



© **Original operating instructions**  
**Flux Cored Welding Set**

**Einhell®**



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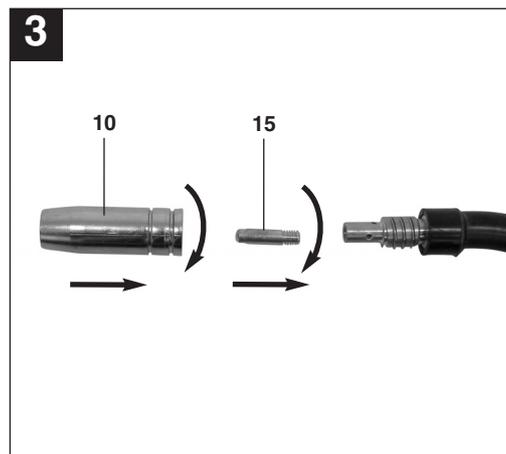
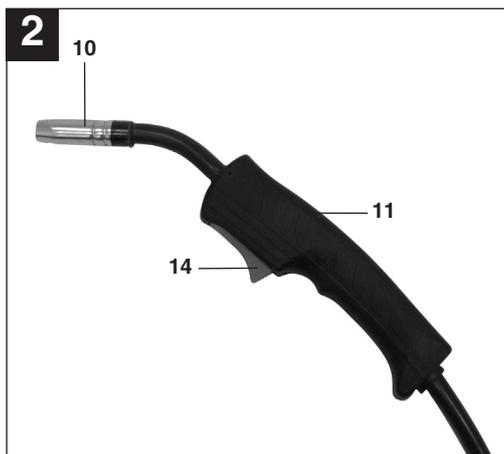
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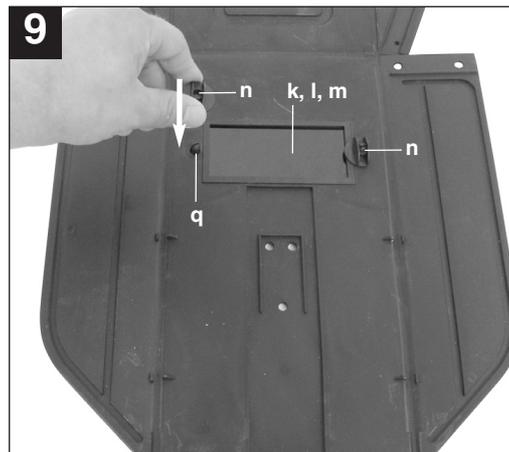
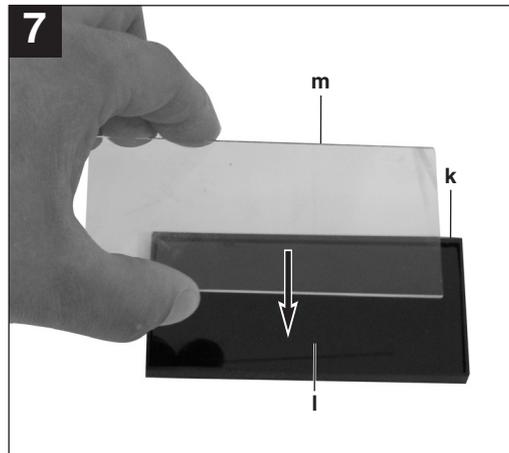
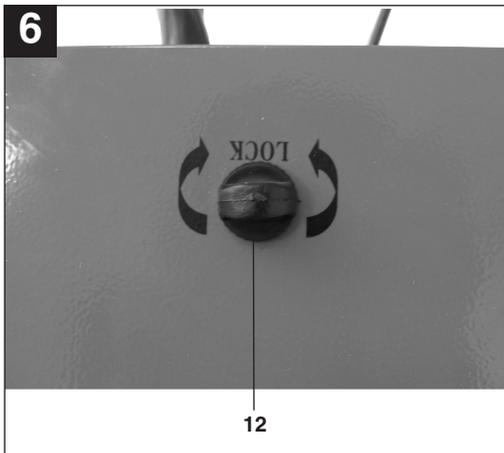
