately after welding. Wait until it has cooled down sufficiently before touching it.

Warning: Welded materials are hot and can cause severe burns if handled improperly.

1.2.6 Sparks and flying debris



- Wear suitable personal protective equipment at all times: ANSI-approved safety goggles or a face shield, a welding helmet, and hearing protection (earplugs) to prevent sparks from entering your ears or hair.

Warning: Welding produces hot sparks that can cause injury. Removing slag from welds can cause flying particles.

1.2.7 Electromagnetic field



- Electromagnetic fields can cause interference in various electrical and electronic devices, such as pacemakers.
- Consult your doctor before using an electric arc welding machine or cutting device.
- Keep persons with a pacemaker away from the welding area during welding.
- Do not wrap cables around your body while welding.
- Bundle the TIG torch line and the ground cable together where possible.
- Keep the TIG torch lead and the ground cable on the same side of your body.

1.2.8 Shielding gas cylinders can explode



- Never expose cylinders to high temperatures, sparks, open flames, mechanical shocks, or welding arcs.
- Do not touch the cylinder with the TIG torch.
- Never weld on a gas cylinder.
- Always secure cylinders upright to a transport trolley or a fixed object.
- Keep cylinders away from welding work and electrical circuits.
- Always use the correct pressure regulator, gas hose, and couplings for the specific application.
- Do not look inside the shut-off valve or the valve when you open it.
- If possible, always use the cylinder protective cap.

WARNING: High-pressure gas cylinders can explode if damaged. Therefore, always handle them with the utmost care.

Important notes:

- If the welding machine is used for an extended period, the thermal protection light on the control panel may illuminate. This indicates that the internal temperature of the welding machine has exceeded the permissible limit. In this case, stop welding and wait until the machine has cooled down and the indicator light goes out. You can then resume welding.
- Switch off the main switch and close the argon gas valve before temporarily leaving the workplace or after the welding work is completed.
- Welders must wear work clothing made of sturdy canvas and a welding helmet or face shield for protection against arc light and heat radiation.
- Install light-tight shields around the workplace to protect others from the effects of arc radiation.
- Keep flammable and explosive materials away from the welding area.
- Ensure that every power connection of the welding machine is correctly connected and grounded.

1.2.9 Residual risks

Despite the implemented safety measures, the following residual risks remain:

- Exposure to UV and IR radiation from the welding arc.
- Exposure to welding fumes and fumes.
- Burns caused by hot workpieces, electrodes, and torch parts.
- Electric shocks caused by contact with live parts.
- Fire hazard due to sparks and hot welding spatter.
- Electromagnetic fields that can affect medical implants.
- Noise emission dependent on the welding process used.

Warning: Users must always wear the prescribed personal protective equipment.

2. INTENDED USE

2.1 Scope

The TIG welding machine NVT315ACDCW is intended exclusively for professional TIG and MMA welding of metallic materials such as carbon steel, stainless steel, copper, aluminum, magnesium, and similar alloys.

The machine is designed for use in industrial and professional environments by adequately instructed and qualified users.

The device may only be used:

- Within the technical specifications described in this manual.
- With approved welding accessories.
- With the prescribed mains voltage.
- With a correctly connected shielding gas supply.
- With a correctly connected cooling system if a water-cooled torch is used.

2.2 Permitted applications

- Within the technical specifications described in this manual.
- With approved welding accessories.
- With the prescribed mains voltage.
- With a correctly connected shielding gas supply.
- With a correctly connected cooling system if a water-cooled torch is used.

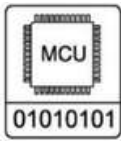
2.3 Prohibited use

- Use in explosive environments.
- Use in rain or in direct contact with water.
- Use as a power source for other equipment.
- Thawing of pipes or structures.
- Use with damaged cables, connectors, or housing.
- Use without proper grounding.
- Use without shielding gas during TIG welding processes.
- Use of non-approved accessories.
- Changes to hardware, software, or security features.

Warning: Use outside the described applications is considered improper use. Damage and injury resulting therefrom are the sole responsibility of the user.

3. PRODUCT DESCRIPTION

3.1 General product description



The NVT 315 AC/DC inverter AC/DC TIG welding system utilizes an MCU (Microcontroller Unit) as the central processor. This allows the welding machine and the entire welding process to be coordinated efficiently. The status of both the machine and the welding process is monitored and adjusted in real time. This ensures that each welding machine offers a high degree of consistency and delivers reliable, stable welding results.

