



## Operating instructions

# MULTI-CUTTER MC 40



<b>Table of contents</b>	<b>Page</b>
1.0 Safety notes .....	1
1.1 Prevention of electrical accidents .....	1
1.2 Work environment.....	2
1.3 Personal protection .....	2
2.0 General information .....	3
2.1 Installation.....	3
3.0 Description of equipment and overview .....	4
4.0 Performance specifications.....	5
5.0 Technical data .....	6
6.0 Initial start-up .....	7
6.1 Electrical connections .....	7
6.2 Compressed air supply .....	7
7.0 Working with the MC 40.....	7
7.1 The principle of plasma cutting .....	7
7.2 Pilot device.....	8
7.3 Setting.....	8
7.4 Cutting.....	8
8.0 Important points .....	9
9.0 Fault detection .....	12
10.0 Servicing .....	13
11.0 Spare parts .....	14

## 1.0 Safety notes

It is necessary to observe certain safety precautions to ensure the operator's safety each time when plasma cutting.

Please observe the following instructions carefully to avoid personal injury and property damage.



### **CAUTION**

**The ON-OFF switch does not completely remove the equipment from the electric circuit!**

**The switch is still live. Pull the mains plug before removing the cover!**

**Switch off the device before attempting to work on the burner!**

## 1.1 Prevention of electrical accidents

**The plasma cutter generates hazardous voltage levels at start-up and while cutting. The following safety precautions must be observed.**

- The equipment should always be operated with the utmost caution.
- Do not work on circuits or lines that carry current. Disconnect the mains plug before examining or repairing the equipment.
- The 208 - 230 V power supply must conform to all local standards.
- Never use the equipment in extremely damp surroundings or on wet ground.
- Do not weld if cables are damaged.
- Only use original parts to replace any damaged burner parts or burner cable parts.
- Maintenance may only be carried out by qualified persons who are aware of the risks involved in working with high voltage.
- Do not hold parts you are cutting in your hand.

## 1.2 Work environment

### Vapours

- Metal dust and vapours, which may be harmful, are generated during cutting. It is necessary, therefore, to wear protective masks and to ensure that work areas are sufficiently ventilated.
- To prevent toxic gases from forming, any solvent and lubricant residues that may be present must be removed before cutting.  
Some chlorinated solvents tend to degrade and form phosgene gas due to the radiation generated by the light arc.
- Coated metals or metals containing lead, graphite, cadmium, zinc, mercury or beryllium may generate toxic gases when cut.
- It is necessary to install smoke hoods in enclosed cutting areas.

### Fire

The following precautions should be taken to prevent fires, which could be caused by sparks or hot cinders:

- All inflammable and combustible materials should be removed from the cutting area.
- Do not cut on either of the following:
  - Petrol or fluid tanks – irrespective of whether these are empty or full.
  - Any structure with cavities filled with combustible material.
- Fire extinguishers must be installed in the close vicinity of the work units.

## 1.3 Personal protection



### **Never look at the cutting arc!**

The arc is extremely hot and bright. Protect eyes and face against this radiation by means of masks or helmets with protective glass.  
Always wear aprons and gloves.  
Put up screens around the cutting site, in order to protect others from looking at the arc.

## **2.0 General information**

Carefully remove the welding equipment from the packaging so as not to damage it.

The equipment should be inspected for transport damage immediately upon arrival.

Check if all attachments, accessories and spare parts are enclosed.

## **2.1 Installation**

The welding equipment is air-cooled. The exhaust is at the back; the intake is at the front.

Therefore, the welding equipment needs to be placed in such a way that the cooling air stream is not hindered.

