

**WELDING MACHINE**

**PERUN 200 MIG SYN PFC**

**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.

The model of PERUN 200 MIG SYN PFC is the multi-function inverter power generators welding by those methods:

- a) MIG/MAG in 2T, 4T, manually or synergic wires G3Si1 or stainless steel 0,6 - 1,0 mm, Al wires 1,0 mm, flux cored wires shelf shielding or standard
- b) E – (MMA) coated electrodes up to 4,0 mm
- c) TIG Lift arc

PERUN 200 MIG SYN PFC is equipped by system of Power Factor Correction (PFC).

## What are the advantages of PFC solution?

1. Higher efficiency and less stress related to the circuit breaker (in other words, circuit breaker will switch off later than the devices without PFC).
2. The machine can be connected to the mains 110 V - 230 V + -15% small influence of under voltage and overvoltage mains power.
3. Smaller level of electromagnetic interference.
4. Minimum net reactive current loading.

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. Once the packing has been opened, make sure that the machine is not damaged. If in any doubt, call the service centre.
2. This equipment must only be used by qualified personnel.
3. During installation, any electric work must only be carried out by trained personnel.
4. The machine must be used in a dry place with good ventilation.
5. 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.
6. It is prohibited to connect more than one INVERTER generator in series or in parallel.
7. When installing the machine, follow the local regulations on safety.
8. The position of the machine must allow easy access by the operator to the controls and connectors.
9. When the welding machine is operating, all its covers and doors must be closed and well fixed.
10. Do not expose the welding machine to direct sunlight or to heavy rain. This equipment conforms to protection rating IP23S.
11. During welding, the welding cables must be located near or at ground level. They should be as short as possible.
12. 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 welding.
13. 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 electrical welding 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.
14. The operator is obliged to warn anyone near the welding area of the risks that welding involves and to arrange to provide adequate protection equipment.
15. It is very important to arrange for sufficient ventilation, especially when welding in enclosed spaces. We suggest using suitable fume extractors to prevent the risk of intoxication by fumes or gas generated by the welding process.
16. The operator must ensure all flammable materials are removed from the work area to avoid any risk of fire.
17. The operator must NEVER weld 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.
18. The operator must be aware of all the special regulations which he needs to conform to when welding in enclosed spaces with a high risk of explosion.
19. 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 welding machine if its cables are damaged in any way.
  - c. Make sure that the grounding 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 grounding of the piece being worked could increase the risk of injury to the operator.
20. 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 welding clamps. In our generator this voltage is 67V.
21. The maximum open-circuit voltage of the welding machines is established by national and international standards (EN 60974-1) depending on the type of weld 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.
22. 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

23. In case 1, the dc welding 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 welding machines of this type can be marked with the symbol: **S**
24. Before opening the machine switch off the machine and disconnect it from the power socket.
25. Only personnel authorised by this company can carry out maintenance on the machine.

**NOTE:**

Device complies with IEC 61000-3-12.

Working ambient temperature between -10 and +40 °C.

Relative humidity below 90% at +20 °C.

Up to 3000 m altitude.

## 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.

## 3. TECHNICAL DATA

Method		MIG/ MAG	MMA	TIG	MIG/ MAG	MMA	TIG
Mains voltage	V/Hz	1x110/50-60			1x230/50-60		
Welding current range	A	25 - 130	10 - 100	10 - 140	25 - 200	10 - 200	10 - 200
Open-circuit voltage $U_{20}$	V	67,0			67,0		
Mains protection	A	25 @			16 @		
Max. effective current $I_{1eff}$	A	22,0	17,5	18,0	14,5	16,0	12,0
Welding current (DC=100%) $I_2$	A	85	65	95	130	120	140
Welding current (DC=60%) $I_2$	A	110	80	125	150	140	160
Welding current (DC=x%) $I_2$	A	35%=130	30%=100	40%=140	30%=200	25%=200	35%=200
Protection		IP 23S					
Standards		EN 60974-1, EN 60974-10 cl. A					
Dimensions (w x l x h) compact	mm	230 x 640 x 420					
Weight - compact	kg	18,4					
Wire speed	m/min	1,5 - 4,5	---	---	1,5 - 16,5	---	---
Spool diameter	mm	200	---	---	200	---	---
Spool weight	kg	5	---	---	5	---	---






ALFA IN continuously strives to produce the best product possible and therefore reserves the right to change, improve or revise the specifications or design of this or any product without prior notice. Such updates or changes do not entitle the buyer of equipment previously sold or shipped to the corresponding changes, updates, improvements or replacement of such items.

## 4. EQUIPMENT

### MODELS

Item No	Description	Picture
5.0291	PERUN 200 MIG SYN PFC	

### ACCESSORIES TO ORDER

Item No.	Description	Picture
SGB25-3	Torch PARKER SGB 250 3m	
SGB25-4	Torch PARKER SGB 250 4m	
SGB25-5	Torch PARKER SGB 250 5m	
T24ST	Torch T2 4m 35-50 arc ST	
T28ST	Torch T2 8m 35-50 arc ST	
5847	Set Connectors ST 12 PIN	
VM0151-1	Hose Gas 3m G1/4-G1/4	
VM0253	Welding Cable Set 2x 3m 35-50 200A	

