

Power ARC Series



GeKaMac®



Inverter Welding Machine Manual Instruction

Model : PoWer ARC 250

Please Read and Understand This Manual
Before Operating The Welding Machine

www.gedikwelding.com

This machine is for internal use only.

It complies with the WEEE Directive.

This machine has been designed in accordance with the EN 60974-1 and EN 60974-10 standards.

The machine is safe when installation, operation, and maintenance are performed in accordance with the user manual and regulations. The operator and machine owner are responsible for adhering to safety rules.

Gedik Kaynak San. Ve Tic. A.Ş. assumes no responsibility for safety or CE compliance if any modifications are made to the machine or if safety rules are not followed.



This Class A equipment is not suitable for use in homes and similar residential areas where the power supply is provided by the low-voltage public electricity network.



This machine is not household waste and cannot be disposed of in the trash.

When the machine reaches the end of its service life or becomes obsolete, it must be disposed of in accordance with regulations.

COMPLIES WITH THE WEEE DIRECTIVE.

Eco Design Statement

This machine has been designed and manufactured in accordance with the requirements of the 2009/125/EC Eco Design Directive concerning the environmentally friendly design of energy-related products.

Accordingly, machines with an idle mode are as follows.

	Idle Mode
MMA	X
MIG	√
TIG	√
Plazma	√
SAW	Out of Scope

Efficiency measurements should be conducted only on the power unit. The water cooling system should be disabled. For more information on measurements and machine settings, Gedik Kaynak Sanayi ve Ticaret A.Ş. should be consulted.



Attention!

Our Valued Customer,

We kindly request that you obey the warnings mentioned below:

- Definitely have the “Warranty Document” approved when you get the machine.
- Use the machine in a way that is in accordance with the fundamentals that are mentioned in the user’s guide of the machine.
- Refer to the nearest GEDIK WELDING authorized service or the service center of GEDIK WELDING when a problem comes up.

Thank you for preferring one of GeKaMac® products.

**AT UYGUNLUK BEYANI****EU DECLARATION OF CONFORMITY**

Bu uygunluk beyanı yalnızca imalatçının sorumluluğu altında düzenlenir.

This declaration of conformity is issued under the sole responsibility of the manufacturer.

İstanbul, Turkey, 08.03.2024

İmalatçı / Manufacturer

GEDİK KAYNAK SANAYİ ve TİCARET A.Ş.

Ankara Cad. No.306 Seyhli Pendik İSTANBUL TÜRKİYE

Ürün / Product

ARC WELDING MACHINE

Marka-Model / Brand- Model

PoWer ARC 250

Yukarıda tanımlanan beyanın nesnesi ilgili uyumlaştırılmış AB mevzuatı ile uyumludur.

The object of the declaration described above, is in conformity with the relevant union harmonisation legislation.

Direktifler / Directives

2014/30/EU & 2014/35/EU & 2009/125/EC

Uyumlaştırılmış standartlar ve uygunluğun deklare edilmesiyle ilişkili diğer referanslar.

References to the relevant harmonised standards used and references to the other technical specifications in relation to which conformity is declared.

EN IEC 60974-1:2022+A11:2022

EN IEC 60974-10:2021

Bu ekipman, talimatlara uygun kurulduğunda, bakımı yapıldığında ve kullanıldığında belirtilen standartlara uygundur. Makine üzerinde bir değişiklik yapıldığında veya yanlış kullanımda deklarasyon geçersiz olur.

The equipment is in compliance with pertinent legislation when installed, utilized, and maintained in accordance with the enclosed instructions. This declaration will be invalid under any modification or improper use.

İmalatçı Adına imzalayan / Signed for and on behalf of:

Hatice Özel, Equipment Business Unit Director



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DO NOT SET UP THE MACHINE BEFORE READING THE USER'S GUIDE AND SECURITY MEASURES THAT ARE FOUND IN IT.

HIDE THIS USER'S MANUAL AND ALWAYS HAVE IT ON HAND.