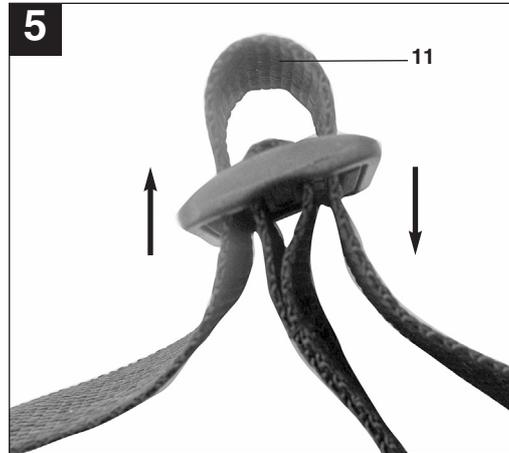
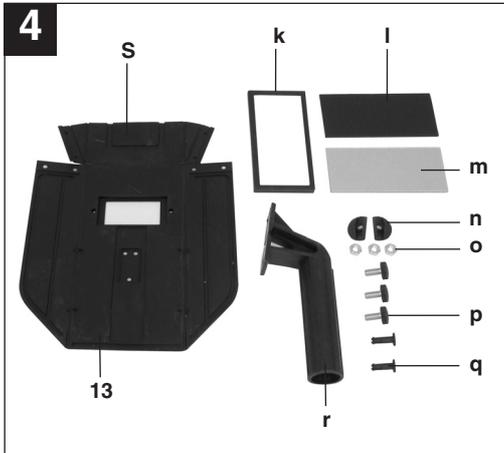
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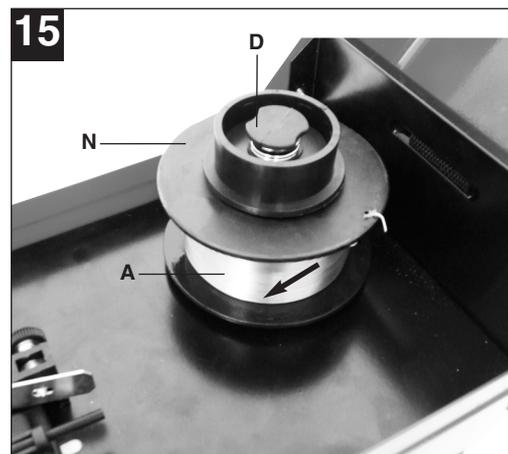
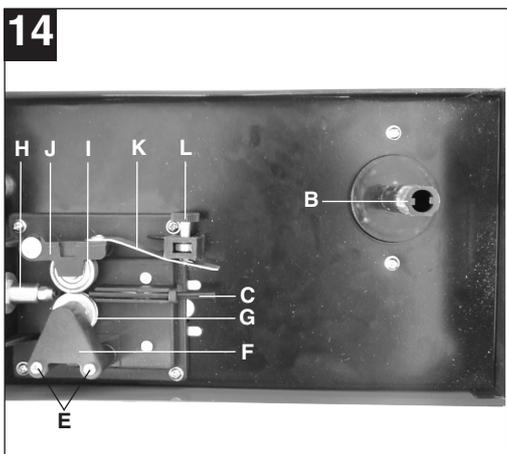
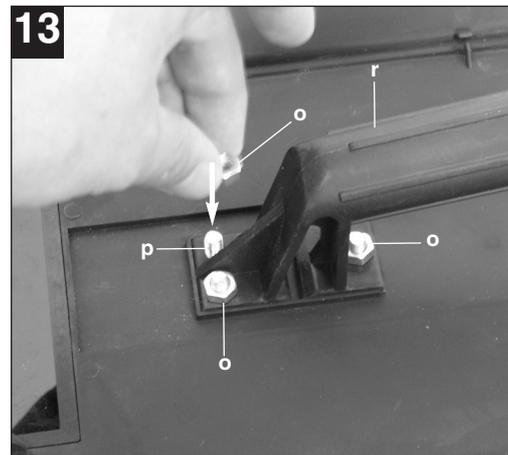
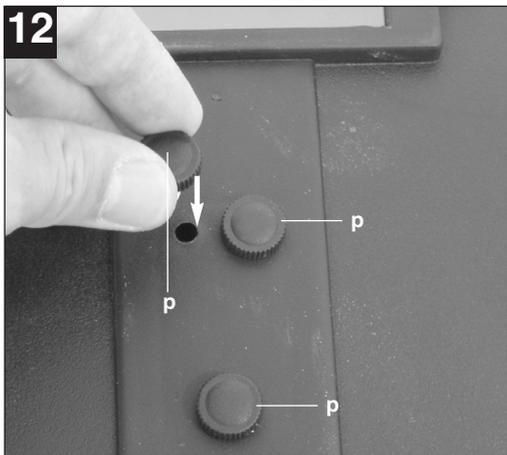
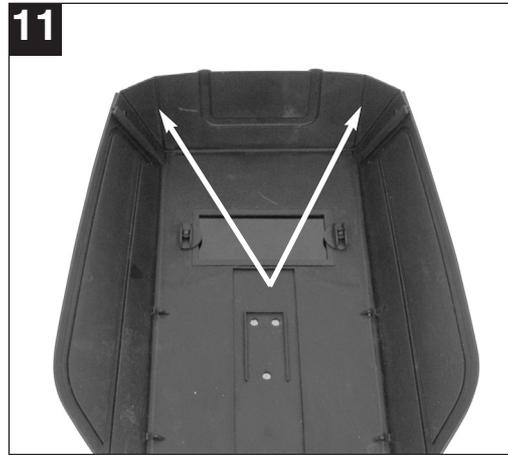
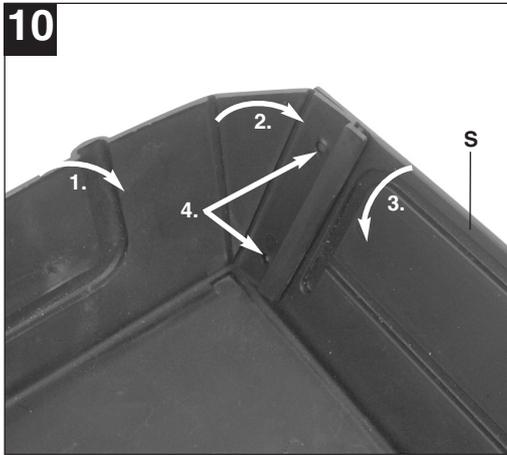