	Rolls – see section WIRE FEEDER	
S777C	Welding Helmet Barracuda S777C Black	
S7SUN9B	Welding Helmet S9B Shooting Blue Shark	
4488	Wire 0.8 Coreshield 15 A D200 Self Shielding 4,5kg spool	
SGL2	Small Gas Lens Body Starter Kit 1.6mm-1/16"	
SGL4	Small Gas Lens Body Starter Kit 2.4mm-3/32"	
SGL5	Small Gas Lens Body Starter Kit 3.2mm-1/8"	
700.0306.10	Electrode wol.1.6x175-Violet	
700.0308.10	Electrode wol.2.4x175-Violet	
700.0310.10	Electrode wolfram E3 3.2x175 - violet	



## 5. MAIN PARTS OF THE MACHINE

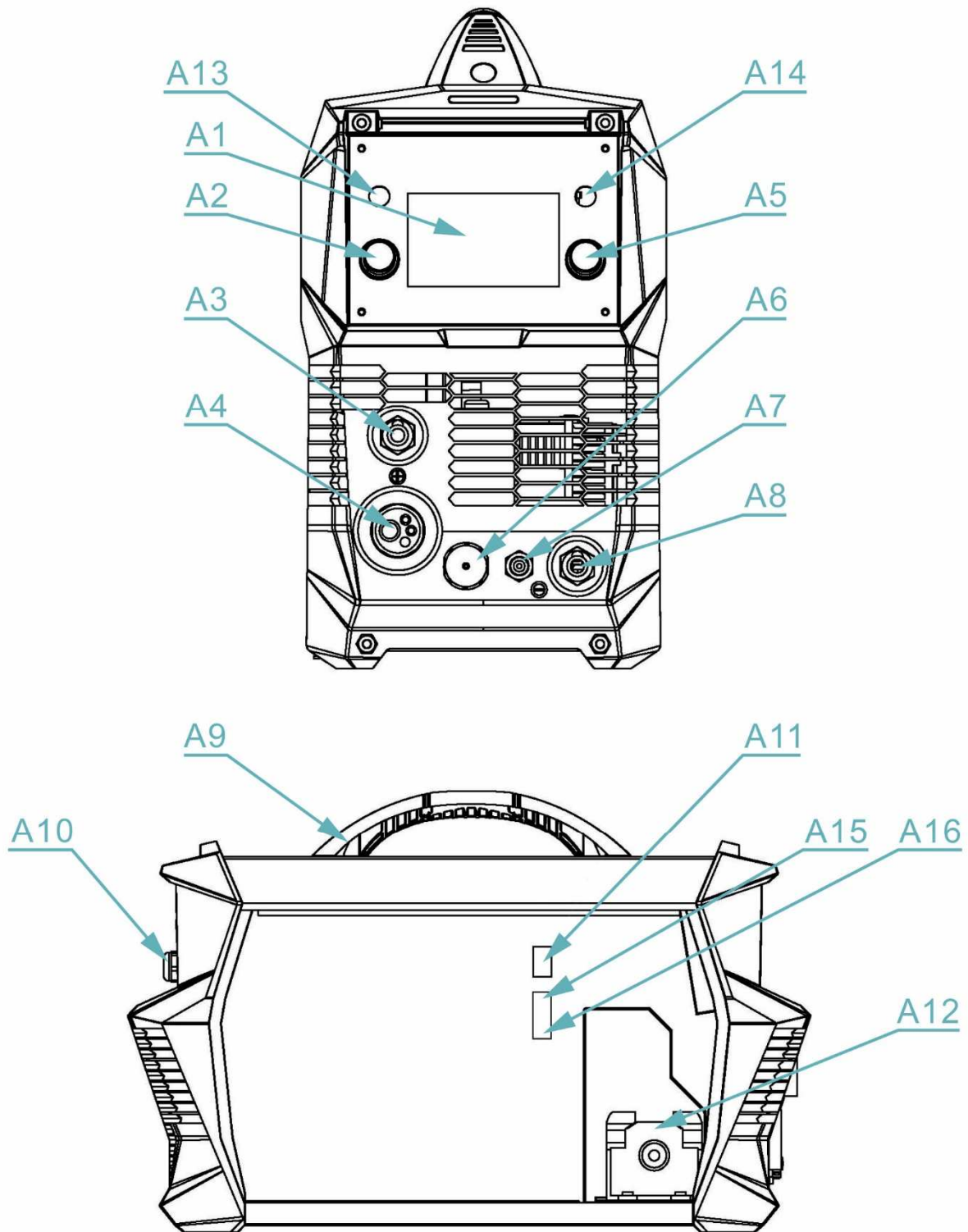


Fig. 1 - PERUN 200 MIG SYN PFC – main parts

Pos.	Description
A1	Display
A2	Knob
A3	Quick connector (+) of welding cables

A4	MIG/MAG torch connector
A5	Knob
A6	TIG torch control connector
A7	Gas connector for TIG torch
A8	Quick connector (-) of welding cables or TIG torch
A9	Handle
A10	Mains cable
A11	Switch Spool Gun
A12	Wire feeder
A13	MENU button
A14	Button for setting the welding current and voltage
A15	Wire feeding button
A16	Gas setting button

## WIRE FEEDER

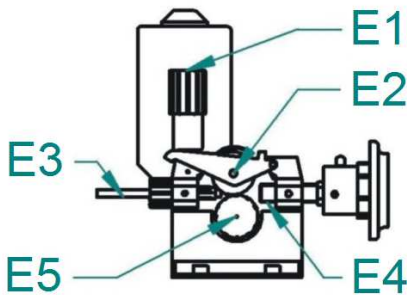
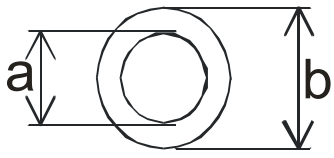
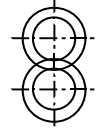
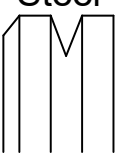
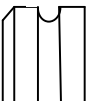
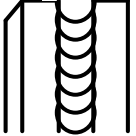


