

NÁVOD K OBSLUZE / SVAŘOVACÍ STROJ CZ

NÁVOD NA OBSLUHU / ZVÁRACÍ STROJ SK

INSTRUCTION FOR USE / WELDING MACHINE EN

BEDIENUNGSANLEITUNG / SCHWEISSGERÄTE DE

INSTRUKCJA OBSŁUGI / MASZYNA SPAWALNICZA PL



309 / 3000

STANDARD - PROCESSOR

MADE IN EU CE

ENGLISH

Contents

INTRODUCTION	18
DESCRIPTION	18
TECHNICAL DATA	18
TYPES OF MACHINES	19
INSTALLATION	19
EQUIPMENT OF WELDING MACHINES	19
CONNECTION TO THE ELECTRICAL POWER SUPPLY	19
CONTROL APPARATUS	20
CONNECTION OF THE WELDING TORCH	21
CONNECTION OF THE WELDING WIRE AND ADJUSTMENT OF GAS FLOW	21
ADJUSTMENT OF WELDING PARAMETERS	21
DESCRIPTION OF WELDING WORK CYCLES	24
RATING PLATE SYMBOLS	42
RECOMMENDED ADJUSTMENT OF WELDING PARAMETERS	43
ELECTRICAL DIAGRAM	45
LIST OF SPARE PARTS	46
TROUBLE SHOOTING LIST	51
WARRANTY CERTIFICATE	55

Introduction

Thank you for purchasing one for our products.



Before using the equipment you should carefully read the instructions included in this manual.

It is also necessary to read all the safety regulations in the enclosed document „Safety instructions and maintenance“.

In order to get the best performance from the system and ensure that its parts last as long as possible, you must strictly follow the usage instructions and the maintenance regulations included in this manual. In the interest of customers, you are recommended to have maintenance and, where necessary, repairs carried out by the workshops of our service organisation, since they have suitable equipment and specially trained personnel available. All our machinery and systems are subject to continual development. We must therefore reserve the right to modify their construction and properties.

Description

Machines 309, 3000 are professional welding machines designed for MIG (Metal Inert Gas) and MAG (Metal Active Gas) welding. It is sources of welding current with flat characteristics. It concerns welding in protection atmosphere of active and intact gases when added material is in a form of „infinite“ wire supplied into the weld by the wire feeding. These methods are very productive, especially for the welds of construction steel, low steel, aluminium and its alloys.

The machines are designed as movable sets, differing from each other in their efficiency. The source of welding current, wire supply and feed are in one compact metal case with two fixed and two turning wheels.

Welding machines have been designed for welding of thin and thickness materials for wires used from 0.6 to 1.2 mm. Standard equipment of machines can be found in chapter „Equipment of welding machines“. Welding machines confirm to all European Union and Czech Republic standards and directives in force.

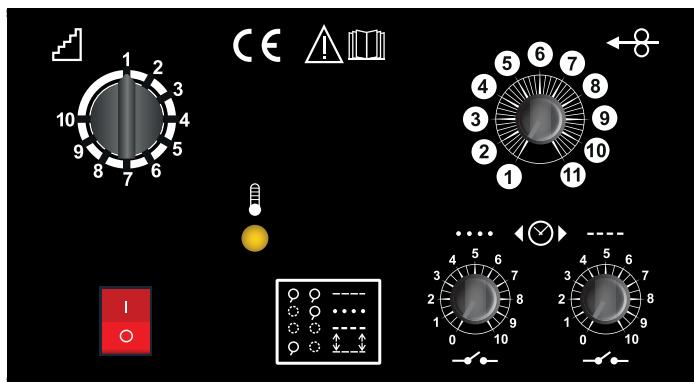
Table 1

Technical data		309	3000
Mains voltage 50/60 Hz	[V]	3 x 400	3 x 400
Welding current range	[A]	30 - 250	30 - 250
Output voltage settings	[V]	17.7 - 39.2	17.7 - 39.2
Regulation steps	-	10	10
Duty cycle	[A]	250 (30 %)	250 (45 %)
Duty cycle 60 %	[A]	200	210
Duty cycle 100 %	[A]	170	190
Mains current/input 60 %	[A / kVA]	9.5 / 6.6	9.6 / 7
Mains protection-slow, D	[A]	16	16
Winding	-	Cu / Al	Cu / Al
Wire feeder	-	2-roll	4-roll
Digital voltmeter	-	only PROC.	only PROC.
Standardly equipped roll	[mm]	0.8 - 1.0	0.8 - 1.0
Wire feed speed	[m/min]	0.5 - 20	0.5 - 20
Diameter of wire - Fe - Al - Tube wire	[mm]	0.6 - 1.2 0.8 - 1.2 -	0.6 - 1.2 0.8 - 1.2 0.8 - 1.2
Protection degree	-	IP 21S	IP 21S
Insulation class	-	F	F, H
Standards	-	EN 60974-1, EN 60974-5, EN 60974-10	
Dimensions LxWxH	[mm]	782x490x738	902x510x890
Weight	[kg]	68	75

Types of Machines

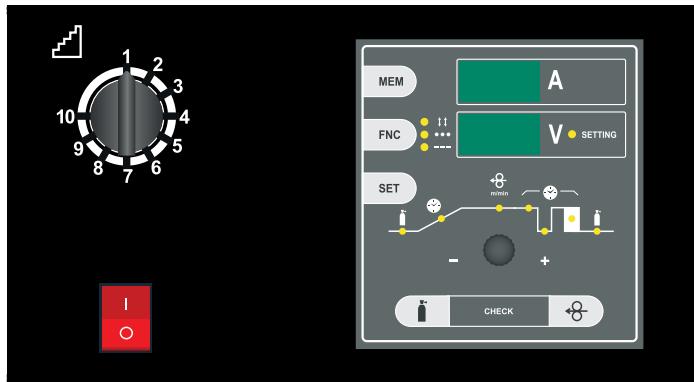
Machines 309, 3000 are delivered in the following designs:

Analogical type STANDARD



Easy and reliable control over machines. Operating is secured by one potentiometer of wire feed and two other potentiometers with a switch which controls switching on and setting spot and pulse functions.

Digital type PROCESSOR



A simple solution of having control over all functions for MIG/MAG welding. Simple control and setting of all functions is secured by one potentiometer and two buttons. Function LOGIC also makes an easy control possible. Machines with this control are supplied with a digital voltmeter in a standard way. A simple solution of having control allows setting values of pre-gas and post-gas, function SOFT START, burning out of wire, spot and pulse welding. Regulation allows setting two-stroke and four-stroke modes. Easy advanced feeding of wire to wire feeder. Electronic regulation of speed of wire feed manages feedback regulation of wire feed which secures constant set speed of wire shifting.

Installation

The installation site for the system must be carefully chosen in order to ensure its satisfactory and safe use. The user is responsible for the installation and use of the system in accordance with the producer's instructions contained in this manual. Before installing the system the user must take into consideration the potential electromagnetic problems in the work area. In particular, we suggest that you should avoid installing the system close to:

- signalling, control and telephone cables
- radio and television transmitters and receivers
- computers and control and measurement instruments
- security and protection instruments

Persons fitted with pacemakers, hearing aids and similar equipment must consult their doctor before going near a machine in operation. The equipment's installation environment must comply to the protection level of the frame i.e. IP 21S. The system is cooled by means of the forced circulation of air, and must therefore be placed in such a way that the air may be easily sucked in and expelled through the apertures made in the frame.

Equipment of machines

Machines are also standardly equipped with:

- Earthing cable 3 m long with a grip.
- Hose for gas connection 1.5 m long.
- Cable for gas heating connection.
- Roller for wire of 0.8 and 1.0 mm in diameter.
- Accompanying documentation.
- Reduction for wire 5 kg and 18 kg.
- Replacement fuse for control Electronics.
- 2-roll (309) / 4-roll (3000) wire feeder.

Special accessories for ordering:

- Welding torch 3, 4 or 5 m long.
- Cylinder pressure regulators for CO₂ or mixed gases of Argon.
- Spare rollers for wires different in diameter.
- 4-roll wire feeder.
- Spare parts of welding torch.
- Earthing cable 4 m or 5 m long.

Connection to the electrical power supply

Before connecting the welder to the electrical supply check, that the machines plate rating corresponds to the supply voltage and frequency and that the line switch of the welder is in the position „0“.

Use original plug for machines to connect to power supply. Machines are designed for TN-C-S grid. It's provided with 5-pin plug. The middle line wire is not used. Eventual changing of plug can be made only by person with electrotechnical qualification. If you need to change the plug, follow this: Connection to the power supply must be carried out using of four polar cable:

- three conducting wires, it does not matter, what is the order of phases
 - the fourth, yellow-green wire is used for making the „EARTH“ connection
- Connect a suitable normalized plug to the power cable. Provide for an electrical socket complete with fuses or an automatic switch.**

TABLE 2: Shows the recommended load values for retardant supply fuses chosen according to the maximum nominal current supplied to the welder and the nominal supply voltage.

