HOMER tools

PLASMA CUTTING MACHINE

HOMER Plasmacut 39

OPERATING MANUAL

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1. INTRODUCTION

Congratulations on your new ALFA IN product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry.

This Operating Manual has been designed to instruct you on the correct use and operation of your ALFA IN product. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore please take the time to read the entire manual, especially the safety precautions. They will help you to avoid potential hazards that may exist when working with this product.

Read and understand this entire manual and your employer's safety practices before installing, operating, or servicing the equipment. While the information contained in this manual represents the manufacturer's best judgement, the manufacturer assumes no liability for its use.

Machine HOMER Plasmacut 39 is designed for cutting metal on the basis of modern technology cutting material through a thin beam plasma gas.

HOMER Plasmacut 39 is designed for high-quality cutting of materials up to 10 mm thick carbon steel (for more information, see instructions below). At lower demands on the quality of the cut can be cut through (separate) the material thickness to 15 mm.

We reserve the law of adjustments and changes in case of printing errors, change of technical parameters, accessories etc. without previous notice. These changes may not be reflected in the manuals for use in paper or electronic form.

2. SAFETY INSTRUCTIONS AND WARNINGS

1. OPERATION AND MAINTENANCE OF PLASMA ARC EQUIPMENT CAN BE DANGEROUS AND HAZARDOUS TO YOURHEALTH.
2. Plasma arc cutting produces intense electric and magnetic emissions that may interfere with the proper function of cardiac pacemakers, hearing aids, or other electronic health equipment. Persons who work near plasma arc cutting applications should consult their medical health professional and the manufacturer of the health equipment to determine whether a hazard exists.
3. Once the packing has been opened, make sure that the machine is not damaged. If in any doubt, call the service centre.
4. This equipment must only be used by qualified personnel.
5. During installation, any electric work must only be carried out by trained personnel.
6. The machine must be used in a dry place with good ventilation.
7. Make sure that no metal dust can be drawn in by the fan inside the machine, as this could cause damage to the electronic circuits.
8. It is prohibited to connect more than one INVERTER generator in series or in parallel.
9. When installing the machine, follow the local regulations on safety.
10. The position of the machine must allow easy access by the operator to the controls and connectors.
11. When the cutting machine is operating, all its covers and doors must be closed and well fixed.
12. Do not expose the cutting machine to direct sunlight or to heavy rain. This equipment conforms to protection rating IP21S.
13. The operator must wear gloves, clothes, shoes, and a helmet or a welder’s helmet, which protect and are fire-resistant in order to protect him against electric shock, flashes and sparks from cutting.
14. The operator must protect his eyes with safety visor or mask designed for welding, fitted with standard safety filters. He should also be aware that during plasma cutting ULTRAVIOLET RADIATION is emitted. Therefore it is vital that his face is also protected from radiation. Ultraviolet rays produce the same harmful effect as sun burning on unprotected skin.
15. The operator is obliged to warn anyone near the cutting area of the risks that cutting involves and to arrange to provide adequate protection equipment.
16. Keep all fumes and gases from the breathing area.
17. Keep your head out of the fume plume.
18. Use an air-supplied respirator if ventilation is not adequate to remove all fumes and gases.
19. The kinds of fumes and gases from the plasma arc depend on the kind of metal being used, coatings on the metal, and the different

processes. You must be very careful when cutting or welding any metals which may contain one or more of the following:

Antimony	Chromium	Mercury
Nickel	Cobalt	Arsenic
Barium	Copper	Selenium
Beryllium	Lead	Silver
Cadmium	Manganese	Vanadium