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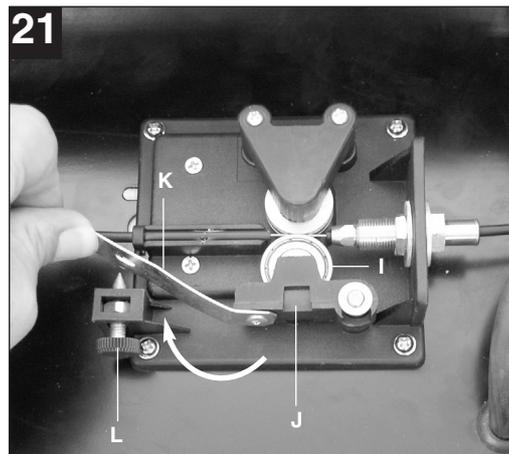
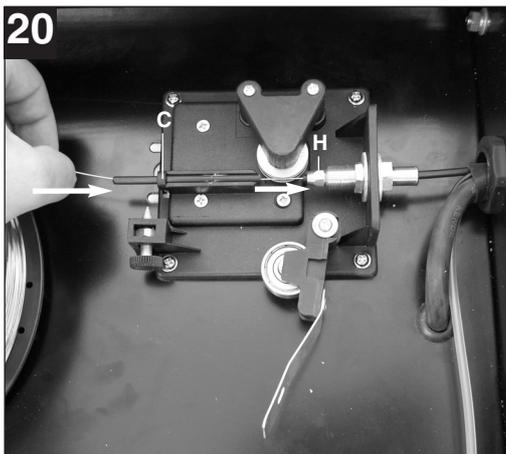
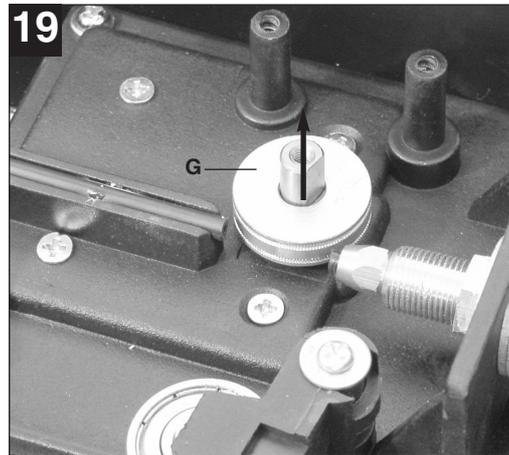
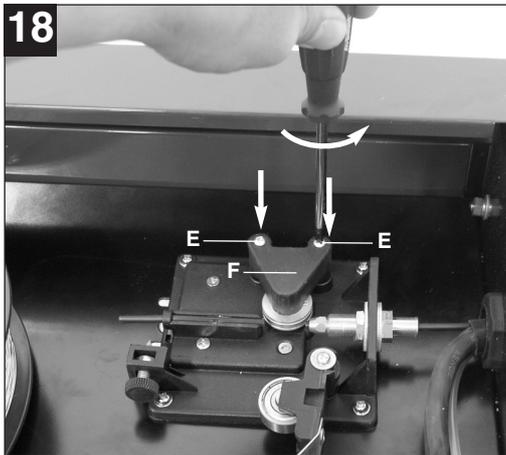
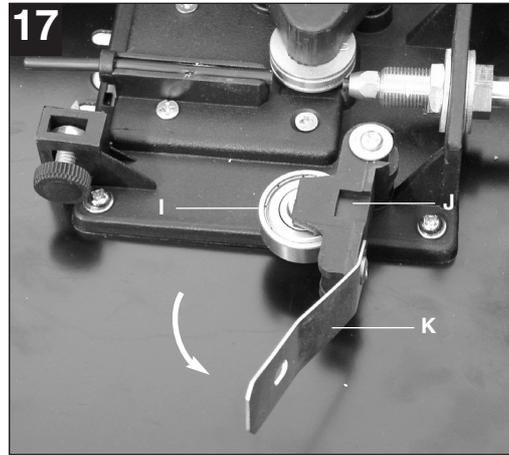
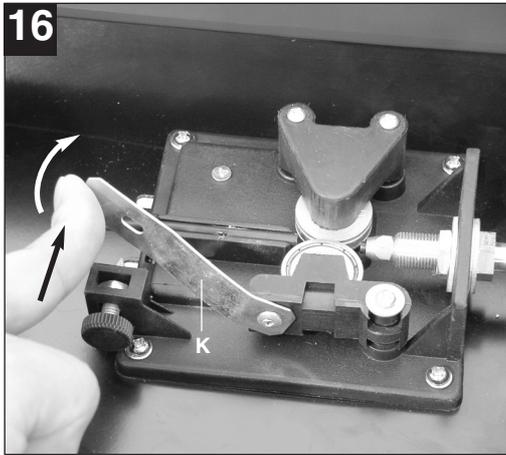
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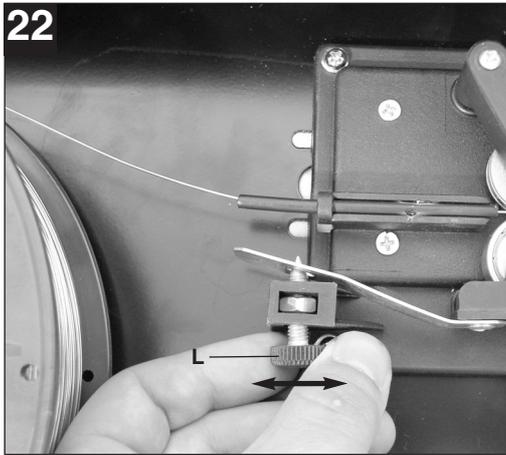














