
Operating instructions



Air-cooling units for water-cooled welding torches

UK 500 UK 500 S



These operating instructions must be read before commissioning.
Failure to do so may be dangerous.

Machine may only be operated by personnel familiar with the appropriate safety regulations.



The machines bear the conformity mark and thus comply with the

- EC Low Voltage Guideline (73/23/EEC)
- EC EMV Directive (89/336/EEC)



In compliance with IEC 60974, EN 60974, VDE 0544 the machines can be used in environments with an increased electrical hazard.

Name des Herstellers:

Name of manufacturer:

Nom du fabricant:

EWM HIGHTEC WELDING GmbH

(nachfolgend EWM genannt)

(In the following called EWM)

(nommé par la suite EWM)

Anschrift des Herstellers:

Address of manufacturer:

Adresse du fabricant:

Dr.- Günter - Henle - Straße 8

D - 56271 Mündersbach – Germany

info@ewm.de

Hiermit erklären wir, daß das nachstehend bezeichnete Gerät in seiner Konzeption und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheitsanforderungen der unten genannten EG- Richtlinien entspricht. Im Falle von unbefugten Veränderungen, unsachgemäßen Reparaturen und / oder unerlaubten Umbauten, die nicht ausdrücklich von EWM autorisiert sind, verliert diese Erklärung ihre Gültigkeit.

We herewith declare that the machine described below meets the standard safety regulations of the EU- guidelines mentioned below in its conception and construction, as well as in the design put into circulation by us. In case of unauthorized changes, improper repairs and / or unauthorized modifications, which have not been expressly allowed by EWM, this declaration will lose its validity.

Par la présente, nous déclarons que la conception et la construction ainsi que le modèle, mis sur le marché par nous, de l'appareil décrit ci - dessous correspondent aux directives fondamentales de sécurité de la U.E. mentionnées ci- dessous. En cas de changements non autorisés, de réparations inadéquates et / ou de modifications prohibées, qui n'ont pas été autorisés expressément par EWM, cette déclaration devient caduque.

Gerätebezeichnung:

Description of the machine:

Déscription de la machine:

Gerätetyp:

Type of machine:

Type de machine:

Artikelnummer EWM:

Article number:

Numéro d'article

Seriennummer:

Serial number:

Numéro de série:

Optionen:

Options:

Options:

keine

none

aucune

Zutreffende EG - Richtlinien:

Applicable EU - guidelines:

Directives de la U.E. applicables:

EG - Niederspannungsrichtlinie (73/23/EWG)

EU - low voltage guideline

Directive de la U.E. pour basses tensions

EG- EMV- Richtlinie (89/336/EWG)

EU- EMC guideline

U.E.- EMC directive

Angewandte harmonisierte Normen:

Used co-ordinated norms:

Normes harmonisées appliquées:

EN 60974 / IEC 60974 / VDE 0544

EN 50199 / VDE 0544 Teil 206

Hersteller - Unterschrift:

Signature of manufacturer:

Signature du fabricant:



Michael Szczesny ,

Geschäftsführer
managing director
gérant

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Safety instructions

For Your Safety:



Observe accident prevention regulations.
Ignoring the following safety procedures can be fatal.

- Before undertaking welding tasks, put on prescribed dry protective clothing, e.g. gloves.
- Protect eyes and face with protective visor.



Electric shocks can be fatal

- The machine may only be connected to correctly earthed sockets.
- Only operate with intact connection lead including protective conductor and safety plug.
- An improperly repaired plug or damaged mains cable insulation can cause electric shocks.
- The machine may only be opened by qualified and authorised personnel.
- Before opening, pull out the mains plug. Switching off is not sufficient. Wait for 2 minutes until capacitors are discharged.
- Always put down welding torch, stick electrode holder in an insulated condition.



Even touching low voltages can cause you to jump and lead to accidents, so:

- Safeguard yourself against falls, e.g. from a platform or scaffolding.
- When welding, operate earth tongs, torch and workpiece properly, not in ways for which they are not intended. Do not touch live parts with bare skin.
- Only replace electrodes when wearing dry gloves.
- Never use torches or earth cables with damaged insulation.



Smoke and gases can lead to breathing difficulties and poisoning.

- Do not breathe in smoke and gases.
- Ensure that there is sufficient fresh air.
- Keep solvent vapours away from the arc radiation area. Chlorinated hydrocarbon fumes can be converted into poisonous phosgene by ultraviolet radiation.



