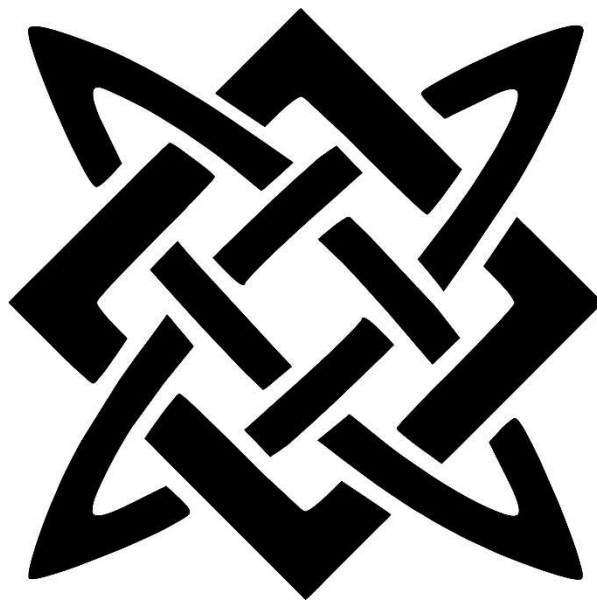


**PLASMA CUTTING MACHINE**

**SVAROG 105 PLASMA**

**OPERATING MANUAL**



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# 1. INTRODUCTION

Dear consumer,

ALFA IN a.s. Thank you for purchasing our product and we believe that you will be satisfied with our machine.

The SVAROG 105 PLASMA machine is designed for cutting metals on the basis of modern technology of material cutting by means of a thin jet of plasma gas. This technology has several advantages over other methods

1. High cutting speed
2. Quality cut with a minimum area of the changed material structure
3. Smaller thermal deformations of the cut material
4. Possibility of cutting carbon and high-alloy, stainless steels and non-ferrous metals
5. The method does not require any special gases
6. Lower costs

SVAROG 105 PLASMA is equipped with a proportional valve that allows precise setting of the required working pressure of the gas and display of the pressure value on the display. The proportional valve allows you to precisely set the required pressure or gas flow and allows high accuracy and stability of cutting. The machine is equipped with the ecological function "fan on emand". If cooling is not required, the machine automatically shuts off the fan.

SVAROG 105 PLASMA is designed for high-quality cutting of materials up to 45 mm thick carbon steel (for more information, see instructions below). Productive cutting of carbon steel can be to a thickness of 32 mm. At lower demands on the quality of the cut can be cut through (separate) the material thickness to 50 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

### GENERAL REQUIREMENTS

1. The machine may only be operated by a worker who is thoroughly familiar with the issue of plasma cutting and who has received appropriate training.
2. Disconnect the device from the mains before any work on the electrical part, removal of the cover or cleaning.
3. For the cutting machine, it is necessary to perform a periodic inspection once every six months by an authorized worker according to ČSN 331500 and ČSN 050630.
4. For safety reasons, protective gloves must be worn when plasma cutting. These gloves protect you from heat radiation and splashes of hot metal.
5. Wear solid insulated shoes. Open shoes are not suitable as drops of hot metal can cause burns.
6. Do not look into the cutting arc without face and eye protection. Always use a high-quality welding helmet with an intact protective filter.
7. Persons in the vicinity of the cutting site must also be informed of the danger and must be provided with protective equipment.
8. When cutting, especially in small spaces, a sufficient supply of fresh air must be ensured, as harmful fumes are produced during cutting.
9. Do not perform cutting work on gas, oil, fuel, etc. tanks (even empty ones) as there is a risk of explosion.
10. Special regulations apply in potentially explosive atmospheres.

### PROTECTIVE UTILITIES

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**



Danger of electric shock, especially if the insulation of the torch, the supply cable fails and if the machine covers are damaged. be aware that the torch can have a voltage of up to 330 volts.

The parameters of the torch comply with the ČSN EN 60974-7 standard, voltage class M.



## Note

**The machine torch cannot be used for versions without CNC!**



## 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. In addition to the risk of injury, the cooling efficiency decreases and the level of interference increases.
4. It is forbidden to operate the machine in wet environments and outdoors in rain or snow.
5. Ensure proper grounding clamping pliers, which also reduces the risk of electric shock.
6. Use prescribed protective utilities, keep them dry.
7. 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.
8. The cutting and pilot arc is a source of very intense light and especially ultraviolet radiation. This radiation can significantly damage the eyesight in a very short time and, with prolonged exposure, causes redness to burns of uncovered parts of the skin.
9. Use a welding helmet equipped with an intact filter with a degree of protection of min. 10.
10. The risk of burns arises when cutting from flying hot metal particles, plasma arc and hot cut material. A thin beam of red-hot plasma (4th state of matter) reaches up to 10,000 ° C in its core!
11. Never point the torch at the eyes, body or other person during ignition.
12. Always wear good quality and undamaged welding gloves, apron and welding clothing, including closed shoes and headgear.
13. During cutting, a large amount of gaseous emissions and dust particles is formed from the material being cut.
14. High temperatures lead to chemical reactions and the formation of various oxides and other compounds, some of which are harmful to health.
15. Particularly hazardous fumes are produced when cutting material containing lead, beryllium, cadmium (cadmium-plated parts) and painted materials.
16. Ultraviolet radiation and high temperatures also produce significant amounts of ozone and nitrogen oxides.

17. Exceeding the concentration of these gases above the values given by hygienic standards can cause damage to health, especially with prolonged exposure.
18. Workplaces must be well ventilated and equipped with an effective extraction system.
19. In addition, a breathing mask must be used when cutting material where particularly hazardous fumes are generated.
20. During its operation, the machine produces noise, the level of which reaches the value of 80-85 dB.
21. We recommend using hearing protection for longer work.

### **PROHIBITED ACTIVITIES**

1. It is forbidden to use the machine in areas with a risk of explosion and in areas with the possibility of easily flammable and flammable substances.
2. It is forbidden to cut containers with residues of any flammable or unknown substances.
3. It is forbidden to cut on closed pressure vessels without first releasing the pressure and leaving it open.