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**GB****⚠ Important!**

When using the equipment, a few safety precautions must be observed to avoid injuries and damage. Please read the complete operating instructions and safety regulations with due care. Keep this manual in a safe place so that the information is available at all times. If you give the equipment to any other person, hand over these operating instructions and safety regulations as well. We cannot accept any liability for damage or accidents which arise due to a failure to follow these instructions and the safety instructions.

**1. Safety regulations****⚠ Safety information**

Please note

Handling this system incorrectly may be hazardous for persons, animals and property. The user of this system is responsible for his/her own safety and for the safety of others.

Read these operating instructions and follow all the regulations.

- Repairs and/or maintenance work may only be carried out by qualified personnel.
- Use only the welding cables supplied.
- Ensure that the appliance is looked after properly.
- To ensure that sufficient air can be drawn in through the ventilation slits, the appliance should not be constricted or placed next to a wall while it is operating. Make sure that the appliance is correctly connected to the mains supply. Do not subject the mains lead to any tensile stress. Unplug the appliance before you change its position.
- Check the condition of the welding cables, the burner and the earth terminals; wear on the insulation and the live parts may result in dangerous conditions and reduce the quality of the welding work.
- Arc welding generates sparks, molten metal particles and smoke, so the following is required: Remove all inflammable substances and/or materials from the working area.
- Ensure that there is adequate ventilation.
- Do not weld on tanks, vessels or pipes that have contained inflammable liquids or gases. Avoid all direct contact with the welding circuit; the idling voltage between the burner and the earth terminal may be dangerous.
- Do not store or use the appliance in wet or damp conditions or in the rain.
- Protect your eyes with specially designed goggles (DIN level 9-10), which you can attach to the

supplied safety shield. Wear gloves and dry safety clothing that are not contaminated by any oil or grease to ensure that your skin is not exposed to ultraviolet radiation from the arc.

- Do not use this welder to defrost pipes.
- Make sure that the equipment is set up so it stands firmly. If the equipment is set up on an angled surface, it may need to be secured by tying or blocking the wheels.

**Remember.**

- The radiation from the arc can damage your eyes and cause burns on skin.
- Arc welding generates sparks and droplets of molten metal; the welded workpiece may start to glow and will remain very hot for a relatively long period of time.
- Arc welding releases vapors that may be harmful. Every electric shock is potentially fatal.
- Do not approach the arc within a radius of 15 m unprotected.
- Protect yourself (and others around you) against the possible hazardous effects of the arc.
- Warning: Depending on the mains connection conditions at the connection point of the welding set, other consumers connected to the mains may suffer faults.

**Important!**

If the supply mains and circuits are overloaded, other consumers may suffer interference during the welding work. If you have any doubts, contact your electricity supply company.

**Sources of danger during arc welding**

Arc welding results in a number of sources of danger. It is therefore particularly important for the welder to comply with the following rules so as not to place himself or others in danger and to avoid endangering people and equipment.