Workpiece, flying sparks and droplets are hot

- Keep children and animals well away from the working area. Their behaviour is unpredictable.
- Move containers with inflammable or explosive liquids away from the working area. There is a danger of fire and explosion.
- Never heat explosive liquids, dusts or gases by welding or cutting. There is also a danger of explosion if apparently harmless substances in closed containers are able to build up excess pressure when they are heated.



Take care to avoid fire hazards

- Any kind of fire hazards must be avoided. Flames can form e.g. when sparks are flying, when parts are glowing or hot slag is present.
- A constant check must be kept on whether fire hazards have been created in the working area.
- Highly inflammable objects, such as matches and cigarette lighters for example, must not be carried in trouser pockets.
- You must ensure that fire extinguishing equipment - appropriate to the welding process - is available close to the welding work area and that easy access is possible.

Safety instructions



Take care to avoid fire hazards

- Containers in which fuels or lubricants have been present must be thoroughly cleaned before welding begins. It is not sufficient simply for the receptacle to be empty.
- After a workpiece has been welded, it must only be touched or brought into contact with inflammable material when it has cooled down sufficiently.
- Loose welding connections can completely destroy protective conductor systems of interior installations and cause fires. Before beginning welding work, ensure that the earth tongs are properly fixed to the workpiece or welding bench and that there is a direct electrical connection from the workpiece to the power source.



Noise exceeding 70 dBA can cause permanent hearing damage

- Wear suitable earmuffs or plugs.
- Ensure that other people who spend time in the working area are not inconvenienced by the noise.



Secure gas cylinder

- Place shielding gas cylinders in the holders provided for them and secure with safety chains.
- Take care when handling cylinders; do not throw or heat, guard against them toppling over.
- When moving by crane, take off the gas cylinder from the welding machine.



Interference by electrical and electromagnetic fields is possible e.g. from the welding machine or from the high-voltage pulses of the ignition unit.

- As laid down in Electromagnetic Compatibility Standard EN 50199, the machines are intended for use in industrial areas; if they are operated e.g. in residential environments problems can occur in ensuring electromagnetic compatibility.
- The functioning of heart pacemakers can be adversely affected when you are standing near the welding machine.
- Malfunctioning of electronic equipment (e.g. EDP, CNC equipment) in the vicinity of the welding location is possible.
- Other mains supply leads, trip leads, signal and telecommunications leads above, under and near the welding device may be subject to interference.



Electromagnetic interference must be reduced to such a level that it no longer constitutes interference. Possible reduction measures:

- Welding machines should be regularly maintained (see Sect. "Maintenance and care")
- Welding leads should be as short as possible and run closely together on or near to the ground.
- Selective shielding of other leads and equipment in the environment can reduce radiation.



Repairs and modifications may only be carried out by authorised, trained, specialist personnel.

The warranty becomes null and void in the event of unauthorised interference.



Our operating instructions will provide you with an introduction into the safe use of the machine.

Therefore please read them closely and only start work when you are familiar with them.

Safety instructions

Transport and set-up



- Machines may only be moved and operated in an upright position.



- Before moving, pull out mains plug and place on the machine.
- Secure high-pressure shielding gas cylinder with safety chain to prevent it from toppling over.

Environmental conditions:

The welding machine can be operated in a location where there is no risk of explosion at

- an **ambient temperature** of -10°C (plasma machines 0°C) to +40°C and
- a **relative air humidity** up to 50% at 40°C.
- where the surrounding air is free of **unusual** amounts of dust, acids, corrosive gases or substances etc., insofar as they do not occur during welding.

Examples of **unusual** operating conditions:

Unusual corrosive smoke, vapour, excessive oil vapour, unusual vibrations or jolts, excessive quantities of dust such as grinding dust etc., severe weather conditions, unusual conditions near the coast or on board ship.

- When setting up the machine, ensure that air inlets and outlets are unobstructed.
The machine is tested to **Protection Standard IP23**, i.e.:
 - Protection against penetration of solid foreign bodies $\varnothing > 12\text{mm}$,
 - Protection against water spray up to an angle of 60° to the vertical.

Notes on the use of these operating instructions

These operating instructions are arranged in Sections.

To help you find your way around more quickly, in the margins you will occasionally see, in addition to sub-headings, icons referring to particularly important passages of text which are graded as follows depending on their importance:



(Note): Applies to special technical characteristics which the user must note.



(Warning): Applies to working and operating procedures which must be followed precisely to avoid damaging or destroying the machine.



(Caution): Applies to working and operating procedures which must be followed precisely to avoid endangering people and includes the “Warning” symbol.

Instructions and lists detailing step-by-step actions in given situations can be recognised by bullet points, e.g.:

- Insert plug of welding current lead into socket (**Sect. 5, G2**) and lock.