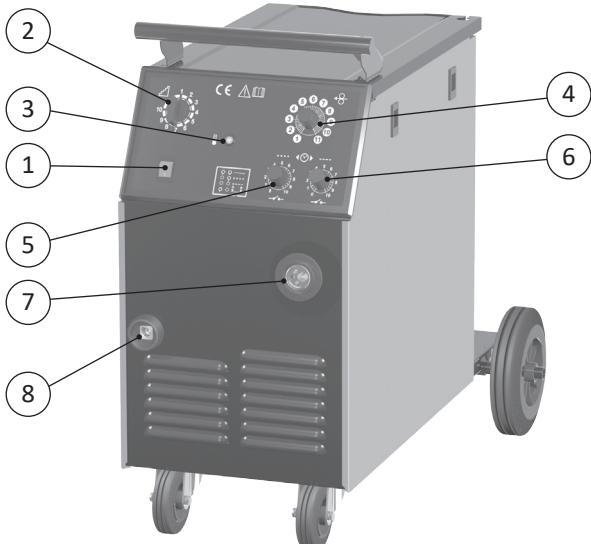
NOTE 1: Any extensions to the power cable must be of a suitable diameter, and absolutely not of a smaller diameter than the special cable supplied with the machine.

NOTE 2: It is not advisable to plug up the welder to motordriven generators, as they are known to supply an unstable voltage.

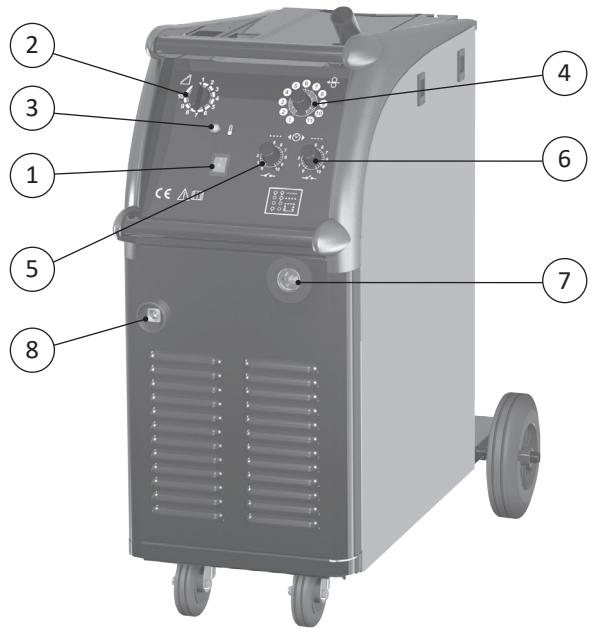
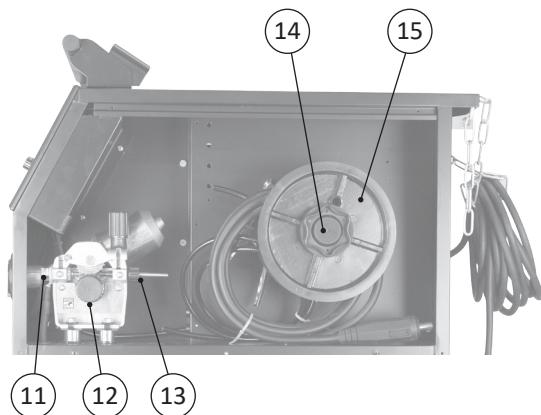
Table 2

		309	3000
I Max	[A]	250 (30 %)	250 (45 %)
Installed power	[kVA]	9,2	6,6
Protection slow, char. D	[A]	16	16
Diameter of input connection	[mm ²]	4 x 2,5	4 x 2,5
Earth cable-cut	[mm ²]	35	35
Welding torch		KTB 25	KTB 25

Control apparatus



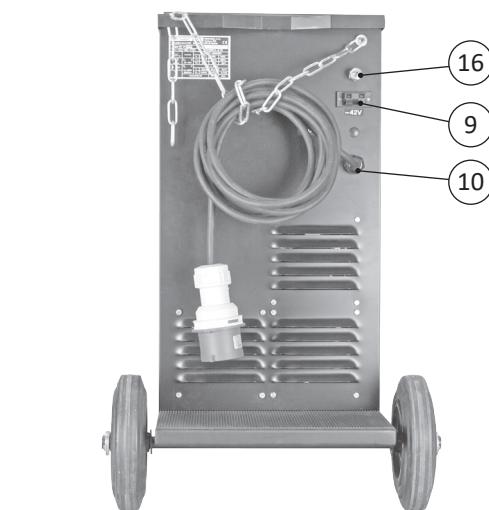
Pic. 1A - TYPE 309



Pic. 1B - TYPE 3000

Only STANDARD

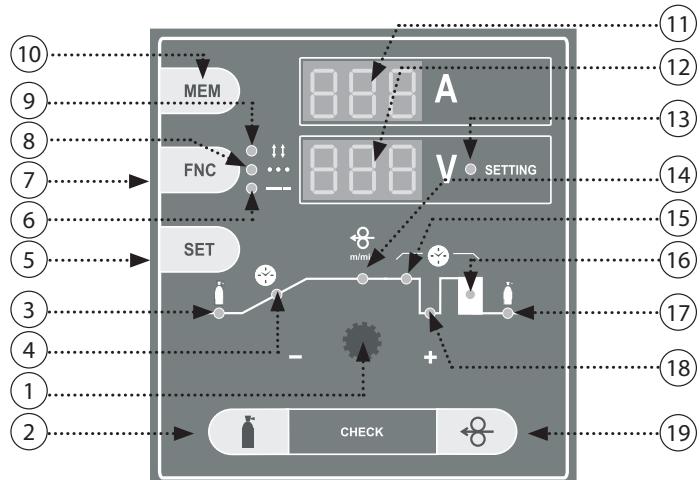
- Position 1 Supply switch. In the „O“ position the welder is off.
- Position 2 10-positional voltage changeover switch.
- Position 3 Thermostat yellow signal light. When this light comes on it means that the overheat cut-off has come on, because the work cycle limit has been exceeded. Wait for a few minutes before starting to weld again.
- Position 4 Potentiometer of speed adjustment of the wire feed.
- Position 5 Switch of spot welding function with potentiometer of adjustment of spot welding length.
- Position 6 Switch of PAUSE function with potentiometer of adjustment of pause length between each spots - slow pulses.
- Position 7 EURO connector of welding burner connection.
- Position 8 Quickcoupling for grounding cable connection.



Pic. 2

- Position 9 Terminal board of voltage supply for gas 24 V AC heating.
- Position 10 Supply cable with connection.
- Position 11 Loading tube of EURO connector.
- Position 12 Wire feeder.
- Position 13 Loading bowden.
- Position 14 Wire spool holder with brake.
- Position 15 Adaptor of wire spool.
- Position 16 Automatic electromagnetic gas valve.

Digital control PROCESSOR



Pic. 3

- Position 1 Potentiometer setting parameters.
- Position 2 Button TEST OF GASES.
- Position 3 LED illustrating pre-gas.
- Position 4 LED illustrating start of speed of welding wire.
- Position 5 Button SET - it allows choosing setting parameters.
- Position 6 LED illustrates switching on of pulse function.
- Position 7 Button welding mode - it allows switching on and off of two-time and four-time modes, spot and pulse welding.
- Position 8 LED illustrating spot welding mode.

- Position 9 LED illustrating four-time welding mode.
- Position 10 Button MEM allows loading of values of voltage and welding current which were measured last time.
- Position 11 Display of welding current.
- Position 12 Display showing welding pressure and values with LED SETTING light up. They are values of speed of wire feeder, pre-gas etc.
- Position 13 LED SETTING which is on only when parameters are shown speed of wire feeder, start of wire, pre-gas and post-gas, spot time and pulse time, burning out of wire.
- Position 14 LED illustrating speed of shifting of welding wire.
- Position 15 LED illustrating spot time.
- Position 16 LED illustrating burnt out time.
- Position 17 LED illustrating post-gas time
- Position 18 LED illustrating pulse time.
- Position 19 Button wire feeder.



Pic. 4

WARNING! During wire threading don't aim the torch against eyes!

Changes when using aluminium wire

For welding with aluminium wire it is necessary to use a special roll with „U“ profile. In order to avoid problems with „ruffle“ of wire, it is necessary to use wire in diameter min. 1.0 mm from alloys AIMg3 or AIMg5. Wires from alloys A199.5 or AISi5 are too soft and can easily cause problems with feed. For welding of aluminium it is necessary to equip the torch with teflone bovdan and special flow drawing tie. As shielding atmosphere it is necessary to use pure Argon.

Adjustment of gas flow

Electric arc and welding pool must be perfectly protected by gas. Too little amount of gas cannot create necessary shielding atmosphere and on the contrary, too big amount of gas entrains air into electric arc, which makes the weld imperfectly protected.

Proceed as follows:

- fix the gas tube with the filter on the inlet of the gas valve on the back side of the machine (pic. 1A pos. 6)
- if you use gas carbon dioxide, it is suitable to plug in gas heating (during the flow less than 6 litres/min the heating is not necessary)
- plug in the cable of heating into the socket (pic. 2 pos. 9) on the machine and into the connector at cylinder pressure regulator, polarity is not important
- press GAS TEST button - for STANDARD on torch, for PROCESSOR on the control panel. Turn adjustment screw on the bottom side of pressure valve until flow indicator shows required flow, then release the button
- if the machine was not used for a longer time, or after entire change of welding torch, it is recommended to blow ways by fresh gas before you start welding

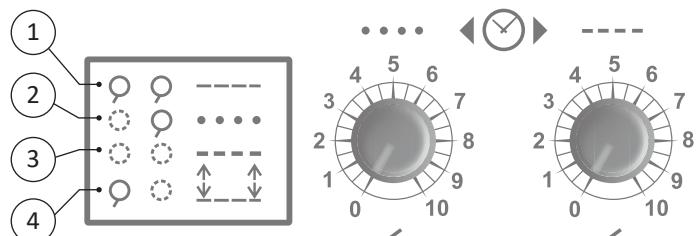
Adjustment of welding parameters

Adjusted parameters depend on used protective gas, wire diameter, applied wire type, size and position of a weld etc.

