

MIG 430 RWS Operations Manual



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SAFETY



Please read this manual carefully before operating the equipment. This device should be used only by qualified personnel. Safe operation is only possible with understanding the possible risks for health and correct operation of the device. Nuriş Teknoloji is not responsible for any injury, death, or malfunction of the device due to the improper use or lack of understanding for 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 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 vapors 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.

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.



WARNING: This machine has been designed to operate in an industrial area. To operate in a domestic area, it is necessary to observe precautions to eliminate possible electromagnetic disturbances. The operator must install and operate this equipment as described in this manual. If any electromagnetic disturbances are detected the operator must put in place corrective actions to eliminate these 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.

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.

TECHNICAL SPECIFICATIONS

The technical specifications for MIG 430 W-RWS are given in the table below.

TECHNICAL PROPERTIES	UNIT	VALUE
Utility Voltage	V AC	3x380 ± %10
Utility Frequency	Hz	50
Input Power	kVA	16,5
Input Current	A	16
Welding Current	A	40 - 370
Welding Voltage	V	18,5 - 42
Open Circuit Voltage	V	42
%100 Duty	A	250
%60 Duty	A	300
Current Setting	A	3x10 Stages
Welding wire feed rate	m/min	2.0 - 20.0
Welding Wire Diameter	Mm	0.80 - 1.00 - 1.20
Protection Class	IP	IP23S
Weight	kg	Power Supply: 154 Wire Feeder: 18
Machine Dimensions	mm	WxHxD 505x910x985
Welding Cable Length	m	3

For any maintenance or repair operations it is recommended to contact the nearest technical service center or Nuriş Teknoloji. Maintenance or repairs performed by unauthorized service centers or personnel will null and void the manufacturer's warranty.

INTRODUCTION

MIG 430 W-RWS gas metal welding machine has two main parts. The wire feeder unit names NSK 4-C and welding power supply.

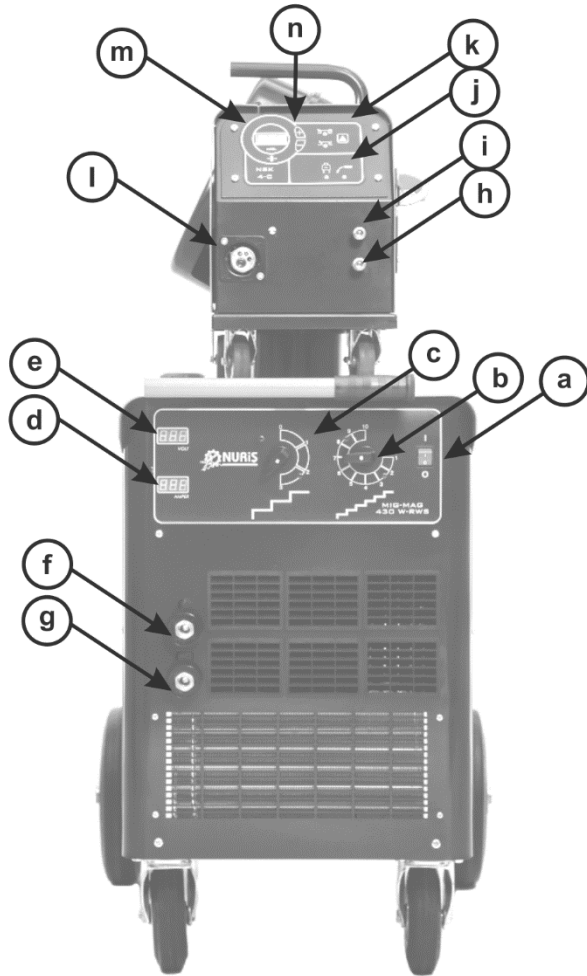


Figure 1, MIG 430W-RWS front view

WELDING POWER SUPPLY

Power transformer and DC rectifier group that provides the voltage and current required for welding. The user parts are (refer to Figure 1):

- a. On-Off Switch
- b. Welding fine voltage selection switch
- c. Welding coarse voltage selection switch
- d. Welding current indicator
- e. Welding voltage indicator
- f. Chassis output connector with low smoothing inductance
- g. Chassis output connector with higher smoothing inductance

NSK 4-C WIRE FEEDER UNIT

This unit feeds the welding wire through welding torch. These parts are (refer to Figure 1):

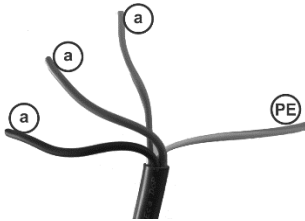
- h. Water inlet quick coupling (red)
- i. Water outlet quick coupling (blue)
- j. Power and torch trigger indicator LED
- k. Two pulse or four pulse torch trigger selection
- l. Welding torch connector
- m. Wire speed indicator
- n. Wire speeds adjust buttons

CONNECTION GUIDE



WARNING: The installation and first operation of the machine should be done by authorized technical personnel.

