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EN 2024

LN500 WELDING MACHINE

SYNERGIC DOUBLE PULSE

USER MANUAL



EN 2024

LN500 WELDING MACHINE

S Y N E R G I C D O U B L E P U L S E

USER MANUAL



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SAFETY PRECAUTIONS

SECURITY SYMBOLS AND INSTRUCTIONS



DANGER

This sign indicates a warning indicating potential dangers. Disregarding these warnings may lead to severe or even fatal injuries.



WARNING

This sign serves to indicate a potentially hazardous situation that poses a risk of injury or damage. Failure to take appropriate precautions may result in injuries or material losses.



CAUTION

This sign communicates potential hazards. Passing over essential precautions may result in both minor injuries and financial losses.



IMPORTANT

Specifies notifications and alerts on how to operate the machine.



Before proceeding with the installation of the product, ensure to read the user manual thoroughly. It is important for your health and the long-term usability of the product that you strictly adhere to all warning labels and safety precautions mentioned in the manual.



This product should not be thrown away after reaching its end of life. Electrical and/or electronic devices should be recycled at recycling facilities.

Explanation Of Safety Symbols



Review this manual carefully before operating the equipment. This device should only be used by qualified personnel. It is crucial to understand the potential health risks and operate the device correctly to ensure safe operation. Nuriş Technology cannot be held responsible for any injuries, fatalities, or device malfunctions caused by improper use or a lack of understanding of the identified risks.



ELECTRIC SHOCK CAN KILL

Arc welding machines can generate high voltages during the operation. Do not touch the live parts such as electrode clamp, work clamp or electrode. Always use the insulated part of the electrode clamp. Wear protective insulating gloves to prevent risk of electric shock. Do not touch any damaged cables.



FUMES AND GASES CAN BE DANGEROUS

Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. To avoid these dangers, the operator must use enough ventilation or exhaust to keep fumes and gases away from the breathing zone.



ARC AND RAYS CAN BURN

Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing. Use suitable clothing made from durable flame-resistant material to protect you skin and that of your helpers. Protect other nearby personnel with suitable, non-flammable screening and warn them not to watch the arc nor expose themselves to the arc.



WELDING SPARKS CAN CAUSE FIRE OR EXPLOSION

Remove fire hazards from the welding area and have a fire extinguisher readily available. Welding sparks and hot materials from the welding process can easily go through small cracks and openings to adjacent areas. Do not weld on any tanks, drums, containers, or material until the proper steps have been taken to ensure that no flammable or toxic vapours will be present.



ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS

Electric current flowing through any conductor creates electric and magnetic fields (EMF). EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before operating this equipment.



WELDED MATERIALS CAN BURN

Welding generates a large amount of heat. Hot surfaces and materials in work area can cause serious burns. Use gloves and pliers when touching or moving materials in the work area.



NOISE MAY CAUSE DAMAGE TO YOUR HEARING ABILITY

The noise generated by some equipment and operations may damage your hearing ability. Wear approved personal ear protective equipment if the noise level is high.



MOVING PARTS MAY CAUSE INJURIES

Keep away from the moving parts. Keep all protective devices such as covers, panels, flaps, etc. of machinery and equipment closed and in locked position.

THINGS TO CONSIDER WHEN WELDING



ANGER

The welding machine should not be operated, and welding should not be performed without using the following protective equipment:

- **Welder's hand shield or head mask:** If not used, the arc rays will result damage to the eyes.
- **Welding glove:** To protect hands and wrists against heat and sparks, long leather gloves must be used.
- **Welding suit:** Welding suit made of synthetic materials should not be used as they can be quickly burned by welding spatter.
- **Occupational footwear:** Shoes with metal toes should be used in case heavy objects fall.
- **Earmuffs/ear plug:** Exposure to welding noise for prolonged periods can lead to hearing damage.

- Do not weld when the cover and/or panels of the machine are open.
- Ventilate the work environment during the welding process.
- Ventilation is necessary in all welding operations. However, it should be noted that excessive air circulation in the welding area can disrupt the protective gas shield. The sensation of burning or irritation in the eyes, nose, and throat are the primary signs of inadequate ventilation. When encountering such a situation, increase the ventilation immediately, and if the problem persists, stop the welding process.
- Do not perform welding or cutting operations on completely sealed cylinders or pipes. Prior to welding, cutting, or any other operations, it is necessary to open, empty, and clean such objects. Welding should not be performed on cylinders or pipes that have previously contained explosive or flammable substances, even if they are empty.
- Welding operations should be halted, and power supply disconnected in case of rain. Otherwise, there is a risk of electric shock and/or machine malfunction.
- Otherwise, there is a risk of electric shock and/or machine malfunction. The surfaces of the parts to be welded should be cleaned using a steel brush or grinding equipment.
- The ground clamp should be attached as close as possible to the welding area and should have good contact with the workpiece. The welding current cable should be used without bending it to avoid damaging the internal spiral.
- The welding torch should be positioned in such a way that the tip is visible, and the weld pool can be observed and controlled.
- Welding continuously for long periods of time can lead to excessive fluid loss in the welder's body. Therefore, long-term welding should be avoided.
- It is not recommended to perform welding operations continuously for extended periods of time for the sake of user ergonomics.

General Safety Warnings

- The installation and first operation of the machine should be done by authorized technical personnel.
- Protective equipment should be procured and used according to the warnings and risks specified in the "Safety Warnings and Instructions" section.
- Equipment and operations can cause hearing loss due to the noise they generate.
- If the noise level is high, appropriate hearing protection devices such as earplugs or earmuffs that comply with relevant standards should be used.
- Do not touch hot components with bare hands. Use tongs and protective gloves to handle hot parts. When working on the machine by contacting it for maintenance and/or repair purposes, ensure that the machine has completely cooled down. Keep all covers and panels of the machine closed, and under no circumstances perform welding when the covers and/or panels are open.
- Stay away from moving parts as they can cause injuries.
- Wear safety shoes with steel toes to protect against the possibility of heavy objects falling.
- Be careful when unwinding the welding wire from the spool. It can unexpectedly spring out and cause harm to the person performing the welding or individuals nearby.
- Fire extinguishers and firefighting materials should be present in the welding area. Flammable materials such as gasoline, oil, and similar substances should be kept away from the welding area. Gasoline, oil, and similar flammable materials should be kept away from the welding area.
- After the completion of the welding process, welded parts should be periodically inspected as certain materials may continue to burn for a while.
- After disconnecting the machine's power supply, wait at least 5 minutes for the machine to cool down before performing any maintenance or repair tasks.