Reference setting of wire speed and switch positions can be found in pages 43 - 44.

STANDARD

Adjustment of main welding parameters of welding voltage and speed of wire shift is carried out with a potentiometer of wire speed (pic. 1A/B pos. 4) and a voltage switch (pic. 1A/B pos. 2). You shall always allocate speed of wire shift to adjusted voltage (switch position 1-10).



- 1 - Both potentiometers switched off - function switched off, normal welding
- 2 - Left Potentiometer Active / Right Off - Set the spot time
- 3 - Both potentiometers active - set the pulse time
- 4 - Left potentiometer off / right active - 4-cycle function on

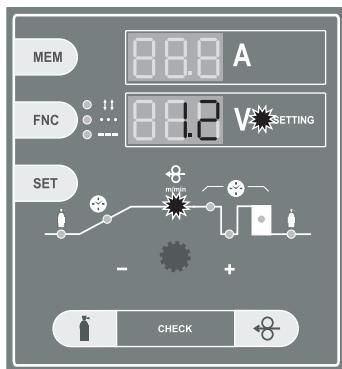
PROCESSOR

Setting of main welding parameters of welding voltage and wire feed speed by a potentiometer (pic. 3, pos. 1) and a voltage switch (pic. 1A/B pos. 2). The wire speed is always assigned to the set voltage (switch position 1-10).

Setting speed of wire shift

Press button SET until you switch on LED marked in the picture.

SET



Use the potentiometer to set up required value of shift speed within range 0,5-20 m/min

NOTE 1: Speed of wire shift can also be adjusted and changed during welding. Either a potentiometer or a remote control UP/DOWN can be used.

NOTE 2: Bottom display shows speed of wire shift only if red LED SETTING and LED "m/min" are on.

Adjustment of other welding parameters

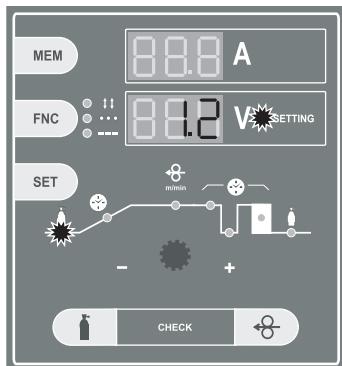
Controlling electronics of machines PROCESSOR enables adjustment of the following welding parameters:

- Time duration of pre-gas (time of protective gas blow before the beginning of welding process).
- Time of start of wire shift speed - function SOFT START (time of start from minimum shift speed up to value of adjusted welding wire speed).
- Speed of wire shift m/min (speed of wire shift during welding).
- Time of switching off interval of welding voltage on arc opposite wire shift: „burning out“ of wire towards the torch top.
- Time of post-gas after finishing welding process.

Setting PRE-GAS

Press button SET until you switch on LED marked in the picture.

SET

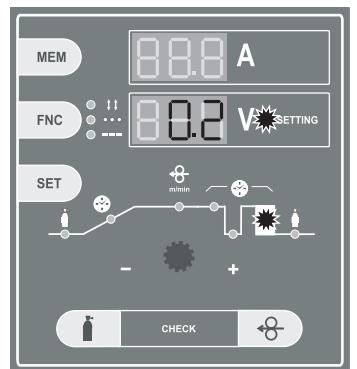


Use the potentiometer to set up required value of pre-gas time within sec.

Adjustment of wire burning out

Press button SET until you switch on LED marked in the picture.

SET

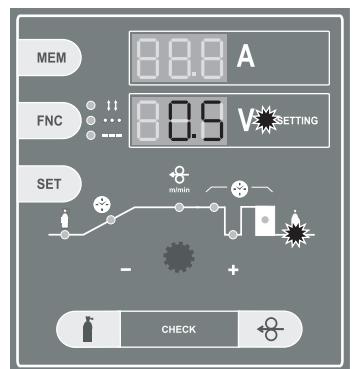


Use the potentiometer to set up required value of wire burning out within sec.

Setting of POST-GAS

Press button SET until you switch on LED marked in the picture.

SET



Use the potentiometer to set up required value of post-gas time 0-5 sec.

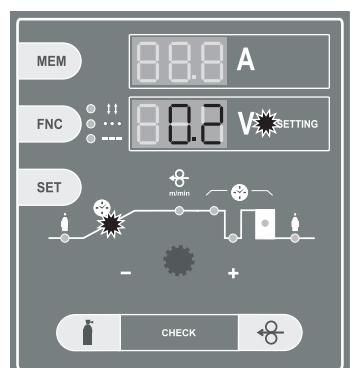
Wire start adjustment - SOFT START function

The SOFT START function ensures faultless start of the welding process. SOFT START allows setting the time / speed of the welding wire.

Setting time of the welding wire rise speed

Press the SET button until the LED shown in the figure lights up.

SET



Set the length of the rise time of the wire to the desired speed by the potentiometer.

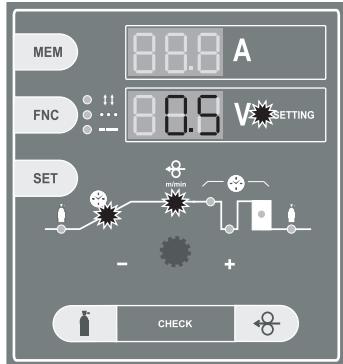
Table 4 - Range of value settings - Machines PROCESSOR

	the duration of the pre-gas	wire feed rate rise time	wire feed speed	point time	lag time	burn out	post-gas time
PROCESSOR 309, 3000	(s) 0 - 3	(s) 0.1 - 5	(m/min) 1 - 20	(s) 0.5 - 5	(s) 0.2 - 2	(s) 0 - 0.99	(s) 0.1 - 10

Setting the rise speed of the welding wire

Press the SET button until the LED shown in the figure lights up.

SET



Set the wire rise speed to the desired feed rate using the potentiometer.

NOTE 1: Adjusted values will be stored automatically in memory after pressing torch button for a period of about 1 sec.

NOTE 2: Set values can't be changed during welding, except speed of wire shift.

Function factory configuration

Function factory configuration is used for initial setting of all parameters for controlling electronics. After you have used this function, all values will be adjusted automatically on values pre-set by producer like with a new machines. In other words, you restart controlling electronics.

Switch the main switch off. Press and hold button SET.

OFF

SET

ON

Switch the main switch on. Release button SET. Display shows values of initial adjustment.

Adjustment of welding mode

Controlling electronics of machines PROCESSOR enables welding in the following modes:

- Smooth two-stroke and four-stroke mode
- Spotting and pulse in two-stroke
- Spotting and pulse in four-stroke

Setting up two-stroke welding mode

Mode two-stroke is set up when the machine is switched off and there is no LED on such.

FNC



Setting two-stroke SPOTTING

Press button until you switch on LED SPOTTING in the picture.

FNC



Mode two-stroke spotting is adjusted.

Setting two-stroke PULSE

Press button until you switch on LED PULSE.

FNC

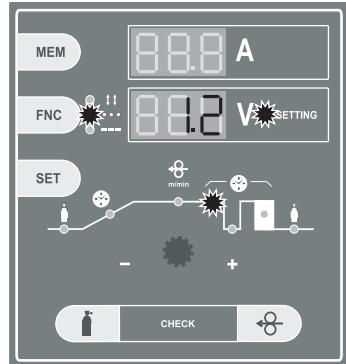


Mode two-stroke pulse is adjusted.

Setting SPOTTING time

Press button SET until you switch on LED marked in the picture.

SET

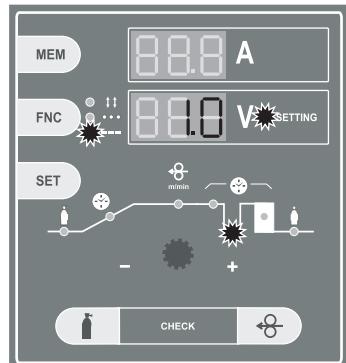


Use the potentiometer to set required value of spot time 0.5-5 sec.

Setting PULSE time

Press button SET until you switch on LED marked in the picture.

SET



Use the potentiometer to set up required value of interval time between particular 0.2-2 sec.

Setting four-stroke welding mode

Press button FNC until you switch on LED.



Mode four-stroke is adjusted.

Setting four-stroke SPOTTING

Press button FNC until you switch on two LED four-stroke and SPOTTING in the picture.



Mode four-stroke spotting is adjusted.

Setting four-time PULSE mode

Press button FNC until you switch on two LED four-stroke and PULSE in the pic.



Mode four-stroke pulse is adjusted.

Function MEM

Function enables back recall and display of last welding parameters for a period of about 7 sec.

Press button MEM

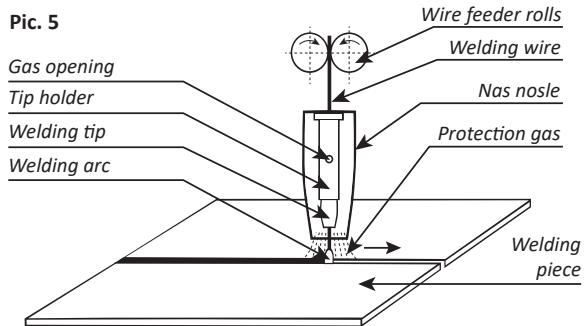
MEM

Display will show last measured values of welding voltage and current for 7 sec. Values can be recalled repeatedly.