Meaning of the diagram descriptions:

- e.g. **(C1)** means: Item C / Figure 1 in the respective Section
- e.g. **(Sect. 3, C1)** means: in Section 3 Item C / Figure 1

General

Congratulations!

You have purchased a modern and efficient air-cooling unit.

The cooling units are fitted with an air-cooled heat exchanger, which means that the cooling capacity depends directly on the ambient temperature. The lower the ambient temperature and therefore the air intake temperature, the higher the cooling capacity. The coolant pressure is monitored with a pressure switch.

The coolant pump installed is protected from overload by a safety fuse.

The cooling unit **UK 500 S** additionally has a 3-phase 400V / 16A CEE socket on the rear of the casing for connecting a welding machine.

Performance features:

- pressure monitor for detecting a low coolant level,
- a low coolant level is indicated by an indicator lamp,
- a powerful centrifugal pump conveys coolant even over great differences in height,
- for cooling welding torches,
- self-closing rapid-action closure couplings.

1 Technical data

	UK 500	UK 500 S
Input voltage	1 x 230V (+15% to -40%) 1 x 240V (+10% to -40%)	3 x 400V (+20% to -25%) 3 x 415V (+15% to -25%)
Mains fuse	1 x 16A	3 x 16A
Output voltage		3 x 400V / 415V
Mains frequency	50/60Hz	
Max. cooling capacity	1200W	
Max. coolant initial pressure	3.5 bar	
Ambient temperature	Depend on the used coolant: Coolant KF 24E-10, -10°C to +40°C (antifreeze to -10°C) Coolant KF 37E-20, -20°C to +10°C (antifreeze to -20°C) Coolant DKF 23E-10, 0°C to +40°C (no antifreeze , deionized coolant for plasma machines)	
Tank capacity	7l	
Dimensions L/W/H incl. handle	485mm x 390mm x 385mm	535mm x 390mm x 385mm
Weight (without coolant)	21kg	24kg
Cooling mode	F	
Protection classification	IP 23	

Area of application

The portable air-cooling units **UK 500** and **UK 500 S** are used for cooling welding torches and should be operated only with our range of torches.

2 Description of the machine

2.1 Front view of machine

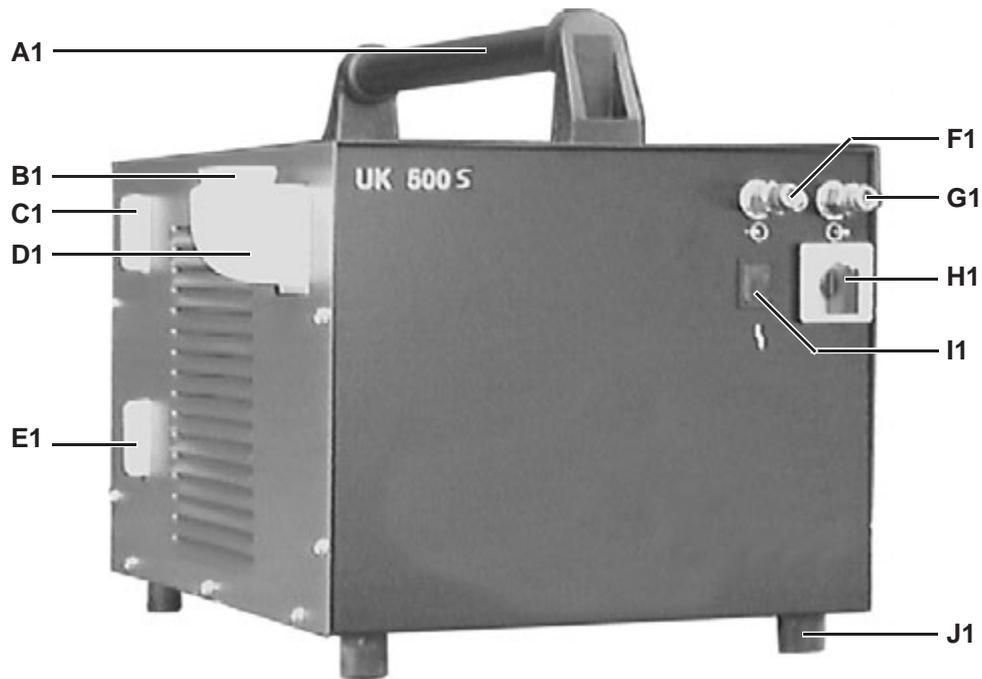


Fig.: 1 Front view:

Item	Symbol	Description
A1		Carrying handle
B1		Filling pipe cap
C1		Top inspection window: Coolant level gauge
D1		Coolant filling pipe
E1		Bottom inspection window: Coolant level gauge
F1		Rapid-action closure coupling (red): Coolant return
G1		Rapid-action closure coupling (blue): Coolant supply
H1		Main switch: Machine On/Off On UK 500 S, the additional socket (B2) is also switched on and off via the main switch
I1		Low coolant level indicator lamp: Indicator lamp lights up, no coolant pressure (level control) Indicator lamp does not light up, machine ready
J1		Rubber feet

2 Description of the machine

2.2 Rear view of machine

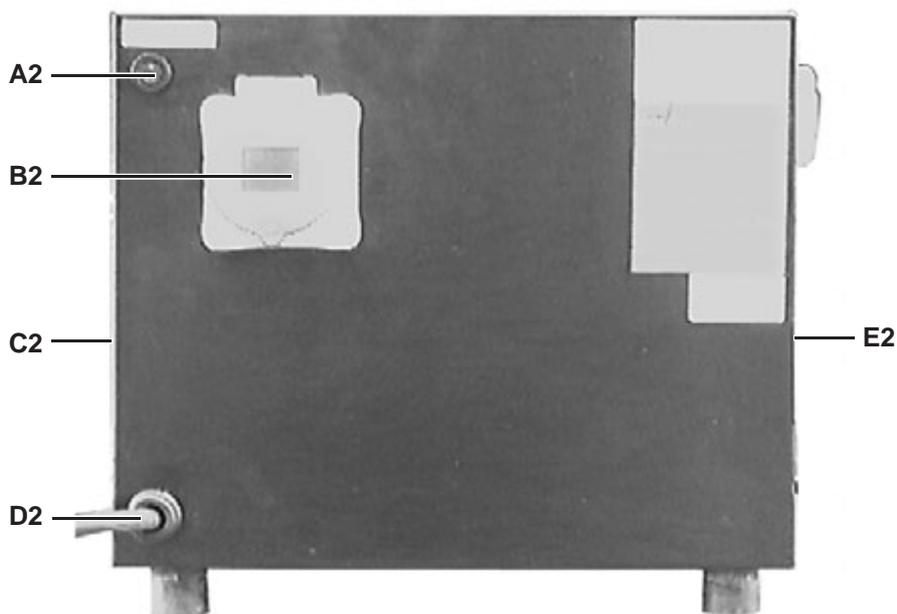


Fig.: 2 Rear view

Item	Symbol	Description
A2		Safety fuse: Fuse protection for the coolant pump
B2		CEE socket: 3 x 400V mains connection for welding machines (only UK 500 S)
C2		Air outlet
D2		Mains connection cable with lead-in and strain relief
E2		Air inlet

3 Commissioning

3.1 Setting up the machine



Follow safety instructions on the opening pages entitled "For Your Safety"!

Set up the machine so that there is enough room to adjust the operating elements. Ensure that the machine is set up in a stable position and appropriately secured.

3.2 Mains connection for the cooling unit



The operation voltage shown on the rating plate must be consistent with the mains voltage.



For mains fuse protection, please refer to the technical data.



For the cooling unit UK 500 S, a corresponding mains plug must be attached to the mains supply lead. The connection must be made by an electrician in compliance with current VDE regulations. The phase sequence is irrelevant and has no effect on the direction of rotation of the fan or the coolant pump.



Insert mains plug of the switched-off machine into the appropriate socket.

3.3 Mains connection for welding machine (only UK 500 S)

The air-cooling unit UK 500 S has a 3-phase CEE socket on the rear. The welding machine on which the torch to be cooled is operated can be connected to this socket.



This socket may be loaded with a max. of 3 x 16A!

3.3.1 Reconnecting the mains voltage 400/415V at the control transformer



Follow safety instructions on the opening pages entitled "For Your Safety"!

The connection cable (arrow) must be rescrewed on the transformer according to the mains voltage.

- For 400V: Screw the connecting cable to 400V (works setting),
- For 415V: Screw the connecting cable to 415V.