ELECTROMAGNETIC COMPATIBILITY (EMC)

This machine has been designed in accordance with all relative directives and norms. However, it may still generate electromagnetic disturbances that can affect other systems like telecommunications (telephone, radio, and television) or other safety systems. These disturbances can cause safety problems in the affected systems. Read and understand this section to eliminate or reduce the amount of electromagnetic disturbance generated by this machine.



IMPORTANT

This machine is designed for use in industrial areas. Before using it in residential or similar places, special precautions need to be taken to prevent potential electromagnetic effects. In such cases, it is advisable to contact Nuriş Teknoloji A.Ş. for technical support.



WARNING

This machine has been designed to operate in an industrial area. Unexpected EMC problems may occur during operation in other environments. To operate in a domestic area, it is necessary to observe precautions to eliminate possible electromagnetic disturbances.

Before installing the machine, the operator must check the work area for any devices that may malfunction because of electromagnetic disturbances. Consider the following:

- Input and output cables, control cables, and telephone cables that are in or adjacent to the work area and the machine,
- Radio and/or television transmitters and receivers,
- Computers or computer-controlled equipment,
- Safety and control equipment for industrial processes,
- Personal medical devices like pacemakers and hearing aids,
- Equipment for calibration and measurement.
- Check the electromagnetic immunity for equipment operating in or near the work area. The operator must be sure that all equipment in the area is compatible. This may require additional protection measures.
- The dimensions of the work area to consider will depend on the construction of the area and other activities that are taking place.

If any electromagnetic disturbances are detected the operator must put in place corrective actions to eliminate these disturbances. Consider the following guidelines to reduce electromagnetic emissions from the machine:

- Connect the machine to the input supply according to this manual. If disturbances occur it may be necessary to take additional precautions such as filtering the input supply.
- The output cables should be kept as short as possible and should be positioned together.
- If possible, connect the work piece to ground to reduce the electromagnetic emissions. The operator must check that connecting the work piece to ground does not cause problems or unsafe operating conditions for personnel and equipment.
- Shielding of cables in the work area can reduce electromagnetic emissions. This may be necessary for special applications.

GENERAL OVERVIEW

LN500W SYNERGIC DOUBLE PULSE and LN500A SYNERGIC DOUBLE PULSE;

- It is a welding machine consisting of a detachable wire feeding unit and a power source that provides welding current, featuring inverter technology, synergic functions, and multi-process capabilities.
- It is a professional arc welding solution developed for the welding of metals such as aluminium, stainless steel, and carbon steel to each other. Additionally, it provides superior performance thanks to its synergic, pulse, and double pulse features, which can be used in MIG/MAG mode (shielding gas).
- It can be used for electrode welding in MMA mode. It is also suitable for carbon cutting tasks up to 8mm (carbon cutting or electrode clamp is an optional accessory).
- It can be used for argon DC (TIG) welding applications with a suitable TIG torch using the Lift-TIG mode (TIG torch is an optional accessory).
- This model has a water circulation and cooling radiator for the torch.
- LN500A SYNERGIC DOUBLE PULSE does not have a water chiller system for the torch. The torch is cooled with air/protective gas. The machine has the following features:
 - Thanks to the new generation inverter technology, there is continuous performance.
 - The ability to automatically adjust welding characteristics through synergic programs."
 - The ability to weld thin and delicate materials smoothly thanks to the DOUBLE PULSE feature.
 - 10 memorable programs
 - Superior performance in all wire types and diameters thanks to the powerful wire driving motor with encoder.
 - Synergistic, PULSE and DOUBLE PULSE feature in MIG/MAG mode
 - Program switching during the welding process in Smart trigger mode
 - MIG/MAG welding as well as MMA and Argon (Lift-TIG) welding
 - Thermal protection against overheating
 - 24 Volt, 70 W CO₂ gas heater connection connector
 - Lightweight and easy to carry compared to competitors

TECHNICAL PARAMETERS

LN500W SYNERGIC DOUBLE PULSE and LN500A SYNERGIC DOUBLE PULSE are gas metal arc welding machines with inverter technology that can perform MIG/MAG (gas metal arc), MMA (shielded electrode) and argon (lift- TIG) welding with a single machine. Technical specifications are given in a separate table for each operating mode.

TECHNICAL PARAMETERS	UNIT	VALUE
MIG MAG MODE		
Welding Current	A	40-500
Welding Voltage	V	15-42
Duty Cycle 40°C	A	330, %100
	A	400, %60
	A	500, %30
ELECTRODE		
Welding Current	A	40-500
Welding Voltage	V	21.6-40
Duty Cycle(40°C)	A	330, %100
	A	390, %60
	A	500, %30
Lift-TIG		
Welding Current	A	40-500
Welding Voltage	V	11.6-30
Duty Cycle(40°C)	A	340, %100
	A	410, %60
	A	500, %35
MACHINE		
Power Supply Weight	kg	107.4 (water) 86.4(air)
Wire Feeder Weight	kg	15.4kg (water) 15.2kg (air)
Wire Draining Speed Field	m/min	1-20
Machine dimension	mm	W:1100 L:800 H:560
Operational temperature	°C	-10 / +40
Storage temperature	°C	-20 / +55
Protection Class	-	IP21S
Warranty	-	2 Years
ELECTRICAL SPECIFICATIONS		
Voltage	V	380
Phase	-	3
Frequency	Hz	50
Input Power	kVA	23
Input Current	A	50
Open Circuit Voltage	V	85
Efficiency	-	%86
Idle state power	W	11.2

MACHINE PART

The parts for the front and rear of the LN500W SYNERGIC DOUBLE PULSE and LN500A SYNERGIC DOUBLE PULSE are given below. Only the parts of the LN500W SYNERGIC DOUBLE PULSE have a (W) next to them.