1. Have all work on the mains voltage system, for example on cables, plugs, sockets, etc., performed only by trained electricians. This particularly applies to configuring intermediate cables.
2. If an accident occurs, disconnect the welding power source from the mains immediately.
3. If electric touch voltages occur, switch off the welding set immediately and have it checked by an expert.
4. Always check for good electrical contacts on the welding current side.
5. Wear insulating gloves on both hands for

- welding. These offer protection from electric shocks (idling voltage in the welding circuit), harmful radiation (Heat and UV radiation) and from glowing metal and slag spatter.
6. Wear firm, insulated footwear. Your shoes should also protect you in wet conditions. Open-toed footwear is not suitable since falling droplets of glowing metal will cause burns.
  7. Wear suitable clothing, do not wear synthetic clothes.
  8. Do not look into the arc with unprotected eyes, use only a welding safety shield with the proper safety glass in compliance with DIN standards. In addition to light and heat, which may cause dazzling and burns, the arc also gives off UV radiation. Without proper protection, this invisible ultraviolet radiation causes very painful conjunctivitis, which will only be noticeable several hours later. In addition, UV radiation will cause sunburn-type symptoms on unprotected parts of the body.
  9. Personnel or assistants in the vicinity of the arc must also be notified of the dangers and provided with the required protection; if necessary install safety walls.
  10. Ensure adequate ventilation for welding, particularly in small rooms since the process causes smoke and harmful gases.
  11. Do not carry out any welding work on tanks that have been used to store gases, fuels, mineral oil or the like, even if they have been empty for a lengthy period of time, since any residue will result in a danger of explosion.
  12. Special regulations apply in areas where there is a potential risk of fire and/or explosion.
  13. Welds that are exposed to large stresses and must comply with safety requirements may only be completed by specially trained and approved welders. Examples of such welds include pressure vessels, rails, trailer hitches, etc.
  14. Note: It must be noted that the protective conductor in electrical systems of appliances may be destroyed by the welding current in the event of negligence, for example if the earth terminal is placed on the welding set casing to which the protective conductor of the electrical system is connected. The welding work is completed on a machine with a protective conductor connection. It is therefore possible to weld on the machine without having connected the earth terminal to it. In this case the welding current will flow from the earth terminal through the protective conductor to the machine. The high welding current may cause the protective conductor to melt.
  15. The fuses on the supply cables to the mains

sockets must comply with the relevant regulations (VDE 0100). To comply with these regulations, only fuses or circuit breakers suitable for the cross-section of the cables may be used (for earthing contact sockets max. 16 A fuses or 16 A circuit breakers). The use of too high a fuse may result in the cable burning and fire damage to the building.

### Constricted and wet areas

When working in constricted, wet or hot areas, use insulating supports and intermediate layers as well as slip-on gloves made of leather or other non-conductive materials to insulate your body against the floor, walls, conductive parts of the machine and the like.

If you use small welding transformers for welding in places with an increase electrical risk, for example in constricted areas with conductive walls, (tanks, pipes, etc.), in wet areas (which make work clothes wet) and in hot areas (perspiration on work clothes), the output voltage of the welding set when idling must not exceed 48 V (effective value). Therefore, the appliance may not be used for these purposes because its output voltage is higher than this.

### Safety clothing

1. While working, the welder must protect his entire body from radiation and burns by wearing suitable clothing and a face guard.
2. Slip-on gloves made of a suitable material (leather) must be worn on both hands. They must be in perfect condition.
3. Suitable aprons must be worn to protect clothing from sparks and burns. A safety suit and, if necessary, head protection must be worn if required by the type of work in question, e.g. overhead welding.
4. The safety clothing used as well as all accessories must comply with the „Personal Safety Equipment“ directive.

### Protection from radiation and burns

1. Provide information about the risk to eyes at the working site in the form of a poster with the wording “Caution – do not look at the flames”. Workplaces are to be screened off wherever possible so that personnel in the vicinity are

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protected. Unauthorized persons are to be kept away from the welding work.

2. The walls in the immediate vicinity of stationary workplaces should not have a light color or a sheen. Windows up to head height are to be protected against radiation passing through them or reflecting off them, for example by coating them with a suitable paint.



Do not store or use the equipment in wet conditions or in the rain. Use the equipment only indoors.

## 2. Layout and items supplied (Fig. 1-8)

1. Carrying strap
2. Thermostat control lamp
3. Housing cover
4. ON/OFF switch
5. Welding wire speed controller
6. Switch for welding current adjustment
7. Mains plug
8. Earth terminal
9. Hose package
10. Welding nozzle
11. Burner
12. Fastening screw for housing cover
13. Welding screen
14. Burner switch

### 2.1 Assembly material

- k. 1 x Safety glass frame
- l. 1 x Welding glass
- m. 1 x Transparent safety glass
- n. 2 x Safety glass retaining bushes
- o. 3 x Nut for handle
- p. 3 x Screws for handle
- q. 2 x Safety glass retaining pin
- r. 1 x Handle
- s. 1 x Welding screen frame

## 3. Intended use

The flux cored welding set is designed for self-shielding flux cored welding using suitable wire. The additional application of gas is not required.

