NÁVOD K OBSLUZE / SVAŘOVACÍ STROJ CZ

NÁVOD NA OBSLUHU / ZVÁRACÍ STROJ SK

USER MANUAL / WELDING MACHINE EN

BEDIENUNGSANLEITUNG / SCHWEIßGERÄTE DE

INSTRUKCJA OBSŁUGI / URZĄDZENIE SPAWALNICZE PL


# FĒNIX 160/200

MADE IN EU CE

# ENGLISH

## CONTENT



## Introduction

Dear Customer, Thank you for your trust and the purchase of our product.

**Before starting up, please read all the instructions in this manual carefully to let you know about this device.**

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

For the most optimal and long lasting usage you have to strictly follow instruction for operation and servicing which are mentioned here. In your interest we recomend you to keep the servicing and possible reparation to put into our service organization because has available equipment and specially trained staff. All our machines and equipment are subject of long lasting development. That is why we reserve the right adjust their production and equipment.

## Description

FĒNIX 160 – 200 machines are welding inverters for industrial and profesional usage made for welding by MMA (coated electrode) and TIG (welding in protective atmosphere of non-consumable electrode) method with touch start. They are source of welding current with steep characteristic. The machines are equipped with strap for easy handling and easy wearing. Welding inverters are constructed with using high-frequency planar transformatter with a ferrite core and the latest MOSFET generation of transistors, used in advanced

Table 1

| Technical data | | FĒNIX 160 | FĒNIX 200 |
|---|---|---|---|
| Input voltage 50 Hz | [ V ] | 1x230 (-40 %; +15 %) | 1x230 (-40 %; +15 %) |
| Welding current range | [ A ] | 10-150 | 10-190 |
| Output voltage | [ V ] | 88 | 88 |
| Duty cycle | [ A ] | 150 (25 %) | 190 (15 %) |
| Duty cycle 60 % | [ A ] | 125 | 155 |
| Duty cycle 100 % | [ A ] | 110 | 140 |
| Protection char. D | [ A ] | 16 | 20 |
| Network current 60 % | [ A/kVA ] | 16 / 3.6 | 19.5 / 4.5 |
| Protection class | | IP 23 S | IP 23 S |
| Coupler | | 10 - 25 | 35 - 50 |
| Recommended type of torch | | KTB 17V | KTB 17V |
| Dimensions LxWxH | [ mm ] | 315 x 112 x 225 | 380 x 112 x 225 |
| Weight | [ kg ] | 4.1 | 4.7 |

pseudo-resonant topology. They are equipped with a number of modern electronic functions such as HOT START for easy arc ignition, SOFT START for slow increase in current when used on genetator or undersized protection, ANTI STICK - limiting the possibility of sticking electrodes or ARC FORCE - additional energy for shortening the arc. The available functions are TIG PULSE, TIG DOWN SLOPE and TIG END CURRENT. Last but not least the machines are equipped with a safety system V.R.D. and turning off while the overvoltage in network. With the exception which were mentioned, all functions are adjustable for a perfect fit to a particular mode of welding conditions and preferences welder. Machines are specially made for production, maintenance, on assembly or workshops. Welding machines are in compliance with relevant standards and regulations of European Union and the Czech Republic.

## 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. The manufacturer is not responsible for damages caused by improper use and handling. Machines must be protected from moisture and rain, mechanical demage, drafts and any possible ventilation of neighbor machines, excessive overloading and by rough handling.
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 protecttion level of the frame i.e. IP 23 S. 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.

## Connection to the electrical supply

Before connecting the welder to the electrical supply, check that the machines plate rating correspondds to the supply voltage and frequency and that the line switch of the welder is in the „0“ position.
Connection to the power supply must be carried out using the four polar cable supplied with the system, of which:

- 2 conducting wires are needed for connecting the machine to the supply
- the fourth, which is YELLOW GREEN in colour is used for making the „EARTH“ connection

Connect a suitable load of normalised plug (2p+e) to the power cable and provide for an electrical socket complete with fuses or an automatic switch. The earth terminal must be connected to the earth conducting wire (YELLOW-GREEN) of the supply.

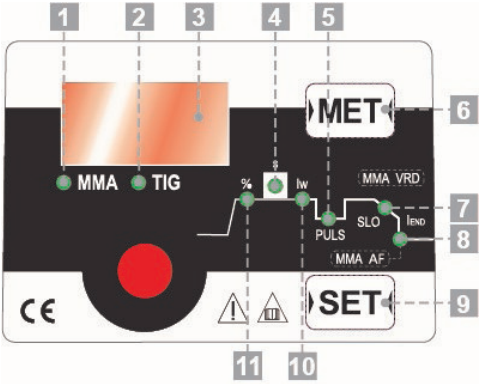
**NOTE:** Any extensions to the power cable must be of a suitable diameter, and absolutely not of a smaller diameter than the special cable supplied with the machine.

**WARNING:** While using the machine on higher welding current, the power take off may exceeds 16 A. In this case it is necessary to change the default supply plug for industrial plug with 20 A protection. At the same time this protection must be in accordance with implementation and protection in the distribution of electricity.
Other methods of connection are fixed connection to separate circuit (such circuit must be protected by circuit-breaker or fuse max. 25 A), or connection to three-phase network 3x400/230 V TN-C-S (TN-S).
In case of connection to three-phase network, the 5-pin plug 32 A must be used. Phase conductor - black (brown) connect in the plug to one of clamp marked L1, L2 or L3. Null conductor - blue - connect to clamp marked (N), white/green conductor connect to clamp marked (Pe). This way modified supply cable of the machine can be pluged to the three-phase socket outlet, which must be protected by circuit-breaker or fuse max. 25 A.

**WARNING:** Machine may not be connected to interlinked voltage (i.e. voltage between two phases). In this case the machine may be demaged. Such modifications could be made only by competent person with electrotechnical qualification.

## Control apparatus

Picture 1



Position 1 LED diode signal a chosen welding methode - MMA.
Position 2 LED signal a chosen welding methode - TIG.
Position 3 Display shows the set value.
Position 4 LED signalize a set value for keeping function of HOT START (only for MMA methode) – the duration of function HOT START is possible to set in range of 0-2 s.
Position 5 LED signalised setting values welding current pulse frequency (for TIG method) can be set from 0 to 500 Hz.
Position 6 MET button to select the method of MMA (stick electrode) or TIG.
Position 7 LED signalised setting values welding current run - for TIG, in MMA method this diode signalizing the security features VRD.
Position 8 LED signalised of activation ARC FORCE (only for MMA method) or setting the value ending welding current (for TIG).
Position 9 SET button for selecting of each function (check of the set value or its change)
Position 10 LED indicating the setting values of welding current (common for MMA and TIG).
Position 11 LED indicating the setting values of welding current (common for MMA and TIG). LED signalising setting values for HOT START (only for MMA method) - the percentage increasing in the welding current at the beginning of the welding process. Function % HOT START can be adjusted between 0 (function disabled) to increase the maximum starting current of 100 % (maximum of 150 A or 190 A depending on the type of machine).