With the NVT 315 AC/DC, the MCU controls every waveform in real time during AC square wave welding. As a result, sharp arc noise during AC welding is significantly reduced, and arc switching noise is greatly minimized. This reduces hearing strain on the welder and also limits tungsten electrode consumption.

The NVT 315 AC/DC uses a special high-frequency arc ignition technology, which ignites the arc more easily and reliably.

During the setting of the welding parameters, the exact parameter values and the WYSIWYG (“What You See Is What You Get”) values are displayed in real time on the digital display. This allows the welding parameters to be set accurately, the welding process to be precisely controlled, and excellent welding results to be achieved.



Thanks to the application of advanced IGBT inverter technology, the main transformer and the choke coil have a more compact design. As a result, the dimensions and weight of the power source are significantly reduced. Additionally, copper losses are limited, while efficiency and power factor are improved. Consequently, the energy-saving effect is substantial.

3.2 Available welding processes

- DC TIG (DC-TIG)
- AC TIG-lassen (AC-TIG)
- DC pulse TIG (DC-PTIG)
- AC pulse-TIG-lassen (AC-PTIG)
- AC-DC MIX TIG
- DC electrode erosion / MMA erosion (DC-MMA)

3.3 Suitable materials

- Carbon steel
- Cast iron
- Stainless steel
- Copper and copper alloys
- Aluminum and aluminum alloy
- Magnesium and magnesium alloy

4. TECHNICAL SPECIFICATIONS

4.1 Technical specifications of the welding machine

Nominal supply voltage	3~400 V ±15%, 50/60 Hz*
Maximum input current	19,2 A
Nominal power consumption	12.6 kVA / 3.3 kVA
No-load output voltage	80 V / 90 V
Duty cycle	60% (@ 40 °C)
Power factor	0,94
Insulation class	F
Protection class	IP21S
Cooling method	Ventilator / Water
Dimensions	593 × 260 × 424 mm
Net weight	26,6 kg

4.2 Technical specifications water cooler

Supply voltage	230V AC, 1-phase
Power source	power supply via the machine
Tank capacity	5 Ltr
	• Above 0 °C: Use demineralized or softened water mixed with an industrial anti-corrosion coolant.
	• Below 0 °C: Use an industrial ethylene glycol-based coolant and adjust the mixing ratio according to the ambient temperature.
	Note: Never use tap water or surface water.
Dimensions	631 x 262 x 355
Net weight	13.8 kg

4.3 Duty Cycle

The duty cycle indicates how much time the welding machine can weld continuously within a 10-minute period, expressed as a percentage of those 10 minutes.

The nominal duty cycle is based on welding with the nominal output current. When the welding current is reduced, the allowable duty cycle increases.

Always use the welding machine within the specified duty cycle.

Load duty cycle curve

Nominal duty cycle: 60%

- Leave for 6 minutes
- Rest/cool down for 4 minutes

Warning: Overloading will damage the machine!

4.4 Protection class

The welding machine has a protection rating of **IP21S**.

During the use of the welding machine:

Do not insert fingers or objects with a diameter smaller than **12.5 mm** (especially metal objects) into the welding machine.

Do not apply excessive pressure to the housing of the welding machine.

4.5 EMC classification

This equipment complies with EN IEC 60974-10 and is classified as Class A welding equipment. Class A equipment is intended for use in industrial environments. In residential environments supplied via the public low-voltage grid, this equipment may cause electromagnetic interference. In such cases, the user may be required to take additional measures.

Note: Before installation, check if the following are located in the vicinity:

- Data cables.
- Telecommunication cables.
- Radio or television receivers.
- Measuring and control equipment.
- Security or alarm systems.
- Pacemakers and other medical implants.

4.6 Noise emission

- The noise level during welding depends on the process used, the welding current, the material, and the working environment.
- When the equivalent sound level exceeds the locally permitted limit, suitable hearing protection must be worn.

5. TRANSPORT AND STORAGE

5.1 Transport

During transport:

- Protect the machine from shocks.
- Prevent tipping.
- Remove connected torches and cables if possible.
- Always secure gas cylinders individually.
- Store the machine in a dry, dust-free environment.