### **3. CONDITIONS OF USE**

1. 1st Putting into operation may only be performed by trained personnel and only in the technical provisions. The manufacturer is not liable for damage caused by improper use and operation. Only use original spare parts from ALFA IN for maintenance and repairs.
2. The device complies with IEC 61000-3-12.
3. The cutting machine is tested according to the standard for degree of protection IP 23 S, which provides protection against the ingress of solid bodies with a diameter greater than 12 mm and protection against the ingress of water falling in a vertical to oblique direction up to 60°.
4. Working ambient temperature between -10 and +40 °C.
5. Relative humidity below 90% at +20 °C.
6. Up to 3000 m altitude.
7. The machine must be positioned so that cooling air can enter and exit the cooling vents without restriction. Care must be taken to ensure that no mechanical particles, especially metal particles, are sucked into the machine (during grinding).
8. When the machine overheats, cutting is automatically interrupted.
9. All interventions in the el. equipment as well as repairs (disassembly of the mains plug) may only be carried out by an authorized person.
10. SVAROG 105 PLASMA is designed for mains voltage 3x400 V.
11. The mains voltage and power input must correspond to the mains plug.
12. For the cutting machine, it is necessary to perform a periodic

inspection once every 6 months by an authorized worker according to ČSN 331500,1990 and ČSN 050630,1993.

13. 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).
14. 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 cutting.

## 4. TECHNICAL DATA

Method		Plasma cutting
Mains voltage	V/Hz	3 x 400/50-60
Cutting current range	A	20 - 105
Open-circuit voltage U <sub>20</sub>	V	330
Mains protection	A	@ 40 (@32)*
Max. effective current I <sub>1eff</sub>	A	36,7
Cutting current (DC=100%) I <sub>2</sub>	A	105 (95)*
Cutting current (DC=60%) I <sub>2</sub>	A	105 (105)*
Max. Input pressure	bar	8,5
Working pressure (torch SVH-105)	bar	5,0 - 5,5
Air consumption (torch SVH-105)	l/min	240
Arc ignition		pneu-mechanic
Current regulation		continuous
Protection		IP 23 S

Standards		EN 60974-1, EN 60974-10 cl. A
Dimensions (w x l x h)	mm	377 x 802 x 621
Weight	kg	46,7

\* Parameters in parentheses are for 32 A mains protection. The machine is equipped from the factory with a 32 A plug, if you need cutting at DZ 100% with a current greater than 95 A, it is necessary to replace the fork with 63 A and operate the machine under a 40 A circuit breaker. For normal manual cutting, a 32 A plug under a 32 A @ circuit breaker is sufficient in most cases.

The fork may only be replaced by a person with electrical qualification which checks the network status at the connection point and decides, if it will be possible to connect the machine in this way.

DZ – load time. The parameter specifies the time of the ten-minute interval as a percentage (at surrounding temperature and machine temperature 40°C), during which the thermal protection of the machine or the circuit breaker does not switch off the burning process.

### CUTTING PARAMETERS OF MANUAL CUTTING

Max. productive cut. thickness - carbon steel		mm	32
Max. cutting thickness - carbon steel (separate mat.)		mm	50
Quality cutting thickness	Carbon steel	mm	45
	Stainless steel	mm	40
	Aluminium	mm	30
	Copper	mm	25
Maximum pierce/cut ( $I_{2max}$ )		mm	22
Recommended cutting speed for thicknesses (fine-grained steel)			
32 mm	mm/min	500	
38 mm	mm/min	250	
50 mm	mm/min	125	
Recommended maximum cutting speeds for thicknesses (fine grain steel)			
6 mm	mm/min	5600	
12 mm	mm/min	2450	
20 mm	mm/min	1300	
25 mm	mm/min	770	