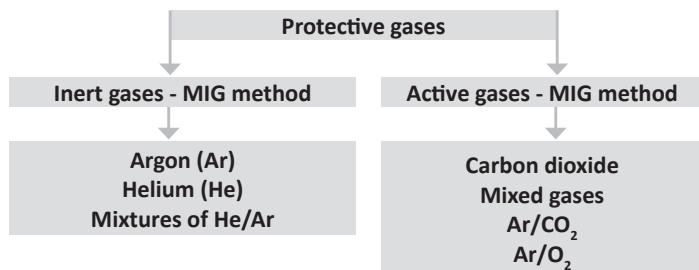
Principle of MIG/MAG welding

Welding wire is lead from the roller into the flow drawing tie with the use of the feed. Arc joins thawing wire electrode with welding material. Welding wire functions as a carrier of the arc and as the source of additional material at the same time. Protective gas flows from the spacer which protects arc and the whole weld against the effects of surrounding atmosphere.

Pic. 5



Protection gas



Principle of setting welding parameters

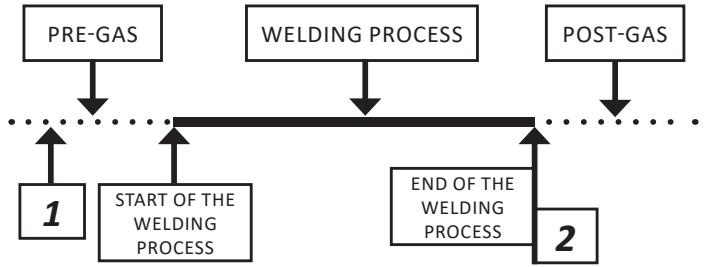
Guidance for setting welding current and voltage MIG / MAG corresponds to the empirical relationship $U_2 = 14 + 0.05 \times I_2$. According to this relationship, we can determine the necessary tension. When setting the voltage, it must be taken into account when it falls under the welding load. The voltage drop is about 4.8 V per 100 A.

The welding current is adjusted by adjusting the required welding current for the selected welding voltage by increasing or decreasing the wire feeding speed, or by fine-tuning the voltage until the welding arc is stable. To achieve a good weld quality and optimum welding current setting, the distance between the feed die and the material must be approximately $10 \times \emptyset$ of the welding wire. Drowning the die in the gas nozzle should not exceed 2 - 3 mm.

Description of welding work cycles

Two-stroke cycle

Welding process is started by only the pressing the switch of the torch. The switch must always be held during the welding process and it can be interrupted releasing the switch of the torch.

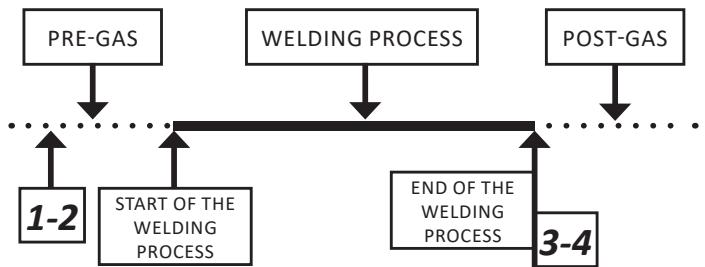


1 Push and hold the switch of torch

2 Release the switch of torch

Four-stroke cycle

It is used to weld long, when the welder does not have to hold the switch of the torch all the time. You will start the welding process in such a way. After releasing of the switch, the welding process still goes on. Only after a further pressing and releasing of the switch of the torch, the welding process is interrupted.

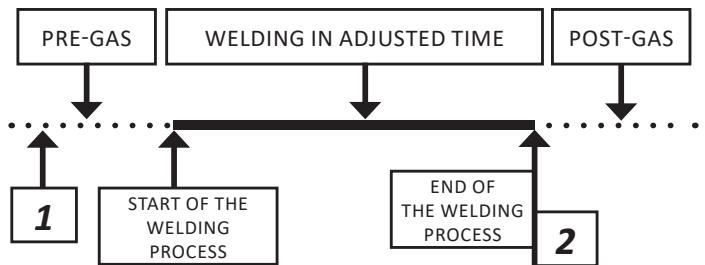


1-2 Push and release the switch of torch

3-4 Push and release the switch again

Spot welding

It is used for welding by individual short spots, whose length can be continuously adjusted for required value. By pressing the switch on the torch, the time circuit is started, which starts the welding process and after the set time it turns off. After further pressing the button, the whole process is repeated.

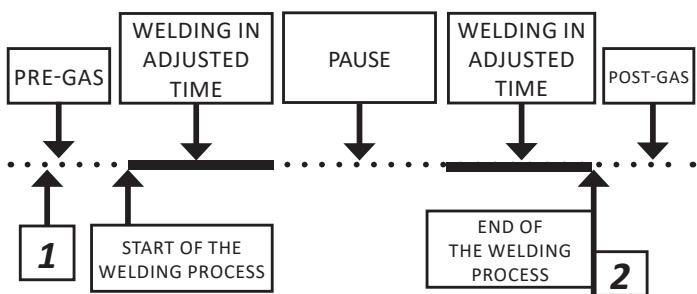


1 Push and hold the switch of torch

2 Release the switch of torch

Pulse welding

It is used for welding by short spots. Length of these spots and pauses can be continuously adjusted. By pressing the switch of the torch, time circuit is started, which starts the welding process and after certain time turns it off. After set pause, the whole activity is repeated. To interrupt the function, it is necessary to release the switch on the welding torch.



1 Push and hold the switch of torch

2 Release the switch of torch

Regular maintenance and inspections

Conduct the inspections according to the relevant Standard EN 60974-4. Before any use of the apparatus, check the conditions of the welding and power supply cables. Do not use damaged cables!

Visual inspections include:

1. Torch, welding current return clamp
2. Power supply network
3. Welding circuit
4. Covers
5. Controlling and indicating elements
6. Apparatus condition in general

The pointing out of any difficulties and their elimination

The supply line is attributed with the cause of the most common difficulties. In the case of breakdown, proceed as follows:

1. Check the value of the supply voltage
2. Check that the power cable is perfectly connected to the plug and the supply switch
3. Check that the power fuses are not burned out or loose
4. Check whether the following are defective:
 - The switch that supplies the machine
 - The plug socket in the wall
 - The generator switch

NOTE: Given the required technical skills necessary for the repair of the generator, in case of breakdown we advise you to contact skilled personnel or our technical service department.

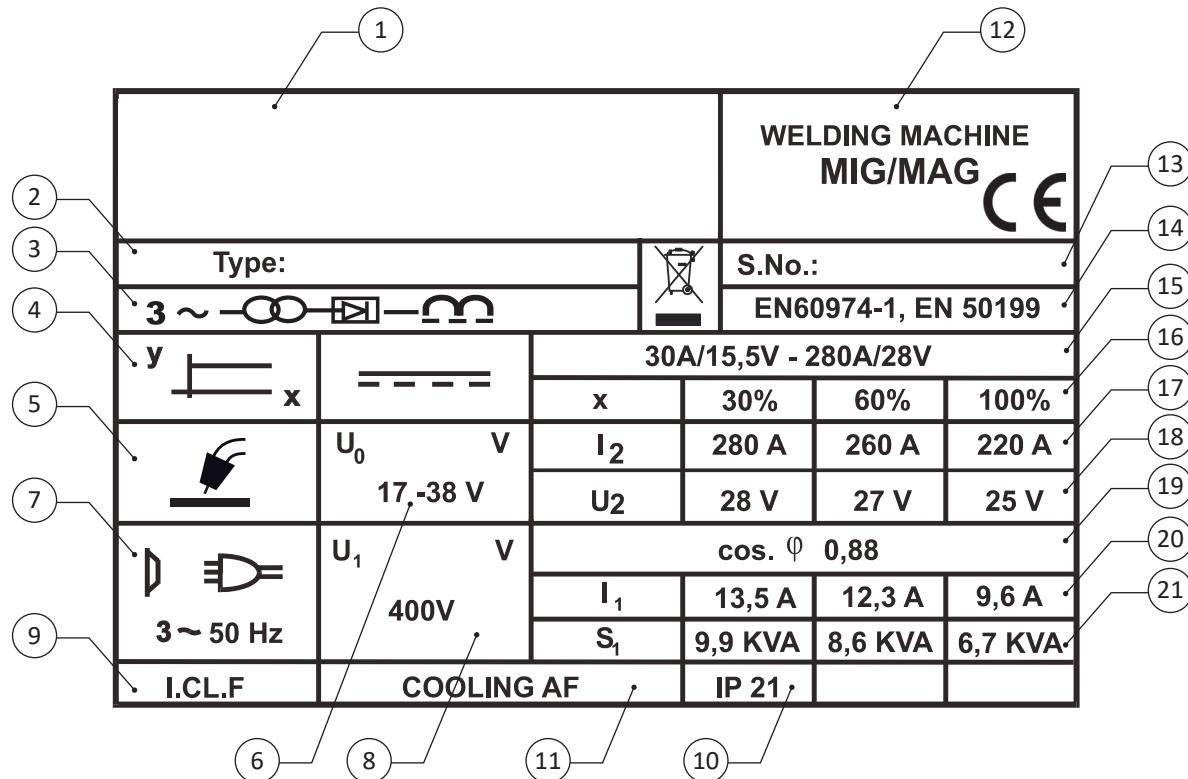
Ordering spare parts

For easy ordering of spare parts mention:

