SPT Plasmateknik AB

STATE OF THE ARC PLASMA CUTTING TECHNOLOGY

INSTRUCTIONS FOR USE

SPLITFIRE
SPEEDFIRE
UPPERCUT

With PTA 121 hand torch

TO THE OPERATOR: PLEASE READ AND UNDERSTAND THIS MANUAL BEFORE USING THE SPLITFIRE, SPEEDFIRE OR UPPERCUT. IT IS *ABSOLUTELY VITAL* TO KNOW THE INFORMATION PRESENTED IN THIS MANUAL IN ORDER TO USE THE MACHINES IN THE BEST WAY.
WITH THIS KNOWLEDGE AND A PROFESSIONAL APPROACH, YOU WILL BE ABLE TO SOLVE MANY COMPLICATED CUTTING APPLICATIONS WITH THESE SYSTEMS.

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1. TECHNICAL DATA

	SPLITFIRE	**SPEEDFIRE**	**UPPERCUT**
Power supply	400 V, 3~50 Hz	400 V, 3~50 Hz	400 V, 3~50 Hz
Mains fuse	16 A slow blow	32 A slow blow	32 A slow blow
Maximum power	10,4 kVA	14,5 kVA	17,6 kVA
Process power	120 V, 20-80 A	120 V, 20-100 A	120 V, 20-120 A
Duty cycle @ 40°C	50% @ 80 A	40% @ 100 A	30% @ 120 A
	60% @ 60 A	60% @ 80 A	60% @ 100 A
	100 % @ 45 A	100% @ 70 A	100% @ 80 A
Power factor	0,95	0,95	0,95
Open circuit voltage	240 VDC	240 VDC	240 VDC
Protection class	IP 23	IP 23	IP 23
Cooling	F	F	F
Temperature class	F	F	F
Dimensions LxWxH	560x190x320	560x190x320	560x190x320
Weight	17 kg	17 kg	18 kg
Maximum cutting capacity	25 mm	35 mm	45 mm
Quality cut	20 mm	30 mm	35 mm
Air pressure	4,5 bar	5,5 bar	5,5 bar
Air flow PTA 121	160 l/min	190 l/min	190 l/min
Standard torch length	6 m	6 m	6 m

2. INSTALLATION

Connect the torch to the power source. After connecting electric power and compressed air, the machine is ready for use. Please read the enclosed instructions on how to use the central connector.

Power supply

Connect the machine to 3-Phase, 50 Hz, 400 V only.

Use with generators

SPLITFIRE, SPEEDFIRE and UPPERCUT are equipped with filters for use with mobile generators. The generator should be of at least 15 kVA for SPLITFIRE, 22 kVA for SPEEDFIRE and 27 kVA available exclusively for the plasma cutting system.

Air supply

Connect dry, clean and oil free compressed air to the filter regulator on the rear of the machine and adjust to 4,5 bar for SPLITFIRE and 5 bar for SPEEDFIRE/UPPERCUT. When cutting at lower amperage than 70 A with SPEEDFIRE/UPPERCUT it may be necessary to lower the air pressure to 4,5 bar in order to get the best cutting capability. Don’t forget to raise the pressure again if returning to amperage above 70 A.

3. OPERATING INSTRUCTIONS

Check that the machine has been properly connected to power supply and compressed air according to chapter 2, INSTALLATION.

Check that the torch is fitted with appropriate consumables for the job at hand.

Connect the earth lead clamp directly at the work piece, ensuring that a good contact is obtained. If necessary, clean the surface from paint, rust, dirt, etc.