Transport temperature:

-20 °C to +55 °C

5.2 Lookup

Storage temperature:

- -20 °C to +55 °C

Relative humidity:

- Maximum 90%, non-condensing.

6. MOUNTING THE WATER COOLER TO THE WELDING MACHINE



Step 1. Lay the welding machine on its side and loosen the small screw on the bottom, outside, back, located in the middle of the welding machine.



Step 2. Attach the frame to the bottom of the welding machine and first secure it where the screw was removed in step 1. Use the long M5*25 screw that is included for this.



Step 3. Attach the connecting bracket with 2 x M5*12.



Step 4. Place the welding machine with the frame on top of the water cooler.



Step 5. Attach the water cooler to the front frame with 2 x M5*25



Step 6. Attach the water cooler to the rear frame with 2 x M5*12. Use the 1 x M5*12 that you unscrewed in step 1 for this.

7. INSTALLATION AND CONNECTION

Please note: The welding machine is supplied without a three-phase power plug. The power cable is pre-assembled, but the correct three-phase power plug must be fitted by the user or a qualified installer.

7.1 Power Supply

- Connect the machine to a 3~400 V mains connection.
- The power cable at the rear provides the full power supply for the welding machine.

7.2 Connecting the protective gas (A)

- Connect the hose from the pressure regulator on the argon cylinder to the Gas Input connection at the rear of the machine.
- Check that the gas system is correctly connected before starting to weld.

7.3 Connecting the TIG torch to the water cooler

On the front of the welding machine:

- Connect the TIG torch cable.(B)
- **Blue connection:** cooling water supply (Water IN / Supply) (C)
- **Red connection:** cooling water return (Water OUT / Return) (D)
- Check that all connections are securely tightened.

7.4 Remote control / foot pedal (optional) (E)

- The following can be connected via the IPS / Remote Connector:
- foot pedal
- TIG torch operation
- external power control
- remote control.



7.5 Connecting a water cooler

Preparation

- Before the water cooler is connected:
- Switch off the welding machine and water cooler.
- Check all hoses, cables, and couplings for damage.
- Fill the water cooler with suitable coolant to between MIN and MAX.

7.5.1 Electrical connection

At the rear of the welding machine:

W.P. Output

- Connect the water cooler's multi-pin control connector to W.P. Output.

Water cooler steering connector function

- Provides communication between welding machine and water cooler.
- Supports automatic on/off.
- Processes security and flow sensor signals.

Cooler

- Connect the flow sensor plug of the water cooler to the Cooler connection.
- Tighten the lock nuts

Function of flow sensor connection:

- Monitors the coolant flow.
- Detects insufficient flow.
- Activates alarm or safety shutdown to prevent damage to the torch



7.6 Connecting water hoses

On the water cooler are located:

Connection	Function
Water Out	Cooled coolant supplied to the TIG torch
Water In	Heated coolant returning from the TIG torch
Flow Sensor	Monitoring of coolant flow
Power Cable	Power supply for the water cooler

- Connect the Water Out of the water cooler to the water inlet of the TIG torch.
- Connect the water outlet of the TIG torch to the Water In of the water cooler.

Important warning

- Water Out must always be connected to the water inlet of the TIG torch.
- Water In receives the heated return water from the TIG torch.

7.7 Pre-commissioning inspection

- Check:
- Water cooler filled with coolant
- W.P. Output connected
- Cooler connected
- Water Out connected to TIG torch
- Water In connected to TIG torch
- Argon connected
- No leaks present

7.8 Commissioning

- 1.First, turn on the water cooler.
- 2.Then switch on the welding machine.
- 3.Check the water circulation.
- 4.Check the coolant level again.
- 5.Only begin welding when there are no leaks.

8. SERVICE

8.1 Welding machine

8.1.1 Front panel



Position	Function
1. Left (+)	DINSE output for TIG torch or electrode holder
2. Center (round multi-pin connector)	Torch control / foot pedal / remote control
3. Center right (brass)	Shielding gas outlet to the TIG torch
4. Right (-)	DINSE output for work clamp (ground cable)

8.1.2 Rear panel



Position	Function
1. Main Switch (OFF/ON)	Turns the machine completely on and off.
2. 3~400V Power Cable	Three-phase power connection for supplying the welding machine.
3. Gas Input	Inlet for the shielding gas (usually argon). The hose from the gas regulator is connected here.
4. Cooler	Connection for the external water cooler or the communication/power link to the integrated cooler (depending on the model).
5. IPS / Remote Connector (multi-pin connection)	For remote control, TIG torch controls, foot pedal, or external current control.
6. Ventilation Grille	Cooling of the internal electronics and power components. Not a connection, but essential for air circulation.