1. The order number and name of the part
2. The type of the machine or welding torch
3. Supply voltage and frequency from rating plate
4. Serial number of the machine

Grafické symboly na výrobním štítku / Grafické symboly na výrobnom štítku / Rating plate symbols

Grafischen Symbole auf dem Datenschild / Symbole graficzne na tabliczce produkcyjnej



CZ - popis	SK - popis	EN - description	DE - Beschreibung	PL - Opis
1 Jméno a adresa výrobce	Meno a adresa výrobcu	Name and address of the manufacturer	Name und Adresse des Herstellers	Nazwa i adres producenta
2 Typ stroje	Typ stroja	Type of machine	Maschinentyp	Rodzaj maszyny
3 Trojfázový usměrněný zdroj	Trojfázový usmernený zdroj	Three phase input	Gerichtete Dreiphasenquelle	Trójfazowe zasilanie z prostownikiem
4 Zdroj s plochou charakteristikou	Zdroj s plochou charakteristikou	MIG/MAG characteristic of welding	Quelle mit flacher Charakteristik	Źródła o charakterystyce płaskiej
5 Stroj pro svařování v ochranné atmosféře MIG/MAG	Stroj pre zváranie v ochranej atmosfére MIG/MAG	MIG/MAG power source	Maschine zum MIG-/MAG-Schweißen in der Schutzgasatmosphäre	Maszyna do spawani w atmosferze ochronnej MIG/MAG
6 Jmenovité napětí na prázdnno	Rozsah zváracieho napäťia	Open circuit voltage	Schweißspannungsbereich	Napięcie nominalne i frekwencja zasilania
7 Napájení	Počet fáz	Power supply	Anzahl Phase	Ilość faz
8 Jmenovité napájecí napětí	Menovité napájacie napätie	Supply voltage	Nennspeisespannung und Frequenz	Napięcie nominalne i frekwencja zasilania
9 Třída izolace	Trieda izolácie	Insulation class	Isolierungsklasse	Klasa izolacji
10 Krytí	Krytie	Protection degree	Schutztart	Stopień ochrony
11 Chlazení ventilátorem	Chladenie ventilátorom	Air-cooled	Ventilatorkühlung	Chłodzenie wentylatorem
12 Svařovací poloautomat MIG/MAG	Zvárací poloautomat MIG/MAG	Welding machine MIG/MAG	Schweißhalbautomat MIG/MAG	Półautomat spawalniczy MIG/MAG
13 Výrobní číslo	Výrobné číslo	Serial number	Produktionsnummer	Numer produkcyjny
14 Normy	Normy	Standards	Norm	Normy
15 Rozsah svařovacího napětí a proudu	Zváracie napätie pri zaťažení vyznačeným prúdom	Welding voltage/current range	Schweißspannung bei der Belastung mit dem gekennzeichneten Strom	Zakres napięcia spawalniczego
16 Zatěžovatel	Doba zaťaženia	Duty cycle	Belastungsdauer	Czas obciążenia
17 Jmenovitý svařovací proud	Menovitý zvárací prud	Welding current	Nennschweißstrom	Nominalny prąd spawalniczy
18 Normalizované jmenovité napětí	Menovité napätie	Nominal voltage	Nennspannung	Nominalne napięcie
19 Účiník	Účiník	Power factor	Leistungsfaktor	Współczynnik mocy
20 Jmenovitý napájecí proud	Vstupný prud	Supply current	Ausgangstrom	Prąd wejściowy
21 Instalovaný výkon	Inštalovaný výkon	Power capacity	Installierte Leistung	Instalowana moc

**Doporučené nastavení svařovacích parametrů / Odporučané nastavenie zváracích parametrov
Recommended adjustment of welding parameters / Orientierungsmäßige Einstellung der Schweißparameter
Zalecane ustawienie parametrów spawalniczych**

PROCESSOR - 309

Program No. 5 309 Cu-Al 1.0-CO2										
	1	2	3	4	5	6	7	8	9	10
	-	-	2,6	3	3,7	4,6	6	8	10,2	14,4
	-	-	1	1,2	1,5	2	4	6	8	10
Orienteční doporučené hodnoty ostatních parametrů / Reference advisory values of other parameters / Orientečné odporúčané hodnoty ostatných parametrov Empfohlene Richtwerte der anderen Parameter / Orientacyjne zalecane wartości pozostałych parametrów										
	-	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	-	-	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
	-	-	0,30	0,30	0,30	0,30	0,30	0,25	0,20	0,20
	-	-	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
Program No. 6 309 Cu-Al 1.0-MIX										
	1	2	3	4	5	6	7	8	9	10
	-	2	2,9	3,1	4,2	5	6,2	7,7	10,6	13
	-	1	1,2	1,5	2	3	4	6	8	10
Orienteční doporučené hodnoty ostatních parametrů / Reference advisory values of other parameters / Orientečné odporúčané hodnoty ostatných parametrov Empfohlene Richtwerte der anderen Parameter / Orientacyjne zalecane wartości pozostałych parametrów										
	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	-	0,3	0,3	0,3	0,5	0,5	0,5	0,5	0,5	0,6
	-	0,25	0,25	0,25	0,25	0,25	0,20	0,20	0,20	0,15
	-	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
Program No. 7 309 Cu-Al 1.2-CO2										
	1	2	3	4	5	6	7	8	9	10
	-	-	-	2,2	2,7	3,5	4,3	5,2	6,3	8,7
	-	-	-	1,5	2	3	4	6	8	10
Orienteční doporučené hodnoty ostatních parametrů / Reference advisory values of other parameters / Orientečné odporúčané hodnoty ostatných parametrov Empfohlene Richtwerte der anderen Parameter / Orientacyjne zalecane wartości pozostałych parametrów										
	-	-	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	-	-	-	0,5	0,5	0,5	0,5	0,5	0,5	0,5
	-	-	-	0,30	0,30	0,30	0,25	0,25	0,20	0,10
	-	-	-	0,3	0,3	0,3	0,3	0,3	0,3	0,3
Program No. 8 309 Cu-Al 1.2-MIX										
	1	2	3	4	5	6	7	8	9	10
	-	-	2,7	3,4	4,2	5,1	6,2	6,5	7,9	9,1
	-	-	1,5	2	3	4	5	6	8	10
Orienteční doporučené hodnoty ostatních parametrů / Reference advisory values of other parameters / Orientečné odporúčané hodnoty ostatných parametrov Empfohlene Richtwerte der anderen Parameter / Orientacyjne zalecane wartości pozostałych parametrów										
	-	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	-	-	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
	-	-	0,30	0,30	0,25	0,25	0,20	0,15	0,15	0,10
	-	-	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
Program No. 1 309 Cu-Al 0.6-CO2										
	1	2	3	4	5	6	7	8	9	10
	3,3	3,5	4,2	5,6	7,8	12,5	15,2	20	-	-
	0,8	1	1,5	2	2,5	3	3,5	4	-	-
Orienteční doporučené hodnoty ostatních parametrů / Reference advisory values of other parameters / Orientečné odporúčané hodnoty ostatných parametrov Empfohlene Richtwerte der anderen Parameter / Orientacyjne zalecane wartości pozostałych parametrów										
	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	-	-
	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6	-	-
	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	-	-
	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	-	-
Program No. 2 309 Cu-Al 0.6-MIX										
	1	2	3	4	5	6	7	8	9	10
	3,7	4,7	6,6	8,1	11	14	17,5	20	-	-
	0,8	1	1,5	2	2,5	3	3,5	4	-	-
Orienteční doporučené hodnoty ostatních parametrů / Reference advisory values of other parameters / Orientečné odporúčané hodnoty ostatných parametrov Empfohlene Richtwerte der anderen Parameter / Orientacyjne zalecane wartości pozostałych parametrów										
	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	-	-
	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	-	-
	0,20	0,20	0,20	0,20	0,20	0,20	0,15	0,15	-	-
	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	-	-
Program No. 3 309 Cu-Al 0.8-CO2										
	1	2	3	4	5	6	7	8	9	10
	-	3,2	3,4	4,5	5,8	6,5	8,5	13	17,9	20
	-	0,8	1	1,5	2	3	4	6	8	10
Orienteční doporučené hodnoty ostatních parametrů / Reference advisory values of other parameters / Orientečné odporúčané hodnoty ostatných parametrov Empfohlene Richtwerte der anderen Parameter / Orientacyjne zalecane wartości pozostałych parametrów										
	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	-	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
	-	0,30	0,30	0,30	0,30	0,30	0,30	0,25	0,20	0,15
	-	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3

Program No. 4 309 Cu-Al 0.8-MIX

	1	2	3	4	5	6	7	8	9	10
	2,8	3,6	4,7	5,8	8	9,5	13,8	14,2	18,6	20
	0,8	1	1,5	2	3	4	5	6	8	10

Orientační doporučené hodnoty ostatních parametrů / Reference advisory values of other parameters / Orientačné odporúčané hodnoty ostatných parametrov

Empfohlene Richtwerte der anderen Parameter / Orientacyjne zalecane wartości pozostałych parametów

