LASER WORKSTATION FOR MICROPERFORATION
AND CUTTING SHEET METAL MATERIALS

Description
Laser technological device for cutting regular-perforation surfaces is created on the basis of mechanism with “fly optic” along X axis and transferring of sheets materials along Y axis. The device works under the control of intellectual controller and PC/AT computer. The working program sets parameters of a laser head movement and processing - a step of displacement, a size of a cutting region, time of micro processing of an element (a hole).

Technical specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Field size, mm²</td>
<td>400 × 400</td>
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<tr>
<td>Minimum step, mm</td>
<td>0.02</td>
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<tr>
<td>Accuracy, mm</td>
<td>0.01</td>
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<tr>
<td>Time of positioning at displacement 0.1 mm, sec</td>
<td>0.01</td>
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<tr>
<td>Laser Wave length, nm</td>
<td>1064</td>
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<tr>
<td>Operating mode</td>
<td>pulsing, TEM00, MM</td>
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<tr>
<td>Energy of an impulse, J</td>
<td>0.1—3.0</td>
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<tr>
<td>Recurrence rate of impulses, Hz</td>
<td>10—100</td>
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Technical appraisal and economic benefits
In comparison with traditional ways (machining, plasma cutting and drilling), laser cutting and perforation is performed with greater accuracy, less waste and a smaller tolerable limit of cutting. Laser cutting providing a qualitative surface of an edge eliminates the need of its subsequent processing.
**Application areas**
The regular-perforation surfaces produced by the laser workstation are intended for experiments in fluids and gases mechanics, hypersonic techniques and for development of new materials.

Besides of using such surfaces in aircraft industry they will find a wide application as separating screens for sorting fine particles in the industry of powder materials and for scientific research. They also can be used as highly effective selecting filters for particles in pharmacology and medicine.

**Development stage**
Pre-production model.

**Patent situation**
Patents not yet applied for.

**Commercial offers**
Contracts for manufacturing and delivery.

**Estimated cost**
2 500 000 roubles.

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