Fig. 2 - Wire feeder

Pos.	Description
E1	Nut of pressure arm
E2	Pressure arm
E3	Inlet liner
E4	EURO connector
E5	Roll

**OVERVIEW OF ROLLS FOR WIRE FEED**

		
		a = 22 mm
		b = 30 mm
Groove type	Wire diameter	Item No
<b>Steel</b> 	0,6-0,8	2187
	0,8-1,0	2188
<b>Aluminium</b> 	0,8-1,0	2270
<b>Flux core</b> 	0,8-1,0	2318
	1,0-1,2	2319

## 6. MAIN MENU

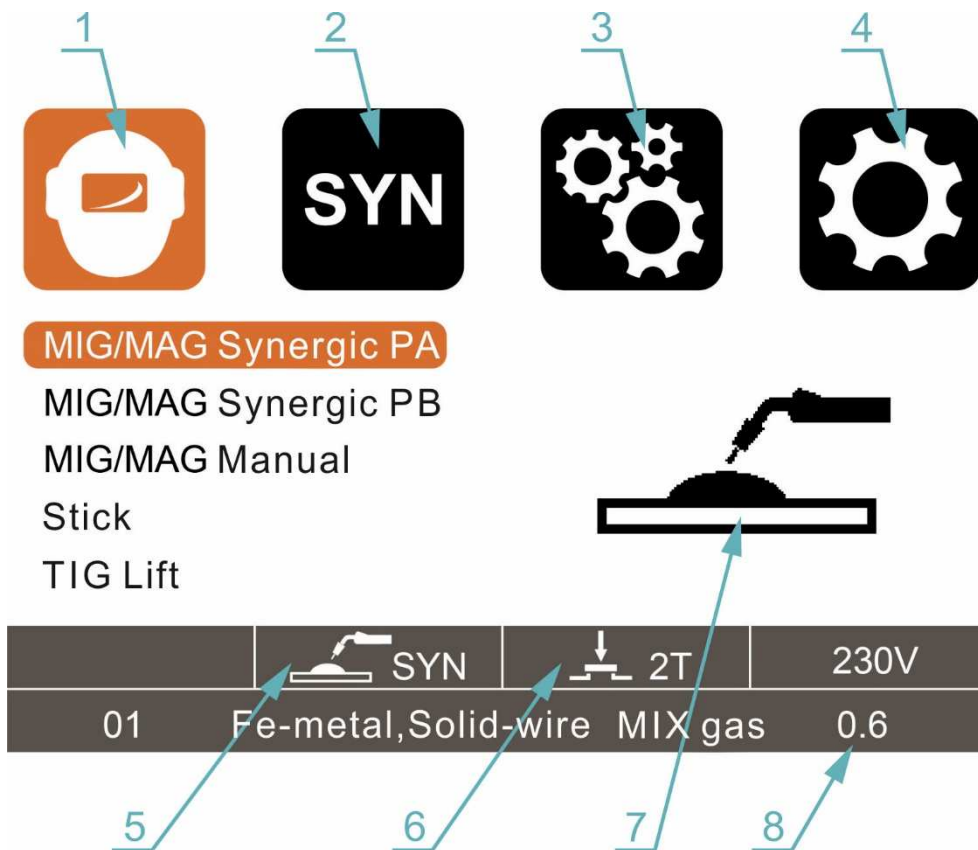


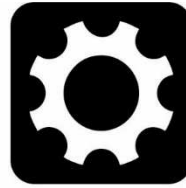
Fig. 3 - Main Menu

Pos.	Description
1	Method selection
2	Synergic parameters selection
3	Welding parameters settings
4	System settings
5	Chosen function icon
6	Chosen mode icon
7	Multifunctional window
8	Synergic parameter (from left: program number, material of welding wire, protective gas and wire diameter)

Press **MENU** button **A13** to move between submenus.

## METHOD SELECTION

Rotate and then press the knob **A2** for method selection.



MIG/MAG Synergic PA

MIG/MAG Synergic PB

MIG/MAG Manual

Stick

TIG Lift



	 SYN	 2T	230V
01	Fe-metal, Solid-wire	MIX gas	0.6

Fig. 4 - Submenu of method selection

Use the button for setting the welding current and voltage **A14** in the upper right part of the panel to get to the settings of welding current and voltage. To change these parameters rotate knobs **A2** and **A5**.




150	0.9		
A	V		
			
 LIFT	 2T	230V	

Fig. 5 - Welding parameters selection

## SYNERGIC PARAMETERS SELECTION

Submenu of synergic parameters is available only when the method MIG/MAG Synergy is chosen.

Rotate and then press the knob **A2** for synergic parameter selection.

PRG	MATERIAL	GAS	D.
01	Fe-metal,Solid-wire	MIX gas	0.6
02	Fe-metal,Solid-wire	MIX gas	0.8
03	Fe-metal,Solid-wire	MIX gas	1.0
04	Fe-metal,Solid-wire	CO2 gas	0.6
05	Fe-metal,Solid-wire	CO2 gas	0.8



	 SYN	 2T	230V
01	Fe-metal,Solid-wire	MIX gas	0.6

Fig. 6 - Synergic parameters selection

## SECONDARY WELDING PARAMETERS SELECTION

Rotate the knob **A2** and then press the knob **A5** for parameters settings.

