



**BINOCULAR MAGNIFIER
LBVO**

Operating Instructions

OPERATING INSTRUCTIONS BINOCULAR MAGNIFIER LBVO



1. APPLICATION

Binocular magnifier is intended for stereoscopic viewing of the operation field with magnification 2.5X and 3.5X and illumination of this field by “cold” light at different applications starting from microsurgical operations to close ups assembly, maintenance and repair works.

The device can be used in rooms at temperature range from -10° up to +35°C and relative humidity 80%.

2. TECHNICAL SPECIFICATIONS

1.	Light spot diameter at 280 mm distance from the projector cell end, not less	mm	55
2.	Minimum luminance at light spot at under rated supply voltage	lux	10,000
3.	Linear magnification of telescopic magnifier monocular lenses		2.5x; 3.3x
4.	Minimum diameters of field of views of monocular eyepieces in the plane of observation, mm for 2.5X magnification for 3.3X magnification	mm	35 20
5.	Working distance from an object under observation to the lenses, within range	mm	250 - 350
6.	Minimum eye relief / distance between exit eyepieces and eyes	mm	20
7.	Eyepieces interpupil base adjustment	mm	58 – 72
8.	light conduit fibre bundle length, not less	mm	2000
9.	Weight of forehead illuminator with magnifier loops & fibre bundle, not less	gm	600
10.	Average service life, not less	years	4

3. DELIVERY SET

Forehead illuminator	1 pc.
Magnifier loop 2.5X	2 pcs.
Magnifier loop 3.3X	2 pcs.
Case	4 pcs.
Certificate	1 pc.

4. ARRANGMENT AND OPERATION

Forehead illuminator with magnifier loops (Fig. 1) consists of the head-band ring 1 and the bracket 2. The projector 3 and two magnifier loops 4 are fixed on the bracket. Eyepieces inter pupil adjustment is carried out using the gear 5.

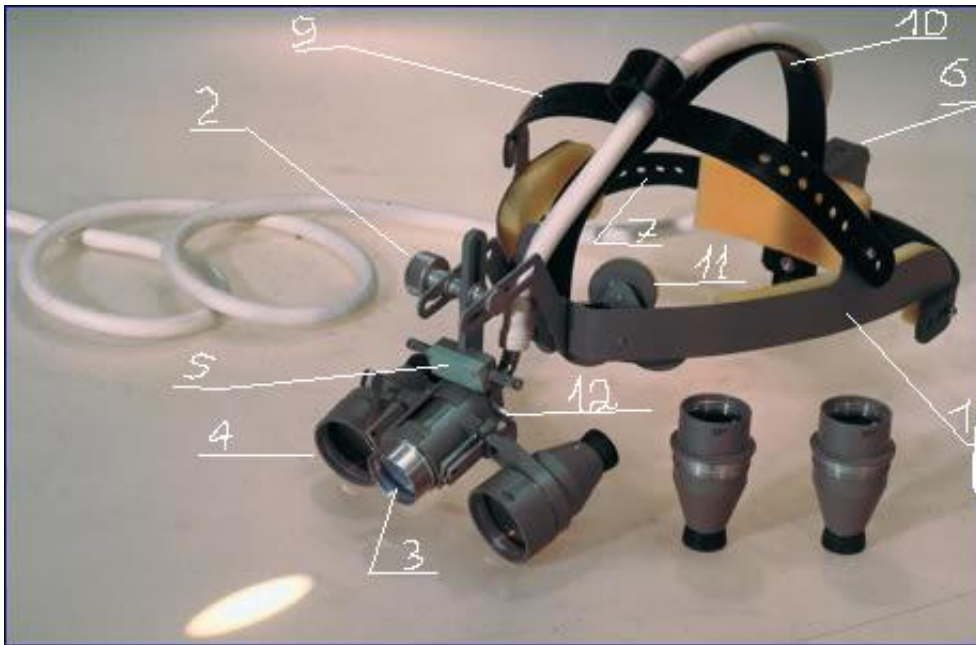
The head-band ring is composed of neck belt 7, tightening of it is made by means of the gear 8, the parietal melt 9, the long belt 10, swing supports 11.

Magnifier loops are set as per following adjustment movements:

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1. Using crossed strips with long grooves where the clamping screw is come through you can make inclinations up – down relative to the transverse axis and movements front-back and up – down.
2. Eyepieces interpupul distance alignment is freely made by simultaneous turning of the magnifier loops around the projector axis 3 in transverse directions using gear handle 5;
3. Magnifier loops turning relative the projector axis to non-operational position is possible when holders 12 are pushed; when magnifiers are down to operational position the eyepieces interpupul distance is remained unchanged.



5. GENERAL INSTRUCTION

- 5.1. Light conduit fibre bundle should be handled cautiously, no sharp bends with radii less than 50mm, compression, displacements, impacts, contact with cutting and scratching objects should be tolerated.
- 5.2. It should not be allowed to touch optic surfaces of the device. In the case of soiling the optics surfaces should be cleaned (but without force) by a soft washed napkin , slightly moistened with a mixture of equal quantities of pure solvents (petroleum-ether TY6-02-1244-83 and ethyl alcohol ГОСТ 18300-72). As this takes place, water penetration under the lens cells must be excluded.

6. PREPARATION FOR USE

- 6.1. Set up the magnifiers loops with required magnification factor into the thread holes of the bracket of the forehead illuminator
- 6.2. Put on the forehead illuminator with loops on a head, adjust the length of the illuminator belts and thoroughly set up eyepieces interpupul distance. Adjustment of belts is made as per following way:
 - gear 8 handle is tighten preliminary against clock hand up to stop position, and then belts are loosen in maximum way;
 - obtain a comfortable setting of the device on the head changing belts length using buckles;
 - make the final fitting of the device on the head by adjusting the neck belt 7 with use of the gear 8.Setting up of eyepieces interpupul distance should be made only rounding the gear 5 handles. It is prohibited to apply strong force to the brackets with magnifier loops during setting since it can be resulted in unsettlement and disorder of the device.
- 6.3. Check operation of holders when make up and downs of the loops.

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6.4. Check quality of the object image at 280 mm distance from the end of the projector cell. A sheet with types can be used for such checking out.

6.5. Clean thoroughly outer surfaces of the forehead illuminator by 3% solid of hydrogen peroxide.

7. STORAGE

7.1. In a clinic or a hospital conditions the device should be preserved in dry place avoiding of dust and dangerous exhalation

7.2. Light conduit fibre bundle should be settled by rings during its storage to avoid possible breakages of glass fibre and cladding.

7.3. Forehead illuminator with bundle can be stored on shelves of medical board or in closed boxes. Magnifier loops should be preserved in the specially intended cases.

8. ACCEPTANCE CERTIFICATION

This binocular magnifier LBVO is fully complied with the technical specification TU3-3.1591-78 and accepted ready for service

9. MANUFACTURER WARRANTY

Manufacturer guarantees the conformance of this device to the requirements of the technical specification at a customer proper operations, transportation and storage conditions.

Warranty period is 12 months from the date of the device setting to operations but not later than 18 months from the date of delivery to a customer.

In case of this device failure to use within warranty period as well as if a customer finds out unacceptable defects at first seeing it is necessary to return it back along with its certificate in Russian and English.