Cutting

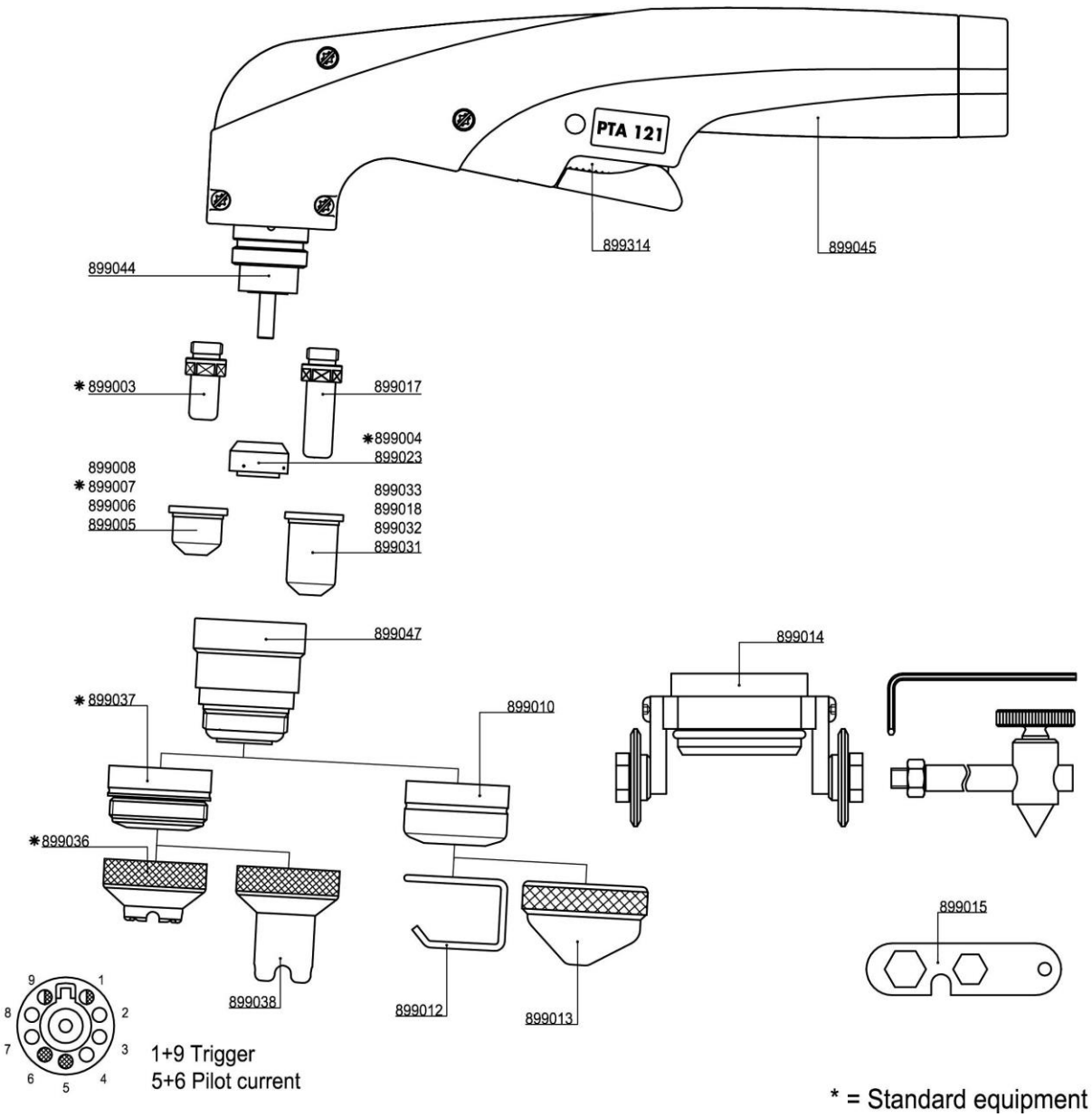
- Switch the machine's main power switch on. The READY lamp will light and the fan will start working.
- Choose process power, 20-80 for SPLITFIRE, 20-100 A for SPEEDFIRE or 20-120 A for UPPERCUT.
- Manouver the torch in position for cutting or gouging.
- Press the START-switch on the torch handle.
  Air will flow for one second before the pilot arc strikes. The pilot arc will burn for about 3 seconds. If contact with the work piece is not obtanined within this time, the pilot arc goes out. Then make a new try.
- To end the process, release the START-switch. The plasma arc goes out instantaneously. Air will continue to flow for about 30 seconds.

NOTE! When the machine is not in use or is only working at long intervals, switch off the machine. It contains mechanical components that should not be exposed to unnecessary wear. It also protects against unvoluntarily firing the pilot arc.