8.2 Water cooler

8.2.1 Front panel



- 1.Cooling Water Inlet
- 2.Cooling Water Outlet
- 3.Coolant Tank Filler Cap
- 4.Fuse holder (3 A)
- 5.Main On/Off Switch
- 6.Coolant level indicator
- 7.Ventilation grille

8.2.2 Rear panel



Description	Function
1. Flow Sensor Connection	Connects the water cooler to the welding machine for monitoring coolant flow. The flow sensor detects insufficient flow and activates an alarm or safety shutdown to prevent damage to the welding torch.
2. Power Cable	Supplies electrical power to the water cooler. This cable powers the coolant pump, fan, and control electronics.
3. Cooling Radiator	Heat exchanger in which the heated coolant is cooled. The radiator dissipates heat to the surrounding air to maintain optimal cooling capacity.
4. Ventilation Grille	Protects the radiator from damage and ensures unrestricted airflow through the water cooler for efficient heat dissipation.
5. Water Cooler Control Connector	Multi-pin connector for communication between the welding machine and the water cooler. Provides control and safety signals, such as automatic on/off switching and flow sensor monitoring.

8.3 Display functions



No.	Element	Function
1 & 2	Parameterscherm	Displays the set welding current (A) and output voltage (V).
3	Supply voltage	Display of the connected mains voltage
4	Left rotary knob	Navigating through menus and adjusting selected parameters.
5	Right rotary knob	Setting values and confirming menu options.
6	Menu bar	Provides access to process settings, memory functions, and system settings.
7	USB port	For importing/exporting welding programs, performing software updates, and saving machine data.
A	Navigation key (Previous/back)	Used to navigate through menus and return to a previous setting or parameter group.
B	Home key	Provides direct access to the main screen and the most important machine settings. This allows the user to quickly return to the start menu.

8.4 Operation of panel buttons



8.4.1 Main adjustment knob

(Operation: press to select, turn left and turn right)



Operation of the button

1. Select between first, second, and third level menus.
2. Press to go to the next menu level (cyclically selectable).
3. Confirming a function or setting.



Turning the knob

1. Select between the parent and child options in the first, second, and third level menus.
2. Turn to the right to select the next function in the current menu.
3. Turn left to select the previous function in the current menu.

8.4.2 Auxiliary setting button

(Operation: press to select, turn left and turn right)



Turning the knob

1. Selecting functions left, right, up, and down within the three-level menu.
Turn to the right to display the next function in the menu.
 - Turn to the left to display the previous function in the menu.
2. Adjusting parameter values in the third menu level.
 - Turning to the right increases the set value.
 - Turning to the left lowers the set value.



Pressing the button

- Confirming a function or setting.

8.5 Las-modi

8.5.1 DC TIG / DC Pulse TIG



Select this welding mode for **DC TIG welding and DC Pulse TIG welding**. This setting is used for welding steel, **stainless steel, copper, titanium, and other metals** that are welded with direct current. In pulse mode, the welding current automatically alternates between a peak current and a base current for better heat control and less distortion.

8.5.2 AC TIG / AC Pulse TIG



Select this welding mode for **AC TIG welding and AC Pulse TIG welding**. This setting is primarily intended for welding **aluminium and magnesium alloys**. The alternating current provides a cleaning effect on the material surface, while the pulse function offers additional control over the weld pool and heat input.

8.5.3 AC/DC MIX TIG



AC/DC MIX TIG combines the benefits of AC and DC welding in a single welding process. The **AC phase** ensures effective cleaning of the aluminum oxide layer, while the **DC phase** provides deeper penetration, a higher melt rate, and a higher welding speed. This welding mode is particularly suitable for thick aluminum structures where both optimal cleaning and maximum penetration are required.

8.5.4 MMA (Manual Metal Arc)



Select this welding mode for welding with coated electrodes (**MMA**). The machine delivers a stable welding current for various electrode types, such as rutile, basic, and cellulose electrodes. Depending on the settings, features such as Hot Start, Arc Force, and Anti-Stick can be used to improve arc ignition and welding characteristics.