The equipment is to be used only for its prescribed purpose. Any other use is deemed to be a case of misuse. The user / operator and not the manufacturer will be liable for any damage or injuries of any kind caused as a result of this.

Please note that our equipment has not been designed for use in commercial, trade or industrial applications. Our warranty will be voided if the equipment is used in commercial, trade or industrial businesses or for equivalent purposes.

## 4. Technical data

Mains connection:	230 V ~ 50 Hz
Welding current:	45-90 A
Duty cycle X%	10 60
Welding current I <sub>2</sub> (A):	90 45
Idling voltage:	31 V
Max. welding wire drum:	0.4 kg
Welding wire diameter	0.9 mm
Fuse:	16 A
Weight:	14 kg

## 5. Before starting the equipment

### 5.1 Assembly (Fig. 7-13)

#### 5.1.1 Fitting the carrying strap (1)

- Guide the carrying strap (1) through the slit on the rear of the equipment, over the housing cover (3) and through the slit on the front of equipment. Connect the ends of the carrying strap as shown in Figure 5 and adjust the strap to the required length.

#### Fitting the welding screen (13)

- Place the welding glass (l) and the transparent safety glass (m) over it in the frame for the safety glass (k) (Fig. 7).
- Press the safety glass retaining pins (q) into the holes in welding screen frame (s) from the outside. (Fig. 8).
- Place the frame for the safety glass (k) with the welding glass (l) and transparent safety glass (m) from the inside into the recess in the welding frame (s), press the safety glass retaining bushes (n) on to the safety glass retaining pins (q) until they engage to secure the frame for the safety glass (k). The transparent safety glass (m) must be on the outside. (Fig. 9).
- Bend the top of the welding screen frame (s) inwards (Fig. 10/1) and fold down the top corners (Fig. 10/2) Now bend the outer sides of the welding screen frame (l) inwards (Fig. 10/3) and connect them by pressing the top corners and outer sides together. When the retaining pins engage, you should be able to hear 2 clear clicks on each side (Fig. 10/4).
- When the top corners of the welding screen are connected as shown in Figure 11, place the screws for the handle (p) from the outside through the three holes in the welding screen. (Fig. 12).
- Turn over the welding screen and place the handle (r) over the threads on the three screws for the handle (p). Secure the handle (r) to the welding screen using the three nuts for the handle (o). (Fig. 13).

### 5.2 Mains connection

- Before you connect the equipment to the mains supply make sure that the data on the rating plate are identical to the mains data.
- The equipment may only be operated from properly earthed and fused shock-proof sockets.

### 5.3 Fitting the wire spool (Fig. 1, 2, 3, 14 – 22)

The wire spool is not supplied.

#### 5.3.1 Wire types

Various welding wires are required for different applications. The welding set can be used with welding wires with a diameter of 0.9 mm. The appropriate feed rollers and contact tubes are supplied with the set. The feed roller, contact tube and wire cross-section must always match each other.

#### 5.3.2 Wire spool capacity

Wire spools with a maximum weight of 0.4 kg can be fitted in the welding set.

#### 5.3.3 Inserting the wire spool

- Unlock the housing cover (Fig. 1/3) by turning the fastening screw (Fig. 6/12) through 90° and flip open the cover.
- Check that the windings on the spool do not overlap so as to ensure that the wire can be unwound evenly.

#### Description of the wire guide unit (Fig. 14-22)

- A Wire spool
- B Spool holder
- C Guide tube
- D Adjusting screw for roller brake
- E Screws for feed roller holder
- F Fee roller holder
- G Feed roller
- H Hose package mounting
- I Pressure roller
- J Pressure roller holder
- K Pressure roller spring
- L Adjusting screw for counter-pressure

#### Inserting the wire spool (Fig. 14, 15)

Place the wire spool (A) on the spool holder (B). Ensure that the end of the welding wire is unwound on the side of the wire guide, see arrow.

#### Inserting the welding wire and adjusting the wire guide (Fig. 16-22)

- Push the pressure roller spring (K) upwards and swing it forwards (Fig. 16).
- Pull the pressure roller holder (J) with the pressure roller (I) and pressure roller spring (K) downwards (Fig. 17).
- Undo the screws for the feed roller holder (E) and pull off the feed roller holder (F) upwards (Fig. 18).
- Check the feed roller (G). The appropriate wire thickness must be specified on the top of the feed roller (G). The feed roller (G) is fitted with