NO	DESCRIPTION
1	Welding wire drum
2	Torch connection
3	Hot water connector, red (W)
4	Cold water connector, blue (W)
5	Chassis connection
6	Current/wire speed and material thickness adjustment
7	Voltage adjustment
8	Menu/program setting
9	Torch hanger attachment
10	Remote connection connector (option)
11	Electrode clamp connection
12	Power Switch
13	Water tank cover (W)
14	Water level part (W)

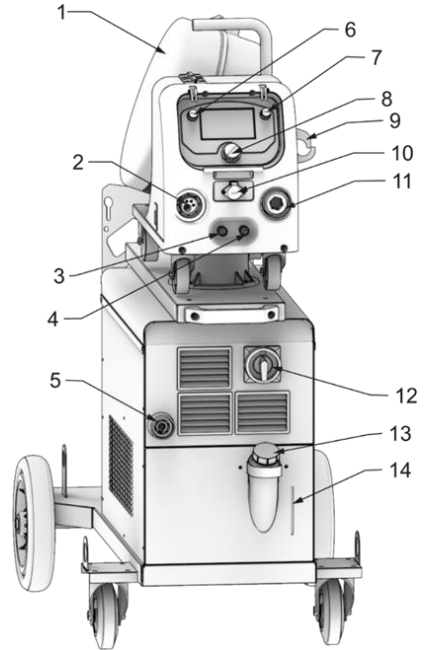


Table 2.1 Part description

Figure 2.1 Front view

NO	DESCRIPTION
1	Gas heat fuse
2	Gas heater connection
3	Wire feed fuse
4	Wire feed communication
5	Welding current (+) output
6	Coolant connector (red inlet) for LN500W
7	Coolant connector (blue inlet) for LN500W
8	Power input

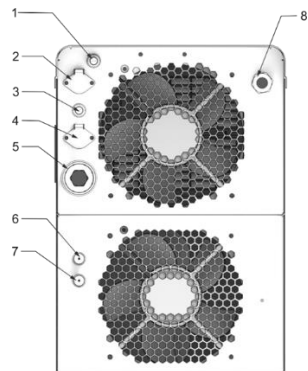


Table 2.2 Part description

Figure 2.2 Rear view

NO	DESCRIPTION
1	Communication connector
2	Gas input coupling
3	Weld input (+)
4	Cold water coupling, blue (W)
5	Warm water coupling, red(W)

Table 2.3 Part description

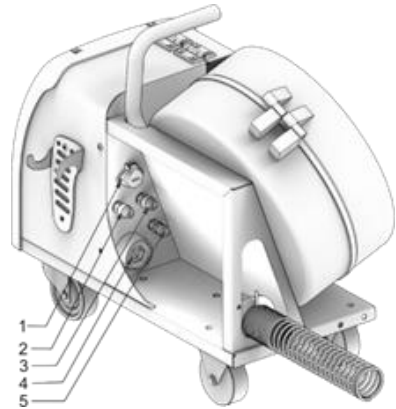


Figure 2.3 Back view

CONNECTION GUIDE

POWER CONNECTION

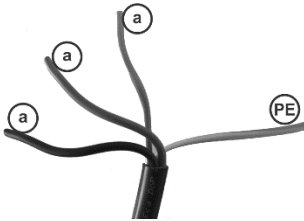


Figure 3.1 Power Connection

Welder power supply operates with three phase 380 Volt 50Hz utility power. The energy input cable is located at the rear of the welder power supply. The yellow-green cable should be connected to protective earth. The remaining cables are the three-phase connection, and the order of their connection to the grid system is unimportant. A suitable fuse must always be used in the electrical panel where the phase connection is made. The technical values specified on the rating plate, such as rated supply voltage (U_i), rated maximum supply current (I_{max}), and maximum effective supply current (I_{1eff}), should be taken into consideration when selecting the fuse.



WARNING

Long power cables should be eliminated. If not possible, they must be coiled/wrapped up (please note that coiled cables may heat-up).



IMPORTANT

The machine must be protected by connecting the ground line to all enclosures. However, it is recommended to use a residual current device (RCD) in the power panel.

The connection between the power supply and wire feeding is made using an intermediate connection package. This package can have different lengths, such as 3 meters, 5 meters, or other lengths, depending on the product type. As indicated in Figure 3.2 :

NO	DESCRIPTION
1	Communication connection
2	Gas hose
3	Coolant connector (blue inlet) for(W)
4	Coolant connector (red inlet) for (W)
5	Welding (+) current output
6	CO ₂ heater output

Table 3.1 Wire feeder parts

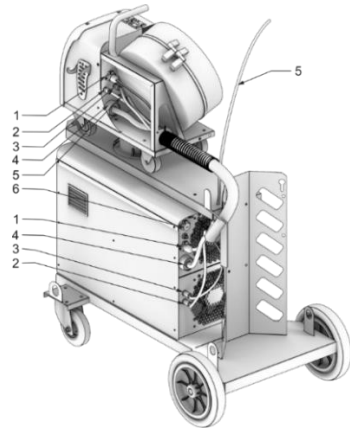


Figure 3.2 Power supply wire feeder connection



WARNING

Worn-out or deteriorated connection elements should not be used, and their controls should be ensured.

MIG/MAG (GAS SHIELDED) MODE CONNECTION

The connections shown in Figure 3.3 should be used for gas metal arc welding (MIG/MAG) mode.

Ground ② connection should be made, and the solidity of the connections should be checked.

When welding, ensure that the cooling liquid connection is made ① otherwise, the torch may be damaged (applies only to the LN500W model).

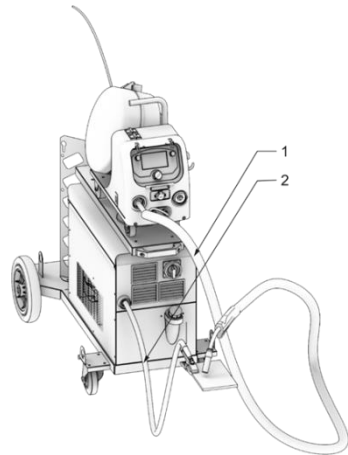


Figure 3.3 MIG/MAG mode connections

MMA MODE (ELECTRODE) CONNECTION

In MMA mode, the connection shown

Figure 3.4 should be made.

Ground ② connection should be made, and the solidity of the connections should be checked.

① MMA illustrates the connection of the electrode cable and clamp.