2. THE DEFINITION OF SECURITY INFORMATION

These symbols are used in the definition of potential dangers. The existence of risk of injury should be understood whenever a security symbol is encountered in the user's guide and possible dangers should be prevented by reading the explanations that follow the symbol carefully. Protect yourself and others against possible serious injury or death risks. Keep children away. People who have pacemakers in their bodies should consult their doctors before operating the welding machine. Be careful when operating by hand on the pieces that are being worked on. Use proper utensils that are necessary to protect yourself from burns that can be caused by the excessive heating of the piece during welding and/or cutting operation. Be sure that all operations concerned with set up, maintenance and repair are performed only by qualified people.



3. COMPREHENDING WARNINGS



- Read the user's guide, labels and safety warnings that are on the machine carefully.
- Be sure that the warning labels on the machine are in good condition. Do not try to remove the labels. Change the labels that are incomplete and damaged.



- Learn how the machine is operated and how its controls are going to be performed properly. No changes can be made to the machine without getting a written approval from GEDIK WELDING IND. AND COM. INC. GEDIK WELDING IND. AND COM. INC. reserves the right to change the technical properties of the machine without prior notice.



- The operational performance of the machine can differ with time according to the dirtiness situation of the work area. It is necessary to perform the maintenance of the machine in regular intervals in order to get the best performance.



- Use your machine in proper work environments. Improper modifications will affect the safe operation and life of your machine in a negative way.



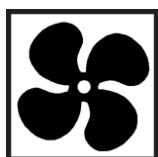
4. HEALTH AND SECURITY MEASURES IN WELDING APPLICATIONS

4.1. Fumes and Gases



• Fumes, dusts and gases that can affect the health of the welder form during welding and cutting operations. The welder should protect himself against these harmful substances that are formed as it is mentioned in the health and safety rules (UW 26.0) for welding, cutting and other related operations.

4.2. Ventilation



• Work areas should be planned in a way that will facilitate the breathing of clean air that has been purified from harmful substances according to the welding method, materials and application conditions and should be equipped in the following way. One or a few of the choices mentioned below should be used.

1. Welding fume should be expelled from the point where it was formed.
2. Technical ventilation should be provided.
3. A normal ventilation should be done.
4. Other ventilation methods should be used.

4.3. Material Safety Information



• "Material Safety Information" which contains safety information about welding materials is available. This material safety information contains the following:

1. Harmful components
2. The harm that may come into being when you use this material
3. Firstaid rules
4. The necessary limit values for the work area
5. How wastes are to be disposed of

4.4. Hazardous Materials



• Harmful substances can form from welding arc heat as well as the content of welding material. These harmful substances can form due to the reasons listed below:

1. Metallic platings, galvanization (zinc), lead
2. Paints, zinc and lead paints
3. Dirt such as surface protecting compounds, oil and grease

Special care should be taken when welding metals that contain lead, cadmium, zinc and crom because these elements form harmful and poisonous substances. The same goes for materials that contain plastic, oil and grease in their surfaces.

Work pieces which have hydrochloric acid or compounds with hydrocarbon on their surfaces, should be purified of these compounds before welding because they cause the formation of poisonous phosgene (MAK: 0,1 ml/m³) during welding.

4.5. Electrical Shock



- Electrode and the piece that is being worked on or ground circuits are electrically active while the welding machine is on. Do not touch these active pieces with bare hands or wet cloth. Wear dry gloves without holes to insulate your hands. Start the welding operation after connecting the grounding pincer as close as possible to the area where welding will be done.



- Start the welding operation after placing the insulating material over the piece that is going to be welded or ground circuits.



- Stop the welding operation whenever the energy cable or the welding cables of the welding machine become damaged. This situation can cause electrocutions that can result in death.



- Be sure that your work area is grounded. Purify the grounding pincer from materials that can inhibit the contact with your work area. Start the welding operation after mounting the grounding pincer onto your work area after it has been purified.

4.6. The Use of the Mask



- Use a protective mask with a proper filter to protect your eyes from sparks and arc rays while welding or watching such activity. The head mask and filtered glasses should meet ANSI Z87 standards.

4.7. Danger of Fire and Burn



- Expel elements that are fire hazards from the welding area. If this is not possible, cover them in order to prevent welding sparks from starting a fire. Do not forget that welding sparks and hot materials coming from welding can go on to neighboring areas through small cracks and openings easily. Do not weld near hydraulic lines. Always have a fire extinguisher on hand.