POWER CONNECTION



Welder power supply works 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 (Figure 2-PE) should be connected to protective earth. The remaining cables are the three phase connections (Figure 2-a). The phase order is not important, thus, connect the three phase cables to the phase supply of the utility.

Figure 2, Power connection



WARNING: The power supply power must be connected to utility power supply through suitable fuse with correct power rating and delay.

WELDING POWER SUPPLY TO WIRE FEEDER CONNECTION

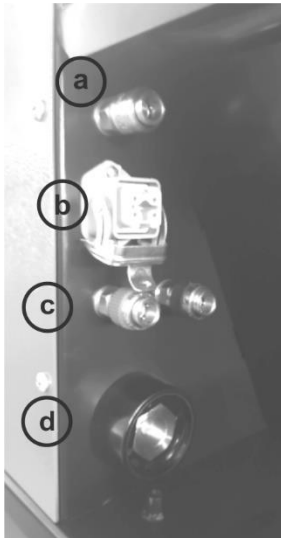


Figure 3, Wire feeder unit rear view

The welding power supply provides (Figure 4) water cooling heat exchange and pressure pump (Figure 4-c), welding current (Figure 4-d) and supply current to the wire feeder (Figure 4-d). The connection between these two units is made by provided extension cable with welding cable, trigger cable, pressured water inlet and outlet hoses packed in a flexible hose.

Connect the water-cooling tubes between the power unit and wire feeder unit (Figure 3-c) using the extension cable provided by the product (the connections are at the rear of wire feeder unit and welding power supply unit). The color coding of the extension cable and the quick coupling of the units should match. Check this point twice (blue and red).

Connect wire feeder unit power connector (Figure 3-b) and lock it with the metal locker on the connector.

Connect the gas supply connector (Figure 3-a)

Finally, connect the torch welding current cable (Figure 3-d) and fix it firmly.



Figure 4, Welding power supply rear view

TORCH CONNECTION

Connect the torch to the connector (Figure 1-l) and tighten the plastic screw gently for a proper connection.

Connect the cooling pipes of the torch to the quick couplings (Figure 1-h) and (Figure 1-i) in front of the wire feeder unit.

Connect the chassis cable into (Figure 1-f) or (Figure 1-g). The chassis cable should be connected to the workpiece in the lowest possible electrical resistance for a proper welding.

Connect the end of the negative cable to the negative output terminal of the machinery.



WARNING: Never use water cooled torches without water cooling. Otherwise, the torch may be damaged.

GAS CONNECTION

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

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, CO₂ heater should be connected. There is a power plug for CO₂ heater (Figure 5-a) at the rear of the welding power unit. It provides 220V supply.



Figure 5, Gas heater connector



WARNING: The 220 Volt 120-Watt socket located at the back of the machine is only for the heater. Do not use it for other purposes. It can damage the machine.

INSTALLING THE WELDING WIRE

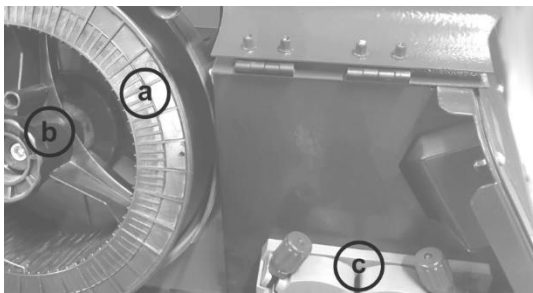


Figure 6, Wire feed mechanism

Attach the welding wire reel (Figure 6-a) to the wire adapter (Figure 6-b) and the wire adapter to its place in the wire feeder unit. Cut the end of the wire properly and take the spring arm pressing the wire drive reels (Figure 6-c) to the neutral position.

Select the wire drive reels (Figure 7-c) and their directions according to the thickness and type of wire you will use and install them in their places.

Pass the wire between the reels, drive the hole (Figure 7-a) in the torch cable (Figure 7-b) and insert the spring arm (Figure 7-d) that presses the wire drive reels into their place by inserting the wire into the channels.