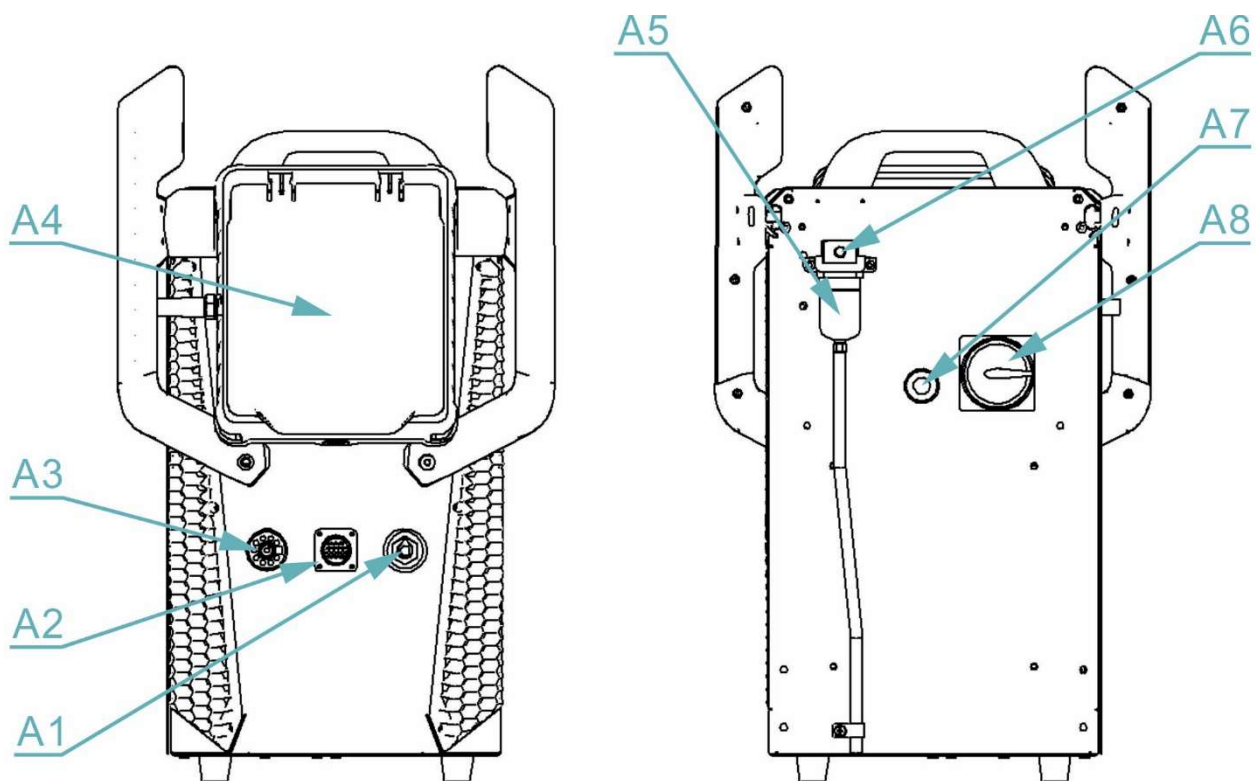
## TRAFFIC ON POWER GENERATOR

Cutting current	Performance of power gen.
105 A	39 kVA
85 A	26 kVA
70 A	20 kVA
40 A	16 kVA
30 A	11 kVA

The continuous power of the control panel is stated only for the connection of the plasma, as a single appliance.

## 5. MAIN PARTS OF THE MACHINE

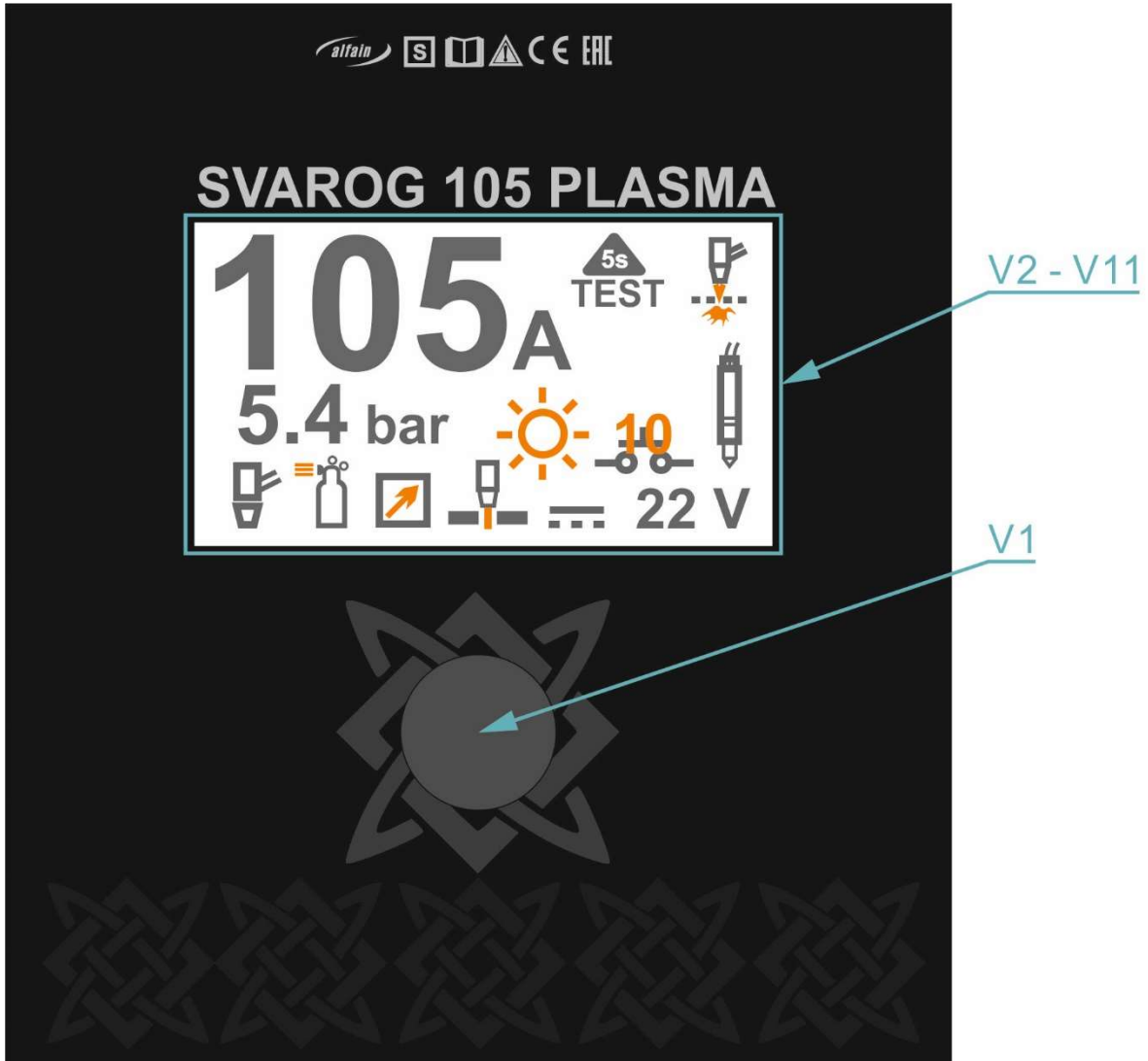
### FRONT AND REAR PANELS



Pic. 1 Main parts of the machine, front and rear view




Pos.	Description
A1	Quick connector - earthing cable
A2	Connector - remote control (CNC version only)
A3	Connector - torch
A4	Control panel
A5	Regulator with cleaner
A6	Air connection
A7	Network cable
A8	Main switch