2T / 4T			
Burn Back			
Slow Feed			
Pre-flow			
Post Flow			
Inductance			



	 SYN	 2T	230V
01	Fe-metal,Solid-wire	MIX gas	0.6

Fig. 7 - Secondary welding parameters selection

Secondary welding parameters	MIG/MAG welding parameters (Default)	TIG welding parameters (Default)	MMA welding parameters (Default)
Two/four Stroke	2T / 4T (2T)	2T / 4T (2T)	-
Burn Back	0 - 10 (0)	-	-
Slow Feed	0 - 10 (0)	-	-
Pre Flow	0 - 2 s (0 s)	-	-
Post Flow	0 - 10 (0 s)	0 - 10 (0 s)	-
Inductance	0 - 10 (5)	-	-
Down slope	-	0 - 10 s (0 s)	-
Hot Start	-	-	0 - 10 (0)
Arc Force	-	-	0 - 10 (0)

## SYSTEM SETTINGS

Rotate the knob **A2** and then press the knob **A5** for parameters settings.

The last position in submenu of system settings is **Factory reset**.

Press the knob **A5** for Factory reset performance.



Language

Unit

Beeper On/off

Brightness

Factory Reset

English


	 SYN	 2T	230V
01	Fe-metal, Solid-wire	MIX gas	0.6

Fig. 8 - Submenu of system settings

## 7. GETTING STARTED MIG/MAG

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

### CHOOSING THE FEEDING ROLL

In all machines (ALFA IN MIG / MAG) rolls with two grooves are used. These grooves are intended for two different wire diameters (e.g. 0,8 and 1,0 mm).

Rolls for wire feed must comply with the diameter and material of the welding wire. Only this way a smooth wire feed can be achieved. Irregularities of the wire feed leads to a poor quality of welding and deformation of the wire.

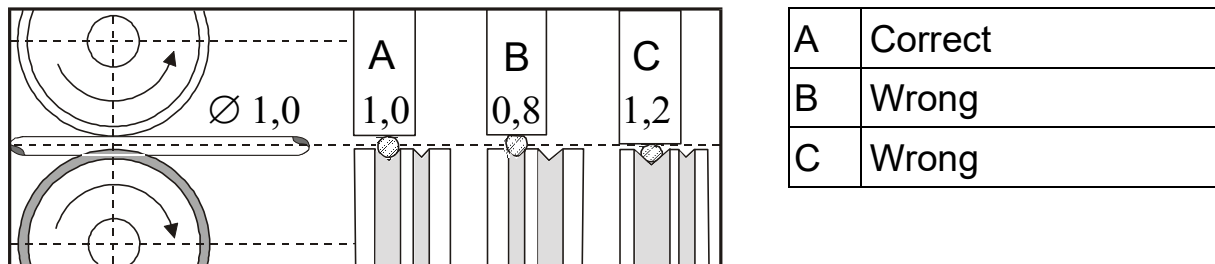
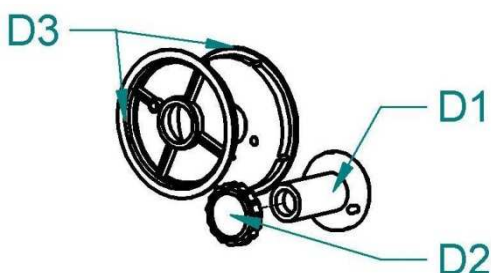


Fig. 9 - The influence of the roll groove on the welding wire

### INSERTING THE WIRE

1. Open the side cover of the wire feeder space.
2. Put the wire spool on the wire spool holder **D1** and fix it with the fixing nut **D2**.
3. Cut off the curved or damaged end of welding wire and lead it through the inlet liner **E3**, and the roll into the liner inside the EURO torch connector (about 5 cm). Make sure, that you use the suitable groove.
4. Put the pressure arm **E2** down in that way, that the teeth or the gear fit and fix it by setting the lever **E1** into vertical position.
5. Adjust the pressure nut that way that it provides constant movement of wire but it does not deform wire. The adjusting screw is located under the plastic screw **E1**.
6. The spool brake is set by the manufacturer. If necessary, the brake can be adjusted by a screw **D1** so that while stopping the feed, spool will be stopped on time (it will avoid excessive release of wire). However, too tight brake needlessly strains the feeding mechanism and thus slippage may occur in the wire rolls.



Pos.	Description
D1	Spool Holder
D2	Nut Spool Holder
D3	It is not for this welder

