

OPERATING MANUAL

08.26

TTW-610 Deposit Welder

ORIGINAL INSTRUCTIONS



Multifunctional Ultrasonic welding machine

Congratulations on your new ultrasonic multifunction welding machine. We hope the machine will be of benefit and joy. Benefit and joy demand and require proper operation and maintenance of the equipment. Therefore, we recommend you read this manual carefully before using the equipment.

Tracytec

Smart solutions for welding and polishing of moulds



EU DECLARATION OF CONFORMITY

According to:

The Low Voltage Directive 2014/35/EU

The EMC Directive 2014/30/EU

Type of equipment: Welding power source

Model: TTW-610

Brand: TracyTec

Identification number:

Manufacturer's authorized representative established within the EEA:

Name, address, and telephone No:

Indsatsen ApS
Djeldvej 62
7830 Vinderup
Denmark
Phone: +45 97 44 33 99

The following harmonized standard in force within the EEA has been used in the design:

EN 60204-1:2018, EN 61000-6-1:2007
EN 61000-6-3:2007 + A1:2011 + AC:2012

Additional Information:

Restrictive use, Class A equipment, intended for use in locations other than residential.

By signing this document, the manufacturer's authorized representative established within the EEA agrees that the equipment in question complies with the safety requirements stated above.

Date:

Denmark
2021-04-23

Signature:

Jes Valdemar Willumsen

Position:

CEO



Content

Safety warnings	4
Electromagnetic noise radiated	5
General description	6
Technical specifications.....	6
Front of the machine/Main functions	7
Rear of the machine	8
Installation diagram	9
Filler wire	10
General settings	10
Operations	11
Starting parameters for EDM Texture and EDM Spark	14



Safety warnings

Welding can through misuse be dangerous to the user and the surroundings. The equipment should only be used in compliance with relevant safety regulations. Special attention should be paid to the following:

Electric shock

- Welding equipment must be installed properly (power regulations and the common regulations).
- Avoid contact with live parts in the welding circuit or electrodes with bare hands. Never use defective or wet welding gloves.
- Insulate yourself from the ground and the workpiece (e.g. use shoes with rubber soles).
- Ensure proper maintenance of welding equipment. In case of damaged cables and insulation, work must be stopped to carry out repairs.
- Repair and maintenance of the equipment shall be performed by a person with requisite technical knowledge.

Welding light

- Protect the eyes as even a brief exposure can cause permanent damage to the eyesight. Use the supplied welding screen or other protection alike.
- Protect your body against the light from the arc as the skin can be damaged by radiation. Use protective clothing covering all parts of the body.
- Work should be screened if possible, and people in the area is advised to be warned against the light from the arc.

Welding fumes and gases

- Smoke and gases emitted during welding is dangerous to inhale. Provide appropriate exhaust and ventilation.

Fire

- Radiation and sparks from the arc can cause fire. Flammable objects must be removed from the welding site.
- Work clothes must also be protected from sparks and spatter from the arc.

Noise

- The arc generates acoustic noise according to welding task. Use earplugs or other ear protection accordingly.



Electromagnetic noise radiated

The TTW-610 TIG welding machine is designed for professional use and complies with European standard EN50199. The standard aims to ensure that equipment does not disturb or is disturbed by other electrical equipment due to electromagnetic noise radiation. The electric spark/welding operation emits noise and is to be used without disturbance whilst taking precautions for the installation and use. The user must ensure that other electrical equipment in the area are not disturbed.

The following must be taking into account in the surrounding area:

1. Supply and signal cables in use in the area of the TTW-610, which are connected to other electrical appliances.
2. Radio and television transmitters and receivers.
3. Computers and electronic systems.
4. Critical safety equipment. Monitoring and process control.
5. Users of pacemakers and hearing aids.
6. Equipment used for calibration and measurement.
7. Time of day when welding and other activities going on.
8. Structure and use of the building.

This machine is intended for use solely by professionals!

Read this instruction manual carefully
before the equipment is installed and in use!

General description

TTW-610 is a multifunctional ultrasonic welding machine that can apply different types of metal to a workpiece surface.

The machine is a versatile tool for the toolmaker's workshop and can perform a wide range of repair and maintenance tasks.