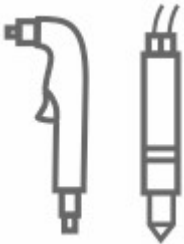








## CONTROL PANEL






Pic. 2 Control panel

Pos.	Icon	Description
V1	---	Encoder with a button
V2-V11	---	Display with overall icon layout
V2	105 <sub>A</sub>	Cutting current <ul style="list-style-type: none"> <li>Always active after switching on the machine</li> <li>The value is changed by turning the encoder <b>V1</b></li> </ul>
V3	5s TEST	Gas test <ul style="list-style-type: none"> <li>active when encoder <b>V1</b> is pressed for 5 sec</li> <li>The value is changed by turning the encoder <b>V1</b></li> <li>Exit the gas test by briefly</li> </ul>

		pressing encoder <b>V1</b>
V4	<b>5.4 bar</b>	<p>Pressure</p> <ul style="list-style-type: none"> <li>• active after a short press on encoder <b>V1</b></li> <li>• change the value by turning encoder <b>V1</b>; the selection does not need to be confirmed, it will be saved automatically</li> <li>• after 5 s of inactivity, the machine switches back to the cutting current setting</li> </ul>
V5		<p>Cutting modes</p> <ul style="list-style-type: none"> <li>• active after 2 short presses of encoder <b>V1</b></li> <li>• change the mode by turning encoder <b>V1</b>; the selection does not need to be confirmed, it will be saved automatically</li> <li>• after 5 s of inactivity, the machine switches back to the cutting current setting</li> </ul>
		Cutting solid material
		Cutting of perforated material
		Grooving
V6	<b>bar Mpa Psi</b>	<p>Change of units</p> <ul style="list-style-type: none"> <li>• active after 3 short presses of encoder <b>V1</b></li> <li>• change units by turning encoder <b>V1</b>; the selection does not need to be confirmed, it will be saved automatically</li> <li>• after 5 s of inactivity, the machine switches back to the cutting current setting</li> </ul>

V7		<p>Display brightness</p> <ul style="list-style-type: none"> <li>• active after 4 short presses of encoder <b>V1</b></li> <li>• change the value by turning the encoder <b>V1</b>, the selection does not need to be confirmed, it is saved automatically</li> <li>• after 5 s of inactivity, the machine switches back to the cutting current setting</li> </ul>
V8	22 V	<p>Current voltage</p> <ul style="list-style-type: none"> <li>• this value cannot be changed</li> </ul>
V9		<p>Manual / machine mode</p> <ul style="list-style-type: none"> <li>• the icon is displayed according to the type of torch connected</li> </ul>
V10		Active cutting input
V11		The consumable parts on the torch are complete
		Gas flow is active
		Remote current setting is active.
		The arc is active
		There is tension on the arc
		The S mark indicates that the machine and torch are suitable for operations in environments with an increased risk of electric shock in accordance with EN 60974-1
		CE mark declaration of the manufacturer's stairs with European directives and standards

		EAC brand of product safety and meeting EMC requirements for export to the Russian Federation, Belarus and Kazakhstan.
		Read the operating manual carefully before use.
		Warning - general danger.

Note:

Switch between individual parameters / modes by pressing encoder **V1**. The active parameter / mode is highlighted in orange, when switching to another parameter / mode the original quantity will be highlighted in grey and the new one in orange.

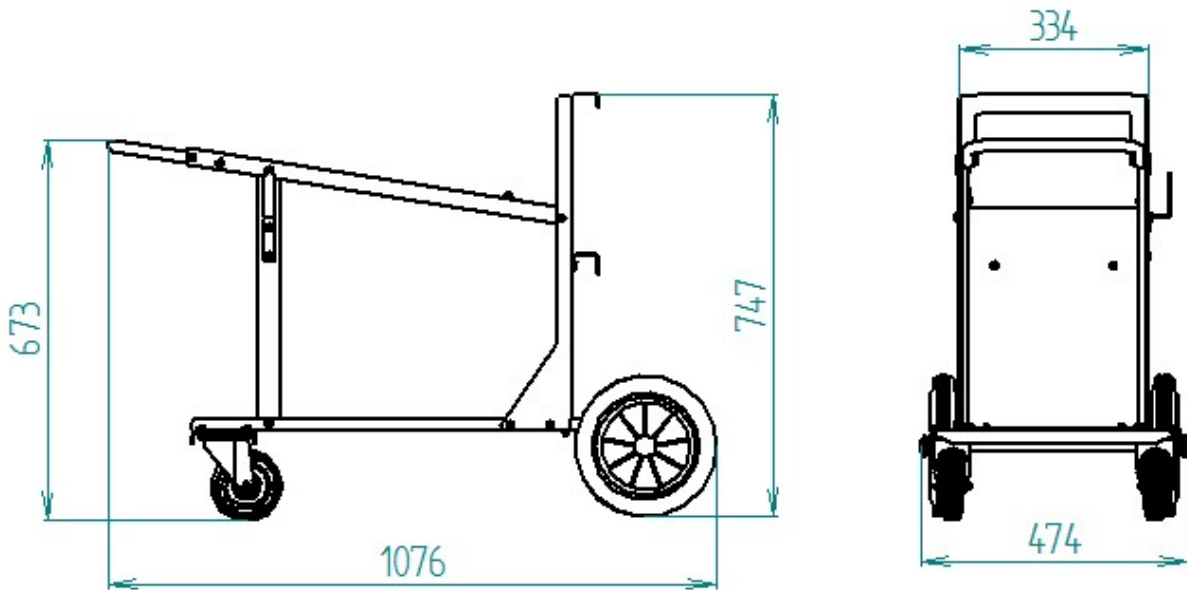
## 6. ACCESSORIES

### PART OF DELIVERY

Pos.	Code	Description
1 pic. 5	7037	Torch Plasma SVH-105 hand 75°
A pic. 3	7076	Cable koax. 6,7 m SV-105, SV-125 6 PIN
	V9030092	Earthing cable 6m 10-25 200 A 16 mm2

### ACCESSORIES TO ORDER

Pos.	Code	Description
	5.0508	Welding carriage P 80
Pic. 4, B	7088	Cable koax. extension 6,0 m SV-105, SV-125 6 PIN
	7101	Lubricant silicon WSF-2 brutto 6 g
	7038	Torch Plasma SVH-105 hand 15°
Pic. 5	7094	Torch Plasma SVH-105 hand, handle 80 cm 90°
Pic. 5	7095	Torch Plasma SVH-105 hand, handle 130 cm 90°
Pic. 5	7096	Torch Plasma SVH-105 hand, handle 80 cm 15°
Pic. 5	7097	Torch Plasma SVH-105 hand, handle 130 cm 15°
	5872	Bevel Tolls PT 40, 60, SCP 60, TH-70,125
	7175	Circle cutting attachment - set SVH-105,125
	5302	Air filter AT 1000
	5304	Filter - set AT 1000 k SVAROG PLASMA
	S777c.	Welding Helmet Barracuda S777C