20. Always read the Material Safety Data Sheets (MSDS) that should be supplied with the material you are using. These MSDSs will give you the information regarding the kind and amount of fumes and gases that may be dangerous to your health.
21. It is very important to arrange for sufficient ventilation, especially when cutting in enclosed spaces. We suggest using suitable fume extractors to prevent the risk of intoxication by fumes or gas generated by the cutting process.
22. Noise can cause permanent hearing loss. Plasma arc processes can cause noise levels to exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.
23. To protect your hearing from loud noise, wear protective ear plugs and/or ear muffs. Protect others in the workplace.
24. Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.
25. The operator must ensure all flammable materials are removed from the work area to avoid any risk of fire.
26. The operator must NEVER cut containers that have previously contained petrol, lubricants, gas or similar flammable materials, even if the container has been empty for a considerable time. THERE IS A VERY HIGH RISK OF EXPLOSION.
27. The operator must be aware of all the special regulations which he needs to conform to when cutting in enclosed spaces with a high risk of explosion.
28. To prevent electric shock, we strongly suggest the following rules:

a) Do not work in a damp or humid environment.
b) Do not use the machine if its cables are damaged in any way.
c) Make sure that the earthing system of the electric equipment is correctly connected and operational.
d) The operator must be insulated from the metal components connected to the return wire.
e) The earthing of the piece being worked could increase the risk of injury to the operator.

29. EN 60974-1 Standard: Open-circuit voltage. During the operation of the machine, the highest voltage, with which it is possible to come into

contact, is the open-circuit voltage between the clamps. In our generator this voltage is 260V.

30. The maximum open-circuit voltage of the plasma machines is established by national and international standards (EN 60974-1) depending on the type of current to be used, on its waveform and on the hazards arising from the work place. These values are not applicable to the strike currents and those for stabilisation of the arc that could be above it.
31. The open-circuit voltage, for as many adjustments as possible, must never exceed the values relating to the various cases shown in the following table:

Case	Working conditions	Open-circuit voltage	
1	Places with increased risk of electric shock	DC current: 113V peak value	AC current: 68V peak value and 48V effective
2	Places without increased risk of electric shock	DC current: 113V peak value	AC current: 113V peak value and 80V effective
3	Torches held mechanically with increased protection for the operator	DC current: 141V peak value	AC current: 141V peak value and 100V effective
4	Plasma cutting	DC current: 500V peak value	

32. In case 1, the dc machines with rectifier must be built in such a way that, in case of a fault developing in the rectifier (for example open circuit, short circuit or lack of power), the permitted values cannot be exceeded. The plasma cutting machines of this type can be marked with the symbol: S
33. Before opening the machine switch off the machine and disconnect it from the power socket.
34. Only personnel authorised by this company can carry out maintenance on the machine.

PROTECTIVE UTTILITIES

1. Welding helmet with filter shade at least 10
2. Welding gloves
3. Welding apron and cloth
4. Welding boots

RISK OVERVIEW

1. Risk of electric shock
2. Ultraviolet light and light radiation
3. Risk of inhaling gas fumes and dust particles
4. Burns
5. Noise

NOTE

1. It is forbidden to operate a machine with damaged insulation of the cutting torch or supply cable.
2. Never operate the machine taken down or damaged covers.
3. It is forbidden to operate the machine in wet environments and outdoors in rain or snow.
4. Ensure proper grounding clamping pliers, which also reduces the risk of electric shock.
5. Use prescribed protective utilities, keep them dry.
6. Plasma arc cutting produces intense electric and magnetic emissions that may interfere with the proper function of cardiac pacemakers, hearing aids, or other electronic health equipment. Persons who work near plasma arc cutting applications should consult their medical health professional and the manufacturer of the health equipment to determine whether a hazard exists.
7. Never aim the torch against the eyes, body or other person.

3. CONDITIONS OF USE

1. This equipment must only be used by qualified personnel.
2. During installation, any electric work must only be carried out by trained personnel.
3. Device complies with IEC 61000-3-12.
4. Do not expose the plasma machine to direct sunlight or to rain or snow. This equipment conforms to protection rating IP21S.
5. Working ambient temperature between -10 and +40 °C.
6. Relative humidity below 90% at +20 °C.
7. Up to 3000 m altitude.
8. Place the machine the way that the cooling air can enter the vents without restriction to. It is necessary to ensure that no impurities, especially metal particles, are not drawn into the machine.
9. Cutting machine in terms of interference suppression is intended primarily for industrial premises. In the case of use of other areas may be need for special measures (see EN 60974-10).
10. The machine must be protected against
    a. Moisture and rain and snow
    b. Mechanical damage

c. Draft and any ventilation of neighbouring machine
d. Excessive overloading - crossing technical parameters
e. Rough handling