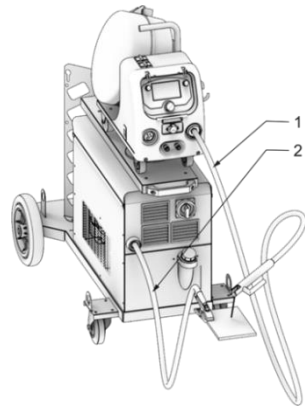


Figure 3.4 MMA mod connection

CONNECTION OF THE WELDING WIRE

Welding wire of appropriate standards must be used during MIG/MAG gas metal arc welding. The wire feed system is designed to handle soft, hard and/or flux-cored welding wires with diameters of 0.8mm, 1.0mm, 1.2mm and 1.6mm. However, the setting and pressure wheel must be selected according to the wire diameter and softness and the other settings must be compatible with it.



WARNING

Before attaching the welding wire, use work gloves to prevent corrosion of the wire and to prevent injury to your hands.

For wire connection, the rear plastic drum of the wire feed and the cover of the part where the wire feed motor is located are opened (Figure 3.5). The plastic screw head of the wire spool brake/tension cylinder (Figure 3.5 -b) is unscrewed manually. After placing the welding wire spool (Figure 3.5 -a) onto the wire spool brake/tension cylinder (Figure 3.5 -b), the plastic screw head is tightened manually. The wire is then passed through the wire channel and brought to the input of the wire feed unit.

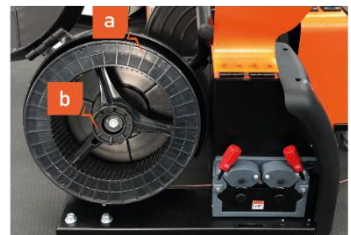


Figure 3.5 Wire feed side view

To remove the wire pressure adjustment handles (red-colored, Figure 3.6 -d), pull the handles outward. During this process, the upper wire pressure rollers will be released, and the wire wheels will disengage. To access the wheels, remove the black screws shown in Figure 3.6 -c and release the securing cover.

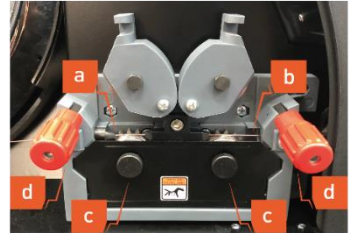


Figure 3.6 Wire feed mechanism

The thickness of the wire to be used is indicated on the wire feed rollers (Figure 3.7 -c). The selection of the wire feed rollers depends on the thickness and material of the wire being used. U-groove wire feed rollers are used for soft wires such as aluminum, while V-groove wire feed rollers are used for steel and stainless steel wires. Also, for flux-cored wire, it is recommended to use serrated V-groove wire feed rollers.

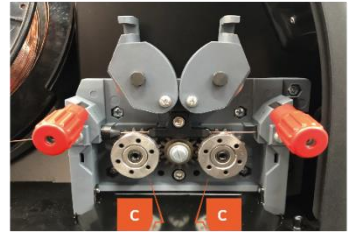


Figure 3.7 Wire feeder roller

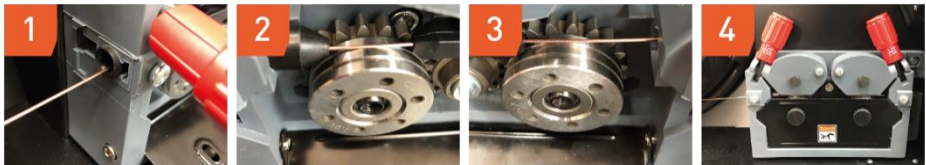


Figure 3.8 Welding wire connection

The welding wire is stretched from the 1st guide shown in Figure 3.8 and driven onto the wire reel. The wire passed through the guide is inserted into the wire drive reel channel as shown in Figure 3.8 -2. The wire passed through the reels is passed through the direction guide as in Figure 3.8 , and the manual driving process is completed. After the manual driving process is completed, overprints are closed (Figure 3.8 -4). By pressing the wire feed button, the wire is fed until the wire comes out homogeneously from the tip of the torch.



WARNING

When initiating the welding process, it is important to pay attention to the trigger condition of the machine. The wire feeding unit screen displays the 2T-4T modes. Failure to observe this may result in unintended triggering of the torch, which can lead to injuries and accidents.

**IMPORTANT**

If the pressure setting is too high, crushing may occur on the wire. The round structure of the wire may be disrupted, and problems may occur while passing through the torch. In addition, the problem of clogging in the contact nozzle may be encountered. If the pressure is low, the wire will be loose, and the wire feeding will not be homogeneous. When adjusting the pressure, it is done from loose to tight.

GAS CONNECTION

Argon or Argon + Helium is used for welding aluminium, magnesium, copper and their alloys of non-ferrous metals, and Argon + Oxygen mixed gases are used for welding stainless steels.

The oxygen ratio must never exceed 3% in welding stainless steels.

Attach the gas connection hose and regulator to the tube, loosen the adjustment screw and turn on the gas and adjust the gas flow by tightening the adjustment screw. If CO₂ gas is to be used, a CO₂ heater should be connected. There is a power plug for the CO₂ heater at the rear of the welding power unit.

**WARNING**

Gas cylinders behind the machine must be secured with a fixing chain.

COOLANT

- Use soft water as the coolant. Lime-containing water can cause problems in the machine's cooling system and shorten its lifespan. Ensure that the water used is clean and free from any particles.
- The cooling liquid tank should be filled with a maximum of 7 Liters of coolant. The liquid level should be between the minimum (min) and maximum (max) lines. The coolant level should be checked before every welding operation.
- Depending on the seasonal conditions, it is recommended to use a mixture of "5 Liters of water + 2 Liters of antifreeze" as the cooling fluid to prevent freezing. The ratio of antifreeze should be adjusted according to the lowest possible ambient temperature. Coolant must be clean, and the water tank cap must be closed to prevent dust ingress.
Do not use any other liquid other than a mixture of coolant and antifreeze. Some fluids, such as alcohol, can react with the antifreeze in the system and cause coagulation.

**IMPORTANT**

In case the cooling liquid reaches the minimum level, the welding process should be stopped. An antifreeze mixture should be added to the water tank. Failure to do so will result in a reduced lifespan of the torch over time.

OPERATION

USE OF THE WIRE FEEDING UNIT

! IMPORTANT

- Menu transitions are made by rotating encoder number 8 in Figure 2.1. It will be referred to as the "middle encoder" in the rest of the document. The encoder number 7 in Figure 2.1 will be referred to as the "right encoder".
- The encoder number 6 in Figure 2.1 will be referred to as the "left encoder".
- The middle encoder is used to make menu transitions by rotation and selections by pressing. The right and left encoders are used to go back when pressed.