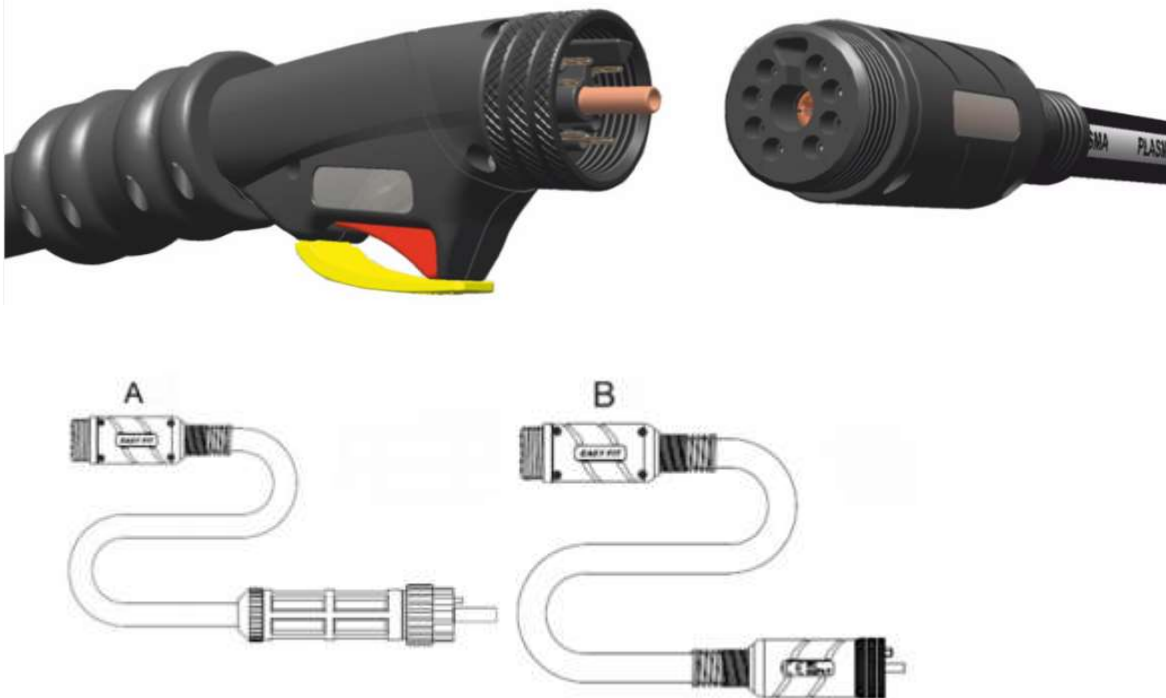


Pic. 3 Carriage P 80

## 7. HAND TORCH AND CONSUMABLES

### SYSTEM SV-FIT

The SV-FIT system allows great variability when using different ends of welding torches or allows to extend the torch length from the standard 6.7 m to 12.7 m by purchase. (Extensions up to a total length of 16 m are available on request.)



Pic. 4 SV-FIT system



Pic. 5 Burners SVH with long handles, SV-FIT system

### LIFE ENDURANCE OF CONSUMABLE PARTS

The need to change consumables on your torch depends on the thickness of the material being cut, the length of the cut, the air quality (presence of moisture, oil and dirt), the way the cut is started (side or puncture), the appropriate piercing height, cutting mode (solid or perforated).

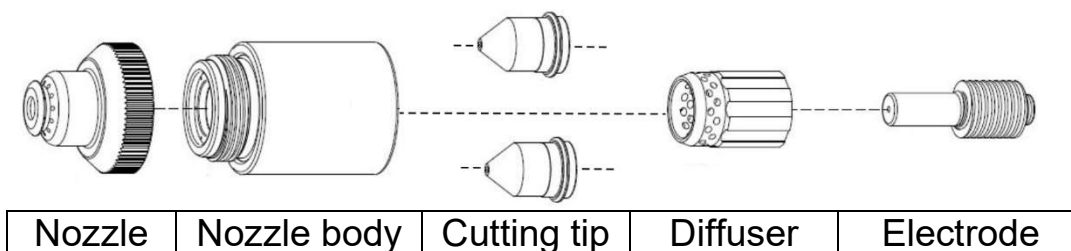
In general, the current set of consumables lasts an average of 1 to 3 hours of cutting (ignited arc). Under normal conditions, the nozzle wears first when cutting by hand, the electrode lasts about half as long.

### HOW TO CHOOSE THE RIGHT CONSUMABLE PARTS

All 6 types of torch SVH-105 use the same consumables that are protected, so the nozzles can be pulled over the cut material.

For the best cut quality, it is necessary to use suitable sets of consumable parts. The individual assemblies by power and type, including order numbers, are listed in the table below.

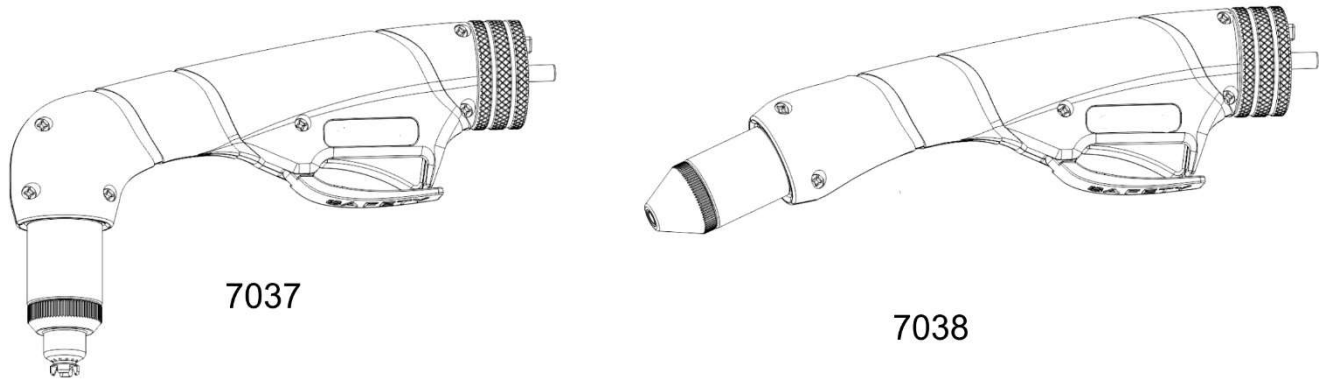
### NAMES OF SVH BURNER PARTS





You can use the SUPERLONG NOZZLE SET for cutting in very hard-to-reach areas, Pic. 7.