- Refrain from welding in environments that may have had or that can have flammable material in them.



- Do not touch the surface that has been welded. The hot surface can cause severe burns.

4.8. Electromagnetic Field Affect



- Current going through a conductor causes Electric and Magnetic Fields (EMF) to be formed. Welding current creates EMF around welding cables and machines.



- EMF can ruin the operation of some pacemakers. For this reason, welders who have pacemakers installed in their bodies should consult their doctors before welding.



- Being exposed to EMF while welding can cause other unknown health problems. Being exposed to EMF can be minimized by paying attention to matters that are mentioned below:

- Guide the electrode and chassis cables together.
- Never wrap the electrode and chassis cables around your body.
- Do not place your body between the electrode and chassis cables.
- Connect the chassis cable as close to the piece that is being worked on as possible.
- Stay as far away from power units while welding as possible.



5. TECHNICAL INFORMATION



5.1. Electromagnetic Noise



- Read this section carefully and understand it in order to reduce or eliminate electromagnetic noises that can be generated by this machine.

This machine has been designed to be operated in an industrial zone. If it is operated in private places (house etc.), it will be necessary to comply with special measures to prevent possible electromagnetic affects. It is necessary for the user to set up and operate these machines just like it is described in the handbook. If any electromagnetic affect is perceived due to the operation of these machines, the user should take corrective measures in order to get rid of these affects completely. If necessary, the user should contact GEDIK WELDING IND. AND COM. INC. No changes should be made to the machine without getting written approval from GEDIK WELDING IND. AND COM. INC.

Work area should be controled in terms of tools that may work incorrectly due to electromagnetic affects before assembling the machine:

- Inlet outlet cables, telephone cables and control cables that are found in the area of the machine,
- Radio and/or television transmitters and receivers,
- Computer or computer controled tools,
- Safety and control equipment for industrial operations,
- Calibration and measurement appliances,
- Medical appliances such as heart rhythm appliance and hearing aids

Control the electromagnetic immunity of equipments that operate near the work area. The user should be sure that all equipments that are in the work area are compatible. Otherwise, it can necessitate additional protective measures.

The ideal measurements of the work area are determined according to the construction of this area and other factors that partake here. You should take the following warnings into account to decrease the affect of electromagnetic wave that is generated by the machine:

* Make the contact between the machine and the network electricity in the way it is explained in the user's guide. If an electromagnetic interaction comes into being, some measures such as filtering the main electrical inlet may need to be taken.

* The outlet cables should be as short as possible and should be kept together.

5.2. Adaptation



- It is forbidden to make adaptations in the welding machine. Making adaptation does not only cause the loss of warranty rights, but it can also place the safety of use of the machine in danger. It can also create the risk of electrocution for the users.

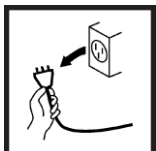
Damage in the welding machine that is caused by incorrect use or the mistake of the user causes the loss of warranty rights.

5.3. Work Environment Heat



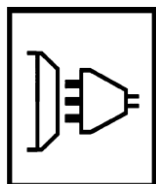
- The accepted environmental temperature range while working is between - 10°C and + 40°C.

5.4. Energy Cable



- Pull the energy cable of the machine from the network after the welding operation is finished and before maintenance and repair operations.

5.5. Welding Load Voltage



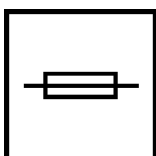
- The welding load voltage of the welding machine has been designed according to the balanced 3 phase network system. Machine protects itself when one or two of the phases that feed the machine are off-line. It is protected against excessive voltage by a 510 V varistor. The power led which is shown in figure-4 (Page 16), will start to flash whenever there is low voltage or a problem with any of the phases. Look the network voltage and frequency up in Table-1 (Page 13)

5.6. Grounding



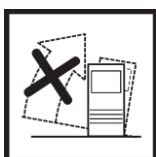
- The operation of the welding machine in networks that don't have a ground line causes damage to the machine. Therefore, it can not be operated in networks that do not have a ground line.