ELECTROMAGNETIC COMPATIBILITY

The welding device is in terms of interference designed primarily for industrial areas. It meets the requirements of EN 60974-10 class A and it isn't designed for using in residential areas, where the electrical energy is supplied by public low-voltage power supply network. It can be here potential problems with ensuring of electromagnetic compatibility in this areas, due to interference caused by power lines as well as the radiated interference.

During operation, the device may be the source of interference.

✋Caution✋
We warn users, that they are responsible for possible interference from welding.

4. TECHNICAL DATA

Method			Plasma cutting
Mains voltage		V/Hz	1 x 230/50-60
Cutting current range		A	20 - 40
Open-circuit voltage U_{20}		V	260
Mains protection		A	16 @
Max. effective current I_{1eff}		A	14,8
Cutting current (DZ=100%) I_2		A	20
Cutting current (DZ=60%) I_2		A	26
Cutting current (DZ=x%) I_2		A	25%=40
Max. cutting thickness - carbon steel (separate mat.)		mm	15
Quality cutting thickenss	Carbon steel	mm	10
	Stainless steel	mm	7
	Aluminium	mm	5
	Copper	mm	3
Max. input pressure		bar	8,5
Working pressure (torch Parker SCB 50)		bar	4,0
Air consumption (torch Parker SCB 50)		l/min	120
Arc ignition			HF
Current regulation			continuous
Protection			IP 21S
Standards			EN 60974-1, EN 60974-10 cl. A
Dimensions (w x l x h)		mm	170 x 480 x 315