**Torch SVH-105**

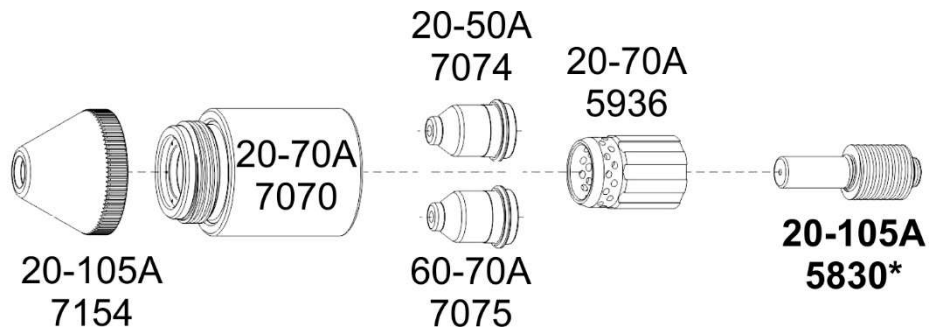
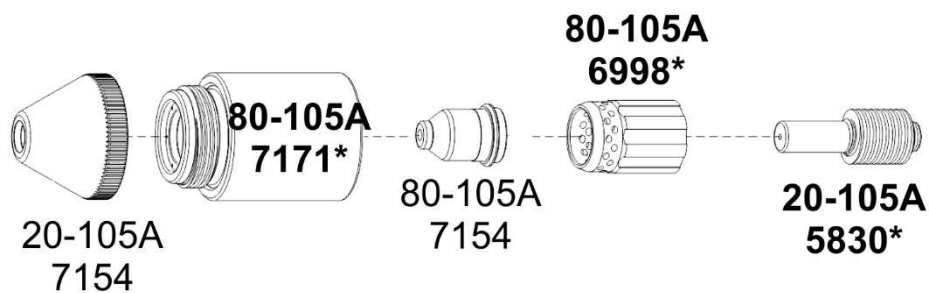
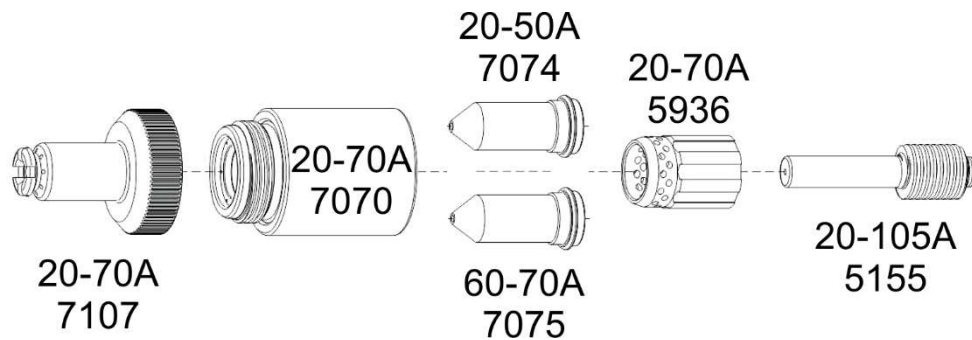
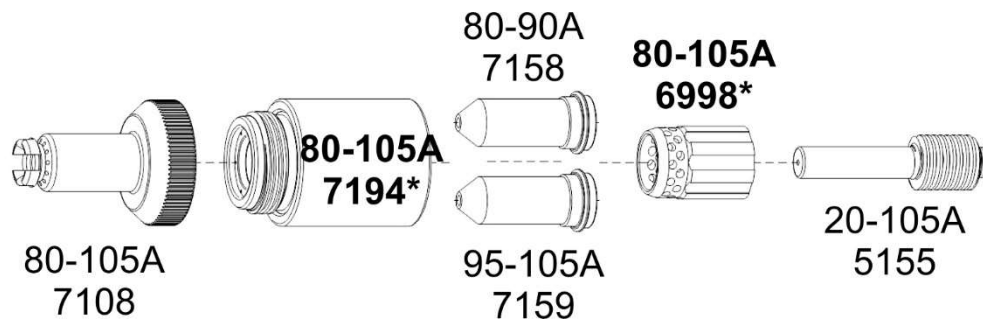


Pic. 6 Hand torch SVH-105

**CONSUMABLE PARTS**

<b>CONSUMABLE PARTS STANDARD 20-70 A</b>					
20-70A 7073	20-70A 7070	20-50A 5832	20-70A 5936	20-105A 5830*	
		60-70A 5937			
<b>CONSUMABLE PARTS STANDARD 80-105 A</b>					
80-105A 7272*	80-105A 7171*	80-90A 7000	80-105A 6998*	20-105A 5830*	
		95-105A 7001*			