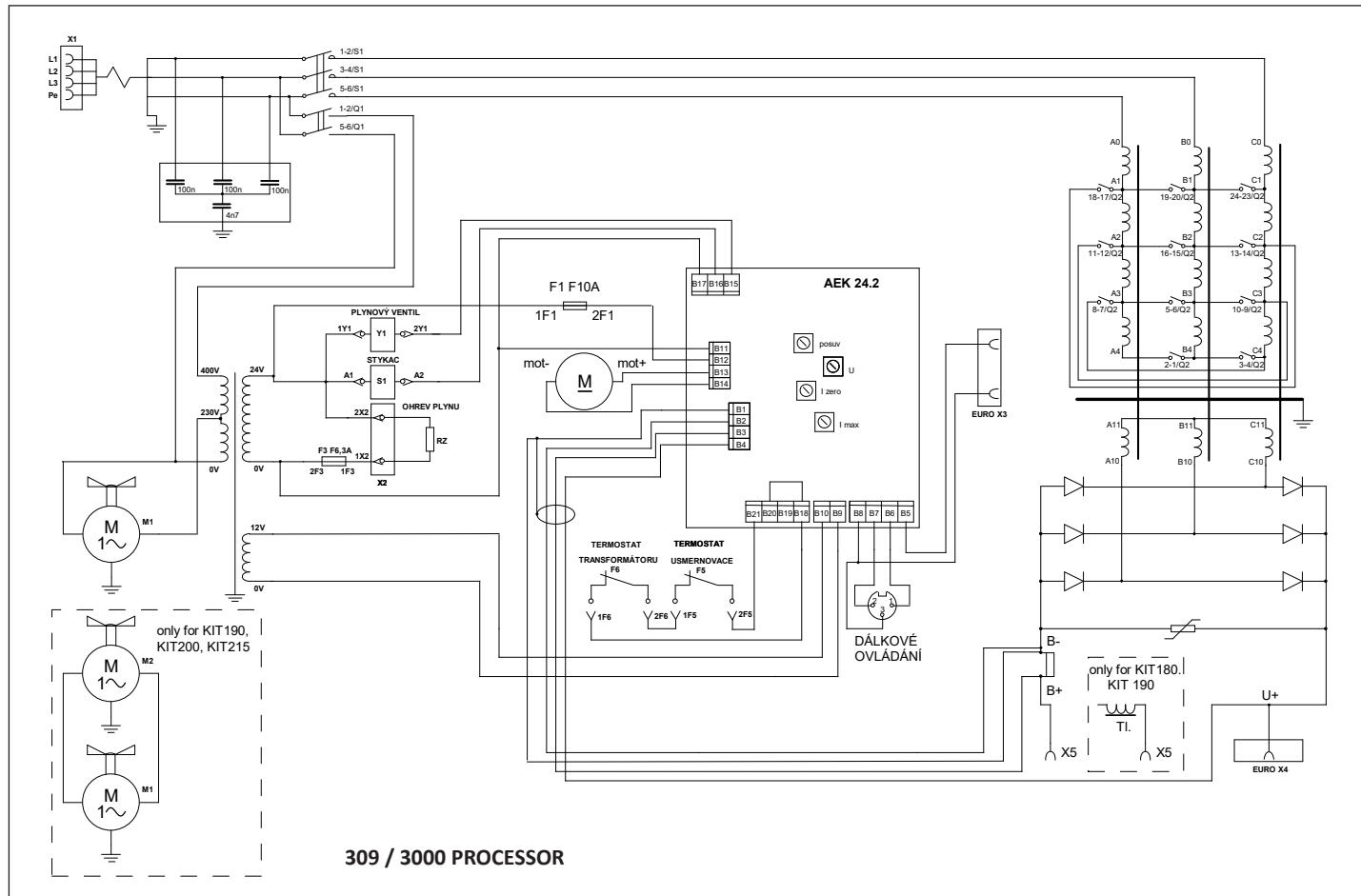
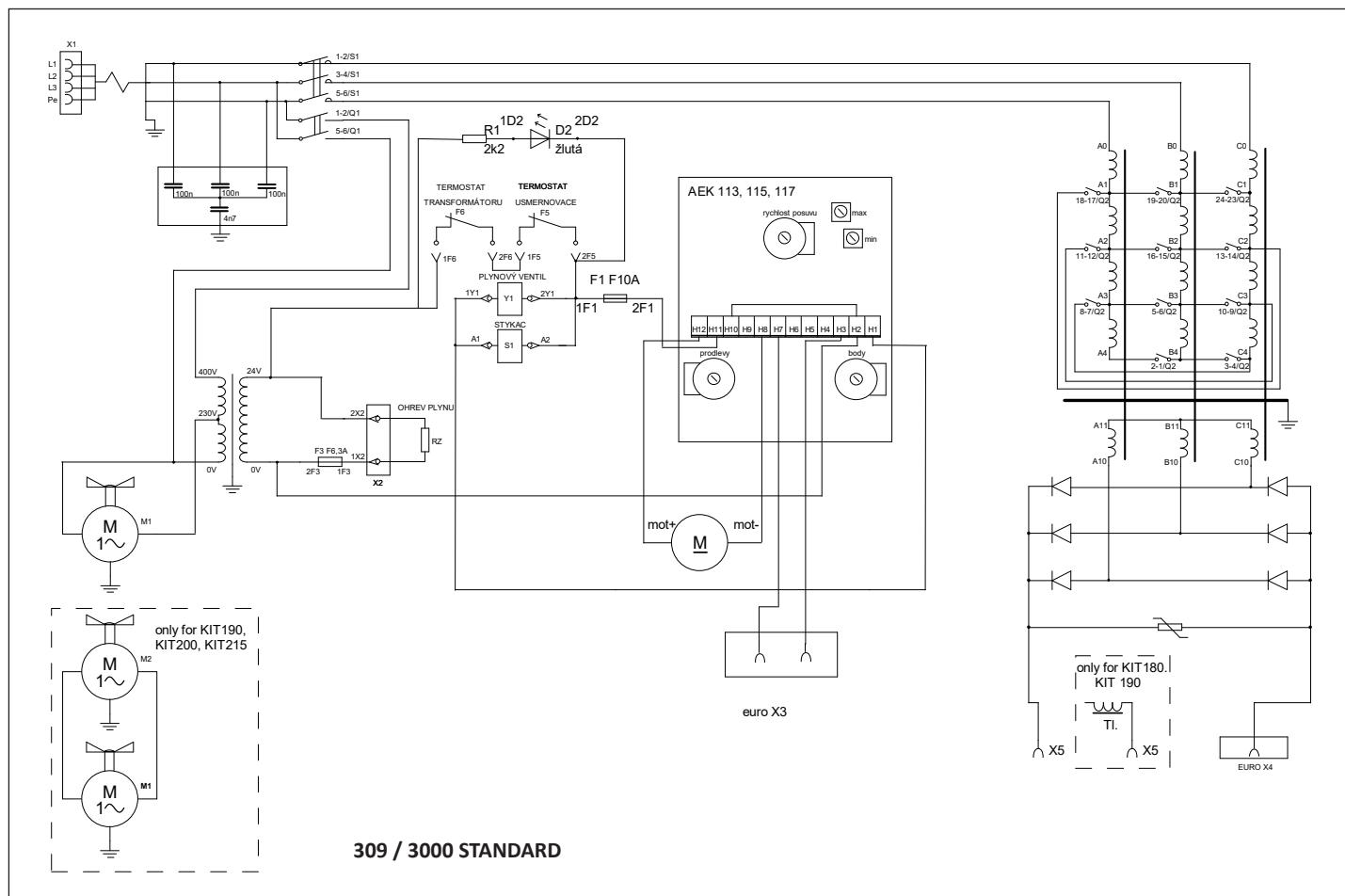
	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	0,5	0,5	0,5	0,5	0,5	0,5	0,3	0,3	0,3	0,3
	0,30	0,30	0,30	0,30	0,25	0,25	0,25	0,20	0,15	0,10
	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3

Porovnávací tabulka stupnice rychlosti posuvu drátů strojů STANDARD (m/min) / Comparing chart with scales of wire shift speed of machines STANDARD (m/min)

Porovnávacia tabuľka stupnice rýchlosťi posuvu drôtov strojov STANDARD (m/min) / Comparing chart with scales of wire shift speed STANDARD (m/min)