Fig. 10 - Spool holder



## INSERTING THE WIRE TO THE TORCH AND CONNECTION OF GROUND CABLE

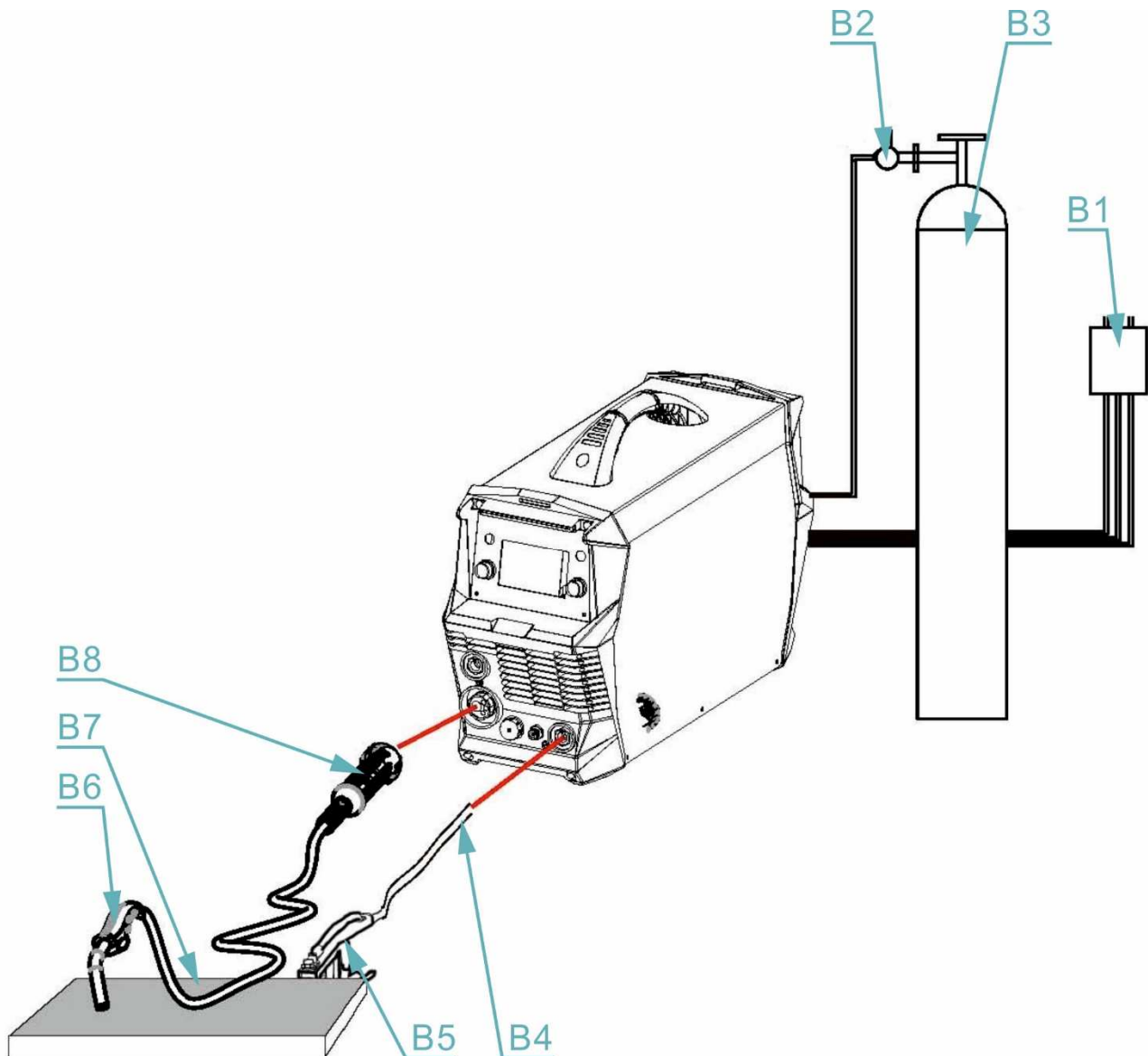


Fig. 11 - Connection of the main MIG/MAG components

1. Connect the torch **B6** to connector **A4** on the machine while the machine is turned off.
2. Connect the ground cable **B4** to the quick connector (-) **A8** of welding cables.
3. Connect the ground clamps **B5** to the weldment **B7** or to the welding table.
4. ⚠️ Notice ⚠️ When inserting the wire do not point with torch to the eyes!
5. Remove the gas nozzle from the torch.
6. Unscrew the current nozzle.
7. Connect the machine to power supply.
8. Turn the main switch on the rear panel to ON.
9. With **MENU** button **A13** and knob **A2** select the mode MIG/MAG.
10. In submenu of welding parameters selection choose 2T or 4T.

11. Press the button **A15** in the space of the wire feeder and the welding wire is fed into the torch. After coming off from the torch tube, screw the current nozzle and gas nozzle on.
12. Before welding, spray the area in a gas hose and current nozzle with a separation spray, to prevent damage.

## ADJUSTMENT OF GAS FLOW

The electric arc and the weld must be perfectly shielded by gas. Too small amount of gas does not perform the protective atmosphere and on the other hand to big amount of the gas brings air into the electric arc.

**Notice** Gas bottle must be well secured against fall. This manual does not solve the safe securing of gas bottle. Information can be obtained from a supplier of industrial gases.

1. Connect the gas hose to gas outlet **F8** on the valve and the gas inlet to the gas connector.
2. Press the button **A16** in the space of the wire feeder.
3. Turn the adjusting screw **F7** at the bottom side pressure reducing valve, until the meter **F6** shows the required flow, then release the button. The optimum flow is 10-15l/min.
4. After long-term shutdown of the machine or replacement of the torch it is suitable to blow the pipes with protective gas before welding.