Picture 2


Position 1 Main switch. In position „0“ the welding machine is OFF.
Position 2 Power cord.
Position 3 Quick minus pole.
Position 4 Quick plus pole.
Position 5 Remote connector.
Position 6 Encoder control.
Position 7 Digital panel.

## Connection of the welding cables

With the machine disconnected from the supply, connect the welding cables, welding torch and earth-cable. The polarity must be choosen according to welding method. For MMA method the polarity determines the producer of electrodes according to their type. The welding cables should be as short as possible, close to each other, and positioned at floor or close to it.

**Welding part**

The material which should be welded, must always be connected to the ground for reducing of electromagnetic radiation. Special attention must also be given to grounding of the welding material to not increase the risk of injury or damage to other electrical equipment.

## Setting of the welding parameters

**Start the machine (restart from the MMA method)**

After turning the machine is first shown on the display for about 2 seconds statues of security functions V.R.D. (On/OFF). After that is displayed for another 2 seconds setting of the function ARC FORCE: AF0 - function is off, AF1 - additional energy for shortening the arc 50 %, AF2 - additional energy for shortening the arc 100 %. During this condition is possible between different settings to choose ARC FORCE rotary encoder. Then is shown the set current welding size and signaling method MMA.

**Starting the machine (restart from the TIG method)**

After the switching the machine on it is shown the set size of welding current and signaling the TIG method.

**Setting of the welding method**

After turning the machine back to the last selected welding method before shutting down. Press the button MET (pos. 6, pic. 1), you can choose the second method of welding.

## Setting of welding parameters for individual methods

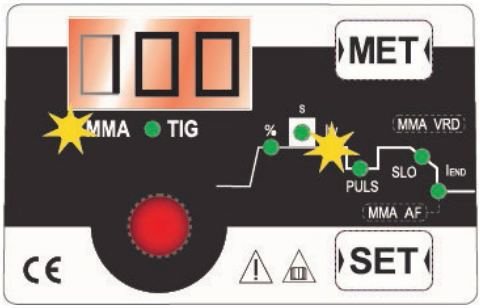
**Possibility of adjustment parameters for MMA method:**

- Welding current 10 - 150 A (series 160), 10 - 190 A (series 200)
- Increase the value of starting current HOT START 0 - 100 % welding current, max. 150 A (series 160), 190 A (series 200).
- Reduction the value of starting current SOFT START 0 to -90 % welding current with continuous increase.
- Starting time of the activity current 0 to 2.0 s.

## MMA method - setting of the welding current

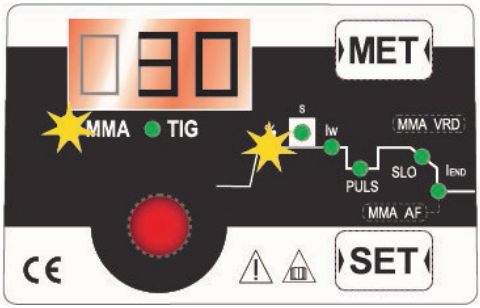
After the setting any parameter after a period of inactivity machine always returns to the default state when „$I_w$“ LED lights up and the display shows the size of the

welding current. Rotary encoder (pos. 6, pic. 2) can directly set required value of welding current.



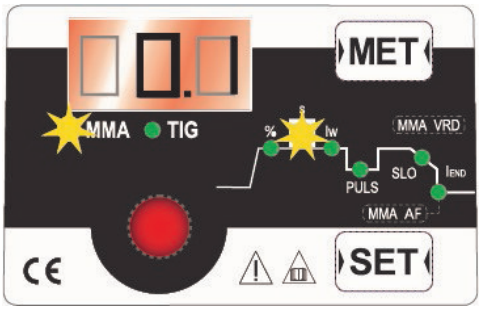

## Method MMA - setting of value HOT START

Press button SET (pos. 9, pic. 1) until LED „%“ (pos. 11, pic. 1) is on as in the picture. Set up required value of current increase in % with a potentiometer (pos. 6, pic. 2). If there is value 30 on the display it means increase of start current by 30 %.




## MMA method
## - setting of the time value of HOT START

Press the SET button (pos. 9, pic. 1), to light up with (pos. 4, pic. 1) as shown on the picture. Rotary encoder (pos. 6, pic. 2) set the required value duration HOT START.




EXAMPLE:

1. When the set welding 100 A (lights LED „$I_w$“ pos. 10 pic. 1 and LED „MMA“ pos. 1, pic. 1), display shows 100 (100 A).
2. By pressing the SET button LED „%“ light up (pos. 11, pic. 1). It is possible to set the value of the starting current - HOT START for example abou 50 % higher (set on the display by potenciometer 50). Final „starting current“ is 150 A. Function HOT START is possible to turn of by setting on 0 %.
3. Again by pressing the SET button with LED (pos. 4, pic. 1). It is possible to set the value of an encoder activation period starting current - eg 0.2 s.
4. When starting the arc welding ignition by current 150 A for 0,2 s then the current drops to the set value $I_w$ 100 A.

## MMA method
## - setting value of SOFT START

Setting is the same as for HOT START, but turning the encoder to the left (pos. 6, pic. 2) sets the negative value. In this way we set the percentage decrease of starting current compared to the set. If there is on the display value -30 it means that the starting current will be about 30 % lower than the set value. The reduction current can be adjusted by up to 90 %. After touching the electrode current unlike the HOT START current continously increase the set value $I_w$ for a set time.

## MMA method
## - setting of the time value for SOFT START

Time setting for this function is the same as for the HOT START.

EXAMPLE:

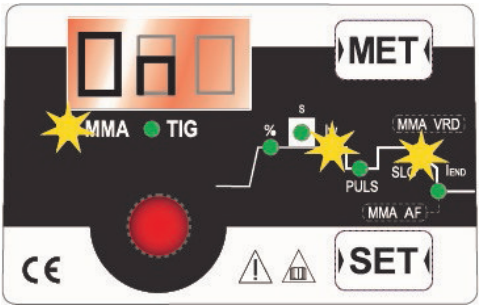
1. When the set welding current 100 A (LED „$I_w$“ pos. 10 in pic. 1 and the LED „MMA“ pos. 1, pic. 1) the display shows 100 (100 A).
2. Pressing the SET button the LED „%“ will light up (pos. 11, pic. 1). It is possible to set the value of starting current - SOFT START for example 50 % lower (we set potenciometer on the display - 50). The result „starting current“ will be 50 A. SOFT START function can be disabled by setting to 0 %.
3. Again by pressing the SET button with LED (pos. 4, pic. 1). It is possible to set the value of an encoder activation period starting current - eg 1.0 s.
4. When you start welding the arc is ignited by 50 A current for 1.0 s will steadily increased to the set value $I_w$ 100 A.

