

National Academy of  
Sciences of Ukraine



E.O.Paton Electric  
Welding Institute

# **LIVE TISSUE WELDING apparatuses of EKVZ-300 PATONMED® series**

Certificate  
of state registration  
number 14574/2015



High-frequency live tissue welding (HF LTW) process developed at the E.O.Paton Electric Welding Institute of the National Academy of Sciences (NAS) of Ukraine in close cooperation with leading medical organizations of Ukraine demonstrated its effectiveness and is successfully applied in surgical practice starting from 2002. During this time over 150 various surgical procedures have been mastered and more than two hundred thousand surgical operations have been successfully performed in such fields as general and abdominal surgery, traumatology, pulmonology, proctology, urology, mammalogy, otolaryngology, gynecology, ophthalmology, etc. This method is highly promising for the transplantation of various organs as well.

- *fast and complete postoperative rehabilitation;*
- *possibility of surgical treatment of patients, who were regarded as inoperable.*

Respective equipment and instruments are the practical basis for HF LTW process realization. Starting from the first apparatuses created as far back as in the middle of the 90ties of the previous century, E.O.Paton Electric Welding Institute developed a whole range of apparatuses supporting this process. The area of distribution of apparatuses of PWI design for HF LTW (over 200 pieces of apparatuses of various modifications) covers many regions of Ukraine, as well as such countries as the Russian Federation, Bulgaria and China.



**Fig. 1. All-purpose apparatus EKVZ-300 PATONMED® for live tissue welding**

HF LTW is believed to be particularly promising for application in veterinary medicine both for surgical treatment of animals (removal of tumors, castration, etc.), as well as for sanitization of cities.

As confirmed by numerous reports of leading surgeons and noted several times at various seminars and conferences, HF LTW method ensures:

- *bloodless, fast, convenient for the surgeon and low-traumatic for the patient performance of operative intervention, reliable hemostasis;*
- *reduction of blood loss by 50% and more;*
- *shortening of surgery duration by 20 - 50%;*
- *high ablaticity of surgery performance;*
- *absence of suppurations;*

At present PWI markets EK-300M1 apparatuses of various modifications developed in the previous years and new apparatus EKVZ-300, which is manufactured under PATONMED® trade name (Fig. 1). They have received state registration and are successfully applied in surgical practice at up to 100 hospitals of Ukraine.

EKVZ-300 apparatus offers wide possibilities for selection of operating algorithms and working parameters of the process, depending on the kinds of surgery and surgeon's requirements. Adaptation, modification and entering of additional programs are performed by user preference. It operates at frequencies of 440 kHz with power controlled in the broadest range practically from zero to maximum val-

ues of this parameter of 300 W.

Software products and operating algorithms developed as a result of numerous comprehensive investigations conducted by PWI in close cooperation with Ukrainian medical specialists, ensure successful performance of surgery in the most diverse surgical fields, making EKVZ-300 apparatus to be a really unique and all-purpose tool in surgeon's hands.

Equipment is, as a rule, fitted with a basic set of tools (pincers and forceps). Customers are offered many types of instruments for open and laparoscopic surgery (see the reverse side of this brochure), including special instruments, for instance, for otolaryngology or ophthalmology. EKVZ-300 can operate with all the instruments for HF LTW developed at PWI so far. Adaptation and application of instruments from other manufacturers is also possible. Simultaneous connection of two instruments by surgeon's choice is envisaged.



Fig. 2

PWI set up production facilities (Fig. 2), which allows covering the needs for this kind of equipment in Ukraine with the possibility of exporting it.

EKVZ-300 was the basis for the development of mobile systems EKVZ-300M and EKVZ-MDU (Fig. 3), which are indispensable for on-call surgeons, first aid stations, air medical service, emergency medicine, veterinary surgery, etc. These apparatuses have small weight (6.5 kg with cables and basic instruments) and are convenient for carrying and transportation. They are deployed into the working position in just few minutes and can operate both under stationary and field conditions. Apparatus EKVZ-300MDU is fitted with a portable remote control panel.