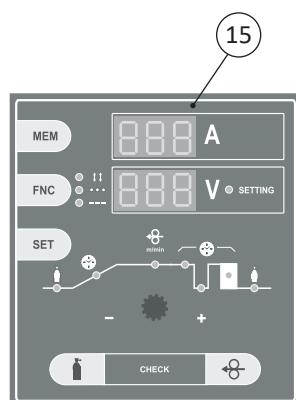
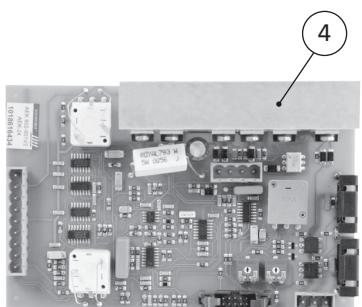
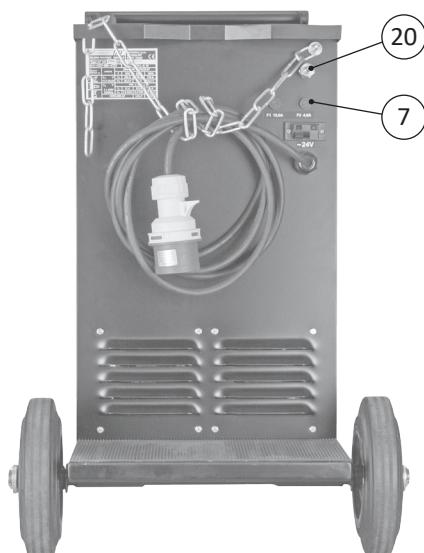
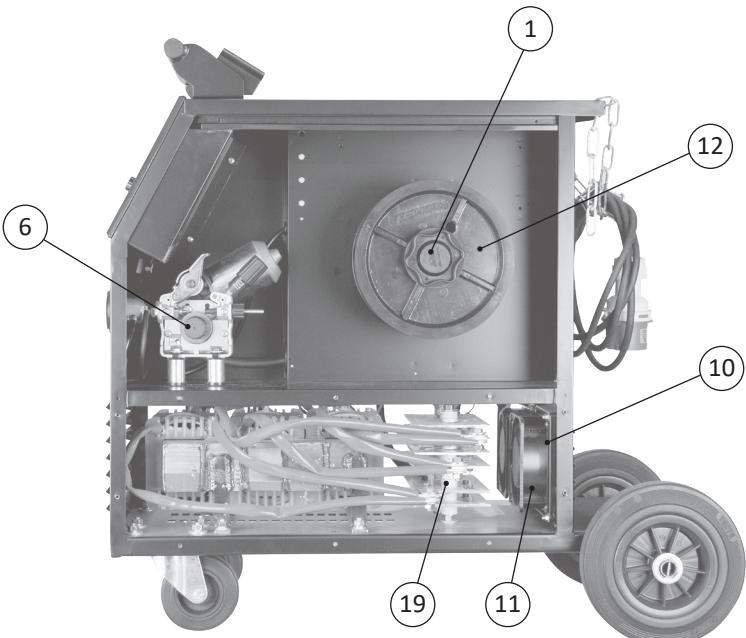
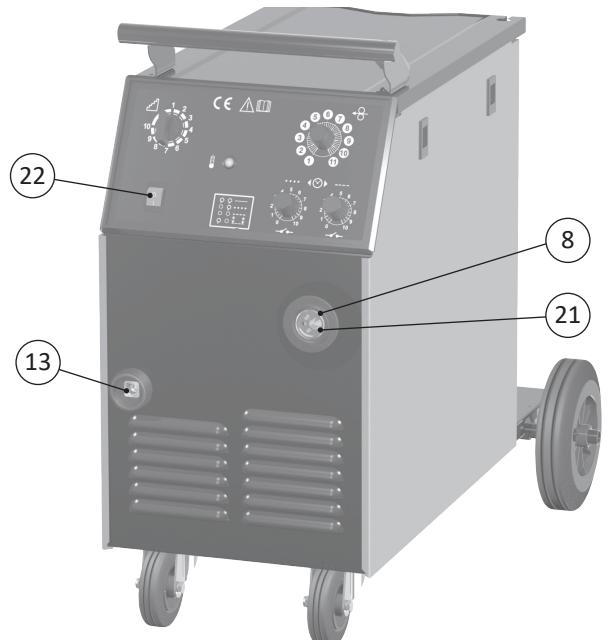
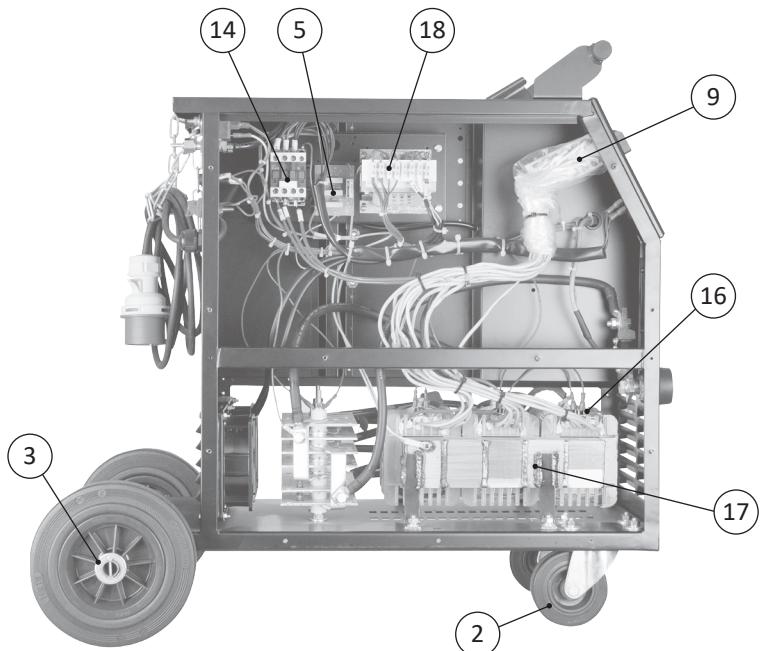
Tabela porównująca skale szybkości podajnika drutów maszyn STANDARD (m/min)

Stupnice potenciometru / Scale of potentiometer Skala potencjometu / Potentiometer – Skala / Skala potencjometu Orientační hodnoty v m/min. / Reference values in m/min. Wartości orientacyjne w m/min. / Richtwerte in m/Min. Wartości orientacyjne w m/min.	1	2	3	4	5	6	7	8	9	10	11
	4	5,8	11,5	15	18	20,5	23	23,5	24	24,5	25



Seznam náhradních dílů / Zoznam náhradných dielov / List of spare parts

Ersatzteilliste / Lista części zamiennych maszyn



CZ - náhradní díly	SK - náhradné diely	EN - spare parts	Varianta / Variant	No.
1 Držák cívky AEK-COOP standart	Držiak cievky AEK-COOP standard	Holder of spool AEK-COOP standard		30009
2 Kolo otočné 180-354	Kolo otočné 180-354	Wheel diameter 180-354		30036
3 Kolo pevné 180-456	Kolo 180-456 pevné	Wheel diameter 180-456		31255
4 Plošný spoj KUH 117-1	PCB KUH 117-1	PCB KUH 117-1	STANDARD	12074
4 Plošný spoj AEK-802-008	PCB AEK-802-008	PCB AEK-802-008	PROCESSOR	10470
5 Plošný spoj AEK-801-003	PCB AEK-801-003	PCB AEK-801-003		10413
6 Posuv 2-kl. malý + malý motor	Posuv 2-kl. malý + malý motor	Feeder 2-roll small + motor small		10701
6 Posuv 4-kl. MINI, kl. Ø 30/22, 0,8-1,0 + motor	Posuv 4-kl. MINI, kl. Ø 30/22, 0,8-1,0 + motor	Feeder 4-roll MINI, roll Ø 30/22 0,8-1,0 + motor		32289
7 Pouzdro pojistkové PTF 70	Puzdro pojistkové PTF 70	Protection case PTF 70		30075
8 Průchodka zásuvky EURO	Priechodka zásuvky EURO	Euro connector grommet		33476
9 Přepínače prim. vod. 309/269	Prepínače prim. vodičov 309/269	Switches of prim. conductors 309/269		10744
10 Rámeček ventilátoru NT Sunon / 30750	Rámček ventilátora NT Sunon / 30750	Fan border NT Sunon / 30750		30512
11 Ventilátor UF20JC23-H	Ventilátor UF20JC23-H	Fan UF20JC23-H	3000 STANDARD/ PROCESSOR	30733
11 Ventilátor Sunon	Ventilátor Sunon	Fan Sunon	309 STANDARD/ PROCESSOR	30451
12 Redukce cívky adaptér AEK	Redukcia cievky adaptér AEK	Adaptor AEK		30096
13 Rychl. zásuvka panel 35-50 šestihran	Rychl. zásuvka panel 35-50 šestihran	Gladhand - socket panel 35-50		30423
14 Stykač 180-215 16A	Stykač 180-215 16A	Contactor 180-215 16A		30999
15 Samolepka čel. panel PROC.	Samolepka čel. panel PROC.	Sticker front panel PROC.	PROCESSOR	31360
16 Termostat 100 °C	Termostat 100 °C	Thermostat 100 °C		30150
17 Trafo hlavní 309	Trafo hlavní 309	Transformer 309		10897
18 Trafo ovládací	Trafo ovládací	Transformer operating		10892
19 Usměrňovač 250-356=PTS 350	Usměrňovač 250-356=PTS 350	Rectifier 250-356=PTS 350		30168
20 Ventil plynový 24V s filtrem ZCQ-20B-8	Ventil plynový 24 V s filtrem ZCQ-20B-8	Gas valve 24 V with filter ZCQ-20B-8		32313
21 Zásuvka EURO komplet	Zásuvka EURO komplet	Euro connector complete		11823
22 Hlavní vypínač IP65 P-C6050	Hlavný vypínač IP65 P-C6050	Main Switch IP65 P-C6050		31105