## Method MMA - security function V.R.D.

The security system V.R.D. provides a low voltage at the output of the machine - 15 V. This safe value changes immediately after contacting the electrode with the welded material. When the welding process is finished the output voltage will automatically change to 15 V again. When the V.R.D. function is turned off the open circuit voltage is 88 V.

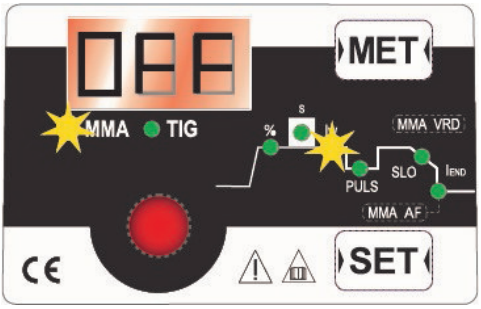
### Method MMA - switching ON function V.R.D.

Switch off the machine with the main switch. Press and hold button MET (pos. 6, pic. 1) on the front panel and switch on the machine with the main switch. Release button MET just after switching on. LED „MMA V.R.D. (pos. 7, pic. 1) is lit up on the panel and sign ON is displayed for about 1-2 s. Function V.R.D. is on (signalised by luminous LED - pos. 7, pic. 1).




### Method MMA - switching OFF function V.R.D.

Switch off the machine with the main switch. Press and hold button MET (pos. 6, pic. 1) on the front panel and switch on the machine with the main switch. Release button MET just after switching on. Indicator light LED „V.R.D.“ is switched off on the front panel and sign OFF is displayed for about 1-2 s. Function V.R.D. is switched off.

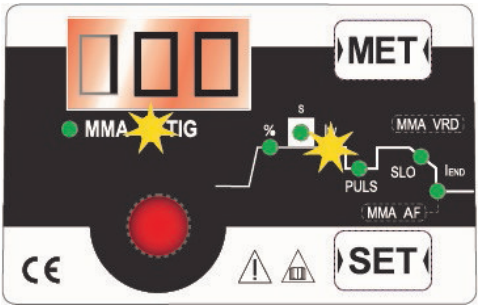



## Options for parameters setting for TIG method:

- Welding current 10-150 A (serie 160), 10-190 A (serie 200).
- The frequency of pulsation welding current 0-500 Hz. Undercurrent value (basic current) is about 50 % upper welding current. The proportion of upper and lower flow (BALANCE) vin the pulsation period is 50 % on 50 %.
- Declaration time of welding current 0-5 s.
- End current 10-150 A (190 A).

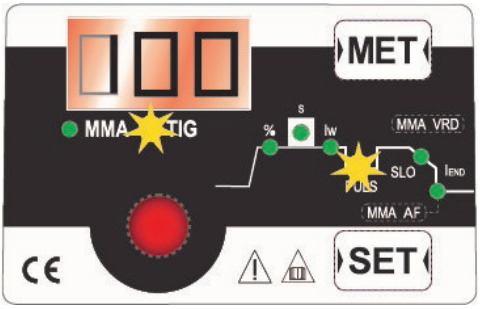
## TIG method - setting of the welding current

By rotary encoder (pos. 6, pic. 2) set the desired welding current.



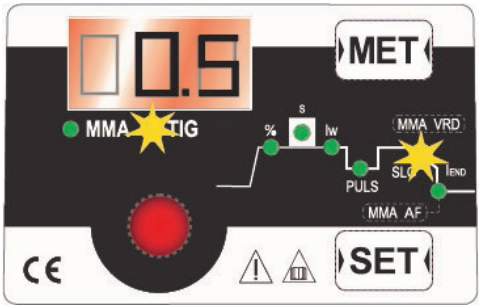

## Method TIG - setting of pulse frequency of welding current

Press button SET (pos. 9, pic. 1) until LED „PULSE“ (pos. 5, pic. 1) is on as in the picture. Set up required value of pulse frequency of welding current with a potentiometer. Pulse is switched off with setting-up „0“.



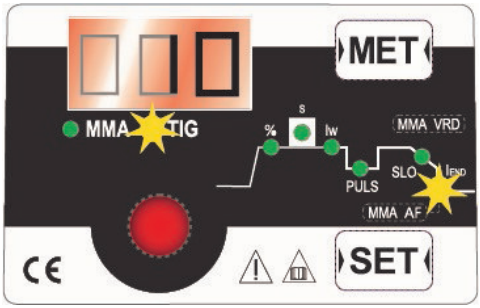

## Method TIG - setting of time of welding current run-out

Press button SET (pos. 9, pict. 1) until LED „SLOPE“ (pos. 7, pict. 1) is on as in the picture. Set up required value of time duration of welding current run-out with a potentiometer.




## Method TIG - setting of end current value

Press button SET (pos. 9, pict. 1) until $I_{END}$ is on as in the picture. Set up required value of end welding current with a potentiometer.




EXAMPLE:

1. When you set welding current on 100 A (LED „$I_w$“ is on, pos. 10, pic. 1) and LED „TIG“ (pos. 2, pict. 1), display shows 100 (100 A).
2. When you press button SET, LED „PULSE“ is lit up (pos. 5, pic. 1). It is possible to set the value of pulse frequency of welding currant within range 0 (pulse is switched off) up to value 500 Hz. Function PULSE can be switched off, if you set frequency on „0”. If you press button SET again, LED „DOWN SLOPE“ is lit up (pos. 7, pic. 1). It is possible to set value of run-out time of welding current - for example 1 s (you can set it with a potentiometer on display 1). Time of run--out of starting current is 1 s.
3. If you press button SET again, LED „$I_{END}$“ is lit up (pos. 8, pic. 1). It is possible to set value of end welding current - for example 10 A (it can be set with a potentiometer on display 10). Time of end welding current is 10 A.

**Overheating of the machine**

°C signs on the display signalize overheating of the machine. Signalization is two stage signalization. In the first phaze the title is, the machine is working properly, but if the working process will not be interupt, the machine will be blocked (°C lights for all the time) until the inside part will cool down.

## ARC FORCE

This feature increases the energy supplied to the shortening of the arc in MMA method which accelerates melting electrodes and thus prevents its sticking. The function is activated when the arc voltage drops below approximately 15 V.