In addition to ultrasonic welding, the machine can also be used for polishing. Combined with the

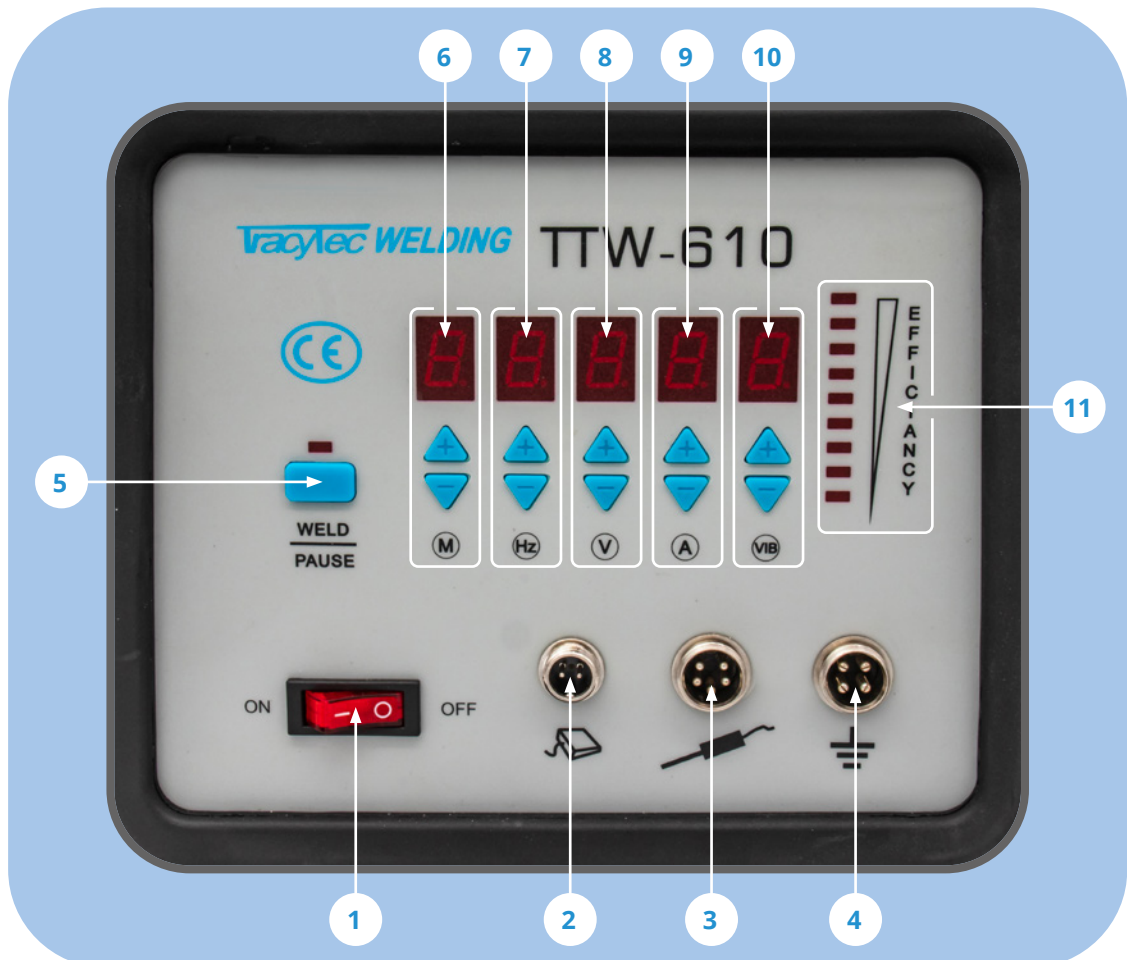
power function, it can also be used for manual EDM (Electrical Discharge Machining).

The machine is equipped with an intelligent frequency tracking system that ensures stable output during operation.