4. CHANGING CONSUMABLES

status 12.07.2012

899040 - PTA121 6m ZA
899041 - PTA121 15m ZA



Consumables/torchparts for PTA 120/121

Part No.	Description
899044	Torch head PTA 121
899003	Electrode *standard* PTA 120/121
899017	Electrode *long* PTA 120/121
899004	Swirl ring PTA 120/121 for 20-80 A
899023	Swirl ring PTA 120/121 for 80-120 A
899005	Nozzle 1,0 20-50 A PTA 120/121
899006	Nozzle 1,2 50-90 A PTA 120/121
899007	Nozzle 1,4 90-120 A PTA 120/121
899008	Nozzle 1,6 120 A PTA 120/121
899016	Nozzle 2,5 gouging PTA 120/121
899031	Nozzle 1,0 20-50 A *long* PTA 120/121
899032	Nozzle 1,2 50-90 A *long* PTA 120/121
899018	Nozzle 1,4 90-120 A *long* PTA 120/121
899033	Nozzle 2,5 gouging *long* PTA 120/121
899047	Protective cup PTA 120/121
899037	Spatter shield threaded PTA 120/121
899036	Contact cutting shield PTA 120/121
899010	Spatter shield PTA 120/121
899012	Distance cutting guide PTA 120/121
899013	Bevel cutting guide PTA 120/121
899038	Contact cutting shield long PTA 120/121
899014	Circle cutting guide PTA 120/121
899045	Handle PTA 121
899314	Button PTA 25/121
899049	Hose assembly PTA 121 6m
899050	Hose assembly PTA 121 15m
899015	Spanner PTA 120/121
899040	Torch PTA 121 6m complete
899041	Torch PTA 121 15m complete

N.B. Don't use consumables for more than 80 A with the SPLITFIRE or 100 A with the SPEEDFIRE. The result will be poor cutting capability.

5. MAINTENANCE

DAILY

Inspect and, if necessary, change the torch consumable parts.
Inspect and, if necessary, empty the moisture trap on the filter regulator on the rear side of the machine. The trap is emptied by pressing the bottom sealing while compressed air is connected. If cleaning the trap is necessary, completely unscrew the glass cup after disconnecting compressed air.

Carefully inspect the hose assembly and torch body with regard to any leak or damage. Never use a damaged torch.

EVERY SIX MONTHS

Disconnect the machine from compressed air and electricity. Remove the cover. Clean the machine with dry, clean and oil free compressed air. Inspect cable connections and gas system.

In unusually dirty environments this procedure should be carried out every month.

6. TROUBLE SHOOTING.

Thermal overload / Air supply failure

If the fan is working, but the green READY-lamp is not lit, the air supply is not sufficient or the thermal overload protection is active. Check the compressed air supply. If the machine is overheated, let it cool down while switched on until the lamp lights again. Then the machine is in working order.

Malfunction

If the pilot arc does not strike:

- The safety switch of the torch is not closed. Check that the protective cup is properly tightened.
- Check the air pressure on the filter regulator on the rear of the machine. The pressure should be approx. 4,5/5,5 bar.

If the pilot arc is unstable:

- Check the air pressure on the filter regulator on the rear of the machine. The pressure should be approx. 4,5/5,5 bar.
- The machine is working two phase. Check electrical supply.

Inferior cut quality or performance:

- Check the torch consumables. Replace if necessary.
- Inspect the torch body and hose assembly with regard to any damage or leak.
- Check the air pressure on the filter regulator on the rear of the machine. The pressure should be approx. 4,5/5,5 bar.
- Check the earth lead connection. Place the earth lead clamp directly on the work piece. If necessary, clean from paint, dirt, rust etc.

7. SAFETY INSTRUCTIONS

All endangerments through plasma cutting are related with the process itself. Endangerments may occur due to:

- High contact voltage
- HV ignition
- Electromagnetic interferences
- Heat and light radiation
- Gases, fumes and smoke
- Noise
- Hot metal and spatter
- Handling of pressure cylinders

The Plasma Cutting Machine has been developed in conformity with following standards:

- EN 60974-1 safety requirements for installations for arc welding and welding power sources

Endangerment due to high contact voltage

Warning!
Before opening the plasma rectifier generally the input power has to be disconnected physically from the mains (unplug mains cable)! Only advised personnel are allowed to carry out any repairs to the machine.

Attention! Connect the work piece cable and earth the workplace before starting the machine!

The power source is equipped with a cooling unit and there is an electric potential between the housing and work piece in case the work piece isn't earthed and the machine is switched on. Because of the high resistance of more than 10 kOhm in the coolant the contact voltage is absolute not dangerous but sensible.
Special hints:

- Connect power source only to correctly earthed mains socket with proper connected safety conductor
- Wear insulating protective clothing (safety shoes, leather apron, gloves), place torch on insulated holder,
- Make sure that they cutting area and plasma machine components are dry and clean, arrange regular inspections.
- Never short safety circuits.