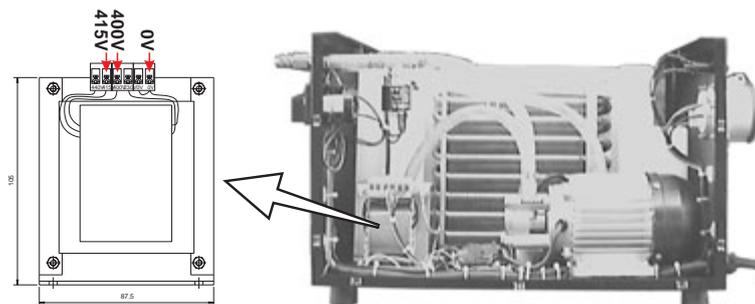


Fig. 3/1: Control transformer

Machines delivered to countries with mains voltages which deviate from the standard are marked with the following labels:

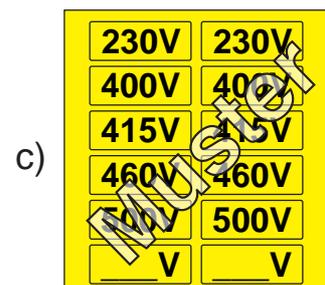
- Indication of the mains voltage (at the end of the cable)
- Mains voltage on delivery (rear of the unit above the rating plate)



- Special voltages, for marking according to reconnecting on site (enclosed with the operating instructions)

After reconnecting for 415V,

- label c) must be taped over label b) and
- label a) must be removed from the end of the cable.



(Art. No. label, see Accessories)

3 Commissioning

3.4 Machine cooling

Observe the following to attain the optimum duty cycle of the power units:

- Ensure that the working area is adequately ventilated,
- Do not obstruct the machine's air inlets and outlets,
- Metal parts, dust or other foreign bodies must not get into the machine.

3.5 Coolant

3.5.1 Adding coolant

The machine is delivered works-filled with a minimum quantity of coolant.

- Check the coolant level and top up to the top inspection window **(C1)**.

Coolant KF23E-10 ensures antifreezing to -10°C !



Mixing this with other liquids or the use of other coolants voids our manufacturer's guarantee!

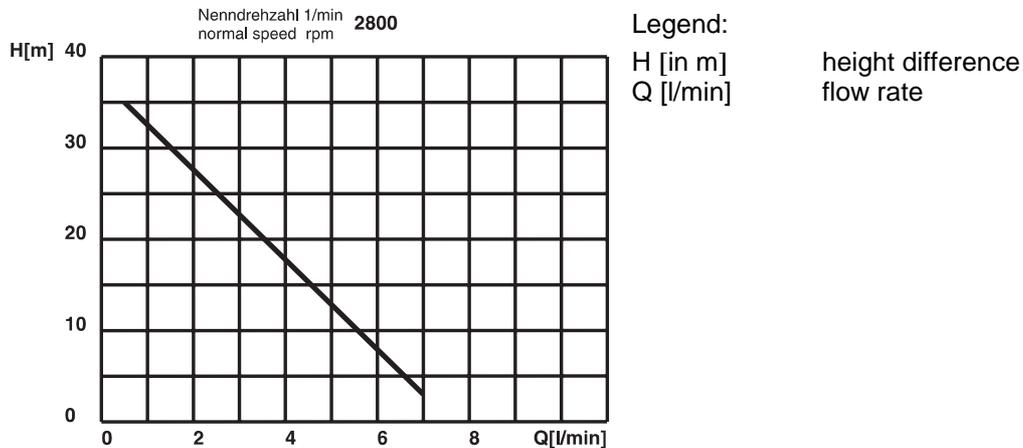
Filter sieve must always be inserted in the filling pipe during filling!

After each commissioning or reconnection, run the machine briefly until all the torch or extension hoses are filled with coolant! Then check the coolant level and top up if necessary!

3.5.2 Coolant connections on the cooling unit

- Push in the coolant connections of the welding torch or a welding machine (e.g. *inverter Microplasma*) on to the rapid-action closure couplings until the two connections lock firmly. (The red coupling corresponds to the coolant return line from the torch or welding machine, the blue coupling corresponds to the coolant supply line to the torch or welding machine) If necessary, the coolant hoses must be lengthened with extension hoses (see Accessories).

3.5.3 Characteristics of the integrated coolant pump



Characteristic curve of the pump

3.6 Switching on the cooling unit

Switch on the cooling unit at the mains switch **(H1)**, only if all points described under "Commissioning" have been observed or fulfilled.

The indicator lamp **(I1)** lights up briefly at the moment of switching on, and must then go out again.

The machine is now ready for use.