The function can be changed by rotating the encoder in three steps when starting the machine is in MMA mode (AF0, AF1 and AF2). When setting AF0 the function is off and there is no increase in current. When AF1 the additional energy is 50 % and at setting AF2 is 100 %. To change the settings for this function can be performed even when the machine is running, in a way that for more than 2 s. hold the SET button (pos. 9, pic. 1). Switching function is signaled by LED „MMA AF“.

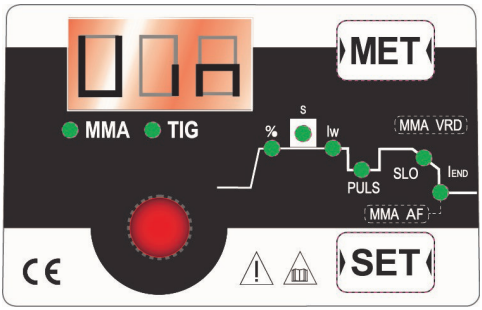
## ANTI STICK

Signalization - - - the display indicates the function of impressing by ANTI STICK. The function is activated, after all when it comes to the action and contact between the electrode and material material (feature does not prevent sticking). By touching is reduced current below 10 A and thus allow easy peel off the electrode. ANTI STICK function can be deactivated eg. for drying of electrodes and this for more than 4 s hold the SET button (pos. 9, pic. 1), and then set the switch rotary encoder: AS 0 function is disabled, AS 1 function is active.

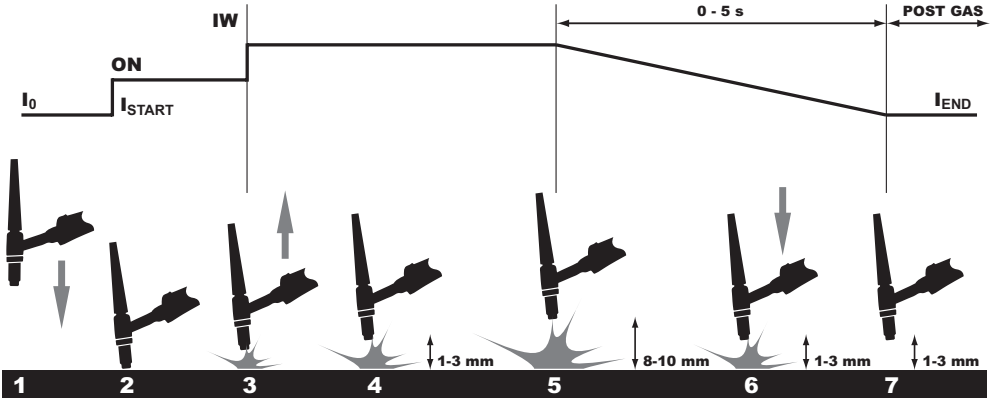
## Function of undervoltage (Uin)

The machine is equipped with an undervoltage recognizing of el. network. Upon the occurrence of deep undervoltage during the operation is drawing attention by blinking Uin. After remission of the causes removes the message using the main switch (pos. 1, pic. 2).

WARNING: If the machine is powered by a lower voltage than 230 V, proportionally there is a decrease performance of the machine.

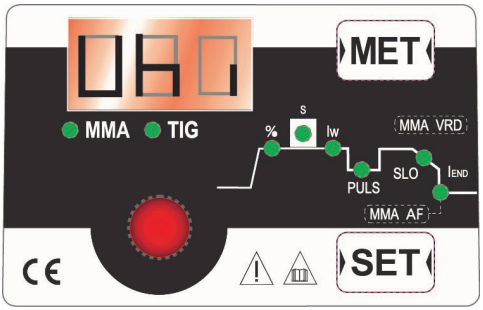


Picture 3 - welding process at TIG LA




## Function of overvoltage function (Uhi)

The machine is equipped with a overvoltage in recognizing el. network. At higher than the allowable voltage the machine will be blocked for increasing the resistance of switching elements and user will be given words UHI. After remission of the causes removes the message by using the main switch (pos. 1, pic. 2).
WARNING: Function is not taken as a over voltage protection. If the high voltage in el. network can couse the damage of the machine.




## Welding by TIG method

**Welding process at TIG LA** (pic. 3)
Starting the gas with a valve on the welding torch.

1. Approaching the tungsten electrode to the welded material.
2. Light touch of tungsten electrode of welded material (no need to cut).
3. Removal of tungsten electrode and arcing of welding arc with LA - very low wear tungsten electrodes by touch.
4. Welding process.
5. Finishing the welding process and activating the DOWN SLOPE (crater filling) is performed by removing tungsten electrodes to about 8 - 10 mm from the welded material.
6. Re-approach - welding current decreases after the set time to the end value set current (e.g. 10 A) - filling the crater.
7. End of the welding process. The digital control automatically switches off the welding process.

Switch off the gas with a valve on the welding torch.

Welding inverters allow TIG welding with touch-triggering. The TIG method is very effective for welding stainless steel. Switch the machine to TIG mode.

**Connecting the welding torch and the cable:**
Connect the welding torch to the minus pole and the ground wire to the plus pole - direct polarity.

**Selection and preparation of tungsten electrodes:**
Table 2 shows the welding current and diameter values for tungsten electrodes with 2% thoria - red electrode markings.

Table 2

| Diameter of the Electrode (mm) | Welding current (A) |
|---|---|
| 1.0 | 15 - 75 |
| 1.6 | 60 - 150 |
| 2.4 | 130 - 240 |

Prepare the tungsten electrode according to the values in table 3 and pic. 4.

Pic. 4

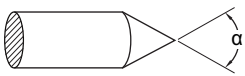
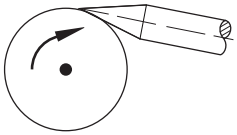


Table 3

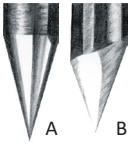
| α (°) | Welding current (A) |
|---|---|
| 30 | 0 - 30 |
| 60 - 90 | 30 - 120 |
| 90 - 120 | 120 - 250 |

**Grinding of tungsten electrodes:**
By proper choice of the tungsten electrode and its preparation will affect the properties of the welding arc, weld geometry and electrode life. The electrode must be gently grinded in the longitudinal direction as shown in pic. 5.
Pic. 6 shows the effect of grinding the electrode on its service life.

Pic. 5



Pic. 6




**Picture 6A -** Fine and even grinding of the electrode in the longitudinal direction - Lifetime up to 17 hours
**Picture 6B -** Coarse and uneven grinding in the transverse direction - Lifetime 5 hours

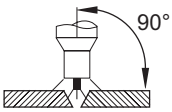
Parameters to compare the influence of the electrode grinding method are given using:
HF ignition el. arc, electrodes Ø 3.2 mm, welding current 150 A and welded materiál - pipe.