Mode Change

- By rotating the middle encoder, you navigate to the "Functions" symbol on the main screen and press the encoder to enter the menu. Then, from the opened mode selection screen, the desired mode is selected by pressing the middle encoder, and the transition to the mode is made.



MIG Mod / SMIG Screen

- The relevant screen is the SMIG (Synergic MIG) homepage. On this screen, you can change the Current, Wire Speed, Material Thickness, and Voltage values. You can switch to the Synergic Programs screen. The symbols on the bottom bar and welding settings are explained at the end of the section.



Current Setting

- In the relevant section, the left encoder can be rotated to adjust the program current. As a feature of the Synergic mode, as the current changes, the corresponding wire speed and voltage will be automatically adjusted accordingly.



Material Thickness Adjustment

- In the relevant section, the left encoder can be rotated to adjust the material thickness. In Synergic mode, the program will determine the appropriate current and voltage based on the selected program and material thickness.



Arc Size Setting

- By rotating the right encoder, the arc length can be increased or decreased. This adjustment affects the voltage.



Water Cooling Error

- The relevant symbol indicates "Torch-Water Cooling Setting." If the symbol is visible, it means the water cooling is off.



Synergic Programs Screen

- On the main screen, if you navigate to the relevant section using the middle encoder and press the encoder, the Synergic Programs screen will open.
- Once the program number is determined, it is saved by pressing the middle encoder again, and then returning to the main screen. You can go back without selecting a program using the right and left encoders.



- If program values are selected and entered by pressing the middle encoder, the program number is automatically determined. Here, using the middle encoder, the material type to be welded, the welding wire used in the machine, wire diameter, gas type, and whether pulse is on or off are selected sequentially. After each feature is determined, selection is made by pressing the middle encoder and moving on to the next feature. When all features are selected, the program number is automatically determined.



Manual MIG Screen

- In the MMIG (Manual MIG) main screen, the wire speed can be adjusted in meters per minute using the left encoder. Voltage adjustment is done using the right encoder. The symbols on the bottom bar and welding settings are explained at the end of the section.
- The relevant symbol indicates the "Torch-Water Cooling setting." If the symbol is visible, it means the water cooling is off.



UYARI

If you are using a water-cooled torch, it is recommended to enable the "Water Cooling" setting to prevent damage to the equipment. (This is explained under the "Welding Settings" section at the end of the chapter.)

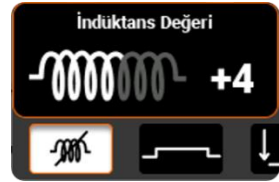
Low Bar Section

In the lower bar sections described below, you can navigate with the middle encoder, enter the selected feature by pressing the middle encoder, and change the values. After the necessary adjustments are made, press the middle encoder again to save them.

Inductance Setting



- The inductance value can be changed from the relevant setting.
- Increasing inductance makes the welding more widely spread; decreasing it makes it more concentrated. The default value is 0 (closed).



Pulse Setting



- Pulse setting cannot be selected in SMIG mode; it provides pulse information for the program. In MMIG mode, it enables turning pulse on and off.
- Pulse is a feature that changes the welding characteristic. It is preferred when welding more delicate materials. It ensures low heat input and less spatter.

Torch Trigger Type



- To change the torch type, there is no need for different types of torches. It is a feature selected based on how the user wants to use the torch.
- **2T trigger setting** Welds while holding the trigger, stops when released. In addition, if the trigger is briefly pressed and pulled, it switches between the saved smart programs.
- **2T Smart trigger setting** works as follows: When the trigger is held down, welding occurs, and it stops when released, similar to 2T mode. Additionally, if the trigger is briefly pressed and released, it switches to the next program saved in memory. The number of program transitions in memory is adjusted with the "Smart Trigger Programs" value in the Welding Settings section. This will be covered in the "Memory" and "Welding Settings" sections.
- **4T trigger setting:** The torch is set to 4T. Welding starts when you press and release the trigger and stops when you press and release it again. If the



trigger is held down before stopping the weld, crater fill function works.

- **4T trigger setting:** The torch is set to 4T Smart. Welding starts when you press and release the trigger and stops when you press it again. In addition, if the trigger is briefly pressed and pulled, it switches between the saved smart programs.



Memory



- On the relevant screen, you can navigate between memory programs using the middle encoder, and the characteristics of the memory programs can be viewed from the table.
- If the middle encoder is pressed at the selected memory number, you switch to the registered characteristics in the memory.
- If the encoder is held down for 3 seconds, the options "Save Over," "Delete," and "Cancel" will appear.
- **Save Over** option saves the set program number, current, etc., welding properties to the relevant memory number.
- **Delete** option clears the relevant program data in memory, returning to default settings.
- **Cancel** option is used to cancel the selection and return. Memory usage in the MMIG screen is the same as in SMIG, only the saved parameters differ.



Welding Setting



- **Wire burn-back time:** The duration of the arc while the wire stops at the end of welding. If the time is kept short, the wire may stick to the material. In very long times, the wire may stick to the torch.
- **Pre-gas time:** Sets the duration of the shielding gas that starts to be given before welding starts.
- **Post-gas speed:** Sets the duration of the shielding gas that continues to be given after the welding process is finished.
- **Initial wire speed:** The speed of the wire going into the material until the welding wire touches the material to be welded and starts the welding.

- **Soft Start:** After welding starts, the time to reach the set wire speed from the initial wire speed.
- **Crater fill time:** Sets the crater fill time when welding is complete.
- **Crater fill ratio:** Adjusts the ratio of end current to main current during crater fill.
- **Hot Start:** When starting the welding process, a hot start ratio multiplier is applied to the main current, so that the welding process starts at a higher current value, thus allowing the cold material to be welded and the welding wire to heat up quickly.
- **Water Motor Stop:** When the dry torch is used, if this setting is set to 1, the water motor will not start.
- **Uç Temizleme Süresi:** Kaynak bitiminde telin ucunda damlacık kalmaması için bu süre ayarlanmalıdır. Eğer kaynak bitiminde tel ucunda damlacık kalmıyorsa ayar iyidir, kalıyorsa yükseltilmelidir. Kaynak bitiminde ufak bir patlama sesi çıkıyorsa, ayar yüksektir.
- **2P Active:** Çift darbeyi açma ve kapatma ayarı. 2P Frekansı: Çift darbe frekansını belirler. Frekans arttıkça daha hızlı üst akım ve alt akım değişimi olur.
- **2P Occupancy ratio:** Sets the ratio of the dwell time in the upper current of the double pulse to the dwell time in the lower current.
- **Smart trigger programs:** It is used to recall the memorized programs with the smart trigger function when welding is done or not.
- **Manual wire speed:** While attaching the wire, it adjusts the speed of the wire supplied with the wire feed button.