8.6 Process Settings

8.6.1 Starting method (HF / Lift TIG)



This function allows you to select the desired TIG starting method. Choose between **HF ignition** for contactless starting or **Lift TIG** for ignition by brief contact with the workpiece.

8.6.2 Service



- **2T (2-stroke)**
Press and hold the torch switch to weld. Release the switch to stop welding.
- **4T (4-stroke)**
Press the torch switch once to start welding. Press the switch again to end welding.
- **Spot-TIG**
SPOT-TIG activates the spot welding function with which A weld point is automatically created with a preset welding time.

8.6.3 Pulsmodus



With the pulse function, the welding current automatically switches between high and low current. This results in better control of heat input and less deformation of the workpiece.

- Pulse mode on – activates pulse welding.
- Pulse mode off – weld with a constant welding current.

8.6.3 AC waveform



This function allows the desired **AC waveform** to be selected. The chosen waveform influences the arc characteristics, heat input, and cleaning performance during TIG welding of aluminium.

8.6.4 Water cooler



With this function, the built-in water cooler can be manually switched on or off.

- **Water cooler on** – activates the cooling water circulation for water-cooled TIG torches.
- **Water cooler off** – switches off the cooling water circulation.

NOTE: When using a water-cooled TIG torch, the water cooler must always be switched on. Never use the torch without active cooling water circulation.

8.7 Lasparameters

8.7.1 Welding Cycle



1. **Gas pre-flow time** – time during which shielding gas flows out before ignition of the welding arc.
2. **Startup current** – welding current used to start the welding process.
3. **Upslope time** – the time during which the current gradually increases from the startup current to the welding current.
4. **Welding current** – set main welding current during welding.

5. **Downslope time** – the time during which the current is gradually reduced after the welding is completed.
6. **Final current** – current value maintained during the phase-out.
7. **Post-flow time** – the time during which shielding gas continues to flow after the welding arc has been extinguished to protect the weld pool and the tungsten electrode.

8.7.2 AC/DC balance



1. **Set AC frequency** – determines the frequency of the alternating current during AC TIG welding.
2. **Set AC balance** – determines the ratio between cleaning action and arc penetration.
3. **Set balance percentage** – sets the percentage of positive and negative alternating current.

8.8 Memory Management

8.8.1 Save / Load Program



Select **Save** or **Load** and choose the desired program memory with the rotary knob. Confirm the choice to save or activate the program.

8.9 System Settings

8.9.1 Language settings



Select the desired **language** with the rotary knob and confirm the choice to save the language setting.
Available languages (depending on software version)

- Dutch
- Engels
- German
- French
- Spanish

8.9.2 Screen brightness



Select the **brightness setting** and adjust the desired value with the rotary knob. The set value is displayed immediately on the screen.

Screen brightness: 0 – 10

Factory setting: 9

Direct visual display of the set brightness level

8.9.3 System Information

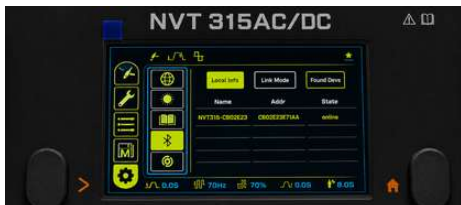


This screen is intended solely for information and contains no adjustable parameters.

Displayed information:

- Software version
- Mainboard version
- Control Panel version
- Firmware information
- System status (depending on software version)

8.9.4 Communication information (Bluetooth)



This screen is intended solely for information and diagnosis. No parameters can be adjusted.

Displayed information:

- Local Info (device information)
- Link Mode
- Found Devices
- Device name
- Bluetooth address (MAC address)
- Connection status (Online / Offline)

8.10 Restore factory settings



Select **YES** to restore factory settings or **NO** to retain current settings. Confirm your choice with the rotary knob.

Functions:

- Restoring factory settings
- Reset of welding parameters
- Reset of process settings
- Reset system settings
- Restoring user configurations

8.11 PARAMETERS

8.11.1 MMA

- MMA-lasstroombereik: 20 – 315 A
- MMA electrode type: Rutile, basic, stainless steel, cast iron, and other common coated electrodes.
- Electrode diameter: 1.6 – 6.0 mm (depending on type and application).