**Protective gas:**
For TIG welding, it is necessary to use argon with a purity of 99.99 %. Determine the amount of flow according to table 4.

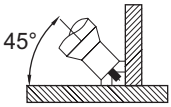
Table 4

| Welding current (A) | Diameter of electrode (mm) | Welding nozzle | | Flow of gas (l/min) |
|---|---|---|---|---|
| | | n (°) | Ø (mm) | |
| 6 - 70 | 1.0 | 4/5 | 6/8.0 | 5 - 6 |
| 60 - 140 | 1.6 | 4/5/6 | 6.5/8.0/9.5 | 6 - 7 |
| 120 - 240 | 2.4 | 6/7 | 9.5/11.0 | 7 - 8 |

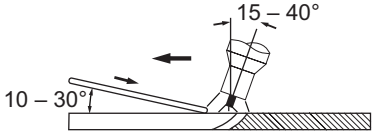
**Holding the welding torch during welding:**



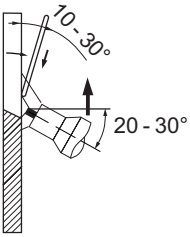

Position W (PA)




Position H (PB)




Position H (PB)




Position S (PF)

**Preparation of basic material:**
Table 5 lists the material preparation values.
Dimensions are determined according to pic. 7.

Pic. 7

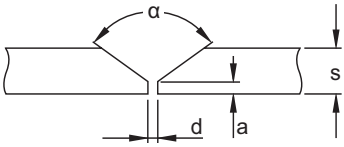



Table 5

| s (mm) | a (mm) | d (mm) | α (°) |
|---|---|---|---|
| 0 - 3 | 0 | 0 | 0 |
| 3 | 0 | 0.5 (max) | 0 |
| 4 - 6 | 1 - 1.5 | 1 - 2 | 60 |

**Basic rules during welding by TIG method:**
1. Purity - grease, oil and other impurities must be removed from the weld during welding. It is also necessary to mind purity of additional material and clean gloves of the welder during welding.
2. Leading additional material - oxidation must be prevented. To do so, flashing end of additional material must be always under the protection of gas flowing from the hose.
3. Type and diameter of tungsten electrodes - it is necessary to choose them according to the values of the current, polarity, type of basic material and composition of protective gas.
4. Sharpening of tungsten electrodes - sharpening the tip of the electrode should be done in trav-erse/horizontal direction. The tinier the roughness of the surface of the tip is, the calmer the burning of the el. arc is as well as the greater durability of the electrode is.

5. The amount of protective gas - it has to be adjusted according to the type of welding or according to the size of gas hose. After finishing the welding gas must flow sufficiently long to protect material and tungsten electrode against oxidation.

**Typical TIG welding errors and their impact on weld quality**

The welding current is too -

**Low:** unstable welding arc

**High:** Tungsten electrode tip breaks lead to turbulent arcing.

Further, mistakes may be caused by poor welding torch guidance and poor addition of additive material.

## Basic rules for welding by MMA

Switch the machine to MMA mode - coated electrode. Table 6 lists the general values for the choice of the electrode, depending on its diameter and the thickness of the base material. These data are not absolute and are informative only. For exact selection, follow the instructions provided by the manufacturer of the electrodes. The current used depends on the position of the welding and the joint type and increases according to the thickness and dimensions of the part.

Table 6

| Strength of welded material (mm) | Diameter of the Electrode |
|---|---|
| 1,5 - 3 | 2 |
| 3 - 5 | 2.5 |
| 5 - 12 | 3.25 |
| > 12 | 4 |

Table 7: Setting the welding current for the given electrode diameter

| Diameter of the Electrode | Welding Current (A) |
|---|---|
| 1.6 | 30 - 60 |
| 2 | 40 - 75 |
| 2.5 | 60 - 110 |
| 3.25 | 95 - 140 |
| 4 | 140 - 190 |
| 5 | 190 - 240 |
| 6 | 220 - 330 |

The approximate indication of the average current used for welding with ordinary steel electrodes is given by the following formula:

**I = 50 x (Øe – 1)**

where: I = the intensity of the welding current

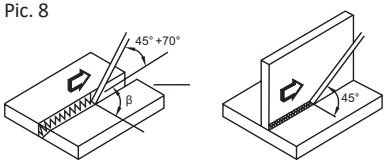
e = the diameter of the electrode

Example for an electrode with a diameter of 4 mm:

I = 50 x (4 - 1) = 50 x 3 = 150 A

**Correct electrode holding during welding**

Pic. 8




**Preparation of basic material:**

Table 8 lists the material preparation values. Specify the dimensions as shown in pic. 9.

Pic. 9

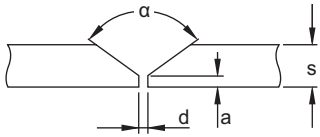



Table 8

| s (mm) | a (mm) | d (mm) | α (°) |
|---|---|---|---|
| 0 - 3 | 0 | 0 | 0 |
| 3 - 6 | 0 | s/2 (max) | 0 |
| 3 - 12 | 0 - 1.5 | 0 - 2 | 60 |

## Warning about possible problems and their remedy

The extension cord and welding cables are considered the most common cause of the problem. **If you have any problems, follow these steps:**

- Check the value of the supplied mains voltage.
- Make sure that the power cord is fully connected to the power outlet and the main power switch.
- Make sure the fuses or the circuit breakers are OK.

If you are using the extension cable, check its length, cross-section and connection.

**Make sure the following parts are not defective:**

- Main switch of the grid
- Power socket and main power switch

**NOTE:** Despite your required technical skills necessary to repair the generator, we recommend contacting trained personnel and our Technical Service Department in case of damage.

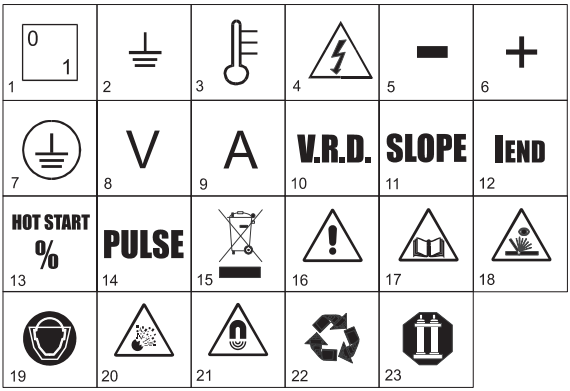
**ROUTINE MAINTENANCE AND INSPECTION**

Check according to EN 60974-4. Always before Use the machine to check the condition of the welding and supply lines cable. Do not use damaged cables.