MMA Mode

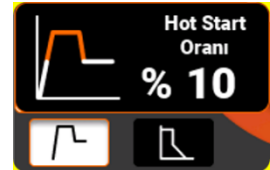
The relevant screen is the MMA welding home page. On this screen, Current, Hot Start, and Arc Force settings can be adjusted.

- With the left encoder, the current can be increased or decreased by 5 Amperes. With the right encoder, the current can be increased or decreased by 1 Ampere. The middle encoder can be used to switch to Hot Start and Arc Force settings, and it can also open the functions screen that allows switching to other welding modes.



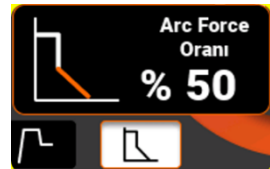
Hot Start Setting

- When starting the welding process, a multiplier based on the Hot Start ratio is applied to the main current. This ensures that the welding process starts at a higher current value, allowing the electrode to heat up quickly along with the cold material to be welded.



Arc Force Setting

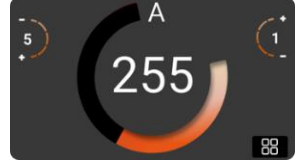
- Arc Force is a system that increases the current instantly when the electrode is about to stick to the material and cause a short circuit, preventing the electrode from sticking. When such an issue occurs, it is advisable to increase this ratio.



LIFT TIG Mode

The relevant screen is the Lift TIG welding homepage. On this screen, Current adjustment can be made.

- With the left encoder, the current can be increased or decreased by 5 Amperes. With the right encoder, the current can be increased or decreased by 1 Ampere. The middle encoder can be used to open the functions screen that allows switching to other welding modes.



System Settings

- **System settings** section is controlled using the middle encoder. By pressing the middle encoder, entry to the relevant screens is provided, and by pressing the right and left encoders, you can navigate back.

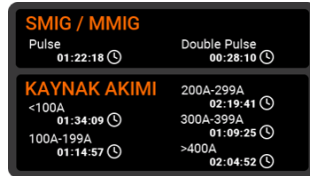


Language

- In this section, language change can be made.

Working Hours

- On the relevant screen, you can observe the total operating time of the machine, as well as the welding time in Synergic MIG, Manual MIG, TIG, and MMA modes.
- By rotating the middle encoder, the MIG mode is selected, and by pressing the encoder, you can enter it to access detailed parameters for MIG welding.
- In the detailed parameters of MIG welding, you can observe welding times dependent on current and Pulse-Double Pulse. The relevant times are the total times for MMIG and SMIG modes.



STORAGE AND INSTALLATION

- The machine should be stored in a closed and dry environment between -20 °C and +50 °C.
- It should be kept upright, and nothing should be put on it.
- If it will be left unused for an extended period, the coolant should be drained.
- Operating temperature must be between -10 °C and +40 °C and it should be operated in a dry environment.
- During operation, ensure that it can easily intake air.

TRANSPORTATION

- Always use the handling ring when moving the machine.
- Never pull-on cables, torch, or hoses.
- Before moving make sure that the machine is turned off and disconnected from the power supply.
- Gas cylinders and small parts must be transported separately from the machine.
- Chains and/or ropes to be used during transportation should be of equal length, equal load distribution should be ensured, and the machine should be lifted in a balanced way.
- The relevant regulations of the country of use, occupational safety and accident prevention rules should be considered.
- During transport, nobody should be in the dangerous area under the machine.



WARNING

- Gas cylinders and small parts must be transported separately from the machine. They must not be craned together.
- Some machines can be extremely heavy, so it is important to take the necessary safety precautions when relocating them in the environment.
- Work shoes must be worn during transportation.

INSTALLATION

- Machine should be positioned in a location easily accessible to the operator during use.
- Welding machine should not be positioned near the operator in a way that could negatively affect their work.
- Machine should be positioned in a location easily accessible to the operator during use.
- The floor should not be wet, and the working environment should not be excessively humid.
- Be careful of dust and dirt that may get inside the machine.
- Cables should not be stacked on top of each other, and they should be located on the same side as the operator but as far away from the operator as possible. Cables should not be scattered or tangled around the operator.
- The gas cylinder should be positioned away from the welding area, should not be exposed to heat, and should not be affected by welding sparks.
- The machine should not be placed near devices with electromagnetic sensitivity during operation and storage.

- The machine should not be placed on surfaces with a slope greater than 10°. Before use, ensure that the machine is stably positioned.
- All electrical connections should be checked.
- The instructions described in this manual should not be applied differently or incorrectly, and no maintenance, repair, or modification should be performed on the machine without authorization.
- To prevent potential work accidents and machine malfunctions, maintenance, repair, or modification should only be performed by authorized personnel.
- Technical issues arising from improper interventions may void the manufacturer's warranty.
- When the machine is used in accordance with the guidelines and specifications, it does not require any significant maintenance. However, the following maintenance procedures should be performed to ensure the machine's high efficiency and long lifetime.
- The specified periods below are applicable when no technical issues have occurred with the device. However, it is important to note that these intervals may be shortened based on the frequency of machine usage and the level of contamination in the working environment.

MAINTENANCE AND REPAIR

- All the electrical connections should be checked regularly.
- Maintenance, repair, or any modification to the machine cannot be made by applying different or incorrectly what is described in this manual.
- Repairs and modifications should only be carried out by authorized persons to prevent possible injuries and damage to the machine.
- The machine may be out of warranty because of unauthorized intervention.
- The device does not require maintenance in the specified conditions, but some points should be considered for its high efficiency and long-lasting operation.
- The periods specified below are the periods to be followed in case the device does not encounter any problems. These periods can be shortened according to the density and pollution of the working environment.