Technical specifications	
Welding material	Steel, Cu, Al, Brass, Titanium
Filler diameter	0.4-5mm
Power voltage	230V, Grounded
Frequency	50Hz
Power consumption	1200W
Dimensions	38?×15?×22?mm
Weight	?kg

Front of the machine / Main functions

1. On/off button. Main switch.
2. Foot pedal connection
3. Handle connection
4. Ground connection
5. Pause/weld button. It is important to set the machine to Pause when it is not in use. This resets the processor that controls the vibration.
6. Mode display and selection buttons. Modes 1–4 are used for steel welding, 5–7 for aluminium. 5 can also be used for tungsten coating. Mode 8 for copper, and 9 for ultrasonic vibration only.
7. Ultrasonic vibration display and setting buttons (1-9).
8. Voltage display and setting buttons (1-9).
9. Ampere display and setting buttons (1-9).
10. Low frequency vibration display and setting buttons.
11. Ultrasonic vibration efficiency indicator. If the efficiency is low, the tool is usually not properly connected to the handpiece or is damaged.



Rear of the machine

1. Fuse.
2. Power cable connection.



Installation diagram



Check cables for any damages before use!
Use the goggle screen and protective clothing e.g. gloves etc.

Filler wire

The machine can weld a wide range of metals, including steel, copper and aluminium.

Standard welding filler wires can be used, although some types provide better performance than others. The welding process does not require flux or shielding gas. However, the weld quality can be improved by using argon as a shielding gas.

Tracytec continuously tests different filler wires and can supply wires with known performance characteristics, together with recommended machine settings.

General settings

Button 6 – Mode

The machine processor is programmed with different operating modes. Modes 1–4 are used for steel welding, modes 5–7 for aluminium welding, mode 5 can also be used for tungsten coating, mode 8 is used for copper welding, and mode 9 is for ultrasonic vibration only. This mode is used with abrasive tools and for compacting a weld.

Button 7 – Ultrasonic vibration (Hz)

A higher setting increases the deposition rate but may also increase porosity. A lower setting results in slower deposition but may cause the filler wire to stick to the workpiece.

Button 8 – Voltage

A higher setting increases the welding temperature. A lower setting produces a cooler, softer and gentler weld.

Button 9 – Ampere

This setting is related to the filler wire diameter. A higher setting also produces a less dense weld deposit.

Button 10 – Low-frequency vibration

This setting follows the Voltage and Current settings. Increasing the Voltage and Current settings also increases the low-frequency vibration.

In general, the recommended settings depend more on the material than on the wire diameter. The weld deposit and the final result depend on the material's ability to vibrate and its melting

The following settings can be used as a starting point for the following materials. Fine adjustments can then be made as required.

Diameter	Material	Mode	HZ	Volt	AMP	VIB
1.0 mm	Steel	1	4	4	3	5
1.0 mm	Steel	1	3	3	3	5
0.5 mm	Steel	1	2	3	3	5
2.0 mm	Stainless	1	4	4	3	5
1.6 mm	Aluminum	5	4	4	4	6
3.0 mm	Aluminium	5	3-5	7-8	5	6-7
1.3 mm	Copper	8	4	4	5	6
2.0 mm	AMCO	8	4	4	4	6
Coating	Tungsten	5	5	5	5	5

Operations

Before welding, use appropriate personal protective equipment (PPE) as required for the application, such as gloves and safety glasses. A welding helmet is normally not required, although tinted safety glasses may be helpful during larger welding jobs.

1. Install the required filler wire in the tool and screw the tool firmly into the handpiece. Ensure that the tool is securely tightened to allow efficient transmission of the ultrasonic vibrations.
2. Set the required machine parameters.
3. Press the Work/Pause button to switch the machine to Work mode. Verify that the ultrasonic vibration efficiency indicator confirms that the ultrasonic vibrations are operating correctly.
4. Place the filler wire against the workpiece, apply light pressure, and press the foot pedal. The machine will begin depositing the filler wire.

As this is a deposition welding process, the machine does not melt the steel in the same way as conventional welding methods.