8.11.2 TIG

Arc ignition: HF (high frequency) / Lift-Arc (depending on the machine version)

8.11.3 DC TIG

- Rated current: 10 A – 315 A
- DC Puls TIG
- Peak current: 10 A – 315 A
- Base flow: 10% – 90%
- Pulse frequency: 0.2 Hz – 999 Hz
- Pulsverhouding (Duty Cycle): 10% – 90%

8.11.4 AC TIG

- Rated current: 5 A – 315 A
- AC frequency: 20 Hz – 250 Hz
- AC-balance: 10% – 90%

8.11.5 AC Pulse TIG

- Peak current: 5 A – 315 A
- Base flow: 10% – 90%
- AC frequency: 20 Hz – 250 Hz
- AC-balance: 10% – 90%
- Pulse frequency: 0.2 Hz – 999 Hz
- Pulsverhouding (Duty Cycle): 10% – 90%

8.11.6 AC/DC MIX TIG

- Rated current: 15 A – 315 A
- MIX frequency: 0.2 Hz – 250 Hz
- MIX DC-duty cycle: 10% – 90%
- MIX DC-stroom: 10% – 90%

9. ERROR CODES AND MALFUNCTIONS

9.1 Overview of TIG AC/DC 315 error codes

Wrong-code	Description	Possible cause	Recommended action
ERR 1	Overheating / overload	• Excessive load, insufficient cooling, ventilation openings blocked	• Stop welding and let the machine cool down.
ERR 1-1 NTC1	Overheating	• Internal temperature too high	• Turn off the machine and let it cool down.
ERR 1-2 NTC2	Overheating	• Temperature protection activated	• Control fans and airflow
ERR 1-3 NTC3	Overheating	• Internal components too hot	• Cool down and reduce strain
ERR 1-4	Time security	• Duty cycle exceeded	• Observe rest periods according to duty cycle
ERR 2	Span	• Mains voltage too high	• Check power supply voltage
ERR 3	Undervoltage	• Mains voltage too low	• Check power supply voltage and cabling
ERR 4	Water shortage	• Coolant level too low or no water circulation	• Check water cooler, hoses, and coolant level
ERR 5	Overflow at the exit	• Short circuit, overload, defective torch/cable	• Check welding circuit and connections
ERR 7	Torch switch lockout	• Torch switch remains active or defective	• Control torch and switch
ERR 13	Communication error	• Fault between control modules or display	• Restart machine, check connections
ERR 16	Anomaly in output current detection	• Defective current sensor or measuring circuit	• Service check necessary
ERR 20	NTC temperature sensor malfunction, interruption or phase failure	• Defective temperature sensor, cable break, or phase problem	• Check the power supply voltage and have the machine inspected.

10. MAINTENANCE

10.1 Maintenance Schedule

Frequency	Component	Inspection / Maintenance	Action if Deviation Found
Before each use	Power cable	Check for damage, wear, loose connections	Do not use the machine; replace by a qualified technician
Before each use	Welding cables	Check for damage and insulation defects	Replace immediately or repair
Before each use	Work clamp	Check for secure connection and condition	Clean or replace
Before each use	Torch and connections	Visual inspection for wear and damage	Replace defective components
Before each use	General machine condition	Check for damage or worn parts	Repair by a qualified technician
Daily	Water cooler	Check coolant level	Refill according to specifications
Daily	Water cooler	Check for leaks	Switch off the machine and have it repaired
Daily	Water hoses	Check for damage and leakage	Replace or repair
Weekly	Ventilation openings	Remove dust and dirt	Clean
Weekly	Gas connections	Check for leaks	Repair or replace connections
Monthly	Inside of machine	Clean with compressed air	Remove dust completely
Monthly	DINSE connections	Check for wear, oxidation, and loose connections	Clean or replace
Monthly	Fans	Check for contamination and proper operation	Clean or replace
Annually	Complete machine	Safety inspection	Inspection by a qualified service technician
Annually	Water cooler	Replace coolant	Use new coolant according to specifications

11 Warranty Terms and Conditions

HUGONG Warranty Terms and Conditions

1. Warranty Period

We provide the following warranty coverage on our products:

- 2-year standard warranty against manufacturing and material defects from the date of purchase.
- 5-year extended warranty, provided the product is registered within 30 days of purchase.