Working under elevated electrical endangerment

This plasma cutting machine in conformity with valid standards (EN 60974) can be used for operation under elevated electrical endangerment

- The power source and the plasma torches are forming a safety-proofed installation which can be separated only by using tools.
- The patented design of the torch prevents electrical danger when the torch consumables are disassembled.

Therefore the power source is marked with the S-sign and operation under elevated electrical endangerment is allowed.
Attention! Always follow the local safety rules!

Endangerment through high voltage (HV)

A HV-igniter starts the pilot arc. The HV-supply is cut-off automatically after pilot arc has struck.

Attention! Never touch nozzle or nozzle cap when power source is switched ON!

HV-ignition may establish electromagnetic fields and can influence:

- heart pace-makers
- electronic devices

Endangerment through electromagnetic interferences

The plasma cutting unit is in conformity with the conditions of the EN 50199 "Electromagnetic compatibility". This standard is valid for arc welding and related processes (plasma cutting) that come in use in commercial and private fields.

Warning!
Special precautions may be required if the plasma unit is used in private fields (for instance screened cables etc.)

The user takes the full risk when installing and using the machine. He has to follow strictly the instructions of the supplier. If electromagnetic interferences are noticed the user is to contact the producer to solve the problem.

Recommendations to classify the environment (EN 50199):

Before the installation takes place the user has to value the environment for electromagnetic problems and to take into consideration:

- Other mains supplies, control cables, signal and telecommunication lines along, above, below or beside the installation
- Broadcasting or television installations
- Computers or other controls
- Safety devices, protection circuits
- The health of people in the area (heart pace makers, hearing aids etc.)
- Devices for measuring and calibrating
- The noise immunity of equipment around the installation, so that they are compatible with electromagnetic interferences. Special measures may be required.
- The time of day that plasma cutting is performed

Recommendations to minimise interferences:

If interferences take place, the following should be done:

- Apply filter for mains connection
- Screening of mains cable of the plasma installation (safe contact between screen and housing required)
- Constant maintenance

- Always keep cover plates and doors of the plasma machines closed
- Avoid excessive length of cutting cables
- Arrange potential equalisation between metallic parts around the installation (the operator has to be electrically isolated from those parts)
- Earthing of the work piece
- Selective screening of other cables and installations

Endangerment through heat and light radiation

The plasma arc produces intense ultraviolet and infrared radiation that can hurt the eyes and skin. Therefore the following precautions have to be arranged:

- Wearing of flame-retardant welding clothes (helmet, apron, gloves, safety shoes)
- Hand or head shield with protective glasses of medium shade for watching the cutting process
- Preparing the cutting area so that reflection and transmission of ultraviolet light is reduced:
    - painting of walls in dark colour
    - use of protective walls and screens

Endangerment through fumes and smoke

Due to the plasma process itself hazardous substances may be produced. To avoid risks on health the following has to be done:

- Keep cutting place well ventilated
- Remove fumes and smoke by exhaustion devices
- Remove all chlorinated and other solvents from the cutting area. They could form phosgene gas when exposed to ultraviolet radiation
- Wear a breathing mask when cutting galvanised materials
- Ensure that toxic limits are not exceeded

Endangerment through noise

Be aware that during plasma cutting a high noise level arises.

Cutting current	Thickness	Noise level in distance of	
		0,5 m	1,0 m
No load			56dB(A)
80A	4mm	82 dB(A)	79 dB(A)
160A	l6mm	86 dB(A)	83 dB(A)
240A	l6mm	96 dB(A)	92 dB(A)

Above levels are general. Variations may occur.

Therefore wear proper ear protection.

Endangerment through spatter

During plasma cutting sparks, slag and hot metal are produced. The risk of burns and fire exists! To avoid these endangerments the following has to be advised:

- Remove all potential flammable materials from cutting area, at least in a 10 m distance.

- Allow cut material to cool down before handling.
- Make fire extinguisher available in the cutting area.

Handling of pressure cylinders

In some cases compressed gases are required for the plasma cutting process. To avoid endangerments the following has to advised:

- Place cylinders upright in secured position.
- Never use damaged cylinders, pressure reducers and armatures.
- Use pressure reducers only for the gas it is determined.
- Never lubricate pressure reducers with grease or oil.
- All parts coming in contact with oxygen must be free from oil and grease.
- When using oxygen and/or flammable gases the pressure reducer must be equipped with an explosive-proofed device (backfire-device)
- Regularly check the gas hoses and other equipment for leaks etc.
- Always follow local regulation regarding gas equipment.