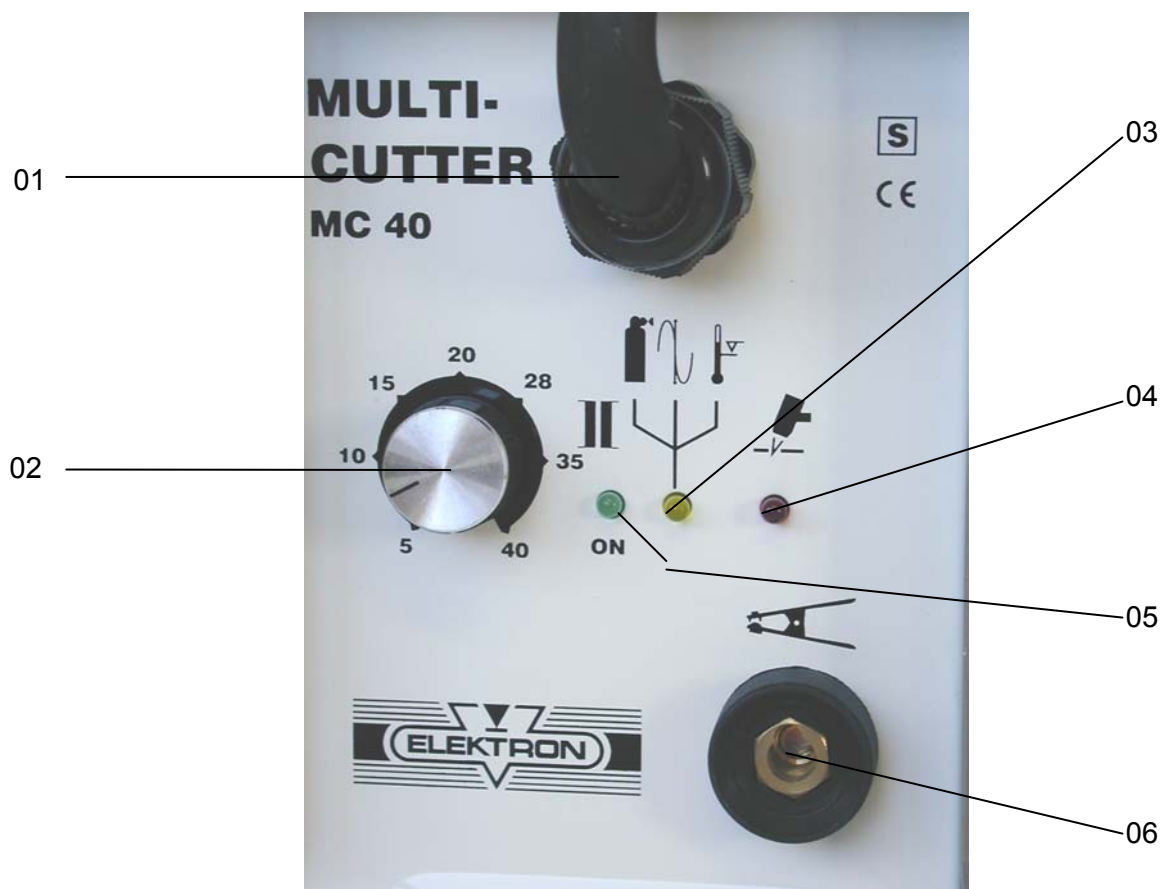
Ensure that dust, moisture, or corrosive vapours cannot enter the equipment.

### 3.0 Description of equipment and overview

#### Rear view of equipment:

- ON-OFF switch:** Use this switch to switch the equipment on.
- Pressure gauge:** Shows the compressed-air pressure (working pressure 5 bar / 72.5 psi)
- Power cord:** With earthing pin plug 230 V / 50/60 Hz

#### Front view of equipment:



- 01 Connection for plasma cutter
- 02 Arc current setting

- 03 Pilot light (yellow)
- 04 Pilot light (red)
- 05 Pilot light (green)
- 06 Earthing connection

#### 03 Pilot light (yellow)

##### Working pressure, mains voltage, thermal fuse:

**Flashing rapidly:** Working pressure too low

**Flashing slowly:** Mains voltage too low

**Constant:** Thermal fuse

#### 04 Pilot light (red):

**Constant:** Pilot arc active

**Flashing:** Earth is not connected correctly.

#### 05 Pilot light (green):

Equipment is operating

## **4.0 Performance specifications**

- Power source specially developed for plasma cutting.
- Splash-free arc.
- Electronic control system controls the cutting process.  
Fully electronic high-frequency generator provides excellent ignition.
- Integrated filter prevents failures caused by the arc and the high frequency generator.
- Electric fan ensures effective cooling.
- Thermal protection of the inverter against overload.