The extended warranty applies only to the original purchaser and is non-transferable.

For certain applications, different warranty periods may apply unless otherwise agreed in writing.

2. Unique HUGONG Warranty

5-Year Warranty with Official Purchase Through an Authorized HUGONG Dealer

The 5-year warranty on our HUGONG welding equipment is unique in the market and reflects our confidence in quality, durability, and service.

This extended warranty is valid only if:

- The machine is purchased from an authorized dealer listed on HUGONGWELDS.EU, the official platform for authorized HUGONG dealers and service partners.
- The product is registered online within 30 days of the purchase date.
- Any repairs or maintenance are performed exclusively by an authorized HUGONG service partner, such as those listed on HUGONGWELDS.EU.
- Repairs carried out by unauthorized parties may void the warranty.
-

A list of authorized dealers and service partners can be found at:

www.hugongwelds.eu

Purchases made through unauthorized sales channels or grey imports are not covered by this warranty.

Valkenpower B.V. is the official importer of HUGONG welding equipment for Western Europe. The extended 5-year warranty is exclusively provided by Valkenpower B.V. in cooperation with HUGONG.

3. Conditions for Warranty (Standard and Extended)

- To qualify for warranty service (standard or extended), the following conditions must be met:
- The product must be purchased through a dealer recognized on HUGONGWELDS.EU.
- The product must be used in accordance with the user manual and prescribed maintenance instructions.
- Maintenance and repairs must be carried out exclusively by authorized HUGONG service partners.
- For the extended warranty, the product must be registered correctly within 30 days after purchase.
- The original purchase invoice must be available and presented upon request.

Important: Incorrect or improper use will completely void the warranty, including the extended warranty.

If the product is not registered correctly within 30 days after purchase, only the standard 2-year warranty applies.

4. What Is Covered by the Warranty?

Within the valid warranty period, HUGONG covers:

- Manufacturing defects;
- Material defects;
- Functional failures occurring under normal use.

We will:

- Repair or replace the defective part;
- Replace the entire product if necessary;
- Or, at our discretion, provide a full or partial refund, taking depreciation into account.

The choice of remedy rests with Valkenpower B.V. or an authorized service partner.

5. What Is Not Covered by the Warranty?

The warranty does not apply to:

Normal Wear Parts

- Electrodes;
- Torches;
- Cables;
- Connectors;
- Filters;
- Hose assemblies;
- Switches;
- Seals.

Consumable Components

- Water cooler pumps are considered wear items and are therefore excluded.

Improper Use

- Misuse;
- Overloading;
- Incorrect installation.

Product Modifications

- Modified or altered products without written approval;
- Use of non-approved accessories or parts.

External Influences

- Ingress of dust, moisture, or metal particles into the machine (considered user-related damage);
- Damage caused by moisture;
- Dust contamination;
- Overheating;
- Power surges;
- Lightning strikes;
- Fire;
- Corrosion;
- Transport damage.

Rental Applications

- Use in rental applications unless agreed otherwise in writing.

6. Warranty Procedure

In the event of a defect:

Contact our customer service department or an authorized HUGONG dealer.

Please provide:

- Proof of purchase;
- Serial number (visible on the machine nameplate);
- A description of the problem and the circumstances under which it occurred.

Shipping

The product must be securely packaged and returned to the designated service center.

Transportation and shipping costs are the responsibility of the customer unless otherwise agreed in writing.

During repair, there is no automatic entitlement to a loan or replacement product.

7. Limitation of Liability

HUGONG and Valkenpower B.V. shall not be liable for:

- Loss of income;
- Consequential damages;
- Business interruption;
- Costs related to dismantling, installation, or adjustments;
- Work performed by third parties without written authorization;
- Claims exceeding the original purchase price.

Statutory consumer rights remain unaffected.

8. Warranty on Parts and Repairs

- Repaired or replaced parts remain covered for the remainder of the original product warranty period.
- Separately purchased spare parts carry a warranty period of 6 months.

9. Applicable Law

These warranty terms are governed by the laws of the Netherlands.

Any disputes should preferably be resolved through mutual consultation. If necessary, disputes may be submitted to the competent court in Roermond or to another recognized dispute resolution body.

Questions?

Our customer service team is happy to assist you.

Visit:

www.hugongwelds.eu

For:

- Dealers
- Service partners
- Product registration
- Technical support