4 Maintenance and care

Under normal operating conditions these welding machines are largely maintenance-free and require a minimum of care. However, a number of points should be observed to guarantee fault-free operation of your welding machine. Among these are regular cleaning and checking, as well as the level of contamination in the environment and the usage time of the machine. **Welding machines may only be carried out by qualified persons. Do not carry out any one of the following tests without the necessary qualifications.**

D



Die im Kapitel "Wartung und Pflege" aufgeführten Hinweise, Richtlinien und Normen wurden grundlegend überarbeitet und sind aus diesem Grund nicht mehr gültig!
Die relevanten Hinweise, Richtlinien und Normen finden Sie in den beiliegenden Ergänzungsblättern "Allgemeine Hinweise zu 3 Jahre Garantie", Art. Nr.: 099-000GAR-EWMxx. Sollten die Dokumente nicht vorliegen, können diese über den autorisierten Fachhändler angefordert werden!
Außerachtlassung kann lebensgefährlich sein!

4.1 Cleaning

To do this, carefully disconnect the power plug!
(Switching off or unscrewing the fuse is not sufficient!)

GB



The instructions, guidelines and standards given in the "Maintenance and Care" chapter have been completely revised and are therefore no longer valid!
The relevant instructions, guidelines and standards can be found in the enclosed supplements "General notes on the 3 year warranty", item no.: 099-000GAR-EWMxx.
If these documents are missing, they can be requested from your authorised specialist dealer!
Not observing these instructions can be potentially fatal!

4.2 Repair



The following steps should be followed when carrying out repairs:
You are recommended to carry out a quality control after every repair. Test sequence:

F



Les consignes, directives et normes indiquées au chapitre « Maintenance et entretien » ont été mises à jour et ne sont donc plus valables !
Vous trouverez les consignes, directives et normes applicables dans les additifs « Consignes générales relatives à la garantie de 3 ans », à l'article : 099-000GAR-EWMxx.
Si vous ne possédez pas les documents, vous pouvez vous les procurer auprès de votre revendeur autorisé !
Le non-respect des consignes peut représenter un danger de mort !

Measurement of open circuit voltage
Measurement of open circuit current
Function test of the welding machine

I



The welding machine must be checked for externally visible faults (without opening the machine) for example, to the following points:
Le istruzioni, direttive e norme presenti nel capitolo „Manutenzione e cura” sono state completamente riviste e per questo motivo non sono più valide!
Le istruzioni, direttive e norme rilevanti le trovate nell'aggiornamento qui allegato "Istruzioni generali sui 3 anni di garanzia", Nr. Art.: 099-000GAR-EWMxx.
Se i documenti non fossero disponibili, possono essere richiesti al rivenditore autorizzato!
L'inosservanza delle istruzioni può comportare pericolo di vita!

Signs of damage
Damage to stop points
Improper interference and modification
The type plate and warning symbol must be present

4 Maintenance and care

4.2.2 Measurement of protective conductor resistance

Measure between safety contact of the mains plug and metal parts which can be touched, e.g. casing screws. During measuring, the entire length of the machine's connecting lead, especially near the connecting points, must be moved.

The resistance must be $< 0.1\Omega$. The measurement must be performed using at least 200 mA.

4.2.3 Measurement of insulation resistance

The machine must be disconnected from the mains!

Open the welding machine and clean it carefully (as described below).

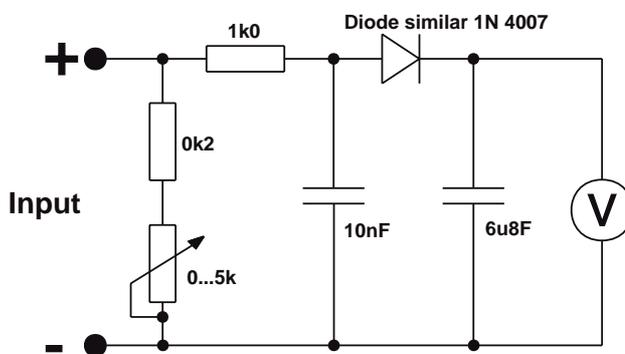
Switch on mains switch.

Insulation resistance mains current circuit - casing: Measure from a connection of the mains plug to the casing. The resistance must be $> 2.5\text{ M}\Omega$.

Insulation resistance welding current circuit - casing: Measure between a welding socket and protective conductor. The resistance must be $> 2.5\text{ M}\Omega$.

Insulation resistance mains current circuit - welding current circuit: Measure from a connection of the mains plug to a welding current socket. The resistance must be $> 5.0\text{ M}\Omega$.

4.2.4 Measurement of open circuit voltage (according to EN 60974-1 / VDE 0544 T1)



Measurement circuit for peak values

Connect the measuring circuit to the welding current sockets as shown in Fig. 1. The voltmeter must indicate the mean value. Adjust the potentiometer from $0\text{k}\Omega$ to $5\text{k}\Omega$ during the measurement. The measured voltage must not deviate from that specified on the rating plate (U_0) by more than 10%.