## 5.0 Technical data

### Power supply

Mains voltage	208 - 230 V
Frequency	50 / 60 Hz
Max. Primary current	40 A
Max. Power input	3.2 kVA

### Cut

Cutting current setting	5/40 A
Pilot arc current	12 A
ON period 60%	40 A
100%	25 A
Dimension (W x D x H)	13 x 29 x 25 cm / 5" x 11.5" x 10"
Weight	7.2 kg / 15.9 lbs
Protection class	IP23

### Cutting speed

Material thickness	Material	Cutting speed min.
0.8 mm / 1/32"	Medium-alloyed steel	5.60 m / 18.0 ft
1.5 mm / 1/16"	Medium-alloyed steel	3.70 m / 12.0 ft
2.5 mm / 1/10"	Medium-alloyed steel	2.10 m / 6.9 ft
4.0 mm / 1/6"	Medium-alloyed steel	1.10 m / 3.6 ft
8.0 mm / 1/3"	Medium-alloyed steel	0.50 m / 1.6 ft
10.0 mm / 2/5"	Medium-alloyed steel	0.25 m / 0.8 ft
0.8 mm / 1/32"	Aluminium	6.90 m / 22.6 ft
1.5 mm / 1/16"	Aluminium	4.30 m / 14.0 ft
2.5 mm / 1/10"	Aluminium	1.80 m / 5.9 ft
4.0 mm / 1/6"	Aluminium	1.30 m / 4.3 ft
6.0 mm / 1/4"	Aluminium	0.80 m / 2.6 ft
0.8 mm / 1/32"	Stainless steel	5.80 m / 19.0 ft
1.5 mm / 1/16"	Stainless steel	2.20 m / 7.2 ft
2.5 mm / 1/10"	Stainless steel	1.10 m / 3.6 ft
4.0 mm / 1/6"	Stainless steel	0.80 m / 2.6 ft
6.0 mm / 1/4"	Stainless steel	0.65 m / 2.1 ft
8.0 mm / 1/3"	Stainless steel	0.50 m / 1.6 ft



## **6.0 Initial start-up**

### **6.1 Electrical connections**

**Ensure that the number of phases and the voltage of the mains supply correspond to those stated on the nameplate**

- Connect the mains cable exiting from the rear of the welding equipment to the power supply.
- Ensure that the yellow-green earth wire of the mains lead is connected to earth. Good earthing is extremely important for the safety of persons and for the protection of the equipment.
- Check that all connections have been properly made to prevent damage from overheating.

### **6.2 Compressed air supply**

**Use dry compressed air only.**

- Connect the compressed air line to the fittings at the rear of the equipment.
- Check that the air pressure is at least 5 bar (72.5 psi).

## **7.0 Working with the MC 40**

### **7.1 Principle of plasma cutting**

This cutting system operates using extremely high temperatures, which are generated through an electric arc between electrode and workpiece and the addition of air through the nozzle opening of the burner. The extremely high intensity of the arc in conjunction with the compressed-air stream generates a plasma jet that melts and removes metal.

The air stream serves two purposes:

- a) It generates the plasma jet together with the arc.
- b) After cutting, the air jet cools the burner.

## 7.2 Pilot device

The pilot device enables the arc to be ignited without touching the workpiece. This makes it easier to cut painted or coated workpieces.



**Device ignites as soon as the burner button is pressed. Danger of injury**  
**Never point toward the body or combustible materials! Fire hazard**

## 7.3 Setting

Before each cutting, make sure the electrode and the nozzle are in good condition.  
Preparation: Connect the air line to the plug-in nipple at the rear of the equipment.  
Maximum admission pressure: 10 bar (145 psi).  
Set the pressure at the manometer to between 4.5 (65 psi) and 5 bar (72.5 psi).  
Connect the plug of the earth cable with the socket (06) on the device and the earth terminal with the workpiece.

**CAUTION!** Tighten the plug securely by turning clockwise.  
Set the potentiometer (02) to the amperage required for the workpiece.

## 7.4 Cutting

Hold the burner head **perpendicular** to the work-piece when cutting. The cutting speed is correct when the arc trace below the work-piece follows the electrode at an angle of 5°-10°.

**High cutting speeds damage the electrode.**

Whilst cutting, the nozzle should be held directly at the work-piece.