Weight (including torch)	kg	9,4

5. MAIN PARTS OF THE MACHINE

FRONT AND REAR PANELS

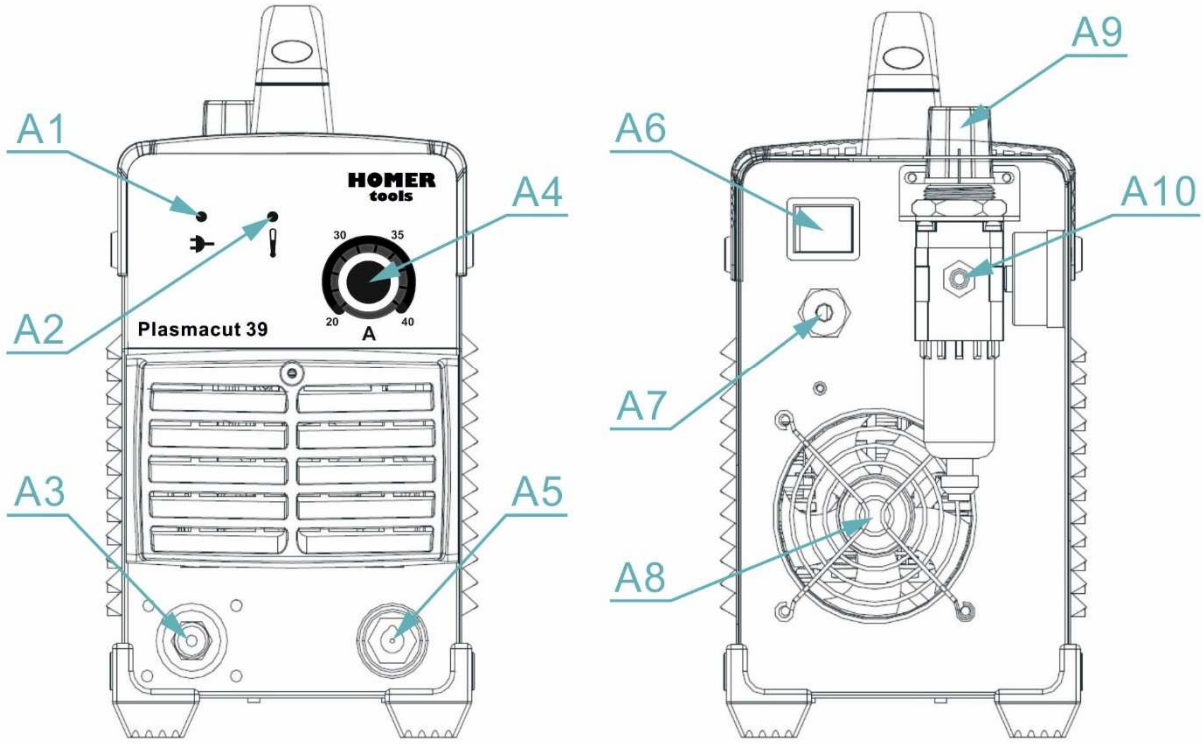


Fig. 1 – Main parts of the machine

Pos.	Description
A1	LED indicator – when illuminated, the machine is ON
A2	LED indicator. If the LED illuminates the thermo-switch is disconnected. In such a case leave the machine on to cool down.
A3	Cutting torch
A4	Potentiometer of cutting current setting
A5	Earthing cable
A6	Switch ON/OFF
A7	Mains cable
A8	Fan
A9	Oil water separator with manometer
A10	Gas fitting

6. ACCESSORIES

CONTENT OF DELIVERY

1. Torch Plasma SCB50 Homer 4 m
2. Earthing cable
3. Operating manual

ON REQUEST

Pos.	Code	Description
	SCB50-40-M16X1.5	Torch Plasma SCB50 Homer 4 m (substitute)
10	P166	Circle Cutting Attachment SCB50
23	4801	Adapter hoses for filter AT 1000
24	5302	Air Filter AT 1000
25	5304	Adapter for AT 1000 PEGAS PLASMA
11	S777c.	Welding Helmet Barracuda S777C Black
12	S7SUN9B	Welding Helmet S9B Shooting Blue Shark
13	E700008	Quick Connector SK-NW7,2-9 mm for hose
14	2546	Clamp 10-16 Gemi