5.7. Electrical Fuse



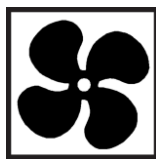
- Connect a 16 A C type fuse in order to protect the line to which the welding machine is connected.

5.8. The Surface of Work



- Do not place the machine on a plane which is at an angle that is higher than 15 degrees with the horizontal and do not operate it on such a surface.

5.9. Ventilation



- The machine must be operated in an environment which has a clean air flow and there shouldn't be any factors that inhibit ventilation or that stops the air flow at the place where the machine is located. The machine should not be covered with paper cloth or similar substances.

5.10. Dusty and Gaseous Environment



- Dust and dirt can enter into the machine. This situation should be decreased as much as possible. Do not work in environments that have a lot of dust and that have water, paint and oil granules along with grinding dusts and abrasive gas in their atmospheres.

5.11. Protection Class



- This machine has IP21 class protection. Keep the machine as dry as possible and do not place the machine on anything wet.

5.12. Maintenance and Repair



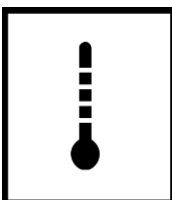
- The opening of the chassis cover of the machine and the intervention by people who are not authorized in the matter of electrical equipments can create life threatening situations. Those who behave contrary to the user's guide, are considered to have accepted the probable negative results in advance.

5.13. Weather Conditions of the Work Environment



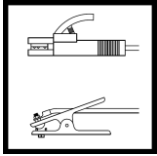
- Definitely do not operate the welding machine under the sunlight, rain or at places where there is the possibility of splash of water.

5.14. Thermal Protection



- Machine is protected against excessive heat by the help of thermal protection. When this protection comes on-line, the warning light in the front panel will be lit. When the safe operating temperature is reached again, the light will turn off and welding will be continued. The machine should not be turned off when thermal protection light is lit. Otherwise, it will take longer for the machine to come on-line due to the fact that fans will come off-line

5.15. Welding and Chassis Pincers



- The cross-sections of cables that are going to be used during welding are important. The cross-section of a cable should be 25 mm^2 according to the cable calculation which was made on the basis of the highest current value. The cable length of the grounding pincer is 3 meters and that of electrode holder is 5 meters.



- Do not use any other cables than the standard cables that came with the machine. Do not change the cross-sections of the cables, do not make them longer or make addition to them. Such a change will reduce the operational efficiency of the machine and the machine can break down. It can cause electrocutions.

5.16. Storage and Transportation

- The welding machine should be stored in closed rooms where the temperature is between -10°C and $+40^\circ\text{C}$ and the humidity is at the most % 70.
- Incendiary, conductive dust or other environmental elements should not be found in the room.
- Keeping the welding machines in their packages is recommended.
- The welding machine should be packaged in a way that will protect it from mechanical damages during long distance transportations.
- The welding machine should not be thrown at random and it should be protected from hits when it is being put away or transported.



6. TECHNICAL PROPERTIES

6.1. Technical Properties of PoWer ARC 250

Properties	Unit	
Network Frequency	Hz	50 - 60
Network Voltage	V	380 ± %10 (3 Phase,)
Power (%45)	kW	8,1
Current Pulled from Network (Eff.) (%45)	A	11
Open Circuit Voltage	V	95
Welding Current Range	A	30 – 250
Rated Supply Current (%45)	A	250
Dimensions (L x W x H)	mm	410x180x350
Weight	kg	15
Protection Class		IP21
Electrode Burning Capacity	mm	1,60 – 4,00
Power Cable	mm ² / m	(4x1,5) / 3
Recommended Network Fuse	A	16 (C-Type)
Efficiency		% 88
Power Factor		0,7