### **Cutting with the pilot arc**

- Hold the burner close to the work-piece.
- Press the trigger and wait for approx. 2 sec for the arc to ignite.
- If you do not begin to cut within 5 sec, the pilot arc will go out.
- With the burner head pressed and the pilot arc ignited, move the burner direct to the work-piece and begin cutting according to the instructions provided under **Cutting**.

## 8.0 Important points

### Advantages

- The MULTI-CUTTER is able to cut easily all high strength steel and "boron" steel body parts which cannot be cut by any other equipment.
- Very high cutting speed with low heat influence to the panel.
- Stepless power adjusting from 5 A up to 40 A.

**Important ! Dry compressed air required**

Remove condensate and the built-up of impurities from the filter daily



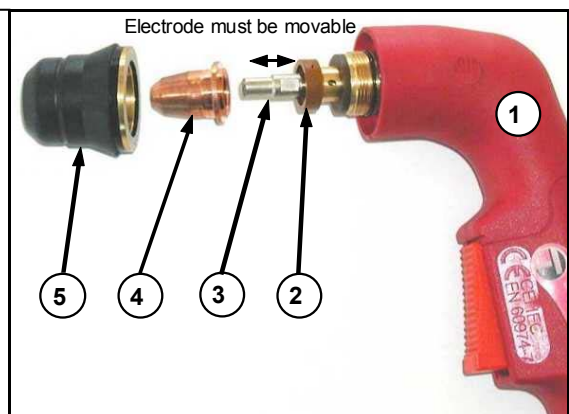
### Important points for correct air flow

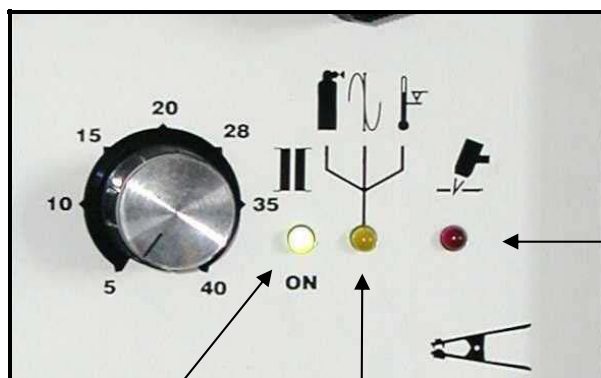
- Adjust air pressure to min 4.5 bar (65 psi), max 5 bar (72 psi) (see picture 1).
- Use air flow gauge to double check correct air flow as follows:
  1. Press trigger button for one second.
  2. **Ensure that cutting arc is off.**
  3. Put air flow gauge on nozzle as shown.
  4. Internal ball should fly in the centre of the marked area, if not adjust by turning the upper button from the pressure reducer (see picture 1).



### Important points for burner service and function

- Replace any defective burner, electrode and nozzle parts.
- Inspect the burner body (1) for any visible damage.
- Check swirl ring (2) for visible damage and correct mounting.
- Ensure that electrode (3) is in good shape and correctly screwed into the thread. Don't tighten too hard, otherwise the electrode lift up system is blocked.
- Cutting nozzle (4) should be clean, the hole should not be blocked or worn out.
- Shield cap (5) should only be tightened by hand, look for visible damage.