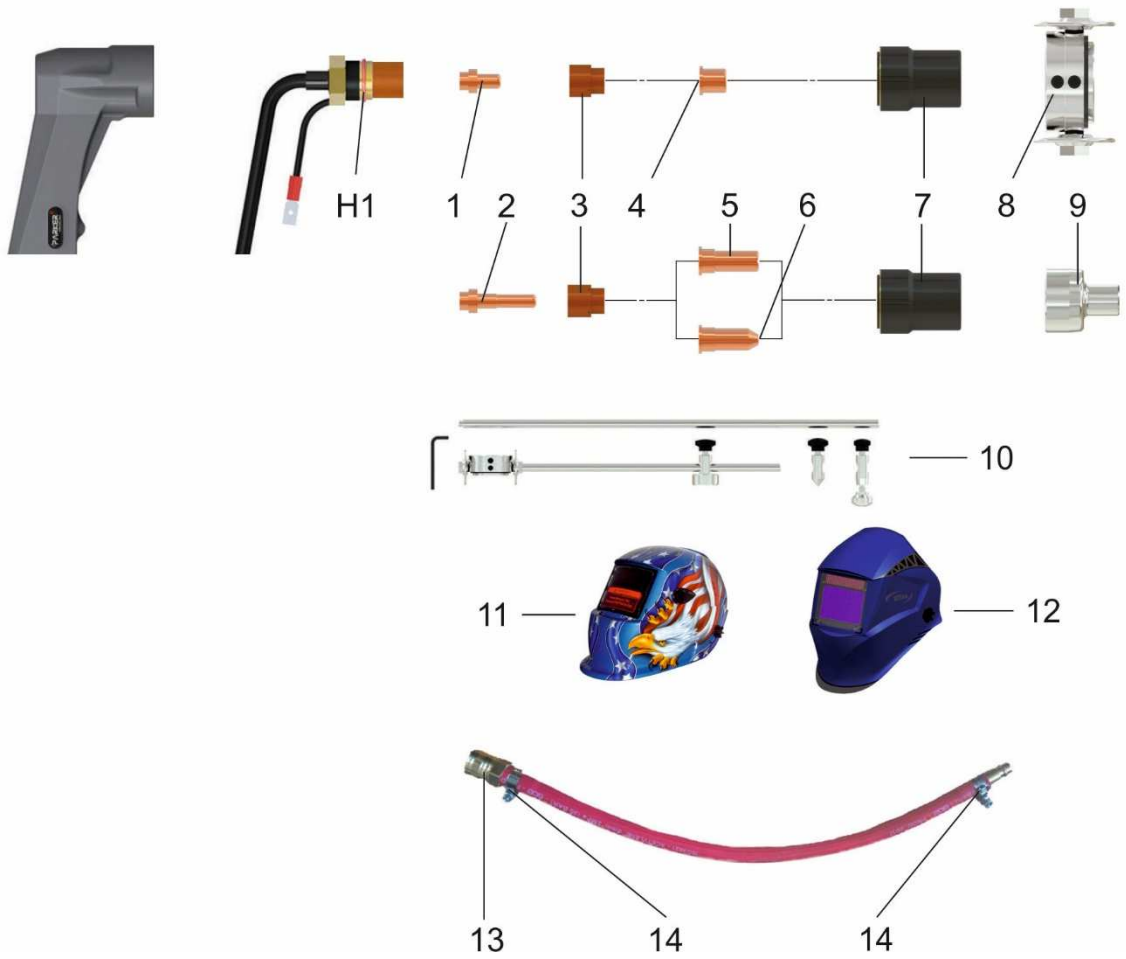


Fig. 2 – Spare parts of the torch SCB 50, machine and adapter

Pos.	Code	Description
H1	**5052**	**O-Ring PT-60, SCP 60**
1	**P1521-Hf**	**Electrode Hafnium SCB50**
2	P1518-Hf	Electrode Hafnium Extended SCB50
3	**P1510**	**Swirl Ring SCB50**
4	**P1304**	**Cutting Tip 1,0 Standard SCB50**
5	P1370	Cutting Tip 1,0 Extended SCB50
6	P1306	Cutting Tip 1,0 Contact Extended SCB50
7	**P5.710.121**	**Retaining Cap SCB50**
8	P154	Cutting Buggy SCB50
9	P1394S-50	Shield Cap Hand SCB50

Note – the bold items are equipped on the torch

Recommended starting kit for the Torch SCB 50:

Pos.	Code	Description	pc
	6096	Starting Kit for SCB50 Homer 4 m	
		Content of starting kit 6096	
1	P1521-Hf	Electrode Hafnium SCB50	2
2	P1518-Hf	Electrode Hafnium Extended SCB50	1
4	P1304	Cutting Tip 1,0 Standard SCB50	4
6	P1306	Cutting Tip 1,0 Contact Extended SCB50	2
9	P1394S-50	Shield Cap Hand SCB50	1

7. GETTING STARTED

Getting started must be consistent with technical data and conditions of use.

☝NOTE☝ This equipment must only be used by qualified personnel.

1. Before beginning work is necessary to connect the machine to the mains (1x230V, 50-60 Hz) in accordance with the chapter 4. TECHNICAL DATA.
2. Check completeness of the mounted cutting torch.
3. Connect the compressed air quick connector to the connector **A10** on the rear wall of the machine.
4. Connect the earthing cable to the cutting material.
5. Check the input pressure. The max. input pressure is 8,5 bar and the min. input pressure is 4,0 bar.
6. Switch the main switch **A6** to the ON position, LED **A1** on the control panel will shine.
7. By means of the potentiometer **A4** set the cutting current corresponding to the thickness of the cutting material.