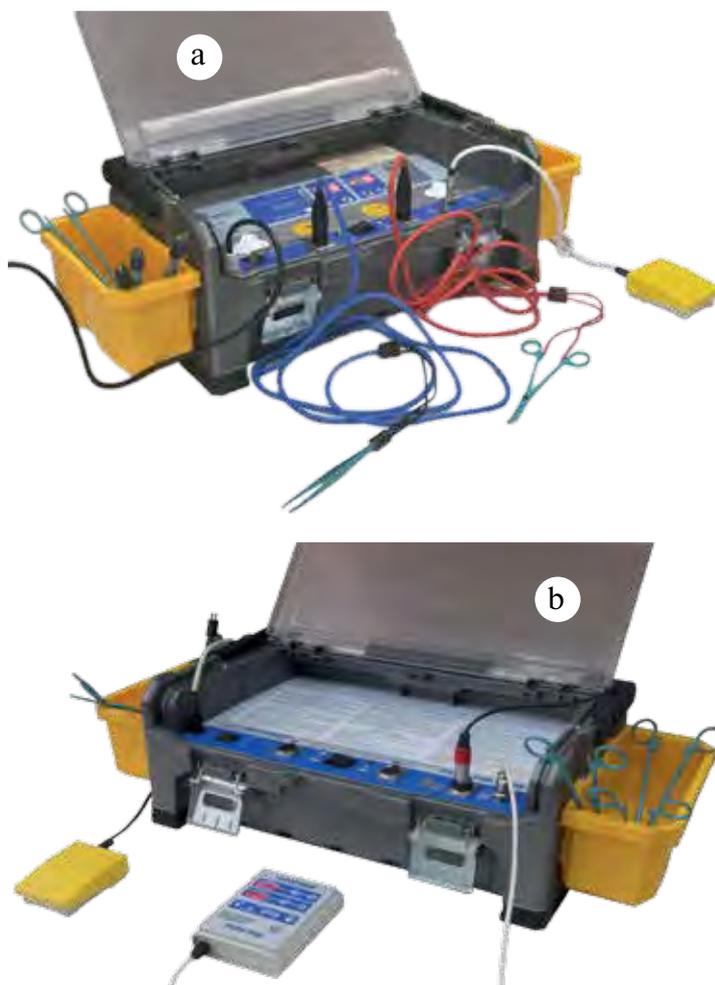


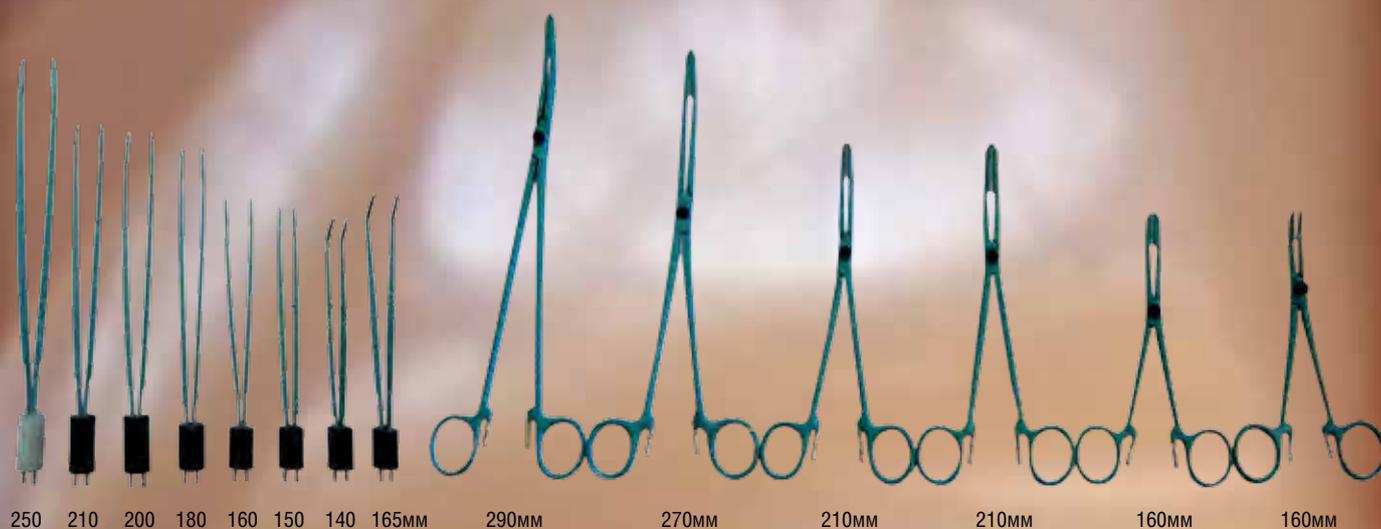
Fig. 3. All-purpose mobile apparatuses for high-frequency live tissue welding with built-in (a) and remote (b) control panels