Equipment is operating

**Flashing:** Earth is not connected correctly

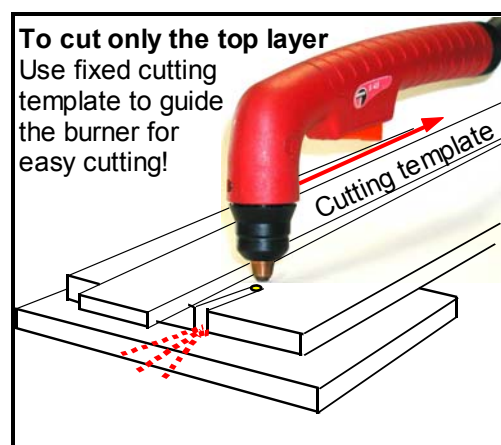
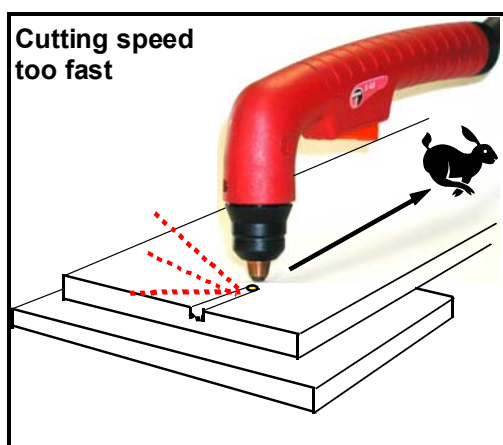
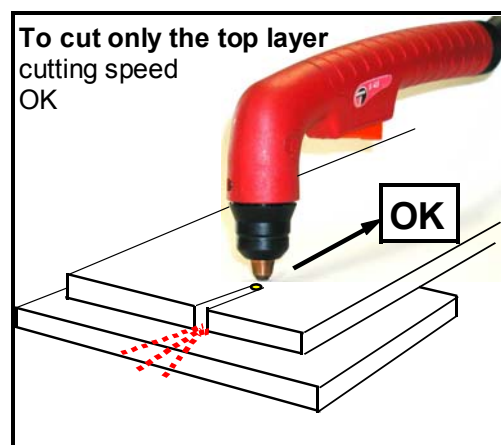
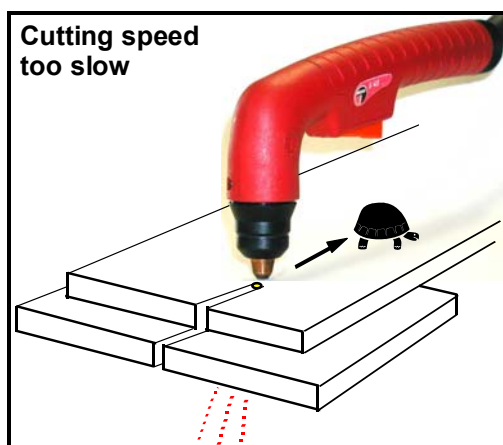
**Constant light:** Pilot arc active

**Rapidly flashing:** Air pressure too low

**Slowly flashing:** Mains voltage too low, extension cord too long, wire size too small

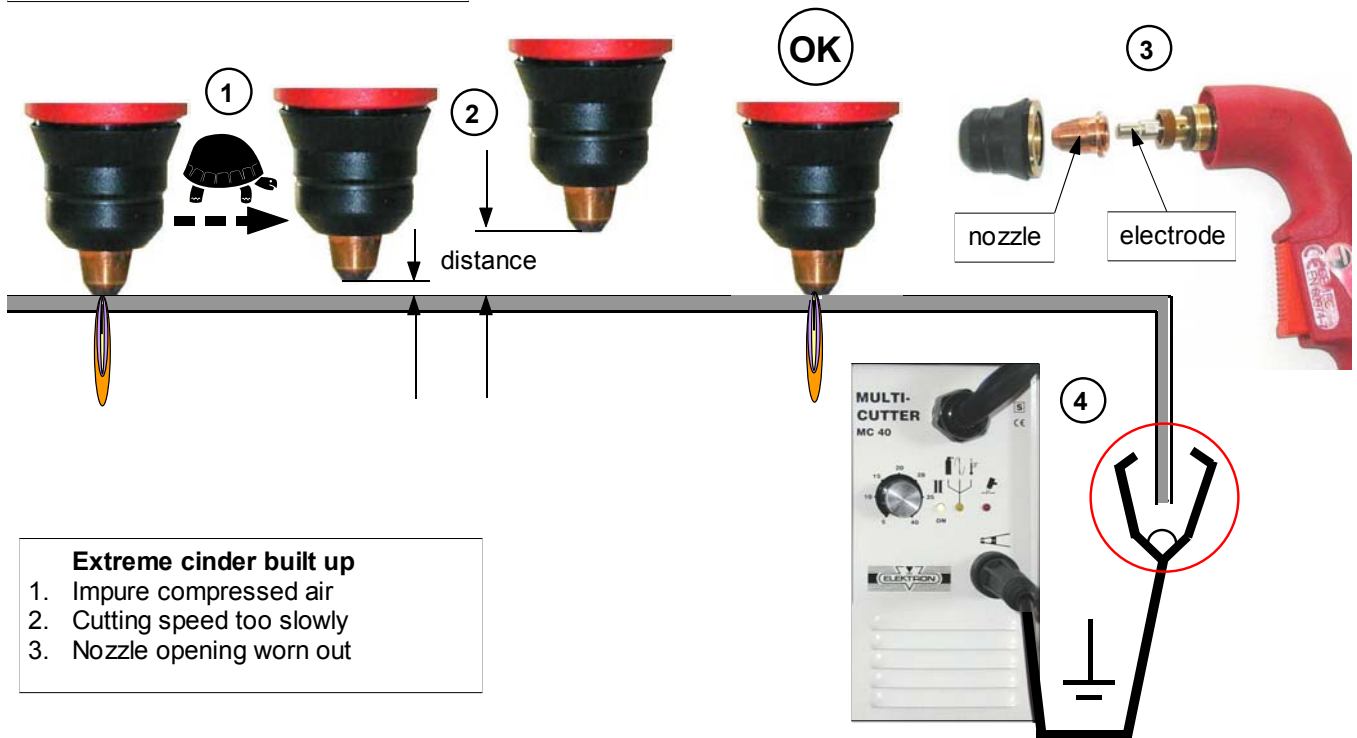
**Constant light:** Thermal fuse active, let unit cool down