8. Press the torch trigger and check, eventually set the working pressure to 4,0 bar on the regulator **A9**.

REQUIREMENTS FOR SOURCE OF COMPRESSED AIR

1. Delivered air pressure must be max. 8,5 bar and min. 4,0 bar.
2. Air consumption 140 l/min.
3. Compressed air for the plasma must be clean and dry.
4. Pressure dew point +3 °C.
5. Maximum oil content 0.1 mg/m3.
6. Maximal size of solid particles 15 microns.
7. The sufficient size of an air tank is 25 l.
8. No additional oiling if the pressure air is permitted. That could damage the plasma machine and the cutting torch.

OPTIONAL AIR FILTERS FOR HOMER PLASMACUT 39

To achieve high quality cutting and to avoid serious disturbances to the torch it is highly advised to include the air filter. The filter needs to be connected to the machine by means of the hoses adapter.

Pos.	Code	Description
23	4801	Adapter hoses for filter AT 1000
24	5302	Air Filter AT 1000
25	5304	Adapter for AT 1000 PEGAS PLASMA

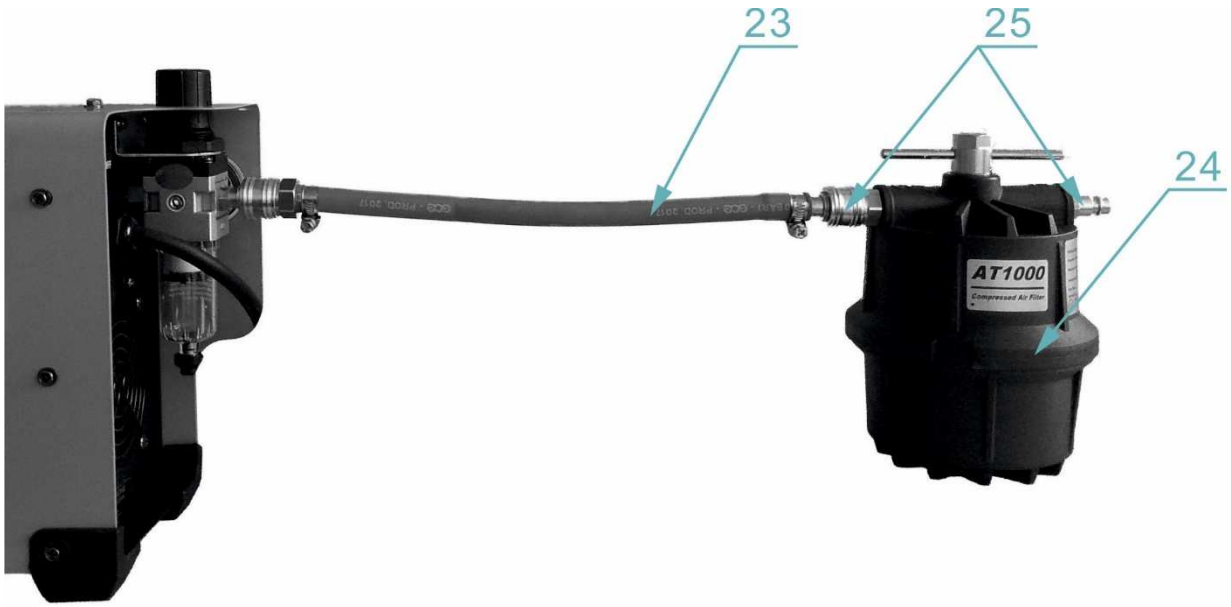


Fig. 3 – Air filter AT 1000

8. CUTTING

1. Move the torch to the material and press the torch trigger. The arc will ignite.
2. Start with cutting. After end of cutting release the torch trigger, the arc turns off and for 30 seconds the air will flow to cool down the torch.
3. After end of pre-gas procedure/torch cooling, which lasts 30 seconds, you can turn off the machine.
4. Move the torch with a constant speed. Cutting speeds vary according to torch output amperage, the type of material being cut, and operator skill.
5. Output current setting or cutting speeds may be reduced to allow slower cutting when following a line, or using a template or cutting guide while still producing cuts of excellent quality.
6. To achieve a good cutting quality make sure the distance between the tip and the material is max. 2 mm. At a greater distance decreases cutting power and the arc may go off. The nozzle can be pulled directly on the material.
7. Plasma cutting may be done in all possible positions (vertically, horizontally, overhead, vertical ascending and descending), but as far as possible choose primarily horizontal cut. In other positions the operator is increasingly threatened by flying drops of molten material.
8. We recommend starting cutting at the edge of the material. If needed to start from the centre of the material, or to cut hole into the material, slightly tilt the torch head and gradually it straighten into a vertical position so the spraying material would not damage the cutting tip (see Figure 4). This workflow must always be followed, if the thickness of material is above 3 mm.