Table- 1 Product Technical Properties

6.2. The Label of the Appliance






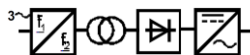
<div> GeKaMac®</div> <div>GEDİK Kaynak Sanayi ve Ticaret A.Ş. Ankara Cad. No:306 Şeyhli- 34906 Pendik-İstanbul/ TURKEY www.gedik Kaynak.com.tr MADE IN TURKEY</div>					
PoWer ARC 250			S/N : 1214-P250-1100		
			IEC 60974-1		
		30A / 21,2V ilâ 250A / 30V			
	U₀ = 100V	X	%45	%60	%100
		I₂	250A	220A	180A
	U₁ = 380V	U₂	30V	28,8V	27,2V
		I_{1maks} = 16A		I_{1etkin} = 11A	
3 ~ 50Hz (60Hz)					
IP21					

Figure- 1 Appliance Label



Inverter Power Source AC/DC

U₁ = Supply Voltage

X = Duty Cycle



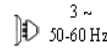
Suitable for welding in an environment with increased hazard of electric shock



Direct Current



MMA Welding



Three-Phase Transformer Rectifier

U₀ = No-Load Voltage

U₂ = Welding Voltage

I₂ = Welding Current

6.3. Block Diagram

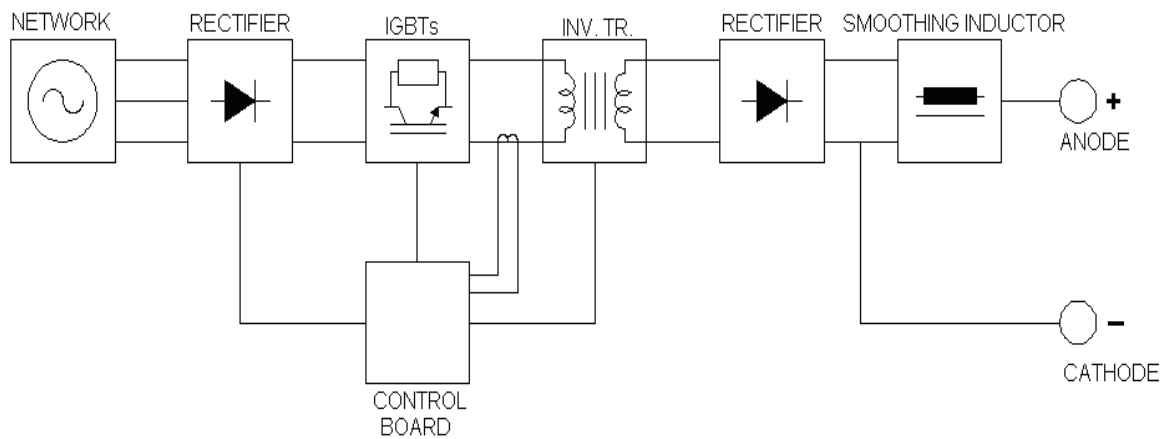


Figure- 2 Block Diagram

6.4. Electrical Circuit Scheme

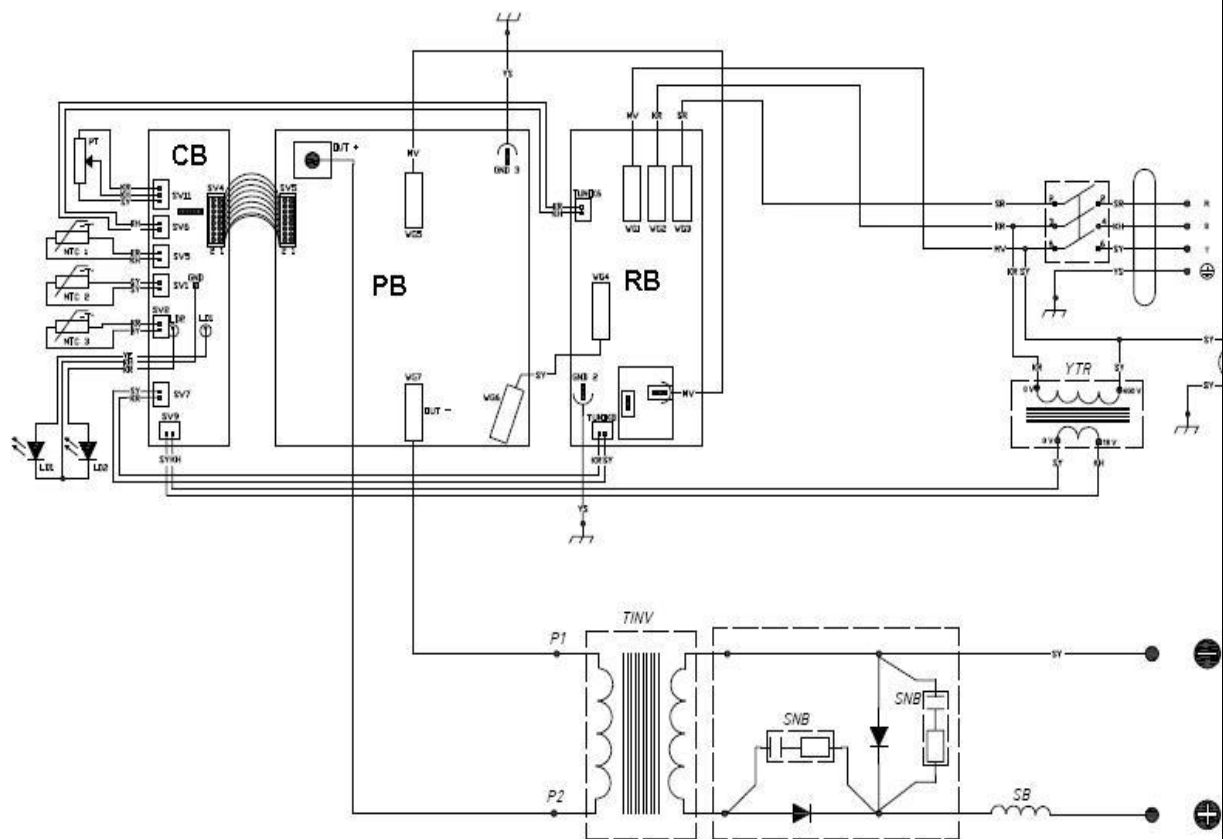


Figure- 3 Electrical Circuit Scheme



7. WELDING MACHINE SETUP AND USAGE

Following operations should be performed before starting to weld:

- Be sure that the conditions that are mentioned in the User's Guide are fulfilled.
- The plugs of welding and grounding cables are to be connected to the connection sockets shown in Figure-4 (Page 16).
- Turn the socket clockwise $\frac{1}{4}$ of a turn after placing it into the housing in such a way that it is opposite the needle of the guide. Be sure that the socket is firmly in place inside the housing without getting pressed very hard. Otherwise, loose sockets can burn due to excessive heating which can take place when the machine is used for long periods of time and when the welding current is high.
- Affix the electrode to the electrode pincer.
- Affix the chassis pincer to an unpainted, rust free and clean surface of the work piece in such a way that it makes complete contact.
- Connect network connection cables to the proper network.
- Turn on the machine by moving the power switch which is shown in Figure-5 (Page 17).
- Observe that the power led which is shown in Figure-4 (Page 16) is on.
- Adjust the proper welding current value which you will determine according to the diameter and type of the electrode, welding position and electrode information log (it is available at the electrode box) by the use of current pot (current adjustment potentiometer) which is shown in Figure-4 (Page 16).
- Start welding by obeying welding rules.