8. WARRANTY

SPT Plasmateknik AB grants a 24 month warranty for its products.

Validity
The warranty applies to power sources manufactured by SPT Plasmateknik AB (SPT). The warranty period is 24 months from date of delivery to end user, but not more than 30 months from delivery from factory. If the product is used more than normal 1-shift work, the warranty period is shortened accordingly.
Any warranty claim should be accompanied by proof of purchase.

Coverage
SPT will take responsibility to repair a machine to the state it was in before the fault occurred.
The warranty covers spare parts and reimbursement for work carried out by an authorised service point. Labor costs are limited to a fixed rate for each action carried out.
Upon replacement of parts, SPT reserves the right to invoice parts. The invoices will be credited upon the return of faulty parts to SPT.
When a warranty claim occurs, the customer should immediately turn to an authorised service point, or SPT directly. SPT requires detailed information about the conditions under which the machine was in use when the fault occurred, such as location (indoor/outdoor), ambient temperature, power supply (generator/normal power supply – if generator, information is needed about the rating and type of generator).
When a machine is taken in for warranty repair it is required that the torch also is brought in with the consumables mounted that were there when the fault occurred. The serial number must be clearly visible.
The user is responsible for limiting the damage by immediately stopping using the machine if a problem is suspected.
Warranty repair may only be carried out by authorised service points. SPT reserves the right to deny warranty claims where work has been carried out by non-authorised service personnel.
Should SPT find that the product has been used inappropriately and it is likely that such inappropriate use may continue, SPT reserves the right to refuse warranty repair and refund the customer, with a deduction for the use the customer has had of the product. SPT also reserves the right to restore the product to working order on the customer’s expense.

Limitations
The following is not covered by warranty:
Defects caused by natural wear.
Defects caused by non-compliance of use and maintenance recommendations.
Improper gas pressure settings.
Improper electrical power supply.
Overload.
Damage caused by transport, handling and improper storage.
Fire
Damage caused by natural causes such as lightning, flooding etc.

Further, the warranty does not cover:
Fault finding, direct or indirect travel costs, transport costs, travel costs, allowances, accommodation and such.

SPT bears no responsibility whatsoever for consequential damages caused by fault in its products, such as, but not limited to, loss of revenue, damages to 3rd party, production delays, penalties etc.

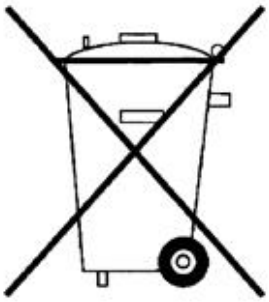
The warranty is not valid if modifications of any kind has been made to the product, without the written approval from SPT. Repairs made by non-authorised service personnel renders the warranty void.

A modified product will be restored to the original state at the expense of the customer prior to any repair, as SPT can not be responsible for the function of its products otherwise.

Warranty on replaced parts
A replaced part will be covered by the original warranty. If less than 6 months remains from the warranty period, a replaced part will be covered for maximum months.

Disputes
Disputes will be handled according to the general terms in Orgalime S 2000.

9. RECYCLING



Do not throw electrical equipment in the regular rubbish! According to EU-directive 2002/96/EG regarding waste that contains electric or electronic parts (WEEE) and its implementation with national laws products must be collected separately and brought to approved recycling facilities after their useful life. As the owner of the product you should find out the location of an approved recycling facility from your local dealer.

SPT Plasmateknik AB
STATE OF THE ARC PLASMA CUTTING TECHNOLOGY

DECLARATION OF CONFORMITY

according to
EMC Directive 2014/30/EU
Low Voltage Directive 2014/35/EU
RoHS2 Directive 2011/65/EU

Type of equipment
Plasma cutting equipment

Brand name or trade mark
SPLITFIRE, SPEEDFIRE, UPPERCUT, UNIFIRE 31PFC, UNIFIRE 26C

Type designations
-

Manufacturer's name, address, telephone & fax no
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Conformity with the Directives stated above relates to the following reference documents:

Standards or other normative documents
EN 60974

As manufacturer we declare under our sole responsibility that the equipment follows the provisions of the Directives stated above

Lund 2017/05/19

Anders Somers
Director