## How to cut only the top layer with MULTI-CUTTER MC 40



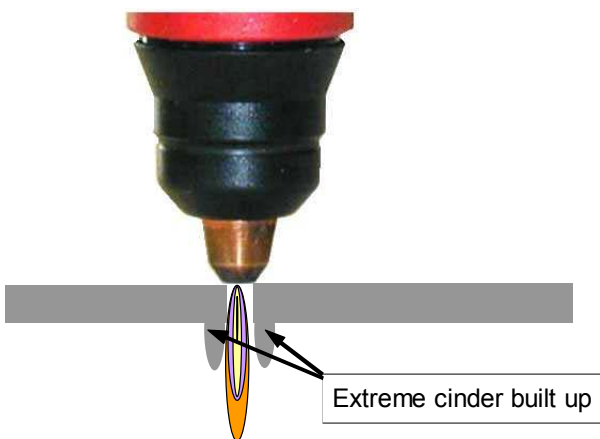
### Main arc distinguishes

1. Cutting speed too slowly
2. Distance to the panel
3. Nozzle or electrode worn out
4. Earth contact insufficient



### Extreme cinder built up

1. Impure compressed air
2. Cutting speed too slowly
3. Nozzle opening worn out



## 9.0 Fault detection

- |   |   |
|---|---|
| (1) Device plugged in, pilot light is not lit                                   | Main fuse defective   |
| (2) Pilot light and thermostat protection light are on, cutting is not possible | Wait for the device to cool down  |
| (3) Pilot arc does not ignite or is not constant                                | (a) Irregular flow of compressed air<br>(b) Compressed air contains moisture  |
| (4) Insufficient penetration depth  | (a) You are cutting too fast<br>(b) Cutting current is too weak   |
| (5) Main arc goes out   | (a) You are cutting too slowly<br>(b) Distance to the panel<br>(c) Nozzle or electrode worn out<br>(d) Earth contact insufficient |
| (6) Extreme cinder build up   | (a) Impure compressed air<br>(b) You are cutting too slowly<br>(c) Nozzle opening worn  |

## 10.0 Servicing

### Routine service

#### Daily:

- Remove condensate and the build-up of impurities from the compressed-air filter.
- Replace any defective burner, electrode and nozzle parts.
- Inspect the burner body for any visible damage.
- Check the condition of the insulation and the hoses.
- Check the condition of the earth cable and the earthing.