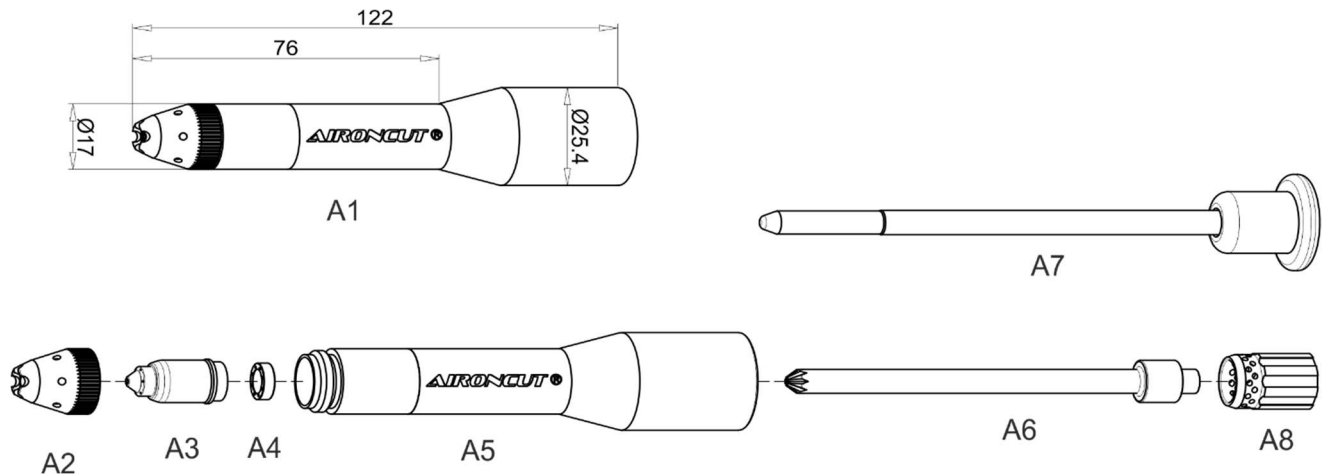


**CONSUMABLE PARTS GROOVING 20-70 A****CONSUMABLE PARTS GROOVING 80-105 A****CONSUMABLE PARTS EXTENDED 20-70 A****CONSUMABLE PARTS EXTENDED 20-70 A**

Parts with \* are mounted on the burner upon delivery.

**START SET**

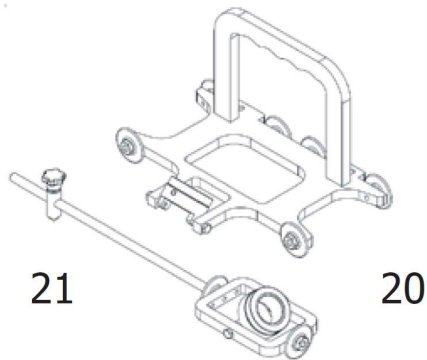
6	5832	Cutting tip 20-50A	2pc
7	7001	Cutting tip 105A	2pc
6	5937	Cutting tip 70A	2pc
7	7000	Cutting tip 85A	2pc
3	5830	Electrode	10pc
10	7073	Nozzle 20-70A	1pc
8	7070	Nozzle body 20-70A	1pc
4	5936	Diffuser 20-70A (pack.2)	1pc

**SUPERLONG NOZZLE**

Pic. 7 Superlong Nozzle – consumable parts

Consumable parts of torch (see pic. 6)		
A1	7168	Complete super long set 70A SVH-105
A2	7166	Nozzle 20-70A
A3	7163	Cutting tip 15-30A
	7164	Cutting tip 45A
	7165	Cutting tip 70A
A4	7162	Ring A SVH
A5	7161	Nozzle super long body
A6	7160	Super long Electrode
A8	5936	Diffuser (bal.2)

## BEVEL TOLLS AND CIRCLE CUTTING



Pic. 8 Bevel tolls and circle cutting

20	5872	Bevel Tolls
21	7175	Circle cutting – set SVH-105,125


## 8. FIRST STEPS

Commissioning of the machine must be in accordance with the technical data and operating conditions.

 **Note**  **This equipment must only be used by qualified personnel.**

1. Before beginning work is necessary to connect the machine to the mains.
2. Check completeness of the mounted cutting torch.
3. Fit the burner and secure the burner well by turning the nut clockwise.
4. Connect the compressed air on connector **A7** on the rear wall of the machine.
5. Connect the compressed air on connector **A6** on the rear wall of the machine.
6. SVAROG 105 PLASMA has a pressure regulator **A5** on the rear panel.
7. Set the pressure with the regulator on the rear panel of the machine to 5.5 bar.
8. After turning on the ON / OFF switch **A8** the display will illuminate
9. Connect the work lead cable to the material being cut and to the connector **A1**.
10. Check up the input air pressure (min 5,0 bar, max 8,5 bar) and make a regulation if necessary.
11. Set potentiometer to the cutting power you need.
12. Fit the torch to the appropriate nozzle diameter according to the selected cutting current.
13. Press the trigger on the cutting torch, the pre gas will flow for 1 s.
14. The pilot arc will start.
15. Shift the torch with the pilot arc close to the material, the pilot arc will change to cutting arc automatically. If you do not start cutting within



2 s, the arc will snuff off. If the torch delays during the cutting from the material, the arc will snuff off. In case that the machine is in mode

Cutting material with gaps – switch **A5** position , cutting arc will change to pilot arc and if you do not start cutting within 2 s, this arc will snuff off.

16. To finish the cutting process, release the torch trigger.

### REQUIREMENTS FOR SOURCE OF COMPRESSED AIR

1. Delivered air pressure must be max. 8,5 bar and min. 5,0 bar.
2. Air consumption minimal 320 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/m<sup>3</sup>.
6. Maximal size of solid particles 15 microns.
7. The minimal size of an air tank is 100 l.
8. No additional oiling if the pressure air is permitted. That could damage the plasma machine and the cutting torch.

 **Note**  Some compressors have a built-in compressed air lubricator at the outlet. The plasma cutter must never be connected to this output! This would contaminate the entire pneumatic system and damage the burner.

### BALANCE AIR FILTER FOR SVAROG 105 PLASMA

In order to achieve high cutting quality and to avoid serious faults on the torch, it is strongly recommended that a filter be always included in the inlet - Pic. 4.