DE - Ersatzteile	PL - części zamienne	Varianta / Variant	No.
1 Spulenhalter AEK-COOP standard	Uchwyt cewki AEK-COOP standard		30009
2 Drehbares Rad	Koło obrotowe		30036
3 Festes Rad 180-456	Koło 180-456 nieruchome		31255
4 PCB KUH 117-1	Połączenie drukowane KUH 117-1	STANDARD	12074
4 PCB AEK-802-008	Połączenie drukowane AEK-802-008	PROCESSOR	10470
5 PCB AEK-802-003	Połączenie drukowane AEK-802-003		10413
6 Feeder 2-Rollen klein + motor klein	Podajnik 2-rolkowy mały + duży silnik		10701
6 Feeder 4-Rollen MINI, Rollen Ø 30/22, 0,8-1,0 + motor	Feeder 4-rolkowy MINI, rolki Ø 30/22, 0,8-1,0 + motor		32289
7 Sicherungshalter PTF 70	Tuleja bezpiecznikowa PTF 70		30075
8 Kodiereinrichtung EURO	Gniazdo EURO złączki		33476
9 Schalter Primärleiter 309/269	Przelączniki przewodów pierwotnych 309/269		10744
10 Sunon Lüfterrähmchen / 30750	Ramka wentylatora Sunon / 30750		30512
11 Lüfter UF20JC23-H	Wentylator UF20JC23-H	3000 STANDARD/ PROCESSOR	30733
11 Lüfter Sunon	Wentylator Sunon	309 STANDARD/ PROCESSOR	30451
12 Spulenreduktion Adapter AEK	Redukcja cewki zasilacz AEK		30096
13 Schnellkupplung - Steckdosepanel 35-50	Gniazdo - panelowe 35-50 sześciokąt		30423
14 Schütz 180-215 16A	Styczniak 180-215 16A		30999
15 Frontplatte PROC.	Naklejka na panel przedni PROC.	PROCESSOR	31360
16 Thermostat 100 °C	Termostat 100 °C		30150
17 Haupttrafo 309	Transformator główny 309		10897
18 Steuertransformator	Transformator sterujący		10892
19 Gleichrichter 250-356=PTS 350	Prostownik 250-356=PTS 350		30168
20 Gasventil 24V mit filter ZCQ-20B-8	Zawór gazowy 24V filtr ZCQ-20B-8		32313
21 Zentralbuchse komplett	EURO złączka komplet		11823
22 Netzschalter IP65 P-C6050	Przelącznik zasilania IP65 P-C6050		31105

EN - Trouble shooting

Warning: machine can repair only competed and educated personal!

Symptom	Reason	Resolution
	A/ BAD PASSING OF THE WIRE THROUGH THE WELDING TORCH OR DRAWING DIE 1/ Drawing die is too imbedded under the edge of the orifice. 2/ The diameter of the opening of the drawing die does not correspond to the used wire. 3/ Tip is very dirty. 4/ Tip is worn out. 5/ The spring in the welding torch is too short or too long. 6/ The spring of appropriate diameter has not been used. 7/ Dirty spring. 8/ Sheave for different diameter of wire. 9/ Shift sheave is worn out. 10/ Spool of the wire is being too intensely braked. B/ OTHER CAUSES	Drawing die can be imbedded only 1 – 2 mm under the edge of the orifice. Change tip for corresponding one. Clean or change the tip. Change the tip. Change the spring. Change the spring. Clean the spring – it has to be cleaned every week. Release the thrust of the shift sheave. Clap on the sheave which corresponds to the used diameter of the wire. Release the screw of the spool brake.
Badly welds – it's sticking, scorching, shaking, large spatter	1/ Fallen-out phase. 2/ Wrongly adjusted working point. 3/ Wrong grounding. 4/ Wrong rectifier. 5/ Low - quality gas or wire. 6/ Faulty alteration switch of the currency. 7/ Faulty circuits. 8/ Burnt wired between el. transformer and the alteration switch of the currency.	Try to connect the machine to some other circuit breaker. Change the fuse, check the socket, the plug and the flexing cable. Check if thee are on the clamp of el. transformer after switching of welding torch all 3 phases A0 connected B0 400 V, A0 400 V and B0 connected C0 400 V – only three phase machines. While measuring with welding machines with the alternation switch of rough voltage always in A position. ATTENTION!, if 1 phase falls out, only voltage of about 230 V appears, there is voltage on the clamp! Right voltage, however, is 400 V - defect is in the contactor or in the socket or released wire on the clamp. Check the voltage and the speed of wire feed. Check the contact between grounding pliers and the work piece. Change the grounding cable. Change the rectifier. Use different wire or gas. Change the alteration switch. Change the el. transformer. Replace the faulty circuit.
The wire is unregularly fed	1/ Worn out sheave - the wire is slipping. 2/ Appropriate diameter of the sheave has not been used. 3/ Faulty motor - worn-out carbons or faulty retch. 4/ Rubbed-in upper sheave. 5/ The spring of the appropriate diameter has not been used. 6/ Dirty spring. 7/ Thrust on the shift is too tight - the wire is being misshapen. 8/ Sheave for some other diameter of the wire. 9/ Sheave of the feed is worn out. 10 The spool of the wire is being too intensely braked.	Change the sheave. Change the sheave. Change the carbons, the retch or the whole motor. Change the upper pulley. Change the spring. Clean the spring - the spring has to be cleaned every week. Release the thrust of the shift sheave. Clap on the sheave which corresponds to the used diameter of the wire. Replace the sheave with a new one. Release the spool brake.
The el. transformer is making very strong grumbling noise, warming up and scorching	1/ Damaged alteration switch of the currency. 2/ Damaged secondary rolling of the transformer. 3/ Damaged primary rolling of the transformer. 4/ Short circuit on the rectifier or the efferent.	Change the alteration switch. Change the transformer. Change the transformer. Remove the cause of the short circuit.
Welding wire is red-hot in the welding torch, on the sheave of the feed and the power cable is being warmed up	1/ The spool or the wire is touching the machine case. 2/ Metal dirt connect the body of the feed with the case of the welding machine. 3/ The rectifier is touching the case of the machine.	Flatten the misshapen parts of the spool in order that they do not touch the machine case. Clean the space of the feed from all dirt. Avoid the contact of the body of the rectifier and the case of the machine.
Gas does not go through the welding machine	1/ Clogged gas hose in the welding torch. 2/ The valve is without voltage.	Make sure if the right inner diameter of the spring has been used, try to clap on a different welding torch or change coaxial cable or the whole welding torch. Change the panel of controlling electronics.
Porous welding point	1/ Gas is not on or the compressed gas cylinder is empty. 2/ Too strong draught in the working place. 3/ Material is destroyed by rust, paint or oil. 4/ The orifice of the drawing die is dirty from the spatter. 5/ The welding torch is too far from the material. 6/ Too small or too big flow of the gas. 7/ Hose connections do not seal.	Turn gas on or connect a new full compressed gas cylinder. Increase the flow of the shielding/protective gas or avoid draught. Purify the material well. Remove the spatter and spray the orifice with separating spray. Hold the welding torch from the material in such a distance which equals 10 times bigger than the diameter of used welding wire. Adjust the flow of the gas on the appropriate values. Check if all hose connections seal.
Welding wire forms a loop between the sheaves and the opening of the capillary of the welding torch	1/ The opening of drawing die (point of the welding torch) is too narrow, does not correspond to the diameter of the used welding wire. 2/ Pressure on the flattening sheave is too big. 3/ Dirty or damaged spring in the welding torch. 4/ The spring in the welding torch is suitable for some other diameter of the welding wire.	Change the drawing die and use the right one. Release the flattening sheave of the feed. Clean the spring - the spring has to be cleaned every week or change it. Change the drawing die for a suitable one.

**Osvědčení o jakosti a kompletnosti výrobku / Osvedčenie o akosti a kompletnosti výrobku
Testing certificate / Qualitätszertifikat des Produktes / Deklaracja Jakości i Kompletności**

Název a typ výrobku Názov a typ výrobku Type Bennennung und Typ Nazwa i rodzaj produktu	<input type="radio"/> 309 <input type="radio"/> STANDARD <input type="radio"/> KIT	<input type="radio"/> 3000 <input type="radio"/> PROCESSOR <input type="radio"/> TIGER
Výrobní číslo stroje: Výrobné číslo stroja: Serial number of machine: Herstellungsnummer der Maschine: Numer produkcyjny maszyny:		Výrobní číslo PCB: Výrobné číslo PCB: Serial number PCB: Herstellungsnummer PCB: Numer produkcyjny PCB:
Výrobce / Výrobca Producer / Produzent / Producent		
Razítko OTK Pečiatka OTK Stamp of Technical Control Department Stempel der technische Kontrollabteilung Pieczętka Kontroli Jakości		
Datum výroby / Dátum výroby Date of production / Datum der Produktion Data produkcji		
Kontroloval / Kontroloval Inspected by / Geprüft von Sprawdził		

**Záruční list / Záručný list / Warranty certificate
Garantieschein / Karta Gwarancyjna**

Datum prodeje / Dátum predaja Date of sale / Verkaufsdatum Data sprzedaży	
Razítko a podpis prodejce / Pečiatka a podpis predajca Stamp and signature of seller Stempel und Unterschrift des Verkäufers Pieczętka i podpis sprzedawcy	

**Záznam o provedeném servisním zátkoku / Záznam o prevedenom servisnom zátkoku / Repair note
Eintrag über durchgeföhrten Serviceeingriff / Zapis o wykonaniu interwencji serwisowej**

Datum převzetí servisem Dátum prevzatia servisom Date of take-over Datum Übernahme durch Servisabteilung Data odbioru przez serwis	Datum provedení opravy Dátum prevedenia opravy Date of repair Datum Durchführung der Reparatur Data wykonania naprawy	Číslo reklamač. protokolu Číslo reklamač. protokolu Number of repair form Nummer des Reklamationsprotokoll Numer protokołu reklamacyj	Podpis pracovníka Podpis pracovníka Signature of serviceman Unterschrift von Mitarbeiter Podpis pracownika

Výrobce si vyhrazuje právo na změnu.
Výrobca si vyhradzuje právo na zmenu.
The producer reserves the right to modification.
Hersteller behaltet uns vor Recht für Änderung.
Producent zastrzega sobie prawo do zmian.