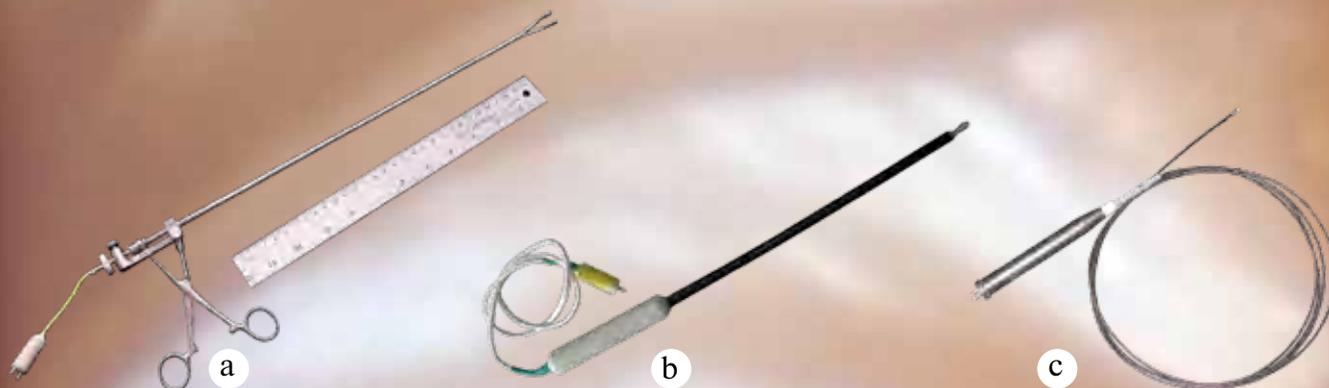
Fig. 4. All-purpose mobile apparatus for high-frequency live tissue welding in stowed condition

The advantages and merits of new equipment, as well as of the processes of welding, cutting and coagulation of live biological tissues allow anticipating their wide practical application. In the future, apparatuses for high-frequency welding of live tissues should become an integral part of each surgery operating room and each surgery table.

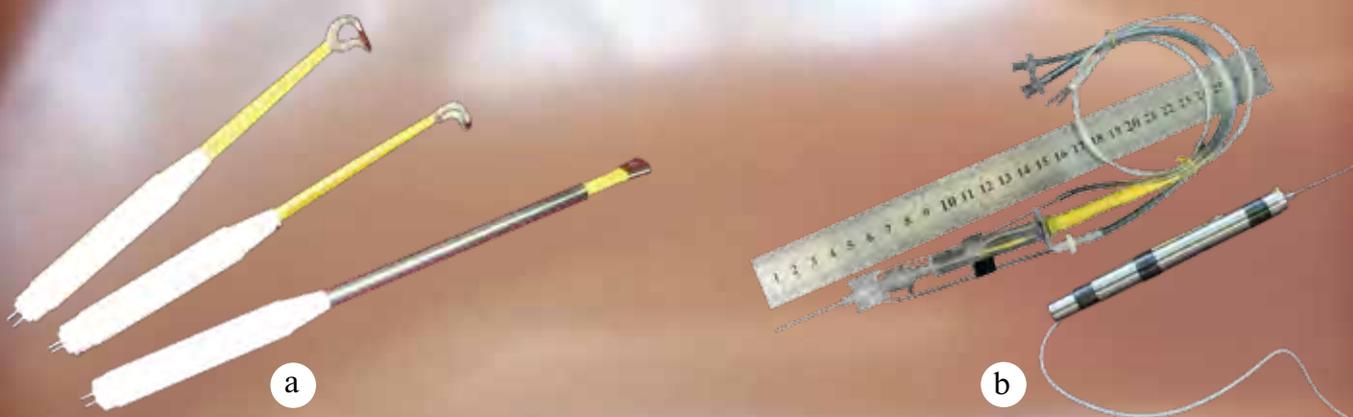
## Bipolar instruments for HF live tissue welding



**Bipolar electrocautery pincers and forceps**



**Bipolar laparoscopic forceps (a), "spoon"-type probe (b) and flexible endoscopic instrument (c)**



**Instruments for HF welding in otolaryngology (a) and ophthalmology (b)**

For technical issues, placing orders, as well as for additional information please contact:

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