Daily Maintenance

- Before operating the machine, the electrical power supply cable and welding cables must be visually inspected. If there is any crushing, peeling or breakage in the cables, the service should be notified.
- Check whether the welding cables and torch terminals are tight and suitable. Tighten if loose.
- Daily maintenance should be done by the person who will perform the welding process.
- The machine coolant level should be checked before each use.

Quarterly Maintenance

- Crushed, frayed or broken cables or cords should be maintained and replaced with new ones if necessary.

Semi-Annually Maintenance

- Electrical power supply connectors must be checked and tightened if loose.
- Side caps should be opened, and all energy connections here should be tightened.
- All accessible bolts and nuts should be checked, and loose ones should be tightened in the body and other parts of the machine.
- Dust accumulated in the machine should be cleaned with compressed dry air. If the machine is used in very dirty environments, this process should be done in periods shorter than six months.

Non-Periodic Maintenance

- The consumables on the torch should be cleaned regularly and replaced if necessary.
- For a good welding quality, if the welding wire is rusted or corroded, it should be replaced with a new one.
- If the labels on the device are dirty and difficult to read, clean them.

TROUBLESHOOTING

WELDING MACHINE

First, check all power connections. The grid connection is a three-phase system. Always check the nominal voltage level for each phase. The welding power supply may experience reduced performance in the event of a phase loss.

PROBLEM	POSSIBLE CAUSES
Wire drive reels spins but wire does not come through	<ul style="list-style-type: none"> * The compression spring pressing the wire feed spools are not in place or is loose. * The torch lead is bent excessively or the spiral guide inside the torch is clogged. * The contact part is blocked. * Depending on the wire diameter used, the wrong groove was used in the wire feed spool. * The wire is not placed correctly in the spool groove. * Suitable welding wire is not used.
Irregular wire feed	<ul style="list-style-type: none"> * The contact part is deformed. * The wire feed spools are dirty or worn. * Wrong groove is used in the wire feed spool. * The spiral guide inside the torch is clogged. * Suitable welding wire is not used.
The arc does not start	<ul style="list-style-type: none"> * The welding cable is not properly connected. * The contact part is deformed. * Earth clamp not connected correctly.

WELD QUALITY

To achieve a high-quality weld, welding parameters such as wire feed speed, welding voltage, and shielding gas flow rate should be correctly adjusted.

The general problems defined for achieving a high-quality weld are given in the table below:

PROBLEM	POSSIBLE CAUSES
Long and unstable arc	* Welding voltage is of high value according to wire diameter and wire feed speed.
Powerless arc	* Welding voltage is of high value according to wire diameter and wire feed speed.
Droplets are splashing	* The voltage is too high. * The gas nozzle is not cleaned properly. * Wire speed is set incorrectly.
Insufficient welding filling	* The voltage is too high. * The gas nozzle is not cleaned properly. * Wire speed is set incorrectly.
Porous welding	* The gas level is too low or too high. * Splashed droplets accumulate in the gas nozzle and cause insufficient gas flow. * The air flow in the welding area neutralizes the shielding gas. * The distance between the tip of the torch and the material being welded is too large or the torch is being used incorrectly. * The material to be welded may be moist, oily, rusty. * Wrong shielding gas used.
Bad welding filling	* Irregular use or incorrect contact part is used. * Low welding voltage selected. * Irregular welding speed used.
Uneven welding	* Wire speed is very high compared to the voltage value. * Welding speed is very low.
Penetration is insufficient	* Wire feed speed is very low compared to voltage.

ERROR MESSAGE

ERROR MESSAGE	MEANING	SOLUTION
E- 3001	High IGBT temperature	The welding process should be stopped, and the machine should be allowed to cool down. Welding should be performed at a lower intensity. If the error message persists despite these measures, please contact the service.
E- 3002	High diode temperature	The welding process should be stopped, and the machine should be allowed to cool down. Welding should be done at a lower setting. If the error message continues to appear even after this, contact the service.
E- 3003	Welding machine high output voltage	Service must be contacted.
E- 3004	Welding output high current	Service must be contacted.
E- 3006	Current sensor error	Service must be contacted.
E- 3007	5V sensor supply low voltage	Service must be contacted.
E- 3008	5V sensor supply high voltage	Service must be contacted.
E- 3009	Overcurrent in IGBT sensor	Service must be contacted.
E- 3010	Short circuit in IGBT sensor	Service must be contacted.
E- 3011	Overcurrent in Diode sensor	Service must be contacted.
E- 3012	Short circuit in Diode sensor	Service must be contacted.
E- 3201	Communication error	Please check the communication cable and connector between the power unit and wire feeding unit. If the error persists, contact the service.
E- 4000	Range	Please wait for it to cool down.

DIAGRAM

LN500W Synergic and LN500A Synergic are welding machines that utilize inverter technology.

The three-phase grid supply is connected to the NHEMSL01500 three-phase switch. The output of the switch is connected to the NHOUKR0200 Inverter EMI filter card.

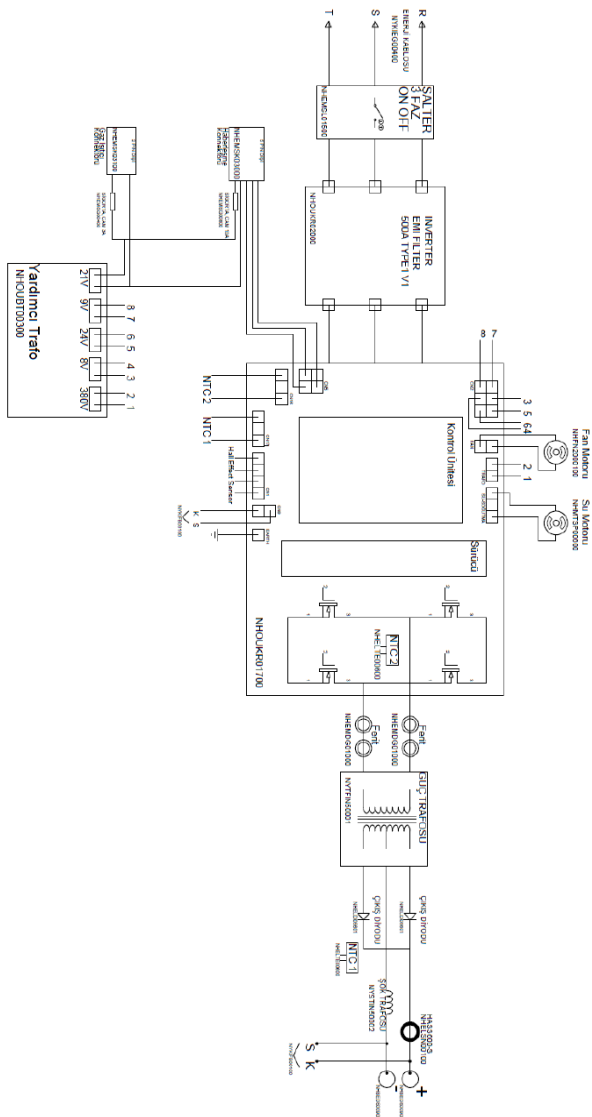
The noise coming from the line or the electrical noise to be applied to the line is filtered by this card. Its output is connected to the NHOUKR01700 main control card.