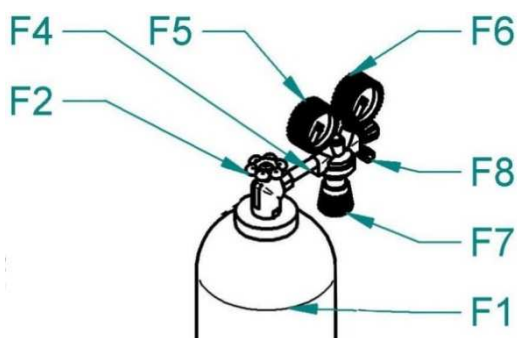


Fig. 12 - Gas flow setting

Pos.	Description
F1	Gas bottle
F2	Cylinder Valve
F4	Pressure Reducer
F5	High Pressure Manometer
F6	Low Pressure Manometer
F7	Adjusting Screw
F8	Gas outlet

## ADJUSTING WELDING PARAMETERS FOR MIG SYN

1. Find the appropriate program number in submenu of synergic parameters.
2. Select the synergic parameter by knob **A2** and then press the knob **A2** for confirmation.
3. After that, choose the appropriate welding parameters by knobs **A2** and **A5**.
4. Recommendation – For perfect manual tack welding (for example for car bodywork repairs) use the machine in the MIG Manual mode.

## ADJUSTING WELDING PARAMETERS FOR MIG MAN

1. Approximate setting for the MIG / MAG welding current and voltage corresponds the empirical relationship  $U_2 = 14 + 0.05 I_2$ . According to this relationship, we can determine the required voltage. When setting the voltage, we expect the decline in voltage during load. The voltage drop is approximately 4,8V at 100 A.
2. Select voltage.
3. Then select the appropriate wire speed.
4. Tune the arc by changing the levels of the choke in submenu of welding parameters settings.

Wire diameter (mm)	Welding current (A)	Material thickness (mm)
0,6	25 - 110	1,0 - 1,6
0,8	35 - 160	1,0 - 2,3
0,9	45 - 160	1,0 - 2,3
1,0	45 - 200	1,2 - 7,0

Table of approximate parameter settings

## ADJUSTING THE MACHINE FOR ANOTHER WIRE DIAMETER

In all machines ALFA IN MIG / MAG are used rolls with two grooves. These grooves are intended for two different wire diameters (e.g. 0,8 a 1,0 mm). Groove can be replaced by removing the rolls and rotating them, or use a different roll grooves with required dimensions.

1. Open the nut **E1** to the left, pressure roll **E2** will be opened upward.
2. Unscrew the plastic locking element **E5** and remove the roll.
3. If there is a suitable groove on the roll, rotate the roll and place it back on the shaft and secure it by screwing the element **E5**.

## FLUX CORE WIRE – SETTING THE POLARITY FOR MIG/MAG TORCH

1. It is desirable to have positive polarity on the MIG/MAG torch while welding with solid wire in majority of cases. The welder is supplied from the production with positive polarity on the MIG/MAG torch.
2. For welding with flux cored wires it may be necessary to have negative polarity on the MIG/MAG torch.
3. The middle terminal **K2** is connected to the central euro connector of the MIG/MAG torch. We supply the welder with **K2** connected by means of the bridge **K3** to terminal (+) **K1**.
4. In case of welding with flux core wire with (-) polarity, connect **K2** by means of the bridge **K3** with **K4** terminal (-). Use Phillips screwdriver.
5. Make sure you fasten the terminals properly.
6. Connect the ground cable **B4** to the quick connector (+) **A3**.



Fig. 13 - Terminals for changing the polarity of the MIG/MAG torch

Pos.	Description
K1	Upper terminal (+)
K2	Middle terminal
K3	Bridge
K4	Lower terminal (-)

### Notice

In case, that you want to weld with flux core wire, it is first necessary to remove the gas nozzle of the torch before starting welding. Furthermore, during the welding process, you must not touch the weldment with the die. There would be a risk of baking the wire.

## ADJUSTING THE MACHINE FOR WELDING OF ALUMINIUM

For feeding the AL wire it is necessary to use roll with the “U” profile - see paragraph OVERVIEW ROLLS WIRE FEED. To prevent problems with feeding use wires with diameter. 1.0 mm of AlMg3 or AlMg. Wire of alloy Al99, 5 or AlSi5 are too soft and easily will cause problems with movement.

For the aluminium welding it is also necessary to provide the torch tefl. liner and special current nipple. We do not recommend you to use the torch longer than 3 m. Great attention must be paid to adjust the contact power of rolls – it must not be too high, otherwise there is a deformation of the wire.

As a protective atmosphere is necessary to use argon.

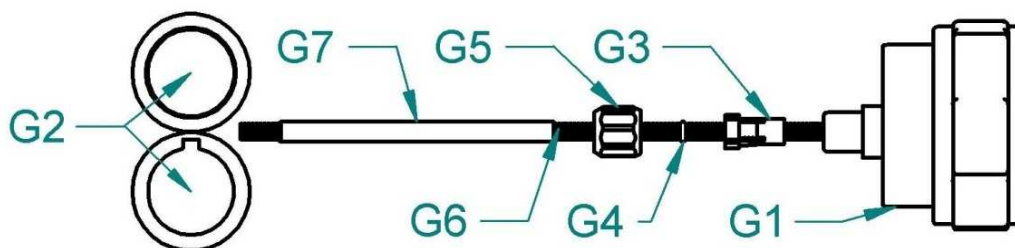


Fig. 14 - Customization of the feed for the aluminium wire

Pos.	Description
G1	EURO connector
G2	Rolls
G3	Liner terminal for 4,0mm, 4,7mm outer diameter
G4	O-ring 3,5 x1, 5mm to prevent escape of gas
G5	Nut
G6	Liner tefl.
G7	Sustain pipe for teflon and plastic liner