9. In case of cutting in the corner or around the corner (see Figure 5), use the long electrode and cutting tip. The cutting power while using the Long cutting tip is decreased.

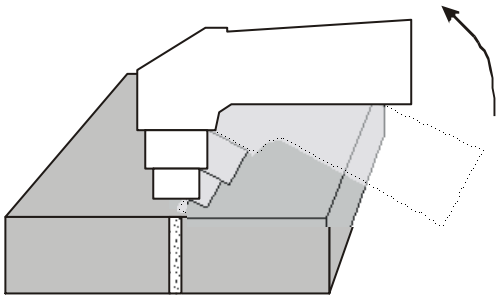


Fig. 4

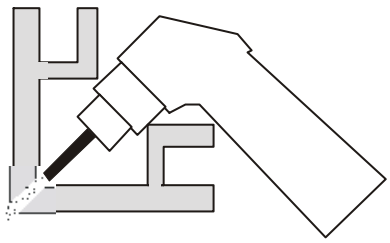


Fig. 5

IMPORTANT RULES

1. The pilot arc burning time should be limited only to the time necessary. It lowers the wear of the cutting tips and electrodes.
2. Never turn off the main switch immediately after finishing cutting but always leave time to run cooling cycle to cool down the torch. Immediate turn-off only in case of emergency.
3. Ensure a good el. contact of the work lead clamps and cutting material.
4. Check and timely exchange cutting tips and the electrodes. Lifetime of these parts is highly dependent on compliance with the principles of good cutting.
5. Disconnect the machine from the mains before replacing the torch consumable parts.
6. Unplug the machine from the mains before any intervention inside the machine.
7. In case of low air pressure or disconnected air input never press the torch trigger. It can cause the torch damage.
8. HOMER Plasmacut 39 is adapted for use with torch SCB 50. This combination comply with EN 60974-7 Article 10.1.4. Using any other type and design of a torch must be approved by ALFA IN a.s.
9. Imperfect capture of condensate would cause its elimination in the area of the cutting tip and it would prevent ignition of the pilot arc.

SOURCES OF POOR QUALITY CUTS

Shallow penetration of the cut

1. The cutting speed is too high. Make sure the slope of the cutting arc does not exceed about 15° (see Figure 6).
2. High wear of the cutting tip or electrode (see Figure 7).
3. Too large thickness of material and not adequately chosen value of current and diameter of the cutting tip.
4. Bad contact between the work lead clamps and material.

Cutting arc is unstable, goes off and "shoots"

1. Worn out cutting tip or electrode
2. High pressure
3. Impurities in the pressure air
4. not captured water condensate

Conical cut

1. If there is a false cut (see Figure 8) turn off the machine, release the shield cup and rotate the cutting tip about 1/4 and again try to cut.
2. Damaged cutting tip and electrode.
3. The position of the torch is not perpendicular to the material.
4. Too large distance from the cutting tip to the material.