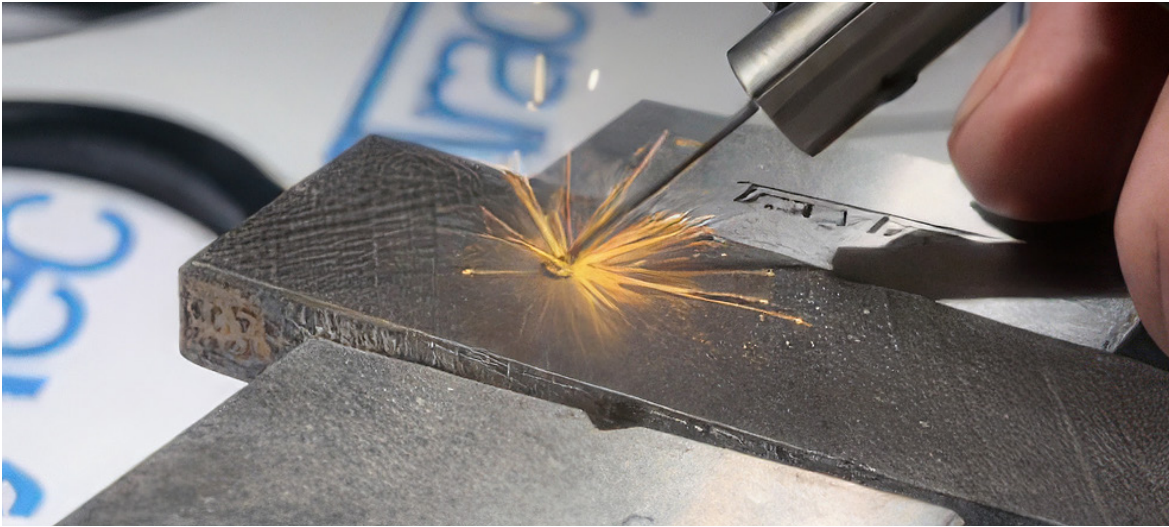
For best results, prepare a clean surface before welding. Make sure the repair area is free from rust, dirt and oil.



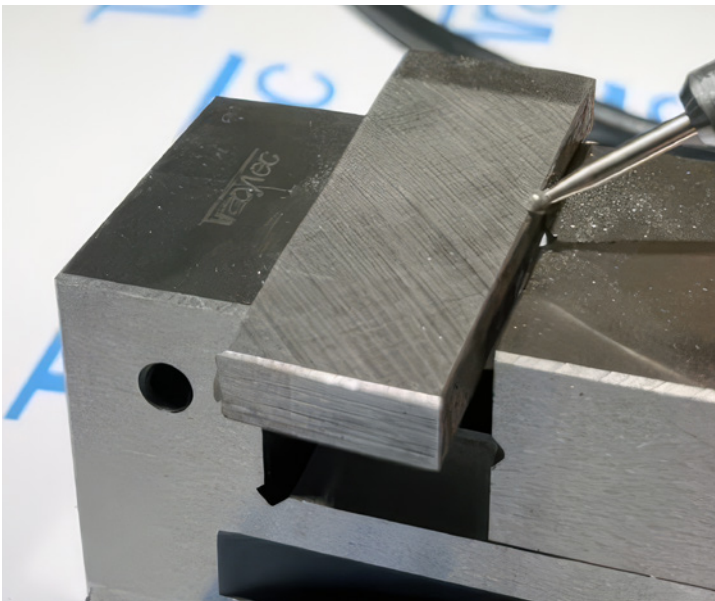
The machine operates using a combination of ultrasonic vibrations, low-frequency vibrations and electrical power.

The material's ability to vibrate decreases as the filler wire becomes red hot. For best results, weld in short pulses using the foot pedal.

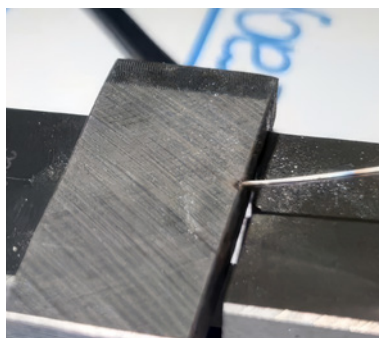
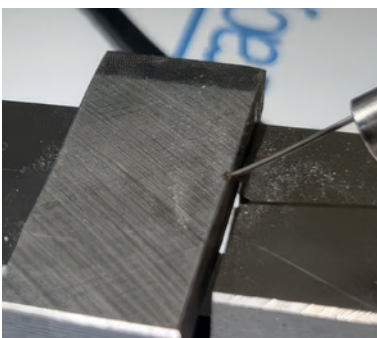