**DO NOT POWER OFF THE MACHINE
WHEN THE THERMAL LED IS ON**

8. FRONT AND REAR VIEW OF POWER ARC 250

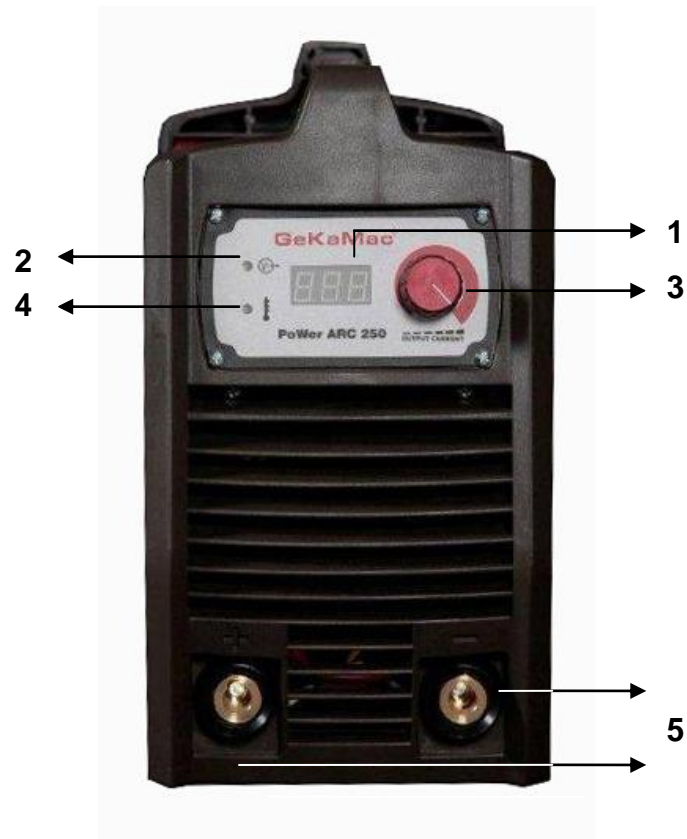


Figure - 4

- 1. Digital Display for Ampermeter
- 2. Power Led
- 3. Current Pot
- 4. Thermal Led
- 5. Choke Coil Outputs