Perform a visual check:

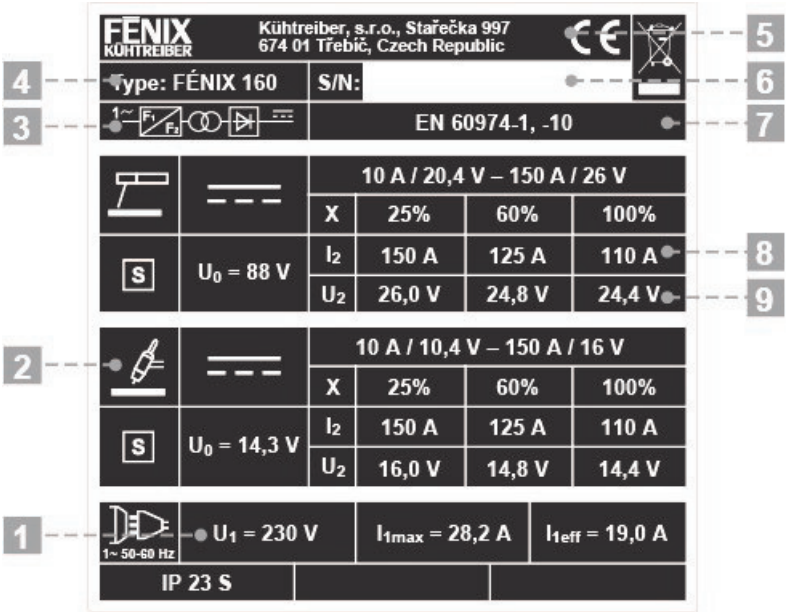
- welding cables
- power grid
- welding circuit
- covers
- control and indicator elements
- general status

## Použité grafické symboly / Key to the graphic symbols / Verwendete grafische Symbole Wykorzystane ikony



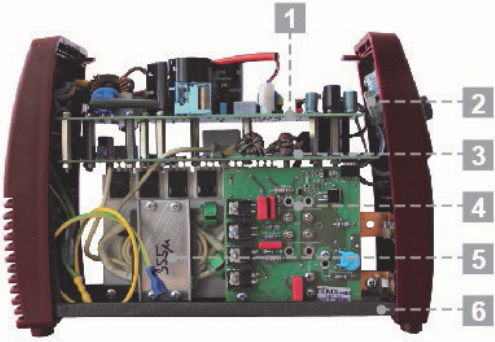

| | Popis / CZ | Opis / SK | Description / ENG | Beschreibung / DE | Opis / PL |
|---|---|---|---|---|---|
| 1 | Hlavní vypínač | Hlavný vypínač | Mine switch | Hauptschalter | Główny włącznik |
| 2 | Uzemnění | Uzemnenie | Grounding | Erdung | Uziemienie |
| 3 | Kontrolka tepelné ochrany | Kontrolka tepelnej ochrany | Yellow signal light for overheat cut off | Signallampe Wärmeschutz | Kontrolka ochrony termicznej |
| 4 | Výstraha riziko úrazu elektrickým proudem | Výstraha pre riziko úrazu el. prúdom | Warning risk of electric shock | Warnung Risikounfall durch el. Strom | Ostrzeżenie przed ryzykiem porażeniem prądem elektryc. |
| 5 | Mínus pól na svorce | Mínus pól na svorke | Negative pole snap-in connector | Minuspol auf der Klemme | Biegun ujemny na zacisku |
| 6 | Plus pól na svorce | Plus pól na svorke | Positive pole snap-in connector | Pluspol auf der Klemme | Biegun dodatni na zacisku |
| 7 | Ochrana zemněním | Ochrana uzemnením | Grounding protection | Erdungsschutz | Ochrona przez uziemnienie |
| 8 | Svařovací napětí | Zváracie napätie | Volts | Schweißspannung | Napięcie spawania |
| 9 | Svařovací proud | Zvárací prúd | Amperes | Schweißstrom | Prąd spawania |
| 10 | V.R.D. bezpečnostní systém MMA | V.R.D. bezpečnostný systém MMA | V.R.D safety system MMA | V.R.D. Sicherheitssystem MMA | V.R.D. system bezpieczeństwa MMA |
| 11 | Doběh proudu | Dobeh prúdu | Current run-out | Stromauslauf | Opadanie natężenia prądu |
| 12 | Koncový proud | Koncový prúd | End current | Schlußstrom | Prąd końcowy |
| 13 | HOT START - procentuelní navýšení proudu při funkci HOT START | HOT START – percentuálne navýšenie prúdu pri funkcii HOT-START | HOT START - percentage increase of current with function HOT START | HOT START - Prozentuelle Stromer-höhung bei der Funktion HOT START | HOT START - procentowy wzrost natężenia prądu podczas zastosowania funkcji HOT START |
| 14 | Frekvence přepínání horního a dolního proudu | Frekvencia prepínania horného a dolného prúdu | Frequency of switching upper and lower current | Frequenz der Umschaltung des oberen und unteren Strom | Częstotliwość przełączania prądu górnego i dolnego |
| 15 | Likvidace použitého zařízení | Likvidácia použitého zariadenia | Disposal of used machinery | Entsorgung der benutzten Einrichtung | Likwidacja urządzenia wykorzystanego |
| 16 | Pozor nebezpečí | Pozor nebezpečenstvo | Caution danger | Vorsicht Gefahr | Uwaga niebezpieczeństwo |
| 17 | Seznamte se s návodem k obsluze | Oboznámte sa s návodom na obsluhu | Read service instructions | Lernen Sie die Bedienanweisung kennen | Zaznajom się z instrukcją obsługi |
| 18 | Zplodiny a plyny při svařování | Splodiny a plyny pri zváraní | Safety regarding welding fumes and gas | Produkte und Gäse beim Schweißen | Spaliny i gazy podczas spawania |
| 19 | Ochrana před zářením, popáleninami a hlukem | Ochrana pred žiarením, popáleninami a hlukom | Protection from radiation, burns and noise | Schutz vor Strahlung, Brandwunden und Lärm | Ochrona przed promieniowaniem, popaleniami i hałasem |
| 20 | Zabránění požáru a exploze | Zabránenie požiaru a explózii | Avoidance of flames and explosions | Brandverhütung und Explosi-onverhütung | Zapobieganie powstawaniu pożarów i wybuchów |
| 21 | Nebezpečí spojené s elektromagnet. polem | Nebezpečenstvo spojené s elektromagnetickým poľom | Risks due electromagnetic fields | Die mit elmagn. Strahlung verbundene Gefahr | Ryzyka połączone z polem elektromagnetycznym |
| 22 | Suroviny a odpad | Suroviny a odpad | Materials and disposal | Rohstoffe und Abfälle | Surowce i odpady |
| 23 | Manipulace a uskladnění stlačených plynů | Manipulácia a uskladnenie stlačených plynov | Manipulation and Storage with compressed gas | Manipulation und Lagerung mit Druckgas | Manipulacja i składowanie gazów sprężonych |