4.2.5 Function test of the welding machine

Carry out a function test depending on the type of machine.

4.3 Repair work

Repair and maintenance work may only be performed by qualified personnel. In all service matters, always consult your dealer. Return deliveries of defective equipment subject to warranty may only be made through your dealer.

When replacing parts, use only original spare parts.

When ordering spare parts, the machine type, serial number and item number of the machine, as well as the type description and item number of the spare part must be quoted.

If repair or maintenance work is carried out on this machine by personnel who are not trained and authorised to undertake such work, the right to claim under the warranty lapses.

5 Ersatzteilliste / Spare parts list

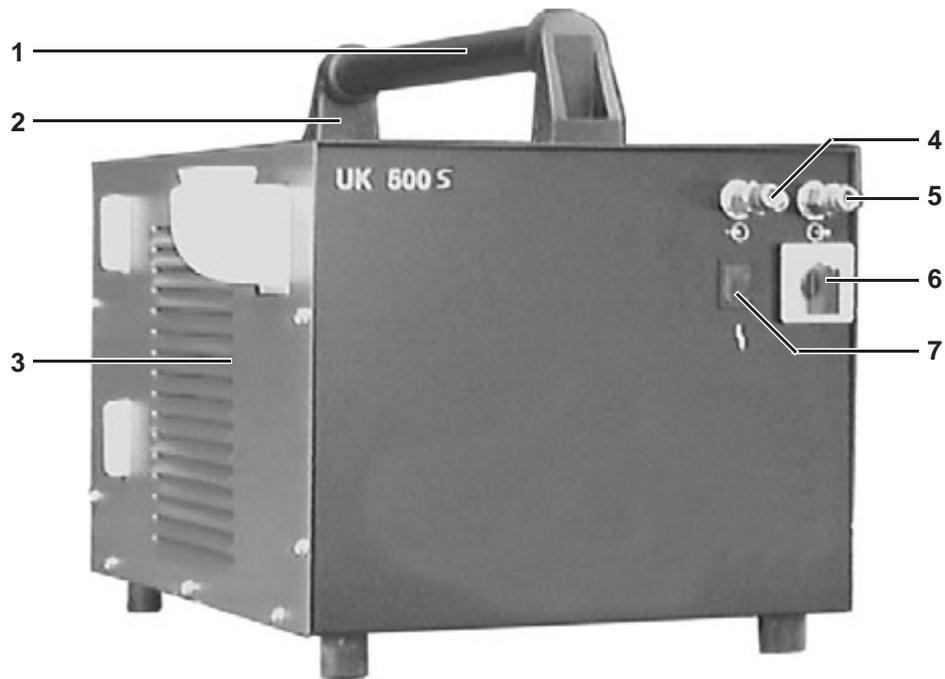


Abb. 5/1

Pos.	Bezeichnung:	Description:	UK 500	UK 500 S
1	Griffstange	Hand grip	074-000237-00009	
2	Halterung für Griffstange	Hand grip mount	074-000237-00000	
3	Gehäuseabdeckung	Casing panel	094-000343-00007	
4	Schnellverschlußkupplung (rot)	Quick release coupling (red)	094-000520-00000	
5	Schnellverschlußkupplung (blau)	Quick release coupling (blue)	094-000521-00000	
6	Netzschalter	Mains switch	074-000231-00000	074-000279-00001
7	Signalleuchte	signal light	094-000377-00000	