Make sure that the torch cable is not bent and press the trigger until the wire comes out of the end. Replace the contact part and gas shield (nozzle) suitable for the wire diameter, press the trigger again to check if the wire moves smoothly.

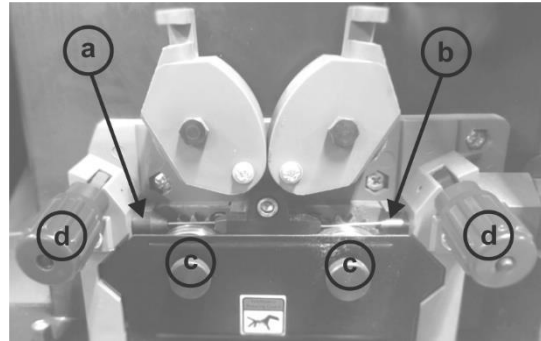


Figure 7, Wire feed motor

OPERATION

1. Adjust the desired welding voltage with fine (Figure 1-b) or coarse (Figure 1-c) range selection switches.
2. To turn-on the welder power unit, toggle (Figure 1-a) power switch to “On” position.
3. Check the selected voltage level from the display (Figure 1-e).
4. Check that power is supplied to wire feeder unit with power LED (Figure 1-j) on.
5. Using the wire speed screen (Figure 1-m) adjust the desired wire speed by using increment and decrement buttons (Figure 1-k).
6. The two trigger or four trigger torch mode can be selected by button (Figure 1-k). The selection can be seen with the relevant LED on the machine.
7. The welding current can be observed on indicator (Figure 1-d) during welding.
8. The torch trigger status can be observed by LED (Figure 1-j).

TIPS AND TRICKS

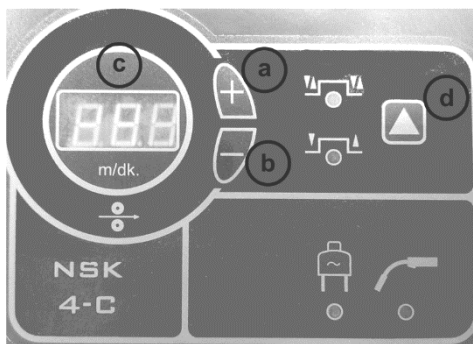


Figure 8, Welding wire driver

To feed wire without shielding gas, press buttons (Figure 8-d) and (Figure 8-a) simultaneously.

To purge shielding gas without feeding welding wire, press buttons (Figure 8-d) and (Figure 8-b) simultaneously.

MAINTENANCE AND TROUBLE SHOOTING



Before starting the maintenance, disconnect the machine from the power supply and make sure that there is no voltage on it. Maintenance can be done by the user.

All the electrical connections should be checked regularly. Loose connections should be tightened. Special care should be given for welding chassis cable and torch connections. These connections carry high currents and should be kept clean for any risk of high temperature rise. Likewise, connection between welding cable and welding connectors should be checked regularly. If any deformation detected, it should be fixed to quarantine rated current handling capacity.

The wire feeder mechanism and welding power supply can be checked for all the bolts and nuts that can be reached. The loose parts can be tightened easily.

If there is dust accumulated in the machine, it can be cleaned with compressed and dry air.

Before troubleshooting, please check all power connections. The mains connection is a three-phase system. Always check the rated voltage level for each phase. The welding power supply may reduce performance in case of single-phase loss.

Refer to the troubleshooting table given below:

Most Common Power Supply Problems	Possible causes and solutions
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"> * Welding cable is not connected properly. * The contact part is deformed * Earth clamp not connected correctly

The welding parameters such as wire feed speed, welding voltage and shielding gas flow rate should be adjusted correctly to achieve a good quality weld.

The common problems identified for a good quality weld are given in the below table

Most Common Welding Quality Problems	Possible causes and solutions
Long and unstable arc	* Welding voltage is of high value according to wire diameter and wire feed speed
Powerless arc	* Welding voltage is of low value according to the 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	* Welding speed is higher than it should be * Wire feed speed is lower than welding speed * Wire diameter is not suitable for the job
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 material to be welded may be moist, oily, rusty
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

The wire feeder and welding power source is manufactured in accordance with TS-EN 60974-1. The service lifetime is 10 (ten) years.

TRANSPORTATION

- Move the machine with the top up.
- Protect against getting wet.
- Protect against impacts.
- Do not stack the machine.

MANUFACTURER COMPANY

NURİŞ TEKNOLOJİ ve MAKİNE SAN. TİC. A.Ş.

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SERVICE

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

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