Figure - 5

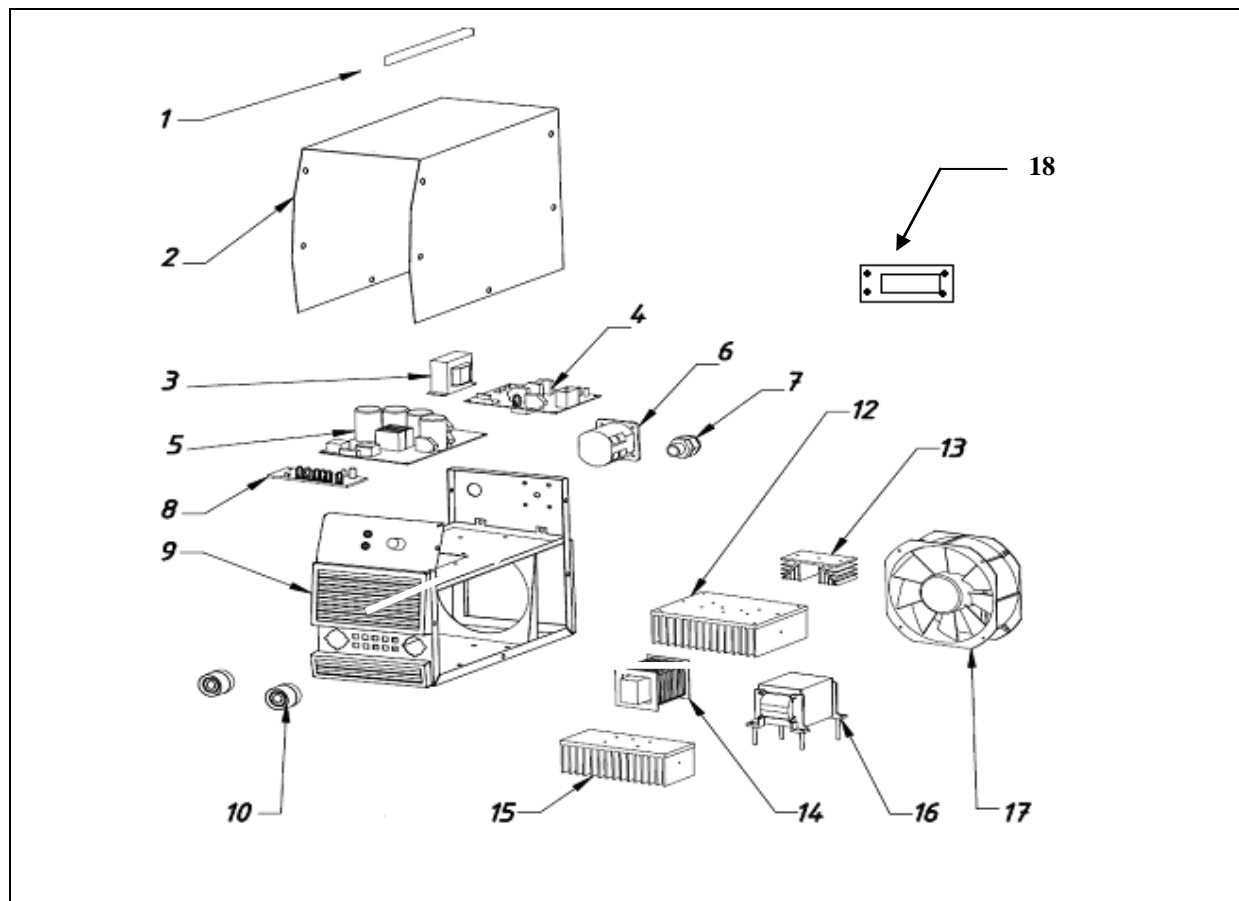
6. Label

7. Package Type of Switch

8. Input of Power Cable



9. SPARE PARTS



PART NO	ORDER CODE	DESCRIPTION
1	106644	ALUMINIUM HANDLE
2	202622	COVER
3	106991	AUXILARY TRANSFORMER
4	202839	RELAY CARD
5	202838	POWER CARD
6	106598	ON/OFF SWITCH
7	101446	PLASTIC FITTING
8	202501	CONTROL CARD
9	202574-203079-202591	BODY + PLASTIC PANELS
10	206001	MACHINE SOCKET
12	202496	IGBT MODULE
13	106605	RECTIFIER HEATSINK
14	202576	OUTPUT CHOKE
15	202497	DIODE MODULE
16	202620	INVERTER TRANSFORMER GROUP
17	106602	COOLING FAN
18	107186	PoWer ARC 250 PANEL CARD

10. WARRANTY CONDITIONS

1. The length of the warranty starts on the date of delivery and it is for 1 years.
2. The whole merchandise including all its parts are covered by the warranty of our company.
3. If the merchandise breakdown within the length of the warranty, the time spent in the repair shop will be added to the length of the warranty. The length of repair of the merchandise is at the maximum 20 working days.
This period of time starts on the date that the merchandise was delivered at one of the following locations: A service station or the seller of the merchandise or dealer or agency or representation office or importer or manufacturer, in this order if there are no service stations.
4. If the merchandise breakdown either due to material and workmanship or assembly lines within the length of the Warranty, it will be repaired without demanding any money under the name of expenditure of workmanship, the cost of the changed piece or under any other name.
5. Replacement operation will be done without charge in cases where the merchandise repeats the same fault more than twice or different faults come up more than four times within the length of the warranty, the unavailability of the machine for use becoming more permanent, the length of the repair exceeds maximum necessary time and the determination of the unrepairability of the merchandise by a report that is prepared either by a service station or the seller or a dealer or an agency or a representation office or the importer or the manufacturer, in this order, if there are no service stations.
6. Faults that are results of misuse according to the user's guide of the merchandise are not covered by the warranty.
7. Ministry of Industry and Commerce, The Protection of the Consumer and Competition General Directorate can be referred to whenever a problem concerning the warranty document comes up.
8. Earth clamp and electrot holder kits are not under warranty.

GeKaMac®

Gedik Welding Machines

Warranty Document

MACHINE INFORMATION

Brand : GeKaMac®

Model :

Serial Number :

CUSTOMER INFORMATION

Company Name :

Authorized Person :

Telephone :

Company Address :

City/Country.....

E-Mail : @.....

Signature /Cachet :

SERVICE INFORMATION

Authorized Service :

Service Staff :

Installation Date :/...../.....

Warranty Starting Date :

Warranty Expiration Date :

Signature /Cachet :

GeKaMac®

Gedik Welding Machines

Warranty Document

MACHINE INFORMATION

Brand : GeKaMac®

Model :

Serial Number :

CUSTOMER INFORMATION

Company Name :

Authorized Person :

Telephone :

Company Address :

City/Country.....

E-Mail : @.....

Signature /Cachet :

SERVICE INFORMATION

Authorized Service :

Service Staff :

Installation Date :/...../.....

Warranty Starting Date :

Warranty Expiration Date :

Signature /Cachet :

Power ARC Series



GeKaMac®



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