This card contains a three-phase DC rectifier, a full-bridge IGBT, and drivers for control and communication electronics. The output of the IGBT bridge is connected to the NYTFIN50001 HF power transformer via EMI filter ferrite rings (NHEDMG01000).

The transformer outputs are transferred to the NYSTIN50002 shock transformer through the NHELD05801 HF diodes.

The output current is connected to the main control card through the NHELSN00100 current transformer and voltage feedback via the NYKFB00100 voltage feedback.

Corrected translation: The output current is connected to the main control card through the NHELSN00100 current transformer, and the voltage feedback is connected via the NYKFB00100 voltage feedback.



TRANSPORTATION

- Make sure that the device's electrical connections are disconnected.
- Carefully coil the cables around designated areas to shield them from impacts and compression during transportation.
- Take precautions to protect the machine from adverse weather conditions during transit.
- Avoid stacking or piling up multiple devices.
- Utilize the crane lugs located on top or next to the wheels to lift the device.
- Disconnect all electrical connections while transporting the device.
- Refrain from carrying the device upside down or on its side.
- Avoid stacking the devices as they are not suitable for stacking.
- Safeguard the devices against impacts and external weather conditions during transportation.

MANUFACTURER COMPANY

NURIS TECHNOLOGY and MACHINERY IND. TRADE. Inc.

Ankara Organized Industrial Zone Ahi Evran OSB Neighborhood. Babürşah Street. No: 2
06935 Sincan-ANKARA/TURKEY

Phone: +90 (312) 267 58 60

Web:

SERVICE

For the most update list of local representatives and authorized technical service lists, refer to www.nuris.com.tr. If there is no accessible technical service in the territory, the default technical service contact info is given below:

NURIS TECHNOLOGY and MACHINERY IND. TRADE. Inc.

Ankara Organized Industrial Zone Ahi Evran OSB Neighborhood. Babürşah Street. No: 2
06935 Sincan-ANKARA/TURKEY

Phone: +90 (312) 267 58 60

Web: www.nuris.com.tr

WARRANTY DOCUMENT

1. The Warranty Period starts from the product delivery date and is 3 (three) years.
2. The warranty duration of the product replaced during the warranty period is limited to the remaining warranty period of the purchased product.
3. All parts (such as the wire feeder) supplied with the product and required for the operation of the product are under the warranty of Nuriş Teknoloji.
4. If the product malfunctions during the warranty period due to material, workmanship, and assembly errors, it will be repaired without any labour cost, replacement part cost or any other fee.
5. The product invoice can be accepted as the warranty certificate.
6. Worn out parts and accessories such as welding torch, electrode holder, power supply cable, control cables, mains connection plug, chassis cable, earth clamp, electrode cable, gas hose, intermediate connection cables, wire press wheels and similar parts are consumables and are not covered by the warranty.
7. The repair period of the product starts from the date of notification of the product defect to the authorized service station or the seller within the warranty period, and from the date of delivery of the product to the authorized service station outside the warranty period.
8. The product within the scope of Nuriş Teknoloji guarantee is checked before packaging and shipping. After receiving the product, check whether there is any damage to the product, in case of damage, notify Nuriş Teknoloji and the shipping company immediately. Check the contents of the box with the ingredient list.
9. The product is out of warranty in the following cases:
 - Products that have been opened or dismantled without the participation of Nuriş Teknoloji officials,
 - Products damaged due to misuse,
 - Products operated under improper installation-maintenance or unsuitable storage / operation conditions,
 - Products that fail due to excessive vibration and/or shock during transportation operations such as loading and unloading,
 - Products damaged in natural disasters (fire, flood, earthquake, flood and lightning strike, etc.),
 - Products that fail as a result of using original and unsuitable spare parts and accessories,
 - Products that fail due to utility power surges or similar problems outside the limits declared by the manufacturer.
10. Nuriş Teknoloji has no responsibility for the issues such as loss of business and loss of production that may occur due to malfunctions that may occur in the machines, except for the free repair of the above-mentioned products under warranty.

Users are responsible to act in-line with the above information. Defects caused by use contrary to the user manual are not covered by the warranty.

NURİŞ TEKNOLOJİ A.Ş.

WELDING MACHINE
WARRANTY DOCUMENT

MACHINE INFORMATION

Brand: NURİŞ TEKNOLOJİ A.Ş.

Model:

Serial Number:

Company Information

Company Name:

Authorized Person:

Telephone:

Address:

City/Country:

E-mail:

SIGNATURE/CACHET:

SERVICE INFORMATION

Authorized Service:

Service Staff:

Installation Date:

Warranty Starting Date:

Warranty Expiration Date:

Telephone:

SIGNATURE/CACHET:

WARNING: Please have both copies of the Warranty Document signed by an Authorized Service Centre for it to be valid. Before signing the Warranty Document, please verify the machine's serial numbers.

I have received the welding machine in a sound and complete condition, with the model and serial numbers as indicated on the front page. This receipt is in accordance with the terms and conditions stated in the warranty document.

NURİŞ TEKNOLOJİ A.Ş.

WELDING MACHINE
WARRANTY DOCUMENT

MACHINE INFORMATION

Brand: NURİŞ TEKNOLOJİ A.Ş.

Model:

Serial Number:

Company Information

Company Name:

Authorized Person:

Telephone:

Address:

City/Country:

E-mail:

SIGNATURE/CACHET:

SERVICE INFORMATION

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EN 2024

LN500 WELDING MACHINE

SYNERGIC DOUBLE PULSE

USER MANUAL