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- two guide grooves. Turn the feed roller (G) over if necessary or replace it. (Fig. 19).
- Position the feed roller holder (F) again and secure it.
  - Remove the gas nozzle (Fig. 2/10) from the burner (Fig. 2/11) by turning it clockwise, unscrew the contact tube (Fig. 3/15). (Fig. 2 – 3). Place the hose package (Fig. 1/9) on the floor as straight as possible pointing away from the welding set.
  - Cut off the first 10 cm of the welding wire to produce a straight cut with no shoulders, warping or dirt. Deburr the end of the welding wire.
  - Push the welding wire through the guide tube (C) between the pressure and feed rollers (G/I) into the hose package mounting (H). (Fig. 20) Carefully push the welding wire by hand into the hose package until it projects out of the hose package by approx. 1 cm at the burner (Fig. 2/11).
  - Undo the adjusting screw for counter-pressure (L) a few turns. (Fig. 22).
  - Push the pressure roller holder (J) with pressure roller (I) and pressure roller spring (K) upwards again and attach the pressure roller spring (K) to the adjusting screw for counter-pressure (L) again (Fig. 21).
  - Now set the adjusting screw for counter-pressure (L) so that the welding wire is positioned firmly between the pressure roller (I) and feed roller (G) without being crushed. (Fig. 22).
  - Screw the appropriate contact tube (Fig. 3/15) for the welding wire diameter on to the burner (Fig. 2/11) and fit the gas nozzle (Fig. 2/10), turning it clockwise.
  - Set the adjusting screw for the roller brake (D) so that the wire can still be moved and the roller stops automatically after the wire guide has been braked.

## 6. Operation

### 6.1 Setting

Since the welding set must be set to suit the specific application, we recommend that the settings be made on the basis of a test weld.

#### 6.1.1 Setting the welding current

The welding current can be set to 2 different levels using the welding current adjustment switch (Fig. 1/6). The required welding current depends on the material thickness, the required penetration depth and the welding wire diameter.

#### 6.1.2 Setting the wire feed speed

The wire feed speed is automatically adjusted to the current setting. The final wire feed speed setting can be made on the welding wire speed controller (Fig. 1/5). It is advisable to start with the medium setting and to re-adjust the speed as necessary. The required quantity of wire depends on the material thickness, the penetration depth, the welding wire diameter and also the size of the gap to be bridged between the workpieces you wish to weld.

### 6.2 Electrical connection

#### 6.2.1 Mains connection

See point 5.2

#### 6.2.2 Connecting the earth terminal (Fig. 1/8)

Connect the welding set's earth terminal (8) in the immediate vicinity of the welding position if possible. Ensure that the contact point is bare metal.

### 6.3 Welding

When all the electrical connections for the power supply and welding current circuit have been made, you can proceed as follows:

The workpieces for welding must be clear of paint, metallic coatings, dirt, rust, grease and moisture in the area where they are to be welded.

Set the welding current and wire feed (see 6.1.1 – 6.1.3) as required.

Hold the welding screen (Fig. 4/13) in front of your face and move the welding nozzle to the point on the workpiece where you wish to complete the weld. Now press the burner switch (Fig. 2/14).

When the arc is burning, the welding set will feed wire into the weld pool. When the weld nugget is large enough, move the burner slowly along the required edge. Move it to and fro if necessary to enlarge the weld pool a little.

Find the ideal setting of the welding current and wire feed speed by carrying out a test weld. Ideally an even welding noise will be audible. The penetration depth should be as deep as possible, but the weld pool must not be allowed to fall through the workpiece.

Do not remove the slag until the weld has cooled. If you want to continue a welding job on an interrupted weld seam, the slag from your initial attempt must first be removed.

#### 6.4 Safety equipment

##### 6.4.1 Thermostat

The welding set is fitted with an overheating guard that protects the welding transformer from overheating. If the overheating guard trips, the control lamp (2) on your set will be lit. Allow the welding set to cool for a time.

## 7. Cleaning, maintenance and ordering of spare parts

Always pull out the mains power plug before starting any cleaning work.

### 7.1 Cleaning

- Keep all safety devices, air vents and the motor housing free of dirt and dust as far as possible. Wipe the equipment with a clean cloth or blow it down with compressed air at low pressure.
- We recommend that you clean the equipment immediately after you use it.
- Clean the equipment regularly with a damp cloth and some soft soap. Do not use cleaning agents or solvents; these may be aggressive to the plastic parts in the equipment. Ensure that no water can get into the interior of the equipment.

### 7.2 Servicing

There are no parts inside the equipment which require additional maintenance.

### 7.3 Ordering replacement parts:

Please provide the following information on all orders for spare parts:

- Model/type of the equipment
- Article number of the equipment
- ID number of the equipment
- Spare part number of the required spare part

For our latest prices and information please go to [www.isc-gmbh.info](http://www.isc-gmbh.info)

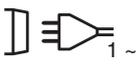
## 8. Disposal and recycling

The equipment is supplied in packaging to prevent it from being damaged in transit. The raw materials in this packaging can be reused or recycled. The equipment and its accessories are made of various types of material, such as metal and plastic. Defective components must be disposed of as special waste. Ask your dealer or your local council.