**TABLE OF WIRE CONSUMPTION DURING WELDING**

Wire diameter [mm]	Range of wire feed speed [m/min]	Maximal wire feed speed [m/min]	Weight of 1 m wire [g]	Wire consumption per 1 minute of welding [g/min]	Wire consumption per 1 hour of welding [g/hour]
<b>Steel wire</b>					
0,6	2 - 5	5	2,3	11,5	690
0,8	3 - 6	6	4	24	1440
1,0	3 - 12	12	6	72	4320
1,2	4 -18	18	9	162	9720
<b>Stainless steel wire</b>					
0,6	2 - 5	5	2,3	11,5	690
0,8	3 - 6	6	4	24	1440
1,0	3 - 12	12	6	72	4320
1,2	4 -18	18	9	162	9720
<b>Aluminum wire</b>					
0,6	2 - 5	5	0,8	4	240
0,8	3 - 6	6	1,3	7,8	468
1,0	3 - 12	12	2	24	1440
1,2	4 -18	18	3	54	3240

**TABLE OF GAS CONSUMPTION DURING WELDING**

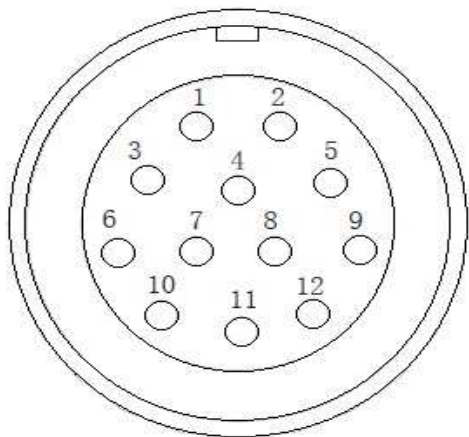
Wire diameter [mm]	Gas flow [l/min]	Gas consumption per 1 hour of welding [l/hour]
0,6	6	$6 * 60 = 360$
0,8	8	$8 * 60 = 480$
1,0	10	$10 * 60 = 600$
1,2	12	$12 * 60 = 720$
1,6	16	$16 * 60 = 960$
2,0	20	$20 * 60 = 1200$

## 8. GETTING STARTED TIG

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

### TIG TORCH CONNECTOR SCHEMA

5737 CONNECTOR ST 12 PIN MALE					
PIN NO.	MMA	FOOT PEDAL	SPOOL GUN	TIG TORCH	MIG TORCH
1	/	/	(-) SPOOL GUN	/	(-) SPOOL GUN
2	/	/	/	/	(+) SPOOL GUN
3	/	/	/	/	(+) POTENTIOMETER
4	/	/	(+) SPOOL GUN	/	POTENTIOMETER CENTER TAP
5	/	/	/	(+) POTENTIOMETER	(-) POTENTIOMETER
6	/	/	/	(-) POTENTIOMETER	/
7	/	/	/	SIGNAL POTENTIOMETER TIG	/
8	/	/	/	START/STOP	START/STOP
9	/	/	/	START/STOP (GND)	START/STOP (GND)
10	/	/	/	/	/
11	/	/	/	/	/
12	/	/	/	/	SPARE LINE