5 Ersatzteilliste / Spare parts list

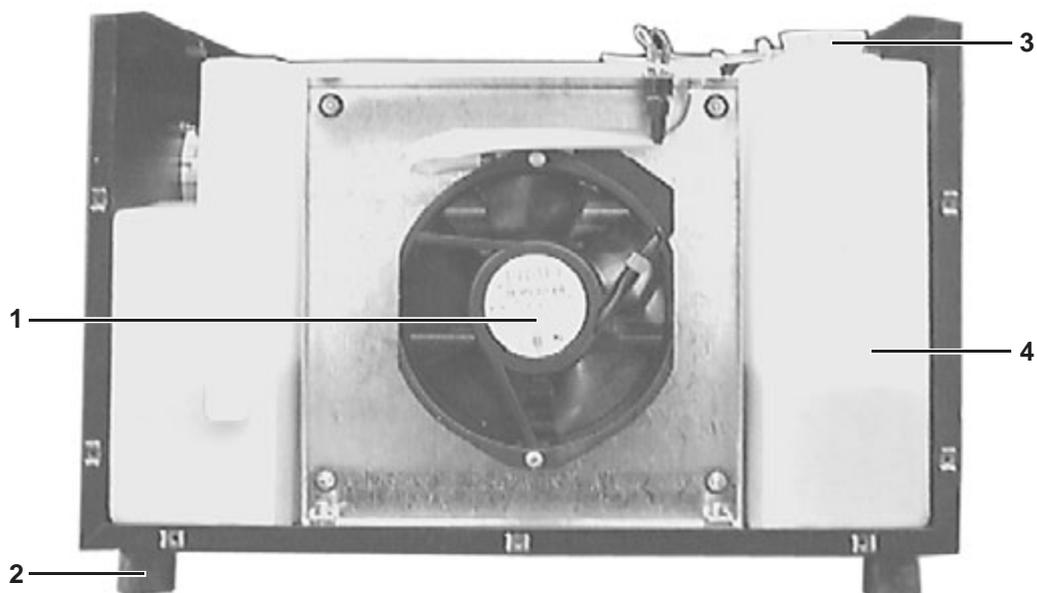


Abb. 5/2

Pos.	Bezeichnung:	Description:	UK 500	UK 500 S
1	Lüfter	Fan	074-000015-00000	
2	Gummifuß	Rubber foot	074-000223-00000	
3	Verschlußdeckel	Sealing cover	064-001685-00000	
	Sieb	Filter sieve	094-001373-00000	
4	Tank	Tank	094-000164-00000	

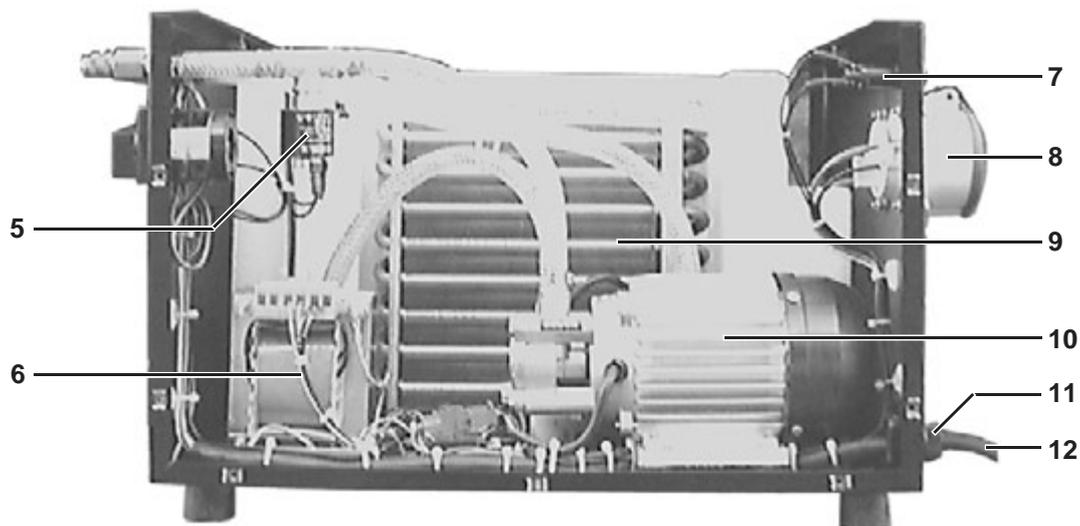


Abb. 5/3

Pos.	Bezeichnung:	Description:	UK 500	UK 500 S
5	Druckwächter	Pressure monitor	094-000232-00001	
6	Versorgungstrafo	Supply transformer	-	094-000516-00000
7	Sicherung (1,6A träge)	Fuse (1.6A slow-blowing)	094-001805-00000	
8	CEE-Steckdose 16A	CEE-Built-in 16A socket	-	094-000596-00000
9	Wärmetauscher	Heat exchanger	094-000133-00000	
10	Kreiselpumpe	Centrifugal pump	094-000053-00001	
11	Kabeldurchführung	Cable gland	074-000283-00000	074-000243-00000
12	Netzkabel	Mains cable	074-000236-00001	094-000002-00000

6 Accessories, options

6.1 Miscellaneous accessories

Designation	Design	Art. No.:
KF 24E-10	Coolant (9.3 litre drum / antifreeze to -10°C)	094-000530-00000
KF 37E-20	Coolant (9.3 litre drum / antifreeze to -20°C)	094-006256-00000
DKF 23E-10	Deionized coolant for plasma machines (9.3 litre drum / no antifreeze)	094-001504-00000
UKV1 Set	Coolant extension hose (length 1m)	092-000858-00000
UKV4 Set	Coolant extension hose (length 4m)	092-000587-00000

7 Circuit diagrams

7.2 UK 500 S

