

New sets abstract.

The cheap, safe and simple sets are allowing precision welding, brazing, local penetration or heating. The typical thicknesses of the majority metal materials are 0,2 -3 mm . The proposed sets have the following advantages:

- guarantees the carrying out of welding, brazing and the rotation of welding-brazing-welding processes applied to the majority metal materials including composite, chrome-nickel-cobalt alloys, noble materials made by usual and powder metallurgy methods
- permits local heat treatment (*hardening, annealing, etc.*) without electrical interaction with the surface of a small detail (*that has to be treated*) and, of necessity, cutting of non-conductivity materials
- an operator of the new set can change twice or three times as many parameters by foot pedal (*as compared with similar sets*)
- melting and re-melting of small (*up to 20 - 40 g.*) amounts of the mentioned metal materials – usually in a graphite cup
- making of small furrows and hollows as well as slight form correction of delicate metal structures and their repairing
- disconnecting of some small assembled details after their brazing, pressing or gluing
- softening and sometimes welding of thermoplastic materials
- one, or single-side, spot welding of various structures, including different bodies, chassis, teeth prostheses and medical instruments, like scalpels, mirrors, boxes made also from dissimilar metal materials as well as micro-cracks elimination in precision structures
- preliminary fixing of small assembling parts before their final joining
- local thickening of thin-walled structures, closing of capillary tubes without a filler material usage or local changing of their cross section dimension
- micro-spraying of metallic and non-metallic materials (*as an option*)
- the price of a new set is as much as 30 – 60% lower than the price of similar sets. service and repair of a new set may be carried out by specialists with minimal training, because it is mainly built on the simplistic element base

Potential customers of the new sets include:

industrial, medical-biological companies, universities and organization which have a deal with delicate metal structures including membrane, vacuum, cryogenic and autoclave machinery, complex medical, electronic and precision instruments and tools, sensors and systems with fine enamel wires, glass-covered thermocouples, different filters made from metal meshes and foils, etc. firms and workshops, engaging in manufacturing and repair of precision mechanics, edge welded bellows (*with wall thicknesses more than 0,25 mm*), metal furniture, washing machines, refrigerators and kitchen appliances, producing small transformers, electrical motors, thin walled tubes and metal goods, cutting instruments, hermetically-sealed vessels, batteries, hydraulic and pneumatic fittings, turbine blades, tool, etc. Also, these sets proven to achieve outstandingly good results in repairing die moulds, stamps and press forms

, metal cutters, scissors, shears. private jewelers, dentists, sculptors and artists working in a small metal art as

well as a lot of amateurs - for set using in home appliances. In some cases, the proposed set can substitute equipment for argon (*TIG*), electron-beam and laser welding (*that is also very important at the point of view of*

the high qualification operators deficit), brazing machines, like gas-flame and induction devices, electrical furnaces. Using of the proposed set will be ecological problem-free. The set working prototype has already been made and, fortunately, has shown good results in welding and brazing of jewelry goods, metal teeth prostheses as well as in spot welding of steel samples with thicknesses of nearly 1 mm . It is important to note

that such steel samples may contain more than 0.3% carbon and may be made from different classes of materials.

The cost of new industrial set depends of their modifications and may be no more than \$5,000 - 7,000 (*without special complex accessories*). The set also includes an original plasma torch that has specific quality -

movable (*adjustable without process interruption*) electrode. More information about the OB-2322 torch is given in our sub-rubric [torches and heads](#). Precisely the controlled axis electrode shift permits to maintain stable conditions for the high-current pilot arc burning during micro brazing, micro spraying, combined and other

processes. There are some ideas of creating a lighter plasma torch.