**GB****9. Troubleshooting**

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Feed roller does not turn	Power supply not connected	Check connection
	Wire feed controller set to 0	Check setting
Feed roller turns, but does not feed any wire	Incorrect roller pressure (see 5.3.3)	Check setting
	Roller brake set too firmly (see 5.3.3)	Check setting
	Dirty / damaged feed roller (see 5.3.3)	Clean or replace
	Damaged hose package	Check the wire guide jacket
	Contact tube wrong size / dirty / worn (see 5.3.3)	Clean or replace
After a lengthy period of use the welding set does not work any longer, the thermostat (2) control light is lit	Welding wire welded to the gas nozzle / contact tube	Release
	The welding set has overheated due to being used for too long and a failure to observe the reset time	Leave the set to cool down for at least 20 – 30 minutes
Very poor weld	Incorrect current / feed setting (see 6.1.1/6.1.2)	Check setting

### 10. Key to symbols

EN 60974-1	European standard for arc welding sets and welding power supplies with limited on time		Do not store or use the equipment in wet or damp conditions or in the rain.
$U_s$	Standardized operating voltage		Single-phase mains connection
$U_1$	Mains voltage	~ 50 Hz	Mains frequency
$I_1 \text{ max}$	Rated maximum mains current		Symbol for falling characteristic curve
	Read the operating instructions carefully before using the welding set and follow them		Self-shielding flux cored welding
$U_0$	Rated idling voltage	IP 21 S	Protection type
$I_2$	Welding current	X	On-load factor
Ø mm	Welding wire diameter	$I_1 \text{ eff}$	Effective value of the highest line current
	Single-phase transformer		



Ⓔ For EU countries only

Never place any electric tools in your household refuse.

To comply with European Directive 2002/96/EC concerning old electric and electronic equipment and its implementation in national laws, old electric tools have to be separated from other waste and disposed of in an environment-friendly fashion, e.g. by taking to a recycling depot.

Recycling alternative to the demand to return electrical devices:

As an alternative to returning the electrical device, the owner is obliged to cooperate in ensuring that the device is properly recycled if ownership is relinquished. This can also be done by handing over the used device to a returns center, which will dispose of it in accordance with national commercial and industrial waste management legislation. This does not apply to the accessories and auxiliary equipment without any electrical components which are included with the used device.

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Given unfavorable conditions in the power supply the equipment may cause the voltage to drop temporarily. If the supply impedance "Z" at the connection point to the public power supply exceeds  $0,448 \Omega$  it may be necessary to take further measures before the equipment can be used as intended from this power supply. If necessary, you can ask your local electricity supply company for the impedance value.



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# **GB** GUARANTEE CERTIFICATE

**Dear Customer,**

All of our products undergo strict quality checks to ensure that they reach you in perfect condition. In the unlikely event that your device develops a fault, please contact our service department at the address shown on this guarantee card. Of course, if you would prefer to call us then we are also happy to offer our assistance under the service number printed below. Please note the following terms under which guarantee claims can be made:

1. These guarantee terms cover additional guarantee rights and do not affect your statutory warranty rights. We do not charge you for this guarantee.
2. Our guarantee only covers problems caused by material or manufacturing defects, and it is restricted to the rectification of these defects or replacement of the device. Please note that our devices have not been designed for use in commercial, trade or industrial applications. Consequently, the guarantee is invalidated if the equipment is used in commercial, trade or industrial applications or for other equivalent activities. The following are also excluded from our guarantee: compensation for transport damage, damage caused by failure to comply with the installation/assembly instructions or damage caused by unprofessional installation, failure to comply with the operating instructions (e.g. connection to the wrong mains voltage or current type), misuse or inappropriate use (such as overloading of the device or use of non-approved tools or accessories), failure to comply with the maintenance and safety regulations, ingress of foreign bodies into the device (e.g. sand, stones or dust), effects of force or external influences (e.g. damage caused by the device being dropped) and normal wear resulting from proper operation of the device. This applies in particular to rechargeable batteries for which we nevertheless issue a guarantee period of 12 months.



The guarantee is rendered null and void if any attempt is made to tamper with the device.



3. The guarantee is valid for a period of 2 years starting from the purchase date of the device. Guarantee claims should be submitted before the end of the guarantee period within two weeks of the defect being noticed. No guarantee claims will be accepted after the end of the guarantee period. The original guarantee period remains applicable to the device even if repairs are carried out or parts are replaced. In such cases, the work performed or parts fitted will not result in an extension of the guarantee period, and no new guarantee will become active for the work performed or parts fitted. This also applies when an on-site service is used.
4. In order to assert your guarantee claim, please send your defective device postage-free to the address shown below. Please enclose either the original or a copy of your sales receipt or another dated proof of purchase. Please keep your sales receipt in a safe place, as it is your proof of purchase. It would help us if you could describe the nature of the problem in as much detail as possible. If the defect is covered by our guarantee then your device will either be repaired immediately and returned to you, or we will send you a new device.

Of course, we are also happy offer a chargeable repair service for any defects which are not covered by the scope of this guarantee or for units which are no longer covered. To take advantage of this service, please send the device to our service address.