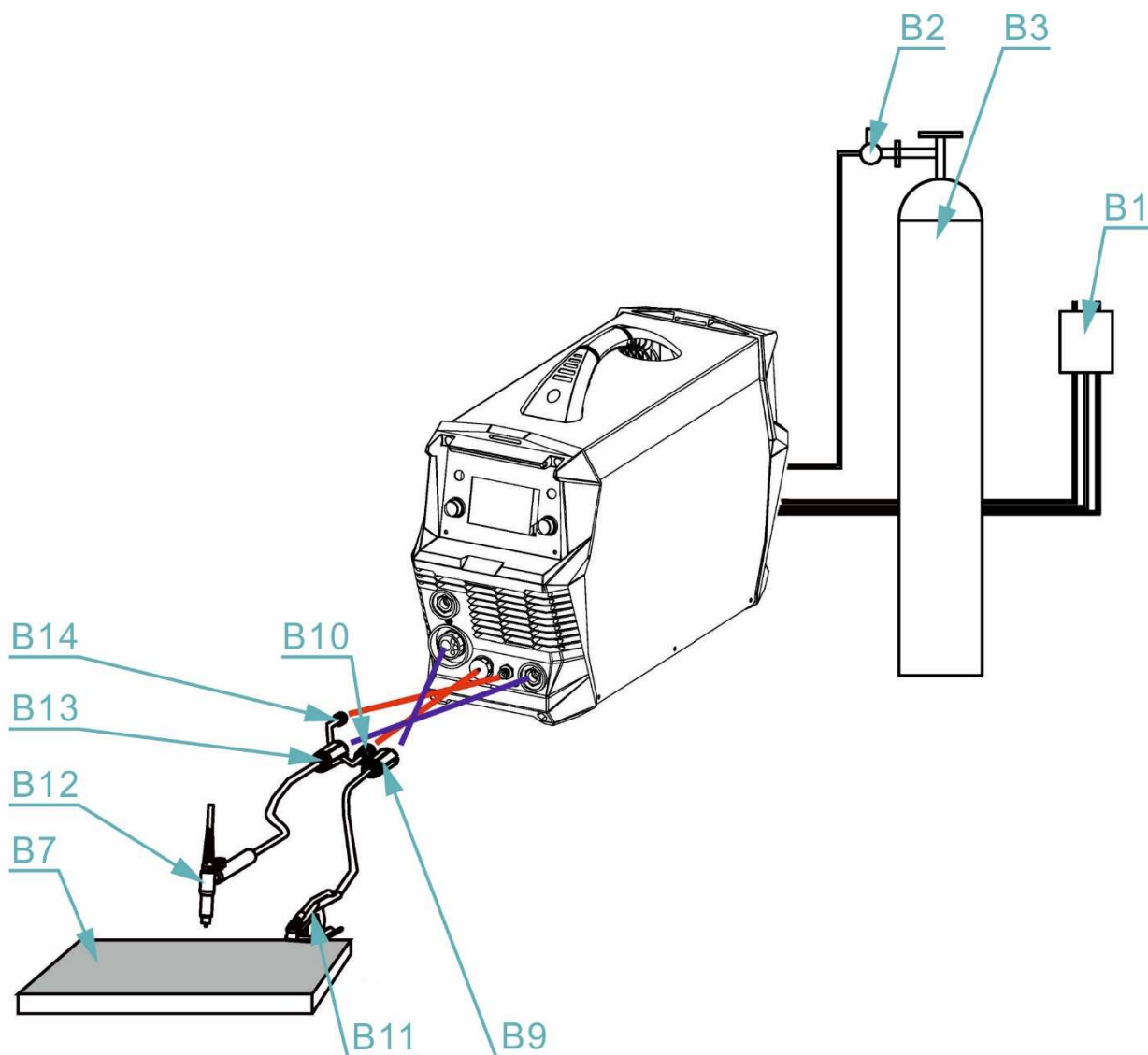


Fig. 15 - Connection of the main TIG components

1. Connect the torch **B12** to the quick connector (-) **A8** of welding cables to the gas connector **B14** and connector **B10**.
2. Connect the ground cable **B9** to the quick connector (+) **A3** of welding cables and the ground clamps **B11** to the weldment **B7** or to the welding table.
3. Connect the machine to power supply and turn the main switch on the back panel to ON.
4. Connect the gas hose and gas flow adjustment described in ADJUSTMENT OF GAS FLOW.
5. In submenu of method selection select **TIG Lift**, see part 6. MAIN MENU.
6. Use the knob **A2** to adjust the welding current.
7. In submenu of welding parameters settings you can change values of Pre Gas time and Post Gas time.



**TABLE OF CONSUMPTION DURING TIG WELDING**

Wolfram electrode diameter [mm]	Argon flow [l/min]
	Steel / stainless steel
0,5	3 – 4
1,0	3 – 5
1,6	4 – 6
2,4	5 – 7
3,2	5 – 9

**9. GETTING STARTED MMA**

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

1. Connect the electrode holder and the work lead to quick connectors **A3** and **A8** according the instructions on the electrode package.



**NOTE** Prevent touching the electrode any metal material for in this mode the quick connectors **A3** and **A8** are under current.



2. In submenu of method selection select **Stick**, see part 6. MAIN MENU.
3. Select the current.

**TABLE OF ELECTRODE CONSUMPTION DURING WELDING**

Electrode diameter [mm]	Range of welding current [A]	Total electrode length [mm]	Weight of boiled electrode without slag [g]	Boiled electrode time [s]	Weight of boiled electrode without slag per 1 second [g/s]
1,6	30 - 55	300	4	35	0,11
2,5	70 - 110	350	11	49	0,22
3,2	90 - 140	350	19	60	0,32
4,0	120 - 190	450	39	88	0,44



**10. ROUTINE MAINTENANCE & INSPECTION**

1. The only routine maintenance required for the PERUN range of machines is a thorough cleaning and inspection, with the frequency depending on the usage and the operating environment.

2.  **WARNING**  Disconnect the PERUN from the mains supply voltage before disassembling.

Special maintenance is not necessary for the control unit parts in the Welder. If these parts are damaged for any reason, replacement is

recommended.

3.  CAUTION  Do not blow air into the welder during cleaning. Blowing air into the welder can cause metal particles to interfere with sensitive electronic components and cause damage to the welder.
4. To clean the welder, disconnect it from the mains supply voltage then open the enclosure and use a vacuum cleaner to remove any accumulated dirt and dust. The welder should also be wiped clean. If necessary, solvents that are recommended for cleaning electrical apparatus may be used.
5. Troubleshooting and repairing of PERUN welding equipment should only be carried out only by suitably qualified or competent person.
6. 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.
7. The person carrying out the servicing needs and repairs must know what to look at, what to look for and what to do.



## ERROR MESSAGES

Error type	Error code	Description	Solution
Thermal switch	E01	Thermal switch 1	Do not switch the machine off, wait until the machine cools down.
Thermal switch	E02	Thermal switch 2	
Thermal switch	E09	Program over heat protection	

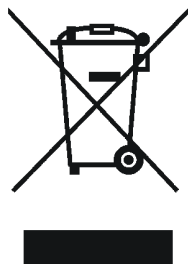
## 11. STATEMENT OF WARRANTY

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 welding 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:
6. 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.

7. Equipment that has been used beyond the specifications established in the operating manual.
8. Installation not in accordance with the installation/operating manual.
9. Any product that has been subjected to abuse, misuse, negligence or accident.
10. Failure to clean and maintain (including lack of lubrication, maintenance and protection), the machine as set forth in the operating, installation or service manual.
11. Within this operating manual are details regarding the maintenance necessary to ensure trouble free operation.
12.  NOTE  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.
13. 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.

## 12. 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.

## 13. 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:	