#### At least twice a year:

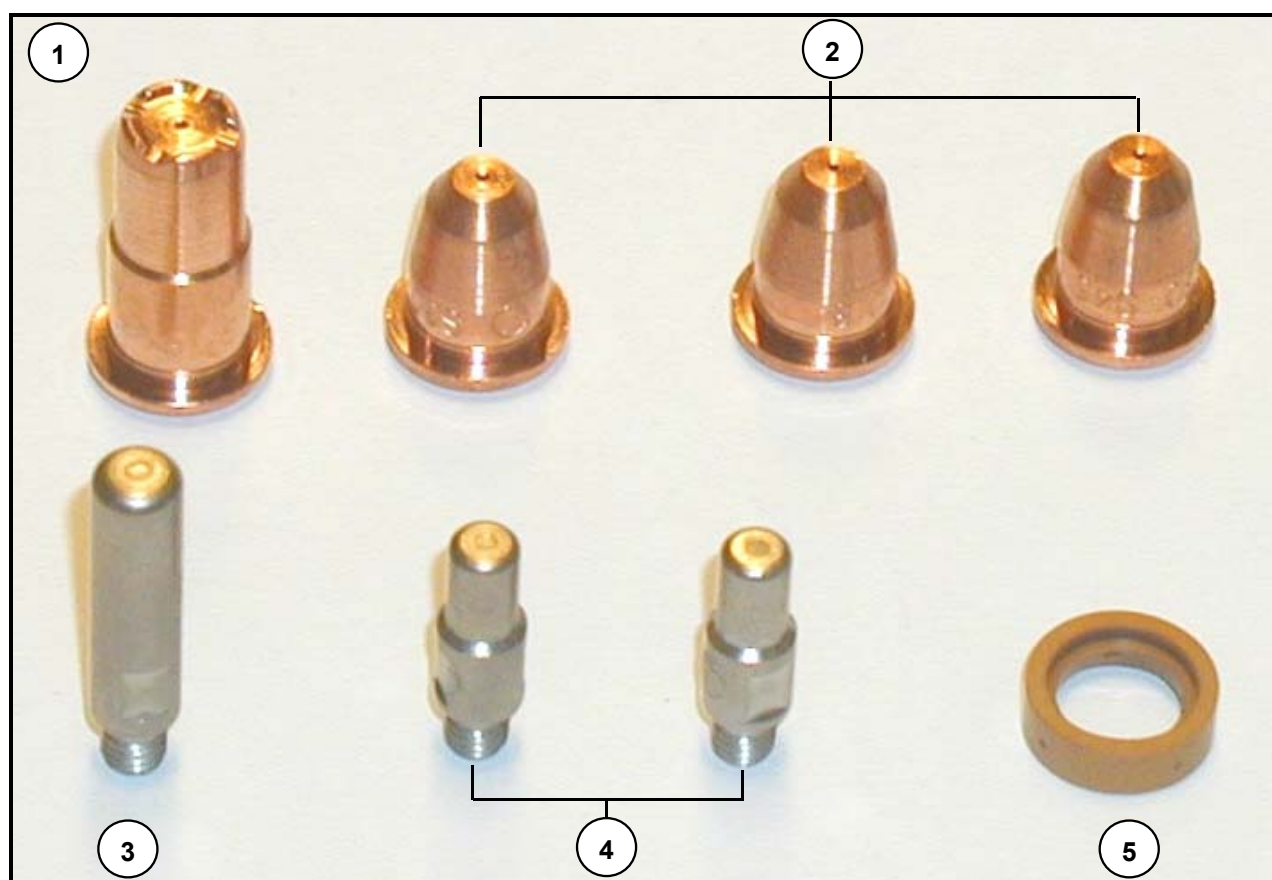
#### Disconnect the cutting device from the mains.

- Remove the cover.
- Carefully, blow away any dust deposits.
- Check for any damage to the insulation of connection cables.
- Check for any damage to the connections. In particular, check the earthing connections of the housing.
- Check the condition of the hoses and the gaskets in the compressed air lines.
- Replace the cover.

## 11.0 Spare Parts

Pos.	Part No.	Wearing parts kits	Pieces
6	325 956	Shield cap	1
2	419 424	Cutting nozzle Standard	10
4	419 423	Electrode Standard	10

Pos.	Part No.	Description
	419 411	Wearing parts kit Contents Pos. 1 to 5
1	325 954	Cutting nozzle long type
2	325 953	Cutting nozzle Standard
3	325 952	Electrode long type
4	325 951	Electrode Standard
5	325 955	Swirl ring



Subject to technical changes without prior notice