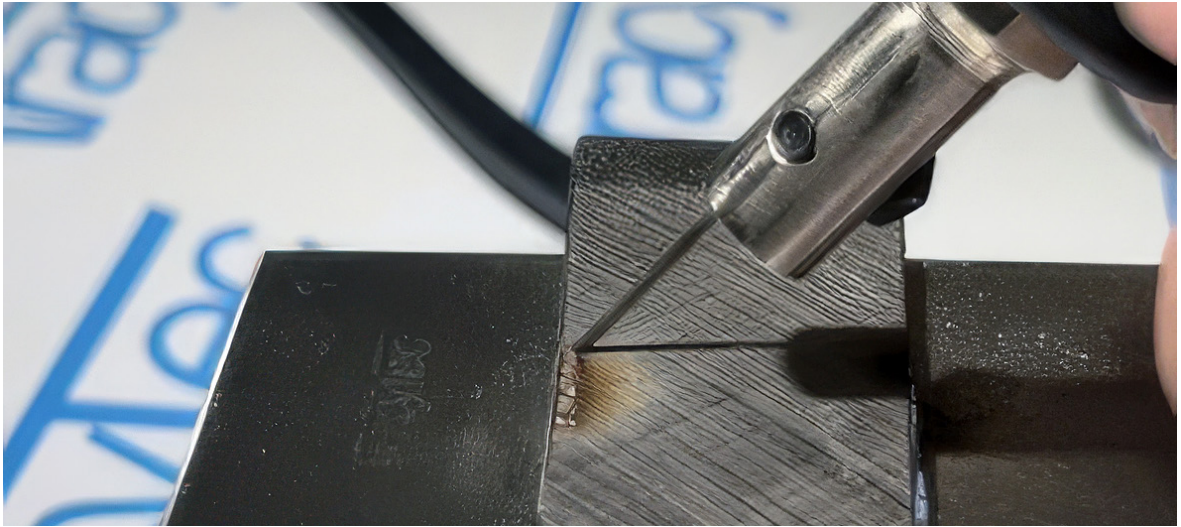
The best results are achieved when the handpiece is held at an angle of 45° or greater to the workpiece surface. This may not be possible in all applications.



When welding a sharp corner, it is recommended to smooth and flatten the surface before welding. Ensure that the repair area is clean and free from rust, dirt and oil.



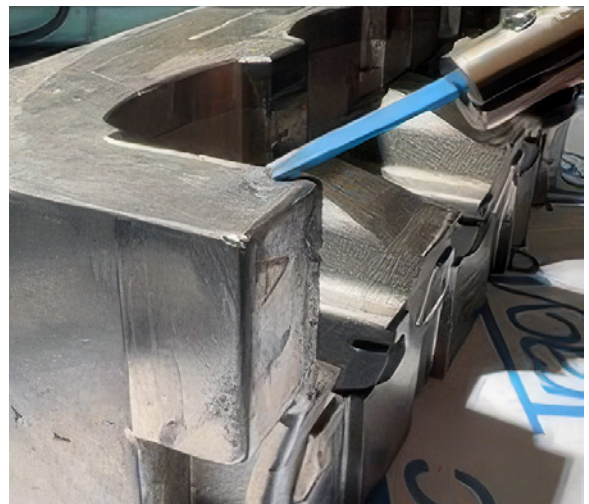
When welding a corner, work in three directions: at a 45° angle, from the front, and from the top.



When welding along the mould parting line, work from the inside out towards the mould cavity.

Build up the weld deposit in small increments. Between weld pulses, allow the ultrasonic vibrations to compact and smooth the deposited material by releasing the foot pedal while maintaining light contact with the workpiece. The required pressure and travel speed depend on the application and are best determined through experience.

The TTW-610 is equipped with powerful ultrasonic and low-frequency vibrations, which can also be used for finishing and refurbishing the weld. Select Mode 9 for ultrasonic vibration only. Install the appropriate abrasive tool for the application. Diamond files and ceramic abrasive stones are commonly used. The foot pedal is not used in this mode, as only the ultrasonic vibrations are active.



In addition to the functions described in this manual, the machine can also be used for EDM operations, including material removal, hole making

and other machining tasks. It can also be used for tungsten coating and engraving.

Starting parameters for EDM Texture and EDM Spark

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17334

Edm

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