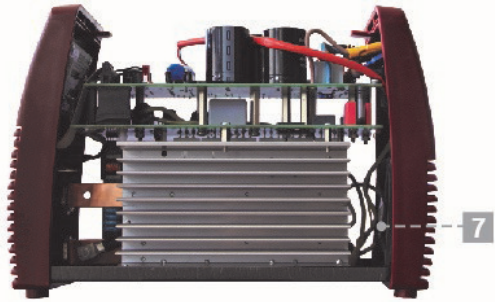
## Výrobní štítek / Výrobný štítok / Production label / Produktionsschild
## Tabliczka znamionowa




| | Popis / CZ | Opis / SK | Description / ENG | Beschreibung / DE | Opis / PL |
|---|---|---|---|---|---|
| 1 | Napájecí napětí | Napájacie napätie | Supply voltage | Speisespannung | Napięcie zasilania |
| 2 | Svařovací metoda | Zváracia metóda | Welding method | Schweißmethode | Metoda spawania |
| 3 | Svařovací stroj | Zvárací stroj | Description of the machine | Schweißmaschine | Spawarka |
| 4 | Typ stroje | Typ stroja | Name of the machine | Maschinentyp | Typ urządzenia |
| 5 | Jméno a adresa výrobce | Názov a adresa výrobcu | Name and address of manufacturer | Name und Anschrift | Nazwa i adres producenta |
| 6 | Výrobní číslo | Výrobné číslo | Serial number | Seriennummer | Nr produkcyjny |
| 7 | Normy | Normy | Standards | Referenznormen | Normy |
| 8 | Proud při zatížení | Prúd pri zaťažení | Nominal welding current | Ampere Aussetzungsverhaltnis | Natężenie prądu podczas obciążenia |
| 9 | Napětí při zatížení | Napätie pri zaťažení | Nominal load voltage | Volt Aussetzungsverhaltnis | Napięcie podczas obciążenia |

**Seznam náhradních dílů strojů / Zoznam náhradných dielov strojov**
**List of spare parts / Ersatzteilliste / Lista części zamiennych urządzenia**