Pos.	Code	Description
25	5304	Set for filter AT 1000 k SVAROG PLASMA
24	5302	Air filter AT 1000

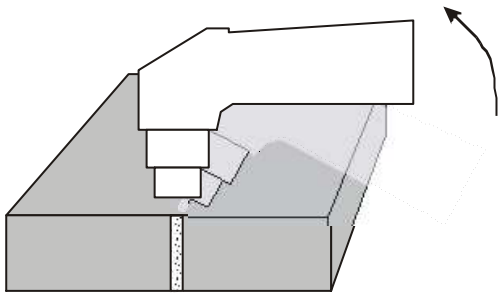
 **Note**  Max. allowable pressure of filter AT 1000 is 8,5 bar.



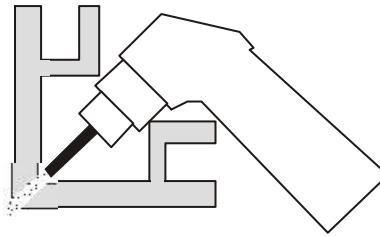
Pic. 9 Air filter

## 9. CUTTING

1. Press the torch trigger. The pilot arc will ignite. Then you have to immediately attach the torch to the cut material. At this point begins to burn the main arc between the torch and the material.
  1. The torch must be moved evenly and pushed, its value depends on the force and type of material to be cut and the size of the cutting current. We recommend testing the samples. In order to achieve a good cutting quality, it is also necessary for the distance of the cutting nozzle to be about 3.5 mm from the material; at greater distances, the cutting power decreases and the main arc goes out;
  2. 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.
  3. 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 Pic. 10). This workflow must always be followed, if the thickness of material is above 3 mm.
  4. In case of cutting in the corner or around the corner (see Pic. 11), use the long electrode and cutting tip. The cutting power while using the Long cutting tip is decreased.



Pic. 10 Cutting



Pic. 11 Cutting in the corner

## 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 only a few hours of cutting time and 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. 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  $15^\circ$  (see Pic. 12).
2. High wear of the cutting tip or electrode (see Pic. 13)
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.

### **Note**

If the cutting arc does not penetrate the material perfectly, the sprayed material clogs the torch nozzle and reduces its service life.

### Cutting arc is unstable, goes off and "shoots"

1. Worn nozzle or electrode
2. High air pressure
3. Polluted air
4. Uncaptured water condensate

### 👉 CAUTION 👈

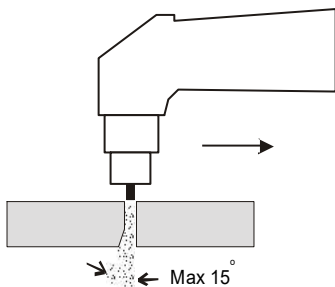
An unstable arc causes very intense interference, which can cause the machine control system to collapse or endanger the surrounding equipment!

### Conical cut

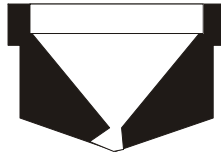
1. If there is a false cut (viz Pic. 14) turn off the machine, release the shield cup and rotate the cutting tip about 1/4 and again try to cut.
2. Damaged cutting tip and electrode.
3. The position of the torch is not perpendicular to the material.
4. Too large distance from the cutting tip to the material.
5. Worn electrode or nozzle.

### 👉 CAUTION 👈

If the electrode is fired deeper than 1.5 mm, it must be replaced.



Pic. 12



Pic. 13

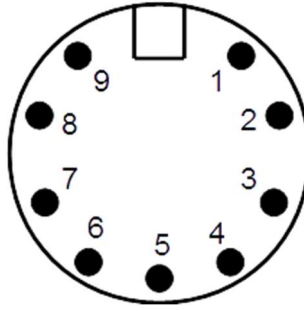


Pic. 14

## 10. TORCH CONNECTION SCHEMA

PIN NO.	TORCH
1	/
2	/
3	/
4	/
5	Pilot arc

6	Pilot arc
7	/
8	Safety
9	Safety



## 11. 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 PEGAS 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.









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 PEGAS 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.



## 12. ERROR MESSAGES

Error messages appear on the machine display. At the same time, a QR code is displayed, which allows you to open the legend of error messages on mobile phones.

Error code	Symbol	Fault / Solution procedure
E01	QR code	Power module overload. Call service +420 563 034 626.
E02		Overheating. Stop cutting and allow the machine to cool down.
E03		Defective MUR diode module; bad IGBT block; faulty driver or cabling. Call service +420 563 034 626.
E04		There was no pilot arc ignition. Check the consumables.
E05		Consumables in the burner did not separate during ignition, probably due to a jam. Check the supplies.
E06	QR code	PFC is not connected. Call service +420 563 034 626
E07	QR code	The mains voltage is over 460 V AC. Check power supply.
E08	QR code	The mains voltage is below 340 V AC. Check power supply.
E09	QR code	Phase failure. Check power supply.
E11		Incorrectly assembled burner consumables. Fix it.
E13		Low output pressure (below 2,7 bar) or no input pressure. Check the air supply.
E14	QR code	The torch button was pressed during start-up. It is necessary to restart the machine.

### 13. STATEMENT OR 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.



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.

8. 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.

## Warranty and post – warranty repairs

1. Warranty repairs are manufactured by the manufacturer or its authorized service organization.
2. The procedure is similar in the case of post-warranty repairs.
3. Report the complaint to e-mail: [servis@alfain.eu](mailto:servis@alfain.eu) or to the phone number +420 563 034 626. The service opening hours are from 7:00 to 15:30 every working day.

## 14. DISPOSAL

### Information for users on the disposal of electrical and electronic equipment in the Czech Republic:

ALFA IN a.s. as a producer, it places electrical equipment on the market and is therefore obliged to ensure the take-back, treatment, recovery and disposal of electrical waste.

ALFA IN a.s. is enrolled in the LIST of the collective system EKOLAMP s.r.o. (under manufacturer's registration number 06453/19-ECZ).



This symbol on the products and / or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.

The device must be disposed of at separate collection and collection points.

EKOLAMP s.r.o. You can find a list of places at:

<http://www.ekolamp.cz/cz/mapa-sbernych-mist>.

### For users in European Union countries:

If you want liquidate electrical and electronic equipment, contact your dealer or supplier for the necessary information.

## 15. 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:		