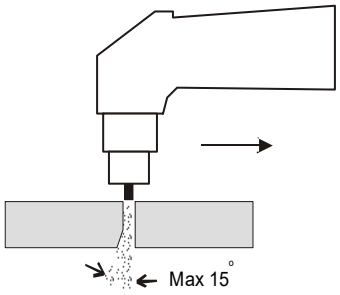


Fig. 6

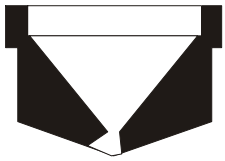


Fig. 7

Fig. 8

9. MAINTENANCE

1. A great care should be taken to the cutting torch. The molten material sprays while cutting. This sputter contaminates the interior space of the torch. The worn parts (consumables) of a plasma torch should be regularly maintained and timely exchanged. Regularly check the condition of diffuser channels (see diagram of the torch). If contaminated, you must clean it with a pressure air or to replace the diffuser. Poor state of the diffuser has a negative impact on the quality of cutting and causes very strong interference that may cause the collapse of the machine control electronics or influence the surrounding devices. If the cable bundle of the torch is worn out it must be replaced immediately - danger of electrical shock.
2. Disconnect the HOMER from the mains supply voltage before disassembling.
3. Special maintenance is not necessary for the control unit parts in the plasma cut machine. If these parts are damaged for any reason, replacement is recommended.

CAUTION

4. Do not blow air into the plasma cut during cleaning. Blowing air into the plasma cut can cause metal particles to interfere with sensitive electronic components and cause damage to the welder.
5. To clean the plasma cut, disconnect it from the mains supply voltage then open the enclosure and use a vacuum cleaner to remove any accumulated dirt and dust. The plasma cut should also be wiped clean. If necessary, solvents that are recommended for cleaning electrical apparatus may be used.
6. Troubleshooting and repairing of HOMER equipment should only be carried out only by suitably qualified or competent person.
7. A ‘competent person’ must be a person who has acquired through training, qualification or experience, or a combination of them, the knowledge and

skills enabling that person to safely carry out a risk assessment and repairs to the electrical equipment in question.

8. The person carrying out the servicing needs and repairs must know what to look at, what to look for and what to do.

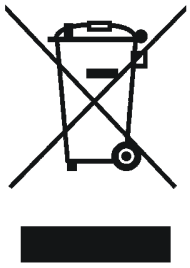
10. STATEMENT OF WARRANTY

1. In accordance with the warranty periods stated below, ALFA IN guarantees the proposed product to be free from defects in material or workmanship when operated in accordance with the written instructions as defined in this operating manual.
2. ALFA IN products are manufactured for use by commercial and industrial users and trained personnel with experience in the use and maintenance of electrical welding and cutting equipment.
3. ALFA IN will repair or replace, at its discretion, any warranted parts or components that fail due to defects in material or workmanship within the warranty period. The warranty period begins on the date of sale to the end user.
4. If warranty is being sought, please contact your ALFA IN product supplier for the warranty repair procedure.
5. ALFA IN warranty will not apply to:
    a. Equipment that has been modified by any other party other than ALFA IN's own service personnel or with prior written consent obtained from ALFA IN Service Department.
    b. Equipment that has been used beyond the specifications established in the operating manual.
    c. Installation not in accordance with the installation/operating manual.
    d. Any product that has been subjected to abuse, misuse, negligence or accident.
    e. Failure to clean and maintain (including lack of lubrication, maintenance and protection), the machine as set forth in the operating, installation or service manual.
6. Within this operating manual are details regarding the maintenance necessary to ensure trouble free operation.
7. Validity condition of warranty is, that the cutting machine must be used only with the torch, which is said in this manual.

NOTE

8. Warranty repairs must be performed by either an ALFA IN Service Centre, an ALFA IN distributor or an Authorised Service Agent approved by the company ALFA IN.
9. As a warranty list serves proof of purchase (invoice) on which is the serial number of the machine, eventually a warranty list on the last page of this manual.

11. DISPOSAL



Only for EU countries. Do not dispose of electric tools together with household waste material.

In accordance with European Council Directive 2002/96/EC on electrical and electronic equipment waste and its implementation in accordance with national law, electric tools that have reached the end of their service life must be collected separately and returned to an environmentally compatible recycling facility.

12. WARRANTY LIST

As a warranty list serves proof of purchase (invoice) on which is the serial number of the machine, eventually a warranty list below, which is filled in by an authorized dealer.

Serial number:	
Day, month (written in words) and year of sale:	
Stamp and dealer signature:	