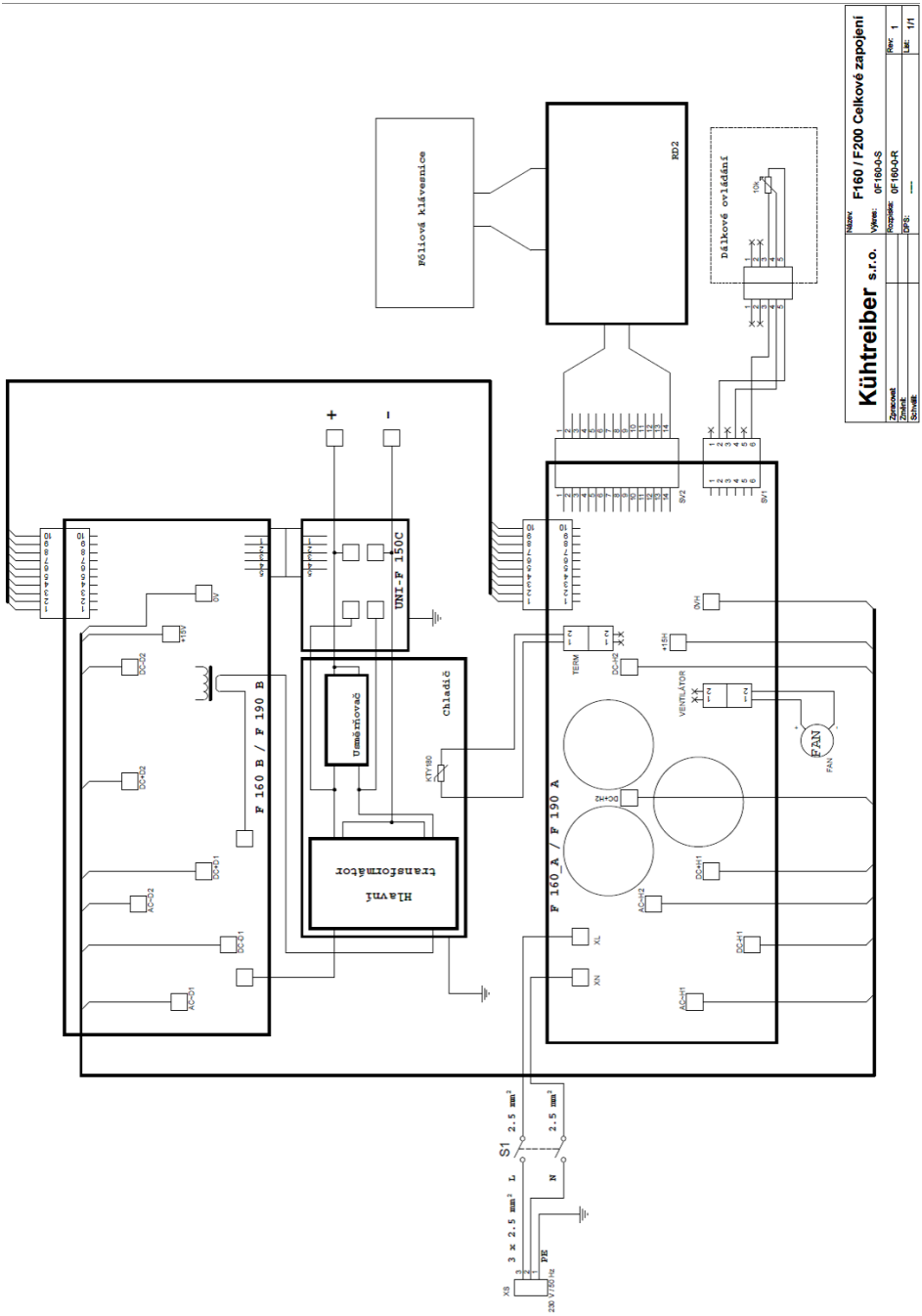



| Poz. pos. | Seznam náhradních dílů / CZ | Zoznam náhradných dielov / SK | List of spareparts / ENG | FĒNIX 160 | FĒNIX 200 |
|---|---|---|---|---|---|
| 1 | Plošný spoj F160_A | Plošný spoj F160_A | PCB F160_A | 11724 | 11734 |
| 2 | Plošný spoj F160_řídící | Plošný spoj F160_riadiaci | PCB F160_ driving | 11720 | 11720 |
| 3 | Plošný spoj F160_B | Plošný spoj F160_B | PCB F160_B | 11725 | 12048 |
| 4 | Plošný spoj F160_UNI | Plošný spoj F160_UNI | PCB F160_UNI | 11726 | 11737 |
| 5 | Transformátor hlavní | Transformátor hlavný | Main Transformer | 11721 | 12044 |
| 6 | Dno | Dno | Base | 11728 | 12049 |
| 7 | Ventilátor | Ventilátor | Fan | 42073 | 42073 |
| 8 | Vypínač hlavní | Vypínač hlavný | Main switch | 30452 | 30549 |
| 9 | Čelo zadní | Čelo zadné | Rear panel | 33211 | 30877 |
| 10 | Kabel přívodní 3x2,5 | Kábel prívodný 3×2,5 | Mains cable 3x2,5 | 31064 | 31064 |
| 11 | Rychlospojka komplet 25 $mm^2$ | Rýchlospojka komplet 25 $mm^2$ | Quick connection core 25 $mm^2$ | 30421 | 30421 |
| 12 | Konektor dálkového ovládání | Konektor diaľkového ovládania | Connector of remote control | 42035 | 42035 |
| 13 | Knoflík přístrojový | Gombík prístrojový | Instrument knob | 30860 | 30860 |
| 14 | Samolepka čelní klávesnice | Samolepka čelnej klávesnice | Front panel sticker | 33212 | 33212 |
| 15 | Samolepka výkonnostní | Samolepka výkonnostná | Base sticker | 33222 | 33320 |
| | Čelo přední | Čelo predné | Front panel | 33210 | 30876 |

| Poz. pos. | Beschreibung / DE | Lista części zamiennych / PL | FĒNIX 160 | FĒNIX 200 |
|---|---|---|---|---|
| 1 | Flacheverbindung F160_A | Obwód drukowany F160_A | 11724 | 11734 |
| 2 | Flacheverbindung F160_řídící | Obwód drukowany F160_sterujący | 11720 | 11720 |
| 3 | Flacheverbindung F160_B | Obwód drukowany F160_B | 11725 | 12048 |
| 4 | Flacheverbindung F160_UNI | Obwód drukowany F160_UNI | 11726 | 11737 |
| 5 | Haupttransformator | Główny transformator | 11721 | 12044 |
| 6 | Boden | Dno | 11728 | 12049 |
| 7 | Lüfter | Wentylator | 42073 | 42073 |
| 8 | Hauptschalter | Główny włącznik | 30452 | 30549 |
| 9 | Hintereseite | Czoło tylne | 33211 | 30877 |
| 10 | Zuführungskabel 3x2,5 | Przewód zasilania 3x2,5 | 31064 | 31064 |
| 11 | Schnellkupplung komplett 25 $mm^2$ | Złącze szybkoskrętne komplet 25 $mm^2$ | 30421 | 30421 |
| 12 | Stecker der Fernbedienung | Wejście sterowania zdalnego | 42035 | 42035 |
| 13 | Gerätknopf | Gałka przyrządowa | 30860 | 30860 |
| 14 | Vordere Selbstklebefolie | Naklejka klawiatury przedniej | 33212 | 33212 |
| 15 | Etikette leitende | Tabiczka znamionowa | 33222 | 33320 |
| | Vordereseite | Czoło wsztec | 33210 | 30876 |

## Elektrotechnické schéma / Elektrotechnická schéma
## Electrical diagram / Schema / Schemat elektrotechniczny



Agrokomplex - Výstavníctvo Nitra, štátny podnik
Zväz strojárskeho priemyslu SR

udeľujú ocenenie

# ČESTNÉ UZNANIE

## MEDZINÁRODNÝ STROJÁRSKY VEĽTRH 2012

exponátu: **Svařovací invertor FENIX**

výrobcovi: **KÜHTREIBER, s. r. o., Třebíč, Česká republika**

vystavovateľovi: **KÜHTREIBER, s. r. o., Třebíč, Česká republika**

predseda
hodnotiteľskej komisie

riaditeľ
Agrokomplex – Výstavníctvo Nitra, štátny podnik

NITRA 22. 5. 2012

| Osvědčení o jakosti a kompletnosti výrobku<br>Osvedčenie o akosti a kompletnosti výrobku / Testing certificate<br>Qualitätszertifikat des Produktes / Deklaracja Jakości i Kompletności | |
|---|---|
| Název a typ výrobku<br>Názov a typ výrobku / Type<br>Bennenung und Typ<br>Nazwa i rodzaj produktu | ☐ **FĒNIX 160** ☐ **FĒNIX 200** |
| Výrobní číslo stroje<br>Výrobné číslo<br>Serial number<br>Herstellungsnummer der Maschine<br>Numer produkcyjny maszyny | |
| Výrobce<br>Výrobca<br>Producer<br>Produzent<br>Producent | |
| Razítko OTK<br>Pečiatka OTK<br>Stamp of Technical Control Department<br>Stempel der technische Kontrollabteilung<br>Pieczątka Kontroli Jakości | |
| Datum výroby<br>Dátum výroby<br>Date of production<br>Datum der Produktion<br>Data produkcji | |
| Kontroloval<br>Kontroloval<br>Inspected by<br>Geprüft von<br>Sprawdził | |

| Záruční list / Záručný list / Warranty certificate / Garantieschein / Karta Gwarancyjna | |
|---|---|
| Datum prodeje<br>Dátum predaja<br>Date of sale<br>Verkaufsdatum<br>Data sprzedaży | |
| Razítko a podpis prodejce<br>Pečiatka a podpis predajca<br>Stamp and signature of seller<br>Stempel und Unterschrift des Verkäufers<br>Pieczątka i podpis sprzedawcy | |

| Záznam o provedeném servisním zákroku / Záznam o prevedenom servisnom zákroku<br>Repair note / Eintrag über durchgeführten Serviceeingriff<br>Zapis o wykonaniu interwencji serwisowej | | | |
|---|---|---|---|
| Datum převzetí servisem<br>Dátum prevzatia servisom<br>Date of take-over<br>Datum Übernahme durch Servisabteilung<br>Data odbioru przez serwis | Datum provedení opravy<br>Dátum prevzatia z opravy<br>Date of repair<br>Datum Durchführung der Reparatur<br>Data wykonania naprawy | Číslo reklam. protokolu<br>Číslo reklam. protokolu<br>Number of repair form<br>Nummer des Reklamationsprotokoll<br>Numer protokołu reklamacyj | Podpis pracovníka<br>Podpis pracovníka<br>Signature of serviceman<br>Signature of serviceman<br>Unterschrift von Mitarbeiter<br>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.

08/2019